SNOWY MONARO REGIONAL COUNCIL

ATTACHMENTS TO REPORTS

(Under Separate Cover)

Ordinary Council Meeting

16 October 2025

ATTACHMENTS TO REPORTS
FOR
ORDINARY COUNCIL MEETING
THURSDAY 16 OCTOBER 2025

Page No.

8 PLANNING AND DEVELOPMENT APPLICATION MATTERS

8.1 Development Application 10.2024.230.1 - Construction of a staged 6 cabin Eco-Tourist Facility

Attachment 1 Architectural Plans 2
Attachment 2 DRAFT Conditions of Consent 46
Attachment 3 Statement of Environmental Effects 79
Attachment 4 Biodiversity Assessment Report 164
Attachment 5 Addendum to Biodiversity Assessment Report 372
Attachment 6 Vegetation Management Plan 467
Attachment 7 Bushfire Risk Assessment Report 512
Attachment 8 BASIX Certificate 558
Attachment 9 NatHERS Certificates 574
Attachment 10 DCCEEW Advice 656
Attachment 11 NSW RFS Advice 657
Attachment 12 Crownlands Advice 663
Attachment 13 AHIMS Searchers 665
Attachment 14 Erosion and Sediment Control Plan 673
Attachment 15 Onsite Wastewater Assessment 702
Attachment 16 Stormwater Management Plan 738
Attachment 17 Thermal Report 778
Attachment 18 Electrical Consumption 793
Attachment 19 Public Submissions 797

PROPOSED ECO CABINS

92 CHONGS ROAD

JINDABYNE

NSW 2627

DESIGN BY
PETER DUKE
PHONE 0418 263 000
EMAIL petersmeeton@gmail.com
MAIL 31 Waterfront Place AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841

DISCLAIMER
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COORDINATION ARCHITECT DETAILS
NAME GRAEME HENE
PHONE 0429 672 870
EMAIL thegrahene@bigpond.com
MAIL PO Box 2078 HALLIDAYS POINT NSW 2430
REG. ARCHITECT NO 2818

OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795 WAVERLEY NSW 2024

ISSUE	DATE	FOR
1	18.05.2023	DA SUBMISSION
2	04.07.2023	DA SUBMISSION
3	07.07.2024	DA SUBMISSION

CLIENT
JOSHUA LEITNER

PROJECT NUMBER
001

PROJECT
PROPOSED ECO CABINS

ADDRESS
92 CHONGS ROAD, JINDABYNE

STATUS
DA

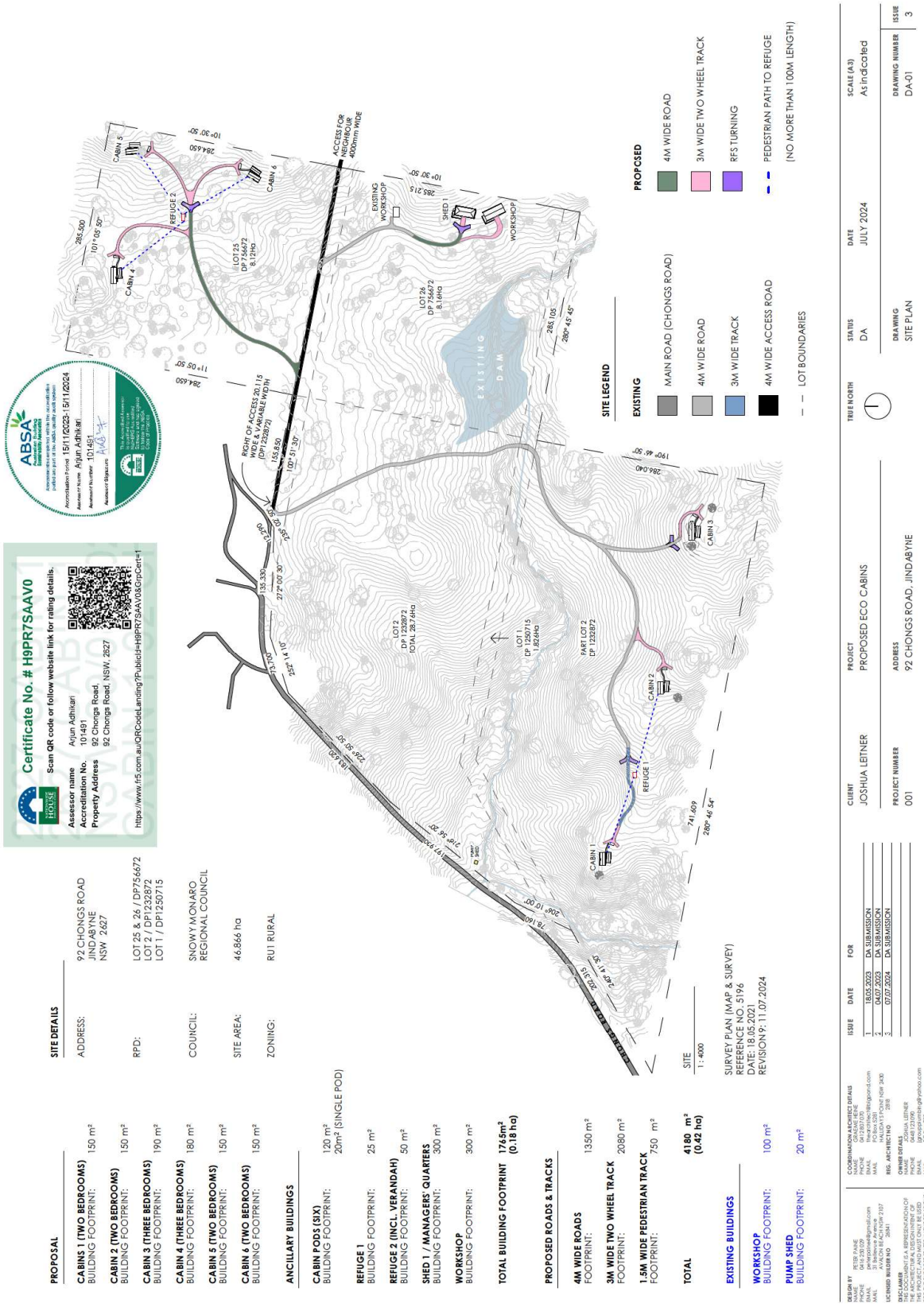
DATE
JULY 2024

SCALE (A3)

DRAWING
COVER PAGE

DRAWING NUMBER
DA-00

ISSUE
3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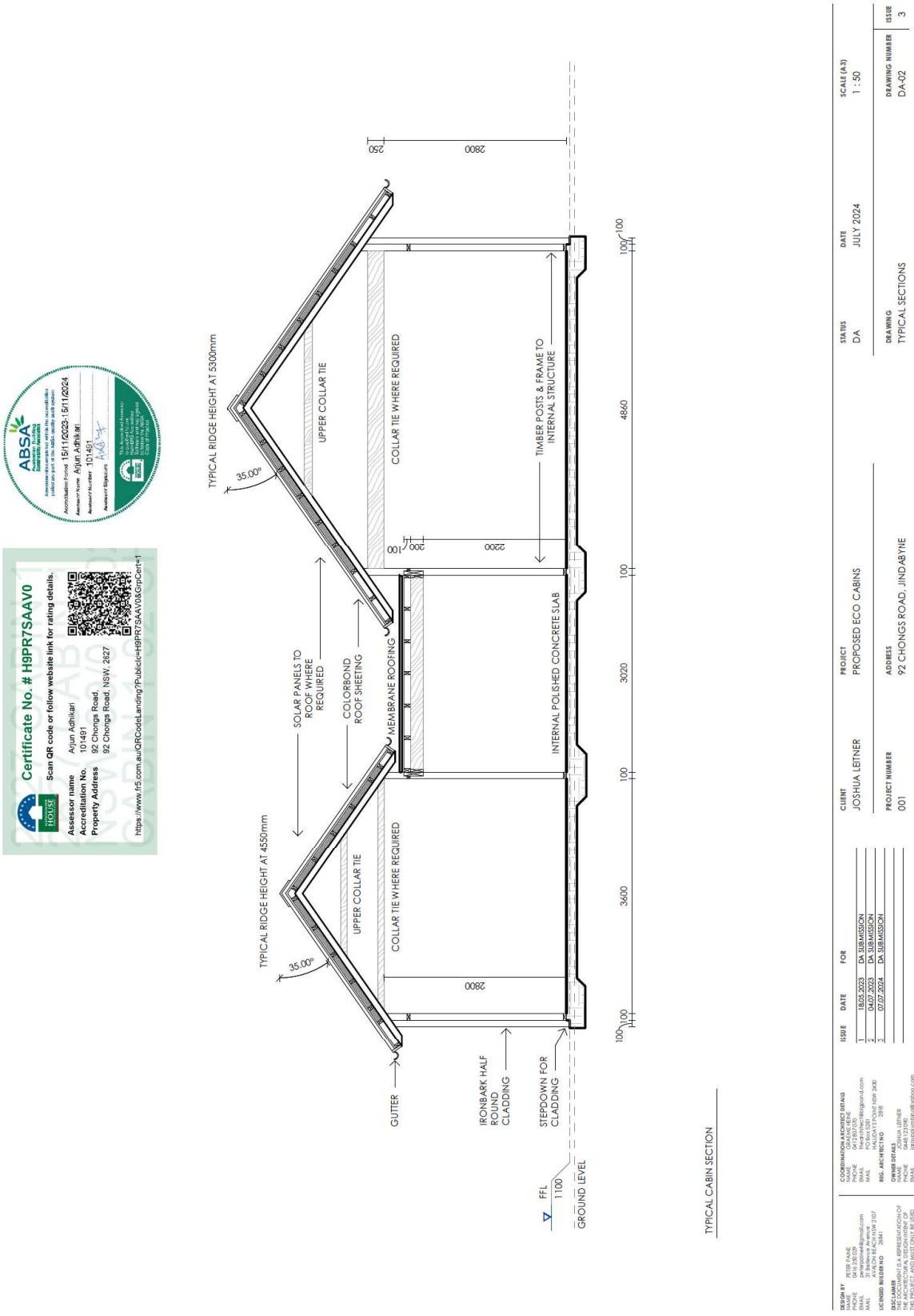
Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chonga Road
92 Chonga Road, NSW, 2627
https://www.fr5.com.au/QRCodeLanding?PublicId=H9PR7SAAV0&GrpCert=1
ABSA
Accredited Assessor
Arjun Adhikari
Assessment Number 101491
Accreditation Period 15/11/2023 - 15/11/2024
PROPOSAL
CABINS 1 (TWO BEDROOMS) 150 m²
CABIN 2 (TWO BEDROOMS) 150 m²
CABIN 3 (THREE BEDROOMS) 190 m²
CABIN 4 (THREE BEDROOMS) 180 m²
CABIN 5 (TWO BEDROOMS) 150 m²
CABIN 6 (TWO BEDROOMS) 150 m²
ANCILLARY BUILDINGS
CABIN PODS (SIX) 120 m² / 20m² (SINGLE POD)
REFUGE 1 25 m²
REFUGE 2 (INCL. VERANDAH) 50 m²
SHED 1 / MANAGERS' QUARTERS 300 m²
WORKSHOP 300 m²
TOTAL BUILDING FOOTPRINT 1765m² (0.18 ha)
PROPOSED ROADS & TRACKS
4M WIDE ROADS 1350 m²
3M WIDE TWO WHEEL TRACK 2080 m²
1.5M WIDE PEDESTRIAN TRACK 750 m²
TOTAL 4180 m² (0.42 ha)
EXISTING BUILDINGS
WORKSHOP 100 m²
PUMP SHED 20 m²
SITE DETAILS
ADDRESS: 92 CHONGS ROAD JINDABYNE NSW 2627
RPD: LOT 25 & 26 / DP756672 LOT 2 / DP1232872 LOT 1 / DP1250715
COUNCIL: SNOWY MONARO REGIONAL COUNCIL
SITE AREA: 46.866 ha
ZONING: RU1 RURAL
SITE 1:4000
SURVEY PLAN (MAP & SURVEY)
REFERENCE NO. 5196
DATE: 18.05.2021
REVISION Nº: 11.07.2024
DESIGN BY PETER SHAW PHONE 0418 690 800 EMAIL petershaw@gmail.com MAIL PO BOX 2107 AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841
DISCLAIMER THIS DRAWING IS A REPRESENTATION OF THE ARCHITECTURAL DESIGN INTENT OF THE PROJECT AND IS NOT TO BE USED FOR THE PURPOSE STATED IN THE REVISIONS COLUMN.
COORDINATION ARCHITECT DETAILS NAME GRAEME PEAKE PHONE 0429 278 880 EMAIL thegrantlee@bigpond.com MAIL PO BOX 2107 HALLIDAYS POINT NSW 2430
REG. ARCHITECT NO 2818
OWNER DETAILS NAME JOSHUA LEITNER PHONE 0448 123 090 EMAIL joshua.leitner@yahoo.com MAIL PO Box 795 WAVERLEY NSW 2024
ISSUE DATE FOR
1 18.05.2023 DA SUBMISSION
2 04.07.2023 DA SUBMISSION
3 07.07.2024 DA SUBMISSION
CLIENT JOSHUA LEITNER
PROJECT PROPOSED ECO CABINS
ADDRESS 92 CHONGS ROAD, JINDABYNE
PROJECT NUMBER 001
TRUE NORTH
STATUS DA
DATE JULY 2024
SCALE (A3) As Indicated
DRAWING SITE PLAN
DRAWING NUMBER DA-01
ISSUE 3
SITE LEGEND
EXISTING
MAIN ROAD (CHONGS ROAD)
4M WIDE ROAD
3M WIDE TRACK
4M WIDE ACCESS ROAD
LOT BOUNDARIES
PROPOSED
4M WIDE ROAD
3M WIDE TWO WHEEL TRACK
RFS TURNING
PEDESTRIAN PATH TO REFUGE
(NO MORE THAN 100M LENGTH)
CABIN 1
CABIN 2
CABIN 3
CABIN 4
CABIN 5
CABIN 6
REFUGE 1
REFUGE 2
SHED 1
WORKSHOP
EXISTING WORKSHOP
EXISTING DAM
ACCESS FOR NEIGHBOUR 4000mm WIDE
RIGHT OF ACCESS 20.115 WIDE & VARIABLE WIDTH (DP 1232872)
LOT 25 DP 756672 8.12Ha
LOT 26 DP 756672 2 8.16Ha
LOT 2 DP 1232872 TOTAL 28.74Ha
LOT 1 DP 1250715 1.824Ha
PART LOT 2 DP 1232872
135.330
272° 00' 30"
153.700
252° 14' 10"
182.601
256° 50' 50"
197.926
218° 36' 50"
78.160
206° 10' 00"
204.315
208° 41' 50"
741.609
280° 46' 54"
285.105
280° 45' 45"
286.040
190° 46' 50"
285.315
10° 30' 50"
284.650
11° 05' 50"
284.650
10° 30' 50"
285.500
101° 05' 50"
135.850
100° 51' 30"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Accreditation No. 101491
Property Address 92 Chongs Road, 92 Chongs Road, NSW, 2627
https://www.fr5.com.au/QRCodeLanding?PublicId=H9PR7SAAV0&GrpCert=1
ABSA
Accreditation Period 15/11/2023-15/11/2024
Assessor Name Arjun Adhikari
Assessor Number 101491
Assessor Signature
TYPICAL RIDGE HEIGHT AT 5300mm
TYPICAL RIDGE HEIGHT AT 4550mm
35.00°
35.00°
UPPER COLLAR TIE
UPPER COLLAR TIE
COLLAR TIE WHERE REQUIRED
COLLAR TIE WHERE REQUIRED
TIMBER POSTS & FRAME TO INTERNAL STRUCTURE
SOLAR PANELS TO ROOF WHERE REQUIRED
COLORBOND ROOF SHEETING
MEMBRANE ROOFING
INTERNAL POLISHED CONCRETE SLAB
GUTTER
IRONBARK HALF ROUND CLADDING
STEPDOWN FOR CLADDING
FFL 1100
GROUND LEVEL
250
2800
200
100
2200
2800
100
100
100
100
3600
3020
4860
TYPICAL CABIN SECTION
DESIGN BY
PETER JOHNS
PHONE 0418 210 200
EMAIL peterjohnes@gmail.com
MAIL 3 Bellevue Place
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841
DISCLAIMER
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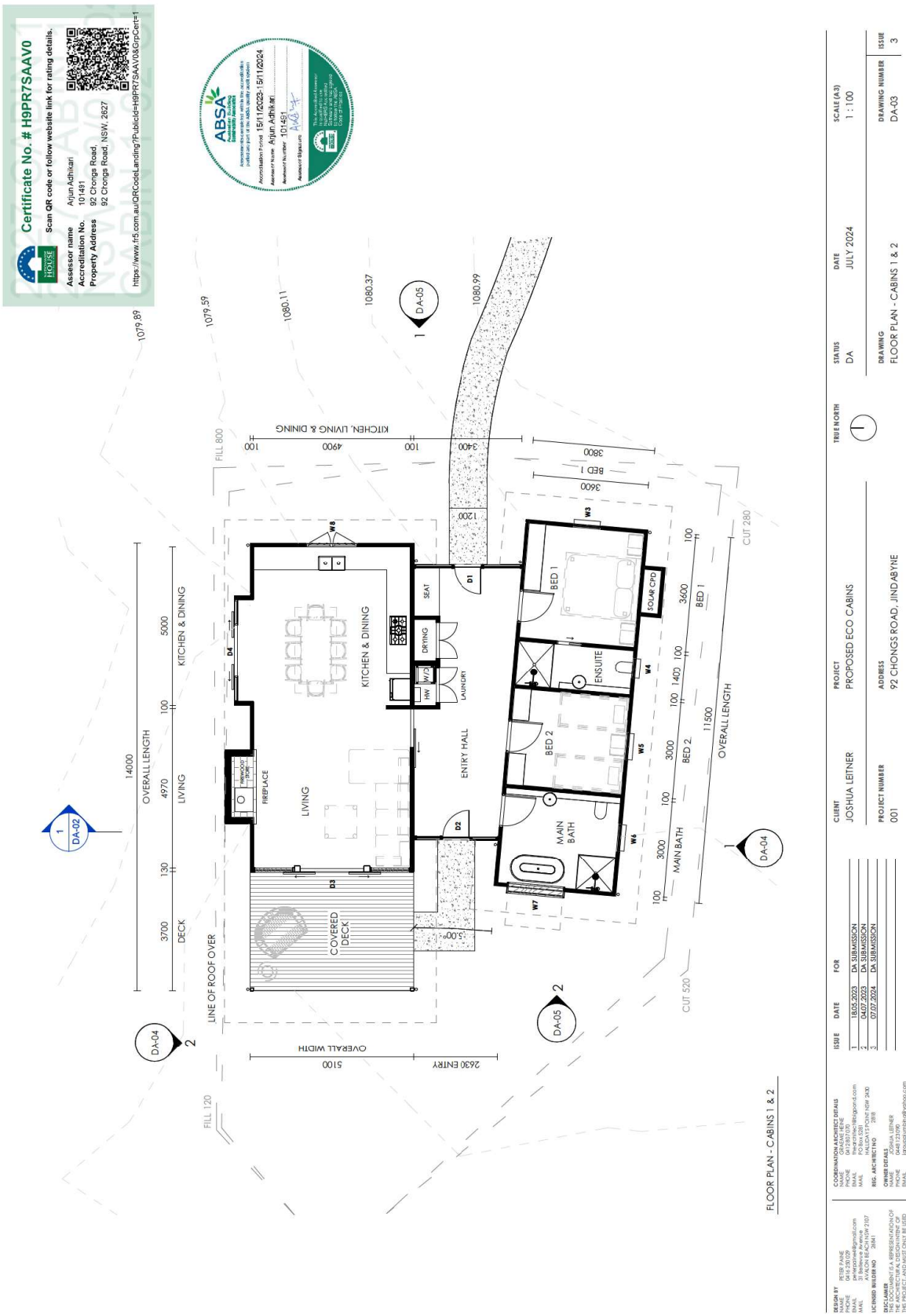
COORDINATION ARCHITECT DETAILS
NAME GRAEME PEINE
PHONE 0429 672 078
EMAIL thegrpmail@bigpond.com
MAIL PO Box 2278
HALIDAY POINT NSW 2430
REG. ARCHITECT NO 2818
OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795
WAVERLEY NSW 2024
ISSUE DATE FOR
1 18.05.2023 DA SUBMISSION
2 04.07.2023 DA SUBMISSION
3 07.07.2024 DA SUBMISSION
CLIENT
JOSHUA LEITNER
PROJECT NUMBER
001
PROJECT
PROPOSED ECO CABINS
ADDRESS
92 CHONGS ROAD, JINDABYNE
STATUS
DA
DATE
JULY 2024
DRAWING
TYPICAL SECTIONS
SCALE (A3)
1 : 50
DRAWING NUMBER
DA-02
ISSUE
3


Certificate No. # H9PR7SAAV0
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Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road, 92 Chongs Road, NSW, 2627
https://www.fs5.com.au/QRCodeLanding/?PublicId=H9PR7SAAV0&CrpCert=1
ABSA
Accreditation Period 15/11/2023-15/11/2024
Assessor name Arjun Adhikari
Assessor Number 101491
Assessor Signature
1079.89
1079.59
1080.11
1080.37
1080.99
DA-05
FILL 800
KITCHEN, LIVING & DINING
100
4900
100
3400
3600
BED 1
3600
1200
W8
W3
D1
SEAT
DRYING
W/D
HW
LAUNDRY
KITCHEN & DINING
BED 1
SOLAR CHD
ENSUITE
W4
BED 2
W5
MAIN BATH
W6
W7
ENTRY HALL
D2
D3
D4
FIREPLACE
LIVING
COVERED DECK
5.00
LINE OF ROOF OVER
CUT 280
CUT 520
OVERALL LENGTH
14000
OVERALL LENGTH
4970
LIVING
5000
KITCHEN & DINING
3700
DECK
130
100
100
1400
3600
BED 1
3000
100
BED 2
11500
3000
100
MAIN BATH
OVERALL WIDTH
5100
2630 ENTRY
DA-02
DA-04
DA-04
DA-05
FILL 120
FLOOR PLAN - CABINS 1 & 2
DESIGN BY
PETER DUKE
PHONE 0418 263 800
EMAIL petersmeeton@gmail.com
MAIL 31 Whale Beach Rd
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28941
DISCLAIMER
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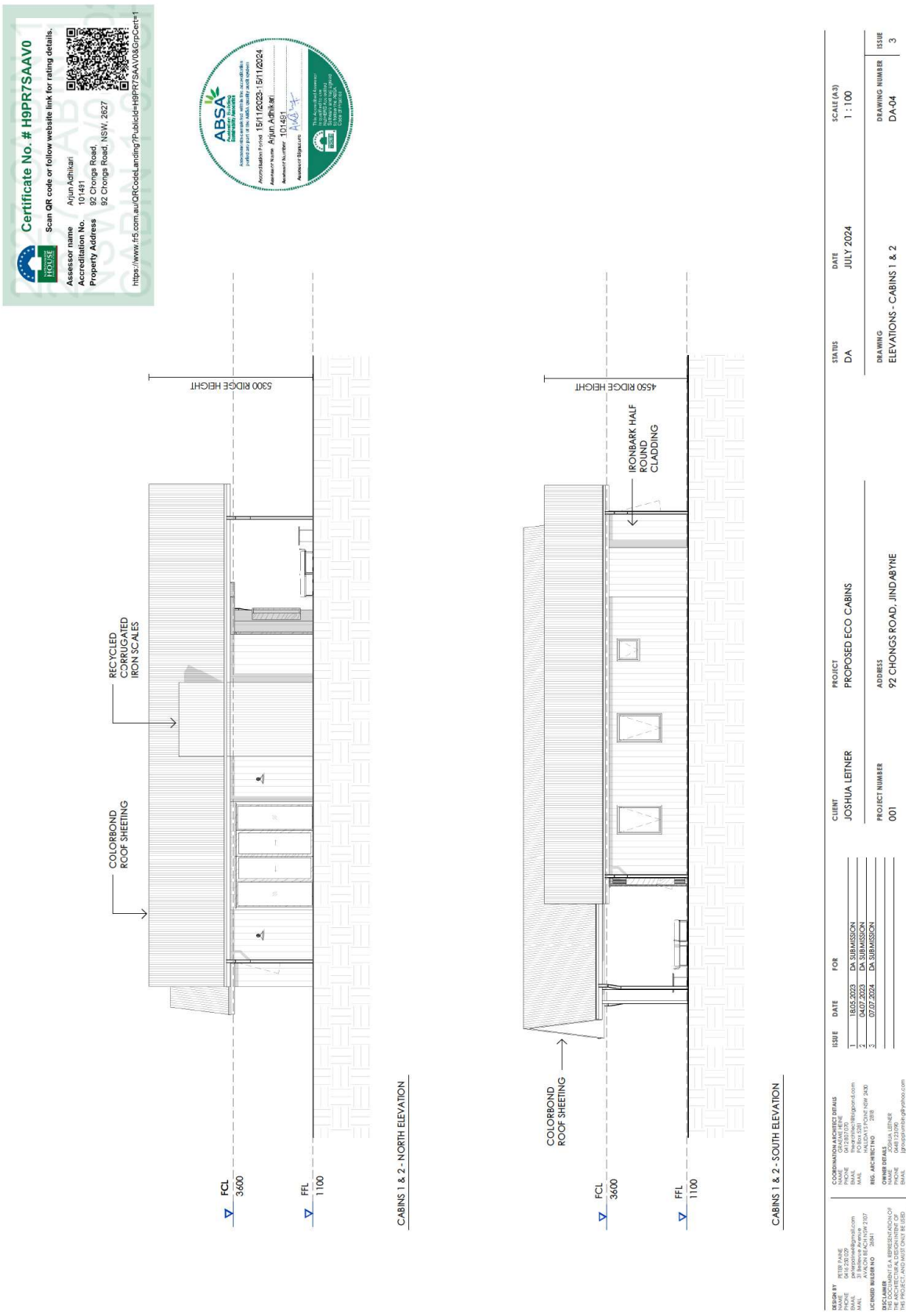
COORDINATION ARCHITECT DETAILS
NAME GRAEME FERIE
PHONE 0412 622 870
EMAIL theprintsetter@bigpond.com
MAIL PO Box 1170
HALIDAYS POINT NSW 2430
REG. ARCHITECT NO 2818
OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795
WAVERLEY NSW 2024
ISSUE DATE FOR
1 18.05.2023 DA SUBMISSION
2 04.07.2023 DA SUBMISSION
3 07.07.2024 DA SUBMISSION
CLIENT JOSHUA LEITNER
PROJECT NUMBER 001
PROJECT PROPOSED ECO CABINS
ADDRESS 92 CHONGS ROAD, JINDABYNE
TRUE NORTH
STATUS DA
DATE JULY 2024
SCALE (A3) 1 : 100
DRAWING FLOOR PLAN - CABINS 1 & 2
DRAWING NUMBER DA-03
ISSUE 3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Accreditation No. 101491
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https://www.fs5.com.au/QRCodeLanding/?PublicId=H9PR7SAAV0&GripCert=1
ABSA
Accreditation Period 15/11/2023-15/11/2024
Assessor Name Arjun Adhikari
Assessor Number 101491
Assessor Signature
5300 RIDGE HEIGHT
RECYCLED CORRUGATED IRON SCALES
COLORBOND ROOF SHEETING
FCL 3600
FFL 1100
CABINS 1 & 2 - NORTH ELEVATION
4550 RIDGE HEIGHT
IRONBARK HALF ROUND CLADDING
COLORBOND ROOF SHEETING
FCL 3600
FFL 1100
CABINS 1 & 2 - SOUTH ELEVATION
DESIGN BY
PETER DUKE
PHONE 0418 230 620
EMAIL petersmeet@gmail.com
MAIL 3 Mitchell Place
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841
DISCLAIMER
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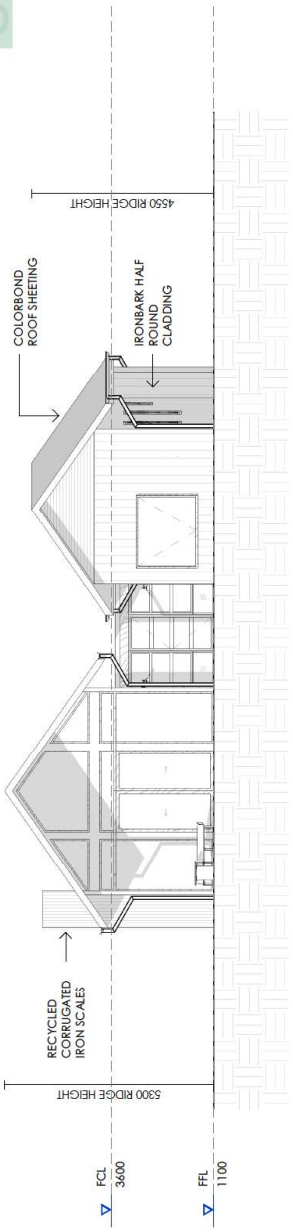
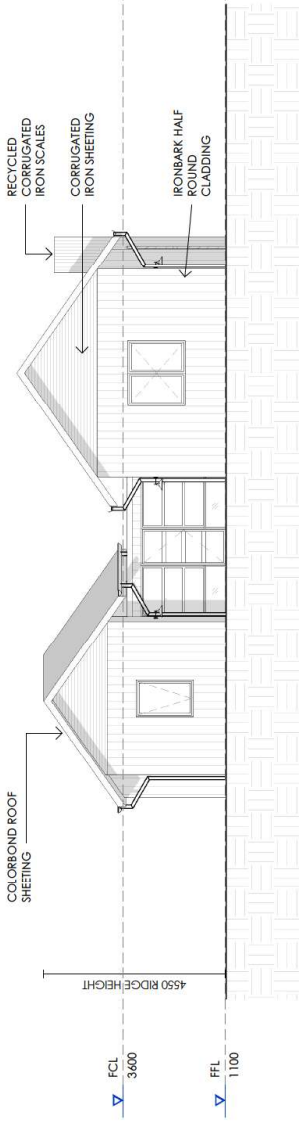
COORDINATION ARCHITECT DETAILS
NAME GRAEME HEINE
PHONE 0412 622 878
EMAIL heingraeme@bigpond.com
MAIL PO Box 2178
HALIDAY POINT NSW 2430
REG. ARCHITECT NO 2818
OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795
WAVERLEY NSW 2024
ISSUE DATE FOR
1 18.05.2023 DA SUBMISSION
2 04.07.2023 DA SUBMISSION
3 07.07.2024 DA SUBMISSION
CLIENT JOSHUA LEITNER
PROJECT PROPOSED ECO CABINS
STATUS DA
DATE JULY 2024
SCALE (A3) 1 : 100
PROJECT NUMBER 001
ADDRESS 92 CHONGS ROAD, JINDABYNE
DRAWING ELEVATIONS - CABINS 1 & 2
DRAWING NUMBER DA-04
ISSUE 3







CABINS 1 & 2 - WEST ELEVATION



CABINS 1 & 2 - EAST ELEVATION

DESIGN BY
PETER DUKE
PHONE 0418 230 620
EMAIL petersmeet@gmail.com
MAIL 31 Whale Beach Rd
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841

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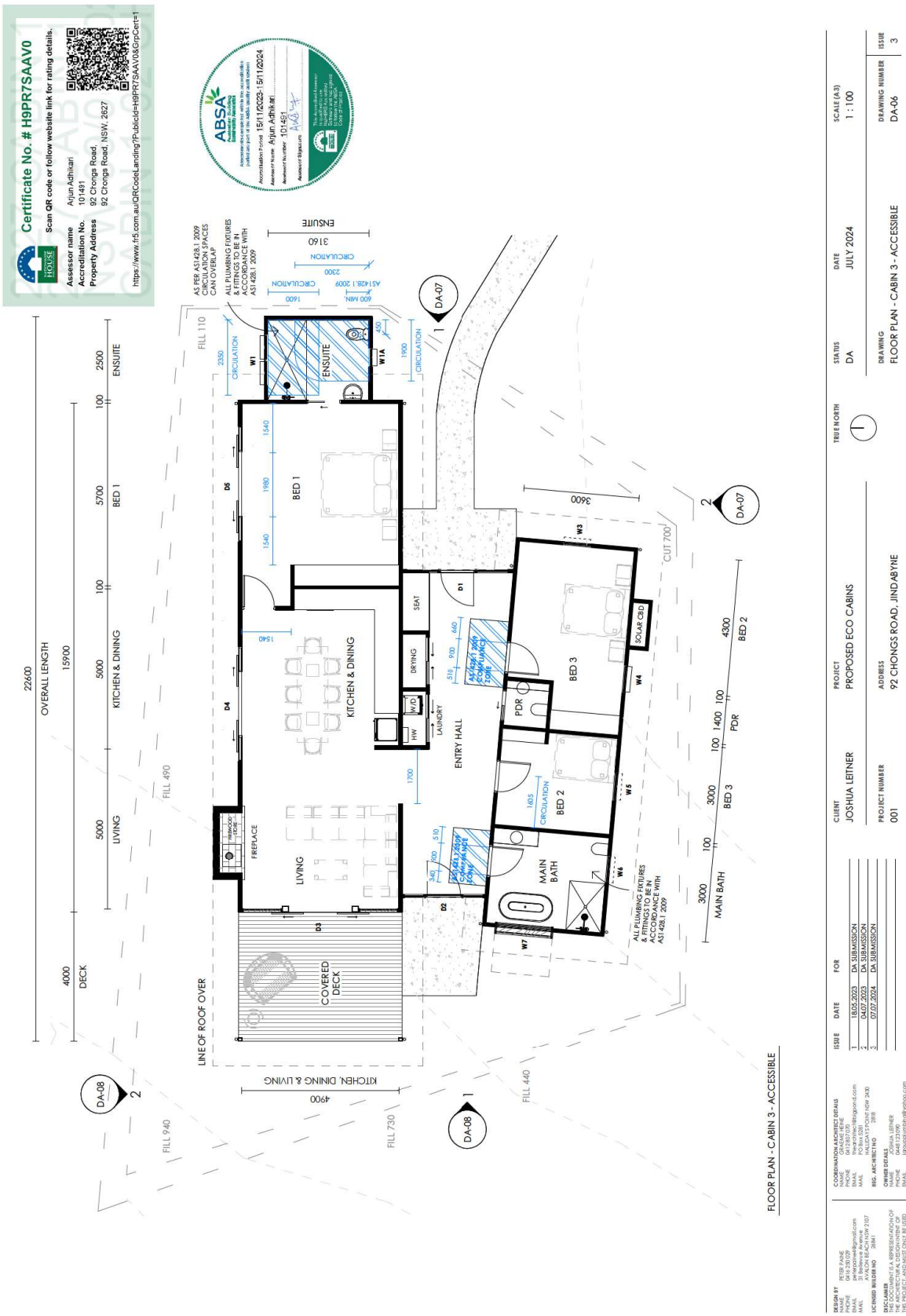
COORDINATION ARCHITECT DETAILS
NAME GRAEME FERE
PHONE 0429 622 870
EMAIL thegrafters@bigpond.com
MAIL PO Box 1078
HALIDAY POINT NSW 2430
REG. ARCHITECT NO 2818

OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795
WAVERLEY NSW 2024

ISSUE	DATE	FOR
1	18.05.2023	DA SUBMISSION
2	04.07.2023	DA SUBMISSION
3	07.07.2024	DA SUBMISSION

CLIENT JOSHUA LEITNER
PROJECT NUMBER 001
PROJECT PROPOSED ECO CABINS
ADDRESS 92 CHONGS ROAD, JINDABYNE

STATUS DA
DATE JULY 2024
SCALE (A3) 1 : 100
DRAWING ELEVATIONS - CABINS 1 & 2
DRAWING NUMBER DA-05
ISSUE 3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Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road, NSW, 2627
https://www.fs5.com.au/QRCodeLanding/?PublicId=H9PR7SAAV0&Cp=cert=1
ABSA
Accreditation Period 15/11/2023-15/11/2024
Assessor Number 101491
Assessor Name Arjun Adhikari
Assessor Signature
AS PER AS1428.1 2009 CIRCULATION SPACES CAN OVERLAP
ALL PLUMBING FIXTURES & FITTINGS TO BE IN ACCORDANCE WITH AS1428.1 2009
CIRCULATION
ENSUITE
BED 1
KITCHEN & DINING
LIVING
DECK
COVERED DECK
ENTRY HALL
LAUNDRY
DRYING
SEAT
BED 2
BED 3
MAIN BATH
PDR
SOLAR CBD
FIREPLACE
LINE OF ROOF OVER
FILL 110
FILL 490
FILL 730
FILL 940
FILL 440
CUT 700
KITCHEN, DINING & LIVING
OVERALL LENGTH
22600
15900
5000
5700
2500
4000
4900
3600
DA-07
DA-08
FLOOR PLAN - CABIN 3 - ACCESSIBLE
DESIGN BY
PETER DUKE
PHONE 0418 210 200
EMAIL petersduke@gmail.com
MAIL 3/1 Bilgola Ave
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28941
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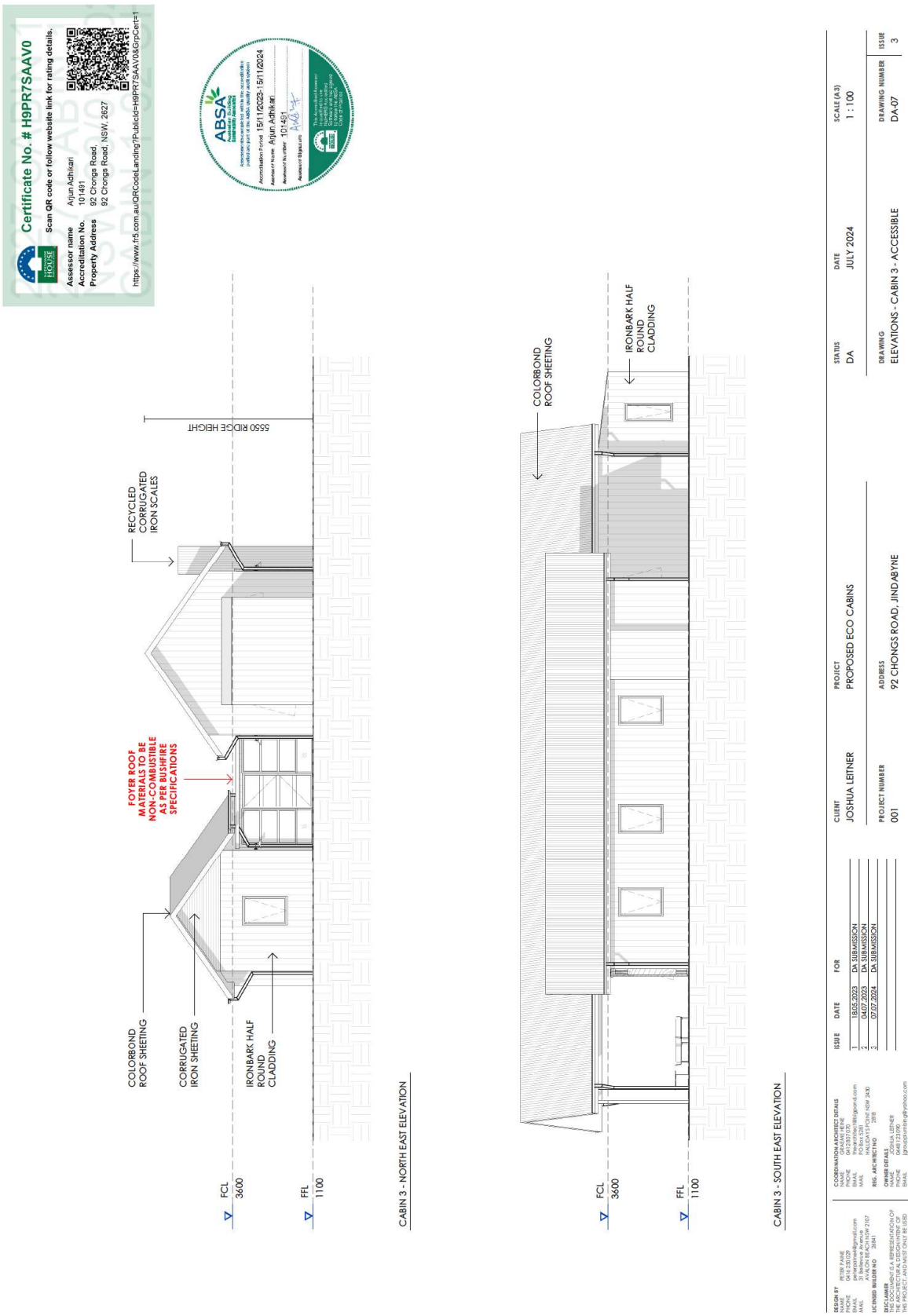
COORDINATION ARCHITECT DETAILS
NAME GRAEME FERIE
PHONE 0427 257 555
EMAIL heritagefree1@bigpond.com
MAIL PO Box 1570
HALIDAY POINT NSW 2430
REG. ARCHITECT NO 2818
OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795
WAVERLEY NSW 2024
ISSUE DATE FOR
1 18.05.2023 DA SUBMISSION
2 04.07.2023 DA SUBMISSION
3 07.07.2024 DA SUBMISSION
CLIENT JOSHUA LEITNER
PROJECT NUMBER 001
PROJECT PROPOSED ECO CABINS
ADDRESS 92 CHONGS ROAD, JINDABYNE
TRUE NORTH
STATUS DA
DATE JULY 2024
SCALE (A3) 1 : 100
DRAWING FLOOR PLAN - CABIN 3 - ACCESSIBLE
DRAWING NUMBER DA-06
ISSUE 3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Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road, 92 Chongs Road, NSW, 2627
https://www.fs5.com.au/QRCodeLanding/?PublicId=H9PR7SAAV0&Gripcert=1
ABSA
Accreditation Period 15/11/2023-15/11/2024
Assessor Name Arjun Adhikari
Assessor Number 101491
Assessor Signature
5550 RIDGE HEIGHT
RECYCLED CORRUGATED IRON SCALES
FOYER ROOF MATERIALS TO BE NON-COMBUSTIBLE AS PER BUSHFIRE SPECIFICATIONS
COLORBOND ROOF SHEETING
CORRUGATED IRON SHEETING
IRONBARK HALF ROUND CLADDING
FCL 3600
FFL 1100
CABIN 3 - NORTH EAST ELEVATION
COLORBOND ROOF SHEETING
IRONBARK HALF ROUND CLADDING
FCL 3600
FFL 1100
CABIN 3 - SOUTH EAST ELEVATION
DESIGN BY
PETER DUKE
PHONE 0418 230 620
EMAIL peterdome@gmail.com
MAIL 3 Wilson Place AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841
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COORDINATION ARCHITECT DETAILS
NAME GRAEME PEPPE
PHONE 0429 672 870
EMAIL thegrpmail@bigpond.com
MAIL PO Box 2178 HALIDAY POINT NSW 2430
REG. ARCHITECT NO 2818
OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshua.leitner@yahoo.com
MAIL PO Box 795 WARBURTON NSW 2324
ISSUE DATE FOR
1 18.05.2023 DA SUBMISSION
2 04.07.2023 DA SUBMISSION
3 07.07.2024 DA SUBMISSION
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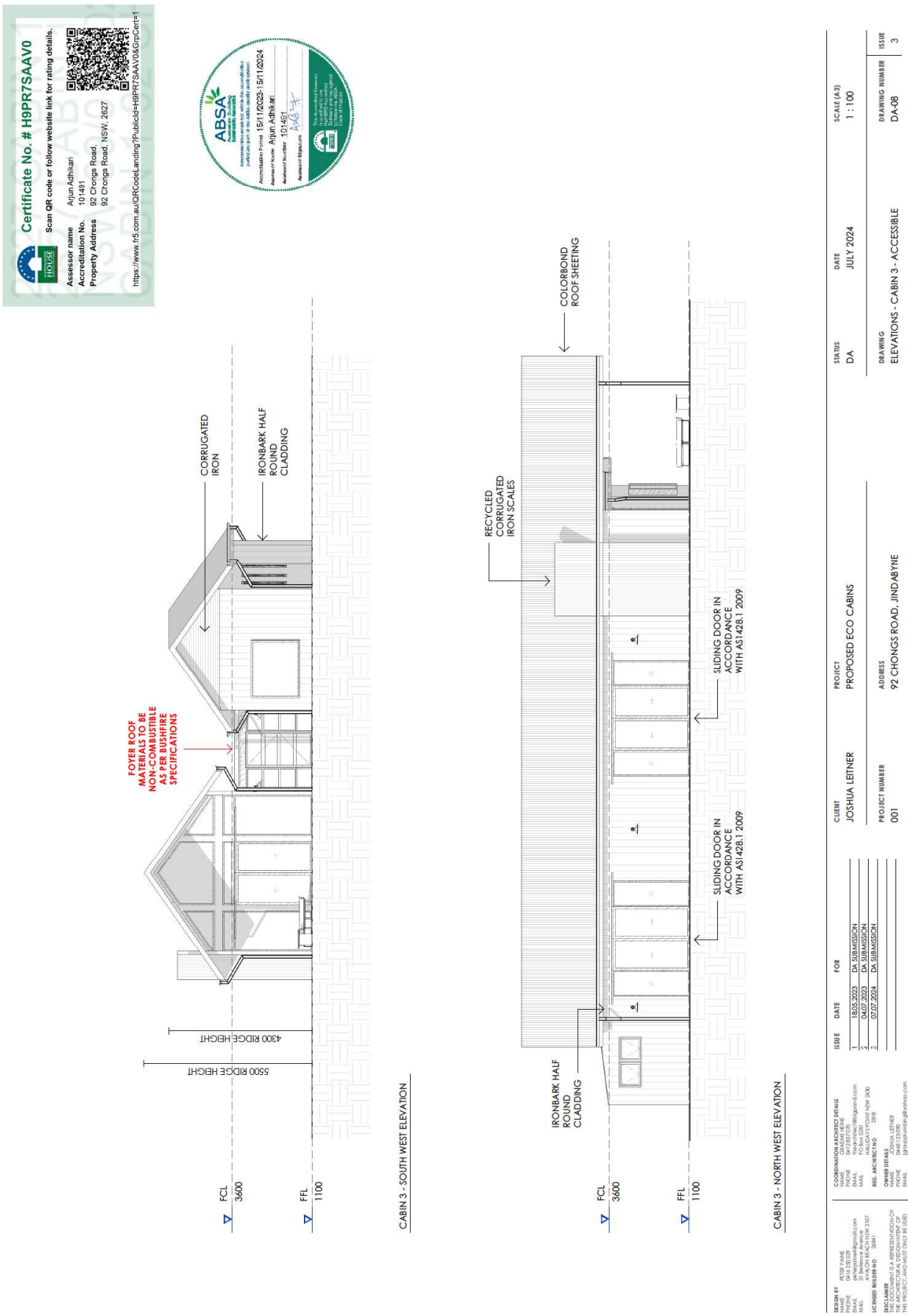
PROJECT PROPOSED ECO CABINS
PROJECT NUMBER 001
ADDRESS 92 CHONGS ROAD, JINDABYNE
STATUS DA
DATE JULY 2024
SCALE (A3) 1 : 100
DRAWING ELEVATIONS - CABIN 3 - ACCESSIBLE
DRAWING NUMBER DA-07
ISSUE 3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ABSA
Accreditation Period 15/11/2023-15/11/2024
Assessor Name Arjun Adhikari
Assessor Number 101491
CORRUGATED IRON
IRONBARK HALF ROUND CLADDING
FOYER ROOF MATERIALS TO BE NON-COMBUSTIBLE AS PER BUSHFIRE SPECIFICATIONS
4300 RIDGE HEIGHT
5500 RIDGE HEIGHT
FCL 3600
FFL 1100
CABIN 3 - SOUTH WEST ELEVATION
RECYCLED CORRUGATED IRON SCALES
COLORBOND ROOF SHEETING
SLIDING DOOR IN ACCORDANCE WITH AS1428.1 2009
IRONBARK HALF ROUND CLADDING
FCL 3600
FFL 1100
CABIN 3 - NORTH WEST ELEVATION
DESIGN BY
PETER DUKE
PHONE 0418 230 620
EMAIL petersdraw@gmail.com
MAIL 3 Wilson Place AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841
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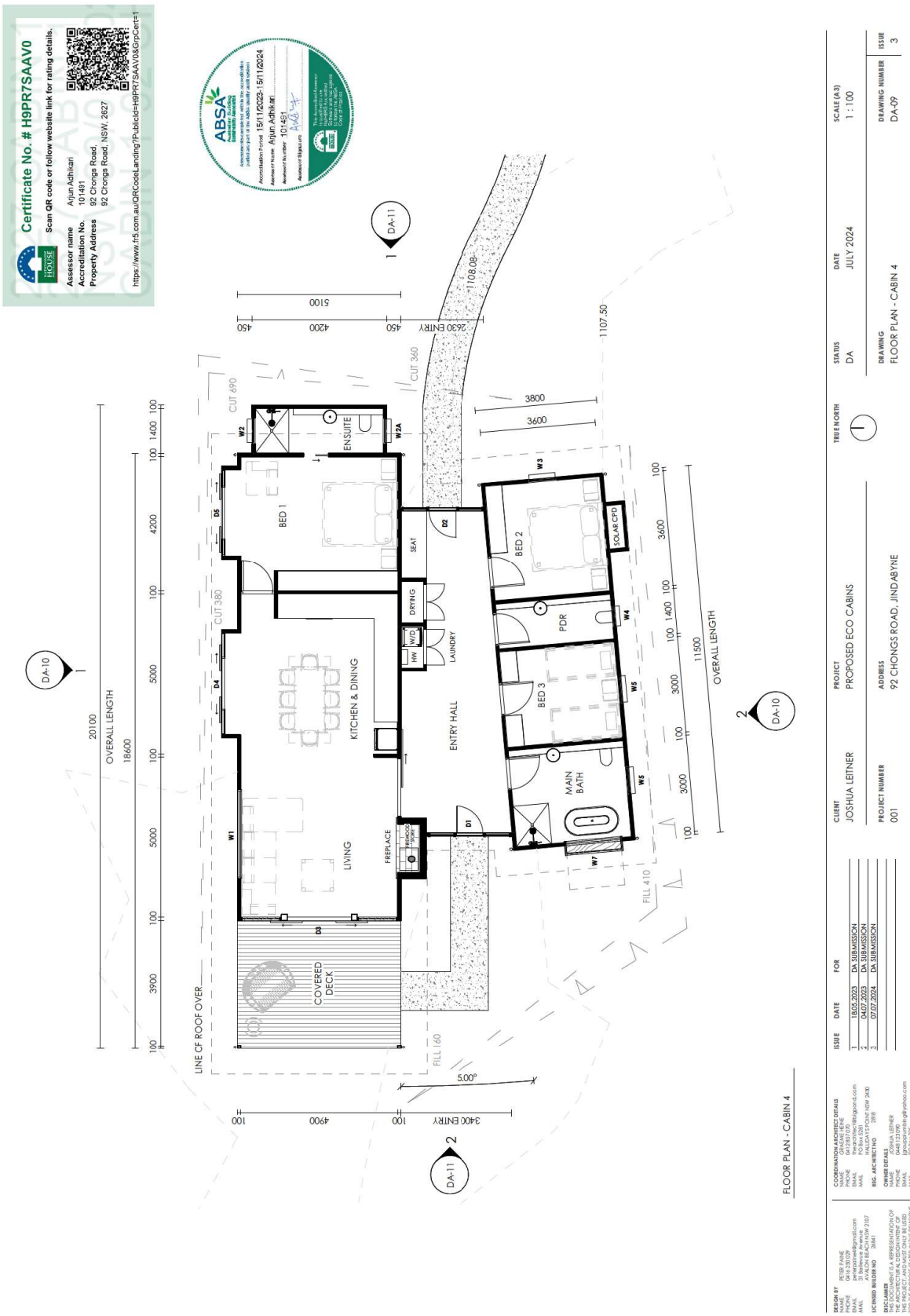
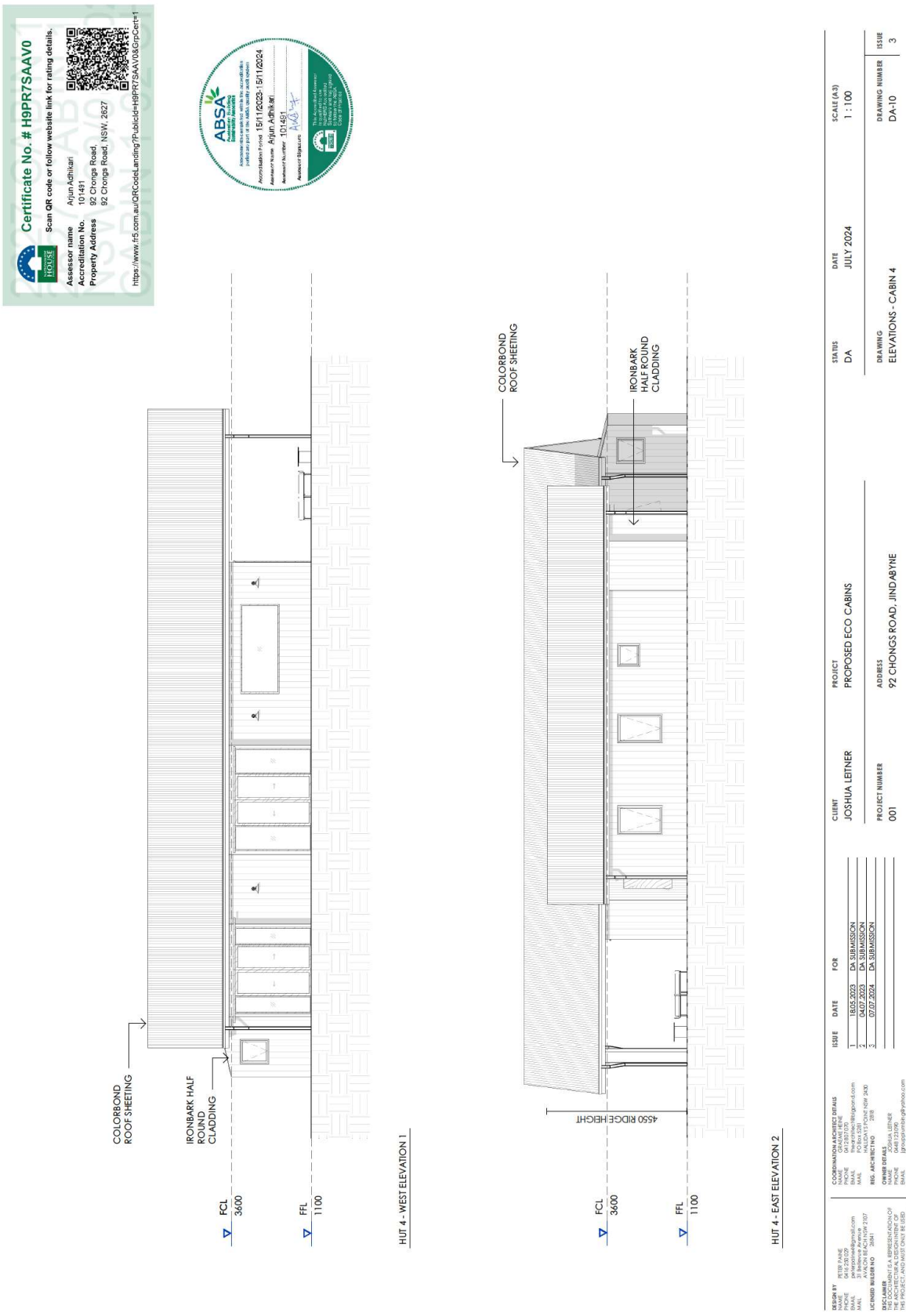
THIS DRAWING IS A REPRESENTATION OF THE ARCHITECTURAL DESIGN INTENT OF THE PROJECT AND IS NOT TO BE USED FOR THE PURPOSE STATED IN THE REVISIONS COLUMN.
COORDINATION ARCHITECT DETAILS
NAME GRAEME HERE
PHONE 0418 230 620
EMAIL thegrantree@bigpond.com
MAIL PO Box 775 HALIDAY POINT NSW 2430
REG. ARCHITECT NO 28841
OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795 WAVERLEY NSW 2024
ISSUE DATE FOR
1 18.05.2023 DA SUBMISSION
2 04.07.2023 DA SUBMISSION
3 07.07.2024 DA SUBMISSION
CLIENT JOSHUA LEITNER
PROJECT NUMBER 001
PROJECT PROPOSED ECO CABINS
ADDRESS 92 CHONGS ROAD, JINDABYNE
STATUS DA
DATE JULY 2024
SCALE (A3) 1 : 100
DRAWING ELEVATIONS - CABIN 3 - ACCESSIBLE
DRAWING NUMBER DA-08
ISSUE 3


Certificate No. # H9PR7SAAV0
Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road, 92 Chongs Road, NSW, 2627
https://www.fs5.com.au/QRCodeLanding/?PublicId=H9PR7SAAV0&Cp=cert=1
ABSA
Accreditation Period 15/11/2023-15/11/2024
Assessor Name Arjun Adhikari
Assessor Number 101491
Assessor Signature
DA-11
DA-10
5100
450
4200
450
2630 ENTRY
1108.08
1107.50
CUT 360
CUT 690
CUT 380
3800
3600
W2
W2A
ENSUITE
BED 1
D5
D2
SEAT
W3
BED 2
SOLAR CPD
DRYING
W4
PDR
D4
KITCHEN & DINING
HW
W/D
LAUNDRY
ENTRY HALL
BED 3
W5
OVERALL LENGTH
20100
18600
100
1400
4200
5000
3900
3600
3000
11500
W1
FIREWOOD STORE
FREPLACE
LIVING
D1
MAIN BATH
W7
D3
COVERED DECK
FILL 410
FILL 160
LINE CF ROOF OVER
5.00°
4900
3400 ENTRY
DA-10
DA-11
FLOOR PLAN - CABIN 4
ISSUE DATE FOR
1 18.05.2023 DA SUBMISSION
2 04.07.2023 DA SUBMISSION
3 07.07.2024 DA SUBMISSION
CLIENT JOSHUA LEITNER
PROJECT PROPOSED ECO CABINS
ADDRESS 92 CHONGS ROAD, JINDABYNE
PROJECT NUMBER 001
TRUE NORTH
STATUS DA
DATE JULY 2024
SCALE (A3) 1 : 100
DRAWING FLOOR PLAN - CABIN 4
DRAWING NUMBER DA-09
ISSUE 3
DESIGN BY PETER DUKE
PHONE 0418 210 620
EMAIL petersmeet@gmail.com
MAIL 3 Mawarra Place AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841
DISCLAIMER
THIS DRAWING IS A REPRESENTATION OF THE ARCHITECTURAL DESIGN INTENT OF THE PROJECT AND IS ISSUED FOR AND ON BEHALF OF THE PURPOSE STATED IN THE REVISIONS COLUMN.
COORDINATION ARCHITECT DETAILS
NAME GRAEME FERIE
PHONE 0429 672 870
EMAIL freriz@tpg.com.au
MAIL PO Box 1 HALIDAY POINT NSW 2430
REG. ARCHITECT NO 2818
OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795 WAVERLEY NSW 2024


Certificate No. # H9PR7SAAV0
Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road, 92 Chongs Road, NSW, 2627
https://www.fs5.com.au/QRCodeLanding/?PublicId=H9PR7SAAV0&Gripcert=1
ABSA
Accreditation Period 15/11/2023-15/11/2024
Assessor Name Arjun Adhikari
Assessor Number 101491
Assessor Signature
COLORBOND ROOF SHEETING
IRONBARK HALF ROUND CLADDING
FCL 3600
FFL 1100
HUT 4 - WEST ELEVATION 1
COLORBOND ROOF SHEETING
IRONBARK HALF ROUND CLADDING
4550 RIDGE HEIGHT
FCL 3600
FFL 1100
HUT 4 - EAST ELEVATION 2
DESIGN BY
PETER JOHNS
PHONE 0418 210 200
EMAIL petersjohns@gmail.com
MAIL 3 Bellevue Place
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28941
DISCLAIMER
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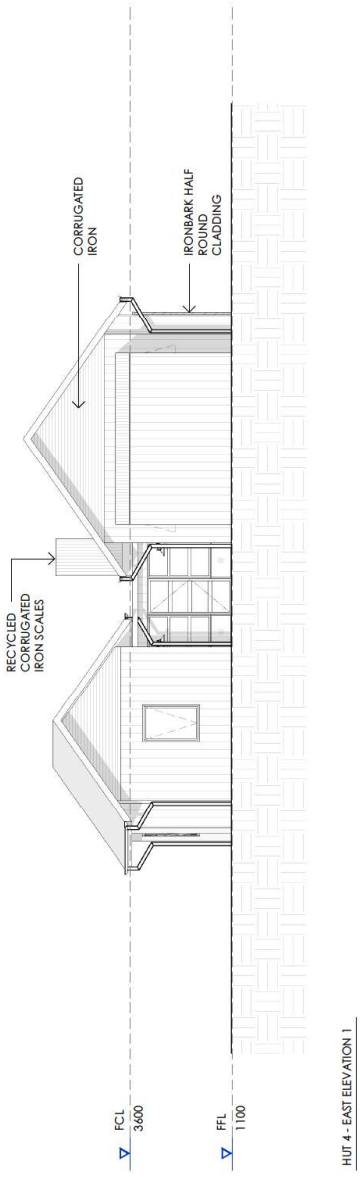
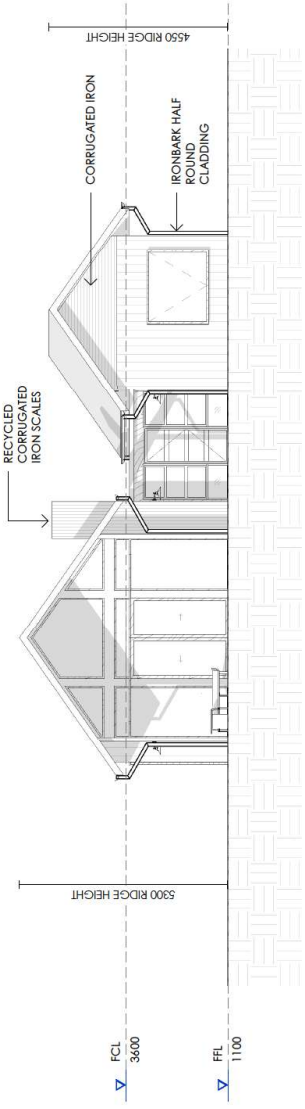
COORDINATION ARCHITECT DETAILS
NAME GRAEME PEPPE
PHONE 0422 222 878
EMAIL thegrpeppe@bigpond.com
MAIL PO Box 1275
HALLEN ST PONT NSW 2430
REG. ARCHITECT NO 2818
OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795
WARBURTON VIC 3799
ISSUE DATE FOR
1 18.05.2023 DA SUBMISSION
2 04.07.2023 DA SUBMISSION
3 07.07.2024 DA SUBMISSION
CLIENT JOSHUA LEITNER
PROJECT NUMBER 001
PROJECT PROPOSED ECO CABINS
ADDRESS 92 CHONGS ROAD, JINDABYNE
STATUS DA
DATE JULY 2024
DRAWING ELEVATIONS - CABIN 4
SCALE (A3) 1 : 100
DRAWING NUMBER DA-10
ISSUE 3







HUT 4 - EAST ELEVATION 1



HUT 4 - WEST ELEVATION 2

DESIGN BY
PETER DUKE
PHONE 0418 210 920
EMAIL petersmeeton@gmail.com
MAIL 3 Mona Vale Place
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841

COORDINATION ARCHITECT DETAILS
NAME GRAEME PEINE
PHONE 0412 627 880
EMAIL thegrainbarn@bigpond.com
MAIL PO Box 2170
HALIDAY POINT NSW 2430
REG. ARCHITECT NO 2818

OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795
WAVERLEY NSW 2024

DISCLAIMER
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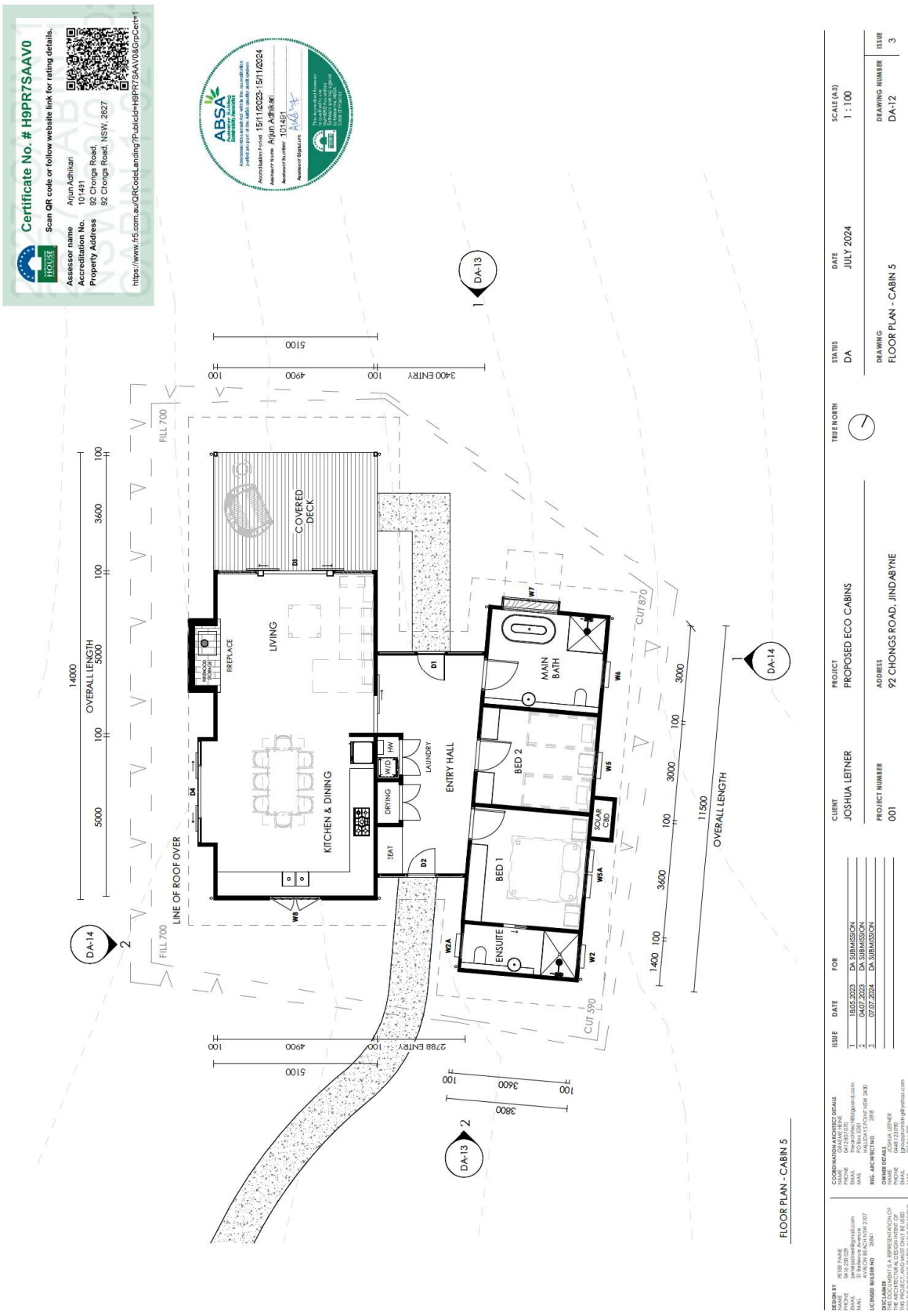
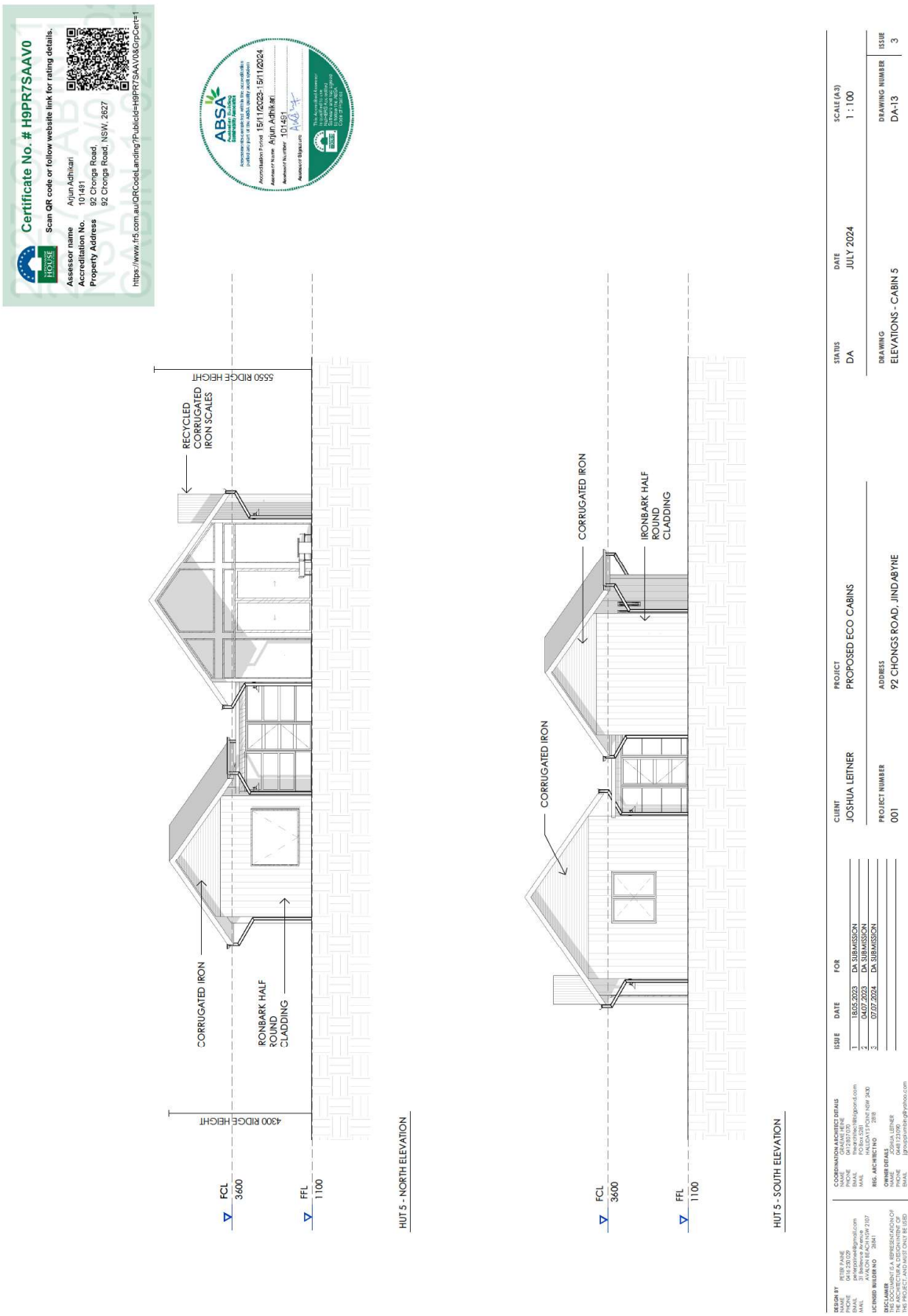
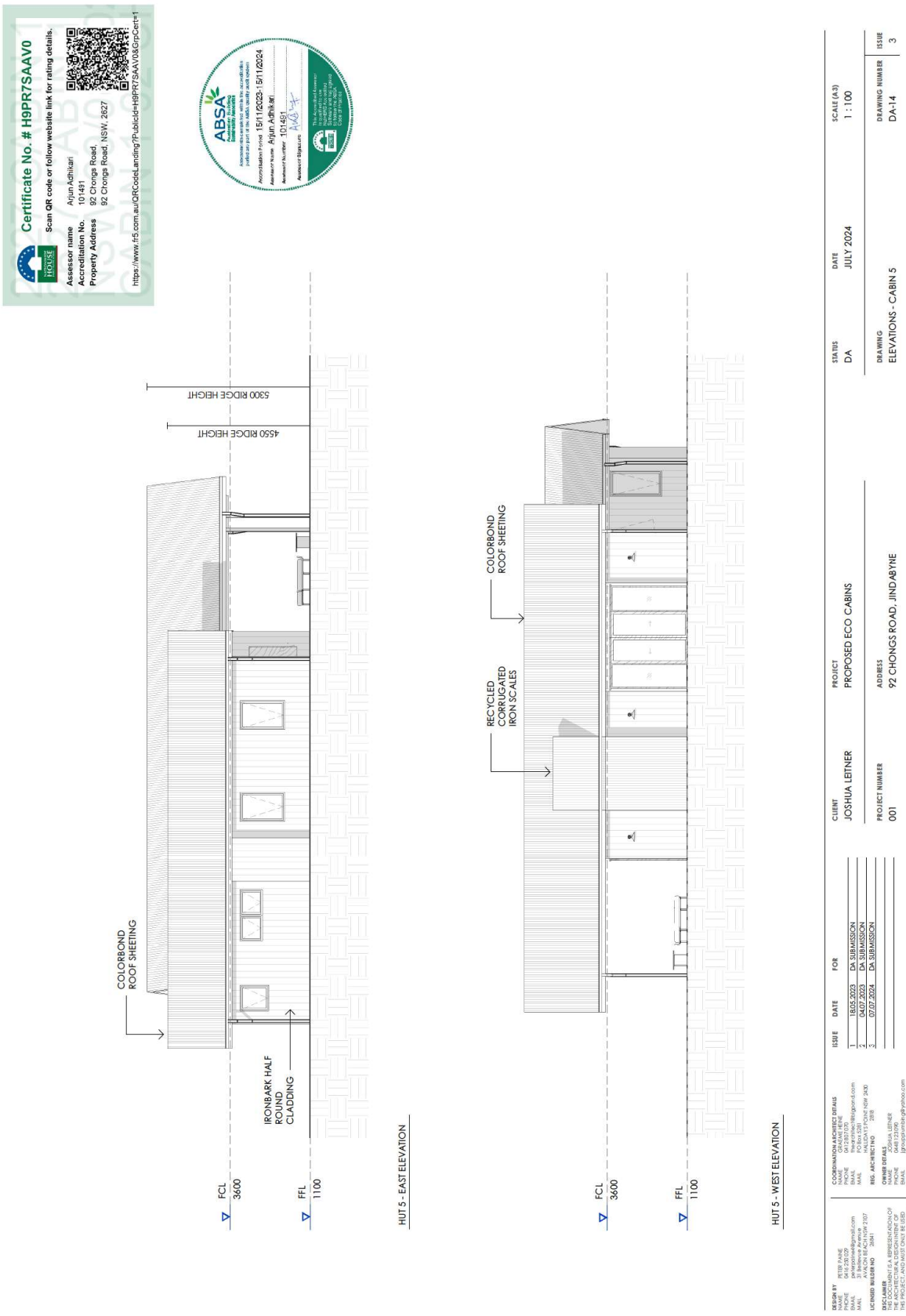
ISSUE	DATE	FOR
1	18.05.2023	DA SUBMISSION
2	04.07.2023	DA SUBMISSION
3	07.07.2024	DA SUBMISSION

CLIENT JOSHUA LEITNER
PROJECT NUMBER 001
PROJECT PROPOSED ECO CABINS
ADDRESS 92 CHONGS ROAD, JINDABYNE

STATUS DA
DATE JULY 2024
SCALE (A3) 1 : 100
DRAWING ELEVATIONS - CABIN 4
DRAWING NUMBER DA-11
ISSUE 3


Certificate No. # H9PR7SAAV0
Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road, 92 Chongs Road, NSW, 2627
https://www.fr5.com.au/QRCodeLanding/?PublicId=H9PR7SAAV0&Gripcert=1
ABSA
Accreditation Period 15/11/2023-15/11/2024
Assessor Name Arjun Adhikari
Assessor Number 101491
Assessor Signature
DA-13
DA-14
COVERED DECK
LIVING
FIREPLACE
KITCHEN & DINING
DRYING
LAUNDRY
ENTRY HALL
MAIN BATH
BED 2
BED 1
ENSUITE
SOLAR 250
SEAT
LINE OF ROOF OVER
FILL 700
CUT 870
CUT 590
OVERALL LENGTH
14000
11500
5100
4900
3400 ENTRY
2788 ENTRY
3600
3000
3800
FLOOR PLAN - CABIN 5
DESIGN BY
COORDINATION ARCHITECT DETAILS
OWNER DETAILS
DISCLAIMER
ISSUE DATE FOR
1 18.05.2023 DA SUBMISSION
2 04.07.2023 DA SUBMISSION
3 07.07.2024 DA SUBMISSION
CLIENT JOSHUA LEITNER
PROJECT PROPOSED ECO CABINS
ADDRESS 92 CHONGS ROAD, JINDABYNE
PROJECT NUMBER 001
TRUE NORTH
STATUS DA
DATE JULY 2024
SCALE (A3) 1 : 100
DRAWING FLOOR PLAN - CABIN 5
DRAWING NUMBER DA-12
ISSUE 3


Certificate No. # H9PR7SAAV0
Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road, 92 Chongs Road, NSW, 2627
https://www.fs5.com.au/QRCodeLanding/?PublicId=H9PR7SAAV0&GripCert=1
ABSA
Accreditation Period 15/11/2023-15/11/2024
Assessor Name Arjun Adhikari
Assessor Number 101491
Assessor Signature
5550 RIDGE HEIGHT
RECYCLED CORRUGATED IRON SCALES
4300 RIDGE HEIGHT
CORRUGATED IRON
RONBARK HALF ROUND CLADDING
FCL 3600
FFL 1100
HUT 5 - NORTH ELEVATION
CORRUGATED IRON
IRONBARK HALF ROUND CLADDING
CORRUGATED IRON
FCL 3600
FFL 1100
HUT 5 - SOUTH ELEVATION
DESIGN BY
PETER DUKE
PHONE 0418 210 620
EMAIL petersmeeton@gmail.com
MAIL 31 Whale Beach Rd
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841
DISCLAIMER
THIS DRAWING IS A REPRESENTATION OF THE ARCHITECTURAL DESIGN INTENT OF THE PROJECT AND IS NOT TO BE USED FOR THE PURPOSE STATED IN THE REVISIONS COLUMN.
COORDINATION ARCHITECT DETAILS
NAME GRAEME FERIE
PHONE 0429 210 620
EMAIL theprintsetter@bigpond.com
MAIL 3/1 Bungan Street
MONA VALE NSW 2103
REG. ARCHITECT NO 2818
OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795
WARBURTON NSW 2234
ISSUE DATE FOR
1 18.05.2023 DA SUBMISSION
2 04.07.2023 DA SUBMISSION
3 07.07.2024 DA SUBMISSION
CLIENT
JOSHUA LEITNER
PROJECT NUMBER
001
PROJECT
PROPOSED ECO CABINS
ADDRESS
92 CHONGS ROAD, JINDABYNE
STATUS
DA
DATE
JULY 2024
SCALE (A3)
1 : 100
DRAWING
ELEVATIONS - CABIN 5
DRAWING NUMBER
DA-13
ISSUE
3


Certificate No. # H9PR7SAAV0
Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road, 92 Chongs Road, NSW, 2627
https://www.fs5.com.au/QRCodeLanding/?PublicId=H9PR7SAAV0&Gripcert=1
ABSA
Accreditation Period 15/11/2023-15/11/2024
Assessor Name Arjun Adhikari
Assessor Number 101491
Assessor Signature
5300 RIDGE HEIGHT
4550 RIDGE HEIGHT
COLORBOND ROOF SHEETING
IRONBARK HALF ROUND CLADDING
FCL 3600
FFL 1100
HUT 5 - EAST ELEVATION
COLORBOND ROOF SHEETING
RECYCLED CORRUGATED IRON SCALES
FCL 3600
FFL 1100
HUT 5 - WEST ELEVATION
DESIGN BY
PETER JOHNS
PHONE 0418 230 620
EMAIL petersjohns@gmail.com
MAIL 31 Whale Beach Rd
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841
DISCLAIMER
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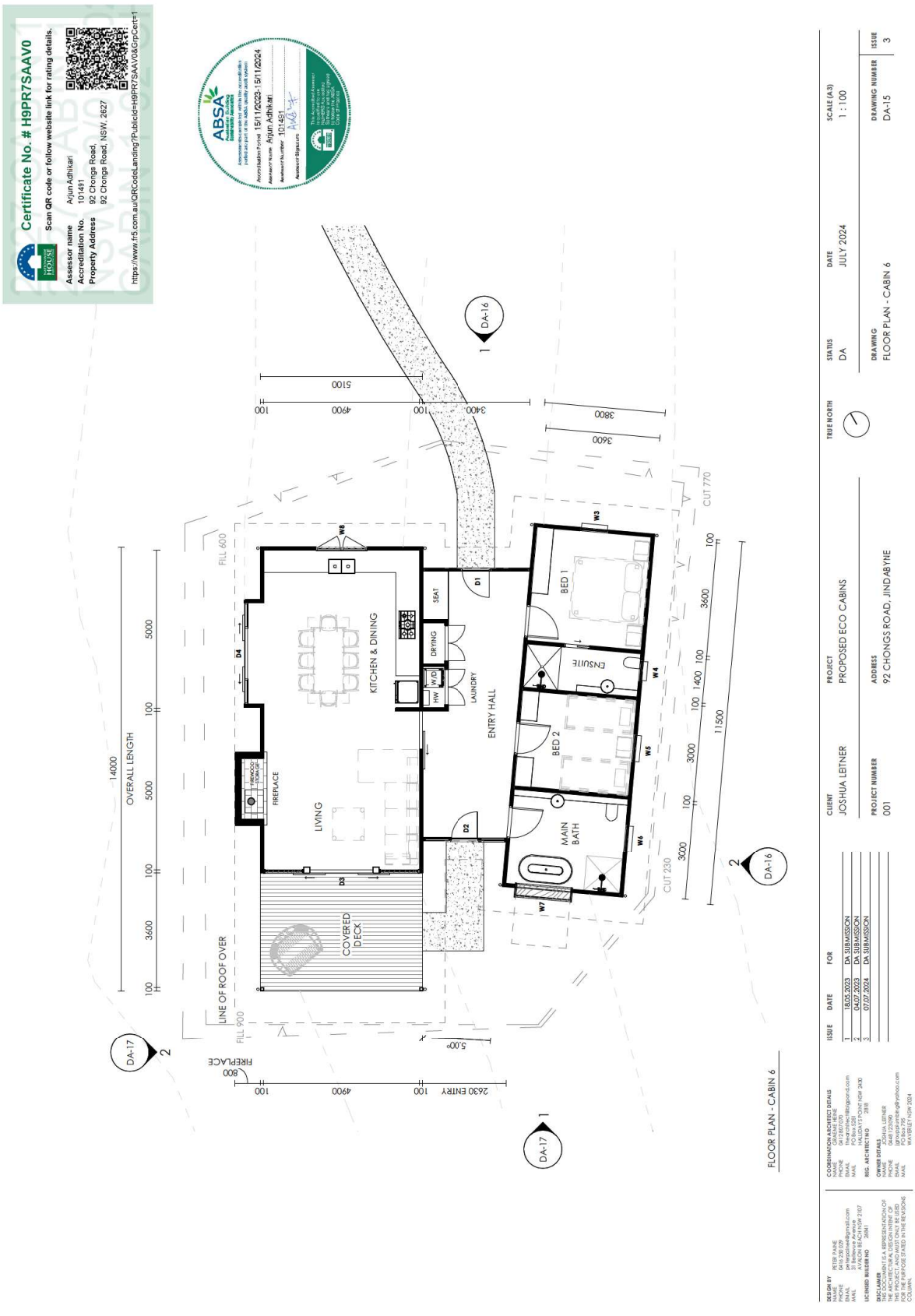
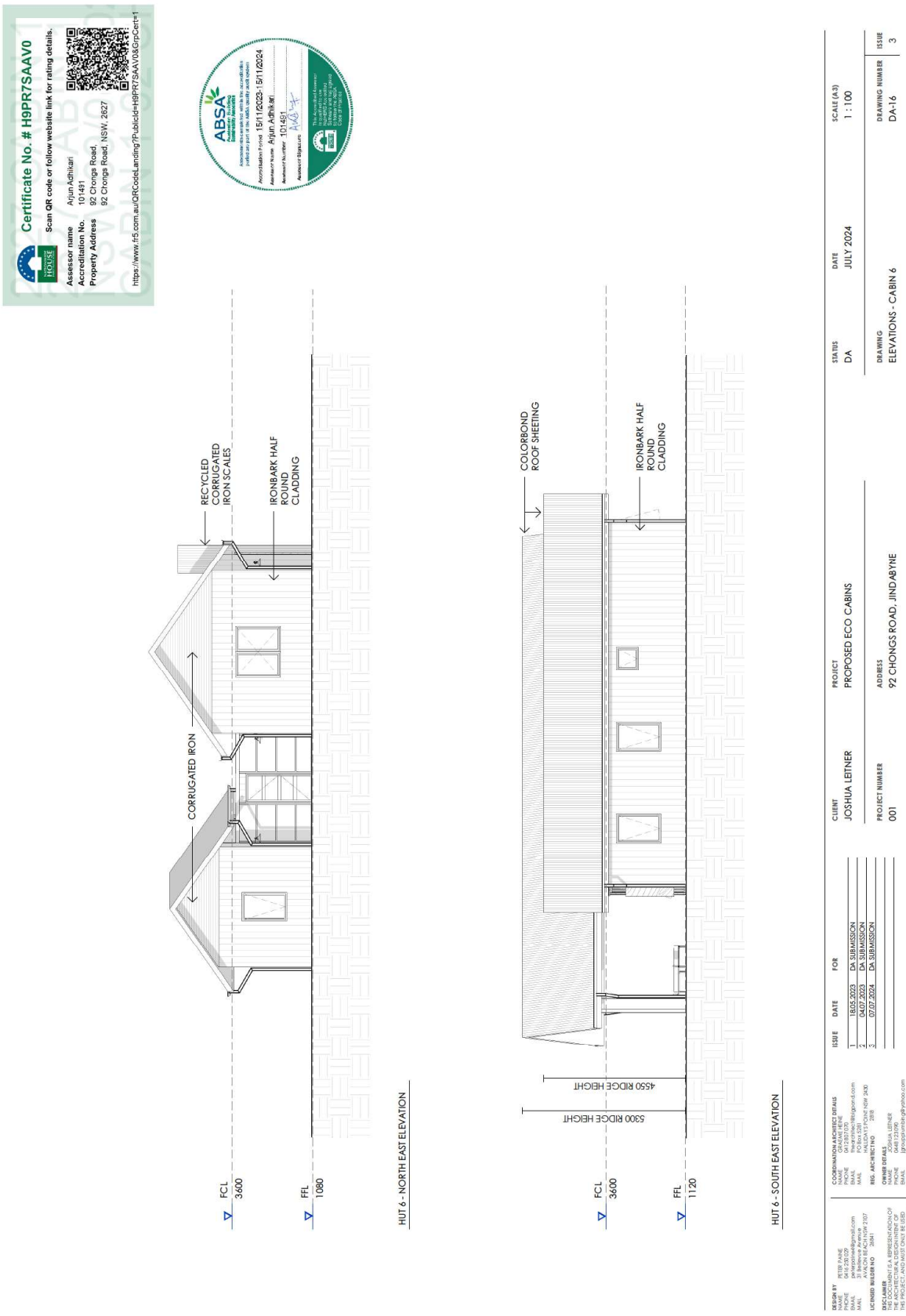
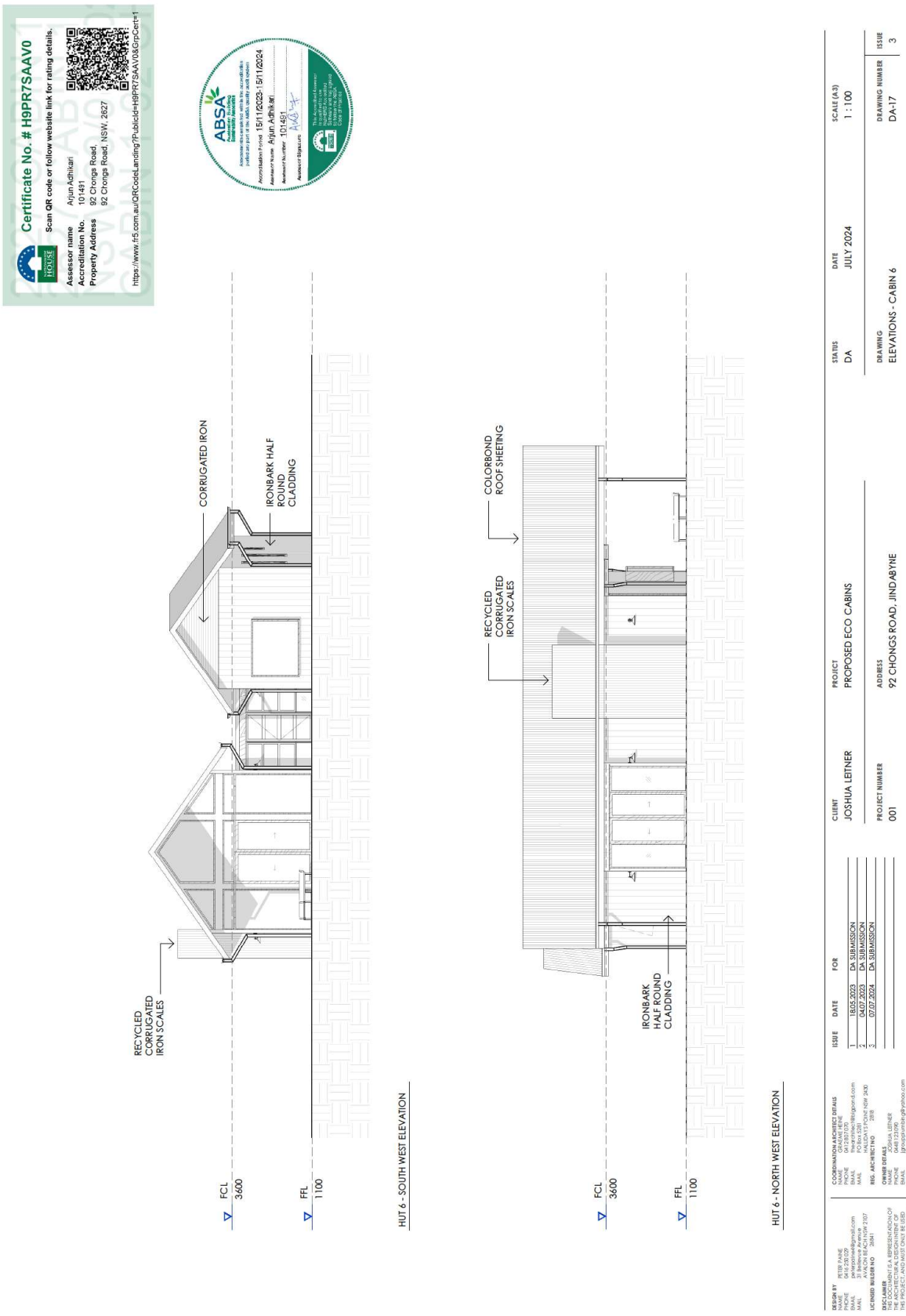
COORDINATION ARCHITECT DETAILS
NAME GRAEME PEPPE
PHONE 0412 622 781
EMAIL thegrantnet@bigpond.com
MAIL PO Box 2178
HALIDAY POINT NSW 2430
REG. ARCHITECT NO 2818
OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795
WAVERLEY NSW 2024
ISSUE DATE FOR
1 18.05.2023 DA SUBMISSION
2 04.07.2023 DA SUBMISSION
3 07.07.2024 DA SUBMISSION
CLIENT JOSHUA LEITNER
PROJECT PROPOSED ECO CABINS
PROJECT NUMBER 001
ADDRESS 92 CHONGS ROAD, JINDABYNE
STATUS DA
DATE JULY 2024
SCALE (A3) 1 : 100
DRAWING ELEVATIONS - CABIN 5
DRAWING NUMBER DA-14
ISSUE 3


Certificate No. # H9PR7SAAV0
Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road, 92 Chongs Road, NSW, 2627
https://www.fr5.com.au/QRCodeLanding?PublicId=H9PR7SAAV0&GrpCert=1
ABSA
Accreditation Period 15/11/2023-15/11/2024
Assessor Name Arjun Adhikari
Assessor Number 101491
Assessor Signature
OVERALL LENGTH
LINE OF ROOF OVER
FILL 600
FILL 900
CUT 770
CUT 230
KITCHEN & DINING
LIVING
FIREPLACE
COVERED DECK
ENTRY HALL
LAUNDRY
DRYING
SEAT
BED 1
BED 2
ENSUITE
MAIN BATH
2630 ENTRY
FLOOR PLAN - CABIN 6
DA-16
DA-17
CLIENT JOSHUA LEITNER
PROJECT PROPOSED ECO CABINS
PROJECT NUMBER 001
ADDRESS 92 CHONGS ROAD, JINDABYNE
TRUE NORTH
STATUS DA
DATE JULY 2024
SCALE (A3) 1 : 100
DRAWING FLOOR PLAN - CABIN 6
DRAWING NUMBER DA-15
ISSUE 3
1 18.05.2023 DA SUBMISSION
2 04.07.2023 DA SUBMISSION
3 07.07.2024 DA SUBMISSION


Certificate No. # H9PR7SAAV0
Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road, 92 Chongs Road, NSW, 2627
https://www.fs5.com.au/QRCodeLanding?PublicId=H9PR7SAAV0&Cp=en-1
ABSA
Assessor name Arjun Adhikari
Assessor Number 101491
Assessor Signature
Accreditation Period 15/11/2023-15/11/2024
RECYCLED CORRUGATED IRON SCALES
IRONBARK HALF ROUND CLADDING
CORRUGATED IRON
FCL 3600
FFL 1080
HUT 6 - NORTH EAST ELEVATION
COLORBOND ROOF SHEETING
IRONBARK HALF ROUND CLADDING
4550 RIDGE HEIGHT
5300 RIDGE HEIGHT
FCL 3600
FFL 1120
HUT 6 - SOUTH EAST ELEVATION
DESIGN BY
PETER DUKE
PHONE 0418 230 620
EMAIL peterjamesduke@gmail.com
MAIL 3/1 Marine Parade AVALON BEACH NSW 2107
LICENSED BUILDER NO 28941
DISCLAIMER
THIS DRAWING IS A REPRESENTATION OF THE ARCHITECTURAL DESIGN INTENT OF THE PROJECT AND IS NOT TO BE USED FOR THE PURPOSE STATED IN THE REVISIONS COLUMN.
COORDINATION ARCHITECT DETAILS
NAME GRAEME PEPPE
PHONE 0422 427 870
EMAIL thegrantseat@bigpond.com
MAIL PO Box 2107 HALIDAY POINT NSW 2430
REG. ARCHITECT NO 2818
OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795 WARBURTON NSW 2324
ISSUE DATE FOR
1 18.05.2023 DA SUBMISSION
2 04.07.2023 DA SUBMISSION
3 07.07.2024 DA SUBMISSION
CLIENT JOSHUA LEITNER
PROJECT PROPOSED ECO CABINS
PROJECT NUMBER 001
ADDRESS 92 CHONGS ROAD, JINDABYNE
STATUS DA
DATE JULY 2024
SCALE (A3) 1 : 100
DRAWING ELEVATIONS - CABIN 6
DRAWING NUMBER DA-16
ISSUE 3


Certificate No. # H9PR7SAAV0
Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road, 92 Chongs Road, NSW, 2627
https://www.fs5.com.au/QRCodeLanding/?PublicId=H9PR7SAAV0&Gripcert=1
ABSA
Accreditation Period 15/11/2023-15/11/2024
Assessor Name Arjun Adhikari
Assessor Number 101491
Assessor Signature
CORRUGATED IRON
IRONBARK HALF ROUND CLADDING
RECYCLED CORRUGATED IRON SCALES
FCL 3600
FFL 1100
HUT 6 - SOUTH WEST ELEVATION
COLORBOND ROOF SHEETING
RECYCLED CORRUGATED IRON SCALES
IRONBARK HALF ROUND CLADDING
FCL 3600
FFL 1100
HUT 6 - NORTH WEST ELEVATION
DESIGN BY
PETER DUKE
PHONE 0418 230 620
EMAIL petersmeet@gmail.com
MAIL 31 Whitney Ave
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841
DISCLAIMER
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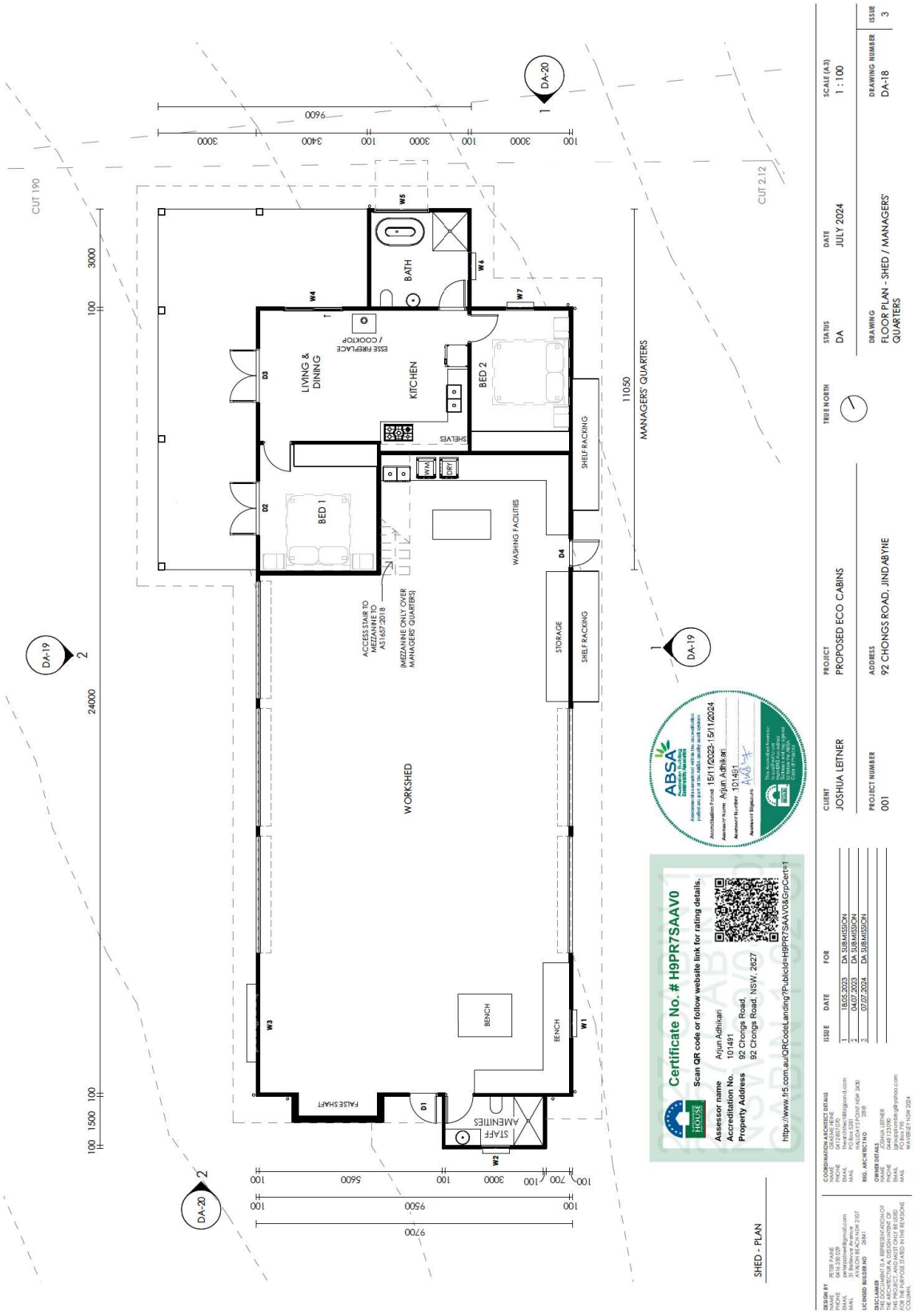
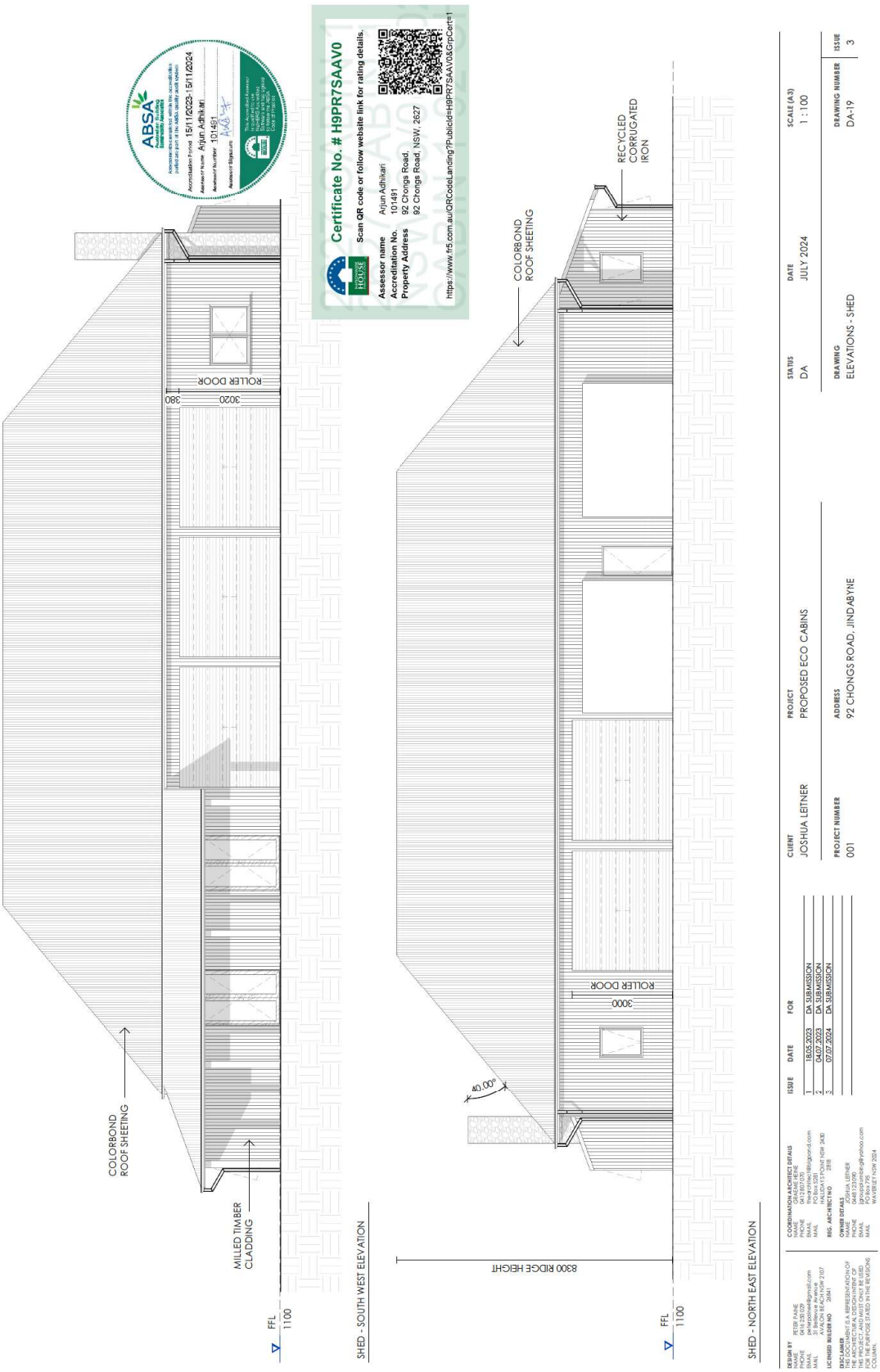
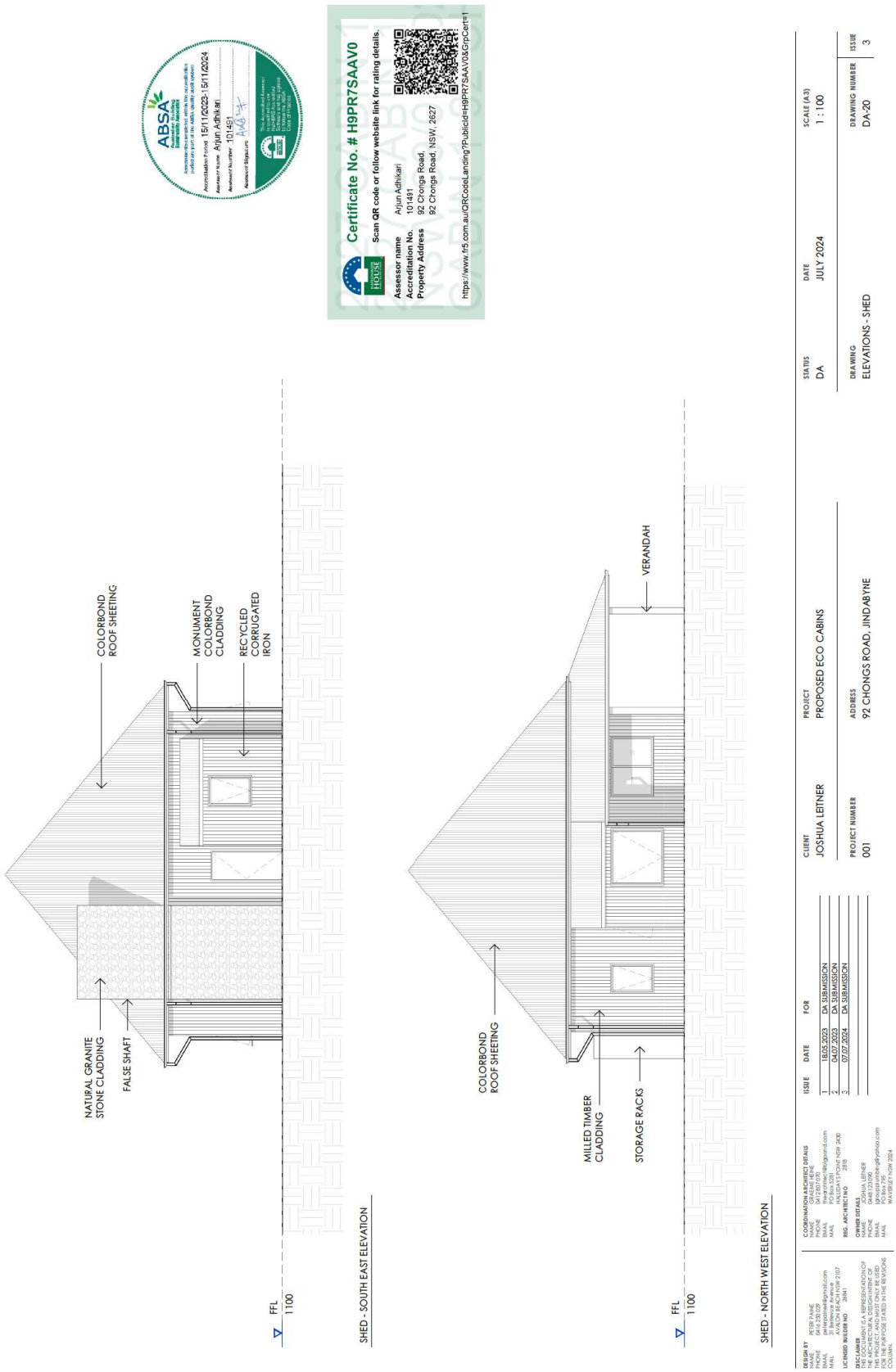
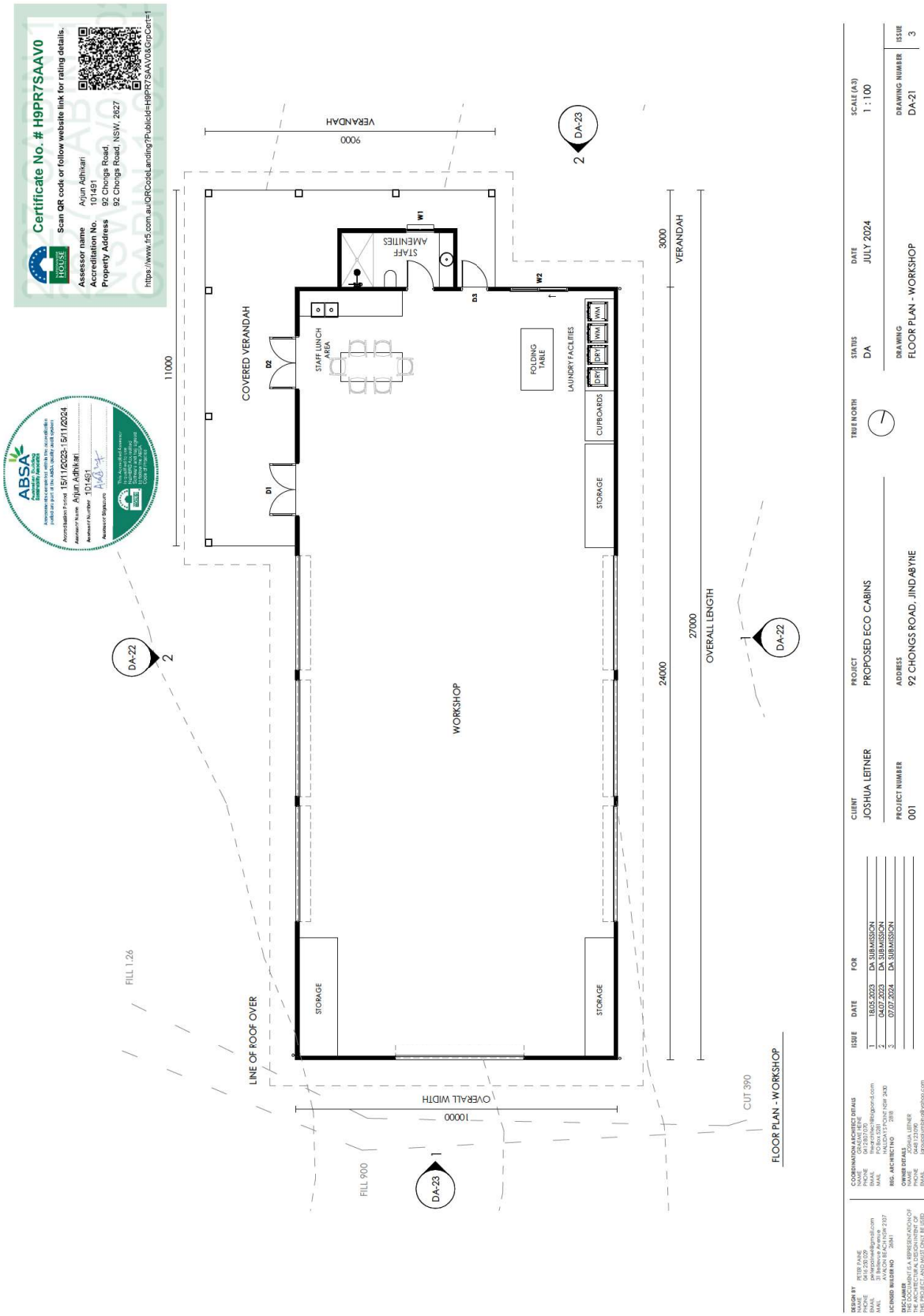
COORDINATION ARCHITECT DETAILS
NAME GRAEME HERE
PHONE 0418 230 620
EMAIL thegrantee@bigpond.com
MAIL 31 Whitney Ave
AVALON BEACH NSW 2107
REG. ARCHITECT NO 28841
OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795
WARBURTON NSW 2234
ISSUE DATE FOR
1 18.05.2023 DA SUBMISSION
2 04.07.2023 DA SUBMISSION
3 07.07.2024 DA SUBMISSION
CLIENT
JOSHUA LEITNER
PROJECT NUMBER
001
PROJECT
PROPOSED ECO CABINS
ADDRESS
92 CHONGS ROAD, JINDABYNE
STATUS
DA
DATE
JULY 2024
SCALE (A3)
1 : 100
DRAWING
ELEVATIONS - CABIN 6
DRAWING NUMBER
DA-17
ISSUE
3


LIVING & DINING
KITCHEN
BED 1
BED 2
BATH
WORKSHED
WASHING FACILITIES
STORAGE
SHELF RACKING
BENCH
FALSE SHAFT
STAFF AMENITIES
ESSE FIREPLACE / COOKTOP
SHELVES
WM
DRY
ACCESS STAIR TO MEZZANINE TO AS1657:2018
(MEZZANINE ONLY OVER MANAGERS' QUARTERS)
MANAGERS' QUARTERS
11050
9600
9700
24000
3000
5600
9500
CUT 190
CUT 2.12
DA-19
DA-20
SHED - PLAN
Certificate No. # H9PR7SAAV0
Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road, 92 Chongs Road, NSW, 2627
https://www.ff5.com.au/QRCodeLanding?PublicId=H9PR7SAAV0&GrpCert=1
ABSA
15/11/2023-15/11/2024
Arjun Adhikari
101491
CLIENT JOSHUA LEITNER
PROJECT PROPOSED ECO CABINS
PROJECT NUMBER 001
ADDRESS 92 CHONGS ROAD, JINDABYNE
TRUE NORTH
STATUS DA
DATE JULY 2024
SCALE (A3) 1 : 100
DRAWING FLOOR PLAN - SHED / MANAGERS' QUARTERS
DRAWING NUMBER DA-18
ISSUE 3
ISSUE DATE FOR
1 18.05.2023 DA SUBMISSION
2 04.07.2023 DA SUBMISSION
3 07.07.2024 DA SUBMISSION


ABSA
Accreditation Period 15/11/2023-15/11/2024
Assessor Name Arjun Adhikari
Assessor Number 101491
Certificate No. # H9PR7SAAV0
Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road, 92 Chongs Road, NSW, 2627
https://www.hl5.com.au/QRCodeLanding?PublicId=H9PR7SAAV0&Fpcent=1
ROLLER DOOR
3020
380
COLORBOND ROOF SHEETING
MILLED TIMBER CLADDING
FFL 1100
SHED - SOUTH WEST ELEVATION
COLORBOND ROOF SHEETING
RECYCLED CORRUGATED IRON
ROLLER DOOR
3000
40.00°
8300 RIDGE HEIGHT
FFL 1100
SHED - NORTH EAST ELEVATION
DESIGN BY
COORDINATION ARCHITECT DETAILS
ISSUE DATE FOR
1 18.05.2023 DA SUBMISSION
2 04.07.2023 DA SUBMISSION
3 07.07.2024 DA SUBMISSION
CLIENT JOSHUA LEITNER
PROJECT PROPOSED ECO CABINS
STATUS DA
DATE JULY 2024
SCALE (A3) 1 : 100
PROJECT NUMBER 001
ADDRESS 92 CHONGS ROAD, JINDABYNE
DRAWING ELEVATIONS - SHED
DRAWING NUMBER DA-19
ISSUE 3

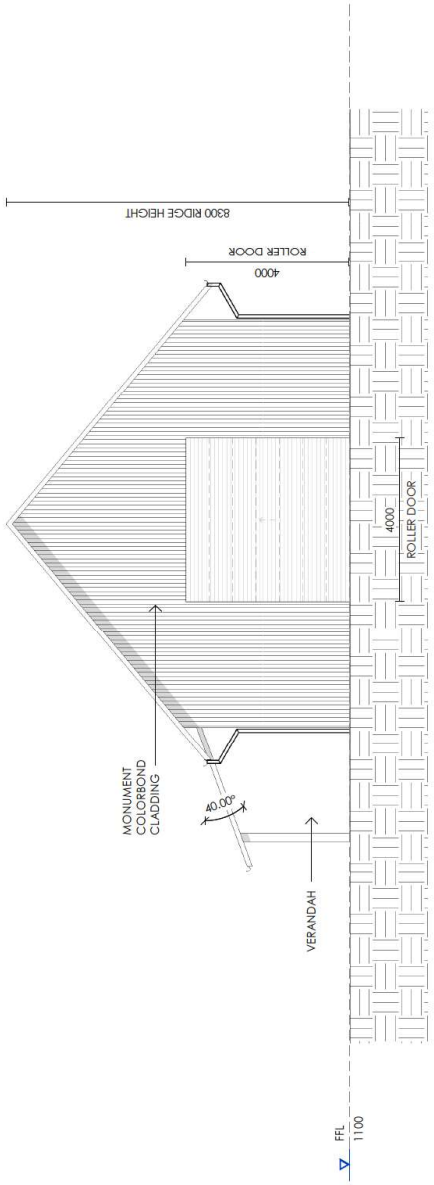

ABSA
Accreditation Period 15/11/2023-15/11/2024
Assessor Name Arjun Adhikari
Assessor Number 101491
Certificate No. # H9PR7SAAV0
Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road, 92 Chongs Road, NSW, 2627
https://www.hl5.com.au/QRCodeLanding?PublicId=H9PR7SAAV0&Gripcent=1
COLORBOND ROOF SHEETING
MONUMENT COLORBOND CLADDING
RECYCLED CORRUGATED IRON
NATURAL GRANITE STONE CLADDING
FALSE SHAFT
FFL 1100
SHED - SOUTH EAST ELEVATION
VERANDAH
COLORBOND ROOF SHEETING
MILLED TIMBER CLADDING
STORAGE RACKS
FFL 1100
SHED - NORTH WEST ELEVATION
DESIGN BY PETER DUKE PHONE 0418 210 200 EMAIL peterjoanne@gmail.com MAIL 31 Whale Beach Rd AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841
COORDINATION ARCHITECT DETAILS NAME GRAEME PEPPE PHONE 0429 425 870 EMAIL thegrantnet@bigpond.com MAIL PO Box 2178 HALIDAY POINT NSW 2430
REG. ARCHITECT NO 2818
OWNER DETAILS JOSHUA LEITNER PHONE 0448 123 090 EMAIL joshualeitner@yahoo.com MAIL PO Box 795 WAVERLEY NSW 2024
DISCLAIMER
THIS DRAWING IS A REPRESENTATION OF THE ARCHITECTURAL DESIGN INTENT OF THE PROJECT AS AGREED BY THE CLIENT FOR THE PURPOSE STATED IN THE REVISIONS COLUMN.
ISSUE DATE FOR
1 18.05.2023 DA SUBMISSION
2 04.07.2023 DA SUBMISSION
3 07.07.2024 DA SUBMISSION
CLIENT JOSHUA LEITNER
PROJECT NUMBER 001
PROJECT PROPOSED ECO CABINS
ADDRESS 92 CHONGS ROAD, JINDABYNE
STATUS DA
DATE JULY 2024
SCALE (A3) 1 : 100
DRAWING ELEVATIONS - SHED
DRAWING NUMBER DA-20
ISSUE 3


Certificate No. # H9PR7SAAV0
Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road NSW 2627
92 Chongs Road, NSW, 2627
https://www.fr5.com.au/QRCodeLanding/?PublicId=H9PR7SAAV0&SrpCount=1
ABSA
Accreditation Period 15/11/2023-15/11/2024
Assessor Name Arjun Adhikari
Assessor Number 101491
Assessor Signature
VERANDAH
9000
DA-23
2
W1
STAFF AMENITIES
W2
D3
COVERED VERANDAH
11000
D2
STAFF LUNCH AREA
FOLDING TABLE
LAUNDRY FACILITIES
WM
WM
DRY
DRY
CUPBOARDS
STORAGE
D1
3000
VERANDAH
DA-22
2
WORKSHOP
24000
27000
OVERALL LENGTH
DA-22
1
STORAGE
STORAGE
LINE OF ROOF OVER
FILL 1:26
OVERALL WIDTH
10000
CUT 390
FILL 900
DA-23
1
FLOOR PLAN - WORKSHOP
DESIGN BY
NAME PETER DUKE
PHONE 0418 210 900
EMAIL petersmeeton@gmail.com
MAIL 3 Hillcrest Place
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841
DISCLAIMER
THIS DRAWING IS A REPRESENTATION OF THE ARCHITECTURAL DESIGN INTENT OF THE PROJECT AND MUST NOT BE USED FOR THE PURPOSE STATED IN THE REVISIONS COLUMN.
COORDINATION ARCHITECT DETAILS
NAME GRAEME FERIE
PHONE 0429 672 870
EMAIL theprintsetter@bigpond.com
MAIL PO Box 2170
HALIDAY POINT NSW 2430
REG. ARCHITECT NO 2818
OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795
WAVERLEY NSW 2024
ISSUE DATE FOR
1 18.05.2023 DA SUBMISSION
2 04.07.2023 DA SUBMISSION
3 07.07.2024 DA SUBMISSION
CLIENT JOSHUA LEITNER
PROJECT PROPOSED ECO CABINS
ADDRESS 92 CHONGS ROAD, JINDABYNE
PROJECT NUMBER 001
TRUE NORTH
STATUS DA
DATE JULY 2024
SCALE (A3) 1 : 100
DRAWING FLOOR PLAN - WORKSHOP
DRAWING NUMBER DA-21
ISSUE 3

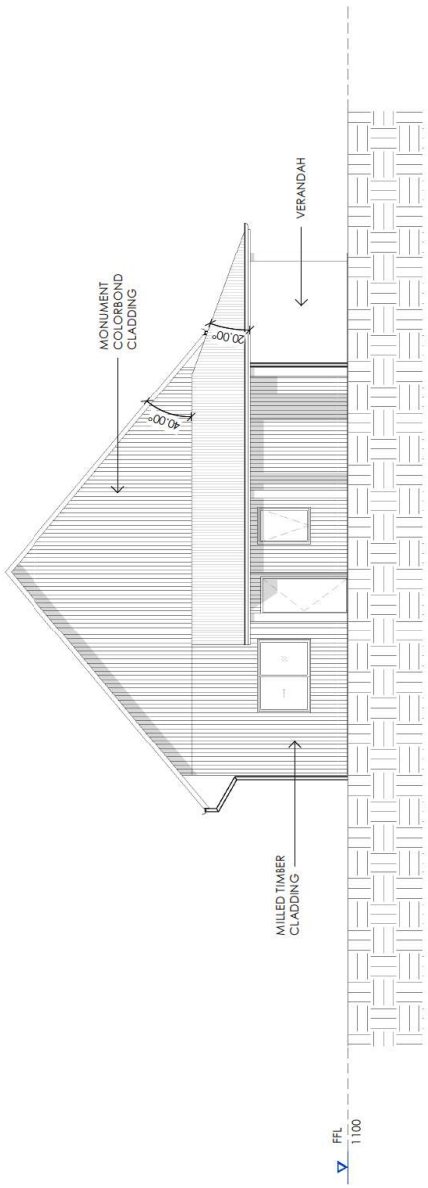

COLORBOND ROOF SHEETING
VERANDAH
ROLLER DOOR
3600
3000
380
CLEARANCE
3380
FFL
1100
WORKSHOP - NORTH EAST ELEVATION
COLORBOND ROOF SHEETING
MONUMENT COLORBOND CLADDING
MILLED TIMBER CLADDING
20.00°
4070 TOP OF WALL
WORKSHOP - SOUTH WEST ELEVATION
Certificate No. # H9PR7SAAV0
STATUS
DA
DATE
JULY 2024
SCALE (A3)
1 : 100
DRAWING
ELEVATIONS - WORKSHOP
DRAWING NUMBER
DA-22
ISSUE
3
CLIENT
JOSHUA LEITNER
PROJECT
PROPOSED ECO CABINS
PROJECT NUMBER
001
ADDRESS
92 CHONGS ROAD, JINDABYNE
ISSUE
DATE
FOR
1
18.05.2023
DA SUBMISSION
2
04.07.2023
DA SUBMISSION
3
07.07.2024
DA SUBMISSION







WORKSHOP - SOUTH EAST ELEVATION



WORKSHOP - NORTH WEST ELEVATION

DESIGN BY
PETER DUKE
PHONE 0418 210 000
EMAIL petersmeet@gmail.com
MAIL 3 Wilson Parade
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841

DISCLAIMER
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COORDINATION ARCHITECT DETAILS
NAME GRAEME FERIE
PHONE 0412 276 778
EMAIL freqzmedia@bigpond.com
MAIL PO Box 3178
HALLEN TA POINT NSW 2430
REG. ARCHITECT NO 2818

OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795
WAVERLEY NSW 2024

ISSUE	DATE	FOR
1	18.05.2023	DA SUBMISSION
2	04.07.2023	DA SUBMISSION
3	07.07.2024	DA SUBMISSION

CLIENT JOSHUA LEITNER
PROJECT NUMBER 001
PROJECT PROPOSED ECO CABINS
ADDRESS 92 CHONGS ROAD, JINDABYNE

STATUS DA
DATE JULY 2024
SCALE (A3) 1 : 100
DRAWING ELEVATIONS - WORKSHOP
DRAWING NUMBER DA-23
ISSUE 3

DESIGN BY
NAME PETER DUKE
PHONE 0418 230 620
EMAIL petersmeeton@gmail.com
MAIL 3 Waterfront Place AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841

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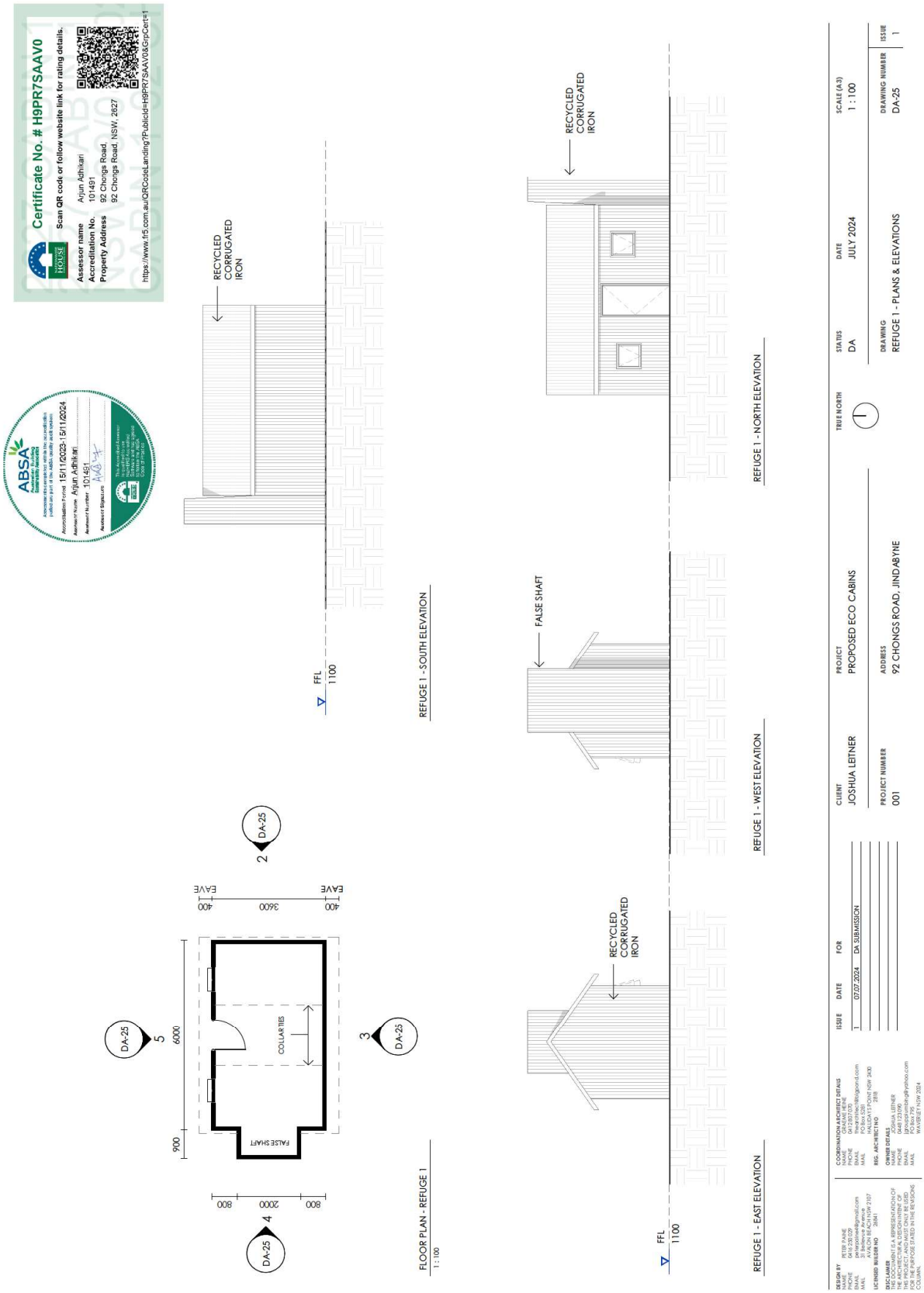
COORDINATION ARCHITECT DETAILS
NAME GRAEME HERE
PHONE 0412 345 678
EMAIL thegrantsec@bigpond.com
MAIL PO Box 1234 HALIDAY POINT NSW 2430
REG. ARCHITECT NO 2818

OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795 WAVERLEY NSW 2024

ISSUE	DATE	FOR
1	07.07.2024	DA SUBMISSION

CLIENT JOSHUA LEITNER
PROJECT PROPOSED ECO CABINS
ADDRESS 92 CHONGS ROAD, JINDABYNE
PROJECT NUMBER 001
STATUS DA
DATE JULY 2024
SCALE (A3) 1 : 100
DRAWING SERVICE PODS - PLAN & ELEVATIONS
DRAWING NUMBER DA-24
ISSUE 1


Certificate No. # H9PR7SAAV0
Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road NSW 2627
92 Chongs Road, NSW, 2627
https://www.fn5.com.au/QRCodeLanding?PublicId=H9PR7SAAV0&SrpCount=1
ABSA
Accreditation Period 15/11/2023-15/11/2024
Assessor Name Arjun Adhikari
Assessor Number 101491
RECYCLED CORRUGATED IRON
FFL 1100
REFUGE 1 - SOUTH ELEVATION
FALSE SHAFT
REFUGE 1 - NORTH ELEVATION
REFUGE 1 - WEST ELEVATION
REFUGE 1 - EAST ELEVATION
DA-25
2
3
4
5
EAVE
400
3600
6000
900
800
2000
COLLAR TIES
FALSE SHAFT
FLOOR PLAN - REFUGE 1
1 : 100
DESIGN BY
PETER DUKE
PHONE 0418 210 000
EMAIL petersmeet@gmail.com
MAIL 3 Mona Pl
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841
DISCLAIMER
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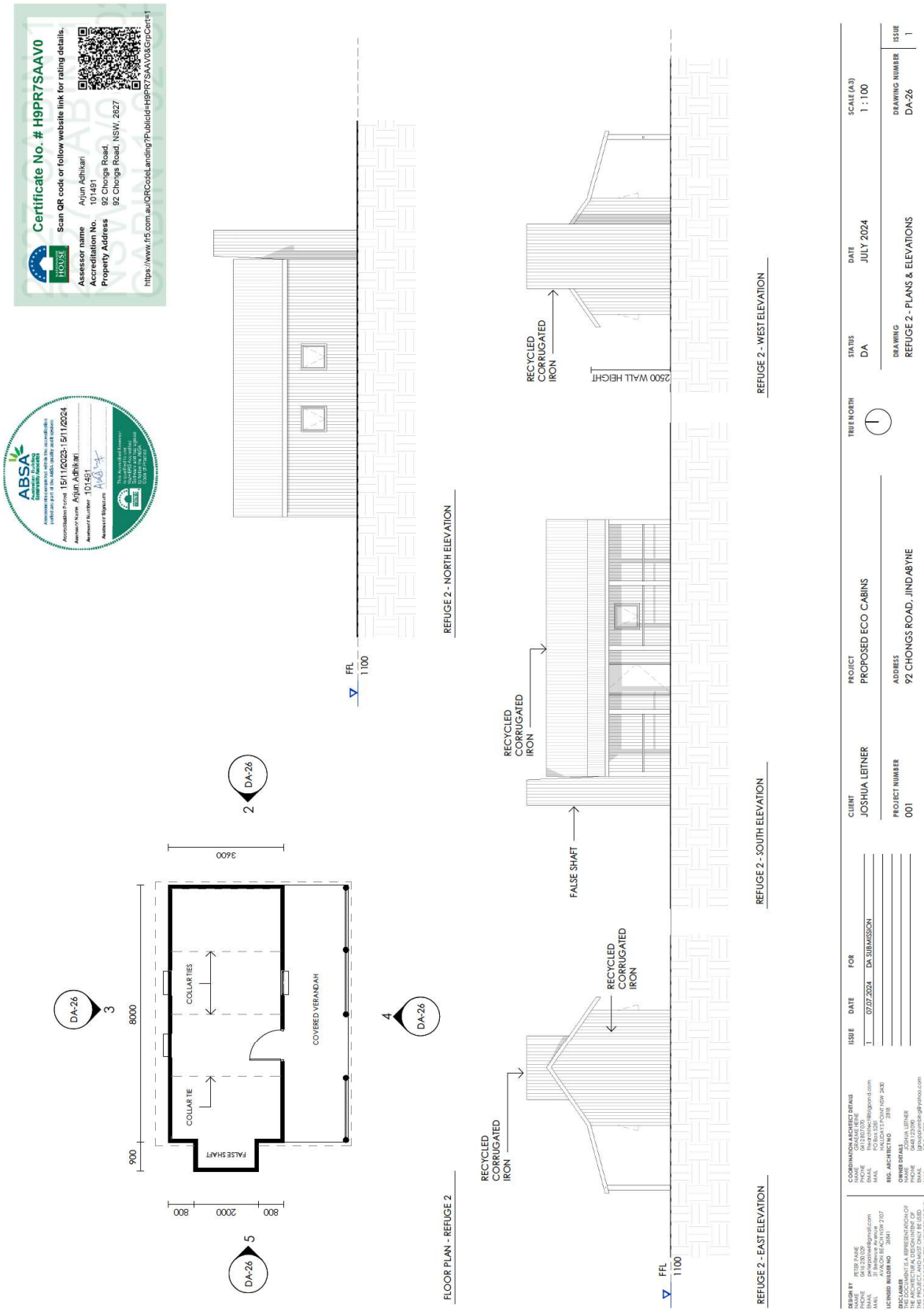
COORDINATION ARCHITECT DETAILS
NAME GRAEME FERIE
PHONE 0418 210 000
EMAIL theprintsetter@gmail.com
MAIL PO Box 2078
HALEKA TT POINT NSW 2430
REG. ARCHITECT NO 2818
OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshua.leitner@yahoo.com
MAIL PO Box 795
WAVERLEY NSW 2024
ISSUE DATE FOR
1 07.07.2024 DA SUBMISSION
CLIENT JOSHUA LEITNER
PROJECT NUMBER 001
PROJECT PROPOSED ECO CABINS
ADDRESS 92 CHONGS ROAD, JINDABYNE
TRUE NORTH
STATUS DA
DATE JULY 2024
SCALE (A3) 1 : 100
DRAWING REFUGE 1 - PLANS & ELEVATIONS
DRAWING NUMBER DA-25
ISSUE 1


Certificate No. # H9PR7SAAV0
Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road NSW 2627
92 Chongs Road, NSW, 2627
https://www.fr5.com.au/QRCodeLanding?PublicId=H9PR7SAAV0&SrpCont=1
ABSA
Accreditation Period 15/11/2023-15/11/2024
Assessor Name Arjun Adhikari
Assessor Number 101491
FFL 1100
REFUGE 2 - NORTH ELEVATION
RECYCLED CORRUGATED IRON
2500 WALL HEIGHT
REFUGE 2 - WEST ELEVATION
RECYCLED CORRUGATED IRON
FALSE SHAFT
RECYCLED CORRUGATED IRON
REFUGE 2 - SOUTH ELEVATION
RECYCLED CORRUGATED IRON
FFL 1100
REFUGE 2 - EAST ELEVATION
DA-26
2
3600
DA-26
3
8000
900
COLLAR TIES
COLLAR TIE
FALSE SHAFT
COVERED VERANDAH
800
2000
800
DA-26
5
DA-26
4
FLOOR PLAN - REFUGE 2
DESIGN BY
PETER DUKE
PHONE 0418 210 200
EMAIL petersdesign@gmail.com
MAIL 3 Wilson Place
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841
DISCLAIMER
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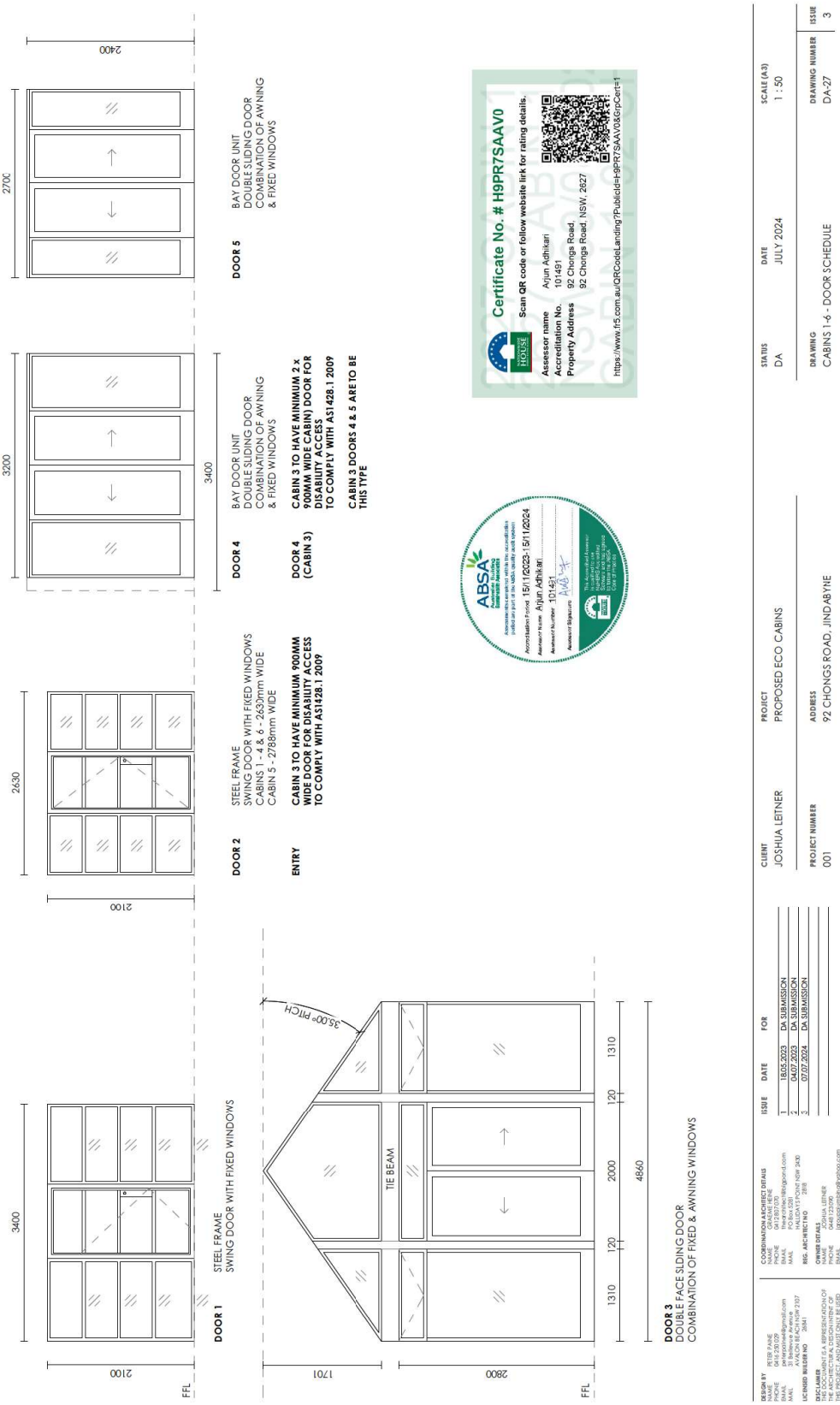
COORDINATION ARCHITECT DETAILS
NAME GRAEME FERNE
PHONE 0412 623 870
EMAIL thegrafterz@bigpond.com
MAIL PO Box 2107
AVALON BEACH NSW 2107
REG. ARCHITECT NO 2818
OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795
WARBURTON NSW 2324
ISSUE DATE FOR
1 07.07.2024 DA SUBMISSION
CLIENT JOSHUA LEITNER
PROJECT NUMBER 001
PROJECT PROPOSED ECO CABINS
ADDRESS 92 CHONGS ROAD, JINDABYNE
TRUE NORTH
STATUS DA
DATE JULY 2024
SCALE (A3) 1 : 100
DRAWING REFUGE 2 - PLANS & ELEVATIONS
DRAWING NUMBER DA-26
ISSUE 1


DOOR 1
STEEL FRAME
SWING DOOR WITH FIXED WINDOWS
DOOR 2
STEEL FRAME
SWING DOOR WITH FIXED WINDOWS
CABINS 1 - 4 & 6 - 2630mm WIDE
CABIN 5 - 2788mm WIDE
ENTRY
CABIN 3 TO HAVE MINIMUM 900MM WIDE DOOR FOR DISABILITY ACCESS TO COMPLY WITH AS1428.1 2009
DOOR 3
DOUBLE FACE SLIDING DOOR
COMBINATION OF FIXED & AWNING WINDOWS
DOOR 4
BAY DOOR UNIT
DOUBLE SLIDING DOOR
COMBINATION OF AWNING
& FIXED WINDOWS
DOOR 4 (CABIN 3)
CABIN 3 TO HAVE MINIMUM 2 x 900MM WIDE CABIN) DOOR FOR DISABILITY ACCESS TO COMPLY WITH AS1428.1 2009
CABIN 3 DOORS 4 & 5 ARE TO BE THIS TYPE
DOOR 5
BAY DOOR UNIT
DOUBLE SLIDING DOOR
COMBINATION OF AWNING
& FIXED WINDOWS
TIE BEAM
35.00° PITCH
FFL
Certificate No. # H9PR7SAAV0
Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road, 92 Chongs Road, NSW, 2627
https://www.hr5.com.au/QRCodeLanding/?PublicId=H9PR7SAAV0&GrpCert=1
ABSA
Accreditation Number: 101491
Assessor Name: Arjun Adhikari
Assessor Signature:
DESIGN BY
PETER JOHNS
PHONE 0418 210 200
EMAIL petersjohns@gmail.com
MAIL 3 Wilson Place
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841
DISCLAIMER
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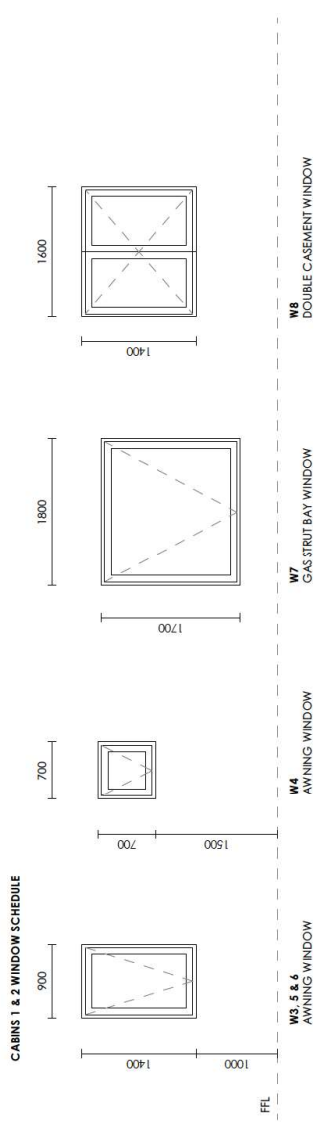
COORDINATION ARCHITECT DETAILS
NAME GRAEME FERNE
PHONE 0427 278 370
EMAIL thegrantlee1@gmail.com
MAIL PO BOX 2170
HALIDAY POINT NSW 2430
REG. ARCHITECT NO 2818
OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795
WAVERLEY NSW 2024
ISSUE DATE FOR
1 18.05.2023 DA SUBMISSION
2. 04.07.2023 DA SUBMISSION
3. 07.07.2024 DA SUBMISSION
CLIENT
JOSHUA LEITNER
PROJECT NUMBER
001
PROJECT
PROPOSED ECO CABINS
ADDRESS
92 CHONGS ROAD, JINDABYNE
STATUS
DA
DATE
JULY 2024
SCALE (A3)
1 : 50
DRAWING
CABINS 1-6 - DOOR SCHEDULE
DRAWING NUMBER
DA-27
ISSUE
3







DESIGN BY
NAME PETER DUKE
PHONE 0418 210 620
EMAIL petersmeeton@gmail.com
MAIL 3 Mitchell Place
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841

DISCLAIMER
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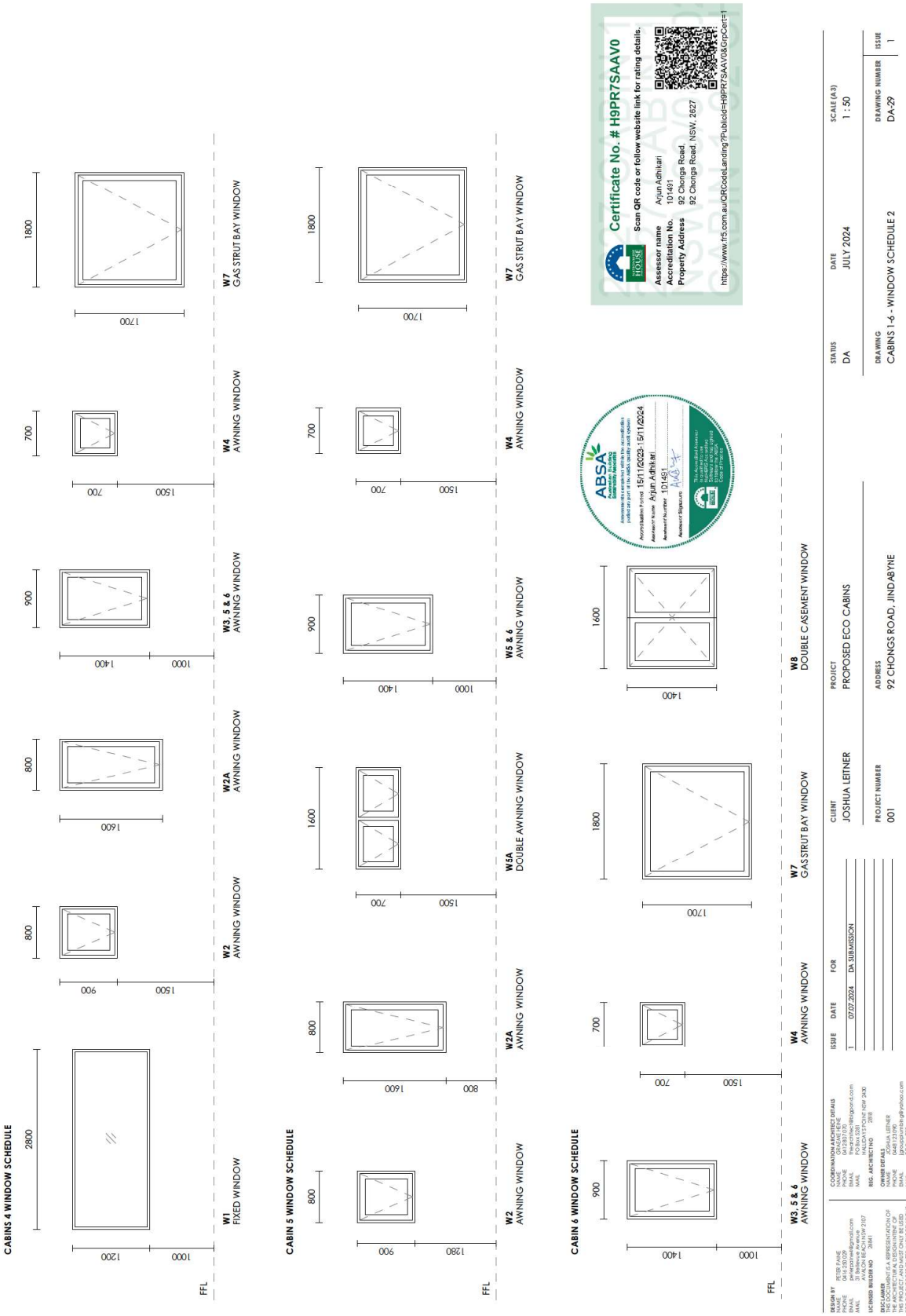
COORDINATION ARCHITECT DETAILS
NAME GRAEME FERIE
PHONE 0412 425 880
EMAIL theprojectsite@bigpond.com
MAIL 3 Mitchell Place
HALIDAY POINT NSW 2430
REG. ARCHITECT NO 2818

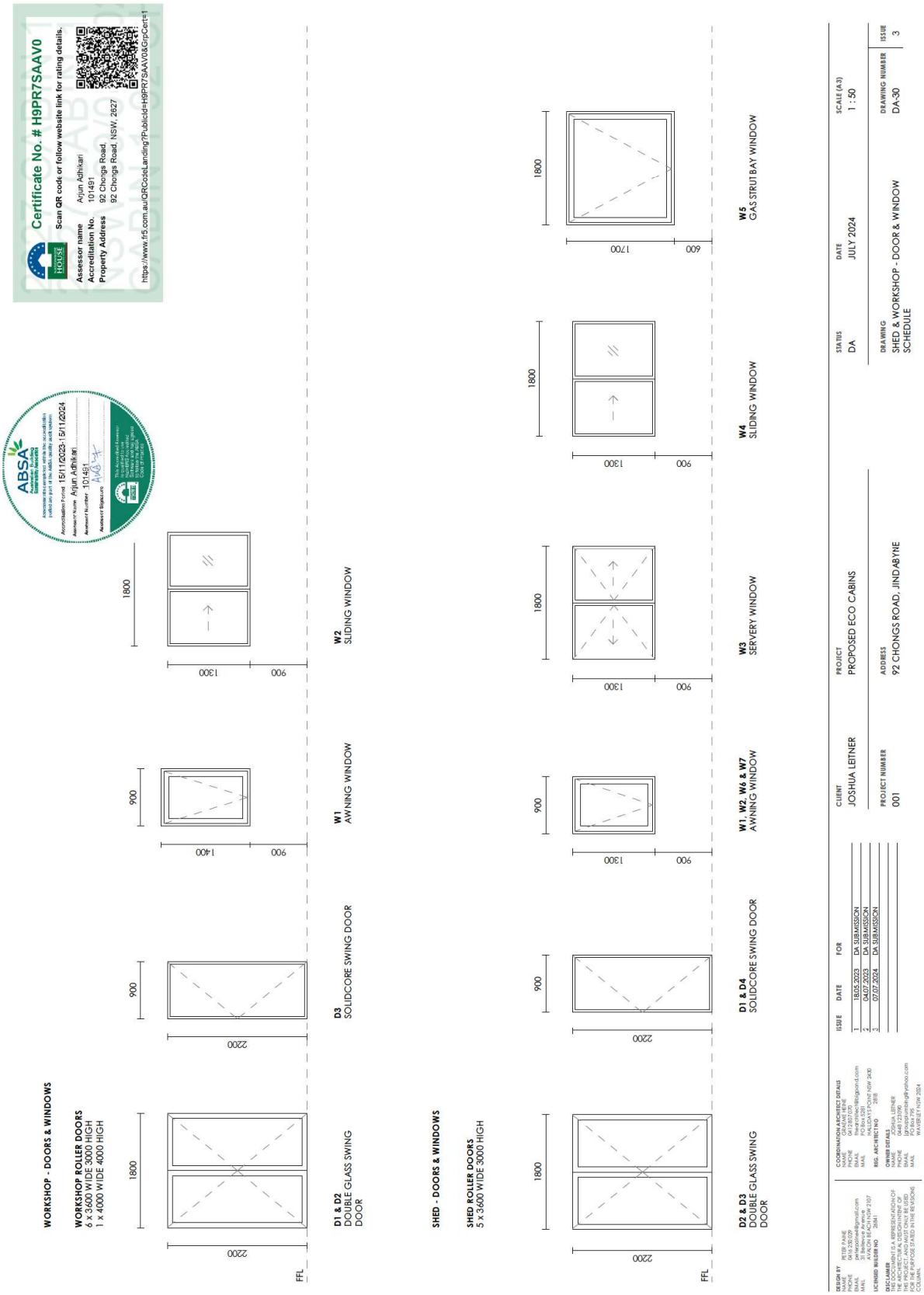
OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshleitner@yahoo.com
MAIL PO Box 795
WAVERLEY NSW 2024

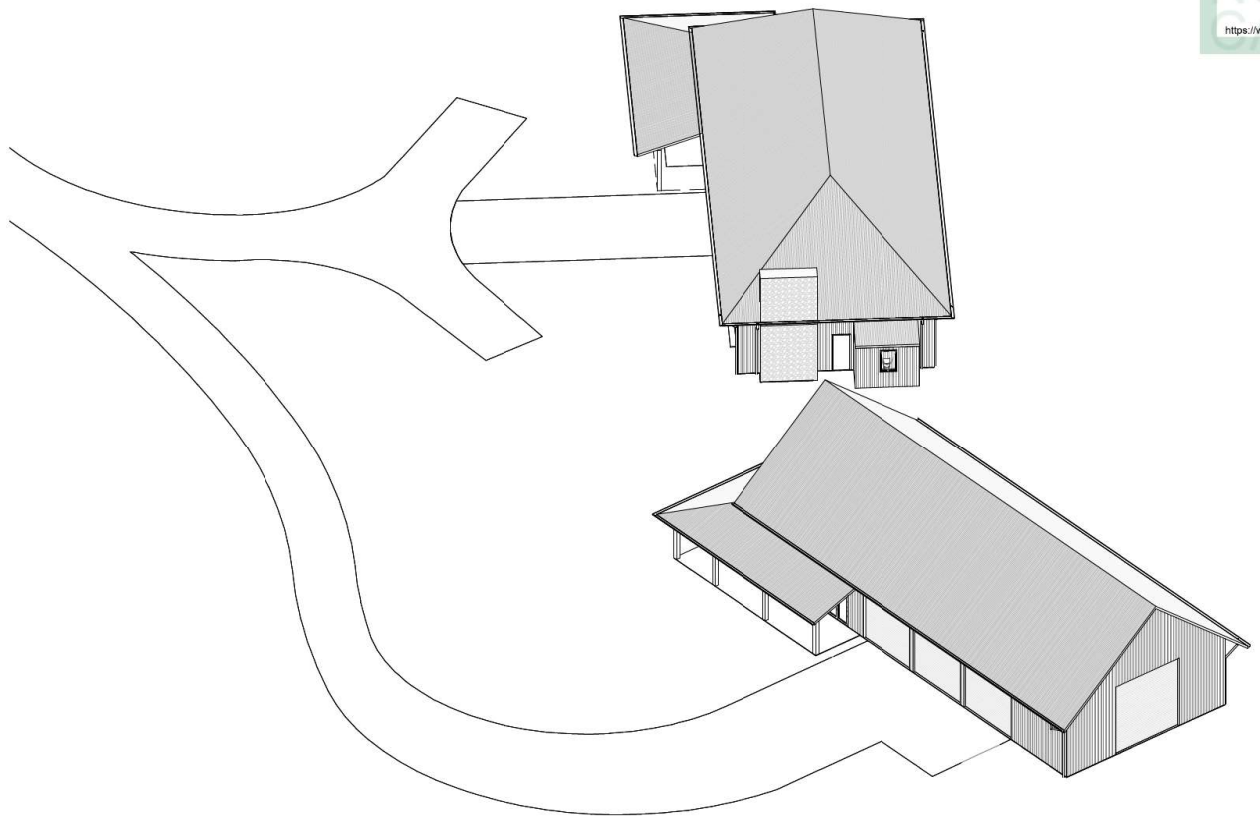
ISSUE	DATE	FOR
1	07.07.2024	DA SUBMISSION

CLIENT JOSHUA LEITNER
PROJECT NUMBER 001
PROJECT PROPOSED ECO CABINS
ADDRESS 92 CHONGS ROAD, JINDABYNE

STATUS DA
DATE JULY 2024
SCALE (A3) 1 : 50
DRAWING CABINS 1-6 - WINDOW SCHEDULE 1
DRAWING NUMBER DA-28
ISSUE 1


CABINS 4 WINDOW SCHEDULE
W1 FIXED WINDOW
W2 AWNING WINDOW
W2A AWNING WINDOW
W3, 5 & 6 AWNING WINDOW
W4 AWNING WINDOW
W7 GAS STRUT BAY WINDOW
CABIN 5 WINDOW SCHEDULE
W2 AWNING WINDOW
W2A AWNING WINDOW
W5A DOUBLE AWNING WINDOW
W5 & 6 AWNING WINDOW
W4 AWNING WINDOW
W7 GAS STRUT BAY WINDOW
CABIN 6 WINDOW SCHEDULE
W3, 5 & 6 AWNING WINDOW
W4 AWNING WINDOW
W7 GAS STRUT BAY WINDOW
W8 DOUBLE CASEMENT WINDOW
FFL
Certificate No. # H9PR7SAAV0
Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road, 92 Chongs Road, NSW, 2627
https://www.h5.com.au/QRCodeLanding?PublicId=H9PR7SAAV0&GrpCert=1
ABSA
Accreditation Period 15/11/2023 - 15/11/2024
Assessor Name Arjun Adhikari
Assessor Number 101491
DESIGN BY
COORDINATION ARCHITECT DETAILS
OWNER DETAILS
DISCLAIMER
ISSUE DATE FOR
1 07.07.2024 DA SUBMISSION
CLIENT JOSHUA LEITNER
PROJECT NUMBER 001
PROJECT PROPOSED ECO CABINS
ADDRESS 92 CHONGS ROAD, JINDABYNE
STATUS DA
DATE JULY 2024
SCALE (A3) 1 : 50
DRAWING CABINS 1-6 - WINDOW SCHEDULE 2
DRAWING NUMBER DA-29
ISSUE 1


Certificate No. # H9PR7SAAV0
Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road NSW, 2627
https://www.fr5.com.au/QRCodeLanding?PublicId=H9PR7SAAV0&SrpCount=1
ABSA
Accreditation Period 15/11/2023-15/11/2024
Assessor Name Arjun Adhikari
Assessor Number 101491
WORKSHOP - DOORS & WINDOWS
WORKSHOP ROLLER DOORS
6 x 3600 WIDE 3000 HIGH
1 x 4000 WIDE 4000 HIGH
D1 & D2
DOUBLE GLASS SWING DOOR
D3
SOLIDCORE SWING DOOR
W1
AWNING WINDOW
W2
SLIDING WINDOW
SHED - DOORS & WINDOWS
SHED ROLLER DOORS
5 x 3600 WIDE 3000 HIGH
D2 & D3
DOUBLE GLASS SWING DOOR
D1 & D4
SOLIDCORE SWING DOOR
W1, W2, W6 & W7
AWNING WINDOW
W3
SERVERY WINDOW
W4
SLIDING WINDOW
W5
GAS STRUT BAY WINDOW
FFL
DESIGN BY
PETER DUKE
COORDINATION ARCHITECT DETAILS
GRAEME HERE
CLIENT
JOSHUA LEITNER
PROJECT
PROPOSED ECO CABINS
STATUS
DA
DATE
JULY 2024
SCALE (A3)
1 : 50
ISSUE
DATE
FOR
18.05.2023 DA SUBMISSION
04.07.2023 DA SUBMISSION
07.07.2024 DA SUBMISSION
PROJECT NUMBER
001
ADDRESS
92 CHONGS ROAD, JINDABYNE
DRAWING
SHED & WORKSHOP - DOOR & WINDOW SCHEDULE
DRAWING NUMBER
DA-30
ISSUE
3
DISCLAIMER
OWNER DETAILS
JOSHUA LEITNER



3D VIEW - SHED 1 & 2

Certificate No. # H9PR7SAAV0

Scan QR code or follow website link for rating details.

Assessor name	Arjun Adhikari
Accreditation No.	101491
Property Address	92 Chongs Road, 92 Chongs Road, NSW, 2627

https://www.fr5.com.au/QRCodeLanding?PublicId=H9PR7SAAV0&GrpCert=1

ABSA Australian Building Sustainability Association

Accreditation Period 15/11/2023-15/11/2024

Assessor Name Arjun Adhikari

Assessor Number 101491

Assessor Signature

This Accredited Assessor is qualified to use NUHERS Accredited Software and has agreed to follow the ABSA Code of Practice

DESIGN BY
NAME PETER PAINE
PHONE 0416 250 029
EMAIL peterpaine4@gmail.com
MAIL 31 Bellevue Avenue AVALON BEACH NSW 2107
LICENSED BUILDER NO 26841

DISCLAIMER
THIS DOCUMENT IS A REPRESENTATION OF THE ARCHITECTURAL DESIGN INTENT OF THIS PROJECT, AND MUST ONLY BE USED FOR THE PURPOSE STATED IN THE REVISIONS COLUMN.

COORDINATION ARCHITECT DETAILS
NAME GRAEME HEINE
PHONE 0412 807 070
EMAIL thearchitect@tbigpond.com
MAIL PO Box 5281 HALLIDAYS POINT NSW 2430
REG. ARCHITECT NO 2818

OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL jgroupplumbing@yahoo.com
MAIL PO Box 795 WAVERLEY NSW 2024

ISSUE	DATE	FOR
1	18.05.2023	DA SUBMISSION
2	04.07.2023	DA SUBMISSION
3	07.07.2024	DA SUBMISSION

CLIENT	PROJECT	STATUS	DATE	SCALE (A3)
JOSHUA LEITNER	PROPOSED ECO CABINS	DA	JULY 2024	

PROJECT NUMBER	ADDRESS	DRAWING	DRAWING NUMBER	ISSUE
001	92 CHONGS ROAD, JINDABYNE	3D VIEW - SHED & WORKSHOP	DA-31	3

MATERIALS

MILLED TIMBER LOGS
COLORBOND - MONUMENT
RECYCLED CORRUGATED IRON
ROLLED CORTEN STEEL
CORRUGATED IRON
NATURAL GRANITE STACKED STONE

PRECEDENTS

HIGH COUNTRY - HUTS & HOMESTEADS (BOOK)

DESIGN BY
PETER DUKE
PHONE 0418 210 200
EMAIL petersmeeton@gmail.com
MAIL 3 Marine Parade
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841

DISCLAIMER
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COORDINATION ARCHITECT DETAILS
NAME GRAEME PEPE
PHONE 0427 222 870
EMAIL thegrantee1@bigpond.com
MAIL PO BOX 2170
HALIDAYS POINT NSW 2430
REG. ARCHITECT NO 2818

OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795
WARBURTON NSW 2324

ISSUE	DATE	FOR
1	07.07.2024	DA SUBMISSION

CLIENT
JOSHUA LEITNER

PROJECT NUMBER
001

PROJECT
PROPOSED ECO CABINS

ADDRESS
92 CHONGS ROAD, JINDABYNE

STATUS
DA

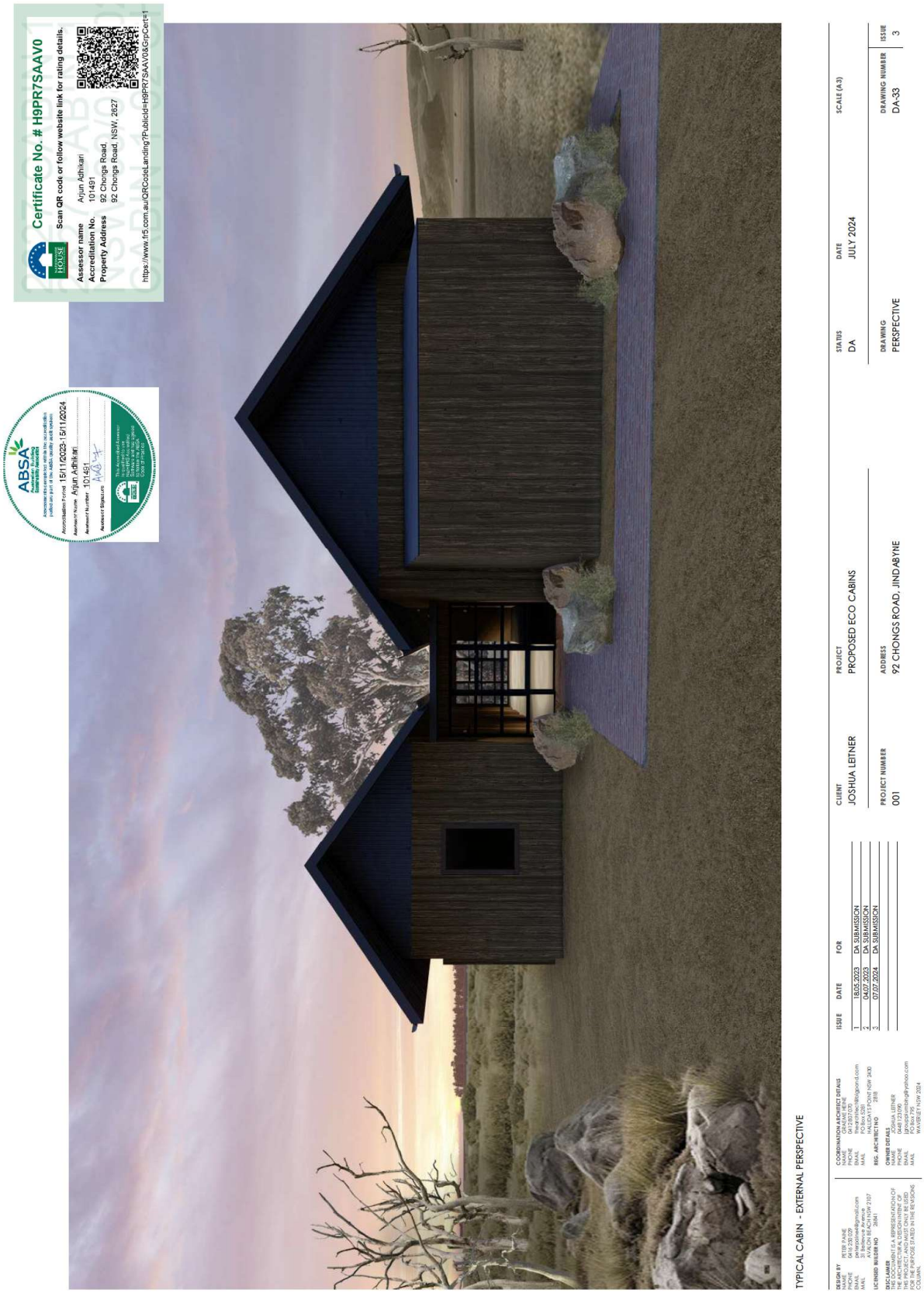
DATE
JULY 2024

SCALE (A3)

DRAWING
PRECEDENTS & MATERIAL PALETTE

DRAWING NUMBER
DA-32

ISSUE
1


Certificate No. # H9PR7SAAV0
Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road, 92 Chongs Road, NSW, 2627
https://www.f5.com.au/QRCodeLanding?PublicId=H9PR7SAAV0&GrpCert=1
ABSA
Accreditation Period 15/11/2023-15/11/2024
Assessor Name Arjun Adhikari
Assessor Number 101491
Assessor Signature
TYPICAL CABIN - EXTERNAL PERSPECTIVE
CLIENT JOSHUA LEITNER
PROJECT PROPOSED ECO CABINS
PROJECT NUMBER 001
ADDRESS 92 CHONGS ROAD, JINDABYNE
STATUS DA
DATE JULY 2024
SCALE (A3)
DRAWING PERSPECTIVE
DRAWING NUMBER DA-33
ISSUE 3
ISSUE DATE FOR
1 18.05.2023 DA SUBMISSION
2 04.07.2023 DA SUBMISSION
3 07.07.2024 DA SUBMISSION

TYPICAL CABIN - EXTERNAL PERSPECTIVE

DESIGN BY
PETER DUKE
PHONE 0418 230 630
EMAIL petersmeet@gmail.com
MAIL 3/1 Marine Parade
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841

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COORDINATION ARCHITECT DETAILS
NAME GRAEME HEINE
PHONE 0418 230 630
EMAIL heinzmeier@bigpond.com
MAIL PO Box 2107
AVALON BEACH NSW 2107
REG. ARCHITECT NO 2818

OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795
WARBURTON NSW 2324

ISSUE	DATE	FOR
1	18.05.2023	DA SUBMISSION
2	04.07.2023	DA SUBMISSION
3	07.07.2024	DA SUBMISSION

CLIENT JOSHUA LEITNER

PROJECT NUMBER 001

PROJECT PROPOSED ECO CABINS

ADDRESS 92 CHONGS ROAD, JINDABYNE

STATUS DA

DRAWING PERSPECTIVE

DATE JULY 2024

SCALE (A3)

DRAWING NUMBER DA-34

ISSUE 3



TYPICAL CABIN - EXTERNAL PERSPECTIVE

ISSUE	DATE	FOR
1	18.05.2023	DA SUBMISSION
2	04.07.2023	DA SUBMISSION
3	07.07.2024	DA SUBMISSION

CLIENT: JOSHUA LEITNER
PROJECT: PROPOSED ECO CABINS
PROJECT NUMBER: 001
ADDRESS: 92 CHONGS ROAD, JINDABYNE
STATUS: DA
DATE: JULY 2024
SCALE (A3)
DRAWING: PERSPECTIVE
DRAWING NUMBER: DA-35
ISSUE: 3

Certificate No. # H9PR7SAAV0
Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road, 92 Chongs Road, NSW, 2627
https://www.h5.com.au/QRCodeLanding?PublicId=H9PR7SAAV0&GripCert=1
ABSA
Accredited Assessor
Accreditation Period 15/11/2023 - 15/11/2024
Assessor Name Arjun Adhikari
Assessor Number 101491
Assessor Signature
HUT 4 (TYPICAL TO ALL TYPES) - EXTERNAL PERSPECTIVE
DESIGN BY
PETER DUKE
PHONE 0438 230 200
EMAIL petersmeet@gmail.com
MAIL 3/1 Marine Parade
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841
DISCLAIMER
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COORDINATION ARCHITECT DETAILS
NAME GRAEME HERE
PHONE 0423 XXX XXX
EMAIL thegrantee@bigpond.com
MAIL PO Box 1234
HALIDAY POINT NSW 2430
REG. ARCHITECT NO 2818
OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795
WAVERLEY NSW 2024
ISSUE DATE FOR
1 18.05.2023 DA SUBMISSION
2 04.07.2023 DA SUBMISSION
3 07.07.2024 DA SUBMISSION
CLIENT JOSHUA LEITNER
PROJECT NUMBER 001
PROJECT PROPOSED ECO CABINS
ADDRESS 92 CHONGS ROAD, JINDABYNE
STATUS DA
DATE JULY 2024
SCALE (A3)
DRAWING PERSPECTIVE
DRAWING NUMBER DA-36
ISSUE 3



TYPICAL CABIN - EXTERNAL PERSPECTIVE

DESIGN BY
PETER DUKE
NAME
PHONE 0418 230 705
EMAIL petersmeed@gmail.com
MAIL 31 Bellevue Parade
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28641

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COORDINATION ARCHITECT DETAILS
NAME GRAEME HEINE
PHONE 0418 230 705
EMAIL heinz@me.com
MAIL PO Box 1
HALIDAY POINT NSW 2430
REG. ARCHITECT NO 2818

OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795
WAVERLEY NSW 2024

ISSUE	DATE	FOR
1	18.05.2023	DA SUBMISSION
2	04.07.2023	DA SUBMISSION
3	07.07.2024	DA SUBMISSION

CLIENT JOSHUA LEITNER

PROJECT NUMBER 001

PROJECT PROPOSED ECO CABINS

ADDRESS 92 CHONGS ROAD, JINDABYNE

STATUS DA

DATE JULY 2024

SCALE (A3)

DRAWING PERSPECTIVE

DRAWING NUMBER DA-37

ISSUE 3

TYPICAL CABIN - EXTERNAL PERSPECTIVE

DESIGN BY PETER DUKE
PHONE 0418 210 200
EMAIL peterjamesduke@gmail.com
MAIL 31 Marine Parade AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841

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COORDINATION ARCHITECT DETAILS
NAME GRAEME FEHE
PHONE 0422 [illegible]
EMAIL thegrantee1@bigpond.com
MAIL PO Box 3178 HALIDAY POINT NSW 2430
REG. ARCHITECT NO 2818

OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795 WARBURTON NSW 2324

ISSUE	DATE	FOR
1	18.05.2023	DA SUBMISSION
2.	04.07.2023	DA SUBMISSION
3.	07.07.2024	DA SUBMISSION

CLIENT JOSHUA LEITNER
PROJECT NUMBER 001
PROJECT PROPOSED ECO CABINS
ADDRESS 92 CHONGS ROAD, JINDABYNE
STATUS DA
DATE JULY 2024
SCALE (A3)
DRAWING PERSPECTIVE
DRAWING NUMBER DA-38
ISSUE 3



TYPICAL CABIN - INTERNAL PERSPECTIVE

DESIGN BY
PETER DUKE
PHONE 0418 250 670
EMAIL petersdmed@gmail.com
MAIL 3/1 Marine Parade
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841

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COORDINATION ARCHITECT DETAILS
NAME GRAEME HEINE
PHONE 0412 622 555
EMAIL heinz@me.com
MAIL PO Box 2107
HALLOA T PONT NSW 2430
REG. ARCHITECT NO 2818

OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795
WAVERLEY NSW 2024

ISSUE	DATE	FOR
1	18.05.2023	DA SUBMISSION
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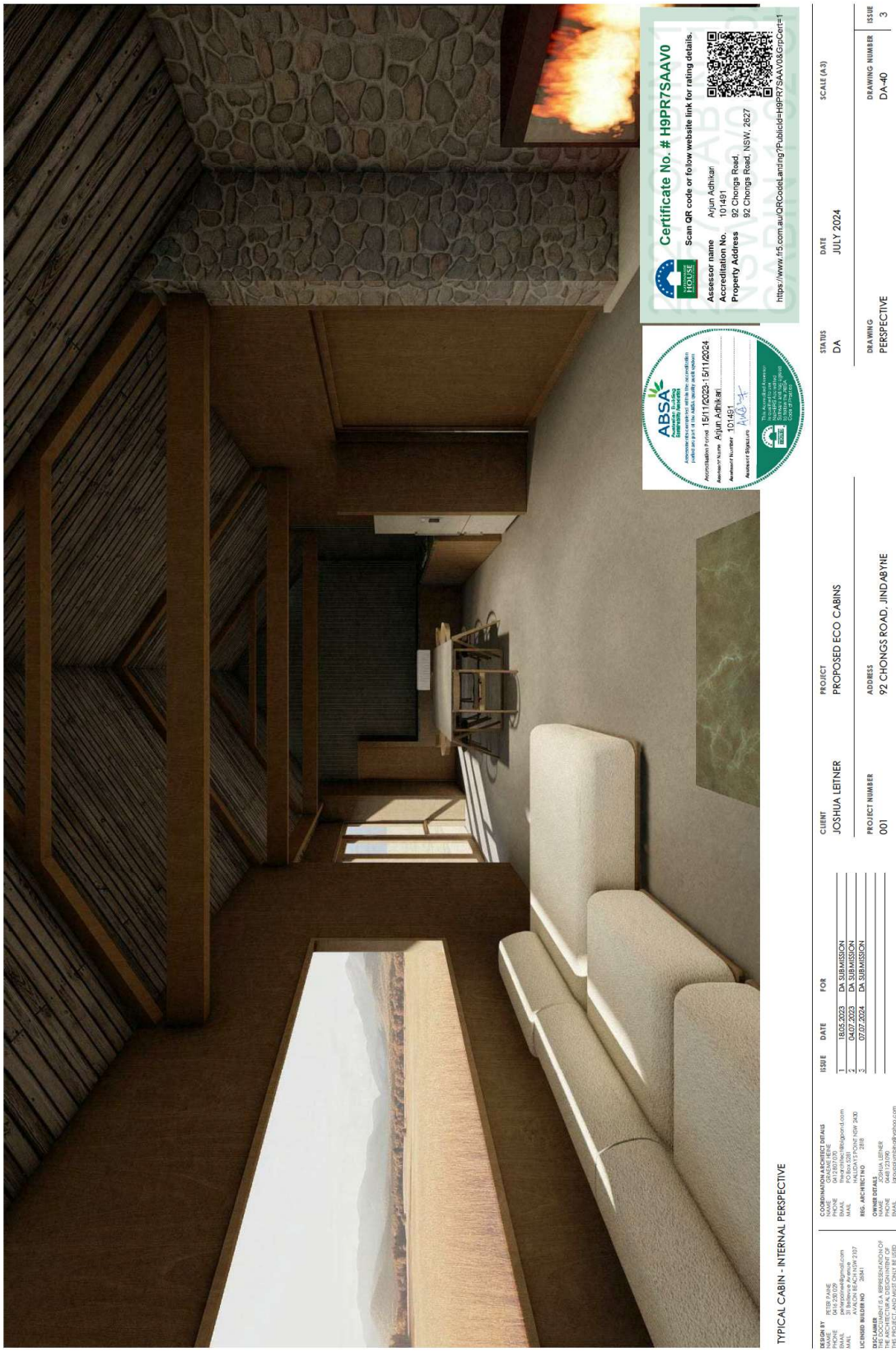
CLIENT JOSHUA LEITNER
PROJECT NUMBER 001
PROJECT PROPOSED ECO CABINS
ADDRESS 92 CHONGS ROAD, JINDABYNE

STATUS DA
DRAWING PERSPECTIVE
DATE JULY 2024
SCALE (A3)
DRAWING NUMBER DA-39
ISSUE 3



TYPICAL CABIN - INTERNAL PERSPECTIVE

DESIGN BY
PETER DUKE
PHONE 0418 230 200
EMAIL peterjohnduke@gmail.com
MAIL 31 Bellevue Pde
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841

COORDINATION ARCHITECT DETAILS
NAME GRAEME HEWE
PHONE 0422 227 880
EMAIL thegrahewe@bigpond.com
MAIL 1/1 Halloa St
HALLOA ST POINT NSW 2430
REG. ARCHITECT NO 2818

OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795
WAVERLEY NSW 2024

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CLIENT JOSHUA LEITNER
PROJECT PROPOSED ECO CABINS
STATUS DA
DATE JULY 2024
SCALE (A3)
PROJECT NUMBER 001
ADDRESS 92 CHONGS ROAD, JINDABYNE
DRAWING PERSPECTIVE
DRAWING NUMBER DA-40
ISSUE 3

REFUGE 1 - EXTERNAL PERSPECTIVE

DESIGN BY
PETER DUKE
PHONE 0418 230 200
EMAIL petersdnsw@gmail.com
MAIL 31 Marine Parade
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28641

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COORDINATION ARCHITECT DETAILS
NAME GRAEME FERE
PHONE 0429 672 870
EMAIL thegrantee1@bigpond.com
MAIL PO BOX 2170
HALIDAY POINT NSW 2430
REG. ARCHITECT NO 2818

OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795
WARBURTON NSW 2324

ISSUE	DATE	FOR
1	18.05.2023	DA SUBMISSION
2.	04.07.2023	DA SUBMISSION
3.	07.07.2024	DA SUBMISSION

CLIENT
JOSHUA LEITNER

PROJECT NUMBER
001

PROJECT
PROPOSED ECO CABINS

ADDRESS
92 CHONGS ROAD, JINDABYNE

STATUS
DA

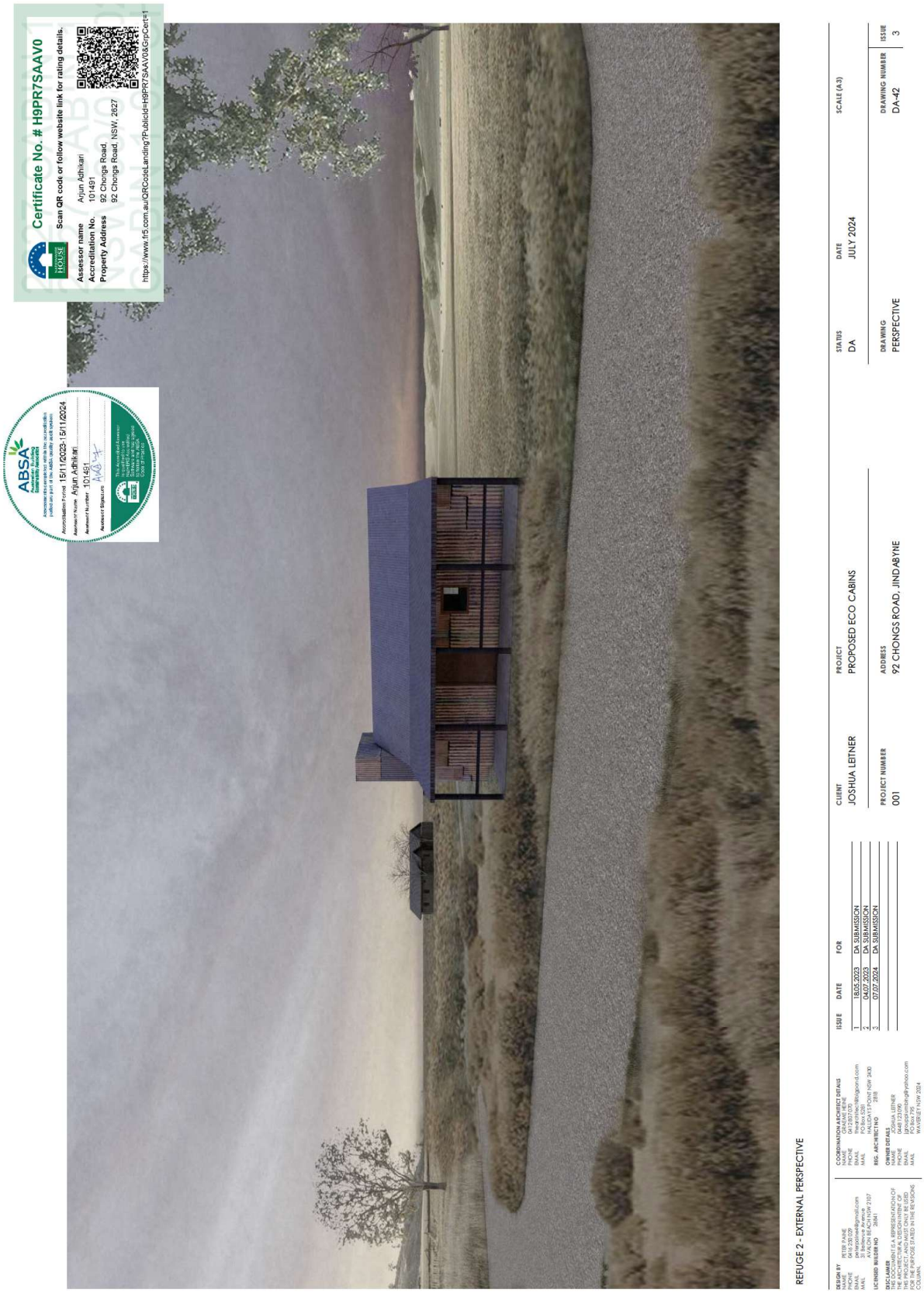
DATE
JULY 2024

SCALE (A3)

DRAWING
PERSPECTIVE

DRAWING NUMBER
DA-41

ISSUE
3


Certificate No. # H9PR7SAAV0
Scan QR code or follow website link for rating details.
Assessor name Arjun Adhikari
Accreditation No. 101491
Property Address 92 Chongs Road, 92 Chongs Road, NSW, 2627
https://www.fr5.com.au/QRCodeLanding?PublicId=H9PR7SAAV0&GrpCert=1
ABSA
Accreditation Period 15/11/2023-15/11/2024
Assessor Name Arjun Adhikari
Assessor Number 101491
Assessor Signature
REFUGE 2 - EXTERNAL PERSPECTIVE
DESIGN BY
NAME PETER PAINE
PHONE 0416 250 029
EMAIL peterpaine@gmail.com
MAIL 31 Bellevue Avenue AVALON BEACH NSW 2107
LICENSED BUILDER NO 28841
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COORDINATION ARCHITECT DETAILS
NAME GRAEME HEINE
PHONE 0412 807 070
EMAIL theardrifiec@bigpond.com
MAIL PO Box 5281 HALIDAY'S POINT NSW 2430
REG. ARCHITECT NO 2818
OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL jgroupsmithtrg@yahoo.com
MAIL PO Box 795 WAVERLEY NSW 2024
ISSUE DATE FOR
1 18.05.2023 DA SUBMISSION
2 04.07.2023 DA SUBMISSION
3 07.07.2024 DA SUBMISSION
CLIENT JOSHUA LEITNER
PROJECT PROPOSED ECO CABINS
PROJECT NUMBER 001
ADDRESS 92 CHONGS ROAD, JINDABYNE
STATUS DA
DATE JULY 2024
SCALE (A3)
DRAWING PERSPECTIVE
DRAWING NUMBER DA-42
ISSUE 3

SHED & WORKSHOP - EXTERNAL PERSPECTIVE

DESIGN BY PETER DUKE
PHONE 0418 263 000
EMAIL petersdrafting@gmail.com
MAIL 3 Waratah Place
AVALON BEACH NSW 2107
LICENSED BUILDER NO 28641

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COORDINATION ARCHITECT DETAILS
NAME GRAEME PEIRE
PHONE 0429 425 281
EMAIL heargraeme@bigpond.com
MAIL PO Box 2078
HALIDAY POINT NSW 2430
REG. ARCHITECT NO 2818

OWNER DETAILS
NAME JOSHUA LEITNER
PHONE 0448 123 090
EMAIL joshualeitner@yahoo.com
MAIL PO Box 795
WAVERLEY NSW 2024

ISSUE	DATE	FOR
1	18.05.2023	DA SUBMISSION
2.	04.07.2023	DA SUBMISSION
3.	07.07.2024	DA SUBMISSION

CLIENT JOSHUA LEITNER
PROJECT PROPOSED ECO CABINS
ADDRESS 92 CHONGS ROAD, JINDABYNE
PROJECT NUMBER 001

STATUS DA
DATE JULY 2024
SCALE (A3)
DRAWING PERSPECTIVE
DRAWING NUMBER DA-43
ISSUE 3

SNOWY MONARO REGIONAL COUNCIL

CONDITIONS OF CONSENT

10.2024.230.1

GENERAL CONDITIONS

Condition					
ADM_01	**Endorsed plans and supporting documentation**				
	Development must be carried out in accordance with the following plans and documentation, except where amended by Council and/or the conditions of this development consent.				
	Approved plans				
	Plan No.	**Rev**	**Plan Title.**	**Drawn By.**	**Date**
	DR-00	3	Cover Page	Graeme Heine	07/07/2024
	DR-01	3	Site Plan	Graeme Heine	07/07/2024
	DR-02	3	Typical Sections	Graeme Heine	07/07/2024
	DR-03	3	Floor Plan – Cabins 1 & 2	Graeme Heine	07/07/2024
	DR-04	3	Elevations – Cabins 1 & 2	Graeme Heine	07/07/2024
	DR-05	3	Elevations – Cabins 1 & 2	Graeme Heine	07/07/2024
	DR-06	3	Floor Plan – Cabin 3 - Accessible	Graeme Heine	07/07/2024
	DR-07	3	Elevations – Cabin 3 - Accessible	Graeme Heine	07/07/2024
	DR-08	3	Elevations – Cabin 3 - Accessible	Graeme Heine	07/07/2024
	DR-09	3	Floor Plan –	Graeme Heine	07/07/2024

PO Box 714 COOMA NSW 2630 | 1300 345 345 | council@snowymonaro.nsw.gov.au | www.snowymonaro.nsw.gov.au

Condition					
		Cabin 4			
	DR-10	3	Elevations – Cabin 4	Graeme Heine	07/07/2024
	DR-11	3	Elevations – Cabin 4	Graeme Heine	07/07/2024
	DR-12	3	Floor Plan – Cabin 5	Graeme Heine	07/07/2024
	DR-13	3	Elevations – Cabin 5	Graeme Heine	07/07/2024
	DR-14	3	Elevations – Cabin 5	Graeme Heine	07/07/2024
	DR-15	3	Floor Plan – Cabin 6	Graeme Heine	07/07/2024
	DR-16	3	Elevations – Cabin 6	Graeme Heine	07/07/2024
	DR-17	3	Elevations – Cabin 6	Graeme Heine	07/07/2024
	DR-18	3	Floor Plan – Shed / Managers Quarters	Graeme Heine	07/07/2024
	DR-19	3	Elevations – Shed / Managers Quarters	Graeme Heine	07/07/2024
	DR-20	3	Elevations – Shed / Managers Quarters	Graeme Heine	07/07/2024
	DR-21	3	Floor Plan – Workshop	Graeme Heine	07/07/2024
	DR-22	3	Elevations – Workshop	Graeme Heine	07/07/2024
	DR-23	3	Elevations – Workshop	Graeme Heine	07/07/2024

Condition					
	DR-24	1	Service Pods – Plan & Elevations	Graeme Heine	07/07/2024
	DR-25	1	Refuge 1 – Plans & Elevations	Graeme Heine	07/07/2024
	DR-26	1	Refuge 2 – Plans & Elevations	Graeme Heine	07/07/2024
	DR-27	3	Cabins 1-6 Door Schedule	Graeme Heine	07/07/2024
	DR-28	1	Cabins 1-6 Window Schedule	Graeme Heine	07/07/2024
	DR-29	1	Shed & Workshop – Door & Window Schedule	Graeme Heine	07/07/2024
	DR-30	3	Cabins 1-6 Window Schedule 2	Graeme Heine	07/07/2024
	DR-31	3	3D View – Shed & Workshop	Graeme Heine	07/07/2024
	DR-32	1	Precedents & Material Palette	Graeme Heine	07/07/2024
	DR-33	3	Perspective	Graeme Heine	07/07/2024
	DR-34	3	Perspective	Graeme Heine	07/07/2024
	DR-35	3	Perspective	Graeme Heine	07/07/2024
	DR-36	3	Perspective	Graeme Heine	07/07/2024
	DR-37	3	Perspective	Graeme Heine	07/07/2024
	DR-38	3	Perspective	Graeme Heine	07/07/2024

Condition					
	DR-39	3	Perspective	Graeme Heine	07/07/2024
	DR-40	3	Perspective	Graeme Heine	07/07/2024
	DR-41	3	Perspective	Graeme Heine	07/07/2024
	DR-42	3	Perspective	Graeme Heine	07/07/2024
	DR-43	3	Perspective	Graeme Heine	07/07/2024
	Approved documents				
	Document Title.		**Version Number**	**Prepared By.**	**Date**
	Statement of Environmental Effects		02	Complete Town Planning Pty Ltd	10/09/2024
	BASIX Report		-	Thermal Environmental Engineering Pty Ltd	09/08/2024
	NatHERs Report (cabin 1)		-	Thermal Environmental Engineering	09/08/2024
	NatHERs Report (cabin 2)		-	Thermal Environmental Engineering	09/08/2024
	NatHERs Report (cabin 3)		-	Thermal Environmental Engineering	09/08/2024
	NatHERs Report (cabin 4)		-	Thermal Environmental Engineering	09/08/2024
	NatHERs Report (cabin 5)		-	Thermal Environmental Engineering	09/08/2024
	NatHERs Report (cabin 6)		-	Thermal Environmental Engineering	09/08/2024
	NatHERs Report (Shed) (manager's residence)		-	Thermal Environmental	09/08/2024

Condition	
	Engineering Bushfire Assessment Report — 5.1 — Harris Environmental Consulting — 13/08/2024 Biodiversity Assessment Report — Anne Clements & Associates Pty Ltd — 21/08/2024 Vegetation Management Plan — 1 — Anne Clements & Associates Pty Ltd — 28/04/2025 In the event of any inconsistency between the approved plans and the supporting documentation, the approved plans prevail. In the event of any inconsistency between the approved plans and a condition of this consent, the condition prevails. **Note:** an inconsistency occurs between an approved plan and supporting documentation or between an approved plan and a condition when it is not possible to comply with both at the relevant time.
	Condition Reason: To ensure all parties are aware of the approved plans and supporting documentation that applies to the development.

ADM_03	**Compliance with the Building Code of Australia and insurance requirements under the Home Building Act 1989**
	For the purposes of section 4.17(11) of the Act, the following conditions are prescribed in relation to a development consent for development that involves any building work: a) that the work must be carried out in accordance with the requirements of the Building Code of Australia. b) in the case of residential building work for which the Home Building Act 1989 requires there to be a contract of insurance in force in accordance with Part 6 of that Act, that such a contract of insurance is in force before any building work authorised to be carried out by the consent commences. This condition does not apply: ○ to the extent to which an exemption is in force under the Home Building Regulation 2014, or ○ to the erection of a temporary building. **Note:** In this condition, a reference to the BCA is a reference to that code as in force on the date the application for the relevant Construction Certificate is made.

	Condition Reason: To ensure the development complies with the requirements of Clause 69 of the Environmental Planning and Assessment Regulations 2021, and Section 4.17(11) of the Environmental Planning and Assessment Act 1979, as amended.

ADM_06	**BASIX requirements**
	Under Clause 75 of the Environmental Planning and Assessment Regulation 2021, it is a condition of this development consent that all the commitments listed in each relevant BASIX Certificate for the development are fulfilled. Relevant BASIX Certification means: a) A BASIX Certificate that was applicable to the development when this development consent was granted or modified in accordance with Section 4.55 of the Environmental Planning and Assessment Act, being BASIX Certificate No 1759363M on date 09 August 2024 or; b) If a replacement BASIX Certificate accompanies any subsequent application for a Construction Certificate, the replacement BASIX Certificate.
	Condition Reason: To ensure the development complies with the requirements imposed under Clause 75 of the Environmental Planning and Assessment Regulations 2021, and Section 4.17 (11) of the Environmental Planning and Assessment Act 1979, as amended.

ADM_04	**Development stages**
	The development is approved, with each stage comprising the following elements: Stage 1: Shed 1 (managers residence/laundry/emergency refuge) & Cabins 1 & 2 Stage 2: Cabins 3 & 4 Stage 3: Cabins 5 & 6 and shed 2/workshop
	Condition Reason: To allow for the orderly sequencing of the development.

ADM_05	**Staging of development**
	Notwithstanding any other condition of this consent, the consent permits separate Construction Certificates and Occupation Certificates to be issued for the approved development in stages, provided that all conditions of consent relevant to the development incorporated within each stage have been complied with prior to the release of the Construction Certificate or Occupation Certificate for that stage.
	Condition Reason: To allow for the orderly sequencing of the development and compliance with relevant conditions for each stage.

ADM_06	**Vegetation Management Plan**
	Strict adherence to the approved Vegetation Management Plan (VMP) must be maintained at all stages of the development.
	Condition Reason: To ensure consistency with the recommendations made in the Vegetation Management Plan

OA_01	**Separate Section 138 Permit - Roads Act 1993**
	Notwithstanding the issue of this development consent, separate consent from Council under Section 138 of the Roads Act 1993, must be obtained prior to any works taking place on a public road including the construction of a new driveway access (or modification of access) and prior to the issue of an Occupation Certificate. Applications for consent under Section 138 must be applied for on the NSW Planning Portal, be accompanied by the required attachments and prescribed fee, and approved prior to installation.
	Condition Reason: To ensure legislative compliance.

OA_04	**Separate Section 68 Approval for water supply, stormwater, and sewerage works**
	Prior to issue of the Construction Certificate, an application pursuant to Section 68 of the Local Government Act 1993 to carry out water supply, stormwater and sewerage works must be submitted to Council. The developer is to ensure that approval for the Section 68 application must be obtained prior to any plumbing and drainage works being undertaken on the site. **Note**: Failure to obtain the Section 68 Approval prior to works being undertaken may result in the developer receiving a monetary penalty and the plumber being subject to investigation by the Department of Fair Trading and a fine exceeding $1500.
	Condition Reason: To ensure compliance with the provisions of the Local Government Act.

OA_05	**Section 68 Approval to install On-Site Sewage Management System**
	Notwithstanding the issue of this development consent, separate approval from Council under Section 68 of the Local Government Act 1993 to install on-site sewage management system and associated plumbing and drainage works must be obtained prior to release of the Construction Certificate. Application for approval under Section 68 to Install On-Site Sewage Management

	System and associated plumbing and drainage works must be applied for on the NSW Planning Portal, be accompanied by the required attachments and prescribed fee, and approved prior to installation.
	Condition Reason: To ensure legislative compliance.

OA_07	**Construction Certificate**
	Notwithstanding the issue of this development consent, separate approval for a Construction Certificate must be obtained prior to commencement. An application for a Construction Certificate must be applied for on the NSW Planning Portal, be accompanied by the required documents and prescribed fee, and be approved prior to any works commencing.
	Condition Reason: Requirement under Clause 6.7 of the Environmental Planning and Assessment Act 1997.

AS_01	**Agency Specific – NSW Rural Fire Service**
	General Conditions The development proposal is to generally comply with the following plans/documents except where amended by the conditions of this Bush Fire Safety Authority. . The plan set titled "Proposed Eco Cabins", issue 3 dated 07.07.2024. . The bush fire assessment preparedby Harris Environmental dated 13/08/2024. Reference 4877BF. **Asset Protection Zones** **The intent of measure is to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting firefighting activities.** 2. From the commencement of building works and in perpetuity, the property around the designated refuge buildings must be established and maintained as an inner protection area in accordance with Appendix 4.1.1 of Planning for Bush Fire Protection 2019 as shown in the following figures from the above referenced bushfire report; . Refuge 1 as per Figure 10. . Refuge 2 as per Figure 13. . Cabin 3 as per Figure 11. 3. From the commencement of building works and in perpetuity, the property around the proposed Managers Quarters must be established and maintained as an inner protection area in accordance with Appendix 4.1.1 of Planning for Bush Fire

	Protection 2019 as shown in the figure 2 of the above referenced bushfire report. **Construction Standards** **The intent of measure is to provide suitable building design, construction and sufficient space to ensure that radiant heat levels do not exceed critical limits for firefighters and other emergency services personnel undertaking operations, including supporting or evacuating occupants.** Construction of cabins 1, 2 and 3 and refuge buildings 1 and 2 must comply with section 3 and section 5 (BAL 12.5) Australian Standard AS3959-2018 Construction of buildings in bushfire-prone areas or the relevant requirements of the NASH Standard – Steel Framed Construction in Bushfire Areas (incorporating amendment A - 2015). New construction must also comply with the construction requirements in Section 7.5 of Planning for Bush Fire Protection 2019. Construction of the managers quarters must comply with section 3 and section 7 (BAL_29) Australian Standard AS3959-2018 Construction of buildings in bushfire-prone areas or the relevant requirements of the NASH Standard - Steel Framed Construction in Bushfire Areas (incorporating amendment A - 2015). New construction must also comply with the construction requirements in Section 7.5 of 'Planning for Bush Fire Protection 2019. Note: The bushfire consultant has advised that it is appropriate apply BAL 12.5 construction to cabins 1 and 2 as well as 3 to provide the structures with a more resilient outcome. **Access - Property Access** **The intent of measure is to provide safe operational access for emergency services personnel in suppressing a bush fire while residents are accessing or egressing an area.** Access roads for special fire protection purpose (SFPP) developments must comply with the requirements of Table 6.8b of 'Planning for Bush Fire Protection 2019'. Vehicular access is provided to the refuge buildings from a public road in accordance with the following: a. accommodation is within 100m of the refuge building; b. pedestrian paths from accommodation to the refuge building/s are provided and clearly, sign posted; c. property access roads are two-wheel drive, all-weather roads; d. the capacity of road surfaces and any bridges/ causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges and causeways are to clearly, indicate load rating; e. there is suitable access for a Category 1 fire appliances to within 4m of the static water supply where no reticulated supply is available;

f. minimum 4m carriageway width;

g. in a forest, woodland and heath situations, rural property access roads have passing bays every 200m and on blind corners or blind crests that are 20m long by 2m wide, making a minimum trafficable width of 6m at the passing bay;

h. minimum vertical clearance of 4m to any overhanging obstructions, including tree branches;

i. provide a suitable turning area at the refuge building in accordance with Appendix 3;

j. curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress;

k. the minimum distance between inner and outer curves is 6m;

l. the cross fall is not more than 10 degrees; and

m. maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads.

Note: Some short constrictions in the access may be accepted where they are not less than 3.5m wide, extend for no more than 30m and where the obstruction cannot be reasonably avoided or removed.

Water and Utility Services

The intent of measure is to provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building.

The provision of water, electricity and gas for the proposed Managers Quarters, Refuge 1, Refuge 2 and Cabin 3 must comply with the following in accordance with Table 6.8c of Planning for Bush Fire Protection 2019:

- a minimum 20,000 litre static water supply, tank, pool, dam or the like, must be provided on-site for each of the above structures,
- an outlet for firefighting purposes is located within the IPA or non-hazard side and away from the structure for each of the above structures,
- 65mm Storz connection with a ball valve is fitted to the outlet of each SWS,
- the ball valve, pipes and tank penetration are adequate for the full 50mm inner diameter water flow through the Storz fitting and are constructed of a metal material,
- underground tanks have an access hole of 200mm to allow tankers to refill, direct from the tank,
- a hardened ground surface for truck access is supplied within 4m of the water outlet or access hole, above-ground tanks are manufactured from concrete or

	metal, • raised tanks have their stands constructed from non-combustible material or bush fire-resisting timber. The bush fire-resisting timbers are Silvertop Ash, Blackbutt, Red or River Gum, Spotted Gum, Red Iron bark, Kwila (Merbau) or Turpentine, • unobstructed access can be provided at all times, • underground tanks are clearly marked, • tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters, • all exposed water pipes external to the building are metal, including any fittings, • where pumps are provided, they are a minimum 5hp or 3kW petrol or diesel-powered pump, and are shielded against bush fire attack, • any hose and reel for firefighting connected to the pump must be 19mm internal diameter, • fire hose reels are constructed in accordance with AS/NZS 1221:1997, and installed in accordance with the relevant clauses of AS 2441:2005, • A Static Water Supply (SWS) sign must be obtained from the local NSW Rural Fire Service (RFS) and positioned for ease of identification by RFS personnel and other users of the SWS. In this regard: o Markers must be fixed in a suitable location to be highly visible, and o Markers should be positioned adjacent to the most appropriate access for the water supply. • all exposed water pipes external to the building are metal, including any fittings; • where pumps are provided, they are a minimum 5hp or 3kW petrol or diesel-powered pump, and are shielded against bush fire attack; any hose and reel for firefighting connected to the pump must be 19mm internal diameter; • fire hose reels are constructed in accordance with AS/NZS 1221:1997, and installed in accordance with the relevant clauses of AS 2441:2005; • where practicable, electrical transmission lines are underground; • where overhead, electrical transmission lines are proposed as follows: o Lines are installed with short pole spacing (30m), unless crossing gullies, gorges or riparian areas; and o No part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 Guideline for Managing Vegetation

	Near Power Lines. • reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 and the requirements of relevant authorities, and metal piping is used; • all fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side; • connections to and from gas cylinders are metal; • polymer-sheathed flexible gas supply lines are not used; and • above-ground gas service pipes are metal, including and up to any outlets. **Landscaping Assessment** **The intent of measure is to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting firefighting activities.** Landscaping within the required asset protection zone must comply with Appendix 4 of Planning for Bush Fire Protection 2019. **Emergency and Evacuation Planning Assessment** **The intent of measure is to provide suitable emergency and evacuation arrangements for occupants**. A Bush Fire Emergency Management and Evacuation Plan must be prepared in accordance with Table G.8d of Planning for Bush Fire Protection 2019 and be consistent with the following: • The NSW RFS document: A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan and include planning for the early relocation of occupants. • detailed plans of all emergency assembly areas, including on-site and off-site arrangements as stated in AS 3745 'Planning for emergencies in facilities', are clearly displayed, and an annually emergency evacuation is conducted. • An appropriately experienced site manager is to be on site whenever the cabins are occupied.
	Condition Reason: To ensure compliance with the *Rural Fires Act 1993*.

BUILDING WORK

BEFORE ISSUE OF A CONSTRUCTION CERTIFICATE

Condition	
PCC_02	**Lot Consolidation**
	Prior to the issue of a Construction Certificate, the below lots must be consolidated. Lot: 25 DP: 756672 Lot: 26 DP: 756672 Lot: 1 DP: 1250715 Lot: 2 DP: 1232872 Evidence of lodgement of the application for consolidation with NSW Land Registry Services must be provided to Council to the satisfaction of Council.
	Condition Reason: To ensure development is within a single allotment

PCC_03	**Payment of Section 7.12 contributions**
	Stage 1 Before the issue of a Construction Certificate for stage 1 of the development the applicant must pay a total contribution of **$10,309.69** as calculated at the date of this consent to Council under Section 7.12 of the Environmental Planning and Assessment Act in accordance with Snowy Monaro Section 7.12 Local Infrastructure Contributions Plan 2022. The total amount payable may be adjusted at the time the payment is made, in accordance with the provisions of the Snowy Monaro Local Infrastructure Plan 2022 (2.8. Indexation of Contributions). **Stage 2** Before the issue of a Construction Certificate for stage 2 of the development the applicant must pay a total contribution of **$6,357.64** as calculated at the date of this consent to Council under Section 7.12 of the Environmental Planning and Assessment Act in accordance with Snowy Monaro Section 7.12 Local Infrastructure Contributions Plan 2022. The total amount payable may be adjusted at the time the payment is made, in accordance with the provisions of the Snowy Monaro Local Infrastructure Plan 2022 (2.8. Indexation of Contributions). **Stage 3** Before the issue of a Construction Certificate for stage 3 of the development the applicant must pay a total contribution of **$10,309.69** as calculated at the date of this consent to Council under Section 7.12 of the Environmental Planning and Assessment

	Act in accordance with Snowy Monaro Section 7.12 Local Infrastructure Contributions Plan 2022. The total amount payable may be adjusted at the time the payment is made, in accordance with the provisions of the Snowy Monaro Local Infrastructure Plan 2022 (2.8. Indexation of Contributions). A copy of the Development Contributions Plan is available for inspection at https://www.snowymonaro.nsw.gov.au/Building-and-Planning/Development/Building-and-Construction/Local-Infrastructure-Contributions **Note**: Indexation of contributions is carried out quarterly.
	Condition Reason: To address the increased demand for regional infrastructure resulting from the approved development.

PCC_06	**Long Service Levy**
	In accordance with Section 6.8(1)(b) of the Environmental Planning and Assessment Act 1979, a Construction Certificate must not be issued until any long service levy payable under Section 34 of the Building and Construction Industry Long Service Payments Act 1986 (or where such levy is payable by instalments, the first instalment of the levy) has been paid. Payment of the levy is to be done via the Service NSW Page with receipt to be uploaded to your Construction Certificate Application on the NSW Planning Portal. Pay Long Service Levy (LSL)
	Condition Reason: To ensure legislative compliance.

PCC_07	**Compliance with Australian Standards and Building Code of Australia**
	The development is required to be carried out in accordance with all relevant Australian Standards and the requirements of the Building Code of Australia. Details demonstrating compliance must be submitted to the Principal Certifier prior to the issue of the Construction Certificate.
	Condition Reason: To ensure legislative compliance.

PCC_08	**Information Required Prior to the Release of a Construction Certificate**
	The following documentation must be submitted to the satisfaction of the Principal Certifier, prior to the granting of the Construction Certificate (where applicable): 1. Detailed building plans and specifications containing sufficient information to verify that the completed building will comply with the Building Code of Australia and the relevant Australian Standards.

	2. A list of any existing fire safety measures provided in relation to the land or any existing building on the land (not applicable to dwellings or outbuildings). 3. A list of any proposed fire safety measures provided in relation to the land or any existing building on the land (not applicable to dwellings or outbuildings). 4. A report prepared by a professional engineer detailing the proposed methods of excavation, shoring or pile construction, and what measures are to be implemented to prevent damage from occurring to adjoining or nearby premises as a result of the proposed excavation works. (NOTE: Any practices or procedures specified to avoid damage to adjoining or nearby premises are to be incorporated into the plans and specifications for the Construction Certificate). 5. Structural engineering details or design documentation including details of the following where relevant: a) Reinforced concrete strip footings b) Reinforced concrete raft slab c) Suspended reinforced concrete slabs d) Structural steelwork e) Structural timber work exceeding the design parameters of Australian Standard AS1684-1999 "Residential timber-framed construction" f) Upper floor joist layout g) Retaining walls h) Roof trusses i) Wall/roof bracing j) The existing structure must be certified as being structurally adequate to carry out the proposed additional loadings. 6. Method of protecting window/door openings as required by BCA. 7. Method of ventilating the basement car park. (NOTE: If mechanical ventilation is required, mechanical ventilation plans must be submitted that also confirm the minimum height clearance specified by AS 2890.1 – Car parking, will be achieved).
	Condition Reason: To ensure the design of the proposed work may be assessed in detail before construction commences and because it is in the public interest that the development complies with the appropriate construction standards, and Section 4.15(1)(e) of the Environmental Planning and Assessment Act 1979, as amended.

PCC_15	**Heating appliances**
	The developer shall submit to the Principal Certifier (i.e. Council or Private Certifier) full details on the heating appliance/s to be installed within the development prior to the

	release of the Construction Certificate. The details are include the location and type of appliance and the manufacturer's installation specifications.
	Condition Reason: To ensure legislative compliance.

BEFORE BUILDING WORK COMMENCES

Condition	
PCW_01	**Prior to the commencement of works**
	No construction works approved by this consent are to commence unless the following have been satisfied: 1) A Construction Certificate has been issued by a certifying authority. 2) A Principal Certifier has been appointed by the person having benefit of the development consent. 3) A notice of commencement of building or subdivision works, and details of the appointed Principal Certifier (in the event that Council is not appointed), are issued to Council at least 48 hours prior to the commencement of works. The Principal Certifier is notified in writing of the name and contractor licence number of the owner/builder intending to carry out the approved works.
	Condition Reason: To ensure legislative compliance.

PCW_03	**Erection of signage**
	A sign must be erected in a prominent position on any site on which any approved work is to be carried out: a) showing the name, address, and telephone number of the certifying authority for the work; b) showing the name of the principal contractor (if any) for any demolition or building work and a telephone number on which that person may be contacted outside working hours; and c) stating that unauthorised entry to the work site is prohibited. The sign must be maintained while the approved work is being carried out and must be removed when the work has been completed.
	Condition Reason: To ensure the development complies with prescribed conditions under the Environmental Planning and Assessment Regulations 2021.

PCW_05	**Erosion and drainage management**
	Earthworks and/or demolition of any existing buildings must not commence until an erosion and sediment control plan is submitted to, and to the satisfaction of, the Principal Certifier. The plan must comply with the guidelines set out in the NSW Department of Housing manual 'Managing Urban Stormwater: Soils and Construction Certificate' (The Blue Book). Erosion and sediment control works must be implemented in accordance with the erosion and sediment control plan.
	Condition Reason: To ensure the impact of the work on the environment in terms of soil erosion and sedimentation is minimised.

PCW_12	**Temporary Sanitary Facilities**
	Toilet facilities are to be provided at or in the vicinity of the work site on which work involved in the erection or demolition of a building is being carried out at the rate of one toilet for every twenty (20) persons or part of twenty (20) persons employed at the site. Each toilet provided must be: 1) a standard flushing toilet; and 2) connected to either: an accredited sewage management facility or an approved chemical closet; 3) located on the site so as to minimise the visual and sensory impacts to neighbouring properties. The toilet facilities shall be provided on-site, prior to the commencement of any works.
	Condition Reason: To ensure sanitary facilities are available on site for workers.

PCW_16	**Termite control**
	Prior to the commencement of works, the Applicant will submit to the satisfaction of the Principal Certifier (i.e. Council or Private Certifier) documentation confirming the building will be protected from termite attack in accordance with the provisions of Australian Standard AS 3660.1. The submitted documentation will include: a) details of the proposed methods to be used; and b) certification of works performed. A durable notice must be permanently fixed to the building in a prominent location, such as in the electrical meter box indicating: a) the method of protection; b) the date of installation; c) where a chemical barrier is used, its life expectancy as listed on the National

	Registration Authority label; and d) the need to maintain and inspect the system on a regular basis. **Note**: Under slab chemical treatment will not be permitted as the only method of treatment unless the area can be re-treated without major disruption to the building.
	Condition Reason: To protect the development from termite damage in the future.

PCW_19	**Enclosure of the site**
	The site must be enclosed with a suitable security fence to prohibit unauthorised access, to be approved by the Principal Certifier. No building work is to commence until the fence is erected.
	Condition Reason: To ensure the protection of the public.

PCW_09	**Bushfire Asset Protection Zones**
	Prior to the commencement of any vegetation clearance or modification, the boundaries of the Asset Protection Zone (APZ) must be surveyed by a registered surveyor and marked on ground. Clearing of vegetation for establishing the APZ must only occur within the marked APZ boundaries.
	Condition Reason: Ensure compliance with Planning for Bushfire Protection.

PCW_20	**Works within un-named streams**
	Should any works be required to be carried out within the water front land of any un-named streams on the subject land, the developer must contact Water NSW to obtain any relevant permits.
	Condition Reason: Ensure compliance with the Legislation.

DURING BUILDING WORK

Condition

DC_01	**Erosion and drainage management**
	Erosion and sediment control works must be implemented in accordance with the endorsed erosion and sediment control plan and maintained throughout the

	construction process.
	Condition Reason: To minimise impact to adjoining properties.

DC_04	**Use of power tools – non-residential areas**
	The developer is to ensure that work on the development site by all persons using power tools and equipment is limited to the following hours: Monday to Friday: 7.00am to 8.00pm Saturday: 7.00am to 8.00pm Sunday: 8.00am to 8.00pm Public Holidays: 8.00am to 8.00pm
	Condition Reason: To ensure building works do not have adverse effects on the amenity of the area.

DC_06	**Principal Certifying Authority**
	A Principal Certifier appointed to replace another must ensure that notice of the appointment and of the approval of the appointment is given to the consent authority and Council (if not the relevant consent authority) within 48 hours of the appointment.
	Condition Reason: To ensure legislative compliance.

DC_07	**Inspections**
	All mandatory inspections required by the Environmental Planning and Assessment Act 1979 and any other inspections deemed necessary by the Principal Certifier must be carried out during the relevant stage of construction. Work must not proceed beyond each critical stage until the Principal Certifier is satisfied that work is proceeding in accordance with this consent, the Construction Certificate(s) and the Act. Council must be given 48 hours notice to undertake the inspections.
	Condition Reason: It is in the public interest that critical stage inspections be issued for these components of the development in accordance with Section 61 of the Environmental Planning and Assessment (Development and Fire Safety) Regulations 2021 as amended.

DC_08	**Items not to be placed on roadway**
	The following items must not be placed on the footpath, roadway or nature strip at any

	time throughout the construction process: c) building materials, sand, waste materials or construction equipment; d) bulk bins/waste skips/containers; or e) other items that may cause a hazard to pedestrians.
	Condition Reason: To ensure no obstruction to the roadway.

DC_09	**Site maintenance**
	The principal contractor, owner-builder or any other person having benefit of the development consent must ensure that: a) approved sediment and erosion control measures are installed and maintained during the construction period; b) building materials and equipment are stored wholly within the work site unless an approval to store them elsewhere is held; and c) the site is clear of waste and debris at the completion of works. Such measures will be in place throughout the construction process.
	Condition Reason: To ensure public health and safety.

DC_11	**Archaeology – unexpected finds**
	If any Aboriginal object(s) is discovered and/or harmed in, or under the land, while undertaking the proposed development activities, the applicant must: a) Not further harm the object(s). b) Immediately cease all work at the particular location. c) Secure the area so as to avoid further harm to the Aboriginal object(s). d) Notify Heritage NSW as soon as practical by calling 131 555 or emailing: info@environment.nsw.gov.au, providing any details of the Aboriginal object(s) and its location. e) Not recommence any work at the particular location unless authorised in writing by Heritage NSW. All Aboriginal cultural heritage items must be mapped as polygons on all subdivision and operational plans to ensure these areas are not inadvertently impacted. If harm to Aboriginal objects cannot be avoided, an application for an Aboriginal Heritage Impact Permit (AHIP) must be prepared and submitted to Heritage NSW before work may continue. In the event that skeletal remains are unexpectedly encountered during the activity,

	work must stop immediately, the area secured to prevent unauthorised access and NSW Police and Heritage NSW contacted.
	Condition Reason: To ensure the protection of objects of potential significance during works.

DC_16	**Cut and fill**
	Soil removed from or imported to the site must be managed in accordance with the following principles: a) All excavated material removed from the site must be classified in accordance with the Department of Climate Change, Energy, the Environment, and Water NSW's Waste Classification Guidelines prior to disposal to an approved waste management facility and reported to the Principal Certifying Authority. b) All fill material imported to the site is to wholly consist of Virgin Excavated Natural Material (VENM) as defined in Schedule 1 of the Protection of the Environment Operations Act 1997 or a material approved under the Department of Climate Change, Energy, the Environment, and Water's general resource recovery exemption.
	Condition Reason: To ensure legislative compliance.

DC_24	**Public access and site security**
	It is the responsibility of the applicant to restrict public access to the building site, building works or materials or equipment on the site when building work is not in progress or the site is otherwise unoccupied.
	Condition Reason: The ensure community is safe from the construction works.

DC_25	**Excavation**
	1. The developer is to ensure that at all times all excavations and backfilling associated with the development is executed safely and in accordance with professional standards. 2. The developer is to ensure that all excavations are properly guarded and protected at all times to prevent them from being a danger to life or property. 3. The developer is to ensure that if an excavation associated with the development extends below the level of the base of the footings of a building on an adjoining allotment of land, the person causing the excavation to be made must: a) preserve and protect the adjoining building from damage, and if

	necessary, underpin and support the building in an approved manner; and b) at least seven (7) days before excavating below the level of the base of the footings of a building on an adjoining allotment of land, give notice of intention to do so to the owner of the adjoining allotment of land and furnish particulars of the excavation to the owner of the building being erected or demolished. 4. The owner of the adjoining allotment of land is not liable for any part of the cost of the work carried out for the purposes of this clause, whether carried out on the allotment of land being excavated or on the adjoining allotment of land. An allotment of land includes a public road and any other public place. 5. The developer is to ensure that the toe of any embankment to a site excavation is a minimum 900mm from the external walls and graded to drain all surface water away from the building. The ground level adjacent to the building is to be no less that 150mm below the top of the reinforced concrete floor slab.
	Condition Reason: To ensure the development complies with the requirements of Clause 74 of the Environmental Planning and Assessment Regulations 2021, and Section 4.17(11) of the Environmental Planning and Assessment Act 1979, as amended.

DC_35	**Works within Riverfronts**
	No controlled activities within any riverfronts on the subject lotsmay be carried out without the relevant approvals under the Water Management Act 2000.
	Condition Reason: Compliance with the Water Management Act 2000

DC_35	**Works within Crown Road Reserve**
	No works within Crown road reserves are permitted to be carried out by the developer.
	Condition Reason: Compliance with the *Roads Act 1993.*

BEFORE ISSUE OF AN OCCUPATION CERTIFICATE

Condition

SUB_16	**Road Upgrade – Right of Carriageway/Chongs Road**
	Road Construction

	Prior to release of occupation certificate for stage 1 the developer shall upgrade the existing Right of Carriageway/Chongs Road from the South Eastern corner of Lot 2 DP1261797 to South Western corner of Lot 26 756672 in conformity with Council's Development Design and Construction Specifications to include the following: (a) A 4 metre wide gravel pavement not less than 150mm thick. (b) 1.5 metre wide table drains. (c) Constructed stormwater drainage (minimum pipe size shall be 450mm diameter). (d) Installation of guideposts, protection fencing (e) A suitable vehicle turning facility (minimum 10.0 metre radius) at the end Applications for consent under Section 138 must be applied for on the NSW Planning Portal, be accompanied by the required attachments and prescribed fee, and approved prior to installation.
	Condition Reason: The above mentioned crown road section does not comply with council's Engineering Specifications of an unsealed Rural Road. Department of Planning, Housing and Infrastructure (Crown Land) – Requires the above mentioned section of Crown Road to be transferred to SMRC, if the determination of this application result in approval and adjoining Crown Road required to service the development.

POC_01	**Occupation Certificates**
	The owner, principal contractor or owner-builder must meet all costs associated with the foregoing conditions which must be completed prior to the issue of the relevant Occupation Certificate, unless otherwise stated.
	Condition Reason: To ensure the building as has been approved for occupation.

POC_02	**Smoke alarms**
	Smoke alarms must be installed in each Class 1 building or dwelling in accordance with the relevant provisions of the BCA – Housing Provisions, and in accordance with AS3786. Smoke alarms must be connected to the consumer mains electric power supply and provided with a battery back-up. A Compliance Certificate certifying the installation of smoke alarms must be provided to the Principal Certifier prior to the issue of the relevant Occupation Certificate.
	Condition Reason: To ensure legislative compliance.

POC_08	**Services**
	Any adjustment or augmentation of any public utility services including gas, water, sewer, electricity, street lighting, and telecommunications required as a result of the development must be at no cost to Council and undertaken prior to the issue of the relevant Occupation Certificate.
	Condition Reason: To ensure any require services are installed by the developer.

POC_09	**Waste management**
	All refuse, spoil and/or material unsuitable for use must be removed from the site and lawfully disposed of upon completion of the building works and prior to the issue of the relevant Occupation Certificate.
	Condition Reason: To ensure waste is disposed of lawfully.

POC_10	**Completion of landscape works**
	Prior to the issue of the final Occupation Certificate, the Principal Certifier must be satisfied that all landscape works, including the removal of all noxious and/or environmental weed species, have been undertaken in accordance with the approved plans and any relevant conditions of consent.
	Condition Reason: To ensure landscaping is applied to the development as per the approved plans.

POC_12	**Fulfilment of BASIX commitments**
	The person having benefit of the development consent must demonstrate the fulfilment of BASIX commitments pertaining to the development prior to the issue of the relevant Occupation Certificate as required under Condition **ADM_06**.
	Condition Reason: To ensure legislative compliance.

POC_15	**Fire safety**
	Prior to the issue of the relevant Occupation Certificate, the Principal Certifier must be satisfied that a Fire Safety Certificate for all the essential fire or other safety measures forming part of this consent has been completed, and that a copy of the Fire Safety Certificate has been provided to Council.
	Condition Reason: To ensure compliance with the provisions of the BCA.

POC_16	**Clearing for Asset Protection Zones**
	Following completion of onsite building works and clearance/modification of vegetation for establishment of the bushfire Asset Protection Zone (APZ), the developer is to certify in writing that the clearing of vegetation for establishment of the APZ was confined within the marked APZ boundaries. Certification of compliance is to be submitted to the Principal Certifier prior to issue of the Occupation Certificate.
	Condition Reason: To ensure clearing occurs within the approved APZ area only.

POC_20	**Separate approval to operate an On-site Sewage Management System**
	Notwithstanding the issue of this development consent, separate approval from Council under the Local Government Act 1993 to operate an on-site sewage management system must be obtained prior to release of the Occupation Certificate. Application for approval to Operate On-site Sewage Management System must be applied for on the NSW Planning Portal, be accompanied by the required attachments and prescribed fee, and approved prior to installation.
	Condition Reason: To ensure legislative compliance.

POC_24	**Service Pods**
	Prior to the issue of the relevant Occupation Certificate, the proposed service pods must be fully enclosed and appropriately acoustically insulated.
	Condition Reason: To ensure the acoustic amenity of adjoining properties.

POC_27	**Rainwater tank capacity**
	Prior to the release of any relevant Occupation Certificate a rainwater tank/s of a minimum volume of 80,000L is to be installed on the site for each of the following developments. • Cabin 1 • Cabin 2 • Cabin 3 • Cabin 4 • Cabin 5 • Cabin 6

	• Shed 1 (manager's residence) Prior to the release of any relevant Occupation Certificate, water supply for bushfire protection is required in consistency with the approved Bushfire Assessment Report.
	Condition Reason: To provide sufficient potable water for properties not connected to Council reticulated supply.

POC_31	**Code of Conduct for Guests**
	Prior to the occupation and commencement of use the developer is to submit to Council for approval a Code of Conduct for Guests. The document should address (but not be limited to) the following issues: a) Advise visitors of access points to the site and general circulation patterns; b) Demand reduction strategies for visitor water usage and energy usage; c) Restricted access areas in order to protect neighbouring properties privacy; d) Advice on visitor etiquette; e) Bushfire prevention strategies; and f) Waste management and minimization. Note; This document is to be provided to guests prior to arrival.
	Condition Reason: To maintain the amenity of neighbouring properties, ensure public safety, and to ensure adherence with the principles of eco-tourism development.

POC_33	**Eco-tourist Accreditation**
	The developer shall provide evidence that an application to gain Eco Accreditation through Eco Tourism Australia and Quality Tourism Accreditation through Australian Tourism Industry Council (ATIe) has been carried out prior to commencement of operation and shall maintain these (or equivalent accreditations) throughout the life of the development.
	Condition Reason: To ensure adherence with the principles of eco-tourism development.

POC_34	**Water Supply to Tourist Facilities Commercial Operations - non reticulated supply**
	As a facility that will supply drinking water from an independent water supply (not town water) to consumers the operator of the premises will be a private supplier. The Private Water Supplier must develop and adhere to a quality assurance management plan (or drinking water management plan) from 1 September 2014 in

	accordance with the requirements of the Public Health Act 2010 and the Public Health Regulation 2012. Guidance and assistance can be sought from Council's Environmental Health Officers and with reference to: https:flwww.health.nsw.gov.aufpublichealthfenvironmentlwaterfprivatesupplies.asp https:flwww.health.nsw.gov.aufenvironmentfwaterfPagesfdrinking-water.aspx A copy of your Drinking Water Management Plan must be provided to Council prior to the commencement of use. The rainwater tanks and rainwater must be used and maintained in accordance with the NSW Health Private Water Supply Guidelines at all times.
	Condition Reason: To ensure legislative compliance

POC_35	**Existing Shed**
	Prior to the issue of an Occupation Certificate, any existing shed structures on site must be made uninhabitable by the removal of any kitchen, bathroom, laundry or toilet fixtures.
	Condition Reason: To ensure legislative compliance

POC_49	**Bushfire compliance inspection**
	Prior to the issue of the Subdivision Certificate an inspection is to be carried out by a suitably qualified consultant demonstrating compliance with ensure condition AS_01.
	Condition Reason: To ensure compliance with *Rural Fires Act 1993.*

POC_50	**Compliance with Vegetation Management Plan**
	Prior to Occupation of the Stage 1 all recommendation as outlined in the Vegetation Management Plan need to be demonstrated to the certifying Authority to have been complied with This includes recommendations for before construction, during construction and prior to occupation.
	Condition Reason: To ensure consistency with the Biodiversity Report and Vegetation Management Plan.

ENG_04	**Rural driveway**
	The developer shall construct a minimum 4 metre wide, 100mm compacted depth gravel vehicular crossing between the edge of the carriageway and the property boundary, generally in accordance with Austroads "Guide to Road Design Part 4 – Intersections and Crossings – General. The developer is to ensure that a pipe culvert vehicle crossing is to be provided to proposed vehicular entrance. The pipe culvert is to be a minimum of 375mm in diameter, 5m in length, constructed of reinforced concrete, RRJ, class 4 with headwalls on both ends. Should the table drain be diverted along the driveway and into the property (generally where the road is on a crest vertical curve), then Council may provide consent that the pipe culvert is not required to be installed. The vehicular crossing shall be inspected by Council's Development Engineer or his delegate at the completion of work. Arrangements for inspections can be made by telephone 1300 345 345 during office hours. **Note:** Works in the road reserve must not commence until a Section 138 (Roads Act 1993) Consent Notice has been approved and issued by Council.
	Condition Reason: To ensure compliance with Councils Engineering specifications and standards.

OCCUPATION AND ONGOING USE

Condition

OU_01	**Occupation Certificate to be submitted**
	An Occupation Certificate must be obtained from the Principal Certifier and a copy submitted to Council (if Council is not the Principal Certifier) prior to the commencement of occupation, or use of the whole or any part of a new building, an altered portion of, or an extension to an existing building.
	Condition Reason: It is in the public interest that an Occupation Certificate be issued prior to occupation of the building in accordance with Section 4.15(1)(e) of the Environmental Planning and Assessment Act 1979, as amended.

OU_02	**External lighting**
	At all times for the life of the approved development, all outdoor lighting must not detrimentally impact upon the amenity of other premises and adjacent dwellings and must comply with, where relevant, AS1158.3-1999 Pedestrian Area (Category P)

	Lighting, and AS4282-1997 Control of the Obtrusive Effects of Outdoor Lighting.
	Condition Reason: To ensure legislative compliance.

OU_08	**Landscaping**
	The landscape works must be maintained to ensure the establishment and successful growth of plants, meeting the intent of the landscape design. This must include but not be limited to watering, weeding, and the replacement of failed plant material.
	Condition Reason: To ensure legislative compliance.

OU_12	**Maintenance of BASIX commitments**
	All BASIX commitments must be maintained in accordance with the requirements in Condition **ADM_06**.
	Condition Reason: To ensure legislative compliance.

OU_17	**Roof water**
	The developer shall ensure that all stormwater is directed from the roof to rainwater storage tanks.
	Condition Reason: To minimise stormwater impacts.

OU_19	**Rainwater tanks**
	1. All fixtures connected to the supply system are marked 'RAINWATER'. 2. Rainwater tanks are de-sludged every three years. 3. For Non-Charged Systems rainwater tanks are to be fitted with a first flush device and filter sock to prevent potential contaminants from entering the tank. 4. For Charged Systems the charged line must have a flush out drain point. 5. Rainwater tanks are fitted with the following: a) Impervious covers and all access points, except for inlet and overflow, are fitted with close fitting lids. b) The inlet and overflow shall incorporate a mesh covering and/or strainer. 6. The tank is enclosed, and inlets screened, to prevent the entry of foreign matter and to prevent mosquito breeding. 7. The roof catchment area is to be kept clear of overhanging vegetation.

	8. Pumps are to be covered or screened to avoid noise nuisances to neighbouring properties. 9. All stormwater that is not collected by the tank is to be directed away from tank foundations, buildings or other structures onto gardens or into rubble pits or directly to the road drainage system such that it does not cause nuisance to neighbouring properties. 10. Tank overflow is to be connected to a retention/infiltration device, swale, appropriate landscaping or directly to the road drainage system such that it does not cause nuisance to neighbouring properties.
	Condition Reason: To ensure rainwater tanks are maintained at a safe level for domestic use.

OU_23	**Garbage disposal**
	Rural: The developer shall ensure that all waste and recyclable materials generated by the development are disposed lawful.
	Condition Reason:

OU_28	**External finishes**
	The materials and colours of external features of any building, driveways, walkways, or large paved areas shall be in colours that blend with the surrounding natural materials (e.g. olive or mist green, light or slate grey, light browns) and shall be non-reflective. The colours and materials for the development are those shown on the approved schedule. **Note**: This condition can be amended with the written consent of Council.
	Condition Reason: To ensure the structure is in keeping with the character of the area.

OU_33	**Occupancy rates – short term accommodation**
	The bedrooms in each in the building are to be occupied by a number of persons not exceeding the number listed in the following schedule: Cabin 1 = 4 Persons Cabin 2 = 4 Persons Cabin 3 = 6 Persons Cabin 4 = 6 Persons Cabin 5 = 4 Persons

	Cabin 6 = 4 Persons The proposed development is not to be used to accommodate more than 28 persons for short term accommodation.
	Condition Reason: To manage occupation rates.

OU_34	**Degree of occupancy**
	The proposed dwelling is approved for use as a single occupancy.
	Condition Reason: To ensure the development is only used for the approved use.

OU_35	**Occupancy (sheds/refuges/service pods only)**
	The proposed shed 2 is not approved for use as a separate occupancy or for sleeping accommodation. The proposed refuges and service pods are not approved for use as a separate occupancies or for sleeping accommodation Any existing sheds onsite are not approved as separate occupancies or for sleeping accommodation.
	Condition Reason: To ensure the development is only used for the approved use.

OU_36	**Advertising signage**
	No external advertising or business signage is approved by this consent. Any future signage will be the subject of a separate development application, where statutorily required.
	Condition Reason: To ensure legislative compliance.

OU_37	**Fencing**
	The developer shall ensure that the development site is fully fenced and signage is erected to inform guests of the boundary of the property and that they must stay within the property boundaries when using the accommodation.
	Condition Reason: To maintain the amenity of adjoining properties

OU_52	**Business Operation and Use of Eco Tourist Facility**
	a) At all times the cabin buildings are being used only for the purpose of eco-

	tourism cabins as defined in the Snowy River Local Environmental Plan. b) The eco tourist facility shall be available for patrons on a year-round basis and shall not be used solely by the owners of the cabin as a holiday home. c) The manager of the eco tourist facility must provide to guests a copy of the Code of Conduct prior to their arrival on site and a copy shall be provided within each cabin. d) A notice shall be provided in the cabin asking the guests and visitors to respect the rural nature of the surrounding area and the amenity and privacy of neighbours. e) The eco tourist facility is to be used solely for the provision of temporary holiday accommodation for guests, for a period of no more than three (3) consecutive months. f) A property manager shall be available to respond to complaints from neighbours and manage the conduct of the tourists occupying the cabins. g) The operator is to ensure that any deliveries that relate to the development are to occur only during normal working hours (8am-5pm Monday to Saturday) and no deliveries to occur Sunday or Public holidays.
	Condition Reason: To maintain the amenity of neighbouring properties, and to ensure adherence with the principles of eco-tourism development.

OU_53	**Waste Management**
	The developer and all future managers/owners shall ensure that all waste generated by the eco-tourist facility is managed in compliance with the Public Health Act 2010.
	Condition Reason: To ensure compliance with the *Public Health Act 2010*.

OU_54	**Vegetation Management Plan**
	Strict adherence to the approved Vegetation Management Plan (VMP) must be maintained for the duration of the operation of the development.
	Condition Reason: To ensure the approved Biodiversity Report and Vegetation Management Plan are implemented for better outcomes for the environment.

OU_55	**Eco-tourist Accreditation**
	The eco tourist development shall gain Eco Certification through Eco Tourism Australia and Quality Tourism Accreditation through the Australian Tourism Industry Council

	(ATIC), within twelve (12) months of commencement of operation and shall maintain these (or equivalent accreditations) throughout the life of the development.
	Condition Reason: To ensure adherence with the principles of eco-tourism development.

ACCENT TOWN PLANNING

Statement of Environmental Effects



Staged 6 Cabins Eco-Tourist Development at 92 Chongs Road, Jindabyne NSW 2627 (Lot 2 DP1232872, Lot 25 DP756672, Lot 26 DP 756672 and Lot 1 DP1250715)

DATE: 10 SEPTEMBER 2024
PREPARED FOR: JOSHUA LEITNER
PREPARED BY: COMPLETE TOWN PLANNING PTY LTD
REVISION: 02

LODGED WITH DA APPLICATION NO. DATE OF LODGEMENT	**DOCUMENTS RELIED UPON FOR AMENDED SEE**
Statement of Environmental Effects – Accent Town Planning	
SEE Rev01 dated 2023	SEE Rev02 dated 10 September 2024
Architectural Plans – Peter Paine	
DA-00 to DA-35 Issue 2 dated 4/7/2023	DA-00 to DA-42 Issue 3 dated 7/7/2024
BASIX – Thermal Environmental Engineering Pty Ltd	
1395023M_02 dated 7 July 2023	1759363M dated 9 August 2024
NatHERS - Thermal Environmental Engineering Pty Ltd	
-	H9PR7SAAV0 dated 9 August 2024
Bushfire Hazard Assessment – Harris Environmental Consulting REF 4877BF	
Version 4 dated 26/4/2023	Version 5.1 dated 13/8/2024
Flora & Fauna Assessment - Narla Environmental	Biodiversity Assessment Report (BAR) – Clements *et al.* 2024
Narla Environmental May 2023 V2.0 Final	Version 1 dated 21 August 2024
Soil & Site Assessment for Onsite Wastewater – Harris Environmental Consulting	
Ref 5012WW V1.0 28/9/2022	Ref 5012WW V3.0 20/08/2024
Stormwater Management Plan – Harris Environmental Consulting	
Ref 5012SMP V1.0 4/10/2022	Ref 5012SMP V3.0 20/8/2024
Erosion & Sediment Control Plan – Harris Environmental Consulting	
Ref 5012ECSP V1.0 7/10/2022	Ref 5012ECSP V3.0 20/8/2024
Cost Estimate	
Econstruct Consulting 8/5/2023	-

1.0 THE PROPOSAL

This report has been prepared to inform the development potential and seek approval for a staged eco-tourist development at 92 Chongs Road Jindabyne, NSW, legally known as Lot 1 DP1250715, Lot 2 DP1232872, Lot 25 DP756672 and Lot 26 DP756672. It examines the site and the constraints affecting the site and the applicable planning controls, which may affect the site's re-development.

Upon review of the bushfire and environmental factors affecting the property the application has been amended from the original 6 Eco Cabins and 2 shed structures to 6 Eco Cabins and Ancillary Buildings and infrastructure as follows:

The proposal consists of:

- **six eco-cabins, comprising four two-bedroom units, one three-bedroom unit, and one accessible three-bedroom unit,**
- **two associated refuges,**
- **one shed with manager's accommodation,**
- **one workshop,**
- **RFS required bushfire Asset Protection Zones, and**
- **roads / tracks.**

The construction is to be staged to allow for greater cost efficiency, management of labour and material resources and to minimise the environmental impact with the reduction of site disturbances.

Stage 1:- Shed 1 (managers residence/laundry/emergency refuge) & Cabins 1 & 2
Stage 2:- Cabins 3 & 4
Stage 3:- Cabins 5 & 6 and shed 2/workshop

Each cabin is designed to relate to the huts and sheds of the High Country, both in scale, finishes and colours ensuring they fit harmoniously within the landscape. Cabins have been designed with energy-efficient systems, including solar panels, rainwater harvesting, and natural insulation.

The property owner has a vision of sharing their property with guests offering unique accommodation with incredible views towards the Snowy Mountains of NSW (Kosciusko National Park) and in a location that offers the best of nature and culture within close proximity.

The development of the site as an eco-tourist experience provides positive influences on the surrounding area. The proposal is focused on encouraging natural regeneration that is assisted by the continuation of invasive priority weed control and conservation works. It will attract visitors at a time where more focus is being put on climate change and how best to combat it. The hope would be that guests would leave with a greater appreciation for sustainability and some ideas as to how to incorporate this within their own homes.

The proposal is deemed to be of positive influence from an environmental, social and economic perspective.

In preparing this advice, the following key documents have been considered:

- Environmental Planning & Assessment Act
- Environmental Planning & Assessment Regulation 2000
- Snowy River Local Environmental Plan 2013;
- State Environmental Planning Policy State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004

- State Environmental Planning Policy (Exempt & Complying Development Codes) 2008
- State Environmental Planning Policy (Koala Habitat Protection) 2021
- Snowy River Development Control Plan 2013
- NSW Planning Portal

2.0 ZONING AND PERMISSIONS

The subject site is located within the Local Government Area (LGA) of Snowy Monaro Regional Council and is subject to the provisions within the Snowy River Local Environmental Plan 2013.

The site is zoned RU1 Primary Production under the Snowy River Local Environmental Plan 2013 and Eco-tourist facilities are a permitted use within the zone. Compliance with Part 5 Clause 5.13 Eco-tourists facilities is demonstrated within this SEE.

Council approval of the development would grant permission to use the site for eco-tourism. There is no application being sought for residential dwellings as part of this submission.

The site is suitable for the proposed use under SRLEP & SRDCP.

2. Permitted without consent
Environmental protection works; Extensive agriculture; Home occupations

3. Permitted with consent
Air transport facilities; Airstrips; Animal boarding or training establishments; Aquaculture; Bed and breakfast accommodation; Boat launching ramps; Boat sheds; Building identification signs; Business identification signs; Camping grounds; Caravan parks; Cellar door premises; Cemeteries; Charter and tourism boating facilities; Centre-based child care facilities; Community facilities; Crematoria; Depots; Dual occupancies; Dwelling houses; Eco-tourist facilities; Educational establishments; Environmental facilities; Extractive industries; Farm buildings; Farm stay accommodation; Flood mitigation works; Forestry; Funeral homes; Garden centres; Helipads; Home-based child care; Home businesses; Home industries; Industrial training facilities; Information and education facilities; Intensive livestock agriculture; Intensive plant agriculture; Jetties; Landscaping material supplies; Mooring pens; Moorings; Open cut mining; Places of public worship; Plant nurseries; Recreation areas; Recreation facilities (outdoor); Respite day care centres; Roads; Roadside stalls; Rural industries; Rural supplies; Rural workers' dwellings; Secondary dwellings; Timber yards; Transport depots; Truck depots; Veterinary hospitals; Water recreation structures; Wharf or boating facilities

4. Prohibited
Any development not specified in item 2 or 3



Figure 1 - RU1 Primary Production – Source ePlanning Spatial Viewer

RU1 – Objectives of Zone:	
To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.	Yes. The proposed eco-tourist development is focused on sustainability. The decision of the developer to use natural and/or recycled materials in the build where possible, provide power using solar panels, the reuse of rainwater as a water supply and minimal land disturbance demonstrates a vision of maintaining and enhancing natural resources.
To encourage diversity in primary industry enterprises and systems appropriate for the area.	Yes. Being situated within the Snowy Monaro Region tourism is a primary industry. The development of an eco-tourism facility on this site would offer an alternative tourist experience from the lodges, hotels and other short-term accommodation options within the town and surrounds. This will entice and encourage a varying type of tourist to the area. Ongoing conservation work in consultation with the relevant authorities is to continue pastural weed control for the Eco tourist facility on the former grazing land.
To minimise the fragmentation and alienation of resource lands.	Yes. The eco-facility will provide the necessary funding for the conservation work which will reduce fragmentation of resource lands. The proposal is directed to ongoing conservation works. Sheds have been positioned to the east of the site and the cabins have been situated on the north and the south sides of the subject site ensuring privacy and space between visitors and adjoining properties. Surrounding property

RU1 – Objectives of Zone:	
	uses include farming, hobby farming, residential and tourist developments.
To minimise conflict between land uses within this zone and land uses within adjoining zones.	Yes. The proposed eco-tourist development is permitted within RU1 zone. Uses for the RU1 properties surrounding the subject land include residential rural lots, tourist developments and farmland. The proposed development will not cause conflict.
To promote tourism, educational and recreational development and living opportunities that are compatible with agricultural activities and the environmental, historical and cultural values of the land.	Yes. The proposal is an eco-development will promote education and recreation. The location of the site, providing a rural based attraction as well as being in close proximity to National Parks and Reserves and ski resorts, will promote further tourism to the area which is a vision within the Snowy Mountains Special Activation Precinct Master Plan. An increase in tourists will give an opportunity for additional education and recreational development.
To ensure that development maintains and protects the scenic values and rural landscape characteristics of the zone through compatible, small-scale development	The form, colour scheme and thoughtful positioning of the cabins promotes the scenic values and landscape characteristics of the site and surrounds. The proposed development has been kept small in scale and will not cause conflict, but compliment the surrounding landscape.

3.0 SITE ANALYSIS & SUITABILITY FOR ECO-TOURISM

3.1 The Site

The site is identified as 92 Chongs Road Jindabyne, NSW, comprised of Lot 2 DP1232872, Lot 25 DP756672, Lot 26 DP756672 and Lot 1 DP1250715 with an area of approximately 46.866ha.

Located approximately a 14 minute drive from Jindabyne township the subject site was a former grazing property that was destocked in 2019 and is now being managed for conservation and ongoing environmental protection. The property is benefited by an existing shed, pumphouse, dam and road infrastructure constructed under SEPP (Exempt and Complying Development Codes). An unnamed watercourse runs through the property joining Sugarloaf Creek at a culvert beside Chongs Road.

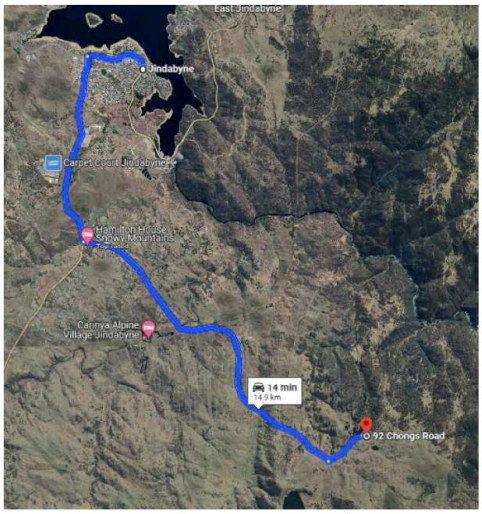


Figure 2 - Location Map. Source Google Maps

The site is identified as bush fire prone land. A Bushfire Hazard Assessment was carried out by Harris Environmental Consulting and has been submitted as part of this application to demonstrate the developments compliance with RFS's 'Planning for Bush Fire Protection' (Ref4877BF dated 13 August 2024).

The surrounding area is predominantly made up of varying sized farm allotments, interspersed with residential properties and tourism developments.

Similar Eco-tourist developments have recently been approved in the area as shown on the figure below.

- 2 Charlottes Lane (DA10.2020.135.001 - 3 cabins)
- 79 High Plains Lane (DA10.2023.200.001 -5 cabins)
- 8013 The Snowy River Way, Jindabyne (DA10.2023.81.001-6 cabins).

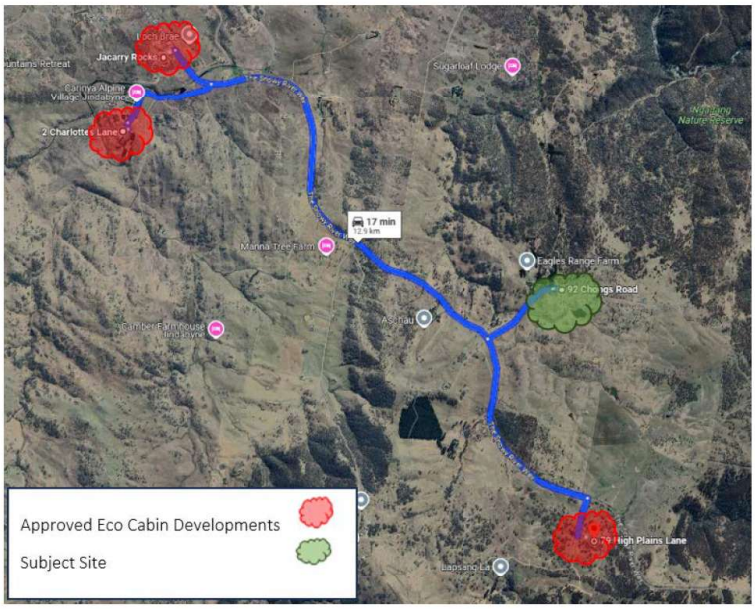


Figure 3 – Eco-Cabin Location Map. Source Google Maps

The site consists of 4 separate titles (Lot 2 DP1232872, Lot 25 DP756672, Lot 26 DP756672 and Lot 1 DP1250715). The DA can be conditioned to consolidate the separate titles into a single lot, if deemed necessary for the approval, however retaining the four (4) separate titles will have no impact on the use of the property for the proposed development.



Figure 4 Site (blue) - Source Google Maps

Access to the property is via Chongs Road which is entered from The Snowy River Way. Chongs Road is a dirt two-wheel drive all access road with the capacity to carry fully loaded fire fighting vehicles.

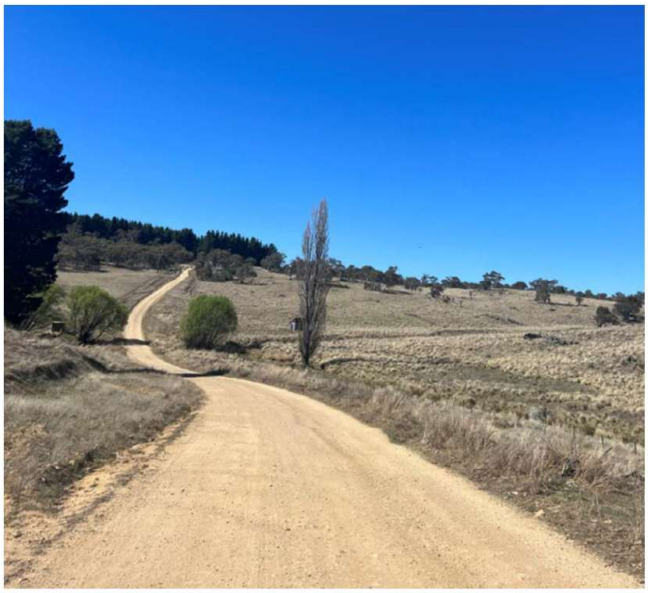


Photo 1: Chongs Road – Crossing Sugarloaf Creek – 30/9/2023



Photo 2: Entry to Site off Chongs Road – 30/9/2023

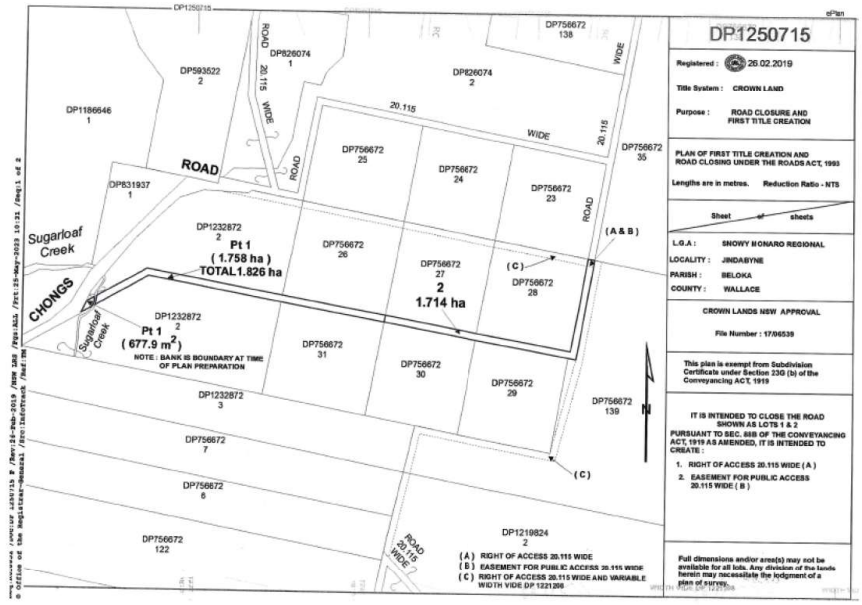


Photo 3: Internal Right of Access is during upgrade works by adjoining lot benefited. 30/9/2023

3.2 Site Planning, Layout and Contours

There are currently no prescribed setbacks for Eco-tourist facilities under the Snowy River DCP 2013, however careful planning has ensured that adequate setbacks are in place to minimise impact on adjoining properties. The size of the lot is 46.866 ha and is irregular in shape. The proposed eco cabins and infrastructure have been designed to address the shape of the allotment and fit effortlessly into the surrounding landscape.

The Crown Road through the subject site was closed by the creation of DP 1250715 in February 2019. Lot 1 DP 1250715 (the former crown road) now forms part of the subject property.



Lot 2 DP 1232872 is burdened by

- Right of Access 20.115m wide & variable (DP1221208)
- Right of Access 20.115m wide & variable (DP1221208)
- Easement for Overhead Powerlines 20.115m wide & variable (DP1245652)
- Right of Access 20.115m wide (DP1250715)

Being that the owner is the registered proprietor of the freehold land burdened by the Rights of Access, they retain the right to cross the easement/ROA lands at any time and may additionally use the land for their own purposes provided they do not substantially obstruct their neighbours rights.

This proposal will not affect access to the lots benefitted by these Rights of Access or impact on the easement areas.

The Certificates of Title and Deposited Plans for the property are attached in Annexure I of this Statement.

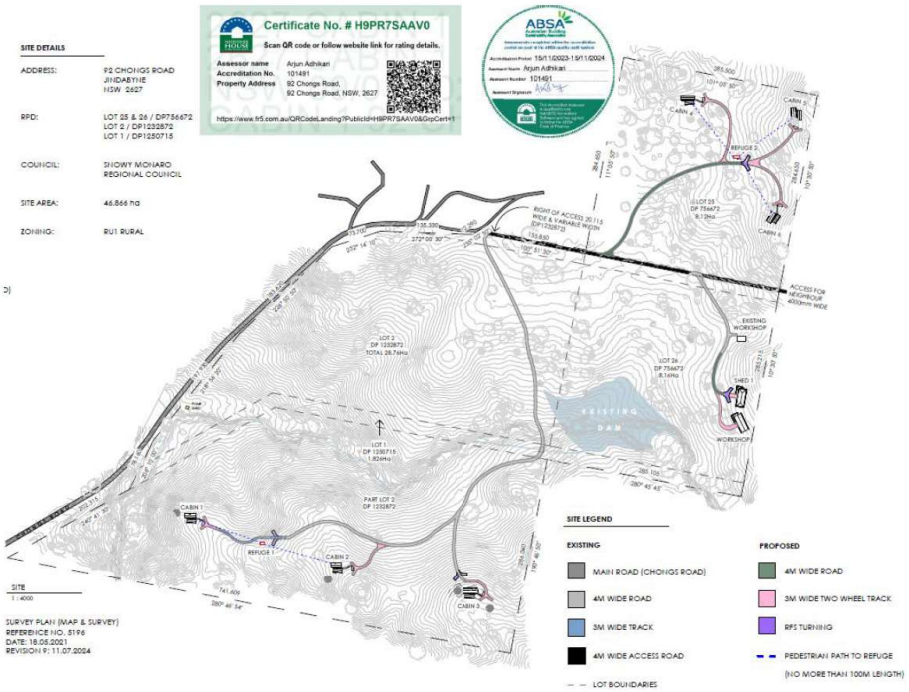


Figure 5 Extract Site Plan -DA-01

3.3 Site Coverage/Floor Space Ratio

The proposed development is deemed to be suitable for the size of the site. The site can easily accommodate the proposed eco-tourism development and maintain compliance with the legislation requirements.

3.4 Streetscape, Setbacks and Character

The location of the buildings have been thoughtfully considered to have minimal environmental impact on the site, maintain compliance with bushfire provisions and give a secluded location for guests to enjoy this unique area.

The closest neighbouring dwelling is 200-250 metres away on the north-western side of Chongs Road. Each proposed setback will ensure the privacy of the adjoining property owners and visitors to the cabins will be maintained.



Figure 6 ePlanning Spatial Viewer – Noting Mapped Area of Biodiversity Values

A Biodiversity Assessment Report (BAR) was carried out as the development does not trigger the BOS as

- *'development is not on land mapped on the BV Map;*
- *the extent of clearing required does not exceed the BOS clearing threshold (being greater than 1 ha for a greater than 40 ha lot size).*

The occurrence and potential for threatened species was assessed in the Biodiversity Assessment Report (BAR). One listed threatened flora species, the listed Vulnerable species Calotis glandulosa*, was recorded associated with the boulders, but none recorded in the area of the proposal, nor likely to occur on former grazing land. There have no records of threatened fauna species on or near the site, nor likely habitat onsite. Hence, a BDAR is not required for the proposal.'*

The existing roads and tracks are to be utilised to minimise the development footprint.

The driveway to the cabins will follow the route of the road easement and the use of granite road base to complement the surrounding natural landscape and buildings.

*'**To avoid and minimise impacts** on the native vegetation and potential habitats, including for the threatened herb* Calotis glandulosa*, the proposal has been carefully located to:*

- *avoid loss of native canopy trees;*
- *avoid areas with existing boulder formations (possible likely habitat for* Calotis glandulosa*); with*
- *the existing roads / tracks (areas of existing disturbance) are to be utilised for the proposal.*

In addition, the weed control measures recommended by Council's Biosecurity Office are directed to re-establishment of the native flora, including by strategic slashing and control of fire-prone and invasive priority weeds.' Clements *et al.* (2024)

Harris Environmental Consulting note in their Bushfire Hazard Assessment.

'The proposed access to the development is from one access point at the end of Chongs Road. The internal access varies from 430 m to Refuge 2, 550 m to the Manages Quarters to 800 m to Refuge 1 from Chongs Road. The proposed access is wholly located in grassland and parking bays can be provided by grassed verges.

The proposed internal access is required to comply with the PBP- Property Access. This includes:

- *minimum 4m carriageway width.*
- *a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches.*
- *provide a suitable turning area in accordance with Appendix 3;*
- *curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress.*
- *the minimum distance between inner and outer curves is 6m.*
- *the crossfall is not more than 10 degrees.*
- *maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads.*
- *any bridges/causeways are sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes) and bridges/ causeways are to clearly indicate load rating;*
- *there is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.*

The proposed Managers Quarters, Refuge 1, Refuge 2 and Cabin 3 is to provide.

- *enough turning room for a fire tanker that requires an inner minimum turning radius of 6 m and outer minimum radius of 12 m at each building.'*

Each cabin has been purposefully located and sensitively designed within the rural landscape to minimise any impact on the rural character.

The proposed colour scheme will ensure the cabins will blend into the landscape, not being a visually prominent feature.

4.0 DEVELOPMENT DESCRIPTION

4.1 Building Form

The proposed eco cabin development complies with the objectives for eco-tourist facilities as defined within the SRLEP - 5.13 Eco-tourist facilities and Snowy River DCP.

A Passive Design Strategy Report S-R2023101200 dated 12 October 2023 by Thermal Environment has been included and concludes: -

> *'Thermal Environmental has reviewed the applicable ESD regulatory requirements and good solar passive deign at proposed development 92 Chongs Road, Jindabyne.*
>
> *A series of initiatives have been implemented to minimise energy use, maximise energy efficiency,*
>
> *minimise the carbon footprint and reduce potable water use whilst maintaining high levels of occupant comfort. Many of these initiatives go beyond the mandatory requirements set out in regulatory requirements / compliance.*

This report demonstrates general compliance with the objectives of sustainable development strategies and sufficiently to addresses passive design requirements for the Development Application which fulfils the sustainable development of an Eco Huts.'

The accommodation has been spaced around the property to allow visitors to connect with the natural landscape. Continued ongoing conservation work of the lots will ensure the proposed single storey cabins will not dominate the undulating nature of the site.

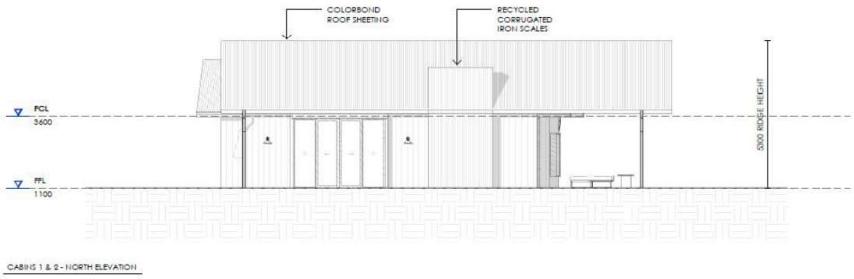
The cabin materials have been selected to be sympathetic to the surrounding environment and will blend with the landscape with the use of Iron bark round back cladding, corrugated iron, hardwood windows and a mix of Colorbond monument roof sheeting.

The use of natural and recycled building supplies for construction, reuse of construction waste by way of timber offcuts for firewood and masonry and concrete to be used behind retaining walls, promotes efficient and sustainable building practices.

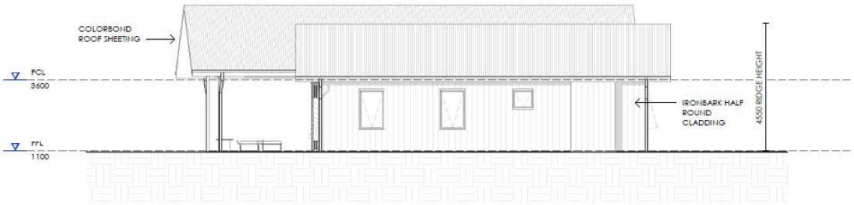
Each cabin within the proposal celebrates the submersion into natural environment with glazed areas and entry points providing strong connection to the natural environment.

	Building Footprint m^2	Bedrooms	Height m
Cabin 1	150	2	5.3
Cabin 2	150	2	5.3
Cabin 3	190	3	5.55
Cabin 4	180	3	5.3
Cabin 5	150	2	5.55
Cabin 6	150	2	5.3
Shed 1 – Managers/Refuge	300	2	8.3
Shed 2 - Storage	300	0	8.3

4.2 Proposed Elevations



CABINS 1 & 2 - NORTH ELEVATION



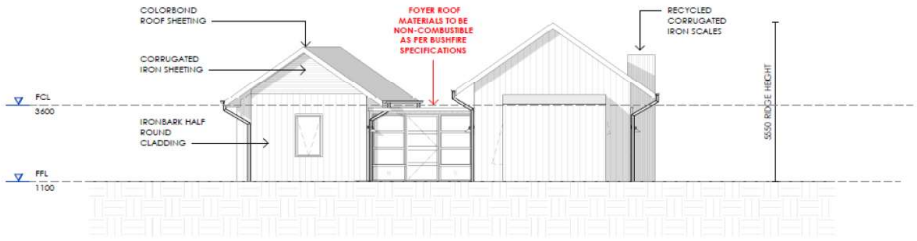
CABINS 1 & 2 - SOUTH ELEVATION



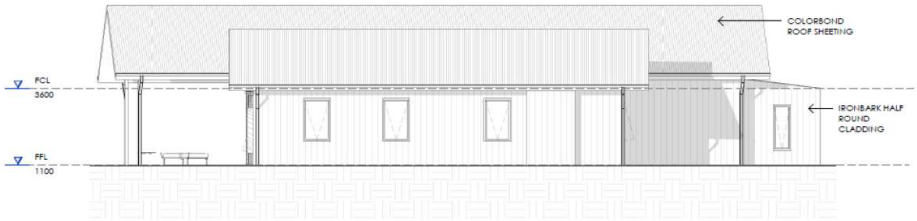
CABINS 1 & 2 - WEST ELEVATION



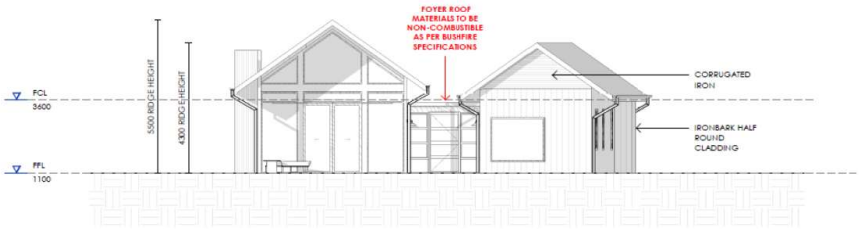
CABINS 1 & 2 - EAST ELEVATION



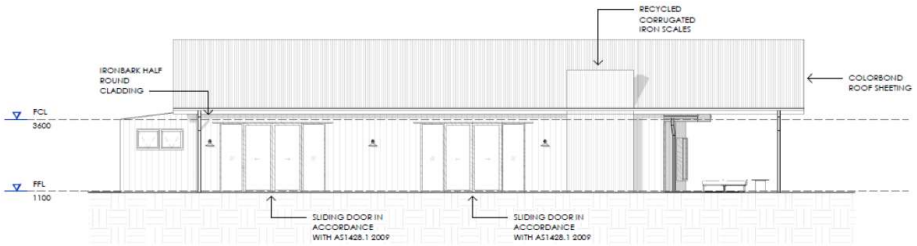
CABIN 3 - NORTH EAST ELEVATION



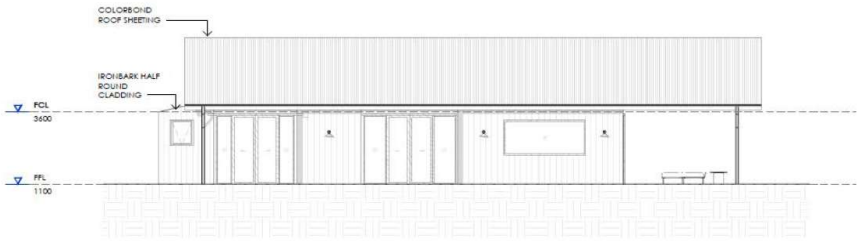
CABIN 3 - SOUTH EAST ELEVATION



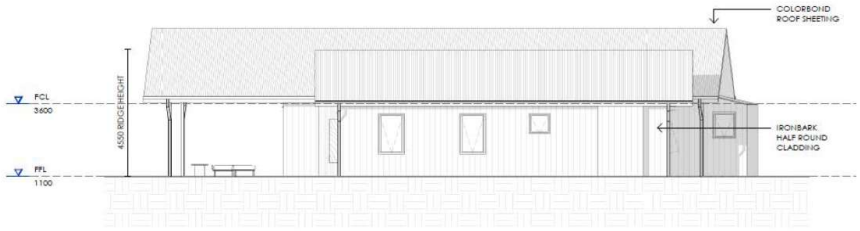
CABIN 3 - SOUTH WEST ELEVATION



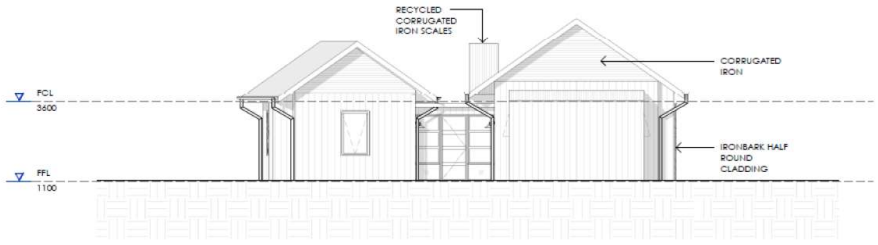
CABIN 3 - NORTH WEST ELEVATION



HUT 4 - WEST ELEVATION 1



HUT 4 - EAST ELEVATION 2



HUT 4 - EAST ELEVATION 1



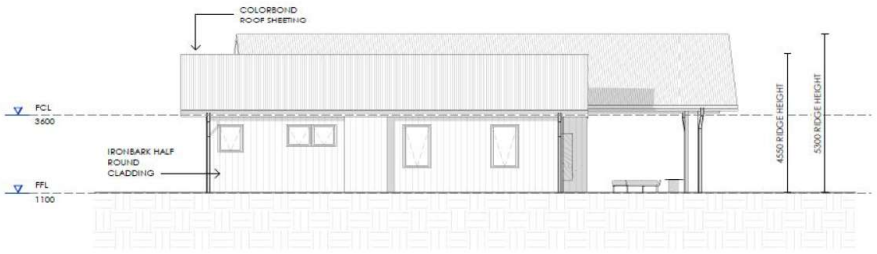
HUT 4 - WEST ELEVATION 2



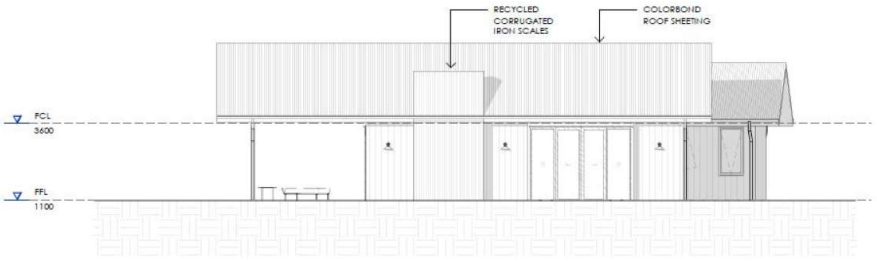
HUT 5 - NORTH ELEVATION



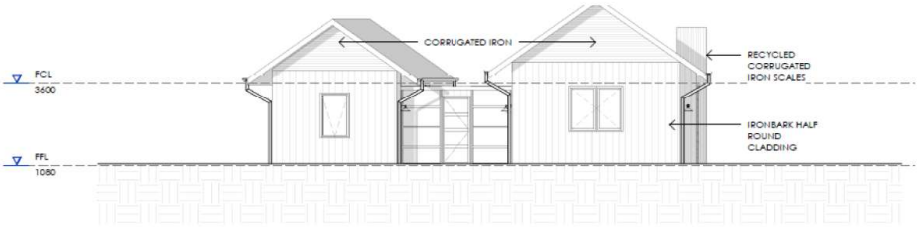
HUT 5 - SOUTH ELEVATION



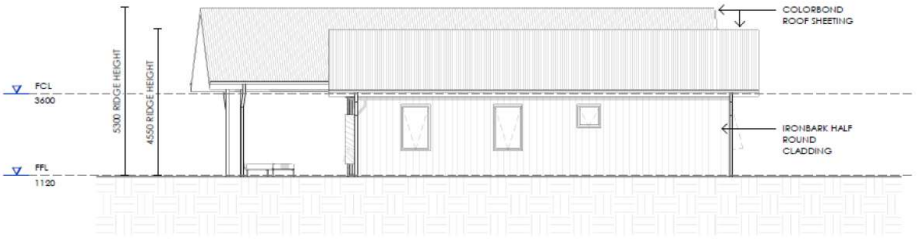
HUT 5 - EAST ELEVATION



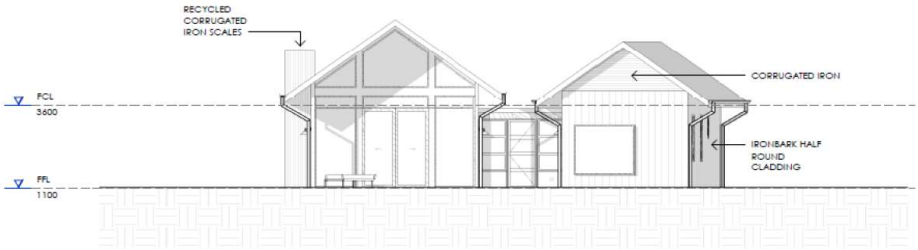
HUT 5 - WEST ELEVATION



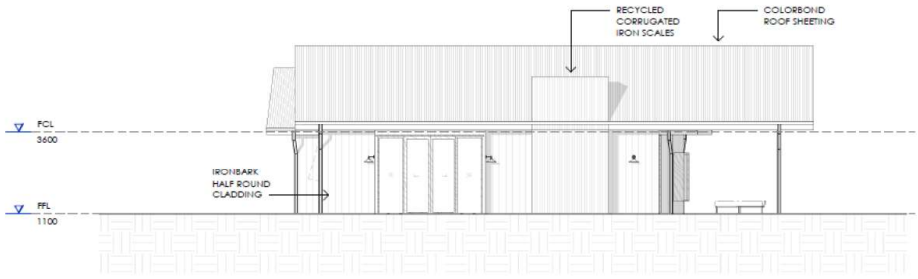
HUT 6 - NORTH EAST ELEVATION



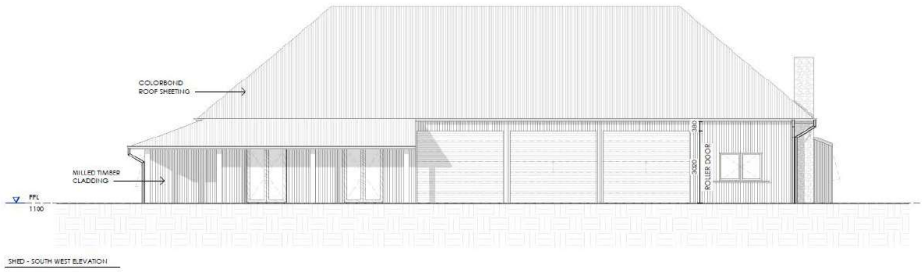
HUT 6 - SOUTH EAST ELEVATION



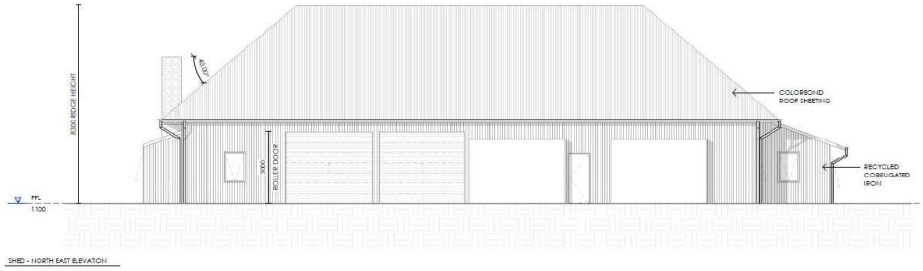
HUT 6 - SOUTH WEST ELEVATION



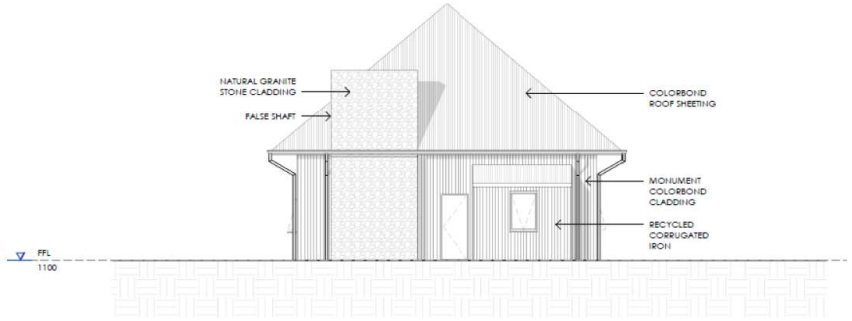
HUT 6 - NORTH WEST ELEVATION



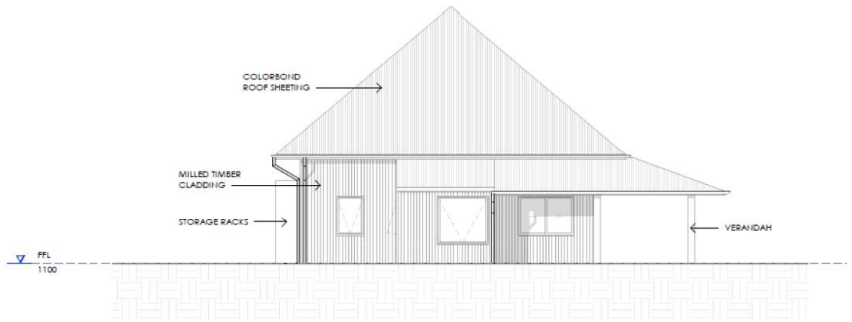
SHED - SOUTH WEST ELEVATION



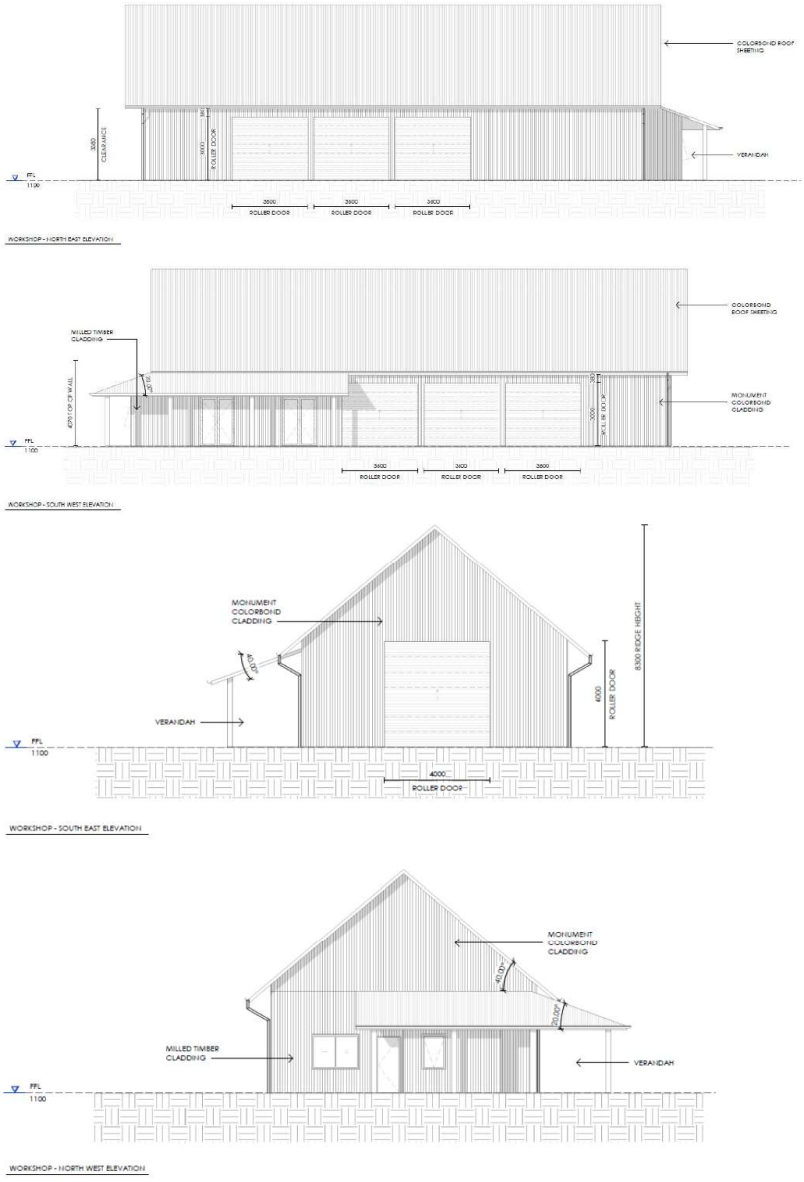
SHED - NORTH EAST ELEVATION



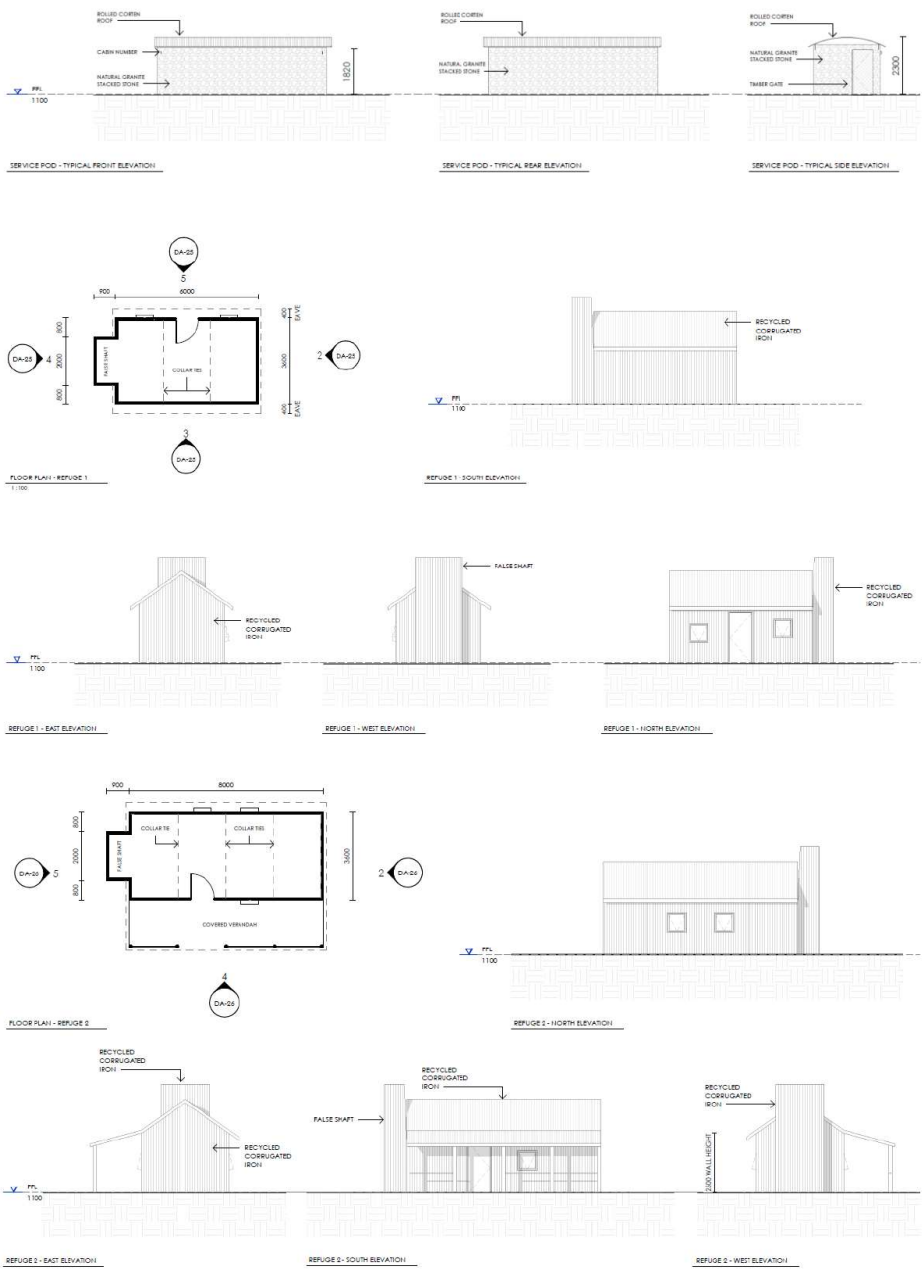
SHED - SOUTH EAST ELEVATION



SHED - NORTH WEST ELEVATION


COLORBOND ROOF SHEETING
VERANDAH
3600 ROLLER DOOR
3600 ROLLER DOOR
3600 ROLLER DOOR
WORKSHOP - NORTH EAST ELEVATION
MILLED TIMBER CLADDING
COLORBOND ROOF SHEETING
MONUMENT COLORBOND CLADDING
3600 ROLLER DOOR
3600 ROLLER DOOR
3600 ROLLER DOOR
WORKSHOP - SOUTH WEST ELEVATION
MONUMENT COLORBOND CLADDING
VERANDAH
4000 ROLLER DOOR
8300 RIDGE HEIGHT
4000 ROLLER DOOR
WORKSHOP - SOUTH EAST ELEVATION
MONUMENT COLORBOND CLADDING
MILLED TIMBER CLADDING
VERANDAH
WORKSHOP - NORTH WEST ELEVATION

STATEMENT OF ENVIRONMENTAL EFFECTS FOR 92 CHONGS ROAD, JINDABYNE



4.3 Fencing

Boundary fencing exists surrounding the site and will be maintained as required.

4.4 Building Height

The development has been designed to fit within the criteria listed in the Snowy River Local Environmental Plan 2013 and meet all criteria set out in the guidelines.

All buildings are single storey and less than 9m height limit.

Building	Height
Cabins 1, 2, 4 & 6	5.3m
Cabin 5	5.55m
Cabin 3 - Accessible	5.55m
Pods	2.3m
Shed 1 – Managers Quarters	8.3m
Shed 2 - Workshop	8.3m

4.5 Colours

The proposed colour scheme of the cabins will aid in ensuring that the cabins blend in with the natural environment and reflect the high country huts found through the Snowy Monaro Region.



4.6 Views, Visual and Acoustic Privacy

The proposed development will not impact on adjoining, visual and acoustic privacy.

There are six single storey cabins proposed on the 46.866 ha allotment.



Photo 5 - View From Cabin 1 to West – Chongs Road & Sugarloaf Creek – 30/9/2023



Photo 6 - View from Cabin 2 SW to Chongs Road & The Snowy River Way – 30/9/2023



Photo 7 - Cabin 2 Site Looking to East.- 30/9/2023



Photo 8 - Cabin 2 View North West To Chongs Road -030/9/2023



Photo 9 - Cabin 3 View South/ South West to The Snowy River Way – 30/9/2023



Photo 10 - Cabin 3 View East – Uphill with Neighbour internal driveway – 30/9/2023



Photo 11 - Cabin 3 View North over Site -30/9/2023



Photo 12 - Cabin 4 Site - 30/9/2023



Photo 13 - Cabin 5 Site -30/9/2023



Photo 14 - Cabin 6 Site – Internal Right of Access shown – 30/9/2023

The backup generators, operating at 65 and 66 decibels from 7m, are housed in enclosed service pods to minimise noise for cabin occupants and are unlikely to affect neighbouring properties. Recommended by Red Earth Energy to complement the Drop Bear Solar System, these generators will activate only if the solar batteries, with a maximum capacity of 57.4 kWh, drop below 30%. Due to the single-phase, 100-amp grid limitation, continuous electric backup isn't feasible. The generators

are for emergency use only. The on-site manager will be trained to maintain them, complete service records, and oversee their servicing.

4.7 Usable Open Spaces

There are no set requirements within the Snowy River LEP 2013 or Snowy River DCP 2013 in regard to usable open spaces within an eco-tourist facility, however the positioning of the cabins throughout the spacious site provides adequate private open space for each cabin.

4.8 Car Parking

Adequate car parking is available on site to allow for staff and guest parking and adequate space for manoeuvring.

4.9 Biodiversity

The Biodiversity Report (BAR) for the staged 6 cabins eco-tourist development and an extract from the summary of that report reads as follows:-

The BAR found that:

'Plant Community Types (PCTs)

The vegetation was sampled in eight BAM plots and one Spot location on 11-13 December 2023. The best match for the native vegetation onsite was PCT 3341 Monaro-Gourock Frost Hollow Grassy Woodland of moderate to very degraded condition. The widespread occurrence of exotic pasture species and little native canopy regeneration recorded in the plots are consistent with the long grazing history of the property.

Threatened ecological communities (TECs)

PCT 3341 is associated in part with the critically endangered ecological community Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion under the NSW Biodiversity Conservation Act 2016.

From comparison of the recorded data with the Final Determination for the listed community all of the vegetation on the site independent of condition is or was previously the listed critically endangered ecological community Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion.

Threatened species

The threatened herb species Calotis glandulosa *was recorded as scattered individuals in grassy areas in Plot 5 and Plot 8. This species is vulnerable under the BC Act and EPBC Act. Despite the grazing history, there appears to be some natural resilience in the soil seed bank.*

Impacts of the proposal

The proposal results in the clearing of <1ha of PCT 3341 Monaro-Gourock Frost Hollow Grassy Woodland. The vegetation onsite irrespective of its condition is consistent with the critically endangered ecological community Monaro Tableland Cool Temperate Grassy Woodland. The Indirect impacts of the proposal include the risk of potential introduction of weeds on tires. The weed risk is to be minimised by implementing the recommendation of Council's Biosecurity Officer. There are no prescribed impacts for the proposal.

Mitigation measures

Given that less than 15,660 ha of Monaro Tableland Cool Temperate Grassy Woodland remain (approximately 5% of its estimated pre-1750 distribution of 295,500 ha), the continuation of the existing environmental protection / conservation works form part of the proposal.

Recommendations

It is recommended that natural regeneration be encouraged and assisted by the continuation of the invasive Priority Weed control and environmental protection / conservation works. This includes managed native meadows/grassland as well as stands of native trees and shrubs on the property, especially Koala Feed Trees near Sugarloaf Creek.'- Clements *et al.* 2024

4.10 Water and Stormwater

Each cabin, along with shed 1, (managers residence) will have connection to their own underground concrete water tank.

Rainwater will be collected from roofs and captured in underground rainwater tank. The water will then be pumped throughout the cabins via a series of filters including a UV filter.

Underground concrete rain water tanks will be installed with a capacity of 80,000 litres. The owner has opted for the underground tank provision to allow for a greater retention and provision of on-site water storage without adding the visual impact of the tanks.

In addition to storage for domestic water use each tank will have the water pump's foot valve positioned to ensure the provision of the required volume of water for bushfire protection.

The BHA by Harris Environmental nominates *'20,000 litre water supply is required at*

- *the proposed Managers Quarters,*
- *Refuge 1*
- *Refuge 2; and*
- *Cabin 3*

for firefighting purposes.
Underground tanks should have an access hole of 200 mm and a hardened ground surface within 4 m of the access hole. A suitable connection for firefighting purposes is required such as a 65mm Storz outlet and a gate or ball valve.'

It has been designed to satisfy the requirements of C6.2-3 Non Domestic Rural Potable Water.

Performance Criteria	Comment
a) Adequate provision of potable water is to be made for the peak occupancy or use of the development	**Complies**. With each bedroom able to accommodate 2 people the peak occupation would be 28 people per day. 28x110 litres = 3,080litres. With 80,000litres required for bushfire provisions. The peak water requirement is 83,080litres. The on-site water tanks hold 320,000 litres of water with the capacity to retain almost 4 times the required amount. In addition to the required bushfire water supply the 80,000 litre tanks can be accessed for additional supply in the event of extreme climatic conditions.
b) Where the development includes accommodation, the development proposal is to demonstrate that the capacity for provision of at least 110 litres of potable water per person per day is available	**Complies.** At least 110 litres of potable water per day will be available. Each tank will be a minimum of 80,000litre underground rainwater tank.
c) Where the development does not include accommodation, the development proposal is to demonstrate that the capacity for provision of 90 litres of potable water per person per day is available.	**N/A.** The development includes accommodation.
d) Sufficient storage of potable water is to be provided for a forward period of at least one week	**Noted.** The water tanks can be set to hold at least one week's supply of potable water on top of the bushfire requirements.
e) A reduced rate of potable water storage may be proposed where the safe use of non-potable water is demonstrated for use in toilet flushing, laundry tubs, washing machines and other uses not involving human consumption. Where a reduced rate of storage is proposed, the reduced rate is to be supported by documentation prepared by a suitably qualified professional.	**N/A** A reduced rate of potable water is not sought.
f) The development proposal for eco-tourist facility is to demonstrate through documentation and management techniques a target for potable water use in the facility of 90 litres per person per day.	**Complies.** Water conservation has been specified within the Soil & Site Assessment by Harris Environmental to reduce the volume of wastewater including ***i.*** *4 star dual flush toilet* ***ii.*** *3 star showerheads* ***iii.*** *4 star taps (excluding bath outlets and garden taps)* ***iv.*** *3 star urinals* ***v.*** *Water efficient washing machines and dishwashers are to be specified and used wherever possible.*

Performance Criteria	Comment
	Water reduction fixtures will also be required to confirm to BASIX, which requires a 40% reduction below average rates of water consumption.
g) The proposed development of an eco-tourist facility must demonstrate a target for grey water re-use within the facility of 100%.	The wastewater management has been designed to comply with Water NSW and ASNZ1547 (2012) requirements. The wastewater system recommended was determined through the assessment of the frequency of use, availability power, slope, soils, wastewater load and site constraints. Secondary wastewater treatment has not been considered as the site will be used intermittently and the solar power source will be unreliable to service the system resulting in non - compliance with site suitability assessment and system selection, section 2 of Designing and Installing On-site Wastewater Systems by Water NSW. *'Intermittent loads* *Systems for sites that only receive intermittent loads, such as holiday houses, include septic tanks, some worm farms and waterless composting toilets. Some systems, including aerated wastewater treatment systems, struggle to effectively manage variable loads from holiday homes, where the system may not be used at all on weekdays, but large loads are contributed for several days on weekends and in holiday periods. The bacteria needed to treat the wastewater can die off when there is no or low inflow and can take time to regenerate once higher flows restart, resulting in poor or ineffective treatment in the meantime.'* Greywater directly from shower, sink and laundry is not practical as a water source to supplement indoor water use. *Daily wastewater loads* *When designing a GTS for a domestic dwelling it is important to consider the input and output loads when considering potential reuse options. If treated greywater is only used for toilet flushing then less input will be needed than if it is used for toilet flushing, clothes washing and garden irrigation. Calculate a hydraulic balance for the system design before choosing which system to install. WaterNSW does not allow treated greywater to be used for landscape watering except through fixed surface or subsurface irrigation systems. Only systems with disinfection can be used for surface or subsurface irrigation. GTSs with no disinfection must use subsoil irrigation at a depth of at least 300 millimetres.* A diversion device could be installed to provide treatment for the use of grey water for watering plants less than 300mm deep. However, this is not essential for the native plants that will be established. Furthermore, a greywater treatment device is not proposed as the only benefit would be so grey water could be used for flushing toilets or in the laundry. As a grey water treatment device is required to remove E.coli to less than 10/100mm, this becomes an expensive way of recycling water and it is more efficient to capture and reuse rainwater.

Performance Criteria	Comment
	A further reason why greywater treatment is not proposed for outdoor re use is that the types of detergents and products that are used, within the cabins and treatment system can have a significant impact on soil and plant health over time. Grey water carries additional salts and can affected the pH due to increased alkalinity of many detergents. This would require the soil pH and moisture content to be regularly monitored and adjusted if necessary to maintain the soil health for maximum site rehabilitation. The installation of the greywater treatment device would require a pump to operate each system. This would put additional strain on the solar power source in times of reduced energy generation. Extended periods of low energy production could result in the in-ability to operate the grey water treatment device in accordance with the operating requirements. This may be re-considered as grey water systems improve in the future. NSW Health notes in Greywater Reuse in Sewered Single Domestic Premises April 2020 - *'One of the most important concepts is that of "Ecologically Sustainable Development (ESD)." There are many definitions of ESD and the following is used in DLG 1998. "ESD is development using, conserving, and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quantity of life, now and in the future can be increased." Four principles of ESD flow from this definition and are:* *• the precautionary principle – if there are threats or serious irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;* *• intergenerational equity – the present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations;* *• conservation of biological diversity and ecological integrity; and* *• improved valuation and pricing of environmental resources* The proposed septic wastewater system complies with the four principles above. The system will not result in environmental degradation. All wastewater is retained, treated and disbursed onsite through the absorption trenches. The proposed septic tanks will not contaminate the water supply by using natural bacteria to remove harmful bacteria before the water is released to replenish the water table. Routine maintenance will be employed to maintain the integrity of the system to avoid potential failure.

Performance Criteria	Comment
	All cleaning products used with the eco-facility will be selected to ensure to health of the septic system will be maintained. The use of septic water systems will not impact on the biological diversity, ecological integrity and environmental resources of the site. NSW Health further notes *'Water may also be conserved by capturing rainwater from the roof and storing in a tank reserved for garden irrigation where rainfall is adequate. This may be a cheaper option to greywater reuse and would also reduce storm water discharges to the environment.'*

4.11 Energy Conservation

In keeping with the sustainability principles each cabin will be powered by solar panels installed and positioned to maximise the solar exposure with a backup diesel generator. A comprehensive report has been prepared by Red Energy who will be supply and install the system.

'A self-sufficient solution designed for country homes and businesses needing dependable technology and a reliable power supply, DropBear uses Selectronic and Fronius inverters and offers versatility that connects to your solar panels to take you completely off the grid, while retaining the option to stay on the grid - it can even connect to a generator if you want to keep that option open.' – RedEarth Energy Storage

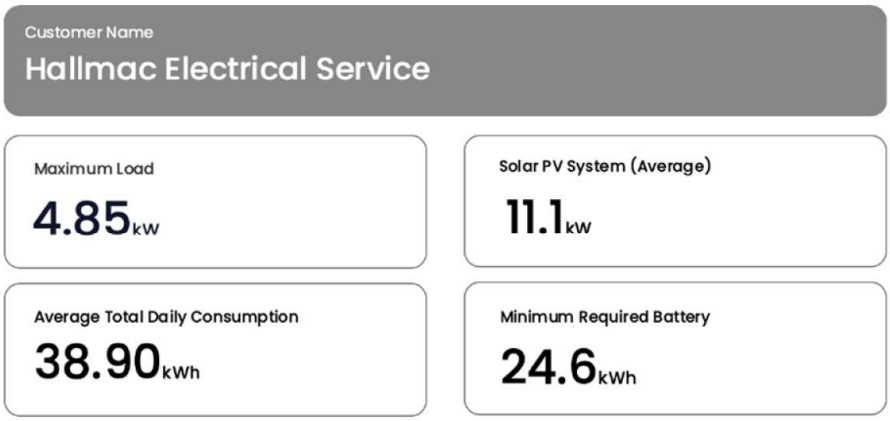


Figure 7 Solar Energy Data

The proposed development has been designed for eco-tourist purposes and demonstrates that there will be significant practical reliance on renewable energy and water use.

- Multi Dwelling BASIX Certificate 1759363M and NatHERS Certificates have been provided by Thermal Environmental Engineering Pty Ltd.

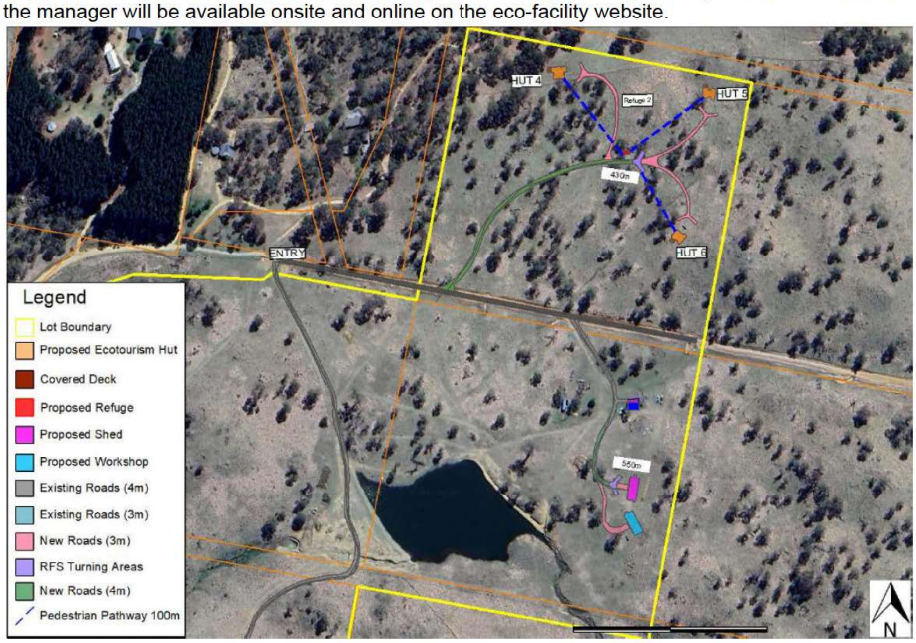
- The proposal demonstrates a 7.7 star rating compliance with the SEPP and current legislation requirements.
- All cabins received a NatHERS rating of 7 star or higher which increases the cabins ability to manage thermal performance, reducing energy consumption.
- Minimal heating and cooling will be provided to the cabins by
  - the split system (powered by solar) in the living rooms,
  - fans in the bedrooms,
  - hydronic floor heating powered by LPG, and
  - solid fuel fireplace that uses seasoned hardwood and recycled briquettes made from sawdust and cardboard.
- Natural light and ventilation are supplied to all habitable and non-habitable rooms.
- All buildings have been designed to require minimal heating and cooling with R3 Rockwool insulation to the external walls, R2.0 ground insulation with double glazed windows throughout.

4.12 Security, Site Facilities and Services

An on-site manager will be available to handle the day-to-day operations of the eco-facility including

- a guest introduction to the site and amenities with an overview of the local area.
- Ability to address the concerns or questions of any guest or neighbour.
- Informing guests will be informed on waste management and reduction goals for the eco-facility by encouraging recycling and composting practices not only during their stay but as a continual practice.

The manager will be residing on site with the managers shed. Compliant with Eco-Tourism requirements all cabins are within 100m walking distance from a bushfire refuge. Contact details for the manager will be available onsite and online on the eco-facility website.



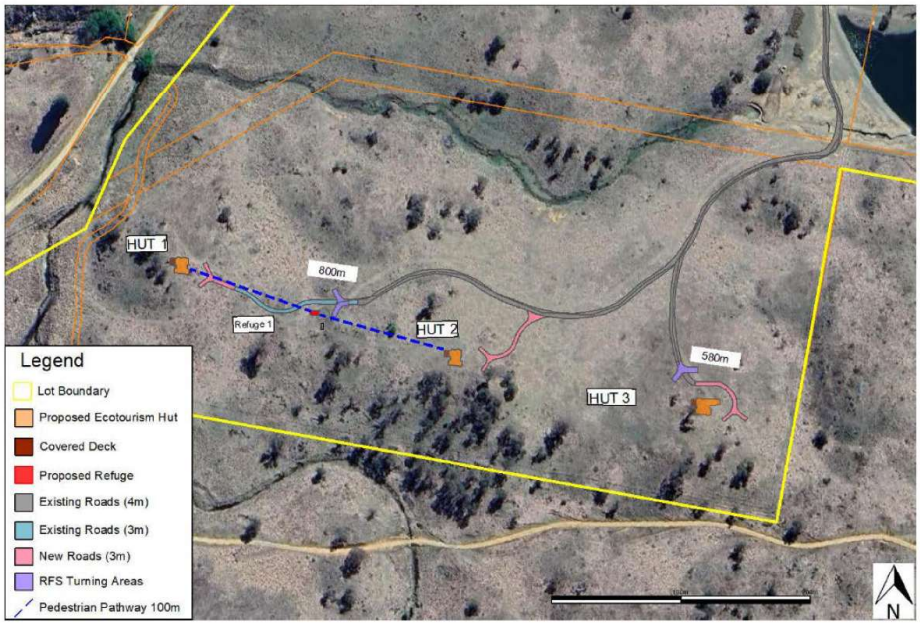


Figure 8 Proposed Access Plans – Source Harris Environmental Consulting Bushfire Report

The proposed development complies to the security, site facility and service requirements offering a safe and secure location for tourist accommodation.

4.13 Sewer

A detailed Onsite Wastewater Assessment has been carried out by Harris Engineering for the site. A separate application for the OSSM will be lodged under S68 application with Snowy Monaro Regional Council.

Wastewater design load and daily wastewater (L/day) *(While no town or bore water supply is available, the design flow rates are conservatively estimated based on 150L/day/pp as per AS/NZS 2012:1547)*	***No. bedrooms in each Cabin (Capacity)***	***Total wastewater load***
	Cabin 1: 2 Bedrooms (6pp)	**= 900 L/day**
	Cabin 2: 2 Bedrooms (6pp)	**= 900 L/day**
	Cabin 3: 3 Bedrooms (8pp)	**= 1200 L/day**
	Cabin 4: 3 Bedrooms (8pp)	**= 1200 L/day**
	Cabin 5: 2 Bedrooms (6pp)	**= 900 L/day**
	Cabin 6: 2 Bedrooms (6pp)	**= 900 L/day**
Conservatively calculated as a 2-bedroom dwelling on a town/bore water as per WaterNSW (2019)	Shed 1 (Manager's Residence):	**= 600 L/day**
Contains bathroom, kitchenette and laundry – assume 5 staff @ 80L/pp/day	Shed 2 (Workshop)	**= 400 L/day**
Proposed wastewater treatment:	Septic tank	
Proposed wastewater disposal:	Soil absorption trench	

'The proposed absorption beds for each cabin are at a location that is compliant with the buffers and setback distances required by Snowy-Monaro Regional Council and WaterNSW. This includes:

- *More than 100m from permanent watercourses, 40m from drainage depressions*
- *6m from downslope driveways/boundary lines*
- *3m from upslope driveways/ boundary lines*
- *6m from downslope buildings and 3m from upslope buildings.*

The sandy loam and clay loam subsoil has suitable permeability and nutrient absorption properties for this method of wastewater treatment and disposal.' – Harris Environmental Consulting report August 2024

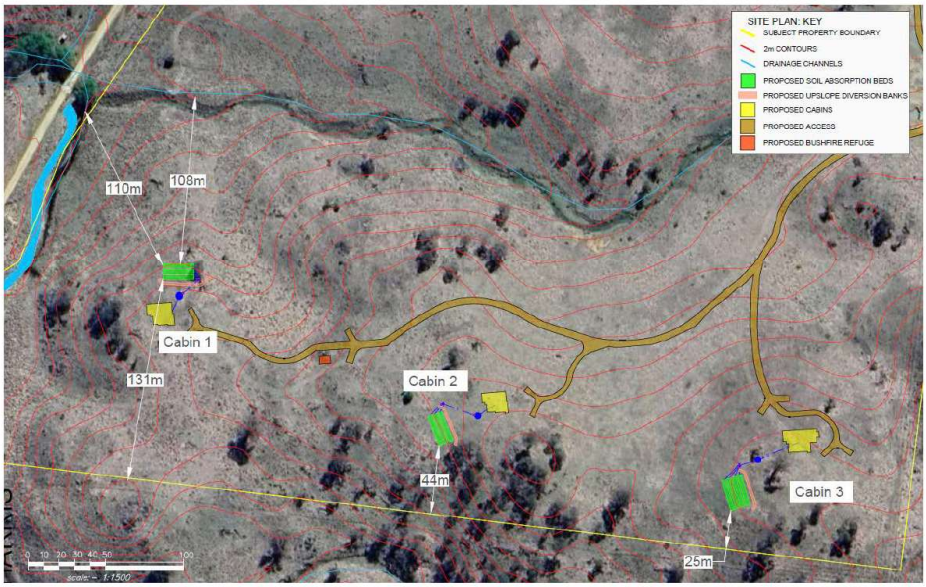


Figure 9 Cabin 1-3 Wastewater treatment Plan – Source Harris Environmental Consulting



Figure 10 Cabin 4-6 Wastewater treatment Plan – Source Harris Environmental Consulting

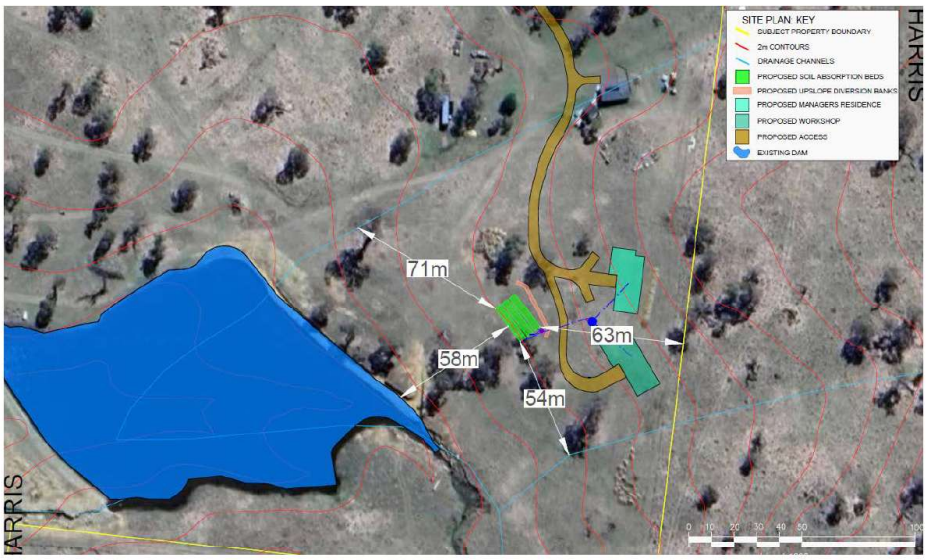


Figure 11 Shed 1 Managers Residence & Workshop Wastewater treatment Plan – Source Harris Environmental Consulting

4.14 Erosion and Sediment Control Plan

Harris Environmental Consulting carried out an assessment of the site for an Erosion and Sediment Management Plan. The recommendations of this assessment can be conditioned as part of the DA.

- *'Installation of sediment fencing and barrier fences in the locations shown in Appendices – Site Plans prior to commencement of the proposed works;*
- *Diversion of clean stormwater runoff from land upslope of the proposed development and access road by means of an earth bank or drain;*
- *Stockpiling of building materials, topsoils, subsoils and supplies in the areas designated; and*
- *Installation of a skip bin for construction waste material.'*

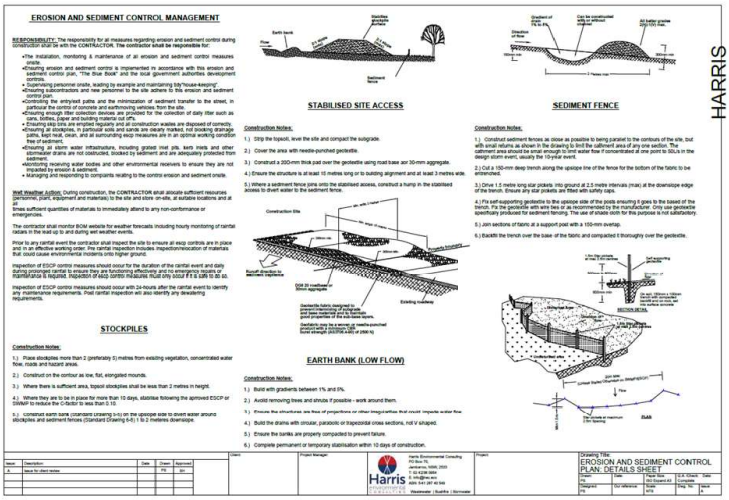


Figure 12 Erosion & Sediment Control Management – Source Harris Environmental Consulting

4.15 Waste Management

The below chart details the waste management plan being put in place for the proposed development. The upmost will be done to limit the volume of waste generated during the construction. As outlined below all waste generated will be disposed of in an eco-conscious way in line with the vision for the development.

Type of waste	Estimated Amount/Volume	Where/how it will be stored on site	Where it will be disposed	Method of transportation/disposal
Timber offcuts Untreated; Timber offcuts Treated:	3 m^3 Nil (Ready cut frames)	Cut + stored for firewood at shed site. Nil.	At shed site. Nil.	Small tip truck. Nil.
Steel.	1 m^3	In bin within building enclosure.	Recycled.	Small tip truck.
Masonary + concrete	1 m^3	In pile within building enclosure.	Recycled + used behind retaining wall.	Mini loader
Plasterboard, Villaboard, Packaging, Non-recyclables	5 m^3	In cage trailer in building enclosure.	Local waste depot.	Car + trailor

Figure 13 Construction Waste Management Plan

Cabins will have enclosed individual service pods containing waste and recycle bins for the ongoing waste management of the eco-facility to ensure no waste materials litter the site. This will be regulated by the on-site manager who will arrange for the collection of the bins and the distribution of recycling in an environmentally friendly way. All other waste will be collected by Snowy Monaro Regional Council.

The manager will be responsible for ensuring all waste from the site is managed with a focus on sustainability. Guests will be informed on waste management and reduction goals for the eco-facility and encouraged to adopt recycling and composting practices not only during their stay but as a continual practice.

Waste management will be re-evaluated on an ongoing basis, as part of the operation of the eco-facility, to ensure that all waste is managed and disposed of in the most efficient and environmentally friendly manner.

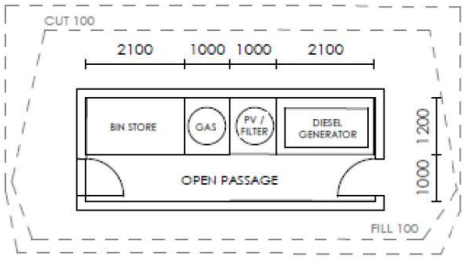


Figure 14 Service Pods

4.16 Aboriginal Heritage

There are no confirmed site records or any other associated landscape feature information from an AHIMS search (see Appendix II – AHIMS Report). In addition to this, there is also no record of Aboriginal objects being present at the site from any other sources of information that a person is already aware.

As a result, the General Due Diligence Assessment shows that AHIP application is not necessary but proposed works will proceed with caution and if any objects are to be found works will be stopped and appropriate authorities will be notified.

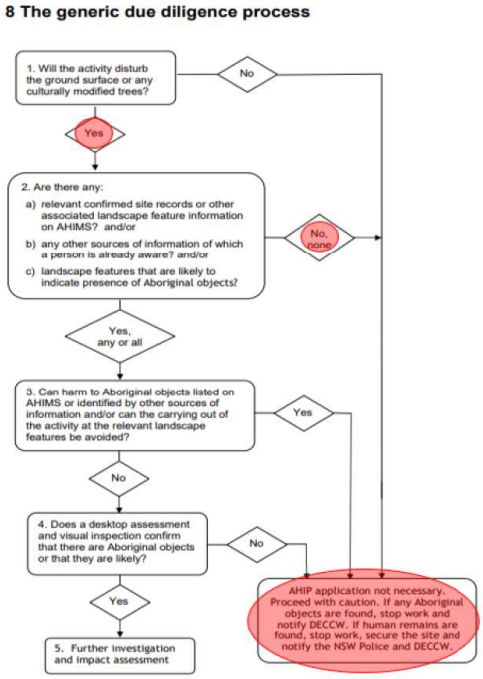


Figure 15 General Due Diligence Assessment Results

5.0 LEGISLATIVE REQUIREMENTS

5.1 Snowy River Local Environmental Plan 2013

An eco-tourist facility is defined in the Snowy River LEP 2013:

'Eco-tourist facility means a building or place that:

- *Provides temporary or short-term accommodation to visitors on a commercial basis, and*
- *Is located in or adjacent to an area with special ecological or cultural features, and'*
- *Is sensitively designed and located so as to minimise bulk, scale and overall physical footprint and any ecological or visual impact.*

It may include facilities that are used to provide information or education to visitors and to exhibit or display items.'

With no maximum number of guests set for an eco-tourist facility, the onus is on the applicant to demonstrate that the development is specifically located and designed for eco-tourist purposes and demonstrates a significant practical reliance on renewable energy and water uses.

The Snowy River LEP 2013 (clause 5.13 Eco-tourist facilities) provides detailed considerations for the development of eco-tourist facilities.

Part 5 Clause 5.13 *Eco-tourist facilities*

(1) *The objectives of this clause are as follows—*

(a) to maintain the environmental and cultural values of land on which development for the purposes of eco-tourist facilities is carried out,

The proposal will not have any negative impacts upon the environment or cultural values of the land. The owner is managing the site for conservation with ongoing environmental protection / conservation works under the guidance of local advisory groups.
Educational material on the significance of the area will be available on-site for the purpose of increasing the awareness of the environmental, ecological and cultural factors within the site and extend to the surrounding locality.

(b) to provide for sensitively designed and managed eco-tourist facilities that have minimal impact on the environment both on and off-site.

All buildings have been designed to complement the surrounding rural environment by blending into the mountain aesthetic. Integrating renewable energy, rainwater collection and recycled building materials provides a sustainable use of building materials and design sensitivity.
All cabins have access to a service pod where waste materials are to be sorted and recycled where possible. Locating the waste storage within the service pods will ensure no debris will be littered in the area.

(2) This clause applies if development for the purposes of an eco-tourist facility is permitted with development consent under this Plan.

Eco-Tourist facilities are a permitted land use under the Snowy River Local Environmental Plan 2013

(2) The consent authority must not grant consent under this Plan to carry out development for the purposes of an eco-tourist facility unless the consent authority is satisfied that—

Performance Criteria		Comment
(a) there is a demonstrated connection between the development and the ecological, environmental and cultural values of the site or area, and	☑	**Complies.** The proposed site is an area of unique beauty that is characteristic of the high country of NSW. From the cabins, guests will be able to form a visual connection with the Snowy Mountains of Kosciusko National Park. The site itself offers unique features such as alpine gum trees and rocky boulder outcrops that are well known environmental features of the area. The close proximity to both Kosciuszko National Park and ski resorts of Perisher and Thredbo as well as the rich history of Lake Jindabyne will ensure guests have opportunities to experience the environmental features and cultural values of the area. The ongoing conservation has demonstrated the landowner commitment to conservation gain and control of the local priority wees (see details in the BAR)
(b) the development will be located, constructed, managed and maintained so as to minimise any impact on, and to conserve, the natural environment, and	☑	The cabins have been designed to ensure that the minimum extent of necessary ground disturbance is required. *'To avoid and minimise impacts on the native vegetation and potential habitats,* *including for the threatened herb* Calotis glandulosa*, the proposal has been carefully located to:* o *avoid loss of native canopy trees;* o *avoid areas with existing boulder formations (possible likely habitat for* Calotis glandulosa*); with* o *the existing roads / tracks (areas of existing disturbance) are to be utilized for the proposal.* *In addition, the weed control measures recommended by Council's Biosecurity* *Office are directed to re-establishment of the native flora, including by strategic slashing and control of fire-prone and invasive priority weeds.'* - Clements *et al.* (2024)
(c) the development will enhance an appreciation of the environmental and cultural values of the site or area, and	☑	The development will incorporate educational elements with the demonstration of conservation works to visitors and guests.
(d) the development will promote positive environmental outcomes and any impact on watercourses, soil quality, heritage and native flora and fauna will be minimal, and	☑	The proposal includes a continuation of conservation works being undertaken on the site in consultation with the appropriate authorities.
(e) the site will be maintained (or regenerated where necessary) to ensure the	☑	The site will be managed for conservation.

continued protection of natural resources and enhancement of the natural environment, and		
(f) waste generation during construction and operation will be avoided and that any waste will be appropriately removed, and	☑	Waste generation will be kept to a minimal in line with the vision the client has for an environmentally sustainable eco-tourist facility. A comprehensive waste management plan has been put in place to ensure all construction waste will be reused or recycled in an environmentally friendly manner. Waste generated in the operation of the eco- tourist facility will be managed appropriately by the on-site manager (recycled/rubbish collection by Snowy Monaro Council).
(g) the development will be located to avoid visibility above ridgelines and against escarpments and from watercourses and that any visual intrusion will be minimised through the choice of design, colours, materials and landscaping with local native flora, and	☑	Each of the cabins is located on gently sloping land below the ridgeline. Design, colours and location have been demonstrated in section 4 of this report.
(h) any infrastructure services to the site will be provided without significant modification to the environment, and	☑	Existing power and water supply will be utilized. The installation of solar panels will allow for the cabins to be self-supporting and sustainable in regard to renewable energy. The on-site sewerage management system designed by Harris Environmental will require a S68 approval from Council.
(i) any power and water to the site will, where possible, be provided through the use of passive heating and cooling, renewable energy sources and water efficient design, and	☑	A complete calculation of the energy requirements has been included with this submission from Hallmac Electrical Services to demonstrate compliance. Each cabin will be powered using solar panels and water will be supplied by rainwater run-off into 80,000 litre tanks which will be filtered and UV treated and reused on site.
(j) the development will not adversely affect the agricultural productivity of adjoining land, and	☑	The proposal includes ongoing conservation works including weed control measures recommended by council's biosecurity officer.
(k) the following matters are addressed or provided for in a management strategy for minimising any impact on the natural environment—	☑	The development will not create any irreversible environmental damage. The proposal includes ongoing conservation works directed to re-establishing native vegetation and native fauna habitats.

(i) measures to remove any threat of serious or irreversible environmental damage, *(ii) the maintenance (or regeneration where necessary) of habitats,* *(iii) efficient and minimal energy and water use and waste output,* *(iv) mechanisms for monitoring and reviewing the effect of the development on the natural environment,* *(v) maintaining improvements on an on-going basis in accordance with relevant ISO 14000 standards relating to management and quality control.*		Extensive investigations have been carried out to ensure the development will not damage any natural habitats. Bushfire, Flora and Fauna and Soil & Water reports with recommendations have been submitted as part of this application. Ongoing monitoring of the site conservation works forms part of SMRC's Biosecurity Officer recommendations dated 11 July 2024. Appendix 1B – Clements *et al.* (2024)

5.2 Snowy River Development Control Plan 2013 – Eco-Tourist Facility

E1 Tourist Development

Tourist Accommodation – Eco-Tourist Cabins
Eco-Tourist facilities provide for a combination of tourism, education and hands on activities relating to the natural or cultural environment.

The objectives for the establishment of an eco-tourist facilities are:

Objectives	Comment
To strive to improve the environment of a site through appropriate design and integration of all elements of the development.	The design of the buildings along with the use of renewable materials in the construction will aid in the improvement of the environment of the site.
To focus on minimal site disturbance with a requirement for design to reflect not alter the natural existing landscape.	Minimal site disturbance is proposed as part of this development. The design of the cabins is sympathetic to the existing landscape. The intent of the proposal is to benefit from the existing rural location with minimal disturbances to improve the safety and wellbeing of future visitors.
To integrate waste minimization and energy efficiency within the design and operation of a development.	A conscious effort has been made to ensure minimal waste is created during the construction process. The use of solar power and reuse of stormwater collected as water supply in the buildings demonstrates energy efficiency is a

Objectives	Comment
	high priority to the developers of this eco-tourist facility.
To reduce the footprint of development components to the minimum required for development to proceed.	All buildings have been designed to provide all modern amenities within small building footprints and utilising existing road infrastructure.
To recognise the importance of key natural features to the visitor experience, and where these are off site (eg National Parks), recognise and address the potential indirect impacts associated with a development.	The unique area of Jindabyne and surrounding region are a convenient base for visitors to explore the nearby lakes, Kosciuszko National Park and ski fields. Visitors can explore the area through a range of activities including bushwalking, fishing, snow activities and water-based sports. The close proximity of the development to Kosciusko National Park offers visitors a unique opportunity to experience the natural and cultural history of the park through the NPWS visitors centres. All guests would receive information on the preservation of the local area and additional information on campaigns such as Keep Australia Beautiful.
To acknowledge the social fabric of the locality and the need to respect, support, and not adversely affect, the local community.	The Jindabyne region centres around predominant agriculture and tourism industry. The Snowy Hydro Scheme and location near Kosciuszko National part and the NSW ski fields have made a lasting impact on the growth and development of the area. The proposed eco-tourist facility will not adversely affect the local community but will help the continual growth and enhancement of the area. The increase in tourists generated by the development will support the locality economically and create interest in the history and the nature of the region.
To incorporate visitor education and environmental awareness as integral components of the development.	In general, the area has an abundance of educational elements in nearby surrounding locations that will offer visitors many options and opportunities to experience nature and the cultural aspects of the area such as the * NPWS visitor centres * Gaden Trout Hatchery * Thredbo Alpine Museum * Yarrongobilly Caves * Snowy Mountains Scheme Visitor Centre. * Lake Jindabyne The on-site manager will be able to provide direction to local knowledge ensuring visitors will be well informed on the locality and cultural and

Objectives	Comment
	health-oriented activities available within the area. Information packs will be available for guests in their cabins to gain further knowledge of the National Park and activities within the locality.
To incorporate ongoing monitoring of the development in total and continually assess cumulative impacts, striving to improve the environment within which the development is situated.	*Ongoing monitoring of the environmental efficiency of the development will be put in place to ensure continual improvement of development and the surrounding site.*
To utilise alternative available technology for essential services, avoiding the use of non-renewable resources where practicable	*The off-grid development utilises the use of solar power and stormwater collection.*

Performance Criteria		Comment
E1.3-1 DESIGN OF ECO-TOURIST FACILITY Minimise site disturbance through integrative design which reflects rather than alters the natural existing landscape. - Use of materials that blend with the surrounding environment - Maximise energy efficiency - Designed on the basis of ecological sustainability and an understanding of potential environmental impacts - Buildings and infrastructure to not dominate the visual landscape.	☑	The proposed cabins are to be constructed with iron bark round back cladding that will blend in with the natural environment. The installation of solar panels and the positioning of the units will act to maximise energy efficiency. The cabins have been designed with a minimal footprint to reduce the amount of ground disturbance. The use of renewable building materials will assist in minimising environmental impacts. The proposed setbacks have been carefully planned so cabins and sheds are not *visibly prominent within the landscape.*
E1.3-2 OPERATION OF ECO-TOURIST FACILITY - An eco-tourist facility that accommodated over 15 guests must be centrally managed by on site management - Where a managers residence is provided as part of an eco-tourist facility, an existing or proposed dwelling is to operate as the managers residence. - Only one managers residence is permitted - The facility must operate on a year round basis - Accommodation must be used soley for the provision of temporary holiday accommodation (no more than 3 consecutive months)	☑	As the facility will provide accommodation for more than 15 guests an on-site manager will be in place to centrally manage the facility. The 2 bedroom managers quarters will be located within Shed 1 along with a refuge centre. Complies. Only one managers residence is proposed with this development. *The facility shall be conditioned by Council to operate on a year-round basis.* *The accommodation shall be conditioned by Council on the approved consent to be accommodated to a maximum of 3 consecutive months.*
E1.3-3 NATURE OF ECO-TOURIST FACILITY - The development may contain facilities for the teaching, researching or dissemination of knowledge in respect of the natural and cultural history of the area. - The development will provide opportunities for visitors to experience nature and culture in ways that lead to a greater	☑	The on-site manager will be able to provide direction to local knowledge ensuring visitors will be well informed on the locality and cultural and health-oriented activities available within the area. Information packs will be available for guests in their cabins to gain further knowledge of the National Park and activities within the locality. Should groups attend the development there is space within the proposed refuge to be used as a teaching centre.

Performance Criteria		Comment
understanding, appreciation and enjoyment.		Guests will be able to experience and enjoy the views of the surrounding mountains and the natural landscape.
E1.3-4 CAR PARKING Eco-Tourist facilities will: - Provide adequate on-site car parking and manoeuvring space to cater for the peak use of the facility - Require a traffic assessment prepared by a suitably qualified traffic engineer as required	☑	There is adequate provision for car parking on the site. Due to the small scale of the development a traffic assessment is not deemed to be necessary for the proposed development. Access to the site will be suitable for 2wd vehicles.
E1.3-5 ACCESS - To ensure reasonable provision is made within the building and access areas for the movement and circulation of people with disabilities - Demonstrate consistency with the provisions of the Disability Discrimination Act 1992 (Commonwealth). - Comply with the Building Code of Australia with respect to access and circulation for persons with a disability.	☑	Complies. Complies. All cabins can be accessed directly from their parking areas. Complies. Cabin 3 has been designed as an accessible unit in compliance with the Building Code of Australia.
E1.3-6 WASTE MANAGEMENT - Waste is to be managed in a safe, tidy and environmentally responsible manner and in accordance with legislative requirements. - Waste management is to be based on the principles of waste avoidance and maximising reuse and recycling of materials. - Details of the waste management strategy for the eco-tourist facility (both construction and operational phases) must be submitted to Council when a Development Application is lodged. (Refer to Chapter A2 Development Application Requirements)	☑	All waste will be stored safely at the shed site and disposed of in a responsible manner. Where possible materials will be reused on the construction site. All other waste will be recycled or disposed of at the local waste depot. Waste management plan has been addressed with a completed table within this application. Each service pod for the cabins will have recycle and rubbish bins provided. The site manager will manage the collection of waste from the service pod and ensure that rubbish and recycling are disposed of in an appropriate and environmentally friendly way.
EDUCATION & AWARENESS		The on-site manager will be able to provide local knowledge ensuring visitors will be well informed on

Performance Criteria		Comment
To incorporate and promote visitor education and environmental awareness as integral components of eco-tourist development. - Contain facilities for the teaching, researching or dissemination of knowledge I respect of the natural and cultural history of the area. - Provide opportunities for visitors to experience nature and culture in ways that lead to a greater understanding, appreciation and enjoyment. Recognise the importance of key natural features to the visitor experience, and where these are off site (eg. National Parks) recognise and address the potential indirect impacts associated with a development.	☑	the locality and cultural and health-oriented activities available within the area. Information packs will be available for guests in their cabins to gain further knowledge of the National Park and activities within the locality. For group activities the refuge area within Shed 1 can be utilised as an education or teaching facility.

Performance Criteria		Comment
C8 Environmental Management		
C8.1-1 Minimising Conflicts	☑	The proposed eco-tourist development is permitted within RU1 zone which allows for the uses of the surrounding subject land include residential rural lots, tourist developments and farmland. Section 3 Site Analysis of this SEE. Similar eco cabin developments approved within the vicinity of the application. The proposed development will not cause conflict.
C8.2-1 Land Contamination	☑	The subject property is not considered contaminated land.
C8.3-1 Erosion & Sediment Control	☑	All works are to be undertaken in accordance with the recommendation of Erosion & Sediment Control Plan by Harris Environmental Consulting Ref 5012ESCP Version 3 Dated 20 August 2024
C8.3-2 Slopes & Batters	☑	Complies. No slopes in excess of 1:3.
C8.4-1 Weed Management	☑	Weed control has been ongoing under the guidance of Council's Biosecurity Officer. The Indirect impacts of the proposal include the risk of potential introduction of weeds on tires. The weed risk is to be minimised by implementing the recommendation of Council's Biosecurity Officer. See BAR – Clements *et al.* (2024)
C8.5-1 Ecological Impacts (a) The development is to minimise any impact on the local ecology including water quality, aquatic habitats and fish passage. (b) Where development may have an impact on threatened species, populations or ecological communities (including development on land significant for flora and fauna), an Assessment of Significance (AOS) is to be undertaken. Where it is found that there would be a significant impact on threatened species, their habitats or endangered ecological communities a	☑	The riparian works specified by the LLS are directed to enhancing the onsite acquatic habitat. The proposed stormwater management plan, and sediment and erosion management plan are directed to protect and enhance natural watercourses and their associated ecosystems and ecological processes from the impacts of the proposal. '*The occurrence and potential for threatened species was assessed in the Biodiversity Assessment Report (BAR). One listed threatened flora species, the listed Vulnerable species* Calotis glandulosa, *was recorded associated with the boulders, but none recorded in the area of the proposal, nor likely to occur on former grazing land. There have no records of threatened fauna species on or near the site, nor likely habitat onsite. Hence, a BDAR is not required for the proposal.* ***Measures to avoid and minimise*** *To avoid and minimise impacts on the native vegetation and potential habitats, including for the threatened herb* Calotis glandulosa, *the proposal has been carefully located to:* o *avoid loss of native canopy trees;* o *avoid areas with existing boulder formations (possible likely habitat for* Calotis glandulosa*); with*

Species Impact Statement (SIS) would be required.		○ *the existing roads / tracks (areas of existing disturbance) are to be utilized for the proposal.* *In addition, the weed control measures recommended by Council's Biosecurity Office are directed to re-establishment of the native flora, including by strategic slashing and control of fire-prone and invasive priority weeds.'* Clements *et al.* (2024)

5.3 State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004

The cabins and managers residence are BASIX affected buildings under the SEPP.

Assessments have been undertaken by Thermal Environmental Engineering.

- Multi Dwelling BASIX Certificate 1759363M is provided with the proposal demonstrating compliance with the SEPP.
- NatHERS Certificate No. H9PR7SAAV0 generated 9 August 2024 demonstrates all 6 cabins and shed 1/managers quarters achieve a 7 star rating or higher.

5.4 State Environmental Planning Policy (Koala Habitat Protection) 2021

92 Chongs Road is subject to the SEPP and a site assessment and subsequent findings have been outlined in section 2.11 of the BAR should be deemed compliant.

'From the vegetation data recorded onsite in eight BAM plots, Eucalyptus viminalis was recorded in only one (Plot 1) with 0.2% cover. Eucalyptus viminalis was not considered to constitute at least 15% of the total number of trees in the upper or lower strata of the tree component. Hence the site is not considered to be Potential Koala Habitat.

***Chapter 4 Koala habitat protection 2021** does not apply to Rural zoned land, RU1, RU2, and RU3 in the Snowy Monaro Regional LGA.*

From the BioNET records, Koala has been recorded nearby in forested land less than 2 km to the south, adjoining the Snowy River Way close to Sugarloaf Creek, and to the north of Ngadang Nature Reserve (Figure 5b).

With further environmental / conservation works, especially planting Koala feed trees such as Eucalyptus viminalis, there is potential to create koala habitat in the future. Note: Eucalyptus viminalis occurs mostly in wetter or seasonally well-watered areas, particularly in mountain valleys and along streams on tableland areas.' Clements *et al.* (2024)

6.0 OTHER MATTERS FOR CONSIDERATION

Criteria	Comment
Scenic Values	The proposed eco cabins are located on gentle slopes below the ridge line to minimise visual impact.
Geotechnical	No geotechnical report is required.
Mine Subsidence	The proposal is not within a mines subsidence area.
Contaminated Land	The site is not known to be contaminated and given the proposal will not involve any significant earth works, it is unlikely that the proposal will disturb any potentially contaminated soil.
Acid Sulfate Soils	Not affected.
Natural Waterways	The conservation works have designed and undertaken to protect and enhance the natural waterways in consultation with Local Land Services. The objectives of both the proposed stormwater management plan, and sediment and erosion management plan are to protect and enhance natural watercourses and their associated ecosystems and ecological processes.
Bushfire	The site is bushfire prone as shown on NSW Planning Portal mapping. Bushfire reports are submitted as part of this application.
Flora and Fauna	*'On this historically cleared, former grazing property, the proposal is continuation of the ongoing environmental protection / conservation works under the guidance of local advisory groups'* (Clements *et al.* 2024).
Heritage	The site is not identified as having local heritage significance. No Aboriginal sites recorded nor places declared in or near the 92 Chongs Road, Jindabyne (AHIMS search dated 14 June 2023)
Social Impact Economic Impact	The development will create only positive impacts from a social and economic perspective. With accommodation shortages being experienced within the long-term rental and holiday accommodation markets in Jindabyne and surrounding area, the proposed development is deemed positive socially and economically.
Street Setback	The proposed street setbacks comply with the DCP and compliment the adjoining development.
Energy Efficiency	BASIX has been obtained as part of this application. BASIX cert 1759363M. NatHERS Certificate No. H9PR7SAAV0. The design of the cabins ensures that minimum amounts of heating and cooling are required. Water will be supplied by filtered and UV treated rainwater collected in water tanks in the services pod of each cabin.
Landscape Design	Ongoing conservation works (Clements *et al.* 2024).
Traffic and Transport	Access is legal and practical and suitable for the use of an eco-tourist facility.

Design of Parking and Service Areas	Suitable car parking has been provided for each cabin. Accessible cabin requirement will comply with relevant legislation.
Cut and Fill	Minimal cut and fill is required for this build.
Demolition and Construction Waste Management	Minimal waste only. Any waste will be disposed of at Council refuse centre or recycled.
Erosion Prevention and sediment control	To be conditioned upon consent. Erosion & Sedimentation management plan has been submitted as part of this application.
Air Quality	The proposal will not impact on the air quality within the area.
Noise and Vibration	The ongoing use of the site is unlikely to create noise or vibration that would have a negative impact on the amenity of the surrounding properties.

7.0 CONCLUSION

The proposal has been assessed in accordance with the provisions of Section 4.15 Evaluation of the Environmental Planning and Assessment Act, 1979, and is considered an appropriate development of the site.

The proposal is permissible with the consent of the Council being compliant with the relevant environmental planning instruments and the Development Control Plan. The Statement of Environmental Effects confirms that the site is suitable and capable of sustaining the proposed development.

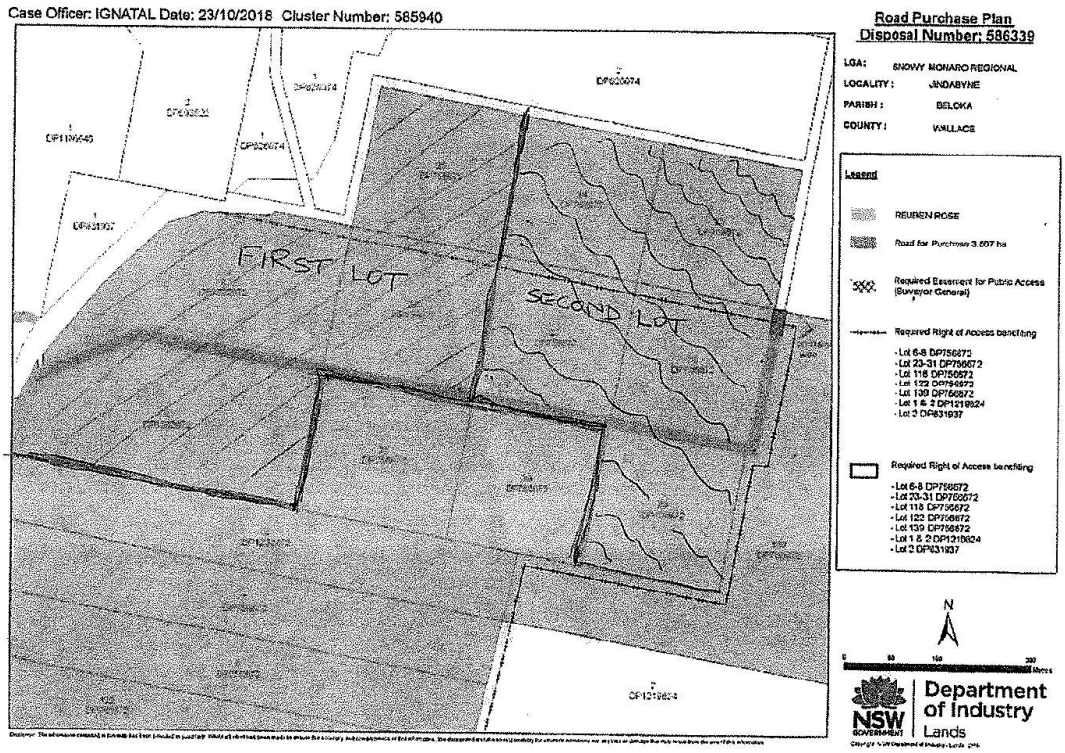
The proposed works do not result in any unreasonable impact on adjoining properties.

The proposal is in the public interest as:

- It provides a sustainable land use.
- It is positive in terms of social, environmental and economic factors.

It is sought that Council approve the application

8.0 APPENDIX I – TITLE SEACHES & DEPOSITED PLANS


Case Officer: IGNATAL Date: 23/10/2018 Cluster Number: 585940
FIRST LOT
SECOND LOT
Road Purchase Plan
Disposal Number: 586339
LGA: SNOWY MONARO REGIONAL
LOCALITY: JINDABYNE
PARISH: BELOKA
COUNTY: WALLACE
Legend
REUBEN ROSE
Road for Purchase 3.697 ha
Required Easement for Public Access (Surveyor General)
Required Right of Access benefiting
- Lot 6-8 DP756872
- Lot 23-31 DP756872
- Lot 116 DP756872
- Lot 122 DP756872
- Lot 139 DP756872
- Lot 1 & 2 DP1219824
- Lot 2 DP631937
Required Right of Access benefiting
- Lot 6-8 DP756872
- Lot 23-31 DP756872
- Lot 116 DP756872
- Lot 122 DP756872
- Lot 139 DP756872
- Lot 1 & 2 DP1219824
- Lot 2 DP631937
N
Department of Industry
Lands
NSW GOVERNMENT

LAND REGISTRY SERVICES

Title Search

Information Provided Through
Spectrum Client Solutions
Ph. 9223 6998 Fax. 9223 7114

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 2/1232872

SEARCH DATE	TIME	EDITION NO	DATE
25/5/2023	9:46 AM	4	7/6/2019

LAND

LOT 2 IN DEPOSITED PLAN 1232872
AT JINDABYNE
LOCAL GOVERNMENT AREA SNOWY MONARO REGIONAL
PARISH OF ABINGTON COUNTY OF WALLACE
PARISH OF BELOKA COUNTY OF WALLACE
TITLE DIAGRAM DP1232872

FIRST SCHEDULE

JOSHUA MARK LEITNER (T AP307143)

SECOND SCHEDULE (7 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
2 LAND EXCLUDES THE ROAD(S) AND CREEK(S) SHOWN IN THE TITLE DIAGRAM
3 DP1221208 RIGHT OF ACCESS 20.115 METRE(S) WIDE AND VARIABLE WIDTH AFFECTING THE PART(S) SHOWN SO BURDENED IN DP1221208
4 DP1221208 RIGHT OF ACCESS 20.115 METRE(S) WIDE AND VARIABLE WIDTH APPURTENANT TO THE PART SHOWN SO BENEFITED IN THE TITLE DIAGRAM
5 DP1245652 EASEMENT FOR OVERHEAD POWER LINE(S) 20.115 METRE(S) WIDE AND VARIABLE WIDTH AFFECTING THE PART(S) SHOWN SO BURDENED IN DP1245652
6 DP1250715 RIGHT OF ACCESS 20.115 METRE(S) WIDE APPURTENANT TO THE LAND ABOVE DESCRIBED
7 AP307144 MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

TM PRINTED ON 25/5/2023

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LAND REGISTRY SERVICES

Title Search

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NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 1/1250715

SEARCH DATE	TIME	EDITION NO	DATE
25/5/2023	10:31 AM	2	7/6/2019

LAND

LOT 1 IN DEPOSITED PLAN 1250715
AT JINDABYNE
LOCAL GOVERNMENT AREA SNOWY MONARO REGIONAL
PARISH OF BELOKA COUNTY OF WALLACE
TITLE DIAGRAM DP1250715

FIRST SCHEDULE

JOSHUA MARK LEITNER (T AP307143)

SECOND SCHEDULE (4 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS (S.13.2 CROWN LAND MANAGEMENT ACT 2016)
2 AS TO BOUNDARIES TO RIVERS/LAKES - SEE SECTION 13.3 CROWN LAND MANAGEMENT ACT 2016
3 LIMITED TITLE. LIMITATION PURSUANT TO SECTION 28T(4) OF THE REAL PROPERTY ACT, 1900. THE BOUNDARIES OF THE LAND COMPRISED HEREIN HAVE NOT BEEN INVESTIGATED BY THE REGISTRAR GENERAL.
4 AP307144 MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

TM PRINTED ON 25/5/2023

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Req:R618852 /Doc:DP 1250715 P /Rev:26-Feb-2019 /NSW LRS /Pgs:ALL /Prt:25-May-2023 10:31 /Seq:2 of 2
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ePlan

CERTIFICATES, SIGNATURES AND SEALS

Sheet 1 of 1

PLAN OF FIRST TITLE CREATION AND ROAD CLOSING UNDER THE ROADS ACT, 1993

* DP1250715

* **Registered:** 26.02.2019

* OFFICE USE ONLY

Surveying Regulation, 2012

I, ...
of .....
a surveyor registered under the *Surveying Act, 2002*, certify that the survey represented in this plan is accurate, has been made in accordance with the *Surveying Regulation, 2001* and was completed on:.....

The survey relates to
.....
.....
(specify the land actually surveyed or specify any land shown in the plan that is not the subject of the survey)

Signature .....:.....*Dated:*.....
Surveyor registered under the Surveying Act, 2002

Datum Line:.....
Type: Urban/Rural

Crown Lands NSW/Western Lands Office Approval

I, Adam Janik, (Authorised Officer) in approving this plan certify that all necessary approvals in regard to the allocation of the land shown herein have been given

Signature: .....
Date: 15/1
File Number: 17/06539
Office: Newcastle BC

Subdivision Certificate

I certify that the provisions of s.109J of the Environmental Planning and Assessment Act 1979 have been satisfied in relation to.

the proposed..... set out herein
(insert 'subdivision' or 'new road')

.....
* Authorised Person/General Manager/Accredited Certifier

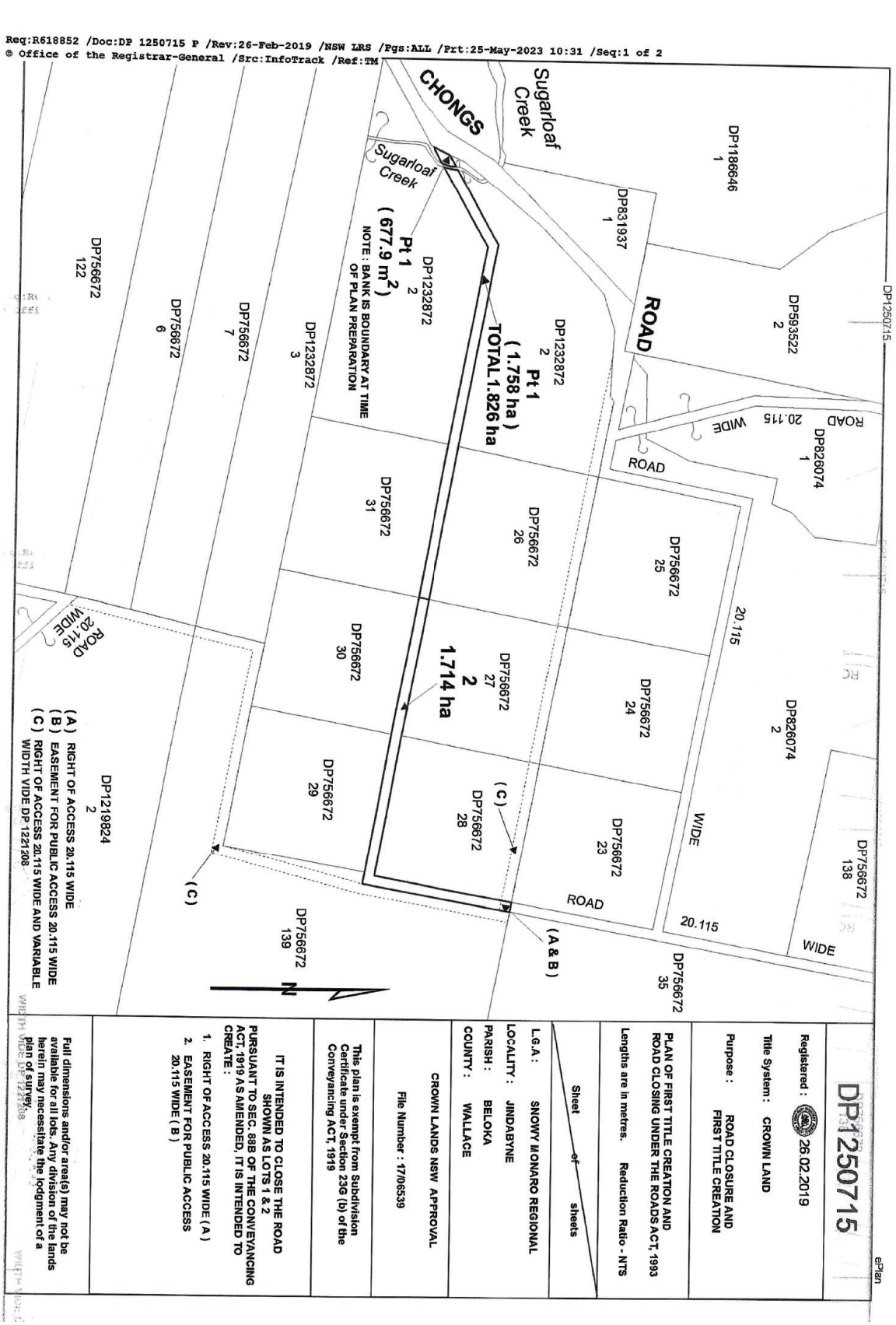
Consent Authority: .....
Date of Endorsement: .....
Accreditation no: .....
Subdivision Certificate no: .....
File no: .....

* Delete whichever is inapplicable.

SIGNATURES, SEALS and STATEMENTS of intention to dedicate public roads or to create public reserves and drainage reserves.

Use PLAN FORM 6A for additional certificates, signatures and seals

SURVEYOR'S REFERENCE:


Req:R618852 /Doc:DP 1250715 P /Rev:26-Feb-2019 /NSW LRS /Pgs:ALL /Prt:25-May-2023 10:31 /Seq:1 of 2
© Office of the Registrar-General /Src:InfoTrack /Ref:TM
CHONGS
Sugarloaf Creek
Sugarloaf Creek
ROAD
Pt 1 2 (677.9 m2)
NOTE : BANK IS BOUNDARY AT TIME OF PLAN PREPARATION
Pt 1 (1.758 ha) TOTAL 1.826 ha
2 1.714 ha
DP1186646 1
DP831937 1
DP593522 2
DP1232872 2
DP1232872 3
DP1232872 2
DP826074 1
DP826074 2
DP756672 122
DP756672 6
DP756672 7
DP756672 31
DP756672 26
DP756672 25
DP756672 30
DP756672 27
DP756672 24
DP756672 29
DP756672 28
DP756672 23
DP756672 138
DP756672 139
DP756672 35
DP1219824 2
ROAD 20.115 WIDE
20.115
WIDE
ROAD
(A) RIGHT OF ACCESS 20.115 WIDE
(B) EASEMENT FOR PUBLIC ACCESS 20.115 WIDE
(C) RIGHT OF ACCESS 20.115 WIDE AND VARIABLE WIDTH VIDE DP 1221208
(A & B)
(C)
N
DP1250715
ePlan
Registered : 26.02.2019
Title System : CROWN LAND
Purpose : ROAD CLOSURE AND FIRST TITLE CREATION
PLAN OF FIRST TITLE CREATION AND ROAD CLOSING UNDER THE ROADS ACT, 1993
Lengths are in metres. Reduction Ratio - NTS
Sheet of sheets
L.G.A : SNOWY MONARO REGIONAL
LOCALITY : JINDABYNE
PARISH : BELOKA
COUNTY : WALLACE
CROWN LANDS NSW APPROVAL
File Number : 17/06539
This plan is exempt from Subdivision Certificate under Section 23G (b) of the Conveyancing ACT, 1919
IT IS INTENDED TO CLOSE THE ROAD SHOWN AS LOTS 1 & 2 PURSUANT TO SEC. 88B OF THE CONVEYANCING ACT, 1919 AS AMENDED, IT IS INTENDED TO CREATE :
1. RIGHT OF ACCESS 20.115 WIDE (A)
2. EASEMENT FOR PUBLIC ACCESS 20.115 WIDE (B)
Full dimensions and/or area(s) may not be available for all lots. Any division of the lands herein may necessitate the lodgment of a plan of survey.

LAND REGISTRY SERVICES **Title Search** InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 2/1232872

SEARCH DATE	TIME	EDITION NO	DATE
20/11/2018	1:43 PM	3	9/10/2018

LAND

LOT 2 IN DEPOSITED PLAN 1232872
AT JINDABYNE
LOCAL GOVERNMENT AREA SNOWY MONARO REGIONAL
PARISH OF ABINGTON COUNTY OF WALLACE
PARISH OF BELOKA COUNTY OF WALLACE
TITLE DIAGRAM DP1232872

FIRST SCHEDULE

REUBEN JOHNSTON ROSE (T AM710135)

SECOND SCHEDULE (5 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
2 LAND EXCLUDES THE ROAD(S) AND CREEK(S) SHOWN IN THE TITLE DIAGRAM
3 DP1221208 RIGHT OF ACCESS 20.115 METRE(S) WIDE AND VARIABLE WIDTH AFFECTING THE PART(S) SHOWN SO BURDENED IN DP1221208
4 DP1221208 RIGHT OF ACCESS 20.115 METRE(S) WIDE AND VARIABLE WIDTH APPURTENANT TO THE PART SHOWN SO BENEFITED IN THE TITLE DIAGRAM
5 DP1245652 EASEMENT FOR OVERHEAD POWER LINE(S) 20.115 METRE(S) WIDE AND VARIABLE WIDTH AFFECTING THE PART(S) SHOWN SO BURDENED IN DP1245652

NOTATIONS

NOTE: THIS FOLIO MAY BE ASSOCIATED WITH A CROWN TENURE WHICH IS SUBJECT TO PAYMENT OF AN ANNUAL RENT. FOR FURTHER DETAILS CONTACT THE LOCAL CROWN LANDS OFFICE AT GOULBURN

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

160082 PRINTED ON 20/11/2018

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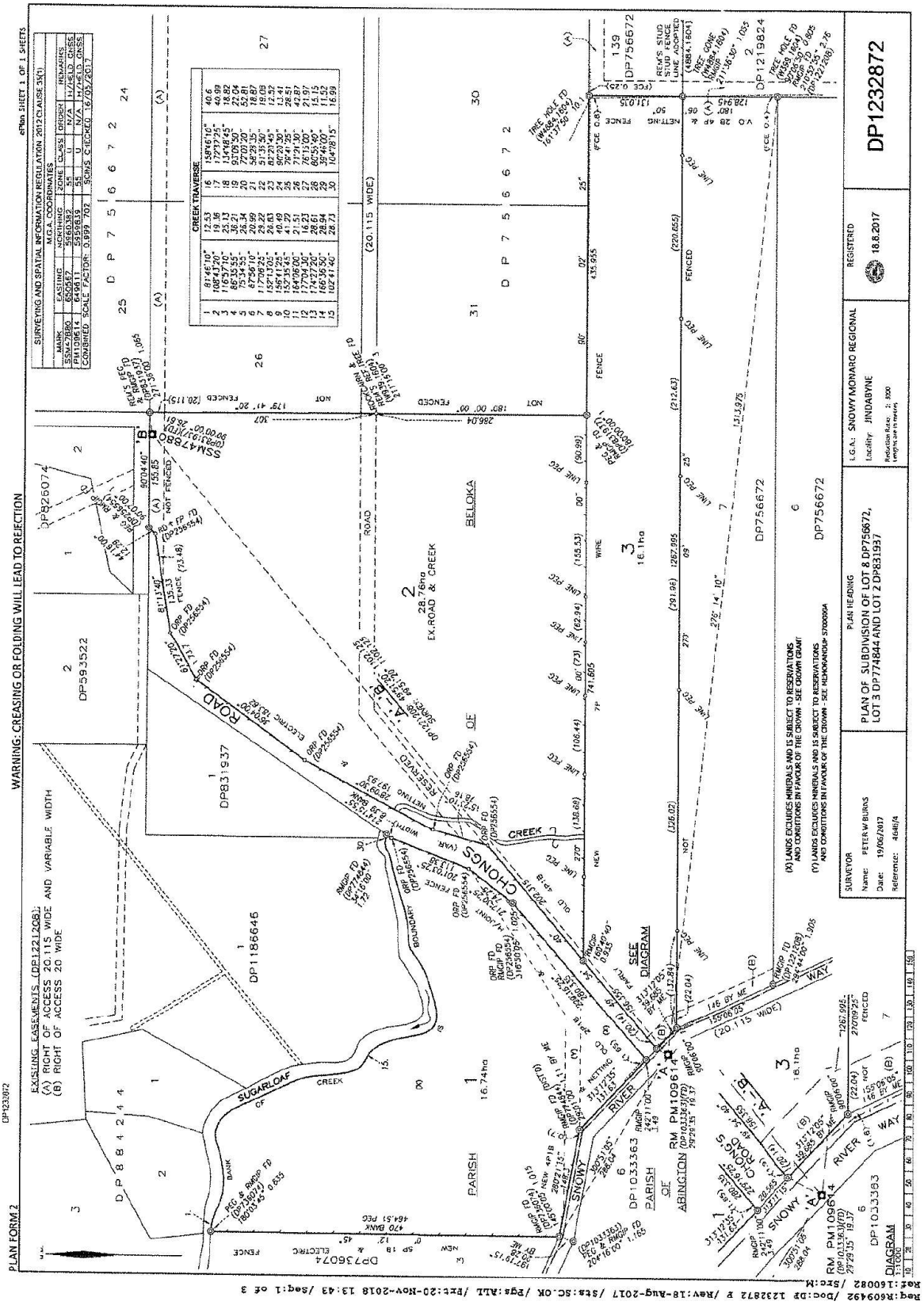
Received: 20/11/2018 13:43:12


PLAN FORM 2
WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION
SURVEYING AND SPATIAL INFORMATION REGULATION 2012 CLAUSE 35(1)
M.G.A. COORDINATES
CREEK TRAVERSE
EXISTING EASEMENTS (DP1221208):
(A) RIGHT OF ACCESS 20.115 WIDE AND VARIABLE WIDTH
(B) RIGHT OF ACCESS 20 WIDE
DP1232872
L.G.A.: SNOWY MONARO REGIONAL
Locality: JINDABYNE
REGISTERED
18.8.2017
PLAN HEADING
PLAN OF SUBDIVISION OF LOT 8 DP756672, LOT 3 DP774844 AND LOT 2 DP831937
SURVEYOR
Name: PETER W BURNS
Date: 19/06/2017
Reference: 4648/4
SEE DIAGRAM
SNOWY RIVER WAY
CHONGS ROAD
SUGARLOAF CREEK
BELOKA
PARISH OF ABINGTON
DP1033363
DP1186646
DP831937
DP593522
DP756672
DP1219824
DP826074
DP736074
DP884244
Req:R609492 /Doc:DP 1232872 P /Rev:18-Aug-2017 /Sts:SC.OK /Pgs:ALL /Prt:20-Nov-2018 13:43 /Seq:1 of 3

Req:R609492 /Doc:DP 1232872 P /Rev:18-Aug-2017 /Sts:SC.OK /Pgs:ALL /Prt:20-Nov-2018 13:43 /Seq:2 of 3
Ref:160082 /Src:M DP1232872

PLAN FORM 6 (2012) WARNING: Creasing or folding will lead to rejection ePlan

DEPOSITED PLAN ADMINISTRATION SHEET Sheet 1 of 2 sheets

Office Use Only
Registered: 18.8.2017
Title System: TORRENS
Purpose: SUBDIVISION

Office Use Only
DP1232872

PLAN OF SUBDIVISION OF LOT 8 DP756672, LOT 3 DP774844 AND LOT 2 DP831937

LGA: **SNOWY MONARO REGIONAL**
Locality: **JINDABYNE**
Parish: **BELOKA**
County: **WALLACE**

Crown Lands NSW/Western Lands Office Approval

I, ... (Authorised Officer) in approving this plan certify that all necessary approvals in regard to the allocation of the land shown herein have been given.

Signature: .....
Date: .....
File Number: .....
Office: .....

Subdivision Certificate

I, Sophie Ballinger
Authorised Person/~~General Manager~~/*~~Accredited Certifier~~, certify that the provisions of s.109J of the *Environmental Planning and Assessment Act 1979* have been satisfied in relation to the proposed subdivision, new road or reserve set out herein.

Signature: [redacted]
Accreditat[redacted]
Consent Authority: SNOWY MONARO REGIONAL COUNCIL
Date of endorsement: 6 July 2017
Subdivision Certificate number: SC4901/2018
File number: SC4901/2018

*Strike through if inapplicable.

Survey Certificate

I, PETER WILLIAM BURNS
of P.O. BOX 737 COOMA. NSW 2630
a Surveyor registered under the *Surveying and Spatial Information Act 2002*, certify that:

*(a) ~~The land shown in the plan was surveyed in accordance with the *Surveying and Spatial Information Regulation 2012*, is accurate and the survey was completed on .....~~

*(b) The land shown in the plan being Lots 1 and 2 was surveyed in accordance with the *Surveying and Spatial Information Regulation 2012*, is accurate and the survey was completed on 21/12/2016. the part not surveyed was compiled in accordance with that Regulation.

*(c) ~~The Easement shown in this plan was compiled in accordance with the *Surveying and Spatial Information Regulation 2012*.~~

Signature: [redacted] Dated: 19/06/2017
Surveyor ID: 690
Datum Line: "A – B"
Type: *~~Urban~~/*Rural
The terrain is *Level-Undulating / *~~Steep-Mountainous~~.

*Strike through if inapplicable.
^Specify the land actually surveyed or specify any land shown in the plan that is not the subject of the survey.

Statements of intention to dedicate public roads, public reserves and drainage reserves.

Plans used in the preparation of survey/compilation.
DP256554 DP774844 DP831937 DP1221208
DP1033363 W939.1604 W399.1604 W4884.1604

If space is insufficient continue on PLAN FORM 6A

Signatures, Seals and Section 88B Statements should appear on PLAN FORM 6A

Surveyor's Reference: 4646/4

Req:R609492 /Doc:DP 1232872 P /Rev:18-Aug-2017 /Sts:SC.OK /Pgs:ALL /Prt:20-Nov-2018 13:43 /Seq:3 of 3
Ref:160082 /Src:M DP1232872

PLAN FORM 6A (2012) WARNING: Creasing or folding will lead to rejection ePlan

DEPOSITED PLAN ADMINISTRATION SHEET Sheet 2 of 2 sheets

Office Use Only

Registered: 18.8.2017

Office Use Only

DP1232872

PLAN OF SUBDIVISION OF LOT 8 DP756672, LOT 3 DP774844 AND LOT 2 DP831937

This sheet is for the provision of the following information as required:

- A schedule of lots and addresses - See 60(c) *SSI Regulation 2012*
- Statements of intention to create and release affecting interests in accordance with section 88B *Conveyancing Act 1919*
- Signatures and seals- see 195D *Conveyancing Act 1919*
- Any information which cannot fit in the appropriate panel of sheet 1 of the administration sheets.

Subdivision Certificate number: SC4001/2018

Date of Endorsement: 6 July 2017

STREET ADDRESS

Lot No.	Street No.	Street Name	Street Type	Locality
1	7470	SNOWY RIVER	WAY	JINDABYNE
2	NOT AVAILABLE	CHONGS	ROAD	JINDABYNE
3	NOT AVAILABLE	CHONGS	ROAD	JINDABYNE

[redacted]

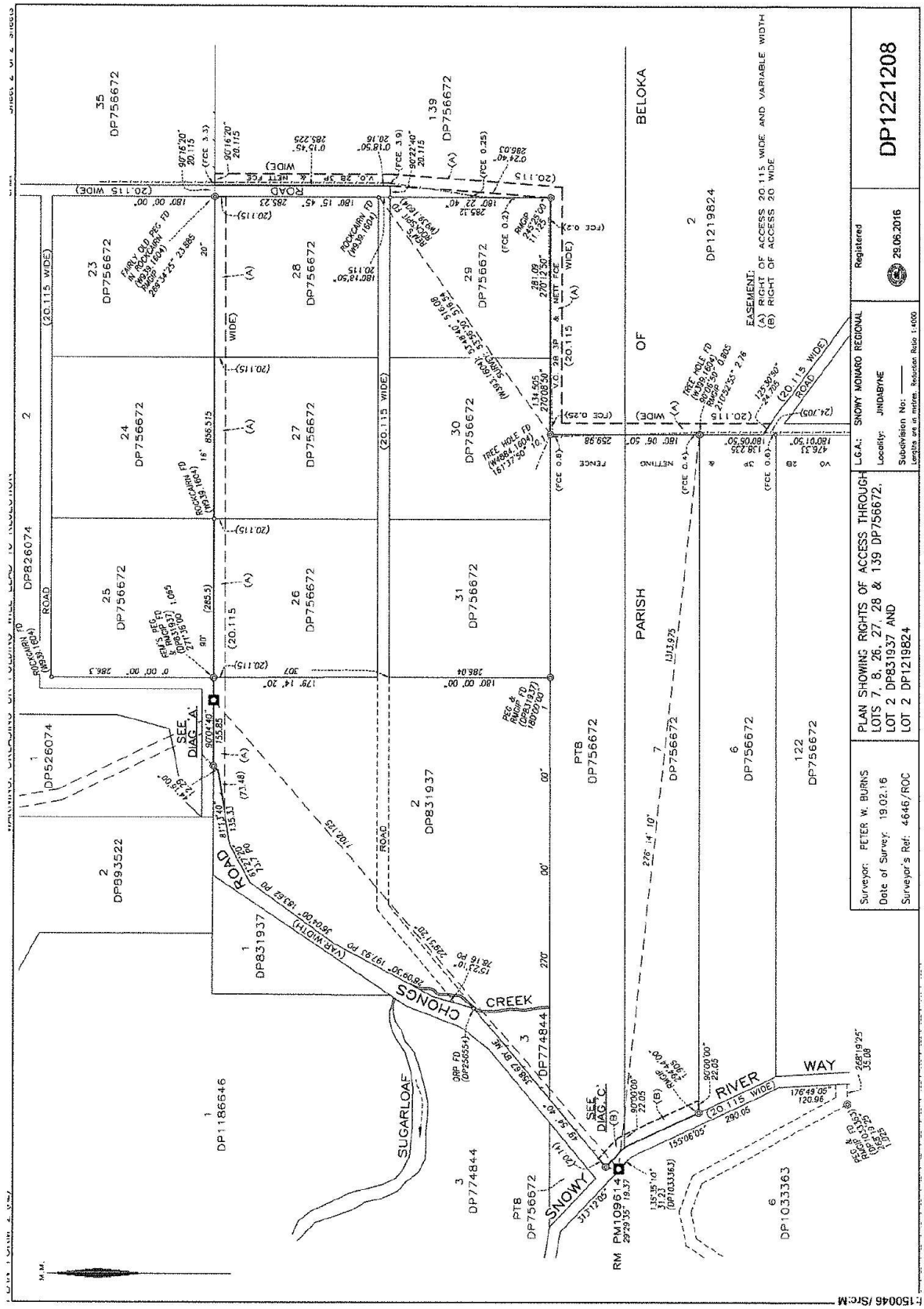
REUBEN ROSE
Registered Proprietor

[redacted]

DENNIS R. WHITEHEAD.
Registered Proprietor.

If space is insufficient use additional annexure sheet

Surveyor's Reference: 4646/4


DP1221208
Registered
29.06.2016
L.G.A.: SNOWY MONARO REGIONAL
Locality: JINDABYNE
Subdivision No:
PLAN SHOWING RIGHTS OF ACCESS THROUGH LOTS 7, 8, 26, 27, 28 & 139 DP756672, LOT 2 DP831937 AND LOT 2 DP1219824
Surveyor: PETER W. BURNS
Date of Survey: 19.02.16
Surveyor's Ref: 4646/ROC
EASEMENT:
(A) RIGHT OF ACCESS 20.115 WIDE AND VARIABLE WIDTH
(B) RIGHT OF ACCESS 20 WIDE
BELOKA
PARISH
OF
SNOWY
RIVER
WAY
CHONGS
CREEK
SUGARLOAF
ROAD
SEE DIAG 'A'
SEE DIAG 'C'
DP1186646
DP1033363
DP774844
DP831937
DP893522
DP526074
DP826074
DP1219824
DP756672
PM109614
RM
M.M.
F150046 /Src:M

ef:150046 /Src:M

PLAN FORM 6 (2012) WARNING: Creasing or folding will lead to rejection ePlan

DEPOSITED PLAN ADMINISTRATION SHEET

Sheet 1 of 2 sheets

Office Use Only

Registered: 29.06.2016

Title System: TORRENS

Purpose: EASEMENT

Office Use Only

DP1221208

PLAN SHOWING RIGHTS OF ACCESS THROUGH LOTS 7, 8, 26, 27, 28 & 139 DP756672, LOT 2 DP831937 AND LOT 2 DP1219824

LGA: **SNOWY MONARO REGIONAL**

Locality: **JINDABYNE**

Parish: **BELOKA AND ABINGTON**

County: **WALLACE**

Crown Lands NSW/Western Lands Office Approval

I, ... (Authorised Officer) in approving this plan certify that all necessary approvals in regard to the allocation of the land shown herein have been given.

Signature: .....

Date: .....

File Number: .....

Office: .....

Subdivision Certificate

I, ...

*Authorised Person/*General Manager/*Accredited Certifier, certify that the provisions of s.109J of the *Environmental Planning and Assessment Act 1979* have been satisfied in relation to the proposed subdivision, new road or reserve set out herein.

Signature: .....

Accreditation number: .....

Consent Authority: .....

Date of endorsement: .....

Subdivision Certificate number: .....

File number: .....

*Strike through if inapplicable.

Survey Certificate

I, PETER WILLIAM BURNS

of P.O. BOX 737 COOMA. NSW 2630

a Surveyor registered under the *Surveying and Spatial Information Act 2002*, certify that:

*(a) The Easements shown in the plan were surveyed in accordance with the *Surveying and Spatial Information Regulation 2012*, are accurate and the survey was completed on 19th February 2016.

~~*(b) The parts of the land shown in the plan being.....was surveyed in accordance with the *Surveying and Spatial Information Regulation 2012*, are accurate and the survey was completed on ....., the part not surveyed was compiled in accordance with that Regulation.~~

~~*(c) The land shown in this plan was compiled in accordance with the *Surveyi* [redacted] *Regulation 2012.~~

Signature: [redacted] Dated: 19/02/2016

Surveyor ID [redacted]

Datum Line: "A – B"

Type: ~~*Urban~~/*Rural

The terrain is *Level-Undulating / ~~*Steep-Mountainous.~~

*Strike through if inapplicable.

^Specify the land actually surveyed or specify any land shown in the plan that is not the subject of the survey.

Statements of intention to dedicate public roads, public reserves and drainage reserves.

Plans used in the preparation of survey/~~compilation.~~

W398.1604 W399.1604 W939.1604 W4287.1604
W4611.1604 W4884.1604 W5498.1604 DP256554
DP821723 DP831937 DP856335 DP1033363
DP1192512 DP1219824

If space is insufficient continue on PLAN FORM 6A

Signatures, Seals and Section 88B Statements should appear on PLAN FORM 6A

Surveyor's Reference: 4646/ROC

ef:150046 /Src:M DP1221208

PLAN FORM 6A (2012) WARNING: Creasing or folding will lead to rejection ePlan

DEPOSITED PLAN ADMINISTRATION SHEET Sheet 2 of 2 sheets

Office Use Only

Registered: 29.06.2016

Office Use Only

DP1221208

PLAN SHOWING RIGHTS OF ACCESS THROUGH LOTS 7, 8, 26, 27, 28 & 139 DP756672, LOT 2 DP831937 AND LOT 2 DP1219824

Subdivision Certificate number: .....

Date of Endorsement: .....

This sheet is for the provision of the following information as required:

- A schedule of lots and addresses - See 60(c) *SSI Regulation 2012*
- Statements of intention to create and release affecting interests in accordance with section 88B *Conveyancing Act 1919*
- Signatures and seals- see 195D *Conveyancing Act 1919*
- Any information which cannot fit in the appropriate panel of sheet 1 of the administration sheets.

PURSUANT TO SEC.88B OF THE CONVEYANCING ACT, 1919,

IT IS INTENDED TO CREATE:-

1. RIGHT OF ACCESS 20.115 WIDE AND VARIABLE WIDTH (A)
2. RIGHT OF ACCESS 20 WIDE (B)

[redacted]

REUBEN ROSE
Registered Proprietor

If space is insufficient use additional annexure sheet

Surveyor's Reference: 4646/ROC

ef:150046 /Src:M DP1221208 ePlan

Instrument setting out terms of Easements intended to be created pursuant to Section 88B Conveyancing Act 1919

(Sheet 1 of 2 Sheets)

DP1221208

Plan: Showing Rights of Access through Lots 7, 8, 26, 27, 28 and 139 DP756672, Lot 2 DP831937 and Lot 2 DP1219824

Full name and address of owner of the land: Reuben Johnston Rose
PO Box 575, Jindabyne NSW 2627

PART 1 (Creation)

Number of item shown in the intention panel on the plan	Identity of easement to be created and referred to in the plan.	Burdened lot(s):	Benefitted lot(s):
1.	Right of access 20.115 wide and variable width	Lot 2 DP831937	Lots 6, 7, 8, 23, 24, 25, 26, 27, 28, 29, 30, 31, 118, 122 and 139 DP756672 and Lots 1 & 2 DP1219824
		Lot 26 DP756672	Lots 6, 7, 8, 23, 24, 25, 27, 28, 29, 30, 31, 118, 122 and 139 DP756672, Lot 2 DP831937 and Lots 1 & 2 DP1219824
		Lot 27 DP756672	Lots 6, 7, 8, 23, 24, 25, 26, 28, 29, 30, 31, 118, 122 and 139 DP756672, Lot 2 DP831937 and Lots 1 & 2 DP1219824
		Lot 28 DP756672	Lots 6, 7, 8, 23, 24, 25, 26, 27, 29, 30, 31, 118, 122 and 139 DP756672, Lot 2 DP831937 and Lots 1 & 2 DP1219824
		Lot 139 DP756672	Lots 6, 7, 8, 23, 24, 25, 26, 27, 28, 29, 30, 31, 118 and 122 DP756672, Lot 2 DP831937 and Lots 1 & 2 DP1219824
		Lot 2 DP1219824	Lots 6, 7, 8, 23, 24, 25, 26, 27, 28, 29, 30, 31, 118, 122 and 139 DP756672, Lot 2 DP831937 and Lot 1 DP1219824
2.	Right of access 20 wide	Lot 8 DP756672	Lots 6 and 7 DP756672
		Lot 7 DP756672	Lot 6 DP756672

[redacted]
REUBEN ROSE
REGISTERED PROPRIETOR

ef:150046 /Src:M DP1221208 ePlan

(Sheet 2 of 2 Sheets)

DP1221208

PART 2 (Terms)

1. Right of access 20.115 wide and variable width.

Name of person empowered to release, vary or modify right of access numbered 1:
The registered proprietor or proprietors for the time being of the Lot or Lots having the benefit.

2. Right of access 20 wide.

Name of person empowered to release, vary or modify right of access numbered 2:
The registered proprietor or proprietors for the time being of the Lot or Lots having the benefit.

I certify that Reuben Johnston Rose, the owner, with whom I am personally acquainted or as to whose identity I am otherwise satisfied, signed this instrument in my presence.

Signature of witness [redacted]

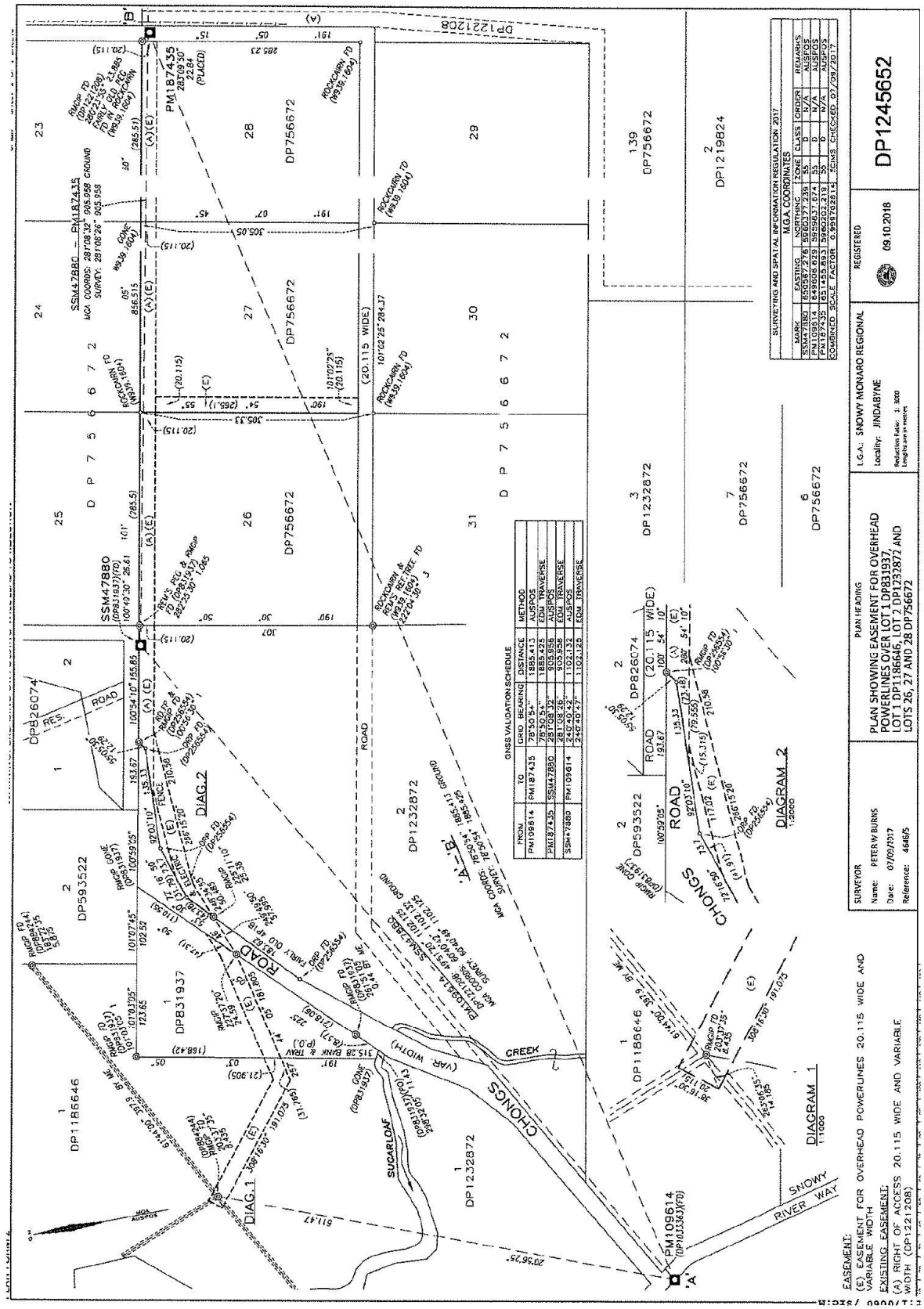
Name of witness: PETER WILLIAM BURNS

Address of witness: 88 COMMISSIONER STREET COOMA. NSW. 2630

Certified correct for the purposes of the Real Property Act 1900 by Reuben Johnston Rose, the owner.

Signature of Reuben Johnston Rose: [redacted]

REGISTERED 29.06.2016


DP1245652
PLAN SHOWING EASEMENT FOR OVERHEAD POWERLINES OVER LOT 1 DP831937, LOT 1 DP1186646, LOT 2 DP1232872 AND LOTS 26, 27 AND 28 DP756672
SURVEYOR
Name: PETER W BURNS
Date: 07/09/2017
Reference: 4646/5
L.G.A.: SNOWY MONARO REGIONAL
Locality: JINDABYNE
REGISTERED
09.10.2018
EASEMENT:
(E) EASEMENT FOR OVERHEAD POWERLINES 20.115 WIDE AND VARIABLE WIDTH
EXISTING EASEMENT:
(A) RIGHT OF ACCESS 20.115 WIDE AND VARIABLE WIDTH (DP1221208)
DIAGRAM 1
DIAGRAM 2
SUCARLOAF
CHONOS
SNOWY RIVER WAY
CREEK
ROAD

ef:170060 /Src:M DP1245652 ePlan

PLAN FORM 6 (2017)	DEPOSITED PLAN ADMINISTRATION SHEET	Sheet 1 of 2 sheet(s)

Office Use Only

Registered: 09.10.2018

Title System: TORRENS

Office Use Only

DP1245652

PLAN SHOWING EASEMENT FOR OVERHEAD POWERLINES OVER LOT 1 DP831937, LOT 1 DP1186646, LOT 2 DP1232872 AND LOTS 26, 27 AND 28 DP756672

LGA: **SNOWY MONARO REGIONAL**

Locality: **JINDABYNE**

Parish: **BELOKA**

County: **WALLACE**

Survey Certificate

I, PETER WILLIAM BURNS.....

of P.O.BOX 737, COOMA. NSW 2630 .....

a surveyor registered under the *Surveying and Spatial Information Act 2002*, certify that:

*(a) The Easement shown in the plan was surveyed in accordance with the *Surveying and Spatial Information Regulation 2017*, is accurate and the survey was completed on 07/09/2017,

~~*(b) The part of the land shown in the plan (*being/*excluding ** .....~~
~~.....)~~
~~was surveyed in accordance with the *Surveying and Spatial Information Regulation 2017*, the part surveyed is accurate and the survey was completed on, ... the part not surveyed was compiled in accordance with that Regulation, or~~

~~*(c) The land shown in this plan was compiled in accordance with the *Surveying and Spatial Information Regulation 2017*.~~

Datum Line: "A – B"

Type: *~~Urban~~/*Rural

The terrain i... /Mountainous.

Signature: [redacted] Dated: 07/09/2017

Surveyor Identification No: 690
Surveyor registered under
the *Surveying and Spatial Information Act 2002*

*Strike out inappropriate words.

**Specify the land actually surveyed or specify any land shown in the plan that is not the subject of the survey.

Crown Lands NSW/Western Lands Office Approval

I, ... (Authorised Officer) in approving this plan certify that all necessary approvals in regard to the allocation of the land shown herein have been given.

Signature: .....

Date: .....

File Number: .....

Office: .....

Subdivision Certificate

I, ...

*Authorised Person/*General Manager/*Accredited Certifier, certify that the provisions of s.109J of the *Environmental Planning and Assessment Act 1979* have been satisfied in relation to the proposed subdivision, new road or reserve set out herein.

Signature: .....

Accreditation number: .....

Consent Authority: .....

Date of endorsement: .....

Subdivision Certificate number: .....

File number: .....

*Strike through if inapplicable.

Plans used in the preparation of survey/~~compilation~~.

DP256554 DP831937 DP1186646 DP1221208
DP1232872 W939.1604

Statements of intention to dedicate public roads, create public reserves and drainage reserves, acquire/resume land.

Surveyor's Reference: 4646/5

Signatures, Seals and Section 88B Statements should appear on PLAN FORM 6A

ef:170060 /Src:M DP1245652

PLAN FORM 6A (2012) WARNING: Creasing or folding will lead to rejection ePlan

DEPOSITED PLAN ADMINISTRATION SHEET Sheet 2 of 2 sheets

Office Use Only
Registered: 09.10.2018

Office Use Only
DP1245652

PLAN SHOWING EASEMENT FOR OVERHEAD POWERLINES OVER LOT 1 DP831937, LOT 1 DP1186646, LOT 2 DP1232872 AND LOTS 26, 27 AND 28 DP756672

Subdivision Certificate number: .....
Date of Endorsement: .....

This sheet is for the provision of the following information as required:
- A schedule of lots and addresses - See 60(c) *SSI Regulation 2012*
- Statements of intention to create and release affecting interests in accordance with section 88B *Conveyancing Act 1919*
- Signatures and seals- see 195D *Conveyancing Act 1919*
- Any information which cannot fit in the appropriate panel of sheet 1 of the administration sheets.

PURSUANT TO SEC.88B OF THE CONVEYANCING ACT, 1919,

IT IS INTENDED TO CREATE:

(1) EASEMENT FOR OVERHEAD POWERLINES 20.115 WIDE AND VARIABLE WIDTH

[redacted]
Signature of Reuben J Rose

[redacted]
Signature of witness
KATHERINE ROSE
7048 SNOWY RIVER WAY,
BELOKA, 2628
Name & Address of witness

[redacted]k Cleary

[redacted]
Signature of witness
Zlata Hain
16 Ponderosa Lane
Jindabyne 2627
Name & Address of witness

[redacted]
Signature of Brendon John Wilkie

[redacted]
Raymond George Wilkie
8/339 Victoria Place
Drummoyne NSW 2047
Name and Address of witness

Execution by Commonwealth Bank of Australia
Mortgagee under dealing AD 665438

Signed at Sydney the 8th day of MAY 2018 For Commonwealth Bank of Australia ABN 48 123 123 [redacted]
Duly appointed Attorney under Power of Attorney Book 4307 No 287
[redacted] Mon[redacted] De La Croix

If space is insufficient use additional annexure sheet.

Surveyor's Reference: 4646/5

sf:170060 /Src:M DP1245652

ePlan

Instrument setting out terms of Easements intended to be created pursuant to Section 88B Conveyancing Act 1919

(Sheet 1 of 4 Sheets)

DP1245652

Plan: Showing Easement for Overhead Powerlines through Lot 1 DP831937, Lot 1 DP1186646, Lot 2 DP1232872 and Lots 26-28 DP756672

Full name and address of owner of the land:	Reuben Johnston Rose PO Box 575, Jindabyne NSW 2627	Lot 2 DP 1232872 Lots 26,27,28 DP 756672
	Jon Patrick Cleary 16 Ponderosa Lane JINDABYNE NSW 2627	Lot 1 DP 1186646
	Brendon John Wilkie Lot 1 Chongs Road Jindabyne NSW 2627	Lot 1 DP 831937

PART 1 (Creation)

Number of item shown in the intention panel on the plan	Identity of easement to be created and referred to in the plan.	Burdened lots:	Prescribed Authority
1.	Easement for overhead powerlines 20.115 Wide and variable width	Lot 1 DP831937 Lot 1 DP1186646 Lot 2 DP1232872 Lot 26 DP756672 Lot 27 DP756672 Lot 28 DP756672	Essential Energy

PART 2 (Terms)

1. Terms of Easement for Overhead Powerlines 20.115 wide and variable width

As set out in Part A of Memorandum AG189384 as registered at LRS

[redacted]

ePlan
(Sheet 2 of 4 Sheets)

DP1245652

~~1.7 remove any unauthorised encroachments from the easement site and recover the~~ costs of carrying out the removal work and repairing any damage to the overhead equipment by the authorised encroachment.

2 In exercising its rights under this easement Essential Energy will take all reasonable precautions to minimise disturbance to the lot burdened and will restore the lot burdened as nearly as practicable to its original condition.

3 Essential Energy will at all times and at its own expense keep the overhead equipment in a proper and fit state of repair.

4 The landowner agrees that it will not:
- 4.1 place or permit to be placed any services or structure within the easement site,
- 4.2 alter the surface of the easement site,
- 4.3 do or permit to be done anything that restricts access to the easement site by Essential Energy, or
- 4.4 plant or allow to grow vegetation other than low or horizontal growing grasses within the easement site

without the written permission of Essential Energy and in accordance with such conditions as Essential Energy may reasonably impose.

5 In this memorandum and any document which refers to it the following definitions apply:
- 5.1 "Essential Energy" means Essential Energy its successors and assigns (who may exercise its rights by any persons authorised by it).
- 5.2 "Easement site" means the part of the lot burdened as the site of any easement for overhead powerlines.
- 5.3 "Fluids" means and includes fluids of any description or kind.
- 5.4 "Gases" means and includes gases of any description or kind.
- 5.5 "Install" includes construct, repair, replace, maintain, modify, use and remove.
- 5.6 "Landowner" means the registered proprietor of the lot burdened and its successors and assigns (including those claiming under or through the registered proprietor).
- 5.7 "Lot burdened" means the land which has the burden of rights created by any document which refers to this memorandum.
- 5.8 "Overhead equipment" means above ground mains, wires, cables or other conduit, transformers (including pole-mounted and padmounted substations) and boosters together with any above ground or underground ancillary works including service cables and connecting cables and the supports therefore (including any towers or poles).
- 5.9 "Services" includes overhead and underground telephone, communications, gas, water, sewage and drainage services.
- 5.10 "Signals" means and includes data or signals of any description or kind.
- 5.11 "Structure" includes building, wall retaining wall, carport and swimming pool but excludes furniture and garden ornament.

And it is hereby declared that the said easement is intended to be an easement in gross under Section 88A of the conveyancing Act 1919 and that the said easement may be released, varied ~~or modified by Essential Energy~~.

I certify that Reuben Johnston Rose, the owner, with whom I am personally acquainted or as to whose identity I am otherwise satisfied, signed this instrument in my presence.

[redacted]

Name of witness: KATHERINE JANE ROSE

Address of witness: 7048 THE SNOWY RIVER WAY, JINDABYNE, 2627

Certified correct for the purposes of the Real Property Act 1900 by Reuben Johnston Rose, the owner.

[redacted] Rose:

ef:170060 /Src:M DP1245652

ePlan
(Sheet 3 of 4 Sheets)

DP1245652

I certify that Brendon John Wilkie, the owner, with whom I am personally acquainted or as to whose identity I am otherwise satisfied, signed this instrument in my presence.

Certified correct for the purposes of the Real Property Act 1900 by Brendon John Wilkie, the owner.

[redacted]

Name of witness: Raymond George Wilkie
Address of witness: 8/339 Victoria Place
Drummoyne NSW 2047

Signature of Brendon John Wilkie:

[redacted]

I certify that Jon Patrick Cleary, the owner, with whom I am personally acquainted or as to whose identity I am otherwise satisfied, signed this instrument in my presence.

Certified correct for the purposes of the Real Property Act 1900 by Jon Patrick Cleary, the owner.

Signature of witness

[redacted]

Name of witness: Zlata Hain
Address of witness:
16 Ponderosa Lane
Jindabyne NSW 2627

Signature of Jon Patrick Cleary:

[redacted]

EXECUTED BY ESSENTIAL ENERGY
by its duly appointed attorney under
power of attorney Book 4728 No. 768
in the presence of:

[redacted]

melinda White
Name of witness
8 Buller Street
Port Macquarie
Address of witness

Mark English
Name and title of attorney:
Deputy General Counsel

af:170060 /Src:M DP1245652

ePlan
(Sheet 4 of 4 Sheets)

DP1245652

Execution by Commonwealth Bank of Australia
Mortgagee under dealing AD 665438

Signed at Sydney the 8th day of May 2018 for Commonwealth Bank Of Australia ABN 48 123 123 124 by its Duly appointed Attorney under Power of Attorney Book 4297 No 297

[redacted]

Witness [redacted]

Linda De La Croix

150 George Street Parramatta NSW 2150

REGISTERED 09.10.2018

LAND REGISTRY SERVICES **Title Search** InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: AUTO CONSOL 6658-130

SEARCH DATE	TIME	EDITION NO	DATE
20/11/2018	1:43 PM	6	7/11/2018

LAND

LAND DESCRIBED IN SCHEDULE OF PARCELS
LOCAL GOVERNMENT AREA SNOWY MONARO REGIONAL
PARISH OF BELOKA COUNTY OF WALLACE
TITLE DIAGRAM CROWN PLAN 939.1604

FIRST SCHEDULE

REUBEN JOHNSTON ROSE (T K559893)

SECOND SCHEDULE (4 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
2 DP1221208 RIGHT OF ACCESS 20.115 METRE(S) WIDE AND VARIABLE WIDTH AFFECTING THE PART OF LOTS 26, 27, 28 IN DP756672 SHOWN SO BURDENED IN DP1221208
3 DP1221208 RIGHT OF ACCESS 20.115 METRE(S) WIDE AND VARIABLE WIDTH APPURTENANT TO THE LAND ABOVE DESCRIBED
4 DP1245652 EASEMENT FOR OVERHEAD POWER LINE(S) 20.115 METRE(S) WIDE AND VARIABLE WIDTH AFFECTING THE PART OF LOTS 26-28 IN DP756672 SHOWN SO BURDENED IN DP1245652

NOTATIONS

NOTE: THIS FOLIO MAY BE ASSOCIATED WITH A CROWN TENURE WHICH IS SUBJECT TO PAYMENT OF AN ANNUAL RENT. FOR FURTHER DETAILS CONTACT THE LOCAL CROWN LANDS OFFICE AT GOULBURN. NOT ALL PARCELS WITHIN THIS TITLE MAY BE AFFECTED BY A CROWN TENURE.

UNREGISTERED DEALINGS: NIL

SCHEDULE OF PARCELS

LOTS 23-29 IN DP756672.

*** END OF SEARCH ***

160082 PRINTED ON 20/11/2018

* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register. InfoTrack an approved NSW Information Broker hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900.

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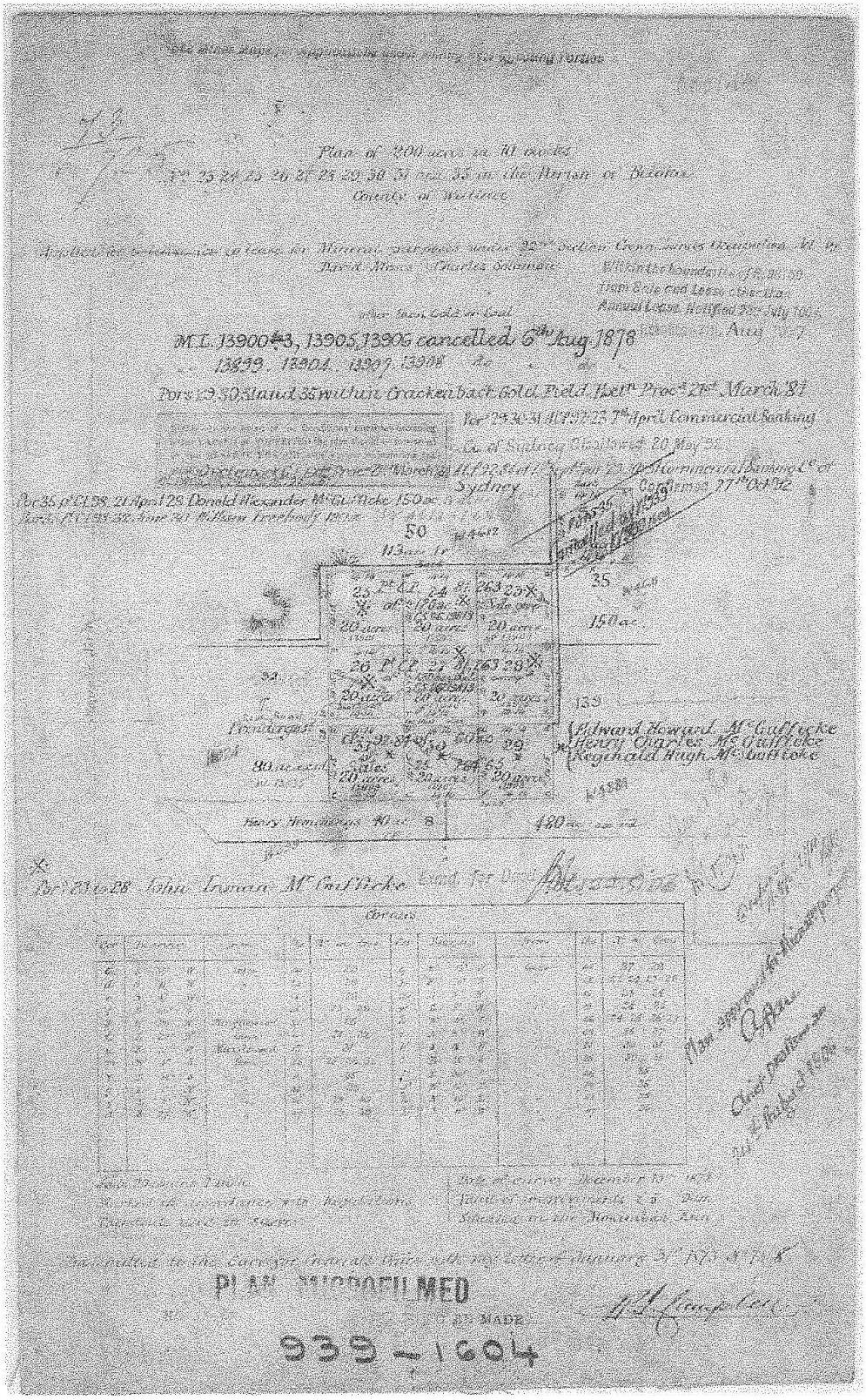
Req:R639876 /Doc:CP 00939-1604 p /Rev:25-Nov-2012 /Sts:OK.OK /Prt:26-Nov-2018 16:51 /Seq:1 of 1
Ref:160082 /Src:M



LAND REGISTRY SERVICES **Title Search** InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 1/1250715

SEARCH DATE	TIME	EDITION NO	DATE
26/3/2019	10:07 AM	-	-

CERTIFICATE OF TITLE HAS NOT ISSUED

LAND

LOT 1 IN DEPOSITED PLAN 1250715
AT JINDABYNE
LOCAL GOVERNMENT AREA SNOWY MONARO REGIONAL
PARISH OF BELOKA COUNTY OF WALLACE
TITLE DIAGRAM DP1250715

FIRST SCHEDULE

THE STATE OF NEW SOUTH WALES

SECOND SCHEDULE (4 NOTIFICATIONS)

* 1 LAND EXCLUDES MINERALS (S.13.2 CROWN LAND MANAGEMENT ACT 2016)
* 2 LAND ABOVE DESCRIBED IS PUBLIC ROAD
* 3 AS TO BOUNDARIES TO RIVERS/LAKES - SEE SECTION 13.3 CROWN LAND MANAGEMENT ACT 2016
* 4 LIMITED TITLE. LIMITATION PURSUANT TO SECTION 28T(4) OF THE REAL PROPERTY ACT, 1900. THE BOUNDARIES OF THE LAND COMPRISED HEREIN HAVE NOT BEEN INVESTIGATED BY THE REGISTRAR GENERAL.

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

160082 PRINTED ON 26/3/2019

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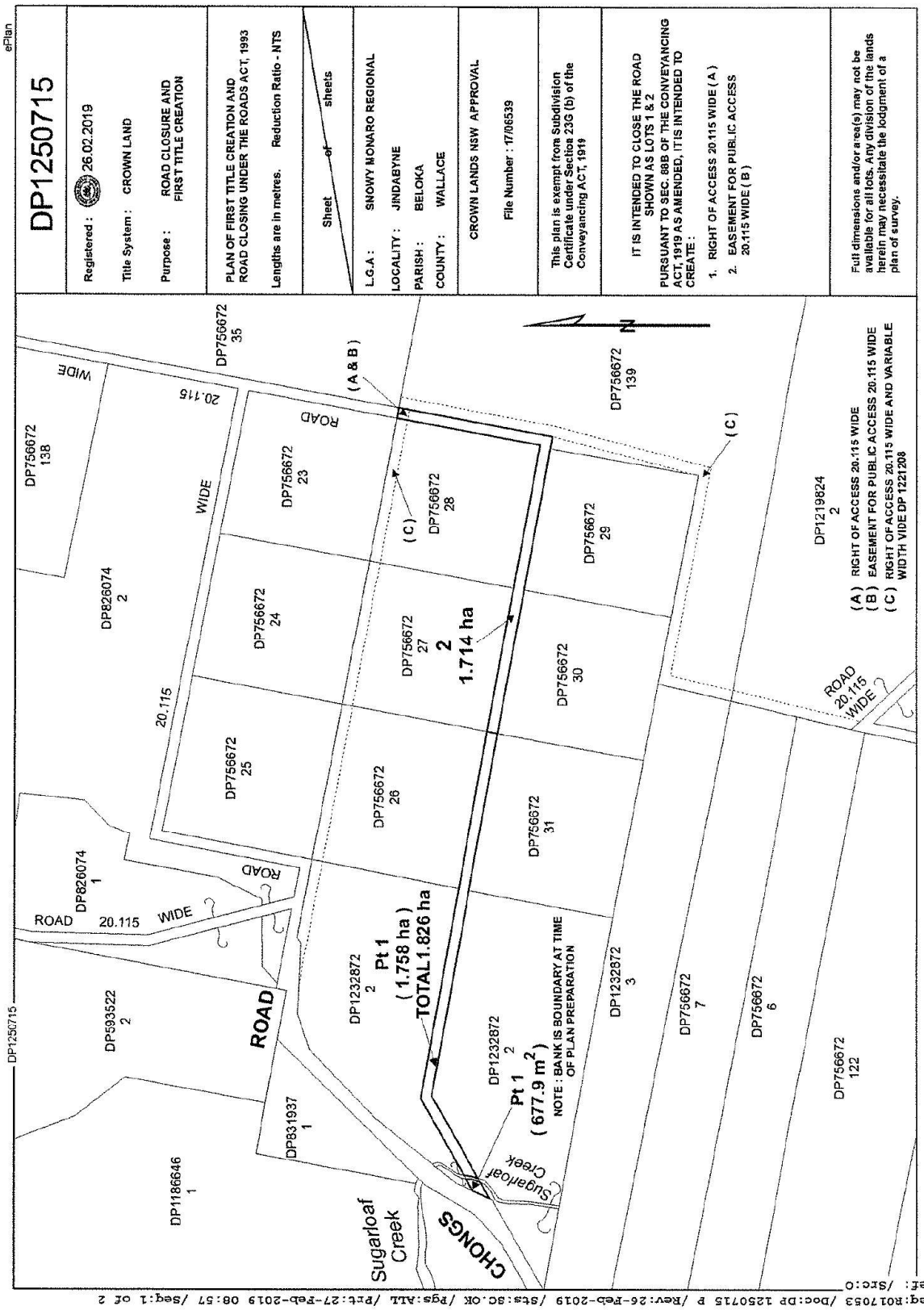

ePlan
DP1250715
Registered : 26.02.2019
Title System : CROWN LAND
Purpose : ROAD CLOSURE AND FIRST TITLE CREATION
PLAN OF FIRST TITLE CREATION AND ROAD CLOSING UNDER THE ROADS ACT, 1993
Lengths are in metres. Reduction Ratio - NTS
Sheet of sheets
L.G.A : SNOWY MONARO REGIONAL
LOCALITY : JINDABYNE
PARISH : BELOKA
COUNTY : WALLACE
CROWN LANDS NSW APPROVAL
File Number : 17/06539
This plan is exempt from Subdivision Certificate under Section 23G (b) of the Conveyancing ACT, 1919
IT IS INTENDED TO CLOSE THE ROAD SHOWN AS LOTS 1 & 2
PURSUANT TO SEC. 88B OF THE CONVEYANCING ACT, 1919 AS AMENDED, IT IS INTENDED TO CREATE :
1. RIGHT OF ACCESS 20.115 WIDE (A)
2. EASEMENT FOR PUBLIC ACCESS 20.115 WIDE (B)
Full dimensions and/or area(s) may not be available for all lots. Any division of the lands herein may necessitate the lodgment of a plan of survey.
(A) RIGHT OF ACCESS 20.115 WIDE
(B) EASEMENT FOR PUBLIC ACCESS 20.115 WIDE
(C) RIGHT OF ACCESS 20.115 WIDE AND VARIABLE WIDTH VIDE DP 1221208
DP756672 35
DP756672 138
DP826074 2
DP826074 1
DP593522 2
DP1186646 1
DP831937 1
DP1232872 2
DP1232872 3
DP756672 23
DP756672 24
DP756672 25
DP756672 26
DP756672 27
DP756672 28
DP756672 29
DP756672 30
DP756672 31
DP756672 139
DP1219824 2
DP756672 7
DP756672 6
DP756672 122
(A & B)
(C)
20.115 WIDE
ROAD
ROAD 20.115 WIDE
2
1.714 ha
Pt 1
(1.758 ha)
TOTAL 1.826 ha
Pt 1 2
(677.9 m2)
NOTE : BANK IS BOUNDARY AT TIME OF PLAN PREPARATION
Sugarloaf Creek
CHONGS
N
Req:R01705 3 /Doc:DP 1250715 P /Rev:26-Feb-2019 /Sts:SC.OK /Pgs:ALL /Prt:27-Feb-2019 08:57 /Seq:1 of 2
Ref : /Src:O

Req:R017055 /Doc:DP 1250715 B /Rev:26-Feb-2019 /Sts:SC.OK /Pgs:ALL /Prt:27-Feb-2019 08:57 /Seq:1 of 2
Ref: /Src:O DP1250715 eplan

Instrument setting out terms of Easements or Profits à Prendre intended to be created or released and of Restrictions on the Use of Land or Positive Covenants intended to be created pursuant to Section 88B Conveyancing Act 1919.

(Sheet 1 of 2 sheets)

Plan:

DP1250715

Plan of First Title Creation and Road Closing under the *Roads Act 1993*

Full name and address of the owner of the land: THE STATE OF NEW SOUTH WALES

Part 1 (Creation)

Number of item shown in the intention panel on the plan	Identity of easement, profit à prendre, restriction or positive covenant to be created and firstly referred to in the plan	Burdened lots(s) or parcel(s):	Benefited lot(s), road(s), bodies or Prescribed Authorities:
1	Right of Access 20.115m wide (A)	Lot 2	Lot 6-7 DP756672 Lot 3 DP1232872 Lot 23-31 DP756672 Lot 118 DP756672 Lot 122 DP756672 Lot 139 DP756672 Lot 1 & 2 DP1219824 Lot 2 DP1232872
2	Easement for Public Access 20.115m wide (B)	Lot 2	Lot 174 DP 729690. The State of New South Wales.

Part 2 (Terms)

Terms of easement, profit à prendre, restriction, or positive covenant numbered 2 in the plan.

1. Full and free right for every person to go, pass and re-pass at all times and for all purposes with or without animals or vehicles or both, to and from the said lot benefited or any such part thereof or any extant Permanent Survey Mark within the said lot benefited.

Name of person or authority whose consent is required to release, vary or modify the easement, profit à prendre, restriction or positive covenant numbered 1 in the plan:

1. Delegated authority from the Minister administering the *Crown Land Management Act 2016*.

   AND

2. Delegated authority from the Surveyor General of New South Wales.

Req:R017055 /Doc:DP 1250715 B /Rev:26-Feb-2019 /Sts:SC.OK /Pgs:ALL /Prt:27-Feb-2019 08:57 /Seq:2 of 2
Ref: /Src:O DP1250715 ePlan

Instrument setting out terms of Easements or Profits à Prendre intended to be created or released and of Restrictions on the Use of Land or Positive Covenants intended to be created pursuant to Section 88B Conveyancing Act 1919.

(Sheet 2 of 2 sheets)

Plan:

DP1250715

Plan of First Title Creation and Road Closing under the *Roads Act 1993*

Full name and address of the owner of the land:

THE STATE OF NEW SOUTH WALES

SIGNED BY

Matt Holloway

.....

(print name)

By delegation pursuant to section 12.3 of the Crown Land Management Act 2016 and with authority under section 13L of the Real Property Act 1900 from the Minister administering the Crown Land Management Act 2016 on behalf of the Registered Proprietor being The State Of New South Wales in the presence of:

.....[redacted].....

(signature of witness)

Lisa Ignatavicius

.....

(name & address of witness)

237 Hunter St Newcastle 2300

.....

.....

)
)
)
)
)
)
)
)
)
)
)
)

...[redacted]

(signature of delegated officer)

REGISTERED 26.02.2019

Req:R017053 /Doc:DP 1250715 P /Rev:26-Feb-2019 /Sts:SC.OK /Pgs:ALL /Prt:27-Feb-2019 08:57 /Seq:2 of 2
Ref: /Src:O

FORM 6 DP1250715 ePlan

CERTIFICATES, SIGNATURES AND SEALS Sheet 1 of 1

PLAN OF FIRST TITLE CREATION AND ROAD CLOSING UNDER THE ROADS ACT, 1993

* DP1250715

* Registered: 26.02.2019

* OFFICE USE ONLY

Surveying Regulation, 2012

I, ...
of .....
a surveyor registered under the *Surveying Act, 2002*, certify that the survey represented in this plan is accurate, has been made in accordance with the *Surveying Regulation, 2001* and was completed on:.....

The survey relates to
.....
.....
(specify the land actually surveyed or specify any land shown in the plan that is not the subject of the survey)

Signature .....*Dated:*.....
Surveyor registered under the Surveying Act, 2002

Datum Line:.....
Type: Urban/Rural

SIGNATURES, SEALS and STATEMENTS of intention to dedicate public roads or to create public reserves and drainage reserves.

Crown Lands NSW/Western Lands Office Approval

I, Adam Janik, (Authorised Officer) in approving this plan certify that all necessary approvals in regard to the allocation of the land shown herein have been given

Signature: .....
Date: 15/1
File Number: 17/06539
Office: Newcastle BC

Subdivision Certificate

I certify that the provisions of s.109J of the Environmental Planning and Assessment Act 1979 have been satisfied in relation to

the proposed..... set out herein
(insert 'subdivision' or 'new road')

.....
* Authorised Person/General Manager/Accredited Certifier

Consent Authority: .....
Date of Endorsement: .....
Accreditation no: .....
Subdivision Certificate no: .....
File no: .....

* Delete whichever is inapplicable.

Use PLAN FORM 6A for additional certificates, signatures and seals

SURVEYOR'S REFERENCE:

9.0 APPENDIX II – AHIMS REPORT

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : 23016DA
Client Service ID : 791115

Accent Town Planning
10 Kosciuszko Road
Jindabyne New South Wales 2627
Attention: Tammy Stewart

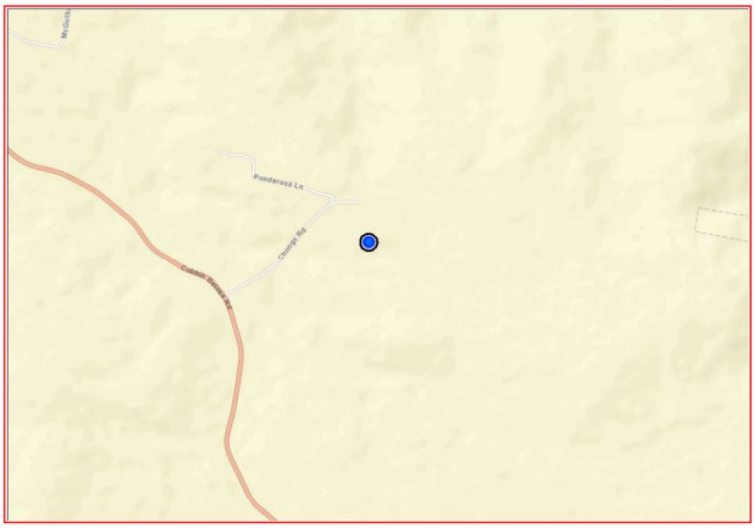
Date: 14 June 2023

Email: matt@completecertification.com.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Address : 92 CHONGS ROAD JINDABYNE 2627 with a Buffer of 50 meters, conducted by Tammy Stewart on 14 June 2023.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

ANNE CLEMENTS & ASSOCIATES PTY. LIMITED
(ABN 41 077 242 365, ACN 077-160-939)
Environmental and Botanical Consultants
Office 2, 3 Harbourview Crescent, Milsons Point 2060
PO Box 1623, North Sydney 2059
Phone: (02) 9955 9733, Facsimile: (02) 9957 4343
Email: mail@acabotanic.com

21 August 2024



Biodiversity Assessment Report for the Staged 6 Cabins Eco-tourist Development at 92 Chongs Road Jindabyne NSW 2627 (Lots 2 DP1232872, 26 DP756672, 25 DP756672, 1 DP1250715).

Prepared by:
Dr AnneMarie Clements
Tony Rodd
Pauline Dever
Tim Harding
Dr Anne Baumann

Prepared for:
Josh Leitner

Summary

This Biodiversity Assessment Report (BAR) has been commissioned by the Coordinating Architect Graeme Heine, on behalf of the landowner Josh Leitner, for the proposed eco-tourist facilities at 92 Chongs Road Jindabyne NSW 2627 (the site). The 46.866 ha site consists of four lots (Lots 2 DP1232872, 25 DP756672, 26 DP756672 and the 20.115 m Lot 1 DP1250715). It is located in the Snowy Monaro Regional Local Government Area.

This historically cleared, former grazing property, zoned *RU1 Primary Production,* has been destocked in 2019 and is now being managed for conservation with ongoing environmental protection / conservation works under the guidance of local advisory groups.

This BAR assesses the environmental constraints and opportunities of the proposal.

Proposal description

The proposal consists of:

- six eco-cabins, comprising four two-bedroom cabins and two three-bedroom cabins of which one is accessible three-bedroom cabin;
- two associated refuges;
- one shed with manager's accommodation,
- one workshop,
- RFS required bushfire Asset Protection Zones (APZs), and
- roads / tracks.

Reason why a BAR has been prepared

A Biodiversity Development Assessment Report (BDAR) under the *BC Act* would be required, if:

- the proposal triggers the Biodiversity Offsets Scheme (BOS) threshold; or
- the proposal is likely to significantly affect threatened species based on the test of significance in section 7.3 of the NSW *Biodiversity Conservation Act 2016.*

The proposal does not trigger the BOS as:

- development is not on land mapped on the BV Map;
- the extent of clearing required does not exceed the BOS clearing threshold (being greater than 1 ha for a greater than 40 ha lot size).

The occurrence and potential for threatened species was assessed in the Biodiversity Assessment Report (BAR). One listed threatened flora species, the listed Vulnerable species *Calotis glandulosa,* was recorded associated with the boulders, but none recorded in the area of the proposal, nor likely to occur on former grazing land. There have no records of threatened fauna species on or near the site, nor likely habitat onsite. Hence, a BDAR is not required for the proposal.

Measures to avoid and minimise

To avoid and minimise impacts on the native vegetation and potential habitats, including for the threatened herb *Calotis glandulosa,* the proposal has been

carefully located to:

- avoid loss of native canopy trees;
- avoid areas with existing boulder formations (possible likely habitat for *Calotis glandulosa*); with
- the existing roads / tracks (areas of existing disturbance) are to be utilised for the proposal.

In addition, the weed control measures recommended by Council's Biosecurity Office are directed to re-establishment of the native flora, including by strategic slashing and control of fire-prone and invasive priority weeds.

Plant Community Types (PCTs)

The vegetation was sampled in eight BAM plots and one Spot location on 11-13 December 2023. The best match for the native vegetation onsite was *PCT 3341 Monaro-Gourock Frost Hollow Grassy Woodland* of moderate to very degraded condition. The widespread occurrence of exotic pasture species and little native canopy regeneration recorded in the plots are consistent with the long grazing history of the property.

Threatened ecological communities (TECs)

PCT 3341 is associated in part with the critically endangered ecological community *Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion* under the *NSW Biodiversity Conservation Act 2016*.

From comparison of the recorded data with the Final Determination for the listed community all of the vegetation on the site independent of condition is or was previously the listed critically endangered ecological community *Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion.*

Threatened species

The threatened herb species *Calotis glandulosa* was recorded as scattered individuals in grassy areas in Plot 5 and Plot 8. This species is vulnerable under the BC Act and EPBC Act. Despite the grazing history, there appears to be some natural resilience in the soil seed bank.

Impacts of the proposal

The proposal results in the clearing of <1ha of *PCT 3341 Monaro-Gourock Frost Hollow Grassy Woodland.* The vegetation onsite irrespective of its condition is consistent with the critically endangered ecological community *Monaro Tableland Cool Temperate Grassy Woodland.* The Indirect impacts of the proposal include the risk of potential introduction of weeds on tires. The weed risk is to be minimised by implementing the recommendation of Council's Biosecurity Officer. There are no prescribed impacts for the proposal.

Mitigation measures

Given that less than 15,660 ha of Monaro Tableland Cool Temperate Grassy Woodland remain (approximately 5% of its estimated pre-1750 distribution of 295,500 ha), the continuation of the existing environmental protection / conservation works form part of the proposal.

Recommendations

It is recommended that natural regeneration be encouraged and assisted by the continuation of the invasive Priority Weed control and environmental protection / conservation works. This includes managed native meadows/grassland as well as stands of native trees and shrubs on the property, especially Koala Feed Trees near Sugarloaf Creek.

Table of Contents

Summary....2
Glossary and Definitions....9
Part A Background information....14
A1.0 Introduction....14
A2.0 Relevant biodiversity legislation....14
A2.1 Council legislation and mapping....14
A2.2 Relevant State legislation....20
A2.3 State Environmental Planning Policies (SEPPs)....23
Part B Stage 1 Biodiversity assessment....26
B1.0 Site location....26
The site is within the Snowy Monaro Local Government Area....26
B1.1 The proposal and the subject land....26
B1.2 Whether a BDAR is required....27
B2.0 Site context....27
B2.1 Landscape features....27
B2.2 Geology and soil....28
B2.3 Climate and effect on vegetation....29
B2.4 Landform and elevation....30
B2.5 Watercourses and drainage....30
B2.6 Extent of native vegetation cover....31
B3.0 Native vegetation, TECs and vegetation integrity methods....31
B3.1 Review of existing vegetation mapping and surveys....31
B3.2 Onsite survey methods....34
B4.0 Native vegetation and vegetation integrity....35
B4.1 Changes to Land use and native vegetation extent....35
B4.2 Biodiversity findings onsite....36
B4.3 Observations....37
B4.4 Most likely Plant Community Types (PCTs) on the site....44
B4.5 Threatened ecological communities (TECs)....46
B4.6 Vegetation zones....47
B4.7 Vegetation integrity....48
B5.0 Habitat suitability for threatened species....48
B5.1 Review of existing information....48
B5.2 Habitat constraints assessment....49
B5.3 Identification of threatened species for assessment....51
B5.4 Threatened fauna habitat searches....53
B6.0 Identifying prescribed impacts....53
B7.0 Avoid and minimise impacts....54
B8.0 Impact Assessment....54
B8.1 Direct, indirect, prescribed impacts....54
B9.0 Mitigation measures....55
References....55

Figures

Site location

1a-1. Site boundary overlaid on the Google satellite 2023.
1a-2. Lot boundaries from SIX maps aerial imagery.
1a-3. Approximate locations of existing roads/tracks and fencelines onsite
1a-4. Native vegetation within 1.5 km buffer overlaid on the Six Maps aerial

imagery.

1a-5. Site Boundary and SIX Maps Hydrolines overlaid on the Google Satellite 2023.

1b-1. Site boundary overlaid on the SIX Maps topographic WMS layer.

1b-2. Site boundary overlaid on the SIX maps topographic WMS layer – close up.

1c-1. Site location overlaid on the IBRA subregions map - version 7

1c-2. Site location overlaid on the NSW Mitchell Landscapes - version 3.1

1d. Site boundary overlaid on the Berridale and Numbla 2 Metre DEM LiDAR dated February 2018 (Spatial Services, ELVIS).

1959-1969 Site boundary overlaid on the 1959 and1969 historic aerial photographs (Spatial Services).

1979-1992 Site boundary overlaid on the 1979 and 1992 historic aerial photographs (Spatial Services).

The proposal

1e. Site plan (Drawing No DA-1, Issue 3, dated 07.07.2024).

1f-1 Bushfire Asset Protection Zones, Refuge 1 (from Harris 2024).

1f-2 Bushfire Asset Protection Zones, Refuge 2 (from Harris 2024).

1f-3 Bushfire Asset Protection Zones, Cabin 3 (from Harris 2024).

1f-4 Bushfire Asset Protection Zones, Shed with a manager's accommodation (from Harris 2024).

1f.

Regulatory mapping

2a. Site boundary overlaid on the Snowy River Local Environmental Plan 2013 - Land Zoning Map.

2b. Site boundary overlaid on the Snowy River Local Environmental Plan 2013 - Lot Size Map.

2c. Site boundary overlaid on the Snowy River Local Environmental Plan 2013 – Terrestrial Biodiversity Map.

2d. Site boundary overlaid on the Snowy River Local Environmental Plan 2013 – Riparian Lands and Watercourses Map.

2e. Site boundary overlaid on the Biodiversity Values Map - version 16.

2f. Bushfire Prone Map (from Harris 2024).

Soils and Geology

3a. Site boundary overlaid on NSW Seamless Geology - version 2.

3b. Site boundary overlaid on Great Soil Group Soil Type Map of NSW – Version 4.5.

Vegetation

4a. Site boundary overlaid on the NSW State Vegetation Type Map version C2.0M2.0 (State Government of NSW and NSWDCCEEW 2023).

4b-1. Field validated vegetation communities (Narla Environmental 2023).

4b-2. Habitat features recorded by Narla Environmental 2023.

4c-1. Site boundary with Narla Plot locations and ACA BAM plot locations overlaid on Google Satellite.

4c-2. Site boundaries with locations of cabins and ACA BAM plots on the Google Satelitte.

4d. Sampling locations overlaid on vegetation map.

BioNet search

5a. Site boundary and BioNet records of threatened flora species overlaid on OpenStreetMap.

5b. Site boundary and BioNet records of threatened fauna species overlaid on OpenStreetMap.

Tables

1. Cover of species recorded in 8 BAM Plots and species present in Spot A.

2. Maximum height and number of individuals per 10 m x 10 m subquadrat for species present ≥ 2 m.

Appendices

1a. Correspondence related to conservation works.

1b. Email from Snowy Monaro Regional Council's Biosecurity Officer dated 11 July 2024.

2a. Photographic record of sampling locations.

2b. Photographic record of trees in and near the Plots.

2c. Photographs of the native and weed species present.

3. Narla Environmental (2023) survey data.

4. BAM input data with number and cover of exotic species.

Document Control

Version	Date	Authors	Details
1	12 July 2024	Dr AnneMarie Clements, Tony Rodd, Pauline Dever, Tim Harding, Dr Anne Baumann	Biodiversity Assessment Report

Photograph on front cover: Ongoing environmental / conservation work. Photograph taken by Josh Leitner on1 December 2021.

Glossary and Definitions

ACA	Anne Clements & Associates
APZ	Asset Protection Zone
BAM	Biodiversity Assessment Method
BAM-C	Biodiversity Assessment Method Calculator
BC Act	Biodiversity Conservation Act 2016 (NSW)
BC Regulation	Biodiversity Conservation Regulation 2017 (NSW)
BDAR	Biodiversity Development Assessment Report
BOS	Biodiversity Offsets Scheme
CEEC	Critically endangered ecological community
DA	Development Application
DBH	Diameter at breast height
DPE	Department of Planning and Environment
DPIE	Department of Planning Industry and Environment
EC	Ecological community listed under the EPBC Act
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
EEC	Endangered ecological community
HTW	High threat weed
IBRA	Interim Biogeographic Regionalisation for Australia
LGA	Local Government Area
LLS Act	Local Land Services Act 2013 (NSW)
MNES	Matters of national environmental significance
PCT	Plant community type
SAII	Serious and Irreversible Impact
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SRDCP	Snowy River Development Control Plan 2013
SRLEP	Snowy River Local Environmental Plan 2013
TBDC	Threatened Biodiversity Data Collection
TEC	Threatened ecological community

Definitions:

Clearing of native vegetation is defined in the *BC Act* as:

> ***native vegetation*** *and* ***clearing*** *native vegetation have the same meanings as in Part 5A of the Local Land Services Act 2013.*
> *Note—Under that Part of that Act, the clearing of dead or non-native plants on certain vulnerable land is taken to be the clearing of native vegetation.*

Local Land Services Act 2013 defines 'native vegetation' and 'clearing' of native vegetation as follows:

> ***60B Meaning of "native vegetation"***
>
> *(1) For the purposes of this Part, native vegetation means any of the following types of plants native to New South Wales—*
>
> *(a) trees (including any sapling or shrub or any scrub),*
>
> *(b) understorey plants,*
>
> *(c) groundcover (being any type of herbaceous vegetation),*
>
> *(d) plants occurring in a wetland.*
>
> *(2) A plant is native to New South Wales if it was established in New South Wales before European settlement. The regulations may authorise conclusive presumptions to be made of the species of plants native to New South Wales by adopting any relevant classification in an official database of plants that is publicly accessible.*
>
> *(3) For the purposes of this Part, native vegetation extends to a plant that is dead or that is not native to New South Wales if—*
>
> *(a) the plant is situated on land that is shown on the native vegetation regulatory map as category 2-vulnerable regulated land, and*
>
> *(b) it would be native vegetation for the purposes of this Part if it were native to New South Wales.*
>
> *(4) For the purposes of this Part, native vegetation does not extend to marine vegetation (being mangroves, seagrasses or any other species of plant that at any time in its life cycle must inhabit water other than fresh water). A declaration under section 14.7 of the Biodiversity Conservation Act 2016 that specified vegetation is or is not marine vegetation also has effect for the purposes of this Part.*

> ***60C Meaning of "clearing" native vegetation***
>
> For the purposes of this Part, clearing native vegetation means any one or more of the following—
>
> (a) cutting down, felling, uprooting, thinning or otherwise removing native vegetation,
>
> (b) killing, destroying, poisoning, ringbarking or burning native vegetation.

Hollow bearing tree is defined in the Biodiversity Assessment Methodology (BAM) (DPIE 2020) as:

Hollow bearing tree: a living or dead tree that has at least one hollow. A tree is considered to contain a hollow if:
(a) the entrance can be seen;
(b) the entrance width is at least 5 cm;
(c) the hollow appears to have depth (i.e. solid wood cannot be seen beyond the entrance); and
(d) the hollow is at least 1 m above the ground.
Trees must be examined from all angles.

Subject land is defined in the Biodiversity Assessment Methodology (BAM) (DPIE 2020) as:

land subject to a development, activity, clearing, biodiversity certification or a biodiversity stewardship proposal.

Dictionary in the Snowy River Local Environment Plan 2013 defines the activities permitted without consent under the *RU1 Primary Production* zoning

Environmental protection works *means works associated with the rehabilitation of land towards its natural state or any work to protect land from environmental degradation, and includes bush regeneration works, wetland protection works, erosion protection works, dune restoration works and the like, but does not include coastal protection works.*

Extensive agriculture ***means any of the following—***

(a) the production of crops or fodder (including irrigated pasture and fodder crops) for commercial purposes,

(b) the grazing of livestock (other than pigs and poultry) for commercial purposes on living grasses and other plants on the land as their primary source of dietary requirements, and any supplementary or emergency feeding, or temporary agistment or housing for weaning, dipping, tagging or similar husbandry purposes, of the livestock,

(c) bee keeping,

(d) a dairy (pasture-based) where the animals generally feed by grazing on living grasses and other plants on the land as their primary source of dietary requirements, and any supplementary or emergency feeding, or temporary agistment or housing for weaning, dipping, tagging or similar husbandry purposes, of the animals.

home occupation *means an occupation that is carried on in a dwelling, or in a building ancillary to a dwelling, by one or more permanent residents of the dwelling and that does not involve—*

(a) the employment of persons other than those residents, or

(b) interference with the amenity of the neighbourhood by reason of the emission of noise, vibration, smell, fumes, smoke, vapour, steam, soot, ash, dust, waste water, waste products, grit or oil, traffic generation or otherwise, or

(c) the display of goods, whether in a window or otherwise, or

(d) the exhibition of any signage (other than a business identification sign), or

(e) the sale of items (whether goods or materials), or the exposure or offer for sale of items, by retail,

but does not include bed and breakfast accommodation, home occupation (sex services) or sex services premises.

Declarations

i. Certification under clause 6.15 Biodiversity Conservation Act 2016

I certify that this report has been prepared based on the requirements of, and information provided under, the Biodiversity Assessment Method and clause 6.15 Biodiversity certification assessment report of the Biodiversity Conservation Act 2016 (BC Act).

Signature: [redacted]

Date: 21 August 2024

Dr AnneMarie Clements

BAM Assessor Accreditation no: BAAS17088

This Biodiversity Assessment Report have been prepared in accordance with the *Biodiversity Assessment Method* (BAM 2020) (DPIE 2020) with reference to *Guidance for the Biodiversity Development Assessment Report Template References for requirements* (NSW Department of Planning and Environment dated April 2022).

ii. Conflict of interest

I declare that I have considered the circumstances and there is no actual, perceived or potential conflict of interest.

This declaration has been made in the interests of full disclosure to the decision-maker. Full disclosure has also been provided to the client.

Signature: [redacted]

Date: 21 August 2024

Dr AnneMarie Clements

BAM Assessor Accreditation no: BAAS17088

ii Details and experience of author/s and contributors

Name	Position	Tasks performed include	Relevant qualifications
Dr AnneMarie Clements	Ecologist	- report preparation - data checking - supervising survey - checking figures - review of data, - cross checking specimens - cross-checking photo records and data recorded - BAM-C analysis	MSc, PhD, Ecology Specialists Certified Environmental Practitioner under the EIANZ: CEnvP Registration Number E200001.
Dr Anne Baumann	Ecologist	- reviewing existing data - report preparation - document review - checking figures	PhD, BScAg, Cert IV Conservation and Land Management. Dip. Arboriculture
Tony Rodd	Botanist	- field survey, including BAM Plots - detail observations - report preparation - data review - double checking mapping	BSc, Specialist botanist with many years of experience
Pauline Dever	Ecologist	- field survey - data entry - mapping	B Env, Dip. Conservation and Land Management.
Tim Harding	Ecologist	- field survey - data entry - mapping	B.Sc with major in ecology.

Part A Background information

A1.0 Introduction

This Biodiversity Assessment Report (BAR) has been prepared, at the request of the landowner Josh Leitner, to address the biodiversity related request for additional information issued by Council on 12 September 2023, namely:

> *Please demonstrate that the areas identified as biodiversity do not meet the threshold requirements for entry into the BOS.*
>
> *Please be sure to include all impacts including APZ and access requirements to Planning for Bushfire Protection 2019 standards.*
>
> *If the threshold calculation is found to be over the trigger then a BDAR is required.*

Development Application No.: DA10.2023.20029.1 lodged with Snowy Monaro Regional Council on 2 August 2023.
Address: 92 Chongs Road, Jindabyne NSW 2627 (location on Figures 1a-1to 1d).
Proposed: Construction of a Staged 6 Cabins Eco-tourist Development (see proposed Site plan, Figure 1e)

Site detail:	**Area (ha)**
Lot 25 DP 756672	8.12
Lot 26 DP 756672	8.16
Lot 2 DP1232872 in two part north and south of Lot 1	28.76
Lot 1 DP 1250715 (20.115 m wide)	1.826
Total	**46.866**

The BAR assesses the native vegetation on the site and the extent of clearing of native vegetation required for the proposal.

Vegetation assessed was post implementation of approximately four years of environmental / conservation work including de-stocking, weed control, soil stabilisation and local native planting. All works have been undertaken with advice and supervision from the relevant advisory groups, including NSW Soil Conservation Service, NSW Water, Greening Australia and Landcare (correspondence in Appendices 1a, 1b).

In addition to addressing the BAR requirements specified by the Biodiversity Assessment Methodology (BAM) (DPIE 2020), the other relevant biodiversity legislation has been considered.

A2.0 Relevant biodiversity legislation

A2.1 Council legislation and mapping

A2.1.1 Snowy River Local Environment Plan 2013

Zoning - This historically cleared former grazing property and surrounding lands are zoned as *RU1 Primary Production* (Figure 2a). The objectives of this zoning are related to primary industry protection with developments that maintain and protect the scenic values and rural landscape characteristics of the zone, namely:

> ***1 Objectives of zone***
> • *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.*
> • *To encourage diversity in primary industry enterprises and systems appropriate for the area.*
> • *To minimise the fragmentation and alienation of resource lands.*
> • *To minimise conflict between land uses within this zone and land uses within adjoining zones.*
> • *To promote tourism, educational and recreational development and living opportunities that are compatible with agricultural activities and the environmental, historical and cultural values of the zone.*
> • *To ensure that development maintains and protects the scenic values and rural landscape characteristics of the zone through compatible, small-scale development.*

> ***2 Permitted without consent***
> *Environmental protection works; Extensive agriculture; Home occupations*

> ***3 Permitted with consent***
> *… Eco-tourist facilities; …*

The environmental works undertaken onsite to date have resulted in:

- permanent water sources;
- an all weather access road (2-wheel drive) from Chongs Road for the construction of the dam;
- areas of conservation planting; and
- areas of erosion control.

Minimum Lot Size for the 46.9 ha site is mapped as 40 ha (Figure 2b).

Terrestrial Biodiversity – pixelated patches of at least 25 m x 25 m in size are mapped on the site (Figure 2c). Clause 7.2 of the LEP applies to these mapped areas, namely:

(1) The objectives of this clause is to maintain terrestrial biodiversity by:

(a) protecting native fauna and flora, and

(b) protecting the ecological processes necessary for their continued existence, and

(c) encouraging the conservation and recovery of native fauna and flora and their habitats.

(3) Before determining a development application for development on land to which this clause applies, the consent authority must consider—

(a) whether the development is likely to have—

(i) any adverse impact on the condition, ecological value and significance of the fauna and flora on the land, and

(ii) any adverse impact on the importance of the vegetation on the land to the habitat and survival of native fauna, and

(iii) any potential to fragment, disturb or diminish the biodiversity structure, function and composition of the land, and

(iv) any adverse impact on the habitat elements providing connectivity on the land, and

(b) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.

(4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that—

(a) the development is designed, sited and will be managed to avoid any significant adverse environmental impact, or

(b) if that impact cannot be reasonably avoided by adopting feasible alternatives—the development is designed, sited and will be managed to minimise that impact, or

(c) if that impact cannot be minimised—the development will be managed to mitigate that impact.

Riparian land and watercourses – Under the LEP mapping (Figure 2d) Sugarloaf Creek in the south-west corner of the site is mapped. The unnamed east to west flowing tributary of Sugarloaf Creek, which flows across the site, is not mapped under the LEP mapping.

Clause 7.3 of the LEP applies to the mapped area in the south west corner of the site. No works are proposed in the south west of the site.

Mapped wetlands - There are no mapped wetlands on the site.

A2.1.2 Snowy River Development Control Plan 2013
The biodiversity controls related to the site have been assessed (the latest is Amendment 3 (Issue 4 into Force on 29/03/2023) (https://www.snowymonaro.nsw.gov.au, accessed on 3 January 2024).

The stated purpose of DCP 2013 (page 1) is:

a source of information covering the technical, legislative and administrative aspects of development within the Snowy River Shire. It provides detailed provisions to guide development so that it achieves the aims and objectives of the Snowy River Local Environmental Plan 2013. The DCP includes detailed objectives and controls for ensuring well designed, quality land use and development within the Snowy River Shire.

The DCP includes:

- Part A Introduction, setting out *the format and legal framework for the DCP*;
- Part B Rural Localities, Towns and Villages;
- Part C General Controls *apply to all DAs and should be read first to determine how these provisions apply. This Part covers subdivision, design (views and landscape, crime prevention through design) car parking, traffic and access, heritage, tree preservation and landscaping, signage and advertising, natural hazard management, environmental management,*

energy and water efficiency, water supply and effluent disposal and waste management and recycling.

- Part D Residential Development;
- Part E Non Residential Development *provides objectives and controls for a range of developments including tourist accommodation, agriculture and rural industry, commercial and retail development (footpath dining and trading), industrial development, recreation facilities and educational establishments;*
- Part F Controls for Specific Sites and Localities *includes detailed controls for specific sites and localities including the Jindabyne Town Centre and the Berridale and Adaminaby Village Centres, Dalgety Village and rural residential estates around Jindabyne and Berridale.*

From the summary matrix table (page A1), Parts A, B, C and E1 apply to Eco-tourist facilities.

Section 4.5 Other Information Requirements include:

Requirements	**Applied to**	**Applied to the site**
Flood Prone Land	*The detailed information requirements for development applications on flood prone land are contained in Chapter C7 Natural Hazard Management.*	No. Council has undertaken flood studies and flood risk management plans for Berridale and Jindabyne. Snowy Monaro Regional Council Flood and Floodplain Risk Management Studies (Nov 2020). The site appears not to be on any flood maps.
Erosion and Sediment Control Plan	*An Erosion and Sediment Control Plan is a plan showing how to minimise erosion and trap sediment occurring as a result of development or building activity. The complexity of the sediment and erosion control plan will vary on the nature and scale of development and the amount of ground disturbance.*	Erosion and Sediment Control Plan has been prepared by Harris Environmental Consulting.
Weed Management	*Where development is to be located on a property with a current weed notice or history of weed notices, a weed management plan is to accompany the development application. The weed management plan must identify: weeds to be controlled and in what area they are to be controlled; and time frame and method of control to be employed.*	Weed control has been ongoing.
Flora and Fauna Report	*Where the proposed development requires the removal of native vegetation or the disturbance of habitats to native bird and animals then a Flora and Fauna report will be required to be carried out by a suitably qualified person.*	A Biodiversity Assessment Report has been prepared in accordance with the BAM 2020.

From the summary matrix table in Part A (page 5) of the DCP, Parts A, B, C, E1 applies to Eco-tourist facilities.

Key Land Use Type	Part A Introduction	Part B Rural Localities, Towns & Villages	Part C General Controls	Part D Residential Development	Part E Non Residential Development						Part F Controls for Specific Sites and Localities
					E 1	E 2	E 3	E 4	E 5	E 6	
TOURIST & VISITOR ACCOMMODATION											
Eco-tourist facilities											

Section A2 of Part A lists the Development Application Requirements, with the steps involved in preparing a development application.

Steps		Applies to the site
1.	Check the zoning of the land under the Snowy River LEP 2013 to determine whether the proposed development is allowed in the zone.	Site is zoned RU1. ***Permitted without consent*** *Environmental protection works; Extensive agriculture; Home occupations.* ***Permitted with Consent*** ***...*** *Eco-tourist facilities, ...*
2.	Check the exempt and complying provisions in the Snowy River LEP 2013 and State Environmental Planning Policy (Exempt and Complying Development Codes).	The SEPP covers the existing works undertaken i.e., road, farm shed.
3.	Determine which clauses of the Snowy River LEP 2013 apply to the site and/or type of development.	Clause 7.2 of the LEP applies. Clause 7.3 of the LEP applies the mapped area in the south-west.
4.	Determine which Chapters of this DCP applies to the site and/or type of development. Carefully work through the general (Part A and Part C) and specific (Parts B, D, E, F) objectives and controls that are relevant to the proposed development.	**Part A**, Sections 1, 2, 3, 4, 5 Section 5.1 – not a subdivision; Section 5.2 – Yes. Development other than subdivisions Section 5.3 DA (Tree works), if required. Section 5.4 landscape details including existing vegetation, …. Section 5.5 Other requirements include Flora and Fauna Report *Where the proposed development requires the removal of native vegetation or the disturbance of habitats to native bird and animals then a Flora and Fauna report will be required to be carried out by a suitably qualified person.* *Part B Section 1 Rural Locality Statements. The site is on the Locaility Map for Jindabyne.*
5.	Meet with Council staff to discuss proposal and identify any likely issues of concern.	Phone and email discussions and a meeting with the council planners have

Steps		Applies to the site
		occurred.

In Part B, the rationale for the formation of the Jindabyne Locality is outlined and includes the following (the site falls within the Jindabyne Locality):

Characteristics	***Comments***	**Applies to the site**
Landscape	*Undulating hills to steep foot slopes. Scattered areas of protected land can be found throughout.*	Yes.
Vegetation	*Snow Gum – Black Sally communities along with modified grasslands and sedge communities.*	Yes.
Geology	*Predominantly granite.*	Yes
Land Use	*Some agriculture, residential and tourism. There are a small number of small farms operating in the area. Land use is predominantly residential.*	The predominant use of the site is not residential, it is tourism and agriculture.
Resources	*N/A*	
Significant flora, fauna, archaeological or heritage values	*Areas to the west of the lake and the eastern boundary of district contain land significant for flora and fauna. The significant threatened species habitat consists of several EECs including; Snowgum Grassy woodland, Natural Temperate Grassland and Snowy River Catchment*	Site not west of the lake. Onsite survey assessed the presence of EECs.
Settlement Pattern	*The Jindabyne locality has the highest population and residential densities in the Shire. … a significant amount of rural living areas …*	N/A

The Key Planning Responses for the Jindabyne Locality are the following:

(a) Maintain pattern of smaller farms for part-time or hobby farming.

(b) Enable farm adjustment.

(c) Median holding size for the locality is 18 ha and average holding size 66 ha. Subdivision will not result in any greater fragmentation of the rural land.

(d) Minimum lot size for dwelling consents (refer Snowy River LEP 2013) is reflective of the average size of a farm in the locality.

(e) Locality has high landscape amenity, particularly areas around Lake Jindabyne and areas with a view to the mountains.

(f) Whole locality is attractive for small rural lot subdivisions, due to proximity to town and ski fields.

(g) Locality is attractive for tourist developments due to proximity to the ski fields, retail and services and due to landscape amenity.

Part C – *General Planning Considerations* includes:

- Section 4 Conservation Incentives (page 46) relates to heritage items and not to biodiversity;

- Section C5-1 Biodiversity, Vegetation and Tree Removal (page 58) does not applies to Rural lands. *This chapter applies to the clearing of native and non-native vegetation and the conduct of tree works in the Shire regulated under Part 3 of State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017*;
- Section C7-1 Bush fire prone land; and
- Section C7-2 Flood prone land.

Part E specifies controls in Section E1-4 (page 12) for the design of Eco-tourist Facilities. The stated biodiversity related objectives and controls for the design of eco-tourist facilities are the following:

Objective SITE DESIGN
To improve the environment of a site and incur minimal site disturbance through integrative design which reflects rather than alters the natural existing landscape.

Controls
Eco-tourist facilities will:
...
- *Be designed on the basis of ecological sustainability and an understanding of the potential environmental impacts.*
- *Reduce the footprint of development components to the minimum required for development to proceed.*

...

Part F relates to town and village centres and estates. This does not apply to the site as it is not within the town nor village centres, nor estates.

A2.2 Relevant State legislation

A2.2.1 *Biodiversity Conservation Act 2016* and *Regulation 2017*

A Biodiversity Development Assessment Report (BDAR) under the *BC Act* would be required, if:

- the proposal triggers the BOS threshold; or
- the proposal is likely to significantly affect threatened species based on the test of significance in section 7.3 of the NSW *Biodiversity Conservation Act 2016*.

The Biodiversity Offsets Scheme (BOS) was established under the *Biodiversity Conservation Act 2016* (BC Act). It applies to native terrestrial vegetation throughout the state of NSW.

The Biodiversity Values (BV) Map identifies land with high biodiversity value, as defined by clause 7.3(3) of the *Biodiversity Conservation Regulation 2017*.

The *BC Regulation 2017* sets out threshold levels for when the BOS will be triggered. The threshold has two elements:

- whether the amount of native vegetation being cleared exceeds an area threshold; or
- whether the impacts occur on an area mapped on the Biodiversity Values Map (BV map).

The BOS clearing threshold related to the minimum lot size of the land under the LEP. Under the Snowy River LEP 2013, the minimum lot size mapped on the site is 40 ha (Figure 2b). From Clause 7.2 of the *Biodiversity Conservation Regulation 2017*, the trigger for clearing for a minimum lot size of 40 ha is 1 ha, namely:

Minimum lot size associated with the property	Threshold for clearing, above which the BOS apply
1 ha to less than 40 ha	0.5 ha or more
40 ha to less than 1000 ha	**1 ha or more**

[Note: The definition of native vegetation, clearing, activities permitted without consent are provided in the Glossary to this report].

The development proposal is not on land mapped on the Biodiversity Values (BV) Map (Figure 2e).

The proposal does not trigger the Biodiversity Offsets Scheme (BOS), as:

- development is not on land mapped on the BV Map; and
- development does not involve clearing of more than 1 ha of native vegetation.

A Biodiversity Development Assessment Report (BDAR) is not required unless the proposal is likely to significantly affect threatened species based on the test of significance in section 7.3 of the NSW *Biodiversity Conservation Act 2016*.

The likelihood of threatened species onsite has been assessed in the area of the proposal as low. A listed threatened plant species *Calotis glandulosa* was recorded associated with the boulders and not in the area of the proposal.

A BDAR is not required for the proposal.

A2.2.2 *Rural Fires Act 1997*

From the *Guide for Bush Fire Prone Land* (NSW Rural Fire Service website, accessed 4 March 2024):

> *Bush Fire Prone Land* [BFPL] *is mapped within a local government area, which becomes the trigger for planning for bush fire protection. … The NSW Bush Fire Prone Land dataset is a map prepared in accordance with the Guide for Bush Fire Prone Land Mapping (BFPL Mapping Guide) and certified by the Commissioner of NSW RFS under purposes of Section 10.3 of the Environmental Planning and Assessment Act 1979 No 203.*

The site has been mapped as Bushfire Prone (Figure 2f), with :

Vegetation Category	Located	Described in BFPL Mapping Guide (NSW Rural Fire Service 2015) as
1.	offsite on adjoining land to north-west.	*… the highest risk for bush fire. It is represented as red on the bush fire prone land map and will be given a 100m buffer. This vegetation category has the highest combustibility and likelihood of forming fully developed fires including heavy ember production. Vegetation Category 1 consists of:* • *Areas of forest, woodlands, heaths (tall and short),*

		forested wetlands and timber plantations.
3.	over the entire site and on surrounding land.	*… medium bush fire risk vegetation. It is higher in bush fire risk than category 2 (and the excluded areas) but lower than Category 1. It is represented as dark orange on a Bush Fire Prone Land map and will be given a 30 metre buffer. This category consists of:* • *Grasslands, freshwater wetlands, semi-arid woodlands, alpine complex and arid shrublands.*

For the proposal, the bushfire asset protection requirements have been assessed by Harris Environmental Consulting (2024) in accordance with *Planning for Bushfire 2019*.

A2.2.3 NSW *Fisheries Management Act 1994*

The site does not contain areas mapped as Key Fish Habitat under the *Fisheries Management Act 1994*.

A2.2.4 NSW *Biosecurity Act 2015*

This Act provides a framework for the prevention, elimination and minimisation of biosecurity risks including threats to terrestrial and aquatic environments arising from pests, diseases, contaminants and other biosecurity matter.

The management of invasive weeds in NSW is governed by the *Biosecurity Act 2015*. The Local Control Authority (Snowy Monaro Regional Council) is responsible for ensuring the prevention, elimination, minimization and management of the biosecurity risk posed or likely to be posed by invasive weeds.

Snowy Monaro Regional Council's Biosecurity Officer found that I dated 11 July 2024 in Appendix 1b):

> *three of the higher priority widespread weeds on your place, these being African lovegrass [Eragrostis curvula], serrated tussock (ST)* [*Nassella trichotoma*], *and St John's wort (SJW)* [*Hypericum perforatum*]. ***The ST and SJW are widespread across the property varying from lightly scattered to denser patches.*** *The ALG is so far limited to a small number of patches with very occasional individual scattered plants. …*
>
> *Given the small amount of lovegrass present and it's invasiveness and flammability, I recommend making this your number one priority to prevent further spread and establishment across the property. ... It could also be beneficial to hand broadcast some native grass seed in these areas to provide a bit of extra competition. As a long-term strategy, these areas would also be ideal for revegetation or natural regeneration ...*

The infestation onsite of the other priority weed *Rosa rubiginosa* (Sweet Briar) is not as widespread as those of *Hypericum perforatum* and *Nassella trichotoma* (see Anne Clements & Associates (ACA) data in Table 1, Narla data in Appendix 3, sampling locations on Figure 4c-1), namely:

Priority weeds	**Recorded in Plots**
Eragrostis curvula	Limited but readily spreads - 1 of 8 plots (Plot 5), Narla Plot 1

Hypericum perforatum	Widespread - All 8 plots, both Narla Plots 1, 2
Nassella trichotoma	Widespread - 6 of 8 plots (Plots 1, 2, 3, 5, 6. 7), both Narla Plots 1, 2
Rosa rubiginosa	Scattered - Plots 2, 4, 6, 7, 8, Narla Plot 1
Rubus fruticosus agg.	Limited - Plot 2, Neither of Narla Plots

The site is being actively managed for *Hypericum perforatum* (St. John's Wort) and *Nassella trichotoma* (Serrated Tussock) as part of the onsite conservation works.

A2.3 State Environmental Planning Policies (SEPPs)

A2.3.1 SEPP (Biodiversity and Conservation) 2021

Chapter 2 (Vegetation in non-rural areas) does not apply to this Rural zoned site.

Chapter 3 Koala Habitat protection 2020 applies to the site as it applies to Rural zoned land, RU1, RU2, and RU3 in the Snowy Monaro Regional LGA. In this Chapter—

core koala habitat means an area of land with a resident population of koalas, evidenced by attributes such as breeding females, being females with young, and recent sightings of and historical records of a population.

guidelines means the guidelines, as in force from time to time, made for the purposes of this Chapter by the Planning Secretary.

Planning for Bush Fire Protection means the document prescribed by the *Environmental Planning and Assessment Regulation 2021*, section 271).

potential koala habitat means areas of native vegetation where trees of the types listed in Schedule 1 constitute at least 15% of the total number of trees in the upper or lower strata of the tree component.

Part 3.2 of the SEPP refers to Development control of koala habitats and Section 3.5 states that development control applies as the site is greater than 1 ha, namely:

> 3.5 Land to which this Part applies
> *This Part applies to land—*
> *(a) that is land to which this Chapter applies, and*
> *(b) that is land in relation to which a development application has been made, and*
> *(c) that, whether or not the development application applies to the whole, or only part, of the land—*
> *(i) has an area of more than 1 hectare, or*
> *(ii) has, together with adjoining land in the same ownership, an area of more than 1 hectare.*

Information is to be provided to Council from a person who is qualified and experienced in tree identification, as to whether or not the land is a potential koala habitat, namely:

> *3.6 Step 1—Is the land potential koala habitat?*
> *(1) Before a council may grant consent to a development application for consent*

*to carry out development on land to which this Part applies, the council must be satisfied as to **whether or not the land is a potential koala habitat**.*

(2) The council may be satisfied as to whether or not land is a potential koala habitat only on information obtained by it, or by the applicant, from a person who is qualified and experienced in tree identification.

(3) If the council is satisfied—

(a) that the land is not a potential koala habitat, it is not prevented, because of this Chapter, from granting consent to the development application, or

(b) that the land is a potential koala habitat, it must comply with section 3.7.

Potential koala habitat means *areas of native vegetation where trees of the types listed in Schedule 1 constitute at least 15% of the total number of trees in the upper or lower strata of the tree component*.

The listed Koala feed trees in Schedule 1 are the following, of which *Eucalyptus viminalis* was recorded onsite.

Scientific name	Common name	Recorded onsite
Eucalyptus tereticornis	Forest red gum	No. Not within species' geographical range
Eucalyptus microcorys	Tallowwood	No. Not within species' geographical range
Eucalyptus punctata	Grey Gum	No. Not within species' geographical range
Eucalyptus viminalis	**Ribbon or manna gum**	**Yes.** Recorded in Plot 1 in the north-west of the site.
Eucalyptus camaldulensis	River red gum	No. Not within species' geographical range
Eucalyptus haemastoma	Broad leaved scribbly gum	No. Not within species' geographical range
Eucalyptus signata	Scribbly gum	No. Not within species' geographical range
Eucalyptus albens	White box	No. Not within species' geographical range
Eucalyptus populnea	Bimble box or poplar box	No. Not within species' geographical range
Eucalyptus robusta	Swamp mahogany	No. Not within species' geographical range

From the vegetation data recorded onsite in eight BAM plots, *Eucalyptus viminalis* was recorded in only one (Plot 1) with 0.2% cover. *Eucalyptus viminalis* was not considered to constitute at least 15% of the total number of trees in the upper or lower strata of the tree component. Hence the site is not considered to be Potential Koala Habitat.

Note: the vegetation onsite is also described by Narla as:

heavily dominated by E. pauciflora with sporadic occurrences of E. stellulata.

Chapter 4 Koala habitat protection 2021 does not apply to Rural zoned land, RU1, RU2, and RU3 in the Snowy Monaro Regional LGA.

From the BioNET records, Koala has been recorded nearby in forested land less than 2 km to the south, adjoining the Snowy River Way close to Sugarloaf Creek, and to the north of Ngadang Nature Reserve (Figure 5b).

With further environmental / conservation works, especially planting Koala feed trees such as *Eucalyptus viminalis*, there is potential to create koala habitat in the future. Note: *Eucalyptus viminalis* occurs mostly in wetter or seasonally well-

watered areas, particularly in mountain valleys and along streams on tableland areas.

For the Central and Southern Tablelands – main koala food trees are listed on the DPE website (https://www.environment.nsw.gov.au/topics/animals-and-plants/native-animals/native-animal-facts/koala/koala-habitat). Three of these species were recorded onsite, *Eucalyptus pauciflora, Eucalyptus rubida and Eucalyptus viminalis.*

Part B Stage 1 Biodiversity assessment

B1.0 Site location

The site is within the Snowy Monaro Local Government Area.

The site is located in the Monaro IBRA subregion of the South Eastern Highlands region. To the west of the Monaro IBRA subregion is the Snowy Mountains IBRA subregion of the Australian Alps (Figure 1c-1). The Monaro is described by the Department of Environment and Climate Change NSW (DECC 2008) as:

> *...the elevated plateau in the south east of NSW located between the Australian Alps and the coastal escarpment.*

The site is in the Mitchell Landscape of Jindabyne Plains (Figure 1c-2).

The site is approximately 45 km south of Lake Eucumbene and 10 km south-east of Lake Jindabyne. The site is located approximately 2 km south-west of the 160 ha Ngadang Nature Reserve. This nature reserve is located on the Snowy River.

The site is located approximately midway between the Snowy River Way turnoff from Barry Way, west of Jindabyne, to Beloka east of the site. The western extreme of the site is approximately 150 m north-east of the Snowy River Wa. The site is accessed from Chongs Road (Figures 1a-1 to 1b-2).

B1.1 The proposal and the subject land

The brief to the architect for the eco-tourist facilities was for comfortable, private, well-spaced-out cabins with views of the main Alpine Range and living spaces facing north. The cabin locations were carefully selected onsite in consultation with the landowner to avoid and minimise potential impacts such as loss of native canopy trees and existing boulder formations. The existing roads and tracks are to be utilised to minimise the development footprint (existing roads and track shown on Figure 1a-3). The intent of the landowner is the long-term continuation of environmental protection / conservation works on the site, in consultation with the relevant advisory groups.

The subject land is shown on the Site Plan (Figure 1e) and consists of:

- six Eco-cabins and associated service pods;
- two refuges;
- one shed with managers accommodation (Shed 1);
- one workshop (Shed 2);
- roads / tracks; and
- associated bushfire Asset Protection Zones (APZs).

The bushfire hazard assessment for this Eco Tourism Development has been assessed by Harris Environmental Consulting (2024) in accordance with Section 6.3.1 of *Planning for Bushfire Protection* (PBP) (NSW Rural Fire Service 2019). The NSW Rural Fire Service requires the provision of a safe refuge that can be readily accessed by patrons within 100 m of the cabins. There are two refuge locations within 100 m of the cabins. [Note: one of the six cabins, Cabin 3, is designed with accessible accommodation and functions as its own refuge]. The proposed bushfire APZs are shown on Figure 1f-1 to 1f-4 (from Harris Environmental Consulting 2024).

The management of the bushfire Asset Protection Zones are to be integrated into the ongoing conservation works which includes the biosecurity weed control recommended by Council's Biosecurity Officer (details in Appendix 1b). No clearing of native vegetation is required for these APZs.

The total area required to be cleared is approximately **0.60 ha**, consisting of (Figure 1e):

- 0.18 ha for proposed buildings; and
- 0.42 ha for proposed roads and tracks.

B1.2 Whether a BDAR is required

A Biodiversity Development Assessment Report (BDAR) under the *BC Act* is required, if:

	For the proposal
the proposal triggers the BOS threshold; or	**No.** Less than the clearing threshold and proposal not with the area on the BV Map.
the proposal is likely to significantly affect threatened species based on the test of significance in section 7.3 of the NSW Biodiversity Conservation Act 2016.	Assessed in this Biodiversity Assessment Report (BAR).

The *BC Regulation 2017* sets out threshold levels for when the Biodiversity Offset Scheme will be triggered. The threshold has two elements:

Trigger	**For the proposal**
whether the amount of native vegetation being cleared exceeds an area threshold or	**No.** The extent of clearing required is approximately 0.60 ha (less than the clearing threshold of 1 ha).
whether the impacts occur on an area mapped on the Biodiversity Values Map (BV map)	**No. T**he proposal is not within area mapped on the Biodiversity Values Map

Hence, a BDAR is not required for the proposal, unless there is a significant impact on threatened species.

B2.0 Site context

The site is described based on the sampling locations entered into the online BioNet Plot to PCT Assignment Tool as the following:

- Landform Pattern: MOUNTAINS
- Morphological Type (Morph type): Stream line, Mid slope, Upper slope to Ridge
- Landform element: Stream bank, Hill slope to Flat
- Annual rainfall: 653.87 to 669.39 mm
- Elevation: 1087.63 to 1118.84 (consistent with the LiDAR)
- Mean annual Temperature: 8.62 to 8.82ºC

B2.1 Landscape features

Landscape features within and around the subject land are assessed using:

- topographic maps, and aerial photographs from the Seed Portal – NSW Government website;
- Nearmap aerial photographs on subscription;
- DEM LiDAR from Spatial Services;
- Geology and soil mapping from the Seed Portal;
- Soil assessment for onsite waste water disposal; and
- Field inspections, onsite surveys and photographic records.

The landscape features have been assessed, as follows:

Landscape features	For the site
IBRA bioregion and subregions	Monaro IBRA subregion of the South Eastern Highlands region(Figure 1c-1).
Rivers and streams	Most of the site is drained by an unnamed watercourse, an eastern tributary of Sugarloaf Creek. Sugarloaf Creek flows for approximately 100 m interval northward across the southwest corner of the site (Figures 1a-5,1b-1, 1b-2).
Wetlands within, adjacent to and downstream of the site	No wetland are mapped under the LEP onsite. There is soak in the west close to the culvert under Chongs Road. (Figures 1a-2, 1b-2).
Connectivity of different areas of habitat*	Connectivity (less than 100 m separation) includes all of the surrounding properties (Figure 1a-4).
Karst, caves, crevices, cliffs, rocks and other geological features of significance and for vegetation clearing proposals, soil hazard features	Karst, caves, crevices, cliffs are not features of the site (Figures 1d, 3a, 3b). Restricted areas of boulders were observed onsite.
Areas of outstanding biodiversity value occurring on the subject land and assessment area	There are no areas of outstanding Biodiversity Value occurring on the site.
Any additional landscape features identified in any SEARs for the proposal	No Secretary's Environmental Assessment Requirements (SEARs) have been issued for the proposal.
NSW (Mitchell) landscape on which the subject land occurs	The site is mapped on Jindabyne Plains (Figures 1c-2).

Note: NSW (Mitchell) landscape mapping is primarily a 1:250 000 scale geomorphic map.

B2.2 Geology and soil

The geology of the site is mapped as Bullenbalong Granodiorite (map unit Sbuu), with Abercrombie Formation (map unit Oada) just outside the site's southern boundary (Figure 3a).

These map units are broadly described by White *et al.* (1976) on the Berridale 1:100 000 geological sheet, with:

Map unit	Description	Geological period
Oada	Black shale, chert, sandstone, slate	Early Silurian

Sbuu	Biotite-rich granodiorite	Late Silurian (Early Devonian?)

Note: Silurian period is in the Paleozoic Era (541 to 252 million years ago), with the Silurian period beginning about 444 and ending 419 million years ago.

The NSW Soil Landcape Mapping Program (http://www.regional.org.au/au/gia/21/681murphy.htm) has not yet published a map of the region including Jindabyne and nearby localities. The available soil mapping is of the Great Soil Group Type map of NSW. Nearly all of the site is mapped as Brown Earths (BRE), except for a sliver just within the southern boundary mapped as Lithosols (L) (Figure 3b).

B2.3 Climate and effect on vegetation

The mean annual rainfall and temperature of the site (from the online BioNet Plot to PCT Assignment Tool) are:

- Annual rainfall: 653.87 to 669.39 mm; and
- Mean annual Temperature: 8.62 to 8.82°C, with
- Elevation: 1087.63 to 1118.84.

The meteorological stations near to the site with rainfall records show a trend in elevation and rainfall (data from *bom climate data online)* with:

- Perisher station (26 km NW of the site) in the Snowy Mountains (elevation 1738 m) receiving an annual average rainfall of 2174 mm;
- Thredbo stations (36 km west of the site) in the Snowy Mountains (elevation 1957 and 1380 m) receiving an annual average rainfall of 1402 mm and 1777 mm; and
- Cooma stations (55 km NE of the site) (elevation 778 m and 930 m) receiving an annual average rainfall of 541 and 544 mm.

The site is at elevations of between 1064 m and 1118 m and is likely to receive less rainfall than Thredbo but more than Cooma.

The rainfall in the month of the survey and the month prior was the following:

Date of survey	Rainfall in month of survey	Rainfall in month prior
Narla Environmental 2023		
11 January 2023	Thredbo – January close to average Cooma – January above average	Thredbo – Dec 2022 close to average; Cooma – Dec 2022 below average.
24 March 2023	Thredbo – March close to average Cooma – March above average	Thredbo – Feb 2023 close to average; Cooma – Feb 2023 below average.
Anne Clements & Associates		
11, 12, 13 December 2023	December above average at both stations	Thredbo – Nov 2023 close to average; Cooma – Nov 2023 above average.

The monthly recorded at nearby meteorological stations in 2023 compared with the long-term mean was the following:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thredbo AWS													
2023	127	79	109	153	127	141	100	111	39	122	156	178	1442

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	**115**	**88**	**118**	**113**	**152**	**159**	**165**	**195**	**202**	**183**	**168**	**126**	**1768**
Cooma Airport													
2023	115	24	96	45	50	15	6	14	10	29	110	136	649
Mean	**56**	**51**	**52**	**40**	**30**	**39**	**39**	**32**	**37**	**47**	**70**	**56**	**541**

At the time of survey on **11-13 December 2023**, the skies were blue, no rainfall was observed onsite and it was hot and sunny, despite the daily records at the nearby meteorological stations.

Daily record	11 December	12 December	13 December
Thredbo AWS			
Rainfall (mm)	3.6	3.8	3.8
Temp Max (°C)	14.2	14.2	14.1
Temp Min (°C)	4.9	5	5.1
Cooma Airport			
Rainfall (mm)	2.5	2.6	2.1
Temp Max (°C)	23.3	23.3	23.3
Temp Min (°C)	8	8	8.3

As a consequence of the climatic conditions:

- **In January 2023** – the vegetation on site was not likely to be drought stressed with close to average monthly rainfall prior to survey;
- **In March 2023** – not likely to be drought stressed;
- **In December 2023** – with the above average rainfall prior to and at time of survey, abundant flowering of both native and exotic species was expected and was observed.

It was observed at time of the December 2023 survey, the soils were not wet and vegetation did not appear drought-stressed.

B2.4 Landform and elevation

Elevation of the site ranges from 1064 m at the crossing point of the west-flowing unnamed creek and Chongs Road (with impeded drainage at the culvert under Chongs Road) to 1118 m at the north-eastern corner of Lot 25. The 1100 m contour crosses the site's central gully close to the eastern boundary, curving westward to cross the northwestern boundary beside Chongs Road. The gully drops westward to the 1064 m contour, which cuts across the gully a short distance beyond the western boundary (Figure 1d).

B2.5 Watercourses and drainage

Most of the site is drained by an unnamed watercourse, an eastern tributary of Sugarloaf Creek of which an approximately 100 m interval flows northward across the acute angle of the site's extreme southwest corner. The unnamed tributary joins Sugarloaf Creek at a culvert beneath Chongs Road (Figure 1a-5).

Sugarloaf Creek and its southwestern tributary Sturgeons Creek (their confluence) is just outside the site's southwest corner. Sugarloaf Creek flows

generally northeastward to join the Snowy River in its gorge 6.5 km downstream of the Lake Jindabyne outlet (Figure 1a-5, 1b-1, 1b-2, 1d).

An approximately 1.2 ha dam replaced the existing smaller dam onsite in June/July 2021 under supervision and approval of NSW Soil Conservation in consultation with NSW Water (correspondence about this works in Appendix 1).

The advice prior to works from NSW Water (email dated 15 March 2021 in Appendix 1) was:

- *erosion works can occur in gullies where the soil is exposed and vertical drops can be smoothed out and remediated.*
- *the dam currently spills to the northern edge, which causes issues.*
- *the dam may be expanded in order to install a proper spillway which will flow over the gradual slope to the south of the dam and into the stream flowing west.*
- *planting of extra plants / trees along the gullies is encouraged to stabilise the soil.*

B2.6 Extent of native vegetation cover

Native vegetation cover on the subject land is assessed in relation to native vegetation cover across a broader area, i.e., a 1500 m buffer of the subject land (Section 3.2 of the BAM (DPIE 2020).

The extent of native vegetation cover within the assessment area has been calculated using the most recent vegetation mapping (DPE 2022) (Figure 1a-4).

Assessment Area	1219 ha
Total area of native vegetation cover	677 ha
Percentage of native vegetation cover	55 %
Class (0-10, >10-30, >30-70 or >70%)	Class >30 - 70

B3.0 Native vegetation, TECs and vegetation integrity methods

B3.1 Review of existing vegetation mapping and surveys

NSW State Vegetation Type Map 2023 (SVTM) mapped approximately half of the site as cleared and the remainder as the following Plant Community Types (PCTs) (Figure 4a):

Mapped Vegetation Type	Located
Unmapped	approximately half of the site
PCT 3341 Monaro-Gourock Frost Hollow Grassy Woodland	widespread and approximately 1/3 of the site
PCT 3375 Monaro-Queanbeyan Rolling Hills Grassy Forest	limit distribution In the north
PCT 3413 Monaro Kangaroo Grass Woodland-Grassland Complex	Approximately 10% of the site
PCT 3741 Monaro Mountains Peppermint Shrub Forest.	In the extreme north

Department of Environment and Climate Change NSW (DECC) 2008
Central Monaro Reserves – Plan of Management
Approximately 2 km to the north-east of the site is the 160 ha Ngadang Nature Reserve. This reserve is one of seven reserves (combined area of 3935 ha) known as "The Monaro". These reserves of the Monaro are considered (Department of Environment and Climate Change NSW (DECC) 2008):

> *important landscape elements as tree covered ridgelines in an otherwise largely treeless environment. The reserves closer to Kosciuszko National Park form timbered ridgelines that protrude into grazing country .*

Ngadang Nature Reserve is described as:

> *on the southern bank of the Snowy River within a steep-sided granite gorge. The area covered by the reserve was at one time part of the Mowenbah Pastoral Holding. In 1940, the area was removed from lease and classified as a fisheries reserve.*

In terms of biodiversity in the Ngadang Nature Reserve (DECC 2008):

> *contains the following two under represented plant communities:*
>
> - Eastern Tableland Dry Shrub/Grass Forest (snow gum *E. pauciflora*/ ribbon gum E. viminalis/ silver wattle *Acacia dealbata*/ kangaroo grass Themeda australis) and
> - South-East Tablelands Dry Shrub-Tussock Grass Forest (dominated by scribbly gum *E. rossii*/ brittle gum E. mannifera/ bush pea *Pultenaea procumbens*/ red-anther wallaby grass *Joycea pallida*).
>
> These communities were considered to be *still extremely poorly represented, in the case of Dry Shrub/Grass Forest and still somewhat under represented in the case of Dry Shrub/Tussock Grass Forest in a formal reserve system* (NPWS Inventory 2000 as cited in Zylstra 2001)".
>
> *Aside from these two communities, small patches of black sallee (E. stellulata) can be found in the lower sections of the major drainage lines.*
>
> **Native Animals:**
> … provides suitable habitat for 11 threatened species. The most significant regionally are the koala (*Phascolarctos cinereus*) and the spotted-tailed quoll (*Dasyurus maculatus*), both of which are listed as vulnerable under the TSC Act.
>
> **Introduced Plants and Animals**
> The boundary of the reserve is only partly stock-proof fenced. Currently, sheep have access to the adjacent grassy flats on the southern boundary of the reserve, at the tops of the spurs and gully heads in the reserve abutting private land. Within these disturbed areas extensive weed infestations are evident.
>
> The most invasive weeds on the grassy flats are serrated tussock (*Nassella trichotoma*) and saffron thistle (*Carthamus lanatus*). Associated with the snow gum (*E. pauciflora*), communities of hawthorn (*Crataegus monogyna*) occur on the lower slopes. A total of 9 introduced species have been identified.
>
> Most of these species do not have any appreciable environmental impact on the ecology of the reserve. Priority species for control identified in the Snowy Mountains Regional Pest Management Strategy are serrated tussock (*Nassella trichotoma*) and African lovegrass (*Ergrostis curvula*).

Since 2001, an annual weed control program targeting serrated tussock has been carried out in the reserve concentrating on the banks of the Snowy River and its major tributaries. Follow up control work will be done annually. It is expected that serrated tussock control will be an ongoing requirement on the reserve.

Goats and pigs are known to exist on the reserve.

Narla Environmental (2023) – an assessment of 1.73 ha of the site was undertaken by Hannah Martin on 11 January 2023 (Figures 4b-1, 4b-2). The survey included:

- *Identifying and recording the vegetation communities present within the Subject Site, with focus on identifying any threatened ecological communities;*
- *Recording a detailed list of flora species encountered within the Subject Site, with a focus on threatened species, species diagnostic of threatened ecological communities and Priority Weeds;*
- *Recording opportunistic sightings of any fauna species seen or heard on or within the immediate surrounds of the Subject Site;*
- *Targeted surveys for threatened flora;*
- *Identifying and recording the locations of notable fauna habitat such as important nesting, roosting or foraging microhabitats;*
- *Assessing the connectivity and quality of the vegetation within the Subject Site and surrounding area; and*
- *Targeting the habitat of any threatened and regionally significant fauna including:*
    - *Tree hollows (habitat for threatened large forest owls, parrots and arboreal mammals);*
    - *Caves and crevices (habitat for threatened reptiles, small mammals and microbats);*
    - *Termite mounds (habitat for threatened reptiles);*
    - *Soaks (habitat for threatened frogs);*
    - *Wetlands (habitat for threatened fish, frogs and water birds);*
    - *Drainage lines (habitat for threatened fish and frogs);*
    - *Fruiting trees (food for threatened frugivorous birds and mammals);*
    - *Flowering trees (food for threatened nectarivorous birds and mammals);*
    - *Trees and shrubs supporting nest structures (habitat for threatened birds and arboreal mammals); and*
    - *Any other habitat features that may support fauna (particularly threatened) species.*

A total of 58 flora species (32 native and 26 exotic) were recorded. Of the 32 native species recorded, most (27 species) were in the groundlayer, with:

- 3 tree species (*Eucalyptus dalrympleana, Eucalyptus pauciflora, Eucalyptus stellulata* identified within the site and no trees recorded in either of two Narla Plots (Plots 1, 2); and
- 2 shrub species (*Acacia dealbata*, *Discaria pubescens* identified within the site, with recorded 1% cover recorded in Narla Plot 1).

It was found that the majority of the 1.73 ha assessed on the site consisted of historically cleared exotic grassland, described as:

- *dominated by exotic pasture grass species including* Bromus diandrus *(Great Brome),* Echium vulgare *(Blueweed),* Taraxacum officinale *(Common Dandelion),* Cirsium vulgare *(Spear Thistle),* Trifolium arvense *(Hare's Foot Clover),* Trifolium repens *(White Clover) and* Conyza bonariensis *(Fleabane).*
- *Minor occurrences of native species such as* Acaena novae-zelandiae *(Bidibid) and* Microlaena stipoides *(Weeping Grass) were evident, however the area was largely overrun by exotics.*
- *Priority Weeds* Nassella trichotoma *(Serrated Tussock),* Rosa rubiginosa *(Sweet Briar) and* Hypericum perforatum *(St. John's Wort) were also identified within the Subject Land and broader Subject Property.*

Narla also recorded habitat trees and microhabitat (rock outcrops) (Figure 4b-2).

Two vegetation communities were identified (Figure 4b-1):

- PCT 3413: Monaro Kangaroo Grass Woodland-Grassland Complex; and
- Historically Cleared Exotic Grassland.

Two Plots were sampled by Narla using BAM techniques on 24 March 2023 (sampling location shown on Figure 4c-1). There were no trees recorded in either of the two plots. The species composition and % covers in the 20 m x 20 m floristic quadrats of these BAM Plots were:

Recorded by Narla (2023)	**Plot 1**	**Plot 2**
number of native species	17	15
cover by native species	32.1%	26.9%
cover by exotic species	32.4%	7.8%
cover by *Nassella trichotoma* (Serrated Tussock)	20%	5%
cover by *Hypericum perforatum* (St. John's Wort)	0.2%	0.1%
cover by *Rosa rubiginosa*	0.1%	0%

B3.2 Onsite survey methods

The vegetation was sampled in eight BAM plots and one Spot location on 11, 12, 13 December 2023 by Tony Rodd, Pauline Dever and Tim Harding using the Biodiversity Assessment Methodology (BAM) (DPIE 2020) (sampling locations on Figures 4c-1, 4c-2).

In addition to the BAM techniques:

- to calculate the percentage covers of species present in the 0.04 ha floristic quadrat of the BAM plots, the covers recorded in four 10 m x 10 m contiguous subquadrats were averaged and the average rounded to the BAM acceptable cover values (Table 1);
- to describe vegetation structure in the sampled vegetation, the numbers of individuals and maximum heights for species ≥ 2 m tall were recorded in the floristic quadrats (Table 2); and
- supplementary data were recorded in Spot A in the creek close to Plot 4.

All sampling locations were photographed with additional general photographs also taken (Appendix 2a, b, c). GPS coordinates were recorded at regular intervals along the transects using a hand-held Garmin GPS map 78 at the time of survey. The GPS coordinates (given in Appendix 4), in conjunction with ground features, were used to plot the sampling locations.

Nomenclature is consistent with Harden (1990-1993, 2002), Harden and Murray (2000) and subsequent taxonomic changes as published in *Telopea*, the Sydney Royal Botanic Gardens' journal of systematic botany, and in other Australian taxonomic literature. The Royal Botanic Gardens' PlantNET website (plantnet.rbgsyd.nsw.gov.au) incorporating Flora Online is the major source for updated taxonomy.

B4.0 Native vegetation and vegetation integrity

B4.1 Changes to Land use and native vegetation extent

The 46.9 ha site was part of the original Baloco Station, a 6,000 acre (approx. 2,400 ha) grazing property. In about 2010 to 2013, the station was split into 4,000 acre blocks (approx. 1,600 ha) and one 2,000 acre block (approx. 800 ha). The 2000 acre block was then split into approximately 100 acre blocks (approx. 40 ha) of which the 46.9 ha site was part of this subdivision (pers. com. with the landowner, March 2024).

From the historic aerial photographs, the site was used for grazing as part of the Baloco Station. It is likely that grazing has occurred on this land since the 1850s. It was actively grazed by cattle prior to purchase in 2019.

From the historic aerial photographs, the earliest available being 1959, there was little evidence of native regeneration (Figures 1959-1969, and 1979-1992, 1a-3):

Year	Onsite
1959	Appears to be grazing land. Scattered trees with grassy understorey. There are tracks across the site.
1969	Similar to 1959. With similar pattern of tree distribution.
1979	Similar to 1959, except clearing in the north-west corner
1992	Similar to 1979.
2023	An east/west road constructed; A 1.2 ha dam along the un-named watercourse; and A series of existing tracks / road.

Post 2019, with the change of landowner, grazing has ceased on the property and environmental protection / conservation works are being implemented.

Adjoining land uses
The site is bounded to (Figures 1a-1, 1a-3, 1b-1, 1b-2, 1d):

The north by Forest land	- Older-established properties flanking the steeper valley of Daley Creek, which flows north to join Sugarloaf Creek. - The property "Waldheim" adjoining the (previous) end of Chongs Road has a large dwelling and outbuildings, with a 2 ha plantation of tall *Pinus radiata* to their south, dominating the skyline. Between "Waldheim" and Lot 25 are lots with smaller dwellings in their south ends. All these properties are on steeper country and more heavily wooded than the site. - The nearest corner of the 160 ha Ngadang Nature Reserve on the south bank of the Snowy River is approximately 1.5 km north-east from the site.
The east by historically cleared grazing land	- Lots 23, 24, 27, 28 of DP 1232872, similar in size and shape to Lots 25 and 26 of the site and with similar topography and tree cover; further east are larger holdings with more rugged topography in parts, then falling to cleared grazing land along the gentler shore of Snowy River, about 3.5 km from the site (location of lots available on the SEED website).
The south by historically cleared grazing land	- Similar topography to that of the site with medium-large lots that appear to be managed as farmland. In most parts, trees are much sparser than on the site. But 800 m to the south and adjoining the Snowy River Way Lots 168, 169 of DP729717 appear to support about 20 ha of native woodland vegetation that is much denser than on any land closer to the site (location of lots available on the SEED website).
The west by historically cleared grazing land, with some moderately dense woodland	- The lots along the valley of Sugarloaf Creek, are for the most part apparently managed as farmland except for the four smaller lots of DP 884244 on the north side of Sugarloaf Creek which all have on average about 50% of their area occupied. This appears to be a hobby farm subdivision, with dwellings on 3 of the 4 lots, accessed by a shared road. The woodland on these lots is isolated, separated from the woodland north of "Waldheim" by about 400 m of fully cleared farmland. (location of lots available on the SEED website).

B4.2 Biodiversity findings onsite

In the in 0.04 ha floristic plots, the native species diversity recorded was:

- highest in Plot 1 (48 native species with 35% native cover);
- more than 30 native species in Plot 5 with 26% native cover and Plot 8 with 25% native cover;
- between 20 and 30 native species in Plots 2, 3, 6, 7 with native cover varying from less than approximately 20% to 38% native cover in Plot 7; and
- less than 20 native species in Plot 4 with 17% native cover.

The number of exotic species recorded varied from 11 to 26, with:

- the lowest number of exotic species recorded having the lowest cover by exotic species, namely Plot 1 in the north-west with 15% cover with 11 exotic species.

and highest in Plot 7 in the south-east (79% cover with 26 exotic species). There was approximately 50% or more cover by exotic species recorded in four of the eight plots, namely Plot 2 (49% cover), Plot 4 (69%), Plot 7 (79%) and Plot 8 (50%)

The number of species recorded in the December 2023 survey was greater than the number recorded by Narla in March 2023. The differences may be related to the time of year and more rainfall recorded prior to the December 2023 survey.

	Number of native understorey and exotic species recorded (total cover)		
Plot	**Total**	**Native**	**Exotic**
1	59 (50% cover)	48 (35% cover)	11 (15% cover)
2	51 (68% cover)	25 (19% cover)	26 (49% cover)
3	52 (52% cover)	28 (16% cover)	24 (35% cover)
4	36 (86% cover)	17 (17% cover)	19 (69% cover)
5	52 (65% cover)	32 (26% cover)	20 (40% cover)
6	41 (78% cover)	22 (38% cover)	19 (40% cover)
7	47(99% cover)	21 (20% cover)	26 (79% cover)
8	50 (75% cover)	32 (25% cover)	18 (50% cover)
Narla 1	37 (64.5% cover)	17 (32.1% cover)	20 (32.4% cover
Narla 2	25 (34.7% cover)	15 (26.9% cover)	10 (7.8% cover)

Species	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Hypericum perforatum	0.1	2	2	2	2	1	1	2
Nassella trichotoma	0.8	0.8	0.3		3	0.1	4	
Bromus hordeaceus	5	10	10	10	15	15	20	20
Bromus sterilis	2	1	4	10	4		10	0.5
Crepis capillaris	0.5	1	4		0.3	2	1	
Echium vulgare								
Holcus lanatus		0.4	0.1	20	0.6	0.9		0.6
Lolium perenne		4	1	15	2	5	4	2
Rumex acetosella	5	15	4	4		5	20	10
Trifolium repens		10	2	1	3	5	10	10

The plot was laid out among scattered trees on a gentle slope on the west side of the crest of a spur, flanking the gully on neigbouring properties that drains to the north, thus on a different sub-catchment to that draining nearly all the remainder of the site which exits the site to the west. The plot ran downhill and parallel to the existing northern fenceline (which was subsequently discovered to be some 70 m south of the mapped northern boundary, so presumably pre-dating the rural subdivision). The 20 m x 20 m floristic quadrat was located at the uphill or east end.

Canopy trees - Within the quadrat there were 5 trees of *Eucalyptus pauciflora* up to about 12 m high, with a small part of the canopy of a taller *E. rubida* overhanging, its trunk just outside the quadrat but readily distinguished by the coppice foliage with rounded, bluish juvenile leaves, on the trunk base, Nearby there were several trees of *E. viminalis*, resembling *E. rubida* but distinguished by their narrow, green coppice leaves. Only some seedlings or young suckers of *E. viminalis* were recorded within the floristic quadrat.

Native shrubs - No understorey tree species were seen except for a single seedling of *Acacia dealbata*, a common wattle of the Monaro region. Smaller shrubs were almost as scarce, the most conspicuous being a group of the 'tree violet' *Melicytus angustifolius* subsp. *divaricatus* at the foot of an *E. pauciflora* close to the fenceline. This is a dense spreading shrub mostly under 1 m high with stiff, thorny branches, in NSW found only on the higher parts of the Southern Tablelands extending to high up

in the alpine zone. The only other shrubs recorded were the prostrate *Bossiaea buxifolia* and a young *Ozothamnus thyrsoideus*, both very inconspicuous.

Native ground covers - It was the native groundlayer plants that showed the greatest diversity in terms of species count. The most conspicuous native grasses were the tussock grasses *Poa labillardierei* and *P. sieberiana,* the former one taller and denser than the latter. Kangaroo Grass, *Themeda triandra,* was patchily present but appeared to have limited cover. Its characteristic seedheads were only just emerging at the time of survey and it is possible that its cover may have increased by late summer. Occurring frequently but contributing little cover were the grasses *Anthosachne scabra, Austrostipa scabra* and *Rytidosperma pilosum.* The grasses *Panicum effusum* and *Rytidosperma monticola* were seen only in the form of a single plant of each. Grasslike (though not grass) plants present were the small sedges *Carex breviculmis* and *C. inversa*, the former sufficiently numerous to contribute significantly to total cover.

It was **native forbs** that were most conspicuous and diverse in the groundlayer, with 32 species recorded. Most conspicuous were two (2) *Vittadinia* species, spreading plants with tiny daisy-like purple or white flowerheads; these made up at least 2% of total cover. *Pantago varia* plants were very numerous and despite the small size of each their combined cover was at least 1%. Another abundant forb was *Geranium solanderi,* with conspicuous pale pink flowers among dense mats of foliage. *Oxalis exilis* and *Ranunculus graniticola,* both with bright yellow flowers, were easily spotted. Less visible among bases of other plants were the creeping herbs *Dichondra repens* and *Hydrocotyle laxiflora,* but their countless ground-hugging round leaves together made cover approaching 5%.

Only 12 **exotic species** were recorded, but some contributed substantially to cover. The annual grasses *Bromus hordeaceus* and *B. sterilis* were the most evident, the former coming into head at time of visit but also with mats of crowded seedlings in patches. Fewer heads of *B. sterilis* were seen but more young plants of it may also have been present, as for *B. hordeaceus. S*errated Tussock, *Nassella trichotoma,* a Weed of National Significance, was recorded in small numbers, cover around 1%. The greatest cover among the non-grass exotics was of *Rumex acetosella*, a very low-growing plant that spreads by deep wiry rhizomes, with countless aboveground small leafy shoots terminating in sprays of minute flowers. The small annual clovers, *Trifolium arvense* and *T. campestre* were present in large numbers but with small cover.

BAM Plot 2
This plot was positioned in the head of a very slight gully on a gentle slope falling to the west, with no rock outcropping.

Native canopy trees - The floristic quadrat included a group of 3 mature trees, one each of the species *Eucalyptus pauciflora*, *E. rubida* and *E. stellulata*, respectively 10 m, 25 m and 8 m tall. These were growing somewhat apart from other trees, most of which were a little further down the slope and separated by open areas of grassland.

Native shrubs - The only shrub recorded was again *Melicytus angustifolius* subsp. *divaricatus*, growing between the trees as in Plot 1.

Native ground covers - The most conspicuous grass was the tall native tussock *Poa labillardierei,* with the lower *L. sieberiana* in smaller numbers, mainly close to the trees. However the cover of native grasses was exceeded by that of exotics, mainly the brome grasses *Bromus hordeaceus* and *B. sterilis*, in the form of dense swards of

seedlings. Some grasslike plants (but not grasses) present in significant amounts were the sedges *Carex incomitata* and *C. inversa* and the rushes *Juncus filicaulis* and *J. vaginatus.* The two *Juncus* species were concentrated along a minor drainage line that cut across the floristic quadrat.

Compared to Plot 1, cover of **native forbs** was low; the only species with covers approaching 1% were *Euchiton involucratus, Geranium solanderi* and *Hydrocotyle laxiflora.* Diversity of forbs was also lower, with 16 species recorded.

Exotic species, Plot 2 was much more weedy than Plot 1 with 26 exotic species recorded, some contributing substantial cover. The most abundant species were *Bromus hordeaceus, Rumex acetosella, Trifolium repens, Hypericum perforatum, Lolium perenne, Nassella trichotoma* and *Taraxacum officinale* – with a combined cover of approximately 50%. Woody weeds were sparsely present, namely *Crataegus monogyna, Rosa rubiginosa* and a blackberry, *Rubus* sp.

BAM Plot 3
This plot was positioned on a gentle slope dropping to the west, close to the highest point on the site at 1110 m ASL.

Native canopy trees - Most of the plot and its near vicinity was treeless grassland but two trees of *Eucalyptus pauciflora,* about 10 m tall and with dense canopies, fell within the floristic quadrat.

Native shrubs - As in Plots 1 and 2 the only shrub of note was *Melicytus angustifolius* subsp. *divaricatus,* a small clump of which grew beneath the trees.

Native ground covers - The tall native tussock grass *Poa labillardierei* was moderately abundant, with around 10% cover. The smaller *Poa sieberiana* was much less abundant, occurring closer around the trees. As in Plot 1, the other native grasses *Anthosachne scabra, Austrostipa scabra* were present but not abundant, and inconspicuous.

Native forbs included 20 species but only a few were abundant. Those contributing the most cover were *Geranium solanderi, Hydrocotyle laxiflora, Oxalis exilis, Plantago varia, Senecio quadridentatus,* and *Vittadinia gracilis* (2 other *Vittadinia* species also present). The native forget-me-not *Cynoglossum australe* was frequent.

Of exotics there were 24 species recorded, with the grasses *Bromus hordeaceus, B. sterilis, Lolium perenne* and *Nassella trichotoma* making around 20% cover between them. The most abundant broad-leaved exotics (1% or more cover) were *Crepis capillaris, Echium vulgare, Hypericum perforatum, Hypochaeris radicata, Rumex acetosella, Salvia verbenaca, Taraxacum officinale, Trifolium arvense* and *T. repens.* Plants of *Verbascum thapsus* were moderately numerous and conspicuous, though making little cover.

BAM Plot 4
Laid along the base of a south-facing, somewhat rocky slope close to the bottom of a shallow valley, this plot sampled rather disturbed vegetation, the disturbance possibly originating from former use by livestock sheltering from bad weather. A small, boggy stream ran through the valley supporting a well defined strip of wetland vegetation dominated by the introduced watercress. The Plot was positioned so as to exclude this wetland (sampled by Spot A).

Native canopy trees -The only tree species recorded in the floristic quadrat was *Eucalyptus pauciflora*, with 3 trees ranging in height from 7 to 15 m. The two larger trees were senescent, with hollow trunks and much dead wood, most of their live foliage appearing to be on coppicing stems from low on the the trunk.

Native shrubs - Only one native shrub species was present though in some abundance, namely *Melicytus angustifolius* subsp. *divaricatus;* it favoured positions beside large boulders and around trees.

Native ground covers - Only two native grasses were recorded, *Anthosachne scabra* and *Poa labillardieri,* only the latter at all abundant. No native graminoids were recorded.

Native forbs were more diverse, with 13 species recorded though this was a significantly lower number than in any of the other 7 plots. The only forbs with covers approaching 1% were *Geranium potentilloides, G. solanderi, Hydrocotyle laxiflora* and *Plantago varia.* The geophytic vanilla-lily *Arhropodium* sp. "Snowy River catchment" was present in some abundance but making very slight cover. Another interesting record was the native dock *Rumex dumosus*, known mainly from lower and drier regions of southern Australia.

Exotic species, of which 18 were recorded, accounted for around 80% of the groundcover. Most of the cover came from the four grasses *Bromus hordeaceus, B. sterilis, Holcus lanatus* and *Lolium perenne*. Conspicuous among the broadleaved exotics were the two thistles *Carduus nutans* and *Cirsium vulgare; Hypericum perforatum*; and the woolly leaved *Verbascum thapsus*. Less conspicuous species though with significant cover were *Rumex acetosella, Hypochaeris radicata* and *Trifolium repens.* There were also two woody exotics, namely *Crataegus monogyna* and *Rosa rubiginosa,* both mature specimens.

BAM Plot 5
Laid out on the western shoulder of a low spur with numerous rock outcrops, this plot extended northward into mostly open grassland with a few trees, mainly *Eucalyptus pauciflora* though with some *E. stellulata* in the vicinity.

Native canopy trees - The floristic quadrat included one *E. pauciflora* about 8 m high and one *E. stellulata* at 12 m, both over-mature specimens.

Native shrubs were slightly more diverse than in other plots, with 3 species recorded, of which the most extensive in terms of cover was *Melicytus angustifolius* subsp. *divaricatus*. Two other shrub species, *Bossiaea buxifolia* and *Oxylobium oxylobioides* were found creeping between rock outcrops, less conspicuous than the *Melicytus* due to their prostrate habit but spreading quite widely nonetheless.

Native grasses were moderately abundant. As in other plots *Poa labillardierei* was the most conspicuous though the smaller tussock-grass *P. sieberiana* was also frequent. In some parts there were groups of the sparser tussock-grass *Austrostipa scabra.* Minor native grasses in terms of cover were *Anthosachne scabra* and *Rytidosperma pilosum.* No sedges or other graminoids were recorded.

Native forb species numbered 23 of which the most abundant in terms of cover was the dock *Rumex dumosus* followed by *Cynoglossum australe, Dichondra repens, Plantago varia, Hydrocotyle laxiflora, Asperula conferta* and *Vittadinia gracilis.* Conspicuous for blue bell flowers was *Wahlenbergia communis* and for its bright yellow flowers, *Oxalis exilis,* though for both foliage cover was very small. A notable

find was *Calotis glandulosa*, a species listed as Vulnerable under the Commonwealth's *Environment Protection and Biodiversity Conservation Act*. This species was observed elsewhere in nearby parts of the site.

Of exotic species, 20 were recorded, including the Weed of National Significance *Nassella trichotoma,* present in moderate abundance. Other problem weeds recorded were *Eragrostis curvula*, moderately dense in a few spots, and *Hypericum perforatum*, common here as elsewhere on the site. *Verbascum thapsus* was particularly abundant. The usual early-season swards of the exotic grasses *Bromus hordeaceus, B. sterilis, Holcus lanatus, Lolium perenne* and *Vulpia* spp. Clovers, *Trifolium* spp. were abundant, including a single plant of *T. subterraneum*, a species that might have been expected to be common in view of its widepread use in sown pastures in cooler parts of NSW.

BAM Plot 6
Laid out on a gentle slope falling toward the central dam, with western aspect, this Plot **sampled cleared grassland** on deep soil with no rock outcropping.

Scattered trees were present not far away to the south and west, including both *Eucalyptus pauciflora* and *E. rubida*, that latter all being very tall, mature trees. Not far away upslope as well as downslope were some recently excavated subsoil mounds being colonised vigorously by weeds (and a few natives as well), the heaped soil likely to have released nutrients following good rains.

Native grasses were present but at moderate cover, the most abundant being *Poa sieberiana* at 10–15%, followed by *Themeda triandra* and *Anthosachne scabra,* covers of the latter two only 1% or less. The native grass cover was vastly exceeded by exotic grass cover (see paragraph below). The only graminoid recorded was *Juncus filicaulis,* present in small numbers.

Native forb species numbered 16 of which 2 had substantial cover, namely *Asperula conferta* (at least 10%) and *Geranium solanderi* (5%). *Acaena agnipila, Hydrocotyle laxiflora* and *Oxalis exilis* were also moderately abundant. The small legume *Swainsona behriana* was apparent as spots of bright purple, the flower heads disproportionate to the leaves in size. Although classed as a climber the native bindweed *Convolvulus angustissimus* was common creeping through grass, its presence betrayed by its showy pink flowers.

Exotics were abundant, making up approximately 50% of total cover. Nineteen (19), species were recorded. As in earlier plots the grasses *Bromus hordeaceus, Holcus lanatus* and *Lolium perenne* were among major contributors to cover. Two less abundant exotic grasses were *Anthoxanthum odoratum* and *Nassella trichotoma.* Of exotic forbs the largest covers came from *Crepis capillaris, Hypocharis radicata*, *Rumex acetosella* and *Trifolium repens* – which together made up almost 20% – although the significant weed species *Carduus nutans, Echium vulgare* and *Hypericum perforatum* and *Verbascum thapsus* were more conspicuous plants.

BAM Plot 7
Positioned on the level crest of a spur extending northwestward towards the central gully, this Plot sampled grassland with widely separated trees and a few small rock outcrops.

The only **tree species present** were *Eucalyptus pauciflora* and *E. rubida* – the former as a single old tree with hollow trunk about 1 m diameter at ground but broken-off at about 7 m height, still with some healthy branches – and the latter as a

mature tree of 22 m height, of rugged character and also with trunk at least 1 m in diameter; similar trees of this species were present in the vicinity. As in nearly all the preceding plots, there were no younger trees observed.

The only **native shrub** recorded in the plot was *Melicytus angustifolius* subsp. *divaricatus,* present as a single individual of modest size.

Three **native grass** species were recorded, *Austrostipa scabra, Poa labillardierei* and *P. sieberiana* but their total cover was quite small. No graminoids (such as *Carex* spp. or *Juncus* spp.) were found.

Of **native forbs**, 16 species were recorded, or 17 if the herbaceous climber *Convolvulus angustissimus* is treated as a forb. The most abundant were *Acaena agnipila, Asperula conferta, Chrysocephalum apiculatum, Cynoglossum australe, Dichondra repens, Geranium solanderi, Oxalis exilis, Vittadinia cuneata, V. gracilis* and *Wahlenbergia communis* – though the total cover of these was barely 10%.

Exotic species recorded numbered 26. The largest cover came from grasses, notably *Bromus hordeaceus, B. sterilis, Dcatylis glomerata, Lolium perenne, Nassella trichotoma* and *Vulpia muralis*. The combined cover of these grasses was approximately 45%. Of broadleaved exotics the most abundant were *Carduus nutans, Crepis capillaris, Echium vulgare, Hypericum perforatum, Hypochaeris radicata, Rumex acetosella, Trifolium repens* and *Verbascum thapsus* – their combined cover about 40%. Species not seen in previous plots were *Chondrilla juncea* and *Tragopogon dubius.*

BAM Plot 8
This was the only Plot placed near the northwestern boundary of Lot 2, laid out along a rocky spur overlooking the curve of Chongs Road in the valley where the site's unnamed creek joins Sugarloaf Creek. The spur drops away quite steeply on this southwest side and on the opposite side is paralleled by a shallower small gully with rock-strewn bed, dropping down from the higher part of Chongs Road.

The most frequent **tree species** in the Plot was *Eucalyptus pauciflora*, of which there were 2 very old trees of large basal diameter but hollowed out and broken-off above, with much dead wood in the crowns. However there were also a good number of healthy, vigorous saplings of *E. pauciflora* in the close vicinity of the old trees – their presence here a notable contrast with the near-absence of eucalypt regeneration in the other 7 Plots. There was also a single tree of *E. stellulata* about 12 m high in the Plot.

The only **native shrub** recorded in the Plot's floristic quadrat was *Melicytus angustifolius* subsp. *divaricatus* (as found in nearly all other Plots), clustered around the base of the largest *E. pauciflora.* Falling just outside the quadrat there were observed plants of the lower-growing shrub *Oxylobium oxylobioides* with bright-orange pea-flowers.

Native grasses were present in significant amounts with 5 species recorded – *Austrostipa scabra, Poa labilladierei, P. sieberiana, Rytidosperma pilosum* and *Themeda triandra* – with *Themeda* more frequent than in most other Plots, though still with small foliage cover at this season. However the cfombined cover of the native grasses was only about 12%, with *Poa labillardierei* contributing the most. No graminoids (such as *Carex* spp. or *Juncus* spp.) were recorded.

There were 25 species of **native forbs** recorded in the floristic quadrat, this high number indicating a lesser degree of disturbance than in some of the other Plots. Those with cover of around 1% or greater were *Dichondra repens, Geranium solanderi, Hydrocotyle laxiflora* and *Plantago varia.* Species not previously seen were *Ammobium alatum, Leptorhynchos squamatus* and *Senecio prenanthoides.*

Exotic species numbered 18, most of them broad-leaved. The only grasses were *Anthoxanthum odoratum, Bromus hordeaceus, B. sterilis, Holcus lanatus* and *Lolium perenne.* Their combined cover was hardly more than 20% . Of broad-leaved exotics the most conspicuous were *Hypericum perforatum* and *Verbascum thapsus* but in terms of cover these were much exceeded by *Rumex acetosella* and *Trifolium repens.* Two woody exotics were present as single shrubs, namely *Crataegus monogyna* and *Rosa rubiginosa.*

Spot A
This was placed to sample wetland vegetation in the bed of the unnamed watercourse that flows westward through the centre of Lot 2. As this is only 2–3 m wide and has a sinuous course it is quite unsuitable for sampling by a BAM plot. Only the area that was wet underfoot was sampled, along an interval of about 20 m. Near the upper end of this interval there was a small break in the levels with a miniature waterfall coming down, an indicator of active flow in the stream at time of visit.

Of native grasses and graminoids the most conspicuous were tall tussocks of the sedge C*arex appressa,* emerging well above all the other plants. Another sedge, *Eleocharis acuta* was common along the margins of stream, with rush-like stems less than half the height of the *Carex*. The only native true grass was *Poa labillardierei*, scattered sparsely along the margins though its usual preference is for better drained soil. Native forbs were absent from the the wetland or at best restricted to the margins, *Wahlenbergia communis* being one such.

Except in the places dominated by the sedges, most of the vegetation cover consisted of exotic. Most conspicuous was the edible herb Watercress, *Nasturtium officinale.*

Vegetation and fauna habitat on the site

The overall impression of the site vegetation was grazing land on undulating country, with scattered eucalypts. Most of the eucalypts onsite were mature to senescent although generally with healthy and abundant foliage.

The most common tree species was *Eucalyptus pauciflora* (Snow Gum); fewer in number were *E. rubida* subsp. *rubida* (Candlebark), all of them taller trees; and *E. stellulata* (Black Sally), similar in stature to the Snow Gums but with distinctly olive-green foliage and greenish bark, readily distinguishable from a distance. It is most readily distinguished from *E. rubida* by its narrow juvenile leaves, seen on coppice growth on lower trunk.

The only other species found on the site was *E. viminalis* subsp. *viminalis* (Ribbon Gum), several trees of which were identified in the western edge of Lot 25 in the north-west of the site.

Following the cessation of grazing in 2019, there is evidence of minor eucalypt regeneration with a single approximately 1 m tall individual (< 5 mm DBH) recorded in both Plots 1 and 8. From the stem class data, Plot 1 (which extended over the

boundary with the adjoining property to the west) was the only plot with spread of age classes. Plot 8 has trees with stem classes less than 20 cm diameter.

In most plots, there has been no eucalypt regeneration for many decades, with an absence of small trees except in Plots 1 and 8 (see photographs in Appendix 2a), namely:

Plot	Stem class DBH (cm)							
	<5	5-9	10-19	20-29	30-49	50-79	80+	Number of hollow bearing trees with the hollow at least 1 m above the ground.
1	1		1	1	1	**3**	**1**	1
2					1	**3**	**1**	3
3						**1**	**1**	1
4						**1**	**2**	1
5					1	**1**		0
6								0
7						**1**	**1**	2
8	1	1	1				**2**	1

Within or near the plots, there were old trees in decline. The number of hollow bearing trees in the 0.1 ha BAM plots was low and varied from 0 to 3:

B4.4 Most likely Plant Community Types (PCTs) on the site

Using data recorded onsite in December 2023 survey, the online *Plot to PCT Assignment Tool* was used to determine the most likely PCTs for the vegetation recorded in Plots 1 to 8.

It is stated on the Department of Planning and Environment website (accessed 3 May 2023) that:

> *The tool provides a standardised repeatable method for identifying quantitative PCTs using the floristic survey methods required under the NSW Biodiversity Assessment Method (BAM).*
>
> ...
>
> *The Tool uses the species and cover-abundance score data in the uploaded data matrix to compare each site with the floristic assemblages of each of the 1,067 quantitative Approved PCTs of the coast and tablelands bioregions. These quantitative PCTs are each defined by a specific group of existing classified reference sites (also known as PCT member plots). The Tool applies an algorithm that generates a measure of the floristic difference between each uploaded site and the central value or 'centroid' of the reference sites that define each PCT. This measure is called the 'distance to centroid', a value that ranges between 0 and 1 and is based on the Bray-Curtis dissimilarity index.*
>
> *An uploaded site with floristic data very similar to a PCT's centroid definition will have a low distance to centroid value for that PCT, indicating a strong match. Weaker matching results have higher distance to centroid values (closer to 1), or higher dissimilarity. The Tool identifies and displays the 10 PCTs with the lowest distance values for each uploaded site, as these have the strongest match to the species assemblage of the site(s).*

From applying the online tool to the data recorded in Plots 1 to 8:

- the best four PCT floristic matches for each plot (**centroid values of 0.695 or less)** are shaded green in the table below;
- PCTs not known to occur in the Monaro IBRA Subregion have been struck out in the table below; and
- PCTs meeting the listed BioNET criteria have been shaded darker green.

Plots	Match 1		Match 2		Match 3		Match 4	
	PCT	Distance to Centroid	PCT	Distance to Centroid	PCT	Distance to Centroid	PCT	Distance to Centroid
1	**3341**	**0.512**	3375	0.602	3338	0.611	~~3337~~	~~0.617~~
2	~~3347~~	~~0.673~~	**3341**	**0.689**	3338	0.721	3385	0.728
3	3414	0.667	3341	0.699	3375	0.707	~~3538~~	0.715
4	3414	0.759	**3413**	**0.772**	~~3415~~	~~0.785~~	3341	0.788
5	3414	0.662	**3341**	**0.668**	~~3538~~	~~0.686~~	3375	0.699
6	3414	0.673	**3413**	**0.676**	~~3366~~	~~0.678~~	3337	0.681
7	3414	0.685	~~3325~~	~~0.718~~	**3341**	**0.732**	~~3538~~	~~0.748~~
8	**3341**	**0.641**	3414	0.681	~~3347~~	~~0.684~~	**3413**	**0.686**

All plots, except Plot 4, have the floristic threshold met (centroid value of 0.695 or less) for the following 9 PCTs (PCT 3314, 3337, 3338, 3341, 3347, 3375, 3413, 3414. 3538). Of these nine PCTs (details in Appendix 6):

- five of the nine PCTs are known to occur in the Monaro IBRA Subregion (PCTs 3338, 3341, 3375, 3413, 3414); and
- only two of these five PCTs (PCTs 3341, 3413) have the location, elevation and soil criteria on the BioNET website (https://vegetation.bionet.nsw.gov.au/, accessed 1 February 2024) consistent with that of the site; and
- the vegetation recorded in Plots 3, 4, 7 were not consistent with any PCTs likely to occur on the site.

Plot	Likely best fit PCT for the plots based on the Plot to PCT tool (centroid values of 0.695 or less), occurrence in Monaro IBRA subregion, and Bionet description of PCT
1	PCT 3341
2	PCT 3341
3	none
4	none
5	PCT 3341
6	PCT 3413
7	none
8	PCT 3341

PCT 3413 is a Themeda grassland, however the cover recorded of *Themeda triandra* was less than 1% (in Plots 1, 6 and 8). This PCT 3413 is unlikely.

It is more likely the entire site, prior to clearing and a long history of grazing, was PCT 3341 Monaro-Gourock Frost Hollow Grassy Woodland. [Note: PCT was able to be fitted for Plots 3, 4, 7] due to degraded nature of the vegetation.

B4.5 Threatened ecological communities (TECs)

PCT 3341 is associated in part with the listed ecological community *Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion.*

From a comparison of the recorded data with the Final Determination for *Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion,* it was found that:

Part 1 Assemblage of species
1.1 Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion (hereafter referred to as the Monaro Tableland Cool Temperate Grassy Woodland) is characterised by the assemblage of species listed below. ….

Of the 51 characteristic species, many were recorded. All four of the listed characteristic eucalypts were recorded on the site, with more than 10% canopy cover recorded in only 3 of the 8 plots (Plots 1, 2, 8), namely:

Plot	**Percent projected foliage cover**			
	Eucalyptus pauciflora	***Eucalyptus rubida subsp. rubida***	***Eucalyptus stellulata***	***Eucalyptus viminalis***
1	10	0.3		0.2
2	10	5	0.5	
3	5			
4	5			
5	1		3	
6				
7	0.8	4		
8	10		1	
Recorded in	**7 of 8 plots**	**3 of 8 plots**	**3 of 8 plots**	**1 of 8 plots**

1.2 The total species list of the community across all occurrences is likely to be considerably larger than that given above. …

No additional comment.

Part 2. Particular area occupied by the ecological community
2.1 … *occurs within the South Eastern Highlands Bioregion …*

The site is in the Monaro IBRA subregion of the South Eastern Highlands Bioregion.

2.2 It is the intent of the NSW Threatened Species Scientific Committee that all

occurrences of the ecological community (both recorded and as yet unrecorded, and independent of their condition) that occur within this bioregion be covered by this Determination.

In conclusion, all of the vegetation on the site independent of condition is or was previously the listed Critically endangered ecological community, *Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion* under the BC Act.

B4.6 Vegetation zones

From the widespread occurrence of exotic pasture species, observations from the historical photographs, the occurrence of old trees with no regeneration occurring over time and track network onsite, the site has been used historically as grazing land for long period of time.

From the species recorded, it has also been historically managed with improved pastures. Grazing ceased in 2019 with a change of land owners, but a legacy of weeds remains present.

Based on the finding from the December 2023 survey and historic aerial photographs, the information used to determine the vegetation zones was the following:

- extent of retained canopy trees;
- native species richness;
- total cover by exotic species; and
- outcomes of the VIS scores for the plots.

Three vegetation zones within **PCT 3341** were identified (Figure 4d):

Vegetation zone	Description	Sampled in	Approximate area (ha)
PCT 3341 – Moderate	Relatively intact with some regeneration.	Plots 1, 8	2.8 (1.1 + 1.7)
PCT 3341 – Degraded	Scattered trees on grazing land.	Plots 2, 3, 5	20.3 (18.7 + 1.6)
PCT 3341 –Very Degraded	Very sparse trees on grazing land.	Plots 4, 6, 7	21.9 +1.2
Remaining area	Waterbody	n/a	1.3
			47

B4.7 Vegetation integrity

Vegetation integrity is a quantitative measure of the composition, structure and function of the vegetation; as well as the presence of high threat weeds and hollow bearing trees. This is calculated using the BAM plot data (see input data for the BAM Calculator in Appendix 4).

B4.7.1 Vegetation integrity of individual survey plots

Using the data recorded in the Plots 1 to 8, the Vegetation Integrity Scores (VIS)

for each of the plots are as follows:

Calculated VIS for individual plots assuming PCT 3341

Assumed PCT	Sampled in	Composition condition score	Structure condition score	Function condition score	Current vegetation integrity score
PCT 3341	Plot 1	94	42.8	98.8	**73.5**
	Plot 2	78.2	31.7	69.3	**55.6**
	Plot 3	69.7	16.3	62	**41.3**
	Plot 4	49.9	17.7	65.4	**38.7**
	Plot 5	82.5	17.2	41.5	**38.9**
	Plot 6	63.2	23.3	9.4	**24.0**
	Plot 7	60.7	16.3	64.2	**39.9**
	Plot 8	70.7	34.2	88.2	**59.8**

The highest integrity scores were recorded in plots 1 and 8, both of which had regeneration of one individual *E. pauciflora* less than 1 m in height. There was no other recorded natural regeneration in the sampled plots on this site.

B4.7.2 Vegetation integrity of the vegetation zones

For the three Vegetation Zones (Figure 4d), the calculated Vegetation Integrity Scores (VIS) are as follows:

Vegetation Zone	Sampled in	Area	Composition condition score	Structure condition score	Function condition score	Current vegetation integrity score
PCT 3341 – Moderate	Plots 1 and 8	2.8 ha	87.4	37.9	96.9	68.5
PCT 3341 – Degraded	Plots 2, 3, 5	19.9 ha	77	25.2	65.4	50.3
PCT 3341 – Very Degraded	Plot 4, 6, 7	21.7 ha	56.5	17.9	56.5	38.5

B5.0 Habitat suitability for threatened species

B5.1 Review of existing information

The existing vegetation mapping and the BioNet records of threatened species (Figures 5a, 5b) were used to inform which species and their likely habitats may be present on the site. This information is used to assist the environmental / conservation planning onsite.

B5.2 Habitat constraints assessment

Potential habitat was systematically assessed onsite with the following likely to provide fauna habitat as the environmental works continue, especially if tree cover and shrub cover are increased and possibly construction of soaks:

Habitat component	Site values recorded
Coarse woody debris	Logs and debris from the mature trees. Course woody debris is an

<table>
<tr><th>Habitat component</th><th>Site values recorded</th></tr>
<tr><td></td><td>important component of the structure of forests and woodlands and provides refuge habitat for ground-dwelling fauna.

The extent of fallen log length (m) recorded in the 0.1 ha BAM Plots 1 to 8 varied, with:
• highest recorded in Plot 1, 3; 7, 8; and
• 0 m lengths recorded in Plot 6.
[Logs are woody material > 10 cm in diameter and > 50 cm in length].

<table><tr><th></th><th>Length of fallen logs (m)</th></tr><tr><td>Plot 1</td><td>72</td></tr><tr><td>Plot 2</td><td>56</td></tr><tr><td>Plot 3</td><td>91</td></tr><tr><td>Plot 4</td><td>67</td></tr><tr><td>Plot 5</td><td>46</td></tr><tr><td>Plot 6</td><td>0</td></tr><tr><td>Plot 7</td><td>190</td></tr><tr><td>Plot 8</td><td>186</td></tr></table></td></tr>
<tr><td>Rock outcrops and bush rock</td><td>Narla (2023) found that Bush rock sporadically occurred within the [1.73 ha] Subject Site, which may provide habitat for invertebrates and reptiles.

Rocky outcrops were recorded as numerous in Plot 5 and occasional in Plot 7 (Figure 4c-2).</td></tr>
<tr><td>Caves, crevices and overhangs</td><td>Absent.</td></tr>
<tr><td>Culverts, bridges, mine shafts, or abandoned structures</td><td>Culvert under Chongs Road, impeded drainage upslope on the site. This culvert appears to be flooded.</td></tr>
<tr><td>Nectar/lerp-bearing trees</td><td>Nectar-bearing trees recorded on the site included Acacia dealbata, Eucalyptus pauciflora, E. rubida, E.stellulata, E. viminalis.</td></tr>
<tr><td>Nectar-bearing shrubs</td><td>Very sparse occurrence of Bossiaea buxifolia, Melicytus angustifolius, Oxylobium oxylobioides, Ozothamnus thyrsoideus were recorded within the site.</td></tr>
<tr><td>Koala Feed Trees</td><td>The Koala feed trees (Schedule 1 of Koala SEPP 2021) recorded onsite were the local native canopy tree species Eucalyptus viminalis (Ribbon Gum) (recorded in Plot 1). Several trees of E. viminalis subsp. viminalis were identified in the western edge of Lot 25 in the north-west of the site.

[Note: Potential koala habitat means areas of native vegetation where trees of the types listed in Schedule 1 (Feed Tree Species) constitute at least 15% of the total number of trees in the upper or lower strata of the tree component.]

The Koala use tree list provided on the BAM Calculator page provides a list of ‘Koala Use Tree’ species for the Central and southern tablelands Koala Modeling Region includes three species recorded onsite, Eucalyptus pauciflora, Eucalyptus</td></tr>
</table>

Habitat component	Site values recorded
	rubida and Eucalyptus viminalis. Central and Southern Tablelands – main koala food trees are listed on the DPE website (https://www.environment.nsw.gov.au/topics/animals-and-plants/native-animals/native-animal-facts/koala/koala-habitat.) . Three of these species were recorded onsite, *Eucalyptus pauciflora, Eucalyptus rubida and Eucalyptus viminalis*.
Large stick nests	No large stick nests observed onsite.
Sap and gum sources	Native sap and gum source trees recorded onsite include Acacia spp., *Eucalyptus* spp.
She-oak fruit (Glossy Black Cockatoo feed)	No *Allocasuarina* spp. nor Casuarina spp. present onsite.
Seed-bearing trees and shrubs	Very sparse occurrence of seed-bearing *Acacia* spp. recorded onsite.
Soft-fruit-bearing trees	No soft-fruit-bearing trees recorded onsite.
Dense shrubbery and leaf litter	Litter was recorded on the site. The extent of litter cover recorded ranged from 26% in Plot 6 to over 60% in Plot 1 (data in Appendix 4). No dense shrubbery recorded onsite.
Tree hollows	Tree hollows may provide nesting habitat for native birds, possums and microbats. Tree hollows were recorded in all plots, except Plots 5, 6. Hollow-bearing trees were most abundant in Plots 1, 2. Narla (2023) also recorded tree hollows in their 2023 survey.
Decorticating bark	Half-bark Eucalypts may provide decorticating bark habitat within a site. This may be an important resource for arboreal fauna that feed on insects which shelter in decorticating bark. Microbat species also roost in this habitat. The eucalypts recorded with decorticating bark include: *Eucalyptus stellulata, and Eucalyptus viminalis*, (though mainly present in upper branches).
Wetlands, soaks and streams	Wetlands, soaks and streams may offer important habitat for birds and frogs. Sugarloaf Creek is mapped in the south-west corner of the site. The unnamed eastern tributary of Sugarloaf Creek that flows through the site is not mapped on Council's Riparian land and watercourses map (Figures 1a-5, 1b-2, 2d).
Open water bodies	A 1.2 ha constructed dam is in the east of the site.
Estuarine, beach, mudflats, and rocky foreshores	Absent

B5.3 Identification of threatened species for assessment

Narla Environmental (2023) in January 2023 searched for threatened plant species known to occur within a 0 km x 10 km cell centred on the site. It was concluded for the threatened plant species that there was a low probability or the plants were absent.

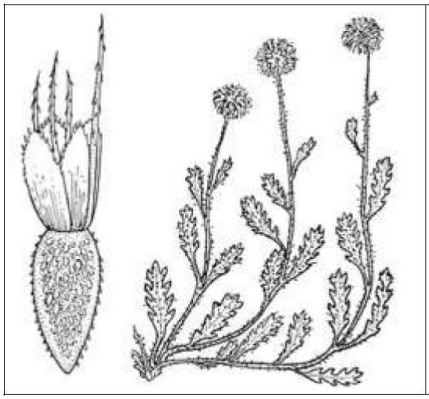
The threatened species considered were *Calotis glandulosa* (Mauve Burr-daisy), *Calotis pubescens* (Max Mueller's Burr-daisy), *Carex raleighii* (Raleigh Sedge), *Discaria nitida* (Leafy Anchor Plant), *Dodonaea procumbens* (Creeping Hop-bush), *Eucalyptus aggregata* (Black Gum), *Euphrasia scabra* (Rough Eyebright),

Leucochrysum albicans var. *tricolor* (Hoary Sunray), *Pelargonium* sp., *Striatellum* (Omeo Storksbill), *Rutidosis leiolepis* (Monaro Golden Daisy) and *Swainsona sericea* (Silky Swainson-pea). These listed species are all ground layer species, except the tree *Eucalyptus aggregata* (Black Gum).

In the December 2023 survey, the threatened species *Calotis glandulosa* was recorded as scattered individuals in grassy areas associated with boulders in Plot 5 (0.1% cover) and Plot 8 (0.1% cover). Note: the area of the boulders are avoided for the construction of the eco-cabins.

Calotis glandulosa is a threatened species: NSW BCA: Vulnerable; Commonwealth EPBC: Vulnerable. It is described on PlantNET as:

> ***Description:*** *Erect or ascending, branched herb to 35 cm high, ± woody at base, hirsute with short glandular hairs and scattered longer septate ones.*
>
> *Basal leaves absent; cauline leaves cuneate but pinnatifid at apex, 1.5–3 cm long, 5–9 mm wide, glandular-hairy, sessile.*
>
> *Heads c. 20 mm diam., solitary; involucral bracts ovate to lanceolate, acute, entire, glandular; receptacle conical, without scales. Ray florets white to blue; ligule 5–8 mm long.*
>
> *Achenes flattened, 1–2.5 mm long, red-brown, tuberculate; pappus of 4 or 5 awns of unequal length, 1.5–5 mm long, barbed towards apex, and with long narrow ciliate scales.*
>
> ***Flowering:*** *December–February*
>
> ***Distribution and occurrence:*** *Grows in grassland and sclerophyll forest at higher altitude, from Eden to Dubbo area.*
> *NSW subdivisions: SC, CT, ST, CWS*



Calotis glandulosa (image from PlantNet)

From the BioNET records, there are at least seven records of *Calotis glandulosa* in vegetation adjoining the Snowy River Way, with the closest record approximately 2 km south of the site (Figure 5a).

In addition, a potential threatened species of *Swainsona* was recorded. It was identified as the more commonly occurring non-threatened species, *Swainsona behriana*:

There is a BioNET record of the threatened species *Swainsona sericea* approximately 1 km south in vegetation adjoining the Snowy River Way.

Other known records of threatened species is *Leucochrysum albican* subsp. *tricolor* approximately 2 km to the north-west in vegetation adjoining the Snowy River Way.

This daisy is described on PlantNET as:

> *Inner involucral bracts white, outer involucral bracts deep red to purplish, at least in bud.*
>
> ***Distribution and occurrence:*** *A plant principally of grasslands and grassy woodlands on relatively fertile soils, often clays or clay-loams derived from basalt or dolerite, or at higher altitudes, from sedimentary parent material. Altitude range c. 100–900 m a.s.l. NSW, Victoria, Tasmania.*
> *NSW subdivisions: CT, ST, CWS*
> *Other Australian states: Vic. Tas.*



From the Tasmanian Threatened Species Link
https://www.threatenedspecieslink.tas.gov.au/Pages/Leucochrysum-albicans-subsp-tricolor.aspx

Photographs of native plant species recorded onsite (including threatened species *Calotis glandulosa* and non-threatened species *Swainsona behriana)* are in Appendix 2c.

B5.4 Threatened fauna habitat searches

Frog calls were detected and recorded during the December 2023 survey. The recordings were sent to the frog expert Grant Webster for identification. He found that:

> *there are only two species present, Crinia signifera (slow paced 'crik-crik-crik' sound) and Limnodynastes tasmaniensis (the rapid fire 'ukukuk').*

Neither of these frog species are threatened.

The old trees onsite provide potential roosting sites, but with the more than 100 years of grazing the foraging potential has been reduced. Fly-overs may be occurring.

The landowner is a member of the Australian Bat Society and is conducting anabat recordings as part of the ongoing environmental works on the property. There are no threatened bat records.

The nearby BioNET fauna records are Diamond Firetail, Gang-gang Cockatoo and Koala (Figure 5b). Currently the site provides little habitat for these species.

B6.0 Identifying prescribed impacts

Prescribed impacts (including direct and indirect impacts) are impacts:

a. on the habitat of threatened entities including:
i. karst, caves, crevices, cliffs, rocks and other geological features of significance,
or
ii. human-made structures, or
iii. non-native vegetation
b. on areas connecting threatened species habitat, such as movement corridors
c. that affect water quality, water bodies and hydrological processes that sustain threatened entities (including from subsidence or upsidence from underground mining)

d. on threatened and protected animals from turbine strikes from a wind farm
e. on threatened species or fauna that are part of a TEC from vehicle strikes.

The likely features relevant to prescribed impacts onsite are the following:

Feature	Present	Description of feature characteristics and location	Threatened entities that use, are likely to use, or are part of the habitat feature.
Karst, caves, crevices, cliffs, rocks or other geological features of significance	☐Yes / **x No**	N/A	N/A
Human-made structures	Yes / **x No**☐	N/A	N/A
Non-native vegetation	**x Yes /** ☐No	Listed weed species.	N/A
Habitat connectivity	**x Yes /** ☐No	The former farming site - connectivity of the subject land with surrounding vegetation is currently fragmented.	There is some potential for threatened species to fly between vegetated areas within the site and offsite vegetation.
Waterbodies, water quality and hydrological processes	**x Yes /** ☐No	No waterbodies occur within the subject land	N/A
Wind turbine strikes (wind farm development only)	☐Yes / **X No**	N/A	N/A
Vehicle strikes	**X Yes** / ☐No	The proposal may increase risk of vehicle strike, with increased traffic movements onsite.	No threatened entities at present. Possibility of increasing risk as environmental works continue.

B7.0 Avoid and minimise impacts

To avoid and minimise impacts on the native vegetation and potential habitats including for the threatened herb *Calotis glandulosa* the proposal has been carefully located to:

- avoid loss of native canopy trees;
- avoid areas with existing boulder formations (possible likely habitat for *Calotis glandulosa*).

The existing roads / tracks (areas of existing disturbance) are to be utilised for the proposal.

B8.0 Impact Assessment

B8.1 Direct, indirect, prescribed impacts

The direct impact of the proposal is the clearing of <1ha of *PCT 3341 Monaro-Gourock Frost Hollow Grassy Woodland.*

There are two Management Zones for the proposal, with:

- < 1 ha to be cleared for the proposal; and
- the remainder to be conserved and enhanced.

The indirect impacts of the proposal include the potential introduction of weeds on tyres. This is expected to be mitigated as part of the ongoing weed control program. There are no prescribed impacts for the proposal.

B9.0 Mitigation measures

The impacts of the proposal are to be mitigated by encouraging and assisting natural regeneration with the continuation of the environmental works onsite including weed control and re-establishment of native trees and shrubs on the property, especially Koala Feed Trees near Sugarloaf Creek.

As part of the conservation works, the areas of boulders are to be conserved and enhanced to provide habitat for reptiles as well as for native flora requiring protective microclimates.

Similarly, any wetland soaks and dam edge habitat are to be encouraged and any frog calls recorded and identified using frog ID. Currently only two common frog species have been recorded but with the continued conservation works there may be potential for threatened frog species.

The management of the bushfire Asset Protection Zones are to be integrated into the ongoing conservation works, which includes the biosecurity weed control recommended by Council's Biosecurity Officer (details in Appendices 1a, 1b).

References

Literature considered

Department of Environment and Climate Change NSW (DECC) (2008) *The Central Monaro Reserves – Plan of Management, 2008*. Dated 1 July 2008.

Department of Planning, Industry and Environment (DPIE) (2020) *Biodiversity Assessment Method*. Dated October 2020.

Department of Planning and Environment (2022) *Guidance for the Biodiversity Development Assessment Report Template References for requirements.* Dated April 2022.

Division of National Mapping (1986) *Climate. Atlas of Australian Resources. Third Series. Volume 4.* Division of National Mapping, Canberra.

Harris Environmental Consulting (2024) *Bushfire Hazards Assessment. Proposed Eco-tourism development at 92 Chongs Road, Jindabyne.* Dated 16 August 2024.

Mitchell PB (2002) *Descriptions for NSW (Mitchell) Landscapes.* Published by Department of Planning, Industry and Environment.

NSW Rural Fire Service (2015) *Guide for Bush Fire Prone Land Mapping. Version 5.* Dated November 2015.

NSW Rural Fire Service (2019) *Planning for Bushfire Protection. A Guide for Councils, Planners, Fire Authorities and Developers.* Date November 2019

Online Maps and data include from:

Biodiversity Values Map and Threshold Tool
Bureau of Meteorology
Elvis - Elevation and Depth - Foundation Spatial Data
Historical, Aerial and Satellite Imagery - Spatial Services
NearMap aerial photographs
NSW FloraOnline - PlantNET
DP&E Website including BioNET
Snowy Monaro Regional Council's website
Seed Portal – NSW Government
SixMaps

Figures

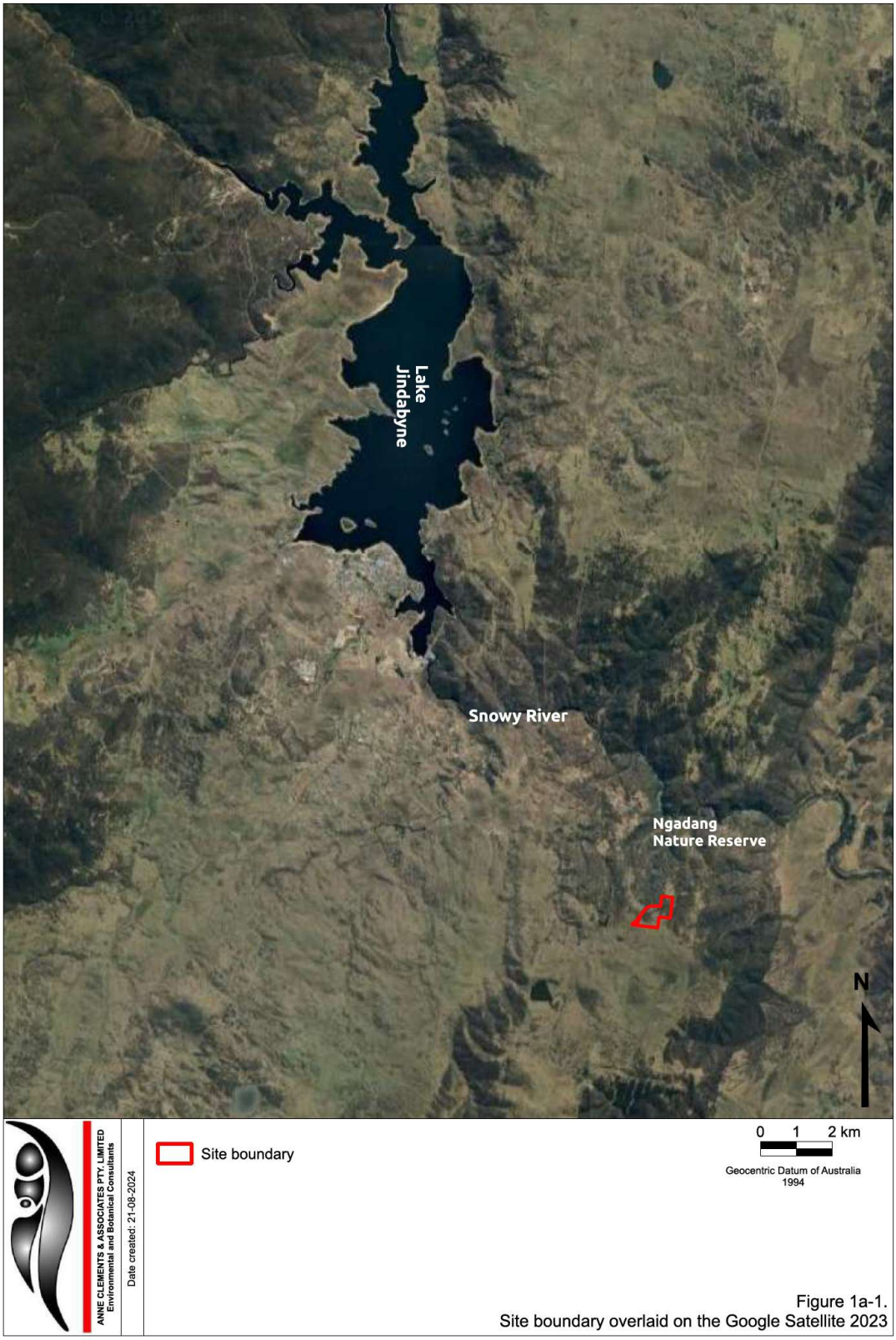


Figure 1a-1.
Site boundary overlaid on the Google Satellite 2023



Figure 1a-2. Lot boundaries from SIX maps aerial imagery.

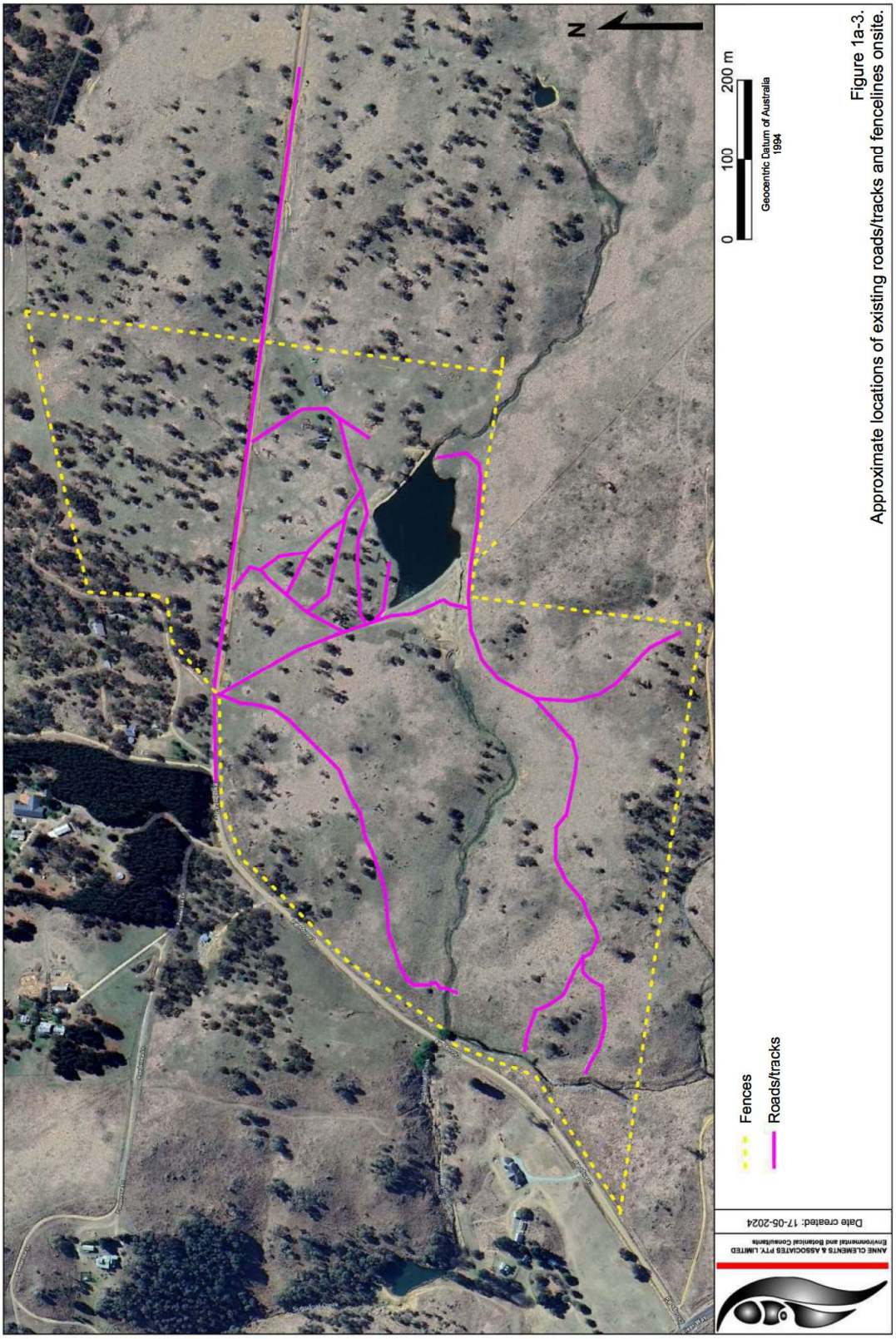


Figure 1a-3. Approximate locations of existing roads/tracks and fencelines onsite.

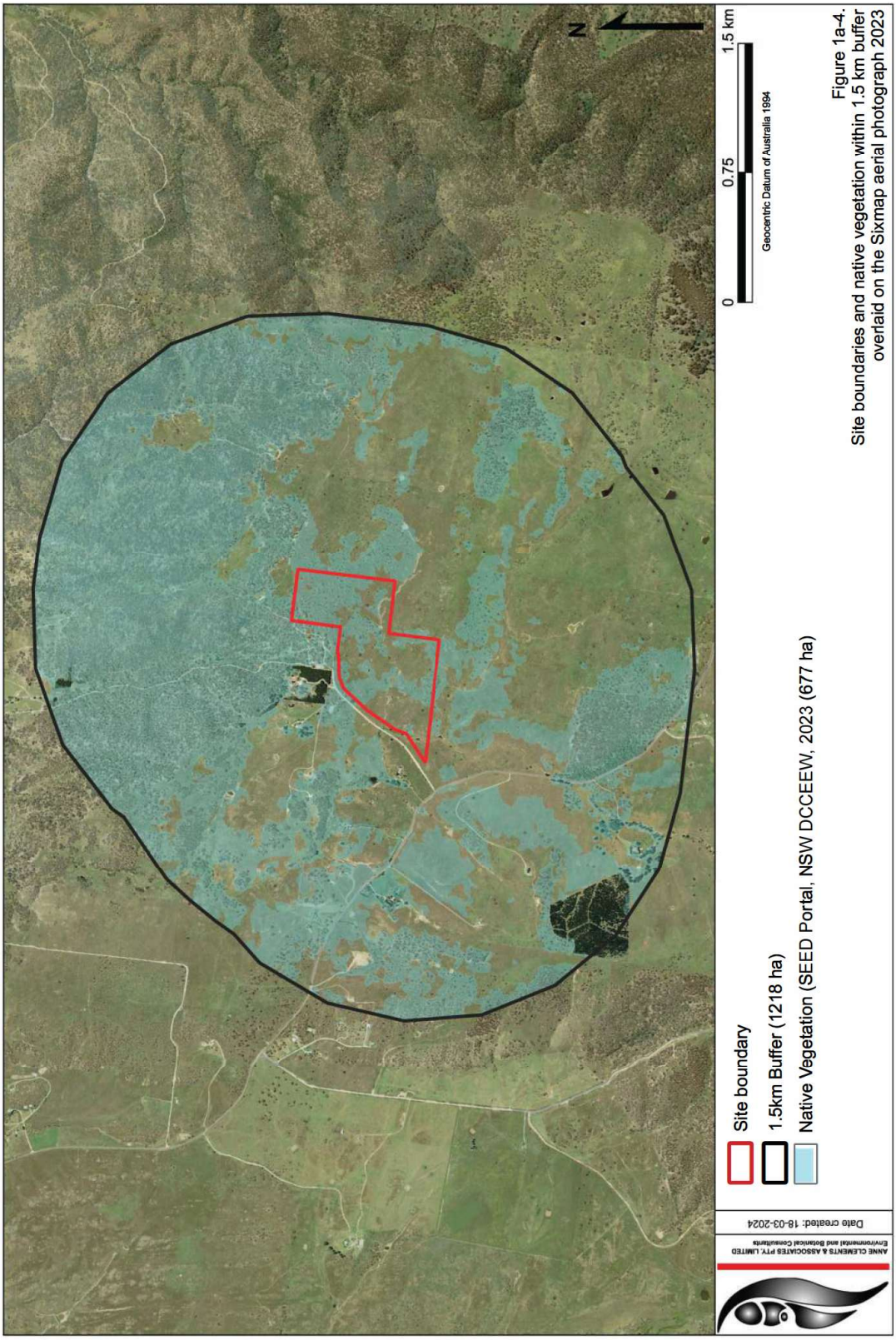


Figure 1a-4.
Site boundaries and native vegetation within 1.5 km buffer overlaid on the Sixmap aerial photograph 2023

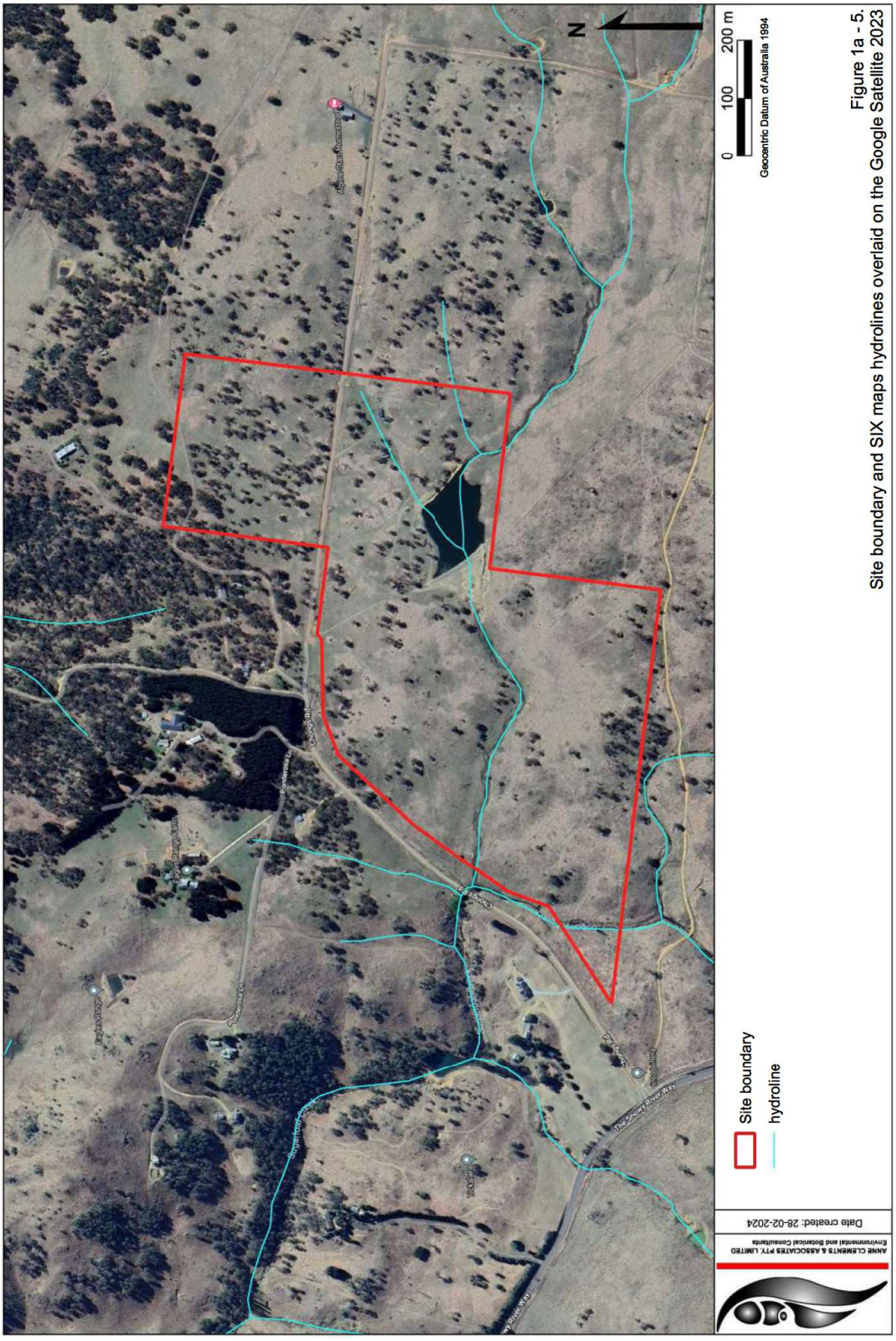


Figure 1a - 5. Site boundary and SIX maps hydrolines overlaid on the Google Satellite 2023

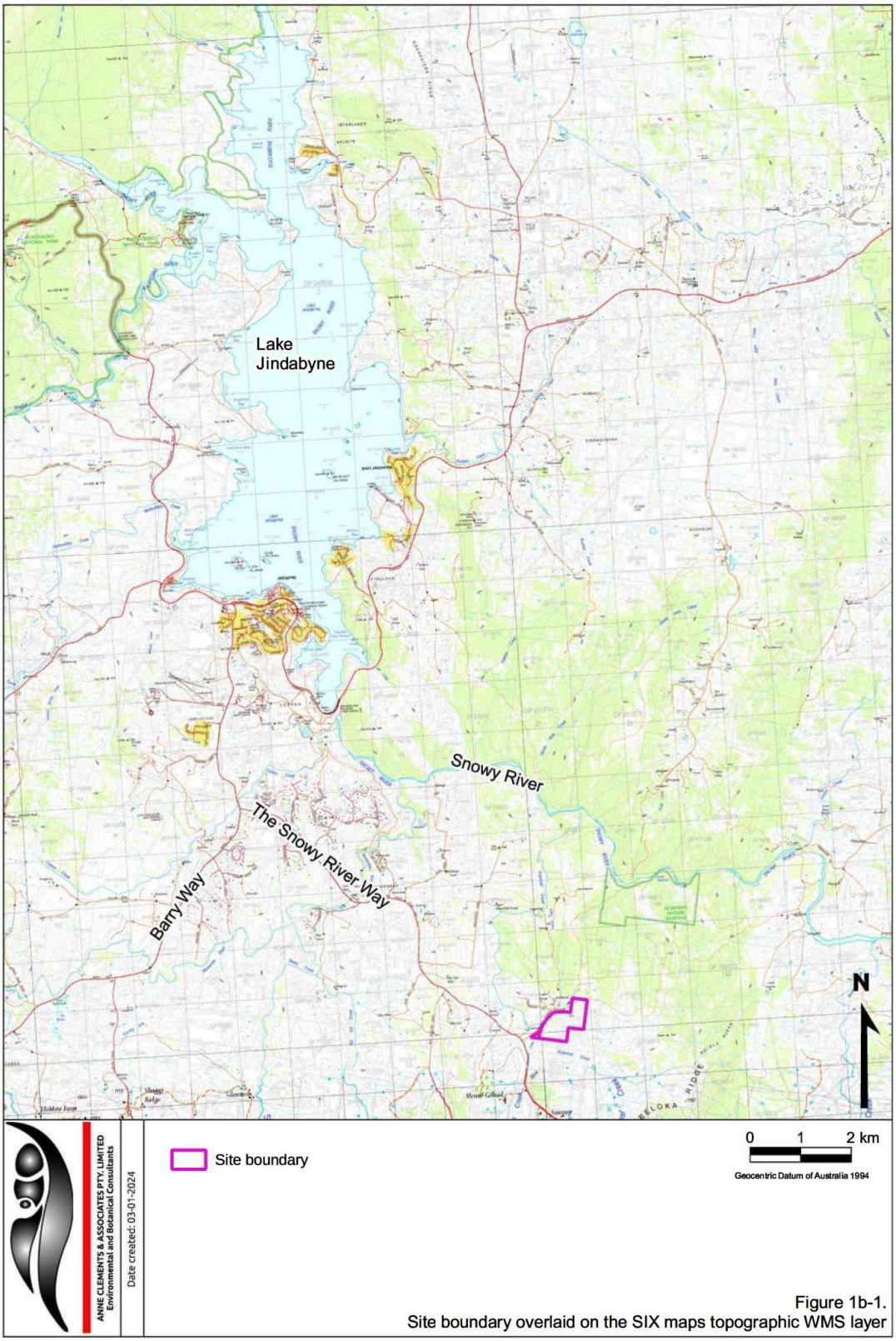


Figure 1b-1.
Site boundary overlaid on the SIX maps topographic WMS layer

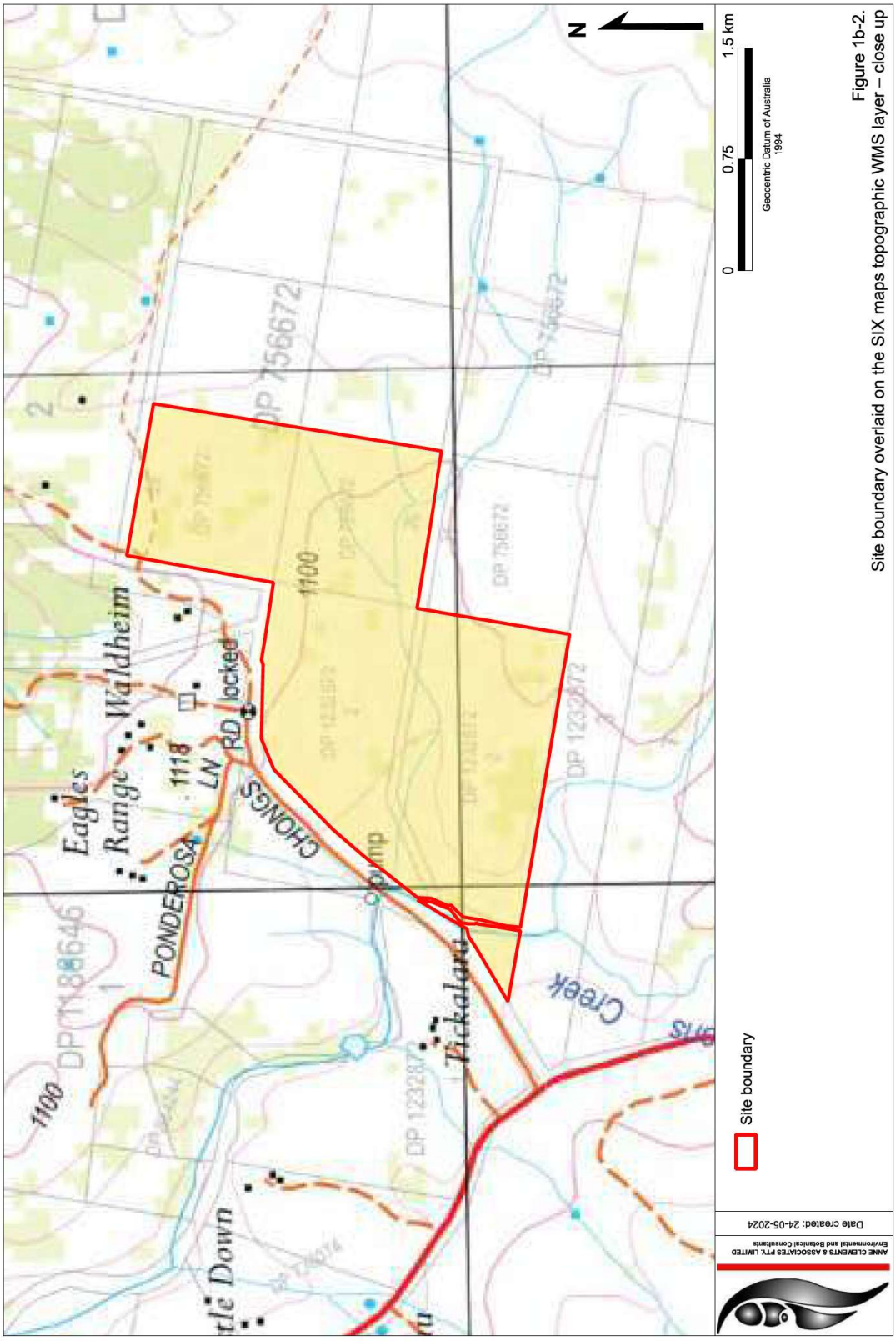


Figure 1b-2. Site boundary overlaid on the SIX maps topographic WMS layer – close up

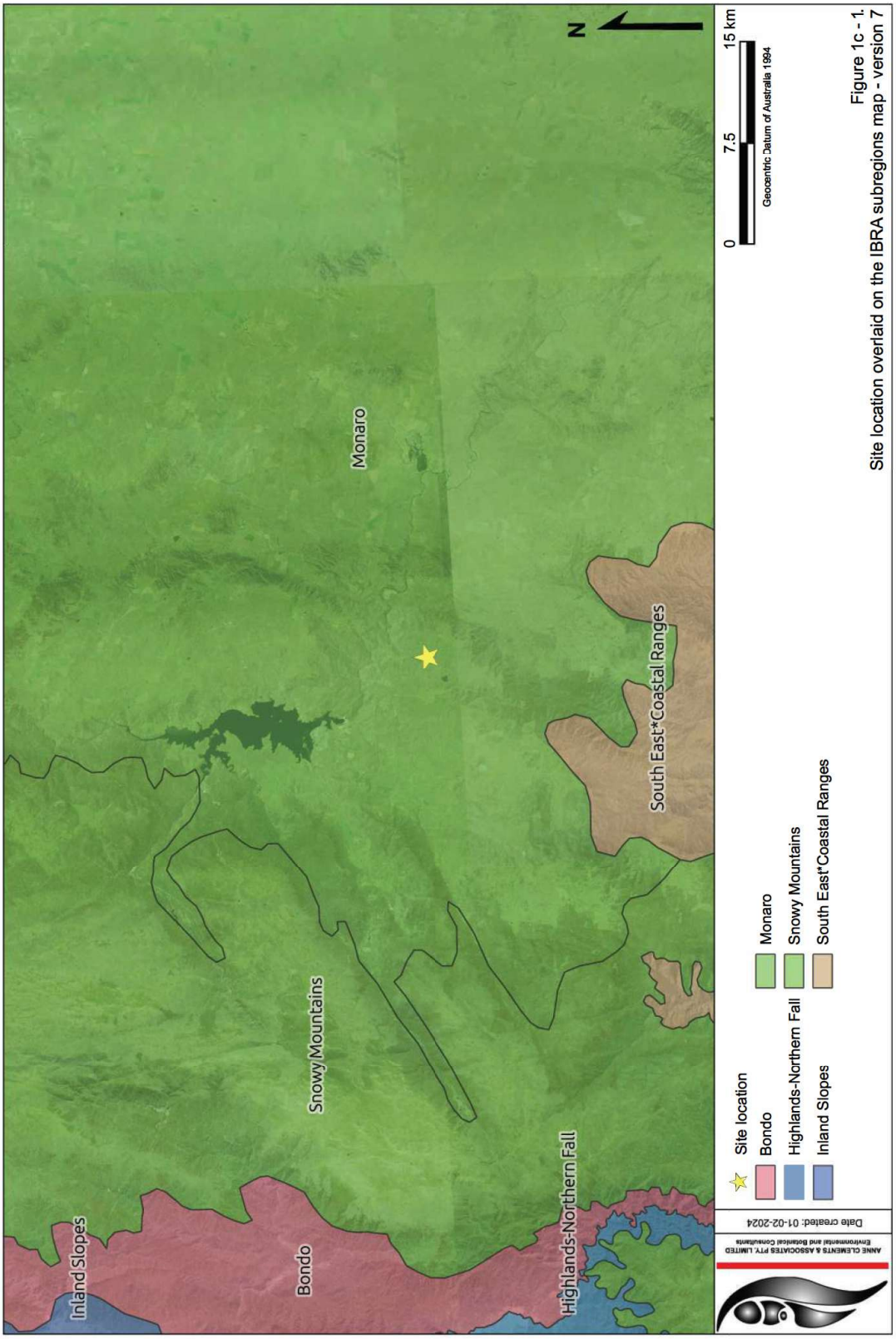


Figure 1c - 1.
Site location overlaid on the IBRA subregions map - version 7

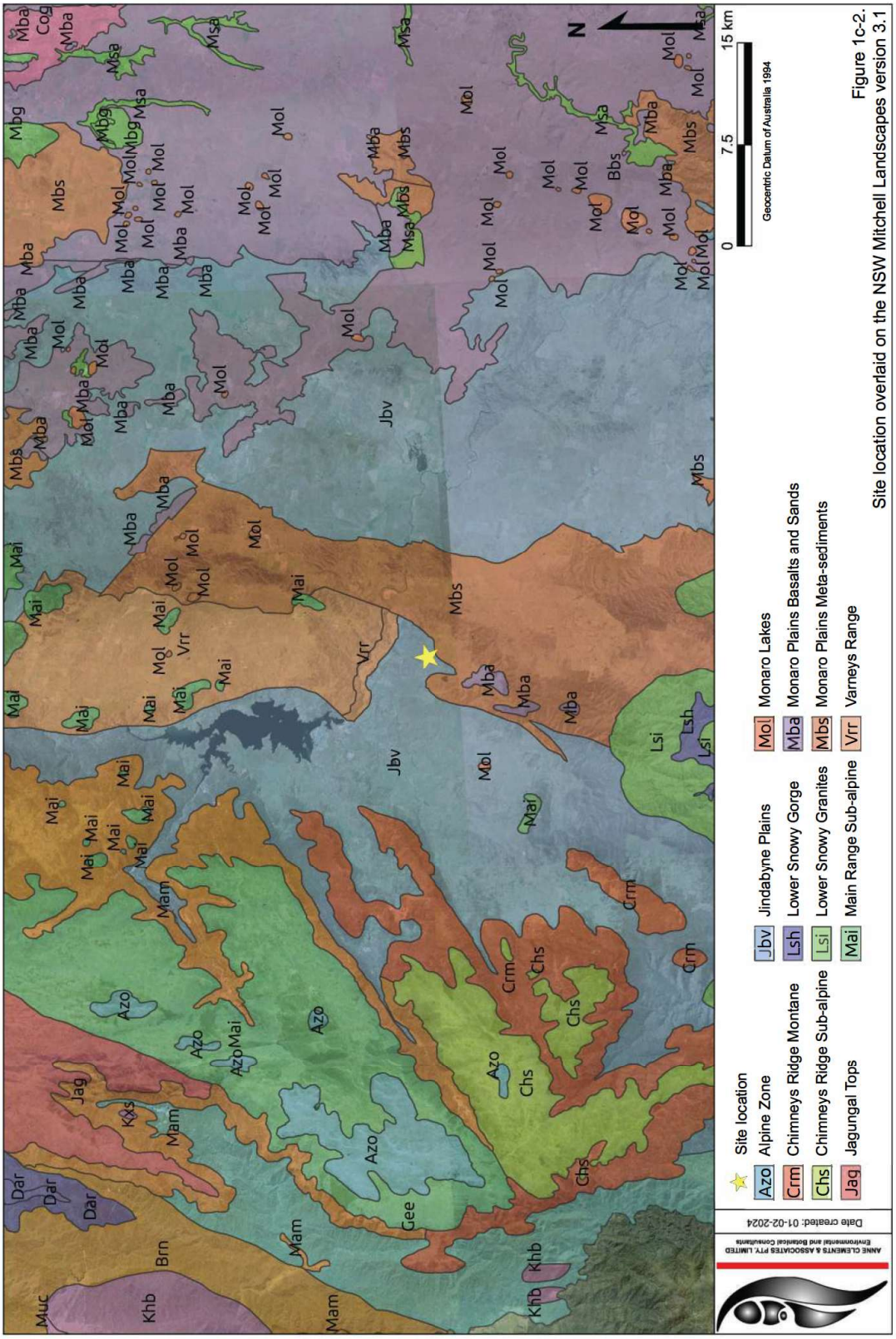


Figure 1c-2. Site location overlaid on the NSW Mitchell Landscapes version 3.1

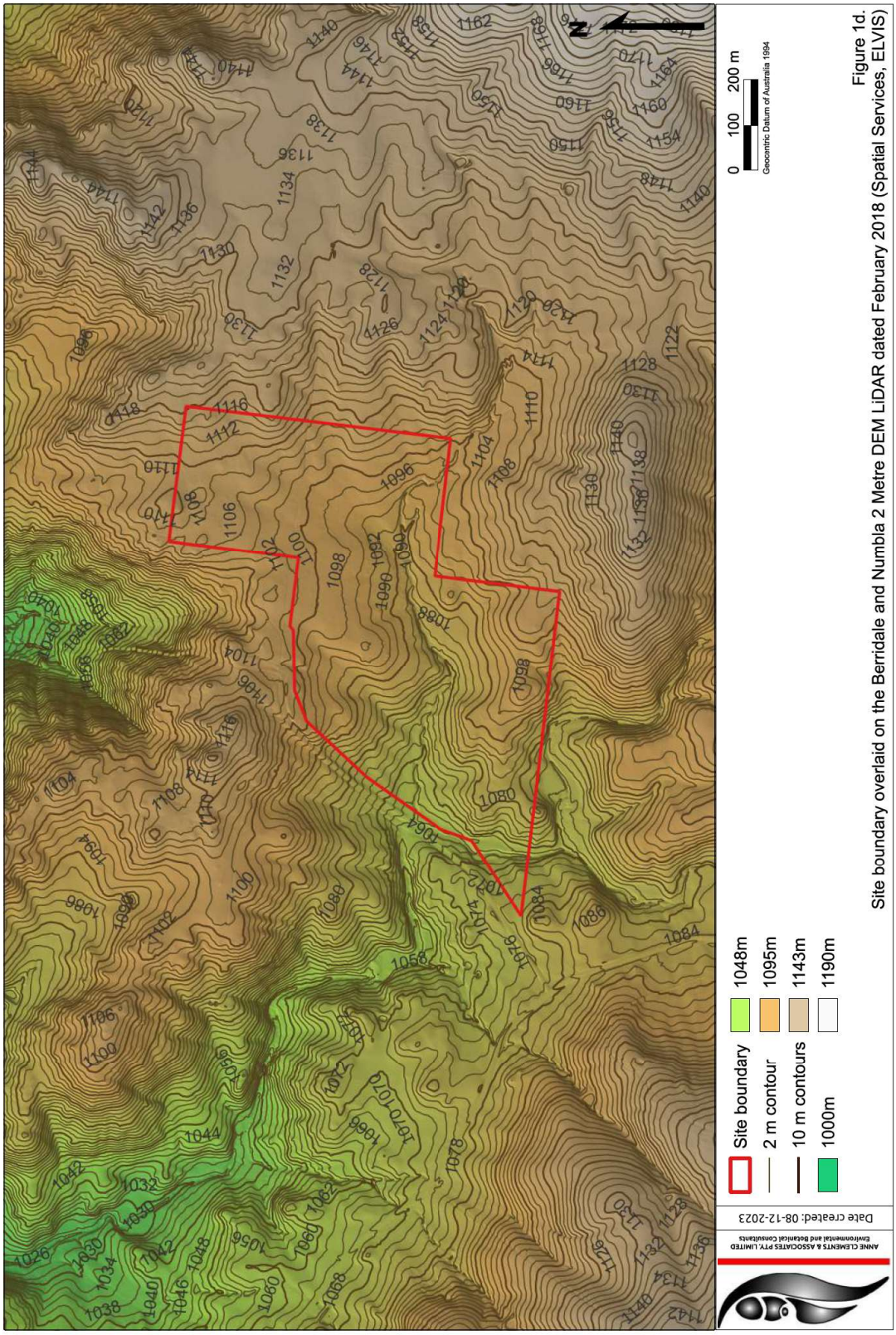


Figure 1d. Site boundary overlaid on the Berridale and Numbla 2 Metre DEM LiDAR dated February 2018 (Spatial Services, ELVIS)

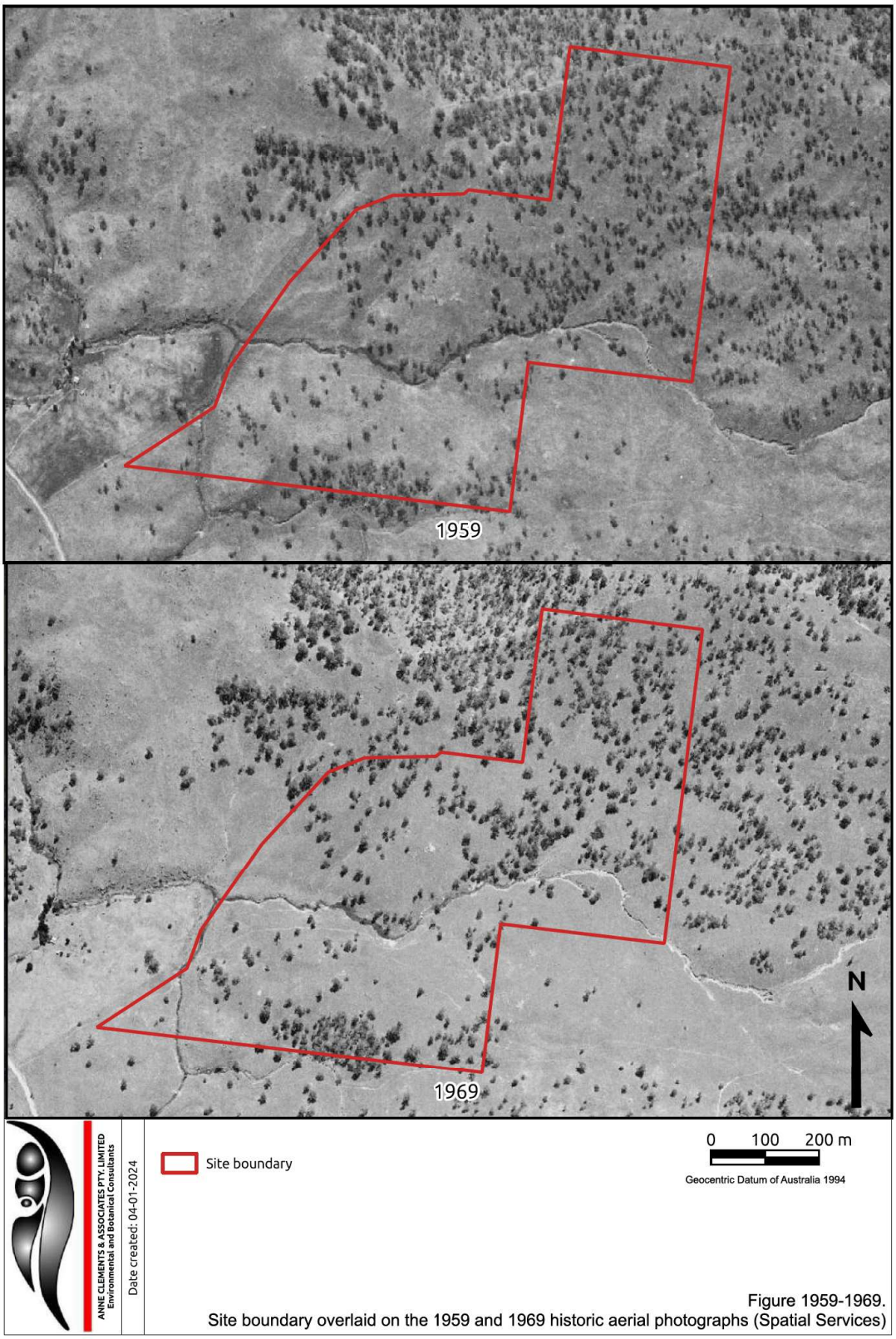


Figure 1959-1969.
Site boundary overlaid on the 1959 and 1969 historic aerial photographs (Spatial Services)

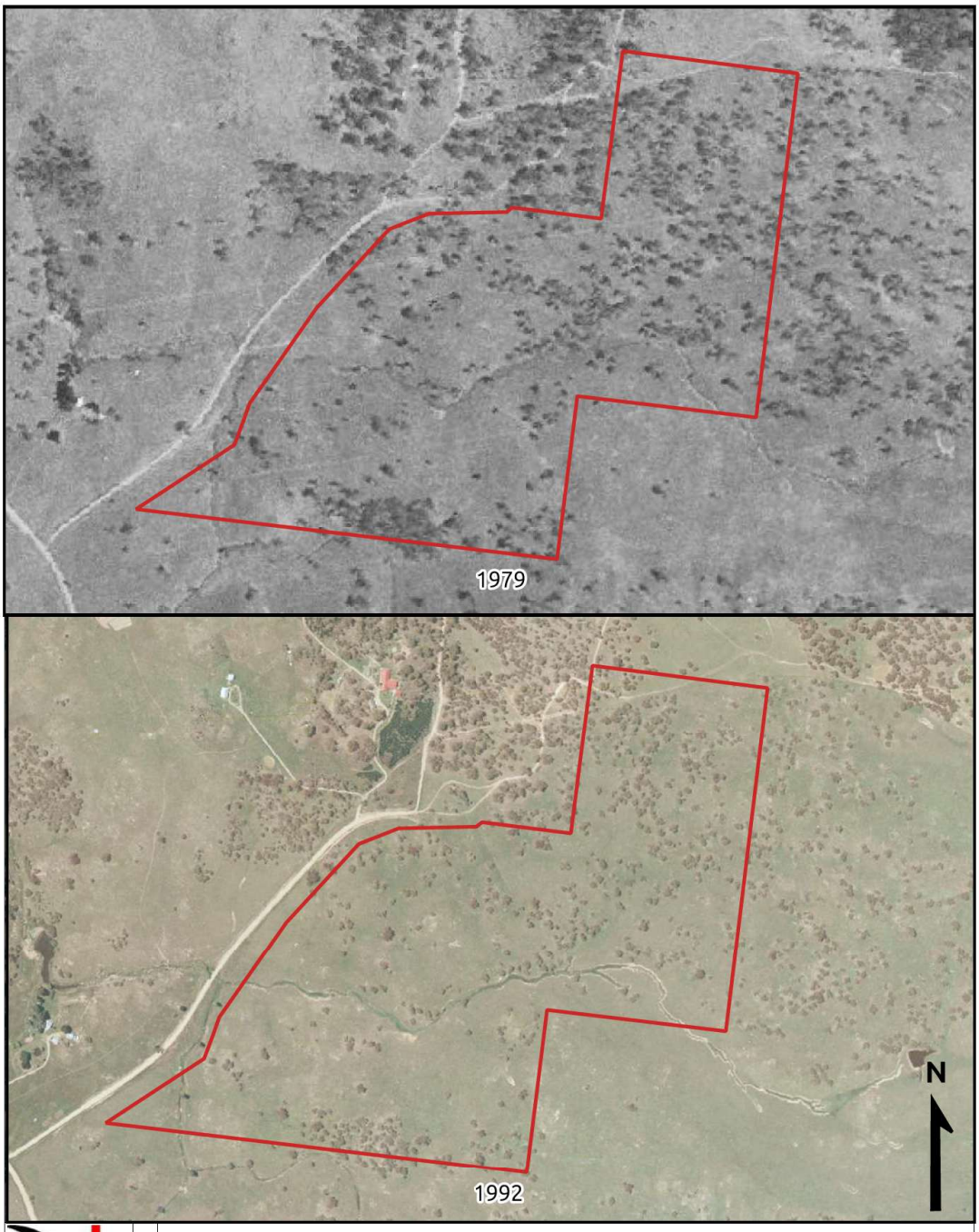


Figure 1979-1992.
Site boundary overlaid on the 1979 and 1992 historic aerial photographs (Spatial Services)

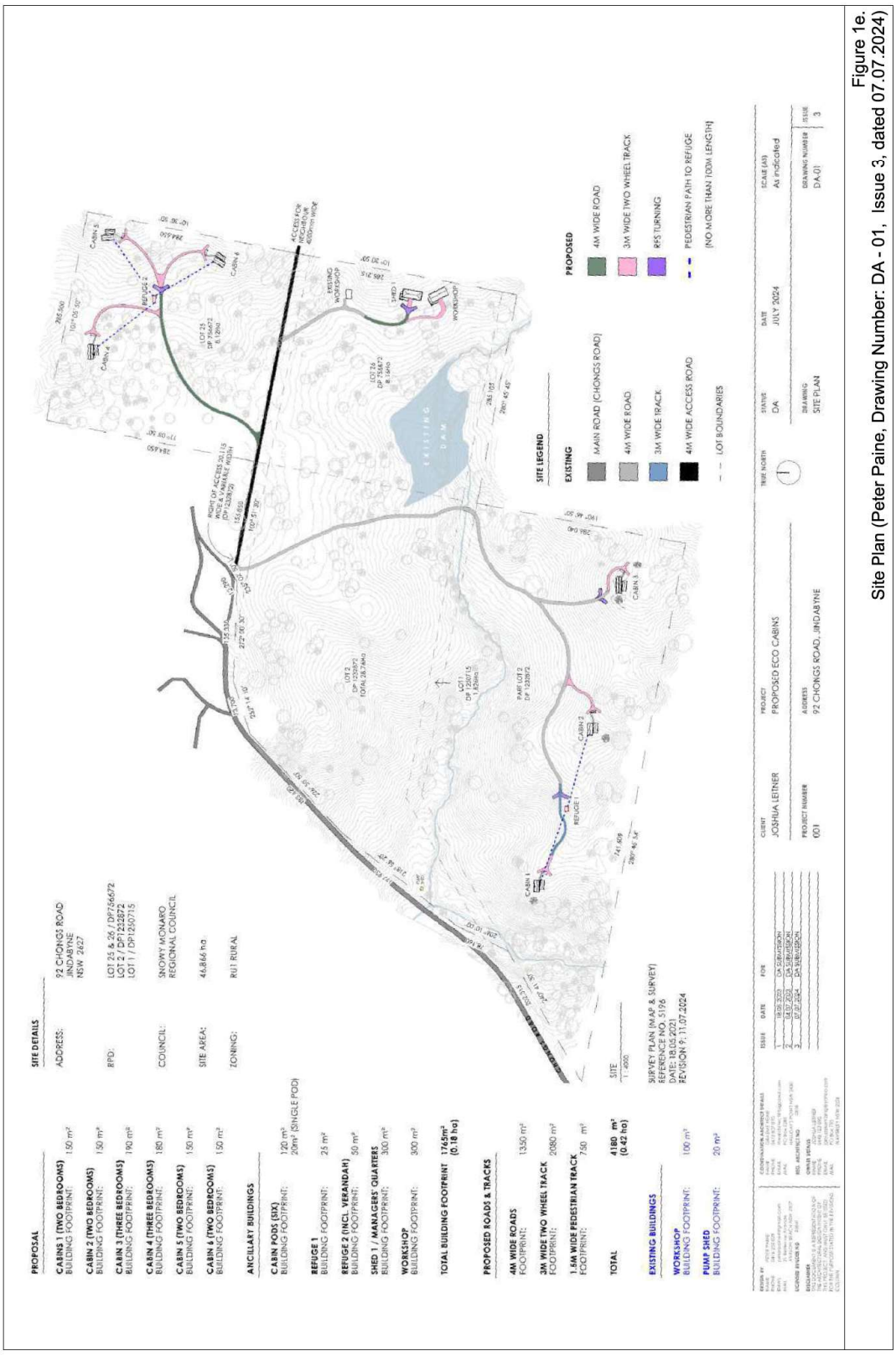


Figure 1e.
Site Plan (Peter Paine, Drawing Number: DA - 01, Issue 3, dated 07.07.2024)

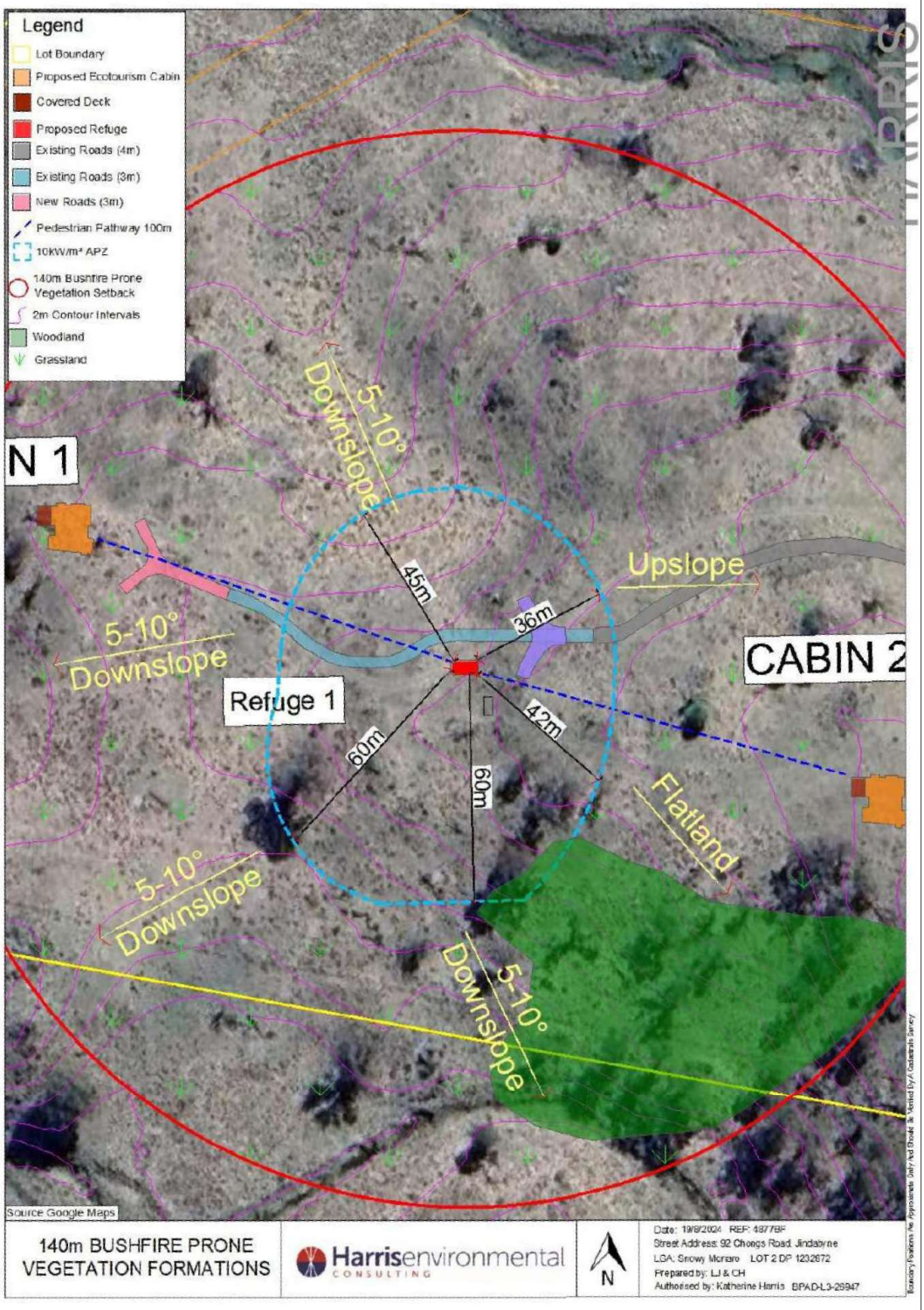


Figure 1f-1.
Bushfire Asset Protection Zones, Refuge 1 (from Harris 2024)

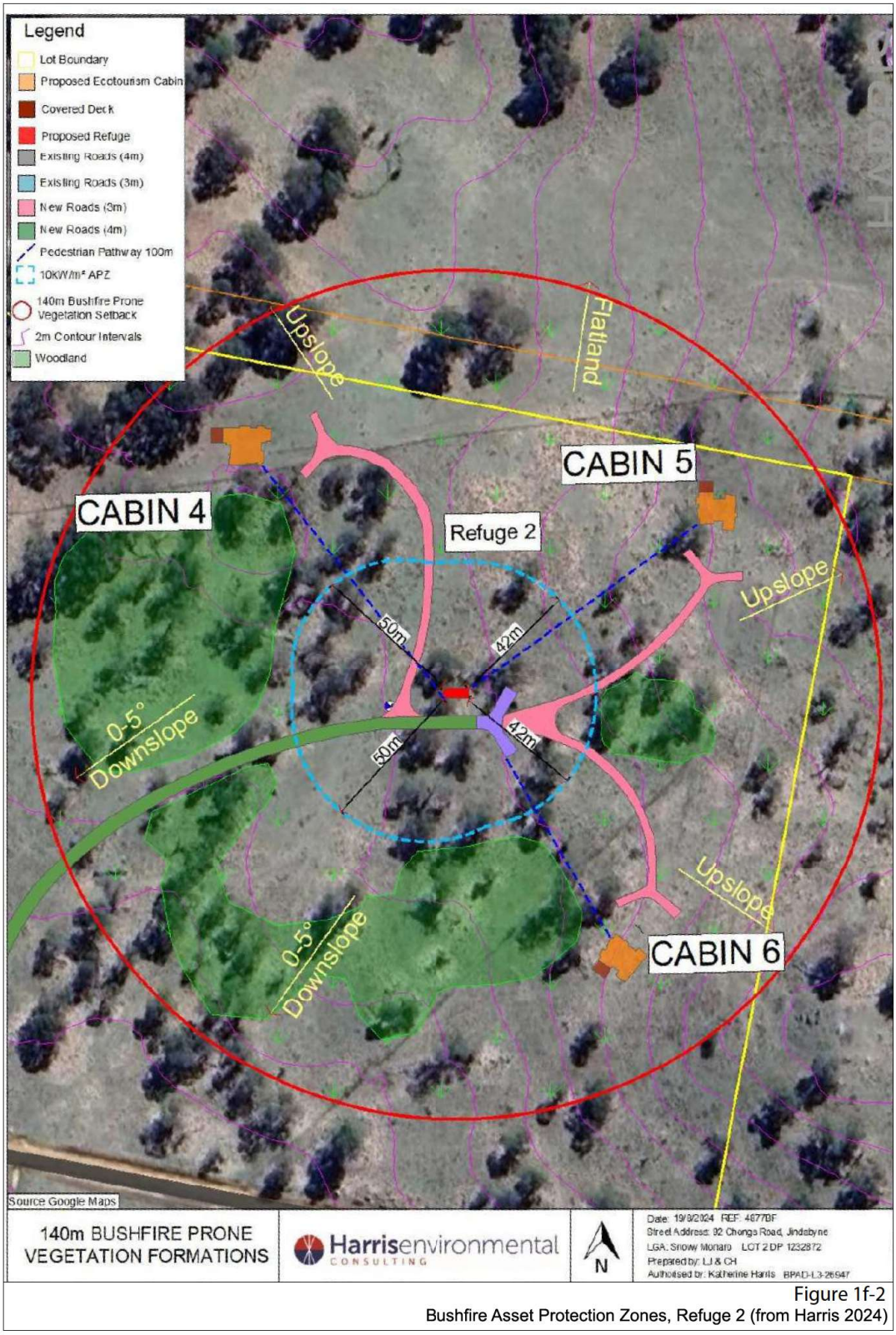


Figure 1f-2
Bushfire Asset Protection Zones, Refuge 2 (from Harris 2024)

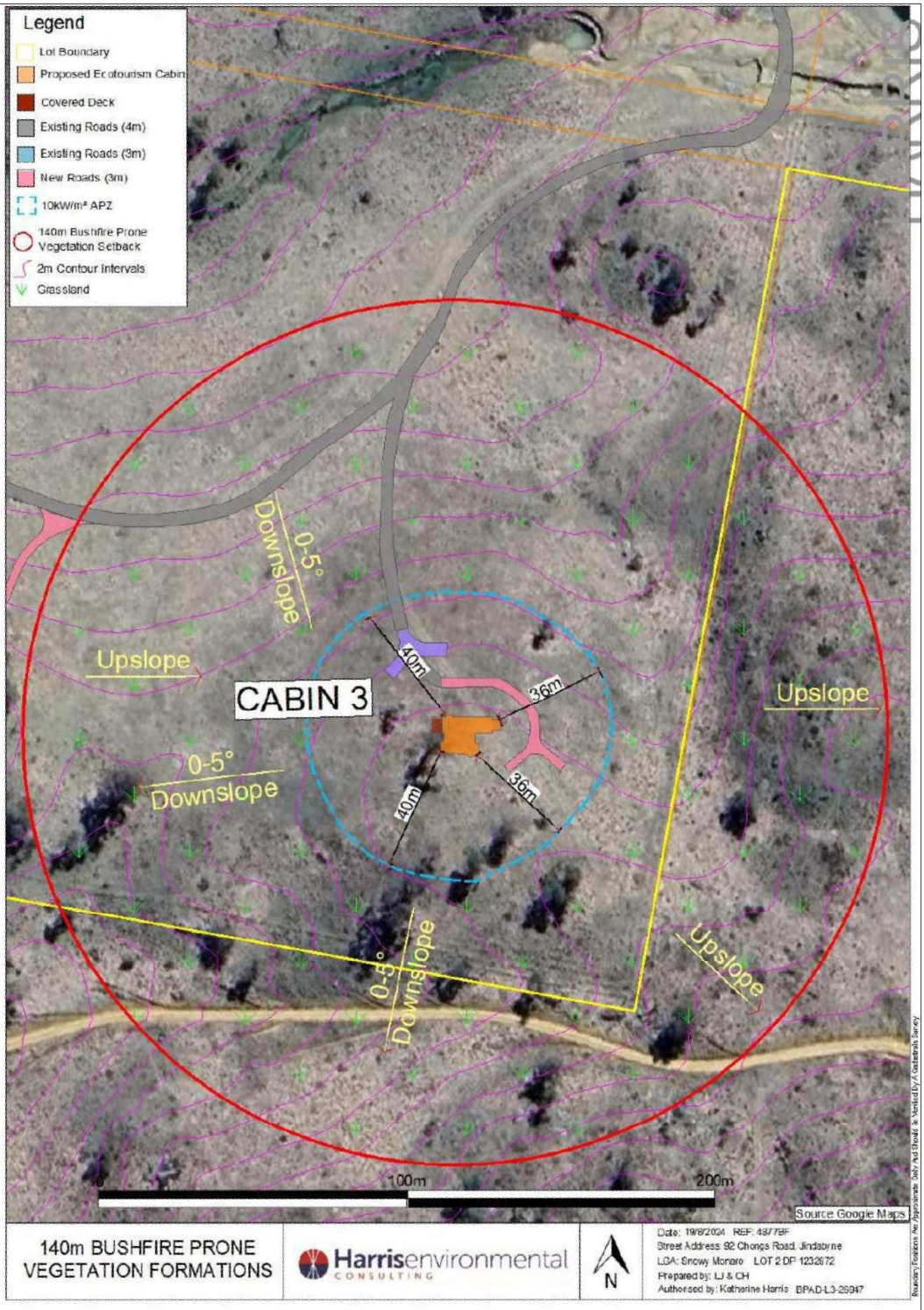


Figure 1f-3.
Bushfire Asset Protection Zones, Cabin 3 (from Harris 2024)

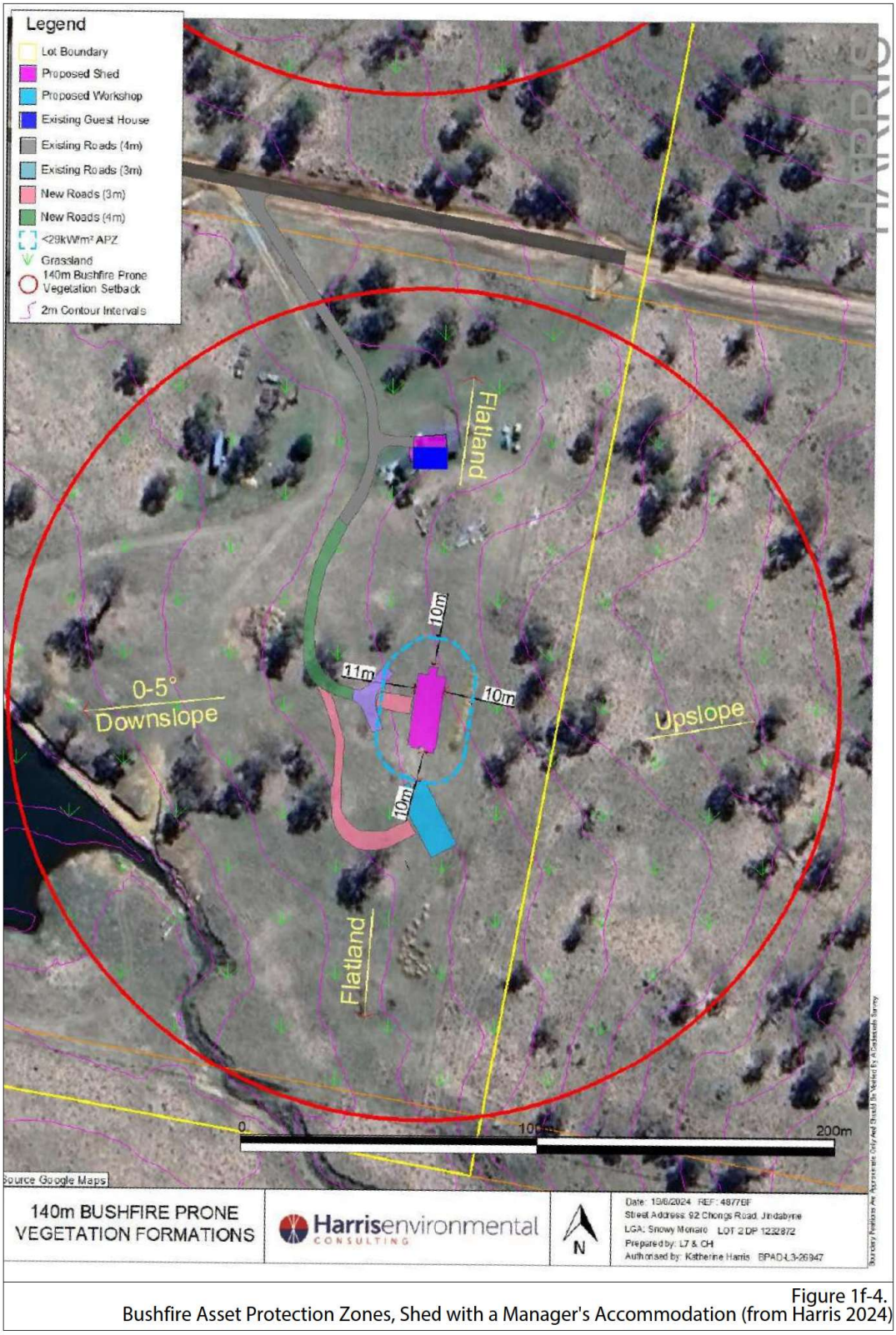


Figure 1f-4.
Bushfire Asset Protection Zones, Shed with a Manager's Accommodation (from Harris 2024)

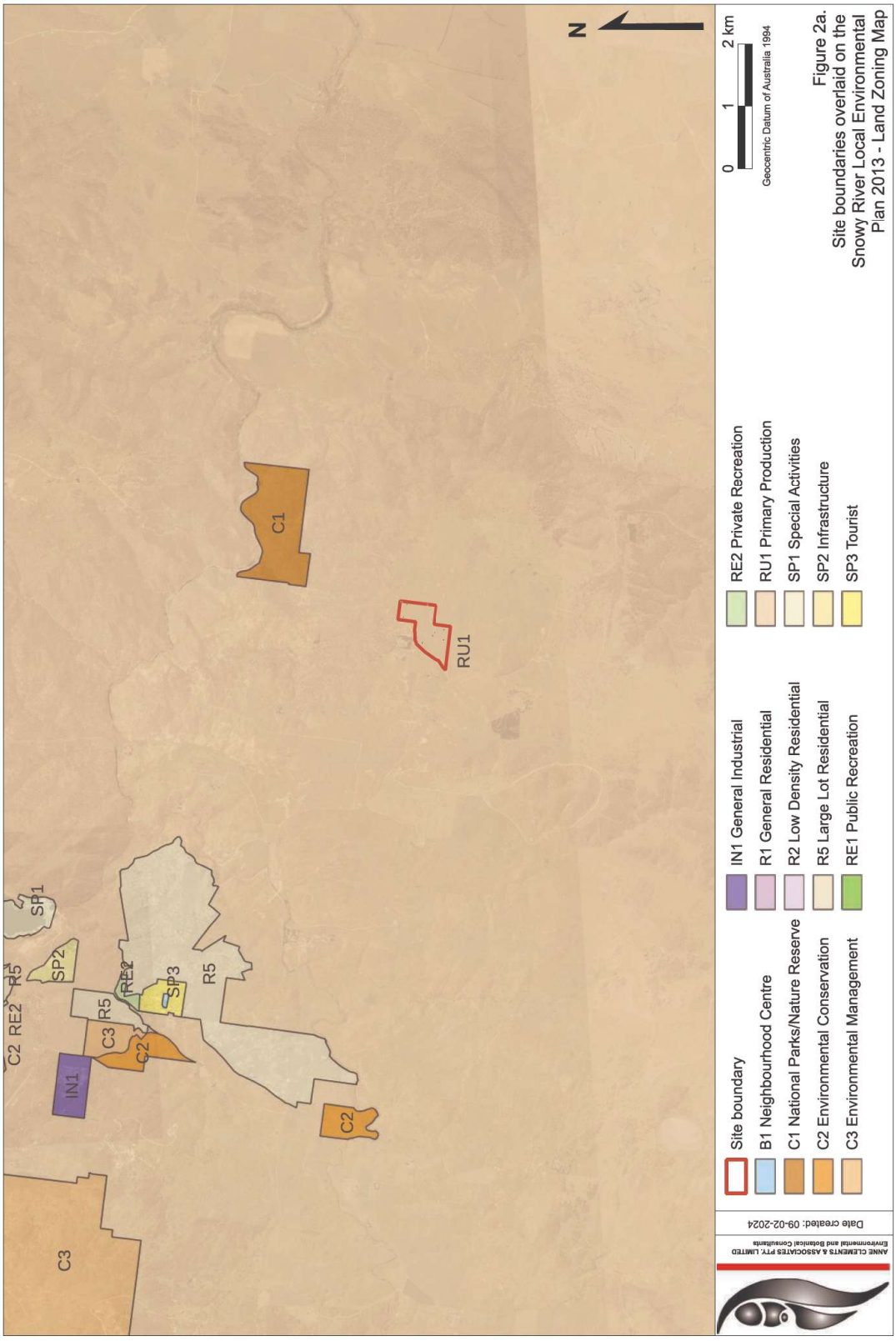


Figure 2a.
Site boundaries overlaid on the Snowy River Local Environmental Plan 2013 - Land Zoning Map

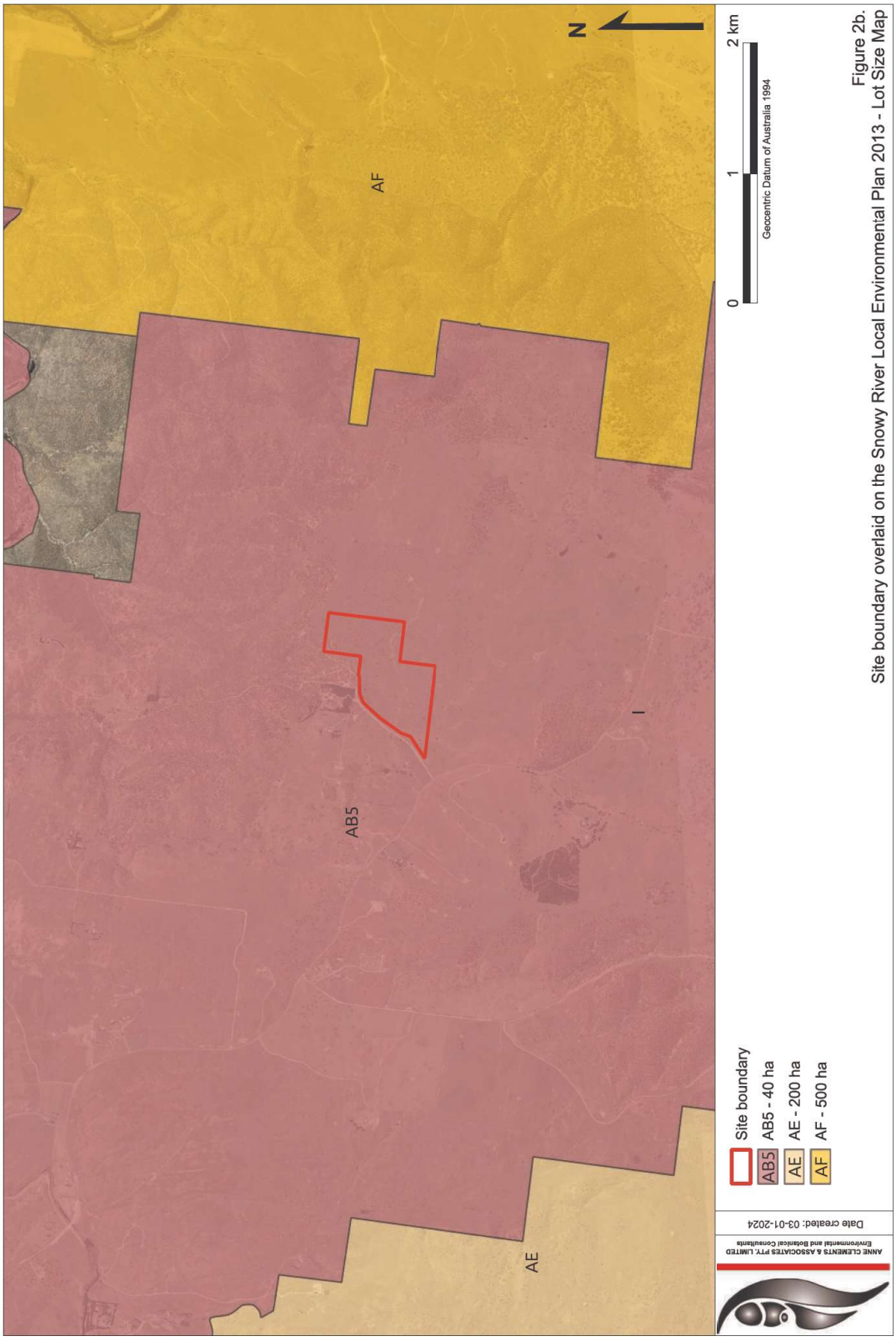


Figure 2b. Site boundary overlaid on the Snowy River Local Environmental Plan 2013 - Lot Size Map



Figure 2c. Site boundary overlaid on the Snowy River Local Environmental Plan 2013 - Terrestrial Biodiversity Map.

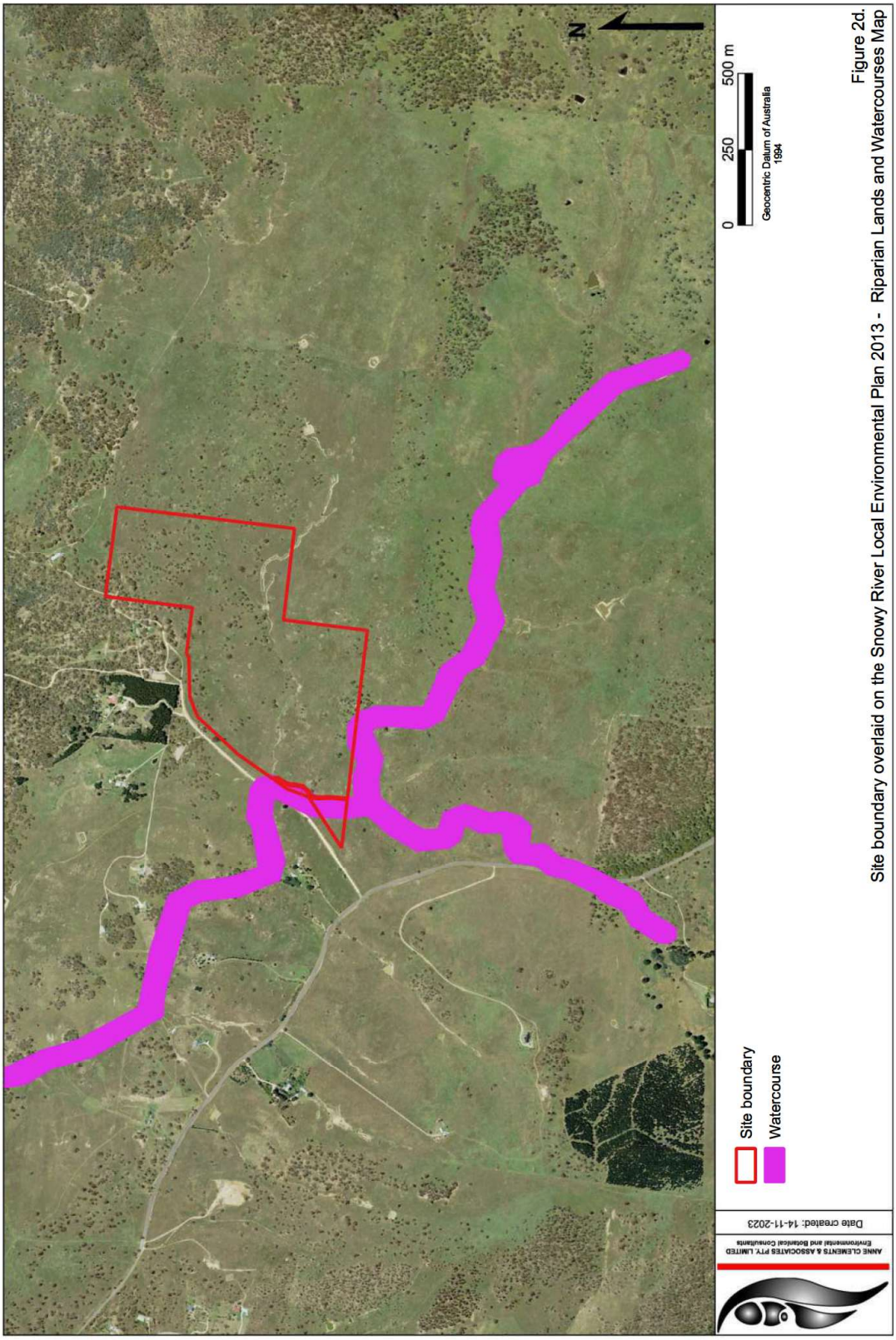


Figure 2d. Site boundary overlaid on the Snowy River Local Environmental Plan 2013 - Riparian Lands and Watercourses Map

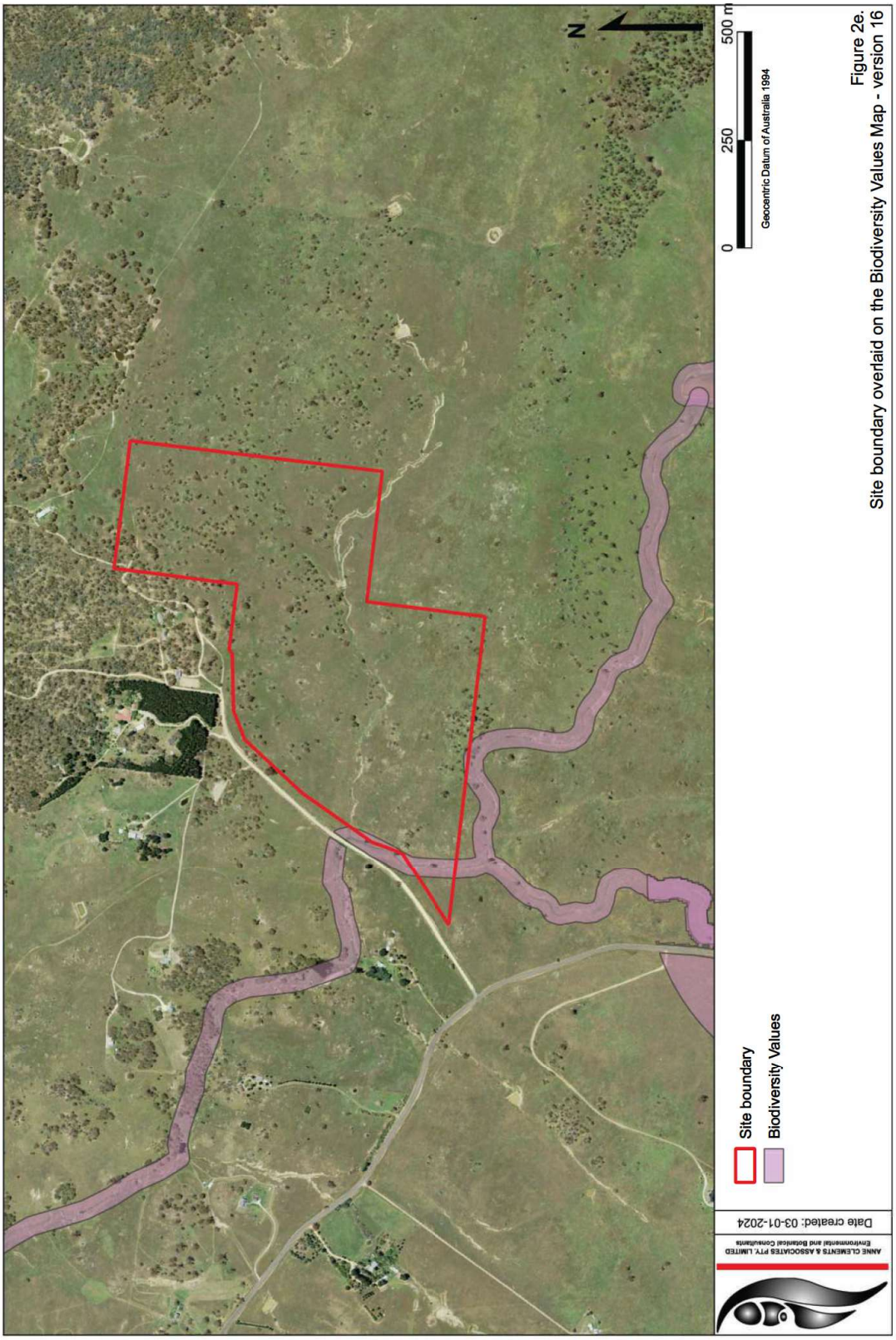


Figure 2e. Site boundary overlaid on the Biodiversity Values Map - version 16

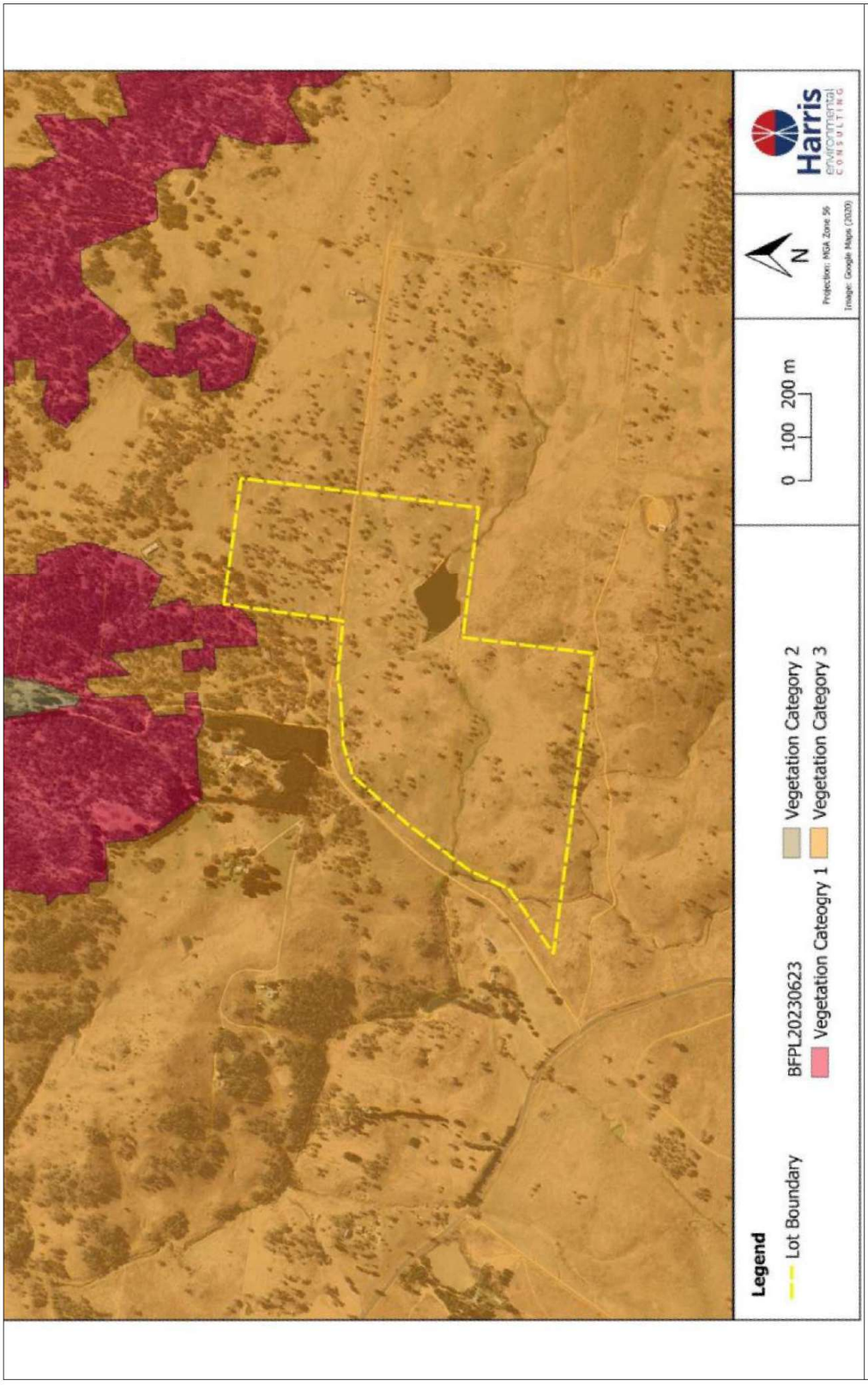


Figure 2f.
Bushfire Prone Map (from Harris 2024)

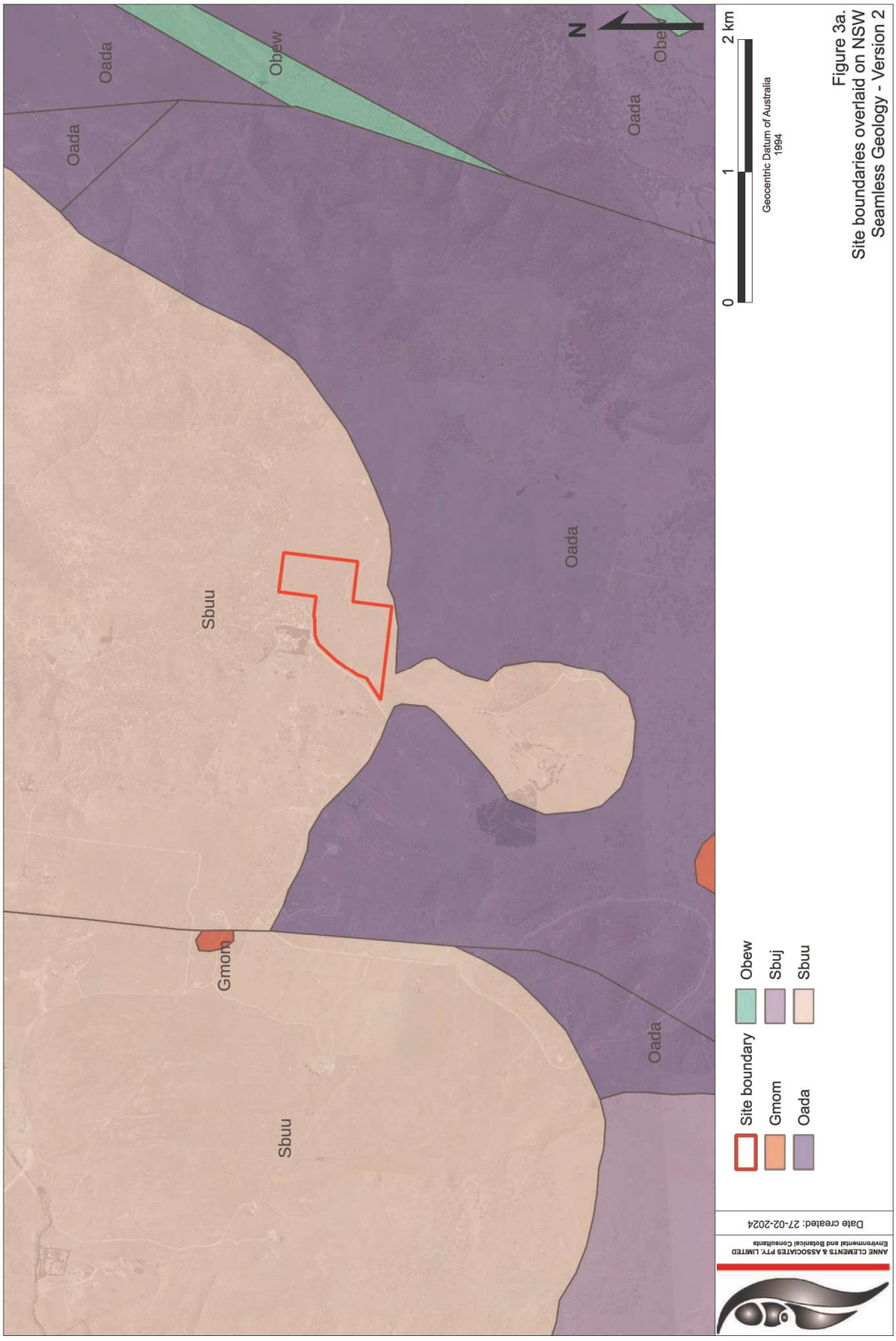


Figure 3a.
Site boundaries overlaid on NSW Seamless Geology - Version 2
Geocentric Datum of Australia 1994
0
1
2 km
N
Site boundary
Gmom
Oada
Obew
Sbuj
Sbuu
Date created: 27-02-2024
ANNE CLEMENTS & ASSOCIATES PTY. LIMITED
Environmental and Botanical Consultants

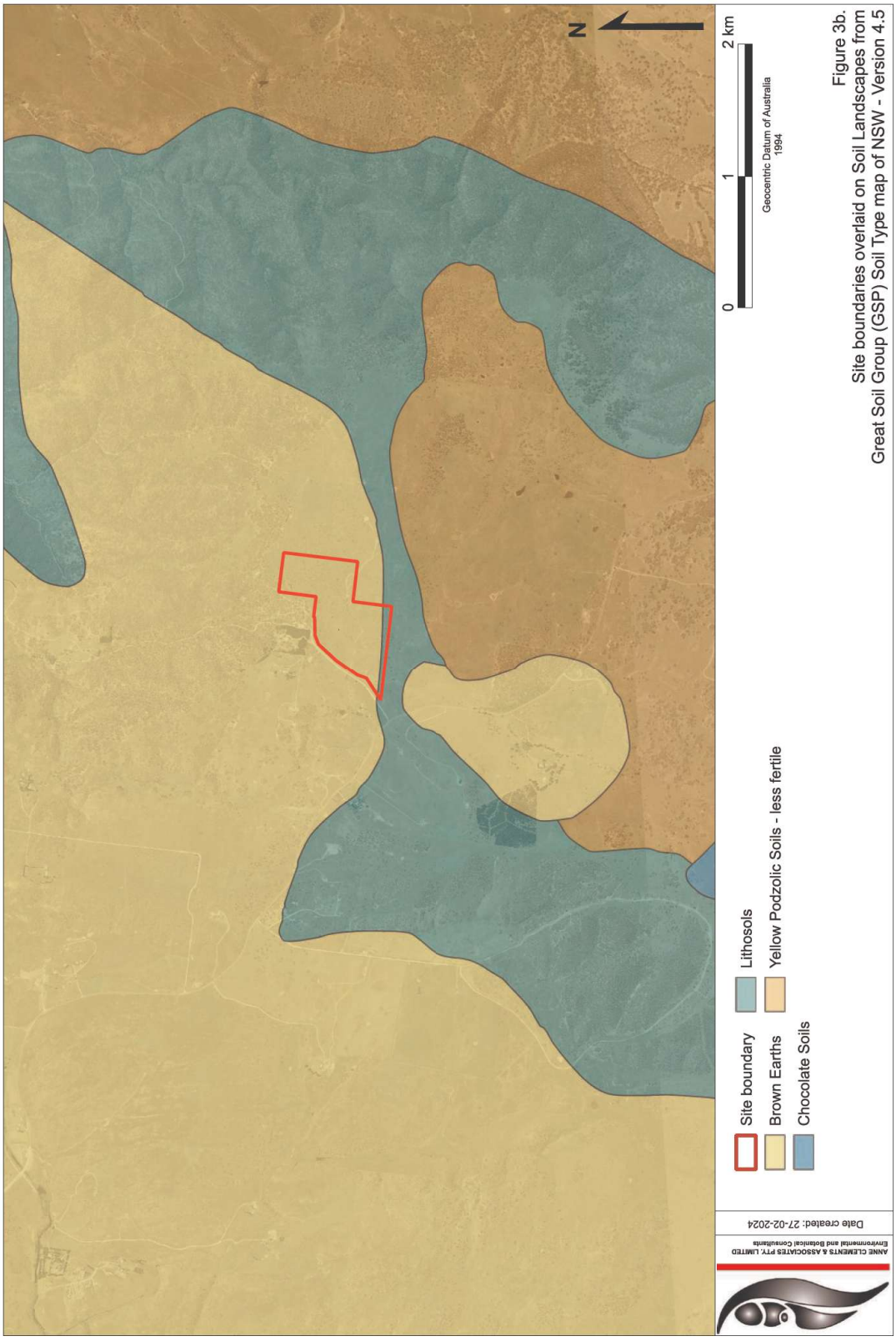


Figure 3b.
Site boundaries overlaid on Soil Landscapes from Great Soil Group (GSP) Soil Type map of NSW - Version 4.5

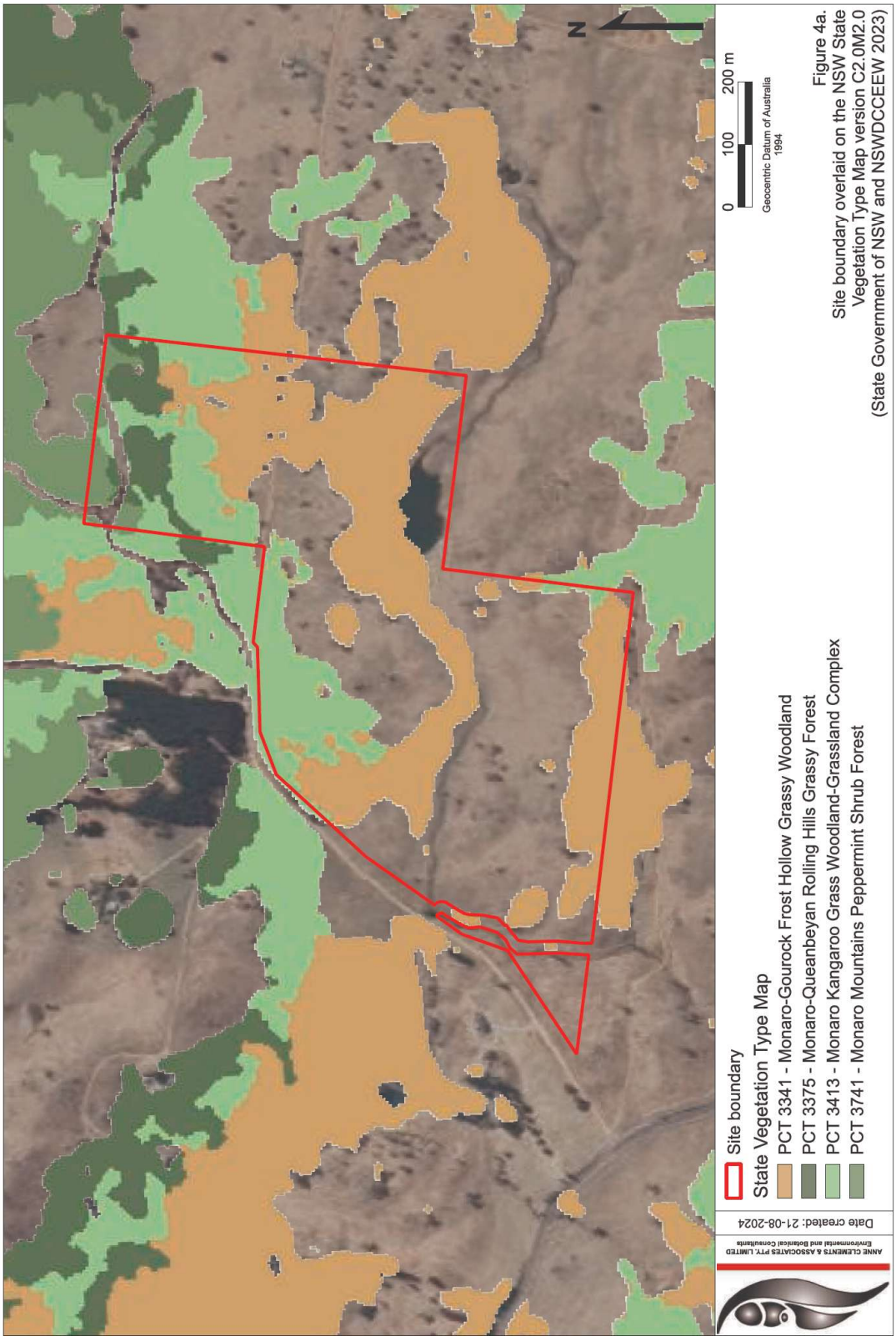


Figure 4a.
Site boundary overlaid on the NSW State Vegetation Type Map version C2.0M2.0
(State Government of NSW and NSWDCCEEW 2023)

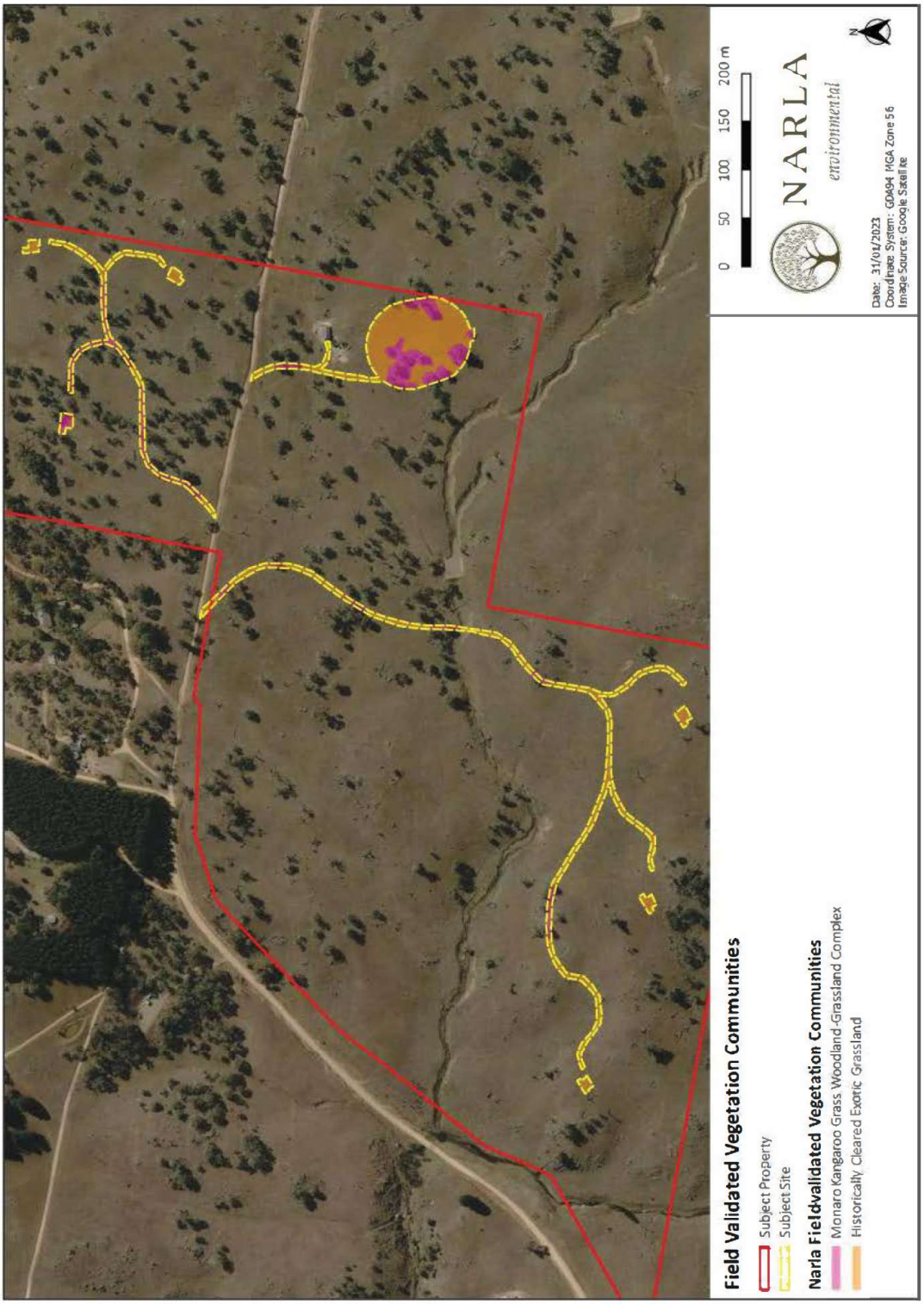


Figure 4b-1. Field Validated Vegetation Communities as mapped within the Subject Site.

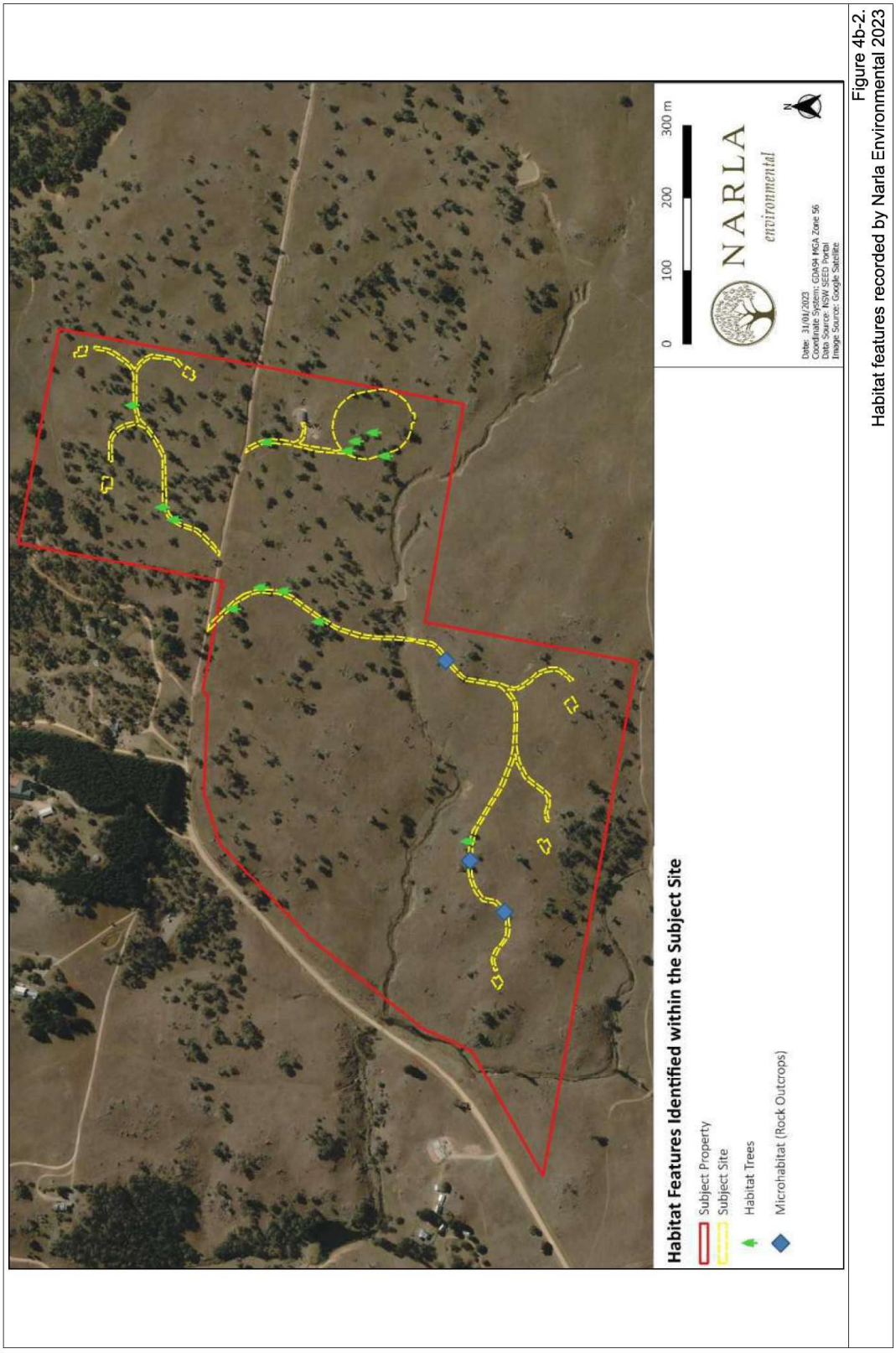


Figure 4b-2.
Habitat features recorded by Narla Environmental 2023

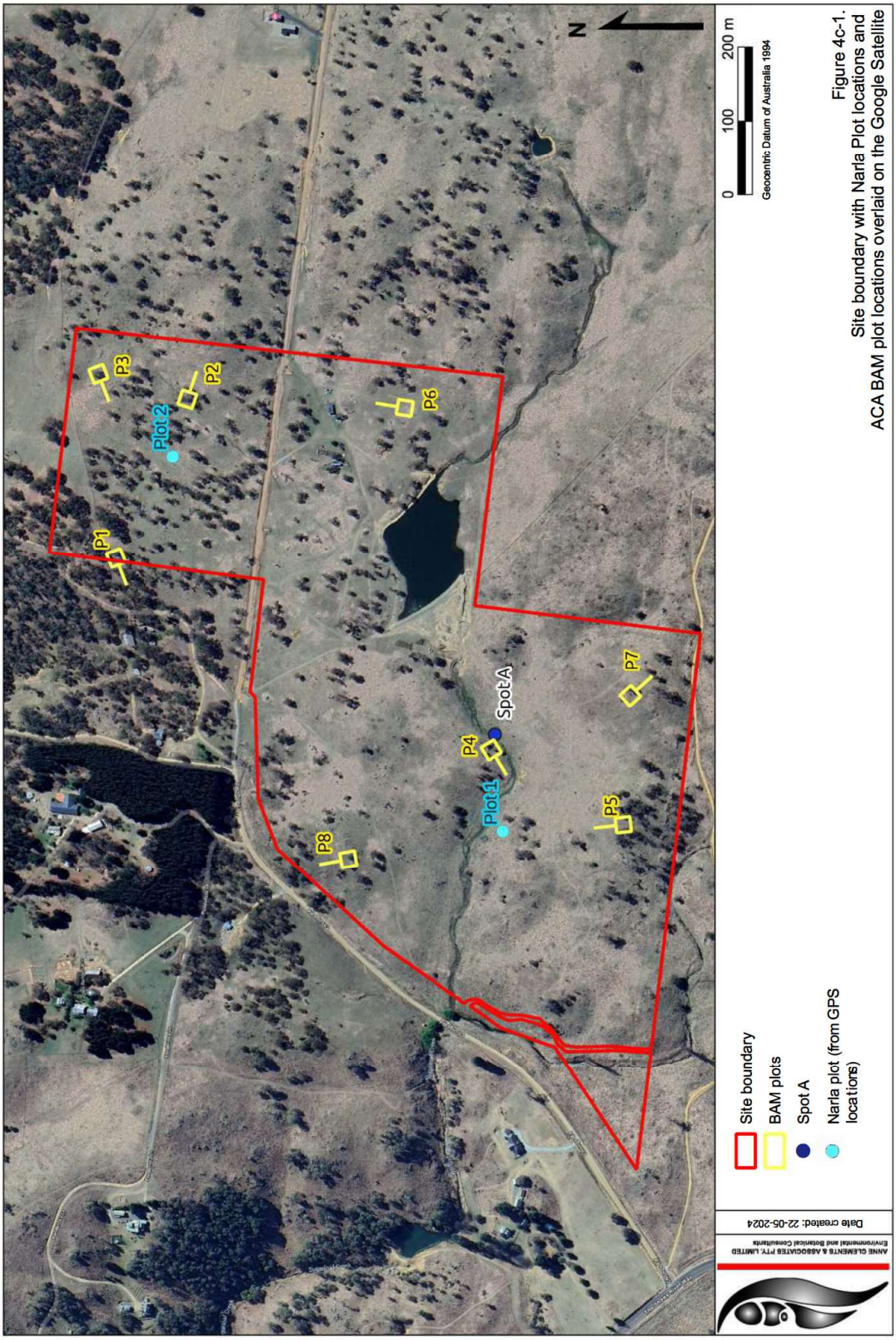


Figure 4c-1.
Site boundary with Narla Plot locations and ACA BAM plot locations overlaid on the Google Satellite

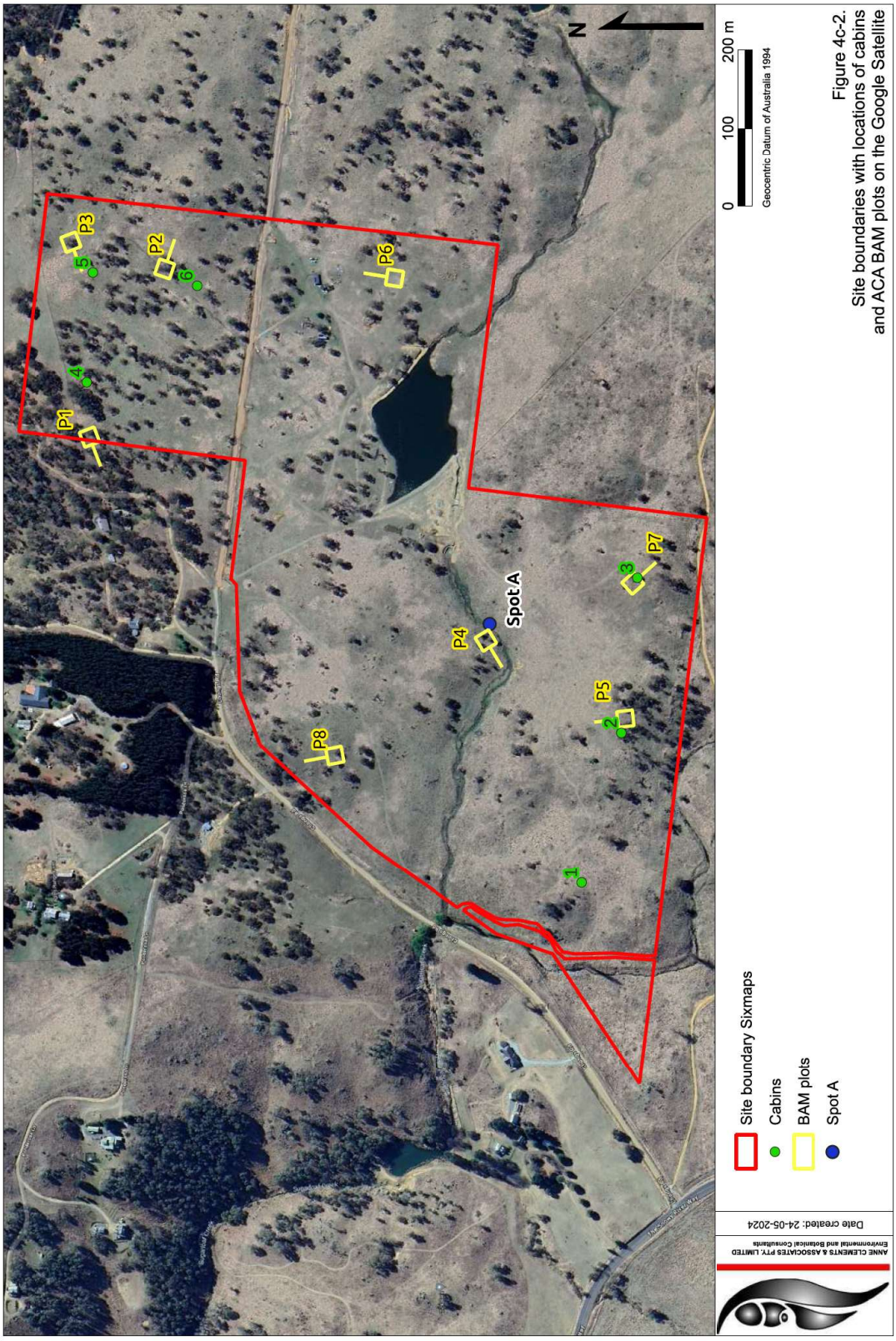


Figure 4c-2.
Site boundaries with locations of cabins and ACA BAM plots on the Google Satellite

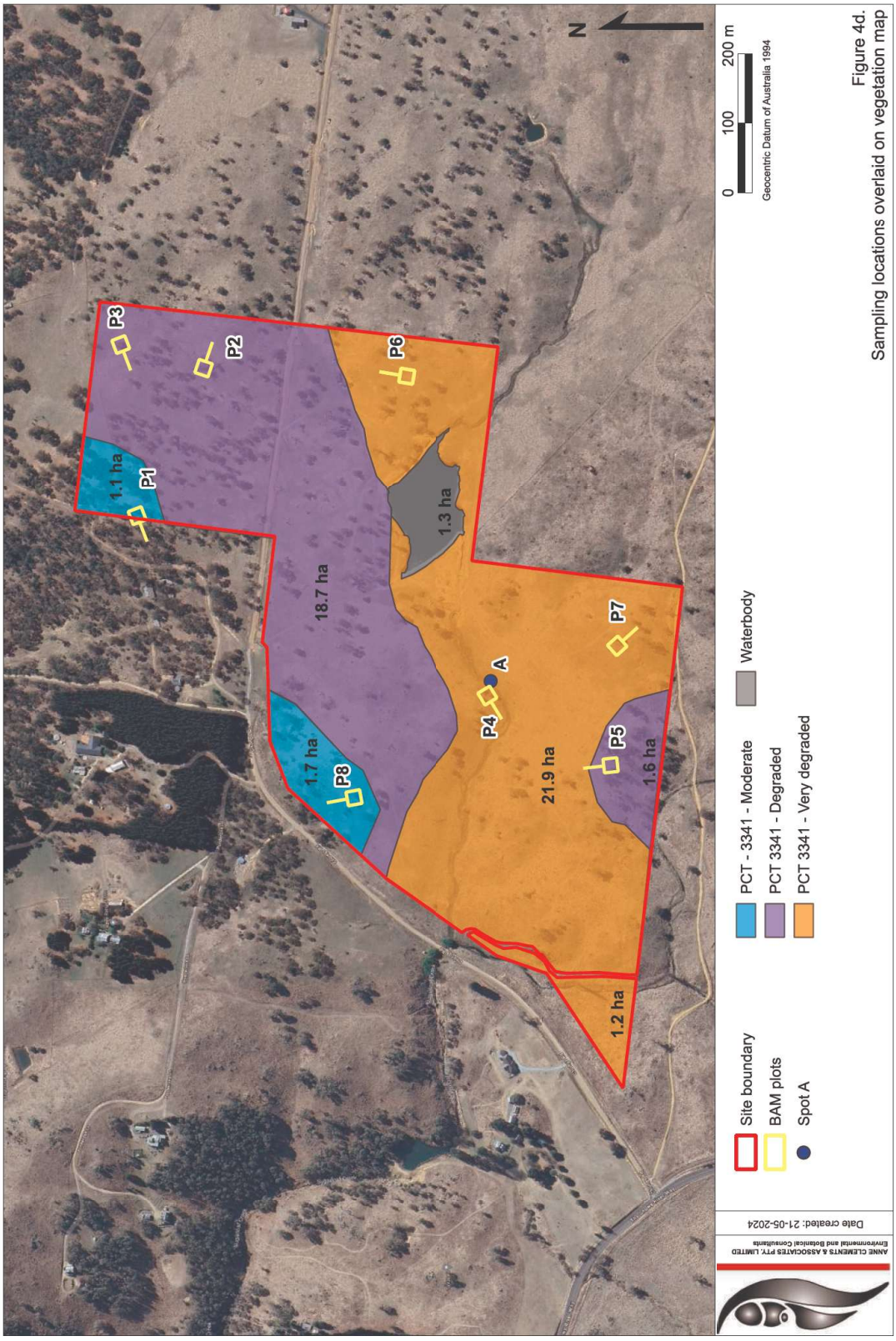


Figure 4d.
Sampling locations overlaid on vegetation map

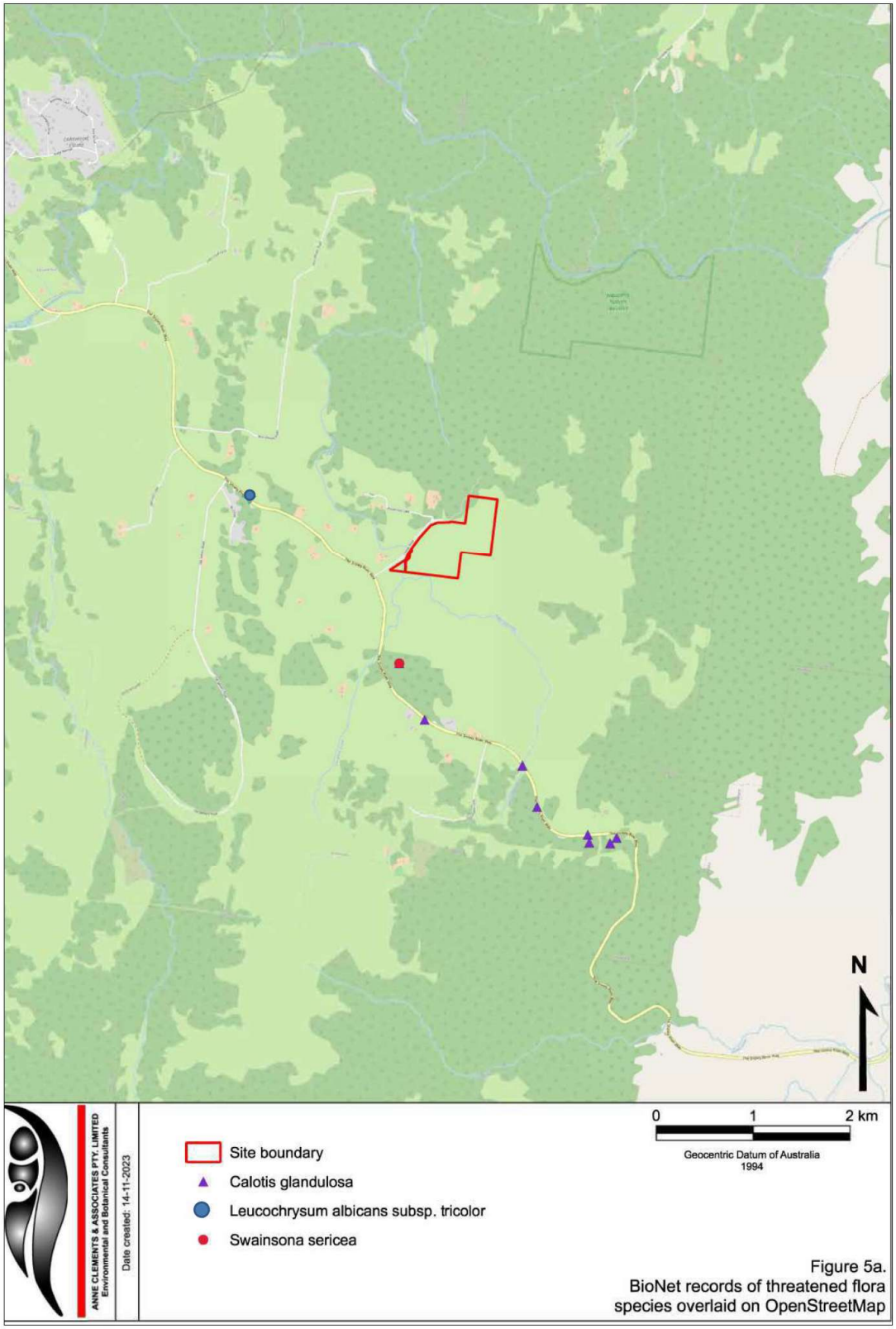


Figure 5a.
BioNet records of threatened flora species overlaid on OpenStreetMap

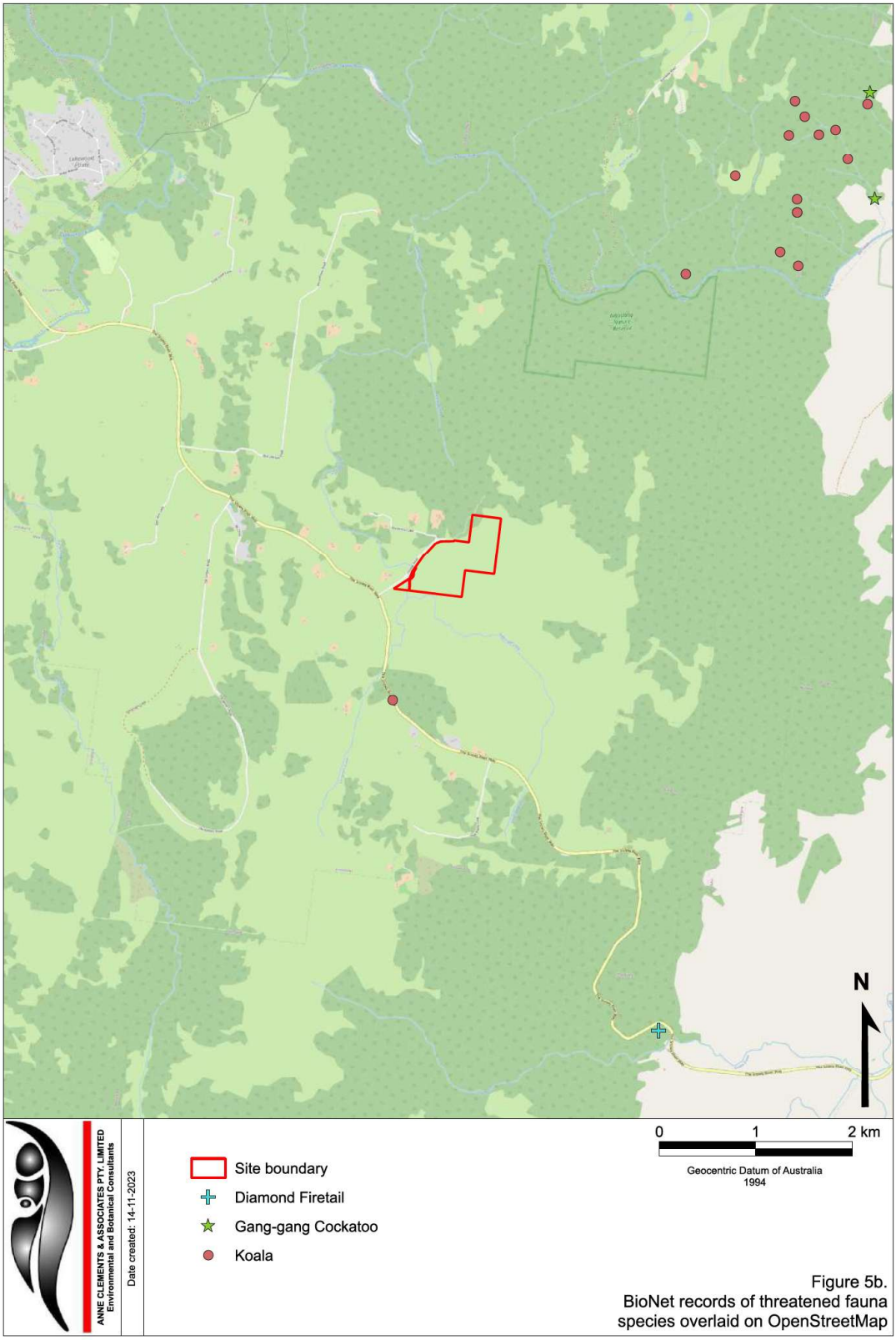


Figure 5b.
BioNet records of threatened fauna species overlaid on OpenStreetMap

Tables

Table 1. Cover of species recorded in 8 BAM Plots and species present in Spot A

Species	Family	ACA BAM Plots and Spot								
		P1	P2	P3	P4	P5	P6	P7	P8	Spot A
Tree (TG)										
Acacia dealbata	Fabaceae Mimosoideae	0.1								
Eucalyptus pauciflora	Myrtaceae	10	10	5	5	1		0.8	10	
Eucalyptus rubida subsp. rubida	Myrtaceae	0.3	5					4		
Eucalyptus stellulata	Myrtaceae		0.5			3			1	
Eucalyptus viminalis	Myrtaceae	0.2								
Shrub (SG)										
Bossiaea buxifolia	Fabaceae Faboideae	0.1				0.1				
Melicytus angustifolius subsp. divaricatus	Violaceae	0.1	0.8	0.4	4	1		0.5	1	
Oxylobium oxylobioides	Fabaceae Faboideae					0.1				
Ozothamnus thyrsoideus	Asteraceae	0.1								
Grass & grasslike (GG)										
Anthosachne scabra	Poaceae	0.1		0.1	0.1	0.1	0.5			
Austrostipa scabra subsp. *Falcata*	Poaceae	0.5		0.1		0.7		1	0.1	
Carex appressa	Cyperaceae									X
Carex breviculmis	Cyperaceae	3		0.1						
Carex incomitata	Cyperaceae		0.1							X
Carex inversa	Cyperaceae	0.1	0.6	0.3						
Eleocharis acuta	Cyperaceae									X
Juncus filicaulis	Juncaceae		3				0.3			
Juncus subsecundus	Juncaceae		0.1							
Juncus vaginatus	Juncaceae		0.3							
Panicum effusum	Poaceae	0.1								
Poa labillardierei	Poaceae	5	10	5	5	5		3	10	X
Poa sieberiana	Poaceae	10	0.8	1		2	15	2	2	
Rytidosperma monticcla	Poaceae	0.1								

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Species	Family	ACA BAM Plots and Spot								
		P1	P2	P3	P4	P5	P6	P7	P8	Spot A
Rytidosperma pilosum	Poaceae	0.1				0.1	0.1		0.1	
Schoenus apogon	Cyperaceae		0.1							
Themeda triandra	Poaceae	0.5					0.6		0.8	
Forb (FG)										
Acaena agnipila	Rosaceae	0.1	0.1	0.1	0.5	0.3	0.8	0.7	0.2	
Ajuga australis	Lamiaceae	0.2							0.1	
Ammobium alatum	Asteraceae								0.1	
Arthropodium sp. Snowy R. catchment	Asparagaceae	0.8	0.1		0.1	0.1			0.1	
Asperula conferta	Rubiaceae	0.1	0.2	0.1		1	10	0.8	0.6	
Brachyscome rigidula	Asteraceae	0.1								
Calotis glandulosa	Asteraceae					0.1			0.1	
Calotis scabiosifolia var. *integrifolia*	Asteraceae	0.1		0.1						
Chrysocephalum apiculatum	Asteraceae	0.1			0.3	0.1		0.3		
Chrysocephalum semipapposum	Asteraceae	0.3		0.4			0.9			
Cullen microcephalum	Fabaceae Faboideae	0.1		0.1		0.1			0.1	
Cymbonotus preissianus	Asteraceae	0.1		0.1						
Cynoglossum australe	Boraginaceae			0.2		2		3		
Dichondra repens	Convolvulaceae	3	0.3	0.4		1	0.2	3	0.8	
Einadia nutans subsp. *nutans*	Chenopodiaceae	0.1	0.1	0.1		0.1		0.1	0.3	
Epilobium billardierianum subsp. cinereum	Onagraceae		0.1				0.1	0.1	0.2	
Euchiton involucratus	Asteraceae	0.1	0.5	0.1			0.2	0.1	0.1	
Geranium potentilloides	Geraniaceae				2	0.3		0.1		
Geranium retrorsum	Geraniaceae				0.3					
Geranium solanderi var. *solanderi*	Geraniaceae	1	0.1	2	1	1	5	0.4	3	

Species	Family	ACA BAM Plots and Spot								
		P1	P2	P3	P4	P5	P6	P7	P8	Spot A
Gonocarpus tetragynus	Haloragaceae	0.1	0.1							
Goodenia paniculata	Goodeniaceae	0.1								
Grona varians	Fabaceae Faboideae	0.1				0.1		0.1	0.1	
Hackelia suaveolens	Boraginaceae					0.1	0.1		0.1	
Hydrocotyle laxiflora	Araliaceae	1	1	2	2	1	0.5		1	
Hypericum gramineum	Clusiaceae	0.2					0.1			
Leptorhynchos squamatus subsp.alpinus	Asteraceae	0.1							0.1	
Oxalis exilis	Oxalidaceae	0.2	0.1	0.3	0.1	0.4	3	0.5	0.4	
Plantago varia	Plantaginaceae	2	0.1	0.9	0.9	2	0.3		2	X
Polygala japonica	Polygalaceae	0.1								
Poranthera microphylla	Phyllanthaceae	0.2								
Pseudognaphalium luteoalbum	Asteraceae		0.1							
Ranunculus graniticola	Ranunculaceae	0.1			0.1				0.1	
Rumex dumosus	Polygonaceae				0.1	5	0.1	0.1	0.1	
Scleranthus biflorus	Caryophyllaceae	0.1								
Senecio prenanthoides	Asteraceae								0.1	
Senecio quadridentatus	Asteraceae	0.5	0.3	0.8		0.1			0.1	
Solenogyne gunnii	Asteraceae	0.1					0.1		0.1	
Swainsona behriana	Fabaceae Faboideae	0.1		0.1		0.1	0.1			
Vittadinia cuneata var. *cuneata*	Asteraceae			0.1		0.1		1	0.1	
Vittadinia gracilis	Asteraceae	0.4	0.3	0.8	0.1	0.8	0.1	0.4		
Vittadinia muelleri	Asteraceae	2		0.1	0.1				0.7	
Wahlenbergia communis	Campanulaceae	0.1		0.1		0.2		2		X
Wahlenbergia gracilis	Campanulaceae		0.1	0.1						
Fern (EG)										
Asplenium flabellifolium	Aspleniaceae					0.1				
Other (OG)										
Clematis leptophylla	Ranunculaceae	0.1			0.1					

Species	Family	ACA BAM Plots and Spot								
		P1	P2	P3	P4	P5	P6	P7	P8	Spot A
Convolvulus angustissimus	Convolvulaceae	0.9		0.6		0.3	0.3	0.5	0.2	X
Glycine clandestina	Fabaceae Faboideae	0.1								
High Threat Weed										
Hypericum perforatum	Clusiaceae	0.1	2	2	2	2	1	1	2	X
Nassella trichotoma	Poaceae	0.8	0.8	0.3		3	0.1	4		
Rosa rubiginosa	Rosaceae		0.1		0.5		0.1	0.1	0.1	
Rubus fruticosus agg.	Rosaceae		0.1							
Exotic										
Aira caryophyllea	Poaceae	0.1		0.1						
Anthoxanthum odoratum	Poaceae						0.3		0.1	
Arenaria serpyllifolia	Caryophyllaceae			0.1						
Bromus brevis	Poaceae		0.1							
Bromus hordeaceus	Poaceae	5	10	10	10	15	15	20	20	
Bromus sterilis	Poaceae	2	1	4	10	4		10	0.5	
Carduus nutans	Asteraceae		0.1		0.1	0.4	0.5	2	0.3	
Cerastium fontanum	Caryophyllaceae			0.1	0.1					
Chondrilla juncea	Asteraceae			0.1	0.3			0.1		
Cirsium vulgare	Asteraceae	0.1	1		2	0.2		0.3	0.5	X
Conyza sumatrensis	Asteraceae		0.2					0.1		
Crataegus monogyna	Rosaceae		0.1		0.5				0.8	
Crepis capillaris	Asteraceae	0.5	1	4		0.3	2	1		
Dactylis glomerata	Poaceae							1		
Echium vulgare	Boraginaceae		1	3			0.3	0.8		
Eragrostis curvula	Poaceae					2				
Erodium cicutarium	Geraniaceae		0.1	0.1			0.1			
Glyceria declinata	Poaceae									X
Holcus lanatus	Poaceae		0.4	0.1	20	0.6	0.9		0.6	X
Hordeum leporinum	Poaceae							0.1		

Species	Family	ACA BAM Plots and Spot								
		P1	P2	P3	P4	P5	P6	P7	P8	Spot A
Hypochaeris radicata	Asteraceae			2	2	0.9	4	2	2	
Lolium perenne	Poaceae		4	1	15	2	5	4	2	X
Medicago lupulina	Fabaceae Faboideae		0.1	0.1						
Myosotis laxa subsp. *caespitosa*	Boraginaceae				0.1					X
Nasturtium officinale	Brassicaceae									X
Plantago lanceolata	Plantaginaceae					0.6		0.1		X
Poa pratensis	Poaceae			0.1	0.1					
Potentilla recta	Rosaceae				0.1	0.1			0.1	
Rumex acetosella	Polygonaceae	5	15	4	4		5	20	10	X
Rumex obtusifolius	Polygonaceae									X
Salvia verbenaca	Lamiaceae		0.1	0.5				0.3		
Sanguisorba minor	Rosaceae		0.1							
Silybum marianum	Asteraceae							0.1		
Sisymbrium orientale	Brassicaceae							0.1		
Taraxacum officinale	Asteraceae		0.8	0.5	0.5	0.8	0.1	0.3	0.2	
Tragopogon dubius	Asteraceae					0.1		0.1	0.1	
Trifolium arvense	Fabaceae Faboideae	1	0.1	0.8		0.2	0.3	0.3	0.1	
Trifolium campestre	Fabaceae Faboideae	0.5	0.1	0.2			0.1			
Trifolium dubium	Fabaceae Faboideae		0.3	0.1						
Trifolium repens	Fabaceae Faboideae		10	2	1	3	5	10	10	X
Trifolium subterraneum	Fabaceae Faboideae					0.1				
Verbascum thapsus	Scrophulariaceae	0.2		0.1	0.4	4	0.4	1	0.9	
Veronica anagallis-aquatica	Plantaginaceae									X
Vulpia muralis	Poaceae		0.1			0.5	0.1	0.3		

Table 2. Maximum height and number of individuals per 10 m x 10 m subquadrat, for species present ≥ 2 m tall.

Botanical name	Subquadrat 1		Subquadrat 2		Subquadrat 3		Subquadrat 4	
	Number	Height	Number	Height	Number	Height	Number	Height
Plot 1								
Eucalyptus pauciflora	3	10 m	1	12 m	1	10 m		
Plot 2								
Eucalyptus pauciflora					1	8 m		
Eucalyptus rubida					1	25 m		
Eucalyptus stellulata	1	7 m						
Plot 3								
Eucalyptus pauciflora	1	10 m					1	10 m
Plot 4								
**Crataegus monogyna*	1	3 m						
Eucalyptus pauciflora			1	15 m	1	7 m	1	10 m
**Rosa rubiginosa*			1	2 m				
Plot 5								
Eucalyptus pauciflora	1	8 m						
Eucalyptus stellulata			1	12 m				
Plot 6								
No trees								
Plot 7								
Eucalyptus pauciflora					1	7 m		
Eucalyptus rubida							1	22 m
Plot 8								
**Crataegus monogyna*			2	3 m				
Eucalyptus pauciflora	3	7 m	4	8 m	3	12 m		
Eucalyptus stellulata			2	9 m				

* = exotic species

Appendices

Appendix 1a.
Correspondence related to conservation works

2024 – 9 January

From: Nicki Taws <nitaws@greeningaustralia.org.au>
To: j group plumbing <jgroupplumbing@yahoo.com>
Sent: Tuesday, 9 January 2024 at 02:35:42 pm AEDT
Subject: RE: Tube stocks

Hi Josh

Here's the list of plants you had from us. The last species is Bursaria spinosa (50). It might be useful for you to identify if any of these species did better or worse at your place. Annie should have most of these species if you want the same again. Good luck with it.

EUCALYPTUS bridgesiana	40
EUCALYPTUS pauciflora	40
EUCALYPTUS rubida	40
EUCALYPTUS stellulata	40
EUCALYPTUS viminalis	40
ACACIA melanoxylon	40
BURSARIA spinosa	50

2021 – 8 February

From: Jack McGrath <jack.mcgrath@lls.nsw.gov.au>
To: jgpluppumbing@yahoo.com <jgpluppumbing@yahoo.com>
Sent: Monday, 8 February 2021 at 08:48:52 am AEDT
Subject: Revegetation Info

Hi Josh

Good to meet you last Friday, its a great job you are doing on the property there (the rouse and the weeds!)

Just thought I would follow up with some general info that you might find useful. On the dam I have attached a link to the water NSW website which has some info on basic landholder rights also it might be worth checking with council as well. Your dam is on a seconded order stream so just be aware of your maximum harvestable right. There is an online calculator that can work this out at the link below.

Basic landholder rights - WaterNSW

Basic landholder rights - WaterNSW

Under the Water Management Act 2000, there are three types of basic landholder rights in NSW: Domestic and stock rights Owners or occupiers of land overlaying an aquifer or has river, estuary or lake frontage can take water without a licence for domestic (household) purposes or to stock water.

www.waternsw.com.au

For the tree planting the local Landcare and Greening Australia sometime have some tree planting programs running - its just a matter of keeping up too date to no when or to get in touch with them so they have your details if anything comes up. Below is a link to the Landcare page and the contact details for Nikki Laws who is involved with Greening Australia. I have also attached a copy of a planting guide that might be of use.

Upper Snowy Landcare – Restoring our Environment

Upper Snowy Landcare – Restoring our Environment

Upper Snowy Landcare is a network dedicated to improving local vegetation, land management and environmental awareness on the central Monaro. Become a member Upper Snowy Landcare Network is tackling tree dieback in the heart of the Monaro where Ribbon Gums died across an area the size of the ACT. Become a member Upper Snowy Landcare Network engages with the community on many levels and themes.

www.uppersnowylandcare.org.au

Nicki Tews | Program Specialist - Ecologist | Greening Australia
PO Box 538, Jamison Centre ACT 2614
P 02 6129 5400 | M 0408 210736 | | W www.greeningaustralia.org.au
Thanks again for your time, we will keep your EOI on file and if something comes up will get back in touch with you, but if you have any questions in the meantime please get in touch.
Thanks
--
Jack McGrath| NRM Land Services Officer
South East Local Land Services
1-3 Sharp Street|Po Box 26|Cooma|NSW 2630
M: 0428 718 500
P: 02 6455 7230
E: jack.mcgrath@lls.nsw.gov.au
Important changes
Our offices will be operating differently due to COVID-19.
The best way you can get in touch with us is through our online enquiry form or by calling 1300 795 299.
One attachment • Scanned by Gmail
Site Preperation ...

From: Nicki Taws <ntaws@greeningaustralia.org.au>
To: jgroupplumbing@yahoo.com <jgroupplumbing@yahoo.com>
Sent: Thursday, 26 August 2021 at 12:03:45 pm AEST
Subject: Dieback tree orders

Hi Josh

I'm contacting landholders who've requested plants through our dieback project and haven't taken delivery of them yet. I have 290 plants packed for you.

Due to the current lockdowns I am looking at options to get a delivery of plants to the region (Cooma / Berridale) for all the landholders whom I would normally be able to deliver to. At the moment ACT is meant to come out of lockdown on 2 Sept but anything could happen before then and I'm also not sure how the NSW lockdown will affect our travel.

I'll stay in touch.

Cheers

Nicki Taws | Program Specialist - Ecologist | Greening Australia
PO Box 538, Jamison Centre ACT 2614
P 02 6129 5400 | M 0408 210736 | | W www.greeningaustralia.org.au |

Greening Australia

We acknowledge the Traditional Custodians of the land on which we live and work, and pay our respects to their Elders past, present and emerging. We honour the deep continuing connection Aboriginal and Torres Strait Islander peoples share with Country.

SITE PREPARATION RECOMMENDATIONS

Josh Leitner 92 Chongs Rd - Jindabyne Area

Liz MacPhee
Alpine Flora
February 2021

There are a number of basic issues that will need to be addressed so that your plantings have the best chance of survival and rapid establishment. The issues that will need to be addressed are:

- Compaction – which is essentially a lack of oxygen in the soil profile
- Lack of nutrients
- Lack of organic matter
- Weed invasion and competition
- Grazing pressure (this will be addressed with the exclusion fence you are proposing to construct)

Note: Compost is an organic plant growth medium that has been 'composted' and has suites of microflora present due to the decomposition process. Mulches are organic materials (such as trees and shrubs) that have been chipped and have not undergone a decomposition process.

1. Planting Area Above and Around the Dam

I. Crazy rip the area with rip lines across contour as much as possible. Rip the lines at random spacing – some close as 1m apart and other up to 3m apart. Rip to a depth of around 150mm to 200mm. This will open up the subsoils to rainfall and also promote weed germination. If possible, do the ripping 3 months prior to planting to get good weed germination for spraying out. Ripping will address any compaction issues.

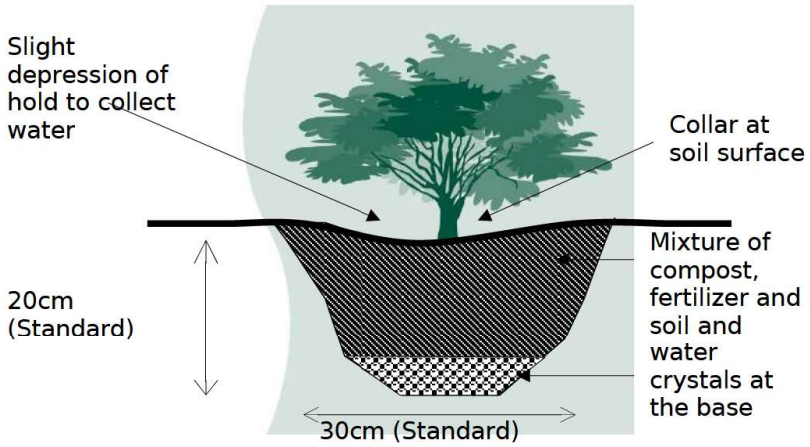
II. Spray rip lines with a non-residual herbicide such as Round Up at least 2 weeks prior to planting and seedlings. This will help with weed competition when the seedlings are small.

III. Source some bulk compost (if you want to?) and add around a litre to each planting hole. This will increase the organic matter in the soil and thereby increase water holding capacity, nutrient provision and growth rates.

IV. Add a handful of an organic slow release fertiliser to each planting hole. This is around 25 g per hole. Dynamic Lifter (pelletized chicken manure) is a good option and readily available. This

addresses any lack of nutrition in the soil and slowly releases nutrients and all native species can tolerate it.

V. Plant seedlings as per the following diagram. Using pre-wet water crystals is an option as it can provide each seedling with a water source in very dry weather.



VI. Mulch with an organic mulch such as woodchip, straw, recycled organic materials if possible. Mulch to a depth of around 15 to 20 mm. Mulching is not completely necessary but improves planting success by limiting loss of soil moisture and improves organic matter and therefore ecological function.

VII. Water in all tubestock with at least a litre of water or more if possible.

VIII. Monitor tubestock for any issues until established – grazing, dryness, weed invasion, insect attack and any other aberrant negative conditions.

IX. Maintain tubestock for at least a year, better to maintain for 2 years. Maintenance in the short term will be additional watering during drought or very hot temperatures. Annual maintenance in regard to weed control and remulching (if you want to).

2. **Windbreak Tree Planting**

I. Rip planting lines to a depth of about 200mm.

II. Let the weeds grow in the rip line and spray with RoundUp.

III. Add pre-wet water crystals to the bottom of the holes and about 50g of organic fertiliser per hole.

IV. Plant at 1.5m spacings (2 lines offset) for the Pinus radiata.

V. Mulch if you want to – this will keep any additional watering to a minimum for the first year or two and facilitate rapid growth.

VI. Water in well.

3. Steep Batters

I. If possible, create as many small terraces as possible down the batter to slow water flow. If no terraces can be formed, use the teeth of an excavator bucket to create cross contour depressions in the batter.

II. Dig swales above the batters to collet water and sediment before it breaches over the batter. The swales can be planted with any of the tussock plants.

III. Cover worked batter with mulch (woodchip or straw).

IV. Secure the mulch with soil saver jute mesh. This mesh has holes around 1cm and is good to allow water infiltration and gaseous exchange in the soil.

V. Plant the batter with a range of groundcovers, tussocks and Clustered Everlasting. Plant at 15 to 20cm spacing. Try and create a small well for each plant to collect any water that falls on the batter. Follow the planting technique as for other areas.

VI. Water in well.

SPECIES RECOMMENDATIONS

Josh Leitner 92 Chongs Rd – Jindabyne Area

Liz MacPhee
Alpine Flora
February 2021

The following species are suitable for cool climates and are relatively hardy to drought.

Native Trees

1. *Banksia marginata* – Silver Banksia
   8m x 5m
   Compact small tree with distinctive cones and leaf shape
   Frost Wind Drought – if lignotuber is present
   Birds and bees
   Feature plant



Silver Banksia in flower

2. *Brachychiton populneus* – Kurrajong
   12m x 8m
   Hardy attractive native tree with bright green glossy leaves
   Drought, Hot temperatures
   Bird attracting
   Bee attracting



Kurrajong shiny leaves

3. *Eucalyptus pauciflora* – Snow Gum
   1-20m x 5-10m
   Small evergreen tree with attractive bark and a pendulous form.
   Very cold temperatures –snow
   Frost, Wind, Shallow rocky soils,
   Attracts birds and insects
   Feature tree in gardens



Snow Gums in the snow.

4. *Eucalyptus rossii* – Scribbly Gum
   15m x 5m
   Attractive tree with yellowish bark that sheds regularly
   White flowers , bird attracting
   Hardy to cold and drought



Scribbly Gum form

5. *Eucalyptus rubida* – Candlebark
   40m x 15m
   Rough, ribbony bark at the base and smooth white trunk higher up
   Red colouring in extreme weather – when hot or cold
   Hardy to cold and drought



Candlebarks

6. *Eucalyptus sideroxylon subsp. sideroxylon* – Red Ironbark
   20m x 15m
   Slow growing, medium sized upright tree and rough textured dark brown bark
   Frost, Drought, Poor rocky soils
   Birds, bees and mammal habitat
   Prolific blossom attractive for gardens



Red Ironbark beautiful flowers

7. *Eucalyptus stellulata* – Black Sallee
   5-14m x 5-10m
   Small evergreen tree with a dense crown and attractive gold-brown bark
   Wet sites, Very cold temperatures – snow
   River bank erosion
   Good small garden tree
   Birds and bees



Black Sallee growing tips

Medium to Tall Shrubs (above 1m tall)

1. *Acacia boormanii* – Snowy River Wattle
   2 m x 1m
   Attractive local wattle
   Rounded attractive form
   Winter flowering – bright yellow



Snowy River Wattle in flower

2. *Acacia covenyi* - Blue Bush
   6m x 3m
   Super hardy wattle
   Frost Drought Strong wind
   Bird and bees



Acacia covenyi in flower

3. *Acacia dealbata* - Silver Wattle
   5-20 m x 5-10m
   Evergreen small tree with feathery silver-grey foliage
   Drought Frost
   Ephemeral wet periods
   Hot temperatures
   Fast growing wind break
   Birds



Acacia dealbata flower and pinnate leaves

4. *Acacia implexa* - Lightwood Wattle
   4-10m x 3-5m Small tree/large shrub with long sickle shaped phyllodes
   Frost Fire tolerant
   Drought
   Strong winds Rocky hills
   Birds and insects



Lightwood wattle open form

5. *Acacia melanoxylon* - Blackwood Wattle
   6-25m x 6-10m
   Densely foliaged upright evergreen tree
   Frost Wind Wet sites
   Drought – moderate
   Bird and insects



A large Blackwood wattle

6. *Acacia obliquinervia* - Mountain Hickory Wattle
   3-15m x 3-8m
   Small evergreen tree or large tree with dense grey foliage
   Frost Wind
   Birds and insects



Mountain Hickory Wattle form

7. *Acacia pravissima* - Ovens Wattle
   3-8m x 3-5m
   Distinctive small tree with triangular phyllodes
   Wet sites Frost
   Birds and insects



Ovens Wattle - A compact rounded wattle

8. *Acacia rubida* - Red Stem Wattle
   2-10m x 2-3m
   Erect tall shrub with bright red stems in winter
   Frost Drought
   Poor soils Rocky slopes
   Hedging/screening



Red stem wattle leaves and parrot

9. *Acacia verniciflua* - Varnish Wattle
   1-4m x 1-2m
   Attractive wattle with shiny leaves and bright yellow flowers
   Frost Drought
   Poor soils Dry areas



Vanish Wattle – a small and hardy wattle

10. *Callistemon citrinus* - Crimson Bottlebrush
    1-3m x 1-2m
    Rigid shrub with a tangled growth form but attractive in flower
    Drought Compaction
    Wet areas
    Birds and insects



Crimson Bottlebrush in flower

11. *Dodonea viscosa* - Sticky Hop Bush
    4m x 1-2m
    Attractive hardy shrub with interesting flowers and attractive foliage – also a purple form
    Drought Frost Strong winds
    Poor soils
    Birds and bees



Sticky Hop Bush flowers

12. *Grevillea rosmarinifolia* – Rosemary Grevillea
    2m x 1.5 m
    Hardy local Grevillea with many attractive cultivars
    Drought and frost tolerant



Rosemary Grevillea flower and foliage

13. *Grevillea victoriae* – Royal Grevillea
    1.5m x 1.5m
    Hardy cold climate shrub
    Attractive red flowers and good form



Royal Grevillea flowers and form.

14. *Hakea laurina* - Pincushion Tree
    5m x 4m
    Attractive small evergreen tree with textured leathery leaves and attractive flowers
    Drought Hot temperatures
    Winter flowering Feature garden tree
    Birds and insects



Stunning Pin Cushion Tree flower

15. *Olearia phloggopappa* – Alpine Daisy Bush
    1.3 m x 1m
    Open to dense shrub with greyish white foliage and clusters of white daisy flowers
    Frost hardy



Alpine Daisy Bush foliage.

16. *Tasmannia xerophila* – Alpine Pepper Bush
    1.5m. x 1.5m
    Medium sized sub-alpine shrub
    Lanceolate glossy leaves and small white flowers.
    Fruits are edible and peppery



Alpine Pepper Bush foliage and flower.

Low Shrubs (less than 1m in height)

1. *Callistemon pityoides* – Alpine Bottlebrush
    0.5 m x 1.5m
    Small, compact in habit with lemon yellow brushes.
    Hardy, cold climate heath species.



Form and flowers of Alpine Bottlebrush

2. *Callistemon subulatus* – Dwarf Bottlebrush
0.5 m x 2m
A compact shrub with arching, sometimes pendulous branches. Profuse red flower spikes to 6cm in length occurring in spring and summer.
A hardy small shrub tolerant to drought and heavy frosts.



Form and flowers of Dwarf Bottlebrush

3. *Chysocephalum semi-pappossum* – Clustered Everlasting
500mm x 300mm
Small yellow clusters of flowers that last for 6 months a year.
Foliage dies off in the winter.



Clustered Everlasting in full flower

4. *Derwentia perfoliata* – Diggers Speedwell
A small perennial shrub with a graceful arching habit, growing to a height and width of 1m. Attractive blue-grey heart-shaped foliage and prominent purple or bright blue flowers in summer. Drought and frost hardy.



Diggers Speedwell in flower

5. *Grevillea australis* - Alpine Grevillea
600mm x 400mm
Extreme hardy alpine small shrub. Frost and drought once established.
Small white flowers in the spring, foliage small and rounded or spiky.



Alpine Grevillea form

6. *Grevillea lanigera* – Wooly Grevillea
700mm x 500mm
An extremely hardy sub-alpine shrub.
Pinky red flowers



Wooly Grevillea form and flower

7. *Ozothmanus alpinus* – Alpine Everlasting
1m x 500mm
Hardy alpine shrub. Small white flowers with red bracts. Compact form.



Alpine Everlasting form and flower.

8. *Ozothamnus hookeri* – Kerosene Bush
800mm x 500mm
Hardy aromatic alpine shrub species
Scale like leaves with small white flowers



Kerosene Bush foliage and flowers.

9. *Nematolepis ovatifolia* – Ovate Phebalium
1m x 3m
Low compact, spreading alpine shrub
Small glossy leaves and small white flowers. Leaves are aromatic.



Ovate Phebalium foliage and flower.

10. *Prostanthera cuneata* – Alpine Mint Bush
    300mm x 500mm
    Compact, aromatic alpine shrub with compact glossy leaves and white trumpet flowers with a purple throat.
    Very hardy to all conditions.



Alpine Mint Bush foliage and flower.

11. *Westringia fruticosa* – Native Rosemary
    An attractive rounded shrub to 1 m with small white flowers. Drought and frost tolerant.



Native Rosemary form.

Groundcovers and Herbaceous Flowering Plants

1. *Arthropodium milleflorum* Pale Vanilla Lily
   0.3 m x 0.1m
   Grass like herbaceous native bulb with white to pink to blue flowers
   Drought Frost Full shade
   Mass planting Flower gardens



Delicate Pale Vanilla Lily

2. *Bulbine bulbosa* Chocolate Lily
   0.5-0.8m x 0.3-0.5m
   Grass like native bulb with yellow flower spikes and a chocolate fragrance
   Frost Drought – medium
   Light shade
   Mass planting –beds and borders



Chocolate Lily in flower

3. *Correa pulchella* 'Dusky Bells' Dusky Bells Correa
0.3m x 2m
Spreading groundcover with red tubular flowers
Frost Drought Part shade



Dusky Bells Correa flower and foliage

4. *Craspedia spp.(lamicola, maxgreyii)* Billy Buttons
0.3m x 0.1 -0.2 m
Summer flowering button daisy – herbaceous with a ground covering rosette and yellow to orange flowers
Frost –snow
Drought – moderate once established



Billy Button typical flower

5. *Grevillea* 'Bronze Rambler' Bronze Rambler Grevillea
0.3-0.5m x 3-5m
Hardy spreading groundcover with bronze red deeply divided foliage
Drought Frost
Difficult sites – steep, poor soils



Bronze Rambler and its spread

6. *Grevillea x guadichaudi* Gaudi Chaudi
0.1m x 5m
A hardy, fast growing groundcover that will thrive in a sunny, well drained position
Drought Frost Salt Hot winds
Steep banks



Another hardy Grevillea groundcover

7. *Grevillea rhyolitica x juniperiana* Cherry Cluster
0.5 x 0.8m
Tough but tidy groundcover with masses of red flowers
Drought Frost



Another hardy Grevillea groundcover

8. *Leucochrysum albicans* Hoary Sunray
0.2m x 0.2m
Grey foliage with a rosette form and yellow or paper daisy white flowers
Frost – snow
Part shade



Lovely white paper daisy flower of the Hoary Sunray

9. *Microseris lanceolata* – Yam Daisy
   200mm x 100mm
   Perennial herb with a yellow daisy flower
   Hardy to frost and drought once established



Wild Yam Daisy and White Paper Daisies

10. *Myoporum parvifolium* Creeping Boobialla
    0.3m x 3m
    Native groundcover with dense cover and small white flowers
    Drought Frost once established
    Slopes/banks
    Lawn substitute



Creeping Boobialla with a good 'matting' form

11. *Rhodanthe anthemoides* – Chamomile Sunray
    200mm x 200mm
    Frost tolerant showy paper daisy
    Bit sensitive to very hot temperatures



Chamomile Sunray on mass

12. *Scleranthus biflorus* Two-flowered Knawel
    0.15m x 0.8m
    Lime green tightly textured groundcover with tiny flowers
    Frost –snow
    Drought – once established
    Part shade Around ponds
    Cold drainage areas
    Between pavers



Scleranthus – native cushion plant

13. *Stylidium graminifolium* Trigger Plant
    0.3m x 0.3m
    A tufting perennial herb that looks great on mass with hot pink flower spikes
    Frost Drought – once established
    Part shade
    Bees/butterflies



Trigger plant in flower

14. *Thymus vulgaris (x citriadorus* var.) Lemon Thyme (non-native)
    0.2 x 0.8m
    Small leaved groundcover with a lemony aromatic fragrance
    Frost Drought – once established
    Borders
    Between pavers



Lemon Thyme in flower

15. *Xerochrysum bracteatum* Straw Daisy
    200mm x 150mm
    Attractive native paper daisy
    Tolerates moderate frost and drought



Straw Daisies on mass

Tussocks

1. *Dianella longifolia* Smooth Flax Lily
   0.5-1m x 03-0.5m
   Spreading tufted evergreen tussock with attractive purple flower spikes and purple fruits
   Drought Frost
   Part shade



Smooth Flax Lily mass planted

2. *Dianella revoluta* Blueberry Lily
0.3-0.4m x 0.3-0.4m
Tufted perennial with compact form with small flowers and purple fruits
Drought Frost
Part shade
Poor soils



Blueberry Lily – a good tussock to grow in amongst rocks

3. *Dianella tasmanica* Alpine Flax Lily
0.4-0.5m x 0.4m
Glossy leaved tufted perennial
Frost – snow
Shade Low light areas
Wet areas
Cold air drainage areas



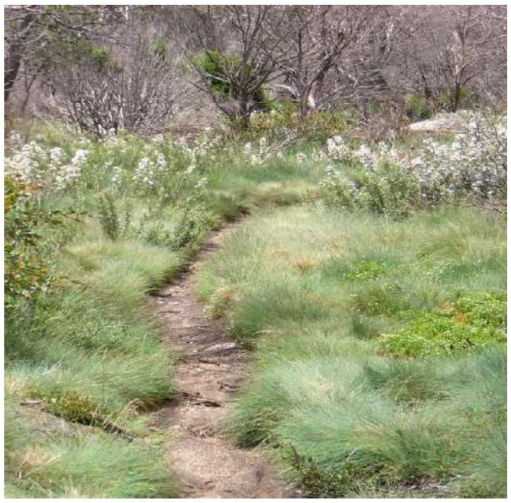
Attractive blue fruits of most Dianella species

4. *Lomandra* spp. Including L. longifolia & filiformis
   1.5m x 1m (some of the varieties are much shorter than this)
   Tufted perennial herb with a spiky brown flower - many interesting varieties
   Frost Drought Hot winds
   Filler in garden beds
   Birds and lizards



Lomandra longifolia 'Tanika' – an attractive variety

5. *Poa fawcettiae* Snow Grass
   0.5 m x 0.4m (taller with flower heads)
   Commonly blue rolled blade tussock grass with distinctive attractive tussock form
   Frost –snow Drought Part shade
   Mass planting



Snow Grass in the bush – an attractive native grass

6. *Poa labillardierei* Common Tussock Grass
1m x 600mm
A tall native tussock grass
Drought and frost tolerant
A good garden filler



Common Tussock Grass

7. *Themeda australis* Kangaroo Grass
0.3m-0.7m x 0.3m
Tufted medium size warm season grass with interesting flower heads
Drought Poor soil Frost
Exposed slopes/banks



Kangaroo Grass flower heads

Species selection for around the dam:

The dam is a great area for planting, but will need the rocks, logs etc placed and any hard infrastructure completed before planting. I have included a link to provide some advice on improving your dam area:

http://gretalandcare.org.au/wp-content/uploads/2017/09/Enhancing-Your-Farm-Dam.pdf

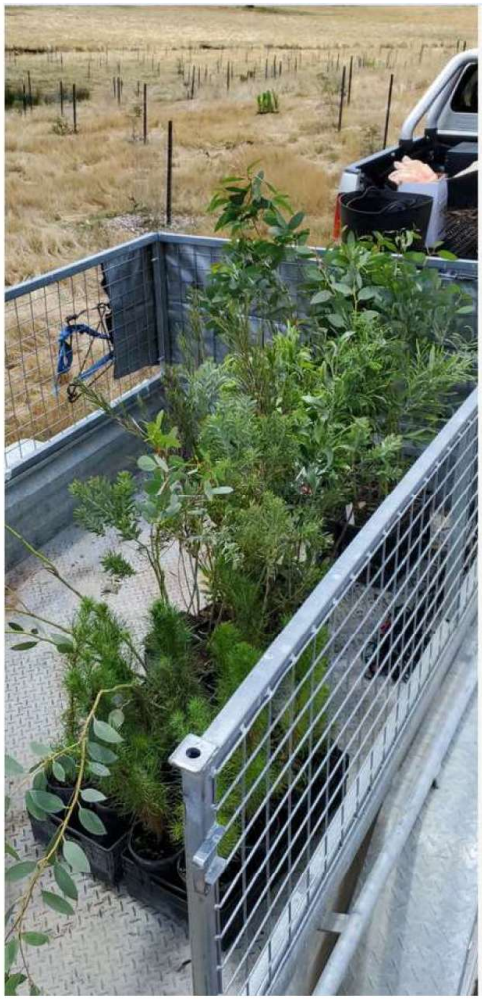
1. Tree:, Eucalyptus stellulata – Black Sallee, Eucalyptus viminalis – Manna Gum, Casuarina cunninhamiana – River Casuarina

2. Shrubs – Acacia dealbata – Silver Wattle, Acacia melanoxylon – Blackwood Wattle, Callistemon sieberi – Lemon Bottlebrush, Leptospermum myrtifolium/grandiflorum – Myrtle Tea Tree

3. Lower species: Carex appressa – Saw Sedge, Carex guadicaudiana – Fen Sedge, Juncus Spp. – Native Rushes, Poa costininana – Prickly Snow Grass, Pratia pedunculata - Mud Pratia, Nymphaea spp. – Water Lilies.

Photographs of planting - Josh Leitner Chongs Road, Jindabyne





Local provenance tubestock for planting



Onsite plantings



Onsite plantings



Guards used to protect plantings



Weed control

2021 – 1 March

From: Sarah Brown <sarah.brown@snowymonaro.nsw.gov.au>
To: 'Josh Leitner' <jgroupplumbing@yahoo.com>
Sent: Monday, 1 March 2021 at 12:04:56 pm AEDT
Subject: RE: Dam construction @92 Chongs Rd

Hi Josh,

Thank you for your email.

Snowy Monaro Regional council does not require a DA for the works you describe below.

Please note that you will need to meet any requirements from the Natural Resource Access Regulator.

And ensure that there is sufficient erosion and sediment control.

Additionally, if you propose to remove any trees a tree permit will be require.

I have attached the application to this email.

Regards,

Sarah

Sarah Brown
Town Planner

SNOWY MONARO
REGIONAL COUNCIL

Buckley's Rural Services Pty Ltd

Tax Invoice To
Josh Leitner Chongs Rd Jindabyne NSW 2627

Highland Grange
Kosciuszko Rd
JINDABYNE NSW 2627

Jim's Mobile 0407 926 752
Clare's Mobile 0407 535 720
E-mail: buckleysrural@outlook.com

Tax Invoice

Date	Terms	Due Date	Tax Invoice #
11/01/2021	Net 7 Days.	18/01/2021	4657

Description	Qty	U/M	Rate	TAX Amt	Amount
Spot spraying Serrated Tussock at Chongs Rd - Jindabyne as requested			0.00	0.00	0.00
Unit with two operators	35	hr	150.00	477.27	5,250.00
Taskforce	12	l	29.70	32.40	356.40
Glyphosate	20	l	9.68	17.60	193.60
Herbi-Dye	5.4	l	30.00	14.73	162.00
Wetter	4	l	8.50	3.09	34.00

Buckley's Rural Services Pty Ltd would like to thank you for your business. Regards Jim Buckley

Subtotal	$5,450.91
Tax	$545.09
Total	**$5,996.00**
Payments/Credits	$0.00
Balance Due	$5,996.00

ABN	15 079 960 268

For Direct Credit Payments
BSB: 032 720
Account: 115 435

Please email payment date to:
buckleysrural@outlook.com

ALPINE FOREST ESTABLISHMENT
PTY LIMITED
168 Gunningrah Road
BOMBALA, NSW 2632
PH: 02 64584096
0409584096

Tax Invoice

Tax Date	Invoice No.
20/01/2023	4809

Invoice To
Josh Blyton 0448123090 jgroupplumbing@yahoo.com

P.O. Number	Terms	Project
	Due on receipt	

Description	Qty	Price	TAX	TAX AMT	Amount
pine trees 140mm	20	5.00	GST	10.00	100.00
snowgums 90mm	30	6.00	GST	18.00	180.00
alpine ash 70mm	30	5.00	GST	15.00	150.00
shrubs 90mm	5	6.00	GST	3.00	30.00
shrubs 70mm	20	6.00	GST	12.00	120.00
shrubs 50mm	15	4.00	GST	6.00	60.00

Tax Summary
GST 64.00;

Subtotal	$640.00
Tax	$64.00
Total	$704.00

PLEASE DEPOSIT MONEY INTO THE FOLLOWING ACCOUNT: BSB:142001 ACC;176517825

Company Business Number	71 105 483 501

Yass Outdoor Power Centre

PH: 02-62261648
FAX: 02-62263120
customerservice@yopc.com.au

Tax Invoice

230 Comur St
Yass NSW 2582
www.yopc.com.au

ABN: 20 120 [illegible]4

PAID

Invoice To

Josh Leitner
PO Box 795
Waverley NSW 2024

Date	10/01/2024
Tax Invoice	525727
P.O. No.	
Terms	COD

Due Date	**24/01/2024**

Item	Description	Qty	Price	Total Inc...
SGA85	STIHL SGA85 - CORDLESS SPRAYER Serial #973812420	1	699.00	699.00
E.F.T.	E.F.T. Tendered			-699.00
	To be picked up by family...			

Payment Options
Direct Deposit to: ANZ
BSB 012-955
Acc No 5302-79731

Thank you for supporting Yass Outdoor Power Centre. We really do appreciate your business.

Subtotal excl G.S.T	-$63.55
Total	$0.00
Payments/Credits	$0.00
Balance Due	**$0.00**



Alpine Flora

TAX INVOICE

Date: February 13, 2021
INVOICE # 252

To: **Josh Leitner**
J Group Plumbing Pty Ltd
92 Chongs Rd
Jindabyne NSW 2627

Liz MacPhee
Alpine Flora
37 Banjo Paterson
Crescent Jindabyne NSW
2627
0456416101
ABN: 40445767440

Description: Planting and Species Advice – 92 Chongs Rd	**Line Total**	**GST**
6/2/21 - Site Visit: 1hr @	$100	$10
12&13/2/21 Planting and Species Advice Documentation: 4hrs@	$400	$40
	Total (GST inclusive):	**$550**

Thank you for your business, I appreciate it.

Please make cheques payable to: Elizabeth MacPhee – Alpine Flora
OR
Direct Debit to:
Elizabeth MacPhee
Commonwealth Bank
BSB: 06 3546
Account Number: 10016286

Forestry Tools

TAX INVOICE

26612

Issue Date Dec. 27, 2023

Forestry Tools
13/28 Barcoo Street
Roseville NSW 2069
Australia

ABN: 19 812 721 629

Invoice to

josh leitner
2-4 Curtis Street
9
Caringbah NSW 2229
Australia

Email:
jgroupplumbing@yahoo.com
Phone: +61448123090

Shipping Address

josh leitner
25 Anniversary Street
Botany NSW 2019
Australia

Email:
jgroupplumbing@yahoo.com
Phone: +61448123090

Payment Method Credit Card
Order Number #26612

ITEM	DESCRIPTION	QUANTITY	UNIT PRICE INC GST	GST	TAX AMOUNT	TOTAL
Bushpro Speed Spade	SKU: 859	1	120.00	10%	$10.91	$120.00
Hamilton Tree Planter - Forestry Tube	SKU: 623	1	180.00	10%	$16.36	$180.00
Hamilton Tree Planter - Super Forestry Tube	SKU: 855	1	200.00	10%	$18.18	$200.00
	Standard Shipping (Order value $200+)		17.00	10%	$1.55	$17.00

SUBTOTAL	$517.00
TOTAL EXCL. GST	$470.00
GST 10%	$47.00
TOTAL INCL. GST	$517.00
AMOUNT PAID	$517.00
AMOUNT DUE	**$0.00**

Thank you for your order.

Forestry Tools
phone 02 9417 7751
fax 02 9417 7426

email Info@forestrytools.com.au
website www.forestrytools.com.au

RAMSGATE MOWER & CHAINSAW SERVICE

1/165 TAREN POINT RD,
CARINGBAH NSW 2229
PHONE 02 9525 8536

EMAIL sales@mowtown.com.au

Tax Invoice

Invoice #: 00076097

A.B.N. 82 074 588 622
A.C.N. 074 588 622

Bill To: J GROUP PLUMBING
25 ANNIVERSARY ST
BOTANY NSW 2019

Ship To: J GROUP PLUMBING
25 ANNIVERSARY ST
BOTANY NSW 2019

WE DO IT RIGHT
THE FIRST TIME

Purchase Order Number

Net EOM 21/12/2023

Chartell Pty Ltd
BSB: 112 879 Acc No: 470576848

QTY.	ITEM NO.	DESCRIPTION	PRICE	UNIT	DISC %	
1	SGA 85	SGA 85 SPRAYER SER NO:972920061	$699.00	EA		$699.00
2	AP300S	AP300S BATTERY SER NO:915758119 & 915758115	$329.00	EA		$658.00
1	AL500	STIHL BATTERY CHARGER SER NO: 986481119	$249.00	EA		$249.00

COMMENT

CODE GST 10% RATE $146.00 GST $1,460.00 SALE AMOUNT

	$1,606.00
	$0.00
GST	$146.00
TOTAL	$1,606.00
PAID TODAY	$1,606.00
BALANCE DUE	$0.00

1/ GOODS TO BE PAID IN FULL UPON RECEIPT
2/ QUOTATION REQUESTS ON REPAIRS IS $49.50 PAID UPFRONT
3/ SHOULD REPAIRS BE OVER 60%OF NEW REPLACEMENT MODEL REPAIR SHALL BE STOPPED
4 / $39 PER DAY STORAGE 14 DAYS AFTER NOTIFICATION

"Sugarloaf Creek Paddock"

Lot 2 Chongs Road, Beloka NSW 2627

- Located only 10 minute's SSE of Jindabyne.
- 43 HA or 108 Acres (approx.) of pristine high country.
- Outstanding mountain views!
- Predominantly granite derived soils as well as some basalt.
- Scattered stands of Snowgums, Whitegums, Black Sallys and Mannagum.
- Watered by Sugarloaf Creek plus dam.
- Building entitlement plus mains power available, fully fenced, Chongs road frontage.

CONTACT: Nick Kirshner
P: 02 6456 6783
E: nick@nickkirshner.com.au
W: nickkirshner.com.au

INSPECT: By Appointment with Exclusive Agent Only

NICK KIRSHNER
Property & Livestock

The above information has been furnished to us by third parties, namely the vendors or vendor's representatives. We have not verified whether or not the information is accurate and do not have a belief one way or the other in regard to its accuracy. We do not accept any responsibility to any person for its accuracy and do not do more than pass it on. All interested parties should make, and rely upon, their own enquiries as to whether or not this information is in fact accurate.

"Sugarloaf Creek Paddock"
Lot 2 Chongs Road, Beloka NSW 2627
43 Hectares or 108 Acres Approx.
AGENTS COMMENTS:
One of the most desirable rural small holdings close to Jindabyne, with reliable water, breathtaking main range and district views, building entitlement plus mains power available at the boundary! Perfectly suited for small rural livestock enterprise, build your dream home, in a blue ribbon location held in the same family for over 100 years!

NICK KIRSHNER
Property & Livestock

Thank you for inspecting the property

On behalf of Nick Kirshner Property & Livestock and our vendors, we would like to thank you for making an appointment to view the property or attending our "open house" today. May we ask that you consider our vendors home and property by taking all due care during your inspection today.

As required by legislation and as part of our service, we will require your full name and contact details. We will then contact you in the coming week to ascertain your comments on this property and to service your real estate needs.

Whether you are visiting this property as a buyer, seller, real estate agent, neighbour or are a person just evaluating the market, we are appreciative and interested in your comments and feedback.

Whatever area you maybe researching, please allow us the opportunity to offer you assistance with our total solution management.

Our services include (but is not limited to)

- Complete buyer services (residential & rural)
- Complete seller services (residential & rural)
- Property management services (holiday and permanent)
- Contract auctioneering (on-site auctions, in-room auctions, clearance sales & stock auctions)
- Buying and selling livestock (sheep, cattle, goats, horses, working dogs and more)
- Rural contracting (fencing, mustering, drenching, firewood deliveries, lamb & calf marking & more)
- Referral network

Finding the right property can sometimes be a frustrating and exhausting experience and if you have not been able to locate a property that suits your requirements, please advise us of your specific needs and budget and we will do our best to assist you.

We also invite you to join our numerous databases to be kept informed.

Once again, thank you for inspecting this property or attending our "open for inspection".

Kind Regards

NICK KIRSHNER Property & Livestock

Nick Kirshner & Desleigh McMahon

PRIVACY ACKNOWLEDGEMENT

By leaving your details with NICK KIRSHNER Property & Livestock, you acknowledge that we collect personal information and you consent to such information being taken for the purpose of providing services to you. You have the right to request access to personal information collected by us and you also have the right to be removed from our databases.

NICK KIRSHNER Property & Livestock
A | 156 Matong Road, Dalgety NSW 2628 | P 64566783 | F 64566784 | E info@nickkirshner.com.au | W nickkirshner.com.au

NICK KIRSHNER
Property & Livestock

"Sugarloaf Creek Paddock"

Lot 2, Chongs Road, Beloka (Jindabyne), NSW 2627

Agent	**NICK KIRSHNER Property & Livestock** 156 Matong Road, Dalgety NSW 2628 **P** (02) 64566783 | **F** (02) 64566784 **E** nick@nickkirshner.com.au | **W** nickkirshner.com.au
Solicitor	**Colin Dunston RFD BA LLB – Solicitor and Notary** **Ref: Colin Dunston** Level 11, 65 York Street Sydney NSW 2000 PO BOX 228, Killara NSW 2071 **P** (02) 9188 9621 | **M** 0403 918 452 | **E** colin@dunstonsolicitor.com.au
Address	**Lot 2, Chongs Road,** Beloka NSW 2627
Legal Description	Lot 2, Plan DP1232872 and Lots 25, 26, Plan DP756672
Land Size	Approximately 43 Hectares | 108 Acres
Elevation	Approximately 1200m highest point
Council Rates	Approximately $1,500 per annum
How To Buy	**ASKING PRICE | $495,000**

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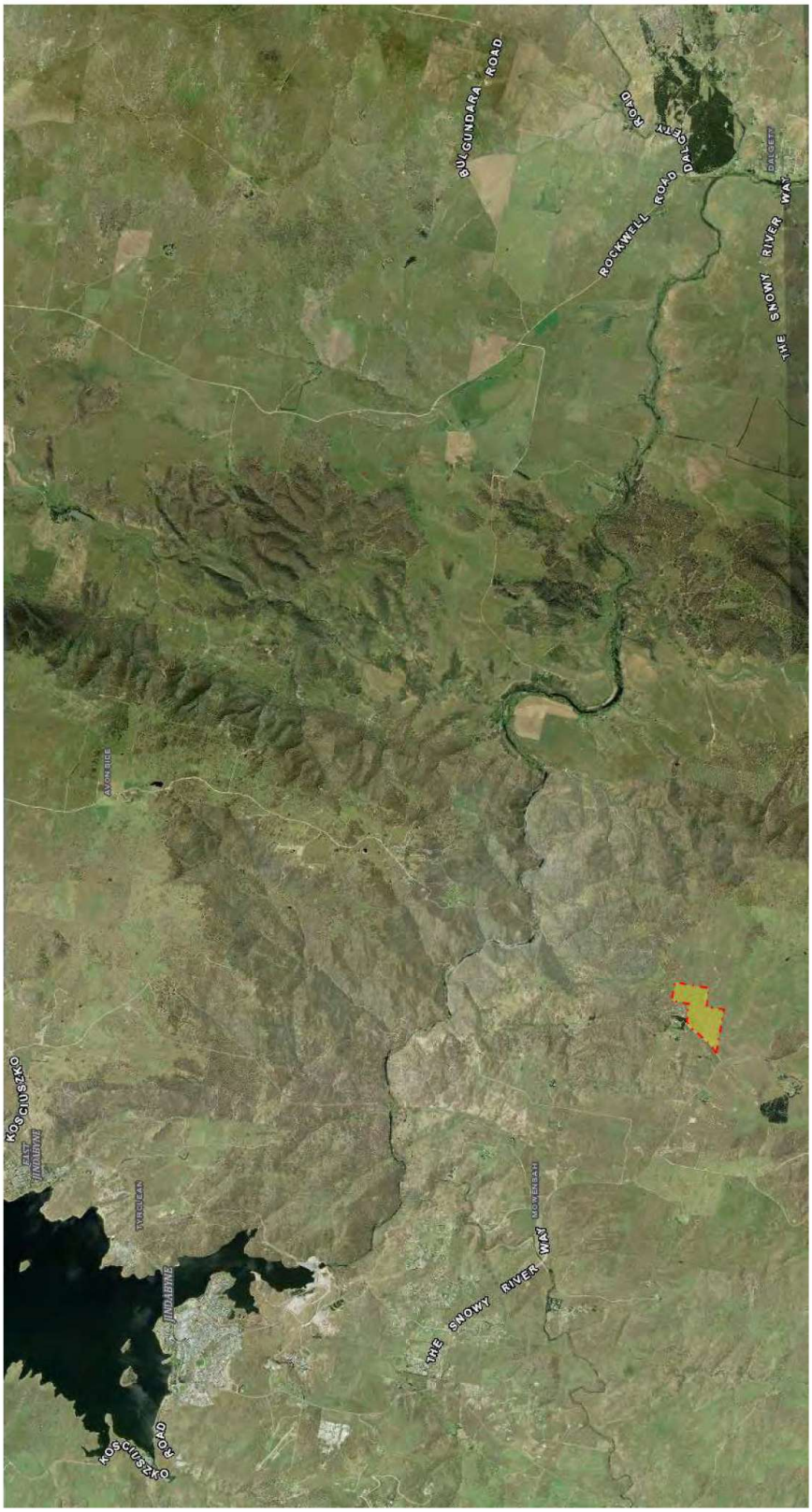
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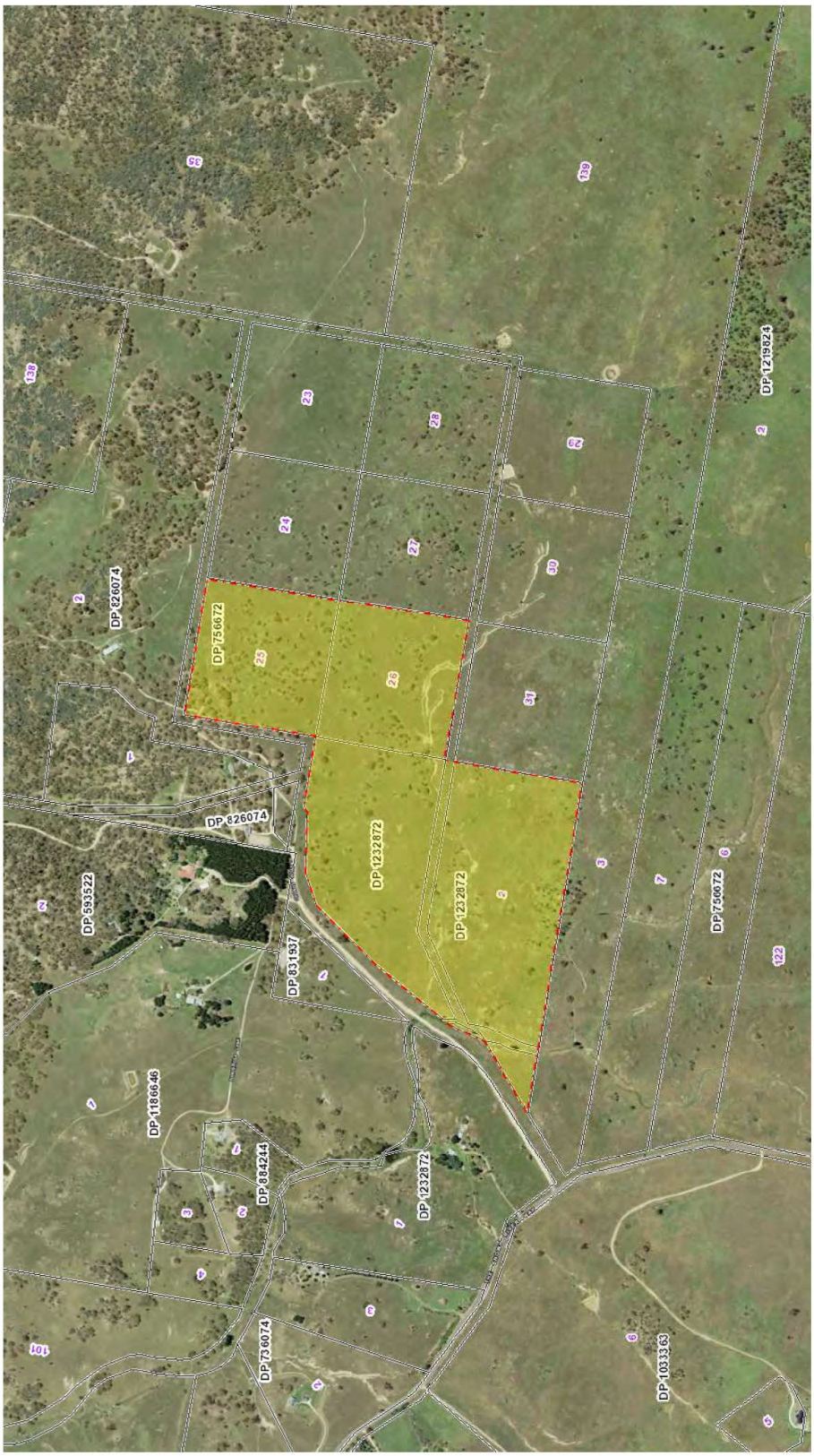
ROCKWELL ROAD
THE SNOWY RIVER WAY
KOSCIUSZKO ROAD
JINDABYNE
THE SNOWY RIVER WAY
KOSCIUSZKO ROAD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DP 756672
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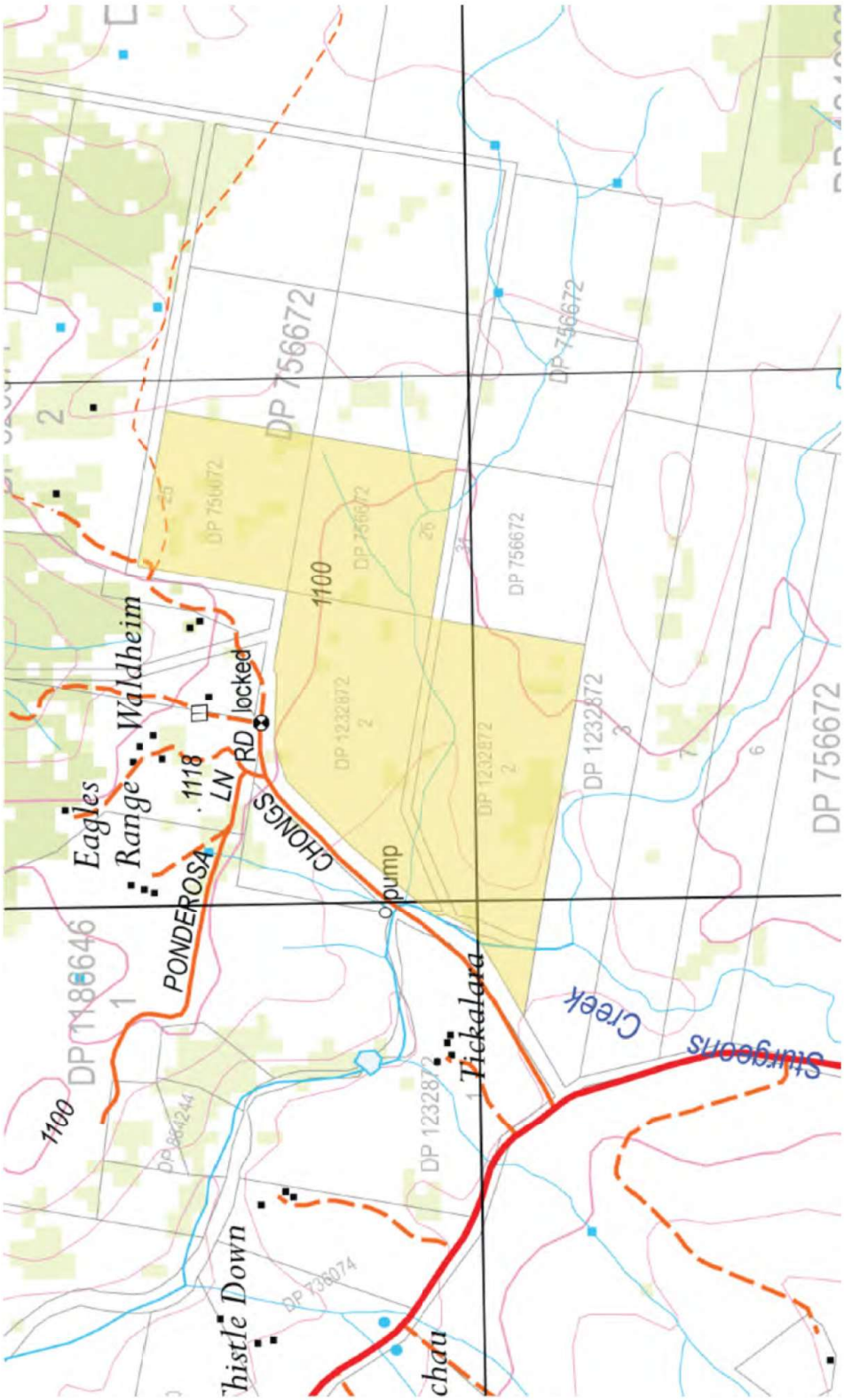
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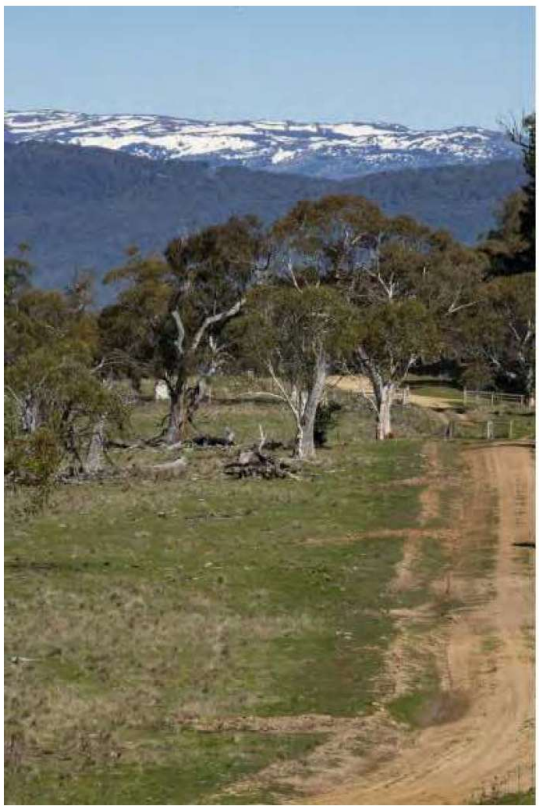
CHOHOS ROAD
PONDEROSA LANE
NSW

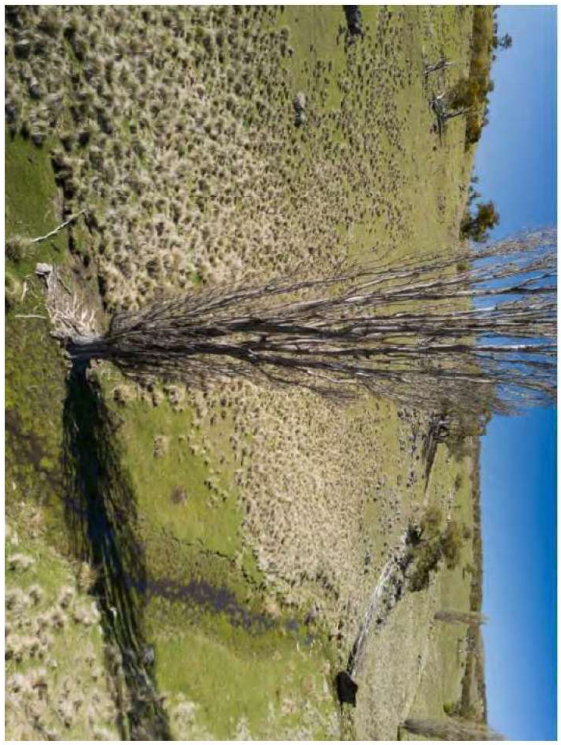


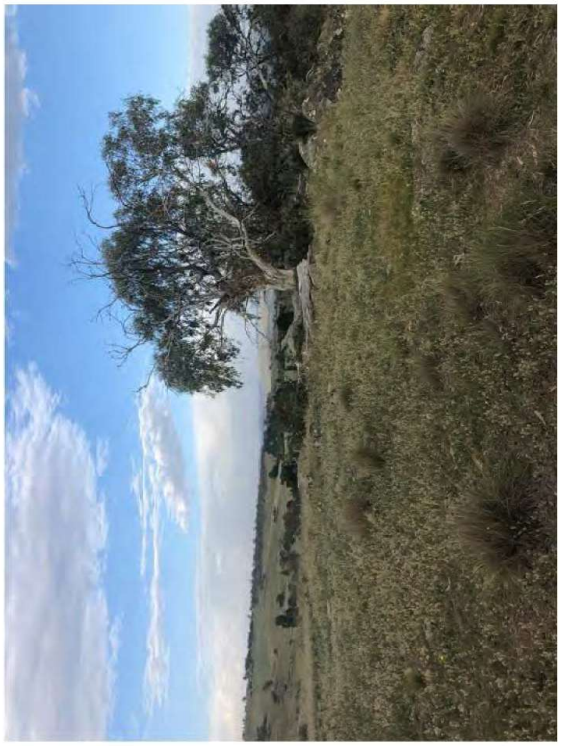






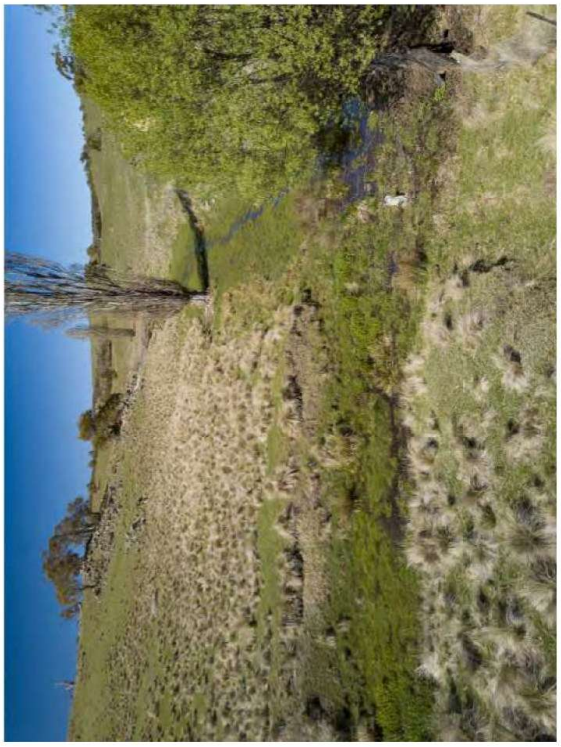












SOME OTHER LOCAL RURAL SALES



Lot 6 & 122, The Snowy River Way, Jindabyne
Approx. 44.5 Hectares or 110 Acres
Sold $485,000 | $4,409 per acre | August 2018
Fully Fenced | Spectacular high country | Rural block with building entitlement.



"Tin Mine Paddock" Cnr Chongs Road & Snowy River Way, Jindabyne
Approx. 50 Hectares or 123 Acres
Sold $520,000 | $4,227 per acre | July 2018
Fully Fenced | Well-watered | Spectacular high country | Rural block



Proposed Lot 4 in subdivision of Lot 1,2,3,4,5,6 of DP 111268 | Parish Mowamba
Approx. 22 Hectares or 56 Acres
Sold $660,000 | $11,785 per acre | May 2018
Fronting the Moonbah river | un-fenced



Proposed Lot 6 in Lot 2 DP 1192512 | Part 7223 The Snowy River Way, Jindabyne
Approx. 40 Hectares or 100 Acres
Sold $500,000 | $5,000 per acre | Jan 2018
Spring | Fully Fenced | Distant View of Snowy Mountains



Lot 2 DP 1113665 | Part 7223 The Snowy River Way, Jindabyne
Approx. 15 Hectares or 37 Acres
Sold $300,000 | $8,108 per acre | Jan 2018
Water | Fully Fenced | Shearing shed, overhead gear, old engine, 2 x shearings stands & 1 x Koerstz wool press | Distant View of Snowy Mountains



Lot 2 DP 1161347 | Old Settlers Road
Approx. 40.08 Hectares or 100 Acres
Sold $525,000 | $5,250 per acre | Aug 2017
Sold $569,550 | $5,695 per acre |Aug 2018
Fully Fenced | Relocatable container cabin with solar power & gas | Distant View of Lake & Snowy Mountains

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Lot 29 DP1224392 | 7731 The Snowy River Way
Approx. 40.03 Hectares or 100 Acres
Sold $439,000 | $4,390 per acre | July 2017
Water | Fully Fenced



Lot 24 DP1207138 | Snowy River Way
Approx. 41.85 Hectares or 103 Acres
Sold $410,000 | $3,980 per acre | May 2017
Water | Fully Fenced



Part 785 | Alpine Way, Crackenback
Approx. 40.73 Hectares or 100 Acres
Sold $425,000 | $4,250 per acre | July 2017
Water | Fully Fenced | Distant View of Snowy Mountains

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NICK KIRSHNER
Property & Livestock

Private Treaty Contract Request

Should you require a copy of the contract, please contact the office on 64566783 or info@nickkirshner.com.au to request a copy of the contract to be forwarded to your solicitor, conveyancer or yourself.

Please keep in mind that the contract is a draft contract and as such is subject to change at any time leading up to an exchange, (after an offer has been submitted and accepted) and accordingly all interested parties are advised to check for any changes before the exchange of contracts.

We also recommend that any interested parties obtain independent building, pest and other reports deemed necessary or required and that you have physically inspected the property.

We would also highly recommend that you have a solicitor review the contract on your behalf.

We have copied the trust account details below for payment of the deposit for your convenience.

Westpac bank| Jindabyne | Nick Kirshner Property & Livestock Trust Account
BSB 032728 | Ac 196874

If you could also please advise who your nominated solicitor or legal representative is in case, we need to liaise or update them in your absence.

Should you require anything further please contact the office on 6456 6783 or info@nickkirshner.com.au otherwise please feel free to contact Nick Kirshner direct on 0416 287 829.

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Peninsula Property Partners Pty Ltd T/as Nick Kirshner Property & Livestock, ABN 48096252729
A 156 Matong Road, Dalgety NSW 2628 | P (02) 64566783 | F (02) 64566784 | M 0416 287 829 | 0410 453 961
E info@nickkirshner.com.au | W nickkirshner.com.au

Appendix 1b
Email from Snowy Monaro Regional Council's Biosecurity Officer dated 11 July 2024.

On Thursday, July 11, 2024, 2:06 PM, Emily Griffin <Emily.Griffin@snowymonaro.> wrote:

Hi Josh,

As advised on the phone I found three of the higher priority widespread weeds on your place, these being African lovegrass (ALG) , serrated tussock (ST), and St John's wort (SJW). The ST and SJW are widespread across the property varying from lightly scattered to denser patches. The ALG is so far limited to a small number of patches with very occasional individual scattered plants. Have a look at the attached map for the approximate locations of the patches of ALG. The aerial imagery is pretty old but hopefully you can figure out where they are from the map. The most north-east patch is straight ahead of you when you come over the causeway among the higher rocky ground. I've also attached a couple of photos I took nearby recently that show what it looks like in a dense patch (note the masses of fine seedheads and orangey-beige colour) and as a single plant (note the curly leaf tips). Over summer it has a greyish green colour and the seedheads are very dark purple, almost black in appearance. They start out with an almost spearlike shape, opening up into the Christmas tree shape as they mature.

Given the small amount of lovegrass present and it's invasiveness and flammability, I recommend making this your number one priority to prevent further spread and establishment across the property. It's mostly growing in the dryer rocky outcrops so the best option would be spot spraying using either glyphosate, flupropanate, or a combination of the two depending on time of year (see https://weeds.dpi.nsw.gov.au/ for rates). It could also be beneficial to hand broadcast some native grass seed in these areas to provide a bit of extra competition. As a long-term strategy, these areas would also be ideal for revegetation or natural regeneration as the grass cover is going to be naturally lighter and therefore more prone to weed invasion, and they already contain remnant vegetation. One thing to be particularly aware of with African lovegrass is that the small seeds are easily transported on vehicles so be careful not to drive through it as this is likely to spread it around the property.

One of the best strategies you can use for all weed species is to maintain good farm hygiene. Limit vehicle movements to tracks, monitor tracks and parking areas for new species, take care in sourcing materials such as mulch or topsoil to make sure it isn't contaminated with weed seeds etc. The other key factor is to maintain good ground cover – weeds love bare ground so any disturbance (eg graders) or high grazing pressure (including from roos and ferals, not just domestic stock) that reduces ground cover can lead to negative impacts. Well managed grazing can be a useful tool in weed management but in your situation I'd suggest the main issue will be deer so anything you can do to control their numbers will help. Deer proof fencing is a bit of an investment but it can be worthwhile in the long term and would also help protect any plants you put in as part of a reveg program – let me know if you want more info on fence design because I've seen a lot of examples of what works well and what doesn't!

Other than these strategies, other possible approaches for the ST and SJW are:

Serrated tussock: slash to prevent seed set and open up the groundcover canopy to allow better competition from other species. It won't kill the plants but it can be a useful technique to reduce seed production while you concentrate on spraying or chipping plants in non-slashable areas. Slashing in late autumn or winter will also make it much easier to spot the ST plants so you can control them – it grows more slowly over the cooler months but it will continue growing and take off earlier in spring than most other species. As with ALG, you can spot spray it with Glyphosate, Flupropanate, or a mix of the two. Boom spraying with flupropanate is also effective but be careful of the rate you use – the lowest label rate is 1.5 L/ha but even at that rate it can knock back the natives a bit (you might find this an interesting read: https://serratedtussock.com/)It can also be worthwhile getting soil testing done and spreading fertilizer, gypsum etc depending on the needs – by increasing the competitiveness of the other grasses you'll find you have fewer serrated tussock seedlings in future years – it's tolerant of dry, shallow, acidic soils and can grow where other species struggle, but the seedlings

aren't very competitive. Most seed also germinate in the first few years after which they quickly lose viability, so if you make a concerted effort to control the adult plants for a few years and build up ground cover, you should notice a significant reduction in plants after 4 or 5 years. Chipping plants out is another option if you're wanting to limit chemical use and unlike spraying, it can be done any time of years, but it takes a fair bit of effort so on a block the size of yours it wouldn't be an efficient strategy on its own. It also doesn't grow very densely under shrubs and trees so shading it out is a potential long-term strategy – there'll still be some plants that need to be controlled but not as many.

St John's wort: as with ST, slashing can be used to minimise seed set however be aware than it can encourage suckering. Manual control isn't very effective except for very small patches because it has a tough crown and spreads via runners – if a small part gets left in the ground it'll just regrow. The best option for you would probably be to spray it with a selective herbicide or mix (see https://weeds.dpi.nsw.gov.au/). The most common practice is to mix a herbicide containing triclopyr and picloram with metsulfuron-methyl. Because of the way SJW grows, you want a slow kill so the chemical gets throughout the whole plant system so go easy when you're spraying it – most people tend to over-apply when spot spraying. I've observed that if you come back two weeks after spraying and it's totally brown and dead, you've hit it a bit hard. It should just be starting to turn brown around the edges at this point.

If this hasn't been enough reading for you, have a look at the following links. Good luck with it all and please reach out if you have any other questions.

Preparing a Whole of Property Weed Management Plan - great document to get you thinking about a long term approach that'll give you the most bang for your buck
https://www.lls.nsw.gov.au/__

Rural Living Handbook - A guide for rural landholders
https://www.lls.nsw.gov.au/__

Good overview of a wide range of weed management techniques
https://

Gully Erosion Assessment and Control Guide
https://www.lls.nsw.gov.au/__

ANU Sustainable Lands - info on topics including establishing shelterbelts and riparian restoration
https://www.sustainablefarms.

Mulloon Institute - landscape rehydration, erosion and sediment control via leaky weirs
https://themullooninstitute.

Biodiversity Conservation Trust – they have various grants available that can be used towards fencing, weed control etc.
https://www.bct.nsw.gov.au/

Local native plant nurseries
https://www. and http://

Saving Soil – a more in depth resource on managing erosion
https://www.dpi.nsw.gov.au/__

An good case study of a property using regenerative practices. While there are big differences in soils/livestock etc between them and you, the principles are still applicable.
https://soilsforlife.org.au/

Kind regards,

Emily Griffin
Biosecurity Officer

PO Box 714
COOMA NSW 2630

Direct (02) 6451 1357
Phone 1300 345 345
Fax (02) 6456 3337
snowymonaro.nsw.gov.au

Think of the environment, please don't print this email unless you really need to

Snowy Monaro Regional Council acknowledges the Traditional Custodians of the region's land and water: the Ngarigo, Walgalu, Southern Ngunnawal and Bidawal Peoples. We pay our respects to Elders past, present and emerging.

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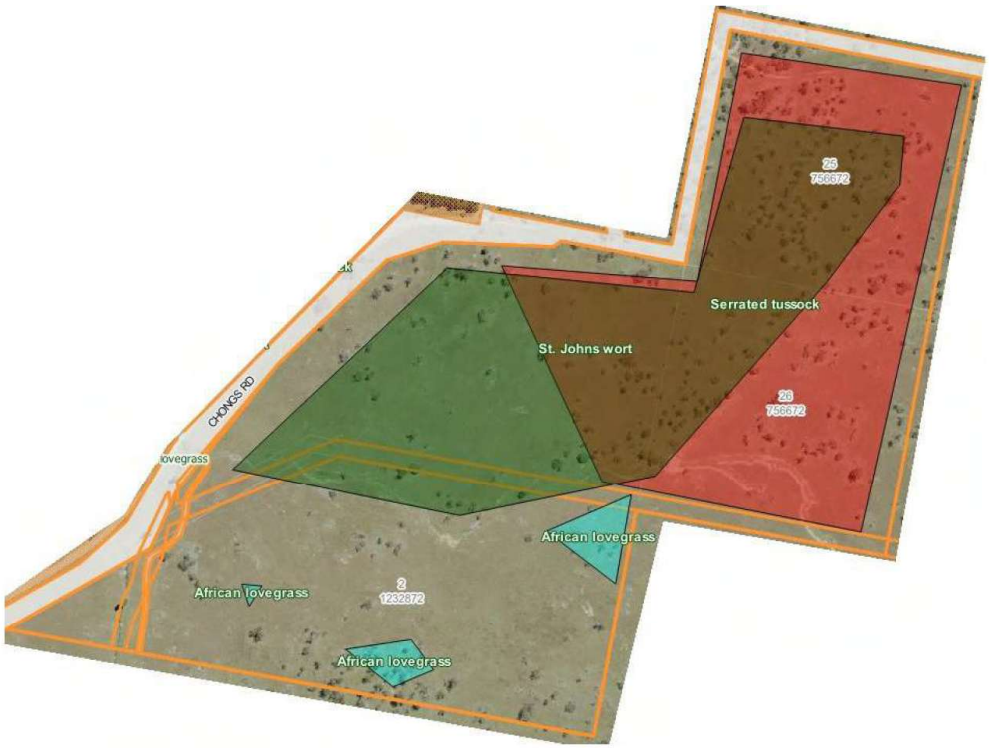




Dense African Love Grass in winter 2024



African Love Grass in winter 2024

Appendix 2a.
Photographic record of sampling locations

Photographic record of sampling locations
Plot 1

Plot 1 – 0 m on tape facing west

Plot 1 – 20 m on tape facing east



Plot 1 - 50 m on tape facing east

Plot 2



Plot 2 - 0 m on tape facing east



Plot 2 – 50 m on tape facing west

Plot 3



Plot 3 – 0 m on tape facing west



Plot 3 – 20 m on tape facing east



Plot 3 – 50 m on tape facing east

Plot 4



Plot 4 – 0 m on tape facing south west



Plot 4 – 20 m on tape facing north east



Plot 4 – 50 m on tape facing north east

Plot 5



Plot 5 – 0 m on tape facing north



Plot 5 – 20 m on tape facing south



Plot 5 – 50 m on tape facing south

Plot 6



Plot 6 – 0 m on tape facing north



Plot 6 – 20 m on tape facing south



Plot 6 – 50 m on tape facing south

Plot 7



Plot 7 – 0 m on tape facing south east



Plot 7 – 20 m on tape facing north west



Plot 7 – 50 m on tape facing north west

Plot 8



Plot 8 – 0 m on tape facing north



Plot 8 – 20 m on tape facing south



Plot 8 – 50 m on tape facing south

Spot A



Spot A – Watercress along a drainage line

Appendix 2b.
Photographic record of native and weed species present

Photographic record of native and weed species present

Bossiaea buxifolia

***Calotis glandulosa* (Plot 5)**

Ajuga australis

Calotis glandulosa

Anne Clements & Associates Pty Limited

Chrysocephalum semipapposum

Cynoglossum australe

Calotis scabiosifolia

Convolvulus angustissimus

***Eucalyptus rubida* (Plot 2)**

***Eucalyptus rubida* (Plot 2)**

Eucalyptus pauciflora

Eucalyptus rubida

***Eucalyptus rubida* (coppicing leaves)**

Eucalyptus stellulata

***Eucalyptus rubida* (bark)**

Eucalyptus stellulata



***Geranium (?)potentilloides* (Plot 5)**



Geranium solanderi



***Eucalyptus stellulata* (buds)**



***Geranium solanderi* (Plot 5)**

Grona varians

Melicytus angustifolius subsp. divaricatus

Goodenia paniculata

Leptorhynchos squamatus



Oxalis exilis



Polygala japonica



***Oxalis exilis* (large yellow flowers)**



***Oxylobium oxylobioides* (Plot 5)**

Anne Clements & Associates Pty Limited

Poranthera microphylla

***Scleranthus biflorus*, *Anthropodium sp A* (now *Anthropodium* sp Snowy R. catchment)**

Poranthera microphylla

Schoenus apogon



Solenogyne gunnii



***Swainsona behriana* (near Plot 6)**



Solenogyne gunnii



Swainsona behriana

***Swainsona behriana* (Plot 3)**

***Vittadinia gracilis* (white flowered form)**

***Swainsona behriana* (near Plot 6)**

***Vittadinia gracilis* (white flowered form) (Plot 2)**

Anne Clements & Associates Pty Limited



***Vittadinia gracilis* (violet flowered form) (Plot 2)**



Vittadinia muelleri



***Vittadinia gracilis* (violet flowered form) (Plot 2)**



Vittadinia gracilis

Anne Clements & Associates Pty Limited

***Xerochrysum apiculatum* (Plot 5)**

Wahlenbergia gracilis

***Wahlenbergia communis* (Plot 3)**

Photographic record of weed species present



***Bromus hordeaceus* (Exotic pasture grass)**



***Echium vulgare* (Weed)**



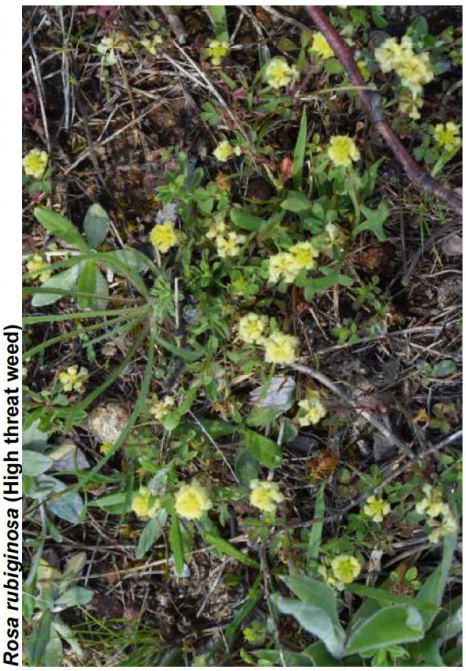
***Erodium cicutarium* (Weed)**



***Erodium cicutarium* (Weed)**



***Rosa rubiginosa* (High threat weed)**



***Trifolium campestre* (annual herb - weed)**



***Hypericum perforatum* (High threat weed)**



***Rosa rubiginosa* (High threat weed)**



***Nassella trichotoma* - Serrated Tussock (High threat weed)**

Appendix 3.
Narla Environmental (2023) survey data

Appendix A. Flora species identified within the Subject Site.

Scientific Name	Canopy	Mid-Story	Ground
Acacia dealbata		x	
Acaena novae-zelandiae			x
*Anagallis arvensis**			x
Asperula conferta			x
*Bromus diandrus**			x
Carduus nutans subsp. *Nutans**			x
Chrysocephalum apiculatum			x
*Cirsium vulgare**			x
Convolvulus erubescens			x
Cymbonotus lawsonianus			x
*Cynodon dactylon**			x
*Cyperus eragrostis**			x
*Cyperus gracilis**			x
*Dactylis glomerata**			x
Dichondra repens			x
Discaria pubescens		x	
*Echium vulgare**			x
Einadia nutans			x
Elymus scaber			x
Eragrostis brownii			x
Eragrostis spp.			x
*Erigeron bonariensis**			x
Eucalyptus dalrympleana	x		
Eucalyptus pauciflora	x		
Eucalyptus stellulata	x		
Euchiton involucratus			x
Galium spp.			x
*Gamochaeta purpurea**			x
Geranium antrorsum			x
Glycine spp.			x
Gonocarpus tetragynus			x
*Holcus lanatus**			x
*Hypericum perforatum***			x
*Hypochaeris radicata**			x
*Juncus acutus**			x
Lepidium spp.			x
Leptorhynchos squamatus			x
*Lolium multiflorum**			x
*Medicago spp.**			x
Melicytus angustifolius subsp. divaricatus			x
Microlaena stipoides			x
*Nassella trichotoma***			x
Oxalis perennans			x
*Plantago lanceolata**			x

Scientific Name	Canopy	Mid-Story	Ground
*Plantago spp.**			x
Poa sieberiana			x
*Rosa rubiginosa***			x
Rytidosperma pilosum			x
Rytidosperma spp.			x
Schoenus apogon			x
Senecio quadridentatus			x
*Taraxacum officinale**			x
Themeda triandra			x
*Trifolium arvense**			x
*Trifolium repens**			x
*Verbascum thapsus**			x
Vittadinia gracilis			x
*Vulpia bromoides**			x

** Denotes exotic species*
*** Denotes Priority Weed*

Appendix B. Fauna species identified within and surrounding the Subject Land.

Class	Scientific Name	Common Name	Status
Aves	*Dacelo novaeguineae*	Laughing Kookaburra	Protected in NSW
	Falco peregrinus	Peregrine Falcon	
	Hirundo neoxena	Welcome Swallow	
	Platycercus elegans	Crimson Rosella	
	Platycercus eximius	Eastern Rosella	
	Pardalotus striatus	Striated pardalote	
	Strepera graculina	Pied Currawong	
Mammalia	*Macropus giganteus*	Eastern Grey Kangaroo	

Appendix C. Site Assessment Field Survey Forma (copied directly from Electronic Data Sheet).

BAM Site – Field Survey Form					
Date:	24.03.2022	**Plot ID:**	Plot 1	**Coordinates**	
Zone:	55	**Plot Dimensions:**	50x20	**Easting:**	650238m S
Datum:	GDA 94	**Middle bearing from 0m:**	268	**Northing:**	5960052m S
PCT:	Historically Cleared Exotic Grassland				

Growth Form	Scientific Name	Cover	Abundance
Exotic	*Verbascum thapsus*	1	30
High Threat Exotic (HTE)	*Acetosella vulgaris*	8	200
High Threat Exotic (HTE)	*Nassella trichotoma*	20	100
Forb (FG)	*Vittadinia gracilis*	10	100
Grass & grasslike (GG)	*Poa sieberiana*	12	80
Grass & grasslike (GG)	*Panicum effusum*	0.5	15
Exotic	*Brassica spp.*	0.1	3
Exotic	*Trifolium repens*	0.2	40
Grass & grasslike (GG)	*Rytidosperma spp.*	3	50
Forb (FG)	*Euchiton involucratus*	1	60
Exotic	*Carduus nutans subsp. Nutans*	0.1	10
Forb (FG)	*Dichondra repens*	0.1	40
Exotic	*Conyza spp.*	0.2	50
Exotic	*Taraxacum officinale*	0.2	50
Exotic	*Lepidium spp.*	0.1	30
Grass & grasslike (GG)	*Eragrostis spp.*	0.5	15
Exotic	*Echium vulgare*	0.1	25
Exotic	*Trifolium arvense*	2	35
Exotic	*Hypochaeris radicata*	0.2	50
Forb (FG)	*Acaena novae-zelandiae*	0.1	20
Shrub (SG)	*Discaria pubescens*	1	3
HTE	*Rosa rubiginosa*	0.1	2
Other (OG)	*Convolvulus erubescens*	0.1	15
Other (OG)	*Glycine spp.*	0.1	40
Grass & grasslike (GG)	*Cyperus gracilis*	0.2	50
HTE	*Hypericum perforatum*	0.1	30
Grass & grasslike (GG)	*Microlaena stipoides*	2	35
Grass & grasslike (GG)	*Themeda triandra*	0.3	30
Forb (FG)	*Oxalis spp.*	0.1	25

Forb (FG)	*Geranium spp.*	1	30
Forb (FG)	*Chrysocephalum apiculatum*	0.1	20

DBH	# Tree Stems Count	# Hollow Bearing Trees
80+cm	0	0
50-79cm	0	
30-49cm	0	
20-29cm	0	
10-19cm	0	
5-9cm	0	
<5cm	0	

Length of Logs (m)	0

BAM Attribute (1x1m)	Litter Cover (%)
1 (5m)	1
2 (15m)	1
3 (25m)	2
4 (35m)	1
5 (45m)	1
Average	1.2

Growth Form	Composition Data (Count of Native Cover)	Structure Data (Sum of Cover)
Tree	0	0
Shrub	1	1
Grass	7	18.5
Forb	7	12.4
Fern	0	0
Other	2	0.2
High Threat Exotics	4	28.2

BAM Site – Field Survey Form					
Date:	24.03.2022	**Plot ID:**	Plot 2	**Coordinates**	
Zone:	55	**Plot Dimensions:**	50x20	**Easting:**	650772m S
Datum:	GDA 94	**Middle bearing from 0m:**	28	**Northing:**	5960466m S
PCT:	Historically Cleared Exotic Grassland				

Growth Form	Scientific Name	Cover	Abundance
Grass & grasslike (GG)	*Panicum effusum*	0.8	50
Forb (FG)	*Senecio quadridentatus*	0.1	3
Forb (FG)	*Geranium spp.*	1	100
#N/A	*Verbascum thapsus*	0.2	50
#N/A	*Echium vulgare*	0.1	6
Grass & grasslike (GG)	*Poa sieberiana*	18	N/A
Forb (FG)	*Cymbonotus preissianus*	0.1	25
Forb (FG)	*Vittadinia gracilis*	5	75
HTE	*Acetosella vulgaris*	2	150
#N/A	*Taraxacum officinale*	0.2	70
Grass & grasslike (GG)	*Themeda triandra*	0.1	20
Forb (FG)	*Euchiton involucratus*	0.1	25
HTE	*Nassella trichotoma*	5	70
Other (OG)	*Glycine spp.*	1	40
HTE	*Hypericum perforatum*	0.2	50
#N/A	*Trifolium arvense*	0.1	25
Grass & grasslike (GG)	*Cyperus gracilis*	0.1	30
Forb (FG)	*Dichondra repens*	0.1	30
Forb (FG)	*Acaena novae-zelandiae*	0.1	6
#N/A	*Trifolium repens*	0.3	100
#N/A	*Conyza spp.*	0.1	20
Forb (FG)	*Galium spp.*	0.1	25
Grass & grasslike (GG)	*Rytidosperma spp.*	0.2	35
Grass & grasslike (GG)	*Microlaena stipoides*	0.1	20

DBH	# Tree Stems Count	# Hollow Bearing Trees
80+cm	0	
50-79cm	0	
30-49cm	0	
20-29cm	0	
10-19cm	0	

5-9cm	0	
<5cm	0	
Length of Logs (m)	0	

BAM Attribute (1x1m)	Litter Cover (%)
1 (5m)	1
2 (15m)	2
3 (25m)	2
4 (35m)	1
5 (45m)	2
Average	1.6

Growth Form	Composition Data (Count of Native Cover)	Structure Data (Sum of Cover)
Tree	0	0
Shrub	0	0
Grass	6	19.3
Forb	8	6.6
Fern	0	0
Other	1	1
High Threat Exotics	3	7.2

Appendix 4.
BAM input data with number and cover of exotic species

BAM import data, and number and cover of exotic species

Location values

Plot	Location							
	PCT	Area (ha)	Patch size	Condition class	Zone	Eastings	Northings	Bearing
Plot 1	3341	2.8	100	Moderate	55	650650	5960554	250
Plot 2	3341	19.9	100	Degraded	55	650839	5960446	290
Plot 3	3341	19.9	100	Degraded	55	650899	5960562	245
Plot 4	3341	21.7	100	Very Degraded	55	650361	5960058	235
Plot 5	3341	19.9	100	Degraded	55	650237	5959881	350
Plot 6	3341	21.7	100	Very Degraded	55	650816	5960140	5
Plot 7	3341	21.7	100	Very Degraded	55	650403	5959877	140
Plot 8	3341	2.8	100	Moderate	55	650214	5960254	345
Spot A					55	650369	5960055	N/A

Composition values
Note: Growth form groups from power query on the online BAM Calculator: Tree = TG, Shrub = SG, Groundcover and other (GG= Grass & grasslike, FG= Forb, EG= Fern, OG = Other)

Plot	Composition (number of trees, shrubs and groundcover species recorded in the plots) and exotic species						
	TG	SG	GG	FG	EG	OG	Exotic (Not entered in the calculator)
Plot 1	4	3	10	32	0	3	11
Plot 2	3	1	8	16	0	0	26
Plot 3	1	1	6	20	0	1	24
Plot 4	1	1	2	13	0	1	19
Plot 5	2	3	5	22	1	1	20
Plot 6	0	0	5	16	0	1	19
Plot 7	2	1	3	16	0	1	26
Plot 8	2	1	5	25	0	1	18

Structure values
Note: Growth form groups from power query on the online BAM Calculator: Tree = TG, Shrub = SG, Groundcover and other (GG= Grass & grasslike, FG= Forb, EG= Fern, OG = Other)

Plot	Structure (summed percent cover for trees, shrubs and groundcover species recorded in the plots) recorded in the plots, and exotic species						
	TG	SG	GG	FG	EG	OG	Exotic (Not entered in the calculator)
Plot 1	10.6	0.3	19.5	13.7	0	1.1	15.30
Plot 2	15.5	0.8	15	3.6	0	0	48.70
Plot 3	5	0.4	6.6	8.63	0	0.6	35.30
Plot 4	5	4	5.1	7.6	0	0.1	68.70
Plot 5	4	1.2	7.9	16	0.1	0.3	39.80
Plot 6	0	0	16.5	21.1	0	0.3	40.30
Plot 7	4.8	0.5	6	12.7	0	0.5	79.10
Plot 8	11	1	13	10.7	0	0.2	50.30

Function values
Note:The benchmarks for stem class DBH is 50cm for PCT 3341
The number of trees with stem classes above the benchmark has been entered in the BAM Calculator (shown as bold).

Plot	Function										
	Litter cover	Length of fallen logs	Hollow bearing trees	Stem class DBH (cm)							Percent cover of High Threat Weeds
				<5	5-9	10-19	20-29	30-49	50-79	80+	
Plot 1	60	72	1	1	0	1	1	1	**3**	**1**	0.9
Plot 2	32	56	3	0	0	0	0	1	**3**	**1**	3
Plot 3	33	91	1	0	0	0	0	0	**1**	**1**	2.3
Plot 4	28	67	1	0	0	0	0	0	**1**	**2**	2.5
Plot 5	28	46	0	0	0	0	0	1	**1**	**0**	5
Plot 6	26	0	0	0	0	0	0	0	**0**	**0**	1.2
Plot 7	44	190	2	0	0	0	0	0	**1**	**1**	5.1
Plot 8	46	186	1	1	1	1	0	0	**0**	**2**	2.1

ANNE CLEMENTS & ASSOCIATES PTY. LIMITED
(ABN 41 077 242 365, ACN 077-160-939)
Environmental and Botanical Consultants
Office 2, 3 Harbourview Crescent, Milsons Point 2060
PO Box 1623, North Sydney 2059
Phone: (02) 9955 9733, Mobile: 0427 553362
Email: mail@acabotanic.com

28 April 2025



Addendum to the Biodiversity Assessment Report (BAR) (Clements *et al.* dated 21 August 2024) prepared for the proposed staged eco-tourist facilities at 92 Chongs Road, Jindabyne NSW 2627

Prepared by:
Dr AnneMarie Clements
Dr Anne Baumann
Tony Rodd
Tim Harding

Prepared for:
Josh Leitner

Document Control

Version	Date	Authors	Details
1	28 April 2025	Dr AnneMarie Clements Dr Anne Baumann Tony Rodd Tim Harding.	Additional information requested from the NSW Department, emailed from Snowy Monaro Regional Council in November 2024.

Photograph on front cover: Looking upslope from the creekline onsite (Photograph taken by Tony Rodd on 21 February 2025)

Shortened forms

BAM	Biodiversity Assessment Method
BC Act	Biodiversity Conservation Act 2016 (NSW)
BAR	Biodiversity Assessment Report
DPE	Department of Planning and Environment
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
MTCTGW	*Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion*
PCT	Plant community type
VMP	Vegetation Management Plan / Environmental Management Plan

Contents

1.0 Introduction.....6
2.0 Issues raised by BCS.....6

Figures, Tables and Appendices cited in the Addendum, Appendix B (Tests of Significance) and Appendix C (Vegetation Management Plan)

1a-1.	Site boundary overlaid on the Google Satellite 2023	From the BAR
1a-2.	Lot boundaries from SIX maps aerial imagery	From the BAR
1a-3.	Approximate locations of existing roads/tracks and fencelines onsite.	From the BAR
1a-4	Site boundaries and native vegetation within 1.5 km buffer overlaid on the Sixmap aerial photograph 2023	From the BAR
1a-5	Site boundary and SIX maps hydrolines overlaid on the Google Satellite 2023	From the BAR
1b-1	Site boundary overlaid on the SIX Maps topographic WMS layer.	From the BAR
1b-2	Site boundary overlaid on the SIX maps topographic WMS layer – close up.	From the BAR
1c-1.	Site location overlaid on the IBRA subregions map - version 7	From the BAR
1c-2.	Site location overlaid on the NSW Mitchell Landscapes - version 3.1	From the BAR
1d.	Site boundary overlaid on the Berridale and Numbla 2 meter DEM LiDAR dated February 2018 (Spatial Services, ELVIS)	From the BAR
1e.	Site plan (Drawing No DA-1, Issue 3, dated 07.07.2024).	From the BAR
1f-1.	Bushfire Asset Protection Zones, Refuge 1 (from Harris 2024)	From the BAR
1f-2.	Bushfire Asset Protection Zones, Refuge 2 (from Harris 2024).	From the BAR
1f-3.	Bushfire Asset Protection Zones, Cabin 3 (from Harris 2024).	From the BAR
1f-4.	Bushfire Asset Protection Zones, Shed with a manager's accommodation (from Harris 2024).	From the BAR
1959-1969	Site boundary overlaid on the 1959 and1969 historic aerial photographs (Spatial Services).	From the BAR
1979-1992	Site boundary overlaid on the 1979 and 1992 historic aerial photographs (Spatial Services).	From the BAR
2a.	Site boundary overlaid on the Snowy River Local Environmental Plan 2013 - Land Zoning Map.	From the BAR
2c.	Site boundary overlaid on the Snowy River Local Environmental Plan 2013 - Terrestrial Biodiversity Map.	From the BAR
2d.	Site boundary overlaid on the Snowy River Local Environmental Plan 2013 - Riparian Lands and Watercourses Map.	From the BAR

2e.	Site boundary overlaid on the Biodiversity Values Map - version 16.	From the BAR
2f.	Bushfire Prone Land Map (from Harris 2024).	From the BAR
3a.	Site boundary overlaid on NSW Seamless Geology - version 2.	From the BAR
3b.	Site boundary overlaid on Great Soil Group Soil Type Map of NSW – Version 4.5.	From the BAR
4a-1	Sampling locations overlaid on the NSW State Vegetation Type Map (DPE 2023).	**Additional**
4d.	Sampling locations overlaid on vegetation map.	From the BAR
4e-1.	Observation locations overlaid on the Google Satellite Imagery (Airbus 2025).	**Additional**
4e-2.	Locations of recorded *Calotis glandulosa* and search paths overlaid on the Google Satellite Imagery (Airbus 2025).	**Additional**
4f.	Reference sites for the VMP overlaid on Google Satellite Imagery.	**Additional**
5a.	Site boundary and BioNet records of threatened flora species overlaid on OpenStreetMap.	From the BAR
5b.	Site boundary and BioNet records of threatened fauna species overlaid on OpenStreetMap.	From the BAR
6.	Conservation Areas overlaid on the proposal.	**Additional**

Tables

1.	Cover of species recorded in 8 BAM Plots and species present in Spot A.	From the BAR
2.	Maximum height and number of individuals per 10 m x 10 m subquadrat for species present > 2 m.	From the BAR
3a.	Native species covers recorded in 1 m x 1 m quadrats.	**Additional**
3b.	Exotic species covers recorded in 1 m x 1 m quadrats.	**Additional**
4.	Species lists from two BioNet Sites within the Reference Sites.	**Additional**

Appendices

A.	Letter from the NSW Department of Climate Change, Energy, the Environment and Water, Biodiversity & Conservation Science, emailed from Snowy Monaro Regional Council in November 2024.
B.	Tests of Significance for *Monaro Tableland Cool Temperate Grassy Woodland* and for *Calotis glandulosa.*
C.	Vegetation Management Plan.
C-1	Council's Biosecurity Officer's advice.
C-2	Photographic record across the site (available on request).
C-3	Email from Local Land Service about Deer cull in April 2025.

C-4	Photographs of the reference sites.
C-5	Photograph file by species (supplied to the landowner and available on request from the client).

1.0 Introduction

This report is an addendum to the Biodiversity Assessment Report (BAR) (Clements *et al.* dated 21 August 2024) prepared for the proposed staged eco-tourist facilities on the approximately 47 ha (46.866 ha) site at 92 Chongs Road, Jindabyne (Figures 1a-1 to 1b-2, 1d, 1e). This addendum has been prepared at the request of Josh Leitner.

The addendum to the BAR addresses the issues raised by the NSW Department of Climate Change, Energy, the Environment and Water (see letter in Appendix A).

In the BAR, it was found that:

- The ecological community *Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion* (MTCTGW), listed as critically endangered under the BC Act, occurs on the site in Moderate condition (2.8 ha), Degraded (19.9 ha) and Very Degraded (21.7 ha) (Figure 4d). As stated in the Final determination:
  - 2.2 *It is the intent of the NSW Threatened Species Scientific Committee that all occurrences of the ecological community (both recorded and as yet unrecorded, and* ***independent of their condition****) that occur within this bioregion be covered by this Determination.*
  - 3.1.7 *Monaro Tableland Cool Temperate Grassy Woodland has been* ***subjected to grazing by domestic stock since the 1820s and extensive structural and compositional degradation*** …
- The plant species *Calotis glandulosa* listed as vulnerable under both the *BC Act* and the *EPBC Act* was recorded on the site close to rocky outcrops.

From the additional field surveys undertaken on 21, 22 February 2025 (from observation points shown on Figure 4e-1, fixed area Quadrats 1 to 50 shown on Figure 4a-1, and targeted searches shown on Figure 4e-2 with results discussed in Appendix B), it confirmed that the vegetation on site was:

- typical of a former grazing property;
- dominated by the exotic pasture grass *Lolium perenne* (recorded in 49 of the 50 quadrats with up to 60% cover) consistent with pasture improvement; with:
  - widespread occurrence of listed weed species;
  - scattered old trees with little signs of any natural regeneration; and
  - generally infrequent and low cover by a diverse array of native groundcovers.

2.0 Issues raised by BCS

Biodiversity Offset Scheme Applicability:
The Biodiversity Assessment Report (BAR) suggests the development does not meet the BOS threshold, but further assessment is needed due to the ecological significance of the Monaro Tableland Cool Temperate Grassy Woodland (Snow Gum Woodland). A Test of significance under the Biodiversity Conservation Act 2016 (BC Act) for both the Snow Gum woodland and Calotis glandulosa *is required.*
...
1. Biodiversity Offset Scheme (BOS) Applicability - *The Biodiversity Assessment Report (BAR), prepared by Anne Clements and Associates (dated 21 August 2024), indicates that the development does not meet the BOS threshold, based on the absence of land on the Biodiversity Values Map (BV Map) and proposed clearing under one hectare (0.60ha). While this aligns with clearing thresholds, the ecological significance of the Monaro Tableland Cool Temperate Grassy*

Woodland, a critically endangered ecological community (CEEC), warrants further consideration through a BOS applicability assessment using a Test of Significance.

Tests of Significance for *Monaro Tableland Cool Temperate Grassy Woodland* under the NSW legislation and *Calotis glandulosa* under the NSW and Commonwealth legislation are provided in Appendix B.

Indirect Impacts and Habitat Degradation:
Concerns include indirect impacts on the threatened Calotis glandulosa *species and potential habitat degradation, necessitating further analysis and significant impact assessment under Environment Protection Biodiversity Conservation Act 1999 guidelines.*

2. Indirect Impacts on Threatened Flora - *The BAR identifies Calotis glandulosa (Mauve Burr Daisy) outside the immediate development area but does not address indirect impacts, such as habitat degradation or invasive species introduction, which could threaten this species. The BAR should include a map with precise locations to aid in conservation, especially regarding weed management.*

3. Habitat Degradation Analysis - *Given that the vulnerable species* C. glandulosa *is protected under both the BC Act and EPBC Act, further analysis is needed on whether surrounding area clearing could indirectly degrade its habitat. Considering the ecological significance of PCT 3341-Monaro-Gourock Frost Hollow Grassy Woodland associated in part with the critically endangered ecological community Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion, listed under the EPBC Act, a significant impact assessment under EPBC guidelines is advised.*

The main indirect impact of concern is spread of invasive species and effects of herbicide control, analysed in Appendix B, and assessed as threats in the Vegetation Management Plan in Appendix C.

Fragmentation and Habitat Connectivity:
Detailed avoidance strategies are required to address fragmentation and habitat connectivity disturbances, as the BAR lacks sufficient detail in this area.

4. Fragmentation and Habitat Connectivity - *The BAR references Clause 7.2 of the Snowy River LEP for terrestrial biodiversity assessment but lacks sufficient detail on how the development avoids or minimises fragmentation and habitat connectivity disturbance. While well-sited, the BAR should include detailed avoidance strategies.*

The *Biodiversity Conservation Amendment (Biodiversity Offsets Scheme) Act 2024* came into effect on 7 March 2025. It includes the addition of Clause 6.3A to the *Biodiversity Conservation Act 2016*, namely:

> ***6.3A Avoid, minimise and offset hierarchy***
> *For the purposes of the biodiversity offsets scheme, the avoid, minimise and offset hierarchy is the principle that avoiding, minimising and offsetting the impacts of actions on biodiversity values be approached as follows—*
> *(a) the proponent of the action first takes all reasonable measures to avoid the impacts of the action on biodiversity values,*
> *(b) after taking all reasonable measures under paragraph (a), the proponent then takes all reasonable measures to minimise the impacts that have not been avoided,*
> *(c) having taken the measures under paragraph (b), the proponent then takes biodiversity conservation measures under the biodiversity offsets scheme to offset or compensate for any residual impact on biodiversity* values.

Fragmentation and Habitat Connectivity are addressed under Part (c) in the Assessment of

Significance for the Threatened Ecological Community and the Threatened Species (Appendix B).

The existing Conservation Works and the proposed Vegetation Management Plan / Environmental Management Plan (VMP) are directed to conserving, enhancing and re-establishing native habitat and creating a living seed bank (Appendix C).

5. BAM Plot Sampling Transparency
The BAR employs BAM plot sampling, but further transparency regarding plot representativeness is needed, particularly in assessing vegetation integrity and habitat quality for threatened species within the Monaro Tableland vegetation.

Sampling transparency

The 2023 BAM Plots in the BAR focused on:

- sampling the existing mapped vegetation variation on the 2023 NSW State Vegetation Type Map;
- locating floristic quadrats of the Plots to include canopy trees, where practicable;
- verifying the findings of the previous survey by Narla Environmental 2023 cited in BAR; and
- describing the vegetation likely to be disturbed by the proposal.

Neither the findings from the 2023 BAM Plots nor the additional 2025 Quadrats validated the 2023 NSW State Vegetation Type Map of map units (Figure 4a-1):

- PCT 3413 Monaro Kangaroo Grass Woodland – Grassland Complex due to the low occurrence of *Themeda triandra* recorded onsite with <1% (in Plots 1, 6 and 8); and
- PCT 3741 Monaro Mountains Peppermint Shrub Forest due to absence of Peppermints recorded in Plot 3.

Map unit from 2023 NSW State Vegetation Type Map	Sampled in
Cleared.	Plot 7 Quadrats 3, 4, 7 to 26, 34, 35, 36, 45, 46, 47, 48.
PCT 3341 Monaro-Gourock Frost Hollow Grassy Woodland.	Plot 2, 4, 5, 6, 8 Quadrats 5, 6, 31, 32, 33, 37 to 44.
PCT 3375 Monaro-Queanbeyan Rolling Hills Grassy Forest.	Plot 3
PCT 3413 Monaro Kangaroo Grass Woodland – Grassland Complex.	Plot 1, partly Plot 2, Quadrats 1, 2, 27 to 30, 49, 50. **Low occurrence of *Themeda triandra* recorded onsite with <1% (in Plots 1, 6 and 8)).**
PCT 3741 Monaro Mountains Peppermint Shrub Forest.	Plot 3 **No Peppermints recorded.**

6. Koala Habitat Considerations
Although koala habitat is nearby, the report concludes the site is not potential koala habitat due to limited feed trees. Given the proximity to known koala populations, additional surveys may be warranted to confirm that development will not impede future habitat expansion.

To guide the proposed Koala habitat expansion onsite, two Reference Sites were

investigated in February 2025 (Figure 4f, details in Appendix C, photographs of the reference sites in Appendix C-4), namely:

- Reference Site 1 – dominated by Koala feed tree *E. viminalis*; and
- Reference Site 2 – known record of Koala and the threatened plant species *Calotis glandulosa, Swainsonia sericea* (Figures 5a, 5b from the BAR).

The future habitat expansion for Koala is planned for in the VMP (Figure 6, Appendix C), with:

- Conservation Area 1. Riparian Corridor and low-lying land to be a fully structured woodland with a canopy of *Eucalyptus stellulata and E. viminalis* with a grassy understorey;
- Conservation Area 2. Existing remnant woodlands to be conserved, enhanced and restored to a fully structured woodland with a canopy of *Eucalyptus pauciflora* and *E. rubida* and diverse understorey, located mainly along the western boundary; and
- Conservation Area 3. Managed meadows with scattered trees to be a living seed bank of native grasses and forbs and conserved scattered native trees.

7. Additional Field Surveys
Extensive field surveys are recommended to assess the development's potential impacts on other threatened species and verify current mitigation measures.

As reported in the BAR, targeted searches were undertaken by Narla Environmental in January 2023 and by our group in December 2023. Of particular interest in these searches were threatened species with nearby records, namely *Calotis glandulosa*, *Leucochrysum albicans* subsp. *tricolor* and *Swainsona sericea* (Figure 5a).

The additional surveys undertaken in February 2025 were:

- 50 additional Quadrats (Figure 4a-1, data in Tables 3a, 3b);
- a series of observation points across the site (Figure 4e-1);
- targeted survey (see search paths on Figure 4e-2); and
- observations from reference site (Figure 4f).

No additional threatened species were recorded onsite (Table 3a).

Comprehensive Biodiversity Strategy and EMP:
A broader biodiversity strategy and a detailed (EMP) are recommended to ensure long-term habitat restoration, invasive species management, and continuous environmental impact mitigation.

8. Comprehensive Biodiversity Strategy - *While the BAR indicates avoidance of canopy trees and boulder formations as potential habitats for C. glandulosa, avoidance measures focus narrowly on physical structures. A broader biodiversity strategy, including enforceable long-term habitat restoration and enhancement actions, is recommended.*

Addressed in the Vegetation Management Plan / Environmental Management Plan (Appendix C). Long-term habitat restoration and enhancement actions form part of the ongoing Conservation Works.

9. Invasive Species Management
Recommendations from the Council's Biosecurity Officer are noted, yet the BAR lacks clear monitoring protocols to prevent invasive species introduction during construction (e.g. vehicle hygiene protocols). While ongoing soil stabilisation and native planting are mentioned, details on their success rates or post-construction monitoring are missing. An Environmental Management Plan (EMP) would ensure continuous environmental impact mitigation.

Addressed in the Vegetation Management Plan / Environmental Management Plan (Appendix C).

10. Detailed EMP with Monitoring Plans
The ecological connectivity and surrounding vegetation and fauna, including koalas, should be comprehensively evaluated. An EMP, including monitoring and management plans, will ensure the preservation and resilience of biodiversity on-site. Key components of the EMP should include:
a) Weed Management Plan
- *Detailed weed management, with no-spray buffer zones around threatened species like the Mauve Burr Daisy.*
- *Measures to limit weed spread, including designated track use for tourist traffic.*

b) Revegetation and Restoration Plan
- *A revegetation strategy for restoring the critically endangered Monaro Tableland Cool Temperate Grassy Woodland (CEEC).*
- *Objectives for native regeneration, soil stabilisation, and protection of TEC and vulnerable species.*
- *Rehabilitation actions for impacted areas (e.g., stockpiling, wastewater infrastructure).*

c) Long-Term Protections for Endangered Ecological Communities (EECs)
- *Identification of risks to CEECs with strategies for ongoing protection.*
- *Adaptive management provisions to monitor and mitigate indirect impacts, such as weed introduction and drainage alterations.*

Addressed in the Vegetation Management Plan / Environmental Management Plan (Appendix C).

After review of the Onsite Waster Assessment prepared by Harris Environmental Consulting (dated 20 August 2024) the following matters were identified and will require further consideration: ...Matter 1 … Matter 11 ...

These have been addressed in Harris Environmental Consulting (dated 7 November 2024). *Soil and Site Assessment for Onsite Wastewater Disposal Staged 6 Cabins Eco-Tourist Development at 92 Chongs Road, Jindabyne, NSW.*

The Vegetation Management Plan / Environmental Management Plan (Appendix C) addresses:
- Matter 10, with the required Asset Protection Zone forming part of Conservation Area 3 –Managed meadows with scattered trees (Figure 6) ; and
- Matter 11, with the proposal being sited to avoid tree removal (Figure 6).

Figures

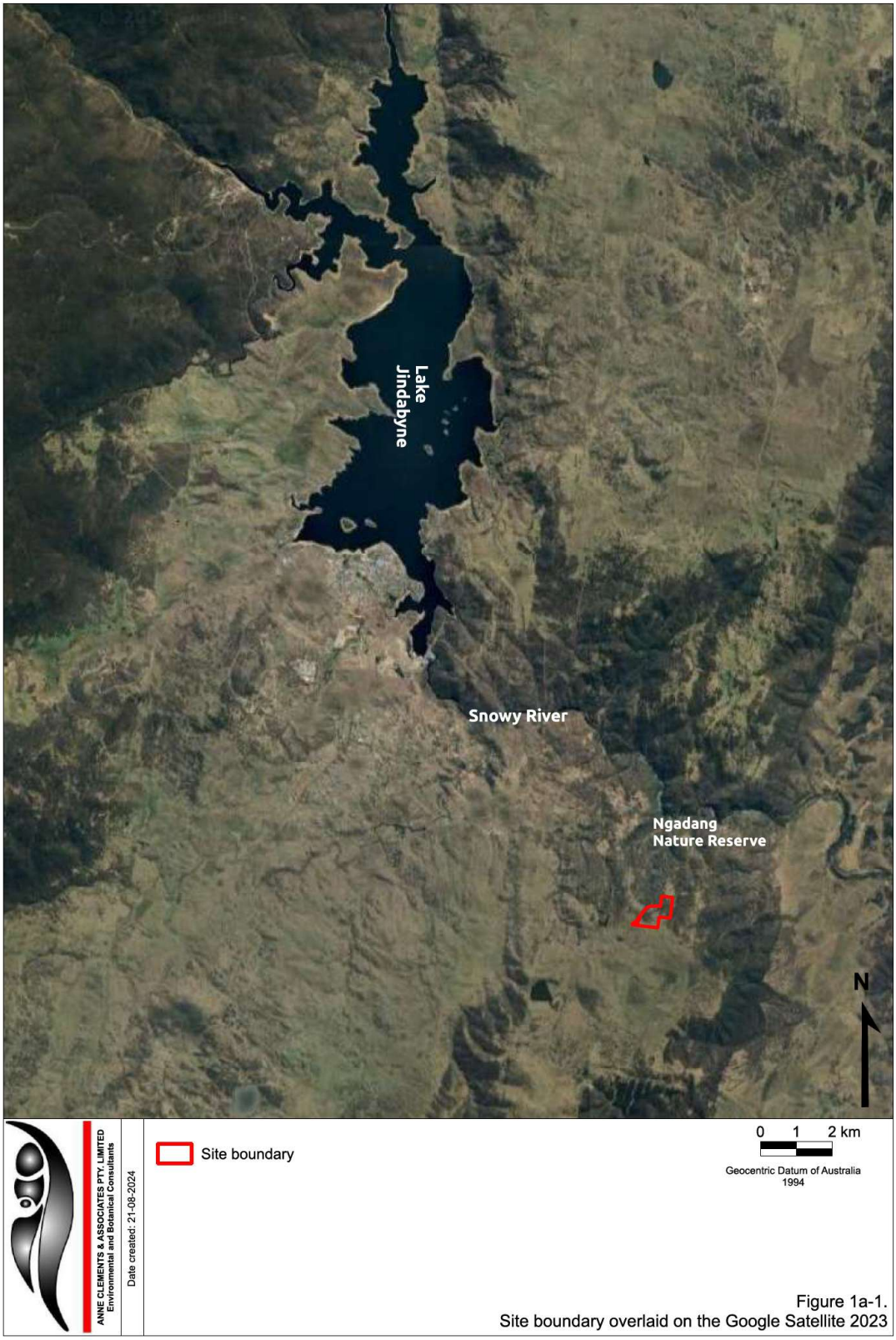


Figure 1a-1.
Site boundary overlaid on the Google Satellite 2023



Figure 1a-2. Lot boundaries from SIX maps aerial imagery.

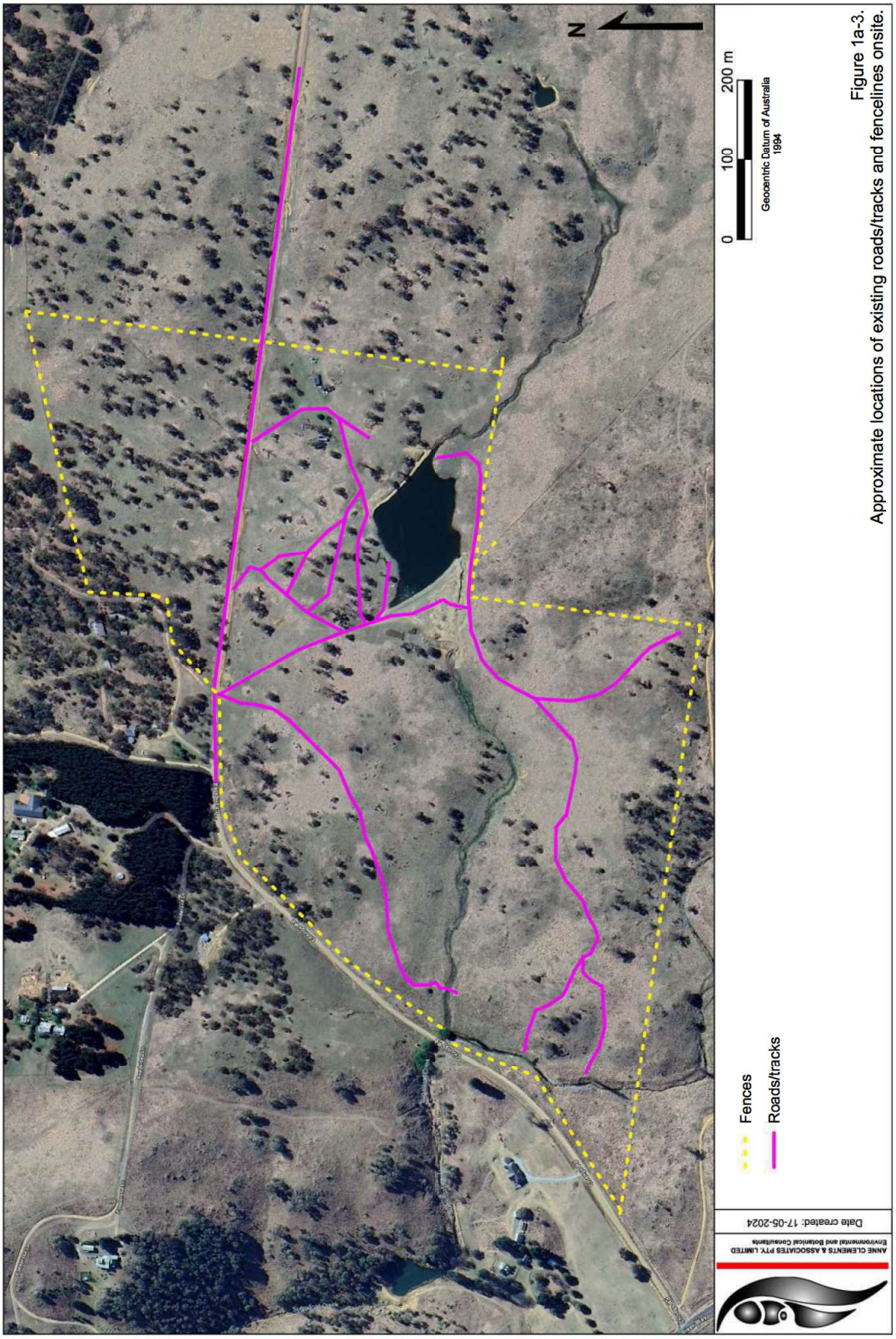


Figure 1a-3. Approximate locations of existing roads/tracks and fencelines onsite.

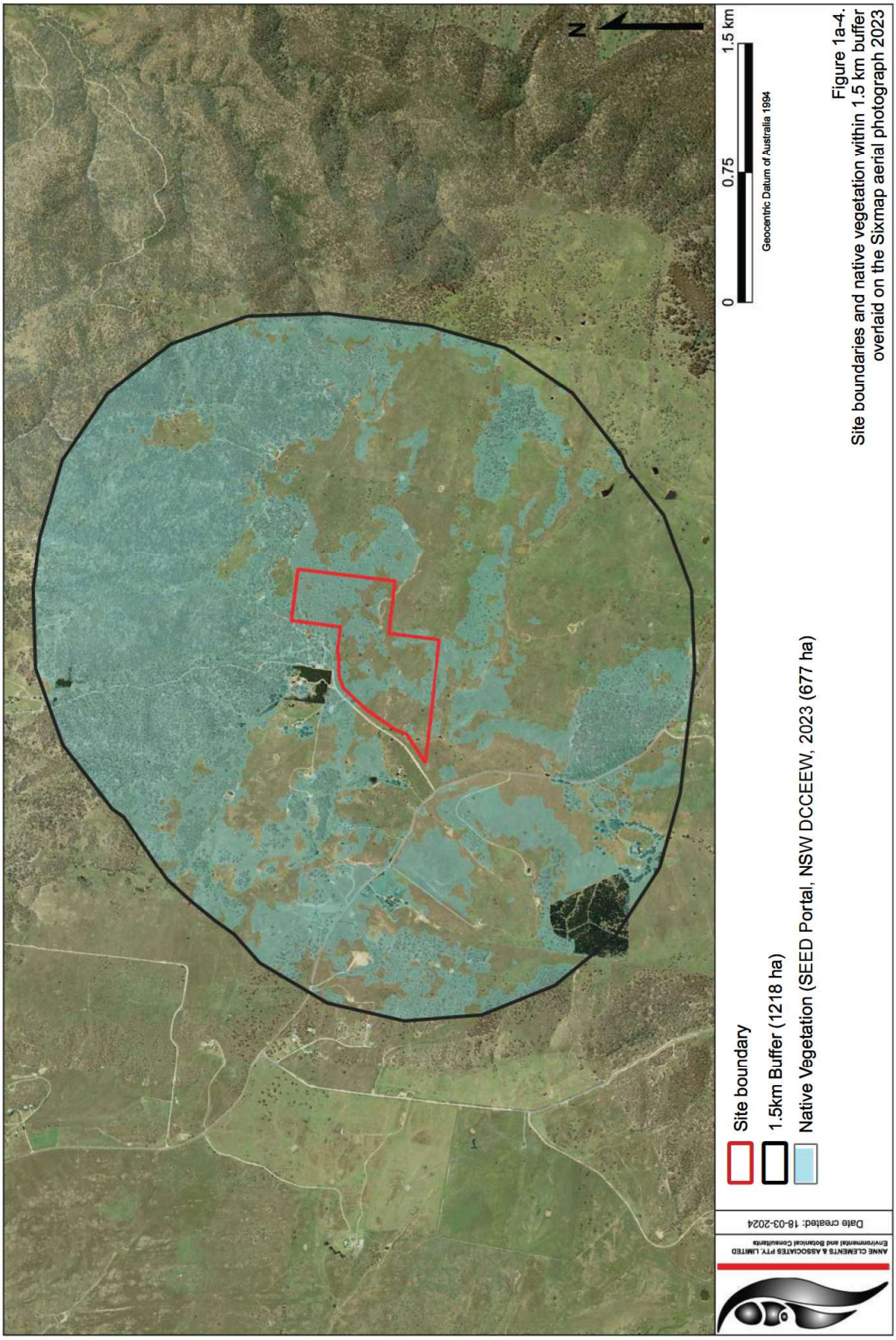


Figure 1a-4.
Site boundaries and native vegetation within 1.5 km buffer overlaid on the Sixmap aerial photograph 2023

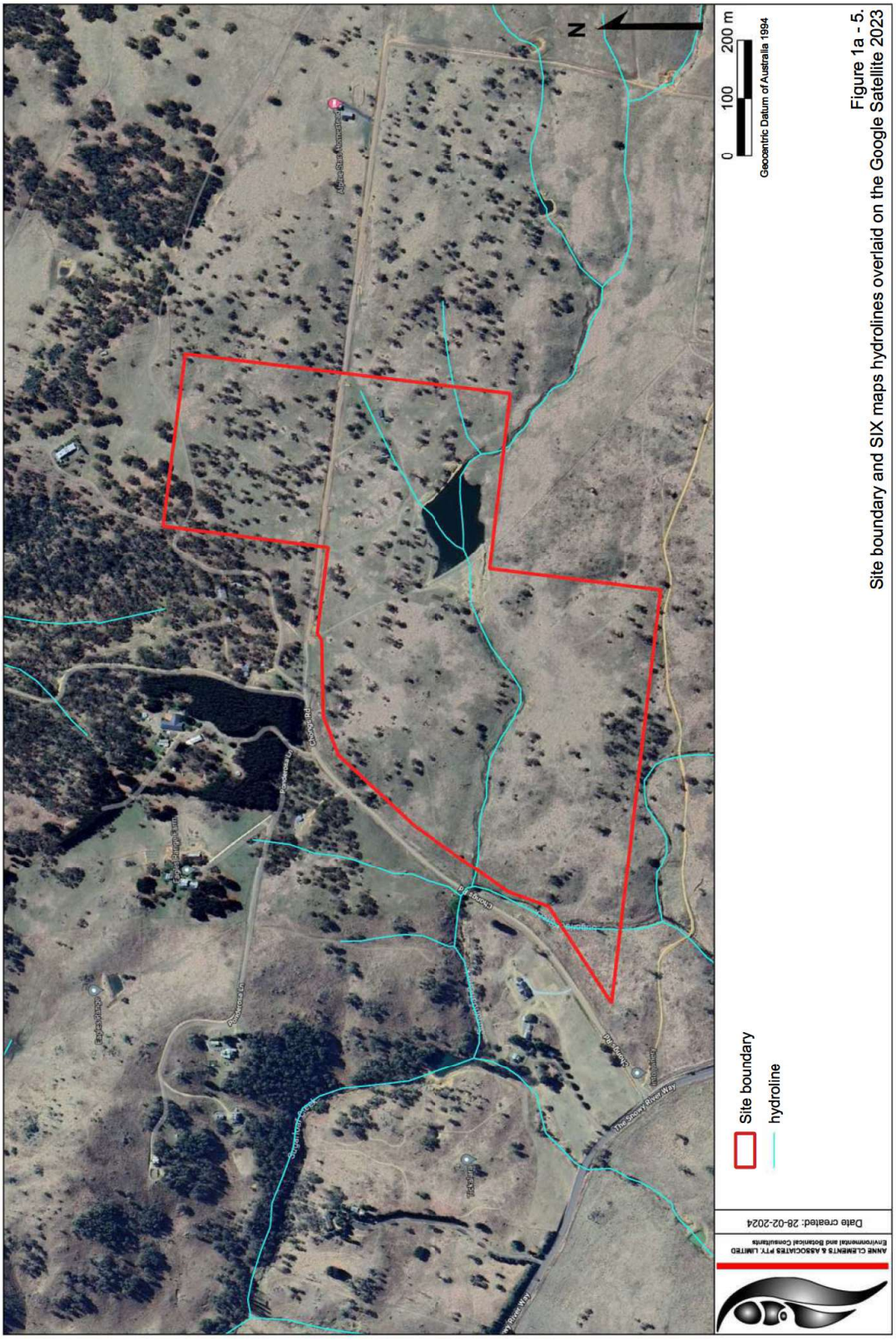


Figure 1a - 5. Site boundary and SIX maps hydrolines overlaid on the Google Satellite 2023

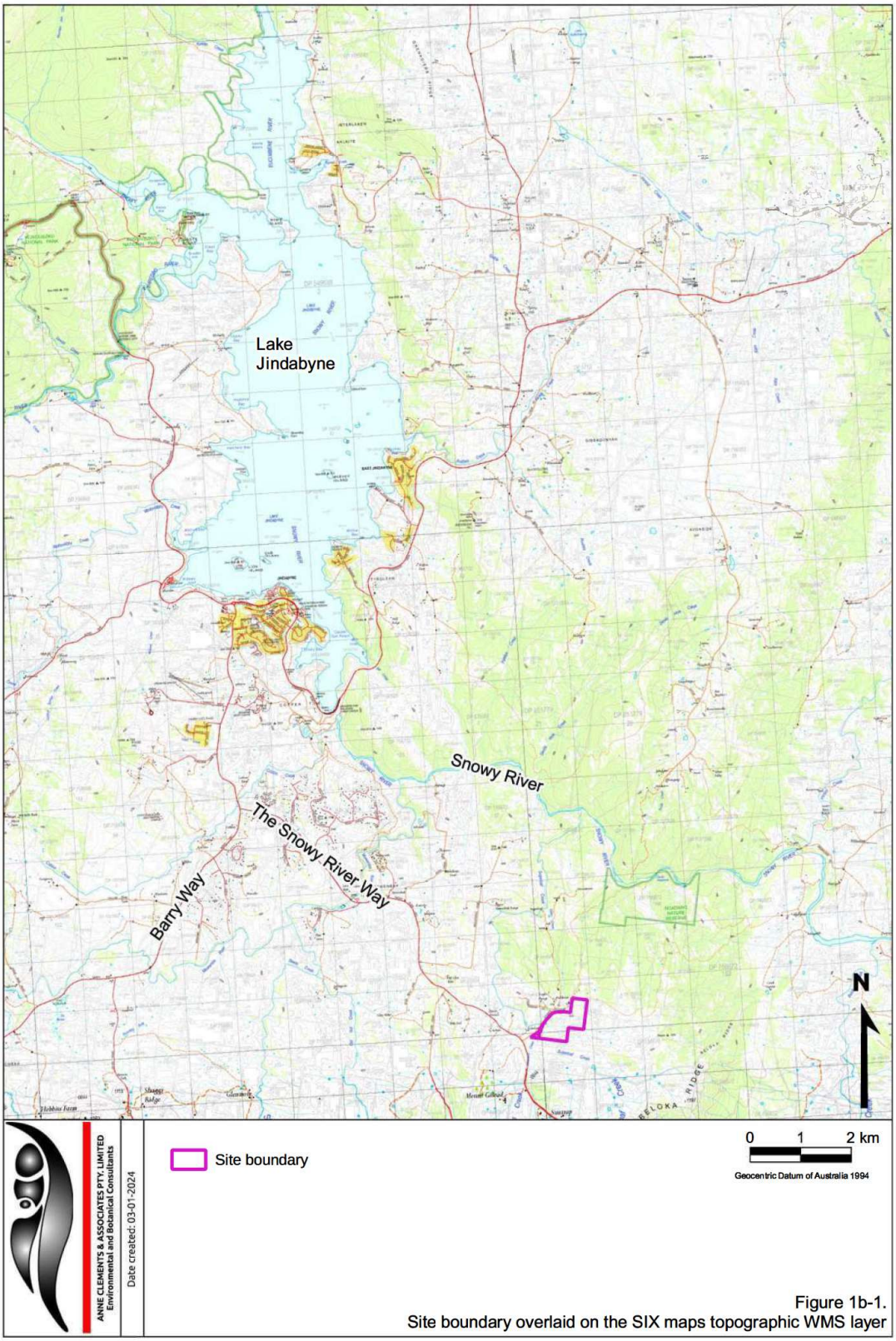


Figure 1b-1.
Site boundary overlaid on the SIX maps topographic WMS layer

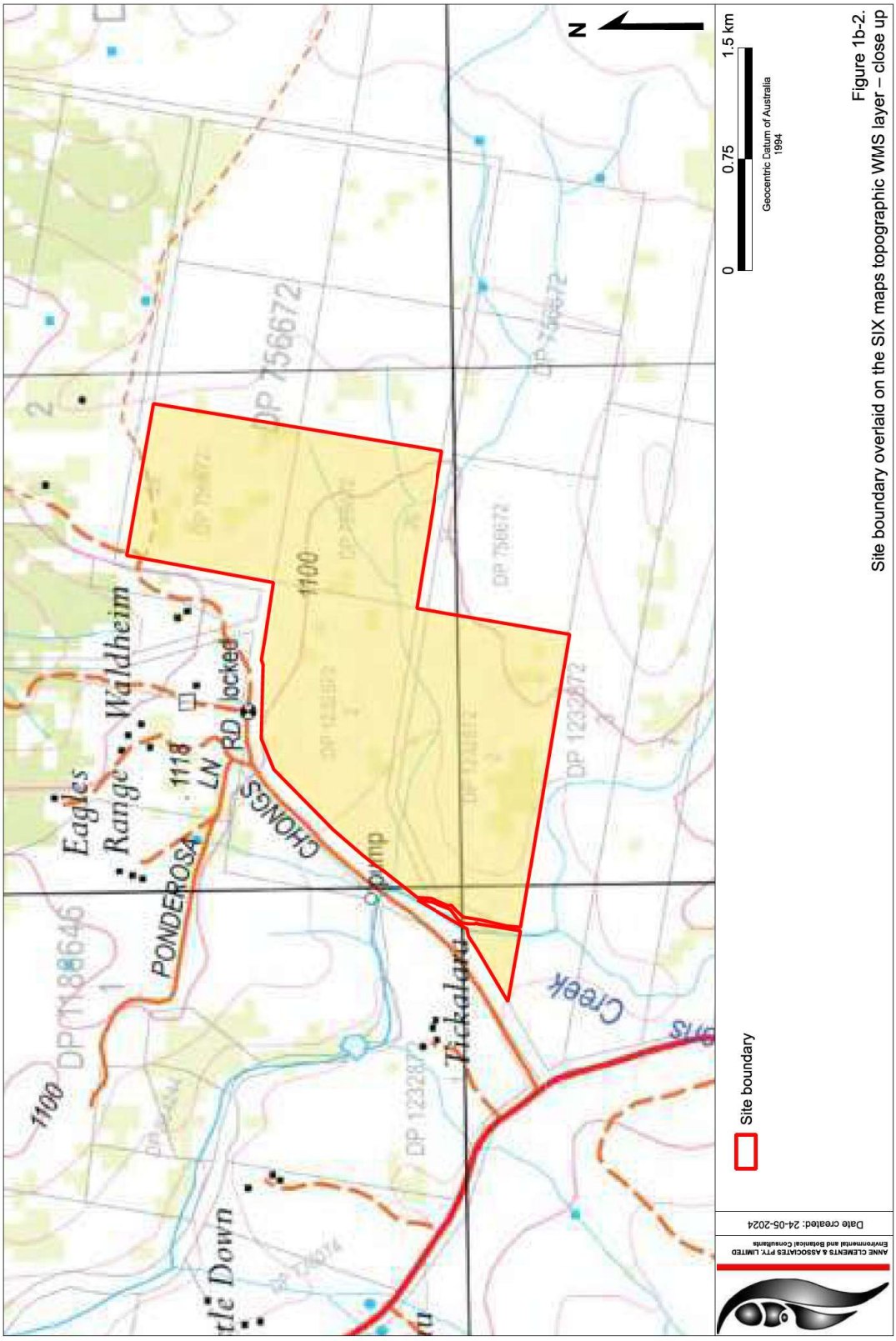


Figure 1b-2. Site boundary overlaid on the SIX maps topographic WMS layer – close up

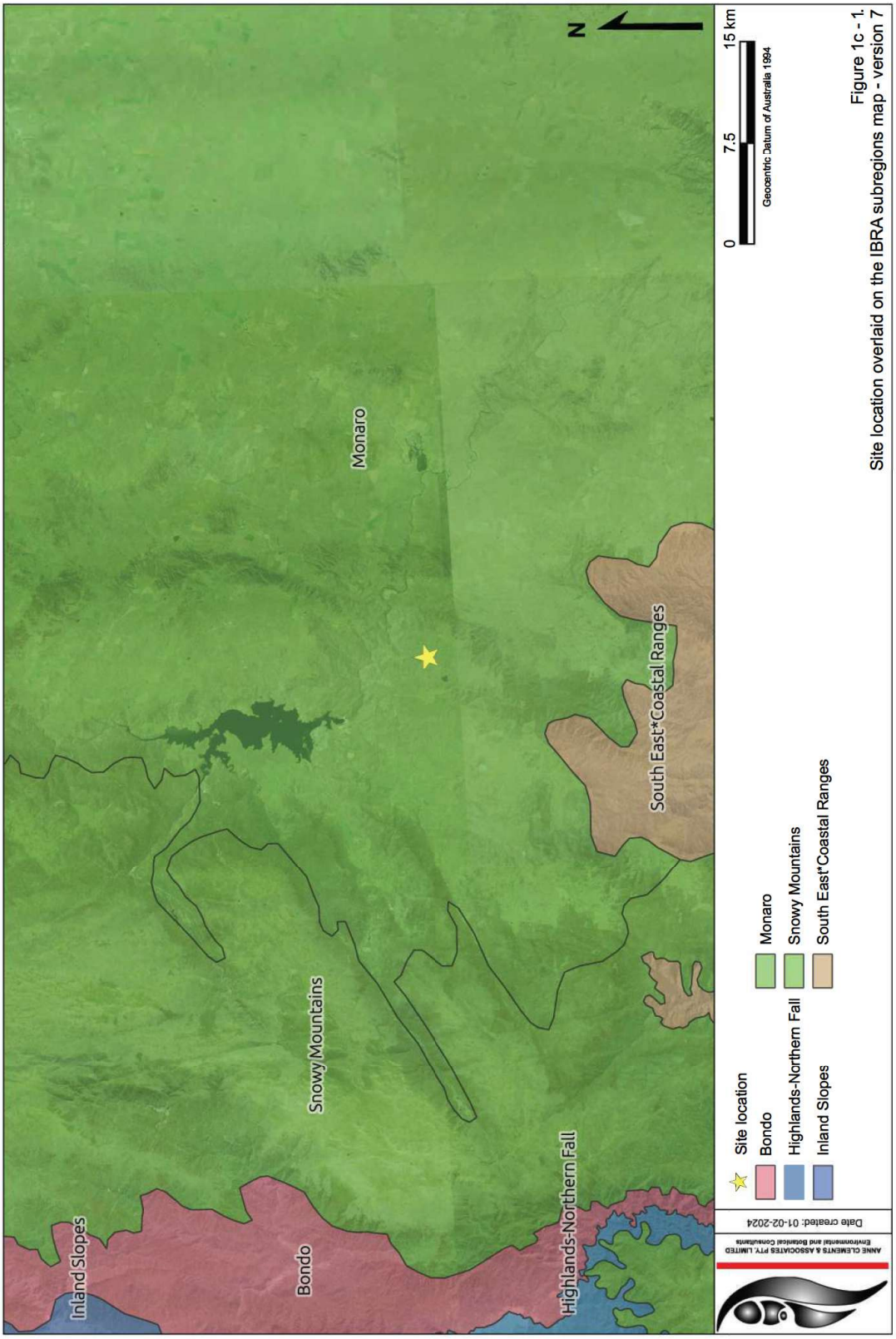


Figure 1c - 1.
Site location overlaid on the IBRA subregions map - version 7

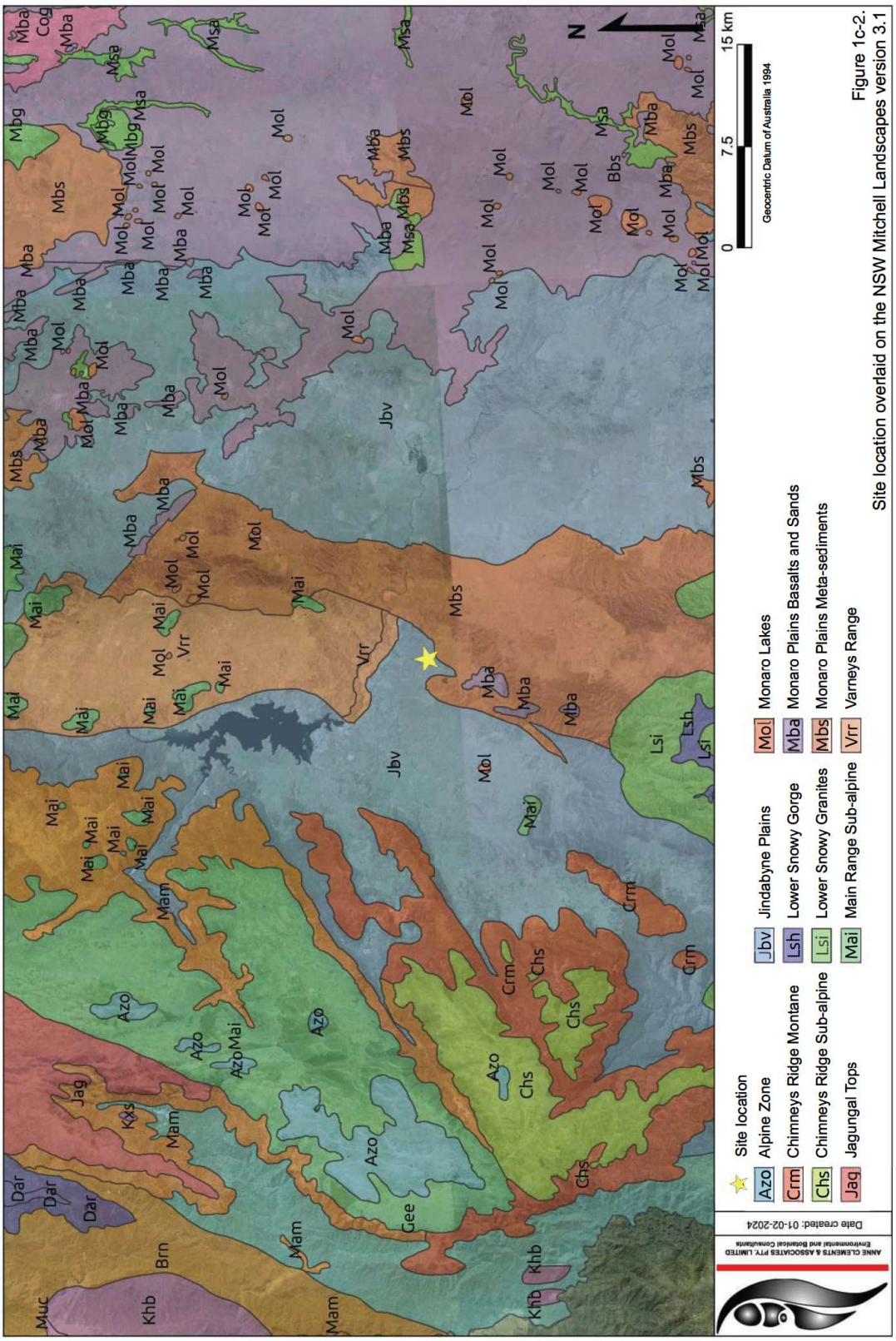


Figure 1c-2.
Site location overlaid on the NSW Mitchell Landscapes version 3.1

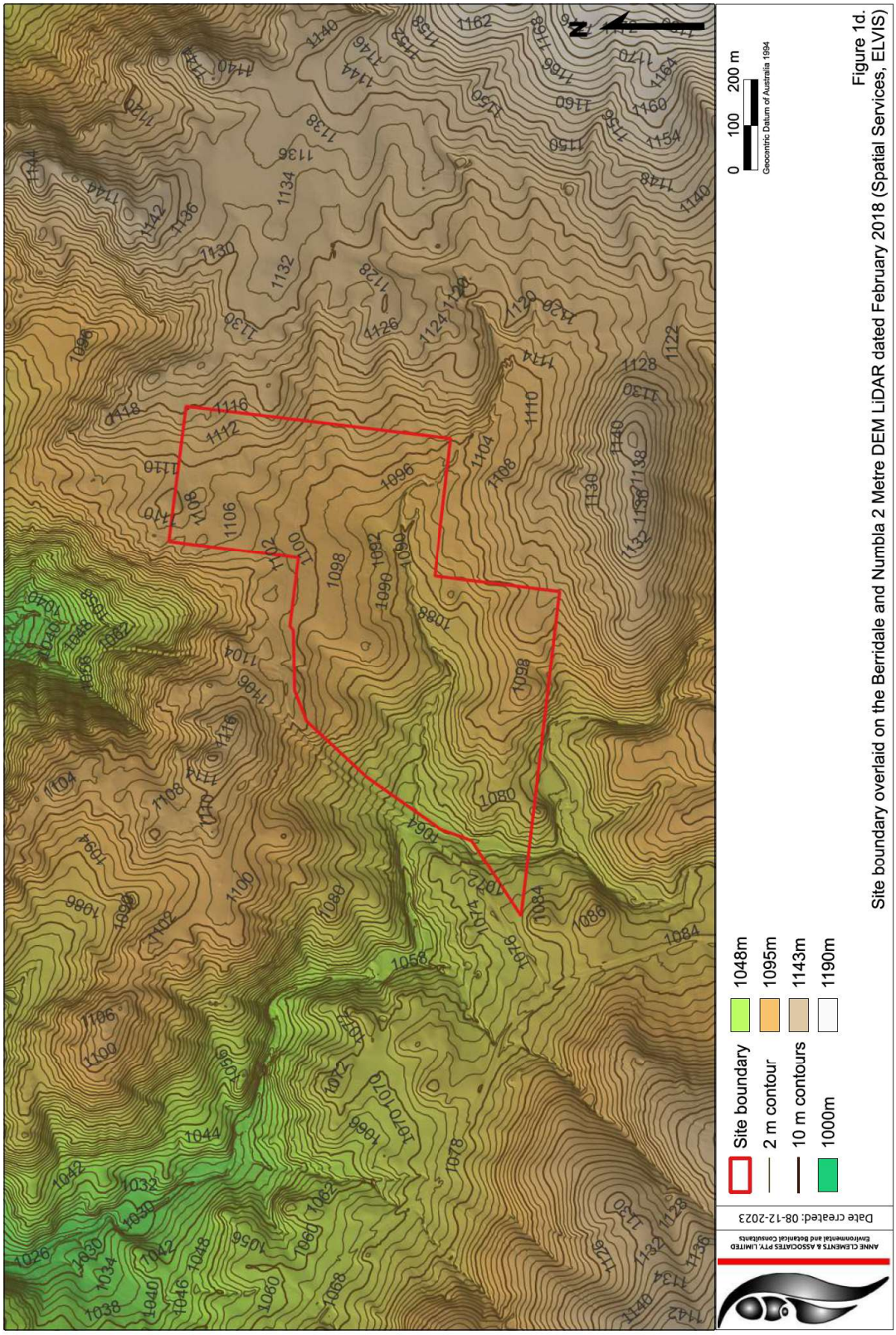


Figure 1d. Site boundary overlaid on the Berridale and Numbla 2 Metre DEM LiDAR dated February 2018 (Spatial Services, ELVIS)

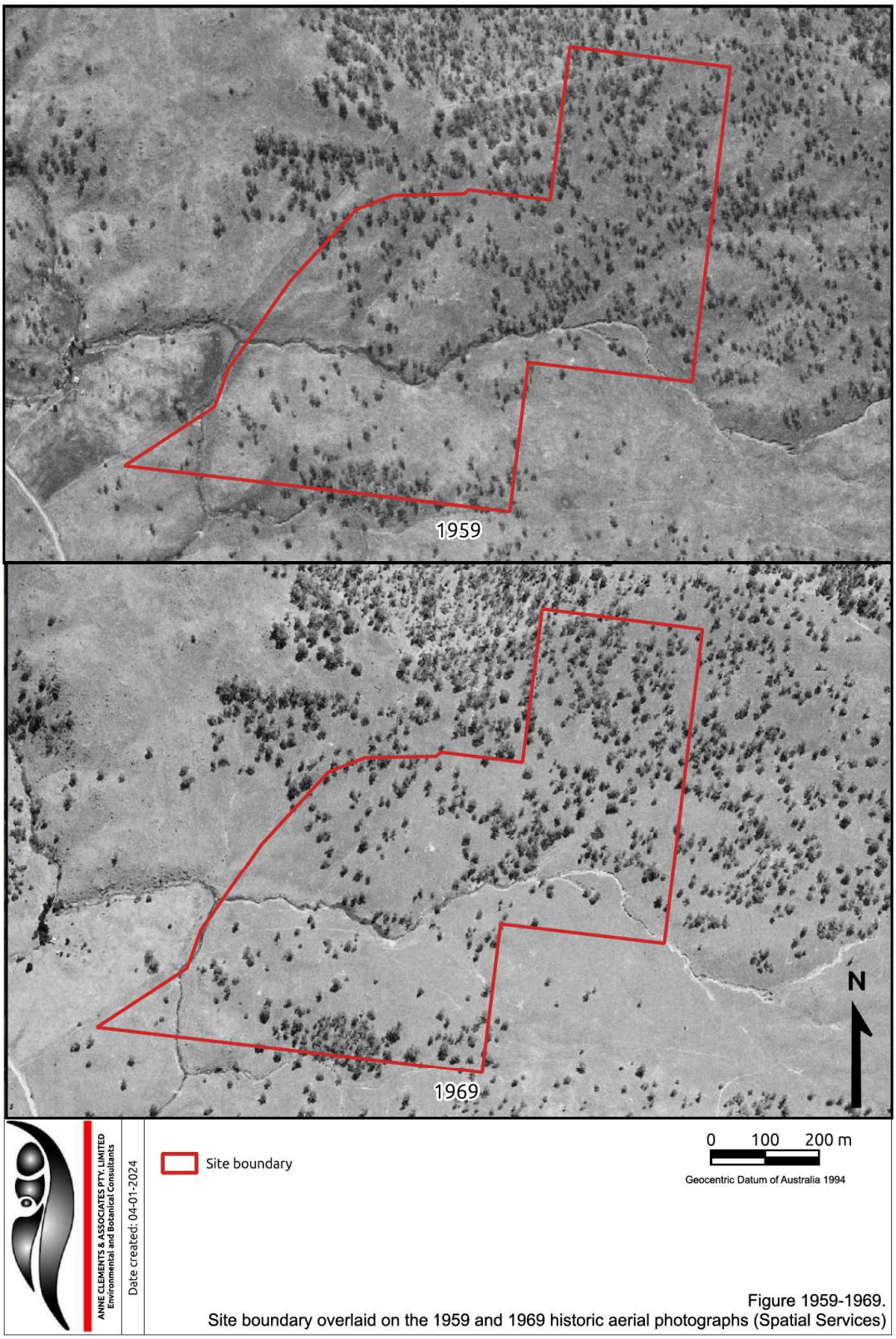


Figure 1959-1969.
Site boundary overlaid on the 1959 and 1969 historic aerial photographs (Spatial Services)

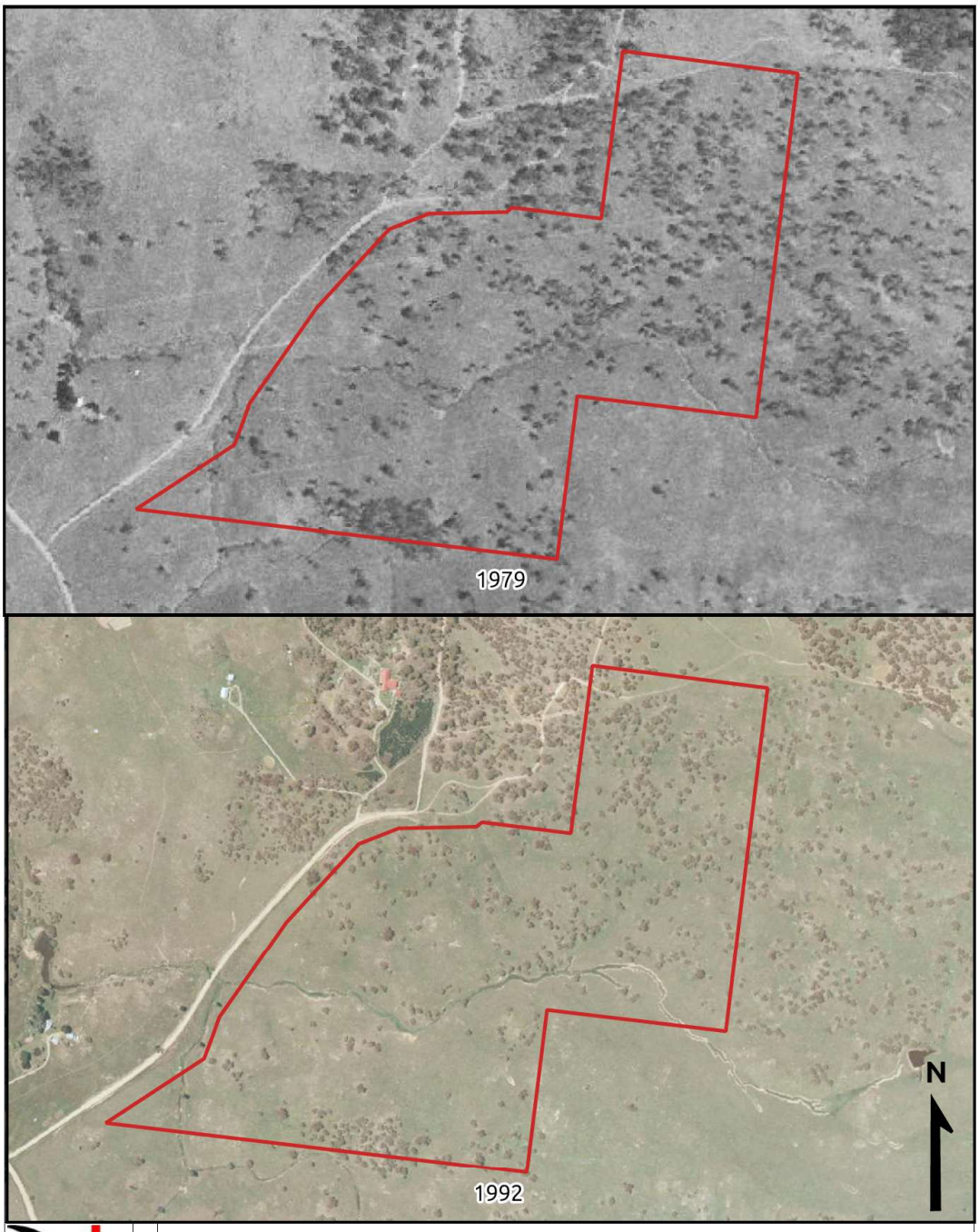


Figure 1979-1992.
Site boundary overlaid on the 1979 and 1992 historic aerial photographs (Spatial Services)

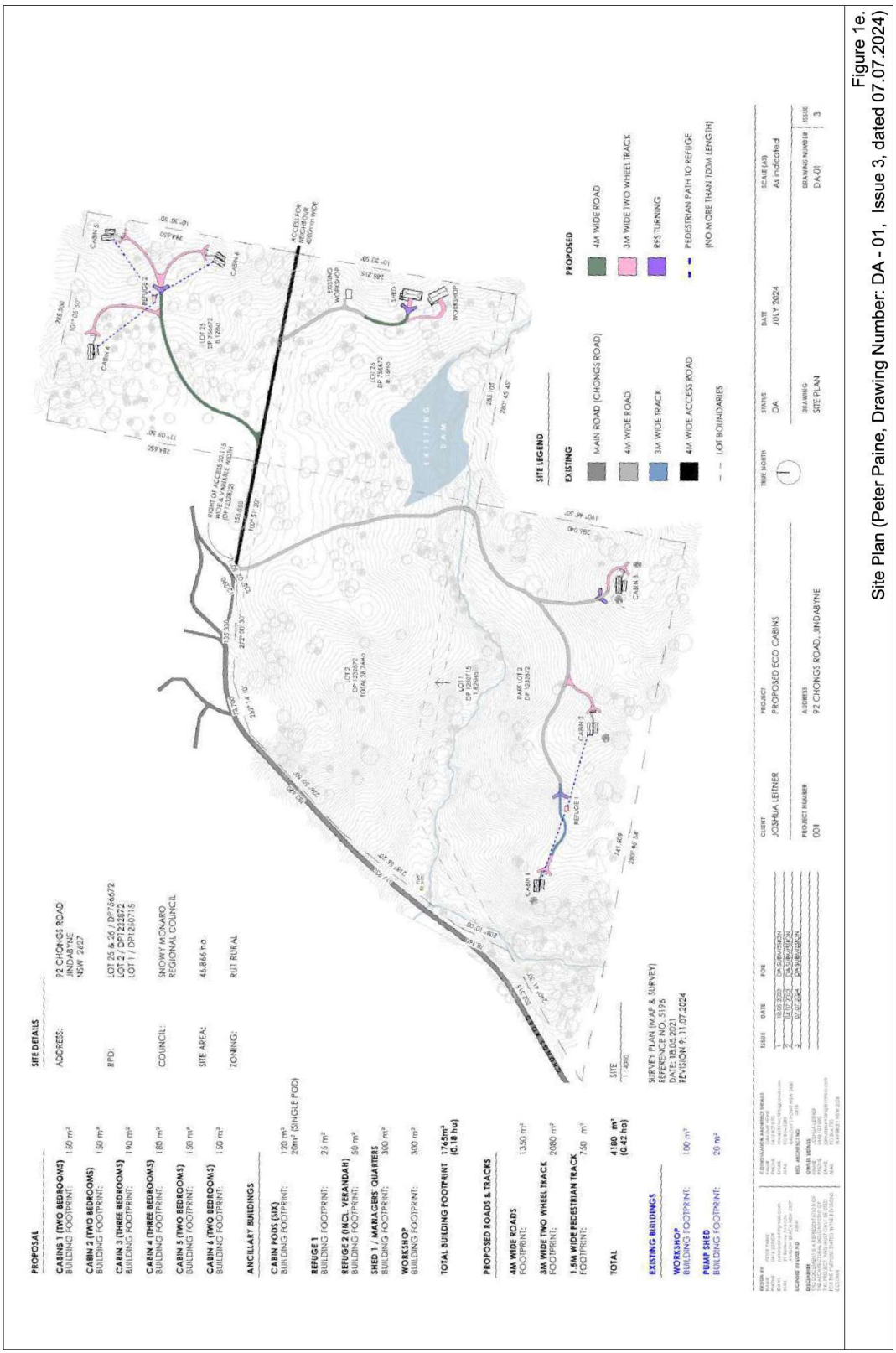


Figure 1e.
Site Plan (Peter Paine, Drawing Number: DA - 01, Issue 3, dated 07.07.2024)

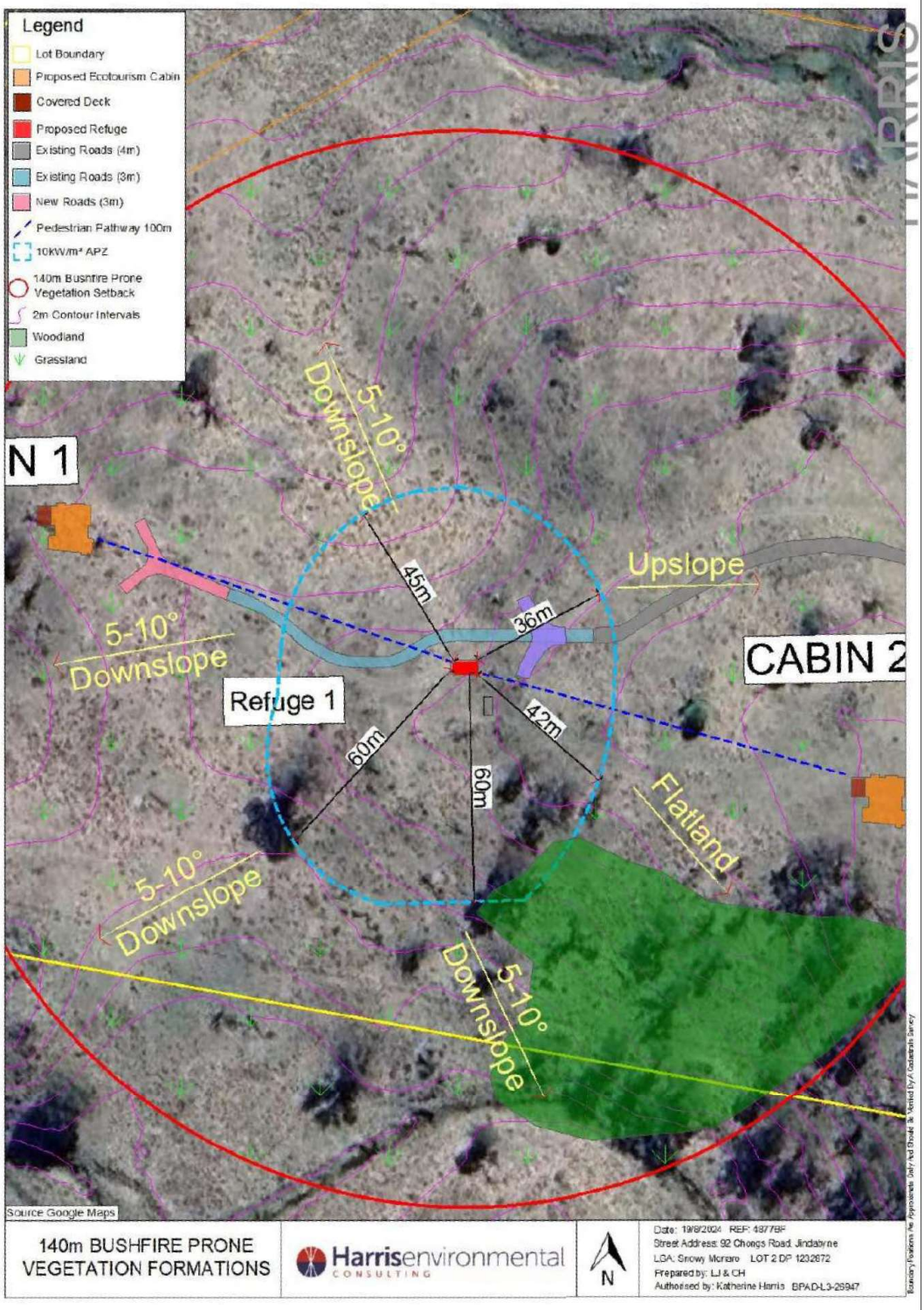


Figure 1f-1.
Bushfire Asset Protection Zones, Refuge 1 (from Harris 2024)

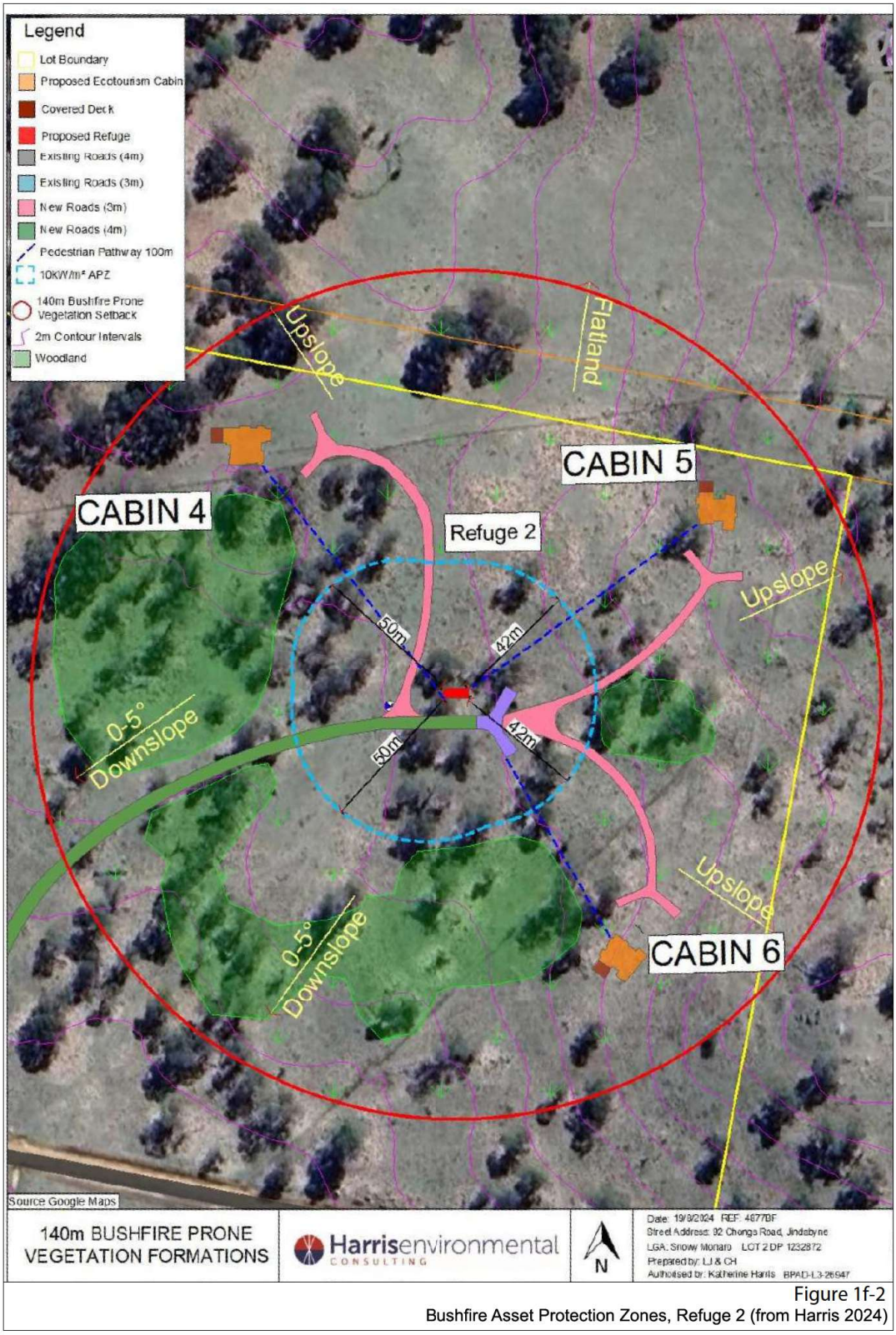


Figure 1f-2
Bushfire Asset Protection Zones, Refuge 2 (from Harris 2024)

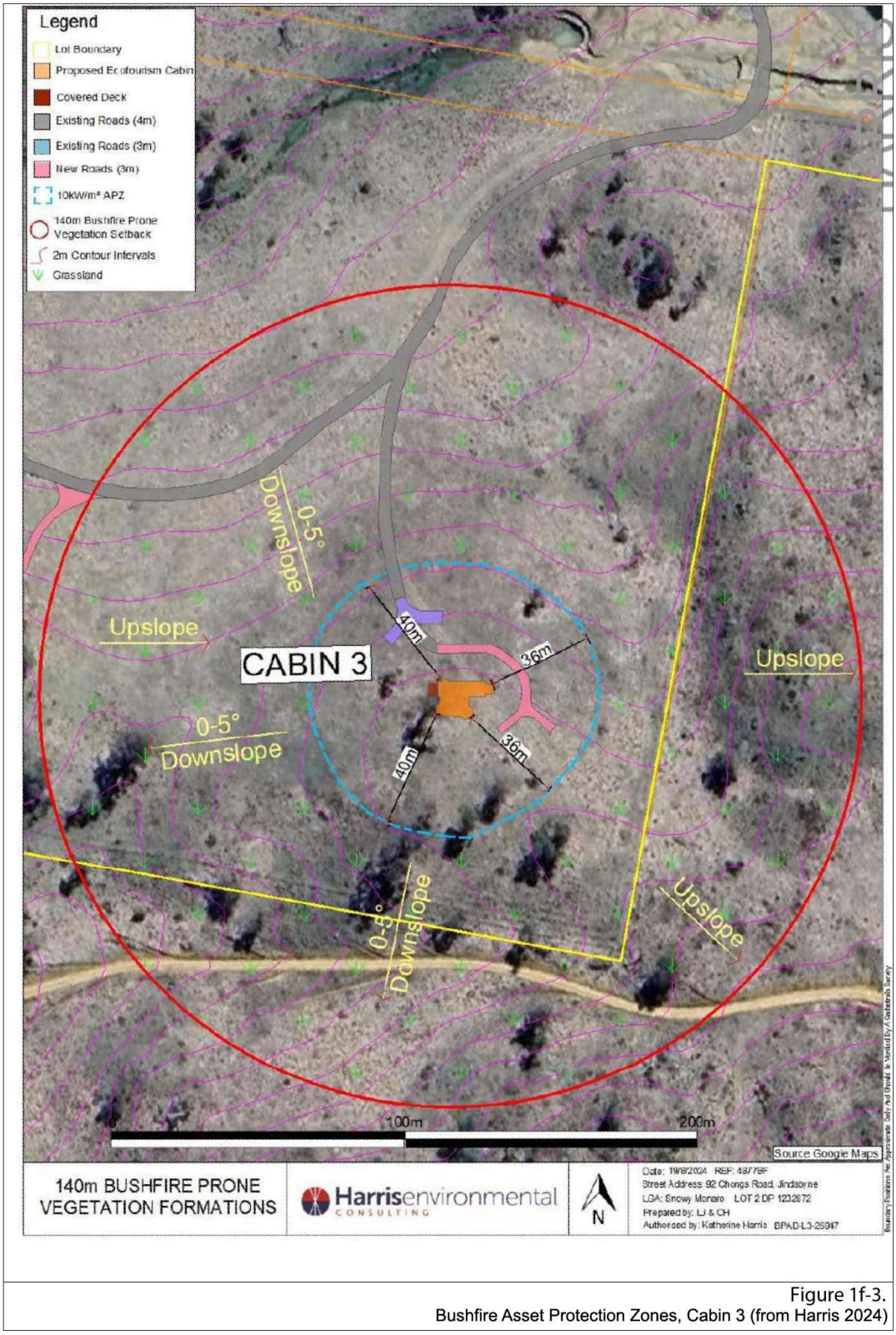


Figure 1f-3.
Bushfire Asset Protection Zones, Cabin 3 (from Harris 2024)

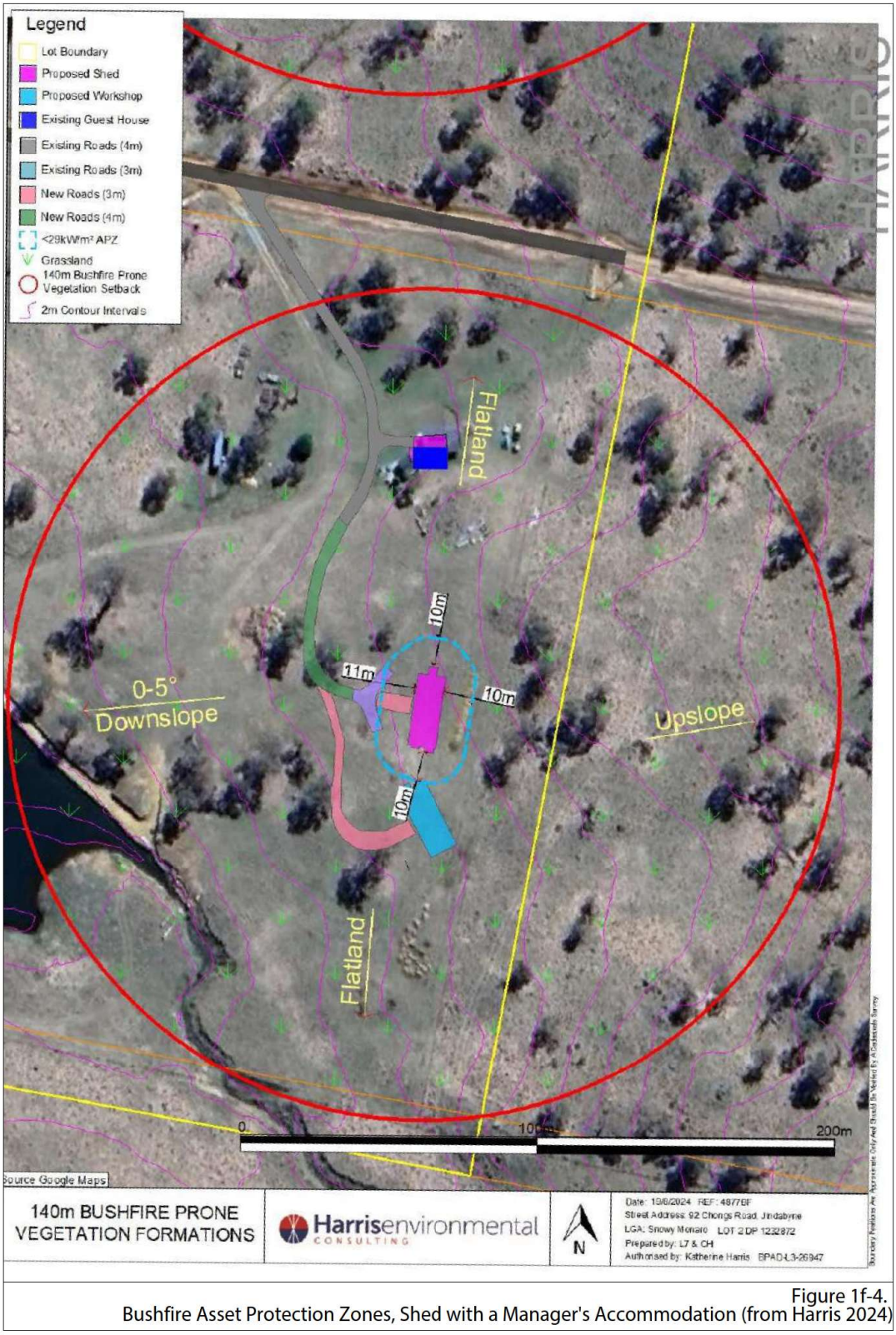


Figure 1f-4.
Bushfire Asset Protection Zones, Shed with a Manager's Accommodation (from Harris 2024)

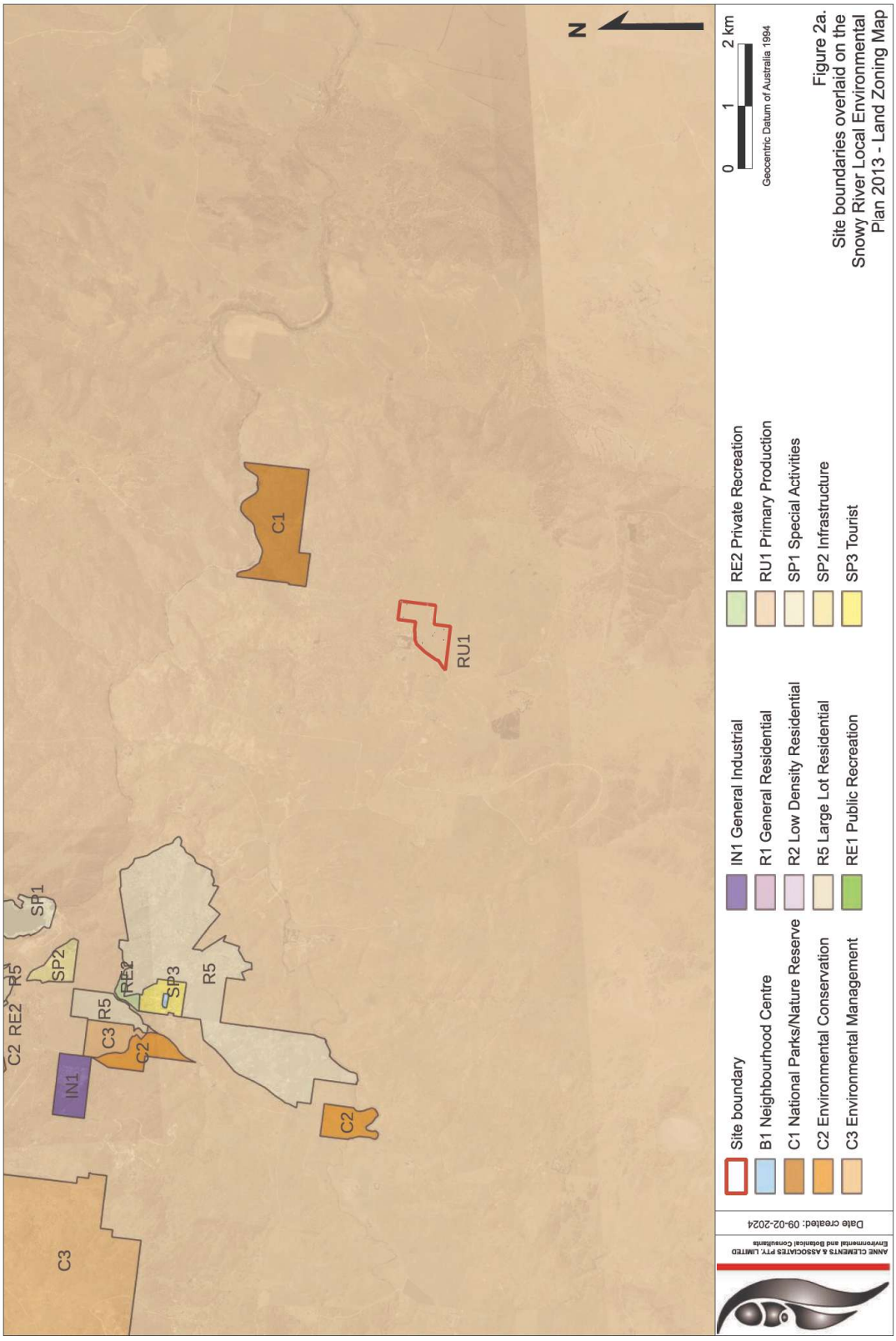


Figure 2a.
Site boundaries overlaid on the Snowy River Local Environmental Plan 2013 - Land Zoning Map

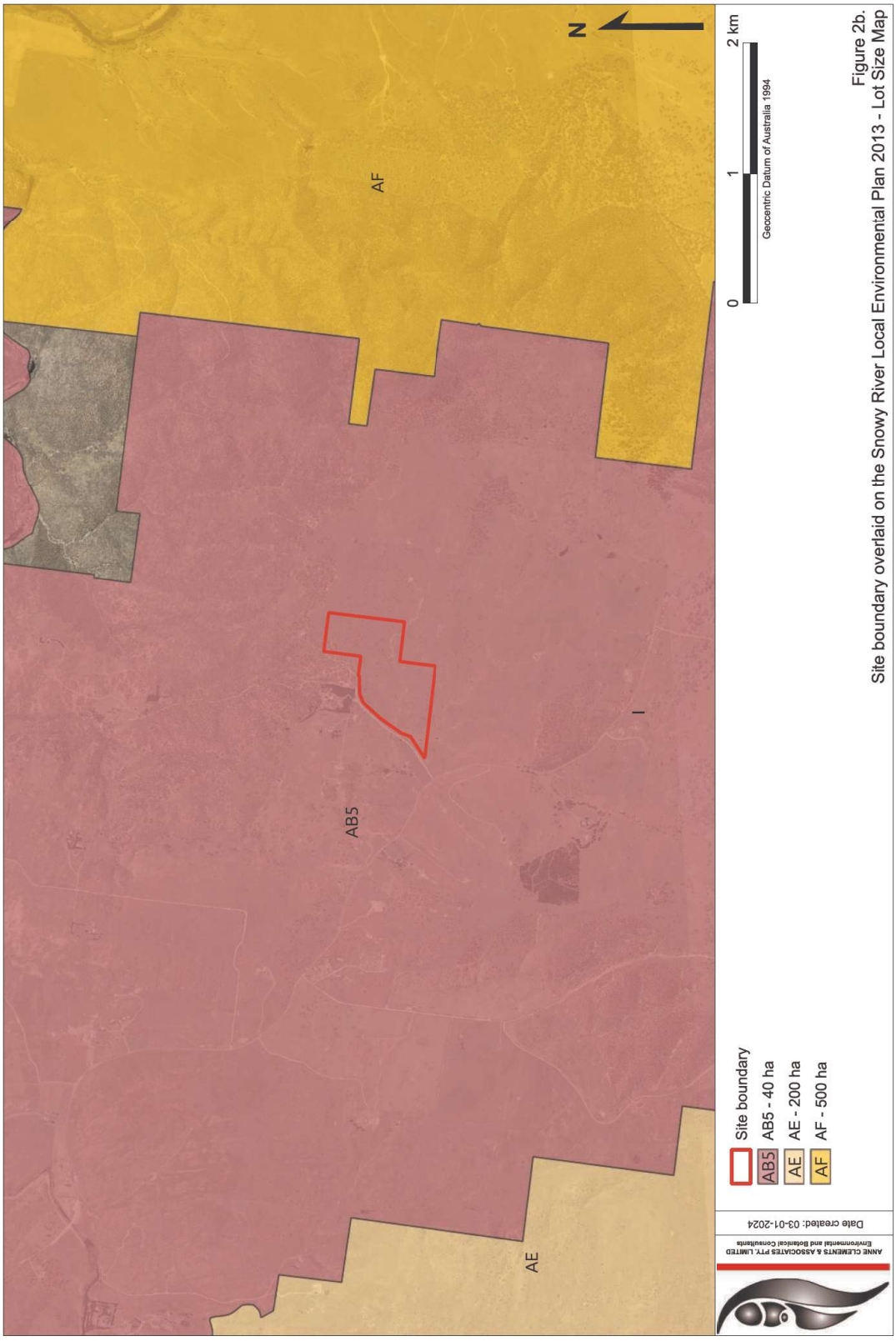


Figure 2b. Site boundary overlaid on the Snowy River Local Environmental Plan 2013 - Lot Size Map



Figure 2c. Site boundary overlaid on the Snowy River Local Environmental Plan 2013 - Terrestrial Biodiversity Map.

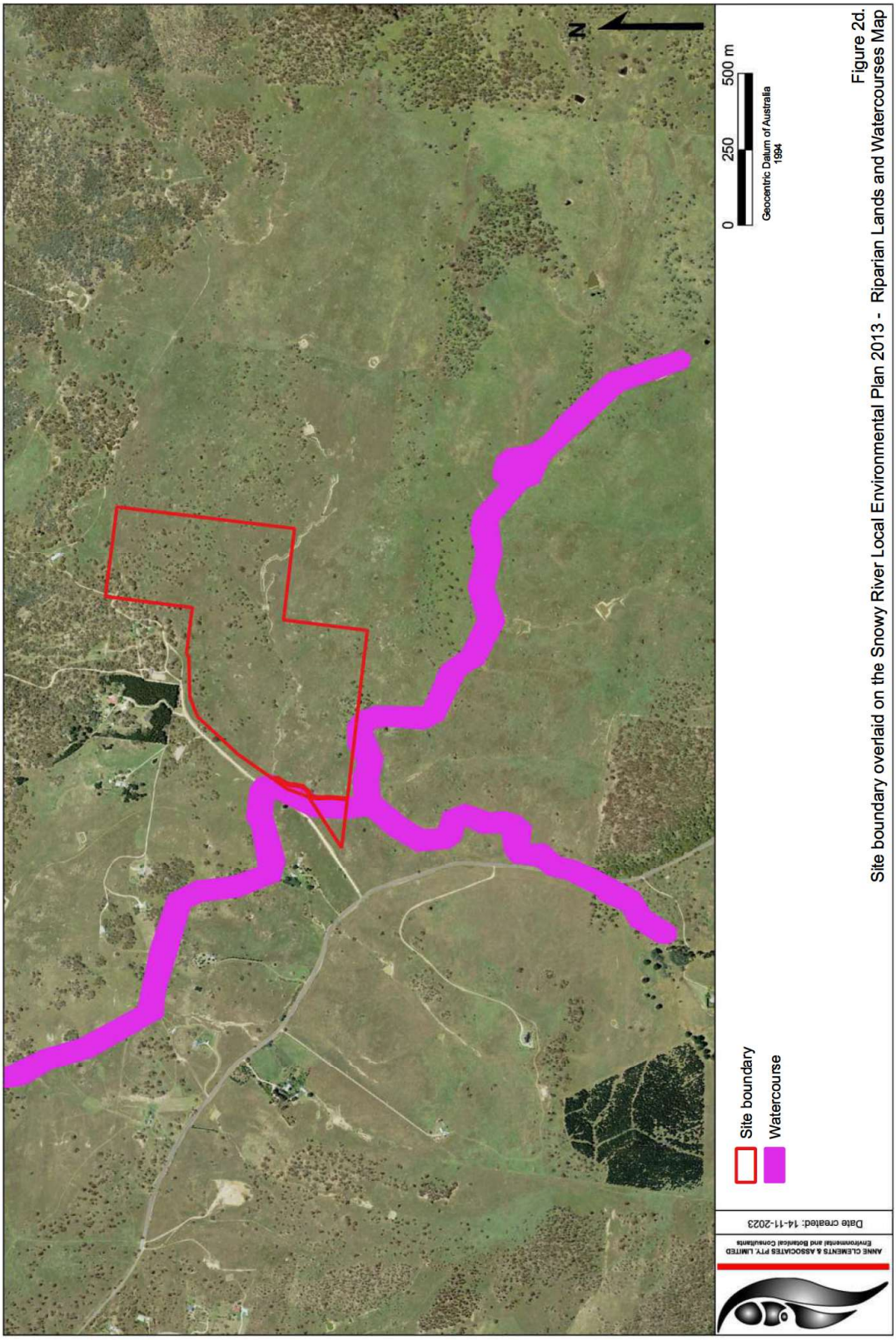


Figure 2d. Site boundary overlaid on the Snowy River Local Environmental Plan 2013 - Riparian Lands and Watercourses Map

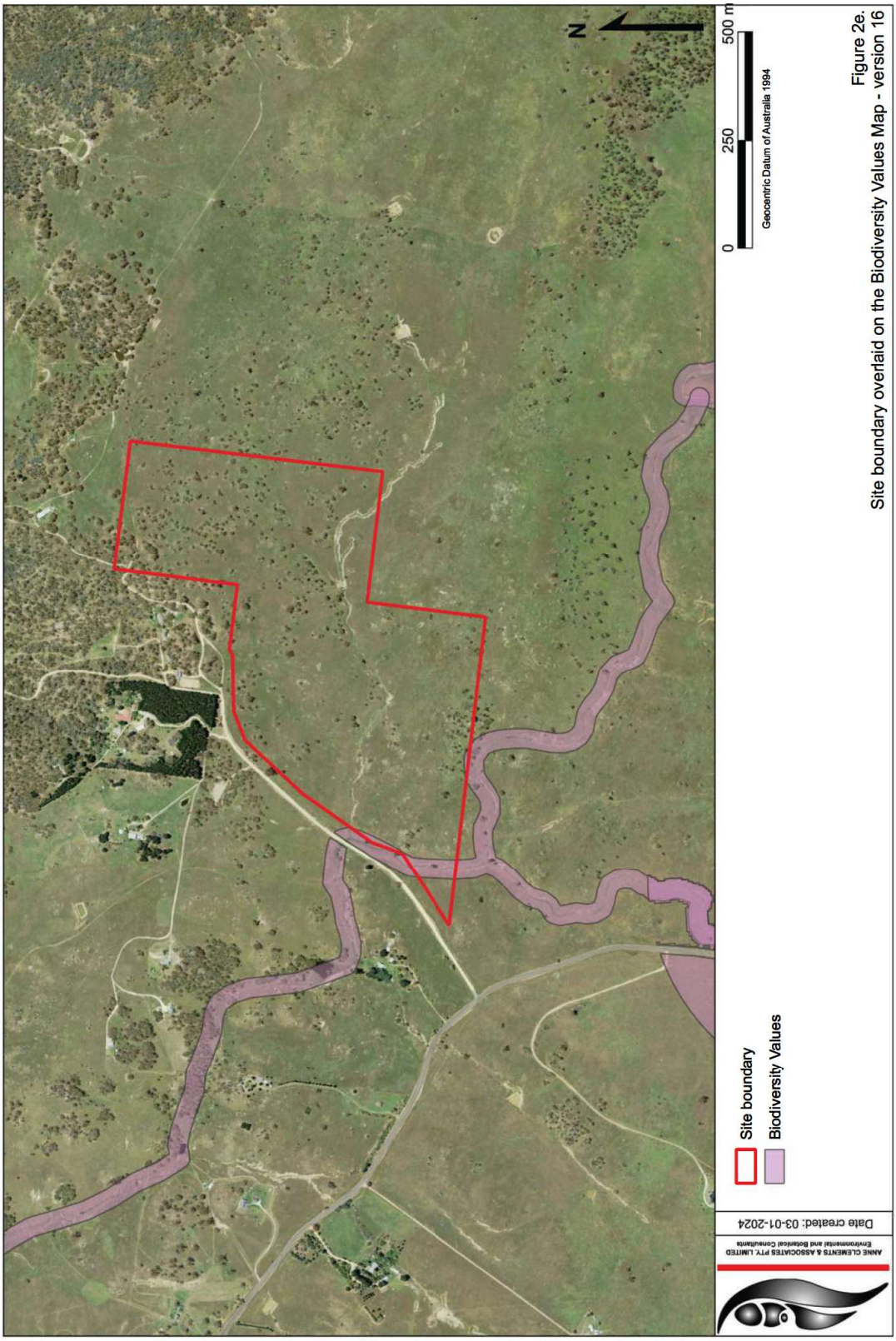


Figure 2e. Site boundary overlaid on the Biodiversity Values Map - version 16

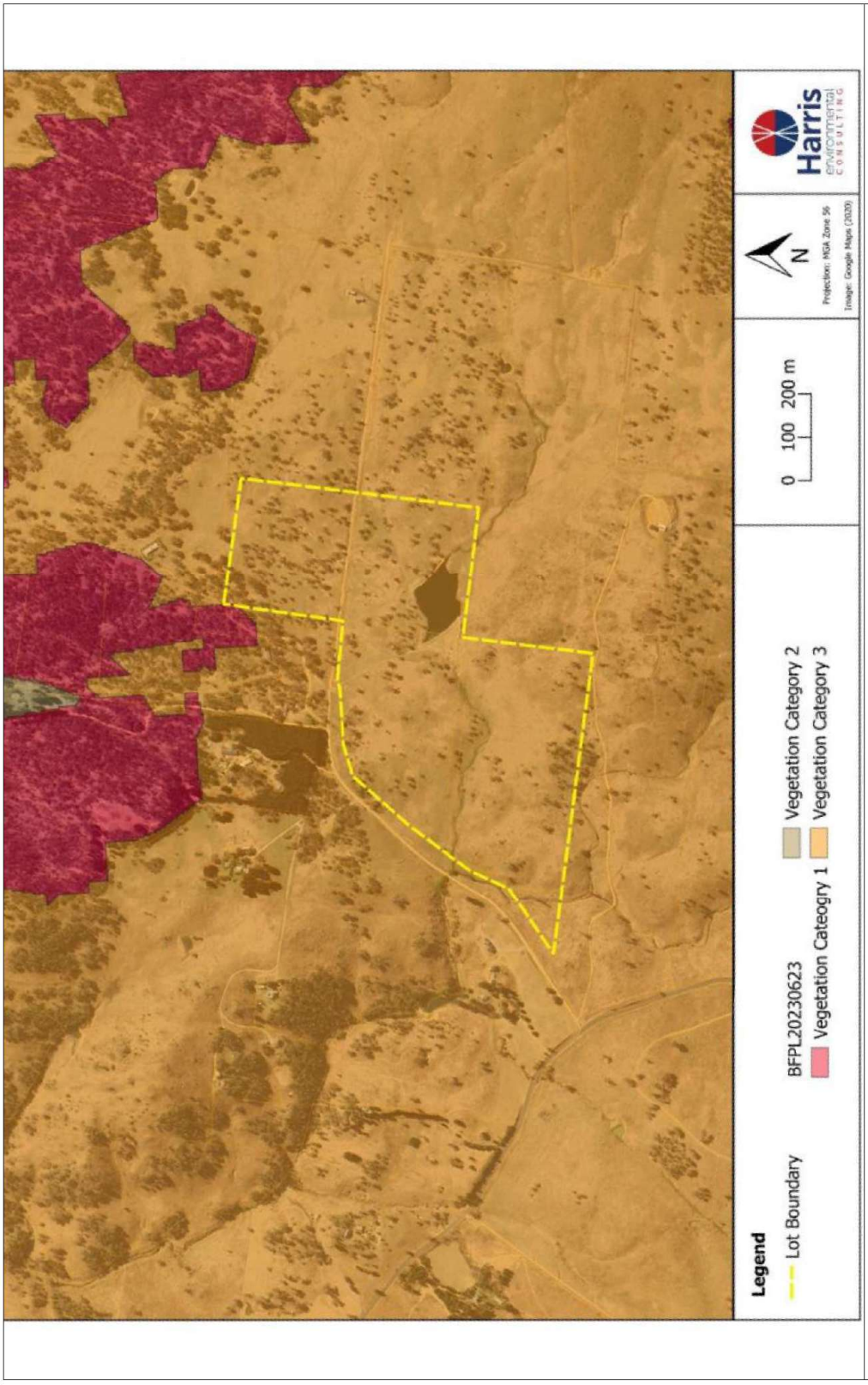


Figure 2f.
Bushfire Prone Map (from Harris 2024)

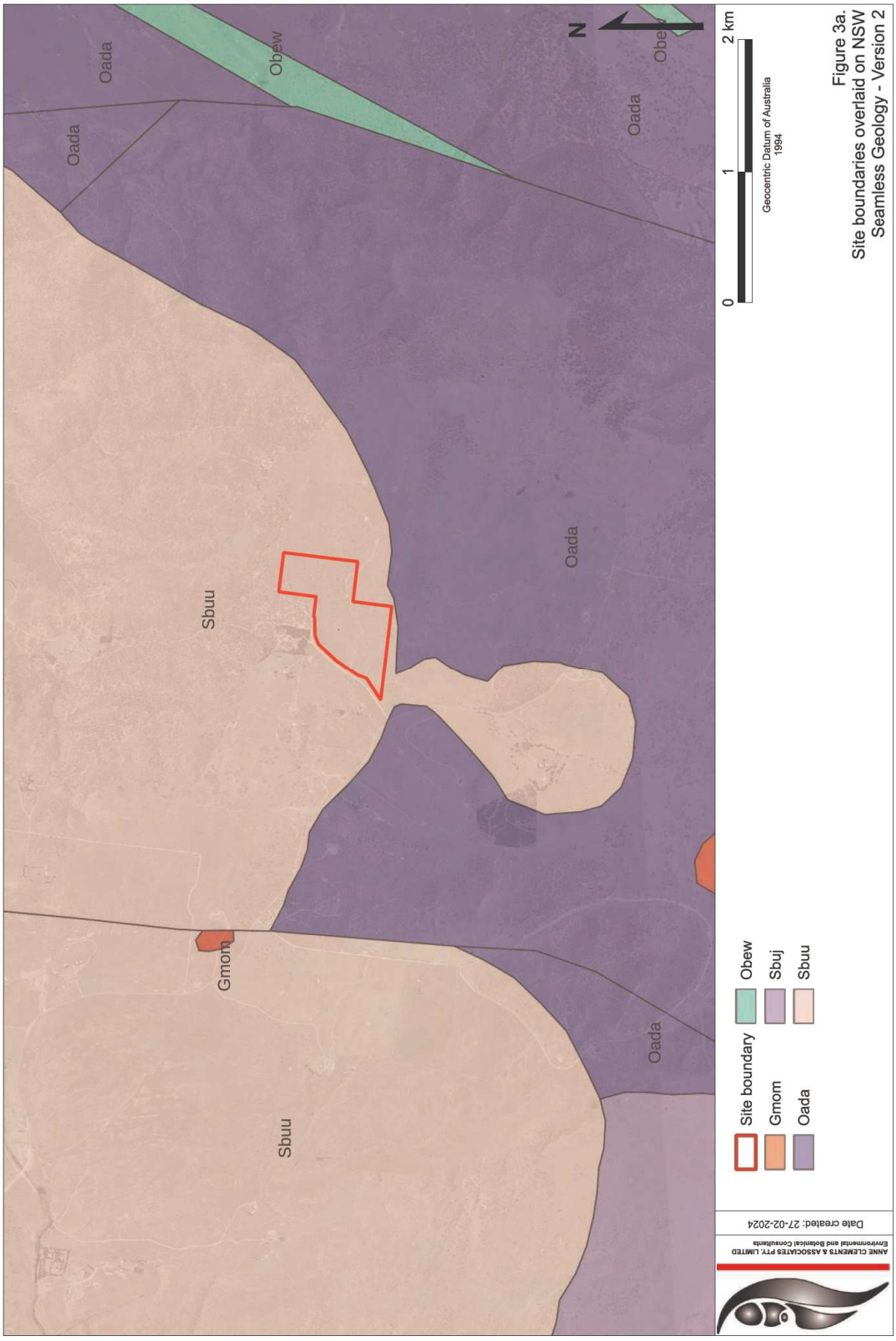


Figure 3a.
Site boundaries overlaid on NSW Seamless Geology - Version 2
Geocentric Datum of Australia 1994
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Oada
Date created: 27-02-2024
ANNE CLEMENTS & ASSOCIATES PTY. LIMITED
Environmental and Botanical Consultants

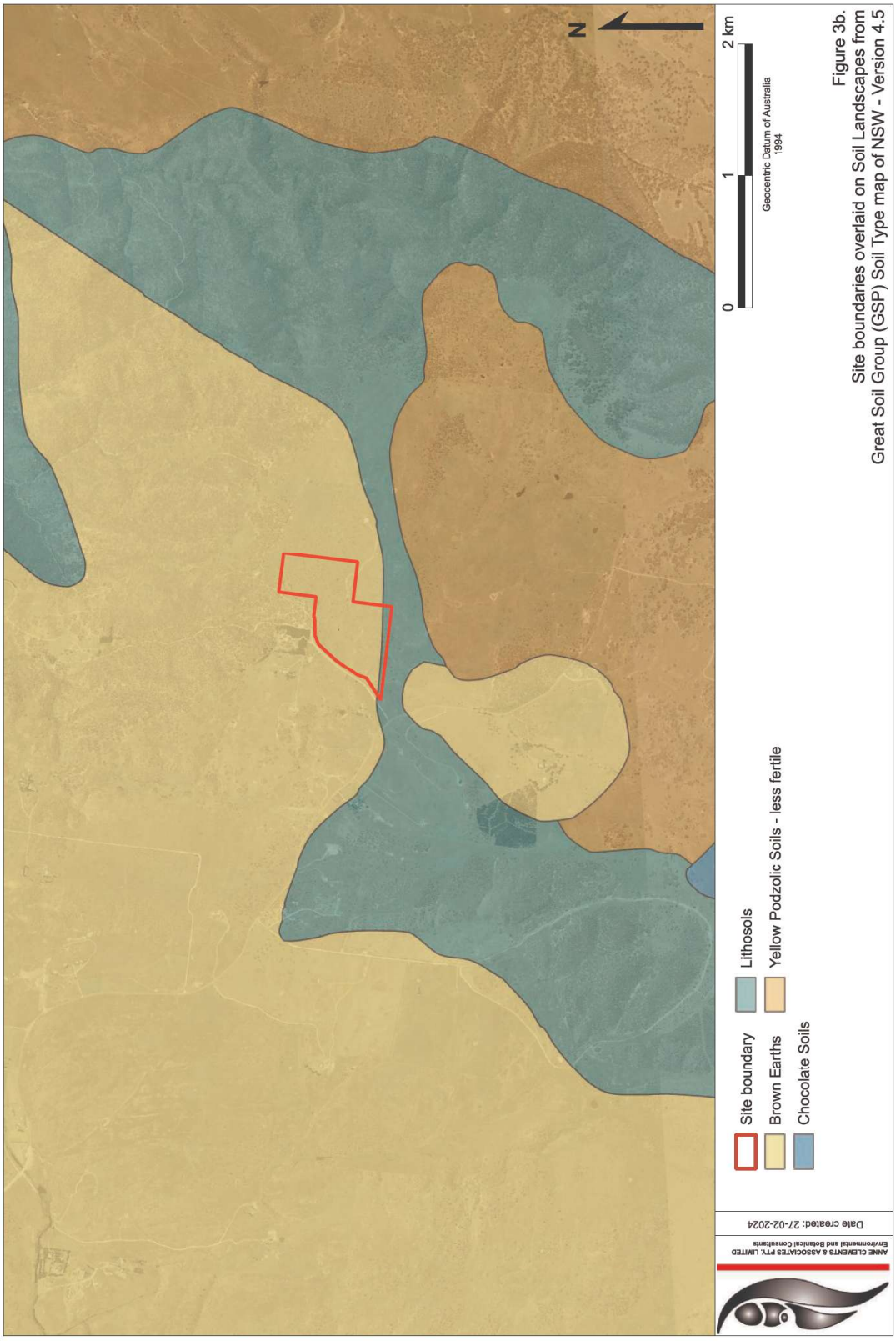


Figure 3b.
Site boundaries overlaid on Soil Landscapes from Great Soil Group (GSP) Soil Type map of NSW - Version 4.5

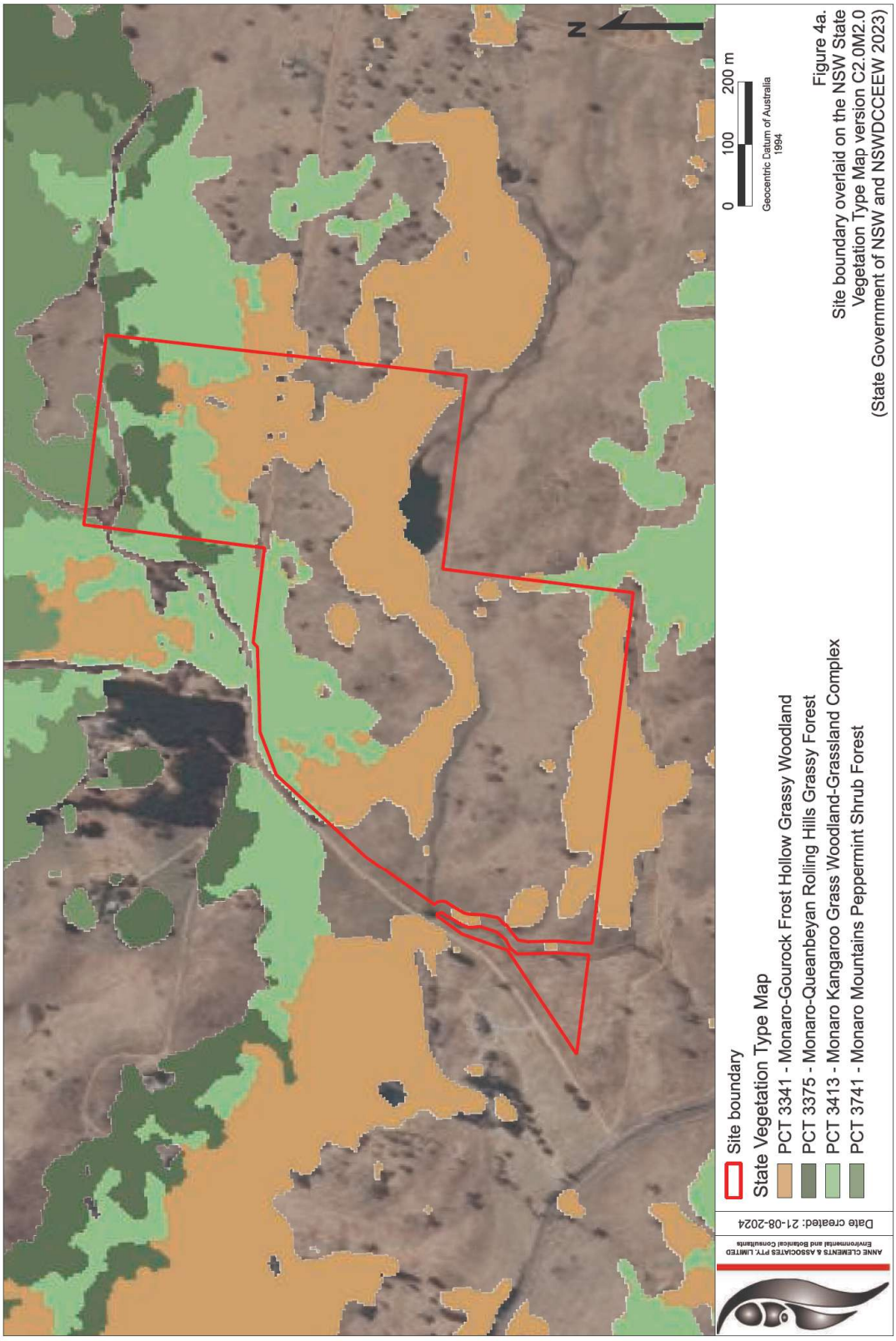


Figure 4a.
Site boundary overlaid on the NSW State Vegetation Type Map version C2.0M2.0 (State Government of NSW and NSWDCCEEW 2023)

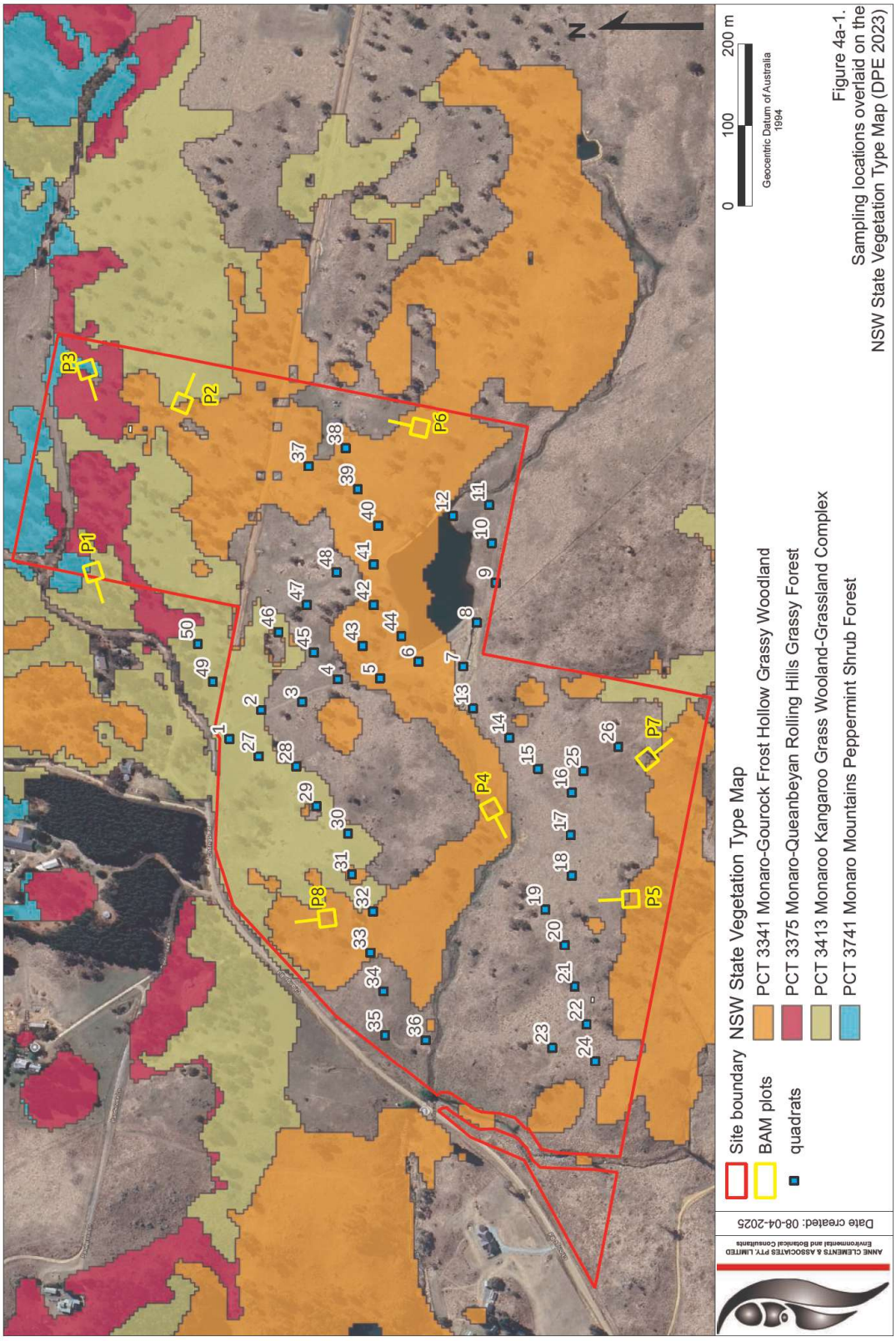


Figure 4a-1.
Sampling locations overlaid on the NSW State Vegetation Type Map (DPE 2023)

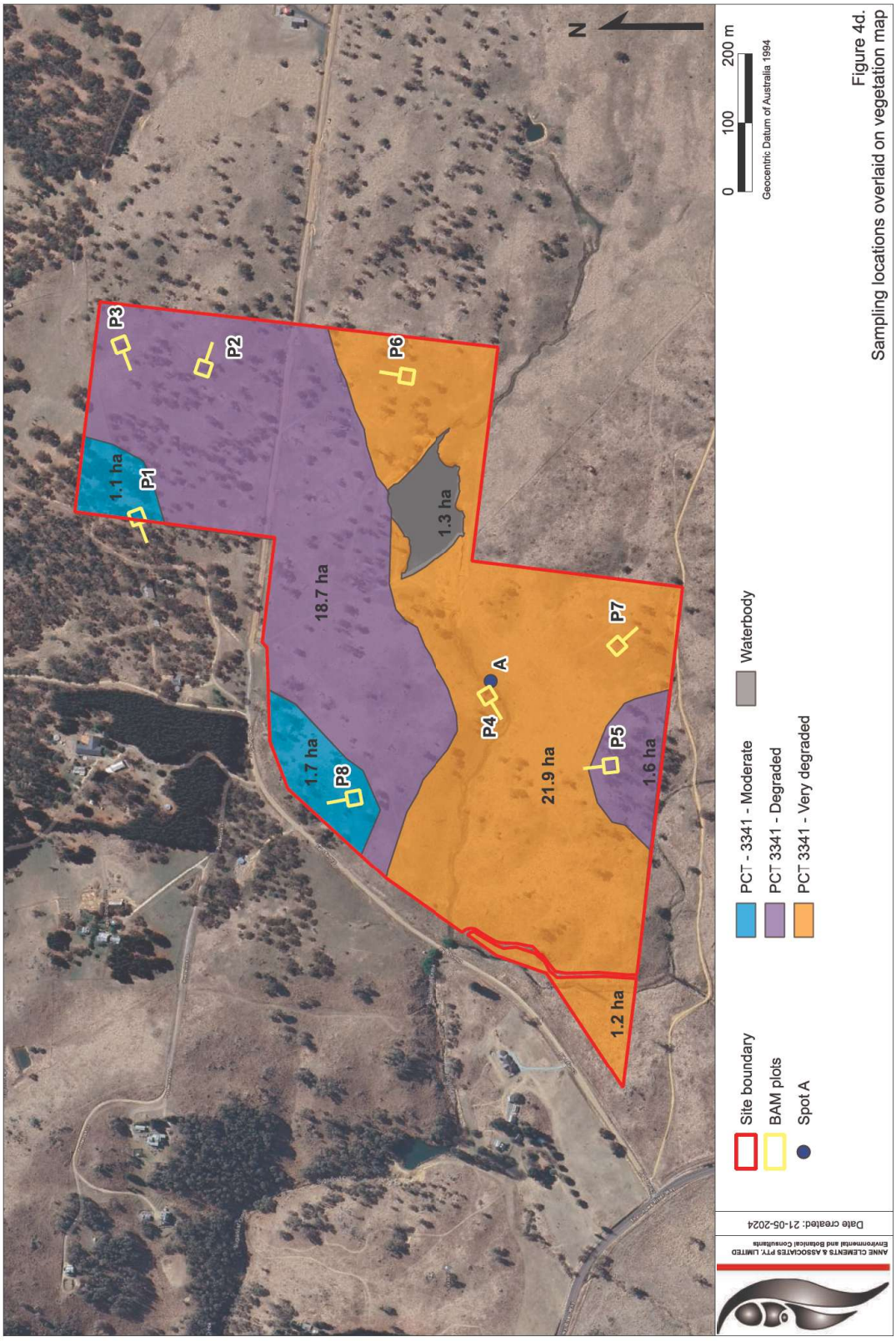
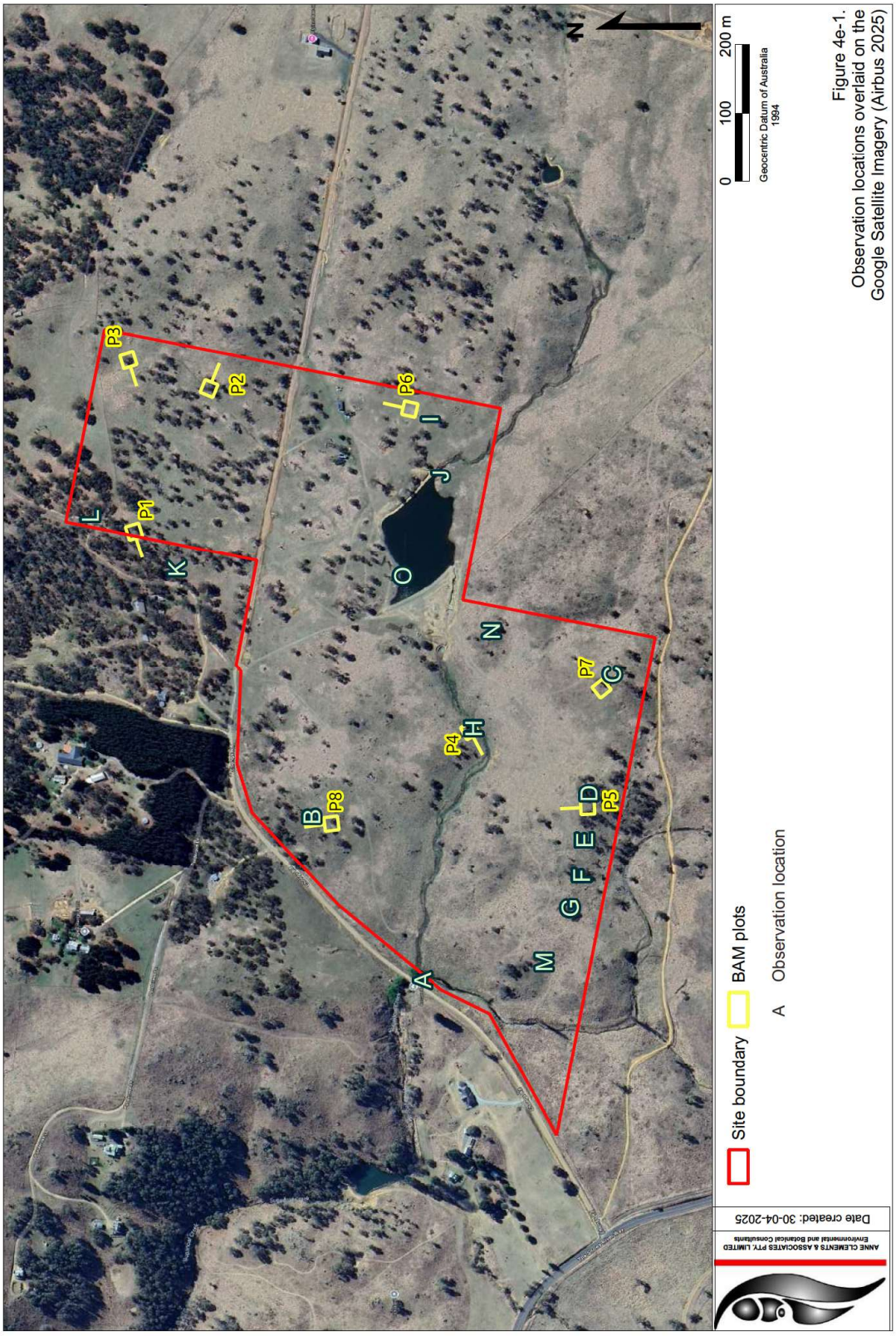


Figure 4d. Sampling locations overlaid on vegetation map


N
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Geocentric Datum of Australia 1994
Figure 4e-1.
Observation locations overlaid on the Google Satellite Imagery (Airbus 2025)
Site boundary
BAM plots
A Observation location
Date created: 30-04-2025
ANNE CLEMENTS & ASSOCIATES PTY. LIMITED
Environmental and Botanical Consultants
P1
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P3
P4
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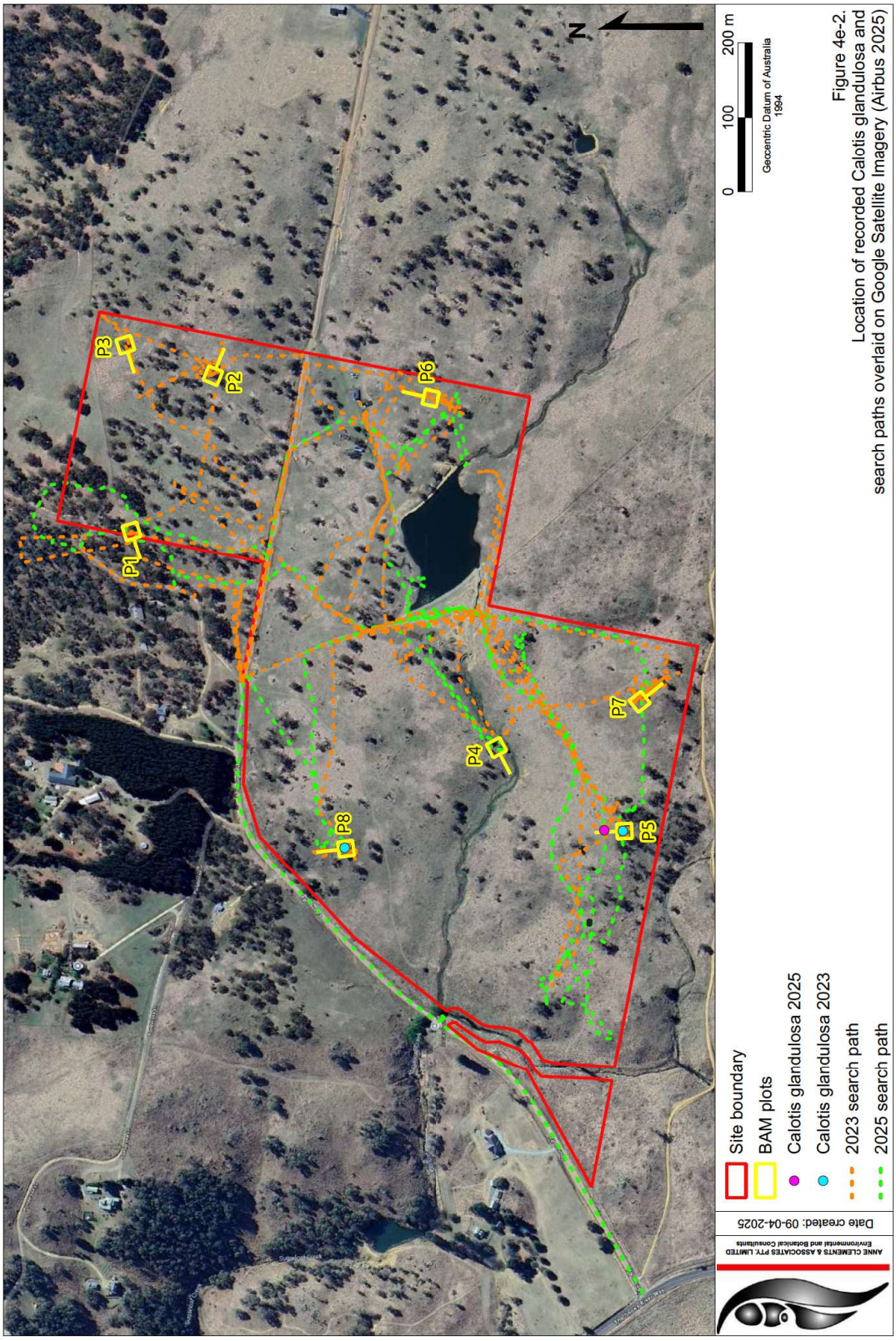

Figure 4e-2. Location of recorded Calotis glandulosa and search paths overlaid on Google Satellite Imagery (Airbus 2025)

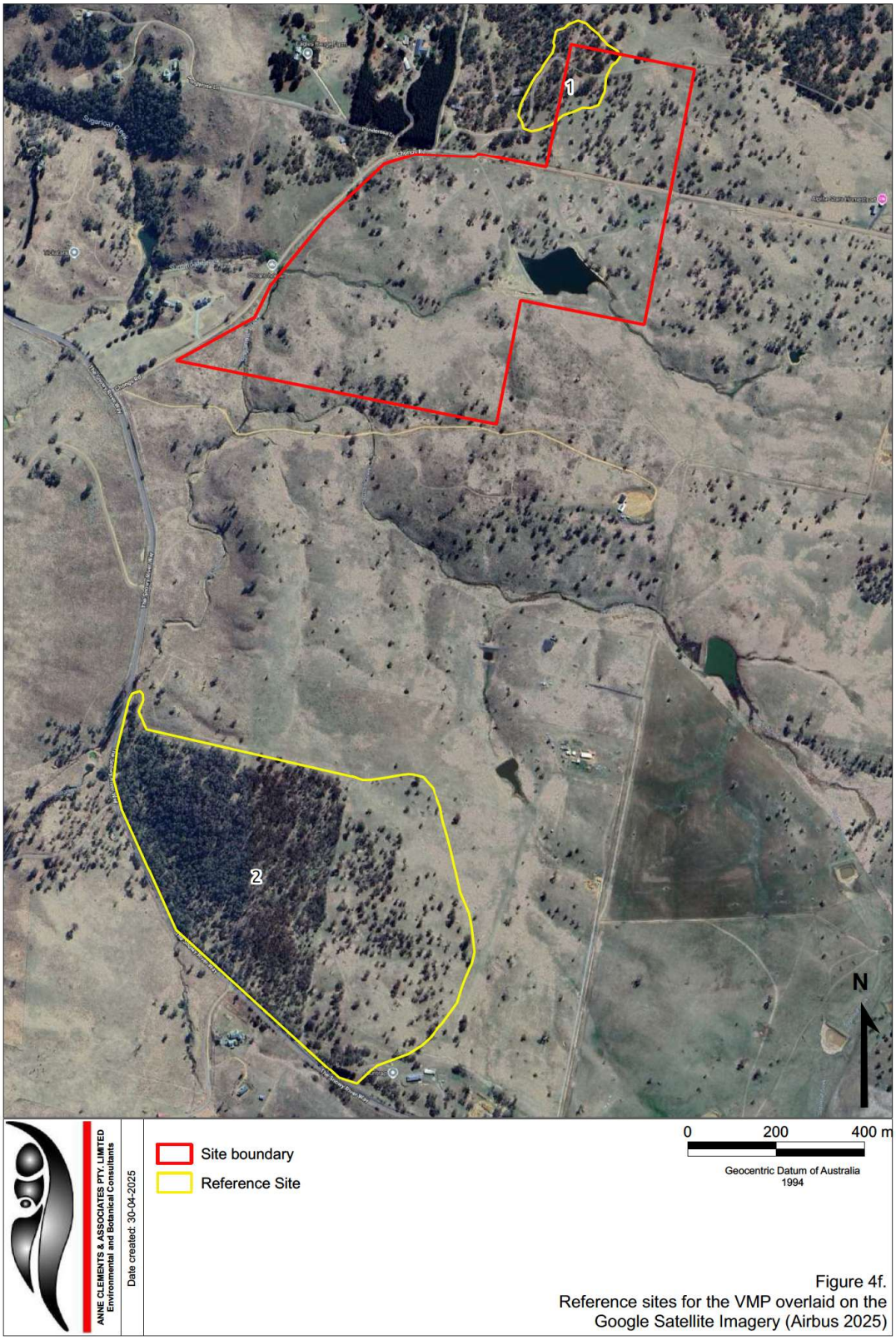

Figure 4f.
Reference sites for the VMP overlaid on the Google Satellite Imagery (Airbus 2025)

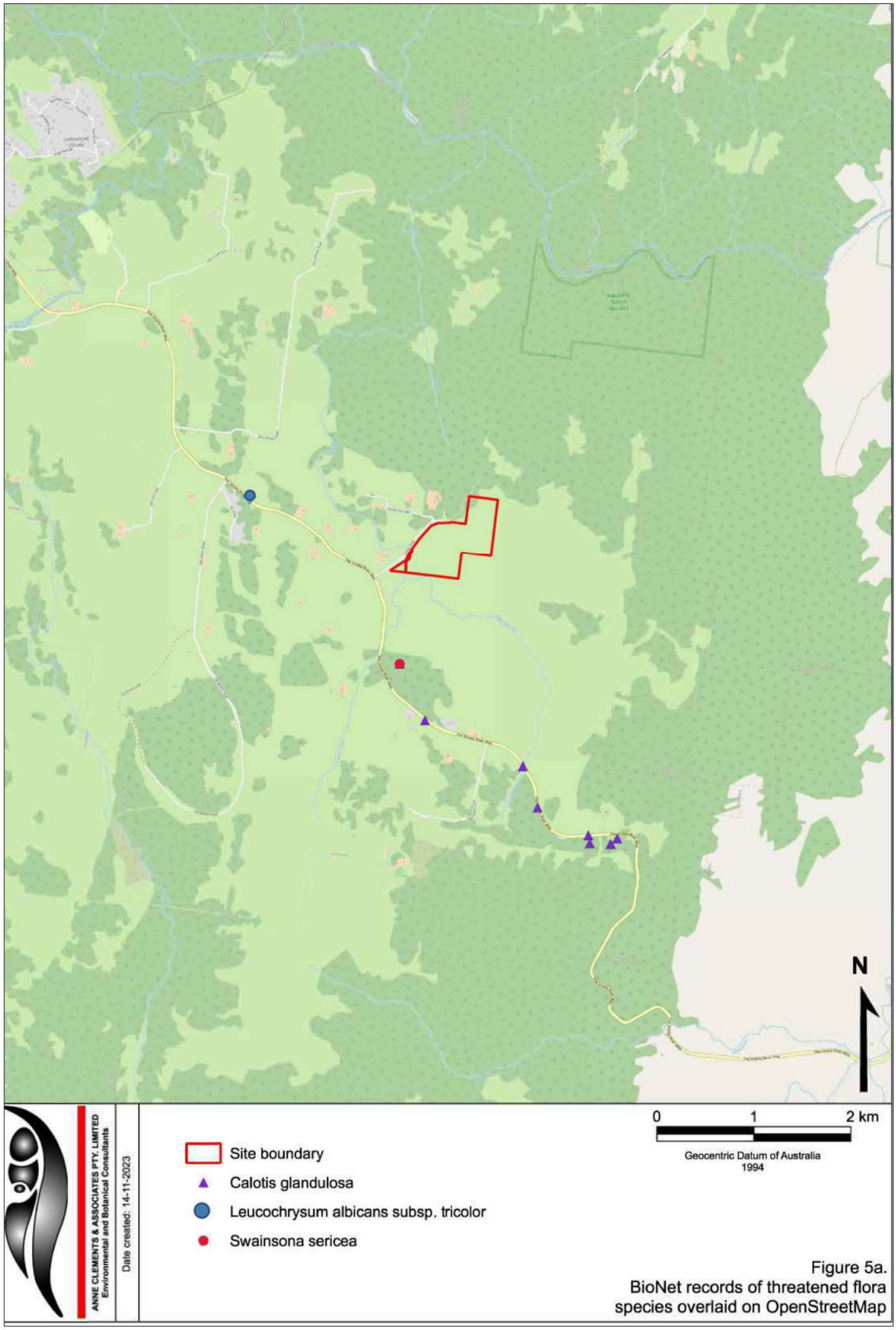

Figure 5a.
BioNet records of threatened flora species overlaid on OpenStreetMap

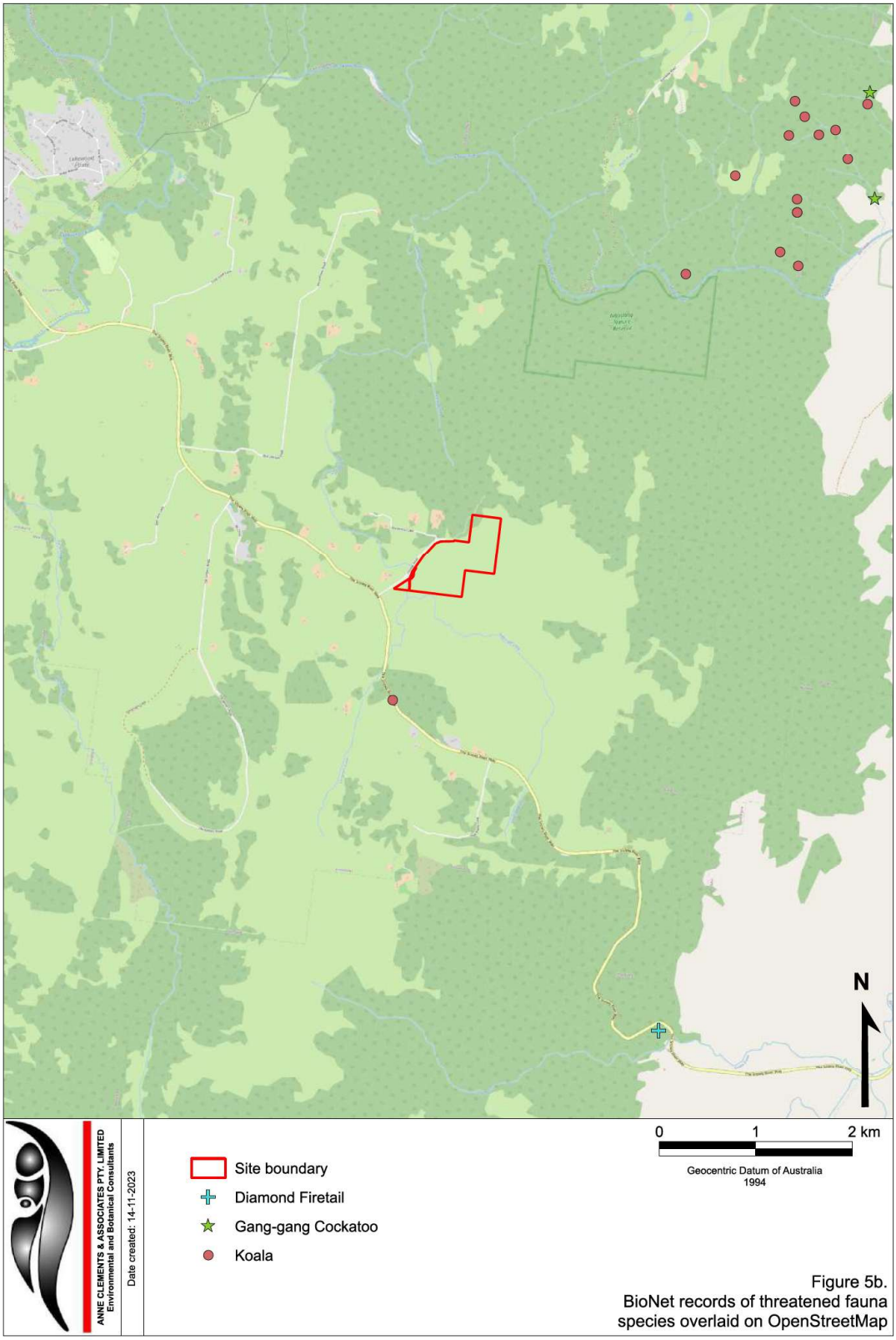

Figure 5b.
BioNet records of threatened fauna species overlaid on OpenStreetMap

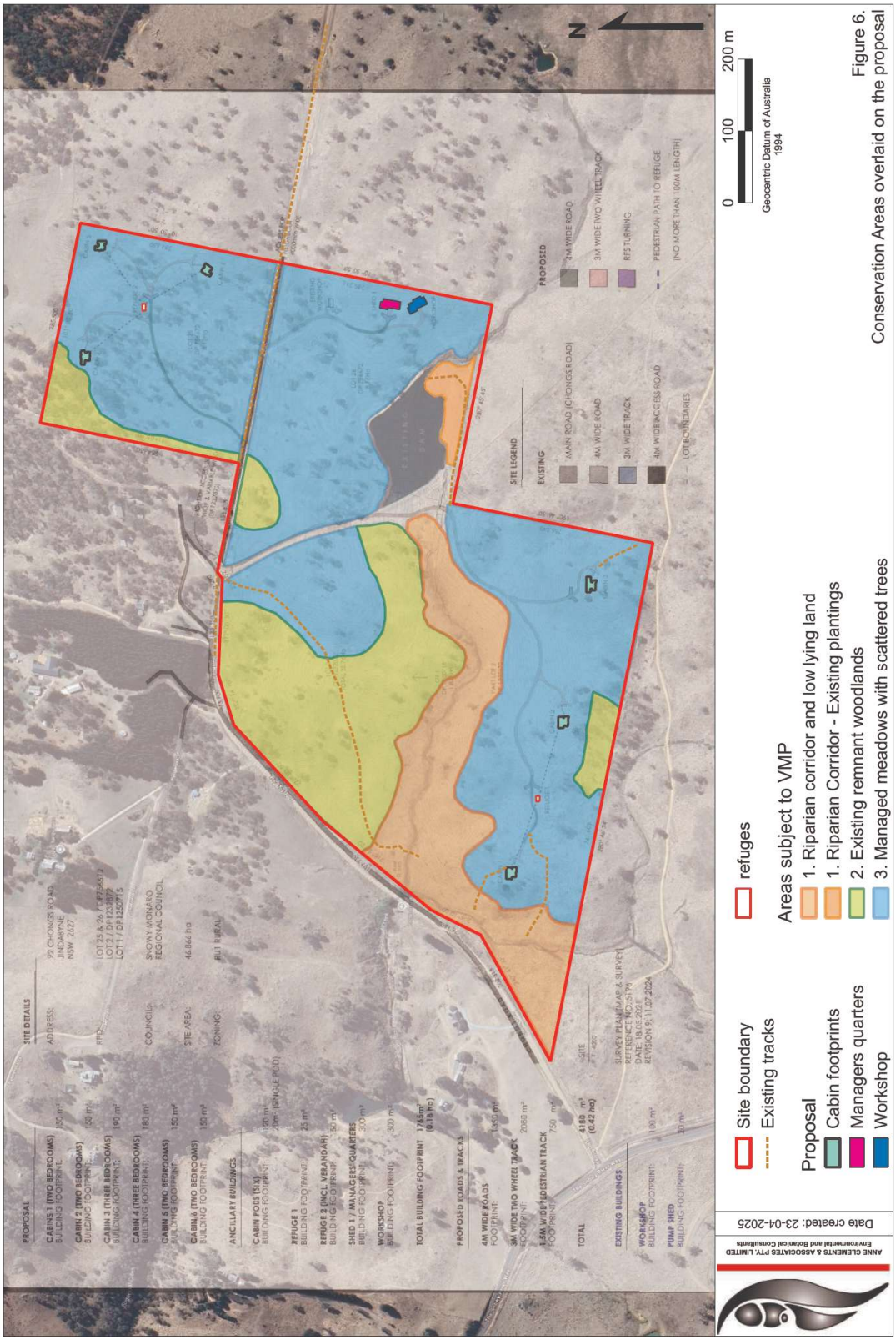

Figure 6. Conservation Areas overlaid on the proposal

Tables

Table 1. Cover of species recorded in 8 BAM Plots and species present in Spot A

Species	Family	ACA BAM Plots and Spot								
		P1	P2	P3	P4	P5	P6	P7	P8	Spot A
Tree (TG)										
Acacia dealbata	Fabaceae Mimosoideae	0.1								
Eucalyptus pauciflora	Myrtaceae	10	10	5	5	1		0.8	10	
Eucalyptus rubida subsp. rubida	Myrtaceae	0.3	5					4		
Eucalyptus stellulata	Myrtaceae		0.5			3			1	
Eucalyptus viminalis	Myrtaceae	0.2								
Shrub (SG)										
Bossiaea buxifolia	Fabaceae Faboideae	0.1				0.1				
Melicytus angustifolius subsp. divaricatus	Violaceae	0.1	0.8	0.4	4	1		0.5	1	
Oxylobium oxylobioides	Fabaceae Faboideae					0.1				
Ozothamnus thyrsoideus	Asteraceae	0.1								
Grass & grasslike (GG)										
Anthosachne scabra	Poaceae	0.1		0.1	0.1	0.1	0.5			
Austrostipa scabra subsp. *Falcata*	Poaceae	0.5		0.1		0.7		1	0.1	
Carex appressa	Cyperaceae									X
Carex breviculmis	Cyperaceae	3		0.1						
Carex incomitata	Cyperaceae		0.1							X
Carex inversa	Cyperaceae	0.1	0.6	0.3						
Eleocharis acuta	Cyperaceae									X
Juncus flicaulis	Juncaceae		3				0.3			
Juncus subsecundus	Juncaceae		0.1							
Juncus vaginatus	Juncaceae		0.3							
Panicum effusum	Poaceae	0.1								
Poa labillardierei	Poaceae	5	10	5	5	5		3	10	X
Poa sieberiana	Poaceae	10	0.8	1		2	15	2	2	
Rytidosperma monticcla	Poaceae	0.1								

Species	Family	ACA BAM Plots and Spot								
		P1	P2	P3	P4	P5	P6	P7	P8	Spot A
Rytidosperma pilosum	Poaceae	0.1				0.1	0.1		0.1	
Schoenus apogon	Cyperaceae		0.1							
Themeda triandra	Poaceae	0.5					0.6		0.8	
Forb (FG)										
Acaena agnipila	Rosaceae	0.1	0.1	0.1	0.5	0.3	0.8	0.7	0.2	
Ajuga australis	Lamiaceae	0.2							0.1	
Ammobium alatum	Asteraceae								0.1	
Arthropodium sp. Snowy R. catchment	Asparagaceae	0.8	0.1		0.1	0.1			0.1	
Asperula conferta	Rubiaceae	0.1	0.2	0.1		1	10	0.8	0.6	
Brachyscome rigidula	Asteraceae	0.1								
Calotis glandulosa	Asteraceae					0.1			0.1	
Calotis scabiosifolia var. *integrifolia*	Asteraceae	0.1		0.1						
Chrysocephalum apiculatum	Asteraceae	0.1			0.3	0.1		0.3		
Chrysocephalum semipapposum	Asteraceae	0.3		0.4			0.9			
Cullen microcephalum	Fabaceae Faboideae	0.1		0.1		0.1			0.1	
Cymbonotus preissianus	Asteraceae	0.1		0.1						
Cynoglossum australe	Boraginaceae			0.2		2		3		
Dichondra repens	Convolvulaceae	3	0.3	0.4		1	0.2	3	0.8	
Einadia nutans subsp. *nutans*	Chenopodiaceae	0.1	0.1	0.1		0.1		0.1	0.3	
Epilobium billardierianum subsp. cinereum	Onagraceae		0.1				0.1	0.1	0.2	
Euchiton involucratus	Asteraceae	0.1	0.5	0.1			0.2	0.1	0.1	
Geranium potentilloides	Geraniaceae				2	0.3		0.1		
Geranium retrorsum	Geraniaceae				0.3					
Geranium solanderi var. *solanderi*	Geraniaceae	1	0.1	2	1	1	5	0.4	3	

Species	Family	ACA BAM Plots and Spot								
		P1	P2	P3	P4	P5	P6	P7	P8	Spot A
Gonocarpus tetragynus	Haloragaceae	0.1	0.1							
Goodenia paniculata	Goodeniaceae	0.1								
Grona varians	Fabaceae Faboideae	0.1				0.1		0.1	0.1	
Hackelia suaveolens	Boraginaceae					0.1	0.1		0.1	
Hydrocotyle laxiflora	Araliaceae	1	1	2	2	1	0.5		1	
Hypericum gramineum	Clusiaceae	0.2					0.1			
Leptorhynchos squamatus subsp.alpinus	Asteraceae	0.1							0.1	
Oxalis exilis	Oxalidaceae	0.2	0.1	0.3	0.1	0.4	3	0.5	0.4	
Plantago varia	Plantaginaceae	2	0.1	0.9	0.9	2	0.3		2	X
Polygala japonica	Polygalaceae	0.1								
Poranthera microphylla	Phyllanthaceae	0.2								
Pseudognaphalium luteoalbum	Asteraceae		0.1							
Ranunculus graniticola	Ranunculaceae	0.1			0.1				0.1	
Rumex dumosus	Polygonaceae				0.1	5	0.1	0.1	0.1	
Scleranthus biflorus	Caryophyllaceae	0.1								
Senecio prenanthoides	Asteraceae								0.1	
Senecio quadridentatus	Asteraceae	0.5	0.3	0.8		0.1			0.1	
Solenogyne gunnii	Asteraceae	0.1					0.1		0.1	
Swainsona behriana	Fabaceae Faboideae	0.1		0.1		0.1	0.1			
Vittadinia cuneata var. *cuneata*	Asteraceae			0.1		0.1		1	0.1	
Vittadinia gracilis	Asteraceae	0.4	0.3	0.8	0.1	0.8	0.1	0.4		
Vittadinia muelleri	Asteraceae	2		0.1	0.1				0.7	
Wahlenbergia communis	Campanulaceae	0.1		0.1		0.2		2		X
Wahlenbergia gracilis	Campanulaceae		0.1	0.1						
Fern (EG)										
Asplenium flabellifolium	Aspleniaceae					0.1				
Other (OG)										
Clematis leptophylla	Ranunculaceae	0.1			0.1					

Species	Family	ACA BAM Plots and Spot								
		P1	P2	P3	P4	P5	P6	P7	P8	Spot A
Convolvulus angustissimus	Convolvulaceae	0.9		0.6		0.3	0.3	0.5	0.2	X
Glycine clandestina	Fabaceae Faboideae	0.1								
High Threat Weed										
Hypericum perforatum	Clusiaceae	0.1	2	2	2	2	1	1	2	X
Nassella trichotoma	Poaceae	0.8	0.8	0.3		3	0.1	4		
Rosa rubiginosa	Rosaceae		0.1		0.5		0.1	0.1	0.1	
Rubus fruticosus agg.	Rosaceae		0.1							
Exotic										
Aira caryophyllea	Poaceae	0.1		0.1						
Anthoxanthum odoratum	Poaceae						0.3		0.1	
Arenaria serpyllifolia	Caryophyllaceae			0.1						
Bromus brevis	Poaceae		0.1							
Bromus hordeaceus	Poaceae	5	10	10	10	15	15	20	20	
Bromus sterilis	Poaceae	2	1	4	10	4		10	0.5	
Carduus nutans	Asteraceae		0.1		0.1	0.4	0.5	2	0.3	
Cerastium fontanum	Caryophyllaceae			0.1	0.1					
Chondrilla juncea	Asteraceae			0.1	0.3			0.1		
Cirsium vulgare	Asteraceae	0.1	1		2	0.2		0.3	0.5	X
Conyza sumatrensis	Asteraceae		0.2					0.1		
Crataegus monogyna	Rosaceae		0.1		0.5				0.8	
Crepis capillaris	Asteraceae	0.5	1	4		0.3	2	1		
Dactylis glomerata	Poaceae							1		
Echium vulgare	Boraginaceae		1	3			0.3	0.8		
Eragrostis curvula	Poaceae					2				
Erodium cicutarium	Geraniaceae		0.1	0.1			0.1			
Glyceria declinata	Poaceae									X
Holcus lanatus	Poaceae		0.4	0.1	20	0.6	0.9		0.6	X
Hordeum leporinum	Poaceae							0.1		

Species	Family	ACA BAM Plots and Spot								
		P1	P2	P3	P4	P5	P6	P7	P8	Spot A
Hypochaeris radicata	Asteraceae			2	2	0.9	4	2	2	
Lolium perenne	Poaceae		4	1	15	2	5	4	2	X
Medicago lupulina	Fabaceae Faboideae		0.1	0.1						
Myosotis laxa subsp. *caespitosa*	Boraginaceae				0.1					X
Nasturtium officinale	Brassicaceae									X
Plantago lanceolata	Plantaginaceae					0.6		0.1		X
Poa pratensis	Poaceae			0.1	0.1					
Potentilla recta	Rosaceae				0.1	0.1			0.1	
Rumex acetosella	Polygonaceae	5	15	4	4		5	20	10	X
Rumex obtusifolius	Polygonaceae									X
Salvia verbenaca	Lamiaceae		0.1	0.5				0.3		
Sanguisorba minor	Rosaceae		0.1							
Silybum marianum	Asteraceae							0.1		
Sisymbrium orientale	Brassicaceae							0.1		
Taraxacum officinale	Asteraceae		0.8	0.5	0.5	0.8	0.1	0.3	0.2	
Tragopogon dubius	Asteraceae					0.1		0.1	0.1	
Trifolium arvense	Fabaceae Faboideae	1	0.1	0.8		0.2	0.3	0.3	0.1	
Trifolium campestre	Fabaceae Faboideae	0.5	0.1	0.2			0.1			
Trifolium dubium	Fabaceae Faboideae		0.3	0.1						
Trifolium repens	Fabaceae Faboideae		10	2	1	3	5	10	10	X
Trifolium subterraneum	Fabaceae Faboideae					0.1				
Verbascum thapsus	Scrophulariaceae	0.2		0.1	0.4	4	0.4	1	0.9	
Veronica anagallis-aquatica	Plantaginaceae									X
Vulpia muralis	Poaceae		0.1			0.5	0.1	0.3		

Table 2. Maximum height and number of individuals per 10 m x 10 m subquadrat, for species present ≥ 2 m tall.

Botanical name	Subquadrat 1		Subquadrat 2		Subquadrat 3		Subquadrat 4	
	Number	Height	Number	Height	Number	Height	Number	Height
Plot 1								
Eucalyptus pauciflora	3	10 m	1	12 m	1	10 m		
Plot 2								
Eucalyptus pauciflora					1	8 m		
Eucalyptus rubida					1	25 m		
Eucalyptus stellulata	1	7 m						
Plot 3								
Eucalyptus pauciflora	1	10 m					1	10 m
Plot 4								
**Crataegus monogyna*	1	3 m						
Eucalyptus pauciflora			1	15 m	1	7 m	1	10 m
**Rosa rubiginosa*			1	2 m				
Plot 5								
Eucalyptus pauciflora	1	8 m						
Eucalyptus stellulata			1	12 m				
Plot 6								
No trees								
Plot 7								
Eucalyptus pauciflora					1	7 m		
Eucalyptus rubida							1	22 m
Plot 8								
**Crataegus monogyna*			2	3 m				
Eucalyptus pauciflora	3	7 m	4	8 m	3	12 m		
Eucalyptus stellulata			2	9 m				

* = exotic species

Table 3a. Native species covers recorded in 1 m x 1 m quadrats

Growth form	Botanical name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Tree	*Eucalyptus rubida* subsp. *rubida*																									
Tree	*Eucalyptus stellulata*																									
Shrub	*Melicytus angustifolius subsp. divaricatus*																									
Grass & grasslike	*Anthosachne scabra*	10					3		0.1					5				5		5						5
Grass & grasslike	*Austrostipa scabra* subsp. *falcata*										2												1			2
Grass & grasslike	*Carex breviculmis*																									
Grass & grasslike	*Carex incomitata*						0.1																			
Grass & grasslike	*Carex inversa*																					0.5		1	0.5	
Grass & grasslike	*Dichelachne inaequiglumis*																									
Grass & grasslike	*Dichelachne* sp.									1	0.1	0.1		2			0.1		0.1							
Grass & grasslike	*Juncus filicaulis*																									
Grass & grasslike	*Panicum effusum*										3				5							1	5			
Grass & grasslike	*Poa labillardierei*		10	15																		10				
Grass & grasslike	*Poa sieberiana*		20	20			1	1			10	15	15	10	15	1	15	5					6	5		
Grass & grasslike	*Rytidosperma pilosum*	0.1	0.1								2	1	2												3	0.1
Grass & grasslike	*Rytidosperma* sp.		10																							
Grass & grasslike	*Themeda triandra*										1	0.5														
Forb	*Acaena agnipila*																0.1									
Forb	*Arthropodium* sp. Snowy R. catchment												2					5								
Forb	*Asperula conferta*											0.5	0.5	0.1					0.5				0.2			
Forb	*Asperula scoparia*																				0.1					
Forb	*Chrysocephalum apiculatum*																								0.1	5
Forb	*Coronidium scorpioides*												0.5													
Forb	*Cymbonotus preissianus*																									
Forb	*Cynoglossum australe*																	0.1						0.1		
Forb	*Dichondra repens*	0.1			3																1		0.1			
Forb	*Epilobium billardierianum* subsp. *cinereum*																				0.1	0.1				

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Table 3a. Native species covers recorded in 1 m x 1 m quadrats

Growth form	Botanical name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Forb	*Euchiton involucratus*						0.1						0.1													
Forb	*Geranium solanderi* var. *solanderi*		0.1								0.1											0.1	0.1			
Forb	*Hackelia suaveolens*											0.1														
Forb	*Hydrocotyle laxiflora*																		0.5							
Forb	*Leptorhynchos squamatus* subsp. *alpinus*																									
Forb	*Oxalis exilis*									1				0.2				0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1
Forb	*Plantago varia*		0.1	0.1	0.1																0.1	0.1				
Forb	*Polygala japonica*							0.1																		
Forb	*Poranthera microphylla*																									
Forb	*Rumex dumosus*																									
Forb	*Solenogyne dominii*																									
Forb	*Solenogyne gunnii*	0.1	0.1	0.1									1	0.5	1					0.1						
Forb	*Vittadinia cuneata* var. *cuneata*																									
Forb	*Vittadinia gracilis*		0.1		5			0.1			2							1					0.1			0.2
Forb	*Wahlenbergia communis*										0.1										0.1		0.1			
Forb	*Wahlenbergia gracilis*																									0.1
Other	*Convolvulus angustissimus*						0.1								0.1			0.1					0.1			

rock	rock										35											0.1				
bare	bare	15	15	15	30	50	50	85	95	70	20	10	20	45	45	50	55	50	55	60	60	70	65	30	60	60
leaf litter	leaf litter				5							25	5		5	5	2	2	3	2	5	3	5			2

Table 3a. Native species covers recorded in 1 m x 1 m quadrats

Growth form	Botanical name	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Tree	*Eucalyptus rubida* subsp. *rubida*															0.1										
Tree	*Eucalyptus stellulata*																0.2									
Shrub	*Melicytus angustifolius subsp. divaricatus*																		15							
Grass & grasslike	*Anthosachne scabra*							15	1		15		0.1			2		10		3	5		1			
Grass & grasslike	*Austrostipa scabra* subsp. *falcata*												0.2													
Grass & grasslike	*Carex breviculmis*							1																		
Grass & grasslike	*Carex incomitata*																									
Grass & grasslike	*Carex inversa*														7											
Grass & grasslike	*Dichelachne inaequiglumis*																			2						
Grass & grasslike	*Dichelachne* sp.																									
Grass & grasslike	*Juncus filicaulis*														10		2									
Grass & grasslike	*Panicum effusum*										3		2				10						3			10
Grass & grasslike	*Poa labillardierei*											40												1		5
Grass & grasslike	*Poa sieberiana*	10	5	10	5	15	20	35	5	25	10					5	3	5		5	15	30	3	3	2	15
Grass & grasslike	*Rytidosperma pilosum*			1									0.1	10		2		5	1	5						
Grass & grasslike	*Rytidosperma* sp.																									
Grass & grasslike	*Themeda triandra*						0.5			0.1						2							0.1			1
Forb	*Acaena agnipila*					0.1																				
Forb	*Arthropodium* sp. *Snowy R. catchment*																									
Forb	*Asperula conferta*									1																
Forb	*Asperula scoparia*	0.5	0.5	0.5		0.1	0.5	0.1	0.1	0.5	0.1			1		0.1	0.1	0.1		0.2	0.1	0.1	0.1	0.1	0.1	
Forb	*Chrysocephalum apiculatum*		0.1	0.1																0.1						
Forb	*Coronidium scorpioides*																									
Forb	*Cymbonotus preissianus*																			0.4						
Forb	*Cynoglossum australe*	0.1					0.1		0.1														0.1			0.1
Forb	*Dichondra repens*												0.1						0.1	0.1	0.2		0.1	0.1		
Forb	*Epilobium billardierianum subsp. cinereum*										0.1															

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Table 3a. Native species covers recorded in 1 m x 1 m quadrats

Growth form	Botanical name	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Forb	*Euchiton involucratus*												0.1			0.1	0.1		0.1	0.2						
Forb	*Geranium solanderi* var. *solanderi*	0.1			0.1		0.1		0.1		0.1	0.1			0.1			0.1			0.1	0.1	0.1		0.1	
Forb	*Hackelia suaveolens*																									
Forb	*Hydrocotyle laxiflora*																	0.1	0.5							
Forb	*Leptorhynchos squamatus* subsp. *alpinus*															0.1										
Forb	*Oxalis exilis*	0.1	0.5		0.1		0.1	0.1	0.1		0.1								0.1		0.1				0.1	
Forb	*Plantago varia*	0.1		0.5			0.1											0.1				0.1	0.5	0.1	0.1	0.1
Forb	*Polygala japonica*																									
Forb	*Poranthera microphylla*												0.1													
Forb	*Rumex dumosus*																			0.5						
Forb	*Solenogyne dominii*					0.5					0.1			3		0.1				0.2		0.1		0.1		0.1
Forb	*Solenogyne gunnii*																0.1									
Forb	*Vittadinia cuneata* var. *cuneata*																			0.1						
Forb	*Vittadinia gracilis*			0.1									0.2						0.1						0.2	
Forb	*Wahlenbergia communis*																									
Forb	*Wahlenbergia gracilis*																									
Other	*Convolvulus angustissimus*						0.1																	0.1		

rock	rock												20													
bare	bare	30	50	45	20	20	10	1	45		15	10	50	40		55	50	35	5	20	30	3	50	60	75	40
leaf litter	leaf litter		3		3	0.1	20	5		30						2		3	35	15	15	1	5		5	10

Table 3b. Exotic species covers recorded in 1 m x 1 m quadrats

Botanical Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Bromus hordeaceus															0.3										
Bromus sterilis											1														
Carduus nutans		0.1	3				5						0.5	0.1	25		5	0.1	0.1				0.1	1	0.2
Carthamus lanatus																	0.1							15	
Cerastium fontanum																									
Chondrilla juncea																					0.1				
Cirsium vulgare			0.1	20									1		3				0.1						
Conyza canadensis							1																		
Conyza sumatrensis												0.1													
Crepis capillaris			0.1														0.1			0.5					
Dactylis glomerata						0.1																			
Echium vulgare				1					1														0.5		
Eragrostis curvula																3				5					
Holcus lanatus	20	5		5		10		0.1							1					10					5
Hypericum perforatum	2	0.1	1			0.1					1					0.5	0.1			0.5			20		0.1
Hypochaeris radicata	0.1	0.1	0.1	2			0.1						0.1	0.5		0.3					0.1	0.1	0.5	1	
Lolium perenne	50	35	30	20	30	35	2		20	20	35	30	20	25	5	30	15	35	25	15	10	15	40	15	30
Medicago lupulina								1																	
Nassella trichotoma			20									20					10	3						10	
Onopordum acanthium			0.1																						
Petrorhagia nanteuilii															0.1									0.1	
Plantago lanceolata		0.1										0.1				0.1									
Poa compressa																									
Potentilla recta																									
Rosa rubiginosa													1												
Rumex acetosella	0.1	0.1	0.1	3					2	2	1		0.1	0.1	5			0.5	7		5	2	1	1	
Salvia verbenaca				0.1					1										0.1					0.1	
Sisymbrium orientale																								0.5	

Table 3b. Exotic species covers recorded in 1 m x 1 m quadrats

Botanical Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Taraxacum officinale	0.1	0.1		1								0.1			0.1					0.1					
Tragopogon sp.																				0.1	0.1				
Trifolium arvense			0.1			0.1	0.1						0.1		0.1					0.1	0.1			0.1	0.1
Trifolium dubium							0.1																		
Trifolium repens	0.1						0.1					0.5	0.1												
Trifolium subterraneum	0.1																								
Verbascum thapsus													3								0.1				
Vulpia sp.				0.1																					

rock										35											0.1				
bare	15	15	15	30	50	50	85	95	70	20	10	20	45	45	50	55	50	55	60	60	70	65	30	60	60
leaf litter				5							25	5		5	5	2	2	3	2	5	3	5			2

Table 3b. Exotic species covers recorded in 1 m x 1 m quadrats

Botanical Name	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Bromus hordeaceus								0.1		3						1		1							
Bromus sterilis																									
Carduus nutans					1	3												1							
Carthamus lanatus																									
Cerastium fontanum																		0.1							
Chondrilla juncea																		0.1							
Cirsium vulgare				0.1	1	2	1	0.1				0.1				2		5					0.2	0.1	
Conyza canadensis																									
Conyza sumatrensis								0.1				0.1													
Crepis capillaris				0.1																					
Dactylis glomerata																									
Echium vulgare	0.5							0.1		0.1															
Eragrostis curvula																									
Holcus lanatus		3		15	5	2	1	1		20	15	0.5		35		2	5	2	2	1					
Hypericum perforatum						0.5				0.1					0.1	1	0.1			1			0.1		0.1
Hypochaeris radicata		0.1	0.5	0.1	0.2	0.1	0.1	0.1	1	0.1	0.1	0.1			0.1		0.1		0.1	0.1	0.1	0.5	0.1	0.1	0.1
Lolium perenne	40	35	40	55	55	40	40	45	40	30	30	5	45	45	30	25	35	30	45	25	60	35	35	5	15
Medicago lupulina																									
Nassella trichotoma	15																								
Onopordum acanthium																									
Petrorhagia nanteuilii																									
Plantago lanceolata																					0.5				
Poa compressa																							0.1		
Potentilla recta							0.1																		
Rosa rubiginosa																									
Rumex acetosella	0.2		0.1	0.5		1	0.1	1	2		2	2			0.5	0.2		3	1		1	1	1	2	0.5
Salvia verbenaca																								0.1	
Sisymbrium orientale																									

Table 3b. Exotic species covers recorded in 1 m x 1 m quadrats

Botanical Name	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Taraxacum officinale				0.1	0.1			0.5			0.1	0.1				0.1				0.2					
Tragopogon sp.						0.1	0.1																		
Trifolium arvense								0.1	0.1							0.1				0.1					
Trifolium dubium													0.1												
Trifolium repens					0.1						0.1		0.1	0.1				0.1	0.1						
Trifolium subterraneum													0.1												
Verbascum thapsus												0.5													1
Vulpia sp.																									

rock												20													
bare	30	50	45	20	20	10	1	45		15	10	50	40		55	50	35	5	20	30	3	50	60	75	40
leaf litter		3		3	0.1	20	5		30						2		3	35	15	15	1	5		5	10

Table 4. BioNET data recorded at Reference Site 2

Native/ Exotic	Scientific name	BioNET sites	
		NUV07W5F (gully)	NUV08W5M (slope)
Native	*Acaena echinata*	X	X
Native	*Acaena novae-zelandiae*	X	
Native	Acacia dealbata subsp. subalpina		X
Native	*Acrotriche serrulata*		X
Native	*Ajuga australis*		X
Native	*Arthropodium milleflorum*		X
Native	*Asperula conferta*	X	X
Native	*Asperula scoparia*		X
Native	*Bossiaea buxifolia*		X
Native	*Brachyscome rigidula*		X
Native	***Calotis glandulosa***		X
Native	*Carex appressa*	X	
Native	*Carex breviculmis*		X
Native	*Carex incomitata*		X
Native	*Chrysocephalum apiculatum*		X
Native	*Cullen microcephalum*		X
Native	*Cymbonotus spp.*		X
Native	*Cynoglossum australe*		X
Native	Cynoglossum suaveolens (syn Hackelia suaveolens)	X	
Native	Desmodium varians (syn Grona varians)		X
Native	*Dichelachne hirtella*		X
Native	*Dichondra repens*		X
Native	*Echinopogon ovatus*		X
Native	Einadia nutans subsp. nutans		X
Native	Elymus scaber (syn Anthosachne scabra)		X
Native	Epilobium billardierianum subsp. cinereum		X
Native	*Eucalyptus pauciflora*		X
Native	Eucalyptus rubida subsp. rubida		X
Native	*Eucalyptus stellulata*	X	
Native	*Euchiton japonicus*		X
Native	*Euchiton sphaericus*		X
Native	*Geranium gardneri*	X	
Native	*Geranium solanderi*	X	X
Native	*Glycine clandestina*		X
Native	*Glycine clandestina*		X
Native	*Hydrocotyle laxiflora*	X	X

Native/ Exotic	Scientific name	BioNET sites	
		NUV07W5F (gully)	NUV08W5M (slope)
Native	Leptorhynchos squamatus subsp. squamatus		X
Native	*Leucopogon fraseri*		X
Native	Melicytus sp. Snowfields	X	
Native	Melicytus spp.	X	
Native	Microlaena stipoides var. stipoides		X
Native	*Oxalis perennans*		X
Native	*Plantago varia*	X	X
Native	*Poa labillardierei*		X
Native	Poa sieberiana var. sieberiana		X
Native	*Ranunculus scapiger*		X
Native	*Rytidosperma pilosum*		X
Native	Rytidosperma spp.		X
Native	*Scleranthus fasciculatus*		X
Native	*Senecio microbasis*		X
Native	*Senecio prenanthoides*		X
Native	*Senecio quadridentatus*		X
Native	***Swainsona sericea***		X
Native	*Themeda australis*		X
Native	*Vittadinia gracilis*		X
Native	*Vittadinia muelleri*		X
Native	*Wahlenbergia planiflora*		X
Exotic	Acetosella vulgaris (syn Rumex acetosella)	X	X
Exotic	*Anthoxanthum odoratum*	X	X
Exotic	*Bromus catharticus*	X	
Exotic	Carduus spp.	X	X
Exotic	*Centaurium erythraea*		X
Exotic	*Cerastium vulgare*	X	
Exotic	*Cirsium vulgare*	X	X
Exotic	*Conyza sumatrensis*		X
Exotic	*Crataegus monogyna*	X	
Exotic	*Crepis capillaris*	X	X
Exotic	*Dactylis glomerata*	X	
Exotic	*Echium vulgare*	X	
Exotic	*Holcus lanatus*	X	X
Exotic	*Hypericum perforatum*		X
Exotic	*Hypochaeris radicata*	X	X
Exotic	*Nassella trichotoma*		X

Native/ Exotic	Scientific name	BioNET sites	
		NUV07W5F (gully)	NUV08W5M (slope)
Exotic	*Phalaris aquatica*	X	
Exotic	*Plantago lanceolata*	X	
Exotic	*Prunella vulgaris*	X	
Exotic	*Rosa rubiginosa*	X	
Exotic	*Sonchus asper*	X	
Exotic	*Taraxacum officinale*	X	
Exotic	*Tragopogon spp.*	X	X
Exotic	*Trifolium arvense*		X
Exotic	*Trifolium campestre*	X	
Exotic	*Trifolium repens*	X	
Exotic	Trifolium spp.		X
Exotic	*Verbascum thapsus*		X

Appendix A
Letter from the NSW Department of Climate Change, Energy, the Environment and Water, Biodiversity & Conservation Science, emailed from Snowy Monaro Regional Council in November 2024.

Department of Climate Change, Energy, the Environment and Water

Your ref: DA 10.2024.230.1
Our ref: DOC24/800459

Mr Evan Radford
Town Planner
Snowy Monaro regional Council
81 Commissioner Street
COOMA NSW 2630

By email: evan.radford@snowymonaro.nsw.gov.au

Dear Mr Radford

Thank you for your correspondence regarding the proposed eco-tourist facilities at 92 Chongs Road, Jindabyne, NSW, 2627. The Biodiversity Conservation Service (BCS) considers council should seek further information regarding this development as there are some key issues which have not been addressed..

- **Biodiversity Offset Scheme Applicability**: The Biodiversity Assessment Report (BAR) suggests the development does not meet the BOS threshold, but further assessment is needed due to the ecological significance of the Monaro Tableland Cool Temperate Grassy Woodland (Snow Gum Woodland). A Test of significance under the *Biodiversity Conservation Act 2016* (BC Act) for both the Snow Gum woodland and *Calotis glandulosa* is required.
- **Indirect Impacts and Habitat Degradation**: Concerns include indirect impacts on the threatened *Calotis glandulosa* species and potential habitat degradation, necessitating further analysis and significant impact assessment under *Environment Protection Biodiversity Conservation Act 1999* guidelines.
- **Fragmentation and Habitat Connectivity**: Detailed avoidance strategies are required to address fragmentation and habitat connectivity disturbances, as the BAR lacks sufficient detail in this area.
- **Comprehensive Biodiversity Strategy and EMP**: A broader biodiversity strategy and a detailed Environmental Management Plan (EMP) are recommended to ensure long-term habitat restoration, invasive species management, and continuous environmental impact mitigation.

Further details are outlined in Attachment 1
If you have any further questions about this issue, please contact Ms Allie Cash, Senior Biodiversity & Conservation Officer, Biodiversity & Conservation Science, on 02 6229 7013 or at rog.southeast@environment.nsw.gov.au.

Yours sincerely,

[redacted]

Allison Treweek
Senior Team Leader Planning, South East
Biodiversity & Conservation Science- DCCEEW

Attachment 1

BCS have reviewed the documents and provide the following comments to assist council.

1. **Biodiversity Offset Scheme (BOS) Applicability**
   The Biodiversity Assessment Report (BAR), prepared by Anne Clements and Associates (dated 21 August 2024), indicates that the development does not meet the BOS threshold, based on the absence of land on the Biodiversity Values Map (BV Map) and proposed clearing under one hectare (0.60ha). While this aligns with clearing thresholds, the ecological significance of the *Monaro Tableland Cool Temperate Grassy Woodland*, a critically endangered ecological community (CEEC), warrants further consideration through a BOS applicability assessment using a *Test of Significance*.
2. **Indirect Impacts on Threatened Flora**
   The BAR identifies *Calotis glandulosa* (Mauve Burr Daisy) outside the immediate development area but does not address indirect impacts, such as habitat degradation or invasive species introduction, which could threaten this species. The BAR should include a map with precise locations to aid in conservation, especially regarding weed management.
3. **Habitat Degradation Analysis**
   Given that the vulnerable species *C. glandulosa* is protected under both the *BC Act* and *EPBC Act*, further analysis is needed on whether surrounding area clearing could indirectly degrade its habitat. Considering the ecological significance of PCT 3341-*Monaro-Gourock Frost Hollow Grassy Woodland* associated in part with the critically endangered ecological community *Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion,* listed under the *EPBC Act*, a significant impact assessment under *EPBC* guidelines is advised.
4. **Fragmentation and Habitat Connectivity**
   The BAR references Clause 7.2 of the *Snowy River LEP* for terrestrial biodiversity assessment but lacks sufficient detail on how the development avoids or minimises fragmentation and habitat connectivity disturbance. While well-sited, the BAR should include detailed avoidance strategies.
5. **BAM Plot Sampling Transparency**
   The BAR employs BAM plot sampling, but further transparency regarding plot representativeness is needed, particularly in assessing vegetation integrity and habitat quality for threatened species within the Monaro Tableland vegetation.
6. **Koala Habitat Considerations**
   Although koala habitat is nearby, the report concludes the site is not potential koala habitat due to limited feed trees. Given the proximity to known koala populations, additional surveys may be warranted to confirm that development will not impede future habitat expansion.
7. **Additional Field Surveys**
   Extensive field surveys are recommended to assess the development's potential impacts on other threatened species and verify current mitigation measures.
8. **Comprehensive Biodiversity Strategy**
   While the BAR indicates avoidance of canopy trees and boulder formations as potential habitats for *C. glandulosa*, avoidance measures focus narrowly on physical structures. A broader biodiversity strategy, including enforceable long-term habitat restoration and enhancement actions, is recommended.
9. **Invasive Species Management**
   Recommendations from the Council's Biosecurity Officer are noted, yet the BAR lacks clear monitoring protocols to prevent invasive species introduction during construction (e.g. vehicle hygiene protocols). While ongoing soil stabilisation and native planting are mentioned, details on their success rates or post-construction monitoring are missing. An Environmental Management Plan (EMP) would ensure continuous environmental impact mitigation.
10. **Detailed EMP with Monitoring Plans**
    The ecological connectivity and surrounding vegetation and fauna, including koalas, should be comprehensively evaluated. An EMP, including monitoring and management plans, will

ensure the preservation and resilience of biodiversity on-site. Key components of the EMP should include:

a) Weed Management Plan

- Detailed weed management, with no-spray buffer zones around threatened species like the Mauve Burr Daisy.
- Measures to limit weed spread, including designated track use for tourist traffic.

b) Revegetation and Restoration Plan

- A revegetation strategy for restoring the critically endangered Monaro Tableland Cool Temperate Grassy Woodland (CEEC).
- Objectives for native regeneration, soil stabilisation, and protection of TEC and vulnerable species.
- Rehabilitation actions for impacted areas (e.g., stockpiling, wastewater infrastructure).

c) Long-Term Protections for Endangered Ecological Communities (EECs)

- Identification of risks to CEECs with strategies for ongoing protection.
- Adaptive management provisions to monitor and mitigate indirect impacts, such as weed introduction and drainage alterations.

After review of the *Onsite Waster Assessment* prepared by Harris Environmental Consulting (dated 20 August 2024) the following matters were identified and will require further consideration:

1. **Cabin 3 Stockpiling Location**: Relocate the stockpiling and soil area to the east side of Cabin 3, away from vegetation and boulder formations.
2. **Cabin 4 Stockpiling Location**: Move the proposed stockpiling area east and closer to the driveway to avoid impacts on surrounding vegetation.
3. **Cabin 5 Stockpiling Location**: Shift the stockpiling area to the southeast, closer to the driveway, to avoid vegetated areas.
4. **Cabin 6 Stockpiling Location**: Relocate the stockpiling area eastward, closer to the proposed driveway, to minimise impacts on nearby vegetation.
5. **Cabin 1 Wastewater Area**: The wastewater area is currently sited above a paddock tree. Consider shifting the absorption beds southeast to avoid impacts on this vegetation.
6. **Cabin 2 Wastewater Area and Batter**: The current placement is close to canopy trees. Moving these features northward could help reduce potential impacts on nearby vegetation.
7. **Cabin 4 Wastewater Area**: Relocate the wastewater area northeast to utilise cleared land, thereby minimising impacts on surrounding vegetation.
8. **Cabin 6 Wastewater Area**: Consider shifting the wastewater area southeast to increase distance from canopy vegetation, reducing potential impacts.
9. **Drainage Channels**: Confirm whether the drainage channels proposed in the stormwater report will necessitate vegetation removal or affect surrounding canopy vegetation for Cabins 1, 4, and 5.
10. **Asset Protection Zone (APZ) for Refuge 2**: Determine if vegetation removal is required for APZ establishment. If the surrounding vegetation is a critically endangered ecological community (CEEC), consider increasing the BAL to reduce the required APZ size.
11. **Tree Removal and Retention Plan**: Provide an accurate plan for tree removal and retention to allow for a clearer understanding of project impacts on vegetation.

ANNE CLEMENTS & ASSOCIATES PTY. LIMITED
(ABN 41 077 242 365, ACN 077-160-939)
Environmental and Botanical Consultants
Office 2, 3 Harbourview Crescent, Milsons Point 2060
PO Box 1623, North Sydney 2059
Phone: (02) 9955 9733, Facsimile: (02) 9957 4343
Email: mail@acabotanic.com

28 April 2025





Appendix B: Tests of Significance for the proposed eco-tourist facilities at 92 Chongs Road, Jindabyne NSW 2627 on:

- ***Monaro Tableland Cool Temperate Grassy Woodland*; and**
- ***Calotis glandulosa***

Prepared by:
Dr AnneMarie Clements
Anne Baumann
Tony Rodd
Tim Harding

Prepared for:
Josh Leitner

Document Control

Version	Date	Authors	Details
1	28 April 2025	Dr AnneMarie Clements Dr Anne Baumann Tony Rodd Tim Harding.	Additional information requested from the NSW Department, emailed from Snowy Monaro Regional Council in November 2024.

Front cover: Photographs taken by Tony Rodd on 21 February 2025
On left: Monaro Tableland Cool Temperate Grassy Woodland in degraded condition, with weedy stands of *Hypericum perforatum* (St John's Wort) and *Eragrostis curvula* (African Lovegrass), as well as recorded location of threatened species *Calotis glandulosa* (Mauve Burr-daisy).

On right: *Calotis glandulosa* amongst dense exotic grass in the south of the site.

Contents

B1.0 Introduction....5

B2.0 The proposal and potential impacts....5

B3.0 Applying the threatened species impact assessment under the BC Act....6
B3.1 Terminology....6

B4.0 Test of Significance for *Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion*....8
B4.1 Adverse effects on the life cycle of a species....8
B4.2 Adverse effects on ecological communities....8
B4.3 Adverse effects on habitats....11
B4.4 Adverse effects on areas of outstanding biodiversity value....12
B4.5 Key threatening processes....12
B4.6 In conclusion....16

B5.0 Test of Significance for *Calotis glandulosa* under the *BC Act*....16
B5.1 Adverse effects on the life cycle of a species....16
B5.2 Adverse effects on ecological communities....18
B5.3 Adverse effects on habitats....18
B5.4 Adverse effects on areas of outstanding biodiversity value....20
B5.5 Key threatening processes....20
B5.6 In conclusion....22

B6.0 Applying the threatened species impact assessment under the EPBC Act....23

References....27

Figures referred to in the Tests of Significance

1a-2. Lot boundaries from SIX maps aerial imagery
1a-3. Approximate locations of existing roads/tracks and fencelines onsite.
1b-2 Site boundary overlaid on the SIX maps topographic WMS layer – close up.
1d. Site boundary overlaid on the Berridale and Numbla 2 meter DEM LiDAR dated February 2018 (Spatial Services, ELVIS)
1e. Site plan (Drawing No DA-1, Issue 3, dated 07.07.2024).
4a-1 Sampling locations overlaid on the NSW State Vegetation Type Map (DPE 2023).
4d. Sampling locations overlaid on vegetation map.
4e-1 Observation locations overlaid on the Google Satellite Imagery (Airbus 2025).
4e-2 Locations of recorded *Calotis glandulosa* and search paths overlaid on the Google Satellite Imagery (Airbus 2025).
4f. Reference sites for the VMP overlaid on Google Satellite Imagery.
6. Conservation Areas overlaid on the proposal.

Tables

1. Cover of species recorded in 8 BAM Plots and species present in Spot A.
2. Maximum height and number of individuals per 10 m x 10 m subquadrat for species present > 2 m.
3a. Native species covers recorded in 1 m x 1 m quadrats.

3b. Exotic species covers recorded in 1 m x 1 m quadrats.

4. Species lists from two BioNet Sites within the Reference Sites.

Appendices

A. Letter from the NSW Department of Climate Change, Energy, the Environment and Water, Biodiversity & Conservation Science, emailed from Snowy Monaro Regional Council in November 2024.

B. Tests of Significance for *Monaro Tableland Cool Temperate Grassy Woodland*; and for *Calotis glandulosa*.

C. Vegetation Management Plan.

C-1 Council's Biosecurity Officer's advice.

B1.0 Introduction

A six eco-cabins eco-tourist facility is proposed on the approximately 47 ha property at 92 Chongs Road Jindabyne NSW (Lots 2 DP1232872, 25 DP756672, 26 DP756672 and Lot 1 DP1250715) (see Figures 1a-2,1b-2, 1d, 1e).

From the data recorded during the 2023 surveys for the BAR, it was concluded that the vegetation of the entire site is *PCT 3341 Monaro-Gourock Frost Hollow Grassy Woodland* which is associated in part with the threatened ecological community (TEC) *Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion* (MTCTGW) under the *Biodiversity Conservation Act 2016* (BC Act).

From a comparison of the recorded data with the Final Determination for MTCTGW in the BAR, it was concluded that despite the clearing and long history of grazing, the site and the surrounding farmland supports the TEC. As stated in the Final Determination, the *occurrences of the ecological community is independent of its condition.* Despite the grazing history of the site, many of the characteristic species for MTCTGW were recorded, with:

- at least one of the listed eucalypt species recorded in 7 of the 8 BAM plots;
- at least 5% canopy cover in BAM Plots 3, 4, 5, 7; and
- more than 10% canopy cover recorded in only 3 of the 8 plots (Plots 1, 2, 8).

To address the issues raised in the letter from the NSW Department of Climate Change, Energy, the Environment and Water, Tests of Significance are provided for:

- the ecological community *Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion,* listed as critically endangered under the NSW *Biodiversity Conservation Act 2016* (BC Act); and
- the species *Calotis glandulosa,* listed as
  - vulnerable under the BC Act; and
  - vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

B2.0 The proposal and potential impacts

The proposal directly impacts less than 1 ha of vegetation on the 46.9 ha site (Figure 1e), achieved by avoiding and minimising impacts on native vegetation and threatened species habitat by:

- utilising existing roads / tracks for access to the proposed structures; and
- siting structures to avoid loss of native canopy trees and boulder formations.

The indirect impacts of the proposal include the potential movement of weeds onsite, and introduction of offsite weeds on tyres. This is expected to be mitigated by the use of cattle grids at entrances and as part of the ongoing weed control program. The Staged Conservation Works are planned to continue, with details in the site specific Vegetation Management Plan / Environmental Management Plan (Appendix C).

The additional sampling in February 2025 (see Figures 4a-1, 4e-1, 4e-2, Tables 3a, 3b) confirmed that the MTCTGW on site was:

- typical of a former grazing property;

- dominated by the exotic pasture grass *Lolium perenne* (recorded in 49 of the 50 quadrats with up to 60% cover) consistent with pasture improvement; with:
  - widespread occurrence of listed weed species;
  - scattered old trees with little signs of any natural regeneration; and
  - generally infrequent and low cover by a diverse array of native groundcovers.

B3.0 Applying the threatened species impact assessment under the BC Act

It is stated in the Threatened Species Test of Significance Guidelines (OEH dated July 2018) that:

> *Threatened species impact assessment is an integral part of environmental impact assessment. The objective of section 7.3 of the* Biodiversity Conservation Act 2016 *(BC Act), the test of significance, is to provide standardised and transparent consideration of threatened species and ecological communities, and their habitats, through the development assessment process.*

In applying the Test of Significance, the Guidelines (OEH 2018, p10) state that:

> *The test of significance should be based on the footprint and the design of the development or activity. Design features targeted at minimising impacts on threatened species can only be considered if the measure has been used successfully for the target species in similar situations. Studies or literature demonstrating the success of the measure must be referenced if proposing that the measure will minimise impacts.*
>
> *Measures that offset or otherwise compensate for the development or activity should not be considered in determining the degree of the effect on threatened species or ecological communities.*
>
> *In determining the nature and magnitude of an impact, it is important to consider matters such as:*
> - *pre-construction, construction and occupation/maintenance phases*
> - *all on-site and off-site impacts, including location, installation, operation and maintenance of auxiliary infrastructure and fire management zones*
> - *all direct and indirect impacts*
> - *the frequency and duration of each known or likely impact/action*
> - *the total impact which can be attributed to that action over the entire geographic area affected, and over time*
> - *the sensitivity of the receiving environment*
> - *the degree of confidence with which the impacts of the action are known and understood.*

B3.1 Terminology

Throughout the Test of Significance Guidelines (OEH 2018) the terms subject site, study area, direct and indirect impacts are used. These are defined in the document as:

Definition of terms	Applied to the proposal
Subject site *means the area directly affected by the proposal. The subject*	This area is equivalent to the 'Subject Land' within the BAR. The Subject Site is < 1 ha and consists of (Figure

<table>
<tr><th>Definition of terms</th><th>Applied to the proposal</th></tr>
<tr><td>site includes the footprint of the development and any ancillary works, facilities, accesses or hazard reduction zones that support the construction or operation of the development or activity.</td><td>1e):
<table>
<tr><th>Component of the proposal</th><th>Footprint (m²) of each individual item</th><th>Total footprint</th></tr>
<tr><td>6 x Eco-cabins</td><td>150, 150, 190, 180, 150, 150 m²</td><td>830 m²</td></tr>
<tr><td>6 x associated service pods;</td><td>20 m²</td><td>120 m²</td></tr>
<tr><td>2 x refuges</td><td>25 and 50 m²</td><td>75 m²</td></tr>
<tr><td>2 x sheds</td><td>300 m²</td><td>600 m²</td></tr>
<tr><td>Proposed roads / tracks; and pedestrian tracks.</td><td>4180 m²</td><td>4,180 m²</td></tr>
<tr><td></td><td>Total</td><td>5, 805 m² (0.58 ha)</td></tr>
</table></td></tr>
<tr><td>Study area means the subject site and any additional areas which are likely to be affected by the proposal, either directly or indirectly. The study area should extend as far as is necessary to take all potential impacts into account.</td><td>The Study Area is considered to be the approximately 47 ha site.</td></tr>
<tr><td>Direct impacts are those that directly affect the habitat of species and ecological communities and of individuals using the study area. They include, but are not limited to, death through predation, trampling, poisoning of the animal/plant itself and the removal of suitable habitat. When applying each factor, consideration must be given to all of the likely direct impacts of the proposed activity or development. When applying each factor, both long-term and short-term impacts are to be considered.</td><td>Direct impacts are the clearing of native vegetation of <1ha of MTCTGW on the approximately 47 ha site. The remainder of the site is to be conserved and enhanced.

The area of potential habitat of Calotis glandulosa is proposed to be managed to encourage its expansion as part of the ongoing conservation works (details in Appendix C).</td></tr>
<tr><td>Indirect impacts occur when project-related activities affect species or ecological communities in a manner other than direct loss within the subject site. Indirect impacts may sterilise or reduce the habitability of adjacent or connected habitats. Indirect impacts can include loss of individuals through starvation, exposure, predation by domestic and/or feral animals, loss of breeding opportunities, loss of shade/shelter, reduction in viability of adjacent habitat due to edge effects, deleterious hydrological changes, increased soil salinity, erosion, inhibition of nitrogen fixation, weed invasion, noise, light spill, fertiliser drift,</td><td>The indirect impact of the proposal include:
the spread of invasive species onsite on tyres (see details of farm hygiene in Council's Biosecurity Officer's advice in Appendix C-1);
the risk from herbicides during the weed control of the mapped stand of Eragrostis curluva in the area of the recorded Calotis glandulosa (see Appendix C-1, front cover)
The site specific Vegetation Management Plan is directed to minimise these risks of indirect impacts (see Appendix C).</td></tr>
</table>

Definition of terms	Applied to the proposal
or increased human activity within or directly adjacent to sensitive habitat areas. As with direct impacts, consideration must be given, when applying each factor, to all of the likely indirect impacts of the proposed activity or development. When applying each factor, both long-term and short-term impacts are to be considered.	

B4.0 Test of Significance for *Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion*

B4.1 Adverse effects on the life cycle of a species

(a)	**in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.**

N/A. *Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion* (MTCTGW) is a threatened ecological community, not a threatened species.

B4.2 Adverse effects on ecological communities

(b)	**in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:**
	(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or
	(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

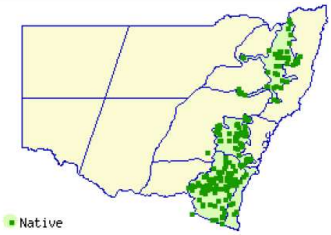
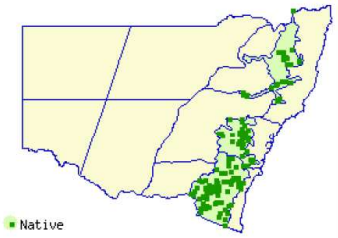
Extent of *Monaro Tableland Cool Temperate Grassy Woodland*

The extent of MTCTGW is described in the Final Determination, namely:

> 4.4 … *forms part of a continuum of related vegetation communities occurring on the broad valleys and moderately undulating hills of the Southern Tablelands of NSW.*
>
> 3.1.3 … *broadly corresponds to the Eucalyptus pauciflora – E. stellulata alliance …*

On PlantNET, the distributions of these two eucalypts are given as:

Species description	Australian Virtual Herbarium map
Eucalyptus pauciflora	

Species description	Australian Virtual Herbarium map
Widespread and locally dominant, in grassy or dry sclerophyll woodland in flat cold sites above about 700 m alt., on deeper soils of varying fertility.	 AVH map***
Eucalyptus stellulata	
Widespread and locally frequent; south from northeast of Tenterfield. *Occurs in grassy woodland on fertile loamy or alluvial soils on cold flats at higher altitudes.*	 AVH map***

From the Final Determination:

> *3.1.4 … Based on an analysis of maps produced by Gellie (2005) and Keith and Bedward (1999), together with maps depicting more recent vegetation clearing (Danaher 2011) … less than 15,660 ha of Monaro Tableland Cool Temperate Grassy Woodland remain, approximately 5% of its estimated pre-1750 distribution of 295,500 ha.*
>
> 3.1.5. *The distribution of Monaro Tableland Cool Temperate Grassy Woodland is highly restricted. The extent of occurrence of MTCTGW is 13,780 km^2 based on a minimum convex polygon enclosing known occurrences of the community ...*
>
> 4.2 *The majority of current records of Monaro Tableland Cool Temperate Grassy Woodland occur in the Southern Tablelands of New South Wales (NSW) between Captains Flat in the north and Bombala in the south. The extent of its distribution largely coincides with the extent of the Monaro Tableland and Tindery-Gourock Ranges Physiographic Regions (Pain et al. 2011). Within those Regions, records of the Community predominantly lie within areas bounded by the 600 mm and 800 mm average annual rainfall isohyets. The eastern boundary corresponds approximately with the crest of the Great Dividing Range between Captains Flat and Nimmitabel, and the eastern catchment boundary of the Snowy River between Nimmitabel and the Victorian Border. To the west, records of Monaro Tableland Cool Temperate Grassy Woodland occur between the Adaminaby area in the north and Ingebyra in the south and are approximately bounded by the Eucumbene and Crackenback Rivers. As a consequence of the extensive rain-shadow centred on the Monaro Tableland, the western distribution of the Community is discontinuous with the*

> *distribution in the east, except for the areas of higher rainfall at the southern end of the Monaro plain between Bombala and Delegate.*

Local occurrence is defined in the Threatened Species Test of Significance Guidelines as:

> *the ecological community that occurs within the study area. However, the local occurrence may include adjacent areas if the ecological community on the study area forms part of a larger contiguous area of that ecological community and the movement of individuals and exchange of genetic material across the boundary of the study area can be clearly demonstrated.*

As stated in the Final Determination:

> *2.2 It is the intent of the NSW Threatened Species Scientific Committee that all occurrences of the ecological community (both recorded and as yet unrecorded, and independent of their condition) that occur within this bioregion be covered by this Determination.*

Hence, despite the clearing and long history of grazing, the site and the surrounding farm land supports this CEEC.

The exchange of genetic material across the boundary of the study area can be clearly demonstrated in terms of movement of individuals, pollination and dispersal of reproductive material in particular from the MTCTGW grasses and canopy trees recorded in the study area. The recorded canopy trees have the following pollination related information:

Canopy species recorded	Flowers and pollination (Benson and McDougall 1998)
Eucalyptus pauciflora	Flowers: White, December–January. Good source of nectar and provides good supplies of pollen for bees (Clemson 1985). Association with mycorrhizal fungi. Host of Scribble Moth *Ogmograptis scribula* (Jones & Elliot 1986). Host to fungus *Aurantioporus pulcherrimus* (May & Simpson 1997).
Eucalyptus rubida subsp. rubida	White, inflorescence 3-flowered, January to February. Seed eaten by Crimson Rosella *Platycercus elegans* (Lepschi 1993). Food plant of Lawn Scarab Beetle *Sericesthis geminata* (Hughes 1974). Host to larvae of Autumn Gum Moth *Mnesampela privata* (CSIRO 1996). Browsed by Koala *Phascolarctos cinereus* (Hawkes 1978).
Eucalyptus stellulata	White/cream, February–May, peak April. Pollinated by flies, beetles, bees; stamens wither after 9–11 days (House 1997).
Eucalyptus viminalis	White, March–April. Flowers annually (House 1997). Food plant of Koala. Greater Gliders may eat young foliage (Kavanagh 1984). Host plant of Cerambycid beetles *Callidiopsis scutellaris, Tessaromma undatum* (Hawkeswood 1993). Food plant of Lawn Scarab Beetle *Sericesthis geminata* (Hughes 1974). Host to larvae of moth, Gum Leaf Skeletoniser Uraba lugens (CSIRO 1996). Crested Shrike-tits *Falcunculus frontatus*, Yellow-bellied Gliders and small dasyurids forage for invertebrates in the shedding bark (Woinarski et al. 1997). Host-specific to round-lerp-forming psyllid *Glycaspis dobsoni* (Moore 1988).

Dispersal across the landscape is via a range of methods, including:

Wind pollination - It is likely that there is some wind pollination between MTCTGW trees on the site and *MTCTGW* trees growing on the surrounding lands. The wind dispersal from eucalypts is local to about 20 m from the parent tree (Benson and Howell 1998).

Wind dispersal from grasses is expected across the site and the adjoining property.

Bird pollination - Birds are known to be successful pollinators to many native Australian plants (Ford *et al.* 1979; Paton and Ford 1977), as pollen can be transferred to the feathers around a birds face and on their beak (Ford *et al.* 1979). In particular, Paton and Ford (1977) found pollen transferred onto Rainbow Lorikeet (*Trichoglossus haematodus*). Lorikeets are known to feed on a wide variety of native flowers, including many plants in the Myrtaceae family (Cannon 1984; Paton and Ford 1977, as noted by Benson and McDougall 1998).

Bat and flying fox pollination - Bats and flying foxes are known to be potential pollinators of many plants (Elmqvist *et al.* 1992; Marshall 1985). *Pteropus* sp. have been observed to eat the blossoms of a variety of plants belonging to the Myrtaceae family (Marshall 1985). Specifically, *P. poliocephalus* has been observed to consume the blossoms of *S. glomulifera* (Parry-Jones and Augee 1991). Birds and bats are potentially important as pollinators as they can fly large distances (5-50 km/day), which may contribute to the cross-pollination of plants (Ford *et al.* 1979; Southerton *et al.* 2004).

Honey bees forage across shorter distances (1-7 km/day) (Beekman and Ratnieks 2000).

Hence the footprint of the proposal is not likely to impede the spread of reproductive material across the landscape. The proposal is not likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, nor likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

B4.3 Adverse effects on habitats

(c)	**in relation to the habitat of a threatened species or ecological community:**	
	(i)	**the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and**
	(ii)	**whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and**
	(iii)	**the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality**

The proposed six eco-cabins and associated infrastructures directly impact less than 1 ha of the approximately 46.9 ha site. 1 ha is approximately 0.007% of the 13,780 km^2 extent of occurrence of MTCTGW. The remainder of the site is to be conserved and enhanced (details in the Vegetation Management Plan in Appendix C)

The area of MTCTGW is not likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity due to the continuation of exchange of genetic material across the landscape.

The proposal has also been carefully located to avoid loss of native canopy trees and areas with existing boulder formations (possible likely habitat onsite for *Calotis glandulosa*).

Hence, the loss of <1 ha of habitat of MTCTGW for the proposal (<0.007% of the 13,780 km^2 extent of occurrence of MTCTGW) is of low importance to the long-term survival of the ecological community in the locality.

B4.4 Adverse effects on areas of outstanding biodiversity value

(d)	**whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly)**

The declared areas of outstanding biodiversity value are the following critical habitats (https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/areas-of-outstanding-biodiversity-value/area-of-outstanding-biodiversity-value-register), page last updated 5 July 2018, accessed 24 April 2025):

- Gould's Petrel;
- Little penguin population in Sydney's North Harbour;
- Mitchell's Rainforest Snail in Stotts Island Nature Reserve; and
- Wollemi Pine.

The proposal is not likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly) as no declared areas are present on the subject site, subject area nor locality.

B4.5 Key threatening processes

(e)	**whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.**

Paragraphs 3.1.6 to 3.1.10 describe the Key threatening processes of MTCTGW, including:

Key threatening processes	
Details (from the Final Determination)	**Related to the development**
'Clearing of native vegetation' (Paragraph 3.1.6)	
...unreserved areas are subject to the threat of vegetation clearing. ... *The total area under reservation is estimated to be 1,525 ha, equivalent to less than 1% of the estimated pre-1750 distribution or 8% of that remaining extant. Remnants are typically small and fragmented and are thus susceptible to attrition via*	The proposal results in the clearing <1 ha of MTCTGW.

Key threatening processes	
clearing for routine land management practices.	
'Competition and grazing by the feral European Rabbit Oryctolagus cuniculus (L.) **(Paragraph 3.1.9)**	
Remnants ...are subject to ongoing grazing pressure from wild introduced herbivores such as the European Rabbit (Oryctolagus cuniculus) and Brown Hare (Lepus capensis). This, in combination with grazing by native marsupials and domestic stock, has resulted in higher rates of biomass consumption than occurred prior to European settlement. ...	
'Anthropogenic climate change'	
[MTCTGW] *… is threatened by changes in rainfall or temperature that may occur as a consequence of human-induced climate change. A decline in annual rainfall is likely to precipitate a contraction of MTCTGW at the lower end of its present rainfall range and a concomitant expansion of temperate montane grasslands. Widespread dieback of Eucalyptus pauciflora observed in 2009 has been attributed to the effects of drought ...Under a warming climate, ..., the dominant tree species (E. pauciflora) may be replaced by E. melliodora, E. blakelyi and E. bridgesiana, and species characteristic of White Box Yellow Box Blakely's Red Gum Woodland may expand their distribution at the expense of species characteristic of MTCTGW.*	This threat by changes in rainfall or temperature is <u>not</u> likely to be exacerbated by the development. The existing trees onsite are *Eucalyptus pauciflora, Eucalyptus rubida* subsp. *rubida, Eucalyptus stellulata* and *Eucalyptus viminalis* (Tables 1, 2). All of the existing trees are old with no regeneration observed, except for one individual in the northwest of the site. The tree planting undertaken has been of local provenance plants (see BAR Appendix 1a). Widespread dieback of *Eucalyptus pauciflora* was <u>not</u> observed onsite.
'Invasion of native plant communities by exotic perennial grasses'	
Remnants of Monaro Tableland Cool Temperate Grassy Woodland are subject to invasion by an extensive range of naturalised plant species. *Major weeds include the shrub species* Rosa rubiginosa *(Sweet Briar),* Ulex europaeus *(Gorse) and* Lycium ferocissimum (*African Boxthorn),* *the forb species* Argemone ochroleuca *subsp.* ochroleuca *(Mexican Poppy),* Hirschfeldia incana *(Buchan Weed),* Hypericum perforatum *(St Johns Wort),* Lepidium draba *(Hoary Cress),* Sisymbrium officinale *(Hedge Mustard),* Verbascum thapsus *(Giant Mullein),* Carthamus lanatus *(Saffron Thistle),* Centaurea calcitrapa *(Star Thistle),* Cirsium vulgare *(Spear Thistle),* Dittrichia graveolens *(Stinkwort),* Trifolium spp. *(Clover),* *the annual grasses* Hordeum spp. *(Barley Grass),* Bromus spp. *(Brome Grass),* Vulpia myuros *(Rat's Tail Fescue),* Lolium perenne *(Perrenial Ryegrass) and perennial grass species including* Eragrostis curvula *(African Lovegrass),* Phalaris aquatica	Of these naturalised exotic species (Tables 1, 3b), the following were recorded onsite: **Shrub species**: - *Rosa rubiginosa* (Sweet Briar) in Plots 2, 4, 6, 7, and 8, up to 0.5% cover in 1 of the 50 quadrats (1 m x 1m) with 1% cover. **Forb species:** - *Hypericum perforatum* (St Johns Wort) in all 8 BAM Plots, up to 2% cover in 17 of the 50 quadrats (1 m x 1 m) with 0.1 to 20% cover; - *Verbascum thapsus* (Giant Mullein), up to 1% cover in Plots 1, 3, 4, 6, 7, 8 and 4% cover in Plot 5; in 4 of the 50 quadrats (1 m x 1m) with 0.1 to 3% cover; - *Cirsium vulgare* (Spear Thistle) in Plots 1, 2, 4, 5, 7, 8, up to 2% cover; in 14 of the 50 quadrats (1 m x 1m) with 0.1 to

Key threatening processes	
(Phalaris), Dactylis glomerata *(Cocksfoot),* Festuca spp. *(Fescue) and* Nassella trichotoma *(Serrated Tussock).*	20% cover. **Annual grasses:** - *Hordeum leporinum* (Barley Grass) 0.1% cover in Plot 7; not recorded in the 50 quadrats (1 m x 1 m); - *Bromus brevis* (Plot 2 at 0.1% cover), *B. hordeaceus* (in all plots, up to 20% cover), *B. sterilis* (all plots except Plot 6, up to 10% cover); and *Bromus* spp. recorded in 6 of the 50 quadrats (0.1 to 4% cover). - The annual / short lived perennial grass, *Lolium perenne* (Perennial Ryegrass) all plots except Plot 1. Up to 5% in Plots 2, 3, 4, 5, 6, 7, 8 and 15% in Plot 4; all 50 quadrats with 2 to 60% cover, except one Q8 with 95% bare ground. **Perennial grass species:** - *Eragrostis curvula* (African Lovegrass) 2% cover in Plot 5; 2 of the 50 quadrats (1 m x 1 m) with 3 to 5% cover; - *Dactylis glomerata* (Cocksfoot) 1% cover in Plot 7; 1 of the 50 quadrats (1 m x 1 m) with 0.1% cover; - *Nassella trichotoma* (Serrated Tussock) in Plots 1, 2, 3, 5, 6, 7, with 3, 4% in Plots 5 and 7, remainder <1% cover; 6 of 50 quadrats with 3 to 20% cover. **This threat is an existing threat**. There is a potential to exacerbated the weed threat due to increased traffic, the ongoing Conservation Works are directed to reduce the weed threats (see Appendix C). From the data, the site was a grazing paddock, sown with *Lolium perenne* (Perennial Ryegrass) in almost all sampling locations, with up to 60% cover in the 1 m x 1m quadrats.

While not listed as a Key threatening process, additional detail on the degradation of the community caused by grazing and associated activities is in paragraph 3.1.7:

Details (from the Final Determination)	**Related to the development**
..grazing by domestic stock since the 1820s and extensive structural and compositional degradation was documented by the middle of the 20th century;	The threat of grazing by domestic stock has been removed (since 2019) as part of the ongoing Conservation Works (details in Appendix 1a of the BAR).

Details (from the Final Determination)	**Related to the development**
The loss of the tree stratum was associated with clearing and ring barking to facilitate pastoral activities coupled with a failure to regenerate due to grazing by rabbits and domestic stock.	Historic threat has since been removed with clearing no longer carried out to support agricultural activities and grazing of domestic stock - ceased in 2019.
Degradation of the ground stratum has been associated with well-documented impacts of grazing including the erosion, compaction and nutrient enrichment of the topsoil.	This threat has been removed with ceasation of grazing by domestic stock in 2019. Feral deer still pose a risk – helicopter cull booked for April 2025 (Appendix C-3).
This has resulted in the partial or complete replacement of tussock forming grass species such as Austrostipa scabra, Poa labillardieri and Themeda triandra with other grasses such as Austrodanthonia spp., Enneapogon spp. and Aristida spp. as well as herbs or sub-shrubs such as Scleranthus spp., Helichrysum spp., Asperula spp. and Helipterum spp.	The following native species were recorded onsite (Tables 1, 3a): **Tussock grasses:** *Austrostipa scabra* (up to 1% cover in 5 of the 8 BAM plots, in only 4 of the 50 quadrats (1 m x 1 m) with 0.2 to 2% cover; *Poa labillardieri* (up to 10% cover in 7 of the 8 Plots, in 6 of the 50 quadrats with 1 to 40% cover), *Themeda triandra* (up to 0.8% cover in 3 of the 8 Plots, in 7 of the 50 Quadrats with 0.1 to 2% cover). **Tufted grasses:** *Rytidosperma monitcolia, R. pilosum* (formerly *Austrodanthonia* spp.) (up to 0.1% cover). *Rytidosperma* spp. in 14 of the 50 Quadrats with 0.1 to 10.1% cover). **Herbs/ sub shrubs:** *Scleranthus biflorus* (0.1% cover in Plot 1) in none of the 50 Quadrat; and; *Asperula conferta* (10% in Plot 6, < 0.8% in other plots *Asperula* spp. *(A. confertus, A. scoparia)* in 25 of the 50 Quadrats with 0.1 to 1.5% cover). Native cover is low for all species.
Extensive disturbance to the ground stratum has also resulted in the establishment of shrub or bracken thickets in certain areas dominated by species such as Cassinia longifolia, Bossiaea buxifolia, Acacia dealbata, A. rubida subsp. *rubida, Pimelea pauciflora and Pteridium esculentum*	There were no observed shrub or bracken thickets on site. Of these species only *Bossiaea buxifolia* and *Acacia dealbata* were recorded with both having 0.1% cover in Plot 1 and *B. buxifolia* having 0.1% cover in Plot 5. In 50 Quadrats, no *Cassinia longifolia, Bossiaea buxifolia, Acacia dealbata, A. rubida* subsp. *rubida, Pimelea pauciflora* nor *Pteridium esculentum* were recorded.
Grazing impacts have been further exacerbated by the application of chemical fertilizers, the removal of large trees, tilling of the soil and the sowing of exotic crop species to increase stocking rates (Keith 2004	None of these activities occur nor are planned onsite, as part of the ongoing Conservation Works.

B4.6 In conclusion

From the application of the Test of Significance under the NSW *Biodiversity Conservation Act 2016*, the direct and indirect impacts of the proposal are not likely to significantly impact the *Monaro Tableland Cool Temperate Grassy Woodland* on the subject site, nor in the study area nor in the locality.

B5.0 Test of Significance for *Calotis glandulosa* under the *BC Act*

B5.1 Adverse effects on the life cycle of a species

(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Interpretation of key terms used in this factor
Life cycle: *the series or stages of reproduction, growth, development, ageing and death of an organism.*

Viable: *the capacity to successfully complete each stage of the life cycle under normal conditions.*

Local population: *the population that occurs in the study area. The assessment of the local population may be extended to include individuals beyond the study area if it can be clearly demonstrated that contiguous or interconnecting parts of the population continue beyond the study area, according to the following definitions:*

- *The local population of a threatened plant species comprises those individuals occurring in the study area or the cluster of individuals that extend into habitat adjoining and contiguous with the study area that could reasonably be expected to be cross-pollinating with those in the study area.*

...

In cases where multiple populations occur in the study area, each population should be assessed separately.

Risk of extinction: *the likelihood that the local population will become extinct either in the short term or in the long term as a result of direct or indirect impacts on the viability of that population.*

Lifecycle

From the description on PlantNET, *Calotis glandulosa* (Mauve Burr-daisy) is an erect or ascending, branched herb to 35 cm high with basal leaves absent. It has conspicuous white to blue ray flowers, with barbed achene fruits that are transported by animals.

On the Bionet species profile, its life cycle is:

- *Flowers appear in spring and summer.*
- *Flowers are followed by a head of brown burrs that may stick to clothing and animals' coats.*

The transport of sticky seed propagules are also described on the Australia Plant Society NSW website:

> *Burr Daisy can be easily grown and would be a nice addition to native cottage gardens and rockeries. Their only downside is that the burrs will stick in your socks so we suggest that you plant specimens away from paths and borders.*

Viability: *Calotis glandulosa* is expected to be readily germinated from seed. Most species of Calotis genus are easily grown from seed, however some may have poor results. *Calotis cunifolia* is readily propagated from seed and from cuttings (Australian Plants Society NSW website www.austplants.com.au, access April 2025).

Seed for Calotis is usually quick to germinate but some dormancy of fresh seed has been reported (Ralph M (1997), Botanic Gardens Trust Ecology of the Cumberland Plain Woodland citing Greening Australia undated).

Local population:

From the species profile on the Departments website (threatened species.bionet.nsw.gov.au/profile/id=10135, accessed 24 April 2025):

> *The distribution of the Mauve Burr-daisy is centred on the Monaro and Kosciuszko regions (Species profile). ...*
>
> *In Kosciuszko NP this species is locally abundant near Tantangara Dam, Nungar Plain, and surrounding areas in grassland and along roadsides (McDougall & Walsh, 2002).*

In the NSW National Parks and Wildlife Service Kosciuszko offset action plan – mauve burr daisy (date), www.environment.nsw.gov.au/publications/kosciuszko-offset-action-plan-mauve-burr-daisy, access 24 April 2025), it is pointed out that:

> *The precise population is unknown, however there are likely to be tens of thousands of plants in the Kosciuszko region, with many thousands in the upper Shoalhaven and Monaro. Kosciuszko populations range from small (about 50 plants) to* ***several thousand****, with Shoalhaven and* ***Monaro populations ranging from isolated plants to groups in the low thousands.***
>
> *… mauve burr-daisies can occur in clusters, and sites of clusters can often be more than one hectare apart*,

Onsite: In December 2023, *Calotis glandulosa* was recorded as scattered individuals in Plot 5 (0.1% cover) in the south and Plot 8 (0.1% cover) in the north west of the site. Both Plots were located on the upper slope grassy areas associated with boulders (see Figure 4e-2).

Given the *Calotis* burred seeds are readily transported on animal fur, it is likely that frequent traffic of kangaroos across the site carries the barbed disseminules away on the animals' feet for distances up to 5 km. [Note; Eastern Grey Kangaroo has a home range of up to 5km in eastern Australia (Australian Museum website, https://australian.museum, accessed 24 April 2025)]. Consequently, the 19 BioNET records may be part of the same population. These records include:

- the two 2023 records onsite in the BAR;
- one record from 1 km to the south approximately 200 m north of the Snowy River Way (in Reference Site 2 used for the VMP, Figure 4f, Table 4, details in Appendix C);

- an additional 7 records from 2009 are along the roadside of the Snowy River Way heading east towards the nearby town of Beloka {Beloka is 10 km by road from the site);
- another 9 records are near the town of Beloka itself including Beloka cemetery.

Hence, the proposed development is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction, as:

- the seeds of most species of Calotis genus are easily grown from seed; and
- it is expected that *Calotis glandulosa* is:
  - readily germinated from seed;
  - able to colonise bare patches and roadsides, and
  - readily transported across the landscape on animal fur due to its barbed seed.

B5.2 Adverse effects on ecological communities

(b)	**in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:**
	(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or
	(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

N/A. *Calotis glandulosa* is not an endangered ecological community or critically endangered ecological community, but a threatened species.

B5.3 Adverse effects on habitats

(c)	**in relation to the habitat of a threatened species or ecological community:**
	(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and
	(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and
	(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

From the species profile and BioNET records nearby, it is likely that the habitat onsite for *Calotis glandulosa* is the approximately 47 ha site. The entire site supports MTCTGW in various conditions, mapped onsite as *PCT 3341 Monaro-Gourock Frost Hollow Grassy Woodland* in degraded to moderate condition (Figure 4d).

The habitat known to support C. *glandulosa* includes, subalpine grassland (dominated by *Poa* spp.) and montane or natural temperate grassland dominated by Kangaroo Grass (*Themeda australis*) and Snow Gum (*Eucalyptus pauciflora*) Woodlands, namely:

Habitat and ecology (From the species profile on the Departments website)

- *Found in montane and subalpine grasslands in the Australian Alps.*
- *Found in subalpine grassland (dominated by Poa spp.), and montane or natural temperate grassland dominated by Kangaroo Grass (Themeda australis) and Snow Gum (Eucalyptus pauciflora) Woodlands on the Monaro and Shoalhaven area.*
- *Appears to be a coloniser of bare patches, which explains why it often occurs on roadsides.*
- *Apparently common on roadsides in parts of the Monaro, though it does not persist for long in such sites.*
- *Does not persist in heavily-grazed pastures of the Monaro or the Shoalhaven area.*
- *Dispersed by animals which carry the sticky burrs to new sites.*

The site is a former grazing property with vegetation dominated by historically sown exotic pasture grass *Lolium perennum,* widespread occurrence of agricultural weed and low likelihood of occurrence of C. *glandulosa.* The destocking in 2019 and conservation works to date on the property are likely to have increased the ability of this species to persist. It appears to be a coloniser of bare patches and roadsides, though none of the records of C. *glandulosa* onsite occupied these bare microhabitats.

The proposed six eco-cabins and associated infrastructures directly impact less than 1 ha of potential habitat on the 46.9 ha site.1 ha is approximately 0.007% of the 13,780 km^2 extent of occurrence of the CEEC MTCTGW.

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

The development footprint is comprised of a series of small footprint areas which do not fragment nor isolate the *C. glandulolsa* habitat from other areas of habitat, namely:

Component of the proposal	Footprint (m^2) of each individual item	Total footprint
6 x Eco-cabins	150, 150, 190, 180, 150, 150 m^2	830 m^2
6 x associated service pods;	20 m^2	120 m^2
2 x refuges	25 and 50 m^2	75 m^2
2 x sheds	300 m^2	600 m^2
Proposed roads / tracks; and pedestrian tracks.	4180 m^2	4,180 m^2
	Total	**5, 805 m^2**

The remainder of the site is to be conserved and enhanced as directed by the site specific VMP with the bushfire Asset Protection Zones associated with the proposal being managed for conservation (Figure 6, details in Appendix C).

The area of habitat is unlikely to become fragmented or isolated from other areas of habitat as a result of the proposed development due to the small footprints of the proposed structures including, use of existing tracks and avoidance of areas with boulders (possible habitat for *Calotis glandulosa*).

(iii)	**the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality**

The <1 ha of potential habitat proposed to be removed is from this approximately 47 ha former grazing property with the groundcover dominated by the historically sown exotic pasture grass *Lolium perennum* and widespread occurrence of agricultural weeds.

From the BioNET records for *Calotis glandulosa,* this species has been recorded along roadsides and in areas with restricted competition from pasture species. The important habitat for this species is the ungrazed Beloka cemetery.

The importance of the proposed removal of <1 ha existing habitat for *Calotis glandulosa* on this former grazing property for the long-term survival of the species in the locality is not likely to be significant.

B5.4 Adverse effects on areas of outstanding biodiversity value

(d)	**whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly)**

The declared areas of outstanding biodiversity value are the following critical habitats (https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/areas-of-outstanding-biodiversity-value/area-of-outstanding-biodiversity-value-register), page last updated 5 July 2018, accessed 24 April 2025):

- Gould's Petrel;
- Little penguin population in Sydney's North Harbour;
- Mitchell's Rainforest Snail in Stotts Island Nature Reserve; and
- Wollemi Pine.

The proposal is not likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly) as no declared areas are present on the subject site, subject area nor locality.

B5.5 Key threatening processes

(e)	**whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.**

There are no Key threatening processes listed in the Final Determination for *Calotis glandulosa* [accessed 30 March 2025].

From the Approved Conservation Advice for *Calotis glandulosa* (Mauve Burr-daisy), the main identified threats to Mauve Burr-daisy include:

Threat	Related to the development
grazing by domestic stock along travelling stock routes	The site is not a travelling stock route. The threat of grazing by domestic stock has been removed (ceased in 2019). This threatening process is not likely to be exacerbated by the development.
council roadside weed control programs (Benson, 1994)	Weed control onsite forms part of the ongoing Conservation Works. Herbicide use is to be strictly controlled as part of the site specific VMP (Appendix C). Council weed control programs are not part of the proposal.
loss and degradation of habitat and/or populations from roadwork	The proposal utilises existing roads and tracks with only approximately 0.1 ha of proposed 4m wide roads and approximately 0.2 ha of 3m wide 2-wheel tracks being proposed.
weed invasion	Weed invasion is an existing threat. There is a potential to exacerbated the weed threat due to increased traffic, the ongoing Conservation Works are directed to reduce the weed threats (see Appendix C).
residential and agricultural development;	The proposal does not constitute agricultural development. It is an eco-tourist facility with ongoing Conservation Works (details in Appendix C).
habitat degradation and population loss by feral pigs (in the Kosciuszko area)	There was no evidence, nor records of feral pigs on the site.

NSW National Parks and Wildlife Service has listed relevant Key threatening processes to *Calotis glandulosa* in Kosciuszko National Park in Table 2 of the NSW National Parks and Wildlife Service Kosciuszko offset action plan – mauve burr-daisy, Kosciuszko Offset Project (dated January 2025), namely:

Threat	Description
Disturbance	*Loss and degradation of habitat and/or populations from road works (particularly widening or rerouting).*
Weeds	*Habitat degradation and competition through invasion, establishment, intensification and spread of weeds (such as ox-eye daisy) to the extent that recruitment or establishment of plants is impaired.*
Feral herbivores	*Damage to individual plants and degradation of mauve burr-daisy habitat by introduced herbivores such as and horses, through grazing, trampling, digging, wallowing and spread of weeds.*
Feral pigs	*Damage to individual plants and degradation of mauve burr-daisy habitat by feral pigs through grazing, trampling, digging, wallowing and spread of weeds.*

The threatened species profile for *Calotis glandulosa* lists the following threats, some of which are related to key threatening processes, namely:

Threats listed in the Threatened Species Profile - (https://threatenedspecies.bionet.nsw.gov.au/profile?id=10135)	**Related key threatening process**	**Related to the development**
Loss and degradation of habitat and/or populations from road works (particularly widening or rerouting).	*Clearing of native vegetation*	No major roadworks proposed. Existing tracks are being used with only minor works.
Loss and degradation of habitat and/or populations by clearing of habitat for residential and agricultural developments.	*Clearing of native vegetation*	<1 ha of approximately 47 ha of potential *Calotis glandulosa* habitat being cleared. Existing habitat of *Calotis glandulosa* is being avoided.
Loss and degradation of habitat and/or populations by intensification of grazing regimes.	*Herbivory and environmental degradation caused by feral deer*	**N/A.** Domestic stock grazing has been discontinued since 2019. Helicopter deer cull planned in April 2025.
Loss and degradation of habitat and/or populations by invasion of weeds.	*Invasion of native plant communities by exotic perennial grasses*	Yes. Ongoing degradation of habitat from weeds including historically sown exotic pasture grass.
Loss and degradation of local habitat and/or populations in Kosciuszko National Park by horses and roadworks.	*Habitat degradation and loss by Feral Horses (brumbies, wild horses),* Equus caballus *Linnaeus 1758*	**N/A.** No feral horses observed onsite.
Potential encroachment and competition from Kunzea ericoides and Kunzea parvifolia.	Not listed.	**N/A.** No *Kunzea* spp. recorded onsite.
Pigs digging up individuals.	*Predation, habitat degradation, competition and disease transmission by Feral Pigs,* Sus scrofa *Linnaeus 1758*	**N/A.** No evidence of pigs utilising the site.
Grazing by cattle and sheep is a threat to plants while the plants are actively growing, flowering or in fruit.	Not listed	**N/A.** Grazing has been discontinued since 2019, with efforts made to conserve and enhance native vegetation.

B5.6 In conclusion

From the application of the Test of Significance under the NSW *Biodiversity Conservation Act 2016*, the direct and indirect impacts of the proposal are not likely to significantly impact the *Calotis glanduosa* on the subject site, nor in the study area nor in the locality.

B6.0 Applying the threatened species impact assessment under the EPBC Act

It is pointed out in the *Matters of National Environmental Significance. Significant impact guidelines* (Department of the Environment 2013) for listed threatened species and ecological communities that:

> *An action will require approval if the action has, will have, or is likely to have a significant impact on a species listed in any of the following categories:*
> *• extinct in the wild*
> *• critically endangered*
> *• endangered, or*
> *• vulnerable*

Calotis glandulosa is listed as Vulnerable under the EPBC Act.

The following criteria are considered:

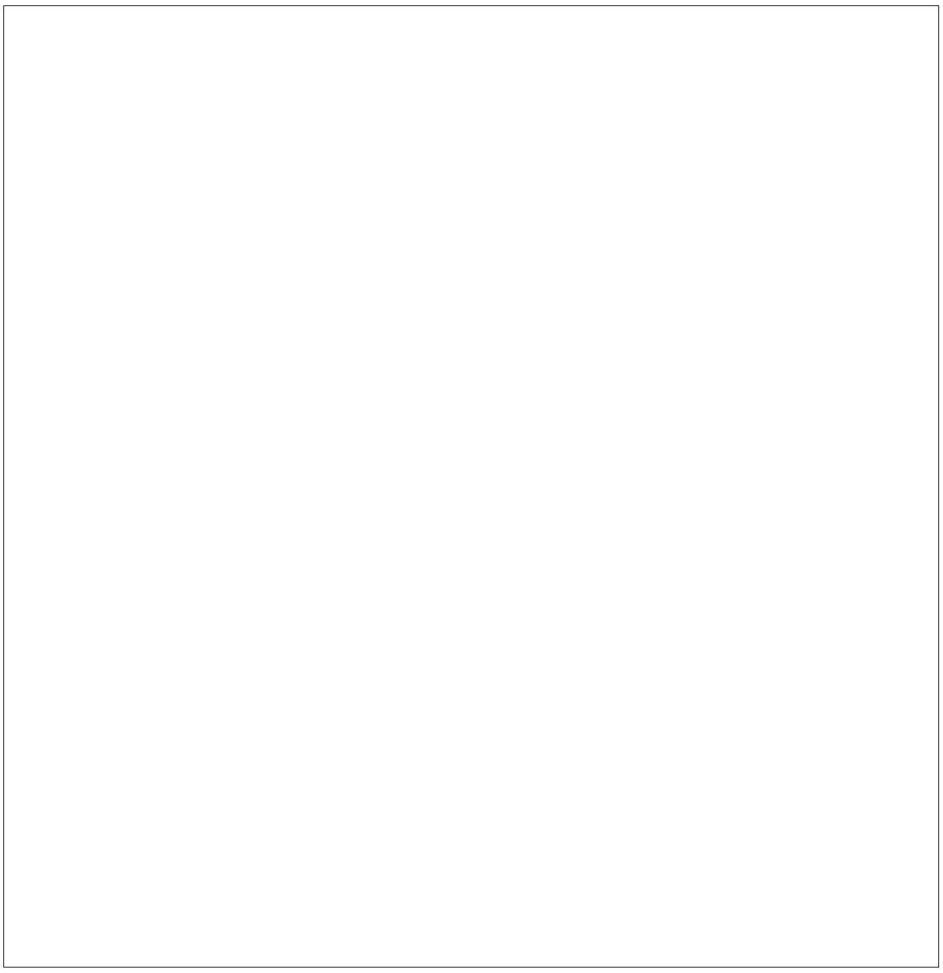
Vulnerable species - Significant impact criteria
An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:
• lead to a long-term decrease in the size of an important population of a species
Note An 'important population' is a population that is necessary for a species' long-term survival and recovery. ***This may include populations identified as such in recovery plans, and/or that are:*** ***• key source populations either for breeding or dispersal*** ***• populations that are necessary for maintaining genetic diversity, and/or*** ***• populations that are near the limit of the species range.***

There is no identified important population for *Calotis glandulosa. T*here is no recovery plan nor other similar documents or databases for *Calotis glandulosa.*

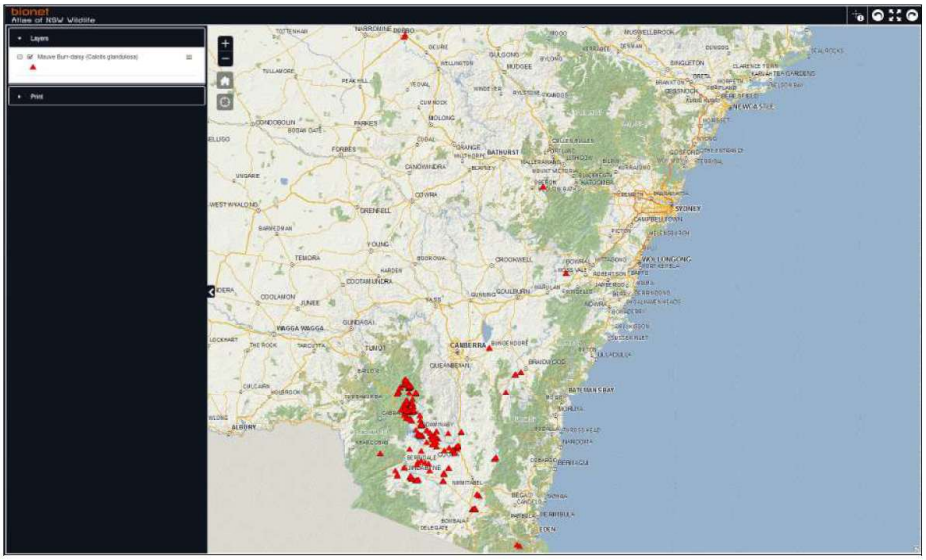
The *Calotis glandulosa* population on the site is not near the limit of the species range, based on:

- **From Commonwealth Approved Conservation Advice for *Calotis glandulosa* (Mauve Burr-daisy)** - *Calotis glandulosa* is endemic to NSW and occurs in Kosciuszko National Park, Monaro Plain, the upper Shoalhaven catchment, and near Oberon. In Kosciuszko NP this species is locally abundant near Tantangara Dam, Nungar Plain, and surrounding areas in grassland and along roadsides. … This species occurs within the Central West, Murrumbidgee and Southern Rivers (NSW) Natural Resource Management Regions;

- **From the Species Profile**, the mapped distribution is:



- The Bionet records show the distribution of *Calotis glandulosa* is centred on the Monaro and Kosciuszko regions with additional records extending to the upper Shoalhaven catchment.



In conclusion, the three sources confirm *Calotis glandulosa* is not at its southern, eastern , northern nor western limit. *The proposal is not likely to lead to a long-term decrease in the size of an important population of Calotis glandulosa.*

• ***reduce the area of occupancy of an important population***

The proposal is not likely to reduce the area of occupancy of an important population as:

- in the NSW National Parks and Wildlife Service Kosciuszko offset action plan – mauve burr-daisy (dated January 2025), it is pointed out that:

  ***The precise population is unknown**, however there are likely to be tens of thousands of plants in the Kosciuszko region, with many thousands in the upper Shoalhaven and Monaro. Kosciuszko populations range from small (about 50 plants) to several thousand, with Shoalhaven and Monaro populations ranging from isolated plants to groups in the low thousands.*

- in Commonwealth Approved Conservation Advice for *Calotis glandulosa* (Mauve Burr-daisy), its distribution and habitat:

  In Kosciuszko NP this species is locally abundant near Tantangara Dam, Nungar Plain, and surrounding areas in grassland and along roadsides (McDougall & Walsh, 2002). …

  Mauve Burr-daisy grows in montane grassland, subalpine grassland dominated by Poa spp., temperate grassland, Eucalyptus pauciflora woodland, and dry sclerophyll forest at high altitude in the Australian Alps (Everett, 1992; DECC, 2005a). This species prefers grazing-restricted sites, such as Beloka Cemetery

Themeda triandra dominated grassland, suggesting that grazing may have led to a decline in abundance throughout its range (Benson, 1994). Mauve Burr-daisy is often recorded at recently disturbed sites (McDougall & Walsh, 2007).

• fragment an existing important population into two or more populations

Unlikely. There is no identified existing important population nor precise population known of *Calotis glandulosa*. The proposal is not likely to fragment any existing important population into two or more populations.

The <1 ha footprint of the proposal on the approximately 47 ha property is not likely to impede the spread of reproductive propagules, leading to any fragmentation. Propagules of *Calotis glandulosa* are the brown burrs that stick to clothing and animals' coats and are readily spread and transported across the landscape. The footprint consists of:

- 0.42 ha of proposed roads and tracks (maximum width 4 m) in addition to the existing tracks across the site; and
- 0.18 ha of total building footprint (6 cabins at 170 to 210 m^2, Workshop and Managers quarters each of 300 m^2, and two refuges, one of 25 m^2 and one of 50 m^2).

• adversely affect habitat critical to the survival of a species

Unlikely. The proposal is not likely to affect habitat critical to the survival of *Calotis glandulosa*. The preferred habitats appears to be grazing-restricted sites, such as Beloka Cemetery, but is often recorded on recently disturbed sites.

• disrupt the breeding cycle of an important population

Unlikely. The proposal is not likely to *disrupt the breeding cycle* of an important population as there is no identified existing important population nor precise population known of *Calotis glandulosa*.

From the description on PlantNET, *Calotis glandulosa* (Mauve Burr-daisy) is an erect or ascending, branched herb with conspicuous white to blue ray flowers, with barbed achene fruits.

On the species profile for *Calotis glandulosa,* its breeding cycle is that:

- *Flowers appear in spring and summer.*
- *Flowers are followed by a head of brown burrs that may stick to clothing and animals' coats.*

Most species of *Calotis* genus are easily grown from seed, however some may have poor results. Seed is usually quick to germinate but some dormancy of fresh seed has been reported (Ralph M (1997). Botanic Gardens Trust Ecology of the Cumberland Plain Woodland citing Greening Australia undated).

The loss of <1 ha of habitat from the 47 ha former grazing property is not likely to disrupt its breeding cycle.

• modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

The proposal is not likely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline as:

- the footprint of the proposal on the 47 ha property is <1 ha; and
- the habitat on the former grazing property has been historically sown exotic improved pasture grass. Despite the property being destocked in 2019, grazing by feral deer persists.

• result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat

Unlikely. The proposal is not likely to result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat as invasive species are already established widespread on this former grazing property.

• introduce disease that may cause the species to decline, or

Possible but unikely. The proposal may introduce disease that may cause the species to decline. The risk of *Phytophthora cinnamomi* is to be minimised by use of cattle grids at entrance points, strict nursery hygiene at the specialist nursery are outlined in the VMP (Appendix C).

• interfere substantially with the recovery of the species.

The proposal loss of <1 ha of degraded habitat is not likely to interfere substantially with the recovery of the species.

B6.1 In conclusion

The proposal (the action) is not likely to require approval under the EPBC Act, as the action is not likely to have a significant impact on the Commonwealth listed vulnerable species *Calotris glandulosa*

References

Beekman M. and Ratnieks F.L.W. (2000) Long-range foraging by the honey-bee, *Apis mellifera. Functional Ecology* 14, 490 –496. 2000 British Ecological Society, Blackwell Science Ltd.

Benson D. and McDougall L. (1998) Ecology of Sydney plant species Part 6 Dicotyledon family Myrtaceae. *Cunninghamia* Vol. 5(4): 1998, 809-987.

Cannon C. (1984) The Diet of Lorikeets *Trichoglossus* spp in the Queensland-New South Wales Border Region. *Emu* 84: 16-22.

Department of the Environment (2013) *Matters of National Environmental Significance. Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999.* (available online).

Elmqvist T., Cox P.A, Rainey W.E., William E. and Pierson E.D. (1992) Restricted Pollination on Oceanic Islands: Pollination of Ceiba pentandra by Flying Foxes in Samoa. *Biotropica*, Vol. 24, No. 1 (Mar., 1992), pp. 15-23. Published by: The Association for Tropical Biology and Conservation. Stable URL: http://www.jstor.org/stable/2388469.

Greening Australia (undate) *Florabank Calotis lappulacea.* Online www.greeningaustralia.org.au.

Marshall A.G. (1985) Old World phytophagous bats (Megachiroptera) and their food plants: a survey. *Journal of the Linnean Society*, 83: 351-369.

Parry-Jones K. and Augee W M. (1991) Food selection by Grey-headed Flying Foxes (*Pteropus poliocephalus*) occupying a Summer Colony Site near Gosford, New South Wales. *Wildl. Res*., 18, 11 1-24.

Paton D.C. and Ford H.A. (1977) Pollination by birds of native plants in South Australia. *Emu* 77: 73-85.

Southerton S. G., Birt P., Porter J. and Ford H. A. (2004) Review of gene movement by bats and birds and its potential significance for eucalypt plantation forestry, *Australian Forestry*, 67:1, 44-53. DOI: 10.1080/00049158.2004.10676205.

ANNE CLEMENTS & ASSOCIATES PTY. LIMITED
(ABN 41 077 242 365, ACN 077-160-939)
Environmental and Botanical Consultants
Office 2, 3 Harbourview Crescent, Milsons Point 2060
PO Box 1623, North Sydney 2059
Phone: (02) 9955 9733
Email: mail@acabotanic.com

28 April 2025



Appendix C: Vegetation Management Plan for the proposed staged eco-tourist facilities at 92 Chongs Road, Jindabyne NSW 2627

Prepared by:
Dr AnneMarie Clements
Dr Anne Baumann
Tony Rodd
Tim Harding

Prepared for:
Josh Leitner

Document Control

Version	Date	Authors	Details
1	28 April 2025	Dr AnneMarie Clements Dr Anne Baumann Tony Rodd Tim Harding.	Additional information requested from the NSW Department, emailed from Snowy Monaro Regional Council in November 2024.

Photograph on front cover: Natural regeneration of *Eucalyptus pauciflora* occurring in the centre of the property (photograph taken by Tony Rodd on 12 December 2023).

Shortened forms

APZ	Asset Protection Zone
BAM	Biodiversity Assessment Method
BC Act	Biodiversity Conservation Act 2016 (NSW)
BAR	Biodiversity Assessment Report
DPE	Department of Planning and Environment
DPIE	Department of Planning Industry and Environment
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
IBRA	Interim Biogeographic Regionalisation for Australia
LEP	Snowy River Local Environment Plan 2013
LLS	Local Land Services
MTCTGW	*Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion*
PCT	Plant community type
SERA	Society for Ecological Restoration Australasia
VMP	Vegetation Management Plan / Environmental Management Plan

Table of Contents

C1.0 Introduction....5
C1.1 Relevant Legislation related to the Conservation Works....6
C1.1.1 NSW Legislation....6
C1.1.2 Local Government legislation....7
C1.2 VMP Guidelines and National Standards....7

C2.0 Site Description....8
C2.1 Site landform and drainage....8
C2.2 Geology and soils....8
C2.3 Climate....8
C2.4 Native vegetation....9
C2.4.1 Vegetation mapping....9
C2.4.2 Biodiversity surveys....9
C2.4.3 Plant Community Types (PCTs)....10
C2.4.4 Threatened ecological community....10
C2.4.5 Reference sites....10
C2.5 Habitat / Ecological Values....11
C2.6 Weeds....12

C3.0 Threats to biodiversity in the Conservation Areas....13
C3.1 Managing potential threats....14

C4.0 Vegetation Management Plan....14
C4.1 Aims of the Vegetation Management Plan....14
C4.2 Areas to which the Vegetation Management Plan applies....15
C4.3 Management Objectives....15
C4.3.1 Management Objective 1 – Protection of Conservation Areas....15
C4.3.2 Management Objective 2 – Controlling invasive weeds....17
C4.3.3 Management Objective 3 – Conserving, enhancing and re-establishing living seed banks....21
C4.3.4 Management Objective 4 – Restoring the critically endangered *Monaro Tableland Cool Temperate Grassy Woodland* and increasing its connectivity....22
C4.3.5 Management Objective 5 – Increasing conservation awareness....24
C4.3.6 Management Objective 6 – Monitoring and maintenance....25

References....26

Figures referred to in the Vegetation Management Plan (Figures included the VMP)

1a-1. Site boundary overlaid on the Google Satellite 2023
1a-2. Lot boundaries from SIX maps aerial imagery
1a-3. Approximate locations of existing roads/tracks and fencelines onsite
1a-4. Native vegetation within 1.5 km buffer overlaid on the Six Maps aerial imagery.
1a-5. Site Boundary and SIX Maps Hydrolines overlaid on the Google Satellite 2023.
1b-1. Site boundary overlaid on the SIX Maps topographic WMS layer.
1b-2. Site boundary overlaid on the SIX maps topographic WMS layer – close up.
1c-1. Site location overlaid on the IBRA subregions map - version 7
1c-2. Site location overlaid on the NSW Mitchell Landscapes - version 3.1
1d. Site boundary overlaid on the Berridale and Numbla 2 meter DEM LiDAR dated February 2018 (Spatial Services, ELVIS)
1e. Site plan (Drawing No DA-1, Issue 3, dated 07.07.2024)
1f-1. Bushfire Asset Protection Zones, Refuge 1 (from Harris 2024)
1f-2. Bushfire Asset Protection Zones, Refuge 2 (from Harris 2024).

1f-3.	Bushfire Asset Protection Zones, Cabin 3 (from Harris 2024).
1f-4.	Bushfire Asset Protection Zones, Shed with a manager's accommodation (from Harris 2024).
1959 - 1969	Site boundary overlaid on the 1959 and1969 historic aerial photographs (Spatial Services).
1979 - 1992	Site boundary overlaid on the 1979 and 1992 historic aerial photographs (Spatial Services).
2a.	Site boundary overlaid on the Snowy River Local Environmental Plan 2013 - Land Zoning Map.
2c.	Site boundary overlaid on the Snowy River Local Environmental Plan 2013 - Terrestrial Biodiversity Map.
2d.	Site boundary overlaid on the Snowy River Local Environment al Plan 2013 - Riparian Lands and Watercourses Map.
2e.	Site boundary overlaid on the Biodiversity Values Map - version 16.
2f.	Bushfire Prone Land Map (from Harris 2024).
3a.	Site boundary overlaid on NSW Seamless Geology - version 2.
3b.	Site boundary overlaid on Great Soil Group Soil Type Map of NSW – Version 4.5.
4a-1.	Sampling locations overlaid on the NSW State Vegetation Type Map (DPE 2023)
4d.	Sampling locations overlaid on vegetation map.
4e-1	Observation locations overlaid on the Google Satellite Imagery (Airbus 2025)
4e-2.	Locations of recorded *Calotis glandulosa* and search paths overlaid on the Google Satellite Imagery (Airbus 2025)
4f.	Reference sites for the VMP overlaid on the Google Satellite Imagery (Airbus 2025)
5a.	Site boundary and BioNet records of threatened flora species overlaid on OpenStreetMap.
5b.	Site boundary and BioNet records of threatened fauna species overlaid on OpenStreetMap.
6.	Conservation Areas overlaid on the proposal

Tables

1.	Cover of species recorded in 8 BAM Plots and species present in Spot A.
2.	Maximum height and number of individuals per 10 m x 10 m subquadrat for species present > 2 m.
3a.	Native species covers recorded in 1 m x 1 m quadrats
3b.	Exotic species covers recorded in 1 m x 1 m quadrats
4.	Species lists from two BioNet Sites within the Reference Site

Appendices to the VMP

C-1.	Council's Biosecurity Officer's advice and map
C-2.	Photographic record across the site (available on request).
C-3.	Email from Local Land Service about the Feral Deer cull in April 2025.
C-4.	Photographs of the reference sites.
C-5.	Photograph file by species (supplied to the landowner and available on request).

C1.0 Introduction

In the Biodiversity Assessment Report (BAR) accompanying the application for the proposed staged eco-tourist facilities at 92 Chongs Road, Jindabyne NSW 2627 (Clements *et al.* 2024), a Vegetation Management Plan was recommended in the BAR, namely:

> *natural regeneration be encouraged and assisted by the continuation of the invasive Priority Weed control and environmental protection / conservation works. This includes managed native meadows/grassland as well as stands of native trees and shrubs on the property, especially Koala Feed Trees near Sugarloaf Creek.*

This site-specific Vegetation Management Plan / Environmental Management Plan (VMP) has been prepared in response to the request for additional information. The VMP is a continuation of the existing Conservation Works onsite and it is associated with the proposed staged sco-tourist facilities (Figure 1e).

Location of Proposal:	The approximately 47 ha (46.866 ha) site at 92 Chongs Road, Jindabyne NSW 2627 (Lots 2 DP1232872, 26 DP756672, 25 DP756672, 1 DP1250715) in the Snowy Monaro Regional Local Government Area (Figures 1a-1, 1-2, 1b-1, 1b-2, 1d).
Existing land use of the site:	The site is a historically cleared, former grazing property, zoned RU1 Primary Production (Figures 1959 – 1992, 2a in the BAR). The property was destocked in 2019 and has been managed for conservation for the past 5 years with ongoing environmental protection / conservation works under the guidance of local advisory groups (details in Appendix 1a from the BAR), including: • planting of approximately 500 local provenance trees; and • extensive and repeated herbicide applications of *Nassella trichotoma* (Serrated Tussock) and *Hypericum perforatum* (St John's Wort).
The proposal:	The proposal is for staged eco-tourist facilities (Figure 1e), consisting of: • six eco-cabins, comprising four two-bedroom cabins and two three-bedroom cabins of which one is an accessible three-bedroom cabin; • two associated refuges; • one shed with manager's accommodation; • one workshop; • RFS required bushfire Asset Protection Zones (APZs); and • roads / tracks.
Conservation significance onsite:	In the BAR, it was found that: • The ecological community *Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion* (MTCTGW), listed as critically endangered under the BC Act, occurs on the site in Moderate condition (2.8 ha), Degraded (19.9 ha) and Very Degraded (21.7 ha) (Figure 4d). As stated in the Final Determination: ◦ 2.2 *It is the intent of the NSW Threatened Species Scientific Committee that all occurrences of the ecological community (both recorded and as yet unrecorded, and* ***independent of their condition****) that occur within this bioregion be covered by this Determination.*

	◦ 3.1.7 *Monaro Tableland Cool Temperate Grassy Woodland has been* ***subjected to grazing by domestic stock since the 1820s and extensive structural and compositional degradation*** … • The plant species *Calotis glandulosa* listed as vulnerable under both the *BC Act* and the *EPBC Act* was recorded on the site close to rocky outcrops.
Vegetation onsite:	The vegetation onsite (sampled in BAM Plots and Quadrats on Figure 4a-1, observation points on Figure 4e-1, targeted searches on Figure 4e-2, data in Tables 1, 2, 3a, 3b) was: • typical of a former grazing property; • dominated by the exotic pasture grass *Lolium perenne* (recorded in 49 of the 50 quadrats with up to 60% cover) consistent with pasture improvement; with: ◦ widespread occurrence of listed weed species; ◦ scattered old trees with little signs of any natural regeneration; and ◦ generally infrequent and low cover by a diverse array of native groundcovers.
Photograph record of species onsite:	A photo file of the species onsite is referenced in Appendix C-5 (supplied to the landowner and available on request from the client).

C1.1 Relevant Legislation related to the Conservation Works

C1.1.1 NSW Legislation

Biodiversity Conservation Act 2016 **(BC Act)**

The area adjoining Sugarloaf Creek in the south west of the site is mapped on the Biodiversity Values Map (Figure 2e in the BAR). The vegetation of this area is dominated by pasture grass with an absence of canopy trees (Figure 4e-1, photographs from observation location A in Appendix C-2).

Rural Fires Act 1997

The entire property is mapped as Vegetation Category 3 on the bushfire prone land map (Figure 2f in the BAR). The bushfire risk of the eco-tourism proposal has been assessed by Harris Environmental Consulting (2024), in accordance with Section 6.3.1 of Planning for Bushfire Protection (NSW Rural Fire Service 2019).

The NSW Rural Fire Service requires the provision of a safe refuge that can be readily accessed by patrons within 100 m of the cabins. There are two refuge locations within 100 m of the cabins. [Note: one of the six cabins, Cabin 3, is designed with accessible accommodation and functions as its own refuge].

The proposed bushfire APZs were assessed by Harris Environmental Consulting 2024. The vegetation management of the APZs forms part of the Conservation Works in the VMP.

NSW *Biosecurity Act 2015*

The Biosecurity Officer of Snowy Monaro Regional Council has assessed the site and provides ongoing advice on the control of the listed weeds (Appendix C-1 of the VMP).

Rural Lands Protection Act 1998

Local Land Services (LLS) control declared pest species listed under the *Rural Lands Protection Act 1998*. A helicopter cull of the feral deer onsite has been organised by the LLS with shooting on the property in April 2025 (email in Appendix C-3).

C1.1.2 Local Government legislation

The site is located within the Snowy Monaro Local Government Area and is subject to the Snowy River Local Environment Plan 2013 (LEP).

Zoning - This historically cleared former grazing property and surrounding lands are zoned as RU1 Primary Production (Figure 2a in the BAR).

Terrestrial Biodiversity – pixelated patches of at least 25 m x 25 m in size are mapped across the site (Figure 2c in the BAR). Clause 7.2 of the LEP applies to these mapped areas. The objectives of this clause is to maintain terrestrial biodiversity by:

> *(a) protecting native fauna and flora, and*
>
> *(b) protecting the ecological processes necessary for their continued existence, and*
>
> *(c) encouraging the conservation and recovery of native fauna and flora and their habitats.*
>
> *...*

The pixellated patches onsite appear not to be related to the occurrence of canopy trees.

Riparian land and watercourses – Sugarloaf Creek in the south-west corner of the site is mapped on the LEP map (Figure 2d in the BAR). The unnamed tributary of Sugarloaf Creek which flows east to west across the site, is not mapped under the LEP. Clause 7.3 of the LEP applies to the mapped area in the south west corner of the site.

> *(1) The objective of this clause is to protect and maintain the following—*
>
> *(a) water quality within watercourses,*
>
> *(b) the stability of the bed and banks of watercourses,*
>
> *(c) aquatic and riparian habitats,*
>
> *(d) ecological processes within watercourses and riparian areas.*

C1.2 VMP Guidelines and National Standards

This VMP has been prepared with reference to the *National Standards for the Practice of Ecological Restoration in Australia* (Standards Reference Group (SERA) 2021) provide a set of principles and standards that can be followed to ensure the best possible outcome for a restoration project. These have been considered in the VMP, in particular, SERA Principle 1: *Ecological restoration practice is based on an appropriate local native reference ecosystem.*

An appropriate reference ecosystem is native vegetation on undisturbed land. The two reference sites have been chosen (locations on Figure 4f, BioNET data from reference site 2 in Table 4, photographs in Appendix C-4,).

The VMP, being an Environmental Management Plan, has been written with:

- Clear aims and objectives;
- Realistic targets associated with each objective; and
- Monitoring and reporting for the protection and maintenance of conservation areas.

The VMP has been prepared by experienced restoration ecologists (authors' details in the BAR).

It should be noted in the VMP that the term "weed" refers to all exotic and non-local native species.

C2.0 Site Description

The site is located in the Monaro IBRA subregion of the South Eastern Highlands IBRA region. It is located approximately 45 km south of Lake Eucumbene, 10 km south-east of Lake Jindabyne and approximately 2 km south-west of Ngadang Nature Reserve. The site is accessed from Chongs Road (Figures 1a-1, 1b-1, with Figures 1c-1, 1c-2 in the BAR).

C2.1 Site landform and drainage

From the online BioNet Plot to PCT Assignment Tool, the site is described as:

- Landform Pattern: MOUNTAINS
- Morphological Type: Stream line, Mid slope, Upper slope to Ridge
- Landform element: Stream bank, Hill slope to Flat
- Elevation: 1087.63 to 1118.84

From the LiDAR image, the lowest point on the site (1064 m) is in the west at the outflow of the unnamed creek adjoining Chongs Road to highest being in the north-eastern corner (1118 m) (Figure 1d).

Drainage pattern - Most of the site is drained by the unnamed tributary of Sugarloaf Creek which flows east to west across the site to join Sugarloaf Creek, close to the culvert under Chongs Road. There is an approximately 1.2 ha dam onsite constructed in June/July 2021 under supervision and approval of NSW Soil Conservation in consultation with NSW Water. Sugarloaf Creek in the southwest corner flows generally northward offsite to join the Snowy River in its gorge 6.5 km downstream of the Lake Jindabyne outlet (Figure 1b-1).

C2.2 Geology and soils

The geology of the site is mapped as Bullenbalong Granodiorite (map unit Sbuu), with Abercrombie Formation (map unit Oada) just outside the site's southern boundary. Bullenbalong Granodiorite described (Geoscience Australia Portal, cited by Harris Environmental 2024a) as:

> *Mafic, coarse-to medium-grained, biotite-rich granodiorite; quartz alignment defines a weakly developed foliation, metasedimentary xenoliths are common.*

The soils of nearly all of the site are mapped as Brown Earths (BRE) Great Soil Group Type, except in the south as Lithosols (L) (Figures 3a, 3b in the BAR).

From a series of soil profiles at the proposed Effluent Management Areas, the soils were found to be a sandy loam textured topsoil, 150 cm deep, overlaying a fine sandy clay loam textured subsoil (Harris Environmental 2024a).

C2.3 Climate

In planning ecosystem restoration, it is important to understand that climate influences:

- the quality and quantity of local native seed availability;
- the timing of seed collection and planting;
- the survival rate of plantings;
- the need for additional watering during plant establishment phases, as well as
- erosion risk during high rainfall events.

From the BioNet Plot to PCT Assignment Tool, mean temperature and annual rainfall are as follows:

Mean annual temperature: 8.62 to 8.82°C

Annual rainfall: 653.87 to 669.39 mm.

The summary rainfall statistics for the Jindabyne (Glochinbah) (meteorology station number: 71021, open since 1906, Elevation: 990 m) are as follows (Climate Data Online, accessed 16 April 2025):

Rainfall	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	63	54	56	41	43	48	41	45	51	62	66	57	**636**
Lowest	0	0	0	0	2	0	2	4	4	3	4	1	**247**
10th %ile	8	7	8	7	9	15	11	16	23	21	22	11	**436**
90th %ile	130	107	120	97	95	99	89	79	87	103	110	113	**807**
Highest	275	202	251	160	210	242	168	146	169	222	200	178	**1154**

Periods of low monthly rainfall (<10 mm) and high monthly rainfall (>200 mm) are expected and are planned for during the implementation of the VMP (see Management objective 4).

C2.4 Native vegetation

C2.4.1 Vegetation mapping

NSW State Vegetation Type Map 2023 mapped approximately half of the site as cleared and the remainder as the following Plant Community Types (PCTs) (Figure 4a-1):

Map unit (SVTM)	Located	Sampled in 8 BAM Plots in December 2023 and 50 Quadrats in February 2025
Cleared	Approx. 1/2 of the site	Plot 7, Quadrats 3, 4, 7 to 26, 34, 35, 36, 45, 46, 47, 48.
PCT 3341 Monaro-Gourock Frost Hollow Grassy Woodland	Approx. 1/3 of the site	Plot 2, 4, 5, 6, 8, Quadrats 5, 6, 31, 32, 33, 37 to 44.
PCT 3375 Monaro-Queanbeyan Rolling Hills Grassy Forest.	Mapped in the north	Plot 3
PCT 3413 Monaro Kangaroo Grass Woodland – Grassland Complex	Upper slopes	Plot 1, partly Plot 2, Quadrats 1, 2, 27 to 30, 49, 50. **Low occurrence of *Themeda triandra* recorded onsite with <1% (Plots 1, 6 and 8)).**
PCT 3741 Monaro Mountains Peppermint Shrub Forest	Mapped in the north	Plot 3 **No Peppermints recorded**

C2.4.2 Biodiversity surveys

The vegetation was sampled in December 2023 using the Biodiversity Assessment Methodology (BAM) (DPIE 2020) (sampling locations on Figure 4a-1, Data in Tables 1, 2).

Additional surveys were undertaken in February 2025, including:

- vegetation observed from observations across the site (locations on Figure 4e-1);
- the site was searched for occurrence of threatened species (tracking locations and locations of occurrences on Figure 4e-2); and
- species cover recorded in widespread sampling of 50 fixed area quadrats (1 m x 1 m in size) across the site (sampling locations on Figure 4a-1, data in Tables 3a, 3b).

C2.4.3 Plant Community Types (PCTs)

The best match for the native vegetation onsite was *PCT 3341 Monaro-Gourock Frost Hollow Grassy Woodland* in (Figure 4d):

- moderate condition (two patches of 1.1 ha and 1.7 ha);
- degraded (two patches 18.7 ha and 1.6 ha in the south); to
- very degraded (23.1 ha).

The recorded widespread occurrence of exotic pasture species and little native canopy regeneration recorded in Plots and Quadrats (Figure 4a-1) are consistent with historically sown improved pastures associated with the long history of grazing on the property (data in Tables 1 to 3b).

C2.4.4 Threatened ecological community

PCT 3341 is associated in part with the critically endangered ecological community *Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion* (MTCTGW) under the NSW *Biodiversity Conservation Act 2016*. In the BAR, it was concluded that all of the vegetation on the grazing property independent of condition is or was previously the listed critically endangered ecological community *Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion* under the BC Act.

C2.4.5 Reference sites

Two nearby reference sites have been chosen to provide guidance for restoration of the native vegetation on the site (Figure 4f, photographs in Appendix C-4).

Reference Site 1 - situated in the north-west corner of the site, and extending offsite. It is near Plot 1. This vegetation was mapped being in moderate condition (Figure 4d).

The topography differed from the rest of the site with a steepening fall to the north-west into the head of the north-flowing Daley Creek offsite. Along the edge of the gully, there are many outcrops of angular granite boulders. This area is unlikely to have been extensively grazed or the rocky area sown with improved pasture species.

Native canopy trees: *Eucalyptus viminalis,* an important Koala feed tree.

Native shrubs: conspicuous with the most abundant being *Ozothamnus conditus,* with *Acacia dealbata* and *Pimelea pauciflora* also present.

Native groundcovers: sparse, with two species recorded *Chrysocephalum semipapposum* and *Lomandra longifolia.*

Reference Site 2 – a patch of woodland with almost continuous canopy surrounded by grazing land, located approximately 800 m south of the site with records of *Calotis glandulosa, Swainsonia sericea* and Koala (Figures 4f, BioNET recorded plot data in Table 4).

Adjoining the east side of the Snowy River Way, this patch of woodland lies on a west facing slope, dropping into a shallow gully that parallels the road.

This reference site was viewed from the road, with:

- the gully supports a near-continuous canopy of *Eucalyptus stellulata* with a grassy understorey;
- the slope to the east of the gully, densely wooded with white-barked trees assumed to be *E. pauciflora*.

In the gully closest to the road (BioNET site NUV07W5F), a total of 33 species (12 native and 21 exotic) were recorded.
Native canopy trees: *Eucalyptus stellulata*;

Native shrubs: *Melicytus* sp. Snowfields

Native groundcovers: *Acaena* spp., *Asperula confertus*, *Geranium* spp., *Hydrocotyle laxiflora, Plantago varia.*

[Note: the reference site was not weed-free. **Exotic species:** included 2 species of *Trifolium* and exotic pasture grasses *Phalaris aquatica*].

On the slopes (BioNET site NUV08W5M), a total of 67 species (52 native and 15 exotic) were recorded.
Native canopy trees: *Eucalyptus pauciflora, Eucalyptus rubida* subsp. *rubida;*

Native shrubs: *Acacia dealbata* subsp. *subalpina* (from Plantnet 5 m rarely to 10 m), *Acrotriche serrulata;*

Native groundcovers: abundant, including *Calotus glandulosa* and *Swainsona sericea.*

[Note: the reference site was not weed-free. **Exotic species:** included *Nassella trichotoma*].

C2.5 Habitat / Ecological Values

Threatened flora - The threatened forb *Calotis glandulosa* was recorded onsite as scattered individuals in the upslope grassy areas (Figure 4e-2). This species is vulnerable under the BC Act and EPBC Act.

Potential habitat onsite for threatened species (Figures 1a-2, 1b-2, 4a-1, Tables 1 to 3b):

- there are no mapped wetlands on the site;
- creeks cross the site**;**
- tree hollows present onsite;
- rocky outcrops and boulders on upper slopes;
- very sparse occurrence of nectar bearing shrubs onsite, include: *Bossiaea buxifolia, Melicytus angustifolius, Oxylobium oxylobioides, Ozothamnus thyrsoideus;*
- Koala food trees recorded onsite, *Eucalyptus pauciflora*, *Eucalyptus rubida* and *Eucalyptus viminalis*;
- native sap and gum source trees recorded onsite include *Acacia* spp., *Eucalyptus* spp.;
- decorticating bark habitat present including *Eucalyptus stellulata*, and *Eucalyptus viminalis*; and

- the site provides limited / fragmented connectivity with surrounding vegetation. Some potential for highly mobile threatened species to fly between vegetated areas within the site and offsite vegetation.

Threatened fauna

The old trees onsite provide some potential roosting sites for bats and birds.

The landowner is a member of the Australian Bat Society and is conducting anabat recordings as part of the ongoing environmental works on the property. There are no threatened bat records.

The nearby BioNET fauna records are Diamond Firetail, Gang-gang Cockatoo and Koala (Figure 5b in the BDAR). Currently, the site provides little habitat for these species.

Two frog species were recorded:

- *Crinia signifera* (slow paced 'crik-crik-crik' sound); and
- *Limnodynastes tasmaniensis* (the rapid fire 'ukukuk').

Neither of the frog species are threatened.

C2.6 Weeds

From the exotic species recorded onsite, an improved grazing pasture has been sown on the site, namely *Lolium perenne* (now recorded in 49 of the 50 quadrats) and possibly *Trifolium repens* and *Trifolium subterraneum,* and unsuccessful sown or animal spread *Dactylis glomerata* (recorded in 1 of 50 quadrats, with cover of 0.1%) (Table 3b). The remainder of the exotic species are weeds.

Of particular concern are the following weeds:

Grasses

- *Eragrostis curvula* (African Lovegrass) was recorded in only 2 of the 50 quadrats – readily spread and becomes a dominant species;
- *Nassella trichotoma* (Serrated Tussock) was recorded in 6 of the 50 quadrats - forms dense stands over large areas displacing native species of conservation value; and
- *Holcus lanatus* (Yorkshire Fog) was recorded in 23 of the 50 quadrats – forms dense stands over large areas displacing native species of conservation value.

Rosettes

- *Echium vulgare* (Viper's Bugloss) was recorded in 6 of the 50 quadrats – rapidly colonises disturbed areas, forms rosettes covering large areas potentially colonised by pioneer native flowering forbs; and
- *Verbascum thapsus* (Great Mullein) was recorded in 4 of the 50 quadrats – as it occupies bare ground on roadsides which is the potential habitat for *Calotis glandulosa.*

Massive seeders

- The thistles (*Cirsium vulgare (*Black Thistle)*, Carduus nutans* (Nodding Thistle)*, Carthamus lanatus* (Saffron Thistle) and *Onopordum acanthium* (Scotch Thistle) – early colonising and increase their cover initially over bare ground and overgrazed pastures (including by Kangaroos and Deer) occupying niches that should be occupied by early colonising flowering native groundcover.

Massive spreaders

- *Hypericum perforatum* (St John's Wort) was recorded in 18 of the 50 quadrats – forms extensive cover, displacing native species of conservation value; and
- *Rumex acetosella* (Sheep Sorrel) was recorded in 34 of the 50 quadrats – forms an extensive network of fine rhizomes utilising the water resources for its growth, competing with the native species for the available water resources.

Fruit spread by birds

- *Rosa rubiginosa* (Briar Rose) and *Crataegus monogyna* (Hawthorn) both have the potential to spread to form fire prone thickets and limit the colonisation of local native species; and
- *Rubus fruticosus* agg. (Blackberry).

C3.0 Threats to biodiversity in the Conservation Areas

The biodiversity of particular concern includes:

- the critically endangered ecological community *Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion* (MTCTGW) under the BC Act; and
- The vulnerable listed forb under the BC Act and the EPBC Act, *Calotis glandulosa* (Mauve Burr-daisy) and its habitat.

For *Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion* (MTCTGW) listed key threatening processes from the Final Determination include:

- '*Clearing of native vegetation*'
- *'Competition and grazing by the feral European Rabbit Oryctolagus cuniculus (L.)*
- *'Anthropogenic climate change'*
- *'Invasion of native plant communities by exotic perennial grasses'*

Note, additional detail on the degradation of the community caused by grazing and associated activities is in paragraph 3.1.7 from the Final Determination, namely:

3.1.7	Monaro Tableland Cool Temperate Grassy Woodland has been subjected to grazing by domestic stock since the 1820s and extensive structural and compositional degradation was documented by the middle of the 20th century Costin 1954). The loss of the tree stratum was associated with clearing and ring barking to facilitate pastoral activities coupled with a failure to regenerate due to grazing by rabbits and domestic stock. Degradation of the ground stratum has been associated with well-documented impacts of grazing including the erosion, compaction and nutrient enrichment of the topsoil (Yates et al. 2000; Eddy 2002; McIntyre et al. 2002; Prober et al. 2005; Lunt et al. 2007). This has resulted in the partial or complete replacement of tussock forming grass species such as *Austrostipa scabra, Poa labillardieri* and *Themeda triandra* with other grasses such as *Austrodanthonia* spp., *Enneapogon* spp. and *Aristida* spp. as well as herbs or sub-shrubs such as *Scleranthus* spp., *Helichrysum* spp., *Asperula* spp. and *Helipterum* spp. (Costin 1954). Extensive disturbance to the ground stratum has also resulted in the establishment of shrub or bracken thickets in certain areas dominated by species such as *Cassinia longifolia, Bossiaea buxifolia, Acacia dealbata, A. rubida* subsp. *rubida, Pimelea pauciflora* and *Pteridium esculentum* (Costin 1954). Grazing impacts have been further exacerbated by the application of chemical fertilizers, the removal of large trees, tilling of the soil and the sowing of exotic crop

	species to increase stocking rates (Keith 2004).

Despite the destocking since 2019, grazing by feral deer and by Kangaroo have been recorded.

Deer - the landowner of the property is participating in the Council helicopter deer cull planned for April 2025. Deer are noted as present at the nearby Eagle Range Farm at 16 Ponderosa Lane, Jindabyne, located approximately 400 m to the west, and described on their website (https://www.eaglesrange.com.au/the-farm.html, accessed February 2025), as:

> *The farm has spectacular sweeping views of the entire main range, ...We have an abundance of wildlife and lots of deer on the property.*

Kangaroo - The high population of Kangaroo onsite is likely to be a consequence of the sown pasture grasses related to its former use as a stock grazing property. With good rainfall and warm temperatures, this former grazing property probably has the carrying capacity for a high number of Kangaroos, but they are unlikely to be sustainable in a poor season when Kangaroo grazing pressure will be high on the limited grazing resources.

For *Calotis glandulosa* - There are no Key Threatening Processes listed in the Final Determination [accessed 30 March 2025]. From the Approved conservation advice for *Calotis glandulosa* (Mauve Burr-daisy), the main identified threats to Mauve Burr-daisy include:

- grazing by domestic stock along travelling stock routes;
- council roadside weed control programs (Benson 1994 cited in the Advice);
- loss and degradation of habitat and/or populations from roadwork;
- weed invasion;
- residential and agricultural development; and
- habitat degradation and population loss by feral pigs (in the Kosciuszko area).

C3.1 Managing potential threats

Threats will be managed by:

- carefully controlling existing weeds, including existing pasture grasses;
- conserving and enhancing local native svegetation and fauna habitat;
- encouraging natural regeneration from existing seedbank;
- Staged re-establishment of living seedbanks of the local native species using direct seeding and/or tubestock planting;
- maintaining and improving and establishing local native species;
- providing suitable habitat and enhanced corridor connectivity, especially for the threatened species Koala and *Calotis glandulosa;*
- increasing awareness of the value of native vegetation and native fauna habitat;
- formalising access through the native vegetation and protection of fauna from human traffic; and
- minimising pathogen risks.

Ongoing monitoring will be conducted to assess progress of the rehabilitation and to ensure that corrective actions are undertaken promptly as required.

C4.0 Vegetation Management Plan

C4.1 Aims of the Vegetation Management Plan

The aims of the Vegetation Management Plan (VMP) are:

- to conserve, enhance and re-establish the local native vegetation and habitat connectivity of the threatened species and critically endangered ecological community; and
- create a living seed bank of the local native species.

C4.2 Areas to which the Vegetation Management Plan applies

The VMP applies to the three distinct areas (Figure 6):

Area	Location	Objective
1.	Riparian corridor and adjoining low-lying area, including the existing plantings.	Increasing connectivity by conserving, enhancing and rehabilitating fully structured vegetation, with dominant canopy species being *Eucalyptus stellata*, *E. viminalis.*
2.	Existing remnant woodlands.	Conserving, enhancing and restoring fully structured vegetation with dominant canopy species being *Eucalyptus pauciflora*, *Eucalyptus rubida*, *Eucalyptus stellata.*
3.	Former grazing land with scattered trees.	Creation of a living seed bank for native ground layer species and retention of existing canopy trees.

C4.3 Management Objectives

The following management objectives have been set for the staged implementation of the Conservation Works. The speed of implementation is dependent on the availability of native tubestock and seed, especially native groundcovers.

1. Protection of Conservation Areas
2. Controlling invasive weeds
3. Conserving, enhancing and re-establishing a living seed bank
4. Restoring the critically endangered *Monaro Tableland Cool Temperate Grassy Woodland* and increasing its connectivity
5. Increasing conservation awareness
6. Monitoring and Maintenance

The satisfaction of each management objective will be contingent on meeting specific targets. The specific targets are associated with each management objective, with time frames for completion of the tasks required to achieve each management objective for this Staged proposal.

C4.3.1 Management Objective 1 – Protection of Conservation Areas

Prior to any construction onsite:

- the site owner / Manager is to appoint an Environmental Manager, who is to be a responsible person with at least 5 years experience of supervising the restoration of degraded native ecosystems and with at least a university degree in natural sciences to supervise, co-ordinate and document conservation works;
- the Environmental Manager is to meet with the landowner, as required;
- the Environmental Manager is to ensure that sufficient suitable tubestock and seed of local native species are available for the establishment of meadows (living seed banks of the native groundcovers) for each of the Staged areas;
- the Environmental Manager / the land owner is to identify onsite the Stage 1 area by flagging off the area of major weed infestations close to the onsite access track, as part of the site hygiene to minimise risk of invasive weed spread, recommended by the Biosecurity Officer (Appendix C-1), and then repeat for each subsequent Stages;
- if sufficient tubestock and seed is not available, then these areas of major weed infestation along access routes are to be regularly mown/slashed to reduce its growth, limit weed seed set and its spread, as part of the site hygiene. The mowing may reduce the weed competition with the native soil seed source. Meadow creation requires the native seed banks to be progressively established;
- install cattle grids to the access to the Stage 1 area initially to minimise risk of soil spread offsite to public roads and to minimise weed introduction from tyre of vehicles entering the site, and then repeat for each subsequent Stages, as required;
- all site workers are to be inducted and made fully aware of the significance of the Conservation Areas. These areas are to be clearly identified on plans and marked on the site as “no-go” areas for construction workers, deliveries and storage for each of the Stages.
- sufficient sediment control fencing is to be installed to minimise erosion risk in the Stage 1, and then repeat for each subsequent Stage, as required;
- suitable fencing is to be installed around planting to minimise grazing by Kangaroo (curious animals that pull up plantings), as required by the Construction Manager, Environmental Manager or land owners; and
- the Construction Area fence is to clearly demarcate the limits of the construction activities, as required.

Prior to and at time of local provenance planting:

To further minimise risk of pathogen introduction:

- nurseries and nursery stock are to be routinely inspected by the Environmental Manager / landowner prior to delivery. The nurseries to be used for plant sourcing must have cleanliness and hygiene protocols and procedures in place; and
- cleanliness onsite and adherence to nursery and bush regeneration protocols are critical to minimising pathogen risks.

During earthworks, construction and any soil preparation required:

- if any native fauna are located during the excavation, then the Environmental Manager is to be contacted immediately and an appropriately qualified fauna expert relocate the animal(s), as required;
- for the onsite construction workers, the importance of the Conservation Areas are to be discussed at the weekly toolbox talks;
- the Conservation Area is to remain clearly identified on plan, clearly identified on the site and marked with signs, as specified by the Environmental Manager / land owner;

- the Construction Manager and Environmental Manager are to ensure that sediment fencing stays in place and is maintained; and
- any requests for corrective actions are to be complied with promptly by the Conservation Manager / land owner.

At time of Staged occupancy:

- prior to occupancy of the Cabins, an Environmental Awareness Kit is to be prepared in consultation with the landowner. It includes an explanation of the significance of the native vegetation and associated native habitat; and
- interpretive signs are to be installed adjoining pathways and at potential seating locations, such as the bird sculpture near the dam. These are to be designed in consultation with the landowner, as required.

C4.3.2 Management Objective 2 – Controlling invasive weeds

To assist with weed identification onsite, high resolution photographs have been supplied to the landowner (Appendix C-5).

The weeding is to take place in successive steps. Weed management usually occurs in three steps, namely:

- Primary weed control, involving initial weed removal works, resulting in the removal of the bulk of weed infestations;
- Secondary weed control, involving follow-up removal of weed regrowth; and
- Tertiary weed control, involving maintenance.

Any herbicide applications are to occur during windless periods (0-5 km/hr) such as early mornings, using a nozzle set to large droplets to minimise risk of spray drift.

Primary / secondary control of invasive woody weeds:

Removal of the woody weeds requires weeding by skilled bush regenerators. The recommended WeedWise controls and duties for weeds including registered herbicide options and specified rates are given online at https://weeds.dpi.nsw.gov.au [accessed March 2025).

The main woody weeds recorded onsite are *Crataegus monogyna* (Common Hawthorn), *Rosa rubiginosa* (Sweet Briar) and *Rubus fruticosus* agg. (Blackberry), with fruit spread by birds. All three form fire prone thickets, limit the colonisation of local native species and pose a threat to the survival of the existing senescent canopy trees.

Maintenance control of woody weeds:

Regrowth of woody weeds from the soil seed bank and bird seed drop is expected. Small seedlings are to be removed by hand where appropriate. Saplings or any suckerings are to be scraped and painted with undiluted glyphosate herbicide, as required. These actions will require regular implementation to exhaust the weed seed bank and prevent any new seedlings maturing and seeding.

It is essential following secondary / maintenance weeding that any new weed infestation is readily addressed as part of the on-going management.

Primary / secondary control of ground layer weeds:

Council's Biosecurity Officer has advised that the most invasive weeds onsite are two highly flammable exotic grass species, as well as an upto 1 m tall shrub (see map in Appendix C-1), namely:

***Eragrostis curvula* (African Lovegrass)** is limited to small patches with very occasional scattered plants. This weed is both invasive and highly flammable. It is described by the Biosecurity Officer (Appendix C-1) as:

> *It's mostly growing in the dryer rocky outcrops so the best option would be spot spraying using either glyphosate, flupropanate, or a combination of the two depending on time of year (see https://weeds.dpi.nsw.gov.au/ for rates). It could also be beneficial to hand broadcast some native grass seed in these areas to provide a bit of extra competition. As a long-term strategy, these areas would also be ideal for revegetation or natural regeneration as the grass cover is going to be naturally lighter and therefore more prone to weed invasion, and they already contain remnant vegetation. It is recommended making this number one priority.*

The mapped infestations include:

- on the rocky hilltop in the south, close to *Calotis glandulosa* records;
- near the entrance gate to the managers cottage; and
- on the road to the proposed cabin in the south-west.

On the rock hilltop, the occurrence of *Eragrostis curvula* is in proximity to the recorded location of the threatened plant species, *Calotis glandulosa*. This invasive weed must be carefully removed as it poses a competitive threat to *Calotis glandulosa*. Repeated mowing / slasher with catcher may be useful in reducing seed volume and biomass. Any native species observed should be marked and tagged.

As pointed out by the Biosecurity Officer:

> *The repeated slashing to prevent seed set and open up the groundcover canopy to allow better competition from the other species. …. Most seed also germinate in the first few years after which they quickly lose viability, so if you make a concerted effort to control the adult plants for a few years and build up ground cover, you should notice a significant reduction in plants after 4 or 5 years.*

Following mowing / slashing regrowth of this weed, native regeneration can then be more readily detected and only then can the weed be carefully spot sprayed, reducing risk to the native ground layer species. If, however, mass weed seedling regrowth occurs post mowing then the best option is to scalp the top few centimetres of the soil to remove both seedlings and the surface seed bank, where practicable.

In preparation for planting, the soil is to be prepared and any weed regrowth be control to encourage natural regeneration, and supplementary seeding and planting native groundcover species, as required. This area includes (Figure 6):

Area	Location	Proposed to be
2.	Existing remnant woodlands.	Conserving, enhancing and restoring fully structured vegetation with dominant canopy species being *Eucalyptus pauciflora*, *Eucalyptus rubida*, *Eucalyptus stellata.*
3.	Grazing land with scattered trees.	Creation of a living seed bank for native ground layer species and retention of existing canopy trees.

On less rocky landscapes adjoining the tracks, *Eragrostis curvula* needs to be urgently controlled as weeds seeds are likely to be transported on vehicles tyres and by grazing Kangaroo and Deer. Within the soil seed banks onsite, there is likely to be only a sparse native component.

To reduce the existing biomass and weed seed volume, repeated mowing / slasher with catcher may be useful. Any native species observed should be marked and tagged. Following mowing / slashing regrowth of this weed, regrowth of *Eragrostis curvula* can then be more readily detected and only then can it be carefully spot sprayed. If however mass seedling regrowth occurs post mowing then the best option is to scalp the top few centimeters of the soil to remove both seedling and the surface seed bank.

In preparation for planting, the soil is to be prepared and any weed regrowth be controlled to encourage natural regeneration, and supplementary seeding and planting native groundcover species, as required. These areas are proposed to be (Figure 6):

Area	Location	Proposed to be
3.	Grazing land with scattered trees.	Creation of a living seed bank for native ground layer species and retention of existing canopy trees.

- *Nassella trichotoma* (Serrated Tussock) is recorded by Biosecurity Officer as widespread across the property, varying from lightly scattered to denser patches.

Despite 5 years of repeated herbicide control, *Nassella trichotoma* remains a problem, which is not unexpected as plants of *Nassella trichotoma* produce more than 140,000 seeds per plant per year and the light seed heads are blown by wind over long distances (up to 20 km) and can also be spread by humans and animals (Weeds of National Significance – Weed Management Guide, *abr.org.au/images/stories/resources/ManagementGuides/WeedGuides/wmg_serrated_tussock.pdf*, accessed 24 March 2025).

Given high seed set and flammable biomass, repeated mowing / slasher with catcher are useful to reduce the existing biomass and weed seed volume. Any native species observed should be marked and tagged and not mown, allowing for their natural regeneration.

Given the extent of this weed, repeated mowing / slashing regrowth of this weed is a holding pattern until there is sufficient native seed / tubestock for re-establishing the native understorey. Depending on the results of repeated mowing / slashing and natural regeneration, either:

- spot spraying control may be considered; or
- given the likely high weed soil seed bank, the best option is to scalp the top few centimetres of the soil to remove both seedling and the surface seed bank.

In preparation for direct seeding and / or tubestock planting, the soil is to be prepared and any weed regrowth be controlled to encourage natural regeneration, and supplementary seeding and planting native groundcover, as required. Scalping is not recommended within the dripline of the existing canopy trees (see Objective 4 for details).

The *Nassella trichotoma* infestation are within all three proposed Conservation Areas (Figure 6).

Nassella trichotoma was not recorded in the existing plantings in the south-east of the site. As pointed out by the Biosecurity Officer:

> *It also doesn't grow very densely under shrubs and trees so shading it out is a potential long-term strategy.*

- *Hypericum perforatum* (St John's Wort), like *Nassella trichotoma, was* recorded by Biosecurity Officer as widespread across the property, varying from lightly scattered to denser patches. Despite 5 years of repeated herbicide control, both *Nassella trichotoma* and *Hypericum perforatum* persists on the site (Appendix C-1).

Hypericum perforatum is described on WeedWise as:

> *contains a chemical called hypericin. Livestock that eat it become very sensitive to sunlight. Stock will only eat St John's wort when other feed is scarce, resulting a massive seed build up in the soil. … St John's wort is native to Europe, Asia and North Africa. It was brought to Australia in 1875 as a garden plant. It is used in herbal medicine.*
>
> *Long-term control of St John's wort needs to consider that:*
>
> - *new seedlings appear from autumn to spring*
> - *seeds need mild temperatures, light and rainfall to develop*
> - *competition suppresses young seedlings*
> - *most new foliage grows in autumn and winter*
> - *foliage dies off in late spring*
> - *flowers develop in spring to autumn*
> - *new plants do not flower in the first year*
> - *seeds are released autumn to winter*
> - *a plant can produce up to 33 000 seeds per year*
> - *seeds can remain viable for 12 years.*

Weedwise points out:

> *A typical program might be to:*
> - *spray or plough in summer to reduce weed numbers*
> - *control weeds again in autumn before sowing a winter cereal or forage crop*
> - *repeat for a second year to decrease the number of St John's wort seeds in the soil*
> - *sow a perennial pasture in the third autumn.*
>
> *Sowing perennial pastures can help suppress St John's wort even in less arable country. Use a direct drill/minimum tillage method to reduce soil disturbance. Control annual weeds over summer and again in autumn before sowing pasture. Allow the new pasture to set seed in the first year. Spot spray any new St John's wort plants.*

As the VMP is for conservation management and minimising long-term herbicide usage, repeated mowing / slashing with a catcher is proposed to reduce the existing weed biomass and weed seed volume of this high seed set species and its flammable biomass. This is a holding position until sufficient natural regeneration has occurred and/or sufficient seed and tubestock are available for restoring the native vegetation.

Hypericum perforatum infestations are within all three proposed Conservation Areas (Figure 6).

In addition to the woody weeds and the Biosecuring listed weeds, there is the legacy its long grazing history on the site, including the improved pasture species *Lolium perenne* sown on the site, and the associated agricultural species.

Of particular concern of the weeds recorded in the 50 Quadrats in February 2025 are:

Weed species such as	Growth forms and potential impacts
Holcus lanatus (Yorkshire Fog)	form dense fire prone stands over large areas and suppress / displace the occurrence of the local native species of conservation value.
Echium vulgare (Viper's Bugloss) and *Verbascum thapsus* (Great Mullein)	form rosettes and occupy bare ground on roadsides which are the potential habitat for *Calotis glandulosa.*
the thistles (*Cirsium vulgare (*Black Thistle), *Carduus nutans* (Nodding Thistle), *Carthamus lanatus* (Saffron Thistle), *Onopordum acanthium* (Scotch Thistle)	massive seeders which are early colonisers of bare ground and overgrazed pastures (including by Kangaroos and Deer). They occupy niches that should be occupied by early colonising flowering native groundcovers.
Rumex acetosella (Sheep Sorrel)	form extensive network of fine rhizomes utilising the water resources for its growth, rather than for the native groundcover species.

C4.3.3 Management Objective 3 – Conserving, enhancing and re-establishing living seed banks

A photo file by species has been prepared to assist with identifying both the native and exotic species. These high resolution photographs have been supplied to the landowner are available on request from the client (Appendix C-5).

A diverse array of native flowering groundcover species was recorded both on the slope at Reference Site 2 (BioNET site NUV08W5M) (Table 4) and in the 50 Quadrats onsite (Table 3a)> There is an existing seed bank onsite of more than 40 flowering native groundcover species recorded in the 50 quadrats onsite (with generally sparse occurrence and low covers), including:

- *Acaena agnipila,* (Rosaceae) Herb with stems 20-50 cm, spiny fruit,. Widespread.
- *Arthropodium* sp. Snowy R. catchment (Asparagaceae) Perennial herb, white flowers with purple capsules.
- *Asperula conferta* (Rubiaceae) Perennial herb ± woody at base; stems mostly to 20 cm long. Corolla white; male flowers 2–3 mm long; female flowers c. 3 mm long.
- *Asperula scoparia* (Rubiaceae) Herbs to 30 cm high. Flowers: few- to several-flowered. Flowering: Spring to early summer.
- *Calotis glandulosa* (Asteraceae) Flower heads about 20 mm in diameter, with white, pink, blue, or mauve 'petals' 5–8 mm long, and yellow centres. Flower heads single. Flowering: Spring-Summer.
- *Convolvulus angustissimus* (Convolvulaceae) Perennial creeper with trailing, twining branches. Corolla funnel-shaped, 7–20 mm long, 7–20 mm diam., pink with a paler throat, rarely white. Flowering: Early Spring till mid Autumn.
- *Coronidium scorpioides*, an aster herb with rosette leaves and bright yellow flowers. Dry slopes. Flowering: spring.
- *Cynoglossum australe* (Boraginaceae), erect herb 30–75 cm high. Basal leaves lanceolate to spathulate. Corolla 4–6 mm long, blue to whitish.

- *Geranium solanderi* var. *solanderi* (Geraniaceae), flowers: Petals 10–12 mm long; sepals c. 5 mm long. Flowering: throughout year but chiefly August–December.
- *Hackelia suaveolens* (Boraginaceae), erect herb to 50 cm. Corolla 4–4.5 mm long, white or sometimes blue. Damp places.
- *Leptorhynchos squamatus* subsp. *alpinus* (Asteraceae), erect or ascending herb 10–40 cm high, stems leafy, usually simple, woolly to glabrescent and shiny red-brown with age. Compound heads terminal. Bright yellow Scaly Buttons. Flowering: spring–summer.
- *Oxalis exilis* (Oxalidaceae) – the form of this species onsite has yellow flowers (approx. 2cm diameters).
- *Poranthera microphylla* (Phyllanthaceae) - Decumbent to ± erect, slender, annual herb, 8–15 cm high. Corymbs c. 0.3–0.8 c. across. Flowers mostly < 2 mm diam. Flowering: warmer months.
- *Themeda triandra* (Poaceae). Perennials. Flowers mostly in Spring and Summer.
- *Vittadinia cuneata* var. *cuneata* (Asteraceae) Woody annual or perennial herb, 10–40 cm high. Ray florets pale blue to mauve. Flowering: throughout year.
- *Vittadinia gracilis* (Asteraceae) Perennial small shrub, 10–40 cm high, erect, with woody base. Flowers: Heads 7–8 mm long; involucral bracts acute, tomentose. Ray florets purple.
- *Wahlenbergia communis* (Campanulaceae) perennial herbs 5-75 cm tall, flowers in cymes. Sepals 2–6 mm long. Corolla blue.
- *Wahlenbergia gracilis* (Campanulaceae) Perennial tufted herb, 5–80 cm high Flowers in cymes. Sepals 1–3 mm long. Corolla usually blue, sometimes white or pink; Flowering: throughout year.

The proposal is Staged which allows for the progressive establishment of living seed banks from the existing insitu seed-banks and from living seed-bank "orchards" onsite.

Creating the living seed bank "orchards" provide resources for the Staged expansion of the Conservation Areas, and as a potential resource for other local conservation works.

The available native seed and tubestock for the creation of living seed banks onsite are currently very limited.

Seed of the native groundcover species, in particular, should be collected and propagated by a specialist local native nursery, such as Alpine Forest Establishment, Greening Australia and Monaro Native Tree Nursery. Any seed collection is to adhere to the Florabank Guidelines (https://www.florabank.org.au/guidelines, accessed 24 April 2025), with seed collection limited to less than 30% of the available seed at time of collection.

The propagated tubestock should be planted out onsite.

C4.3.4 Management Objective 4 – Restoring the critically endangered *Monaro Tableland Cool Temperate Grassy Woodland* and increasing its connectivity

Assisted natural regeneration is the generally preferred means for restoring the local native vegetation. To encourage ongoing natural regeneration requires soil biota to be restored, and a soil seed bank to be established (Management Objective 3). Restoring native soil biota is related to re-establishing their host plants for the mycorrhizal fungi, decreasing the occurrence of weed species onsite and reducing the grazing pressure (Kangaroo and Deer) on the land.

The weed control and feral deer control form essential parts of re-establishing the native ecosystems and ecological balance.

However, currently the groundlayer, dominated by exotic pasture species, *Lolium perenne* and associated weeds, is an attractive food sources for Kangaroo. The strategy is to reduce the grazing habitat value onsite and allow the Kangaroo numbers to return to a sustainable population, by:

- mowing/slashing weeds;
- staged invasive weed replacement with native ground covers; and
- shading out with trees and shrubs within the fauna corridors.

The site's history and existing grazing pressures has resulted in areas with little regeneration occurring. In these areas, supplementary planting is required.

The schedule for planting is as follows:

Plant order by the end of October / **November -** The orders for the local provenance tubestock should be placed with the specialist nursery for planting in the following April (Autumn).

Seed resources - It should be remembered that initial local provenance tubestock plantings are to be provide the seed resources for subsequent years of Staged plantings and as a local resource of other restoration projects. Please ensure seed collections are as local as practicable.

Soil preparation when soil is dry and warm - Given the property has had a long history of stock grazing and grazing by feral deer, the soil is to be prepared by deep ripping to a depth of 500 mm using a tyne to crack the subsoil. Deep ripping should be planned for December and at the latest by the end of January so the soil has time to settle prior to planting. Deep ripping is not to occur within the canopy of the existing trees.

Planting time - Planting should be planned for autumn prior to the frosts. The plants must be hardened off in the specialist nursery prior to delivery to the site. Ideally planting is to occur after 30 mm of rain. It is always wise to ask the local farmers if they are sowing crops. Remember in times of drought, watering attracts feral animals to the property.

Watering – tubestock need to be either planted into moist soil or watered in. Flow-up watering / rain is essential.

Conservation Area 1 - Riparian corridor and low lying land
Post the staged weed control and soil preparation, on the low-lying land adjoining the drainage line, the native woodland is to be re-established. The species recommended are based on species recorded at the Reference Sites:
Trees: *Eucalyptus stellulata, Eucalyptus viminalis;*
Shrubs: *Acacia dealbata* subsp. *subalpina, Melicytus* sp. Snowfields, *Ozothamnus conditus,* with *Pimelea pauciflora;*
Groundcover: grassy understorey.

Density of the planting is alternate trees and shrubs at 3 m centres.

The extent of planting is dependent on the availability of tubestock grown from local native seed.

Conservation Area 1 - Riparian corridor and low lying land - existing plantings
The 500 existing native plantings in the approximately 0.5 ha area in the south east included *Eucalyptus bridgesiana, Eucalyptus pauciflora, Eucalypyptus rubida, Acacia melanoxylon* and *Bursaria spinosa* from Greening Australia. All of these species naturally occur on or near the site. The density of planting was one tubestock per 10 m^2, that is at 3 m centres. As these nursery supplied plants may include non-local provenance plantings, this area is not suitable for seed collection onsite.

Conservation Area 2 – Existing remnant woodland
The existing vegetation on these slopes consists of:
Trees: *Eucalyptus pauciflora, Eucalyptus rubida* subsp. *rubida*;
Shrubs: *Melicytus angustifolius* subsp.*divaricatus, Oxylobium oxylobioides, Ozothamnus thyrsoideus.*
Groundcover: grassy understorey.

Conservation Area 3 – Managed meadows with scattered trees
The implementation of the weed control and the RFS requirements provides an opportunity for the re-establishment of managed meadows of local native groundcovers. The highly flammable invasive weeds onsite are to be replaced as part of the ongoing Conservation Works.

Creating flower meadows from former grazing paddocks require the existing native seed bank to be stimulated. Regular mowing / slashing and weed control strategies are to be used for establishing "orchards" of living seed banks. The size of the orchards is dependent on the availability of native seed. The time of seed set affects the layout of the orchards of living seed. In some cases, single species orchards are appropriate, such as swards of *Themeda triandra*, and separate swards of everlasting daisies.

The existing scattered trees require weed reducing within the canopy spread. Regular weed slashing under these trees forms part of the management, as required.

Planting of managed meadows adjoining access roads
The planting densities depend on the extent of natural occurrence and regeneration occurring during the weed control. The planting densities of the ground cover species on road edges should be 1 plant every 25 cm in 3 rows with up to 1 m separation between the 3 rows. This reduces the risk of weed re-infestation including from vehicle tyres and fauna movements. The establishment of roadside plantings formalise road edges and also allows for natural spread of native species along the roadsides. The management of these roadsides as flowering meadow species allows for weed control to be regularly implemented.

C4.3.5 Management Objective 5 – Increasing conservation awareness

Not only is conservation awareness required during the construction phase with its inductions and toolbox talks (Objective 1), but conservation awareness is fundamental for the life of the project.

The Conservation Areas are designed to provide a range of conservation experiences from that of the wooded riparian corridors adjoining the watercourses, woodlands on rocky hilltops to open landscape with scattered trees and flowering meadows. To achieve the VMP aims, increased awareness by people using the site of the existence of the native vegetation and associated fauna habitat is required.

In order to maximise the appreciation of native flora and fauna and minimise the risk of fragmentation and disturbance to the native vegetation being conserved, enhanced and re-established onsite, and to increase the appreciation of the natural environment by the summer guests to the eco-tourist facilities, the living seed bank meadows of the flowering native groundcovers are to be located:

- adjoining the entrances;
- along the internal access roads and tracks; and
- in the former paddocks surrounding and overlooked by the cabins.

The site, with its planned riparian corridors and wooded connectivity on the slopes, is designed to encourage local native wildlife movement across the landscape. The open water areas onsite are designed to be enjoyed by the guests and provide habitat for frogs and other native fauna.

Formalised walking paths are to occur in the Conservation Areas, including on the south facing slope as well as between the cabins and the refuges. These tracks are to minimise impact to the native vegetation, as well as provide access to the native vegetation by the guests. Seating areas form part of the considerations in the VMP. Both the formalised walking paths and seating within the corridors provide opportunity to increase environmental awareness during the guests' visits.

C4.3.6 Management Objective 6 – Monitoring and maintenance

The monitoring and maintenance applies to the area subject to the VMP. The VMP is to be in place for the life of the development.

The aims of the VMP are to conserve, enhance and re-establish the local native vegetation and habitat connectivity of the threatened species and critically endangered ecological community, and create a living seed bank of the local native species. The aims are to be achieved by implementation of the actions contained under the objectives with specific targets for:

- measuring how well the aims are being achieved throughout the monitoring period;
- determining when or if further actions are required; and
- time frames for carrying out the tasks to be completed.

Specific short-term targets, including during construction phase(s), relate to:

- documenting and photographing works and changes onsite. The observation points shown on Figure 4e-1 can be used as monitoring points for annual photographs used to document environmental changes. These documents and photographs are to be included in monitoring reports;
- formalising the access routes to works areas;
- clearly defining the limits of works areas onsite. Note storage areas are to be within the defined works areas (not in the Conservation Areas);
- minimising erosion risks from access routes and works areas by installing sediment and erosion controls, as required;
- minimising risk of weed spread by vehicles by adhering to site hygiene, including regularly mowing and slashing of weed infestation along staged access routes and surrounding works areas; and
- Implementing any corrective actions required, with promptly responses by the Construction team / landowner; and details to be included in the monitoring reports.

The long-term targets for the life of the proposal include weed control, maintaining local native plant species and encouraging ongoing native recruitment.

Weed control

On this approximate 47 ha former grazing property with dominance of exotic pasture grass and associated weed, the long-term target is <5% total projected foliage weed cover in the Conservation Areas. This is to be progressively implemented in the Stages.

Native plant species diversity

The long-term target for the conservation areas should reflect the plant species diversity of the reference sites, the local benchmark, with:

- Reference Site 1 – dominated by Koala feed tree *Eucalyptus viminalis*; and
- Reference Site 2 – known record of Koala and the threatened plant species *Calotis glandulosa, Swainsonia sericea.*

Scheduling – It is dependent on the Staging of the proposal. Monitoring, maintenance and reporting generally relate to the time periods of Month 1, Month 3, Month 6, Month 12, then yearly for the life of the development. For this Staged project, the monitoring periods are to be at least yearly.

The specific performance targets are related to the successes in previous monitoring periods. The targets are set by the Environmental Manager in consultation with the landowner to guide site management for the next monitoring period(s).

Monitoring Reports are to include:

- details of rainfall;
- locations of access to the Stage;
- areas where works have been done;
- Conservation Works done;
- progress to date and works required;
- a photographic record from the fixed photographic monitoring points to be used to evaluate the change in weed cover;
- any native fauna observed, including photographs if possible, including estimates of Kangaroos and feral animals onsite; and
- any issues that arise through the monitoring process are to be addressed and corrective actions implemented, and outcomes of implementation documented in the next monitoring report.

These reports are to be used to evaluate the success of the project over each monitoring period and to assess the long-term potential resilience of the ecosystems.

Results of the monitoring are to be discussed with the appropriate authorities including Snowy Monaro Regional Council's Biosecurity Officer.

References

Clements A, Rodd T, Dever P, Harding T and Baumann A (2024) *Biodiversity Assessment Report for the Staged 6 Cabins Eco-tourist Development at 92 Chongs Road Jindabyne NSW 2627 (Lots 2 DP1232872, 26 DP756672, 25 DP756672, 1 DP1250715).* Prepared for Josh Leitner. Dated 2 September 2024.

Department of Planning, Industry and Environment (DPIE) (2020) *Biodiversity Assessment Method*. Dated October 2020.

Harris Environmental Consulting (2024) Bushfire Hazards Assessment. Proposed Eco-tourism development at 92 Chongs Road, Jindabyne. Dated 16 August 2024.

Harris Environmental Consulting (2024a) *Soil and site assessment for Onsite Wastewater Disposal Staged 6 Cabins Eco-Tourist Development at 92 Chongs Road, Jindabyne, NSW.* Version 3.1. Client Mr Josh Leitner. Dated 7 November 2024.

NSW Rural Fire Service (2019) *Planning for Bush Fire Protection. A guide for councils, planners, fire authorities and developers.* Dated November 2019.

Society for Ecological Restoration Australasia (SERA) (2021) *National standards for the practice of ecological restoration in Australia.* Edition 2.2. Dated SEptember 2021. Published Society for Ecological Restoration Australasia. Available from URL: Available from URL: http://www.seraustralasia.com/standards/home.html

Appendix C-1.
Council's Biosecurity Officer's advice and map

On Thursday, July 11, 2024, 2:06 PM, Emily Griffin <Emily.Griffin@snowymonaro.> wrote:

Hi Josh,

As advised on the phone I found three of the higher priority widespread weeds on your place, these being African lovegrass (ALG) , serrated tussock (ST), and St John's wort (SJW). The ST and SJW are widespread across the property varying from lightly scattered to denser patches. The ALG is so far limited to a small number of patches with very occasional individual scattered plants. Have a look at the attached map for the approximate locations of the patches of ALG. The aerial imagery is pretty old but hopefully you can figure out where they are from the map. The most north-east patch is straight ahead of you when you come over the causeway among the higher rocky ground. I've also attached a couple of photos I took nearby recently that show what it looks like in a dense patch (note the masses of fine seedheads and orangey-beige colour) and as a single plant (note the curly leaf tips). Over summer it has a greyish green colour and the seedheads are very dark purple, almost black in appearance. They start out with an almost spearlike shape, opening up into the Christmas tree shape as they mature.

Given the small amount of lovegrass present and it's invasiveness and flammability, I recommend making this your number one priority to prevent further spread and establishment across the property. It's mostly growing in the dryer rocky outcrops so the best option would be spot spraying using either glyphosate, flupropanate, or a combination of the two depending on time of year (see https://weeds.dpi.nsw.gov.au/ for rates). It could also be beneficial to hand broadcast some native grass seed in these areas to provide a bit of extra competition. As a long-term strategy, these areas would also be ideal for revegetation or natural regeneration as the grass cover is going to be naturally lighter and therefore more prone to weed invasion, and they already contain remnant vegetation. One thing to be particularly aware of with African lovegrass is that the small seeds are easily transported on vehicles so be careful not to drive through it as this is likely to spread it around the property.

One of the best strategies you can use for all weed species is to maintain good farm hygiene. Limit vehicle movements to tracks, monitor tracks and parking areas for new species, take care in sourcing materials such as mulch or topsoil to make sure it isn't contaminated with weed seeds etc. The other key factor is to maintain good ground cover – weeds love bare ground so any disturbance (eg graders) or high grazing pressure (including from roos and ferals, not just domestic stock) that reduces ground cover can lead to negative impacts. Well managed grazing can be a useful tool in weed management but in your situation I'd suggest the main issue will be deer so anything you can do to control their numbers will help. Deer proof fencing is a bit of an investment but it can be worthwhile in the long term and would also help protect any plants you put in as part of a reveg program – let me know if you want more info on fence design because I've seen a lot of examples of what works well and what doesn't!

Other than these strategies, other possible approaches for the ST and SJW are:

Serrated tussock: slash to prevent seed set and open up the groundcover canopy to allow better competition from other species. It won't kill the plants but it can be a useful technique to reduce seed production while you concentrate on spraying or chipping plants in non-slashable areas. Slashing in late autumn or winter will also make it much easier to spot the ST plants so you can control them – it grows more slowly over the cooler months but it will continue growing and take off earlier in spring than most other species. As with ALG, you can spot spray it with Glyphosate, Flupropanate, or a mix of the two. Boom spraying with flupropanate is also effective but be careful of the rate you use – the lowest label rate is 1.5 L/ha but even at that rate it can knock back the natives a bit (you might find this an interesting read: https://serratedtussock.com/)It can also be worthwhile getting soil testing done and spreading fertilizer, gypsum etc depending on the needs – by increasing the competitiveness of the other grasses you'll find you have fewer serrated tussock seedlings in future years – it's tolerant of dry, shallow, acidic soils and can grow where other species struggle, but the seedlings

aren't very competitive. Most seed also germinate in the first few years after which they quickly lose viability, so if you make a concerted effort to control the adult plants for a few years and build up ground cover, you should notice a significant reduction in plants after 4 or 5 years. Chipping plants out is another option if you're wanting to limit chemical use and unlike spraying, it can be done any time of years, but it takes a fair bit of effort so on a block the size of yours it wouldn't be an efficient strategy on its own. It also doesn't grow very densely under shrubs and trees so shading it out is a potential long-term strategy – there'll still be some plants that need to be controlled but not as many.

St John's wort: as with ST, slashing can be used to minimise seed set however be aware than it can encourage suckering. Manual control isn't very effective except for very small patches because it has a tough crown and spreads via runners – if a small part gets left in the ground it'll just regrow. The best option for you would probably be to spray it with a selective herbicide or mix (see https://weeds.dpi.nsw.gov.au/). The most common practice is to mix a herbicide containing triclopyr and picloram with metsulfuron-methyl. Because of the way SJW grows, you want a slow kill so the chemical gets throughout the whole plant system so go easy when you're spraying it – most people tend to over-apply when spot spraying. I've observed that if you come back two weeks after spraying and it's totally brown and dead, you've hit it a bit hard. It should just be starting to turn brown around the edges at this point.

If this hasn't been enough reading for you, have a look at the following links. Good luck with it all and please reach out if you have any other questions.

Preparing a Whole of Property Weed Management Plan - great document to get you thinking about a long term approach that'll give you the most bang for your buck
https://www.lls.nsw.gov.au/__

Rural Living Handbook - A guide for rural landholders
https://www.lls.nsw.gov.au/__

Good overview of a wide range of weed management techniques
https://

Gully Erosion Assessment and Control Guide
https://www.lls.nsw.gov.au/__

ANU Sustainable Lands - info on topics including establishing shelterbelts and riparian restoration
https://www.sustainablefarms.

Mulloon Institute - landscape rehydration, erosion and sediment control via leaky weirs
https://themullooninstitute.

Biodiversity Conservation Trust – they have various grants available that can be used towards fencing, weed control etc.
https://www.bct.nsw.gov.au/

Local native plant nurseries
https://www. and http://

Saving Soil – a more in depth resource on managing erosion
https://www.dpi.nsw.gov.au/__

An good case study of a property using regenerative practices. While there are big differences in soils/livestock etc between them and you, the principles are still applicable.
https://soilsforlife.org.au/

Kind regards,

Emily Griffin
Biosecurity Officer

PO Box 714
COOMA NSW 2630

Direct (02) 6451 1357
Phone 1300 345 345
Fax (02) 6456 3337
snowymonaro.nsw.gov.au

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Snowy Monaro Regional Council acknowledges the Traditional Custodians of the region's land and water: the Ngarigo, Walgalu, Southern Ngunnawal and Bidawal Peoples. We pay our respects to Elders past, present and emerging.

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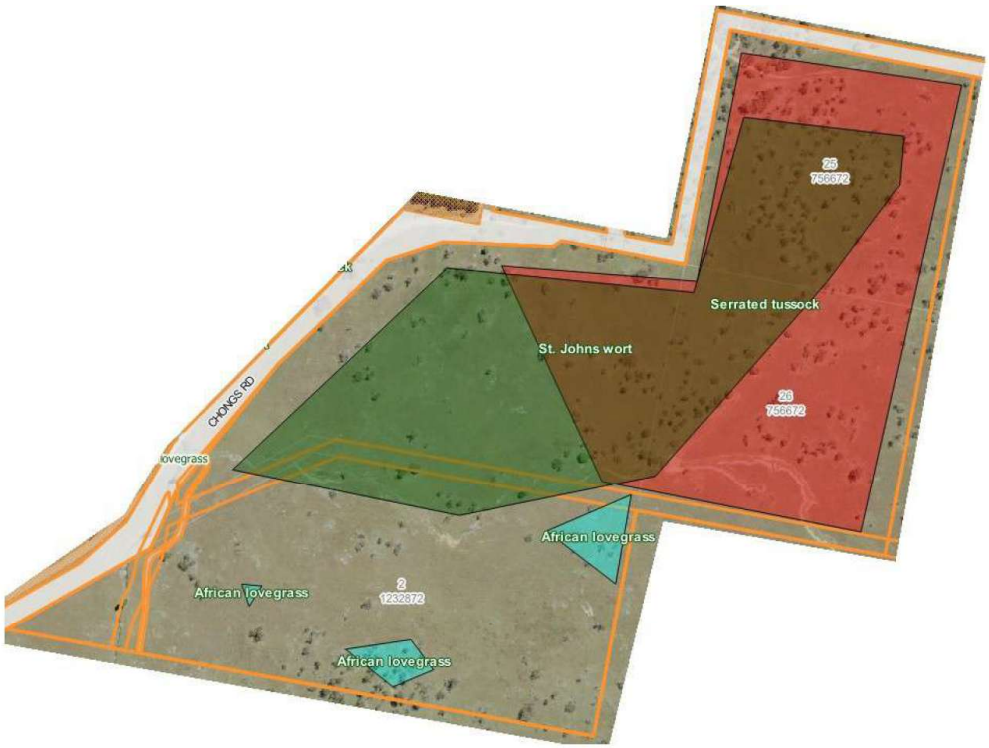




Dense African Love Grass in winter 2024



African Love Grass in winter 2024

Appendix C-2.
Photographic record across the site (available on request).

Appendix C-3.
Email from Local Land Service about the Feral Deer cull in April 2025.

Gmail **Anne Clements <acabotanic@gmail.com>**

Fw: Upper Snowy Aerial Shoot consent
2 messages

j group plumbing <[redacted]> 8 April 2025 at 09:14
To: Anne Clements <[redacted]>

Anne, please see confirmation email from kirrily from local land services.

Sent from Yahoo Mail for iPhone

Begin forwarded message:

On Tuesday, April 8, 2025, 9:12 am, Kirrily Gould <[redacted]> wrote:

Hi Josh,

Thanks for your email.

We have received your consent and confirm that shooting will only take place on your property in April, from the 28th and we will not continue on your property after the 30th April as per your request.

You will receive notifications closer to the date.

Thanks and kind regards,

Kirrily

From: j group plumbing <[redacted]>
Sent: Sunday, 6 April 2025 6:13 PM
To: Kirrily Gould <[redacted]>
Subject: Re: Upper Snowy Aerial Shoot consent

Hi kirrily,

I hope you are doing well..

can you please email me back to confirm you got my consent and the aerial shooting will take place to control wild deer.

Also please add the dates to which this will take place.. kindest regards

Josh leitner

Sent from Yahoo Mail for iPhone

On Wednesday, March 5, 2025, 10:32 am, Kirrily Gould <[redacted]> wrote:

Hi Josh, Thanks for taking my call this morning.

If you could please re-submit the consent form and note that you give consent for April dates only that would be great.

Your holding reference number that you will need for the form is; 129047882

Link to form here; https://regionalnsw.qualtrics.com/jfe/form/SV_4YC0oRNZo6YVlie

Thanks again,

Kirrily Gould

Land Services Officer

Local Land Services Agency

Department of Primary Industries and Regional Development

Appendix C-4.
Photographs of the reference sites.

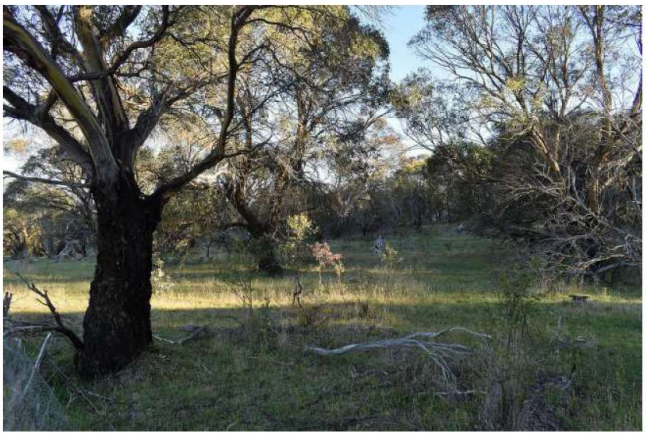
Photographic record of Reference Sites 1 and 2

	**Reference site 1, with *Eucalyptus viminalis***
	**Reference site 1 with *Eucalyptus viminalis;* track to shed on adjacent property to north**

	***Ozothamnus thyrsoideus* at Reference site 1**
	***Ozothamnus thyrsoideus* at Reference site 1**
	***Chrysocephalum semipapposum* at Reference site 1**

	**Reference site 1**
	**Reference site 1**

	***Pimelea pauciflora* at Reference site 1**

	**Reference site 2**
	**Reference site 2**
	**Reference site 2**

Appendix C-5.
Photograph file by species (supplied to the landowner and available on request).

REF: 4877BF
AUGUST 13, 2024
Valid to:13/08/2025

Harrisenvironmental CONSULTING

BUSHFIRE HAZARD ASSESSMENT

SIX PROPOSED ECO TOURISM CABINS, TWO REFUGES, MANAGERS QUARTERS AND WORKSHOP
92 CHONGS ROAD, JINDABYNE, NSW

LGA: Snowy Monaro
Lot 2 DP 1232872, 26 DP 756672, 25 DP 756672, 1 DP 1250715
Applicant: Josh Leitner

HARRIS ENVIRONMENTAL CONSULTING
TEL: (02) 4236 0954/48 621168
kate@hec.eco

BUSHFIRE HAZARD ASSESSMENT

HARRIS ENVIRONMENTAL CONSULTING
ABN 541 287 40 549

Phone: (02) 4236 0954/ 02 48621168
Mobile: 0403237072
Email: kate@hec.eco
Web: www.harrisenvironmental.com.au
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VERSION CONTROL

Title	Bushfire Hazard Assessment			
Site address	92 Chongs Road, Jindabyne, NSW			
Prepared By	Letara Judd BPAD L2 46804			
Date Created	1/12/2021			
Version Number	**Modified By**	**Modifications Made**	**Date Modified**	**Status**
[1.0]	LJ	Issue for DA submission	1/12/2021	Complete
[2.0]	LJ	Modification from applicant	29/09/2022	Complete
[3.0]	LJ	Modification from applicant	31/10/2022	Complete
[4.0]	LJ	Modification from applicant	26/04/2023	Complete
[5.0]	LJ	Modification from applicant	11/07/2024	Complete
[5.1]	LJ	Modification from applicant	13/08/2024	Complete

ASSESSOR & QUALIFICATIONS

Letara Judd
[redacted]
BPAD-L2-46804
GRAD CERT BUSH FIRE PROTECTION, (UWS)
BACHELOR OF ENVSC (HONS) (UOW)

[redacted]
BPAD L3 26947
GRAD DIP BUSH FIRE PROTECTION, UWS
GRAD DIP ENVIRO MANG HERTS, UK
GRAD DIP NAT RES UNE
BSC APP SC, AGRICULTURE HAC

DISCLAIMER

The recommendations provided in the summary of this report are a result of the analysis of the proposal in relation to the requirements of Planning for Bushfire Protection 2019. Utmost care has been taken in the preparation of this report however there is no guarantee of human error. The intention of this report is to address the submission requirements for Development Applications on bushfire prone land. There is no implied assurance or guarantee the summary conditions will be accepted in the final consent and there is no way Harris Environmental Consulting is liable for any financial losses incurred should the recommendations in this report not be accepted in the final conditions of consent.
This bushfire assessment provides a risk assessment of the bushfire hazard as outlined in the PBP 2019 and AS3959 2018. It does not provide protection against any damages or losses resulting from a bushfire event.

TABLE OF CONTENTS

1 PROPOSAL 7

2 PLANNING LAYERS 13

3 SITE DESCRIPTION 15

3.1. Slope and aspect of the site within 100 m 15

3.2. Vegetation formation within 140 m of proposed development 16

4 BUSHFIRE THREAT ASSESSMENT 26

4.1. Asset Protection Zones (APZ) 26

4.2. Relevant Construction Standard 28

4.4. Emergency Management 29

4.5. Adequate Water and Utility Services 29

4.6. Safe Operational Access 30

5 LANDSCAPING 33

6 Compliance with Section 6.3.1 35

7 SUMMARY 39

7 REFERENCES 41

FIGURES

Figure 1 Site location 8
Figure 2 Broadscale aerial view of the subject site....9
Figure 3 Close up view of development (North) 9
Figure 4 Close up view of development (South)....11
Figure 5 Proposed Plans 12
Figure 6 Bushfire Prone Map 13
Figure 7 LEP Zone Map....14
Figure 8 Biodiversity Mapping....14
Figure 9 Slope 15
Figure 10 Bushfire Prone Vegetation within 140 metres of Refuge 1 18
Figure 11 Bushfire Prone Vegetation within 140 metres of Cabin 3 19
Figure 12 Bushfire Prone Vegetation within 140 metres of Managers Quarters 20
Figure 13 Bushfire Prone Vegetation within 140 metres of Refuge 2 21
Figure 14 Proposed Access Plan....31
Figure 15 Evacuation Directions 32

TABLES

Table 1 Planning Layers 13
Table 2 Predominate Vegetation Classification 16
Table 3 APZ and BAL Determination Refuge 1 26
Table 4 APZ and BAL Determination Refuge 2 27
Table 5 APZ and BAL Determination Cabin 3 27
Table 6 APZ and BAL Determination Managers Quarters 27
Table 7 PBP 2019 Table 6.8 Compliance 35

APPENDIX

Appendix i Cabins floor plans 42

EXECUTIVE SUMMARY

This report provides a Bushfire Hazard Assessment for the proposed Eco Tourism Development at 92 Chongs Road, Jindabyne, NSW.

Previous discussions with Martin Webster , Development Assessment and Planning Coordinator / from NSW Rural Fire Service Planning and Environment Services (South) has provided feedback regarding the development design across the site.

The proposal consists of six eco-cabins, comprising four two-bedroom units, one three-bedroom unit, and one accessible three-bedroom unit, two associated refuges, one shed with manager's accommodation, one workshop, RFS required bushfire Asset Protection Zones and access roads / tracks. Cabin 3 is proposed to be a refuge building, along with the 2 proposed refuges on site.

Site inspection was undertaken by Letara Judd (BPAD L2) on 8 November 2021. This Eco Tourism Development has been assessed in accordance with Section 6.3.1 PBP 2019. This is an integrated development, as the development is considered Special Fire Protection Purpose (SFPP) under Section 6 PBP (2019). Therefore, a Bushfire Safety Authority (BFSA) is required under Rural Fires Act s.100B.

This assessment classifies the bushfire prone land within the site as:

- Upslope – 5-10° Downslope Woodland; and
- Upslope – 5-10° Downslope Grassland.

Refuge, 1 Refuge 2 and Cabin 3 (refuge buildings) can be constructed to **BAL 12.5** as specified by AS3959 - 2018 Construction for Buildings in Bushfire Prone Areas, *PBP 2019* and/or *NASH Standard Steel Framed Construction in Bushfire Areas* (2014).

No construction standard is required for accommodation (Cabin 1, 2, 4, 5 & 6) in development where a construction level of BAL 12.5 or greater is applied to the refuge building in accordance with AS 3959 or NASH Standard and 7.5 of PBP.

For Refuge 1, Refuge 2 and Cabin 3, a <10kW/m^2 APZ is required to be established from the commencement of building works and should be maintained in perpetuity for the following distances:

- Refuge 1:
  - 60 m on the south;
  - 42 m to the east;
  - 45 m on the north-west;
  - 36 m to the north-east.
- Refuge 2:
  - 42 m on the north-east and south-east.
  - 50 m on the north-west and south-west.
- Cabin 3:
  - 36 m on the north-east and south-east.
  - 40 m on the north-west and south-west.

The shed with manager's accommodation can be constructed to **BAL 29** as specified by AS3959 - 2018 Construction for Buildings in Bushfire Prone Areas, *PBP 2019* and/or *NASH Standard Steel Framed Construction in Bushfire Areas* (2014).

For the shed with manager's accommodation, a <29kW/m^2 APZ is required to be established from the commencement of building works and should be maintained in perpetuity for the following distances:

- 10 m on the north, east and south;
- 11 m on the west.

The existing shed is required to be upgraded to improve ember protection. This is to be achieved by enclosing all openings (excluding roof tile spaces) or covering openings with a non-corrosive metal screen mesh with a maximum aperture of 2mm. Where applicable, this includes any sub floor areas, openable windows, vents, weep holes and eaves. External doors are to be fitted with draft excluders.

The proposed workshop is >6 m from a habitable building, therefore no bush fire protection requirements apply.

The subject lot is located Chongs Road. This is a two-wheel drive, all weather road. The capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles. The proposed access to the development is from one access point at the end of Chongs Road. The internal access varies from 430-800m from Chongs Road. The proposed access is wholly located in grassland and parking bays can be provided by grassed verges.

The proposed internal access is required to comply with the PBP- Property Access. This includes:

- minimum 4m carriageway width;
- a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches;
- provide a suitable turning area in accordance with Appendix 3;
- curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress;
- the minimum distance between inner and outer curves is 6m;
- the crossfall is not more than 10 degrees;
- maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads;
- any bridges/causeways are sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes) and bridges/ causeways are to clearly indicate load rating;
- there is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.

The shed with manager's accommodation, Refuge 1, Refuge 2 and Cabin 3 is to provide enough turning room for a fire tanker that requires an inner minimum turning radius of 6 m and outer minimum radius of 12 m at each building.

The applicant should ensure 20,000 litre water supply for firefighting purposes: at the proposed shed with manager's accommodation, Refuge 1, Refuge 2 and Cabin 3.

Above ground tanks are required to be manufactured of concrete or metal and raised tanks have their stands protected. All above ground water pipes external to the building are required to be metal including and up to any taps. Pumps are to be shielded. Underground tanks should have an access hole of 200 mm and a hardened ground surface within 4 m of the access hole. A suitable connection for firefighting purposes is required such as a 65mm Storz outlet and a gate or ball valve.

Any bottled gas will be installed and maintained in accordance with *AS1596* and the requirements of the relevant authority. If gas cylinders need to be kept close to the buildings, the release valves must be directed away from the building and away from any combustible material. Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used.

Electrical transmission lines, if above ground, will be managed in accordance with specifications issued by Energy Australia.

Bush Fire Emergency Management and Evacuation Plan is to be prepared consistent with the NSW RFS document: *A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan*, and *AS 3745:2010*.

1 PROPOSAL

The owners of 92 Chongs Road, Jindabyne, NSW, propose to construct 6 Eco Tourism Cabins, two refuges a managers quarters and workshop. Cabin 3 is proposed to be a refuge building, along with the 2 proposed refuges on site. The site contains an existing shed on Lot 2 DP 1232872, 26 DP 756672, 25 DP 756672, 1 DP 1250715. Letara Judd undertook a site inspection on 8 November 2021.

The proposal consists of:

- six eco-cabins, comprising four two-bedroom units, one three-bedroom unit, and one accessible three-bedroom unit;
- two associated refuges;
- one shed with manager's accommodation,
- one workshop,
- RFS required bushfire Asset Protection Zones, and
- roads / tracks.

This development is proposed as Eco Tourism. The proposed development aims to reduce the environmental footprint and create minimal impact from APZs. The increase loss of structures is noted, and emphasis is placed on emergency management and an onsite refuge for development approval. The proposed Eco Tourism cabins are assessed against Section 6.3.1 of the PBP 2019.

Harris Environmental Consulting was commissioned to provide this bushfire assessment.

Figure 1 shows the subject lot location. The subject lot is located north of the Snowy River Way. Figure 2 provides a broadscale aerial view of the subject site, overlaid on the Google satellite 2023. Figures 3 & 4 show a close-up view of the development in north and south of the site. Figure 5 shows the proposed plans.

FIGURE 1 SITE LOCATION

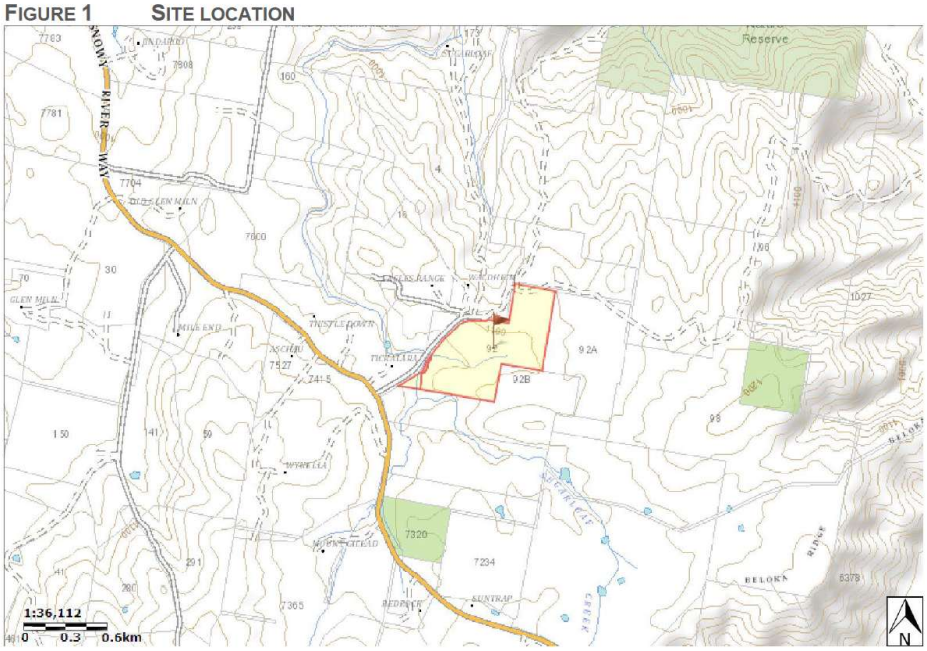


FIGURE 2 BROADSCALE AERIAL VIEW OF THE SUBJECT SITE

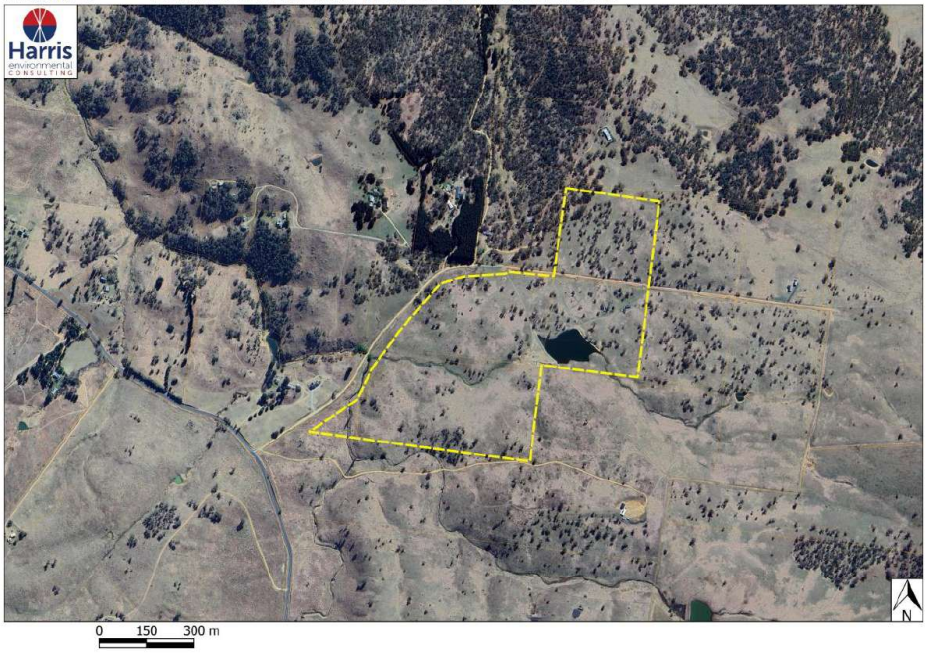


FIGURE 3 CLOSE UP VIEW OF DEVELOPMENT (NORTH)

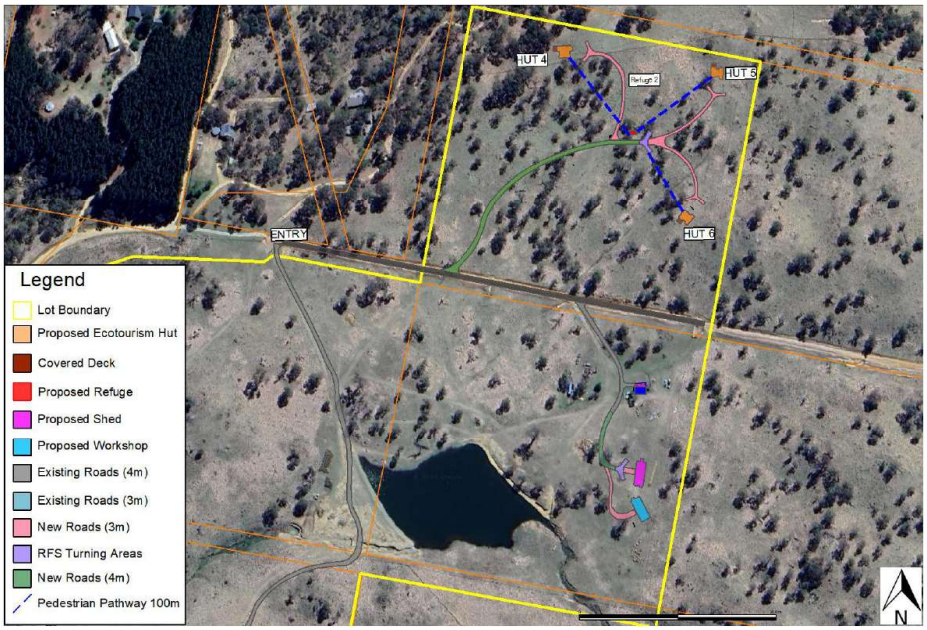


FIGURE 4 CLOSE UP VIEW OF DEVELOPMENT (SOUTH)

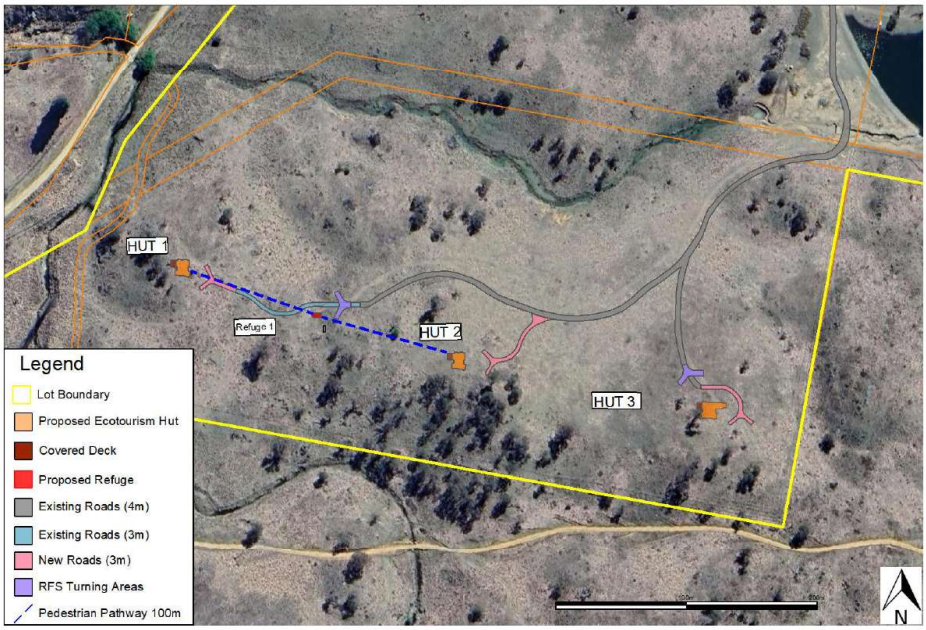
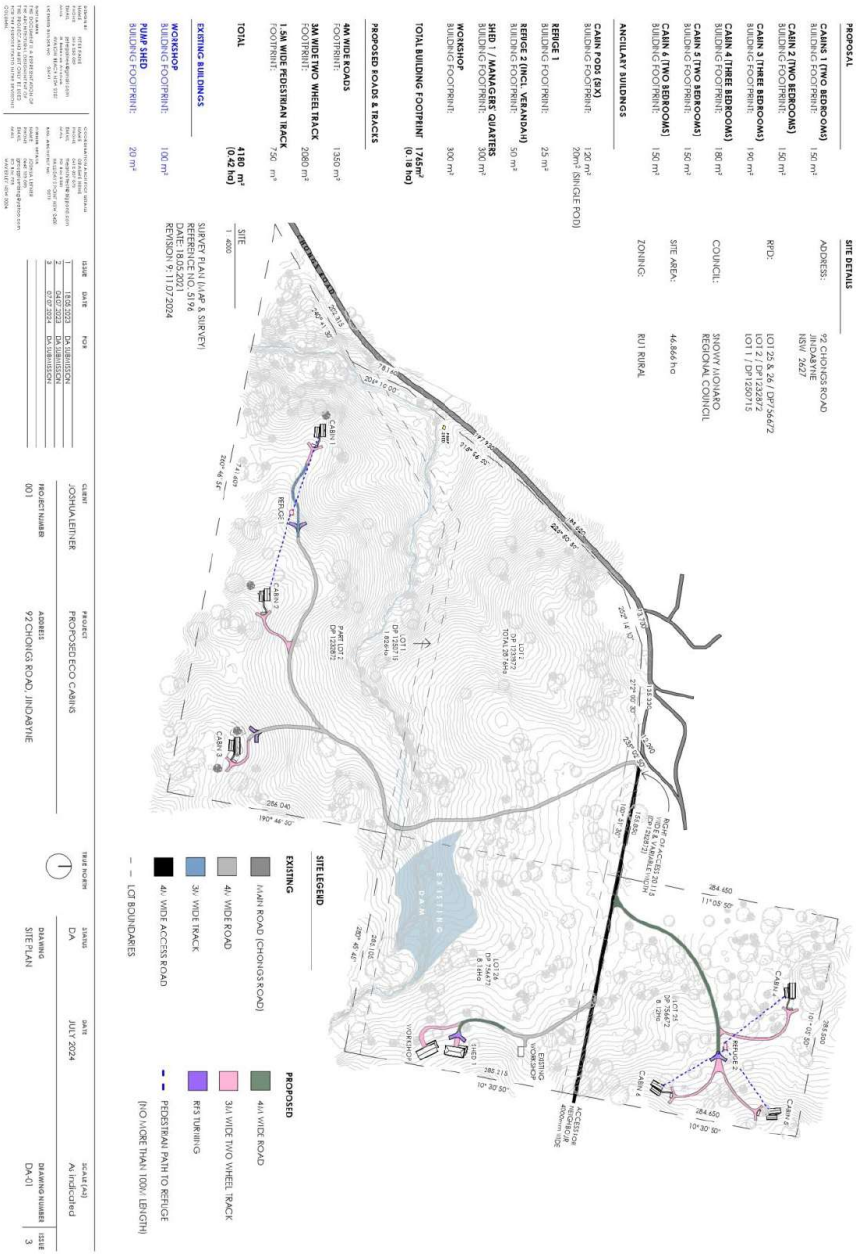


FIGURE 5 **PROPOSED PLANS**



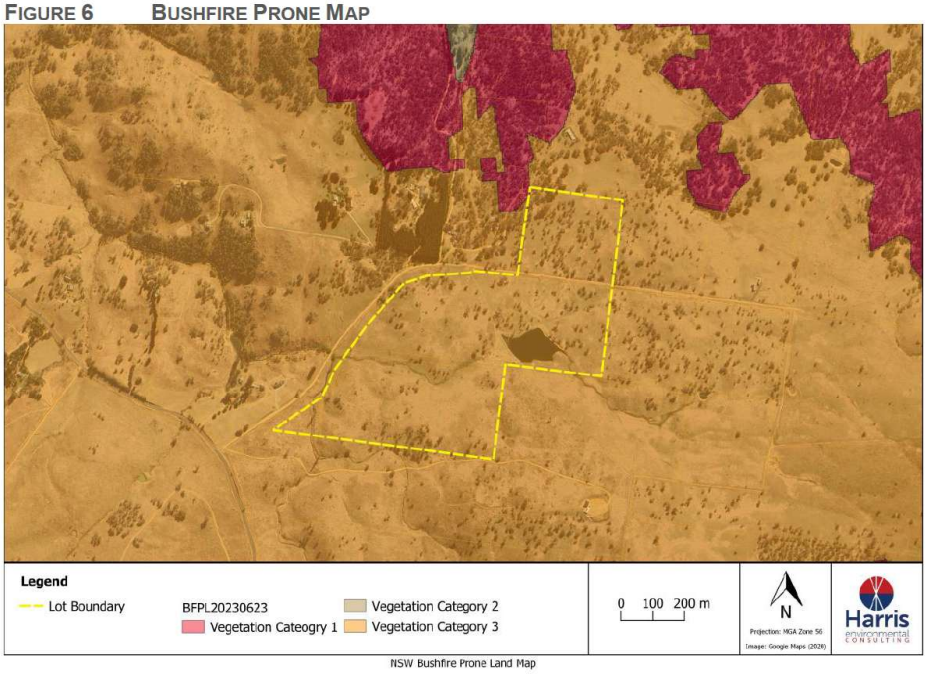
2 PLANNING LAYERS

The following planning layers are described in Table 1 and shown in the Figures below:

TABLE 1 PLANNING LAYERS

MAP	FIGURE	DESCRIPTION
Bushfire Prone Land Map	6	The subject lot is mapped "Vegetation Category 3"
LEP Zone Map	7	The subject lot is zoned as "RU1 Primary Production".
Biodiversity Values Map	8	There is land identified 15/7/24 as having high biodiversity value under the Biodiversity Offsets Scheme under the Biodiversity Conservation Act 2016. The proposed development and associated APZ are not on land mapped on the Biodiversity Values Map.

FIGURE 6 BUSHFIRE PRONE MAP



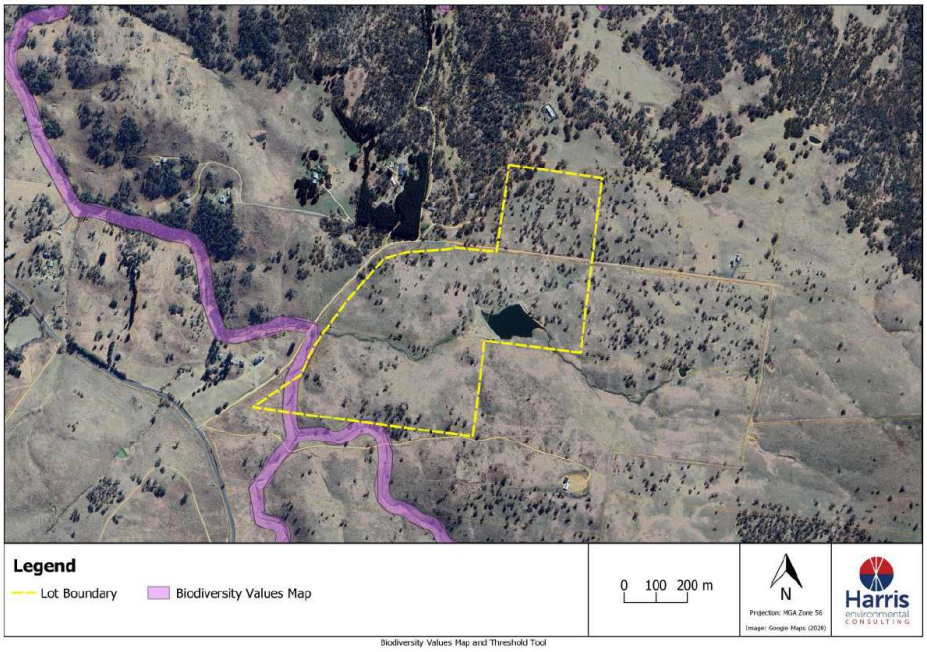
NSW Bushfire Prone Land Map

FIGURE 7 LEP ZONE MAP



NSW Environmental Planning Instrument - Land Zoning

FIGURE 8 BIODIVERSITY MAPPING



Biodiversity Values Map and Threshold Tool

3 SITE DESCRIPTION

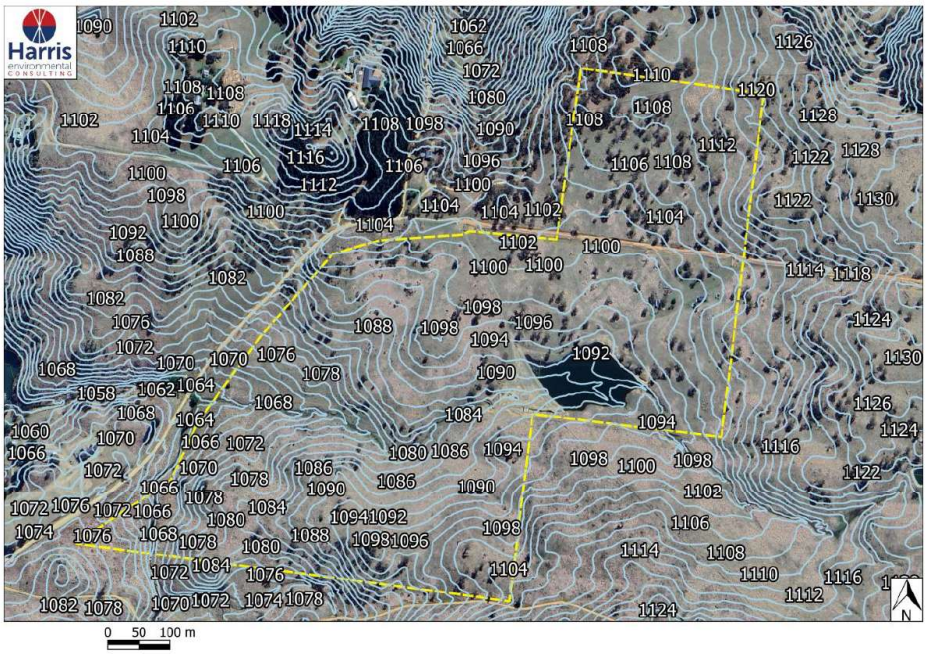
3.1. Slope and aspect of the site within 100 m

The slope that would most significantly influence fire behaviour was determined over 100 m out from the proposed development. This assessment was made with 2 m contour intervals (LiDAR) (Geoscience Australia, 2020) and field inspection using a clinometer.

The Australian Standard AS3959-2018 identifies that the slope of the land under the classified vegetation is much more important than the slope between the site and the edge of the classified vegetation.

As can be seen in Figure 9 the site is located on slopes that fall to a creek line on the centre of the site, with the land on the east located upslope and downslope on the western elevation.

FIGURE 9 SLOPE



3.2. Vegetation formation within 140 m of proposed development

Figures 10-13 (Image: Google Maps, 2023) show the managed and unmanaged land within a 140 m of the proposed Refuge 1, Cabin 3, Managers Quarters and Refuge 2.

The vegetation formations are described below and summarised in Table 2.

The vegetation within the subject land is classified 'Grassland' and 'Grassy Woodland'. Woodland vegetation dominates the northern and southern portions of the subject site only with the centre having minimal trees.

Photos 1-7 show the surrounding vegetation.

TABLE 2 PREDOMINATE VEGETATION CLASSIFICATION

	Vegetation Formation	Effective Slope	Distance from façade to hazard
Refuge 1			
North-West	Grassland	Downslope 5-10˚	45 m
North-East	Grassland	Upslope	36 m
South-East	Woodland	Downslope 5-10˚	60 m
South-West	Woodland	Downslope 5-10˚	60 m
East	Woodland	Flatland	42 m
Cabin 3			
North-West	Grassland	Downslope 0-5˚	40 m
North-East	Grassland	Upslope	36 m
South-East	Grassland	Upslope	36 m
South-West	Grassland	Downslope 0-5˚	40 m
Managers Quarters			
North	Grassland	Flatland	10 m
South	Grassland	Flatland	10 m
East	Grassland	Upslope	10 m
West	Grassland	Downslope 0-5˚	11 m
Refuge 2			

North-East	Woodland	Upslope	42 m
North-West	Woodland	Downslope 0-5°	50 m
South-East	Woodland	Upslope	42 m
South-West	Woodland	Downslope 0-5°	50 m

FIGURE 10 BUSHFIRE PRONE VEGETATION WITHIN 140 METRES OF REFUGE 1

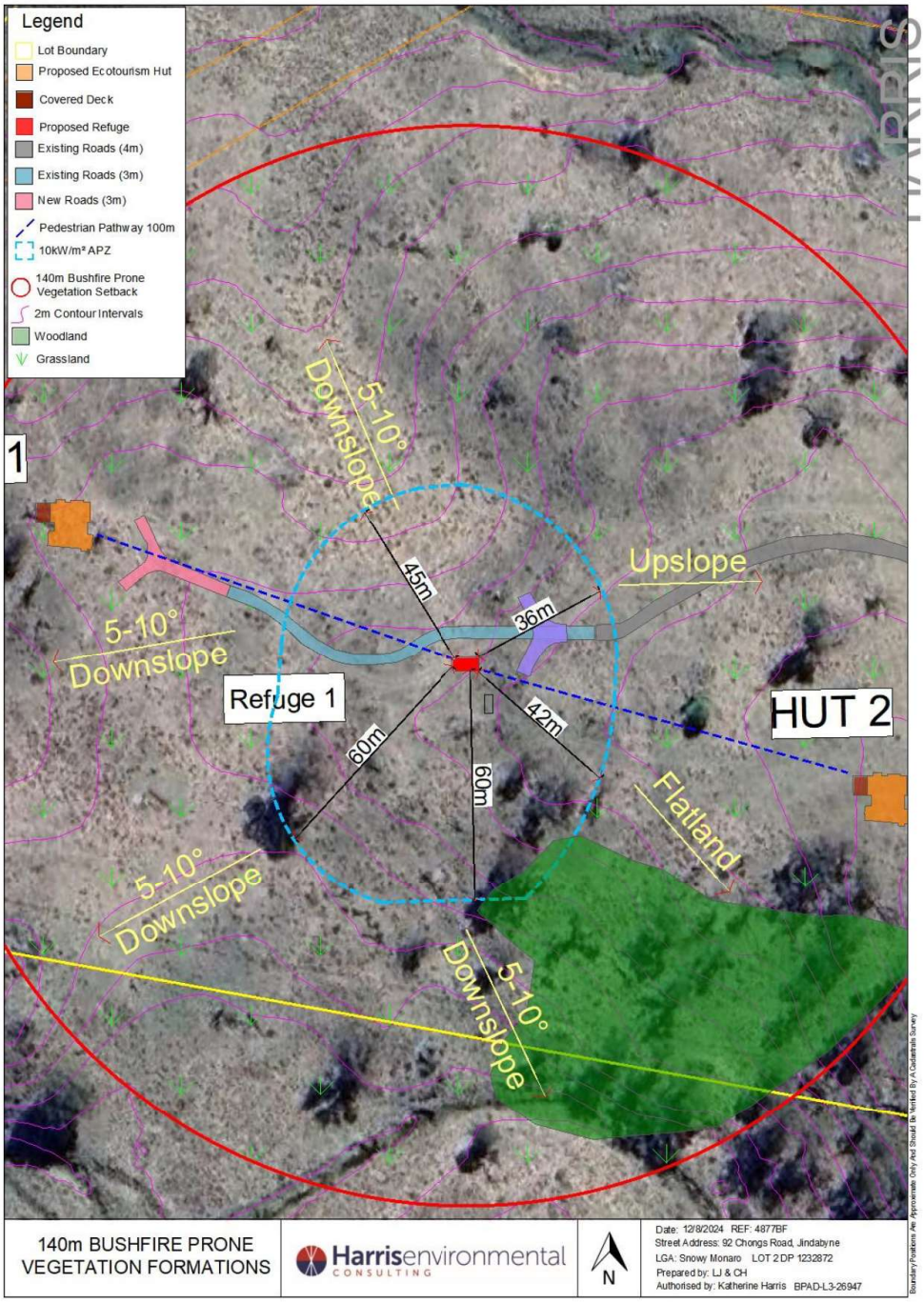


FIGURE 11 BUSHFIRE PRONE VEGETATION WITHIN 140 METRES OF CABIN 3

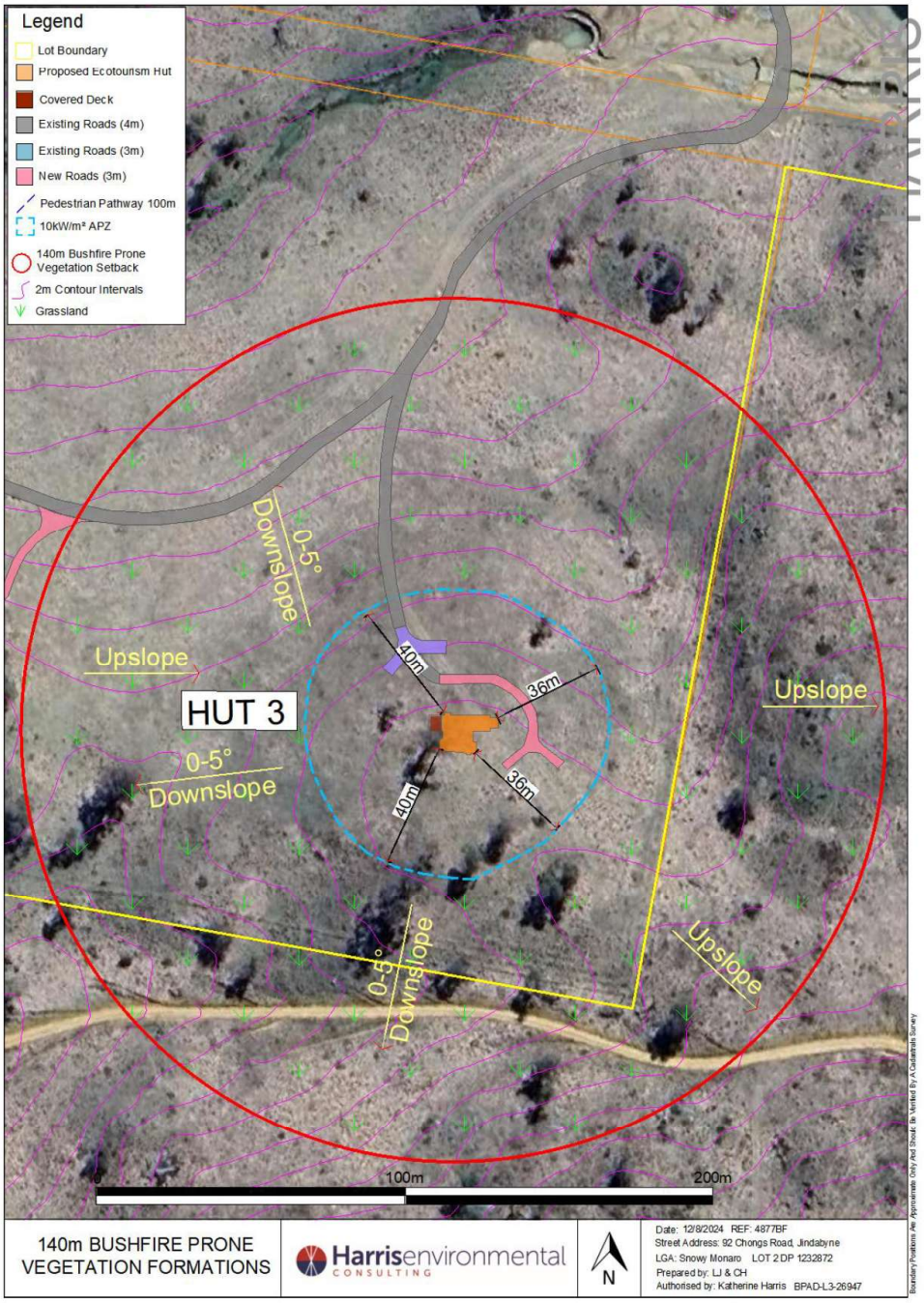


FIGURE 12 BUSHFIRE PRONE VEGETATION WITHIN 140 METRES OF MANAGERS QUARTERS

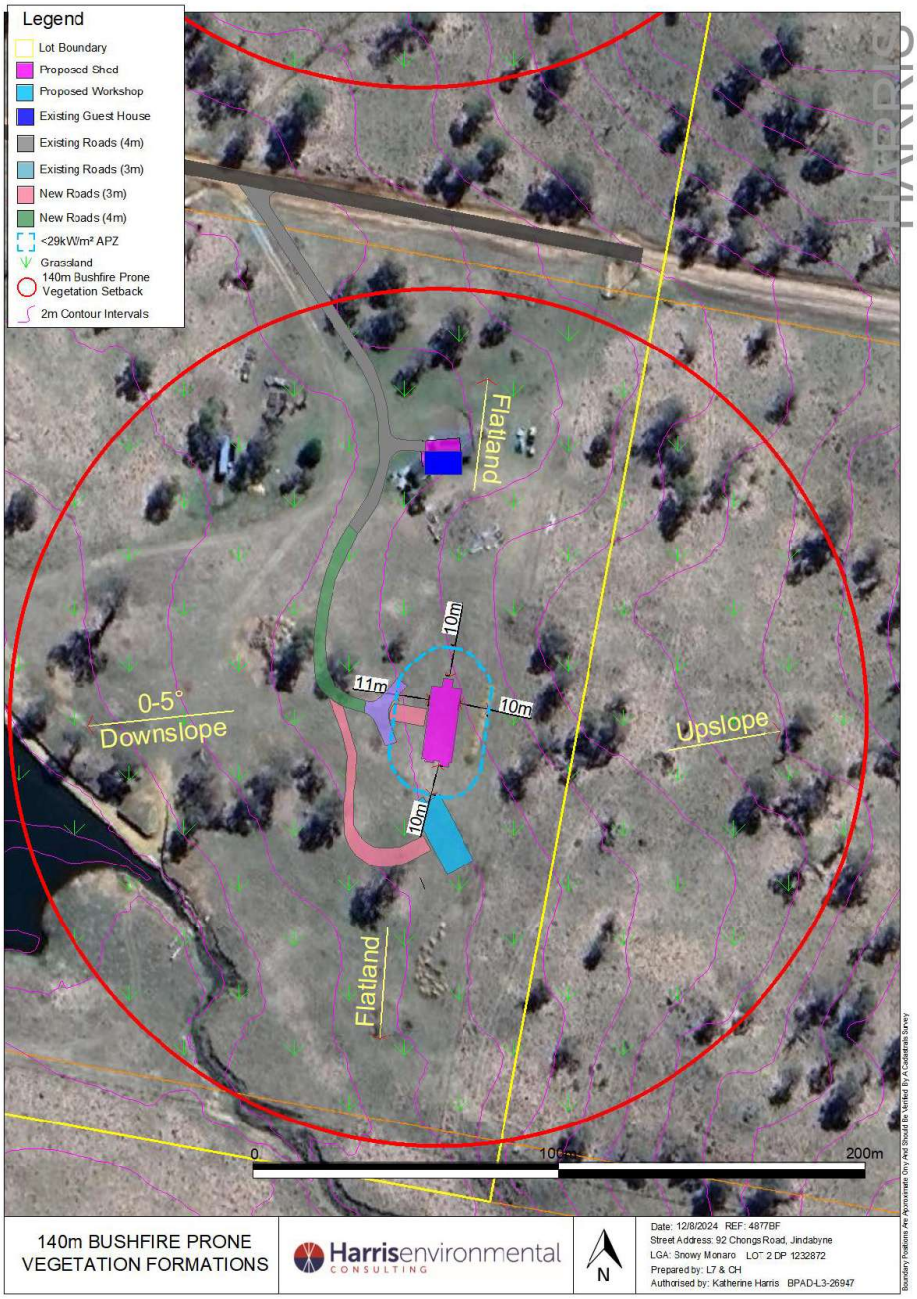


FIGURE 13 BUSHFIRE PRONE VEGETATION WITHIN 140 METRES OF REFUGE 2

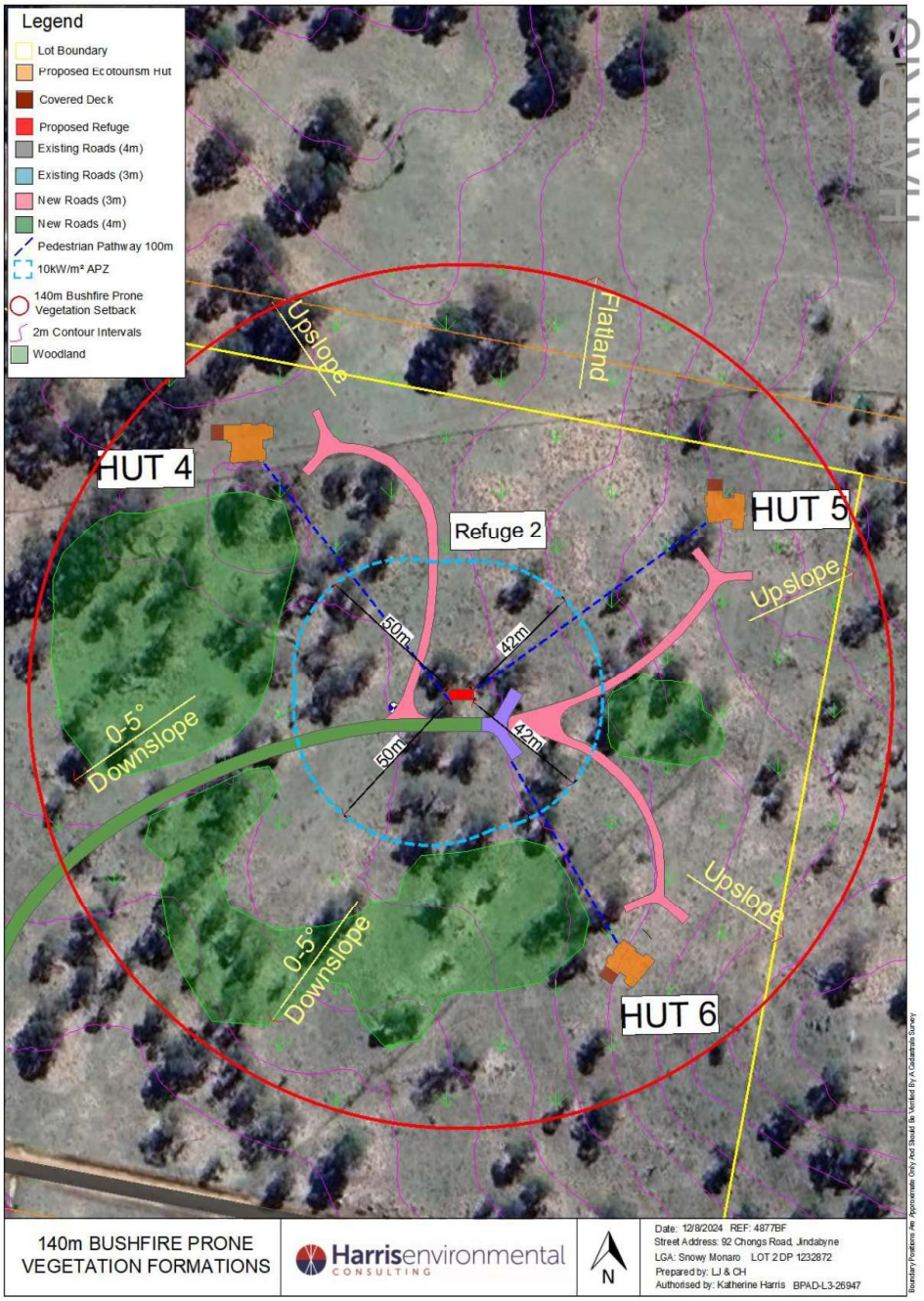


Photo 1 *View of Woodland on north of subject site looking east (Refuge 2) (8/11/21)*



Photo 2 *View of Woodland on north of subject site looking west (Refuge 2) (8/11/21)*



Photo 3 *View Grassland on south of the subject site looking west (Refuge 1) (8/11/21)*



Photo 4 *View of Woodland on south of subject site (Refuge 1) (8/11/21)*



Photo 5 *View of Grassland on southwest of subject site (Refuge 1) (8/11/21)*



Photo 6 *View of Grassland within centre of subject site looking east (to Cabin 3) (8/11/21)*



Photo 7 *View of Grassland within centre of subject site looking north (Managers Quarters) (11/2/22)*



4 BUSHFIRE THREAT ASSESSMENT

4.1. Asset Protection Zones (APZ)

Table A1.12.1 and Table A1.12.6 *Planning for Bush Fire Protection 2019* have been used to determine the width of the required APZ for the proposed development using the vegetation and slope data identified. Snowy Monaro LGA is in FDI 80.

Table 3-6 shows the APZ and BAL determination.

For Refuge 1, Refuge 2 and Cabin 3, a <10kW/m^2 APZ is required to be established from the commencement of building works and should be maintained in perpetuity for the following distances:

Refuge 1:

- 60 m on the south;
- 42 m to the east;
- 45 m on the north-west;
- 36 m to the north-east.

Refuge 2:

- 42 m on the north-east and south-east.
- 50 m on the north-west and south-west.

Cabin 3:

- 36 m on the north-east and south-east.
- 40 m on the north-west and south-west.

For the Managers Quarters, a <29kW/m^2 APZ is required to be established from the commencement of building works and should be maintained in perpetuity for the following distances:

- 10 m on the north, east and south;
- 11 m on the west.

TABLE 3 APZ AND BAL DETERMINATION REFUGE 1

	NORTH-EAST	***NORTH-WEST***	***SOUTH***	***EAST***
Gradient	Upslope	Downslope 5-10˚	Downslope 5-10˚	Flatland
Vegetation	Grassland	Grassland	Woodland	Woodland
Distance between façade and hazard	36 m	45 m	60 m	42 m
PBP 2019 <10kW/m2 APZ	36 m	45 m	60 m	42 m
BAL	**BAL 12.5**	**BAL 12.5**	**BAL 12.5**	**BAL 12.5**

TABLE 4 APZ AND BAL DETERMINATION REFUGE 2

	NORTH-EAST	*NORTH-WEST*	*SOUTH-EAST*	*SOUTH-WEST*
Gradient	Upslope	Downslope 5-10°	Upslope	Downslope 5-10°
Vegetation	Woodland	Woodland	Woodland	Woodland
Distance between façade and hazard	42 m	50 m	42 m	50 m
PBP 2019 <10kW/m2 APZ	42 m	50 m	42 m	50 m
BAL	**BAL 12.5**	**BAL 12.5**	**BAL 12.5**	**BAL 12.5**

TABLE 5 APZ AND BAL DETERMINATION CABIN 3

	NORTH-EAST	*NORTH-WEST*	*SOUTH-EAST*	*SOUTH-WEST*
Gradient	Upslope	Downslope 0-5°	Upslope	Downslope 0-5°
Vegetation	Grassland	Grassland	Grassland	Grassland
Distance between façade and hazard	36 m	40 m	36 m	40 m
PBP 2019 <10kW/m2 APZ	36 m	40 m	36 m	40 m
BAL	**BAL 12.5**	**BAL 12.5**	**BAL 12.5**	**BAL 12.5**

TABLE 6 APZ AND BAL DETERMINATION MANAGERS QUARTERS

	NORTH	*SOUTH*	*EAST*	*WEST*
Gradient	Flatland	Flatland	Upslope	Downslope 0-5°
Vegetation	Grassland	Grassland	Grassland	Grassland
Distance between façade and hazard	10 m	10 m	10 m	11 m
PBP 2019 <29kW/m2 APZ	10 m	10 m	10 m	11 m
BAL	**BAL 29**	**BAL 29**	**BAL 29**	**BAL 29**

4.2. Relevant Construction Standard

The Australian Standard AS3959 – 2018 and or *NASH Standard Steel Framed Construction in Bushfire Areas* (2014) are the enabling standards that address the performance requirements of both parts 2.3.4 and Part GF5.1 of the Building Code of Australia for the Construction of Class 1, 2 and Class 3 buildings within a designated Bushfire Prone Area.

The following was determined for this site:

Relevant fire danger index.....FDI 80
Flame temperature .....1200 K

Refuge, 1 Refuge 2 and Cabin 3 can be constructed to **BAL 12.5** as specified by AS3959 - 2018 Construction for Buildings in Bushfire Prone Areas, *PBP 2019* and/or *NASH Standard Steel Framed Construction in Bushfire Areas* (2014).

No construction standard is required for accommodation in development where a construction level of BAL 12.5 or greater is applied to the refuge building in accordance with AS 3959 or NASH Standard and 7.5 of PBP.

The Managers Quarters can be constructed to **BAL 29** as specified by AS3959 - 2018 Construction for Buildings in Bushfire Prone Areas, *PBP 2019* and/or *NASH Standard Steel Framed Construction in Bushfire Areas* (2014).

The existing shed is required to be upgraded to improve ember protection. This is to be achieved by enclosing all openings (excluding roof tile spaces) or covering openings with a non-corrosive metal screen mesh with a maximum aperture of 2mm. Where applicable, this includes any sub floor areas, openable windows, vents, weep holes and eaves. External doors are to be fitted with draft excluders.

The proposed workshop is >6 m from a habitable building, therefore no bush fire protection requirements apply.

4.4. Emergency Management

A Bush Fire Emergency Management and Evacuation Plan is to be prepared consistent with the NSW RFS document: A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan, and AS 3745:2010.

For proposals in isolated or remote areas which involve large travel distances through bush fire prone vegetation, the following issues should be determined and addressed:

- the amount of travel likely to be generated during an emergency evacuation; the capacity of the broader road network to facilitate safe emergency evacuation.
- limitations/constraints inherent in the road system; and
- management of potential traffic conflicts (such as emergency vehicles versus evacuating members of the public).

The Bush Fire Emergency Management and Evacuation Plan must consider a mechanism for the early relocation of occupants on days when adverse fire weather is notified, or adverse fire activity occurs in the local government area in which the development operates.

The Plan shall:

- Identify permissible activities that may occur within the site on days of forecasted catastrophic or extreme fire weather;
- Identify trigger points for implementation of the emergency evacuation plan; and
- Identify procedure to contact the NSW RFS District Office / NSW Fire Brigade and inform them of proposed actions (i.e., early evacuation/on-site refuge).

4.5. Adequate Water and Utility Services

The applicant should ensure the following water supply for the proposed development for firefighting purposes:

- 20,000 litre water supply at the proposed Managers Quarters, Refuge 1, Refuge 2 and Cabin 3.

Above ground tanks are required to be manufactured of concrete or metal and raised tanks have their stands protected. All above ground water pipes external to the building are required to be metal including and up to any taps. Pumps are to be shielded. Underground tanks should have an access hole of 200 mm and a hardened ground surface within 4 m of the access hole. A suitable connection for firefighting purposes is required such as a 65mm Storz outlet and a gate or ball valve.

Any bottled gas will be installed and maintained in accordance with AS1596 and the requirements of the relevant authority. If gas cylinders need to be kept close to the buildings, the release valves must be directed away from the building and away from any combustible material. Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used.

Electrical transmission lines, if above ground, will be managed in accordance with specifications issued by Energy Australia.

4.6. Safe Operational Access

The *PBP (2019)* requires the provision of safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from an area.

The subject lot is located Chongs Road. This is a two-wheel drive, all weather road. The capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles.

The proposed access to the development is from one access point at the end of Chongs Road. The internal access varies from 430 m to Refuge 2, 550 m to the Manages Quarters to 800 m to Refuge 1 from Chongs Road as shown in Figure 14. The proposed access is wholly located in grassland and parking bays can be provided by grassed verges.

The proposed internal access is required to comply with the PBP- Property Access. This includes:

- minimum 4m carriageway width.
- a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches.
- provide a suitable turning area in accordance with Appendix 3;
- curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress.
- the minimum distance between inner and outer curves is 6m.
- the crossfall is not more than 10 degrees.
- maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads.
- any bridges/causeways are sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes) and bridges/ causeways are to clearly indicate load rating;
- there is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.

The proposed Managers Quarters, Refuge 1, Refuge 2 and Cabin 3 is to provide:

- enough turning room for a fire tanker that requires an inner minimum turning radius of 6 m and outer minimum radius of 12 m at each building.

For context, Figure 15 shows the subject lot and evacuation locations to the nearest townships. Jindabyne is located 15 kms north-west and Dalgety 23 kms southeast from The Snowy River Way, the connecting through road to Chongs Road as shown in Figure 15.

In accordance with Eco Tourism requirements, cabins are to be within 100 m walking distance of the proposed refuge.

FIGURE 14 PROPOSED ACCESS PLAN

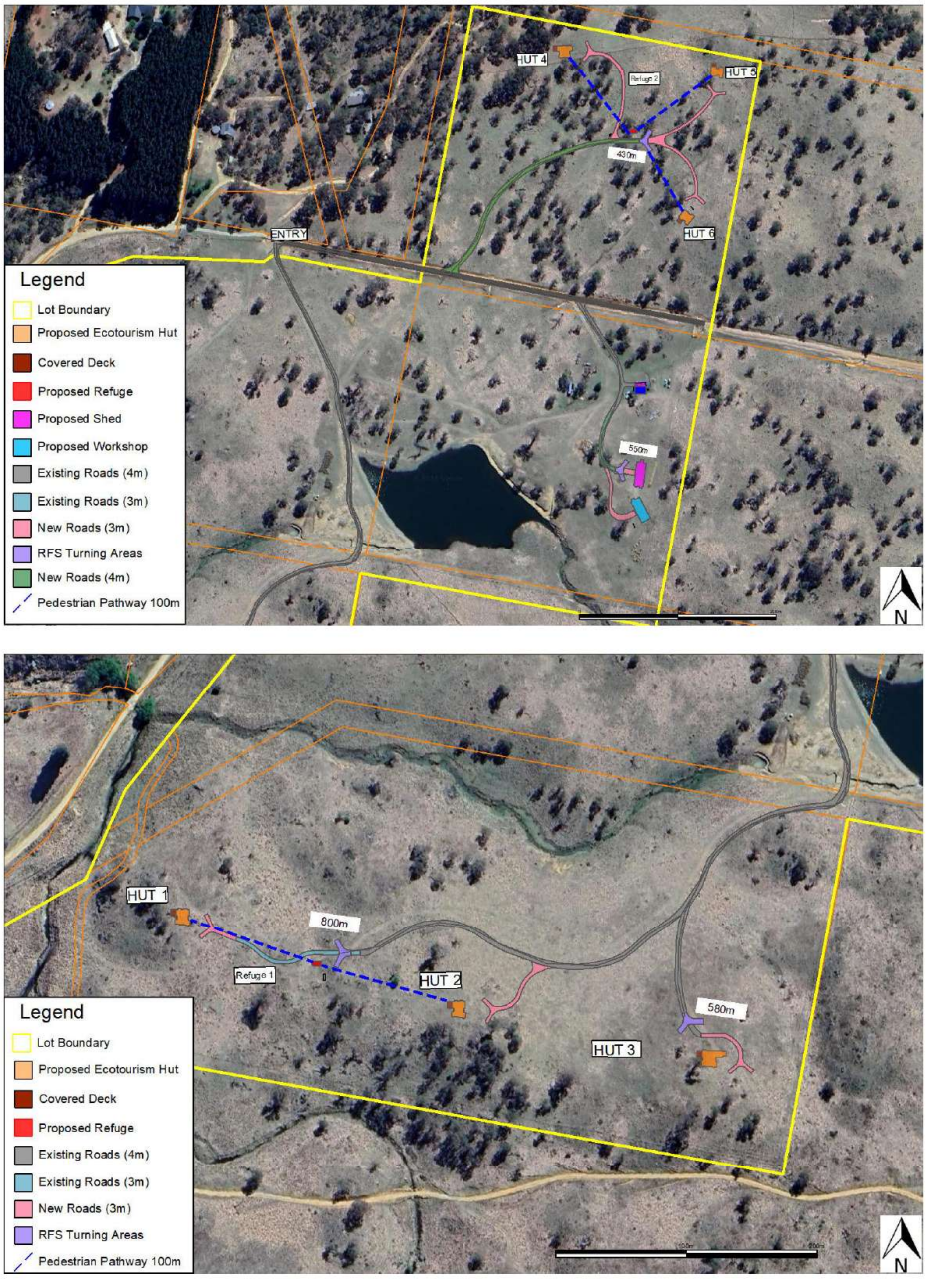
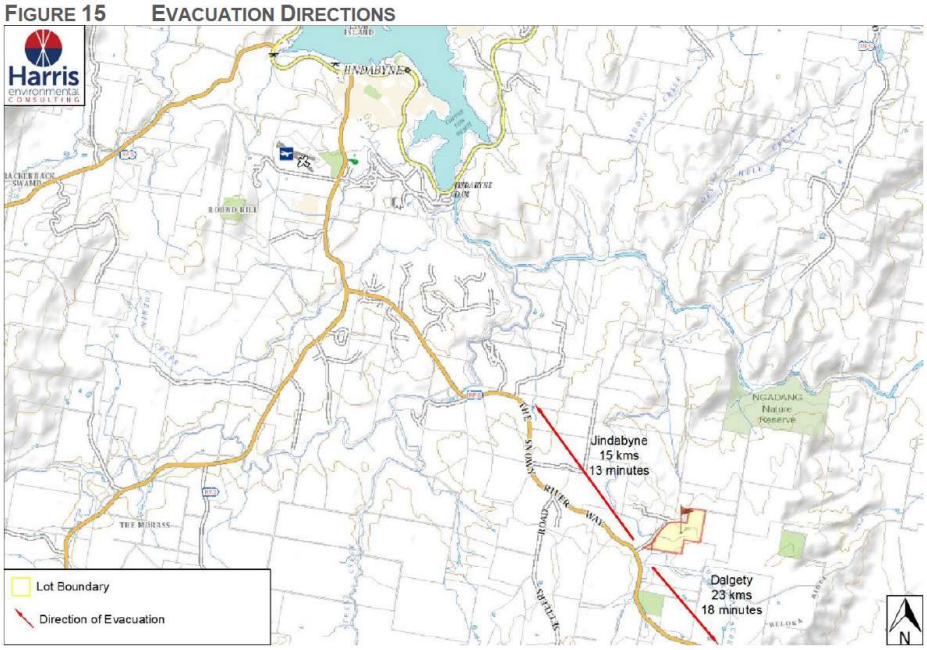


FIGURE 15 EVACUATION DIRECTIONS



5 LANDSCAPING

An APZ is required to be established and should be maintained for perpetuity.

To achieve the APZ requirements, the permitted activities (environmental protection works and extensive agriculture) are proposed subject to a site specific Vegetation Management Plan, including:

- scalping areas with Nassella trichotoma (Serrated Tussock) and Hypericum perforatum (St. John's Wort), replacement with local native grasses and forbs for commercial seed harvesting for conservation areas elsewhere in the local district. Seed harvesting is likely to encourage colonisation by pioneer native species, including Vittidinia spp. and Geranium spp. as well as reducing fuel loads to meet the requirement of the Inner Protection Area; and
- clumps of trees and shrubs are to be established compliant with the APZ requirements.

When landscaping, vegetation should be located greater than 2 m from any part of the roofline of a dwelling or the shed. Garden beds of flammable shrubs are not to be located under trees and should be no closer than 10 m from an exposed window or door. Trees should have lower limbs removed up to a height of 2 m above the ground.

Appendix 4 (PBP) provides guidelines for landscaping and Bushfire Provisions within the APZ. To incorporate bushfire protection measures into future development, the owner is advised to consider the following:

- Avoid planting trees species with rough fibrous bark, or which retain/shed bark in long strips or retain dead material in their canopy.
- Avoid planting deciduous species that may increase fuel at surface/ground level by the fall of leaves.
- Avoid climbing species to walls and pergolas.
- Locate combustible materials such as woodchips/mulch, flammable fuel stores (LPG gas bottles) away from the building.
- Locate combustible structures such as garden sheds, pergolas, and materials such as timber furniture away from the building.
- Ensure any vegetation planted around the house is a suitable distance away so these plants do not come into physical contact with the house as they mature.
- The property should be developed to incorporate suitable impervious area surrounding the house, including courtyards, paths, and driveways.

The vegetation within the APZ is to be managed as an Inner Protection Area (IPA). The IPA is the area closest to the building and creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the development and act as a defendable space. Vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 1cm in height and be discontinuous.

In practical terms the IPA is typically the curtilage around the building, consisting of a mown lawn and well-maintained gardens.

When establishing and maintaining an IPA the following requirements apply:

Trees

- tree canopy cover should be less than 15% at maturity.
- trees at maturity should not touch or overhang the building.
- lower limbs should be removed up to a height of 2m above the ground.
- tree canopies should be separated by 2 to 5m; and
- preference should be given to smooth barked and evergreen trees.

Shrubs

- create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided.
- shrubs should not be located under trees.
- shrubs should not form more than 10% ground cover: and
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

Grass

- grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
- leaves and vegetation debris should be removed.

6 COMPLIANCE WITH SECTION 6.3.1

TABLE 7 PBP 2019 TABLE 6.8 COMPLIANCE

	Performance Criteria	Acceptable Solution	Demonstration of Compliance
Asset Protection Zone	**SFPP:** radiant heat levels of greater than 10kW/m² (calculated at 1200K) will not be experienced on any part of the building.	the building is provided with an APZ in accordance with Table A1.12.1 in Appendix 1.	Refuge 1, Refuge 2 and Cabin 3 provide APZs in accordance with Table A1.12.1.
		APZs are located on lands with a slope less than 18 degrees.	The APZ is not located on land than exceeds 18 degrees.
	APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	The APZ is managed in accordance with the requirements of Appendix 4 of PBP 2019 and is wholly within the boundaries of the development site.	All land within the specified APZ in the subject lot is to be managed in accordance with Appendix 4 of PBP 2019.
	APZs are managed and maintained to prevent the spread of fire to the building.		
	The APZ is provided in perpetuity.	APZ are wholly within the boundaries of the development site;	Complies
	Ecotourism: radiant heat levels of greater than 10kW/m² (1200K) are not experienced by emergency service personnel and occupants during firefighting and emergency management around a building on site that can be used as a refuge.	An APZ is provided in accordance with Table A1.12.1 in Appendix 1 of this document around the entire refuge building or structure.	Refuge 1, Refuge 2 and Cabin 3 provide APZs in accordance with Table A1.12.1.
Landscaping	Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	Landscaping is in accordance with Appendix 4. And fencing is constructed in accordance with section 7.6 of PBP 2019.	Can comply.

Construction Standards	Ecotourism: the proposed refuge building can withstand bush fire attack in the form of wind, embers, radiant heat, and flame contact.	a construction level of BAL-12.5 or greater is applied to the refuge building in accordance with AS 3959 or NASH Standard and 7.5 of PBP.	Refuge 1, Refuge 2 and Cabin 3 are to be built to BAL 12.5.
		a refuge building is provided;	Complies
	occupants of the ecotourism facility are provided with appropriate shelter in the event of a bush fire.	the refuge building must have sufficient space for all occupants and comply with the occupancy levels permissible for that structure; and	Complies
		the refuge building must be constructed to BAL-12.5 or greater in accordance with AS 3959 or NASH Standard and 7.5 of PBP.	Refuge 1, Refuge 2 and Cabin 3 are to be built to BAL 12.5.
Access	Ecotourism: fire fighting vehicles are provided with safe, all-weather access to the proposed refuge building.	vehicular access is provided to the refuge building from a public road in accordance with property access requirements of Table 5.3b;	Can comply.
		accommodation is within 100m of the refuge building; and	Complies, all cabins within 100 m walking distance of either Refuge 1, Refuge 2 or Cabin 3.
		pedestrian paths from accommodation to the refuge building/s are provided and clearly signposted.	Sign posting to comply.

Water Supply	An adequate water supply for firefighting purposes is installed and maintained.	reticulated water is to be provided to the development, where available; or a 10,000 litres minimum static water supply for firefighting purposes is provided for each occupied building where no reticulated water is available. all above-ground water service pipes external to the building are metal, including and up to any taps. a connection for firefighting purposes is located within the IPA or non-hazard side and away from the structure; a 65mm Storz outlet with a ball valve is fitted to the outlet; ball valve and pipes are adequate for water flow and are metal; supply pipes from tank to ball valve have the same bore size to ensure flow volume; underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank; a hardened ground surface for truck access is supplied within 4m of the access hole; above-ground tanks are manufactured from concrete or metal; raised tanks have their stands constructed from non-combustible material or bush fire-resisting timber (see Appendix F AS 3959); unobstructed access is provided at all times; tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters; and underground tanks are clearly marked all exposed water pipes external to the building are metal, including any fittings; where pumps are provided, they are a minimum 5hp or 3kW petrol or diesel-powered pump, and are shielded against bush fire attack; Any hose and reel for firefighting connected to the pump shall be 19mm internal diameter; and fire hose reels are constructed in accordance with AS/NZS 1221:1997 Fire hose reels and installed in accordance with the relevant clauses of AS 2441:2005 Installation of fire hose reels.	The applicant should ensure the following water supply for the proposed development for firefighting purposes: • 20,000 litre water supply at the proposed Managers Quarters. Refuge 1, Refuge 2 and Cabin 3.

Electricity Services	Location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	Where practicable, electrical transmission lines are underground. Where overhead, electrical transmission lines are proposed as follow: - lines are installed with short pole spacing (30m), unless crossing gullies, gorges or riparian areas; and - no part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 *Guideline for Managing Vegetation Near Power Lines.*	To comply
Gas Service	location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.	reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 and the requirements of relevant authorities, and metal piping is used. all fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side. connections to and from gas cylinders are metal. if gas cylinders need to be kept close to the building, safety valves are directed away from the building and at least 2m away from any combustible material, so they do not act as a catalyst to combustion. polymer-sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used; and above-ground gas service pipes external to the building are metal, including and up to any outlets.	To comply
Emergency Management	a Bush Fire Emergency Management and Evacuation Plan is prepared.	A Bush Fire Emergency Management and Evacuation Plan is prepared consistent with the NSW RFS document: A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan, and AS 3745:2010. For proposals in isolated or remote areas which involve large travel distances through bush fire prone vegetation, the following issues should be determined and addressed: • the amount of travel likely to be generated during an emergency evacuation. • the capacity of the broader road network to facilitate safe emergency evacuation. • limitations/constraints inherent in the road system; and • management of potential traffic conflicts (such as emergency vehicles versus evacuating members of the public). The Bush Fire Emergency Management and Evacuation Plan must consider a mechanism for the early relocation of occupants on days when adverse fire weather is notified, or adverse fire activity occurs in the local government area in which the development operates. Note: A copy of the Bush Fire Emergency Management and Evacuation Plan shall be provided to the Local Emergency Management Committee for its information prior to occupation of the development.	To comply

7 SUMMARY

- Refuge, 1 Refuge 2 and Cabin 3 can be constructed to **BAL 12.5** as specified by AS3959 - 2018 Construction for Buildings in Bushfire Prone Areas, *PBP 2019* and/or *NASH Standard Steel Framed Construction in Bushfire Areas* (2014).

- No construction standard is required for accommodation in development where a construction level of BAL 12.5 or greater is applied to the refuge building in accordance with AS 3959 or NASH Standard and 7.5 of PBP.

- For Refuge 1, Refuge 2 and Cabin 3, a <10kW/m^2 APZ is required to be established from the commencement of building works and should be maintained in perpetuity for the following distances:
  - Refuge 1:
    - 60 m on the south;
    - 42 m to the east;
    - 45 m on the north-west;
    - 36 m to the north-east.
  - Refuge 2:
    - 42 m on the north-east and south-east.
    - 50 m on the north-west and south-west.
  - Cabin 3:
    - 36 m on the north-east and south-east.
    - 40 m on the north-west and south-west.

- The Managers Quarters can be constructed to **BAL 29** as specified by AS3959 - 2018 Construction for Buildings in Bushfire Prone Areas, *PBP 2019* and/or *NASH Standard Steel Framed Construction in Bushfire Areas* (2014).

- For the Managers Quarters, a <29kW/m^2 APZ is required to be established from the commencement of building works and should be maintained in perpetuity for the following distances:
  - 10 m on the north, east and south;
  - 11 m on the west.

- The existing shed is required to be upgraded to improve ember protection. This is to be achieved by enclosing all openings (excluding roof tile spaces) or covering openings with a non-corrosive metal screen mesh with a maximum aperture of 2mm. Where applicable, this includes any sub floor areas, openable windows, vents, weep holes and eaves. External doors are to be fitted with draft excluders.

- The proposed workshop is >6 m from a habitable building, therefore no bush fire protection requirements apply.

- The subject lot is located Chongs Road. This is a two-wheel drive, all weather road. The capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles. The proposed access to the development is from one access point at the end of Chongs Road. The internal access varies from 430-800m from Chongs Road. The proposed access is wholly located in grassland and parking bays can be provided by grassed verges.

- The proposed internal access is required to comply with the PBP- Property Access. This includes:
  - minimum 4m carriageway width;

  - a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches;
  - provide a suitable turning area in accordance with Appendix 3;
  - curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress;
  - the minimum distance between inner and outer curves is 6m;
  - the crossfall is not more than 10 degrees;
  - maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads;
  - any bridges/causeways are sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes) and bridges/ causeways are to clearly indicate load rating;
  - there is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.

- The Managers Quarters, Refuge 1, Refuge 2 and Cabin 3 are to provide enough turning room for a fire tanker that requires an inner minimum turning radius of 6 m and outer minimum radius of 12 m at each building.

- The applicant should ensure the following water supply for the proposed development for firefighting purposes:
  - 20,000 litre water supply at the proposed Managers Quarters, Refuge 1, Refuge 2 and Cabin 3.

- Above ground tanks are required to be manufactured of concrete or metal and raised tanks have their stands protected. All above ground water pipes external to the building are required to be metal including and up to any taps. Pumps are to be shielded. Underground tanks should have an access hole of 200 mm and a hardened ground surface within 4 m of the access hole. A suitable connection for firefighting purposes is required such as a 65mm Storz outlet and a gate or ball valve.

- Any bottled gas will be installed and maintained in accordance with *AS1596* and the requirements of the relevant authority. If gas cylinders need to be kept close to the buildings, the release valves must be directed away from the building and away from any combustible material. Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used.

- Electrical transmission lines, if above ground, will be managed in accordance with specifications issued by Energy Australia.

- A Bush Fire Emergency Management and Evacuation Plan is to be prepared consistent with the NSW RFS document: *A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan*, and *AS 3745:2010*.

7 REFERENCES

Geoscience Australia (2020). *ELVIS - Elevation - Foundation Spatial Data*. Elevation.fsdf.org.au. Available at: http://elevation.fsdf.org.au/

Keith, D. (2004) "*Ocean Shores to Desert Dunes*" Department of Environment and Conservation, Sydney

NSW Department of Planning and Environment (2020). Planning Portal. Accessed at: https://www.planningportal.nsw.gov.au/

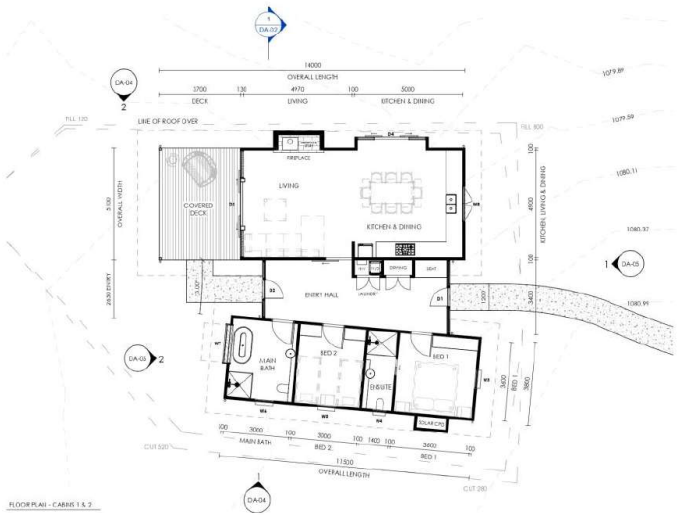
NSW Office of Environment and Heritage (2020). Biodiversity Value Map. Accessed at: https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BVMap

NSW Rural Fire Service (2019) *Planning for Bushfire Protection. A Guide for Councils, Planners, Fire Authorities and Developers. November 2019*

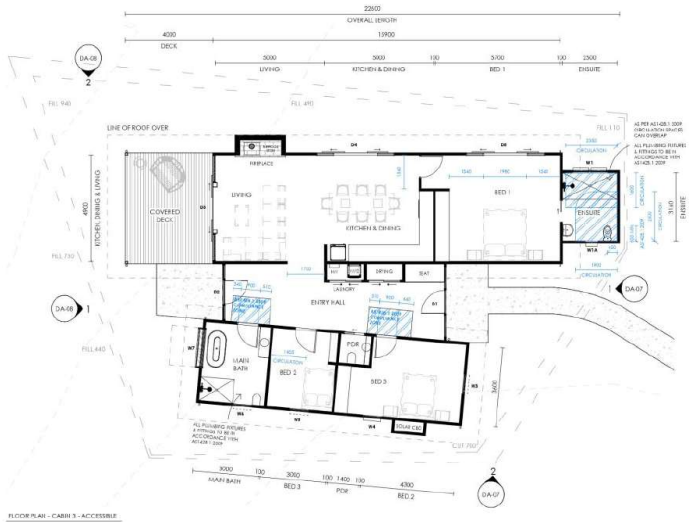
Standards Australia (2018) *AS3959, Construction of buildings in bushfire-prone areas.*

Tozer MG, Turner K, Keith DA, Tindall D, Pennay C, Simpson C, MacKenzie B, Beukers P, Cox S 2010. *Native Vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands*. Cunninghania 11:359-406.

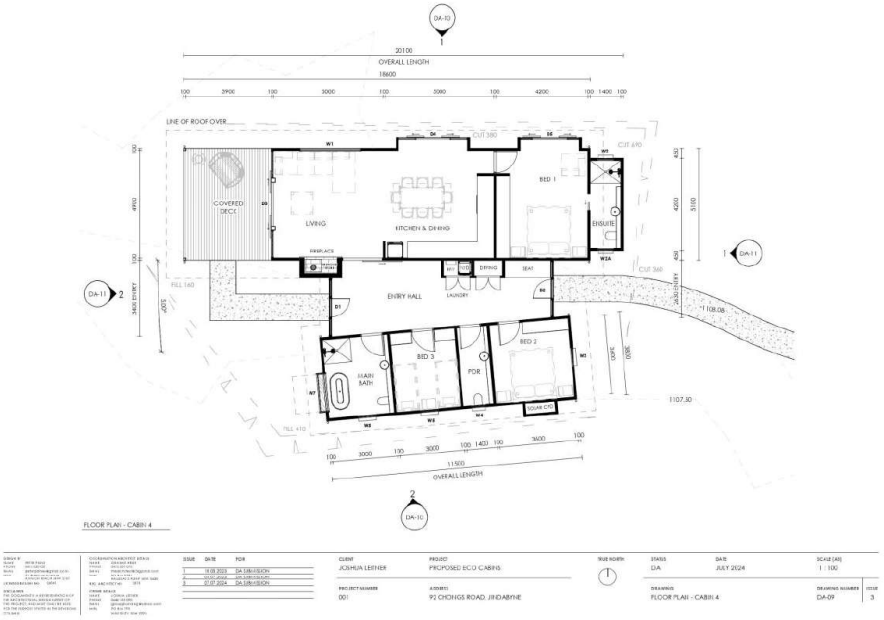
APPENDIX I CABINS FLOOR PLANS







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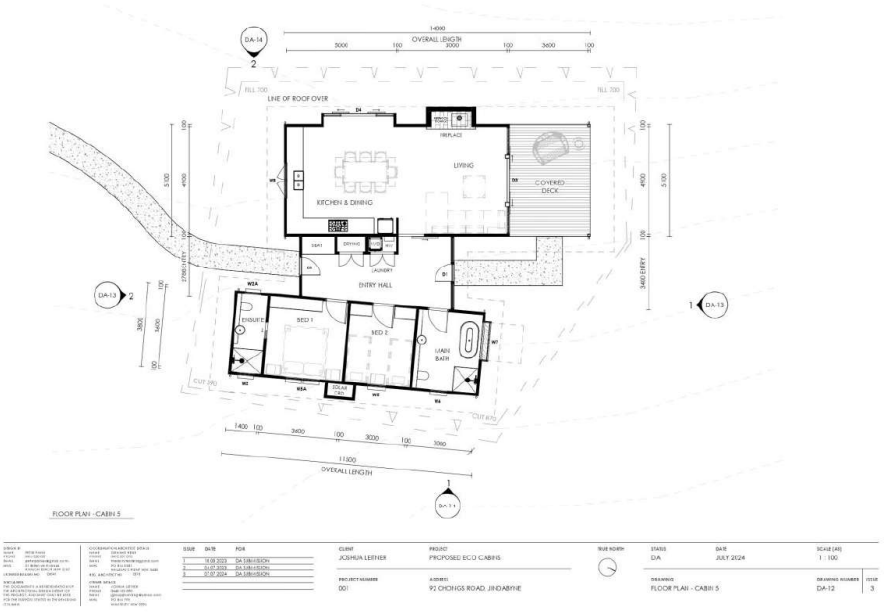
COVERED DECK
LIVING
KITCHEN & DINING
BED 1
ENSUITE
ENTRY HALL
LAUNDRY
BED 3
BED 2
MAIN BATH
FOR
OVERALL LENGTH
FLOOR PLAN - CABIN 4
JOSHUA LEITHER
PROPOSED ECO CABINS
92 CHONGS ROAD, JINDABYNE
JULY 2024
DA-09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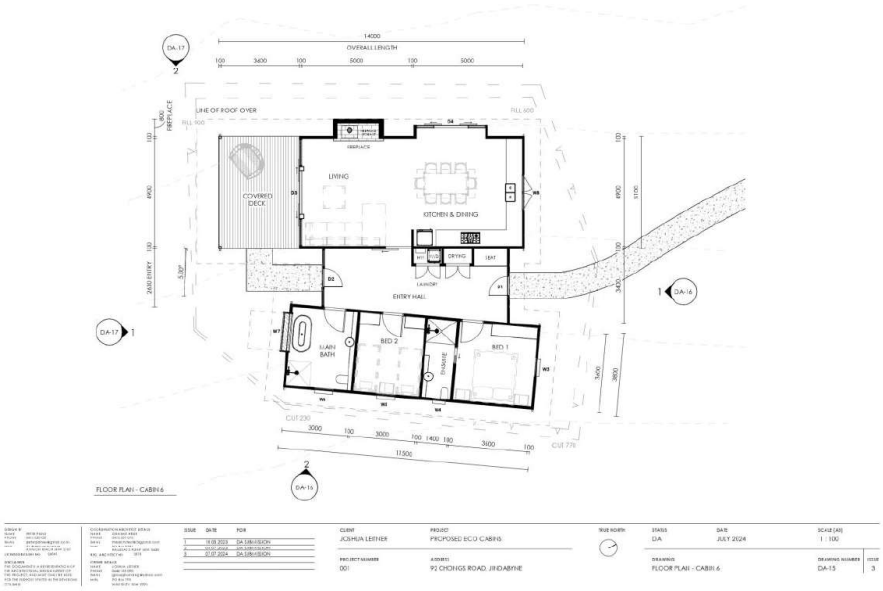
ENTRY HALL
LAUNDRY
ENSUITE
BED 1
BED 2
MAIN BATH
OVERALL LENGTH
FLOOR PLAN - CABIN 5
JOSHUA LEITHER
PROPOSED ECO CABINS
92 CHONGS ROAD, JINDABYNE
JULY 2024
DA-12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COVERED DECK
LIVING
KITCHEN & DINING
ENTRY HALL
LAUN BATH
BED 2
BED 1
FLOOR PLAN - CABIN 6
JOSHUA LEITHER
PROPOSED ECO CABINS
92 CHONGS ROAD, JINDABYNE
JULY 2024
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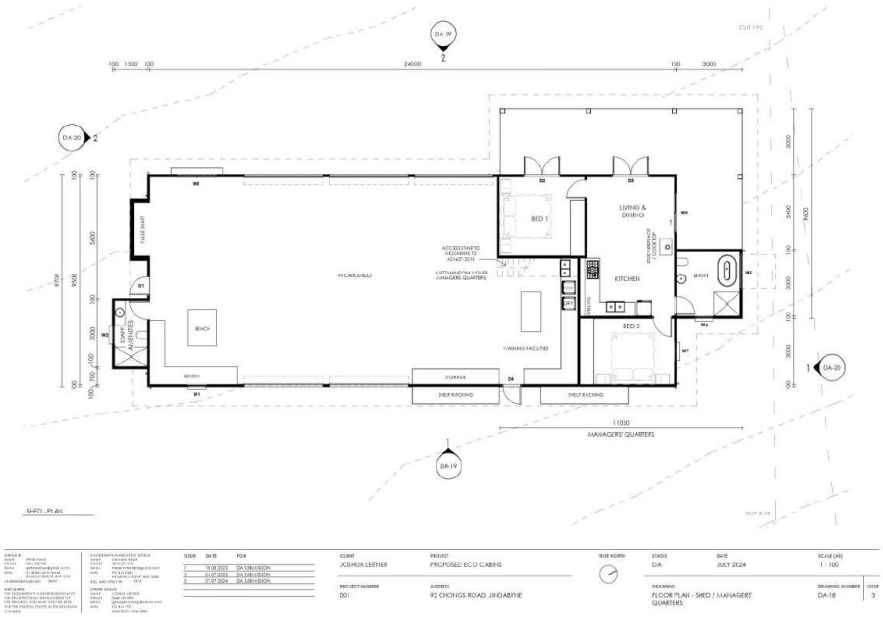
FLOOR PLAN - CABIN 6
DA-15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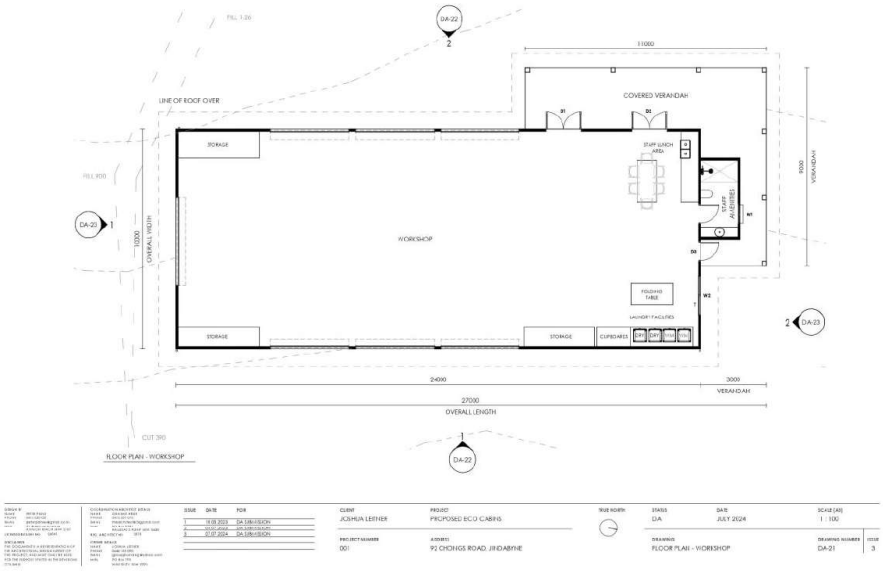
LIVING & DINING
KITCHEN
BED 2
BENCH
SHELF RACKING
SHELF RACKING
WASHING FACILITIES
11000
MANAGERS' QUARTERS
JOSHUA LEITHER
PROPOSED ECO CABINS
92 CHONGS ROAD, JINDABYNE
JULY 2024
1 : 100
FLOOR PLAN - SHED / MANAGERS' QUARTERS
DA-18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STORAGE
WORKSHOP
STAFF LUNCH AREA
STAFF AMENITIES
FOLDING TABLE
LAUNDRY FACILITIES
CUPBOARDS
OVERALL WIDTH
OVERALL LENGTH
VERANDAH
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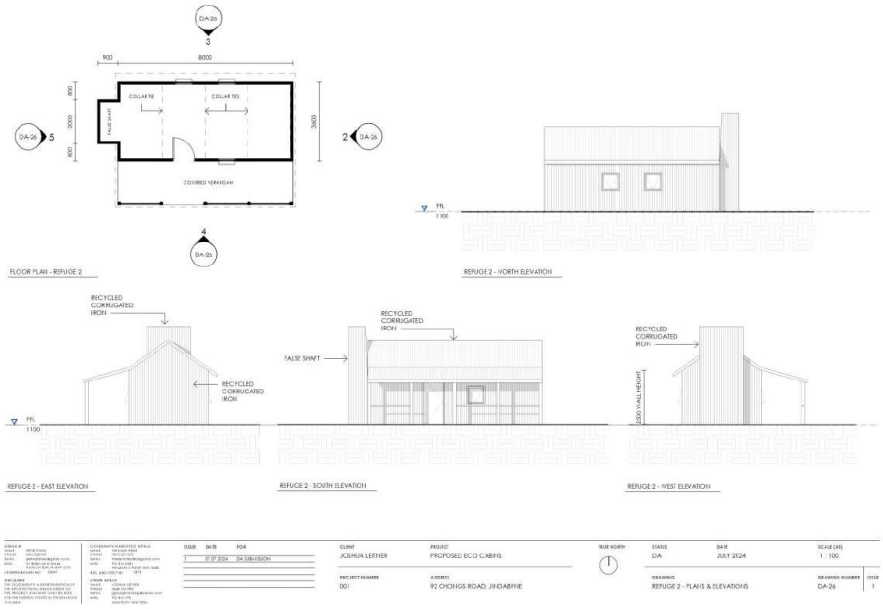
JOSHUA LEITNER
PROPOSED ECO CABINS
92 CHONGS ROAD, JINDABYNE
FLOOR PLAN - WORKSHOP
DA-21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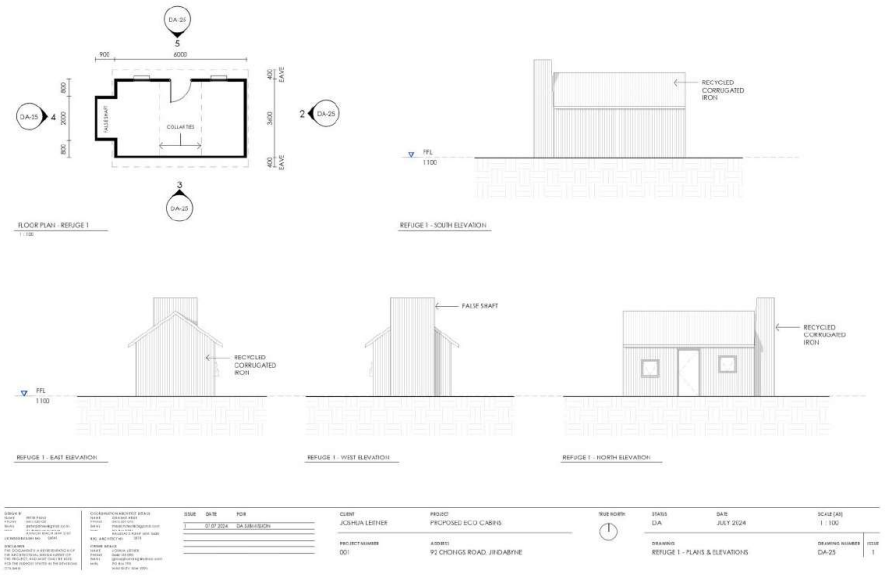
FALSE SHAFT
COVERED VERANDAH
FLOOR PLAN - REFUGE 2
REFUGE 2 - NORTH ELEVATION
RECYCLED CORRUGATED IRON
FALSE SHAFT
REFUGE 2 - EAST ELEVATION
REFUGE 2 - SOUTH ELEVATION
REFUGE 2 - WEST ELEVATION
JOSHUA LEITNER
PROPOSED ECO CABINS
92 CHONGS ROAD, JINDABYNE
REFUGE 2 - PLANS & ELEVATIONS
DA-26


FLOOR PLAN - REFUGE 1
REFUGE 1 - SOUTH ELEVATION
REFUGE 1 - EAST ELEVATION
REFUGE 1 - WEST ELEVATION
REFUGE 1 - NORTH ELEVATION
RECYCLED CORRUGATED IRON
FALSE SHAFT
COLLAR TIES
FFL
1100
JOSHUA LEITNER
PROPOSED ECO CABINS
92 CHONGS ROAD, JINDABYNE
DA
JULY 2024
1 : 100
REFUGE 1 - PLANS & ELEVATIONS
DA-25

BASIX® Certificate

Building Sustainability Index www.basix.nsw.gov.au

Multi Dwelling

Certificate number: 1759363M

This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability, if it is built in accordance with the commitments set out below. Terms used in this certificate, or in the commitments, have the meaning given by the document entitled "BASIX Definitions" dated 10/09/2020 published by the Department. This document is available at www.basix.nsw.gov.au

Secretary
Date of issue: Friday, 09 August 2024
To be valid, this certificate must be submitted with a development application or lodged with a complying development certificate application within 3 months of the date of issue.

NSW GOVERNMENT

Project summary	
Project name	92 Chongs Road Jindabyne_Rev03
Street address	92 CHONGS ROAD JINDABYNE 2627
Local Government Area	SNOWY MONARO REGIONAL
Plan type and plan number	Deposited Plan 756672
Lot No.	26
Section no.	-
No. of residential flat buildings	0
Residential flat buildings: no. of dwellings	0
Multi-dwelling housing: no. of dwellings	7
No. of single dwelling houses	0

Project score		
Water	✔ 63	Target 40
Thermal Performance	✔ Pass	Target Pass
Energy	✔ 54	Target 52
Materials	✔ -89	Target n/a

Certificate Prepared by
Name / Company Name: THERMAL ENVIRONMENTAL ENGINEERING PTY LTD
ABN (if applicable): 89166914441

Description of project

Project address	
Project name	92 Chongs Road Jindabyne_Rev03
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Local Government Area	SNOWY MONARO REGIONAL
Plan type and plan number	Deposited Plan 756672
Lot No.	26
Section no.	-

Project type	
No. of residential flat buildings	0
Residential flat buildings: no. of dwellings	0
Multi-dwelling housing: no. of dwellings	7
No. of single dwelling houses	0

Site details	
Site area (m²)	772820
Roof area (m²)	710.86
Non-residential floor area (m²)	0.00
Residential car spaces	0
Non-residential car spaces	0

Common area landscape	
Common area lawn (m²)	0.00
Common area garden (m²)	0.00
Area of indigenous or low water use species (m²)	0.00

Assessor details and thermal loads	
Assessor number	101491
Certificate number	H9PR7SAAV0
Climate zone	69

Project score		
Water	✔ 63	Target 40
Thermal Performance	✔ Pass	Target Pass
Energy	✔ 54	Target 52
Materials	✔ -89	Target n/a

Description of project

The tables below describe the dwellings and common areas within the project

Multi-dwelling houses

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
Cab 1	2	104.9	10.6	540.00	540.00
Cab 5	2	101.4	10.6	550.00	550.00

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
Cab 2	2	104.9	10.6	620.00	620.00
Cab 6	2	105.5	10.6	450.00	450.00

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
Cab 3	3	144.3	12.4	585.00	585.00
Shed1	2	52.7	8.5	0.00	0.00

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
Cab 4	3	132.3	15.6	454.00	454.00

No common areas specified.

Schedule of BASIX commitments

1. Commitments for multi-dwelling housing
   - (a) Dwellings
     - (i) Water
     - (ii) Energy
     - (iii) Thermal Performance and Materials

2. Commitments for common areas and central systems/facilities for the development (non-building specific)
   - (b) Common areas and central systems/facilities
     - (i) Water
     - (ii) Energy

Schedule of BASIX commitments

The commitments set out below regulate how the proposed development is to be carriedout. It is a condition of any development consent granted, or complying development certificate issued, for the proposed development, that BASIX commitments be complied with.

1. Commitments for multi-dwelling housing

(a) Dwellings

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must plant indigenous or low water use species of vegetation throughout the area of land specified for the dwelling in the "Indigenous species" column of the table below, as private landscaping for that dwelling. (This area of indigenous vegetation is to be contained within the "Area of garden and lawn" for the dwelling specified in the "Description of Project" table).	✔	✔	
(c) If a rating is specified in the table below for a fixture or appliance to be installed in the dwelling, the applicant must ensure that each such fixture and appliance meets the rating specified for it.		✔	✔
(d) The applicant must install an on demand hot water recirculation system which regulates all hot water use throughout the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below.		✔	✔
(e) The applicant must install:			
(aa) a hot water diversion system to all showers, kitchen sinks and all basins in the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below; and		✔	✔
(bb) a separate diversion tank (or tanks) connected to the hot water diversion systems of at least 100 litres. The applicant must connect the hot water diversion tank to all toilets in the dwelling.		✔	✔
(e) The applicant must not install a private swimming pool or spa for the dwelling, with a volume exceeding that specified for it in the table below.	✔	✔	
(f) If specified in the table, that pool or spa (or both) must have a pool cover or shading (or both).		✔	
(g) The pool or spa must be located as specified in the table.	✔	✔	
(h) The applicant must install, for the dwelling, each alternative water supply system, with the specified size, listed for that dwelling in the table below. Each system must be configured to collect run-off from the areas specified (excluding any area which supplies any other alternative water supply system), and to divert overflow as specified. Each system must be connected as specified.	✔	✔	✔

	Fixtures					Appliances		Individual pool				Individual spa		
Dwelling no.	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded
All dwellings	4 star (> 6 but <= 7.5 L/min)	4 star	5 star	5 star	no	-	-	-	-	-	-	-	-	-

	Alternative water source						
Dwelling no.	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection (s)	Laundry connection	Pool top-up	Spa top-up
Shed1	Individual water tank (No. 1)	Tank size (min) 20000.00 liters	To collect run-off from at least: 100.00 square metres of roof area; 0.00 square metres of impervious area; 0.00 square metres of garden and lawn area; and 0.00 square metres of planter box area.	-	yes	yes	-	-
All other dwellings	Individual water tank (No. 1)	Tank size (min) 20000.00 liters	To collect run-off from at least: 140.00 square metres of roof area; 0.00 square metres of impervious area; 0.00 square metres of garden and lawn area; and 0.00 square metres of planter box area.	yes	yes	yes	no	no

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must install each hot water system specified for the dwelling in the table below, so that the dwelling's hot water is supplied by that system. If the table specifies a central hot water system for the dwelling, then the applicant must connect that central system to the dwelling, so that the dwelling's hot water is supplied by that central system.	✔	✔	✔
(c) The applicant must install, in each bathroom, kitchen and laundry of the dwelling, the ventilation system specified for that room in the table below. Each such ventilation system must have the operation control specified for it in the table.		✔	✔

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(d) The applicant must install the cooling and heating system/s specified for the dwelling under the "Living areas" and "Bedroom areas" headings of the "Cooling" and "Heating" columns in the table below, in/for at least 1 living/bedroom area of the dwelling. If no cooling or heating system is specified in the table for "Living areas" or "Bedroom areas", then no systems may be installed in any such areas. If the term "zoned" is specified beside an air conditioning system, then the system must provide for day/night zoning between living areas and bedrooms.		✓	✓
(e) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Artificial lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that the "primary type of artificial lighting" for each such room in the dwelling is fluorescent lighting or light emitting diode (LED) lighting. If the term "dedicated" is specified for a particular room or area, then the light fittings in that room or area must only be capable of being used for fluorescent lighting or light emitting diode (LED) lighting.		✓	✓
(f) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Natural lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that each such room or area is fitted with a window and/or skylight.	✓	✓	✓
(g) This commitment applies if the applicant installs a water heating system for the dwelling's pool or spa. The applicant must: (aa) install the system specified for the pool in the "Individual Pool" column of the table below (or alternatively must not install any system for the pool). If specified, the applicant must install a timer, to control the pool's pump; and (bb) install the system specified for the spa in the "Individual Spa" column of the table below (or alternatively must not install any system for the spa). If specified, the applicant must install a timer to control the spa's pump.		✓ ✓	
(h) The applicant must install in the dwelling: (aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below; (bb) each appliance for which a rating is specified for that dwelling in the "Appliances & other efficiency measures" column of the table, and ensure that the appliance has that minimum rating; and (cc) any clothes drying line specified for the dwelling in the "Appliances & other efficiency measures" column of the table.		✓ ✓ ✓	✓
(i) If specified in the table, the applicant must carry out the development so that each refrigerator space in the dwelling is "well ventilated".		✓	
(j) The applicant must install the photovoltaic system specified for the dwelling under the "Photovoltaic system" heading of the "Alternative energy" column of the table below, and connect the system to that dwelling's electrical system.	✓	✓	✓

	Hot water	Bathroom ventilation system		Kitchen ventilation system		Laundry ventilation system	
Dwelling no.	Hot water system	Each bathroom	Operation control	Each kitchen	Operation control	Each laundry	Operation control
All dwellings	gas instantaneous - 5 star	individual fan, ducted to façade or roof	interlocked to light with timer off	individual fan, ducted to façade or roof	interlocked to light	individual fan, ducted to façade or roof	interlocked to light

	Cooling		Heating		Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bathrooms or toilets	Main kitchen
Cab 2, Cab 4	1-phase airconditioning - non ducted / EER 3.0 - 3.5	1-phase airconditioning - non ducted / EER 3.0 - 3.5	1-phase airconditioning - non ducted / EER 3.0 - 3.5	1-phase airconditioning - non ducted / EER 3.0 - 3.5	0	no
All other dwellings	1-phase airconditioning - non ducted / EER 3.0 - 3.5	1-phase airconditioning - non ducted / EER 3.0 - 3.5	1-phase airconditioning - non ducted / EER 3.0 - 3.5	1-phase airconditioning - non ducted / EER 3.0 - 3.5	0	no

	Individual pool			Individual spa		Appliances other efficiency measures					
Dwelling no.	Pool heating system	Pool Pump	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Dishwasher	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	-	gas cooktop & electric oven	-	-	no	no

	Alternative energy		
Dwelling no.	Photovoltaic system (min rated electrical output in peak kW)	Photovoltaic collector installation	Orientation inputs
All dwellings	-	-	-

(iii) Thermal Performance and Materials	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must attach the certificate referred to under "Assessor details" on the front page of this BASIX certificate (the "Assessor Certificate") to the development application and construction certificate application for the proposed development (or, if the applicant is applying for a complying development certificate for the proposed development, to that application). The applicant must also attach the Assessor Certificate to the application for a final occupation certificate for the proposed development.			
(b) The Assessor Certificate must have been issued by an Accredited Assessor in accordance with the Thermal Comfort Protocol.			
(c) The details of the proposed development on the Assessor Certificate must be consistent with the details shown in this BASIX Certificate, including the details shown in the "Thermal Loads" table below.			

(iii) Thermal Performance and Materials	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(d) The applicant must show on the plans accompanying the development application for the proposed development, all matters which the Thermal Comfort Protocol requires to be shown on those plans. Those plans must bear a stamp of endorsement from the Accredited Assessor, to certify that this is the case.	✔		
(e) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all thermal performance specifications set out in the Assessor Certificate, and all aspects of the proposed development which were used to calculate those specifications.		✔	
(f) The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.		✔	✔
(g) Where there is an in-slab heating or cooling system, the applicant must: (aa) Install insulation with an R-value of not less than 1.0 around the vertical edges of the perimeter of the slab; or (bb) On a suspended floor, install insulation with an R-value of not less than 1.0 underneath the slab and around the vertical edges of the perimeter of the slab.	✔	✔	✔
(h) The applicant must construct the floors and walls of the development in accordance with the specifications listed in the table below.	✔	✔	✔
(i) The applicant must show on The plans accompanying The development application for The proposed development, The locations of ceiling fans set out in The Assessor Certificate.	✔		
(j) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), the locations of ceiling fans set out in the Assessor Certificate.		✔	

	Thermal loads		
Dwelling no.	Area adjusted heating load (in MJ/m²/yr)	Area adjusted cooling load (in MJ/m²/yr)	Area adjusted total load (in MJ/m²/yr)
Cab 1	241.5	0.6	242.100
Cab 2	242.3	0.7	243.000
Cab 3	229.6	0.3	229.900
Cab 4	236.8	0.4	237.200
Cab 5	275	0.7	275.700
Cab 6	231	0.3	231.300
All other dwellings	202.4	0.1	202.500

	Construction of floors and walls				
Dwelling no.	Concrete slab on ground (m²)	Suspended floor with open subfloor (m²)	Suspended floor with enclosed subfloor (m²)	Suspended floor above garage (m²)	Primarily rammed earth or mudbrick walls
Cab 3	156.7	-	-	-	no
Cab 4	147.9	-	-	-	no
Cab 5	112	-	-	-	no
Shed1	61.2	-	-	-	no
All other dwellings	115.5	-	-	-	no

	Floor types									
	Concrete slab on ground				Suspended floor above enclosed subfloor			Suspended floor above open subfloor		
Dwelling no.	Area (m²)	Insulation	Low emissions option	Dematerialisation	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation
Cab 3	156.7	polyurethane	-	conventional slab	-	-	-	-	-	-
Cab 4	147.9	polyurethane	-	conventional slab	-	-	-	-	-	-
Cab 5	112	polyurethane	-	conventional slab	-	-	-	-	-	-
Shed1	61.2	polyurethane	-	conventional slab	-	-	-	-	-	-
All other dwellings	115.5	polyurethane	-	conventional slab	-	-	-	-	-	-

	Floor types										
	First floor above habitable rooms or mezzanine			Suspended floor above garage			Garage floor				
Dwelling no.	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation	Low emissions option	Dematerialisation
All dwellings	-	-	-	-	-	-	-	0	-	-	conventional slab

External walls

	External wall type 1				External wall type 2			
Dwelling no.	Wall type	Area (m²)	Insulation	Low emissions option	Wall type	Area (m²)	Insulation	Low emissions option
All dwellings	framed (fibre cement sheet or boards), frame : timber - H2 treated softwood	198.5	fibreglass batts or roll	none	framed (metal clad), frame : timber - H2 treated softwood	12.7	fibreglass batts or roll	none

External walls

	External wall type 3				External wall type 4			
Dwelling no.	Wall type	Area (m²)	Insulation	Low emissions option	Wall type	Area (m²)	Insulation	Low emissions option
All dwellings	please select	-	-	none	please select	-	-	none

Internal walls

	Internal walls shared with garage			Internal wall type 1			Internal wall type 2		
Dwelling no.	Wall type	Area (m²)	Insulation	Wall type	Area (m²)	Insulation	Wall type	Area (m²)	Insulation
All dwellings	-	-	-	plasterboard, frame: timber - H2 treated softwood	88.5	-	-	-	-

Ceiling and roof

	Flat ceiling / pitched roof			Raked ceiling / pitched or skillion roof			Flat ceiling / flat roof		
Dwelling no.	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation
Cab 3	-	-	Ceiling:,Roof:	framed - metal roof, frame: timber - H2 treated softwood	147.1	Ceiling:fibreglass batts or roll,Roof: foil/ sarking	-	-	Ceiling:,Roof:
Cab 4	-	-	Ceiling:,Roof:	framed - metal roof,	173	Ceiling:fibreglass batts or	-	-	Ceiling:,Roof:

Ceiling and roof									
	Flat ceiling / pitched roof			Raked ceiling / pitched or skillion roof			Flat ceiling / flat roof		
Dwelling no.	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation
				frame: timber - H2 treated softwood		roll,Roof: foil/ sarking			
Cab 5	-	-	Ceiling:,Roof:	framed - metal roof, frame: timber - H2 treated softwood	132.1	Ceiling:fibreglass batts or roll,Roof: foil/ sarking	-	-	Ceiling:,Roof:
Cab 6	-	-	Ceiling:,Roof:	framed - metal roof, frame: timber - H2 treated softwood	136.3	Ceiling:fibreglass batts or roll,Roof: foil/ sarking	-	-	Ceiling:,Roof:
Shed1	-	-	Ceiling:,Roof:	framed - metal roof, frame: timber - H2 treated softwood	79.9	Ceiling:fibreglass batts or roll,Roof: foil/ sarking	-	-	Ceiling:,Roof:
All other dwellings	-	-	Ceiling:,Roof:	framed - metal roof, frame: timber - H2 treated softwood	135.6	Ceiling:fibreglass batts or roll,Roof: foil/ sarking	-	-	Ceiling:,Roof:

	Glazing type			Frame types				
Dwelling no.	Single glazing (m²)	Double glazing (m²)	Triple glazing (m²)	Aluminium frames (m²)	Timber frames (m²)	uPVC frames (m²)	Steel frames (m²)	Composite frames (m²)
Cab 5	0	48.11	0	48.11	0	0	0	0
Cab 6	0	46.55	0	46.55	0	0	0	0
Shed1	0	15.66	0	15.66	0	0	0	0
Cab 1, Cab 2	0	46.54	0	46.54	0	0	0	0
All other dwellings	0	54.9	0	54.9	0	0	0	0

2. Commitments for common areas and central systems/facilities for the development (non-building specific)

(b) Common areas and central systems/facilities

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a showerhead, toilet, tap or clothes washer into a common area, then that item must meet the specifications listed for it in the table.		✔	✔
(b) The applicant must install (or ensure that the development is serviced by) the alternative water supply system(s) specified in the "Central systems" column of the table below. In each case, the system must be sized, be configured, and be connected, as specified in the table.	✔	✔	✔
(c) A swimming pool or spa listed in the table must not have a volume (in kLs) greater than that specified for the pool or spa in the table.	✔	✔	
(d) A pool or spa listed in the table must have a cover or shading if specified for the pool or spa in the table.		✔	
(e) The applicant must install each fire sprinkler system listed in the table so that the system is configured as specified in the table.		✔	✔
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		✔	✔

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	no common facility	no common facility	no common facility	no common laundry facility

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a ventilation system to service a common area specified in the table below, then that ventilation system must be of the type specified for that common area, and must meet the efficiency measure specified.		✔	✔
(b) In carrying out the development, the applicant must install, as the "primary type of artificial lighting" for each common area specified in the table below, the lighting specified for that common area. This lighting must meet the efficiency measure specified. The applicant must also install a centralised lighting control system or Building Management System (BMS) for the common area, where specified.		✔	✔
(c) The applicant must install the systems and fixtures specified in the "Central energy systems" column of the table below. In each case, the system or fixture must be of the type, and meet the specifications, listed for it in the table.	✔	✔	✔

Central energy systems	Type	Specification
Other	-	-

Notes

1. In these commitments, "applicant" means the person carrying out the development.
2. The applicant must identify each dwelling, building and common area listed in this certificate, on the plans accompanying any development application, and on the plans and specifications accompanying the application for a construction certificate / complying development certificate, for the proposed development, using the same identifying letter or reference as is given to that dwelling, building or common area in this certificate.
3. This note applies if the proposed development involves the erection of a building for both residential and non-residential purposes (or the change of use of a building for both residential and non-residential purposes). Commitments in this certificate which are specified to apply to a "common area" of a building or the development, apply only to that part of the building or development to be used for residential purposes.
4. If this certificate lists a central system as a commitment for a dwelling or building, and that system will also service any other dwelling or building within the development:, then that system need only be installed once (even if it is separately listed as a commitment for that other dwelling or building).
5. If a star or other rating is specified in a commitment, this is a minimum rating.
6. All alternative water systems to be installed under these commitments (if any), must be installed in accordance with the requirements of all applicable regulatory authorities. NOTE: NSW Health does not recommend that stormwater, recycled water or private dam water be used to irrigate edible plants which are consumed raw, or that rainwater be used for human consumption in areas with potable water supply.

Legend

1. Commitments identified with a "✔" in the "Show on DA plans" column must be shown on the plans accompanying the development application for the proposed development (if a development application is to be lodged for the proposed development).
2. Commitments identified with a "✔" in the "Show on CC/CDC plans and specs" column must be shown in the plans and specifications accompanying the application for a construction certificate / complying development certificate for the proposed development.
3. Commitments identified with a "✔" in the "Certifier check" column must be certified by a certifying authority as having been fulfilled. (Note: a certifying authority must not issue an occupation certificate (either interim or final) for a building listed in this certificate, or for any part of such a building, unless it is satisfied that each of the commitments whose fulfilment it is required to monitor in relation to the building or part, has been fulfilled).

Nationwide House Energy Rating Scheme®
Multiple Class 1 Dwellings Summary
NatHERS® Certificate No. H9PR7SAAV0

Generated on 9 Aug 2024 using FirstRate5 v5.5.5

Property

Address 92 Chongs Road,
92 Chongs Road, NSW, 2627

Lot/DP

NatHERS Climate Zone 69

Accredited assessor

Name Arjun Adhikari
Business name Thermal Environmental Engineering
Email a.adhikari@thermalenvironmental.com
Phone 0430636395
Accreditation No. 101491
Assessor Accrediting Organisation
ABSA

Verification

To verify this certificate, scan the QR code or visit https://www.fr5.com.au/QRCodeLanding?PublicId=H9PR7SAAV0&GrpCert=1
When using either link, ensure you are visiting www.fr5.com.au.

National Construction Code (NCC) requirements

The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J3D3 and J3D15 of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Summary of all dwellings

Certificate number and link	Unit number	Heating load (load limit) [MJ/m²/p.a.]	Cooling load (load limit) [MJ/m²/p.a.]	Total load [MJ/m²/p.a.]	Star rating	Whole of Home Rating
E492Z3Z5D3	Cabin 1	241.5 (N/A)	0.6 (N/A)	242.1	7.6	NA
TRZQ29AVPA	Cabin 2	242.3 (N/A)	0.7 (N/A)	243.0	7.6	NA

H9PR7SAAV0 NatHERS Certificate **7.7 Star rating as of 9 Aug 2024**

Summary of all dwellings

Certificate number and link	Unit number	Heating load (load limit) [MJ/m²/p.a.]	Cooling load (load limit) [MJ/m²/p.a.]	Total load [MJ/m²/p.a.]	Star rating	Whole of Home Rating
ZT5W1M11LP	Cabin 3	229.6 (N/A)	0.3 (N/A)	229.9	7.8	NA
2S764IVJ5V	Cabin 4	236.8 (N/A)	0.4 (N/A)	237.2	7.7	NA
BGZSH8D0KC	Cabin 5	275.0 (N/A)	0.7 (N/A)	275.7	7	NA
622YYK5G0I	Cabin 6	231.0 (N/A)	0.3 (N/A)	231.3	7.8	NA
VCGEDH8ESM	Shed	202.4 (N/A)	0.1 (N/A)	202.5	8.3	NA

Explanatory notes

About this report

This is a summary of NCC Class 1 dwellings in a development. For more details of each dwelling refer to the individual dwelling's certificate using the certificate number in summary of all dwellings table

NatHERS ratings use computer modelling to evaluate a home's energy effi ciency and performance. They use localised climate data and standard assumptions on how people use their home to predict the energy loads and energy value*. The thermal performance star rating uses the home's building specifi cations, layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings) to predict the heating and cooling energy loads. The Whole of Home performance rating uses information about the home's appliances and onsite energy production and storage to estimate the homes energy value*.

For more details about an individual dwelling's assessment, refer to the individual dwelling's NatHERS Certificate (accessible via link)

Accredited Assessors

For high quality NatHERS Certificates, always use an accredited or licenced assessor registered with an Assessor Accrediting Organisation (AAO). AAOs have strict quality assurance processes, and professional development requirements ensuring consistently high standards for assessments.

Non-accredited assessors (Raters) have no ongoing training requirements and are not quality assured.

Licensed assessors in the Australian Capital Territory (ACT) can produce assessments for regulatory purposes only, using endorsed software, as listed on the ACT licensing register

Any queries about this report should be directed to the assessor. If the assessor is unable to address questions or concerns, contact the AAO specifi ed on the front of this certificate.

Disclaimer

The NatHERS Certificate format is developed by the NatHERS Administrator. However, the content in certificates is entered by the assessor. It is the assessor's responsibility to use NatHERS accredited software correctly and follow the NatHERS Technical Note to produce a NatHERS Certificate.

The predicted annual energy use, cost and greenhouse gas emissions in this NatHERS Certificate are an estimate based on an assessment of the dwelling's design by the assessor. It is not a prediction of actual energy use, cost or emissions. The information and ratings may be used to compare how other dwellings are likely to perform when used in a similar way.

Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited software and made by the assessor who prepared this report), including assumptions about occupancy, behaviour, appliance performance, indoor air temperature and local climate.

Not all assumptions made by the assessor while using the NatHERS accredited software tool are presented in this report and further details or data fi les may be available from the assessor

Nationwide House Energy Rating Scheme® NatHERS® Certificate No. E492Z3Z5D3

Generated on 9 Aug 2024 using FirstRate5: 5.5.5 (3.22)

Property

Address	Cabin 1, 92 Chongs Road, Jindabyne, NSW, 2627
Lot/DP	-
NCC Class*	Class 1a
Floor/all Floors Type	New Home

Plans

Main plan	DA-03/2024-07-07
Prepared by	Peter Paine

Construction and environment

Assessed floor area [m²]*		**Exposure type**
Conditioned*	104.9	exposed
Unconditioned*	10.6	**NatHERS climate zone**
Total	115.5	69 Thredbo Valley
Garage	-	

Accredited assessor

Name	Arjun Adhikari
Business name	Thermal Environmental Engineering
Email	a.adhikari@thermalenvironmental.com
Phone	0430636395
Accreditation No.	101491
Assessor Accrediting Organisation	ABSA
Declaration of interest	No

NCC Requirements

NCC provisions	Volume 2
State/Territory variation	Yes

National Construction Code (NCC) requirements

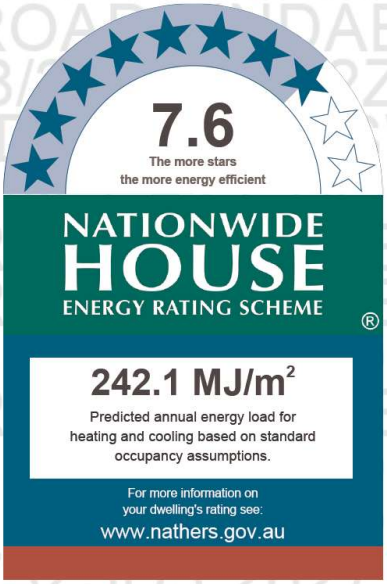
The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J3D3 and J3D15 of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Thermal performance star rating



Thermal performance [MJ/m²]

Limits taken from ABCB Standard 2022

	Heating	Cooling
Modelled	241.5	0.6
Load limits	N/A	N/A

Features determining load limits

Floor type (lowest conditioned area)	N/A
NCC climate zone 1 or 2	N/A
Outdoor living area	N/A
Outdoor living area ceiling fan	N/A

Whole of Home performance rating

No Whole of Home performance rating generated for this certificate

Verification

To verify this certificate, scan the QR code or visit https://www.fr5.com.au/QRCodeLanding?PublicId=E492Z3Z5D3 When using either link, ensure you are visiting www.fr5.com.au.

*Refer to glossary.

E492Z3Z5D3 NatHERS Certificate 7.6 Star Rating as of 9 Aug 2024

About the ratings

Thermal performance rating

NatHERS thermal software models the expected heating and cooling energy loads using information about the design, construction, climate and common patterns of household use. The thermal performance rating (shown as a star rating on this Certificate) does not take into account appliances, apart from the airflow impacts from ceiling fans.

Whole of Home performance rating

NatHERS Whole of Home software uses the heating and cooling energy loads combined with the energy performance of the home's appliances (heating, cooling, hot water, lighting, pool/spa pump and onsite renewable energy generation and storage) and models the expected energy value* of the whole home. The Whole of Home performance rating is shown as a score out of 100 on this Certificate.

Heating & Cooling Load Limits

Additional information

In some locations under the NCC NatHERS pathway, separate heating and cooling load limits may apply. Minimum required star ratings in northern parts of Australia may also be affected by the presence or absence of an outdoor living area and/or an outdoor living area ceiling fan. Refer to the ABCB NatHERS heating and cooling load limits Standard 2022 for details or contact the relevant local building regulating authority, noting that State and Territory variations may also apply.

Setting options:

Floor type:
- CSOG – Concrete Slab on Ground
- SF – Suspended Floor (or a mixture of CSOG and SF)
- NA – Not Applicable

NCC climate Zone 1 or 2:
- Yes
- No
- NA – not applicable

Outdoor living area:
- Yes
- No
- NA – not applicable

Outdoor living area ceiling fan:
- Yes
- No
- NA – not applicable

Predicted onsite renewable energy impact

No Whole of Home performance assessment conducted for this certificate.

Predicted Whole of Home annual impact by appliance

Shows the contribution each appliance has on the home's annual energy use, greenhouse gas emissions and cost without solar

Energy use:

No Whole of Home performance assessment conducted for this certificate.

Greenhouse gas emissions:

No Whole of Home performance assessment conducted for this certificate.

Cost:

No Whole of Home performance assessment conducted for this certificate.

Graph key:

*Refer to glossary.

E492Z3Z5D3 NatHERS Certificate 7.6 Star Rating as of 9 Aug 2024

Certificate check

The checklist covers important items impacting the dwelling's ratings.
It is recommended that the accuracy of the whole certificate is checked.

Note: The boxes indicate when and who should check each item.
It is not mandatory to complete this checklist.

	Approval stage		Construction stage		
	Assessor checked	Consent authority/ surveyor checked	Builder checked	Consent authority/ surveyor checked	Occupancy/other
Genuine certificate check					
Does this Certificate match the one available at the web address or QR code verification link on the front page?		☐	☐	☐	☐
Does the NatHERS certificate number on the NatHERS-stamped plans match the number on this Certificate?		☐	☐	☐	☐
Thermal performance check					
Windows and glazed doors					
Does the window size, opening type and location shown on the NatHERS-stamped plans or as installed match what is shown in *'Window and glazed door schedule'* and *'Roof window schedule'* tables on this Certificate?	☐	☐	☐	☐	☐
Does the installed windows meet the substitution tolerances (AFRC* based SHGC* and U-values*) as shown in the *'Window and glazed door type and performance'* and *'Roof window type and performance'* tables on this Certificate?			☐	☐	☐
External walls					
Does the external wall bulk insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the External wall type table on this Certificate?	☐	☐	☐	☐	☐
Does the external wall shade (colour) match what is shown in the *'External wall typo'* table on this Certificate?	☐	☐	☐	☐	☐
Floor					
Does the floor insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Floor type'* table on this certificate?	☐	☐	☐	☐	☐
Ceiling penetrations*					
Does the *'quantity'* and *'type'* of ceiling penetrations* (e.g. downlights, exhaust fans, etc) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Ceiling penetrations'* table on this Certificate?	☐	☐	☐	☐	☐
Ceiling					
Does the ceiling insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Ceiling type'* table on this Certificate?	☐	☐	☐	☐	☐
Roof					
Does the external roof shade (colour) on the NatHERS stamped plans or as installed match what is shown in the *'Roof type'* table on this Certificate?	☐	☐	☐	☐	☐
Apartment entrance doors (NCC Class 2 assessments only)					
Does the 'External Door Schedule' show apartment entrance doors? Please note that an "external door" between the modelled dwelling and a shared space, such as an enclosed corridor or foyer, should not be included in the assessment (because it overstates the possible ventilation) and would invalidate the Certificate.	☐	☐		☐	☐
Exposure*					
Has the appropriate exposure type (terrain) (shown on page 1) been applied? For example, it is unlikely that a ground-floor apartment is "exposed" or a top floor high-rise apartment is "protected".	☐	☐		☐	☐
Heating and cooling load limits*					
Do the load limits settings (shown on page 1) match the values in the ABCB Standard 2022: NAtHERS heating and cooling load limits for the appropriate climate zone?	☐	☐	☐	☐	☐

*Refer to glossary.

E492Z3Z5D3 NatHERS Certificate 7.6 Star Rating as of 9 Aug 2024

Certificate check
Continued

	Approval stage		Construction stage		
	Assessor checked	Consent authority/ surveyor checked	Builder checked	Consent authority/ surveyor checked	Occupancy/other
Additional NCC requirements for thermal performance (not included in the NatHERS assessment)					
Thermal bridging					
Does the dwelling meet the NCC requirement for thermal bridging?		☐	☐	☐	☐
Insulation installation method					
Has the insulation been installed according to the NCC requirements?			☐	☐	☐
Building sealing					
Does the dwelling meet the NCC requirements for Building Sealing?		☐	☐	☐	☐
Whole of Home performance check (not applicable if a Whole of Home performance assessment is not conducted)					
Appliances					
Does the cooling appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the Appliance schedule on this Certificate?	☐	☐	☐	☐	☐
Does the heating appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or installed, match the location and minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the hot water system type and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the pool pump efficiency/performance shown on the NatHERS-stamped plans or as installed match the minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the onsite renewable energy system type, orientation and system size or generation capacity shown on the NatHERS stamped plans or installed match the *'Onsite Renewable Energy schedule'* on this Certificate?	☐	☐	☐	☐	☐
Additional NCC Requirements for Services (not included in the NatHERS assessment)					
Does the lighting meet the artificial lighting requirements specified in the NCC?		☐	☐	☐	☐
Does the hot water system meet the additional requirements specified in the NCC?		☐	☐	☐	☐
Provisional values* check					
Have provisional values* been used in the assessment and, if so, are they noted in *'Additional notes'* table below?	☐	☐			

Other NCC requirements

Note: This Certificate only covers the energy efficiency requirements in the NCC. Additional requirements that must also be satisfied include, but are not limited to: condensation, structural and fire safety requirements and any state or territory variations to the NCC energy efficiency requirements.

Additional notes

Modelling notes and assumptions.

1. Downlights not included on the supplied plans - hence not included in the model
2. Floor Covering - as per plans
3. External wall construction - Timber cladding with R4 Rockwool insulation
4. Typical roof construction - Insulation R5.0
5. Internal walls - 13mm plaster board on bothsides with timber studs
6. Floor - Slab on ground R3.0 Insulation

*Refer to glossary.

7. Slab edge insualtion R1.0

8. Double glazing with timber Frame used throughout the development.

9. Shading and evaes as per plans provided

10. Exhaust fans on bathrooms, laundry and kitchen - 250 x 250 mm and assumed to be sealed.

Any futher or future changes made on the design documentation must be verified and amended if there are any departures on the above assumptions.

E492Z3Z5D3 NatHERS Certificate 7.6 Star Rating as of 9 Aug 2024

Room *schedule*

Room	Zone Type	Area [m²]
Kitchen/Living	kitchen	52.1
Foyer	dayTime	22.7
Bath	unconditioned	10.6
Bedroom 2	bedroom	10.7
Ensuite	nightTime	4.9
Bedroom 1	bedroom	12.8
Laundry	dayTime	0.8
Drying	dayTime	0.9

Window and glazed door *type and performance*

Default* windows

				Substitution tolerance ranges	
Window ID	Window description	Maximum U-value*	SHGC*	SHGC lower limit	SHGC upper limit
No Data Available					

Custom* windows

				Substitution tolerance ranges	
Window ID	Window description	Maximum U-value*	SHGC*	SHGC lower limit	SHGC upper limit
A&L-038-13 W	A&L Timber Sliding Door DG LightBridge-4-10Ar-4	1.83	0.45	0.43	0.47

Window and glazed door *schedule*

Location	Window ID	Window no.	Height [mm]	Width [mm]	Window type	Opening %	Orientation	Window shading device*
Kitchen/Living	A&L-038-13 W	W8	1400	1600	casement	90.0	E	No
Kitchen/Living	A&L-038-13 W	D4 A	2400	800	fixed	0.0	N	No
Kitchen/Living	A&L-038-13 W	D4 B	2400	1600	sliding	90.0	N	No
Kitchen/Living	A&L-038-13 W	D4 C	2400	800	fixed	0.0	N	No
Kitchen/Living	A&L-038-13 W	D3 A Top	850	1310	fixed	0.0	W	No
Kitchen/Living	A&L-038-13 W	D3 B Top	850	2000	fixed	0.0	W	No
Kitchen/Living	A&L-038-13 W	D3 C Top	850	1310	fixed	0.0	W	No
Kitchen/Living	A&L-038-13 W	D3 A Middle	350	1310	awning	90.0	W	No
Kitchen/Living	A&L-038-13 W	D3 B Middle	350	2000	fixed	0.0	W	No
Kitchen/Living	A&L-038-13 W	D3 C Middle	350	1310	awning	90.0	W	No
Kitchen/Living	A&L-038-13 W	D3 A lower	2400	1310	fixed	0.0	W	No
Kitchen/Living	A&L-038-13 W	D3 C Lower	2400	1310	fixed	0.0	W	No

*Refer to glossary.

Kitchen/Living	A&L-038-13 W	D3 B Lower	2400	2000	sliding	90.0	W	No
Foyer	A&L-038-13 W	D1 A	2100	1133	fixed	0.0	E	No
Foyer	A&L-038-13 W	D1 C	2100	1133	fixed	0.0	E	No
Foyer	A&L-038-13 W	D1 B	2100	1134	casement	90.0	E	No
Foyer	A&L-038-13 W	D2 A	2100	876	fixed	0.0	W	No
Foyer	A&L-038-13 W	D2 C	2100	876	fixed	0.0	W	No
Foyer	A&L-038-13 W	D2 B	2100	877	casement	90.0	W	No
Bath	A&L-038-13 W	W6	1400	900	awning	90.0	S	No
Bath	A&L-038-13 W	W7	1700	1800	awning	90.0	W	No
Bedroom 2	A&L-038-13 W	W5	1400	900	awning	90.0	S	No
Ensuite	A&L-038-13 W	W4	700	700	awning	90.0	S	No
Bedroom 1	A&L-038-13 W	W3	1400	900	awning	90.0	E	No

Roof window* *type and performance value*

Default* roof windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
No Data Available					

Custom* roof windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
No Data Available					

Roof window* *schedule*

Location	Window ID	Window no.	Opening %	Area [m²]	Width [mm]	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight* *type and performance*

Skylight ID	Skylight description	Skylight shaft reflectance
No Data Available		

Skylight* *schedule*

Location	Skylight ID	Skylight No.	Skylight shaft length [mm]	Area [m²]	Orient-ation	Outdoor shade	Diffuser
No Data Available							

External door *schedule*

Location	Height [mm]	Width [mm]	Opening %	Orientation
No Data Available				

*Refer to glossary.

E492Z3Z5D3 NatHERS Certificate 7.6 Star Rating as of 9 Aug 2024

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade [colour]	Bulk insulation [R-value]	Reflective wall wrap*
1	01 - Timber Wall	0.5	Medium	Rockwool batt: R4.0 (R4.0)	No
2	01 - Timber Wall	0.5	Medium	Rockwool batt: R4.0 (R4.0)	No
3	01 - Metal Wall	0.5	Medium	Rockwool batt: R4.0 (R4.0)	No

External wall *schedule*

Location	Wall ID	Height [mm]	Width [mm]	Orientation	Horizontal shading feature* maximum projection [mm]	Vertical shading feature* (yes/no)
Kitchen/Living	1	3900	1018	S	709	Yes
Kitchen/Living	2	650	3940	N	0	No
Kitchen/Living	2	1500	1263	N	0	No
Kitchen/Living	2	1500	1280	N	0	No
Kitchen/Living	2	650	1456	N	0	No
Kitchen/Living	1	850	8324	N	0	No
Kitchen/Living	1	3900	712	S	676	Yes
Kitchen/Living	1	2800	4887	E	706	No
Kitchen/Living	3	850	4887	SE	783	No
Kitchen/Living	1	3900	1681	N	724	Yes
Kitchen/Living	1	3900	538	E	2411	Yes
Kitchen/Living	1	3900	740	N	186	No
Kitchen/Living	1	3900	1691	N	222	No
Kitchen/Living	1	3900	749	N	183	No
Kitchen/Living	1	3900	538	W	9852	Yes
Kitchen/Living	1	3900	1718	N	721	Yes
Kitchen/Living	3	3900	691	E	7318	Yes
Kitchen/Living	3	3900	1874	N	40	No
Kitchen/Living	1	850	4881	W	4700	No
Kitchen/Living	3	3900	696	W	6269	Yes
Kitchen/Living	1	650	4881	W	4700	No
Kitchen/Living	1	3900	1602	N	727	Yes
Kitchen/Living	1	2400	4881	W	4663	No
Foyer	1	2450	3367	E	0	Yes
Foyer	1	2450	2635	W	0	Yes
Foyer	1	650	1527	N	0	No
Foyer	1	650	2967	N	0	No

*Refer to glossary.

Foyer	1	650	1383	N	0	No
Foyer	1	650	2130	N	0	No
Bath	1	3600	2977	S	654	No
Bath	2	550	1542	N	0	No
Bath	1	3600	1417	N	672	Yes
Bath	1	2950	3557	W	766	No
Bath	3	650	3575	W	781	No
Bedroom 2	1	3600	2974	S	663	No
Bedroom 2	2	550	2979	N	0	No
Ensuite	1	3600	1372	S	678	No
Ensuite	2	550	1369	N	0	No
Bedroom 1	1	3600	3580	S	655	No
Bedroom 1	1	2800	3602	E	764	No
Bedroom 1	3	650	3577	E	803	No
Bedroom 1	1	3600	1442	N	815	Yes
Bedroom 1	2	550	2132	N	0	No

Internal wall *type*

Wall ID	Wall type	Area [m²]	Bulk insulation
1	01 - Timber Wall Internal	94.7	

Floor *type*

Location	Construction	Area [m²]	Sub-floor ventilation	Added insulation [R-value]	Covering
Kitchen/Living	FR5 - CSOG: Slab on Ground	52.1	Enclosed	R3.0	Tiles
Foyer	FR5 - CSOG: Slab on Ground	22.7	Enclosed	R3.0	Carpet
Bath	FR5 - CSOG: Slab on Ground	10.6	Enclosed	R3.0	Tiles
Bedroom 2	FR5 - CSOG: Slab on Ground	10.7	Enclosed	R3.0	Carpet
Ensuite	FR5 - CSOG: Slab on Ground	4.9	Enclosed	R3.0	Tiles
Bedroom 1	FR5 - CSOG: Slab on Ground	12.8	Enclosed	R3.0	Carpet
Laundry	FR5 - CSOG: Slab on Ground	0.8	Enclosed	R3.0	Tiles
Drying	FR5 - CSOG: Slab on Ground	0.9	Enclosed	R3.0	Tiles

Ceiling *type*

E492Z3Z5D3 NatHERS Certificate 7.6 Star Rating as of 9 Aug 2024

Location	Construction material/type	Bulk insulation R-value [may include edge batt values]	Reflective wrap*
Kitchen/Living	Plasterboard	R5.0	Yes
Foyer	Plasterboard	R5.0	Yes
Bath	Plasterboard	R5.0	Yes
Bedroom 2	Plasterboard	R5.0	Yes
Ensuite	Plasterboard	R5.0	Yes
Bedroom 1	Plasterboard	R5.0	Yes
Laundry	Plasterboard	R5.0	No
Drying	Plasterboard	R5.0	No

Ceiling *penetrations**

Location	Quantity	Type	Height [mm]	Width [mm]	Sealed/unsealed
Kitchen/Living	1	Exhaust Fans	250	250	Sealed
Kitchen/Living	25	Downlights	100	100	Sealed
Foyer	9	Downlights	100	100	Sealed
Bath	1	Exhaust Fans	250	250	Sealed
Bath	5	Downlights	100	100	Sealed
Bedroom 2	5	Downlights	100	100	Sealed
Ensuite	1	Exhaust Fans	250	250	Sealed
Ensuite	2	Downlights	100	100	Sealed
Bedroom 1	6	Downlights	100	100	Sealed
Laundry	1	Downlights	100	100	Sealed
Laundry	1	Exhaust Fans	250	250	Sealed
Drying	1	Downlights	100	100	Sealed

Ceiling *fans*

Location	Quantity	Diameter [mm]
No Data Available		

Roof *type*

Construction	Added insulation [R-value]	Solar absorptance	Roof shade [colour]
Cont:Attic-Continuous	0.0	0.5	Medium
Cont:Attic-Continuous	1.8	0.5	Medium
Cont:Attic-Continuous	1.8	0.5	Medium

Thermal bridging *schedule for steel frame elements*

Building element	Steel section dimensions [height x width, mm]	Frame spacing [mm]	Steel thickness [BMT,mm]	Thermal break [R-value]

*Refer to glossary.

E492Z3Z5D3 NatHERS Certificate 7.6 Star Rating as of 9 Aug 2024

No Data Available

Appliance *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

Note: A flat assumption of 5W/m2 is used for lighting, therefore lighting is not included in the appliance schedule.

Cooling system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Heating system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Hot water system

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Hot Water CER Zone	Zone 3 STC	Assessed daily load
No Whole of Home performance assessment conducted for this certificate.					

Pool/spa equipment

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.			

Onsite renewable energy *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Orientation	System size or generation capacity
No Whole of Home performance assessment conducted for this certificate.		

Battery *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Size [battery storage capacity]
No Whole of Home performance assessment conducted for this certificate.	

*Refer to glossary.

E492Z3Z5D3 NatHERS Certificate 7.6 Star Rating as of 9 Aug 2024

Explanatory Notes

About this report

NatHERS ratings are a reliable guide for comparing different dwelling designs and to demonstrate that designs meet the energy efficiency requirements in the National Construction Code.

NatHERS ratings use computer modelling to evaluate a home's energy efficiency and performance. They use localised climate data and standard assumptions on how people use their home to predict the heating and cooling energy loads and energy value* of the whole home. The thermal performance star rating uses the home's building specifications, layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings) to predict the heating and cooling energy loads. The Whole of Home performance rating uses information about the home's appliances and onsite energy generation and storage to estimate the homes energy value*.

The actual energy loads, cost and greenhouse gas emissions of a home may vary from that predicted. This is because the assumptions will not always match the actual occupant usage patterns. For example, the number of occupants and how people use their appliances will vary. Energy efficient homes use less energy, are warmer on cool days, cooler on hot days and cost less to run.

Accredited assessors

For quality assured NatHERS Certificates, always use an accredited or licenced assessor registered with an Assessor Accrediting Organisation (AAO). AAOs have strict quality assurance processes, and professional development requirements ensuring consistently high standards for assessments.

Non-accredited assessors (Raters) have no ongoing training requirements and are not quality assured.

Any queries about this report should be directed to the assessor. If the assessor is unable to address questions or concerns, contact the AAO specified on the front of this certificate.

Disclaimer

The NatHERS Certificate format is developed by the NatHERS Administrator. However, the content in the certificate is entered by the assessor. It is the assessor's responsibility to use NatHERS accredited software correctly and follow the NatHERS Technical Note to produce a NatHERS Certificate.

The predicted annual energy load, cost and greenhouse gas emissions in this NatHERS Certificate are an estimate based on an assessment of the dwelling's design by the assessor. It is not a prediction of actual energy use, cost or emissions. The information and ratings may be used to compare how other dwellings are likely to perform when used in a similar way.

Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited software and made by the assessor who prepared this report), including assumptions about occupancy, behaviour, appliance performance, indoor air temperature and local climate.

Not all assumptions made by the assessor using the NatHERS accredited software tool are presented in this report and further details or data files may be obtained from the assessor.

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
AFRC	Australian Fenestration Rating Council
Assessed floor area	the floor area modelled in the software for the purpose of the NatHERS assessment. Note, this may not be consistent with the floor area in the design documents.
Ceiling penetrations	features that require a penetration to the ceiling, including downlights, vents, exhaust fans, range hoods, chimneys and flues. Excludes fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
Conditioned	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it will include garages.
COP	Coefficient of performance
Custom windows	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
Default windows	windows that are representative of a specific type of window product and whose properties have been derived by statistical methods.
EER	Energy Efficiency Ratio, measure of how much cooling can be achieved by an air conditioner for a single kWh of electricity input
Energy use	This is your homes rating without solar or batteries.
Energy value	The net cost to society including, but not limited to, costs to the building user, the environment and energy networks (as defined in the ABCB Housing Provisions Standard).
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category – exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category – open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category – suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category – protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au.
Net zero home	a home that achieves a net zero energy value*.
Opening percentage	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au
Recommended capacity	this is the capacity or size of equipment that is recommended by NatHERS to achieve the desired comfort conditions in the zone or zones serviced. This is a recommendation and the final selection sizing should be confirmed by a suitably qualified person.
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate air gap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.

*Refer to glossary.

E492Z3Z5D3 NatHERS Certificate 7.6 Star Rating as of 9 Aug 2024

STCs	Small-scale Technology Certificates, certificates created by the REC registry for renewable energy technologies that may be bought and sold as part of the Small-scale Renewable Energy Scheme operated by the Clean Energy Regulatory
Thermal breaks	are materials with an R-value greater than or equal to 0.2 that must separate the metal frame from the cladding. This includes, but is not limited to, materials such as timber battens greater than or equal to 20mm thick, continuous thermal breaks such as polystyrene insulation sheeting, plastic strips or furring channels.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).
Window shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes horizontal* or vertical shading features* (eg eaves and balconies)

Nationwide House Energy Rating Scheme® NatHERS® Certificate No. TRZQ29AVPA

Generated on 9 Aug 2024 using FirstRate5: 5.5.5 (3.22)

Property

Address	Cabin 2, 92 Chongs Road, Jindabyne, NSW, 2627
Lot/DP	-
NCC Class*	Class 1a
Floor/all Floors Type	New Home

Plans

Main plan	DA-03/2024-07-07
Prepared by	Peter Paine

Construction and environment

Assessed floor area [m²]*		**Exposure type**
Conditioned*	104.9	exposed
Unconditioned*	10.6	**NatHERS climate zone**
Total	115.5	69 Thredbo Valley
Garage	-	

Accredited assessor

Name	Arjun Adhikari
Business name	Thermal Environmental Engineering
Email	a.adhikari@thermalenvironmental.com
Phone	0430636395
Accreditation No.	101491
Assessor Accrediting Organisation	ABSA
Declaration of interest	No

NCC Requirements

NCC provisions	Volume 2
State/Territory variation	Yes

National Construction Code (NCC) requirements

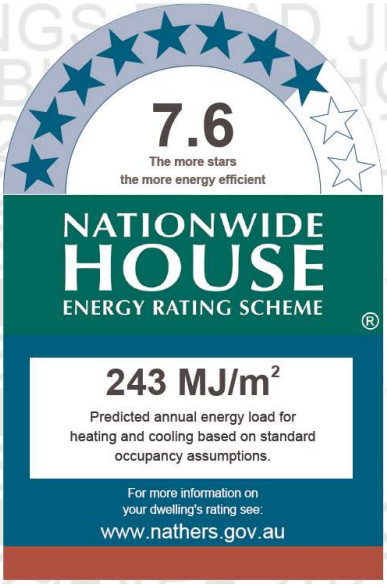
The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J3D3 and J3D15 of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Thermal performance star rating



Thermal performance [MJ/m²]

Limits taken from ABCB Standard 2022

	Heating	Cooling
Modelled	242.3	0.7
Load limits	N/A	N/A

Features determining load limits

Floor type (lowest conditioned area)	N/A
NCC climate zone 1 or 2	N/A
Outdoor living area	N/A
Outdoor living area ceiling fan	N/A

Whole of Home performance rating

No Whole of Home performance rating generated for this certificate

Verification

To verify this certificate, scan the QR code or visit https://www.fr5.com.au/QRCodeLanding?PublicId=TRZQ29AVPA When using either link, ensure you are visiting www.fr5.com.au.

*Refer to glossary.

TRZQ29AVPA NatHERS Certificate 7.6 Star Rating as of 9 Aug 2024

About the ratings

Thermal performance rating

NatHERS thermal software models the expected heating and cooling energy loads using information about the design, construction, climate and common patterns of household use. The thermal performance rating (shown as a star rating on this Certificate) does not take into account appliances, apart from the airflow impacts from ceiling fans.

Whole of Home performance rating

NatHERS Whole of Home software uses the heating and cooling energy loads combined with the energy performance of the home's appliances (heating, cooling, hot water, lighting, pool/spa pump and onsite renewable energy generation and storage) and models the expected energy value* of the whole home. The Whole of Home performance rating is shown as a score out of 100 on this Certificate.

Heating & Cooling Load Limits

Additional information

In some locations under the NCC NatHERS pathway, separate heating and cooling load limits may apply. Minimum required star ratings in northern parts of Australia may also be affected by the presence or absence of an outdoor living area and/or an outdoor living area ceiling fan. Refer to the ABCB NatHERS heating and cooling load limits Standard 2022 for details or contact the relevant local building regulating authority, noting that State and Territory variations may also apply.

Setting options:

Floor type:
- CSOG – Concrete Slab on Ground
- SF – Suspended Floor (or a mixture of CSOG and SF)
- NA – Not Applicable

NCC climate Zone 1 or 2:
- Yes
- No
- NA – not applicable

Outdoor living area:
- Yes
- No
- NA – not applicable

Outdoor living area ceiling fan:
- Yes
- No
- NA – not applicable

Predicted onsite renewable energy impact

No Whole of Home performance assessment conducted for this certificate.

Predicted Whole of Home annual impact by appliance

Shows the contribution each appliance has on the home's annual energy use, greenhouse gas emissions and cost without solar

Energy use:

No Whole of Home performance assessment conducted for this certificate.

Greenhouse gas emissions:

No Whole of Home performance assessment conducted for this certificate.

Cost:

No Whole of Home performance assessment conducted for this certificate.

Graph key:

*Refer to glossary.

TRZQ29AVPA NatHERS Certificate 7.6 Star Rating as of 9 Aug 2024

Certificate check

The checklist covers important items impacting the dwelling's ratings.
It is recommended that the accuracy of the whole certificate is checked.

Note: The boxes indicate when and who should check each item.
It is not mandatory to complete this checklist.

	Approval stage		Construction stage		
	Assessor checked	Consent authority/ surveyor checked	Builder checked	Consent authority/ surveyor checked	Occupancy/other
Genuine certificate check					
Does this Certificate match the one available at the web address or QR code verification link on the front page?		☐	☐	☐	☐
Does the NatHERS certificate number on the NatHERS-stamped plans match the number on this Certificate?		☐	☐	☐	☐
Thermal performance check					
Windows and glazed doors					
Does the window size, opening type and location shown on the NatHERS-stamped plans or as installed match what is shown in *'Window and glazed door schedule'* and *'Roof window schedule'* tables on this Certificate?	☐	☐	☐	☐	☐
Does the installed windows meet the substitution tolerances (AFRC* based SHGC* and U-values*) as shown in the *'Window and glazed door type and performance'* and *'Roof window type and performance'* tables on this Certificate?			☐	☐	☐
External walls					
Does the external wall bulk insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the External wall type table on this Certificate?	☐	☐	☐	☐	☐
Does the external wall shade (colour) match what is shown in the *'External wall typo'* table on this Certificate?	☐	☐	☐	☐	☐
Floor					
Does the floor insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Floor type'* table on this certificate?	☐	☐	☐	☐	☐
Ceiling penetrations*					
Does the *'quantity'* and *'type'* of ceiling penetrations* (e.g. downlights, exhaust fans, etc) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Ceiling penetrations'* table on this Certificate?	☐	☐	☐	☐	☐
Ceiling					
Does the ceiling insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Ceiling type'* table on this Certificate?	☐	☐	☐	☐	☐
Roof					
Does the external roof shade (colour) on the NatHERS stamped plans or as installed match what is shown in the *'Roof type'* table on this Certificate?	☐	☐	☐	☐	☐
Apartment entrance doors (NCC Class 2 assessments only)					
Does the 'External Door Schedule' show apartment entrance doors? Please note that an "external door" between the modelled dwelling and a shared space, such as an enclosed corridor or foyer, should not be included in the assessment (because it overstates the possible ventilation) and would invalidate the Certificate.	☐	☐		☐	☐
Exposure*					
Has the appropriate exposure type (terrain) (shown on page 1) been applied? For example, it is unlikely that a ground-floor apartment is "exposed" or a top floor high-rise apartment is "protected".	☐	☐		☐	☐
Heating and cooling load limits*					
Do the load limits settings (shown on page 1) match the values in the ABCB Standard 2022: NAtHERS heating and cooling load limits for the appropriate climate zone?	☐	☐	☐	☐	☐

*Refer to glossary.

TRZQ29AVPA NatHERS Certificate 7.6 Star Rating as of 9 Aug 2024

Certificate check
Continued

	Approval stage		Construction stage		
	Assessor checked	Consent authority/ surveyor checked	Builder checked	Consent authority/ surveyor checked	Occupancy/other
Additional NCC requirements for thermal performance (not included in the NatHERS assessment)					
Thermal bridging					
Does the dwelling meet the NCC requirement for thermal bridging?		☐	☐	☐	☐
Insulation installation method					
Has the insulation been installed according to the NCC requirements?			☐	☐	☐
Building sealing					
Does the dwelling meet the NCC requirements for Building Sealing?		☐	☐	☐	☐
Whole of Home performance check (not applicable if a Whole of Home performance assessment is not conducted)					
Appliances					
Does the cooling appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the Appliance schedule on this Certificate?	☐	☐	☐	☐	☐
Does the heating appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or installed, match the location and minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the hot water system type and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the pool pump efficiency/performance shown on the NatHERS-stamped plans or as installed match the minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the onsite renewable energy system type, orientation and system size or generation capacity shown on the NatHERS stamped plans or installed match the *'Onsite Renewable Energy schedule'* on this Certificate?	☐	☐	☐	☐	☐
Additional NCC Requirements for Services (not included in the NatHERS assessment)					
Does the lighting meet the artificial lighting requirements specified in the NCC?		☐	☐	☐	☐
Does the hot water system meet the additional requirements specified in the NCC?		☐	☐	☐	☐
Provisional values* check					
Have provisional values* been used in the assessment and, if so, are they noted in *'Additional notes'* table below?	☐	☐			

Other NCC requirements

Note: This Certificate only covers the energy efficiency requirements in the NCC. Additional requirements that must also be satisfied include, but are not limited to: condensation, structural and fire safety requirements and any state or territory variations to the NCC energy efficiency requirements.

Additional notes

Modelling notes and assumptions.

1. Downlights not included on the supplied plans - hence not included in the model
2. Floor Covering - as per plans
3. External wall construction - Timber cladding with R4 Rockwool insulation
4. Typical roof construction - Insulation R5.0
5. Internal walls - 13mm plaster board on bothsides with timber studs
6. Floor - Slab on ground R3.0 Insulation

*Refer to glossary.

7. Slab edge insualtion R1.0

8. Double glazing with timber Frame used throughout the development.

9. Shading and evaes as per plans provided

10. Exhaust fans on bathrooms, laundry and kitchen - 250 x 250 mm and assumed to be sealed.

Any futher or future changes made on the design documentation must be verified and amended if there are any departures on the above assumptions.

TRZQ29AVPA NatHERS Certificate 7.6 Star Rating as of 9 Aug 2024

Room *schedule*

Room	Zone Type	Area [m²]
Kitchen/Living	kitchen	52.1
Foyer	dayTime	22.7
Bath	unconditioned	10.6
Bedroom 2	bedroom	10.7
Ensuite	nightTime	4.9
Bedroom 1	bedroom	12.8
Laundry	dayTime	0.8
Drying	dayTime	0.9

Window and glazed door *type and performance*

Default* windows

Window ID	Window description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
No Data Available					

Custom* windows

Window ID	Window description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
A&L-038-13 W	A&L Timber Sliding Door DG LightBridge-4-10Ar-4	1.83	0.45	0.43	0.47

Window and glazed door *schedule*

Location	Window ID	Window no.	Height [mm]	Width [mm]	Window type	Opening %	Orientation	Window shading device*
Kitchen/Living	A&L-038-13 W	W8	1400	1600	casement	90.0	E	No
Kitchen/Living	A&L-038-13 W	D4 A	2400	800	fixed	0.0	N	No
Kitchen/Living	A&L-038-13 W	D4 B	2400	1600	sliding	90.0	N	No
Kitchen/Living	A&L-038-13 W	D4 C	2400	800	fixed	0.0	N	No
Kitchen/Living	A&L-038-13 W	D3 A Top	850	1310	fixed	0.0	W	No
Kitchen/Living	A&L-038-13 W	D3 B Top	850	2000	fixed	0.0	W	No
Kitchen/Living	A&L-038-13 W	D3 C Top	850	1310	fixed	0.0	W	No
Kitchen/Living	A&L-038-13 W	D3 A Middle	320	1310	awning	90.0	W	No
Kitchen/Living	A&L-038-13 W	D3 B Middle	320	2000	fixed	0.0	W	No
Kitchen/Living	A&L-038-13 W	D3 C Middle	320	1310	awning	90.0	W	No
Kitchen/Living	A&L-038-13 W	D3 A lower	2400	1310	fixed	0.0	W	No
Kitchen/Living	A&L-038-13 W	D3 C Lower	2400	1310	fixed	0.0	W	No

*Refer to glossary.
Generated on 9 Aug 2024 using FirstRate5: 5.5.5 (3.22) for Cabin 2, 92 Chongs Road, Jindabyne, NSW, 2627

Kitchen/Living	A&L-038-13 W	D3 B Lower	2400	2000	sliding	90.0	W	No
Foyer	A&L-038-13 W	D1 A	2100	1133	fixed	0.0	E	No
Foyer	A&L-038-13 W	D1 C	2100	1133	fixed	0.0	E	No
Foyer	A&L-038-13 W	D1 B	2100	1134	casement	90.0	E	No
Foyer	A&L-038-13 W	D2 A	2100	876	fixed	0.0	W	No
Foyer	A&L-038-13 W	D2 C	2100	876	fixed	0.0	W	No
Foyer	A&L-038-13 W	D2 B	2100	877	casement	90.0	W	No
Bath	A&L-038-13 W	W6	1400	900	awning	90.0	S	No
Bath	A&L-038-13 W	W7	1700	1800	awning	90.0	W	No
Bedroom 2	A&L-038-13 W	W5	1400	900	awning	90.0	S	No
Ensuite	A&L-038-13 W	W4	700	700	awning	90.0	S	No
Bedroom 1	A&L-038-13 W	W3	1400	900	awning	90.0	E	No

Roof window* *type and performance value*

Default* roof windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
No Data Available					

Custom* roof windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
No Data Available					

Roof window* *schedule*

Location	Window ID	Window no.	Opening %	Area [m²]	Width [mm]	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight* *type and performance*

Skylight ID	Skylight description	Skylight shaft reflectance
No Data Available		

Skylight* *schedule*

Location	Skylight ID	Skylight No.	Skylight shaft length [mm]	Area [m²]	Orient-ation	Outdoor shade	Diffuser
No Data Available							

External door *schedule*

Location	Height [mm]	Width [mm]	Opening %	Orientation
No Data Available				

*Refer to glossary.

TRZQ29AVPA NatHERS Certificate 7.6 Star Rating as of 9 Aug 2024

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade [colour]	Bulk insulation [R-value]	Reflective wall wrap*
1	01 - Timber Wall	0.5	Medium	Rockwool batt: R4.0 (R4.0)	No
2	01 - Timber Wall	0.5	Medium	Rockwool batt: R4.0 (R4.0)	No
3	01 - Metal Wall	0.5	Medium	Rockwool batt: R4.0 (R4.0)	No

External wall *schedule*

Location	Wall ID	Height [mm]	Width [mm]	Orientation	Horizontal shading feature* maximum projection [mm]	Vertical shading feature* (yes/no)
Kitchen/Living	1	3900	1018	S	709	Yes
Kitchen/Living	2	650	3940	N	0	No
Kitchen/Living	2	1500	1263	N	0	No
Kitchen/Living	2	1500	1280	N	0	No
Kitchen/Living	2	650	1456	N	0	No
Kitchen/Living	1	850	8324	N	0	No
Kitchen/Living	1	3900	712	S	676	Yes
Kitchen/Living	1	2800	4887	E	706	No
Kitchen/Living	3	850	4887	SE	783	No
Kitchen/Living	1	3900	1681	N	724	Yes
Kitchen/Living	1	3900	538	E	2411	Yes
Kitchen/Living	1	3900	740	N	186	No
Kitchen/Living	1	3900	1691	N	222	No
Kitchen/Living	1	3900	749	N	183	No
Kitchen/Living	1	3900	538	W	9852	Yes
Kitchen/Living	1	3900	1718	N	721	Yes
Kitchen/Living	3	3900	691	E	7318	Yes
Kitchen/Living	3	3900	1874	N	40	No
Kitchen/Living	1	850	4881	W	4700	No
Kitchen/Living	3	3900	696	W	6269	Yes
Kitchen/Living	1	799	4881	W	4700	No
Kitchen/Living	1	3900	1602	N	727	Yes
Kitchen/Living	1	2400	4881	W	4663	No
Foyer	1	2450	3367	E	0	Yes
Foyer	1	2450	2635	W	0	Yes
Foyer	1	650	1527	N	0	No
Foyer	1	650	2967	N	0	No

*Refer to glossary.

Foyer	1	650	1383	N	0	No
Foyer	1	650	2130	N	0	No
Bath	1	3600	2977	S	654	No
Bath	2	550	1542	N	0	No
Bath	1	3600	1417	N	672	Yes
Bath	1	2950	3557	W	766	No
Bath	3	650	3575	W	781	No
Bedroom 2	1	3600	2974	S	663	No
Bedroom 2	2	550	2979	N	0	No
Ensuite	1	3600	1372	S	678	No
Ensuite	2	550	1369	N	0	No
Bedroom 1	1	3600	3580	S	655	No
Bedroom 1	1	2800	3602	E	764	No
Bedroom 1	3	650	3577	E	803	No
Bedroom 1	1	3600	1442	N	815	Yes
Bedroom 1	2	550	2132	N	0	No

Internal wall *type*

Wall ID	Wall type	Area [m²]	Bulk insulation
1	01 - Timber Wall Internal	94.7	

Floor *type*

Location	Construction	Area [m²]	Sub-floor ventilation	Added insulation [R-value]	Covering
Kitchen/Living	FR5 - CSOG: Slab on Ground	52.1	Enclosed	R3.0	Tiles
Foyer	FR5 - CSOG: Slab on Ground	22.7	Enclosed	R3.0	Carpet
Bath	FR5 - CSOG: Slab on Ground	10.6	Enclosed	R3.0	Tiles
Bedroom 2	FR5 - CSOG: Slab on Ground	10.7	Enclosed	R3.0	Carpet
Ensuite	FR5 - CSOG: Slab on Ground	4.9	Enclosed	R3.0	Tiles
Bedroom 1	FR5 - CSOG: Slab on Ground	12.8	Enclosed	R3.0	Carpet
Laundry	FR5 - CSOG: Slab on Ground	0.8	Enclosed	R3.0	Tiles
Drying	FR5 - CSOG: Slab on Ground	0.9	Enclosed	R3.0	Tiles

Ceiling *type*

TRZQ29AVPA NatHERS Certificate 7.6 Star Rating as of 9 Aug 2024

Location	Construction material/type	Bulk insulation R-value [may include edge batt values]	Reflective wrap*
Kitchen/Living	Plasterboard	R5.0	Yes
Foyer	Plasterboard	R5.0	Yes
Bath	Plasterboard	R5.0	Yes
Bedroom 2	Plasterboard	R5.0	Yes
Ensuite	Plasterboard	R5.0	Yes
Bedroom 1	Plasterboard	R5.0	Yes
Laundry	Plasterboard	R5.0	No
Drying	Plasterboard	R5.0	No

Ceiling *penetrations**

Location	Quantity	Type	Height [mm]	Width [mm]	Sealed/unsealed
Kitchen/Living	1	Exhaust Fans	250	250	Sealed
Kitchen/Living	25	Downlights	100	100	Sealed
Foyer	9	Downlights	100	100	Sealed
Bath	1	Exhaust Fans	250	250	Sealed
Bath	5	Downlights	100	100	Sealed
Bedroom 2	5	Downlights	100	100	Sealed
Ensuite	1	Exhaust Fans	250	250	Sealed
Ensuite	2	Downlights	100	100	Sealed
Bedroom 1	6	Downlights	100	100	Sealed
Laundry	1	Downlights	100	100	Sealed
Laundry	1	Exhaust Fans	250	250	Sealed
Drying	1	Downlights	100	100	Sealed

Ceiling *fans*

Location	Quantity	Diameter [mm]
No Data Available		

Roof *type*

Construction	Added insulation [R-value]	Solar absorptance	Roof shade [colour]
Cont:Attic-Continuous	0.0	0.5	Medium
Cont:Attic-Continuous	1.8	0.5	Medium
Cont:Attic-Continuous	1.8	0.5	Medium

Thermal bridging *schedule for steel frame elements*

Building element	Steel section dimensions [height x width, mm]	Frame spacing [mm]	Steel thickness [BMT,mm]	Thermal break [R-value]

*Refer to glossary.

TRZQ29AVPA NatHERS Certificate 7.6 Star Rating as of 9 Aug 2024

No Data Available

Appliance *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

Note: A flat assumption of 5W/m2 is used for lighting, therefore lighting is not included in the appliance schedule.

Cooling system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Heating system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Hot water system

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Hot Water CER Zone	Zone 3 STC	Assessed daily load
No Whole of Home performance assessment conducted for this certificate.					

Pool/spa equipment

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.			

Onsite renewable energy *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Orientation	System size or generation capacity
No Whole of Home performance assessment conducted for this certificate.		

Battery *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Size [battery storage capacity]
No Whole of Home performance assessment conducted for this certificate.	

*Refer to glossary.

TRZQ29AVPA NatHERS Certificate 7.6 Star Rating as of 9 Aug 2024

Explanatory Notes

About this report

NatHERS ratings are a reliable guide for comparing different dwelling designs and to demonstrate that designs meet the energy efficiency requirements in the National Construction Code.

NatHERS ratings use computer modelling to evaluate a home's energy efficiency and performance. They use localised climate data and standard assumptions on how people use their home to predict the heating and cooling energy loads and energy value* of the whole home. The thermal performance star rating uses the home's building specifications, layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings) to predict the heating and cooling energy loads. The Whole of Home performance rating uses information about the home's appliances and onsite energy generation and storage to estimate the homes energy value*.

The actual energy loads, cost and greenhouse gas emissions of a home may vary from that predicted. This is because the assumptions will not always match the actual occupant usage patterns. For example, the number of occupants and how people use their appliances will vary. Energy efficient homes use less energy, are warmer on cool days, cooler on hot days and cost less to run.

Accredited assessors

For quality assured NatHERS Certificates, always use an accredited or licenced assessor registered with an Assessor Accrediting Organisation (AAO). AAOs have strict quality assurance processes, and professional development requirements ensuring consistently high standards for assessments.

Non-accredited assessors (Raters) have no ongoing training requirements and are not quality assured.

Any queries about this report should be directed to the assessor. If the assessor is unable to address questions or concerns, contact the AAO specified on the front of this certificate.

Disclaimer

The NatHERS Certificate format is developed by the NatHERS Administrator. However, the content in the certificate is entered by the assessor. It is the assessor's responsibility to use NatHERS accredited software correctly and follow the NatHERS Technical Note to produce a NatHERS Certificate.

The predicted annual energy load, cost and greenhouse gas emissions in this NatHERS Certificate are an estimate based on an assessment of the dwelling's design by the assessor. It is not a prediction of actual energy use, cost or emissions. The information and ratings may be used to compare how other dwellings are likely to perform when used in a similar way.

Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited software and made by the assessor who prepared this report), including assumptions about occupancy, behaviour, appliance performance, indoor air temperature and local climate.

Not all assumptions made by the assessor using the NatHERS accredited software tool are presented in this report and further details or data files may be obtained from the assessor.

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
AFRC	Australian Fenestration Rating Council
Assessed floor area	the floor area modelled in the software for the purpose of the NatHERS assessment. Note, this may not be consistent with the floor area in the design documents.
Ceiling penetrations	features that require a penetration to the ceiling, including downlights, vents, exhaust fans, range hoods, chimneys and flues. Excludes fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
Conditioned	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it will include garages.
COP	Coefficient of performance
Custom windows	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
Default windows	windows that are representative of a specific type of window product and whose properties have been derived by statistical methods.
EER	Energy Efficiency Ratio, measure of how much cooling can be achieved by an air conditioner for a single kWh of electricity input
Energy use	This is your homes rating without solar or batteries.
Energy value	The net cost to society including, but not limited to, costs to the building user, the environment and energy networks (as defined in the ABCB Housing Provisions Standard).
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category – exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category – open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category – suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category – protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au.
Net zero home	a home that achieves a net zero energy value*.
Opening percentage	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au
Recommended capacity	this is the capacity or size of equipment that is recommended by NatHERS to achieve the desired comfort conditions in the zone or zones serviced. This is a recommendation and the final selection sizing should be confirmed by a suitably qualified person.
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate air gap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.

*Refer to glossary.

TRZQ29AVPA NatHERS Certificate 7.6 Star Rating as of 9 Aug 2024

STCs	Small-scale Technology Certificates, certificates created by the REC registry for renewable energy technologies that may be bought and sold as part of the Small-scale Renewable Energy Scheme operated by the Clean Energy Regulatory
Thermal breaks	are materials with an R-value greater than or equal to 0.2 that must separate the metal frame from the cladding. This includes, but is not limited to, materials such as timber battens greater than or equal to 20mm thick, continuous thermal breaks such as polystyrene insulation sheeting, plastic strips or furring channels.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).
Window shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes horizontal* or vertical shading features* (eg eaves and balconies)

*Refer to glossary.

Nationwide House Energy Rating Scheme® NatHERS® Certificate No. ZT5W1M11LP

Generated on 9 Aug 2024 using FirstRate5: 5.5.5 (3.22)

Property

Address	Cabin 3, 92 Chongs Road, Jindabyne, NSW, 2627
Lot/DP	-
NCC Class*	Class 1a
Floor/all Floors Type	New Home

Plans

Main plan	DA-06/07-07-2024
Prepared by	Peter Paine

Construction and environment

Assessed floor area [m²]*		**Exposure type**
Conditioned*	144.3	exposed
Unconditioned*	12.4	**NatHERS climate zone**
Total	156.7	69 Thredbo Valley
Garage	-	

Accredited assessor

Name	Arjun Adhikari
Business name	Thermal Environmental Engineering
Email	a.adhikari@thermalenvironmental.com
Phone	0430636395
Accreditation No.	101491
Assessor Accrediting Organisation	ABSA
Declaration of interest	No

NCC Requirements

NCC provisions	Volume 2
State/Territory variation	Yes

National Construction Code (NCC) requirements

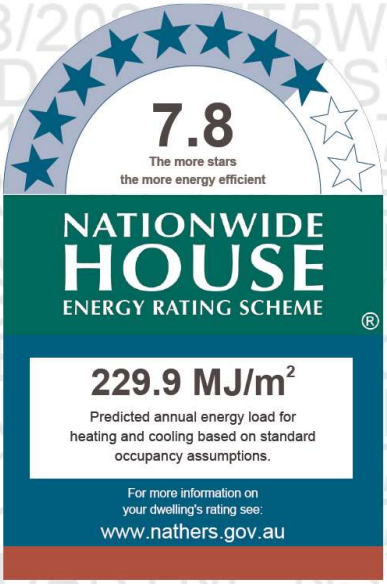
The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J3D3 and J3D15 of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Thermal performance star rating



Thermal performance [MJ/m²]

Limits taken from ABCB Standard 2022

	Heating	Cooling
Modelled	229.6	0.3
Load limits	N/A	N/A

Features determining load limits

Floor type (lowest conditioned area)	N/A
NCC climate zone 1 or 2	N/A
Outdoor living area	N/A
Outdoor living area ceiling fan	N/A

Whole of Home performance rating

No Whole of Home performance rating generated for this certificate

Verification

To verify this certificate, scan the QR code or visit https://www.fr5.com.au/QRCodeLanding?PublicId=ZT5W1M11LP When using either link, ensure you are visiting www.fr5.com.au.

*Refer to glossary.

About the ratings

Thermal performance rating

NatHERS thermal software models the expected heating and cooling energy loads using information about the design, construction, climate and common patterns of household use. The thermal performance rating (shown as a star rating on this Certificate) does not take into account appliances, apart from the airflow impacts from ceiling fans.

Whole of Home performance rating

NatHERS Whole of Home software uses the heating and cooling energy loads combined with the energy performance of the home's appliances (heating, cooling, hot water, lighting, pool/spa pump and onsite renewable energy generation and storage) and models the expected energy value* of the whole home. The Whole of Home performance rating is shown as a score out of 100 on this Certificate.

Heating & Cooling Load Limits

Additional information

In some locations under the NCC NatHERS pathway, separate heating and cooling load limits may apply. Minimum required star ratings in northern parts of Australia may also be affected by the presence or absence of an outdoor living area and/or an outdoor living area ceiling fan. Refer to the ABCB NatHERS heating and cooling load limits Standard 2022 for details or contact the relevant local building regulating authority, noting that State and Territory variations may also apply.

Setting options:

Floor type:
- CSOG – Concrete Slab on Ground
- SF – Suspended Floor (or a mixture of CSOG and SF)
- NA – Not Applicable

NCC climate Zone 1 or 2:
- Yes
- No
- NA – not applicable

Outdoor living area:
- Yes
- No
- NA – not applicable

Outdoor living area ceiling fan:
- Yes
- No
- NA – not applicable

Predicted onsite renewable energy impact

No Whole of Home performance assessment conducted for this certificate.

Predicted Whole of Home annual impact by appliance

Shows the contribution each appliance has on the home's annual energy use, greenhouse gas emissions and cost without solar

Energy use:

No Whole of Home performance assessment conducted for this certificate.

Greenhouse gas emissions:

No Whole of Home performance assessment conducted for this certificate.

Cost:

No Whole of Home performance assessment conducted for this certificate.

Graph key:

*Refer to glossary.

ZT5W1M11LP NatHERS Certificate 7.8 Star Rating as of 9 Aug 2024

Certificate check

The checklist covers important items impacting the dwelling's ratings.
It is recommended that the accuracy of the whole certificate is checked.

Note: The boxes indicate when and who should check each item.
It is not mandatory to complete this checklist.

	Approval stage		Construction stage		
	Assessor checked	Consent authority/ surveyor checked	Builder checked	Consent authority/ surveyor checked	Occupancy/other
Genuine certificate check					
Does this Certificate match the one available at the web address or QR code verification link on the front page?		☐	☐	☐	☐
Does the NatHERS certificate number on the NatHERS-stamped plans match the number on this Certificate?		☐	☐	☐	☐
Thermal performance check					
Windows and glazed doors					
Does the window size, opening type and location shown on the NatHERS-stamped plans or as installed match what is shown in *'Window and glazed door schedule'* and *'Roof window schedule'* tables on this Certificate?	☐	☐	☐	☐	☐
Does the installed windows meet the substitution tolerances (AFRC* based SHGC* and U-values*) as shown in the *'Window and glazed door type and performance'* and *'Roof window type and performance'* tables on this Certificate?			☐	☐	☐
External walls					
Does the external wall bulk insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the External wall type table on this Certificate?	☐	☐	☐	☐	☐
Does the external wall shade (colour) match what is shown in the *'External wall typo'* table on this Certificate?	☐	☐	☐	☐	☐
Floor					
Does the floor insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Floor type'* table on this certificate?	☐	☐	☐	☐	☐
Ceiling penetrations*					
Does the *'quantity'* and *'type'* of ceiling penetrations* (e.g. downlights, exhaust fans, etc) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Ceiling penetrations'* table on this Certificate?	☐	☐	☐	☐	☐
Ceiling					
Does the ceiling insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Ceiling type'* table on this Certificate?	☐	☐	☐	☐	☐
Roof					
Does the external roof shade (colour) on the NatHERS stamped plans or as installed match what is shown in the *'Roof type'* table on this Certificate?	☐	☐	☐	☐	☐
Apartment entrance doors (NCC Class 2 assessments only)					
Does the 'External Door Schedule' show apartment entrance doors? Please note that an "external door" between the modelled dwelling and a shared space, such as an enclosed corridor or foyer, should not be included in the assessment (because it overstates the possible ventilation) and would invalidate the Certificate.	☐	☐		☐	☐
Exposure*					
Has the appropriate exposure type (terrain) (shown on page 1) been applied? For example, it is unlikely that a ground-floor apartment is "exposed" or a top floor high-rise apartment is "protected".	☐	☐		☐	☐
Heating and cooling load limits*					
Do the load limits settings (shown on page 1) match the values in the ABCB Standard 2022: NAtHERS heating and cooling load limits for the appropriate climate zone?	☐	☐	☐	☐	☐

*Refer to glossary.

ZT5W1M11LP NatHERS Certificate 7.8 Star Rating as of 9 Aug 2024

Certificate check
Continued

	Approval stage		Construction stage		
	Assessor checked	Consent authority/ surveyor checked	Builder checked	Consent authority/ surveyor checked	Occupancy/other
Additional NCC requirements for thermal performance (not included in the NatHERS assessment)					
Thermal bridging					
Does the dwelling meet the NCC requirement for thermal bridging?		☐	☐	☐	☐
Insulation installation method					
Has the insulation been installed according to the NCC requirements?			☐	☐	☐
Building sealing					
Does the dwelling meet the NCC requirements for Building Sealing?		☐	☐	☐	☐
Whole of Home performance check (not applicable if a Whole of Home performance assessment is not conducted)					
Appliances					
Does the cooling appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the Appliance schedule on this Certificate?	☐	☐	☐	☐	☐
Does the heating appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or installed, match the location and minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the hot water system type and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the pool pump efficiency/performance shown on the NatHERS-stamped plans or as installed match the minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the onsite renewable energy system type, orientation and system size or generation capacity shown on the NatHERS stamped plans or installed match the *'Onsite Renewable Energy schedule'* on this Certificate?	☐	☐	☐	☐	☐
Additional NCC Requirements for Services (not included in the NatHERS assessment)					
Does the lighting meet the artificial lighting requirements specified in the NCC?		☐	☐	☐	☐
Does the hot water system meet the additional requirements specified in the NCC?		☐	☐	☐	☐
Provisional values* check					
Have provisional values* been used in the assessment and, if so, are they noted in *'Additional notes'* table below?	☐	☐			

Other NCC requirements

Note: This Certificate only covers the energy efficiency requirements in the NCC. Additional requirements that must also be satisfied include, but are not limited to: condensation, structural and fire safety requirements and any state or territory variations to the NCC energy efficiency requirements.

Additional notes

Modelling notes and assumptions.

1. Downlights not included on the supplied plans - hence not included in the model
2. Floor Covering - as per plans
3. External wall construction - Timber cladding with R4 Rockwool insulation
4. Typical roof construction - Insulation R5.0
5. Internal walls - 13mm plaster board on bothsides with timber studs
6. Floor - Slab on ground R3.0 Insulation

*Refer to glossary.

7. Slab edge insualtion R1.0
8. Double glazing with timber Frame used throughout the development.
9. Shading and evaes as per plans provided
10. Exhaust fans on bathrooms, laundry and kitchen - 250 x 250 mm and assumed to be sealed.

Any futher or future changes made on the design documentation must be verified and amended if there are any departures on the above assumptions.

ZT5W1M11LP NatHERS Certificate 7.8 Star Rating as of 9 Aug 2024

Room *schedule*

Room	Zone Type	Area [m²]
Kitchen/Living	kitchen	49
Entry Hall	dayTime	27.2
Bath	unconditioned	10.6
Bedroom 2	bedroom	10.6
PDR	unconditioned	1.8
Bedroom 3	bedroom	18.6
Bedroom 1	bedroom	28.8
Ensuite	nightTime	7.7
Laundry	dayTime	1.2
Drying	dayTime	1.2

Window and glazed door *type and performance*

Default* windows

				Substitution tolerance ranges	
Window ID	Window description	Maximum U-value*	SHGC*	SHGC lower limit	SHGC upper limit
No Data Available					

Custom* windows

				Substitution tolerance ranges	
Window ID	Window description	Maximum U-value*	SHGC*	SHGC lower limit	SHGC upper limit
A&L-038-13 W	A&L Timber Sliding Door DG LightBridge-4-10Ar-4	1.83	0.45	0.43	0.47

Window and glazed door *schedule*

Location	Window ID	Window no.	Height [mm]	Width [mm]	Window type	Opening %	Orientation	Window shading device*
Kitchen/Living	A&L-038-13 W	D4 A	2400	710	fixed	0.0	N	No
Kitchen/Living	A&L-038-13 W	D4 B	2400	1980	sliding	90.0	N	No
Kitchen/Living	A&L-038-13 W	D4 C	2400	710	fixed	0.0	N	No
Kitchen/Living	A&L-038-13 W	D3 A Top	850	1310	fixed	0.0	W	No
Kitchen/Living	A&L-038-13 W	D3 B Top	850	2000	fixed	0.0	W	No
Kitchen/Living	A&L-038-13 W	D3 C Top	850	1310	fixed	0.0	W	No
Kitchen/Living	A&L-038-13 W	D3 A Middle	350	1310	awning	90.0	W	No
Kitchen/Living	A&L-038-13 W	D3 B Middle	350	2000	fixed	0.0	W	No
Kitchen/Living	A&L-038-13 W	D3 C Middle	350	1310	awning	90.0	W	No
Kitchen/Living	A&L-038-13 W	D3 A lower	2400	1310	fixed	0.0	W	No

*Refer to glossary.

ZT5W1M11LP NatHERS Certificate 7.8 Star Rating as of 9 Aug 2024

Kitchen/Living	A&L-038-13 W	D3 C Lower	2400	1310	fixed	0.0	W	No
Kitchen/Living	A&L-038-13 W	D3 B Lower	2400	2000	sliding	90.0	W	No
Entry Hall	A&L-038-13 W	D1 A	2100	1133	fixed	0.0	E	No
Entry Hall	A&L-038-13 W	D1 C	2100	1133	fixed	0.0	E	No
Entry Hall	A&L-038-13 W	D1 B	2100	1134	casement	90.0	E	No
Entry Hall	A&L-038-13 W	D2 A	2100	876	fixed	0.0	W	No
Entry Hall	A&L-038-13 W	D2 C	2100	876	fixed	0.0	W	No
Entry Hall	A&L-038-13 W	D2 B	2100	877	casement	90.0	W	No
Bath	A&L-038-13 W	W6	1400	900	awning	90.0	S	No
Bath	A&L-038-13 W	W7	1700	1800	awning	90.0	W	No
Bedroom 2	A&L-038-13 W	W5	1400	900	awning	90.0	S	No
Bedroom 3	A&L-038-13 W	W4	700	700	awning	90.0	S	No
Bedroom 3	A&L-038-13 W	W3	1400	900	awning	90.0	E	No
Bedroom 1	A&L-038-13 W	D5 C	2400	710	fixed	0.0	N	No
Bedroom 1	A&L-038-13 W	D5 B	2400	1980	sliding	90.0	N	No
Bedroom 1	A&L-038-13 W	D5 A	2400	710	fixed	0.0	N	No
Ensuite	A&L-038-13 W	W1A	1500	600	awning	90.0	S	No
Ensuite	A&L-038-13 W	W1	700	1600	awning	90.0	N	No

Roof window* *type and performance value*

Default* roof windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
No Data Available					

Custom* roof windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
No Data Available					

Roof window* *schedule*

Location	Window ID	Window no.	Opening %	Area [m²]	Width [mm]	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight* *type and performance*

Skylight ID	Skylight description	Skylight shaft reflectance
No Data Available		

Skylight* *schedule*

*Refer to glossary.

ZT5W1M11LP NatHERS Certificate 7.8 Star Rating as of 9 Aug 2024

Location	Skylight ID	Skylight No.	Skylight shaft length [mm]	Area [m²]	Orient-ation	Outdoor shade	Diffuser
No Data Available							

External door *schedule*

Location	Height [mm]	Width [mm]	Opening %	Orientation
No Data Available				

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade [colour]	Bulk insulation [R-value]	Reflective wall wrap*
1	01 - Timber Wall	0.5	Medium	Rockwool batt: R4.0 (R4.0)	No
2	01 - Metal Wall	0.5	Medium	Rockwool batt: R4.0 (R4.0)	No
3	01 - Metal Wall	0.5	Medium	Rockwool batt: R4.0 (R4.0)	No

External wall *schedule*

Location	Wall ID	Height [mm]	Width [mm]	Orientation	Horizontal shading feature* maximum projection [mm]	Vertical shading feature* (yes/no)
Kitchen/Living	1	3900	439	S	574	Yes
Kitchen/Living	1	1500	1674	N	0	No
Kitchen/Living	1	1500	1671	N	0	No
Kitchen/Living	1	1500	1286	N	0	No
Kitchen/Living	1	850	8324	N	0	No
Kitchen/Living	1	3900	6338	N	742	Yes
Kitchen/Living	2	3900	691	E	13529	Yes
Kitchen/Living	2	3900	1874	N	64	No
Kitchen/Living	1	850	4881	W	4700	No
Kitchen/Living	2	3900	696	W	5814	Yes
Kitchen/Living	1	650	4881	W	4700	No
Kitchen/Living	1	3900	1103	N	751	Yes
Kitchen/Living	1	2400	4881	W	4751	No
Entry Hall	1	2450	3458	E	0	Yes
Entry Hall	1	2450	2590	W	0	Yes
Entry Hall	1	650	1527	N	0	No
Entry Hall	1	650	2967	N	0	No
Entry Hall	1	650	1383	N	0	No
Entry Hall	1	650	2130	N	0	No
Bath	1	3600	2975	S	739	No

*Refer to glossary.

Bath	1	1200	2070	N	0	No
Bath	1	3600	900	N	553	Yes
Bath	1	2950	3575	W	730	No
Bath	3	650	3575	W	781	No
Bedroom 2	1	3600	2978	S	735	No
Bedroom 2	1	1200	2967	N	0	No
PDR	1	1200	1378	N	0	No
Bedroom 3	1	3600	5793	S	732	No
Bedroom 3	1	2950	3577	E	739	Yes
Bedroom 3	3	650	3577	E	803	No
Bedroom 3	1	3600	1029	N	544	Yes
Bedroom 3	1	1200	3263	N	0	No
Bedroom 1	1	1500	388	S	0	No
Bedroom 1	1	3900	5299	S	565	Yes
Bedroom 1	1	3900	942	E	740	Yes
Bedroom 1	1	1100	3135	W	0	No
Bedroom 1	1	3900	810	E	740	Yes
Bedroom 1	1	3900	6330	N	744	Yes
Ensuite	1	2400	2470	S	0	Yes
Ensuite	1	2500	3135	E	0	No
Ensuite	1	2400	2470	N	0	Yes

Internal wall *type*

Wall ID	Wall type	Area [m²]	Bulk insulation
1	01 - Timber Wall Internal	127.7	

Floor *type*

Location	Construction	Area [m²]	Sub-floor ventilation	Added insulation [R-value]	Covering
Kitchen/Living	FR5 - CSOG: Slab on Ground	49	Enclosed	R3.0	Tiles
Entry Hall	FR5 - CSOG: Slab on Ground	27.2	Enclosed	R3.0	Carpet
Bath	FR5 - CSOG: Slab on Ground	10.6	Enclosed	R3.0	Tiles
Bedroom 2	FR5 - CSOG: Slab on Ground	10.6	Enclosed	R3.0	Carpet
PDR	FR5 - CSOG: Slab on Ground	1.8	Enclosed	R3.0	Tiles
Bedroom 3	FR5 - CSOG: Slab on Ground	18.6	Enclosed	R3.0	Carpet

*Refer to glossary.

Bedroom 1	FR5 - CSOG: Slab on Ground	28.8	Enclosed	R3.0	none
Ensuite	FR5 - CSOG: Slab on Ground	7.7	Enclosed	R3.0	none
Laundry	FR5 - CSOG: Slab on Ground	1.2	Enclosed	R3.0	none
Drying	FR5 - CSOG: Slab on Ground	1.2	Enclosed	R3.0	none

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value [may include edge batt values]	Reflective wrap*
Kitchen/Living	Plasterboard	R5.0	Yes
Entry Hall	Plasterboard	R5.0	Yes
Bath	Plasterboard	R5.0	Yes
Bedroom 2	Plasterboard	R5.0	Yes
PDR	Plasterboard	R5.0	Yes
Bedroom 3	Plasterboard	R5.0	Yes
Bedroom 1	Plasterboard	R5.0	No
Ensuite	Plasterboard	R5.0	No
Laundry	Plasterboard	R5.0	No
Drying	Plasterboard	R5.0	No

Ceiling *penetrations**

Location	Quantity	Type	Height [mm]	Width [mm]	Sealed/unsealed
Kitchen/Living	1	Exhaust Fans	250	250	Sealed
Kitchen/Living	24	Downlights	100	100	Sealed
Entry Hall	11	Downlights	100	100	Sealed
Bath	1	Exhaust Fans	250	250	Sealed
Bath	5	Downlights	100	100	Sealed
Bedroom 2	5	Downlights	100	100	Sealed
PDR	1	Exhaust Fans	250	250	Sealed
PDR	1	Downlights	100	100	Sealed
Bedroom 3	9	Downlights	100	100	Sealed
Bedroom 1	11	Downlights	100	100	Sealed
Ensuite	2	Downlights	100	100	Sealed
Laundry	1	Downlights	100	100	Sealed
Drying	1	Downlights	100	100	Sealed

Ceiling *fans*

Location	Quantity	Diameter [mm]

*Refer to glossary.

ZT5W1M11LP NatHERS Certificate 7.8 Star Rating as of 9 Aug 2024

No Data Available

Roof *type*

Construction	Added insulation [R-value]	Solar absorptance	Roof shade [colour]
Cont:Attic-Continuous	0.0	0.5	Medium
Cont:Attic-Continuous	1.8	0.5	Medium
Cont:Attic-Continuous	0.0	0.5	Medium
Cont:Attic-Continuous	1.8	0.5	Medium

Thermal bridging *schedule for steel frame elements*

Building element	Steel section dimensions [height x width, mm]	Frame spacing [mm]	Steel thickness [BMT,mm]	Thermal break [R-value]
No Data Available				

Appliance *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

Note: A flat assumption of 5W/m2 is used for lighting, therefore lighting is not included in the appliance schedule.

Cooling system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Heating system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Hot water system

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Hot Water CER Zone	Zone 3 STC	Assessed daily load
No Whole of Home performance assessment conducted for this certificate.					

Pool/spa equipment

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.			

Onsite renewable energy *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Orientation	System size or generation capacity
No Whole of Home performance assessment conducted for this certificate.		

*Refer to glossary.

Battery *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Size [battery storage capacity]
No Whole of Home performance assessment conducted for this certificate.	

ZT5W1M11LP NatHERS Certificate 7.8 Star Rating as of 9 Aug 2024

Explanatory Notes

About this report

NatHERS ratings are a reliable guide for comparing different dwelling designs and to demonstrate that designs meet the energy efficiency requirements in the National Construction Code.

NatHERS ratings use computer modelling to evaluate a home's energy efficiency and performance. They use localised climate data and standard assumptions on how people use their home to predict the heating and cooling energy loads and energy value* of the whole home. The thermal performance star rating uses the home's building specifications, layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings) to predict the heating and cooling energy loads. The Whole of Home performance rating uses information about the home's appliances and onsite energy generation and storage to estimate the homes energy value*.

The actual energy loads, cost and greenhouse gas emissions of a home may vary from that predicted. This is because the assumptions will not always match the actual occupant usage patterns. For example, the number of occupants and how people use their appliances will vary. Energy efficient homes use less energy, are warmer on cool days, cooler on hot days and cost less to run.

Accredited assessors

For quality assured NatHERS Certificates, always use an accredited or licenced assessor registered with an Assessor Accrediting Organisation (AAO). AAOs have strict quality assurance processes, and professional development requirements ensuring consistently high standards for assessments.

Non-accredited assessors (Raters) have no ongoing training requirements and are not quality assured.

Any queries about this report should be directed to the assessor. If the assessor is unable to address questions or concerns, contact the AAO specified on the front of this certificate.

Disclaimer

The NatHERS Certificate format is developed by the NatHERS Administrator. However, the content in the certificate is entered by the assessor. It is the assessor's responsibility to use NatHERS accredited software correctly and follow the NatHERS Technical Note to produce a NatHERS Certificate.

The predicted annual energy load, cost and greenhouse gas emissions in this NatHERS Certificate are an estimate based on an assessment of the dwelling's design by the assessor. It is not a prediction of actual energy use, cost or emissions. The information and ratings may be used to compare how other dwellings are likely to perform when used in a similar way.

Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited software and made by the assessor who prepared this report), including assumptions about occupancy, behaviour, appliance performance, indoor air temperature and local climate.

Not all assumptions made by the assessor using the NatHERS accredited software tool are presented in this report and further details or data files may be obtained from the assessor.

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
AFRC	Australian Fenestration Rating Council
Assessed floor area	the floor area modelled in the software for the purpose of the NatHERS assessment. Note, this may not be consistent with the floor area in the design documents.
Ceiling penetrations	features that require a penetration to the ceiling, including downlights, vents, exhaust fans, range hoods, chimneys and flues. Excludes fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
Conditioned	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it will include garages.
COP	Coefficient of performance
Custom windows	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
Default windows	windows that are representative of a specific type of window product and whose properties have been derived by statistical methods.
EER	Energy Efficiency Ratio, measure of how much cooling can be achieved by an air conditioner for a single kWh of electricity input
Energy use	This is your homes rating without solar or batteries.
Energy value	The net cost to society including, but not limited to, costs to the building user, the environment and energy networks (as defined in the ABCB Housing Provisions Standard).
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category – exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category – open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category – suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category – protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au.
Net zero home	a home that achieves a net zero energy value*.
Opening percentage	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au
Recommended capacity	this is the capacity or size of equipment that is recommended by NatHERS to achieve the desired comfort conditions in the zone or zones serviced. This is a recommendation and the final selection sizing should be confirmed by a suitably qualified person.
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate air gap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.

*Refer to glossary.

ZT5W1M11LP NatHERS Certificate 7.8 Star Rating as of 9 Aug 2024

STCs	Small-scale Technology Certificates, certificates created by the REC registry for renewable energy technologies that may be bought and sold as part of the Small-scale Renewable Energy Scheme operated by the Clean Energy Regulatory
Thermal breaks	are materials with an R-value greater than or equal to 0.2 that must separate the metal frame from the cladding. This includes, but is not limited to, materials such as timber battens greater than or equal to 20mm thick, continuous thermal breaks such as polystyrene insulation sheeting, plastic strips or furring channels.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).
Window shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes horizontal* or vertical shading features* (eg eaves and balconies)

*Refer to glossary.

Nationwide House Energy Rating Scheme® NatHERS® Certificate No. 2S764IVJ5V

Generated on 9 Aug 2024 using FirstRate5: 5.5.5 (3.22)

Property

Address	Cabin 4, 92 Chongs Road, Jindabyne, NSW, 2627
Lot/DP	LOT25/DP1232872
NCC Class*	Class 1a
Floor/all Floors Type	New Home

Plans

Main plan	DA-09/2024-07-07
Prepared by	Peter Paine

Construction and environment

Assessed floor area [m²]*		**Exposure type**
Conditioned*	132.3	exposed
Unconditioned*	15.6	**NatHERS climate zone**
Total	147.9	69 Thredbo Valley
Garage	-	

Accredited assessor

Name	Arjun Adhikari
Business name	Thermal Environmental Engineering
Email	a.adhikari@thermalenvironmental.com
Phone	0430636395
Accreditation No.	101491
Assessor Accrediting Organisation	ABSA
Declaration of interest	No

NCC Requirements

NCC provisions	Volume 2
State/Territory variation	Yes

National Construction Code (NCC) requirements

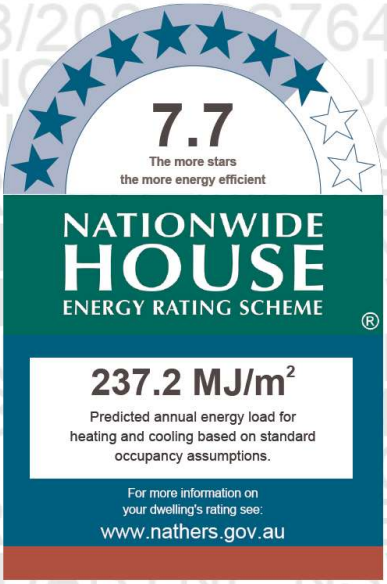
The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J3D3 and J3D15 of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Thermal performance star rating



Thermal performance [MJ/m²]

Limits taken from ABCB Standard 2022

	Heating	Cooling
Modelled	236.8	0.4
Load limits	N/A	N/A

Features determining load limits

Floor type (lowest conditioned area)	N/A
NCC climate zone 1 or 2	N/A
Outdoor living area	N/A
Outdoor living area ceiling fan	N/A

Whole of Home performance rating

No Whole of Home performance rating generated for this certificate

Verification

To verify this certificate, scan the QR code or visit https://www.fr5.com.au/QRCodeLanding?PublicId=2S764IVJ5V When using either link, ensure you are visiting www.fr5.com.au.

*Refer to glossary.

2S764IVJ5V NatHERS Certificate 7.7 Star Rating as of 9 Aug 2024

About the ratings

Thermal performance rating

NatHERS thermal software models the expected heating and cooling energy loads using information about the design, construction, climate and common patterns of household use. The thermal performance rating (shown as a star rating on this Certificate) does not take into account appliances, apart from the airflow impacts from ceiling fans.

Whole of Home performance rating

NatHERS Whole of Home software uses the heating and cooling energy loads combined with the energy performance of the home's appliances (heating, cooling, hot water, lighting, pool/spa pump and onsite renewable energy generation and storage) and models the expected energy value* of the whole home. The Whole of Home performance rating is shown as a score out of 100 on this Certificate.

Heating & Cooling Load Limits

Additional information

In some locations under the NCC NatHERS pathway, separate heating and cooling load limits may apply. Minimum required star ratings in northern parts of Australia may also be affected by the presence or absence of an outdoor living area and/or an outdoor living area ceiling fan. Refer to the ABCB NatHERS heating and cooling load limits Standard 2022 for details or contact the relevant local building regulating authority, noting that State and Territory variations may also apply.

Setting options:

Floor type:
- CSOG – Concrete Slab on Ground
- SF – Suspended Floor (or a mixture of CSOG and SF)
- NA – Not Applicable

NCC climate Zone 1 or 2:
- Yes
- No
- NA – not applicable

Outdoor living area:
- Yes
- No
- NA – not applicable

Outdoor living area ceiling fan:
- Yes
- No
- NA – not applicable

Predicted onsite renewable energy impact

No Whole of Home performance assessment conducted for this certificate.

Predicted Whole of Home annual impact by appliance

Shows the contribution each appliance has on the home's annual energy use, greenhouse gas emissions and cost without solar

Energy use:

No Whole of Home performance assessment conducted for this certificate.

Greenhouse gas emissions:

No Whole of Home performance assessment conducted for this certificate.

Cost:

No Whole of Home performance assessment conducted for this certificate.

Graph key:

*Refer to glossary.

2S764IVJ5V NatHERS Certificate 7.7 Star Rating as of 9 Aug 2024

Certificate check

The checklist covers important items impacting the dwelling's ratings.
It is recommended that the accuracy of the whole certificate is checked.

Note: The boxes indicate when and who should check each item.
It is not mandatory to complete this checklist.

	Approval stage		Construction stage		
	Assessor checked	Consent authority/ surveyor checked	Builder checked	Consent authority/ surveyor checked	Occupancy/other
Genuine certificate check					
Does this Certificate match the one available at the web address or QR code verification link on the front page?		☐	☐	☐	☐
Does the NatHERS certificate number on the NatHERS-stamped plans match the number on this Certificate?		☐	☐	☐	☐
Thermal performance check					
Windows and glazed doors					
Does the window size, opening type and location shown on the NatHERS-stamped plans or as installed match what is shown in *'Window and glazed door schedule'* and *'Roof window schedule'* tables on this Certificate?	☐	☐	☐	☐	☐
Does the installed windows meet the substitution tolerances (AFRC* based SHGC* and U-values*) as shown in the *'Window and glazed door type and performance'* and *'Roof window type and performance'* tables on this Certificate?			☐	☐	☐
External walls					
Does the external wall bulk insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the External wall type table on this Certificate?	☐	☐	☐	☐	☐
Does the external wall shade (colour) match what is shown in the *'External wall typo'* table on this Certificate?	☐	☐	☐	☐	☐
Floor					
Does the floor insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Floor type'* table on this certificate?	☐	☐	☐	☐	☐
Ceiling penetrations*					
Does the *'quantity'* and *'type'* of ceiling penetrations* (e.g. downlights, exhaust fans, etc) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Ceiling penetrations'* table on this Certificate?	☐	☐	☐	☐	☐
Ceiling					
Does the ceiling insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Ceiling type'* table on this Certificate?	☐	☐	☐	☐	☐
Roof					
Does the external roof shade (colour) on the NatHERS stamped plans or as installed match what is shown in the *'Roof type'* table on this Certificate?	☐	☐	☐	☐	☐
Apartment entrance doors (NCC Class 2 assessments only)					
Does the 'External Door Schedule' show apartment entrance doors? Please note that an "external door" between the modelled dwelling and a shared space, such as an enclosed corridor or foyer, should not be included in the assessment (because it overstates the possible ventilation) and would invalidate the Certificate.	☐	☐		☐	☐
Exposure*					
Has the appropriate exposure type (terrain) (shown on page 1) been applied? For example, it is unlikely that a ground-floor apartment is "exposed" or a top floor high-rise apartment is "protected".	☐	☐		☐	☐
Heating and cooling load limits*					
Do the load limits settings (shown on page 1) match the values in the ABCB Standard 2022: NAtHERS heating and cooling load limits for the appropriate climate zone?	☐	☐	☐	☐	☐

*Refer to glossary.

2S764IVJ5V NatHERS Certificate 7.7 Star Rating as of 9 Aug 2024

Certificate check
Continued

	Approval stage		Construction stage		
	Assessor checked	Consent authority/ surveyor checked	Builder checked	Consent authority/ surveyor checked	Occupancy/other
Additional NCC requirements for thermal performance (not included in the NatHERS assessment)					
Thermal bridging					
Does the dwelling meet the NCC requirement for thermal bridging?		☐	☐	☐	☐
Insulation installation method					
Has the insulation been installed according to the NCC requirements?			☐	☐	☐
Building sealing					
Does the dwelling meet the NCC requirements for Building Sealing?		☐	☐	☐	☐
Whole of Home performance check (not applicable if a Whole of Home performance assessment is not conducted)					
Appliances					
Does the cooling appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the Appliance schedule on this Certificate?	☐	☐	☐	☐	☐
Does the heating appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or installed, match the location and minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the hot water system type and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the pool pump efficiency/performance shown on the NatHERS-stamped plans or as installed match the minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the onsite renewable energy system type, orientation and system size or generation capacity shown on the NatHERS stamped plans or installed match the *'Onsite Renewable Energy schedule'* on this Certificate?	☐	☐	☐	☐	☐
Additional NCC Requirements for Services (not included in the NatHERS assessment)					
Does the lighting meet the artificial lighting requirements specified in the NCC?		☐	☐	☐	☐
Does the hot water system meet the additional requirements specified in the NCC?		☐	☐	☐	☐
Provisional values* check					
Have provisional values* been used in the assessment and, if so, are they noted in *'Additional notes'* table below?	☐	☐			

Other NCC requirements

Note: This Certificate only covers the energy efficiency requirements in the NCC. Additional requirements that must also be satisfied include, but are not limited to: condensation, structural and fire safety requirements and any state or territory variations to the NCC energy efficiency requirements.

Additional notes

Modelling notes and assumptions.

1. Downlights not included on the supplied plans - hence not included in the model
2. Floor Covering - as per plans
3. External wall construction - Timber cladding with R4 Rockwool insulation
4. Typical roof construction - Insulation R5.0
5. Internal walls - 13mm plaster board on bothsides with timber studs
6. Floor - Slab on ground R3.0 Insulation

*Refer to glossary.

7. Slab edge insualtion R1.0

8. Double glazing with timber Frame used throughout the development.

9. Shading and evaes as per plans provided

10. Exhaust fans on bathrooms, laundry and kitchen - 250 x 250 mm and assumed to be sealed.

Any futher or future changes made on the design documentation must be verified and amended if there are any departures on the above assumptions.

2S764IVJ5V NatHERS Certificate 7.7 Star Rating as of 9 Aug 2024

Room *schedule*

Room	Zone Type	Area [m²]
Ensuite	nightTime	5.5
Bedroom 1	bedroom	21.7
Kitchen/Living	kitchen	51.7
Entry Hall	dayTime	29.8
Bedroom 2	bedroom	12.8
PDR	unconditioned	4.9
Bedroom 3	bedroom	10.7
Bath	unconditioned	10.6

Window and glazed door *type and performance*

Default* windows

				Substitution tolerance ranges	
Window ID	Window description	Maximum U-value*	SHGC*	SHGC lower limit	SHGC upper limit
No Data Available					

Custom* windows

				Substitution tolerance ranges	
Window ID	Window description	Maximum U-value*	SHGC*	SHGC lower limit	SHGC upper limit
A&L-038-13 W	A&L Timber Sliding Door DG LightBridge-4-10Ar-4	1.83	0.45	0.43	0.47

Window and glazed door *schedule*

Location	Window ID	Window no.	Height [mm]	Width [mm]	Window type	Opening %	Orientation	Window shading device*
Ensuite	A&L-038-13 W	W2	900	800	awning	90.0	N	No
Ensuite	A&L-038-13 W	W2A	1600	800	awning	90.0	S	No
Bedroom 1	A&L-038-13 W	D5 A	2400	675	awning	60.0	N	No
Bedroom 1	A&L-038-13 W	Opening 49	2400	1350	casement	90.0	N	No
Bedroom 1	A&L-038-13 W	Opening 50	2400	675	awning	60.0	N	No
Kitchen/Living	A&L-038-13 W	D3 A LOWER	2400	1310	fixed	0.0	W	No
Kitchen/Living	A&L-038-13 W	D3 C LOWER	2400	1310	fixed	0.0	W	No
Kitchen/Living	A&L-038-13 W	D3 B LOWER	2400	2000	casement	90.0	W	No
Kitchen/Living	A&L-038-13 W	D3 A MIDDLE	350	1310	awning	90.0	W	No
Kitchen/Living	A&L-038-13 W	D3 B MIDDLE	350	2000	fixed	0.0	W	No
Kitchen/Living	A&L-038-13 W	D3 C MIDDLE	350	1310	awning	90.0	W	No
Kitchen/Living	A&L-038-13 W	D3 A TOP	850	1310	fixed	0.0	W	No

*Refer to glossary.

Kitchen/Living	A&L-038-13 W	D3 B TOP	850	2000	fixed	0.0	W	No
Kitchen/Living	A&L-038-13 W	D3 C TOP	850	1310	fixed	0.0	W	No
Kitchen/Living	A&L-038-13 W	D4 A	2400	800	fixed	0.0	N	No
Kitchen/Living	A&L-038-13 W	Opening 46	2400	800	fixed	0.0	N	No
Kitchen/Living	A&L-038-13 W	Opening 47	2400	1600	sliding	90.0	N	No
Kitchen/Living	A&L-038-13 W	W1	1200	2800	fixed	0.0	N	No
Entry Hall	A&L-038-13 W	D2 A	2100	876	fixed	0.0	E	No
Entry Hall	A&L-038-13 W	D2 C	2100	876	fixed	0.0	E	No
Entry Hall	A&L-038-13 W	D2 B	2100	877	casement	90.0	E	No
Entry Hall	A&L-038-13 W	D2 C	2100	876	fixed	0.0	W	No
Entry Hall	A&L-038-13 W	D2 B	2100	877	casement	90.0	W	No
Entry Hall	A&L-038-13 W	D2 A	2100	876	fixed	0.0	W	No
Bedroom 2	A&L-038-13 W	W3	1400	900	awning	90.0	E	No
PDR	A&L-038-13 W	W4	700	700	awning	90.0	S	No
Bedroom 3	A&L-038-13 W	W5	1400	900	awning	90.0	S	No
Bath	A&L-038-13 W	W6	1400	900	awning	90.0	S	No
Bath	A&L-038-13 W	W7	1700	1800	awning	90.0	W	No

Roof window* *type and performance value*

Default* roof windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
No Data Available					

Custom* roof windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
No Data Available					

Roof window* *schedule*

Location	**Window ID**	**Window no.**	**Opening %**	**Area [m²]**	**Width [mm]**	**Orientation**	**Outdoor shade**	**Indoor shade**
No Data Available								

Skylight* *type and performance*

Skylight ID	**Skylight description**	**Skylight shaft reflectance**
No Data Available		

Skylight* *schedule*

Location	**Skylight ID**	**Skylight No.**	**Skylight shaft length [mm]**	**Area [m²]**	**Orient-ation**	**Outdoor shade**	**Diffuser**

*Refer to glossary.

2S764IVJ5V NatHERS Certificate 7.7 Star Rating as of 9 Aug 2024

No Data Available

External door *schedule*

Location	Height [mm]	Width [mm]	Opening %	Orientation
No Data Available				

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade [colour]	Bulk insulation [R-value]	Reflective wall wrap*
1	01 - Timber Wall	0.5	Medium	Rockwool batt: R4.0 (R4.0)	No
2	01 - Metal Wall	0.5	Medium	Rockwool batt: R4.0 (R4.0)	No

External wall *schedule*

Location	Wall ID	Height [mm]	Width [mm]	Orientation	Horizontal shading feature* maximum projection [mm]	Vertical shading feature* (yes/no)
Ensuite	1	2550	1379	N	0	Yes
Ensuite	1	466	3973	E	0	No
Ensuite	2	889	3973	E	0	No
Ensuite	1	2550	1379	S	0	Yes
Ensuite	1	2400	3977	E	0	No
Bedroom 1	1	1655	2476	N	0	No
Bedroom 1	1	4055	1701	S	747	Yes
Bedroom 1	1	4055	449	E	548	Yes
Bedroom 1	1	4055	464	E	566	Yes
Bedroom 1	1	4055	393	N	729	No
Bedroom 1	1	4055	471	E	936	Yes
Bedroom 1	1	4055	2685	N	0	No
Bedroom 1	1	4055	478	W	0	Yes
Bedroom 1	1	4055	1107	N	0	No
Kitchen/Living	1	2400	4887	W	4740	No
Kitchen/Living	1	650	4868	W	4743	No
Kitchen/Living	1	850	4868	W	4743	No
Kitchen/Living	1	4055	1391	S	755	Yes
Kitchen/Living	1	4055	704	W	6136	Yes
Kitchen/Living	1	4055	1247	S	0	Yes
Kitchen/Living	1	1655	238	N	0	No
Kitchen/Living	1	1655	578	W	0	No
Kitchen/Living	1	1655	6958	N	0	No

*Refer to glossary.

Kitchen/Living	1	4055	1202	N	0	No
Kitchen/Living	1	4055	464	E	0	Yes
Kitchen/Living	1	4055	3182	N	0	No
Kitchen/Living	1	4055	467	W	0	Yes
Kitchen/Living	1	4055	5691	N	750	No
Entry Hall	1	2400	2582	E	718	Yes
Entry Hall	1	2400	2664	W	382	Yes
Bedroom 2	1	3550	3575	S	571	No
Bedroom 2	1	2730	3584	E	744	No
Bedroom 2	2	820	3581	E	772	No
Bedroom 2	1	3550	788	N	544	Yes
Bedroom 2	1	1150	2807	N	0	No
PDR	1	3550	1379	S	550	No
PDR	1	1150	1368	N	0	No
Bedroom 3	1	3550	2974	S	549	No
Bedroom 3	1	1150	2948	N	0	No
Bath	1	3550	2968	S	546	No
Bath	1	1150	2528	N	0	No
Bath	1	3550	438	N	556	Yes
Bath	1	2730	3592	W	744	No
Bath	2	820	3579	W	784	No

Internal wall *type*

Wall ID	Wall type	Area [m²]	Bulk insulation
1	01 - Timber Wall Internal	116.4	

Floor *type*

Location	Construction	Area [m²]	Sub-floor ventilation	Added insulation [R-value]	Covering
Ensuite	FR5 - CSOG: Slab on Ground	5.5	Enclosed	R3.0	Tiles
Bedroom 1	FR5 - CSOG: Slab on Ground	21.7	Enclosed	R3.0	Carpet
Kitchen/Living	FR5 - CSOG: Slab on Ground	51.7	Enclosed	R3.0	Tiles
Entry Hall	FR5 - CSOG: Slab on Ground	29.8	Enclosed	R3.0	Carpet
Bedroom 2	FR5 - CSOG: Slab on Ground	12.8	Enclosed	R3.0	Carpet
PDR	FR5 - CSOG: Slab on Ground	4.9	Enclosed	R3.0	Tiles

Bedroom 3	FR5 - CSOG: Slab on Ground	10.7	Enclosed	R3.0	Carpet
Bath	FR5 - CSOG: Slab on Ground	10.6	Enclosed	R3.0	Tiles

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value [may include edge batt values]	Reflective wrap*
Ensuite	Plasterboard	R5.0	No
Bedroom 1	Plasterboard	R5.0	No
Kitchen/Living	Plasterboard	R5.0	No
Entry Hall	Plasterboard	R5.0	No
Bedroom 2	Plasterboard	R5.0	No
PDR	Plasterboard	R5.0	No
Bedroom 3	Plasterboard	R5.0	No
Bath	Plasterboard	R5.0	No

Ceiling *penetrations**

Location	Quantity	Type	Height [mm]	Width [mm]	Sealed/unsealed
Ensuite	1	Exhaust Fans	250	250	Sealed
Ensuite	1	Downlights	100	100	Sealed
Bedroom 1	11	Downlights	100	100	Sealed
Kitchen/Living	1	Exhaust Fans	250	250	Sealed
Kitchen/Living	25	Downlights	100	100	Sealed
Entry Hall	12	Downlights	100	100	Sealed
Bedroom 2	6	Downlights	100	100	Sealed
PDR	1	Exhaust Fans	250	250	Sealed
PDR	2	Downlights	100	100	Sealed
Bedroom 3	5	Downlights	100	100	Sealed
Bath	1	Exhaust Fans	250	250	Sealed
Bath	5	Downlights	100	100	Sealed

Ceiling *fans*

Location	Quantity	Diameter [mm]
No Data Available		

Roof *type*

Construction	Added insulation [R-value]	Solar absorptance	Roof shade [colour]
Cont:Attic-Continuous	0.0	0.5	Medium

*Refer to glossary.

2S764IVJ5V NatHERS Certificate 7.7 Star Rating as of 9 Aug 2024

Thermal bridging *schedule for steel frame elements*

Building element	Steel section dimensions [height x width, mm]	Frame spacing [mm]	Steel thickness [BMT,mm]	Thermal break [R-value]
No Data Available				

Appliance *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

Note: A flat assumption of 5W/m2 is used for lighting, therefore lighting is not included in the appliance schedule.

Cooling system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Heating system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Hot water system

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Hot Water CER Zone	Zone 3 STC	Assessed daily load
No Whole of Home performance assessment conducted for this certificate.					

Pool/spa equipment

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.			

Onsite renewable energy *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Orientation	System size or generation capacity
No Whole of Home performance assessment conducted for this certificate.		

Battery *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Size [battery storage capacity]
No Whole of Home performance assessment conducted for this certificate.	

*Refer to glossary.

2S764IVJ5V NatHERS Certificate 7.7 Star Rating as of 9 Aug 2024

Explanatory Notes

About this report

NatHERS ratings are a reliable guide for comparing different dwelling designs and to demonstrate that designs meet the energy efficiency requirements in the National Construction Code.

NatHERS ratings use computer modelling to evaluate a home's energy efficiency and performance. They use localised climate data and standard assumptions on how people use their home to predict the heating and cooling energy loads and energy value* of the whole home. The thermal performance star rating uses the home's building specifications, layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings) to predict the heating and cooling energy loads. The Whole of Home performance rating uses information about the home's appliances and onsite energy generation and storage to estimate the homes energy value*.

The actual energy loads, cost and greenhouse gas emissions of a home may vary from that predicted. This is because the assumptions will not always match the actual occupant usage patterns. For example, the number of occupants and how people use their appliances will vary. Energy efficient homes use less energy, are warmer on cool days, cooler on hot days and cost less to run.

Accredited assessors

For quality assured NatHERS Certificates, always use an accredited or licenced assessor registered with an Assessor Accrediting Organisation (AAO). AAOs have strict quality assurance processes, and professional development requirements ensuring consistently high standards for assessments.

Non-accredited assessors (Raters) have no ongoing training requirements and are not quality assured.

Any queries about this report should be directed to the assessor. If the assessor is unable to address questions or concerns, contact the AAO specified on the front of this certificate.

Disclaimer

The NatHERS Certificate format is developed by the NatHERS Administrator. However, the content in the certificate is entered by the assessor. It is the assessor's responsibility to use NatHERS accredited software correctly and follow the NatHERS Technical Note to produce a NatHERS Certificate.

The predicted annual energy load, cost and greenhouse gas emissions in this NatHERS Certificate are an estimate based on an assessment of the dwelling's design by the assessor. It is not a prediction of actual energy use, cost or emissions. The information and ratings may be used to compare how other dwellings are likely to perform when used in a similar way.

Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited software and made by the assessor who prepared this report), including assumptions about occupancy, behaviour, appliance performance, indoor air temperature and local climate.

Not all assumptions made by the assessor using the NatHERS accredited software tool are presented in this report and further details or data files may be obtained from the assessor.

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
AFRC	Australian Fenestration Rating Council
Assessed floor area	the floor area modelled in the software for the purpose of the NatHERS assessment. Note, this may not be consistent with the floor area in the design documents.
Ceiling penetrations	features that require a penetration to the ceiling, including downlights, vents, exhaust fans, range hoods, chimneys and flues. Excludes fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
Conditioned	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it will include garages.
COP	Coefficient of performance
Custom windows	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
Default windows	windows that are representative of a specific type of window product and whose properties have been derived by statistical methods.
EER	Energy Efficiency Ratio, measure of how much cooling can be achieved by an air conditioner for a single kWh of electricity input
Energy use	This is your homes rating without solar or batteries.
Energy value	The net cost to society including, but not limited to, costs to the building user, the environment and energy networks (as defined in the ABCB Housing Provisions Standard).
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category – exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category – open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category – suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category – protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au.
Net zero home	a home that achieves a net zero energy value*.
Opening percentage	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au
Recommended capacity	this is the capacity or size of equipment that is recommended by NatHERS to achieve the desired comfort conditions in the zone or zones serviced. This is a recommendation and the final selection sizing should be confirmed by a suitably qualified person.
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate air gap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.

*Refer to glossary.

2S764IVJ5V NatHERS Certificate 7.7 Star Rating as of 9 Aug 2024

STCs	Small-scale Technology Certificates, certificates created by the REC registry for renewable energy technologies that may be bought and sold as part of the Small-scale Renewable Energy Scheme operated by the Clean Energy Regulatory
Thermal breaks	are materials with an R-value greater than or equal to 0.2 that must separate the metal frame from the cladding. This includes, but is not limited to, materials such as timber battens greater than or equal to 20mm thick, continuous thermal breaks such as polystyrene insulation sheeting, plastic strips or furring channels.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).
Window shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes horizontal* or vertical shading features* (eg eaves and balconies)

*Refer to glossary.

Nationwide House Energy Rating Scheme® NatHERS® Certificate No. BGZSH8D0KC

Generated on 9 Aug 2024 using FirstRate5: 5.5.5 (3.22)

Property

Address	Cabin 5, 92 Chongs Road, Jindabyne, NSW, 2627
Lot/DP	LOT25/DP1232872
NCC Class*	Class 1a
Floor/all Floors Type	New Home

Plans

Main plan	DA-12/2024-07-07
Prepared by	Peter Paine

Construction and environment

Assessed floor area [m²]*		**Exposure type**
Conditioned*	101.4	exposed
Unconditioned*	10.6	**NatHERS climate zone**
Total	112	69 Thredbo Valley
Garage	-	

Accredited assessor

Name	Arjun Adhikari
Business name	Thermal Environmental Engineering
Email	a.adhikari@thermalenvironmental.com
Phone	0430636395
Accreditation No.	101491
Assessor Accrediting Organisation	ABSA
Declaration of interest	No

NCC Requirements

NCC provisions	Volume 2
State/Territory variation	Yes

National Construction Code (NCC) requirements

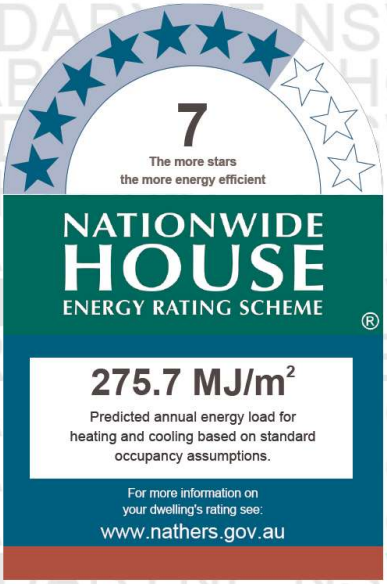
The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J3D3 and J3D15 of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Thermal performance star rating



Thermal performance [MJ/m²]

Limits taken from ABCB Standard 2022

	Heating	**Cooling**
Modelled	275	0.7
Load limits	N/A	N/A

Features determining load limits

Floor type (lowest conditioned area)	N/A
NCC climate zone 1 or 2	N/A
Outdoor living area	N/A
Outdoor living area ceiling fan	N/A

Whole of Home performance rating

No Whole of Home performance rating generated for this certificate

Verification

To verify this certificate, scan the QR code or visit https://www.fr5.com.au/QRCodeLanding?PublicId=BGZSH8D0KC When using either link, ensure you are visiting www.fr5.com.au.

*Refer to glossary.

BGZSH8D0KC NatHERS Certificate 7 Star Rating as of 9 Aug 2024

About the ratings

Thermal performance rating

NatHERS thermal software models the expected heating and cooling energy loads using information about the design, construction, climate and common patterns of household use. The thermal performance rating (shown as a star rating on this Certificate) does not take into account appliances, apart from the airflow impacts from ceiling fans.

Whole of Home performance rating

NatHERS Whole of Home software uses the heating and cooling energy loads combined with the energy performance of the home's appliances (heating, cooling, hot water, lighting, pool/spa pump and onsite renewable energy generation and storage) and models the expected energy value* of the whole home. The Whole of Home performance rating is shown as a score out of 100 on this Certificate.

Heating & Cooling Load Limits

Additional information

In some locations under the NCC NatHERS pathway, separate heating and cooling load limits may apply. Minimum required star ratings in northern parts of Australia may also be affected by the presence or absence of an outdoor living area and/or an outdoor living area ceiling fan. Refer to the ABCB NatHERS heating and cooling load limits Standard 2022 for details or contact the relevant local building regulating authority, noting that State and Territory variations may also apply.

Setting options:

Floor type:
- CSOG – Concrete Slab on Ground
- SF – Suspended Floor (or a mixture of CSOG and SF)
- NA – Not Applicable

NCC climate Zone 1 or 2:
- Yes
- No
- NA – not applicable

Outdoor living area:
- Yes
- No
- NA – not applicable

Outdoor living area ceiling fan:
- Yes
- No
- NA – not applicable

Predicted onsite renewable energy impact

No Whole of Home performance assessment conducted for this certificate.

Predicted Whole of Home annual impact by appliance

Shows the contribution each appliance has on the home's annual energy use, greenhouse gas emissions and cost without solar

Energy use:

No Whole of Home performance assessment conducted for this certificate.

Greenhouse gas emissions:

No Whole of Home performance assessment conducted for this certificate.

Cost:

No Whole of Home performance assessment conducted for this certificate.

Graph key:

*Refer to glossary.

BGZSH8D0KC NatHERS Certificate 7 Star Rating as of 9 Aug 2024

Certificate check

The checklist covers important items impacting the dwelling's ratings.
It is recommended that the accuracy of the whole certificate is checked.

Note: The boxes indicate when and who should check each item.
It is not mandatory to complete this checklist.

	Approval stage		Construction stage		
	Assessor checked	Consent authority/ surveyor checked	Builder checked	Consent authority/ surveyor checked	Occupancy/other
Genuine certificate check					
Does this Certificate match the one available at the web address or QR code verification link on the front page?		☐	☐	☐	☐
Does the NatHERS certificate number on the NatHERS-stamped plans match the number on this Certificate?		☐	☐	☐	☐
Thermal performance check					
Windows and glazed doors					
Does the window size, opening type and location shown on the NatHERS-stamped plans or as installed match what is shown in *'Window and glazed door schedule'* and *'Roof window schedule'* tables on this Certificate?	☐	☐	☐	☐	☐
Does the installed windows meet the substitution tolerances (AFRC* based SHGC* and U-values*) as shown in the *'Window and glazed door type and performance'* and *'Roof window type and performance'* tables on this Certificate?			☐	☐	☐
External walls					
Does the external wall bulk insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the External wall type table on this Certificate?	☐	☐	☐	☐	☐
Does the external wall shade (colour) match what is shown in the *'External wall typo'* table on this Certificate?	☐	☐	☐	☐	☐
Floor					
Does the floor insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Floor type'* table on this certificate?	☐	☐	☐	☐	☐
Ceiling penetrations*					
Does the *'quantity'* and *'type'* of ceiling penetrations* (e.g. downlights, exhaust fans, etc) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Ceiling penetrations'* table on this Certificate?	☐	☐	☐	☐	☐
Ceiling					
Does the ceiling insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Ceiling type'* table on this Certificate?	☐	☐	☐	☐	☐
Roof					
Does the external roof shade (colour) on the NatHERS stamped plans or as installed match what is shown in the *'Roof type'* table on this Certificate?	☐	☐	☐	☐	☐
Apartment entrance doors (NCC Class 2 assessments only)					
Does the 'External Door Schedule' show apartment entrance doors? Please note that an "external door" between the modelled dwelling and a shared space, such as an enclosed corridor or foyer, should not be included in the assessment (because it overstates the possible ventilation) and would invalidate the Certificate.	☐	☐		☐	☐
Exposure*					
Has the appropriate exposure type (terrain) (shown on page 1) been applied? For example, it is unlikely that a ground-floor apartment is "exposed" or a top floor high-rise apartment is "protected".	☐	☐		☐	☐
Heating and cooling load limits*					
Do the load limits settings (shown on page 1) match the values in the ABCB Standard 2022: NAtHERS heating and cooling load limits for the appropriate climate zone?	☐	☐	☐	☐	☐

*Refer to glossary.

BGZSH8D0KC NatHERS Certificate 7 Star Rating as of 9 Aug 2024

Certificate check
Continued

	Approval stage		Construction stage		
	Assessor checked	Consent authority/ surveyor checked	Builder checked	Consent authority/ surveyor checked	Occupancy/other
Additional NCC requirements for thermal performance (not included in the NatHERS assessment)					
Thermal bridging					
Does the dwelling meet the NCC requirement for thermal bridging?		☐	☐	☐	☐
Insulation installation method					
Has the insulation been installed according to the NCC requirements?			☐	☐	☐
Building sealing					
Does the dwelling meet the NCC requirements for Building Sealing?		☐	☐	☐	☐
Whole of Home performance check (not applicable if a Whole of Home performance assessment is not conducted)					
Appliances					
Does the cooling appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the Appliance schedule on this Certificate?	☐	☐	☐	☐	☐
Does the heating appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or installed, match the location and minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the hot water system type and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the pool pump efficiency/performance shown on the NatHERS-stamped plans or as installed match the minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the onsite renewable energy system type, orientation and system size or generation capacity shown on the NatHERS stamped plans or installed match the *'Onsite Renewable Energy schedule'* on this Certificate?	☐	☐	☐	☐	☐
Additional NCC Requirements for Services (not included in the NatHERS assessment)					
Does the lighting meet the artificial lighting requirements specified in the NCC?		☐	☐	☐	☐
Does the hot water system meet the additional requirements specified in the NCC?		☐	☐	☐	☐
Provisional values* check					
Have provisional values* been used in the assessment and, if so, are they noted in *'Additional notes'* table below?	☐	☐			

Other NCC requirements

Note: This Certificate only covers the energy efficiency requirements in the NCC. Additional requirements that must also be satisfied include, but are not limited to: condensation, structural and fire safety requirements and any state or territory variations to the NCC energy efficiency requirements.

Additional notes

Modelling notes and assumptions.

1. Downlights not included on the supplied plans - hence not included in the model
2. Floor Covering - as per plans
3. External wall construction - Timber cladding with R3 Rockwool insulation
4. Typical roof construction - Insulation R5.0
5. Internal walls - 13mm plaster board on bothsides with timber studs
6. Floor - Slab on ground R3.0 Insulation

*Refer to glossary.

7. Slab edge insualtion R1.0

8. Double glazing with timber Frame used throughout the development.

9. Shading and evaes as per plans provided

10. Exhaust fans on bathrooms, laundry and kitchen - 250 x 250 mm and assumed to be sealed.

Any futher or future changes made on the design documentation must be verified and amended if there are any departures on the above assumptions.

BGZSH8D0KC NatHERS Certificate 7 Star Rating as of 9 Aug 2024

Room *schedule*

Room	Zone Type	Area [m²]
Bath	unconditioned	10.6
Bedroom 2	bedroom	10.6
Bedroom 1	bedroom	12.8
Ensuite	nightTime	4.9
Entry Hall	dayTime	20.9
Kitchen/Living	kitchen	52.2

Window and glazed door *type and performance*

Default* windows

Window ID	Window description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
No Data Available					

Custom* windows

Window ID	Window description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
A&L-038-13 W	A&L Timber Sliding Door DG LightBridge-4-10Ar-4	1.83	0.45	0.43	0.47

Window and glazed door *schedule*

Location	Window ID	Window no.	Height [mm]	Width [mm]	Window type	Opening %	Orientation	Window shading device*
Bath	A&L-038-13 W	W6	1400	900	awning	90.0	E	No
Bath	A&L-038-13 W	W7	1700	1800	awning	90.0	N	No
Bedroom 2	A&L-038-13 W	W5	1400	900	awning	90.0	E	No
Bedroom 1	A&L-038-13 W	W5A	700	1600	awning	90.0	E	No
Ensuite	A&L-038-13 W	W2A	1600	800	awning	90.0	W	No
Ensuite	A&L-038-13 W	W2	900	800	awning	90.0	E	No
Entry Hall	A&L-038-13 W	D2 C	2100	929	fixed	0.0	S	No
Entry Hall	A&L-038-13 W	D2 B	2100	930	casement	90.0	S	No
Entry Hall	A&L-038-13 W	D2 A	2100	929	fixed	0.0	S	No
Entry Hall	A&L-038-13 W	D1 A	2100	1133	fixed	0.0	N	No
Entry Hall	A&L-038-13 W	D1 C	2100	1133	fixed	0.0	N	No
Entry Hall	A&L-038-13 W	D1 B	2100	1134	casement	90.0	N	No
Kitchen/Living	A&L-038-13 W	D3 C LOWER	2400	1310	fixed	0.0	N	No
Kitchen/Living	A&L-038-13 W	D3 A LOWER	2400	1310	fixed	0.0	N	No

*Refer to glossary.

BGZSH8D0KC NatHERS Certificate 7 Star Rating as of 9 Aug 2024

Kitchen/Living	A&L-038-13 W	D3 B LOWER	2400	2000	casement	90.0	N	No
Kitchen/Living	A&L-038-13 W	D3 A MIDDLE	320	1310	awning	0.0	S	No
Kitchen/Living	A&L-038-13 W	D3 B MIDDLE	320	2000	fixed	0.0	S	No
Kitchen/Living	A&L-038-13 W	D3 C MIDDLE	320	1310	awning	0.0	S	No
Kitchen/Living	A&L-038-13 W	D3 A TOP	850	1310	fixed	0.0	S	No
Kitchen/Living	A&L-038-13 W	D3 B TOP	850	2000	fixed	0.0	S	No
Kitchen/Living	A&L-038-13 W	D3 C TOP	850	1310	fixed	0.0	S	No
Kitchen/Living	A&L-038-13 W	D4 C	2400	800	fixed	0.0	W	No
Kitchen/Living	A&L-038-13 W	D4 A	2400	800	fixed	0.0	W	No
Kitchen/Living	A&L-038-13 W	D4 B	2400	1600	sliding	90.0	W	No
Kitchen/Living	A&L-038-13 W	W8	1400	1600	casement	90.0	S	No

Roof window* *type and performance value*

Default* roof windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
No Data Available					

Custom* roof windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
No Data Available					

Roof window* *schedule*

Location	**Window ID**	**Window no.**	**Opening %**	**Area [m²]**	**Width [mm]**	**Orientation**	**Outdoor shade**	**Indoor shade**
No Data Available								

Skylight* *type and performance*

Skylight ID	**Skylight description**	**Skylight shaft reflectance**
No Data Available		

Skylight* *schedule*

Location	**Skylight ID**	**Skylight No.**	**Skylight shaft length [mm]**	**Area [m²]**	**Orient-ation**	**Outdoor shade**	**Diffuser**
No Data Available							

External door *schedule*

Location	**Height [mm]**	**Width [mm]**	**Opening %**	**Orientation**
No Data Available				

*Refer to glossary.

BGZSH8D0KC NatHERS Certificate 7 Star Rating as of 9 Aug 2024

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade [colour]	Bulk insulation [R-value]	Reflective wall wrap*
1	01 - Timber Wall	0.5	Medium	Rockwool batt: R4.0 (R4.0)	No
2	01 - Metal Wall	0.5	Medium	Rockwool batt: R4.0 (R4.0)	No

External wall *schedule*

Location	Wall ID	Height [mm]	Width [mm]	Orientation	Horizontal shading feature* maximum projection [mm]	Vertical shading feature* (yes/no)
Bath	1	3550	1473	W	568	Yes
Bath	1	1150	1487	W	0	No
Bath	1	3550	2971	E	721	No
Bath	1	2730	3580	N	742	No
Bath	2	820	3580	S	775	No
Bedroom 2	1	1150	2981	W	0	No
Bedroom 2	1	3550	2959	E	729	No
Bedroom 1	1	1150	2155	W	0	No
Bedroom 1	1	3550	1436	W	549	Yes
Bedroom 1	1	3550	3580	E	737	No
Ensuite	1	3550	1367	W	560	No
Ensuite	1	2730	3576	S	738	No
Ensuite	2	820	3576	N	767	No
Ensuite	1	3550	1369	E	737	No
Entry Hall	1	2400	2756	S	633	Yes
Entry Hall	1	2400	3343	N	598	Yes
Kitchen/Living	1	2400	4874	N	4743	No
Kitchen/Living	1	650	4874	S	4452	No
Kitchen/Living	1	850	4874	S	4452	No
Kitchen/Living	1	3900	1621	W	759	Yes
Kitchen/Living	1	3900	708	N	6351	Yes
Kitchen/Living	1	3900	1873	W	0	No
Kitchen/Living	1	3900	701	S	7331	Yes
Kitchen/Living	1	3900	1722	W	745	Yes
Kitchen/Living	1	3900	530	N	1332	Yes
Kitchen/Living	1	3900	3184	W	215	No
Kitchen/Living	1	3900	537	S	2424	Yes
Kitchen/Living	1	3900	1680	W	752	Yes

*Refer to glossary.

Kitchen/Living	1	3166	4866	S	737	No
Kitchen/Living	2	889	4866	N	750	No
Kitchen/Living	1	3900	700	E	640	Yes
Kitchen/Living	1	1655	6856	W	0	No
Kitchen/Living	1	4055	2547	E	637	Yes

Internal wall *type*

Wall ID	Wall type	Area [m²]	Bulk insulation
1	01 - Timber Wall Internal	70.5	

Floor *type*

Location	Construction	Area [m²]	Sub-floor ventilation	Added insulation [R-value]	Covering
Bath	FR5 - CSOG: Slab on Ground	10.6	Enclosed	R3.0	Tiles
Bedroom 2	FR5 - CSOG: Slab on Ground	10.6	Enclosed	R3.0	Carpet
Bedroom 1	FR5 - CSOG: Slab on Ground	12.8	Enclosed	R3.0	Carpet
Ensuite	FR5 - CSOG: Slab on Ground	4.9	Enclosed	R3.0	Tiles
Entry Hall	FR5 - CSOG: Slab on Ground	20.9	Enclosed	R3.0	Carpet
Kitchen/Living	FR5 - CSOG: Slab on Ground	52.2	Enclosed	R3.0	Tiles

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value [may include edge batt values]	Reflective wrap*
Bath	Plasterboard	R5.0	No
Bedroom 2	Plasterboard	R5.0	No
Bedroom 1	Plasterboard	R5.0	No
Ensuite	Plasterboard	R5.0	No
Entry Hall	Plasterboard	R5.0	No
Kitchen/Living	Plasterboard	R5.0	No

Ceiling *penetrations**

Location	Quantity	Type	Height [mm]	Width [mm]	Sealed/unsealed
Bath	1	Exhaust Fans	250	250	Sealed
Bath	5	Downlights	100	100	Sealed
Bedroom 2	5	Downlights	100	100	Sealed
Bedroom 1	6	Downlights	100	100	Sealed

*Refer to glossary.

Ensuite	1	Exhaust Fans	250	250	Sealed
Ensuite	1	Downlights	100	100	Sealed
Entry Hall	8	Downlights	100	100	Sealed
Kitchen/Living	1	Exhaust Fans	250	250	Sealed
Kitchen/Living	25	Downlights	100	100	Sealed

Ceiling *fans*

Location	Quantity	Diameter [mm]
No Data Available		

Roof *type*

Construction	Added insulation [R-value]	Solar absorptance	Roof shade [colour]
Cont:Attic-Continuous	0.0	0.5	Medium

Thermal bridging *schedule for steel frame elements*

Building element	Steel section dimensions [height x width, mm]	Frame spacing [mm]	Steel thickness [BMT,mm]	Thermal break [R-value]
No Data Available				

Appliance *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

Note: A flat assumption of 5W/m2 is used for lighting, therefore lighting is not included in the appliance schedule.

Cooling system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Heating system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Hot water system

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Hot Water CER Zone	Zone 3 STC	Assessed daily load
No Whole of Home performance assessment conducted for this certificate.					

Pool/spa equipment

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.			

*Refer to glossary.

BGZSH8D0KC NatHERS Certificate 7 Star Rating as of 9 Aug 2024

Onsite renewable energy *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Orientation	System size or generation capacity
No Whole of Home performance assessment conducted for this certificate.		

Battery *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Size [battery storage capacity]
No Whole of Home performance assessment conducted for this certificate.	

*Refer to glossary.

BGZSH8D0KC NatHERS Certificate 7 Star Rating as of 9 Aug 2024

Explanatory Notes

About this report

NatHERS ratings are a reliable guide for comparing different dwelling designs and to demonstrate that designs meet the energy efficiency requirements in the National Construction Code.

NatHERS ratings use computer modelling to evaluate a home's energy efficiency and performance. They use localised climate data and standard assumptions on how people use their home to predict the heating and cooling energy loads and energy value* of the whole home. The thermal performance star rating uses the home's building specifications, layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings) to predict the heating and cooling energy loads. The Whole of Home performance rating uses information about the home's appliances and onsite energy generation and storage to estimate the homes energy value*.

The actual energy loads, cost and greenhouse gas emissions of a home may vary from that predicted. This is because the assumptions will not always match the actual occupant usage patterns. For example, the number of occupants and how people use their appliances will vary. Energy efficient homes use less energy, are warmer on cool days, cooler on hot days and cost less to run.

Accredited assessors

For quality assured NatHERS Certificates, always use an accredited or licenced assessor registered with an Assessor Accrediting Organisation (AAO). AAOs have strict quality assurance processes, and professional development requirements ensuring consistently high standards for assessments.

Non-accredited assessors (Raters) have no ongoing training requirements and are not quality assured.

Any queries about this report should be directed to the assessor. If the assessor is unable to address questions or concerns, contact the AAO specified on the front of this certificate.

Disclaimer

The NatHERS Certificate format is developed by the NatHERS Administrator. However, the content in the certificate is entered by the assessor. It is the assessor's responsibility to use NatHERS accredited software correctly and follow the NatHERS Technical Note to produce a NatHERS Certificate.

The predicted annual energy load, cost and greenhouse gas emissions in this NatHERS Certificate are an estimate based on an assessment of the dwelling's design by the assessor. It is not a prediction of actual energy use, cost or emissions. The information and ratings may be used to compare how other dwellings are likely to perform when used in a similar way.

Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited software and made by the assessor who prepared this report), including assumptions about occupancy, behaviour, appliance performance, indoor air temperature and local climate.

Not all assumptions made by the assessor using the NatHERS accredited software tool are presented in this report and further details or data files may be obtained from the assessor.

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
AFRC	Australian Fenestration Rating Council
Assessed floor area	the floor area modelled in the software for the purpose of the NatHERS assessment. Note, this may not be consistent with the floor area in the design documents.
Ceiling penetrations	features that require a penetration to the ceiling, including downlights, vents, exhaust fans, range hoods, chimneys and flues. Excludes fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
Conditioned	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it will include garages.
COP	Coefficient of performance
Custom windows	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
Default windows	windows that are representative of a specific type of window product and whose properties have been derived by statistical methods.
EER	Energy Efficiency Ratio, measure of how much cooling can be achieved by an air conditioner for a single kWh of electricity input
Energy use	This is your homes rating without solar or batteries.
Energy value	The net cost to society including, but not limited to, costs to the building user, the environment and energy networks (as defined in the ABCB Housing Provisions Standard).
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category – exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category – open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category – suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category – protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au.
Net zero home	a home that achieves a net zero energy value*.
Opening percentage	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au
Recommended capacity	this is the capacity or size of equipment that is recommended by NatHERS to achieve the desired comfort conditions in the zone or zones serviced. This is a recommendation and the final selection sizing should be confirmed by a suitably qualified person.
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate air gap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.

*Refer to glossary.

BGZSH8D0KC NatHERS Certificate 7 Star Rating as of 9 Aug 2024

STCs	Small-scale Technology Certificates, certificates created by the REC registry for renewable energy technologies that may be bought and sold as part of the Small-scale Renewable Energy Scheme operated by the Clean Energy Regulatory
Thermal breaks	are materials with an R-value greater than or equal to 0.2 that must separate the metal frame from the cladding. This includes, but is not limited to, materials such as timber battens greater than or equal to 20mm thick, continuous thermal breaks such as polystyrene insulation sheeting, plastic strips or furring channels.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).
Window shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes horizontal* or vertical shading features* (eg eaves and balconies)

*Refer to glossary.

Nationwide House Energy Rating Scheme® NatHERS® Certificate No. 622YYK5G0I

Generated on 9 Aug 2024 using FirstRate5: 5.5.5 (3.22)

Property

Address	Cabin 6, 92 Chongs Road, Jindabyne, NSW, 2627
Lot/DP	LOT25/DP1232872
NCC Class*	Class 1a
Floor/all Floors Type	New Home

Plans

Main plan	DA-15/2024-07-07
Prepared by	Peter Paine

Construction and environment

Assessed floor area [m²]*		**Exposure type**
Conditioned*	105.5	exposed
Unconditioned*	10.6	**NatHERS climate zone**
Total	116.1	69 Thredbo Valley
Garage	-	

Accredited assessor

Name	Arjun Adhikari
Business name	Thermal Environmental Engineering
Email	a.adhikari@thermalenvironmental.com
Phone	0430636395
Accreditation No.	101491
Assessor Accrediting Organisation	ABSA
Declaration of interest	No

NCC Requirements

NCC provisions	Volume 2
State/Territory variation	Yes

National Construction Code (NCC) requirements

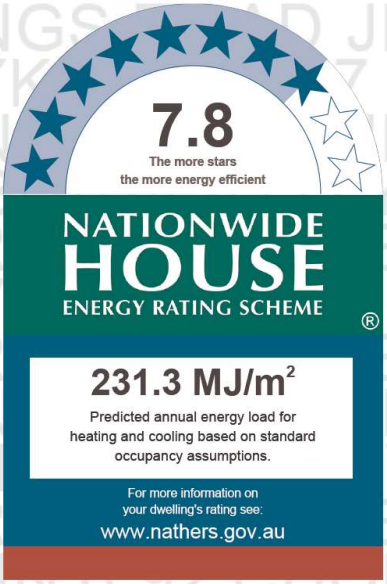
The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J3D3 and J3D15 of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Thermal performance star rating



Thermal performance [MJ/m²]

Limits taken from ABCB Standard 2022

	Heating	**Cooling**
Modelled	231	0.3
Load limits	N/A	N/A

Features determining load limits

Floor type (lowest conditioned area)	N/A
NCC climate zone 1 or 2	N/A
Outdoor living area	N/A
Outdoor living area ceiling fan	N/A

Whole of Home performance rating

No Whole of Home performance rating generated for this certificate

Verification

To verify this certificate, scan the QR code or visit https://www.fr5.com.au/QRCodeLanding?PublicId=622YYK5G0I When using either link, ensure you are visiting www.fr5.com.au.

*Refer to glossary.

622YYK5G0I NatHERS Certificate 7.8 Star Rating as of 9 Aug 2024

About the ratings

Thermal performance rating

NatHERS thermal software models the expected heating and cooling energy loads using information about the design, construction, climate and common patterns of household use. The thermal performance rating (shown as a star rating on this Certificate) does not take into account appliances, apart from the airflow impacts from ceiling fans.

Whole of Home performance rating

NatHERS Whole of Home software uses the heating and cooling energy loads combined with the energy performance of the home's appliances (heating, cooling, hot water, lighting, pool/spa pump and onsite renewable energy generation and storage) and models the expected energy value* of the whole home. The Whole of Home performance rating is shown as a score out of 100 on this Certificate.

Heating & Cooling Load Limits

Additional information

In some locations under the NCC NatHERS pathway, separate heating and cooling load limits may apply. Minimum required star ratings in northern parts of Australia may also be affected by the presence or absence of an outdoor living area and/or an outdoor living area ceiling fan. Refer to the ABCB NatHERS heating and cooling load limits Standard 2022 for details or contact the relevant local building regulating authority, noting that State and Territory variations may also apply.

Setting options:

Floor type:
- CSOG – Concrete Slab on Ground
- SF – Suspended Floor (or a mixture of CSOG and SF)
- NA – Not Applicable

NCC climate Zone 1 or 2:
- Yes
- No
- NA – not applicable

Outdoor living area:
- Yes
- No
- NA – not applicable

Outdoor living area ceiling fan:
- Yes
- No
- NA – not applicable

Predicted onsite renewable energy impact

No Whole of Home performance assessment conducted for this certificate.

Predicted Whole of Home annual impact by appliance

Shows the contribution each appliance has on the home's annual energy use, greenhouse gas emissions and cost without solar

Energy use:

No Whole of Home performance assessment conducted for this certificate.

Greenhouse gas emissions:

No Whole of Home performance assessment conducted for this certificate.

Cost:

No Whole of Home performance assessment conducted for this certificate.

Graph key:

*Refer to glossary.

622YYK5G0I NatHERS Certificate 7.8 Star Rating as of 9 Aug 2024

Certificate check

The checklist covers important items impacting the dwelling's ratings.
It is recommended that the accuracy of the whole certificate is checked.

Note: The boxes indicate when and who should check each item.
It is not mandatory to complete this checklist.

	Approval stage		Construction stage		
	Assessor checked	Consent authority/ surveyor checked	Builder checked	Consent authority/ surveyor checked	Occupancy/other
Genuine certificate check					
Does this Certificate match the one available at the web address or QR code verification link on the front page?		☐	☐	☐	☐
Does the NatHERS certificate number on the NatHERS-stamped plans match the number on this Certificate?		☐	☐	☐	☐
Thermal performance check					
Windows and glazed doors					
Does the window size, opening type and location shown on the NatHERS-stamped plans or as installed match what is shown in *'Window and glazed door schedule'* and *'Roof window schedule'* tables on this Certificate?	☐	☐	☐	☐	☐
Does the installed windows meet the substitution tolerances (AFRC* based SHGC* and U-values*) as shown in the *'Window and glazed door type and performance'* and *'Roof window type and performance'* tables on this Certificate?			☐	☐	☐
External walls					
Does the external wall bulk insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the External wall type table on this Certificate?	☐	☐	☐	☐	☐
Does the external wall shade (colour) match what is shown in the *'External wall typo'* table on this Certificate?	☐	☐	☐	☐	☐
Floor					
Does the floor insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Floor type'* table on this certificate?	☐	☐	☐	☐	☐
Ceiling penetrations*					
Does the *'quantity'* and *'type'* of ceiling penetrations* (e.g. downlights, exhaust fans, etc) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Ceiling penetrations'* table on this Certificate?	☐	☐	☐	☐	☐
Ceiling					
Does the ceiling insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Ceiling type'* table on this Certificate?	☐	☐	☐	☐	☐
Roof					
Does the external roof shade (colour) on the NatHERS stamped plans or as installed match what is shown in the *'Roof type'* table on this Certificate?	☐	☐	☐	☐	☐
Apartment entrance doors (NCC Class 2 assessments only)					
Does the 'External Door Schedule' show apartment entrance doors? Please note that an "external door" between the modelled dwelling and a shared space, such as an enclosed corridor or foyer, should not be included in the assessment (because it overstates the possible ventilation) and would invalidate the Certificate.	☐	☐		☐	☐
Exposure*					
Has the appropriate exposure type (terrain) (shown on page 1) been applied? For example, it is unlikely that a ground-floor apartment is "exposed" or a top floor high-rise apartment is "protected".	☐	☐		☐	☐
Heating and cooling load limits*					
Do the load limits settings (shown on page 1) match the values in the ABCB Standard 2022: NAtHERS heating and cooling load limits for the appropriate climate zone?	☐	☐	☐	☐	☐

*Refer to glossary.

622YYK5G0I NatHERS Certificate 7.8 Star Rating as of 9 Aug 2024

Certificate check
Continued

	Approval stage		Construction stage		
	Assessor checked	Consent authority/ surveyor checked	Builder checked	Consent authority/ surveyor checked	Occupancy/other
Additional NCC requirements for thermal performance (not included in the NatHERS assessment)					
Thermal bridging					
Does the dwelling meet the NCC requirement for thermal bridging?		☐	☐	☐	☐
Insulation installation method					
Has the insulation been installed according to the NCC requirements?			☐	☐	☐
Building sealing					
Does the dwelling meet the NCC requirements for Building Sealing?		☐	☐	☐	☐
Whole of Home performance check (not applicable if a Whole of Home performance assessment is not conducted)					
Appliances					
Does the cooling appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the Appliance schedule on this Certificate?	☐	☐	☐	☐	☐
Does the heating appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or installed, match the location and minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the hot water system type and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the pool pump efficiency/performance shown on the NatHERS-stamped plans or as installed match the minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the onsite renewable energy system type, orientation and system size or generation capacity shown on the NatHERS stamped plans or installed match the *'Onsite Renewable Energy schedule'* on this Certificate?	☐	☐	☐	☐	☐
Additional NCC Requirements for Services (not included in the NatHERS assessment)					
Does the lighting meet the artificial lighting requirements specified in the NCC?		☐	☐	☐	☐
Does the hot water system meet the additional requirements specified in the NCC?		☐	☐	☐	☐
Provisional values* check					
Have provisional values* been used in the assessment and, if so, are they noted in *'Additional notes'* table below?	☐	☐			

Other NCC requirements

Note: This Certificate only covers the energy efficiency requirements in the NCC. Additional requirements that must also be satisfied include, but are not limited to: condensation, structural and fire safety requirements and any state or territory variations to the NCC energy efficiency requirements.

Additional notes

Modelling notes and assumptions.

1. Downlights not included on the supplied plans - hence not included in the model
2. Floor Covering - as per plans
3. External wall construction - Timber cladding with R4 Rockwool insulation
4. Typical roof construction - Insulation R5.0
5. Internal walls - 13mm plaster board on bothsides with timber studs
6. Floor - Slab on ground R3.0 Insulation

*Refer to glossary.

7. Slab edge insualtion R1.0

8. Double glazing with timber Frame used throughout the development.

9. Shading and evaes as per plans provided

10. Exhaust fans on bathrooms, laundry and kitchen - 250 x 250 mm and assumed to be sealed.

Any futher or future changes made on the design documentation must be verified and amended if there are any departures on the above assumptions.

622YYK5G0I NatHERS Certificate 7.8 Star Rating as of 9 Aug 2024

Room *schedule*

Room	Zone Type	Area [m²]
Bedroom 1	bedroom	12.8
Ensuite	nightTime	4.9
Bedroom 2	bedroom	10.7
Bath	unconditioned	10.6
Entry Hall	dayTime	25.1
Kitchen/Living	kitchen	52

Window and glazed door *type and performance*

Default* windows

				Substitution tolerance ranges	
Window ID	Window description	Maximum U-value*	SHGC*	SHGC lower limit	SHGC upper limit
No Data Available					

Custom* windows

				Substitution tolerance ranges	
Window ID	Window description	Maximum U-value*	SHGC*	SHGC lower limit	SHGC upper limit
A&L-038-13 W	A&L Timber Sliding Door DG LightBridge-4-10Ar-4	1.83	0.45	0.43	0.47

Window and glazed door *schedule*

Location	Window ID	Window no.	Height [mm]	Width [mm]	Window type	Opening %	Orientation	Window shading device*
Bedroom 1	A&L-038-13 W	W3	1400	900	awning	90.0	NE	No
Ensuite	A&L-038-13 W	W4	700	700	awning	90.0	SE	No
Bedroom 2	A&L-038-13 W	W5	1400	900	awning	90.0	SE	No
Bath	A&L-038-13 W	W7	1700	1800	awning	90.0	SW	No
Bath	A&L-038-13 W	W6	1400	900	awning	90.0	SE	No
Entry Hall	A&L-038-13 W	D2 A	2100	875	fixed	0.0	SW	No
Entry Hall	A&L-038-13 W	D2 C	2100	875	fixed	0.0	SW	No
Entry Hall	A&L-038-13 W	D2 B	2100	880	casement	90.0	SW	No
Entry Hall	A&L-038-13 W	D1 A	2100	1133	fixed	0.0	NE	No
Entry Hall	A&L-038-13 W	D1 B	2100	1134	casement	90.0	NE	No
Entry Hall	A&L-038-13 W	D1 C	2100	1133	fixed	0.0	NE	No
Kitchen/Living	A&L-038-13 W	W8	1400	1600	casement	90.0	NE	No
Kitchen/Living	A&L-038-13 W	D4 A	2400	800	awning	60.0	NW	No
Kitchen/Living	A&L-038-13 W	D4 B	2400	1600	sliding	90.0	NW	No

*Refer to glossary.

Kitchen/Living	A&L-038-13 W	D4 C	2400	800	awning	60.0	NW	No
Kitchen/Living	A&L-038-13 W	D3 C LOWER	2400	1310	fixed	0.0	SW	No
Kitchen/Living	A&L-038-13 W	D3 A LOWER	2400	1310	fixed	0.0	SW	No
Kitchen/Living	A&L-038-13 W	D3 B LOWER	2400	2000	sliding	90.0	SW	No
Kitchen/Living	A&L-038-13 W	D3 A MIDDLE	350	1310	awning	90.0	SW	No
Kitchen/Living	A&L-038-13 W	D3 B MIDDLE	350	2000	fixed	0.0	SW	No
Kitchen/Living	A&L-038-13 W	D3 C MIDDLE	350	1310	awning	90.0	SW	No
Kitchen/Living	A&L-038-13 W	D3 A TOP	850	1310	fixed	0.0	SW	No
Kitchen/Living	A&L-038-13 W	D3 B TOP	850	2000	fixed	0.0	SW	No
Kitchen/Living	A&L-038-13 W	D3 C TOP	850	1310	fixed	0.0	SW	No

Roof window* *type and performance value*

Default* roof windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
No Data Available					

Custom* roof windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
No Data Available					

Roof window* *schedule*

Location	**Window ID**	**Window no.**	**Opening %**	**Area [m²]**	**Width [mm]**	**Orientation**	**Outdoor shade**	**Indoor shade**
No Data Available								

Skylight* *type and performance*

Skylight ID	**Skylight description**	**Skylight shaft reflectance**
No Data Available		

Skylight* *schedule*

Location	**Skylight ID**	**Skylight No.**	**Skylight shaft length [mm]**	**Area [m²]**	**Orient-ation**	**Outdoor shade**	**Diffuser**
No Data Available							

External door *schedule*

Location	**Height [mm]**	**Width [mm]**	**Opening %**	**Orientation**
No Data Available				

External wall *type*

*Refer to glossary.

622YYK5G0I NatHERS Certificate 7.8 Star Rating as of 9 Aug 2024

Wall ID	Wall type	Solar absorptance	Wall shade [colour]	Bulk insulation [R-value]	Reflective wall wrap*
1	01 - Timber Wall	0.5	Medium	Rockwool batt: R4.0 (R4.0)	No
2	01 - Metal Wall	0.5	Medium	Rockwool batt: R4.0 (R4.0)	No

External wall *schedule*

Location	Wall ID	Height [mm]	Width [mm]	Orientation	Horizontal shading feature* maximum projection [mm]	Vertical shading feature* (yes/no)
Bedroom 1	1	3550	3573	SE	905	No
Bedroom 1	1	2880	3565	NE	836	No
Bedroom 1	2	670	3596	E	848	No
Bedroom 1	1	3550	1434	NW	788	Yes
Bedroom 1	1	1150	2157	S	0	No
Ensuite	1	3550	1379	SE	891	No
Ensuite	1	1150	1373	S	0	No
Bedroom 2	1	3550	2991	SE	890	No
Bedroom 2	1	1150	3089	S	0	No
Bath	1	1150	1513	S	0	No
Bath	1	3550	1458	NW	783	Yes
Bath	1	3050	3586	SW	842	No
Bath	2	670	3586	SW	855	No
Bath	1	3550	2968	SE	914	No
Entry Hall	1	2400	2645	SW	0	Yes
Entry Hall	1	2400	3368	NE	0	Yes
Kitchen/Living	1	4055	1036	SE	687	Yes
Kitchen/Living	1	1655	8336	S	0	No
Kitchen/Living	1	4055	689	SE	687	Yes
Kitchen/Living	1	3166	4868	NE	737	No
Kitchen/Living	2	889	4868	E	750	No
Kitchen/Living	1	4055	1678	NW	735	Yes
Kitchen/Living	1	4055	544	NE	2407	Yes
Kitchen/Living	1	4055	3179	NW	192	No
Kitchen/Living	1	4055	545	SW	1546	Yes
Kitchen/Living	1	4055	1718	NW	737	Yes
Kitchen/Living	1	4055	713	NE	7304	Yes
Kitchen/Living	1	4055	1874	NW	0	No
Kitchen/Living	1	4055	709	SW	6397	Yes
Kitchen/Living	1	4055	1611	NW	736	Yes

*Refer to glossary.

Kitchen/Living	1	2400	4872	SW	4787	No
Kitchen/Living	1	650	4872	SW	4800	No
Kitchen/Living	1	850	4872	SW	4800	No

Internal wall *type*

Wall ID	Wall type	Area [m²]	Bulk insulation
1	01 - Timber Wall Internal	77.6	

Floor *type*

Location	Construction	Area [m²]	Sub-floor ventilation	Added insulation [R-value]	Covering
Bedroom 1	FR5 - CSOG: Slab on Ground	12.8	Enclosed	R3.0	Carpet
Ensuite	FR5 - CSOG: Slab on Ground	4.9	Enclosed	R3.0	Tiles
Bedroom 2	FR5 - CSOG: Slab on Ground	10.7	Enclosed	R3.0	Carpet
Bath	FR5 - CSOG: Slab on Ground	10.6	Enclosed	R3.0	Tiles
Entry Hall	FR5 - CSOG: Slab on Ground	25.1	Enclosed	R3.0	Carpet
Kitchen/Living	FR5 - CSOG: Slab on Ground	52	Enclosed	R3.0	Tiles

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value [may include edge batt values]	Reflective wrap*
Bedroom 1	Plasterboard	R5.0	No
Ensuite	Plasterboard	R5.0	No
Bedroom 2	Plasterboard	R5.0	No
Bath	Plasterboard	R5.0	No
Entry Hall	Plasterboard	R5.0	No
Kitchen/Living	Plasterboard	R5.0	No

Ceiling *penetrations**

Location	Quantity	Type	Height [mm]	Width [mm]	Sealed/unsealed
Bedroom 1	6	Downlights	100	100	Sealed
Ensuite	1	Exhaust Fans	250	250	Sealed
Ensuite	1	Downlights	100	100	Sealed
Bedroom 2	5	Downlights	100	100	Sealed
Bath	1	Exhaust Fans	250	250	Sealed
Bath	5	Downlights	100	100	Sealed

*Refer to glossary.

Entry Hall	10	Downlights	100	100	Sealed
Kitchen/Living	1	Exhaust Fans	250	250	Sealed
Kitchen/Living	25	Downlights	100	100	Sealed

Ceiling *fans*

Location	Quantity	Diameter [mm]
No Data Available		

Roof *type*

Construction	Added insulation [R-value]	Solar absorptance	Roof shade [colour]
Cont:Attic-Continuous	0.0	0.5	Medium

Thermal bridging *schedule for steel frame elements*

Building element	Steel section dimensions [height x width, mm]	Frame spacing [mm]	Steel thickness [BMT,mm]	Thermal break [R-value]
No Data Available				

Appliance *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

Note: A flat assumption of 5W/m2 is used for lighting, therefore lighting is not included in the appliance schedule.

Cooling system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Heating system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Hot water system

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Hot Water CER Zone	Zone 3 STC	Assessed daily load
No Whole of Home performance assessment conducted for this certificate.					

Pool/spa equipment

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.			

Onsite renewable energy *schedule*

*Refer to glossary.

622YYK5G0I NatHERS Certificate 7.8 Star Rating as of 9 Aug 2024

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Orientation	System size or generation capacity
No Whole of Home performance assessment conducted for this certificate.		

Battery *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Size [battery storage capacity]
No Whole of Home performance assessment conducted for this certificate.	

*Refer to glossary.

622YYK5G0I NatHERS Certificate 7.8 Star Rating as of 9 Aug 2024

Explanatory Notes

About this report

NatHERS ratings are a reliable guide for comparing different dwelling designs and to demonstrate that designs meet the energy efficiency requirements in the National Construction Code.

NatHERS ratings use computer modelling to evaluate a home's energy efficiency and performance. They use localised climate data and standard assumptions on how people use their home to predict the heating and cooling energy loads and energy value* of the whole home. The thermal performance star rating uses the home's building specifications, layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings) to predict the heating and cooling energy loads. The Whole of Home performance rating uses information about the home's appliances and onsite energy generation and storage to estimate the homes energy value*.

The actual energy loads, cost and greenhouse gas emissions of a home may vary from that predicted. This is because the assumptions will not always match the actual occupant usage patterns. For example, the number of occupants and how people use their appliances will vary. Energy efficient homes use less energy, are warmer on cool days, cooler on hot days and cost less to run.

Accredited assessors

For quality assured NatHERS Certificates, always use an accredited or licenced assessor registered with an Assessor Accrediting Organisation (AAO). AAOs have strict quality assurance processes, and professional development requirements ensuring consistently high standards for assessments.

Non-accredited assessors (Raters) have no ongoing training requirements and are not quality assured.

Any queries about this report should be directed to the assessor. If the assessor is unable to address questions or concerns, contact the AAO specified on the front of this certificate.

Disclaimer

The NatHERS Certificate format is developed by the NatHERS Administrator. However, the content in the certificate is entered by the assessor. It is the assessor's responsibility to use NatHERS accredited software correctly and follow the NatHERS Technical Note to produce a NatHERS Certificate.

The predicted annual energy load, cost and greenhouse gas emissions in this NatHERS Certificate are an estimate based on an assessment of the dwelling's design by the assessor. It is not a prediction of actual energy use, cost or emissions. The information and ratings may be used to compare how other dwellings are likely to perform when used in a similar way.

Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited software and made by the assessor who prepared this report), including assumptions about occupancy, behaviour, appliance performance, indoor air temperature and local climate.

Not all assumptions made by the assessor using the NatHERS accredited software tool are presented in this report and further details or data files may be obtained from the assessor.

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
AFRC	Australian Fenestration Rating Council
Assessed floor area	the floor area modelled in the software for the purpose of the NatHERS assessment. Note, this may not be consistent with the floor area in the design documents.
Ceiling penetrations	features that require a penetration to the ceiling, including downlights, vents, exhaust fans, range hoods, chimneys and flues. Excludes fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
Conditioned	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it will include garages.
COP	Coefficient of performance
Custom windows	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
Default windows	windows that are representative of a specific type of window product and whose properties have been derived by statistical methods.
EER	Energy Efficiency Ratio, measure of how much cooling can be achieved by an air conditioner for a single kWh of electricity input
Energy use	This is your homes rating without solar or batteries.
Energy value	The net cost to society including, but not limited to, costs to the building user, the environment and energy networks (as defined in the ABCB Housing Provisions Standard).
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category – exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category – open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category – suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category – protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au.
Net zero home	a home that achieves a net zero energy value*.
Opening percentage	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au
Recommended capacity	this is the capacity or size of equipment that is recommended by NatHERS to achieve the desired comfort conditions in the zone or zones serviced. This is a recommendation and the final selection sizing should be confirmed by a suitably qualified person.
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate air gap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.

*Refer to glossary.

622YYK5G0I NatHERS Certificate 7.8 Star Rating as of 9 Aug 2024

STCs	Small-scale Technology Certificates, certificates created by the REC registry for renewable energy technologies that may be bought and sold as part of the Small-scale Renewable Energy Scheme operated by the Clean Energy Regulatory
Thermal breaks	are materials with an R-value greater than or equal to 0.2 that must separate the metal frame from the cladding. This includes, but is not limited to, materials such as timber battens greater than or equal to 20mm thick, continuous thermal breaks such as polystyrene insulation sheeting, plastic strips or furring channels.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).
Window shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes horizontal* or vertical shading features* (eg eaves and balconies)

*Refer to glossary.

Department of Climate Change, Energy, the Environment and Water

Your Ref: DA.10.2024.230.1
Our ref: DOC25/469658

Evan Radford
Town Planner

Snowy Monaro Regional Council

81 Commissioner St

Cooma NSW 2630

By email: evan.radford@snowymonaro.nsw.gov.au

Dear Evan,

Subject: **DA.10.2024.230.1 Eco-tourist facilities 92 Chongs Road, Jindabyne, NSW, 2627**

Conservation Programs, Heritage and Regulation (CPHR) provide the following advice in response to your request for comment on the proposal at 92 Chongs Road Jindabyne.

We have reviewed the additional information submitted with the aforementioned development application and suggest that it is largely fit for purpose. We recommend that you require adherence to the Vegetation Management Plan (VMP) via the imposition of consent conditions on any consent, should one be forthcoming.

If you have any questions in relation to the above, please do not hesitate to contact Nat O'Rourke, Team Leader Planning at rog.southeast@environment.nsw.gov.au.

Yours sincerely

[redacted]

Allison Treweek 12/06/2025
Senior Team Leader Planning
Conservation Programs, Heritage and Regulation

RFS

NSW GOVERNMENT

Snowy Monaro Regional Council
PO Box 714
COOMA NSW 2630

Your reference: (CNR-73927) 10.2024.230.1
Our reference: DA20250815003306-Original-1

ATTENTION: Evan Radford

Date: Thursday 25 September 2025

Dear Sir/Madam,

Integrated Development Application
s100B – SFPP – Eco-Tourism Facility
92 CHONGS RD JINDABYNE NSW 2627, 2//DP1232872, 26//DP756672, 25//DP756672, 1//DP1250715

I refer to your correspondence dated 14/08/2025 seeking general terms of approval for the above Integrated Development Application.

The New South Wales Rural Fire Service (NSW RFS) has considered the information submitted. General Terms of Approval, under Division 4.8 of the *Environmental Planning and Assessment Act 1979*, and a Bush Fire Safety Authority, under section 100B of the *Rural Fires Act 1997*, are now issued subject to the following conditions:

General Conditions
The development proposal is to generally comply with the following plans/documents except where amended by the conditions of this Bush Fire Safety Authority.

- The plan set titled "Proposed Eco Cabins", issue 3 dated 07.07.2024.
- The bush fire assessment preparedby Harris Environmental dated 13/08/2024. Reference 4877BF.

Asset Protection Zones

The intent of measure is to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting firefighting activities.

2. From the commencement of building works and in perpetuity, the property around the designated refuge buildings must be established and maintained as an inner protection area in accordance with Appendix 4.1.1 of *Planning for Bush Fire Protection 2019* as shown in the following figures from the above referenced bushfire report;

- Refuge 1 as per Figure 10.
- Refuge 2 as per Figure 13.
- Cabin 3 as per Figure 11.

Postal address
NSW Rural Fire Service
Locked Bag 17
GRANVILLE NSW 2142

Street address
NSW Rural Fire Service
4 Murray Rose Ave
SYDNEY OLYMPIC PARK NSW 2127

T (02) 8741 5555
F (02) 8741 5550
www.rfs.nsw.gov.au

3. From the commencement of building works and in perpetuity, the property around the proposed Managers Quarters must be established and maintained as an inner protection area in accordance with Appendix 4.1.1 of *Planning for Bush Fire Protection 2019* as shown in the figure 2 of the above referenced bushfire report.

Construction Standards

The intent of measure is to provide suitable building design, construction and sufficient space to ensure that radiant heat levels do not exceed critical limits for firefighters and other emergency services personnel undertaking operations, including supporting or evacuating occupants.

Construction of cabins 1, 2 and 3 and refuge buildings 1 and 2 must comply with section 3 and section 5 (BAL 12.5) Australian Standard AS3959-2018 *Construction of buildings in bushfire-prone areas* or the relevant requirements of the *NASH Standard - Steel Framed Construction in Bushfire Areas* (incorporating amendment A - 2015). New construction must also comply with the construction requirements in Section 7.5 of *Planning for Bush Fire Protection 2019*.

Construction of the managers quarters must comply with section 3 and section 7 (BAL 29) Australian Standard AS3959-2018 *Construction of buildings in bushfire-prone areas* or the relevant requirements of the *NASH Standard - Steel Framed Construction in Bushfire Areas* (incorporating amendment A - 2015). New construction must also comply with the construction requirements in Section 7.5 of *'Planning for Bush Fire Protection 2019*.

NB The bushfire consultant has advised that it is appropriate apply BAL 12.5 construction to cabins 1 and 2 as well as 3 to provide the structures with a more resilient outcome.

Access – Property Access

The intent of measure is to provide safe operational access for emergency services personnel in suppressing a bush fire while residents are accessing or egressing an area.

Access roads for special fire protection purpose (SFPP) developments must comply with the requirements of Table 6.8b of *'Planning for Bush Fire Protection 2019'*.
Vehicular access is provided to the refuge buildings from a public road in accordance with the following:

a. accommodation is within 100m of the refuge building;
b. pedestrian paths from accommodation to the refuge building/s are provided and clearly, signposted;
c. property access roads are two-wheel drive, all-weather roads;
d. the capacity of road surfaces and any bridges/ causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges and causeways are to clearly, indicate load rating;
e. there is suitable access for a Category 1 fire appliances to within 4m of the static water supply where no reticulated supply is available;
f. minimum 4m carriageway width;
g. in a forest, woodland and heath situations, rural property access roads have passing bays every 200m and on blind corners or blind crests that are 20m long by 2m wide, making a minimum trafficable width of 6m at the passing bay;
h. minimum vertical clearance of 4m to any overhanging obstructions, including tree branches;
i. provide a suitable turning area at the refuge building in accordance with Appendix 3;

j. curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress;
k. the minimum distance between inner and outer curves is 6m;
l. the cross fall is not more than 10 degrees; and
m. maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads.

Note: Some short constrictions in the access may be accepted where they are not less than 3.5m wide, extend for no more than 30m and where the obstruction cannot be reasonably avoided or removed.

Water and Utility Services

The intent of measure is to provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building.

The provision of water, electricity and gas for the proposed Managers Quarters, Refuge 1, Refuge 2 and Cabin 3 must comply with the following in accordance with Table 6.8c of *Planning for Bush Fire Protection 2019*:

- a minimum 20,000 litre static water supply, tank, pool, dam or the like, must be provided on-site for each of the above structures,
- an outlet for firefighting purposes is located within the IPA or non-hazard side and away from the structure for each of the above structures,
- 65mm Storz connection with a ball valve is fitted to the outlet of each SWS,
- the ball valve, pipes and tank penetration are adequate for the full 50mm inner diameter water flow through the Storz fitting and are constructed of a metal material,
- underground tanks have an access hole of 200mm to allow tankers to refill, direct from the tank,
- a hardened ground surface for truck access is supplied within 4m of the water outlet or access hole,
- above-ground tanks are manufactured from concrete or metal,
- raised tanks have their stands constructed from non-combustible material or bush fire-resisting timber. The bush fire-resisting timbers are Silvertop Ash, Blackbutt, Red or River Gum, Spotted Gum, Red Ironbark, Kwila (Merbau) or Turpentine,
- unobstructed access can be provided at all times,
- underground tanks are clearly marked,
- tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters,
- all exposed water pipes external to the building are metal, including any fittings,
- where pumps are provided, they are a minimum 5hp or 3kW petrol or diesel-powered pump, and are shielded against bush fire attack,
- any hose and reel for firefighting connected to the pump must be 19mm internal diameter,
- fire hose reels are constructed in accordance with AS/NZS 1221:1997, and installed in accordance with the relevant clauses of AS 2441:2005,
- A Static Water Supply (SWS) sign must be obtained from the local NSW Rural Fire Service (RFS) and positioned for ease of identification by RFS personnel and other users of the SWS. In this regard:
  - Markers must be fixed in a suitable location to be highly visible, and
  - Markers should be positioned adjacent to the most appropriate access for the water supply.
- all exposed water pipes external to the building are metal, including any fittings;
- where pumps are provided, they are a minimum 5hp or 3kW petrol or diesel-powered pump, and are shielded against bush fire attack; any hose and reel for firefighting connected to the pump must be 19mm internal diameter;

- fire hose reels are constructed in accordance with AS/NZS 1221:1997, and installed in accordance with the relevant clauses of AS 2441:2005;
- where practicable, electrical transmission lines are underground;
- where overhead, electrical transmission lines are proposed as follows:
  - lines are installed with short pole spacing (30m), unless crossing gullies, gorges or riparian areas; and
  - no part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 *Guideline for Managing Vegetation Near Power Lines*.
- reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 and the requirements of relevant authorities, and metal piping is used;
- all fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side;
- connections to and from gas cylinders are metal;
- polymer-sheathed flexible gas supply lines are not used; and
- above-ground gas service pipes are metal, including and up to any outlets.

Landscaping Assessment

The intent of measure is to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting firefighting activities.

Landscaping within the required asset protection zone must comply with Appendix 4 of *Planning for Bush Fire Protection 2019*.

Emergency and Evacuation Planning Assessment

The intent of measure is to provide suitable emergency and evacuation arrangements for occupants.

A Bush Fire Emergency Management and Evacuation Plan must be prepared in accordance with Table 6.8d of *Planning for Bush Fire Protection 2019* and be consistent with the following:

- The NSW RFS document: A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan and include planning for the early relocation of occupants.
- detailed plans of all emergency assembly areas, including on-site and off-site arrangements as stated in AS 3745 '*Planning for emergencies in facilities*', are clearly displayed, and an annually emergency evacuation is conducted.
- An appropriately experienced site manager is to be on site whenever the cabins are occupied.

General Advice – Consent Authority to Note

BAL 12.5 construction has been applied to all cabins to increase their reslience. Wherever possible a minimum 10m APZ is also recommended. The RFS acknowledges the provisions within PBP 2019 that apply to eco-tourism facilities where environmental constraints may limit the application of APZs commensurate with construction standards. Where APZs cannot be provided the structures may not be defendable.

For any queries regarding this correspondence, please contact David Webster on 1300 NSW RFS.

Yours sincerely,

Michael Gray

RFS

Manager Planning & Environment Srv (Sth)
Built & Natural Environment

NSW GOVERNMENT

RFS

NSW GOVERNMENT

BUSH FIRE SAFETY AUTHORITY

SFPP – Eco-Tourism Facility
92 CHONGS RD JINDABYNE NSW 2627, 2//DP1232872, 26//DP756672, 25//DP756672, 1//DP1250715
RFS Reference: DA20250815003306-Original-1
Your Reference: (CNR-73927) 10.2024.230.1

This Bush Fire Safety Authority is issued on behalf of the Commissioner of the NSW Rural Fire Service under s100b of the Rural Fires Act (1997) subject to the attached General Terms of Approval.

This authority confirms that, subject to the General Terms of Approval being met, the proposed development will meet the NSW Rural Fire Service requirements for Bush Fire Safety under *s100b of the Rural Fires Act 1997.*

Michael Gray
Manager Planning & Environment Srv (Sth)
Built & Natural Environment

Thursday 25 September 2025

Department of Planning, Housing and Infrastructure

CM9 Ref: 25/00072#58

The Chief Executive Officer
Snowy Monaro Regional Council
PO Box 714
COOMA NSW 2630

Attn: Evan Radford

Email: council@snowymonaro.nsw.gov.au

Dear Sir/Madam

Proposed Development:	DA10.2024.230.1 – Construction of a staged 6 Cabin Eco-Tourist development with associated ancillary building and infrastructure.
Applicant:	Complete Town Planning
Location:	92 Chongs Road, Jindabyne 26/756672, 25/756672, 2/1232872 & 1/1250715

I refer to Council's email dated 25 July 2025 providing the Department of Planning, Housing and Infrastructure – Crown Lands and Public Spaces (the Department) the opportunity to comment on the subject development proposal. The Department as adjoining landowner has reviewed the development application in accordance with the principles of Crown land management (s.1.4 Crown Lands Management Act 2016) and offers no objections to the proposed development.

While the proposal does not directly impact on the Crown Estate, please ensure that the applicant does not undertake any activities on the Crown road or use the Crown roads for any purposes associated with the development by attaching the following conditions to any consent issued.

The proponent may not:
- Encroach upon the adjacent Crown road,
- Remove any vegetation from the adjacent and adjoining Crown road,
- Stockpile materials, equipment or machinery on the adjacent or adjoining Crown roads,
- Direct stormwater or rainwater tank overflow discharges, septic or contaminated waste on the adjacent and adjoining Crown road, or
- Use the adjacent and adjoining Crown road as effluent management zone or as asset protection zone.

1. Should Council's determination of the application result in approval, then the following action is required: Snowy Monaro Regional Council must request the transfer of any parts of the adjoining Crown roads required to service the proposed development prior to issuing an occupation certificate. (Attachment A)

Should the development be modified in any manner that impacts the adjoining Crown land, e.g. by amendment to the development proposal or draft conditions of consent, the department requests an opportunity to further review the application prior to determination.

Should you require any further information, please do not hesitate to contact me at the Goulburn Crown Lands Office by tia.galvin@dpie.nsw.gov.au

Yours sincerely

[redacted]

Tia Galvin
A/Senior Natural Resource Management Officer
Department of Planning, Housing and Infrastructure – Crown Lands

Date: 8 August 2025

Department of Planning, Housing and Infrastructure
Attachment A – Part of Crown Road required for transfer
Crown Account Details
Parish: BELOKA
County: WALLACE
LGA: SNOWY MONARO REGIONAL
Suburb: JINDABYNE
Author: DPIgisAd03
Map Created: 7/08/2025 9:04:04 AM
Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere
Disclaimer: Scale is not accurate. Crown Lands must not be liable for any loss or damage (including loss of profits, business, revenue or data) whether in connection with any defect, error or inaccuracy of information or any part thereof or any products or services.
Copyright: Department of Planning, Housing and Infrastructure - Crown Lands 2025.
PO Box 2215, Dangar, NSW 2309
Tel: 1300 886 235 Visit: www.industry.nsw.gov.au/lands

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : heritage
Client Service ID : 1036267

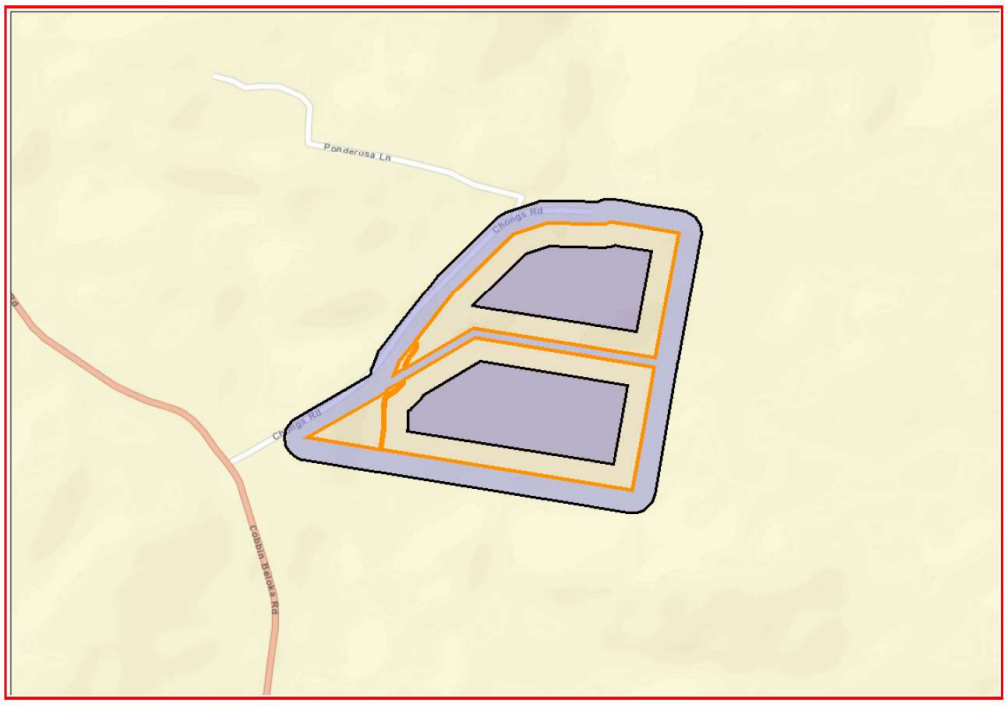
Evan Radford
5 25 Park Road
Jindabyne New South Wales 2627
Attention: Evan Radford
Email: evan.radford@snowymonaro.nsw.gov.au

Date: 22 August 2025

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 2, DP:DP1232872, Section : - with a Buffer of 50 meters, conducted by Evan Radford on 22 August 2025.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
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- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : heritage
Client Service ID : 1036269

Evan Radford

Date: 22 August 2025

5 25 Park Road
Jindabyne New South Wales 2627

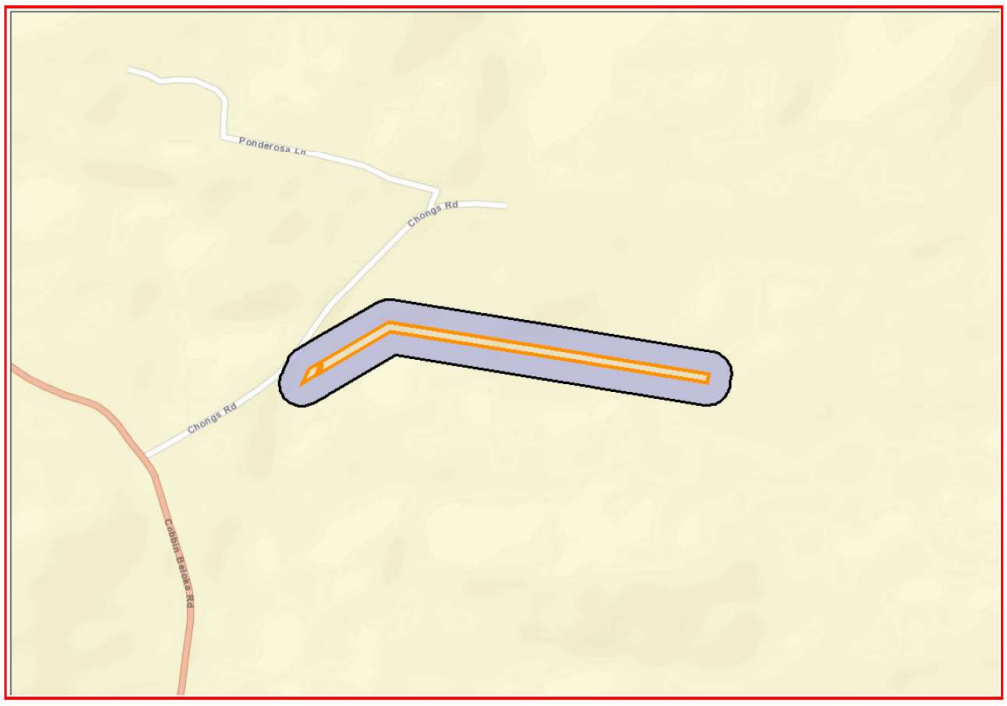
Attention: Evan Radford

Email: evan.radford@snowymonaro.nsw.gov.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 1, DP:DP1250715, Section : - with a Buffer of 50 meters, conducted by Evan Radford on 22 August 2025.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



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Web: www.heritage.nsw.gov.au

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : heritage
Client Service ID : 1036278

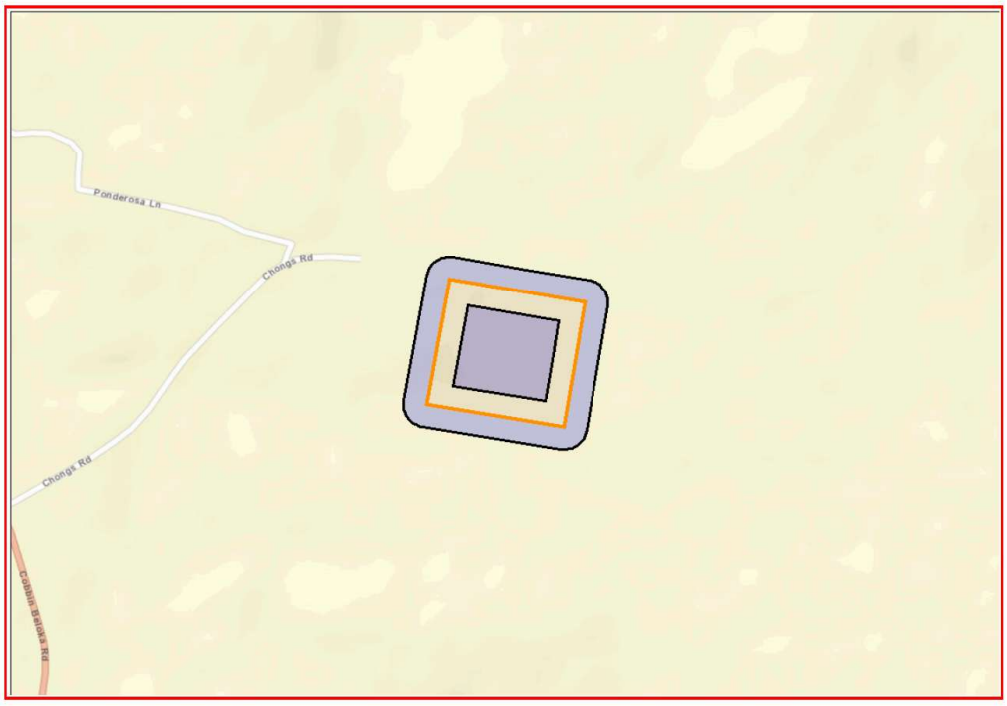
Evan Radford
5 25 Park Road
Jindabyne New South Wales 2627
Attention: Evan Radford
Email: evan.radford@snowymonaro.nsw.gov.au

Date: 22 August 2025

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 26, DP:DP756672, Section : - with a Buffer of 50 meters, conducted by Evan Radford on 22 August 2025.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



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ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : heritage
Client Service ID : 1036280

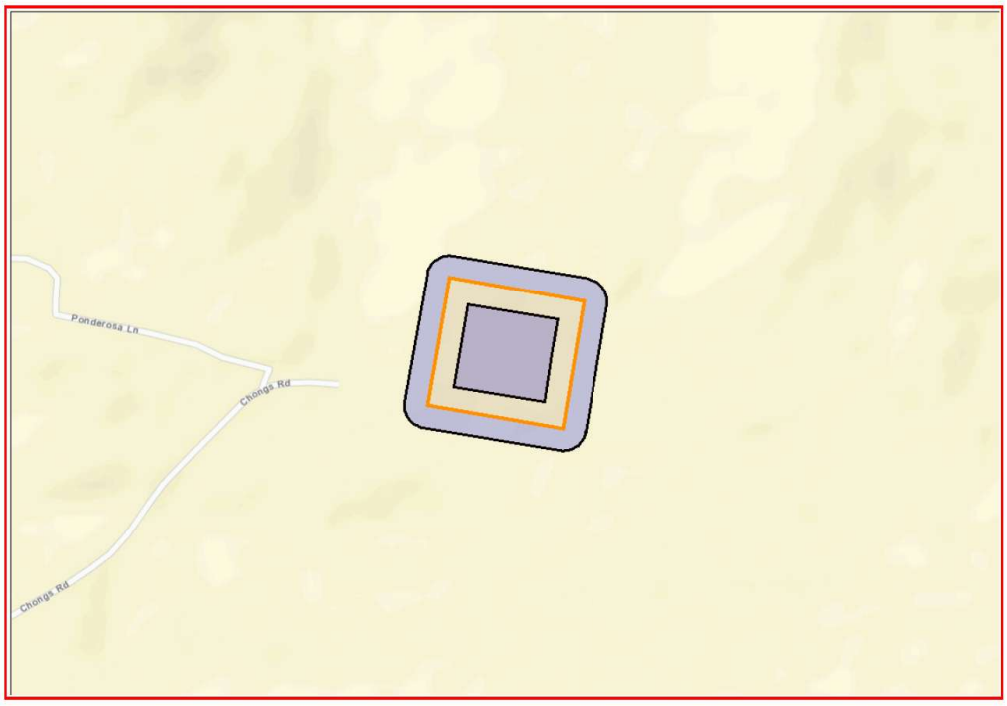
Evan Radford
5 25 Park Road
Jindabyne New South Wales 2627
Attention: Evan Radford
Email: evan.radford@snowymonaro.nsw.gov.au

Date: 22 August 2025

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 25, DP:DP756672, Section : - with a Buffer of 50 meters, conducted by Evan Radford on 22 August 2025.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



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REF: 5012ESCP

VERSION [3.1]

7 NOVEMBER 2024

EROSION AND SEDIMENT CONTROL PLAN

STAGED 6 CABINS ECO-TOURIST DEVELOPMENT AT 92 CHONGS ROAD, JINDABYNE, NSW

LGA: Snowy-Monaro

Lot 2 DP 1232872, Lot 26 DP 756672, Lot 25 DP 756672 & Lot 1 DP 1250715

CLIENT: Mr Josh Leitner

HARRIS ENVIRONMENTAL CONSULTING
6/1 MEMORIAL DRIVE, SHELLHARBOUR CBD, 2529, NSW
TEL: (02) 4236 0954
info@hec.eco

VERSION CONTROL

Title	Erosion and Sediment Control Plan			
Site address	92 Chongs road, Jindabyne, NSW			
Description	6 Proposed Eco-Cabins, Manager's Residence and Workshop.			
Created By	Matthew Spann B. Env. Sci (Hons) (UOW)			
Approved by:	Sean Harris Msc Env Science (UOW), Grad dip Nat Res (UNE), BscAppSc, Agriculture (HAC)			
Date Created	Thursday, 6 October 2022			
Version Number	**Modified By**	**Modifications Made**	**Date Modified**	**Status**
[1.0]	P.S.	Issue for client review	7/10/2022	Complete
[2.0]	M.S.	Addition of managers residence and Workshop	28/09/2022	Complete
[3.0]	M.S.	Updated development areas and alterations to EMAs	20/08/2024	Complete
[3.1]	M.S.	Response to Council RFI	20/08/2024	Complete

Limitations

The findings and recommendations in this report are based on the objectives and scope of work outlined above. Harris Environmental Consulting performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental assessment profession. The report and conclusions are based on the information obtained at the time of the assessment. Changes to the site conditions may occur subsequent to the investigation described herein, through natural processes or through the intentional or accidental addition of contaminants, and these conditions may change with space and time. The results of this assessment are based upon site assessment conducted by HEC personnel and information provided by the client and site management. All conclusions regarding the property are the professional opinions of the HEC personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made, HEC assumes no responsibility or liability for errors in any data obtained from regulatory agencies, information from sources outside of HEC, or developments resulting from situations outside the scope of this project.

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TABLE OF CONTENTS

1. Assessment Criteria 4
2. Site Description 5
3. Erosion And Sediment Control Plan 9
3.1 Objectives 9
3.1.1. Minimise Disturbance 9
3.1.2. Stabilised Site Access 10
3.1.3. Topsoil Handling Proceedures 10
3.1.4. Stockpiles 10
3.1.5. Clean Water Diversion 11
3.1.6. Sediment Fence 11
3.1.7. Litter And Building Waste 11
3.1.8. Concrete Mixer Clean-Up 11
3.1.9. Guttering 11
3.1.10. Temporary Waterway Crossing 12
3.1.11. Service Trenches 12
3.1.12. Post Construction & Erosion Control 13
3.2 Installation Sequence For ESCP Control Measures 14
4. Maintenance of Control Measures 14
5. Summary 15

FIGURES

Figure 1 Location of property 4
Figure 2 Proposed Development Site Plan 6

TABLES

Table 2 Species And Sowing Rates For Re-Vegetation 13

APPENDICES

Appendix i Standard Drawing SD 5-8 Energy Dissipater 16
Appendix ii Standard Drawing SD 5-1 Temporary Waterway Crossing 17
Appendix iii Standard Drawing SD 4-1 – Stockpiles 18
Appendix iv Standard Drawing SD 6-8 – Sediment Fence 19
Appendix v Standard Drawing SD 6-14 – Stabilised Site Access 20
Appendix vi Standard Drawing SD 5-5 – Earth Bank 21
Appendix vii Erosion & Sedimentation Control Plan Sheet 1.1 22
Appendix viii Erosion & Sedimentation Control Plan Sheet 1.2 23
Appendix ix Erosion & Sedimentation Control Plan Sheet 1.3 24
Appendix x Erosion & Sedimentation Control Plan Sheet 1.4 25
Appendix xi Erosion & Sedimentation Control Plan Sheet 1.5 26
Appendix xii Erosion & Sedimentation Control Plan Sheet 1.6 27
Appendix xiii Erosion & Sedimentation Control Plan Sheet 1.7 28
Appendix xiv Erosion & Sedimentation Control Plan Sheet 1.8 29

1. ASSESSMENT CRITERIA

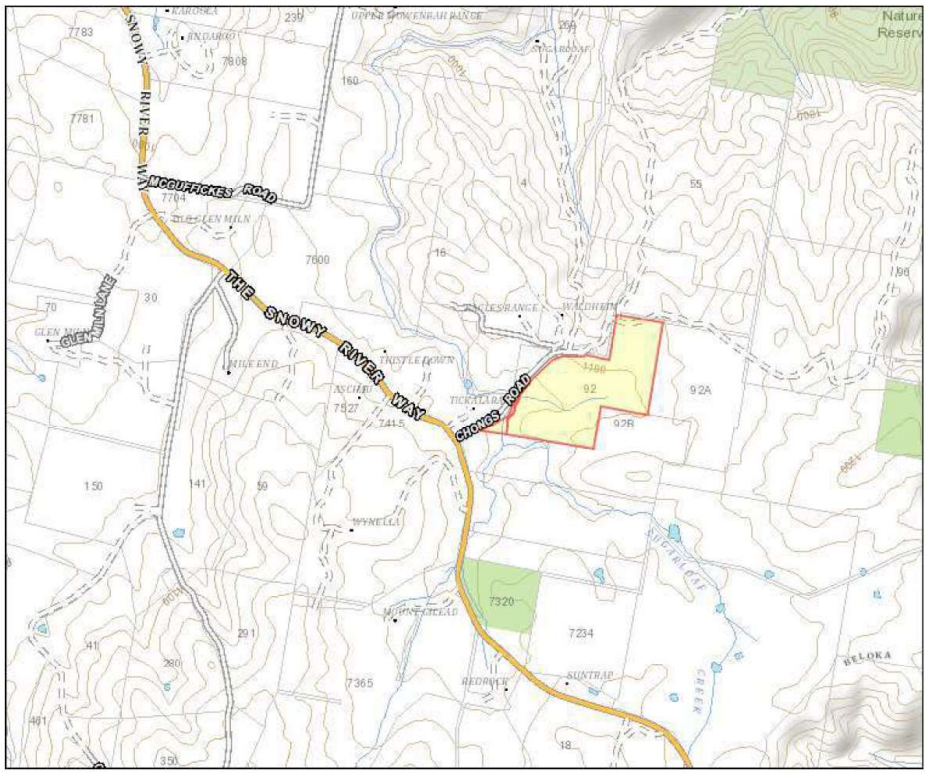
This Erosion and Sediment Control Plan was prepared by Harris Environmental Consulting at the request of Mr Josh Leitner. It relates to the proposed development on Lot 2 DP 1232872, Lot 26 DP 756672, Lot 25 DP 756672 & Lot 1 DP 1250715, located at 92 Chongs road, Jindabyne, NSW.

The proposed development includes the construction of six eco-cabins, two associated bushfire refuges, a shed with manager's quarters and a workshop and a network of gravel roads to access the new facilities on this approximately 46.866ha property.

This Erosion and Sediment Control Plan was prepared in accordance with Managing Urban Stormwater: Soils and Construction, NSW Department of Housing, 1998 (The Blue Book). It addresses the management of soil erosion associated with the proposed earthworks for the road works and building construction.

The location of the property is shown in figure 1.

FIGURE 1 LOCATION OF PROPERTY



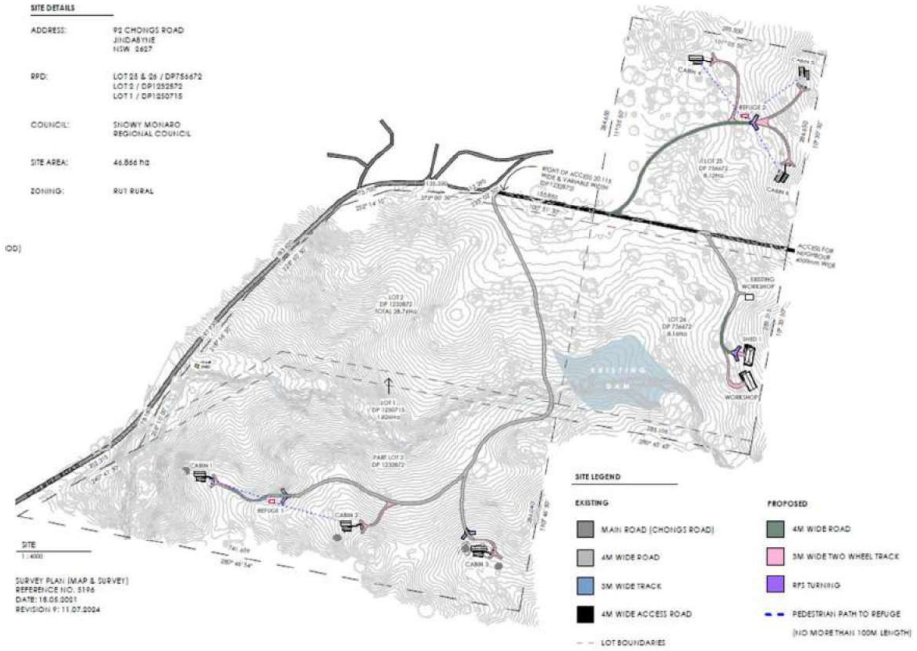
Source: Sixmaps

2. SITE DESCRIPTION

Drinking Water Catchment:	The property drains to a series of grassed drainage depressions, immediately downslope of the development, that flow to Sugarloaf Creek. This is not a drinking water catchment. The existing dam is not used for drinking water.
Topography:	The topography of the site is shown in Figure 1 and further in the site plans in the Appendix. Slopes onsite are typically undulating between 5-15 percent. Local relief across the development site is approximately 25m, altitude 1087-1118m AHD.
Evidence of soil erosion	The site is fully grassed; however, evidence of sheet and gully erosion was found during the site inspection on the 11th of February 2022. However, in the time since, soil conservation works have been carried out on site to mitigate soil loss. These works are outside the scope of this Assessment.
Existing land use:	The land proposed for development is land currently zoned RU1 for Rural Primary Production.
Soil and geology:	The soil landscapes of the site are not mapped. Geoscience Australia has identified the soil types over the property as belonging to the Dermosols family. The site is underlain by Silurian trans-type granites and Ordovician sedimentary rocks (quartz-rich sandstone, siltstone and mudstone). Soil testing conducted by HEC indicates a weakly-structured loams and massive, earthy sandy loams of varying depths.
Services:	The site is not sewered, relying on on-site effluent disposal systems. The site is not connected to a reticulated water supply.
Drainage:	The proposed development is contained in three catchments. Surface flows under the existing land use are currently directed north. southwest and south via overland flow paths to a dam and drainage channels that eventually drain into Sugarloaf Creek. Surface flows following development will be directed towards the existing dam and natural drainage depressions.
Vegetation	The site is under grass cover.
Salinity Potential & acid sulphate risk	There is no evidence of salinity. No salinity information is available for this site. However, salinity is not expected to be a constraint. There is no acid sulphate risk.

This ESCP proposes erosion control measures. It includes the standard sediment control fences, upslope diversion bank, level spreaders and protection of stockpiles.

FIGURE 2 PROPOSED DEVELOPMENT SITE PLAN



Source: *Peter Paine Drawing No DA-1, Issue 3, dated 07.07.2024*

Photo 1 Existing dam



Source: Sean Harris, taken 11th February 2022

Photo 2 Terrain and landform of the site



Source: Sean Harris, taken 11th February 2022

Photo 3 Terrain and landform of the site



Source: Sean Harris, taken 11th February 2022

Photo 4 Terrain and landform of the site



Source: Sean Harris, taken 11th February 2022

Photo 5 Terrain and landform of the site



Source: Sean Harris, taken 11th February 2022

3. EROSION AND SEDIMENT CONTROL PLAN

This Erosion and Sediment Control Plan (ESCP) includes:

1) Drawings showing the layout and details of the erosion and sediment control measures, and;
2) Supporting commentary and construction notes.

3.1 OBJECTIVES

The primary objective of the Erosion and Sediment Control Plan is to prevent the erosion of soil from the site and its transport downstream resulting in sedimentation of watercourses. The Blue Book defines an ESCP as a concise report and/or drawing/s that provide sufficient information to demonstrate how the development meets the relevant stormwater controls, the objectives are to:

i. Protect and enhance natural watercourses and their associated ecosystems and ecological processes.
ii. Maintain, protect and/or rehabilitate modified watercourses and their associated ecosystems and ecological processes towards a natural state.
iii. Mitigate the impacts of development on water quality and quantity.
iv. Minimise soil erosion and sedimentation resulting from site disturbing activities.
v. Minimise the potential impacts of development and other associated activities on the aesthetic, recreational and ecological values of receiving water.
vi. Ensure the principles of ecologically sustainable development are applied in consideration of economic, social and environmental values in water cycle management.

The owner/builder/developer will be responsible for applying standard erosion controls in accordance with the 'Blue Book' prior to the construction of the development. Standard erosion controls that would be applicable include:

3.1.1. MINIMISE DISTURBANCE

Earthworks should be kept to a minimum and should only be commenced immediately prior to building and road works. Clear only those areas necessary for construction work to occur. Maintain as much soil coverage as possible with the use of grass, leaf litter and mulch, gravel or erosion control blanket (ECB) or matting. Vegetation located down-slope of the work site assists in filtering out sediment.

Erect tree protection zones along the dripline of the tree(s). Within this zone; ensure that the soil is not disturbed; maintain water runoff at the pre-development rate and ensure that any water draining to the area is not polluted with building waste products.

3.1.2. STABILISED SITE ACCESS

The ingress to and egress from the site should be confined to one stabilised site access point. Stabilisation can be achieved either by a sealed driveway to the street or by a rumble strip. Stabilised site access via a rumble strip should be at least three metres wide and typically a minimum of 15 metres long. The access should be constructed using maximum 75mm aggregate being 200mm thick and underlain by needle-punched geotextile.

Refer to Standard Drawing SD 6-14 for detailed construction notes.

3.1.3. TOPSOIL HANDLING PROCEEDURES

- Ideally, topsoil should only be handled when moist, but not too wet or dry, to avoid structural decline of the soil.
- Only strip and remove topsoil immediately before starting earthworks and construction.
- Stripped topsoil should be stored in stockpiles, as outlined below.
- When using topsoil to revegetate the development area, scarify the surface prior to spreading of topsoil to encourage bonding of both materials.

3.1.4. STOCKPILES

Topsoil may need to be kept in a small amount for revegetation following completion of the dwelling, however any subsoil stripped from the site will likely need to be removed from site and disposed of appropriately. Topsoil can be used to re-spread following completion of the development to optimum growing conditions for the required revegetation. The stockpile of topsoil should be no greater than 2 meters in height.

A sediment fence is to be installed along the downslope side of the stockpile, parallel with the contour.

Ensure the stockpiles are:

- constructed on the contour at least 2 (preferably 5) metres from hazard areas, particularly likely areas of concentrated water flows, e.g. waterways, roads, slopes steeper than 10 percent, etc.; and
- If to be in place for more than 10 days, they would be stabilised either through vegetation or the use of geofabrics or spraying with polymer materials etc.

See Standard Drawing SD 4-1 for detailed construction notes. The site plans included in this report show approximate locations for these stockpiles, however these can be adjusted as necessary to avoid sensitive vegetation. If relocated, sediment fence and upslope diversion will also need to be adjusted accordingly.

3.1.5. CLEAN WATER DIVERSION

Where there is the possibly of larger amounts of upslope run-off, stormwater may need to be diverted around construction sites until completion and revegetation. An earth bank upslope of the development site may be required to keep clean runoff away.

See the Appendix for a standard drawing of an upslope diversion bank.

3.1.6. SEDIMENT FENCE

Sediment fencing is to be installed along the downslope length, construction buildings/worksite and stockpiles to filter runoff as it drains through to downslope grassland. The sediment fence is to consist of a woven geotextile material, which is to be installed so water passes through, rather than under, the fence. The sediment fence should drive 1.5m long star pickets into the ground at 2.5m intervals (max) and extend up to 20m along the contour. The sediment fence should be bend inward toward the upslope side every 20m long if the sediment fence to be installed more than 20m. See Standard Drawing SD 6-8 in the Appendix of this Plan for detailed construction notes.

The sediment fence should be maintained so that no more than 30 percent of the design capacity is lost to accumulated sediment and replaced when functionality is lost. For public safety and sediment control efficiency, sediment barriers should not be located outside property boundaries without council approval.

3.1.7. LITTER AND BUILDING WASTE

All hard waste should be stored on-site in a way that prevents material loss caused by wind or water. Smaller materials such as litter should be contained in covered bins or litter traps formed on three sides by a geotextile windbreak or similar device.

When travelling to and from the site, secure load to prevent windblown litter polluting our waterways and roadsides.

Arrangements should be made for regular collection and disposal.

3.1.8. CONCRETE MIXER CLEAN-UP

Fully contain concrete waste washed from trucks and mixer units on-site and store where it cannot be washed from the site, harming the environment.

3.1.9. GUTTERING

Guttering of the proposed dwelling should be installed to the new rainwater tank as soon as possible to prevent excessive stormwater run-off from the new roof, which could overwhelm erosion and sediment control measures.

The rainwater tank should be connected to the stormwater management system as soon as practicable.

3.1.10. TEMPORARY WATERWAY CROSSING

New drainage works are to be integrated with the existing stabilised gully crossings that has been constructed below the dam.

The outlets to watercourses should be of a natural form, using riprap packed with soil and planted with sedges, rushes and grasses as scour protection.

Temporary waterway crossings can be constructed near dam outlet and where the possibility of stormwater overflow onto the proposed access road. See Appendices – Site Plans for the proposed locations and notes how to construct a temporary waterway crossing.

3.1.11. SERVICE TRENCHES

Service trenches should be constructed in a way so they are adequately protected from erosion. This can be done through undertaking the following measures and precautions:

- Avoid trenching in areas where water flow is likely to concentrate.
- Ensure trench widths and depths are the minimum required. This minimises the disturbed area.
- Divert surface water from trench openings.
- Use sandbags as plugs across trench invers to shorten the length of sediment-laden flow in the trench, until such a time that the trenches are backfilled and the sandbags are removed
- Only leave excavations open for the minimum practical time and avoid digging trenches when there is risk of storms.
- Organise service installations to enable progressive backfilling.
- Ensure plugs, collars or trench stops are employed to control tunnel erosion after backfilling is completed.
- Provide an appropriate allowance for settling of backfill material.
- After backfilling, remove excess or unsuitable spoil from the site. Then replace topsoil and vegetate to match the surrounding ground levels and vegetation species.

Installing diversion banks diagonally across the easement is a key element of erosion control for liner service installations. The spacing of diversion banks according to slope is particularly important on down grades

Cross banks need to discharge away from the disturbed are of the easement into a stabilised area or sedimentation measure. Successive banks down a slope should be designed and constructed to ensure that a bank does not capture the discharge from the previous bank, concentrating the flows.

3.1.12. POST CONSTRUCTION & EROSION CONTROL

Progressively stabilise the site as soon as possible after construction, so that no areas remain exposed to erosion damage. This minimises the potential for ongoing soil erosion.

In the period of low rainfall erosivity during the rehabilitation period, the site should achieve a C-factor of less than 0.15 or equivalent to 50% or more of groundcover.

In the period of moderate-high rainfall erosivity during the rehabilitation period, the site should achieve a C-factor of less than 0.1 or equivalent to 60% or more of groundcover and set in motion a program that should ensure it will drop permanently, by vegetation, paving, armouring, etc. to less than 0.05 or equivalent to 70% or more of groundcover within a further 60 days.

Annual species are the most effective for a quick ground cover protection, but this will only provide a temporary ground cover as plants will die off by early summer. A mixture of annual and perennial species is needed to ensure the groundcover is maintained for the full period in which the site will be exposed to erosion. The advice of a local seed merchant should be sought regarding suitable species, sowing rates and the season for establishment. The species and rates shown in Table 1 are standard rates from DOH (2004). A cover of chopped hay will improve germination and establishment.

TABLE 1 SPECIES AND SOWING RATES FOR RE-VEGETATION

Sowing season	Annual Seed mix	Perennial seed mix
Autumn/Winter	Oats @ 40kg/ha Japanese millet @ 10kg/ha	
Spring/Summer	Japanese millet @ 10kg/ha Oats @ 20kg/ha	Rhodes grass @ 1-4 kg/ha
Autumn/Spring		Cocksfoot @ 1-3kg/ha Phalaris @ 1-3 kg/ha

As an alternative to those species listed above in Table 1, grasses that are native to the region could also be used to provide ground cover on completion of the development. Species will need to be able to provide the suitable amount of ground cover on a year-round basis.

Areas that have been compacted by machinery movement during the construction phase, may require mechanical aeration, ripping or bioremediation to relieve soil compaction and to restore the soil's drainage capabilities. Mechanical remediation should be undertaken prior to re-spreading topsoil.

3.2 INSTALLATION SEQUENCE FOR ESCP CONTROL MEASURES

The timing of works and the installation of control measures has a major influence on the management of stormwater to prevent erosion and sediment.

Step 1	Establish a single stabilized entry/exit point (rumble pad)
Step 2	Install sediment fence(s) along the low side of the site and barrier fences
Step 3	Divert up-slope water around the worksite and appropriately stabilise any drainage channels
Step 4	Clear only the area necessary (maintaining vegetation on footpath and in conservation areas)
Step 5	Stockpile topsoil within the sediment control zone
Step 6	Stabilize exposed earth banks (for example, with vegetation or erosion control blankets)
Step 7	Install on-site waste receptacles (mini-skips, bins, windproof litter receptors)
Step 8	Install roof downpipes as soon as practicable after the roof is laid
Step 9	Ensure that all control measures are maintained in good working order
Step 10	Revegetate or otherwise stabilise the site as soon as practicable following construction.

4. MAINTENANCE OF CONTROL MEASURES

All erosion, sediment and drainage control measures need to be regularly checked and maintained in good working order. Best practice includes anticipation of potential risks and being prepared for abnormal circumstances and emergencies. These measures include:

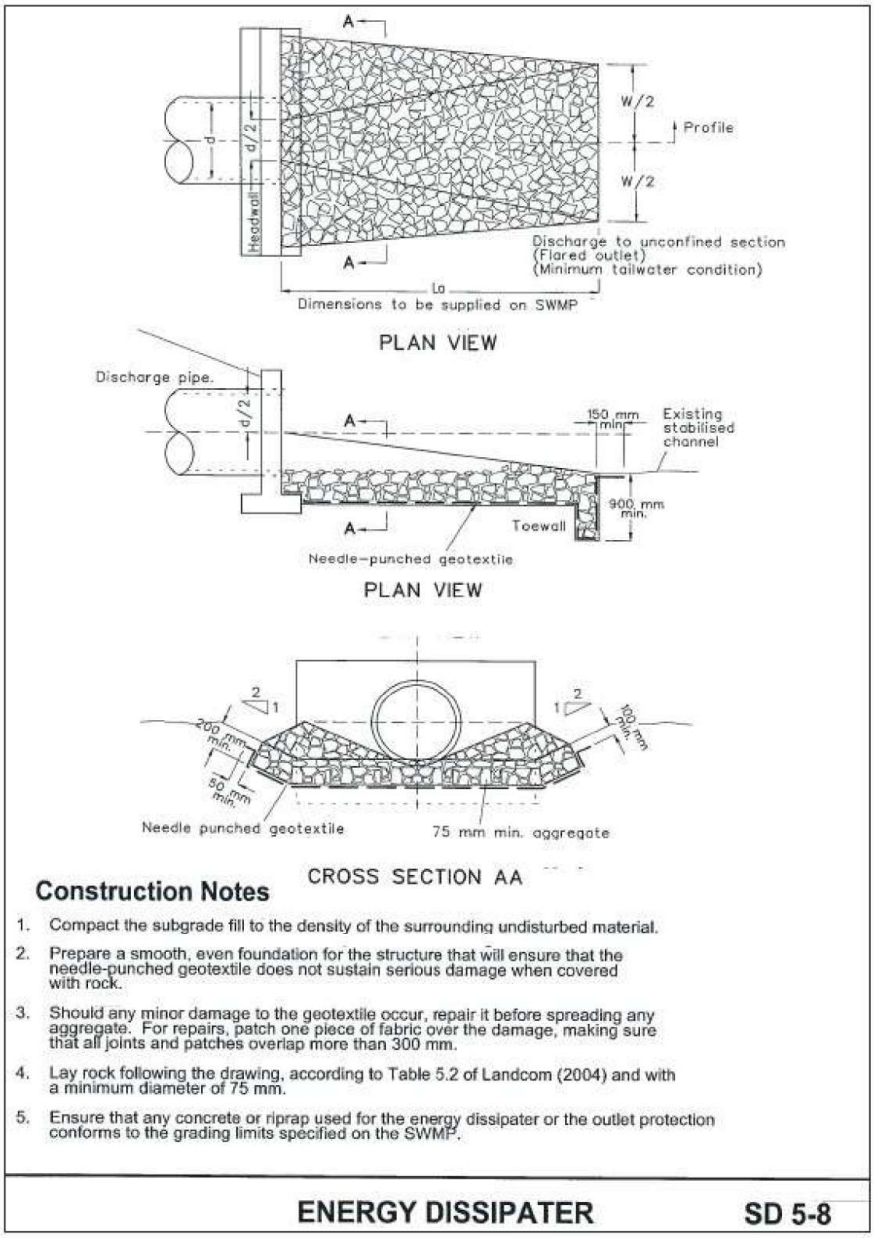
- Regularly maintain these controls at no less than 70% capacity at all times until construction is complete and the site is stabilised.
- Stockpile extra sediment fence fabric and posts on-site to facilitate emergency repairs.
- Reapply crushed rock to the entry/exit pad (rumble pad) when sediment build-up occurs.
- Repair eroded drainage channels with rock, turf or erosion control blankets or matting.
- Ensure built-up sediment is removed at regular intervals from sediment barriers.
- Check and replace/repair sediment barriers daily if they are ripped, damaged or no longer anchored.

5. SUMMARY

This Erosion and Sediment Control Plan recommends the following:

- Installation of sediment fencing and barrier fences in the locations shown in Appendices – Site Plans prior to commencement of the proposed works;
- Diversion of clean stormwater runoff from land upslope of the proposed development and access road by means of an earth bank or drain;
- Stockpiling of building materials, topsoils, subsoils and supplies in the areas designated; and
- Installation of a skip bin for construction waste material.

APPENDIX I STANDARD DRAWING SD 5-8 ENERGY DISSIPATER

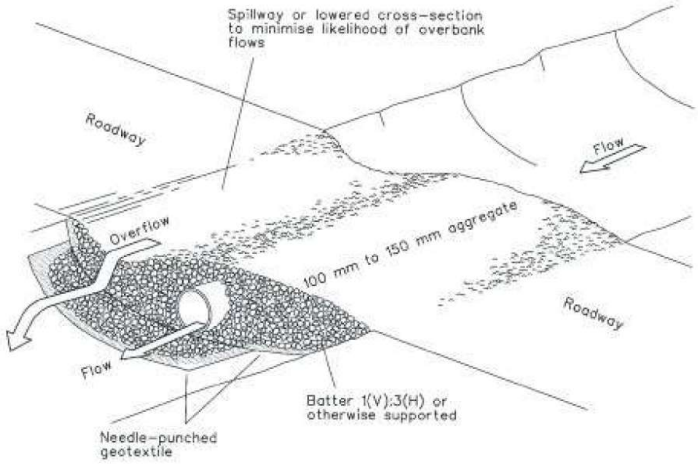


Construction Notes

1. Compact the subgrade fill to the density of the surrounding undisturbed material.
2. Prepare a smooth, even foundation for the structure that will ensure that the needle-punched geotextile does not sustain serious damage when covered with rock.
3. Should any minor damage to the geotextile occur, repair it before spreading any aggregate. For repairs, patch one piece of fabric over the damage, making sure that all joints and patches overlap more than 300 mm.
4. Lay rock following the drawing, according to Table 5.2 of Landcom (2004) and with a minimum diameter of 75 mm.
5. Ensure that any concrete or riprap used for the energy dissipater or the outlet protection conforms to the grading limits specified on the SWMP.

ENERGY DISSIPATER **SD 5-8**

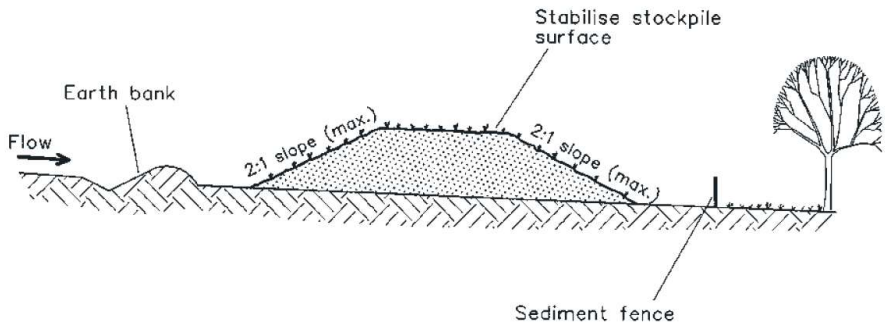
APPENDIX II STANDARD DRAWING SD 5-1 TEMPORARY WATERWAY CROSSING



Construction Notes

1. Prohibit all traffic until the access way is constructed.
2. Strip any topsoil and place a needle-punched textile over the base of the crossing.
3. Place clean, rigid, non polluting aggregate or gravel in the 100 mm to 150 mm size class over the fabric to a minimum depth of 200 mm.
4. Provide a 3-metre wide carriageway with sufficient length of culvert pipe to allow less than a 3(H): 1 (V) slope on side batters.
5. Install a lower section to act as an emergency spillway in greater than design storm events.
6. Ensure that culvert outlets extend beyond the toe of fill embankments.

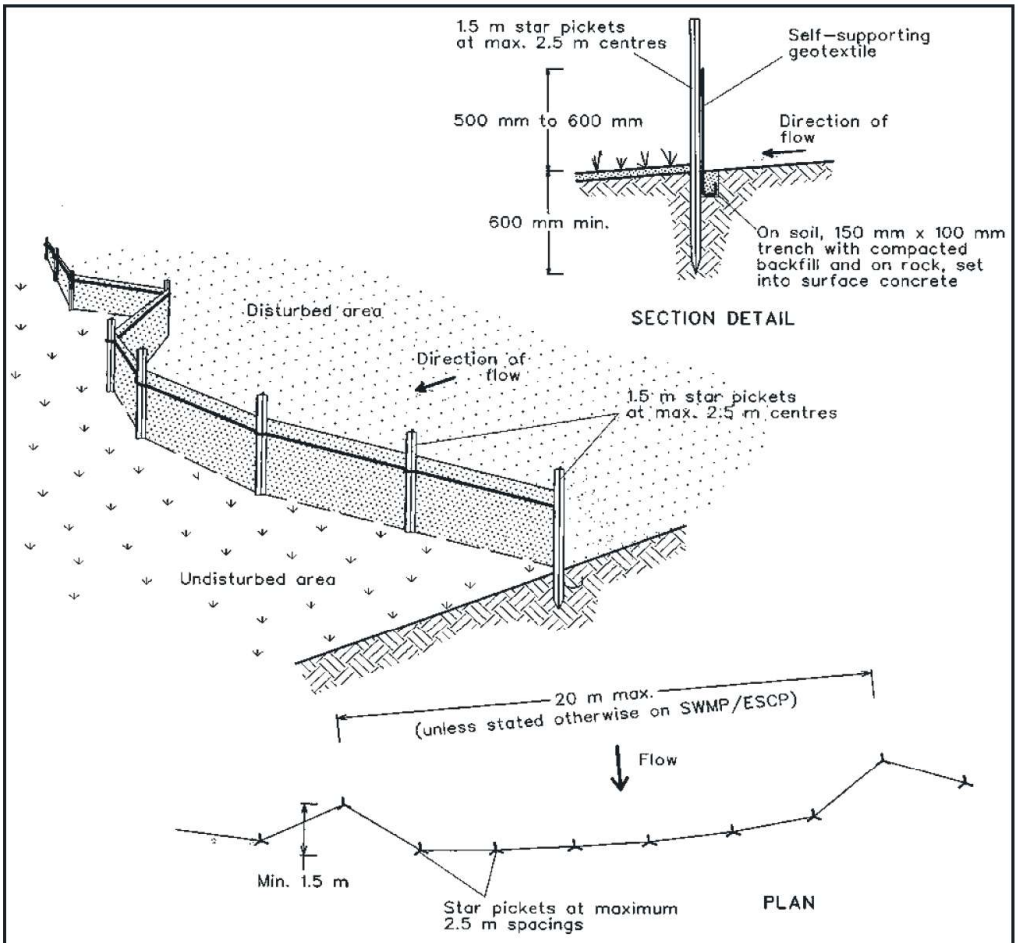
TEMPORARY WATERWAY CROSSING **SD 5-1**



Construction Notes

1. Place stockpiles more than 2 (preferably 5) metres from existing vegetation, concentrated water flow, roads and hazard areas.
2. Construct on the contour as low, flat, elongated mounds.
3. Where there is sufficient area, topsoil stockpiles shall be less than 2 metres in height.
4. Where they are to be in place for more than 10 days, stabilise following the approved ESCP or SWMP to reduce the C-factor to less than 0.10.
5. Construct earth banks (Standard Drawing 5-5) on the upslope side to divert water around stockpiles and sediment fences (Standard Drawing 6-8) 1 to 2 metres downslope.

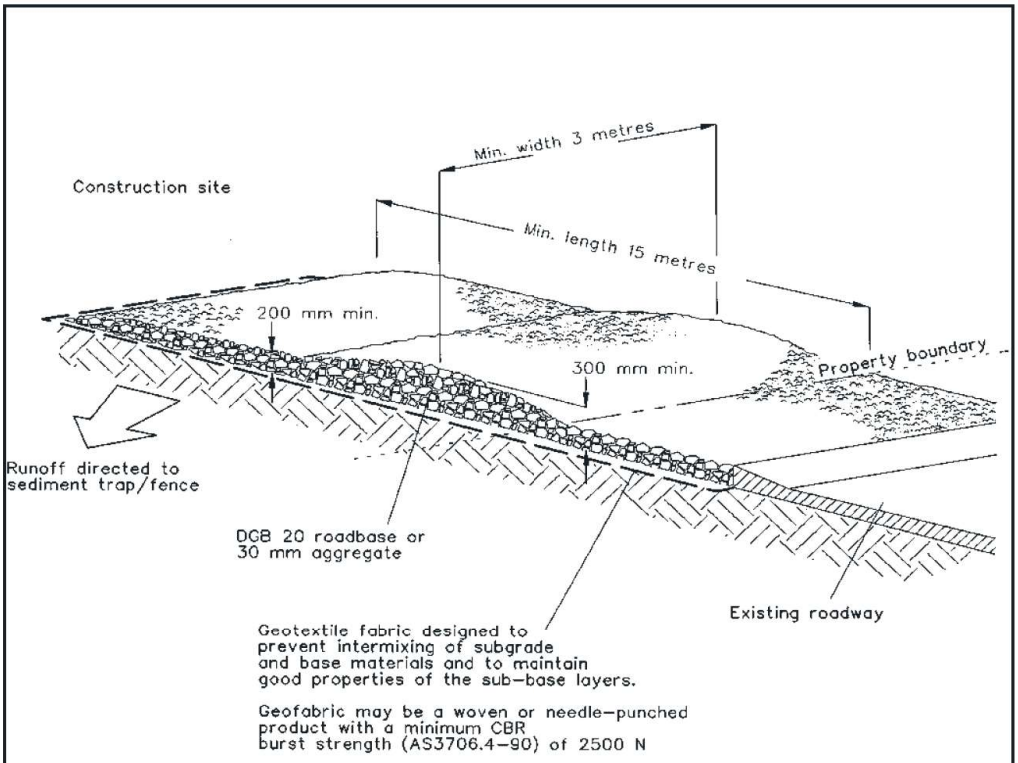
STOCKPILES **SD 4-1**



Construction Notes

1. Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns as shown in the drawing to limit the catchment area of any one section. The catchment area should be small enough to limit water flow if concentrated at one point to 50 litres per second in the design storm event, usually the 10-year event.
2. Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
3. Drive 1.5 metre long star pickets into ground at 2.5 metre intervals (max) at the downslope edge of the trench. Ensure any star pickets are fitted with safety caps.
4. Fix self-supporting geotextile to the upslope side of the posts ensuring it goes to the base of the trench. Fix the geotextile with wire ties or as recommended by the manufacturer. Only use geotextile specifically produced for sediment fencing. The use of shade cloth for this purpose is not satisfactory.
5. Join sections of fabric at a support post with a 150-mm overlap.
6. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

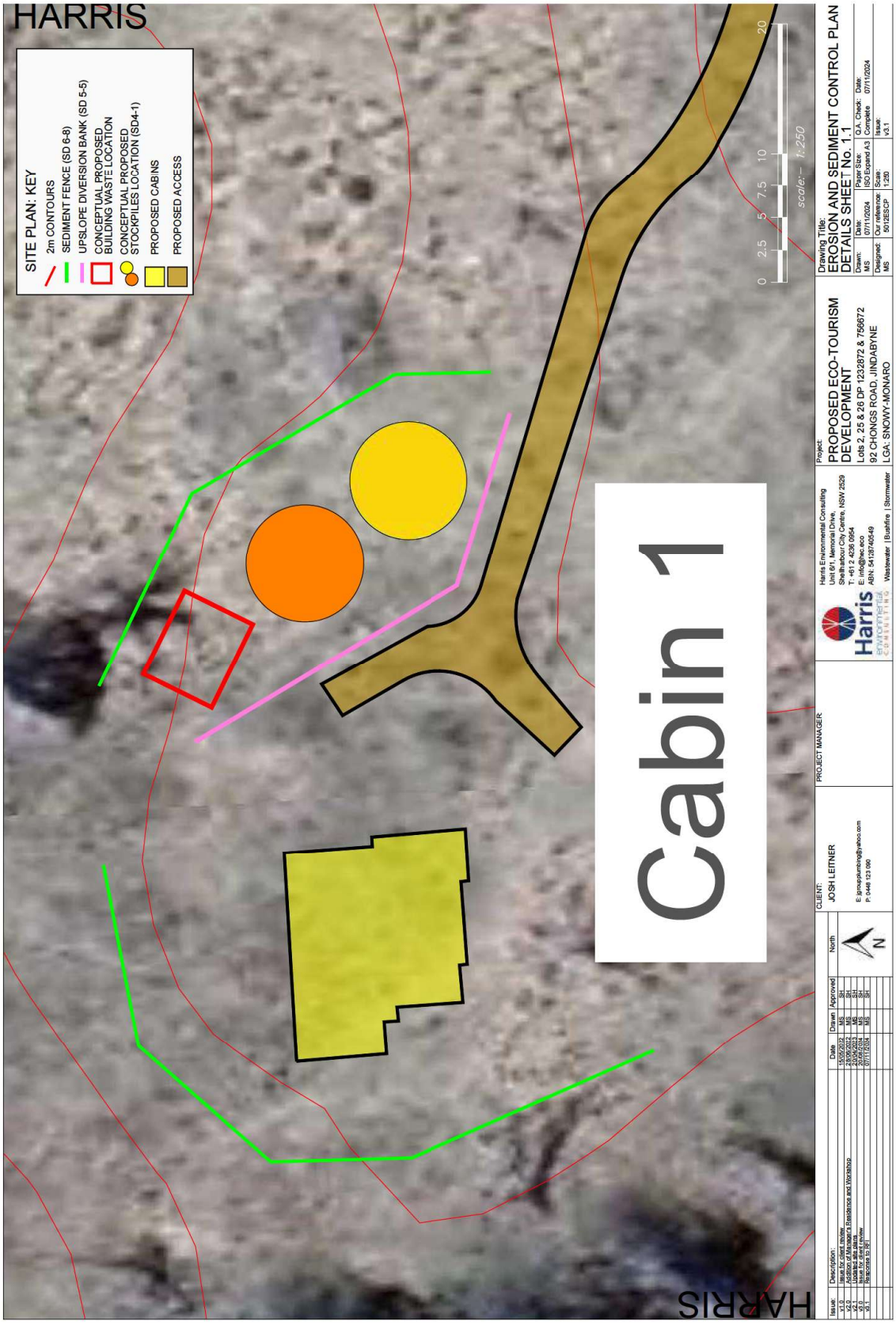
SEDIMENT FENCE **SD 6-8**



Construction Notes

1. Strip the topsoil, level the site and compact the subgrade.
2. Cover the area with needle-punched geotextile.
3. Construct a 200-mm thick pad over the geotextile using road base or 30-mm aggregate.
4. Ensure the structure is at least 15 metres long or to building alignment and at least 3 metres wide.
5. Where a sediment fence joins onto the stabilised access, construct a hump in the stabilised access to divert water to the sediment fence

STABILISED SITE ACCESS **SD 6-14**


HARRIS
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SEDIMENT FENCE (SD 6-8)
UPSLOPE DIVERSION BANK (SD 5-5)
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CONCEPTUAL PROPOSED STOCKPILES LOCATION (SD4-1)
PROPOSED CABINS
PROPOSED ACCESS
Cabin 1
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scale:- 1:250
Drawing Title:
EROSION AND SEDIMENT CONTROL PLAN
DETAILS SHEET No. 1.1
Project:
PROPOSED ECO-TOURISM DEVELOPMENT
Lots 2, 25 & 26 DP 1232872 & 756672
92 CHONGS ROAD, JINDABYNE
LGA: SNOWY-MONARO
Harris Environmental Consulting
Unit 6/1, Memorial Drive,
Shellharbour City Centre, NSW 2529
T: +61 2 4236 0954
E: info@hec.eco
ABN: 54128740549
Wastewater | Bushfire | Stormwater
PROJECT MANAGER:
CLIENT:
JOSH LEITNER
E: jgroupplumbing@yahoo.com
P: 0448 123 090
Issue: Description: Date Drawn Approved North
v1.0 Issue for client review 15/05/2022 MS SH
v2.0 Addition of Manager's Residence and Workshop 28/06/2022 MS SH
v2.1 Updated site plans 20/05/2024 MS SH
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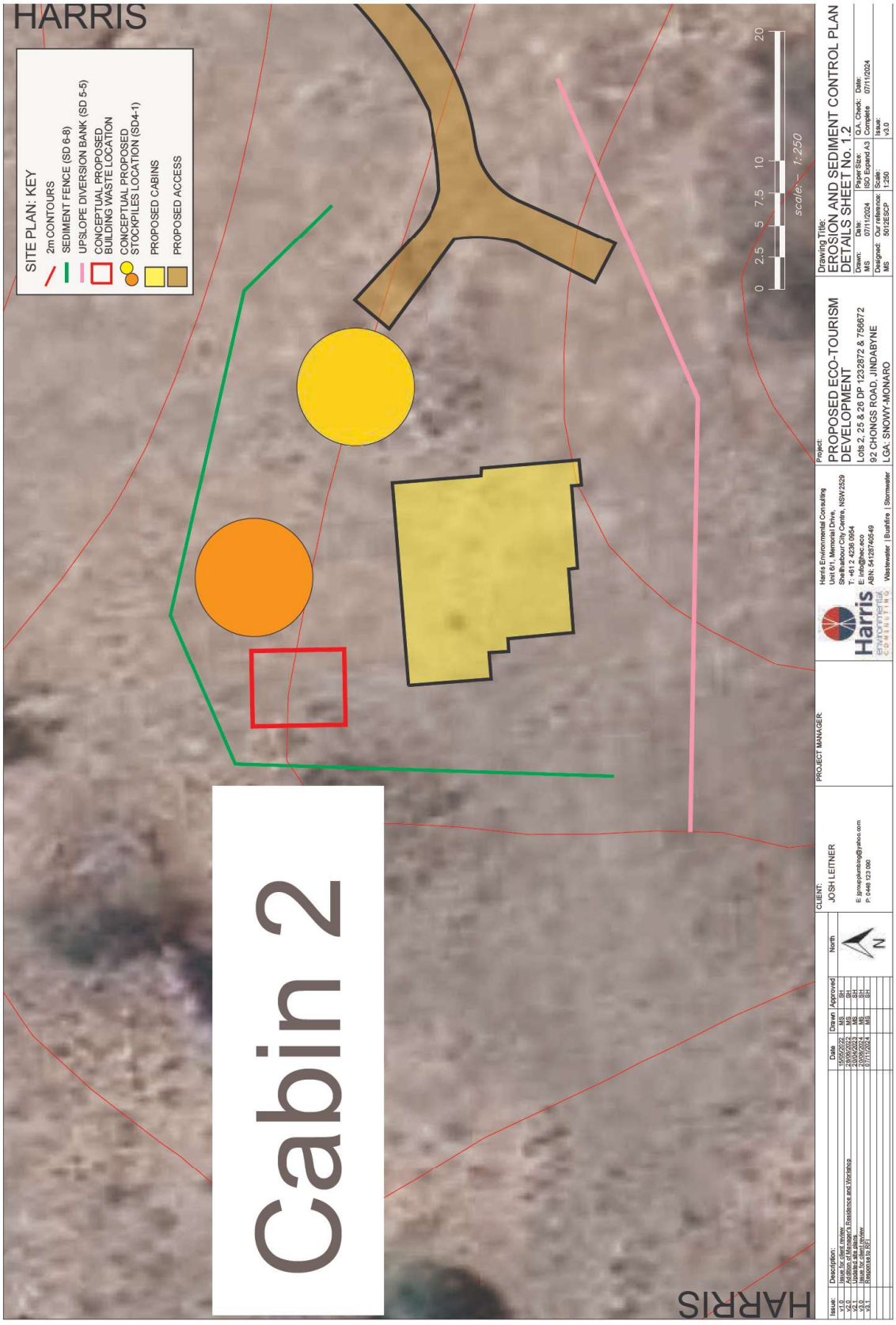
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PROPOSED ACCESS
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Cabin 2
HARRIS
Drawing Title:
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DETAILS SHEET No. 1.2
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Harris Environmental Consulting
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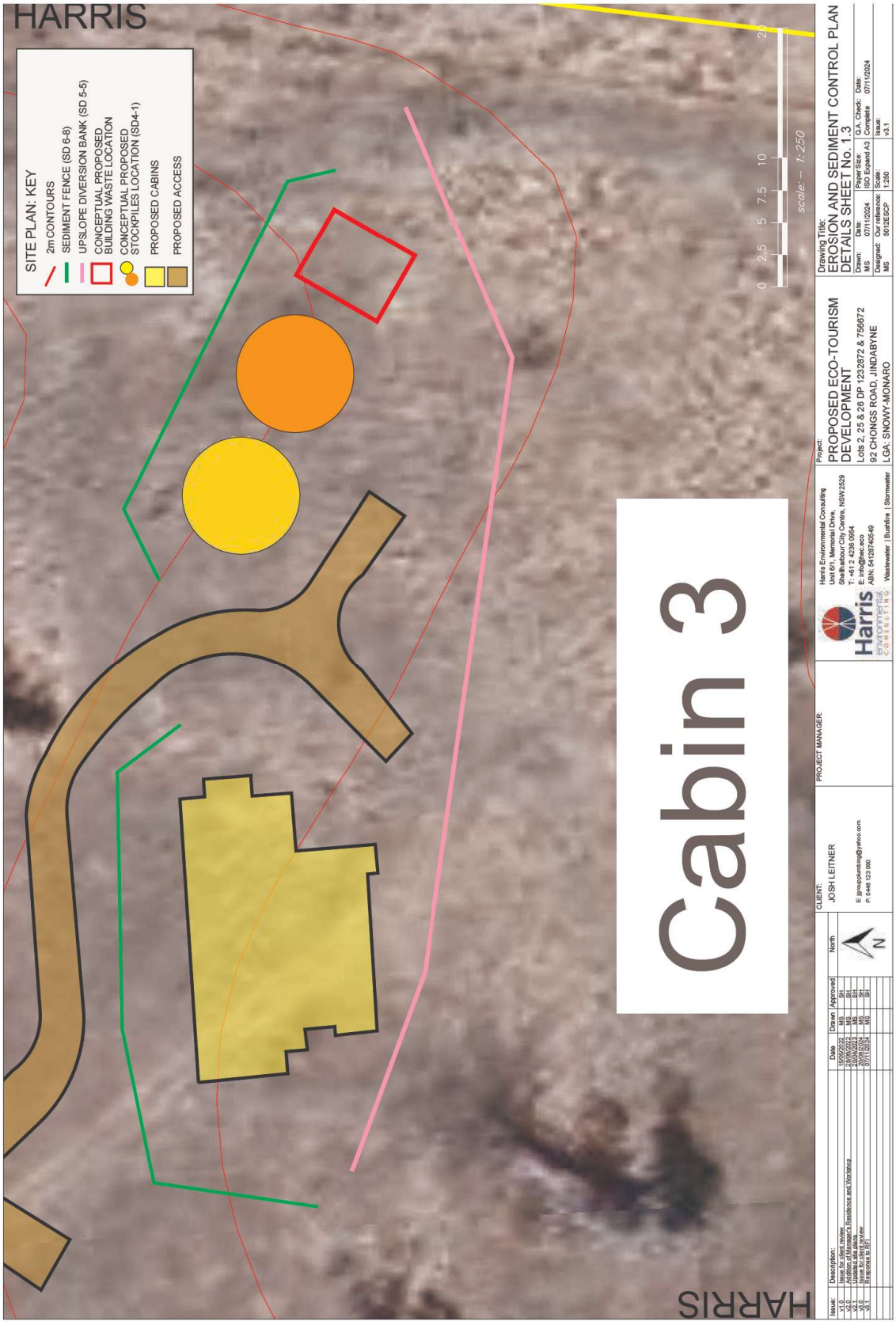
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Issue: v3.1
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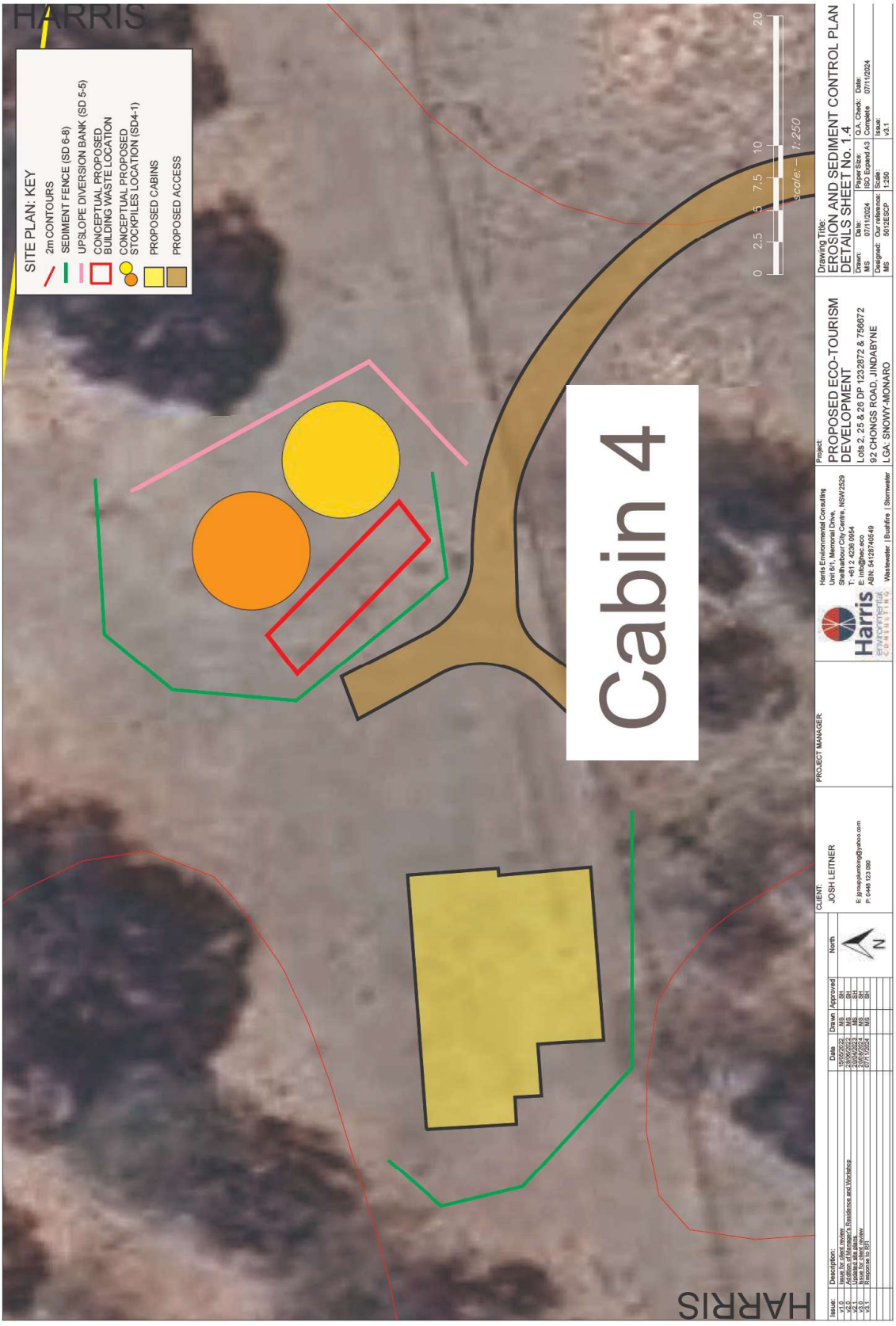
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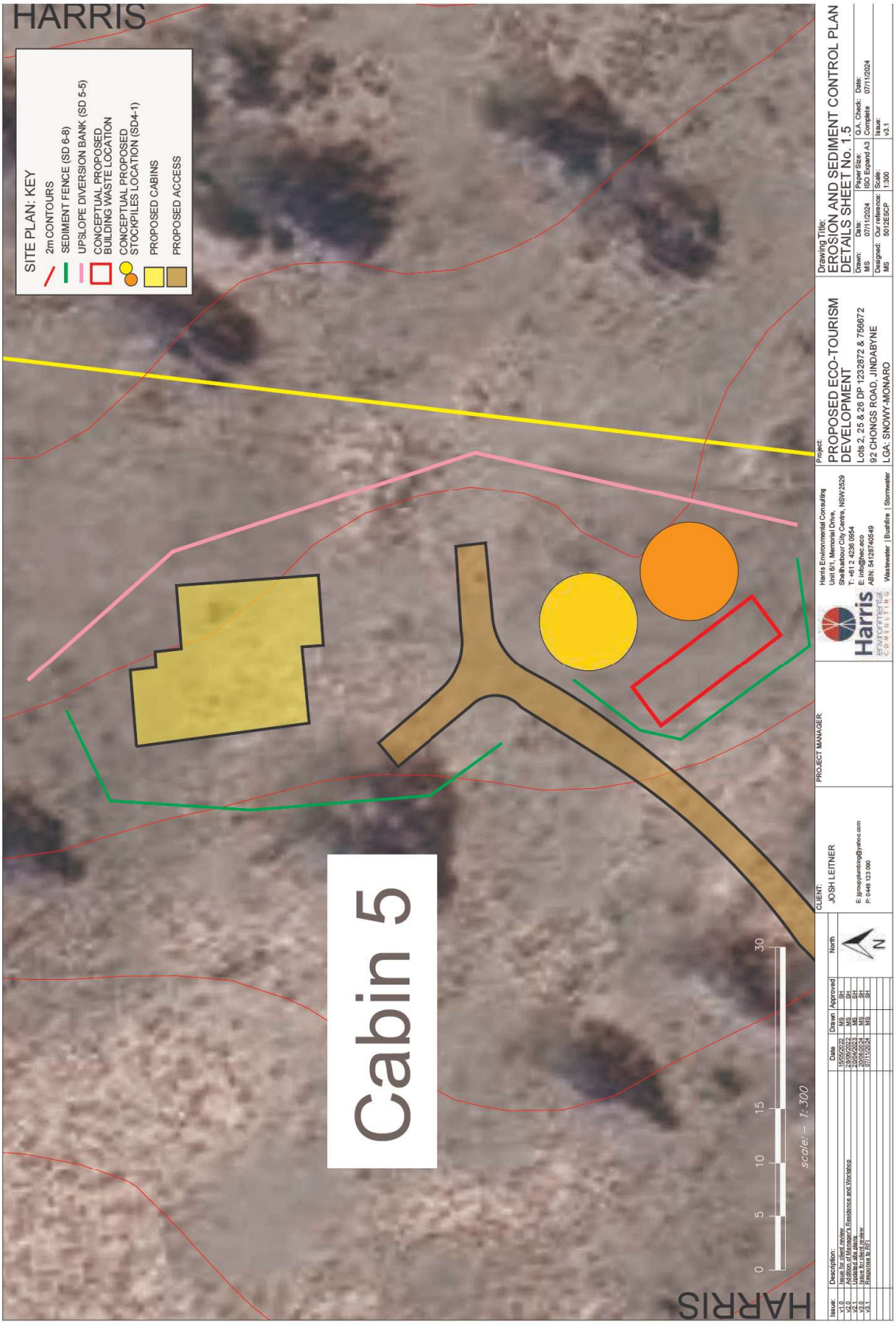
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CONCEPTUAL PROPOSED STOCKPILES LOCATION (SD4-1)
PROPOSED CABINS
PROPOSED ACCESS
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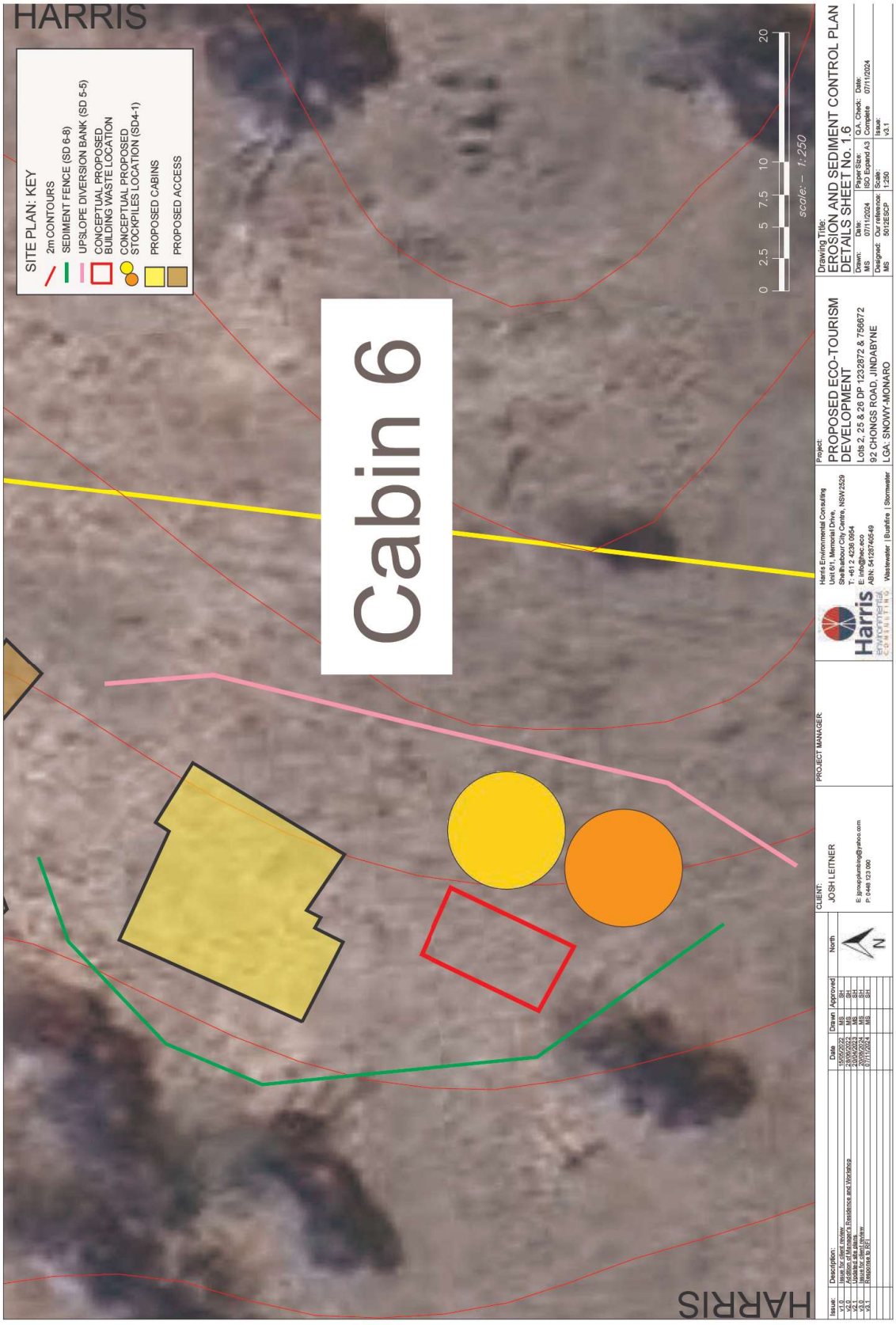
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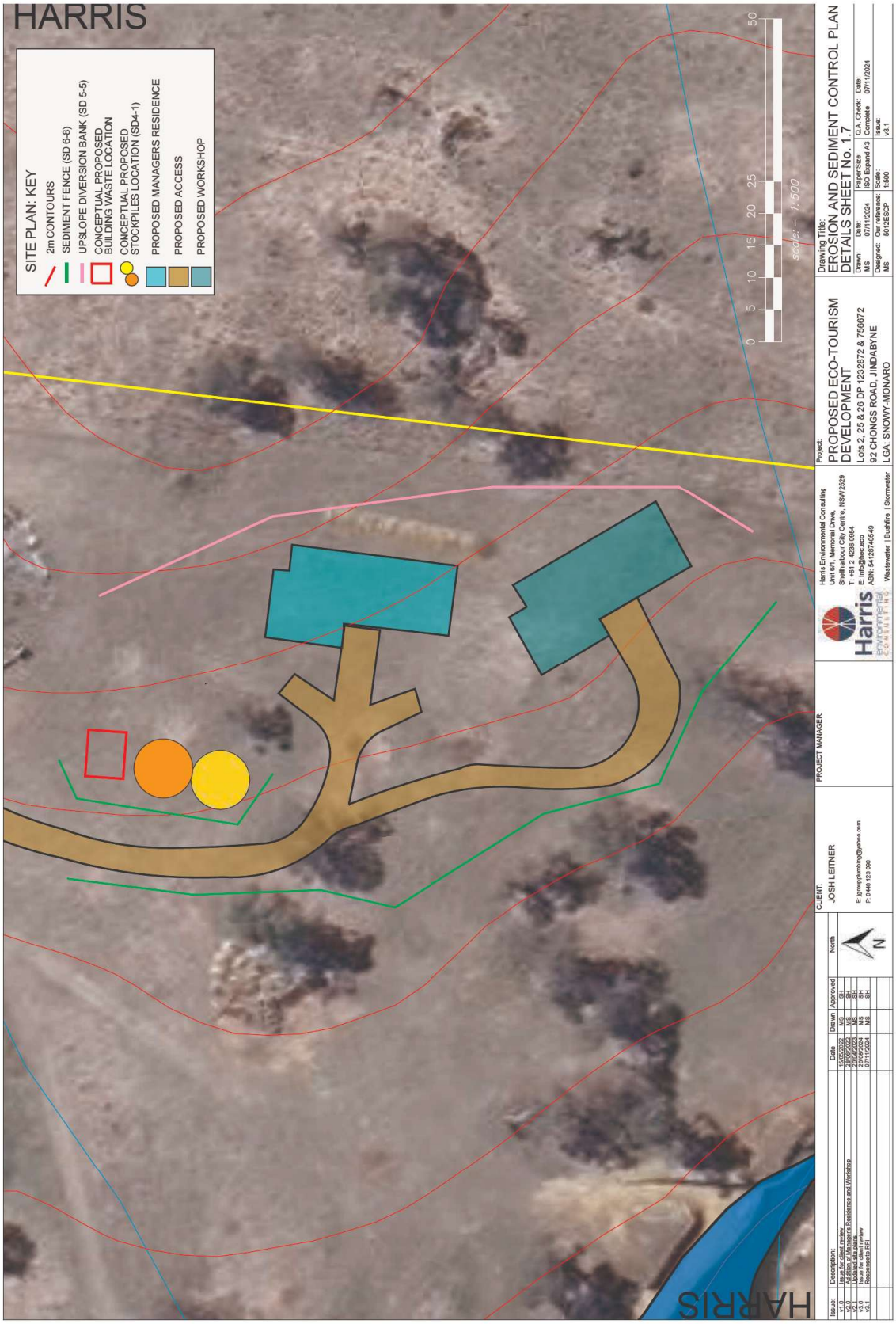
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UPSLOPE DIVERSION BANK (SD 5-5)
CONCEPTUAL PROPOSED BUILDING WASTE LOCATION
CONCEPTUAL PROPOSED STOCKPILES LOCATION (SD4-1)
PROPOSED MANAGERS RESIDENCE
PROPOSED ACCESS
PROPOSED WORKSHOP
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DETAILS SHEET No. 1.7
Drawn: MS
Date: 07/11/2024
Paper Size: ISO Expand A3
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Date: 07/11/2024
Designed: MS
Our reference: 5012ESCP
Scale: 1:500
Issue: v3.1
Project:
PROPOSED ECO-TOURISM DEVELOPMENT
Lots 2, 25 & 26 DP 1232872 & 756672
92 CHONGS ROAD, JINDABYNE
LGA: SNOWY-MONARO
Harris Environmental Consulting
Unit 6/1, Memorial Drive,
Shellharbour City Centre, NSW 2529
T: +61 2 4236 0954
E: info@hec.eco
ABN: 54128740549
Wastewater | Bushfire | Stormwater
PROJECT MANAGER:
CLIENT:
JOSH LEITNER
E: jgroupplumbing@yahoo.com
P: 0448 123 090
North
Issue:
Description:
Date
Drawn
Approved
v1.0 Issue for client review 15/05/2022 MS SH
v2.0 Addition of Manager's Residence and Workshop 28/06/2022 MS SH
v2.1 Updated site plans 20/04/2023 MS SH
v3.0 Issue for client review 20/06/2024 MS SH
v3.1 Response to RFI 07/11/2024 MS SH
HARRIS


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SITE PLAN: KEY
2m CONTOURS
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DETAILS SHEET No. 1.8
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Date: 07/11/2024
Paper Size: ISO Expand A3
Q.A. Check: Complete
Date: 07/11/2024
Designed: MS
Our reference: 5012ESCP
Scale: 1:250
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v3.1 Response to RFI 07/11/2024 MS SH
HARRIS

REF: 5012WW

VERSION [3.1]

7 NOVEMBER 2024

Harrisenvironmental CONSULTING

SOIL AND SITE ASSESSMENT FOR ONSITE WASTEWATER DISPOSAL

STAGED 6 CABINS ECO-TOURIST DEVELOPMENT AT 92 CHONGS ROAD, JINDABYNE, NSW

LGA: Snowy-Monaro

Lots 2 DP 1232872, Lot 26 DP 756672, Lot 25 DP 756672 & Lot 1 DP 1250715

CLIENT: Mr Josh Leitner

HARRIS ENVIRONMENTAL CONSULTING
6/1 MEMORIAL DRIVE, SHELLHARBOUR CBD, 2529, NSW
TEL: (02) 4236 0954
Info@hec.eco

VERSION CONTROL

Title	Soil and Site Assessment for Onsite Wastewater Disposal			
Site address	92 Chongs road, Jindabyne, NSW			
Proposed development	6 Proposed Eco-Cabins, Manager's Residence and Workshop.			
Created By	Matthew Spann B. Env. Sci (Hons) (UOW)			
Approved by:	Sean Harris Msc Env Science (UOW), Grad dip Nat Res (UNE), BscAppSc, Agriculture (HAC)			
Date Created	Tuesday, 15 March 2022			
Version Number	**Modified By**	**Modifications Made**	**Date Modified**	**Status**
[1.0]	M.S.	Issue for client review	15/03/2022	Complete
[2.0]	M.S.	Addition of managers residence and Workshop	28/09/2022	Complete
[2.1]	M.S.	Updated Site Plans	20/04/2023	Complete
[3.0]	M.S.	Updated development areas and alterations to EMAs	20/08/2024	Complete
[3.1]	M.S.	Response to RFI	7/11/2024	Complete

Limitations

The findings and recommendations in this report are based on the objectives and scope of work outlined above. Harris Environmental Consulting performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental assessment profession. The report and conclusions are based on the information obtained at the time of the assessment. Changes to the site conditions may occur subsequent to the investigation described herein, through natural processes or through the intentional or accidental addition of contaminants, and these conditions may change with space and time. The results of this assessment are based upon site assessment conducted by HEC personnel and information provided by the client and site management. All conclusions regarding the property are the professional opinions of the HEC personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made, HEC assumes no responsibility or liability for errors in any data obtained from regulatory agencies, information from sources outside of HEC, or developments resulting from situations outside the scope of this project.

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TABLE OF CONTENTS

1. Introduction 4
2. Site Information 6
3. Site Assessment 7
4. Soil Assessment 8
5. Summary of Soil And Site Constraints 11
6. System Design 12
   6.1 Required Capacity of A Septic Tank 12
   6.2 Pipes 13
7. Sizing the Soil Absorption Beds 14
   6.4 Splitter Box To Distribute Wastewater To Beds 15
8. Summary 16
9. References 17

TABLES

Table 1 All Waste Septic Tank Operational Capacities 12
Table 2 Required Septic Tank Capacities 12
Table 3 Minimum pipe diameter and grade calculations 13
Table 4 Minimum pipe depth for trafficable areas 13
Table 5 Dimensions For Constructing Soil Absorption Bed 14
Table 6 Required Wastewater Disposal Areas 15

FIGURES

Figure 1 Location of the proposed Development 5
Figure 2 Splitter box 15

APPENDICES

Appendix i Construction of soil absorption beds 18
Appendix ii General Recommendations To Manage Water Quality And Quantity 21
Appendix iii Required Buffers 22
Appendix iv Standard Drawing 9A - Upslope Diversion Drain 24
Appendix v Site Plan – Sheet 1.1 25
Appendix vi Site Plan – Sheet 1.2 26
Appendix vii Site Plan – Sheet 1.3 27
Appendix viii Site Plan – Sheet 2.1 28
Appendix ix Site Plan – Sheet 2.2 29
Appendix x Site Plan – Sheet 2.3 30
Appendix xi Site Plan – Sheet 2.4 31
Appendix xii Site Plan – Sheet 2.5 32
Appendix xiii Site Plan – Sheet 2.6 33
Appendix xiv Site Plan – Sheet 2.7 34
Appendix xv Standard drawing – Soil Absorption Beds 35

1. INTRODUCTION

This Site and Soil Assessment for On-site Wastewater was prepared by Harris Environmental Consulting at the request of Mr Josh Leitner. It relates to the proposed development on Lots 2 DP 1232872, Lot 26 DP 756672, Lot 25 DP 756672 & Lot 1 DP 1250715 at 92 Chongs road, Jindabyne, NSW.

The proposed development includes the construction of six eco-cabins, two bushfire refuges, a shed with manager's quarters and a workshop and a network of gravel roads to access the new facilities on this approximately 46.866ha property.

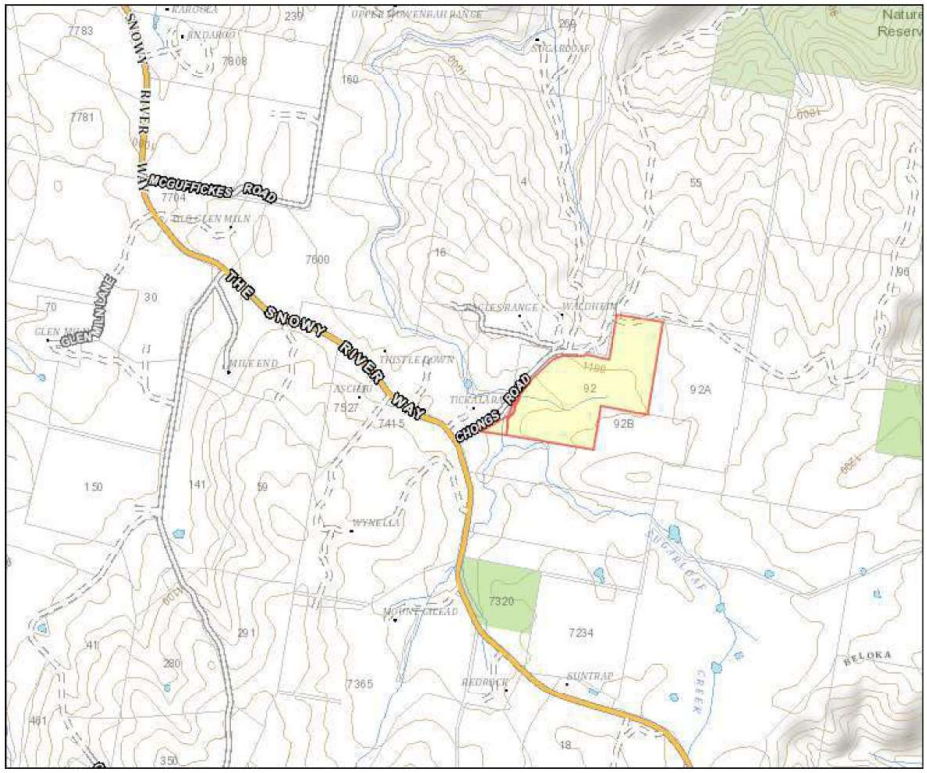
Fieldwork was undertaken by a representative of Harris Environmental Consulting (HEC) on the 11th February 2022. This plan is based on the primary investigation of the soils, topography, and hydrology of the site observed on the day of inspection. Soil samples and photos of the site were taken for further analysis.

The assessment was prepared to assess compliance with related requirements described in:

- Snowy-Monaro Regional Council Development Control Plan
- Local Government Act 1993
- Australian Standard AS/NZS 3500 Plumbing and Drainage 2018
- Environment and Health Protection Guidelines (1998) On-site Sewage Management for Single Households (Department of Local Government)
- AS/NZ 1547:2012 On-site wastewater management (Standards Australia, 2012)
- WaterNSW (2019), Designing and Installing On Site Wastewater Systems. A Sydney Catchment Authority Current Recommended Practice

Location of the site is shown in Figure 1.

FIGURE 1 LOCATION OF THE PROPOSED DEVELOPMENT



Source: SixMaps

2. SITE INFORMATION

Owner/client:	Mr Josh Leitner *J Group Plumbing Pty Ltd* E: jgroupplumbing@yahoo.com P: 0448 123 090	
Size of property:	~46 ha	
Legal title:	Lots 2 DP 1232872, Lot 26 DP 756672, Lot 25 DP 756672 & Lot 1 DP 1250715	
Local Government:	Snowy-Monaro Regional Council	
Water supply:	Tank	
Wastewater design load and daily wastewater (L/day) *(While no town or bore water supply is available, the design flow rates are conservatively estimated based on 150L/day/pp as per AS/NZS 2012:1547)*	***No. bedrooms in each Cabin (Capacity)***	***Total wastewater load***
	Cabin 1: 2 Bedrooms (6pp)	**= 900 L/day**
	Cabin 2: 2 Bedrooms (6pp)	**= 900 L/day**
	Cabin 3: 3 Bedrooms (8pp)	**= 1200 L/day**
	Cabin 4: 3 Bedrooms (8pp)	**= 1200 L/day**
	Cabin 5: 2 Bedrooms (6pp)	**= 900 L/day**
	Cabin 6: 2 Bedrooms (6pp)	**= 900 L/day**
Conservatively calculated as a 2-bedroom dwelling on a town/bore water as per WaterNSW (2019)	Shed 1 (Manager's Residence):	**= 600 L/day**
Contains bathroom, kitchenette and laundry – assume 5 staff @ 80L/pp/day	Shed 2 (Workshop)	**= 400 L/day**
Proposed wastewater treatment:	Septic tank	
Proposed wastewater disposal:	Soil absorption trench	
Date site assessed:	11 February 2022	
Date report prepared:	16 August 2024	
Report prepared by	Matthew Spann B. Env. Sci (Hons) (UOW)	
Site assessor:	[redacted] Msc Env Science (UOW), Grad dip Nat Res (UNE), BscAppSc, Agriculture (HAC) Sean Harris	

3. SITE ASSESSMENT

Climate - rainfall	*N/A for soil absorption beds*
Climate - evaporation	*N/A for soil absorption beds*
Flood potential	Proposed wastewater treatment system is above 1 in 100-year flood level; minor limitation. Proposed wastewater disposal area above 1 in 20-year flood level; minor limitation.
Frost potential	The site is not known to be subject to severe frosts, minor limitation
Exposure	Northern aspect; minor limitation
Slope	Slopes ranging from 6-22%, minor to moderate limitation for treated wastewater disposal
Landform	Convex slope, minor limitation
Run-on and seepage	Minor upslope stormwater run-on; minor limitation
Erosion potential	Minor erosion potential
Site drainage	Moderate to well drained soil profile; minor limitation
Evidence of fill	No evidence of fill; minor limitation
Domestic groundwater use	No groundwater bores within 100m
Surface rock	No surface rock; minor limitation
Buffer distance from wastewater management system:	Permanent waters: 100m+ Intermittent waters: 40m+ Boundary of premises: *Irrigation* 3-6m *Sand mound/trench* 6-12m Swimming pools: 6m+ Buildings (shed): 3-6m

4. SOIL ASSESSMENT

Method:	Hand augur/crowbar/shovel
Depth to bedrock (m):	1000mm to restrictive layer; minor limitation
Depth to high soil water table:	No groundwater or subsoil mottling encountered at a depth of 1000mm; minor limitation
Coarse (%):	No coarse fragments in subsoil, minor limitation
pH (soil/water):	pH 7.1 – 6.9; minor limitation
Electrical conductivity:	<1dSm, minor limitation
Salinity hazard:	No salinity information available for this area
Native vegetation and environmentally sensitive vegetation	No native vegetation or environmentally sensitive vegetation within 1m of the proposed EMA.
Geological unit: *(From Geoscience Australia Portal)* Soil landscape: *(From Geoscience Australia Portal)*	Bullenbalong Granodiorite – *Mafic, coarse-to medium-grained, biotite-rich granodiorite; quartz alignment defines a weakly developed foliation, metasedimentary xenoliths are common.* Unmapped Soil Landscape – Soils belonging to the k*andosols and dermosols orders, as per the Australian Soil Classification*
Surface rock:	No surface rock in proposed effluent management area
Bulk density:	1.5 g/cm^3 - well drained soil profile; minor limitation

Soil Testing Results

		Emerson Class Number	Cation Exchange Capacity (meq/100g)	Exchangeable Sodium Percent (%)	Phosphate Sorption Capacity (mg/kg)
Cabin 1	*Layer 1*	3	5.3	<0.1	1190
	Layer 2	6	8.0	0.4	1410
Cabin 6	*Layer 1*	2	4.0	<0.1	714
	Layer 2	2	7.7	0.8	973

Cabin 1: Soil profile from two soil profiles in each EMA:	Layer 1		DLR
	Texture Colour Depth Structure Coarse frag.	Loam 10.0YR-3/4 Donkey brown 0-150mm Weakly structured 0-5%	N/A
	Layer 2		DLR
	Texture Colour Depth Structure Coarse frag.	Fine sandy clay loam 10.0YR – 4/4 Coyote Brown 150-1000mm Weakly structured 0-5%	6mm/day

Cabin 2: Soil profile from two soil profiles in each EMA:	Layer 1		DLR
	Texture Colour Depth Structure Coarse frag.	Loam 10.0YR-3/4 Donkey brown 0-150mm Weakly structured 0-5%	N/A
	Layer 2		DLR
	Texture Colour Depth Structure Coarse frag.	Fine sandy clay loam 10.0YR – 4/4 Coyote Brown 150-1000mm Weakly structured 0-5%	6 mm/day
Cabin 3: Soil profile from two soil profiles in each EMA:	Layer 1		DLR
	Texture Colour Depth Structure Coarse frag.	Loam 10.0YR-3/4 Donkey brown 0-150mm Weakly structured 0-5%	N/A
	Layer 2		DLR
	Texture Colour Depth Structure Coarse frag.	Fine sandy clay loam 10.0YR – 4/4 Coyote Brown 150-1000mm Weakly structured 0-5%	6 mm/day
Cabin 4: Soil profile from two soil profiles in each EMA:	Layer 1		DLR
	Texture Colour Depth Structure Coarse frag.	Loam 10.0YR-3/4 Donkey brown 0-150mm Weakly structured 0-5%	N/A
	Layer 2		DLR
	Texture Colour Depth Structure Coarse frag.	Fine sandy clay loam 10.0YR – 4/4 Coyote Brown 150-1000mm Weakly structured 0-5%	6 mm/day
Cabin 5: Soil profile from two soil profiles in each EMA:	Layer 1		DLR
	Texture Colour Depth Structure Coarse frag.	Loam 10.0YR-3/4 Donkey brown 0-150mm Weakly structured 0-5%	N/A
	Layer 2		DLR
	Texture Colour Depth Structure Coarse frag.	Fine sandy clay loam 10.0YR – 4/4 Coyote Brown 150-1000mm Weakly structured 0-5%	6 mm/day

Cabin 6: Soil profile from two soil profiles in each EMA:	Layer 1		DLR
	Texture Colour Depth Structure Coarse frag.	Loam 10.0YR-3/4 Donkey brown 0-150mm Weakly structured 0-5%	N/A
	Layer 2		DLR
	Texture Colour Depth Structure Coarse frag.	Fine sandy clay loam 10.0YR – 4/4 Coyote Brown 150-1000mm Weakly structured 0-5%	6 mm/day
Manager's Residence Soil profile from two soil profiles in each EMA:	Layer 1		DLR
	Texture Colour Depth Structure Coarse frag.	Loam 10.0YR-3/4 Donkey brown 0-150mm Weakly structured 0-5%	N/A
	Layer 2		DLR
	Texture Colour Depth Structure Coarse frag.	Fine Sandy Clay Loam 10.0YR – 4/4 Coyote Brown 150-1000mm Weakly structured 0-5%	6 mm/day

5. SUMMARY OF SOIL AND SITE CONSTRAINTS

There are no major soil or site constraints that would prevent the installation of septic tanks for wastewater treatment and soil absorption beds for treated wastewater disposal. Septic tanks have been elected as the proposed method of wastewater management due to the remote nature of the property and the fact that septic tanks do not rely on a consistent power supply. Furthermore, the cabins are likely to be intermittently occupied, which could lead to issues if an Aerated Wastewater Treatment System was to be used.

Given the sloped nature of the site of each effluent disposal area, this report proposes upslope diversion banks be installed at each area to deflect surface runoff around the absorption bed area.

The proposed absorption beds for each structure are at locations that are compliant with the buffers and setback distances required by Snowy-Monaro Regional Council and WaterNSW. This includes:

- More than 100m from permanent watercourses, 40m from drainage depressions
- 6m from downslope driveways/boundary lines
- 3m from upslope driveways/ boundary lines
- 6m from downslope buildings and 3m from upslope buildings.

The sandy loam and clay loam subsoil has suitable permeability and nutrient absorption properties for this method of wastewater treatment and disposal.

The wastewater streams from both the Manager's Residence and the Workshop may be combined into a single septic tanks and disposal area.

There are two bushfire refuges also proposed as part of the development. These structures will not contain any wastewater generating fixtures, and hence have not included in any wastewater design.

6. SYSTEM DESIGN

6.1 REQUIRED CAPACITY OF A SEPTIC TANK

Septic tanks are to be sized in accordance with AS/NZS 1547 (2012), as shown in Table 1.

TABLE 1 ALL WASTE SEPTIC TANK OPERATIONAL CAPACITIES

Population (persons)	No. bedrooms	Design flow (L/day)	Tank capacity (L)
1-5	1-3	1000	3000
6-7	4	1000-1400	3500
8	5	1400-1600	4000
9-10	6	1600-2000	4500

For each Cabin, the septic tank should be sized for the individual design wastewater flow, such as is in Table 2 below:

TABLE 2 REQUIRED SEPTIC TANK CAPACITIES

Cabin	Total wastewater load	Required Septic Tank Capacity
Cabin 1	= 900 L/day	3,000L
Cabin 2	= 900 L/day	3,000L
Cabin 3	= 1,200 L/day	3,500L
Cabin 4	= 1,200 L/day	3,500L
Cabin 5	= 900 L/day	3,000L
Cabin 6	= 900 L/day	3,000L
Shed 1 (Manager's Residence):	= 600 L/day	3,000L *(Combined)*
Shed 2 (Workshop)	=400 L/day	

The location of the septic tank is shown indicatively on the Site Plans in the Appendix. The final location of the tank may be decided onsite in conjunction with the property owner and the installer. However, please note:

- It is to be at least 1.5m from any building.
- Shall be located above the 1% AEP (1:100) flood contour.

6.2 PIPES

The sewer pipes between the plumbing amenities, treatment system and effluent disposal area must conform with 'AS/NZS 3500(Set):2018 Plumbing and Drainage Set' specifying the nominal pipe sizes and respective minimum grades. Table 3 contains these specifications.

In addition, where a sewer carrying untreated wastewater to a treatment system is longer than 60 metres, the minimum grade should be doubled, and inspection ports should be installed at least every 30 metres or at an angle or change of grade.

The sewer pipes between the plumbing amenities, septic tank and effluent disposal area must be buried at a depth that provides protection against mechanical damage or deformation, in accordance with 'AS/NZS 3500(Set):2018 Plumbing and Drainage Set'. Table 4 shows the minimum pipe depth for trafficable areas.

TABLE 3 MINIMUM PIPE DIAMETER AND GRADE CALCULATIONS

Nominal pipe size (DN)	Minimum grade %	Minimum grade ratio
65	2.5	1:40
80	1.65	1:60
100	1.65*	1:60
125	1.25	1:80
150	1.00	1:100

* Except for drains from septic tanks, sewage treatment plants and unvented discharge pipes from tundishes, which may have a minimum grade of 1%,
Source: 'AS/NZS 3500.2:2018 Plumbing and drainage Part 2 Sanitary plumbing and drainage' Table 3.4.1. NB: pipe grades are expressed as a percentage of vertical to horizontal distances.

TABLE 4 MINIMUM PIPE DEPTH FOR TRAFFICABLE AREAS

Location	Minimum depth of cover (mm) for all materials other than cast iron
Where subject to vehicular traffic	500
Elsewhere	300

Source: 'AS/NZS 3500 (Parts 0-4):2018 Plumbing and drainage Set'. Table 3.7.2 Minimum Cover for Buried Pipes'

7. SIZING THE SOIL ABSORPTION BEDS

The soil absorption bed can be constructed within the range of widths and depths shown in Table 5 (ASNZ1547, 2012). The bed can be no deeper than 600mm and no wider than 4m. For this site, the proposed base of the bed is 450mm below ground surface (300mm aggregate and 150mm topsoil).

TABLE 5 DIMENSIONS FOR CONSTRUCTING SOIL ABSORPTION BED

	Typical dimensions (mm)	Maximum (mm)	Minimum (mm)
Width	1000-4000	4000	1000
Depth of aggregate	300-600	600	300
Depth of topsoil	100-150	150	100
Spacing between adjacent beds	-	NA	1000
Source: 'AS/NZS 1547:2012 *On-site* domestic wastewater management			

The size of the soil absorption bed is calculated using the formulae in AS/NZ 1547(2012). It is based on design flow rate, design width and Design Loading Rate (DLR), which is the amount of effluent that, over the long-term, be applied each day per area of an infiltrative surface without failure of the infiltrative surface. ASNZ1547(2012) recommend a DLR of 6mm/day for clay loam soils receiving effluent treated to a primary standard.

The AS/NZ1547(2012) method for calculating bed size is as follows:

$$L = \frac{Q}{DLR \times W}$$

Where

L = Length in m
Q = Design daily flow in L/day
W = Width in m
DLR = Design Loading Rate in mm/day (6mm/day)

Based on the above formulae and assumptions described in this report, the soil absorption sizing and configurations are shown in Table 6 below.

TABLE 6 REQUIRED WASTEWATER DISPOSAL AREAS

Cabin	DLR (mm/day)	Required Disposal Area (m^2)	Bed Configuration
Cabin 1	6	150	**THREE** 20m x 2.5m
Cabin 2	6	150	**THREE** 20m x 2.5m
Cabin 3	6	200	**FOUR** 20m x 2.5m
Cabin 4	6	200	**FOUR** 20m x 2.5m
Cabin 5	6	150	**THREE** 20m x 2.5m
Cabin 6	6	150	**THREE** 20m x 2.5m
Manager's Residence + Workshop	6	167	**THREE** 18.5m x 3m

6.4 SPLITTER BOX TO DISTRIBUTE WASTEWATER TO BEDS

A splitter distribution box ensures even flow to each bed. Splitter boxes should be checked as part of performance monitoring inspections to confirm that an even flow of effluent is being directed to each distribution line. See **Figure 2.**

FIGURE 2 SPLITTER BOX



8. SUMMARY

The assessment was prepared for the proposed eco-tourism development. This assessment recommends the following:

- The installation of separate septic tanks for each eco-cabin, capable of supporting the daily discharges shown in Table 2.
- Installation of soil absorption beds to the dimensions shown in Table 6 and as described in the Appendix and shown on the Site Plans. It is expected that the configuration of this bed may need to be adjusted when the bed construction is underway.
- Beds within each individual disposal area must receive an equal distribution of wastewater, which can be achieved using a gate valve or similar.
- Upslope diversion banks should be installed to deflect upslope surface run-on away from the disposal areas.

9. REFERENCES

Department of Local Government (1998) *On-site Sewage Management for Single Households*. NSW Government.

Standards Australia (2012) Australian/New Zealand Standard 1547:2012 *On-site domestic wastewater management*. Standards Australia.

NSW Health Septic Tank Accreditation Guidelines (2001).

Hazelton, P.A and Murphy, B.W ed. (1992) *What Do All the Numbers Mean? A Guide for the Interpretation of Soil Test Results.* Department of Conservation and Land Management (incorporating the Soil Conservation Service of NSW), Sydney.

Snowy-Monaro Regional Council Development Control Plan

APPENDIX I CONSTRUCTION OF SOIL ABSORPTION BEDS

The following is a summary of construction notes from WaterNSW (2019) and should be read in conjunction with Standard Drawing attached. Refer to these documents if further clarification is required.

Step 1: Site Preparation

Obtain a copy of the council approved plans and conditions of consent. Accurately locate beds as shown on the site plans and according to the specified and approved design and/or any covenant. Check the location of all constructed beds against the approved site plans. If there is any change in their position from the site plans, a Section 96 application (from the *Environmental Planning and Assessment Act 1979)* must be made to the council to alter their position.

Step 2: Positioning

Build the beds along the contours and use laser leveling to ensure that the base is exactly level. If this does not happen, distribution will not be even and one part of the bed will be more heavily loaded. This could cause the most heavily loaded part of the bed to fail prematurely, with further creeping failure as the effluent is forced to more distant parts of the bed.

The basal area of the beds has been determined according to the procedures in AS/NZS 1547(2012) and WaterNSW (2019) . This includes a minimum bed length to width ratio of 3:1, beds must be installed parallel to the site contours and beds must be of the same basal area if they are receiving the same volume of wastewater.

Always avoid cutting bed through existing weakened ground (eg., through the alignments of former underground pipes, cables or conduits) as they may provide preferential pathways for the effluent to escape from the bed. If they cut downslope through the ground occupied by a series of bed, effluent may preferentially flow to the lowest bed causing it to fail or surcharge. Where it is unavoidable to cut into alignment or it happens accidentally, seal the weaknesses in the bed walls with cement or bentonite grout.

Step 3: Timing

Build beds during fine weather. If it rains before beds are completed, they should be covered to protect them from rain damage.

Once dug, complete the beds promptly to avoid foreign material being washed into the open bed. In particular, avoid puddling, where clay settles out at the bottom of a water filled trench exposed to rain, as clay settling on the base of the bed will reduce bed performance.

Step 4: Excavation

- Carefully excavate the base of any bed and level it with a dumpy or laser level. The bed must be level along and across the line of the bed. If there is a slope across the base of the bed, the effluent will drain to and preferentially load the downslope side of the bed, which may then fail or overflow.
- Where beds are dug along the contour on sloping ground by an excavator that does not have a pivoting bucket, the base of the bed will probably be cut parallel to the ground surface. In this case, the base of the bed will have a fall towards the downslope side. The bed should be further hand dug to level the base and stop excessive effluent accumulating against the downslope wall of the bed.
- Where beds are dug by excavator in clayey soils, any smearing of the bed walls and floor must be fixed by scarifying the surface.

Step 5: Construction

- Do not dig beds in dispersive soils. If the soil appears dispersive after the beds are dug, add gypsum to the bed base at the rate of one kilogram per square metre. Absorption beds should not be built in medium to heavy clay soils, and preferably not in light clay soils.
- Pressure-dosing manifold consisting of 25mm PVC pipe with 3mm holes drilled (deburred) at 400mm centres facing upwards. The total number and length of laterals will be determined by the required bed size (m^2) and the lateral spacings shown in this drawing.
- Install a 90mm slotted PVC or agricultural pipe over manifold laterals.
- Install an inspection port on downhill side of trench / bed. This is made from 50mm PVC pipe with perforations in the aggregate level of the trench / bed.
- Install individual flush points for each lateral. This may be a screw cap fitting on a 90-degree elbow level with the bed surface or a pressure controlled flush valve (such as those used for subsurface irrigation systems) inside an irrigation control box. Manual flushing should be carried out at least every 12 months.
- Install a 40mm PVC dosing manifold. Larger systems may require different pipe sizes and orifice reducers at lateral connection points.
- Pump dosed effluent from treatment system. The pump must be capable of delivering the total flow rate required for all laterals whilst providing a 1.5m residual head (i.e. squirt height) at the highest orifice (with no more than 10% variation in squirt height across the whole bed). For beds with individual laterals no more than 10m long, it is acceptable to adopt a flow rate
- of 3.5-4L/min/lineal metre. Total dynamic head (including friction loss) will need to be determined on a site-specific basis.
- Ensure that the sides of beds are not damaged or caused to collapse when the beds are filled with gravel or sand.

- Beds can be filled with gravel (typically 20-40 millimetres or occasionally coarse sand), but it should not be compacted. Appropriate consideration should be given to bed storage capacity where beds are filled with material other than gravel.

- Lay geotextile filter cloth over the gravel or sand in a bed and under the topsoil to ensure that the topsoil does not penetrate and block the bed.

- Test the beds with clean water before filling with gravel (or coarse sand) to ensure effective and even distribution of effluent.

- Apply 150 to 200 millimetres of topsoil to the top of the bed and leave it slightly mounded above ground level to allow it to settle and to encourage incident rainfall to be shed away from the top of the bed.

- The top of the absorption bed area should be turfed or grass planted to establish vegetation cover promptly after construction. This ensures the best uptake of effluent by evapotranspiration. Ensure that larger deep-rooting plants are not planted close to bed to reduce the chance of root intrusion and clogging of the beds.

- A stormwater diversion berm/ drain should be built on sloping sites upslope of the absorption beds. Standard Drawing No. 9A provides detail about constructing a stormwater diversion drain.

Step 6: Dosing

- Beds may be gravity-fed or pressure-dosed using pumps or dosing siphons. Raised pressure-dosed absorption beds are a possible alternative where there are shallow limiting layers present (eg bedrock, clay or water table) and not enough separation distance from that layer. The linear loading rate must be addressed in these situations.

- Install a hydraulically operated indexing valve that delivers effluent to a different trench / bed or set of laterals at each pump cut-in.

- Checklist 10.1 details matters that should be checked when trenches or beds are installed. Plumbers/ installers and Council inspectors can use this checklist to ensure installation has been completed properly - see http://www.sca.nsw.gov.au/publications/publications/designing-and-installing-on-site-wastewater-systems

APPENDIX II GENERAL RECOMMENDATIONS TO MANAGE WATER QUALITY AND QUANTITY

Insinkerator style kitchen garbage disposal units should be avoided as they increase water consumption and raise the nutrient and BOD concentrations of household effluent.

Water conservation can reduce the volume of wastewater that needs to be treated and discharged on site. The residence should include appliances that are rated under the Water Efficiency Labelling and Standards (WELS) Scheme that includes:

i. 4-star dual-flush toilets;
ii. 3-star showerheads;
iii. 4-star taps (for all taps other than bath outlets and garden taps);
iv. 3-star urinals; and
v. Water-efficient washing machines and dishwashers are to be specified and used wherever possible.

Chemical cleaning compounds and other chemicals that enter the treatment system should be low in phosphate and salt. Anti-bacterial chemical cleaning compounds and other chemicals that enter the treatment system should be avoided. This includes chlorine, disinfectants, bleaches etc.

Water conservation can reduce the volume of wastewater that needs to be treated and discharged on site. Water reduction fixtures will also be required to conform to BASIX, which requires a 40% reduction below average rates of water consumption. The following AAA-rated would help achieve this:

- Dual flush toilets (6/3L)
- Aerator taps
- Shower heads that limit flow to no more than 6L/minute
- Dishwashers that use no more than 18 litres per wash cycle
- Washing machines that use no more than 22 litres per dry kg of clothes

APPENDIX III REQUIRED BUFFERS

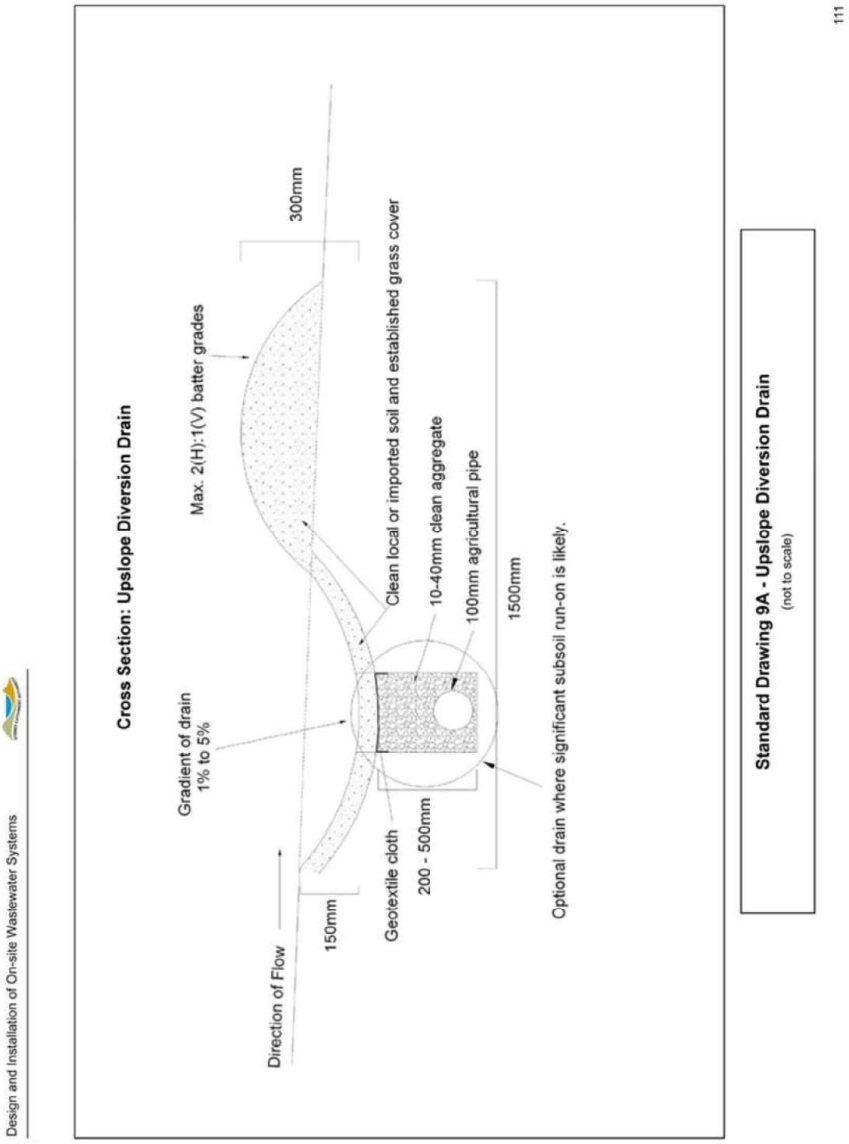
The following buffers must be applied when installing all onsite sewage management systems in accordance with WaterNSW (2019) and Snowy-Monaro Council's Development Control Plan.

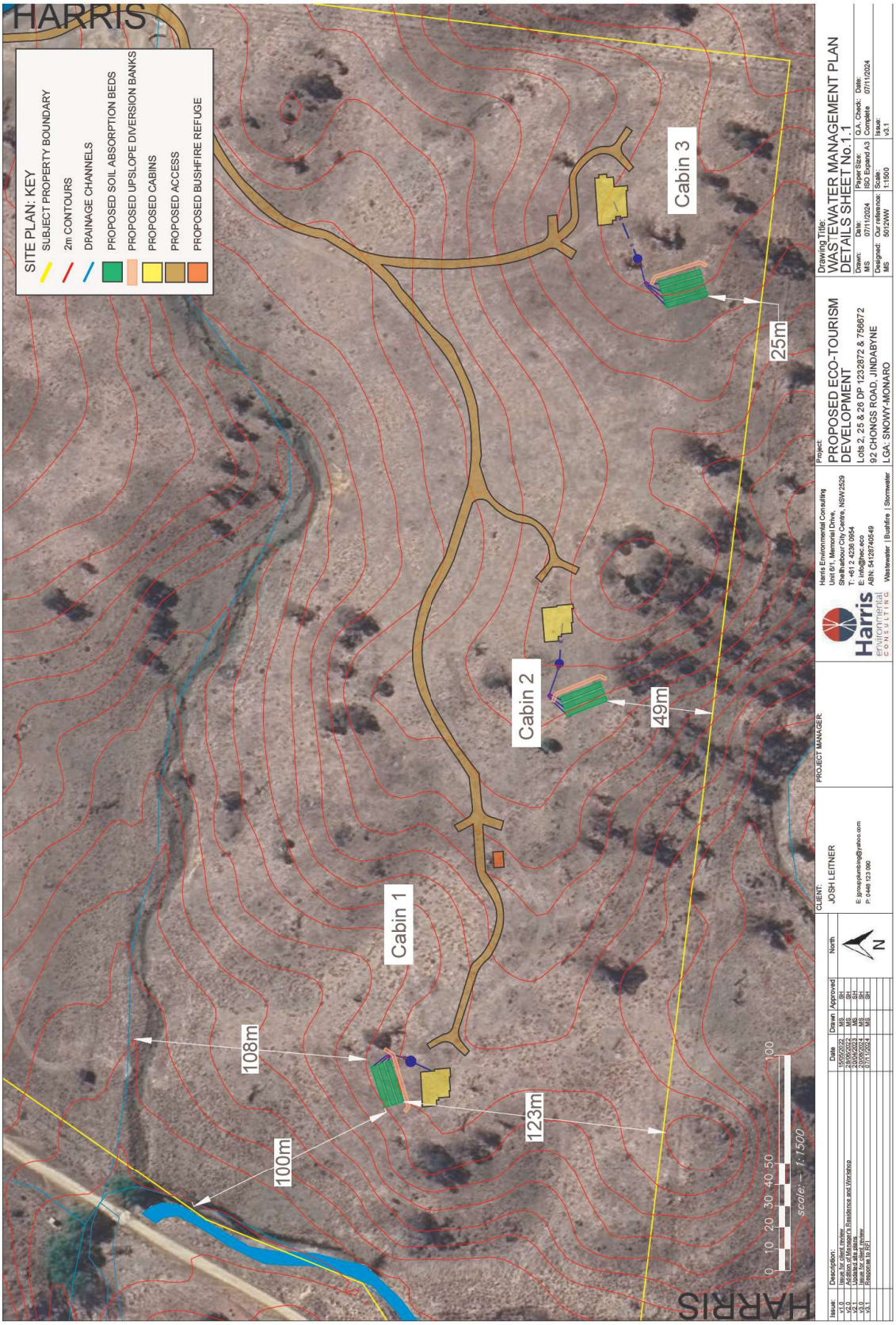
Table 2.6 – Buffer distances

Feature	Level of effluent treatment	Effluent application method	Buffer distance (minimum)	Achievable
Buildings, retaining walls	Primary	Subsoil	2.0m downslope and where flat, or 6.0m upslope of the feature	□ Yes □ No □ N/A
	Secondary (disinfected)	Subsurface and surface (including drip or trickle) irrigation	2–6m (<3m only for drip irrigation on low rate)	□ Yes □ No □ N/A
Premises boundaries, paths and walkways, recreation areas	Primary	Subsoil	3.0m downslope and where flat, or 6.0m upslope of the feature; 15m to recreation areas, if by LPED irrigation	□ Yes □ No □ N/A
	Secondary (disinfected)	Subsurface irrigation	3.0m downslope and where flat, or 4.0m upslope of the feature	□ Yes □ No □ N/A
		Surface irrigation	15m up- or downslope of the feature	□ Yes □ No □ N/A
In ground potable water tanks, in ground swimming pools	Primary	Subsoil	15m and downslope from water tank or pool	□ Yes □ No □ N/A
	Secondary (disinfected)	Subsurface and surface irrigation	4.0m - should not be located upslope of feature	□ Yes □ No □ N/A
Watercourse, lakes and the full supply level for all water supply reservoirs	Primary	Subsoil	100m from the high water level	□ Yes □ No □ N/A
	Secondary (disinfected)	Subsurface and surface irrigation	100m from the high water level	□ Yes □ No □ N/A
Bore or well licenced for domestic^ consumption	Primary	Subsoil	100m	□ Yes □ No □ N/A
	Secondary (disinfected)	Subsurface and surface irrigation	100m	□ Yes □ No □ N/A

Feature	Level of effluent treatment	Effluent application method	Buffer distance (minimum)	Achievable
Drainage depressions, farm dams and roadside drainage and lot scale stormwater quality improvement devices	Primary	Subsoil	40m from the high water level	□ Yes □ No □ N/A
	Secondary (disinfected)	Subsurface and surface irrigation	40m from the high water level	□ Yes □ No □ N/A
^ If within 100 metres of a bore or well licenced for domestic consumption, a draw-down analysis is required using an appropriate methodology, such as Cromer, Gardner and Beavers, 2001 'An improved viral die-off method to estimate setback distances'. Domestic consumption is taken to mean for drinking, watering of edible plants etc.				

APPENDIX IV STANDARD DRAWING 9A - UPSLOPE DIVERSION DRAIN




HARRIS
SITE PLAN: KEY
SUBJECT PROPERTY BOUNDARY
2m CONTOURS
DRAINAGE CHANNELS
PROPOSED SOIL ABSORPTION BEDS
PROPOSED UPSLOPE DIVERSION BANKS
PROPOSED CABINS
PROPOSED ACCESS
PROPOSED BUSHFIRE REFUGE
Cabin 1
Cabin 2
Cabin 3
25m
49m
108m
123m
100m
0 10 20 30 40 50 100
scale: 1:1500
HARRIS
Drawing Title:
WASTEWATER MANAGEMENT PLAN
DETAILS SHEET No.1.1
Project:
PROPOSED ECO-TOURISM DEVELOPMENT
Lots 2, 25 & 26 DP 1232872 & 756672
92 CHONGS ROAD, JINDABYNE
LGA: SNOWY-MONARO
Harris Environmental Consulting
Unit 6/1, Memorial Drive,
Shellharbour City Centre, NSW 2529
T: +61 2 4236 0954
E: info@hec.eco
ABN: 54128740549
Wastewater | Bushfire | Stormwater
PROJECT MANAGER:
CLIENT:
JOSH LEITNER
E: jgroupplumbing@yahoo.com
P: 0448 123 090
North
N
Issue:
Description:
Date
Drawn
Approved
v1.0 Issue for client review 15/06/2022 MS SH
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v2.1 Updated site plans 20/04/2023 MS SH
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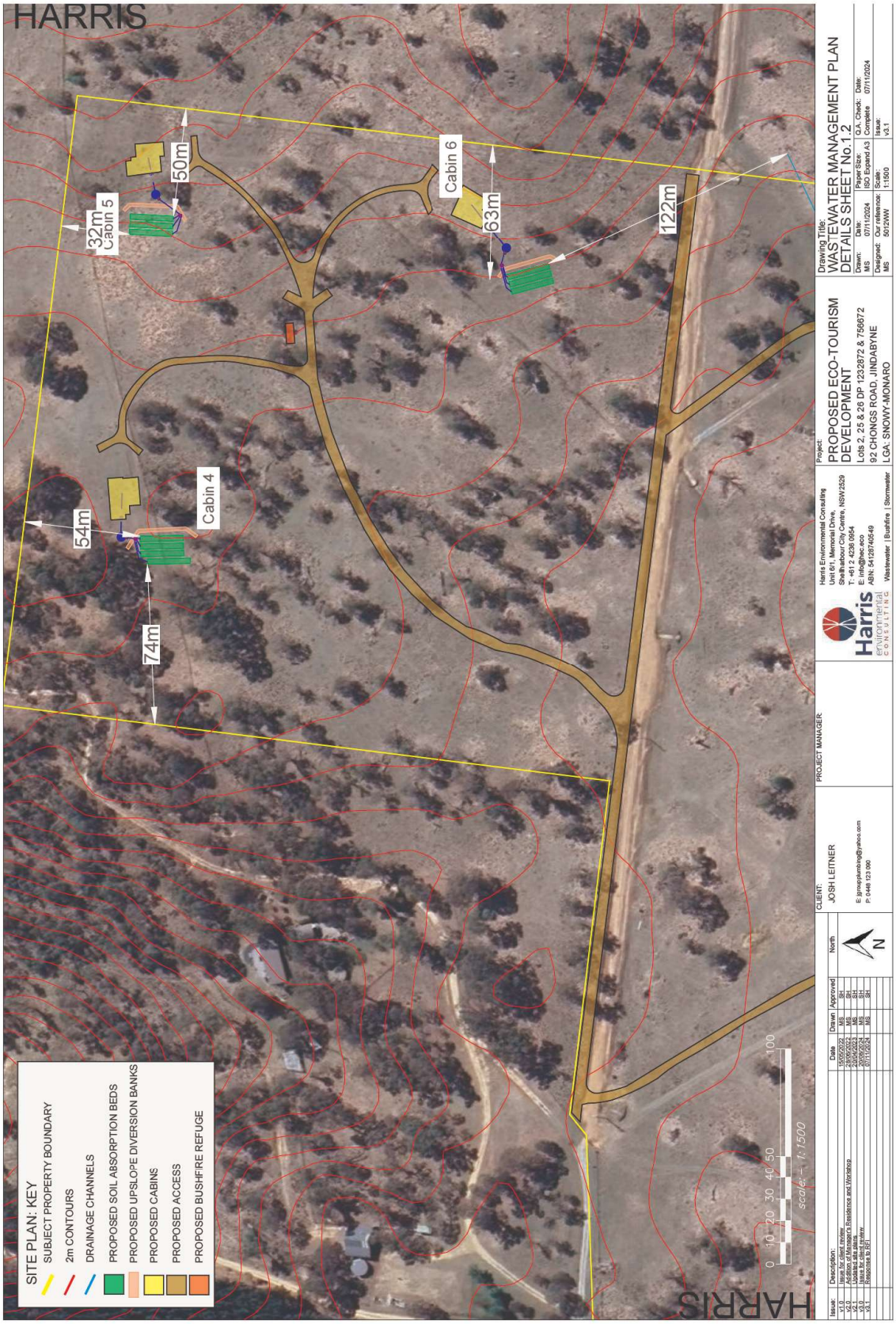
v3.1 Response to RFI 07/11/2024 MS SH


HARRIS
Cabin 5
Cabin 6
Cabin 4
32m
50m
63m
122m
54m
74m
SITE PLAN: KEY
SUBJECT PROPERTY BOUNDARY
2m CONTOURS
DRAINAGE CHANNELS
PROPOSED SOIL ABSORPTION BEDS
PROPOSED UPSLOPE DIVERSION BANKS
PROPOSED CABINS
PROPOSED ACCESS
PROPOSED BUSHFIRE REFUGE
0 10 20 30 40 50 100
scale: 1:1500
HARRIS
Drawing Title:
WASTEWATER MANAGEMENT PLAN
DETAILS SHEET No.1.2
Project:
PROPOSED ECO-TOURISM DEVELOPMENT
Lots 2, 25 & 26 DP 1232872 & 756672
92 CHONGS ROAD, JINDABYNE
LGA: SNOWY-MONARO
Harris Environmental Consulting
Unit 6/1, Memorial Drive,
Shellharbour City Centre, NSW 2529
T: +61 2 4236 0954
E: info@hec.eco
ABN: 54128740549
Wastewater | Bushfire | Stormwater
PROJECT MANAGER:
CLIENT:
JOSH LEITNER
E: jgroupplumbing@yahoo.com
P: 0448 123 090
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v3.1 Response to RFI 07/11/2024 MS SH
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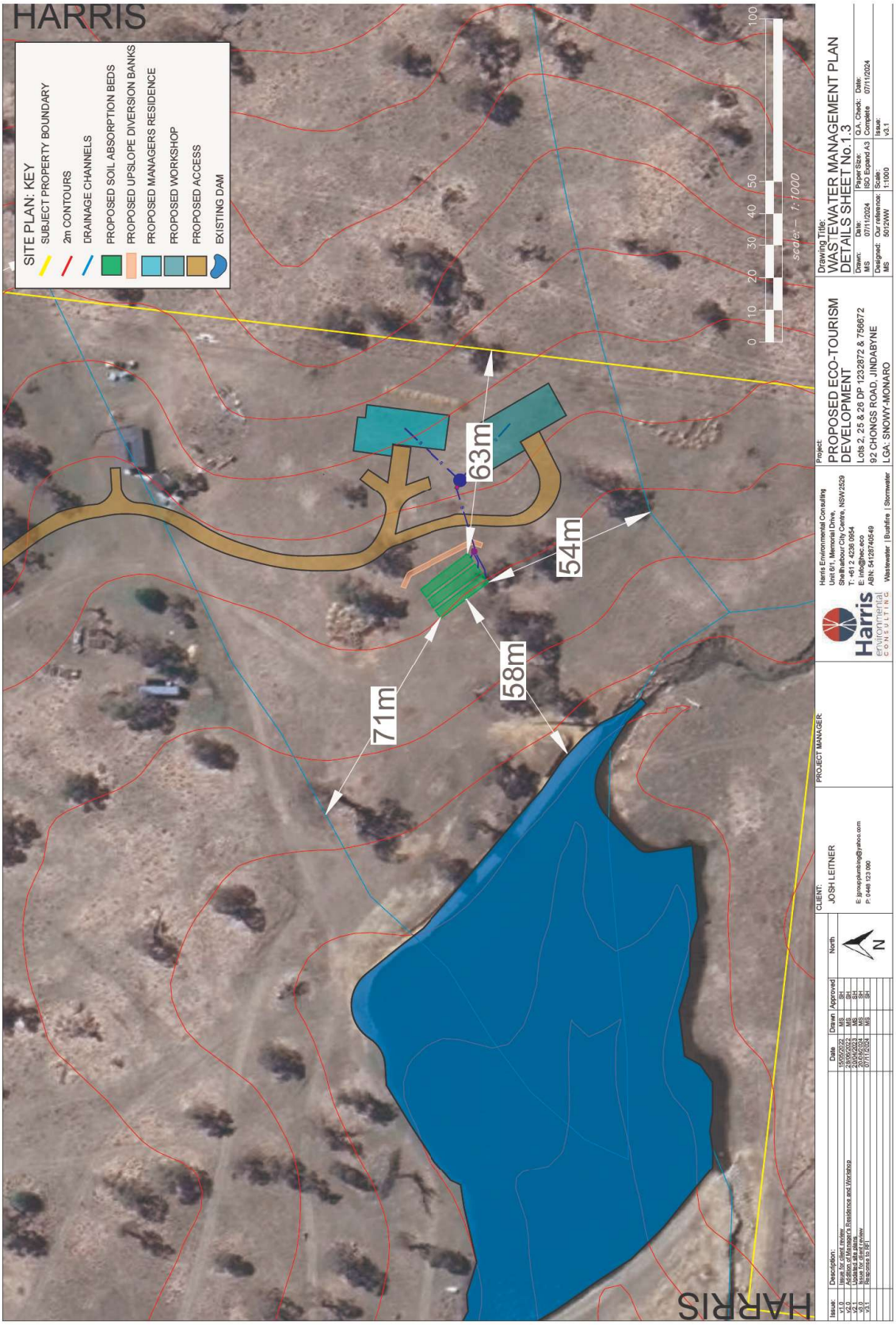
HARRIS
SITE PLAN: KEY
SUBJECT PROPERTY BOUNDARY
2m CONTOURS
DRAINAGE CHANNELS
PROPOSED SOIL ABSORPTION BEDS
PROPOSED UPSLOPE DIVERSION BANKS
PROPOSED MANAGERS RESIDENCE
PROPOSED WORKSHOP
PROPOSED ACCESS
EXISTING DAM
63m
54m
58m
71m
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scale: – 1:1000
Drawing Title:
WASTEWATER MANAGEMENT PLAN
DETAILS SHEET No.1.3
Project:
PROPOSED ECO-TOURISM DEVELOPMENT
Lots 2, 25 & 26 DP 1232872 & 756672
92 CHONGS ROAD, JINDABYNE
LGA: SNOWY-MONARO
Harris Environmental Consulting
Unit 6/1, Memorial Drive,
Shellharbour City Centre, NSW 2529
T: +61 2 4236 0954
E: info@hec.eco
ABN: 54128740549
Wastewater | Bushfire | Stormwater
PROJECT MANAGER:
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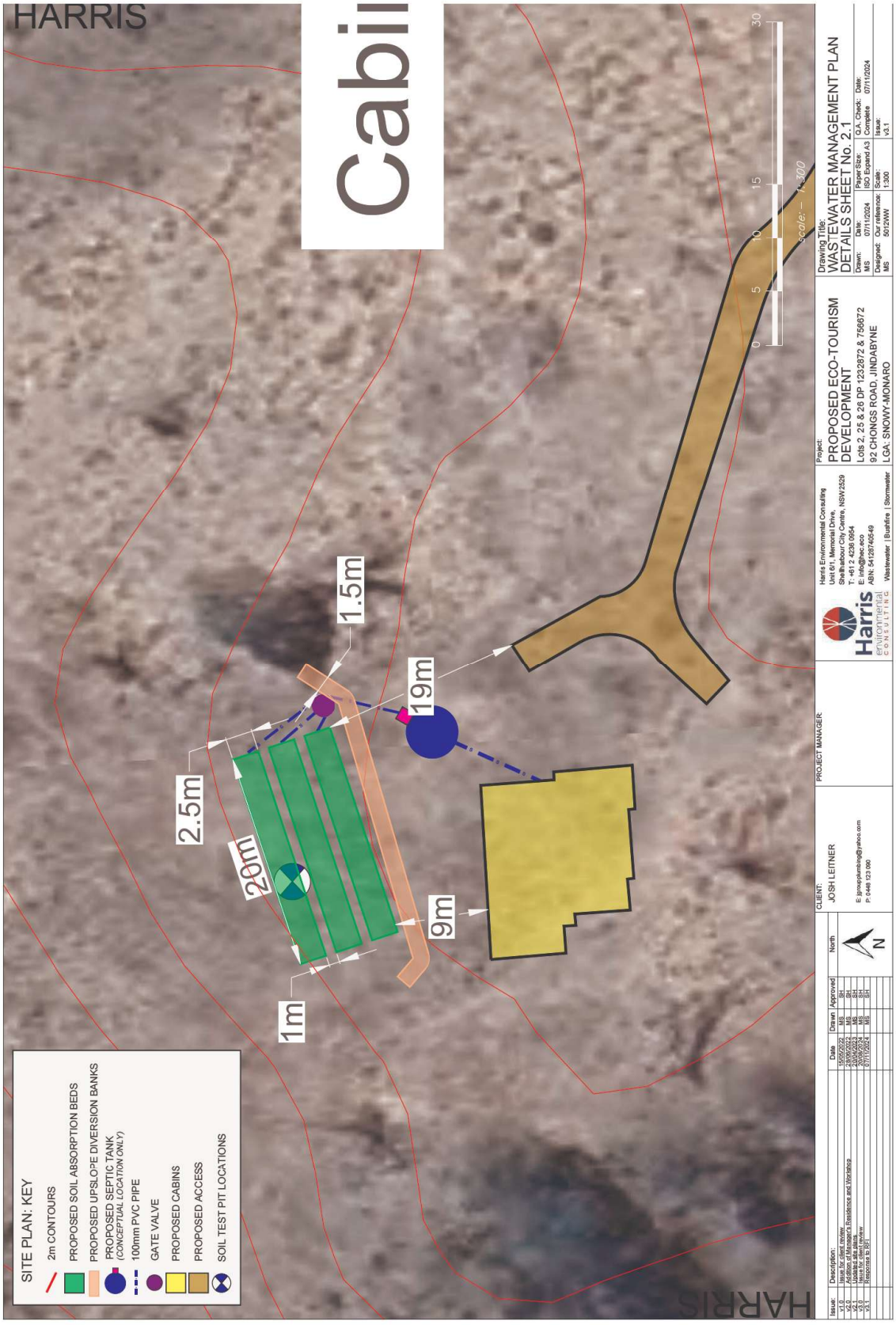
JOSH LEITNER
E: jgroupplumbing@yahoo.com
P: 0448 123 090
North
N
HARRIS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Cabi
1.5m
19m
2.5m
20m
9m
1m
0
5
10
15
30
scale: – 1:300
SITE PLAN: KEY
2m CONTOURS
PROPOSED SOIL ABSORPTION BEDS
PROPOSED UPSLOPE DIVERSION BANKS
PROPOSED SEPTIC TANK
(CONCEPTUAL LOCATION ONLY)
100mm PVC PIPE
GATE VALVE
PROPOSED CABINS
PROPOSED ACCESS
SOIL TEST PIT LOCATIONS
Harris Environmental Consulting
Unit 6/1, Memorial Drive,
Shellharbour City Centre, NSW 2529
T: +61 2 4236 0954
E: info@hec.eco
ABN: 54128740549
Wastewater | Bushfire | Stormwater
Project:
PROPOSED ECO-TOURISM DEVELOPMENT
Lots 2, 25 & 26 DP 1232872 & 756672
92 CHONGS ROAD, JINDABYNE
LGA: SNOWY-MONARO
Drawing Title:
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DETAILS SHEET No. 2.1
Drawn: MS
Date: 07/11/2024
Paper Size: ISO Expand A3
Q.A. Check: Complete
Date: 07/11/2024
Designed: MS
Our reference: 5012WW
Scale: 1:300
Issue: v3.1
PROJECT MANAGER:
CLIENT:
JOSH LEITNER
E: jgroupplumbing@yahoo.com
P: 0448 123 090
North
N
Issue:
Description:
Date
Drawn
Approved
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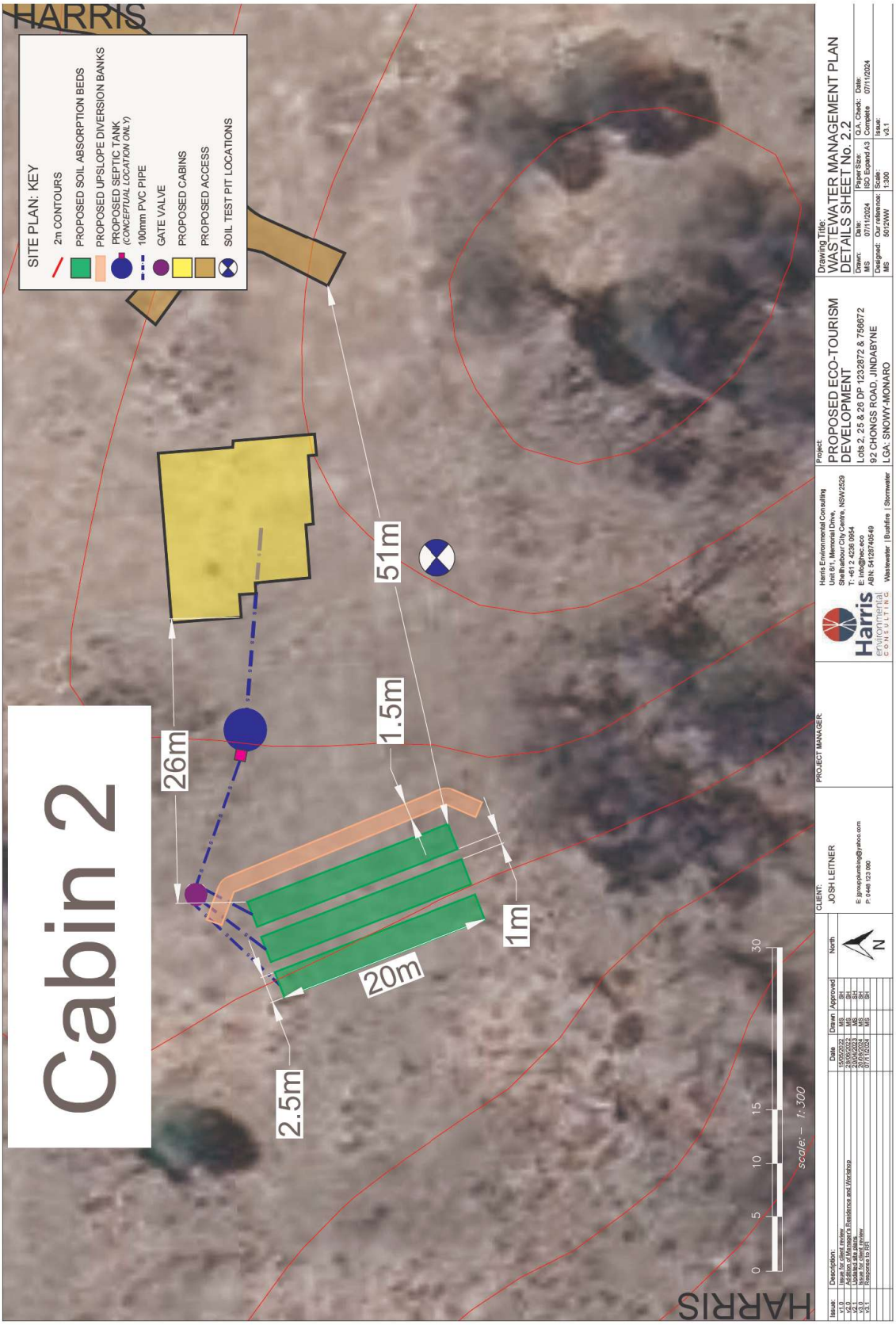
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SITE PLAN: KEY
2m CONTOURS
PROPOSED SOIL ABSORPTION BEDS
PROPOSED UPSLOPE DIVERSION BANKS
PROPOSED SEPTIC TANK (CONCEPTUAL LOCATION ONLY)
100mm PVC PIPE
GATE VALVE
PROPOSED CABINS
PROPOSED ACCESS
SOIL TEST PIT LOCATIONS
Cabin 2
26m
51m
1.5m
1m
20m
2.5m
0 5 10 15 30
scale: – 1:300
HARRIS
Drawing Title:
WASTEWATER MANAGEMENT PLAN
DETAILS SHEET No. 2.2
Project:
PROPOSED ECO-TOURISM DEVELOPMENT
Lots 2, 25 & 26 DP 1232872 & 756672
92 CHONGS ROAD, JINDABYNE
LGA: SNOWY-MONARO
Harris Environmental Consulting
Unit 6/1, Memorial Drive,
Shellharbour City Centre, NSW 2529
T: +61 2 4236 0954
E: info@hec.eco
ABN: 54128740549
Wastewater | Bushfire | Stormwater
PROJECT MANAGER:
CLIENT:
JOSH LEITNER
E: jgroupplumbing@yahoo.com
P: 0448 123 090
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v3.1 Response to RFI 07/11/2024 MS SH
North
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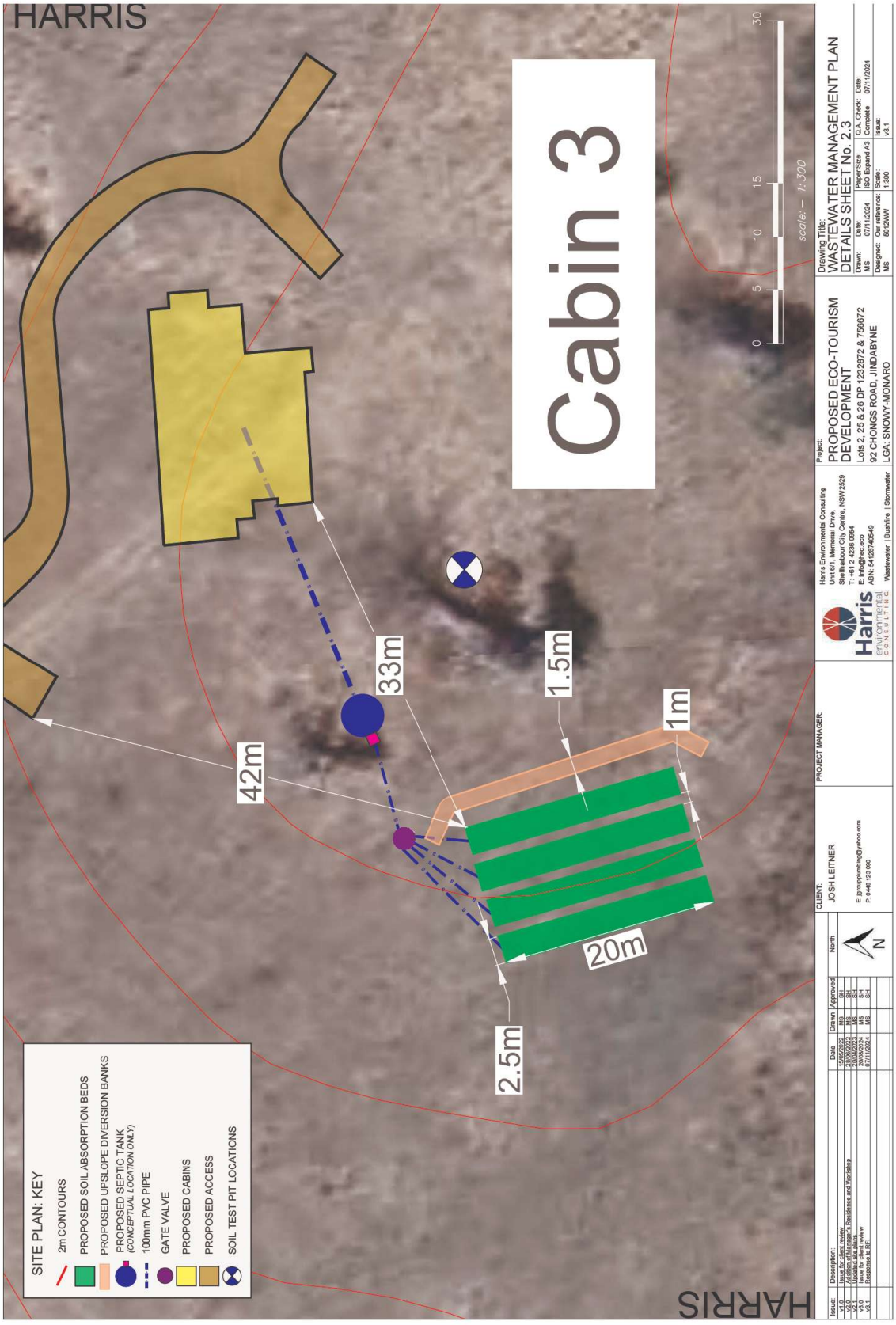
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Cabin 3
33m
42m
1.5m
1m
20m
2.5m
0 5 10 15 30
scale: – 1:300
SITE PLAN: KEY
2m CONTOURS
PROPOSED SOIL ABSORPTION BEDS
PROPOSED UPSLOPE DIVERSION BANKS
PROPOSED SEPTIC TANK (CONCEPTUAL LOCATION ONLY)
100mm PVC PIPE
GATE VALVE
PROPOSED CABINS
PROPOSED ACCESS
SOIL TEST PIT LOCATIONS
Drawing Title: WASTEWATER MANAGEMENT PLAN DETAILS SHEET No. 2.3
Project: PROPOSED ECO-TOURISM DEVELOPMENT
Lots 2, 25 & 26 DP 1232872 & 756672
92 CHONGS ROAD, JINDABYNE
LGA: SNOWY-MONARO
Harris Environmental Consulting
Unit 6/1, Memorial Drive,
Shellharbour City Centre, NSW 2529
T: +61 2 4236 0954
E: info@hec.eco
ABN: 54128740549
Wastewater | Bushfire | Stormwater
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CLIENT: JOSH LEITNER
E: jgroupplumbing@yahoo.com
P: 0448 123 090
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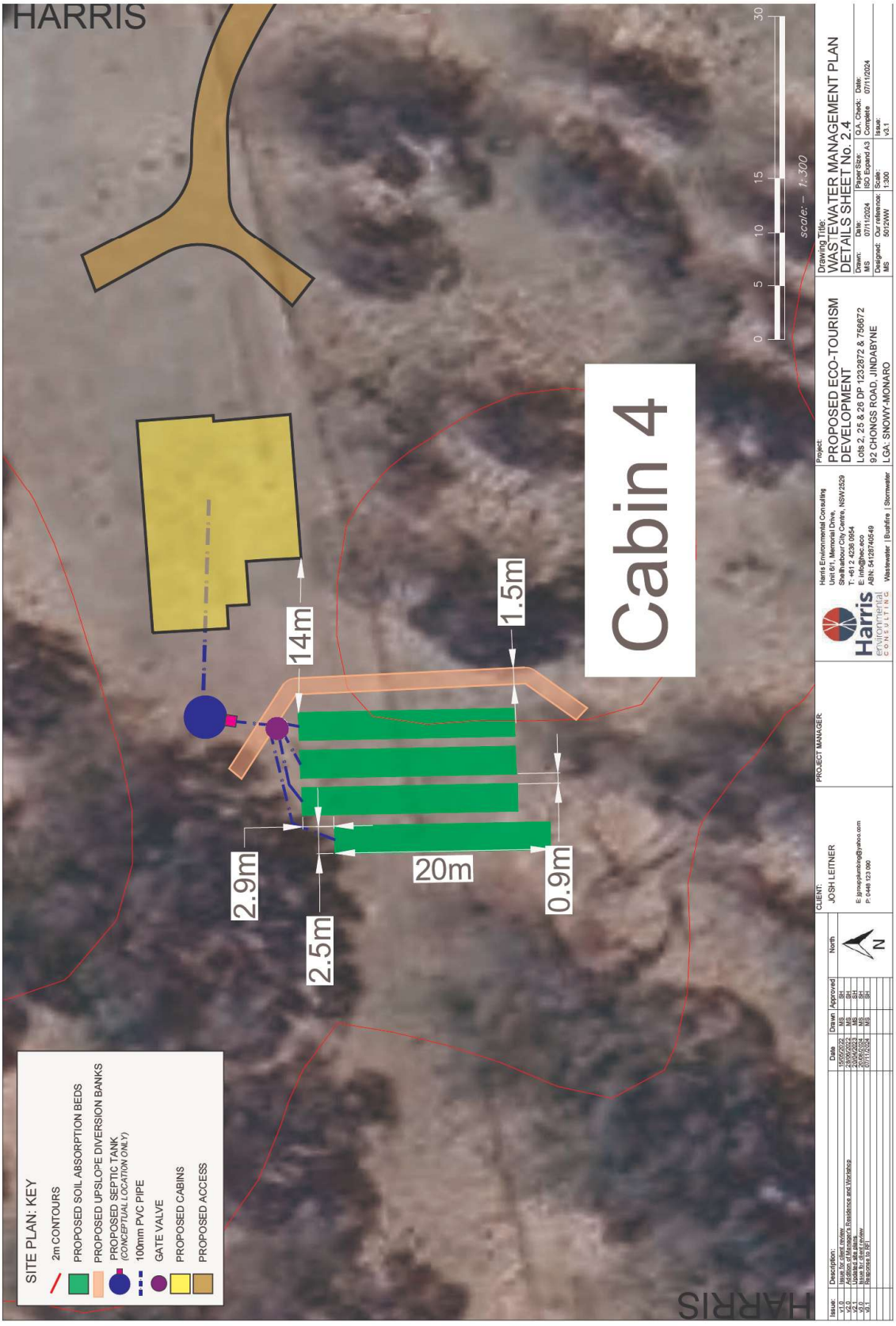
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Cabin 4
14m
1.5m
2.9m
20m
2.5m
0.9m
SITE PLAN: KEY
2m CONTOURS
PROPOSED SOIL ABSORPTION BEDS
PROPOSED UPSLOPE DIVERSION BANKS
PROPOSED SEPTIC TANK (CONCEPTUAL LOCATION ONLY)
100mm PVC PIPE
GATE VALVE
PROPOSED CABINS
PROPOSED ACCESS
scale: – 1:300
0 5 10 15 30
Harris Environmental Consulting
Unit 6/1 Memorial Drive,
Shellharbour City Centre, NSW 2529
T: +61 2 4236 0554
E: info@hec.eco
ABN: 54128740549
Wastewater | Bushfire | Stormwater
Project:
PROPOSED ECO-TOURISM DEVELOPMENT
Lots 2, 25 & 28 DP 1232872 & 756672
92 CHONGS ROAD, JINDABYNE
LGA: SNOWY-MONARO
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Designed: MS
Our reference: 9012WW
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Issue: v3.1
CLIENT:
JOSH LEITNER
E: jgroupplumbing@yahoo.com
P: 0448 123 000
PROJECT MANAGER:
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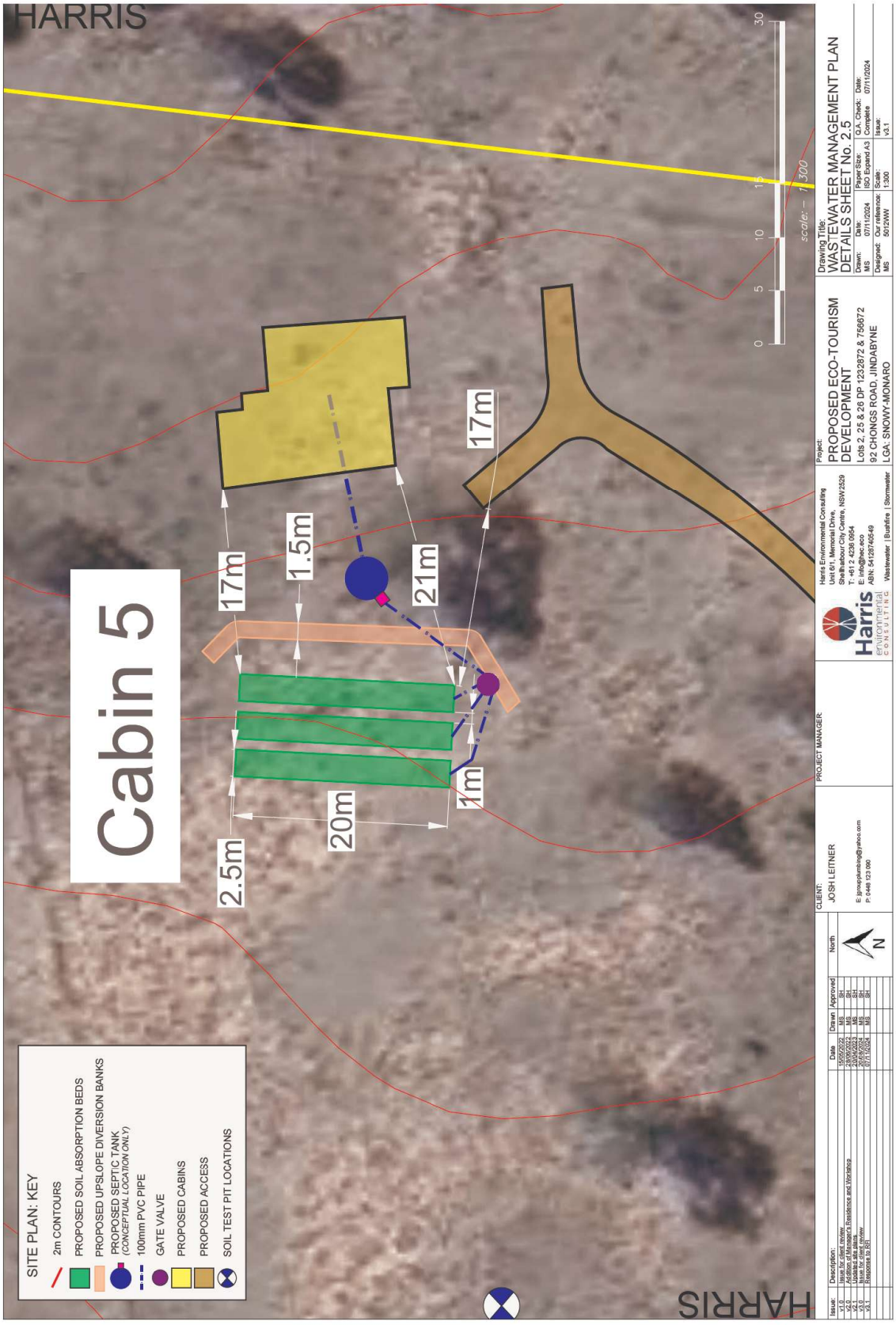
HARRIS


HARRIS
Cabin 5
17m
1.5m
21m
17m
1m
20m
2.5m
0
5
10
15
30
scale: – 1:300
SITE PLAN: KEY
2m CONTOURS
PROPOSED SOIL ABSORPTION BEDS
PROPOSED UPSLOPE DIVERSION BANKS
PROPOSED SEPTIC TANK
(CONCEPTUAL LOCATION ONLY)
100mm PVC PIPE
GATE VALVE
PROPOSED CABINS
PROPOSED ACCESS
SOIL TEST PIT LOCATIONS
Drawing Title:
WASTEWATER MANAGEMENT PLAN
DETAILS SHEET No. 2.5
Project:
PROPOSED ECO-TOURISM DEVELOPMENT
Lots 2, 25 & 26 DP 1232872 & 756672
92 CHONGS ROAD, JINDABYNE
LGA: SNOWY-MONARO
Harris Environmental Consulting
Unit 6/1, Memorial Drive,
Shellharbour City Centre, NSW 2529
T: +61 2 4236 0954
E: info@hec.eco
ABN: 54128740549
Wastewater | Bushfire | Stormwater
PROJECT MANAGER:
CLIENT:
JOSH LEITNER
E: jgroupplumbing@yahoo.com
P: 0448 123 090
Issue:
Description:
Date
Drawn
Approved
North
v1.0 Issue for client review 15/05/2022 MS SH
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v3.1 Response to RFI 07/11/2024 MS SH
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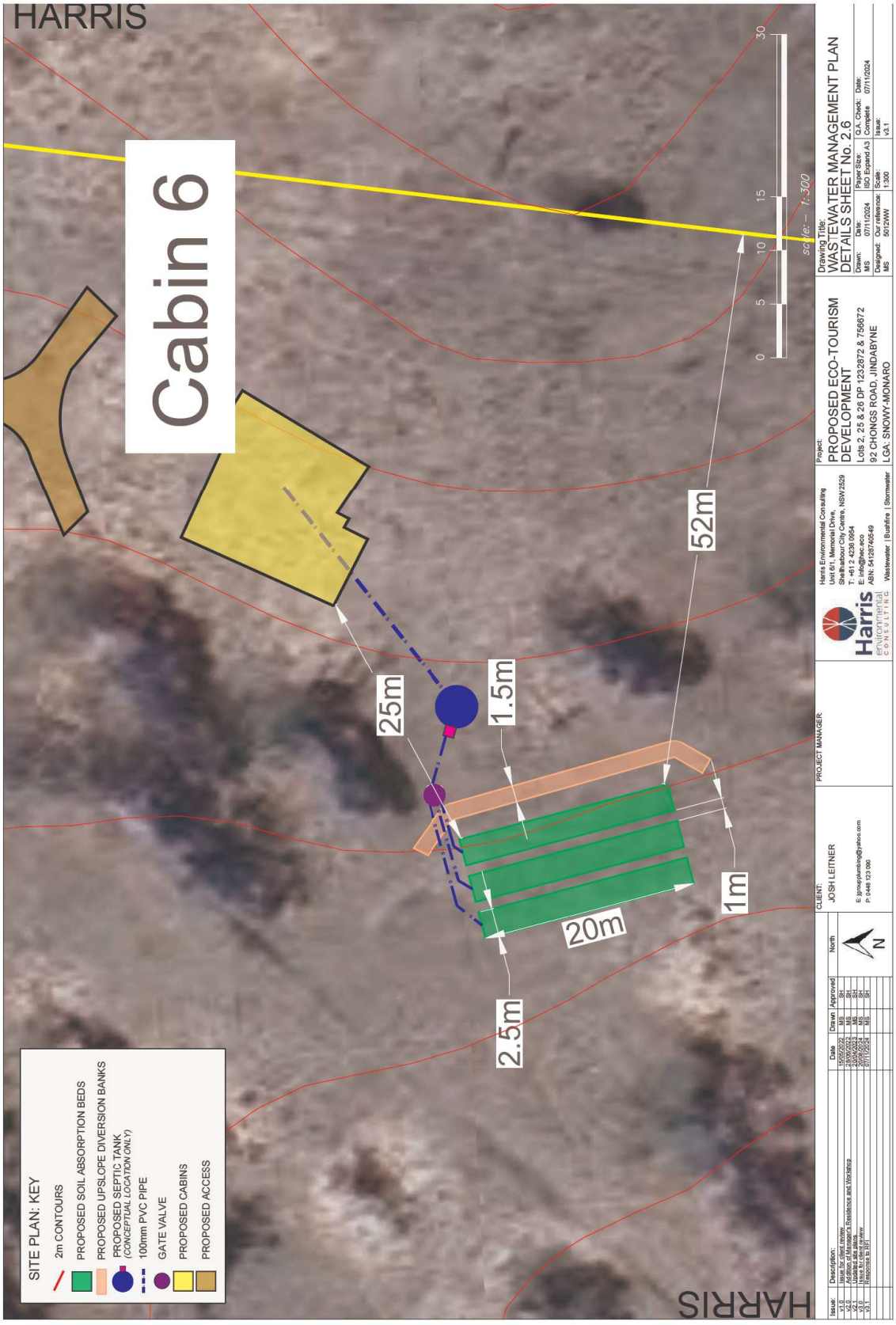
HARRIS
Cabin 6
25m
1.5m
52m
1m
20m
2.5m
0 5 10 15 30
scale: – 1:300
SITE PLAN: KEY
2m CONTOURS
PROPOSED SOIL ABSORPTION BEDS
PROPOSED UPSLOPE DIVERSION BANKS
PROPOSED SEPTIC TANK (CONCEPTUAL LOCATION ONLY)
100mm PVC PIPE
GATE VALVE
PROPOSED CABINS
PROPOSED ACCESS
Drawing Title: WASTEWATER MANAGEMENT PLAN DETAILS SHEET No. 2.6
Project: PROPOSED ECO-TOURISM DEVELOPMENT
Lots 2, 25 & 26 DP 1232872 & 756672
92 CHONGS ROAD, JINDABYNE
LGA: SNOWY-MONARO
Harris Environmental Consulting
Unit 6/1, Memorial Drive,
Shellharbour City Centre, NSW 2529
T: +61 2 4236 0954
E: info@hec.eco
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Wastewater | Bushfire | Stormwater
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E: jgroupplumbing@yahoo.com
P: 0448 123 090
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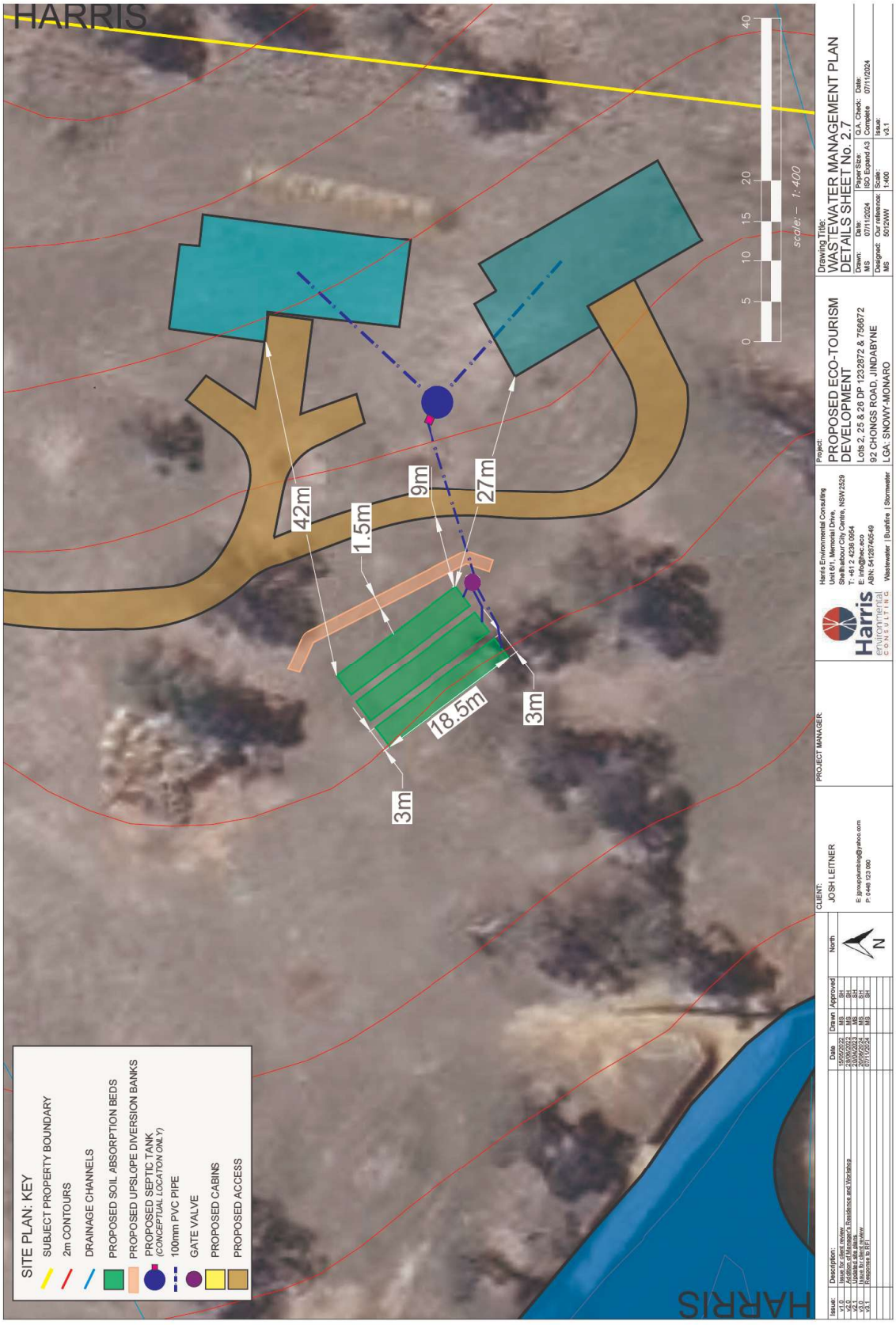
HARRIS
SITE PLAN: KEY
SUBJECT PROPERTY BOUNDARY
2m CONTOURS
DRAINAGE CHANNELS
PROPOSED SOIL ABSORPTION BEDS
PROPOSED UPSLOPE DIVERSION BANKS
PROPOSED SEPTIC TANK (CONCEPTUAL LOCATION ONLY)
100mm PVC PIPE
GATE VALVE
PROPOSED CABINS
PROPOSED ACCESS
42m
1.5m
9m
27m
18.5m
3m
3m
0 5 10 15 20 40
scale: – 1:400
Drawing Title:
WASTEWATER MANAGEMENT PLAN
DETAILS SHEET No. 2.7
Project:
PROPOSED ECO-TOURISM DEVELOPMENT
Lots 2, 25 & 26 DP 1232872 & 756672
92 CHONGS ROAD, JINDABYNE
LGA: SNOWY-MONARO
Harris Environmental Consulting
Unit 6/1, Memorial Drive,
Shellharbour City Centre, NSW 2529
T: +61 2 4236 0954
E: info@hec.eco
ABN: 54128740549
Wastewater | Bushfire | Stormwater
PROJECT MANAGER:
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v3.1 Response to RFI 07/11/2024 MS SH
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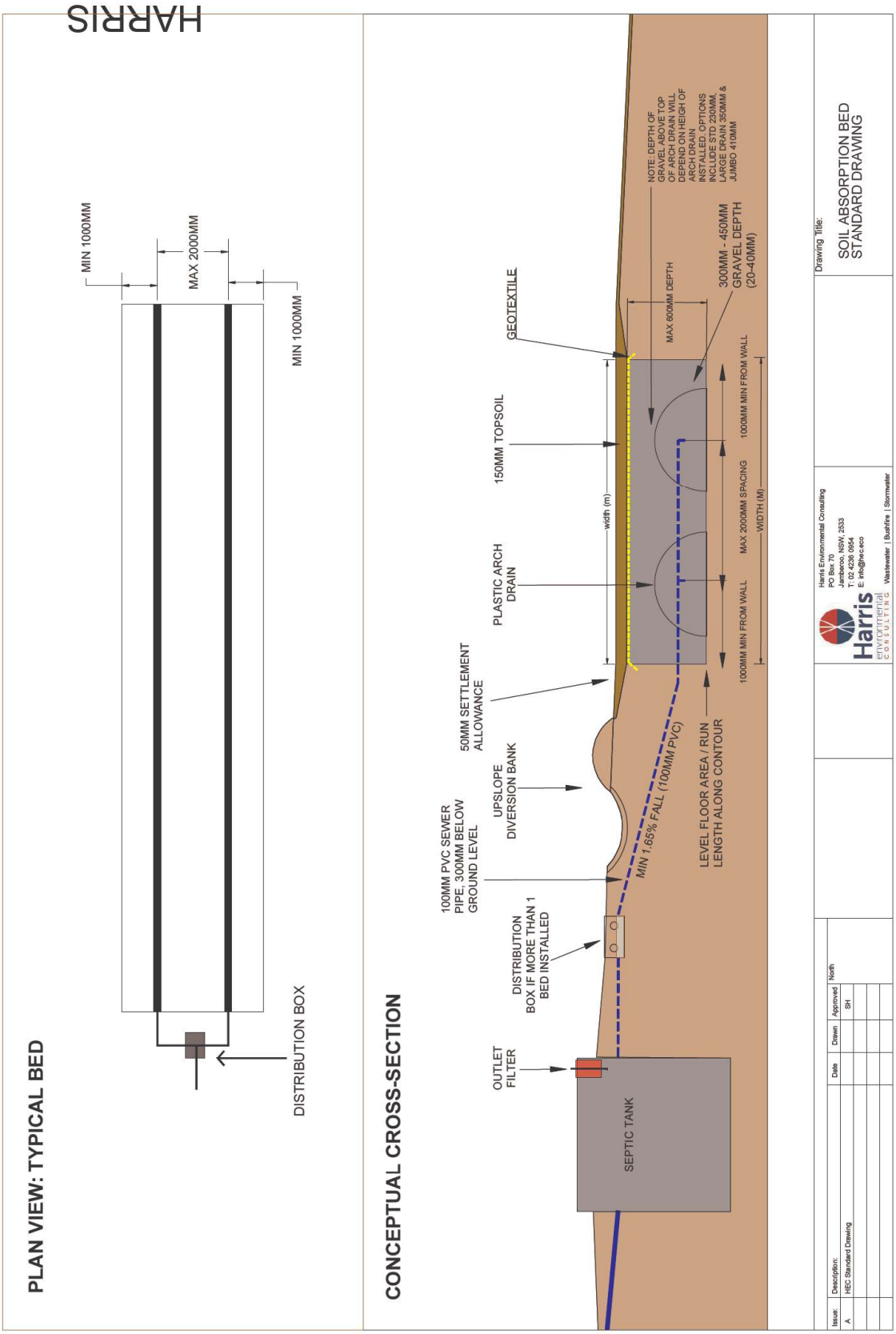
HARRIS
PLAN VIEW: TYPICAL BED
MIN 1000MM
MAX 2000MM
MIN 1000MM
DISTRIBUTION BOX
CONCEPTUAL CROSS-SECTION
GEOTEXTILE
150MM TOPSOIL
PLASTIC ARCH DRAIN
50MM SETTLEMENT ALLOWANCE
UPSLOPE DIVERSION BANK
100MM PVC SEWER PIPE, 300MM BELOW GROUND LEVEL
DISTRIBUTION BOX IF MORE THAN 1 BED INSTALLED
OUTLET FILTER
SEPTIC TANK
MIN 1:65% FALL (100MM PVC)
LEVEL FLOOR AREA / RUN LENGTH ALONG CONTOUR
NOTE: DEPTH OF GRAVEL ABOVE TOP OF ARCH DRAIN WILL DEPEND ON HEIGH OF ARCH DRAIN INSTALLED. OPTIONS INCLUDE STD 230MM, LARGE DRAIN 350MM & JUMBO 410MM
MAX 600MM DEPTH
300MM - 450MM GRAVEL DEPTH (20-40MM)
width (m)
1000MM MIN FROM WALL
MAX 2000MM SPACING
WIDTH (M)
1000MM MIN FROM WALL
Drawing Title:
SOIL ABSORPTION BED STANDARD DRAWING
Harris Environmental Consulting
PO Box 70
Jamberoo, NSW, 2533
T: 02 4236 0954
E: info@hec.eco
Harris ENVIRONMENTAL CONSULTING
Wastewater | Bushfire | Stormwater
Issue: A
Description: HEC Standard Drawing
Date
Drawn
Approved SH
North

REF: 5012SMP

VERSION [3.1]

7 NOVEMBER 2024

STORMWATER MANAGEMENT PLAN

STAGED 6 CABINS ECO-TOURIST DEVELOPMENT AT 92 CHONGS ROAD, JINDABYNE, NSW

LGA: Snowy Monaro Regional

Lot 2 DP 1232872, Lot 26 DP 756672, Lot 25 DP 756672 & Lot 1 DP 1250715

CLIENT: Mr. Josh Leitner

HARRIS ENVIRONMENTAL CONSULTING
6/1 MEMORIAL DRIVE, SHELLHARBOUR CBD, 2527 NSW
TEL: (02) 4236 0954
sean@hec.eco
ABN: 54128740549

VERSION CONTROL

Title:	Stormwater Management Plan			
Site address:	92 Chongs road, Jindabyne, NSW			
Description:	Proposed eco-cabins, farm shed and manager's quarters			
Created By:	Matthew Spann B. Env Sci. (Hons) (UOW)			
Date Created:	Monday, 7 March 2022			
Version Number	**Modified By**	**Modifications Made**	**Date Modified**	**Status**
[1.0]	P.S.	Issue for client review	14/03/2022	Complete
[2.0]	P.S.	Issue for client review (reduce impervious areas)	4/10/2022	Complete
[3.0]	M.S.	Updated development areas and alterations to EMAs	20/08/2024	Complete
[3.1]	M.S.	Response to Council RFI	7/11/2024	Complete

Limitations

The findings and recommendations in this report are based on the objectives and scope of work outlined above. Harris Environmental Consulting performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental assessment profession. The report and conclusions are based on the information obtained at the time of the assessment. Changes to the site conditions may occur subsequent to the investigation described herein, through natural processes or through the intentional or accidental addition of contaminants, and these conditions may change with space and time. The results of this assessment are based upon site assessment conducted by HEC personnel and information provided by the client and site management. All conclusions regarding the property are the professional opinions of the HEC personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made, HEC assumes no responsibility or liability for errors in any data obtained from regulatory agencies, information from sources outside of HEC, or developments resulting from situations outside the scope of this project.

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TABLE OF CONTENTS

1. Introduction 4
2. Site Description 5
2.1 Proposed Development 5
2.2 Site And Soil Evaluation 6
3. Assessment Requirements 8
4. Stormwater Management Plan 9
4.1 Objectives 9
4.2 Design Storm 10
4.3 Control Measures 12
5. Maintenance Of Control Measures 15
5.1 Stormwater Control Measure Maintenance 16
6. Summary 18
7. References 19

FIGURES

Figure 1 Location Of The Subject Site 4
Figure 2 Sub-Catchments 7
Figure 3 Peak Flow Design For The Proposed Development 10
Figure 4 Sub-Catchment To The Existing Dam 11
Figure 5 Maximum Design Flow Velocities ("The Blue Book") 13
Figure 6 Conceptual Level Spreader Drawing 14

TABLES

Table 1 Proposed Development Impervious Areas 5
Table 2 Climate Data 6
Table 3 Areas of Each Sub-Catchment 7
Table 4 Design Average Recurrence Intervals 8
Table 5 Peak Flow Design For The Dam 11
Table 6 Minimum Pipe Depth For Trafficable Areas 13
Table 7 Level Spreader Design Summary 14

APPENDICES

Appendix IFD Design Rainfall intensity (mm/h).....20
Appendix ii Soil Profiles 21
Appendix iv Rock Check Dam 24
Appendix v Examples of a Rock-Lined Waterway 25
Appendix v Standard Design Parameters For Grass Swale 26
Appendix vi Stormwater management plan – Details Sheet No.1.1 28
Appendix vii Stormwater management plan – Details Sheet No.1.2 29
Appendix viii Stormwater management plan – Details Sheet No.1.3 30
Appendix ix Stormwater management plan – Details Sheet No.1.4 31
Appendix x Stormwater management plan – Details Sheet No.1.5 32
Appendix xi Stormwater management plan – Details Sheet No.2.1 33
Appendix xii Stormwater management plan – Details Sheet No.2.2 34
Appendix xiii Stormwater management plan – Details Sheet No.2.3 35
Appendix xiv Stormwater management plan – Details Sheet No.2.4 36
Appendix xv Stormwater management plan – Details Sheet No.2.5 37
Appendix xvi Stormwater management plan – Details Sheet No.2.6 38
Appendix xvii Stormwater management plan – Details Sheet No.2.7 39

1. INTRODUCTION

This Stormwater Management Plan was prepared by Harris Environmental Consulting (HEC) at the request of the owner Mr Josh Leitner. It related to the proposed development on Lot 2 DP 1232872, Lot 26 DP 756672, Lot 25 DP 756672 & Lot 1 DP 1250715, located at 92 Chongs road, Jindabyne, NSW.

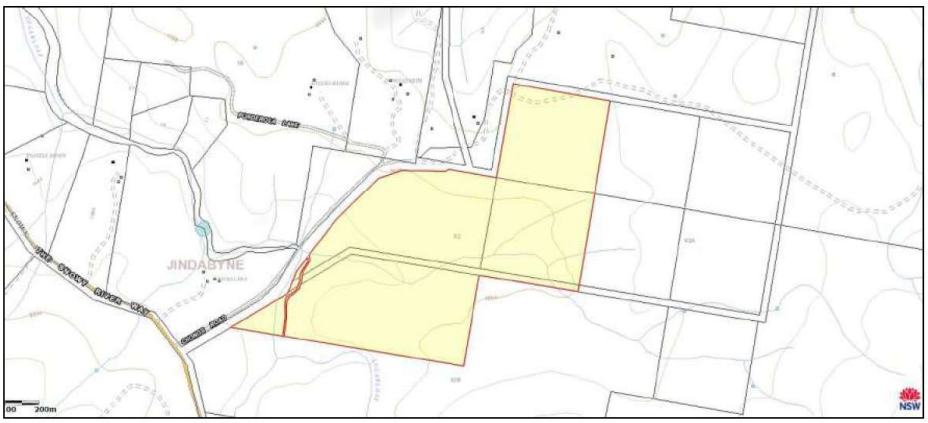
The proposed development includes the construction of six eco-cabins, two associated bushfire refuges, a shed with manager's quarters, a workshop and a network of gravel roads to access the new facilities on this approximately 46.866ha property.

The Plan has been prepared in accordance with:

- Snowy Monaro Regional Council Development Control Plan; NSW Development Design Specification D5 Stormwater Drainage design, 2000;
- Managing Urban Stormwater: Soils and Construction, NSW Department of Housing, 1998 (The Blue Book)
- Australian Rainfall and Runoff (AR&R)
- Guidance on Use of Rainwater Tanks, Australian Health Committee
- Australian Standard AS/NZS 3500 Plumbing and Drainage 2018

The location of the proposed development site is shown in Figure 1.

FIGURE 1 LOCATION OF THE SUBJECT SITE



Source: SixMaps

2. SITE DESCRIPTION

2.1 PROPOSED DEVELOPMENT

The proposed development will be reliant on bore water for water supply. Rainwater will be collected from the roofs of the cabins and stored in rainwater tanks for onsite reuse and disposal.

The development will require an Onsite Wastewater Management System. An Onsite Wastewater Assessment and System Design were prepared by Harris Environmental Consulting (Ref 5012WW). The subject report proposes a septic tank and soil absorption beds for onsite wastewater management. As a conservative measure, the proposed locations of stormwater treatment systems are more than 15m from effluent disposal areas.

The approximate total area of the property is 46.866ha. The impervious areas of the proposed development are shown in Table 1.

TABLE 1 PROPOSED DEVELOPMENT IMPERVIOUS AREAS

Structure	Proposed area (m^2)	% impervious area
Cabin 1 (roof area)	150	100
Cabin 2 (roof area)	150	100
Cabin 3 (roof area)	190	100
Cabin 4 (roof area)	180	100
Cabin 5 (roof area)	150	100
Cabin 6 (roof area)	150	100
Refuge 1	25	100
Refuge 2 (inc veranda)	50	100
Manager's quarters	300	100
Workshop	300	100
Access (gravel)	11,059	50
TOTAL	**12,704**	

2.2 SITE AND SOIL EVALUATION

2.2.1 CLIMATE

The median annual rainfall recorded at the Jindabyne (Caryinya Lane) Rainfall Station (7.9km away) is 571.3mm. The average annual evaporation recorded at the Cooma Airport Station is 1087mm.

TABLE 2 CLIMATE DATA

Median Monthly Rainfall												
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
41	63.6	33.8	21	21.5	43	28.7	33.9	35.1	46.7	70.1	46.8	571.3
Median Monthly Evaporation												
165.3	126.9	97.3	78.6	47.1	32.8	47.5	60.3	90.9	104.6	99.1	136.6	1087
Median Monthly Maximum Temperature												
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
20.1	18	15.3	11.3	7.2	4.2	3.0	3.2	6.8	11.1	14.4	17.1	11.3

2.2.2 GEOLOGY, SOIL-LANDSCAPE AND SOIL PROFILES

Geological unit	Bullenbalong Granodiorite – *Mafic, coarse- to medium-grained, biotite-rich granodiorite; quartz alignment defines a weakly developed foliation, metasedimentary xenoliths (e.g. cordierite-andalusite-biotite) are common.*
Acid Sulphate Risk	No acid sulphate risk
Salinity hazard	No salinity hazard
Soil landscape	Unmapped Soil Landscape – *However soils are mapped as belonging to the kandosols and dermosols orders*
Soil profiles	See Appendix II

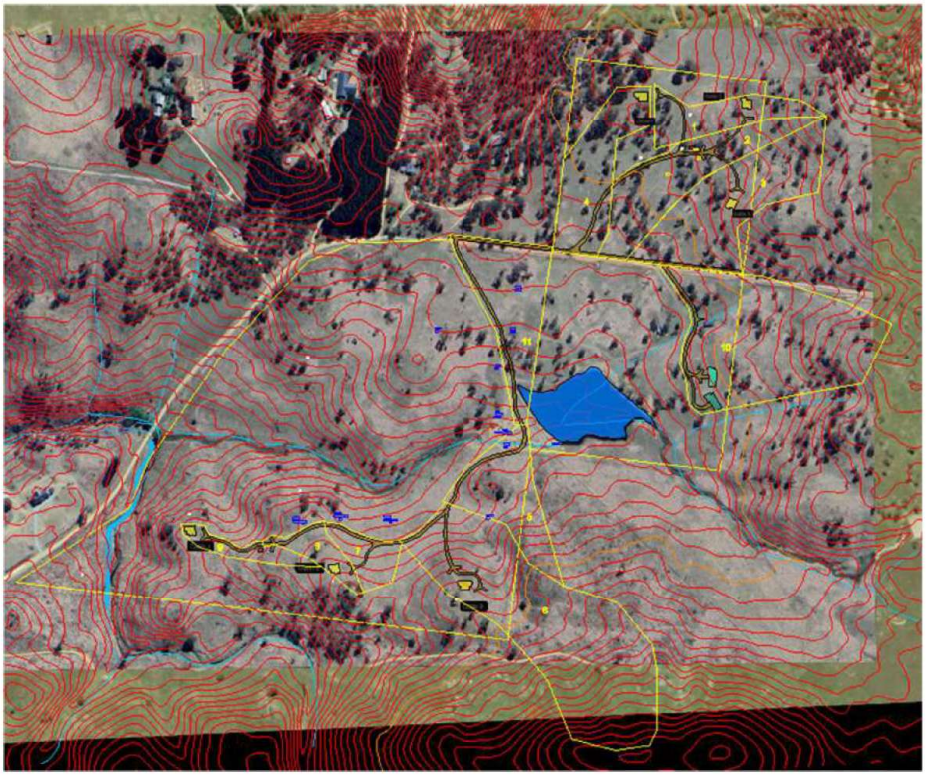
2.2.3 SUB-CATCHMENTS

The site is divided into 11 different sub-catchments. Overland flows from the proposed development site on the northern side (catchments 1, 2, and 3) are expected to flow southwest via overland flow paths. Overland flow from Catchments 4 and 11 are expected to flow south via overland flow paths. On the southern side of the property (catchments 5, 6, 7, 8, 9 and 11), the overland flows from the proposed development site are expected to flow north and northwest via overland flow paths. On the eastern side of the property (catchment 10), the overland flows from the proposed development site are expected to flow southwest via overland flow paths. See Table 3 and Figure 2 below.

TABLE 3 AREAS OF EACH SUB-CATCHMENT

Catchment	Area of the catchment (ha)	Area of the catchment (m^2)	Development area (m^2)
1	1.116	11,166	681
2	2.975	20,975	1,503
3	3.35	33,500	1,314
4	1.58	15,800	1158
5	1.695	16,950	825
6	5.971	59,718	1425
7	0.609	6097	728
8	0.540	5406	722
9	0.466	4660	865
10	4.985	49,854	2090
11	2.093	20,930	1969

FIGURE 2 SUB-CATCHMENTS



3. ASSESSMENT REQUIREMENTS

The development assessment requires as follows:

- A stormwater drainage system shall be provided in accordance with the "major/minor" system concept set out in Chapter 14 of AR&R (1987) in accordance with Table 4.

TABLE 4 DESIGN AVERAGE RECURRENCE INTERVALS

Development	Minor System (Years)	Major System (Years)
Residential	5	100

- All drainage is to be designed in accordance with this specification and to satisfy the specific requirements of the Consent.

- The existing or proposed stormwater discharge shall have not the potential to cause overland flood inundation problems on the property

- An overland flow path shall be provided for drainage systems even where the 100-year ARI flows can be maintained within the pipe system.

4. STORMWATER MANAGEMENT PLAN

This Stormwater Management Plan includes:

1. Drawings showing the layout and details of the stormwater control measures, and;
2. Supporting commentary and construction notes.

This SMP **has not included On-site Detention** (OSD) or **On-site Retention** (OSR) as it is outside the required scope.

4.1 OBJECTIVES

The primary objective of the Stormwater Management Plan is to mitigate and/or eliminate the potential for stormwater to cause the loss of life, serious injury, property damage, erosion and sedimentation. This can be achieved by adopting principles of Water Sensitive Urban Design (WSUD); and by managing stormwater events, the quality of rainwater runoff, erosion and sedimentations as well as encouraging the harvesting/reuse of stormwater to reduce the demand on reticulated water supplies. Further objectives include:

I. Ensuring there is no adverse impact from stormwater runoff on downstream properties as a result of development in the catchment for all storm events up to and including a 100-year ARI event.

II. Encouraging the reuse of stormwater from rooftops to reduce the stormwater runoff.

III. Ensuring adequate drainage is provided for developments.

IV. Protecting properties from localised flooding.

V. Preventing contaminated runoff from entering watercourses.

VI. Minimising erosion and reducing the volume of wastewater entering waterways.

VII. Minimising sedimentation and pollution in waterways and drainage systems.

VIII. Protecting and enhancing natural watercourses and their associated ecosystems and ecological processes.

IX. Ensuring stormwater systems and infrastructure are designed, installed and maintained so as not to increase the risk to life or safety of people.

This applies to all developments, which involve additional buildings or hard surface areas.

4.2 DESIGN STORM

4.2.1 DESIGN STORM FOR SUB-CATCHMENTS

To determine the peak flow from the development, the rational method is used. The rational method is described by the following equation:

$$Q = C * I * A$$

Where: A = Catchment area in km^2
I = Rainfall intensity in mm/hr.
C= Rational Runoff Coefficient
Q= Flow rate (m^3/s)

The data obtained from the Bureau of Meteorology's Rainfall IFD Data System for Latitude -36.4937 Longitude 148.6875.

To calculate the runoff coefficient of each catchment, a 10-year ARI, 1-hour design storm Intensity is used which provides a rainfall depth of 29.2mm/hour.

From the formula above, the calculated peak flow for the proposed development runoff is shown in Figure 3 below.

FIGURE 3 PEAK FLOW DESIGN FOR THE PROPOSED DEVELOPMENT

Site	A	tc	Rainfall Intensity, I, mm/hr						C10
	ha	mins	1 yr,tc	5 yr,tc	10 yr,tc	20 yr,tc	50 yr,tc	100 yr,tc	
1 - Cabin 5 and access	1.116	4		97.9				193	0.20
2 - Access and refuge	2.975	6		91.8				184	0.22
3 - Cabin 6 and access	3.35	7		85				190	0.18
4 - Cabin 4 and access	1.58	5		91.8				184	0.17
5 - Access	1.695	5		97.9				193	0.21
6 - Cabin 3 and access	5.971	8		80				180	0.17
7 - Access	0.609	4		97.9				193	0.26
8 - Cabin 2 and access	0.54	3		97.9				193	0.21
9 - Cabin 1, refuge and access	0.466	3		105				204	0.23
10 - Manger's residence, Workshop and access	4.985	8		91.8				184	0.18
11 - Access	2.093	6		91.8				184	0.22

		Catchment										
ARI yrs	Frequency Factor	1	2	3	4	5	6	7	8	9	10	11
	Fy	m3/s	m3/s	m3/s	m3/s	m3/s	m3/s	m3/s	m3/s	m3/s	m3/s	m3/s
1 yr,tc												
5 yr,tc												
10 yr,tc												
20 yr,tc	1.05	0.064	0.175	0.150	0.072	0.102	0.237	0.045	0.032	0.033	0.240	0.123
50 yr,tc												
100 yr,tc	1.2	0.144	0.402	0.382	0.165	0.229	0.610	0.102	0.073	0.073	0.551	0.283

In accordance with Snowy Monaro Regional Council Development Control Plan, the stormwater treatment systems should design for **a 5-year ARI**. The time concentration of the site is between 3-8 minutes and the peak flow is between **0.032-0.237m^3/s** for a 5-year ARI. The maximum flow for a **100-year ARI is 0.610m^3/s.**

The design peak flows assumed all the runoff from the impervious areas without the use of Onsite Stormwater Retention (OSR) – rainwater tanks.

4.2.2 DESIGN STORM FOR DAM OVERFLOW

The dam will receive the stormwater overflow from approximately 1.323km^2 catchment area. See Figure 4. The peak flow designed for a 10-year ARI for one-hour rainfall intensity is 1.749m^3/s. See Table 5 for the calculation.

FIGURE 4 SUB-CATCHMENT TO THE EXISTING DAM

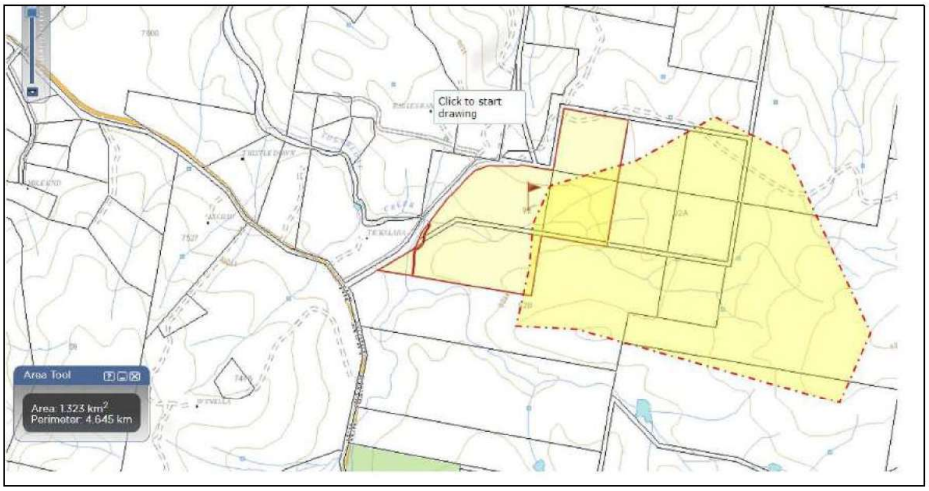


TABLE 5 PEAK FLOW DESIGN FOR THE DAM

RATIONAL METHOD FOR URBAN AREAS - 10 YEAR 1 HOUR STORM			
Total Area	A	1323000	m^2
Total Impervious area	A_i	12704	m^2
10 year ARI runoff coefficient	C_{10}	0.16	unitless
Pervious Area 10 year ARI runoff coefficient	C^1_{10}	0.16	mm/hr
Fraction Impervious (0.0 to 1.0)	f	0.010	unitless
10 Year ARI, 1 hour rainfall intensity	$^{10}I_1$	29.2	mm/hr
Frequency factor	F_Y	1	unitless
Runoff coefficient	C_Y	0.16	unitless
Rainfall Inensity	I	29.2	mm/hr
Flow rate	Q	**1.7492**	m^3/s

4.3 CONTROL MEASURES

The owner/builder/developer will be responsible for applying standard erosion controls in accordance with the 'Blue Book' prior to the construction of the residential dwellings. Stormwater runoff from hard standing surfaces created during construction such as driveways and rooftops shall be where possible harvested and reused onsite in accordance with BASIX requirements. Where it is not possible to harvest or reuse the stormwater runoff, the runoff shall be managed using standard control measures to minimise its velocity and concentration. Standard controls that would be applicable include:

4.3.1 RAINWATER TANK

It is proposed that **a minimum of 3,000L rainwater tank will be installed** for each proposed structure for Onsite Stormwater Retention (OSR) stormwater re-use. All rainwater tanks will overflow to a level spreader.

The conceptual proposed locations of the rainwater tank are shown in the Stormwater Management Plans. The proposed location of the rainwater tank is an upslope of the proposed treatment measure and in a location where the pitch of the roof and rainwater guttering can gravity feed into the rainwater tank.

The first rainfall may contain contaminates at a higher than usual concentration, such as bird droppings, dust, leaves, and other debris. As the rainwater tank will be used as a water supply, the following best practice measures are recommended to pre-treat the water before it enters the tank.

- Screened downpipe and rainwater head on each downpipe (mesh size = 4-6mm)
- A leaf diverting device.
- A first flush device, to capture a dispose of the first 20L/100m^2 of roof area during each rainfall event.
- Vermin and insect-proof screens no courser than 1mm on all inflows and outflows, specifically to prevent mosquitos.
- Calmed inlet to reduce sediment disturbance and oxygenate the water
- Floating intake for the pump

All rainwater installations must be installed in accordance with local planning, building, plumbing authorities and NSW Health guidelines. If connected to internal fixtures/appliances they must also be in accordance with the authority having jurisdiction and the manufacturer's recommendations, where they are not in conflict with AS/NZS 3500.1.2018.

The outflow pipe between the rainwater tank and level spreader must be buried at a depth that provides protection against mechanical damage or deformation, in accordance with 'AS/NZS 3500(Set):2018 Plumbing and Drainage Set'. Table 6 outlines the minimum pipe depth for trafficable areas. If it is anticipated light to heavy traffic may pass over the buried outflow pipe, it must be buried at the appropriate depth.

TABLE 6 MINIMUM PIPE DEPTH FOR TRAFFICABLE AREAS

Location	Minimum depth of cover (mm) for all materials other than cast iron
Where subject to vehicular traffic	500
Elsewhere	300

Source: 'AS/NZS 3500 (Parts 0-4):2018 Plumbing and drainage Set'. Table 3.7.2 Minimum Cover for Buried Pipes'

Note that all overflow pipe locations shown on the attached site plans are conceptual only and **are not final. Pipe runs can be relocated as necessary by the installer to avoid any potential impacts on vegetation*

4.3.2 SIZING LEVEL SPREADER

The designer's main goal with level spreader design is to ensure an appropriate length of a level spreader – a length that does not allow for erosive velocities downslope. The maximum design flow velocities in Table 6 summarise the maximum flow velocity before erosion occurs based on ground cover. Level spreaders must be designed to ensure non-erosive velocities not only at the time the water passes over the level spreader but at the time water has reached the effective distance. The effective distance is the distance downslope of the level spreader where only one-third of the available land is used to convey water, flow beyond the level spreader effective distance is considered to be concentrated, not dissipated. Therefore, velocities allowed as water flows over the level spreader must be one-third of the erosive velocity experienced at the effective distance downslope.

FIGURE 5 MAXIMUM DESIGN FLOW VELOCITIES ("THE BLUE BOOK")

Material	Critical velocity (m/second)											
	Inundation <6 hours			Inundation <12 hours			Inundation <24 hours			Inundation <48 hours		
	Soil erodibility			Soil erodibility			Soil erodibility			Soil erodibility		
	Low	Moderate	High	Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
High performance bonded plastic fibres (vegetated)	7.0	7.0	7.0	6.0	6.0	6.0	5.0	5.0	5.0	4.0	4.0	4.0
Plastic fibres with netting	5.0	5.0	5.0	4.3	4.3.	4.3	3.6	3.6	3.6	3.0	3.0	3.0
Mesh reinforced pregrown turf	3.0	2.7	2.4	2.6	2.3	2.0	2.3	2.0	1.8	2.0	1.8	1.6
Kiku yu	2.5	2.2	1.9	2.1	1.9	1.6	1.9	1.7	1.4	1.6	1.4	1.2
Jute or coir mesh (close weave, bitumen sprayed)	2.3	2.0	1.7	1.9	1.7	1.5	1.7	1.5	1.3	1.5	1.3	1.1
Coconut/ jute fibre mats	2.3	2.0	1.7	1.9	1.7	1.5	1.7	1.5	1.3	1.5	1.3	1.1
Couch , carpet grass , Rhodes grass , etc.	2.0	1.8	1.4	1.7	1.5	1.2	1.5	1.4	1.1	1.3	1.2	0.9
Bare soil	0.7	0.5	0.3	0.6	0.4	0.3	0.5	0.4	0.2	0.4	0.3	0.2

The calculation to determine the Length (L) of the level spreader is based on two equations, The Weir Equation and the Continuity Equation.

Firstly, it is assumed that the level spreader functions as a long weir. Flow over a weir is described by the following equation:

$$Q = C_w * L * H^{3/2}$$

Where: C_w = Weir Coefficient

L = Length of lever spreader (m)

H= Driving head (m)

Q= Flow rate over weir (m^3/s)

Secondly, the height and length of water flow over the weir dictates the velocity over the level spreader. This relationship is shown in the second equation, the continuity equation.

$$Q = V * A = V * (L * \frac{2}{3}H)$$

Where: V = Velocity over weir in (m/s)

A = Cross sectional area of flow ($L * \frac{2}{3}H$)

It is assumed the flow height over the weir is 2/3 of the driving head upslope.

Combining the weir and continuity equation, leads to the following relationship:

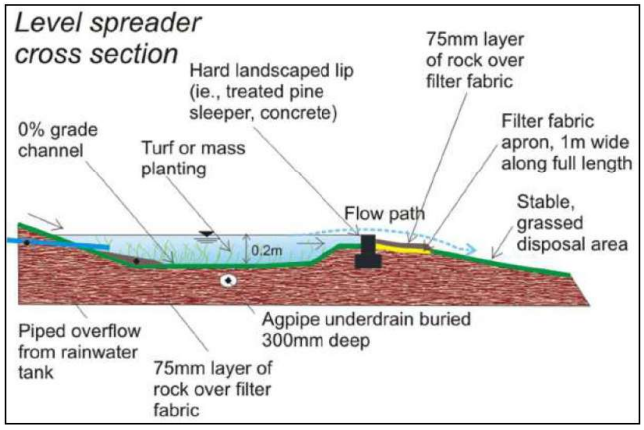
$$V = 1.5 * C_w * H^{1/2}$$

In this way, the height of water flow over the weir is determined based on the permissible flow velocity over the weir, determined by the vegetative cover at the effective distance downslope of the weir. By inserting the height back into either the weir or continuity equation the length of the level spreader needed to distribute flow is given. Given the relatively small impervious area of each structure (an example shown in Table 7), the required sill lengths of the level spreaders are all less than 1 metre. As a conservative measure, all level spreaders proposed have a sill length of 2 metres.

TABLE 7 LEVEL SPREADER DESIGN SUMMARY

Development (largest impervious)	Impervious area or catchment area (m^2)	Runoff coefficient (see Section 4.2)	Rainfall intensity (mm/hr)	Flow rate (m^3/s)	Design Velocity (m/s)	Required level spreader length (m)
Catchment 10	600 (roof only)	0.18	91.8	0.00275	0.6	0.4

FIGURE 6 CONCEPTUAL LEVEL SPREADER DRAWING



4.3.3 STORMWATER OVERFLOW TO SWALE

Stormwater run-off from the proposed access roads will be treated by grassed swales. These features are graded and engineered, installed as shallow, vegetated, trapezoidal channels designed to remove pollutants and reduce the occurrence of sedimentation and erosion. The design of a grass swale works to promote the conveyance of stormwater by slowing its flow velocity, allowing for the removal of pollutants by filtration, the infiltration of stormwater into the subsoil and the settling of suspended solids.

Grass swales are constructed in accordance with the following design parameters:

- Grassed swales should be located on grades between 1%-3%.
- Steeper grades of 4% will require check dams be constructed along the length of the swale, in line with Appendix IV.
- Grades of 5% and over will require permanent stabilization via rock lining, as seen in Appendix V.
- Side slopes no greater than 4(horizontal): 1(vertical).
- The swale will also need to discharge stormwater via mitre drains every 20-30m. The mitre drains will need to terminate in level spreaders to prevent further scour erosion. Levels spreaders should have a sill length of at least 2m.

The proposed locations of grass swales are shown in the Appendices – Site Plans of this report.

The proposed trapezoidal grass swale running parallel to the access road will have a top width of 2.3m, a bottom width of 0.3m, has a depth of 0.2m and side slopes with a ratio no greater than 4(horizontal) to 1(vertical). The cross-sectional area of the swale is that it has a greater capacity than the peak flow rate (in m^3/s) that it is expected to receive.

If the landowner wishes to, grassed swales could instead be constructed as bioswales – planted with native vegetation – rock-lined swales, or a combination of the two. Vegetation will need to be water tolerant, but also able to survive through periods without rainfall. Rock-lined swales required on the plans will need to remain so.

Roof run-off from both of the proposed bushfire refuges will be minimal due to their small impervious area. This Assessment recommends that roof run-off from the refuges will be able to be piped straight into the nearest swale for discharge, as there will be minimal risk of erosion in this manner.

See Appendix VI for the design parameters of individual swales, as seen on the Site Plans.

5. MAINTENANCE OF CONTROL MEASURES

5.1 STORMWATER CONTROL MEASURE MAINTENANCE

5.1.1 RAINWATER TANK MAINTENANCE

Irrespective of how the rainwater tank is used, water quality is dependent on implementing a sensible maintenance program. However, while maintenance requirements are not particularly onerous, in practice most roof catchments and rainwater tanks are poorly maintained. This may reflect the notion that rain is a relatively pure source of water and it may be related to the fact that in many rural areas, the availability of water is a bigger issue than quality.

Standard rainwater tank maintenance procedures include:

- Clearing gutters and roof catchments of debris every 3-4 months
- Clearing overhanging tree branches or shrubs
- Checking tank inlets and screens are clean, and making repairs if necessary
- Inspecting for the access of animals, birds, insects and mosquito larvae
- Examining the tank for the accumulation of sediments and algae every 2-3 years.
- Checking the tank and tank roof, for holes, structural integrity, etc.
- Check pipework for structural integrity and proper drainage.

5.1.2 RAINWATER TANK DISINFECTION

Rainwater can be chlorinated by adding powdered swimming pool chlorine (calcium hypochlorite, 75 percent available chlorine) or liquid chlorine (sodium hypochlorite, 12.5 percent available chlorine). You should not use stabilised chlorine (chlorine cyanurates).

Five milligrams of chlorine per litre is required for disinfection. This is equivalent to 7 grams of calcium hypochlorite or 40 millilitres of sodium hypochlorite per 1000 litres of water. A level dessert spoon may be used as an approximate measure for 7 grams of powdered calcium hypochlorite. A lot of the chlorine may be used up during disinfection. There should be at least 0.5 milligrams per litre free chlorine, 30 minutes after the chlorine is added – you can use a pool chlorine test kit to measure how much chlorine is in the water. Note that milligrams per litre is the same as parts per million.

You should be able to smell the chlorine faintly an hour or so after treating the water. If you can't, you may need to add a similar amount of chlorine again. Ideally, the tank shouldn't be used for at least 24 hours to allow the chlorine taste and smell to dissipate and for harmful microorganisms to be destroyed. To maintain a safe water supply after the initial dosage, 1 gram of calcium hypochlorite or 4 millilitres of sodium hypochlorite per 1000 litres should be added to the rainwater tank and allowed to stand for a minimum of two hours. The water will be safe to drink provided the chlorine smell is not too strong.

Your local Public Health Unit can provide information on water quality and health (under "Health Department of NSW" in the Telstra White Pages or at http://www.health.nsw.gov.au/public-health/phus/phus.html

5.1.3 LEVEL SPREADER AND SWALE MAINTENANCE

Common causes for failure to maintain diffuse flow included the following:

- Lack of maintenance.
- Changes in topography and vegetation.
- Poor construction methods (level spreader lip not level; channel built with easily eroded materials)
- Human interference after the feature has been constructed

Level spreaders and swales require at least yearly maintenance to remove trees and shrubs that begin to grow on the level spreader lip, within the swale channel or that impede flow just downslope of the level spreader. Any debris and sediment that build up in the level spreader, forebay, and channel should be removed annually and after storms. Additionally, the level spreader channel and the riparian buffer should be examined annually and after storms greater than or equal to the two-year storm for possible erosion and gulley formation.

If possible, the buffer vegetation immediately downslope of the level spreader lip should be mowed regularly to encourage low, dense growth and to facilitate inspection. The use of perennial, dense, low-growing ground covers (such as pre-grown turf or common Kikuyu) downslope of the lip may help to maintain diffuse flow. These issues should be addressed immediately to restore proper function. If erosion is apparent, corrective action must be taken, such as installing erosion control matting and possibly regrading.

6. SUMMARY

This Stormwater Management Plan recommends:

- Runoff from the rooves of the proposed eco-cabins, Manager's Residence and Workshop will be captured by a minimum of 3,000L rainwater tank each.
- Stormwater runoff from the overflow from the rainwater tanks will drain to the proposed level spreaders and then overflow onto the grassland area.
- Stormwater runoff from the overflow from the access road and other impervious areas will drain to the proposed swales and then overflow onto the grassland area.
- All stormwater installations should be installed in accordance with 'AS/NZS 3500(Set):2018 Plumbing and Drainage Set' and Snowy Monaro Regional Council Development Control Plan; *NSW Development Design Specification D5 Stormwater Drainage design, 2000.*
- As a conservative measure, all stormwater treatment systems are more than 15m from effluent disposal areas.

7. REFERENCES

Snowy Monaro Regional Council Development Control Plan; NSW Development Design Specification D5 Stormwater Drainage design, 2000;

ARRB Transport Research (2002) Environmental Practices Manual for Rural Sealed and Unsealed Roads

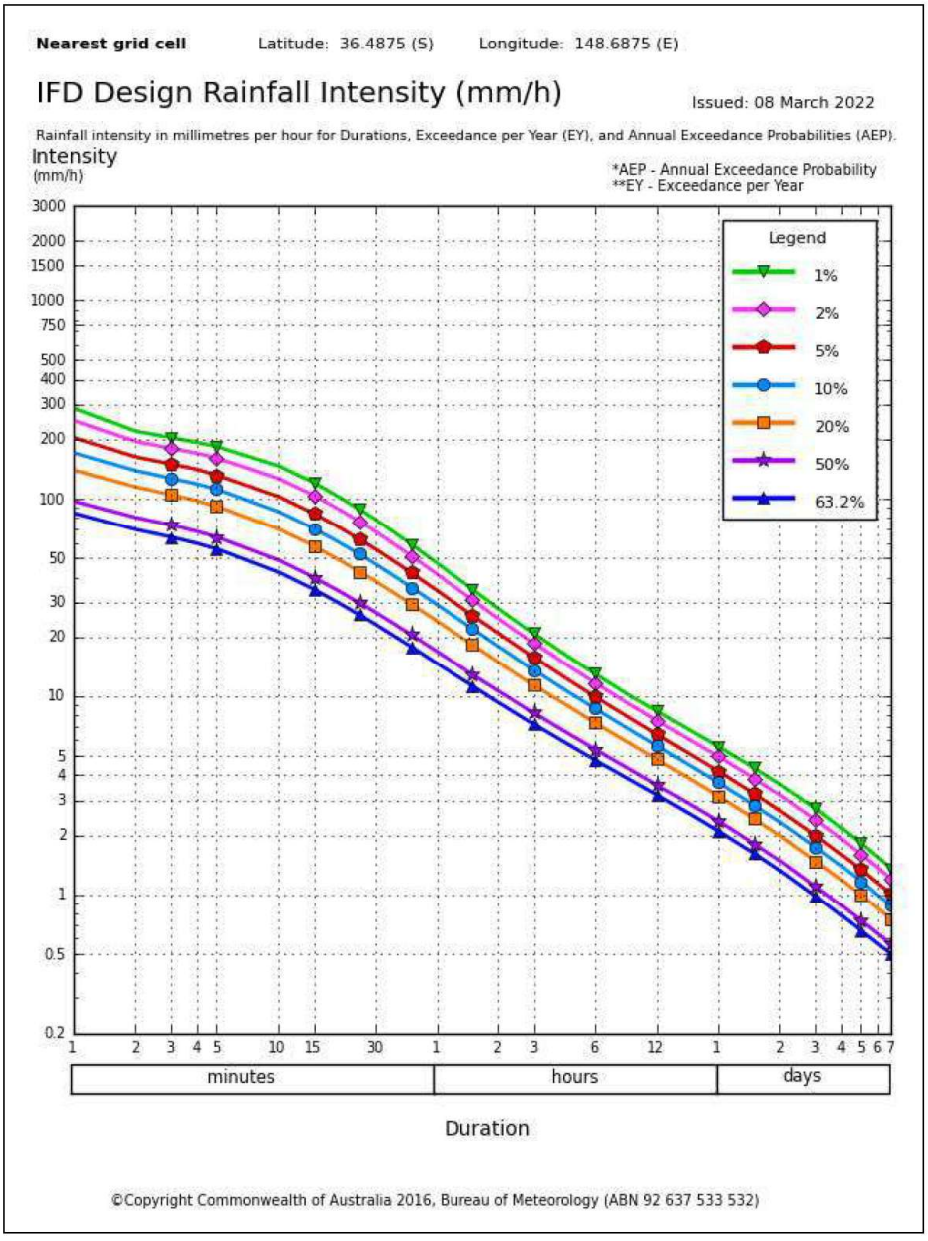
Coombes PJ, Kuczera G, Analysis of the Performance of Rainwater Tanks in Australian Capital Cities, in Proceedings of the 28th International Hydrology and Water Resources Symposium, Wollongong, November 2003.

Melbourne Water (2004) WSUD Engineering Procedures: Stormwater.

Hazelton, P.A and Murphy, B.W ed. (1992) *What Do All the Numbers Mean? A Guide for the Interpretation of Soil Test Results.* Department of Conservation and Land Management (incorporating the Soil Conservation Service of NSW), Sydney.

Landcom, 'The Blue Book – Soils and Construction, Volume 1, 4th Edition', Lancom, Sydney, 2006.

APPENDIX I IFD DESIGN RAINFALL INTENSITY (MM/H)



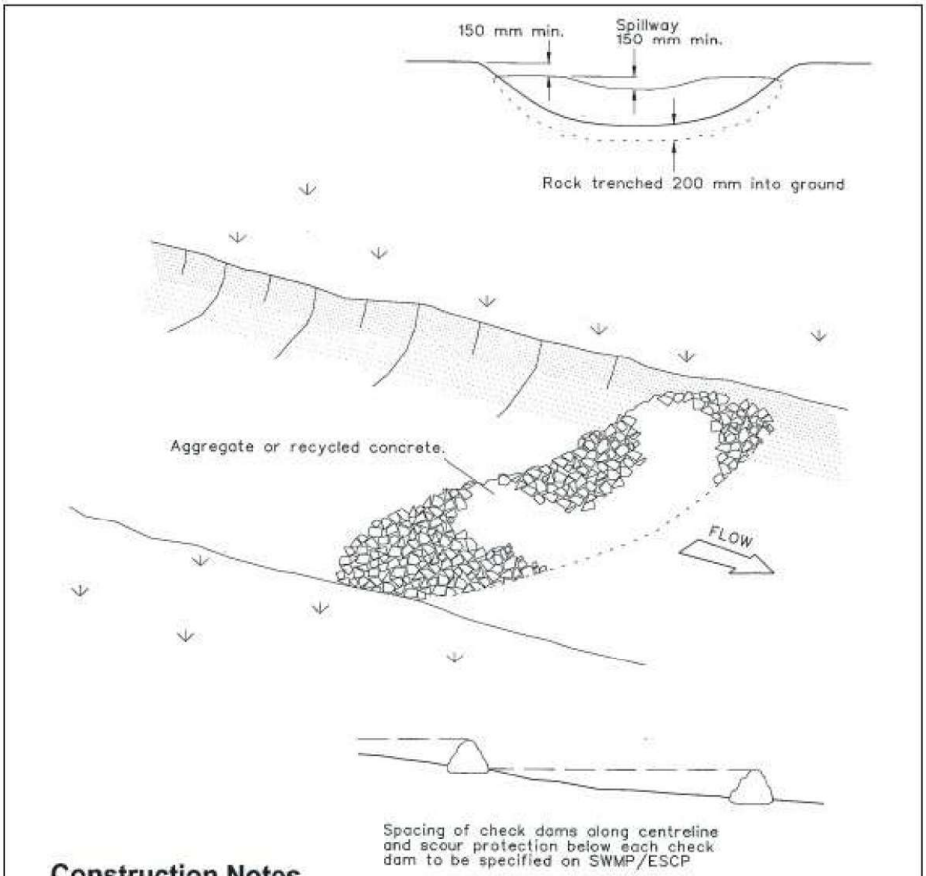
APPENDIX II SOIL PROFILES

Cabin 1: Soil profile from two soil profiles in each EMA:	Layer 1		DLR	DIR
	Texture Colour Depth Structure Coarse frag.	Loam 10.0YR-3/4 Donkey brown 0-150mm Weakly structured 0-5%	N/A	N/A
	Layer 2		DLR	DIR
	Texture Colour Depth Structure Coarse frag.	Fine sandy clay loam 10.0YR – 4/4 Coyote Brown 150-1000mm Weakly structured 0-5%	6mm/d	N/A
Cabin 2: Soil profile from two soil profiles in each EMA:	Layer 1		DLR	DIR
	Texture Colour Depth Structure Coarse frag.	Coarse sandy loam 10.0YR-3/2 Coffee brown 0-150mm Massive, earthy fabric 0-5%	N/A	N/A
	Layer 2		DLR	DIR
	Texture Colour Depth Structure Coarse frag.	Clayey sandy loam 7.5 yr – 3/4 Brown nose 150-500mm, bedrock reached Massive, earthy fabric 0-5%	15 mm/d	N/A
Cabin 3 Soil profile from two soil profiles in each EMA:	Layer 1		DLR	DIR
	Texture Colour Depth Structure Coarse frag.	Loam 10.0YR-3/4 Donkey brown 0-150mm Weakly structured 0-5%	N/A	N/A
	Layer 2		DLR	DIR
	Texture Colour Depth Structure Coarse frag.	Fine sandy clay loam 10.0YR – 4/4 Coyote Brown 150-1000mm Weakly structured 0-5%	6 mm/d	N/A
Cabin 4: Soil profile from two soil profiles in each EMA:	Layer 1		DLR	DIR
	Texture Colour Depth Structure Coarse frag.	Loam 10.0YR-3/4 Donkey brown 0-150mm Weakly structured 0-5%	N/A	N/A
	Layer 2		DLR	DIR
	Texture Colour Depth Structure Coarse frag.	Fine sandy clay loam 10.0YR – 4/4 Coyote Brown 150-1000mm Weakly structured 0-5%	6 mm/d	N/A

Cabin 5: Soil profile from two soil profiles in each EMA:	Layer 1		DLR	DIR
	Texture Colour Depth Structure Coarse frag.	Loam 10.0YR-3/4 Donkey brown 0-150mm Weakly structured 0-5%	N/A	N/A
	Layer 2		DLR	DIR
	Texture Colour Depth Structure Coarse frag.	Fine sandy clay loam 10.0YR – 4/4 Coyote Brown 150-1000mm Weakly structured 0-5%	6 mm/d	N/A
Cabin 6: Soil profile from two soil profiles in each EMA:	Layer 1		DLR	DIR
	Texture Colour Depth Structure Coarse frag.	Loam 10.0YR-3/4 Donkey brown 0-150mm Weakly structured 0-5%	N/A	N/A
	Layer 2		DLR	DIR
	Texture Colour Depth Structure Coarse frag.	Fine sandy clay loam 10.0YR – 4/4 Coyote Brown 150-1000mm Weakly structured 0-5%	6 mm/d	N/A
Cabin 7: Soil profile from two soil profiles in each EMA:	Layer 1		DLR	DIR
	Texture Colour Depth Structure Coarse frag.	Loam 10.0YR-3/4 Donkey brown 0-150mm Weakly structured 0-5%	N/A	N/A
	Layer 2		DLR	DIR
	Texture Colour Depth Structure Coarse frag.	Fine sandy clay loam 10.0YR – 4/4 Coyote Brown 150-1000mm Weakly structured 0-5%	6 mm/d	N/A
Cabin 8: Soil profile from two soil profiles in each EMA:	Layer 1		DLR	DIR
	Texture Colour Depth Structure Coarse frag.	Loam 10.0YR-3/4 Donkey brown 0-150mm Weakly structured 0-5%	N/A	N/A
	Layer 2		DLR	DIR
	Texture Colour Depth Structure Coarse frag.	Fine sandy clay loam 10.0YR – 4/4 Coyote Brown 150-1000mm Weakly structured 0-5%	6 mm/d	N/A

Cabin 9: Soil profile from two soil profiles in each EMA:	Layer 1		DLR	DIR
	Texture Colour Depth Structure Coarse frag.	Loam 10.0YR-3/4 Donkey brown 0-150mm Weakly structured 0-5%	N/A	N/A
	Layer 2		DLR	DIR
	Texture Colour Depth Structure Coarse frag.	Fine sandy clay loam 10.0YR – 4/4 Coyote Brown 150-1000mm Weakly structured 0-5%	6 mm/d	N/A

APPENDIX III ROCK CHECK DAM



Construction Notes

1. Check dams can be built with various materials, including rocks, logs, sandbags and straw bales. The maintenance program should ensure their integrity is retained, especially where constructed with straw bales. In the case of bales, this might require their replacement each two to four months.
2. Trench the check dam 200 mm into the ground across its whole width. Where rock is used, fill the trenches to at least 100 mm above the ground surface to reduce the risk of undercutting.
3. Normally, their maximum height should not exceed 600 mm above the gully floor. The centre should act as a spillway, being at least 150 mm lower than the outer edges.
4. Space the dams so the toe of the upstream dam is level with the spillway of the next downstream dam.

ROCK CHECK DAM **SD 5-4**

APPENDIX IV EXAMPLES OF A ROCK-LINED WATERWAY



Figure 5.4
A rock-lined waterway

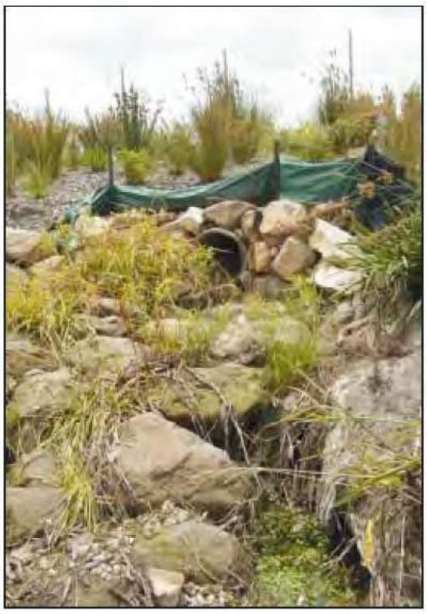


Figure 5.8
A riprap outlet on a steep slope.

APPENDIX V STANDARD DESIGN PARAMETERS FOR GRASS SWALE

Design Parameters	Design value							
ID	1	2	3	4	5	6	7	8
Length (m)	44m	132m	246m	68m	101	176	113	30
Bed slope (%)	1-2%	**4%	2%	1-3%	**6%	1-3%	**7%	1-3%
Base Width (m)	0.3m							
Top width	2.3m (ID 3, 8, 9 and 13 = 4m)							
Depth	0.2m							
Vegetation Height	0.2m (where not rock lined)							
Batter Slope	1:4							
*Manning's coefficient (n)	0.033							
Cross-sectional area (m^2) (Capacity)	0.26	0.26	0.43	0.26	0.26	0.26	0.26	0.43
Predicted Peak Flow rate (m^3/s) (Catchment)	0.175 (1 & 2)	0.175 (2)	0.175 (2, 4 & 11)	0.240 (10)	0.150 (3)	0.240 (10)	0.123 (11)	0.102 (5 & 11)

*n = 0.033 for short grass

**rock check dam is required – see Appendix IV.

***Jute, coir mesh, coconut/ jute fibre mats, or loose rock (10kg each) is required.

****Plastic fibres with netting, mesh reinforced pre-grown turf or loose rock (50kg-100kg each) is required.

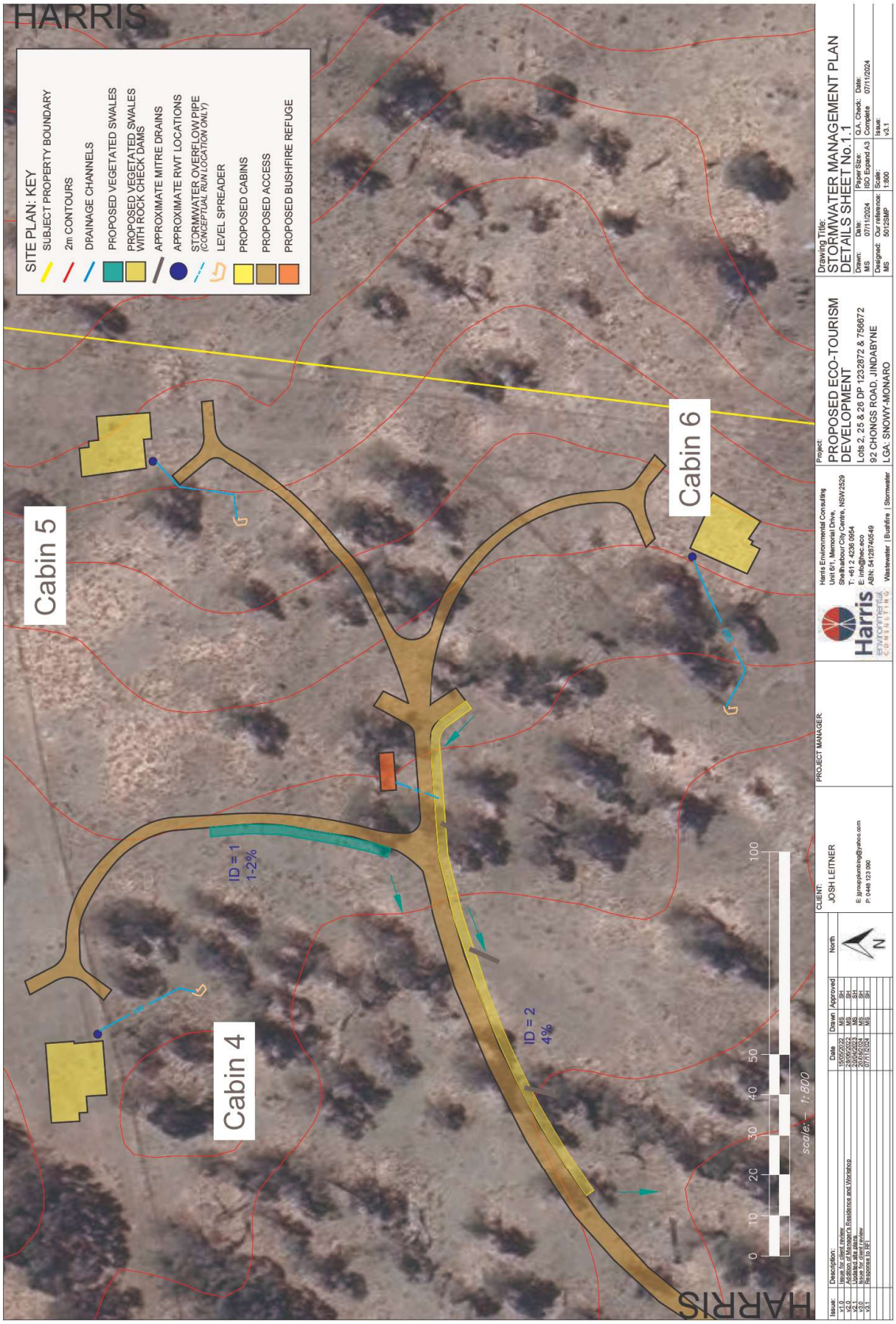
Design Parameters	Design value							
ID	9	10	11	12	13	14	15	16
Length (m)	42m	92m	30m	70m	61	90	73	110
Bed slope (%)	1-3%	1-3%	1-3%	****13%	***5%	3%	***5%	***7%
Base Width (m)	0.3m							
Top width	2.3m (ID 3, 8, 9 and 13 = 4m)							
Depth	0.2m							
Vegetation Height	0.2m (where not rock lined)							
Batter Slope	1:4							
*Manning's coefficient (n)	0.033							
Cross-sectional area (m^2) (Capacity)	0.26	0.26	0.26	0.26	0.43	0.26	0.26	0.26
Predicted Peak Flow rate (m^3/s) (Catchment)	0.102 (5)	0.102 (5)	0.237 (6)	0.237 (6)	0.237 (6)	0.045 (7)	0.032 (8)	0.033 (9)

*n = 0.033 for short grass

**rock check dam is required – see Appendix IV.

***Jute, coir mesh, coconut/ jute fibre mats, or loose rock (10kg each) is required.

****Plastic fibres with netting, mesh reinforced pre-grown turf or loose rock (50kg-100kg each) is required.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PROPOSED VEGETATED SWALES WITH ROCK CHECK DAMS
APPROXIMATE MITRE DRAINS
APPROXIMATE RWT LOCATIONS
STORMWATER OVERFLOW PIPE (CONCEPTUAL RUN LOCATION ONLY)
LEVEL SPREADER
PROPOSED CABINS
PROPOSED ACCESS
PROPOSED BUSHFIRE REFUGE
Cabin 4
Cabin 5
Cabin 6
ID = 1
1-2%
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4%
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40
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DETAILS SHEET No.1.1
Project:
PROPOSED ECO-TOURISM DEVELOPMENT
Lots 2, 25 & 26 DP 1232872 & 756672
92 CHONGS ROAD, JINDABYNE
LGA: SNOWY-MONARO
Harris Environmental Consulting
Unit 6/1, Memorial Drive,
Shellharbour City Centre, NSW 2529
T: +61 2 4236 0954
E: info@hec.eco
ABN: 54128740549
Wastewater | Bushfire | Stormwater
PROJECT MANAGER:
CLIENT:
JOSH LEITNER
E: jgroupplumbing@yahoo.com
P: 0448 123 090
Issue:
Description:
Date
Drawn
Approved
North
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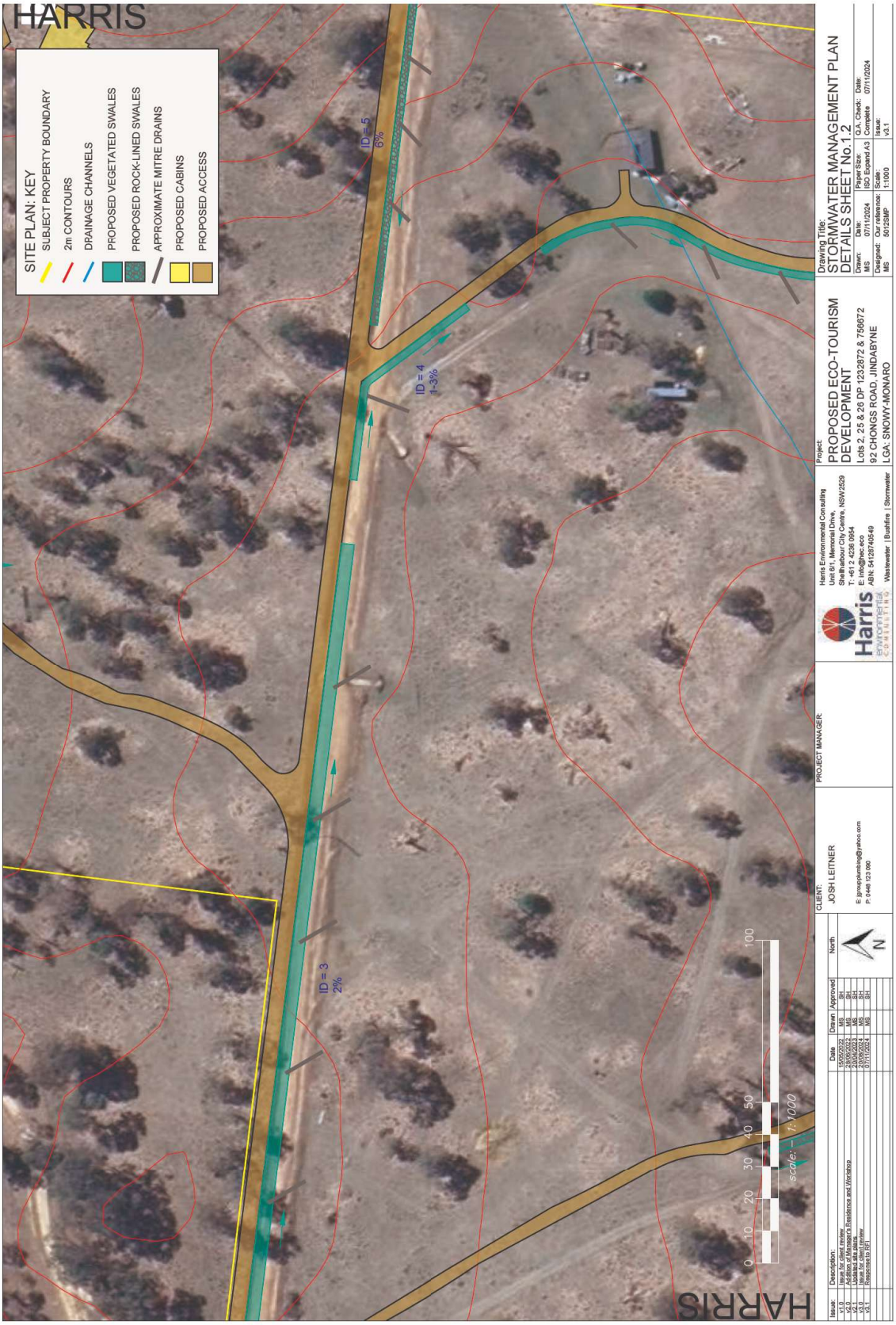
v2.0 Addition of Manager's Residence and Workshop 28/05/2022 MS SH
v2.1 Updated site plans 20/05/2023 MS SH
v3.0 Issue for client review 20/05/2024 MS SH
v3.1 Response to RFI 07/11/2024 MS SH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PROPOSED CABINS
PROPOSED ACCESS
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92 CHONGS ROAD, JINDABYNE
LGA: SNOWY-MONARO
Harris Environmental Consulting
Unit 6/1, Memorial Drive,
Shellharbour City Centre, NSW 2529
T: +61 2 4236 0954
E: info@hec.eco
ABN: 54128740549
Wastewater | Bushfire | Stormwater
PROJECT MANAGER:
CLIENT:
JOSH LEITNER
E: jgroupplumbing@yahoo.com
P: 0448 123 090
North
N
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v1.0 Issue for client review 15/05/2022 MS SH
v2.0 Addition of Manager's Residence and Workshop 28/05/2022 MS SH
v2.1 Updated site plans 20/04/2023 MS SH
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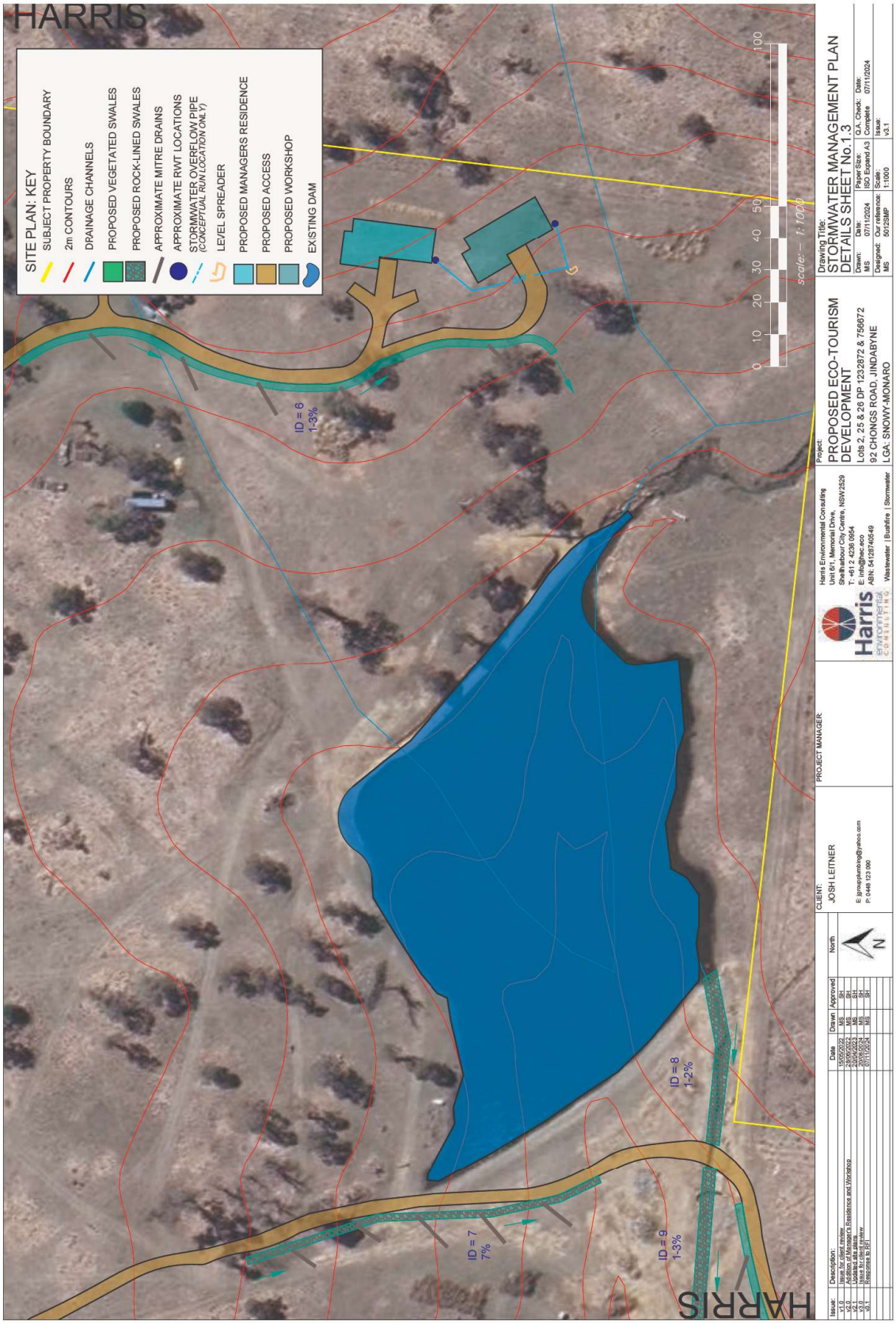
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APPROXIMATE RWT LOCATIONS
STORMWATER OVERFLOW PIPE (CONCEPTUAL RUN LOCATION ONLY)
LEVEL SPREADER
PROPOSED MANAGERS RESIDENCE
PROPOSED ACCESS
PROPOSED WORKSHOP
EXISTING DAM
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v2.1 Added Lot 6 cabin 24/05/2022 MS SH
v3.0 Issue for client review 20/08/2024 MS SH
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CLIENT: JOSH LEITNER
E: jpmcplumbing@yahoo.com
P: 0448 123 000
PROJECT MANAGER:
Harris Environmental Consulting
Unit 6/1 Memorial Drive,
Shellharbour City Centre, NSW 2529
T: +61 2 4236 0954
E: info@hec.eco
ABN: 54128740549
Wastewater | Bushfire | Stormwater
Project:
PROPOSED ECO-TOURISM DEVELOPMENT
Lots 2, 25 & 26 DP 1232872 & 756672
92 CHONGS ROAD, JINDABYNE
LGA: SNOWY-MONARO
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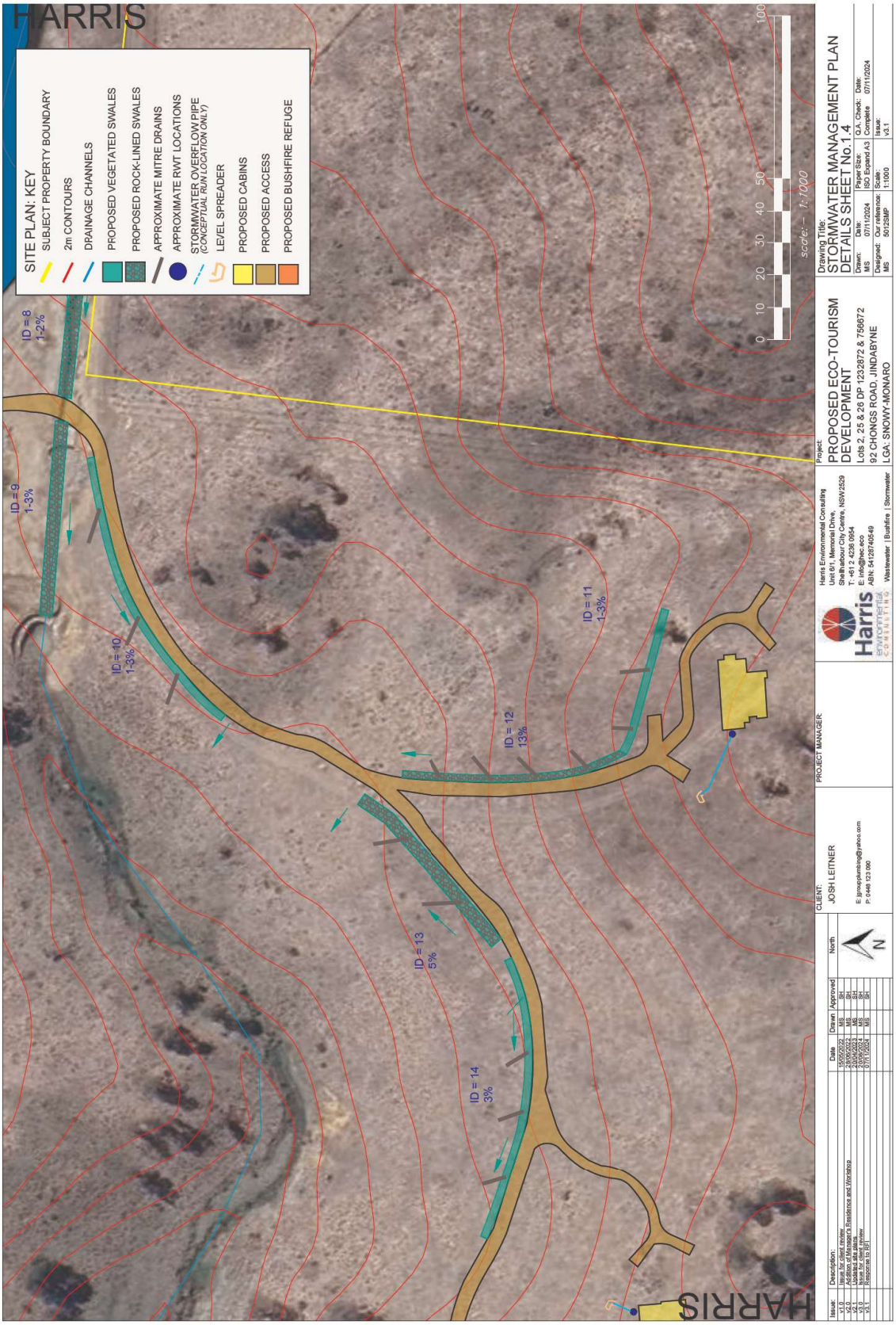
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APPROXIMATE RWT LOCATIONS
STORMWATER OVERFLOW PIPE (CONCEPTUAL RUN LOCATION ONLY)
LEVEL SPREADER
PROPOSED CABINS
PROPOSED ACCESS
PROPOSED BUSHFIRE REFUGE
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ID = 9 1-3%
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ID = 11 1-3%
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Lots 2, 25 & 26 DP 1232872 & 756672
92 CHONGS ROAD, JINDABYNE
LGA: SNOWY-MONARO
Harris Environmental Consulting
Unit 6/1, Memorial Drive,
Shellharbour City Centre, NSW 2529
T: +61 2 4236 0954
E: info@hec.eco
ABN: 54128740549
Wastewater | Bushfire | Stormwater
PROJECT MANAGER:
CLIENT: JOSH LEITNER
E: jgroupplumbing@yahoo.com
P: 0448 123 090
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v2.0 Addition of Manager's Residence and Workshop 28/06/2022 MS SH
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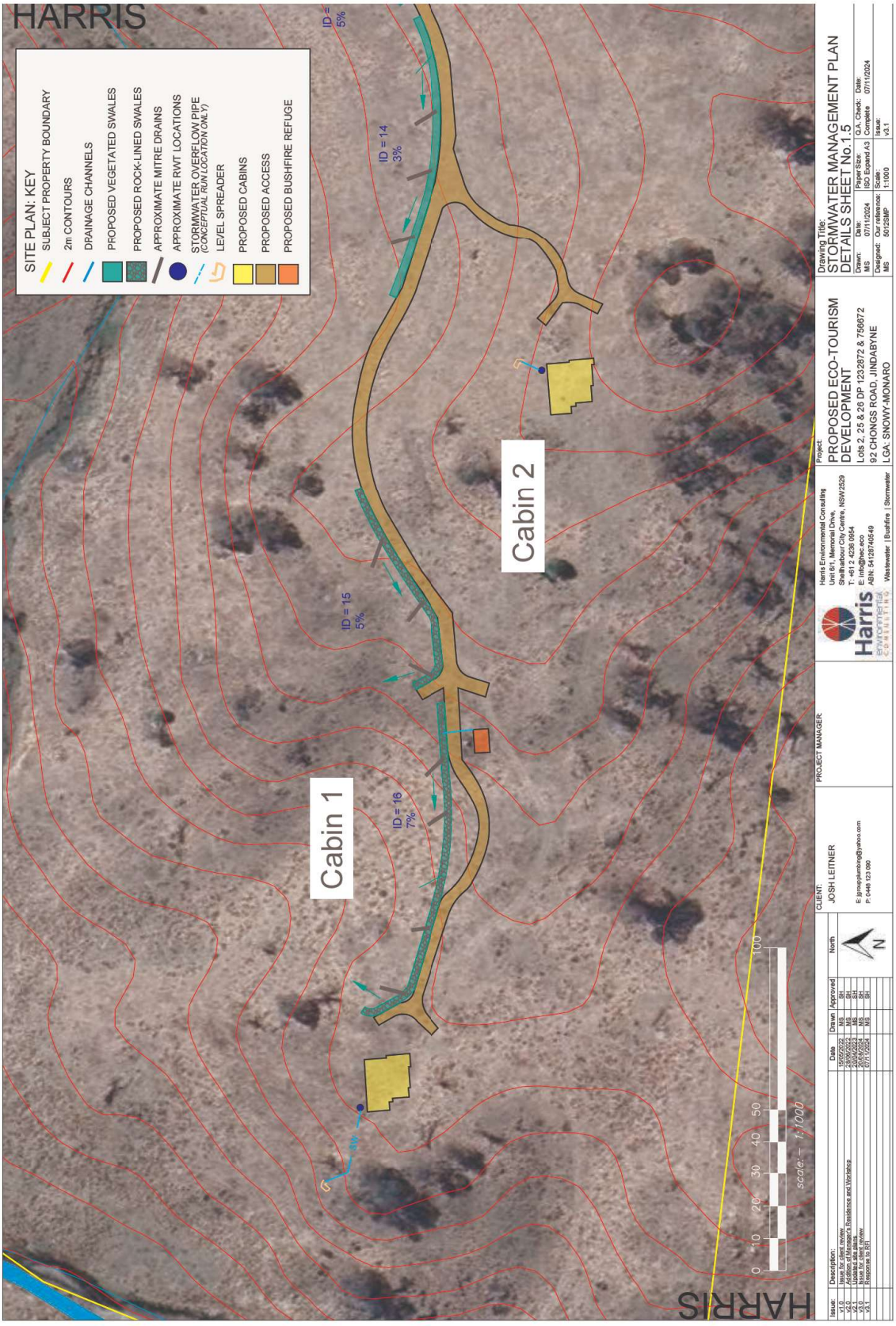
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APPROXIMATE RWT LOCATIONS
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PROPOSED ACCESS
PROPOSED BUSHFIRE REFUGE
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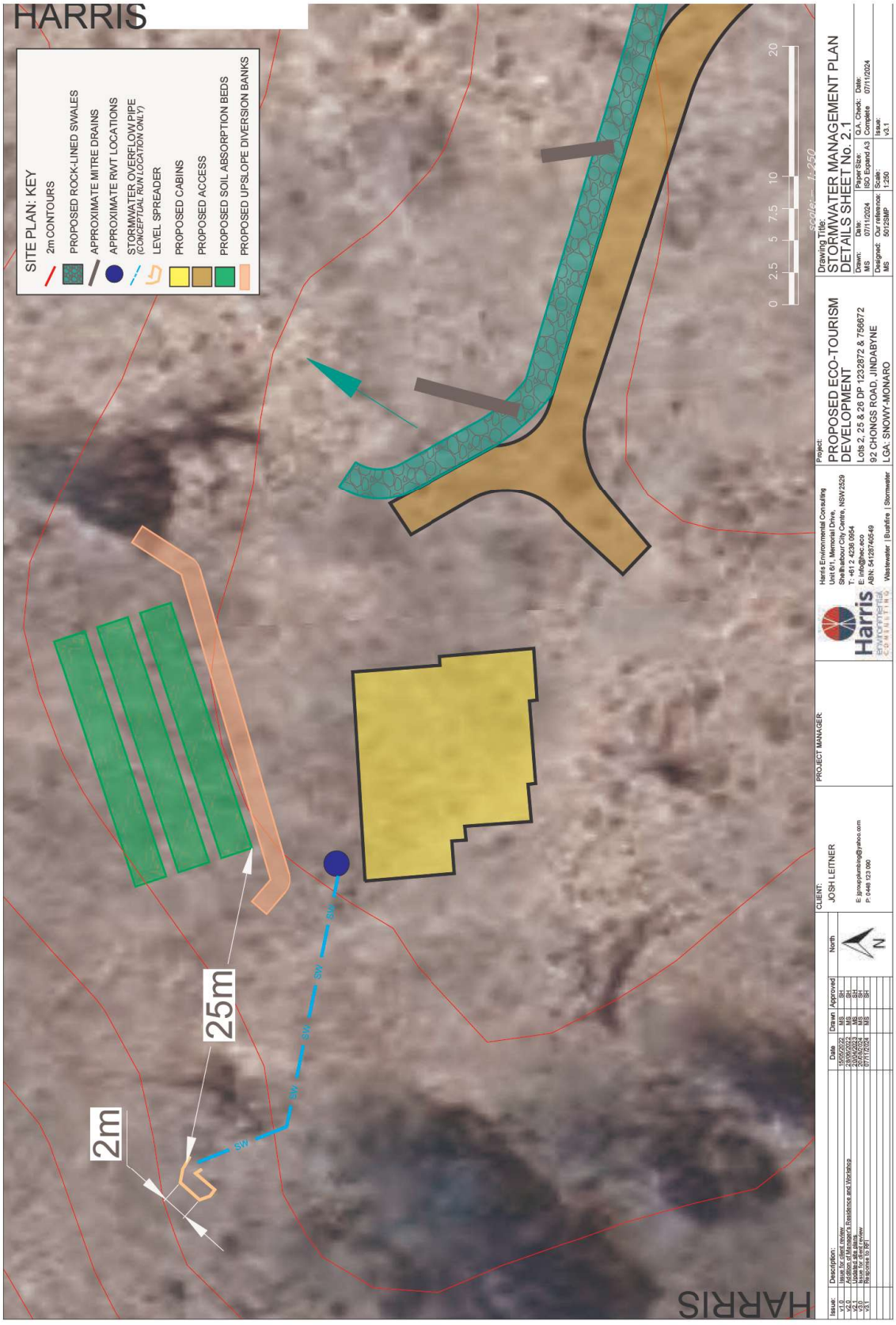
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APPROXIMATE RWT LOCATIONS
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PROPOSED CABINS
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PROPOSED SOIL ABSORPTION BEDS
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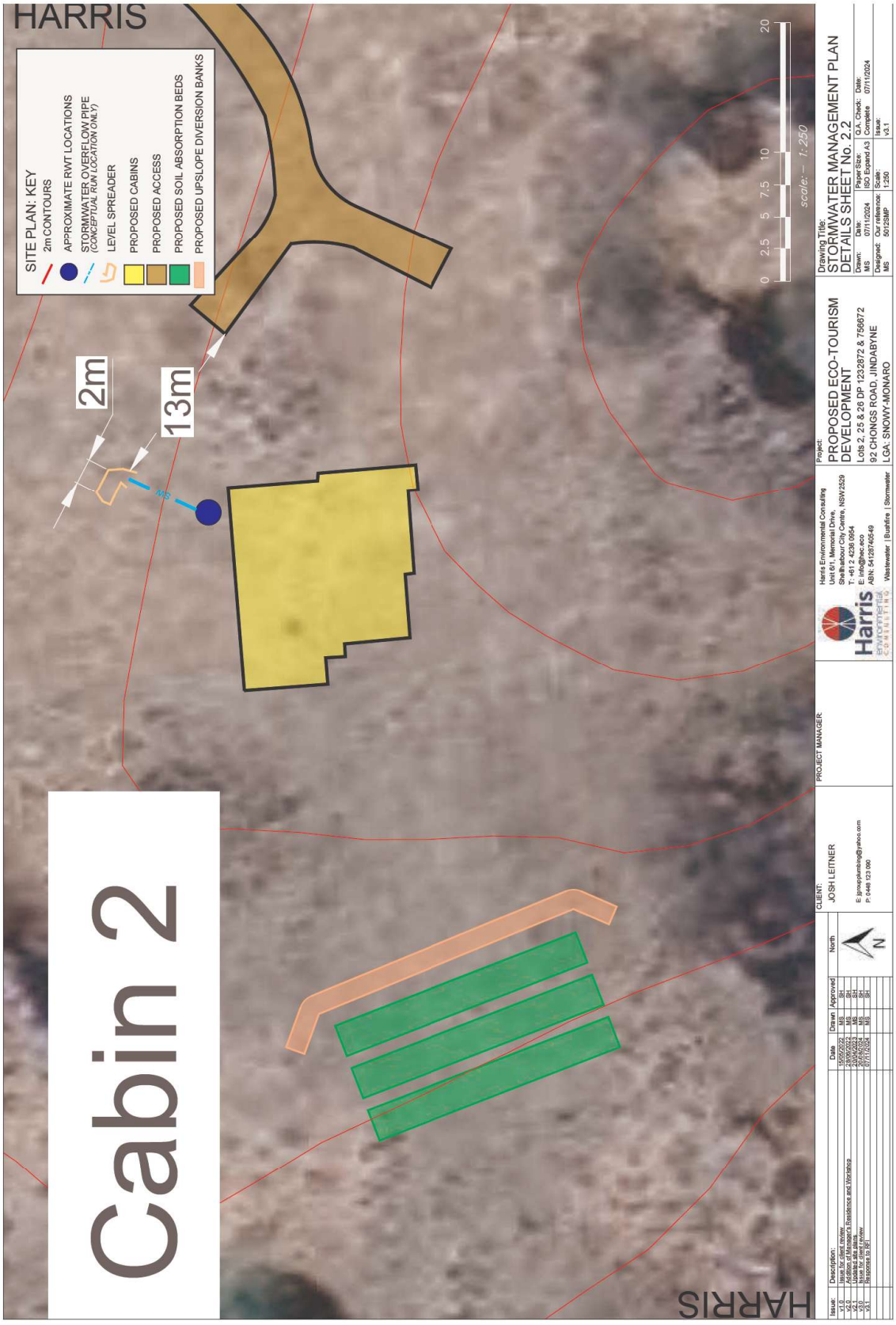
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Lots 2, 25 & 26 DP 1232872 & 756672
92 CHONGS ROAD, JINDABYNE
LGA: SNOWY-MONARO
Harris Environmental Consulting
Unit 6/1, Memorial Drive,
Shellharbour City Centre, NSW 2529
T: +61 2 4236 0954
E: info@hec.eco
ABN: 54128740549
Wastewater | Bushfire | Stormwater
PROJECT MANAGER:
CLIENT:
JOSH LEITNER
E: jgroupplumbing@yahoo.com
P: 0448 123 090
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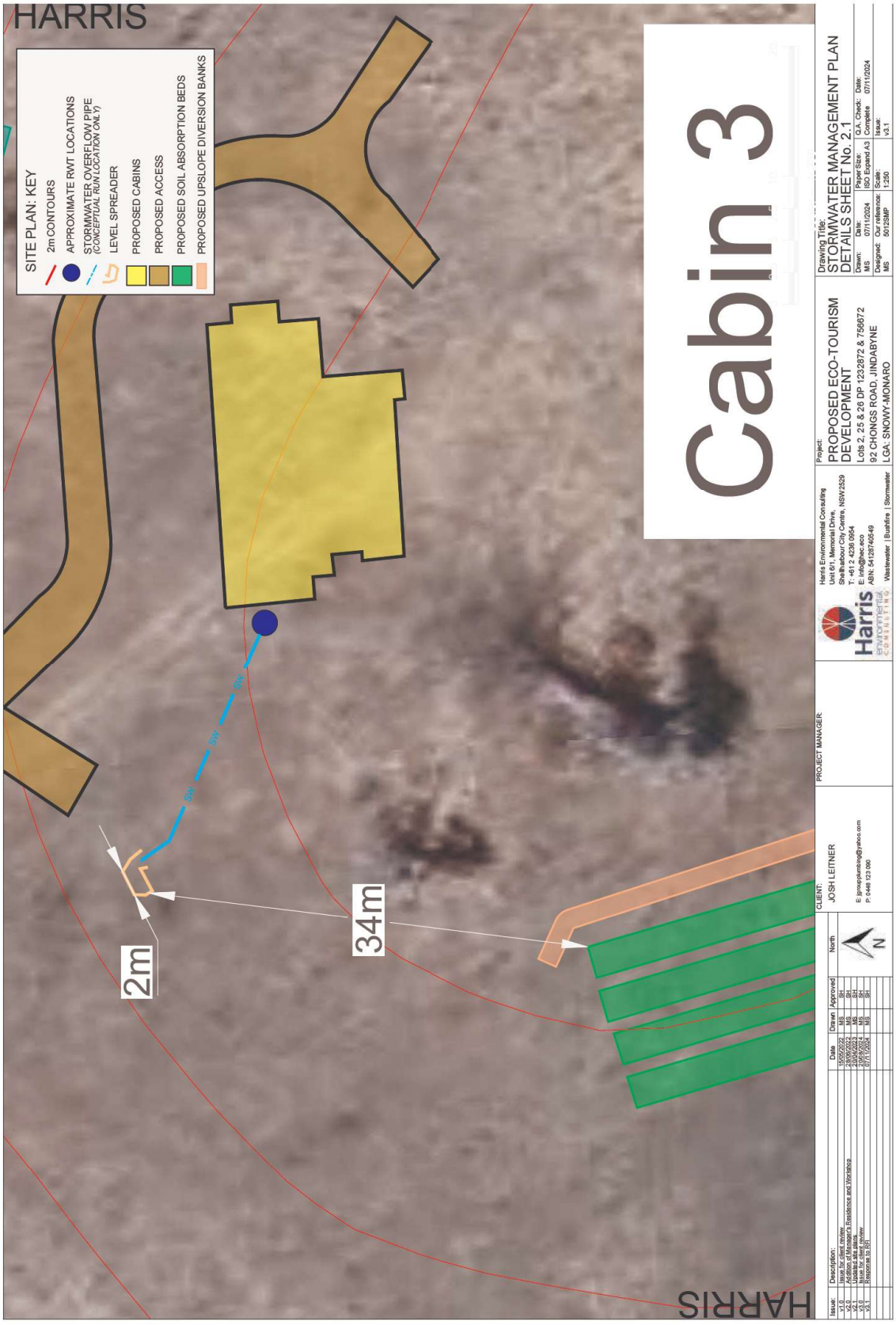
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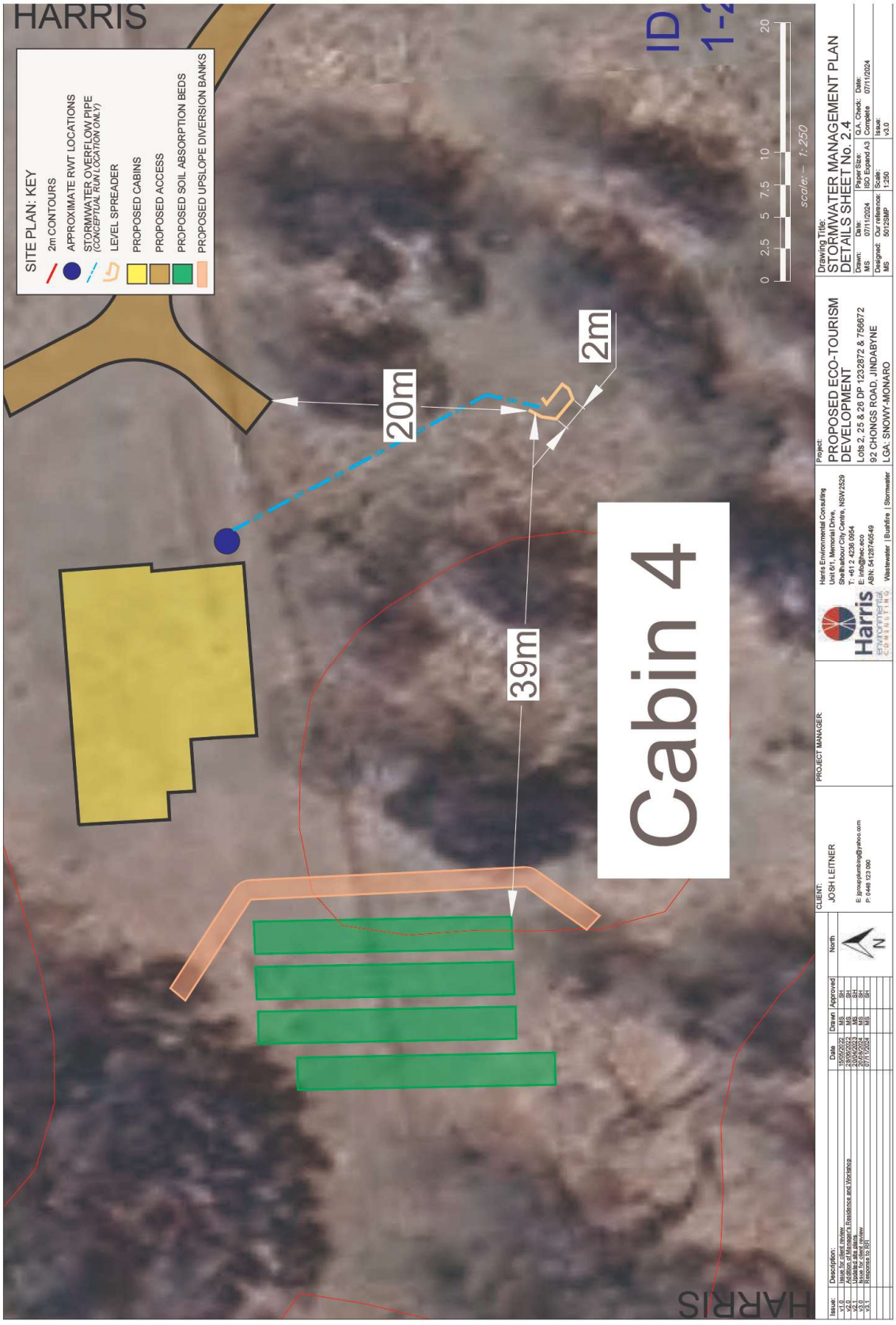
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LGA: SNOWY-MONARO
Harris Environmental Consulting
Unit 6/1, Memorial Drive,
Shellharbour City Centre, NSW 2529
T: +61 2 4236 0954
E: info@hec.eco
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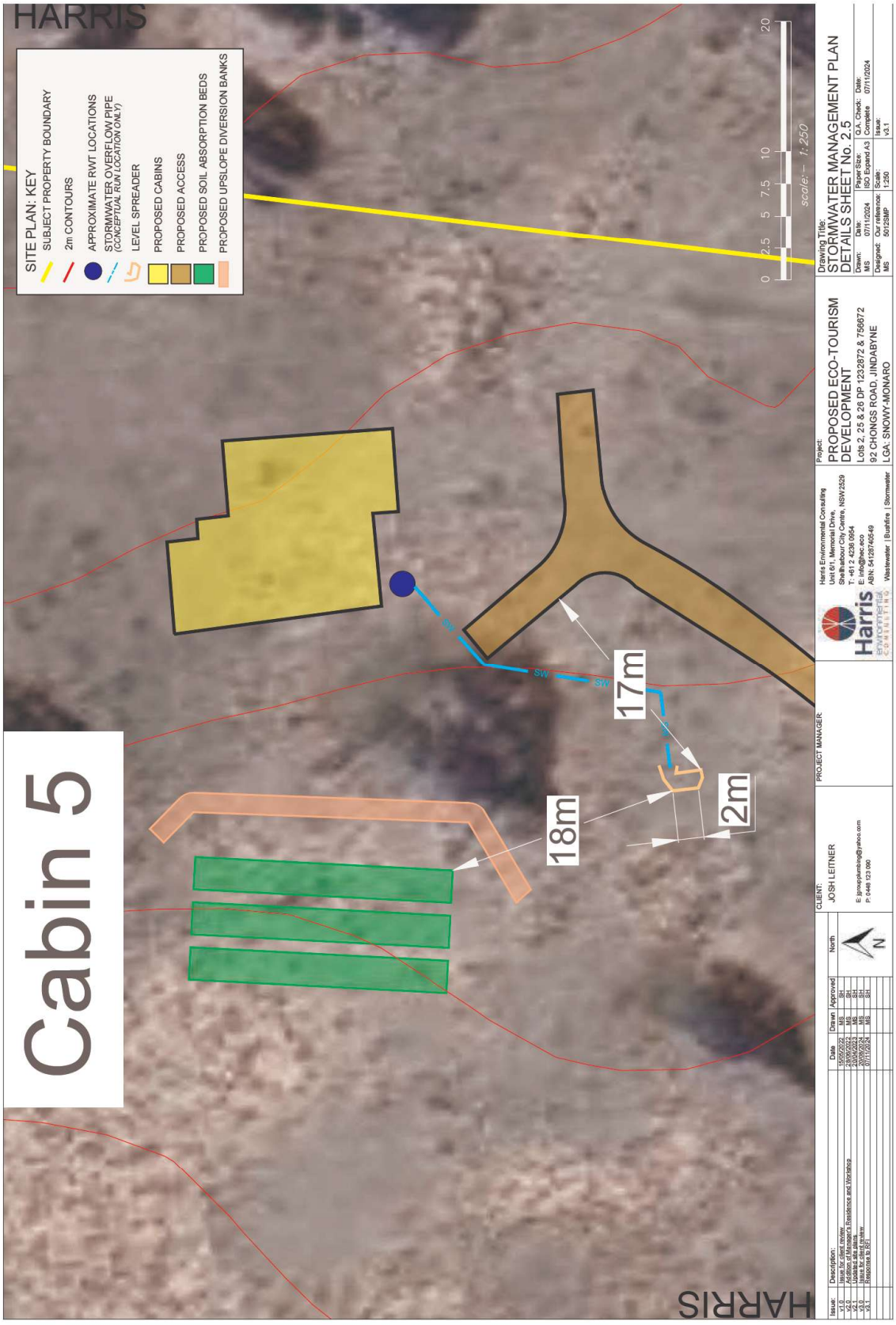
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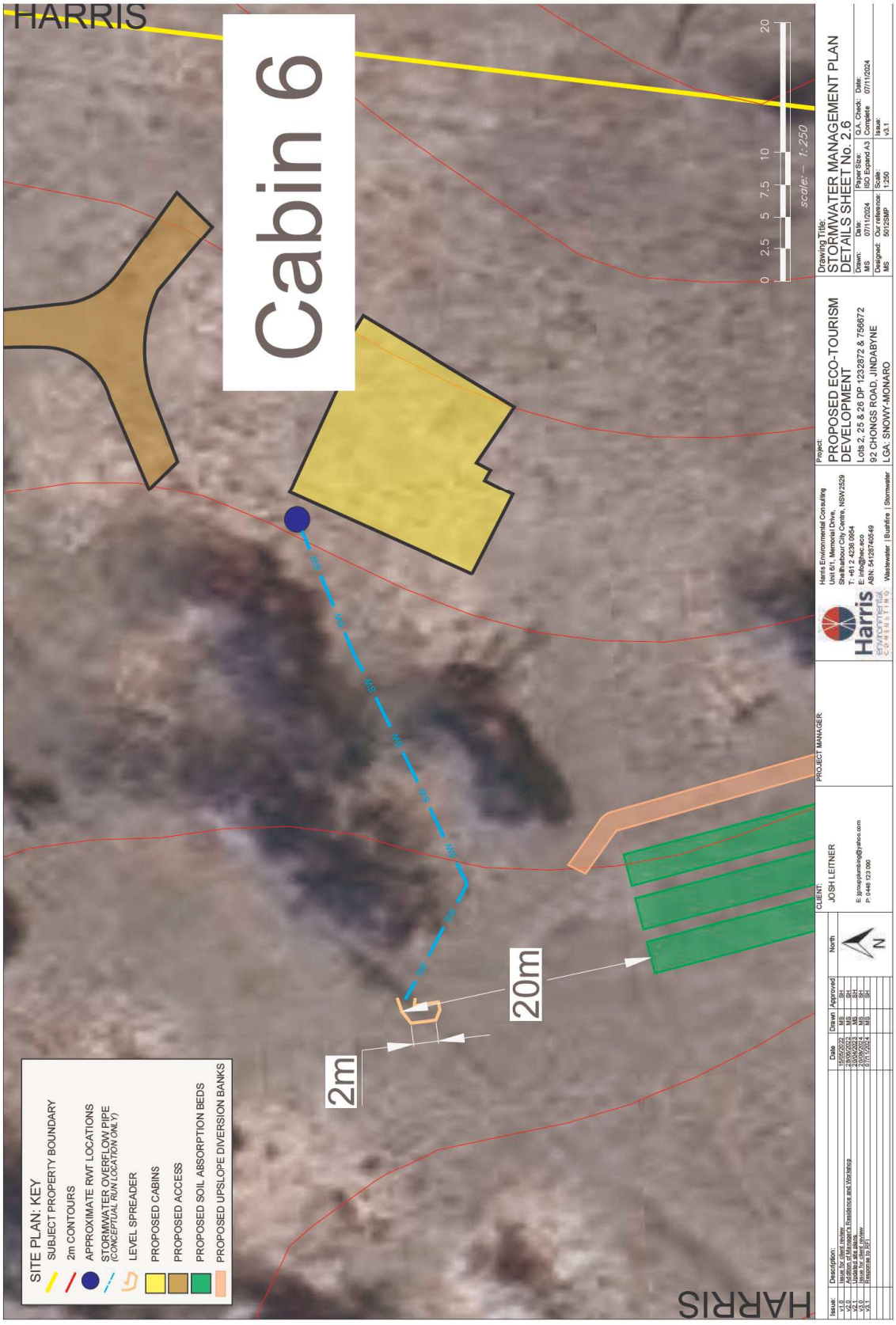
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PROJECT MANAGER:
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Unit 6/1 Memorial Drive,
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T: +61 2 4236 0954
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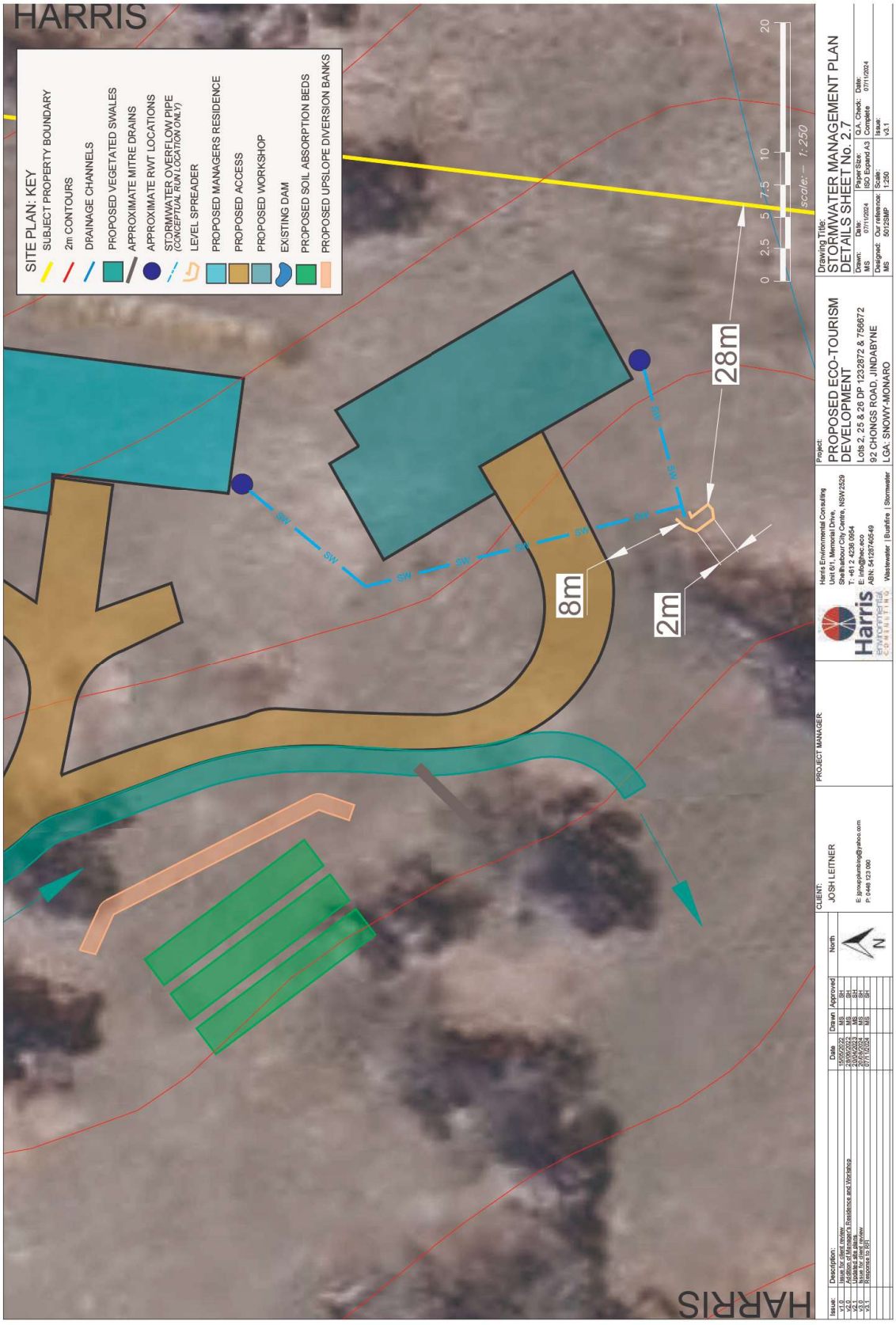
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THERMAL ENVIRONMENTAL

Josh Leitner

92 Chongs Road Jindabyne

Passive Design Strategy Report

Report No: S-R2023101200

12th October 2023

REVISION STATUS

Report No	S-R2023101200	Revision	[01]	Date	12/10/2023

Revision	Description of Revision	Date	Checked	Approved
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01	Revised Issue – 01	12/10/2023	JL	AA

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Contact Details

Thermal Environmental Engineering Pty Ltd
(ABN: 89 166 914 441)
www.thermalenvironmental.com

61 Yallambee Road
Berowra, NSW 2081
tel: 02 9456 7008

Author

Arjun K Adhikari
mob: 0430 636 395
arjun.adhikari@thermalenvironmental.com

TABLE OF CONTENTS

		Page No.
EXECUTIVE SUMMARY		**4**
1	**INTRODUCTION**	**5**
1.1	THE SITE AND DEVELOPMENT DESCRIPTION	5
2	**ESD REQUIREMENTS**	**6**
2.1	BASIX AND NATHERS	6
3	**SUSTAINABLE DESIGN STRATEGIES**	**7**
3.1	CLIMATE ANALYSIS, SITE CONSTRAINTS AND ASSETS	7
	3.1.1 Local Temperature and Diurnal Average	8
	3.1.2 Local Wind Pattern	9
3.2	ENERGY AND GREENHOUSE GAS STRATEGY	10
	3.2.1 Passive Design Features	10
	3.2.2 Energy Efficiency Features	12
	3.2.3 Renewable Energy Options	13
3.3	WATER	13
	3.3.1 Water Efficiency	13
3.4	INDOOR ENVIRONMENT (IE)	13
3.5	MATERIAL LIFE CYCLE IMPACTS	14
3.6	ECOLOGY	14
4	**CONCLUSION**	**15**

EXECUTIVE SUMMARY

The proposed development ECO Hut at 92 Chongs Road, Jindabyne NSW 2627 has been designed according to the best passive design principles. This is supported by various passive deign features implemented in the design development stages of the project.

Reducing greenhouse gas emission and improving its environmental performance in terms not just energy but also, water, materials, emission and waste are also considered. The design has been developed to take advantage of the best aspect of climate and site resources such as local temperatures, diurnal variations, local wind patterns for natural ventilation where possible without detracting from the required functionality.

The buildings have been carefully designed to reduce greenhouse gas emissions and adapt to future climate change by applying façade optimisation principles for daylight, shading strategies according to mass and orientation.

Employing the vision, the development also seeks to maximise opportunities for on-site energy supply and reduce CO_2 emissions. Following renewable energy strategies are implemented on site:

- Solar PV system – minimum of 1.5 kW installed on each dwelling.

Sustainable design goes further than just reducing greenhouse gas emissions. Other dimensions of sustainable design concerns effective use of resources, recycling, use materials and choosing responsible suppliers and transport. The major construction material for the site is from timber as external cladding which supports the use of low embodied energy material.

The development is also targeting reduction in potable water consumption being totally self-sufficient and off the grid. This will be achieved through a combination of high efficiency fixtures, on site wastewater rainwater harvesting.

This report presents the overall approach to sustainable design for the ECO Huts described in the report. The ambition demonstrated is intended to foster a sense of environmental stewardship.

1 INTRODUCTION

This report details the environmental and climate responsive design and sustainability features of the proposed Eco Huts at 92 Chongs Road, Jindabyne and how the project responds to the sustainability objectives and climate responside solar passive design.

1.1 THE SITE AND DEVELOPMENT DESCRIPTION

The proposed development will provide ECO Huts on 11,760 m^2 of land comprising:

- Hut 1 – 147.05 m2 (two bedrooms)
- Hut 2 – 184.5 m2 (three bedrooms)
- Hut 3 - 147.05 m2 (two bedrooms);
- Hut 4 – 180.7 m2 (three bedrooms)
- Hut 5 – 139.4 m2 (two bedrooms)
- Hut 6 – 148.3 m2 (two bedrooms);
- Shed 1 – 307.3 m2 (2 bedrooms); and
- Shed 2 – farm house – 298.4 m2 .
- On site renewables (PV,);
- Rainwater collection and re-use;

The site is located at 92 Chongs road, Jindabyne within Snowy Monaro Reginal City Council. The site, as shown in Figure 1, is located approximately 470 km south-west of Sydney. The site is generally surrounded by dense bush land and rainforest vegetation and small farming allotments.

The site's locational context is shown at Figure1.

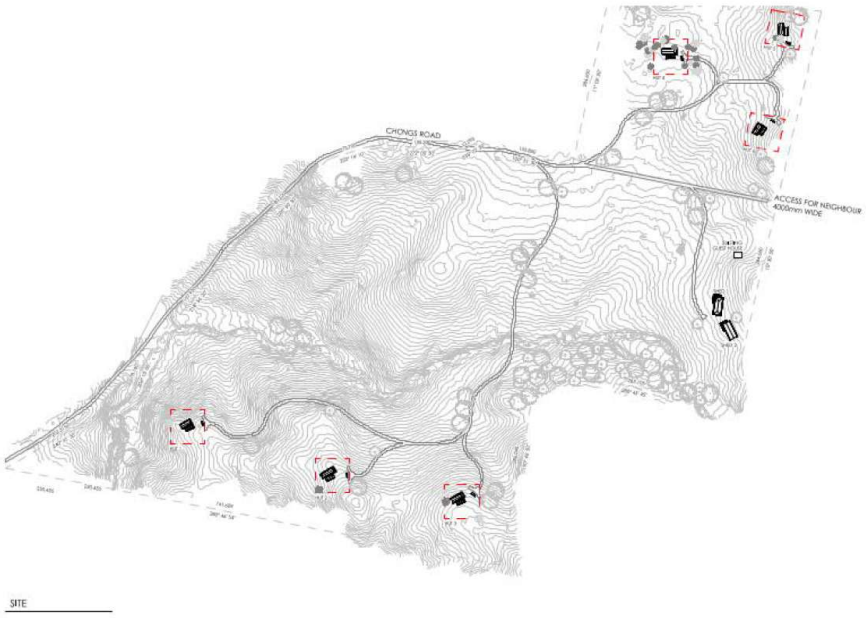


Figure 1: Site Plan

2 ESD REQUIREMENTS

This section provides an overview of key mandatory requirements relating to the development and a summary voluntary sustainability initiative being targeted to enhance the overall development performance.

2.1 BASIX AND NATHERS

The Building Sustainability Index (BASIX) was released in 2004 by the NSW Department of Planning to set standards for reductions in greenhouse gas and potable water use associated with new residential development in NSW. This now includes greenhouse reduction standards for all new multi-unit residential housing and renovations over $50,000. BASIX analyses data on size, buildings materials, location etc of the intended development and determines a score benchmarked against thermal, energy and water targets.

The RDCP 2014 requires residential component of mixed use development by legislation to pass BASIX to ensure BASIX water and energy commitments are met. For compliance with the specific targets for residential component of the development please refer to the BASIX report produced by Thermal Environmental.

3 SUSTAINABLE DESIGN STRATEGIES

The design team have incorporated a series of initiatives to achieve energy, water and thermal comfort compliance and to ensure the design responds to the requirements of the National Construction Code.

Additional strategies beyond the minimum requirements have also been included for this development due to its use and intention to achieve an Eco Hut.

Passive measures and efficient services will minimise energy use and reduce the carbon footprint of the building whilst maintaining high levels of indoor environmental quality to maximise occupant comfort.

Water efficient fixtures seek to reduce demand and rainwater captured water will be used for non-potable use such as irrigation and flushing toilets.

Materials used in the building will, where practical, be from environmentally accredited suppliers and of low toxicity to provide good indoor air quality. Offsite prefabrication is being considered for some elements of the development including the accommodation.

The sustainability strategies are summarised in the following section and will be further refined through the detailed design stages.

3.1 CLIMATE ANALYSIS, SITE CONSTRAINTS AND ASSETS

The purpose of site analysis is to understand the local climate, so that the proposed building design and layout appropriately responds and adapts to the local climate.

The local climate analysis considers local weather data, wind analysis (speed, direction and frequency), solar radiation, optimum orientation, ground temperatures, diurnal variation, comfort hours and helps identify which sustainable design strategies are suited to the building and location. E.g. whether the use of natural ventilation or night cooling strategies are feasible

A preliminary analysis of the site resources and constraints are summarised in Figure 2 with more detailed discussion on climate conditions below.

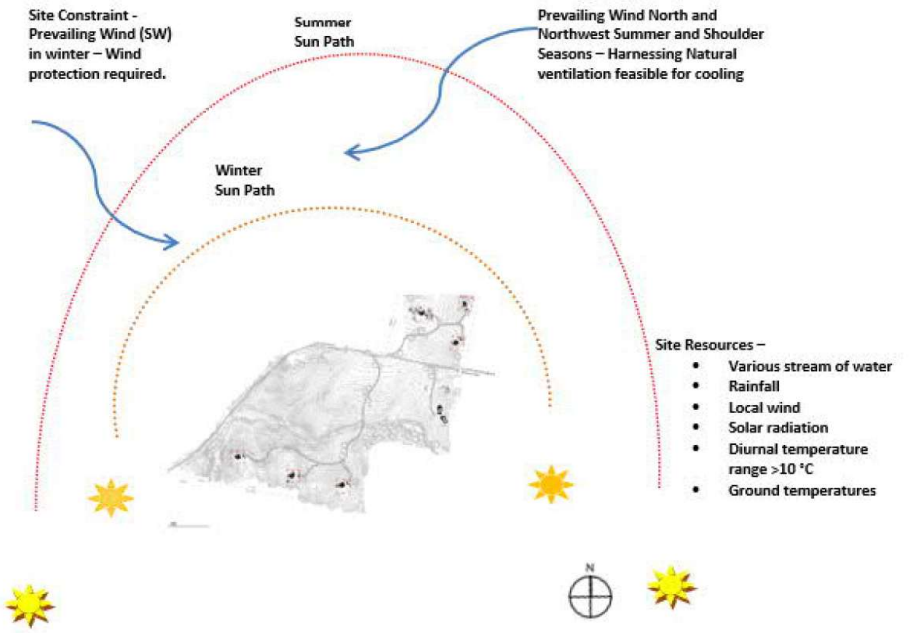


Figure 2: Site Analysis and Resources/Constraints

3.1.1 Local Temperature and Diurnal Average

Figure 3 shows the outdoor air temperature (mean, maximum and low) and the thermal comfort range for Thredbo, NSW The thermal comfort range shown is taken from the Adaptive Comfort Model in ASHRAE Standard 55-2010. The monthly diurnal average temperature along with the solar radiation (both diffuse and direct) data is also presented as shown in Figure 3.

Climate conditions are suitable to provide thermal comfort for 4% of the year. However some form of active heating will be required throughout the year.

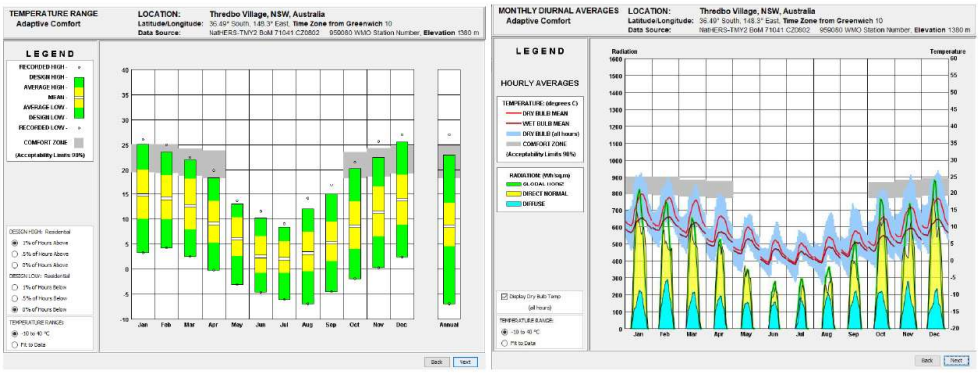


Figure 3: Local Temperature, Solar Radiation and Comfort Band

Monthly diurnal averages highlight the difference in temperature between daytime and night time. The analysis of the diurnal temperature range indicates that night time cooling can be used on the proposed Eco Huts during some summer months.

The average solar radiation for the site exceeds 600 W/m^2 during summer and about 300 W/m^2 during winter. The excess level of heat in summer will be mitigated through appropriate façade and shading device design. In winter this heat load could be used to supplement the heating required where feasible and appropriate. The available solar radiation indicates good potential for solar hot water heating and energy generation via photovoltaic options.

3.1.2 Local Wind Pattern

Australia's two prevailing wind streams are determined by the seasonal movement of high pressure systems (i.e. anticyclones). Variations in wind direction and speed are greatest at the coastal areas due to the influence of the diurnal and sea breeze affects. The local wind pattern of all months of the year for Nowra is shown in Figure 4.

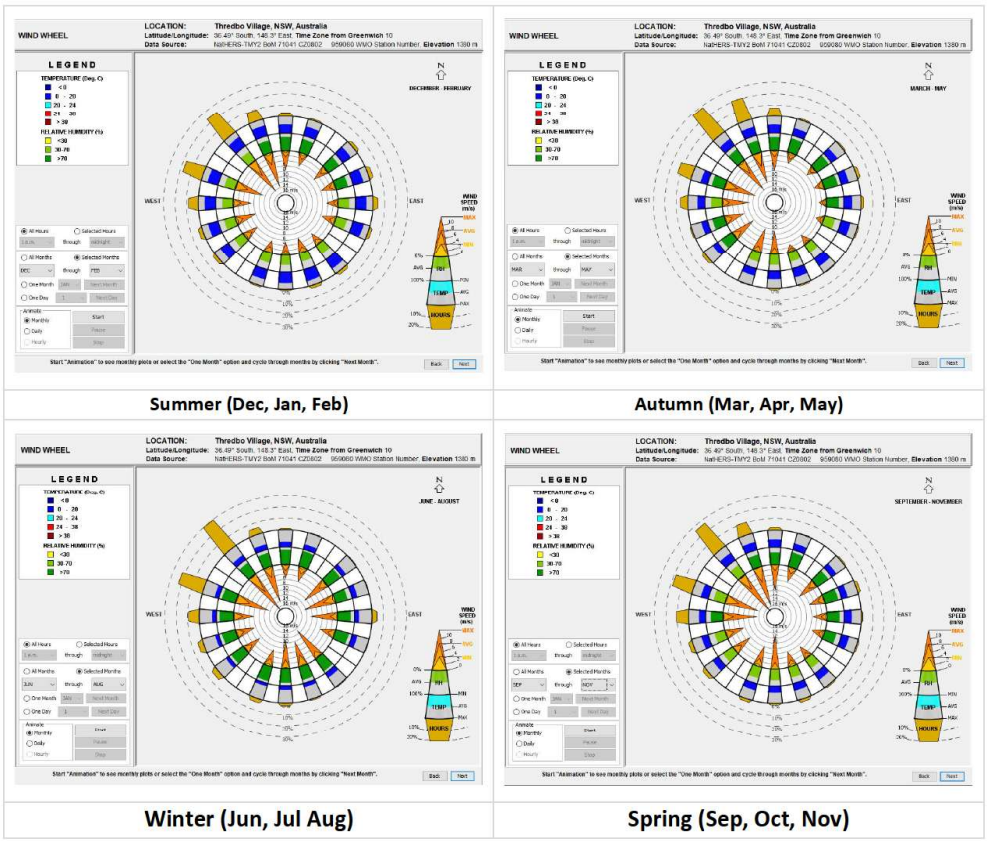


Figure 4: Local Wind Pattern and Prevailing Wind Direction

During the winter months (June, July and August) the majority of the coldest winds are from the North West at an average speed of approximately 6-8 m/s. During these months, wind protection is required on the western façade of the building.

During summer (December, January and February), the favourable winds or cooler winds comes from North and North West at an average speed of approximately 6 -8 m/s. The wind from east is relatively warmer compared to south and west. Where feasible, natural ventilation is utilised to provide passive cooling in summer.

During autumn (March, April and May), the majority of the winds comes from the North West. During Spring (September, October and November), the majority of the winds comes from the North West and. During shoulder seasons there may be some potential for ventilation.

3.2 ENERGY AND GREENHOUSE GAS STRATEGY

The energy and greenhouse gas (GHG) strategy for the development seeks to first focus on reducing demand through passive measures. Building services required for providing conditioned air and lighting will be selected and designed for maximum energy efficiency. A series of opportunities for onsite low / zero carbon generation have been considered.

3.2.1 Passive Design Features

- The site layout and orientation has been developed with consideration of passive solar design principles to allow winter solar access but prevent some summer solar heat gains. Passive solar design is illustrated in Figure 5.

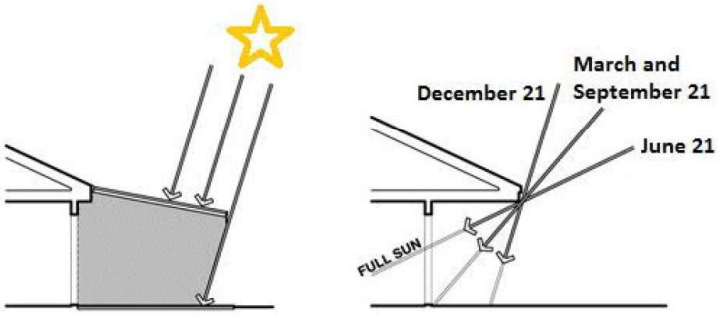


Figure 5: Passive Solar Design

- The thermal performance or the buildings glazing and envelope in their current form has been optimised and fabric and glazing requirements determined in accordance with NathERS requirements. Refer to Thermal Environmental NatHERS report for further details on building envelope and glazing performance.
- Traditional passive homes in temperate to cooler climates used light weight construction with slab on grade and shade outdoor spaces – refer to Figure 6.

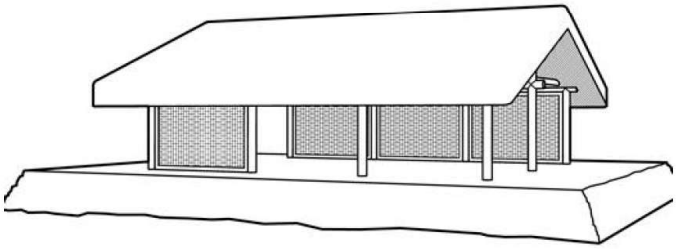


Figure 6: Passive Solar Design – lightweight wall – timber cladding and Concrete slab on ground

- All buildings are suited to using natural ventilation with internal layouts generally providing cross flow paths through the building (refer to Figure 7). However due to the climate conditions some mechanical heating would be required throughout the year.

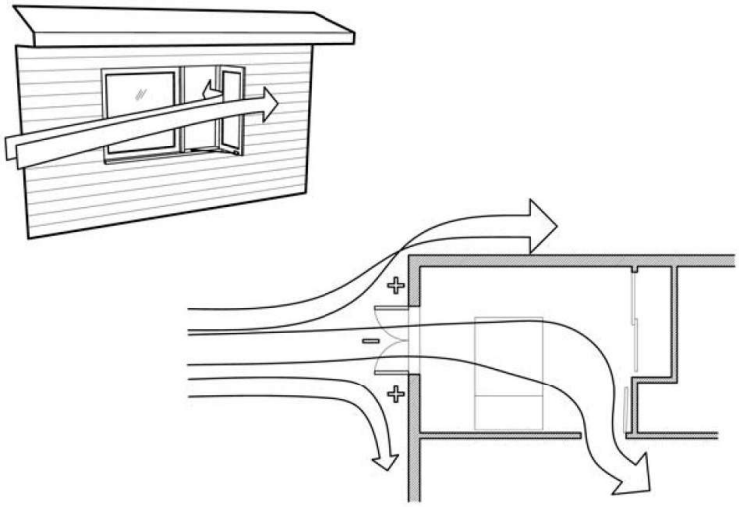


Figure 7: Natural Ventilation

- Use of sufficient / optimum insulation to prevent heat loss in cooler climates Figure 8.

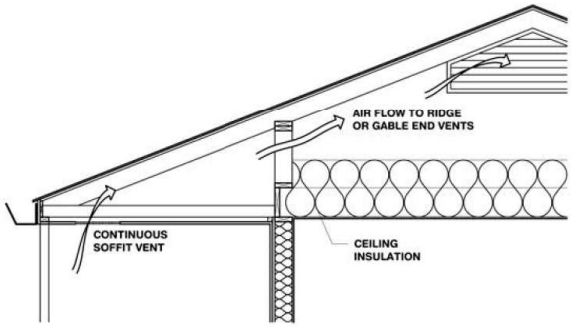


Figure 8: Extensive use of Insulation – to minimise heat loss throughout the year.

- The orientation of the facilities and position of glazed elements in facades will enable internal spaces to receive adequate levels of daylight thereby reducing the need for artificial lighting and conserving energy. Conceptual illustration of daylight and ventilation is shown in Figure 9.

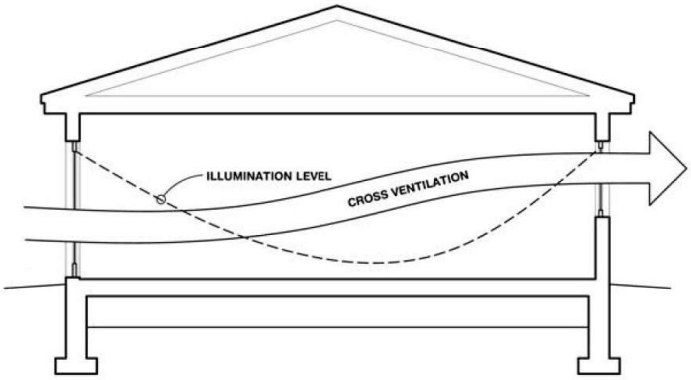


Figure 9: Daylighting and Cross Ventilation

3.2.2 Energy Efficiency Features

The design of the building services within the development includes the following energy efficiency initiatives:

Mechanical Services

- Efficient and suitably sized mechanical heating, ventilation and air conditioning systems;
- Appropriate zoning and control for HVAC systems to condition spaces when required;
- Use of ceiling fans on hot days. Ceiling fans or indoor air motion can make the environment feel at least 2.5 to 2.8°C cooler thus less air conditioning is needed.

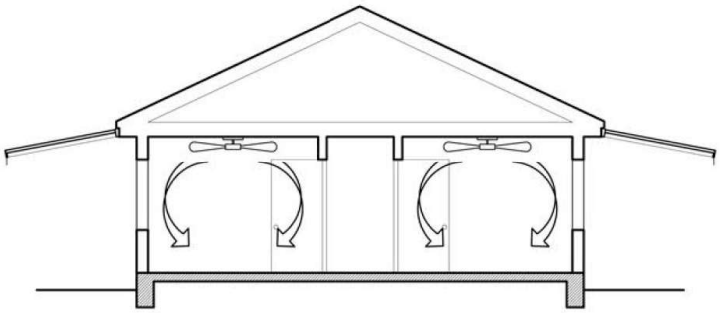


Figure 10: Use of Veiling Fans

Electrical - Lighting

- Selection of energy efficient light fittings, such LED, with time clock control and motion detection switching; and;
- External lighting controlled by daylight sensor and/or timer to ensure that lights are turned on when required.

Hot Water Services

- Solar gas boosted for domestic hot water in all buildings;

Appliances and Equipment

All appliances and equipment to be energy efficient with high levels of energy rating. IT equipment to be "US EPA Energy Star Compliant" or equivalent. Appliances to achieve high level rating under www.energyrating.com.au.

3.2.3 Renewable Energy Options

Following renewable energy options for the site are being proposed which can lead to further operational greenhouse gas (GHG) reductions. The following renewable energy options are considered suitable and will be evaluated further in the detailed design stage to determine the optimal site renewable energy demand:

- **Solar photovoltaic (PV)** panels are a suitable technology to provide a portion of the overall building energy use. Solar panels are installed on the roof of Huts and will be facing north. Some PV is a requirement due to BASIX energy target.

3.3 WATER

The development is isolated from urban water supplies and therefore water management is a key aspect of the sustainability strategy for the site. Water used on site will come from on site rainwater harvesting.

In a similar manner to energy, the water strategy for the development seeks to first minimise water consumption through design and selection of efficient fixtures, fittings and through the use of low water species where practical to reduce need or limit the need for irrigation.

Further investigations on water efficiency refer to BASIX report produced by Thermal Environmental.

3.3.1 Water Efficiency

The following measures have been implemented to reduce demand for water use and reduce volume of waste water effluent generated at the development:

- The use of sanitary fixtures and appliances with the following WELS rating:
  - Taps – 5 Star
  - Urinals – 5 star
  - Toilet – 4 Star (with dual flush)
  - Showers – 4 Star
  - Washing Machines – 5 Star (where proposed)
  - Dishwashers – 5 Star (where proposed)
- Landscaping - planting type using local and indigenous species

3.4 INDOOR ENVIRONMENT (IE)

Indoor environment initiatives target thermal comfort, provision adequate ventilation and fresh air supply as well as acoustic and visual amenity.

- Thermal comfort conditions will be achieved through the passive solar design strategies, building fabric, natural ventilation and HVAC system;
- Artificial lighting are flicker free and design to achieve suitable lighting levels for the use of the space;
- The design of the envelope and extent of glazing does allow for daylight penetration whist minimising heat transfer and glare;
- Internal building services are suitably attenuated to provide adequate internal noise levels.
- Outside air rates should aim to exceed minimum code (AS1668) requirements providing additional quantities of fresh air to occupants;

- The design will reduce indoor pollutants, such as volatile organic compounds (VOC) and formaldehyde through appropriate material selection;
- Designated smoking areas away from building entrances, outdoor dining areas and building air intakes will be nominated;

3.5 MATERIAL LIFE CYCLE IMPACTS

Selection of materials used in the building is critical for minimising environmental impact through:

- Consideration of life cycle environmental impacts (e.g. embodied energy, GHG and water, other emissions to air)
- The use sustainable materials (for example: timber) as opposed to traditional construction, such as pre-fabricated structures on piers as opposed to raft and slab type construction reduces ground and ecological disruption and impact on the soil and natural environment.
- Pre-fabricated structures will be quick to assemble on site and cost effective onsite construction and are manufactured using processes that result in less material waste.
- Minimise or no use of materials with ozone depletion potential, global warming potential and materials containing volatile organic compounds;
- Capital costs, ongoing maintenance costs and total life-cycle-cost;
- The operability and maintainability of the facility;
- The reliability, availability and flexibility of the facility and its useful life;
- Climate change adaptation and risk management.

The following strategies have been implemented:

- The construction of the development includes the use of environmentally sustainable construction materials to minimise the construction and operational impacts of the development.
- All timber used for the development to be sourced from Forest Stewardship Council (FSC) certification scheme or reused source.
- Timber products used should contain no formaldehyde and be procured from a forest certification scheme OR is from a reused source;
- Maintenance forms a significant component of a building's life cycle cost. Durability and longevity of all construction materials, finishes, furniture and equipment is considered to deliver a future-proofed asset with minimised life cycle costs.

3.6 ECOLOGY

There are several strategies implemented to limit impact and improve the ecological value of the site:

- The development is sited and designed in existing cleared areas to ensure a minimal impact on native vegetation.
- The development incorporates an alternative solution to mitigate potential bushfire impacts eliminating the need to remove vegetation.
- The development will have minimal detrimental impacts on the flora and fauna due to off-site pre-fabricated structure, which requires assembly on site and thus causing minimal soil disruption.
- The management of the site will ensure the significant flora and fauna will be protected and monitored more closely than under the current conditions.

4 CONCLUSION

Thermal Environmental has reviewed the applicable ESD regulatory requirements and good solar passive deign at proposed development 92 Chongs Road, Jindabyne.

A series of initiatives have been implemented to minimise energy use, maximise energy efficiency, minimise the carbon footprint and reduce potable water use whilst maintaining high levels of occupant comfort. Many of these initiatives go beyond the mandatory requirements set out in regulatory requirements / compliance.

This report demonstrates general compliance with the objectives of sustainable development strategies and sufficiently to addresses passive design requirements for the Development Application which fulfils the sustainable development of an Eco Huts.

Calculation Name: Josho's Farm
Name: Hallmac Electrical Service
Address: 92 Chongs Rd, Jindabyne NSW 2627, Australia

Date: May 26, 2023
Off-Grid Calculation
Powered by RedEarth Energy Storage

Appliance / Item	Quantity	Running Watts	Usage (Hours)	Daily KWHs	Time Used
Dishwasher	1	1800	1	1.80	Morning✓ Afternoon✓ Mid-Day✓ Night✓
Microwave	1	1400	0.5	0.70	Morning✓ Afternoon✓ Mid-Day✓ Night✓
Fridge / Freezer	1	150	8.5	1.27	Morning✓ Afternoon✓ Mid-Day✓ Night✓
Toaster	1	1500	0.1	0.15	Morning✓ Afternoon✓ Mid-Day✓ Night✓
Water Pump	1	1000	1	1.00	Morning✓ Afternoon✓ Mid-Day✓ Night✓
Air Compressor	1	3300	0.5	1.65	Morning✓ Afternoon✓ Mid-Day✓ Night✓
Washing Machine	1	300	1.5	0.45	Morning✓ Afternoon✓ Mid-Day✓ Night✓
Ceiling Fan	1	40	5	0.20	Morning✓ Afternoon✓ Mid-Day✓ Night✓
Ceiling Lights	6	11	6	0.40	Morning✓ Afternoon✓ Mid-Day✓ Night✓
Portable Heater	1	2400	3	7.20	Morning✓ Afternoon✓ Mid-Day✓ Night✓
Iron	1	2000	0.5	1.00	Morning✓ Afternoon✓ Mid-Day✓ Night✓
Sound System	1	60	7	0.42	Morning✓ Afternoon✓ Mid-Day✓ Night✓
Television	1	90	4	0.36	Morning✓ Afternoon✓ Mid-Day✓ Night✓
Modem / Router	1	10	24	0.24	Morning✓ Afternoon✓ Mid-Day✓ Night✓
Laptop Computer	1	90	6	0.54	Morning✓ Afternoon✓ Mid-Day✓ Night✓
Air Conditioner	1	1400	4	5.60	Morning✓ Afternoon✓ Mid-Day✓ Night✓

Electric Oven	1	3400	1	3.40	Morning✓ Afternoon✓ Mid-Day✓ Night✓
Kettle	1	2200	0.1	0.22	Morning✓ Afternoon✓ Mid-Day✓ Night✓
Pump	1	500	3	1.50	Morning✓ Afternoon✓ Mid-Day✓ Night✓
Electric HWS	1	3600	2	7.20	Morning✓ Afternoon✓ Mid-Day✓ Night✓
Dryer	1	1800	2	3.60	Morning✓ Afternoon✓ Mid-Day✓ Night✓

ADDITIONAL INFORMATION (OPTIONAL)

✓
Three Phase Power Required?

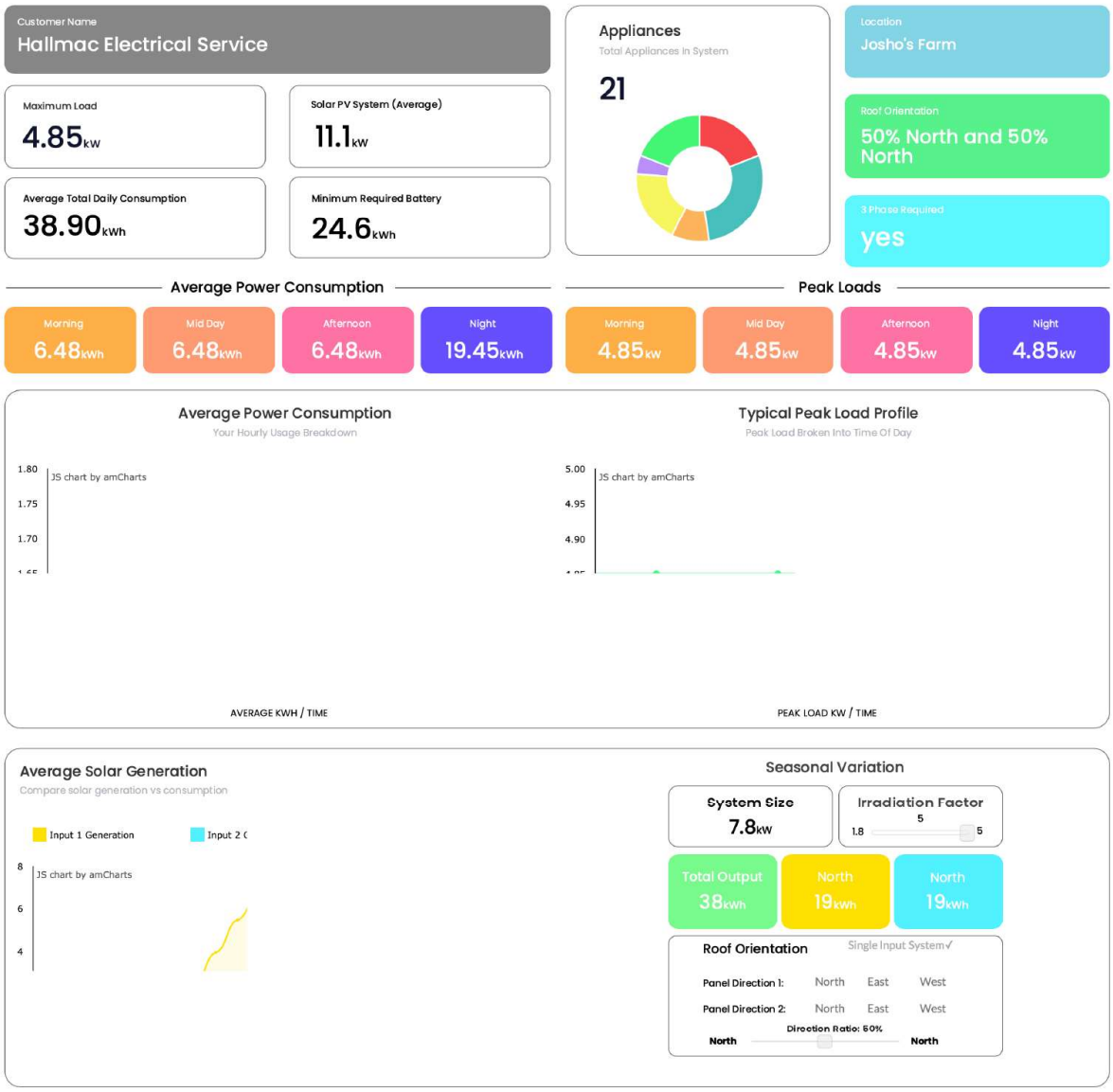
Roof Orientation

Panel Direction 1: North East West

Panel Direction 2: North East West

Direction Ratio: 50%

North North


Customer Name
Hallmac Electrical Service
Maximum Load
4.85kW
Solar PV System (Average)
11.1kW
Average Total Daily Consumption
38.90kWh
Minimum Required Battery
24.6kWh
Appliances
Total Appliances In System
21
Location
Josho's Farm
Roof Orientation
50% North and 50% North
3 Phase Required
yes
Average Power Consumption
Morning 6.48kWh
Mid Day 6.48kWh
Afternoon 6.48kWh
Night 19.45kWh
Peak Loads
Morning 4.85kW
Mid Day 4.85kW
Afternoon 4.85kW
Night 4.85kW
Average Power Consumption
Your Hourly Usage Breakdown
1.80
1.75
1.70
JS chart by amCharts
AVERAGE KWH / TIME
Typical Peak Load Profile
Peak Load Broken Into Time Of Day
5.00
4.95
4.90
JS chart by amCharts
PEAK LOAD KW / TIME
Average Solar Generation
Compare solar generation vs consumption
Input 1 Generation
Input 2
8
6
4
JS chart by amCharts
Seasonal Variation
System Size
7.8kW
Irradiation Factor
5
1.8
5
Total Output
38kWh
North
19kWh
North
19kWh
Roof Orientation
Single Input System✓
Panel Direction 1: North East West
Panel Direction 2: North East West
Direction Ratio: 50%
North
North



Two Matches Found

Based on your results, we believe these suggestions may best suit your usage

Please note, you may need to consider your usage patterns and system limitations.

We recommend consulting a trained RedEarth installer

Your Best Match

We believe this system may best match your usage

Three Phase	Max Load	Max Day Load	Solar Size	Battery Size
	Less than 22.5kW	Less Than 60kW	Greater Than 15kW	49.2kW - 73.8kW
	4.85 kW	4.8 kW	7.8 kW	24.6 kW

DROPBEAR 3PH

OFF-GRID POWER

DropBear's fully integrated system offers a hybrid versatility that connects to your solar panels to take you completely off the grid, while retaining the option to stay on the grid. It's suitable for homes and businesses with high daytime loads and usage.

For a sheltered area, DropBear includes our advanced remote monitoring system, giving you access directly from your mobile device and RedEarth's continuous monitoring service.

Pre-wired for PV panels and a backup generator, DropBear is easy to install. The system can take up to 57kWh of RedEarth's own Clean Energy Council-listed Troppo batteries, so you can start small and grow your storage later.

OFF GRID 3 PH

FEATURES

- 22.5kw peak -60kw Surge power
- Up to 45kw of PV (three 15kw PV inverters)
- From 49.2kw/H to 73.8kw/H battery
- Auto-Gen start
- 12V Gen battery charger
- 10 year Redearth warranty
- Plug n Play design for installation
- RedEarth 4G Remote monitoring
- STC eligible
- 220kg +45kg per battery
- 220(H) x 154 (W) x 56 (D)
- IP40 Indoor rated

Other Suggestions

While these may not be perfect fits, we believe these systems may also suit your usage

Three Phase	Max Load	Max Day Load	Solar Size	Battery Size
	Less than 22.5kW	Less Than 60kW	Greater Than 15kW	49.2kW - 135.3kW
	4.85 kW	4.8 kW	7.8 kW	24.6 kW

COPPERHEAD 3PH

OFF-GRID POWER

Designed to provide peak demand support. the Copperhead is RedEarth's next-generation, utility-grade standalone off-grid battery energy storage system. Both scaleable and easily upgradeable in the field, Copperhead can adapt to your changing needs.

OFF GRID 3 PH

FEATURES

- 22.5kw peak -60kw Surge power
- Up to 45kw of PV (three 15kw PV inverters)
- From 49.2kw/H to 135.3kw/H battery
- Auto-Gen start
- 12V Gen battery charger
- 10 year Redearth warranty
- Plug n Play design for installation
- RedEarth 4G Remote monitoring
- STC eligible
- 220kg +45kg per battery
- 220(H) x 154 (W) x 56 (D)
- IP40 Indoor rated

[redacted]

5th November 2024

CEO
Snowy Monaro Regional Council
PO Box 714
Cooma, NSW 2630
(email: council@snowymonaro.nsw.gov.au)

Dear Sir/Madam,

Re: Proposed DA for Construction of a staged 6 Cabin Eco-Tourist development with associated ancillary buildings and infrastructure at 92 Chongs Road, Jindabyne – DA 10.2024.230.1

Thank you for Evan's email dated 18/10/24 that formally provided us an extension of time to COB 5/11/24 for submission of our response to this proposed development.

This letter is provided in objection to the proposed development application that was lodged with Snowy Monaro Regional Council (SMRC) for the proposed construction of an eco-tourist development at 92 Chongs Rd, Jindabyne.

[redacted] our existing amenity will be unduly impacted by the proposed development that is in reality a residential development play disguised as eco-tourism.

Our key concerns include the number and size of the proposed buildings and their proposed location on the property which will adversely and unduly affect the current amenity we enjoy and should continue to be able to enjoy under the RU1 zoning. These undue impacts include unwarranted: noise; privacy; visual; light intrusion and traffic.

We call on SMRC to refuse the DA as submitted.

After reading through the documents included on SMRC's website it would also appear that the information provided by the applicant does not adequately address the potential impacts of the proposed development including: noise; privacy; visual impact; light intrusion; traffic; and potential contamination of Sugar Loaf Creek;

The following comments are noted from our review of these documents:

1. **Scale of "Cabins"**
   We note that the scale of the 6 proposed cabins under the context of eco-tourism appears unprecedented. We would suggest that the term cabin is incorrectly used as these proposed dwellings are all of similar proportions to the houses and homes that adjoin the property.

   With increased scale comes increased number of users. The proportions of these cabins will allow for

The Statement of Environmental Effects (SEE) notes that the design of the cabins relate to the huts of the high country. We are avid back country users and note that the huts of the high country are around the similar size as the proposed Refuge buildings or smaller. These other buildings are 5 to 10 times the size of those buildings in the high country.

2. **Proximity of Proposed Dwellings to our Home**
We note that our home is located in visual and acoustic proximity to the proposed dwellings and in particular the proposed location in particular of "Cabin 4".

From what we can ascertain we note that:
- Cabin 4 is oriented to the west so it will look directly at our home;
- The a 4.5m high fully glased façade including double doors opening onto its veranda will direct noise and light directly at our home;
- The position of the house will cause overlooking, noise and light towards our bedroom and substantial loss of privacy.

This location and orientation will significantly impact the amenity of our home

There is no analysis or justification of this impact within the application.

3. **Headlight and noise from proposed access road**
Unfortunately, due to the orientation and location of the proposed roadway leading to and from buildings 4, 5 6 and refuge 2, vehicles travelling along this proposed roadway will be pointing directly to our property / home. At night this will cause unwarranted light intrusion from headlights (that are very likely to be on high beam) again unduly impacting the amenity we currently enjoy.

4. **Undue negative impact from noise generated from the proposed development**
The supporting DA documents provided online does not include an acoustic report, hence the impact on the amenity of our home is not addressed within submission.

We currently enjoy almost no background noise. This low ambient noise level allows us to literally hear the sound of nature, whether it be the wind or sounds of visiting wild life, birds eating seeds. Hence the proposed inclusion of diesel generators, along with the noise accompanying human occupation and vehicle movements that goes with the size, density and location of each dwelling will adversely and unnecessarily impact our amenity.

a. Proposed inclusion of Diesel Generators

The proposed inclusion of diesel generators for each dwelling as a part of an "off grid" power solution will adversely impact our amenity.

The Statement of Environmental Effects (SEE) does not mention the use of Diesel Generators, however the floor plans for each dwelling/building clearly includes diesel generator locations. Hence we can only conclude that the applicant intends to install diesel generation as opposed to connecting to mains power as a backup to its proposed solar energy.

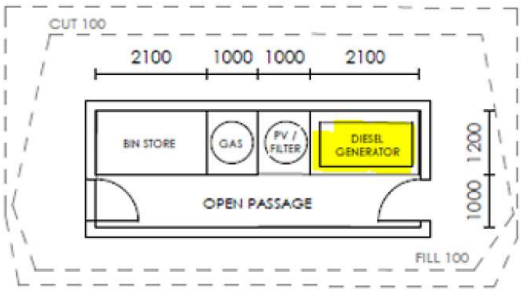


Figure 14 Service Pods

We would suggest there is no reasonable inclusion of diesel generators on the property as 92 Chongs Road is not a remote property warranting a full off grid power solution. We note that:

- there are power poles already in place along the access road within the property providing connection to neighbouring homes;
- all neighbouring properties have mains power connections;
- the proposed use of diesel generators, is unwarranted and embeds the use of fossil fuels on the property whereby the alternate use of mains power allows connection to renewable energy from energy providers thus avoiding further impact on the environment from unnecessarily burning fossil fuels;

The use of diesel generators is a clear non-compliance with one of the key objectives of the Snowy River DCP 2013 which is to *"avoid the use of non-renewable resources where practical"*.

5. **Distance off boundaries**
The proposed development maximises its impact on the environment and neighbours by placing the proposed homes as close to the boundaries as possible.
The current location of proposed dwellings are some 500m to 1 km from the managers residence.

We note that these residences are so close to the boundaries that the required APZ to reduce the BAL rating of these homes (cabins 1, 2, 4, 5 and 6) is not achieved and hence two additional refuge buildings are being proposed.

6. **Traffic Assessment**
Snowy River DCP 2013 – Eco Tourism. Cl E1.3-4 requires a traffic assessment by a suitably qualified traffic engineer. The SEE suggests a traffic assessment is not required. We are uncertain of this, as at peak winter occupation, there could be over 50+ additional vehicle movements a day generated by the proposed development. Given the access road is a shared access that currently has some 2-8 vehicle movements a day this is a significant increase for a dirt access road which includes agricultural gate access. As there are a number of access points converging on the single access road, we would suggest that a traffic report would be appropriate. The gate entrance of the access road to Chongs Rd could be considered a three way intersection also has restricted visibility which we would suggest needs confirmation on the suitability of this many cars.
In addition the suitability of Chongs Rd (which is also a dirt road) for this level of increased traffic itself along with the capacity of culvert crossing and the intersection of Chongs Rd and

Snowy River Way should also be confirmed as in reality the additional number of homes will probably double the current traffic movements at that intersection.

7. **Density of proposed dwellings**
Under RU1, it is permissible to have two dwellings (houses) and potentially smaller cabin (tiny home or caravan size) buildings and plus shed infrastructure. The level of development currently proposed includes an additional 6 houses, one large mixed use residential house/shed, a workshop and two refuges. This is on top of the existing workshop. We note the refuges are of similar scale to other eco cabins and tiny homes. This proposed density would appear to be a four-fold over development of the property under the allowable density for RU1 zoning.

8. **Lack of Architectural Analysis**

The architectural drawings are very limited and do not address the impact of the development on the environment or neighbouring properties. Comments include:

- There is no analysis of proposed location or orientation of the proposed dwellings with respect to how the overlooking and noise from these houses impact the amenity of neighbouring properties;
- There no analysis of the road alignment orientations with respect to mitigating light intrusion and noise impacts on neighbouring properties;
- Exterior opening doors and view lines from Cabin 4 are oriented directly at our home. There is no analysis of how the architect has minimised impacts on the environment and neighbouring properties;
- There is no analysis included of orientation from a passive design perspective of any of the buildings. Exterior opening doors and view lines from Cabin 4 are oriented directly at our home. This is a western orientation. From a passive design perspective we would have understood that a northern orientation would be more preferable. However there is no discussion from the architect or review of how they have oriented this or any of the other proposed homes;
- The provided perspectives are useless. There are no perspectives or the like that show the impact of the proposed dwellings that have a ridge height of some 5.5m. Nor do these perspectives include for the impacts of site leveling and road alignment etc;
- We note from our review these dwellings appear to be sited at the top of a ridge lines when looking at from the roadways to the west of the property. There are no perspectives that analyse this impact.

9. **Potential Contamination Source of Potable Water**
The proposed development is at the head of Sugarloaf Creek and includes for an additional 8 septic systems that will discharge on the property. Sugar Loaf Creek is a source of potable drinking water for households in Ponderosa Lane and also for the property known as Sugarloaf with those mentioned properties having pump systems that draw from the creek. The applicant's SEE advises that a detailed Onsite Wastewater Assessment has been completed by Harris Engineering for the site and that a separate application for management of this will be lodged. The site assessment report on p7 notes that wrt "Domestic Groundwater use" "there are no groundwater bores within 100m". There is however no comment on the proximity of the creek which has a low volume of moving water and is well within this distance.

We would suggest it would be pertinent to check that this is not the case as domestic water is drawn from Sugar Loaf Creek on the opposite side of Chongs Road by neighbouring properties. We also note that 92 Chongs Rd also have a groundwater bore used to fill its lake

(dam). Sugar Loaf Creek passes within some 60m or less of the septic for Cabin 1. The existing dam is within 58m of the septic proposes for the septic servicing the workshop and managers house/shed. The dam also feeds into Sugarloaf Creek.

Hence the assessment completed by Harris Environmental may not confirm one way or another that the proposed additional sewer discharge will not impact the quality of drinking water currently enjoyed. We would suggest additional work on this may be appropriate.

10. **Bushfire Hazard Assessment (BHA)**
We understand that the causeway in Chongs Road may be insufficient to meet the 23 tonne design capacity to support a laden fire truck and may need upgrading. The BHA does not mention this was reviewed.

It is interesting that the majority of dwellings on the property (Cabins 1, 2, 4, 5 and 6) are not required to be designed to a BAL rating as the proponent has elected to include refuges for people to escape to in lieu of appropriately locating and constructing the dwellings for the environment in the first place. From a commercial perspective we question that if these dwellings have not been designed and constructed for the bushfire attack level they are sited within whether insurers will provide cover for these buildings and hence whether finance from senior lenders will be achievable.

By repositioning and appropriately designing and construction these dwellings would be likely to be able to achieve the appropriate BAL levels.

Hence the bush fire analysis for the property when viewed from a commercial perspective supports the argument for better positioned and/or fewer buildings to be constructed.

11. **Bulk Earthworks Drawings not provided**
The size of each of the proposed buildings is the same size as a residential home with the exception of the sheds which are substantially larger all included an on-grade concrete slab construction. Each building also has an 80,000 litre underground water tank. There are also access driveways / roads, septic tanks, trenching and protection berms an stormwater drains and spreaders. All this will require substantial earthworks including cutting and filling. We suggest that the potential impact of this level of construction on the environment has not been addressed within the information provided.

12. **Undue Impact on Environment – proposed extensive use of fossil fuel**
Clause 5.13 Snowy River LEP 2013 for eco-touring facilities calls for *any power where possible to use renewable energy sources.* The proposed development does not achieve this.

The proposed buildings include a large use of fossil fuel including the: burning diesel for electricity generators; burning gas for hydronic heating; burning timber for wood fires. This is not an environmental sensitive or eco-friendly / sustainable design. We would suggest there are far better design choices that are currently available to the developer that would eliminate all of this proposed use of fossil fuel.

13. **Undue Impact on Environment – Extent of Site Works**
Clause 5.13 Snowy River LEP 2013 for eco-tourist facilities calls *for the design of to minimise impact on the environment* including *flora and fauna*. The proposed development does not achieve this.

The size and form of construction of the proposed dwellings combined with the building of roads and infrastructure which has been maximised by spreading the proposed dwellings as far apart as possible close to adjoining boundaries, along with the recent construction of the large man-made lake (dam) and implementation of APZ's required to achieve a BAL of 12.5 or better on the property will require significant earth works, reduction of native trees, and removal of habitat hollows. This development in its current form has a substantial impact on the environment/property.

14. **Undue Impact on Environment – Placement of buildings on ridgelines**
    Clause 5.13 Snowy River LEP 2013 for eco-tourist facilities calls the development will be *located to avoid visibility above ridge lines*. The proposed development does not achieve this. The placement of dwellings are on ridge lines and hence highly visible from adjacent roads and properties.

15. **NatHHERS Certificate**
    The NatHERS certification provided does not include an assessment of what is proposed or will end up being built. I am unsure of the value of its inclusion in the application and in reality can be considered misleading as the value are referenced in the SEE. When you review the document, the certificate appears to provide a hypothetical value of what may be achieved for any residential home.

16. **Residential Development Disguised as Eco-tourism**
    Let's call it for what it is! This is a residential development play in an RU1 zoning whereby the proposed homes can be sold off individually under a community title of which eco-tourism permits. The developer will make a substantial profit from these sales and with sustained income from the onsite management which of course could also be sold off.
    The large lake (dam) already constructed on the property is quite similar to that constructed at Lake Crackenback.
    The current location of proposed dwellings are some 500m to 1 km from the managers residence. We are unsure why these dwellings are pushed so far away from the managers property but would suggest it is possible to allow for future expansion of the development or so that the applicant's home will be less impacted by the noise, light and other impacts from these other homes.
    Eitherway, we would suggest the applicant could rebadge the development application as Lake Crackenback 2.0!

Thus, based on our review, we would expect Snowy Monaro Regional Council to not approve the application in it current form. In our view the applicant has not provided sufficient evidence to support such a development:

- The impact on neighbours have not been outlined, minimised or addressed including noise, privacy, head light intrusion;
- That capacity of the road infrastructure is sufficient;
- The level of excavation and clearing has not been outlined and addressed;
- That the current domestic use of potable drinking water drawn from Sugarloaf Creek will not be impacted.

However, if for some reason you do, we would reasonably request that:

- Cabin 4 be either deleted or moved some 40m or so east of its current proposed location and rotated 90 degrees so that its glass façade, double opening doors and balcony face north and away from overlooking our home so as to go someway to mitigating the impact on our amenity;

- The access road and parking to cabins 4, 5, 6 and refuge 2 be realigned so that at no time cars and their headlights can be seen from our home and property;
- That no diesel generators be permitted and in lieu mains connection be used as a backup to the proposed solar systems. This will help reduce unnecessary noise;
- That a management plan be put in place that prevent parties, gatherings and other invasive activities in the proximity of our home;
- Provision of an acoustic report addressing impacts with mitigating measures being conditioned as a part of the consent;
- That a traffic impact assessment be completed and any upgrades required be conditioned as a part of the consent.

Please do not hesitate to call or email should you have any queries what so ever.

Yours sincerely,

[redacted]

Cc: Evan Radford, Town Planner (by email)

Political Donations & Gifts Disclosure Statement
Please complete this form and attach to your submission/application. **DA No.** 10[redacted]

Have you or any other person with financial interest in this development application made a politic[redacted]

[redacted]ifts Disclosure Statement*.

[redacted] gift in accordance with section 147. The maximum [redacted] months, or both.

Evan Radford
Ref: 10.2024.230.1
Pan: PAN-471087

Proposed DA for 92 Chongs Rd.
Jindabyne NSW 2627
"Proposed Staged Eco Tourism Development - 6 Eco Cabins, Manager's Residence / Laundry / Emergency Refuge & Shed"

[redacted]
Application No: 10.2023.229.1

Dear Evan,

As owners of [redacted] for over 50 years, we would like to advise council of our many concerns with this adjoining proposed development, listed as follows....

1. It is evident that major infrastructure has already been carried out at this site, well before a copy of the DA was received by any affected properties. Our questions are.... was the necessary permission given by council to proceed with this work, and if not, why would the owner apparently be so confident that this DA would be approved, that he has had such expansive and expensive work already completed?

2. The positioning of the proposed buildings in this DA is questionable, as the 6 "Eco Cabins" are actually positioned very close to 3 adjoining properties. Why haven't they been positioned as to not impact on surrounding neighbours and why are they so distant from the Manager's quarters and laundry facilities? There is definitely more than enough area to have allowed more consideration of adjoining properties.

3. Already with added traffic flow along The Snowy River Way over the past years, including an alarming number of gravel trucks daily, we now have delivery vans refusing to use our entrance gate, as it is deemed "too dangerous" owing to the blind corners on either side, and of course, the current speed limit of 100kph. As our entrance is adjacent to Chongs Rd, we are extremely concerned about the additional traffic that a development of this size will generate at this intersection, and how Chongs Rd itself will handle the increased volume.... this unsealed road was originally only a "gated" right-of-way [redacted] Hopefully there is to be a "Traffic Impact Assessment" carried out.

4. The impact that a development of this size and nature will have on the critical headwaters of Sugarloaf Creek is alarming. All properties from here to the point where this creek flows into The Snowy River, will be crucially affected, be it from the threat of future contamination or impact from this development's planned pumping systems. We know that the water from Sugarloaf Creek is relied on heavily for domestic use as well as being essential for the survival of stock among these many land owners.

5. Why have the terms (a) "huts", (b) "cabins" and (c) "sheds" been used in this DA, when clearly the buildings planned do not appear to fit into these categories. The plans clearly show 2 & 3 bedroomed houses and as an example, "Shed 1" not only has a verandah, but also a substantial "feature" chimney. These plans certainly appear to be quite misleading.

(a) "Hut"..."a small temporary dwelling of simple construction"

(b) "Cabin"..."a small wooden shelter in a remote area"

(c) "Shed"... "a small building for tools and/or gardening equipment"

6. We and all our adjoining neighbours purchased our acreages specifically with the thought of having

privacy and serenity into the future, which the then existing building code assured us of, but now we are confronted by these "Eco Cabin" proposed developments, both here and in the surrounding area. Surely these developments cannot be allowed to impact this rural area on any level.

N.B.
In accordance with Section 147 of the Environmental Planning and Assessment Act 1979, we declare that we have not made any political donations or gifts within the last 2 years, nor any associate.

Yours sincerely,

[redacted]

[redacted]

ATTN: Evan Radford

Town Planner

Snowy Monaro Regional Council

P.O Box 714

Cooma NSW 2630

We are writing to you regarding the development at 92 Chongs Rd, Jindabyne 2627 (DA NUMBER 10.2024.230.1). Lot 1 DP 1250715, Lot 2 DP 123872, Lot 25 DP 756672, Lot 26 DP 756672

We are the owners of [redacted]

This is not eco-tourism

We have many concerns regarding the proposed development which is a large-scale commercial development on multiple titles, which appears to have an unapproved building and unapproved water catchment already in place.

This development is proposed as Eco-cabins but there is nothing "Eco" about it. In its current form, it looks more l it would not be allowed in the zoning. The proposed dwellings appear to be average 3-bedroom residential homes

The proposal is for 6 Eco cabins and 2 sheds (live-in) structures in addition to the dwelling which is already on the

This proposed development is spread over several titles and these titles should either be consolidated or each titl building entitlements, but with the proposed houses on them.

Objectives of eco-tourism are "to improve the environment of a site through appropriate design and integration of all elements of the development"

- These are not cabins, they are 2 and 3-bedroom houses with wood fires, in-floor heating, diesel generators, and the intention to pump illegally from a bore that is unlicensed for commercial use.
- There is not any passive solar radiation or other principles of environmental design used.
- There is no attempt to use any eco-friendly wastewater treatment
- The energy rating of these buildings does not even meet a star rating of 7, which is a requirement, for development from October. This may have been amended.

The development is spread over multiple titles, which means the footprint is over the entire land area. This is not minimal impact. All dwellings are being built on the boundaries of the property, close to many neighbours. Three of the houses will be visible on the ridge line from Chongs Road and the adjoining properties.

The proposed houses are not close to the management facilities and are not even on the same title as the manager's residence.

The development does not fit within the established character of the area and is considered out of context for the rural location.

The sheds proposed in the development are not sheds. One is a residential dwelling and the other is a function centre or events centre or educational centre, or some type of dining facility? It is not clear in the proposal but it would seem the sheds should be approved to suit their actual use.

The DA does not seem to mention the existing dwelling, that the developer is currently living in.

Energy

As mentioned above the buildings have no energy-efficient design, such as passive solar radiation. Actually, they are replicas of inefficient 1800s style huts, with wood heating and diesel generators. They are clad with timber from native trees that are not even sustainably harvested.

Peak winter tourism is when solar power is less effective due to cloud cover. The solar should be 100% off the grid and rely on batteries, not diesel generators. They should also be hooked to the grid if they need alternate power to the solar provided. There is grid power on the site.

As well as being a contradiction to eco-efficient, diesel generators create noise pollution which would impact neighbouring properties, particularly 9 buildings using individual diesel generators.

The buildings are planned with fireplaces, but there is no mention of fireplaces in the DA. These are not eco-friendly heating systems or suitable for an eco-tourist development.

They also have plans for in-floor heating which would put pressure on the planned solar systems.

Water

The current bore is licensed for stock and domestic and not commercial use. In the conditions of the license it was supposed to be placed a minimum of 40 metres from the creek, it has been placed only about 19 metres from the Creek.

The developer has also put a massive dam on the creek without approval. He is pumping from the bore into the dam which is extremely concerning. If also using the bore for water supply, for a commercial venture, (which it is not licensed for) it will be putting vast pressure on the water supply. This is concerning to downstream users, particularly in times of drought. The developer is harvesting much more than his entitled rights which is taking supply from other riparian users.

The Natural Resources Access Regulator needs to be consulted for any approval regarding this development. We are very concerned about our water supply and the effects it will have on groundwater and Sugarloaf Creek.

On page 26 of the proposal, the number used for water calculation is 24 people, but on page 31 the numbers of people are 40 in the "huts" plus 4 in the manager's residence and we can only assume 4 in the current unapproved dwelling on the block. This is 48 people. What is stopping more than the proposed amount of people staying in these huts? Tourists always try to sneak extra people in and they don't care about water usage and use excessive amounts over that of a normal residential dwelling.

The proposal suggests that only one week's supply can be held in each tank (in addition to bush fire protection). That is nowhere near enough water. The bush fire protection water should be held separately from the dwelling supply, otherwise, how do you know it hasn't been used?

Suggestions that the bore be used for water tops ups is very concerning without a commercial license.

There is no grey water designed into this tourist facility yet "The proposed development of an eco-tourist facility must demonstrate a target for grey water re-use within the facility of 100%". The argument used not to incorporate grey water is that the solar power will be unreliable and so they are happy to run diesel generators. This is not fulfilling the requirements for eco-tourism.

The other argument used, to not use greywater, is that it is expensive to recycle water (page 28). Instead, the developers seem intent on using diesel generators and pump excessive groundwater (too close to the Creek) at the cost of the environment.

The numbers of people being proposed for this development changes throughout the report. It is contradicted several times throughout the report suggesting the developer has the intention of using the houses for more people than is being approved.

Waste Water

We are extremely concerned about the discharge of wastewater into septic systems near Sugarloaf Creek. This Creek is the water source for stock and domestic riparian rights, downstream of this development.

There is no eco-tourism integration of eco-friendly wastewater alternative systems, such as composting toilets, worm farms, reed bed waste treatment facilities.

This facility needs to have 9 septics installed.

Traffic and Road

The Snowy River Development Control Plan 2013 (Eco Tourist Facility) says that it is a requirement to have a traffic assessment prepared by a suitably qualified traffic engineer.

This is not a small development it is a commercial development that could have 48 people per day and large amount of car movements. A traffic assessment must be conducted.

Chong's Road is not a suitable surface for 2WDs. The road surface has too much clay content in it (it needs much more gravel) and as soon as it is wet, it is almost impossible to drive a 2WD vehicle along it, as it is a mud slick. It is not possible to drive it in snow without a 4WD. The hills down to the creek are dangerous in snow and ice.

With housing of 48 people, this proposed development could easily accept bus groups and yet there is no provision for any type of bus transport. Chong's Road can barely manage vehicles such as the gas truck (in wet conditions).

A road upgrade to bitumen should be considered for safety and reliable road access for 2wd vehicles if an Eco-tourism operation, of this size, is using this road.

The intersection of Chong's Road and the Snowy River Way is not suitable for this type of development. The developer should put in turning Lanes and the road speed reduced (like at the Station). There is a very dangerous blind corner on the Dalgety Side.

The causeway on Sugarloaf Creek would need to be upgraded to take more traffic. This causeway floods and the road surface washes away.

When the road is flooding there is no access in or out.

There is no mention of road surface finishing for the internal roads of this development. There is concern about gravel washing down and silting up the Creek.

Once again the land titles should be consolidated or the internal roads should be adequate for a subdivision, in case the developer sells off the individual lots (with the houses on them).

Rubbish

This proposal does not make it clear as to how rubbish will be managed. There is not enough bin area at the end of Chong's Road. The tip is not necessarily open on changeover days, so where would the rubbish be managed and stored?

This development is too large for the rural area, it bears no qualities of eco-tourism and is clearly a loophole for the developer to put housing on the multiple titles.

'In accordance with Section 147 of the Environmental Planning and Assessment Act 1979, I declare that I have not made any political donations or gifts within 2 years, nor any associate.

Yours Sincerely

[redacted]

Evan Radford
Town Planner
Snowy Monaro Regional Council
P.O Box 714
Cooma NSW 2630

We are writing to you regarding the development at **92 Chongs Rd, Jindabyne 2627 (DA NUMBER 10.2024.230.1). Lot 1 DP 1250715, Lot 2 DP 123872, Lot 25 DP 756672, Lot 26 DP 756672**

[redacted]

We have reviewed the plans and documents provided and have also been afforded planning and legal assistance, with a summary of the key issues and concerns informing our objection to the Development Application, as follows.

Permissibility & Intent:

- The existing property is made of four lots and titles, with no dwelling entitlement as each lot is not 40 hectares in size. Only when combined and consolidated, would the property be able to accommodate a lawful dwelling.

- The existing dwelling on Lot 26 DP 756672 would have to be unlawful as the lot is 8.5 hectares in size. There is no evidence of consent being granted for such a dwelling.

- Stage 1 of the development places Cabins 1 & 2 on current Lot 2 DP 1232872. The cabins are not located on the same allotment of land as the managers residence. Each of these lots can be sold independent of each other, unless they are made to be consolidated, prior to commencement. Being independent lots, the managers residence does not service a lawful purpose, as it has nothing to manage.

- The proposed manager's residence is located between 500-1000m away from the proposed cabins. This appears to be deliberate as it would achieve a dwelling on an allotment less than the lot size, separate to the proposed cabins on the other allotments. It would also provide the managers residence privacy and amenity from the cabins, yet the same has not been provided between the proposed cabins and the adjoining residents, such as us. This building and its location could not effectively manage the appropriate operations of the facility or its impacts on the neighbors, and this defeats the intent of having on-site management.

- Stage 2 places Cabin 3 on Lot 2 DP 1232872 and Cabin 4 on Lot 25 DP 756672. There is no logic to this staging, other than spreading the cabins out onto the three current lots. This would allow, after Stage 2, for three separate

lots to each include accommodation for tourists and/or dwelling and each lot to be sold separately.

- The placement of the cabins, scattered over a large area, creates much greater impacts than clustering the cabins close together, thus not adhering to the requirements of an eco-tourism facility. This must have been proposed to disperse the development onto three different titles, allowing each lot to be sold separately.

- By dispersing the development to the outer edges of the property boundaries, the impact on the adjacent landowners is greatened with the development being both visible from and to the neighbours adjacent. This creates undesirable amenity and privacy impacts on us and our neighbors, which could be mitigated by a smaller low scale development concentrated in a smaller cluster, a real 'Eco-tourist facility'.

- The development is of a commercial scale in terms of its disbursement, the proposed number and type of accommodation provided, including the number of guests. Eco-tourist cabins are essentially to be low-scale buildings, designed to be sympathetic to its surrounding natural and built environment. The proposed development describes the cabins as 'high country huts', yet they are 150m2-190m2 in size and represent the size of traditional 2 and 3 bedrooms rural dwellings that are rented out on Airbnb. Despite having a gable roof form, they are nothing like the huts found in the high country, which are much smaller in size. The example photos provided in the precedent drawings show huts that are less than 50m2, which is the typical size and scale of real high country huts.

- The proposal can only be defined as tourist and visitor accommodation, a prohibited land use in the RU1 zone.

The proposal does not legitimately fulfil the definition of an eco-tourist facility and does not adequately comply with clause 5.13 of the Snowy River LEP 2013. This is because:

i. The development is not located in an area with special ecological or cultural features. The Biodiversity Assessment Report establishes that the site and area is not of a high ecological value. No assessment of the cultural features has been provided.
ii. The development has not been sensitively designed, as it includes large scale cabins and large sheds, inconsistent with an eco-tourist facility and consistent with rural tourist and visitor accommodation.
iii. The development has not been sensitively located to '*minimise the overall physical footprint'*. The footprint of the development is dispersed over 3 lots with roads, bridges, trenches for services and development over a 40 hectare area.

iv. The development has limited 'eco' credentials as listed:
- achieves the minimum 7 star rating a normal dwelling would, therefore not offering any additional thermal comfort than an ordinary dwelling.
- uses gas for hydronic floor heating, hot water, cooktop and oven requiring a carbon polluting based energy source, delivered by trucks.
- includes diesel generators.
- includes excessive ground disturbance.

Snowy River Development Control Plan 2013:

- The DCP sets out objectives for Eco-tourist facilities.

  The proposal does not comply with these provisions as the proposal disperses the development and its impact over a large area. The development heavily alters the landscape by way of roads, excessive cut and fill, services trenching, bridges and culverts and hard landscaping. The proposed cabins do not include sufficient design, construction or management elements to support its "eco" credentials.

  The proposal is not representative of sensitive design which responds to the values and characteristics of the site.

- An eco-tourist facility should be able to demonstrate a connection between the development and the ecological, environmental and cultural values of the site or area and this would extend to education and awareness.

- There is little evidence that the development would be able to incorporate and promote visitor education and environmental awareness as components of its eco-tourist development.

- Guests will not learn much about a large 3 bedroom dwelling that uses gas for floor heating, hot water, diesel generators when there is a lack of sun.

- The proposed development is out of context with the rural setting and land use in the locality. The RU1 zoning is for primary production. Contrary to the SoEE, tourism is not a primary industry enterprise. This shows a fundamental lack of understanding of zoning, its objectives and its intent.

  The scale of the development and the dispersed nature of the development, located close to external boundaries, will create land use conflicts with both the rural lifestyle and living enjoyed by us and our neighbours who each have the one or two dwellings per property.

The DA does not demonstrate how conflict between land uses within the same zone will be mitigated. Dispersing the development over a large area and locating the buildings close to the external boundaries will likely cause conflict with the agricultural production of the adjacent farming land. Pet management from guests could cause conflict with the extensive grazing undertaken.

Traffic & Access:

- The proposed development is for 7 dwellings, 6 for tourist and visitor accommodation and one for a managers dwelling, to accommodate 42 people as outlined in the Effluent Report. The proposal also includes parking for at least 12 vehicles. At an average of 8-10 vehicle movements per day per dwelling, the expected traffic generation for Chongs Road would be in the order of 60-70 vehicles per day.

  A rural road with this extent of traffic, with more than 10 lots is commonly required to be made sealed with a bitumen surface. The proposed seven additional dwellings across three lots will increase the traffic on Chongs Road by more than an expected 50%.

- The traffic impacts on us and the existing residents on Chongs Road will be significant, yet they have not been considered or addressed. The DA does not include a Traffic Impact Assessment, despite this being required under the Snowy River DCP 2013.

- The intersection of Chongs Road and the Snowy River Way is not likely compliant, does not provide adequate viewing distances and should be required to be upgraded with the scale of the development. The culvert on Chongs Road over Sugarloaf Creek is susceptible to flooding and is required to provide a minimum 23 tonne load capacity to comply with the RFS Planning for Bushfire Protection 2019 Guidelines. The internal culvert/bridge over the watercourse would also need to be constructed to a minimum 23 tonne load limit.

- The proposed driveway servicing all three lots would require a right-of-way to provide coinciding legal and practical access to each lot, from Chongs Road. A right-of-way is commonly not permitted off an existing right-of-way.

Controlled Activity Approval:

- The proposed development seeks to undertake work within waterfront land, including both the vehicle and pedestrian crossings of the watercourse within the embankments of a watercourse, including instream works.

- The proposed development triggers the Integrated development provisions under Division 4.8 of the *Environmental Planning and Assessment Act 1979* with referral required to NSW Natural Resource Access Regulator for a Water Management Use, Water Management Work and a Controlled Activity Approval under the *Water Management Act 2000*.

  With the proposal being a nominated Integrated Development under the *Water Management Act 2000*, it is required to be advertised for a minimum of 28 days and include signage on the site. This is set out in Schedule 1 (8A) of the *Environmental Planning and Assessment Act 1979*.

- The DA is required to be re-exhibited for a minimum of 28 days to satisfy the nominated Integrated Development provisions under Councils *Community Participation Plan*.

Biodiversity:

- The proposed scattered arrangement of the cabins across the three lots at the far reaches of the property will result is much greater impacts on biodiversity, if they were clustered together, close to Chongs Road.

- By dispersing the development, its road and services over a large area, impacts on fauna and flora have not been avoided or minimised. The Biodiversity Assessment Report does not adequately address the *NSW Biodiversity Conservation Act* or the hierarchy principles associated with avoid, minimise and mitigate.

- The Biodiversity Assessment Report and SoEE has not adequately or legitimately calculated the total disturbance impacts associated with the development; therefore the development would have to exceed the clearance thresholds. This would trigger the Biodiversity Offsets Scheme and the need for a Biodiversity Development Assessment Report.

  The following disturbances have not been included in the assessment:
  - cut and fill & hard landscaping work around each cabin. The DA elevation plans show the cabins on flat land, however the Site Plan shows the slope and contour, requiring significant cut and fill across the cabin sites. Overall site disturbance would have to be double the footprint of each cabin, thus over 3500m2, not 1765m2 as reported.
  - each cabin requires its own septic tank, connection and absorption trenches. The required disposal area outlined in the Harris report identifies 1167m^2 in total, and this does not include the tanks and trench between as well as the upslope diversion

- 4 x 80,000 litre underground tank including larger excavation area + trenching between tanks and cabins. Trenching alone would have to be 700m x 5m width = 3500m2.
- walking tracks between the refuge buildings and cabins, as using the roads are more than 100m walking distance from each cabin to the refuge.
- hard stand driveway and access to each refuge building.
- an APZ for each refuge building, with the APZ to comprise of cut grass less than 100mm, therefore requiring complete removal of all native vegetation,

The Biodiversity Assessment Reports needs to both map and verify the total disturbances as outlined in all the reports and plans lodged with the DA.

Bushfire:

- The proposed scattered arrangement of the cabins across the three lots at the far reaches of the property will create much greater bushfire risks, then a centrally located smaller scale development. This could result in an uncontrolled bushfire that impacts on our life and property.

- As a result, the proposed development does not comply with the Bushfire requirements of PBP, 2019 as follows:
  - The refuge buildings are more than 100m walking distance to each cabin.
  - The property is accessed by a right of way and includes more than 3 dwellings accessed by the right of way. The right of way is required to be upgraded to a public road.
  - The property does not provide a second alternate access to a public road.
  - Chongs Road and the internal road over the watercourse would require the culvert/bridge to have a minimum load rating of 23 tonnes.

Visual & Privacy Impacts:

- The property is located in an elevated, prominent position, visible from both the Snowy River Way & Chongs Road. Due to the topography and open native vegetation associated with the property, the development will be visible over large distances from both the public road and adjoining properties, including ours.

- Proposed Cabin 1 is located on a visually prominent ridge, which will allow for overlooking directly to our dwelling and property. Although it is setback from the road, the distance between is not interrupted by any vegetation or topography. Proposed cabins 2 & 3 are also very visible from both the public road and adjacent properties. The relatively small setbacks for large rural

properties and lack of trees will result in the development being highly visible with visual impacts on the locality.

The SoEE makes statements it cannot logically defend, such as that *'The proposed setbacks have been carefully planned so cabins and sheds are not visibly prominent within the landscape.'* (pg 49).

- The 3D rendered images provide no value on the real visual impacts of the totality of the development with all the roads and services included, or its prominent location. A proper visual impact assessment with views from the public domain and closest adjacent residents, including our property, should be undertaken.

  The DA plans do not reflect the cut and slope and excavations associated with each building. This is at odds with the SoEE, survey plan, landscape plans and topography associated with the property.

- The height of the sheds including the manager's residence is excessive for a single-story building. The roof height of each building is over 8m, which indicates the future intent to install a mezzanine, hence why no sections are provided.

  The height and scale of the buildings do not adhere to the building height objectives under clause 4.3 of the Snowy River LEP 2013 or an eco-tourist facility. The distance of the sheds and managers residence to the cabins demonstrates it serves no purpose for the cabins or its operations.

The proposed development can only be described as flawed and conceals the real intent of the development. The development as presented could not be considered lawful as it has not demonstrated its permissible and generates significant number of non-compliances with various legislation including the Snowy River Local Environmental Plan 2013 and Snowy River Development Control Plan 2013.

In accordance with Section 147 of the Environmental Planning and Assessment Act 1979, I declare that I have not made any political donations or gifts within 2 years, nor any associate.



[redacted]

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[redacted]

[redacted]



[redacted]

From: [redacted]
Sent: 20/10/2024 8:41:57 AM +11:00
To: council@snowymonaro.nsw.gov.au
Subject: Objection against 92 Chongs RD Jindabyne construction of staged 6 cabin eco - tourist development

Attention: Evan Radford
Development Application Officer
Snowy Monaro Regional Council
Application Number - 10.2024.2301

20.10.2024

Dear Mr. Radford,

I am writing to formally object to Development Application 10.2024.230.001 for the proposed construction of a staged six-cabin eco-tourist development at 92 Chongs Road, Jindabyne (DA Number 10.2023.229.1). Lot 1 DP 1250715, Lot 2 DP 123872, Lot 25 DO 756672, Lot 26 DP 756672

[redacted] I wish to express my deep concerns regarding this application, which I believe poses significant negative impacts on our rural community and environment.

[redacted]

The new proposal remains essentially unchanged in terms of its positioning and commercial scale, which raises significant issues for local residents. [redacted] My concerns about the density of such a development on a relatively small parcel of land—particularly regarding noise pollution, light pollution, and potential trespassing—[redacted]

[redacted]

As a resident who moved to the countryside for peace and tranquility, I am particularly concerned about how this development will affect my livelihood. The proximity of the proposed cabins to my property will significantly intrude on my privacy and way of life, [redacted] I value my ability to move freely without the disturbance of commercial activities encroaching on my space.

The proposed eco-tourist facility, as defined by relevant guidelines, is expected to be sensitively designed and located to minimize ecological and visual impact. However, the current application fails to adhere to these standards. Instead, it appears to prioritise commercial interests over environmental considerations. The proposed cabins, visible from various vantage points, will intrude upon the natural landscape and disrupt the rural character of our community.

Furthermore, the application highlights several concerning practices:

Water Usage: The proposed development will require significant bore water extraction, yet the developer currently holds only a domestic license for residential and livestock use. This raises concerns about the potential depletion of water resources for neighbouring properties.
Power Generation: The reliance on diesel generators for power contradicts the principles of eco-tourism. The noise and pollution generated by multiple generators will undoubtedly disrupt the quiet environment we currently enjoy. There is an existing power grid on-site that should be utilised instead.
Environmental Management: The application does not adequately address how waste and effluent will be managed, particularly concerning potential runoff into Sugarloaf Creek. This is a significant concern given the proximity of proposed huts to watercourses.

Additional factors warranting attention include the lack of a traffic assessment, the inadequacy of pet management plans for transient guests, and the absence of grey water recycling—critical components for any development that claims to be eco-friendly.

Lastly, I urge the council to consider the long-term implications of this development. It is essential to ensure that such proposals do not pave the way for future subdivision or commercialisation of what is intended to remain a rural area.

In conclusion, I respectfully request that the council take my objections into serious consideration and reject this development application. The community I chose for its natural beauty and tranquility deserves protection from disruptive commercial enterprises that do not align with the character and values of our environment.

Thank you for your attention to this matter. I look forward to your response.

Sincerely,

[redacted]

[redacted]

[redacted]

To Evan Radford,

Submission for:

Proposed Development: Construction of a Staged 6 Cabin Eco Tourist development with associated ancillary buildings and infrastructure.

Property Description: 92 Chongs Road Jindabyne NSW 2627
Lot 26 DP 756672 PH Beloka, Lot 25 DP 756672 Ph Beloka, Lot 2 DP 1232872 Ph Beloka, Lot 1 DP 1250715 Ph Beloka.

Application Number: 10.2024.230.1.

Political Donations & Gift Disclosure Statement

DA No. 10.2024.230.1

I would like to make a submission **against** the approval of this Development application on the following grounds:

1) [redacted] Outlook is directly towards my property. Consideration of my privacy.
2) Refuge cabin appears to be in line of site from my property.
3) Cabin septic systems from creeks?
4) The sizes of the cabins stated as 2 bedrooms or three bedrooms. If a bedroom is 4m x 4m = 16m2. X 2 bedrooms plus say 2 baths of 10m2 each = 52m2. Then an additional 98m2 and even more for the 3 bedroom cabins for living and commons areas seems like excessive bulk and scale for a proposed Eco-Tourism.
5) Volume of traffic which will be imposed on Chongs Road is more than its capacity. Especially the creek crossing in extreme weather events. And will change the quiet rural setting myself and surrounding owners have brought the places for.
6) Cabins positioned to boundaries with little consideration for neighbouring properties.
7) Scale of development considering internal areas of the property are relatively clear of development.

The development application appears to have been undertaken with little care for the rural setting and neighbours.

These are my objections, and I would like them recorded against this Application. You are more than welcome to call me to discuss if you would like further clarification.

Political donation or gift Statement:
Have you or any other person with a financial interest in this development application made a political donation or gift within the last 2 years? – **NO**

Name: [redacted] **Signature:** [redacted]

Regards,

