



# Coombs Residential Estate

## EDP Design Response Report

Job Number YN292347

Land Development Agency

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**Cardno Young Pty Ltd**  
ABN 24 008 579 404  
14 Wormald Street  
Symonston ACT 2905  
PO Box 7217, CPBC  
ACT 2610 Australia  
Telephone: 02 6112 4500  
Facsimile: 02 6112 4599  
International: +61 2 6112 4500  
canberra@cardno.com.au  
www.cardno.com.au

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## **1. INTRODUCTION**

The Molonglo Valley, to the west of Lake Burley Griffin, is the future land release to house Canberra's growing population. Over the next 40 years the development of the valley is expected to house over 30,000 residents. Coombs and Wright are the first residential developments. Coombs is located between the Molonglo River Corridor and the future John Gorton Drive, whilst Wright is located south-west of Coombs between Uriarra Road, Cotter Road and the proposed John Gorton Drive.

The development of these two areas will set the benchmark for the quality of development in Molonglo which capitalises on the site's unique location adjoining the Molonglo River corridor, Stromlo Village, and Mount Stromlo (Stromlo Forest Park) and utilises these natural features and views to Black Mountain and the Brindabella Ranges to create easily identifiable landmarks to assist in wayfinding.

The Coombs Residential Estate is to be developed by the ACT Government. It is being managed by the Land Development Agency (LDA), an agency established to develop land in the ACT on behalf of the Territory in accordance with the principles and policies laid down in the Territory Plan.

This Estate Development Plan report outlines the key planning objectives and principles upon which the Coombs Residential Estate is planned. The Coombs Estate Development Plan provides the important planning requirements of the Concept Plan and the LDA's Draft Coombs, Wright & North Weston (Part) Urban & Landscape Guidelines.

This Coombs Estate Development Plan provides for 651 residential blocks, 21 Multi Unit (M/U) sites, 9 mixed use commercial/residential blocks, a local centre, and a school precinct incorporating a primary school, school oval, community and child care sites. The Estate contains blocks for one or two storey housing including, small block courtyard (SR 3), premium villa (SR3), villa (SR1), and compact blocks (C1 and C2), and a number of larger traditional and custom blocks (SR5) up to 1,000m<sup>2</sup>. This mix provides a choice of block sizes suitable to allow a wide range of housing design at various price points.

The block layouts have been designed in accordance with Rule 62 and 63 of the Concept Plan and the Draft Territory Plan Variation 301 regarding solar access provision.

This Estate Development Plan has been prepared based on the Guidelines for the Preparation of Estate Development Plans (ACTPLA, February 2007) and as defined in the Territory Plan and Section 94 of the *Planning and Development Act 2007*.

The Estate Development Plan is submitted under the Impact Track development application and assessment process. The ACTPLA has already conducted extensive environmental assessments associated with the development of the Molonglo Structure Plan and based on these assessments the Planning Minister on 22 July 2009 granted an exemption for the need to submit an Environmental Impact Statement with the development applications for both Wright and Coombs (see Appendix I).

### **DRAWING SCHEDULE**

#### **Civil Design and Services (Cardno Young Pty Ltd)**

Locality Plan and Drawing List	292347-C-LOC-01
Land Use Plan	292347-C-LUP-01
Estate Development Plan	292347-C-EDP-01 to 04
Block Details Plan	292347-C-BDP-01 to 07
Road Hierarchy Plan/Traffic Analysis Plan	292347-C-RHP-01 to 05
Chainage Plan	292347-C-CHP-01 to 04
Road Longitudinal Sections	292347-C-RDLS-01 To 40
Road Typical Sections	292347-C-TYP-01 to 07
Slope Analysis Plan	292347-C-SAP-01 to 04

Public Transport Network & Off Road Movement System	292347-C-PATH-01 to 04
On Street Parking Plan	292347-C-PP-01 to 04
Waste Collection Plan	292347-C-WCP-01 to 04
Bushfire Risk Assessment & Management Plan	292347-C-BFP-01 to 05
Preliminary Fill Plan	292347-C-FILL-01 to 04
Environmental Management Concept Plan	292347-C-EMCP-01 to 02
Vehicular Turning Paths	292347-C-VTP-01 to 20
Road Details Plan	292347-C-RDP-01 to 08
Staging Plan	292347-C-STG-01
Water Sensitive Urban Design Outcomes Plan	292347-C-WSUD-01 to 03
Concept Master Plan	292347-C-CMP-01

**Master Plans**

Stormwater Master Plan	292347-C-SWMP-01 to 04
Sewer Master Plan	292347-C-SMP-01 to 06
Water Supply Master Plan	292347-C-WMP-01 to 02

**Landscape and Urban Design (John Easthope and Associates)**

Energy Audit	EAP-01 to 07
Block Typology Plans	BTP-01 to 07
Landscape Master Plan	LMP-01 to 07
Tree Retention Plan	TRP-01 to 09
Multi Unit Development Intentions Plan	DIP-01 to 03
Building Envelope Plan	BEP-01 to 05
Planning Control Plans	PCP-01 to 07
Tree Management Plans	TMP-01 to 07
Concept Open Space	OSC-01
Shadow Diagrams	SHD-01 to 03

## 1.1. Site Characteristics

### Location and Views

Coombs Estate is a greenfield site located in the Molonglo Valley. The proposed development site is approximately 110 hectares in area and is flanked by the proposed John Gorton Drive to the south, the Molonglo River to the north (and partially to the north east and north west), Holdens Creek to the west and the proposed North Weston Pond to the east.

Site characteristics are:

- Site is surrounded by green ridges;
- Site undulates with ridges, and local valleys. Two main ridges in a north south orientation predominate in the east and west of the site;
- Markedly limited amount of land below 5% slope;
- Vistas to Black Mountain, Mount Stromlo, Dairy Farmers Hill, Arboretum and surrounding hilltops;
- Visual connection to key Canberra axes, and vista points;
- Strong vertical landform, in immediate vistas; and
- Molonglo Valley environmental assets.

### Existing Vegetation

The site was previously a pine plantation destroyed in the 2003 bushfires. As part of the Molonglo Structure Plan ACTPLA conducted a tree assessment to identify significant trees to be retained. This study concluded there are no significant trees in Wright or Coombs (see Appendix E).

Associated with the EDP, the LDA conducted an additional tree assessment of the immature eucalypts which are generally located on the Coombs ridge. The tree assessment was undertaken by dsb Landscape Architects in October 2009.

These trees have some cultural significance as they were planted by ACT Forests for the women's Jog for Life Organisation. The trees originally linked Deeks Park with the ridge of Coombs, however the majority were lost after the bushfires. The remaining trees located along the Coombs ridgeline are generally considered to be in poor condition or form, however the Estate Development Plan has been developed to retain these trees where possible. In particular the proposed road reserves for Road C03, C08E and C08W have been widened to accommodate retention of the existing eucalypts.

In addition it is proposed to retain some existing pines in two proposed local parks. The first is adjacent to the town centre and bounded by Road C03, Road C07, Road C08 and Road C28. The second is on the east side of the ridge in West Coombs and bounded by Road C23, Road C37 and Road C40. The retention of pines is included as a reference to the sites former usage as a pine plantation. Tree retention plans are included within the EDP set.

### Environmental Protection and Biodiversity Conservation (EPBC)

Ecological studies conducted by ACTPLA in Coombs found a single threatened species, the Pink Tail Worm Lizard (PTWL). As such, a referral under sections 75 and 77A of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) was made on 25 August 2009 referencing the proposed Coombs residential estate and associated regional infrastructure (outside the scope of this EDP).

A decision notification was issued on 28 September 2009 by the Commonwealth (Department of the Environment, Water, Heritage and the Arts [DEWHA]). The notification determined the proposed development of Coombs is not considered a controlled action providing development is undertaken in accordance with the listed conditions.

On 2 March 2010 ACTPLA applied to amend the original determination and down grade a number of PTWL potential Habitats based on additional field studies. Subsequently the amended determination was issued by DEWHA on 16 April 2010 again finding that the development of Coombs is not a controlled action if development is undertaken in accordance with the listed conditions (a copy of this determination is contained at Appendix H).

Compliance with these conditions was discussed at the Agency workshop on 8 November 2010 and each condition was allocated to either a capital works project or the Coombs EDP or both. Section 9 of this report discusses these requirements and their relationship to the Coombs EDP in greater detail.

The Coombs EDP has been developed consistent with the requirements of the EPBC determination.

No additional referrals are required to the Department of the Environment, Water, Heritage and the Arts.

## **1.2. Heritage**

As part of the initial investigations for the Molonglo Valley, the ACT Government through the ACT Planning and Land Authority (ACTPLA) engaged AASC in 2006 to undertake a desk top heritage review for the proposed future development areas in the Molonglo Valley. The findings of this review were presented in a series of site specific mitigation strategies for previously recorded Aboriginal and non-Aboriginal heritage sites previously identified within the designated bounds of the Molonglo Valley study area. The report also presented a series of management strategies for undertaking further archaeological investigations within the Molonglo Valley Study Area.

In 2008 ACTPLA expanded the heritage study to include field investigations of Wright and Coombs. The ACT Archaeological Society identified a number of possible heritage sites in Coombs, and ACTPLA conducted additional investigations.

Heritage approval for the development of Coombs was granted 5 October 2010 and development in Coombs will be subject to the unanticipated discovery plan included in Coombs, Wright and Environs Detailed Heritage Assessment Report No. 0901 (10/1/09).

## **1.3. Planning Context**

This Estate Development Plan has been prepared to respond to the provisions of the Territory Plan and, specifically, the Coombs and Wright Concept Plan (effective 8 July 2011).

The land is defined as Future Urban Area and contains a mixture of land use zones including, Residential, Mixed Use (commercial/residential), Community Facility and Urban Open Space. There are no gazetted or constructed roads currently on the site.

The site is directly adjacent to the Molonglo River Corridor. The River Corridor is zoned NUZ4 under the Territory Plan. It is acknowledged that some works under this EDP fall within the River Corridor (specifically filling for roads, road construction and stormwater infrastructure) however all are permissible land uses under both the Territory Plan and National Capital Plan.

### **1.3.1 Community Titling**

This Estate Development Plan contains a number of Sections proposed for creation under a community titles scheme. Sections AN, AO, BA and BB all propose terrace blocks with rear access provided via a private community titled block (shared driveway). While a shared driveway is not considered a rear lane under the Territory Plan the EDP has been developed consistent with its requirements.

Where Sections are proposed for development as part of a Community Title Scheme it is noted that none of the Crown leases intended to form part of the Schemes will be transferred until the relevant Community Title Scheme is registered at the Land Titles Office.

Sections subject to community titling have been nominated on the Estate Development Plans, 292347-C-EDP 01 to 04 with details further clarified on the Block Details Plans, 292347-C-BDP 01 to 07.

## **1.4. Molonglo Surge Protection Line**

A review of the "Molonglo Catchment and Scrivener Dam Flood Hydrology" was commissioned by ACTPLA and undertaken by SKM to assess, amongst other things, the risk posed to downstream residential development by the Scrivener Dam.

The Coombs and Wright Concept Plan includes the Molonglo Surge Protection Line (SPL) which represents the flood level under a dam failure assessment completed by SKM as part of the above commission. The significance of the SPL is that leases will not be granted on land below the surge protection line without implementation of mitigation measures.

Regarding Coombs an agreement was reached between LDA and ACTPLA that filling of land to bring above the surge protection level was an appropriate mitigation measure. ACTPLA have also confirmed that SKM's latest modelling (Draft February 2011) assumes the development area is filled by 6m to simulate double storey dwellings on the boundary. The maximum filling proposed under the Coombs EDP to raise land above the surge protection level is less than 4m.

ACTPLA have subsequently provided written confirmation that the proposed filling is acceptable, refer Appendix M.

In light of that noted above we can verify that no blocks proposed under the Coombs EDP will require restrictions due to potential flood hazards.

## **SITE PLANNING POTENTIAL AND CONSTRAINTS**

### **2.1 Potential**

- Develop the Estate Development Plan within the framework of the Territory Plan;
- Ensure that the planning and design principles of the Coombs and Wright Concept Plan are incorporated into the EDP;
- Capitalise on views to natural features within and beyond the site to Canberra landmarks;
- Provide a connective street pattern that reduces vehicle trips and encourages pedestrian activity;
- Design the blocks to achieve solar access;
- Allow for larger street trees to provide future micro climate (summer shade and winter sun) for pedestrians;
- Respond to the local landform;
- Incorporate ACTPLA's solar code provisions to ensure all dwellings have acceptable solar access;
- Access to extensive outdoor recreation; and
- Proximity to central Canberra.

### **2.2 Constraints**

- A number of drainage easements will be required to pass through the site. These would ideally be contained within the road corridors and open space areas;
- River corridor and habitat (PTWL) protection;
- Landform;
- Location and orientation of John Gorton Drive;
- Stormwater treatment;
- Bushfire protection measures;
- Integration with Wright to the south of John Gorton Drive; and
- Interface with various Capital Works projects (trunk sewer, North Weston Pond and Coombs Ponds).

### **2.3 Planning Controls/Technical Amendments**

Planning Controls are generally consistent with the current Territory Plan, however LDA request the Coombs Concept Plan is amended via a Technical Amendment to include the following:

- Technical amendments to ensure the multi-unit sites adjacent to John Gorton Drive provide noise mitigation measures in accordance with Rule 156 of the Residential zones – Multi unit Housing development Code;
- Bushfire protection measures as identified in the EDP submission;
- Surveillance blocks in community title laneways as per Rule 32B of the Residential Zones – Single Dwelling Code as identified in the EDP submission;
- Zero dwelling setbacks on a number of blocks contrary to Figure C4 of the Residential Zones – Single Dwelling Code to accommodate traffic calming devices and as identified in the EDP submission;
- Additional technical amendments may be required, as the detail design progresses, eg. to ensure driveways are in safe locations, etc.

## **2.4 Solar Setbacks**

LDA requested additional building envelopes (R62 and R63) to be included in the Concept Plan to ensure neighbours do not overshadow their southern neighbour more than the 1.8m high boundary fence at 12 noon winter solstice (21 June).

In addition all blocks within Coombs have been designed to comply with the allowable blocks shown in *Draft Territory Plan Variation 301 (Single Residential Block Compliance Tables)* which are designed to ensure each dwelling has access to winter sunlight.

Shadow Diagrams have also been provided for all terrace blocks to verify compliance with the relevant sections of the Territory Plan.

## **3.0 PLANNING PROPOSAL**

### **3.1 Geotechnical Assessment**

A detailed geotechnical investigation was undertaken in December 2009 by Douglas Partners.

The investigation was carried out to provide information on:

- Subsurface profiles including groundwater conditions,
- Excavatability of subsurface strata,
- Suitability of onsite materials for reuse,
- Erosion potential,
- Site preparation and earthworks,
- Subgrade CBR values,
- Design bearing capacities,
- Likely site classifications to AS2870-1996,
- Suitable foundation systems.

The field tests encountered variable conditions underlying the site with the principal succession of strata broadly summarised below:

- TOPSOIL: silty sand topsoil with rootlets to depths of 0.1 – 0.2 m.
- SILTY SAND: dense, dry to moist silty sand to depths of generally 0.4 – 0.5 m.
- SAND, CLAY & SILT: medium dense to dense and stiff to hard (cemented in parts) sand, clay and silt to depths of 0.25 – 2.6 m.
- DACITE/RHYODACITE: extremely low to low strength, extremely to highly weathered dacite and rhyodacite bedrock below depths of 0.25 – 2.6 m continuing to the limit of investigation at depths of 0.9 – 4.2 m.

The investigation has indicated subsurface conditions generally comprising silty topsoils, silty sands then soils of variably sand, clay and silt composition overlying weathered dacite/ rhyodacite bedrock. The silty topsoil, natural soils and extremely low to very low strength bedrock could be expected to be removed using conventional earthmoving plant and as such no difficulties are anticipated.

Below test pit refusal depths, excavation will largely be dependent on the degree of fracturing/jointing and the strike and dip of bedding within the rock relative to the excavation.

The use of large excavators fitted with toothed buckets and rippers could excavate up to 3-4 m within weathered rocks based on previous experience in similar bedrock conditions within the Molonglo area.

The upper silty sandy layer (underlying the root zone) is considered to be unsuitable for engineering applications and may be difficult to handle and compact. The soils can be placed in the verge, in landscape mounds or other non-structural applications. Blending in thin layers with clayey, gravelly and/or weathered rock material may be possible with reuse in controlled filling areas.

After stripping and removal of topsoils and the upper silty/sandy layer, it would be expected that most of the materials available from cutting on the site would be suitable for reuse as filling over the lower areas depending on the depth of the excavation. The clayey material derived from the initial phase of stripping, though, would be expected to be the weakest of the borrow materials available and consequently, provision should be made for placing the clay soils at the base of the deeper filled sections of the site.

The weathered dacite/rhyodacite would be suitable for re-use as general filling or controlled filling provided oversized pieces (greater than 75 mm in any dimension) are removed. As excavation proceeds into higher

strength bedrock, it would be expected that cobble and boulder sized bedrock pieces would be removed, which would need to be crushed prior to use as filling. It is expected that minimal fines would be created during the crushing process and that blending with the overlying soil may be required to create a suitable well-graded filling material.

### **3.2 Noise**

GHD has undertaken a desktop assessment of the potential traffic noise impacts of the proposed North-South Arterial Road, now known as John Gorton Drive (JGD), on proposed adjacent residential areas.

A 63 dB(A) L10 (18-hr) contour plot was produced for the projected (2021) traffic flows along the John Gorton Drive. Predicted results indicate that the ACTPLA's traffic noise goal may be exceeded at some parts of the proposed residential areas adjacent to the John Gorton Drive.

GHD suggests there are a number of options for mitigation of traffic noise that can be contained within the road reserve. However, it is understood that ACTPLA's intention is that the property developers within the proposed residential areas will address noise attenuation requirements and that no attenuation measures will be built within the road reserve.

Noise mitigation measures can only be enforced if affected multi-unit sites are identified in the Concept Plan. Therefore LDA request a Technical Amendments to the Concept Plan to ensure the multi-unit sites adjacent to John Gorton Drive (identified in the EDP planning control plans) provide noise mitigation in accordance with Rule 156 of the Residential zones – Multi Unit Housing Development Code.

### **3.3 Street Lighting**

ActewAGL will undertake the underground electricity reticulation and street lighting design in accordance with the current Design Standards for Urban Infrastructure.

All local access roads will be designed to Category P3. The street light types proposed for Coombs shall be equal to and compatible with the street light selection for recent new developments. The pole spacing, regardless of the eventual pole type, will be similar to current street light systems.

The streetlight poles have been positioned 1.9m behind the kerb line on roads. This is in accordance with the ActewAGL requirements for locations of street lights in laneways and main roads. For consistency throughout the development, a standard distance behind the kerb line has been adopted for all roadways.

The detail design will consider the location of lighting and street trees, low energy lighting and manage the potential issue of intrusive lighting, in particular light spillage due to Coomb's proximity to the Mount Stromlo Observatory.

### **3.4 Road Hierarchy & Traffic**

The identification of a road hierarchy serves not only to identify the road's role to carry vehicles but should attempt to match the class of road to its use and the environmental needs of the community. The desire to separate through and local traffic should improve the general amenity of all areas within the development.

If roads are viewed as either purely for local access or purely for traffic movements then inconsistencies will arise. For example, a main road passing through a shopping centre. Where road network design alone is unable to remedy this situation traffic management can be applied to minimise impacts and prioritise conflicting functions.

Traffic management objectives at a local level need to be consistent with government objectives for community planning and development. The need to ensure cohesive precincts, ensure accessibility of neighbourhood areas for all road users and ensure the environmental integrity is respected are levers which traffic management most closely affects.

The classification of roads in the ACT is based on a formal road hierarchy. The classification fundamentally relates to the predominant function of a road and to the extent it serves the two basic purposes of the road network, i.e. the movement of traffic and access to property. A road's physical characteristics and traffic volume will reflect its function and role in the network. The road classifications used are:

- **Arterial Roads**

Arterial roads predominantly serve longer distance travel within a district and through traffic from one district to another, and form the principal avenues of communication for metropolitan scale traffic movements. They include limited access roads and parkways (or freeways) having full access control and grade separated intersections.

- **Major Collector Roads**

Major collector roads collect and distribute traffic within residential, industrial and commercial areas. They form the link between the primary network and the roads within local areas and should carry only traffic originating or terminating in the area. The volume of traffic carried is constrained by environmental objectives - safety and traffic noise - rather than road geometry and reflects the limited area that they serve. Direct property access is still permissible but the level of traffic may dictate that access and egress arrangements should be such that vehicles can exit properties in a forward direction.

- **Minor Collector Roads**

Minor collector roads collect and distribute traffic from access streets, linking to the major collector roads within the neighbourhood. They can also provide secondary connections direct to the external arterial road network. Traffic volumes are compatible with direct property access.

- **Access Streets**

Access streets are generally streets where the residential environment is dominant. Traffic volumes and speed environments are low.

However, traffic volumes alone should not be the only criterion used in road classifications. Factors such as traffic compositions, bus service routes, pedestrian / cycle considerations and connections to other road categories should also inform the classification.

Intersection connections should be provided between roads of identical or adjacent classifications. As an example it is undesirable for a local road to connect directly to an arterial road. Closer spacing of intersections is also possible the further down the classification ranking.

Typically the speed limit on access streets and minor collector roads is 50 km/h, major collector roads is 60 km/h and arterial roads is 60 km/h or above.

Peak hour volumes on roads are typically eight to twelve per cent of the daily flows.

- **Rear Access Lanes**

All blocks in Sections AN, AO, BA, BB that have rear access from the lane will be part of the community title scheme with the rear lanes forming the common property for the scheme.

Waste collection will be from the adjacent public road network as indicated on the waste collection plans (Drawings 292347-C-WCP 01-04).

- **Pedestrian / Cycle Facilities**

Cycling and walking are supported by the ACT Government and are recognised as healthy, low cost and environmentally friendly forms of transport. The ACT Government has adopted the National Strategy for Ecologically Sustainable Development and the National Greenhouse Strategy. Both of these strategies support an increase in commuter cycling and walking in favour of private car use.

Recreation policies also strongly support walking and cycling as a means of improving community health and fitness, and of helping to reduce greenhouse gas emissions and vehicle-produced noise and air pollution.

Provision for pedestrians and cyclists is indicated in the public transport network and off road movement systems plans (Drawings 292347-C-PTP-01 to 04). The proposed network exceeds the Standards and provides every street with a path on both sides of the road and links major desire lines with trunk paths. The trunk paths will connect Coombs with Mount Stromlo, Wright, the Molonglo River and to the existing trunk pathway system to Lake Burley Griffin, Weston Creek and Civic.

- **Public Transport Provision**

Coombs has been designed to support both the high frequency bus route on John Gorton Drive and a local network that connects Duffy, Wright and Coombs. Extensive consultation has been undertaken with TAMS and ACTION regarding bus service for the estate and the school precinct in particular.

Major Collector and Minor Collector Roads have been designed as bus routes, all roads fronting the proposed school have been designed as bus capable. This is consistent with ACTION and TAMS direction and will provide a degree of flexibility in final route selection for the estate. Drawings 292347-C-PTP-01 to 04 indicate the proposed public transport network. ACTION is supportive of the proposed bus network.

Roundabouts and other traffic calming measures have been designed to fully accommodate bus movements and turning paths.

ACTION and TAMS have also requested that Coombs be designed to accommodate a 14.5m rigid vehicle new to the fleet, namely a Scania Steer Tag. The 14.5m rigid is a more onerous requirement than provisioned under the Territory Plan though we understand a Draft amendment has been circulated for Agency comment.

Cardno has created a turning template for a 14.5m rigid vehicle that ACTION has approved for use in the Coombs EDP. Intersections throughout the proposed bus network have been designed to accommodate those turning movements required by a 14.5m rigid vehicle.

### **3.4.1 Traffic Generation**

A forecast of the traffic generation potential of the broader Coombs & Wright master plan area was undertaken based upon the potential lot yields identified. These areas were then used to determine appropriate traffic generation using traffic generation rates identified within the RTA Guidelines for Traffic Generating Developments (October 2002) for non residential land uses and ACTPLA Residential Subdivision Development Code for residential land uses. Standard assumptions on the likely inbound/ outbound split of traffic were adopted as follows:

- 20% inbound 80% outbound for residential uses during AM peak hour. PM peak hour assumed to be the reverse.
- 30% outbound 70% inbound for commercial uses during AM peak. PM peak hour assumed to be the reverse.

To assist in the assessments a zoning system was created for the master plan yields. The following assumptions are made to determine the number of units for each zone:

- RZ1** Residential Suburban Zone: total number of lots as identified on the master plan and assessed on the basis of one dwelling per lot.
- RZ4** Medium Density Residential Zone: Min 40 dwellings per hectare as per the Territory Plan. (Maximum of 100 dwellings per hectare used for traffic generation).
- RZ5** High Density Residential Zone: 50 dwellings per hectare as per the Territory Plan. (Maximum of 100 dwellings per hectare used for traffic generation).
- CZ5** Mixed Land Use: residential one dwelling per 150m<sup>2</sup> of site and commercial based upon one storey of total site area.

### **3.4.2 Traffic Distribution**

A traffic distribution of travel external to the site area has been assessed on the basis of the traffic distribution identified in the Molonglo Roads Feasibility Study (SMEC) in which the trips were proportionally assigned to the major attractors and generators for Molonglo traffic. The SMEC analysis identified a distribution of 65% to the south/east (to the city), 30% north/west (towards Belconnen) and 5% to the south to Stromlo Village. Short term traffic generation while a link to Belconnen is not provided does not unduly affect local traffic volumes.

### **3.4.3 Intersection Performance**

The SIDRA results determined that the internal intersections within the development operate satisfactorily during both the AM and PM peak hour periods.

Based upon the results it is deduced that all other intersections within the masterplan area should operate at satisfactory levels of operation. A full copy of the Traffic Impact Assessment is included in Appendix A.

The intersection operating performance was assessed using the SIDRA software package to determine the Degree of Saturation (DS), Average Delay (AVD in seconds) and Level of Service (LoS) at each intersection. The SIDRA program provides Level of Service Criteria Tables for various intersection types.

## **3.5 Stormwater**

### **3.5.1 Proposed Stormwater Infrastructure**

The proposed stormwater system for the development is based on the design requirements set out by the Department of Urban Services, Design Standards for Urban Infrastructure, Section 1. Stormwater is to be diverted wherever possible to rain gardens and bio-swales prior to downstream discharge to either a regional stormwater management facility or direct to the Molonglo River. Otherwise the stormwater system will be a conventional drainage system consisting of a 5 year ARI capacity road pipe network overlain by a 100 year ARI major overland flow system.

### **3.5.2 Overland Flow Management**

ACTPLA have developed a detailed stormwater strategy for North Weston, Coombs and Wright that provides stormwater attenuation to pre development flows at Coombs Pond A and B.

It is generally proposed that the 100 year ARI flows from Coombs will be attenuated within these ponds prior to discharge to the Molonglo River. However due to the site topography it is not practical for all Coombs sub-catchments to drain direct to the Molonglo River without flood attenuation.

Cardno sought a clarification in this regard from ACTPLA on and received confirmation that catchments beyond the Coombs Ponds can discharge without attenuation given the proximity of the Molonglo River and the proportionate sub-catchment size within the wider Molonglo catchment.

### 3.6 Water Sensitive Urban Design

#### 3.6.1 Aims

The aims of the catchment based water quality assessments were to:

- Assemble a MUSIC models for planned Future Conditions and to estimate the size of water quality measures to meet the adopted stormwater quality targets for development in the Molonglo Valley;
- Assess the overall reduction in pollutant exports from planned developments in Coombs and Wright prior to discharge to receiving waters including North Weston Pond, Pond A, Pond B and local watercourses downstream of regional ponds.

#### 3.6.2 ACT Stormwater Treatment Objectives

As stated in the 2009 WaterWays Water Sensitive Urban Design General Code (ACTPLA, 2009), the objectives for stormwater quality management will be achieved by the combination of works undertaken by the ACT Government, through its capital works program, and by Government or the private sector through works undertaken in new developments and redevelopments.

The responsibility for meeting targets on development or redevelopment sites lies with the developer (Government or private) or builder, while responsibility for meeting the regional or catchment-wide targets lies with Government.

The final adopted targets are shown in Table 1. They refer to reduction in pollutant export compared to an urban catchment with no water quality management controls.

**Table 1: Final Adopted Targets for Reduction in Average Annual Pollutant Exports (after ACTPLA, 2009)**

	Development or Redevelopment Site	Regional or Catchment-Wide
TSS	60%	85%
TP	45%	70%
TN	40%	60%

#### 3.6.3 Molonglo Valley Subcatchment Stormwater Treatment Objectives

As discussed in the Summary of Stormwater Quality Modelling of Coombs and Wright (ACTPLA, undated), due to the range of catchment types, and the limited ability in some catchments to install large stormwater treatment facilities, it was considered too onerous to make every catchment reach the Catchment-wide stormwater quality targets. Therefore, the catchments were classified into 4 types and each catchment was assigned targets as a range of the Developer targets. These are listed in the table below.

**Table 2: Pollutant Reduction Targets for Subcatchments in the Molonglo Valley  
 (after ACTPLA, undated)**

	Target	TSS		TP		TN	
		lower	upper	lower	upper	lower	upper
No Ponds Downstream	100-150% of Developer	60%	90%	45%	68%	40%	60%
Large Pond D/S only	50%-75% of Developer	30%	45%	23%	34%	20%	30%
Small Pond with Large Pond D/S	75%-100% of Developer	45%	60%	34%	45%	30%	40%
Small Pond D/S only	100-150% of Developer	60%	90%	45%	68%	40%	60%
Out flow from Large ponds	Regional	85%		70%		60%	

While eight subcatchments within Coombs would be classified as having a "Large Pond Downstream" which would require developer measures to only achieve 75% - 100% of the Developer targets, the targets adopted for the purpose of sizing local WSUD measures was to achieve 100% or greater of the developer targets.

Likewise for the purpose of sizing local WSUD measures the targets adopted for the eight subcatchments discharging to local watercourses downstream of major ponds was to achieve 100% or greater of the developer targets.

### 3.6.4 Modelling Software - MUSIC

The CRC for Catchment Hydrology (CRCCH) has developed a Model for Urban Stormwater Improvement Conceptualisation (MUSIC), which packages the results of many research activities undertaken at the CRCCH and other organisations into a user-friendly stormwater management tool.

MUSIC enables urban catchment managers to:

- (a) determine the likely water quality emanating from specific catchments,
- (b) predict the performance of specific stormwater treatment measures in protecting receiving water quality,
- (c) design an integrated stormwater management plan for a catchment,
- (d) evaluate the success of a treatment node or treatment train against a range of water quality standards, and
- (e) analyse the lifecycle costs of a treatment node or treatment train.

To support the consistent assessment of stormwater pollutant exports and stormwater treatment trains, calibration of the rainfall/runoff and pollutant export parameters for the MUSIC and xpaqualm were undertaken and reported in the 2009 WaterWays Water Sensitive Urban Design General Code (ACTPLA, 2009).

The calibration process for MUSIC and the resulting recommended model parameters was described in the 2007 Code. On 1 May 2009 the Proposed Technical Amendment to the Territory Plan No. V20009-08 was published. This Amendment updated the stormwater quality parameters for the MUSIC and xpaqualm models given in the previous 2007 Code.

### **3.6.5 Landuse**

The subcatchment areas and their estimated imperviousness under planned Future Conditions which were adopted are as given in Table 3

### **3.6.6 Rainfall/Runoff**

Hourly rainfall data was obtained for Canberra Airport (Station 70014).

The time period selected for input into the MUSIC models was:

1/1/1968 – 31/12/1977 (for simulation of a 10 year period)

The adopted rainfall/runoff parameters were as given in the 2009 WaterWays Water Sensitive Urban Design General Code (ACTPLA, 2009).

### **3.6.7 Water Quality Parameters**

The Event Mean Concentrations were as given in the 2009 WaterWays Water Sensitive Urban Design General Code (ACTPLA, 2009).

### **3.6.8 Assumed Rainwater Tank Characteristics**

The following assumptions were adopted for rainwater tanks to be installed on residential properties:

- The area of roof draining to the rainwater tank is 150 m<sup>2</sup>;
- The rainwater tank has a volume of 2,000 L (2 kL);
- The rainwater tank supplies water for garden watering and toilet flushing
- The average annual demand for garden watering is 140 kL/yr (in accordance with Table 1, Appendix A, Rainwater Tanks, Guidelines for Residential Properties in Canberra", (ACTPLA, 2004))
- The average annual demand for toilet flushing is 60 kL/yr (in accordance with Table 1, Appendix A, Rainwater Tanks, Guidelines for Residential Properties in Canberra", (ACTPLA, 2004)).

### **3.6.9 Assumed GPT Characteristics**

The capture of pollutants by a CDS trap was guided by the performance data given in Figures C-2, C-3 and C-4 for TSS, TP and TN given in the 2005 User Guide for MUSIC Version 3.

Each CDS trap was modelled with:

- a low flow bypass = 0.05 m<sup>3</sup>/s to give nil treatment of low concentration flows (refer Figures C-3 and C-4 for low concentrations)
- a high flow bypass = 0.69 m<sup>3</sup>/s to represent bypassing of 6 month ARI and greater flows

### **3.6.10 Assumed Biofilter Characteristics**

The following assumptions were adopted when conceptually sizing of biofilters:

- The extended detention depth is 0.3 m;
- The surface area and the filter area are the same;
- The filter depth is 0.6 m;
- The filter median particle diameter is 0.24 mm; and
- The saturated hydraulic conductivity is 120 mm/hr.

For modelling purposes it was assumed that all inflows up to a 6 month ARI flow would enter the biofilter ie. higher flows would bypass the biofilter. A notional high flow bypass of 0.69 m<sup>3</sup>/s was adopted for assessment purposes.

### **3.6.11 MUSIC Model**

An overall MUSIC model of planned development in Wright and Coombs was assembled to estimate the size of water quality measures in Coombs to meet the adopted stormwater quality targets for development in the Molonglo Valley as well as to assess the overall reduction in pollutant exports from planned developments in Coombs and Wright prior to discharge to receiving waters including North Weston Pond, Pond A, Pond B and local watercourses downstream of regional ponds.

The model excluded all high density and/or mixed use sites because these sites are responsible for treating runoff from the site in accordance with the Developer Targets.

The number of properties with and without rainwater tanks and the resulting size of biofilters required to achieve 100% or greater of the developer targets are given in Table 3.

It will be noted that a number of subcatchments in Wright represent road reserves only within areas of high density or mixed use development. Runoff from these subcatchments is treated only in downstream major ponds.

The MUSIC model is shown in Figure 1. The model was run using Version 3.1 to maintain consistency with previous assessments.

### 3.6.12 MUSIC Results

The performance of the treatment trains for subcatchments in Coombs and Wright are given by subcatchments and by receiving waters in Tables 4 and 5 respectively.

It will be noted the reductions in stormwater pollutants discharged to the North Weston Pond and Pond A match or exceed 100% of Developer targets. In the case of Pond B the TN reduction prior to discharge into the pond is 93% of the Developer target. This is because of untreated road runoff from road reserves external to high density and/or mixed use sites.

In a comparison with the targets given in Table 2 the following reductions in average annual pollutant exports from the various subcatchments with treatment trains are achieved:

*No Ponds Downstream (100% - 150% of Developer Targets)*

	TSS	TP	TN
Min	130%	127%	101%
Max	144%	138%	101%

*Large Ponds Downstream only (50% - 75% of Developer Targets)*

	TSS	TP	TN
Min	129%	116%	99%
Max	137%	132%	101%

It is concluded that in subcatchments discharging to local watercourses downstream of major ponds that the treatment trains deliver reductions in average annual pollutant exports within the range identified by ACTPLA.

It is concluded that in subcatchments discharging to major ponds that the treatment trains deliver reductions in average annual pollutant exports that exceed the range identified by ACTPLA.

It was also concluded that the rainwater tanks achieved a 20% reduction in average consumption of potable water based on the total average consumption per household of 330 kL/yr given in Table 1, Appendix A, Rainwater Tanks, Guidelines for Residential Properties in Canberra", (ACTPLA, 2004).

**Table 3: Summary of Subcatchment Areas and Number of Properties with Rainwater Tanks**

Subcatchment	Impervious (Ha)		Pervious (Ha)		Total (Ha)	No. of Lots		Total
	Untreated	Treated	Untreated	Treated		No RWT	With RWT	
<b>Wright</b>								
JG1	0.00	5.40		9.69	15.09		109	109
JG2A		6.50		9.60	16.10		181	181
JG2B		4.00		7.00	11.00		76	76
JG3		1.50		0.50	2.00		0	0
JG4		0.59		0.69	1.28		8	8
JG5	0.10	0.00	0.156		0.260		0	0
JG6	0.08		0.12		0.20		0	0
JG7	0.14		0.20		0.34		0	0
JG8		2.23		3.19	5.42		45	45
JG9		3.35		5.94	9.29		74	74
JG10	0.37		0.20		0.57		0	0
JG11	0.77		0.14		0.91		0	0
N64		1.19		4.18	5.37		25	25
N65B		0.06		0.06	0.12		0	0
	1.46	24.83	0.82	40.85	67.96			
<b>Coombs</b>								
C1		0.79		0.09	0.88		0	0
C2		2.10		0.73	2.83		57	57
C3		1.68		1.19	2.87		27	54
C4		0.90		0.43	1.33		0	5
C5		6.64		3.66	10.30		0	78
C6		1.40		0.79	2.19		0	21
C7		1.54		0.83	2.37		0	16
C8		2.13		1.62	3.75		0	0
C9		8.03		2.33	10.36		8	80
C10		9.29		5.00	14.29		0	163
C11		1.87		0.86	2.73		0	23
C12		1.77		0.77	2.54		0	24
C13		1.56		0.62	2.18		0	14
C14		6.58		3.71	10.29		0	102
C15		3.11		1.34	4.45		23	56
C16		4.72		5.32	10.04		60	124

**Table 4: Summary of Performance of Treatment Trains by Subcatchment**

Subcatchment	Total Area (Ha)	Imperviousness	Rainwater Tanks	CDS GPT	Biofilter Area (m2)	TSS	TP	TN
<b>Wright</b>								
JG1	15.09	36%	Y	Y	100	75.0%	51.0%	39.9%
JG2A	16.10	40%	Y	Y	115	78.4%	55.9%	44.3%
JG2B	11.00	36%	Y	Y	110			
JG3								
JG4	1.28	46%	Y			10.5%	10.2%	13.2%
JG5	0.26	40%				0%	0%	0%
JG6	0.20	40%				0%	0%	0%
JG7	0.34	40%				0%	0%	0%
JG8	5.42	41%	Y		85	75.8%	56.5%	40.1%
JG9	9.29	36%	Y		110	72.6%	54.9%	40.0%
JG10	0.57	65%				0%	0%	0%
JG11	0.91	85%				0%	0%	0%
N64	5.37	22%	Y			73.3%	55.6%	40.0%
N65B	0.12	50%				0%	0%	0%
<b>Coombs</b>								
C1	0.88	90%		Y	44	85.4%	61.8%	39.5%
C2	2.83	74%		Y	120	86.3%	62.0%	40.3%
C3	2.87	59%		Y				
C4	1.33	68%	Y	Y	88	80.5%	57.7%	40.2%
C5	10.30	64%	Y	Y	172	80.9%	55.5%	40.4%
C6	2.19	64%	Y	Y	44	78.2%	57.0%	39.8%
C7	2.37	65%	Y	Y	64	81.6%	59.8%	40.5%
C8	3.75	57%			148	85.5%	62.6%	40.3%
C9	10.36	78%	Y	Y	210	81.9%	55.4%	40.0%
C10	14.29	65%	Y	Y	142	77.1%	52.3%	40.5%
C11	2.73	68%	Y	Y	64	80.2%	57.9%	40.0%
C12	2.54	70%	Y	Y	60	80.3%	58.5%	40.7%
C13	2.18	72%	Y	Y	64	82.1%	59.5%	40.2%
C14	10.29	64%	Y	Y	136	78.6%	54.1%	40.3%
C15	4.45	70%	Y	Y	124	80.9%	59.3%	40.1%
C16	10.04	47%	Y	Y	132	79.3%	54.9%	40.0%

**Table 5: Summary of Performance of Treatment Trains by Receiving Water**

Subcatchment	Total Area (Ha)	Imperviousness	Rainwater Tanks	CDS GPT	Biofilter Area (m <sup>2</sup> )	TSS	TP	TN
<b>Developer Targets</b>								
Receiving Water: North Weston Pond						60%	45%	40%
C1	0.88	90%		Y	44	85.4%	61.8%	39.5%
<b>Overall</b>						<b>86%</b>	<b>62%</b>	<b>39.5%</b>
<b>Receiving Water: Pond A</b>								
JG1	15.09	36%	Y	Y	100	75.0%	51.0%	39.9%
JG2A	16.10	40%	Y	Y	115	78.4%	55.9%	44.3%
JG2B	11.00	36%	Y	Y	110			
JG3								
JG4	1.28	46%	Y			10.5%	10.2%	13.2%
JG5	0.26	40%				0%	0%	0%
JG6	0.20	40%				0%	0%	0%
C6	2.19	64%	Y	Y	44	78.2%	57.0%	39.8%
C7	2.37	65%	Y	Y	64	81.6%	59.8%	40.5%
C8	3.75	57%			148	85.5%	62.6%	40.3%
C9	10.36	78%	Y	Y	210	81.9%	55.4%	40.0%
<b>Overall</b>						<b>77%</b>	<b>54%</b>	<b>41%</b>
<b>Receiving Water: Pond B</b>								
JG7	0.34	40%				0%	0%	0%
JG8	5.42	41%	Y		85	75.8%	56.5%	40.1%
JG9	9.29	36%	Y		110	72.6%	54.9%	40.0%
JG10	0.57	65%				0%	0%	0%
JG11	0.91	85%				0%	0%	0%
N64	5.37	22%	Y			73.3%	55.6%	40.0%
N65B	0.12	50%				0%	0%	0%
C15	4.45	70%	Y		124	80.9%	59.3%	40.1%
C16	10.04	47%	Y	Y	132	79.3%	54.9%	40.0%
<b>Overall</b>						<b>71%</b>	<b>52%</b>	<b>37%</b>
<b>Receiving Water: Local Watercourses</b>								
C2	2.83	74%		Y	120	86.3%	62.0%	40.3%
C3	2.87	59%		Y	88	80.5%	57.7%	40.2%
C4	1.33	68%	Y	Y				
C5	10.30	64%	Y	Y	172	80.9%	55.5%	40.4%
C10	14.29	65%	Y	Y	142	77.1%	52.3%	40.5%
C11	2.73	68%	Y	Y	64	80.2%	57.9%	40.0%
C12	2.54	70%	Y	Y	60	80.3%	58.5%	40.7%
C13	2.18	72%	Y	Y	64	82.1%	59.5%	40.2%
C14	10.29	64%	Y	Y	136	78.6%	54.1%	40.3%
<b>Overall</b>						<b>80%</b>	<b>55%</b>	<b>40%</b>
<b>% Achievement of Developer Target</b>								
						<b>133%</b>	<b>122%</b>	<b>101%</b>

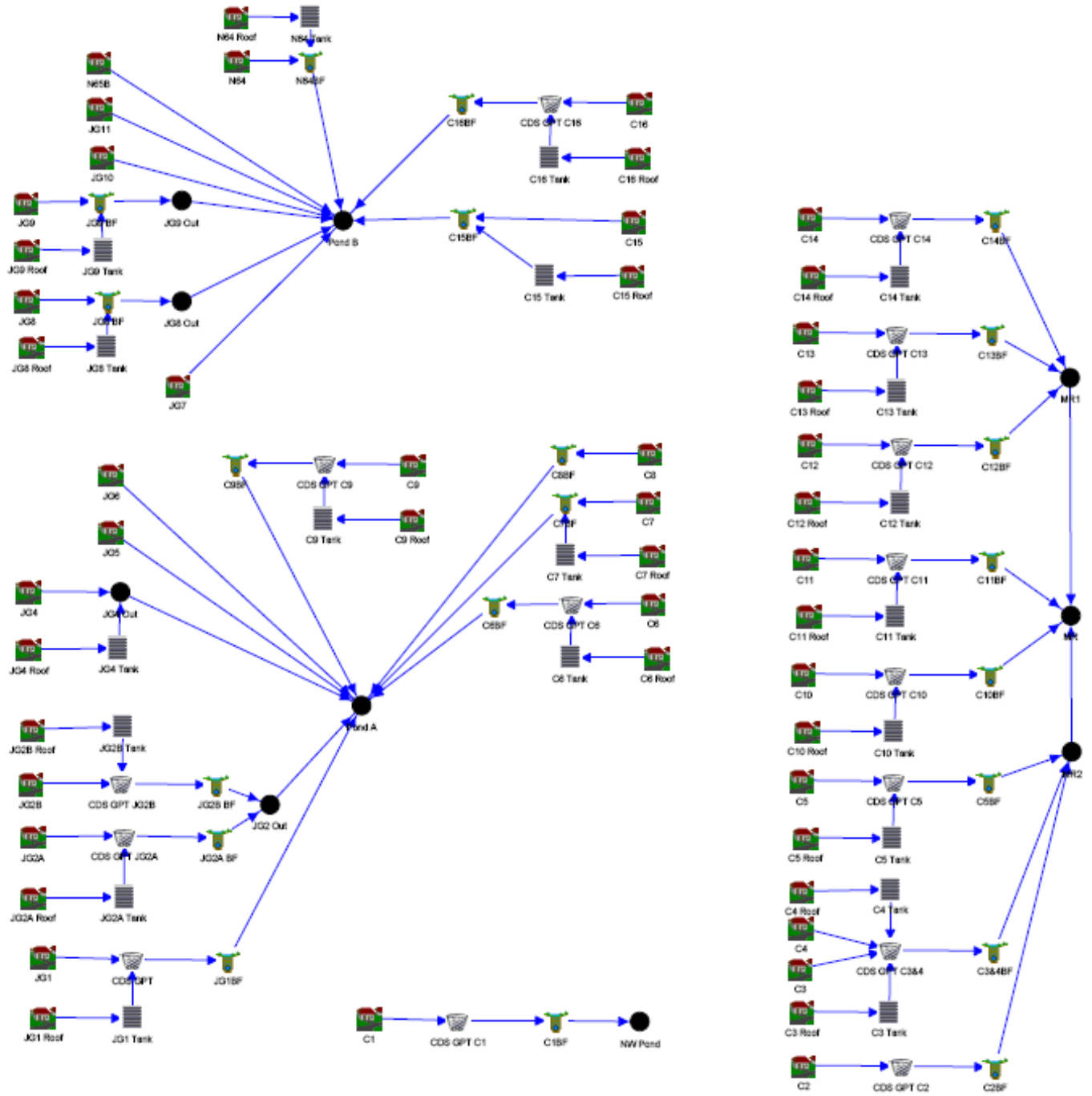


Figure 1: MUSIC Model Layout for Wright and Coombs

### 3.7 Sewer

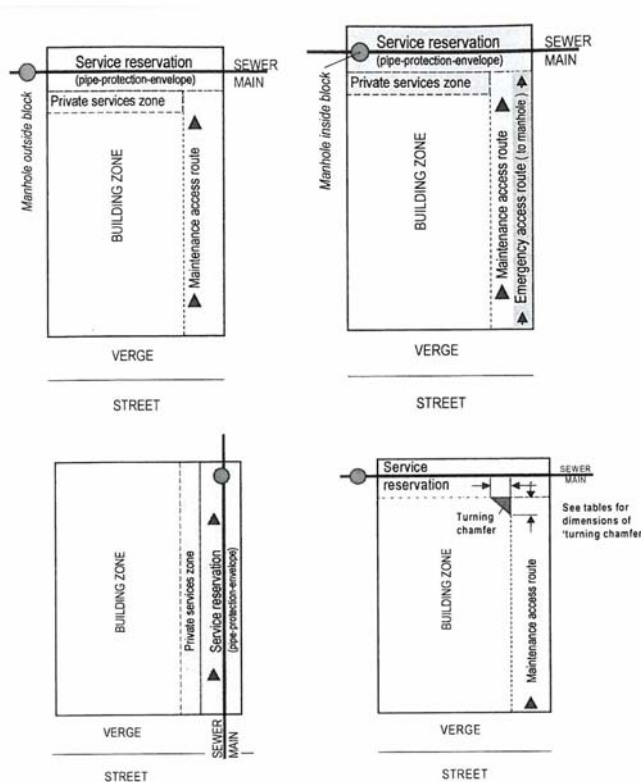
The sewerage network for Coombs drains to the existing 500mm and 600mm diameter Molonglo trunk sewer at 7 locations. Additionally, there are five and two connections into the existing 225mm and 300mm sewer lines from Wright Estate respectively. A 225mm diameter sewer line is proposed along the majority of the eastern edge road (Road C11) due to loadings from the upstream high density blocks.

Ongoing communication between Cardno, ActewAGL and Brown Consulting are underway to coordinate necessary proposed manhole sizes, pipe sizes, bearing and invert levels of connections into the Molonglo trunk sewer.

The equivalent population (EP) has been calculated in the commercial areas based on the assumptions that the proposed buildings will be one storey high and their gross floor area (GFA) comprise 60% of the proposed block area. The EP in the high density residential areas were estimated based on the maximum number of dwellings as dictated by the Territory Plan.

For blocks with less than 1.2 metres fall from the front to the back of the block, it is proposed to install the sewer in the verge to minimise the impact of sewer access easements on the block area. This will be designed in accordance with Actew Standards.

A separate submission of the Sewer Master Plan has been made directly to ActewAGL under their formal approval process.



**Figure 2: Access of Utility Sewerage Services in Rear of Blocks**

### **3.8 Water**

Coombs is proposed to be supplied by an existing 300mm diameter water main along John Gordon Drive which extends to Cotter Road. Coombs is proposed to have 10 connection points into the DN300mm water main within John Gordon Drive. This external DN300mm trunk main is supplied by both the Oakey and Duffy reservoirs where the nominal water level in the low zone is 640m. The Oakey reservoir TWL is 685m, however is reduced by pressure reducing valves to 640m, prior to reaching the Coombs development. The Duffy reservoir TWL is 644m.

The zone boundary for Coombs was modelled for two looped systems set by the nominated 563m contour which divided the Estate into the Low and Low Low pressure zones. The Low Zone mains were extended further east of the 563m contour to service the future high density and commercial blocks so that higher pressures can be gained during fire fighting in these areas. Two pressure reducing valves (PRV) have been modelled to decrease the pressure from the Low Zone to the Low Low Zone at the east and west extremities of the Estate. Two additional PRV's are proposed to ensure that security of water supply is achieved during the staged construction of the Coombs development.

The Low Zone system consists of a 150mm water main to service commercial and high density blocks. Fire flow category F6 "for residential areas" is predominant throughout Coombs with the F5 fire rating applied in the high density, commercial areas and along the edge road around Coombs. Water mains with accompanying easements are proposed through the terrace block laneways as the length is greater than 100m and additional hydrants are required to comply with ACT Fire Brigade Guidelines. The fire zones have been agreed in principal with ACT Fire Brigade during the master planning process.

The internal pipe network has been modelled hydraulically using the computer program WaterCAD. Through the use of this program, the pipes have been sized accordingly to meet Actew Water Supply Standards. The modelling has shown that all category F5 and F6 fire risk zones have reached the anticipated fire flow peak demand loads of 45 l/s and 25 l/s respectively with a minimum of 10m pressure head. Analysis of the zone boundary and the different pressures also showed that the PRV's proposed are adequate in reducing the pressure for more acceptable water pressures in the different zones.

In addition to the EDP, a separate submission of the Water Master Plan has been made direct to ActewAGL under their formal approval process and also to the ACT Fire Brigade for their endorsement.

The water supply strategy is illustrated in the Water Master Plan in drawings: 292347-C-WMP-01 and 292347-C-WMP-02.

### **3.9 Utilities**

Discussions with ActewAGL and Jemena indicate that Coombs can be fully serviced from proposed infrastructure to be accommodated in the John Gorton Drive road reserve.

All dwellings will be provided with Fibre to the Home (FTTH). LDA are currently engaged in a procurement process with telecommunications service providers for provision of service to Coombs. Cardno will liaise with the successful service provider as soon as an appointment is made.

### **3.10 Bushfire Risk Assessment**

A Bushfire risk assessment was undertaken by Australian Bushfire Protection Planners for ACTPLA as part of the Structure Plan for the whole of Molonglo Valley.

Subsequently LDA has commissioned Australian Bushfire Protection Planners to undertake a bushfire risk assessment for the whole of the proposed Coombs Estate. The findings of this assessment have been used to determine the widths of inner and outer asset protection zones and home asset protection zones. See Appendix C and Plans BFP-01 to 05.

The LDA has developed this plan in consultation with ESA and TaMS with the final report being issued for endorsement on 02/03/2011.

The report recommends the bushfire protection measures below:

#### **Molonglo River Corridor**

##### **(a) Rehabilitation and bushfire hazard management of the vegetation within the river corridor:**

The Molonglo Stage 2 Bushfire Risk Assessment recommended a 30 metre wide IAPZ and a HAPZ of between 30 – 50 metres – based on the advice that the river would be dammed and that the river corridor would be managed as a 'foreshore reserve'. This advice has now been withdrawn as the proposal is for the river corridor to be rehabilitated as a habitat/riparian corridor, increasing the potential bushfire risk from unplanned bushfire events occurring in unmanaged vegetation.

The reduction of the fuel hazard in this corridor is critical to the safety of the occupants of the future suburb of Coombs [and North Weston] and the emergency services that will attend to fire events in the river corridor. The difficulty is however, reaching a balance between retaining a habitat corridor and reducing the bushfire risk, exacerbated by the difficulty of managing steep, rough land which is also the habitat for the Pink Tailed Worm Lizard, whilst retaining water quality in the river.

The rehabilitation of the vegetation within the corridor should remove the introduced species and replicate the natural River Sheoak community with scattered 'patches' maintained along the edge of the river bank – broken by wide sections of native grasses in order to provide a disconnected canopy along both sides of the river.

The steeper, rocky sections of the higher river bank shall be retained as open grassland with the remainder of the corridor rehabilitated and maintained as an 'open woodland community' with an open, separated tree canopy and a grassy understorey. Canopy separation between the River Sheoak and the woodland community is important.

Management of bushfire fuels, by traditional methods such as slashing, is impractical due to the nature of the landform and the requirement to minimise damage to the Pink Tailed Worm Lizard habitat [surface rocks] which prevails across much of the river corridor.

It is therefore recommended that a Fire Management Plan be prepared specifically for the corridor which establishes a management protocol based on the primary management being by stock grazing, hand slashing in the PTWL Habitat areas, mechanical slashing (where possible) and periodic ecological hazard reduction burning in order to provide certainty over the reduction of the bushfire fuels to levels which are identified, in the Strategic Bushfire Management Plan for the ACT – Version Two, to maintain the corridor as an Outer Asset Protection Zone.

The corridor should not be gazetted as a 'Nature Reserve' and annual funding shall be provided, specifically (& separately) for the fuel management of the river corridor. Funding for the maintenance of the existing fire access trails along the north-eastern side of the river corridor shall also be provided in order to provide access for maintenance and fire-fighting access.

An edge road shall be provided to the full perimeter of the river corridor including across the stormwater detention ponds in order to provide continuity of fire-fighting access.

A 50 metre wide Inner Asset Protection Zone shall be provided to the blocks facing the river corridor with a 100 metre wide Outer Asset Protection Zone extending from the outer edge of the IAPZ and managed to provide a maximum Overall Fuel Hazard Level of < 35, as agreed by ESA.

The Ember Zone [HAPZ] to the residential precinct which faces the river corridor shall be BAL 29 for 100 metres plus BAL 19.0 for the next 150 metres, in accordance with A.S. 3959 – 2009 – '*Construction of Buildings in Bushfire Prone Areas*'.

The stormwater detention ponds on Holdens Creek, Weston Creek and the internal creek lines shall be maintained as an Inner Asset Protection Zone.

#### **Northern aspect to the north-eastern portion of Coombs**

##### **(a) Provision of Inner Asset Protection Zone:**

There shall be provided a 50 metre wide Inner Asset Protection Zone, as agreed by ESA, measured from the block boundary.

##### **(b) Provision of Managed Outer Asset Protection Zone:**

There shall be provided an Outer Asset Protection Zone, of a minimum width of 100 metres, measured from the northern edge of the Inner Asset Protection Zone, as agreed by ESA. The OAPZ shall incorporate the land within the medium/high quality potential PTWL Habitats and shall be maintained in an ecologically sympathetic manner to the satisfaction of TAMS in accordance with TaMS PTWL habitat fuel & fire suppression guidelines to achieve a Grassland Fuel Hazard of < 35, without significantly impacting on the Pink-tailed Worm Lizard habitat.

##### **(c) Provision of Ember [HAPZ] Zone:**

The Ember Zone [HAPZ] to the residential precinct which faces Misery Point and the remainder of the river corridor shall be BAL 29 for 100 metres plus BAL 19.0 for the next 150 metres, in accordance with A.S. 3959 – 2009 – '*Construction of Buildings in Bushfire Prone Areas*'.

#### **Northern aspect to Coombs**

##### **(a) Management of the Holdens Corridor:**

The full width of the Holdens Creek corridor, including the edge road and landscape buffer (refer Section D of the *Coombs and Wright Concept Plan*) shall be maintained as an Inner Asset Protection Zone. The minimum width of the IAPZ shall be 50 metres, as agreed by ESA.

##### **(b) Provision of Managed Outer Asset Protection Zone:**

There shall be provided an Outer Asset Protection Zone, of a minimum width of 100 metres, to the north of the Holdens Creek corridor, measured from the northern edge of the Inner Asset Protection Zone, as agreed by ESA.

##### **(c) Provision of Ember [HAPZ] Zone:**

There shall be provided an Ember Zone of a minimum width of 200 metres, measured from the Inner Asset Protection Zone, where those buildings erected within the first 50 metres of the HAPZ are constructed to comply with BAL 19 and the remainder to BAL 12.5, in accordance with A.S. 3959 – 2009 – '*Construction of Buildings in Bushfire Prone Areas*'.

### **South-western edge to Coombs**

#### **(a) Management of the future suburb of Wright:**

Should the construction of the new suburb of Wright not occur concurrently or before the new suburb of Coombs, the regenerating vegetation within the future suburb of Wright shall be slashed or removed in order to minimise the change of a fire starting and spreading, under south-westerly winds, towards the south-western edge of Coombs.

The management prescription for this work shall be that combustible fuels shall be maintained to a maximum height of 100mm.

The minimum width of this management shall be 500m, including the width of the proposed north-south arterial road corridor.

### **North-western corner to Coombs**

#### **(a) Provision of Managed Outer Asset Protection Zone:**

Until such time that the Stromlo Forest Park development can provide a managed buffer zone to the northwest corner of Wright, capable of minimising the passage of fire from the northwest, there shall be provided, to the northwest of the Uriarra Road corridor a minimum 400 metre wide managed Outer Asset Protection Zone.

### **Southern edge of Coombs [Cotter Road]:**

The southern edge to the new suburb of Coombs adjoins the Open Space corridor between Warragamba Avenue and Cotter Road. This corridor has been replanted with various species of trees.

The Molonglo Stage 2 Bushfire Risk Assessment [ABPP – 2006] identified that this corridor, if unmanaged, would provide a high level of risk to the southern edge of Coombs. This level of risk has been determined by this risk assessment.

The Risk Assessment also recommended that a 40 metre wide IAPZ and 50 metre wide HAPZ be provided to this aspect of the new suburbs.

Therefore, it is recommended that the full width of the Cotter Road corridor, the landscape buffer zone, Service Street and to the front boundary blocks facing Cotter Road shall be managed as an Inner Asset Protection Zone.

A 50 metre wide Ember [HAPZ] Zone shall be established inside southern edge of the new suburb, to the east from the eastern edge of the Stromlo Rural Village, measured from the Inner Asset Protection Zone, where those buildings erected are constructed to comply with BAL 12.5 in accordance with A.S. 3959 – 2009 '*Construction of Buildings in Bushfire Prone Areas*'.

## 4 AGENCY LIAISON AND CONSULTATION

### 4.1 Agency Liaison

Consultation on the Coombs EDP to date comprises two components:

1. Liaison with relevant agencies including ACTPLA; and
2. Liaison with interest groups and the broader community.

In terms of liaison with relevant agencies, Cardno and/or the LDA have been involved in a series of meetings with a number of agencies and interest groups in the lead up to finalising the EDP.

A summary of the Agency and stakeholder consultation in development of the Coombs Estate Development Plan is outlined in Table 6 below:

**Table 6: Summary of Agency and Stakeholder Consultation**

Date	Agency	Purpose and Outcome
24/6/09	Weston Creek Community Council	LDA presentation, detailed discussion, Q&A by over 200 attendees
1/7/09	Woden Valley Community Council	LDA presentation, detailed discussion, Q&A by attendees
8/7/09	Weston Creek Community Council	Follow up presentation, detailed discussion, Q&A by attendees
10/11/09	ACTPLA	Discuss the proposed Concept Plan Technical Amendment and impacts on Coombs and Wright design.
18/11/09	ACTPLA Development Assessments Unit	Confirm how various provisions in the proposed Technical Amendment would be applied.
18/11/09	Various Equestrian Groups.	Discuss Equestrian groups concerns and requirements with regard to site access during and post construction.
19/11/09	Project Team attended workshop on solar access presented by The Expert Client (TEC) and ACTPLA	Recommendations of ACTPLA's Draft Solar Code to be incorporated into planning for Wright & Coombs EDP. In particular to consider for block plans and orientation.
19/11/09	Project Team met with Molonglo sustainability consultants (FWR).	FWR findings on sustainability initiative to be incorporated into planning for Coombs & Wright.
24/11/09	ACTPLA	To discuss integration with various capital works projects including John Gorton Drive, trunk infrastructure and regional stormwater detention and water quality basins.
10/12/09	ACTPLA	To discuss the Technical Amendment/Concept Plan.
11/12/09	Equestrian groups	Discuss equestrian track diversions during and post construction
14/12/09	ACTPLA	Discuss further revisions to the Technical Amendment/Concept Plan.
15/12/09	ACTPLA, Sport + Rec. and Education	To discuss requirements for primary school precinct, including oval.
11/01/10	Equestrian Association	To provide input into the Riparian Management Strategy in terms of tracks through Coombs and Wright.

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Date	Agency	Purpose and Outcome
13/01/10	ACTPLA	Comments provided on latest Technical Amendment (issued 23 December 09) and in particular minimum area requirements in terms of densities within precincts.
13/01/10	Chief Ministers Office	Discussions related to program for land release and Government requirements in terms of release.
28/01/10	Conservation Council, Bush on the Boundary, Southern ACT Catchment Group, Molonglo Catchment Group, Upper Murrumbidgee Catchment Committee	Wright & Coombs early design work and master plan discussion.
8/2/10	Pedal Power	Wright & Coombs early design work and master plan discussion
24/02/10	ACTPLA	Pre-lodgement meeting to discuss any Technical Amendment/Concept Plan compliance issues.
04/03/10, 11/03/10 and 12/03/10	ACTPLA	Pre-lodgement meeting to discuss required revisions to Coombs Master Plan including NCA boundary issues.
16/03/10	ACTION Buses	Meeting to discuss proposed bus routes and bus stops
13/04/10	ACTPLA	Further pre-lodgement meeting to discuss required revisions to Coombs Master Plan including NCA boundary issues.
21/04/10	ACTPLA	Meeting on John Gorton Drive interface issues.
26/04/10 (and then fortnightly - ongoing)	ACTPS	Molonglo infrastructure co-ordination meetings.
30/6/10	LAPS	Meeting to discuss Bushfire, Riparian Zone, Structure Plan & Limits of Urban Development
26/7/10	ACTPLA, TaMS, DECCEW & JACS,	ACTPLA workshop on EPBC strategic assessment for Molonglo Valley
28/7/10	DHCS	Meeting to discuss potential allocation of land for Get a life program
30/07/10	ACTPLA	Confirmation that stormwater discharge unable to drain to Coombs Ponds does not require attenuation.
5/8/2010	ACTPLA, TaMS, LAPS & DECCEW	Non potable water use in Molonglo and Lawson
18/8/10	Will Osborn (PTWL expert)	Discuss the PTWL confirmation study potential management of habitats.
20/8/10	TaMS & LAPS	Land custodianship of Wright and Coombs
16/9/10	ACTPLA & DET	To discuss size, boundaries and topography of the Molonglo school site including a brief outline of surrounding sites and any proposed works on those sites.
20/9/10	ACTPLA & LAPS	PTWL and bushfire issues for Molonglo
7&8/10/10	Canberra Organic Growers Society	Discuss the community use of the Sewer attendants Cottage in Coombs and the proposal for a Community Garden.
11/10/10	TaMS, ACTPLA, LAPS, JACS	Meeting to discuss conservation of PTWL Habitat and implementation of Bushfire mitigation measure in Molonglo.
03/11/10	ACTPLA	Meeting to discuss Coombs development area boundary.
08/11/10	LDA, ACTPLA, TaMS, JACS, DECCEW, DET, CMD, LAPS	Agency workshop on Coombs EDP.
22/11/10	TaMS	Meeting to discuss bus routes.
06/12/10	ACTPLA	Pre-lodgement meeting to discuss EDP.
31/1/11, 7/2/11, 10/2/11	Commissioner for Environment and Sustainability	Discussion regarding the possible retention of pine trees in Wright & Coombs
25/01/10	ESA	Meeting to discuss ESA requirements with regards to hydrant spacing, water pressures and laneway configurations.

Date	Agency	Purpose and Outcome
16/02/11	TAMS	Coombs EDP – Pre lodgement meeting to discuss various design requirements.
23/02/11	ACTPLA, LMP	Meeting to discuss stormwater discharge and adherence to EPBC requirements for medium and high quality PTWL habitats.
25/02/11	ACTION	Issue of Draft Public Transport Network for comment, noting the proposed PTN to be consistent with meeting outcomes to date.
08/03/11	ACTION	Confirmation on suitability of Cardno Steer Tag turning template.
01/3/11	DECCEW, JACS, ACT Fire Brigade, LAPS	Meeting to discuss Wright temp. Bushfire mitigation and Coombs OAPZ
25/02/11, 28/02/11	ACTPLA	Emails and discussion regarding definition of Road 7 in the Concept Plan and confirmation of intent for Coombs EDP.
02/05/11	TAMS	Coombs EDP – Meeting to discuss stance in dealing with TAMS EDP comments.
10/06/11 & 28/06/11	Department of Education	Coordination of school access points and general responses to EDP comments.
28/06/11	ESA	Meeting to discuss revised EDP documentation and confirm response to ESA comments.

## 4.2 Community Consultation

In parallel with the above stakeholder consultation, the LDA held four formalised public information sessions during December 2009 and March 2010.

The first two sessions were held on 8 and 10 December 2009 with further sessions on 1 and 4 March 2010. Formal feedback from the community was sought until the end of March 2010.

The community was invited to participate in these sessions through the following channels:

- advertisements in The Canberra Times and The Chronicle in the two weeks leading up to the sessions; notification on the LDA's Molonglo Valley website;
- telephone calls to key stakeholders by LDA staff;
- notification on the Weston Creek Community Council website; and
- a self-initiated letterbox drop by the Weston Creek Community Council.

### December 2009 Public Information Sessions

The December 2009 sessions provided the community with the opportunity to review the LDA's site assessment, (opportunities and constraints), the resulting key planning principles and two preliminary designs for Wright and Coombs. Based on the site constraints and opportunities and community feedback the LDA prepared a Consultation Paper on the findings of these sessions, a summary of which is reproduced below. An updated consolidated report was also produced following the formal period of submission at the end of March 2010.

It is relevant to note that the Molonglo information sessions were spread across the afternoon and evening to ensure all interested parties had an opportunity to attend. Members of the Molonglo Valley Project Team were on hand throughout the sessions to answer questions about the draft Estate Development Plans. Representatives from ACTPLA and Roads ACT were also present to answer questions relating to other areas of Molonglo Valley's development.

At these sessions, members of the public could view a range of information including:

- site analysis;
- environmental considerations;
- sustainability (including solar access);
- factors influencing subdivision design (e.g. views, Arboretum, Stromlo Forest Park, land form and views, desire lines); and
- landscape aspirations.

Two preliminary subdivision designs were also on display offering different options for Wright and Coombs' development.

Feedback forms were provided to allow participants to give their views. Registrations of Interest forms were also available and there was significant interest from the public in purchasing land in the Molonglo Valley.

A total of 100 people provided input and feedback to the December sessions. The issues raised included:

- impact on equestrian use;
- roads and traffic;
- affordable housing;
- sustainability (solar orientation, water reuse);
- environmental issues (river corridor, habitat and species protection);
- landscape/ urban design;
- impact on Stromlo Village;
- provision of ageing in place dwellings; and
- block sizes.

The community feedback generally supported Option 2 that retained the immature Eucalypts along Coombs Ridge, and uses landmarks for way finding and connecting the majority of people in the suburb with natural features.

### **March 2010 Public Information Sessions**

From the December community feedback the LDA further developed/refined Option 2 and in March 2010 presented 2 more options and supporting background information for community review.

The March 2010 sessions were a follow up to the December 2009 sessions and provided the community with the opportunity to view the updated planning relating to the draft Estate Development Plans for both Wright and Coombs. Matters of interest arising from the December sessions were dealt with in more detail such as the proposed means of access for equestrian groups during and post construction and the intended methods for achieving Water Sensitive Urban Design (WSUD).

Most of the focus however, was on the design for Coombs where unresolved issues were flagged, including options for solar compliance and the impact of the Molonglo River management strategy and bushfire assessment on the final EDP layout.

## 5 LANDSCAPE MASTER PLAN

### 5.1 Design Intent of Master Plan

The Design Intent of the Landscape Master Plan is to further develop the Landscape Principles of the Coombs Concept Plan. The EDP Landscape Master Plan integrates the WSUD principles of the development, street trees, landscape plantings, and built embellishments in order to provide a comprehensive streetscape and open space concept. The Landscape Master Plan concept is broken down into the following parts:

### 5.2 Streetscape Character

Street tree species selection provides hierarchy to the estate and provides a variety of street characters and identities.

- The overall streetscape planting theme is intended when viewed from above (Mt Stromlo) to visually represent deciduous forest groupings, similar to that of The National Arboretum Canberra and the proposed tree groupings in the Stromlo Forest Master Plan. The grouped tree species will aid in defining neighbourhood street character and have been selected with contrasting autumn colour in mind;
- The prevalence of deciduous trees positioned in the verges according to TAMS (Territory and Municipal Services) standards facilitates solar access to residential blocks, enabling residences to attain optimal energy efficiency all year round;
- Large verge-friendly Eucalypts define the primary north-south median and help to supplement existing eucalypts retained along the main ridgeline in Coombs. The north-south Eucalypt planting scheme carries through into the southern suburb of Wright and may also provide useful ecological corridors for Eucalypt-favouring wildlife;
- All paths and plantings beyond the Coombs outer roadways are future works by others. It is recommended, however, that small scattered groups of native tree planting, compliant with Asset Protection Zone requirements and viewsheds should be located along the perimeter of the site to continue the fitness trail planting scheme from Wright;
- Existing grassing within the Inner Asset Protection zone will be upgraded to slashable standards to enable hazard reduction activity.

Street tree species and locations have been conceptually developed based on detailed drawings for Wright, by Oxigen Landscape Architects and Urban Designers. Trees are specified on the Landscape Master Plan as follows:

TREE SPECIES	ROAD NUMBERS
<i>Eucalyptus sideroxylon</i> 'Rosea'	C07, C09, C18, C21, C23, C25, C37, C40, C52, C53
<i>Fraxinus americana</i>	C10, C11, C19, C36, C40, C43, C45
<i>Fraxinus velutina</i>	C07, C14, C19, C20, C22, C37, C41
<i>Pistachia chinensis</i>	C03A, C03B, C07, C13, C20, C29, C30, C35, C39
<i>Sophora japonica</i>	C09, C22, C27, C32
<i>Quercus phellos</i>	C21, C22, C24, C26
<i>Quercus robur</i>	C15, C16, C20, C42
<i>Quercus palustris</i> 'Freefall'	C03A/B, C03C/D, C04, C08W/E, C25
<i>Quercus coccinea</i>	C04, C10, C11, C17, C23, C44
<i>Ulmus</i> 'Sapporo Autumn Gold'	C07
<i>Ulmus pumila</i>	C51, C52, C53
<i>Zelkova serrata</i>	C12, C15, C31, C33, C34, C38

### **5.3 Parks and Open Space**

Parks and Open Spaces vary in amenities depending on their size and location.

The 'Pond A', 'Pond B' and North Weston Pond areas are designed by others; however, it would be advantageous to continue landscape themes found in Coombs & Wright in these areas such as signage, trails, plantings, and furniture.

The formal parks in this Estate Development Plan are approximately 4.8ha in area and are classified as Neighbourhood Parks by TAMS. Neighbourhood Parks are typically adjacent residential areas and include playground facilities. The majority of Coombs Neighbourhood Parks contain play facilities. Each park is different in amenity but unifies the nature of Coombs & Wright:

- Local Neighbourhood Park, between of Road C28 and Road C08E: Located among mixed use, medium density buildings, this park is visible from the main roadway entry to Coombs and is bounded by arterial roads on two of its sides. In order to best take advantage of the size and situation of this park, the park's design is intended to adopt the formal atmosphere of the adjacent café precinct and blend it with sculptural play features, dining, seating, and innovative use of landscape materials and plantings. This area will also be characterised by retained and pruned existing pine stands. There is scope to locate public artwork in this open space. Site furniture and paving should be contemporary, built from high quality materials to fit in with the sculptural play design scheme. This park should be representative of a "town square" for Coombs;
- Central Neighbourhood Park, Road C40 and Road C37: This central neighbourhood park is surrounded by local roads and is set within a low density housing area. It would be advantageous to retain some existing pines (to reflect the past land use of the site) and build on their presence by incorporating informal natural play areas and play equipment with soft fall surfacing. This park will boast a varied landscape that offers a range of play opportunities in both natural and structured environments. Natural refuge areas will include exciting toddler to teenager play programming, seating, and a circuit path that ties all functions together.

There are also informal open spaces within Coombs. These informal open spaces are generally designed for pedestrian / multi-use access, drainage, and as landscape buffers. Wherever feasible, open space corridors in Coombs have been outfitted with connective pathways to ensure pedestrian, cyclist / multi-use, equestrian, and mountain bike activities are distributed across the suburb where appropriate. There are several distinct open spaces in Coombs that are not formal parks such as:

- Coombs and Wright Fitness Trail: Skirting Coombs' periphery is a future area by others intended to become a path system with native shade trees. The fitness trail will be made up of a 6m wide multi use path in the Molonglo River Corridor. This is part of a sequence of fitness equipment links into Wright's fitness trail that form a continuous loop. There will also be a future 3m wide gravel path provided by others for mountain biking and hiking in this corridor.
- Axial Open Space: Open space has been dedicated to the road C03A median and perpendicular Road C08W and Road C08E to preserve existing eucalyptus trees along ridgelines. The Road C25 open space contains a central pathway so that users can easily travel between the paths within Block AW. The C03A median is meant to be a visually dramatic corridor between John Gorton Drive and the Molonglo River as well as accentuate the natural ridgeline. This can also be used by pedestrians for north-south travel.
- Internal Park Pathways: All Parks within Coombs are designed with hierarchical off-road pathway systems that integrate into the greater paths network. An important location for directional signage will be the T-intersection of the fitness trail and the trail through the 'Pond A' open space; this where all major paths converge, especially for commuting cyclists.

## **5.4 Tree Management and Retention**

A number of tree assessments and surveys have been completed relevant to Coombs, they are:

- ACTPLA tree study, which states there are no registered or regulated trees in Coombs;
- dsb tree study, which is a more detailed assessment of the existing eucalypts along the main ridge line;
- Molonglo Amenity Tree Assessment for Coombs and Wright suburbs, dsb study dated January 2010, that makes recommendations on the retention and staged removal of the existing eucalypts along the ridge line.

The above noted surveys are provided as Appendix E.

In summary we note the following:

- ACTPLA's tree assessment found there are no trees within the Coombs development area governed by the Tree Protection Act;
- With the exception of the eucalypts along the main ridge line the remaining vegetation within Coombs is a pest plant, *Pinus radiata*, generally 3-6m tall and not considered regulated or registered trees;
- Two stands of *pinus radiata* are proposed to be retained within urban open space areas. This is to reflect the sites natural heritage and to reflect the current visually dominant feature;
- Further details on the size and number of *pinus radiata* to be retained will be provided during detailed design. A detailed tree survey of existing pines proposed for retention will also be prepared at detailed design stage;
- Where existing eucalypts are proposed for retention, refer to Tree Management Plans, refer Sheets 180-186 and Tree Retention Plans, Sheets 154-162 provide further details.

## **5.5 Energy Audit**

The Territory Plan – Appendix C Energy Audits of Subdivisions – Detached Residential Blocks forms the basis for this assessment.

All blocks (attached and detached) were assessed under Table 9 Criteria for Determining Block Rating. Those blocks that did not comply with the criteria (a) or (b) were assessed under criteria (c).

Each of the block ratings had further rating applied due to slope of land and aspect of block.

## **5.6 Zero Setbacks**

In determining blocks which should have a zero setback, the following principles have been adopted:

- There are no zero blocks on N-S streets.
- Zero setbacks on blocks on E-W streets are located on the western side (unless a corner block).
- No zero setbacks to any street frontage, except on corner blocks when the street is a laneway.
- If there is no advantage in terms of energy performance then zero setbacks are avoided to allow for greater flexibility for housing product choice.

The results of the Energy Audit, refer Table 7 below, indicate that 76% of all blocks (attached and detached) in the Estate obtained a rating of 3 stars or greater. This exceeds the Territory Plan requirements as only detached block need to comply with this provision. The composite results are shown in a table on the Energy Audit. The block-by-block ratings are shown on drawing EAP 1-7.

**Table 7: Energy Ratings for Coombs**

Rating	Blocks	%
1	0	0
2	146	22.4
3	96	14.8
4	157	24.1
5	252	38.7
TOTALS	651	100

The Energy Guidelines assessment criteria do not assess blocks narrower than 9m. As a result all small blocks fall into the 2 star rating.

### **5.7 Land Use Plan**

An Estate Development Plan (EMP-01) has been prepared to indicate the land use policy applicable to the site – refer also to Section 1.2 'Planning Context'.

### **5.8 Development Intentions Plan/Building Envelope Plan**

A typical Development Intentions Plan has been prepared to show the building intent (DIP 1-7). Block typologies are shown along with indicative footprints for each single dwelling house and multi unit site.

## **6 ASSESSMENT OF EDP AGAINST RESIDENTIAL SUBDIVISION CODE**

Element 1: Neighbourhood Design

**Intent:**

To provide safe, convenient, accessible and attractive neighbourhoods that meet the diverse and changing needs of the community. This encompasses offering a wide choice in good quality housing and associated community and commercial facilities, providing for local employment opportunities, encouraging walking cycling and use of public transport, minimising energy and water consumption, and promoting a sense of place through neighbourhood focal points and the creation of a distinctive identity which recognises and, where relevant, preserves the natural environment.

Element 2: Street Works

Rules / Criteria	Compliance
2.1 Functions and Structure	

Rules / Criteria	Compliance
<p>C1</p> <p>The street network has a clear structure and component streets conform to their function within the network.</p>	<p><i>Complies:</i></p> <p><i>The street network has a clear structure with roads conforming to their function in the network.</i></p> <p><i>Major and Minor Collectors Roads, Roads C03 and C04, form the main north south spines between the signalised intersections on John Gorton Drive and with East and West Coombs.</i></p> <p><i>Strong links between Roads C03 and C04 are provided within the road hierarchy by Roads C07 and C08, together with Road C20 on the eastern side of the main ridge in east Coombs (which also links east and west Coombs). These roads are higher order within the hierarchy, generally Local Access C or higher) and represent the main links carrying the majority of localised traffic. In addition these roads form the basis of the Public Transport Network through the estate.</i></p> <p><i>The higher order roads and main spine links throughout the estate are further supplemented by lower order roads (Local Access B) carrying a reduced number of vehicles typically derived from the lower density, RZ1 areas though in some isolated cases from higher density development. The lower order roads are part of a clear structure that link with the Major, Minor Collectors and Local Access C spine network and therefore provide efficient transport links to John Gorton Drive in the south.</i></p> <p><i>There are some Local Access A roads though consistent with the requirements of Table 4 from the Residential Subdivision Code these have only been nominated on roads where no through traffic can be reasonably expected.</i></p> <p><i>It is also noted that all streets link with other roads that are no more than two levels higher or lower in the hierarchy as defined by this Code with the exception of Road C28.</i></p> <p><i>Road C28 is a short (approximately 100m) street connecting Road C3 (major collector) at its western extent to Road C7 (minor collector) at its eastern extent. This access street has been geared as a local access B and is anticipated to facilitate approximately 400 vpd, of which the majority of trips are generated by MU site Section AT Block 'b' and further supplemented by traffic accessing the Local Centre. In order to deter through movements from utilising this connection, this street will be appropriately calmed through the incorporation of LATM measures such as road cushions and road narrowings, with details to be provided at the detailed design stage.</i></p> <p><i>The lower order category for Road C28, with traffic control measures, will be further developed at detailed design to provide synergy between the local centre and the open space area directly to the north.</i></p>

Rules / Criteria	Compliance
<p>R2</p> <p>The street network reflects the characteristics specified in Table 2.</p>	<p><i>Complies: The street network consists of Access Streets and Collector Streets which are based on the indicative traffic volumes and road characteristics notes in Table 2.</i></p> <p><i>There are a number of cases where the road characteristic notes determine the classification of the road instead of the indicative traffic volumes. e.g. Local Access A do not convey traffic from other areas, and the Coombs and Wright Concept Plan requires Road 3 to be a Collector Road.</i></p>
<p><b>2.2 Corridors and Precincts</b></p>	
<p>R3</p> <p>Streets within any neighbourhood do not operate as through traffic routes for externally generated traffic (other than for pedestrians, cyclists and public transport).</p>	<p><i>Complies: Externally generated traffic will be served by the John Gorton Drive, rather than through traffic movements in Coombs. The main external traffic destinations from the John Gorton Drive will generally be to the primary school precinct (including the adjoining community facilities), the Local Centre and the Molonglo River Corridor. These are not considered as through traffic routes.</i></p> <p><i>The exception to that noted above is the future link to North Weston as required by the Coombs and Wright Concept Plan. The proposed road network is consistent with the Coombs and Wright Concept Plan including the identification of key roads and their relationship to Precincts.</i></p>
<p>R4</p> <p>Connections between residential streets and arterial roads are in accordance with the requirements of Table 3.</p>	<p><i>N/A: The connections with John Gorton Drive are mandated in the Concept Plan and are to be constructed as part of the Capital Works Project</i></p>
<p>C5</p> <p>Safe and convenient links are provided for pedestrians and cyclists across transport corridors.</p>	<p><i>Complies: Signalised intersections and pedestrian underpasses are part of the John Gorton Drive Capital Works project. These crossings will provide a safe and convenient link for pedestrians and cyclists at approximately every 400m. In addition pedestrian refuges will be provided at convenient locations for the crossing of major collector roads within the Coombs Estate.</i></p>
<p>R6</p> <p>Junctions between the external roads and the internal street network are located so as to minimise restriction of movement on the roads, and to avoid traffic volumes in excess of 6000 vehicles per day (vpd) on major collector streets and 3000 vpd on minor collector streets.</p>	<p><i>Complies: The spacing of junctions between external roads and the internal street network restricts traffic volumes to less than 6,000 vpd on Roads C03A, C03B and C04 and to less than 3,000 vpd on all other minor collector streets.</i></p> <p><i>All roads have been designed to comply with Ausroads and TaMS Standards.</i></p> <p><i>See Road Hierarchy Plan (Drawing RHP 01 to 04)</i></p>
<p><b>2.3 Safety, Access and Convenience</b></p>	

Rules / Criteria	Compliance
R7 Junctions are spaced as set out in Table 3.	<i>Complies</i>
C8 The street network creates convenient movement for residents between their homes and higher order roads	<i>Complies: The block layout complies with this criterion and the requirements of the Concept and Structure Plans. The only element of R8 the EDP does not comply with is the maximum 1200m distance between any dwelling and the arterial road and this is because the Territory Plan locates dwellings over 1300m (in a straight line) from the Arterial Road. Otherwise the driving distance from any dwelling to the nearest collector road complies with Rule 8 and the road network provides convenient movement for residents to all other higher order roads.</i>
R9 No more than three turning movements at intersections or junctions are required in order to travel from any home to the most convenient collector street or higher-order road.	<i>Complies: Coomb's street design is a connective grid. This generally reduces the length of vehicle trips and requires 3 or less turning movements between all dwellings and the most convenient collector road.</i>
R10 Proposed housing development along a movement corridor does not have direct vehicle access to an arterial road, unless there are no suitable access alternatives, in which case vehicle access on to the corridor must be able to be made in a forward direction.	<i>Complies: There is no direct access to the arterial road from dwellings. Access to dwellings is only permitted via the internal road network (individual dwellings) and service roads (limited to high density sites).</i>
<b>2.4 Traffic Impacts and Residential Amenity</b>	
R11 No more than 5% of dwellings have direct access to streets with the long-term maximum desirable traffic volume in excess of 3000 vpd.	<i>Complies: No dwellings have direct driveway access to streets with traffic volumes greater than 3,000 vpd.</i>
R12 An acoustic analysis identifies internal and external noise impacts.	<i>Complies: GHD has undertaken a desktop assessment of the potential traffic noise impacts of the proposed John Gorton Drive on proposed adjacent residential areas.</i>  <i>As stated in the EDP report the LDA is requesting a technical amendment to the concept plan to require the high density developments along John Gorton Drive to mitigate the predicted future traffic noise levels. A planning control plan that clearly identifies blocks requiring acoustic noise mitigation has been prepared and submitted as part of the EDP submission.</i>
<b>2.5 Functions and Width</b>	

Rules / Criteria	Compliance
<p>R13</p> <p>The road cross-sections and location of utilities and driveways within verges maintain an alignment for the planting of street trees as required by Table 4.</p>	<p><i>Complies: Road reserves and driveway locations have been designed throughout the estate to accommodate all services and proposed large street tree planting in accordance with Table 4.</i></p>
<p>R14</p> <p>The road network caters for the efficient provision of public utility networks including water, sewerage, stormwater, electricity, telecommunications and gas, as demonstrated by certification by relevant authorities.</p>	<p><i>Complies: all services can be fully accommodated within the road verge to meet authority requirements. See typical cross sections (Drawings TYP 01 – 06).</i></p>

Rules / Criteria	Compliance
<p>C15</p> <p>Street reserve width is sufficient to cater for all street functions, including:</p> <ul style="list-style-type: none"> <li>a) Safe and efficient movement of all users</li> <li>b) Provision for parked vehicles</li> <li>c) Location, construction and maintenance of network utilities;</li> <li>d) Overland flow paths within depth and velocity safety criteria for pedestrian and vehicles</li> <li>e) Provision for water sensitive urban design</li> <li>f) Carriageway and pedestrian lighting are integrated with a tree management plan that maintains designed lighting levels over time</li> <li>g) Street tree planting</li> <li>h) Retaining walls</li> <li>i) Public lighting</li> <li>j) Pedestrian and cycle paths.</li> </ul>	<p><i>Complies: The proposed widths for all streets are sufficient to cater for all street functions noting:</i></p> <ul style="list-style-type: none"> <li>a. <i>A minimum 1.5m wide footpath is proposed on both sides of streets generally to maximise pedestrian connectivity and efficiency of movements. On road cycle lanes have been provided along main desire lines such as Road C03 A&amp;B and C04. In addition a 2.5m shared pathway is proposed on Roads C03 C&amp;D, C07, C08 to efficiently convey cyclists and pedestrians to and from strong desire lines such as the school, local centre, River Corridor and open space areas such as North Weston Pond. 2.5m shared pathways are also nominated around the Mixed-Use Zones. The street network establishes a road hierarchy and traffic management that restrains vehicle speeds, deters through traffic and is appropriate for other road uses. Trafficable lanes have been designed in accordance with the Territory Plan and intersections have been designed in accordance with the relevant standards. In addition intersections along the bus routes have been designed to accommodate the requirements of ACTION buses.</i></li> <li>b. <i>Indented parking has been provided in front of dwellings, along main traffic routes and adjacent to amenity. Lower order roads within the road hierarchy will accommodate informal parking within the road reserve in accordance with R32 and table 4. Parking has been provided at a rate of 1 space per 2 blocks &lt;12.5m wide. Larger blocks with frontages greater than 12.5m accommodate visitor parking on block;</i></li> <li>c. <i>Utility services, (shared trench, potable water, sewer and stormwater) have been designed with clearances nominated in keeping with the relevant standards;</i></li> <li>d. <i>Road reserves have been designed to convey minor storm events via stormwater pit and pipe infrastructure. Major storm events up to and including the Q100 will be conveyed via a combination of pit and pipe and overland flow within the road reserve in keeping with the relevant standards regarding velocity depth and hazard;</i></li> </ul>

Rules / Criteria	Compliance
	<p>e. <i>The majority of the street verges are 7.5m wide, which allow for WSUD elements to be included in the streets. The design has included kerb watering of street trees, however the majority of WSUD measures, gross pollutant traps and bio retention areas are generally proposed at downstream discharge points and not within the road reserve;</i></p> <p>f. <i>Street trees and street lighting are proposed on a common alignment to provide an efficient verge configuration and consider clearances to services and other infrastructure. Street trees will be adequately spaced to maintain desired lighting levels and on consideration mature tree canopy;</i></p> <p>g. <i>Street tree planting has been nominated in keeping with the relevant standards and consistent with the Territory Plan;</i></p> <p>h. <i>Retaining walls are proposed within the central median of Road C03 and Road C46. The road reserves are of sufficient width to accommodate retaining walls while still maintaining adherence to the relevant standards and Territory Plan. Other retaining walls along roads 9 and 20 are not located within the road reserve, but sited either in the public open space or on blocks;</i></p> <p>i. <i>All road reserves have been designed in keeping with the relevant standards in relation to public lighting and are of sufficient width in order to accommodate street lights and associated electrical infrastructure;</i></p> <p>j. <i>A minimum 1.5m wide footpath is proposed on both sides of streets to maximise pedestrian connectivity and efficiency of movements.</i></p> <p><i>On road cycle lanes have been provided along main desire lines such as Road C03 A&amp;B and C04. In addition a 2.5m shared pathway is proposed on Roads C03 C&amp;D, C07, C08 to efficiently convey cyclists and pedestrians to and from strong desire lines such as the school, local centre, River Corridor and open space areas such as North Weston Pond. 2.5m shared pathways are also nominated around the Mixed-Use Zones.</i></p>

Rules / Criteria	Compliance
<p>R16</p> <p>Speed reduction devices are part of the design for the total street environment which demonstrates that:</p> <ul style="list-style-type: none"> <li>a) Slow points, including either horizontal or vertical deflection, are designed to slow traffic to design speeds.</li> <li>b) Slow points and carriageway narrowings are designed to take into account the needs of cyclists, by ensuring speed compatibility, adequate space for concurrent passage or off-street diversions.</li> <li>c) Landscape design, on-street parking and streetscape design are used to complement speed restriction measures.</li> <li>d) Speed restriction techniques and devices are not used in isolation and only exist as part of an integrated traffic management solution.</li> <li>e) The verge, when considered in conjunction with the horizontal alignment and permitted fence, wall and other property frontage treatments, provides safe sight distances, taking into account expected vehicle speeds and pedestrian and cyclist movements.</li> <li>a) f) Traffic control devices are designed in accordance with national standards that take into account the access requirements for emergency vehicles.</li> </ul>	<p><i>Complies: The street network incorporates numerous traffic calming measures including roundabouts, four way intersections and associated priority controls coupled with speed attenuation measures.</i></p> <p><i>Complies: The proposed street network accommodates 1.5m wide on street cycle paths on major and collector roads.</i></p> <p><i>Complies: On street parking is proposed (in areas) on collector streets to assist in maintaining a low speed environment.</i></p> <p><i>Complies: As stated above a suite of speed reduction devices are proposed to provide an integrated traffic management solution that clearly conveys vehicle speeds.</i></p> <p><i>Complies: Verge widths are generally greater than those nominated in Table 4 and provide safe sight distances for vehicle, pedestrian and cycle movements. The exception being adjacent to open space areas where a reduced verge is appropriate due to limited infrastructure allocation and considering increased view corridors.</i></p> <p><i>Also Road C46 proposes a 6.15m verge though Table 4 nominated 6.25m minimum. Again this is appropriate given the allocation within the verge and the desired urban outcome – a one-way large lot dress circle. An in principal agreement has been received from TaMS and all infrastructure clearances are in line with in principal agreements from Jemena and ActewAGL.</i></p> <p><i>Complies: The detail design will ensure all traffic control devices will be in accordance with access requirements for emergency vehicles.</i></p>
<p>R17</p> <p>The impact of measures intended to restrain traffic speeds and traffic volumes take account of the needs of other road users and adjoining dwellings, by avoiding:</p> <ul style="list-style-type: none"> <li>a) unacceptable traffic noise to adjoining dwellings</li> <li>b) devices that reduce convenience or safety levels for cyclists and public transport.</li> </ul>	<p><i>Complies: No traffic control devices are proposed that are considered to have an unacceptable impact on adjoining dwellings through traffic noise or the convenience and safety of cyclists and public transport.</i></p>
<p>R18</p> <p>Shared Use Zones comply with AUSTROADS requirements.</p>	<p><i>Complies: There are no Shared Use Zones Roads proposed in Coombs.</i></p>

Rules / Criteria	Compliance
<p>R19</p> <p>Sight distances at pedestrian and cyclist crossings and at junctions and intersections are in accordance with <i>Part 5 Guide to Traffic Engineering Practice</i> or its successor.</p>	<p><i>Complies: Sight distance for all intersections have been tested and comply.</i></p>
<p><b>2.6 Site Access and Width</b></p>	
<p>R20</p> <p>Motorists are able to enter or reverse from a block or site in a single movement.</p>	<p><i>Complies: Blocks are generally perpendicular to streets and allow sufficient manoeuvring space to enter or reverse from a block in a single movement.</i></p>
<p>R21</p> <p>Driveways and direct vehicle access to major collector streets and other streets that carry more than 3000 vpd are designed to require forward entry and exit of vehicles from properties.</p>	<p><i>Complies: No direct access is provided to lower density blocks from roads which exceed 3,000 vpd. Access from higher density developments are required by the Territory Plan to provide forward entry and exits (Multi-unit housing code Rule 76 (d))</i></p>
<p><b>2.7 Geometric Design</b></p>	
<p>R22</p> <p>Longitudinal gradient does not exceed the gradients specified in Table 4, and street pavement cross-fall is between 2.5% and 5%.</p>	<p><i>Complies: Road gradients and pavement crossfalls are in accordance with Table 4. Where a priority road has a gradient greater than 5% the intersection grading as part of detailed design will ensure that the crossfall does not exceed 5%</i></p>
<p>R23</p> <p>Geometric design for intersections, roundabouts and slow points are consistent with the vehicle speed and maximum design vehicle envelop intended for each street and is consistent with AUSTRROADS Guidelines and in accordance with the <i>Australian Road Rules</i>.</p>	<p><i>Complies: The design of all intersections, roundabouts and slow points are in accordance with AUSTRROADS guidelines and the Australian Road Rules.</i></p>
<p>R24</p> <p>At intersections, turning vehicles are accommodated using AUSTRROADS <i>Design Vehicles and Turning Templates</i> to enable turns to be made in a single forward movement as follows:</p> <ol style="list-style-type: none"> <li>For turns between a major collector and a minor collector or access street, the 'design articulated vehicle' provides a turning path radius of at least 15 m in accordance with the <i>Australian Road Rules</i>.</li> <li>For turns between a minor collector street and access streets, the 'design heavy rigid vehicle' provides a turning path radius of at least 15 m, using any part of the pavement, in accordance with the <i>Australian Road Rules</i>.</li> <li>For turns between access streets, the B99 'design car' provides a turning path radius of at least 7.5 m using the correct side of the pavement only.</li> </ol>	<p><i>Complies: All turning paths and vehicles comply with Australian road rules. Refer to vehicle turning path drawings submitted as part of the EDP.</i></p>

Rules / Criteria	Compliance
<p>R25</p> <p>Kerb radii do not exceed desirable kerb returns in Table 4, except when required to accommodate larger vehicle turning movements in accordance with the <i>Australian Road Rules</i>.</p>	<p><i>Complies: Kerb radii do not exceed desirable kerb returns in Table 4 except where required to allow safe design vehicle movements in accordance with the Australian Road Rules.</i></p>
<p><b>2.8 Laneways</b></p>	
<p>R26</p> <p>Laneways must serve one of the following purposes:</p> <ul style="list-style-type: none"> <li>a) Run east-west and provide small-lot rear-parking access to maximise solar access to habitable areas;</li> <li>b) Access multi-unit housing;</li> <li>c) Rear access to lots fronting busy streets; or</li> <li>d) Service retail and commercial areas.</li> </ul>	<p><i>No laneways are proposed under the EDP however community title shared driveways in Sections AO, AN, BA and BB provide rear access to terrace blocks and perform a similar function. With regards R26 we confirm the following:</i></p> <ul style="list-style-type: none"> <li><i>a. The community title shared driveways generally run East/West and provide rear access to small lots and maximise solar access to habitable areas.</i></li> </ul>
<p>C27</p> <ul style="list-style-type: none"> <li>a) Good passive surveillance into, along and through lanes is provided;</li> <li>b) Continuous lines of garage doors and fences are avoided;</li> <li>c) Opportunities for privately maintained landscape areas are provided;</li> <li>d) Modifications to all code items to the satisfactions of Asset Acceptance at TAMS are addressed;</li> <li>e) Emergency Services Bureau supports the use of the rear lane as its primary access.</li> </ul>	<p><i>No laneways are proposed under the EDP however community title shared driveways in Sections AO, AN, BA and BB provide rear access to terrace blocks and perform a similar function. With regards C27 we confirm the following:</i></p> <ul style="list-style-type: none"> <li><i>a. Surveillance rooms have been nominated on the northern side of all community titles shared driveways to provide good passive surveillance along and through the shared driveway as well as the community titled open space areas. In addition the lanes are straight and offer unrestricted sight lines;</i></li> <li><i>b. Community titled shared driveways proposed under this EDP are all lineal elements provided rear access to terrace dwellings. The terraces are proposed in rows of no more than 6 dwellings with community titled open space areas to ensure the rear facades of dwellings are not continuous elements;</i></li> <li><i>c. Community titled open space areas have been provided to all terrace sections within community titled shared driveways (total width of 2m landscaped verges);</i></li> <li><i>d. The terrace configuration has been reviewed to the satisfaction of TAMS;</i></li> <li><i>e. ESA has given its in principal support for the community titled shared driveways configuration with formal endorsement expected as part of this EDP submission.</i></li> </ul>
<p><b>2.9 Culs-de-sac</b></p>	
<p>R28</p> <p>No more than 15% of lots across the entire sub division are served by culs-de-sac.</p>	<p><i>N/A: There are no culs-de-sac roads proposed within Coombs.</i></p>

Rules / Criteria	Compliance
R29 Culs-de-sac are no longer than 100 m.	<i>N/A: There are no culs-de-sac roads proposed within Coombs</i>
R30 Linking paths to adjoining areas for use by pedestrians and cyclists include lighting and allow for surveillance from the surrounding roads and private properties.	<i>Complies: Paths through sections AK, BS, BR, AI and BM will be adequately lit and allow for surveillance from the surrounding roads and properties.</i>
R31 For turning movements at the head of a cul-de-sac, sufficient area is provided for the 'design refuse vehicle' (as advised by the relevant waste collection authority) to make a three-point turn.	<i>N/A: There are no culs-de-sac roads proposed within Coombs</i>
<b>2.10 On-street Parking</b>	
R32 In streets where visitor parking is not provided on site, one car-parking space is provided for every two dwellings. These are located against the kerb if the carriageway width is sufficient, or in parking bays constructed within the verge and located within 60 m from the frontage of each dwelling.	<i>Complies: See parking plan (PP01 – 05) which demonstrates the proposed parking complies with this rule and the requirements of Table 4 that requires one hard standing space per two block frontages less than 12.5m.</i>
R33 The dimensions of car spaces and access comply with the requirements of AS 2890.	<i>Complies: All car spaces have been designed to comply with AS2890.</i>
<b>2.11 Water Sensitive Urban Design</b>	
R34 Water Sensitive Urban Design treatments are provided in accordance with the Water Ways: <i>Water Sensitive Urban Design General Code</i> .	<i>Complies: The Water Sensitive Urban Design strategy proposed meets the requirement of Water Ways: Water Sensitive Urban Design General Code and the Concept Plan.</i>

**Element 3: Pedestrians and Cyclist Facilities**

**Intent:**

- a) To encourage walking and cycling by providing safe, accessible, convenient and legible movement networks to destinations within and beyond the neighbourhood

Rules / Criteria	Compliance
<b>3.1 Location and Design</b>	
R35 Footpaths and cycle paths are provided in accordance with Table 4.	<i>Complies: All footpath and cycle paths meet or exceed the requirements of Table 4. All Streets will have 1.5m footpath on both sides of the road. 2 – 2.5m paths are provided where higher use is foreseen, with 2.5m paths provided in high amenity areas in accordance with R37 c).</i>
R36 a) Lighting is provided to paths in accordance with AS/NZ 1158; and b) A tree management plan is provided demonstrating how required lighting levels can be maintained as tree canopies develop over time.	<i>N/A - Lighting design will be undertaken as part of the detailed design and will meet these requirements. The lighting design will fully consider the proposed landscape treatment within the verge.</i>
R37 a) For collector streets on which block access is provided, pedestrian or cycle paths are provided on either side of the street and separated from the carriageway pavement. b) Minor paths, where required, are a minimum width of 1.2 m and do not exceed 10% gradient, or the gradient is no greater than any adjacent street pavement. c) Minor paths are 2.5 m minimum width in the vicinity of meeting points, schools, shops and other activity centres. d) Minimum stopping sight distances at path intersections is in accordance with AUSTROADS <i>Guide to Traffic and Engineering Practice</i> or its successor.	<i>Complies: pedestrian or cycle paths are provided on either side of the street and are separated from the carriageway pavement.</i>  <i>Complies: All minor paths exceed the 1.2m minimum width and with a gradient that does not exceed the adjacent street pavement.</i>  <i>Complies: Paths of 2.5m width are to be provided adjacent to shops and other activity centres.</i>  <i>Complies: Minimum stopping sight distances at path intersections are in accordance with AUSTROADS Guide to Traffic and Engineering Practice.</i>
<b>3.2 Safe Crossings</b>	
R38 Where traffic volumes exceed 3000 vpd or speeds exceed 50 km/h, safe crossings are created with the use of pedestrian refuges, slow points, thresholds or other appropriate mechanism.	<i>Complies: Pedestrian refuges are provided for all paths crossing streets where traffic volumes exceed 3000 vpd or speeds exceed 50 km/h.</i>
R39 At potential conflict points or junctions on high-use facilities, paths are widened to a minimum width of 2.5 m to allow for passing of pedestrians and cyclists in opposite directions.	<i>Complies: See rule 37 (c).</i>

Rules / Criteria	Compliance
<p>R40</p> <p>Safe street crossings are provided for all street users with sight distances, pavement markings, warning signs and safety rails (where appropriate for cyclists) in accordance with AUSTRROADS requirements.</p>	<p><i>Complies: Safe street crossing locations are to be fully incorporated into the EDP and detailed design of the estate. The EDP shows the general location of each crossing. The detailed design will further refine the designs to ensure the crossings fully comply with AUSTRROADS requirements.</i></p>
<p>R41</p> <p>Compliant pram and wheelchair crossings are provided where cycle and pedestrian paths intersect with kerbs.</p>	<p><i>Complies: The EDP shows pram crossings at each street intersection. Detail design process will ensure they comply with standards.</i></p>
<p>R42</p> <p>Markings and tactile aides are provided in accordance with the relevant Australian Standard to assist sight-impaired people, the elderly and children.</p>	<p><i>N/A - These will be incorporated into the detailed design.</i></p>

**Element 4: Public Transport**

**Intent:**

- a) To increase opportunities for choice in mode of transport, and provide cost-effective and energy-efficient public transport services that are accessible and convenient to the community

Rules / Criteria	Compliance
<p><b>4.1 Bus Stop Location and Design</b></p>	
<p>R43</p> <p>a) At least 90% of dwellings are within 400 m safe walking distance from an existing or potential bus route, or 200 m safe walking distance from an existing or proposed demand-responsive or community bus service route. In addition, at least 90% of dwellings are within 500 m from the nearest existing and proposed bus stop.</p> <p><b>OR</b></p> <p>b) at least 90% of dwellings are within 750 m of a high frequency trunk service bus stop that has, or is projected to provide, a minimum of eight outbound buses an hour during the morning peak.</p>	<p><i>Complies: More than 90% of all dwellings are located within 400m walking distance of a proposed bus route and within 500m from the nearest bus stop.(refer to Public Transport Network &amp; Off Road Movement Systems Plan).</i></p> <p><i>In addition more than 90% of dwellings are located within 750m of a high frequency trunk service bus stop on the arterial road.</i></p>
<p>R44</p> <p>The siting of bus stops is related to the pedestrian path network.</p>	<p><i>Complies: The proposed bus stops fully consider the pedestrian path network and linkage with open space. The street grid network provides great pedestrian permeability and a variety of routes to bus stops.</i></p>

Rules / Criteria	Compliance
<p>R45</p> <p>Bus stops are located within 400 m of sporting, community, retail and educational facilities.</p>	<p><i>Complies: The bus stops within Coombs are located within 400m of sporting, community, retail and educational facilities, and the mixed use sites along John Gorton Drive are adjacent to high frequency stops.</i></p>
<p>R46</p> <p>Bus stops are in accordance with <i>Disability Access Standards for Public Transport</i>.</p>	<p><i>NA: Bus stops are shown on the road hierarchy plan and the detailed design will ensure they comply with the design standards.</i></p>
<p>R47</p> <p>Bus stops are designed in accordance with TaMS Design Guidelines.</p>	<p><i>NA: These requirements will be incorporated in the detailed design. Locations are shown in the EDP.</i></p>
<p>R48</p> <p>The geometry of streets identified as bus routes are suitable for turning, stopping sight distance, grade and parking requirements of buses (as determined from appropriate design documents) has a carriageway width of 7.5m or within ranges specified in Tables 4 and 5.</p>	<p><i>Complies: Bus routes meet the requirements of this rule including the use of Tag Steer buses as shown on the vehicle turning path diagrams.</i></p> <p><i>In addition, indented on street parking has been provided along the bus routes to ensure parking does not restrict bus movements. As roundabouts have an impact on block locations the EDP demonstrates that the roundabouts comply with a Tag Steer bus. Additional detail will be provided at detail design.</i></p>
<p>C49</p> <p>a) Convenient connections to adjoining areas and other public transport routes (including future routes), provide for ease of movement of buses between neighbourhoods, and link activity centres within and external to the neighbourhood.</p> <p>b) Buses are able to safely gain access to the neighbourhood and cross arterial roads without complicated turning manoeuvres when travelling between neighbourhoods.</p>	<p><i>Complies: The proposed bus routes have been discussed with Action. The location of the bus routes provide Action with the opportunity to extend the Duffy route into Wright, Coombs and North Weston or provides access directly off John Gorton Drive.</i></p> <p><i>NA - Two signalised intersections connect Coombs with John Gorton Drive. These intersection are not part of Coombs EDP but are included in the Capital Works Program</i></p>

**Element 5: Public Open Space and Sporting Facilities**

**Intent:**

- a) To provide public open space and sporting facilities as formative elements in the neighbourhood layout that meet community requirements for safe and accessible outdoor recreational space and that contribute to the community identity through landscaping, heritage and biodiversity protection.

Rules / Criteria	Compliance
<b>5.1 Size and landform</b>	
<p>R50 Local neighbourhood parks must have a minimum size of 0.5 ha, unencumbered by utilities infrastructure, to provide sufficient size for amenity, recreation and environmental purposes.</p>	<p><i>Complies: Local neighbourhood parks have an unencumbered area greater than 0.5ha.</i></p>
<p>R51 Pedestrian parkland serving multiple purposes (e.g. for community paths, bikepaths, stormwater, utilities and the like) achieves minimum widths as described in Table 4 and TaMS Design Standards.</p>	<p><i>Complies: The parkland in and around Coombs serves a variety of functions, including stormwater management, recreational use. The parklands also contain bikepaths and footpaths that link dwellings, river corridor, school, etc.</i></p> <p><i>Only minimum widths of paths are included in Table 4. Path widths comply with Table 4 and the construction details will comply with TaMS design standards.</i></p>
<p>R52 Open space in watercourses and drainage swales are inundated only in a storm event of greater than two-year average recurrence interval and do not present a safety hazard.</p>	<p><i>Complies: WSUD principles adopted across the site allow swales to carry low flows. These however do not present a safety hazard as all recreational open space areas associated with water courses are above 2 year storm events.</i></p>
<p>R53 Drainage swales are contoured, unfenced, grassed, and landscaped.</p>	<p><i>Complies: The Landscape Masterplan shows that the drainage swales are unfenced, grassed and landscaped.</i></p>
<b>5.2 Accessibility</b>	
<p>R54 Fully compliant pedestrian and cycle paths are provided to be contiguous with the on-road and off-road trunk network and achieve access through and to the open space. Service vehicle access and public parking is provided in accordance with TaMS design standards.</p>	<p><i>Compliant pedestrian and cycle paths are provided throughout the estate with on-road cycle paths provided on the main collectors.</i></p> <p><i>Service vehicle access to open spaces will be resolved as part of the detailed design.</i></p>

Rules / Criteria	Compliance
<p>R55</p> <p>Barriers and integrated landscape design prevent motor vehicle trespass onto open space in accordance with TaMS design standards</p>	<p><i>NA – This is a detailed design issue as it does not relate to land take, however, a combination of kerb types (Barrier and Castellated Kerbs) and landscape treatments (including stock fencing along the river corridor) will be provided to prevent vehicular access onto open spaces.</i></p>

**Element 6: Block Layout and Building Envelope Plans**

**Intent:**

- a) To ensure the layout and orientation of blocks achieves required energy standards and provides for attractive and safe streets and public open space

Rules / Criteria	Compliance
<b>6.1 Section Size</b>	
<p>C56</p> <p>a) Street and block layouts are pedestrian-friendly and provide for perimeter buildings fronting a perimeter street around sections.</p> <p>b) Where sections depths are less than 50m, details are provided about housing types, urban design and affordability objectives.</p>	<p><i>Complies: Street and block layouts are pedestrian friendly with the street layout in a preamble grid and paths on both sides of the road. Perimeter buildings front street around sections.</i></p> <p><i>Complies: No sections are less than 50m deep.</i></p>
<p>R57</p> <p>The estate includes a combination of multi-unit sites and single and two-storey attached and detached residential dwellings.</p>	<p><i>Complies: The dwelling types and range complies with the concept plan requirements and provides a variety of housing products.</i></p>
<p>R58</p> <p>Smaller blocks and blocks capable of supporting higher density are located in sections adjacent to commercial centres, public transport, or high amenity areas such as parks.</p>	<p><i>Complies: Smaller blocks and higher density development are located adjacent to public transport, commercial centres and parks.</i></p>
<b>6.2 Solar Efficient Subdivisions</b>	
<p>R59</p> <p>An energy audit carried out in accordance with <i>Energy Audits of Subdivisions – Detached Residential Blocks</i> (Appendix C) achieves the following:</p> <p>a) a minimum of 75% of blocks have an energy rating of three stars or above</p> <p>b) all blocks have a minimum rating of one star.</p>	<p><i>Complies: 75.9% of blocks are 3 stars or higher; the remaining 24.1% have a 2 star rating. The 2 star blocks are principally made up of attached terrace house, facing north/south with rear access. The current rating scheme is not designed to rate attached house products.</i></p>

Rules / Criteria	Compliance
<p>C60</p> <p>By applying the current building setbacks it is impossible to ensure all dwellings will not be overshadowed by their neighbour. LDA request additional setbacks from ATPLA's draft Solar Code are applied to protect solar access. All blocks comply with this document however on block controls need to be applied to ensure solar access.</p> <p>a) Demonstrate that energy efficiency and amenity considerations are achieved.</p> <p>b) Demonstrate that the private open space receives sufficient sunshine to support its intended uses, including outdoor eating, clothes drying, and growth of plants.</p>	<p><i>Complies: All detached blocks within the estate can achieve north-facing, habitable rooms with a minimum of 3 hours direct sunlight onto the floor or wall of the main daytime living area, and to 50% of the POS, between 9.00am and 3.00pm on 21 June.</i></p> <p>LDA requested additional building envelopes (R62 and R63) to be included in the Concept Plan to ensure neighbours do not overshadow their southern neighbour more than the 1.8m high boundary fence at 12 noon winter solstice (21 June).</p> <p><i>In addition LDA has designed all blocks to comply with the Draft Territory Plan Variation 306 (Single Residential Block Compliance Tables) which are designed to ensure all block achieved solar access.</i></p> <p><i>With the application of these new requirements all detached and attached blocks within the estate can achieve north-facing, habitable rooms with a minimum of 3 hours direct sunlight onto the floor or wall of the main daytime living area, and to 50% of the POS, between 9.00am and 3.00pm on 21 June. Refer to Building Envelope Plans for indicative footprints and POS location and shadow diagrams for terrace blocks.</i></p>
<p><b>6.3 Multi-unit Sites</b></p>	
<p>R61</p> <p>Multi-unit sites are located within 200m of a commercial zone, public transport node, or public open space.</p>	<p><i>Complies. Multi units are located within 200m of commercial zone, public transport node or public open spaces.</i></p>
<p>R62</p> <p>Sites for multi-unit development sit within a public road layout that provides similar address and frontage opportunities as the urban structure for single residential blocks.</p>	<p><i>Complies: All multi-unit sites sit within a public road layout that provides similar address and frontage opportunities as single residential blocks.</i></p>
<p>R63</p> <p>When providing access to more than four attached dwellings, shared driveways run east-west and maximise solar access to dwellings.</p>	<p><i>Complies: the attached dwellings driveways run east west and the dwellings north south. On higher density sites basement parking will be required. All dwellings are sited to</i></p>

Rules / Criteria	Compliance
	<i>ensure living areas and private open spaces achieve good solar access.</i>
<p>R64                      Units address public streets or open space. Continuous rear fencing along public roads is avoided.</p>	<p><i>Complies: The blocks have been designed to comply with current Territory Plan requirements for multi unit sites. The intention plans show how units can be designed to provide an internal open space with units addressing the streets. All fencing is to be in accordance with the Territory Plan, which does not permit continuous rear fencing along public roads.</i></p>
<p>R65                      Where internal private roads maintained by the body corporate accommodate more than 300 vehicle movements a day, the roads are developed with the same opportunities for on-street parking, pedestrian paths, verge landscaping and Water Sensitive Urban Design as the public roads described in Table 4.</p>	<p><i>Complies: The provision of internal roads in multi unit sites is subject to the design of each site and a separate development application from this EDP. The development intention plans show indicative layouts for multi unit sites and indicative driveway cross sections of internal driveways. These internal roads combine opportunities for on street parking, pedestrian paths, verge landscaping and WSUD with the multi unit code driveway requirements. In addition the estate has been designed to provide extensive on street parking adjacent to multiunit sites.</i></p> <p><i>The only other private road which has over 300VPD is the lane at Section AN. The amenity of the public lanes per Table 4 is less than the EDP's private lane as Table 4 does not permit lanes to provide landscaping, street trees, on-street parking, footpaths, etc. All of the private lanes have significant areas of landscaping (at the entrances and in the middle) to provide slow points and to avoid continuous lines of garage doors and fencing.</i></p>
<p><b>6.4 Security, Surveillance, Safety, and Amenity</b></p>	
<p>R66                      Where blocks adjoin streets with traffic volumes in excess of 3000 vpd, the block layout achieves one or more of the following:</p> <ul style="list-style-type: none"> <li>a) Incorporates service roads or rear lane access adjacent to busier arterial roads;</li> <li>b) Uses battle-axe blocks to provide vehicle access from a side or rear street;</li> <li>c) Provides pedestrian access to the busy road where vehicle access is not provided;</li> <li>d) Arranges blocks to side onto busier streets with vehicle access from a side street;</li> <li>e) Where road safety standards are met, on-street parking is provided;</li> <li>f) Provides for forward exit from garages and driveways for larger blocks; or</li> <li>g) Incorporates shared driveways to garages at the rear of the blocks to facilitate exit in a forwards direction.</li> </ul>	<p><i>Complies: Two roads (part only C03 &amp; C04) have predicted daily traffic volumes in excess of 3000 vpd. All road sections with predicted daily traffic volumes in excess of 3000 vpd are fronted by multi unit / mixed use sites or open space. No direct vehicular access is proposed in these locations, though appropriate pedestrian linkages and crossing points are proposed.</i></p>

Rules / Criteria	Compliance
<p>R67</p> <p>a) Blocks front streets or public open space.</p> <p>b) Where blocks abut public open space the principles described in Figure 4 are applied.</p>	<p><i>Complies: All single and multi unit blocks have their primary address fronting roads, however 2 multi unit blocks that also abut parks.</i></p> <p><i>While Figure 4 generally relates to single dwelling blocks the principles of having edge streets around the rest of the park has been applied.</i></p> <p><i>In addition the Concept Plan has detail built from requirements to ensure the multi unit dwellings address the parks and open spaces (C60).</i></p>
<p>R68</p> <p>Battle-axe blocks are used only where they:</p> <p>a) front parks, natural areas or recreation areas such as golf courses</p> <p>b) provide frontage to major roads.</p> <p>c) are necessary to provide vehicle access to sloping sites.</p>	<p><i>Complies: Battle-axe blocks are necessary to provide vehicular access from sloping sites and to eliminate dangerous access points near the roundabouts on major roads.</i></p>
<p><b>6.5 Compact blocks (defined as blocks having a site area less than 250m<sup>2</sup>)</b></p>	
<p>R69</p> <p>Compact blocks are located:</p> <p>a) Opposite parkland open space; or</p> <p>b) Within 100m of parkland open space; or</p> <p>c) Adjacent to a minimum 10m wide verge.</p>	<p><i>Complies: All compact blocks are within 100m of open space or parkland or alternatively are adjacent to verges of a minimum 10m width.</i></p>
<p>R70</p> <p>a) Where vehicle access is provided to the front of the block the block frontage is to a local road, and not a major collector.</p> <p>b) Where a block has rear laneway access it may front a collector road.</p>	<p><i>Complies. All compact blocks are serviced by a rear lane / shared private driveway.</i></p>

Rules / Criteria	Compliance
<p>R71</p> <p>Compact blocks provide opportunities for north facing living areas that can be achieved through such measures as:</p> <p>a) East - west running ends of sections</p> <p>b) East – west running culs de sac or minor access roads.</p>	<p><i>Complies: Compact blocks are located with east/west running sections and achieve acceptable solar orientation in accordance with the Territory Plan solar access requirements.</i></p>
<p>R72</p> <p>Road and services infrastructure achieves all operational requirements for waste collection, utilities service access and overland flow protection applicable to standard residential blocks.</p>	<p><i>Complies. The compact blocks have been sited close to parklands and on topographic that minimise grade issues that may impact on services, etc. Waste collections will be via the street and gravity services will be provided in the private lane or in the street.</i></p>

**Element 7: Utilities, Waste Management and Sediment and Erosion Control**

**Intent:**

- a) To ensure that residential areas are adequately serviced with sewerage, water, stormwater, fire-fighting, electricity, gas, street lighting and communication services in a timely, cost-effective, coordinated and efficient manner that supports sustainable development practices and asset maintenance needs and to promote the use of road verges or other public land for the provision of reticulated services where topography and other site constraints allow.

Rules / Criteria	Compliance
<b>7.1 Viability of Services</b>	
<p>R73</p> <p>Land development occurs only where adequate stormwater, sewerage and water supplies for domestic and fire-fighting purposes can be provided and maintained in accordance with utility codes and standards made under or in accordance with ACT law.</p>	<p><i>Complies: Service availability for the development is dependent on ACTPLA's capital works projects and the Actew sewer main project. The timing of these projects is currently consistent with the completion of the development.</i></p>
<b>7.2 Utility Services on Leased and Unleased Land</b>	
<p>R74</p> <p>a) Utility services comply with utility standards.</p> <p>b) Subject to agreement between the land manager and utility provider, water, electricity, gas and communication services are located within road reservations or other Territory Land that is, and is to remain, unleased.</p> <p>c) Subject to agreement between the proponent and the utility provider, and for the purpose of maximising land utilisation, preference is given to locating sewage and stormwater services within road reservations, or other Territory Land that is, and is to remain, unleased.</p>	<p><i>Complies: Proposed utility services comply with design standards.</i></p> <p><i>Complies. Water, electrical, gas and technical services are located in the public street verges.</i></p> <p><i>Complies: Sewer and stormwater are located within road reserves wherever topography allows. Where this cannot be achieved due to topography. The services have been located at the rear of a block where the setbacks allow for the required side access easement. In principle support from the utility provider has been received.</i></p>
<p>R75</p> <p>a) Where utility standards require sewerage and stormwater services to be located within leased blocks, those services:</p> <p>i) are contained within service reservations and accessed by means of utility, emergency or maintenance access routes complying with Figures 5 and 6 and Table 7</p> <p>ii) are on a block of sufficient size to accommodate service reservations and utility access routes, whilst providing comparable building footprint area to similar but unencumbered blocks</p> <p>iii) where possible, are located in service reservations directly accessible from unleased Territory Land</p> <p>iv) where possible, are co-located with private open space to maximise land utilisation</p>	<p><i>Complies: Sewer and stormwater are located within road reserves wherever topography allows. Where this cannot be achieved due to the topography the services have been located at the rear of a block where the setbacks allow for the required side access easement. This is generally on blocks greater than 500m<sup>2</sup>, however functional size houses can still be achieved on blocks approx 450m<sup>2</sup>.</i></p>
<b>7.3 Shared Trenching</b>	
<p>R76</p> <p>Compatible minor service reticulation in the road verge may be located in shared trenching where permitted by utility standards.</p>	<p><i>Complies: Shared trenching has been designed in accordance with agency standards.</i></p>

Rules / Criteria	Compliance
<p>R77</p> <p>Written acceptance of service reservation alignments has been provided by Territory and Municipal Services (TaMS) and other relevant utility providers.</p>	<p><i>N/A: Written support cannot be obtained until the detailed design submission is received by the agencies, however in principle support has been received from TAMS, ActewAGL and Jemena for shared trench arrangement and proposed verge configuration.</i></p>
<p><b>7.4 Width of Service Reservations and Service Access Elements</b></p>	
<p>R78</p> <p>All sewerage and stormwater reticulation on land that is to be leased is located in a service reservation. The widths of service reservations are agreed by the utility provider and comply with the relevant section of Table 6. More than one easement may be required, as is shown in Figure 6.</p>	<p><i>Complies: the proposed easement and access requirements are in accordance with agency standards. (refer to rule 75 above)</i></p>
<p><b>7.5 Width of Service Reservation and Emergency Access to Minor Service Reticulation</b></p>	
<p>R79</p> <p>Where service reservations for sewerage reticulation cannot be adequately accessed directly from public land, maintenance and emergency access routes are provided on each affected leased block to provide obstruction-free access from public land to the service reservation.</p>	<p><i>Complies - Sewer services are located within road reserves or open space as far as possible. Where services lie within blocks the design of easements has been carried out in accordance with agency guidelines. (refer to rule 75 above)</i></p>
<p>R80</p> <p>The widths of maintenance and access routes are approved by the utility provider and comply with the relevant section of Table 6.</p>	<p><i>Complies. Refer to 3.7 of Report</i></p>

Rules / Criteria	Compliance
<p>R81</p> <p>Where corner blocks require service reservations in the rear corner, the service reservation is extended along a side boundary to link with the road verge as shown in Figure 5 and 6.</p>	<p><i>Complies. Easements to be extended for stormwater access to link with road verge</i></p>
<p><b>7.6 Separation of Private and Utility Services</b></p>	
<p>R82</p> <p>Where the permissible footprints of buildings are located adjacent to a service reservation, the relevant service provider determines and provides written approval of the extent and width of a private service zone required for private stormwater and sanitary drains, electricity and communication cables, gas, water and irrigation pipes associated with the development of the lease. This zone is documented in the EDP to provide adequate separation of private services from utility assets, and to prevent damage to private services when the utility is repairing or replacing its assets (see Figure 5). More than one private service zone may be required.</p>	<p><i>Complies: See diagram showing access to utility sewerage and stormwater services in rear of blocks in 3.7. The detailed design of the estate will fully incorporate these requirements.</i></p>
<p><b>7.7 Recording Utility Access Requirements in Leases</b></p>	
<p>R83</p> <p>Where services are proposed to be included in leased land the proponent:</p> <ul style="list-style-type: none"> <li>a) consults with each utility service provider during the preparation of the EDP and obtains written confirmation that the provider's service reservations and maintenance and emergency access route requirements are included</li> <li>b) provides a written undertaking that all designated service reservations, maintenance and emergency access routes, and utility pipe protection envelopes are recorded on the Deposited Plans that will be referred to in the subsequent leases in the manner shown in Appendix B</li> <li>c) includes in the EDP the standard lease clauses applying to service reservations, maintenance and emergency access routes and utility pipe protection envelopes.</li> </ul>	<p>Consultation undertaken with all service providers. Providers' service reservations, emergency, and maintenance access and private service zones are detailed in 3.7 and these will be fully incorporated into the hydraulic masterplans and the detailed design.</p> <p>Written Support to be obtained as part of agency circulation process of EDP prior to Development approval. Consultation to date has indicated in principal support for the service and maintenance reservations.</p>

Rules / Criteria	Compliance
<b>7.8 Design and Construction Qualifications</b>	
<p>R84</p> <p>Sewerage facilities, water supply mains, stormwater, electricity, communications services, gas and street lighting are designed by persons who are qualified by reference to codes and standards made under or in accordance with ACT law.</p>	<p><i>Complies: The detailed design will be undertaken and/or verified by a Chartered Professional Engineer or agencies with appropriate experience.</i></p>
<b>7.9 Overland Flow Paths for Sewage and Stormwater Spillage</b>	
<p>R85</p> <p>Overland flow paths must be provided to ensure that surcharge of sewage or stormwater from utility network overflow points (such as manholes) or future residential sanitary drain overflow relief gullies, will not be obstructed by proposed building footprints and will comply with utility and residential plumbing standards.</p>	<p><i>Complies: Stormwater overland flowpaths are located to prevent discharge through leased land.</i></p> <p><i>The locations of sewer manholes are in accordance with the appropriate standards.</i></p> <p><i>The detail design process will refine the block grading and stormwater and sewer designs.</i></p> <p><i>All buildings are subject to a separate development application.</i></p>
<b>7.10 Location of Sewage and Stormwater Connections</b>	
<p>R86</p> <p>Unless specifically approved by the utility provider, the sewer and stormwater ties are at the low point of the block in accordance with utility standards.</p>	<p><i>Complies: The majority of sewer and stormwater ties are located at the low point of the block. Where this cannot be met adequate depth will be provided to ensure the lowest point of the block can drain into the service (this will be approved by Agencies)</i></p>
<p>R87</p> <p>a) Subject to agreement between the proponent and the utility provider, the sewer and stormwater ties may be located away from the low point.</p> <p>b) Written approval is provided by TaMS and other utility service providers, and any special requirements imposed by the service authorities are incorporated in the design.</p>	<p><i>Complies - See above.</i></p> <p><i>Noted.</i></p>
<b>7.11 Clearance Between Utility Equipment and Landscape Elements</b>	
<p>R88</p> <p>The location of and accessibility to meters, control valves, manholes and utility connections are acceptable to service providers and determined in accordance with utility standards to minimise conflict with proposed driveways, fencing, courtyard walls or other permanent paving, vegetation or structures mandated by the development.</p>	<p><i>Complies: Service locations are designed in accordance with TAMS Design Standards for Urban Infrastructure and service authority requirements.</i></p>

Rules / Criteria	Compliance
<b>7.12 Noise and odour buffer zones</b>	
<p>R89</p> <p>Buffer zones complying with utility requirements are provided between dwellings and utility service equipment such as sewer vents or pump stations to protect residential amenity from odour and noise nuisance. This buffer zone is agreed with the utility provider and documented in the EDP.</p>	<p><i>N/A.</i></p> <p><i>No sewer or water pump stations are to be provided as part of this development. Sewer vents are not part of this EDP but part of the trunk sewer main which has been design to allow residential development in accordance with the Territory Plan land use zones.</i></p>
<b>7.13 Waste management</b>	
<p>R90</p> <p>Waste management is in accordance with the latest version of the <i>Development Control Code for Best Practice Waste Management in the ACT, TaMS 2006</i>.</p>	<p><i>Complies: See waste management plan (WCP 01-04).</i></p>
<p>R91</p> <p>In accordance with the <i>Development Control Code for Best Practice Waste Management in the ACT (TaMS 2006)</i>, garbage collection vehicle access is provided as follows:</p> <ul style="list-style-type: none"> <li>a) to mobile garbage bins for all single unit dwellings and multi unit and cluster developments up to and including 10 units.</li> <li>b) to garbage hoppers in an approved structure for multi-unit sites in excess of 10 dwellings.</li> </ul>	<p><i>Complies. All single dwelling blocks have street garbage collection within 60m of the dwelling.</i></p> <p><i>Complies. The multi unit blocks are an adequate size to allow the future development to have internal garbage collection.</i></p>
<p>R92</p> <p>Demolition waste leaving the site is diverted to a recycling or reprocessing operator for the particular type of waste material. Evidence of proper recycling, reprocessing or disposal is obtained and kept for 12 months after practical completion of the project.</p>	<p><i>Complies. The majority of the waste on this site will come from the removal of the existing pine trees, which will be chipped and used as mulch in the Arboretum or on site.</i></p> <p><i>Generally no other demolition waste will be generated from this development.</i></p> <p><i>All waste generated as part of the construction will be subject to a separate waste management plan developed by the civil and landscape contractors.</i></p>
<b>7.14 Sediment and Erosion Control Plan</b>	
<p>R93</p> <p>A Sediment and Erosion Control Concept Plan satisfies the requirements of the Environment Protection Authority.</p>	<p><i>Complies. The EDP submission contains a Sediment and Erosion Control Concept Plan. See drawing (EMCP-01 and 02).</i></p>

## 7 COMPLIANCE WITH THE COOMBS AND WRIGHT CONCEPT PLAN

The Coombs and Wright Concept Plan became effective on January, 2010 and has been amended serial times with the latest amendment dated 8 July 2011.

The following section demonstrates compliance with the provisions of Parts A and B of the Plan including with the purpose of the Plan and with the “desired planning outcomes” contained in the Plan.

Part C has been excluded as it relates to development undertaken following EDP approval.

Only Rules/Criteria relevant to Coombs have been assessed in this report. Compliance with the provisions as they relate to Wright were covered in the Wright EDP report.

### Part A – Land use

**Notes:**

1. Precincts referred to in this part are shown on figure 2, subject to element 2.
2. Roads referred to in this part are shown on figure 3, subject to element 3.
3. Signalised intersections on the north-south arterial road (*referred to in this EDP report as John Gorton Drive*) are shown on figure 3, subject to element 3.
4. Sections referred to in this part are shown on figure 4, and they are located by cross sections lines.

#### 1.1 Land use plan

Rules / Criteria	Compliance
<p>Note: <b>Desired planning outcomes relevant to this element are: (a), (b), (c), (e), (f), (g), (h), (j), (k), (o), (p) and (q).</b></p>	
<p>C1  <b>Precinct A</b>                      Subject to the identification of precincts and key roads in accordance with elements 2 and 3, and to the zoning of land that is not in a future urban area, the land use plan submitted with an EDP shows in precinct A,</p> <p>a) RZ1, consistent with desired planning outcome (a)                      b) PRZ1, consistent with desired planning outcome (h).</p> <p>Desired planning outcomes:</p> <p>(a) Provide diverse housing types, block sizes, densities and affordability to meet the changing needs of households and to encourage the formation of a diverse community;</p>	<p><i>Complies as follows:</i></p> <p>a) <i>The location of precinct A in the EDP is consistent with figure 2 in the concept plan and all residential development in the precinct is permitted by the Territory Plan RZ1 Land Use policies.</i></p> <p><i>In accordance with planning outcome (a), R37 &amp; R51 of the concept plan (density controls), a variety of low density (less 20 dwellings / ha) block sizes have been provided. Overall the desired planning outcome (a) is achieved by providing a range of housing products and block sizes across the estate in a number of different precincts of which precinct A contribute the low density suburban product, and</i></p>

Rules / Criteria	Compliance
<p>(h) retain the landscape setting and significant natural elements of the site as part of an urban open space network that responds to the topography of the area, contributes to 'place-making' character, and where possible connects to adjacent suburbs with high levels of public access, amenity and safety.</p>	<p><i>The public open space (PRZ1) and enlarged road reserves provided in Precinct A retain the significant features of the site including, views to the Molonglo River, surrounding hills, Black Mountain and the existing Eucalyptus trees on the ridge. These trees, together with the proposed plantings will be the highest element in Precinct A and will provided a landscape back drop so the housing does not break the skyline.</i></p> <p><i>The location of the open space in the Concept Plan (northwest of the ridge) was originally proposed to retain moderate quality Pink-tailed Worm Lizard (PTWL) potential habitat. This potential habitat has since been reassessed by a PTWL expert for ACTPLA and the Commonwealth has downgraded it to low quality (EPBC determination 16 April 2010). As the site does not contain significant site features and R26 (concept plan) and the EPBC determination do not require the area to be retained and the area has been proposed for development.</i></p> <p><i>The EDP has provided an alternative open space centrally located (adjacent to section BR) on the eastern side of the ridge in accordance with Table 7 (Description and prime management purpose of urban parks and sportsgrounds) of the Residential Subdivision Development Code. Together with the Holdens Creek Pond open space the provision of this park will guarantee residents of both the east and west sides of the ridge will have centrally located open space for recreational purposes.</i></p> <p><i>At this time the Strategic EPBC Assessment for the Molonglo Valley (including the River Corridor) has not been completed, and there is no guarantee that the Commonwealth will permit recreational facilities (playgrounds, etc) within the River Corridor.EDP.</i></p>

Rules / Criteria	Compliance
<p>C2</p> <p><b>Precinct B</b></p> <p>Subject to the identification of precincts and key roads in accordance with elements 2 and 3, and to the zoning of land that is not in a future urban area, the land use plan submitted with an EDP shows in precinct B,</p> <ul style="list-style-type: none"> <li>a) RZ5, not less than 6.5ha, consistent with desired planning outcome (b)</li> <li>b) RZ4, not less than 2ha, consistent with desired planning outcome (b)</li> <li>c) PRZ1, following the watercourse, consistent with desired planning outcome (h)</li> <li>d) RZ1, consistent with desired planning outcome (a) over the balance</li> </ul> <p>Desired planning outcomes:</p> <ul style="list-style-type: none"> <li>(a) Provide diverse housing types, block sizes, densities and affordability to meet the changing needs of households and to encourage the formation of a diverse community;</li> <li>(b) Allow for zoning to accommodate higher residential densities and building heights, community facilities and mixed use retail/commercial activity centres supported by residential development close to areas of higher amenity and the north-south arterial road which includes a major public transport route;</li> <li>(h) retain the landscape setting and significant natural elements of the site as part of an urban open space network that responds to the topography of the area, contributes to 'place-making' character, and where possible connects to adjacent suburbs with high levels of public access, amenity and safety.</li> </ul>	<p><i>Complies as follows:</i></p> <ul style="list-style-type: none"> <li>a) <i>A total of 17.5ha of RZ5 is provided, thus exceeding the minimum 6.5ha required in the Concept Plan; The EDP complies with Desired planning outcome (b) for the following reasons:</i> <ul style="list-style-type: none"> <li>- <i>RZ5 is a high density area with the minimum density for each block in accordance with R49 of the Concept Plan (1 dwelling for each 200m<sup>2</sup>);</i></li> <li>- <i>the height of buildings will be controlled by the Territory Plan provisions (minimum 2 storeys, maximum 6 storeys); and</i></li> <li>- <i>The location of RZ5 in the EDP is consistent with figure 2 in the Concept Plan, which places high density housing along the arterial road and around the mixed use area of Coombs.</i></li> </ul> </li> <li>b) <i>A total of 3.2ha of RZ4 is provided thus exceeding the minimum 2ha required in the EDP; The EDP complies with Desired planning outcome (b) for the following reasons:</i> <ul style="list-style-type: none"> <li>- <i>RZ4 is a high density area with the minimum density for each block in accordance with R49 of the Concept Plan (1 dwelling for each 200m<sup>2</sup>);</i></li> <li>- <i>the height of buildings will be controlled by the Territory Plan provisions (maximum 3 storeys); and</i></li> <li>- <i>The location of RZ4 in the EDP is consistent with figure 2 in the concept plan, which places it adjacent to the high amenity area of Holdens Creek Pond.</i></li> </ul> </li> <li>c) <i>The PRZ1 area provided is consistent figure 2 of the Concept Plan with desired planning outcome (h) in that it:</i> <ul style="list-style-type: none"> <li>• <i>is part of an open space network which is proposed to continue south of John Gorton Drive into the adjoining suburb of Wright</i></li> <li>• <i>will retain the existing watercourse and natural elements of the site where possible, in a landscaped parkland setting, noting however, that the water course alignment, topography and configuration will be impacted on by the</i></li> </ul> </li> </ul>

Rules / Criteria	Compliance
	<p><i>construction and proximity of John Gorton Drive – however, landscape elements can be utilised to reinstate and enhance the original landscape (particularly water) features</i></p> <ul style="list-style-type: none"> <li>• <i>will directly adjoin John Gorton Drive allowing opportunities for a highly visible and accessible public space which, through landscaping and urban design elements (such as public art), can contribute to 'place making' by helping to establish the desired character for Coombs</i></li> <li>• <i>will directly adjoin a multi unit site which can be developed to effectively extend the public realm features of the park into the site and which will provide passive surveillance to assist with public safety for park users. Furthermore, the park will provide a high level of amenity for residents of the surrounding higher density developments which adjoin on 1 side ensuring that the park is likely to be well utilised. It is also likely the adjacent developments will be themed and marketed to capitalise on the amenity and attributes offered by the park; and</i></li> </ul> <p>d) <i>The balance of the precinct comprises RZ1 housing products permitted by the Territory Plan RZ1 Land Use policies and provides a variety of block sizes and housing, while complying with the RZ1 density rules (R37 &amp; R51) of the Concept Plan. Overall the desired planning outcome (a) is achieved by providing a range of housing products and block sizes across the estate in a number of different precincts of which precinct A contribute the low density suburban product.</i></p>
<p>C3  <b>Precinct C</b></p> <p>Subject to the identification of precincts and key roads in accordance with elements 2 and 3, and to the zoning of land that is not in a future urban area, the land use plan submitted with an EDP shows in precinct C, CZ5, not less than 0.4ha, consistent with desired planning outcome (b).</p> <p>Desired planning outcomes:</p> <p>(b) Allow for zoning to accommodate higher residential densities and building heights, community facilities and mixed use retail/commercial activity centres supported by residential development close to areas of higher amenity and the north-south arterial road which includes a major public transport route;</p>	<p><i>Complies: Precinct C comprises a total of 0.67ha of CZ5 adjacent to the edge road and Holden's Creek, thus exceeding the minimum 0.4ha required area of CZ5. The CZ5 zoning has been located in accordance with bushfire requirements for edge streets and C27 of the Concept Plan. The sight is consistent with Figure 2 in the Concept Plan and locates the mixed used area adjacent to the high amenity open space of Holdens Creek Pond.</i></p>

Rules / Criteria	Compliance
<p>C4</p> <p><b>Precinct D</b></p> <p>Subject to the identification of precincts and key roads in accordance with elements 2 and 3, and to the zoning of land that is not in a future urban area, the land use plan submitted with an EDP shows in precinct D, consistent with desired planning outcome (b),</p> <p>a) CZ4 on the south eastern side of road 3, not less than 1.4ha</p> <p>b) CZ5, not less than 0.9ha.</p> <p>Desired planning outcomes:</p> <p>(b) Allow for zoning to accommodate higher residential densities and building heights, community facilities and mixed use retail/commercial activity centres supported by residential development close to areas of higher amenity and the north-south arterial road which includes a major public transport route;</p>	<p><i>Complies as follows:</i></p> <p>a) <i>A total of 1.4ha of CZ4 is provided on the south eastern side of road 3 thus meeting the minimum 1.4ha required to be provided in the Concept Plan; The EDP complies with Desire planning outcome (b) for the following reasons:</i></p> <ul style="list-style-type: none"> <li>- <i>CZ4 is a high density area with the minimum density for each block in accordance with R50 of the Concept Plan (1 dwelling for each 150m<sup>2</sup>);</i></li> <li>- <i>the height of buildings will be controlled by R56 of the Concept Plan (minimum 3 storeys, no maximum restriction); and</i></li> <li>- <i>The location of CZ4 in the EDP is consistent with figure 2 in the concept plan, which places the local centre at the main entrance to Coombs adjoining the arterial road (south east of road 3); and</i></li> </ul> <p>b) <i>A total of 1.64ha of CZ5 is provided, thus exceeding the minimum 0,9ha required to be provided in the Concept Plan. The EDP complies with Desire planning outcome (b) for the following reasons:</i></p> <ul style="list-style-type: none"> <li>- <i>CZ5 is a high density area with the minimum density for each block in accordance with R50 of the Concept Plan (1 dwelling for each 150m<sup>2</sup>);</i></li> <li>- <i>the height of buildings will be controlled by R53 in the Concept Plan (minimum 3 storeys, no maximum restriction); and</i></li> <li>- <i>The location of CZ5 in the EDP is consistent with figure 2 in the concept plan, which places the mixed use along the arterial road and adjoining the local centre.</i></li> </ul>
<p>C5</p> <p><b>Precinct E</b></p> <p>Subject to the identification of precincts and key roads in accordance with elements 2 and 3, and to the zoning of land</p>	<p><i>Complies: Precinct E comprises a total of 2.43ha of RZ5, thus exceeding the minimum 1ha of RZ5 required. The</i></p>

Rules / Criteria	Compliance
<p>that is not in a future urban area, the land use plan submitted with an EDP shows in precinct E, RZ5, not less than 1ha, consistent with desired planning outcome (b).</p> <p>Desired planning outcomes:</p> <p>(b) Allow for zoning to accommodate higher residential densities and building heights, community facilities and mixed use retail/commercial activity centres supported by residential development close to areas of higher amenity and the north-south arterial road which includes a major public transport route;</p>	<p><i>dwelling yield is consistent with R49 and it provides higher density housing close to the arterial road and the local centre / mixed use precinct, consistent with planning outcome b and figure 2 of the Concept Plan.</i></p>
<p>C6</p> <p><b>Precinct F</b></p> <p>Subject to the identification of precincts and key roads in accordance with elements 2 and 3, and to the zoning of land that is not in a future urban area, the land use plan submitted with an EDP shows in precinct F a minimum overall area of 17ha, comprising,</p> <ul style="list-style-type: none"> <li>a) CFZ, not less than 6ha, to accommodate at a minimum, an educational establishment (primary school), community activity centre and child care centre, consistent with desired planning outcome (b)</li> <li>b) PRZ1, not less than 0.3ha at the junction of roads 3, 7 and 8 consistent with desired planning outcome (h)</li> <li>c) PRZ1 and NUZ4, in the balance to accommodate Coombs urban open space corridor specified in R23) and C23).</li> </ul> <p>Desired planning outcomes:</p> <p>(b) Allow for zoning to accommodate higher residential densities and building heights, community facilities and mixed use retail/commercial activity centres supported by residential development close to areas of higher amenity and the north-south arterial road which includes a major public transport route;</p> <p>(h) retain the landscape setting and significant natural elements of the site as part of an urban open space network that responds to the topography of the area, contributes to 'place-making' character, and where possible connects to adjacent suburbs with high levels of public access, amenity and safety.</p>	<p><i>Complies: Precinct F is 17ha inclusive of roads (in accordance with ACTPLA pre-application meeting advice 6/12/2010);</i></p> <ul style="list-style-type: none"> <li>a) <i>The area of CFZ is 6ha which meets the minimum area required for the various community facilities – ie primary school, community activity centre, and child care centre; The location of the CFZ land use is consistent with Figure 2 of the Concept Plan which locates community facilities adjacent to high amenity areas and close to the arterial road and mixed use areas in accordance with planning outcome b;</i></li> <li>b) <i>The area of PRZ1 provided at the junction of roads 3, 7 and 8 is 0.5ha which exceeds the minimum 0.3ha required. The location of the park is consistent with Figure 2 of the Concept Plan. This park will form an external plaza abutting the local centre and is part of the open space system that connects east and west Coombs. The park will also retain a number of existing pine trees, to reflection of the former use of the site. Pine trees are a significant natural element that currently dominates the site, but will only be retained in 2 parks within Coombs. The retention of the pine trees is consistent with the desired planning outcome (h).</i></li> <li>c) <i>The balance of the precinct comprises PRZ1 and NUZ4 and accommodates the Coombs urban space corridor – refer C23.</i></li> </ul>

Rules / Criteria	Compliance
<p>C7</p> <p><b>Precinct G</b></p> <p>Subject to the identification of precincts and key roads in accordance with elements 2 and 3, and to the zoning of land that is not in a future urban area, the land use plan submitted with an EDP shows in precinct G,</p> <p>a) RZ5, not less than 2.7ha, consistent with desired planning outcome (b)</p> <p>b) PRZ1, following the watercourse, consistent with desired planning outcome (h).</p> <p>Desired planning outcomes:</p> <p>(b) Allow for zoning to accommodate higher residential densities and building heights, community facilities and mixed use retail/commercial activity centres supported by residential development close to areas of higher amenity and the north-south arterial road which includes a major public transport route;</p> <p>(h) retain the landscape setting and significant natural elements of the site as part of an urban open space network that responds to the topography of the area, contributes to 'place-making' character, and where possible connects to adjacent suburbs with high levels of public access, amenity and safety.</p>	<p><i>Complies as follows:</i></p> <p>a) <i>The area of RZ5 provided in precinct G is 3.9ha which exceeds the minimum 2.7ha required. The dwelling yield is consistent with R49 and it provides higher density housing close to the arterial road and the local centre / mixed use precinct, consistent with planning outcome b and figure 2 of the Concept Plan; and</i></p> <p>b) <i>The PRZ1 area provided is consistent figure 2 of the Concept Plan and with desired planning outcome (h) in that it:</i></p> <ul style="list-style-type: none"> <li>• <i>is part of an open space network which is proposed to continue south of John Gorton Drive into the adjoining suburb of Wright</i></li> <li>• <i>will retain the existing watercourse and natural elements of the site where possible, in a landscaped parkland setting, noting however, that the water course alignment, topography and configuration will be impacted on by the construction and proximity of John Gorton Drive – however, landscape elements can be utilised to reinstate and enhance the original landscape (particularly water) features</i></li> <li>• <i>will directly adjoin John Gorton Drive allowing opportunities for a highly visible and accessible public space which, through landscaping and urban design elements (such as public art), can contribute to 'place making' by helping to establish the desired character for Coombs</i></li> <li>• <i>will directly adjoin a multi unit site which can be developed to effectively extend the public realm features of the park into the site and which will provide passive surveillance to assist with public safety for park users. Furthermore, the park will provide a high level of amenity for residents of the surrounding higher density developments which adjoin on 1 side ensuring that the park is likely to be well utilised. It is also likely the adjacent developments will be themed and marketed to capitalise on the amenity and attributes offered by the park.</i></li> </ul>
<p>C8</p> <p><b>Precinct H</b></p> <p>Subject to the identification of precincts and key roads in accordance with elements 2 and 3, and to the zoning of land that is not in a future urban area, the land use plan submitted with an EDP shows in precinct H, RZ1, consistent</p>	<p><i>Complies: Precinct H comprises RZ1. The location of precinct H in the EDP is consistent with figure 2 in the concept plan and all residential development in the precinct is permitted by the Territory Plan RZ1 Land Use policies (including the park).</i></p>

Rules / Criteria	Compliance
<p>with desired planning outcome (a).</p> <p>Desired planning outcomes:                      (a) Provide diverse housing types, block sizes, densities and affordability to meet the changing needs of households and to encourage the formation of a diverse community;</p>	<p><i>In accordance with planning outcome (a), R37 &amp; R51 of the concept plan (density controls), a variety of low density (less 20 dwellings / ha) block sizes have been provided. Overall the desired planning outcome (a) is achieved by providing a range of housing products and block sizes across the estate in a number of different precincts of which precinct A contribute the low density suburban product.</i></p>
<p>C9  <b>Precinct I</b></p> <p>Subject to the identification of precincts and key roads in accordance with elements 2 and 3, and to the zoning of land that is not in a future urban area, the land use plan submitted with an EDP shows in precinct E, RZ5, not less than 5.9ha, consistent with desired planning outcome (b).</p> <p>Desired planning outcomes:                      (b) Allow for zoning to accommodate higher residential densities and building heights, community facilities and mixed use retail/commercial activity centres supported by residential development close to areas of higher amenity and the north-south arterial road which includes a major public transport route;</p>	<p><i>Complies: Precinct I comprises a total of 6.65ha of RZ5, thus exceeding the minimum area of RZ5 required to be provided in the EDP.</i></p> <p><i>The dwelling yield is consistent with R49 and it provides higher density housing close to areas of higher amenity, consistent with planning outcome b and figure 2 of the Concept Plan.</i></p>
<p>C10  <b>Precinct J</b></p> <p>Subject to the identification of precincts and key roads in accordance with elements 2 and 3, and to the zoning of land that is not in a future urban area, the land use plan submitted with an EDP shows in precinct J, CZ5, not less than 2ha, consistent with desired planning outcome (b).</p> <p>Desired planning outcomes:                      (b) Allow for zoning to accommodate higher residential densities and building heights, community facilities and mixed use retail/commercial activity centres supported by residential development close to areas of higher amenity and the north-south arterial road which includes a major public transport route;</p>	<p><i>Complies: Precinct J contains 3ha of CZ5, thus exceeding the minimum 2ha area of CZ5 required to be provided in the precinct.</i></p> <p><i>The EDP complies with Desire planning outcome (b) for the following reasons:</i></p> <ul style="list-style-type: none"> <li>- <i>CZ5 is a high density area with the minimum density for each block in accordance with R50 of the Concept Plan (1 dwelling for each 150m2);</i></li> <li>- <i>the height of buildings will be controlled by R53 in the Concept Plan (minimum 3 storeys, no maximum restriction); and</i></li> </ul> <p><i>The location of CZ5 in the EDP is consistent with figure 2 in the concept plan, which places the mixed use at the entrance to the estate on the southeast side of road 4 at the intersection with the arterial road and consistent with R27 of the concept plan.</i></p>
<p>C11 to C22</p>	<p><i>Not relevant to Coombs EDP</i></p>
<p>C23</p>	

Rules / Criteria	Compliance
<p><b>Coombs urban open space corridor</b></p> <p>Subject to the identification of precincts and key roads in accordance with elements 2 and 3, and to the zoning of land that is not in a future urban area, the land use plan submitted with an EDP shows Coombs urban open space corridor, PRZ1 and NUZ4, consistent with desired planning outcome (h) that,</p> <ul style="list-style-type: none"> <li>a) follows the unnamed water course from Wright to its confluence with Molonglo River</li> <li>b) includes a neighbourhood park, oval, cycleway and stormwater measures.</li> </ul>	<p><i>Complies: The EDP accommodates the Coombs urban open space corridor (PRZ1 and NUZ4 zones), consistent with desired planning outcome (h) in that,</i></p> <ul style="list-style-type: none"> <li><i>a) it follows the unnamed water course from Wright to its confluence with Molonglo River;</i></li> <li><i>b) the corridor will include a neighbourhood park, oval, cycleway and stormwater measures.</i></li> </ul> <p><i>In addition the location of the PRZ1 and NUZ4 are consistent with figures 2 &amp; 4 in the concept plan and the EDP has been coordinated with the ACTPLA Capital Works Project that is constructing these facilities.</i></p>
<p><b>C24</b></p> <p>Weston Creek urban open space corridor</p> <p>Subject to the identification of precincts and key roads in accordance with elements 2 and 3, and to the zoning of land that is not in a future urban area, the land use plan submitted with an EDP shows Weston Creek urban open space corridor, PRZ1, consistent with desired planning outcome (h).</p> <p>Desired planning outcomes:</p> <p>(h) retain the landscape setting and significant natural elements of the site as part of an urban open space network that responds to the topography of the area, contributes to 'place-making' character, and where possible connects to adjacent suburbs with high levels of public access, amenity and safety.</p>	<p><i>Complies: This park is principally a Capital Works Project separate to the Coombs EDP, however LDA will provide a local play ground within the park to comply with desired planning outcome (h).</i></p> <p><i>The Weston Creek urban open space will provide a high level of public access, amenity and safety and responds to the natural topography of the area.</i></p>
<p><b>C25</b></p> <p>Holdens Creek urban open space corridor</p> <p>Subject to the identification of precincts and key roads in accordance with elements 2 and 3, and to the zoning of land that is not in a future urban area, the land use plan submitted with an EDP shows Holdens Creek urban open space corridor, PRZ1 and NUZ4, consistent with desired planning outcome (h).</p> <p>Desired planning outcomes:</p> <p>(h) retain the landscape setting and significant natural elements of the site as part of an urban open space network that responds to the topography of the area, contributes to 'place-making' character, and where possible connects to adjacent suburbs with high levels of public access, amenity and safety.</p>	<p><i>Complies: This park is principally a Capital Works Project separate to the Coombs EDP, however LDA will provide a local play ground within the park to comply with desired planning outcome (h).</i></p> <p><i>The Holdens Creek urban open space will provide a high level of public access, amenity and safety and responds to the natural topography of the area.</i></p>
<p><b>R26</b></p> <p>The land use plan submitted with an EDP includes PRZ1 to</p>	<p><i>Complies: The EDP does not propose any development within 20 metres of any area of moderate or high quality</i></p>

Rules / Criteria	Compliance
<p>incorporate a buffer not less than 20 metres wide (where measure wholly outside the habitat areas) around areas of moderate and high quality Pink-tailed worm lizard (<i>Aprasia parapulchella</i>) habitat, as shown on Figure 5 and section viii.</p>	<p><i>Pink-tailed worm lizard (Aprasia parapulchella) habitat as shown in Figure 5 and more recent PTWL habitat surveys.</i></p> <p><i>The river corridor (including PTWL potential habitats) will be separated from the construction site by stock proof fencing, (see landscape master plan) This fencing will be handed over to TaMS at the end of the project and is likely to be retained until the River Park Concept Plan develops an alternative.</i></p> <p><i>The EDP complies with Section viii for the following reasons:</i></p> <ul style="list-style-type: none"> <li>- <i>The Capital Works Trunk Sewer is in accordance with the typical section minimum 20m distance to PTWL habitats; and</i></li> </ul> <p><i>House blocks in the EDP are located almost twice the distance from PTWL habitats compared to that shown in section viii (50m instead of 30m). This is due to the detailed bushfire mitigation plan, inner asset protection zones recommendations and compliance with the Coombs EPBC management requirements for PTWL.</i></p>

1.2 Precincts	
<b>Note:</b> Desired planning outcomes relevant to this element are: (b) and (c).	
Rules / Criteria	Compliance
<p>C27</p> <p>Subject to the zoning of land that is not in a future urban area, the land use plan submitted with an EDP identifies precincts with the following characteristics:</p> <p>a) precinct A is bounded by Holdens Creek urban open space corridor, Molonglo River corridor, road 8 and precinct B</p> <p>b) precinct B is bounded by precinct C, Holdens Creek urban open space corridor, precinct A, road 3 and precinct D and the north-south arterial road (<i>John Gorton Drive</i>)</p> <p>c) precinct C is bounded by Holdens Creek urban open space corridor and precinct B, and may adjoin precinct A</p> <p>d) precinct D is part of the Coombs/Wright local centre. It is bounded by precinct B, road 7, precinct E and the north-south arterial road (<i>John Gorton Drive</i>). It is transacted by road 3</p> <p>e) precinct E is bounded by precinct D, road 7, the urban open space corridor draining to Coombs pond and the north-south arterial road (<i>John Gorton Drive</i>)</p> <p>f) precinct F is the Coombs community facilities precinct. It is bounded by road 3, road 8, Molonglo River corridor, Coombs urban open space corridor and road 7</p> <p>g) precinct G is bounded by the urban open space corridor draining to Coombs pond, road 7, road 4, and the north-south arterial road (<i>John Gorton Drive</i>)</p> <p>h) precinct H is bounded by Coombs urban open space corridor, Molonglo River corridor, the urban open space surrounding the proposed Weston Creek pond, precinct I and road 7</p> <p>i) precinct I is bounded by precinct H, Weston Creek urban open space corridor road and road 7</p> <p>j) precinct J is bounded road 4, road 7, Weston</p>	<p><i>Complies: All precincts generally comply with the following characteristics listed below.</i></p> <p><i>A copy of the EDP precinct boundaries is contained in Appendix B.</i></p> <p>a) <i>Complies: Precinct A is bounded by Holdens Creek urban open space corridor, Molonglo River corridor, road 8 (C08E) and precinct B</i></p> <p>b) <i>Complies: precinct B is bounded by precinct C, Holdens Creek urban open space corridor, precinct A, road 3 (Road C03A and C03B) and precinct D and the north-south arterial road (John Gorton Drive)</i></p> <p>c) <i>Complies: precinct C is bounded by Holdens Creek urban open space corridor and precinct B.</i></p> <p>d) <i>Complies: precinct D is part of the Coombs/Wright local centre. It is bounded by precinct B, road 7 (C07), precinct E and the north-south arterial road (John Gorton Drive). It is transacted by road 3 (Road C03/C0D)</i></p> <p>e) <i>Complies: precinct E is bounded by precinct D, road 7 (C07), the urban open space corridor draining to Coombs pond and the north-south arterial road (John Gorton Drive)</i></p> <p>f) <i>Complies: precinct F is the Coombs community facilities precinct. It is bounded by road 3 (C03), road 8 (C08E), Molonglo River corridor, Coombs urban open space corridor and road 7 (C07)</i></p> <p>g) <i>Complies: precinct G is bounded by the urban open space corridor draining to Coombs pond, road 7 (C07), road 4, and the north-south arterial road (John Gorton Drive)</i></p> <p>h) <i>Complies: precinct H is bounded by Coombs urban open space corridor, Molonglo River corridor, the urban open space surrounding the proposed Weston Creek pond, precinct I and road 7 (C07)</i></p> <p>i) <i>precinct I is bounded by precinct H, Weston Creek urban open space corridor road and road 7 (C07)</i></p> <p>j) <i>precinct J is bounded road 4 (C04), road 7</i></p>

<p>Creek urban open space corridor road and the north-south arterial road (<i>John Gorton Drive</i>).</p> <p>k) precinct K is the site of the ACT Forestry Depot. It is bounded by Weston Creek urban open space corridor and the north-south arterial road</p> <p>l) precinct L is bounded by Molonglo River corridor, Holdens Creek urban open space corridor, precinct M and the existing water supply easement</p> <p>m) precinct M is bounded by the north western boundary of Coombs, precinct L, Holdens Creek urban open space corridor and the north-south arterial road. It is transected by the existing water supply easement</p> <p>n) precinct N is bounded by Holdens Creek urban open space corridor, the north-south arterial road, precinct O, precinct R and Uriarra Road</p> <p>o) precinct O is part of the Coombs/Wright local centre. It is bounded by precinct N, the north-south arterial road, precinct P and road 6. It is transected by road 5</p> <p>p) precinct P is bounded by precinct O, the north-south arterial road, Coombs urban open space overland flow corridor and road 6</p> <p>q) precinct Q is bounded by Coombs urban open space overland flow corridor, the north-south arterial road, Cotter Road and road 6</p> <p>r) precinct R is the balance of Wright south of Holdens Creek. It is bounded by precinct N, road 6, the north-south arterial road, Cotter Road and Uriarra Road</p> <p>s) precinct S is bounded by the northern boundary of Wright, the north-south arterial road, precinct T, the existing water supply easement, precinct V and Uriarra Road</p> <p>t) precinct T is bounded by the north-south arterial road, the existing water supply easement and precinct S</p> <p>u) precinct U is bounded by the existing water supply easement, the north-south arterial road, Holdens Creek urban open space corridor and Uriarra Road. It is transected by road 1</p> <p>v) precinct V is bounded by Uriarra Road,</p>	<p><i>(C07), Weston Creek urban open space corridor road and the north-south arterial road (John Gorton Drive).</i></p> <p>k) precinct K is to be developed on the site of the ACT Forestry Depot. It is bounded by Weston Creek urban open space corridor and the north-south arterial road</p> <p>l) <i>N/A Not part of this EDP</i></p> <p>m) <i>N/A Not part of this EDP</i></p> <p>n) <i>N/A Not part of this EDP</i></p> <p>o) <i>N/A Not part of this EDP</i></p> <p>p) <i>N/A Not part of this EDP</i></p> <p>q) <i>N/A Not part of this EDP</i></p> <p>r) <i>N/A Not part of this EDP</i></p> <p>s) <i>N/A Not part of this EDP</i></p> <p>t) <i>N/A Not part of this EDP</i></p> <p>u) <i>N/A Not part of this EDP</i></p> <p>v) <i>N/A Not part of this EDP</i></p>
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<p>precinct S and precinct U</p> <p>w) Coombs urban open space corridor,                  i. follows the unnamed water course from Wright to its confluence with Molonglo River                  ii. includes a neighbourhood park, oval, shared paths and stormwater measures</p> <p>x) Weston Creek urban open space corridor contains the proposed Weston Creek pond and surrounding urban open space and stormwater measures</p> <p>y) Holdens Creek urban open space corridor follows Holdens Creek from Uriarra Road to its confluence with Molonglo River and includes a pond, shared path and a section of the Bicentennial National Trail</p> <p>Desired planning outcomes:</p> <p>(b) Allow for zoning to accommodate higher residential densities and building heights, community facilities and mixed use retail/commercial activity centres supported by residential development close to areas of higher amenity and the north-south arterial road which includes a major public transport route;</p> <p>(c) provide safe, compact, walkable residential precincts with convenient vehicular, pedestrian, cycle and public transport access to recreational, retail/commercial and community facilities</p>	<p>w) <i>Complies: Coombs urban open space corridor, i. follows the unnamed water course from Wright to its confluence with Molonglo River                  ii. includes a neighbourhood park, oval, shared paths and stormwater measures</i></p> <p>w) <i>Complies: Weston Creek urban open space corridor contains the proposed Weston Creek pond and surrounding urban open space and stormwater measures</i></p> <p>x) <i>Complies: Holdens Creek urban open space corridor follows Holdens Creek from Uriarra Road to its confluence with Molonglo River and includes a pond, shared path and a section of the Bicentennial National Trail</i></p> <p><i>DPO (b) The provision of the different precincts which will deliver a range of dwelling densities and building heights complies with desired planning outcome (h)</i></p> <p><i>DPO (c) The school, community facilities sites and the local centre are located in the heart of the estate. Together with the street grid network, the estate provides extensive permeability for vehicles and pedestrians.</i></p>
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**1.3 Identification of key roads**

Note: Desired planning outcomes relevant to this element are: (d), (f) and (n).

Rules / Criteria	Compliance
<p>R28</p> <p>The land use plan submitted with an EDP complies with the location and configuration of the north-south arterial road (<i>John Gorton Drive</i>), including lanes, underpasses, entry points, junctions and signals as shown on figure 3.</p>	<p><i>Complies: The Coombs EDP provides entry points with John Gorton Drive as dictated by the adjacent capital works project and consistent with figure 3 in the concept plan.</i></p> <p><i>The intersections proposed with John Gorton Drive are configured to permit vehicular movements consistent with the Concept Plan.</i></p>
<p>C29 and C30</p>	<p><i>Not relevant to Coombs EDP</i></p>
<p>C31</p> <p>Road 3</p> <p>Subject to the zoning of land that is not in a future urban area, and to previously approved EDPs, the land use plan submitted with an EDP shows and identifies road 3, the principal collector road to the Coombs low density residential</p>	<p><i>Complies: Road 3 (nominated C03A, C03B, C03C and C03D in the EDP) is the principal collector road to the</i></p>

<p>area (precinct A) from signalised intersection 2.</p>	<p><i>Coombs low density residential area and is also referred to as the 'ridge' road. It joins John Gorton Drive at signalised intersection 2.</i></p>
<p>C32                  Road 4                  Subject to the zoning of land that is not in a future urban area, and to previously approved EDPs, the land use plan submitted with an EDP shows and identifies road 4, which links signalised intersection 1 with north Weston via a proposed road bridge and embankment at the northern extremity of the proposed Weston Creek pond.</p>	<p><i>Complies: Road 4 meets the required function specified in the Concept Plan (ie linking John Gorton Drive and the Weston Creek pond). The alignment of the road also retains the significant views to the surrounding hills, Molonglo River Corridor and Black Mountain.</i></p>
<p>C33 and C34</p>	<p><i>Not relevant to Coombs EDP</i></p>
<p>C35                  Road 7                  Subject to the zoning of land that is not in a future urban area, and to previously approved EDPs, the land use plan submitted with an EDP shows and identifies road 7, which links roads 3 and 4, and forms the boundary between the medium and high density residential and mixed use zones abutting the north south arterial (<i>John Gorton Drive</i>) and the balance of Coombs. Its key function is to provide a convenient link between abutting land uses and the signalised intersections on the north-south arterial (<i>John Gorton Drive</i>).                  Desired planning outcomes:                  (d) provide a legible and permeable road network that integrates safe and adequate pedestrian and cycle access to the precinct and connectivity to surrounding suburbs, facilities and features such as Stromlo Forest Park, Molonglo River corridor and Duffy Primary School and the urban open space network                  (f) encourage walking, cycling and the use of public transport                  (n) provide for a street and pedestrian movement network with a legible hierarchy and function that integrates safe and adequate pedestrian and cycle access and connectivity</p>	<p><i>Complies:</i>  <i>Road 7 essentially runs parallel with John Gorton Drive and is proposed to provide east west access through the southern portion of Coombs whilst servicing the development fronting John Gorton Drive. The EDP complies in terms of meeting this objective. However, at its western extremity the continuation of Road 7 dissects the proposed local centre and the adjacent neighbourhood park which collectively are proposed to be developed to create a "Village Centre" precinct. To give vehicular priority to this section of road is not considered a desirable planning outcome as the urban design objective for this part of the estate is to create an integrated pedestrian friendly "Village Centre" where traffic will be slowed, on street parking provided, a safe environment created for pedestrians moving between the local centre and the park, and convenient through access by vehicles is permitted but discouraged unless it is associated with a trip to the shops.</i></p> <p><i>In addition, due to high traffic volumes on Road C03 in the vicinity of the town centre, an unrestricted right turn onto Road C28 does not perform to an appropriate level of service. As such Road C28 is proposed with a prioritised left in left out only.</i></p> <p><i>To facilitate efficient through movement of traffic roundabouts are proposed at the intersection of Road 03 / Road 08 and also Road 07 / Road 08. These intersections have been assessed and all perform with an appropriate level of service. Therefore the proposed road network is considered to operate efficiently and in keeping with the intent of the Concept Plan.</i></p>

	<p><i>Differentiated landscaping, road design and paving and signage in this portion of Road 7 is proposed to promote the Village Centre character and convey the intent that vehicles entering this area are in a low speed environment where pedestrians will be given priority. The "convenience" factor for the traffic using Road 7 in its western extremity will therefore be for those seeking access to the uses within the Village Centre. Accordingly this section of Road 7 is considered a "Pedestrian Priority Route".</i></p> <p><i>It is proposed to encourage the rest of the through traffic on Road 7 to travel immediately east of the Village Centre precinct around the park to join Road 8 and then Road 3. This route is therefore considered the "Vehicle Priority Route" and will have wider carriageways to accommodate the bus route (ie Tag-Steer buses) and high traffic volumes that would otherwise dissect the Village Centre and isolate the park from the shops. The wider carriageways on this road will generally be seen as giving priority to vehicles and not pedestrians.</i></p> <p><i>In summary, the only vehicles which will be encouraged to continue west past the local centre and park on Road 7 will be those seeking to access the Village Centre precinct, where a low speed environment is expected. Vehicles not seeking access to the Village Centre but only access to/from Road 3 will be generally deviated around the Centre to link with Road 8 (unless they choose to turn into the Village Centre).</i></p> <p><i>This minor departure as detailed above complies with desired planning outcome (d), (f) and (n) in that it provides a legible and permeable road network as well as a safe pedestrian environment linking the local centre to the park.</i></p>
	<p><i>Full access to and from Road 3 will still be provided from Road 7 but provided in a manner suitable for the creation of a Village Centre. Whilst there will therefore be different design environments for the two distinct portions of Road 7 (for the reasons outlined above), it nevertheless still complies with this criterion in that it:</i></p> <ul style="list-style-type: none"> <li><i>• links Roads 3 and 4 forms the boundary between mixed uses and higher densities fronting John Gorton Drive and the balance lower density areas of Coombs; and</i></li> </ul> <p><i>provides a convenient link between abutting landuses</i></p>

	<i>and the signalised intersections on John Gorton Drive</i>
C36 Road 8 Subject to the zoning of land that is not in a future urban area, and to previously approved EDPs, the land use plan submitted with an EDP shows and identifies road 8, which links road 3 with the edge road to Molonglo River corridor, and forms the boundary between Coombs CFZ (precinct F) and Coombs RZ1 (precinct A).	<i>Complies: Road 8 links the Coombs ridge road (road 3) with the Coombs edge road adjoining the Molonglo River corridor and forms a boundary to the CFZ and RZ1 zones in precincts F and A respectively.</i>

## Part B – Subdivision

### Notes:

1. This part is applicable to the preparation and assessment of estate development plans (EDP). It should be read in conjunction with other relevant codes.
2. Precincts referred to in this part are as defined in Part A and shown on the relevant land use plan submitted for a development application where an EDP is required.
3. Sections referred to in this part are shown on figure 4, and they are located by cross sections lines.

### 1.4 Block sizes

**Note:** Desired planning outcomes relevant to this element are: (a) and (b).

Rules / Criteria	Compliance
R37 <b>RZ1 in each precinct,</b> a) has a maximum of 50% of blocks less than 500m <sup>2</sup> , and b) a maximum of 20% of blocks are less than 250m <sup>2</sup> . Note: The 20% in b) is a subset of the 50% in a). This rule applies to each precinct, independently, i.e. without reference to proposed subdivision of RZ1 in other precincts.	<p><i>Complies: Precinct A (RZ1 zone) within the EDP has:</i></p> <p><i>a) maximum of 30% of blocks less than 500m<sup>2</sup> and</i></p> <p><i>b) 0% of blocks less than 250m<sup>2</sup>.</i></p> <p><i>Complies: Precinct B (RZ1 zone) within the EDP has:</i></p> <p><i>a) maximum of 21% of blocks less than 500m<sup>2</sup> and</i></p> <p><i>b) 0% of blocks less than 250m<sup>2</sup>.</i></p> <p><i>Complies: Precinct H (RZ1 zone) within the EDP has:</i></p> <p><i>a) Maximum of 32% of blocks less than 500m<sup>2</sup>, and</i></p> <p><i>b) 18.2% of blocks less than 250m<sup>2</sup>.</i></p> <p><i>No other precinct contains RZ1 blocks</i></p>

### 1.5 Multi-unit housing

**Note:** Desired planning outcomes relevant to this element are: (a) and (b).

Rules / Criteria	Compliance
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<p>R38</p> <p>In addition to the maximum number of dwellings on multi-unit blocks, an EDP identifies the minimum number of dwellings on multi-unit blocks, in accordance with Part C.</p>	<p><i>Complies: For multi unit blocks, the EDP identifies the minimum and maximum number of dwellings proposed by way of a range for each block. Generally the maximum is limited to 100 dwellings/ha. and the minimum complies with R49 and R50 (see block detail plans).</i></p>
<p><b>1.6 Open space</b></p>	
<p><b>Note: Desired planning outcomes relevant to this element are: (a), (b), (c), (d), (e), (f), (g) and (p).</b></p>	
<p><b>Rules / Criteria</b></p>	<p><b>Compliance</b></p>
<p>C39</p> <p>Edge Streets are provided to the common boundary between blocks in urban zones (other than single residential blocks and precinct C), and PRZ1 and NUZ4 to achieve the following:</p> <ul style="list-style-type: none"> <li>a) Ease of access to urban open space corridors</li> <li>b) Surveillance of urban open space corridors</li> <li>c) Avoidance of rear boundary fencing at the common boundary to PRZ1 and NUZ4</li> <li>d) Ground floor dwelling address to urban open space where there is no edge street.</li> </ul>	<p><i>Complies.</i></p> <ul style="list-style-type: none"> <li>a. <i>Parks generally have a minimum 75% edge streets including 100% edge street to the Molonglo River Corridor (NUZ4). The exception to this is Section CA. The adjoining open space provides the oval for the school. It is undesirable, for reasons of amenity and public safety, to divide the school and the oval with a public road. However the urban open space corridor is easily accessible;</i></li> <li>b. <i>The master plan has been developed considerate to surveillance of the urban open space corridors. North Weston Pond, Coombs Pond and the Molonglo River Corridor benefit from view corridors largely unrestricted from adjacent street and urban development;</i></li> <li>c. <i>No rear boundary fencing at the common boundary to PRZ1 and NUZ4 is proposed under this EDP;</i></li> <li>d. <i>Single unit residences have street frontage as required by the Territory Plan. Where MU sites abut open space, future development will be subject to compliance with the relevant sections of the Territory Plan and including aspects relating to the built form.</i></li> </ul>
<p>R40</p> <p>There is no common boundary between a single residential block and PRZ1 or NUZ4. Edge streets are provided to the common boundary between single residential blocks and PRZ1 or NUZ4.</p>	<p><i>Complies: there are no common boundaries proposed between PRZ1/NUZ4 zones and single residential blocks. They are all separated by road reservations (streets).</i></p>
<p>R41 and R42</p>	<p><i>Not relevant to Coombs EDP</i></p>
<p>R43</p> <p>Continuous edge roads are provided along the boundary between urban development and Molonglo River corridor and associated urban open space.</p>	<p><i>Complies: there are edge roads between all urban boundaries and the river corridor (and its associated urban spaces) in Coombs in accordance with figure 4 of the Concept Plan.</i></p>

<p>C44</p> <p>Coombs urban open space overland flow corridor:</p> <ul style="list-style-type: none"><li>a) follows the unnamed water course from Wright to its confluence with Molonglo River</li><li>b) includes a neighbourhood park, oval, cycleway and stormwater measures.</li></ul>	<p><i>Complies: the open space corridor follows the unnamed water course from Wright to the river and will include a variety of community facilities including parks, the oval, cycleways and appropriate stormwater measures.</i></p>

1.7 Shared paths	
<p>Note: <b>Desired planning outcomes relevant to this element are: (c), (d), (e), (f), (h), (l), (n), (o) and (q).</b></p>	
Rules / Criteria	Compliance
<p>C45</p> <p>An off-road network of cycleways and pedestrian paths to link key community and urban open space destinations in the neighbourhood subject to element 1 is provided including:</p> <ul style="list-style-type: none"> <li>a) a trunk cycleway following Molonglo River corridor</li> <li>b) a trunk cycleway following road 8 from Molonglo River corridor trunk cycleway to the local centre adjoining precinct F</li> <li>c) links to parks and neighbourhood facilities including shops and schools</li> <li>d) an underpass under the John Gorton Drive to provide access to Molonglo River corridor from:                             <ul style="list-style-type: none"> <li>i. (relates to North Wright)</li> <li>ii. (relates to Wright)</li> <li>iii. Coombs urban open space corridor, to road 6 cycle path system network</li> <li>iv. (relates to Weston Creek)</li> </ul> </li> <li>e) a continuous primary pedestrian path along both sides of the length of the north-south arterial road (<i>John Gorton Drive</i>) of:                             <ul style="list-style-type: none"> <li>i. a minimum 2 metres wide on the Coombs side of the road</li> <li>ii. (Wright).</li> </ul> </li> </ul>	<p><i>Complies: The EDP complies with the major pedestrian path and cycleway network shown in figure 4 of the concept plan.</i></p> <p><i>However the design and construction of the majority of these paths are not part of the EDP but included in various capital works projects. The following is a list of paths being provided by the EDP and Capital works projects:</i></p> <ul style="list-style-type: none"> <li>- <i>Coombs EDP will construct the main 1.5m wide pedestrian paths along the arterial road and the link between the arterial road and the community facility land. Otherwise the rest of the paths will be designed and constructed as part of the following are Capital Works Projects::</i></li> <li>- <i>The river park concept plan will provided the cycleways within the river corridor,</i></li> <li>- <i>the North Western Creek Pond will provide the cycleways that link the arterial road with the river corridor to the east of Coombs</i></li> <li>- <i>The Holdens Creek Pond open space will provided the cycleway within Holdens Creek;</i></li> </ul> <p><i>Coombs pond will provided the design for the link between the river corridor and the community facility site.</i></p> <p><i>Complies: An off-road network of cycleways and pedestrian paths has been provided as shown in Drawings PTP 01 to 04 to link key community and urban open space destinations in Wright and Coombs (ie parks, neighbourhood facilities and shops) noting however, that Capital Works will provide:</i></p> <ul style="list-style-type: none"> <li>✓ <i>the John Gorton Drive underpasses and associated linkages;</i></li> <li>✓ <i>the Coombs urban open space underpass under John Gorton Drive; and</i></li> <li>✓ <i>a continuous primary pedestrian path of a minimum 1.5 metres wide along the Coombs side of John Gorton Drive.</i></li> </ul>

<b>1.8 Road Network</b>	
<b>Rules / Criteria</b>	<b>Compliance</b>
<p>R46</p> <p>Junctions with the north south arterial road are limited to the following:</p> <ul style="list-style-type: none"> <li>a) locations shown in Figure 3</li> <li>b) an uncontrolled T-intersection adjacent to the Stromlo Forestry Depot (temporary only)</li> <li>c) a left-in/left out arrangement near the Holdens Creek bridge accessing to the east</li> <li>d) protected right turn arrangements at the following locations:                             <ul style="list-style-type: none"> <li>i. adjacent to Stromlo Forest Depot [in place of temporary arrangements referred to in item b)]</li> <li>ii. approximately 100m to the west of the junction referred to in item d)i)</li> <li>iii. approximately midway between intersections 1 and 2 shown in Figure 3 accessing both sides</li> <li>iv. at Holdens Creek accessing Uriarra Road</li> <li>e) a left-in/left-out arrangement at the location referred to in item d) ii)</li> </ul> </li> </ul>	<p><i>Complies: Junctions with the north south arterial proposed under this EDP are located consistent with the requirements of the Concept Plan specifically:</i></p> <ul style="list-style-type: none"> <li>a) <i>as per Figure 3</i></li> <li>b) <i>NA to this EDP</i></li> <li>c) <i>Provided by Road C21 at the western most extent of this EDP adjacent to Holdens Creek;</i></li> <li>d) <i>i. NA to this EDP</i> <i>ii. provided by Road C11 at the eastern most extent of this EDP adjacent to North Weston Pond open space</i> <i>iii. provided by Road C53 on the eastern side of the John Gorton Drive underpass</i> <i>iv. NA to this EDP</i></li> <li>e) <i>A left-in/left-out configuration for Road C11 is proposed under this EDP. Specifically no right turn movement from Road C11 will be permitted onto John Gorton Drive.</i></li> </ul>
R46A	<i>NA to this EDP</i>
<p>R46B</p> <p>Vehicular access from the north south arterial to adjoining blocks is permitted only from service streets.</p>	<i>Complies: Vehicular access from the north south arterial is only proposed from service streets or from adjoining streets (i.e. not direct from north south arterial).</i>
<b>1.9 Stormwater</b>	
<b>Note: Desired planning outcomes relevant to this element are: (g), (h), (k), (l), (m) and (p).</b>	
<b>Rules / Criteria</b>	<b>Compliance</b>
<p>R47</p> <p>Stormwater treatment ponds and overland flow paths are provided as indicated on figure 4 and sections i, ii, iii, iv, v, vii, ix, x, xi and xii for the purpose of stormwater management.</p>	<p><i>Complies – The stormwater treatment ponds and over land flow paths have been provided consistent with figure 4.</i></p> <p><i>As stated in the rule the stormwater treatment and flow paths (minimum open space widths) have been provided in accordance with the sections x and xi. The locations of the rest of the sections in figure 4 are not applicable to the Coombs EDP.</i></p>

Rules / Criteria	Compliance
<p>R48</p> <p>Molonglo surge protection line is provided in Coombs as indicated on figure 4. No leases (other than holding leases) are to be issued down-slope of this line until it is demonstrated that Scrivener Dam meets flood safety and operational requirements, based on the applicable Australian National Committee on Large Dams (ANCOLD) guidelines.</p>	<p><i>Complies:</i></p> <p><i>Bulk filling of the edge road and adjacent blocks is proposed as an appropriate mitigation measure against the Molonglo surge protection line. The "Molonglo Catchment and Scrivener Dam Flood Hydrology" commissioned by ACTPLA demonstrates this to be the case. Refer also Section 1.4 of this report.</i></p> <p><i>All blocks proposed under this EDP are above the impact of the Molonglo surge protection line.</i></p>

## Part C – Building and structures

**Notes:** Sections referred to in this part are cross sections at the end of this plan. They are located by cross sections lines on figure 4

<p>R49</p> <p>In RZ4 and RZ5 in precincts B, E, G, I, M, N, P, Q and T, the minimum average residential density on each block is one dwelling for each 200m<sup>2</sup> of site area (rounded to the nearest whole number).</p>	<p><i>Complies:</i></p> <p><i>RZ4 and RZ5 in Precincts B, E, G, I, M, P, Q and T have minimum residential density on each block of one dwelling for each 200m<sup>2</sup> of site area.</i></p>
<p>R50</p> <p>In CZ4 and CZ5 in precincts D, J, K and O, the minimum residential density on each block is one dwelling for each 150m<sup>2</sup> of site area (rounded to the nearest whole number).</p>	<p><i>Complies:</i></p> <p><i>CZ4 and CZ5 in Precincts D, J, K and O have minimum residential density on each block of one dwelling for each 150m<sup>2</sup> of site area.</i></p>
<p>R51</p> <p>In RZ1, the maximum <i>net residential density</i> is 20 dwellings/hectare</p>	<p><i>Complies:</i></p> <p><i>The average net residential density in the RZ1 zone is 12 dwellings/hectare.</i></p>

## **8 ENVIRONMENTAL IMPACT STATEMENT (EIS) EXEMPTION – MOLONGLO URBAN LAND DEVELOPMENT**

As part of the strategic planning process completed for the initial stages of land development proposed in the Molonglo Valley an EIS scoping/s211 exemption request was submitted to ACTPLA by the LDA 28 May 2009. The exemption was granted by the Minister for Planning on 22 July 2009.

Though the s211 exemption was free from conditions the initial scoping report contained various recommendations and comments made by Government Entities. We note that a number of comments are located outside of the area of the Coombs EDP and are therefore not applicable to the assessment of the EDP. The following section clarifies the intent, where relevant, of the Coombs EDP in fulfilling the intent of the EIS exemption:

*The following numbering system is consistent with the EIS Scoping & Section 211 consideration prepared by ACTPLA, July 2009.*

Report to Minister for Planning EIS scoping & Section 211 considerations Prepared by ACTPLA July 2009	LDA response with regard to Coombs EDP
<i>4.1 Item 1 Part 4.2 Schedule 4 - Arterial Road</i>	<p><b><i>Item 4.1 – Arterial Road</i></b>  <i>The arterial road is outside of the area of the EDP. The potential environmental impacts were noted as air quality, ambient noise, vibration, visual intrusion and impact on residential areas.</i></p> <p><i>Only ambient noise can be addressed by the adjacent residential development. Sections 2.3 &amp; 4 of the EDP report address noise from the arterial road.</i></p> <p><i>Section 4 includes the outcomes of the GHD desktop assessment of the potential traffic noise impacts of the proposed North-South Arterial Road on proposed adjacent residential areas.</i></p> <p><i>LDA has provided Planning Control Plans which identify which multi unit sites need to mitigate noise. LDA request these plans form a Technical Amendments to the Concept Plan to ensure the multi-unit sites adjacent to the North/South Arterial Road provide noise mitigation measures in accordance with the requirements of the Territory Plan.</i></p>
<i>4.2 Item 3 Part 4.2 Schedule 4 – Weston Pond</i>	<p><b><i>Item 4.2 – North Weston Pond</i></b>  <i>Proposed stormwater in East Coombs interfaces with North Weston Pond however these are minor construction elements. Construction of North Weston Pond is a separate Capital Works item outside of the EDP area. This item is therefore not applicable to the proposed EDP.</i></p>

Report to Minister for Planning EIS scoping & Section 211 considerations Prepared by ACTPLA July 2009	LDA response with regard to Coombs EDP
<p><b>4.3 Item 5 Part 4.2 Schedule 4 – Trunk Sewer</b></p>	<p><b>Item 4.3 – Trunk Sewer</b>  <i>The proposed sewer reticulation network from Coombs connects to the trunk sewer at various locations. However, construction of the trunk sewer forms a separate Capital Works item outside of the EDP area. This item is therefore not applicable to the proposed EDP.</i></p>
<p><b>4.4 Item 1 Part 4.3 Schedule 4 – PTWL Habitat</b></p> <p><b>Impacts</b>                      This area of East Molonglo is known PTWL habitat. The potential for the disturbance and loss of PTWL habitat as a result of this project was identified early in the Territory Plan Variation and design process.</p> <p><b>Previous studies</b>                      Two studies are key to understanding the PTWL habitat of this area of the Molonglo Valley.</p> <ul style="list-style-type: none"> <li>• Habitat mapping and conservation considerations for the Pink-tailed Worm Lizard with respect to the alignment of the proposed Molonglo Trunk Sewer, W Osborne 2007; and</li> <li>• Environmental planning principles for the protection of the Pink-tailed Worm Lizard in the Lower Molonglo Valley, ACT, W Osborne 2008. These documents were supplied in support of the s211 exemption consideration. These studies achieved two things:</li> <li>• identifying the quality/extent of PTWL habitat; and</li> <li>• provide recommendations for land use planning in the vicinity of the PTWL habitat to mitigate or avoid impacts from urban development.</li> </ul> <p><b>Conclusion</b>                      The concept plans for Wright and Coombs have been developed with reference to the above mentioned studies. The concept plans have identified a land use pattern that is sympathetic to the PTWL habitat areas. These will be carried forward to the individual EDP DAs. PCL has agreed that the recommendation of the reports have been addressed through the design and subsequent adoption of the concept plans for Wright and Coombs. PCL have provided wording of a possible condition that should be attached to any subsequent EDP DA approval. It is concluded that further environmental assessment of this issue is not required for this project.</p>	<p><b>Item 4.4 – PTWL Habitat</b>  <i>On 16 April 2010 The Australian Government, Department of Environment, Water, Heritage and the Arts conditionally determined that urban development of the Coombs Estate was not a controlled action (EPBC approval). The EPBC determination is contained at Appendix H. Section 1.1 and Section 9 of this report also outline the consultation process completed in consideration of this decision and verifies the LDA's commitments, with regard to compliance with the requirements of the EPBC determination.</i></p> <p><i>Further TaMS, ACTPLA and LDA have completed a Molonglo Riparian Strategy adjacent to Coombs and North Weston (see Appendix K). This strategy represents a first stage in an ongoing strategy for the river corridor which ultimately will extend from Scrivener Dam to the lower end of the future urban area downstream of Coppins Crossing. This Strategy address urban interface issues, conservation objectives, recreational uses and land management requirements. The second stage of planning for the Molonglo River is the development of a River Corridor Concept Plan. We understand the River Corridor Concept Plan is currently being prepared by ACTPLA though at the time of writing this report the outcomes are unknown.</i></p>

<p><i>Report to Minister for Planning                      EIS scoping &amp; Section 211 considerations                      Prepared by ACTPLA July 2009</i></p>	<p><i>LDA response with regard to Coombs EDP</i></p>
<p><b>4.5 Item 3 Part 4.3 Schedule 4 – Clearing greater than .5ha</b>  <b>Conclusion</b>                      Environmental studies supplied in support of this s211 application, including the review by <i>NGHenvironmental</i>, have identified the impacts of urban development of the areas of North Weston, Wright and Coombs.</p> <p>Recommendations given in those reports have been reinforced in the adopted concept plans and the indicative land use pattern of the Territory Plan. It is concluded that further environmental assessment of this issue is not required for this project. Detailed design issues can be addressed at the individual EDP DA stage.</p>	<p><b>Item 4.5 – Clearing Greater than ½ ha of native vegetation</b>  <i>From vegetation assessments the site does not contain ½ ha of native vegetation. The majority of the site is covered by a pine forest which is considered to be a weed in the ACT and the rest of the site is degraded pasture, which has been extensively grazed and predominately consists of exotic species.</i></p> <p><i>As for the clearing of the land the Environmental Protection Guidelines for Construction and Land Development 2007 govern this issue and requires the construction contractor to enter into agreement with EPA prior to start of construction.</i></p>
<p><b>4.6 Item 7 Part 4.3 Schedule 4 – Heritage</b>  <b>Conclusion</b>                      It is concluded that further assessment of this issue is not required for this project. However, the requirement for an unanticipated discovery plan must still be attached to any EDP DA or other DA approval, as a standard condition.</p>	<p><b>Item 4.6 – Heritage</b>  <i>Heritage approval for Coombs was granted 5 October 2010. Development in Coombs is subject to the unanticipated discovery plan included in Coombs, Wright and Environs Detailed Heritage Assessment Report No. 0901 (10/1/09).</i></p>
<p><b>4.7 Item 8 Part 4.3 Schedule 4 – Contaminated land</b>  <b>Impacts</b>                      This trigger is activated as the area for development contains known contaminated sites. These sites include the former Weston Sewage Treatment Facility, night soil depot, builders land fill and former pine plantation.</p> <p><b>Previous studies</b>                      This issue has been identified early and addressed accordingly. Phase 1 ESA's studies have been completed for all contaminated sites, with Phase 2 and remediation action plans already lodged with an independent land contamination auditor for endorsement and subsequent submission to the Environment Protection Authority's Environment Protection Unit for sign off, which is expected by 31 July 2009.</p> <p><b>Conclusion</b>                      The EPA has confirmed that contamination issues have been adequately identified and the process for remediation is well in hand. It is recommended that should a an EDP DA be lodged prior to EPU signing off on the remediation action plans that approval be conditional upon obtaining the required EPU clearance of the final remediation plans. It is concluded that further assessment of this issue is not required for this project.</p>	<p><b>Item 4.7 – Contaminated Land</b>  <i>The SMEC Phase 1 Environmental Assessment approved by EPA (12/2/2009), identified 2 sites north of Holdens Creek that will require remediation (TP2151 &amp; TP2152). These sites are not in the Coombs EDP area, refer Appendix L.</i></p> <p><i>The rest of the sites identified in this report as being contaminated are located in and around the former sewer treatment plant which is outside of the Coombs EDP area. These areas are being remediated as part of the capital works for the North Weston Pond.</i></p>

<i>Report to Minister for Planning                      EIS scoping &amp; Section 211 considerations                      Prepared by ACTPLA July 2009</i>	<i>LDA response with regard to Coombs EDP</i>
<b>4.8 Entity comments</b>	<b>Item 4.8 – Entity comments</b> <i>Addressed in the preceding sections and clarified below:</i>
<p><b>EPA</b></p> <p><b>Recommendation</b>                      That any subsequent DA for an EDP in the area of land that is the subject of this EIS scope/s211 request must provide documentary evidence of EPU sign off on all documents associated with the land contamination investigations and remediation, including;</p> <ul style="list-style-type: none"> <li>• Final ESA Phase 2 Report – Pine Plantation, Blocks 1204 and 1180 Weston Creek;</li> <li>• Short Term Contamination Environmental Management Plan – Pine Plantation, Blocks 1204 and 1180 Weston Creek;</li> <li>• Final Phase 2 Report – Former Weston Creek Sewerage Treatment Plant,</li> <li>• Builders Landfill and Night Soil Depot, Blocks 1196, 1179 and 1203 Weston Creek;</li> <li>• Short Term Contamination Environmental Management Plan – Builders Landfill and Night Soil Depot, Blocks 1196, 1179 and 1203 Weston Creek;</li> <li>• Short Term Contamination Environmental Management Plan – Grease Trench and Sludge Bed, Part Block 1210 Weston Creek;</li> <li>• Remedial Action Plan - Builders Landfill and Night Soil Depot, Blocks 1196, 1179 and 1203 Weston Creek; and</li> <li>• Remedial Action Plan – Block 1210 Weston Creek</li> </ul>	<p><i>EPA's 2009 list of potentially contaminated sites are all outside of the Coombs EDP area. As discussed above The SMEC Phase 1 Environmental Assessment for Coombs was approved by EPA on 12/2/2009 which did not identify any contamination within the Coombs EDP area, refer Appendix L.</i></p>

Report to Minister for Planning EIS scoping & Section 211 considerations Prepared by ACTPLA July 2009	LDA response with regard to Coombs EDP
<p><b>Conservator</b>                      Conditional support of s211 exemption. The comments submitted by the Conservator are concerned with:</p> <p>i) Increased recreational use of the Molonglo River Corridor; and</p> <p>ii) Indirect impacts to PTWL habitat. The proponent is aware that impacts on the Molonglo River Corridor and the PTWL habitat are potential significant issues that must be addressed before development of the area can proceed. As such numerous studies have been commissioned and completed over many years to obtain an understanding of the areas ecology and potential impacts of the proposed urbanisation of the Molonglo Valley. Statements and documents provided by the proponent in support of the EIS scope/s211 request demonstrate that the issues have been thoroughly investigated with the results informing the Territory Plan Variation, concept plans/strategic land use pattern indicated by the Territory Plan. Clarification was sought and provided (3 July 2009) by the proponent as follows:</p> <p>iii) It is conceded by the proponent that increased recreational use of the Molonglo River corridor will occur as a result of urban development within the Molonglo Valley. However, studies commissioned to investigate the valley as the next major development front for the ACT have mapped areas of significant conservation value and proposed strategies for minimising impacts. This is reflected in the Territory Plan by identification of the river corridor as NUZ4-River Corridor and restricting the limits (size and shape) of the FUA to be sympathetic to the receiving environment. The limits of the development area will be further refined at the EDP DA evaluation assessment stage by referencing the recommendations of the previous studies and by ensuring that the indicative land use pattern of the Territory Plan is adhered to.</p> <p>iv) Indirect impacts on PTWL habitat will occur as a result of the development of the valley. As with the issues associated with the river corridor, the studies commissioned to investigate this issue were used to inform the strategic land use pattern in the Territory Plan which avoids those areas of high PTWL habitat value. It has also been confirmed by the proponent that a sewer pump station is no longer required for the trunk sewer line. This further reduces the impact upon PTWL habitat. In relation to the location of the dam wall for the proposed Coombs Pond, it was chosen to ensure minimal impact by locating in an area of former pine plantation of very low ecological value. However, the Conservator will have an opportunity to comment on the DA for the pond during the referral process which will include TaMS.</p>	<p><i>The Conservator raised a number of issues which have been addressed in this report, EDP or EPBC determination as explained below:</i></p> <p><i>i) Recreation use of the river corridor:                      The Molonglo Riparian Strategy adjacent to Coombs and North Weston has identified areas of potential recreational use and areas of conservation. In addition ACTPLA is preparing a River Park Concept Plan for the whole of the Molonglo River. Together, these documents define areas for conservation and recreation and fulfil the Conservators recommendation for the development of the Molonglo River Corridor Master Plan.</i></p>

<p>Report to Minister for Planning EIS scoping &amp; Section 211 considerations Prepared by ACTPLA July 2009</p>	<p>LDA response with regard to Coombs EDP</p>
<p><b>Conclusion</b> The comments submitted by the Conservator contain a level of detail that the EIS process is not intended to address. Whilst the comments have proven valuable in identifying issues early in the development process there are more appropriate tools to ensure they are implemented. By way of the comments being noted in this report they will be carried forth into the EDP DA assessment for the various other DA's associated with the development of this area of the Molonglo Valley. The comments may also be given effect through any relevant Deed of Agreement. The issues raised by the Conservator have been thoroughly investigated by the proponent as is evidenced by the numerous studies referenced in the s211 request. ACTPLA is satisfied that the level of investigation and documentation has demonstrated that further environmental assessment is not required. At a 6 July 2009 meeting with the Conservator and key staff, it was agreed that the issues raised by the Conservator could be addressed by this report making a recommendation to the Minister that that the Conservators comments be addressed at the EDP DA assessment stage</p>	<p>i) <i>Indirect impacts on PTWL</i> <i>The Coombs EPBC determination places a number of conditions on development to ensure the PTWL habitats are protected. The Coombs EDP complies with these conditions (see Section 9 of this report). As the report included statement of compliance with the Coombs EPBC, this fulfils the Conservator's recommendation for a statement against the Molonglo Valley Strategic Environmental Assessment which is yet to be determined by the Commonwealth.</i></p> <p><i>As Coombs ponds are being designed and constructed by Capital works (separate to the Coombs EDP) the Conservator's recommendation regarding the location of the dam walls is not relevant to the Coombs EDP.</i></p>
<p><b>Recommendation</b> That any subsequent DA for an EDP must include:</p> <ul style="list-style-type: none"> <li>• A Molonglo River Corridor Master Plan. The plan is to be prepared in consultation with Parks Conservation and Lands, and include the implementation of the principles for the protection of Pink-tailed Worm Lizard habitat as contained in the report <i>Environmental planning principles for the protection of the Pink-tailed Worm Lizard (Aprasia paraulchella) in the Lower Molonglo Valley, ACT – William S Osborne February 2008</i>. The plan will include the requirement for a 20m buffer zone and an additional Inner Asset Fire Protection Zone that is to be within the development area, not within the river corridor or urban open space. Locations of cycle paths, walking tracks, roads and other infrastructure are to be located in the inner asset protection zone n, not within the 20m buffer zone. The plan must contain provision for the appropriate fencing of PTWL habitat adjacent to the urban development area;</li> <li>• A statement addressing how the EDP has considered and addressed findings and recommendations of the Molonglo Valley Strategic Environmental Assessment;</li> </ul> <p>A statement addressing how the design of the ponds has considered and addressed PCL advice regarding the locations of the dam walls.</p>	<p><i>See i) above together with Section 9 of this report and the Molonglo Riparian Strategy at Appendix K.</i></p>

<p>Report to Minister for Planning EIS scoping &amp; Section 211 considerations Prepared by ACTPLA July 2009</p>	<p><i>LDA response with regard to Coombs EDP</i></p>
<p><b>ACT Heritage Council</b></p> <p><b>Recommendation</b> That no further assessment is required in relation to these matters. That any subsequent DA for an EDP must include:</p> <ul style="list-style-type: none"> <li>• Documentary evidence of the ACT Heritage Councils ratification and clearance of the final report re: historic heritage places in the areas of Coombs and Wright; and</li> <li>• A statement addressing how the EDP has considered and addressed findings and recommendations of the final report re: historic heritage places in the areas of Coombs and Wright.</li> <li>• An unanticipated discovery plan be developed for each are that is subject an EDP DA or other DA approval.</li> </ul>	<p><i>As stated above Heritage approval for Coombs study and the unanticipated discovery plan was granted 5 October 2010. Development in Coombs is subject to the unanticipated discovery plan included in Coombs, Wright and Environs Detailed Heritage Assessment Report No. 0901 (10/1/09).</i></p>
<p><b>ACT Health</b></p> <p><b>Recommendation</b> That conditions requiring documentary evidence of EPU approval for all site contamination reports be provided at the EDP DA submission stage.</p>	<p><i>The Coombs EDP report includes the EPA approval letter dated 12/2/2009 of the SMEC Phase 1 Environmental Assessment for Coombs (Appendix L). The study did not identify any contamination within the Coombs EDP area.</i></p>
<p><b>ACT Emergency Services Agency – ACT Fire Brigade, ACT State Emergency Services</b></p> <p>Conditional support of s211 exemption. Whilst ACT ESA supports the s211 exemption they have identified several matters that they believe will need to be addressed prior to or in conjunction with development of the site:</p> <ul style="list-style-type: none"> <li>i) Fire station response area; ACT FB</li> <li>ii) Water supplies; ACT FB</li> <li>iii) Infrastructure – roadways standards; ACT FB</li> <li>iv) Street furniture; ACT FB</li> <li>v) Construction requirements; ACT FB</li> <li>vi) Bush fire risk; ACT FB</li> <li>vii) Drowning risk; ACT SES</li> </ul> <p>ACTPLA considers that the matters listed above are concerned with a level of detail that is beyond the scope of the EIS process. They are more appropriately addressed during the DA assessment stage of the EDP and or the individual infrastructure project DA's.</p> <p><b>Recommendation</b> That no further assessment is required in relation to these matters.</p>	<p><i>ACT Emergency Services Agency comments relate to bushfire protection measure (addressed by this EDP) detail design issues (locations of street furniture, etc), structure plan issues and the public safety associated with the ponds being constructed by capital works in Coombs and North Weston (outside of the EDP area).</i></p>

<p>Report to Minister for Planning                  EIS scoping &amp; Section 211 considerations                  Prepared by ACTPLA July 2009</p>	<p><i>LDA response with regard to Coombs EDP</i></p>
<p><b>Section 5 - DA Considerations</b></p> <p>Any development application related to the MVUD will include the consideration of appropriate conditions of approval such as those outlined below. Issues which are identified during the assessment of the subsequent impact track development application may be addressed through further conditions not included in this section or as a variation of these conditions. Many of the conditions of approval involve the implementation or management of mitigation measures. The following possible conditions of approval have been identified during the consideration of the s211 request for the proposal:</p>	<p><b>Item 5 – DA Considerations of approval</b></p> <p><i>The majority of the recommended conditions of approval have already been complied with as part of the information submitted with the EDP, clarified as follows:</i></p>
<p><b>Construction Environmental Management Plan</b>                  That a <i>Construction Environmental Management Plan</i> (CEMP) be submitted to ACTPLA for approval prior to the commencement of works on site. The CEMP shall include as a minimum, the following sub-plans and mitigation measures:</p> <p>(a) Vegetation Management Plan and Mitigation Strategy A plan that details management and/or removal of native and exotic vegetation before, during and after construction and endorsed by PCL, TAMS.</p> <p>(b) Map of areas of Environmental Significance A map that identifies areas of environmental significance, including areas identified for rehabilitation, offsets and for special consideration.</p> <p>(c) Work Method Statements Work method statements endorsed by PCL, TAMS.</p> <p>(d) Conservation Management Plan and Unanticipated Discovery Plan – Heritage A <i>Conservation Management Plan</i> and an <i>Unanticipated Discovery Plan</i>, that include the discovery of human remains, developed and endorsed by the ACT Heritage Council.</p> <p>(e) Noise Management Plan A <i>Noise Management Plan</i> including mitigation measures to be endorsed by EPA.</p> <p>(f) Molonglo River Corridor Master Plan A Molonglo River Corridor Master Plan endorsed by PCL</p> <p>(g) Sediment and Erosion Control Plan A <i>Sediment and Erosion Control Plan</i> to be endorsed by the EPA.</p>	<p><b>Construction Environmental Management Plan</b></p> <p>a) <i>A vegetation management plan and mitigation strategy. The majority of the site and adjacent River Corridor is a former pine plantation which has not been managed since the 2003 bushfires and is generally over grown with weeds (blackberry, pines, and willows). The EDP includes a tree survey and tree management plan for areas within the Coombs EDP and the Molonglo Riparian Strategy outlines the general method for clearing weeds from the River Corridor. In addition ACTPLA's River Corridor Concept Plan will undertake this work for the rest of the River Corridor. As such there is no need to include this as a condition of approval;</i></p> <p>b) <i>A map of environmental significance. The only areas of environmental significance is the moderate and high quality PTWL habitats which have been shown in the Coombs EDP Plans. As such there is no need to include this as a condition of approval;</i></p> <p>c) <i>Construction work methods are part of the EPA agreement which the construction contractor enters into with EPA in accordance with the Environmental Protection Guidelines for Construction and Land Development 2007. As such there is no need to include this as a condition of approval;</i></p> <p>d) <i>Heritage Conservation Management Plan and Unanticipated Discovery Plan, as stated above these plans have already been approved (5 October 2010) as stated above. As such there is no need to include this as a condition of approval;</i></p>

<p><i>Report to Minister for Planning                      EIS scoping &amp; Section 211 considerations                      Prepared by ACTPLA July 2009</i></p>	<p><i>LDA response with regard to Coombs EDP</i></p>
<p><i>NOTE: the CEMP may contain plans and management strategies listed elsewhere within the conditions of approval. Where these plans can be integrated into the CEMP, it must be clearly identified to which condition of approval the plan or management strategy applies.</i></p>	<p><i>e) Noise, as stated above (4.1) this issue has already been addressed by the provision of Planning Control Plans which identify which multi unit sites need to mitigate noise and in sections 2.4 in the EDP report. As such there is no need to include this as a condition of approval ;</i></p> <p><i>f) Molonglo River Corridor Master Plan, as stated above LDA, TaMS and ACTPLA have developed the Molonglo Riparian Strategy for Coombs and North Weston to allow the Coombs EDP to comply with the intent of this condition. In the future ACTPLA will complete the Molonglo River Concept Plan, separate to the EDP for Coombs. As such there is no need to include this as a condition of approval:</i></p> <p><i>g) A Concept Sediment and Erosion Control Plan has been submitted as part of the EDP. A detailed Sediment and Erosion Control Plan will form part of the construction contractor agreement with the EPA. As such there is no need to include this as a condition of approval.</i></p>
<p><b>Environmental Authorisation/Agreement</b>                      That prior to the commencement of works, the following requirements be sought, submitted to and approved by the EPA:</p> <p>(h) Environment Authorisation under the provisions of the <i>Environment Protection Act 1997</i> for any activity on the site which is listed under Schedule 1 as a Class A activity;</p> <p>(i) A Waterways Works licence under the provision of the <i>Water Resources Act 2007</i> for any diversion of or any works within a natural waterway; and</p> <p>(j) Environment Protection Agreement with the EPA for any activity on the site which is listed under Schedule 1 as a Class B activity of the <i>Environment Protection Act 1997</i>.</p>	<p><b><i>Environmental Authorisation / Agreement</i></b>  <i>There is no need to include this as a condition of approval as it is already required prior to construction by the Environment Protection Act 1997.</i></p>
<p><b>Works on Territory Land</b>                      That in accordance with the <i>Roads and Public Places Act 1937</i> no work should be undertaken on road verges and other unleased Territory Land without the approval of the Manager, Asset Acceptance, Community &amp; Infrastructure Services (AA, C&amp;I), TAMS. The approval is to be obtained prior to the commencement of any work on site.</p>	<p><b><i>Works on Territory Land.</i></b>  <i>As LDA will be constructing Coombs, LDA will be the managers of the unleased Territory Land not Asset Acceptance. As such this recommended condition does not apply.</i></p>
<p><b>Traffic Management Plan</b>                      That a <i>Traffic Management Plan</i> be submitted to and approved by the Manager, AA, C&amp;I, TAMS, and evidence of this approval be submitted to ACTPLA prior to the commencement of works.</p>	<p><b><i>Traffic Management Plan</i></b>  <i>To be included as part of detailed design submissions, approved and administered by Asset Acceptance in Tams. Without this plan detail design approval will not be granted per TaMS Requirements for Design Acceptance Submissions. As such there is no need to include this as a condition of approval under the Land and Planning Act.</i></p>

<p><b>Report to Minister for Planning</b>  <b>EIS scoping &amp; Section 211 considerations</b>  <b>Prepared by ACTPLA July 2009</b></p>	<p><i>LDA response with regard to Coombs EDP</i></p>
<p><b>Construction (Temporary) Parking Management Plan</b>                  That a detailed construction parking plan for the construction phase be submitted to and approved by the Manager, AA, C&amp;I, TAMS, prior to the commencement of any works on site. This plan shall take into account all construction/demolition vehicles and equipment, and construction workers vehicles, and how and where they will be accommodated within the site to the satisfaction of the Manager, AA, C&amp;I, TAMS.</p>	<p><b><i>Construction (Temporary) Parking Management Plan</i></b>  <i>To be included in the detailed design submissions, approved and administered by Asset Acceptance in TaMS. Without this plan detail design approval is not granted. As such there is no need to include this in a condition of approval.</i></p>
<p><b>Traffic Control Device Drawings</b>                  That Traffic Control Device drawings for all new and amended works be submitted to the Manager, AA, C&amp;I, TAMS for approval prior to the installation of such devices.</p>	<p><b><i>Traffic Control Device Drawings</i></b>  <i>To be included in the detailed design submissions, approved and administered by Asset Acceptance in TaMS. Without this plan detail design approval is not granted. As such there is no need to include this in a condition of approval.</i></p>
<p><b>Landscape Management Protection Plan (LMP)</b>                  That during construction, all existing vegetation (trees, shrubs and grass) located on the verge and unleased Territory land immediately adjacent to the development be managed, protected and maintained in accordance with the LMP submitted to and approved by the Manager, AA, C&amp;I, TAMS prior to the commencement of works. This plan is to be implemented before the commencement of works, including the demolition/earthworks on the site and is to be in accordance with <i>City Management Guidelines for the Protection of Public Landscape Assets Adjacent to Development Works-REF-04</i>.</p>	<p>The tree assessment commissioned by ACTPLA concluded no significant trees were present within the Coombs EDP area. However LDA propose to retain some existing trees due to their cultural value. A tree retention plan is included with the EDP and will form the basis for any contractual requirement for the protection of existing vegetation. This aside, and considering the status of all existing vegetation on site and not significant, a formal LMP is not considered appropriate and is not proposed.</p>
<p><b>Notice of Commencement of Construction</b>                  That a Notice of Commencement of Construction be submitted to the Manager, AA, C&amp;I, TAMS, one week prior to the commencement of works. The Notice shall also include the confirmation of any protective measures installed in accordance with the approved <i>Landscape Management Protection Plan</i> and programmed implementation of the <i>Temporary Traffic Management Plan</i>.</p>	<p><b><i>Notice of Commencement of Construction</i></b>  <i>Shall be provided 2 weeks before commencement on site in accordance with any EPA Agreement, therefore there is no need to include this as a condition of approval</i></p>
<p><b>Waste Management Plan</b>                  That a <i>Waste Management Plan</i> be prepared in accordance with the Development Control Code for Best Practice Waste Management in the ACT which includes demolition, construction and ongoing operational phases.</p>	<p>LDA has an ongoing agreement with the International Arboretum site for the use of pine mulch from cleared vegetation areas within Wright and Coombs. Otherwise this is a greenfield site and a formal WMP is not considered necessary.</p>
<p><b>Bushfire Risk Management and Mitigation Plan</b>                  That a bushfire risk assessment and recommendations be endorsed by the Commissioner, Emergency Services Authority and be submitted to ACTPLA prior to commencement of works on site, in accordance with the Planning for Bushfire Risk Mitigation General Code, the Territory Plan.</p>	<p><b><i>Bushfire management Plan</i></b>  <i>A Bushfire Management Plan and report have been submitted with the EDP for endorsement by ESA as part of the entity comments on the EDP. ESA endorsement must be forthcoming prior to EDP approval being granted. As such there is no need to include this in a condition of approval.</i></p>

<p><b>Report to Minister for Planning</b>  <b>EIS scoping &amp; Section 211 considerations</b>  <b>Prepared by ACTPLA July 2009</b></p>	<p><i>LDA response with regard to Coombs EDP</i></p>
<p><b>Table of Associated works and details of associated works</b>                  Details of associated works including off site works be submitted to ACTPLA including the location of alternative recreation areas, parking areas and public viewing areas. Details shall include requirements for approval (DA/BA) and proposed intended timeframes for implementation</p>	<p><i>Table of associated works and details of associated works to be provide to ACTPLA.</i>  <i>All associated works are included in the EDP drawings. The staging plan identifies the general timing of the works. As such there is no need to include this requirement as a condition of approval;</i></p>
<p><b>Audit of requirements of conditions of approval</b>                  That prior to the commencement of works, the applicant/Lessee shall nominate an independent person, who will be approved by ACTPLA, to audit and ensure that all conditions of approval set out in the decision by ACTPLA, or under the EPBC Act are fully completed in accordance with the next condition of this decision. That prior to the completion of work, the applicant/Lessee shall submit a report prepared and endorsed by the person identified under the previous condition of this decision to provide demonstrated evidence that the mitigation measures set out in the approval have been fully completed to the satisfaction of ACTPLA.</p>	<p><i>Audit of requirements of conditions of approval by an independent person approved by ACTPLA.</i>  <i>The Coombs EDP has addressed all of the significant issues identified in the recommendations associated with the Section 211 exemption. Therefore the EDP is likely to be approved with a limited number of standard conditions. It would be unusual for an independent Auditor to administer the standard EDP conditions of approval. As such there is no need to include this requirement as a condition of approval.</i></p>
<p><b>Compliance Monitoring and Tracking</b>                  That a Compliance Tracking Program be developed and implemented to track and audit the requirements and compliance of conditions of the approval. The Program shall be submitted to and approved by ACTPLA prior to the commencement of construction or operation as appropriate. The program shall relate to both the construction and operational stages of the project and shall include, but not necessarily be limited to:</p> <p>(k) Provisions for periodic review of the compliance status of the development against the requirements and conditions of approval;</p> <p>(l) Provisions for periodic reporting of compliance status to ACTPLA; and</p> <p>(m) Mechanisms for rectifying any non-compliance identified during auditing or review of compliance.</p>	<p><i>Compliance Monitoring and Tracking program to be approved by ACTPLA before construction.</i>  <i>As stated above in the Audit requirements the Coombs EDP has addressed all of the significant issues identified in the recommendations associated with the Section 211 exemption. Therefore the EDP is likely to be approved with a few typical conditions. It would be unusual for a monitoring and tracking program to be required by ACTPLA for the standard EDP conditions of approval. As such there is no need to include this requirement as a condition of approval.</i></p>
<p><b>Implementation of revisions for approval</b>                  That prior to the commencement of works, revised drawings, based on the relevant drawings submitted as part of the application, showing any changes required as a result of the implementation of the conditions of approval set out in this decision, shall be submitted to ACTPLA for assessment and decision;</p>	<p><i>Implementation of Revisions for Approval prior to commencement of works.</i>  <i>This is a typical condition of approval, however the Land Act already governs this requirement. As such there is no need to include this requirement as a condition of approval.</i></p>
<p><b>Hazardous Materials</b>                  That a <i>Hazardous Materials Management Plan</i> be submitted to the Manager, EPA, DECCEW, in accordance with the <i>Hazardous Materials Environment Protection Policy</i>.</p>	<p><b><i>Hazardous Material Management Plan</i></b>  <i>The EPA agreement between the construction contractor and the EPA includes an unexpected hazardous material discovery plan. As the EPA agreement is required by the Environment Protection Act there is no requirement for a condition of approval for this item.</i></p>

<p>Report to Minister for Planning                  EIS scoping &amp; Section 211 considerations                  Prepared by ACTPLA July 2009</p>	<p><i>LDA response with regard to Coombs EDP</i></p>
<p><b>Emergency and Incident Response Management Plan</b>                  That an <i>Emergency and Incident Response Management Plan</i> endorsed by the ESA shall be submitted to ACTPLA for approval prior to the commencement of works on site.</p>	<p><b><i>Emergency and Incident Response Management Plan.</i></b>  <i>This plan is not required under ACTPLA's Guidelines for the preparation of Estate Development Plans. From the comments within the Section 211 recommendations it would appear this plan is not specifically related to the development of Coombs, but the overall structure plan for East Molonglo and response times for emergency services. The development of a single estate cannot address this issue, it needs to be addressed at the structure plan level. As such there is no need to include this requirement as a condition of approval;</i></p>

In summary the significant issues raised in 2009 in the Section 211 exemption recommendations have been addressed, supersede or do not apply to the Coombs EDP area.

## 9 RESPONSE TO EPBC DETERMINATION CONDITIONS

While the EPBC determination found the proposed development not to be a controlled action, the determination is conditioned. Compliance with these conditions was discussed at an Agency workshop on 8 November 2010 and each condition was allocated to either a capital works project or the Coombs EDP or both.

The following section discusses these requirements and their relationship to the Coombs EDP in greater detail. Crucially the following section outlines the LDA's response:

Commonwealth EPBC Determination	LDA response with regard to Coombs EDP
<p>1. Maintain a buffer zone of at least 20m from moderate and high quality <i>Aprasia parapulchella</i> habitat except when inconsistent with other measures in this notice.</p>	<p><i>No works are proposed within 20m of moderate and high quality habitats. It is not anticipated that any construction activities will require access within 20m of moderate and high quality habitats.</i></p> <p><i>Erosion and sediment control measures installed on site shall be considerate to the location of medium and high quality habitats. Sediment fencing shall be installed on the upstream side of all habitats and will be employed in conjunction with catch drains to divert 'dirty water' away from habitats of interest.</i></p> <p><i>During construction appropriate barrier fencing will be provided around the works perimeter.</i></p> <p><i>Following completion of the works a stock proof fence will be installed around the Coombs edge road until such times as the Molonglo River Corridor Concept Plan is established and works commence under that plan.</i></p>
<p>2. Ensure vehicles do not drive over and keep all forms of disturbance, such as heavy earthmoving equipment and other construction activity away from moderate and high quality <i>Aprasia parapulchella</i> habitat except when inconsistent with other measures in this notice.</p>	<p><i>No works are proposed within 20m of moderate and high quality habitats. It is not anticipated that any construction activities will require access within 20m of moderate and high quality habitats.</i></p> <p><i>Erosion and sediment control measures installed on site shall be considerate to the location of medium and high quality habitats. Sediment fencing shall be installed on the upstream side of all habitats and will be employed in conjunction with catch drains to divert 'dirty water' away from habitats of interest.</i></p>
<p>3. Prevent construction spoil and any material used in soil stabilisation and revegetation from running down slope over mapped <i>Aprasia parapulchella</i> habitat area.</p>	<p><i>Preparation of a Contractor's Environmental Management Plan will be a contractual requirement of any construction activity completed under the Coombs EDP. Protection of EPBC habitats will be a mandatory Contract requirement.</i></p> <p><i>The EPA will approve the Contractor's Environmental Management Plan prior to commencement of works on site and will be made aware of the EPBC sensitivities.</i></p> <p><i>Erosion and sediment control measures installed on site shall be considerate to the location of medium and high quality habitats. Sediment fencing shall be installed on the upstream side of all habitats and will be employed in conjunction with catch drains to divert 'dirty water' away from habitats of interest.</i></p>

Commonwealth EPBC Determination	<i>LDA response with regard to Coombs EDP</i>
<p>4. Prevent the spread or planting of trees, shrubs or weeds (eg <i>blackberry rubus fruitcosus</i>) within 20m of high and moderate quality <i>Aprasia parapulchella</i>. Trees and shrubs will not be planted in areas that could potentially shade moderate and high quality habitat and buffers.</p> <p>4.1 All construction machinery will be washed to prevent the spread of weeds prior to entering the site. All machinery operating below the proposed edge road will be washed; if machines have been (a) offsite or (b) entered or operated in the area of former pine plantation.</p>	<p><i>No landscaping or civil works are proposed within 20m of high or moderate quality habitats, landscaping of the river corridor is subject to the River Corridor Concept Plan.</i></p> <p><i>Preparation of a Contractor's Environmental Management Plan will be a contractual requirement of any construction activity completed under the Coombs EDP. Adherence to this Clause will become a Contract requirement.</i></p>
<p>5. Prevent stormwater, occurring as a result of this action, from flowing over moderate and high quality <i>Aprasia parapulchella</i> habitat patches below the sewer line.</p>	<p><i>A clarification was sought as to the intent of Condition 5 as it relates to stormwater runoff. A meeting was held between ACTPLA, DECCEW (The Conservator's Representative), LDA and Cardno on 23 February 2011 with the following agreement reached:</i></p> <ul style="list-style-type: none"> <li><i>• Low-flow discharge / 3-month (Annual Recurrence Interval (ARI)) flows should be directed towards existing gully lines (and away from PTWL habitats) where practical. Where not practical low-flow discharge / 3-month flows may be directed towards PTWL habitats if equal or less than pre-development conditions;</i></li> <li><i>• Minor design (1 in 5yr ARI) flows should be directed towards existing gully lines and away from PTWL habitats;</i></li> <li><i>• Major design (1 in 100yr ARI) flows should be direct towards existing gully lines and away from PTWL habitats;</i></li> </ul> <p><i>Hydraulic and hydrological modelling should demonstrate capacity of gully lines to convey post-development flows without inundation of medium and high quality PTWL habitats.</i></p>
<p>6. Erect permanent fencing to enclose moderate and high quality <i>Aprasia parapulchella</i> habitat. Fencing will be designed to minimise unregulated public access, rock collection, access by domestic animals and unregulated stock grazing.</p>	<p><i>During construction appropriate barrier fencing will be provided around the works perimeter.</i></p> <p><i>Following completion of the works a stock proof fence will be installed around the Coombs edge road until such times as the Molonglo River Corridor Concept Plan is established and works commence under that plan.</i></p> <p><i>Permanent fencing of the medium and high quality habitats is to be completed under the Molonglo River Park Concept Plan works.</i></p>
<p>7. An edge road as indicated on Page 27 of the Coombs and Wright Concept Plan will separate residential development from the river corridor</p>	<p><i>An edge road consistent with the Coombs and Wright Concept Plan is proposed under this EDP.</i></p>

Commonwealth EPBC Determination	LDA response with regard to Coombs EDP
<p>8. A management strategy will be implemented, and ensure that:</p> <p>8.1 Habitat values for high and moderate quality <i>Aprasia parapulchella</i> habitat patches below the edge road are maintained and improved, including removal and ongoing management of weeds;</p> <p>8.2 Any fire, biomass management, or fuel reduction required as a result of the action within 20m of moderate and high quality habitat will be conducted in an ecologically sympathetic manner with the conservation of <i>Aprasia parapulchella</i>. Grazing will only be used as a management technique when it is undertaken in accordance with expert advice;</p> <p>8.3 Signs containing educational / public information concerning the conservation of <i>Aprasia parapulchella</i> in the Molonglo Valley will be erected in consultation with expert advice.</p>	<p><i>The Coombs bushfire mitigation plan has determined that PTWL habitats and other OAPZ's are ecologically compatible, see 3.10 of the EDP report and Appendix C. All other matters associated with a management strategy for high and moderate quality Aprasia parapulchella habitat patches will be a requirement of the Molonglo River Park Concept Plan and is outside the scope of this EDP.</i></p>
<p>9. Measures 1. and 2. will not apply with respect to construction of public access to the river corridor through moderate quality <i>Aprasia parapulchella</i> habitat or buffer areas. Access ways will be planned and designed in accordance with expert advice to minimise impact and conserve habitat values;</p> <p>9.1 Access ways will not pass through high quality <i>Aprasia parapulchella</i> habitat</p>	<p><i>N/A – Public access through the river corridor will be addressed as part of the Molonglo River Park Concept Plan and is outside the scope of this EDP.</i></p>
<p>10. Surface rocks suitable for <i>Aprasia parapulchella</i> from within the Coombs pond inundation area and access way alignments will be used to rehabilitate areas of potential habitat below the sewer line in accordance with expert advice. Rehabilitation will not take place within mapped high quality habitat. Rocks and any machinery will be washed of all soil and organic matter prior to use for rehabilitation.</p> <p>10.1 A monitoring program developed in accordance with expert advice will survey rehabilitated habitat areas annually for 5 years, following completion of the trunk sewer.</p>	<p><i>N/A – Clause relates to the River Park Concept Plan and Capital Works project in construction of the trunk sewer and Coombs Ponds and is outside the scope of this EDP.</i></p>
<p>11. For Patch 2 all measures expect measure 1 apply. In addition;</p> <p>11.1 Within 20m of Patch 2 machinery will only operate from within or above the sewer alignment; excavated material will not be stockpiled below the alignment.</p> <p>11.2 All land disturbed within 20m of Patch 2 will be rehabilitated to improve current <i>Aprasia parapulchella</i> habitat value in accordance with expert advice. Specifically surface rocks will be retained and replaced and disturbed areas will be revegetated with local native grasses, sterile Rye and specifically Kangaroo grass.</p>	<p><i>11.1 N/A - All works are proposed above the sewer alignment within the vicinity of Patch 2. The Works area of any construction will therefore not extend beyond the sewer alignment and therefore no material will be stockpiled below the alignment.</i></p> <p><i>11.2 It is anticipated that this area will be heavily disturbed by construction of the Trunk Sewer Capital Works. Construction of the trunk sewer will occur prior to Coombs EDP works in this area. LDA will retain expert advice for any area of Patch 2 left undisturbed when Coombs works commence. Any work proposed within 20m of Patch 2 will be completed in accordance with his advice.</i></p>
<p>12. Patch 4 will be rehabilitated to improve current <i>Aprasia parapulchella</i> habitat value below the sewer alignment as per the measure outlined in 11.2</p> <p>12.1 All development other than the trunk sewer will avoid the rehabilitated portion of Patch 4 by a minimum of 20m</p>	<p><i>All works are proposed above the sewer alignment within the vicinity of Patch 4. LDA will work with the adjacent capital works project to ensure the provision of stormwater is 20m from any rehabilitated PTWL habitat area.</i></p>

Commonwealth EPBC Determination	LDA response with regard to Coombs EDP
13. A wildlife expert experienced with <i>Aprasia parapulchella</i> will check all potential habitat that is disturbed prior to construction. Any <i>Aprasia parapulchella</i> specimens found will be relocated to the nearest suitable habitat.	<i>N/A – Clause relates to Capital Works project in construction of the trunk sewer and Coombs Ponds and is outside the scope of this EDP.</i>
14. The above measures do not apply to the area identified as Patch 1 except measures 10 and 13.	<i>N/A – Patch 1 will be disturbed by the Coombs Pond capital works and is outside the scope of this EDP.</i>

The Coombs EDP has been developed consistent with the requirements of the EPBC determination as clarified above.

No additional referrals are required to the Department of the Environment, Water, Heritage and the Arts.

Appendix A

Traffic Impact Assessment

# PROPOSED COOMBS ESTATE DEVELOPMENT PLAN

Traffic Analysis and Road Hierarchy  
Final Report

Prepared for  
**ACT Land Development Agency**

transportation | traffic | engineering | planning

June 2011

**Cardno (NSW/ACT) Pty Ltd**

Traffic and Transport

ABN 95 001 145 035

Level 3, 910 Pacific Highway, Gordon

New South Wales 2072 Australia

Telephone: 02 9496 7700

Facsimile: 02 9499 3902

International: +61 2 9496 7700

[www.cardno.com.au](http://www.cardno.com.au)**DOCUMENT CONTROL**

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# 1 INTRODUCTION

Cardno was commissioned by the Land Development Agency (LDA) to undertake a Road Hierarchy and Traffic Analysis Report to assist in the formulation of the Coombs Estate Development Plan for residential development within Stage 1 of the Molonglo Valley Development.

The proposed Coombs Estate Development Plan consists of a predominantly residential development with the following mix of land uses:

- Single dwellings.
- High and medium density residential.
- Commercial mixed use.
- Primary school.
- Child care facility.
- Public open spaces.
- Community facilities.

A number of previous traffic studies of relevance have been undertaken to identify the infrastructure requirements for the development within the Molonglo Valley. Key outputs from these studies have been included within these technical assessments where relevant. Previous traffic studies include:

- Molonglo Infrastructure Stage 1 Traffic Report December (GHD 2008).
- Molonglo Transport Model Review Final Report (AECOM 2010).
- Proposed Wright Estate Development Plan Traffic Study (Cardno 2010).

This report builds upon the work undertaken previously. It should be noted that we have used the most recent information for the intersection layout configurations for JGD from the GHD report. Our report has also used distribution splits and midblock traffic volumes on JGD from the AECOM report. The focus of this study is an examination of the precinct internal road layout and appropriate definition of a road hierarchy. The operation of key internal intersections is also assessed to understand their likely operational performance in both the interim (2021) and ultimate (2031) stages of development. These future time periods have been selected as they correspond with the AECOM report assessment. The interim case assumes one midblock lane in each direction in JGD whilst the ultimate scenario assumes 3 midblock lanes in each direction in JGD.

## 1.1 SCOPE OF WORKS

The scope of this study comprises the following tasks:

- Determine an appropriate set of future year design traffic flows for the Coombs Estate Development Plan.
- Undertake intersection analysis for 2 intersections on John Gorton Drive (JGD). These key intersections are considered to represent the connections of the higher order road network (arterial through to major collector).

- Review traffic generation internal to the site and assess intersection performance where appropriate based on anticipated traffic volumes. These locations are detailed below and assessed using SIDRA to determine appropriate priority and intersection type.
  - Road 03/Road 28
  - Road 03/Road 08
  - Road 07/Road 08
  - Road 20/Road 09
  - Road 07/Road 04
- Identify an appropriate road hierarchy plan based upon traffic volumes, traffic composition, bus services and active transport (walk/cycle) considerations.
- Assess the environmental traffic capacity of the internal road network under the road hierarchy plan.
- Summarise the above into a Road Hierarchy and Traffic Analysis Report.

This study should appropriately assess the operational performance of internal intersections within Coombs and the site access connections to the external road network system.

It is proposed that new intersection connections are constructed as part of the proposed JGD which is a planned major arterial road which will provide the major vehicular access connections to both Coombs and Wright. Intersection layouts have been developed by other consultants in the reports referenced above. Operational performance needs to be considered for both Wright and Coombs based on final land use estimates.

## **1.2 REFERENCE DOCUMENTS**

- Report on Molonglo Infrastructure Stage 1 Traffic Report (GHD 2008).
- Molonglo Transport Model Review Final Report (AECOM 2010).
- Proposed Wright Estate Development Plan Traffic Study (Cardno 2010).
- Updated traffic forecast produced by SMEC provided by TAMS via email to Cardno dated 11 January 2010.
- Guidelines for the preparation of Estate Development Plans (ACT Planning & Land Authority 2009).
- Territory Plan Wright Concept Plan (ACT Parliamentary Counsel 2008).
- Guide to Traffic Generating Developments (NSW RTA 2002).
- Road Hierarchy Plan for Coombs and Wright Estate Development Plan Drawing No. 292347-RHP-01, 02, 03 (Cardno 2010).
- TAMS Design Standards for Urban Infrastructure (Edition 1 issue 0).
- Parking and Vehicular Access General Code (ACTPLA 2008).

## **1.3 REPORT STRUCTURE**

The remainder of the report is structured as follows:

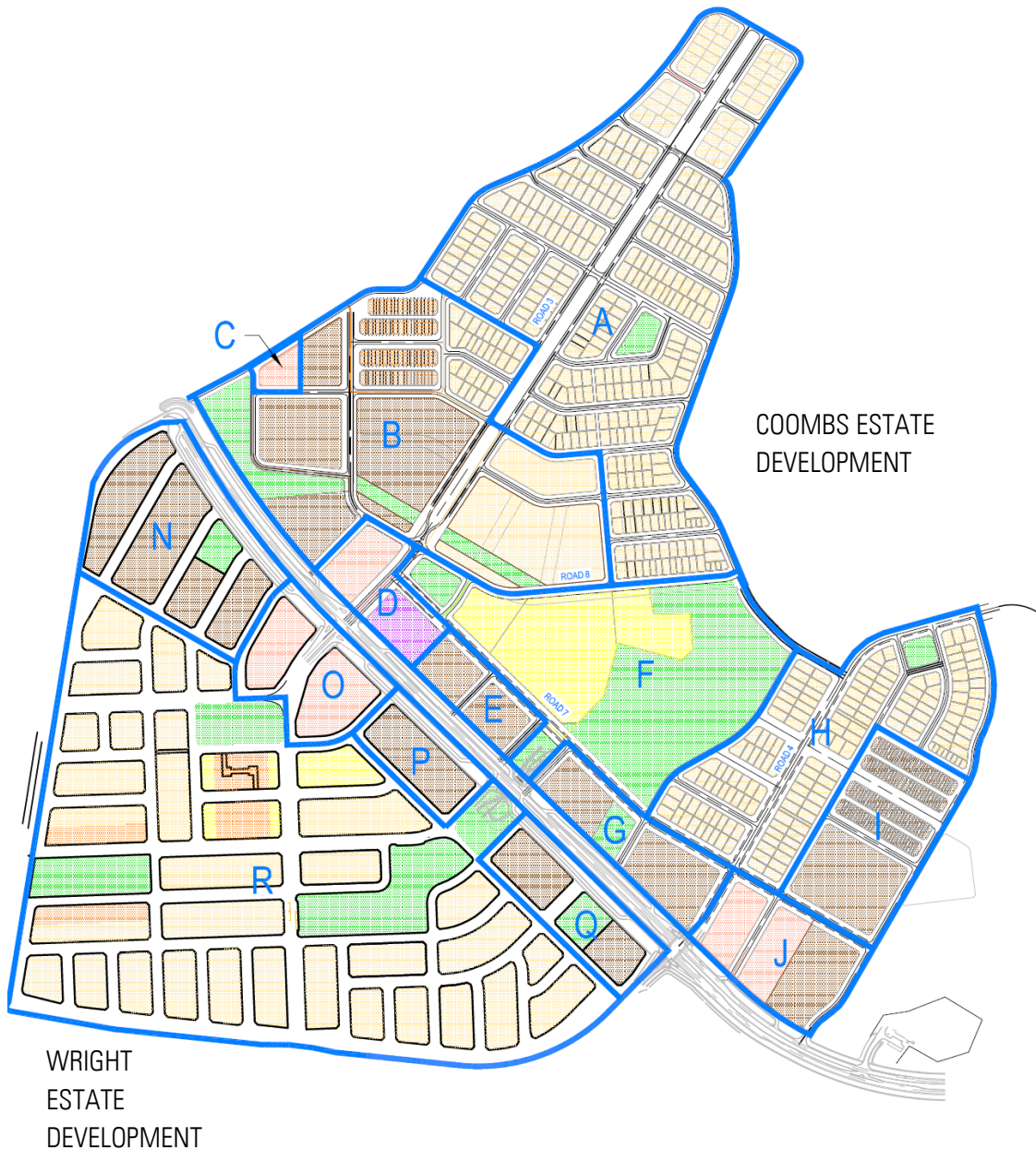
- Chapter 2 describes the Concept Plan and proposed Coombs Estate Development Plan.
- Chapter 3 describes the derivation of the forecast traffic volumes associated with the Masterplan.
- Chapter 4 outlines the proposed road hierarchy including its principles and identifies and assesses the road hierarchy and key intersection performances both within Coombs and its external intersections along JGD.
- Chapter 5 provides a summary and concludes the study.

## 2 PROPOSED COOMBS DEVELOPMENT

The Coombs Estate Development Plan is to be provided one of the first stages of the proposed large scale land use changes within the Molonglo Valley.

The Coombs and Wright Masterplan is indicated in **Figure 2.1**. The layout for Road 3, 4, 7 and 8 is consistent with the Concept Plan.

**Figure 2.1** Site Location



## **2.1 Proposed Arterial Road Construction to Access Coombs**

Roads ACT are constructing a new arterial road link providing principal vehicular access to all proposed land release areas within the Molonglo Valley, namely John Gorton Drive (JGD). JGD will connect Cotter Road in the south to Coulter Drive and Bindubi Street in the north. The road will cater for road vehicles and accommodate on road cycling and future Inter-town Public Transport (IPT).

It is proposed to construct JGD in stages as the Molonglo Valley is being progressively developed with Stages 1A and 1B, those providing direct frontage and access to Coombs from Road C11 in the east to Road C21 in the west, currently under construction.

JGD Stage 1D is currently being designed by GHD and will extend from the western boundary of Coombs. Construction is expected to commence sometime in 2012 and therefore a permanent connection to JGD from Coombs Road C21 is anticipated. Should the timeline for JGD Stage 1D extend a temporary connection can be facilitated.

These future stages of JGD construction will provide improved accessibility between the site and the existing urban areas to the north (Belconnen / Macquarie). Accordingly the potential traffic distributions between the Wright and Coombs Estate Development Plan area and the external road network will change as the road is progressively constructed.

## 3 TRAFFIC VOLUMES

This section of the report details the methodology used to determine the traffic generation of the site and its distribution and assignment within the Coombs Estate based on the development mix of each block and potential access points onto JGD. This information has been used in developing the internal road hierarchy including elements such as bus routes.

### 3.1 DETERMINATION OF TRAFFIC GENERATION

A maximum forecast of the traffic generation potential of the Coombs Estate Development Plan was undertaken based upon the potential lot yields identified within the Masterplan. The same approach was utilised for the Wright Estate Development Plan. Traffic generation on the yields has been assessed by adoption of the following traffic generation rates:

- Single dwellings 8 vehicle movements per day per dwelling.
- Multi-unit dwellings 6 vehicles per day per dwelling.
- Mixed use floorspace 10 trips per 100 sqm (based on expected development mix).
- Child care facility 1.6 trips per day per child (based upon RTA Guide to Traffic Generating Development long-day child care uses).
- Primary school 60% of students are driven to school (based upon previous school studies undertaken by Cardno).
- Community facility 10 trips per 100 m<sup>2</sup> per day.

For the traffic assessment of this study, the following yields were assessed:

- 706 single dwellings.
- 2530 multi-unit dwellings.
- 19,850 m<sup>2</sup> GFA mixed use floorspace.
- 8,860 m<sup>2</sup> site area for child care facility with 200 children.
- 38,300 m<sup>2</sup> site area for primary school with 900 students.
- 12,550 m<sup>2</sup> site area for community facility.

A conservative approach has been taken with respect to the assumed dwelling numbers at the multi-unit sites. The upper limit of the ranges provided illustrated on the Road Hierarchy and Traffic Analysis Plan (RHP) have been adopted at all locations and is reflected in the trips generated, as recorded in **Table 3.1**.

It has been assumed, as per the Wright study, that LDA anticipate that the mixed use floorspace would comprise of doctors surgeries, a small supermarket, hairdressers, laundries and small businesses etc. These land uses will provide a local focus with the potential for a significant number of walk/cycle trips to be made from the surrounding areas.

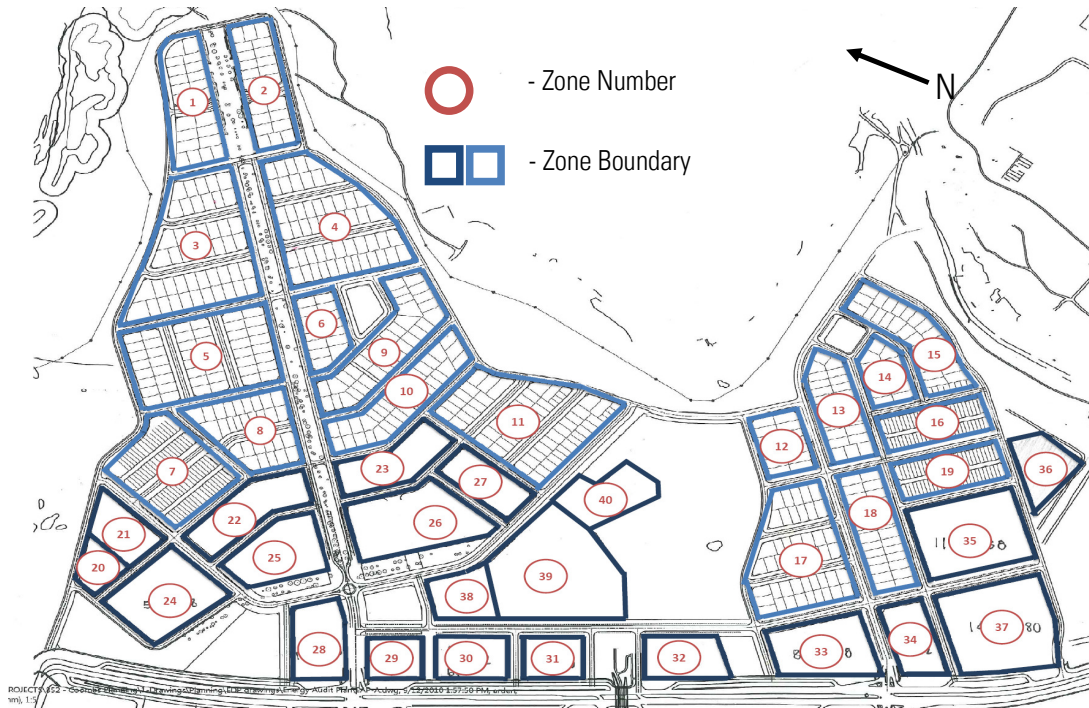
Based on the potential for shared trips (trips generated by local attractors such as schools and retail, but not resulting in a trip end) and the anticipated sustainable mode share (as discussed in AECOM's 2010 study), given the high quality walking and cycling infrastructure proposed and excellent public transport facilities (high frequency route on JGD, local services beginning from day 1) the likely volume of traffic generated is judged to be approximately 15% less than would be generated by the stated code rates total traffic generated by the Coombs

Estate and this discount is reflected as the lower end of the daily vehicle movements forecasted in the RHP. The RTA Guide to Traffic Generating Developments states that such an allowance (up to 25%) provides a realistic representation of trips occurring internal to a subdivision. An upper range has been included however which reflects conservative dwelling densities and code traffic generation rates, and are published as the upper limit of the range anticipated on the RHP. The road hierarchy proposed has been informed by these upper limit rates.

### 3.1.1 Zoning System

Zones are defined as locations where trips originate and terminate, i.e. trip ends. Based on the Coombs Estate Development Plan, a zoning system is set up for the study area as shown in **Figure 3.1**. A total of 40 zones have been set up for this study. Based on the rates assumed above, the development could generate some 19,850 two way daily trips or 2,500 two-way peak hour trips. It should be noted that the daily trip rate does not calculate to 10 times the hourly rate as some land uses within the site such as the school and child care have proportionally higher number of trips in the peak hour compared to the daily rate than do the residential land uses. **Table 3.1** details the number of trips generated by each zone.

**Figure 3.1 Zoning System**



**Table 3.1 Generated Zone Trips**

Zone No.	Development Type	Daily Trips		Zone No.	Development Type	Daily Trips		Zone No.	Development Type	Daily Trips	
		Lower	Upper			Lower	Upper			Lower	Upper
1	Suburban Residential	150	176	15	Suburban Residential	232	273	29	Commercial Mixed	789	928
2	Suburban Residential	150	176	16	Medium Density Residential	347	408	30	High Density	470	553
3	Suburban Residential	320	376	17	Suburban Residential	313	368	31	High Density	408	480
4	Suburban Residential	368	433	18	Suburban Residential	177	208	32	High Density	510	600
5	Suburban Residential	327	385	19	Medium Density Residential	354	416	33	High Density	832	979
6	Suburban Residential	102	120	20	Commercial Mixed	204	240	34	Commercial Mixed	995	1171
7	Medium Density Residential	524	616	21	High Density Residential	388	456	35	High Density	1250	1471
8	Suburban Residential	198	233	22	High Density Residential	735	865	36	High Density	510	600
9	Suburban Residential	232	273	23	High Density Residential	592	696	37	Part Commercial Mixed	1428	1680
10	Suburban Residential	218	256	24	High Density Residential	944	1111	38	Child Care	272	320
11	Suburban Residential	449	528	25	High Density Residential	679	799	39	Primary School	918	1080
13	Suburban Residential	164	193	27	High Density Residential	765	900				
14	Suburban Residential	89	105	28	Commercial Local	986	1160				

## 3.2 TRAFFIC DISTRIBUTION

Trips were assigned in proportion to the major attractors and generators for Molonglo traffic. For a robust assessment a distribution of 70% to/from the east and 30% to/from the west was assumed, with the ultimate assumption that there will be approximately a 50/50 split north/south. This is consistent with the AECOM forecasts (51% north / 49% south, refer to Table 12).

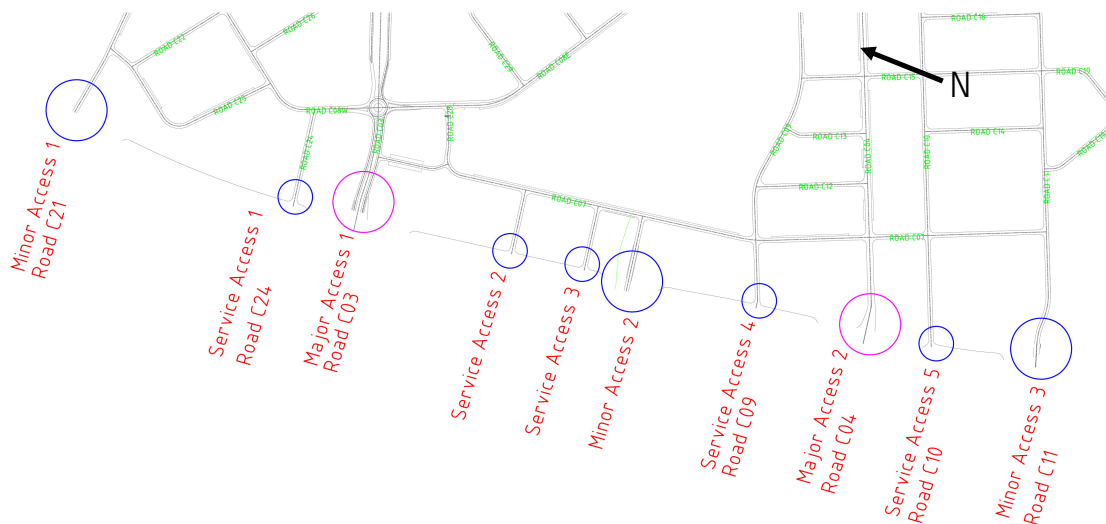
Based on our review of the work undertaken by AECOM in 2010, the nature of the study was such that the level of detail provided at an individual intersection level was not sufficient for the modelling required in this study. At an intersection level, the traffic distribution breakdown was based on the traffic distribution identified in Table 6-8 of Section 6.13 in the Molonglo Transport Model Review (SMEC). However the AECOM forecast traffic movements, which reflect current planning intentions were adopted, including the midblock forecast traffic volumes on JGD.

### 3.2.1 Development Access

Development accesses into the development from John Gorton Drive are as follows:

- Major accesses located at Road C03 in the north and at Road C04 in the south with all movements permitted at these intersections.
- Minor accesses located at Road C21 in the north, Road C11 in the south with some restricted movements.
- Service access roads at various locations along John Gorton Drive with only left in left out movements permitted.

**Figure 3.2 Development Access Points**



It is assumed in this assessment that the outbound trips from Coombs to the south will be distributed to the various major, minor and service accesses. Inbound trips from the south will only be distributed to the Major Accesses (Road C03 and Road C04) and Minor Access 2 due to the right turn movement restriction on the service accesses and Minor Access 1 (Road C21) and Minor Access 3 (Road C11).

Outbound trips to the north will access via the major accesses while it is assumed that inbound trips from the north will utilise most accesses along John Gorton Drive.

It has been assumed, given duplicate development types in the assessment that a small proportion of traffic from Wright will enter Coombs to utilise the Town Centre facilities.

The distribution percentages used at each access are detailed in **Table 3.2**.

**Table 3.2 Access Distribution**

Zones	Trips	Trips Distributed To									
		Major Access 1	Major Access 2	Minor Access 1	Minor Access 2	Minor Access 3	Service Access 1	Service Access 2	Service Access 3	Service Access 4	Service Access 5
1,3,5,7,8,20-22,24,25,28	To South	30%		20%			20%				
	To North	30%									
	From South	70%									
	From North	10%		10%			10%				
2,4,6,9-11,23,26,27	To South	30%	10%							30%	
	To North	10%	20%								
	From South	35%	35%								
	From North	20%	5%							5%	
12-19,33-37	To South		35%			15%				10%	10%
	To North		30%								
	From South		50%							20%	
	From North		15%			5%				5%	5%
29,30,31,32	To South	15%			35%			10%	10%		
	To North	30%									
	From South	35%			35%						
	From North	10%			10%			5%	5%		
38,39,40	To South	30%	30%							10%	
	To North	20%	10%								
	From South	35%	35%								
	From North	20%	10%								

### 3.3 TRAFFIC ASSIGNMENT

Traffic was assigned onto the internal precinct local road network on the basis of likely driver routes through the Masterplan area using routes seeking to minimise travel distances and time.

### 3.4 INTERACTION BETWEEN NORTH WESTON AND COOMBS ESTATES

Road C04 provides a connection between North Weston and Coombs at its north-eastern extent. The primary reason for providing this connection is to facilitate local bus services in an efficient manner. During consultation,

some concerns were raised that this link, in association with the east-west connection provided by Road C20, may facilitate 'rat-running', and has the potential to provide a more efficient east-west connection than John Gorton Drive (JGD) between the primary access points to North Weston and Coombs.

Analysis has been undertaken to determine the likely level number of trips travelling between the estates as a result of this connection being provided. With the exception of traffic movements attracted to retail core, childcare facilities and the school which originate from North Weston, there were no externally generated trips judged to travel via this connection. This is primarily due to the fact that the anticipated travel time associated with external traffic movements arriving from the northern end of JGD, travelling via North Weston and then traversing east-west through Coombs, destined for the western portion of the estate or re-connecting with JGD is judged to exceed the time it would take to continue along JGD and if bound for the western portion of the estate, entering via Road C3. This assumption can be mainly attributed to the more circuitous internal route and speed limit which is significantly less on the internal road network than on JGD.

In addition to the local bus movements, approximately 200 vpd are anticipated to travel between the two estates (Coombs and North Weston) via this link; of which approximately 50 vpd are anticipated to travel via Road C20. An inset has been provided on sheet 2 of the RHP, which isolates the number of trips originating from North Weston which utilise Coombs' internal road network.

## 4 PROPOSED COOMBS ESTATE DEVELOPMENT PLAN LAYOUT

### 4.1 ROAD CLASSIFICATIONS

The identification of a road hierarchy serves not only to identify the roads role to carry vehicles but should attempt to match the class of road to its use and the environmental needs of the community. The desire to separate through and local traffic should improve the general amenity of all areas within the development.

If roads are viewed as either purely for local access or purely for traffic movement then inconsistencies will arise. An example of this would be the situation where a main road passes through a shopping centre, here both local access and through traffic movement must be accommodated. Where road network design alone is unable to remedy this situation traffic management can be applied to minimise impacts and prioritise conflicting functions.

Traffic management objectives at a local level need to be consistent with government objectives for community planning and development. The levers which traffic management most closely affects are:

- Need to ensure cohesive precincts.
- Need to ensure accessibility of neighbourhood areas for all road users.
- Need to ensure the environmental integrity is respected.

The classification of roads in the ACT is based on a formal road hierarchy. The classification fundamentally relates to the predominant function of a road and to the extent it serves the two basic purposes of the road network, i.e. the movement of traffic and access to property. A road's physical characteristics and traffic volume will reflect its function and role in the network.

The road classifications used are:

- Arterial roads.
- Major collector roads.
- Minor collector roads.
- Access streets.

The definitions of each road classification are discussed in the following sections.

#### 4.1.1 Arterial Roads

Arterial roads predominantly serve longer distance travel within a district and through traffic from one district to another, and form the principal avenues of communication for metropolitan scale traffic movements. They include limited access roads and parkways (or freeways) having full access control and grade separated inter-sections. A small number have higher levels of property access for urban design reasons, for example Northbourne Avenue, or reflect the planning and design parameters of the time of their construction, for example, Limestone Avenue. Traffic capacity is a function of the design of the road rather than being constrained by environmental objectives.

### **4.1.2 Major Collector Roads**

Major collector roads collect and distribute traffic within residential, industrial and commercial areas. They form the link between the primary network and the roads within local areas and should carry only traffic originating or terminating within an area. The volume of traffic carried is constrained by environmental objectives - safety and traffic noise - rather than road geometry and reflects the limited area that they serve. Direct property access is still permissible but the level of traffic may dictate that access and egress arrangements should be such that vehicles can exit properties in a forward direction.

### **4.1.3 Minor Collector Roads**

Minor collector roads collect and distribute traffic from access streets, linking to the major collector roads within the neighbourhood. They can also provide secondary connections direct to the external arterial road network. Traffic volumes are compatible with direct property access.

### **4.1.4 Access Streets**

Access streets are generally streets where the residential environment is dominant. Traffic volumes and speed environment are low. They would generally connect only to a collector road.

### **4.1.5 Speed Environments**

The ATPLA Residential Subdivision Development Code provides details on the desirable speed environment based on the residential street level, type and function which requires the following speed limits, consistent with our proposed speed environment as part of the EDP:

- Access streets - 40km/h.
- Minor collector roads - 50 km/h.
- Major collector roads - 50 km/h.
- Arterial roads - 60 km/h or above.

### **4.1.6 TAMS Classifications**

In addition to the above coarse level definitions TAMS Design Standard for Urban Infrastructure identifies a road classification based upon the National Association of Australian State Road Authorities (now known as Austroads) and describes urban roads as follows:

- Class 6 - Those roads whose main function is to perform the principal avenue of communication for massive traffic movements.
- Class 7 - Those roads, not being Class 6, whose main function is to supplement the Class 6 roads in providing for traffic movements or which distribute traffic to local street systems.
- Class 8 - Those roads not being Class 6 or 7, whose main function is to provide access to abutting property.
- Class 9 - Those roads which provide almost exclusively for one activity or function and which cannot be assigned to Class 6, 7 or 8.

## 4.2 ROAD HIERARCHY PRINCIPLES

TAMS Design Standard for Urban Infrastructure also identifies a road hierarchy network to maximise road safety, amenity and legibility and to provide for all road users. Sections from this document are reproduced below.

A hierarchical road network is essential to maximise road safety, amenity and legibility and to provide for all road users. Each class of road in the network serves a distinct set of functions and is designed accordingly. The design should convey to motorists the predominant function of the road. Essentially there is a broad division between arterial and non arterial (or local) roads.

### Arterial Roads

Servicing the individual residential areas are the major roads that are Class 6 and in some cases Class 7 roads. These are important transport routes that provide for the major traffic streams in terms of both volume and speed.

In the ACT, there are three distinct types of major road:

- Sub-Arterial.
- Arterial.
- Parkway.

### Non-Arterial Roads

There are four distinct street types in residential areas:

- Access Places – Class 8.
- Access Streets – Class 8.
- Collector Street (Minor) – Class 7.
- Collector Street (Major) – Class 7.

The lowest order of road (Access Place) having as its primary function, residential space / amenity features which facilitate pedestrian and cycling movements and where vehicular traffic is subservient in terms of speed and volume to those elements of space, amenity, pedestrians and cyclists.

The next level of road (Access Street) should provide a balance between the status of that street in terms of its access and residential amenity function. Residential amenity and safety are dominant but to a lesser degree than Access Places.

All Collector Streets have a residential function but also carry higher volumes of traffic than the lower order streets. A reasonable level of residential amenity and safety is maintained by restricting traffic volumes and speeds; however amenity and safety do not have the same priority as Access Streets and Access Places.

Major Collector Streets provide the principal link between the residential street network and the arterial road system. These streets often require frontage access restrictions due to traffic volume