ALICE SPRINGS TOWN COUNCIL

SUBDIVISION AND DEVELOPMENT GUIDELINES

November 2012
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1. INTRODUCTION

1.1 The Planning and Development Process

The NT Planning Act establishes the Development Consent Authority (DCA) as the Relevant Authority for the consideration and determination of ordinary applications for development consent (i.e. planning approval) in Alice Springs.

The Minister for Lands and Planning is the Relevant Authority for Exceptional Development Permits and Planning Scheme Amendments (e.g. rezoning applications), which include any and all proposed changes to the NT Planning Scheme, which is the primary reference document for planning and development in Alice Springs.

Where the DCA has considered an ordinary application for development consent, which includes subdivision applications, and has determined that a development permit is to be issued with conditions dealing with a matter or matters that are to be undertaken to the requirements of the Local Authority, then the Alice Springs Town Council Subdivision and Development Guidelines (“these Guidelines”) are the reference document setting out the general principles and specific requirements of the Alice Springs Town Council (ASTC).

As a Local Authority, referred to in the NT Planning Act, the areas of responsibility, for which ASTC is generally responsible, relate to the provision and maintenance of public roads, stormwater drainage (as it relates to the local road network), and the level of amenity provided in road reserves and public open space that is presently, or is potentially to be placed, under the care and control of Council. It is recognised that these Guidelines will not necessarily provide guidance on all aspects of each particular development. Where the guidelines do not provide sufficient clarity in respect of a particular matter, then that matter will need to be referred to the Director of Technical Services for clarification of ASTC’s requirements.

Most public roads within the Municipality of Alice Springs are under the care and control of ASTC, except for NT Government roads. A map showing those roads that are currently under the care and control of the NT Government is available on the internet (see [http://www.transport.nt.gov.au/__data/assets/pdf_file/0013/6430/Alice-Springs-2007.pdf](http://www.transport.nt.gov.au/__data/assets/pdf_file/0013/6430/Alice-Springs-2007.pdf))

As a Local Authority, ASTC seeks to work co-operatively with Service Authorities and other government agencies to streamline Development and avoid conflicting advice. Developers are advised to contact the appropriate authorities and other government agencies to determine their general and specific requirements.

- Development Consent Authority (DCA) – Relevant Authority e.g. ordinary development permits and certificates of compliance.
- Department of Lands, Planning and Environment (DLPE) – Lands Administration, Development Assessment Services, Building Assessment Services and Road Networks Division e.g. requirements in relation to Crown Lands or NT Government roads.
- Department of Infrastructure – Construction Division e.g. engineering specifications for public works in areas under the care and control of NT Government.
• Power and Water Corporation (PWC) – electrical, sewer and water connections e.g. Dial Before you Dig.
• Department of Natural Resources, Environment, the Arts and Sport (DLPEE) e.g. heritage, erosion and sediment control, noise control, pollution, water bores.
• Aboriginal Areas Protection Authority (AAPA) - Sacred Sites e.g. significant trees.
• Department of Health (DoH) e.g. septic systems, mosquito control.

1.2 Local Authority Requirements

An Authorised Officer of ASTC shall have regard to his or her roles and responsibilities under the NT *Local Government Act* when discharging his or her duties under the NT *Planning Act*.

These Guidelines provide an easy reference guide for an Authorised Officer of ASTC, as well as any person or business undertaking development in Alice Springs, or likely to affect in any way, a public road or any other public land or public infrastructure that is under the care and control of ASTC.

These Guidelines provide “Deemed-to-Comply” standards for most Development Works within the Municipality. Where particular circumstances require solutions that are beyond the scope of these Guidelines, then approval from the Director of Technical Services must be obtained prior to the design being implemented.

These Guidelines have been arranged so that a person or business undertaking development (i.e. “Developer”) can access those sections that apply to the particular aspect of development that is of interest. It is often not necessary to consult all sections of these Guidelines to determine the requirements for a particular Development.

1.3 Design Philosophy

The philosophy underpinning these Guidelines is that public safety should have priority in any decisions made by an Authorised Officer of ASTC. These Guidelines incorporate that philosophy, with due consideration to a range of local factors, like the size of motor vehicles commonly found in Alice Springs and traffic volumes generated within the Municipality, climate and soil types.

These Guidelines contain design criteria which respond to existing arrangements for roads and stormwater infrastructure. This document seeks to provide infrastructure that will result in the least Whole-of-Life Costs to current and future ratepayers in the design and construction of future roads, paths, public open space, lighting and stormwater infrastructure.

While these Guidelines set out conventional standards for Development Works they are not intended to discourage the use of innovative tools and techniques to achieve sustainable development that are beyond the scope set out in these Guidelines (e.g. expanding the use of solar energy or designing stormwater systems to encourage the retention and re-use of stormwater runoff).
While Whole-of-Life Costs are a major consideration, approval or acceptance of a Development by ASTC may reflect considerations other than cost. In all instances where an innovative solution is proposed to a particular design problem, the application is to be accompanied by an assessment of the Whole-of-Life Costs for the innovative solution and a comparison with the Whole-of-Life Costs of a more conventional solution and a statement of the benefits that the innovative solution brings to the community.

In some instances it may be necessary for the Developer to seek approval for a design solution that has significantly higher Whole-of-Life Costs than the “Deemed-to-Comply” standards set out in these Guidelines and, under those circumstances, ASTC may consider a cash or non-cash contribution from the Developer to offset these additional costs in perpetuity.

The ASTC Director Technical Services is able to provide advice on whether a particular design complies with the intent of the guidelines. Where solutions are required that are beyond the scope of these guidelines, the approval must be obtained from the Director Technical Services prior to the design being implemented.

The performance of these guidelines will be reviewed annually to ensure the ongoing acceptability of the standard that they set. Following approval of any proposed variations by the Elected Members of ASTC these standards will be updated accordingly.

1.4 Definitions

The following table defines specific words and terms used in these Guidelines.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAPA</td>
<td>Aboriginal Areas Protection Authority – approval of all matters relating to Sacred Sites, including significant trees</td>
</tr>
<tr>
<td>Access</td>
<td>Provision of infrastructure to cater for the adequate movement of vehicles, pedestrians and cyclists</td>
</tr>
<tr>
<td>Access Road</td>
<td>The road that provides adequate movement for vehicles, pedestrians and cyclists to the full frontage of developed allotments. The road classification for various categories of Development is to be in accordance with these Guidelines</td>
</tr>
<tr>
<td>Act</td>
<td>The NT Planning Act</td>
</tr>
<tr>
<td>AMCORD</td>
<td>Australian Model Code for Residential Development</td>
</tr>
<tr>
<td>Approval Documents</td>
<td>Formal advice from an Authorised Officer of ASTC that the Design Documentation, as submitted, is approved for construction, including but not limited to the following: • Approval letter with or without conditions; • Approved drawings; and • Approved pavement design (where necessary)</td>
</tr>
<tr>
<td>Approved Drawings</td>
<td>Detailed Design Drawings submitted to ASTC by the Developer and approved by an Authorised Officer of ASTC for construction. If no drawings are submitted or the submitted drawings do not show sufficient detail then the Standard Drawings included in these Guidelines shall be deemed to be the Approved Drawings</td>
</tr>
<tr>
<td>Approved Non-standard Lighting</td>
<td>A non-standard fitting that complies with PWC public lighting technical standards (i.e. Volume 3 of PWC’s Standards manual) and can be placed on the non-metered PWC network.</td>
</tr>
<tr>
<td>Term</td>
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<tr>
<td>ARR</td>
<td>Australian Rainfall and Runoff published by Engineers Australia</td>
</tr>
<tr>
<td>AHRB</td>
<td>Australian Road Research Board</td>
</tr>
<tr>
<td>ASTC</td>
<td>Alice Springs Town Council</td>
</tr>
<tr>
<td>ASTC Works Permit</td>
<td>Permit to Work Within a Road Reserve - approval issued by an Authorised Officer of the Alice Springs Town Council to undertake works on public roads or other land under the care and control of Council</td>
</tr>
<tr>
<td>Authorised Officer</td>
<td>An Officer of the ASTC authorised under the relevant section of the NT Local Government Act</td>
</tr>
<tr>
<td>Municipal Plan</td>
<td>Alice Springs Town Council Municipal Plan (as amended) contains an annual list of fees and charges and related to development assessment, amongst other things</td>
</tr>
<tr>
<td>Construction Approval Fee (previously Inspection of Works Fee)</td>
<td>Fee payable by the Developer prior to ASTC approving the Design Documentation. The Fee is based on the Estimated Construction Cost of the works, as advised and certified by the Superintendent and approved by an Authorised Officer of ASTC. The Construction Cost is to be calculated and the Construction Approval Fee paid prior to ASTC acceptance of the works On-Maintenance</td>
</tr>
<tr>
<td>Construction Deposit</td>
<td>An amount equal to 5% of the Construction Cost provided to ASTC in the form of cash or bank guarantee prior to commencing construction of the Development Works</td>
</tr>
<tr>
<td>Civil Contractor</td>
<td>The legal entity contracted to the Developer to construct the Development Works</td>
</tr>
<tr>
<td>Construction Cost</td>
<td>Estimated cost to construct the Development Works, as estimated and certified by the Superintendent, and accepted by ASTC. The advice to ASTC from the Superintendent of the cost of the Development Works is to be accompanied by a schedule showing the quantities, rates and amounts of the various components of the Development Works</td>
</tr>
<tr>
<td>Council</td>
<td>Alice Springs Town Council.</td>
</tr>
<tr>
<td>Department of Infrastructure (DI)</td>
<td>NT Government Department of Infrastructure (or its successor).</td>
</tr>
<tr>
<td>Design Approval Fee (previously know as Plan Approval Fee)</td>
<td>The fee payable by the Developer to ASTC for administration and approval of the detailed Design Documentation. The fee is set out in the ASTC Municipal Plan. The Design Approval Fee is to be paid prior to the Design Documentation being approved by an Authorised Officer of ASTC.</td>
</tr>
<tr>
<td>Design Documentation</td>
<td>Technical Specification, Drawings, Calculations, Reports and any other documents required by Council to satisfactorily show the intended works for the Development.</td>
</tr>
<tr>
<td>Developer</td>
<td>The legal entity that is issued a Development Permit from the Development Consent Authority (DCA).</td>
</tr>
<tr>
<td>Development</td>
<td>Any works (i.e. Development Works) that require approval from the DCA or the Minister for Lands, Planning and Environment, usually in the form of a Development Permit with conditions</td>
</tr>
<tr>
<td>Development Consent Authority (DCA)</td>
<td>The Relevant Authority established under the NT Planning Act that determines ordinary development permit applications</td>
</tr>
<tr>
<td><strong>Development Permit</strong></td>
<td>A planning instrument that is issued by the Relevant Authority, under the NT <em>Planning Act</em>, which permits the Developer to proceed with a development in accordance with the conditions of the Permit</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Development Site</strong></td>
<td>The parcel(s) of land upon which Development Works that are approved by a valid Development Permit have been or are about to be undertaken</td>
</tr>
<tr>
<td><strong>Development Works</strong></td>
<td>Works that are to be undertaken on the Development Site, or adjacent to the Development Site, to complete the conditions of the Development Permit, including any conditions necessary to satisfy the requirements of the Local Authority and Service Authorities</td>
</tr>
<tr>
<td><strong>DoH</strong></td>
<td>NT Government Department of Health</td>
</tr>
<tr>
<td><strong>DLPE</strong></td>
<td>NT Government Department of Lands, Planning and Environment</td>
</tr>
<tr>
<td><strong>DI</strong></td>
<td>NT Government Department of Infrastructure</td>
</tr>
<tr>
<td><strong>Disability Discrimination Act</strong></td>
<td>Commonwealth <em>Disability Discrimination Act 1992</em> and any regulations or standards thereof</td>
</tr>
<tr>
<td><strong>Development Assessment Fees</strong></td>
<td>Fee payable by the Developer prior to ASTC usually split into two parts (see Design Approval Fee and Construction Approval Fee). The fee structure adopted by Council is published in the current Municipal Plan. The fees outlined in the Municipal Plan include the fees for the development assessment process, the assessment of engineering details (if any), post-construction inspections and any processing of documentation during the construction and the formal acceptance by an Authorised Officer of ASTC that the Development Permit Conditions have been met (i.e. Part 5 clearance advice)</td>
</tr>
<tr>
<td><strong>Design Life (Road Pavement)</strong></td>
<td>Road pavements shall generally be designed and constructed to achieve a minimum 25 year design life, unless otherwise approved by an Authorised Officer of ASTC</td>
</tr>
<tr>
<td><strong>External Works Bond</strong></td>
<td>Where the Developer indicates an intention to delay the construction of specific works that are required as part of the Development Works, then ASTC may require the Developer to lodge a bond to cover the full cost of the outstanding works, until such time as those works have been completed</td>
</tr>
<tr>
<td><strong>Greenfield Subdivision</strong></td>
<td>Development Works, usually associated with a residential subdivision proposal, in an area where the servicing of smaller allotments requires major civil construction work (e.g. headworks)</td>
</tr>
<tr>
<td><strong>Guidelines</strong></td>
<td>ASTC Subdivision and Development Guidelines</td>
</tr>
<tr>
<td><strong>HPS</strong></td>
<td>High Pressure Sodium e.g. standard (orange) street light</td>
</tr>
<tr>
<td><strong>LED</strong></td>
<td>Light Emitting Diode e.g. cool white (energy efficient) light</td>
</tr>
<tr>
<td><strong>Local Authority</strong></td>
<td>In relation to roles and responsibilities in relation to the NT <em>Planning Act</em> refers to the Local Government Authority responsible for the Municipality of Alice Springs (i.e. Alice Springs Town Council)</td>
</tr>
<tr>
<td><strong>Maintenance Deposit</strong></td>
<td>The monetary security lodged by the Developer to ASTC for the Maintenance Period. The Maintenance Deposit may be in the form of cash, or an unconditional bank guarantee from a banking institution approved by an Authorised Officer of ASTC, or as otherwise approved by an Authorised Officer of ASTC.</td>
</tr>
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</table>
| **Maintenance Period** | A period, being usually 24 months or sometimes longer, as specified in the Approval Documents, during which time the
Development Works are accepted On-Maintenance for performance testing. The Maintenance Period will not commence until the Development Works have been constructed in accordance with the approved design and public areas are safe for public access. The Maintenance Period may be lengthened, as necessary, to allow the Developer to complete any defects or omissions identified during the Off-Maintenance inspection. Any major defects identified and repaired during the Maintenance Period may be subject to performance testing for a further 24 months before being released Off-Maintenance. The Developer is responsible for the maintenance of the Development Works during the Maintenance Period.

<table>
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<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Minister</td>
<td>The Minister responsible for administering the NT Planning Act (i.e. Minister for Lands, Planning and the Environment).</td>
</tr>
<tr>
<td>Municipality</td>
<td>Municipal area administered by the Alice Springs Town Council</td>
</tr>
<tr>
<td>Non-standard Lighting</td>
<td>A light fitting or fixture, other than a standard light fitting or fixture, on a metered electricity supply.</td>
</tr>
<tr>
<td>NT Planning Scheme</td>
<td>The NT Planning Scheme is established under the NT Planning Act and is the primary reference document for the determination of development applications in Alice Springs.</td>
</tr>
<tr>
<td>Off-Maintenance</td>
<td>Formal advice from an Authorised Officer of ASTC to the Developer that the Development Works are accepted Off-Maintenance. Development Works will not be accepted Off-Maintenance until the completion of all work required during the Off-Maintenance Inspection. Any Maintenance Deposit lodged will be returned with Off-Maintenance acceptance of the Development Works.</td>
</tr>
<tr>
<td>On-Maintenance</td>
<td>Formal advice from an Authorised Officer of ASTC that the Development Works are accepted On-Maintenance, which means that the Development Works will have been constructed to the true intent and meaning of the Approval Documents and be able to be used for the designed purpose. The Development Works will not be accepted On-Maintenance until all of the Development Works have been completed and the Maintenance Deposit has been lodged.</td>
</tr>
<tr>
<td>Procedural Statement and Directives (PSD)</td>
<td>Council endorsed operational document that accompanies Council adopted policy (e.g. Rural Road Reserve Management PSD)</td>
</tr>
<tr>
<td>Public Place</td>
<td>Any land owned by, or under the care and control of, or custodianship of, or trusteeship of Council by lease, licence, statutory instrument or some other form of agreement, including: (a) any bridge, footpath, court, lane, alley, passage or thoroughfare open to, or used by, the public; or (b) any park, garden, reserve or other public open space that can be use for recreation or resort; or (c) any open place, in which ASTC has an interest, to which the public has, or is permitted to have access to, with or without payment for admittance; or (e) any drain, other than a drain that is owned and controlled by the NT Government; or (f) any road but does not include a highway or any other road that is owned and controlled by the NT Government; or (g) any public toilet and the land or premises used in connection with it.</td>
</tr>
<tr>
<td><strong>PWC</strong></td>
<td>Power and Water Corporation</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>Relevant Authority</strong></td>
<td>The NT Planning Act establishes the DCA as the Relevant Authority for the determination of ordinary development permit applications. The Minister for Lands and Planning is the Relevant Authority for the determination of Exceptional Development Permit applications or to amend the NT Planning Scheme.</td>
</tr>
<tr>
<td><strong>Road Hierarchy</strong></td>
<td>The classification of roads adopted by ASTC, based on the functionality of the road network, as set out in this document.</td>
</tr>
<tr>
<td><strong>Standard Drawings</strong></td>
<td>The current set of Standard Drawings, produced in conjunction with these Guidelines and administered by ASTC, as well as selected Standard Drawings of the NT Department of Infrastructure and the Power and Water Corporation, as listed in these Guidelines.</td>
</tr>
<tr>
<td><strong>Standard Lighting</strong></td>
<td>A lamp, luminare, mounting bracket, public lighting pole, supply cable or control equipment normally used by, or acceptable to, PWC for connection to an electricity supply that is to be provided by PWC and generally paid for, in the first instance, by the Developer and thereafter the cost of electricity is incurred by Council. Standard lighting for street lighting is normally associated with a non-metered supply where the assets are owned and maintained by PWC and therefore subject to PWC’s technical standards. ASTC is generally responsible for ensuring appropriate design of lighting levels in local streets, which may be achieved by the provision of Standard Lighting or Non-standard Lighting however Standard Lighting and Non-standard Lighting have very different cost structures and maintenance regimes that would need to be considered by Council in each case.</td>
</tr>
<tr>
<td><strong>Street</strong></td>
<td>Any public road, as prescribed by the NT Local Government Act 2008.</td>
</tr>
<tr>
<td><strong>Superintendent</strong></td>
<td>The Project Manager / Supervising Engineer engaged by the Developer to prepare Approval Documentation for the Development Works and supervise the construction of the Development Works.</td>
</tr>
<tr>
<td><strong>Technical Specification</strong></td>
<td>Part of the contract documents for the contracting of civil works and defines details of the Development Works. The specification shall include the general conditions of contract as well and the specific job specification for the Development Works. This specification is to be submitted to ASTC with the design documentation for approval by an Authorised Officer of ASTC.</td>
</tr>
<tr>
<td><strong>WSUD</strong></td>
<td>Water sensitive urban design</td>
</tr>
<tr>
<td><strong>Whole-of-Life Costs</strong></td>
<td>Includes life cycle costs calculated by a costing Engineer or a Quantity Surveyor.</td>
</tr>
<tr>
<td><strong>Worksafe NT</strong></td>
<td>NT Government agency responsible for implementing NT Workplace Health and Safety Act and the NT Workplace Health and Safety Regulations.</td>
</tr>
</tbody>
</table>
2 IDENTIFICATION OF DEVELOPMENT TYPES

The following Flow Chart (Figure 1) has been prepared to assist in understanding the approvals needed from ASTC in relation to any proposed works in the ASTC area. This Flow Chart is to be read in conjunction with the descriptions set out in Part 2.1 to Part 2.9

Figure 1: Council Development Assessment Flow Chart
2.1 Minor Works

Minor Works are works that are undertaken on land under the control of ASTC and are of a minor nature. All Minor Works on ASTC land require a Permit to Work Within an ASTC Road Reserve (i.e. ASTC Works Permit) prior to commencing construction of the Development Works. Minor Works may be required as a condition of a Development Permit and in that instance they still require an ASTC Works Permit. Typical works within an existing road reserve or other land that is under the care and control of Council include:

- Residential driveway crossover construction or re-construction;
- Lot drainage connection and/or repair to ASTC stormwater drainage system (e.g. kerb and gutter);
- Water connection, service or mains repair (where the water main is located within the road verge);
- Sewer connection, service or mains repair (where the sewer main is in the street or in the verge);
- Electrical connection, service or mains repair (where the mains are constructed in the verge);
- Telecommunications connection (where the cables are buried in the verge);
- Verge development (e.g. planting of trees or installation of any other landscaping treatments other than bare earth paths); or
- Other minor works (e.g. erection of a sign)

Minor Works require the Developer to obtain an ASTC Works Permit before commencement of the works. The works are to be undertaken in accordance with a valid ASTC Works Permit and the standards set out in the ASTC Works Permit guides, as appropriate. A copy of the ASTC Works Permit application form and ASTC Works Permit guides are available from the ASTC website (see http://www.alicesprings.nt.gov.au/document/list/Forms/Roads).

Application for ASTC approval will require adherence to the process outlined in Section 3.5.1 of these Guidelines (i.e. ASTC Works Permit process for Minor Works).

2.2 Single Dwelling Residential Development

This type of development typically involves constructing a dwelling on cleared land in an urban area or in a rural area but might also mean alterations and additions to an existing dwelling and would generally require ASTC approval in relation to the following matters:

- Construction of a new driveway crossover. The driveway will need to be located to allow safe access to and egress from a public road;
- The floor level of the dwelling should be designed to allow a complying driveway to conform to the profile of the existing road verge, as set out in these Guidelines;
- Construction of a stormwater drainage connection to the ASTC stormwater drainage system (e.g. kerb and gutter). The stormwater connection will need to be sized to accommodate runoff, as required by AS/NZS3500 and the Building Code of Australia (BCA);

ASTC approval of Development Works will require adherence to the process outlined in Section 3.5.1 of these Guidelines (i.e. ASTC Works Permit processes).
2.3 Multiple Dwelling Residential Development

This type of Development typically involves the provision of multiple dwelling units on a single allotment and includes duplex and unit blocks on vacant land or redevelopment of an existing site, and is generally located in urban areas, on land that has been zoned for multiple dwellings, or medium density residential, or higher intensity uses and would generally require ASTC approval in relation to the following matters:

- Driveway crossover - location for sight lines, width for ease of access, shape to conform with profile of the road verge; and construction materials for maintenance;
- Connection to ASTC stormwater drainage system (usually kerb and gutter but sometimes requires connection to the sub-surface system of pits and pipes) is to be designed using the provisions of Australian Rainfall and Runoff (ARR) to meet the minimum requirements of these Guidelines;
- The provision of any public open space resulting from the Development;
- The provision of, or upgrading of any public lighting necessary to accommodate the proposed Development; and
- The provision of, or upgrading of, a foot path / cycle path network to the frontage of the Development Site.

ASTC approval of the Development Works will require adherence to the process outlined in Section 3.5.2 of these Guidelines (i.e. ASTC Works Permit processes).

2.4 Commercial Property Development

This type of development typically involves development occurring in Commercial or Tourist Commercial zones, as described in the NT Planning Scheme, and can be Development on vacant land or redevelopment of existing developed areas and would generally require ASTC approval in relation to the following matters:

- Driveway crossover - sight lines; width for ease of access; shape to conform with profile of the road verge; and construction materials for maintenance;
- Verge development - full verge paving matched with the existing colour palate is required in the Central Business zone. In other areas concrete footpath and paving is required to the full extent of the frontage. Verge development should comply with the requirements of AS1428 (i.e. provide mobility access for disabled people);
- Connection to ASTC stormwater drainage system usually requires connection to the sub-surface system of pits and pipes and is to be designed using the provisions of ARR and AS/NZS3500 in order to meet the minimum requirements of these Guidelines;
- The provision of any landscaping treatments and road furniture in the road reserve;
- Alterations to existing road layout, foot path or cycle path adjacent to Development Site; and
- Upgrade of any public lighting necessary to accommodate the proposed Development.

ASTC approval will require adherence to the process outlined in Section 3.5.2 of these Guidelines (i.e. ASTC Works Permit processes).
2.5 Industrial Development

This type of development generally occurs on land that is located within the General Industry or Light Industry zones, as described in the NT Planning Scheme, and can be on vacant land or redevelopment of an existing industrial development and would generally require ASTC approval in relation to the following matters:

- Driveway location, width and shape to suit the requirements of AS/NZS2890.2 and Austroads to provide for the turning movements of the types of vehicles expected to service the development. If an existing constructed carriageway in the road reserve needs to be widened to accommodate a new development, then approval for that work will form part of the approval for the entire development;
- Verge development - construction of a concrete foot path / cycle path, or upgrading of an existing foot path / cycle path is required to the full frontage of the Development Site;
- Connection to ASTC stormwater drainage system usually requires connection to subsurface pits and pipes and is to be designed using the provisions of AS/NZS3500 and ARR in order to meet the minimum requirements of these Guidelines;
- Provision of any plants or road furniture, including signage, in the road reserve.

ASTC approval will require adherence to the process outlined in Section 3.5.2 of these Guidelines (i.e. ASTC Works Permit processes).

2.6 Exceptional Development / Specific Use Development

These types of development can be any type of development, regardless of whether it is defined in, or complies with, the NT Planning Scheme and are only permitted by the special approval of the Minister for Lands and Planning (“the Minister”), as the Relevant Authority under the NT Planning Act. These types of development often includes elements noted elsewhere in these Guidelines and would generally require ASTC approval in relation to matters described above, as also being applicable to other types of Development.

Matters that generally require ASTC approval are as follows:

- Designing and constructing new roads and intersections and foot paths / cycle paths and/or widening or upgrading of existing constructed roads and foot paths / cycle paths, road verges, and the like. This work may include the construction of traffic lights or roundabouts, as necessary, to cater for increased traffic;
- Designing and constructing all new stormwater drainage systems needed to service the Development, as well as any alteration or upgrade to, or connection with, the existing ASTC stormwater drainage system to ensure that the downstream capacity of the stormwater drainage system is not exceeded; and
- The lighting requirements for any future public roads that are to be under the care and control of ASTC, including foot paths / cycle paths and areas of public open space, shall be as appropriate to ensure the safety of pedestrian and/or vehicular traffic either associated with the development, or impacted by the Development, by the provision of lighting to ASTC design standards and PWC electrical standards.

ASTC approval will require adherence to the process outlined in Section 3.5.2 of these Guidelines (i.e. ASTC Works Permit processes).
2.7 Greenfield Subdivisions

This type of Development is taken to be on land that has not been previously developed, or not to any significant extent, and generally takes the form of new residential or industrial estates although it can occur as an isolated commercial or industrial development on previously undeveloped land. As this type of Development generally occurs beyond existing developed areas, it may be necessary for the Developer to provide all of the infrastructure that would be necessary to service the highest intensity use or uses that the proposed zoning would allow and would generally require ASTC approval in relation to the following matters:

- The provision of new roads, including foot paths and/or cycle paths, to the standard required by the Development Permit / ASTC Works Permit, as well as upgrading any connecting roads under the care and control of ASTC;
- The provision of stormwater drainage, as well as the connection to and upgrading of any existing ASTC stormwater drainage system to ensure that the downstream capacity of the stormwater drainage system is not exceeded;
- The lighting requirements for any future public roads that are to be under the care and control of ASTC, including foot paths and/or cycle paths and areas of public open space, shall be as appropriate to ensure the safety of pedestrian and/or vehicular traffic either associated with the development, or impacted by the development, by the provision of lighting to ASTC design standards and PWC electrical standards.

ASTC approval will require adherence to the process outlined in Section 3.5.2 of these Guidelines (i.e. ASTC Works Permit processes).

2.8 Other Subdivisional Developments

This type of Development typically involves the re-subdivision of land that has already been developed and may include the subdivision or consolidation of residential, commercial or industrial land. This type of Development may require the provision new or upgraded roads, stormwater drainage, public lighting, parks, etc. Where existing infrastructure has been provided to a lesser standard than the Deemed-to-Satisfy standards set out in these Guidelines, then the Developer will be required to upgrade existing infrastructure and would generally require ASTC approval in relation to the following matters:

- Road widening to the ultimate road width and provision of kerb and gutter, if necessary, on the Development Site and/or upgrading of the road and verges including the provision of foot path / cycle path and verge reshaping, as necessary;
- Construction of new stormwater drainage infrastructure and connection to the existing ASTC stormwater system. Upgrading of the adjacent stormwater may be required to accommodate additional stormwater runoff. The design of stormwater detention / retention systems may be considered an acceptable alternative to ensure that the downstream capacity of the stormwater drainage system is not exceeded; and
- Upgrading of any street lighting or lighting of any other Public Place to bring the lighting for the proposed Development up to current ASTC standards.

ASTC approval will require adherence to the process outlined in Section 3.5.2 of these Guidelines (i.e. ASTC Works Permit processes).
2.9 Planning Scheme Amendment (e.g. spot rezoning)

A planning scheme amendment is only permitted by the special approval of the Minister for Lands Planning (“the Minister”), as the Relevant Authority under the NT Planning Act because it has the potential to change the NT Planning Scheme zoning provisions. This is not a type of Development per se however proposed Planning Scheme Amendments are generally referred to the Local Authority for comment because higher intensity development has potential to impact on the capacity of existing infrastructure.

Applications for amendments to the NT Planning Scheme are usually to facilitate a shift from lower intensity to higher intensity land uses. Denser development usually results in increased traffic flows and/or stormwater volumes and may exceed the capacity of existing infrastructure and would generally require ASTC approval in relation to the following matters:

- Roads that provide access to the site will need to be assessed in the light of the increased traffic flows and pedestrian usage from the development and upgraded to accommodate road traffic and pedestrian volumes, as appropriate. ASTC will consider the highest density use to which newly rezoned land could be put.

- Stormwater flows will need to be assessed for the increased runoff potential. Where it can be shown that the existing ASTC stormwater drainage system is inadequate to manage increased stormwater flow, it may be necessary to upgrade the existing system and/or provide on-site detention / retention structures to limit the resulting runoff to pre-development flows;

- The Developer is responsible for providing engineering advice or engineering designs to show that the stormwater drainage resulting from the development would not create a nuisance to other landowners or a hazard to public safety. This would mean the design of sufficient capacity in the stormwater drainage infrastructure to ensure non-worsening of flooding of any existing residential allotments and emergency access in a 1 in 100 year storm event along all public roads in a new residential subdivision.

- Flooding of any residential allotments and emergency access in a 1 in 100 year storm event along all public roads in a new residential subdivision.

A Planning Scheme Amendment, in and of itself, may not require any Development Works to be undertaken but may be conditioned to require work external to the site (e.g. headworks) to be constructed as part of the future development of the Development Site.

If external works are required as part a rezoning proposal but the Developer is disinclined, for whatever reason, to construct those works until a later development stage then ASTC may require an External Works Bond to be lodged as part of any ASTC acknowledgement of the rezoning proposal.

It may also be that the Minister will consider the views of the Local Authority in the context of any future development application for civil works, which will have to address issues relating to the connection with, or impact upon, ASTC infrastructure.
3 GENERAL REQUIREMENTS AND APPROVALS

3.1 Administrative Provisions

3.1.1 Developer Insurance
The Developer is responsible for any and all damage to existing facilities, services and structures, whether in public or private ownership, resulting from the Development Works. Evidence of appropriate insurance must be demonstrated prior to the commencement of any Development Works. The Developer is required to maintain appropriate insurance until the Development Works are completed, prior to release of the Development Off-maintenance.

The Developer must be in a position to claim against sufficient public liability insurance to cover the perceived risk of undertaking the Development, with a minimum amount of $20,000,000.00 (i.e. $20 million) deemed acceptable. The insurance is to provide indemnity for the parties undertaking the development, as well as to specifically indemnify ASTC against any public liability claim that may arise from the Development.

3.1.2 Developer to Engage Suitably Qualified Consultants
For all Development, other than Minor Works (see Section 2.1) and Single Dwelling Residential Development (see Section 2.2), the Developer shall engage a suitably qualified and experienced Project Manager / Superintendent to:

- design the Development and/or co-ordinate professional designers to produce a consolidated package of the Development design (i.e. Design Documentation);
- provide engineering and other certification, as required of the Design Documentation;
- manage the Development Works, including any variations that may result from the undertaking of Development Works;
- supervise the construction of the Development Works; and
- provide certification Development Works and provide certified As-constructed plans and details of the Development Works, as-constructed.

The Developer shall nominate a Project Manager / Superintendent in writing to ASTC, together with details of public liability and/or professional indemnity insurance to indemnify ASTC against any liability arising from the Development.

3.1.3 Council Approval of Supervising Engineer / Certifying Engineer
Where a Supervising Engineer has been appointed and a Certifying Engineer has been engaged, ASTC may require the Developer to advise in writing that the Supervising Engineer and Certifying Engineer:

- hold individual membership or corporate membership of a professional industry organisation;
- hold relevant qualifications and have recent relevant professional experience in subdivision construction and/or other Development Works;
- possess professional indemnity insurance, either individually or as part of an organisation, and what amount of insurance is adequate for the perceived risk associated with the Development Works;
- have no real or perceived conflict of interest with the Development Works and have allowed adequate time to complete the Development Works to the required standards.
ASTC reserves the right to consider the criteria in relation to each individually nominated Supervising Engineer / Certifying Engineer and may require the provision of additional details to indicate that an individual is suitably qualified and experienced to supervise and/or advise on the proposed Development Works. ASTC reserves the right to nominate any conditions upon which ASTC will accept advice and/or certification from a particular Supervising Engineer or Certifying Engineer.

3.1.4 Design Consultant / Project Manager from Other Disciplines
Where the design consultant / project manager is from a professional discipline other than engineering, such as architects or other design professionals, building certifiers, and the like, ASTC may request details of qualifications, professional membership (if any) and details of relevant industry work experience.

The above criteria will be considered in each case, together with any history of dealing with ASTC. Additional information may be required to show that the consultant / project manager is suitably qualified and experienced to advise and/or supervise the Development Works.

ASTC reserves the right to nominate any conditions upon which ASTC will accept advice and/or certification from a nominated design consultant / project manager, which may include obtaining additional advice from a consulting Engineer or another design professional, with qualifications and experience relevant to a particular aspect of the Development.

3.1.5 Upgrade of Existing Roads and Stormwater Drainage
Where the Development is designed to connect to existing ASTC infrastructure and it is determined by an Authorised Officer of ASTC that the existing roads and/or stormwater drains are sub-standard or of insufficient capacity to cope with the expected increase in stormwater runoff or additional traffic generated by the proposed Development, then the Developer may be required to upgrade the existing infrastructure to accommodate the increased loading.

If the stormwater drainage design shows that increased stormwater peak flows will result from the Development, then the provision of suitable on-site detention / retention and/or reuse options to reduce the runoff to pre-development flows may be acceptable.

If the existing roads and drains need to be upgraded as a consequence of the proposed Development, then the upgrading works shall be designed and constructed by the Developer as part of the Development Works.

Where an upgrade of existing infrastructure is required, the Developer is to prepare detailed design drawings for the works and submit these designs and an estimate of cost for the infrastructure upgrade to ASTC, as set out in Section 3.5.2 of these Guidelines.

Prior to the ASTC approval of any Development Works requiring an infrastructure upgrade the Developer shall submit an External Works Bond for the full amount of the estimate of cost of the infrastructure upgrade.

Following submission of detailed design drawings for the Development Works, and approval of the Design Documentation, which may or may not be conditional, the Developer either receives approval to construct the Development Works, in accordance with the detailed design drawings being stamped and signed and issued “for-construction”, as part of the Approval Documents, or is asked to submit a variation for approval by an Authorised Officer of ASTC.
3.2 Council Fees for Development Assessment

3.2.1 General
The ASTC Municipal Plan, as amended from time to time, sets out the various Development Assessment Fees, which include the fees applicable for assessment and approval of plans, fees applicable for inspection and acceptance of construction works and fees applicable for significant changes to detailed design drawings under review.

3.2.2 Development Approval Fee
A Development Assessment Fee for single dwellings, multiple dwellings, subdivisions / units titling and community facilities allows for the full cost of assessing and approving the design of proposed Development Works to be recouped from the Developer.

The fees have been averaged out within the various development categories, depending on the complexity criteria, for simplicity of use for both the Developer and ASTC.

The Development Approval Fee is listed in the ASTC Municipal Plan (as amended) and is decided by Council as part of the annual budget process and is reviewed quarterly and can be found on the ASTC website (see http://www.alicesprings.nt.gov.au/fee/).

The Development Approval Fee that is payable in each case, is the fee that is listed in the ASTC Municipal Plan for the financial year at the date that the Development Permit is issued.

3.2.3 Development Inspection Fee
A Development Inspection Fee for multiple dwellings, subdivisions / units titling and commercial / industrial developments allows the full cost of inspection and acceptance of the Development Works to be recouped from the Developer.

The Development Inspection Fee is listed in the ASTC Municipal Plan (as amended) and are decided by Council as part of the annual budget process and reviewed quarterly and can be found on the ASTC website (see http://www.alicesprings.nt.gov.au/fee/).

The fee payable is the fee listed in the ASTC Municipal Plan for the financial year at the time that the Developer requests Council to give clearance for a Part 5 clearance from the DCA.

3.2.4 Fees for Significant Changes to Documents that have been Lodged for Assessment
Where detailed design drawings, specifications and reports have been lodged with ASTC for assessment, and the Developer makes significant changes to the design, as submitted, which then requires a major re-assessment of the application, then the re-assessment of the plans shall be undertaken at the hourly rate set out in the ASTC Municipal Plan (as amended).

In any event ASTC would generally require a consolidated set of drawings, accompanied by a transmittal statement and a written request for re-assessment, before any amendments to the detailed design drawings and specifications could be approved.

In such a case, the fee that is payable would be the fee that is contained in the ASTC Municipal Plan for the financial year at the time that the revised plans were lodged with ASTC “for approval” or “for construction” (see http://www.alicesprings.nt.gov.au/fee/).
3.3 ASTC Permits and Procedures

3.3.1 Permit to Work Within an Existing ASTC Road Reserve

A “Permit to Work within Alice Springs Town Council Road Reserve” (i.e. ASTC Works Permit) is required for any works that are to be undertaken within an existing road reserve that is under the care and control of ASTC. Any application for an ASTC Works Permit, for work that is within a road, road reserve or other Public Place that is under the care and control of Council, must be accompanied by the payment of the standard fee, as listed in the ASTC Municipal Plan (as amended).

Where the proposed Development Works are to be undertaken in accordance with a valid Development Permit, issued by the DCA, or an Exceptional Development Permit, issued by the Minister for Lands and Planning, and a condition or conditions attached to the instrument indicate that the proposed Development requires construction of Development Works in accordance with ASTC requirements, or words to that effect, then detailed design drawings indicating the proposed extent of the Development Works shall be submitted to ASTC for approval by an Authorised Officer of ASTC prior to the lodgement of an application for an ASTC Works Permit. A copy of the application form for an ASTC Works Permit, along with a copy of the guidelines for common types of works, can be obtained from the ASTC web site (see http://www.alicesprings.nt.gov.au/document/list/Forms/Roads).

3.3.2 Greenfield Subdivisions and Work on Future Drainage Reserves/Easements

Any and all proposed Development Works on proposed roads, road reserves, public open space and drains, which are to become the responsibility of ASTC, will require formal approval of design drawings by an Authorised Officer of ASTC, usually by way of written approval, with or without conditions, and formally endorsed design drawings issued “for-construction”, along with any other Design Documentation, making up the Approved Documents.

Connections to existing roads and/or road reserves / foot paths / cycle paths / road drainage systems and, where the proposed works include the provision of driveways to future allotments, footpaths / cycle paths or verge development, then this work is to be generally constructed to the standards applied in the relevant ASTC Works Permit guide(s).

3.4 Standard Development Conditions

As a Local Authority, responding to a referral of a development permit application from the DCA, ASTC will generally require standard conditions to be applied to any Development Permit issued. Standard conditions can cover uncontrolled stormwater, which can lead to erosion and sedimentation issues, connections to the ASTC stormwater drainage infrastructure, linkages with foot paths and cycle paths, the construction of driveway crossovers, sight line considerations on public roads, bin placement areas on public roads, signage that is in view of a Public Place and off-street car parking, insofar as it relates to on-street car parking or other areas that are under the care and control of Council.

3.5 Plan Approval Process

All Development Works and/or Minor Works, in areas that are under the care and control of Council, require written approval by an Authorised Officer of ASTC. ASTC approval will also require adherence to the ASTC Works Permit process (see Section 3.5.1 and Section 3.5.2).
3.5.1 Approval of Minor Works and Permitted Uses

Application for ASTC approval of Minor Works (see Section 2.1), and permitted uses, usually associated with Single Dwelling Residential Development (see Section 2.2), and other works associated with a Public Place, other than works carried out by Council, are to be made on the ASTC Works Permit application form, in accordance with the standards applied in the guide(s) appropriate for the relevant works at that time, which can be obtained from the Alice Springs Town Council website (see http://www.alicesprings.nt.gov.au/document/list/Forms/Roads).

3.5.2 Approval of Development other than Minor Works.

All applications for approval of detailed design drawings for Development Works, other than Minor Works described in 3.5.1 above, shall be made on the “Design Documentation Approval Application Form” (see Appendix C) and shall be accompanied by one hard copy and one electronic copy of the following Design Documentation:

- Detailed design drawings issued “for-approval” or “for-construction”, including sediment and erosion control plans for all major stages of Greenfield Subdivision Development, signed as checked and approved for issue by the Project Manager / Superintendent (note: for subdivisions, especially, Council will require copies of detailed design drawings approved by other service authorities in the form of an approved Master Services Compilation Plan before Detailed Design Approval can be given);
- A copy of the relevant specifications for the Development Works;
- A copy of the current Development Permit from the DCA;
- Stormwater design reports, including drainage calculations;
- Road design reports, including pavement design calculations;
- Geotechnical engineering and soil reports and recommendations;
- Concept verge and landscape design drawings for public open space;
- Any other details listed in these Guidelines and specifically requested by ASTC (e.g. Sacred Site Clearance; Traffic Generation Report; Traffic Management Plan; etc.).

Detailed Design Approval will not be given unless it includes all of the above items and is accompanied by the Design Approval Fee. ASTC will assess the Design Documentation and, either approve the Design Documentation, or request amendments to be included on the detailed design drawings that are to be issued “for-construction”.

When ASTC is satisfied with the Design Documentation, the Developer shall submit two (2) hard copy sets of detailed design drawings marked “for-construction” for an Authorised Officer of ASTC to stamp and sign with “permission to use for construction purposes” and return one (1) set of signed plans together with a letter of approval setting out any conditions of approval.

ASTC approval of detailed design drawings does not in any way verify or accept responsibility for the technical adequacy of the drawings or the veracity of the Design Documentation, this responsibility remains with the Developer and/or Design Consultant / Project Manager. For subdivisional works the approval of the Design Documentation does not, in and of itself, constitute approval for the commencement of construction, which will require a Pre-start Meeting (see Appendix E).
3.5.3 Detailed Design Elements

The detailed design drawings for Development Works, other than Minor Works (Part 2.1) and Single Dwelling Residential Development (Part 2.2) are to be prepared and presented in accordance with the requirements of Appendix B of these Guidelines. Matters that will require detailed consideration include:

- Road works (including pavement design), drainage works and associated earthworks;
- Erosion and sediment control for all major stages of the proposed development;
- Development of road verges and public open space areas, as required;
- Foot paths and cycle paths;
- Street lighting levels;
- Any other associated works required under the Development Permit and/or as required by ASTC (see Appendix B).

3.5.4 Design Reports for Subdivisional Development

In addition to detailed design drawings, the Design Documentation should include a report describing the intent, criteria, assumptions and considerations involved in the design that is to be submitted for approval by an Authorised Officer of ASTC as part of the Design Documentation. Any departure from the Deemed-to-Comply standards in these Guidelines should be detailed and justified.

Design Documentation is required for all subdivisional development. The requirements for the preparation of Design Documentation are set out in Appendix D (i.e. Design Documentation Approval Checklist). Design Documentation must include but may not be limited to the following design elements:

- Road works (including pavement design), drainage, erosion control and associated site preparation works and earthworks;
- Erosion and sediment control for all major stages of the proposed Development;
- Development of verges and public open spaces as required;
- Foot paths and cycle paths;
- Street lighting levels;
- General security and site control;
- Proposed Traffic Movement Plans for all Development Works within or affecting existing roads and open space areas under the care and control of Council and for the general security of and site control;
- Any other associated works required under a Development Permit and/or as required by ASTC.

Landscape, environmental, erosion and sediment control works form an integral part of any subdivision Development and are to be designed to co-ordinate and integrate with other aspects of the subdivision design.
3.5.5 Construction Management Plan

Design Documentation put together by the Developer, and submitted to ASTC for approval, is to include a “Construction Management Plan”. The Construction Management Plan is to provide the following details:

- Environmental Management including but not restricted to the following:
  - Contact details for the Supervising Engineer / Project Manager / Civil Contractor;
  - Proposed staging of construction activity (i.e. order of opening the site);
  - Proposed hours of construction activity;
  - The proposed method of protection of any vegetation retained on-site;
  - Erosion and sediment control plans; and
  - Proposed method of dust control.

- Protection of existing infrastructure;
- Protection of public access; and
- Traffic Management Plan.

3.5.6 Specifications for New Roads and Public Open Space for Acceptance by ASTC

The Developer shall prepare general specifications and project specifications for all subdivisional work to fully describe the standards for the supply of materials and the methods to be used during construction of the Development Works.

Without limiting the scope and the standards set out in the job specification for the Development Works, where the provisions of the specification are similar, or exceed, the standards set out in the Department of Infrastructure (DI) standard specification for road works commensurate with the type of Development Works.

All Hold Point inspections are to be joint inspections between the Superintendent, Certifying Engineer, Civil Contractor and an Authorised Officer of ASTC. Witness point inspections may be deemed to be optional after consultation with the Superintendent / Supervising Engineer / Project Manager.

ASTC will attend Hold Point and Witness Point inspections, as listed in the specification and/or the Inspection and Testing Plan (see Table 18), or as otherwise advised at the Pre-start Meeting. The following criteria are to be used in conjunction with the DI specification.

- Miscellaneous Provisions
  - All project notice boards or advertising signs for erection on-site will require an ASTC Works Permit

- Provision for Traffic
  - “Work-in-Progress” signs may be required for work within an existing road reserve, unless otherwise approved by ASTC as part of an ASTC Works Permit.

- Clearing
  - For any trees that are to be retained in Road Reserves or any other Public Place that is, or is to be, under the care and control of ASTC, the method of protection is to be in accordance with AS4970 – Protection of trees on development sites;
- For any trees that are to be pruned in all future Road Reserves and any other Public Place that is, or is to be, under the care and control of ASTC the work shall be undertaken in accordance with AS4373 – *Pruning of Amenity Trees*;
- Where soil is to be removed, as part of the Development Works, topsoil shall be stripped and stockpiled for re-use on-site (2.0 m maximum stockpile height) in accordance with AS3798 – *Guidelines for commercial and residential developments*;
- The Developer is required to provide a copy of the “Authority Certificate” from the Aboriginal Areas Protection Authority (AAPA) to ASTC before any clearing or other civil works is undertaken on a Development Site.

**Earthworks**
- Haul routes that are used to remove excess material from site will require ASTC approval for the haul route, size of vehicles where they involve roads that are under the care and control of Council.
- Rock fill material is not to be used in future Road Reserves and Public Open Space areas that are to be under the care and control of Council.
- In road cuttings the material below sub-grade level below natural ground surface is to be scarified to 200 mm depth and re-compacted.

**Conformance Testing**
- DI standard specification (see Section 5.9.2) or as required in the Inspection and Testing Protocol (see Table 18).

**Pavements and Shoulders**
- All sealed road pavements are to be constructed with fine crushed rock pavement material

**Dense Graded Asphalt**
- DI Mix Type 2 is to be used on access roads in a residential Development. DI Mix Type 3 is to be used for collector and arterial roads and industrial and commercial access roads and at significant roundabouts on residential access roads and for any correction courses that may be required.

**Miscellaneous Concrete Works**
- Kerb and channel shall be “kerb and gutter” or “layback kerb & gutter” as set out in these Guidelines and is to be placed in accordance with the provisions of AS2876 using N25 – 20 mm aggregate concrete.
- Foot paths shall have a S2 type (i.e. non-slip) finish and expansion joints are to be filled with bitumen impregnated expandable foam strip or other suitable proprietary filler material.

**Drainage Works**
- Pipes with diameter of 600 mm or less shall be rubber ring jointed.

**Road Furniture**
- All sign posts in concrete paved areas shall be constructed with a proprietary quick release post base approved by an Authorised Officer of ASTC with the top of the fitting set 40 mm above the surface (see Standard Drawing ASTC - 111).

**Ducting and Conduits**
For Single Dwelling Residential Development only, the Developer shall provide galvanised rectangular hollow steel (RHS) conduits at one or both property boundaries extending from the kerb face to 300 mm inside the property.

For all other Development, the stormwater discharge shall be directly to the sub-surface drainage system, where possible, with reinforced concrete pipe (RCP). ASTC would generally expect the design to be prepared by an NT-registered plumber or a suitably qualified professional stormwater engineer;

The end of the conduit inside the property boundary shall be terminated in a surcharge / inlet pit as required by Part 5 of AS/NZS3500;

The rectangular hollow steel (RHS) conduits shall be sized to accommodate the expected surface runoff from the allotment, including any water coming across the allotment, as required by AS/NZS3500, with an impervious area equal to the expected area of Development for the allotment;

Standard construction details for stormwater conduits in the verge are set out on Standard Drawing ASTC - 107.

Street Lighting

The Developer shall provide sufficient lighting to achieve the minimum lighting standards set out in these Guidelines (note: ASTC will not supply any materials).

Thrust Boring

These Guidelines are to be read in conjunction with ASTC Works Permit guide “Road Works Guidelines – Sealed Roads”;

All work in existing ASTC Road Reserves requires a “Permit to work within the Alice Springs Town Council Road Reserve” (i.e. ASTC Works Permit);

Any application for approval for thrust boring is to be made at least ten (10) working days prior to the intended start date to allow time for the notice of approval to be processed.

3.5.7 Other References for Plan Preparation

When designing Development Works that require specific ASTC approval, reference is to be made initially to these Guidelines. Where these Guidelines are silent, then reference is to be made to the most current version of the appropriate industry standards, including ARR for stormwater drainage and Austroads and Australian Road Research Board (ARRB) Sealed Local Roads Manual and Australian Standards and other engineering publications for specific works, with particular reference to the documents referred to in Part 5 (see References).

The Developer and/or the Superintendent / Project Manager are advised to discuss the Development concept, detailed Design Documentation and Development Work with an Authorised Officer of ASTC throughout the planning, design and construction phase, to assist in smooth processing of Development through the ASTC approvals process.

3.5.8 Allotment Filling

Where allotment filling directs stormwater run-off from the Development Site to the ASTC stormwater drainage system the works will need to be constructed in accordance with the approved detailed design drawings and “As-Constructed” plans showing the final survey after the allotment filling is required to be submitted to ASTC for approval prior to the giving of any Part 5 (i.e. NT Planning Act - Certificate of Compliance) advice.
3.5.9 Commencement of Construction for Subdivisional Developments

No work shall commence on the Development Works for new subdivisions until the detailed design drawings and specifications for all Development Works have been approved by an Authorised Officer of ASTC and a Pre-start Meeting has been held on-site with the Superintendent, Project Manager, Civil Contractor and an Authorised Officer of ASTC.

3.6 Maintenance Security Deposit and Construction Deposit

3.6.1 Form of Deposit

Where a deposit is required to be lodged with ASTC during the process of construction of subdivision and other Development Works that require the approval of an Authorised Officer of ASTC, the deposit may be in the following form of cash or a Bank Guarantee from a major banking organisation in Australia. Bank Guarantees are required for the duration of the Development Works and are to have no end date. They will require a written release from an Authorised Officer of ASTC before they can be cancelled.

3.6.2 Construction Deposits

Where the proposed Development Works have the potential to cause damage to existing ASTC infrastructure or cause hazardous situations to occur in existing ASTC infrastructure a Construction Deposit equal to 5% of the estimated value of the Development Works is to be lodged with ASTC prior to issue of the formal approval of the detailed Design Documentation for the proposed Development Works.

The Construction Deposit is required as surety against the Developer ceasing works and causing damage to ASTC owned infrastructure, the neglect of partly constructed works that will become the responsibility of ASTC or for any instances where emergency situations arise and the developer does not respond to in a timely manner.

Except for emergencies, before all or any part of the Construction Deposit is expended, ASTC will give formal advice to the developer setting out the action needed and the time period in which the matter needs correction.

In an emergency ASTC will make the situation safe for vehicular and pedestrian traffic. ASTC may claim all or part of the Construction Deposit as a result of such action and will advise the Developer of the action taken and any further works needed and provide a statement of costs. The full value of the Construction Deposit will need to be restored within 14 days of the receipt of such formal advice from ASTC.

The Construction Deposit will be maintained until the Development Works are accepted “On-Maintenance” by an Authorised Officer of ASTC, following a satisfactory “On-Maintenance” inspection. ASTC will only accept responsibility for public infrastructure “On-Maintenance” after an Authorised Officer of ASTC has given advice in respect of Part 5 considerations (i.e. advice to the DCA relating to the issuance of a Certificate of Compliance in respect of ASTC conditions on a Development Permit).

As soon as reasonably practicable after the Development Works are accepted “On-Maintenance”, an Authorised Officer of ASTC may approve a reduction in the value of the Construction Deposit from 5% to 2.5% of the value of Development Works (i.e. total construction costs) and the remainder will be retained by ASTC as the Maintenance Deposit.
3.6.3 Maintenance Deposit

A Maintenance Deposit equal to 2.5% of the value of the Development Works (i.e. construction costs) will need to be lodged with ASTC prior to the works being accepted “On-Maintenance” and will be held for the entire period that the Development Works are “On-Maintenance” (i.e. defects liability period) (note: usually 24 months).

The purpose of the Maintenance Deposit is to ensure the rapid repair of any aspects of the Development Works for which the Developer is responsible that fail in service during the On-maintenance period. The Developer will be expected to inspect the Development Works from time to time to identify areas that need repair and to organise the repair in a timely manner.

In addition an Authorised Officer of ASTC will undertake regular audit Inspections during the period that the Development Works are “On-Maintenance” and will advise the Developer of any matters that require repair and a timeframe for the repairs to be completed.

Where a significant component of the Development Works require repair ASTC will need to be advised and will notify the Developer of any inspection and test requirement that may be necessary during the repair to ensure the quality of the repair work. ASTC may require the repaired works to be covered by an extension of the Maintenance Deposit for a period of 24 months following the repair (i.e. extended defects liability period).

The Maintenance Deposit will be released by an Authorised Officer of ASTC at the end of the defects liability period that the Development Works are “On-Maintenance”, after a satisfactory “Off-Maintenance” inspection, at which point any Bank Guarantee can be cancelled.

3.7 Part 5 Clearance Advice

When each of the conditions on the Development Permit that are listed for completion to ASTC requirements are complete, an Authorised Officer of ASTC will write to the DCA with advice outlining the extent to which ASTC conditions have been complied with. This advice is generally called Part 5 clearance because it relates to a Certificate of Compliance issued under part 5 of the Planning Act. This advice may include, but does not have to mean, acceptance by ASTC of some or all of the Development Works “On-Maintenance”.

3.8 As-Constructed Drawings

Where detailed design drawings and specifications (i.e. Design Documentation) for the Development Works have been approved by an Authorised Officer of ASTC, a full set of “As-Constructed” drawings, showing the originally-approved design, amended and endorsed, where necessary, to show any and all variations to the Approved Documents (where variations are outside of construction tolerances), is required to be submitted to ASTC prior to the giving of Part 5 clearance advice.

“As-Constructed” drawings are to include plans and drawings approved by Service Authorities, including representation and certification of the infrastructure that is located within a road reserve or otherwise under the care and control of Council. All plans and drawings are to be provided by the Developer electronically in .pdf files and .dwg files, compatible with Autocad 2010, and two (2) A3 hard copies of the approved plans and drawings.
3.9 On-Maintenance Requirements

Where detailed design drawings and specifications (i.e. Design Documentation) for the Development Works have been approved by an Authorised Officer of ASTC, the Development Works will need to be inspected and any defects and/or omissions corrected and/or constructed.

The following information will need to be provided to ASTC and approved by an Authorised Officer of ASTC before the Development Works will be accepted On-Maintenance:

- A full set of job testing records for the Development Works, in accordance with these Guidelines, or the approved Job Specification (if different) that includes:
  - Earthworks testing (if any);
  - Trench backfilling of stormwater drainage lines;
  - Sub-grade testing;
  - Sub-base pavement testing (if any);
  - Base course pavement;
  - AC pavement testing;

- Lodgement of the Maintenance Deposit (see Section 3.6.3);

- A full set of As-Constructed Drawings (see Section 3.8);

- Certification from the Certifying Engineer that the Development Works approved by ASTC have been constructed in accordance with the Approval Documentation;

- A joint inspection of the works between ASTC, the Project Manager / Superintendent and the Civil Contractor to list any work for correction/adjustment, and, if necessary, to confirm the completion of the Development Works (note: ASTC will issue written advice at the completion of the On-Maintenance site inspection);

- A completed copy of the On-Maintenance Process Checklist (Appendix E);

- A completed copy of the On-Maintenance Site Inspection Checklist (Appendix G); and

- A formal written request from the Project Manager / Superintendent for the Development Works to be accepted “On-Maintenance” by Council.

3.10 Review of conditions

A Development Permit may only be issued by the Development Consent Authority (DCA), an agency of the Northern Territory Government. In its role as a local Authority, ASTC may recommend to DCA that certain conditions attach to a particular development, particularly in relation to stormwater, road and public open space requirements.

Such conditions are generally drafted by ASTC's Manager Developments. Should a developer be dissatisfied by a condition, the developer may request that ASTC's Director Technical Services [or Chief Executive Officer] review the condition.

Should a developer remain dissatisfied after the review has taken place, the developer may make a written submission to the Mayor which submission will be considered by the ASTC Elected Members.
4.0 SPECIFIC REQUIREMENTS

4.1 Street and Place Names
The Developer shall ensure that the names for all streets and roads, places and parks for the
development are approved by Council and the Place Names Committee for the Northern
Territory (i.e. “Place Names Committee”).

The Developer is to liaise with Council and make submissions to the Place Names Committee
at the planning stage of the Development. Proposed place names are submitted by the Place
Names Committee to ASTC for advice / comment. After comment by ASTC, the Place Names
Committee will decide the names and advise all relevant parties.

4.2 Roads Hierarchy
4.2.1 General
Planning and traffic engineering practices for subdivision layouts generally involve the
classification of roads into a series of categories depending upon function. A road hierarchy
needs to be established for any proposed development to allow for the safe and orderly
movement of vehicles, cyclists and pedestrians within, across and between roads. The road
network for the Municipality of Alice Springs consists of a defined road hierarchy and is
generally fixed in relation to any proposed works.

Developers are required to match into the existing road network with consideration of the
proposed use and traffic patterns expected to be generated by the Development. All new
roads shall be assessed by ASTC, based on its interim and future functionality, and the level
of road hierarchy shall be determined by an Authorised Officer of ASTC.

ASTC generally uses the following road hierarchy:

- Urban Roads
  - Urban Residential Cul-de-sac
  - Urban Residential Access Roads
  - Urban Collector Roads
  - Urban Arterial Roads

- Rural Roads
  - Rural Residential Cul-de-sac
  - Rural Residential Access Road
  - Rural Residential Collector
  - Rural Residential Arterial Road
  - Rural Living Cul-de-sac
  - Rural Living Access
  - Rural Living Collector
  - Rural Living Arterial Road
  - Rural Cul-de-sac
  - Rural Access
  - Rural Collector
  - Rural Arterial Road
- Industrial Roads
  - Industrial Cul de sac
  - Industrial Access Road Industrial Collector Road
- Retail / Commercial Roads
  - Retail / Commercial Cul-de-sac
  - Retail / Commercial Access
  - Retail / Commercial Collector
  - Central Business Access

New roads are to be designed to conform to the road classification criteria in Table 1.

4.2.2 Classification of Roads in New Subdivisions
All new roads within the Municipality of Alice Springs that are to be under the care and control of Council, shall be classified in terms of the Road Hierarchy (see Section 4.2.1) taking to account the ultimate developed capability of the land in the vicinity of the Development using existing or proposed zone(s) in the NT Planning Scheme.
1. Standard kerb and gutter (K&G) is required to the frontage of all Public Open Space areas
2. Land abutting Multi-residential, or land zoned Tourist Commercial or Commercial adjacent road is to be classified as a Collector Road
3. 1.8 m wide corridor both sides, adjacent to the boundary, formed & compacted to 90% MMDD
4. Invert of Table Drain both Sides is to be not less than 300 mm below shoulder
5. Provide 1.5 m wide sealed shoulder both sides on rural roads
6. The use of cul-de-sac is to be limited and used only where there are spatial and/or topography limitations preclude the use of other layouts
7. Provide full verge paving, suitable for disabled access, to the full frontage of all businesses
8. In CB, C and TC zones the entire verge is to be paved suitable for disabled access with threshold ramp to be inside the property boundary

<table>
<thead>
<tr>
<th>Road Type</th>
<th>Max Number of Lots</th>
<th>Max Length (m)</th>
<th>Parking</th>
<th>Concrete Foot Path</th>
<th>Cycle Path / Lane</th>
<th>Kerb to Kerb to (m)</th>
<th>Reserve Width (m)</th>
<th>Kerb/Edge</th>
<th>Verge Width (m)</th>
<th>Verge Crossover</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Roads</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cul de sac</td>
<td>10</td>
<td>200</td>
<td>On Road</td>
<td>1.5 m both sides</td>
<td>n/a</td>
<td>8.0</td>
<td>17.0</td>
<td>Standard K&amp;G</td>
<td>4.5</td>
<td>Std Drawing</td>
<td>Note 2, 6 &amp; 7</td>
</tr>
<tr>
<td>Access</td>
<td>60</td>
<td>1 200</td>
<td>On Road</td>
<td>1.5 m both sides</td>
<td>n/a</td>
<td>11.0</td>
<td>20.0</td>
<td>Standard K&amp;G</td>
<td>4.5</td>
<td>Std Drawing</td>
<td>Note 2 &amp; 7</td>
</tr>
<tr>
<td>Collector</td>
<td>300</td>
<td>As Approved</td>
<td>On Road</td>
<td>1.5 m both sides</td>
<td>2.5 m one side</td>
<td>11.0</td>
<td>20.0</td>
<td>Standard K&amp;G</td>
<td>4.5</td>
<td>Std Drawing</td>
<td>Note 2 &amp; 7</td>
</tr>
<tr>
<td>Arterial</td>
<td>n/a</td>
<td>As Approved</td>
<td>On Road</td>
<td>1.5 m both sides</td>
<td>2.5 m one side</td>
<td>13.0</td>
<td>22.0</td>
<td>Standard K&amp;G</td>
<td>4.5</td>
<td>Std Drawing</td>
<td>As Approved</td>
</tr>
<tr>
<td>Rural Residential Roads</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Cul de sac</td>
<td>5</td>
<td>500</td>
<td>On Road</td>
<td>1.5 m both sides</td>
<td>n/a</td>
<td>8.0</td>
<td>17.0</td>
<td>Layback K&amp;G</td>
<td>4.5</td>
<td>Std Drawing</td>
<td>Note 6</td>
</tr>
<tr>
<td>Access</td>
<td>60</td>
<td>6 000</td>
<td>On Road</td>
<td>1.5 m both sides</td>
<td>n/a</td>
<td>11.0</td>
<td>20.0</td>
<td>Layback K&amp;G</td>
<td>4.5</td>
<td>Std Drawing</td>
<td></td>
</tr>
<tr>
<td>Collector</td>
<td>300</td>
<td>As Approved</td>
<td>On Road</td>
<td>1.5 m one side</td>
<td>2.5 m one side</td>
<td>11.0</td>
<td>20.0</td>
<td>Standard K&amp;G</td>
<td>4.5</td>
<td>Std Drawing</td>
<td></td>
</tr>
<tr>
<td>Arterial</td>
<td>n/a</td>
<td>As Approved</td>
<td>Limited</td>
<td>1.5 m one side</td>
<td>2.5 m one side</td>
<td>13.0</td>
<td>22.0</td>
<td>Standard K&amp;G</td>
<td>4.5</td>
<td>Std Drawing</td>
<td></td>
</tr>
<tr>
<td>Rural Living Roads</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cul de sac</td>
<td>5</td>
<td>1 000</td>
<td>On Lot</td>
<td>Note 3</td>
<td>n/a</td>
<td>8.0 m - Note 5</td>
<td>22.0 Min</td>
<td>Table-drain - Note 4</td>
<td>5.5</td>
<td>Std Drawing</td>
<td></td>
</tr>
<tr>
<td>Access</td>
<td>60</td>
<td>30 000</td>
<td>On Lot</td>
<td>Note 3</td>
<td>n/a</td>
<td>11.0 m - Note 5</td>
<td>25.0 Min</td>
<td>Table-drain - Note 4</td>
<td>5.5</td>
<td>Std Drawing</td>
<td></td>
</tr>
<tr>
<td>Collector</td>
<td>300</td>
<td>As Approved</td>
<td>On Lot</td>
<td>Note 3</td>
<td>n/a</td>
<td>11.0 m - Note 5</td>
<td>25.0 Min</td>
<td>Table-drain - Note 4</td>
<td>5.5</td>
<td>Std Drawing</td>
<td></td>
</tr>
<tr>
<td>Arterial</td>
<td>n/a</td>
<td>As Approved</td>
<td>Limited</td>
<td>Limited</td>
<td>Limited</td>
<td>11.0 m - Note 5</td>
<td>25.0 Min</td>
<td>Table-drain - Note 4</td>
<td>5.5</td>
<td>Std Drawing</td>
<td></td>
</tr>
</tbody>
</table>

Notes
1. Standard kerb and gutter (K&G) is required to the frontage of all Public Open Space areas
2. Land abutting Multi-residential, or land zoned Tourist Commercial or Commercial adjacent road is to be classified as a Collector Road
3. 1.8 m wide corridor both sides, adjacent to the boundary, formed & compacted to 90% MMDD
4. Invert of Table Drain both Sides is to be not less than 300 mm below shoulder
5. Provide 1.5 m wide sealed shoulder both sides on rural roads
6. The use of cul-de-sac is to be limited and used only where there are spatial and/or topography limitations preclude the use of other layouts
7. Provide full verge paving, suitable for disabled access, to the full frontage of all businesses
8. In CB, C and TC zones the entire verge is to be paved suitable for disabled access with threshold ramp to be inside the property boundary
4.3 Road Cross-Section Elements

4.3.1 General

Typical road cross-sections for urban residential, rural residential and commercial / industrial roads are set out in Standard Drawing ASTC - 100 while rural and rural living roads are set out in Standard Drawing ASTC - 101.

Standard Drawing ASTC - 102 shows the preferred location for the various services that may be installed in the standard road verge. Where other layouts of services are needed then the road verge (and total road reserve width) may need to be widened to accommodate all of the services.

4.3.2 Cross-Fall and Configuration of Roads

Urban and Rural Residential Roads

The pavement cross-fall and road configuration shall be:

- 3% cross-fall from the centre line;
- Where road surfacing other than asphalt is approved on local roads (e.g. concrete or segmental pavers), then the cross-section shall be determined by discussion with an Authorised Officer of ASTC;
- Kerb and gutter is to be provided in accordance these Guidelines and is to be constructed in accordance with Standard Drawing ASTC - 106.

Rural Living and Rural Roads

The pavement cross-fall and road configuration is to be:

- 3% from the centre line to the edge of seal and 4% on shoulders;
- Table drains minimum 200 mm below natural surface and/or 300 mm below the pavement at the edge of the seal.

Industrial Roads

The pavement cross-fall and road configuration shall be:

- 3% from the road centreline;

4.3.3 Road Verges

Road verge widths, for all new roads within the Municipality of Alice Springs that are to be under the care and control of Council, are dependent upon foot path and service corridors and access requirements and the verge is to be a minimum as set out in these Guidelines but may need to be widened if it is necessary to accommodate additional services.

Road verge grading is to be in accordance with Standard Drawing ASTC - 100 and Standard Drawing ASTC - 101 from 2% minimum to 8% maximum. The objects and intents of the Disability Discrimination Act and the requirements of mobility access standards apply.
4.3.4 Kerb and Gutter

Kerb and gutter profiles for all kerbed roads that are or are to be under the care and control of Council, are to be constructed in accordance with the detail shown on the Standard Drawing ASTC - 106. Kerb and gutter may be constructed of “machine placed concrete” (i.e. extruded kerbing) and shall be built to the tolerances set out as set out in Australian Standard AS2876. The kerb and gutter profile required for each road classification are set out in Table 1.

4.3.4 Road Surfacing

All new roads within the Municipality of Alice Springs, that are to be under the care and control of ASTC, are to be surfaced with dense graded Asphaltic Concrete (AC) to the requirements, as set out in Table 2 Any base course preparation that requires asphalt depths greater than the acceptable range, as set out in Table 2 are to be corrected with an approved asphalt corrector course prior to the laying of the final surface.

Table 2: Road Surfacing Details

<table>
<thead>
<tr>
<th>Road Classification</th>
<th>Specification</th>
<th>Minimum Depth (mm)</th>
<th>Compacted Thickness (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Residential Cul-de-sac and Access</td>
<td>DG10</td>
<td>30</td>
<td>25-40</td>
</tr>
<tr>
<td>Urban Collector and Arterial</td>
<td>DG14</td>
<td>40</td>
<td>35-55</td>
</tr>
<tr>
<td>Rural Residential Cul-de-sac and Access</td>
<td>DG10</td>
<td>30</td>
<td>25-40</td>
</tr>
<tr>
<td>Rural Collector and Arterial</td>
<td>DG14</td>
<td>40</td>
<td>35-55</td>
</tr>
<tr>
<td>Industrial Access and Collector</td>
<td>DG14</td>
<td>40</td>
<td>35-55</td>
</tr>
<tr>
<td>Rural Living / Rural Cul-de-sac and Access</td>
<td>DG10</td>
<td>30</td>
<td>25-40</td>
</tr>
<tr>
<td>Rural Living / Rural Collector and Arterial</td>
<td>DG14</td>
<td>40</td>
<td>35-55</td>
</tr>
</tbody>
</table>

Note: DG = Dense Graded Asphalt

4.4 Road Geometry

4.4.1 General requirements

Roads are to be designed for traffic speeds set out in Section 4.5 of these Guidelines and the Developer is expected to use the geometrical layout of the roads to help encourage traffic usage of the roads to the traffic design speeds. Where the Development relies on access through existing roads it may be necessary to control the speed in the existing road and retrofitting of traffic calming devices may be required as part of the development.

4.4.2 Road Alignment Elements

4.4.2.1 Horizontal Curves on the Road Alignment

As a general requirement deflection angle between 35° and 90° are to be avoided. Minimum horizontal curve radii for road alignments shall comply with the following:
- All road curves, on urban and rural roads, with adverse cross-fall shall be designed with a minimum radii that complies with the requirements of the current version of Austroads Part 3 – Geometric Design
- All urban and rural residential roads with a hierarchy status of collector or lesser are to be designed so that the curve radius on the centreline to achieve adequate Approach Sight Distance (ASD) to driveways and intersections, in accordance with the most current version of Austroads Part 4 – Intersections at Grade.

### 4.4.2.2 Intersection Turning Criteria

Intersections are to be designed and constructed in accordance with Table 3.

**Table 3: Intersection Turning Criteria**

<table>
<thead>
<tr>
<th>Intersecting Roads</th>
<th>Design Vehicle</th>
<th>Checking Vehicle</th>
<th>Minimum Radii (Kerb/Bitumen Seal)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Urban Residential &amp; Rural Residential Roads</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arterial / Arterial</td>
<td>Single articulated vehicle</td>
<td>B-double (25 m) – turn radius</td>
<td>To suit turning movements</td>
</tr>
<tr>
<td></td>
<td>(19 m) - turn radius 15 m</td>
<td>15 m</td>
<td></td>
</tr>
<tr>
<td>Arterial / Collector</td>
<td>Single Articulated Vehicle</td>
<td>B-double (25 m) - turn radius</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(19 m) - turn radius 15 m</td>
<td>15 m</td>
<td></td>
</tr>
<tr>
<td>Arterial / Residential</td>
<td>Service Vehicle (8.8 m) – turn</td>
<td>Single unit truck/bus (12.5 m) –</td>
<td></td>
</tr>
<tr>
<td></td>
<td>radius 12.5 m</td>
<td>turn radius 12.5 m</td>
<td>12.5 m</td>
</tr>
<tr>
<td>Collector / Collector</td>
<td>Single unit truck/bus (12.5 m)</td>
<td>Single articulated (19 m) – turn</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– turn radius 12.5 m</td>
<td>radius 15 m</td>
<td>12.5 m</td>
</tr>
<tr>
<td>Collector / Residential</td>
<td>Service Vehicle (8.8 m) – turn</td>
<td>Single unit truck/bus (12.5 m) –</td>
<td></td>
</tr>
<tr>
<td></td>
<td>radius 9 m</td>
<td>turn radius 12.5 m</td>
<td>10 m</td>
</tr>
<tr>
<td>Residential / Residential</td>
<td>Service vehicle (8.8 m) – turn</td>
<td>Single unit truck/bus (12.5 m) –</td>
<td></td>
</tr>
<tr>
<td></td>
<td>radius 9 m</td>
<td>turn radius 12.5 m</td>
<td>10 m</td>
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<tr>
<td><strong>Rural Living Roads</strong></td>
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<td></td>
</tr>
<tr>
<td>Arterial / Arterial</td>
<td>Single articulated vehicle</td>
<td>B-double (25 m) – turn radius</td>
<td>To suit turning movements</td>
</tr>
<tr>
<td></td>
<td>(19 m) - turn radius 15 m</td>
<td>15 m</td>
<td></td>
</tr>
<tr>
<td>Arterial / Collector</td>
<td>Single Articulated Vehicle</td>
<td>B-double (25 m) - turn radius</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(19 m) - turn radius 15 m</td>
<td>15 m</td>
<td></td>
</tr>
<tr>
<td>Arterial / Access</td>
<td>Single unit truck/bus (12.5 m)</td>
<td>B-double (25 m) - turn radius</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– turn radius 12.5 m</td>
<td>12.5 m</td>
<td></td>
</tr>
<tr>
<td>Collector / Collector</td>
<td>Single unit truck/bus (12.5 m)</td>
<td>Single articulated (19 m) – turn</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– turn radius 12.5 m</td>
<td>radius 15 m</td>
<td>12.5 m</td>
</tr>
<tr>
<td>Collector / Access</td>
<td>Service vehicle (8.8 m) – turn</td>
<td>Single unit truck (12.5 m) – turn</td>
<td></td>
</tr>
<tr>
<td></td>
<td>radius 12.5 m</td>
<td>radius 12.5 m</td>
<td>12.5 m</td>
</tr>
<tr>
<td>Access / Access</td>
<td>Service vehicle (8.8 m) – turn</td>
<td>Single unit truck (12.5 m) – turn</td>
<td></td>
</tr>
<tr>
<td></td>
<td>radius 12.5 m</td>
<td>radius 12.5 m</td>
<td>12.5 m</td>
</tr>
<tr>
<td>Intersecting Roads</td>
<td>Design Vehicle</td>
<td>Checking Vehicle</td>
<td>Minimum Radii (Kerb/Bitumen Seal)</td>
</tr>
<tr>
<td>--------------------</td>
<td>----------------</td>
<td>------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td><strong>Rural Roads</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arterial / Arterial</td>
<td>B-double (25 m) - turn radius 15 m</td>
<td>Type 2 road train (53 m) - turn radius 15 m</td>
<td>To suit turning movements</td>
</tr>
<tr>
<td>Arterial / Collector</td>
<td>Single articulated vehicle (19 m) - turn radius 15 m</td>
<td>B-double (25 m) - turn radius 15 m</td>
<td>15 m</td>
</tr>
<tr>
<td>Arterial / Access</td>
<td>Single unit truck/bus (12.5 m) - turn radius 12.5 m</td>
<td>Single articulated vehicle (19 m) - turn radius 12.5 m</td>
<td>12.5 m</td>
</tr>
<tr>
<td>Collector / Collector</td>
<td>Single articulated vehicle (19 m) - turn radius 12.5 m</td>
<td>B-double (25 m) - turn radius 15 m</td>
<td>12.5 m</td>
</tr>
<tr>
<td>Collector / Access</td>
<td>Single unit truck/bus (12.5 m) - turn radius 12.5 m</td>
<td>Single articulated vehicle (19 m) - turn radius 12.5 m</td>
<td>12.5 m</td>
</tr>
<tr>
<td>Access / Access</td>
<td>Single unit truck/bus (12.5 m) - turn radius 12.5 m</td>
<td>Single articulated vehicle (19 m) - turn radius 12.5 m</td>
<td>12.5 m</td>
</tr>
<tr>
<td><strong>Commercial / Industrial Roads</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arterial / Arterial</td>
<td>B-double (25 m) - turn radius 15 m</td>
<td>Type 2 road train (53 m) - turn radius 15 m</td>
<td>To suit turning movements</td>
</tr>
<tr>
<td>Arterial / Collector</td>
<td>Single articulated (19 m) - turn radius 15 m</td>
<td>B-double (25 m) - turn radius 15 m</td>
<td>15 m</td>
</tr>
<tr>
<td>Arterial / Local</td>
<td>Single unit truck/bus (12.5 m) - turn radius 12.5 m</td>
<td>Single articulated (19 m) - turn radius 12.5 m</td>
<td>12.5 m</td>
</tr>
<tr>
<td>Collector / Collector</td>
<td>Single articulated (19 m) - turn radius 12.5 m</td>
<td>B-double (25 m) - turn radius 15 m</td>
<td>12.5 m</td>
</tr>
<tr>
<td>Collector / Local</td>
<td>Single unit truck/bus (12.5 m) - turn radius 12.5 m</td>
<td>Single articulated (19 m) - turn radius 12.5 m</td>
<td>12.5 m</td>
</tr>
<tr>
<td>Local / Local</td>
<td>Single unit truck/bus (12.5 m) - turn radius 12.5 m</td>
<td>Single articulated (19 m) - turn radius 12.5 m</td>
<td>12.5 m</td>
</tr>
</tbody>
</table>

Road furniture on all roads is to be located to allow for the minimum turning movement of the checking vehicle, as defined in Table 3, without causing damage to infrastructure.

4.4.2.3 Minimum Cul-de-sac Radii

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

- Residential Roads = 12.0 m radius
- Industrial Roads = 14.5 m radius

Cul-de-sacs are considered undesirable in industrial areas, but where this cannot be avoided turning areas should be designed to suit the expected end use of the lots to be serviced, taking to account zoning of the land, lot sizes, property frontage and access needs. Reversing movements or multi-point turns are not considered appropriate for industrial cul-de-sacs.
4.4.2.4 Intersections and Separation Distances

Adequate Approach Sight Distance (ASD) is to be provided at all intersections. Cross roads and “Y” intersections are not desirable and may not be approved unless signalisation, roundabout or other approved traffic control, that is warranted, has been provided. Typical separation distances based on left-turn conflict overlap are set out in Table 4.

Table 4: Typical Separation Distances

<table>
<thead>
<tr>
<th>Design Speed (kph)</th>
<th>Separation Distance (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>70</td>
<td>105</td>
</tr>
</tbody>
</table>

Where staggered “T” intersections are provided the stagger offset is to be provided in accordance with the requirements of Austroads Guide to Road Design Part 4A – *Unsignalised and Signalised Intersections*. For left – right stagger on two lane two way roads shall have a minimum separation in accordance with Table 5.

Table 5: Typical Left – Right Staggers

<table>
<thead>
<tr>
<th>Road Classification</th>
<th>Cul de sac</th>
<th>Urban Access</th>
<th>Urban Collector</th>
<th>Urban Arterial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cul de sac</td>
<td>10 m</td>
<td>15 m</td>
<td>15 m</td>
<td>20 m</td>
</tr>
<tr>
<td>Urban Access</td>
<td>15 m</td>
<td>15 m</td>
<td>15 m</td>
<td>20 m</td>
</tr>
<tr>
<td>Urban Collector</td>
<td>15 m</td>
<td>15 m</td>
<td>20 m</td>
<td>25 m</td>
</tr>
<tr>
<td>Arterial</td>
<td>NA</td>
<td>20 m</td>
<td>25 m</td>
<td>25 m</td>
</tr>
</tbody>
</table>

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 and longitudinal grade on the minor road shall match the pavement cross fall of the through-road.

4.4.2.5 Extent of intersection Construction

Where a through road is to be constructed by a Developer and an intersecting road location is fixed and is to be constructed by another Developer in the future, the former Developer will construct the intersection in full at its expense, including all drainage requirements. This may necessitate construction outside the boundaries of the subject land. In this case all necessary permissions are to be obtained prior to the approval of detailed design drawings (i.e. Design Documentation). All roads within a new subdivision Development are to be constructed to the full length of all frontages of all lots in the subdivision.

4.4.3 Road Gradient Elements

4.4.3.1 Maximum and Minimum Gradients
All roads are to be designed to give the best possible grade to suit the natural/existing ground and minimise the amount of cut and fill. The maximum possible length shall be provided with longitudinal grades that comply with the provisions of AS1428. All design and construction is to comply with the object and intent of the Disability Discrimination Act and where longitudinal grades permit all construction is to comply with the requirements of AS1428 and any other relevant standards. Design ground levels are to be obtained from actual field survey and assumption of levels from contour plan or other types of plans is unacceptable. Maximum and minimum grades shall be generally in accordance with those shown in Table 6.

Table 6: Maximum and Minimum Longitudinal Road Grades

<table>
<thead>
<tr>
<th></th>
<th>Residential Cul-de-sac / Access</th>
<th>Urban Collectors / Urban Arterials</th>
<th>Industrial (All Roads)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desirable Maximum %</td>
<td>10</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Absolute Maximum %</td>
<td>12</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Minimum %</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

The absolute maximum grades shall only be approved in special cases. Re-design in consultation with an Authorised Officer of ASTC is required where the maximum grades are contemplated and only after complete consideration of all known alternatives will they be considered. The minimum gradient for all kerb returns and cul-de-sac heads shall be 1.0 %

4.4.3.2 Vertical Curves

Vertical curves are to be simple parabolas and are to be used where change of grade exceeds 2% (1:50). The length of vertical curves will take into account overtaking and stopping sight distances and comfort factors in accordance with relevant Austroads publications. Vertical curve lengths (m) are to be designed and constructed in accordance with Table 7.

Table 7: Minimum Vertical Curve Lengths

<table>
<thead>
<tr>
<th>Minimum Vertical Curve length (m)</th>
<th>Residential Cul-de-sac / Access</th>
<th>Secondary Collector</th>
<th>Primary Collector</th>
<th>Arterial</th>
<th>Industrial (All Roads)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20</td>
<td>25</td>
<td>25</td>
<td>30</td>
<td>25</td>
</tr>
</tbody>
</table>

Where the road is constructed with a kerb and gutter edge profile and where other safety factors do not control the design, then minimum lengths of vertical curve are to be used to limit the areas of non-standard longitudinal grade in the kerb and gutter.
4.5 Traffic Design (e.g. speed limits)

Traffic management design is to comply with the speed criteria set out in the table below, with due consideration given to emergency services, unless otherwise designed in accordance with these Guidelines or by specific approval from an Authorised Officer of ASTC.

4.5.1 Desirable Design Speeds

Table 8: Desirable Design Speeds Urban and Rural Residential Roads

<table>
<thead>
<tr>
<th></th>
<th>Cul-de-sac</th>
<th>Access</th>
<th>Collector</th>
<th>Arterial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum desirable speed – urban residential (kph)</td>
<td>50</td>
<td>60</td>
<td>60</td>
<td>TBA</td>
</tr>
<tr>
<td>Maximum desirable speed – rural residential (kph)</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>TBA</td>
</tr>
<tr>
<td>Speed for sight distance (kph)</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>TBA</td>
</tr>
</tbody>
</table>

Table 9: Desirable Design Speeds Rural and Rural Living Roads

<table>
<thead>
<tr>
<th></th>
<th>Cul-de-sac</th>
<th>Access</th>
<th>Collector</th>
<th>Arterial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum desirable speed – rural living (kph)</td>
<td>60</td>
<td>60</td>
<td>80</td>
<td>TBA</td>
</tr>
<tr>
<td>Maximum desirable speed – rural (kph)</td>
<td>60</td>
<td>60</td>
<td>80</td>
<td>TBA</td>
</tr>
<tr>
<td>Speed for sight distance (kph)</td>
<td>60</td>
<td>60</td>
<td>100</td>
<td>TBA</td>
</tr>
</tbody>
</table>

Table 10: Desirable Design Speeds Commercial / Industrial Roads

<table>
<thead>
<tr>
<th></th>
<th>Cul-de-sac</th>
<th>Access</th>
<th>Collector</th>
<th>Arterial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum desirable speed - Commercial/Industrial (kph)</td>
<td>60</td>
<td>60</td>
<td>80</td>
<td>TBA</td>
</tr>
<tr>
<td>Speed for sight distance (kph)</td>
<td>60</td>
<td>60</td>
<td>100</td>
<td>TBA</td>
</tr>
</tbody>
</table>

4.5.2 Channelisation of Intersections of Urban and Rural Residential Roads

All intersections, except those being treated with roundabouts or signalisation, are to be channelised (minimum 1.2m wide splitter islands) in accordance with the criteria set out below:

Table 11: Channelisation of Intersections

<table>
<thead>
<tr>
<th></th>
<th>Cul-de-sac</th>
<th>Residential</th>
<th>Collector</th>
<th>Arterial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Collector</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
4.5.3 Traffic Islands and Roundabouts

Roundabouts are generally unacceptable in residential areas however, where traffic Islands and/or roundabouts are used as part of the traffic design, they shall be designed in accordance with the provisions in these Guidelines and relevant reference publications. All traffic islands and/or roundabouts are to be finished with a maintenance-free or minimum maintenance surface. Traffic islands less than 5 m² in area shall be generally concrete paved with a finished surface, as specified by an Authorised Officer of ASTC. Larger traffic islands may require landscaping to the specific approval of an Authorised Officer of ASTC. Traffic islands and/or roundabouts that are not cast monolithically shall be provided with sub-soil drainage to the piped drainage system.

4.6 Access and Egress

The requirements for access and egress relative to a public road apply to all intersections with other roads, as well as the access and egress to individual properties. The principles of intersection design, including sight distances, turning paths and acceleration and deceleration need to be considered in all locations. Intersection design criteria are addressed elsewhere in these Guidelines. Access and egress to a public road under the care and control of Council may be provided in accordance with an “Access Management Strategy” prepared in accordance with these Guidelines (see Section 4.6.1). Deviation from the Deemed-to-Satisfy specification will require written approval from an Authorised Officer of ASTC

4.6.1 Access Management Strategy

Access / egress is permitted and encouraged to various classifications of roads in accordance with the Table 15.

Table 12: Provision of Access and Egress

<table>
<thead>
<tr>
<th>Road Classification</th>
<th>Access/Egress</th>
<th>Additional Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arterial (Residential / Rural Living / Rural / Commercial / Industrial)</td>
<td>Access / egress by approval of ASTC only</td>
<td>Designed for through traffic – existing access permitted – new access may be allowed for some Rural Roads</td>
</tr>
<tr>
<td>Collector (Commercial / Industrial)</td>
<td>Access / egress by approval of ASTC only</td>
<td>Designed for through traffic – existing access permitted</td>
</tr>
<tr>
<td>Collector (Rural Residential / Rural Living/ Rural)</td>
<td>Access permitted</td>
<td>Egress in a forward direction only and with adequate sight visibility</td>
</tr>
<tr>
<td>Collector (Residential)</td>
<td>Access / egress permitted</td>
<td>Adequate sight visibility must be demonstrated – restricted to safe areas of intersections.</td>
</tr>
</tbody>
</table>
4.6.2 General Design Criteria

Access / egress shall be designed in accordance with the provisions of Austroads Guide to Road Design.

4.6.3 Gated Access and Egress

For developments that include gated access, the provision of sufficient queuing space for entering traffic needs to be assessed in accordance with the requirements of AS/NZS2890. Where queuing needs to be provided for multiple residential developments a 6.0 m setback is usually adequate.

4.7 Sight Lines

4.7.1 General Comments

While the calculation of safe sight distances is included in Austroads Guide to Road Design, some basic principles to allow the easy determination of a safe sight distance for property access in most urban, rural residential, rural living and industrial areas are set out below.

4.7.2 Safe Intersection Sight Distance (SISD)

Safe sight distances shall be provided at all driveways and road intersections in accordance with Austroads Part 4A – *Un-signalised and Signalised Intersections*.

4.7.3 Property Boundary Fences

4.7.3.1 Requirements for Boundary Fences for Vehicular Access

Where property boundary fences interfere with the sight lines the fences will need to be modified to allow clear vision for the sight lines. Modification may only require partial reduction of the height of the fence to 1 m (note: in most instances where road verges are 4.5 m wide or more then fence modification should not be necessary).

4.7.3.2 Requirement for Accesses to Have Visibility of Pedestrian Usage

Where the property access enters onto a road verge that has a constructed foot path or where pedestrian traffic can be expected, and the fence on the front boundary obscures visibility for a B85 vehicle (AS/NZS2890), the access opening in the fence will need to be widened to provide sight lines from the vehicle entering the road verge from the property to allow visibility of pedestrians for 2 m each side of the constructed driveway from 2.5 m from the road property boundary. Further details of this requirement can be found in AS/NZS2890.

4.7.4 Street Vegetation

Where existing vegetation in the road verge restricts the proposed sight lines the vegetation will need to be adjusted at the Developer’s expense. Where vegetation needs to be adjusted work will need the approval of Council and any new plantings to replace any damaged plans will need to be approved by an Authorised Officer of ASTC.
4.8 Car Parking

Car parks that are intended to be located with a road reserve (i.e. on-street) and public parking in areas under that are to be under the care and control of Council (i.e. off-street) shall be designed in accordance with AS/NZS2890 for a B99 vehicle, User Class 3 (i.e. C3). The NT Planning Scheme provides a different set of dimensions for off-street parking on private land. Council has its own requirements for off-street parking where Council is the intended owner of the car park (see Figure 2).

Figure 2: Dimensions for Off-Street Parking (i.e. in a Council Car Park)
4.8.1 Provision of Car Parking

Car parking for Greenfield subdivisions, in areas that are to be under the care and control of Council, shall be provided in the form of parallel parking in residential and commercial areas and 90° angle parking adjacent to public open space. The road carriage way and road reserve may need to be widened to contain the parking movements in the adjacent traffic lane. All parking bays within the Central Business and Commercial zones shall be line-marked, in accordance with the provisions of AS/NZS2890.

4.8.2 Reinstatement of Car Parks

Where Development occurs in streets with existing marked parking bays and the Development Works cause changes to the existing parking bay layout the Developer is required to re-mark all of the affected parking bays. The re-marked parking bays will need to comply with Section 4.8.3 and the revised layout will require the approval of an Authorised Officer of ASTC. The preferred method of reinstatement would result in no net loss of parking places, using parallel parking, where possible, and complying with AS/NZS2890, where possible.

4.8.3 Design of On-Street Car Parking

Development Works affecting car parking spaces that are situated within a road reserve or other public parking area that are, or are to be, under the care and control of ASTC shall be designed generally in accordance with AS/NZS2890 (note: AS/NZS2890.1 relates to off-street parking; AS/NZS2890.6 relates to off-street parking for people with disabilities), for a B99 vehicle, User Class 3, to allow for the predominance of larger vehicles in Alice Springs. Preferred layouts utilise parallel parking for on-street parking, where possible, or angle parking adjacent to public open space. The preferred dimensions for on-street parallel parking are contained in Table 2.1 of AS/NZS2890.5. The dimensions for on-street angle parking shall be designed in accordance with AS/NZS2890.5 - Table 2.2 and Figures 2.2, 2.3 & 2.4.

4.9 Street Furniture

The installation of any street furniture (e.g. bollards, bike handrails, rubbish bins, seating, street art or information signs) will require approval by an Authorised Officer of ASTC.

4.10 Street Signs and Pavement Markings

4.10.1 Road and Street Signs

The Developer shall obtain approval from the Place Names Committee for the Northern Territory for all street names and place names for all new Subdivision Development. All street signs are to be provided by the Developer at each intersection in accordance with:

- The provisions of AS1742.
- Street name signs at each intersection shall be located relative to the road in the position shown on Standard Drawing ASTC - 111.
- One sign post (fitted with blades for all roads) is required at T intersections.
- Two sign posts (fitted with blades for all roads) are required at cross-road intersections.
- All other advisory and traffic control devices necessary for effective traffic control.
4.10.2 Traffic Intersection Control and Movement Regulation Signs

Traffic movement at intersections shall be controlled by stop signs, give-way signs, roundabout control and/or traffic signals to the warrants set out in the Development Permit or ASTC Works Permit, or as set out in Australian Standard AS1742, or as otherwise approved or required by an Authorised Officer of ASTC.

4.10.3 Road Pavement Markings

Road pavement markings, including chevrons, lane lines, stop bars, raised reflective markers and no-parking lines, shall be installed to the warrants and specification set out in AS1742 and shall generally be provided by the Developer as follows:

- Chevrons and lane lines at all traffic Islands;
- Give way and stop lines at stop and give way signs;
- No-parking edge lines at intersections and as required in the Central Business zone;
- All other areas in accordance with the warrants in AS1742.

4.10.4 Other Road Signs

Hazard markers, sight boards, warning signs, no-parking signs and all other advisory and traffic control devices necessary for effective traffic control and/or required by the Council approval shall be provided by the Developer to the warrants set out in AS1742.

4.11 Street Lighting and Lighting of Public Open Space

4.11.1 Introduction

ASTC has a legal obligation to provide a safe environment for its community. Part of this obligation relates to the provision of a street environment which is conducive to the safe and effective movement of vehicular and pedestrian traffic at night and the discouragement of illegal and anti social behaviour. Street lighting and lighting of other Public Places is a critical factor in providing a safe environment, as well as providing an appropriate level of amenity.

These Guidelines provide principles for the provision of street lighting and lighting of other Public Places that is conducive to the safe and comfortable movement of vehicular and pedestrian traffic at night and to the discouragement of illegal and anti-social behaviour.

These Guidelines establish processes to ensure:

- efficient and effective placement of street lighting and lighting of other Public Places; and
- a standard of lighting sufficient to allow amenity and visual cues at night, including defining roads, kerbs, footpaths, road line marking, property lines, essential signage, road furniture, road surface imperfections, as well as vehicles, pedestrians and cyclists.

These Guidelines promote:

- The incidence of street lighting and lighting of other Public Places as an effective risk management practice and an effective counter-measure for traffic accidents; and
- A safe and secure environment through the provision of street lighting and lighting of other Public Places.
These Guidelines provide:

- the provision of lighting with illumination levels appropriate to the lighting environment and generally in accordance with the Road Lighting Design Standards, as nominated in the relevant Australian Standard;
- distinguishing the lighting needs in commercial, residential, industrial and rural areas as well as car parks, parks and reserves, and major traffic routes;
- non-standard types of lighting to be provided in heritage areas and other unique or specialised areas.

The design of lighting for streets and other Public Places shall be in accordance with the lighting categories contained in AS/NZS 1158.1.1:2005 – Lighting for roads and public spaces (Part 1.1 – vehicular traffic (Category V) lighting performance and design requirements) and AS/NZS 1158.3.1:2005 – Lighting for roads and public spaces (Part 3.1 – Pedestrian area (Category P) lighting performance and design requirements). These lighting categories are:

- Category V (1 to 5) lighting applicable to roads on which the visual requirements of motorists are dominant (e.g. traffic routes);
- Category P (1 to 12) applicable to roads on which the visual requirements of pedestrians are dominant and applicable to outdoor public areas, other than roads and streets, where the visual requirements of pedestrians are dominant.

These Guidelines are intended to provide instruction as to what standard of street lighting will be provided by new developments within the Municipality of Alice Springs. ASTC will investigate and consider the provision of available shielding to lights where it will not substantially decrease the level of lighting in the public space in the vicinity of the light fitting and all practical attempts to reduce light affecting the adjacent properties have been made by the adjacent property owner.

Public lighting should minimise energy consumption while maintaining adequate illumination. Many public energy authorities have been experimenting with more energy-efficient lighting systems, and these should be used wherever possible. Solar powered street lights and lights in other public areas can be used successfully. They are particularly useful in large parks where the need for expensive underground power cabling can be avoided.

Street lights should also create ambience and character in residential projects, and many power authorities have widened the range of standard fittings available to developers. Lighting designs should consider principles and practices associated with “Crime Prevention Though Environmental Design” (CPTED).

4.11.2 Requirement for Lighting of Streets and Other Public Places

ASTC is responsible for the ongoing operation and maintenance of public lighting, where the ASTC has agreed to pay an annual charge to PWC, which includes electricity consumption and the replacement of lamps and other parts, as required.

The cost of installing lighting in streets and any other Public Place that is, or is to be, under the care and control of Council, including design and installation costs, shall be paid for by the subdivision Developer or paid for by Council and recouped from the subdivision Developer.
The cost of the provision and maintenance of lighting associated with privately owned and controlled Public Places (e.g. shopping centres) will be borne by the private land owners. Security lighting, where necessary, will be the responsibility of the private land owner and all arrangements are usually between the private land owner and PWC.

The subdivision Developer shall provide lighting to streets and other Public Places, including sporting facilities, in accordance with these Guidelines.

4.11.3 Electrical Standards

All electrical work is to be designed and constructed to the required standards and subject to the approval of Power and Water Corporation (PWC). Lighting on roads under the control of the NT Government is to be provided to the requirements and approval of the NT Government agency responsible for the operation and maintenance of such roads.

4.11.4 Specifications

Lighting provided on roads controlled by ASTC is to be generally in accordance with these Guidelines, or otherwise approved by an Authorised Officer of ASTC, and is to be designed to provide the lighting levels set out in AS/NZS1158. The specifications that are applicable for lighting designs for roads under the care and control of ASTC, except for roads in rural and rural living zones, should satisfy the lighting requirements as listed below (see Table 13).

Table 13: Lighting Requirements

<table>
<thead>
<tr>
<th>Lighting Category</th>
<th>Road Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>V3</td>
<td>Commercial / Industrial Arterial (i.e. sub-arterial)</td>
</tr>
<tr>
<td>V3</td>
<td>Urban Residential / Rural Residential Arterial (i.e. sub-arterial)</td>
</tr>
<tr>
<td>V4</td>
<td>Commercial / Industrial Collector (i.e. distributor)</td>
</tr>
<tr>
<td>P3</td>
<td>Urban Residential Collector (i.e. distributor)</td>
</tr>
<tr>
<td>P3</td>
<td>Rural Residential Collector (i.e. distributor)</td>
</tr>
<tr>
<td>P3</td>
<td>Commercial / Industrial Access (i.e. major local road)</td>
</tr>
<tr>
<td>P4</td>
<td>Urban Residential Access (i.e. major local road)</td>
</tr>
<tr>
<td>P4</td>
<td>Commercial / Industrial Cul-de-sac (i.e. minor local road)</td>
</tr>
<tr>
<td>P4</td>
<td>Urban Residential Cul-de-sac (i.e. minor local road)</td>
</tr>
<tr>
<td>P4</td>
<td>Rural Residential Access (i.e. major local road)</td>
</tr>
<tr>
<td>P4</td>
<td>Multiple Dwelling / Unit Complex (i.e. cluster housing)</td>
</tr>
<tr>
<td>P4</td>
<td>Rural Residential Cul-de-sac (i.e. minor local road)</td>
</tr>
<tr>
<td>P1, P2, P3 or P4*</td>
<td>Footpath / Bicycle Path</td>
</tr>
<tr>
<td>P1, P2, P3 or P4*</td>
<td>Public Open Space</td>
</tr>
<tr>
<td>P11</td>
<td>Car parks, Shopping Centres, Community Facilities</td>
</tr>
<tr>
<td>to be determined</td>
<td>Sporting Fields (separately metered in the name of ASTC)</td>
</tr>
</tbody>
</table>

*depends on level of security and amenity (see AS/NZS1158.3.1:2005 Table 2.2)
Streets with vehicle movements greater than 2000 vehicles per day shall be lit in accordance with the road classification in the table of lighting requirements (see Table 13). Streets with vehicle movements less than 2000 vehicle movements per day may be lit to a lesser standard, subject to a risk assessment, as approved by an Authorised Officer of ASTC.

**Street Lighting in Rural and Rural Living Zones**

Street lighting to AS/NZS1158 lighting categories is not generally applicable in rural and rural living subdivisions, except where the developer requests lighting for public safety reasons and is willing to pay the full costs of installation and any maintenance of non-standard lighting.

The provision of street lighting at rural intersections will be dependent on the availability of low voltage power supply and funding constraints. Where low voltage supply is not economically available; reflectors and other road delineation devices and solar powered lights may be considered, subject to a traffic management risk assessment, by a qualified traffic management engineer, as approved by an Authorised Officer of ASTC.

The cost of lighting a rural intersection between an existing arterial road or a collector road and a new rural development shall be covered by the developer to the extent that the intersection upgrade is warranted by the development. Street lighting is generally not considered appropriate on local roads in Rural and Rural Living zones unless there is significant pedestrian traffic.

Street lighting in rural and rural living zones is to be augmented with line marking, reflective markers, guide posts, signage and other visual cues, in such a way as to not unreasonably impact on the amenity of the rural area. Where street lighting is to be installed in rural or rural living zones, it shall be designed to improve road safety and have nil upward component of light.

In Rural and Rural Living Zones street lighting on sub-arterial roads is to a minimum P3 standard to be installed locally at all intersections, changes in direction of 20 degrees or more (see Table 6), such that the next street light is clearly visible from the previous one, and any other areas that may present a potentially hazard to road users.

In Rural and Rural Living Zones street lighting on collector roads is to a minimum P4 standard to be installed locally at all intersections, changes in direction of 20 degrees or more (see Table 6), such that the next street light is clearly visible from the previous one, and any other areas that may present a potentially hazard to road users.

In Rural and Rural Living Zones street lighting on access roads is to a minimum P4 standard to be installed locally at all intersections, changes in direction of 20 degrees or more (see Table 6), such that the next street light is clearly visible from the previous one, cul-de-sacs heads, dead ends and other areas that may present a potentially hazard to road users.

Lighting designs for new developments, showing lux levels that have been certified by a lighting design Engineer as complying with these requirements, shall only be approved by an Authorised Officer of ASTC, after the Developer has consulted with any residents living immediately adjacent to the new lighting installation, whose rural amenity may be affected by the installation of such lighting.
Street lighting to the required standard shall generally be achieved by installing minimum 70 watt High Pressure Sodium (HPS) luminare with an equivalent light output and distribution as a typical street lighting luminare. All luminaires should be illuminating at least one "visual cue" to ensure that they do not become "invisible" in very clear night conditions (e.g. the luminare at the end of the cul-de-sac should illuminate the "chevrons"). Street lighting poles should be placed to maximise their safety from impact (e.g. on the inside of corners and curves). All sweeping bends and corners should have line marking at the edge of the carriageway.

Street Lighting in Residential Areas

In urban residential and rural residential areas, which are already served by the overhead power grid (underground servicing is preferred by ASTC), a 70 watt HPS or equivalent luminare shall be placed in such a way as to take into account any variations in pole spacing, the need for additional light at intersections, changes in road alignment, traffic management devices, road furniture, nature strip trees, adjacent land uses and particularly dark areas.

In urban residential and rural residential areas that front arterial, sub-arterial or collector roads that correspond with AS/NZS1158.1 Road Lighting category V4 and V5, 150 watt HPS, or Metal Halide, or equivalent luminare shall be used.

Where underground power is supplied and steel “Urban Residential Distribution” (URD) poles are utilised, lighting shall be in accordance with the road lighting category shown in Table 16 (above), with standard spacing for URD poles.

Where new subdivisions are designed to a particular theme or ASTC requires Non-standard Lighting in a residential area of special heritage significance, lighting equipment that can be installed on the public lighting system should be used in accordance with the lighting standard for Approved Non-Standard Lighting.

Where PWC has approved the use of Non-standard Lighting in new residential subdivisions, ASTC is responsible for the maintenance of the light fitting, lamp, photo electric cell and pole, unless otherwise negotiated with PWC. Where a non-standard item is acceptable or approved by PWC, ASTC would prefer that the item become a Standard Lighting item so that it satisfies the terms of an agreement with PWC for the operation and maintenance of street lighting.

Where there is no agreement with PWC for approved Non-standard lighting to be installed on a non-metered supply, ASTC will not be in a position to accept Non-standard lighting in a public road in a new subdivision or where traffic conditions may be expected to change significantly (e.g. large multiple dwelling). Council will not accept any additional cost burden imposed by the ongoing operation and maintenance of Non-standard Lighting.

Commercial Areas

ASTC shall ensure that developers provide sufficient lighting for consistent, effective, illumination, to minimise dark areas and improve public safety. HPS luminaires will generally be placed on each consecutive pole, Where a commercial / industrial area is adjacent to a sub-arterial road the lighting will be designed and installed to the appropriate Road Lighting Category (see Table 16). In high profile commercial centres metal halide lighting should be used to provide better quality lighting to improve perceptions of safety, compliment CCTV and encourage night time activity.
In areas of special significance such as heritage, specialised retail development, cultural and civic centres, non-standard public lighting in conjunction with underground cabling may be considered. The preferred option is for approved non-standard lighting on PWC’s network as distinct from having a separate metered supply. Decorative street lighting may be requested and may be approved by an Authorised Officer of ASTC only after PWC and the ASTC Public Art Policy and Procedures have been consulted.

Major Car Parks at Shopping Centres and Community Facilities

Public lighting in these areas may include ‘watchman’ security flood-lighting on electricity supply poles if considered necessary. Lighting shall generally be designed to the appropriate Road Lighting Category (see Table 13). Approved non-standard public lighting for car parks in commercial areas of special heritage significance may be considered. Approved non-standard equipment that can be installed on the PWC system will be the preferred option.

Industrial Areas

Lighting shall generally be designed to the appropriate Road Lighting Category (see Table 16) however guidelines may be eased when considering allotment size and frontage width at the discretion of the Authorised Officer. Private industrial precincts will be encouraged to install their own security lighting as ASTC does not provide private security lighting. For industrial premises abutting Category V roads which have heavy vehicles entering and leaving the property, 150 watt HPS, or equivalent, as approved, shall generally be considered appropriate.

Major Traffic Routes

Lighting of arterial roads shall comply with DI guidelines, which generally comply with AS/NZS1158.1 Road Lighting Category V1, V2 or V3. In some instances, where increased traffic volumes generated from new subdivisions may impact on safety at intersections with major roads, ASTC will assess the need for appropriate lighting to be installed at those intersections at the Developer’s expense.

Parks and Reserves

Lighting of open space areas will generally be considered necessary where the park is used for passive night time recreation and/or when public safety is a significant issue or when the park is used as an access from one road to another. Lighting of small parks may involve utilisation of ‘watchman’ security lights subject to amenity considerations for any neighbouring properties. Lighting of larger parks with specialty lighting may be considered as part of an ASTC capital works project.

Laneways

While laneways are not generally encouraged in new subdivision layouts, occasionally topographic and other constraints may make lanes, in the form of public thoroughfares or drainage reserves, necessary. In such circumstances consideration will generally be given to providing lighting at each end of a laneway, but not within a laneway, unless the particular laneway has been identified as a high profile area, such as in the Central Business zone.
Street Lighting Upgrades

ASTC shall consider each request for new lighting, or modified lighting, on its merits subject to the availability of funding, the emergence of new technologies, and the availability of design and construction resources. ASTC shall consider any such request in the context of emerging technologies, in particular, the use of alternative lights and lighting systems to reduce the consumption of electricity (e.g. light emitting diodes).

New technologies for the lighting of streets and other Public Places shall be investigated continuously to promote the concepts of reduced energy consumption and greenhouse gas emission reduction. ASTC shall promote the use of green energy to achieve sustainable street lighting where practical.

ASTC shall forward any public requests regarding malfunctioning street lights directly to PWC. Public requests for new and improved lighting will be forwarded to an Authorised Officer of ASTC for investigation. ASTC may request the Developer to engage an Electrical (Lighting Design) Engineer to design a public lighting scheme that complies with AS/NZS1158.

Reinstatement

The Developer shall reinstate any damage to roads, footpaths, verges, drainage structures and vehicle driveways to their original condition.

4.11.5 Standard Drawings

ASTC has a set of standard drawings (see Appendix A).


4.11.6 Specific Information Requirements

The Developer shall provide ASTC with all approvals and from PWC regarding the electrical design and lighting layout, certified by a Lighting Design Engineer to achieve the lighting level prior to detailed design approval and acceptance of the lighting assets On-Maintenance.

4.11.7 Lighting design

General Requirements

(1) It is the Developer’s responsibility to indicate an appropriate level of street lighting and lighting of other Public Places for the Development as part of the Approval Documents;

(2) The lighting design shall take account of future planning proposals and zoning of land;

(3) ASTC shall nominate the appropriate level of street lighting and extent of street lighting and lighting of other Public Places prior to the approval of the detailed lighting design.

(4) As a general rule, street lighting shall be installed in association with the installation of new traffic treatments and new road openings to existing roads.

(5) All street lighting and lighting of other Public Places shall be installed to the appropriate lighting level, as shown in Table 13, prior to Part 5 clearance advice being issued, unless otherwise approved in writing by an Authorised Officer of ASTC.
Detailed Requirements

(1) The design and construction of street lighting and lighting of other Public Places –
   (a) Unless otherwise approved in writing by an Authorised Officer of ASTC, all lighting shall be installed prior to part 5 clearance advice and acceptance of new roads, paths and public open space areas On-Maintenance;
   (b) All lighting shall be designed and installed under the direction of an Electrical Engineer experienced in this type of work (i.e. Lighting Design Engineer).
   (d) All lighting designs are to be submitted to ASTC through the Superintendent / Supervising Engineer;
   (e) Where traffic treatments are being installed in association with a new Development, the Superintendent / Supervising Engineer shall coordinate the design and installation of the street lighting and lighting of other Public Places. This involves coordinating the Civil Engineer with the Electrical Engineer;

(2) The following information is required for lighting of streets and other Public Places–
   (a) Existing road alignments, property boundaries, locations of existing poles and lights where appropriate;
   (b) Location of proposed lights and poles, detailing type, bracket size, mounting height and distance between poles;
   (c) Any physical feature that may affect the design;
   (d) Possible conflicts with other services;
   (e) Drawings showing plans of the street lights, using PWC standard luminaires, cable installations, types, cross-sections and alignments;
   (f) Certification that the design complies with the required lighting levels and other relevant standards.

(3) Where the NT Government requires street lighting as a condition of development, such as in association with traffic treatments or with opening of a new road, the Department of Infrastructure may also have conditions similar to the above and/or additional conditions, where necessary.

Street Lighting in Minor Roads

(1) Minor Roads, being a residential cul-de-sac, residential access, minor collector road, industrial cul-de-sac and industrial access have lighting designed to achieve the minimum lighting requirements for each of the lighting categories. Refer to Table 16.

(2) Lighting of pedestrian refuges and other Local Area Traffic Management (LATM) devices are in accordance with AS1158.3.1 – Lighting for roads and public spaces Pedestrian area (Category P) lighting - Performance and design requirements.

(3) Street lighting is enhanced to achieve, at least, the minimum lighting requirements where the road exists and is identified as having a drainage problem; or at intersections, sharp bends of 45° or more (see Table 6), cul-de-sac heads, local shops, bus stops and any other location that is potentially hazardous to pedestrians;

(4) For open space areas that are managed as drainage reserves or bushland and for land in rural and rural living zones or conservation zones, where Table 16 lighting categories do not apply, street lighting and lighting of other Public Places may not be required.
Street Lighting on Major Roads and at Intersections

(1) Major roads are arterial, sub-arterial and major collector.

(2) On roads under the control of the NT Government, the design complies with all current requirements of the Department of Infrastructure.

(3) Street lighting shall be installed on all arterial roads in conjunction with or prior to the installation of traffic treatments such as channelised intersections, pedestrian crossings, refuges or roundabouts.

Lighting in Parks and on Pedestrian and Cycle Paths

(1) Lighting requirements for parks are determined on a case-by-case basis.

(2) Street lighting is to be provided adjacent to all parks.

(3) Pedestrian and bicycle paths may be lit using vandal resistant bollard lights to minimise obtrusive lighting where situated adjacent to residential properties.

(4) Lights are to be located at either end of paths and at intervals along the path, in accordance with a certified design, or as approved by an Authorised Officer of ASTC.

(5) The location of lighting shall be such that mobility access is maintained for people with a disability.

(6) The location of lighting shall allow ease of access for maintenance vehicles.

Lighting in Unit Title Schemes (i.e. Multiple Dwellings)

(1) Whether involving public or private roads, street lighting is generally provided in accordance with the requirements for local roads, in accordance with AS/NZS1158.3.1.

(2) Where involving internal access ways -
   (a) a street lighting plan shall be submitted as part of the development application;
   (b) the usual provision is for bollard lights adjacent to internal access way, pedestrian and vehicle entry points and paths.

Alignment of Street Light Poles

(1) Street light poles are located at common side property boundaries.

(2) On standard width road verges, being 4.5 m wide, street light pole and conduit alignment are in accordance with Standard Drawing ASTC – 102.

(3) On road verges that are wider than 4.0 m width, pole alignment is generally 1.1 m behind the back of the kerb.

(4) Trees planted no closer than 7.0 m from existing or future street light pole location.

(5) In locations where the preferred alignment is not achievable, the alignment will be determined by negotiation with an Authorised Officer of ASTC.

(6) Street light poles are not to be located at the same side boundaries as fire hydrants, or on truncated boundaries.

(7) Placement of the street light poles on the tangent point of kerb and gutter return is subject to the approval of an Authorised Officer of ASTC.
Street Light Luminaires

(1) Subject to PWC’s technical standards, 70 watt HPS are permitted, if considered practical by an Electrical Engineer.

(2) Fluorescent lighting and opal sphere luminaires are not generally to be used.

(3) All luminaires conform to the PWC program of rationalisation of street light luminaires in order to avoid high maintenance costs when luminaires require replacement.

(4) New luminaires and brackets are to be of the same or of similar appearance to those in adjacent existing developments.

(5) Luminaires shall generally include HPS lamps.

(6) Luminaires on arterial or collector roads shall generally be screened to minimise light spillage.

(7) Luminaires on access roads and cul-de-sacs are generally not screened, except as approved in such locations as to light paths.

(8) Luminaires on roads in all rural and rural living zones are to be screened.

(9) Post-top luminaires for decorative purposes are not to be used except where approved by an Authorised Officer of ASTC.

(10) Subject to the requirements of PWC, outreach brackets for luminaires shall be 1.5 m minimum length except where they are designed to only light paths, in which case the outreach may be 0.5 m.

Street Light Materials

(1) Materials for streetlight construction generally require PWC approval, subject to PWC’s technical standards, and, where applicable, approval from DI for roads under the care and control of the NT Government.

(2) Proposals for street lights themes, or the use of Non-standard Streetlights, where designed as part of a streetscape, will be considered on their merits, provided they are approved by PWC and acceptable to ASTC.

(3) All new street light poles are base plate mounted steel poles and where practicable supplied through underground conduits, unless otherwise approved in writing by an Authorised Officer of ASTC.

(4) Frangible poles are required in certain circumstances - refer to the requirements of DI and PWC Technical Manuals and Operating Procedures.

Approving Authorities

(1) Lighting designs that have been approved by PWC, and certified by a Lighting Design Engineer, are to be submitted to ASTC and, where necessary, to DI for information and/or approval and acceptance.

(2) Electrical designs and lighting layouts that are designed by Civil Engineers are to be certified by Electrical Engineers prior to submitting to PWC and ASTC for approval, and where relevant, to DI for information and/or approval and acceptance.
Specific Applications

High activity areas, such as around retail outlets and at the interface with the existing road network, should be considered a "special" case and the requirements of AS/NZS1158 should be applied. The Developer should discuss the preliminary design requirements with an Authorised Officer of ASTC before submissions are made to Council. The Developer may want to design a higher standard of traffic treatments as justification for not installing road lighting that meets the criteria set out in AS/NZS1158. Any special measures proposed should be clearly described in the submission to Council, along with an assessment of risk.

4.11.8 Crime Prevention through Environmental Design (CPTED)

CPTED Lighting Principles

If the area is intended for night time use, lighting should provide adequate visibility. Pedestrian walkways, back lanes and access routes open to public spaces should be lit so that a person with normal vision is able to identify a face from a distance of about 10 m. Inset spaces, signs, entrances and exits should be adequately lit. On the other hand, lighting of different wattage, colour temperature and rendition may also be used to make certain public areas “less hospitable” to gathering for long periods.

Lighting is not desirable in an isolated area or for a path leading to some obscure places. Lighting these areas may provide a false sense of security for people during night time use. Paths or other Public Places not intended for night time use could be fenced off and remained unlit to avoid giving a false sense of security or impression of being frequently used at night.

Lighting should be uniformly spread to reduce contrast between shadows and illuminated areas. More fixtures with lower wattage rather than fewer fixtures with higher wattage help reduce deep shadows and avoid excessive glare.

Design proposals should take into account the night time use of the outdoor spaces and specify the type, placement and intensity of lighting.

Lights should be designed and constructed with materials to minimise vandalism.

Lighting should also be directed on roadside pavement and possible entrapment spaces other than on roads. Lighting should take into account vegetation, such as mature trees, and other obstructions that would cause light to be blocked off.

Light colour finishes on walls and ceilings should be used for places such as car parks and isolated routes leading to it. This may be preferred to using lights of higher intensity that consume more energy and are costlier to maintain.

Lighting requires maintenance to preserve visibility. Bushes and trees that block off light should be trimmed. Lighting fixtures should be located at suitable heights for easy maintenance and replacement. Light fixtures should be maintained in a clean condition and promptly replaced if burnt or broken. Posting information indicating who to call in case of burnout or vandalised lights is desirable.

4.11.9 Lighting Construction

The Developer shall install light columns, outreaches, distribution pillars, lanterns and fittings in accordance with PWC standard drawings.
4.12 Disability Access

All new roads and re-constructed road verges are to make adequate provision for disabled access in accordance with the requirements of the Commonwealth *Disability Discrimination Act*, in accordance with AS1428 *Design for access and mobility* and in the following manner:

4.12.1 Kerb Ramps and Foot Path Grades

Disability Access is to be provided by:

- road verge cross-falls as shown on Standard Drawing ASTC - 100, Standard Drawing ASTC - 101 and Standard Drawing ASTC - 112 and by construction of a complying kerb ramp, where required, at the tangent point of the kerb returns for all intersecting roads;
- longitudinal fall and cross-fall on all constructed foot paths and cycle paths to the requirements of AS1428 where the longitudinal grade of the adjacent road allows the construction of a complying path of travel with the need for landings;
- kerb ramps to comply with AS1428 at all foot path / cycle path crossings of the road; and
- Where a foot path or cycle path to be is provided on one side of the road only it will be necessary to construct new kerb ramps on both sides of the road to provide a complying path of travel across the road.

4.12.2 Construction or Reconstruction of Road Verges for Commercial Development

Typically the whole verge (except areas needed for approved plantings) will need to be paved in concrete or approved alternative and in the Central Business area construction to match the existing colour palate may be ordered. Construction will need to comply with the requirements of AS1428, where applicable, and the following:

- The whole of the verge is to comply with AS1428;
- Where the area abuts an intersection provide kerb ramps at the tangent point of the kerb returns to the requirements of AS1428. Additional kerb ramps may need to be provided to provide a complying path of travel across the road; and
- Any disability ramps for access to the buildings are to be provided in the property and not in the road reserve.

4.13 Public Open Space

4.13.1 Classification of Public Open Space

Public open space that is to be vested in ASTC, as the result of a new subdivision, will be classified after consideration has been given to the following matters:

- Integration with the existing development. CPTED principles
- Environmental protection, including the conservation of remnant vegetation and habitat;
- Consideration of the need to maintain or develop ecological and/or wildlife corridors;
- The need for open space and pedestrian movement linkages;
- The need for active and passive recreation areas to integrate with the existing recreational facilities in the area.
- The proposed use of trees, shrubs and grasses that grow naturally in the area.

The ASTC open space classification and development requirements are set out in Table 14.
### Table 14: Open Space Classification

<table>
<thead>
<tr>
<th>Category</th>
<th>Minimum size</th>
<th>Distribution</th>
<th>Development in the park</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pocket Park</td>
<td>&lt; 3 000 m²</td>
<td>Not in new subdivisions</td>
<td>n/a</td>
</tr>
<tr>
<td>Large Local Park</td>
<td>0.3 Ha (3 000 m²) to 0.5 Ha (5 000 m²)</td>
<td>5 minutes walk from home</td>
<td>landscaped arid garden (i.e. no irrigation) CPTED layout with ordinary street lighting 1 x water fountain (i.e. bubbler) 2 x litter bins 2 x shaded seating locations^ 1 x seat-table &amp; shade structure 1 x double swing park signage</td>
</tr>
<tr>
<td>Neighbourhood Park</td>
<td>0.5 Ha (5 000 m²) to 0.8 Ha (8 000 m²)</td>
<td>15 minutes walk from home</td>
<td>100% Kikuyu with pop up sprinklers&quot; CPTED layout with ordinary street lighting 2 x water fountains (i.e. bubblers) 4 x litter bins 2 x seat-table &amp; shade structure 4 x shaded seating locations^ 1 x double swing 1 x playground feature bollards, park signage</td>
</tr>
<tr>
<td>Precinct Park</td>
<td>0.8 Ha (8 000 m²) to 2.8 ha (28 000 m²)</td>
<td>1 per precinct</td>
<td>Minimum 60% Kikuyu with pop-up sprinklers# Minimum 30% landscaped with drip irrigation CPTED layout with pedestrian lighting (P4) 2.5m wide gravel or concrete path 1 x water fountains (i.e. bubbler) per 4 000 m² 1 x shaded seating location^ per 4 000 m² 1 x seat-table &amp; shade structure per 4 000 m² 1 x double swing per 4 000 m² 1 x playground feature per 4 000 m² 1 x litter bin per 2 000 m² 1 x dual burner gas barbecue 1 x car park per 2 000 m² bollards, park signage, public toilets (3F+2M+U+DA+Family Room)</td>
</tr>
<tr>
<td>Pedestrian Linkage / Corridor</td>
<td>No minimum size</td>
<td>As approved</td>
<td>&lt; 50% Trees 2.5m wide cycle path CPTED layout with pedestrian lighting (P4)</td>
</tr>
<tr>
<td>Organised Recreation</td>
<td>To be determined</td>
<td>As Approved</td>
<td>Minimum 60% Kikuyu with pop-up sprinklers# Minimum 10% landscaped with drip irrigation CPTED layout with pedestrian lighting plus special purpose lighting, seating locations and playground features to be determined at time of application and submitted for approval by an Authorised Officer of ASTC 1 x shaded seating location^ per 2 000 m² 1 x water fountain (i.e. bubbler) per 4 000 m² 1 x car park per 500 m² 1 x litter bins per 2 000 m² bollards, park signage, public toilets</td>
</tr>
</tbody>
</table>

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^ Irrigation controller needs to be a Rainbird controller with flow meter linked to ASTC Central Computer (note: open space irrigation systems using potable water supply are to include appropriate backflow prevention device).

^ shaded seating locations shall be planted with 6 x juvenile trees and hand watered during the establishment phase
4.13.2 Park Furniture, Park Equipment and Park Signage

Park furniture, park equipment and park signage is to be developed in accordance with the following standards:

- Park signage is to be provided in a manner similar to the signage on existing parks and the details will be confirmed at the time of application for Detailed Design Approval.
- Parks are to be lit to the standards set out in Part 4.11 of these Guidelines.
- Litter bins are to be located where approved by ASTC and be of the size and type specified from time to time and be installed to manufacturers specification.
- Park tables, seats and shade structures are to be designed and constructed in accordance with Standard Drawing ASTC - 113 and Standard Drawing ASTC - 114 and be certified as complying to the requirements of the NT Building Act, where applicable.
- Drinking fountains (i.e. bubblers) are to be of an approved design and be installed to the manufacturers specification and to the general arrangement set out on Standard Drawing ASTC - 114.
- Car parking and landscaping are to be provided to the standard set out in these Guidelines, or as otherwise approved by an Authorised Officer of ASTC.

4.13.3 Preferred Names of Parks

The preferred names are the local flora and fauna and selected residents or pioneers of the Alice Springs area. Only if these sources are exhausted are Australian places and flora and fauna to be proposed. All proposed park names are to be submitted to the NT Place Names Committee for approval, as set out in Section 4.1 of these Guidelines.

4.13.4 Access to Public Open Space

General vehicle access is to be prevented from all public open space areas however the developer is required to provide access for service vehicles using a locked park gate as shown on Standard Drawing ASTC - 113 and is to be installed at the location approved by ASTC. The number of service access points required will depend on the size, shape, location and proposed use of the public open space area and the number of access points shall be advised by an Authorised Officer of ASTC, as part of the approval process.

The following minimum requirements apply to each public open space area:

- One service access point; and
- Maximum 300 m distance from access to the road frontage.

Where the open space has frontage to more than one street the preferable location of the proposed access is from the street with the lower Road Hierarchy status.

4.13.5 Bollard to Park Boundaries

Bollards are to be provided to Neighbourhood Park, Precinct Park and Linkage/Pedestrian Corridor park boundaries that form the frontage to roads. Bollards will need to be spaced to prevent general vehicle access to the park and be located along the entire property boundary. Bollards are to be designed and constructed in accordance with Standard Drawing ASTC – 113, or as otherwise approved by an Authorised Officer of ASTC.
4.14 Verge Landscaping

All verge landscaping in roads and under the care and control of ASTC will need to comply with the requirements of the ASTC Verge Development PSD “Landscaping Verges”. Landscaping of verges on new roads, created from the subdivision of land, that will ultimately come under the care and control of ASTC, is to be detailed on plans submitted with the other development works and will generally comply with the requirements of the ASTC Verge Development PSD “Landscaping Verges”. Generally all rubbish shall be collected and removed from the Development Site and disposed of at the landfill after which time the levels shall be corrected to comply with AS1428 in areas under the care and control of Council.

4.14.1 Application for Approval of Verge Landscaping

Application for approval for verge landscaping can be made as under

- An ASTC Works Permit is required before commencing any landscaping that is within an existing road reserve (see http://www.alicesprings.nt.gov.au/document/list/Forms/Roads).
- For landscaping on all verges of proposed new roads, and in proposed Public Places, the proposed landscaping treatment is to be shown on landscape plans lodged as part of the Design Documentation Approval Application (Appendix C).

4.14.2 Plant Species and General Standards of Landscaping

All landscaping work in the verge in roads under the care and control of ASTC is to be in accordance with the ASTC Verge Development PSD “Landscaping Verges” which is available from the ASTC web site (see http://www.alicesprings.nt.gov.au/document/list/Forms/Roads).

4.14.3 Rural Road Reserve

The development and maintenance of rural roads is controlled by Council in accordance with the Rural Road Reserve Management Procedural Statement and Directives (PSD). Where proposed Development Works have the potential to impact on verges in rural roads, an Authorised Officer of ASTC will be guided by the policies and procedural statements and directives of Council. Developers wanting to develop aspects of a rural road verge should consult with an Authorised Officer of ASTC on the implications of Council policies and PSDs.

4.15 Service Corridors

4.15.1 Location of Service Corridors

All services in the road reserve are to be provided in the space allocation shown on Standard Drawing ASTC - 102 unless approved in writing by an Authorised Officer of ASTC. Services are to be designed to avoid conflicts, to the requirements of the service providers and to provide a minimum separation with the ASTC stormwater drainage infrastructure of 150 mm.

4.15.2 Conduits under the Road

All services laid under the pavement surface are to be encased in conduit provided in accordance with Standard Drawing ASTC – 103 and shall comply with the following:

- The strength of the conduit shall be adequate for the traffic loading on the road;
- The conduit shall be laid to the requirements of the service providers;
- The conduit shall be laid in such a way as to be self draining;
- The kerb on both sides of the road shall be marked with a brass marker set into the kerb concrete or standard service authority mark inscribed in the concrete of the kerb directly above the location of the conduit. Where brass markers are used the marker is to be inscribed in the following manner; Electricity marked “E”; Water marked “W”; Communications marked “C”; and Sewer marked “S”.

4.16 Foot Paths and Cycle Paths

4.16.1 Location of Foot Paths and Cycle Paths

Foot paths and cycle paths are to be provided on roads created or reconstruction by development works in accordance with Table 1. All paths, including concrete foot paths, concrete cycle paths and other paths for general use, as well as the entire verge in the Central Business zone, Commercial and Tourist Commercial zones, are to be generally provided for pedestrian access in accordance with AS1428.

4.16.2 Recycled Glass

ASTC has a stockpile of recycled glass in the form of “glass sand” and in the interests of recycling waste products and contributing to the development of a sustainable environment, Council has been using recycled glass sand in the construction and reconstruction of foot paths and cycle paths. All new paths (including reconstructed paths within or associated with all new developments) should be constructed using glass sand from recycled glass. ASTC has a standard design mix with 10% glass sand for use in foot path and cycle path construction in all new Developments that require paths to be constructed.

4.16.3 Timing of Construction

In new development all new foot paths and cycle paths required are to be constructed as part of the Development Works. These paths are to be constructed as set out on Standard Drawing ASTC – 104 and on a sub-grade, compacted to 95% of modified maximum dry density (MMDD). The Developer must take all reasonable care to produce structurally strong concrete in the path. All paths broken, during the maintenance period, are to be reinstated on request from ASTC or at the Off-Maintenance inspection, if not before.

4.16.4 Foot Paths

Concrete foot paths, including any new linkages with existing concrete foot paths, should be constructed as part of the Development Works for any new development that requires a path to be constructed. Foot paths, to be provided in accordance with Table 18, are to be constructed with 100 mm thick concrete, reinforced with SL62 reinforcing mesh, to the minimum dimensions set out on Standard Drawing ASTC – 104. Other construction materials will be considered on a case-by-case basis with suitable cost-benefit analysis.

Concrete foot paths are to be 400 mm from property boundaries, unless otherwise approved by an Authorised Officer of ASTC. Pedestrian access is to be provided to all areas of a new subdivision, as per the objectives and intent of the Commonwealth Disability Discrimination
Act, and concrete foot paths are to be constructed as an “Continuous Accessible Path of Travel” as set out in AS1428 where the adjacent road grades allow the construction of an un-ramped footpath.

All concrete foot paths constructed in roads or future roads are to include kerb ramps in accordance with Standard Drawing ASTC - 112 and the provisions of AS1428, if applicable. Kerb ramps are to be provided at all intersections (unless otherwise approved by an Authorised Officer of ASTC) and shall generally be located at the tangent points of the kerb returns and provide an accessible path for the shortest distance across the road.

In all cases a kerb ramp is required where the accessible path meets the opposing kerb in an existing kerbed road and if no existing complying kerb ramp is available the kerb ramp is to be provided by the Developer in accordance with AS/NZS1428. ASTC may require the provision of tactile ground surface indicators (TGSIs) in kerb ramps within the Municipality however TGSIs are generally only required in the central business zone. Confirmation of ASTC’s requirements in this regard must be sought from an Authorised Officer of ASTC.

4.16.5 Cycle Paths

Concrete cycle paths, including any new linkages with existing cycle paths, should be constructed as part of the Development Works for any new Development that requires a cycle path to be constructed. Cycle paths are to be provided in the locations listed in Table 18 or in such other locations as may be advised in writing by an Authorised Officer of ASTC. All 100 mm thick, steel reinforced, concrete cycle paths are to be provided, at least, to the minimum dimensions set out on Standard Drawing ASTC – 104.

The width of any cycle path shall be determined based on the proposed cycle traffic usage, as shown on any cycle strategy or any cycle plan adopted by ASTC, or as may be advised in writing by an Authorised Officer of ASTC when the detailed Design Documentation is approved. Any cycle path shall be designed to allow ASTC maintenance vehicles to access the cycle path.

4.16.6 Geometric Design for Cycle Paths

The geometric design for all cycle paths is to be in accordance with the current Austroads – Guide to Road Design Part 6A – Pedestrian and Cyclist Paths.

4.16.7 Fully Paved Verges

Fully paved verges are to be provided to all new development in the Central Business Zone and to new developments in Commercial, Service Commercial and Tourist Commercial Zones and some spot rezoning where ordered by the ASTC.

Where fully paved verges are required the whole of the verge shall comply with the requirements of AS1428 unless otherwise approved by an Authorised Officer of ASTC. Any paths of travel required for access (i.e. to kerb ramps, doorways and the like are to be marked with tactile ground surface indicators as set out in AS1428.4.1:2009).

Access ramps for access to adjacent properties are to be positioned so that they are wholly within the allotment that is to be supplied with the access (i.e. no part of the access ramp for a building is to be in a Public Place).
4.17 Driveway and Kerb Crossovers

ASTC will determine the acceptable position for location or re-location of all new driveways. All new driveways are to be constructed in accordance with the following guidelines:

- Where an allotment abuts or fronts onto more than one roadway, ASTC require that the driveway(s) shall access the road with the lower road hierarchy status (i.e. if an allotment abuts a Collector Road and a Local Road then driveway access be to the Local Road).

- The driveway is to be located to allow for the Approach Sight Distance for the through traffic for both entry and exit, in accordance with the Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections and shall generally be in accordance with AS/NZS2890 Part 1 & Part 2 and the location of the driveway shall be at least 15 m from any intersecting roadway.

- Under certain circumstances, ASTC may require deceleration or turning lanes to the allotment or the elimination of certain turning movements based on safety and traffic management issues.

- Where practical, driveways shall be located such to have minimal impact marked on road parking layout.

- Only one driveway will be permitted to each property without prior approval in writing by an Authorised Officer of ASTC.

- Where new driveway(s) are installed as part of a development any existing driveways not needed for the development are to be removed and the kerb and gutter reinstated.

- Where the proposed location for a new driveway conflicts with an existing side entry pit (SEP), a new SEP is to be constructed at a location approved by an Authorised Officer of ASTC.

4.17.1 Minor Development, Single Dwelling Residential Development and Permitted Uses

Driveways for Minor Development (see Section 2.1) and Single Dwelling Residential Development (see Section 2.2) and Permitted Uses in existing zones, are to be constructed in accordance with an approved ASTC Works Permit and associated guidelines.

4.17.2 Driveways for All Other Developments

Driveways are to be constructed in accordance with the requirements of AS/NZS2890 and shall comply with the following:

- Driveways to commercial / industrial development are to be designed to accommodate the swept turning path of the largest vehicle proposed for use to service the property.

- ASTC may approve one-way driveways to commercial and industrial properties on a case by case basis.
4.18 Roads Stormwater Drainage Design

4.18.1 General Requirements

All new Developments are required to provide an adequate stormwater drainage system that drains additional stormwater flows to a lawful point of discharge without damage to adjacent property or existing infrastructure. The Developer is encouraged to discuss the stormwater drainage design concept early in the process to avoid major changes at the approval stage.

These Guidelines set out the criteria for the stormwater drainage design however, where these Guidelines are silent or where the Developer believes that there are special circumstances, these matters are to be discussed with an Authorised Officer of ASTC, and resolved prior to the completion of the detailed stormwater drainage design.

4.18.2 Minor Development and Single Dwelling Residential Development and Permitted Uses

Generally Minor Development (see Section 2.1) and Single Dwelling Residential Development (see Section 2.2) and Permitted Uses in existing planning zones can be discharged into the existing stormwater drainage system and can generally be taken to the kerb and gutter.

Where there is potential for increased stormwater run-off from any roof or hardstand areas, a stormwater drainage system is to be designed in accordance with AS/NZS3500 for all new Development, up to the ultimate development density based on the zoning of the land. An ASTC Works Permit is required where there is a connection with ASTC stormwater infrastructure or where there is the potential to impact on a road or other Public Place that is under the care and control of Council.

4.18.3 All Other Development

All other Development, including the subdivision of land, is required to provide a stormwater drainage system, designed using Australian Rainfall Runoff, to estimate the discharge and take increased volumes of stormwater to a lawful point of discharge. Where Development Works are required to be designed and submitted to ASTC for approval, as a Development Design Approval Application, the proposed Development Works need to be approved by an Authorised Officer of ASTC before commencement of any Development Works.

4.18.4 Drainage Philosophy and Considerations

The following matters are to form the basis of the stormwater drainage design:

- The stormwater drainage design for urban, rural residential and industrial roads is to be based on a system of sealed roads, kerb and gutter, SEPs and underground drainage and/or grassed open channels and diversion drains for all increased runoff including external catchments;
- Any stormwater drainage design for rural living and rural roads is to be based on a system of cross-road drainage and open earth table drains and/or diversion drains;
- Where diversion drains (or similar) are constructed in land external to the development, the developer will need to provide easement for access and maintenance in favour of
ASTC, or where the drain is constructed in Crown Land, the Developer shall provide approval from DLPE to maintain the drain in perpetuity;

- Public roads are to be considered as primarily for use by vehicular and pedestrian traffic and for providing access to property and public amenity and safety are to be paramount considerations in the stormwater drainage design;

- Where a proposed stormwater drainage system leads to an increase in peak runoff, then consideration is to be given to the impact of the Development on existing capacity of downstream drains and the stormwater drainage design needs to include some detail regarding such matters for the consideration of an Authorised Officer of ASTC.

- The stormwater drainage system is to be designed to accommodate both minor storms and major rainfall events;

- Drainage of all allotments, apart from residential, rural living, rural residential and rural allotments, is to be collected within the allotments and conveyed by underground pipe(s) to the stormwater drainage system by means of underground drainage and open cut-off drains, as warranted. This includes the control of both the minor and major storm events emanating from either within the site and/or from external catchments draining to the allotment. Unless adequate overland flow paths can be incorporated in the design, all of the $Q_{100}$ flow may have to be contained in the underground drainage;

- Stormwater run-off from allotments in a single dwelling residential zone, other than discharge from roof and paved areas (impervious areas), may be discharged across the surface (i.e. sheet flow) to the main drainage system. Stormwater run-off from impervious areas is to be piped to the ASTC stormwater drainage system. If stormwater run-off from an allotment in a single dwelling residential zone is to be concentrated then it may not be discharged in that form onto public land or over adjacent private property but may be discharged to the kerb and gutter in an approved pipe;

- Stormwater runoff from rural allotments may be discharged (sheet flow) across the surface (i.e. sheet flow) to the stormwater drainage system;

- Where necessary flows emanating from external catchments draining into allotments are to be intercepted and directed to the stormwater drainage system. The minor storm flows are to be piped and the major storm may be contained in open drains. These drains are to be connected to the trunk drainage system and, where these drains cross privately owned land, then easements are to be provided in favour of ASTC;

- Erosion and sediment control plans are required to be approved by ASTC prior to commencement of construction works to ensure that sediment does not enter the ASTC stormwater drainage system from the Development Works. In all instances where sediment enters the ASTC stormwater drainage system, the Developer shall be required to remove the sediment immediately or the sediment will be removed by Council and the cost charged back to the developer;

- 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;

• Relief drainage from all low points in the kerb and gutter is to be provided to provide drainage to the \( Q_{100} \) drainage system. Where this is provided outside the road reserve an easement in the name of ASTC is to be provided; and

• To avoid mosquito breeding, all impervious drainage structures are to be designed to have no ponding of water and open earth drains and other pervious areas are to pond water for no longer than 48 hours or for a depth greater than 50 mm.

In the absence of building design and location, post development flows for residential allotments are to be calculated using a standard 15 m x 15 m centrally placed building area and assuming a paved driveway running from the frontage road to the front of the building.

4.18.5 Design Criteria

Stormwater drainage design is to conform to the philosophy and methods described in these Guidelines and the publications referenced in Part 5 of these Guidelines. In addition to the above criteria, the following requirements apply to all stormwater drainage systems:

• The minimum pipe diameter for a drain that picks up surface flow within a road reserve is 300 mm and Class 2 concrete or equivalent is the minimum strength standard.

• A piped system is to have the capacity to accommodate the design rainfall run-off for the minor storm (i.e. 5 year Average Recurrence Interval (ARI) with the top water level in SEPs a minimum of 150 mm below the surface entry level and a minimum of 300 mm below the surface for junction pits and manholes and other structures.

• Energy losses must be allowed for in all 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 details, as shown in the Standard Drawing ASTC – 102.

• Stormwater drainage manholes are not to be placed in the road pavement and side entry pits are to be located so as not to hinder the construction of driveways and other lot services.

• Sealed joints are to be used for all drainage lines (i.e. rubber ring joints for pipe sizes 600mm diameter or less and external bands for other drains).

• Pipes are to be laid centrally in any drainage easements granted in favour of ASTC.

• The minimum easement width is to be 3.0 m for pipe diameters of 450 mm or less at depths up to 1.5 m. The easement widths are to be increased for pipe diameters and depths greater than above and ASTC will advise of the easement widths required,

• For road drainage in new subdivisions secondary protection drainage flow path is to be provided allowing a surcharge due to 50% blockage of the primary piped system.

• Existing fences and structures are to be modified as needed to minimise the obstruction of water flow in watercourses, open drains and flow paths.
Stormwater is to be controlled so that the limit/capacity of the downstream drainage system is not exceeded and properties are not to be inundated.

Pipe grades are to be no flatter than 0.5% gradient, unless otherwise approved.

Design calculations shall be submitted to ASTC for approval in the form of a spreadsheet similar to those shown in ARR, and shall include:

5 year ARI:
- A plot of the hydraulic grade line
- A check of flooded road widths
- A check of flows across junctions
- Inclusion of SEPs at the upstream tangent points of all junctions and immediately upstream of pedestrian crossing locations.

100 year ARI:
- A check of the minimum road/bypass flow capacity.
- Detailed Design Drawings and a report outlining compliance with these Guidelines.

The Developer shall provide easements in favour of ASTC for all drainage structures in land not owned by ASTC. Where the drain services one allotment only, the easement is to be in favour of the allotment which it services. In all other cases the easements shall be in the name of ASTC and shall be a minimum of 3 m wide with a minimum of 1 m clearance from the edge of the pipe to the easement boundary. All infrastructure and easements shall be supplied at no cost to ASTC by the Developer.

Where the capacity of infrastructure downstream of a proposed development is adversely affected by the stormwater runoff from the development and detention/retardation basins are proposed to reduce peak flows to pre-development flows the whole range of flows up to and including the $Q_{100}$ will need to be retarded to ASTC satisfaction.

Where allotment fill directs stormwater runoff to the ASTC drainage system, the As-Constructed level of the fill needs to be confirmed before the On-Maintenance approval.

Alice Springs rainfall intensity data is to be sought from the Bureau of Meteorology.

4.18.6 Drainage Runoff Coefficients

Due to the variation of land, land use and soil types it is not practical to list coefficients of runoff in these Guidelines. The Design Engineer is to assess and confirm the coefficients prior to undertaking drainage design for the proposed development. The Design Engineer is to treat any and all drainage catchments as being totally saturated for the calculation of $Q_{100}$ flows. Run-off coefficients and characteristics for the ultimate development of the allotments based on zoning of the Development Site must be considered in designing the stormwater system.

4.18.7 Recurrence Intervals, Time of Concentration and Rainfall Intensity

The design intensity for a calculated time of concentration is to be determined from the appropriate design rainfall intensity diagram that can be obtained from the Bureau of Meteorology. The minimum time of concentration to be used for a fully developed catchment is 5 minutes (i.e. $T_c = 5$). The Civil Engineer / stormwater designer is to adopt the following minimum Average Recurrence Interval (ARI) for the minor storm and the major storm.
Table 15: Storm Intensity Recurrence Interval (ARI in Years)

<table>
<thead>
<tr>
<th>Catchment Zone</th>
<th>Minor Storm</th>
<th>Major Storm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Business and Commercial</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>Industrial</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>Multiple Dwelling / Medium Density Residential</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>Single Dwelling Residential</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>Public Open Space and Drainage Reserves</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>Rural Residential</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>Rural Living and Rural Access Roads (Crossroad culverts)</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>Collector/Arterial Roads (Crossroad Culverts)</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 16: Road Stormwater Limits

<table>
<thead>
<tr>
<th>Urban Residential and Rural Residential</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Minor Storm</strong></td>
</tr>
<tr>
<td><strong>Major Storm</strong></td>
</tr>
<tr>
<td>Cul-de-sac Road</td>
</tr>
<tr>
<td>Access Roads</td>
</tr>
<tr>
<td>11m Collector Roads or Arterial Road</td>
</tr>
<tr>
<td>Open Space &amp; Drainage Reserves</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Commercial / Industrial</th>
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<tbody>
<tr>
<td>All Roads</td>
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<table>
<thead>
<tr>
<th>Rural Living and Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Roads</td>
</tr>
</tbody>
</table>
4.18.8 Use of Roads, Public Open Space and Drainage Reserves for Stormwater Drainage
Stormwater flow from the minor storm and major storm must be managed within the limits shown in Table 16. Sufficient capacity must be created such that the major storm can be contained wholly within drainage structures and/or the road reserve.

4.18.9 Drainage Catchments
The Developer shall prepare a catchment plan, showing contours with Australian Height Datum (AHD) values and showing the whole area contributing to the drainage for the Development Site. The catchment plan shall show and tabulate the areas of all the sub-catchments used in the drainage design and this plan is to be submitted, with the drainage design, to ASTC for approval by an Authorised Officer of ASTC.

A stormwater drainage system to service a Development Site shall be designed to carry stormwater runoff from the identified catchment when it is fully developed in accordance with the ultimate development intensity based on the zoning of the land at the time. Where the Development is to be staged a stormwater drainage design is required for the entire Development before detailed drainage designs for individual stages will be approved.

4.18.10 Development Draining to Existing Stormwater Infrastructure
Where a new Subdivision Development drains to an existing stormwater drainage system that is under the care and control of Council, then the Development shall be designed to:

- Contain the stormwater runoff to pre-development peak flows; or
- Not to exceed the capacity of the receiving system; or
- Design and construct upgrades to existing drainage system to provide additional capacity to accommodate increased runoff from the Development.

4.18.11 Stormwater Management
The discharge of stormwater shall comply with the Waste Management and Pollution Control Act before it will be accepted to the ASTC stormwater drainage system. It is expected that the design of new stormwater systems will incorporate, where necessary, the requirements of:

- NT Government - Control Guidelines (4) and Technical Notes (15);
- CSIRO publication - WSUD Engineering Procedures (including Water Sensitive Urban Design installations suitable for Arid Lands); and/or

As a design principle:

- Stormwater in impervious drainage structures is to be conveyed at self cleansing velocities to sediment collection points designed in the system;
- Areas of the Development Site that do not need to be disturbed are to be fenced off during the construction process to protect the area from construction traffic;
- Erosion is to be controlled at the work site (i.e. as high in the system as possible);
- Disturbed areas are to be finished to final level and given surface treatment as soon as the work is complete to reduce erosion of the Development Site;
- Areas of the Development Site are not to be disturbed until required for construction.
While the selection of the stormwater treatment structures is ultimately influenced by site constraints and the requirements and adherence to the reference documents, it is considered that the following Water Sensitive Urban Design (WSUD) elements could be considered necessary in many developments within the Municipality. These elements include:

- Sediment basins;
- Vegetated swales;
- Soakage pits;
- Sand filters; and
- Rainwater tanks

Plans showing construction phase treatment for sediment and erosion control, as well as permanent stormwater structures, are to be submitted for the approval of an Authorised Officer of ASTC, as part of the application for approval of the detailed Design Documentation.

4.18.12 Drainage of Allotments

Historically, the NT Government is responsible for the control of drainage on allotments. ASTC is responsible for drainage within road reserves, stormwater drainage reserves that have been vested in Council, stormwater drainage easements in favour of ASTC and any other land that is under the care and control of Council. While ASTC recognises the NT Government as the regulatory authority, ASTC requires the Developer to provide stormwater drainage calculations for all stormwater that runs off private land and onto ASTC land or into the ASTC stormwater drainage system (see Standard Drawing ASTC – 107). For building works, these calculations are to be based on the requirements of AS/NZS3500, as a reference document for the BCA.

4.18.13 Rainwater Tanks

ASTC is generally supportive of rainwater tank usage, in both domestic and commercial settings for detention of peak runoff and for reuse. The collection and reuse of rainwater may be considered appropriate for use in or on or part of landscaping elements.

Where rainwater tank(s) are to be installed, as part of a detailed stormwater design submitted to an Authorised Officer of ASTC for approval, then the capacity of the tank(s) and the maintenance of the tank(s) should be considered in relation to the following documents:

* DesertSMART COOLMob (see http://desertsmartcoolmob.org/?page_id=526)
* Department of Health and Ageing - Requirements on Use of Rainwater Tanks

4.18.14 Open Drainage Structures

All open drains are to be designed to incorporate the following features:

- Open unlined drains are to be assessed for the capacity of the soils to resist erosion (see NTG Fact Sheet) and be designed at grades that maintain flow velocities less than the scour velocity of the soil or shall be treated to prevent erosion. Scour velocities in the order of 0.5 m/s can be expected for erodible soil in any unlined drains.
- Unlined drains shall be vegetated to provide protection from rain drop impact and to assist in the protection against damage from runoff
• Open drains shall have a maximum depth of flow of 750 mm and shall provide for a 150 mm freeboard to the flow level of the Q_{100} storm and shall have a depth by velocity (d*v) of 0.6 m^2/s or less.

• Where public access is possible, warning devices and/or safety barriers are to be provided, particularly at road crossings of the drain (e.g. provide pedestrian handrails, etc). Where the drain runs parallel to a road it may be necessary to provide guardrails or guideposts, depending on the setback of the drain from the road shoulder.

• The top water level in the drain, at Q_{100} flows is to allow emergency access at all road crossings and shall not be allowed to enter into any building allotments.

• Where the drain changes direction the drain, base and batters, shall be lined with concrete, or other approved treatment, of sufficient length and breadth to minimise potential erosion.

• Maximum side slopes of any open drain is to be designed to resist erosion from water flows and rain drop impact and accommodate the potential of the soil to erode and in no case shall be steeper than 1 in 6 (16%).

• All drains are to be designed to retain water during the storm and during the normal runoff and there is to be no ponding of water for more than 48 hours or to greater than 50 mm deep to prevent mosquito breeding.

• Where a drain is cannot accommodate safe public access during a storm event, then pedestrian barrier fencing, with locked maintenance access gates, shall be provided.

4.19 Stormwater Pipes and Pits

All drainage pipes, pits and culverts are to be supplied and installed in accordance with the detailed requirements set out in these Guidelines.

4.19.1 Drainage Pipes and Culverts

All drainage pipes and culverts are to be a proprietary brand of Steel Reinforced Concrete (SRC) or Fibre Reinforced Concrete (FRC) of suitable strength and be manufactured and constructed and tested in accordance with Australian Standards. If other types of drainage pipes or culverts are proposed for use, these are to be approved by an Authorised Officer of ASTC. The referenced Australian Standards for this purpose are:

• AS1597 - Precast Reinforced Concrete Box Culverts
• AS/NZS3725 - Design for Installation of Buried Concrete Pipes
• AS/NZS4058 - Precast Concrete Pipes (Pressure and Non-pressure)
• AS/NZS4139 - Fibre reinforced Concrete Pipes and Fittings

All stormwater drainage pipes, pits and culverts are to be constructed in accordance with the ASTC Standard Drawings, the Australian Standard Codes and the DI Technical Specification, where appropriate.

4.19.2 Manholes

All manholes and inlet pits are to be constructed in accordance with the job specification, ASTC Standard Drawings or the DI Standard Drawings and Technical Specification and to comply with access requirements for Occupational Health and Safety requirements.
Manholes are to be constructed in accordance with these Guidelines:

- be constructed at all pipe junctions and where pipes change direction, diameter or grades and where a side entry pit has not been provided;
- be provided at a maximum distance between manholes is to be 90 m;
- manholes are not to be constructed in the pavement area of roadway unless approved in writing by an Authorised Officer of ASTC;
- certified precast manholes are approved for use however any cutting of the precast units for pipe entry will need to be certified by the manufacturer;
- pipes entering manholes and inlet pits are to be finished flush with the internal wall of the manhole and shall be grouted in accordance with the specification; and
- cut ends of pipes are to be treated with epoxy or similar to protect exposed steel.

The geometry of the pipe entry into the manhole is critical to limit the hydraulic head losses in the manhole and the following matters need to be addressed:

- Minimise changes in velocity through the manhole;
- Minimise changes in flow direction;
- Avoid “opposed lateral” inflows (i.e. all incoming flows are to be in an arc from the direction of outlet flows to 90°, or at a maximum 180°, arc centred around the inlet);
- Limit the deflection from inflow to outflow to reduce the head losses; and
- Rounding the entry to the outlet pipe.

4.19.3 Side Entry Pits

Side entry pits (SEPs) are to be constructed in accordance with the details shown on the Standard Drawing ASTC - 105, Standard Drawing ASTC - 108, Standard Drawing ASTC - 109 and Standard Drawing ASTC - 110 and their location shall be specified in the design plans.

SEPs are to be located at all low points, immediately upstream of intersections and above pedestrian crossings that are part of the constructed foot path / cycle path system and at intermediate positions to limit the depth of flow in the gutters. The location of SEPs shall avoid conflict with existing or proposed services and avoid conflict with proposed driveway locations.

SEPs are to be designed to allow reduction of performance values of 20% blockage of the side entry opening and 50% blockage of any grate used in conjunction with the side entry opening. SEPs may either be side entry only or a combined grate / side entry openings. Grated openings only will not be approved. SEP grates are to be designed and constructed in accordance with AS3996 for heavy traffic loading and are to be bicycle safe.

4.19.4 Letter Box Pits

Where catch drains are to discharge to a pipe drain the catch drain is to discharge to a letterbox pit that is connected to the pipe system constructed in accordance with the DI Standard Drawing C(S) 1010/1 (as amended). Open end walls to ASTC drains or culverts will not be allowed in or near residential areas. The letterbox pit and any stone pitched aprons are to be constructed in accordance with the standard drawings. The location of the letterbox pit is to be assessed in relation to child safety and where necessary the letterbox pit opening is to be limited to 125 mm maximum opening.
4.20 Stormwater Catch Drains

Overland flow paths may be intercepted by catch drains at the following locations:

- Sag points in the kerb and gutter to provide relief drainage to the road drainage for major stormwater flows where relief drainage is not available along the road at required ponding depths;
- At the top and bottom of substantial cuttings and embankments;
- Where required in parks or as part of Water Sensitive Urban Design (WSUD);
- At rear allotment boundaries to intercept inflow from external stormwater catchment areas; and
- At other locations, as determined by an Authorised Officer of ASTC.

Catch drains are to be designed to carry $Q_{100}$ flows to the constructed drainage system or to an approved natural drainage channel.

Relief overflow stormwater drainage from rear allotment catch drains draining through the Development are to be provided between the drain and the street drainage system by a stabilised, shaped open drain wholly contained within a drainage easement in favour of ASTC.

4.21 Geotechnical Report and Pavement Design

4.21.1 Geotechnical Report

A Geotechnical Report for the proposed development is to be provided with an application for approval of the detailed design drawings for a Development. The Geotechnical Report is to be prepared in accordance with the Austroads publication Guide to Road Design – Part 7 – Geotechnical Investigation and Design and, without limiting the scope of that document, the Geotechnical Report is to detail the following items:

- Classification of the fine grained soils on the development site and provide particle size analysis test results. ASTC experience with existing roads is that the fine grained soils with a high percentage (%) passing the 425 mm sieve are unreliable as a Sub-grade material with the past pavement design practice and these soils need to be identified and special care taken in their specification as Sub-grade;
- Testing for Sub-grade strength to at least 0 – 600 mm below the proposed Sub-grade surface level;
- Identification of sub-soil moisture when it is within 2.0 m of the proposed Sub-grade;
- Determination of California Bearing Ratio (CBR) values to allow the preliminary assessment of pavement design thickness.

4.21.2 Pavement Design

Before the pavement depth for construction is approved by an Authorised Officer of ASTC, it will be necessary for the Developer to:

- Expose the road sub-grade and provide geotechnical evaluation of the various soil types in the sub-grade;
- Take samples and provide test result to the standards set out in the Austroads Guide to Pavement Technology – Part 2 – Pavement Structural Design (i.e. at least every 100 m length for urban roads);
- Provide laboratory CBR values for the above sampling using OMC moisture and density of 95% modified maximum dry density (MMDD) and for fine grained soils confirm the results with a set of Dynamic Cone Penetrometer (DCP) tests down to 1.0 m below sub-grade.

Pavement design parameters to be used will include the following unless variations are specifically approved by ASTC:

- Pavement Design Life is to be 25 years;
- Full pavement Design Traffic Loading (DTL) is assumed from commencement of service life of pavement;
- Lane Distribution Factor (LDF) is 1.0 for all carriageways <7.5m wide where parking is allowed on the carriageway, otherwise 0.5 can be used; and
- Equivalent Standard Axle (ESA) shall be calculated using an estimate of ESA’s per Heavy Vehicle Axle Group (HVAG); HVAG per Heavy Vehicle (HV); and the proportion of HVs in the Average Annual Daily Traffic (AADT) movements for each road or street.

Proposals are assessed on a case-by-case basis however Table 17 can be used as a guide.

### Table 17: Pavement Design Criteria

<table>
<thead>
<tr>
<th></th>
<th>Rural / Residential Access Road</th>
<th>Connector / Collector</th>
<th>Industrial Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>% HV in AADT</td>
<td>3%</td>
<td>4.5%</td>
<td>20%</td>
</tr>
<tr>
<td>ESA/HVAG</td>
<td>0.4</td>
<td>0.6</td>
<td>1.2</td>
</tr>
<tr>
<td>HVAG/HV</td>
<td>2.0</td>
<td>2.2</td>
<td>3.0</td>
</tr>
</tbody>
</table>

The final pavement design, including calculation of design traffic loading, will need to be forwarded to ASTC and approved by an Authorised Officer of ASTC before Sub-grade construction can be approved and the pavement courses constructed.

### 4.22 Inspection and Testing Protocols

#### 4.22.1 General

These Guidelines set out the construction requirements for subdivision Development Works within the Municipality. ASTC has adopted the DI standard specifications and standard drawings as the ASTC standard where a specific ASTC Standard Specification or Standard Drawing is not available. The provisions set out in these Guidelines shall take precedence in the event that there is conflict between the DI standards and the standards set out elsewhere in these Guidelines.

#### 4.22.2 Control and Supervision of Development Works

The Developer is responsible for constructing the Development Works necessary to complete the requirements for the Development, including testing, recording and reporting the test results to ASTC, as and when required. The Developer shall engage a suitably qualified and experienced Superintendent to supervise the Development Works and to certify the quality of materials and methods of construction on completion of the work. All appointments for inspections are to be made through the Superintendent, who will be required to inspect the Development Works prior to the request for ASTC to inspect.
The Civil Contractor and/or Project Manager, when not personally present on site, is to be represented by a nominated, competent and experienced Site Supervisor. Inspections by ASTC shall in no way diminish the responsibility of the Developer to adequately supervise and certify agreed-to aspects of the Development Works.

The Developer shall ensure that all Development Works are carried out in accordance with the requirements of the Development Permit, Approval Documentation, indicating general compliance with these Guidelines and an approved Inspection and Testing Plan (ITP), agreed at the Pre-start Meeting.

ASTC reserves the right to conduct audit inspections of any part of the Development Works, without prior notice and will advise site personnel of the intent to inspect the site immediately. Any advice or direction given to site personnel during an inspection will be promptly conveyed to the Superintendent by an Authorised Officer of ASTC.

4.22.3 Construction Program
A construction program is to be submitted, in the form of a Gantt chart, or similar, with critical path analysis, to ASTC for approval prior to arranging the Pre-start Meeting. The program is to include all major work activities, including but not limited to the following:

- Site works and implementation and maintenance of sediment and erosion controls;
- Bulk earthworks and road excavation to verge level;
- Construction of stormwater drainage and sewer within the road reserve;
- Sub-grade treatment as required;
- Road service crossings;
- Placement of sub-base course pavement if required;
- Placement of base course pavement;
- Placement of extruded concrete kerbs & gutter and foot path / cycle path construction;
- Utility services and landscape preliminaries;
- Placement of the wearing course to pavement;
- Shaping of the road verge and final landscaping; and
- Sediment and erosion control plan, including maintenance period.

The Construction Program is to be updated at least every month and will need to be amended when external events (e.g. significant wet weather) result in major changes to the program. The Construction Program will be used by ASTC to allocate time for works inspections.

4.22.4 General Inspection and Testing Plan (ITP)
The following General Inspection and Testing Plan (ITP) sets out the roles and responsibilities of the agencies involved and summarises the principal testing procedures in the DI specification and/or these Guidelines. In all cases the requirements of the DI specification apply and the Developer can be expected to comply with the provisions of the specification, unless modified by the job specification and approved by an Authorised Officer of ASTC.
### Table 18: General Inspection and Testing Plan

<table>
<thead>
<tr>
<th>Work Element</th>
<th>Test</th>
<th>Standard</th>
<th>Frequency</th>
<th>Superintendent Responsibility</th>
<th>ASTC Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-start Meeting</td>
<td></td>
<td></td>
<td></td>
<td>Invite all parties to Pre-start Meeting; ensure Contractor has current version of approved plans; outline performance standards; highlight critical aspects of the design.</td>
<td>Outline performance standards, highlight critical aspects of the design, notify any particular inspection requirements during the works. Record minutes of Pre-start Meeting, and distribute copies of minutes to all attendees</td>
</tr>
<tr>
<td>General Control of the Works</td>
<td></td>
<td></td>
<td></td>
<td>Ensure on-site Contractor has latest version of approved design, including any amendments. Check for compliance and check test results</td>
<td>ASTC shall, where appropriate, check works for compliance and advise the Supervising Engineer/Project Manager of any non-compliance</td>
</tr>
</tbody>
</table>

#### Allotment Fill Draining to the Road

<table>
<thead>
<tr>
<th>Allotment Levels</th>
<th>Finished Surface Levels (FSL)</th>
<th>Free Draining</th>
<th>Each lot draining to the road</th>
<th>Confirm allotment drainage</th>
<th>Random inspection and check results at On-Maintenance</th>
</tr>
</thead>
</table>

#### Road Embankments and Earthworks Compaction

<table>
<thead>
<tr>
<th>Quality of Material</th>
<th>Visual/grading, as required</th>
<th>DI Specification Part 4.4.5</th>
<th>FDD each 1/3000 m² (Min 3 /lot) Approx. 1/50 lm</th>
<th>Make sufficient visits to confirm quality of material and compaction and examine and endorse test results</th>
<th>Make random audit inspections. Check test results at completion and at On-Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compaction</td>
<td>AS1289.5.2.1</td>
<td>90% MMDD</td>
<td>Each 1/FDD</td>
<td>Make sufficient visits to confirm quality of material and compaction and examine and endorse test results</td>
<td>Make random audit inspections. Check test results at completion and at On-Maintenance</td>
</tr>
<tr>
<td>Alignment &amp; level</td>
<td>FSL Survey</td>
<td>+/- 75 mm design level</td>
<td>Each FDD</td>
<td>Make sufficient visits to confirm quality of material and compaction and examine and endorse test results</td>
<td>Make random audit inspections. Check test results at completion and at On-Maintenance</td>
</tr>
</tbody>
</table>

#### Stormwater Drainage

<table>
<thead>
<tr>
<th>Location Structure</th>
<th>Survey Measure</th>
<th>+/- 200 mm</th>
<th>Each</th>
<th>Inspect before backfilling; check for compliance with design; endorse test results; and lodge with ASTC</th>
<th>Random audit inspections; check for compliance and concrete strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>SL &amp; IL at structures</td>
<td>Survey</td>
<td>standard tolerances</td>
<td>Each</td>
<td>Inspect before backfilling; check for compliance with design; endorse test results; and lodge with ASTC</td>
<td>Random audit inspections; check for compliance and concrete strength</td>
</tr>
<tr>
<td>Bedding material</td>
<td>Visual /grading</td>
<td>DI Specification</td>
<td>Each line</td>
<td>Inspect before backfilling; check for compliance with design; endorse test results; and lodge with ASTC</td>
<td>Random audit inspections; check for compliance and concrete strength</td>
</tr>
<tr>
<td>Manholes/ Pits</td>
<td>Visual</td>
<td>Straight and on grade</td>
<td>Each line</td>
<td>Inspect before backfilling; check for compliance with design; endorse test results; and lodge with ASTC</td>
<td>Random audit inspections; check for compliance and concrete strength</td>
</tr>
<tr>
<td>Pipes</td>
<td>Visual</td>
<td></td>
<td>Each line</td>
<td>Inspect before backfilling; check for compliance with design; endorse test results; and lodge with ASTC</td>
<td>Random audit inspections; check for compliance and concrete strength</td>
</tr>
<tr>
<td>Backing Filling Quality</td>
<td>Grading</td>
<td>DI Specification</td>
<td>Each line</td>
<td>Inspect before backfilling; check for compliance with design; endorse test results; and lodge with ASTC</td>
<td>Random audit inspections; check for compliance and concrete strength</td>
</tr>
<tr>
<td>Backfilling Compaction</td>
<td>AS1289.5 (2.1)</td>
<td>90% -95% MMDD</td>
<td>3 per 10 m³</td>
<td>Inspect before backfilling; check for compliance with design; endorse test results; and lodge with ASTC</td>
<td>Random audit inspections; check for compliance and concrete strength</td>
</tr>
<tr>
<td>Work Element</td>
<td>Test</td>
<td>Standard</td>
<td>Frequency</td>
<td>Superintendent Responsibility</td>
<td>ASTC Responsibility</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
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<td>-------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Sub-grade (min 300 mm deep)</strong></td>
<td></td>
<td></td>
<td></td>
<td>Make routine visits and checks to confirm construction to approved design.</td>
<td>Conduction joint inspection with Superintendent (including proof rolling). When approved</td>
</tr>
<tr>
<td>Field Density FDD</td>
<td>NTCP 102.1</td>
<td>AS 1289.5 (8.1)</td>
<td>1/1000 m² (Min 3 / lot i.e. approx 1/50 lm)</td>
<td>Make routine visits and checks to confirm construction to approved design.</td>
<td>approve placement of pavement materials Check for compliance with the approved design and advise Superintendent</td>
</tr>
<tr>
<td>Compaction to 300 mm</td>
<td>AS1289.5 (2.1)</td>
<td>95% MMDD</td>
<td>1/FDD</td>
<td>Examine and endorse all test results and level checks and forward to ASTC then arrange a joint inspection with ASTC to proof roll the sub-grade.</td>
<td></td>
</tr>
<tr>
<td>CBR Testing</td>
<td>AS1289.6 (1.1)</td>
<td></td>
<td>1/5FDD (Min 1/lot or each change of soil type)</td>
<td>Make sufficient visits to ensure material quality and layer compaction Proof roll &amp; lodge test results with ASTC</td>
<td></td>
</tr>
<tr>
<td>Horizontal &amp; vertical alignment</td>
<td>Survey</td>
<td></td>
<td>Each 25 lm</td>
<td>Make sufficient visits to ensure material quality and layer compaction Proof roll &amp; lodge test results with ASTC</td>
<td></td>
</tr>
<tr>
<td>Profile</td>
<td>String line / level survey</td>
<td>-25 mm +0 mm</td>
<td>Each 25 lm</td>
<td>Make sufficient visits to ensure material quality and layer compaction Proof roll &amp; lodge test results with ASTC</td>
<td></td>
</tr>
<tr>
<td><strong>Select Fill / Sub-grade Replacement</strong></td>
<td></td>
<td></td>
<td></td>
<td>Make sufficient visits to ensure material quality and layer compaction Proof roll &amp; lodge test results with ASTC</td>
<td></td>
</tr>
<tr>
<td>Material Quality (FDD)</td>
<td>AS1289.3. (6.1)</td>
<td>CBR min 30 at 95% MMDD</td>
<td>1/3000m² (min 3/lot i.e approx 1/150 lm or each change in soil type)</td>
<td>Make sufficient visits to ensure material quality and layer compaction Proof roll &amp; lodge test results with ASTC</td>
<td></td>
</tr>
<tr>
<td>Compaction</td>
<td>AS1289.5 (2.1)</td>
<td>95% MMDD</td>
<td>1/FDD</td>
<td>Make sufficient visits to ensure material quality and layer compaction Proof roll &amp; lodge test results with ASTC</td>
<td></td>
</tr>
<tr>
<td>Profile &amp; Depth</td>
<td>Survey</td>
<td></td>
<td>Each 25 lm</td>
<td>Make sufficient visits to ensure material quality and layer compaction Proof roll &amp; lodge test results with ASTC</td>
<td></td>
</tr>
<tr>
<td><strong>Kerb and Gutter</strong></td>
<td></td>
<td></td>
<td></td>
<td>Make sufficient visits to ensure material quality and layer compaction Proof roll &amp; lodge test results with ASTC</td>
<td></td>
</tr>
<tr>
<td>Horizontal &amp; Vertical Alignment</td>
<td>Survey/ Measure</td>
<td>Vertical +/- 5 mm Horizontal +/- 10mm</td>
<td>Each 25 m</td>
<td>Make sufficient visits to ensure material quality and layer compaction Proof roll &amp; lodge test results with ASTC</td>
<td></td>
</tr>
<tr>
<td>Concrete</td>
<td>Cylinder / Impact strength</td>
<td>N25/20 mm Slump 80 +/-15 mm</td>
<td>Each Second Load</td>
<td>Make sufficient visits to ensure material quality and layer compaction Proof roll &amp; lodge test results with ASTC</td>
<td></td>
</tr>
<tr>
<td><strong>Pavement Layers</strong></td>
<td></td>
<td></td>
<td></td>
<td>Make sufficient visits to ensure material quality and layer compaction Proof roll &amp; lodge test results with ASTC</td>
<td></td>
</tr>
<tr>
<td>Material Quality</td>
<td>AS1289.3 (6.1)</td>
<td>Fine Crushed rock</td>
<td>1/5000m² (min 1/lot approx 1/250 lm))</td>
<td>Make sufficient visits to ensure material quality and layer compaction Proof roll &amp; lodge test results with ASTC</td>
<td></td>
</tr>
<tr>
<td>Field Density</td>
<td>NTCP 102.1 &amp; AS1289.5 (8.1)</td>
<td></td>
<td>1/1000m² (min 3/lot or approx 1/50 lm)</td>
<td>Make sufficient visits to ensure material quality and layer compaction Proof roll &amp; lodge test results with ASTC</td>
<td></td>
</tr>
<tr>
<td>Compaction</td>
<td>AS1289.5</td>
<td>100%</td>
<td>Min 1/FDD</td>
<td>Make sufficient visits to ensure material quality and layer compaction Proof roll &amp; lodge test results with ASTC</td>
<td></td>
</tr>
<tr>
<td>Work Element</td>
<td>Test</td>
<td>Standard</td>
<td>Frequency</td>
<td>Superintendent Responsibility</td>
<td>ASTC Responsibility</td>
</tr>
<tr>
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<tr>
<td>(2.1) MMDD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proof Roll of Pavement</td>
<td>DI</td>
<td>Specification</td>
<td>All areas</td>
<td>confirm the compliance with</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>No visible movement or springing</td>
<td></td>
<td>tolerance and test results.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>All areas</td>
<td></td>
<td>Supply copies of test results</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>All areas</td>
<td></td>
<td>to ASTC during construction</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>All locations</td>
<td></td>
<td>and with the application for Proof Roll</td>
<td></td>
</tr>
<tr>
<td>Horizontal &amp; vertical alignment</td>
<td>Survey</td>
<td>0+10mm Std edge deviation</td>
<td>All locations</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5mm in 3m</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profile and pavement layer thickness</td>
<td>Survey</td>
<td>Not more than 0.5% cross-fall</td>
<td>Each 25 lm</td>
<td>Confirm the compliance with</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>deviation</td>
<td></td>
<td>tolerance and test results.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>All locations</td>
<td></td>
<td>Supply copies of test results</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>All locations</td>
<td></td>
<td>to ASTC during construction</td>
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<tr>
<td></td>
<td></td>
<td>and with the application for Proof Roll</td>
<td></td>
<td>and with the application for Proof Roll</td>
<td></td>
</tr>
<tr>
<td>Surfacting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material Quality</td>
<td>Mix design/bitumen content</td>
<td>DI Specification</td>
<td>1/100 t or part thereof</td>
<td>Confirm mix design Superintendent to oversee surfacing and endorse test results and supply results to ASTC Organise inspection with ASTC including water truck (if required) to confirm free drainage.</td>
<td>Random visits, if required. Approve the test results and attend joint inspection.</td>
</tr>
<tr>
<td>Compaction &amp; thickness</td>
<td>AS1289 (0.8 &amp; 0.9)</td>
<td>DI Specification</td>
<td>1/1000 m² (i.e. not less than 1/100 lm) minimum 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profile</td>
<td>Survey</td>
<td>DI Specification</td>
<td>All locations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.22.5 Work Item Inspection Test Points
The Developer shall prepare work item inspection test points (ITPs) that identify each lot (by chainage, if appropriate) together with specified Hold Points and Witness Points and tests that are required to ensure conformance with the specification for each Hold Point and Witness Point. The work item ITPs are to be identified with the associated work activity, as shown on the critical path chart and the ITPs for the next period are to be identified with each update of the construction program (i.e. work schedule), listing current planned commencement and completion times. Note: conformance for compaction of soils is based on lots meeting the criteria set out in these Guidelines (i.e. Specification for Conformance Testing).

4.22.4 Pre-start Meeting
Before the commencement of any works the Developer shall arrange a Pre-start Meeting in accordance with the requirements of the General Inspection and Testing Plan.

4.22.5 Work in Existing Road Reserves
The Developer is to obtain a Works Permit from ASTC for all work carried out in an existing road reserve under the care and control of ASTC and, unless and otherwise approved in writing by an Authorised Officer of ASTC, shall comply with the following:

- Service crossings of the road pavement and foot path are to be thrust or tunnel bored;
• All services in the road shall be laid from the service alignment to the road reserve boundary in conduits;
• The appropriate alignment for optical fibre for the delivery of telecommunications services is in the 1 400 mm to 2 400 mm behind the kerb on the side opposite the stormwater drainage;
• Alignments for other services are to comply with the services corridors, as set out on Standard Drawing ASTC - 102, and the service corridors in both verges can be used to reduce conflicts;
• If an existing footpath covers the permitted alignment shown on the standard drawing, the Developer may choose to demolish the existing footpath / cycle path, excavate to lay the service and replace the footpath / cycle path with a new footpath / cycle path to ASTC standards, in lieu of boring. Where this method is used the service shall be laid in a conduit; and
• In special circumstances trenching across a road may be approved at intersections and will only be permitted at the tangent points of the intersections to minimise the length of any trenching across the road.

Any trenching across a road, foot path, cycle path or driveway is to have saw-cut edges. In the case of footpaths and driveway crossovers, whole slabs are to be replaced rather than narrow saw-cut trenches. ASTC is to define the width of the trench to be saw-cut.

4.23 Workplace Health and Safety

4.23.1 General

The Developer shall comply with the requirements Workplace Health and Safety Act and the Workplace Health and Safety Regulations at all times. Public safety is paramount and ASTC’s exposure to public risk must be considered at all times. The Developer shall demonstrate evidence of Work Health and Safety system and management by considering the following:
• Undertake WH&S Risk Assessment;
• Develop Health and Safety Plan;
• WH&S Performance Reporting;
• WH&S Incident Notification.

The Developer shall ensure that the Contractor has a WH&S document setting out the health and safety requirements for issue to all sub-contractors working on the Development Site.

4.23.2 Insurance

The Developer shall arrange for public liability insurance sufficient to cover the perceived risks associated with the works. This insured amount shall be approved by an Authorised Officer of ASTC and is to be generally not less than $20M.

Evidence of the insurance and any provisions to indemnify ASTC against any Public Liability Claims resulting from the Development Works on the Development Site are to be provided to ASTC on request and/or at the Pre-start Meeting.
4.23.3 Control of the Development Site
The Developer shall manage the Development Site to exclude trespass of the site and/or manage the Development Works to prevent hazards and mitigate risks to persons entering the site outside of working hours.

4.24 Traffic Management
The Developer is to provide Traffic Management for the Development Site, in accordance with the requirements of the NT Traffic Act and Traffic Regulations and Australian Standard AS1742 – Manual of Uniform Traffic Control Devices and shall manage the Development Works in accordance with these Guidelines.

4.24.1 Work in Existing Road Reserve
Where the Development Works are undertaken in existing road reserves that are under the care and control of ASTC the Developer is required to obtain an ASTC Works Permit to work within the ASTC road reserve by making separate application on the appropriate form.

4.24.2 Work in Greenfield Subdivisions and Subdivisional Redevelopment
The Developer is wholly responsible for the safety of the Development Site and shall provide adequate traffic control devices at the entrance(s) to prevent traffic from entering and/or advise any entering traffic of any traffic hazards within the property.

In all instances, where the general public is permitted to enter a Development Site, the work areas need to be signed in the same manner as would be required for Development Works in a Public Place (i.e. ASTC Works Permit with Traffic Management Plan).

4.25 Environmental Requirements
4.25.1 General Environmental Requirements
ASTC has a responsibility to the community to manage the environmental impacts of new Development Works within the Municipality that are within, or impact upon, areas that under the care and control of Council.

4.25.2 Construction Noise
Construction Noise is controlled by the NT Waste Management and Pollution Control Act and it is recommended that the Developer contacts the Environment and Heritage Division of DLPEE to determine the appropriate hours for undertaking Development Works.

4.26 Erosion and Sediment Control
4.26.1 Responsibility
Where work on new subdivisions is to occur on Crown Land (under the terms of a development lease) or on private land, the management of the environmental impacts is a matter for the DLPEE however in most instances where stormwater from the Development is, or is to be, discharged into an existing stormwater drainage system that is under the care and control of Council, then ASTC will be concerned with the manner of discharge and the quality of stormwater entering the existing stormwater drainage system.
ASTC generally expects to receive and have the opportunity to review any Erosion and Sediment Control Plan and any clean-up procedures prior to approval of Development Documentation to assess the potential for the Development Works to cause sedimentation in the existing or proposed future ASTC stormwater drainage infrastructure.

4.26.2 Clean-up Requirements
Where sediment enters the ASTC stormwater drainage system during construction or where dust from construction activity enters the road system and the Development Works have been accepted On-maintenance the ASTC stormwater road system and/or drainage system shall be kept clean by the Developer until the end of the maintenance period. Any clean-up is to be complete in the timeframe stipulated in the letter of advice from an Authorised Officer of ASTC or the clean-up work will be done by ASTC at the end of the maintenance period, with the entire cost to be recovered from the maintenance bond.

4.27 Management of Existing Vegetation
All proposals to remove dead or damaged vegetation on land that is under the care and control of Council will need to be approved by an Authorised Officer of ASTC. Generally all applications to ASTC that would have the effect of removing or damaging vegetation on land that is under the care and control of Council, would need to be accompanied by advice from the Aboriginal Areas Protection Authority (i.e. AAPA) to establish the significance, if any, of the vegetation under the NT Sacred Sites Act and whether or not the vegetation requires special protection or treatment in a particular way (e.g. Sacred Sites Certificate).

ASTC encourages the retention of existing vegetation on Greenfield Subdivisions to help manage erosion and sedimentation until final occupation of the Development Site.

In all Greenfield Subdivisions it will be necessary for the developer to be in possession of an AAPA certificate that identifies any significant vegetation that may potentially impact on the Development Works or will eventually be included in land under the care and control of Council before road-works and stormwater plans are approved by an Authorised Officer of ASTC. ASTC may request the modification of an approved development layout to have the significant vegetation included in lands not under the care and control of Council.

4.28 Survey Marks
The Surveyor General is the authority responsible for survey marks under the Licensed Surveyors Act. A person shall not willfully remove, damage, deface or destroy a survey mark except with the explicit a priori permission of the Surveyor General or a nominated representative.

A Developer should contact the Surveyor General, or a nominated representative, whenever a survey mark is accidentally removed, damaged, defaced or destroyed or where proposed Development Works have the potential to remove, damage, deface or destroy a survey mark.

A delegate of the Surveyor General has been made available through the Department of Lands, Planning and Environment in Alice Springs.
4.29 Site Access and Construction Signage

4.29.1 General

Site access and construction signage is to be provided in a manner that does not cause a traffic hazard in the adjacent road(s) and does not result in damage to ASTC infrastructure.

4.29.2 Site Access

Temporary site access, in land under the care and control of Council, is to be designed in accordance with these Guidelines and the Developer will need to obtain an ASTC Works Permit and other appropriate permits to manage any and all stormwater runoff and traffic management issues associated with the Development Site prior to the commencement of construction activity. Access to the Development Site will generally be sealed to prevent erosion issues and to control dust issues.

Not all roads within the Municipality have been designed to accommodate heavier road haulage vehicles and where the access to a Development Site traverses roads that are under the care and control of Council, the size and weight of haulage vehicles able to access the Development Site through ASTC streets may be limited to that of a heavy rigid vehicle, unless otherwise approved by an Authorised Officer of ASTC.

Factors to be considered in approving larger vehicles for haulage to Development Sites are:

- Traffic congestion;
- Damage to infrastructure from inadequate turning paths;
- Safety at intersections including visibility and turning paths;
- Adequacy of the pavement design and the performance of existing pavement;
- Road signage and any additional road signage needed; and
- Time constraints for the operation of heavy vehicles.

4.29.3 Construction Signage

For any signage proposed for erection on land controlled by ASTC or on private property or on land that is in full view of land that is under the care and control of Council the Developer is required to obtain an ASTC Works Permit for the Erection of a Sign. Any signage that is to be erected as part of the Development Works shall be required to list out-of-hours contact details for site personnel for the convenience of the general public and to advise of any erosion, dust and noise issues.
5 REFERENCES

5.1 List of Publications

- Austroads Guide to Road Design – All Parts;
- Austroads Guide to Traffic Management – All Parts;
- Austroads Guide to Traffic Engineering Practice – All Parts;
- Austroads Design Vehicles and Turning Paths Templates;
- Austroads Technical Report AP-T36/06 - Pavement Design for Light Traffic
- ARRB Sealed Local Roads Manual – Guidelines to Good Practice for the Construction, Maintenance and Rehabilitation of Pavements (1995);
- ARRB Report 34, Stormwater Drainage Design in Small Urban Catchments;
- CSIRO, Water Sensitive Urban Design Engineering Procedures: Stormwater
- Australian Standard AS1742 Manual of Uniform Traffic Control Devices (All Parts);
- Australian Standard AS/NZS2890: Parking Facilities (All Parts);
- Australian Standard AS/NZS3500: Plumbing and Drainage (Code of Practice);
- Australian Standard AS/NZS1158: Lighting for Roads and Public Spaces;
- Australian Standard AS3798: Guidelines on Earthworks for Developments;
- Institution of Engineers Australia, Australian Rainfall and Runoff;
- National Water Commission, Evaluating Options for Water Sensitive Urban Design;
- Commonwealth Disability Discrimination Act and Regulations
- NT Local Government Act and Regulations
- NT Planning Act and Regulations
- NT Building Act and Regulations
- NT Traffic Act and Regulations
- NT Public and Environmental Health Act and Public Health Regulations
- NT Sacred Sites Act and Regulations
- NT Waste Management and Pollution Control Act and Regulations
- NT Work Health and Safety (National Uniform Legislation) Act and Regulations
# APPENDIX A

## ASTC Standard Drawings

<table>
<thead>
<tr>
<th>Drawing No.</th>
<th>Amend</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTC - 100</td>
<td>1A</td>
<td>Typical Road Cross-Sections - Urban &amp; Commercial/Industrial</td>
</tr>
<tr>
<td>ASTC - 101</td>
<td>1A</td>
<td>Typical Road Cross-Sections - Rural Residential, Rural Living &amp; Rural</td>
</tr>
<tr>
<td>ASTC - 102</td>
<td>1A</td>
<td>Typical Service Layout</td>
</tr>
<tr>
<td>ASTC - 103</td>
<td>1A</td>
<td>Conduits Under the Road</td>
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<tr>
<td>ASTC - 104</td>
<td>1A</td>
<td>Foot Paths and Cycle Paths</td>
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<tr>
<td>ASTC - 105</td>
<td>1A</td>
<td>Kerb Crossovers</td>
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<td>ASTC - 106</td>
<td>1A</td>
<td>Typical Kerbs and Gutters</td>
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<td>1A</td>
<td>Stormwater Connection to Kerb and Gutter</td>
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<td>ASTC - 108</td>
<td>1A</td>
<td>Side Entry Pit - General Arrangement</td>
</tr>
<tr>
<td>ASTC - 109</td>
<td>1A</td>
<td>Side Entry Pit - Precast Lintel Details</td>
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<td>ASTC - 110</td>
<td>1A</td>
<td>Side Entry Pit - Grate and Frame</td>
</tr>
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<td>ASTC - 111</td>
<td>1A</td>
<td>Street and Road Name Sign</td>
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<td>ASTC - 112</td>
<td>1A</td>
<td>Standard Kerb Ramp</td>
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<td>ASTC - 113</td>
<td>1A</td>
<td>Park Furniture Details</td>
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<td>ASTC - 114</td>
<td>1A</td>
<td>Park Shade Structure and Water Fountain</td>
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<td>ASTC - 115</td>
<td>1A</td>
<td>Typical Tree Planting Detail</td>
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<td>ASTC - 116</td>
<td>1A</td>
<td>Guidelines for Steep Driveway Grading</td>
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## DI Standard Drawings

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<tr>
<td>C(S)1005</td>
<td>1</td>
<td>MANHOLES &amp; INLET PITS</td>
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<tr>
<td>C(S)1010</td>
<td>1</td>
<td>CATCH DRAIN AND LETTTER BOX PIT</td>
</tr>
<tr>
<td>C(S)1100</td>
<td>5</td>
<td>STORMWATER CULVERT ENDWALLS &amp; PIPE LAYING DETAILS</td>
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<tr>
<td>C(S)1102</td>
<td>3</td>
<td>ENDWALLS TO PIPE CULVERTS 375 mm - 675 mm DIAMETER</td>
</tr>
<tr>
<td>C(S)1103</td>
<td>3</td>
<td>HEADWALLS TO PIPE CULVERTS 750 mm - 1950 mm DIAMETER</td>
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<td>C(S)1104</td>
<td>3</td>
<td>ENDWALLS TO PRECAST BOX CULVERTS</td>
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<tr>
<td>C(S)1206</td>
<td>6</td>
<td>RURAL RESIDENTIAL PROPERTY ACCESS - CONCRETE INVERT</td>
</tr>
</tbody>
</table>
APPENDIX B

Plan Presentation

Detailed design drawings that are to be submitted with an application for road works and stormwater drainage for approval by an Authorised Officer of ASTC are to comply with the following requirements. Standardisation of the presentation of plans and drawings is necessary for consistency of ASTC records and will allow quicker processing of applications.

Detailed design drawings shall generally include the following:
1. Cover sheet
2. Locality Plan
3. Subdivision Layout / Staging
4. Earthworks
5. Road Works and Drainage
6. Longitudinal Section for Each Road
7. Standard Cross-Sections of Each Road
8. Detail Plan of each Intersection, Cul-de-sac & Slow Points
9. Details of Foot Path / Cycle Path and Disability Access Points
10. Longitudinal Section of Each Drainage Line
11. Stormwater Device Details
12. Inter-lot (i.e. Rear Lot) Drainage
13. Drainage Calculations and Catchment Plan
14. Any Structural Details
15. Erosion and Sediment Control measures
16. Master Services Compilation Plan (approved by PaWC)

The following general information is required to accompany all plans for Development Works:

- Estate name (if any);
- Lot number of the parent lot and any daughter lots;
- Developer’s name and the Superintendent’s name;
- Planning approval number;
- Scales and reference to AHD;
- Plan number and sheet number;
- Schedule and date of amendments;
- North sign/arrow/pointer;
- Signed certification by an experienced designer/design Engineer; and/or
- Signed checking certification by an Engineer holding membership of the Institute of Engineers or Engineers Australia (membership type and membership number).
Scales for all plans and drawings should preferably be those recommended by Standards Australia and AUSTROADS, namely:

- 1:1, 1:2, and 1:5 and multiples of 10 of these scales; or
- Although not preferred, 1:25 and 1:125 and their multiples of ten (10) may be approved.

The following matters are generally required for any plans lodged with ASTC for approval:

- Liner dimensions are to be in metres (to 0.01 m), except for small structures, where millimetres may be approved;
- Details of methods of dimensioning should be in accordance with AS 1155 Appendix A, Metric Units in Construction;
- Road cross-sections are to be provided at 25.0 m intervals with further section to adequately show the detail eg on curves, pipe crossing of rural roads and driveways where level control is needed;
- All levels are to be in AHD with bench marks, reference pegs and permanent survey marks expressed to three decimal places (0.001 m);
- Reduced levels for road works and stormwater drainage may be expressed to three decimal places (0.001 m);
- Road grades are to be shown to 2 significant figures;
- Pipe grades are to be shown to three significant figures;
- Where appropriate plans are to show the following:
  - Legend;
  - Stage boundaries and stage numbers;
  - Road boundaries;
  - Existing natural surface and proposed constructed details;
  - North point;
  - Cross-sections are to extend to show the intersection with existing natural surface;
  - Diameter and class of all pipes; and
  - Limits of disturbance and vegetation retention;
APPENDIX C

Design Documentation Approval Application Form

New Application / Variation / Alteration / Staged Development

Development ..............................................................................................................................................

Type of Works .........................................................................................................................................

Developer .............................................................................................................................................

Address ..................................................................................................................................................

..............................................................................................................................................................

Tel ................. Fax ....................... Email ...........................................................

Project Manager .................................................................................................................................

Supervising Engineer ...........................................................................................................................

Certifying Engineer ...............................................................................................................................

Address: .............................................................................................................................................

..............................................................................................................................................................

Tel: ......................... Fax: ......................... Email: ..........................................................

The following design documentation is submitted herewith for approval by ASTC:

Plan No (including amendment details) ............................................................................................... 

..........................................................................................................................................................

Other information attached ..................................................................................................................

..............................................................................................................................................................

I/we request ASTC to assess the attached design documentation and approve the Development Works for construction. I/we undertake to pay the fees set out in the current ASTC Municipal Plan for this assessment. I/we confirm that the design documentation conforms to the requirements of the ASTC Subdivision and Development Guidelines and the requirements of any Development Permit.

Signed Developer: ..............................................................................................................................

Supervising Engineer / Project Manager:..............................................................................................
Attached

- Development Permit;
- Engineering Drawings and Landscape Drawings;
- Engineering and Landscape Specifications;
- Engineering Design Report;
- Approvals from other Authorities;
- Certified estimate of the cost of Development Works;
- All required test results and certification; and
- Any other documentation required to complete the Design Documentation necessary for ASTC approval of the Development Works.
APPENDIX D

Design Documentation Approval Checklist
For internal ASTC use as well as use by Developer / Project Manager / Superintendent.

Development………………………………………………………………………. Submission No. 1, 2, 3, 4, 5, etc…

Consultant …………………………………………………………………………Date Submitted / /

• Preliminary design discussions with ASTC? Yes / No
• Design Documentation submitted to ASTC with the following items attached:
  ➢ Proof of Appointment of Project Manager / Superintendent to act on behalf of the Developer
  ➢ Copy of relevant land use agreements, development leases and covenants, especially if Development Works are on Crown Land
  ➢ Copy of the current Development Permit(s)
  ➢ Copy of authorisation to carry our work from the owner of the land
  ➢ Design Documentation Approval Application Form and ASTC Development Assessment Fee
  ➢ Detailed design drawings (see Appendix B), including Engineer Certified design drawings and drainage calculations and details and calculations for Erosion and Sediment Control measures and landscaping details
  ➢ Engineering Design Report(s)
  ➢ Specification(s) for the Development Works, including engineering and landscaping
  ➢ Geotechnical and Soil types report(s)
  ➢ Pavement design calculations
  ➢ Structural details, including Engineer Certified design drawings and calculations
  ➢ Approvals from other Authorities
  ➢ Estimate of cost of construction of the Development Works
  ➢ Construction Management Plan, including hours of operation
  ➢ Certifications and details of Public Risk Insurance
All plans must be Checked and Signed by an Authorised Officer of ASTC.

The requirements are generally as follows:

Two copies of all drawings, at A3 Size (and legible with the naked eye), are required. Drawings are to include but not be limited to the following:

- Landscape and Irrigation (concept drawings if the details are not finalised);
- Stormwater Management and Erosion and Sediment Control;
- Engineering drawings are to include as they apply to the Development;
  1. Cover sheet
  2. Locality drawing
  3. Subdivision layout / staging (if applicable)
  4. Earth works
  5. Road works and stormwater drainage
  6. Longitudinal and cross-sections for roads
  7. Detail plan of each intersection, cul-de-sac and hazard point
  8. Longitudinal section of each drainage line
  9. Drainage calculations and catchment plan
  10. Foot path layout

Payments
Design Approval Fee (relevant fee listed in the current ASTC Municipal Plan)

Checked by ................................................................. Date / /

Comments ...........................................................................................
## APPENDIX E

**ASTC Pre-start Meeting Form**

<table>
<thead>
<tr>
<th>Date:</th>
<th>ASTC Reference No. (for all correspondence):</th>
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</thead>
<tbody>
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<table>
<thead>
<tr>
<th>Development Name</th>
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<table>
<thead>
<tr>
<th>Project Manager:</th>
<th>Supervision By:</th>
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<table>
<thead>
<tr>
<th>Contractor:</th>
<th>ASTC Rep:</th>
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<th>Quality Control Coordinator:</th>
<th>A/H No:</th>
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<table>
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<th>Works Start Date:</th>
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<th>Price of Works:</th>
<th>Sub-Contractors:</th>
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<table>
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<tr>
<th>Period of Works:</th>
<th>Suppliers:</th>
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<table>
<thead>
<tr>
<th>Work Hours (e.g. 6:00 am – 6:00 pm Monday to Saturday)</th>
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<tbody>
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<table>
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<tr>
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<th>Attendees:</th>
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<tr>
<td>2.</td>
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<tr>
<td>3.</td>
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<tr>
<td>4.</td>
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<tr>
<td>5.</td>
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<tr>
<td>6.</td>
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<tr>
<td>7.</td>
</tr>
<tr>
<td>8.</td>
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<table>
<thead>
<tr>
<th>1 (a)</th>
<th>Work Place Health &amp; Safety and Public Liability Insurance (provide evidence to ASTC)</th>
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</table>

<table>
<thead>
<tr>
<th>1 (b)</th>
<th>Site Induction?</th>
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<table>
<thead>
<tr>
<th>2</th>
<th>Traffic Control – On ASTC roads - approval of traffic management plan</th>
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<table>
<thead>
<tr>
<th>3</th>
<th>Any AAPA approvals/permitted work areas</th>
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</thead>
<tbody>
<tr>
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<table>
<thead>
<tr>
<th>4</th>
<th>Filling draining to the roads?</th>
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<table>
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<tr>
<th>5</th>
<th>Existing services affected by the works? - approvals</th>
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<table>
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<th>6</th>
<th>Landscaping and Parks development - Comments</th>
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<th>Geotechnical Consultants:</th>
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<td></td>
<td>Work Required:</td>
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|                       |                           |
|                       |                           |
| 8 | Any retained vegetation? |
| 9 | Dust and Mud control |
| 10 | Protection of adjacent properties |
| 11 | Erosion and Sediment Control Plan – comments |
| 12 | Design Alterations? |
| 13 | Other Issues? |
| 14 | Inspections Required |
| 14.1 | Sub-grade |
| 14.2 | Pre-seal |
| 14.3 | On-Maintenance |
| 14.4 | Off-Maintenance |
| 14.5 | Final Inspection |
| 14.6 | Audit inspections |
| 14.7 | Hold Point Inspections |

**General Matters**

| 1 | SEP’S are to be constructed to Standard Drawing ASTC – 108 |

| 2 | Construction of concrete foot path/cycle paths is to be undertaken in a manner that assures the maximum performance under loads. Failure from obvious substandard construction will need to be repaired by the developer |

| 3 | CBR testing is to be undertaken on the weakest material in the zone 0 mm - 600 mm below sub-grade level. |

**Other Comments**
Appendix F

On-Maintenance Process Check List
For internal Council use as well as Developer / Project Manager / Superintendent (Engineering Consultant)

Project ........................................................................................................................................

Superintendent .........................................................................................................................

Application Date / /

Inspection Date / /

- Application for Works to be placed On-Maintenance (completed and attached)
- On-Maintenance Inspection complete and reinspected (if necessary)
- Application to ASTC for acceptance of Maintenance Security Deposit and Uncompleted Works Bond (if applicable)
- Submission of Certification of the Works

2 Road Works and Drainage
3 Landscape / Irrigation
4 Structural
5 Other Authorities
6 Any other certifications required

- Submission of As-Constructed Drawings in
  1. Hard copy
  2. Digital copy (in the form specified)
- Submission of Clearances
  1. Private Owners
  2. Other Authorities

- Submission of required test results and reports
- Submission of the Cadastral Survey Plan with Final Easement Details and confirmation that the Survey Pegs are in place
- Submission a Statement of the value of the Maintenance Security Deposit base on the final cost of the works and submission of any top up of the Maintenance Security Deposit.

Checked ........................................................................................................................................

Date of On Maintenance approval / /

Comments ....................................................................................................................................
....................................................................................................................................................
Appendix G

On-Maintenance Site Inspection Checklist

The Developer/Project Manager/Supervising Engineer/Superintendent must request the On-Maintenance Inspection in writing and any application is to be accompanied by a completed and signed copy of the On-Maintenance Site Inspection Checklist. The On-Maintenance Inspection is a joint site inspection with the Developer/Project Manager /Supervising Engineer/Superintendent, Civil Contractor and an Authorised Officer representing ASTC who shall inspect the following matters:

<table>
<thead>
<tr>
<th>Item</th>
<th>Verification (Yes/No/NA)</th>
<th>Comment</th>
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</thead>
<tbody>
<tr>
<td><strong>Stormwater Drainage System</strong></td>
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</tr>
<tr>
<td>(a) Pipe work has been visually inspected and is satisfactory i.e.</td>
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<td></td>
</tr>
<tr>
<td>• Free from debris and siltation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Pipe joints satisfactory with no deflection or movement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• No visible sign of trench backfill subsidence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• No exposed reinforcing in cut pipe ends</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• CCTV report provided</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) gully pits and manholes have been visually checked and are satisfactory i.e.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• No ponding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• No excessive cracking of reinforced concrete works</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Clear of silt and debris</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• All mortar in place and no excessive spalling or cracking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• No visible subsidence</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Earthworks**

<table>
<thead>
<tr>
<th>Item</th>
<th>Verification (Yes/No/NA)</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Slopes to conform with the stormwater catchment plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Erosion and sediment control protects Council drainage structures</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Road works**
(a) Road pavement has been visually inspected and is satisfactory i.e.

- No damage to AC surface
- No ponding
- Clear of silt

(b) Kerb and channel has been visually inspected and is satisfactory i.e.

- No excessive cracking to concrete works
- No ponding
- Service conduit markings
- AC flush or above the lip of the gutter

(c) Line marking and road signage adequate

Miscellaneous

(a) Pathways and concrete works satisfactory

(b) Street signage and road markings are as per approved plans and are satisfactory

Other Matters

(a) Specific site matters are complete and are OK

(b) As Constructed details provided

(c) Service Authorities certificates provided

(d) Test results as per ITP provided

Superintendent Signature ____________________________  IEA Qualification

Name: ________________________________________________  _____________

Date: ________________________________________________

Council Notes: __________________________________________
Appendix H

Off-Maintenance Site Inspection Checklist

The Developer/Project Manager/Supervising Engineer/Superintendent must request the Off-Maintenance site inspection in writing and that application is to be accompanied by a completed and signed copy of the Off-Maintenance Site Inspection Checklist.

The Off-Maintenance site inspection is a joint site inspection with the Developer/Project Manager/Supervising Engineer/Superintendent, Civil Contractor and an Authorised Officer representing ASTC and shall inspect the following matters:

<table>
<thead>
<tr>
<th>Item</th>
<th>Verification</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stormwater Drainage System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Pipe work has been visually inspected at manholes and pits and is satisfactory i.e.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Free from debris and siltation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Pipe joints with structures are stable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• No visible sign of trench backfill subsidence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• No exposed reinforcing in cut pipe ends</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) SEP’S and manholes have been visually checked and are satisfactory i.e.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• No ponding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• No excessive cracking of reinforced concrete works</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Clear of silt and debris</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• All mortar in place</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• No visible subsidence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Items repaired during maintenance are OK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earthworks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) Erosion and sediment control protects Council drainage structures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Road works</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
(a) Road pavement has been visually inspected and is satisfactory i.e.

- No damage to AC surface
- No ponding, subsidence or cracking
- Clear of silt
- No depression in the AC at the gutter

(b) Kerb and channel has been visually inspected and is satisfactory i.e.

- No excessive cracking to concrete works or damage to the top of kerb
- No ponding
- Service conduit markings are OK

(c) Line marking and road signage adequate – does line marking need to be re-painted

Miscellaneous

(a) Pathways and concrete works satisfactory with no excessive breakages

(b) No trip edges in the road verges

Other Matters

(e) Specific site matters are satisfactory

(f) Significant repairs during maintenance are OK

Superintendent Signature __________________________________          IEA Qualification
Name: __________________________________________________          ____________________
Date: ____________________________________________________
Council Notes: __________________________________________________________________________
______________________________________________________________________________________
Appendix I

Bonding Application

All applications for External Works Bonds, Construction Deposits and Maintenance Deposits shall be made on the attached form and in accordance with the conditions set out below:

Monetary Guarantee

The Monetary Guarantee may be lodged with ASTC in either of the following formats:

a) A Bank Guarantee from an approved Financial Institution;
b) Cash.

Developer’s Obligations

The applicant shall, at its own costs:

a) Provide a Monetary Guarantee to ASTC to guarantee any required action;
b) Undertake any actions required within a prescribed period.

ASTC Obligations

ASTC shall undertake the required action where the Developer has:

a) Complied with the requirements of the approval of Development Works given by ASTC;
b) Provided ASTC with a formal application and a Monetary Guarantee;
c) Paid all costs associated with the preparation and lodgement of the Monetary Guarantee;
d) Satisfied ASTC that the required action can be completed within the prescribed period.

Default by the Developer

a) Where the applicant fails to complete the required action, ASTC shall state a fair estimate of cost of completing the Required Action including all costs, charges and overheads associated with completing the required action.
b) ASTC may recover the fair estimate of cost of completing the required action from any monies or bank guarantees lodged to guarantee the required action.

Use of Monetary Guarantee

ASTC may apply any monies recovered following default by Developer to any of the following actions:

a) Carry out the required action, or part thereof, within the prescribed period;
b) Repair any incorrectly or partly completed works undertaken as part of the required action;
c) Repair any infrastructure damaged as a result of undertaking the required action;
d) Reimbursement for any damages that may have been suffered as a result of undertaking the required action.

Release of Monetary Guarantee

ASTC shall:

a) Release the Monetary Guarantee where the Developer has completed the requirements, as set out above;

or

b) reduce the Monetary Guarantee, where agreed during the application process, when the required action is completed, provided that the amount of the Monetary Guarantee retained is equal to 1.5 times the reasonable estimate of the cost of completing the required action, including any Maintenance Deposit.

Application for Bonding of Development Works

If the Developer is required to lodge a Bond with ASTC then this Bond shall to comply with the provisions in the ASTC Subdivision and Development Guidelines.
ASTC Bonding of Works Application Form

Date

Applicant

Development

Bonding for

Monetary Amount

Requested Action

Required Action

Prescribed Period

Bond Instrument

Applicant’s Signature