

## ANNEXURE CQS-C MAXIMUM LOT SIZES AND MINIMUM TEST FREQUENCIES

### GENERAL

1. The maximum lot sizes and minimum test frequencies are separately specified for all major activities covered by the Technical Specifications as listed hereunder.
2. The requirements applicable to this Contract are identified with an asterisk indicating that only these details are attached in this Annexure.
3. Where material/product quality certification can be obtained from the supplier, tests listed per contract/separable part need not be repeated.

**Contents of Annexure CQS-C**

Item	Sub-Annexure	Required (*) for this Contract	Reference Specification	Sub-Annexure Heading
1	C1		C213	Earthworks
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**Sub-Annexure C1  
EARTHWORKS (Specification C213)**

ACTIVITY	KEY QUALITY VERIFICATION REQUIREMENTS	MAXIMUM LOT SIZE	MINIMUM TEST FREQUENCY	TEST METHOD
Stripping Topsoil	Surface Levels	10,000m <sup>2</sup>	1 Cross Section per 25m	Survey
Excavation	Geometry	10,000m <sup>2</sup>	1 Cross Section per 25m	Survey
Floor of Cuttings	Material Quality - CBR	5,000m <sup>2</sup>	1 per 1,000m <sup>2</sup> *	AS1289.6.1.1
	Compaction	10,000m <sup>2</sup>	1 per 500m <sup>2</sup>	AS1289.5.4.1
Foundation for Embankments	Compaction	5,000m <sup>2</sup>	1 per 500m <sup>2</sup>	AS1289.5.4.1
Embankments - General	Geometry	One layer 10,000m <sup>2</sup>	1 Cross Section per 25m	Survey
	Material Quality - CBR	One layer 5,000m <sup>2</sup>	1 per 800m <sup>3</sup>	AS1289.6.1.1
	Compaction/Moisture Content	One layer 5,000m <sup>2</sup>	1 per 250m <sup>3</sup>	AS1289.5.1.1 AS1289.5.4.1 AS1289.5.7.1
Road Carriageway Embankments - Select Zone	Geometry	One layer 10,000m <sup>2</sup>	1 Cross Section per 25m	Survey
	Material Quality - Maximum Particle Size	10,000m <sup>2</sup>	1 per 1,000m <sup>3</sup> *	AS1289.6.1.1
	- CBR	10,000m <sup>2</sup>	1 per 500m <sup>3</sup> *	
	Compaction/Moisture Content	One layer 5,000m <sup>2</sup>	1 per 250m <sup>3</sup>	AS1289.5.1.1, AS1289.5.4.1 AS1289.5.7.1
Fill Adjacent to Structures: Bridges, Retaining Walls and Cast-in-Situ Culverts	Material Quality			
	- Maximum Particle Size	1 Structure	1 per 200m <sup>3</sup> *	AS1289.3.3.1
	- Plasticity Index	1 Structure	1 per 200m <sup>3</sup> *	
	Compaction/Moisture Content	1 Structure	1 per layer	AS1289.5.1.1, AS1289.5.4.1 AS1289.5.7.1

\* Note: or part thereof, per lot.

**Sub-Annexure C2****STORMWATER DRAINAGE - PIPE CULVERTS, BOX CULVERTS, OPEN DRAINS INCLUDING KERB & GUTTER, DRAINAGE STRUCTURES (Specifications C220, C221, C222, C223, C224)**

ACTIVITY	KEY QUALITY VERIFICATION REQUIREMENTS	MAXIMUM LOT SIZE	MINIMUM TEST FREQUENCY	TEST METHOD
Supply of Precast Units	Precast Quality - Suppliers documentary evidence and certification	1 batch	1 per type/size/ class per batch	
Siting and Excavation	Geometry	1 drainage line/structure	1 per drainage line/structure	Survey
Foundation	Compaction	1 drainage line/structure	1 per 20 lin m *	AS1289.5.4.1
Material surrounding Steel Structures	Material Quality - pH/Electrical Resistivity	1 drainage line/structure	1 per material	AS1289.4.3.1 AS1289.4.4.1
Bedding	Material Quality - Particle Size Distribution Compaction/Moisture Content	1 contract  1 drainage line/structure	1 per 200m <sup>3</sup> *  1 per layer, per 20 lin m	AS1141.11 AS1289.5.7.1, AS1289.5.4.1
Concrete Bedding or Lining	Geometry		1 Cross Section per 25m	Survey and 3m Straight Edge
Installation of Precast Units	Geometry	1 drainage line/structure	1 per drainage line/structure	Survey
Selected Backfill	Material Quality - Maximum Particle Size - Plasticity Index Compaction/Moisture Content	1 contract  1 contract  1 drainage line/structure	1 per 100m <sup>3</sup> *  1 per 100m <sup>3</sup> *  1 per 2 layers per 50m <sup>2</sup>	AS1289.3.3.1 AS1289.5.7.1, AS1289.5.4.1
Rock Fill for Gabions/ Wire Mattresses	Material Quality:  - Wet Strength - Wet/Dry Strength Variation	1 contract  1 contract	1 per contract  1 per contract	AS1141.22 AS1141.22
Kerb and Gutter	Geometry		1 Cross Section per 25m	Survey and 3m Straight Edge

\* Note: or part thereof, per lot.

**Sub-Annexure C3  
SUBSURFACE DRAINAGE (Specifications C230, C231, C232, C233)**

ACTIVITY	KEY QUALITY VERIFICATION REQUIREMENTS	MAXIMUM LOT SIZE	MINIMUM TEST FREQUENCY	TEST METHOD	
Material Supply	Material Quality - Supplier's documentary evidence and certification of:				
	Pipe	1 contract/size	1 per type/size		
	Filter Material				
	- Grading (Type A, B, C, D)	1 contract/size	1 per type	AS1141.11	
	- Coefficient of Permeability (Type B)	1 contract/size	1 per type	AS1289.E5.1 ASTM-D2434-68	
	- Grading Variation after Treatment (Type B)	1 contract/size	1 per type	AS1141.11	
	- Wet Strength (Type C, D)	1 contract/size	1 per type	AS1141.22	
- 10% Fines Wet/Dry (Type C, D)	1 contract/size	1 per type	AS1141.22		
	Geotextile	1 contract	1 per type		
Excavation - Trench Base	Line and Grade	1 drainage line	1 per drainage line	Survey	
	Compaction	1 drainage line	1 per 200 lin m*	AS1289.5.4.1	
Bedding and Backfill					
	- Filter Material	Compaction	1 drainage line	1 per drainage line	AS1289.5.4.1
	- Selected Backfill	Compaction	1 drainage line	1 per 200 lin m*	AS1289.5.4.1
	- Earth Backfill	Compaction	1 drainage line	1 per 200 lin m*	AS1289.5.4.1
Drainage Mat	Geometry	2000m <sup>2</sup>	1 Cross Section per 25m	Survey	

\* Note: or part thereof, per lot

**Sub-Annexure C4**  
**STABILISATION (Specification C241)**

ACTIVITY	KEY QUALITY VERIFICATION REQUIREMENTS	MAXIMUM LOT SIZE	MINIMUM TEST FREQUENCY	TEST METHOD
Material Supply	Material Quality - Supplier's documentary evidence and certification of:			
	- Cement	1 contract	1 per 100t	AS3972
	- Quicklime			
	· Available Lime (CaO content)	1 contract	1 per 100t	AS3583.12
	· Slaking Rate	1 contract	1 per 100t	T432
	· Particle Size Dist'n	1 contract	1 per contract	AS1141.11
	- Hydrated Lime			
	· Available Lime (CaOH <sub>2</sub> )	1 contract	1 per 100t	AS3583.12
	· Residue on Sieving	1 contract	1 per contract	AS3583.14
	- Ground Blast Furnace Slag	1 contract	1 per month	AS3583.2
- Flyash	1 contract	1 per month	AS3583.1	
- Blended Stabilising Agent	1 contract	1 per month		
- Water				
Chloride ion content	1 contract	1 per contract	AS3583.13	
Sulphate ion content	1 contract	1 per contract	AS1289.4.2.1	
Undissolved solids	1 contract	1 per contract		
Mix Design	NATA certification - Supplier's documentary evidence and certification	1 mix	1 per mix	
Stationary Mixing Plant	Application rate of stabilising agent	1 day's production	1 per 100t	
	Compressive strength of product	1 day's production	1 per 400t	AS1289.6.1.1
In-Situ Spreading	Spread rate	1 layer 1,000m <sup>2</sup>	1 per lot or 1 per 500m <sup>2</sup>	
Trimming and Compaction	Geometry	1 layer 2,000m <sup>2</sup> , max 1 day's placement	One cross section per 25m	Survey
	Surface Quality	"	10 per 200m lane length *	3m Straight Edge
	Average Layer thickness	"	1 per lot	
	Average Width	"	1 per lot	Measure/Survey
	Relative Compaction/Moisture Content	"	3 per lot	AS1289.5.7.1 AS1289.5.8.1

\* Note: or part thereof, per lot.

**Sub-Annexure C5  
FLEXIBLE PAVEMENTS (Specification C242)**

ACTIVITY	KEY QUALITY VERIFICATION REQUIREMENTS	MAXIMUM LOT SIZE	MINIMUM TEST FREQUENCY	TEST METHOD
Base and Subbase Supply	Material Quality - Supplier's documentary evidence and certification	1 contract		
	- Particle Size Distribution		1 per 1,000t	AS1289.3.6.1
	- Fine Particle Size Distribution Ratio		1 per 1,000t	AS1289.3.6.3
	- Liquid Limit		1 per 1,000t	AS1289.3.1.1
	- Plastic Limit		1 per 1,000t	AS1289.3.3.1
	- Plasticity Index		1 per 1,000t	AS1289.3.3.1
	- Maximum Dry Compressive Strength		1 per 5,000t	T114
	- Particle Shape		1 per 1,000t	AS1141.14
	- Aggregate Wet Strength		1 per 5,000t	AS1141.22
	- Wet/Dry Strength Variation		1 per 5,000t	AS1141.22
	- Modified Texas Triaxial Classification		1 per contract	T171
- Unconfined Compressive Strength (Modified)		1 per 5,000t	T116	
- Unconfined Compressive Strength (Bound)	1 contract	1 per mix design	T131	
Placement	Geometry: Alignment & Level	One layer 2,000m <sup>2</sup> or max 1 day's placement	1 Cross Section per 15m	Survey
	Width & Surface Trim		10 per selected 200 lin m*	Measure & 3m Straight Edge
	Deflection Control - Benkelman Beam	One layer 5,000m <sup>2</sup> or max 1 day's placement	4 per 1,000m <sup>2</sup> minimum 10 per lot	T160
Compaction/Moisture Content/ Dry Density Testing	One layer 5,000m <sup>2</sup> or max 1 day's placement	10 per 5,000m <sup>2</sup> layer or 3 per lot if less	AS1289.5.2.1, T130, AS1289.5.4.1 AS1289.5.8.1	

\* Note: or part thereof, per lot.

**Sub-Annexure C6**  
**SPRAYED BITUMINOUS SURFACING (Specification C244)**

ACTIVITY	KEY QUALITY VERIFICATION REQUIREMENTS	MAXIMUM LOT SIZE	MINIMUM TEST FREQUENCY	TEST METHOD
Materials Supply	Material Quality - Suppliers documentary evidence and certification of: - Class 170 Bitumen - Refinery Cutback Bitumen - Polymer Modified Binder - Bitumen Adhesion Agent - Cutback Oils - Aggregate Precoating Agent - Aggregate	1 tanker load 1 tanker load 1 tanker load 1 delivery 1 delivery/ tanker 1 delivery/ tanker 1 contract	1 per tanker load 1 per tanker load 1 per tanker load 1 per delivery 1 per delivery/tanker 1 per delivery/tanker 1 per 400m3	AS2758.2
Application Rates	Binder  Aggregate	1 day's operation  1 day's operation	Calculate per spray run  Calculate per spray run	

† One per Contract or change in material

\* Note: or part thereof, per lot

**Sub-Annexure C7**  
**ASPHALTIC CONCRETE (Specification C245)**

ACTIVITY	KEY QUALITY VERIFICATION REQUIREMENTS	MAXIMUM LOT SIZE	MINIMUM TEST FREQUENCY	TEST METHOD
Materials Supply	Material Quality - Supplier's documentary evidence and certification of:  - Coarse & Fine Aggregates · Grading · Moisture Content · Wet Strength · Wet/Dry Strength Variation · Particle Shape · Fractured Faces · Polishing Agg Friction Value  - Mineral Filler  - Bitumen Binder  - Polymer Modified Bitumen · Elasticity Recovery at 60°C · Viscosity on ER at 60°C · Torsional Recovery at 25°C · Viscosity at 180°C  - Bitumen Adhesion Agent · Resistance to Stripping  - Reclaimed Asphalt Pavement (RAP)  - Bitumen Emulsion	1 wk's prod'n 1 wk's prod'n 1 contract 1 contract 1 contract 1 contract 1 contract 1 contract  1 contract or 1 month's production  1 refinery batching  1 production batch by supplier  1 contract  1 stockpile  1 contract	1 per day 1 per day ) ) 1 per ) contract ) or change in ) material  contract or 1 per month's production  1 per tanker load  1 per tanker load  1 per contract or change in material  1 per stockpile  1 per contract or change in material	AS2758.5 AS1141.11 AS1289.2.1.1 AS1141.22 AS1141.22 AS1141.14 AS1141.18 AS1141.42  AS2357  AS2008  MBT 21 MBT 21 MBT 22 MBT 11  T230 or nominated equivalent  AS1141.11  AS1160
Mix Design - Nominated Mix	Approval of mix and NATA certification. Supplier's documentary evidence and certification	1 mix per contract	1 per mix	
Production Mix	Temperature Moisture Content Grading Binder Content	C245.7 from Spec C245 Asphaltic Concrete as included as separate table below. Additionally, max lot size one 12 hr shift's production.	1 per truck load	Measure AS2891.10 AS2891.3.3 AS2891.3.1
	Resistance to Stripping	1 production mix	1 per mix per 5000t or once per month (whichever is the most frequent)	T640

ACTIVITY	KEY QUALITY VERIFICATION REQUIREMENTS	MAXIMUM LOT SIZE	MINIMUM TEST FREQUENCY	TEST METHOD
Laying and Compaction	Temperature	1 day's laying per site	1 per truck load	Measure
	Levels	1 day's laying per site	1 cross section per 25m	Survey
	Shape	1 day's laying	10 per 200m* lane length	3m Straight Edge
	Relative Compaction/Layer Thickness	1 day's laying	6 cores per lot 10 nuclear density tests per lot	AS2891.9.3 or Nuclear Density Meter

\* Note: or part thereof, per lot

Quantity of Asphalt in production lot	Minimum Frequency of Testing
Less than 100 tonnes	One per 50 tonnes or part thereof
101 to 300 tonnes	One per 100 tonnes or part thereof
301 to 600 tonnes	One per 150 tonnes or part thereof
Over 600 tonnes	One per 200 tonnes or part thereof

**Table C245.7 Minimum Testing Frequencies for Asphalt Production**

**Sub-Annexure C8  
 READY-MIXED CONCRETE PRODUCTION & SUPPLY  
 (Specifications C247, C248)**

ACTIVITY	KEY QUALITY VERIFICATION REQUIREMENTS	MAXIMUM LOT SIZE	MINIMUM TEST FREQUENCY	TEST METHOD
Raw Materials Supply	Material Quality - Supplier's documentary evidence and certification of:-			
	Cement	1 mth's prod'n	1 per week	AS 3972
	Flyash	1 mth's prod'n	1 per month	AS 3582.1
	Water	1 contract	1 per contract	AS3583.13, AS1289.4.2.1
	Admixtures	1 mth's prod'n	1 per month	AS 1478
	Fine Aggregates (C248 only)			
	- Grading	1 wk's prod'n	1 per 200m <sup>3</sup> concrete*	AS1141.11
	- Moisture Content	N/A	1 per day	
	- Sulphate Soundness	1 contract	1 per contract	AS1141.24
	- Bulk Density	1 contract	1 per contract	AS 2758.1
	- Unit Mass (particle density)	1 contract	1 per contract	AS 2758.1
	- Water Absorption	1 contract	1 per contract	AS 2758.1
	- Material Finer 2µm	1 contract	1 per contract	AS 2758.1
	- Deleterious Material (Impurities/Reactive)	1 contract	1 per contract	AS 2758.1
	- Combined Aggregates (C247 and C248)			
	- Grading	1 wk's prod'n	1 per 200m <sup>3</sup> concrete*	AS1141.11
	- Moisture Content	1 wk's prod'n	1 per day	
	- Wet Strength	1 contract	1 per contract	AS1141.22
	- Wet/Dry Strength Variations	1 contract	1 per contract	AS1141.22
	- Sulphate Soundness	1 contract	1 per contract	AS1141.24
	- Particle Shape	1 contract	1 per contract	AS1141.14
	- Fractured Faces	1 contract	1 per contract	AS1141.18
- Bulk Density	1 contract	1 per contract	AS 2758.1	
- Unit Mass (particle density)	1 contract	1 per contract	AS 2758.1	
- Water Absorption	1 contract	1 per contract	AS 2758.1	
- Material Finer 75µm	1 contract	1 per contract	AS 2758.1	

ACTIVITY	KEY QUALITY VERIFICATION REQUIREMENTS	MAXIMUM LOT SIZE	MINIMUM TEST FREQUENCY	TEST METHOD
Raw Materials Supply (Cont'd)	- Weak Particles	1 contract	1 per contract	AS 2758.1
	- Light Particles	1 contract	1 per contract	AS 2758.1
	- Deleterious Materials (Impurities/Reactive)	1 contract	1 per contract	AS 2758.1
	- Iron Unsoundness	1 contract	1 per contract	AS 2758.1
	- Falling/Dusting Unsoundness	1 contract	1 per contract	AS 2758.1
Mix Design	Compressive Strength	1 contract mix	1 per mix per contract	AS1012.9
	Aggregate Moisture Content	1 contract mix	1 per mix per contract	
	Consistency - Slump	1 contract mix	1 per mix per contract	AS1012.3.1
	Air Content	1 contract mix	1 per mix per contract	AS1012.4 Method 2
	Shrinkage	1 contract mix	1 per mix per contract	AS1012.13

\* Note: or part thereof, per lot

**Sub-Annexure C9  
MASS CONCRETE SUBBASE (Specification C247)**

ACTIVITY	KEY QUALITY VERIFICATION REQUIREMENTS	MAXIMUM LOT SIZE	MINIMUM TEST FREQUENCY	TEST METHOD
Concrete Supply	Refer Sub-Annexure C8: Ready-Mixed Concrete Production and Supply			
	Concrete/Air Temperature	50m <sup>3</sup>	1 per 50m <sup>3</sup>	Measure
	Air Content	50m <sup>3</sup>	1 per 50m <sup>3</sup>	AS1012.4 Method 2
	Consistency - Slump	50m <sup>3</sup>	1 per load	AS1012.3.1
	Compressive Strength (7 day)	50m <sup>3</sup>	1 pair per 50m <sup>3</sup>	AS1012.1 AS1012.8 AS1012.9
Placement	Compressive Strength (28 day)	50m <sup>3</sup>	1 pair per 50m <sup>3</sup>	AS1012.1 AS1012.8 AS1012.9
	Thickness	50m <sup>3</sup>	5m grid on plan area	Survey and check with subgrade survey
	Geometry	50m <sup>3</sup>	1 cross section per 15m	Survey and 3m Straight Edge
Curing	Material Quality - Supplier's documentary evidence and certification	1 contract	1 per production batch	AS3799 AS1160
	Application Rate	1 day's work	1 per 1000m <sup>2</sup> *	
Joints	Geometry	50m <sup>3</sup>	All joints	Survey

\* Note: or part thereof, per lot

**Sub-Annexure C10****PLAIN OR REINFORCED CONCRETE BASE (Specification C248)**

ACTIVITY	KEY QUALITY VERIFICATION REQUIREMENTS	MAXIMUM LOT SIZE	MINIMUM TEST FREQUENCY	TEST METHOD
Concrete Supply	Refer Sub-Annexure C8: Ready-Mixed Concrete Production and Supply			
	Concrete/Air Temperature	50m <sup>3</sup>	1 per 50m <sup>3</sup>	Measure
	Air Content	50m <sup>3</sup>	1 per 50m <sup>3</sup>	AS1012.4 Method 2
	Consistency - Slump	50m <sup>3</sup>	1 per load	AS1012.3.1
	Compressive Strength (7 day)	50m <sup>3</sup>	1 pair per 50m <sup>3</sup>	AS1012.1 AS1012.8 AS1012.9
	Compressive Strength (28 day)	50m <sup>3</sup>	1 pair per 50m <sup>3</sup>	AS1012.1 AS1012.8 AS1012.9
Placement	Relative Compaction			
	- Machine Placed	50m <sup>3</sup>	1 per 50m <sup>3</sup> *	AS1012.14
	- Hand Placed	Area between 2 consecutive const. joints or 50m <sup>3</sup> (whichever is the lesser)	2 per lot	AS1012.14
	Thickness	50m <sup>3</sup>	5m grid on plan area	Survey
	Geometry	50m <sup>3</sup>	1 cross section per 15m	Survey and 3m Straight Edge
Ride Quality	Profile Factor	1000m <sup>2</sup>	10/lane/lot	3m Straight Edge
Surface Texture	Texture Depth	1000m <sup>2</sup>	2 per lot	Survey
Curing	Material Quality - Supplier's documentary evidence and certification	1 contract	1 per production batch	AS3799 AS1160
	Application Rate	1 day's work	1 per 1000m <sup>2</sup> *	
Joints	Sealant Material Quality Supplier's documentary evidence and certification	1 contract	1 per prod'n batch	
	Geometry	50m <sup>3</sup>	All joints	Survey

\* Note: or part thereof, per lot

**Sub-Annexure C11  
BITUMINOUS MICROSURFACING (Specification C255)**

ACTIVITY	KEY QUALITY VERIFICATION REQUIREMENTS	MAXIMUM LOT SIZE	MINIMUM TEST FREQUENCY	TEST METHOD
Materials Supply	Material Quality - Supplier's documentary evidence and certification of:			
	- Bitumen (prior to emulsification)	1 contract	1 per contract or change in material	AS2008
	- Bitumen Emulsion			
	· Residual Binder Content (Residue from Evaporation)	1 contract	2 per bulk delivery	AS1160, App.D
	- Mineral Aggregates			
	· Degradation Factor	1 contract	1 per contract or 6 month period	AS1141.25
	· Los Angeles Value	1 contract	"	AS1141.23
	· Aggregate Wet Strength	1 contract	"	AS1141.22
	· Wet/Dry Strength Variation	1 contract	"	AS1141.22
	· Polished Aggregate Friction Value	1 contract	"	AS1141.42
· Sand Equivalent	1 contract	"	AS1289.3.7.1	
- Mineral Filler	1 month's prod'n	"	AS2357	
- Combined Aggregate Grading	1 contract	"	AS1141.11, AS1141.12	
Mix Design - Nominated Mix	Approval of mix and NATA certification - Supplier's documentary evidence and certification	1 contract	1 per mix	
Production Mix	Grading	1 day's prod'n or 50m <sup>3</sup> (whichever is the lesser)	2 per 50m <sup>3*</sup>	AS2891.3.1
	Residual Binder Content		2 per 50m <sup>3*</sup>	AS2891.3.1
Laying	Levels	1 layer, max 200m <sup>3</sup>	1 cross section per 15m	Survey
	Surface Quality	1 layer, max 200m <sup>3</sup>	10 per 100m* lane length	3m Straight Edge

\* Note: or part thereof, per lot

**Sub-Annexure C12**  
**SEGMENTAL PAVING (Specification C254)**

ACTIVITY	KEY QUALITY VERIFICATION REQUIREMENTS	MAXIMUM LOT SIZE	MINIMUM TEST FREQUENCY	TEST METHOD
Materials Supply	Material Quality - Supplier's documentary evidence and certification of:			
	- Concrete Segmental Paving Units	1 contract	1 per contract	
	- Clay Segmental Paving Units	1 contract	1 per contract	
	- Bedding Sand · Grading	1 contract	1 per contract or change in material	AS1141.11
	- Joint Filling Sand · Grading	1 contract	1 per contract or change in material	AS1141.11
Base	Geometry	One layer 5000m <sup>2</sup> , max 1 day's placement	One cross section per 25m	Survey
	Surface Quality	"	10 per 200m <sup>2</sup> or lot	3m Straight Edge
Edge Restraints	Refer 'Minor Concrete Works'	1 day's placement	1 per 10 lin m	Measure/Survey
Laying Paver Units	Joint Width	1 day's placement	All joints	Measure
	Geometry	1 day's placement	One cross section per 15m	Survey
	Surface Quality	1 day's placement	10 per 200m <sup>2</sup> or lot	3m Straight Edge

\* Note: or part thereof, per lot

**Sub-Annexure C13  
MINOR CONCRETE WORKS (Specification C271)**

ACTIVITY	KEY QUALITY VERIFICATION REQUIREMENTS	MAXIMUM LOT SIZE	MINIMUM TEST FREQUENCY	TEST METHOD
Subgrade	Compaction	1000 lin m or 1000m <sup>2</sup>	1 per 200 lin m or 200m <sup>2</sup>	AS1289.5.4.1
Gravel Subbase Construction	Compaction	1 day's placement	1 per 100 lin m or 100m <sup>2</sup>	AS1289.5.4.1
	Subbase Geometry	1 day's placement	1 per 25 lin m	3m Straight Edge
Steel Supply	Material Quality - Suppliers documentary evidence and certification	1 delivery	1 per production batch	
Ready-Mixed Concrete Supply	Material Quality - Suppliers documentary evidence and certification	1 contract	1 per mix type	
	Consistency - Slump	15m <sup>3</sup>	1 per load	AS1012.3 Method 1
	Compressive Strength (7 and 28 day)	15m <sup>3</sup>	2 pairs per 15m <sup>3</sup>	AS1012.1, AS1012.8, AS1012.9
Concrete Placement	Finished Levels	15m <sup>3</sup>	1 cross section per 15m	Survey and 3m Straight Edge
	Surface Dimensions	Single Fabrication	As required to confirm design dimensions	measure
Backfilling	Material Quality			
	- Maximum particle size	1 contract/ material type	1 per 200m <sup>3</sup> or lot	
	- Plasticity Index	1 contract/ material type	1 per 200m <sup>3</sup> or lot	AS1289.3.3.1
	Compaction	1 day's work or max 200m <sup>2</sup>	1 per 200m <sup>2</sup> or lot	AS1289.5.4.1
Sprayed Concrete	Test Panels and Cores	1 contract	3 test panels and 4 cores per mix design	AS1012.4, AS1012.9 AS1012.14
	Compressive Strength Cores	15m <sup>3</sup>	2 per 15m <sup>3</sup>	AS1012.4, AS1012.9 AS1012.14
	Curing Material Quality - Supplier's documentary evidence and certification	1 contract	1 per production batch	

\* Note: or part thereof, per lot

**Sub-Annexure C14**  
**PAVEMENT MARKINGS (Specification C261)**

ACTIVITY	KEY QUALITY VERIFICATION REQUIREMENTS	MAXIMUM LOT SIZE	MINIMUM TEST FREQUENCY	TEST METHOD
Materials Supply	Material Quality - Supplier's documentary evidence and certification of:			
	- Paint	1 contract	1 per contract or change in material	
	- Glass Beads	1 contract	"	
	- Thermoplastic Material	1 contract	"	
	- Raised Pavement Markers	1 contract	"	
Paint Application	Wet Film Thickness	1 contract	1 per site visit or change in pressure settings	AS 1580.107.3
	Application Rate of Glass Beads	1 contract	1 per site visit or change in pressure settings	Annexure C261A
Thermoplastic Application	Cold Film Thickness	1 contract	1 per site visit or change in pressure settings	Measure by micrometer
	Application Rate of Glass Beads	1 contract	1 per site visit or change in pressure settings	Annexure C261A

**Sub-Annexure C15  
SIGNPOSTING (Specification C262)**

ACTIVITY	KEY QUALITY VERIFICATION REQUIREMENTS	MAXIMUM LOT SIZE	MINIMUM TEST FREQUENCY	TEST METHOD
Materials Supply	Material Quality - Supplier's documentary evidence and certification of: - Sign Blanks - Aluminium Extrusion Backing - Retro-reflective Material - Non-reflective Paint - Non-reflective Sheet Material - Steel Sign Support Structures	1 contract  1 contract 1 contract 1 contract 1 contract	1 per contract, or change in material " " " " "	
Concrete Foundations	Refer 'Minor Concrete Works'			

**Sub-Annexure C16**  
**LANDSCAPING (Specification C273)**

ACTIVITY	KEY QUALITY VERIFICATION REQUIREMENTS	MAXIMUM LOT SIZE	MINIMUM TEST FREQUENCY	TEST METHOD
Seed	Certification of Authenticity for the prescribed Mix	1 contract	Certification for each production batch delivered	
Imported Topsoil	Material Quality			AS4419
	- pH	10,000m <sup>2</sup>	1 per 500m <sup>3</sup>	
	- Organic Content	10,000m <sup>2</sup>	1 per 500m <sup>3</sup>	
	- Soluble Salt Content	10,000m <sup>2</sup>	1 per 500m <sup>3</sup>	
Mulch for Planting	Material Quality	1 contract	1 contract	AS4454

**Sub-Annexure C17  
WATER RETICULATION (Specification C401)**

ACTIVITY	KEY QUALITY VERIFICATION REQUIREMENTS	MAXIMUM LOT SIZE	MINIMUM TEST FREQUENCY	TEST METHOD
Materials Supply	Material Quality - Supplier's documentary evidence and certification of:			
	- uPVC Pipes	1 contract	1 per contract	AS2977
	- Ductile Iron Pipes	1 contract	"	AS2280 and AS2129
	- Copper Pipe	1 contract	"	AS1432
	- Polyethylene Pipe	1 contract	"	AS1159
	- Stop Valves Material	1 contract	"	AS2638 and AS2129
	- Non Return Valves	1 contract	"	AS3578
	- Spring Hydrants	1 contract	1 per contract	AS2544 or AS3952
Siting and Excavation	Geometry	1 line	1 per line	Survey
Bedding	Material Quality - Grading	1 contract	1 per contract per source	AS2032
Thrust and Anchor Blocks	Refer Sub-Annexure C13			
Concrete Encasement	Refer Sub-Annexure C13			
Chamber Covers and Frames	Geometry	1 cover/frame	1 per cover/frame	survey
Testing of Pipelines	Pressure testing	1 line	1 per line	As specified C401.28
Backfill and Compaction	Compaction	1 line	1 per 2 layers max 100m <sup>2</sup>	AS1289.5.7.1
Switchgear and Controlgear Assembly	Electrical function	each installation	1 factory test per installation	AS3439
Commissioning of Pumping Station	Certification testing of electrical installation in accordance with relevant Australian Standards	1 installation	1 per installation	

### Sub-Annexure C18 SEWERAGE SYSTEM (Specification C402)

ACTIVITY	KEY QUALITY VERIFICATION REQUIREMENTS	MAXIMUM LOT SIZE	MINIMUM TEST FREQUENCY	TEST METHOD
Materials Supply	Material Quality - Supplier's documentary evidence and certification of:			
	- uPVC Pipes	1 contract	1 per contract	AS1477
	- Ductile Iron Pipes	1 contract	"	AS2280 and AS2129
	- Vitrified Clay Pipes	1 contract	"	AS1741
	- Precast Access Chambers	1 contract	"	AS4198
Siting and Excavation	Geometry	1 line/ structure	1 per line/ structure	Survey
Bedding	Material Quality - Grading	1 contract	1 per contract per source	AS 1152
Concrete Bedding	Refer Sub-Annexure C13			
Laying and Jointing of Pipes, Access Chambers, Structures	Geometry	1 line	1 per line	Survey
Thrust and Anchor Blocks	Refer Sub-Annexure C13			
Concrete Encasement	Refer Sub-Annexure C13			
Cast-in-situ Access Chambers	Material Quality - Tri-Calcium Aluminate Content	1 contract	1 per contract per source	AS3972
	- Fineness Index	1 contract	"	AS3972
	- Minimum Cement Content	1 contract	"	AS3972
Acceptance Test of Gravitation Mains and Access Chambers	- Compressed Air Testing	1 line	1 per line	As specified C402.36 C402.37
	- Hydrostatic Testing	1 per test length Test length = 1370m pipeline dia.(mm)	1 per line	As specified C402.38
Backfill and Compaction	Compaction	1 line	1 per 2 layers max 100m <sup>2</sup>	AS1289.5.7.1
Switchgear and Controlgear Assembly	Electrical Compliance	each installation	1 factory test per installation	AS3439
Commissioning of Pumping Station	Certification testing of electrical installation in accordance with relevant Australian Standards	1 installation	1 per installation	