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1 PREFACE

The Austroads series of Guides for provision and management of road and transport infrastructure provides a level of consistency across all jurisdictions in Australia and New Zealand. All road authorities have agreed to adopt the Austroads Guides as the primary technical reference, together with the relevant Australian and New Zealand Standards.

The Australian Capital Territory has adopted the Austroads Guides, and has issued a revised series of documents to reflect this development in standards and specifications for practice in the ACT. The ACT Government accepts the principles and general guidance in the Austroads Guide to Road Design. This Municipal Infrastructure Standard is issued to clarify any exceptions or additional requirements for implementation in the ACT, and to identify relevant complementary documents.

This present document is part of the ACT Municipal Infrastructure Standard (MIS) series spanning the broad scope of municipal infrastructure development and management in the ACT. Whilst based on the earlier Urban Services Design Standards for Urban Infrastructure Works, this document has been significantly expanded to incorporate new technologies and to bring it into line with Australian best practice. This revised series uses AUS-SPEC (October 2013) format wherever practical.

For the purposes of this series of standards, municipal infrastructure pertains to roadworks (except arterial and higher order roads), stormwater drainage and landscaping required to service residential, commercial and industrial estates for both greenfield and urban in-fill developments. They are works to be owned and maintained by Territory and Municipal Services (TAMS) and to be constructed either by a developer and gifted to the ACT Government or constructed as part of the ACT Government Capital Works program. In all developments, if these Design Standards cannot be appropriately applied the proposed innovation should be discussed with and approved by TAMS.

1.1.1.1 Municipal Infrastructure Standards

MIS 01 Street planning and design
MIS 02 Earthworks and site grading
MIS 03 Pavement design
MIS 04 Subsurface drainage
MIS 05 Active travel
MIS 06 Verges
MIS 07 Driveways
MIS 08 Stormwater
MIS 09 Bridges and related structures
MIS 10 Guardrails, fences and barriers
MIS 11 Off-street parking
MIS 12 Guide signs
MIS 13 Traffic Control Devices
MIS 14 Public lighting
MIS 15 Urban edge Management Zone
MIS 16 Urban open space
MIS 17 Shopping centres and other public urban spaces
MIS 18 Sportground design
MIS 20 Street and park furniture and barbeques
MIS 21 Playgrounds and playground equipment
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2 URBAN EDGE MANAGEMENT

2.1 GENERAL

2.1.1 RESPONSIBILITIES

2.1.1.1 Objectives

General: Plan, design and document for an appropriate interface between the urban area and surrounding public and unleased land. The urban edge forms part of the urban development area and is the buffer strip of land between the edge road or private lease and rural or non-urban areas. This Design Standard applies to existing and future urban edges.

Exclusions: The urban edge does not include the road reserve or edge road which forms part of the municipal area, refer to MIS 01. The urban edge generally does not include areas of reserved land such as Nature Reserves which have a separate Plan of Management.

Provide consideration for the following:

- Sensitivity to existing landscape character and effective functional and visual transition between urban lands and broad scale open space at realistic capital cost.
- Cost effective management practices can be applied.
- Appropriate bush fire hazard management strategies.
- Conservation of natural values and protection of threatened species and communities.

2.1.1.2 Precedence

Where any document except legislation, the Territory Plan or a Plan of Management issued in conjunction with this Design Standard includes technical requirements that conflict with this Design Standard the requirements of this Design Standard take precedence.

2.1.2 CROSS REFERENCES

2.1.2.1 Commonwealth Legislation

Environment Protection and Biodiversity Conservation Act 1999

2.1.2.2 ACT Legislation

Emergencies Act 2004
Environmental Protection Act 2001
Nature Conservation Act 2014
National Capital Plan
Pest Plants and Animals Act 2005
Public Roads Act 1902
Public Unleased Land Act 2013
Territory Plan 2008 and related Codes
Tree Protection Act 2005
Water Resources Act 2007
Work Health and Safety Act 2011
2.1.2.3 ACT Government Strategic Documents

AP2 - A new climate change strategy and action plan for the ACT
ACT Lowland Woodland Conservation Strategy (Action Plan No 27)
ACT Pest Animals Management Strategy 2012 – 2022
ACT Weed Strategy 2009-2019
Strategic Bushfire Management Plan for the ACT
Threatened Species Action Plans

2.1.2.4 Design standards

The following standards are related to this standard:

MIS 01 Street planning and design
MIS 05 Active Travel
MIS 08 Stormwater
MIS 10 Guardrails, fences and barriers
MIS 12 Guide signs

2.1.2.5 TAMS Reference Documents

Reference document 4 Protection of public landscape assets
Reference document 6 Design Acceptance submissions
Reference document 7 Operational acceptance submissions
Reference document 8 WAE quality records
Reference document 9 Final acceptance submissions
Reference document 10 Landscape consolidation

2.1.2.6 Other documents

The following documents are related to this standard:

Bicentennial National Trail – Memorandum of Understanding
Managing the Urban Edge – Discussion paper December 2013, ACT Conservation Council

2.1.3 REFERENCED DOCUMENTS

The following documents are incorporated into this design standard by reference:

2.1.3.1 Australian Standards

AS/NZS 2890 Parking facilities
AS 2890.2-2002 Off-street commercial vehicle facilities

2.1.3.2 Other publications

Austroads

AGPT06/09 Guide to Pavement Technology-Part 6 Unsealed pavements
2.1.4 INTERPRETATIONS

2.1.4.1 Abbreviations

General: For the purposes of this Design Standard the following abbreviations apply:

ACTEA: ACT Equestrian Association.
IAPZ: Inner Asset Protection Zone.
LATM: Local Area Traffic Management.
NCC: National Construction Code
OAPZ: Outer Asset Protection Zone.
SBMP: Strategic Bushfire Management Plan for the ACT.
TAMS: Territory and Municipal Services, ACT Government and its successors.

2.1.4.2 Definitions

General: For the purpose of this Design Standard, the definitions of terms used to define the components of the road reserve are in conformance with AS 1348, Glossary of Austroads Terms and AGRD03.

Other definitions that are relevant to this Design Standard are outlined below,

- Articulated float: Fire fighting truck and trailer carrying a D6 size dozer, refer to ESA.
- Asset Protection Zone: Includes inner and outer zones; an area in or beside urban development that is designed and managed to reduce the risk of adverse impacts from bushfires on assets (public or privately owned). Refer to the SBMP.
- Block: A parcel of land, as defined in the Territory Plan.
- Dormant trails: Tracks that are accessed irregularly for maintenance or fire fighting requirements.
- Rigid float: Fire fighting tankers and large rural tankers with a rigid body, refer to ESA.
- Urban edge: The edges to the city, but not a defined or fixed distance. Includes urban and non-urban areas and may contain Outer, Inner and House Asset Protection Zones.
- Urban interface: Where urban land uses meets non-urban land uses, the line between the Outer and Inner Asset Protection Zones.
2.2 PRE-DESIGN PLANNING

2.2.1 CONSULTATION

2.2.1.1 TAMS and other Authorities

Requirements: Consult with TAMS and other relevant Authorities during the preparation of design. In addition to the requirements of this Design Standard, identify the specific design requirements of these authorities.

TAMS: Consult on access for authorised vehicles to undertake tasks such as fire management, grass mowing and slashing, cut-off drain management, flora and fauna management and law enforcement. Discuss the proposed layout and pavement surfacing.

EPD: Consult on protecting any significant features such as ecologically significant habitats, cultural and heritage sites and geological features when determining the urban edge. Consult also on equestrian trail requirements.

CMTEDD: Consult on any future proposed infrastructure or strategic planning studies for the site.

ESA: Comply with bushfire management and emergency access requirements.

Bushfire Prone Areas: Conform to the requirements of the Bushfire Risk Mitigation General Code.

Utilities: Consult on access for authorised vehicles to utility assets located within or adjacent to the urban edge.

2.2.1.2 Utilities services plans

Existing site conditions: Obtain plans from all relevant utilities and other organisations whose services, trees, important ecological habitats or other assets exist within the area of the proposed development. Plot this information on the relevant drawings including the plan and cross-sectional views. As a minimum, designs should refer to ‘Dial-before-you-dig’ information that is readily available in most areas.

Responsibility: Confirm service plan’s accuracy with onsite inspection and also potholing if deemed necessary.

2.2.1.3 Safety in Design

Requirement: Implement safety in design processes in accordance with the Work Health and Safety Act.

Bushfire risk assessment: Prepare in accordance with the NCC and the Bushfire Risk Mitigation General Code.

2.2.1.4 Proposed new services

Requirement: Detail any new services proposed or relocated as part of the proposed works.

2.2.1.5 Protection of existing infrastructure

Requirement: Obtain drawings of existing infrastructure including landscaping within and at the interface to the site. Consult with the asset owners, where this is not covered by the Development Application process, to identify asset protection requirements.

Protection of existing trees: As a minimum, prepare a Tree Management Plan for TAMS approval prior to any works adjacent to existing trees.
2.2.2 PLANNING

2.2.2.1 General

Layout: Establish an adequate buffer strip containing:

- Layout for management fencing.
- Fire break in accordance with ESA requirements.
- Access tracks for land management and other maintenance authorities.
- Controlling public and unauthorised vehicle access.
- Provision for emergency access.
- Fire fighting water supply and hydrants.
- Catch and cut-off drains.
- Electricity and other services.

2.3 DESIGN

2.3.1 DESIGN CRITERIA

2.3.1.1 General

Maintenance and fire control: The general design requirements for an urban edge zone are to:

- Provide direct vehicle access and gates from cul de sacs and loop roads to the urban edge zone.
- Ensure access is possible through municipal streets, including where LATM features have been installed.
- Provide co-located maintenance tracks and catch drain adjacent to property boundaries.
- Provide easements for overland stormwater flow through open space, refer to MIS 08.
- Provide secondary catch drains where required
- Retain existing trees and other native vegetation, while enabling tree cover breaks to be established in areas with continuous canopy cover. Where possible, retain important habitat features such as hollow bearing trees, surface rocks or fallen logs.
- Avoid creating gaps of greater than 100m between tree trunks to provide appropriate cover for native fauna.
- Provide an easily maintained and mowable strip of land along the boundary of blocks.
- Establish fencing along the open space boundary, refer to MIS 10.
- Avoid small, steep, difficult to maintain areas, particularly rocky outcrops.
- Provide a buffer between development and environmentally sensitive areas in accordance with the requirements of EPD and the Development Application approval conditions.
- Provide an offset between development and utilities which require a buffer in accordance with the requirements of the utility operator.
- Consider the ongoing management of the area by providing access for scheduled bushfire fuel reduction and minimise opportunities for weeds to flourish.
- Provide opportunities for native wildlife movement to and from urban areas where the site has been identified for this purpose on actmapi.
2.3.2 FIRE ACCESS AND MAINTENANCE TRACKS

2.3.2.1 General

Provide: All weather access tracks immediately adjacent to the back boundaries of the residential properties adjoining the urban edge zone. Consider the location of retaining walls.

Access and safety: To the Crime Prevention through Environmental Design General Code.

2.3.2.2 Width

Nominal width: 5 m, conform to the SBMP.

Minimum pavement width: 3.5 m, unless otherwise approved by TAMS.

Intermittent obstructions: The effective width shall not to be constrained by obstructions such as electricity poles.

Passing bays: In the case of a minimum width track, and where the terrain does not provide a natural shoulder to allow vehicles to pass, the design shall include pull over bays at a maximum spacing of 250 m.

2.3.2.3 Crossfall

General: Design with the crossfall into the slope, include consideration for the following:

- Control of surface runoff,
- Reduction of environmental impact.
- Prevent erosion and seepage across the track surface and reduce long term maintenance requirements.

Minimum slope: 3%, unless otherwise approved by TAMS and ESA.

Maximum slope: 10% unless otherwise approved by TAMS and ESA.

2.3.2.4 Horizontal alignment

Location: Where applicable, the track (toe of the batter) shall be aligned adjacent to the residential property boundaries while still retaining a reasonable horizontal alignment for the operation of large vehicles such as fire tankers and large machinery.

Rigid Float access: Avoid sharp turns and corners that would prevent or hinder the access of fire tankers or large maintenance machinery. Design for Rigid Float access to the SBMP, unless otherwise approved. In steep or difficult topography consult with TAMS and ESA for specific access requirements.

2.3.2.5 Longitudinal gradient

Minimum grade: 0.5% to allow for surface drainage.

Maximum gradient: 10% for the safe operation of emergency and other heavy vehicles.

Steep gradients: Consult with TAMS and ESA at the early planning stage where grades over 10% are proposed. Provide consideration for the type of vehicles, track surfacing and stormwater runoff control. Provide appropriate treatment for steep batters and where possible, minimise cut and fill requirements.
2.3.2.6 Access

General: Provide access from the municipal road network, pedestrian ways or floodways.

Standard: To AS 2890.2.

Location: Consult with TAMS and ESA.

Access route: Demonstrate vehicle access routes for construction and maintenance vehicles as part of detailed design.

Associated drainage structures: Locate cut-off drains and secondary spillways with these access points to reduce flooding of leases should the cut-off drain becomes blocked. No structures should be allowed to impinge on the access.

Access point drainage: If part of a cut off drain secondary spillway discharges to the access point, the access track may require kerb and guttering to prevent the edge of the track being eroded or undermined.

Control of unauthorised access: Provide appropriate rural or ranger gates and fencing, refer MIS 10. Where gates are installed, consider requirements for queuing, parking or turning around at the access point.

2.3.2.7 Access from the track to publicly managed land

General: Provide clear access from the management track to adjoining publicly managed land that is not impeded by drains, fences, rocks and other obstacles.

Take off points: Where the catch drains or cut batters restrict vehicle access provide access at strategic locations, typically at 300 to 500 m intervals, consult with ESA. This may involve culverts, kerb transitions or the laying back of cut batters to form ramps with 20 % maximum gradient.

2.3.2.8 Pavement surface

General: The selection of an appropriate track surface will be determined by a number of factors which include:

- Soil type.
- Visual impact.
- Track gradient.
- Stormwater flows.
- Specific management requirements, refer to TAMS.

Selection: Apply different surfaces along a length of track in response to changing site conditions. Where required, short sealed sections may be approved. In particular, provide a stabilised surface between the access point and gate. Consider the following:

- Compacted crushed rock: The most commonly used pavement surface for maintenance trails. Apply erosion control measures on steep slopes and hard wearing surface.
- Two coat seal: Best option from a long term maintenance point of view for slopes up to 10%. Not suitable on steeper grades as rutting can occur and also unsuitable as an equestrian trail.
- Asphaltic Concrete: Best option for steep slopes to provide low maintenance and long term trafficable surface.
- Permeable concrete grass paving: Useful as a functional yet visually unobtrusive surface on access points between residential blocks.
- Reinforced concrete: Use as a low maintenance solution for sections of track on steep grades or drainage spillway crossings. Concrete can be visually intrusive, although this can be partly overcome by the full depth suitably coloured oxide.

- Dormant trails: Tracks that are unlikely to have regular access should be designed to have minimum maintenance requirements.

Sealed pavement design: To MIS 03.

Unsealed pavement design: To AGPT 06.

2.3.3 FENCING

2.3.3.1 General

General: Provide fencing and gates to secure nature reserves and rural land from unauthorised access.

Design: Conform to MIS 10.

2.3.3.2 Materials

Standard: To MIS 10.

Drainage: If fencing is to cross cut-off drains, the part of the fence within the drain is to have hinged flap to allow water and debris to flow under the fence without blocking.

2.3.4 SLASHED GRASS AREAS

2.3.4.1 General

General: The maintenance track generally defines the boundary between two different intensities of maintenance.

- An outer zone immediately adjacent to the track is to be provided in a condition suitable for slashing.

- A inner zone between the edge of the track and the property boundary constitutes a service corridor and is generally maintained to the standard of other urban open space.

2.3.4.2 Inner slashing strip

Desirable width: 5 m.

Slope: 1:4 maximum, unless otherwise approved by TAMS.

Ground surface: Within this zone remove rocks, boulders, surface irregularities and other impediments to slashing.

Reinstatement: Plant disturbed areas with non-invasive grass species, refer to MIS 25. Undertake a site specific risk assessment to assess reinstatement requirements.

Native grasses: Revegetation in areas of known conservation value or adjacent to conservation reserves should be undertaken with native species. Refer to MIS 25.
2.3.4.3 Outer slashing strip

Desirable width: 8m minimum.

Slope :1:4 maximum. Minimise the requirement for manual vegetation management. Consult with TAMS if areas are steeper than 1:4 or if large boulders or bedrock are exposed. In these circumstances the width of the zone may be reduced to 3 metres, with fire fuel reduction performed by hand held machinery such as mowers and brush cutters.

2.3.5 FIRE MANAGEMENT ZONE

General: To the SBMP. Where there is conflict between fire management and conservation priorities, requirements of the Emergencies Act shall take precedence for the prevention of damage to persons or property in the event of a fire. Catch and cut off drains

2.3.5.1 General

Design: To MIS 08.

General: Integrate drains with the maintenance track. Locate the drain on the high side of the track to minimise water running onto the track and erosion of the track. Form by embankment building or by excavating into the hillside. Provide access to areas above the drain.

- Control surface runoff, do not direct concentrated overland flows into adjacent blocks.
- Avoid construction of a separate stormwater structure such as a levee bank or swale to reduce environmental impact subject to the stormwater management plan.
- Prevent erosion and seepage across the track surface and reduce long term maintenance requirements.
- Manage the quality of discharge water. Do not discharge stormwater into environmentally sensitive areas.

2.3.6 WILDLIFE MANAGEMENT

2.3.6.1 General

Requirement: Where the urban edge is adjacent to areas of known conservation value or adjacent to conservation reserves ensure that the design of the urban edge enhances the opportunity for wildlife movement through the urban edge. Consider the following:

- Design buffer areas to retain a high level of native species cover or reinstate non-invasive species with a high level of cover to reduce the opportunity for weeds to flourish.
- Retain existing flora for landscape wherever possible and provide clumped shrub planting in close proximity to retained trees to provide appropriate habitats.
- Utilise clumped shrub planting to ensure that the distance of bare ground between suburban trees and nearby bushland does not exceed 100m.
- Manage aquatic and riparian ecosystems to enhance the ecosystem in terms of flows, water quality and aquatic connectivity.

2.3.7 SERVICE EASEMENTS

Location: Locate services such as electricity, stormwater, water, gas and telephone within a service easement between the track and the property boundaries.

2.4 DOCUMENTATION

Requirements: Comply with Requirements for Design Acceptance Submissions.