

***COFFS HARBOUR CITY COUNCIL***



**DEVELOPMENT SPECIFICATION  
DESIGN**

***0160 Quality (Design)***

***Version 1      01 January 2009***

<b>0160 QUALITY (DESIGN)</b>
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## 1 SCOPE AND GENERAL

### 1.1 SCOPE

This worksection sets out the process for quality assurance of Designs required by Council for engineering works. The requirements are applicable to all design work whether undertaken by Designers within Council, a Consultant or a Sub-consultant.

The worksection 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.

The worksection refers also to engineering design processes for developments that do not involve subdivision

### 1.2 OBJECTIVE

This worksection's objective is to set standards and document requirements for the execution and recording of design processes in order that the infrastructure associated with any Council works is designed to be fit for service and of a standard reasonably maintainable by Council as a community asset.

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.

### 1.3 REFERENCED DOCUMENTS

The following documents referred to in this worksection are:

#### **Worksections**

0041 *Geometric road layout*

0042 *Pavements*

0043 *Subsurface drainage (Design)*

0061 *Bridges and other structures*

0044 *Pathways and cycleways*

0021 *Site regrading*

0074 *Stormwater drainage (Design)*

0075 *Control of erosion and stormwater management*

1102 *Control of erosion and sedimentation*

#### **Standards**

AS 1170 Structural design actions

AS 1684 Residential timber-framed construction

AS 1742 Manual of uniform traffic control devices

AS 1742.2 Manual of uniform traffic control devices—Traffic control devices for general use

AS 3600 Concrete structures

AS 4100 Steel structures

AS 5100 Bridge design

#### **Other publications**

*Engineers Australia*

Australian Rainfall and Runoff (AR&R)

WSAA

WSA 02 Sewerage Code of Australia WSA 02-1999.

WSA 03 Water Reticulation Code of Australia WSA 03-1999.

## 1.4 BIBLIOGRAPHY

### Workgroups

00 *Planning and Design* workgroup

11 *Construction – Roadways* workgroup

### 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 environments management systems auditing
SAA HB 90.3	The Construction Industry—Guide to ISO 9001:2000

### Council's Codes and Policies

Section 90 (EP&A ACT)

Local Government Act (1993)

Local Government Act (1919) Subdivisions Pt XII

Technical Publications used as Engineering Standards (AR&R)

NSW Department of Public Works and Services guidelines for water reticulation and sewerage systems

## 1.5 CERTIFICATION

### Certification report

The Designer shall present all engineering drawings to Council for acceptance. Each set of drawings shall be accompanied by a Certification Report signed by the Designer. The Certification Report shall comprise the certificate and check lists set out in Annexure A.

### Certification of preliminary drawings

Certification Reports shall be submitted with preliminary drawings and shall be resubmitted with updates when final drawings are submitted.

A certification report is not required when submitting sketch plans or concept plans.

### Design non-conformance

The Certification Report shall indicate on check lists any aspects of design which do not meet requirements or tolerances set out in This worksection and other applicable Council design and construction specifications.

## 1.6 DRAFTING REQUIREMENTS

### General

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.

### Standard sheet and plan numbers

All design drawings shall be prepared on a Council approved standard sheet and shall be clearly numbered 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.

### Logical order

The information shown on the drawings shall be logically collected on discrete sheets.

- 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.
- Annexure B provides guidelines for grouping information in design drawings.

## 1.7 DESIGNER'S QUALIFICATIONS

### Civil works

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).

## **Structures**

An engineer qualified as above shall be accepted as qualified to prepare plans for bridges, retaining walls, miscellaneous structures, buildings, pumping stations and flood control structures.

## **1.8 RECORDS**

### **General**

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

In the case of a Consultant or Sub-consultant preparing the design, copies of records shall be made available to Council on request and without charge.

### **Design file**

A design file shall be maintained which contains records of calculations, approvals and decisions, geotechnical data and other design data that could be relevant in reviewing aspects of the design or planning future maintenance responsibilities.

### **Calculation record retention**

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

### **Hydrologic and hydraulic design**

Particular requirements apply to hydrological and hydraulic design data (refer to 0074 *Stormwater drainage (Design)*).

## **1.9 AUDIT**

### **General**

Council shall have the right of audit of all processes and documents related to the project design. The Designer shall provide Council all reasonable assistance in inspecting records of designs submitted to Council for acceptance.

### **Notice of access**

In order to provide for such audit, access to the premises of the Designer will be provided to Council on a 24 hour notice basis.

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**2 ANNEXURE A—CERTIFICATION REPORT**

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XXX Council

**2.1 DESIGN CERTIFICATE**

**Project Title:** \_\_\_\_\_

**Council Drawing No:** \_\_\_\_\_

**Name of Designer:** \_\_\_\_\_

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 Council's Design Specifications 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 will not significantly impact on the environmental factors of the area as interpreted under Part V of the Environmental Planning and Assessment Act.

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.

Contact Phone: \_\_\_\_\_

\_\_\_\_\_ Design Engineer/Surveyor \_\_\_\_\_ Date

Contact Postal Address: \_\_\_\_\_

\_\_\_\_\_ Qualifications \_\_\_\_\_

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**2.2 DESIGN CHECK LIST 1**

**BASE PLOT OF EXISTING FEATURES**

Reference: Council's Survey Brief and Policies on Environment, Heritage, etc.

Drawings: General Layout, Drainage and Intersection Layout Plans.

	<b>Check completed by (initials)</b>	<b>Date</b>	<b>Not applicable (tick)</b>
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 the works are clearly indicated and annotated.	.....	.../.../.....	<input type="checkbox"/>
1.5 Features significant to heritage considerations within the works 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 REQUIREMENTS OR SPECIAL FEATURES TO BE NOTED:

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**2.3 DESIGN CHECK LIST 2**

**HORIZONTAL ROAD ALIGNMENT**

Reference: Design Specifications 0041 *Geometric road layout*, 0061 *Bridges and other structures*, 0044 *Pathways and cycleways*

Drawings: General layouts, typical road cross sections, plan and longitudinal sections, intersection layouts

	<b>Check completed by (initials)</b>	<b>Date</b>	<b>Not applicable (tick)</b>
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 setout data is clearly defined and tabulated.	.....	...../...../.....	<input type="checkbox"/>

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

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**2.4 DESIGN CHECK LIST 3**

**VERTICAL ROAD ALIGNMENT**

Reference: Design Specifications 0041 *Geometric road layout*, 0061 *Bridges and other structures*, 0044 *Pathways and cycleways*

Drawings: Plan and longitudinal sections, road cross sections.

	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"/>

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

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**2.5 DESIGN CHECK LIST 4**

**ROAD CROSS SECTIONS**

Reference: Design Specifications 0041 *Geometric road layout*, 0061 *Bridges and other structures*, 0044 *Pathways and cycleways*

Drawings: Typical Road Cross Sections, Road Cross Sections and Longitudinal Sections.

	<b>Check completed by (initials)</b>	<b>Date</b>	<b>Not applicable (tick)</b>
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 Pavement description and surface treatment is indicated.	.....	...../...../.....	<input type="checkbox"/>
4.5 Property boundaries, service allocations and location of known existing underground services and pathway treatments are indicated.	.....	...../...../.....	<input type="checkbox"/>
4.6 Sufficient cross sections are shown to define all variations and width transitions.	.....	...../...../.....	<input type="checkbox"/>
4.7 Cross sections are of sufficient width to fully assess impact of road level on adjoining property.	.....	...../...../.....	<input type="checkbox"/>
4.8 Stability of embankment slopes, batters and retaining walls has been verified as satisfactory.	.....	...../...../.....	<input type="checkbox"/>
4.9 Cross section reference level conforms with vertical road alignment.	.....	...../...../.....	<input type="checkbox"/>

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

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## 2.6 DESIGN CHECK LIST 5

### ROAD AND INTERALLOTMENT DRAINAGE

Reference: Design Specifications 0021 *Site regarding*, 0074 *Stormwater drainage (Design)*, 0043 *Subsurface drainage (Design)*

Drawings: Drainage Plan and Schedule of Drainage Elements, Drainage Profiles and Drainage Structure Details

	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, e.g., 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"/>
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"/>

**ROAD AND INTERALLOTMENT DRAINAGE**

Reference: Design Specifications 0021 *Site regarding*, 0074 *Stormwater drainage (Design)*, 0043 *Subsurface drainage (Design)*

Drawings: Drainage Plan and Schedule of Drainage Elements, Drainage Profiles and Drainage Structure Details

	<b>Check completed by (initials)</b>	<b>Date</b>	<b>Not applicable (tick)</b>
5.16 Road drainage has been provided in accordance with Council's Handbook for Drainage Design Criteria.	.....	.../.../...	<input type="checkbox"/>
5.17 Interallotment drains have been designed in accordance with Council's Specification and/or Australian Rainfall and Runoff (AR&R).	.....	.../.../...	<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 REQUIREMENTS OR SPECIAL FEATURES TO BE NOTED:

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**2.7 DESIGN CHECK LIST 6**

**SIGNS AND MARKINGS**

Reference: Council's Signposting and Pavement Marking Policies

Drawings: Pavement marking and signposting

		<b>Check completed by (initials)</b>	<b>Date</b>	<b>Not applicable (tick)</b>
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 Council's Policies.	.....	...../...../.....	<input type="checkbox"/>

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

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**2.8 DESIGN CHECK LIST 7**

**PAVEMENT DESIGN**

Reference: Design Specification 0042 *Pavement*

Drawings: Typical road cross sections, road cross sections

		<b>Check completed by (initials)</b>	<b>Date</b>	<b>Not applicable (tick)</b>
7.1	The pavement design and surface treatment is shown clearly on the typical road cross sections 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	Geotechnical data is assessed as adequate and is held on the design file.	.....	.../.../....	<input type="checkbox"/>

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

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**2.9 DESIGN CHECK LIST 8**

**BRIDGE/MAJOR CULVERT DESIGN**

Reference: Design Specification 0061 *Bridges and other structures*

Drawings: Structure details

	Check completed by (initials)	Date	Not applicable (tick)
8.1 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"/>
8.2 Geotechnical data is assessed as adequate and is held on the design file. ....	.....	...../...../.....	<input type="checkbox"/>
8.3 The type and functional dimensions of the bridges meet AS 5100, AS 4100, AS 3600, AS 1684, AS 1170,. ....	.....	...../...../.....	<input type="checkbox"/>
8.4 The type and class of all materials are indicated on the drawings. ....	.....	...../...../.....	<input type="checkbox"/>
8.5 Records of all significant design calculations are available for audit. ....	.....	...../...../.....	<input type="checkbox"/>

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

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**2.10 DESIGN CHECK LIST 9**

**EROSION/AND SEDIMENTATION CONTROL PLANS**

Reference: Design Specifications 1102 *Control of erosion and sedimentation*, 0075 *Control of erosion and stormwater management*

Drawings: Erosion and Sedimentation Control Concept Plans

	<b>Check completed by (initials)</b>	<b>Date</b>	<b>Not applicable (tick)</b>
9.1 Both short term and long term erosion control concept plans have been prepared using the guidelines within Council's Design Specification 0075 <i>Control of erosion and stormwater management during construction</i> and 1102 <i>Control of erosion and sedimentation</i> .	.....	...../...../.....	<input type="checkbox"/>
9.2 Erosion and sedimentation control has been designed in accordance with any conditions of development consent.	.....	...../...../.....	<input type="checkbox"/>

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

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**2.11 DESIGN CHECK LIST 10**

**WATER RETICULATION**

Reference: Design worksection 0071 *Water supply – reticulation and pump stations (Design)*

	<b>Check completed by (initials)</b>	<b>Date</b>	<b>Not applicable (tick)</b>
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 REQUIREMENTS OR SPECIAL FEATURES TO BE NOTED:

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**2.12 DESIGN CHECK LIST 11**

**SEWERAGE SYSTEM**

Reference: Design Specifications 0076 *Sewerage systems – reticulation and pump stations (Design)*

		<b>Check completed by (initials)</b>	<b>Date</b>	<b>Not applicable (tick)</b>
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 REQUIREMENTS OR SPECIAL FEATURES TO BE NOTED:

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### 3 ANNEXURE B—EXAMPLE COMPILATION OF DRAWINGS

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 No	Topic
1.	Development consent number (if applicable), project title, locality sketch and index of sheets.
2.	General layout plan with contour details and a clear indication of the extent of work.
3.	Earthworks Plan
4.	Erosion and sedimentation control concept plans (short term and long term treatment).
5.	Typical road cross sections showing road widths, pavement (design) configuration, batter slopes, kerb and gutter types.
6.	Plan and longitudinal section of each road showing setout data, road safety barrier locations, guide posts and services.
7.	Drainage Plan and schedule of drainage elements (pipe lines and structures).
8.	Drainage profiles.
9.	Drainage structure details.
10.	Road cross sections.
11.	Intersection layout details.
12.	Pavement marking and signposting.
13.	Structure details—bridges, retaining walls, etc.
14.	Sewerage
15	Water

1. 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.

2. Scales are required to be nominated on all drawings and north points shown on all plan views.