

# **Engineering Guidelines for Subdivisions and Development Standards**

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## **PART 1 GENERAL REQUIREMENTS**

NOVEMBER 2018



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## 1. INTRODUCTION

The general requirements for Engineering Guidelines for Subdivisions and Development Standards Manual outlines Council's minimum standards for engineering infrastructure for the subdivision and development of land. The Engineering Guidelines for Subdivisions and Development Standards Manual will be updated on a regular basis to reflect changing development requirements.

The Engineering Guidelines for Subdivisions and Development Standards Manual is to be read in conjunction with the Development Consent and the planning instruments applying to the site

The developer will be responsible for the construction and costs of all civil engineering works associated with a development. All works will be carried out in accordance with the requirements of the Development Consent.

The Development Consent will list the civil engineering assets which Council will be responsible for upon completion of the works and following the issue of a Subdivision Certificate. All the engineering works should normally be constructed in accordance with Federation Council's Engineering Guidelines for Subdivisions and Development Standards Manual.

The developer will ensure that the detailed engineering plans meet all the conditions of the Development Consent.

A Subdivision Certificate will not be issued until the Development Consent conditions have been met in full.

Developers and their design consultants are encouraged to meet with Council's engineering staff prior to the design process commencing. This will assist developers to understand Council's philosophy in relation to the expected design standards.

The Subdivision and Development Guidelines comprise the following:

**Part 1      General Requirement**

Part 2      Design of Roads

Part 3      Stormwater Drainage Design

Part 4      Water Reticulation Design

Part 5      Sewerage Reticulation Design

Part 6      Landscaping, and Measures for Erosion, Sedimentation and Pollution Control

Part 7      Testing

## 2. REFERENCE DOCUMENTS

### 2.1 LEGISLATION AND STANDARDS.

These documents make reference to National and State legislation and both National and NSW State Standards where applicable. All national and NSW State Legislation must be complied with.

The appropriate standards may include those from;

- Australian standards
- Road and Maritime Services standards
- Water Services Association of Australia standards.
- Utility Provider Standards
- Industry Standards.
- Industry Codes of Practice

The minimum standards outlined in these Engineering Guidelines for Subdivisions and Development Standards Manual takes preference over both the national, state and industry standards.

### 2.2 ABBREVIATIONS.

|       |                                       |
|-------|---------------------------------------|
| AHD   | Australia Height Datum                |
| EP&A  | Environmental Planning and Assessment |
| MGA   | Map Grid of Australia                 |
| NSW   | New South Wales                       |
| W.A.E | Works as Executed                     |
| RMS   | Roads and Maritime Services           |

### 3. GENERAL

#### 3.1 COMMUNITY EXPECTATION

National Standards for Subdivision and Land Development change in response to community expectations. In recent decades there has been an increased emphasis on:

- Community facilities, public open space areas and landscaping.
- Water sensitive urban design, water conservation and water quality
- Energy efficiency and sustainability
- Community safety
- Biological and ecological sustainability

#### 3.2 ALTERNATIVE SOLUTIONS

Council may approve an alternative design solution to the requirements listed in the Engineering Guidelines for Subdivisions and Development Standards Manual. Developers will need to demonstrate that an alternative design solution is superior to the Engineering Guidelines for Subdivisions and Development Standards Manual when proposing an alternative solution the developer document the justification for the alternative design solution. The documentation will demonstrate the following is overall, an equal or superior solution. Some of the areas to be considered will be

- Asset Life
- Maintenance costs
- Operations and utility costs,
- Running costs
- Environmental Benefits
- Community Benefits
- Fitness for Purpose.

#### 3.3 DEVELOPMENT MASTER PLAN

Developers need to take into consideration the integrated provision of urban landscaping, roads, drainage, water, sewer, gas, lighting, telecommunications and electrical services. Council may require the developer to prepare an overall master plan. This should include both the development and any areas and services affected by the development.

The objectives of this masterplan are to ensure:

- Compliance with the Planning schemes
- Information provided in the Masterplan allows for an informed review of development impacts on the affected areas and services.
- That staged or multi developer developments can be delivered in a coordinated, safe and efficient manner
- That infrastructure is appropriately sized planned for future development.

#### 3.4 RECOMMENDED PROCEDURE

To facilitate the expeditious approval of the Detailed Engineering Plans, the following process is encouraged:

- Prior to the commencement of design, meet with Council staff to discuss site and engineering constraints and issues.
- Ensure that the infrastructure within the proposed development integrates with surrounding existing infrastructure, urban design and community master plans
- Develop a Master Plan where the proposed development is likely to significantly impact on existing communities or other developments. Council may require the Developer to develop a master plan.
- Prepare preliminary engineering Drawings and Specifications for review by Council.
- Provide all necessary supporting information including engineering studies and design calculations as well as information required by the Council.
- Review and comment by Council staff.
- Prepare full engineering drawings for the development in accordance with review and comment by the Council
- Review and approval by council.

### **3.5 AUTHORISATION TO PREPARE SUBDIVISION ENGINEERING PLANS**

Council requires that the Engineering design plans are prepared to Council's Standards by a person, either holding qualifications acceptable for Membership the Institute of Engineers Australia, accreditation by the Institution of Surveyors NSW Inc. or a person who has demonstrated experience and skills in the preparation of plans and specifications for land development to the satisfaction of Council's Director of Engineering Operations.

### **3.6 APPROVAL BY OTHER UTILITY AUTHORITIES**

The Developer will make all necessary enquiries, submit applications, prepare plans, pay all fees and levies, and obtain all approvals from Utility Authorities for services to be provided to the development. All the approvals will be submitted to Council prior to Council approving the engineering Plans.

Third party Utility Providers may include:

- NBN
- Telephone
- Electricity
- Gas
- Water in northern areas of the Council area

The developer will arrange written certification from each Utility Authority that the works associated with the Development have been completed to the satisfaction of the Utility Authority and all fees and levies to the Utility Authority have been paid.

### **3.7 LOCATION OF SERVICES WITHIN THE DEVELOPMENT**

The location and offset of services shall be as per Council's Standard Drawing for service locations.



All services shall generally run parallel to the road centreline and shall cross the road reserves as close as possible to perpendicular, unless otherwise approved by Council.

## 4. ENGINEERING DRAWINGS AND SPECIFICATIONS

### 4.1 DEFINITIONS AND SPECIFICATIONS

**Council** is defined as Federation Council or its delegated 'authorised council delegate' with sufficient and relevant authority.

**Developer** is defined as the person or organisation having benefit of the development.

**Contractor** is defined as the person or organisation carrying out the works on behalf of the Developer. Council's interactions in regard to the development will be with the Developer.

**Engineer** or **Consultant** is defined as a person either holding qualifications acceptable for Membership the Institute of Engineers Australia or a person who has demonstrated experience and skills in the preparation of plans and specifications for land development to the satisfaction of Council's Director of Engineering Operations.

Registered Surveyor is defined as a person registered under the Surveying and Spatial Information Act 2002 No 83 as amended.

### 4.2 SUBMISSION OF ENGINEERING DRAWINGS

#### 4.2.1 INITIAL DISCUSSION

It is recommended that the developer has an initial discussion with Council's Planning and engineering staff to allow an exchange of information and raising of potential issues to be resolved.

The initial discussion with Council to review the Development proposal may include but not be limited to:

- Existing features, adjoining property features, existing significant trees, historical items, topographical features, other unusual or significant features.
- Natural and proposed drainage paths.
- Effects of any filling or construction of structure which may impact on overland flows
- Disposal of any material taken from the development site.
- Extent of impervious surfaces
- Consideration of any onsite waste management systems, outside sewerable areas.
- existing car parking, paths and landscapes within the area.
- Traffic Management Requirements for a traffic engineering report (if required). This may include existing and predicted traffic volumes, road hierarchy, bus routes, traffic control features, traffic generating facilities. Traffic engineering reports should consider a 30year horizon consider overall neighbourhood growth.
- Identification of commercial, social and community infrastructure affected or included in the development
- Intersection treatments
- Flood levels including impacts of overland flows.
- Proposed Lot layout including driveway access, layout, and parking
- Proposed footpath layout and recommendations of the Pedestrian Access Mobility Plan (PAMP) (if appropriate)
- Proposed open spaces and linkages.
- Proposed car parking
- Proposed landscaping
- Proposed street lighting
- Proposed drainage

#### 4.2.2 DEVELOPMENT MASTER PLAN

Where Council considers that a development may significantly effect on surrounding areas, landscapes or services, it may require the developer to submit a master plan for the development.

The masterplan will address the impacts of the development on within the development area as well as surrounding areas. These will include visual amenity, community infrastructure council services and infrastructure.

#### 4.2.3 PRELIMINARY ENGINEERING PLANS

Initially submit one (1) preliminary set of plans and specifications. The plans will show all aspects of the development. In particular, they should demonstrate their compliance with the engineering requirements of the development set out in this Engineering Guidelines for Subdivisions and Development Standards Manual or identified in the initial Developer/Council meeting.

To allow Council staff to assess the merits of the development in regards to the recommended engineering infrastructure to be provided, the developer should also provide the appropriate catchment plans, flood plans, stormwater calculations specifications traffic studies etc. as supporting documents.

Alternative the Developer may provide an electronic version of the plans. These will be in format suitable to Council. Currently this includes a DXG or DXF file. The plans will be submitted as A3 plans and must be legible at this size.

#### 4.2.4 DETAILED ENGINEERING PLANS

The final plans will include:

Engineering 'A3' drawings are to be submitted in triplicate with a covering letter for signature. All plans produced at 'A1' size and submitted at 'A3' size must be legible at the A3 size. One set of approved plans will be returned to the applicant.

In addition the Developer may provide an electronic version of the plans. These will be in format suitable to Council. Currently this includes a DWG or DXF file. The plans must be legible at the A3 size.

For uniformity of plan presentation, all plan sizes, lettering, line work and symbols are to conform to AS 1100 - Technical Drawing Standards.

All scales are to be shown in the form of a 'bar' and a ratio scale. All drawings shall include a list of the symbols used.

The following items shall be detailed in the drawings, and be on a separate sheets:

- A cover sheet with a Locality Plan and List of Drawings
- Lot layout and easements
- Roads, intersections and Kerb and Gutter (plans, long sections and cross sections and pavement design)
- Stormwater lines and pits (plans, long sections and tables).
- Water Supply lines, hydrants, valves and tappings (plans, long sections and tables)
- Sewerage lines, rising mains, pits, valves and connection points (plans, long sections and tables)

- Landscape plan.
- Dust, Erosion and Sediment Control Plan
- Services Plan including Telecommunications, optical fibre, Electricity, gas

#### **4.3 SUBMISSION OF CONSTRUCTION SPECIFICATION**

The specification is the responsibility of the developer, and is to include reference to requirements contained within Council's Engineering Guidelines for Subdivisions and Development Standards Manual, together with the appropriate standard specifications to comply with the utility authorities' requirements..

Specifications supplied must be complimentary with the drawings. Care must be taken to ensure that the specifications do not contradict the plans.

#### **4.4 APPROVAL OF ENGINEERING DRAWINGS AND SPECIFICATION**

Council will review the Civil Engineering Drawings and Construction Specification for compliance with these guidelines. It is the responsibility of the developer to ensure that the designs and specification are technically correct and comply with the following:

- Council's Engineering Guidelines for Subdivisions and Development Standards Manual
- Relevant Australian Standards
- Relevant Local, State and Federal Government Legislation
- Council's Development Consent for the Subdivision

Subject to the Developer meeting all Council and third party utility authorities' requirements, Council will issue a Construction Certificate for the work.

#### **4.5 COMMENCEMENT OF WORKS**

The detailed, engineering plans and specifications shall be approved by Council and a Construction Certificate issued prior to the on ground works commencing. The Developer must notify council at least two days prior to commencement of on ground works (Section 81a (2)(b) of the EP&A Act).

Work must be substantially commenced within 5 years of the Construction Certificate being issued.

#### **4.6 DEVELOPERS RESPONSIBILITY**

The Developer will ensure that all the works are carried out in accordance with plans and specifications, meets workplace safety legislation/ regulations and is to the satisfaction of the Council and third party Utility Authorities.

The Developer is held responsible that the Development is fit for purpose. This includes carrying out additional works if necessary, but not identified on the approved Engineering plans, to ensure the infrastructure works as expected.

The developer ensure that the construction and installation of infrastructure does not adversely affect adjoining public and private properties' infrastructure or access.

The Developer is responsible for rectifying any errors or omissions, which become evident during construction.

Any variation to the approved plans will require Council approval and modification to the approved plans.

The Subdivision Certificate will not be released until:

- all engineering works (including supplying Works as Executed plans) are completed.
- certificates of compliance are provided by utility Authorities.
- all conditions of the development consent are satisfied (Section 109J (2) of the EP&A Act).

The Developer is responsible for all supervision of the contractors. They may appoint an independent person or company to act as the superintendent for the works required for the development.

The developer will ensure that all the required inspections are carried out.

The works and worksite remain the responsibility of the developer until the assets are formally handed over to Council.

## **5. SURVEY AND SETTING OUT REQUIREMENTS**

### **5.1 PROJECT SURVEY AND SETOUT.**

The Contractor is to set out the works using a registered surveyor or as otherwise approved by Council. The specification will outline the survey and set out requirements.

### **5.2 DATUM AND CO-ORDINATES.**

The survey shall be undertaken on Australian Height Datum and GDA94 co-ordinates.

### **5.3 BENCH MARKS**

Bench Marks shall be established within the works area at intervals not exceeding 100 metres and in accordance with sound surveying practice.

### **5.4 SURVEY CONTROL MARKS**

All plans of survey are to show connection to at least two survey control permanent marks where such exist in the vicinity of the subdivision or where practicable.

The survey control marks shall be in accordance with the 'Surveying and Spatial Information Regulation 2017'. Two copies of the locality sketch plans of the marks placed are to be forwarded to the Council with the final subdivision plan.

### **5.5 LOT BOUNDARIES**

Lot boundaries shall be established to the standard required by 'Surveying and Spatial Information Regulation 2017', prior to the final inspection of works.

## **6. INSPECTION OF WORKS**

### **6.1 INSPECTION AND UNINTERRUPTED ACCESS**

The whole of the road, drainage, kerb and gutter, water and sewerage construction works, which the Developer is required to carry out in respect of a development will be inspected as outlined in the approval or listed in these Engineering Guidelines for Subdivisions and Development Standards Manual.

All works are to be carried out to the satisfaction of Council. The Contractor / Developer is to provide uninterrupted access for the examination of any facilities, works and materials as requested by Council.

No work is to commence until the Detailed Engineering Plans have been approved by Council.

Council may carry out Audits of the elements of the works from time to time. The developer and contractor will allow Council and its agents access for this purpose. Council will give the 24hours notice of any such audit. The Audits will be at the cost to Council, however items found to require alteration or inclusion will be the developers cost.

All Utility Authorities' works are to be carried out in accordance with the requirements of the Utility Authority. The developer will comply with the Inspections and notification requirements from each Utility Authority.

### **6.2 PUBLIC SAFETY**

The Developer will be held responsible for the safety and efficient passage of the public through and/or around the works. The Developer shall not obstruct the free passage of the public unless public safety is at risk and no other means of ameliorating that risk is readily available.

The Developer shall provide all traffic and pedestrian controllers, lights, barriers, signs and fences necessary to prevent any accidents to the public or private damage or loss. The Developer shall provide, erect and maintain all necessary signs temporary roads, bridges, footways, drains and trench supports and protection in order to ensure public safety.

### **6.3 DAMAGE TO SERVICES**

The Developer is responsible for locating all services. The Developer will make all necessary enquiries regarding the location of services This will include 'Dial before you Dig' and any relevant service authorities. Where proposed works have the potential to conflict with services, physically locate the services on site. All details to be shown on the works as Executed plans.

In the event of any services being damaged or interrupted, the Developer shall notify the responsible Utility authority immediately and take all necessary steps to provide for the safety of the public. The Developer will repair the damage as quickly as possible. The cost of all repairs is the responsibility of the Developer.

### **6.4 TRAFFIC CONTROL**

The Developer shall prepare and implement an approved Traffic and Pedestrian Management Plans to ensure safe, continuous movement of traffic as required by Council or RMS.

All traffic Management Plans will be designed and installed by person with the appropriate NSW qualification from RMS.

Signs, barricades, barriers, warning lights, etc. shall be placed where works are in progress and in accordance with AS 1742 – ‘Manual of Uniform Traffic Control Devices’.

#### **6.5 FIRE FIGHTING PROVISION**

The Developer shall provide and maintain adequate firefighting equipment, take adequate fire protection measures during the works and take action to prevent damage to, or destruction by fire of bushland trees, shrubs, grasses or property.

#### **6.6 WORK WITHIN RAILWAY PROPERTY**

Before starting any work across a railway line or railway property, the Developer shall obtain written approval from the Rail Authority controlling the railway property.

The Developer shall comply with all requirements of the Rail Authority and complete work to the Rail Authority’s satisfaction.

#### **6.7 INSPECTIONS AND NOTIFICATIONS**

The Developer must provide the name, address and telephone number of the Principal Contractor at least seven days prior to the proposed date of commencement of any construction;

The Developer shall provide 24 hours to council notice for the following civil engineering works inspections:

- Completion of stringlines and formwork for Kerb and Gutter work
- Trench excavation prior to pipe laying
- Pipe laying prior to backfilling
- Completion of formwork and installation of reinforcement prior to concrete pouring.
- Pressure testing of water and sewer mains
- Stormwater drains
- Completion of subgrade preparation prior to placing of the base layer for trafficked areas
- Completion of each base layer for trafficked areas prior to compaction testing.
- Sealing or asphaltting of trafficked areas.

Council may inspect the works or request documentation and photographs to demonstrate that the work has been carried out in accordance with the approved plans and specification.

#### **6.8 RECORDS**

The developer shall submit if required by council, the following:

- Dockets and Test results from concrete suppliers for concrete supplied to the development
- Written advice from its geotechnical consultant that the subgrade and pavement layers meet the required standard prior to sealing.
- Pavement design
- All supply docket and sealing records for all sealing works
- Pressure and leakage tests.



The developer shall ensure that the contractor carries all necessary tests and inspections to ensure compliance with the approved Plans and Specification.

Council may prescribe additional tests and inspections to determine that acceptable standards of workmanship have been achieved. The additional testing and inspections will be initially at Council costs.

Where tests show that the required standard has not be met, the developer will carry out the replacement or rework to the required standard. The costs associated with the replacement or rework will be the responsibility of Developer.

The developer will be responsible for all costs and fees for additional inspections and testing.

## **7. FEES AND CONTRIBUTIONS**

### **7.1 SUBDIVISION/DEVELOPMENT INSPECTION FEES**

The developer will pay all fees for the development and inspections prior to council issuing a Construction Certificate for the work.

### **7.2 SERVICES/FACILITIES AND HEADWORKS CONTRIBUTIONS**

Section 7.11 and Section 7.12 of the Environmental protection act 1979 allows Council to develop a Development Contributions Plan. The Development Contributions Plan outlines the levy developers are required to pay to assist offset the additional costs of the providing future community infrastructure.

The levy is payable to Council prior to the release of the Approved Plan of Subdivision.

The services provided by Council for which Developer contributions may be applicable include:

- Roads & Traffic Management Facilities
- Open Space and Recreational Facilities
- Community Facilities
- Commercial Centre Car Parks
- Stormwater Drainage
- Sewerage
- Water Supply

## **8. BONDS AND GUARANTEES FOR PERFORMANCE**

### **8.1 RELEASE OF SUBDIVISION PLANS**

The Developer shall in writing, request Council to issue a Subdivision Certificate and release the Subdivision Plans following the completion of the works.

The Council will inspect the work carried out within 14 days of receiving the request. Council will issue a Subdivision Certificate and release the subdivision plans promptly if the Developer has carried out or supplied the following:

- Certification is provided that all engineering works have been completed to Council's satisfaction.
- Certificates from all utility authorities have been installed in accordance with their requirements.
- All required testing results have been provided in the approved format.
- Signed Works as Executed drawings have been provided in the approved format.
- All fees and levies paid.
- A maintenance bond has been paid.

### **8.2 MAINTENANCE OF WORKS**

The Maintenance Period will be 12 months and will commence on the date of the release of the Subdivision Plan. A maintenance bond shall apply during the period.

The developer is required to regularly inspect and maintain the development during the maintenance period. If maintenance is not carried out to the satisfaction of Council, Council may carry out maintenance to bring the development up to a satisfactory standard and apply the maintenance bond to recover the costs involved.

At any time during the Maintenance Period, Council may direct the Developer to rectify any defect in the work. If defects or omissions are not rectified to the satisfaction of Council, Council will be at liberty to rectify the defect and apply the maintenance bond for payment of the cost.

The nature of some defects, eg water main breaks, sewer main connections etc., may necessitate Council's immediate repair. The maintenance bond may be used for the costs unless the Developer elects to pay Council separately.

### **8.3 RELEASE OF BONDS FOLLOWING THE MAINTENANCE LIABILITY PERIOD**

A joint inspection will be held between the Developer and Council shortly before the end of the maintenance period. Following the inspection and after the completion of any rectification works by the Developer, Council will advise the developer in writing of the satisfactory completion of the maintenance period. Council shall arrange for the release of any bonds or guarantees to be paid within 28 days of the satisfactory completion of the maintenance period.

### **8.4 MAINTENANCE BOND**

A maintenance bond will be provided by the Developer to Federation Council prior to the release of the subdivision plan. The maintenance bond will be 5% to the value of the civil engineering works or \$5,000, whichever is greater. This bond will be held by Council to cover any defects or omissions, which may arise or become apparent in the Maintenance Period.

The Developer will submit evidence of a market rate value for the works to allow a fair value to be determined. The Developer may submit a copy of the successful Tenderers' bid for the Construction of the Subdivision Works to allow this bond to be determined.

The Bond will be in the form of a Bank Guarantee. All Bank Guarantees will not have an expiry date.

## **8.5 DEFERRED WORKS**

The Developer and the council may agree to defer some works where Council determines that it is not practical to physically construct the works at that time or there is a community benefit in delaying the works.

The Council will determine the conditions of the deferment. These may include the Developer paying the full costs of the deferred works to Council for council to complete at an appropriate time or the implementation of additional bonds/bank guarantees to allow the Developer to complete with timeframes set by Council.

## 9. WORKS AS EXECUTED (W.A.E.) PLANS

Works-as- Executed plans shall be prepared following the completion of engineering works. The plans are to be endorsed by a registered surveyor, professional engineer, development supervisor or other person approved by Council that the plans are true record of the works carried out.

The following signed endorsement shall be appended to each page of the WAE plans.

*I hereby certify that engineering works shown on the plan are Works-As-Executed and have been constructed in accordance with the plans and specifications approved by Council.*

*Plan No(s).*

*Name:* .....

*Signature:* .....

*Authority* .....

The plans will clearly identify any changes, additional work or deleted work from the original approved plans. The plans must show all changes of level or location from the original approved plans.

The Works as Executed Plans shall also include:

- The location (including footprint) of any site fill, the natural surface levels, finished surface levels and compaction achieved
- W.A.E locations of stop valves, hydrants, sewer manholes, sewer junctions, inter lot drainage inlet points and stormwater drainage manholes

CCTV is to be used in accordance with current applicable standards to locate all sewer junctions, and confirm the integrity of the installation. A digital MPEG format record is to be provided to Council as part of the conditions of compliance for the works.

A registered surveyor will supply a signed certificate stating that all pipes, conduits, and pits are located wholly within the respective easement or street reserve as shown on the Approved plan.

WAE plans should be provided in a DXF electronic format.