



MoES – G 2025 (DRAFT)

General Requirements

Manual of Engineering Standards

maitland
CITY COUNCIL

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G – General Requirements

1. Introduction

Council's Manual of Engineering Standards (MoES) is designed to support the delivery of quality civil engineering infrastructure for a range of projects benefiting the Maitland community. Its purpose is to streamline the processing of engineering submissions, ensuring that infrastructure is designed and built to be safe, functional, cost-effective to maintain, and aligned with community expectations.

This Manual has been developed to enable designers, Councils, and consultants to prepare compliant concepts and designs for civil works. The manual is intended to provide all the necessary design requirements for preparing Development Applications (DA), Subdivision Works Certificates (SWC), Roads Act Applications, and Construction Certificates (CC) for development works.

2. Preface

This Manual sets out the minimum standards and guidelines for engineering design and construction works in the Maitland City Council (MCC) Local Government Area. It is primarily intended for use by development professionals in the preparation of DAs and engineering design plans for the construction of approved works, including "SWC" under the Environmental Planning and Assessment Act (EP&A Act), Section 138 of the Roads Act

3. Aims & Outcomes

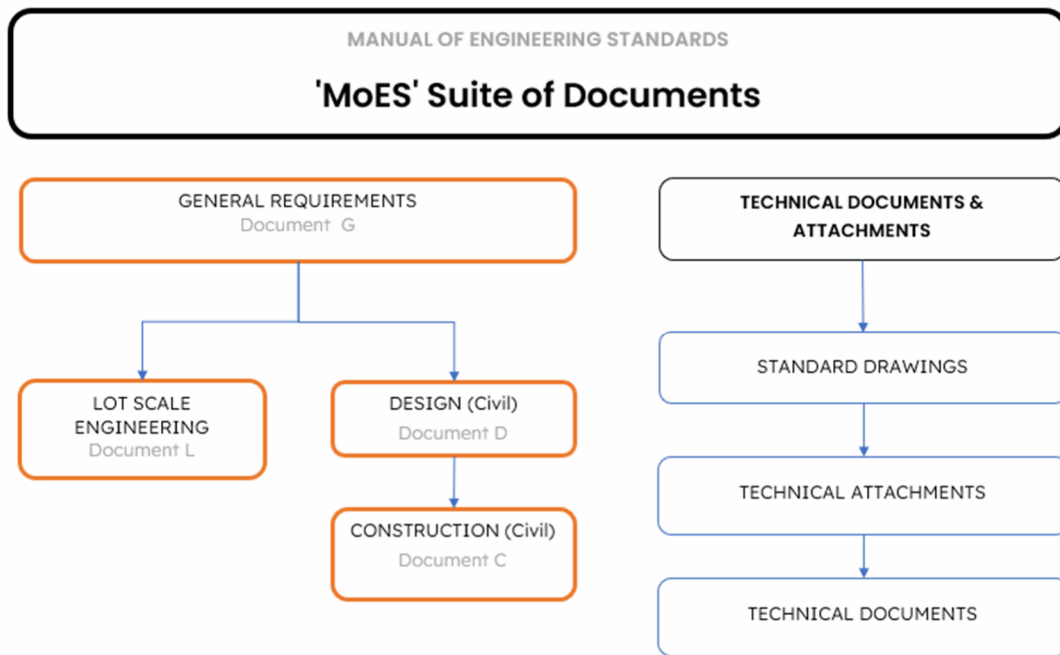
The aims of the **Manual of Engineering Standards (MoES)** are:

- To recognise and control development within natural landscape of acceptable infrastructure catering for the movement throughout of pedestrians, cyclists, and motor vehicles, and for the control of rainfall runoff as part of that infrastructure, and for appearance.
- To identify Council's expectations and requirements relating to information required in engineering plans and standards of engineering design and construction for subdivision and development.
- To promote best engineering practice and quality environmental outcomes.

The desired outcomes in the application of the Manual are (**SPEL**):

- **Safety** – for public usage of the built infrastructure.
- **Politic** – for prudent and tactful interaction in the practical matters with affected residents.
- **Environmental** – controls to protect adjoining and nearby residents and ecologies.
- **Liability** – optimise number and selection of infrastructure to minimise Council's maintenance responsibilities.

4. Structure of Manual of Engineering Standards



MoES is structured to provide a framework for engineering practices and guidelines for developments in the Maitland Local Government Area (MLGA). It is organised into four (4) key documents that outline standards and procedures relevant to various aspects of engineering projects. These include documents on general requirements, design criteria, construction, and lot-scale engineering. Each document is interconnected with references and cross-references, ensuring consistency and alignment across different aspects of engineering practice.

G: General Requirements

Document G: General Requirements serves as the foundational document, including overarching principles and processes that apply to two or more documents within the suite. It establishes the fundamental expectations and procedures that must be adhered to throughout the project lifecycle from design and construction to handover.

L: Lot Scale Engineering

Document L: Lot Scale Engineering provides guidance for small-scale developments, such as multi-dwelling housing, two-lot subdivisions, commercial, industrial, business developments, and other projects. These developments typically do not require the construction of public infrastructure including new roads and major public drainage, although some minor public works, such as footpaths or partial road upgrades, may be needed. The document aims to cover most topics relevant to small-scale developments (not already addressed in Document G: General Requirements), though some overlap with Design and Construction Documents may be necessary.

D: Design

Document D: Design focuses on the preparation of preliminary engineering plans and construction plans, addressing more detailed technical standards for larger civil engineering projects. It is primarily applicable to large-scale subdivisions and other developments that require the construction of public infrastructure, such as roads and drainage. This section does not cover private infrastructure. The requirements for civil earthworks including lot filling are also addressed in this document.

C: Construction

Document C: Construction outlines the construction requirements and critical engineering standards necessary to ensure safety, quality, and compliance. Its purpose is to support effective project management, enhance regulatory adherence, and promote best practices throughout all stages of construction.

Technical Documents and Appendixes

The manual also includes Technical Documents and Appendixes, which provide supplementary information such as Standard Drawings, erosion and sediment control, driveway design, street lighting design, etc. These attachments expand on and supplement the standards outlined in the main body of the manual. Typically located outside of the main documents, they are used in multiple processes or by different users, such as developers, Council programs, and/or resident-exempt development items. The goal is to provide easy access to this information without duplicating it across multiple documents.

Overall, MoES is designed to be a cohesive and integrated resource, ensuring that all development activities are conducted in accordance with established best practices and standard requirements. It serves as a vital tool for engineers, contractors, and stakeholders involved in development and Council projects, fostering consistency, quality, and compliance.

5. Disclaimer

This manual does not confer any responsibility upon Council with respect to the accuracy of the design and calculations for which responsibility fully rests with the applicant's consultants and designers. The applicant is responsible for ensuring design compliance with the relevant Development Consent, current Council's MoES, Australian Standards, legislations, and current engineering industry standards.

The engineer and professional are fully accountable and liable for the design and work. They cannot rely solely on meeting the minimum requirements of Council's MoES, as newer or higher standards demand a more rigorous design, particularly in terms of structural integrity and safety considerations. They must demonstrate current best technical practices and standards in their assessments, consistent with what any reasonable engineer would apply.

If work has not commenced prior to the lapsing of the Development Consent or two (2) years after the issued date of the SWC, the SWC should be amended to comply with the current version of Council's MoES and the latest industry standards. Reassessment fees may apply.

MoES Documents are intended to be a technical manual and should not be used as a works specification. It does not remove the need for compliance with all relevant statutory requirements.

Whilst this manual is a policy document of Maitland City Council, the information contained herein at the date of publication, is subject to revision by Council due to changing standards over time. Therefore, no warranty can be given that this Document represents current standards and technical practices at the time of their application in design and construction. The responsibility is on the user of this manual to verify the currency of information contained and referenced herein, prior to implementation.

Subsequently, certified/approved designs for works that are either on existing public lands or on land intended for dedication to the public, and that are older than two years, must be reviewed and rendered acceptable to Council, prior to construction.

6. Design Considerations

The design considerations complement technical standards to guide the design process. The following list, though not exhaustive, highlights some key considerations.

6.1. Design Life

All designs and construction shall provide a minimum design life of 25 years. MoES may specify a longer duration for certain items. Additionally, some industry requirements, such as those for concrete pipes and other prefabricated components, may specify a greater design life, which should be followed.

This design life requirement also applies to lot-scale items such as drainage and retaining structures. In some cases, rural residential lots may require the creation of small basins and level spreaders to manage stormwater. Earth basins and level spreaders, for example, may need to use concrete or other materials with a practical design life of 25 years or more.

6.2. Built To Owners Scale

For lot-scale infrastructure, designers must ensure that future maintenance and access to interallotment drainage lines and retaining walls can be effectively managed by lot owners and tenants in a practical and feasible manner.

While developers may use large excavators and machinery to construct major elements on a greenfield site, future owners will need to work around existing sheds, fences, and structures. In these cases, very small machines, hand tools, and wheelbarrows may be required. Designs, construction products, and techniques should be scaled to a level that is practical, economical, and safe for the intended owner to maintain and replace. Examples include:

- **Interallotment drainage** should not use concrete pipes or be placed at an unreasonable depth, which would require machinery and/or shoring boxes for future excavation.
- **Retaining walls** should not be excessively high to avoid the need for shoring during replacement. Tiering will create manageable scales for staged maintenance. The use of large concrete slabs and panels may be problematic.

6.3. Ongoing Maintenance

The ongoing maintenance of both public and private infrastructure is crucial during the design and construction phases. Council faces challenges due to the large number of public assets, making it essential to optimise quality and minimise the maintenance required to effectively manage and sustain new assets. Therefore, designers and Council must carefully consider the life cycle costs of maintenance, demolition, and replacement, ensuring these decisions are supported by practical, sustainable research, engineering practices, and scientific principles.

- Minimise maintenance tasks that offer no environmental or public benefit.
- Minimise unnecessary mowing areas and, where possible, ensure adequate space for Council's 72-inch mowers to manoeuvre as a minimum, unless an alternative maintenance size is specified. This will help reduce the need for hand machinery and manual labour.
- Ensure public land and stormwater maintenance areas are easily accessible to maintenance traffic. The design should include provisions for turning and manoeuvring of Council's maintenance vehicles. Council can provide guidance on identifying suitable pathways and the required vehicle sizes.

- Consider health and safety impacts, with particular emphasis on creating a safe working environment for maintenance personnel by providing proper access for machinery and equipment, reducing manual labour, and eliminating the need for temporary work pads and access tracks. For example, for open channels and swales, ensure adequate offsets and clearances from adjoining boundaries and obstructions to allow access from the road or top of the bank to the maintenance area.

A Maintenance Plan must be prepared by the designer and submitted with the design. Public infrastructure and drainage systems should be low-maintenance and economically sustainable. A cost-effective maintenance strategy must be developed and included in the Maintenance Plan.

6.4. Best Practice Design

An Appendix E titled "Best Practice" is a crucial component of the manual, outlining industry standards, regulatory requirements, and current state and national engineering guidelines that align with MoES. Since it is impossible for the Manual to address every scenario, Council, engineers, and designers may reference these documents to supplement MoES as needed. They provide valuable resources for maintaining consistency and ensuring designs meet the necessary safety and quality standards within the industry.

As legislation, standards, and technology evolve, designs must remain flexible to accommodate changing requirements and, when appropriate, emerging trends.

Where MoES does not provide guidance on a specific item, the designer must consult with Council to confirm whether the topic has been intentionally omitted or simply not covered in the document. This list should not be used as an opportunity to reinterpret or contradict MoES requirements, as long as they remain relevant and up to date.

This list refers to industry documents, including the Australian Rainfall and Runoff (ARR) Guide, Australian Standards, Austroads etc. While these documents may be updated between MoES revisions, they must still be complied with, even when revised.

The design must be submitted with engineering details, including but not limited to methods, parameters, assumptions, calculations, and certifications from the designer confirming that it has been prepared in accordance with the latest versions of Austroads, Australian Standards, and/or the ARR Guide. Any standards or specifications used must be current at the time of the application.

6.5. Safety in Design

The *Work Health and Safety Act 2011* requires designers to prepare a written report for any structure that may pose health and safety hazards to people. This report, known as a Safety in Design (SiD) report. The report must meet specific requirements outlined in the Act and its Regulations. The SiD report shall be submitted to Council along with the design, with a particular focus on infrastructure components such as basins, stormwater drains, roads, and paths. The report must detail design measures aimed at mitigating the associated risks.

The designer is legally responsible and accountable for all designs submitted, regardless of whether they meet minimum standards, even after they have been accepted and approved by Council. This responsibility extends to the construction phase, including any products, techniques, and processes the contractor undertakes. Not all 'engineering solutions' are good designs, and accountability does not transfer from the consultant/contractor.

When designing civil infrastructure, the designer must integrate construction considerations with the functionality of the location, its uses, and its elements. This integration should prioritise safety and future maintenance, employing strategies that are both low-impact and sustainable.

Basins shall be positioned directly adjacent to roads, with suitable vehicle access to concrete GPTs (Gross Pollutant Traps) and basin access tracks. Underground pipes and pit systems must be adequately screened if they are large enough for children to enter and for flood safety reasons.

6.6. Crime Prevention Through Environmental Design

Crime Prevention through Environmental Design (CPTED) is a multi-disciplinary approach aimed at enhancing safety by integrating crime prevention principles into the planning, design, and layout of communities and neighbourhoods. Its goal is to minimise opportunities for criminal activities and anti-social behaviour.

In designing public areas, including new streets, it is essential to prioritise community safety and consider how the design can deter potential crime. Elements such as plant selection, and the placement of lighting fixtures can significantly influence this. Vegetation or infrastructure that provides opportunities for concealment near pedestrian areas will not be permitted. The principles of CPTED include:

- **Natural Surveillance:** Designing spaces to maximise visibility, making it easier for people to see and be seen. For example, locate basins near roads so they can be seen from the front yard of four or more lots. Avoid narrow walkways between properties or dead ends/cul-de-sacs by designing connected streets.
- **Territorial Reinforcement:** Establishing a sense of ownership over a space through design elements such as clearly defined property lines, signage, and landscaping. This signals to potential offenders that the area is actively monitored and cared for. Example: Define public land and reserves from private land.
- **Access Control:** Regulating who can access a space and under what conditions. This can be achieved through measures like fencing, gates, and controlled entrances, which help manage movement and reduce opportunities for unauthorised activities.
- **Maintenance:** Ensuring that the physical environment is easy to maintain and care for. Neglected or poorly maintained areas can signal a lack of concern from residents or authorities, potentially attracting criminal activity.

For more detailed guidance on CPTED principles, the NSW Police Force website provides valuable information, as well as the outlined CPTED design principles in the MCC DCPs.

Council may also provide a list of how CPTED applies to civil infrastructure and spaces within its jurisdiction.

6.7. Designing For All Abilities

Designing for All Abilities refers to the principle and technical practice of creating streets and public spaces that are accessible and inclusive for people of all ages and abilities. This involves considering the needs of individuals with disabilities, elderly persons, parents with strollers, and others who may have mobility challenges or specific requirements. Key aspects of designing for all abilities typically include:

- **Accessibility:** Ensuring that streets and public spaces are accessible to wheelchair users and individuals with mobility impairments. This may involve providing ramps and accessible pathways that comply with accessibility standards.
- **Universal Design:** Incorporating features that benefit everyone, regardless of ability. Examples include tactile paving for visually impaired individuals, clear signage, seating areas, and adequate lighting.

- **Safety:** Designing streets with safety in mind, considering factors such as traffic flow, pedestrian crossings, and visibility to minimise risks for all users.
- **Inclusivity:** Designing spaces that are welcoming and accessible to diverse users, fostering a sense of community and social interaction, and ensuring that streets are safe, inclusive, and accommodating for all.

GENERAL PROCESSES AND REQUIREMENTS

7. Introduction

This section focuses on processes that are involved as a developer moves through from concept, design, construction and signoff of civil works. This section assumes that Council or another authority has granted consent for the project, however it may also be applicable to other scenarios.

It is recommended that the Consultant/Project Manager consult with Council prior to commencement of design and construction to discuss the following requirements:

- conditions of consent,
- local conditions,
- intended design,
- construction methods; and
- materials.

Design and construction shall be carried out in accordance with this Manual and any amendments the subject of a “revision” of any part of the Manual and being the version current at the time of either the design or the construction. Should elements of a design, for the intended dedicated public works, at the time of construction, be considered by Council to be a variation to this Manual (the version current at the time of construction), the engineering plans under that certificate shall be reviewed and amended where necessary to ensure that the design and construction requirements meet current standards.

8. Project Manager & Principal Certifier

On all Subdivisions and Developments that require construction works, a specific person nominated to act as a Project Manager must be appointed. In addition, the project must have an appointed Principal Certifier (PC) for the entirety of works approved under the EP&A Act.

In the case of subdivision or where it is intended that works be dedicated to the public, Council must be appointed as the PC unless legislation allows otherwise.

In the case of works within an existing public road, approval for the works and an engineering design may only be obtained under the Roads Act from either Council or from TfNSW when relevant.

The Project Manager must be readily available and have sufficient authority and ability to discuss and resolve any operational problems that occur during the works.

9. Definitions

- Council’s Engineer refers to Council representative, who is the authorised responsible person for certification of subdivisions and development works. Generally, also the PC.
- Certifier refers to the definition within the EP&A Act.

- The Applicant (representing the Owner/Developer) refers to the person with authority to make decisions regarding the project and may be the Project Manager.
- The Contractor is the primary contractor/person engaged to carry out work.
- Approved, in the context of construction refers to any materials or treatments determined by Council's Engineer or Certifier to be suitable to meet relevant standards.
- Footpath, or shared path refers to the paved path which may be within a footway, pathway, or public reserve.
- Footway refers to the roadside verge between the road pavement and the road reserve boundary.
- Cycleway, a generic term used to describe a bicycle route, lane, or path or that part of a separate path used for riders. It is usually within a road pavement and dedicated by markings for cyclists.
- MoES, Manual of Engineering Standards.
- Planning Scheme refers to an adopted planning strategy/policy including Local Environment Plan (LEP), DCP, precinct plans.
- PC or Principal Certifier, as defined under the EP&A Act. Previously also called PCA (principle certifying authority prior to legislation changes
- TfNSW, Transport for New South Wales. Interchangeable with Roads and Traffic Authority (RTA), Roads and Maritime Services (RMS) and any future changes.
- Zoning, as applied by the Maitland Local Environment Plan (LEP).

All fees and contributions shall be paid in accordance with Council's fees and charges policy.

10. Design & Construction

10.1. Preliminary Engineering Plans (for Development Applications)

Engineering plans shall be prepared by suitably qualified and experienced consultants, satisfying the requirements of this Manual, as well as relevant Development Consent, Roads Act approval, or other processes that call for the use of MoES. Preliminary Engineering Plans outline a project's initial concepts and feasibility at the DA stage, providing primary details for approvals and costing. Construction Plans provide detailed instructions, including drawings and specifications for the execution of the project. While Preliminary Engineering Plans focus on planning, Construction Plans are used for construction purposes.

10.2. Endorsement by an Accredited Professional

All submissions shall be endorsed by an Accredited Professional as outlined below. All professionals shall be suitably qualified, practicing, and able to provide current insurances and indemnities. For any additional requirements or uncertainties, contact Council for clarification.

TYPE OF DOCUMENTATION	ACCREDITED PROFESSIONAL	AREA OF PRACTICE
Plan of Subdivision Spatial & Boundary Definition	NSW registered surveyor	Spatial data and land surveying
Works-As-Executed Plan (WAE)	NSW qualified surveyor	Engineering surveying
Civil Engineering Drawing	Professional Engineer	National Engineer Register (NER) civil, Chartered

		Professional Engineer (CPEng) civil
Structural items such as oversized pits, headwall, bridges, retaining walls, flood mound, etc.	Chartered Professional Engineer	NER structural, CPEng structural
Precast items	Chartered Professional Engineer or manufacture compliance certificate, as directed by Council	NER structural, CPEng structural
Geotechnical engineering including road construction, slope stability, basin structure, landslip, earthworks, and any geotechnical structural components	Chartered Professional Engineer	NER geotechnical, CPEng geotechnical
Traffic Management Plan and Traffic Guidance Scheme	Traffic control work license: prepare a work zone traffic management plan	Road safety
Landscaping	Registered landscape architect or accredited landscape designer	Landscape architect/landscape designer
Bioretention planting and other water quality planting	Suitably qualified engineer	NER environmental, CPEng environmental
Arboricultural	NSW registered arborist or holder of AQF Level 5	Arboriculture
Bushfire	Bushfire planning and design (BPAD) accredited	Bushfire
Public Lighting and Electricity	NSW Level 3 Accredited Service Provider (ASP) for designing distribution works	Electrical
Dilapidation report for civil infrastructures	Suitably qualified engineer or registered survey	Qualified engineer or surveyor

10.3. Construction

No work shall commence on the site until:

- The project has “Development Consent”,
- The engineering designs have been approved,
- The SWC, CC or another Certificate issued (eg S138, S68),
- Conditions of consent/approval that require action prior to commencement of works, have been satisfied; and
- The PCA has been appointed and notified of intention to commence, and payment of any necessary fees has been made.

Long Service Levy shall be paid prior to the issue of the SWC/CC. Two working days' notice in writing to the PCA is required prior to the commencement of site works. PCA fees shall be paid prior to the commencement of site works.

10.4. Safety of work

For works within the road reserve, the applicant or contractor, or landowner is responsible to erect and maintain approved standard safety devices such as fencing, barricades, signs and where necessary, lights in accordance with Council's standards and requirements. The worksite shall be kept in a tidy condition and maintained safe for pedestrian access for the duration of the work. Upon completion of works and removal of formwork, barricades, etc, the adjacent footway shall be filled or trimmed along the edges of the works to an even grade with a maximum slope of 1 in 8 (i.e. a 100mm rise or fall over a distance of 800mm).

10.5. Removal of Defective Works

Council retains the right to alter, repair or in some cases, remove and replace any work on public reserve/land for which approval has not been obtained, or that has not been carried out in accordance with this Manual, or is considered unsound or unsafe, or is of poor workmanship. The work would be undertaken by Council at the full cost of the responsible person, recoverable in accordance with the Roads Act.

11. Insurance/Levy

11.1. Public Liability Insurance Policy

Contractors engaged on Developments or Subdivision Works are to have current Public Liability Insurance to the minimum value of \$20 million before commencing construction. Minor works that are not on road pavements may be able to have \$10 million at Council discretion. The policy is to indemnify MCC and/or the TfNSW where works occur in a public space. Council can require a higher minimum value on a site-by-site basis within public land.

11.2. Workers Compensation

Contractors engaged on Development or Subdivisional works are to have a current Workers Compensation insurance Policy for all employees, as required by legislation.

11.3. Professional Indemnity Insurance

Accredited Certifiers shall be insured in accordance with the requirements of the EP&A Act and the relevant Accreditation Body.

11.4. Long Service Leave Levy

In accordance with the EP&A Act, payment of the levy where applicable, must be paid prior to issue of the relevant SWC/CC.

12. Works on Public Land

Where works within public land such as a "road" or "open space" are necessary or are required through Development Consent under the EP&A Act, (such as road pavement, kerb & gutter, footpath, drainage, embellishments, etc) those works must be approved under Councils required application

process, and completed to the written satisfaction of Council prior to issue of either the relevant Subdivision Certificate (SC) or Occupation Certificate (OC) issued under the EP&A Act, or as stated in the consent.

12.1. Council Approval

Approval under S138 of the Roads Act or S68 of the Local Government Act shall be obtained from Council for any works on public land and/or for carrying out public stormwater drainage works. S138 or S68 approval may be combined with a SWC issued by Council, or it may need to be obtained separately from Council where a private certifier issues the SWC/CC for the private land component of the works.

12.2. Approved Contractors

Works within a road reserve or other public land may only be performed by an experienced contractor who is approved by Council. The developer/builder shall apply to Council for that approval of the contracting company. Council has the right to reject a contractor or sub-contractor if they are not demonstrated to be appropriate. Factors which Council may take into account in determining the suitability of a contractor may include, but not be limited to, suitable experience, capability or past performance.

12.3. Commencement of (Minor) Works

Minor works in public roads involve small-scale activities such as stormwater connections, removal of redundant crossing and/or layback, service installations and adjustments, minor public infrastructure works etc. Prior to commencement of work, the contractor/builder shall have obtained written consent to commence works from Council and shall submit to Council:

- Evidence of currency of public liability insurance and relevant insurances,
- The method of works and proposed plant usage,
- The proposed duration of the works: and
- A traffic management plan (if required).

The contractor's representative must be present at the critical inspections required by this Manual.

Regarding works in a road reserve relating to property driveway access and installation of services, general term of conditions for "opening" a road, (such as trenching across a road pavement and/or within the road verge) should be referenced. These documents are available from Council as part of a Road Opening application. Minor works, such as a driveway or stormwater pipe connection to the street drainage system, may be applied for, and consented to, under Council form "Work Application on Council Land and Roads".

For matters relating to the disruption of normal vehicle and pedestrian traffic movements and related to works (such as trenching) that may involve temporary or partial road closures, refer to Document C : Construction. These works may require the submission of a Traffic Guidance Scheme, which must be approved by Council before proceeding.

12.4. Road Closure

Permanent road closures may only be inaugurated by Council. An application to Council is necessary for consideration of such a proposal.

12.5. Locks on Public Land

Where locks are needed on public land, such as for maintenance gates, removable bollards, and switchboards, the contractor shall install locks during construction. The contractor shall contact Council through the subdivision inspectors to schedule a time to swap out the locks at the completion of works. Public

13. Utility Services

Electricity, communications, water, sewer (and natural gas where applicable) shall be provided to subdivision developments in accordance with the relevant provider's requirements and in accordance with conditions of Development Consent.

For Subdivision Works Approval – Utility plans shall be provided along with typical sections of the utility allocations within the verge, or, if not yet approved, pending locations clearly marked as draft.

At Construction Phase – A copy of the stamped approved plans and the approval from the appropriate utility providers shall be provided to Council within two (2) weeks following the issued date of the SWC (or Roads Act Approval), and before the placement of road pavement materials and public stormwater pipes.

At Practical Completion/SC – WAE plans for all utilities and services are to be submitted to Council upon the completion of all works.

The Developer is responsible for rectification of any damage to services resulting from construction activity.

All trenching and restoration shall be carried out to the provider's and Council's requirements. Adjustments to services, required by the development, shall be the responsibility of the Developer/Contractor.

Any restoration work shall match the existing surfaces, such as turf, concrete, asphalt, or pavers, or as otherwise directed by Council. Restoration within specific parts of Maitland CBD shall be undertaken at the developer's expense but constructed only by Council, in line with Council's fees and charges.

It is the applicant's responsibility to check whether the proposed works affect any Public Utility mains installation or any proposed new mains. Council cannot guarantee that future "openings" within the road reserve for the installation of mains, will not be required.

Where underground works within the road reserve are required or necessary for supply of services to the development site (such as water, sewer, communication, electricity, gas), further consent for a "*Road Opening*" must be obtained from Council.

13.1. Utility Services General Requirements

Council's typical sections cover local lot-scale servicing only. For trunk mains, all utility locations and details require Council approval. Developers must submit typical sections to Council outlining utility allocations within the proposed verges for both local and trunk main servicing. Additional verge width may be necessary for non-standard items that do not fit within the standard verge allocations. Typical cross sections shall have a layout and level of detail equivalent to the Standard Drawing SD001 and should include the following details:

- Shared service trench for standard electricity, gas, and telecommunication conduits,
- Trench for water mains conduit up to 300mm in diameter for lot connection,

- Electrical pillar box,
- Special infrastructure for major electrical, gas, and telecom conduits, large water mains (over 300mm in diameter), and telecom manholes,
- Deep soil zone reserved for street tree planting,
- Streetlight pole,
- Public stormwater drainage system,
- Footpath,
- Roadway including kerb and gutter; and
- Property boundary.

13.2. The Electrical Power

For new urban residential, business, and industrial subdivisions, all utility services shall be installed underground.

Council shall be notified in writing where a developer considers that above-ground services are unavoidable. Negotiations with Council's Infrastructure and Works Engineers shall occur prior to submission of relevant plans and documentation. Modification of subdivision consent/plans will likely be required to incorporate wider verges capable of accommodating aboveground utilities

In "large lot" residential R5 zoned areas, power shall be underground unless otherwise agreed with Council and the energy provider. In rural RU zoned areas, overhead services are acceptable, their use being in the form of Aerial Bundled Cable (ABC) as the preferred option.

13.3. Street Lighting

The major purpose of street lighting as defined by Australian Standards is required to "assist pedestrians to orientate themselves and detect potential hazards and to discourage fear of crime and crime against the person while protecting the integrity of the nighttime environment through control of light spill and glare".

Street lighting shall be provided for all new subdivisions for urban residential and business release areas as determined by Council. Design shall be generally in accordance with:

- Australian Standard AS1158 part 3 as a design guide,
- Council's Standard Drawing SD001 for pole standard location and footing; and
- Council's Technical Document: Street Lighting.

13.4. Other Authorities

All works shall be carried out in accordance with the requirements of relevant Government Authorities, for issues that relate to Planning, Environment, Fire, WORKCOVER, etc. The developer is responsible for obtaining all required approvals.

14. Public Reserves

Land to be used for any of the following purposes shall be dedicated to Council as a Public Reserve:

- Areas of land to be dedicated to Council as a nature reserve (generally in its natural condition perhaps with a path),

- Local parks (usually embellished for recreational activities for children),
- Drainage reserves (predominately for stormwater drainage devices but may include surrounding recreational amenity, seating etc); and
- Playing fields (for organised sports).

For assistance in planning for public reserves (including associated playgrounds) developers should consult Council's adopted policies (for example see "Functional Brief: Local Playground") and seek consultation with Council personnel for each purposeful reserve type. Council's Development Contribution Team and Community and Recreation Planning Team may be contacted to determine the applicable development contributions or to confirm any alternative arrangements for development contributions. Drainage & Nature Reserves

Land to be dedicated to Council in its natural condition shall be left safe and tidy, free of hazards to public safety and made suitable for mowing (where appropriate) and being slashed prior to final inspection. All areas shall be managed in accordance with Environment, Vegetation, Landscaping & Heritage Section of this Document. Designated reserve areas shall not be used to stockpile deleterious materials or waste. Revegetation shall be required where damage is caused to reserve areas.

Where directed by Council, signposting, setting out the restrictions on the use of the reserve, shall be erected. Proposed reserves shall be examined for termite nests, by a qualified pest control person. Any identified nest shall be eliminated prior to issue of a SC.

Defined paths through natural reserves shall be made safe by the removal of trees/limbs and shrubs with potential to either fall onto the path. Adverse screening adjacent to the path caused by vegetation that may impede normal surveillance or create "entrapment" opportunities shall be removed.

Trees/limbs adjacent to and overhanging adjoining properties shall be removed. An assessment by an arborist or a Council officer shall be made prior to the work being performed.

Land to be dedicated to Council for drainage purposes shall be planned to ensure safety for areas that may attract public access, provide low-maintenance vegetation, and ease of access and manoeuvrability for mowing and maintenance plant. SWC and/or structural certification will be required for all structural elements.

In planning for drainage reserves, the area of land set aside should:

- be kept to a minimum for that purpose except as may be deemed necessary where coincidental with other non-drainage uses.
- Consider potential expansion of drainage infrastructure for future contributing catchments.

14.1. Parks & Playing Reserves

Land that is designated through planning strategies to be local parks and playing fields shall be subject to specific Development Consent. All proposed improvements shall be approved by Council.

Improvements shall be inspected by Council officers and all approved equipment and facilities installed, shall be certified by either the manufacturer or a suitably qualified person, as satisfactory for public use and compliant with Australian Standards or some other appropriate standard.

Parks shall be serviced and enhanced with:

- Water supply (including irrigation sprinklers with appropriate safety control devices) for establishing vegetation,

- Landscaping in accordance with an approved plan conducive for efficient maintenance,
- Lighting only where specifically required by Council (preferably solar powered),
- Path paving at a minimum width of 1.8 metres and concrete edging around specified areas,
- Disability access,
- Maintenance vehicle access and lockable gates,
- Barriers such as steel bollards and fencing to deter unauthorised vehicle entry,
- Signposting nominating restricted activities within the park; and
- An assessment for suitability of any existing trees, as per Document G: General Requirements - Environment.

Where structures such as steps, handrails, ramps, balustrades, retaining walls, and other public use components are provided, they shall comply with the relevant provisions with design parameters for such items outlined in the Building Code of Australia and Australian Standards. For example, stairs must comply with the BCA regarding their design and construction.

14.2. Operation and Maintenance

Maintenance Manuals or Operation and Maintenance Plans for items such as public reserves, sports facilities, gross pollutant traps and like structures shall be prepared and submitted to Council prior to issue of a SC or OC for each type of reserve item indicating the location of infrastructure and services and including a maintenance and replacement regime for each applicable component.

15. Subdivision Certificate

An application for a Subdivision Certificate shall be made in accordance with the requirements of the EP&A Act and the EP&A (Development Certification and Fire Safety) Regulation.

Prior to issue of the SC, the following items (but not limited to those items) shall be satisfied:

- Compliance with the Development Consent,
- Submission of evidence that satisfactory arrangements have been made with the utility, authorities,
- Payment of all contributions and fees,
- Submission of bonds (cash or bank guarantee) where necessary,
- Submission of a copy of any instrument required under the Conveyancing Act. Regarding the creation of inter-allotment drainage easements under section 88B of the Conveyancing Act, the person or authority given the power to release vary or modify such easements shall be *“the lots burdened, and the lots benefited, only with the consent of MCC”*,
- Practical completion of construction works,
- Submission of geotechnical reports and test results including pavement layer details,
- Submission of WAE Plans,
- Lot classification as determined by AS 2870; and
- PDF copy of utility plans accompanying the WAE.

15.1. Lot Classification

Lot classification in accordance with AS 2870 is required for land within various planning zones, in accordance with the following guidelines:

- Residential (R1) – the classification shall apply to the whole of the lot.
- Rural – classification is not required.
- Large - lot Residential (R5) – the classification shall apply to the whole of the lot or that portion of the lot considered suitable for dwelling construction.
- Industrial and business zonings do not attract classification requirements by Council.

Regarding a ‘P’ classification, where subdivision work (such as filling) is performed on the land the subject of Development Consent, Council’s preference is that the works be performed such that no lot be classified as such. Similarly, land that in its natural state is determined to be “P” classification is considered by Council as not a desirable outcome for release, and the developer must consider performing works to improve the classification.

A “P” classification signifies that the land is considered to have limitations or constraints that affect its suitability for development. Improving land’s classification ensures future development aligns with the long-term planning goals and standards, ensuring sustainable and effective land use planning in MLGA.

15.2. Road Widening

Road widening involves an adjustment to a road reserve boundary such that a part of a property may be acquired by or dedicated to Council as “public road” in accordance with an adopted road widening scheme or as a requirement for planned works within Council’s construction programme. Where a SC is to be issued for a development, the widening shall be shown on the survey plan.

16. Bonds

Bonds are generally considered for the following:

- Repairing any damage caused to public infrastructure/property resulting from activities related to the consent.
- Completing public works (e.g., roadworks, kerbing and guttering, footway construction, stormwater drainage, environmental controls, landscaping, and other significant infrastructure) required in connection with the consent.
- Rectifying public work defects arising within twelve (12) months after completion, etc.

Bonds will generally be required by a condition of consent, by another agreement such as a Works in Kind Agreement, by a Council policy such as MoES, or other relevant legislation or policy.

In addition to the bond amount, there will be bond handling fees as set out in Council’s current Fees and Charges. These fees include charges for receiving the bond, conducting inspections of the work, and processing the bond release.

Where the developer fails to complete, reinstate, or maintain the works during the bonding period, Council may draw on the bond to complete the necessary work and cover the costs from the bond amount.

16.1. Works Maintenance Bonds (WMB)

WMB is a bond required for developments creating public infrastructure and is set at 5% of the cost of works, held for twelve (12) months. The bond ensures the contractor repairs any defects that arise during the maintenance period.

The greater of the 5% calculation or a minimum fee of \$10,000 is required. Applicants must provide evidence of the construction works contract price to Council to determine the bond amount. The fees may be adjusted annually in accordance with Council's adopted fees and charges.

The maintenance or bonding period commences either on the date of registration of the SC or the date of the Practical Completion Certificate for work not associated with a SC. Prior to the bond payment being received by Council:

- All services must be completed,
- WAE plans must be submitted to Council,
- Any works posing risks to public safety must be completed; and
- A lot-classification report must be undertaken, as applicable.
- All required contributions and fees stipulated in the consent must be paid in full.

The bond provided by the applicant must be submitted to Council either as an unconditional bank bond or in cash. To accurately determine the bond amount, applicants must provide evidence of the appropriate construction work contract price.

If no application for a bond refund is submitted to Council within six (6) years from the payment date, or if the bond account has not been operated for at least six (6) years, the remaining bond amount may be transferred to the Chief Commissioner of State Revenue under the Unclaimed Money Act 1995.

16.2. Performance Bonds

Performance bonds may be required for several reasons, including:

- Landscape maintenance and/or establishment periods,
- Monitoring the performance of the constructed infrastructure or item, guaranteeing that it will function as intended for a certain period after the work is completed. If the infrastructure doesn't perform as expected (e.g., it fails to meet performance criteria or has defects), the bond may be used to cover the cost of repairs or replacement; and
- Situations where the construction quality of an item is questionable and requires a period of observation, which may include its removal and replacement.

The bond amount and terms will be set by Council. A formal bond agreement may also need to be entered into.

16.3. Outstanding Works Bonds

Consideration of a bond shall be given when works are substantially complete, and construction items are delayed due to circumstances beyond the reasonable control of the developer or contractor. Bonding is strongly discouraged and is at the sole discretion of MCC. Council may refuse to accept a bond if it determines that the bond presents an unacceptable risk or offers no public benefit. The purpose of the bond is to ensure that the infrastructure related to a development or subdivision is completed without imposing undue financial burden on Council or the community.

Consideration of the bond will be subject to the following conditions:

- The works do not adversely affect the operation of the development.
- The incomplete works do not present a safety issue that cannot be satisfactorily managed.
- The incomplete works and their subsequent completion will not inhibit the commencement of building development on the new lots.
- Council considers the public benefit outweighs the risk.

All agreed works are on public land and may be undertaken by Council, or on its behalf, if the developer fails to complete them within a reasonable timeframe.

The bond amount is typically a minimum of 200% of the determined costs/quote or \$10,000, whichever is greater, and must be satisfactory to Council. Higher amounts may be required if Council identifies additional risks. If the works are not completed within the specified timeframe and Council has not used the bond money to execute the works, Council may require additional security to account for annual indexation in accordance with the Consumer Price Index (CPI). The minimum fee will be updated annually in Council's Fees and Charges.

The following works must be completed before a bond for outstanding works will be considered:

- Roads with a primer seal applied.
- Disturbed soil stabilised.
- Water and sewer connections completed and tested.
- Geotechnical reports regarding land suitability submitted and deemed satisfactory.
- All-weather access provided to each allotment.
- Drainage systems/structures in place.

Items that may be considered for bonding, where justified, typically include:

- Asphalt, due to large delays in industry supply.
- Sections of footpath paving affected by justified issues, such as utility considerations.
- Turf beyond that necessary for stabilisation.
- Signposting and line-marking not deemed essential for public safety.
- Landscaping with justifiable reasons.

16.4. Bond Process

Where the proposal meets the criteria for bonding set out in Sections 16.1, 16.2, or 16.3, the applicant shall satisfy the following:

- Provide a timeframe schedule for completing the bonded works. The outstanding works bond is generally three (3) to six (6) months maximum.
- Provide a quote from a suitable quantity surveyor, registered land surveyor, or qualified engineer/contractor for the cost of the works. The quote shall include site establishment and demolition, labour, traffic control, contingencies, and other relevant factors. The quote must be treated as a standalone project by a new contractor, as unit rates from the original and larger contract are not appropriate for the smaller scale of the bonded works.
- Provide a suitable security in the form of cash, a bank cheque, or an irrevocable bank guarantee (from a reputable financial institution) to cover the bonded amount.
- Enter into an agreement with Council outlining the terms of the bond. The agreement shall include a written program for the completion of bond works, including plans that identify the scope of works to accompany the quote estimate.
- Provide Council with authorisation for unrestricted access to the development site at any time to inspect and/or carry out works as necessary.
- Pay the relevant associated fees in accordance with Council's Fees and Charges, typically including bond inspection fees and bond administration fees.
- Pay any required contributions and acknowledge that contributions cannot be covered by a bond.

- Install temporary measures to ensure public safety regarding the incomplete works and their completion. These measures may include signposting, temporary fencing, and traffic control.

Note:

- Any bank guarantee shall not have an expiry "sunset" date and must include a statement regarding Council's absolute right to draw on the security to carry out the works and, if necessary, recover any additional costs incurred in the execution of the works.
- No interest will accrue on cash deposits.
- Council will not release any part of the bond to a third party without written consent from the bond applicant.
- The bond may be drawn down in stages according to the agreed schedule or as related works are completed, with Council approval. Administration fees will be charged for each change made to the bond. Where the bond applies to an entire stage, all works required under that stage must be completed before the bond can be released. Separate bonds may be required for different types of work, such as one for outstanding civil works and another for vegetation.
- The bond will only be released once Council is satisfied that any identified damages have been properly addressed and/or the required works have been completed, following an inspection by Council.
- Where no application for a bond refund is submitted to Council within six (6) years from the payment date, or if the bond account has not been operated for at least six (6) years, the remaining bond amount may be transferred to the Chief Commissioner of State Revenue under the Unclaimed Money Act 1995.

17. Works as Executed

WAE plans for the approved civil works, including utilities and services, shall be submitted to Council upon completion of the works. These plans must be accompanied by the Quality Assurance (QA) documentation. This submission is necessary for future reference, regulatory compliance, and to ensure that Council has up-to-date records of the completed works. The plans will be used to verify that the work was completed as per the approved specifications and will be required for any future maintenance or modifications.

WAE plans (or the equivalent electronic files) shall be submitted in the format required by Council. The WAE information, survey, and spatial data shall be endorsed by a suitably qualified surveyor who is independent of the contractor. The WAE information may also need to be certified by a qualified practising chartered civil engineer (or an equivalent professional), as deemed satisfactory depending on the scale of the works, at Council's discretion. The developer must engage an external professional to complete the WAE information and cannot self-certify their own work.

The endorsement shall include:

- Name, contact information, and company name of the surveyor/engineer.
- Clear description of the relevant stage number and development.
- Signature of the responsible professional(s) and the date of certification.
- A copy of the professional indemnity insurance and public liability coverage.
- Include the professional registration number of the surveyor and/or engineer.
- A statement detailing the surveying methods employed, including the type of equipment used (e.g., GPS), and the horizontal and vertical accuracy of the methods. (Note: Certain GPS tolerances may not be suitable for all purposes).

- Certification from the engineer (or an equivalent qualified professional) confirming that the WAE information accurately reflects the constructed works, where required by Council.
- A statement acknowledging the responsibility of the surveyor and the applicant's engineer for the accuracy and completeness of the WAE plans/information, where required by Council.
- A statement acknowledging that Council and other stakeholders may rely on the information provided in the WAE drawings for further assessments or decisions, where required by Council.
- Engineer's certification that the onsite works including deviations meet design requirements, for components such as road geometry, safety drainage, hydraulic performance, flood mitigation, and drainage freeboards, where applicable or state the variations have negatively impacted design requirements and how it is deficient.
- Clearly highlight any deviations from specified tolerances or reasonable tolerances in the WAE drawings using clouding or other markers, where applicable.

Where construction varies from permitted tolerance, Council may require rectification. Additional testing may be necessary to determine the extent of the rectification works, as needed. The WAE plans shall provide sufficient details to accurately define the works and demonstrate compliance with the specified tolerances. The plans shall include:

- Plan views showing location.
- The entire construction plan set shall be provided as the works-as-executed drawings. The front sheet/index shall indicate which plans within the total set include WAE information, modifications, and field amendments.
- All WAE information shall be overlaid on the design for plan and section views.
- Sub-grade centreline and the outer edge of the box-out for both subgrade and "select/capping layer" where employed.
- Electronic conformance reports generated from field surveys during construction at subgrade, subbase, and base levels are accepted as an alternative to conventional survey methods, whether taken at random points or specific chainages. Plan views shall also be included.
- Location and level of kerb and guttering, road centreline, road crown, either lip of gutter or top of kerb, rear and front of footpath, at boundary, at changes of grade where no footpath exists, and overland flow paths (top, bottom, and changes of grade).
- Concrete works and structures, including vehicle access, paths, pads, shelters, retaining structures (top and toe).
- Location and level of piped and open drainage systems, including pipe sizes, subsoil drains/mats, inter-allotment systems, lintels, drainage aprons, ripraps, and other structures such as railings and signage.
- Finished surface levels of lots, including all cut/fill regraded areas. Provide contours at 0.2 metres or 0.25 metres intervals for flat land with spot levels at reasonable intervals. At a minimum, spot levels shall be provided for all corners, the middle of all boundaries, or at a maximum 20 metres grid, whichever is smaller. Changes of grade shall also be provided.
- Street furniture, including traffic control devices (line-marking and signage), utilities, particularly in the road reserve, street lighting, street trees, landscaping perimeters, and features.

Where construction parameters vary from, or are not specifically nominated and located on, the approved plans, additional information, as follows, shall be noted on the plans or detailed within a final geotechnical report:

- Sub-grade replacement/modification, specifications, thickness, levels, and extent.
- Sub-base and base-course specifications, thickness, levels, and extent.

- Location of tests carried out on the layers.

18. Quality Assurance Submission

Records of quality assurance (QA) must be created and maintained from the commencement of construction through to handover. These records must be kept in electronic format with appropriate backup strategies to prevent data loss, or in physical form. The contractor is responsible for ensuring that up-to-date copies of all documents are maintained.

The contractor must provide Council's subdivision engineers with documentation confirming that all work has been completed in accordance with the approval, approved plans, this manual, and certification lists. Submissions are to adhere to the following guidelines:

- Combined PDF format with no file access restrictions.
- Include a list of contents.
- Include all testing reports, surveys, and data sheets related to material and product qualities, as well as applications and specifications for civil works components such as stormwater systems, roads, landscaping, and earthworks.
- Include testing plans identifying the locations where testing has occurred.
- Include instruction manuals for infrastructure components such as gross pollution traps, etc.
- Include procedure documents and work instructions.
- Include forms and relevant external documents.
- Include any relevant certifications and certificates.

18.1. Compliance Certificates

The certifier (Council) may require a Compliance Certificate (Component Certificates) for a component of works from a suitably qualified professional for items including:

- **Geotechnical Certifications:** generally, by a NER geotechnical engineer or NATA registered laboratory, including Pavement Material, Density, Deflection, Basin Clay Core Density, Backfill Density.
- **Civil Engineering Certification:** including structural, design compliance, WAE conformance, etc., by a suitably qualified engineer.
- **Manufacture Certification:** for precast and pre-assembled structures.
- **Landscape Certification:** Certification by a qualified arborist (as relevant) or qualified landscape designer/architect.

The compliance certificate must include the following to be considered valid:

- The name and details of the person issuing the certificate.
- The certificate must be signed and dated by the issuer.
- Confirmation that the signatory is authorised and qualified to sign off on the works.
- The signatory's contact details.
- Indication of whether the certificate covers the entire project or only specific components of the works.
- A description of the relevant work/building component and its relationship to the development.

- Include references to the relevant clause in the Australian Standards, Austroads, or other applicable standards related to the sign-off work, specifying the year of adoption and the revision.

19. CCTV Inspection of Drainage Conduits

Closed-circuit television (CCTV) Inspection and reporting in conformance with Council's requirements are required for any construction and replacement of Council's stormwater drainage conduits. Maitland City Council staff may wave the requirement for small scale projects.

19.1. Introduction

This section specifies the submission requirements for CCTV stormwater inspections to assess conduit conditions and identify issues such as blockages, leakages or damage. Submissions must include video footage, images, and detailed reports all formatted according to relevant standards and this guideline.

19.2. Technical Specifications

The inspection must be conducted by a qualified CCTV professional with appropriate public liability insurance. Inspectors entering confined spaces must have appropriate training and be provided with the necessary safety equipment. The work must adhere to WSA 05 guidelines, use a pan-and-tilt camera with an inclinometer and be coded on site with WinCan software. Equipment calibration records must be included in the report.

19.3. Inspection Procedure

The contractor shall conduct CCTV inspections of all stormwater drainage conduits within fourteen (14) days before the project's completion date to ensure compliance with industry standards, verify flow conditions, and detect any structural defects. Inspections shall cover all pipe and culvert joints including the invert and obvert in accordance with WSA 05 standards and be conducted during dry weather. Levels are to be recorded in Australian Height Datum (AHD).

A safety assessment must be completed prior to work and all activities must adhere to Occupational Health and Safety regulations and Workcover requirements. Avoid using access structures under roads or heavy traffic areas and complete the CCTV inspection from adjacent structures where possible.

The contractor must notify the PCA of any CCTV inspections at least twenty-four (24) hours in advance. A preliminary CCTV inspection after subbase completion and before kerb construction is recommended to identify and address defects early and potentially reducing costs.

19.3.1. Reporting Requirements

The report must include a spreadsheet detailing all defects with the following information:

- Date and time of inspection.
- Asset Owner.
- Operator's name.
- Address/Location.
- Line details (reference, length, shape, type, class, invert levels, construction date, sizes).
- Starting and finishing pits.
- Defect chainage (m).

- Defect/Feature (WSA 05-2008 2.2).
- Characterisation 1 and 2 (WSA 05-2008 2.2).
- Quantification 1 (WSA 05-2008 2.2, including crack width in mm).
- Acceptance determination (WSA 05-2008 2.2).

19.3.2. Standard and Compliance

- WSA 05 Conduit Inspection Reporting Code of Australia.
- IPWEA PN 5 Condition Assessment and Asset Performance Guidelines – Stormwater Drainage.
- Council's Manual of Engineering Standards.
- AS 4058 Precast Concrete Pipes.

19.3.3. Quality Assurance (QA)

Works and reports for all characteristics must comply with WSA 05 and IPWEA PN5.

19.3.4. Submission Guideline

Inspection reports must comply with Council's specification and the Conduit Inspection Reporting Code of Australia WSA 05. Upon completion of the inspection, the contractor is required to submit the CCTV footage and the detailed report on a USB drive to Council within five (5) working days for the initial inspection and within ten (10) working days for any subsequent inspections.

19.3.5. Handover Requirements

Any defects identified during the CCTV inspection of the pipes must be thoroughly documented in the report, along with a detailed rectification proposal and assessment. Defects found post-installation must comply with WSA 05 standards, be classified by type according to AS/NZS 4058, and assessed for acceptability based on Table 3.6 of the standard, which outlines the criteria for pipe wall and joint surface defects. Council will review all measurements for accuracy and, at its discretion, determine the severity of the defects.

The proposed repair and/or reconstruction works must be submitted to Council for review and approval. Any repairs identified, agreed upon and approved by Council must be carried out. Once the repairs are completed, Council will assess the completed work. If the repairs meet the required standards, Council will accept the pipes (or culvert conduits) for handover.

Council may propose an agreement that includes additional security measures, such as a bond, in exchange for issuing a Practical Completion Certificate or SC, at Council's discretion. The applicant will be responsible for all costs associated with inspections and any required rectification work. Council may also consult with an independent CCTV inspector or the conduit manufacturer.

Additionally, all stormwater conduits must be flushed clean from end to end and left in proper working order upon completion of the pipe works.

20. Unapproved Works and Variations

Where additional works or departures from the approved plans are made without approval, the Works as Executed plans must be accompanied by a report and/or calculations prepared by the Design Consultant providing sufficient justification for acceptance. Such reports shall also address the following:

- An explanation detailing that the departures comply with this Manual, or adequately satisfy the intent of the Manual or some other standard.
- Where works do not comply and are not accepted by Council, the report shall recommend remedial works necessary to rectify non-compliance.
- Council will review the submissions and determine a way forward.

A modification to the DA application may be required for additional works or variations from the originally approved plans.

ENVIRONMENT, VEGETATION, LANDSCAPING & HERITAGE

21. Introduction

The protection of environment and heritage, applies to all engineering works where disturbance of a construction site is inevitable. This may involve the existing surface or any vegetation, horticultural feature, water body or stream, objects, and places of Aboriginal or European heritage, or natural vegetation and critical habitat.

22. Developer Responsibilities

22.1. Legislation

Items of the “built” or “natural” environment which have conservation significance are protected by the Heritage Act, National Parks and Wildlife Act, Biodiversity Conservation Act, Protection of the Environment Operations Act, Maitland Local Environmental Plan, State Environmental Planning Policy (Resilience and Hazards) or State Environmental Planning Policy (Biodiversity and Conservation), together with Council Policies and Plans including the “Maitland Greening Plan” and DCP “Maitland Conservation and Design Guidelines”. The Biodiversity Conservation Act protects both plants and wildlife.

22.2. Heritage Conservation and Protection

Where a known item of heritage or heritage site is affected by or adjacent to a development, specific conditions of consent will require protection measures during construction. These must be strictly adhered to, or severe penalties (fines and imprisonment or both) may result from action under Section the Heritage Act, the EP&A Act, or the National Parks and Wildlife Act.

Where in the course of undertaking development works a person uncovers or discovers a relic (within the meaning of the Heritage Act) or Aboriginal object or place, they are to:

- Cease work on the site.
- Take appropriate measures to secure and protect the site or relic including fencing.
- Contact Council’s Engineer.
- Notify either the Heritage Council or the Office of Environment and Heritage, as appropriate, of the discovery as required by the Heritage Act or the National Parks and Wildlife Act.

For the purposes of the Heritage Act a relic is any object or material evidence of settlement of the area, which is fifty or more years old, but specifically excluding Aboriginal objects.

For the purpose of the National Parks and Wildlife Act, an Aboriginal object means any deposit, object or material evidence relating to Aboriginal habitation of New South Wales. Similarly, an Aboriginal place means a place declared by the Minister (administering the National Parks and Wildlife Act) that is or was of special significance with respect to Aboriginal culture.

The purpose of these provisions is not to restrict development unnecessarily, but to ensure that valuable historical or cultural information or items are not lost or destroyed. In the majority of cases, work will be able to proceed once data on the item or place has been recorded or the relic excavated. It is advised that there is no advantage to be gained by ignoring the provisions and proceeding with works that result in destruction of items or places of heritage significance.

23. Vegetation

Environmental and vegetation protection measures shall apply to all works including the preparation of detailed plans of all necessary requirements for approval as part of the CC.

Any persons involved with such works and their design, shall as a minimum, abide by the requirements outlined within this Document, where applicable.

Measures must be taken to ensure that no contaminated material or noxious weeds are transported off site without due care, and with diligence and authorisation for removal and/or disposal.

24. Trees and Habitats

It is Council's policy to conserve native vegetation and minimise damage to trees in all new developments in accordance with the Maitland Environmental Sustainability Strategy 2030. The Maitland Greening Plan and the LEP requires the preservation of trees with a height of 3 metres or more, or with a hanging branch spread of 3 metres or more in diameter. Australian Standard AS4970, *Protection of Trees on Development Sites*, applies to trees on both private and public land and contains the necessary information required to determine the tree protection zone and prepare a tree protection plan.

Further:

- Areas of council may be subject to a Tree Preservation Order (TPO). Consultation with Council will be necessary regarding tree disturbance.
- Council's consent must be obtained prior to the removal of trees, endangered ecological community or mature vegetation via a Development Consent or other approval processes.
- Council must be notified of the intention to begin clearing at least two business days before commencing works. Trees to be removed shall be clearly marked on site and correspond with those approved on the development and engineering plans for removal. Precision felling of some trees may be necessary to avoid damage to other trees or structures.
- Consent from the Catchment Management Authority may be required due to the nature of the work.
- Council's consent does not authorise access onto adjoining lands, such as for temporary storage or disposal of materials.

The applicant may have approval for large-scale clearing such as a major greenfield subdivision within the Urban Release Area (URA). It is important to consider that this approval could be based on offsetting and other avoidance measures. Tree Disturbance

Regarding tree disturbance:

- Consent conditions regarding the protection of vegetation must be complied with, during construction.
- Works that are being carried out must be consistent with an approved Environmental Protection Plan, as part of a CC. That plan must show, where appropriate, protection of vegetation, soil

stockpiles, site (and/or habitat, such as nest boxes or offsets) rehabilitation and replanting and soil erosion and sediment control and must show the size and spread of existing trees.

- Wherever possible all trees removed shall be recycled either by chipping, tub grinding or reuse as timber product.
- Replacement tree planting consistent with the *Greening Plan* will be required where shown on the engineering plans or as directed by Council's engineer following damage or unauthorised removal of trees.
- All trees and shrubs identified for protection on the engineering/environmental management plans shall be effectively protected by a fence enclosure to ensure:
 - Avoidance of soil compaction by stockpiling of fill material, sheds, or car parking.
 - Avoidance of spills or placement of oils, bitumen, distillate concrete or the like within 10 metres of tree(s).
 - Trenching is not carried out within the critical root zone of trees.
 - No topsoil removal within 4 metres of trees.
 - Avoidance of damage to trees by machinery.

24.1. Habitat Treatment

An ecologist shall be on site during the felling of identified trees and ensure that any displaced or injured wildlife is collected and released appropriately. All actions taken by an ecologist shall be reported to Council.

The following shall be satisfied prior to felling any tree or removing/pruning adjacent trees:

- Determine if the tree constitutes a habitat tree or supports any species listed under the Biodiversity Conservation Act and whether Environmental Impact Assessment (effect on threatened species, populations or ecological communities, or their habitats) under the EP&A Act has been carried out.
- Compliance with any Biodiversity Development Assessment Report (BDAR) shall be carried out as part of the DA.
- Measures should be taken to reduce the potential for injury and death to animals likely to inhabit the tree and may require inspection of hollows, sectional dismantling and/or supervision of works or removal/relocation of animals by a qualified ecologist. Habitat trees include any trees with hollows.
- Retention of hollows should be undertaken where possible on the site, where this is not possible and habitat is not significantly impacted, the tree hollows should be placed where possible in retained vegetation and/or nest boxes should be placed to retain habitat potential.
- Where approved construction work requires the removal of trees, the contractor is to engage the services of a suitably qualified ecologist to inspect the site and identify any tree which is likely to be a habitat tree. The ecologist is also to be on site during the felling of any identified tree and ensure that any displaced or injured wildlife is collected and forwarded to an appropriate Wildlife Rescue Service. All actions taken by an ecologist shall be reported to Council.

25. Environment

Protection of the environment (encompassing its human, natural and built aspects) is considered a priority of design and construction.

When working near a water body further information should be sought regarding adequate precautions.

25.1. Fire Restrictions

Burning of vegetation on-site is not permitted.

25.2. Noise Control

The contractor shall comply with all statutory requirements with respect to noise. All practical precautions shall be taken to minimise noise and to contain works within specified hours of operation. All construction equipment shall be fitted with recommended noise suppressors (see also Document C: Construction, Working Hours).

25.3. Dust Control

The developer shall comply with any statutory controls with respect to dust pollution. Soil-exposed areas shall be progressively mulched or vegetated and watered, or treated with dust suppressants or other means.

When directed by Council, if in Council's opinion dust control is inadequate or that continued works creates a significant dust nuisance, works shall cease until it is considered by Council that works can recommence (see also Appendix B).

25.4. Site Storage

Equipment and materials stored on site shall be approved by Council's Engineer to prevent damage to the site, roadway, footpath and minimise hazards to person. Materials should be contained on-site to avoid impacting the surrounding properties and environment and stockpiled in a manner to avoid cross contamination of materials from the action of the weather or vehicle movement.

25.5. Contaminants

The developer is to dispose of all contaminants, oils, liquids, solids etc. in accordance with statutory regulations and produce receipts for appropriate disposal as required. Appropriate records should be available for all soil brought on site to show it complies with an appropriate resource recovery exemption under the POEO Waste regulations. Where it is suspected that soil is contaminated, Council may direct that soil testing is required.

25.6. Works on Waterfront Land

A controlled activity approval must be obtained from the Department of Planning and Environment before commencing any controlled activity on waterfront land, unless an exemption applies. Waterfront land includes the bed and bank of any river, lake, or estuary, as well as all land within 40 metres of the highest bank of these bodies of water. Soil Conditions

Soil issues such as salinity, acid sulphate soils and sodic soils can impact both the environment and infrastructure. Should any of these concerns occur management plans need to be established and provided to Council for approval with the relevant application (SWC/CC/other).

26. Erosion and Sediment Control

For works where there is a possibility of erosion of soil by wind, water or vehicles creating dust and sedimentation problems, an environmental protection proposal shall be prepared for approval as part of the engineering design for the CC. (Refer to Appendix B).

26.1. Controls – During Construction

Contractors must employ *effective* sediment control measures, to ensure that sediment and pollutants are not carried off the development site, nor eroded by wind and water, nor by “tracking” of vehicles.

It is an offence under the Protection of the Environment Operations Act to pollute the environment as a result of sediment leaving the site. A breach may result in the issue of an infringement notice and attract a monetary fine. (Refer also to Document C: Construction)

Designs should be prepared which minimises the extent of disturbed areas, which may involve staging of clearing/stripping such that small areas are exposed and stabilized (perhaps with established grass cover), prior to the next stage commencing.

26.2. Controls – Post Construction

Development and subdivision proposals shall include permanent devices and methods to treat pollutants in stormwater runoff, such as litter, coarse and fine particles, phosphorus, nitrogen, and hydrocarbons. (See also Document D: Design & Document L: Lot Scale Engineering).

Such devices and methods to be employed may be:

- Gross Pollutant Traps (pits, racks, basins etc),
- constructed wetlands,
- bio-retention (dry basins); and
- combinations of any such devices, as necessary.

Bio-retention facilities are particularly susceptible to uncontained erosion from future building activity within the subdivision and should therefore be postponed for construction until approximately 80% completed allotment development within the contributing stormwater catchment, or in the case of staged development, prior to issue of the SC for a later stage within the release area. For this purpose, an unlimited-time cash bond or bank guarantee shall be submitted to Council for an approved value of the works, plus 50%.

26.3. Material Transportation

All transportation of construction materials, sands, gravels, soils etc to and from the site must be carried out in such a manner as to prevent depositing materials on surrounding streets. The developer shall ensure that adequate control measures are in place to prevent this occurrence or then to rectify the pollution if it occurs. All loads of loose materials shall be covered during transport to and/or from the site.

27. Landscape and Vegetation

Before the lodgement of a DA, all Landscaping options should be investigated to best integrate the proposed development with existing landscaping and significant vegetation. Landscape and vegetation management should be based upon suitable initial site evaluation and analysis including any existing significant vegetation.

Aspects to be considered are:

- trees and vegetation for retention
- trees and vegetation for removal
- Areas to be undisturbed such as buffer areas and semi natural areas.

Earth mounds, retaining walls and grade changes should be designed so as not to impede normal surveillance, nor to create personal “entrapment” scenarios.

Refer to Technical Guideline: Street Tree, Tree Species List, and Canopy Cover for further information on street tree planting.

28. Bushfire Considerations

Consideration in the design shall have regard to “Planning for Bushfire Protection (PBP)” requirements as required.

When developing the bushfire report and preliminary engineering plans, the following information provides guidance on how Council interprets MoES and any General Terms of Approval (GTAs) when assessing proposed or existing public infrastructure (e.g., roads, drainage reserves, etc.). With the submission of a bushfire report and bushfire assessment, Council will require the following:

- **Road Type Identification:** To avoid ambiguity, the bushfire consultant’s report must identify each road type (i.e., perimeter, non-perimeter, property access roads, trunk roads and any roads considered to be neither). These road types shall be labelled in the report and diagrams. The diagram and report must also depict the location of any parking restrictions noting Councils requirements for on-street parking.
- **Asset Protection Zones (APZs):** APZs and other bushfire restrictions are not acceptable on drainage reserves, parks, or recreational land that will be dedicated to Council. These areas will be landscaped as part of the development and even into the future to meet urban heat canopy requirements and provide amenity.
- **APZs on Roads:** APZs are acceptable on roads to Council satisfaction, provided the verge landscaping meets APZ requirements. Additional verge widths to achieve APZ widths will not be supported on the outside of perimeter roads. Some minimal increases of width against the lot frontages could be considered. Concrete paths shall be placed in the outer verge so that general path maintenance is sufficient to also address the RFS GTA’s without increased maintenance regimes for Council
- **Fire Source Considerations:** Drainage reserves and corridors (channels, basins, etc), and riparian corridors need to be considered as fuel sources. The fuel loading needs to be consistent with the accepted fuel loads from the RFS for the vegetation type unless reduced fuel loads are ensured through a conditioned management regime. These shall be identified and considered in the bushfire assessment. Impractical proposals will be rejected by Council. In the case of Riparian corridors Council may set a higher fuel loading than Office of Water as supplementary planting such as for Urban Heat Canopy may occur.
- **Parking Lane Requirement:** Councils Road hierarchy provides for on-road parking on all roads, and particularly against residential lot frontages. Parking is often removed from the outside of a perimeter road however some blistered parking may be warranted. The carriageway widths specified by PBP relate to the unrestricted travel corridor width. As the Road Authority, Council sets the requirements for on-street parking and these parking requirements will be in addition to the RFS minimum travel corridor width, unless a performance solution has been accepted in writing by both RFS and Council.

Locating services (water, gas, electricity) outside of carriageway width and parking spaces is required in accordance with any PBP requirements

- **Road ownership and Accountability:** Council is the ultimate asset owner of a road reserve and can reject a concept that may be acceptable to NSW RFS if it is not also in the public interest for Council. The onus is on the design proposal to satisfy both RFS and Council.
- **Cul-de-Sac Parking Concept:** RFS and Council preference is to create looped connections and eliminate dead ends (including cul-de-sacs).

Where cul-de-sacs are unavoidable, the length must be minimised, and on-street parking shall be provided for and adjacent to residential lots, on the outside of the clear turning radius/area required by PBP.

An alternative, to be discussed with RFS early-on in design, may be to locate on-street parking in the centre of the cul-de-sac head, as shown in the concept below. Where proposed, it must allow one-way circulation with the minimum width complying with 'NSW Fire Safety Guidelines – Access for fire brigade vehicles and firefighters' general firefighting appliance. In these cases, parking may be excluded from the (outer) road pavement adjacent to properties.

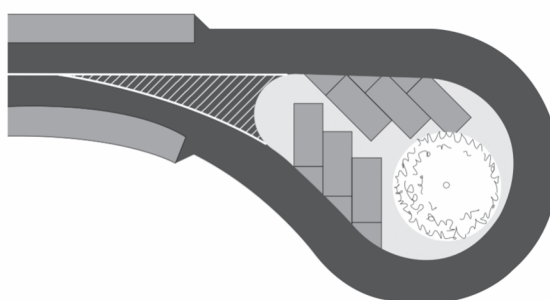


Figure - Cul-de-sac parking concept.
(See Standard Drawing for proper details)

- **Subdivision Staging and Bushfire Report Considerations:** The subdivision staging plan and bushfire report shall consider the following:
 - How temporary APZs will be provided during staged development and who is responsible for maintenance.
 - How turning heads, compliant with PBP requirements, will be achieved during staged development and be available throughout the construction phase of subsequent stages. Note: Staging layouts with looping roads instead of dead-ends are strongly encouraged.
 - When two points of access are required as part of the bushfire report and/or GTAs, the staged release should clearly outline when these access points will be constructed. Access and APZs should be in place before construction occurs unless otherwise conditioned.

Local Area traffic Management (LATM) Devices: Traffic calming devices are to be considered for perimeter roads to discourage speeding at intersections and as required by Council.

Council will nominate the types of LATM device to be used. The modified intersection and mid-block island are pre-approved. Modified intersections shall clearly indicate the priority travel manoeuvre and use V drains to signify the give-way leg when the straight through priority is not used.

All LATM devices shall meet Council requirements, and the NSW Access for Fire Brigade Vehicles and Firefighters document.

Any traffic control devices that have integrated kerbs to slow traffic (e.g. speed hump, chicane slow point, small roundabout) are to have low profile mountable kerbing to allow easy negotiation by a fire appliance.