

DEVELOPMENT DESIGN SPECIFICATION

DQS

QUALITY ASSURANCE REQUIREMENTS FOR DESIGN

[Return to Contents](#)

Amendment Record for this Specification Part

This Specification is Council's edition of the AUS-SPEC generic specification part and includes Council's primary amendments.

Details are provided below outlining the clauses amended from the Council edition of this AUS-SPEC Specification Part. The clause numbering and context of each clause are preserved. New clauses are added towards the rear of the specification part as special requirements clauses. Project specific additional script is shown in the specification as italic font.

The amendment code indicated below is 'A' for additional script 'M' for modification to script and 'O' for omission of script. An additional code 'P' is included when the amendment is project specific.

Amendment Sequence No.	Key Topic addressed in amendment	Clause No.	Amendment Code	Author Initials	Amendment Date
0	Customisation for Hastings Council Local Government Area	All	A,O,M	HC	Aug 03
1	Relocation of Contents page to beginning of document	N/A	AOM	HC	26/02/04

CONTENTS

CLAUSE		PAGE
DQS.01	SCOPE.....	2
DQS.02	OBJECTIVES.....	2
DQS.03	REFERENCE AND SOURCE DOCUMENTS.....	2
DQS.04	DESIGN REPORT.....	2
DQS.05	ENGINEERING DESIGN PLANS AND SPECIFICATIONS.....	3
DQS.06	DESIGNER'S QUALIFICATIONS.....	3
DQS.07	RECORDS.....	4
DQS.08	AUDIT.....	4

ANNEXURES

DQS-A	DESIGN CERTIFICATION REPORT
DQS-B	MINIMUM DRAFTING GUIDELINES
DQS-C	DESIGN CHECKLISTS

QA FOR ENGINEERING DESIGN

DQS.01 SCOPE

1. This design specification sets out the process for quality assurance of Designs required by Council for community assets. The requirements are applicable to all design work whether undertaken by the Council, Council's representative, Developer, his Project Manager, Designer or a sub-designer.

Quality Assurance

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.
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.

Maintenance

Records

DQS.03 REFERENCE AND SOURCE DOCUMENTS

(1) Council Specifications

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

(2) Australian Standards

AS/NZS 3905.2	Guide to quality system Standards AS/NZS 9001, AS/NZS 9002 and AS/NZS 9003 for construction.
AS/NZS 3913	Quality manuals - Guide to preparation.
AS/NZS ISO 8402	Quality management and quality assurance - Vocabulary.
AS/NZS ISO 9001	Quality systems - Model for quality assurance in design, development, production, installation and servicing.
AS/NZS ISO 9004.1	Quality management and quality system elements - Guidelines.
AS1100	Engineering Drawings
AUSTROADS	

(3) Other

Section 79C (EP&A ACT)
Local Government Act (1993)
Technical Publications used as Engineering Standards e.g.(AR&R 1987)
Interim Policies and Guidelines

DQS.04 DESIGN REPORT

1. The Designer shall present all engineering plans to Council for acceptance. Each set of plans shall be accompanied by a Design Report which will be signed by the Designer. The Design Report will comprise the Design Report Certification, check lists and
2. Design Reports shall be required with preliminary plans and shall require resubmission with updates when final plans are submitted. Design Reports are not

Design Report

Design Reports &

HASTINGS COUNCIL

required with sketch plans or concept plans.

**Preliminary
Plans**

3. The Design Report shall indicate on the checklists any aspects of design, which do not meet requirements or tolerances set out in Council's Aus-Spec Design and Construction Specifications and Subdivision Codes.

DQS.05 ENGINEERING DESIGN PLANS AND SPECIFICATIONS

1. Design plans 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.

2. All design plans shall be prepared in accordance with Hastings Council CAD Specifications.

**CAD
specifications
& Template**

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. Sheets of 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. Standard Drawings shall be utilised as applicable to each element of the design.

**Standard
Drawings**

5. All plans and specifications for roadworks, drainage works, water supply, excluding reservoirs and pump stations, sewerage works (excluding structural and geotechnical elements of pumping stations) are to be prepared by an experienced professional civil engineer or experienced professional surveyor.

6. Plans and specifications for all water supply reservoirs and pump stations, sewer pumping stations and structural works such as flood control structures, bridges over 6 m or retaining walls in excess of 0.6 m in height are to be certified by an experienced professional structural engineer.

7. Road pavements, landfills, excavations less than 1 m and subsurface structures shall be designed by an experienced professional civil or geotechnical engineer and supported by a geotechnical report. Council may accept pavement subsurface designs from an experienced professional surveyor for:

- a. Minor cul-de-sacs
- b. Footways
- c. Landfill up to 0.3 m
- d. Minor subsoil drainage.

DQS.06 DESIGNER'S QUALIFICATIONS

1. *Plans and specifications are to be prepared and submitted by suitably qualified and experienced persons.*

**Engineer
Surveyor**

An Experienced Professional Engineer must be:

A person registered in a relevant area of practice on the National Professional

HASTINGS COUNCIL

Engineers Register administered by the Institution of Engineers, Australia and covered by any required Professional Indemnity Insurance; and where applicable, a Member of a Scheme established under Professional Standards Legislation in the relevant jurisdiction; or

A Chartered Professional Engineer (CPEng) or other person providing satisfactory evidence to the responsible authority that they have the qualifications and experience to be competent to perform the required tasks independently.

An Experienced Professional Surveyor must be:

Registered by the NSW Board of Surveyors and meet the requirements of the Board to maintain that registration, and

Employed by a firm that is currently accredited by the Surveyor Practice Accreditation Scheme (SPAS). The accreditation scheme is jointly run by the Institute of Surveyors Australia and the Association of Consulting Surveyors and is intended to maintain parity between Surveyors and Engineers with regard to engineering work.

DQS.07 RECORDS

- | | | |
|----|--|--------------------------------------|
| 1. | The Designer shall retain appropriate design records in a format such that design staff with no prior knowledge of the particular design can understand them readily. | |
| 2. | A design file shall be maintained by the Designer 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. | <i>Design File to be kept</i> |
| 3. | Particular requirements apply to hydrological and hydraulic design data. (Refer to D5). | <i>Hydrologic Design</i> |
| 4. | Copies of records will be made available to Council on request and without charge. | <i>Hydraulic Design</i> |

DQS.08 AUDIT

- | | | |
|----|---|--------------------------|
| 1. | Council shall have the right of audit of all processes and documents related to the project design. The Designer shall provide Council's Officers all reasonable assistance in inspecting records of designs submitted to Council for acceptance. | <i>Assistance</i> |
| 2. | In order to provide for such audit, access to the premises of the Designer will be provided to Council on a 48 hour notice basis. Audits shall be carried out during normal business hours. | <i>Access</i> |

DESIGN CERTIFICATION

Project Title: _____

DA/BA No: _____

Council Drawing No: _____

Name of Designer: _____

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, excluding Council's standard drawings, has been carried out in accordance with current standards of good industry practice and in accordance with relevant Australian Standards, Council's Design Specifications, Subdivision Code and specific instructions received from Council with the exception of departures cited in the attached design check lists for Council's advice.

I certify that this Design is in 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 Plans (this includes designs for staged construction).

OR (Delete non applicable paragraph)

I certify the design has been assessed pursuant to the provisions of part V of the EPA Act and has been determined by Council to have no significant impact on the environment.

I certify that all structural elements of the Design have been designed by an experienced professional Structural Engineer

Contact Phone: _____

Designer Date

Contact Postal Address: _____

Qualifications

ANNEXURE DQS-B**MINIMUM DRAFTING GUIDELINES****A. ROADWORKS PLANS**

A preferred* sequence of drawing sheets acceptable to Council in the compilation of a full set of Roadworks Plans is set out as follows.

Sheet N^o	TOPIC
a.	Cover sheets
b.	Plan views with existing and proposed contours
c.	Longitudinal sections
d.	Cross sections (including typical)
e.	Kerb return profiles and intersection detail plans (including contours)
f.	Specialised detail (including slip roads, special access, property adjustments etc)
g.	Structural details
h.	Standard drawings
i.	Contoured catchment plan
j.	Hydraulic and Hydrological calculations
k.	Sediment and Erosion Control Plan
l.	Signage and Line Marking
m.	Water Reticulation
n.	Sewerage Reticulation
o.	Landscaping

NOTE * 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.

ANNEXURE DQS-C

DESIGN CHECKLISTS

Amendment Sequence No.	Design Checklist No.	Clause No.	Amendment Code	Author Initials	Amendment Date

DESIGN CHECKLIST 1 – PRE-DESIGN REQUIREMENTS

Revision No.: _____

Issue Date: ____/____/____

	Check Completed By (Initials)	Date	Not Applicable (Tick)
1.1 Review of Environmental Factors or DA Completed to requirements of EPA Act.	_____	____/____/____	<input type="checkbox"/>
1.2 Environmental & Planning requirements of Council obtained.	_____	____/____/____	<input type="checkbox"/>
1.3 Design Brief received and consulted with client/customer.	_____	____/____/____	<input type="checkbox"/>
1.4 Utility Authority requirements/quotes obtained for;			
Electricity	_____	____/____/____	<input type="checkbox"/>
Telecommunication	_____	____/____/____	<input type="checkbox"/>
Water	_____	____/____/____	<input type="checkbox"/>
Sewerage	_____	____/____/____	<input type="checkbox"/>
Stormwater	_____	____/____/____	<input type="checkbox"/>
Flooding	_____	____/____/____	<input type="checkbox"/>
1.5 Government Authority requirements assessed and obtained from;			
DISNR (previously DLWC)	_____	____/____/____	<input type="checkbox"/>
NSW Fisheries	_____	____/____/____	<input type="checkbox"/>
NPWS	_____	____/____/____	<input type="checkbox"/>
DPWS	_____	____/____/____	<input type="checkbox"/>
EPA	_____	____/____/____	<input type="checkbox"/>
RTA	_____	____/____/____	<input type="checkbox"/>
Planning NSW	_____	____/____/____	<input type="checkbox"/>
1.6 Concept Plan prepared and approved by client/customer.	_____	____/____/____	<input type="checkbox"/>
1.7 Property acquisitions/easements identified and suitable arrangements made with landowners, legal representatives etc.	_____	____/____/____	<input type="checkbox"/>
1.8 Scope of works clearly defined in Design Brief and confirmed with client/customer.	_____	____/____/____	<input type="checkbox"/>
1.9 Community and other interest groups eg. Aboriginal Land Council	_____	____/____/____	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS OR SPECIAL FEATURES TO BE NOTED (Add additional sheets if required)

Design Check List 2 BASE PLOT OF EXISTING FEATURES

Revision No.: _____

Issue Date: ____/____/____

	Check Completed By (Initials)	Date	Not Applicable (Tick)
2.1 Initial Plot verified by site inspection for existing drainage.	_____	_ / _ / _	<input type="checkbox"/>
2.2 Initial Plot verified by site inspection for existing property descriptions, boundaries and accesses.	_____	_ / _ / _	<input type="checkbox"/>
2.3 Initial Plot of contours verified as representative of site terrain.	_____	_ / _ / _	<input type="checkbox"/>
2.4 Trees and significant environmental features affected by development are clearly indicated and annotated.	_____	_ / _ / _	<input type="checkbox"/>
2.5 Features significant to heritage considerations within the development boundaries are clearly indicated and annotated.	_____	_ / _ / _	<input type="checkbox"/>
2.6 Existing public and private property likely to be affected by these Designs are clearly indicated and annotated.	_____	_ / _ / _	<input type="checkbox"/>
2.7 Existing public utility services likely affected are clearly indicated and annotated.	_____	_ / _ / _	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS OR SPECIAL FEATURES TO BE NOTED (Add additional sheets if required)

Design Check List 3 HORIZONTAL ROAD ALIGNMENT

Revision No.: _____

Issue Date: ____/____/____

		Check Completed By (Initials)	Date	Not Applicable (Tick)
3.1	Alignment compatible with design speed, and topography of site.	_____	/ /	<input type="checkbox"/>
3.2	Alignment is adequate in relation to clearance of roadside hazards.	_____	/ /	<input type="checkbox"/>
3.3	Driver and Pedestrian sight distance is adequate.	_____	/ /	<input type="checkbox"/>
3.4	Conflict with existing services is minimised.	_____	/ /	<input type="checkbox"/>
3.5	Road widths and lanes meet Councils requirements, RTA requirements, AUSTRROADS requirements and design traffic requirements.	_____	/ /	<input type="checkbox"/>
3.6	Alignment of bridges suits road alignment.	_____	/ /	<input type="checkbox"/>
3.7	Pedestrian, bicycle and parking requirements are met.	_____	/ /	<input type="checkbox"/>
3.8	Provision for large vehicles such as buses, garbage trucks and emergency vehicles is adequate.	_____	/ /	<input type="checkbox"/>
3.9	Intersection Layouts meet turning requirements of design traffic including emergency vehicles.	_____	/ /	<input type="checkbox"/>
3.10	Pavement width tapers and merges conform to Aus-Spec requirements, Councils requirements, RTA requirements, and AUSTRROADS requirements	_____	/ /	<input type="checkbox"/>
3.11	Pedestrians and prams are catered for.	_____	/ /	<input type="checkbox"/>
3.12	Conflict with existing Public Utility services has been identified and resolved.	_____	/ /	<input type="checkbox"/>
3.13	Horizontal road alignment has been provided in accordance with Councils requirements, RTA requirements, AUSTRROADS requirements and any Conditions of Development Consent.	_____	/ /	<input type="checkbox"/>
3.14	Horizontal alignment has been provided to minimise cuts and fills, earthworks and to blend with the terrain.	_____	/ /	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS OR SPECIAL FEATURES TO BE NOTED(Add additional sheets if required)

Design Check List 4 VERTICAL ROAD ALIGNMENT

Revision No.: _____

Issue Date: ____/____/____

		Check Completed By (Initials)	Date	Not Applicable (Tick)
4.1	Grades meet maximum and minimum requirements and minimise earthworks.	_____	_ / _ / _	<input type="checkbox"/>
4.2	Vertical clearances to bridges and services meet Councils requirements, RTA requirements, AUSTRROADS requirements and relevant standards.	_____	_ / _ / _	<input type="checkbox"/>
4.3	Vertical sight distance is adequate for drivers and pedestrians.	_____	_ / _ / _	<input type="checkbox"/>
4.4	Cover to drainage structures or services is adequate.	_____	_ / _ / _	<input type="checkbox"/>
4.5	Vertical alignment is adequate for disposal of surface drainage from properties and from road.	_____	_ / _ / _	<input type="checkbox"/>
4.6	Design levels provide flood free access for 1:100 year flood or other events specified by Council.	_____	_ / _ / _	<input type="checkbox"/>
4.7	Vertical alignment is compatible with property access, topography and visually acceptable.	_____	_ / _ / _	<input type="checkbox"/>
4.8	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"/>
4.9	Sight distance is acceptable for all accesses to roundabouts.	_____	_ / _ / _	<input type="checkbox"/>
4.10	Alignment coordination with horizontal alignment is in accordance with the RTA/AUSTRROADS guidelines.	_____	_ / _ / _	<input type="checkbox"/>
4.11	Conflict with existing Public Utility services has been identified and resolved.	_____	_ / _ / _	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS
OR SPECIAL FEATURES TO BE NOTED (Add additional sheets if required)

Design Check List 5 ROAD CROSS SECTIONS

Revision No.: _____

Issue Date: ____/____/____

		Check Completed By (Initials)	Date	Not Applicable (Tick)
5.1	Typical Cross Sections have kerb & gutter, guardrail, public utilities (existing and proposed) and surface and subsoil drainage indicated.	_____	____/____/____	<input type="checkbox"/>
5.2	Batter slopes are indicated and batter treatment is indicated where appropriate.	_____	____/____/____	<input type="checkbox"/>
5.3	Pavement description and surface treatment is indicated.	_____	____/____/____	<input type="checkbox"/>
5.4	Property boundaries, service allocations and footpath treatments are indicated.	_____	____/____/____	<input type="checkbox"/>
5.5	Sufficient Cross Sections are shown to define all variations and width transitions.	_____	____/____/____	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS OR SPECIAL FEATURES TO BE NOTED(Add additional sheets if required)

Design Check List 6 ROAD AND INTERALLOTMENT DRAINAGE

Revision No.: _____

Issue Date: ____/____/____

		Check Completed By (Initials)	Date	Not Applicable (Tick)
6.1	Drawings indicate existing surface drainage.	_____	/ /	<input type="checkbox"/>
6.2	Hydrological data is the most current available.	_____	/ /	<input type="checkbox"/>
6.3	Hydrologic and Hydraulic design calculations are complete and fully recorded and available for audit.	_____	/ /	<input type="checkbox"/>
6.4	Underground drainage and structures do not conflict with services.	_____	/ /	<input type="checkbox"/>
6.5	The designed drainage lines are compatible with existing incoming lines and outgoing lines.	_____	/ /	<input type="checkbox"/>
6.6	The type of pipe, size, gradient and class are indicated for each drainage line as well as the bedding requirements.	_____	/ /	<input type="checkbox"/>
6.7	Height of fill over drainage lines is within allowable limits.	_____	/ /	<input type="checkbox"/>
6.8	Drainage is provided for local depressions eg median areas or areas adjacent to fills.	_____	/ /	<input type="checkbox"/>
6.9	The effect of headwater and back-up water on private property has been assessed and adequate surcharge paths have been provided.	_____	/ /	<input type="checkbox"/>
6.10	Subsurface drainage has been provided when required.	_____	/ /	<input type="checkbox"/>
6.11	The need for batter drains has been considered for fills.	_____	/ /	<input type="checkbox"/>
6.12	The height and energy level of downstream drainage has been allowed for in the design.	_____	/ /	<input type="checkbox"/>
6.13	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)
6.14	Emergency flowpaths are located so as to minimise impact on private property.	_____	/ /	<input type="checkbox"/>
6.15	Road drainage has been provided in accordance with Conditions of Development Consent and current AS, RTA standards, and Aus-Spec	_____	/ /	<input type="checkbox"/>
6.16	Interallotment drains have been designed in accordance with Aus-Spec, current AS and Australian Rainfall and Runoff (Current Edition).	_____	/ /	<input type="checkbox"/>
6.17	Appropriate land stabilisation and velocity controls have been implemented to pipe systems, open channels and embankments.	_____	/ /	<input type="checkbox"/>
6.18	Easements have been created in accordance with waterway buffer width requirements and dimensions are shown on the plans.	_____	/ /	<input type="checkbox"/>
6.19	Existing and proposed public utilities are indicated on plans, cross sections and longitudinal sections.	_____	/ /	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS OR SPECIAL FEATURES TO BE NOTED (Add additional sheets if required)

Design Check List 7 SIGNS AND MARKINGS

Revision No.: _____

Issue Date: ____/____/____

		Check Completed By (Initials)	Date	Not Applicable (Tick)
7.1	Signs are shown on the drawings in accordance with AS 1743.	_____	_ / _ / _	<input type="checkbox"/>
7.2	Pavement linemarking and pavement marking is indicated on the drawings to meet the requirements of AS 1742.2.	_____	_ / _ / _	<input type="checkbox"/>
7.3	Signs and linemarking have been designed in accordance with any Conditions of Development Consent.	_____	_ / _ / _	<input type="checkbox"/>
7.4	Street name sign location shown on plans.	_____	_ / _ / _	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS OR SPECIAL FEATURES TO BE NOTED (Add additional sheets if required)

Design Check List 8 PAVEMENT DESIGN

Revision No.: _____

Issue Date: ____/____/____

		Check Completed By (Initials)	Date	Not Applicable (Tick)
8.1	The pavement design is shown clearly on the drawings and any variations are indicated on appropriate cross sections.	_____	____/____/____	<input type="checkbox"/>
8.2	The pavement design complies with D2 Pavement Design Specification where available or AUSTROADS APRG Report 21	_____	____/____/____	<input type="checkbox"/>
8.3	Pavement Design is in accordance with any Conditions of Development Consent.	_____	____/____/____	<input type="checkbox"/>
8.4	Geotechnical Data has been obtained for pavement design.		____/____/____	<input type="checkbox"/>

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

Design Check List 9 BRIDGE DESIGN AND MAJOR CULVERT DESIGN

Revision No.: _____

Issue Date: ____/____/____

	Check Completed By <i>(Initials)</i>	Date	Not Applicable <i>(Tick)</i>
9.1 The design has been performed in accordance with DQS.06	_____	/ /	<input type="checkbox"/>
9.2 Geotechnical Data has been obtained for bridge foundation design.	_____	/ /	<input type="checkbox"/>
9.3 The type and functional dimensions of the bridges meet AUSTRROADS Bridge Design Codes 1992, AS 3600 (1988), AS 1684 (1992), AS 1170 (1989), AS 4100 (1990).	_____	/ /	<input type="checkbox"/>
9.4 The type and class of all materials are indicated on the drawings.	_____	/ /	<input type="checkbox"/>
9.5 Records of all design calculations are available for audit if required.	_____	/ /	<input type="checkbox"/>
9.6 The design complies with any Conditions of Development Consent, Aus-spec, relevant RTA guidelines, ARR, relevant Australian standards and AUSTRROADS	_____	/ /	<input type="checkbox"/>
9.7 Hydrological and hydraulic design calculations are complete and fully recorded and available for audit if required.	_____	/ /	<input type="checkbox"/>
9.8 The type of culvert, pipe size, gradient and class are indicated for each drainage structure as well as the bedding requirements.	_____	/ /	<input type="checkbox"/>
9.9 Height of fill over drainage structures are within allowable limits.	_____	/ /	<input type="checkbox"/>
9.10 The height and energy level downstream chainage has been allowed for in the design.	_____	/ /	<input type="checkbox"/>
9.11 Appropriate land stabilisation and velocity controls have been implemented to bridges, culverts, open channels and embankments.	_____	/ /	<input type="checkbox"/>
9.12 Existing and proposed public utilities are indicated on plans, cross and longitudinal sections.	_____	/ /	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS OR SPECIAL FEATURES TO BE NOTED (Add additional sheets if required)

Design Check List 10

EROSION/SILTATION CONTROL PLANS

Revision No.: _____

Issue Date: ____/____/____

	Check Completed By <i>(Initials)</i>	Date	Not Applicable <i>(Tick)</i>
10.1 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.	_____	____/____/____	<input type="checkbox"/>
10.2 Erosion and Sedimentation Control has been designed in accordance with any Conditions of Development Consent.	_____	____/____/____	<input type="checkbox"/>
10.3 Erosion and Sedimentation Control facilities where practical utilise existing and proposed drainage facilities.	_____	____/____/____	<input type="checkbox"/>
10.4 Existing and proposed public utilities are indicated on longitudinal sections. .	_____	____/____/____	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS OR SPECIAL FEATURES TO BE NOTED (Add additional sheets if required)

Design Check List 11 STORMWATER QUALITY

Revision No.: _____

Issue Date: ____/____/____

	Check Completed By <i>(Initials)</i>	Date	Not Applicable <i>(Tick)</i>
11.1 Stormwater Quality facilities have been designed to;	_____	_ / _ / _	<input type="checkbox"/>
• Meet the requirements of Environmental Planning Assessment Act 1979	_____	_ / _ / _	<input type="checkbox"/>
• In accordance with any Aus-spec D9 requirements and conditions of Development Consent/Part V Assessment	_____	_ / _ / _	<input type="checkbox"/>
• Interface with stormwater piped network and detention facilities			
• ARQ Guidelines, and any relevant Australian standards.	_____	_ / _ / _	<input type="checkbox"/>
11.2 Safety aspects of the design have been addressed in terms of;			<input type="checkbox"/>
• Adequacy of batter slopes in retention/detention ponds	_____	_ / _ / _	<input type="checkbox"/>
• Minimum depth of treatment points	_____	_ / _ / _	<input type="checkbox"/>
• Access to enclosed structures	_____	_ / _ / _	<input type="checkbox"/>
• Fencing	_____	_ / _ / _	<input type="checkbox"/>
• Stagnant waters/mosquito breeding	_____	_ / _ / _	<input type="checkbox"/>
• Pollutant loads			
11.3 Stormwater Quality Control plans have been prepared using guidelines of AUSPEC Design Specification D7 & Construction Specification C211.	_____	_ / _ / _	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS OR SPECIAL FEATURES TO BE NOTED (Add additional sheets if required)

Design Check List 12 STORMWATER DRAINAGE DESIGN

Revision No.: _____

Issue Date: ____/____/____

		Check Completed By (Initials)	Date	Not Applicable (Tick)
12.1	Recurrence intervals verified with Council for major and minor events.	_____	_ / _ / _	<input type="checkbox"/>
12.2	Catchment areas provided on plans and checked for future development potential.	_____	_ / _ / _	<input type="checkbox"/>
12.3	Intensity Frequency Duration (IFD) relationships derived in accordance with ARR 1987.	_____	_ / _ / _	<input type="checkbox"/>
12.4	Design coefficient of runoff, frequency, friction coefficient and velocities have been verified.	_____	_ / _ / _	<input type="checkbox"/>
12.5	All drainage easements are shown	_____	_ / _ / _	<input type="checkbox"/>
12.6	Discharge points are legal and approved by Council.	_____	_ / _ / _	<input type="checkbox"/>
12.7	Surcharge flow paths conform with ARR 1987 major/minor philosophy and verified with Council, AS3500 and Aus-Spec D5	_____	_ / _ / _	<input type="checkbox"/>
12.8	Gutter flow widths and pit spacing verified to conform to AUSPEC D5- Stormwater Drainage Design.	_____	_ / _ / _	<input type="checkbox"/>
12.9	Hydraulic calculations provided and make allowances for head, pit and tail water losses in accordance with Aus-Spec D5	_____	_ / _ / _	<input type="checkbox"/>
12.10	Velocity/depth relationships checked to ensure safety of all pedestrians and vehicles in accordance with Aus-Spec D5	_____	_ / _ / _	<input type="checkbox"/>
12.11	Retarding basins critical storm duration to conform to Aus-Spec D5 – Stormwater Drainage Design.	_____	_ / _ / _	<input type="checkbox"/>
12.12	Onsite detention conforms with requirements of Council criterion.	_____	_ / _ / _	<input type="checkbox"/>
12.13	Interallotment drainage provided to all allotments to requirements of AUSPEC specifications.	_____	_ / _ / _	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS OR
SPECIAL FEATURES TO BE NOTED (Add additional sheets if required)

Design Check List 13 WATERFRONT DEVELOPMENT

Revision No.: _____

Issue Date: ____/____/____

		Check Completed By (Initials)	Date	Not Applicable (Tick)
13.1	Relevant approvals obtained from State agencies (eg DLWC, Fisheries, NPWS).	_____	_ / _ / _	<input type="checkbox"/>
13.2	Agency requirements incorporated in or addressed by the design.	_____	_ / _ / _	<input type="checkbox"/>
13.3	Land reclamations/ fill based on a detailed geotechnical assessment.	_____	_ / _ / _	<input type="checkbox"/>
13.4	Certification of landfill/reclamations provided.	_____	_ / _ / _	<input type="checkbox"/>
13.5	Waterway beach/deep water frontage zones conform with AUSPEC D8.	_____	_ / _ / _	<input type="checkbox"/>
13.6	All structures (eg relevant walls, bridges and marina facilities certified to comply with appropriate design guides and standards.	_____	_ / _ / _	<input type="checkbox"/>
13.7	The effect of all structures on the hydraulic performance of the waterway verified to have no significant impact.	_____	_ / _ / _	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS OR SPECIAL FEATURES TO BE NOTED (Add additional sheets if required)

Design Check List 14 CYCLEWAY PATHWAY DESIGN

Revision No.: _____

Issue Date: ____/____/____

	Check Completed By <i>(Initials)</i>	Date	Not Applicable <i>(Tick)</i>
14.1 Cycleway/pathways conform to Council approved strategies/plans.	_____	_ / _ / _	<input type="checkbox"/>
14.2 The type of cycleway (ie on-road, off-road confirmed with Council).	_____	_ / _ / _	<input type="checkbox"/>
14.3 The cycleway/pathway verified to conform with AUSTROADS and AUSPEC D9 in respect of;			
• Bridge crossings			<input type="checkbox"/>
• Width and alignment	_____	_ / _ / _	<input type="checkbox"/>
• Signage	_____	_ / _ / _	<input type="checkbox"/>
• Material types	_____	_ / _ / _	<input type="checkbox"/>
• Facilities	_____	_ / _ / _	<input type="checkbox"/>
• Disability/access	_____	_ / _ / _	<input type="checkbox"/>
• Intersection treatment	_____	_ / _ / _	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS OR SPECIAL FEATURES TO BE NOTED (Add additional sheets if required)

Design Check List 15 BUSHFIRE PROTECTION

Revision No.: _____

Issue Date: ____/____/____

		Check Completed By (Initials)	Date	Not Applicable (Tick)
15.1	The Bushfire requirements conform with the provision of Council's consent.	_____	_ / _ / _	<input type="checkbox"/>
15.2	Requirements of NSW Bush Fire Brigades have been included in the designs..	_____	_ / _ / _	<input type="checkbox"/>
15.3	Perimeter tracks have been provided to conform with AUSPEC D10.	_____	_ / _ / _	<input type="checkbox"/>
15.4	Fire protection zones have been provided to conform with AUSPEC D10.	_____	_ / _ / _	<input type="checkbox"/>
15.5	Fuel reduced and free zones have been provided to conform with AUSPEC D10.	_____	_ / _ / _	<input type="checkbox"/>
15.6	Design makes suitable provision for staged developments to conform with AUSPEC D10.	_____	_ / _ / _	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS OR SPECIAL FEATURES TO BE NOTED (Add additional sheets if required)

Design Check List 16**WATER RETICULATION**

Revision No.: _____

Issue Date: ____/____/____

		Check Completed By (Initials)	Date	Not Applicable (Tick)
16.1	The design has been performed in accordance with Aus-Spec DQS.06	_____	_ / _ / _	<input type="checkbox"/>
16.2	The survey has been performed in accordance with Aus-Spec DQS.06	_____	_ / _ / _	<input type="checkbox"/>
16.3	Geotechnical data is assessed as adequate and is held on the design file.	_____	_ / _ / _	<input type="checkbox"/>
16.4	The design complies with Aus-Spec D11.	_____	_ / _ / _	<input type="checkbox"/>
16.5	The type and class of all materials, fittings, joints, and special requirements for crossings and protection are indicated on the drawings.	_____	_ / _ / _	<input type="checkbox"/>
16.6	Records of all significant design calculations are appended.	_____	_ / _ / _	<input type="checkbox"/>
16.7	The design meets the requirements of all Statutory Authorities.	_____	_ / _ / _	<input type="checkbox"/>
16.8	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 (Add additional sheets if required)

Design Check List 17 SEWERAGE SYSTEM

Revision No.: _____

Issue Date: ____/____/____

		Check Completed By <i>(Initials)</i>	Date	Not Applicable <i>(Tick)</i>
17.1	The design has been performed in accordance with Aus-Spec DQS.06	_____	_ / _ / _	<input type="checkbox"/>
17.2	The survey has been performed in accordance with Aus-Spec DQS.06	_____	_ / _ / _	<input type="checkbox"/>
17.3	Geotechnical data is assessed as adequate and is held on the design file.	_____	_ / _ / _	<input type="checkbox"/>
17.4	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 current edition of the Sewerage Code of Australia.	_____	_ / _ / _	<input type="checkbox"/>
17.5	The type and class of all materials, fittings, joints, and special requirements for crossings and protection are indicated on the drawings.	_____	_ / _ / _	<input type="checkbox"/>
17.6	Records of all significant design calculations are available for audit.	_____	_ / _ / _	<input type="checkbox"/>
17.7	The design meets the requirements of all Statutory Authorities.	_____	_ / _ / _	<input type="checkbox"/>
17.8	The design complies with any conditions of development consent and Aus-Spec D12.	_____	_ / _ / _	<input type="checkbox"/>

DEPARTURES FROM COUNCIL OR STATE ROAD AUTHORITY NORMAL REQUIREMENTS OR SPECIAL FEATURES TO BE NOTED (Add additional sheets if required)

Design Check List 18 LAND & STREET SCAPE DESIGN

Revision No.: _____

Issue Date: ____/____/____

		Check Completed By <i>(Initials)</i>	Date	Not Applicable <i>(Tick)</i>
18.1	The design has been completed by a qualified Landscape Architect or Landscape Design Consultant with substantial experience and the plans conform to section D13.01	_____	/ /	<input type="checkbox"/>
18.2	Garden bed plantings have the minimum depths of material.	_____	/ /	<input type="checkbox"/>
18.3	The soil and mulch is suitably retained by a low maintenance border.	_____	/ /	<input type="checkbox"/>
18.4	Tree plantings of suitable species conform to the requirements of sections D13.03 & D13.11	_____	/ /	<input type="checkbox"/>
18.5	Adequate drainage has been provided to ensure that the integrity of any asset in the vicinity is not compromised	_____	/ /	<input type="checkbox"/>
18.6	The drainage of the landscaping conforms to the requirements of D13.04 and specifications D4 & D5.	_____	/ /	<input type="checkbox"/>
18.7	Earthworks near existing trees have been assessed according to D13.12.	_____	/ /	<input type="checkbox"/>
18.8	The type and location of all furniture, signage, fencing and structures has been specified on the plans in accordance with D13.05, D13.06, D13.09 & D13.10.	_____	/ /	<input type="checkbox"/>
18.9	Suitable species have been selected to enhance the existing and surrounding vegetation as per sections D13.11 & D13.07.	_____	/ /	<input type="checkbox"/>
18.10	The design has specified suitable and durable materials for all elements (D13.13).	_____	/ /	<input type="checkbox"/>
18.11	The provision of landscaping on slopes and batters has considered the potential for scour and erosion of the materials (D13.15)	_____	/ /	<input type="checkbox"/>
18.12	Landscaping of verges medians and footways is suitable and ensures satisfactory safety for road users as per section D13.16.	_____	/ /	<input type="checkbox"/>

18.14 Landscaping on verges, medians, and footways specifies plants with a suitable low maintenance requirement and drainage.

_____	/ /	<input type="checkbox"/>
Check Completed By (Initials)	Date	Not Applicable (Tick)

18.15 The use of Crime Prevention Through Environmental Design (CPTED) principles has been maximised in order to limit the crime potential resulting from the new development.

_____	/ /	<input type="checkbox"/>
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18.16 Adequate pedestrian access and safety has been provided, including measures to minimise the trip hazard potential.

_____	/ /	<input type="checkbox"/>
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18.17 Lighting (if required) conforms to the Aust. Standard for Public Lighting (AS1158)

_____	/ /	<input type="checkbox"/>
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18.18 The landscaping of drainage flowpaths will not interfere with the hydraulic capacity of the flowpath (D13.14).

_____	/ /	<input type="checkbox"/>
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18.19 The design complies with any conditions of development consent.

_____	/ /	<input type="checkbox"/>
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DEPARTURES FROM NORMAL COUNCIL REQUIREMENTS OR SPECIAL FEATURES TO BE NOTED (Add additional sheets if required)