



DEVELOPMENT GUIDELINES

Prepared by
S & T Consulting
239 Dances Road, Caboolture, QLD
4510
Ph/Fax (07) 5497 4221

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INTRODUCTION

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1.1 GENERAL

This document supersedes the previous edition of the Katherine Town Council Guidelines for Subdivisions in the Katherine Municipality.

The document is aimed at providing a clear, structured and practical set of requirements and procedures to assist developers, consultants and contractors involved with all forms of land development in which Council has a direct or indirect interest.

Where discrepancies between this Guideline and Relevant Standards or in respect to various Relevant Standards occur, the Officer shall determine which standard is to be adopted for the Development.

1.2 DISCLAIMER

The Guidelines shall be read in conjunction with relevant legislation and any Council approved policies or documentation.

All due care has been taken in producing these Guidelines and its consistency with relevant legislation and standards, however, if any inconsistency is noted Council will provide the necessary clarifications. Council does not guarantee the completeness of the information contained within these Guidelines and does not accept any loss or damage that may result from the use of the Guidelines.

Council reserves the right to deviate from particular aspects of the Guidelines for any Subdivision or Development where it deems it to be warranted.

The Developer (or its Consultants) is responsible for ensuring that all works are designed and constructed in accordance with the Guidelines.

1.3 GUIDELINE CONTROL

The latest edition of the Guidelines are available free of charge from Council's web site in PDF format.

Katherine Town Council may update the Guidelines at any time. It is the Developer or Consultant's responsibility to ensure that they are referring to the latest edition of the Guidelines.

1.4 DEFINITIONS

The following are the definitions of specific wording and terms used within these Guidelines.

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| Access | Provision of infrastructure to cater for the adequate movement of vehicles, pedestrians and cyclists to each allotment. |
| Application Fee | The Fee payable to Council to lodge an application for approval of any works based on the current Fees and Charges. |
| Approved Drawings | Those Drawings submitted by the Developer or Consultant and approved by the Officer for construction purposes. If no Drawings are approved or the approved Drawings are deficient then the Standard Drawings shall be deemed to be the Approved Drawings be it in part or full. |
| Construction Approval Fee | The Fee payable to Council by the Developer for administration, management, design approval and supervision of approved Construction Works. The Fee is based on 1.0% of the actual construction cost and is payable before On Maintenance can be granted by the Officer. |
| Construction Cost | The cost to construct the Development Works in question. The Developer or Consultant shall provide Estimated Construction Costs in a legible Schedule format to the Officer for ratification and approval. This Estimated Construction Cost forms the basis of certain Council Fees & Charges calculations. |

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| Consultant | The Consultant(s) and/or their duly authorised representatives(s) appointed by the Developer to undertake various design and/or construction Certification associated with a Development. |
| Contractor | The person or entity bound to execute the Development Works. |
| Contribution Plan | A Plan developed by Council under Section 27 of the Planning Act to facilitate payment of a Contribution as assessed by Council towards the upgrade of Infrastructure as a consequence of the Development. |
| Council | Katherine Town Council |
| Council Property | Any land owned or maintained by Council, either by licence, statutory requirement or agreement. |
| Council's Standard Drawings | The Northern Territory Government Department of Construction & Infrastructure Standard Drawings for Civil and Landscaping Works. Council may also make reference to specific in-house Standard Drawings, which shall take precedence. |
| Council's Technical Specification | The Northern Territory Government Department of Construction & Infrastructure Technical Specifications for Civil and Landscaping Works. These may be downloaded from the NTG website. Council may make reference to other Specifications as required. |
| Deed of Agreement | The formal agreement entered into between Developer and Council describing the works required by Council to be carried out under the Development and the conditions under which Council's requirements may be met. |
| Defect | An unsatisfactory or non-complying item of work noted by the Consultant, Certifier or Officer. All defects are to be rectified to the satisfaction of the Officer. |
| Defects Liability Period | That period (usually 12 months) from On Maintenance until such time as the Developer or Contractor can apply for an Off Maintenance inspection and the Officer deems the works to be Off Maintenance. |
| Design Documentation | Technical Specifications, Drawings, Calculations, Reports and any other such documents required by Council to satisfactorily show the intended works for the Development. |
| Developer | The Owner(s) or Lessee of the land proposed to be Developed. |
| Development | Includes Subdivision Development and/or Re-Development and any other Development that Council can make formal requirements upon. |
| Development Permit | Is that Permit issued by the Development Consent Authority, which permits the Developer to proceed with Development Works subject to the conditions stated therein. |
| Development Technical Specification | That Technical Specification lodged by the Developer or Consultant and approved by Council for construction purposes. Where no Technical Specification has been so approved or the approved Technical Specification is deficient, Council's Standard Technical Specification shall be deemed to be the Technical Specification be it in part or full. |
| Development Works | The Development Works shall include, but not be limited to, road works and associated earthworks and site works, drains, pathways and cycle ways, street lighting, streetscapes and landscaping of public spaces owned or maintained by Council. The works are not restricted to the proposed development, but may be extended to include existing or other proposed roads, drains, reserves or public or privately owned lands giving access to or affected by or having effect on, the proposed Development. |
| Fees and Charges | The published Fees and Charges currently adopted by Council. |

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| Final Completion | The stage reached when all Development Works have been constructed to the true intent and meaning of the Approved Drawings and Technical Specification; the whole of the works being able to be used for the purpose for which they have been designed. The relevant requirements of the Development Permit must have been complied with. The Officer is the only person that can deem Final Completion of the Development Works. |
| Maintenance Bond | That Monetary Bond lodged by the Developer or Contractor for the duration of the Maintenance Period and any holding over period and may be drawn upon by Council to carry out defect rectification, if after due process, no appropriate action is taken by the Contractor / Developer. The Maintenance Bond is calculated at 2.5% (under Fees and Charges) of the Construction Cost of the works and is to be lodged prior to the Works being placed On Maintenance. |
| Maintenance Period | The statutory minimum period as specified, in which the Works, having been deemed to be On Maintenance by the Council, remain the responsibility of the Developer to care for and maintain and repair defects resulting from faulty workmanship, and/or defective materials and design defects and omissions until Off Maintenance is granted. Note that the Developer/Consultant is responsible for adequate design at all times. |
| The Officer | The Chief Executive Officer of the Council or the duly authorised or delegated person acting on behalf of the Officer in the matter(s) of subdivision or development - usually the Council's Works Manager or an authorised representative. |
| Off Maintenance | When works have reached the end of the Maintenance Period and have been deemed to be accepted by the Officer, at which point in time Council takes responsibility for Maintenance of the completed works. All defects raised at the Off Maintenance inspection must be adequately addressed before Council accepts responsibility. Therefore Off Maintenance is when all defects are completed and works handed over to Council. This may be in Separable Parts. |
| On Maintenance | When works have reached Final Completion and have been deemed to be accepted by the Officer, at which point in time the Maintenance Period begins. The Officer may accept minor defects on the proviso that they are adequately addressed by the Developer or Contractor within a specified period. |
| Relevant Standards | Those Australian Standards, other standards, guidelines, procedures and methodologies adopted and/or widely accepted Nationally or in the Northern Territory. Where there is a conflict between such standards the Officer shall nominate the appropriate standard to be used. |
| Road Hierarchy | That classification of roads as adopted by Council, into a series of categories dependent upon functionality. |
| Security Bond | That Monetary Bond lodged by the Developer or Contractor for an indefinite duration to cover specific works that have yet to be completed, are deemed to be defective or non-compliant or in cases where a specific risk or liability has been identified. Council may draw on the Security Bond to carry out defect rectification or to rectify damages incurred, if after due process, no appropriate action is taken by the Contractor / Developer. A Security Bond is calculated at the Estimated Construction Cost of the works to be secured against or the Estimated Cost of the Risk. |
| Subdivision Works | Subdivision Works shall include, but not be limited to, road works and associated earthworks and site works, drains, pathways and cycle ways, street lighting, streetscapes and landscaping of public spaces owned or maintained by Council. The works are not restricted to the proposed development, but may be extended to include existing or other proposed roads, drains, reserves or public or privately owned lands giving access to or affected by or having effect on, the proposed Subdivision. |

PLANNING PROCESS

2.1 GENERAL

2.2 COUNCIL'S ROLE

2.3 DEVELOPMENT PERMIT

2.4 DEVELOPER CONTRIBUTIONS

2.5 FINALISATION OF DEVELOPMENTS

2.1. GENERAL

The Northern Territory Planning Act establishes the Development Consent Authority as the body responsible for approving Subdivisions and Developments in the Northern Territory. All Planning applications are to be made to that Authority.

It is strongly recommended that Developers discuss their submissions with the Development Assessment Services (DAS) section of the Northern Territory Government.

Council is not responsible for issuing Subdivision and Development Permits. Its role in the planning process is one of a referral agency or service authority and also as the body representing the interests of the wider community.

2.2. COUNCIL'S ROLE

The Planning Act requires that Council is formally advised of Development Applications and Planning Scheme amendments within the municipality and this allows Council the opportunity to comment on such Development Applications within the public exhibition period defined under the Act.

Council has a wide range of responsibilities under the Northern Territory Local Government Act (LGA) in addition to its role under the Planning Act. Under the LGA, Council is specifically responsible for:

- Maintenance and management of most public roads and verges;
- Vehicle access to properties;
- Traffic control;
- On street and off street car parking;
- Footpaths and cycle-ways;
- Foreshore protection;
- Stormwater drainage;
- Waste collection;
- Council owned land and public spaces.

For all forms of Development (including subdivisions), it is strongly recommended that Developers discuss their proposals, especially in respect to the above items, with Council at an early stage. This ensures that the Developer is fully aware of Council requirements and any issues can be discussed, negotiated or agreed to prior to the issue of the Development Permit.

Once planning applications have been made to the Development Consent Authority, Council will assess and make recommendations to the Authority prior to the issuance of the Development Permit.

2.3. DEVELOPMENT PERMIT

Development Permits are usually issued subject to Conditions that have been recommended by Council, other Service Authorities and the Development Consent Authority.

Once the Development Permit has been issued, construction of the development may proceed subject to the Developer having taken out all the necessary permits and receiving the necessary approvals.

2.4. DEVELOPER CONTRIBUTIONS

The Northern Territory Planning Act provides that a Service Authority such as Council may put in place a Contribution Plan under which a developer is required to provide specific monetary contributions relating to:

- Infrastructure external to the development (currently restricted by the Regulations to Roads and Drains);
- Public car parking (if the required number of car parking spaces cannot be accommodated on site).

Council's Contribution Plans are available on Council's website and these may be updated at any time. It is the Developer or Consultant's responsibility to ensure that they are referring to the latest edition of the Contribution Plans.

In areas of the Katherine Municipality where there is no gazetted contribution plan the DCA can issue conditions on a Development Permit which require upgrading or provision of infrastructure within the public domain to meet Council or Northern Territory Government requirements.

2.5. FINALISATION OF DEVELOPMENTS

Prior to obtaining a Certificate of Occupancy in the case of a new developments or Titles Release in case of a subdivisions, it will be necessary to obtain Council's clearance that all relevant conditions set out on the Development Permit have been complied with to Council's satisfaction.

This involves inspections of the site and relevant works by Council officers with an issuance of a Final Completion Certificate. Refer to Section 3 for further details.

GENERAL REQUIREMENTS

3.1 STATUTORY REQUIREMENTS

3.2 COUNCIL REQUIREMENTS

- 3.2.1 Developer Responsibilities
- 3.2.2 Consultant Requirements
- 3.2.3 Deed of Agreement
- 3.2.4 Relevant Permits
- 3.2.5 Street Names
- 3.2.6 Maintenance and Security Bonds
- 3.2.7 Associated Upgrading Works
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3.3 OTHER AUTHORITY REQUIREMENTS

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3.5 REQUIREMENTS TO OBTAIN FINAL COMPLETION

3.6 ON MAINTENANCE

3.7 MAINTENANCE (DEFECTS LIABILITY) PERIOD

3.8 OFF MAINTENANCE

3.1. STATUTORY REQUIREMENTS

The provisions of the Northern Territory Planning Act regulate the subdivision and development of land in the Northern Territory with the Northern Territory Planning Authority being responsible for administering the Act.

In respect to the planning, design and construction aspects of any Development, adherence to relevant statutory requirements is mandatory. Some of the relevant statutes are as follows:

- Local Government Act and Regulations;
- Anti-Discrimination Act and Regulations;
- Building Act & Regulations;
- Construction Contracts Act & Regulations;
- Construction Industry Long Service Leave Act & Regulations;
- Crown Lands Act & Regulations;
- Environment Protection Authority Act;
- Environment Offences & Penalties Act;
- Fences Act;
- Heritage Conservation Act;
- Katherine Town Council Bylaws;
- Land Title Act & Regulations;
- Local Government Act & Regulations;
- Aboriginal Sacred Sites Act & Regulations;
- Planning Act & Regulations;
- Water Supply and Sewerage Services Act & Regulations;
- Workplace Health and Safety Act & Regulations;

It is the Developer and/or Consultant's responsibility to be conversant with all relevant statutory requirements.

3.2. COUNCIL REQUIREMENTS

3.2.1 Developer Responsibilities

The Developer will be responsible and accountable for all actions during the development process, from lodgement of Planning Applications through to Off Maintenance.

It is expected that the Council's requirements be adhered to, particularly in the areas of programmed construction inspections, environmental controls, testing and certification during construction.

The Developer will be required to enter into a Deed of Agreement with Council, including the payment of the Construction Approval Fee and lodgement of Security and/or Performance Bonds relating to the Development Works.

The Developer is to be responsible for all damage to existing facilities, services and structures in both public and private ownership sustained as a result of the Development Works.

Sufficient public risk insurance must be carried by the Developer to cover the proposed Development. The insurance is to specifically indemnify Council. Evidence of appropriate insurance must be demonstrated prior to commencement of any construction works.

The Developer may be required by Council to engage Consultants to design, manage and supervise the relevant works to be eventually be taken over by Council.

The Developer or Consultant shall provide to Council for approval, all relevant designs, drawings and specifications for all proposed works associated with the Development to be taken over and maintained by Council.

Approval of Documents does not constitute permission to commence construction works nor does it absolve the Developer and/or Consultant of its responsibilities for the preparation or content of the design.

3.2.2 Consultant Requirements

Where there is a specific Council requirement for the Developer to engage Consultants they shall meet the following criteria unless otherwise approved by the Officer;

Engineering Consultants:

- Eligible to be elected to the National Professional Engineers Register;
- Eligible for Corporate Membership of the Institution of Engineers, Australia;
- Adequate recognised professional experience in the relevant form of Development;
- Possess professional indemnity insurance to a minimum amount of \$500,000 or appropriate to the perceived risk involved with the Development Works;
- Have no conflict of interest in the time or cost of completing the works and the completion of the works to the required standards.

Landscape Consultants:

- Hold recognised qualifications in the areas of Landscape Architect / Urban Landscape Design - AILA membership;
- Hold recognised qualifications in the areas of Irrigation Design - eligible for Irrigation Association of Australia membership;
- Adequate recognised professional experience in the relevant form of Development;
- Possess professional indemnity insurance to the perceived risk involved with the Development works;
- Have no conflict of interest in the time or cost of completing the works and the completion of the works to the required standards.

Other Consultants:

- In the matter of consultants in other disciplines, such as environmental areas, similar qualifications will apply and the matter should be discussed with the Officer.

In all cases the Officer shall have the right to reject any nominated Consultant.

3.2.3 Deed of Agreement

The Developer may be required at the discretion of the Officer, to enter into a Deed of Agreement with Council for the proper execution of the works required for the Development prior to or at the time of the Officer issuing design plan approval.

The Deed is to contain among other things, a Schedule, detailing all conditions and requirements for the Development Works referred to under the Development Permit, to be ultimately taken over and maintained by Council,

The Deed and Schedule shall be subject to acceptability by the Officer. It is recommended that the Developer discuss and negotiate the wording of these documents with the Officer prior to lodgement.

The Developer is to lodge all securities and pay all fees required by the Council, as set out in the Deed prior to or at the time of the Officer issuing design plan approval.

The name appearing on the Deed and any other Agreement or Bond shall be the name of the Developer appearing on the Development Permit. Council will not enter into any dealings with the other parties.

An example of a Deed of Agreement is shown in the Appendix C.

3.2.4 Relevant Permits

Where Development is to take place on Crown Land leased from the Northern Territory Government, that Government shall generally act as the Owner.

The Developer may have entered into a Deed of Agreement with the Northern Territory Government requiring securities to be lodged with them under the terms set out in that Deed.

Where Council is to take over and maintain any of the associated infrastructure, Council then becomes the Responsible Authority and the requirements, as set out in the Guidelines, apply.

Dependent upon the type of agreement the Developer may have entered into with Northern Territory Government, it may not be necessary to enter into a Deed of Agreement with Council. This will be at the Officers discretion.

Where works are to be carried out on land owned or controlled by other Authorities and private owners, suitably documented permission to construct is to be obtained from the relevant Authority or person(s). This is to be presented to the Officer prior to the commencement of works and a formal clearance obtained and presented at completion.

Works will not be Accepted and placed On Maintenance until all necessary clearances are obtained and submitted to the Officer

Where works are to be carried out in an existing road reserve or land owned or under the control of Council, a Permit to construct the works shall be obtained.

3.2.5 Street Names

The relevant Authority for acceptance of Street Names is the Northern Territory Government - Place Names Committee. The Developer shall install standard street name signs at every intersection.

3.2.6 Maintenance and Security Bonds

The Developer shall lodge a Maintenance Bond with Council for an amount of 2.5% of the Construction Cost of the Development Works prior to acceptance of On Maintenance.

The Developer shall also lodge any necessary Security Bonds for an amount estimated to be the cost of all outstanding works or where a significant risk or liability has been identified, an amount to suitably cover that risk or liability.

With any proposed Bonds to be submitted, the Developer shall forward schedules identifying the relevant works and costs associated with such, the amount of which is to be approved by the Officer.

3.2.7 Associated upgrading works

Where it is determined that the associated existing roads and/or drainage are sub standard or inadequate to accommodate the proposed traffic generated and/or drainage flows by the proposed Development, or if the existing roads and drainage are in some way detrimentally affected by the proposed Development, Council may require the upgrading of the existing roads and drainage to the appropriate standard.

The upgrading of roads and drainage may be achieved by actual construction by the Developer at the Developer's cost, or by contribution of an agreed amount or by contribution of amounts as determined under a Contribution Plan. The Officer shall make that determination.

Where construction is to be carried out by the Developer, the Developer is to submit a Security (External Works) Bond at the time of the Officer approving design drawings.

Where Development occurs with unconstructed, partially or fully constructed street frontages and/or partially or fully constructed existing drainage systems, Council may require the following:

- Partial or full reconstruction of the abutting road and/or the surrounding road(s) including road pavements, kerbs and gutters, footpaths, crossovers and driveways, shared footways and bikeways, verges and landscaping/streetscape works;
- Partial or full reconstruction of the abutting, internal and/or out-falling drainage system;
- Partial or full construction of new shared internal access roads or driveways and associated drainage where access easements or battle-axe legs apply;
- Extension of services or provision for extension of services (conduits) from the front boundary to the top of the battle-axe leg or access easement.
- Internal drainage where necessary and the provision of appropriate easements where the proposed drainage from one site or allotment is concentrated and discharges over another allotment being created or downstream thereof.
- Removal of existing driveways and crossings where necessary and replacement with kerb and/or kerb and channel.

All Developments shall be adequately drained to Council requirements.

3.2.8 Street Lighting Requirements

Council is the authority responsible for Street lighting and other lighting in areas determined by Council, within the Katherine Town Council Local Government area of Katherine, Council pays Power and Water Corporation for electricity consumption. Public area (e.g. Parks) lighting outside of road reserves will generally be owned and operated by Council. These networks are metered and the meter is to be registered in Council's name as soon as the works are placed On Maintenance.

The Developer is to provide street and other lighting in public areas of the Development in accordance with current Australian Standards. All roads, pathways and carparks shall have lighting to Power and Water Corporation and Council Standards and specifications. Other public places such as playgrounds or barbeques shall have lighting as directed by the Officer.

Council will specify the required lighting categories as described in the Australian Standards.

Council will be responsible for tariff payments, repairs and maintenance and capital replacement charges of street and other area lighting only after the works have been placed On Maintenance by Council and the Developer has arranged to have the works transferred to Council's name.

3.2.8.a Technical Specifications for Street Lights

Refer to Appendix L

3.2.9 Environmental Management

Pollution of the waterways, rivers and drains can be caused by stormwater discharge, manual transportation or air blown sediments or pollutants from a Development site. To cause or allow this is an offence under a variety of Acts, Regulations and By-laws.

The Developer shall be responsible for adequately addressing any potential Environmental matters such as clearing of vegetation, stormwater drainage management and erosion & sediment control in relation to the proposed Development works.

Based on the type and size of Development Works, an Environmental Management Plan and/or Vegetation Management Plan may be required to be submitted to Council prior to granting of design approval.

In respect to Erosion & Sediment Control, a suitable management plan shall be submitted for all Developments. This plan shall be based on the Guidelines produced by the Northern Territory Government - Department of Natural Resources, Environment, the Arts and Sport.

In respect to fill material, such material shall be solid, inert and non-hazardous.

Contaminated fill containing any of, but not limited to the following, is unacceptable:

- household rubbish, vegetation, timber and iron and other metals, whitegoods etc,
- liquid waste, oil drums and plastic containers,
- car bodies, tyres,
- pesticides and containers, gas bottles, dangerous goods, hazardous wastes,
- acid sulfate and other contaminated soils.

3.3. OTHER AUTHORITY REQUIREMENTS

The Development Permit will contain specific conditions that must be complied with to ultimately achieve finalisation of the Development. These conditions may mean that the requirements of Authorities other than Council (Other Authorities) have to be complied with.

Council requires that approvals from Other Authorities be submitted prior to Council approving designs / construction. Council will not approve plans or construction without these approvals, which may include the following:

- The Northern Territory Government for all road works and associated earthworks, drainage works, pathways, street lighting and streetscaping for all roads defined as "96(2)" gazetted as being controlled by that Government;
- The Northern Territory Government for all development proposed on Crown Land, environmental matters and stormwater pollution (see below);
- The Northern Territory Government - Department of Natural Resources, Environment, the Arts and Sport for all matters concerning water quality, clearing and erosion and sediment control. This Department is not a Referral Agency, but Council will be forwarding all proposals for comment prior to any approvals being given.
- Power and Water Corporation for all electricity reticulation, water supply and sewerage reticulation;
- Telstra or other Providers or Carriers (e.g. Austar) for all communication facilities;
- Fire and Rescue Services for fire fighting requirements.

Plans and specifications must be submitted to each Authority for review and / or approval during the design period prior to commencement of construction.

Clearances, or approvals for construction will also be required by Council from the Authorities at completion of construction.

3.4. AS CONSTRUCTED DOCUMENTATION

The Developer is to provide As Constructed Drawings in legible A3 hard copy and digital AutoCAD and PDF format to the Officer prior to acceptance of On Maintenance.

The following requirements apply:

- The drawings are to be clearly marked "AS CONSTRUCTED" and certified by a Registered Surveyor as follows:
 - “This drawing is an accurate representation of the works as constructed and the information is suitable for use by Council and others. As constructed levels have been provided by a Registered Surveyor.
Certified by - - - - - ”
- Correct street names and lot numbers are to be shown on the plans.
- Earthworks
 - + Certification of the design plans is sufficient provided adequate As Constructed spot levels are shown adjacent to design level.
- Roadworks

- + Certification of the design plans is sufficient provided as constructed grade and cross section information and levels is shown adjacent to the design levels and information.
- + Location of street signs etc. is to be confirmed but accurate survey is not required.
- + As constructed pavement thicknesses and make-up including minimum CBR values for the pavement materials are to be noted.
- Stormwater Drainage
 - + Certification of the design plans is sufficient provided as constructed pipe diameters and types, invert levels, surface levels, pipe lengths and grades are shown adjacent to the design information.
 - + The design drainage calculations are to be amended as constructed.
- Landscape Works
 - + Certification of the design plans is sufficient provided all works were carried out in accordance with the design.
 - + Any amendments are to be noted on the plans.
- Other Works e.g. Structural
 - + Certification of the design plans for structures constructed within Council roadways or Public Land is sufficient
 - + Any amendments are to be noted on the plans.

All drawings are to be drafted in accordance with AS1100 and sound CAD practice. This is particularly important for As Constructed electronic copies.

Other As Constructed Documentation shall consist of:

- Statement of Compliance -
- Non Compliance Report(s) -
- Inspection and Testing Results and Reports;
- Other documentation such as:
 - + Structural Certification;
 - + Certifications by other disciplines and trades.

Inspection and Testing Verification and Records are to include all items required under the agreed and/or approved Inspection and Testing program. As well it will include any other job specific items ordered by the Officer and carried out.

Should any of the above test results not meet the required standards or specification, the Consultant shall include in his submission, details of re-testing and/or rectification carried out.

The documentation is to be presented in logically assembled and bound documents including a table of contents.

As part of the process of works being placed "On Maintenance", the details and value of the works is to be submitted so that it can be placed on Council's Asset Register.

The Consultant is required to provide the necessary details of costs and quantities, broken up into segments and allocated to specific sections of roads and drains.

3.5. REQUIREMENTS TO OBTAIN FINAL COMPLETION

Upon the completion of the works, including landscape / streetscape works, the Developer (or Consultant where applicable) is to notify the Officer in writing that the works have been completed in accordance with the approved drawings and specifications and request a Final Completion inspection to have the works placed On Maintenance.

Prior to the inspection, the Developer (or Consultant where applicable) shall submit the following:

- Engineering Certification as per Appendix G;
- As Constructed Drawings;

- All relevant construction test results and quality assurance documents;
- Any non-conformance or non-compliance with the approved documents or any of the relevant policies laws, codes or specifications;
- On Maintenance Inspection Checklist (Appendix E) completed and signed;
- Other information so conditioned or required by the Officer.

The inspection will require the presence of the Officer, the Developer (or Consultant where applicable) and the Contractor. All drainage pit covers are to be temporarily removed and all drainage lines flushed for the inspection. The Officer may have other special requirements to be attended to prior to inspection.

As soon as is practical after the inspection, the Officer will inform the Developer (or Consultant where applicable) any items not in accordance with the requirements of the drawings and specification and the conditions set out in the Development Permit.

The items shall be divided into:

- Items requiring completion, repair or alteration prior to granting of Final Completion or acceptance On Maintenance. A further inspection of these works when completed or rectified shall be deemed to be an extension of the Final Completion inspection;
- Other items that may be completed, repaired or altered by an agreed date during the Maintenance Period. These works may require a Security Bond(s) to be lodged;
- Items that are to be monitored for performance during the maintenance period. These works may require submission of a Security Bond.
- Relevant Items or conditions on the Development Permit not completed.
- Any other outstanding matters requiring attention

Council requires works to be completed prior to Final Completion rather than being bonded, however, in certain cases the Officer may allow bonding in lieu of completing outstanding works.

If a bond for outstanding works is sought, the Developer is to lodge an application to the Officer requesting that the works be bonded. Applications are to be in writing and are to include the following information:

- Concise reference to the location, extent and nature of works to be bonded;
- A timetable for the future completion of the outstanding works;
- An itemised estimate of the cost of the works to be bonded;
- Reasons for requesting the bonded work;
- Any other information that will assist in the assessment of the application.

All Bonds lodge shall be Cash or Unconditional Bank Guarantees from a financial institution acceptable to Council. The name of the Developer appearing on the bond is to be the same as appears on the Development Permit and other documentation lodged with Council.

All bonds submitted to Council shall clearly state the following information:

- Name and address of the person or persons responsible for the payment or the arranging of the unconditional guarantee;
- The amount of the payment or unconditional guarantee;
- Name, stage and location of subdivision and Development Permit Number;
- A concise explanation of the purpose of the bond referring to all items for which it is to be utilised.

Compliance with the above submission requirements does not necessarily imply acceptance of the bond and each request shall be subject to acceptance by the Officer.

3.6. ON MAINTENANCE

Prior to formal acceptance of On Maintenance, the following items (in addition to the Final completion items) must be completed:

- Certified cost of the constructed works and any outstanding works;
- Payment of all relevant fees to Council;
- Submission of all relevant Bonds;
- Submission of relevant clearances;
- Submission of Survey Plan and Easement Details;
- Other information so conditioned or required by the Officer.

The Maintenance Bond calculated at 2.5% of the certified cost of the works, is to be lodged prior to the Works being placed On Maintenance.

When the foregoing requirements to have the works placed On Maintenance have been complied with, the Officer will issue the Developer with an On Maintenance certificate.

The Certificate of Takeover as per Appendix H shall be issued but will not have effect until both the Officer and the Developer have signed and dated the document.

3.7. MAINTENANCE (DEFECTS LIABILITY) PERIOD

Defined as "The statutory period, in which the Works, having been deemed to be Finally Complete and accepted and placed On Maintenance by the Council, are to remain the responsibility of the Developer, to care for and maintain and repair any and all defects resulting from design errors or omissions, faulty workmanship and/or defective materials."

The Maintenance Bond is to be held for the duration of the Maintenance Period until such time as the relevant works are deemed Off Maintenance. Council may draw upon the Bond to carry out defect rectification, if after due process; the Developer takes no appropriate action.

Generally, the Maintenance Period (Defects Liability Period) shall be 12 months, however if there are special circumstances, Council may decide that a longer period is required.

This could be when the Development and/or relevant works are constructed on filled / reclaimed land or major trenching carried out in Council's road pavements or other situations where the Officer deems it necessary.

The following is a list of maintenance and defects liability period requirements for all works applicable to Developments and includes, but is not limited to:

- Seed, water and fertilise all disturbed areas to obtain 90% grass coverage within six months of the works being accepted On Maintenance;
- Water, weed, fertilise and carry out all necessary maintenance to all landscaped areas provided as part of the works.
- Maintain to the manufacturer's and Council's specifications and requirements all structures located within the defined development;
- Mow road verges, pathways and park areas and other areas under Council's future control to maintain a grass length as specified and agreed;
- Sweep roads to maintain a surface free of loose stones and excessive dirt deposits;
- Remove silt and debris washed into kerbs, kerb and channel and underground drainage pipes, drainage structures and overland drains;
- Clear temporary and permanent stormwater control and erosion control structures of debris and silt on a regular basis and as necessary when filled to 50%;
- Repair all scours, replace topsoil and grassing to areas eroded by stormwater. Upgrade existing erosion control measures or install new temporary or permanent control structures where severe scouring indicates the need;
- Repair all trench subsidence to all infrastructure and services;

- Repaint line marking as necessary;
- Repair or replace all subsided pipes, kerbs and pavements;
- Replace all construction providing a risk to the public;
- Replace or repair any cracked, chipped or broken kerbs, paving, pipes and structures.

At any time during the Maintenance Period, Council may undertake random inspections or audits to determine the satisfactory maintenance of the works. This does not relieve the Developer of this responsibility.

Where Council believes that the Developer is not carrying out the necessary inspections and audits during the maintenance period, the Council's time in these matters will be charged to the Developer.

Where maintenance requirements or defects are noted, written advice will be issued to the Developer requiring works to be carried out within a stipulated time. Where public safety or health is at risk, verbal advice may be given followed up by written advice. In this instance appropriate action may be required within 24 hours from the time of the verbal advice.

Where notifications are not complied with by the due date, Council can, without further reference, undertake the works at the Developer's cost.

If at any time after the works have been declared Finally Complete, Accepted and placed On Maintenance by Council, the Development Works are found to be not in accordance with the approved specification and drawings, and then the works are to be rectified at the Developer's cost. Minor items may be monitored and the works undertaken at the end of the Maintenance Period.

Council will not be responsible for damage caused as a result of builder's or any other's operations. This applies to all works. All damaged works are to be rectified prior to being accepted Off Maintenance by Council. If the works are not rectified, the cost of any works deemed to be necessary to repair the damage will be deducted from the Maintenance Bond and/or any other relevant bond that is in place.

The repair of construction defects or the rectification of design errors and omissions are to be undertaken as they are identified.

Construction defects include but are not limited to:

- Shrinkages of materials used in construction: e.g., movement of asphalt away from kerbs, pavement cracking, subsidence in trenches, pavements, kerbs, etc.;
- Incorrect installation of materials; e.g., deflection of pipes, incorrect bedding, broken and chipped kerbs, paths, paving or concrete structures, etc.;
- Use of materials that do not comply with the specification: e.g., gravels and bedding sands with incorrect gradings, incorrect class of pipes, low concrete strength, etc.;
- Defects that were identified during construction, but were monitored rather than rectified.
- Incorrect operation of irrigation system and pipe leaks;
- Trees not establishing and dying.

3.8. OFF MAINTENANCE

At the end of the designated Maintenance Period, the Developer (or Consultant where applicable) is to notify the Officer in writing requesting an inspection to have the works placed Off Maintenance.

Prior to the inspection, the Developer (or Consultant where applicable) shall submit the following:

- Off Maintenance Inspection Checklist (Appendix J) completed and signed;
- Other information so conditioned or required by the Officer.

The inspection will require the presence of the Officer, the Developer (or Consultant where applicable) and the Contractor. All drainage pit covers are to be temporarily removed and all drainage lines flushed for the inspection. The Officer may have other special requirements to be attended to prior to inspection.

As soon as is practical after the inspection, the Officer will inform the Developer (or Consultant where applicable) any items not in accordance with the requirements of the drawings and specification and the conditions set out in the Development Permit.

All defects or items arising from the inspection must be completed to the satisfaction of the Officer. When the foregoing requirements to have the works placed Off Maintenance have been complied with, the Officer will issue the Developer with an Off Maintenance certificate.

The Final Certificate - Off Maintenance as per Appendix K shall be issued but will have no effect until both the Officer and the Developer have signed and dated the document.

At that point in time, all relevant Bonds shall be returned minus any amounts that Council may have drawn on.

DESIGN REQUIREMENTS

- 4.1 DESIGN SUBMISSIONS
- 5.2 DESIGN DOCUMENTATION STANDARDS
 - 4.2.1 Drawing Scales
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 - 4.4.1 Verge & Footpaths
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- 4.5 ROAD PAVEMENTS & WEARING SURFACES
- 4.6 STORMWATER DRAINAGE
 - 4.6.1 General Requirements
 - 4.6.2 Design Philosophy & Criteria
 - 4.6.3 Drainage Coefficients & Recurrence Intervals
 - 4.6.4 Initial & Major Storm flow criteria
 - 4.6.5 Drainage Catchments & Networks
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 - 4.6.7 Freeboard for Drainage Systems
 - 4.6.8 Intersection low points
 - 4.6.9 Gross Pollutant Traps
 - 4.6.10 Stormwater Management
 - 4.6.11 Interallotment Drainage
 - 4.6.12 Drainage pipes, culverts, pits & structures
 - 4.6.13 Open Drainage structures and drains

4.7 LANDSCAPING

- 4.7.1 General
- 4.7.2 Existing Vegetation Survey
- 4.7.3 Street Tree and Other Planting
- 4.7.4 Turfing
- 4.7.5 Irrigation
- 4.7.6 Parks and Reserves
- 4.7.7 Furniture and Structures

4.8 STREET AND PUBLIC AREA LIGHTING

4.9 WASTE BIN INFRASTRUCTURE

4.1 DESIGN SUBMISSIONS

The Developer (or Consultant where applicable) is responsible for all design and construction activities carried out during the course of the Development.

The Developer (or Consultant where applicable) shall submit a Design Report describing the intent, criteria, considerations, standards referred to and philosophy of the design for all works for approval from the Officer. Any departure from Council's policies, as set out in the Guidelines, should be noted and justified.

Design aspects may include but are not limited to the following:

- Roadworks and stormwater drainage;
- Associated site works, earthworks and erosion & sediment control;
- Landscaping of streets and public open spaces;
- Pathways and Cycle ways;
- Street lighting;
- Environmental Management;
- Construction Specifications
- Any other associated works required under the Development Permit and as required by Council.

The Developer is to engage appropriately qualified people to carry out a site Geotechnical Investigation inspection to determine the soil types and geotechnical properties.

The Design submission shall also include all relevant drawings, calculations and other such Reports required to adequately convey the design intent and proposed construction elements.

One copy of the Documents, which shall include relevant plans and is to be submitted to the Officer for preliminary perusal and comment. The documents must be signed as CHECKED and APPROVED for the purposes of the issue by the Consultant or they will not be accepted.

Appendix B - Design Approval Checklist highlights all documents, plans and fees required for Design submission. The submission will not be accepted unless accompanied by all items.

Once the submission has been accepted, the Officer may make comments back to the Consultant, or if satisfied that the submission meets all requirements, inform the Consultant of such. The Developer / Consultant should allow a reasonable time for examination of the documentation. The Officer will be able to advise of the approximate time required at the time of submission.

Amended plans (if required) are to be resubmitted by the Consultant for approval. The plans must be signed as CHECKED and APPROVED by the consultant or they will not be accepted.

When satisfied that the plans and specifications meet all requirements, they will be stamped and signed "Permission to Use for Construction Purposes" by the Officer, subject to any conditions required and noted. The stamped approved plans do not constitute permission to commence construction of the Development Works. Construction shall commence only after a Notice to commence construction works.

Where, in the Officer's opinion, significant variations to existing or new submissions are made by the Developer, fees will be charged at an hourly rate, in accordance with Council's approved Fees and Charges, for the Officer's time.

The Plan Variation Approval Fee (based on Council's Fees and Charges) will be payable prior to the variation being approved.

This approval does not mean that Council accepts responsibility for the engineering or technical adequacy of the design. This is the responsibility of the design Consultant.

4.2 DESIGN DOCUMENTATION STANDARDS

All design elements shall be undertaken based on these Guidelines and Relevant Standards. Where a standard is not clearly conveyed within these Guidelines the following commonly used Relevant Standards shall be utilised:

- Austroads - Traffic Management
- Austroads - Road Design (all Parts)
- Austroads - Road Safety (all Parts)
- Austroads - Road Surface Skid Resistance
- Austroads - Local Area Traffic Management
- Austroads - Pavement Design (all Parts)
- Austroads - Bridge Technology (all Parts)
- Austroads - Selection of Road Surfacing
- Austroads - Spray Sealing Guide
- Austroads - Design for Trucks
- AS1428 (all Parts) - Mobility Access
- AS1742 (all Parts) - Manual of Uniform Traffic Control Devices
- AS2890 (all Parts) - Parking Requirements
- AS3798 - Earthworks for Residential & Commercial Developments
- Australian Rainfall & Runoff

Other relevant Standards, Guidelines, Technical Reports and Practices may also be utilised, however, reference must be made in the initial Design Report of all Standards and design assumptions.

All drawings shall be produced in metric in accordance with AS1100 series and are to be clear and legible at A3 size drawings. The drawings are to be checked and signed by the appropriately qualified person.

The Level Datum must be an established Department of Lands Benchmark to Australian Height Datum. The datum and the locations of such datum points are to be clearly marked on the plans.

4.2.1 Drawing Scales

The following is the recommended drawing scales.

| DRAWING | | SCALE |
|--|------------|----------|
| Locality Plan | | 1 : 5000 |
| Site Works, Erosion and Drainage Control Plan | | 1 : 1000 |
| Overall Layout Plan | | 1 : 1000 |
| Road Plan | Preferred | 1 : 500 |
| | Minimum | 1 : 1000 |
| Road Longitudinal Section | Horizontal | 1 : 1000 |
| | Vertical | 1 : 100 |
| Road Cross Sections | | 1 : 200 |
| Intersections, Traffic Management Devices, Cul de sacs | | 1 : 200 |
| Drainage Plans | Preferred | 1 : 500 |
| | Minimum | 1 : 1000 |
| Drainage Longitudinal Sections | Horizontal | 1 : 1000 |
| | Vertical | 1 : 100 |

Landscape documentation plans should typically be drawn at standard metric scales of 1 : 250, 1 : 200, or 1 : 100 and be consistent throughout the drawing set. Details should typically be drawn at standard metric scales of 1 : 25, 1 : 20, or 1 : 10.

4.2.2 Drawing Information

The following is considered to be the minimum information to be conveyed on the drawings. All drawings must clearly convey the design intent be adequately cross-referenced and show sufficient detail for construction purposes.

Locality Plan

- Existing Roads;
- New roads;
- All relevant street names;
- Any other significant features.

Site Works Drawing

- All existing and proposed roads and property boundaries;
- Existing and proposed contours with appropriate contour intervals;
- Detailed areas of cut and fill;
- Levels along existing roads and properties adjacent to recontoured areas;
- Details of existing vegetation and extent of clearing and vegetation protection.

Layout Drawing

- Existing and new roads with allocated street names (if already approved);
- Pavement widths;
- Lots with lot numbers;
- Existing and proposed street drainage and allotment drains and easements;
- Services and fence lines (where applicable);
- Traffic management devices;
- Footpaths, footways, cycle paths;
- Survey and benchmarks.

Road Drawings

Plans

- Widths of all pavements, verges and medians;
- Distances (chainages) and stations along center line of road;
- Horizontal curve data;
- Existing and proposed levels;
- Existing and proposed street drainage including drainage structures;
- Lots facing onto streets;
- Proposed traffic management devices of signage location;
- Existing and proposed services in the road reserve;
- Footways, footpaths, cycle paths;
- Survey and bench marks;
- Street names (if already approved).

Cross Sections

To show the offset from the road reserve centre line and levels of the following points at maximum 20 metre intervals

- Road centre line;
- Toe and top of kerb;
- Any change in cross fall;
- Road reserve boundary;
- Cuts and fills extending into properties.

Longitudinal Sections

- Running distance (chainage) along the centre line of the road;
- Existing surface levels along centre line (optional both property lines);
- Design levels for road centre line and kerbs where applicable. Levels at 20m maximum spacing for straight grades and 10m maximum for vertical curves. Levels to be shown at horizontal curve tangent points and other required locations;
- Lengths of grade lines with grades expressed as percentages;
- Intersection and tangent point changes of grade;
- Length of vertical curves and other information;
- Transition and super elevation details.

Intersections, Cul de sac, Roundabouts, Bends, Traffic Management Devices

- All adjacent lot boundaries;
- Geometric details;
- Design levels at appropriate points;
- Design grades and vertical curve details around kerb and curve radials;
- Drainage and other services;
- Pram crossings and footpaths etc.

Drainage Drawings

Plans

- Existing and proposed drainage line detailing pipe sizes, types, connections, grades, lengths, drainage pits and structures and special backfill requirements;
- Upstream and downstream levels on all existing drainage and outfalls to which connections are being made;
- Sub soil drainage details;
- Existing and proposed sewer lines and any other services which may effect the proposed drainage works;
- Existing and proposed contours / finished levels;
- Streets, street names and lots and lot numbers;
- Existing and proposed drainage easements and other easements including description and widths;
- Stormwater connection points;
- Open drains, table drains, outlet and overflow structures, head walls retardation and siltation basins etc.

Longitudinal Sections

- All pipe sizes, grades, type and class of pipe;
- Existing and finished surface levels on the line of the pipe(s);
- The running distances (chainages) between pits and drainage structures
- Location and level of other services or connections crossing or in close proximity to, including parallel to, the drainage line;
- Details and identification of all pits and drainage structures;

Master Services Plans

The Master Services Plan shall show locations of all services and shall provide sufficient information to enable the invert levels of the storm water and sewer pipes to be calculated at any point. At each location where storm water and sewer pipes cross, the invert level of each pipe shall be shown.

Where Telstra and Power and Water Corporation ducting and water mains are laid at non-standard depths, the depth to these services shall be indicated on the plan.

Landscape Plans

The scope of landscaped areas and the complexity of the design will determine the number of drawings and detail of technical specification required to convey the information for construction. This will be negotiated by consultation with Council's Landscape Architect.

A plant schedule is to be shown on the appropriate plan, listing botanical name, container size, and quantity/density.

The graphic presentation should incorporate a legend to clearly identify each of the following:

- Existing trees to be retained or removed
- Proposed trees, shrubs and groundcovers
- Lawn areas and garden bed edging
- Paved surfaces
- Furniture
- Lighting
- Proposed and existing fencing

A coloured plan will assist in legibility of the surface treatments but is not a prerequisite for endorsement.

4.3 ROAD DESIGN REQUIREMENTS

Road design is to comply with the relevant Standards especially those documented by Austroads. The Consultant is responsible for referring to and using the most up to date and relevant standard. All standards used or referred to shall be stated in the Design Report.

In all circumstances, access is to comply with the objects and intent of the Anti-Discrimination Act and the requirements all relevant Australian Standards and Guidelines. Access is to be provided to all parts of the Development.

4.3.1 Road Hierarchy

A road hierarchy needs to be established for any proposed development that allows the safe and orderly movement of vehicles, cyclists and pedestrians within, across and between roads within the development.

The road network for Katherine consists of a defined road hierarchy and is generally fixed in relation to any proposed works.

Developers are required to match into this road network with the proposed pattern and use of the development. All new roads shall be assessed by Council based on its interim and future functionality and a level of road hierarchy approved by the Officer.

The Road Hierarchy is defined as follows:

Residential Cul-de-sac - A road with a single connection point to higher function road, which provides frontage for a maximum of 25 residences.

Residential Local Road - A road, which provides frontage for a maximum of 50 residences.

Residential Secondary Collector Road - A collector road giving access to a maximum of 125 residences and giving entry to one or more access roads.

Residential Primary Collector Road - A collector road giving access to a maximum of 250 residences and giving entry to one or more access roads. This type of collector road must have a minimum of two connection points to the Distributor Road network and may service a bus route.

Residential Distributor Road - A distributor road is the highest status road in the suburb and provides a connection from the neighbourhood to higher order roads and may service a bus route.

Industrial Local Road - A road providing access to a maximum of 50 lots, which primarily or wholly service traffic whose origin or destination is a lot fronting the street.

Industrial Collector Road - A collector road of relatively longer length having a significant traffic handling function not associated with properties fronting the street. These streets also provide access to those properties, which do directly front the street.

The number of residences or lots stated above includes all those that are or can be serviced by that particular road type taking into account possible future developments or land subdivisions.

4.3.2 Design Speed

The following design speeds shall be adhered to.

Residential Roads

| | Cul-de-sac | Local | Secondary Collector | Primary Collector | Arterial |
|--|------------|-------|---------------------|-------------------|------------|
| Maximum desirable operating speed km/h | 50 | 50 | 60 | 60 | As advised |
| Speed for sight distance km/h | 50 | 50 | 60 | 60 | As advised |

Industrial Roads

| | Local | Collector |
|--|-------|-----------|
| Maximum desirable operating speed km/h | 60 | 60 |
| Speed for sight distance km/h | 60 | 60 |

The Design Speed for C.B.D., Tourist and other classification of roads shall be determined by the Officer.

A traffic environment is to be provided such that the design speeds are not generally exceeded, with due consideration being given to the requirements of buses (where applicable) and various emergency services.

The following features and measures are encouraged in the design of Urban road structure to create a safe urban road environment:

- Variable alignment (meandering carriageway);
- General and isolated width restrictions;
- Selected variations to pavement surface texture and colour;
- Street furniture placement;
- Streetscape planting;
- Other appropriate measures.

Developments may require that traffic calming works be carried out in existing roads, abutting or giving access to the proposed Development.

In these cases, community consultation may have to be carried out at the Developer's expense or cost shared with Council as determined by the Officer.

Care is to be taken that no unacceptable traffic hazards are introduced.

4.3.3 Road & Road Reserve Cross Sections

The minimum cross section details depend upon a number of criteria including the location of footpaths, services and the provision of access. Typically road and road reserve widths are as follows:

| | Residential Cul-de-sac | Residential Local | Residential Secondary Collector | Residential Primary Collector | Industrial Local | Industrial Collector |
|-------------------|------------------------|-------------------|---------------------------------|-------------------------------|------------------|----------------------|
| Verge width | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Carriageway width | 6.0 | 6.0 | 8.0 | 11.0 | 11.0 | 13.0 |
| Verge width | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |

Exceptions to the above criteria can only be granted by the Officer.

All roadways shall have two-way crossfall at 3% with design superelevation only being used for Road Functions of Distributor or higher. The Officer may consider one-way crossfall in certain situations such as water sensitive urban design on access roads only.

Cut and fill batters may be extended into allotments where the design cross-section cannot be contained within the road reserve. In these cases the batter slope should not exceed 1 in 6 unless in special cases, geotechnical testing indicates that steeper slopes are sustainable. Consideration is to be given in this case to ongoing maintenance of the steeper slope. In all cases the maximum grade for vehicular access from the property line to within the allotment is to be 1 in 6.

4.3.4 Intersections

Adequate stopping sight distance to be provided at all intersections.

Cross roads and "Y" intersections are not acceptable unless signalisation, roundabout or other approved traffic control is warranted and utilised. Staggered "T" intersections are to be provided and separated as far as possible.

At all intersections the through road having the higher road hierarchy is to maintain its cross section. The terminating road is to match its longitudinal grade with the pavement cross fall of the through road. This may be waived where circumstances warrant, ie, in the case of concrete inverts where the terminating road is a Local Road intersecting with a Local Road or Collector Road.

Where the gradient of the intersecting road is 5% or less, consideration may be given to a concrete dished invert across the intersection. Inverts may be used at intersections between Local Roads and Collector Roads and Local Roads and Local Roads.

In the instance where the through road is constructed by the Developer and the terminating road location is fixed and/or is to be constructed by another Developer in the future, the former Developer may be required by the Officer to construct the intersection in full at their expense, including all drainage requirements. This may necessitate construction outside the boundaries of the subject land. In this case all necessary permission is to be obtained prior to the approval of design drawings.

Intersections, except those being treated with roundabouts or signalisation are to be channelised (minimum 2.0m wide splitter islands) as indicated in the following:

| | Cul-de-sac | Local | Secondary Collector | Primary Collector | Arterial |
|---------------------|------------|-------|---------------------|-------------------|----------|
| Local | No | No | Yes | Yes | Yes |
| Secondary Collector | Yes | Yes | Yes | Yes | Yes |
| Primary Collector | Yes | Yes | Yes | Yes | Yes |

Intersections shall be designed to allow for the movement of Austroads Design Vehicles in accordance with the following:

| | Residential | | | |
|---------------------------------|------------------|---------------------|-------------------|----------|
| | Cul-de-sac Local | Secondary Collector | Primary Collector | Arterial |
| Residential Cul-de-sac & Local | SU | SU | SU | SU |
| Residential Secondary Collector | SU | ST | ST | ST |
| Residential Primary Collector | SU | ST | ST | ST |

ST denotes an Austroads design 21m semi trailer with a turning path radius of 12.5m.

SU denotes an Austroads design 11m single unit truck with a turning path radius of 12.5m.

Minimum intersection kerb return radii shall be as follows:

| | Residential Cul-de-sac & Local | Residential Collector | Residential Distributor | Industrial |
|--------------------------------|--------------------------------|-----------------------|-------------------------|------------|
| Residential Cul-de-sac & Local | 10 | 10 | 10 | - |
| Residential Collector | 10 | 10 | 20 | 20 |
| Residential Distributor | 10 | 20 | 20 | 20 |
| Industrial | - | 20 | 20 | 20 |

The Officer will determine the Design Vehicle for Industrial Roads and reserves the right to nominate other design vehicles to be catered for on Residential Roads.

All road and intersection designs shall accommodate the Design Vehicle.

4.3.5 Cul-de-sacs

Cul de sacs are considered undesirable in industrial areas, but where this cannot be avoided approval may be given for a maximum of ten lots to be serviced. In this case, lots should be smaller sizes so as not to attract heavy transport. There is no specific shape for the cul de sacs, however, any reasonable proposal that permits turning for a semi trailer and provides acceptable frontage and access will be considered. No reversing movements or multi-point turns will be considered for turning in these cul de sacs.

The minimum gradient for kerbs at the cul de sac head shall be 0.5 %.

The minimum acceptable radius for circular turning areas at the cul de sac head is as follows:

Residential Roads 8.5 metre radius

Industrial Roads 13.5 metre radius (or such radius to cater for the Design Vehicle)

The verge reserved for the location of services shall not be less than 4.5 metres at any location.

4.3.6 Longitudinal Grades

Under all circumstances, all design and construction is to comply with the object and intent of the Anti-Discrimination Act and the requirements and provisions of relevant standards.

Maximum and minimum road grades are as follows.

| | Residential | | Industrial |
|---------------------|--------------------|------------------------|------------|
| | Cul-de-sac / Local | Collectors / Arterials | All Roads |
| Desirable Maximum % | 10 | 8 | 6 |
| Absolute Maximum % | 12 | 10 | 8 |
| Desirable Minimum % | 0.5 | 0.5 | 0.5 |
| Absolute Minimum % | 0.3 | 0.3 | 0.3 |

The absolute maximum and absolute minimum grades may be approved by the Officer in special cases. Redesign is to be considered where these grades are contemplated and only after complete examination of all options will they be considered.

4.3.7 Kerbs

Kerb profiles shall be in accordance with the Standard Drawings.

Layback Kerb - To be used only in Cul de sacs or Local Roads that exclusively service R1 residential allotments.

Standard Barrier Kerb and Gutter - To be used in all other areas.

Alternative Kerbs - Attractive and functional edge treatments using concrete or bituminous concrete may be considered dependant upon a supporting proposal being made to the Officer by the Developer.

4.3.8 Traffic Islands and Roundabouts

All traffic islands are to be finished with a maintenance free or minimum maintenance surface. Generally speaking, traffic islands less than 5 square metres in area shall be concrete paving with a finished surface as specified by the Officer. Larger traffic islands may require landscaping to the approval of the Officer.

4.3.9 Traffic Signs and Pavement Markings

All traffic control signs and pavement markings are to conform to the relevant Standards. Suitably presented traffic control plans are to be forwarded to Council for Approval.

Street name signs are to be provided at the Developer's cost at each intersection in accordance with the Standard Drawings and other relevant Standards.

Overall, the following signage and marking is to be provided for each development:

- Street name signs at each intersection in accordance with the Standard Drawings.
- Warning and advisory signs as required;
- Road marking as required on distributor and collector roads;
- Parking signs where required;
- All other advisory and traffic control devices necessary for effective traffic control.

4.3.10 Other Provisions

Roads abutting public open space are to be provided with car parking bays at appropriate locations. Such bays are to be designed to accommodate either angle or parallel parking, depending on the available road width, verge width, length of road frontage and defined road hierarchy.

The design of subdivisional roads abutting school sites or commercial areas shall take into account pedestrian crossing needs.

The design of subdivisional roads shall accommodate for the provision for proposed bus routes. Road widths need to be adequate to cater for bus stops especially on collector roads. Indented bus bays may be required in certain circumstances.

4.4 VERGE, FOOTPATHS & DRIVEWAYS

4.4.1 Verge and footpaths

Verge and footpath widths for all roads are dependent upon footpath and services locations and access requirements. Refer to Standard Drawings.

Access is to be provided for all to all areas of the subdivision as per the objective and intent of the Anti-Discrimination Act and the requirements of relevant access standards.

Footpaths shall be constructed as per the Standard Drawings and in accordance with the following requirements:

| | |
|--|--|
| Residential Cul-de-sacs | Not required |
| Residential Local (SD zoning only) | Roads < 200m long - not required. Roads > 200m long - Standard path on one side |
| Residential Secondary Collector (SD zoning only) | Standard path on both sides. |
| Residential Primary Collector (SD zoning only) | Standard path on one side with Shared path on the other side. |
| Residential Distributor | Shared path on both sides. |
| Industrial Local | Standard path on both sides. |
| Industrial Collector | Standard path on one side with Shared path on the other side. |

Standard paths shall be 1.5 metres wide and Shared paths shall be a minimum of 2.0 metres wide. The width and nominated location of Shared paths shall be determined by the Officer based on the anticipated type & frequency of use and the form of linkage created. All paths shall be located 0.3 metres from the Road Reserve boundary and constructed in accordance with the Standard Drawings.

For Walkways the path width shall be 3.0 metres and in that instance removable and lockable bollards shall be installed at each end to preclude vehicle movements.

Access ramps (pram crossings) are to be provided as per the Standard Drawing at the appropriate locations at all intersections and any other nominated location. The Officer may nominate the installation of tactile devices in certain locations.

4.4.2 Driveways

Access must be provided to every part of the Development. All verges, whether they contain a constructed footpath or not, are to be provided with access.

Driveways shall be constructed as per the Standard Drawings and in accordance with Council's Driveway Policy.

The Officer will determine the acceptable location or relocation of all driveways in accordance with the following criteria:

- All R1 zoned allotments (including duplex allotments) shall have one 3.5 metre wide driveway access to the roadway.
- All R2, R3 and R4 allotments shall have one 6.0 metre wide driveway access to the roadway. Two driveway accesses may be considered by the Officer based on safety, traffic management and serviceability issues. Entry only and Exit only driveways may also be considered by the Officer based on safety, traffic management and serviceability issues.
- All Commercial and Industrial allotments shall have one 6.0 metre wide driveway access to the roadway. Wider driveways may be considered where serviceability of an acceptable design vehicle is an issue. Two driveway accesses may be considered based on safety, traffic management and serviceability issues. Entry only and Exit only driveways may also be considered based on safety, traffic management and serviceability issues.
- Where allotments abut or front onto more than one roadway, then Council prefers that the driveway(s) shall access the roadway with the lower road hierarchy status. I.e. If the allotment abuts a Collector Road and a Local Road then driveway access be to the Local Road.
- The location of the driveway shall be at least 15 metres from any intersecting roadway.
- The driveway shall meet Austroad sight distance criteria for both entry and exit.
- Where practical, driveways shall be located such to have minimal impact to on-road parking.
- Under certain circumstances Council may require deceleration or turning lanes to the allotment or the elimination of certain turning movements based on safety and traffic management issues.

Battle-axe allotments are not favoured or encouraged for subdivision development, however, it is recognised that there may be some situations for which there are no other options. All options are to be explored before the Officer will consider battle-axe allotments and driveways to such.

4.4.3 Walkways

In the development of new subdivisions, pedestrian and cyclist movements should be provided within the road reserve network or dedicated open space areas. Narrow walkways or laneways between adjacent properties are to be discouraged due to their common association with antisocial behaviour and will generally not be approved. If a walkway or laneway has to be constructed to provide an essential linkage between open space areas they must be a minimum 10 metres wide and incorporate a paved pathway with a minimum width of 3 metres. Irrigation must be provided to any planted areas.

The pathway shall be lit to AS 1158.3 Category P2 with a pole height of 4.5 metres. Lighting shall be designed to minimise spillage into adjacent properties. The Developer shall install a solid fence a minimum of 2 metres high along the boundary of the linkage and residential or commercial land. Linkages are to be designed taking into account Crime Prevention Through Environmental Design (CEPTD) Principles. Vehicular access to these linkages will be prevented through the use of bollards, except for service vehicles that will have access to the pathway through a lockable entrance.

With new developments or redevelopments adjacent existing walkways the Developer shall install a solid fence a minimum of 2 metres high along the boundary and shall design the internal layout and structures to minimise the possible effects of any antisocial behaviour that may emanate from the walkway or laneway.

4.4.4 Bonding of Footpaths & Driveways

Council's Policy generally is that, footpaths, share paths and driveways located within road reserves will not be constructed until building construction within the development is substantially complete (75% absolute minimum).

Where it is not appropriate to complete this construction prior to Final Completion, payment in lieu for the construction based on Council's current Fees and Charges is to be lodged with Council to enable clearance for Titles release.

Footpaths are to be constructed in or adjacent to areas such as parks and other identified areas at the time of development.

4.4.5 Cyclist facilities

The provision of safe and convenient facilities for pedestrians and cyclists (and in some more rural areas horses and riders) is a prime consideration in designing a road network within any subdivision.

Council requires Developers to provide facilities for pedestrians and cyclists in all proposed developments in accordance with the overall network plan.

As for roads, Katherine Municipality has an existing road hierarchy and network of bicycle and pedestrian paths, which is constantly being extended and upgraded.

Off-road facilities comprise of footpaths, share paths, bicycle only paths, pedestrian only paths and pedestrian access way paths.

On-road facilities comprise cycle ways constructed as an integral part of the roadway.

Shared paths and cycle paths are to be constructed in accordance with the Standard Drawings. The standard drawings detail asphalt or concrete surfacing, however alternative treatments may be considered at the discretion of the Officer.

The Officer shall determine the need for any form of cyclist facilities.

4.5 ROAD PAVEMENTS & WEARING SURFACES

The Consultant is to prepare detailed designs for flexible pavements in accordance with the Relevant Standards.

Notwithstanding anything stated in the design Guidelines, the minimum design life for a pavement in the Katherine Municipality is 30 years and is to be based on the following Design ESA's and prescribed wearing courses:

| Road Class | Asphaltic Concrete | Residential | Industrial |
|--------------------------|--------------------|----------------------|----------------------|
| | | Design Loading (ESA) | Design Loading (ESA) |
| Distributor | 40mm | 2.0x10 ⁶ | 2.0x10 ⁶ |
| Collector (11m pavement) | 40mm | 5.0x10 ⁵ | 2.0x10 ⁶ |
| Collector (8m pavement) | 25mm | 2.5x10 ⁵ | 1.0x10 ⁶ |
| Loop | 25mm | 4.0x10 ⁴ | 1.0x10 ⁶ |
| Cul-de-sac | 25mm | 1.0x10 ⁴ | 1.0x10 ⁶ |

The minimum accepted pavement thickness and make-up for urban residential roads is;

- Subgrade shall be 150mm minimum compacted thickness and compacted to 95% MMDD;
- Subbase and Base courses (crushed rock) shall be 150mm minimum compacted thickness and compacted to 98% MMDD and 100% MMDD respectively;
- Wearing surfaces shall be 25mm minimum compacted thickness of asphaltic concrete.

The wearing course on all urban roads is to be asphalt over a prime or primer seal.

Asphalt is to conform to Urban Mix Type 2 in accordance with the Technical Specification.

Other types of pavement construction such as Rigid Pavements and Segmental Pavements may be proposed and Council will consider these. Council is supportive of alternative pavements, especially in lesser use environments such as accessways and roads.

Segmental Pavements shall be designed in accordance with the Concrete Masonry Association of Australia (CMAA) standards.

The Consultant is to design for pavement drainage where necessary to maintain a moisture free sub-grade and base course as determined by the site geotechnical investigation.

All roads are to be provided with appropriate sub-surface drainage to both sides of the pavement and at any other location in or across the pavement, unless it can be adequately demonstrated that such drains are not required.

Sub surface drains are to be located and constructed in accordance with the Standard Drawings.

4.6 STORMWATER DRAINAGE DESIGN

4.6.1 General Requirements

Developers subdividing land for urban residential, commercial or industrial developments are required to provide an adequate stormwater drainage system. The subdivision of rural land will require the provision of a similar system.

All areas except rural require sub soil drainage to be installed to road pavements. Subsoil drains may be required for rural road pavements in special circumstances.

Developers, through their Consultants, should discuss Council's requirements for drainage of a new subdivision or any other type of Development at the following times:

- Prior to making a Development Application - a preliminary drainage proposal and investigation will be required, ie, if a drainage problem is deemed to exist;
- Prior to preparation of engineering or other drawings.

4.6.2 Design Philosophy & Criteria

Council's general stormwater drainage design philosophy is as follows:

- The stormwater drainage design is to be based on a system of sealed roads, kerb and gutter, entry pits and underground drainage supplemented where applicable by a system of floodways preferably located in open spaces or drainage reserves;
- Roadways are to be viewed as primarily for use by vehicular and pedestrian traffic and for providing access to property by vehicle and foot. They are not to be viewed as primary drains and floodways. Public amenity and safety are to be paramount considerations;
- Consideration is to be given to the impact of the proposed drainage system on existing drains and buildings and downstream catchments.
- The drainage system is to be designed to accommodate two different storm events:
 - a) The initial storm;
 - b) The major storm.
- Drainage of all lots, apart from residential R1, is to be collected within the allotments and conveyed by underground pipe(s) to the main drainage system. This includes the control of both the initial and major storm events emanating from either within the site and/or from exterior catchments by means of underground drainage and open cut-off drains as warranted. If necessary, part or all of the Q100 flow may have to be undergrounded.
- Drainage run-off from residential R1 lots may be discharged (sheet flow) across the lot surface to the main drainage system. If drainage run-off from residential R1 lots is

concentrated then it may not be discharged in that form onto public land or over adjacent private property;

- Subsoil drainage is required;
- Environmental considerations are a major consideration. Erosion and sediment control are required.
- No encumbrance of any land designed, or intended to be utilised as a floodway will be permitted.
- No drainage low points with associated ponding will be allowed within the kerb radial section of intersections. The low points are to be located before the tangent point on the side road of the intersection.
- During the wet season, the ground becomes saturated and all drainage design should be carried out with the view that there will be 100% runoff from any and all sites.
- To avoid mosquito breeding, all drainage systems and associated structures should be designed to have no ponding of water.
- The minimum pipe diameter for a drain picking up surface flow within the road reserve is 375 mm and Class 2 concrete or equivalent is the minimum strength standard.
- The piped system is to have the capacity to accommodate the design rainfall with the top water level in side entry pits a minimum of 150 mm below the surface entry level and for junction pits and manholes and other structures, a minimum of 300 mm below the surface.
- Energy losses must be allowed for in drainage lines.
- Stormwater drainage lines in road reserves are generally to be aligned in accordance with the requirements of the services locations and the pit details and pipe laying and subsoil drainage details as set out in the Council Standard Drawings.
- Pipe joints shall be in accordance with the Standard Drawings.
- Pipes located within properties are to be laid centrally in easements granted to Council.
- The minimum easement width is to be 3.0 m for pipe diameters of 450 mm or less and at depths up to 1.5 m. Increased easement widths are to be provided for pipe diameters and depths greater than above as advised by the Officer.
- Grated inlet pits are not acceptable in Road Reserves or Parklands. Combined grated inlet pits with side entry pits or letterbox pits may be considered by the Officer.
- Drainage connections to Council's system shall be located at the lowest point of each allotment.

4.6.3 Drainage Coefficients & Recurrence Intervals

The designer is to use a coefficient of runoff factor 'C' of 1.0 for all drainage design calculations.

Runoff characteristics for the ultimate development of the allotments based on land zoning must be considered in designing an adequate stormwater system.

The design intensity for a calculated time of concentration is to be determined from the Katherine Design Rainfall Intensity Diagram contained in Australian Rainfall and Run-off.

The minimum time of concentration to be used for a fully developed catchment is 5 minutes.

The designer is to adopt the following minimum Storm Recurrence Intervals.

| Catchment Zoning | Initial Storm | Major Storm |
|--|---------------|-------------|
| B1, B2, B3, B4 | 10 | 100 |
| Open Space and Drainage Reserves | 1 | 100 |
| Industrial, & R1 (R2, R3 & R4 zones to be determined by the Officer) | 2 | 100 |

4.6.4 Initial & Major Storm flow criteria

Stormwater must be contained within the absolute maximum limits tabulated below for the Initial and Major Storms. In all cases the flow is to be contained totally within the road reserve.

Residential

| | Initial Storm | Major Storm |
|--------------------------------------|--|---|
| Local Road | Flow may spread to crown of road for two-way crossfall or road centreline for one-way crossfall or to flush kerbs in dish drains | Flow may spread to road reserve boundary but maximum depth in roadway is not to exceed 400mm nor should $D \times V$ exceed 0.45 where D = depth (m) and V = velocity (m/s) |
| 8m Collector Roads | Flow shall not overtop crown of road or kerbs. | Flow may spread to road reserve boundary but maximum depth in roadway is not to exceed 400mm nor should $D \times V$ exceed 0.45 where D = depth (m) and V = velocity (m/s) |
| 11m Collector Roads or Arterial Road | Flow shall not overtop kerbs and shall leave at least 3.0m width of roadway free of water. | Flow may spread to road reserve boundary but maximum depth in roadway is not to exceed 400mm nor should $D \times V$ exceed 0.45 where D = depth (m) and V = velocity (m/s) |
| Open Space & Drainage Reserves | | Flow to be contained within boundaries and velocities not to exceed scour velocity (1.5 m/s in OUD's) |

Industrial

| | | |
|-----------|--|---|
| All Roads | Flow shall not overtop kerbs and shall leave at least 3.0m width of roadway free of water. | Flow may spread to road reserve boundary but maximum depth in roadway is not to exceed 400mm nor should $D \times V$ exceed 0.45 where D = depth (m) and V = velocity (m/s) |
|-----------|--|---|

4.6.5 Drainage Catchments & Networks

Upstream Catchments Passing Through Development

The Consultant is to examine the total drainage catchment and ensure that the drainage system for the Development is capable of carrying the ultimate design flow from the upstream catchment.

In this instance, Developers are responsible for negotiating their own cost sharing arrangements.

Shared Catchment

Developers, who are developing simultaneously and whose land shares a common drainage catchment, have a shared responsibility for ensuring that the whole of the catchment is drained as required.

Staged Subdivision

Where development is staged, an overall drainage plan for the whole of the catchment is required before approval will be given to any individual stage. Drainage of each stage is to be in accordance with the overall plan.

Development Occupies Upper Part of the Catchment

Where a new Development occupies the upper part of a catchment in common with existing developed land for which there is no overall drainage catchment plan, the existing drainage system of the Council may not be able to carry the design storms applicable to the design recurrence intervals detailed in these Guidelines.

In these circumstances the Developer:

- is to prepare and submit an overall drainage plan; and
- is to examine the complete downstream drainage network to evaluate the maximum quantity of stormwater that may be discharged into the existing network. If the capacity of the existing drainage network is exceeded, the surplus water, if feasible, is to be retained and disposed of within the subdivision or if not, the existing system is to be upgraded at the Developers cost to accommodate the design run-off.

Discharge of Stormwater Drainage onto Land Owned by Others

In cases where the stormwater drainage is to be discharged onto land owned by Others, arrangements are to be made by the Developer with the owner of the land, to provide easements as required over the route of the drain and to construct or improve the drain as required.

Drainage Outfall

The Developer is to liaise and negotiate outfall requirements with the appropriate authority where the drain discharges into a watercourse, creek or river.

4.6.6 Subsoil Drainage

Ground water level must be taken into consideration for drainage and all other aspects of design for the Development.

The Developer / Consultant is responsible for determining the type and extent of subsoil drainage required. Any failures resulting from high wet season ground water levels are to be reinstated, together with additional subsoil drainage if required by the Officer at the Developer's expense.

4.6.7 Freeboard for Drainage Systems

All developments along watercourses and main drains will require floor levels of buildings to be constructed at least 300 mm above the major flood level.

For existing buildings, provisions are to be made in the design to achieve the freeboard.

A plan is to be submitted at the design stage indicating the minimum design floor level of any affected building on the development. The plan must also indicate the minimum design levels of the affected allotments and in the case where it is determined that not all of the allotment(s) require filling to the 100 year flood level, the allotment must show the nominated building envelope(s) and the proposed filling level(s).

4.6.8 Intersection low points

No drainage low points and the subsequent ponding that may result are permitted within the kerb radial section of intersections. The low point is to be located in the side road of the intersection before the tangent point.

In the case of minor, steeper than usual intersections with minor drainage flows, if a low point must be designed within the kerb radial, the gutter of the kerb and channel may be designed to fall out across the road pavement. In this case, stormwater drainage may be required to be collected by means of drainage pits located at the tangent points each side of the low point.

4.6.9 Gross Pollutant Traps

The use of gross pollutant traps must be considered as part of the drainage design. As a principle, these are to be installed at the source, particularly in industrial areas, rather than at the bottom of a catchment.

The Officer may require that litter traps be installed for specific catchment areas where litter may be an issue eg: shopping centres.

4.6.10 Stormwater Management

All stormwater drainage systems are to be designed to incorporate water sensitive design principles and achieve acceptable stormwater quality objectives.

Council will not accept any polluted stormwater run-off into its drainage systems. It is therefore essential to thoroughly design for Stormwater Management and Erosion Control in any proposed development.

Compensating basins, retardation basins, artificial wetlands, nutrient stripping basins, gross pollutant traps, sedimentation and erosion control and siltation basins are to be incorporated. These are to be designed in accordance with Australian Rainfall and Run-off, the Australian Institute of Engineers Guidelines and other relevant publications and are to be sited to suit the requirements of the drainage system.

A Sediment and Erosion Control Plan together with or incorporating a Stormwater Management Plan is to be provided as part of the civil and landscape design drawings for approval.

In particularly sensitive areas, these drawings may have to be presented in preliminary forms and considered as part of the Planning Process - Development Application.

4.6.11 Interallotment Drainage

Historically, Lands Planning and Environment have been and still are responsible for the control of drainage on allotments. Council has been responsible for drainage within road reserves, drainage easements and on Council owned or controlled land.

In cooperation with Lands, the control of drainage works, including, design, construction, run-off and maintenance of drainage on and from allotments may be extended to Council.

In these cases, all Council drainage policies and requirements will apply.

4.6.12 Drainage pipes, culverts, pits & structures

All drainage pipes and culverts are to be proprietary brand Reinforced Concrete or Fibre Reinforced Concrete of suitable strength and manufacture constructed and tested to Australian Standards. If other types of drainage pipes or culverts are proposed for use, these are to be approved by the Officer.

All drainage pipes and culverts are to be constructed in accordance with the Standard Drawings and Technical Specification.

Particular attention is to be paid to site requirements such as corrosive or acidic soils.

All drainage structures are to be constructed in accordance with the Standard Drawings and Technical Specification.

All structures to comply with access requirements for Occupational Health and Safety issues.

Side Entry Pits

- May be either side entry type or combined grated / side entry. Grated pits in isolation are susceptible to blockage and are not the preferred option.
- To be placed at all low points, immediately upstream from intersections and at intermediate positions to limit the amount of flow in gutters.

- To be placed on the upstream sides of pedestrian / crossings to limit the flow to 500 mm maximum width in these locations. The transition of the kerb and gutter must not intrude into the pram crossing.
- Road low points are to be located as close as possible to the centre of R1 lots and opposite the side boundaries of multi-unit lots.
- Grates for grated side entry pits are to be designed to be safely traversed by pedestrians and cyclists.

Man Access Pits

- To be constructed at all pipe junctions and where pipes change direction, diameter or grades. (side entry pits may also be used).
- The maximum distance between junction pits is to be 90 m.
- Junction pits in the area of roadway where the main traffic flow is predominant should be avoided.

Catch Drains, Letterbox Pits and Stone Pitched Gullies

- Concrete catch drains appropriate to contain Q100 flows, in tandem with a 2-year underground pipe drainage system, are required on all development sites other than R1 allotments. Drains to be handed to Council shall be covered by a drainage easement.
- Concrete catch drains are required at the top and bottom of substantial cut and fill embankments at the discretion of the Officer.
- Concrete catch drains are to be provided to the satisfaction of the Officer in parks and along allotment boundaries where catchment sheet flows exceed 0.5 ha.
- Grassed catch drains with 1.0 m wide concrete inverts may be substituted for standard catch drains in parks. If deflections in park alignments are required, horizontal curves of 5 m radius are to be provided.

Underground (Blind) Pits

- Underground or blind pits or junction chambers are not acceptable. All pits or chambers shall extend to and allow access from the surface.

Bandage Joints for Pipe Connections

- Bandage joints may only be used where a proprietary product is not available and at the discretion of the Officer.
- The diameter of the joining pipe must be no more than one third that of the main drainage pipe and constructed in accordance with the Standard Drawings.
- A pit must be located within 5 m of the joint on either of the lines.

4.6.13 Open Drainage structures and drains

Council will not accept open drainage structures or drains (lined or unlined) for any new Development. Table Drains may be accepted at the discretion of the Officer in certain Rural Subdivisions.

4.7 LANDSCAPING

4.7.1 General

A general aim for landscape design is to incorporate the existing natural character of the site. This includes consideration of specific natural elements upon the site and the wider natural environment within which the site is situated. All design measures should aim to reduce potential impacts to the natural resource base and moreover to enhance the function of the natural landscape structure.

The landscape design should also provide accessible and equitable provision of open space to the community. The configuration of reserves and streetscape should aim to be cohesive and legible within the larger urban design of precincts and in accordance with the Crime Prevention Through Environmental Design (CPTED) Principles.

Specific principles include:

- a. The configuration of open space should complement existing vegetation to attract and support the native fauna and to provide a buffer between development and viable ecosystems.
 - Integrate parks, reserves and habitat corridors, to provide linear connections
 - Maximise opportunities for the retention and re-introduction of plant material that is indigenous to the site
 - Establish plant material of appropriate structure and species composition
- b. Landscape design should minimise the maintenance of landscape works.
 - Ensure that works are to the appropriate standard, of durable materials and low maintenance design
 - Conserve water through xeriscape techniques, appropriate to the climate and utilising water-wise plant selection
 - Where irrigation is required opportunities for water re-use should be maximised
- c. Development of the site should not increase the rate of surface run-off and opportunities should be sought to improve the quality of surface water before leaving the site:
 - Incorporate on-site retention of stormwater and collection for re-use.
 - Increase the scope for infiltration, minimising sealed surfaces and maximising use of porous surfaces.
 - Planting design should reduce velocities and ensure even flow distribution to avoid erosion.
- d. Landscape design should be complimentary to building structures
 - To maximise the efficiency of buildings, plantings should be established to demonstrate maximum solar gain.
 - To assist microclimate management, plantings should reduce the deleterious effects of wind and other natural climatic events, provide shading and promote air circulation.
 - Landscape design should create an attractive visual setting for buildings, relative to the scale of the built form.
- e. Landscape design should provide an overall character and identity of the streetscape to assist in the legibility and interpretation of the Town.
 - Orientation of subdivision design to incorporate frontages to open space to promote natural surveillance and community ownership.
 - To reinforce the function and character of the street type within the network and to reflect the character of existing surrounds.
 - Design elements should be applied consistently to create continuity in character for the streetscape.
 - Adequate provision for the establishment and performance of plant materials.

- Utilities to be provided, where practical, within common underground trenching.
- Encourage pedestrian access by providing a degree of visual permeability to ensure that adequate sight-lines are provided for safe passage.
- Lighting design to provide adequate illumination, taking into account the effect of vegetation growth and any other potential obstructions.

The Developer is required to provide Landscape designs for:

- Streetscapes - street trees, grassing of verges, street furniture, irrigation of trees and verges.
- Public spaces owned and/or maintained by Council - trees, shrubs, plantings, grassing, furniture, playground equipment, irrigation, special drainage requirements etc.
- Erosion and sediment control - landscape designs are always a consideration, whether as part of the erosion control works or as part of the accompanying civil works.

Council makes no distinction between the relative importance of landscape and road and drainage works as part of the required Development Works. Landscape works are viewed as an integral part of the Development Works, not as add-ons to the major civil works.

All concept and design landscape works should be discussed with Council during the Planning stage and then at the Design stage of the Development Process.

All works are to be designed to current Australian Standards, guidelines and requirements.

Landscape design plans shall be approved prior to any construction works being carried out, including proposed species for use in landscape areas.

Consideration is to be given to the mature development of street trees, ie; trees are to be located so as not to interfere with street lighting. Trees are to be planted in accordance with the Standard Drawings and Technical Specification.

4.7.2 Existing Vegetation Survey

All existing vegetation upon the site and in surrounding vegetation systems must be subject to a detailed and accurate survey.

An existing "Vegetation Plan" must be submitted for consideration when developing the landscape design.

The Vegetation Plan must contain the following information:

- a) identification of the species including botanical name;
- b) accurately show the location of the species, and;
- c) indicate the height/spread of the tree and girth of the trunk (ie whether the tree is subject to the control of Significant Tree Register).
- d) identify any trees that are affected by termite attack.

The Vegetation Plan must also indicate whether the tree is to be removed or retained and supply reasons why.

All construction drawings shall show the above protection zones. The Landscape Design Plan, earthworks, drainage and service drawings shall show the trees to be retained and their protection zones.

Prior to demolition or construction, the applicant shall contact the Council Officer for a site inspection to confirm the accuracy of Tree Protection Zones required for those trees to be retained.

4.7.3 Street trees and other plantings

Council approves suitable species of street trees and shrubs for streetscapes.

Consideration is to be given to the mature development of street trees, i.e.; trees are to be located so as not to interfere with street lighting.

Street trees are to be planted in the locations as specified on the Standard Drawings; any variations to this must be approved by the Officer.

Road verges are to be planted at the following rates:

- Verges two trees per allotment frontage and proportionally for side boundaries
- On bicycle ways 20 per 100 metres both sides. Drip irrigation is required.
- Buffer areas 150 per 100 metres. Drip irrigation is required.

Sight distance is a major consideration with tree planting.

Trees will preferably be native to the development area, be aesthetically complimentary to the development theme and design, tend to exhibit stable/deep-rooted structure and require low maintenance following establishment.

The Developer is to supply all plants from an accredited nursery under NIAA guidelines. Trees used are to be a minimum of three months in their container, have sturdy trunks and have a well-developed root system.

They are to be available in sufficient quantities for placement and maintenance replacement, and in a healthy and vibrant state prior to commencement of work.

Any diseased or dying plants are to be removed immediately and replaced at the Contractor's expense.

4.7.4 Turfing

All verges and parklands shall be finished with 150mm minimum topsoil after aerating with Verti Drain or similar.

Turf to be established by rolls (sod), plugs (if approved by the Council Officer), or seed.

All forms of traffic are to be excluded from the area established with turf by effective barrier until establishment, (to the satisfaction of the Officer). Complete and thorough watering is to follow establishment of grass to ensure correct settling of soil fines.

The establishment and maintenance of turf shall be in accordance with the Technical Specification.

Council does not maintain verges after on maintenance requirements and will require individual connectional irrigation to private residences prior to off maintenance hand over.

4.7.5 Irrigation

Irrigation is to be designed and supervised by Certified Irrigation Designers.

Permanent and temporary irrigation works are required for street trees and grassing and these are to be located clear of other services and works in the road reserve.

4.7.6 Parks and Reserves

Following Council approval of the Landscape Concept Plan, the nominated Landscape Architect shall then prepare the design documentation including the Landscape Design Plan.

An estimate of probable cost for the construction of the work is also required to be provided to Council. This calculation will be derived from the Schedule of Rates and Quantities which will form part of the Landscape Work Schedules. The costing will list each item according to the Schedule of Rates and Quantities.

Typically the Landscape Design Plan will identify:

- existing elements to be removed / retained
- grading and drainage
- surface treatments and layout
- planting design
- construction details
- irrigation design

Typically the Technical Specification will comprise:

- Site preparation and demolition
- Earthworks and cultivation
- Irrigation
- Concrete and paving works
- Planting and Turfing
- Furniture
- Maintenance
- Landscape Work Schedules

'As constructed' drawings shall be submitted prior to the completion of the maintenance period (i.e. off maintenance).

Parks and Reserves are to be a minimum of 5000 square metres in area. This area does not include adjacent road reserves.

All Parks and Reserves shall have Water Supply, Telstra Service and Power Supply in accordance with the Technical Specification.

Parks and Reserves are to be designed and positioned to ensure that the width of access/exit points are maximised. Laneway type access will not be acceptable. The main area of the park or reserves is to be immediately accessible from the adjacent road reserve and areas of open space recessed between private lots are to be avoided.

Absolute minimum access width is 10 metres.

General vehicle access is to be prevented by the use of bollards; however, service access is required to Park and Reserve areas and shall be lockable. The number of accesses required depends on the size, shape, location and proposed use of the Park or Reserve.

The following indicates the minimum requirements to each Park or Reserve area.

- One service access;
- 300 metres maximum between accesses in elongated areas;
- Preferable that the proposed access is from a Local Road rather than a Collector Road.

4.7.7 Furniture and Structures

All open space areas are to be provided with suitable playground equipment to the satisfaction of the Council Officer and constructed to the relevant standards.

Park furniture for Parks and Reserves will be in accordance with the Standard Drawings.

All playgrounds, gazebos, shelters, barbeques, seats and tables shall have path access from the adjoining roadways in accordance with the Anti-discrimination Act.

All proposed structures, eg; adult exercise equipment and feature structures such as gazebos, shelters, shade, barbeques, art, rubbish bins, furniture and decorative statements are to be approved by the Council Officer in the Design Phase in accordance with the Northern Territory Building Codes.

Bollards for street trees and park boundaries shall be recycled plastic in accordance with the Standard Drawings and the Technical Specification.

4.8 STREET AND PUBLIC AREA LIGHTING

The Developer is to provide street lighting in accordance with current Australian Standards for illumination level, materials and installation and the requirements of Council and PowerWater.

The works are not restricted to the Development boundaries, but may be extended to include existing roads providing access to or affected by the proposed Development.

While lighting must be in accordance with the Relevant Standards, when assessing risk in particular areas, designers are reminded that there is a need to take into account the fact that people with a disability have a higher risk when using facilities at night.

The Consultant is encouraged to try new equipment and technologies to improve the efficiency and aesthetics of the street lighting, but at the same time must consider the ramifications of long-term maintenance and replacement issues. Council will not consider the use of any alternative lantern and/or pole "just to be different".

Procedure for Design and Approval

- The Developer is to engage a suitably qualified Consultant to carry out the road lighting design.
- The Consultant is to request Council to specify the required lighting categories as described in the Australian Standards.
- The Developer is to provide a "Certificate of Street Lighting Compliance" from a Consultant to PowerWater for their approval of the street lighting design drawings.
- Approval will not be given to civil design construction drawings until PowerWater has approved the road lighting design and a copy of that approval provided to Council through the main civil design consultant.

Specific Design Requirements

- Design to Relevant Standards.
- All new or relocated poles shall to be located in accordance with the Relevant Standards for the placement of rigid and frangible light base poles.
- Where there is an unacceptable risk of collision with a light pole consideration is to be given to the use of frangible slip base poles.
- Street lights shall to be placed at each end of a walkway and each bend of a walkway.
- Lights shall to be placed on the boundaries of allotments where possible.
- Consideration should be given to minimising the problem of light shining into private properties.
- All cables, fittings, lamps, poles and controls etc are to be of a type and rating approved by PowerWater. Street Lamps shall to be High Pressure Sodium unless approved otherwise.
- For footpaths/cycle ways, lanterns shall to be side entry unless otherwise approved. For roads and carparks and parks, bottom entry lamps are preferred.
- In access roads, curved poles 5.5m to 6.5 m high are preferred. 4.5m high poles will only be accepted in special circumstances.
- Bollard style lighting is not acceptable to Council.
- In the case of parks etc., the lighting is to be separately metered.
- Consideration is to be given to complimenting and integrating proposed lighting into the proposed and existing streetscape / landscape works, particularly the location with respect to the mature development of street trees.

4.9 WASTE BIN INFRASTRUCTURE

The Developer is responsible for providing appropriate waste bin infrastructure to Relevant Standards and in accordance with Council' Policies and requirements.

Developers of residential, commercial and industrial property will adequately show details of proposed waste and recycling bin storage enclosure/s on a drawing 'to-scale' with site and elevation plans. Design shall be based on the requirements stated in Council's Bin Policy.

Residential

All detached dwellings and cluster dwellings with 3 or less dwellings per lot, will be provided with Council's kerbside collection service.

All flats and cluster dwellings (with 4 or more dwellings per development) will be provided with Council's manual collection service. The number of waste and recycling bins provided will vary according to the size of the development, as stated in the above Policy. Council's waste bin contractor will service the receptacles from a designated bin storage enclosure/s within the property.

Commercial and Industrial

Council does not provide a waste collection service to commercial and industrial premises. Council requires commercial and industrial premises to have on-site, dedicated waste bin and recycling storage enclosures and to arrange for private waste collection and recycling services.

CONSTRUCTION REQUIREMENTS

- 5.1 GENERAL
- 5.2 SUPERVISION & CERTIFICATION OF WORKS
- 5.3 PRE-START MEETING
- 5.4 CONSTRUCTION HOLD POINTS
- 5.5 CONFORMANCE TESTING
- 5.6 VEGETATION CLEARING & TOPSOIL
- 5.7 SUBGRADE EVALUATION
- 5.8 WORK, HEALTH & SAFETY REQUIREMENTS
- 5.9 ENVIRONMENTAL REQUIREMENTS
- 5.10 WORKS ON COUNCIL PROPERTY
- 5.11 TRAFFIC CONTROL & PEDESTRIANS
- 5.12 LANDSCAPING WORKS

5.1 GENERAL

All aspects of the Development Technical Specification and the Approved Drawings shall be strictly adhered to. Council's Technical Specification and/or Standard Drawings may be used for inclusion in contracts between Developers and Contractors for Development Work and may also be used for contracts between Council and Contractors.

Any permanent survey mark affected by the works is to be identified and reported to the Department of Lands and the Surveyor Generals Office for replacement or relocation.

5.2 SUPERVISION & CERTIFICATION OF WORKS

The Developer / Contractor is responsible for all construction activities carried out during the course of the Development Works. Inspections by the Officer shall in no way diminish the responsibility of the Developer / Contractor to adequately supervise the works.

The Developer is to ensure that all works are carried out in accordance with the requirements of the Development Permit, the Deed of Agreement, the approved Inspection and Testing Plan, the Approved Drawings and Specifications and these Guidelines and as agreed at the Pre-start Meeting.

The Developer shall ensure that a suitably qualified Consultant carries out the supervision of the works. The Consultant is responsible for the certification of the works.

Final approval and acceptance will only be given when all works have been executed to the true intent and meaning of the approved drawings and specifications and when all the requirements set out hereafter have been complied with and are in accordance with section 3.

For inspections of other areas of works, ie, landscaping and structural works, inspections are to be carried out as specified, required and agreed with the Officer.

5.3 PRE-START MEETING

The Developer or Consultant is to initiate a pre-start meeting with the Officer. The Developer (if no Consultant required), Consultant, Contractor, Council and Other Authorities (if required) are required to attend to outline all parties' requirements and to discuss the items set out below.

- Engineering, Other plans and Other Authorities approvals;
- Council Inspections and Holdpoints;
- Workplace Health and Safety - Safety Management Scheme and General Risk Management;
- Inspection and Testing Plan;
- Traffic control / traffic;
- Spoil off site / import fill;
- Working Hours;
- Parks / landscaping - Landscape Section;
- Environmental - vegetation clearing, stormwater management, erosion and sediment control, dust suppression and noise control;
- Reinstatement works to Council and other property;
- Protection of and permission to enter private property;
- Design alterations during construction;
- Geotechnical and Blasting details;
- Contractor's Insurances and Council indemnities;
- Certifier and Certification of works;
- Proposed Construction Programme;
- Public Consultant;
- Other matters.

The meeting is to be minuted by the Officer with the minutes then forwarded onto the Consultant (Developer if Consultant not required).

Prior to commencing construction, the Developer is to give the Officer at least 24 hours notice in writing, which is to include the following information:

- Subdivision Estate / Development Name / Stage / Brief description of Works.
- Developer: Name, Address, Contact Person and Contact Number
- Developer's Representative(s): Firm's name, Discipline; Address; Contact Person and Contact Number
- Contractor; Name, Address, Contact Person and Contact Number
- Date of Council Approval of Design
- Proposed Working Hours - All works will be contained between the hours as specified and agreed.

5.4 CONSTRUCTION HOLD POINTS

With respect to all works, the Officer, Consultant and Contractor are to jointly inspect the site at Construction Hold Points. The Consultant shall give the Officer a minimum of two business days notice of impending Hold Points. The Officer may request additional inspections (Hold Points) at anytime.

The Consultant is to ensure that any particular section of work to be inspected has been satisfactorily completed before requesting any such scheduled inspection. Each stage will be inspected prior to the next stage works being commenced.

In circumstances where there is concern about workmanship or materials, works are not to proceed until the Officer is satisfied by the adequacy of the work.

The Contractor is to ensure that the site is prepared and that the specific elements of works are readily visible and accessible so that the Officer can conduct the necessary inspection. If the Contractor is not Quality Assured, then additional inspections may be required at the Officer's discretion.

The following is a list of the mandatory Construction Hold Points; The Officer reserves the right to introduce additional Hold Points for specific Developments or segments of work.

- Completion of sub-grade preparation
- Completion of sub-base
- Completion of base
- At commencement of kerbing
- Prior to pouring of concrete for footpaths or driveways
- After excavation and before pipe laying to assess bedding and fabric requirements
- When drainage lines and pits are laid on bedding prior to backfill
- Subsoil drains prior to backfill
- Irrigation and potable water (public use) pipework and valves in place prior to backfill to conduct hydrostatic testing
- Electrical supply to irrigation controller prior to backfilling
- At hole preparation prior to tree planting and root barrier installation
- Prior to seeding of topsoil or laying of turf.
- Prior to installation of furniture, fittings and other structures (following subsurface preparation prior to backfilling)

Council will not accept works that has not been adequately inspected by the Officer at the prescribed Hold Points.

5.5 CONFORMANCE TESTING

The Consultant shall comply with the requirements of The Northern Territory Government Department of Construction & Infrastructure Technical Specifications for Conformance Testing. No other Conformance Testing regime shall be accepted unless approved in writing by the Officer.

All testing shall be undertaken by an approved testing authority in accordance with the Technical Specifications and Relevant Standards.

The Consultant will be responsible for ensuring that all required quality control checks are carried out during construction. If requested the Consultant is to progressively submit a copy of test results to the Officer.

In addition to the normal inspection and testing requirements as detailed in the Technical Specification, the Officer reserves the right to inspect and require additional samples to be tested to ascertain the quality and quantity of materials being used. The cost of this testing will be met by the Developer. The Consultant will be informed of any works requiring remedial action.

The Officer may make inspections of the works on a random audit basis. Such inspections may include but are not limited to items such as Traffic Control, Occupational Work, Health & Safety Issues and Environmental Management. These inspections may take place without any prior notice to the Consultant or Contractor.

The Officer may request progressive certification from the Consultant indicating correctness of construction in accordance with the approved plans and specifications for all or any of the stages of construction.

In the absence of inspection by the Officer, certification by the Consultant will not necessarily be accepted. The Officer reserves the right to have the work proven in the field whether by inspection or specific testing.

The Consultant shall submit Non-Compliance Reports to the Officer immediately. These Reports shall identify the nature and number of non-complying items and state the Consultant's justifications for Council acceptance.

5.6 VEGETATION CLEARING & TOPSOIL

The Developer / Contractor shall not remove any tree or shrub without prior approval of the Officer. The natural vegetation is to be retained where stated on the Vegetation Plan and in instances where no such plan exists, wherever it is possible.

The developer is responsible for consulting the Tree Preservation and Historic Tree Registers and providing evidence that no trees are affected.

All tree roots, boulders and other deleterious material are to be removed to a depth of 600 mm below the natural surface or finished levels of the road reserve which ever is greater. Stumps are to be completely removed.

All vegetation shall be mulched on site, burning off of vegetation is not permitted.

Upon completion of the clearing operations, natural topsoil shall be stripped from the road reserve areas of cut and fill and proposed utility service locations to an appropriate depth. The topsoil shall then be stockpiled for re-spreading.

When earthworks have been completed, the site topsoil shall be blended as required to meet the Technical Specification and re-spread to a minimum compacted depth of 100mm on all exposed areas of earthworks as required, to match approved finish surface levels. Note, in the absence of adequate topsoil quantities being available, it will be the Developers responsibility to import approved topsoil to the satisfaction of the Officer.

5.7 SUBGRADE EVALUATION

After subgrade excavation, the Consultant is required to submit a detailed geotechnical report, the results of which are to be used as a basis of formulating a pavement design.

Council will not inspect pavement subgrades, or approve the placement of pavement materials, until a pavement design has been submitted and approved by the Officer.

5.8 WORK, HEALTH & SAFETY REQUIREMENTS

The Contractor must have in place a Policy Document setting out all occupational work, health and safety requirements and be issued to all sub-contractors prior to them commencing any works or entering the work site.

In the case of contracts between Council and Contractors, the Officer has the right to suspend or terminate the works if statutory work, health and safety requirements are not met.

5.9 ENVIRONMENTAL REQUIREMENTS

The Developer / Contractor is to ensure that all reasonable measures are taken in respect of environmental matters. In particular the following shall be properly addressed to Council's satisfaction.

- The requirements of the relevant Regulations and Acts are to be accorded with;
- The approved plans and specifications, setting out the environmental requirements and measures, are to be strictly adhered to;
- Dust, air and noise emissions are to be controlled such that nuisance is not caused to surrounding properties. Council reserves the right to direct any and all such measures as deemed necessary to ensure compliance, including cessation of works. The Developer shall be responsible for all such costs;
- Any Environmental Bond lodged may be drawn on if the Developer does not take immediate action to address environmental issues.

The Developer / Contractor shall notify the Officer immediately there is any measurable environmental damage or impact caused by the Development or when there is a deviation from the approved plans or specifications.

The Developer / Contractor is to adhere to the requirements set out in the approved Sediment and Erosion Control Plan, unless the Officer considers such measures are to be amended. Maintain all sediment and erosion control structures throughout the whole construction period, including the maintenance period.

The Developer / Contractor must ensure that the wheels, tracks and body surfaces of all plant and vehicles leaving the site are free of mud etc. Provide and maintain slopes, crowns and drains on all excavations and embankments to ensure satisfactory drainage at all times. Water is not to pond on the works unless such ponding is part of the approved Sediment and Erosion Control Plan.

5.10 WORKS ON COUNCIL PROPERTY

Works within Council Property include:

- Works carried out within Council's property, ie, road reserves, parks, public spaces or any other place owned by or defined as owned by or maintained by the Council. This includes the installation of cable and other structures for the delivery of cable television services in the Municipality.
- Works carried out by Contractors under Contract to Council, by Other Authorities that have a statutory right to carry out works within Council road reserves or by private persons or organisations that wish to carry out works within Council property.
- Works conducted underground, above ground or ground level including aerial cabling.

All necessary Permits to carry out works are to be obtained by the Developer / Contractor.

Works will only be carried out as per the approved design, in the manner and under the terms and conditions specified and at the times agreed to by the Consultant / Contractor and approved by the Officer. Any variations to the design will require the approval of the Officer.

No works may be commenced without the approval of the Officer.

All works carried out on Council property shall not degrade Council's assets. Any degradation of an asset shall be compensated for in a manner approved by the Officer. The works are to be reinstated to the condition of the existing or better as deemed by the Officer.

This includes permits for the installation of cable and other structures for the delivery of cable television services in the Municipality. Permits will be required even if the works form part of proposed internal subdivision construction.

The works may be of such a nature, size or in such a location, that the Officer will require a specific security bond or bond(s) to be lodged prior to the commencement of works

The Permit is issued for a stipulated period and if works are not completed within the stipulated time frame then the Permit must be extended. The Permit will terminate at the satisfactory completion of the works. The Officer may revoke the permit if it is deemed that the Permit Holder is not acting within the Conditions of the Permit.

All residents and owners within the works area and any other area deemed by the Officer to be affected by the works, are to be advised of the proposed works by individual written advice, not less than 14 days prior to the proposed commencement of works.

All relevant authorities as defined by the Officer are to be advised at least 14 days prior to the proposed commencement of works and any statutory requirements of the authorities satisfied. Relevant Authorities may include public or private individuals or bodies, which may have a direct or indirect interest in the proposed works.

The safety of the public is paramount and Council's exposure to Public Risk also must be considered at all times. The Permit Holder is to appoint a Safety Officer who is to be totally responsible for all aspects of safety throughout the works site.

The Permit Holder must have in place all necessary insurances, which are to indemnify Council against any claims arising out of the works. Proof of insurance must be lodged with Council prior to commencement of works.

Working hours are restricted to times that provide minimum disturbance to nearby residents, business, traffic and any other service in the Council land. Dependent upon the location, it may be necessary to carry out the works within restricted working hours. This shall be recognised, determined and specified by the Officer prior to approval of plans and specifications.

If the Officer is required to be present outside normal Council working hours, then the Permit Holder is to be responsible for overtime costs at rates as agreed under the Permit.

The Officer has the ultimate decision in the matter of working hours.

When designs for cabling and/or any other service is being carried out in existing Council road reserves, the following is to apply:

- All roads, pavements, footpaths and vehicular crossings / driveways are to be under-bored unless otherwise approved by the Officer;
- The appropriate alignment for cabling for the delivery of cable television services is in the 00-800mm [corridor](#) behind the kerb.
- Alignments for other services are to comply with the requirements of the services corridors as set out on the Standard Drawing;
- If a footpath covers the permitted alignment behind the kerb, the Permit Holder may choose to demolish the existing footpath, excavate to lay cables and replace the footpath with a new path to Council's standards in lieu of boring;

Any trenching across a road, footpath or driveway (if approved by the Officer) is to have saw-cut edges. In the case of footpaths and crossings driveways, whole slabs are to be replaced

rather than narrow saw-cut trenches. The Officer is to agree to the width of the trench to be saw cut.

No trench is to be over excavated in width and depth without the specific approval of the Officer. All trenching is to be adequately drained and de-watered.

Where the trenching intercepts coffee rock, cavities and/or crab-holes, the Officer will approve the necessary remedial works to be carried out prior to the laying of services and backfilling. The Officer may recommend:

- Fill cavities with lean mix concrete and/or;
- Prepare and place a lean mix slurry bedding and/or
- Encase the backfill and bedding material in an approved geotextile fabric in accordance with the manufacturer's specification.

The Permit Holder is to open only as much trenching as can be closed again in one day. All works are to be carried out in stages so that no more than an agreed length or 100 metres maximum of trench is open at any one time.

Where the trench base is deemed as unsuitable, additional material is to be removed as necessary and backfilled to the design level with approved material.

All backfill is to achieve the specified degree of compaction as defined in the Technical Specification.

Trenches in the verge / footway

To be backfilled to the established grading from top of kerb to the reserve boundary and flush with the edges of pavement / top of kerb.

Material used for backfilling can be material won on site.

Compact to 85% minimum MMDD ratio in verge areas and 90% minimum MMDD ratio under pathways.

Verges are generally to be turfed where grass existed prior to the works. Adequate provision is to be made for irrigation of the turfing until established.

Grassing as a means of surface re-instatement is only to be carried out where specifically approved by the Officer. If grassing is approved, it shall be placed as detailed in the Technical Specification.

Trenches across and/or adjacent to Roadways and Footpaths

The material used for backfilling under road pavements or adjacent to, or in close proximity or parallel to road pavements and/or existing kerbs, is to be fine crushed rock with 3% (by weight) cement stabilisation. Wearing surface shall be 50mm minimum asphalt surfacing. The Officer may specify that deep lift asphalt be placed in lieu of this.

Trenches to be backfilled in 150mm maximum layers.

Density tests are required for every trench across a road trafficked area or along the kerb / edge of pavement and / or along the footpath at the rate indicated in the Technical Specification.

The Permit Holder is required to submit a security bond based on Council's current adopted rate for future reinstatement of subsidence of the road trench under traffic. The bond, if not drawn upon, will be returned after a defects liability period as determined by the Officer.

Concrete Surfaces

Reinstate cast in situ concrete surfaces to the requirements of the Officer as detailed or specified.

Finish to the same surface texture, colour and shape as the existing/adjoining concrete work.

Paved Surfaces

Reinstatement works are to be carried out to the requirements and standard current practice for the paving material. Finish to the same surface texture, colour and laying patterns as the existing/adjoining work.

Pavements and Asphalt Surfacing

Reinstatement works are to be carried out in accordance with the provisions of fine crushed rock pavements and Asphalt Surfacing as specified in the Technical Specification. A 50 mm minimum thick asphalt layer is to be placed in any asphalt paved or sealed areas.

The Permit Holder is to take whatever measures are necessary (this includes dial before you dig service) to prove the location of existing services and is wholly responsible for any damage and reinstatement to the services. This includes existing irrigation systems.

Any connection or disconnection is to be carried out by or under the direct supervision of the appropriate authority to which appropriate notice will have been given.

The Contractor is to pay all costs and charges to the appropriate authorities for supervision and materials and for any other purpose as is necessary to carry out the works.

Where deemed by the Officer, all works are to be supervised by an appropriately qualified Superintendent. The degree of supervision will be agreed upon at the Pre-start Meeting and will be dependent upon the contract entered into between the Contractor with the Developer and/or Other Authority, the degree of Quality Assurance supporting the Superintendent and/or the Contractor, Public Risk and the Conditions of the Permit.

The Permit Holder is to be responsible for ensuring that the provisions of the following and any other relevant clauses contained in the Guidelines are complied with and is to submit to the Officer any proposals for traffic movements, temporary structures, clearing, cleaning up (including burning off), erosion and sediment control, demolition and the like for approval prior to the commencement of works.

Solid, Liquid and Gaseous Contaminants

The contractor is to be responsible for the proper storage and disposal of all contaminants in accordance with all statutory and contractual obligations.

Disposal of Waste

Waste from construction operations, including food scraps and the like, are to be removed from the site.

Trucking

All trucks entering and leaving the site of works are to be loaded and the load constrained in such a manner as to prevent the dropping or tracking of materials onto streets. This includes ensuring that all wheels, tracks and body surfaces are free of mud and other contaminants.

Dust and Water and Erosion Control

Adjoining owners, residents and the general public are to be protected against dust, dirt and water nuisance. Dust screens and watering are to be used to reduce dust nuisance.

All proper precautions are to be taken by the Contractor to ensure that erosion and sedimentation from any lands or location used, occupied or controlled by the Contractor is kept to an absolute minimum during the course of the works.

During the works, the following conditions apply to existing vegetation:

- Pruning, cutting or removal of vegetation (including roots) will not be permitted without permission of the Officer;
- Vegetation roots or limbs will be bored under or bypassed if so determined by the Officer;
- Works may be required to be redesigned if a tree is determined to be endangered by the works and another solution is achievable;
- Refer to the Relevant Standards for vegetation removal or pruning.
- Valuation of vegetation damaged or proposed to be damaged by the Permit Holder is to be assessed under to the Relevant Standards. The Permit Holder will be required

to reinstate / replace any damaged vegetation to the value determined by the Officer and maintained to the satisfaction of the Officer.

The Permit Holder is to assume responsibility for the safe conduct of the traffic through or around the work site 24 hours per day from possession of the site to Final Completion of the Works.

The works are to be organised and carried out in such a way as to minimise obstruction and inconvenience to the public.

5.11 TRAFFIC CONTROL & PEDESTRIANS

A Traffic Control Plan is to be submitted at or prior to the Pre-start Meeting detailing proposed temporary road closures, detours and control arrangements, including after hours control, road maintenance and provision of access to and notification of residents. Only experienced traffic controllers are to be used.

Supply, erect and maintain necessary warning devices.

The Contractor is to liaise with owners of adjacent properties and ensure access is provided and maintained at all times.

Any road closures and significant detours are to be advertised in the Katherine Times newspaper and by other means so required by the Officer 14 days prior to the proposed closure / detour.

All temporary traffic detours or deviations in high traffic areas shall have a sealed surface and the public adequately notified to the satisfaction of the Officer prior to instigation.

Temporary pedestrian detours shall conform to Anti-Discrimination Act requirements.

The Consultant / Contractor shall inform the Officer immediately there is an incident or issue involving a member of the public.

5.12 LANDSCAPING WORKS

All landscaping works shall be carried out in accordance with the Technical Specifications, Approved Drawings and Standard Drawings. Maintenance of all new plantings shall continue until such time as Off Maintenance is declared for the Development.

Vegetation Plan

The "Vegetation Plan" if submitted and endorsed by the Officer must be adhered to in respect to whether a tree is to be removed or retained.

For the retention of trees (including those under the control of Significant Tree Register), the following measures are to be undertaken by the applicant:

The tree is to be physically protected by the fencing off of the tree canopy and root zones using 1.8 metre high star picketing/chainwire before the commencement of any demolition or construction works. The fencing shall be located along the Tree Protection Zone and shall remain in place until all works are completed.

Within this zone there is to be no storage of materials or machinery or site office/sheds, nor is cement to be mixed or chemicals spilt/disposed of in the area, soil levels altered or excavations undertaken, or stockpiling of soil or rubble. Any works required within this zone shall be under the direction of a suitably qualified Arborist, and to the satisfaction of the Officer.

Prior to demolition or construction, the applicant shall contact the Officer for a site inspection to confirm the accuracy of Tree Protection Zones required for those trees to be retained.

Approved works to be carried out within the dripline (canopy area) of vegetation, should be kept to an absolute minimum (including the storage of equipment, machinery, or driving of vehicles and plant equipment in the vicinity of the vegetation) using excavation techniques

that will preserve the root system of the plant. Where the root system has to be cut, a method of cutting the root, while not disturbing the rest of the root system, shall be employed.

All work requiring root pruning of vegetation to be retained is to be performed by qualified Arborist. Roots with diameter greater than 50mm is to be clean cut with hand saw outside of excavation zone.

Trees, Shrubs and Ground Covers

The Developer is to supply all plants from an accredited nursery under NIAA guidelines.

They are to be available locally in sufficient quantities for installation and maintenance replacement, and in a healthy and vibrant state prior to commencement of work.

Trees, shrubs and ground covers used in Developments, shall be a minimum of three months in their container, have sturdy and well hardened trunks/stems, a vigorous and well developed root system and have been maintained by early training / pruning to aid sound structural development.

Trees with a single central leader will only be accepted. The only exception will be where specific species do not exhibit this characteristic at any stage of their development. The planting stock must be inspected by the Officer prior to installation.

All plants are to be healthy and free from insect pests, plant diseases, sun scalds or other disfigurements. Any diseased or dying plants are to be removed immediately and replaced at the Contractor's expense.

The location of street trees/shrubs is to be accurately set out in accordance with the approved drawings and the alignment and depth of all services confirmed prior to the excavation of holes for planting.

Planting pits, root directional guides and bollards are to be constructed in accordance with the Standard Drawings and Development Technical Specifications.

Turfing

All verges and parklands shall be finished with 150mm minimum topsoil after aerating with Verti Drain or similar.

Turf to be established by rolls (sod), plugs (if approved by the Officer), or seed.

All forms of traffic are to be excluded from the area established with turf by effective barrier until establishment, (to the satisfaction of the Officer). Complete and thorough watering is to follow establishment of grass to ensure correct settling of soil fines.

The establishment and maintenance of turf shall be in accordance with the Development Technical Specification.

Irrigation

Irrigation where required is to be designed and constructed by Certified Irrigation Designers.

Permanent and temporary irrigation works are required for street trees and grassing and these are to be located clear of other services and works in the road reserve.

APPENDICES

| | |
|------------|---|
| Appendix A | Development Submission Form |
| Appendix B | Design Approval Checklist |
| Appendix C | Deed of Agreement (Example) |
| Appendix D | Permission to Use for Construction |
| Appendix E | On Maintenance Procedure Checklist |
| Appendix F | On Maintenance Site Inspection Checklist |
| Appendix G | Engineers Certification |
| Appendix H | Certificate of Takeover |
| Appendix I | Off Maintenance Procedure Checklist |
| Appendix J | Off Maintenance Site Inspection Checklist |
| Appendix K | Final Certificate - Off Maintenance |
| Appendix L | Streetlighting Technical Specifications |

APPENDIX A - DEVELOPMENT SUBMISSION FORM
NEW APPLICATION I VARIATION

DEVELOPMENT

TYPE OF WORKS -----

DEVELOPERS NAME -----

CONTACT PERSON **POSITION**

Address -----

Tel ----- Fax ----- Email -----

CONSULTANTS NAME -----

CONTACT PERSON **POSITION**

Address -----

Tel ----- Fax ----- Email -----

The following Drawings and Specifications are submitted herewith for comment I approval together with other information as stated on Appendix B - Design Approval Checklist:

Drawing & Specification No's (including Amendment Numbers) - Attach list if required

The design conforms to all of the requirements of the Katherine Town Council Development Guidelines.

Developer's Consultant Signed Date -----

The information requested by this form is being collected by the Council for the purpose of Approving Developments under the provision of the Northern Territory Planning Act and Northern Territory Local Government Act.

APPENDIX B - DESIGN APPROVAL CHECKLIST

For Internal Council Use as well as Consultant / Developer Use
This form is not required to be submitted to Council.

PROJECT - - - - - SUBMISSION 1, 2, 3, 4, 5

CONSULTANT - - - - - DATE SUBMITTED / /

D Initial Design Discussions with Council

D Design Submission to Council for Comment / Approval. The following items are to be submitted:

DOCUMENTS

- D Proof of Appointment to Act for the Developer
- D Copy of relevant Agreements and supporting documentation if development is to be carried out on Crown Land
- D Copy of current Development Permit(s)
- D Copy of Permission to Carry out Works on Other's Land
- D Executed Development Application Form
- D Design Report(s)
- D Drainage calculations and plans
- D Pavement design calculations
- D Geotechnical and Soil Types Report
- D Proposed Subdivision Plan
- D Approvals from Other Authorities
- D Estimate of Construction Cost
- D Specification and Drawings for Civil and Landscape Works
- D Specification and Details for Stormwater Management and Erosion Control Works
- D Necessary certifications
- D Any other items required, ie, Structural drawings and computations, etc.
- D Copy of appropriate Public Risk Insurance

PLANS

All plans must be signed as Checked and Approved by the appropriately qualified person.

Two copies of all drawings are required at A3 size.

- D Concept Landscape and Irrigation Drawings if Detail Drawings not finalised
- D Stormwater Management and Erosion Control Drawings
- D Structural Drawings if required, ie, retaining walls, fences, footings, etc
- D Civil Drawings made up as follows:
 - Site Works
 - Services
 - Roadwork & Drainage & Subsoil Drainage Layout
 - Roadworks Longitudinal Sections
 - Roadworks Cross Sections
 - Drainage Longitudinal Sections
 - Intersection, Bends, and Court Details
 - Typical Sections, General Notes, Locality Plan
 - Footpath Layout
 - Any other relevant drawings

PAYMENTS

- D Design Approval Fee (% of the Construction Cost based on the Fees & Charges)
- D Specific Bonds (if required)

CHECKED - - - - - DATE CHECKED / /

COMMENTS - - - - -

APPENDIX C - DEED OF AGREEMENT

DEED OF AGREEMENT

PROVISION OF ROADS, STORMWATER DRAINAGE, LANDSCAPING AND STREETLIGHTING

Whereas by Subdivision Instrument of Determination Number/s

dated _____ the Developer is to undertake the provision of roads, stormwater drainage, landscaping and streetlighting to each lot associated with the subdivision of Lot _____ Town of _____ at his expense and to the satisfaction of the Town Clerk, Katherine Town Council.

Now this Deed Witnesses as follows:

1. The Procedures and Technical requirements are those set out in:
 - i. Katherine Town Council Development Guidelines.
 - ii. The Northern Territory Government Department of Construction & Infrastructure Technical Specifications for Road and Bridge Works currently in use by Katherine Town Council.
 - iii. Katherine Town Council's current standard drawings.
2. The Developer shall construct all works to the satisfaction of the Town Clerk of the Katherine Town Council and in accordance with those documents detailed in the first recital hereof.
3. The Developer shall employ a Consulting Engineer approved by the Town Clerk to carry out design work, supervise the construction of the works and certify the completion of the whole or any part of the works. The Developer shall ensure that the Consulting Engineer shall carry professional indemnity insurance acceptable to the Town Clerk and shall have no pecuniary interest which is related to the time or cost of completion, or profitability, or expenditure of capital on the works, either directly, or indirectly.
4. The Developer shall have on site at all times while the roadworks and storm water drains and associated appurtenances are being laid, tested or backfilled, the consulting engineer or a person employed by him and approved by the Town Clerk to ensure that the works are carried out in accordance with Paragraph 1, hereof.
5. The Developer shall pay to Council an inspection fee calculated on the basis of 1% of an agreed estimate of the construction costs of roads and storm water drainage on the project. This is to cover Council's costs for plan checking and routine site inspections.

6. The Developer may choose to pay Council to carry out the full role of the Consulting Engineer in supervision of the works. Should this be desired, the Developer shall be required to pay Council a fee equal to that charged under the consultants Scale of Fees for supervision; in addition to the 1% in Clause 5.
7. The Developer may choose to pay to Council, in lieu of construction of footpaths and driveways, an amount equal to the value of the footpaths and driveways required. The works would then be undertaken by Council following completion of building activity.
8. The Developer shall provide security for a twelve (12) month Defects Liability Period in the form a cash or unconditional bank guarantee and the amount of such security shall be not less the 2.5% of the construction costs.
9. The Developer shall rectify any defect in workmanship or materials arising in relation to the works within a period of twelve (12) months after the date of issue of the Certificate of Takeover for roads and storm water drainage specifying that the works have been completed to the satisfaction of the Town Clerk.
10. Upon notice of such defect being given to the Developer by the Town Clerk, the Developer shall, within 28 days, rectify the defect to the satisfaction of the Town Clerk. If the Developer fails to rectify the defect within the said 28 days, the Council may rectify the defect and the cost of such rectification shall be a debt due by the Developer to the Council.
11. Where a defect arises where public health or safety may be jeopardized, the Town Clerk shall arrange for urgent repairs to be carried out by others if the Developer is unable to do the necessary work immediately. The cost of such repair shall be a debt due by the Developer to the Council.
12. Without prejudice to any of the rights of the Council, the Council may at first instance resort to the security held for the due performance by the Developer of its obligations during the Defects Liability Period for the cost incurred in rectifying defects.
13. The Developer shall indemnify and keep indemnified the Katherine Town Council, its officers, servants and agents against all actions, proceedings, claims and demands whatsoever that may be brought or prosecuted against them or any of them by any person or persons in respect of any loss or damage suffered by that person arising from or in relation to the construction of the works by the Developer in accordance with this agreement.
14. The obligations of the Developer pursuant to this deed may be enforced by the Town Clerk of the Katherine Town Council or his delegate for and on behalf of the Katherine Town Council.
15. The Developer shall execute all documents considered necessary by the Town Clerk to vest ownership of the complete works in the Katherine Town Council.

APPENDIX D - PERMISSION TO USE FOR CONSTRUCTION

KATHERINE TOWN COUNCIL
SUBDIVISION DEVELOPMENT

CERTIFICATE
PERMISSION TO USE FOR CONSTRUCTION PURPOSES

SIGNED: _____ DATE: _____

TOWN CLERK - KATHERINE TOWN COUNCIL

This Permission to Use is given on the basis that the Developer and/or the Consultant is not relieved from full responsibility for the correctness, accuracy and appropriateness of the design and or documents so associated.

Items omitted from the design, which must also be incorporated, are:

APPENDIX E - ON MAINTENANCE PROCESS CHECKLIST

For Internal Council Use as well as Consultant / Developer Use
This form is not required to be submitted to Council.

PROJECT -----

CONSULTANT

APPLICATION DATE I /

INSPECTION DATE / /

- D Application for Works to be Placed on Maintenance
- D On Maintenance Inspection
- D Bond Application to Council and Outstanding Works
- D Confirmation of Outstanding Works or other Security Bonds and Fee Details
- D Submission of Certification of works Roads and Drains
 Landscape / Irrigation
 Structural
 Other Authorities
 Other
- D Submission of As Constructed Drawings Hard Copy
 Digital
- D Submission of Clearances Private Owners
 Other Authorities
- D Submission of Test Results and Reports
- D Submission of Cadastral Survey Plan with Final Easement Details
- D Submission of Maintenance Bond
 Construction Approval Fee
 Outstanding Works or other Security Bonds
 Footpath, Crossover and Driveway Payment
- D Issue of On Maintenance Certificate

CHECKED -----

DATE CERTIFICATE ISSUED / /

COMMENTS -----

APPENDIX F - ON MAINTENANCE SITE INSPECTION CHECKLIST

This form is not required to be submitted to Council.

All test results, inspections, certifications, as constructed drawings and clearances in place. The Works have been visually inspected and the following constructed to approved drawings and satisfactory standards:

ALLOTMENTS

- D Pegged;
- D Lots graded to minimum design levels;
- D Lots grassed;
- D Soil and stormwater management in place.

ALLOTMENT DRAINAGE

- D Catch drains - location, profile, line, level, outlet with erosion control;
- D Field inlets - location and property drain and sub soil drain connection provided;
- D Overland flow path including Q100 open drains - profile, line, level, grassing established, erosion control, concrete lining;
- D Pipework - size, line, level;
- D Soil and stormwater management in place.

STORMWATER DRAINAGE SYSTEM

- D Pipe/Drainage layout - size, line, level, location;
- D Gully pits and manholes to correct standards - transitions;
- D Covers - good order, level, grade;
- D Endwalls, headwalls and outlet structures - erosion control, free from scour and siltation;
- D All connections to pits mortared flush, all walls smooth mortared flush, no reinforcement projections;
- D All stepirons, rungs, ladders, cages in position;
- D Open cut channels - profile, line, level, grassing, erosion control measures;
- D Overland flow - clear of obstruction, profile, line, level, grassing established, concrete lining, erosion control;
- D Sub soil drainage connections to pits, flush points, discharges to gullies or other approved outlet;
- D Grassing to swales, outlets, inlets, allotments, batters;
- D Soil and stormwater management in place.

EARTHWORKS

- D Retaining walls located clear of road reserves;
- D Batter slopes stabilised, free from erosion;
- D All disturbed areas grassed, free from erosion;
- D Soil and stormwater management in place;
- D Compaction test results, inspection records, certifications.

ROAD SURFACING

- D Hot mix wearing course sound in appearance and showing no signs of cracking, blemishes, erosion and oxidation;
- D Bitumen seal sound in appearance, no blemishes, adequate aggregate cover, no bitumen bleeding through surface, excess aggregate removed from site.
- D Joints are flush;
- D Kerbs and pavements free of overspray, splashes and marks;
- D Final profile is regular, crowns correctly located, no obvious high points, hollows, low points and ponding of water;
- D Joints with concrete works are sound and to the correct level. No gaps for water intrusion.

APPENDIX F - ON MAINTENANCE SITE INSPECTION CHECKLIST (Continued)

CONCRETE KERBS, KERB & CHANNEL, MEDIANS AND ISLANDS

- D Correct type and profile;
- D Laid to true line and level;
- D Finish is smooth, hard, sound and durable in appearance, free from bumps, rain damage, erosion, irregularities, surface blemishes, cracking, equipment grazes and marks and chipped and broken joints;
- D Ponding of stormwater does not occur;
- D Transitions to existing work and gully pits are smooth, regular, correct length;
- D Service markers have been placed to the kerb face;
- D Lip and back of kerb are flush with road surface, footpaths and verges;
- D All channelisation works and medians completed - signage, markers, pavement marking and traffic measures;
- D Subsoil drains and flushing points to medians and islands;

FOOTPATHS, BIKEWAYS AND PAVING INCLUDING INTERLOCKING AND OTHER

- D Finish is appropriate to use, hard, sound and durable in appearance, free from bumps, rain damage, erosion, irregularities, surface blemishes, cracking, marks, chipping and broken joints;
- D True to line and level width;
- D Jointing as required, expansion joints provided;
- D Concrete appropriately cured;
- D Pram ramps as per access requirements and plans;
- D Safety rails, hardware, pavement marking and signs installed.

STREETSCAPE, LANDSCAPE, PARKS, FENCING AND FEATURES

- D All turfing, grassing, weed control, tree planting, bollards, drainage, irrigation and other works as necessary to approval of Council's Parks section.
- D Erosion and stormwater management in place;
- D All fences other than approved entrance structures have been constructed within allotments;
- D Entrance features have planning and building approvals and certifications;
- D Approvals from manufacturers and submission of guarantees, warranties.
- D Approvals from Council's Parks section;
- D Appropriate undersurface to playgrounds;
- D Structural certifications;
- D Childproof fencing;
- D Approvals from other authorities and other trades and disciplines.

OTHER SERVICES

- D All approvals as constructed received and submitted;
- D All pit and manhole covers constructed to correct levels and slopes;
- D All services, road crossings permanently marked as required on kerbs or by approved markers;

OTHER

- D Street names signs with house numbers;
- D Traffic signs and markers and pavement marking.

APPENDIX G - ENGINEERS CERTIFICATION

KATHERINE TOWN COUNCIL
SUBDIVISION DEVELOPMENT

ENGINEERS CERTIFICATE

'AS CONSTRUCTED'

I, _____ (Block Letters)

of _____ (Block Letters)

hereby certify that from my personal knowledge, the works indicated on plan numbers:

to which this certificate is affixed, have been completed fully and wholly in accordance with the detailed plans and specifications previously submitted to Council and given Permission to Use have also been satisfactorily completed.

The underground works shown on the plans have been constructed in the location and to the levels shown on these plans. The 'as constructed' alignment and levels can be distinguished from the design alignment and levels because:

ENGINEER

CHARTERED

Grade of Membership of I.E. Australia: _____

Date: _____

APPENDIX H -CERTIFICATE OF TAKEOVER

KATHERINE TOWN COUNCIL
SUBDIVISION DEVELOPMENT

SUBDIVISIONAL DEVELOPMENT
CERTIFICATE OF TAKEOVER

Developer: _____

Subdivision of Lot Number/s: _____ Town of _____

Survey Plan Number: _____

Instrument of Determination Number: _____

Katherine Town Council confirms that the roadworks, storm water drainage, street furniture and landscaping as prescribed by the plans and specifications previously submitted have been satisfactorily constructed and are hereby taken over for maintenance purposes. They are subject to a Defects Liability Period of twelve (12) months from the date of this certificate. Those items listed below are exceptions to the above and must be completed by the date agreed to below. The Defects Liability Period for those particular items shall commence on the date they are completed.

| ITEM: | DATE FOR COMPLETION: |
|---|----------------------|
| - Funds received to cover Council supervision/ inspection | \$ _____ |
| - Funds received in lieu of footpaths/driveways | \$ _____ |
| | _____ |
| Total: | \$ _____ |
| Budget Item: | \$ _____ |
| Date: | |
| - Security for Defects Liability Period | \$ _____ |
| Date: | |

Signed: _____ -Katherine Town Council
 _____ -Developer

Date: _____

APPENDIX I - OFF MAINTENANCE PROCEDURE CHECKLIST

For Internal Council Use as well as Consultant / Developer Use
This form is not required to be submitted to Council.

PROJECT -----

DATE REQUEST SUBMITTED I I

CONSULTANT

- D Request from Developer for Off Maintenance Inspection and Return of Security(s)
- D Off Maintenance Inspection
- D Issue of Off Maintenance Certificate by Council - Works Taken Over by Council

INSPECTION DATE / /

DATE MAINTENANCE CERTIFICATE ISSUED / /

COMMENTS -----

APPENDIXJ - OFF MAINTENANCE SITE INSPECTION CHECKLIST

This form is not required to be submitted to Council.

All further test results, inspections, certifications, as constructed drawings and clearances in place. The works have been visually inspected and are satisfactory allowing for normal wear and tear. The requirements are as follows but not limited to:

EARTHWORKS, SITEWORKS & ALLOTMENTS: Those still in the title of the developer.

- D Lots grassed, batter slopes established;
- D Soil and stormwater management still in place.

STORMWATER DRAINAGE SYSTEM

- D All pits, manholes and drainage structures in good condition;
- D All covers, lintels and frames free from damage;
- D Erosion control at outlets and open drains free from erosion, siltation and scour;
- D All pits, pipes and culverts free from obstruction, siltation;
- D Erosion and stormwater management still in place and adequately maintained.

ROAD PAVEMENTS AND SURFACING

- D Hot mix wearing course / bitumen seal, sound in appearance, no cracking, blemishes, erosion and oxidation;
- D Joints are flush, no signs of cracking, rutting or other types of failures;
- D Surfaces are still straight and true to line and level, no low points and ponding of water.

CONCRETE AND INTERLOCKING PAVING, KERBS, KERB & CHANNEL, MEDIANS AND ISLANDS

- D Finish is still hard, sound, durable, smooth, unblemished, no cracking, chipping of joints and pavers, free from erosion and rain damage;
- D Surfaces are still straight and true to line and level, drain well, no ponding of water;
- D Lip of kerb is still flush with road surface, no gap between kerb and pavement;
- D All siltation cleaned out of kerb and channel etc.

STREETSCAPE, PARKS, LANDSCAPE, FENCING AND OTHER FEATURES

- D Inspections have been carried out with Council's Parks section;
- D All plants, shrubs, trees, grassed areas well maintained and in good healthy condition;
- D All grassed areas, verges, undersurfaces to playgrounds, etc draining well;
- D All structures and equipment well maintained, free from rust and blemishes, structurally sound;
- D All undersurfaces to playgrounds in good order;
- D All irrigation systems in full working order and where necessary, controllers on line and functioning.

OTHER

- D All clearances from Other Authorities and Others received;
- D All pit, valve, manhole, service boxes to correct levels and slopes, no obstructions in verges, grassed areas, etc;
- D Line marking re-marked where necessary.
- D Street name and other signs still in place

APPENDIX K - FINAL CERTIFICATE - OFF MAINTENANCE

KATHERINE TOWN COUNCIL
SUBDIVISION DEVELOPMENT

SUBDIVISIONAL DEVELOPMENT
FINAL CERTIFICATE - OFF MAINTENANCE

DEVELOPER: _____

SUBDIVISION OF LOT NO: _____ TOWN OF _____

SURVEY PLAN NO: _____

INSTRUMENT OF DETERMINATION NO: _____

Katherine Town Council confirms that the roadworks, stormwater drainage, street furniture and landscaping required on the above subdivision have now been finally and satisfactorily completed and the Developer has satisfied all his obligations to Council under the Instrument of Determination.

Security Lodged for Defect Liability Period: \$ _____

Less amount necessarily used by Council: \$ _____

Balance refundable: \$ _____

Signed: _____ Katherine Town Council

Date: _____

APPENDIX L – STREETLIGHTING TECHNICAL SPECIFICATIONS

Minimum Certifications

- IES LM79-08, "Electrical and Photometric Measurements of Solid-State Lighting Products"
- AS/NZS 1158 series and CIE S025 using the **absolute** method.
- Complies with the relevant requirements of Clause 5.7 of SA/SNZ TS 1158.6:2015
- Complies to ANZ 60598.2.3 part 2,3 for outdoor luminaires
- P category lighting to ANZ 11583.1 P4 with independent certification minimum spacing of 55M
- Global Mark declaration of suitability for use on Australian power networks
- Certification of load testing to AEMO NEM for inclusion on the non-metered load table for under 50W and under 100W
- ACMA and RCM compliance for use on Australian power networks
- IK 09 or greater certification

Surge Arrestor

LED fitting minimum 445 Joule CATB (6kV / 3kA)

When fitted with Smart Controller (eg. Cimcon 3100-7P 700 Joule CATC (20kV / 10kA)

PE Cell

The unit must be fitted with a PE cell with a full ANSI C136.41 7 pin dimming receptacle. Must pass IP65 water test with NEMA-7 receptacle.

Fixtures and Fittings

The equipment needs to withstand harsh environment such as extreme heat, humidity, condensation, and rain. Equipment inherently designed, 'fit-for-purpose'; tested to EN60598-2-3 and EN61347-2-13 standards to cope with the above conditions, backed with extensive data on light performance in either the NT or similar environments. Stainless steel 316 grade screws and mounting accessories to EN 60598-1 are required. Climate-adaptive drivers rated to 70 degrees.

LED Type

SuperBright class 30lm/w efficacy LED arrays are required with Photometric, LM-79 and LM-80 test reports from a NATA accredited Laboratory are required on request.

Precise Light Distribution

With the emphasis being on street, pedestrian-crossing and footpath illumination, in order to eliminate glare and to improve the visual environment, it is imperative to direct light where light is actually needed and away from where it is not with precision and efficiency and to eliminate glare onto security cameras, residential property, travelling or stationary vehicles. To this effect, only luminaires which incorporate **COB LED field-interchangeable contact-technology, asymmetrical lenses are acceptable**, offering precise Optical Control and field-selectable application flexibility.

Remote Powerhead Option

The Luminaire must have an option if requested where the LED unit has no voltage above 48VDC, where the Mains LED driver is remotely located up to 22m away from the LED head unit. This is for remote areas where access to repairing the light fitting is cost prohibited. The fitment of a remote box at the base of the pole will be seen favourably.

Australian Support and Warranty

The supplier must show extensive in country support of its products. It is expected that all warranty and repairs be conducted at an Australian repair centre.

Warranty terms if required will be **for** a minimum of **5 years** including an extended warranty period of **10 years being** if required.

Vandal Resistance

The unit to be supplied must be able to withstand rock impacts to the shell and LED and still maintain function. The supplier must provide a single-piece die-cast body fitted with vandal-proof, tempered-glass lenses meeting IK09. Polycarbonate lenses and LED covers are not acceptable.

Smart Controller NEMA-7

System and luminaires must be compatible with the Cimcon 3100 series controllers