NEW SOUTH WALES

DEVELOPMENT DESIGN SPECIFICATION

DQS

QUALITY ASSURANCE REQUIREMENTS FOR DESIGN

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DQS.01 SCOPE

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

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

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

DQS.02 OBJECTIVES

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

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

DQS.03 REFERENCE AND SOURCE DOCUMENTS

(a) Council Specifications

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

(b) Australian Standards

AS/NZS 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.

(c) Other

Section 90 (EP&A ACT)
Local Government Act (1919) Subdivisions Pt XII
Local Government Act (1993)
Technical Publications used as Engineering Standards (AR&R)
Interim Policies and Guidelines

DQS.04 CERTIFICATION

1. The Developer shall present all engineering drawings to Council's XXXXXXXX Manager for acceptance. Each set of drawings shall be accompanied by a Certification Report which will be signed by the Developer's Engineer or registered Surveyor. The Certification Report will comprise the certificate and check lists set out in Annexure DQS-A.

Certification Report

2. Certification Reports shall be required with preliminary drawings and shall require resubmission with updates when final drawings are submitted. Certification is not required with sketch plans or concept plans.

Certification of Preliminary Drawings

3. The Certification Report shall indicate on check lists any aspects of design which do not meet requirements or tolerances set out in Council's Design and Construction Specifications and Subdivision Codes.

Design Non-conformance

DQS.05 MINIMUM DRAFTING REQUIREMENTS

1. Design drawings shall be definitive and clearly set out so as to present the design concepts in such a way that the project can be understood, specified for construction and satisfactorily built.

Criteria

2. All sheets within the drawing set should be clearly numbered by the designer with separate sheets numbered as part of a set. The first sheet of the plan set shall be numbered as sheet 1 and shall include the sheet index. All drawing sheets shall have an allocated space in the bottom right hand corner for an assigned number provided by Council (18 characters). Any 'works as executed' plans subsequently lodged with Council shall not be numbered as additional sheets to the original approved plan set.

Plan Sets & Sheet Numbers

3. The information shown on the drawings shall be logically collected on discrete sheets to avoid illogical and onerous effort in cross referencing between sheets in order to find information. Drawings should not be overcrowded with information and should not rely on colour printing or colour wash to impart information. Drawings should be on A1 or A2 size sheets and be suitable for black and white copying and photo reduction to A3 paper size without loss of clarity.

Logical Drawing Sheets

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

DQS.06 DESIGNER'S QUALIFICATIONS

1. A Civil Engineer deemed to be suitably experienced by Council and qualified so as to be accepted as a member of the Institution of Engineers, Australia or a Registered Surveyor deemed to be suitably experienced by Council shall be accepted as qualified to prepare plans for roadworks, drainage works, water supply, sewerage works (excluding pumping stations), canal works (excluding flood control structures and bridges).

Engineer Surveyor

2. A Civil Engineer qualified as detailed above shall be accepted as qualified to prepare plans for bridges, retaining walls, miscellaneous structures, buildings, pumping stations and flood control structure provided such plans are checked and certified by a practising Chartered Professional Civil or Structural engineer or a competent qualified practising Professional Civil or Structural Engineer.

Structural Design by Engineer

DQS.07 RECORDS

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

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

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

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

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

DQS.08 AUDIT

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

2. In order to provide for such audit, the Developer or the Developer's Consultant is to permit access to their premises by Council if requested on a mutually agreed basis.. ***Notice of Access***

CONTENTS

ANNEXURES

ANNEXURE DQS-A

GREATER TAREE CITY COUNCIL
DESIGN CERTIFICATION REPORT

Project Title: _____

DA/BA No: _____

Consultant's Drawing No: _____

Name of Consultant: _____

Name and Address of Developer: _____

_____

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

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

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

I certify that all structural elements of the design have been designed and/or certified by a competent qualified practising Professional civil or Structural Engineer.

Contact Phone: _____

Contact Postal Address: _____

_____

_____

_____

_____
Design Engineer/Surveyor Date

_____
Qualifications

Design Check List 1 BASE PLOT OF EXISTING FEATURES

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

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

Design Check List 2 HORIZONTAL ROAD ALIGNMENT

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

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

Design Check List 3 VERTICAL ROAD ALIGNMENT

		Check Completed By *(initials)*	Date	Not Applicable *(tick)*
3.1	Grades meet maximum and minimum requirements.		/ /	☐
3.2	Vertical clearances to bridges and services meet standards.		/ /	☐
3.3	Vertical sight distance is adequate for drivers and pedestrians.		/ /	☐
3.4	Cover to drainage structures or services is adequate.		/ /	☐
3.5	Vertical alignment is adequate for disposal of surface drainage from properties and from road.		/ /	☐
3.7	Vertical alignment is compatible with property access.		/ /	☐
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.		/ /	☐
3.9	Sight distance is acceptable for all accesses to roundabouts.		/ /	☐
3.10	Alignment coordination with horizontal alignment is in accordance with the AUSTROADS design guides as referenced in the AUS-SPEC specifications.		/ /	☐
3.11	Conflict with existing public utility services has been identified and resolved.		/ /	☐
3.12	Vertical road alignment setout data is clearly defined on the longitudinal sections.		/ /	☐

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

Design Check List 4 ROAD CROSS SECTIONS

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

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

Design Check List 5 ROAD AND INTERALLOTMENT DRAINAGE

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

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

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

Design Check List 6 SIGNS AND MARKINGS

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

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

Design Check List 7 PAVEMENT DESIGN

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

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

Design Check List 8 BRIDGE/MAJOR CULVERT DESIGN

		Check Completed By *(initials)*	Date	Not Applicable *(tick)*
8.1	The design has been performed by a competent practicing Civil or Structural Engineer.	_____	/ /	☐
8.2	Geotechnical data is assessed as adequate and is held on the design file.	_____	/ /	☐
8.3	The type and functional dimensions of the bridges meet AUSTROADS Bridge Design Codes 1992, AS 3600, AS 1684, AS 1170, AS 4100.	_____	/ /	☐
8.4	The type and class of all materials are indicated on the drawings.	_____	/ /	☐
8.5	Records of all significant design calculations are available for audit.	_____	/ /	☐
8.6	The design complies with any conditions of development consent.	_____	/ /	☐

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

Design Check List 9 EROSION AND SEDIMENT CONTROL PLANS

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

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

ANNEXURE DQS-B

EXAMPLE COMPILATION OF DRAWINGS

A. ROADWORKS PLANS

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

Sheet N^{o}	**TOPIC**
1	Development Consent Number Locality Sketch and Index of Sheets.
2	General Subdivision Plan with contour details and a clear indication of the extent of work.
3	Typical Road Cross Sections showing road widths, pavement (design) configuration, batter slopes, kerb and gutter types.
4.	Plan and Longitudinal Section of each road showing setout data and services.
5.	Drainage Plan and Schedule of Drainage Elements (Pipe lines and structures).
6.	Drainage Profiles.
7.	Drainage Structure Details.
8.	Road Cross Sections.
9.	Intersection Layout Details.
10.	Pavement Marking and Signposting.
11.	Erosion and Sedimentation Control Plans (short term and long term treatment).
12.	Structure Details – Bridges, Retaining Walls, etc.

NOTE
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.