



FINAL VARIATION

Land (Planning and Environment) Act 1991

Variation to the Territory Plan No. 257

Suburb of Crace
Gungahlin

October 2006

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1. EXPLANATORY STATEMENT

1.1 Background

Planning for Gungahlin dates back to the 1970s, when the National Capital Development Commission (NCDC) first commissioned surveys of the area. In the 1980s the NCDC continued the planning and in 1988 released a draft plan for Gungahlin for comment, and an accompanying Environmental Impact Statement (EIS) which formed the basis of the original National Capital Plan Map and Territory Plan for Gungahlin. The original Gungahlin Policy Plan was gazetted in 1989. In 1991 when development in Gungahlin began, the plan was amended to include more detailed planning for the suburbs of Amaroo, Casey, Harrison, Ngunnawal and Nicholls. It was amended again in 1992 to provide for the development of the Harcourt Hill estate in the suburb of Nicholls.

Since the introduction of the Territory Plan in October 1993, three major variations in Gungahlin have been completed. *The Mulligans Flat Variation* (Number 15, 1994) significantly expanded the Nature Reserve. Gungahlin Town Centre and Central Area Variation (Number 53, 1995), in response to the discovery of the striped legless lizard (*Delma impar*), substantially altered the original plan for the town centre in both its location and development as an urban village. More recently, Variation 130 (2004) amended the Territory Plan for North Gungahlin by confirming the planning for the remaining undeveloped areas of Amaroo and Ngunnawal and introducing a revised policy framework for the six new suburbs namely, Bonner, Casey, Forde, Jacka, Moncrieff, and Taylor. Draft Variation No. 231 (East Gungahlin) is currently before the Legislative Assembly Planning and Environment Committee for consideration to confirm the planning intentions for the suburbs of Kenny and Throsby, the southern part of the suburb Harrison and the expanded boundaries of the Goorooyaroo Nature Reserve.

Crace has previously not been developed because it had been occupied by CSIRO as a field research station. The ACT Government acquired the land from the Commonwealth in 2004. CSIRO has recently vacated the land, which is now available for urban development.

Changes in approaches to urban management with an emphasis on sustainability have also informed the planning process. Among these initiatives are alternative approaches to urban water management, the co-location of community facilities, protection of Aboriginal and European heritage and in recognition of changing shopping trends, the location of retail centres.

The purpose of this Variation is to introduce *Defined Land provisions of the Land (Planning and Environment) Act 1991*, by setting out a series of principles and policies that reflect the planning intent and inform the development of the future suburb. The Variation provides a greater level of detail than the initial Outline Plan. The Variation will therefore become the stated policy intention for

the development of Crace. Should this Variation progress, it will form the basis for further detailed planning ahead of land release and development.

1.2 Site Description

Crace is located in the southern portion of Gungahlin, south of the suburb of Palmerston and has an area of approximately 133 hectares. It is bounded on the west by Gundaroo Drive and Ginninderra Creek and to the east by *Gungaderra Nature Reserve*. The southern edge is formed by the Barton Highway. In notional terms, the suburb has capacity to accommodate approximately 1200 dwellings including higher density dwellings clustered around public transport routes and the commercial area. The final dwelling number will be dependent on detailed subdivision design.

1.3 Current Territory Plan/National Capital Plan Policies

The current policy framework reflects the 1989 Gungahlin Policy Plan and shows a minimum level of detail. The existing Territory Plan Map, as it relates to Crace, has a Residential Land Use Policy. Major Roads shown on the Territory Plan Map in the vicinity of Crace are Gundaroo Drive, the Barton Highway and Nudurr Drive. A Hills Ridges and Buffer Areas Land Use Policy corridor runs adjacent to the Barton Highway. The Gungaderra Grassland Nature Reserve lies to the east of the suburb and is included in 'Public Land'.

Much of the land outside the residential area is included in the Hills Ridges and Buffer Areas Policy. The existing Territory Plan Land Use Policy for the area subject to this variation is shown in **Figure 1.1**.

The National Capital Plan identifies the suburb of Crace as an Urban Area with a Hills, Ridges & Buffer Spaces corridor along the Barton Highway, adjacent to the suburb. The Territory Plan is required to be not inconsistent with the provisions of the National Capital Plan.

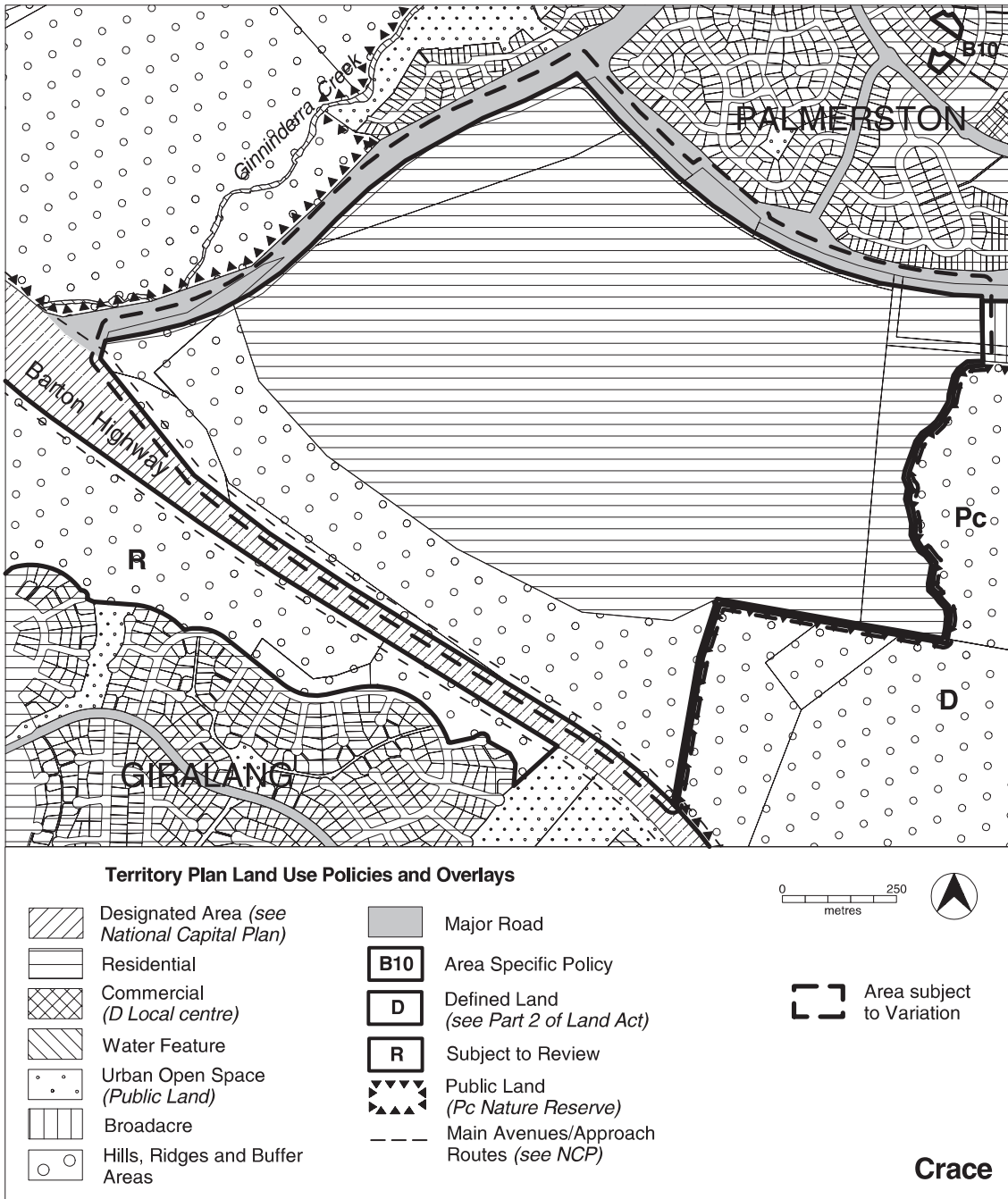


Figure 1.1 – Territory Plan Current Land Use Policies

1.4 Planning Principles

1.4.1 Principles and Policies for Development of Defined Land

Section 7(3)(c) of the Land Act states that where the Territory Plan identifies land as Defined Land, it shall also set the principles and policies for its development. The Land included in this Variation is proposed to be 'Defined Land' pursuant to section 7(3)(c) of the Land Act. The Defined Land process establishes that the development of this land must be consistent with the Principles and Policies contained in this Variation. In addition the process enables the Territory Plan to be progressively updated as the detailed designs for the area unfold.

Crace

Crace is a discrete suburb that is bounded by the Gungaharra Grassland Nature Reserve and Gungahlin Hill to the east, Gundaroo Drive and Percival Hill to the west, the Barton Highway to the south and Nudurr Drive to the north. The suburb is located in the south west of Gungahlin and is adjacent to the suburb of Palmerston.

Crace is an undulating area that contains a number of scattered Yellow Box/Red Gum trees, which form an important landscape feature of the suburb.

1.4.2 General Planning Principles

The following General Planning Principles apply:

- Planning and development of Crace should incorporate sustainability principles including social, cultural, economic, environmental and ecological considerations.
- The landscape setting and values of Crace and surrounds are to be recognised and enhanced. The Hills, Ridges and Buffer Area Land Use Policy area along the Barton Highway is to be planted with appropriate native vegetation preferably from local seed provenance subject to the consideration of bushfire risk.
- Existing important trees should be incorporated into the urban fabric as a priority and protected under the *Tree Protection Act 2005*.
- Ensure land uses adjacent to conservation areas do not have significant adverse impacts on threatened species.
- The subdivision design shall take advantage of view sheds provided by open space corridors and major collector road alignments.

- Detailed planning is to preserve and enhance the natural, cultural and heritage characteristics and values of the area to support and strengthen the local community's identity.
- Detail planning is to incorporate and make provision for linkages between places of heritage importance and areas of natural environment within the suburb and adjacent areas.
- The local neighbourhood is to be based on a walkable radius of 400m, and focus on an activity node comprising commercial or community facility land use.
- Community facility sites should be located, where possible, close to public transport and in places where, for reasons of safety, people already have a cause to congregate such as the local centre.
- Public open space, within close proximity to, the local centre, together with various other nominated sites, may be utilised for possible community and recreation activities.
- The retail centre should be well located on a major road in order to serve the population of the suburb and ensure the long-term viability of the centre.
- Water sensitive urban design principles and measures are to be adopted to secure economic, social and environmental benefits and to assist in achieving the targets identified in the 'Think Water Act Water Strategy' for sustainable water use in the ACT.
- An integrated cycling and pedestrian network should connect to the local centre, parks and hilltops within the suburb of Crace and provide links to trunk routes, services and facilities in other areas of Gungahlin and Canberra.
- The road hierarchy should be legible, connected to the wider network and provide good and safe access to all users and encourage high levels of public transport usage. Roads should be designed to achieve the appropriate speed environment without the necessity to introduce traffic calming devices such as raised platforms and chicanes.
- Subdivision design should encourage housing diversity and enhance access to energy efficient house design. Higher density residential development is to be located around activity nodes, including the local centre, water quality features and along transport routes.
- Major public utilities are to be provided as required.
- Aboriginal and historic heritage places are to be recognised and significant sites conserved in public open space.

- Bushfire risk should be considered and mitigated appropriately in the planning and development of the suburb and its buffer areas.
- The use of public art in defining an appropriate entry feature to the site is to be encouraged.
- Careful consideration should be given to subdivision design to maximise solar access.

1.4.3 Specific planning principles

The Outline Plan Generator diagram and the Outline Plan indicate the manner in which the Territory Plan will be varied for Crace. The Outline Plan is included to assist in the understanding of the implications of the Variation to the Territory Plan.

Only the primary road system is shown on the Outline Plan and the alignments are representative of the planning intentions.

The Outline Plan indicates the general location of the various land uses proposed for the suburb and reflect the requirements shown on the Outline Plan generator diagram.

GENERAL POLICIES (Refer to Figure 1.2)

The following General Policies apply:

- A. The location of a local convenience retail centre and associated higher density residential are placed centrally within the suburb at the intersection of the collector road system.
- B. A local bus route will be accommodated through the suburb via the local centre and areas of higher density, facilitating and encouraging public transport use.
- C. Edge roads are to be utilised as a buffer between residential development and areas of open space and Gungaharra Grassland Nature Reserve.
- D. Open space spines to be based on existing prominent drainage paths.
- E. Water detention features are required and are to be located within the natural drainage lines in open space.
- F. Provide an area close to the local centre for a community facility site.
- G. Internal road access shall initially be of a boulevard character before merging into avenues.

- H. Opportunities are to be provided for small scale community facility uses (sites) in open space in convenient locations predominantly along public transport routes.
- I. The native landscape character within the buffer areas along Barton Highway and adjacent to Gungaharra Grassland Nature Reserve shall be strengthened with plants of local provenance. The bushfire risk associated with the additional landscaping of these areas will need to be considered further at the detail design stage and as part of the further bushfire risk assessment.

SPECIFIC POLICIES (Refer to Figure 1.2 and Figure 1.3)

The following specific policies apply:

1. The suburb is to be accessed from Gundaroo Drive from a single access point and Nudurr Drive at two points.
2. A trunk cycleway is to be provided to connect to Gundaroo Drive and link to the Barton Highway in south-east of site for commuter cyclists.
3. Existing Aboriginal site of significance are to be protected and preserved within Urban Open Space.
4. Higher density housing is to be provided adjacent to the local centre, the community facility site, public transport routes and adjacent to open space corridors and water quality features.
5. Provide playing fields (neighbourhood oval consisting of a Basic Sports Unit).
6. Provide hilltop park.
7. Retain important group of trees within open space.

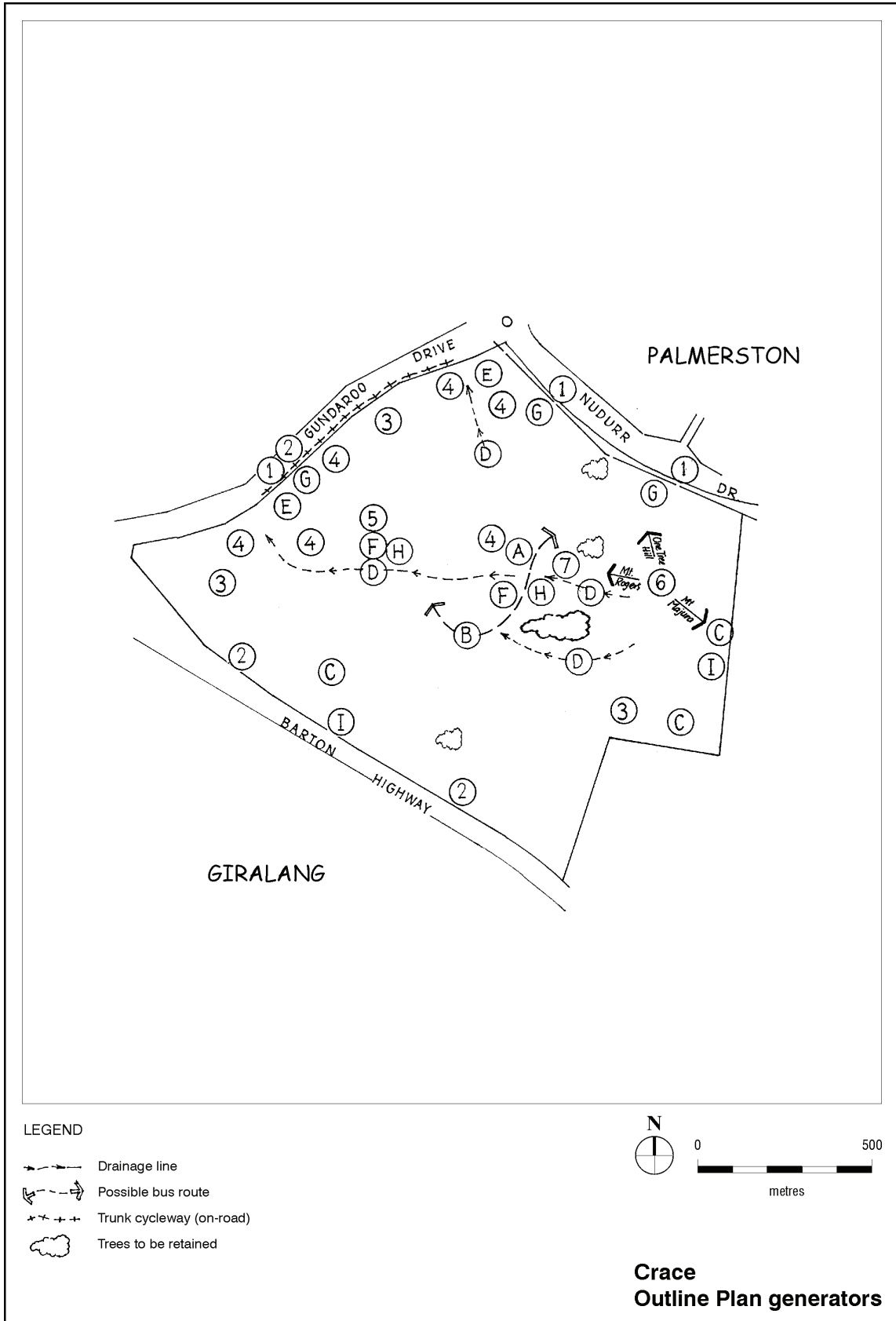


Figure 1.2 Outline Plan Generators

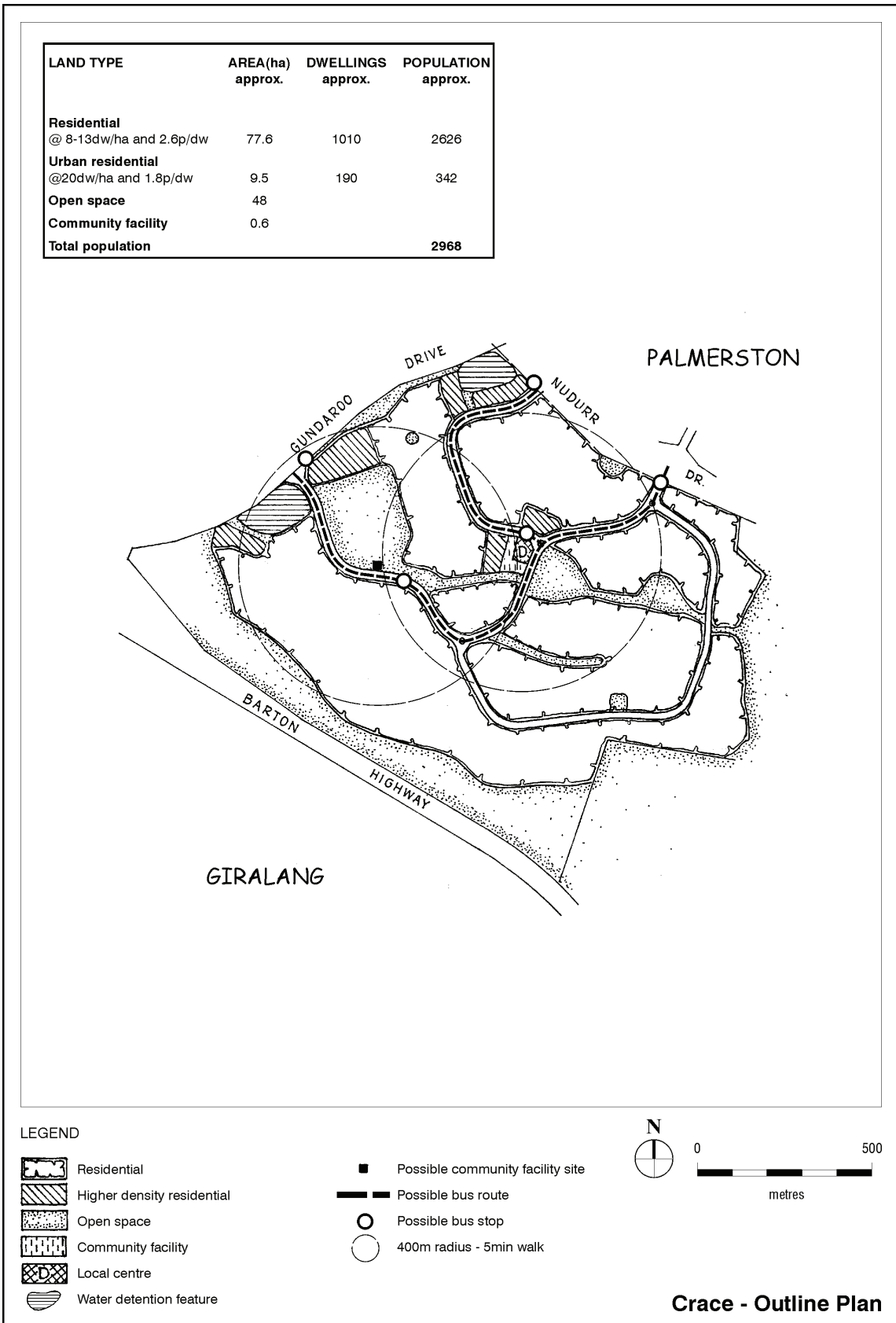


Figure 1.3 Outline Plan

1.4.4 Residential Area

Future urban development in Crace will be contained within the area bounded by Gundaroo Drive, Nudurr Drive, the Barton Highway and the Gungaharra Nature Reserve. The Variation incorporates principles and policies, which recognises these relationships.

The Variation proposes a mixture of housing types including medium density housing generally up to two storeys. A Residential B9 Area Specific Policy (Urban Residential) under the Territory Plan is also included close to the Crace Local Centre. The B9 area may permit development up to 3 storeys where it has been provided for in an approved Estate Development Plan. This Area Specific Policy is the same provision, which applies in parts of new suburbs in Gungahlin, where higher density is proposed in close proximity to activity nodes, including local centres and along transport routes.

1.4.5 Shopping Centre

The Variation proposes one Local Centre in Crace. The gross floor area of the retail component of the local centre will be in the order of 500m². Effective pedestrian and bicycle access will be integrated with the proposed local centre development, as will strong public transport links. Crace Local Centre and in particular its environs provide significant opportunities for the co-location of “urban housing” (i.e. medium density multi-unit residential developments to encourage an effective mixed use character in accordance with the “urban village” concept).

The Local Centre will aim to provide convenience shopping with “mixed use” characteristics within walking distance of the adjoining residential areas. The centre will be designed to be flexible to accommodate the changes in community demands over time and will be supported by concentrations of medium density housing which will foster the “mixed use” characteristics of the suburb.

1.4.6 Community Facilities

The Variation identifies a community facility site adjacent to the local centre which provides good access to public transport, open space and reinforces a sense of community for the local residents. The site area of the facility shall be approximately 6,000m². The size of this community facility site will be determined at a later stage, associated with subdivision planning and development. The use of this site will be consistent with those permitted uses, identified in the Territory Plan for community facilities land use policy areas. A neighbourhood playing field (Basic Sports Unit) is also to be provided within the suburb.

In addition, other possible community facility sites may be identified within the open space system for those facilities requiring a smaller site, such as scout

and community halls. Demonstrated demand for the release and development of these sites will be established in the future.

1.4.7 Urban Open Space

The Variation emphasises the importance of urban open space as a structural element, contributing to sustainability as well as providing a recreational resource and visual amenity for future residents.

The Variation also identifies a more comprehensive and sustainable urban stormwater management system, where overland stormwater and flood movements are accommodated predominantly in road reservations and within the open space system. A neighbourhood playing field (Basic Sports Unit) is to be located within Urban Open Space.

1.4.8 Heritage

Aboriginal sites of high significance are to be retained and protected within Urban Open Space, consistent with agreed management requirements.

1.4.9 Ecological Values

Crace contains yellow box and red gum trees, but the understorey is entirely exotic and has been significantly modified by past agricultural activities. As such, it does not meet the definition of the endangered ecological community, although the trees themselves are of habitat and aesthetic value and it is estimated that approximately 80% of the mature trees on the site contain hollows, which are likely to be suitable as nesting sites for wildlife. Wherever possible these trees will be retained in open space, parks or roadside reserves or as part of the landscape setting for community purposes or other less intensive land uses. Where practicable, it is proposed that trees will be retained as large groups, which will also facilitate the provision for wildlife movement, particularly for birds across the suburb from the native forest habitat on Gungahlin Hill with the developing habitat on Percival Hill.

Retention of trees will be considered further during the detail planning stage. However, it is noted that a tree survey and assessment, and a Draft Tree Management Plan have been prepared in accordance with the requirements of the previous interim tree legislation. Planning which has informed this Variation, retains all exceptional quality trees and wherever practicable high value trees in either public open space or road reserves. The opportunity for developing an ecological corridor associated with the visual corridor on the east of the Barton Highway will also be explored as part of the detailed planning for the suburb.

Crace is adjacent to the Gungaharra Grassland Nature Reserve (187ha), which is an important component of the conservation estate in the ACT containing key identified habitat for the Striped Legless Lizard, Golden Sun Moth and Perunga Grasshopper. The nature reserve also protects a small example of the interface

between grassland and woodland on the southern slopes of Gungahlin Hill, near the Barton Highway.

The planning principles for Crace respect and recognise the importance of the urban interface with the Gungaderra Grassland Nature Reserve and will incorporate requirements for edge roads and stormwater measures to protect this area. These are detailed below in Section 1.4.9 (b) and importantly include the protection of the reserve from runoff from the proposed urban development.

Crace is located within the two main drainage catchments of Ginninderra and Gungaderra Creeks. There is no stormwater drainage discharge into the grassland reserve as a result of planning associated with this Variation.

In addition, as part of the buffer between the proposed residential development and the reserve a number of trees and an area that is showing signs of regenerating are to be retained forming a corridor in this part of the site that connects with Gungahlin Hill.

1.4.10 Urban Edge Interface

(a) Bushfire

Crace is located within the urban area and as such is not located in a declared bushfire prone area. However, Crace may be subjected to the threat of bushfires. The most likely avenue that bushfires could approach the suburb is from the northwest over or around Percival Hill, and the south and west. Conversely, fires may be able to spread from the suburb into the nature reserve on the eastern edge of the suburb.

Consistent with the ACT Planning and Land Authority's Planning Guideline – Planning for Bushfire Risk Mitigation, a bushfire risk assessment has been undertaken for the new suburb to determine the level of risk from ember attack, radiant heat and/or flame contact. The assessment has also identify site specific mitigation measure that has informed planning for the suburb. These measures include an outer and inner asset protection zones and a house asset protection zone where higher construction standards for residential dwellings apply under Australian Standard 3959 (Building in Bushfire Areas) and the Building Code of Australia.

A further bushfire risk assessment is required to be undertaken at the detail design stage to confirm the planning for the suburb and the required mitigation measures including their location and width.

(b) Gungahra Grassland Nature Reserve– Interface Issues

The suburb of Crace has Gungahra Grassland Nature Reserve adjacent to its eastern boundary. It is important that the nature reserve is appropriately protected and buffered against potential threats from suburban development, including weed invasion, dumping of rubbish and removal of plants. It is proposed that a buffer be established which will fulfil both conservation and fire management requirements.

1.4.11 Transport Network

The transport network for Crace and adjacent areas is mostly established and comprehensive and includes roads, local bus routes, cycle ways and pathways. The road network has been established using a range of road types including arterial, local road, minor road and access roads. The collector road network is designed to maximise public transport usage by requiring 90% of dwellings to be located within 400m of a bus route and 95% of dwellings to be within 500m of a potential bus stop, with the pedestrian and cycle network linking residential areas with commercial centres and recreational resources. Generally, roads of collector status and above are shown on the draft variation map.

Of the two key roads for Crace, Gundaroo Drive provides the trunk route in and out of the area. It protects urban areas from traffic infiltration and directs traffic to destinations outside of Gungahlin. Nudurr Drive has only been constructed from Gundaroo Drive to Grampians Street, which provides for connections into Palmerston and to the shops.

An extensive off-road recreation and cycle network is proposed, as part of the open space system, to serve the commercial centre and other activity nodes. This network will also connect to the trunk network serving main employment centres and connections to other parts of Gungahlin and the ACT.

Planning to date for the new suburb has been informed by a detail traffic analysis study and review of traffic related issues associated with Gundaroo and Nudurr Drives and the wider Gungahlin road network. The development of Crace is able to commence and it will be staged over a number of years. In the short term, traffic generated by the suburb will have minimal impact on the wider road network. The Government has committed to review the wider road network following the completion of all stages of Gungahlin Drive Extension to determine the need and timing for an upgrade of Gundaroo Drive and the Gundaroo Drive / Barton Highway intersection. The need for the extension of Nudurr Drive will also be reviewed. Improvements will be subject to future capital works funding.

1.4.12 Noise Management

Development within the suburb is required to comply with the Authority's Draft Noise Management Guidelines. Abatement measures may be required to meet the noise criteria requirements of the Guidelines. These measures may include

mounding and landscaping in road reserves, together with particular fencing requirements and/or specific design and construction requirements for dwellings where necessary to achieve internal noise levels set out in the guidelines.

1.4.13 Stormwater Management

The Crace site covers two drainage catchments; the Ginninderra Creek catchment and the Gungaderra catchment. The vast majority of the site is in the Ginninderra catchment. Within the Crace site there are a number of sub-catchments with pronounced drainage lines, which are a major design driver for planning of Crace.

There is no stormwater drainage discharge into the grassland reserve as a result of planning associated with this Variation.

To meet water quality and quantity requirements it will be necessary to retard and treat stormwater run-off on-site prior to it entering the main creek system.

The need for water quality treatment and for overland flow paths to accommodate high flows or surcharge of the piped system present opportunities relating to the planning of Crace. Open space systems with ponds/wetlands at the lower points of the site adjacent to Gundaroo Drive to meet both water quality and retardation objectives are planned. The benefits relate to the establishment of landscape water features and aquatic habitats within the open space system, assisting with stormwater management and providing a passive recreation resource and pleasant outlook.

The Variation proposes a stormwater system, where overland flows are accommodated in the urban open space system and road reservation. The proposal for a linked park system allows for a number of other goals to be achieved in addition to management of stormwater, including provision for cycle paths and walking trails. This is consistent with current thinking where stormwater is regarded as a resource rather than a problem to be exported as quickly as possible.

Appropriate Water Sensitive Urban Design (WSUD) principles are to be adopted in the development of Crace. The implementation of WSUD involves the application of a broad range of measures aimed at:

- Reducing the reliance on the town water supply system;
- Optimising opportunities for the reuse of wastewater (both treated effluent and greywater) and stormwater; and
- Reducing the export of stormwater runoff and associated pollutants to levels specified in the draft WSUD Guidelines.

1.5 Changes to the Territory Plan

1.5.1 Changes to the Territory Plan Map

The changes to the Territory Plan map are shown in Figure 2.1 below.

The Variation redefines the existing basic land use policy framework and introduces a greater level of detail. The changes to the Territory Plan map are:

- A Defined Land Overlay is applied to the suburb and to areas extending to the Barton Highway and the boundary with Gungaharra Nature Reserve.
- The boundaries of the Hills, Ridges and Buffer Areas and Residential policies between Crace, the Barton Highway and Gungaharra Nature Reserve are adjusted;
- Areas of urban open space are introduced through the suburb including two water quality control ponds;
- A Commercial D (Local Centre) site is introduced;
- A Community Facility site is introduced adjacent to the local centre;
- Residential B9 Area Specific Policy is applied adjacent to the Crace Local Centre;
- A Major Road network through the suburb is introduced; and
- An area of Broadacre Land Use Policy is introduced to the north eastern boundary of the suburb.

The Variation map indicates the land use policy boundaries as accurately as possible but may be subject to adjustments following detailed surveys.

1.6 Consultation on the Draft Plan Variation

The draft Variation was released for public comment on 17 November 2005 and a notice under section 19(1) of the Land Act was placed in the ACT Legislation Register on 17 November 2005 and published in the Canberra Times on 19 November 2005.

Written comments were invited by 19 December 2005 and a total of six (6) written submissions were received as a result of the public consultation process. Five (5) comments were received from inter and intra-agency parties. One (1) comment was received from a member of the public.

The main issues related to:

- Infrastructure requirements (drainage, stormwater management, water quality and supply);
- Road layout to minimise speeding and rat-running;
- Flexibility for changes to land use during more detailed planning;
- Preservation of Aboriginal heritage places;
- Extension to Nudurr Drive to ease heavy traffic on Kosciuszko Avenue;

1.7 Revisions to the Draft Variation

Following the consultation process, minor changes were made to the Variation document. These are detailed below:

Item 1.4.2. General Planning Principles:

- “environmental/ecological” added after “...social, cultural, economic”.

Item 1.4.8. Ecological Values:

- “...no drainage to occur within the Gungaderra catchment” replaced with “Crace is located in two catchments (Ginninderra and Gungaderra Creeks). There will be drainage in both catchments, but as shown in the Crace Stormwater concept plan, there will be no runoff from the estate into the grassland reserve within the Gungaderra catchment.” Note - also see Section 1.8.

Item 1.4.11. Stormwater Management:

- “appropriate” added before “Water Sensitive Urban Design principles”.
- “and road reservation” added in after “urban open space system” in fourth paragraph.
- “pre-development level’ replaced with “levels specified in the draft WSUD Guidelines”.

Item 1.5.1. Changes to Territory Plan Map:

- “two water ponds” deleted and replaced with “two water quality control ponds”.

1.8 Revisions to the Recommended Final Variation

In response to the Planning and Environment Committee's Report recommendations, the following changes have been made and incorporated into the final Variation document:

- **1.4.2 General Planning Principles**

Second dot point amended to read: "The landscape setting and values of Grace and surrounds are to be recognised and enhanced. The Hills, Ridges and Buffer Area Land Use Policy area along the Barton Highway is to be planted with appropriate native vegetation preferably from local seed provenance subject to the consideration of bushfire risk."

Third dot point amended to read: "Existing important trees should be incorporated into the urban fabric as a priority and protected under the *Tree Protection Act 2005*."

Seventeenth dot point amend to read "Aboriginal and historic heritage places are to be recognised and significant sites conserved in public open space."

An additional dot point inserted to read: "Careful consideration should be given to subdivision design to maximise solar access."

- **1.4.3 Specific Planning Principles**

Under **GENERAL POLICIES**:

Item 'C' amended to read as follows: "Edge roads are to be utilised as a buffer between residential development and areas of open space and Gungaharra Grassland Nature Reserve."

Item 'I' amended to read as follows: "The native landscape character within the buffer areas along Barton Highway and adjacent to Gungaharra Grassland Nature Reserve shall be strengthened with plants of local provenance. The bushfire risk associated with the additional landscaping of these areas will need to be considered further at the detail design stage and as part of the further bushfire risk assessment."

Under **SPECIFIC POLICIES**:

Item 3 amended to read as follows: "Existing Aboriginal site of significance are to be protected and preserved within Urban Open Space."

- **Figure 1.2 Outline Plan Generators** replaced with a revised diagram.

- **Figure 1.3 Outline Plan** replaced with a revised diagram.

- **New Section 1.4.8 Heritage** has been inserted to read as follows:

"Aboriginal sites of high significance are to be retained and protected within Urban Open Space, consistent with agreed management requirements."

- **1.4.10 Urban Edge Interface**

Under **a) Bushfire**, part of the existing text has been amended to:

“Consistent with the ACT Planning and Land Authority’s Planning Guideline – Planning for Bushfire Risk Mitigation, a bushfire risk assessment has been undertaken for the new suburb to determine the level of risk from ember attack, radiant heat and/or flame contact. The assessment has also identified site specific mitigation measure that has informed planning for the suburb. These measures include an outer and inner asset protection zones and a house asset protection zone where higher construction standards for residential dwellings apply under Australian Standard 3959 (Building in Bushfire Areas) and the Building Code of Australia.

A further bushfire risk assessment is required to be undertaken at the detail design stage to confirm the planning for the suburb and the required mitigation measures including their location and width.”

- **1.4.11 Transport Network** – the following new paragraph has been added to the Section:

“Planning to date for the new suburb has been informed by a detail traffic analysis study and review of traffic related issues associated with Gundaroo and Nudurr Drives and the wider Gungahlin road network. The development of Crace is able to commence and it will be staged over a number of years. In the short term, traffic generated by the suburb will have minimal impact on the wider road network. The Government has committed to review the wider road network following the completion of all stages of Gungahlin Drive Extension to determine the need and timing for an upgrade of Gundaroo Drive and the Gundaroo Drive / Barton Highway intersection. The need for the extension of Nudurr Drive will also be reviewed. Improvements will be subject to future capital works funding.”

- New section **1.4.12 Noise Management** has been inserted to read as follows:

“Development within the suburb is required to comply with the Authority’s Draft Noise Management Guidelines. Abatement measures may be required to meet the noise criteria requirements of the Guidelines. These measures may include mounding and landscaping in road reserves, together with particular fencing requirements and/or specific design and construction requirements for dwellings where necessary to achieve internal noise levels set out in the guidelines.”

A number of editorial improvements have also been made to the Variation, as follows:

- **1.4.2 General Planning Principles**

Sixth dot point – “local” added to “...to support and strengthen the local community’s identity.”

Fourteenth dot point –new sentence added to the dot point as follows “Roads should be designed to achieve the appropriate speed environment without the necessity to introduce traffic calming devices such as raised platforms and chicanes.”

- **1.4.4 Residential Area** – minor editorial changes to the paragraphs.
- **1.4.7 Urban Open Space** – the following new sentence added to the second paragraph “A neighbourhood playing field (Basic Sports Unit) is to located within Urban Open Space.”
- **1.4.9 Ecological Values** - minor editorial changes to the second paragraph. Part of the last paragraph was amended in Section 1.7 (Response to consultation) to make reference to the Crace Stormwater Concept Plan demonstrating that no drainage occurs into the Gungaderra Grassland. The text has been further amended to delete the reference to the stormwater concept plan as follows “Crace is located within the two main drainage catchments of Ginninderra and Gungaderra Creeks. There is no stormwater drainage discharge into the grassland reserve as a result of planning associated with this Variation.”
- **1.4.13 Stormwater Management** – the following sentence has been added to be consistent with Section 1.4.9: “There is no stormwater drainage discharge into the grassland reserve as a result of planning associated with this Variation.”

2. VARIATION

2.1 Variation to the Territory Plan Map

The Territory Plan map is varied as shown on Figure 2.1 as follows:

- A Defined Land Overlay is applied to the suburb and to areas extending to the Barton Highway and the boundary with Gungaharra Nature Reserve.
- The boundaries of the Hills, Ridges and Buffer Areas and Residential policies between Crace, the Barton Highway and Gungaharra Nature Reserve are adjusted;
- Areas of urban open space are introduced through the suburb including two water quality control ponds;
- A Commercial D (Local Centre) site is introduced;
- A Community Facility site is introduced adjacent to the local centre;
- Residential B9 Area Specific Policy is applied adjacent to the Crace Local Centre;
- A Major Road network through the suburb is introduced; and
- An area of Broadacre Land Use Policy is introduced to the north-eastern boundary of the suburb.

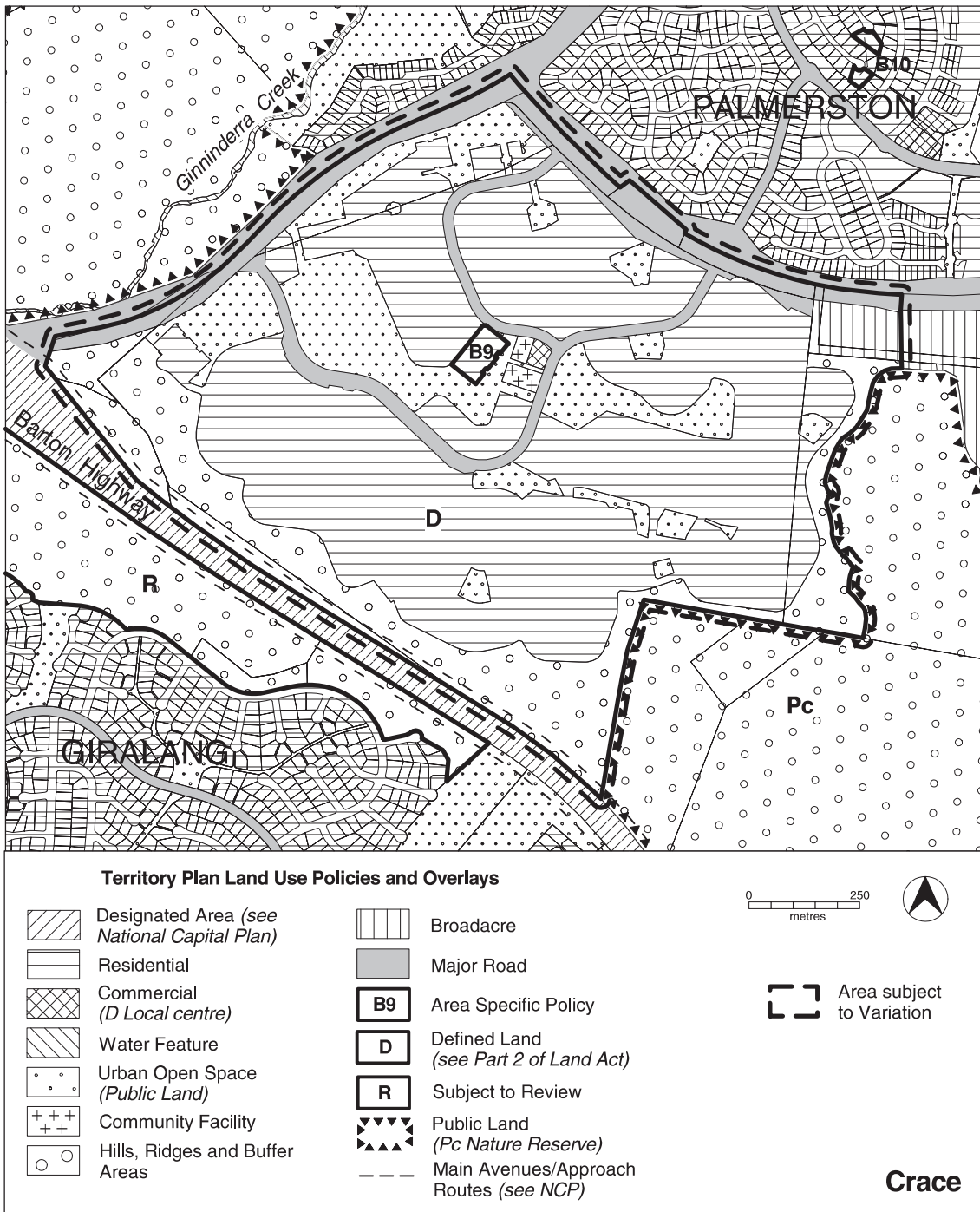


Figure 2.1 Variation to the Territory Plan Map

Interpretation service

ENGLISH	If you need interpreting help, telephone:
ARABIC	: إذا احتجت لمساعدة في الترجمة الشفوية ، إتصل برقم الهاتف :
CHINESE	如果你需要传译员的帮助，请打电话：
CROATIAN	Ako trebate pomoć tumača telefonirajte:
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Crace Concept Plan

December 2006



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1 INTRODUCTION

The Crace Concept Plan Report outlines the planning objectives, principles and important planning requirements, which will inform more detail future planning and development of the suburb. The Concept Plan has been adopted as a Guideline under the Territory Plan. As such, the Concept Plan guides planning decisions and is required to be taken into consideration in development and land use proposals.

More detail planning analysis and additional background information on this estate is contained in the Crace Concept Plan Background Report (December 2006). Reference to this Report is necessary to understand the basis of the Concept Plan and Indicative Subdivision Plan.

Crace has been unable to be developed to date because it has been used until recently by the CSIRO as a field research station. The ACT Government purchased the site from the Commonwealth in 2004. The CSIRO has vacated the area and the land is now available for release and development.

1.1 Site Description

The site is bounded on the south by the Barton Highway, Gundaroo Drive to the west, Nudurr Drive to the north and Gungahlin Nature Reserve in the east (see Figure 1). Across the bordering roads, the site has an interface with the suburbs of Palmerston and Giralang (although the separation distances are significant) as well as the Ginninderra Creek/Percival Hill Nature Park.

Figure 2 shows Crace in the metropolitan context.

The site is generally undulating, with an elevated hilltop. Tree coverage ranges from sparse to large individual specimens and large clusters. There are several well-defined drainage depressions running east to west.

1.2 Landscape and Views

Crace is visible from the adjacent arterial roads (Gundaroo Drive and Barton Highway), as well as from surrounding hills. Percival Hill and Gungahlin Hill creates a sense of broad scale enclosure, whilst longer views to distant mountains and ranges provide an opportunity to exploit these attractive vistas. The most prominent feature on the site is the shelterbelt plantation adjacent to the woolshed, whilst the undulating topography constitutes another significant and attractive feature. Tree re-generation in a gully and minimum rock outcrops are other visual features worthy of incorporation into any future development.

1.3 Geotechnical Assessment

A preliminary geotechnical desktop assessment has been undertaken. This was supported by a limited number of test pits and knowledge of various geotechnical formations. The site is therefore considered geotechnically stable and geotechnical conditions are typical of the area.

To properly assess the site conditions and to provide individual block site classifications, a detailed geotechnical investigation by test pits will be required to establish the necessary final

design parameters and construction recommendations for roads, bridges/culverts and bulk earthworks.

Figure 1 Crace Locality Plan



Figure 2 Crace In Metropolitan Context



2 VARIATION TO THE TERRITORY PLAN NO.257

The concept planning study has informed a concurrent Territory Plan variation process. Variation to the Territory Plan No. 257 - Suburb of Crace, dated 8 December 2006, redefines the basic land use policy framework and introduces a greater level of detail for the suburb. The Variation also introduces Defined Land provisions under the *Land (Planning and Environment) Act 1991*, by setting out a series of principles and policies that reflected the planning intent for the development of the future suburb.

Importantly, the Concept Plan is consistent with the principles and policies contained in Variation No. 257.

This Variation to the Territory Plan together with Variation No. 130 (North Gungahlin Structure Plan) and Variation No. 231 (East Gungahlin) now completes the strategic planning review for all future Gungahlin suburbs.

3 CRACE CONCEPT PLAN

The Concept Plan is shown in Figure 3, the main elements of which are discussed below. The Concept Plan is supported by the Indicative Subdivision Plan that shows a planning and engineering solution taking into account the identified constraints and opportunities.

3.1.1 *Sustainability Objectives*

Sustainability in economic, social and environmental outcomes is an ACT Government policy as outlined in "People Place Prosperity, 2001". The Concept Plan responds to the objective requiring all design decisions to be actively considered and able to be justified for a positive contribution to sustainable neighbourhoods.

3.1.2 **Urban Design Objectives**

Achieving good urban design facilitate high quality living environment and amenity. The following site-specific urban design objectives are identified for Crace and incorporated into the Concept Plan.

Character and Identity – Sense of Space

The existing landscape of the enclosing ridges and Percival Hill are distinctive qualities. These landscape and topographical components are defining elements that contribute to the identity of Crace. As such they have been preserved through vistas and open space spines through the suburb.

The extent and treatment of the retention basins and waterways, urban edges and buffer spaces shape the landscape character of the neighbourhood and inform the design response of the landscape master plan.

The hierarchy of open spaces, including linkage spaces, are important to define effective understanding of each space's function and the extent of development together with maintenance regime. Sporting facilities and small community facilities should be located in these open spaces where appropriate.

4 CRACE INDICATIVE SUBDIVISION PLAN

An Indicative Subdivision Plan is shown at Figure 4 that provides a suburb wide solution to the planning for Crace. The detail shown demonstrates that the Concept Plan is a practical solution using the Important Planning Requirements and other information contained in the Background Report to arrive at a water sensitive, ecologically sustainable and liveable urban environment.

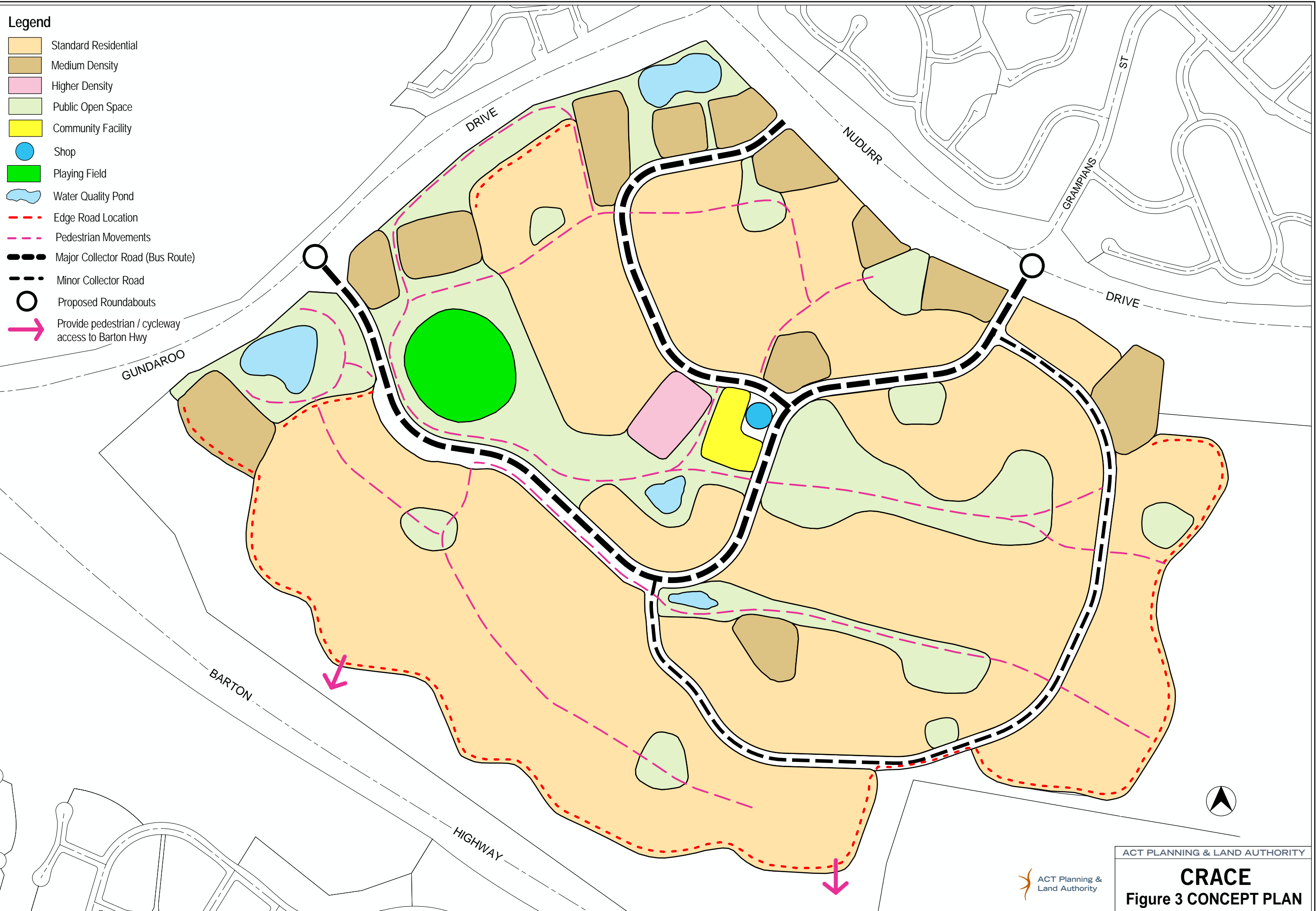
The plans embody the principles and objectives, and are based on the assessment of a range of alternative solutions for both the pattern of residential subdivision and the location of the commercial centre.

5 INDICATIVE LANDSCAPE MASTERPLAN

The Landscape Master Plan recognizes and responds to the general planning objectives and principles of the Crace Concept Plan and the Gungahlin Landscape Policy Plan (1996). The site has been extensively modified over time through clearing and little remains of the original natural woodland vegetation. It is proposed that all new tree planting shall be predominately native species.

Figure 5 shows the Crace Indicative Landscape Masterplan. This plan shows the broad landscape intentions.

The buffer between the suburb and the Barton Highway is to be predominately native landscaping and strengthened with plants of local provenance. Landscaping of this area is to be considered in the context of bushfire risk in the further bushfire risk assessment.



- Legend**
- Standard Residential
 - Medium Density
 - Higher Density
 - Public Open Space
 - Community Facility
 - Shop
 - Playing Field
 - Water Quality Pond
 - Edge Road Location
 - Pedestrian Movements
 - Major Collector Road (Bus Route)
 - Minor Collector Road
 - Proposed Roundabouts
 - Provide pedestrian / cycleway access to Barton Hwy













ACT PLANNING & LAND AUTHORITY



CRACE
Figure 3 CONCEPT PLAN








LEGEND












-  Standard
-  Medium Density
-  Higher Density
-  Urban Open Space
-  Childrens Playgrounds
-  Playing Fields
-  Community Facilities
-  Commercial
-  Landscape Buffer Areas
-  Water Quality Control Ponds
-  Area identified for possible Aged Persons Facilities
-  Provide on and off street parking for higher density housing



LEGEND:

-  EXISTING TREES TO BE RETAINED
-  PROPOSED DECIDUOUS PLANTING
-  PROPOSED NATIVE PLANTING
-  LOCAL CENTRE / VILLAGE
-  OPEN SPACE / PARK
-  BUILDING
-  POND
-  PLAYGROUND / SEATING AREA
-  PEDESTRIAN / CYCLE PATH
-  SWALE

PROPOSED PLANTING:

-  **ARTERIAL** - Gundaroo Drive - To be consistent with existing planting - Back row planting of Eucalyptus rossi/native shrubs, kerb row of Zelkova serrata, Nudurr Drive - buffer planting of E. rossi/native shrubs.
-  **MAJOR COLLECTOR** - Strong formal avenue planting of medium to large deciduous, Category 1 trees @ 13m spacing, e.g. Ulmus parvifolia, Liquidamber styraciflua., Fraxinus pennsylvanica 'Cinnzam'.
-  **MAJOR ACCESS** - Formal avenue planting of medium sized deciduous Category 1 trees, e.g. Fraxinus americana 'Chamdell', F. pennsylvanica 'U', e.g. banile', Gleditsia triacanthos 'Shademaster'.
-  **ENTRY NODE** - Where space permits, entries to have strong formal plantings of trees with autumn colour or flowering spp. with the inclusion of built elements/signage. Suggested species: Acer rubrum 'Autumn Glory', Pyrus calleryana 'Bradford', Malus spectabilis.
-  **ACCESS ROAD** - Evenly spaced 1 to 2 trees/block depending on block size. Small to medium sized deciduous trees for solar access and autumn colour, e.g. Pyrus calleryana, Pyrus ussuriensis 'Winter Glow', Liquidamber styraciflua 'Palo Alto', Acer buergerianum.
-  **EDGE STREETS** - Native species on open space side of street e.g. Eucalyptus mannifera, E. melliodora, E. rossi.
-  **LANEWAYS/MEWS** - Small deciduous trees e.g. Pyrus calleryana, Malus floribunda, Malus spectabilis.
-  **LOCAL CENTRE** - Deciduous trees with strong autumn foliage to reinforce centre as focal point. e.g. Acer rubrum 'Autumn Glory', Acer x. freemanii 'Autumn Blaze', Zelkova serrata 'Green Vase'.
-  **LOCAL PARKS** - Predominantly native species with some large deciduous trees to be used as place making elements, e.g. Eucalyptus mannifera, E. dives, E. melliodora, E. rossi, Liquidamber spp., Liriodendron tulipifera, Fraxinus oxycarpa 'Raywood', Ulmus parvifolia.
-  **OPEN SPACE** - Native species consistent with existing open woodland e.g. Eucalyptus melliodora, E. bridgesiana, E. rossi. Fire abatement requirements for planting to apply in open space interface along Barton Highway.
-  **SWALES/RETENTION PONDS** - Native trees, grasses and shrubs. Inclusion of rocks, boulders and pedestrian bridges where appropriate.

Note: All new tree planting to be predominantly native species



CRACE
LANDSCAPE MASTERPLAN

Figure 5

DATE: MAY 2005
SCALE: 2500@A1
5000@A3

ACT Planning & Land Authority logo and other project details.



6 IMPORTANT PLANNING REQUIREMENTS

This section outlines the important planning requirements from the Crace Concept Plan to inform future planning for the suburb that is the estate development planning process.

6.1 Housing Policies (Small Scale Blocks)

At the present time there are no policies in respect to Small Scale Blocks. These are blocks that are under 500m² in area and for various reasons cannot conform to the Residential Codes under Appendix III of the Territory Plan.

The housing types are typically terrace and row housing on separate blocks with normally one or both sides having zero or reduced building side setbacks. Vehicle access, due to the small width of the block, requires rear laneway/car-court access. Table 2 and Clause 6.14 Section Planning sets down some principles when designing a subdivision pattern that creates small scale blocks. The main concern centres on long lengths of straight laneways dominated by garage doors that results in less than desirable urban design outcomes.

Figure 6 shows the Important Planning Requirements for the Crace Concept Plan.

6.2 Housing Mix

The Indicative Subdivision Plan at Figure A5 proposes a dwelling yield of 1,200 dwellings and the mix of block sizes as shown in Table 1.

Table 1 Block Size/ Dwellings Mix

BLOCK SIZE	DWELLINGS NUMBER	%
251 - 350m ²	90	7%
351 - 450m ²	45	4%
451 - 650m ²	810	68%
650m ² +	100	8%
Multi Unit - No	155	13%
Total	1,200	100%

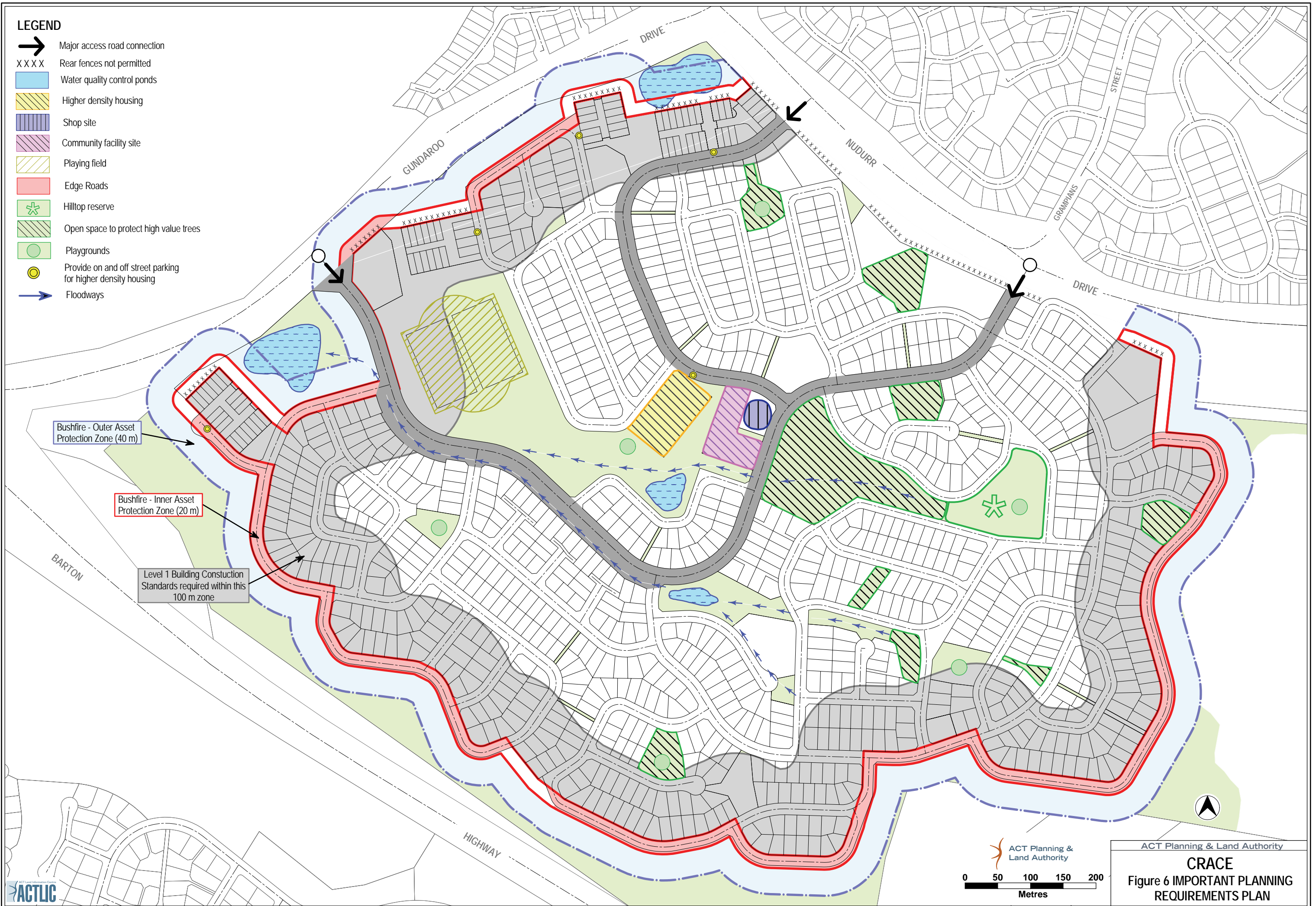
The gross residential/urban area of the suburb is 92 Ha. The total number of dwellings is 1200 resulting in a dwelling yield of approx 13 dwellings per hectare. Development within the suburb shall provide:

- A mix of block sizes as shown in the 'Indicative Subdivision' design;
- A mix of small scale blocks (e.g. terrace housing) and multi unit dwellings to be located around the water quality control ponds and the Local Centre;
- To have higher densities along the Nudurr Drive frontage where access to the existing facilities located in Palmerston are within walking distance; and
- Areas are to be set aside for visitor car parking both on street and off-street adjacent to the small scale and terrace housing blocks.

6.3 Commercial centres

The Concept Plan proposes one centrally located local centre in Crace at the location shown on the Crace Concept and Important Planning Requirements Plans. The gross floor area of the retail component of the local centre shall be in the order of 500m². Effective pedestrian and bicycle access will be integrated with the proposed local centre development, as will strong public transport links. Crace Local Centre provides for opportunities for the co-location of urban housing (i.e. medium density multi-unit residential developments) to encourage an effective mixed-use character in accordance with the "urban village" concept or shop-top housing.

The local centre may include other small-scale retail, office and personal service tenancies, as well as allowing for community facilities, and may include residential development at the upper floor level. The centre shall be designed to be flexible to accommodate the changes in community demands over time and should be supported by concentrations of adjacent medium density housing which will foster the mixed-use characteristics of the area.



6.4 Community Facilities

The Concept Plan identifies a community facility site adjacent to the local centre which provides good access to public transport, open space and reinforces a sense of community for the local residents. The site area of the facility will be approximately 6,000m². The actual size and use of this community facility site will be determined at a later stage, associated with estate development planning. The use of this site will be consistent with those permitted uses identified in the Territory Plan for Community Facilities Land Use Policy areas.

In addition, other possible community facility sites may be identified within the open space system for those facilities requiring a smaller land take, such as scout and community halls. Demonstrated demand for the development of these sites will be established in later detailed planning stages and will need to be consistent with the Territory Plan.

6.5 Open Space Provision

The Crace Concept Plan contains a hierarchy of open spaces totalling about 48Ha serving different purposes. The spaces are to be provided/ located generally in accordance with Important Planning Requirements and the Concept Plan.

A neighbourhood playing field (basic sports unit) is also to be provided within the suburb and form part of the open space network. The location of the playing fields is shown in the Important Planning Requirement plan.

6.6 Environment

6.6.1 *Ecological Values*

Crace contains remnant Yellow Box and Red Gum trees, but the understorey is entirely exotic and has been significantly modified by past agricultural activities. As such, it does not meet the definition of the endangered ecological community, although the trees themselves are of habitat and aesthetic value. Wherever possible these trees have been retained in open space, parks or roadside reserves or as part of the landscape setting for community purposes or other less intensive land uses. Conservation of these trees will be addressed during the detail planning stage.

The planning principles for Crace respect and recognise the importance of the urban interface with the Gungaharra Grasslands Nature Reserve and will incorporate requirements for edge roads and stormwater measures to protect this area as required by the Important Planning Requirements Plan.

6.6.2 *Tree Protection*

A detailed tree survey and assessment was undertaken for the site and identified individual trees and tree groups.

The Crace Concept Plan and Indicative Subdivision Plan have endeavoured to maximise the number of trees to be retained on site, commensurate with the need to meet residential block yields and other government planning objectives including an efficient pattern of urban development. In particular, it is essential to retain all exceptional classified trees on public land

(in urban open space or road reserves) as these are large mature eucalypts are not suitable to be retained on residential housing blocks.

The Tree Protection Unit (Territory and Municipal Services) has reviewed the tree assessment and survey and their comments incorporated into the documentation. A draft Tree Management Plan based on the Indicative Subdivision Plan has received in-principle support from the Tree Protection Unit.

6.7 Heritage

A cultural and heritage assessment was undertaken for the Commonwealth prior to sale of the land to the ACT, followed by further investigations during 2006 by the Territory. These comprised a field survey, documentary review, salvage collection of registered Aboriginal sites, recovery, assessment of Potential Archaeological Deposits through a program of subsurface testing. Consultations has occurred with ACT Heritage Unit, ACT Heritage Council, Environment ACT, Ngunnawal Local Aboriginal Land Council, Buru Ngunawal Aboriginal Corporation, and Ngunnawal Aboriginal Corporation.

As a result of the further investigation, the sites of Aboriginal cultural heritage significance are protected in the Concept Plan within Urban Open Space.

6.8 Contamination Assessment

Phases 1 and 2 Contamination Assessment of Crace have been undertaken. The Environment Protection Authority has reviewed and endorsed the findings of an independent environmental audit for the site in July 2006. The audit found that the site was suitable for it's permitted uses under the Territory Plan.

6.9 Bushfire Risk Assessment

An bushfire risk assessment was undertaken for Crace. The recommendations from this assessment required bushfire risk mitigation measures to be incorporated into the development of Crace are shown on Figure 6 and are:

- Outer Asset Protection Zone (IAPZ) – 40 metres
- Inner Asset Protection Zone (OAPZ) – 20 metres
- House Asset Protection Zone (HAPZ) (buildings to comply with Level 1 construction under AS3959) – 100 metres into the suburb. (Note: Emergency Services Authority has recommended, given the knowledge of the ACT fire climate and the degree of risk involved, to reduce the depth of Level 1 construction to 50 metres along the eastern edge).

To ensure optimum mitigation against the threat of the bushfire, a further bushfire risk assessment is required at the estate development planning stage. This assessment is also required to specifically reassess the location and width of the outer asset protection zone, which currently encroaches (minor) into Gungaharra Nature Reserve to ensure that the Reserves' biodiversity values are protected.

6.10 Road Network/ Hierarchy

Overall Crace has ready access to existing transport services which will be progressively improved as Gungahlin continues to grow. The position in respect of each element of the transport system is as follows:

- Crace is well located with direct access to the arterial road network and consequently good accessibility to all the major centres and the rest of metropolitan Canberra. Accessibility will be further improved with the construction of the Gungahlin Drive extension.
- The road network and hierarchy within the suburb is designed to provide accessibility, connectivity and legibility. The layout of internal road network has been designed to encourage and direct internal traffic to the major collector road, thereby helping to reduce the traffic volumes and rat-running on the internal roads. The collector roads provide good coverage with the vast majority of residents being within 400 metres of a bus route. A combination of on road cycle lanes and off road-shared paths provides for pedestrians and cyclists.

6.10.1 Road Cross Sections

Following on from the road hierarchy, road cross sections have been prepared and included in the background report. Generally these cross sections follow Territory requirements. There are however some special features such as:

- Swale drains as part of implementing water sensitive urban design to be incorporated into local streets where practical and where existing ground slopes do not exceed 5%;
- The (bushfire) edge road around the perimeter of the suburb and with the open space includes a 20-metre wide IAPZ. Specific features of this zone include low fuel loads (mown or heavily grazed) consistent with Strategic Bushfire Management Plan with vehicle accessible slopes (e.g. maximum butter slope of 1 in 4) for fire fighting purposes, where necessary. This IAPZ is required not only to provide a buffer between a fire and residential properties but also shelter and provides a safe operating area for fire crews.

6.10.2 Road Intersections

Existing key intersections in the area were assessed for their ability to accommodate expected 2011 and 2021 traffic volumes, with and without Crace. Of particular interest were the intersections of:

- Gundaroo Drive / Gungahlin Drive;
- Barton Hwy / Gundaroo Drive / William Slim Drive; and
- Nudurr Drive / Gundaroo Drive.

Each of these intersections is assessed in more detail throughout the Traffic Assessment Report. Planning to date for the new suburb has included a detail traffic analysis study and a review of traffic related issues associated with Gundaroo and Nudurr Drives and the wider road network. In

the short term, traffic generated by the suburb will have minimal effect on the wider road network. This is because the development of the suburb will be staged over a number of years. The Government has committed to review the wider road network in Gungahlin in mid to late 2009 following the completion of all stages of Gungahlin Drive Extension to determine the need and timing for any upgrade of Gundaroo Drive and extension of Nudurr Drive as well as improvements to the Gundaroo Drive and Barton Highway intersection. Improvements will be subject to future capital works funding.

6.11 Pedestrian and Bicycle Network

Pedestrian and off-road cycling facilities are required to be implemented in accordance with the Master Plan for Trunk Cycling and Walking Path Infrastructure 2004 – 14 (Roads ACT, September 2004) and the Background Report to the North Gungahlin Structure Plan review incorporated into Variation No. 130 to the Territory Plan.

Pedestrian paths shall be incorporated into the final design for Crace in accordance with current Government policies, standards and guidelines at the time.

The potential bicycle routes (refer to Figure 7) within the estate should be:

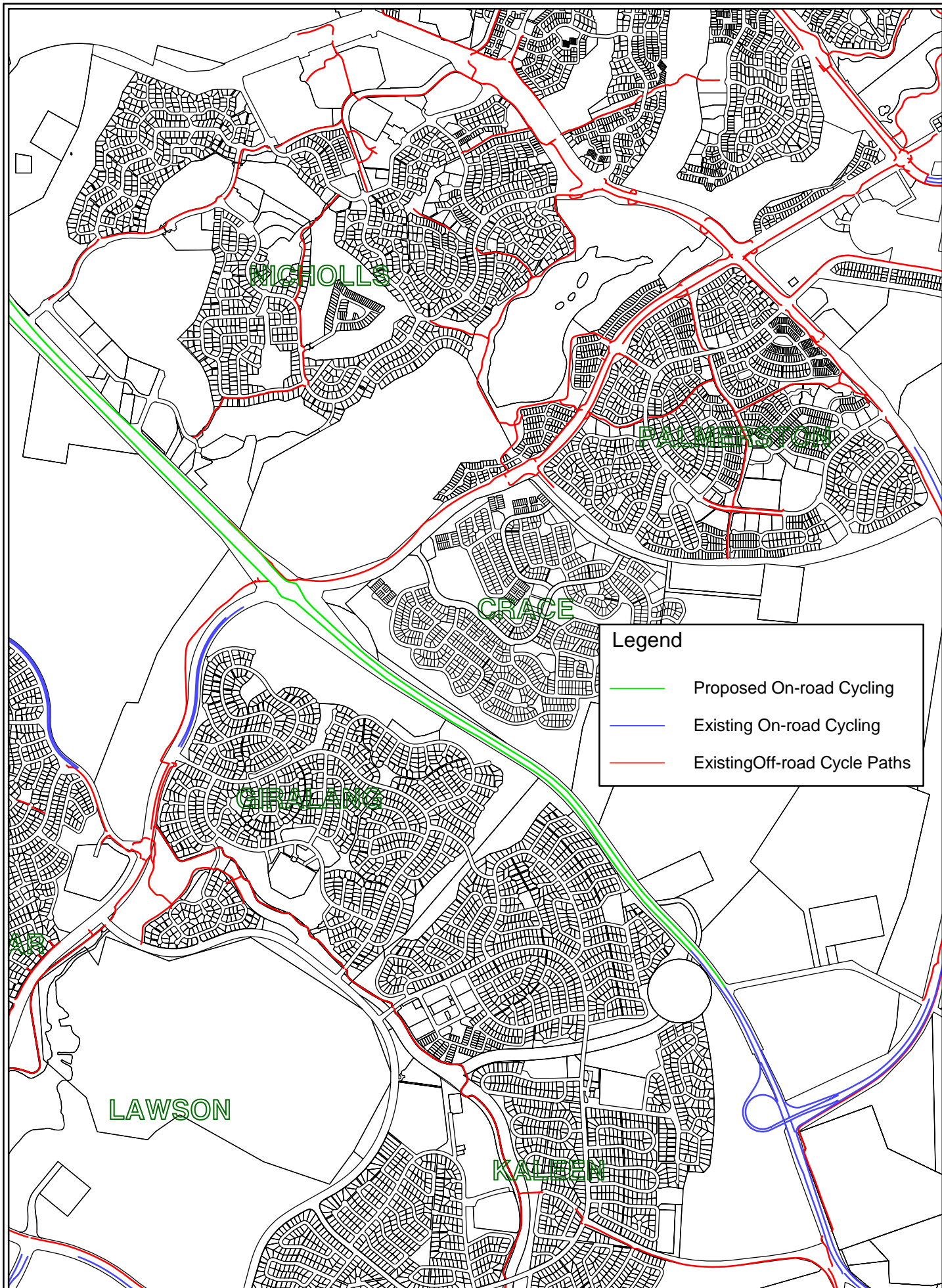
- On road cycle lanes for all Collector roads;
- Off road shaped paths, which follow Gundaroo Drive and Nudurr Drive.

The main features of the path system in the vicinity of Crace are:

- Major off-road wide paths along Gundaroo Drive to the Gungahlin Town Centre and via a wide path in the William Slim Drive/Ginninderra Creek system to the Belconnen Town Centre.
- Within Palmerston there is a largely grade-separated system which links with the Gundaroo Drive path and provides grade-separated crossings of both Gundaroo Drive and Gungahlin Drive.
- The path in the Ginninderra Creek corridor also links to a major path to the Giralang shops and school and the Kaleen Group Centre and schools.
- Palmerston, Kaleen and Giralang, all have path networks which serve the suburbs.

Crace therefore has a number of good opportunities to link into the existing path systems and achieve excellent pedestrian/cycle accessibility to both local and the major metropolitan facilities:

- Link to the Gundaroo Drive path which in turn provides connections throughout metropolitan Canberra.
- Link to Barton Highway in South East of site for commuter cyclists.
- Link via the existing wide path system in Palmerston to the retail and community facilities in Palmerston and, further to the north, to the Gungahlin Town Centre.
- Potentially a new link under the Barton Highway and, using the suburban narrow path system, providing reasonably direct access to the shops and community facilities including primary and high schools in Giralang and Kaleen.



Legend

- Proposed On-road Cycling
- Existing On-road Cycling
- Existing Off-road Cycle Paths

6.12 Public Transport

Overall there is potential for good public transport services to and from Crace. The Crace Concept Plan makes provision for a central bus route through the suburb, generally meeting the 400m walking distance criteria for over 95% of all housing in the suburb. See Figure 3.

The proposed bus routes through Crace would provide an efficient service via a relatively direct route through the suburb and would directly link to the commercial and community facilities at the Local Centre.

6.13 Noise Assessment

A Noise Impact Assessment has been undertaken as a part of the Traffic Study, which identifies certain recommendations to mitigate the impact of traffic noise generated from surrounding roads (Barton Highway, Gundaroo Road and Nudurr Drive) on the suburb. The assessment concluded that Nudurr Drive would not create any significant noise and minimal noise mitigation measures were required. Whereas residential development near the Barton Highway and Gundaroo Road will require noise mitigation measures to ensure internal noise levels met the Authority's Draft Noise Management Guideline.

A range of measures are available to mitigate against noise including mounding and landscaping in road reserves, fencing requirements, separation between noise source and residence, and/or specific design and construction requirements for dwellings including glazing to achieve internal noise levels which met the Authority's Draft Noise Management Guideline. The specific mitigation measures will be considered further as part of the detail design process to ensure that Authority's Draft Noise Management Guidelines are met.

6.14 Section Planning

6.14.1 Access

Access to private car parking for small-scale blocks having a frontage of less than 10 metres should be located primarily in rear access lanes or car courts. This is done to minimise the numbers of kerb crossings and driveways that would interfere with regular spacing of street trees, on street visitor parking and increase adverse impacts on the streetscape character of frontages incorporating garages.

6.14.2 Block Orientation and Sizes

Block sizes vary to provide for different housing types. The block sizes illustrated in the table below allow for generous habitable private open space to be located directly outside primary internal living areas. The orientation of blocks as shown in the Crace Indicative Subdivision Plan is designed to match the orientation with the house type accommodated whilst maximizing solar penetration to habitable spaces. The following table shows suggested minimum block dimensions for the various housing types:

Table 2 Minimum Block Dimensions by House Type

HOUSE TYPE	MINIMUM WIDTH (METRES)	MINIMUM DEPTH (METRES)	MINIMUM AREA M ²	SECTION WIDTH (METRES)
Terrace (access from laneway)	8	30	240	70
Courtyard (Access from laneway)	10	30	300	70
Courtyard (Access from street)	12	30	360	60
Semi Detached House	12	30	360	60
Standard Detached House	15	30	500	60

Accordingly townhouses and semi detached houses are oriented predominantly north south so that one primary facade can be oriented to catch the sun while courtyard houses take advantage of the open space within the block to open the house to the sun on an east west orientation.

The Concept Plan proposes a mixture of housing types including medium density housing up to two storeys. In addition an area of Residential B9 Area Specific Policy (under the Territory Plan) is located close to the Crace Local Centre. It is estimated that the medium and higher density areas will comprise up to 20% of the total housing in the suburb. Residential B9 may permit development up to 3 storeys where they have been provided for in an approved Estate Development Plan. This B9 provision also applies to parts of other new suburbs in Gungahlin.

6.14.3 Car Parking/Car Courts

Where car courts are proposed in the centre of the sections, deep-rooted areas of tree planting for shade and visual amenity should be provided. Habitable spaces and balconies should be oriented ensuring overlooking for passive surveillance and to provide active frontages to the car courts.

Additional car parking shall be provided for visitors both on street and off-street for small-scale blocks (450m² and under), including terrace-housing blocks that have laneway vehicle access, at the rate of 1 space per 4 dwellings. The Indicative Subdivision Plan at Figure A 5 shows possible visitor parking based on this subdivision design.

Crace Illustrative Section Plan



6.15 Urban Edge Treatment

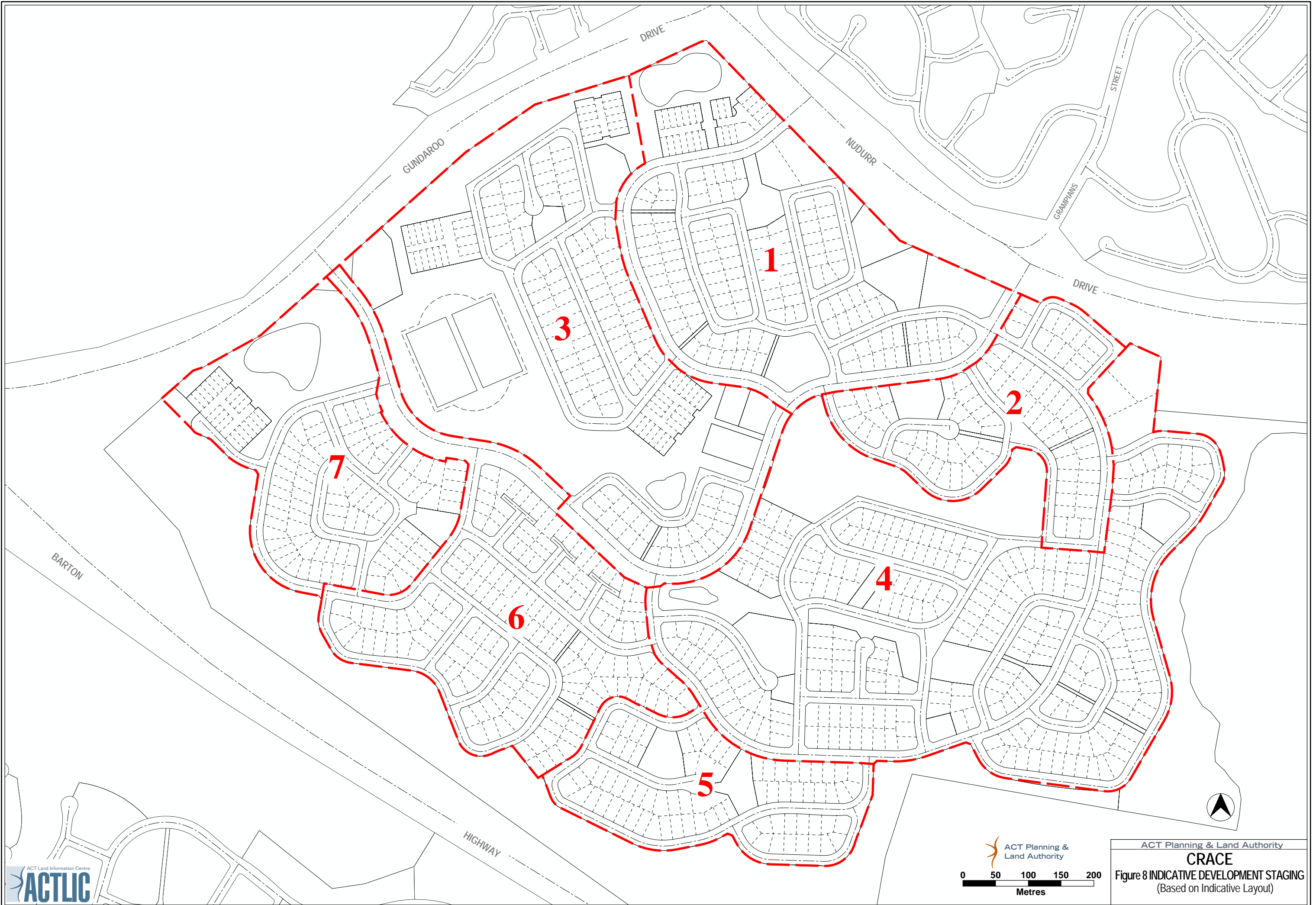
Edge Roads (roads around the perimeter of the suburb) within the Inner Asset Protection Zone shall be designed to accommodate emergency services vehicles for fire fighting purposes, and meet the following Emergency Services Authority criteria:

- A minimum un-obstructed sealed road width of 7.5m to allow for passing of two fire trucks;
- 7.5m verge adjacent to housing, with street planting on the house side only;
- A concrete edge incorporating a gutter with minimum 2m width on the fire edge of the road;
- The road shall be of sufficient strength to accommodate a 15 tonne load and allow for turning circles of a 12.5m truck; and
- Access to hydrants, including parking of emergency services vehicles, shall be provided and may include suitable access points to emergency services tracks, lay-by parking, and hardstand or reinforced ground areas for tanker filling at hydrants.

Bushfire mitigation measures will be confirmed through a further bushfire risk assessment associated with detail planning.

6.16 Indicative Development Staging

Figure 8 shows a suggested staging program for land release in the development of Crace. All areas of land can be developed with regard to available servicing infrastructure. All necessary infrastructure currently exists within close proximity. Therefore there is potential for areas of land within Crace to be released in a staged manner while the infrastructure required for further stages inside Crace is being constructed.



6.17 Engineering Services Master Planning

The Crace residential development conceptual hydraulic master plans are developed to assist in providing an indication of the hydraulic infrastructure required for the suburb.

The location and capacity of the existing hydraulic services adjacent to the site were investigated to determine the extent of infrastructure upgrades required (if any) to cater for the proposed development.

6.17.1 *Water Supply*

Crace is located within two water supply zones. The Low Zone is served from the Nicholls reservoir (TWL 652.5), with the Intermediate zone served from the Gungahlin Reservoir No. 1 (TWL 652.5).

Proposed connections to the existing water reticulation system are from the adjacent suburb of Palmerston and the trunk mains from Gungahlin No. 1 Reservoir.

6.17.2 *Sewer Management*

A trunk sewer (1050mm diameter) is located on the opposite side of Gundaroo Drive near Ginninderra Creek. The development of Crace can be divided into three main catchments, all of which drain west to the trunk sewer. There will be three main sewer connection points for Crace. All proposed connection points are of an adequate size and have sufficient capacity to service the anticipated peak wet weather flows. No pump stations will be required to service Crace.

6.17.2.1 *Sewer Vent*

Located near the intersection of the Barton Highway and Gungahlin Drive is a major mechanised sewer vent. This vent aerates the section of the Ginninderra Trunk Sewer between Gungahlin Pond and Chuculba Cres (Giralang). This is the largest vent in this catchment and is the only mechanically forced vent. The vent must be considered as a development constraint to the southwest corner of Crace. ActewAGL advised that the emissions from this vent are presumed to be low in strength due to the relative "fresh" sewage in this upstream system. There is requirement to ensure this issue is qualified prior to release of possibly affected land.

6.17.3 *Stormwater Management*

Stormwater drainage for the site is divided into two main catchments. These catchments generally drain towards Ginninderra Creek. Two water quality/detention ponds are located adjacent to Gundaroo Drive at the lower end of the site. A majority of the site drains to these water quality ponds. Gross pollutant traps are proposed upstream of the water quality to trap pollutants and sediments before they enter the ponds.

The concept planning outcome ensures that there is no stormwater drainage discharge into the Gungahlin Grassland Reserve.

6.17.4 Other Infrastructure

Provision of the normal utility services including electricity, gas, and telecommunications would be installed within Crace in accordance with agency specifications and design standards. High speed broad band is to be provided.

All residential streets will have street lighting to DUS/ActewAGL standard specifications in accordance with the road hierarchy. All internal electricity will be supplied via an underground reticulation network.

6.18 Works Associated with Development

The following works are associated with the development of the suburb:

- Two intersections with Nudurr Drive;
- One major intersection with Gundaroo Drive;
- Water Quality control Pond #1 adjacent Gundaroo Drive; and
- Water Quality control Pond #2 adjacent intersection of Gundaroo Drive and Nudurr Drive.

6.19 Summary of Further Investigations

Prior to development of the site, further detail investigations are required to be undertaken. These include:

6.19.1 Final Tree Management Plan

Final Tree Management Plan to be prepared for the Estate Development Plan.

6.19.2 Heritage:

All management recommendations specified in the Background Report must be implemented at the estate development plan stage.

6.19.3 Sewer Vent

Undertake the monitoring and then first-pass dispersion modelling of emissions of the sewer vent is required. If the initial assessment however shows potential impact on Crace then a mitigations options study will be required and expert consultants would need to be brought in.

6.19.4 Geotechnical

A detailed geotechnical investigation shall be carried out concurrently with detailed design of road and block layouts to ensure that subsurface conditions will not adversely affect the construction of infrastructure within the estate.

6.19.5 Stormwater

Water Sensitive Urban Design measures proposed within the site shall be investigated in detail to determine that the measures proposed shall not adversely affect any other infrastructure or private property, prior to finalisation of the road and block layout for incorporating into the Estate Development Plan.

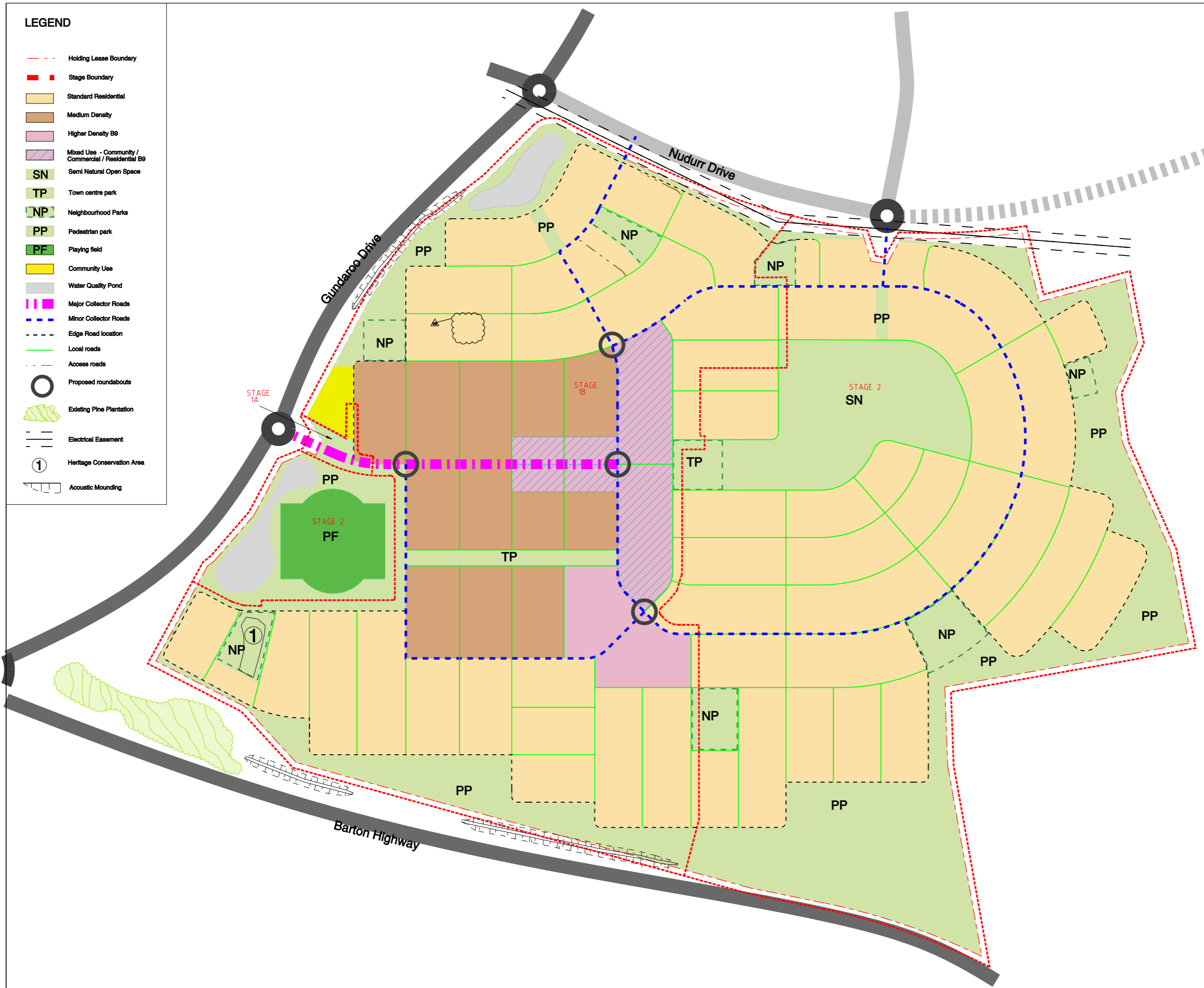
6.19.6 *Older Persons Housing Requirements*

Clarification and assessment of the specific demand/need for Older Persons Housing facilities within Crace will be undertaken closer to the date of land release if required.

6.19.7 *Fire Assessment*

A further independent Bushfire Risk Assessment shall be undertaken at the preparation of the Estate Development Plan or detail design stage and the outcomes incorporated into the design to the satisfaction of the Territory.

This assessment is also required to specifically reassess the location and width of the outer asset protection zone, which currently encroaches (minor) into Gungaharra Nature Reserve to ensure that the Reserves' biodiversity values are protected.



LEGEND

- Holding Lease Boundary
- Stage Boundary
- Standard Residential
- Medium Density
- Higher Density B9
- Mixed Use - Community / Commercial / Residential B9
- SN Semi Natural Open Space
- TP Town centre park
- NP Neighbourhood Parks
- PP Pedestrian park
- PF Playing field
- Community Use
- Water Quality Pond
- Major Collector Roads
- Minor Collector Roads
- Edge Road location
- Local roads
- Access roads
- Proposed roundabouts
- Existing Pine Plantation
- Electrical Easement
- Heritage Conservation Area
- Acoustic Mounding

Key Plan



Issue	Date	Amendment
00	26.03.08	DA Submission
01	30.06.08	2nd Circulation Inc. Agency Comments
02	24.07.08	Incorporating Agency Comments
03	28.10.08	Vary 01 - Section AG

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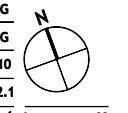
Project Consultants

TRACT CONSULTANTS PTY LTD
 LANDSCAPE ARCHITECTS
 LEVEL 8, 80 MOUNT STREET
 NORTH SYDNEY
 SYDNEY, NSW 2060
 AUSTRALIA
 TELEPHONE 612 9954 3733
 FACSIMILE 612 9954 3825
 sydney@tract.net.au
 www.tract.net.au

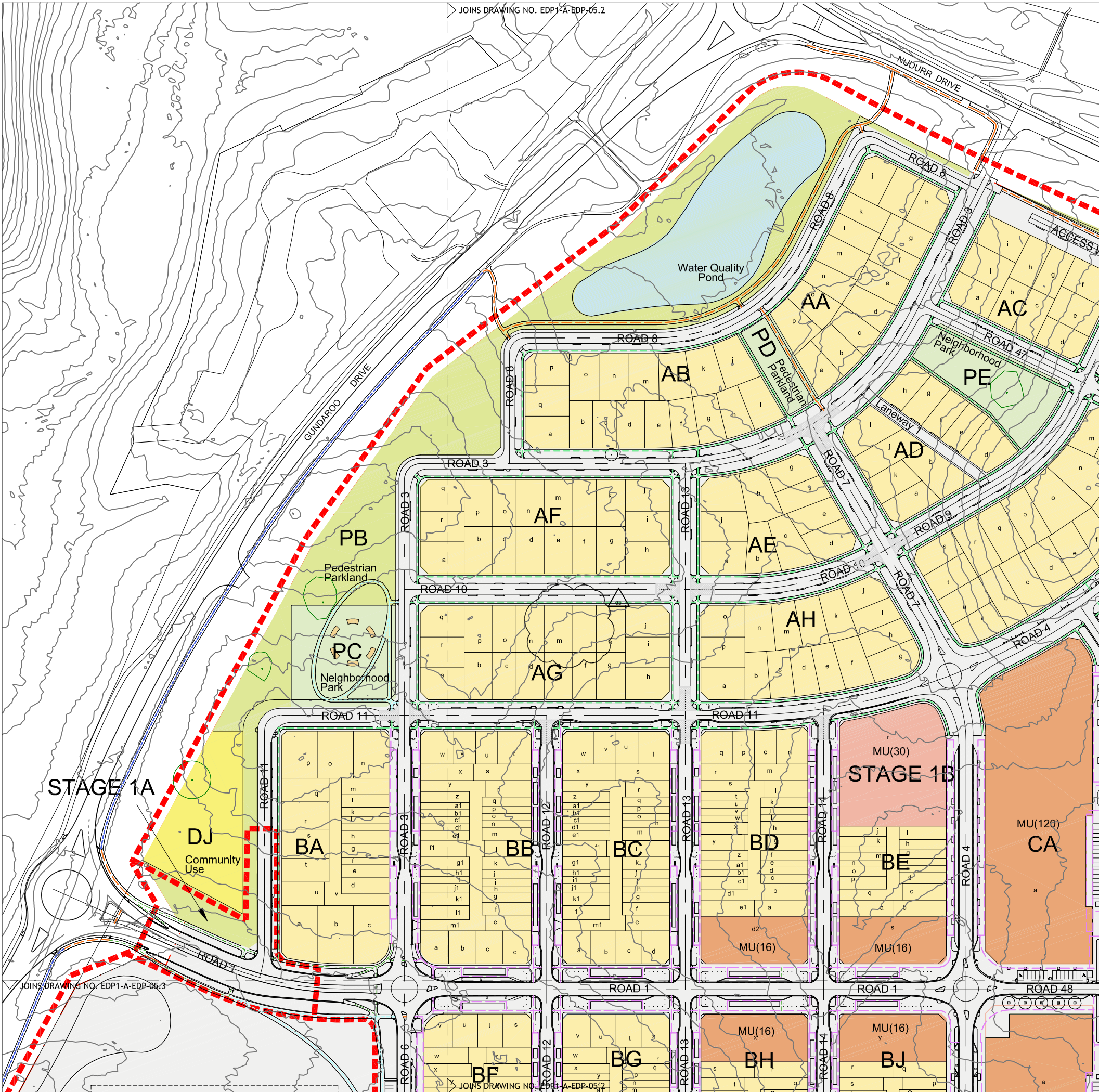
Project
CRACE
ESTATE DEVELOPMENT PLAN
DEVELOPMENT APPLICATION

Drawing Title
Concept Plan
 Sheet 1 of 1

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Checked	GG
Approved	GG
Job No	207010
Drawing Number	EDP1-LA-CMP-02.1
Plan No.	2.1 Issue 03



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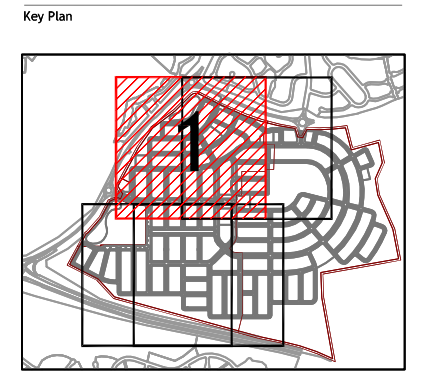


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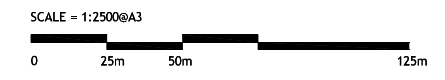
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LEGEND

- HOLDING LEASE BOUNDARY
- STAGING BOUNDARY
- SINGLE BLOCKS
- MULTI - UNIT HOUSING BLOCKS
- MIXED - USE COMMUNITY, COMMERCIAL, RESIDENTIAL
- URBAN OPEN SPACE
- BUFFER AREA
- WATERS
- COMMUNITY
- FOOTPATH 1.2m WIDE
- FOOTPATH 1.5m WIDE
- FOOTPATH 2.0m WIDE
- FOOTPATH 2.5m WIDE
- FOOTPATH > 2.5m
- FUTURE 2.5m OFF-ROAD TRUNK CYCLEWAY BY TERRITORY
- FOOTPATH SPECIALISED
- PLAYGROUND
- EXISTING TREES TO BE RETAINED
- HERITAGE CONSERVATION AREA



Issue	Date	Amendment
00	26/03/08	DA Submission
	10/04/08	FOR INFORMATION
	18/06/08	FOR INFORMATION
	26/06/08	FOR INFORMATION
01	30/06/08	2nd CIRCULATION inc. AGENCY COMMENTS
02	24/07/08	INCORPORATING AGENCY COMMENT
03	28/10/08	VARY 01 - SECTION AG



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Land Development Agency

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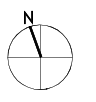
Project
CRACE
 ESTATE DEVELOPMENT PLAN
 DEVELOPMENT APPLICATION

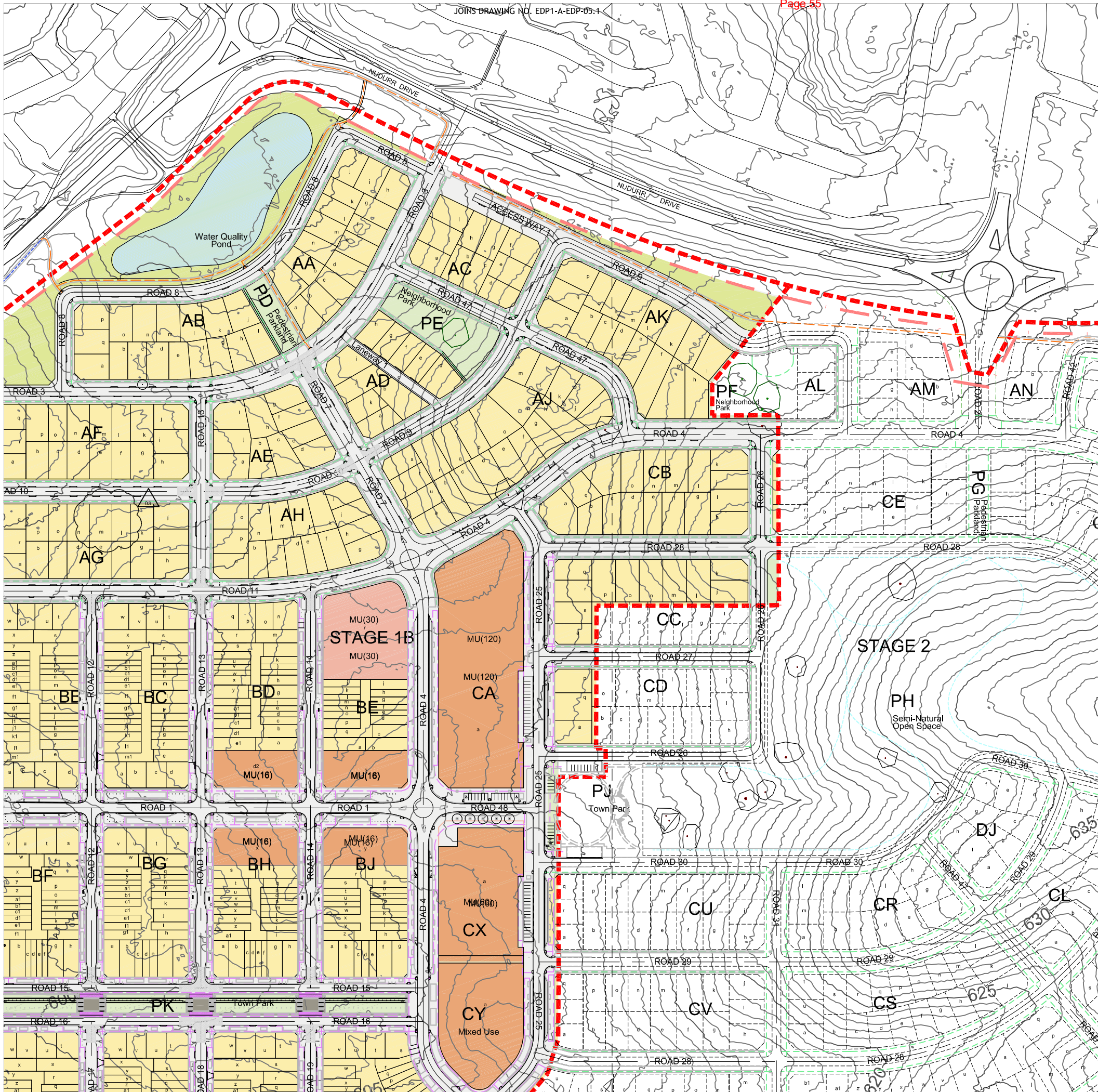
Drawing Title
Estate Development Plan
 Stage-1 Sheet 1 Of 4

Block Yield - Stage 1

BLOCK AREA	BLOCKS
SR1 0 to 250 m2	283
SR2 251 to 350 m2	75
SR3 351 to 450 m2	183
SR4 451 to 650 m2	278
SR5 > 650 m2	23
Multi-unit Development	7
TOTAL	844

Scale	1:2500
Drawn	XX
Checked	-
Approved	-
Job No	207045.00
Drawing Number	EDP1-A-EDP-05.1
Plan No.	5.1 Issue 03

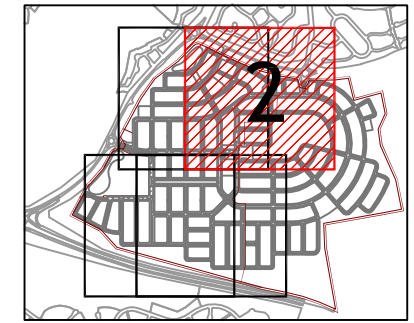




LEGEND

- HOLDING LEASE BOUNDARY
- STAGING BOUNDARY
- SINGLE BLOCKS
- MULTI - UNIT HOUSING BLOCKS
- MIXED - USE COMMUNITY, COMMERCIAL, RESIDENTIAL
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- FOOTPATH 2.0m WIDE
- FOOTPATH 2.5m WIDE
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Key Plan



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01	30/06/08	2nd CIRCULATION inc. AGENCY COMMENTS
02	24/07/08	INCLUDING AGENCY COMMENTS
03	28/10/08	VARY 01 - SECTION AG



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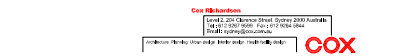
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Project
CRACE
 ESTATE DEVELOPMENT PLAN
 DEVELOPMENT APPLICATION

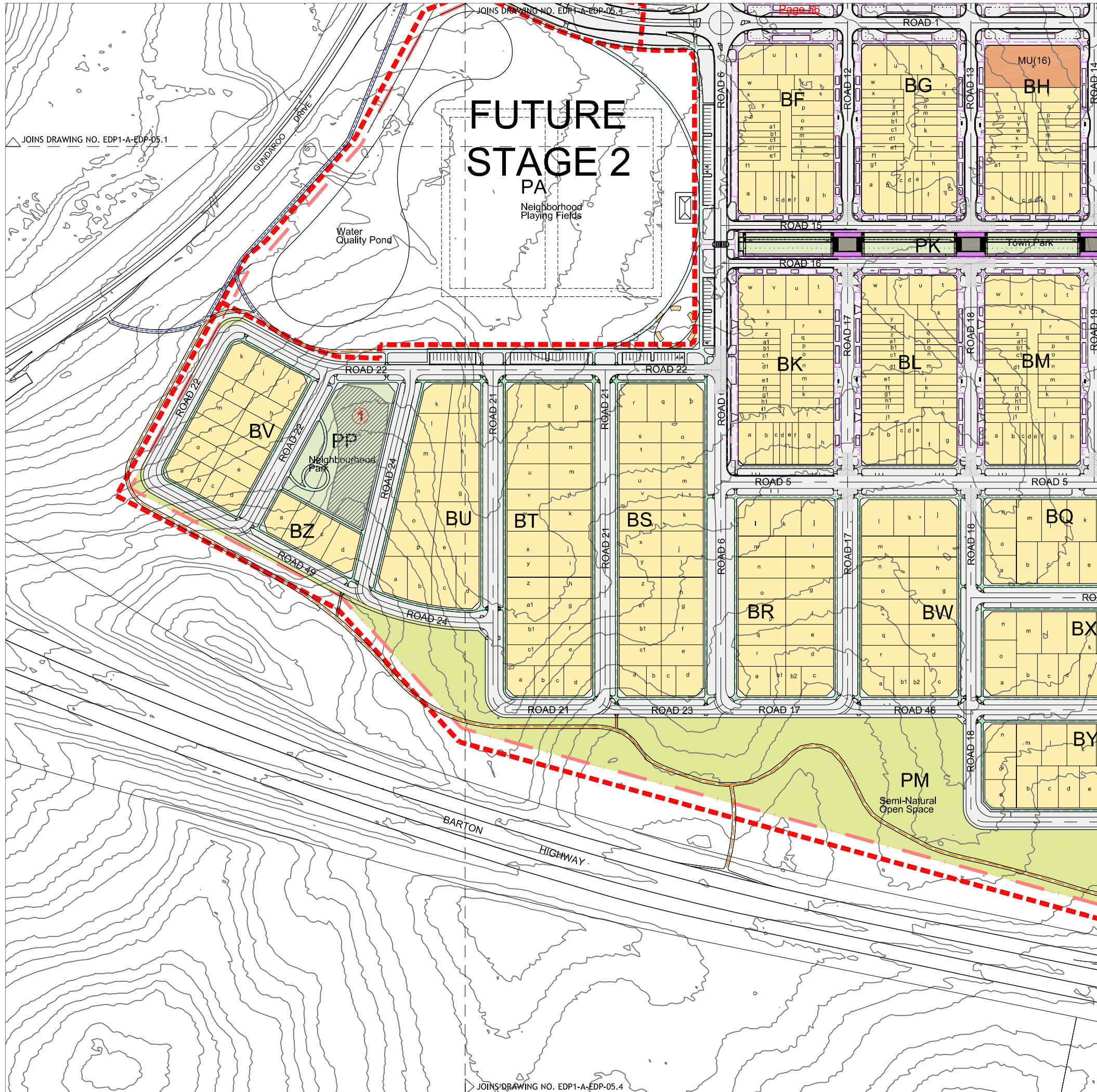
Drawing Title
Estate Development Plan
 Stage-1 Sheet 2 Of 4

Block Yield - Stage 1

BLOCK AREA	BLOCKS
SR1 0 to 250 m2	283
SR2 251 to 350 m2	75
SR3 351 to 450 m2	183 ⁰³
SR4 451 to 650 m2	278
SR5 > 650 m2	23
Multi-unit Development	7
TOTAL	844 ⁰³

Scale	1:2500
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Approved	-
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Plan No.	5.2 Issue 03

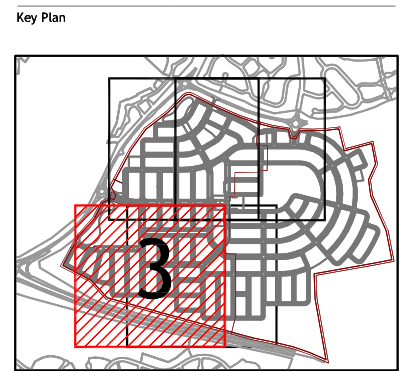




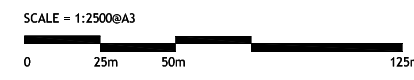
- ### LEGEND
- HOLDING LEASE BOUNDARY
 - STAGING BOUNDARY
 - SINGLE BLOCKS
 - MULTI - UNIT HOUSING BLOCKS
 - MIXED - USE COMMUNITY, COMMERCIAL, RESIDENTIAL
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Block Yield - Stage 1

BLOCK AREA	BLOCKS
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SR4 451 to 650 m2	278
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03	28/10/08	VARY 01 - SECTION AG



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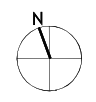
Project Consultants

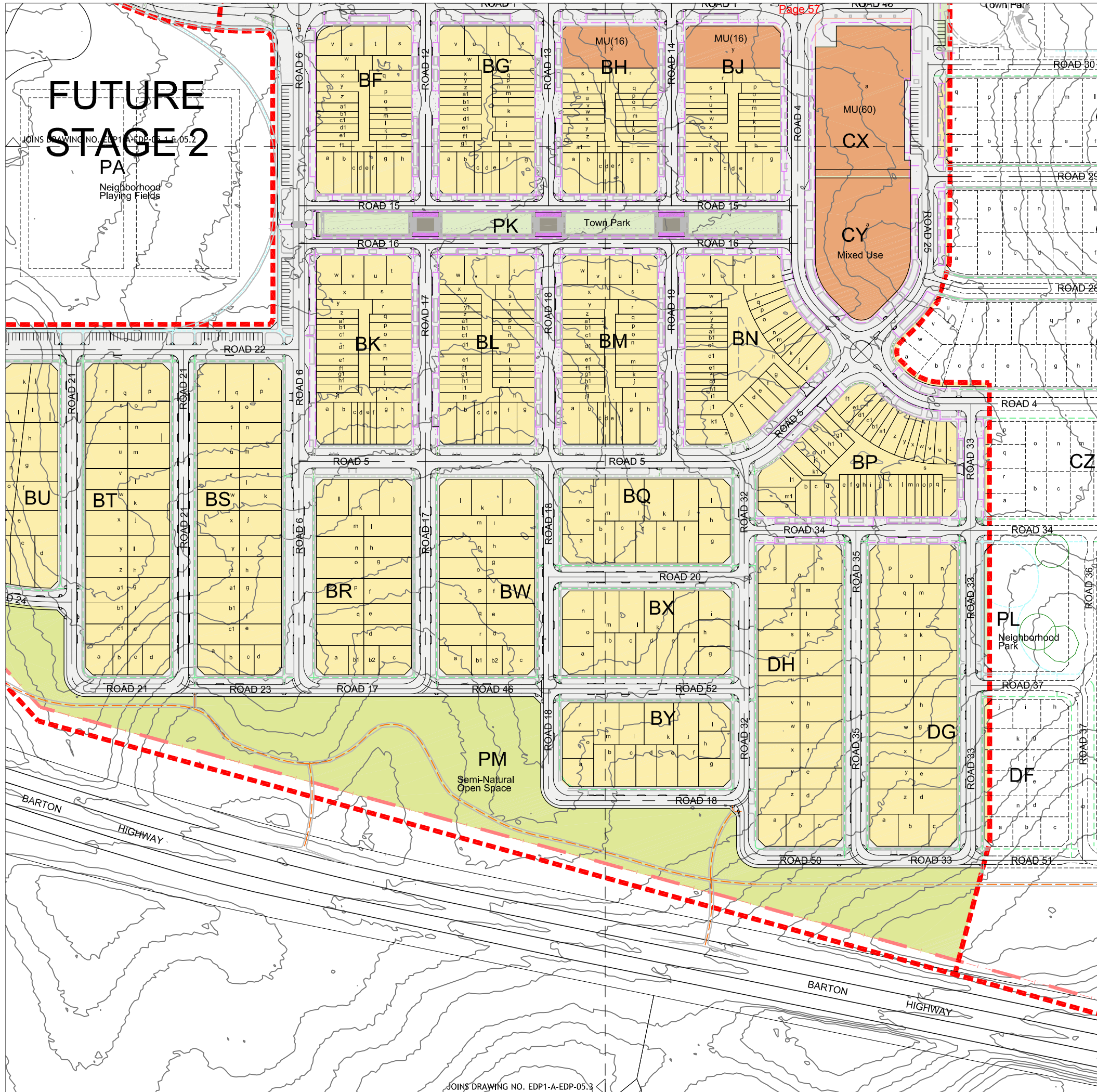


Project
CRACE
 ESTATE DEVELOPMENT PLAN
 DEVELOPMENT APPLICATION

Drawing Title
Estate Development Plan
 Stage-1 Sheet 3 Of 4

Scale 1:2500
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 Checked -
 Approved -
 Job No 207045.00
 Drawing Number EDP1-A-EDP-05.3
 Plan No. **5.3 Issue 03**





FUTURE STAGE 2 PA
Neighborhood Playing Fields

JOINS DRAWING NO. EDP1-A-EDP-05.2

JOINS DRAWING NO. EDP1-A-EDP-05.3

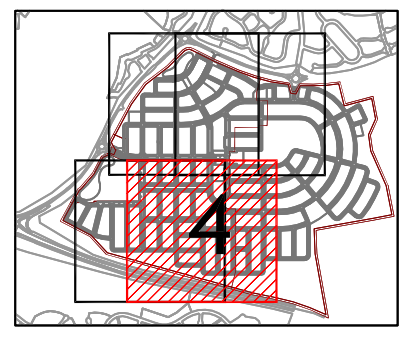
LEGEND

- HOLDING LEASE BOUNDARY
- STAGING BOUNDARY
- SINGLE BLOCKS
- MULTI - UNIT HOUSING BLOCKS
- MIXED - USE COMMUNITY, COMMERCIAL, RESIDENTIAL
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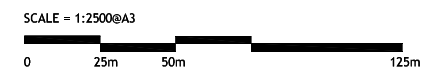
Block Yield - Stage 1

BLOCK AREA	BLOCKS
SR1 0 to 250 m2	283
SR2 251 to 350 m2	75
SR3 351 to 450 m2	183
SR4 451 to 650 m2	278
SR5 > 650 m2	23
Multi-unit Development	7
TOTAL	844

Key Plan



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	26/06/08	FOR INFORMATION
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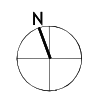
Project Consultants



Project
CRACE
ESTATE DEVELOPMENT PLAN
DEVELOPMENT APPLICATION

Drawing Title
Estate Development Plan
Stage-1 Sheet 3 Of 4

Scale 1:2500
 Drawn XX
 Checked -
 Approved -
 Job No 207045.00
 Drawing Number EDP1-A-EDP-05.4
 Plan No. **5.4 Issue 03**



LEGEND

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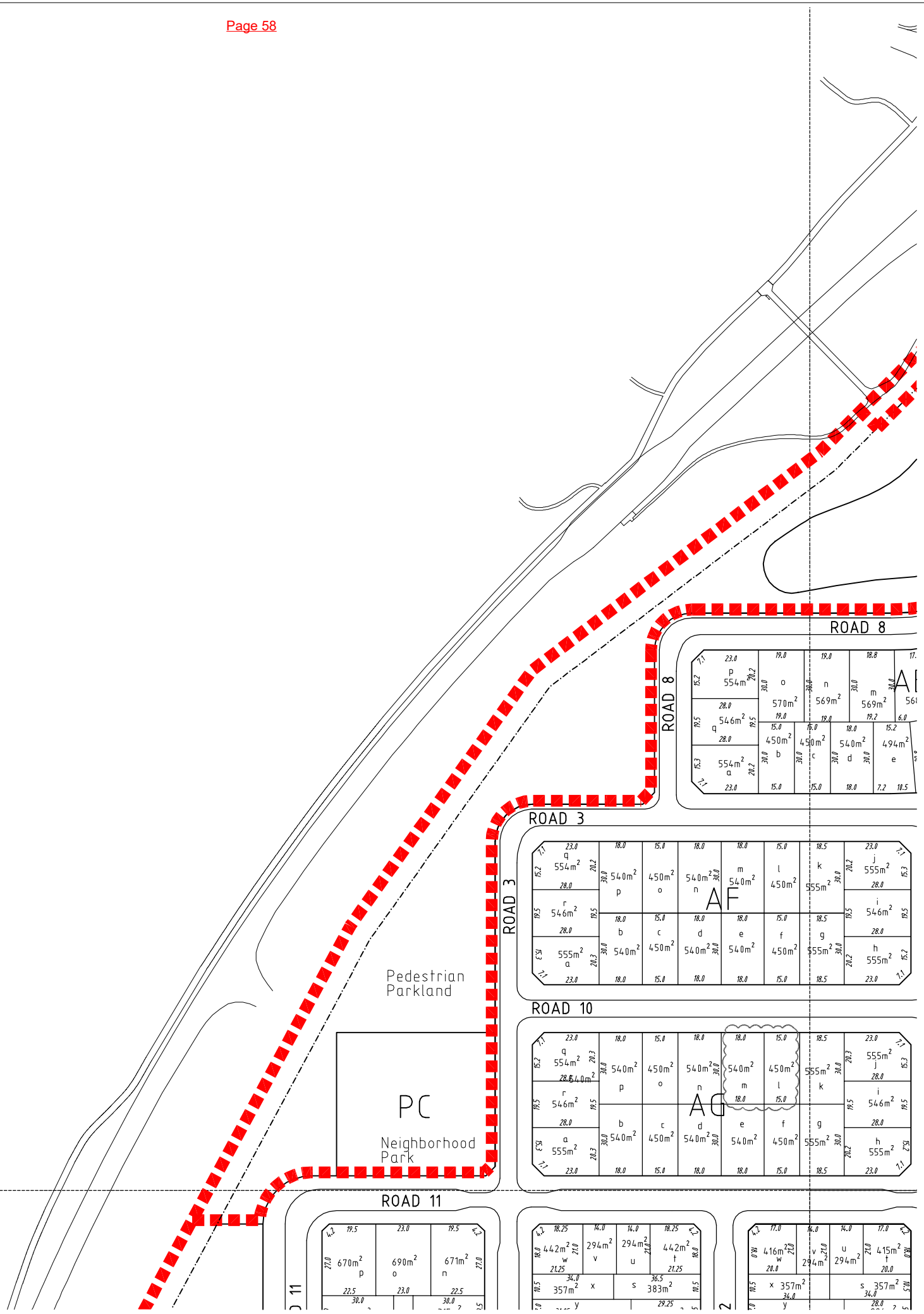
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d e BLOCK NUMBER

AB SECTION NUMBER

NOTE:

ALL BLOCK AREAS AND DIMENSIONS TO BE CONFIRMED BY SURVEY



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28.0	28.0	19.0	19.0	18.0	18.0
q	546m ²	r	450m ²	s	540m ²
28.0	28.0	19.0	19.0	18.0	18.0
15.3	23.0	19.0	19.0	18.0	17.0
a	554m ²	b	450m ²	c	540m ²
28.0	28.0	19.0	19.0	18.0	18.0
15.2	23.0	19.0	19.0	18.0	17.0
d	554m ²	e	450m ²	f	540m ²
28.0	28.0	19.0	19.0	18.0	18.0

15.2	23.0	18.0	18.0	18.0	18.5	23.0	
q	554m ²	r	540m ²	s	450m ²	t	555m ²
28.0	28.0	18.0	18.0	18.0	18.5	23.0	
u	546m ²	v	450m ²	w	555m ²	x	546m ²
28.0	28.0	18.0	18.0	18.0	18.5	23.0	
15.3	23.0	18.0	18.0	18.0	18.5	23.0	
a	555m ²	b	540m ²	c	450m ²	d	540m ²
28.0	28.0	18.0	18.0	18.0	18.5	23.0	
15.2	23.0	18.0	18.0	18.0	18.5	23.0	
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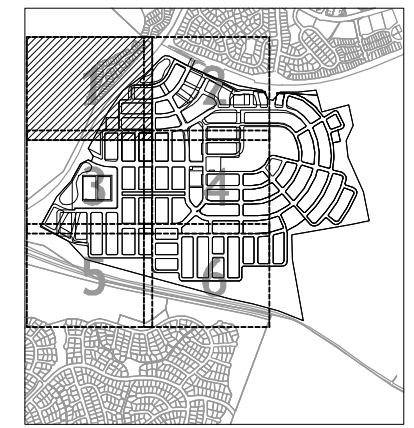
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28.0	28.0	18.0	18.0	18.0	18.5	23.0	
15.3	23.0	18.0	18.0	18.0	18.5	23.0	
a	555m ²	b	540m ²	c	450m ²	d	540m ²
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15.2	23.0	18.0	18.0	18.0	18.5	23.0	
e	555m ²	f	540m ²	g	450m ²	h	555m ²
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22.5	23.0	22.5			
38.0	38.0	38.0			
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29.25	29.25	29.25			

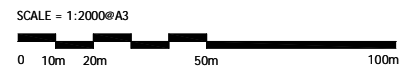
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18.25	14.0	14.0	18.25				
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29.25	29.25	29.25	29.25				

17.0	14.0	14.0	17.0				
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17.0	14.0	14.0	17.0				
x	357m ²	y	357m ²	z	357m ²		
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Key Plan



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00	26/03/08	DA Submission
01	30/06/08	2nd Circulation inc. Agency Comments
02	24/07/08	Minor Corrections
03	24/07/08	Incorporating Agency Comments
04	28/10/08	Vary 01 - Section AG



Joint Venture Partners

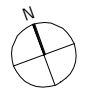
Joint venture managed by CIC Limited

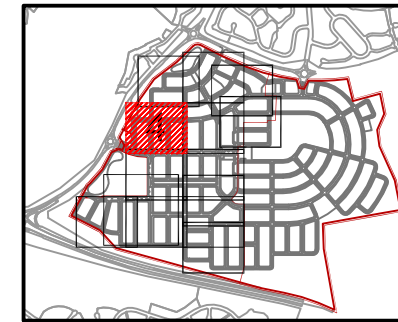
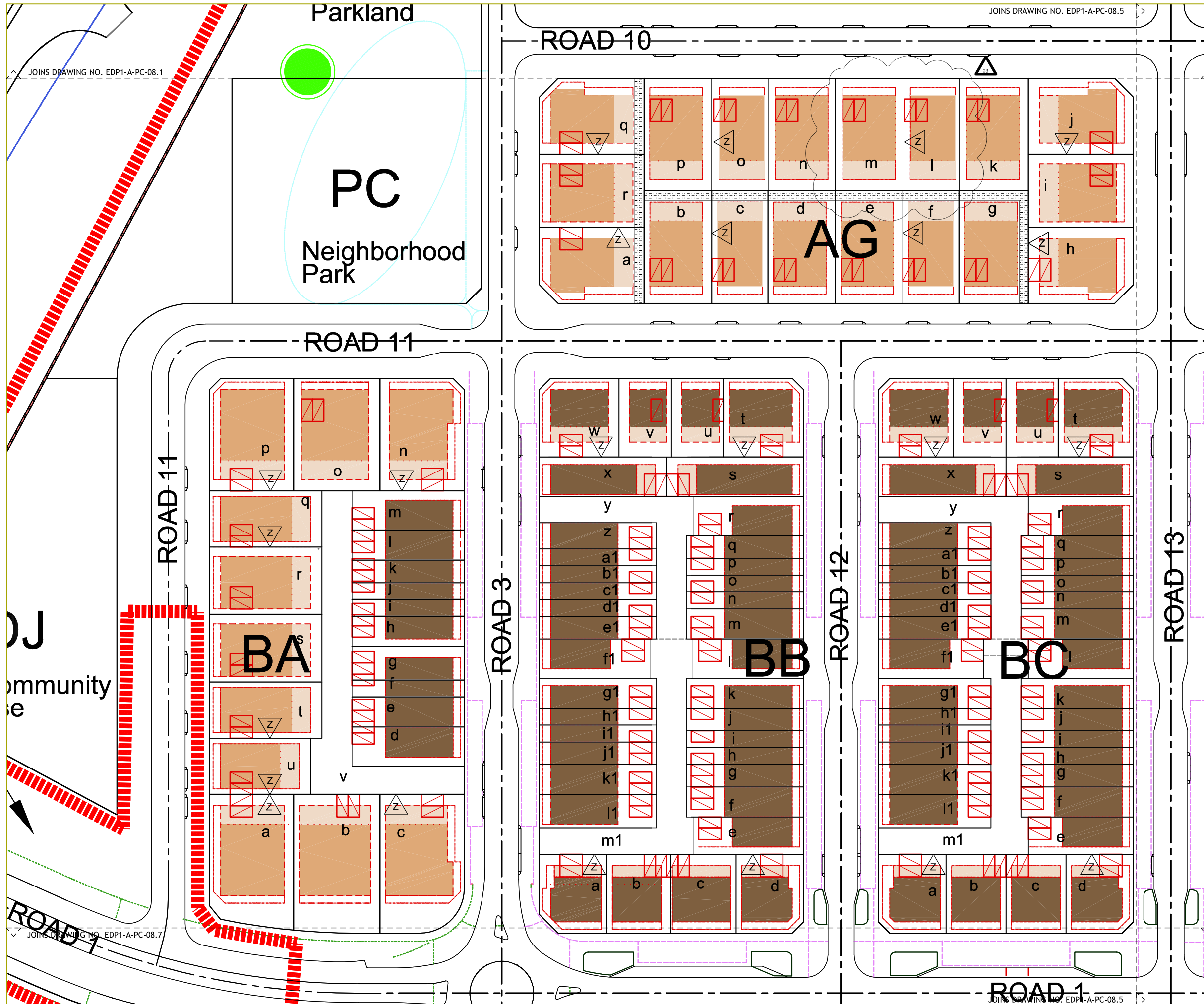
Project Consultants

Project
CRACE STAGE 1
ESTATE DEVELOPMENT PLAN
DEVELOPMENT APPLICATION

Drawing Title
Block Details Plan
 Sheet 1 of 6

Scale	1:2000
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Checked	VL/KB
Approved	VL
Job No	4431
Drawing Number	EDP1-ENG-BDP-6.1
Plan No.	6.1 Issue 04





Issue	Date	Amendment
00	26/03/08	DA Submission
	20/06/08	FOR INFORMATION
01	30/06/08	2nd CIRCULATION inc. AGENCY COMMENTS
02	24/07/08	INCORPORATING AGENCY COMMENTS
03	28/10/08	VARY 01 - SECTION AG



Joint Venture Partners

Land Development Agency

Canberra Investment Corporation Limited

Defence Housing AUSTRALIA

PBSPROPERTY GROUP

Joint venture managed by CIC Limited
Project Consultants



Project
CRACE
ESTATE DEVELOPMENT PLAN
DEVELOPMENT APPLICATION

Drawing Title
Planning Controls
Stage-1 Sheet 6 of 14

Scale	1:1000
Drawn	XX
Checked	-
Approved	-
Job No	207045.00
Drawing Number	EDP-A-PC-8.4
Plan No.	8.4 Issue 03

LEGEND

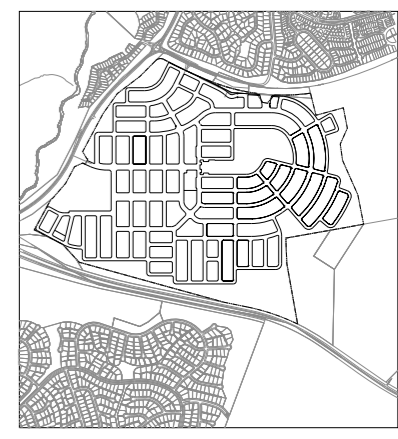
- - - Holding Lease Boundary
- - - Stage Boundary
- Dryland grassing
- Filter wetland plants
- Grass areas
- Groundcovers
- Playground
- Path
- Water Body
- Proposed Tree Planting
Refer to Master Legend
Dwg.No EDP1-LA-LMP-09.1
for tree species and locations
- Existing tree retained



Refer Dwg.No EDP1-LA-LMP-09.1
for tree species and locations

Refer to Dwg.No EDP1-LA-LMP-09.3,
EDP1-LA-LMP-09.4, EDP1-LA-LMP-09.5
EDP1-LA-LMP-09.6 for 1:2500 detail plans

Key Plan



Issue	Date	Amendment
00	30.06.08	2nd Circulation Inc. Agency Comments
01	24.07.08	Incorporating Agency Comments
02	28.10.08	Vary 01 - Section AG

Joint Venture Partners



Land Development Agency



Carberra Investment Corporation Limited



Defence Housing Australia



PBS PROPERTY GROUP

Joint venture managed by CIC Limited

Project Consultants

TRACT CONSULTANTS PTY LTD
LANDSCAPE ARCHITECTS
LEVEL 8, 80 MOUNT STREET
NORTH SYDNEY
SYDNEY, NSW 2060
AUSTRALIA
TELEPHONE 612 9954 3733
FACSIMILE 612 9954 3825
sydney@tract.net.au
www.tract.net.au

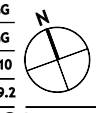
Project

CRACE
ESTATE DEVELOPMENT PLAN
DEVELOPMENT APPLICATION

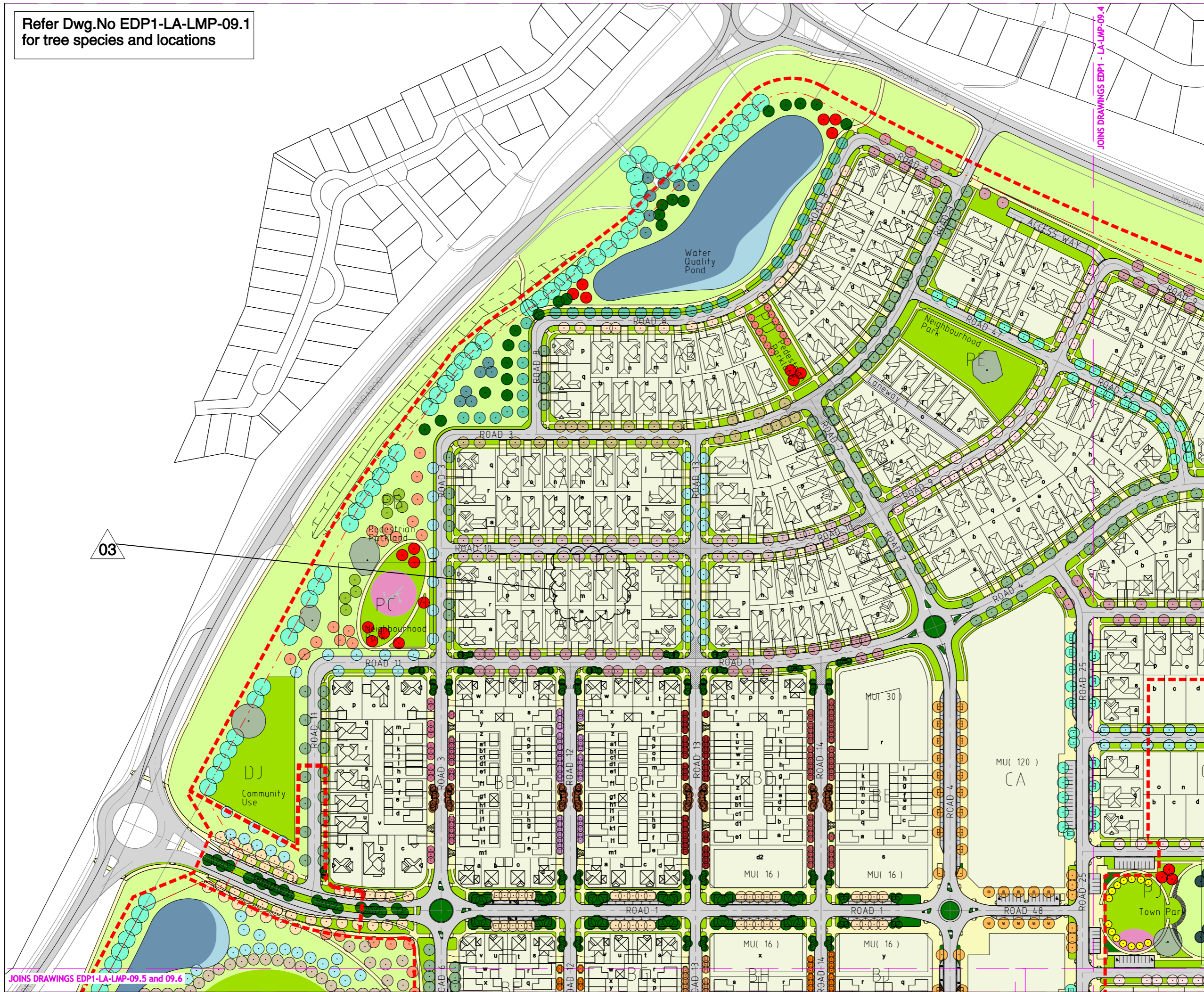
Drawing Title

Landscape Masterplan
Sheet 2 of 6

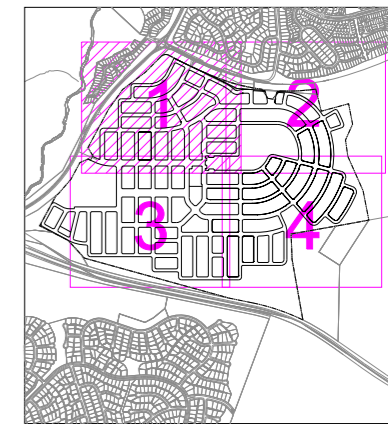
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Drawn	AF/CN
Checked	GG
Approved	GG
Job No	207010
Drawing Number	EDP1-LA-LMP-09.2
Plan No.	9.2 Issue 02



Refer Dwg.No EDP1-LA-LMP-09.1 for tree species and locations



Key Plan



Issue	Date	Amendment
00	26.03.08	DA Submission
01	30.06.08	2nd Circulation Inc. Agency Comments
02	24.07.08	Incorporating Agency Comments
03	28.10.08	Vary 01 - Section AG

Joint Venture Partners



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 www.tract.net.au

Tract

Project

**CRACE
 ESTATE DEVELOPMENT PLAN
 DEVELOPMENT APPLICATION**

Drawing Title

**Landscape Masterplan
 Sheet 3 of 6**




















Scale	1:2500
Drawn	AF/CN
Checked	GG
Approved	GG
Job No	207010
Drawing Number	EDP1-LA-LMP-09.3
Plan No.	9.3



JOINS DRAWINGS EDP1-LA-LMP-09.5 and 09.6

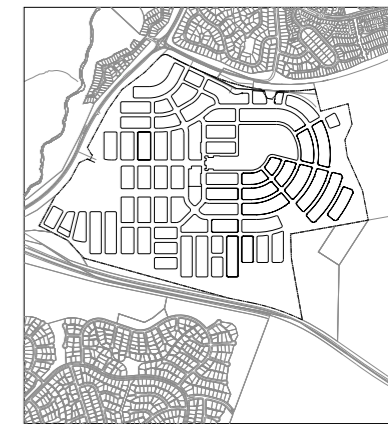
JOINS DRAWINGS EDP1 - LA-LMP-09.4

LEGEND

-  Holding Lease Boundary
-  Semi Natural Open Spaces
-  Pedestrian Parkland
-  Street Tree Avenue
-  Urban Residential Streetscape
-  Neighbourhood Park
-  Neighbourhood Playing Field
-  Town Park
-  Entry Boulevard
-  Road Reserve and External Buffer Areas
-  Standard Residential
-  Medium Density
-  Higher Density
-  Water Bodies
-  Community Use
-  Playground
-  Entry Point
-  Electrical Easement
-  Acoustic Mounding



Key Plan



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Joint Venture Partners



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Tract

Project

CRACE
 ESTATE DEVELOPMENT PLAN
 DEVELOPMENT APPLICATION

Drawing Title

**Landscape Structure
 Plan**

Sheet 1 of 1

Scale	1:6000
Drawn	AF/CN
Checked	GG
Approved	GG
Job No	207010
Drawing Number	EDP1-LA-LSP-11.1
Plan No.	11.1



LEGEND

- 138 - TREE IDENTIFICATION NUMBER
- Em - SPECIES CODE
- Pm - MANAGEMENT STATUS CODE
- ✳️ TREE IMPACT PLAN TO BE PROVIDED
Tree No: 50
- 🟩 EXCELLENT VALUE TREE TO BE RETAINED WITH 5m TPZ OUTSIDE DRIP LINE
Tree No: 50
- 🟨 TREE TO BE RETAINED WITH 2m TPZ OUTSIDE DRIP LINE
Tree No's: 1, 4, 6,
- 🟠 EXISTING TREE TO BE REMOVED
Tree No's: 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 108, 109, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 167, 168, 169, 170, 171, 172, 173, 176, 182, 183, 184, 185, 186, 280, 281
- TREE OUTSIDE DEVELOPMENT AREA
- ▬ HOLDING LEASE BOUNDARY
- ▬ STAGE BOUNDARY

- KEY TO SPECIES**
- Ca - Cupressus arizonica Eb - Eucalyptus blakelyi Ebi - Eucalyptus bicostata
 - Ebr - Eucalyptus bridgesiana Em - Eucalyptus melliodora Ero - Eucalyptus rossii

TREE PROTECTION CONDITIONS

STANDARD CONDITIONS

- A copy of these conditions shall be kept on site from the time that the protective fences are erected to the time that all works are completed on site.

Tree removal

- All protected trees are to be retained unless otherwise stated in Specific Conditions below.

Fencing of protected trees

- All *Regulated Trees*, other than those classified as being of 'Exceptional' quality, shall be fenced off by a continuous 1800 mm high chain wire protective fence at the extent of the tree protection zones as identified in the 'Tree Protection Act 2005'.
- All *Registered Trees* and *Regulated Trees* classified as being of 'Exceptional' quality, shall be fenced off by a continuous 1800 mm high chain wire protective fence 3 metres from the extent of the existing canopy.
- The protective fences shall be erected prior to the commencement of any earthworks, construction or demolition activity on any part or stage of the development and shall remain in place until all construction works are completed.
- The protective fence shall be maintained in good order for the duration of the construction works.
- A Tree Protection Sign, as specified by Environment ACT, shall be prominently displayed on the fences of all fenced off areas.

No activities permitted within the fenced off area

- No activities are permitted in the fenced off area unless otherwise stated in *Specific Conditions* below.
- Tree surgery will be permitted to trees requiring such action. Activity is to be undertaken in accordance with AS 4373 by a qualified arboriculturist to ensure that the activity results in a balanced tree.

SPECIFIC CONDITIONS

The following *Specific Conditions* are based on the following plans:
 • *Tree Management Plans* numbered EDP1-PL-TMP-12.1 & EDP1-PL-TMP-12.2
 The above conditions shall be observed except where the following apply:

Protective Fencing

- Protective fencing is to be erected and maintained in accordance with the *Standard Conditions* except for trees included on the plans *Tree Impact Drawings* that are affected by works adjacent to trees. These trees are to be fenced to the tree protection zone with the exception of the area identified as 'affected' and may include a 1 metre buffer area to allow works to occur.
- For the purposes of these conditions, the area inside the protective fencing is referred to as the 'fenced off area'.

Tree Removal

Only trees that have been endorsed within the Tree Management Plan as marked for removal may be removed.

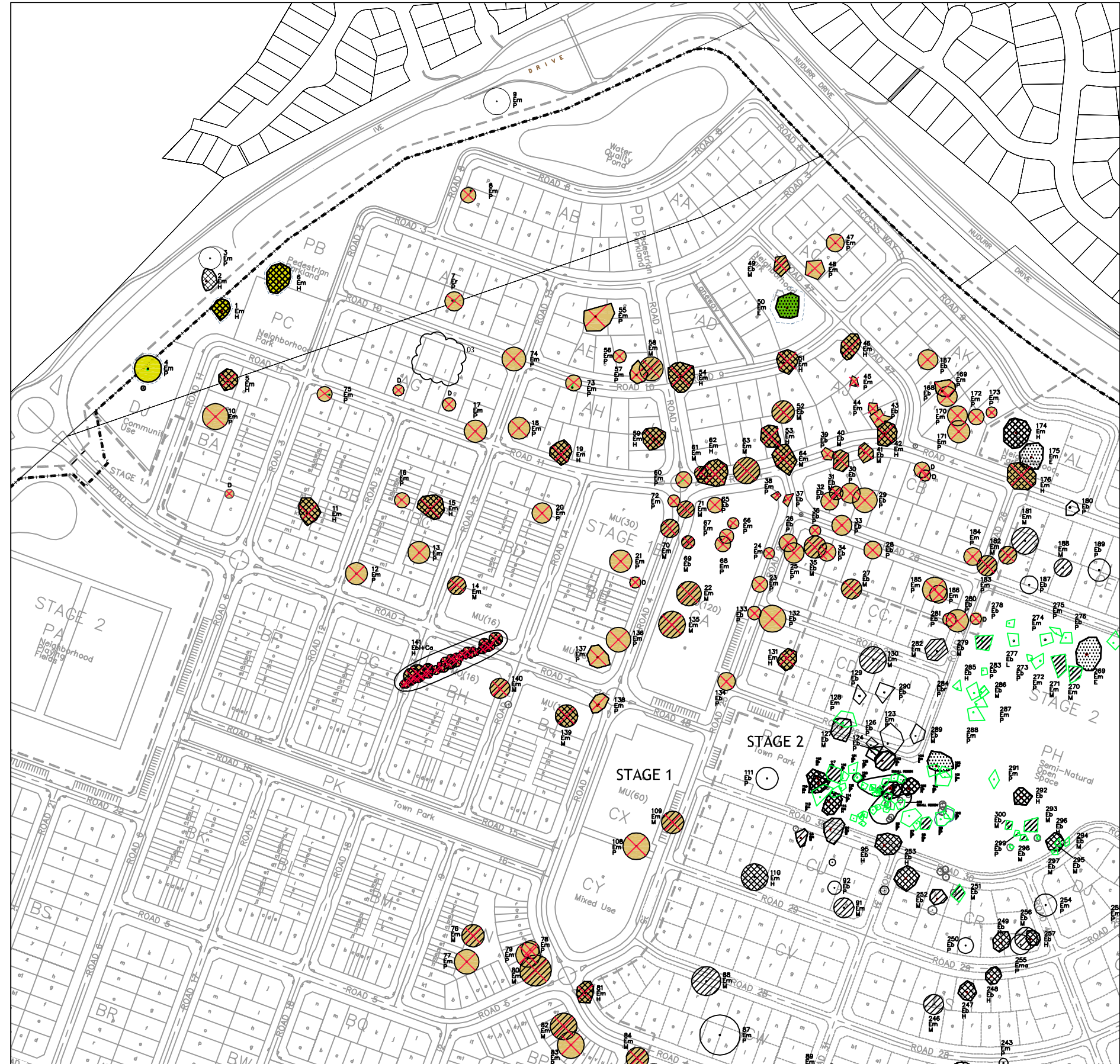
Services

- Services and Utilities reticulation is permitted in accordance with the following conditions:
- Works under the Canopy extent must be undertaken by underboring.
- Works within the Tree Protection Zone but outside the drip line must be undertaken by hand excavation.
- No roots greater than 50mm in diameter are damaged; and
- Are at the minimum depth provided by the relevant Standards or Authority requirements.

Low Impact Works

Low Impact activity may occur within the fenced off areas of trees (other than *Registered Trees* and those classified as being of 'Exceptional' quality) for the purpose of 'light works', which includes the constructing footpaths, bike paths, driveways, swale drains, specific footing, garden beds and the like, provided the activity is in accordance with the following conditions:

- The cultivation of soil for irrigation and shrub beds is not considered a groundwork activity provided it is in accordance with the limitations below.
- Generally, no activity occurs within 3 metres of the trunk, with the exception of landscaping activities specified below.
- Garden beds, where within 3 metres of the trunk must be no greater than 300mm in depth, excavation is limited to 50mm and where the garden beds adjoin a tree, a gravel breathing layer is used.
- Fences and walls within the drip line and more than 3 metres from the trunk will not be allowed unless piers are used at 2.5m centre. No strip footings permitted.
- Any soil required for landscaping and irrigation purposes adjacent to trees must not be excavated below 50mm and result in fill which would exceed the natural surface level by 100mm.
- Generally, excavation is limited to a depth of 150mm below natural ground level, except where it may be specified within the specific conditions.
- No roots greater than 50mm in diameter are damaged;
- The excavated area for footpaths, swale drains, bike paths etc is less than 2.5 metres in width.
- Protective fences may be moved to provide sufficient space to allow footpaths, bike paths or swale drains to be constructed whilst continuing to protect areas not affected by the activity; and
- Where there are existing structures, paths and services, low impact works may be undertaken provided there is no increase in the development footprint and excavation is limited to a depth of 300mm below natural ground level.

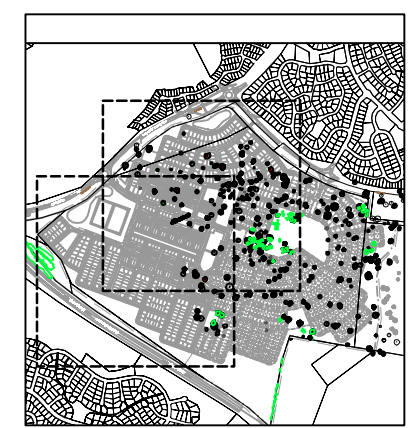


JOINS DRAWING EDP1-PL-TMP 12.2

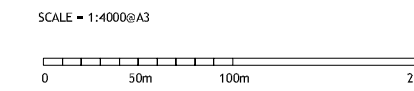
- MANAGEMENT STATUS**
- E Exceptional value tree that must be retained with no disturbance. Mature specimen, grand appearance and stature. May have unusual character, or be a rare species well balanced. Little to no epicormic shoots.
 - M Medium value tree where retention is desirable but may be considered for removal if all other design options are exhausted. Mature specimen. Some evidence of limb fall. Epicormics may be common. Dieback common
 - P Poor quality tree which may be removed. Significant dieback common. Decay/hollows common. Included bark forks common. May have a short life expectancy.
 - D Dead

Notice
 Failure to comply with the above conditions is an offence under the *Tree Protection Act 2005* and may result in an infringement notice of up to \$1,000 for an individual or \$5,000 for a corporation. Prosecution of more a serious offence may result in a criminal conviction and a penalty of up to \$40,000 for an individual or a penalty of up to \$200,000 for a corporation.

Key Plan



Issue	Date	Amendment
00	26/3/08	DA Submission
01	30/6/08	2nd circulation inc. Agency Comments
02	25/7/08	Incorporating Agency Comments
03	28/10/08	Vary 01- Section AG

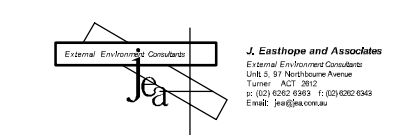


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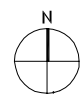
Project

CRACE
 ESTATE DEVELOPMENT PLAN
 DEVELOPMENT APPLICATION

Drawing Title

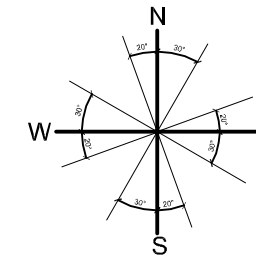
Tree Management Plan
 STAGE 1

Scale	1:1000
Drawn	IM
Checked	JE
Approved	JE
Job No	4431
Drawing Number	EDP1-PL-TMP-12.1
Plan No.	12.1 Issue 03

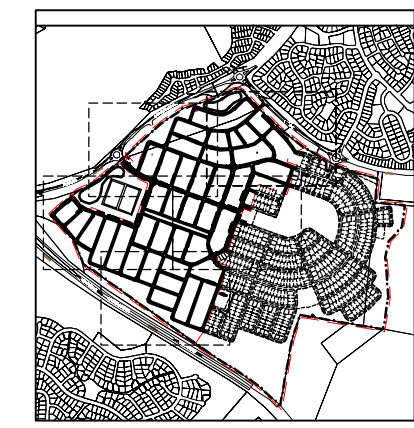


LEGEND

- ■ ■ ■ ■ HOLDING LEASE BOUNDARY
- ■ ■ ■ ■ STAGE BOUNDARY
- ⑤ ENERGY RATING
- EXISTING TREE TO BE RETAINED
- 492m² BLOCK AREA
- 22m BLOCK WIDTH
- ZERO BUILDING LINE FOR GARAGE



Key Plan



ENERGY RATINGS

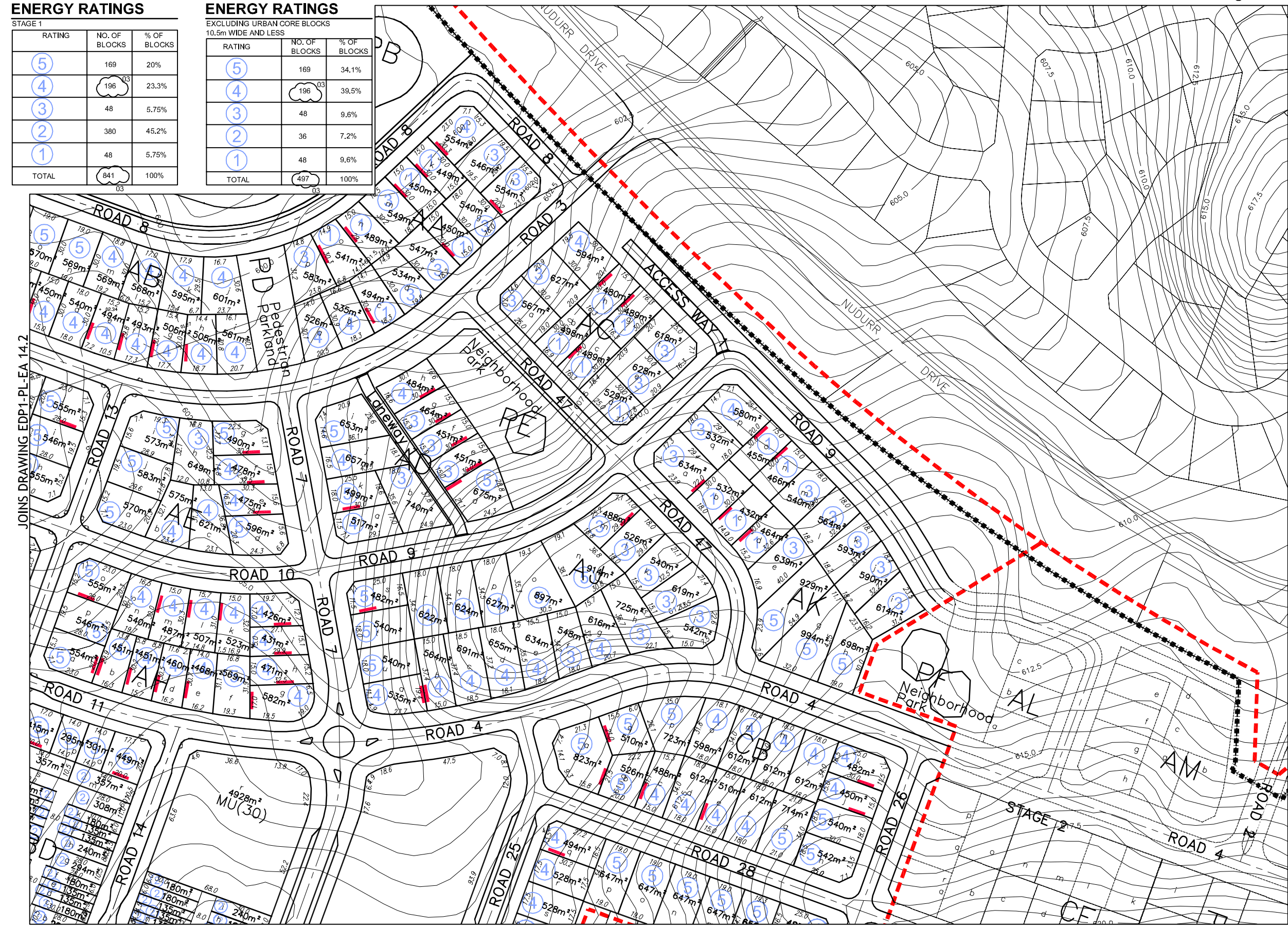
STAGE 1

RATING	NO. OF BLOCKS	% OF BLOCKS
⑤	169	20%
④	196	23.3%
③	48	5.75%
②	380	45.2%
①	48	5.75%
TOTAL	841	100%

ENERGY RATINGS

EXCLUDING URBAN CORE BLOCKS 10.5m WIDE AND LESS

RATING	NO. OF BLOCKS	% OF BLOCKS
⑤	169	34.1%
④	196	39.5%
③	48	9.6%
②	36	7.2%
①	48	9.6%
TOTAL	497	100%

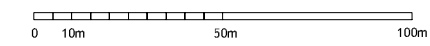


JOINS DRAWING EDP1-PL-EA 14.2

JOINS DRAWING EDP1-PL-EA 14.4

Issue	Date	Amendment
00	26/3/08	DA Submission
01	30/6/08	2nd circulation inc. Agency Comments
02	25/7/08	Incorporating Agency Comments
03	28/10/08	Vary 01- section AG

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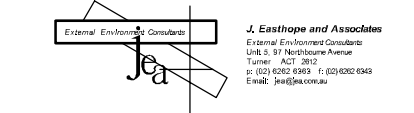


Joint Venture Partners



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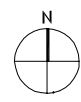
Project Consultants



Project
CRACE
 ESTATE DEVELOPMENT PLAN
 DEVELOPMENT APPLICATION

Drawing Title
Energy Audit
 STAGE 1

Scale	1:2000 @ A3
Drawn	WJ
Checked	JE
Approved	JE
Job No	4431
Drawing Number	EDP1-PL-EA-14.1
Plan No.	14.1



LEGEND

- HOLDING LEASE BOUNDARY ■■■■■ STAGE BOUNDARY
- ⑤ ENERGY RATING
- 492m² BLOCK AREA
- 22m BLOCK WIDTH
- ZERO BUILDING LINE FOR GARAGE
- EXISTING TREE TO BE RETAINED

ENERGY RATINGS

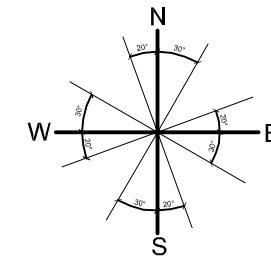
STAGE 1

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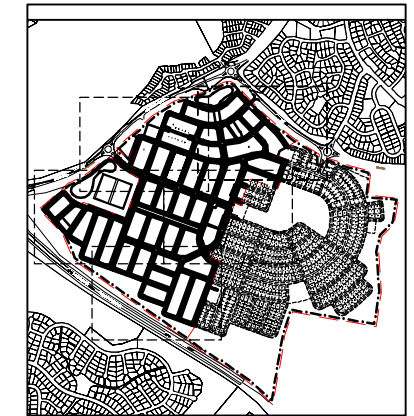
ENERGY RATINGS

EXCLUDING URBAN CORE BLOCKS 10.5m WIDE AND LESS

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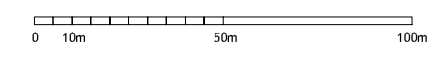


Key Plan



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SCALE = 1:2000@A3

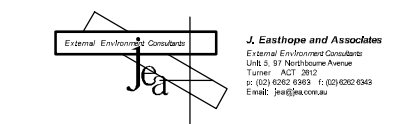


Joint Venture Partners



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Project

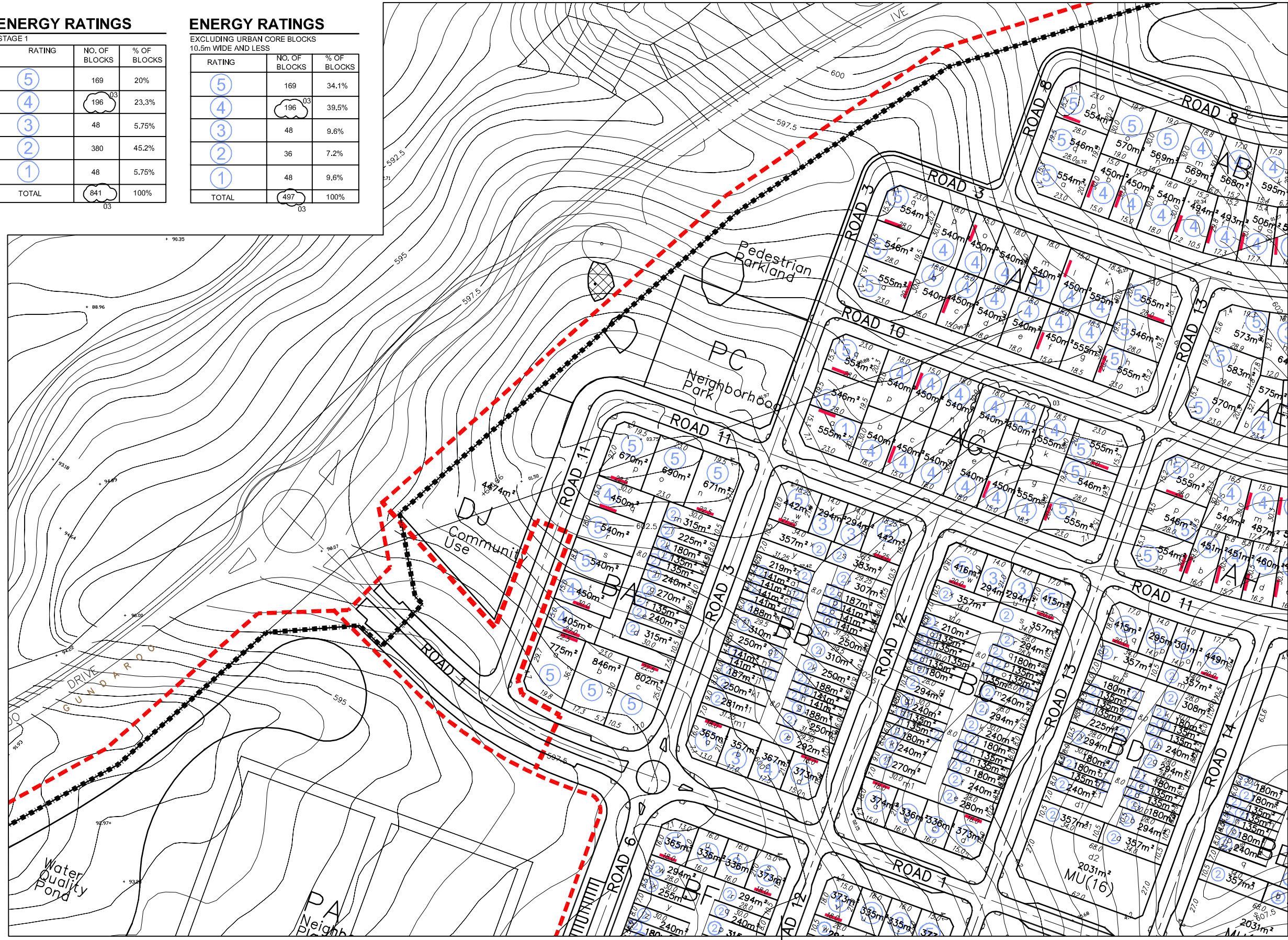
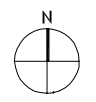
**CRACE
ESTATE DEVELOPMENT PLAN
DEVELOPMENT APPLICATION**

Drawing Title

**Energy Audit
STAGE 1**

Scale 1:2000 @ A3

Drawn	WJ
Checked	JE
Approved	JE
Job No	4431
Drawing Number	EDP1-PL-EA-14.2
Plan No.	14.2



JOINS DRAWING EDP1-PL-EA 14.3

JOINS DRAWING EDP1-PL-EA 14.4

Plan No. 14.2 Issue 03

LEGEND

- HOLDING LEASE BOUNDARY ■■■■■ STAGE BOUNDARY
- ⑤ ENERGY RATING
- 492m² BLOCK AREA
- 22m BLOCK WIDTH
- ZERO BUILDING LINE FOR GARAGE
- EXISTING TREE TO BE RETAINED

ENERGY RATINGS

STAGE 1

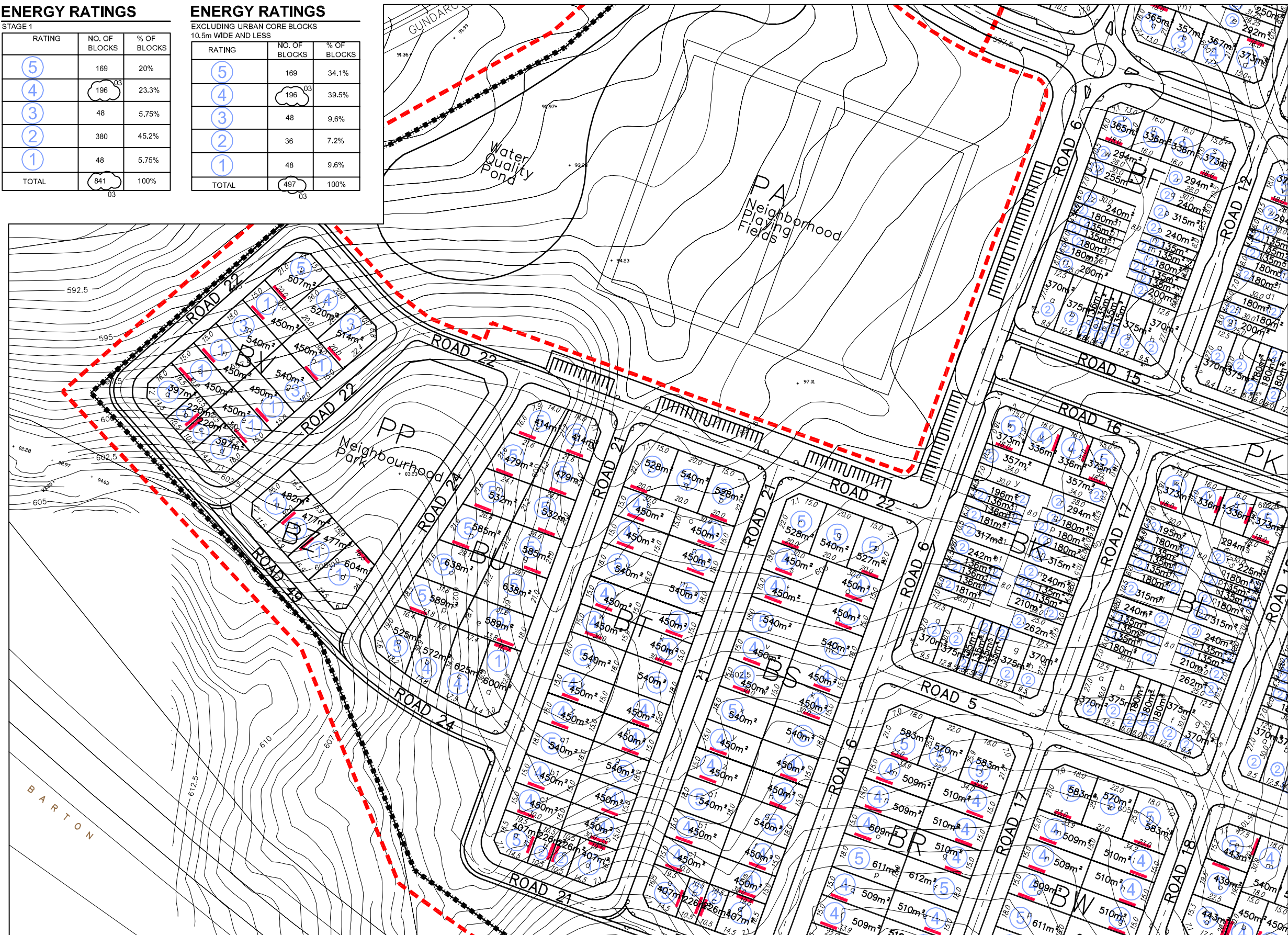
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ENERGY RATINGS

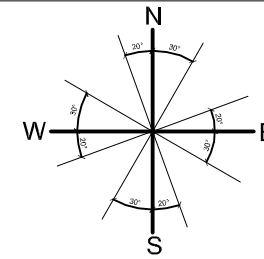
EXCLUDING URBAN CORE BLOCKS 10.5m WIDE AND LESS

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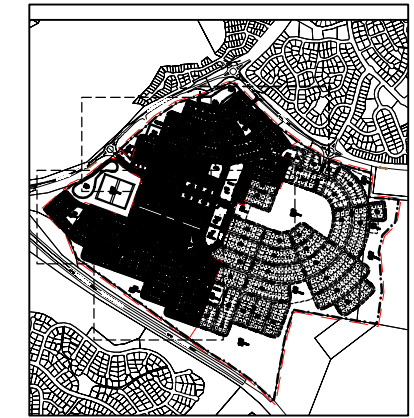
JOINS DRAWING EDP1-PL-EA 14.2



JOINS DRAWING EDP1-PL-EA 14.5



Key Plan



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SCALE = 1:2000@A3

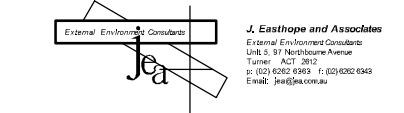


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Project Consultants



Project

**CRACE
ESTATE DEVELOPMENT PLAN
DEVELOPMENT APPLICATION**

Drawing Title

**Energy Audit
STAGE 1**

Scale 1:2000 @ A3

Drawn IW

Checked JE

Approved JE

Job No 4431

Drawing Number EDP1-PL-EA-14.3

Plan No. **14.3** Issue 03



LEGEND

- HOLDING LEASE BOUNDARY ■■■■■ STAGE BOUNDARY
- ⑤ ENERGY RATING
- 492m² BLOCK AREA
- 22m BLOCK WIDTH
- ZERO BUILDING LINE FOR GARAGE
- EXISTING TREE TO BE RETAINED

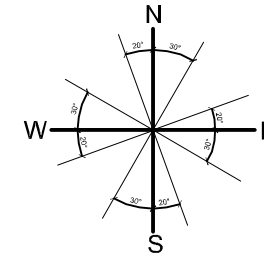
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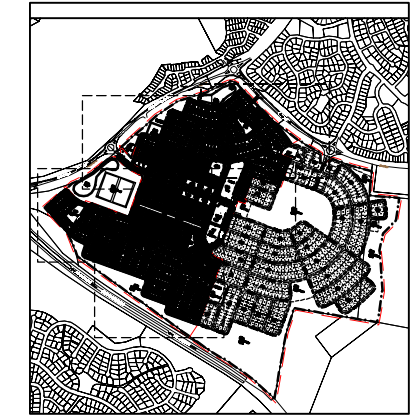
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JOINS DRAWING EDP1-PL-EA 14.1

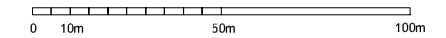


Key Plan



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SCALE = 1:2000@A3

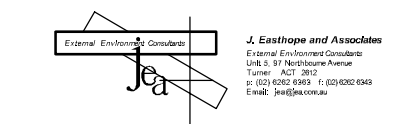


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Project

**CRACE
ESTATE DEVELOPMENT PLAN
DEVELOPMENT APPLICATION**

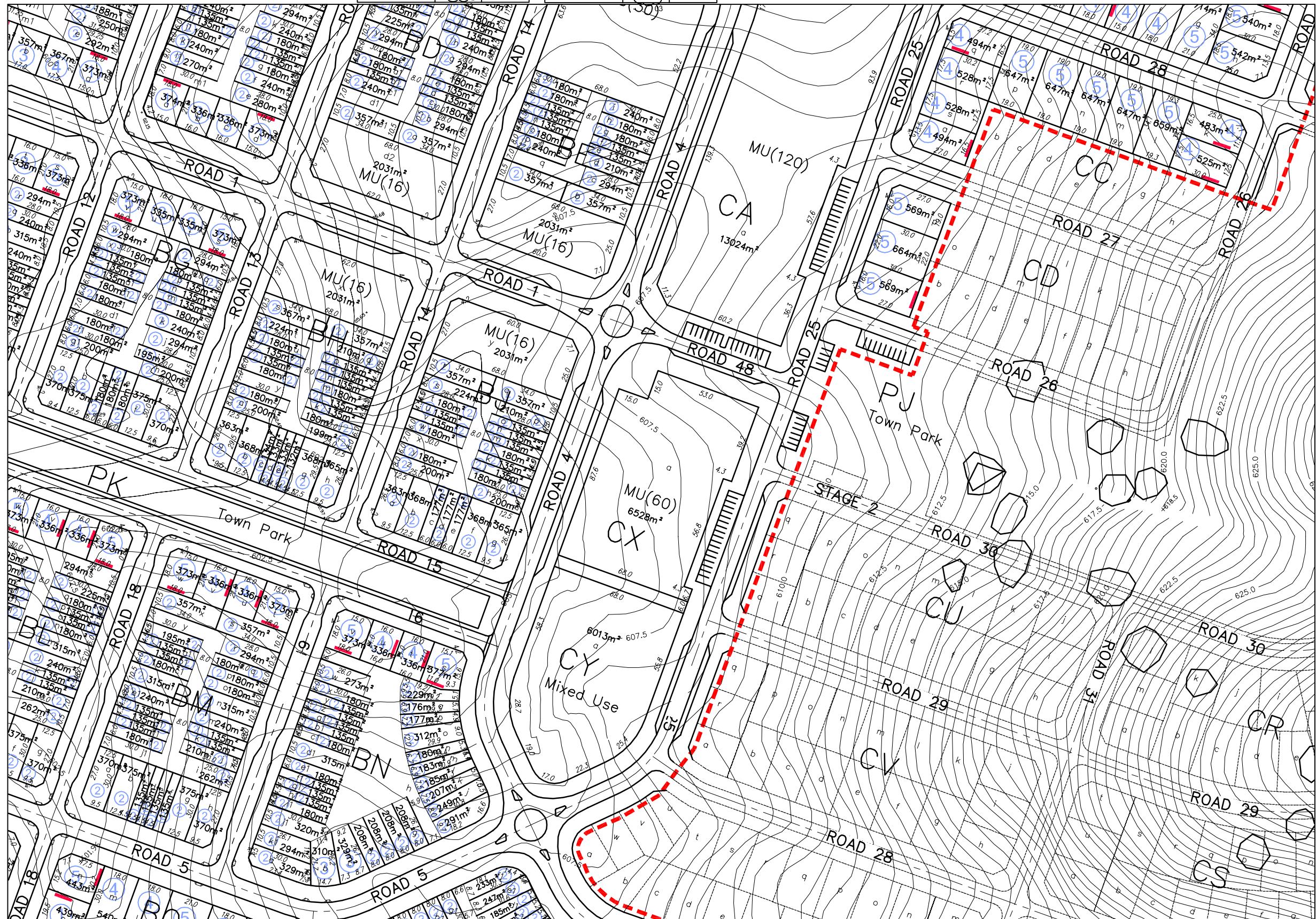
Drawing Title

**Energy Audit
STAGE 1**

Scale	1:2000 @ A3
Drawn	IM
Checked	JE
Approved	JE
Job No	4431
Drawing Number	EDP1-PL-EA-14.4
Plan No.	14.4 Issue 03



JOINS DRAWING EDP1-PL-EA 14.3



JOINS DRAWING EDP1-PL-EA 14.5

LEGEND

- HOLDING LEASE BOUNDARY ■■■■■ STAGE BOUNDARY
- ⑤ ENERGY RATING
- 492m² BLOCK AREA
- 22m BLOCK WIDTH
- ZERO BUILDING LINE FOR GARAGE
- EXISTING TREE TO BE RETAINED

ENERGY RATINGS

STAGE 1

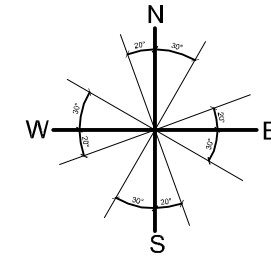
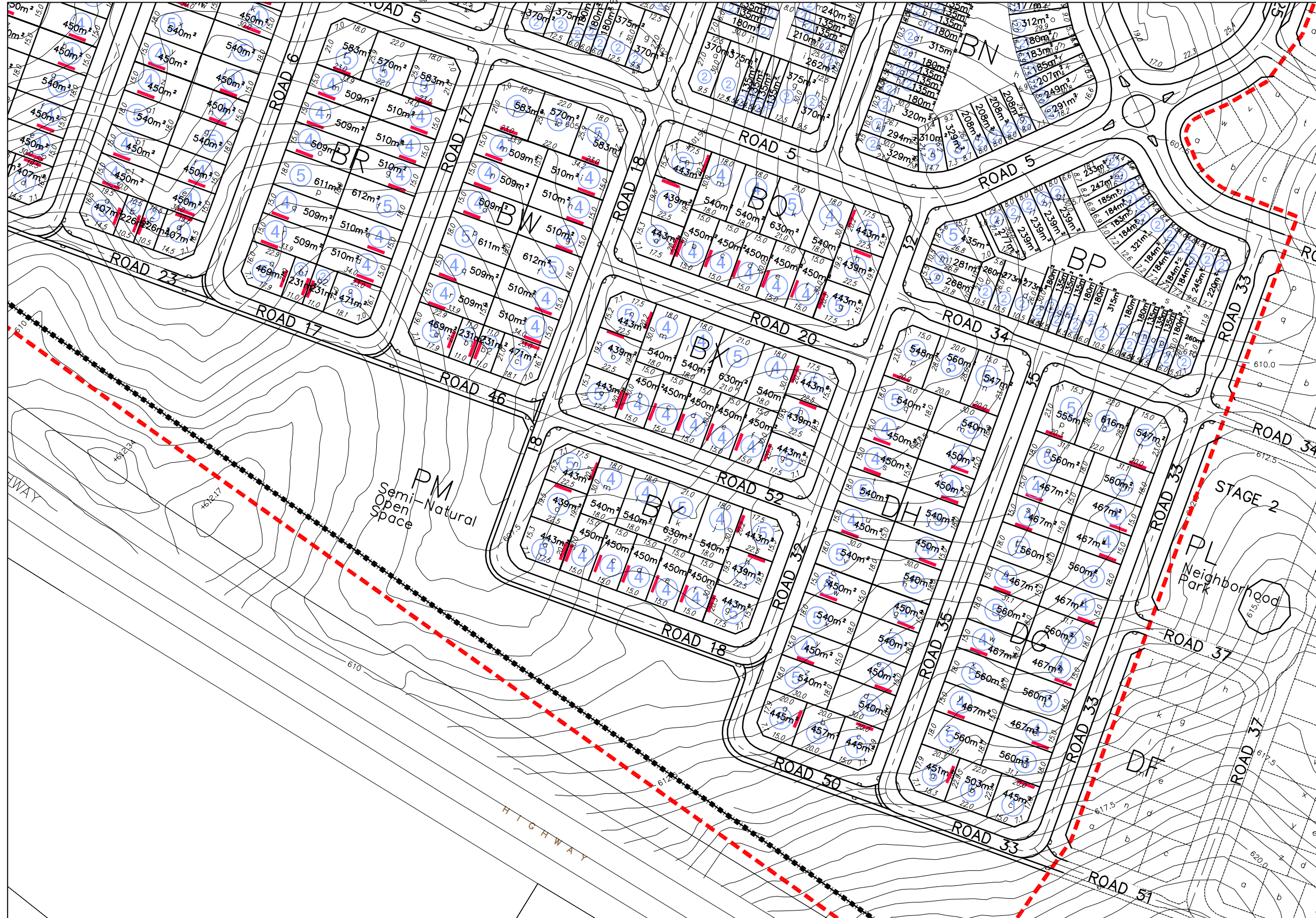
RATING	NO. OF BLOCKS	% OF BLOCKS
⑤	169	20%
④	196	23.3%
③	48	5.75%
②	380	45.2%
①	48	5.75%
TOTAL	841	100%

ENERGY RATINGS

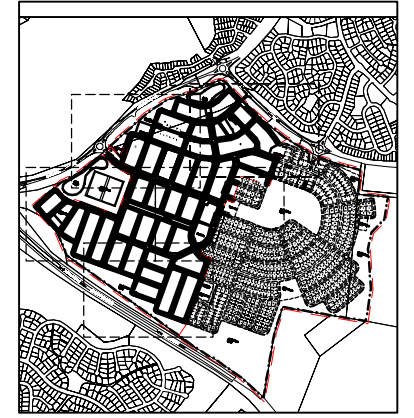
EXCLUDING URBAN CORE BLOCKS
10.5m WIDE AND LESS

RATING	NO. OF BLOCKS	% OF BLOCKS
⑤	169	34.1%
④	196	39.5%
③	48	9.6%
②	36	7.2%
①	48	9.6%
TOTAL	497	100%

JOINS DRAWING EDP1-PL-EA 14.4

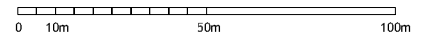


Key Plan



Issue	Date	Amendment
00	26/3/08	DA Submission
01	30/6/08	2nd circulation inc. Agency Comments
02	25/7/08	Incorporating Agency Comments
03	28/10/08	Vary 01 - section AG

SCALE = 1:2000@A3

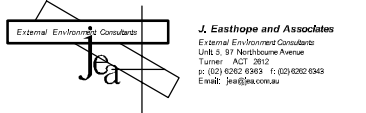


Joint Venture Partners



Joint venture managed by CIC Limited

Project Consultants



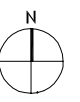
Project

**CRACE
ESTATE DEVELOPMENT PLAN
DEVELOPMENT APPLICATION**

Drawing Title

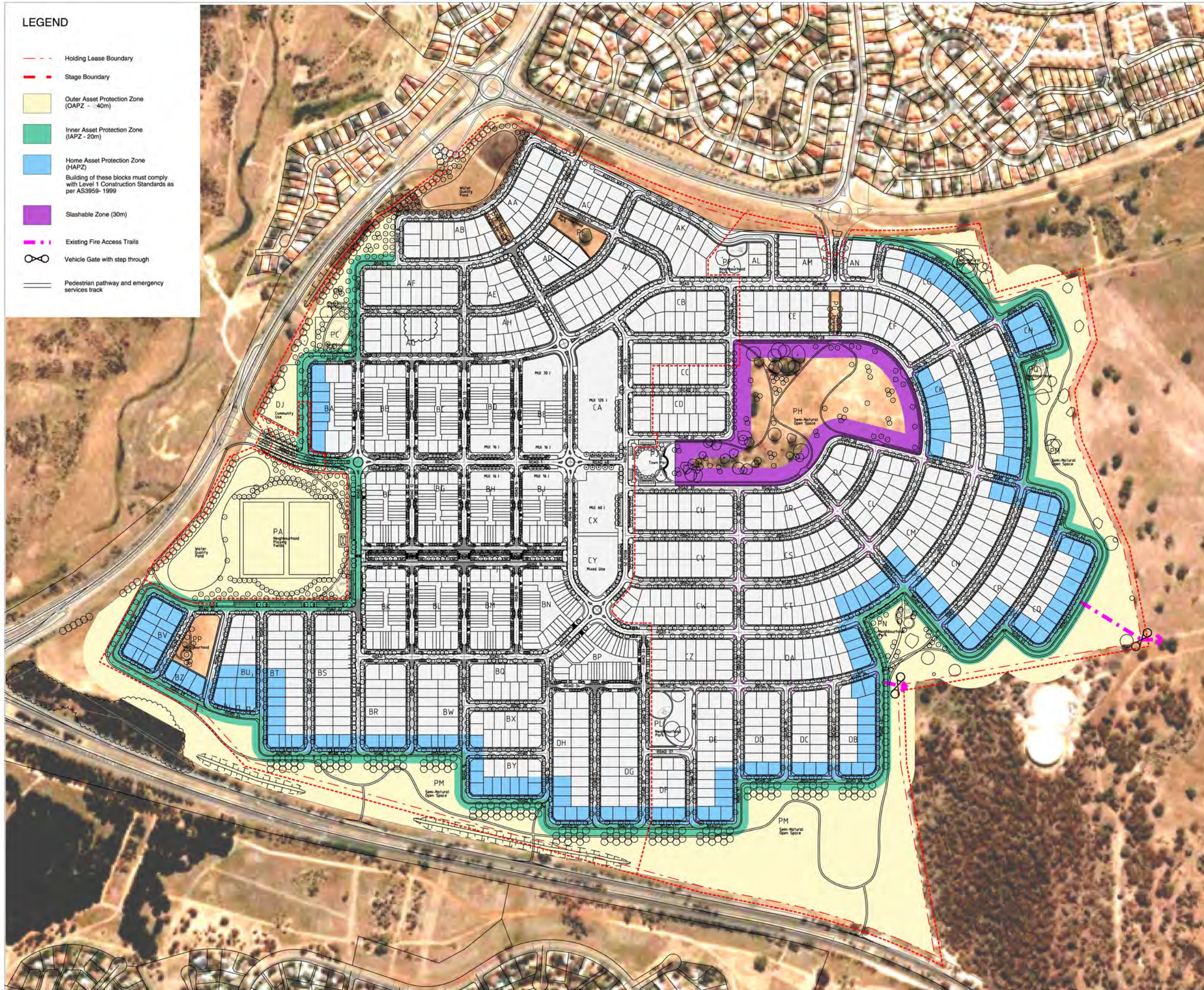
**Energy Audit
STAGE 1**

Scale	1:2000 @ A3
Drawn	IM
Checked	JE
Approved	JE
Job No	4431
Drawing Number	EDP1-PL-EA-14.5
Plan No.	14.5



LEGEND

- - - Holding Lease Boundary
- - - Stage Boundary
- Outer Asset Protection Zone (OAPZ - 40m)
- Inner Asset Protection Zone (IAPZ - 20m)
- Home Asset Protection Zone (HAPZ)
Building of these blocks must comply with Level 1 Construction Standards as per AS3959- 1999
- Slashable Zone (30m)
- - - Existing Fire Access Trails
- Vehicle Gate with step through
- Pedestrian pathway and emergency services track



Key Plan



Issue	Date	Amendment
00	30.06.08	2nd Circulation inc. Agency Comments
01	24.07.08	Incorporating Agency Comments
02	28.10.08	Vary 01 - Section AG

Joint Venture Partners



Joint venture managed by CIC Limited

Project Consultants

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Tract

Project

**CRACE
ESTATE DEVELOPMENT PLAN
DEVELOPMENT APPLICATION**

Drawing Title

**Bushfire Management
Plan**
Sheet 1 of 2

Scale	1:6000
Drawn	AF / CN
Checked	GG
Approved	GG
Job No	207010
Drawing Number	EDP1-LA-BMP-15.1
Plan No.	15.1 Issue 02

