

SNOWY RIVER SHIRE COUNCIL

**DEVELOPMENT DESIGN
SPECIFICATION**

DQS

**QUALITY ASSURANCE
REQUIREMENTS FOR DESIGN**

QUALITY ASSURANCE REQUIREMENTS FOR DESIGN

DQS.01 SCOPE

1. This Design Specification sets out the process for quality assurance of Designs required by Council for development consents. The requirements are applicable to all design work whether undertaken by the Developer, the Developer's Project Manager, Consultant or a Sub-consultant.

Quality Assurance

2. The Specification refers to Engineering Design processes. Requirements which refer to the Concept Design of developments are generally covered in Council's Subdivision Code. The requirements of the Subdivision Code are a prerequisite to the quality requirements for Engineering Design provided in this Specification (DQS).

Prerequisite

3. The Specification refers also to engineering design processes for developments that do not involve subdivision.

DQS.02 OBJECTIVES

1. This Specification aims to set standards and document requirements for the execution and recording of design processes in order that the infrastructure associated with any development is designed to be fit for service and of a standard reasonably maintainable when it is accepted by Council as a community asset.

Maintenance

2. It is also an objective that these qualities be readily demonstrable by clear records of key design processes and that data relevant to the upkeep of the assets is available to Council's management.

Records

DQS.03 REFERENCE AND SOURCE DOCUMENTS

(a) Council Specifications

All Specifications for Design and Construction
Council's Codes and Policies

(b) Australian Standards

AS/NZS ISO 9000 Quality management systems — Fundamentals and vocabulary
AS/NZS ISO 9001 Quality management systems — Requirements
AS/NZS ISO 10013 Guidelines for quality management system documentation
AS/NZS ISO 19011 Guidelines for quality and/or environmental management systems auditing
Handbook HB 90.3 The Construction Industry — Guide to ISO 9001:2000

(c) Other

Environmental Planning and Assessment Act 1979 (EP&A ACT)
Local Government Act (1993)
Technical Publications used as Engineering Standards (eg; AR&R)
Interim Policies and Guidelines

DQS.04 CERTIFICATION

- | | |
|---|--|
| 1. A Construction Certificate under section 109C of the EP&A Act is required before construction of subdivision work may commence. These Certificates can be issued by the consent authority (usually Council) or an accredited certifier. | Construction Certificate |
| 2. Where a Construction Certificate is not required (eg; ancillary works for other developments) engineering designs shall be submitted to Council for approval. | Other approvals |
| 3. The Developer shall present all engineering drawings to Council's XXXXXXXX Manager for acceptance. Each set of drawings shall be accompanied by a Certification Report which will be signed by the Developer's Engineer or Surveyor. The Certification Report will comprise the certificate and check lists set out in Annexure DQS-A. | Certification Report |
| 4. Certification Reports shall be required with preliminary drawings and shall require resubmission with updates when final drawings are submitted. Certification is not required with sketch plans or concept plans. | Certification of Preliminary Drawings |
| 5. The Certification Report shall indicate on check lists any aspects of design which do not meet requirements or tolerances set out in Council's Design and Construction Specifications and Subdivision Codes. | Design Non-conformance |

DQS.05 MINIMUM DRAFTING REQUIREMENTS

- | | |
|--|-------------------------------|
| 1. Design drawings shall be definitive and clearly set out so as to present the design concepts in such a way that the project can be understood, specified for construction and satisfactorily built. | Criteria |
| 2. All design drawings should be clearly numbered by the designer with separate sheets numbered as part of a set. All drawing sheets shall have an allocated space in the bottom right hand corner for an assigned number provided by Council (18 characters). | Sheet Numbers |
| 3. The information shown on the drawings shall be logically collected on discrete sheets to avoid illogical and onerous effort in cross referencing between sheets in order to find information. Drawings should not be overcrowded with information and should not rely on colour printing or colour wash to impart information. Drawings should be on A1 or A2 size sheets and be suitable for black and white copying and photo reduction to A3 paper size without loss of clarity. | Logical Drawing Sheets |
| 4. Annexure DQS-B provides guidelines for grouping information in design drawings. | |

DQS.06 DESIGNER'S QUALIFICATIONS

- | | |
|---|--------------------------------------|
| 1. An Engineer deemed to be suitably experienced in the relevant field by Council and eligible for Chartered Professional Membership of the Institution of Engineers, Australia or a Registered Surveyor deemed to be suitably experienced by Council shall be accepted as qualified to prepare plans for roadworks, drainage works, water supply, sewerage works (excluding pumping stations), canal works (excluding flood control structures and bridges). | Engineer Surveyor |
| 2. An Engineer qualified as detailed above shall be accepted as qualified to prepare plans for bridges, retaining walls, miscellaneous structures, buildings, pumping stations and flood control structures. | Structural Design by Engineer |

DQS.07 RECORDS

- | | |
|--|--|
| 1. The Designer shall retain appropriate design records in a format such that they | |
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can be understood readily by design staff with no prior knowledge of the particular design.

2. Calculations which can readily be re-done need not be kept once the construction maintenance period of the project has expired.

***Calculation
Record
Retention***

3. A design file shall be maintained by the Developer or the Developer's Consultant containing records of calculations, approvals and decisions, geotechnical data and other design data which could be relevant in reviewing aspects of the design or planning future maintenance responsibilities.

***Design File to
be kept***

4. Particular requirements apply to hydrological and hydraulic design data. (Refer to Council's Stormwater Drainage Design Specification).

***Hydrologic,
Hydraulic
Design***

5. Copies of records will be made available to Council on request and without charge.

DQS.08 AUDIT

1. Council shall have the right of audit of all processes and documents related to the project design. The Developer and the Developer's Consultant shall provide Council's Officers all reasonable assistance in inspecting records of designs submitted to Council for acceptance.

***Provide
Assistance***

2. In order to provide for such audit, access to the premises of the Developer or the Developer's Consultant will be provided to Council on a 24 hour notice basis.

***Notice of
Access***

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ANNEXURE DQS-A

SNOWY RIVER SHIRE COUNCIL DESIGN CERTIFICATION REPORT

Project Title: _____

DA No: _____

Consultant's Drawing No: _____

Name of Consultant: _____

Name and Address of Developer: _____

I certify that the subject drawings represent a design for which the attached design check lists provide a valid record.

I certify that this Design has been carried out in accordance with current standards of good industry practice and in accordance with Snowy River Shire Council's Design Specifications, Subdivision Code and specific instructions received with the exception of departures cited in the attached design check lists for Council's advice.

I certify that this Design is in strict compliance with the development consent conditions and where a variance to the consent is found, written confirmation has been received from Council approving of the variance prior to the lodgement of Design Drawings (this includes designs for staged construction).

I certify that all structural elements of the Design have been designed by an Engineer deemed to be suitably experienced in the relevant field by Council and eligible for Chartered Professional Membership of the Institution of Engineers, Australia

<p>Contact Phone: _____</p> <p>Contact Postal Address: _____ _____ _____ _____</p>	<p>_____</p> <p>Design Engineer/Surveyor _____ Date _____</p> <p>Qualifications _____</p>
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Design Check List 1 BASE PLOT OF EXISTING FEATURES

	Check Completed By (initials)	Date	Not Applicable (tick)
1.1 Initial plot verified by site inspection for existing drainage.	_____	____ / ____ / ____	<input type="checkbox"/>
1.2 Initial plot verified by site inspection for existing property descriptions, boundaries and accesses.	_____	____ / ____ / ____	<input type="checkbox"/>
1.3 Initial plot of contours verified as representative of site terrain.	_____	____ / ____ / ____	<input type="checkbox"/>
1.4 Trees and significant environmental features affected by development are clearly indicated and annotated.	_____	____ / ____ / ____	<input type="checkbox"/>
1.5 Features significant to heritage considerations within the development boundaries are clearly indicated and annotated.	_____	____ / ____ / ____	<input type="checkbox"/>
1.6 Existing public and private property likely to be affected by these Designs are clearly indicated and annotated.	_____	____ / ____ / ____	<input type="checkbox"/>
1.7 Survey and bench-marks clearly indicated and annotated.	_____	____ / ____ / ____	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS
OR SPECIAL FEATURES TO BE NOTED:

Design Check List 2 HORIZONTAL ROAD ALIGNMENT

	Check Completed By (initials)	Date	Not Applicable (tick)
2.1 Alignment compatible with design speed.	_____	____ / ____ / ____	<input type="checkbox"/>
2.2 Alignment is adequate in relation to clearance of roadside hazards.	_____	____ / ____ / ____	<input type="checkbox"/>
2.3 Driver and pedestrian sight distance is adequate.	_____	____ / ____ / ____	<input type="checkbox"/>
2.4 Conflict with existing services is minimised.	_____	____ / ____ / ____	<input type="checkbox"/>
2.5 Road widths and lanes meet Councils requirements and design traffic requirements.	_____	____ / ____ / ____	<input type="checkbox"/>
2.6 Alignment of bridges suits road alignment.	_____	____ / ____ / ____	<input type="checkbox"/>
2.7 Pedestrian, bicycle and parking requirements are met.	_____	____ / ____ / ____	<input type="checkbox"/>
2.8 Provision for large vehicles such as buses, garbage trucks and emergency vehicles is adequate.	_____	____ / ____ / ____	<input type="checkbox"/>
2.9 Intersection layouts meet turning requirements of design traffic including emergency vehicles.	_____	____ / ____ / ____	<input type="checkbox"/>
2.10 Pavement width tapers and merges are adequate.	_____	____ / ____ / ____	<input type="checkbox"/>
2.11 Pedestrians and prams are catered for.	_____	____ / ____ / ____	<input type="checkbox"/>
2.12 Conflict with existing public utility services has been identified and resolved.	_____	____ / ____ / ____	<input type="checkbox"/>
2.13 Horizontal road alignment has been provided in accordance with any conditions of development consent.	_____	____ / ____ / ____	<input type="checkbox"/>
2.14 Horizontal road alignment setout data is clearly defined and tabulated.	_____	____ / ____ / ____	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS
OR SPECIAL FEATURES TO BE NOTED:

Design Check List 3 VERTICAL ROAD ALIGNMENT

	Check Completed By (initials)	Date	Not Applicable (tick)
3.1 Grades meet maximum and minimum requirements.	_____	____/____/____	<input type="checkbox"/>
3.2 Vertical clearances to bridges and services meet standards.	_____	____/____/____	<input type="checkbox"/>
3.3 Vertical sight distance is adequate for drivers and pedestrians.	_____	____/____/____	<input type="checkbox"/>
3.4 Cover to drainage structures or services is adequate.	_____	____/____/____	<input type="checkbox"/>
3.5 Vertical alignment is adequate for disposal of surface drainage from properties and from road.	_____	____/____/____	<input type="checkbox"/>
3.6 Grades are satisfactory for 1:100 year flood levels.	_____	____/____/____	<input type="checkbox"/>
3.7 Vertical alignment is compatible with property access.	_____	____/____/____	<input type="checkbox"/>
3.8 The gradient on an intersecting road is not significantly greater than the cross slope of the through pavement and no greater than 3% at give way and stop signs.	_____	____/____/____	<input type="checkbox"/>
3.9 Sight distance is acceptable for all accesses to roundabouts.	_____	____/____/____	<input type="checkbox"/>
3.10 Alignment coordination with horizontal alignment is in accordance with the AUSTROADS design guides as referenced in the AUS-SPEC specifications.	_____	____/____/____	<input type="checkbox"/>
3.11 Conflict with existing public utility services has been identified and resolved.	_____	____/____/____	<input type="checkbox"/>
3.12 Vertical road alignment setout data is clearly defined on the longitudinal sections.	_____	____/____/____	<input type="checkbox"/>

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DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS
OR SPECIAL FEATURES TO BE NOTED:

Design Check List 4 ROAD CROSS SECTIONS

	Check Completed By (initials)	Date	Not Applicable (tick)
4.1 Typical cross sections have complete dimensions.	_____	____ / ____ / ____	<input type="checkbox"/>
4.2 Typical cross sections have kerb & gutter, road safety barrier and surface drainage indicated.	_____	____ / ____ / ____	<input type="checkbox"/>
4.3 Batter slopes are indicated and batter treatment is indicated where appropriate.	_____	____ / ____ / ____	<input type="checkbox"/>
4.4 Property boundaries, service allocations and location of known existing underground services and pathway treatments are indicated.	_____	____ / ____ / ____	<input type="checkbox"/>
4.5 Sufficient cross sections are shown to define all variations and width transitions.	_____	____ / ____ / ____	<input type="checkbox"/>
4.6 Cross sections are of sufficient width to fully assess impact of road level on adjoining property.	_____	____ / ____ / ____	<input type="checkbox"/>
4.7 Stability of embankment slopes, batters and retaining walls has been verified as satisfactory.	_____	____ / ____ / ____	<input type="checkbox"/>
4.8 Cross section reference level conforms with vertical road alignment.	_____	____ / ____ / ____	<input type="checkbox"/>

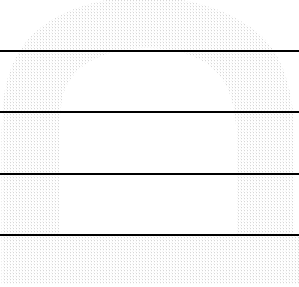

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS OR SPECIAL FEATURES TO BE NOTED:

Design Check List 5 ROAD AND INTERALLOTMENT DRAINAGE

		Check Completed By (initials)	Date	Not Applicable (tick)
5.1	Drawings indicate existing surface drainage.	_____	____ / ____ / ____	<input type="checkbox"/>
5.2	Hydrological data is the most current available.	_____	____ / ____ / ____	<input type="checkbox"/>
5.3	Hydrologic and hydraulic design calculations are complete and fully recorded and available for audit.	_____	____ / ____ / ____	<input type="checkbox"/>
5.4	Underground drainage and structures do not conflict with services.	_____	____ / ____ / ____	<input type="checkbox"/>
5.5	The designed drainage lines are compatible with existing incoming lines and outgoing lines.	_____	____ / ____ / ____	<input type="checkbox"/>
5.6	The length of line, type of pipe, size, class and bedding requirements are indicated for each drainage line on the schedule of drainage elements.	_____	____ / ____ / ____	<input type="checkbox"/>
5.7	Height of fill over drainage lines is within allowable limits.	_____	____ / ____ / ____	<input type="checkbox"/>
5.8	Drainage is provided for local depressions eg median areas or areas adjacent to fills.	_____	____ / ____ / ____	<input type="checkbox"/>
5.9	The effect of headwater and back-up water on private property has been assessed.	_____	____ / ____ / ____	<input type="checkbox"/>
5.10	Subsurface drainage has been provided when required and clearly located by line and level, with details provided..	_____	____ / ____ / ____	<input type="checkbox"/>
5.11	The need for batter drains has been considered for fills and cuttings.	_____	____ / ____ / ____	<input type="checkbox"/>
5.12	The height and energy level of downstream drainage has been considered.	_____	____ / ____ / ____	<input type="checkbox"/>
5.13	Drainage structures and flowpaths are located so as to ensure safe vehicular and pedestrian transit.	_____	____ / ____ / ____	<input type="checkbox"/>

		Check Completed By (initials)	Date	Not Applicable (tick)
5.14	Drainage structure number, setout, type and pipe details indicated on the drainage plans and schedule of drainage elements.	_____	____/____/____	<input type="checkbox"/>
5.15	Emergency flowpaths are located so as to minimise impact on private property.	_____	____/____/____	<input type="checkbox"/>
5.16	Road drainage has been provided in accordance with any conditions of development consent.	_____	____/____/____	<input type="checkbox"/>
5.17	Interallotment drains have been designed in accordance with Council's Specification and/or Australian Rainfall and Runoff (Edition 1987).	_____	____/____/____	<input type="checkbox"/>
5.18	Appropriate land stabilisation and velocity controls have been implemented to pipe systems, open channels and embankments.	_____	____/____/____	<input type="checkbox"/>
5.19	For allotments affected by flood controls, the floor height controls are to be compatible with road and drainage levels.	_____	____/____/____	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS
OR SPECIAL FEATURES TO BE NOTED:

Design Check List 6 SIGNS AND MARKINGS

	Check Completed By (initials)	Date	Not Applicable (tick)
6.1 Sign types, sizes, locations and support structure details are shown on the drawings in accordance with AS 1742 (All parts).	_____	____ / ____ / ____	<input type="checkbox"/>
6.2 Pavement linemarking and pavement marking type and setout is indicated on the drawings to meet the requirements of AS 1742.2.	_____	____ / ____ / ____	<input type="checkbox"/>
6.3 Signs and linemarking have been designed in accordance with any conditions of development consent.	_____	____ / ____ / ____	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS
OR SPECIAL FEATURES TO BE NOTED:

Design Check List 7 PAVEMENT DESIGN

	Check Completed By (initials)	Date	Not Applicable (tick)
7.1 The pavement design and surface treatment is shown clearly on the drawings and any variations are indicated on appropriate cross sections.	_____	____ / ____ / ____	<input type="checkbox"/>
7.2 The pavement design complies with Council's Pavement Design Specification.	_____	____ / ____ / ____	<input type="checkbox"/>
7.3 Pavement design is in accordance with any conditions of development consent.	_____	____ / ____ / ____	<input type="checkbox"/>
7.4 Geotechnical data is assessed as adequate and is held on the design file.	_____	____ / ____ / ____	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS
OR SPECIAL FEATURES TO BE NOTED:

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Design Check List 9

EROSION/AND SEDIMENTATION CONTROL PLANS

		Check Completed By (initials)	Date	Not Applicable (tick)
9.1	Both short term and long term erosion control plans have been prepared using the guidelines within Council's Design Specification D7 and Construction Specification C211.	<hr/>	<hr/> / <hr/> / <hr/>	<input type="checkbox"/>
9.2	Erosion and sedimentation control has been designed in accordance with any conditions of development consent.	<hr/>	<hr/> / <hr/> / <hr/>	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS
OR SPECIAL FEATURES TO BE NOTED:

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Design Check List 10

WATER RETICULATION

	Check Completed By (initials)	Date	Not Applicable (tick)
10.1 The design has been performed by an Engineer deemed to be suitably experienced in the relevant field by Council and eligible for Chartered Professional Membership of the Institution of Engineers, Australia	_____	____/____/____	<input type="checkbox"/>
10.2 The survey has been performed by a practicing registered Surveyor.	_____	____/____/____	<input type="checkbox"/>
10.3 Geotechnical data is assessed as adequate and is held on the design file.	_____	____/____/____	<input type="checkbox"/>
10.4 The type and functional dimensions of the reticulation meet NSW Department of Public Works and Services guidelines, the appropriate Australian Standards and is compatible with the Water Reticulation Code of Australia WSA 03-1999.	_____	____/____/____	<input type="checkbox"/>
10.5 The type and class of all materials, fittings, joints, and special requirements for crossings and protection are indicated on the drawings.	_____	____/____/____	<input type="checkbox"/>
10.6 Records of all significant design calculations are available for audit.	_____	____/____/____	<input type="checkbox"/>
10.7 The design meets the requirements of all Statutory Authorities.	_____	____/____/____	<input type="checkbox"/>
10.8 The design complies with any conditions of development consent.	_____	____/____/____	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS OR SPECIAL FEATURES TO BE NOTED:

Design Check List 11

SEWERAGE SYSTEM

	Check Completed By (initials)	Date	Not Applicable (tick)
11.1 The design has been performed by an Engineer deemed to be suitably experienced in the relevant field by Council and eligible for Chartered Professional Membership of the Institution of Engineers, Australia	_____	____/____/____	<input type="checkbox"/>
11.2 The survey has been performed by a practicing registered Surveyor.	_____	____/____/____	<input type="checkbox"/>
11.3 Geotechnical data is assessed as adequate and is held on the design file.	_____	____/____/____	<input type="checkbox"/>
11.4 The type and functional dimensions of the reticulation meet NSW Department of Public Works and Services guidelines, the appropriate Australian Standards and is compatible with the Sewerage Code of Australia WSA 02-1999.	_____	____/____/____	<input type="checkbox"/>
11.5 The type and class of all materials, fittings, joints, and special requirements for crossings and protection are indicated on the drawings.	_____	____/____/____	<input type="checkbox"/>
11.6 Records of all significant design calculations are available for audit.	_____	____/____/____	<input type="checkbox"/>
11.7 The design meets the requirements of all Statutory Authorities.	_____	____/____/____	<input type="checkbox"/>
11.8 The design complies with any conditions of development consent.	_____	____/____/____	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS
OR SPECIAL FEATURES TO BE NOTED:

EXAMPLE COMPILATION OF DRAWINGS

A. ROADWORKS PLANS

An example of the sequence of drawing sheets acceptable to Council in the compilation of a full set of Roadworks Drawings is set out as follows.

Sheet N ^o	TOPIC
1	Development Consent Number Locality Sketch and Index of Sheets.
2	General Subdivision Plan with contour details and a clear indication of the extent of work.
3	Typical Road Cross Sections showing road widths, pavement (design) configuration, batter slopes, kerb and gutter types.
4.	Plan and Longitudinal Section of each road showing setout data and services.
5.	Drainage Plan and Schedule of Drainage Elements (Pipe lines and structures).
6.	Drainage Profiles.
7.	Drainage Structure Details.
8.	Road Cross Sections.
9.	Intersection Layout Details.
10.	Pavement Marking and Signposting.
11.	Erosion and Sedimentation Control Plans (short term and long term treatment).
12.	Structure Details – Bridges, Retaining Walls, etc.
13.	Water Reticulation Arrangement
14.	Sewerage Reticulation Arrangement
15.	Sewer Profiles
16.	Water and Sewage Pump Station Details, Water Service Reservoir Details
NOTE	<ol style="list-style-type: none"> Any one set of Roadworks Plans may require more than 1 sheet for each of the topics listed and may also require supplementary sheets for site specific details. Scales are required to be nominated on all drawings and north points shown on all plan views.