



Land (Planning and Environment) Act 1991

# Variation to the Territory Plan No. 231

East Gungahlin  
Suburbs of Kenny, Throsby,  
Part Harrison and  
Goorooyarroo Nature Reserve

August 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 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 six new suburbs namely, Bonner, Casey, Forde, Jacka, Moncrieff, and Taylor.

To guide the protection and management of species and ecological communities declared threatened under the *Nature Conservation Act 1980* Action Plans have been prepared. In April 2004, the Government released the *Lowland Woodland Conservation Strategy, Action Plan No 27 (LWCS)*. A *Lowland Native Grassland Conservation Strategy* has also been prepared (Action Plan 28).

The LWCS reflects the regional and national policy context for the conservation of biodiversity. The LWCS concluded that biodiversity would be maintained by avoiding urban development in areas containing large areas of native woodlands and grasslands. This approach reflects increased understanding of the natural resources of the ACT. The Government has already moved to protect significant areas of native vegetation and threatened species. Since 1988, significant areas of land previously zoned for urban use (including residential, commercial and community purposes) have been added to the ACT nature conservation estate, these include Mulligans Flat Nature Reserve (300ha, 1994), the Gungahlin grassland reserves (360 ha, 1995) and with other minor adjustments, a total of 740ha has been protected.

The Government has decided to protect approximately 1,000 hectares of Yellow Box - Red Gum woodlands in Goorooyaroo Nature Reserve (East Gungahlin)

and Callum Brae (Jerrabomberra Valley). The ACT Planning and Land Authority (the Authority) has received a recommendation from the Conservator of Flora and Fauna to amend the Public Land (nature reserve) boundaries on the Territory Plan Map to reflect the Government's decision.

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.

There is significant urban development occurring in Gungahlin within the Ginninderra and Gungaderra Creek Catchment. In addition to development in Gungahlin, the *Canberra Spatial Plan* recommends future growth in the ACT through redevelopment within the existing town centres and Central Canberra, as well as greenfields development in the Molonglo Valley, and the Kowen Plateau.

This Variation will form the basis of further detailed planning, taking the form of concept plans and estate development plans. Also of relevance to future development are land use policies, design and siting codes, and any relevant principles and policies for Defined Land. Proposed commercial centres, major public open space and conservation areas, may also require the preparation of centre master plans and plans of management.

## **1.2 Preliminary Assessment**

Under part 4 of the Land Act a Preliminary Assessment (PA) was prepared in association with the variation. The PA (*Kenny, Part Throsby, Part Harrison & Gorooyarroo Nature Reserve, July 2004*) examined the potential impact of the proposed changes on the physical, natural and human environments. It focused on that part of the subject land that is currently not "defined" land under the Territory Plan, comprising the Gorooyarroo Nature Reserve, Kenny and the eastern part of Throsby. It was confined to these areas because the balance of the land affected by this variation was the subject of previous environmental assessment in association with Variation No.53 – District of Gungahlin, Gungahlin Town Centre and Central Area, 1995.

An evaluation of the PA by the delegate of the Minister for the Environment was undertaken and concluded that the PA was adequate and no further environmental impact assessment was required. The PA evaluation report made a number of recommendations, which have been taken into consideration in finalising the Variation.

## **1.3 Current Territory 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 East Gungahlin, includes the proposed suburbs of Throsby, Kenny and part Harrison in the Residential policy. Major Roads shown on the current Territory

Plan Map are Horse Park Drive (the major east-west arterial), Sandford Street and Flemington Road. A Group Centre is identified in Kenny and a Local Centre in Throsby. The Territory Plan also provides for a high school and a primary school sites in Kenny together with district playing fields. Community Facility sites, including one for a primary school, are also identified in Throsby. Higher density residential areas (B9 areas) are identified adjacent to community and commercial sites in Throsby. Urban Open Space policy areas align with the Sullivans Creek corridor through Kenny. A Hills Ridges and Buffer Areas corridor runs through Throsby. The Mulligans Flat Nature Reserve lies adjacent to the suburb of Throsby and is included in 'Public Land'.

A 'Defined Land ' Overlay (refer section 2.6) currently applies to land in the north west of Throsby, where land use policy boundaries have already been refined under the defined land process and the principles and policies in Variation 53 Gungahlin Town Centre and Central Area. However, the Overlay does not currently extend to land south of the Wells Station Heritage Precinct in the suburb of Harrison.

Most of the land outside the urban area is included in the Hills Ridges and Buffer Areas Policy except for a portion in the southeast corner, which is a Designated Area under the National Capital Plan (NCP). This area is included in the Inner Hills (refer figure 23 of the NCP) and the Designated Area status is reflected in the Territory Plan.

An Industrial policy applies to land in the southwest corner and incorporates the Mitchell industrial area. An area of Hills Ridges and Buffer Areas and Broadacre policy lies adjacent to the industrial area.

The existing Land Use Policy for the area subject to this variation is shown in **Figure 1.1**.

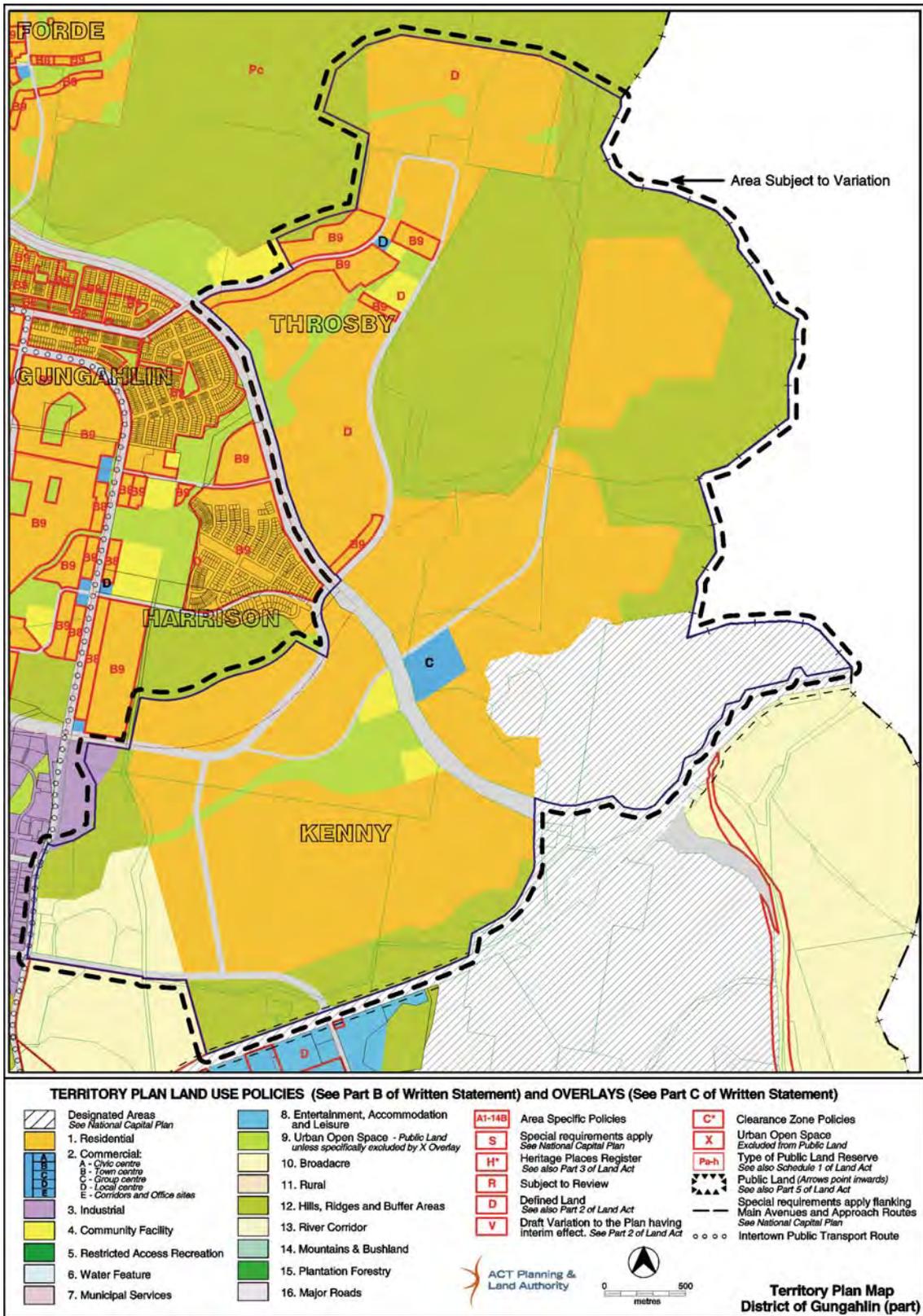


Figure 1.1 – Territory Plan Current Land Use Policies

## **1.4 Throsby and part Harrison**

Variation No.53 imposed a “defined land” overlay and adopted principles and policies for the development of the western part of Throsby and the southern part of Harrison. Since this variation commenced in 1995, more emphasis has been placed on sustainable design, and more detailed outline planning for individual suburbs. This approach was most recently embodied in Variation No.130 – North Gungahlin which commenced in February 2004. To ensure that these parts of Harrison and Throsby benefit from a planning approach consistent with the adjoining new suburbs, they have been added to this variation.

## **1.5 Planning Principles**

### **1.5.1 General**

The principal planning philosophy supporting the Variation is to provide for the integration of the natural environment and human activity in the form of urban development on a sustainable basis.

The planning principles and policies underpinning this variation are:

- development should be sustainable in terms of ecological, cultural, social and economic considerations.
- to establish conservation areas and provide for management arrangements which are sufficient to conserve threatened fauna, woodlands and grasslands.
- to ensure land uses adjacent to conservation areas do not have significant adverse impacts on threatened species.
- the landscape setting and values of the site should be recognised and enhanced. Existing significant landscape features will be retained.
- the local neighbourhood should be based on a walkable radius of 400m from an activity node, such as a local centre, park or community facility.
- residential areas should be arranged in a series of inter-connected suburbs, each with their own local centre, typically adjoining a primary school site and open space corridor.
- mixed uses (Residential B8, B9) will be permitted adjacent to commercial centres and other key locations.
- group centres serving larger populations should be well located on major roads in order to serve a cluster of suburbs.
- an integrated cycling route network should be created within and between communities consistent with national standards.
- the open space network should connect key destinations such as local centres, group centres, schools, parks, community facilities, ovals, ponds and hilltop lookouts.

- the road hierarchy should be clearly legible and provide good and safe access to all users.
- the pattern of urban development should encourage high levels of public transport usage.
- the links between sustainable urban water management and downstream ecological impacts on flora and fauna should be recognised. The potential for urban development to alter flow rates and degraded water quality should be addressed and appropriate sustainable urban water management measures adopted accordingly.
- Aboriginal and European heritage places will be recognised and significant sites conserved in public open space where appropriate. Land uses adjacent to places to be conserved are not to have significant adverse impacts on the retention of the place.
- Conservation area will be part of the overall landscape character of East Gungahlin. Strategies will be developed at the detail planning stage to protect the interface of conservation from urban development impacts.

The changes to the Territory Plan Map are detailed at Part 2 of the variation.

### **1.5.2 Residential Areas**

The overall landscape and visual character of future residential areas in the northeast part of Gungahlin will be significantly enhanced through the creation of the Gorooyarroo Nature Reserve. The nature reserve will protect significant areas of very high conservation value Yellow Box/Red Gum Grassy Woodlands. The variation will protect this land from development by changing the current Residential Land Use Policy to Hills Ridges and Buffer Land Use Policy Area. This change will reduce the amount of land available for residential development by approximately 300 hectares. This reduction will be offset to some extent, by developing the remaining residential land at higher densities.

The variation provides for a mixture of housing types with medium density housing up to three storeys, identified by Residential B9 Area Specific Policy, close to Kenny Group Centre, Throsby Local Centre, Kenny primary school, the intersection of Horse Park Drive and Wells Station Drive, and along the major roads within Throsby. It is estimated that this will comprise around 20% of the total housing yield. A Residential B9 Area Specific Policy is also applied to part Harrison, so as to be consistent with the existing B9 Area Specific Policy for the balance of Harrison and as it is located adjacent to a major (transport) road.

The variation also applies Residential B8 Area Specific Policy for land adjacent to the Kenny primary school.

### **1.5.3 Shopping Centres**

The variation provides for one Group Centre in Kenny. The retail structure is consistent with the BIS Retail Study released in early 1999 and the outcomes of community consultation processes. The group centre developments will be carefully planned, being aligned with the staged development of Gungahlin Centre. Site area will be in the range 4,000m<sup>2</sup> to 10,000m<sup>2</sup> with a final determination made close to the time of its release. Effective pedestrian and bicycle access will be integrated with the proposed group centre development, as will strong public transport links. Kenny Group Centre will incorporate significant opportunities for the co-location of 'urban housing' ie. higher density multi-unit residential developments to encourage an effective mixed-use character in accordance with the "urban village" concept. The land use policy of sites close to the retail core will permit a vertical mix of commercial and residential uses.

The Kenny Group 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. Throsby Local Centre will also be supported by concentrations of medium density housing which will foster the 'mixed use' characteristics of the suburb.

The Variation relocates the Commercial C (Group Centre) from the eastern side of Horse Park Drive to the western side of Horse Park Drive.

### **1.5.4 Community Facilities**

The variation identifies community facility sites in Kenny and Throsby. These are located close to commercial centres or major roads thus providing good access to public transport, open space, and schools, and a sense of community. Current site identification is based on current estimated demand. Detailed facilities planning and provision will be based on estimated demand and demographic characteristics before and during the development of an area.

Proposed social infrastructure within the East Gungahlin includes:

- One denominational high school located in Throsby and government primary schools in Kenny and Throsby; and
- A Group Centre in Kenny and a Local Centre in Throsby.

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

The Variation deletes the government high school site previously identified in Kenny (now located in Harrison) and relocates the government primary school site more centrally within the suburb.

### **1.5.5 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. A linear open space system along the Sullivans Creek floodway is designed not only to protect the natural drainage system and major ridgelines, but also to create the opportunity for an off-road movement system suitable for pedestrians and cyclists. An open space network is indicated through south Throsby and Kenny and playing fields are identified adjacent to the Kenny primary school.

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.

### **1.5.6 Ecological Values – Gorooyarroo Nature Reserve and Hills Ridges and Buffer Areas**

The ACT Flora and Fauna Committee, established under the *Nature Conservation Act 1980* is responsible for assessing the conservation status of flora and fauna in the ACT, and the ecological significance of potentially threatening processes. Where in its opinion a species or community is under threat, a recommendation for declaration is made, and if adopted, an Action Plan is prepared in response by the Conservator of Flora and Fauna. An Action Plan includes proposals for the identification, protection and survival of a threatened species or community.

In April 2004 the Government launched the *ACT Lowland Woodland Conservation Strategy (Action Plan No 27)* that addresses the conservation needs of an endangered ecological community and the threatened plants and animals that are dependent upon it. Previously each species had a separate Action Plan, which inhibited consideration of the management requirements of multiple species in an integrated way. Since then, a *Lowland Native Grassland Conservation Strategy*, which focuses on native grasslands and threatened grassland animals and plants, has also been proposed. It replaces previous Action Plans for animals and plants.

The following is a summary of the natural resources of the area subject to this variation.

#### **(a) Yellow Box-Red Gum Grassy Woodlands**

The Gorooyarroo nature Reserve contains significant areas of Yellow Box/Red Gum grassy woodlands and threatened animals and plants.

The ACT Woodland Conservation Strategy identifies the Gorooyarroo area of east Gungahlin as part of a larger woodland complex in Gungahlin that also includes the Mulligans Flat Nature Reserve and is referred to as the Gorooyarroo-Mulligans flat Unit in the Strategy.

About 360 ha of Yellow Box/Red Gum Grassy Woodland together with other woodlands types with significant conservation values are protected within the Mulligans Flat Nature Reserve. Much of the Unit is in very good condition, including areas of secondary grassland that are derived from Yellow Box-Red Gum. The unit contains one of the largest, most intact and contiguous areas of Yellow Box Red Gum grassy woodlands and other woodland types remaining in the ACT, providing habitat for threatened birds and other species, with records of Hooded Robin, Regent Honeyeater and Brown Treecreeper and other species of declining woodland birds.

In the Gooroo part of the Unit in east Gungahlin, there is an extensive area of Yellow Box/Red Gum Grassy Woodland of very high conservation value. The Lowland Woodland Conservation Strategy identifies that a key planning and conservation objective is to finalise the boundary between urban development in east Gungahlin and these Gooroo woodlands. The boundary has now been finalised and approximately 750 hectares of high conservation value Yellow Box/Red Gum grassy woodlands and other woodlands will be protected in a new nature reserve to be known as the Goorooyaroo Nature Reserve. Ecological connectivity from Mulligans Flat nature Reserve, through Gooroo to Mt Majura will be achieved with the creation of the new nature reserve.

Part of the new nature reserve is located within the existing Hills Ridges and Buffer Areas policy on the Territory Plan or the inner hills (Designated Area) on the National Capital Plan. However, a significant proportion (approximately 300 hectares) is currently covered by the Residential Land Use Policy. The variation seeks to protect this land from development by changing the current Residential Land Use Policy to the Hills Ridges and Buffer Areas Policy. At the same time the boundary of the nature reserve will be defined by including the Public Land 'pc' (nature reserve) Overlay on the Territory Plan Map.

The East Gungahlin Area also contains other lowland woodlands, particularly south of Horse Park Drive within the future suburb of Kenny. These Kenny woodlands consist of open woodland and scattered trees of mature Yellow Box, Blakely's Red Gum, Apple Box and some candlebark over a predominantly exotic understorey and they represent the original natural grassland frost hollow areas.

Most of these areas of woodland in Kenny, outside the Goorooyaroo Nature Reserve, are classified as lowland woodland vegetation that is in part substantially and severely modified (*ACT Lowland Conservation Strategy 2003*). These woodlands represent fragmented remnants where the native understorey has been destroyed or so highly modified that the remnants no longer represent the community of interrelated native plants and animals. The generally poor condition of these woodlands reflect the high level of clearance due to pastoral activities. Although some native plants may remain, for most of these areas the native understorey is effectively irretrievable. However, the tree cover may still be valuable habitat particularly for birds.

Some woodland remnants will be retained in urban parks or roadside reserves or as part of the landscape setting for community purposes or other less

intensive land uses. Conservation of these woodlands in Kenny will be addressed at the Concept Planning stage for Kenny.

The option of securing a parcel of land (25ha) adjacent to the northeastern boundary of Goorooyaroo Nature Reserve in NSW is being explored. This land contains high quality Yellow Box/Red Gum Grassy Woodland and Red Stringybark Forest with a largely intact understorey that has been relatively undisturbed by grazing. Securing conservation management for this land will improve ecological connectivity between Goorooyaroo Nature Reserve and Mulligans Flat Nature Reserve.

**Woodland habitat value:** In the ACT, woodlands support a wide diversity of animals, including birds, bats, reptiles, ground dwelling and arboreal mammals, and invertebrates. Tree hollows developed in older trunks and branches, together with fallen timber, provide habitat for many of these species. In the better woodlands, structural complexity is created by the presence of tree hollows, trees of different ages, a mid-level shrub layer and a grassy understorey which provide nesting sites, shelter and food resources for fauna.

About fifty bird species including some that are listed as threatened species in the ACT (eg Hooded Robin, Brown Treecreeper) occur as residents or summer migrants in woodland which is important breeding habitat for many species (Taylor 1992). Many woodland birds rely on fallen timber or native shrubs as key habitat features, which are now depleted due to past land, use practices. Small fragmented patches of woodland separated from larger areas and sometimes with depleted understorey vegetation are also of reduced value to birds and other animals.

## **(b) Forestry Plantation**

In the Gooroo area adjacent to the ACT/NSW border, areas of forestry plantation have been established. These plantations will be incorporated into the Goorooyaroo Nature Reserve.

## **(c) Natural Temperate Grasslands**

In 2002 the ACT Government introduced a *New Focus for Nature Conservation in the ACT*, which includes a program to establish strategies for priority species/ecological communities. To implement this program, Environment ACT initiated a three-year review of existing Action Plans for threatened species and ecological communities. The first review in 2002-2003 resulted in the ACT Woodland Conservation Strategy covering Yellow Box-Red Gum Grassy Woodlands. The second review (*ACT Lowland Native Grassland Conservation Strategy*) concerns natural temperate grasslands, which provides habitat for threatened grassland species.

Reflecting Government Policy, the *Lowland Native Temperate Grassland Conservation Strategy 2004* (Action Plan 28) takes an integrated, Territory –

wide approach within a regional context, to the protection of the remaining lowland native grasslands. The *Strategy* seeks to maintain and improve the natural integrity of the remaining lowland native grassland ecosystems.

The Strategy recognises that in addition to natural temperate grassland, which is an endangered ecological community, there are also areas of native pasture and secondary grassland (included in the *Lowland Woodland Conservation Strategy* as it is derived from cleared woodland).

The *Lowland Native Grassland Conservation Strategy* supersedes seven separate Action Plans previously published for the natural temperate grassland ecological community, four threatened animal species associated with lowland grassland and two plant species, all declared threatened under the Nature Conservation Act 1980. The statutory requirement for the ACT Conservator of Flora and Fauna to prepare Action Plans for declared threatened species and ecological communities remains.

There were previously several small natural temperate grassland remnants totalling 1.7 hectares in the Kenny area. Since the Action Plan for natural temperate grassland was prepared in 1997 there have been changes to some grassland sites in terms of size, botanical significance rating and condition. Several sites have been destroyed and others have been degraded beyond recovery. The Kenny native grassland remnants are now classified as degraded beyond recovery.

The LWCS, Action Plan No 27 identifies an area of lowland woodland-secondary grassland of 38.3 hectares in the northeast part of the PA Area. This area will be incorporated into the Gorooyarroo Nature Reserve.

Secondary grasslands are derived from grassy woodlands or forests that have been extensively cleared of trees since European settlement, through intentional removal, dieback or prevention of natural regeneration. Reflecting their origins, secondary grasslands in the ACT are considered to be part of the Yellow Box – Red Gum Grassy Woodland endangered ecological community and are included in the *ACT Lowland Woodland Conservation Strategy*.

## **(d) Wildlife**

As detailed above, ACT woodlands support a wide diversity of animals, in particular birds. The Mulligans Flat Nature Reserve, to the north and north east of the proposed suburbs of East Gungahlin contains many of the species that occur in the area, either as residents or summer migrants. The ACT Parks and Conservation Service produced a brochure in February 2000 titled *Birds of Mulligans Flat*, which contains a comprehensive listing of the native bird species known to occur in the Nature Reserve.

Woodlands in the ACT provide important habitat for six animal species (see below) declared as threatened in the ACT under the Nature Conservation Act 1980. All of these are birds. The *ACT Lowland Woodland Conservation*

*Strategy* (Action Plan No 27) provides descriptions of bird species and the Canberra Ornithologist Group has provided records of their distribution in the ACT. Five of the bird species have been recorded in the Mulligans Flat / Gooroo area.

The Hooded Robin (*Melanodryas cucullata*) has been reported as being in decline in its known habitat range, and reported locally extinct in several areas of the ACT. Small groups have been observed in the grassy woodlands in the north of the ACT and Mulligans Flat, often with scattered Yellow Box or Blakely's Red Gum with long grass, low shrubs and fallen logs.

The Swift Parrot (*Lathamus discolor*) breeds in Tasmania and over-winters on the Australian mainland from April/May until October. Small numbers of the species have been recorded intermittently in the ACT, though not each year. They inhabit mainly dry open eucalypt forests and woodlands, usually box-ironbark communities and the Yellow Box/Red Gum Grassy Woodland community.

The Superb Parrot (*Polytelis swainsonii*) is known to occur in the ACT region, where the Yellow Box Red Gum Grassy Woodlands form the major habitat of the species. Most recorded sightings of the species in the ACT have occurred in the Hall/Kinlyside area and Mulligans Flat Nature Reserve, during their spring-summer breeding season. They are sparsely distributed between the ACT and surrounding region, coinciding with Yellow Box/Red Gum Grassy Woodland communities.

The Brown Treecreeper (*Climacteris picumnus*) is found in dry woodlands and open forest below 1000 metres. Small populations of this species occur in the northern part of the ACT, particularly in the Mulligans Flat Nature Reserve. The species is recorded as in decline since 1994, and has become locally extinct in some parts of the ACT. It is known to frequent drier forests and relatively undisturbed woodlands, where the native understorey, particularly grasses, have been preserved.

The Regent Honeyeater *Xanthomyza phrygia*, declared an endangered species in the ACT and also nationally and internationally. Yellow Box has been identified as one of the key habitat species for the Regent Honeyeater. Locally, the majority of records of the species are from naturally occurring, flowering Yellow Box/Red Gum Grassy Woodlands in the northern parts of the ACT.

Recorded occurrences in the ACT are located throughout Gungahlin and in the Mulligans Flat Nature Reserve. Once fairly common, it is now rarely observed in the ACT region, and thought to be in decline nationally since the 1920's.

The Painted Honeyeater (*Grantiella picta*) is known or suspected to occur in the ACT region and is already recognised as endangered. In the ACT, the species has historically been associated with River Oak along river systems, especially the Murrumbidgee River.

Varied Sitella (*Daphnoenositta chrysoptera*) has recently been listed as a vulnerable species and occurs in the East Gungahlin area.

The Common Dunnart *Sminthopsis murina*, locally uncommon but widely distributed across southeast Australia, has been recorded in the Mulligans Flat area.

The Eastern Grey Kangaroo *Macropus giganteus* is abundant in the ACT and occurs in all types of grassy woodland on both rural and reserve lands in the Gungahlin area. Other mammals typically found in ACT woodlands include the Swamp Wallaby *Wallabia bicolor*, Red-necked Wallaby *Macropus rufogriseus*, arboreal Brush-tailed Possum *Trichosurus vulpecula*, Sugar Glider *Petaurus breviceps*. The Echidna *Tachyglossus aculeata* is a known terrestrial woodland inhabitant in this part of the ACT.

Three species of bats *Vespadelus vulturnus*, *V. regulus* and *Nyctinomus australis* occur in lowland woodland and use hollows have formed in the branches and trunks of trees.

Thirteen reptile species have been recorded in the Mulligans Flat area, including snakes, skinks, geckos, lizards and the Long-necked Turtle *Chelodina longicollis*, in addition to eight frog species. Of these the Black-headed Snake *Unechis dwyeri*, Shingleback *Trachydosaurus rugosus*, unnamed skink *Ctenotus uber orientalis*, Spotted Burrowing Frog *Neobatrachus sudelli* and Whistling Treefrog *Litoria verreauxi* are uncommon in the ACT.

#### Striped Legless Lizard (*Delma impar*)

The Variation for part East Gungahlin has been prepared having regard to the proposal in Action Plan No. 2 to protect small areas of Striped Legless Lizard habitat within the Kenny development. However, while the Action Plan suggested that such areas might be protected along roadsides and within urban parks, the Variation retains a larger, more continuous area of habitat within suitable parts of the Broadacre Land Use Policy Area north of Sandford Street and its extension, as well as in the adjacent Hills, Ridges and Buffer Area.

This has the potential to retain up to about 34 ha of suitable habitat (*Austrostipa* or *Phalaris* pasture) on gently sloping, open terrain, with an additional area of open woodland on the hill to the north. This would be smaller than any of the other existing or proposed grassland reserves in the ACT, which conserve the species, and need not be a formal conservation reserve. It nevertheless offers the best opportunity in Kenny to conserve some habitat, which is compact, and relatively well protected from the impacts of urban development, and would be comparable in size with some areas in Victoria, which support the Striped Legless Lizard.

There is insufficient information about the species to state confidently whether a habitat area of this size would maintain a viable population in the long term. There would be the benefit, however, of maintaining a protected population in a location, which will be essentially isolated from the other grassland reserves from the viewpoint of fire risk, once the intervening development is complete.

The decision to maintain this area as Striped Legless Lizard habitat is subject to confirmation of its presence through further monitoring.

A compact habitat area on the edge of the urban development would be less prone than remnant habitat areas within the suburb to the impacts of adjacent residential development, including trampling, predation by cats and dogs and rubbish dumping. It would also be easier to establish an appropriate mowing or grazing regime, which would not conflict with other community values. The success of the habitat management would depend on finding appropriate uses within the Broadacre area, which would permit the retention of pasture with a tussock grass structure suitable for the Striped Legless Lizard. The existing use of part of the area as a radio transmitter site is one example of an appropriate use.

At the regional strategic level, the habitat retained in Kenny would complement the three existing grassland reserves in Gungahlin, as well as other proposed or potential reserves in the Jerrabomberra and Majura Valleys and an area of habitat maintained by the Commonwealth Government within the Majura Field Firing Range. This system of reserves and other habitat is consistent with the obligations of the ACT to contribute to the Natural Recovery Plan for the Striped Legless Lizard by providing an adequate cluster of conservation reserves protecting the species within the Territory.

The development of Kenny will nevertheless lead to the loss of the majority of the existing Striped Legless Lizard habitat within the area, although most of this is introduced pasture rather than natural temperate grassland. There is the option of salvaging some lizards from this area and translocating them to alternative habitat areas or using them for research and educational purposes. Any translocation would be subject to rigorous protocols, must be done in an experimental framework, and should desirably be based on the results of translocation trials conducted elsewhere (e.g. in Victoria).

The issues associated with the conservation of the Striped Legless Lizard in the Kenny area are discussed further in the report at Appendix A in the Preliminary Assessment.

### **(e) Opportunities for further specific ecological studies**

The creation of the Goorooyarroo Nature Reserve means that an area of over 1000ha, much of which contains Yellow Box/Red Gum Grassy Woodland (including the existing Mulligans Flat Nature Reserve) is protected in northeast Gungahlin. This is a significant ecological resource for the ACT community. The opportunity to undertake ecological studies that are designed to develop knowledge about woodland management practices that will improve the ecological condition of the nature reserves is to be pursued. This improved knowledge base will also assist in the detailed planning of the urban edge and ensure that the impact of residential and other developments on the adjacent nature reserve are minimized.

## 1.5.7 Urban Edge Interface

### **Bushfire**

The Authority has undertaken a Bushfire Risk Analysis in June 2004 (Refer 'Appendix B' of Preliminary Assessment Report) for the future suburb of Throsby in East Gungahlin. Both previous fire history and planning considerations adopted in other parts of Australia confirm that the proposed suburb of Throsby, particularly the northern part, is in a fire prone area. The most likely ways that bushfires could spread into the area of the proposed suburb is from the nature reserves or from Horse Park Drive, conversely, fires would be able to spread from the suburb into the reserves.

The draft Bushfire Risk Analysis Report concludes that Throsby can be developed for residential purposes and the risks can be reduced to acceptable levels by a range of measures outlined in the draft report. The report has been circulated to ACT Government Agencies and it has received in principle support for its findings.

In summary, protecting the future residential communities in Throsby from bushfire impacts will require the successful integration of policy strategies as follows:

- *Land Use Planning* – including urban design, type of use, landscaping, utilities placement, Building Code of Australia enforcement, development guidelines;
- *Bushfire Fuel Management* - including appropriate land management objectives, risk management assessments, hazard reduction strategies such as fuel removal, fuel reduction, and/or fuel isolation practices;
- *Community Awareness and Resilience* – including awareness campaigns, encouraging and supporting a self help culture, education programs, partnerships with industry and the community, Landcare and Parkcare groups, neighbourhood watch type programs, community risk advice on-line;
- *Landscape Design and Vegetation Type* – the type of vegetation found or introduced into an area can add to its bush or grass fire capability. Interface landscaping and vegetation types to reduce bushfire impacts should be included as part of all urban edge development proposals;
- *Access and Egress* – road and street design at the interface should provide safe access for fire fighting units and for easy egress for those who wish to evacuate if threatened by fire.

To ensure that the level of risk from the threat of bushfire is reduced at the interface with the new suburbs, the Variation recognises provision for buffer area or fire management zones to be incorporated into the detail design of future residential areas. These buffer areas will consist of edge roads and fuel free zones in residential area interfaces with nature reserves.

Implementation of strategies such as bushfire fuel reduction would be reflected in a fire management plan prepared by the relevant land manager. Awareness and education strategies targeted at the resident population can be implemented as the community becomes established on these interim and final interface areas.

### **Mulligans Flat Nature Reserve & Gorooyarroo Nature Reserve – Interface Issues**

The future suburb of Throsby has Mulligans Flat Nature Reserve to the north and Gorooyarroo Nature Reserve to the east of the suburb. It is important that the nature reserves are appropriately buffered against potential threats from suburban development, including weed invasion, dumping of rubbish and removal of plants. It is proposed that a buffer area (within the residential area) will contain several elements, including edge roads, appropriate fencing and a fuel free zone to create an overall buffer that fulfils both conservation protection and fire management requirements. This conservation management area will assist in reducing the potential impacts associated with nearby residential areas including the incursion of weeds, predation by domestic pets, dumping of rubbish, inappropriate access and removal of plants/timber. This buffer will also form part of the fire management zone, similar to that described earlier in this section between residential areas and Hills Ridges and Buffer land use areas or the Nature Reserve.

### Cat Containment & Native Wildlife

Under the *Domestic Animals (Cat Containment) Amendment Act 2005*, cats are required to be confined to their owners' premises in the future suburbs of Forde and Bonner. The suburbs adjoin the Mulligans Flat Nature Reserve and containment is aimed at keeping cats away from woodland habitat in the nearby nature reserve. The measures are particularly important as Mulligans Flat Nature Reserve has populations of two resident bird species, namely the Hooded Robin and the Brown Treecreeper, which are threatened with extinction.

The proposed suburb of Throsby has an interface with Mulligans Flat Nature Reserve and the Gorooyarroo Nature Reserve. As discussed in this Variation, the two reserves contain a diversity of native wildlife. Any future introduction of cat containment in Throsby will require further amendments to the *Domestic Animal Services Act 2003* and will need to be discussed with the Department of Urban Services who has administrative responsibility for Domestic Animals legislation. This issue will be considered in further detail at the Concept Planning Stage for the suburb.

### Kenny Area North East of Horse Park Drive

This area of land between Horse Park Drive and Gorooyarroo Nature Reserve, whilst not containing land with significant conservation values does provide an important interface between urban development and the reserve. Consequently, it is considered that a Broadacre Land Use Policy is the most appropriate for this area. This land use policy recognises the environmental quality of the

adjacent nature reserve whilst allowing the Territory opportunities for future development that reflects this relationship. To ensure this, development in this area will have a lower impact than the surrounding residential area and incorporate a higher ratio of landscaped or natural open space relative to the envelope of the built development. In addition, development will provide protection to adjacent nature reserve land, including provision for bushfire mitigation measures and be landscaped in sympathy with the adjacent reserve land.

### **1.5.8 Transport Network**

The transport network for the East Gungahlin and Central Area district is comprehensive, including roads, an inter-town public transport route (IPT), 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 laneways. The collector road network is designed to maximise public transport usage, with the pedestrian and cycle network linking residential areas with schools, commercial centres and recreational resources. Generally roads of collector status and above are shown on the Territory Plan map.

Of the two key roads for the East Gungahlin area, Horse Park Drive provides the trunk route in and out of the area. It protects existing and planned urban areas from traffic infiltration and directs traffic to destinations outside of Gungahlin. The Gungahlin IPT is a major public transport corridor, which runs along Flemington Road, through the Town Centre to Mirrabai Drive.

The collector road network is designed to encourage greater public transport usage and supplement the ITP system. The road network satisfies the ACTION criteria, 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.

An extensive off-road /recreation and cycle network is proposed, as part of the open space system, to serve commercial centres, schools and other activity nodes. An off-road network will also be provided serving main employment centres and connections to the ITP route.

### **1.5.9 Stormwater Management**

There is currently no stormwater infrastructure in Kenny or Throsby. Urban development in these areas will require new stormwater infrastructure to be established and there will also be the cost of upgrading existing infrastructure in North Canberra to accommodate development in the new areas. Full details are contained in the Preliminary Assessment report.

The variation introduces a more comprehensive stormwater system, where overland stormwater and flood movements are accommodated mainly in the urban open space system. 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 off road bicycle paths and walking trails, and the provision of wildlife corridors. This is consistent with current thinking where

stormwater is now regarded as a major resource rather than a problem to be exported as quickly as possible.

The ultimate stormwater drainage system for Kenny will require at least one large retardation basin to be constructed in the location shown in **Figure 2.1**. This is a large, almost treeless site, with two existing creek channels through it. The pond could be constructed with no need for tree removal.

Options for the management of stormwater from North Throsby include creation of ponds on the western side of Throsby and the upgrading of the existing Mulligans Flat Pond inside the Nature Reserve. The preferred option at this stage is for the management of stormwater (ponds) to occur within or immediately downstream of the residential area of Throsby.

Water Sensitive Urban Design (WSUD) principles are to be adopted for the development of East Gungahlin. The principal objective is to secure economic, social and environmental benefits of integrated 'water in the landscape' (including water sensitive design techniques) and 'total water cycle' based designs to achieve a balance of water across the landscape, at the block, neighbourhood, district and catchment levels.

The stormwater strategy embodied in the variation also allows the opportunity for smaller ponds to be constructed. These smaller ponds will be designed with a more natural appearance than the larger ponds, with the option of being constructed "off-line", ie to the side of the creek rather than on the line of the creek (such as the facility on David Street in O'Connor). Their benefits are related to the establishment of water features and habitats within the open space system, as well as assisting with stormwater management.

## **1.6 Changes to the Territory Plan**

This Variation applies to land on the Territory Plan Map within the suburbs currently identified as Kenny, Throsby, part Harrison, and the non-urban area of Gooroo in East Gungahlin (refer Figure 1.1). The Variation identifies the boundary of the Goorooyaroo Nature Reserve and further refines land use policy boundaries currently shown on the Territory Plan map.

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

- The Goorooyaroo Nature Reserve is identified by:
  - Changing the land use policy for approximately 300 hectares of land in the Gooroo area, from Residential to Hills Ridges and Buffer Areas,
  - applying the Public Land 'Pc' (nature reserve) Overlay to identify the boundary of the reserve, and
  - making adjustments to the Hills Ridges and Buffer Areas and Residential policies to follow the reserve boundary.

- The Mulligans Flat Nature Reserve is extended to follow the revised urban edge for Throsby.
- A stormwater management pond is proposed for Kenny.
- The Commercial C Group Centre Site is relocated from the eastern side of Horse Park Drive into Kenny.
- The proposed locations of government primary and denominational high school sites are refined with the Kenny government primary school site relocated more centrally within the suburb. The government high school in Harrison will now serve East Gungahlin and the Kenny site is no longer required.
- The Urban Open Space Policy is amended to follow the alignment of Sullivans Creek through Throsby and Kenny and identify additional areas including a site for a playing field adjacent to the proposed site for the Kenny primary school. A stormwater management pond (Water Feature Policy) is identified in the open space corridor through Kenny. These changes respond to the findings of the Stormwater Master plan for Sullivans Creek.
- The Industrial policy is expanded to incorporate a small parcel of land to the east of the Mitchell industrial area. This change creates a more logical boundary to the industrial area and is reflected in Figure 3 Part B Industrial land Use policies in the Territory Plan Written Statement by incorporating the area in the 'a' (general industry) precinct.
- The boundaries of the Hill Ridges and Buffer Areas and Residential policies between Kenny and the Federal Highway are adjusted.
- The boundaries of the Broadacre, Residential and Hills Ridges and Buffer Areas policies on the southwest corner are adjusted.
- A Residential B8 Area Specific Policy is identified adjacent to the Kenny primary school. Residential B9 Area Specific Policy areas are identified adjacent to the Kenny Group Centre, Throsby local centre, primary schools, part Harrison, the intersection of Horse Park Drive and Wells Station Drive, and along major roads in Throsby.
- A Broadacre Land Use Policy is applied to the area (approximately 23ha) northeast of Horse Park Drive in Kenny recognising the interface of this parcel of land with the Goorooyarroo Nature Reserve and the transition between urban development and nature reserve.
- A Defined Land Overlay is applied to the urban areas. The layout of these areas will be progressively amended in response to changes made by detailed Implementation Plans lodged prior to development. The Variation includes the following changes to provisions for Defined Land:
  - The defined land Overlay is extended to include the suburb of Kenny. The principles and policies to guide further detailed planning in Kenny, part Harrison and Throsby are included at Part 3. 3 of this document. For existing Defined Land in part Harrison and Throsby subject to this Variation, these principles and policies replace the ones that currently apply in Variation 53 Gungahlin Town Centre and Central Area.

The variation map indicates the land use policy boundaries as accurately as possible but may be subject to adjustments following detailed planning. The changes to the Territory Plan map are indicated in **Figure 2.1** at **Part 2** of this document.

## **1.7 Defined Land**

The Variation identifies the East Gungahlin urban area as defined land in accordance with the provisions of the Land Act. The Territory Plan Map is amended to add the defined land overlay to Kenny and those parts of Throsby and Harrison where it does not currently apply. The Variation also introduces principles and policies for Kenny and updates the principles and policies for existing defined land in part Harrison and the suburb of Throsby by replacing the ones currently applying in Variation No.53 - Gungahlin Town Centre and Central Area. 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.

It is important that the planning of an area the size of East Gungahlin is not unduly constrained during its period of development. The Defined Land process enables the Territory Plan to be progressively updated in line with the current best practices while maintaining principles and policies identified for each area. In summary, the process is:

- The land is identified as Defined Land and the principles and policies for its development are set out in the Territory Plan through the normal Plan Variation process. The draft Variation constitutes the first stage of the process and is subject to full statutory public consultation, Executive approval and possible disallowance by the Legislative Assembly;
- Detailed subdivision plans for the development of the site are prepared progressively in accordance with the principles and policies set out in the approved Variation; and
- Following the approval of subdivision plans, the Authority varies the Territory Plan by publishing a notice in the Legislation Register pursuant to section 32 of the Land Act. This Variation specifies the boundaries and purposes for which the various parts of the land may be used. On notification of the variation, the land ceases to be Defined Land.

The principles and policies for the development of Defined Land are detailed at Section 2 of this document.

## **1.8 Consultation on the Draft Variation Plan Variation**

Draft Variation No.231 was released for public comment on 23 July 2004. The closing date for comments was 3 September 2004. Written submissions received on the draft Variation were made available for public perusal.

Comments from the Conservator of Flora and Fauna received prior to the release of the draft Variation were considered in preparing the document for public release.

The Authority considered issues raised in the submissions and a report was prepared and submitted to the Minister. Reports on consultation with the Conservator of Flora and Fauna, the National Capital Authority and the ACT Heritage Council were also submitted to the Minister.

## **1.9 Revisions to the Draft Variation**

The draft Variation has been revised as follows:

- A Broadacre Land Use Policy has been applied to the area northeast of Horse Park Drive in Kenny (previously residential) to respond to community concerns regarding the interface of this parcel of land and the Goorooyarroo Nature Reserve.
- The General Policies for Kenny have been updated to reflect the above Land Use Policy changes. An additional point has been added and the plans modified.
- Additional General Planning Principles and Policies for Defined Land have been added to reflect the need for an interface between development and conservation areas
- Additional General Planning Principles and Policies for Defined Land have been added to improve ecological conditions and habitat value for threatened and declining bird species.
- Since the release of the draft Variation the Territory Plan Map has been updated in the northwest corner of Throsby, resulting in changes to the alignment of the road and configuration of the Community Facility Land Use Policy.

## **1.10 Revisions to the Recommended Final Variation**

The Recommended Final Variation has been revised as follows:

- An additional specific policy has been added for Throsby, which requires a further review of the environmental values within Goorooyarroo Nature Reserve to confirm the northern part of the suburb's land use boundaries. This is in response to a recommendation made by the Legislative Assembly's Standing Committee on Planning and Environment.
- The Residential / Broadacre land use policy boundaries to the south west of Kenny have been revised.
- The principles and policies for part Harrison have been updated and included in this Variation, from previously being refer to Variation No. 53. This has been undertaken to ensure all the principles and policies applicable to east Gungahlin are consistent and are located within a single document.

- The title of the Variation has been updated to include part Harrison, that is Variation to the Territory Plan No. 231 (East Gungahlin - suburbs of Kenny, Throsby and part Harrison and Gorooyarroo Nature Reserve) (see above).
- The General Policies, Outline Plan and Outline Plan Generators for Kenny have been updated to include part Harrison (see above).
- The areas, dwellings and population table in the Kenny and part Harrison Outline Plan has been updated accordingly (see above). The figures associated with the areas of residential and urban residential land in Kenny have also been updated as they had been incorrectly calculated in the draft Variation.
- The Variation has been updated to reflect the introduction of the *Domestic Animals (Cat Containment) Amendment Act 2005* and the release of the ACT Lowland Native Grassland Conservation Strategy (Action Plan No. 28).

## 2 VARIATION

### 2.1 Variation to the Territory Plan Map

The Territory Plan map is varied for the area shown as subject to variation as follows:

- The Goorooyarroo Nature Reserve, East Gungahlin is identified by:
  - Changing the land use policy for approximately 300 hectares of land in the Gooro area, from Residential to Hills Ridges and Buffer Areas,
  - Applying the Public Land 'Pc' (nature reserve) Overlay to identify the boundary of the reserve; and
  - making adjustments to the Hills Ridges and Buffer Areas and Residential policies to follow the reserve boundary.
- The Mulligans Flat Nature Reserve is extended along its boundary with Throsby by changing the policy from Residential to Hills Ridges and Buffer Areas and amending the Public Land 'Pc' Overlay;
- The Commercial C Group Centre Site is relocated from the eastern side of Horse park Drive into Kenny;
- The Community Facility policy is amended by deleting the site for a government high school in Kenny and relocating the government primary school site more centrally within the suburb;
- The Industrial policy is expanded to incorporate a small parcel of land to the east of the Mitchell industrial area;
- The Urban Open Space Policy is amended to follow the alignment of Sullivans Creek through Throsby and Kenny and identify additional areas including a site for a playing field adjacent to the proposed site for the Kenny primary school;
- A large stormwater management pond (Water Feature Policy) is identified in the open space corridor in Kenny;
- The boundaries of the Hill Ridges and Buffer Areas and Residential policies between Kenny and the Federal Highway are adjusted to respond to the Structure Plan;
- The boundaries of the Broadacre, Residential and Hills Ridges and Buffer Areas policies on the south-west corner are adjusted to respond to the Structure Plan;
- A Residential B8 Area Specific Policy is identified adjacent to the Kenny primary school. Residential B9 Area Specific Policy areas are identified adjacent to the Kenny Group Centre, Throsby local centre, primary schools, at the intersection of Horse Park Drive and Wells Station Drive, part Harrison, and along major roads within Throsby;
- A Broadacre Land Use Policy is applied to the area (approximately 23ha) northeast of Horse Park Drive in Kenny.
- A Defined Land Overlay is applied to the urban area.

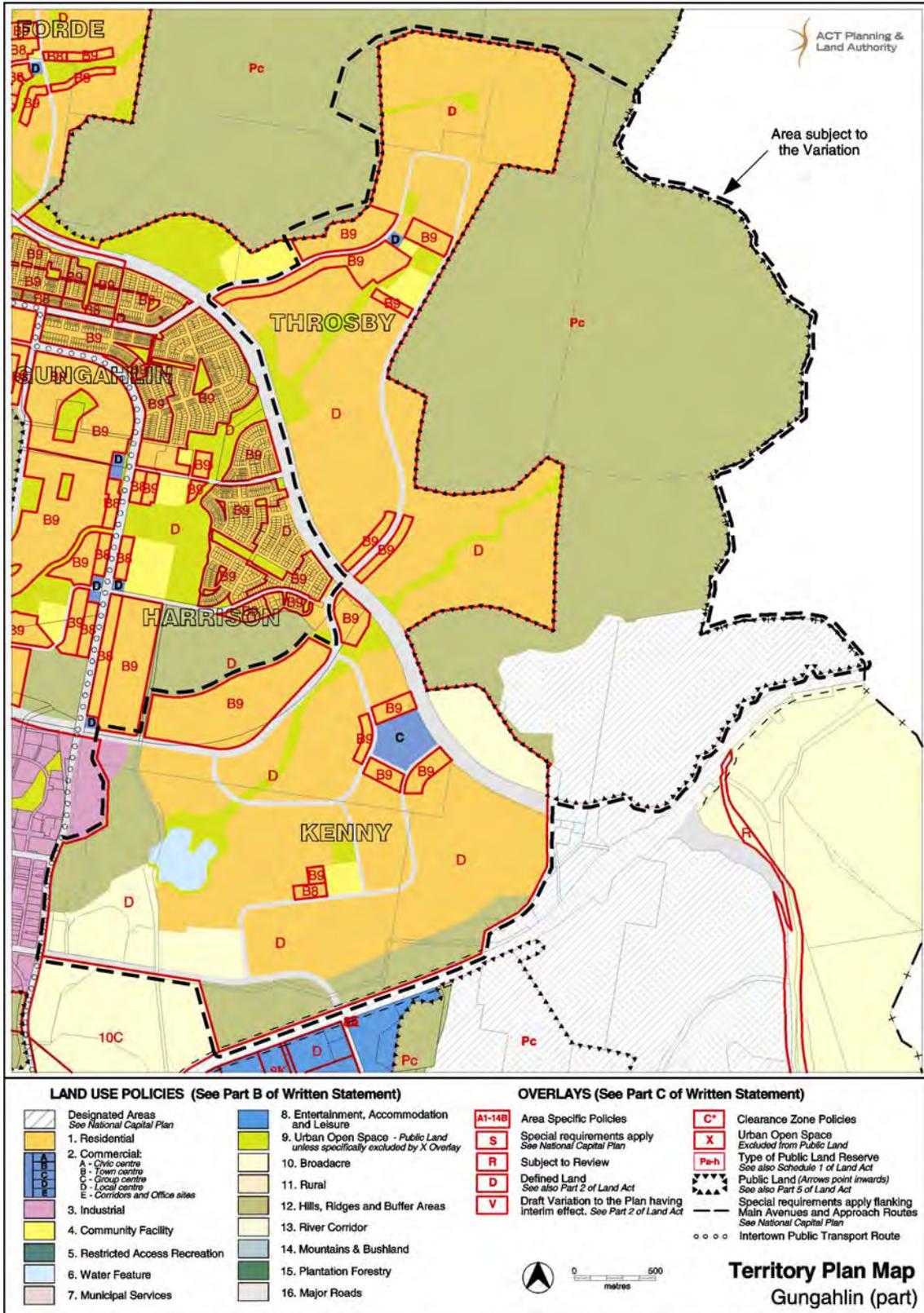


Figure 2.1 Variation to the Territory Plan Map

## 2.2 Variation to the Territory Plan Written Statement

At Part B3 Industrial Land Use Policies, Figure 3 Mitchell, amend the 'a' (General Industry) boundary in the northeast precinct to incorporate the additional land included in the Industrial Land Use Policy indicated in Figure 2.1 of the Variation document.

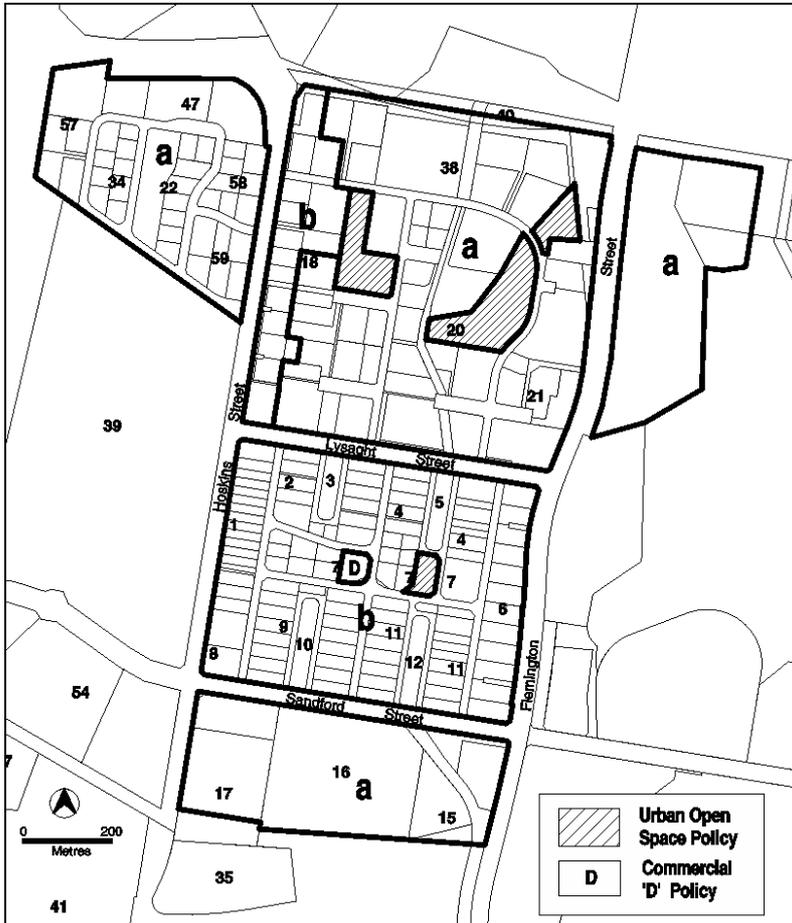


Figure 3 – Mitchell

## **2.3 Defined Land Principles and Policies – General**

The principles and policies to guide further detailed planning in Kenny and Throsby are set out below. For existing Defined Land in part Harrison and Throsby subject to this Variation, these principles and policies replace the ones that currently apply in Variation 53 Gungahlin Town Centre and Central Area.

The broad principles set out below are to guide the development of East Gungahlin. Development is to be in accordance with these broad principles. However, all of these principles should have equal weighting and none should be pre-eminent or interpreted in isolation of the planning context determined by the suite of principles.

### **2.3.1 GENERAL PLANNING PRINCIPLES AND POLICIES**

- a) To provide a series of connected, overlapping residential areas around a series of local centres, schools, community facilities and open space.
- b) To provide an urban structure that is simple, legible and flexible.
- c) To encourage a mix of land uses, including appropriate commercial, retail and other uses, which contribute to a diverse character.
- d) To maintain and enhance natural systems and protect key natural areas.
- e) To provide residential areas that are walkable, permeable and compact.
- f) To encourage development that is ecologically sustainable, and minimise pollution through design and technology of stormwater, wastewater, sewerage, traffic and other systems.
- g) To limit and discourage the use of non-renewable resources.
- h) To limit the consumption of energy and encourage the use of passive and active solar systems and energy efficient building design.
- i) To provide a variety of housing types to meet housing needs at the present time and in the future.
- j) To ensure housing densities support a viable, accessible, frequent and energy efficient public transport system.
- k) To develop a landscape that is sympathetic to the cultural and heritage values of the area and conducive to a variety of uses and natural experiences, with a character that retains the inherent site values and cultural associations.
- l) To create a landscape pattern that brings the open space network close to all urban development, providing access and amenity, and that correlates closely with the broader natural landscape setting.
- m) To maintain and create an open space system, which is representative of local natural environments, e.g. forest on protected hills, woodland on hill slopes, grassland on lowlands and wetlands in valleys and drainage lines.

## **2.3.2 ENVIRONMENT**

### **Nature Conservation**

To establish conservation areas and provide for management arrangements which are sufficient to conserve threatened fauna, woodlands and grasslands.

To ensure land uses adjacent to conservation areas do not have significant adverse impacts on threatened species.

### **Energy**

Make provision for the public transport system to be an integral part of the structure of the East Gungahlin area.

Facilitate the use of natural energy systems (solar and other alternative energy sources) in building design and public infrastructure, including street lighting.

Facilitate pedestrian and bicycle movement between East Gungahlin and Gungahlin Town Centre and adjacent areas.

Encourage reduction in energy use in the construction and operation of infrastructure.

### **Water**

Facilitate reduced water consumption by design and possible recycling of wastewater.

Encourage reduction in water consumption by the use where appropriate of native plant species, preferably indigenous to Gungahlin.

### **Building**

Facilitate recycling of waste products and use of recycled products.

Give preference to materials which;

- Cause minimum environmental impact and use of energy in terms of their extraction, manufacture and assembly;
- Can be reused recycled and which minimise site contamination, and
- Have a minimum life cycle cost.

Encourage the use of low energy systems for lighting, heating and cooling, and appliances.

Provide for solar efficiency in buildings through orientation and design.

Ensure residential uses within mixes use areas incorporate acoustic design measures to ensure provisions of the relevant Noise Control legislation are complied with.

### **2.3.3 CULTURAL PLANNING**

Reflect the cultural significance of the Gungahlin Area, including its landscape, natural environment and history of occupation, in the design of dwellings and open spaces. Encourage public appreciation of the heritage of East Gungahlin through appropriate interpretation

In the planning process, facilitate community cultural development, which reinforces the role of the site in providing and developing identity for the community, particularly with regard to the interaction between:

- Natural heritage
- Aboriginal heritage
- European heritage
- Open space systems
- Contemporary cultural diversity among residents
- Built form and streetscape design and;
- Contemporary visual, craft, performing and community arts practice.

## **Access**

Provide sites for community facilities amongst other uses where this enhances their access and community safety, and where their permanence can be assured.

Provide safe and convenient bicycle and pedestrian access between transport and car parking) and retail, nodes (public transport facilities community and recreational facilities, and to adjoining suburbs.

Discourage through traffic where it provides a barrier to pedestrians, by the provision of convenient alternatives and by street design that calms traffic.

Enhance access and reduce costs and seek opportunities for co-location or joint provision of community and recreation facilities, or their inclusion in joint ventures.

## **Equity**

Provide sites for the equitable distribution of services and facilities having regard to the level of provision in other residential areas.

Provide for a variety of affordable types and retirement housing, including public tenure.

## **Amenity**

Provide spaces, which are useable and pleasant, with spaces for quiet reflection and casual meeting.

Provide a legible residential layout with appropriate 'landmarks' and adequate signage.

## **Community Safety**

Where practicable provide natural surveillance of public areas through active frontages in the ground level of buildings with particular reference to out-of hours use.

## **Flexibility**

Provide for long-term flexibility in planning the urban area and in community use building design to accommodate different uses as needs change.

Provide opportunities for collaborative and coordinated management of facilities.

### **2.3.4 ECONOMIC**

Encourage mixed-use developments, which provide for home-based employment and small-scale workplaces.

Facilitate the development of viable local centres in the residential areas.

### **2.3.5 TRANSPORT**

Provide an appropriate hierarchy of streets and other movement systems.

Provide a street system that is clear in use, character and connectivity.

Provide slow speed environments, where necessary, to ensure a high level of pedestrian amenity.

Provide direct connections for pedestrians and cyclists to the metropolitan and district pedestrian and cycle network.

## **Parking**

Ensure car parking does not visually or functionally dominate other land uses.

Provide ample parking for people with disabilities adjacent to their destinations.

## **Public Transport**

Ensure that the residential sectors are conveniently served by public transport.

Locate public transport routes and stops within easy walking distances with numerous opportunities for boarding and alighting.

## **Pedestrians**

Provide functional, convenient, safe and attractive pedestrian routes for both access and recreation.

## **Bicycles**

Provide safe and attractive cycle routes connecting major destinations and linking to district and metropolitan cycleways.

Facilitate the use of bicycles for recreation by integrating cycleways with the open space system.

### **2.3.6 PUBLIC SPACES**

Provide public spaces with a high level of environmental amenity.

Ensure public spaces have edges that are sufficiently developed to provide appropriate surveillance.

Encourage community ownership of public spaces.

Provide a variety of public spaces, which are capable of both formal and informal use.

Provide a high quality of urban design, landscape, street furniture and lighting in all public spaces.

### **2.3.7 STORMWATER**

Develop a stormwater system that is based on principles of sustainability.

Integrate the stormwater system into the general open space.

Provide for a diverse range of vegetation types and wildlife habitats within the stormwater system and incorporate wildlife links where possible.

Encourage the development of individual block or group housing on-site stormwater storage, reuse and management systems.

Integrate overland stormwater systems into site developments, limit the piping of stormwater where practicable with the use of swale drains.

Control runoff from urban areas, both during and after the development phase in order to protect downstream water quality.

### **2.3.8 URBAN DESIGN**

Develop an urban form that is walkable, permeable and compact.

Provide for residential development that has a significant variety of housing types.

Develop an urban form that is robust and enables incremental development and flexibility.

Ensure that development responds to the natural and cultural features of the site and preserves and enhances these features where appropriate.

Base the urban form on a hierarchical network of streets, which restrict vehicular speeds.

Provide residential precincts that have a distinct urban character and are visually harmonious and legible.

Provide an urban form that has direct connections for pedestrians, cyclists and motor vehicles to adjoining areas.

Define the edges of residential precincts by peripheral streets, distinctive landscape treatment and appropriate building forms.

Ensure that the ground floor levels of higher density buildings are integrated with adjoining verge or finished site levels to enable easy access for both disabled and able-bodied persons.

### **2.3.9 URBAN STRUCTURE PRINCIPLES**

Detailed planning, based on a number of urban structure principles should provide the framework for future development.

## **East Gungahlin Land Use**

East Gungahlin Land Use is based on principles that:

- Provide a variety of residential densities that respond to the location of housing.
- Provide flexibility for change over time.
- Mix land uses as appropriate.
- Provide for the location and integration of adequate community facilities within or adjacent to local centres or for their co-location with schools.
- Provision may be made for a site for a service station north of Mitchell.

### **2.3.10 CONSERVATION**

Provision is made for the conservation of threatened species and ecological communities through reserving land for nature conservation purposes. The main principles are:

- Establish conservation areas, which are adequate in area, with a sufficient buffer from development areas.
- Establish conservation areas with suitable management arrangements to protect flora and fauna.
- Make the conservation areas part of the overall landscape character by ensuring their visual integration into the open space system.
- Ensure land uses adjacent to conservation areas do not have a significant impact on reserve.
- Where appropriate, edge roads are to be used to provide an interface between development and significant conservation areas.
- Management practices are implemented within the reserve areas to improve the ecological condition and its habitat value for threatened and declining woodland birds.

### **2.3.11 STREET AND MOVEMENT SYSTEM**

The street and movement system is based on principles that:

- Provide a hierarchy of streets and roads that are safe and appropriate to their function.
- Use the streets as means of enhancing and conserving the site's characteristics as well as reinforcing the area's component parts.
- Ensure the street system is fully integrated with the existing and proposed system for the remainder of Gungahlin and the metropolitan area.
- Improve safety, and limit vehicle speeds where appropriate, through road design.
- Ensure pedestrian and cycle route form an integral part of the overall transport system.
- Maintains provision for an Intertown Transport System.

### **2.3.12 URBAN OPEN SPACE**

The Urban open space system is based on principles that:

- Creates a hierarchy of open space, beginning with the street system, and continuing through the local parks, floodway system, large urban parks and the conservation areas.
- Provide a safe, convenient open space network that links residential areas to community facilities and other destination points and is readily accessible from residential areas.

- Ensure that the open space network is designed to provide opportunities for wildlife movement corridors, sustainable transport (walking and cycling) and overland flow paths for major storms.
- Incorporate a variety of experiences and uses within the open space system.
- Ensure open spaces are planted with appropriate local native species, including grasses where practicable.
- Encourage local residents to develop 'ownership' of open space by directly relating housing and community facilities to the open space, and by ensuring that housing faces onto open space.
- Ensure high levels of public access to and surveillance of open space by the provision of edge roads with housing facing across to the open space.
- Provide adequate and appropriate open space buffers to heritage sites of significance that aid in their interpretation and characterisation.
- Protect and enhance the cultural, natural and heritage features and characteristics of the open space system.
- Make provision for necessary public infrastructure including sewer and flood ways within the open space system.
- At appropriate locations provide access points that assist in providing an attractive interface between development and areas of nature reserve.

### **2.3.13 URBAN FORM**

The main principles that underlie and create the urban form are:

- The reserves, overland flow paths and open space system will respond to the natural landscape form and cultural values of the site.
- This diagonal system is overlaid with a slightly modified rectangular grid, with urban boulevards and east-west and north-south connector streets.
- The urban boulevards are the location for denser residential development (along major transport corridors) with a possibility of mixed uses. This is reinforced by the location of local centres on the boulevards at public transport stops.
- Where residential areas front the park system, edge roads provide protection and passive surveillance by housing fronting these edge roads.

### **2.3.14 LANDSCAPE**

The landscape is based on principles that:

- Establish a landscape that relates to the natural environment and promotes biodiversity by the use of local plant material and the incorporation of a variety of plant community and habitats.

- Establish culturally meaningful landscape settings for aboriginal and post-contact sites of significance that enhance their preservation and interpretation.

## **Conservation Areas**

Make the conservation areas part of the overall landscape character of the East Gungahlin area by ensuring their visual integration into the open space system of the area.

## **Watercourse Parks**

Use the stormwater management and resultant open space system as a formative element in the design of East Gungahlin.

### **2.3.15 LOCAL PARKS**

Provide local parks in residential areas where private open space is limited and the distance to the public open space system is greater than 200m.

## **2.4 Defined Land Principles and Policies – Suburban**

The principles and policies to guide further detailed planning for the suburbs of Kenny and Throsby and part Harrison area set out below. These principles and policies replace the ones currently applying to existing defined land in the suburb of Throsby and part Harrison included in Variation 53 Gungahlin Town Centre and Central Area.

### **2.4.1 General**

The development of East Gungahlin should incorporate sustainability principles including economic, social, cultural considerations.

The landscape setting and values of the East Gungahlin urban area are to be recognised and enhanced. Boundary hills and significant internal ridges within the urban fabric are to be protected from development and planted with native vegetation. Significant trees are to be incorporated into the urban fabric where possible.

Conservation and heritage sites such as Wells Station Road (heritage trail) and adjacent trees are to be retained and protected within open space.

Detailed planning is to take advantage of the natural, cultural and heritage characteristics of the area and extend them to create a program to support and strengthen the community's identity.

Community Facility sites should be located close to public transport and in places where, for reasons of safety, people already have a cause to congregate particularly at shopping centres and schools.

Open space, within close proximity to, retail centres, together with various other nominated sites, may be utilised for possible community and recreation facility uses. The size and type of facility will be determined at a later detailed planning stage.

Retail centres serving larger populations should be well located on major roads in order to serve a cluster of suburbs and ensure the long-term viability of the centre.

Sustainable urban water management design principles are to be adopted to secure economic, social and environmental benefits of integrated 'water in the landscape' (including water sensitive urban design techniques) and "total water cycle" based designs to achieve a better balance of water across the landscape.

An integrated cycling and pedestrian network should connect commercial centres, schools, parks, ovals and hilltops and provide links to trunk routes.

The road hierarchy should be legible and provide good and safe access to all users and encourage high levels of public transport usage.

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 and 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 open space where appropriate.

#### **2.4.2 Suburb Plans**

The Outline Plan generators diagrams and the Outline Plans indicate the manner in which the Territory Plan will be implemented for the suburbs of Kenny, part Harrison and Throsby. The Outline Plans are 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 Plans and the alignments are representative of the planning intentions.

The Outline Plans indicate the location of the various land uses proposed for the suburb and reflect the requirements shown on the Outline Plan generators diagram.

#### **2.4.3 Kenny and part Harrison**

### **General Policies (Refer to Figure 3)**

- A. A Group Centre with adjoining higher density housing is to be developed at a major road intersection with Horse Park Drive.
- B. Edge roads to be utilised wherever possible as a buffer between residential development, urban open space, nature reserves, heritage precinct and other adjoining land uses.
- C. A local bus route is to be provided through the suburb via the Group Centre, areas of higher density and primary school site, encouraging public transport usage.
- D. Opportunities are to be provided for small-scale community facility sites in open spaces in convenient locations predominantly along public transport routes.
- E. Neighbourhood oval to be located adjacent to proposed Government Primary School.
- F. A water detention feature is required as part of Sullivan's Creek Drainage Study.
- G. Higher density and mixed-use residential areas will be located adjacent to the primary school.
- H. Development is to be for Broadacre purposes that complement the reserve.

## **Specific Policies (Refer to Figures 3 and 4)**

1. Existing drainage lines to contribute to linear park
2. Cultural and / or natural heritage sites are to be preserved within open space and provide a pedestrian/cycling underpass to urban areas of Kenny east of Horse Park Drive.
3. Cycleway/pedestrian link to be provided within open space.
4. Wells Station Road (heritage trail) and adjacent trees to be retained in open space.
5. Ensure Sandford Street extension to Federal Highway connection.

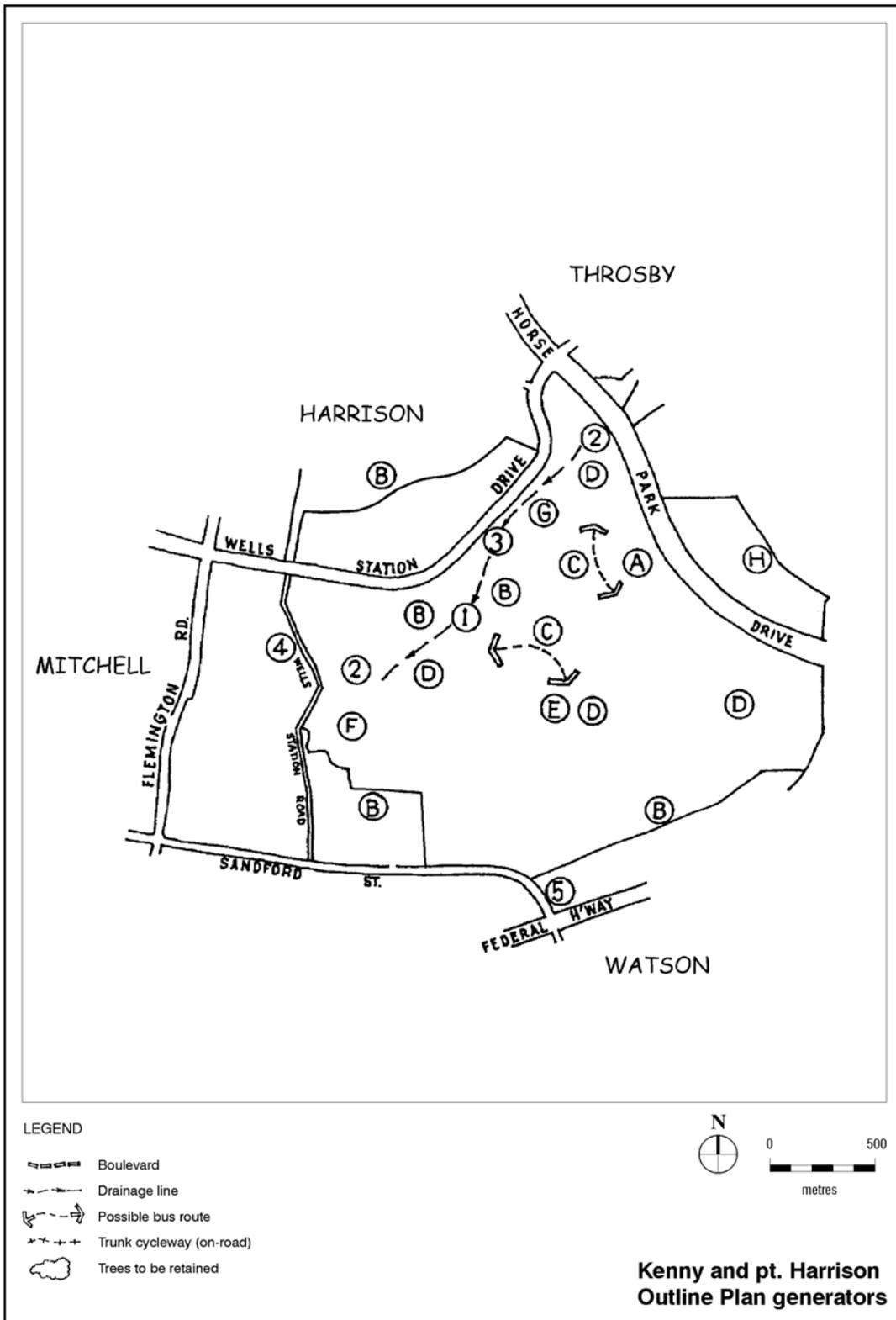
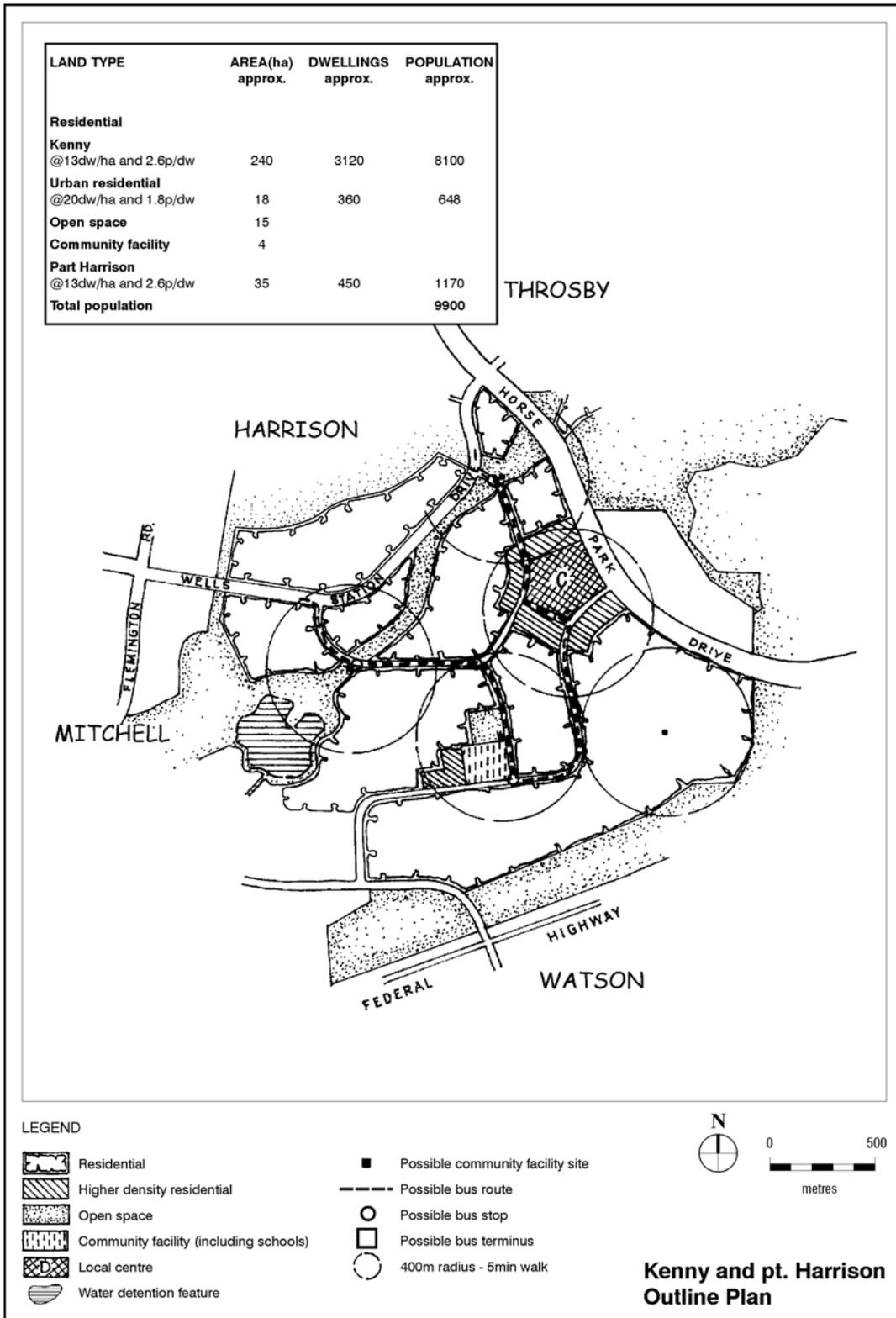


Figure 3



**Figure 4**

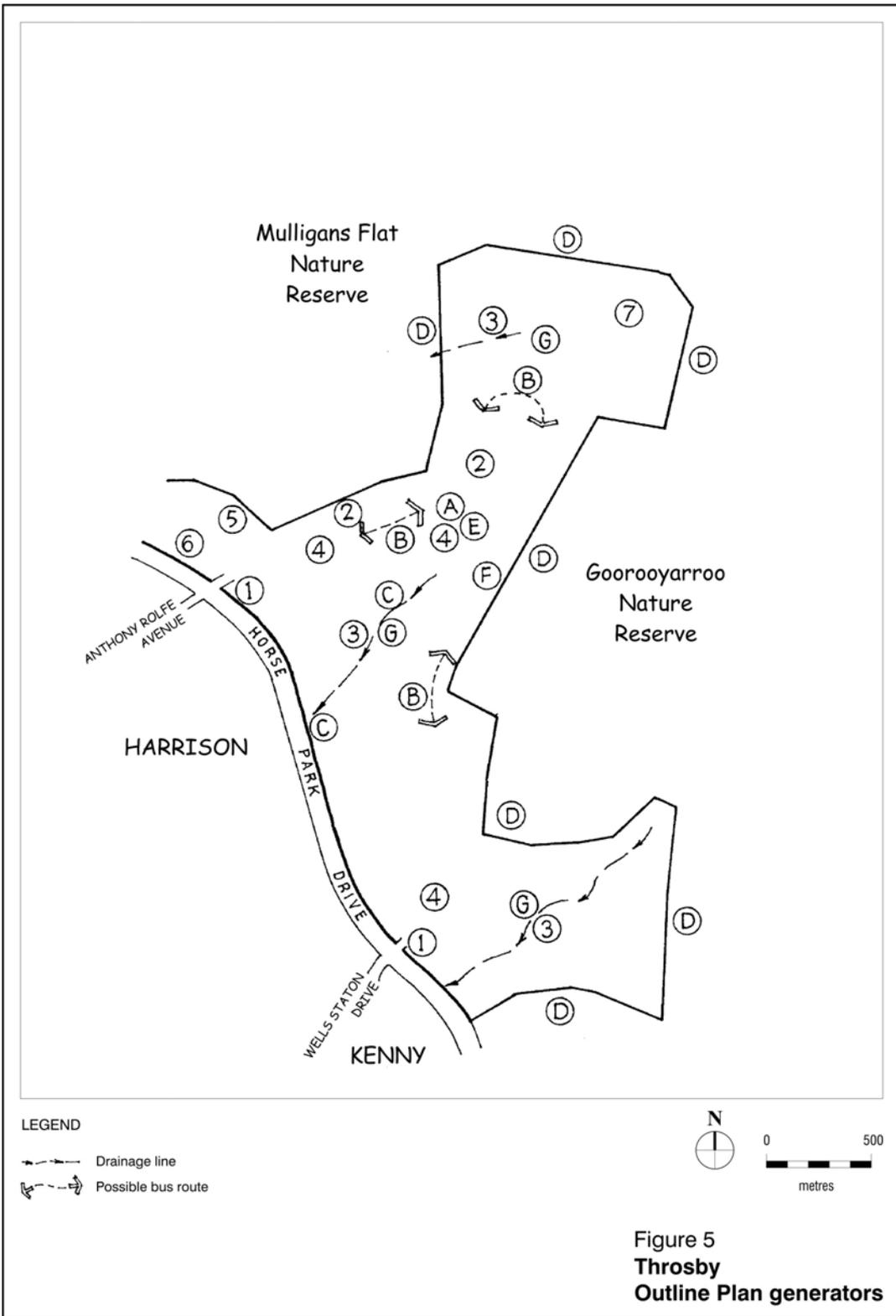
#### 2.4.4 Throsby

### **General Policies (Refer to Figure 5)**

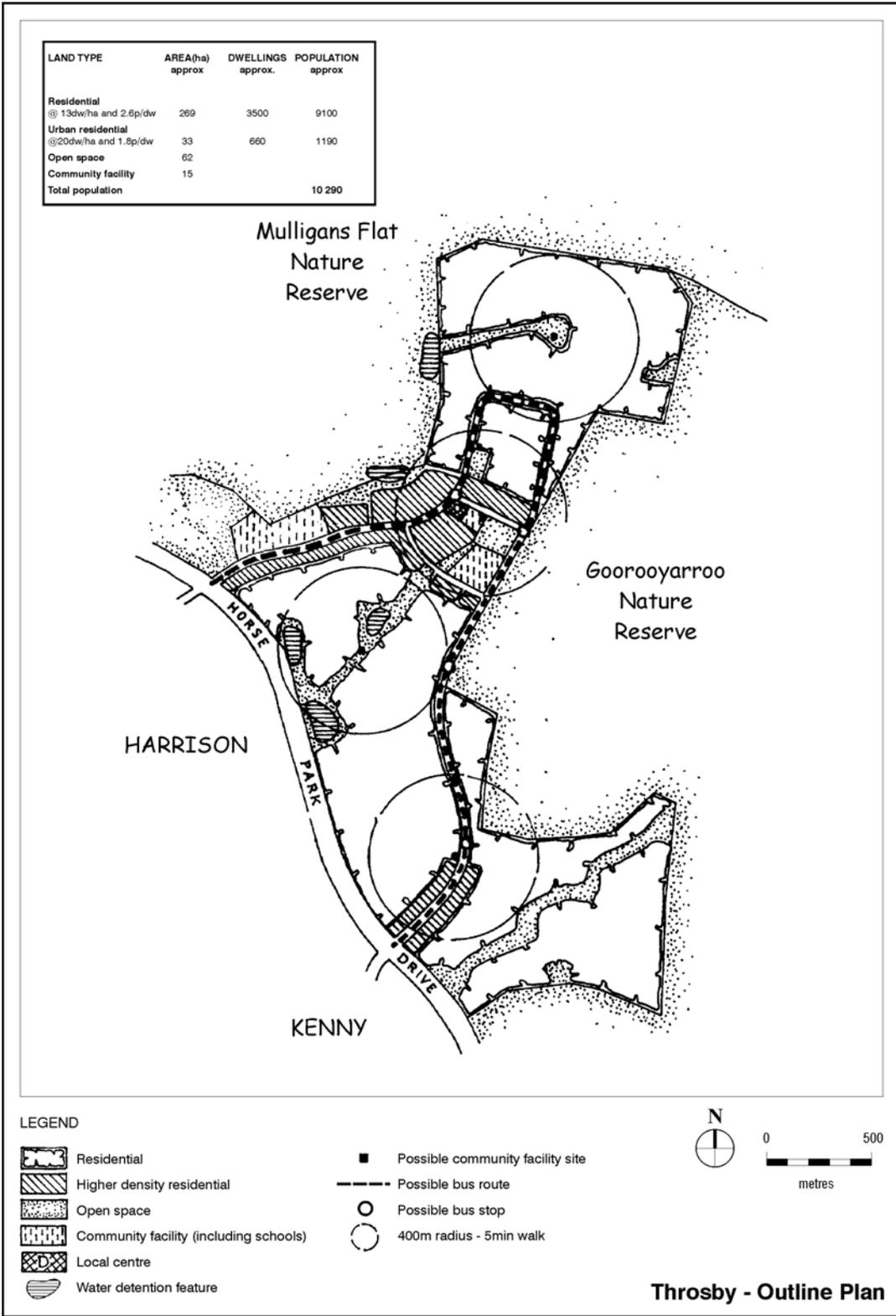
- A. The local centre will incorporate and be adjacent to areas of higher density housing and community facilities sites. Higher density areas may include provision for mixed-use development.
- B. A local bus route to be accommodated through the suburb via the local centre, areas of higher density and schools.
- C. Water detention features are required to be located within the natural drainage line in open space.
- D. Edge roads to be utilised wherever possible as a buffer between residential development, areas of open space and nature reserves.
- E. Provide an area close to the local centre for a community facility site.
- F. Government Primary school to be located centrally within the suburb.
- G. Opportunities are to be provided for small-scale community facility sites in open space in convenient locations.

### **Specific Policies (Refer Figures 5 and 6)**

- 1. Road connections to the suburb to be from extensions of Anthony Rolfe Avenue and Wells Station Drive.
- 2. Cultural natural and/or heritage sites are to be retained in open space.
- 3. Existing drainage lines to contribute to linear parks and combine pedestrian and cycleway links.
- 4. Areas of higher density housing to be located along major transport routes within the suburb and adjacent to local centre.
- 5. Site to be identified for denominational Secondary School adjacent to District Playing fields.
- 6. Suitable site to be identified for District Playing Fields.
- 7. The land uses for the northern part of Throsby with Goorooyaroo and Mulligans Flat Nature Reserves will be confirmed closer to land release, following an assessment of the environmental values within the reserves.



**Figure 5**



**Figure 6**

## 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:
GREEK	Αν χρειάζεστε διερμηνέα τηλεφωνήσετε στο
ITALIAN	Se avete bisogno di un interprete, telefonate al numero:
MALTESE	Jekk għandek bżonn l-għajnuna t'interpretu, çempel:
PERSIAN	: اگر به ترجمه شفاهی احتیاج دارید به این شماره تلفن کنید:
PORTUGUESE	Se você precisar da ajuda de um intérprete, telefone:
SERBIAN	Ako vam je potrebna pomoć prevodioca telefoniрајте:
SPANISH	Si necesita la asistencia de un intérprete, llame al:
TURKISH	Tercümana ihtiyacımız varsa lütfen telefon ediniz:
VIETNAMESE	Nếu bạn cần một người thông-ngôn hãy gọi điện-thoại:

### TRANSLATING AND INTERPRETING SERVICE

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Land (Planning and Environment) Act 1991

**Draft  
Variation to the  
Territory Plan  
No.231**

East Gungahlin  
Suburbs of Kenny and Throsby and  
Goorooyarroo Nature Reserve

July 2004



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# Foreword

Aboriginal people have lived in the region now known as the Australian Capital Territory for tens of thousands of years. The European colonisation of Australia disrupted Aboriginal traditional land use and has constrained the association of Aboriginal people with land, to their detriment. The ACT and wider region is still occupied by descendants of the Aboriginal people who lived in this area and places of Aboriginal cultural heritage provide tangible reminders of their traditional land use.

ACTPLA would like to acknowledge the relationship of Aboriginal people to the lands that are the subject of this Draft Variation to the Territory Plan and the significance of the cultural heritage places that demonstrate traditional Aboriginal land use, to the Aboriginal and wider community.

# 1. INTRODUCTION

## 1.1 Outline of the process

The Commonwealth's *Australian Capital Territory (Planning and Land Management) Act 1988* allows for the ACT Legislative Assembly to make laws to establish a Territory Planning Authority and for that Authority to prepare and administer a Territory Plan. As a result the Territory Plan came into effect in October 1993 following an extensive process of public consultation and review by a Committee of the Legislative Assembly.

The Territory Plan comprises a written statement, defined land principles and policies, and a map. The written statement contains general planning principles (at Part A), sixteen specific land use policies eg commercial, residential, urban open space, etc. (at Part B), overlay provisions (at Part C) and definitions of terms (at Part D). The Territory Plan map shows the location and extent of areas affected by the various land use policies and overlays contained in the written statement. It identifies land use policies by different colours, and overlay provisions by distinctive borders and overlay codes.

Draft variations to the Territory Plan are prepared in accordance with the *Land (Planning and Environment) Act 1991*. Following the release of the draft plan variation under s19 of the Act, submissions from the public are invited. At the conclusion of the consultation period the Planning and Land Authority submits a report on consultation and a recommended draft plan variation to the Minister for Planning for approval and referral to the Legislative Assembly Standing Committee on Planning and Environment. The Minister must take the findings of the Committee into account before deciding whether to approve the draft plan variation. If the Minister approves the draft plan variation, he will table it and associated documents in the Legislative Assembly. Unless disallowed by the Legislative Assembly within five sitting days, the plan variation commences on a day nominated by the Minister.

## 1.2 This document

This document contains the background papers in relation to the proposed variation. It comprises the following parts:

- Part 1 - This Introduction.
- Part 2 - An **Explanatory Statement**, which gives reasons for the proposed variation and describes its effect.
- Part 3 - The **Draft Plan Variation**, which details the precise changes to the Territory Plan that are proposed.

## 1.3 Public Consultation

Comments from the public are invited on the draft variation. Subject to consideration of responses received, ACTPLA proposes to submit this draft variation to the Minister for Planning in accordance with the *Land (Planning and Environment) Act, 1991*.

The documents relating to this draft plan variation may be viewed at:

- ACTPLA Customer Service Centre, Ground Floor, South Building, Dame Pattie Menzies House, 16 Challis Street, Dickson (opposite the Motor Registry) 8:30am to 4:30pm weekdays. Copies of the draft plan variation can be obtained here;
- ACT Government libraries at Belconnen, Civic, Dickson, Erindale, Griffith, Gungahlin, Kippax, Tuggeranong and Woden during normal opening hours; and
- the ACTPLA website at [www.actpla.act.gov.au/tplan/index.htm](http://www.actpla.act.gov.au/tplan/index.htm).

**Written comments** from the public are invited on the draft plan variation by **Friday 3 September 2004**. Comments should include reference to this draft variation, a return postal address, and be addressed to:

The Manager, Territory Plan Co-ordination Section  
ACT Planning and Land Authority

Comments may be submitted in one of the following ways:

- Hand deliver to:  
ACTPLA Customer Service Centre, 16 Challis Street, Dickson
- Post to:  
PO Box 1908  
CANBERRA ACT 2601
- Email: [terrplan@act.gov.au](mailto:terrplan@act.gov.au)

Copies of all written comments received will be made available for public inspection at the ACTPLA Customer Service Centre, Dickson, during normal office hours for a period of 15 business days after the closing date listed above.

## 2. EXPLANATORY STATEMENT

### 2.1 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 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 six new suburbs namely, Bonner, Casey, Forde, Jacka, Moncrieff, and Taylor.

To guide the protection and management of species and ecological communities declared threatened under the *Nature Conservation Act 1980* Action Plans have been prepared. In April 2004, the Government released the *Lowland Woodland Conservation Strategy*, Action Plan No 27 (LWCS). A *Lowland Native Grassland Conservation Strategy* is being prepared (Action Plan 28).

The LWCS reflects the regional and national policy context for the conservation of biodiversity. The LWCS concluded that biodiversity will be maintained by avoiding urban development in areas containing large areas of native woodlands and grasslands. This approach reflects increased understanding of the natural resources of the ACT. The Governments have already moved to protect significant areas of native vegetation and threatened species. Since 1988, significant areas of land previously zoned for urban use (including residential, commercial and community purposes) have been added to the ACT nature conservation estate, these include Mulligans Flat Nature Reserve (300ha, 1994), the Gungahlin grassland reserves (360 ha, 1995) and with other minor adjustments, a total of 740ha has been protected.

The Government has now decided to protect approximately 1,000 hectares of Yellow Box - Red Gum woodlands in Goorooyaroo Nature Reserve (East Gungahlin) and Callum Brae (Jerrabomberra Valley). ACTPLA has received a recommendation from the Conservator of Flora and Fauna to amend the Public Land (nature reserve) boundaries on the Territory Plan Map to reflect the Government's decision.

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.

There is significant urban development occurring in Gungahlin within the Ginninderra and Gungaderra Creek Catchment. In addition to development in Gungahlin, the *Canberra Spatial Plan* recommends future growth in the ACT through redevelopment within the existing town centres and Central Canberra, as well as greenfields development in the Molonglo Valley, and the Kowen Plateau.

Should this Variation progress, it will form the basis of further detailed planning, taking the form of development control plans and estate development plans (implementation plans). Also of relevance to future development are land use policies, design and siting codes, and any relevant principles and policies for Defined Land. Proposed commercial centres, major public open space and conservation areas, may also require the preparation of centre master plans and plans of management.

## **2.2 Preliminary Assessment**

Under part 4 of the Land Act a Preliminary Assessment (PA) has been prepared in association with this draft variation. The PA (*Kenny, Part Throsby, Part Harrison & Goorooyaroo Nature Reserve, July 2004*) examines the potential impact of the proposed changes on the physical, natural and human environments. It focuses on that part of the subject land that is currently not "defined" land under the Territory Plan, comprising the Goorooyaroo Nature Reserve, Kenny and the eastern part of Throsby. It is confined to these areas because the balance of the land affected by this variation was the subject of previous environmental assessment in association with Variation No.53 – District of Gungahlin, Gungahlin Town Centre and Central Area, 1995.

Whilst the PA has been released for comment concurrently with this Draft Variation, a separate evaluation of the PA by the delegate of the Minister for the Environment must nonetheless be undertaken. Any recommendations from the PA evaluation must be taken into consideration in formulating the final Variation.

## 2.3 Current Territory 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 East Gungahlin, includes the proposed suburbs of Throsby and Kenny in the Residential policy. Major Roads shown on the current Territory Plan Map are Horse Park Drive (the major east-west arterial), Sandford Street and Flemington Road. A Group Centre is identified in Kenny and a Local Centre in Throsby. The Territory Plan also provides for a high school and a primary school sites in Kenny together with district playing fields. Community Facility sites, including one for a primary school, are also identified in Throsby. Higher density residential areas (B9 areas) are identified adjacent to community and commercial sites in Throsby. Urban Open Space policy areas align with the Sullivans Creek corridor through Kenny. A Hills Ridges and Buffer Areas corridor runs through Throsby. The Mulligans Flat Nature Reserve lies adjacent to the suburb of Throsby and is included in 'Public Land'.

A 'Defined Land ' Overlay (refer section 2.6) currently applies to land in the north west of Throsby, where land use policy boundaries have already been refined under the defined land process and the principles and policies in Variation 53 Gungahlin Town Centre and Central Area. However, the Overlay does not currently extend to land south of the Wells Station Heritage Precinct in the suburb of Harrison.

Most of the land outside the urban area is included in the Hills Ridges and Buffer Areas Policy except for a portion in the south-east corner which is a Designated Area under the National Capital Plan (NCP). This area is included in the Inner Hills (refer figure 23 of the NCP) and the Designated Area status is reflected in the Territory Plan.

An Industrial policy applies to land in the south-west corner and incorporates the Mitchell industrial area. An area of Hills Ridges and Buffer Areas and Broadacre policy lies adjacent to the industrial area.

The existing Land Use Policy for the area subject to this variation is shown in **Figure 2.1**.

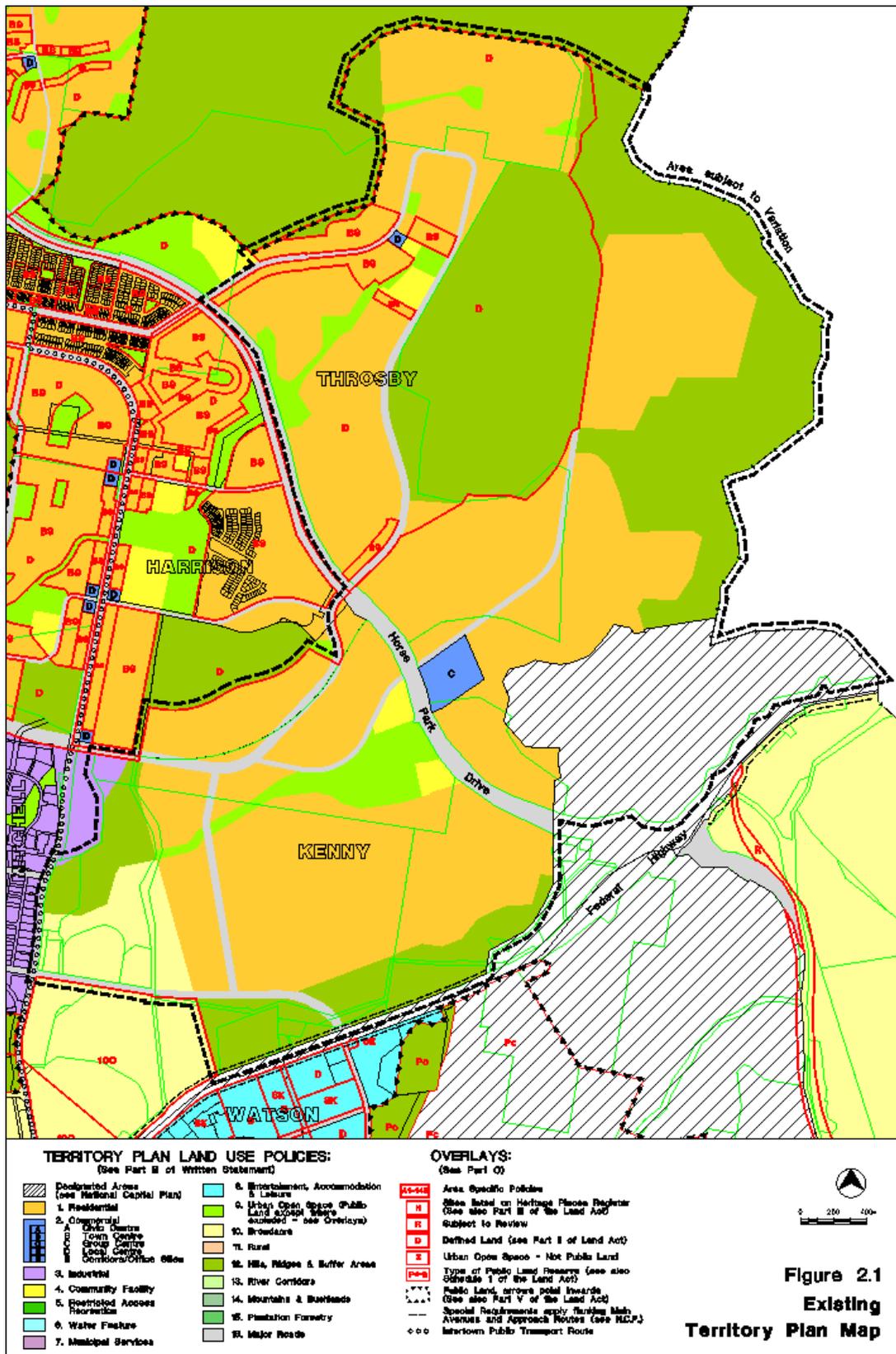


Figure 2.1 – Territory Plan Current Land Use Policies

## 2.4 Throsby

Variation No.53 imposed a “defined land” overlay and adopted principles and policies for the development of the western part of Throsby. Since this variation commenced in 1995, more emphasis has been placed on sustainable design, and more detailed outline planning for individual suburbs. This approach was most recently embodied in Variation No.130 – North Gungahlin which commenced in February 2004. To ensure that this part of Throsby benefits from a planning approach consistent with the adjoining new suburbs, it has been added to this draft variation.

## 2.5 Planning Principles

### 2.5.1 General

The principal planning philosophy supporting the draft Variation is to provide for the integration of the natural environment and human activity in the form of urban development on a sustainable basis.

The planning principles and policies underpinning this draft variation are:

- development should be sustainable in terms of ecological, cultural, social and economic considerations;
- to establish conservation areas and provide for management arrangements which are sufficient to conserve threatened fauna, woodlands and grasslands;
- to ensure land uses adjacent to conservation areas do not have significant adverse impacts on threatened species;
- the landscape setting and values of the site should be recognised and enhanced. Existing significant landscape features will be retained;
- the local neighbourhood should be based on a walkable radius of 400m from an activity node, such as a local centre, park or community facility;
- residential areas should be arranged in a series of inter-connected suburbs, each with their own local centre, typically adjoining a primary school site and open space corridor;
- mixed uses (Residential B8, B9) will be permitted adjacent to commercial centres and other key locations.;
- group centres serving larger populations should be well located on major roads in order to serve a cluster of suburbs;
- an integrated cycling route network should be created within and between communities consistent with national standards;

- the open space network should connect key destinations such as local centres, group centres, schools, parks, community facilities, ovals, ponds and hilltop lookouts;
- the road hierarchy should be clearly legible and provide good and safe access to all users;
- the pattern of urban development should encourage high levels of public transport usage;
- the links between sustainable urban water management and downstream ecological impacts on flora and fauna should be recognised. The potential for urban development to alter flow rates and degraded water quality should be addressed and appropriate sustainable urban water management measures adopted accordingly; and
- Aboriginal and European heritage places will be recognised and significant sites conserved in public open space where appropriate.
- Conservation area will be part of the overall landscape character of East Gungahlin. Strategies will be developed at the detail planning stage to protect the interface of conservation from urban development impacts.

The proposed changes to the Territory Plan Map are detailed at Part 3 of the draft variation.

### **2.5.2 Residential Areas**

The overall landscape and visual character of future residential areas in the northeast part of Gungahlin will be significantly enhanced through the creation of the Goorooyaroo Nature Reserve. The nature reserve will protect significant areas of very high conservation value Yellow Box/Red Gum Grassy Woodlands. The draft variation will protect this land from development by changing the current Residential land use policy to Hills Ridges and Buffer Land Use Policy Area. This change will reduce the amount of land available for residential development by approximately 300 hectares. This reduction will be offset to some extent, by developing the remaining residential land at higher densities.

The draft variation proposes a mixture of housing types with medium density housing up to three storeys, identified by Residential B9 Area Specific Policy, close to Kenny Group Centre, Throsby Local Centre, Kenny primary school and the intersection of Horse Park Drive and Wells Station Drive. It is estimated that this will comprise around 20% of the total housing yield.

The draft variation also proposes Residential B8 Area Specific Policy for land adjacent to the Kenny primary school. Following further detailed planning, the B8 policy may also replace the proposed B9 overlay in parts of Kenny. This policy allows for higher density mixed-use development and provides for residential development up to four storeys. Small-scale offices, restaurants, community

facilities and shops may be permitted at ground floor level. Through Variation No.130 – North Gungahlin these policies were amended so that they can be applied more generically throughout Gungahlin.

### **2.5.3 Shopping Centres**

The draft variation proposes one Group Centre in Kenny. The retail structure is consistent with the BIS Retail Study released in early 1999 and the outcomes of community consultation processes. The group centre developments will be carefully planned, being aligned with the staged development of Gungahlin Centre. Site area will be in the range 4,000m<sup>2</sup> to 10,000m<sup>2</sup> with a final determination made close to the time of its release. Effective pedestrian and bicycle access will be integrated with the proposed group centre development, as will strong public transport links. Kenny Group Centre will incorporate significant opportunities for the co-location of ‘urban housing’ ie. higher density multi-unit residential developments to encourage an effective mixed use character in accordance with the “urban village” concept. The land use policy of sites close to the retail core will permit a vertical mix of commercial and residential uses.

The Kenny Group 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. Throsby Local Centre will also be supported by concentrations of medium density housing which will foster the ‘mixed use’ characteristics of the suburb.

The draft Variation relocates the Commercial C (Group Centre) from the eastern side of Horse Park Drive to the western side of Horse Park Drive.

### **2.5.4 Community Facilities**

The draft variation identifies community facility sites in Kenny, Throsby, Harrison and Franklin. These are located close to commercial centres thus providing good access to public transport, open space, and schools, and a sense of community. Current site identification is based on current estimated demand. Detailed facilities planning and provision will be based on estimated demand and demographic characteristics before and during the development of an area.

Proposed social infrastructure within the East Gungahlin includes:

- One Government High School (reduced from two) located in Harrison that will serve the future residents of Kenny, Throsby, Harrison, Franklin and Mulanggari;
- A Group Centre in Kenny and a Local Centre in Throsby;

- Two Local Activity Centres located on Flemington Road;

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

The draft Variation deletes the government high school site in Kenny and relocates the government primary school site more centrally within the suburb.

### **2.5.5 Urban Open Space**

The draft 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. A linear open space system along the Sullivans Creek floodway is designed not only to protect the natural drainage system and major ridge lines, but also to create the opportunity for a off-road movement system suitable for pedestrians and cyclists. An open space network is indicated through south Throsby and Kenny and playing fields are identified adjacent to the Kenny primary school.

The draft 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.

### **2.5.6 Ecological Values – Gorooyarro Nature Reserve and Hills Ridges and Buffer Areas**

The ACT Flora and Fauna Committee, established under the *Nature Conservation Act 1980* is responsible for assessing the conservation status of flora and fauna in the ACT, and the ecological significance of potentially threatening processes. Where in its opinion a species or community is under threat, a recommendation for declaration is made, and if adopted, an Action Plan is prepared in response by the Conservator of Flora and Fauna. An Action Plan includes proposals for the identification, protection and survival of a threatened species or community.

In April 2004 the Government launched the *ACT Lowland Woodland Conservation Strategy (Action Plan No 27)* that addresses the conservation needs of an endangered ecological community and the threatened plants and animals that are dependent upon it. Previously each species had a separate Action Plan which inhibited consideration of the management requirements of multiple species in an integrated way. Since then a *draft Lowland Native Grassland Conservation Strategy*, that focuses on native grasslands and

threatened grassland animals and plants, has also been proposed. It will replace previous Action Plans for animals and plants.

The following is a summary of the natural resources of the area subject to this draft variation.

## **(a) Yellow Box-Red Gum Grassy Woodlands**

The Goorooyarro nature Reserve contains significant areas of Yellow Box/Red Gum grassy woodlands and threatened animals and plants.

The ACT Woodland Conservation Strategy identifies the Gooroo area of east Gungahlin as part of a larger woodland complex in Gungahlin that also includes the Mulligans Flat Nature Reserve and is referred to as the Gooroo-Mulligans flat Unit in the Strategy. About 360 ha of Yellow Box/Red Gum Grassy Woodland together with other woodlands types with significant conservation values are protected within the Mulligans Flat Nature Reserve. Much of the Unit is in very good condition, including areas of secondary grassland that are derived from Yellow Box-Red Gum. The unit contains one of the largest, most intact and contiguous areas of Yellow Box Red Gum grassy woodlands and other woodland types remaining in the ACT, providing habitat for threatened birds and other species, with records of Hooded Robin, Regent Honeyeater and Brown Treecreeper and other species of declining woodland birds.

In the Gooroo part of the Unit in east Gungahlin, there is an extensive area of Yellow Box/Red Gum Grassy Woodland of very high conservation value. The Lowland Woodland Conservation Strategy identifies that a key planning and conservation objective is to finalise the boundary between urban development in east Gungahlin and these Gooro woodlands. The boundary has now been finalised and approximately 750 hectares of high conservation value Yellow Box/Red Gum grassy woodlands and other woodlands will be protected in a new nature reserve to be known as the Goorooyarro Nature Reserve. Ecological connectivity from Mulligans Flat nature Reserve, through Gooroo to Mt Majura will be achieved with the creation of the new nature reserve.

Part of the new nature reserve is located within the existing Hills Ridges and Buffer Areas policy on the Territory Plan or the inner hills (Designated Area) on the National Capital Plan. However, a significant proportion (approximately 300 hectares) is currently covered by the Residential Land Use Policy. The draft variation proposes to protect this land from development by changing the current Residential Land Use Policy to the Hills Ridges and Buffer Areas Policy. At the same time the boundary of the nature reserve will be defined by including the Public Land 'pc' (nature reserve) Overlay on the Territory Plan Map.

The East Gungahlin Area also contains other lowland woodlands, particularly south of Horse Park Drive within the future suburb of Kenny. These Kenny woodlands consist of open woodland and scattered trees of mature Yellow Box, Blakely's Red Gum, Apple Box and some candlebark over a predominantly exotic understorey and they represent the original natural grassland frost hollow areas.

Most of these areas of woodland in Kenny, outside the proposed Goorooyaroo Nature Reserve, are classified as lowland woodland vegetation that is in part substantially and severely modified (*ACT Lowland Conservation Strategy 2003*). These woodlands represent fragmented remnants where the native understorey has been destroyed or so highly modified that the remnants no longer represent the community of interrelated native plants and animals. The generally poor condition of these woodlands reflect the high level of clearance due to pastoral activities. Although some native plants may remain, for most of these areas the native understorey is effectively irretrievable. However, the tree cover may still be valuable habitat particularly for birds.

Some woodland remnants will be retained in urban parks or roadside reserves or as part of the landscape setting for community purposes or other less intensive land uses. Conservation of these woodlands in Kenny will be addressed at the Concept Planning stage for Kenny.

**Woodland habitat value:** In the ACT, woodlands support a wide diversity of animals, including birds, bats, reptiles, ground dwelling and arboreal mammals, and invertebrates. Tree hollows developed in older trunks and branches, together with fallen timber, provide habitat for many of these species. In the better woodlands, structural complexity is created by the presence of tree hollows, trees of different ages, a mid-level shrub layer and a grassy understorey which provide nesting sites, shelter and food resources for fauna.

About fifty bird species including some that are listed as threatened species in the ACT (eg Hooded Robin, Brown Treecreeper) occur as residents or summer migrants in woodland which is important breeding habitat for many species (Taylor 1992). Many woodland birds rely on fallen timber or native shrubs as key habitat features which are now depleted due to past land use practices. Small fragmented patches of woodland separated from larger areas and sometimes with depleted understorey vegetation are also of reduced value to birds and other animals.

## **(b) Forestry Plantation**

In the Gooroo area adjacent to the ACT/NSW border, areas of forestry plantation have been established. These plantations will be incorporated into the Goorooyaroo Nature Reserve.

## **(c) Natural Temperate Grasslands**

In 2002 the ACT Government introduced a *New Focus for Nature Conservation in the ACT*, which includes a program to establish strategies for priority species/ecological communities. To implement this program, Environment ACT initiated a three-year review of existing Action Plans for threatened species and ecological communities. The first review in 2002-2003 resulted in the ACT Woodland Conservation Strategy covering Yellow Box-Red Gum Grassy Woodlands. The second review concerns natural temperate grasslands which provides habitat for threatened grassland species. The *ACT Lowland Native Grassland Conservation Strategy* is being produced under the second review covering natural temperate grassland.

Reflecting Government Policy, the *Lowland Native Temperate Grassland Conservation Strategy 2004* (Action Plan 28) takes an integrated, territory – wide approach within a regional context, to the protection of the remaining lowland native grasslands. The *Strategy* seeks to maintain and improve the natural integrity of the remaining lowland native grassland ecosystems.

The Strategy recognises that in addition to natural temperate grassland, which is an endangered ecological community, there are also areas of native pasture and secondary grassland (included in the *Lowland Woodland Conservation Strategy* as it is derived from cleared woodland).

The *Lowland Native Grassland Conservation Strategy* supersedes seven separate Action Plans previously published for the natural temperate grassland ecological community, four threatened animal species associated with lowland grassland and two plant species, all declared threatened under the Nature Conservation Act 1980. The statutory requirement for the ACT Conservator of Flora and Fauna to prepare Action Plans for declared threatened species and ecological communities remains.

There were previously several small natural temperate grassland remnants totalling 1.7 hectares in the Kenny area. Since the Action Plan for natural temperate grassland was prepared in 1997 there have been changes to some grassland sites in terms of size, botanical significance rating and condition. Several sites have been destroyed and others have been degraded beyond recovery. The Kenny native grassland remnants are now classified as degraded beyond recovery.

The LWCS, Action Plan No 27 identifies an area of lowland woodland-secondary grassland of 38.3 hectares in the northeast part of the PA Area. This area will be incorporated into the Gorooyaroo Nature Reserve.

Secondary grasslands are derived from grassy woodlands or forests that have been extensively cleared of trees since European settlement, through intentional

removal, dieback or prevention of natural regeneration. Reflecting their origins, secondary grasslands in the ACT are considered to be part of the Yellow Box – Red Gum Grassy Woodland endangered ecological community and are included in the *ACT Lowland woodland Conservation Strategy*.

## **(d) Wildlife**

As detailed above, ACT woodlands support a wide diversity of animals, in particular birds. The Mulligans Flat Nature Reserve, to the north and north east of the proposed suburbs of East Gungahlin contains many of the species that occur in the area, either as residents or summer migrants. The ACT Parks and Conservation Service produced a brochure in February 2000 titled *Birds of Mulligans Flat* which contains a comprehensive listing of the native bird species known to occur in the Nature Reserve.

Woodlands in the ACT provide important habitat for six animal species (see below) declared as threatened in the ACT under the Nature Conservation Act 1980. All of these are birds. The *ACT Lowland Woodland Conservation Strategy* (Action Plan No 27) provides descriptions of bird species and the Canberra Ornithologist Group has provided records of their distribution in the ACT. Five of the bird species have been recorded in the Mulligans Flat / Gooroo area.

The Hooded Robin (*Melanodryas cucullata*) has been reported as being in decline in its known habitat range, and reported locally extinct in several areas of the ACT. Small groups have been observed in the grassy woodlands in the north of the ACT and Mulligans Flat, often with scattered Yellow Box or Blakely's Red Gum with long grass, low shrubs and fallen logs.

The Swift Parrot (*Lathamus discolor*) breeds in Tasmania and over-winters on the Australian mainland from April/May until October. Small numbers of the species have been recorded intermittently in the ACT, though not each year. They inhabit mainly dry open eucalypt forests and woodlands, usually box-ironbark communities and the Yellow Box/Red Gum Grassy Woodland community.

The Superb Parrot (*Polytelis swainsonii*) is known to occur in the ACT region, where the Yellow Box Red Gum Grassy Woodlands form the major habitat of the species. Most recorded sightings of the species in the ACT have occurred in the Hall/Kinlyside area and Mulligans Flat Nature Reserve, during their spring-summer breeding season. They are sparsely distributed between the ACT and surrounding region, coinciding with Yellow Box/Red Gum Grassy Woodland communities.

The Brown Treecreeper (*Climacteris picumnus*) is found in dry woodlands and open forest below 1000 metres. Small populations of this species occur in the northern part of the ACT, particularly in the Mulligans Flat Nature Reserve. The

species is recorded as in decline since 1994, and has become locally extinct in some parts of the ACT. It is known to frequent drier forests and relatively undisturbed woodlands, where the native understorey, particularly grasses, have been preserved.

The Regent Honeyeater *Xanthomyza phrygia*, declared an endangered species in the ACT and also nationally and internationally. Yellow Box has been identified as one of the key habitat species for the Regent Honeyeater. Locally, the majority of records of the species are from naturally occurring, flowering Yellow Box/Red Gum Grassy Woodlands in the northern parts of the ACT.

Recorded occurrences in the ACT are located throughout Gungahlin and in the Mulligans Flat Nature Reserve. Once fairly common, it is now rarely observed in the ACT region, and thought to be in decline nationally since the 1920's.

The Painted Honeyeater (*Grantiella picta*) is known or suspected to occur in the ACT region and is already recognised as endangered. In the ACT, the species has historically been associated with River Oak along river systems, especially the Murrumbidgee River.

Varied Sitella (*Daphnoenositta chrysoptera*) has recently been listed as a vulnerable species and occurs in the East Gungahlin area.

The Common Dunnart *Sminthopsis murina*, locally uncommon but widely distributed across south-east Australia, has been recorded in the Mulligans Flat area.

The Eastern Grey Kangaroo *Macropus giganteus* is abundant in the ACT and occurs in all types of grassy woodland on both rural and reserve lands in the Gungahlin area. Other mammals typically found in ACT woodlands include the Swamp Wallaby *Wallabia bicolor*, Red-necked Wallaby *Macropus rufogriseus*, arboreal Brush-tailed Possum *Trichosurus vulpecula*, Sugar Glider *Petaurus breviceps*. The Echidna *Tachyglossus aculeata* is a known terrestrial woodland inhabitant in this part of the ACT.

Three species of bats *Vespadelus vulturnus*, *V. regulus* and *Nyctinomus australis* occur in lowland woodland and use hollows have formed in the branches and trunks of trees.

Thirteen reptile species have been recorded in the Mulligans Flat area, including snakes, skinks, geckos, lizards and the Long-necked Turtle *Chelodina longicollis*, in addition to eight frog species. Of these the Black-headed Snake *Unechis dwyeri*, Shingleback *Trachydosaurus rugosus*, unnamed skink *Ctenotus uber orientalis*, Spotted Burrowing Frog *Neobatrachus sudelli* and Whistling Treefrog *Litoria verreauxi* are uncommon in the ACT.

### Striped Legless Lizard (*Delma impar*)

The Draft Variation to the Territory Plan (DVP) for part East Gungahlin has been prepared having regard to the proposal in Action Plan No. 2 to protect small areas of Striped Legless Lizard habitat within the Kenny development. However, while the Action Plan suggested that such areas may be protected along roadsides and within urban parks, the DVP for part East Gungahlin proposes retaining a larger, more continuous area of habitat within suitable parts of the Broadacre Land Use Policy Area north of Sandford Street and its extension, as well as in the adjacent Hills, Ridges and Buffer Area.

This proposal has the potential to retain up to about 34 ha of suitable habitat (*Austrostipa* or *Phalaris* pasture) on gently sloping, open terrain, with an additional area of open woodland on the hill to the north. This would be smaller than any of the other existing or proposed grassland reserves in the ACT which conserve the species, and need not be a formal conservation reserve. It nevertheless offers the best opportunity in Kenny to conserve some habitat which is compact and relatively well protected from the impacts of urban development, and would be comparable in size with some areas in Victoria which support the Striped Legless Lizard.

There is insufficient information about the species to state confidently whether a habitat area of this size would maintain a viable population in the long term. There would be the benefit, however, of maintaining a protected population in a location which will be essentially isolated from the other grassland reserves from the viewpoint of fire risk, once the intervening development is complete. The decision to maintain this area as Striped Legless Lizard habitat is subject to confirmation of its presence through further monitoring.

A compact habitat area on the edge of the urban development would be less prone than remnant habitat areas within the suburb to the impacts of adjacent residential development, including trampling, predation by cats and dogs and rubbish dumping. It would also be easier to establish an appropriate mowing or grazing regime which would not conflict with other community values. The success of the habitat management would depend on finding appropriate uses within the Broadacre area which would permit the retention of pasture with a tussock grass structure suitable for the Striped Legless Lizard. The existing use of part of the area as a radio transmitter site is one example of an appropriate use.

At the regional strategic level, the habitat retained in Kenny would complement the three existing grassland reserves in Gungahlin, as well as other proposed or potential reserves in the Jerrabomberra and Majura Valleys and an area of habitat maintained by the Commonwealth Government within the Majura Field Firing Range. This system of reserves and other habitat is consistent with the obligations of the ACT to contribute to the Natural Recovery Plan for the Striped

Legless Lizard by providing an adequate cluster of conservation reserves protecting the species within the Territory.

The development of Kenny will nevertheless lead to the loss of the majority of the existing Striped Legless Lizard habitat within the area, although most of this is introduced pasture rather than natural temperate grassland. There is the option of salvaging some lizards from this area and translocating them to alternative habitat areas or using them for research and educational purposes. Any translocation would be subject to rigorous protocols, must be done in an experimental framework, and should desirably be based on the results of translocation trials conducted elsewhere (e.g. in Victoria).

The issues associated with the conservation of the Striped Legless Lizard in the Kenny area are discussed further in the report at Appendix A in the Preliminary Assessment.

### **2.5.7 Urban Edge Interface**

#### **Bushfire**

ACTPLA has undertaken a Bushfire Risk Analysis in June 2004 (Refer 'Appendix B' of Preliminary Assessment Report) for the future suburb of Throsby in East Gungahlin . Both previous fire history and planning considerations adopted in other parts of Australia confirm that the proposed suburb of Throsby, particularly the northern part, is in a fire prone area. The most likely ways that bushfires could spread into the area of the proposed suburb is from the nature reserves or from Horse Park Drive, conversely, fires would be able to spread from the suburb into the reserves.

The draft Bushfire Risk Analysis Report concludes that Throsby can be developed for residential purposes and the risks can be reduced to acceptable levels by a range of measures outlined in the draft report. The report has been circulated to ACT Government Agencies and it has received in principle support for its findings. The report will be finalised in August 2004 and will inform the final Variation.

In summary, protecting the future residential communities in Throsby from bushfire impacts will require the successful integration of policy strategies as follows:

- *Land Use Planning* – including urban design, type of use, landscaping, utilities placement, Building Code of Australia enforcement, development guidelines;
- *Bushfire Fuel Management* - including appropriate land management objectives, risk management assessments, hazard reduction strategies such as fuel removal, fuel reduction, and/or fuel isolation practices;

- *Community Awareness and Resilience* – including awareness campaigns, encouraging and supporting a self help culture, education programs, partnerships with industry and the community, Landcare and Parkcare groups, neighbourhood watch type programs, community risk advice on-line;
- *Landscape Design and Vegetation Type* – the type of vegetation found or introduced into an area can add to its bush or grass fire capability. Interface landscaping and vegetation types to reduce bushfire impacts should be included as part of all urban edge development proposals;
- *Access and Egress* – road and street design at the interface should provide safe access for fire fighting units and for easy egress for those who wish to evacuate if threatened by fire.

To ensure that the level of risk from the threat of bushfire is reduced at the interface with the new suburbs, the East Gungahlin Draft Variation to the Territory Plan recognises provision for buffer area or fire management zones to be incorporated into the detail design of future residential areas. These buffer areas will consist of edge roads and fuel free zones in residential area interfaces with nature reserves.

Implementation of strategies such as bushfire fuel reduction would be reflected in a fire management plan prepared by the relevant land manager. Awareness and education strategies targeted at the resident population can be implemented as the community becomes established on these interim and final interface areas.

### **Mulligans Flat Nature Reserve & Goorooyaroo Nature Reserve – Interface Issues**

The future suburb of Throsby has Mulligans Flat Nature Reserve to the north and Goorooyaroo Nature Reserve to the east of the suburb. It is important that the nature reserves are appropriately buffered against potential threats from suburban development, including weed invasion, dumping of rubbish and removal of plants. It is proposed that a buffer area (within the residential area) will contain several elements, including edge roads, appropriate fencing and a fuel free zone to create an overall buffer that fulfils both conservation protection and fire management requirements. This conservation management area will assist in reducing the potential impacts associated with nearby residential areas including the incursion of weeds, predation by domestic pets, dumping of rubbish, inappropriate access and removal of plants/timber. This buffer will also form part of the fire management zone, similar to that described earlier in this section between residential areas and Hills Ridges and Buffer land use areas or the Nature Reserve.

## Cat Containment & Native Wildlife

In March 2004 the Legislative assembly supported a motion to permanently confine cats to their owners premises in the future suburbs of Forde and Bonner. The suburbs adjoin the Mulligans Flat Nature Reserve and containment is aimed at keeping cats away from woodland habitat in the nearby nature reserve. The measures are particularly important as Mulligans Flat Nature Reserve has populations of two resident bird species, namely the Hooded Robin and the Brown Treecreeper which are threatened with extinction.

The statutory and policy issues will be finalised by Environment Act with planning issues to be handled by ACT Planning and Land Authority.

The proposed suburb of Throsby has an interface with Mulligans Flat Nature Reserve and the Goorooyaroo Nature Reserve. As discussed in this DVP, the two reserves contain a diversity of native wildlife. It is anticipated that similar to the proposed measures in Forde and Bonner, cat containment measures may also need to apply in Throsby. This issue will be considered in further detail at the Concept Planning Stage for the suburbs east of Horse park Drive.

### **2.5.8 Transport Network**

The transport network for the East Gungahlin and Central Area district is comprehensive, including roads, an inter-town public transport route (IPT), 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 laneways. The collector road network is designed to maximise public transport usage, with the pedestrian and cycle network linking residential areas with schools, 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 the East Gungahlin area, Horse Park Drive provides the trunk route in and out of the area. It protects existing and planned urban areas from traffic infiltration and directs traffic to destinations outside of Gungahlin. The Gungahlin IPT is a major public transport corridor, which runs along Flemington Road, through the Town Centre to Mirrabei Drive, and terminates at the Moncrieff Group Centre.

The collector road network is designed to encourage greater public transport usage and supplement the ITP system. The road network satisfies the ACTION criteria, 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.

An extensive off-road /recreation and cycle network is proposed, as part of the open space system, to serve commercial centres, schools and other activity nodes. An off-road network will also be provided serving main employment centres and connections to the ITP route.

### 2.5.9 Stormwater Management

There is currently no stormwater infrastructure in Kenny or Throsby. Urban development in these areas will require new stormwater infrastructure to be established and there will also be the cost of upgrading existing infrastructure in North Canberra to accommodate development in the new areas. Full details are contained in the Preliminary Assessment report.

The draft variation proposes a more comprehensive stormwater system, where overland stormwater and flood movements are accommodated mainly in the urban open space system. 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 off road bicycle paths and walking trails, and the provision of wildlife corridors. This is consistent with current thinking where stormwater is now regarded as a major resource rather than a problem to be exported as quickly as possible.

The ultimate stormwater drainage system for Kenny will require at least one large retardation basin to be constructed in the location shown in **Figure 3.1**. This is a large, almost treeless site, with two existing creek channels through it. The pond could be constructed with no need for tree removal.

Options for the management of stormwater from North Throsby include creation of ponds on the western side of Throsby and the upgrading of the existing Mulligans Flat Pond inside the Nature Reserve. The preferred option at this stage is for the management of stormwater (ponds) to occur within or immediately downstream of the residential area of Throsby.

Water Sensitive Urban Design (WSUD) principles are to be adopted for the development of East Gungahlin. The principal objective is to secure economic, social and environmental benefits of integrated 'water in the landscape' (including water sensitive design techniques) and 'total water cycle' based designs to achieve a balance of water across the landscape, at the block, neighbourhood, district and catchment levels.

The stormwater strategy embodied in the draft variation also allows the opportunity for smaller ponds to be constructed. These smaller ponds will be designed with a more natural appearance than the larger ponds, with the option of being constructed "off-line", ie to the side of the creek rather than on the line of the creek (such as the facility on David Street in O'Connor). Their benefits are related to the establishment of water features and habitats within the open space system, as well as assisting with stormwater management.

## 2.6 Proposed Changes to the Territory Plan

### 2.6.1 Proposed Changes to the Territory Plan Map

This draft Variation applies to land on the Territory Plan Map within the suburbs currently identified as Kenny, Throsby, Harrison, and the non urban area of Gooroo in East Gungahlin (refer Figure 2.1). The draft Variation proposes to identify the boundary of the Goorooyaroo Nature Reserve and further refine land use policy boundaries currently shown on the Territory Plan map.

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

- The Goorooyaroo Nature Reserve is identified by:
  - ♦ Changing the land use policy for approximately 300 hectares of land in the Gooroo area, from Residential to Hills Ridges and Buffer Areas,
  - ♦ applying the Public Land 'Pc' (nature reserve) Overlay to identify the boundary of the reserve, and
  - ♦ making adjustments to the Hills Ridges and Buffer Areas and Residential policies to follow the reserve boundary.
- The Mulligans Flat Nature Reserve is extended to follow the revised urban edge for Throsby.
- A stormwater management pond is proposed for Kenny.
- The alignment of Wells Station Drive, which has been adjusted to reduce potential impacts on the proposed Wells Station Heritage Precinct, is confirmed;
- ♦ The Commercial C Group Centre Site is relocated from the eastern side of Horse Park Drive into Kenny;
- The proposed locations of government primary and high school sites are refined. The government high school in Harrison will now serve East Gungahlin and the Kenny site is no longer required. In addition, the government primary school site in Kenny is relocated more centrally within that suburb;
- The Urban Open Space Policy is amended to follow the alignment of Sullivans Creek through Throsby and Kenny and identify additional areas including a site for a playing field adjacent to the proposed site for the Kenny primary school. A stormwater management pond (Water Feature Policy) is identified in the open space corridor through Kenny. These

changes respond to the findings of the Stormwater Masterplan for Sullivans Creek.

- The Industrial policy is expanded to incorporate a small parcel of land to the east of the Mitchell industrial area. This change creates a more logical boundary to the industrial area and is reflected in Figure 3 Part B Industrial land Use policies in the Territory Plan Written Statement by incorporating the area in the 'a' (general industry) precinct;
- The boundaries of the Hill Ridges and Buffer Areas and Residential policies between Kenny and the Federal Highway are adjusted. ;
- The boundaries of the Broadacre, Residential and Hills Ridges and Buffer Areas policies on the south-west corner are adjusted.
- A Residential B8 Overlay is identified adjacent to the Kenny primary school and a Residential B9 Overlay is identified adjacent to the Kenny Group Centre and primary school and at the intersection of Horse Park Drive and Wells Station Drive; and
- A Defined Land Overlay is applied to the urban areas. The layout of these areas will be progressively amended in response to changes made by detailed Implementation Plans lodged prior to development. The draft Variation includes the following changes to provisions for Defined Land:
  - The defined land Overlay is extended to include the suburb of Kenny. The principles and policies to guide further detailed planning in Kenny and Throsby are included at Part 3. 3 of this document. For existing Defined Land in Throsby subject to this draft Variation, these principles and policies replace the ones that currently apply in Variation 53 Gungahlin Town Centre and Central Area.
  - The Defined Land Overlay is extended to include land south of the Wells Station Heritage Precinct in the suburb of Harrison. The principles and policies in Variation 53 Gungahlin Town Centre and Central Area apply to this land.

The draft variation map indicates the proposed land use policy boundaries as accurately as possible but may be subject to adjustments following detailed planning. The proposed changes to the Territory Plan map are indicated in **Figure 3.1** at **Part 3** of this document.

## **2.7 Reasons for the Proposed Variation**

### **2.7.1 Goorooyarroo Nature Reserve**

In April 2004 the Government announced the completion of the *ACT Lowland Conservation Woodland Strategy* (Action Plan No. 27). The Strategy is a thorough assessment of lowland woodlands, including Yellow Box-Red Gum and has taken an integrated, Territory-wide approach to woodland conservation within a regional context. It provides important information and strategic priorities that will continue to inform the Government when it makes its land use decisions.

In its response to the strategy, the Government has decided to add to the ACT's nature conservation estate approximately 1,000 hectares of Yellow Box - Red Gum woodlands in a new Nature Reserve, Goorooyarroo (East Gungahlin) and Callum Brae (Jerrabomberra Valley). ACTPLA has received a recommendation from the Conservator of Flora and Fauna to amend the Public Land (nature reserve) boundaries on the Territory Plan Map to reflect the government's decision.

The Public Land Overlays on the Territory Plan Map identify the areas reserved as Public Land in accordance with the provisions of the Land Act. The management objectives for various categories of Public Land are outlined in Schedule 1 of the Land Act. The Schedule specifies that nature reserves be intended to preserve the natural environment and provide for public use for recreation education and research. The designation of land as Public Land triggers a requirement for the Conservator of Flora and Fauna to prepare a plan of management for the area. These plans address land management matters essential for conservation of the natural environment.

Public Land categories are indicated on the Territory Plan Map by overlays and relevant codes (eg 'Pa' for wilderness area, 'Pc' for nature reserve, 'Ph' for sport and recreation reserve). Additions and other changes to Public Land boundaries or categories on the Territory Plan Map require a draft Variation.

Gungahlin will provide the major focus for 'greenfield' development during the next 10 to 15 years. The draft variation responds primarily to the need to provide more detailed planning to enable locations and boundaries of land uses to be specified in greater detail than is currently shown on the Territory Plan.

In addition, significant changes in the thinking on sustainable urban developments have influenced the urban structure for Gungahlin since the originally proposed 1988 NCDC Policy Plan. The following specific considerations have formed the basis for the draft variation.

### **2.7.2 Population Trends**

The following population trends are expected to affect the demand for housing.

- An ageing population, together with increases in the formation of single-person households is likely to boost demand for higher quality medium-density and adaptable housing;
- Growth of single-parent families and a continuing need for “affordable housing”;
- Increasing numbers of home based businesses; and
- Increasing awareness by the general public of environmental issues, which in turn is likely to boost demand for inclusion of lower-impact residential designs and the use of solar energy, natural gas, rainwater collection and grey water recycling.

These trends indicate a continuing need to provide opportunities for a wide range of housing choices within both established and developing areas.

### ***Environment Impact Statement (1989) – General***

The Gungahlin Environmental Impact Statement (EIS) Final Statement January 1989, refers to an expected population for the whole of Gungahlin of approximately 80,000 – 85,000 people. This population would reside in dwellings constructed on 30,000 – 32,000 residential blocks.

The population assumptions applied in the 1989 Gungahlin EIS were:

- derived from a direct comparison with Belconnen;
- used a generation rate of 1,700 – 1,800 persons per square kilometre;
- this approximates to 6.5 – 7.0 dwellings per hectare with 2.6 persons per dwelling.

The EIS identified future trends towards lower household occupancy levels, smaller less traditional households, an aging population, and an increased number of medium density dwellings. However, the estimated population of 80,000 – 85,000 does not reflect these trends as the overall pattern of demographic change was not expected to alter substantially from that experienced in other districts.

**Table 1**

<b>1989 Draft Policy Plan</b>				<b>East Gungahlin Draft Variation</b>						
<b>Suburb</b>	Approx. Area - ha. Residential	No. of Dwellings @ 8 d/ha	No. of Persons @ 2.6 p/d +	<b>Suburb</b>	Approx Area (ha) Residential	No of Residential Dwellings @ 13d/ha	No. of Persons @ 2.6 p/d	Approx. Area (ha) B8, B9	No. of dwelling units @ 20 d/ha	No of persons @ 1.8 p/d x
<b>Kenny</b>	329	2650	<b>6900</b>	<b>Kenny</b>	260	<b>3800</b>	9800	10	<b>200</b>	360

+ 2.6 persons per dwelling is used for consistency with the EIS  
 x 1.8 persons per dwelling reflects the lower occupancy per dwelling in B8 and B9 areas.

Table 1 above shows that the approximate forecast difference in population between the 1989 EIS and the proposed part East Gungahlin Outline Plan is

about an additional 2300 persons. The difference in population is attributed to the combination of the low density (8 dwellings/hectare) assumed in the EIS Draft Policy Plan and the contemporary densities (13 to 20 dwellings/hectare) adopted for the part East Gungahlin Outline Plan and the reduced area for residential development due to provision for nature conservation.

### **2.7.3 Sustainable Development**

The term sustainability has many definitions. The *Towards a Sustainable ACT: A Discussion Paper* released in June 2002 for comment proposes the following definition. "In the ACT, sustainability is about how we meet the needs of people today without compromising the ability of future generations to meet their needs. It is an approach to decision making that recognises that social, economic and environmental issues are interconnected and decisions must incorporate each of these aspects if they are to be good decisions in the longer term."

One of the primary objectives of the draft variation is to ensure that the development of East Gungahlin incorporates sustainability principles including ecological, social, cultural and economic considerations. Ecological studies have played a major role in the planning of Gungahlin from its initial stages. As ecological knowledge has expanded there have been significant changes to the planning of Gungahlin, including the establishment and expansion of the Mulligans Flat Nature Reserve at Forde and the relocation and redesign of the town centre to conserve native grassland habitat.

Whilst the planning principles and policies recognise the importance of conservation of native grasslands and grassy woodlands, it will not be feasible to preserve remnants of endangered communities in every place they occur. Retention of remnants in urban areas may only occasionally be realistic when considering urban development and infrastructure requirements against the size, ecological quality and connectivity of grassland and woodland remnants.

The draft variation aims to provide for an accessible and efficient public transport system. The proposed commercial centres contain the highest residential densities with further medium density housing areas located within easy walking distance of public transport services.

The pedestrian and cycle networks will establish effective links between residential areas, schools, neighbourhood centres, recreational resources and public transport networks.

As a result of changing community profiles and attitudes with a greater emphasis on home based care, the draft variation identifies community facility sites in each neighbourhood, with further sites potentially available in commercial centres.

Water Sensitive Urban Design principles are to be adopted for the development of East Gungahlin. WSUD is a philosophical approach to urban planning and

design that aims to integrate the management of the total water cycle into the urban development process. Initially focused on reducing the impacts of urban development and redevelopment on stormwater runoff, the definition of WSUD has been broadened to encompass management of the total urban water cycle. 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 pre-development levels.

The ACT Government has released *Think Water Act Water*, the draft water resource management strategy for the ACT, and water sensitive urban design guidelines are to be released in 2004. The principles set out in these guidelines and strategies will be adopted for East Gungahlin and will improve water quality in receiving waters, enhance ecological values and amenity, reduce potable water demand, and potentially provide long term cost savings.

#### **2.7.4 Responding to Changing Community Needs**

### **Shopping Centres**

The BIS Retail Study, released in early 1999, indicates that fewer shopping centres will be needed in Gungahlin. The town centre and three mid-sized group centres (located at major junctions) will serve most of the population's shopping needs, together with the existing and future shopping centres in other areas of Gungahlin, Belconnen, Dickson, Civic, and Mitchell. Five smaller local centres are proposed to serve local convenience shopping needs. These centres replace the two group centres and three local centres currently shown on the Territory Plan.

### **Community Facilities**

The profile of the community is changing and this will influence the number and types of facilities that are required as well as their location. There have been many changes over the years to the delivery of services and the provision of facilities, with a greater focus on multi-use and co-located facilities. An increasing emphasis on the service to be provided rather than the facility from which the service is delivered has generated a move toward mobile services and the provision of home based care rather than facility based assistance, particularly in the health area. At the same time, government, non-government

and community organisations are now seeking evidence of a demonstrated need for a facility, rather than providing a facility in anticipation of demand.

The draft variation highlights the role of community facility sites in contributing to a cohesive community and retains a range of sites for future facilities. Each neighbourhood includes at least one community facility site with further smaller sites potentially available within mixed-use areas and in the open space system.

## **2.8 Defined Land**

The draft Variation proposes to identify the East Gungahlin urban area as defined land in accordance with the provisions of the Land Act. The Territory Plan Map will be amended to add the defined land overlay to Kenny and those parts of Throsby and Harrison where it does not currently apply. The draft Variation also introduces principles and policies for Kenny and updates the principles and policies for existing defined land in the suburb of Throsby by replacing the ones currently applying in Variation No.53 - Gungahlin Town Centre and Central Area. Section 7(3)(e) 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.

It is important that the planning of an area the size of East Gungahlin is not unduly constrained during its period of development. The Defined Land process enables the Territory Plan to be progressively updated in line with the current best practices while maintaining principles and policies identified for each area. In summary, the process is:

- The land is identified as Defined Land and the principles and policies for its development are set out in the Territory Plan through the normal Plan Variation process. This draft Variation constitutes the first stage of the process and is subject to full statutory public consultation, Executive approval and possible disallowance by the Legislative Assembly;
- Detailed subdivision plans for the development of the site are prepared progressively in accordance with the principles and policies set out in the approved Variation; and
- Following the approval of subdivision plans, ACTPLA varies the Territory Plan by publishing a notice in the Legislation Register pursuant to section 32 of the Land Act. This Variation specifies the boundaries and purposes for which the various parts of the land may be used. On notification of the variation, the land ceases to be Defined Land.

The principles and policies for the development of Defined Land are detailed at Section 3 of this document.

## 2.9 Effect of the Draft Plan Variation

As stated in the consultation notice (published in the Legislation Register and the Canberra Times at the commencement of the public consultation period) the variation has interim effect from 23 July 2004 to 22 July 2005 or until the end of the “defined period”, whichever is shorter. Under section 9 of the Act “defined period” means the period commencing on the date that the draft plan variation is notified in the Legislation Register and terminating at the expiration of the day before –

- (a) the date the draft variation comes into effect; or
- (b) the date the variation (ie the approved version of the draft variation) is rejected by the Legislative Assembly (following its tabling); or
- (c) the date the draft variation is withdrawn under section 22(1)(c), section 27(a) or section 30A(3)(b)

During the period of interim effect, the Territory, the Executive, a Minister or a Territory authority shall not do any act, or approve of the doing of any act that would be inconsistent with the Territory Plan or the Territory Plan as varied by the draft plan variation.

Generally this means that where there is an inconsistency between a provision of the draft plan variation and an existing provision of the Territory Plan, **the more onerous provision shall apply**, to the extent of that inconsistency.

## 2.10 Planning and Land Council

The Draft Variation was referred to the ACT Planning and Land Council on 23 September 2003 for advice under the Planning and Land Regulations. The Council made the following comments:

“The proposed Draft Variation – Gooroo / Kenny – aims to change the Territory Plan to give effect to the Government’s commitment to establish the Gooroo Nature Reserve in East Gungahlin and to put in place the necessary planning for the suburb of Kenny.

The Council supports the proposed Draft Variation to change the Territory Plan to establish the Goorooyaroo Nature Reserve in East Gungahlin – in particular noting the implications that flow from the establishment of the nature reserve affecting adjoining areas of proposed urban development, including the suburb of Kenny.”

## **2.11 Conservator of Flora and Fauna**

In preparing this draft plan variation the Planning and Land Authority is required under section 16 of the *Land (Planning and Environment) Act 1991* to consider any recommendations made by the Conservator of Flora and Fauna.

The Conservator made the following comments:

“ The DVP addresses one of the key priority actions included in Action Plan 27 (ACT Lowland Woodland Conservation Strategy) by establishing the Goorooyarroo Nature Reserve, a major addition to the nature conservation estate in the ACT. The reserve will protect a large area of Yellow Box - Red Gum Grassy Woodland, an endangered ecological community and habitat for a suite of threatened and declining bird species.

Proposals in the DVP in relation to the Striped Legless Lizard (*Delma impar*) are consistent with Action Plan 2. However, any proposal to salvage lizards during any development of their habitat will only be considered for licensing after thorough investigation and consultation with the National Recovery Team for the Striped Legless Lizard. Salvage is not a substitute or alternative for conservation measures”

### **2.11.1 Response to Conservator’s Comments**

The Conservators Comments are duly noted. Any future actions to salvage Striped Legless Lizard populations in Kenny will be done strictly in consultation with Environment ACT and the National Recovery Team for the Striped Legless Lizard.

## 3. DRAFT VARIATION

### 3.1 Variation to the Territory Plan Map

The Territory Plan map is varied as shown on Figure 3.1 as follows:

- The Goorooyarroo Nature Reserve, East Gungahlin is identified by:
  - Changing the land use policy for approximately 300 hectares of land in the Gooroo area, from Residential to Hills Ridges and Buffer Areas,
  - Applying the Public Land 'Pc' (nature reserve) Overlay to identify the boundary of the reserve; and
  - making adjustments to the Hills Ridges and Buffer Areas and Residential policies to follow the reserve boundary.
- The Mulligans Flat Nature Reserve is extended along its boundary with Throsby by changing the policy from Residential to Hills Ridges and Buffer Areas and amending the Public Land 'Pc' Overlay;
- The new alignment of Wells Station Drive is confirmed;
- The Commercial C Group Centre Site is relocated from the eastern side of Horse park Drive into Kenny;
- The Community Facility policy is amended by deleting the site for a government high school in Kenny and relocating the government primary school site more centrally within the suburb;
- The Industrial policy is expanded to incorporate a small parcel of land to the east of the Mitchell industrial area;
- The Urban Open Space Policy is amended to follow the alignment of Sullivans Creek through Throsby and Kenny and identify additional areas including a site for a playing field adjacent to the proposed site for the Kenny primary school;
- A large stormwater management pond (Water Feature Policy) is identified in the open space corridor in Kenny;
- The boundaries of the Hill Ridges and Buffer Areas and Residential policies between Kenny and the Federal Highway are adjusted to respond to the Structure Plan;
- The boundaries of the Broadacre, Residential and Hills Ridges and Buffer Areas policies on the south-west corner are adjusted to respond to the Structure Plan;
- A Residential B8 Overlay is identified adjacent to the Kenny primary school and a Residential B9 Overlay is identified adjacent to the Kenny Group Centre and primary school and at the intersection of Horse Park Drive and Wells Station Drive; and
- A Defined Land Overlay is applied to the urban area.

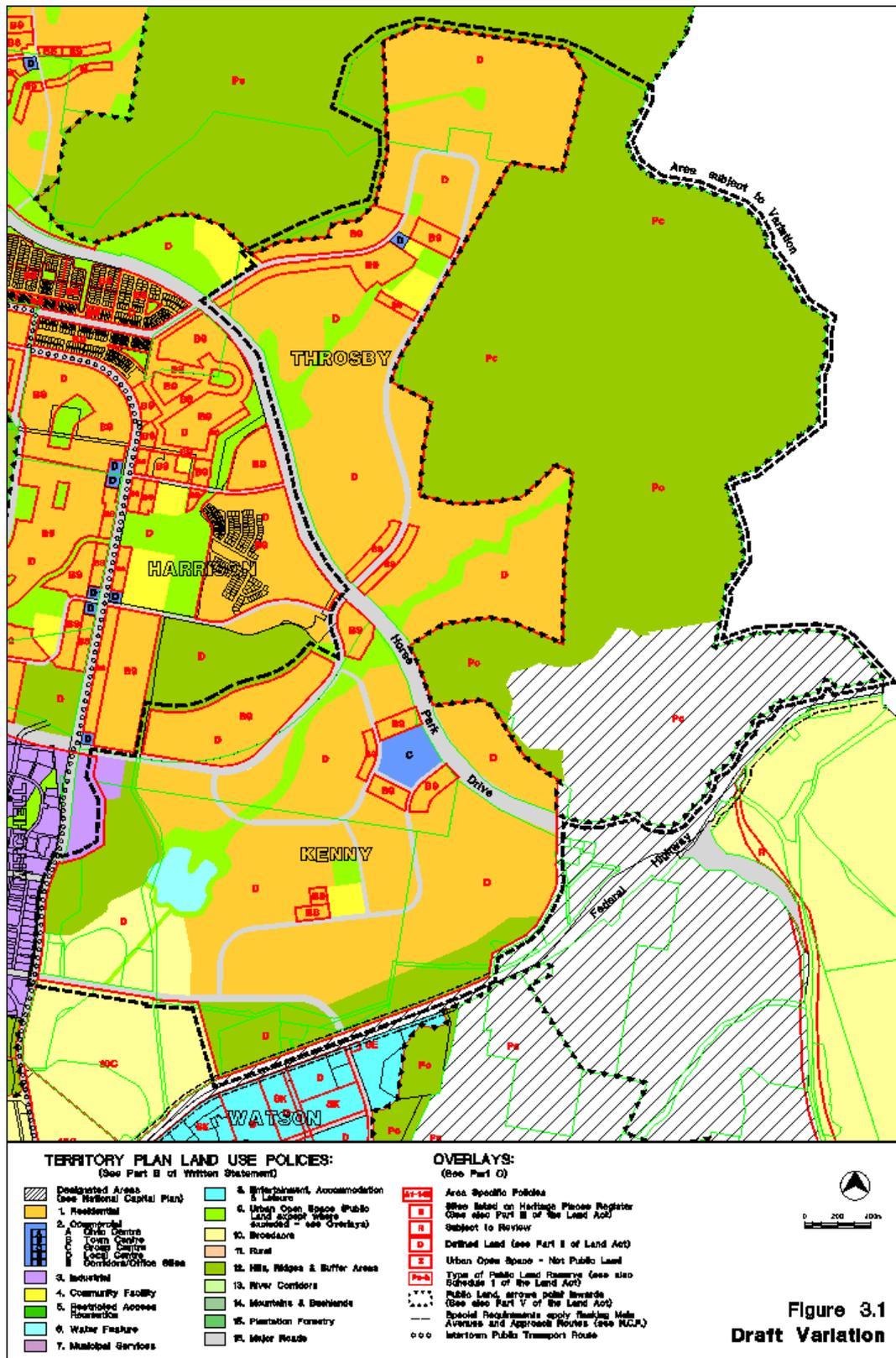


Figure 3.1 Variation to the Territory Plan Map

## **3.2 Variation to the Territory Plan Written Statement**

At Part B3 Industrial Land Use Policies, Figure 3 Mitchell, amend the 'a' (General Industry) boundary in the north east precinct to incorporate the additional land included in the Industrial Land Use Policy indicated in Figure 3.1 of the draft Variation document.

### **3.3 Defined Land Principles and Policies – General**

The principles and policies in Variation 53 Gungahlin Town Centre and Central Area apply to Defined Land south of the Wells Station Heritage Precinct in the suburb of Harrison and subject to this draft Variation.

The principles and policies to guide further detailed planning in Kenny and Throsby are set out below. For existing Defined Land in Throsby subject to this draft Variation, these principles and policies replace the ones that currently apply in Variation 53 Gungahlin Town Centre and Central Area.

The broad principles set out below are to guide the development of East Gungahlin. Development is to be in accordance with these broad principles. However, all of these principles should have equal weighting and none should be pre-eminent or interpreted in isolation of the planning context determined by the suite of principles.

#### **3.3.1 GENERAL PLANNING PRINCIPLES AND POLICIES**

- a) To provide a series of connected, overlapping residential areas around a series of local centres, schools, community facilities and open space.
- b) To provide an urban structure that is simple, legible and flexible.
- c) To encourage a mix of land uses, including appropriate commercial, retail and other uses, which contribute to a diverse character.
- d) To maintain and enhance natural systems and protect key natural areas.
- e) To provide residential areas that are walkable, permeable and compact.
- f) To encourage development that is ecologically sustainable, and minimise pollution through design and technology of stormwater, wastewater, sewerage, traffic and other systems.
- g) To limit and discourage the use of non-renewable resources.
- h) To limit the consumption of energy and encourage the use of passive and active solar systems and energy efficient building design.
- i) To provide a variety of housing types to meet housing needs at the present time and in the future.
- j) To ensure housing densities support a viable, accessible, frequent and energy efficient public transport system.

- k) To develop a landscape that is sympathetic to the cultural and heritage values of the area and conducive to a variety of uses and natural experiences, with a character that retains the inherent site values and cultural associations.
- l) To create a landscape pattern that brings the open space network close to all urban development, providing access and amenity, and that correlates closely with the broader natural landscape setting.
- m) To maintain and create an open space system which is representative of local natural environments, e.g. forest on protected hills, woodland on hill slopes, grassland on lowlands and wetlands in valleys and drainage lines.

### **3.3.2 ENVIRONMENT**

#### **Nature Conservation**

To establish conservation areas and provide for management arrangements which are sufficient to conserve threatened fauna, woodlands and grasslands.

To ensure land uses adjacent to conservation areas do not have significant adverse impacts on threatened species.

#### **Energy**

Make provision for the public transport system to be an integral part of the structure of the East Gungahlin area.

Facilitate the use of natural energy systems (solar and other alternative energy sources) in building design and public infrastructure, including street lighting.

Facilitate pedestrian and bicycle movement between East Gungahlin and Gungahlin Town Centre and adjacent areas.

Encourage reduction in energy use in the construction and operation of infrastructure.

#### **Water**

Facilitate reduced water consumption by design and possible recycling of wastewater.

Encourage reduction in water consumption by the use where appropriate of native plant species, preferably indigenous to Gungahlin.

## **Building**

Facilitate recycling of waste products and use of recycled products.

Give preference to materials which;

- Cause minimum environmental impact and use of energy in terms of their extraction, manufacture and assembly;
- Can be reused recycled and which minimise site contamination, and
- Have a minimum life cycle cost.

Encourage the use of low energy systems for lighting, heating and cooling, and appliances.

Provide for solar efficiency in buildings through orientation and design.

Ensure residential uses within mixes use areas incorporate acoustic design measures to ensure provisions of the relevant Noise Control legislation are complied with.

### **3.3.3 CULTURAL PLANNING**

Reflect the cultural significance of the Gungahlin Area, including its landscape, natural environment and history of occupation, in the design of dwellings and open spaces. Encourage public appreciation of the heritage of East Gungahlin through appropriate interpretation

In the planning process, facilitate community cultural development which reinforces the role of the site in providing and developing identity for the community, particularly with regard to the interaction between:

- Natural heritage
- Aboriginal heritage
- European heritage
- Open space systems
- Contemporary cultural diversity among residents
- Built form and streetscape design and;
- Contemporary visual, craft, performing and community arts practice.

## **Access**

Provide sites for community facilities amongst other uses where this enhances their access and community safety, and where their permanence can be assured.

Provide safe and convenient bicycle and pedestrian access between transport and car parking) and retail, nodes (public transport facilities community and recreational facilities, and to adjoining suburbs.

Discourage through traffic where it provides a barrier to pedestrians, by th provision of convenient alternatives and by street design that calms traffic.

Enhance access and reduce costs and seek opportunities for co-location or joint provision of community and recreation facilities, or their inclusion in joint ventures.

## **Equity**

Provide sites for the equitable distribution of services and facilities having regard to the level of provision in other residential areas.

Provide for a variety of affordable types and retirement housing, including public tenure.

## **Amenity**

Provide spaces, which are useable and pleasant, with spaces for quiet reflection and casual meeting.

Provide a legible residential layout with appropriate 'landmarks' and adequate signage.

## **Community Safety**

Where practicable provide natural surveillance of public areas through active frontages in the ground level of buildings with particular reference to out-of hours use.

## **Flexibility**

Provide for long term flexibility in planning the urban area and in community use building design to accommodate different uses as needs change.

Provide opportunities for collaborative and coordinated management of facilities.

### **3.3.4 ECONOMIC**

Encourage mixed-use developments, which provide for home-based employment and small-scale workplaces.

Facilitate the development of viable local centres in the residential areas.

### **3.3.5 TRANSPORT**

Provide an appropriate hierarchy of streets and other movement systems.

Provide a street system that is clear in use, character and connectivity.

Provide slow speed environments, where necessary, to ensure a high level of pedestrian amenity.

Provide direct connections for pedestrians and cyclists to the metropolitan and district pedestrian and cycle network.

## **Parking**

Ensure car parking does not visually or functionally dominate other land uses.

Provide ample parking for people with disabilities adjacent to their destinations.

## **Public Transport**

Ensure that the residential sectors are conveniently served by public transport.

Locate public transport routes and stops within easy walking distances with numerous opportunities for boarding and alighting.

## **Pedestrians**

Provide functional, convenient, safe and attractive pedestrian routes for both access and recreation.

## **Bicycles**

Provide safe and attractive cycle routes connecting major destinations and linking to district and metropolitan cycleways.

Facilitate the use of bicycles for recreation by integrating cycleways with the open space system.

### **3.3.6 PUBLIC SPACES**

Provide public spaces with a high level of environmental amenity.

Ensure public spaces have edges that are sufficiently developed to provide appropriate surveillance.

Encourage community ownership of public spaces.

Provide a variety of public spaces, which are capable of both formal and informal use.

Provide a high quality of urban design, landscape, street furniture and lighting in all public spaces.

### **3.3.7 STORMWATER**

Develop a stormwater system that is based on principles of sustainability.

Integrate the stormwater system into the general open space.

Provide for a diverse range of vegetation types and wildlife habitats within the stormwater system and incorporate wildlife links where possible.

Encourage the development of individual block or group housing on-site stormwater storage, reuse and management systems.

Integrate overland stormwater systems into site developments, limit the piping of stormwater where practicable with the use of swale drains.

Control runoff from urban areas, both during and after the development phase in order to protect downstream water quality.

### **3.3.8 URBAN DESIGN**

Develop an urban form that is walkable, permeable and compact.

Provide for residential development that has a significant variety of housing types.

Develop an urban form that is robust and enables incremental development and flexibility.

Ensure that development responds to the natural and cultural features of the site and preserves and enhances these features where appropriate.

Base the urban form on a hierarchical network of streets, which restrict vehicular speeds.

Provide residential precincts that have a distinct urban character and are visually harmonious and legible.

Provide an urban form that has direct connections for pedestrians, cyclists and motor vehicles to adjoining areas.

Define the edges of residential precincts by peripheral streets, distinctive landscape treatment and appropriate building forms.

Ensure that the ground floor levels of higher density buildings are integrated with adjoining verge or finished site levels to enable easy access for both disabled and able-bodied persons.

### **3.3.9 URBAN STRUCTURE PRINCIPLES**

Detailed planning, based on a number of urban structure principles should provide the framework for future development.

## **East Gungahlin Land Use**

East Gungahlin Land Use is based on principles that:

- Provide a variety of residential densities that respond to the location of housing.
- Provide flexibility for change over time.
- Mix land uses as appropriate.
- Provide for the location and integration of adequate community facilities within or adjacent to local centres or for their co-location with schools.
- Provision may be made for a site for a service station north of Mitchell.

### **3.3.10 CONSERVATION**

Provision is made for the conservation of threatened species and ecological communities through reserving land for nature conservation purposes. The main principles are:

Establish conservation areas which are adequate in area, with a sufficient buffer from development areas.

Establish conservation areas with suitable management arrangements to protect flora and fauna.

Make the conservation areas part of the overall landscape character by ensuring their visual integration into the open space system.

Ensure land uses adjacent to conservation areas do not have a significant impact on reserve.

### **3.3.11 STREET AND MOVEMENT SYSTEM**

The street and movement system is based on principles that:

- Provide a hierarchy of streets and roads that are safe and appropriate to their function.
- Use the streets as means of enhancing and conserving the site's characteristics as well as reinforcing the area's component parts.
- Ensure the street system is fully integrated with the existing and proposed system for the remainder of Gungahlin and the metropolitan area.
- Improve safety, and limit vehicle speeds where appropriate, through road design.
- Ensure pedestrian and cycle route form an integral part of the overall transport system.
- Maintains provision for an Intertown Transport System.

### **3.3.12 URBAN OPEN SPACE**

The Urban open space system is based on principles that:

- Creates a hierarchy of open space, beginning with the street system, and continuing through the local parks, floodway system, large urban parks and the conservation areas.

- Provide a safe, convenient open space network that links residential areas to community facilities and other destination points and is readily accessible from residential areas.
- Ensure that the open space network is designed to provide opportunities for wildlife movement corridors, sustainable transport (walking and cycling) and overland flow paths for major storms.
- Incorporate a variety of experiences and uses within the open space system.
- Ensure open spaces are planted with appropriate local native species, including grasses where practicable.
- Encourage local residents to develop 'ownership' of open space by directly relating housing and community facilities to the open space, and by ensuring that housing faces onto open space.
- Ensure high levels of public access to and surveillance of open space by the provision of edge roads with housing facing across to the open space.
- Provide adequate and appropriate open space buffers to heritage sites of significance that aid in their interpretation and characterisation.
- Protect and enhance the cultural, natural and heritage features and characteristics of the open space system.
- Make provision for necessary public infrastructure including sewer and flood ways within the open space system.

### **3.3.13 URBAN FORM**

The main principles that underlie and create the urban form are:

- The reserves, overland flow paths and open space system will respond to the natural landscape form and cultural values of the site.
- This diagonal system is overlaid with a slightly modified rectangular grid, with urban boulevards and east-west and north-south connector streets.
- The urban boulevards are the location for denser residential development (along major transport corridors) with a possibility of mixed uses. This is reinforced by the location of local centres on the boulevards at public transport stops.
- Where residential areas front the park system, edge roads provide

protection and passive surveillance by housing fronting these edge roads.

### **3.3.14 LANDSCAPE**

The landscape is based on principles that:

- Establish a landscape that relates to the natural environment and promotes biodiversity by the use of local plant material and the incorporation of a variety of plant community and habitats.
- Establish culturally meaningful landscape settings for aboriginal and post-contact sites of significance that enhance their preservation and interpretation.

### **Conservation Areas**

Make the conservation areas part of the overall landscape character of the East Gungahlin area by ensuring their visual integration into the open space system of the area.

### **Watercourse Parks**

Use the stormwater management and resultant open space system as a formative element in the design of East Gungahlin.

### **3.3.15 LOCAL PARKS**

Provide local parks in residential areas where private open space is limited and the distance to the public open space system is greater than 200m.

## **3.4 Defined Land Principles and Policies – Suburban**

The principles and policies to guide further detailed planning for the suburbs of Kenny and Throsby area set out below. These principles and policies replace the ones currently applying to existing defined land in the suburb of Throsby included in Variation 53 Gungahlin Town Centre and Central Area.

### **3.4.1 General**

The development of East Gungahlin should incorporate sustainability principles including economic, social, cultural considerations.

The landscape setting and values of the East Gungahlin urban area are to be recognised and enhanced. Boundary hills and significant internal ridges within the urban fabric are to be protected from development and planted with native vegetation. Significant trees are to be incorporated into the urban fabric where possible.

Conservation and heritage sites such as Wells Station Road and adjacent trees are to be retained and protected within urban open space.

Detailed planning is to take advantage of the natural, cultural and heritage characteristics of the area and extend them to create a program to support and strengthen the community's identity.

Community Facility sites should be located close to public transport and in places where, for reasons of safety, people already have a cause to congregate particularly at shopping centres and schools.

Public open space, within close proximity to, retail centres, together with various other nominated sites, may be utilised for possible community and recreation facility uses. The size and type of facility will be determined at a later detailed planning stage.

Retail centres serving larger populations should be well located on major roads in order to serve a cluster of suburbs and ensure the long-term viability of the centre.

Sustainable urban water management design principles are to be adopted to secure economic, social and environmental benefits of integrated 'water in the landscape' (including water sensitive urban design techniques) and "total water cycle" based designs to achieve a better balance of water across the landscape.

An integrated cycling and pedestrian network should connect commercial centres, schools, parks, ovals and hilltops and provide links to trunk routes.

The road hierarchy should be legible and provide good and safe access to all users and encourage high levels of public transport usage.

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 and 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 where appropriate.

### **3.4.2 Suburb Plans**

The Outline Plan generators diagrams and the Outline Plans indicate the manner in which the Territory Plan will be implemented for the suburbs of Kenny and Throsby. The Outline Plans are included to assist in the understanding of the implications of the draft Variation to the Territory Plan.

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

The Outline Plans indicate the location of the various land uses proposed for the suburb and reflect the requirements shown on the Outline Plan generators diagram.

### **3.4.3 Kenny**

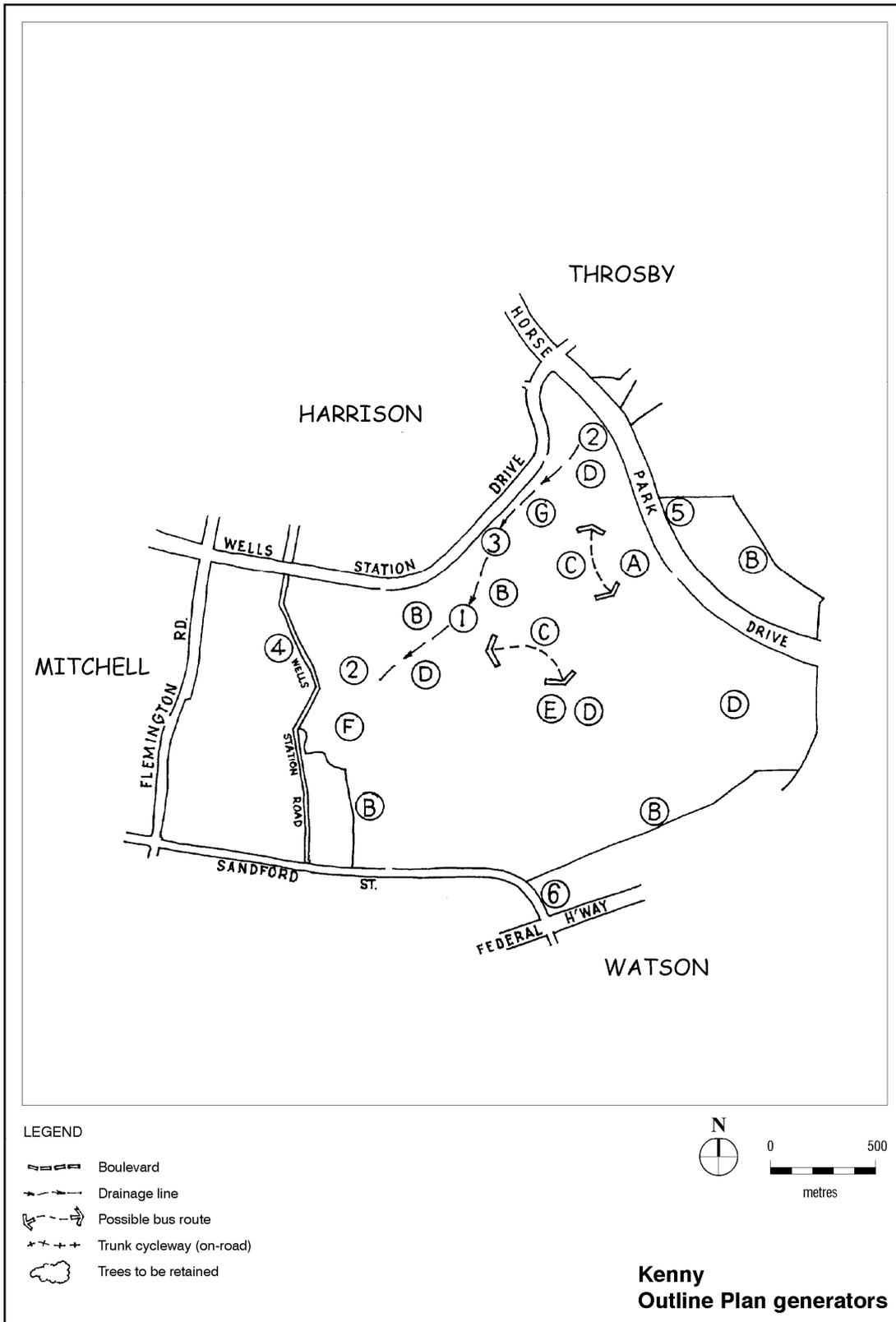
## **General Policies (Refer to Figure 3)**

- A. A Group Centre with adjoining higher density housing is to be developed at a major road intersection with Horse Park Drive.
- B. Edge roads to be utilised wherever possible as a buffer between residential development, urban open space and nature reserves.
- C. A local bus route is to be provided through the suburb via the Group Centre, areas of higher density and primary school site, encouraging public transport usage.
- D. Opportunities are to be provided for small scale community facility sites in open spaces in convenient locations predominantly along public transport routes.

- E. Neighbourhood oval to be located adjacent to proposed Government Primary School.
- F. A water detention feature is required as part of Sullivan's Creek Drainage Study.
- G. Higher density and mixed-use residential areas will be located adjacent to the primary school.

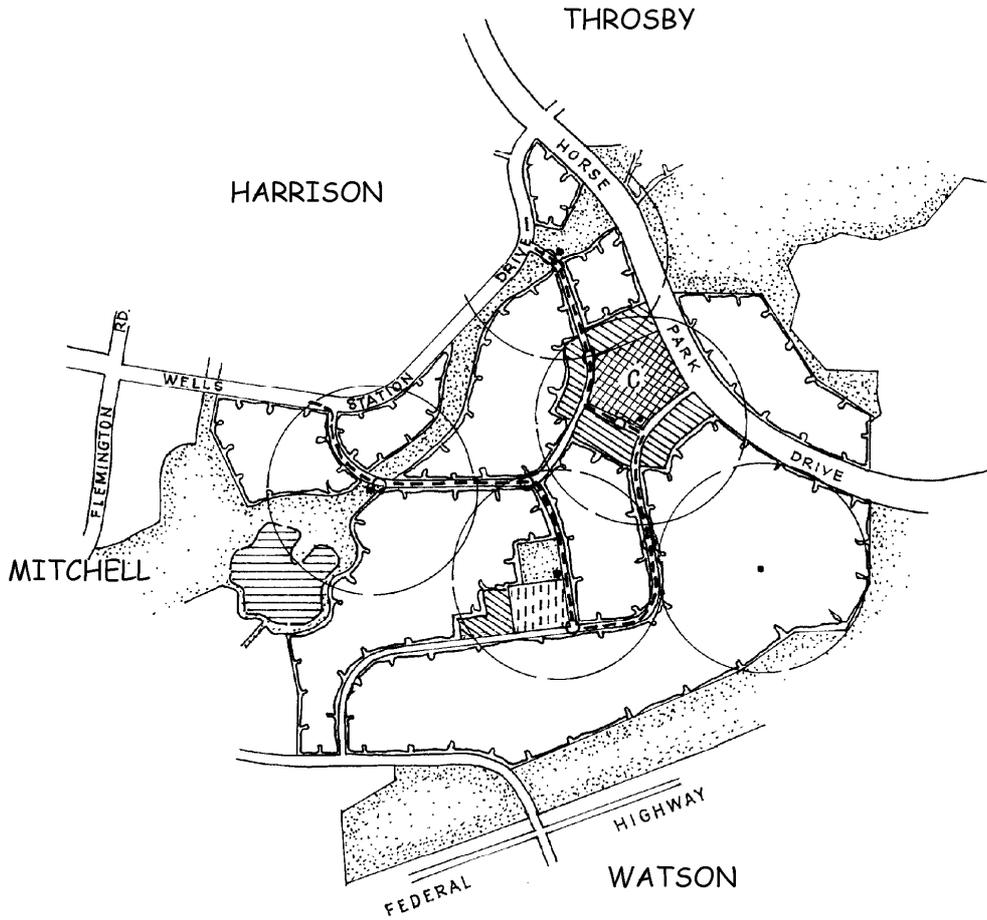
### **Specific Policies (Refer to Figures 3 and 4)**

1. Existing drainage lines to contribute to linear park
2. Cultural and / or natural heritage sites are to be preserved within open space and provide a pedestrian/cycling underpass to urban areas of Kenny east of Horse Park Drive.
3. Cycleway/pedestrian link to be provided within open space.
4. Wells Station Road and adjacent trees to be retained in open space.
5. Provide for an emergency alternative vehicular access to Horse Park Drive from northern section of suburb.
6. Ensure Sandford Street extension to Federal Highway connection.



**Figure 3**

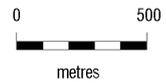
LAND TYPE	AREA(ha) approx	DWELLINGS approx.	POPULATION approx
Residential @ 13dw/ha and 2.8p/dw	260	3380	8780
Urban residential @ 20dw/ha and 1.8p/dw	12	240	432
Open space	15		
Community facility	4		
Total population			9200



LEGEND

-  Residential
-  Higher density residential
-  Open space
-  Community facility (including schools)
-  Local centre
-  Water detention feature

-  Possible community facility site
-  Possible bus route
-  Possible bus stop
-  Possible bus terminus
-  400m radius - 5min walk



**Kenny - Outline Plan**

**Figure 4**

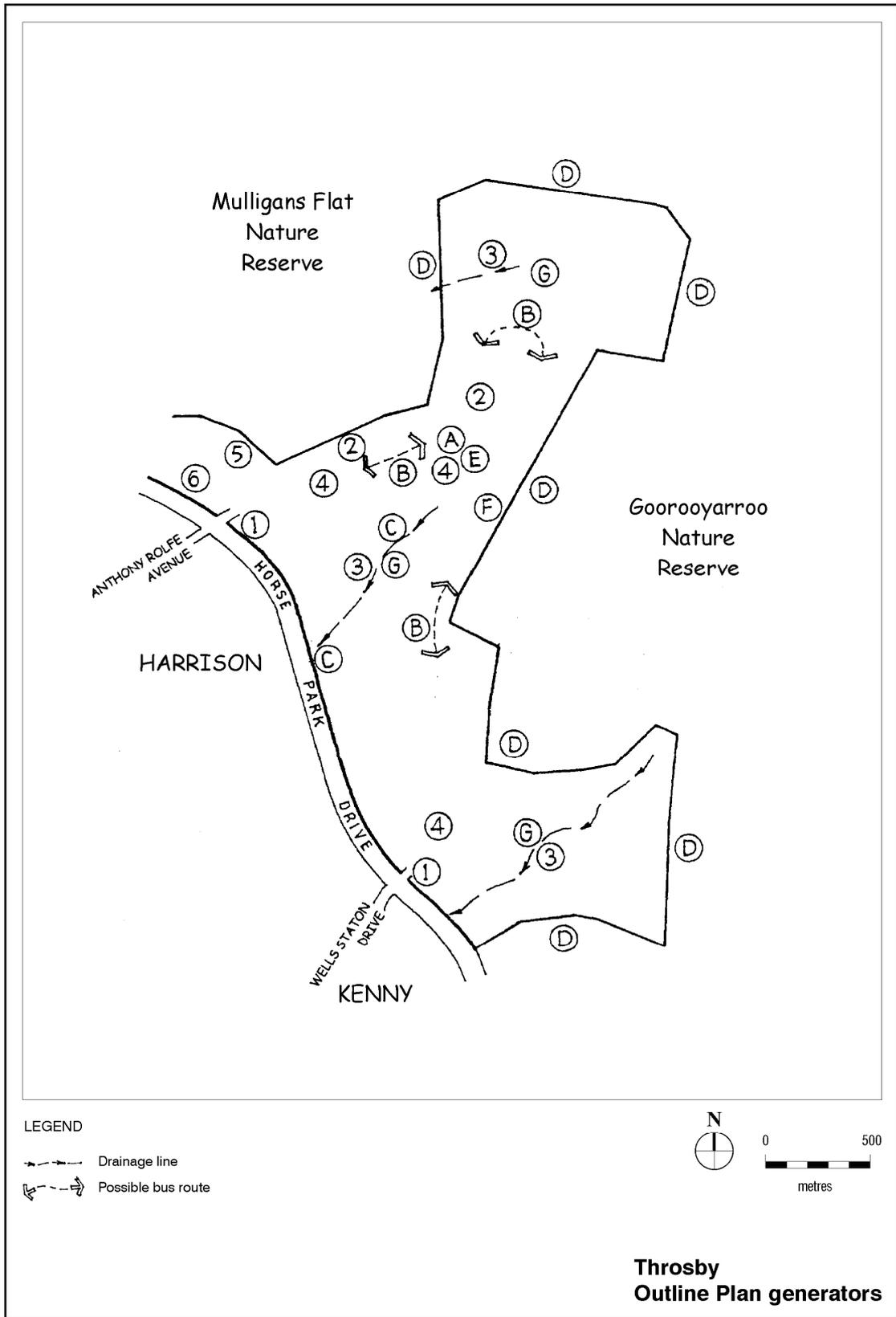
### 6.1.1 Throsby

#### **General Policies (Refer to Figure 5)**

- A. The local centre will incorporate and be adjacent to areas of higher density housing and community facilities sites. Higher density areas may include provision for mixed use development.
- B. A local bus route to be accommodated through the suburb via the local centre, areas of higher density and schools.
- C. Water detention features are required to be located within the natural drainage line in open space.
- D. Edge roads to be utilised wherever possible as a buffer between residential development, areas of open space and nature reserves.
- E. Provide an area close to the local centre for a community facility site.
- F. Government Primary school to be located centrally within the suburb.
- G. Opportunities are to be provided for small scale community facility sites in open space in convenient locations.

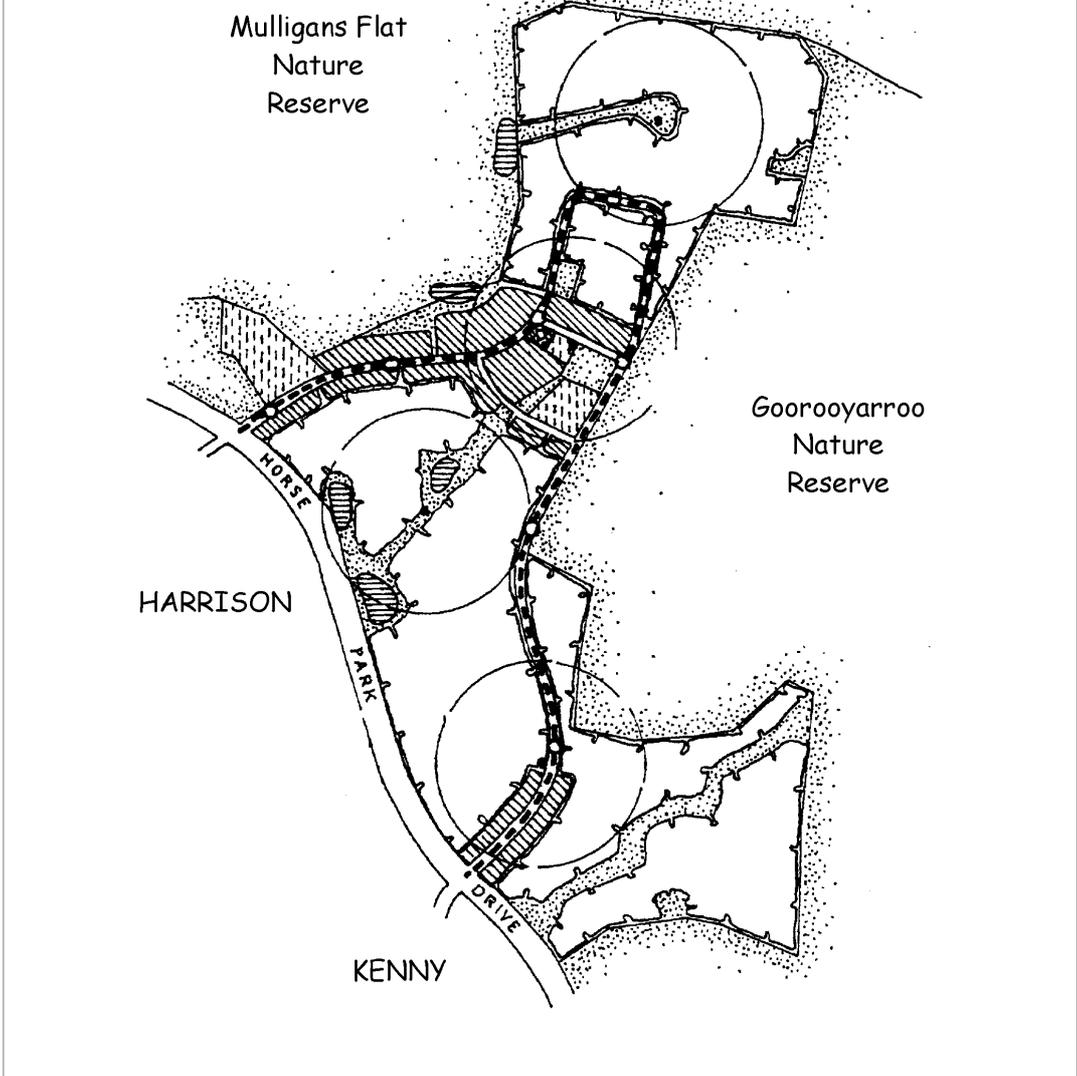
#### **Specific Policies (Refer Figures 5 and 6)**

- 1. Road connections to the suburb to be from extensions of Anthony Rolfe Avenue and Wells Station Drive.
- 2. Cultural natural and/or heritage sites are to be retained in open space.
- 3. Existing drainage lines to contribute to linear parks and combine pedestrian and cycleway links.
- 4. Areas of higher density housing to be located along major transport routes within the suburb and adjacent to local centre.
- 5. Site to be identified for denominational Secondary School adjacent to District Playing fields.
- 6. Suitable site to be identified for District Playing Fields.



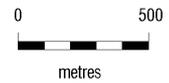
**Figure 5**  
Page 52

LAND TYPE	AREA(ha) approx	DWELLINGS approx.	POPULATION approx
Residential @ 13dw/ha and 2.8p/dw	269	3500	9100
Urban residential @20dw/ha and 1.8p/dw	33	660	1190
Open space	62		
Community facility	5		
Total population			10 290



LEGEND

-  Residential
-  Higher density residential
-  Open space
-  Community facility (including schools)
-  Local centre
-  Water detention feature
-  Possible community facility site
-  Possible bus route
-  Possible bus stop
-  Possible bus terminus
-  400m radius - 5min walk



**Throsby - Outline Plan**

**Figure 6**

## 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:
GREEK	Αν χρειάζεστε διερμηνέα τηλεφωνήσετε στο
ITALIAN	Se avete bisogno di un interprete, telefonate al numero:
MALTESE	Jekk għandek bżonn l-għajnuna t'interpretu, çempel:
PERSIAN	: اگر به ترجمه شفاهی احتیاج دارید به این شماره تلفن کنید:
PORTUGUESE	Se você precisar da ajuda de um intérprete, telefone:
SERBIAN	Ako vam je potrebna pomoć prevodioca telefoniрајте:
SPANISH	Si necesita la asistencia de un intérprete, llame al:
TURKISH	Tercümana ihtiyacımız varsa lütfen telefon ediniz:
VIETNAMESE	Nếu bạn cần một người thông-ngôn hãy gọi điện-thoại:

### TRANSLATING AND INTERPRETING SERVICE

**131 450**

Canberra and District - 24 hours a day, seven days a week

**MINISTER FOR PLANNING**

**PRELIMINARY ASSESSMENT  
EVALUATION**

**FOR**

**EAST GUNGAHLIN  
SUBURBS OF KENNY AND THROSBY AND GOOROOPYARROO NATURE  
RESERVE**

**PROPONENT: ACT PLANNING AND LAND AUTHORITY**

**OCTOBER 2004**

**ACT GOVERNMENT**

## 1. Introduction

In order to meet the requirements of Section 121 (1) of the *Land (Planning and Environment) Act 1991* (the 'Land Act') the following evaluation has been prepared for the Preliminary Assessment for the East Gungahlin suburbs of Kenny, Throsby and Gorooyaroo Nature Reserve.

The function of this evaluation is to determine if any of the environmental impacts associated with the proposal are of sufficient significance to warrant further impact assessment.

## 2. Background

The Territory Plan, gazetted on the 14 September 1993, generally incorporated the NCDC's original plan for Gungahlin, together with two significant previously approved Variations to the Interim Territory Plan. These were:

- Gungahlin – Suburbs of Amaroo, Casey, Harrison, Ngunnawal, Nicholls (1991).
- Gungahlin – Part of Nicholls including the Gold Creek Tourist area (1992).

These two Variations established Draft Variations to the Territory Planning principles and policies for the development of the respective areas.

Three major variations to the Territory Plan have since been gazetted:

- Mulligans Flat (Variation 15, 1994) which significantly expanded the Reserve area;
- Gungahlin Town Centre and Central Area (Variation 53, 1995) which substantially altered the original plan for the town centre, mainly in response to the discovery of habitats of the vulnerable Striped Legless Lizard (*Delma impar*) on the original town centre sites and creation of conservation reserves;
- Draft Variation No. 130 – North Gungahlin Structure Plan

These Variations demonstrated the need to modify the Territory Plan to ensure that environmentally significant sites are adequately protected. In addition, the Community argued strongly for a new approach to retail provision and urban development generally.

A proposed Variation to the Territory Plan has now been prepared which makes changes to the boundaries of urban development in Gungahlin's Eastern suburbs and results in changes to the Hills, Ridges and Buffer areas, Urban Open Space and Community Facilities Land Use Policies. The PA states that this proposed draft variation applies to land on the Territory Plan Map within the suburbs currently identified as Kenny, Throsby, Harrison and the non urban area of Gorooy in East Gungahlin. The draft variation proposes to identify the boundary of the Gorooyaroo Nature Reserve and further refine land use policy boundaries currently shown on the Territory Plan Map. The proposed changes to the Territory Plan Map, as stated in the Draft Variation to the Territory Plan (DV 231) are as follows:

- The Gorooyaroo Nature Reserve in Throsby/East Gungahlin is identified by Changing the land use policy for approximately 300 hectares of land in the Gorooy area from Residential to Hills, Ridges and Buffer Areas; applying the Public Land 'Pc' (nature reserve) overlay to identify the boundary of the reserve; and making

adjustments to the Hills, Ridges and Buffer Areas and Residential policies to follow the reserve boundary.

- The Mulligans Flat Nature Reserve is extended to follow the revised urban edge of Throsby;
- A stormwater management pond is proposed for Kenny;
- The alignment of Wells Station Drive, which has been adjusted to reduce potential impacts on the proposed Wells Station Heritage Precinct, is confirmed;
- The commercial C Group Centre site is relocated from the eastern side of Horse Park Drive into Kenny;
- The proposed locations of government primary and high school sites are refined. The government high school in Harrison will now serve East Gungahlin and the Kenny site is relocated more centrally within the suburb;
- The Urban Open Space Policy is amended to follow the alignment of Sullivans Creek through Throsby and Kenny and identify additional areas including a site for a playing field adjacent to the proposed site for the Kenny primary school. A stormwater management pond (Water Feature Policy) is identified in the open space corridor through Kenny. These changes respond to the findings of the Stormwater Masterplan for Sullivans Creek;
- The industrial policy is expanded to incorporate a small parcel of land to the east of the Mitchell Industrial Area;
- The boundaries of the Hills, Ridges and Buffer areas and Residential policies between Kenny and the Federal Highway are adjusted;
- The boundaries of the Broadacre, Residential and Hills Ridges and Buffer areas policies on the southwest corner are adjusted;
- A Residential B8 Overlay is identified adjacent to the Kenny primary school and a Residential B9 Overlay is identified adjacent to the Kenny Group Centre and primary school and at the intersection of Horse Park Drive and Wells Station Drive; and
- A Defined Land Overlay is applied to the urban areas. The layout of these areas will be progressively amended in response to changes made by detailed Implementation Plans lodged prior to development.

The characteristics of the proposal are such that it falls under the list of prescribed classes of defined decisions in Appendix II of the Territory Plan that require a mandatory Preliminary Assessment (PA) as follows:

- All proposals that involve changes in land use policy from Community Facility, Urban Open Space and Hills Ridges and Buffer Areas;

- All proposals involving the potential clearing of greater than 0.5 hectares of remnant native vegetation;
- Major Utility Installation (stormwater management pond).

On 13 April 2004 a PA was triggered under Section 113 of the Land Act. The Structure Planning and Design Section, ACT Planning and Land Authority (ACTPLA) was nominated as the proponent and was required to prepare a PA in accordance with Schedule 3 of the Land Act.

The final PA was submitted on 22 July 2004 and was advertised concurrently with DV 321 in the Canberra Times on 24 July 2004 and in the Legislation Register on 24 July 2004. The PA was also available on the ACTPLA web page for comment throughout the notification period. The public consultation period closed on 03 September 2004.

### **3. Compliance with requirements of the *Land (Planning and Environment) Act 1991*.**

The PA has met the requirements of the Land Act in respect to Gazettal and public notification. The PA was prepared in accordance with Schedule 3 of the Land Act. Copies of the PA were available from the ACTPLA Shopfront, 16 Challis St Dickson, during normal office hours at a price of \$10.40 a copy. Copies of the PA were lodged with the ACT Library Service and a copy was hand delivered to Ms Lorraine Frawley of the Conservation Council of the South-East Region and Canberra Inc on 26 July 2004.

### **4. Adequacy in identifying the range of possible impacts of the proposal on the physical, natural and human environments.**

The issues identified by the PA fall into the following three categories:

**Impacts on the Physical Environment:** Stormwater, sewerage, water supply, infrastructure provision, traffic impacts and public transport.

**Impacts on the Human Environment:** Aboriginal and European Heritage issues, social issues, air quality, contaminated sites and noise.

**Impacts on the Non-Human Biological Environment:** Conservation of natural resources, flora and fauna and urban edge interface.

The PA satisfactorily identifies the range of possible impacts arising from the proposed development.

### **5. Technical Evaluation of Potential Environmental Impacts**

#### **Impacts on the Physical Environment**

##### **Stormwater/Water quality**

East Gungahlin is mostly within the Sullivans Creek Catchment, however the North Throsby area, near Mulligans Flat Nature Reserve, is within a different catchment and drains via Yerrabi Pond via the eastern arm of Ginninderra Creek. The ACT Planning and Land Authority (ACTPLA) reviewed Stormwater drainage planning for Kenny during 2003 in conjunction with the overall master plan for the whole of Sullivans Creek Catchment area.

Part of the 2003 strategic stormwater master plan addressed a conceptual stormwater plan for North Throsby. Measures such as retarding basins, wetlands and open water ponds have been introduced to reduce the impact of stormwater runoff.

The PA indicates that the natural creek through the area will be retained. Stormwater drainage for Kenny will include retarding basins/ponds that will help to restrict outflows and will result in the retention of the natural creek system.

The PA identifies the Water Sensitive Urban Design principles which will be applied to the development area and include the following principles:

- The level of nutrients and sediments discharge from the site is no greater than from a well managed rural landscape;
- The intensity and volume of stormwater runoff from the estate for a runoff event that occurs once every 3 months is no more that if the site were in an undeveloped rural state.

The PA addresses the requirement of Water Sensitive Urban Design and Think Water Act Water and provides measures to ensure the impact of stormwater flows as a result of this proposal are reduced. Some further refinement is required at the more detailed concept planning stage.

The PA has adequately addressed this issue.

### **Water Supply**

The PA states that water supply for the new suburbs of Throsby and the higher portion of Kenny will derive from a new 675mm main along Horse Park Drive from Gungahlin Drive. It is proposed that this main will connect to an extension of the bulk supply main from Campbell and Hackett which will provide a third source of supply to Gungahlin. The existing 375mm main through Mitchell will supply the lower portion of Kenny.

### **Sewerage**

The PA indicates that the urban development in Kenny will require an upgrade of the sewer network connecting to the existing trunk sewer network infrastructure in North Canberra. As pumped drainage is not acceptable, the proposal involves a trunk sewer to be installed along Sullivans Creek to provide gravity drainage of the catchment.

The PA notes that the downstream North Canberra Trunk Sewerage System has limited capacity and that wet weather flows would require peak flow attenuation, involving methods such as an attenuation tank. The PA indicates the potential site for this tank

would be on Block 4 Section 49 Lyneham, adjacent to Northbourne Avenue and north of the Barton Highway intersection.

### **Road and Cycling Infrastructure**

The existing ACT Government road construction program for the five years to 2007 provides for the completion of major road projects in Gungahlin that will substantially increase capacity to meet the growing needs for transport generated by Gungahlin's growth.

The PA notes that Horse Park Drive has been completed and this provides an important alternative access to the Gungahlin region and will provide a transport link to the suburbs of Kenny and Throsby. The Sandford Street extension from Mitchell to the Federal Highway has started construction and will provide alternative access to the Federal and Barton Highways.

The PA states that the most significant road network change is the re-alignment of Wells Station Drive. The reason for the change was to re-route the road away from the Wells Station Heritage precinct to protect the landscape and the historical values.

The new urban areas require a network of public and private transport links internally that need to interface with external transport connections.

The development of future arterial roads in the East Gungahlin area will provide the opportunity to develop on-road cycling facilities to connect the Gungahlin Town Centre with other areas. A number of trunk cycle paths will be successfully connected to a proposed trunk cycle path on the western edge of the Federal Highway/Northbourne Avenue. A future open space corridor along Sullivans Creek will provide an opportunity for the development of a trunk pedestrian movement corridor and cycleway for recreational use.

The PA states that the new road system proposed will meet demands from public and private transport to and from Gungahlin, as well as within Gungahlin.

Roads ACT have advised that the following guiding principles for future road design be adopted for the proposed development:

- The road network layout provides for emergency vehicles and at the same time controls vehicle speeds without having to retro fit traffic control devices, such as speed humps and chicanes;
- Road widths be designed that make the negotiation by waste collection and emergency vehicles easy when other vehicles are parked on the street;
- Intersection detail designs accommodate single heavy vehicle turning movements in accordance with the Austroads guidelines and Australian Road Rules and are based on desirable dimensions and not absolute minimum dimensions;
- Collector roads to be designed accommodate the on road cycling shared lane facilities. This will help to assist and link the commuter cyclists from suburban

following disturbance of the natural vegetation. This issue is discussed further in contaminated sites.

The PA states that the proposed development will take into account best environmental practice by employing a range of measures in accordance with the Environment ACT guidelines for *Erosion and Sediment Control During Land Development, 1998*. These measures are designed to control erosion and retain sediments on site, including diversion structures to convey upstream runoff away from the site, off-stream sediment retention ponds, silt fences and progressive revegetation to aid site stabilisation.

The PA adequately addressed this issue.

### **Air Quality**

The PA notes that the climate for East Gungahlin is similar to that experienced in Canberra as a whole. Local variations occur in rainfall, cold air drainage and wind patterns. The topography plays a major role in the air quality of East Gungahlin. The broad undulating plains form cold air drainage from the upland areas, however, the removal of trees from the lower areas has altered airflow movements and fog patterns, which have accentuated ground temperature extremes.

During the summer months, the prevailing winds are from the north-west and from the east and provides overall good air movement during this season. The PA notes that in the Winter months, cold, stable conditions lead to the development of temperature inversions, trapping lower quality air at ground level. The principal factors that will affect the air quality in East Gungahlin are emissions from motor vehicles and wood heaters for domestic heating. Methods are proposed to reduce the potential for air pollution such as discouraging the installation of wood fuel heaters and public education in relation to vehicle emissions. An increase in the use of Public Transport would also help to reduce the impact of air pollution.

The PA has adequately addressed this issue.

### **Noise**

The PA states that a Noise Abatement Area (NAA), which stipulates flying heights, bisects Gungahlin on a northwest alignment through the lower end of Kenny, Mitchell and the Gungahlin Town Centre. Development in East Gungahlin is not constrained by this boundary. In practice, most heavy aircraft flying across the NAA boundary are well above the minimum heights required. The PA states that the existing Australian Standards provide for residential development in areas up to 20ANEF (Australian Noise Exposure Forecast), with such development permissible up to 25ANEF with noise mitigation techniques. Areas suitable for residential development in Gungahlin lie well outside the areas seriously or moderately affected by aircraft noise.

The noise as a result of the construction of East Gungahlin may be conducted in residential areas with compliance to the relevant noise standards of the Environment Protection Act 1997. The PA notes that all construction activities are to be in accordance with this Act.

The PA has adequately addressed this issue.

## **Contaminated sites**

The PA indicates that there are contaminated sites within the proposed East Gungahlin area. There is a plunge sheep dip located on Block 666 adjacent to the Federal Highway. There are also uncontrolled builders spoil dumps located on Blocks 601 and 399 Gungahlin. There is an historic landfill at the site of an old disused limestone quarry on Block 696 (formerly Block 237) Gungahlin.

An area of acid sulphate bearing rock has been identified in the proximity of the Majura Road and Federal Highway intersection. This rock, when disturbed, can produce highly acidic leachate, which can be detrimental to the natural and built environment.

The PA states that prior to development, a detailed investigation will occur to ensure that all areas of concern are identified. Appropriate remedial action, specific to the chemicals of concern, will be implemented as part of the detailed planning undertaken for Kenny and Throsby.

The PA had adequately addressed this issue.

## **Impacts on the Human Environment**

### **Visual Impacts**

The PA states that there will be a significant change in the physical characteristics of the existing environment as it will be changing from a rural landscape to an urban landscape. The existing scenic environment in Kenny is characterised by flat to gently sloping wide plains with pastoral character along Sullivans Creek.

The impact of the introduction of urban infrastructure into this environment is to be reduced with the inclusion of landscaping. The principles noted in the Gungahlin Landscape Policy will help to achieve an attractive landscape that will positively contribute to the environmental quality of the area. The PA states the landscaping will achieve objectives relating to streetscape, buffers to nature conservation areas, urban open space, landscaping of parks and natural creek systems that will reduce the impact of the built form on the environment.

As stated in the PA, the urban development, particularly in Kenny, will be evident to people travelling along the Federal Highway. The PA notes that this will let visitor know that they have arrived in Canberra. The views, as a result of this proposal, will be similar to that of Tuggeranong when viewed from the Monaro Highway.

The PA has adequately addressed this issue.

### **Heritage Issues**

#### **Aboriginal Heritage**

In relation to impacts on Aboriginal sites, the PA has addressed this issue by drawing upon previous information compiled about Aboriginal heritage places in the East Gungahlin area and commissioning additional cultural heritage surveys of areas where information was considered deficient.

On the basis of this information, the PA has identified fourteen (14) Aboriginal archaeological sites located within the PA area and has alluded to the potential future discovery of further places including the risk of finding further sites once development has commenced.

The PA identifies that impacts on Aboriginal places will be mitigated by a range of potential actions including collection of artefacts with no further action necessary; collection of artefacts with some sub-surface testing; and subsurface testing of areas with archaeological potential and retention in situ. These are the normal range of mitigative measures although it should be noted that "retention in situ" is a separate strategy and could apply to sites as well as areas with archaeological potential.

Where further sites are discovered during development the PA has correctly identified the standard procedures of stopping works to permit an assessment of the finds. This procedure would apply to all future discoveries, although the PA has identified creek side areas and future stormwater developments as being of particularly high risk. In relation to stormwater infrastructure the PA notes that this issue would be addressed in the subsequent implementation works.

The PA has also identified that further discussion will occur with Environment ACT as detailed planning progresses for Throsby and Kenny to ensure that the goals of achieving in-situ conservation, preservation and interpretation of significant places are achieved.

The PA has also identified that the development will require responsible agencies (Urban Open Space/Transport and Drainage) to take responsibility for the longer-term management of conserved places and that there may be increased development costs overall.

### European Heritage

The proponent has addressed this issue by drawing upon previous information compiled about historic heritage places in the East Gungahlin area and commissioning additional cultural heritage survey of areas where information was considered deficient.

The PA has identified a range of historic (standing and archaeological sites) located within the PA area. However the PA and DV areas are different. There are 7 known historic places located within the DV area that are not in the PA area. Of these 4 are located within Reserve lands and the proposal is not considered to pose direct impact. There are two places not within the PA study area but within or very close to the DV area, where proposed land uses will ultimately impact. They are the Winters Ruin with associated ploughlands (aka Stone Hut Ruin) and Dungarvon. The PA identifies Winters Ruin and Mulligans Flat Ploughlands as being within the PA area, which is incorrect but they are in the DV area. Sullivans Creek ploughland is referred to as outside the PA area, but is actually within it. Also the Heritage Unit has drawn attention to a further place, Arnold Grove that ought to be included in the PA, (although there is no change of land use proposed that would directly impact upon it).

Despite these matters the PA indicated that the existence of places outside its study area is noted and that they will be dealt with in future more detailed planning, when they will be assessed and their future determined according to their significance.

The PA identifies a range of further studies required to conserve places in urban open space including Conservation Management Plans, specialised landscaping and preservation works and interpretation (p58). These are standard strategies. The PA further also commits to further consultation with Environment ACT as detailed planning processes occur to realise the goals of *insitu* conservation and interpretation.

The proponent has therefore provided in a general sense, commitment to adequate means of fully identifying and mitigating the impacts upon historic places. The general planning principles and policies at 3.3.1 Page 37 in relation to the conservation of the natural and cultural heritage of East Gungahlin and encouragement of public appreciation of East Gungahlin through interpretation is supported. Likewise, the intention to provide adequate and appropriate open space buffers to heritage sites of significance, the use of the landscape system to conserve and reinforce cultural heritage values by the inclusion of all significant sites into landscape areas is supported. The next more detailed planning stages for the area are crucial, and this is acknowledged in the PA.

Conservation planning and retention of the significance of William Ginns House, Canberra Park Homestead, Dungarvon, Burtons House Site, ACT Border and Survey markers\*, Ploughlands, Arnold Grove\*, Inglewood/Winters Ruin, Edward Woods Ruin\*, Stone Fence Line\* and the old Ginninderra to Bungendore Road\* and of significant Aboriginal sites would be conditional for heritage support of the proposal (\*noting that conservation of many of these is already assured via their incorporation within Reserve lands or Hills Ridges and Buffer areas). The Heritage Unit has also recently received enquiries from the public about Inglewood/Winters Ruin/Ploughlands and Edward Woods ruin (and their future conservation in light of DV231).

The Heritage Unit has advised that it would be beneficial to identify Agency responsibilities and timeframes particularly where dealing with the heritage places to be retained or requiring works particularly where needs are identified for conservation planning or salvage.

Without timely action to conserve identified heritage values in advance of land development, there is a risk of detrimental impact resulting from nearby urban development, and an outline of responsibilities and timeframes could contribute to impact mitigation.

### **Social Issues**

The PA notes the key community objectives for East Gungahlin, which are;

- To develop a district which supports and promotes the community life of its residents and produces a built environment which meets the different needs of the community;
- To provide a full range of community facilities, including schools and services in accordance with the needs of the residents; and

- To locate facilities and services in centres such as Kenny Group Centre to maximise their accessibility and viability.

The PA states that retail centres will be placed to provide easy access and services for the residents of the catchment. Site selection is based on established criteria for well-located and accessible facilities and is consistent with the ACT Governments Location Guidelines for Community and Recreation Facilities.

The provision of schooling facilities is less than other established suburbs of Canberra. The PA notes that the ACT Department of Education and Community Services indicated that this level of provision should satisfy projected school enrolments. The smaller number of schools proposed reflects the decline in the number of children per household that the ACT is experiencing.

The PA allows for a range of housing types such as higher density development in areas with good transport access and larger sites to cater for future retirement complexes in the East Gungahlin area.

The PA has adequately addressed this issue.

## **Impacts on the Non-Human Biological Environment**

### **Conservation of Natural Resources**

The PA has tried to provide a practical compromise between the conservation of the natural environment and providing high quality residential development opportunities. The East Gungahlin area contains a large component of native vegetation, most of which will be protected in the new reserve to be known as Goorooyaroo.

### **Yellow Box/Red Gum Grassy Woodland**

The PA provides details about the Yellow Box/Red Gum Grassy Woodland within the area of the proposed DV 231. This woodland is part of a larger woodland complex in Gungahlin, which is identified in the ACT Lowland Woodland Conservation Strategy as the Gooro-Mulligans Flat Unit. Approximately 360 hectares of woodland with significant conservation value is protected within the Mulligan's Flat Nature Reserve.

One of the key planning and conservation objectives of the ACT Lowland Woodland Conservation Strategy is to finalise the boundary between urban development in east Gungahlin and the woodland areas within Gooro, where there are additional areas of very high conservation Yellow Box/Red Gum Grassy Woodland.

The PA refers to ecological surveys of the woodland undertaken by Environment ACT during 2001, which provided an assessment of the woodlands, grasslands and wildlife in the area. In consultation with Environment ACT, the ACT Planning and Land Authority determined the extent of the areas requiring protection and areas for urban development.

The PA explains that as a result of this planning process, approximately 750 hectares of high conservation value woodland will be protected in a new nature reserve to be known as the Goorooyarroo Nature Reserve.

The PA has adequately addressed this issue.

### **Other Woodland**

The East Gungahlin area also contains other woodlands of good tree diversity, particularly south of Horse Park Drive within the future suburb of Kenny. The PA states that a Tree Assessment is to be undertaken to identify trees that are classed as significant under the *Tree Protection (Interim Scheme) Act 2001* and trees with ecological value. These trees are to be retained as part of the landscape setting.

The PA has adequately addressed this issue.

### **Natural Temperate Grassland**

The PA states that there are small remnant areas of natural temperate grassland within the Kenny area (approximately 1.7 hectares). There have been numerous changes to these sites and the Kenny site is now classified as degraded beyond recovery.

### **Striped Legless Lizard**

The Striped Legless Lizard is listed as threatened in the ACT, New South Wales, Victoria and Nationally. It is listed as a vulnerable species under the ACT Nature Conservation Act and the Commonwealth Environment Protection and Biodiversity Conservation Act. There are three grassland reserves in Gungahlin which were established through DVP 53 for the protection of the Striped Legless Lizard.

The PA notes that at the time of the Draft Variation to the Territory Plan No. 53 (DVP 53), when three grassland reserves containing the Striped Legless Lizard were identified, the Conservator of Flora and Fauna recommended 'that areas of native grassland in Kenny, including those known to contain *Delma impar* (Striped Legless Lizard), be protected from immediate development and any activities incompatible with conservation of *Delma impar* or lowland native grasslands, pending further surveys of *Delma impar* in Kenny and the Jerrabomberra Valley. The results of these surveys will enable the potential and need for a fourth conservation zone in Gungahlin to be assessed'. Action plan No. 2 for the Striped Legless Lizard, which was prepared in 1997, identified the Kenny habitat as a 'site within the urban fabric'. The PA noted that this site includes extensive areas of potential Striped Legless Lizard habitat, which have been significantly modified.

Since the preparation of Action Plan No. 2, which is currently being reviewed, there have been several significant developments relevant to the conservation of the Striped Legless Lizard. These include;

- The preparation of the National Recovery Plan for the Striped Legless Lizard;
- Additional surveys for the Striped Legless Lizard within the ACT and surrounding region; and
- The preparation of a planning framework for natural ecosystems of the ACT and New South Wales Southern Tablelands.

The PA notes that the main threat to the survival of the Striped Legless Lizard is a loss of habitat as a result of other land uses, particularly urban development or intensive agriculture or grazing. Other potential threats include predation and direct human disturbance. The PA notes that these threats are likely to be increased by the proximity of the urban development, with domestic cats in particular being suggested as potential predators.

Surveys for the Striped Legless Lizard were undertaken at ten sites in Kenny in 1994 and 1995. The Lizard was recorded at nine of these ten sites.

The PA notes that the proposed land uses in the Kenny area, which are likely to provide habitat for the Striped Legless Lizard, are as follows;

- Residential – the majority of the land east of Wells Station Road;
- Water Feature – a large pond immediately east of Wells Station Road;
- Urban Open Space – a corridor along Sullivans Creek;
- Hills, Ridges and Buffer Areas – land south of the hill west of Wells Station Road (the hill itself is unlikely to provide an acceptable habitat); and
- Broadacre – land on both sides of Wells Station Road, although much of this has been modified to the extent of being unsuitable as Striped Legless Lizard habitat.

The PA notes that the best opportunity for retaining Striped Legless Lizard habitat associated with the proposed Kenny development appear to lie within the lower elevations of the Hills, Ridges and Buffer land use areas, particularly within the adjacent Broadacre land use. The PA concludes that the implementation of the proposed development in Kenny will result in the loss of the majority of any remaining Striped Legless Lizard habitat in the area, which is predominately Phalaris pasture. The PA states that this would not conflict with the obligations of the ACT to make an appropriate contribution to the National Recovery Plan for the species, as there is an adequate cluster of existing or proposed conservation reserves located elsewhere in the ACT.

The PA satisfactorily addresses this issue.

## **Urban Edge Interface**

### **Bushfire**

The PA states that Throsby is in a bushfire prone area and the most likely ways that bushfires could spread into the area of the proposed suburb is from the Nature Reserves. Conversely, fires would be able to spread from the residential areas into these reserves. The PA has divided the proposed area into three zones; the northern enclave; the main southern part; and a southeastern outlier that is to the north west of Kenny.

The PA notes that the proposed infrastructure (water supply, fire trails, edge and access roads) appears adequate, but the site of a proposed primary school is vulnerable to fire from the southeast and would require a protection zone of 30m from the eastern edge of the suburb.

The PA recommends that setbacks or protection zones be provided. Houses in the northern part of Throsby need to meet Level 1 of Australian Standard AS 3959. Elsewhere, dwellings need only to conform to the Building code of Australia, except on the

western edge of the southeast outlier within 100m of the urban interface, where houses should also conform to Level 1 of AS 3959.

The PA acknowledges that recent bushfires, both locally and regionally, have demonstrated the potential for such events to occur close to residential areas and recognises the need to consider a range of preventative measures to be undertaken to ensure minimal impact.

The PA notes that residents, particularly those near the urban/rural interface should maintain gardens that avoid;

- Tall conifers or eucalypts;
- Continuous canopies of shrubs and trees to houses;
- Undergrowth that permits fire to 'climb' into tree crowns;
- Flammable species;
- Extensive combustible mulch;
- Bushes against house walls;
- Bushes in front of windows, brush and other combustible fences; and
- Other flammable items near houses (eg wood piles, flammable fuels).

The PA recommends that a protection zone of 35m width be established inside the boundary of the suburb's northern enclave in addition to the existing fuel reduced zone that is within the boundary of the nature reserve.

Perimeter or edge roads are proposed, as stated in the PA, to permit easy and safe access for fire suppression vehicles to urban/rural interface.

The PA acknowledges that some of the proposed residential areas are located within an area that may be subject to fire. However, with the introduction of the fire suppressant measures suggested in the PA, the risk of fire spreading into the suburbs is reduced to an acceptable level.

The PA has adequately addressed this issue.

### **Cat Containment and Native Wildlife**

In March 2004, the Legislative assembly supported a motion to permanently confine cats to their owners' premises in the suburbs of Forde and Bonner. These suburbs adjoin the Mulligans Flat Nature Reserve and measures are in place to minimise predation by roaming domestic cats.

The proposed suburb of Throsby is adjacent to the Mulligans Flat Nature Reserve and the Goorooyaroo Nature Reserve. The PA notes that similar measures to those proposed in Forde and Bonner may also need to apply to Throsby. The PA notes that this issue will be further investigated at the Concept Planning Stage for the suburbs east of Horse Park Drive.

## **6. Community Comments on the Preliminary Assessment**

Two public submissions and a submission from the Conservation Council of the South East Region and Canberra were received during the public consultation period for the

Preliminary Assessment. The following issues were raised in these submissions, which are relevant to the PA:

1. The proposed urban development will result in the destruction of significant woodland elements (eg isolated trees). It is unproven that the significant ecological values of mature trees can be protected within the urban fabric in the long term.

The proposed Gorooyarroo Nature Reserve includes the most significant (usually less modified) areas of Yellow Box/Red Gum Grassy Woodland and other lowland woodland vegetation. Some of the areas of lowland woodland vegetation outside the proposed Gorooyarroo Nature Reserve have been assessed as being substantially and severely modified. These woodlands represent fragmented remnants where the native understorey has been destroyed or so highly modified that the remnants no longer represent the community of interrelated plants and animals that has been declared endangered.

It is acknowledged that some woodland areas will be destroyed when urban development occurs. However, individual trees may be retained as part of the urban fabric following an assessment of the Conservator of Flora and Fauna. While this will not retain all ecological values represented by the remnants, however, experience shows that some fauna, such as possums and some birds, are tolerant of urban development and will utilise mature trees located in the residential areas.

As part of the concept planning process a tree survey and assessment will be undertaken in accordance with the *Tree Protection (Interim Scheme) 2001*. All trees assessed as being exceptional are required to be retained and wherever possible trees assessed as being significant are required to be retained in Open Space, road reserves and large blocks. The proposed removal of any trees that are recognised as being significant will need the approval of the Conservator of Flora and Fauna.

2. The PA has taken a 'broad brush' approach to assessing biodiversity impacts. A more comprehensive analysis of all factors needs to be considered. For example, it is recommended that bird surveys be undertaken in each season to provide comprehensive data for environmental assessment.

The PA has been prepared based on the information contained in the Lowland woodland Conservation Strategy (LWCS), the Draft Native Grassland Conservation Strategy and the associated planning process undertaken to establish the boundary of the Gorooyarroo Nature Reserve that addresses one of the priority tasks included in the LWCS. The DVP will provide for protection of connectivity between Mulligans Flat Nature Reserve and Mount Majura Nature Reserve. The creation of the reserve has also taken into account the habitat requirements of woodland birds and has incorporated areas of secondary grassland that will be managed to re-establish the original woodland type. Environment ACT intends to manage the new reserve in a manner that will improve its ecological condition and improve its habitat value for threatened and declining woodland birds. Research will be undertaken to provide the scientific information for these decisions to be soundly based.

3. The data provided on bird species is incomplete, without detail and not up to date.

The PA was prepared based on the data provided by Environment ACT and that contained in the LWCS for the identified species. This information is based on an analysis of Canberra Ornithologists Group (COG) data presented in the LWCS, which was completed in April 2004. The LWCS is an Action Plan (No 27) prepared under the Nature Conservation Act 1980.

4. The future viability of these reserves as a sustainable habitat for woodland birds is questionable. It is recommended that; no housing occurs east of Horse Park Drive and that alternative land use options are looked at; that the neck of Throsby between the two reserves is not developed at all; and that the area on the east of Horse Park Drive opposite the commercial group centre is not developed at all as it is part of a know Brown Treecreeper habitat.

The proposal will see the formal creation of a 750ha nature reserve that protects significant areas of Yellow Box/ Red Gum Grassy Woodland and secondary grassland. This is one of the key recommendations of the LWCS and will provide connectivity between Mulligans Flat Nature Reserve and Mt Majura Nature Reserve. The PA notes that this area includes 300ha of land that currently within the Residential land use policy in the Territory Plan, which will be changed to Hills, Ridges and Buffers land use policy.

The PA notes that the reserve boundaries have been determined in consultation between relevant Government Agencies and are considered an appropriate response to one of the priority tasks identified in the LWCS and in the context of developing a city.

Environment ACT have advised that given the expected elapse of several years before detailed planning occurs of urban land use east of Horse Park Drive, there will be an opportunity for the land use adjacent to the Gorooyaroo Nature Reserve to be reviewed to ensure that ecological values in peripheral areas of Gorooyaroo Nature Reserve are not unduly affected by nearby uses.

As mentioned above, there will also be the opportunity to implement internal reserve practices to improve the habitat value of the reserve area.

5. Areas adjacent to reserves should be cat free zones

The PA indicates that it is proposed that cat containment provisions similar to those to be implemented in Forde and Bonner are to be applied to the areas east of Horse Park Drive.

6. The boundary of Gorooyaroo Nature Reserve is unnecessarily long and will result in increased edge effects, fire abatement issues and loss of habitat.

The PA notes that it is important that the nature reserves are appropriately buffered against potential threats from suburban development. The PA proposes that a buffer area (within the residential area) will contain several elements including, edge roads, cultural heritage features, appropriate fencing and a fuel free zone that will help to create a buffer that fulfils both conservation protection and fire management requirements. The details of these will be resolved as part of the detailed planning process, which will also include the creation of access points (eg pocket parks) and signage outlining the values of the reserve

area. It is recommended that further studies be undertaken on the Throsby 'neck' area prior to land release.

An initial assessment of the potential for bushfire damage on all areas of the East Gungahlin proposal has been undertaken as part of this PA. This established that development could occur in this area in a number of different scenarios designed to reduce the risk and any encroachment into the built environment. These include; providing setbacks to reduce ember attack; providing fuel free zones; providing edge/perimeter roads; construction to meet level 1 of AS 3959 in certain areas; and the use of garden plants that do not propagate fire. The PA also recognises the existing situation where there is a 9m wide management zone within Mulligans Flat.

The PA notes that further investigations will be undertaken at the concept planning stage to further refine any management requirements.

7. Development next to or near land with threatened remnant woodland should have a buffer of at least one kilometre between housing and the reserve with limited access to reserves and ecological sensitive areas.

The PA notes that it is important that the nature reserves are appropriately buffered against potential threats from suburban development. Environment ACT intends to manage the new reserve in a manner that will improve its ecological condition and improve its habitat value for threatened and declining woodland birds. Research will be undertaken to provide the scientific information for this to be soundly based.

It should be noted that land east of the Throsby 'neck' and located in NSW is likely to function ecologically as part of the Mulligans Flat and Gorooyaroo Nature Reserve complex. Environment Act is seeking information from NSW about the status of this land with a view to ensuring its ecological function is maintained.

## **7. Evaluation of need for further Assessment**

### **Compliance with requirements of the Land Act**

The PA prepared for the proposed development has met the requirements of the Land Act in respect to Gazettal (Legislation Register) and public notification. The PA was prepared in accordance with Schedule 3 of the Land Act. A copy of the PA was delivered to the Conservation Council of the South-East Region and Canberra (Inc.) as per the requirement in Section 117 of the Land Act.

Resolution: **No** further assessment is required.

### **Unresolved issues or impacts identified in the Minister's evaluation, which are of sufficient significance to warrant further Assessment.**

No outstanding or unresolved issues were identified.

Resolution: **No** further Assessment is required.

## **8. Conclusion**

From the above technical evaluation it is concluded that the Preliminary Assessment adequately presents the potential impacts of the proposal on the environment. No further environmental impact assessment is required. However, there are issues which need to be further addressed and are outlined in the following recommendations.

## **9. Recommendations**

It is recommended that:

- Management practices are implemented within the reserve areas to improve the ecological condition and its habitat value for threatened and declining woodland birds.
- The final DVP (DV231) contains Principles and Policies, which provide for further studies to be undertaken at the appropriate planning stages for the proposed development areas adjacent to the Goorooyaroo Nature Reserve to ensure that the ecological values in peripheral areas of the reserve are not affected by proposed nearby land uses.
- The ACT Planning Authority, in consultation with the Heritage Unit, identify timeframes and responsibilities for investigation and assessment of heritage places which are identified to be retained or requiring works, particularly where needs are identified for conservation planning or salvage.

Jane Bell  
Environment Minister's Delegate  
1 October 2004



**East Gungahlin  
Suburbs of Kenny and Throsby and  
Goorooyarroo Nature Reserve**

**PRELIMINARY ASSESSMENT**

**July 2004**

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**APPENDIX A** - Report to the ACT Planning and Land Authority – June 2004  
The Striped Legless Lizard (*Delma impar*) in the Proposed Suburb of Kenny  
Implications for Urban Development

**APPENDIX B** – Report to the ACT Planning and Land Authority – June 2004  
Bushfire Risk Assessment for the Proposed Housing Development at  
Throsby, ACT

## **1. GENERAL INFORMATION**

The *Land (Planning and Environment) Act 1991 (the Land Act)* requires that certain proposals be subject to an assessment of their environmental impacts. Where an assessment is required, the proponent is to prepare a Preliminary Assessment (PA) in accordance with *Part IV* of the *Land Act*.

This PA has been triggered by a proposed Variation to the Territory Plan, which proposes changes to the Hills Ridges and Buffer Areas, Urban Open Space and Community Facilities Land Use Policies for the subject area, and requires clearance of more than 0.5 hectares of remnant native vegetation. The Draft Variation to the Territory Plan (DVP) responds to the proposed East Gungahlin Draft Variation to the Territory Plan, as described in this Assessment.

### **1.1 Name and address of proponent**

The ACT Government is responsible for the proposal to revise the planning for the Eastern undeveloped parts of Gungahlin, which is the subject of the Preliminary Assessment. Specifically, the proponent for the PA is:

Manager, Structure Planning  
ACT Planning and Land Authority  
16 Challis Street  
DICKSON ACT 2602

The proponent's representative is:  
Mr Kevin Godkin  
Structure Planning  
Land Planning Branch  
ACT Planning and Land Authority

Ph (02) 6207 6189      Fax (02) 6207 2587

### **1.2 Details of the Contact**

All inquiries regarding this Preliminary Assessment should be made to:

Manager  
Development and Environmental Policy  
ACT Planning and Land Authority  
GPO Box 1908 CANBERRA ACT 2601  
Contact details for submissions Fax: 6207 72587  
Email: [eia.actpla.gov.au](mailto:eia.actpla.gov.au)

Copies of this PA may be purchased from the ACT Planning and Land Authority Shopfront at Dame Pattie Menzies House, 16 Challis Street, Dickson, and are available for inspection at all public libraries or on the ACTPLA website at [www.actpla.act.gov.au](http://www.actpla.act.gov.au)

## 1.3 Status of the Project

### 1.3.1 Background

Planning for Gungahlin dates back to the 1970s, when the National Capital Development Commission (NCDC) first commissioned surveys of the Gungahlin area. In the 1980s, the NCDC embarked on detailed planning for Gungahlin, and in 1988 released a Policy Plan and accompanying Environmental Impact Statement (EIS). The Policy Plan formed the basis of the definition of Gungahlin's Urban Areas in the National Capital Plan and Territory Plan. The Territory Plan shows key elements such as the location of roads, residential, commercial and industrial areas, community facility sites, urban open space, ponds, and hills, ridges and buffer areas (**Figure 1**). In 1991, the development of Gungahlin commenced.

The Territory Plan, gazetted on the 14 September 1993, generally incorporated the NCDC's original plan for Gungahlin, together with two significant previously approved Variations to the Interim Territory Plan. These were:

- Gungahlin - Suburbs of Amaroo, Casey, Harrison, Ngunnawal, Nicholls (1991).
- Gungahlin - Part of Nicholls including the Gold Creek Tourist Area (1992).

These two Variations established Draft Variation to the Territory Planning principles and policies for the development of the respective areas.

Three major variations to the Territory Plan have since been gazetted:

- *Mulligans Flat* (Variation 15, 1994) which significantly expanded the Reserve area;
- *Gungahlin Town Centre and Central Area* (Variation 53, 1995) which substantially altered the original plan for the town centre, mainly in response to the discovery of habitats of the vulnerable Striped Legless Lizard (*Delma impar*) on the original town centre site and creation of conservation reserves;
- *Draft Variation No 130* - North Gungahlin.

These Variations demonstrated the need to modify the Territory Plan to ensure that environmentally significant sites were adequately protected. In addition, as part of the process of preparing the town centre variation a Community Brief (1994) for the town centre was prepared with the community which argued strongly for a new approach to retail provision and urban development generally. The urban village concept was supported as one which was much more attuned to cultural needs and aspirations, and principles of sustainability.

### 1.3.2 Urban change

The parameters shaping the development of Canberra are changing. These include:

- Demographic changes including a slowing in population growth, lower fertility rates; reduction in household sizes; later marriage; increasing separation and divorce; increasing numbers of people who will never marry; and an ageing population;

- Housing demand and demands for wider housing choices and types;
- Rate of growth;
- Employment composition and structure;
- Cost of infrastructure provision;
- Declining share of retail expenditure at local centres;
- Increasing disparities in income levels and quality of life;
- High quality design;
- Information technology advancements;
- Greater awareness and understanding of environmental issues and the need to protect biodiversity; and
- Increasing levels of private car usage for commuter trips.

### The Griffin Plan

The first plan for Canberra resulted from a design competition launched by the Federal Government in 1911, and was won by Walter Burley Griffin. Though the Griffin Plan was primarily concerned with the formal layout of the Central Area as the setting for Australia's Parliament House and main government functions, it also established a number of principles relating to the pattern of urban development and its relationship to topographic and landscape elements.

The major principles that guided the development of the Griffin Plan and provide the key to the character of the Canberra of today, were judged to be of national significance at the time of the development of Canberra, and remain so as planning for Canberra's future continues. Although Griffin's plan was for a population of 75,000, these principles continue to form the basis of statutory planning documents such as the National Capital Plan which guide planning frameworks to accommodate a city forecast to reach 500,000 people, of which 100,000 will reside in Gungahlin.

Matters of national significance in the planning and development of Canberra and the ACT include:

- The pre-eminence of the role of Canberra and the Territory as Australia's National Capital;
- Preservation and enhancement of the landscape features which give the National Capital its character and setting;
- Respect for key elements of Griffin's formally adopted plan for Canberra;
- Creation, preservation and enhancement of fitting sites, approaches and backdrops for national institutions and ceremonies as well as National Capital uses; and
- The development of a city which both respects environmental values and reflects national concerns with the sustainability of Australia's urban areas.

### The Canberra Spatial Plan

To accommodate this forecast growth, the ACT Government is working towards preparing a

framework that will progress Canberra along the path to sustainability, and proposes to implement its strategic approach to the achievement of this goal through *The Canberra Plan*. The Plan will consist of a suite of integrated strategies that focus on the key areas of economic, social and environmental sustainability. As the first step in this process, the *Canberra Spatial Plan* is being developed. Its aim is to provide Canberra with a contemporary planning framework that responds to:

- The future urban form of Canberra, including density and urban consolidation;
- The impact of sustainability imperatives on development patterns;
- The impact of economic development on the physical layout of the city, including the vocational needs of industry and business;
- The role of town centres, especially Civic;
- The integration of land use planning with transport planning and the promotion of public transport;
- The critical elements of the natural and built environments which should be maintained and protected for the 'bush capital'; and
- The growth rates and their impact on the spatial organisation of the city.

The Spatial Plan will be an equal partner along with the *Canberra Social Plan* and the *Canberra Economic White Paper* in providing for a sustainable future. The proposed Draft Variation to the Territory Plan for East Gungahlin will be incorporated into this framework, assisting to contribute to a sustainable future Canberra.

#### Future Canberra and DVP 155

The Organisation for Economic Co-operation and Development (OECD) 'Urban Renaissance' Study and the Future Canberra Conference held in May 2001 stressed the changes in the environmental and economic parameters facing the city. It highlighted the importance of the development of a citywide strategy and a strategic plan for the revitalisation of Civic as key elements in the realisation of a more sustainable pattern of urban development and in promoting the growth for the city.

In response to these issues, Variation to the Territory Plan No. 155 (review of Part A of the Territory Plan) introduces the following goals for the ACT:

#### ***Sustainable development***

Continued development and change to accommodate economic and population growth but in a manner which upholds community values, conserves natural resources, safeguards ecological systems, achieves reduction in the level of greenhouse gas emissions, and establishes the ACT as a model living environment for the 21<sup>st</sup> century.

#### ***An effective, healthy and livable city***

Management of urban growth and change within a metropolitan framework which promotes an efficient pattern of development coupled with cost-effective provision of transport, infrastructure and services, and which maximises lifestyle quality and choice.

### ***Economic vitality***

Diversification and expansion of the economy by building on the Territory's environmental quality, accessibility, capital city advantages, human resources and skills base; strengthening regional links; fostering innovation; and rewarding enterprise.

### ***Community Well being***

A caring and harmonious society in which both individual and collective rights are respected; divisions are minimised; there is fair and reasonable access to adequate services and facilities; and proper concern for community health and safety.

### ***Environment and High Quality Design***

Continuing enhancement of the Territory's natural, built and cultural environment, including conservation of heritage and other valued features and with an emphasis on high quality, creative design of new development, urban spaces and landscape settings.

### ***Variation 200 The Garden City***

The ACT Government has recently introduced several new initiatives with the specific desire to move towards a high quality sustainable future for Canberra. These include guidelines such as Designing for High Quality and Sustainability and the proposed ACTCode (2001). Variation No. 200 to the Territory Plan introduces policies and provisions that protect the residential amenity and neighbourhood character of suburban areas, provide strategic guidance on the preferred location of residential redevelopment and promote more sustainable development and housing choice. The suburban area provisions introduce a further layer of controls aimed at protecting the low rise, leafy character of suburban areas, and introduce some key changes to the residential design and siting codes in the Territory Plan.

### ***Statutory Responsibilities for Protecting Biological Assets***

The ACT Government has a statutory responsibility under the *Land (Planning and Environment) Act 1991* and the *Nature Conservation Act 1980* to protect and conserve biological resources.

The Territory Plan, an instrument empowered by the Land Act, requires that biological resources be considered in the planning process. Specific goals in the Territory Plan in relation to biological resources are:

- (a) To promote the conservation of natural resources;
- (b) To conserve and enhance valued features of the Territory's natural, built, social and cultural environment; and
- (c) To promote ecologically sustainable development, protect biodiversity, and provide for high standards of environmental amenity, urban design and landscape.

These specific requirements reflect the growing emphasis in planning to consider ecological issues, and in particular the explicit adoption in the Territory Plan of the principle of ecological sustainability.

Division 5 – Public Land of the *Land (Planning and Environment) Act 1991* recognises biological assets can be protected by preparing plans of management. The process involves

the Conservator recommending to the Authority that the Plan be varied to provide for reservation for conservation purposes including, a nature reserve, wilderness area, national park, open space etc.

The *Nature Conservation Act 1980* (ACT) makes provision for the protection and conservation of native flora and fauna and the *Land (Planning and Environment Act) 1991* sets objectives for the management of nature reserves, wilderness areas and national parks. The Nature Conservation Act was strengthened in 1994 by an amendment that empowered the Minister to declare threatened species and communities in the ACT, and established the flora and Fauna Committee to assist the Minister in this process.

The Conservator of Flora and Fauna has prepared Action Plans in accordance with the requirements of the Nature Conservation Act, in consultation with the Flora and Fauna Committee. The Action Plans include details of each species or community, its known distribution the ACT and proposals for protection and survival.

An objective of the *ACT Nature Conservation Strategy* is to incorporate the conservation requirements of native species and ecological communities into planning for land development, with special consideration being given to those elements of our natural assets that are poorly conserved or sensitive to environmental change.

New Commonwealth legislation also strengthens the protection of natural resources in the ACT. The *Environment Protection and Biodiversity Conservation Act 1999* gives the Commonwealth a role in assessing and approving all actions that impact significantly on threatened species or communities. This is a marked change from the Commonwealth's previous role in which they were only involved if the proposal were on Commonwealth land, or required a decision by another Commonwealth agency.

The area subject to this PA contains a large component of remnant native vegetation, which varies in terms of ecological integrity depending on the nature of past land use. The value of the area for wildlife depends to a significant degree on the native forest and woodland in these areas.

### **1.3.3 Planning in East Gungahlin**

The Policy Plan Implementation Plan Gungahlin (NCDC, 1989) included an indicative development program for East Gungahlin that showed that development in the eastern parts would be the final stages in the overall development of Gungahlin. Development in East Gungahlin will require the commitment of funding to provide the required infrastructure, particularly drainage and sewerage in the Sullivans Creek catchment.

In 2002, the then Planning and Land Management Group (PALM) completed a planning review, consisting of a Scoping Study Report, of the East Gungahlin Area of Gungahlin. The purpose of the review was to:

- Re-examine and revise the planning for East Gungahlin with particular regard to the presence of large areas of Yellow Box/Red Gum Grassy Woodlands with associated

wildlife habitat in the area;

- Draw together and integrate a range of different strategies and government policies into future planning for Gungahlin;
- Take into account significant changes in the basic assumptions underlying previous planning work such as the changes to the Gungahlin Town Centre location and the creation of significant conservation reserves at Mulligans Flat and Mulangarri/Crace; and
- Harness current approaches and ideas to the application of sustainable development principles and environmental management, access to public transport, urban design and safety, cultural planning, water cycle management and innovative infrastructure delivery.

The review covered the future suburbs of Kenny and Throsby and the Gooroo woodlands area within the Sullivans Creek and Gungaderra Creek catchment. This land is undeveloped apart from rural development consisting of scattered homesteads and outbuildings. Development within the Gungaderra Creek Catchment is now progressing south of Horse Park Drive to establish the future suburb of Harrison.

The review included an assessment of the cultural heritage features of the Sullivans Creek Catchment and an analysis of the ecological characteristics of the area, based on existing information and field studies undertaken by Wildlife Research and Monitoring Unit. The review was finalised and a Scoping Study Report was circulated to ACT government agencies for comment, including Environment ACT, who provided extensive comments. The Scoping Study Report was revised to reflect input from ACT government agencies and then finalised in late 2002.

The 2002 PALM planning review provides much of the basic planning information for East Gungahlin and informs this Preliminary Assessment.

#### **1.3.4 Consultation**

There are no resident populations in Kenny or Throsby, as yet. ACTPLA has met with the Mulangari Community Council, which consists of tenants residing at the historic properties of Canberra Park, Wells Station and Gungaderra Homestead in Gungahlin.

Canberra Park Homestead is currently being assessed by the Heritage Council and is within the area covered by this PA. ACTPLA met with the Community Council in early 2003 to brief them on the proposed East Gungahlin Structure Plan and heritage conservation issues in East Gungahlin.

In November 2003, ACTPLA briefed the Planning and Land Council on the East Gungahlin Structure Plan and advised them that a PA and variation to the Territory Plan would be prepared during 2004.

No formal consultation has occurred with the Gungahlin Community Council, conservation groups such as Friends of Grasslands or the Conservation Council for the South East Region. These groups, and others, will have an opportunity to comment on this PA when it is released for Public Comment in late July 2004.

## **1.4 Location of the Proposal**

The area covered by this Preliminary Assessment is approximately 1000 hectares and is shown at **Figure 2**. The area consists of the eastern undeveloped part of Gungahlin within the Sullivans Creek Catchment comprising the suburb of Kenny and a part of the suburbs of Throsby and Harrison. Designated land towards the Federal Highway is excluded from the area under this Preliminary Assessment. The area is bounded by the Federal Highway to the south, Flemington Road and the future suburbs of Harrison and Throsby to the west and northwest. To the northeast and east is the ACT/NSW border and to the north is the Hills Ridges and Buffer Area connection to the Mulligans Flat Nature Reserve.

The Gungahlin Town Centre is located generally to the north west of the area with Flemington Road providing a direct road connection.

The headwaters of Sullivans Creek encompass the proposed suburb of Kenny and part of the Gorooyarroo Nature Reserve. Sullivans Creek drains in a south-westerly direction, eventually into Lake Burley Griffin. Gungaderra Creek catchment is directly to the west of the Sullivans Creek catchment and like Sullivans Creek also drains in a southwest direction. The part of Throsby being considered in this PA is located within the Sullivans Creek catchment area.

## **1.5 Description of the Project**

### ***1.5.1 Type and Form of the Project including Supporting Developments***

The proposal assessed in this Preliminary Assessment relates to a proposed DVP for East Gungahlin.

A broad description of the proposal is provided below and the changes proposed are assessed in Part 3 of this document. It should be noted that the changes proposed are not only a result of a review of policy, but also add a layer of detail which was not available when the Territory Plan was first prepared, as there is now a greater understanding of the complex issues affecting the planning for the area.

This PA is not concerned with the general impact of urban development in East Gungahlin – this issue has been dealt with and resolved through the original NCDC Gungahlin Policy Plan and EIS in 1988-89, and the established policies contained in the Territory Plan and National Capital Plan (NCP). Instead this PA has responded to the differences between the current Territory Plan and the Draft Variation proposed. Accordingly only the impact of the proposed changes are assessed.

### **Proposed East Gungahlin Draft Variation to the Territory Plan**

A major theme underpinning the proposed Draft Variation to the Territory Plan is the need to apply sustainability principles. The Plan seeks to achieve an efficient and sustainable land use structure together with a respect for the natural, heritage, environmental and cultural elements of the East Gungahlin Area. Details of the Plan, its objectives and principles are

outlined in detail in the East Gungahlin Draft Variation to the Territory Plan.

## **A. Extent of Urban Area**

The proposed Draft Variation to the Territory Plan (**Figure 3**) for the urban areas in Kenny, part Throsby and part Harrison correspond closely with the current Territory Plan boundary. The main exceptions are:

- The realignment of Wells Station Drive to reduce potential impacts on the proposed Wells Station Heritage Precinct;
- Relocation of a Commercial C Group Centre Site into the suburb of Kenny;
- Relocation of a community facilities site for a government high school from Kenny to Harrison (now one government high school to serve East Gungahlin);
- Small increase in land for Industrial Land Use;
- The alignment of the open space green corridor on Sullivans Creek has been more clearly defined as a result of the findings of a Stormwater Masterplan for Sullivans Creek;
- The boundary of the Gorooyarroo Nature Reserve in Throsby / East Gungahlin has been identified;
- The width of the Hills Ridges and Buffer corridor between Kenny and the Federal Highway has been adjusted; and
- The area of land identified for Broadacre land uses east of Mitchell has been adjusted.

## **B. Revised Urban Structure**

The landscape characteristics of the site generate the suburb of Kenny, incorporating a major transport route and open space corridor (on Sullivans Creek) incorporating natural drainage lines and other significant landscape, ecological and cultural heritage features. Wells Station Drive, a major north-south arterial, will be realigned and the collector road network will be identified.

The location of major commercial and community facilities is revised and a new site is identified for local facilities including a Group Centre.

The boundaries of the urban edge, Hills Ridges and Buffer Areas, Industrial and Broadacre areas are further refined. The area will be covered by a Defined Land Overlay in accordance with the Land Act to enable detailed adjustments at later detailed planning stages.

The major features of the Draft Variation to the Territory Plan are:

- development should encourage an environment that facilitates sustainability in terms of ecological, cultural, environmental, social and economic considerations;
- the landscape setting and values of the site should be recognised and enhanced. Existing significant landscape features will be retained, including significant trees where possible;
- the local neighbourhood will be based on a walkable radius of 400m, and focussed on an activity node such as a basic unit of open space (such as a park and potential community facility);
- residential areas should be based on a series of inter-connected suburbs (each containing 3 or 4 neighbourhoods) with their own local centre, typically adjoining a primary school site

- and open space corridor;
- mixed use will be permitted at Kenny Group Centre;
- A Group Centre with adjoining higher density housing is to be developed at a major road intersection with Horse Park Drive;
- an integrated cycling route network should be created within and between communities consistent with national standards;
- The layout of the suburb will be designed to encourage use of public transport, cycling and walking, thereby minimising dependence on the private car;
- A local bus route is to be provided through the suburb of Kenny via the Group Centre, areas of higher density and primary school site to encourage public transport use;
- the open space system should form a continuous web of spaces that contains a sequence of destinations eg. centres, schools, parks, community facilities, ovals, ponds;
- the road hierarchy should be clearly legible and provide good and safe access to all users and encourage high levels of public transport usage;
- water sensitive urban design should be adopted as a means of implementing the principles of sustainable urban water management; and
- Aboriginal and historic heritage place will be recognised and significant sites conserved in public open space where appropriate.

### C. Population and Employment

#### *Environment Impact Statement (1989) – General*

The Gungahlin Environmental Impact Statement (EIS) Final Statement January 1989, refers to an expected population for the whole of Gungahlin of approximately 80,000 – 85,000 people. This population would reside in dwellings constructed on 30,000 – 32,000 residential blocks.

The population assumptions applied in the 1989 Gungahlin EIS were:

- derived from a direct comparison with Belconnen;
- used a generation rate of 1,700 – 1,800 persons per square kilometre;
- this approximates to 6.5 – 7.0 dwellings per hectare with 2.6 persons per dwelling.

The EIS identified future trends towards lower household occupancy levels, smaller less traditional households, an aging population, and an increased number of medium density dwellings. However, the estimated population of 80,000 – 85,000 does not reflect these trends as the overall pattern of demographic change was not expected to alter substantially from that experienced in other districts.

**Table 1**

<b>1989 Draft Policy Plan</b>				<b>East Gungahlin Draft Variation to the Territory Plan</b>						
<b>Suburb</b>	<b>Approx. Area - ha. Residential</b>	<b>No. of Dwellings @ 8 d/ha</b>	<b>No. of Persons @ 2.6 p/d +</b>	<b>Suburb</b>	<b>Approx Area (ha)</b>	<b>No of Residential Dwellings @ 13d/ha</b>	<b>No. of Persons @ 2.6 p/d</b>	<b>Approx. Area (ha) B8, B9</b>	<b>No. of dwelling units @ 20 d/ha</b>	<b>No of persons @ 1.8 p/d x</b>
<b>Kenny</b>	329	2650	<b>6900</b>	<b>Kenny</b>	290	3800	<b>9800</b>	10	200	<b>360</b>

+ 2.6 persons per dwelling is used for consistency with the EIS

*x 1.8 persons per dwelling reflects the lower occupancy per dwelling in B8 and B9 areas.*

Table 1 above shows that the approximate forecast difference in population between the 1989 EIS and the proposed East Gungahlin Draft Variation to the Territory Plan is about 3200 persons. The difference in population is attributed to the combination of the low density (8 dwellings/hectare) assumed in the EIS Draft Policy Plan and the contemporary densities (13 to 20 dwellings/hectare) adopted for the East Gungahlin Draft Variation to the Territory Plan.

The following is a discussion on the possible impacts due to the increase in population.

#### *Traffic*

Since the preparation of the Gungahlin EIS (1989), many trends have emerged that support the increased use of private vehicles including rising incomes, more dispersed employment and flexible working hours. This impact may be offset by features of the proposed Draft Variation to the Territory Plan that allow for home based employment, and public transport becoming a viable alternative to private car use as fuel costs continually rise and pay parking is more widely introduced.

It is recognised that additional road capacity will be required to meet Gungahlin's overall traffic demand. The ACT Government road construction program for the next five years provides for the completion of major projects that will substantially increase road capacity to meet increasing transport demands generated by Gungahlin's growth. The construction of Horse Park Drive to Federal Highway/Majura Road interchange will provide additional peripheral route capacity to meet the travel demand generated by development of East Gungahlin.

*Forecast Impact:* While the proposed road system will meet demands from public and private transport within East Gungahlin and to other areas of Gungahlin, there may be some congestion on arterial road connections from Gungahlin to the rest of Canberra during peak times, as occurs on the existing road network across Canberra.

#### *Transport*

The Sustainable Transport Plan will integrate a range of policies, programs and tools to produce a set of specific strategies and actions to achieve government's economic, social and environmental objectives in the transport sector.

The Transport Plan recognises that increased use of public transport could improve Canberra's transport efficiency and reduce the rate of production of greenhouse gases from transport. Canberra was designed as a car-oriented city, cars have become relatively cheaper and they continue to be more flexible than public transport for many trips. In addition there are many trends that are supporting the increasing use of private vehicles for transport including rising incomes, the declining share of commuter trips, more dispersed employment, more flexible working hours and increased participation by women in the workforce. Nevertheless public transport will continue to provide an important role in the overall transport system and will continue to be a major or main means of transport for many households.

One of the goals of the Transport Plan will be to maximise accessibility and therefore reduce

the need for some trips and to encourage alternative modes of travel by car pooling, bicycle and walking. The Plan will support land use and transport integration and policies that encourage trips by these alternative modes and public transport.

As a result of changed Commonwealth employment strategies, the town centre is likely to provide less employment positions than envisaged in the EIS (1989). This employment shortfall may be offset by the ACT Government's approach to encourage employment in town centres, as well as provide opportunities in other commercial centres in the East Gungahlin area.

Associated with the town centre employment level is the potential for an increase in vehicle trips as residents travel to work outside the East Gungahlin area, although, increased opportunities and the convenience of home based employment may assist in reducing the employment based trip demand.

As the majority of the ACT vehicle (public and private) fleet are now using unleaded petrol (introduced in 1986), technological advancements in vehicle engineering, and the possibility of ACTION bus fleet converting to natural gas fuel in the future, all of which contribute to a lessening of greenhouse gas impacts.

*Forecast Impact.* Potential increase in transport related greenhouse gas emissions. Some congestion on arterial road connections from Gungahlin to the rest of Canberra during peak times may occur, diminishing over time as the balance of policy initiatives designed to encourage greater public transport use take effect.

#### *Employment*

The number of Gungahlin residents in the labour force is estimated to be between 52,000 and 55,000 when the Gungahlin population reaches 100,000. This is between 10,000 and 12,500 more than the higher long term projected in the Gungahlin EIS (1989).

It is estimated that there will be about 5200 East Gungahlin residents in the labour force when the East Gungahlin population is 10,100. This is about 2000 more than expected by the Gungahlin EIS (1989) projections.

It appears that there will be 2,000 to 7,000 fewer jobs in Gungahlin than expected in the Gungahlin EIS (1989). The Gungahlin EIS (1989) and current estimates of employment in Mitchell and Gungahlin suburbs are similar, but the EIS over-estimated the number of jobs likely to be located in Gungahlin Town Centre, mainly due to the likely decrease in government office jobs. Residents in this part of East Gungahlin who are seeking a government office job will therefore have to travel a longer distance (ie Belconnen or Central Canberra). However there will still be opportunities for jobs in education, retailing, services and trades within the District. The following table compares the employment assumptions in the Gungahlin EIS (1989) with current employment estimates.

**Table 2**

<b>GUNG AHLIN EMPLOYMENT</b>	<b>EIS 1989</b>	<b>2002 Estimate</b>	<b>Difference</b>
Participation rate % 15+	71.6	73.6	
Labour force from participation rate (1)	42,500	55,000	12,000
Workers: population % ACT		54.6	
Workers: population % Gung	50.0	52.0	
Labour force from worker: pop ratio (1)	42,500	52,000	10,000
Population East Gungahlin	6900	10,100	3200
Workers: population % E.Gung	46.0	55.0	
E. Gungahlin employed residents	3200	5200	2000
Gungahlin residents working in District	7,000	8,500	1,500
Commuters leaving Gungahlin (2)	30,000	43,500	13,500
Jobs in Gungahlin District	16,000	14,000	-2,000
to	21,000		-7,000
Jobs in Gungahlin Town Centre	8,000	6,000	-2,000
to	12,000		-6,000
Jobs in Mitchell	3,000	4,000	1,000
	4,000		0
Local jobs in Gungahlin suburbs	5,000	4,000	-1,000
Jobs in East Gungahlin		0	
(1) Employed residents by the end of Gungahlin's development			
(2) Based on 37,000 resident work force			

Source: 2002 Estimate, Planning Policy Section, PALM

The implementation of planning for employment in East Gungahlin will be influenced by the review of urban settlement options to be undertaken as part of the Canberra Spatial Plan. Completion of Gungahlin development to 100,000 people by 2028 would require at least half of annual dwelling demand and one-third of additional jobs to be located in Gungahlin. Alternatives which focus on redevelopment, infill or additional residential land in the surrounding region will delay the development of Gungahlin suburbs and the location of employment within the District.

For the new suburbs there are indications that there will be some shift in the employment projections from that originally envisaged. Some employment opportunities may be lost in the town centre. However, with advancements in technology there is the opportunity for a greater percentage of workers to operate out of residential dwellings, which in turn reduce traffic volumes out of the area.

Experience from other cities suggests that public transport systems become increasingly important to cities with significant traffic congestion and it is important for Canberra to keep up with technology (where this is cost-effective) and provide for future systems, as the city grows.

Transport makes a significant contribution to greenhouse gases and there are many initiatives proposed as part of the ACT Greenhouse strategy to reduce this contribution. There will continue to be a need to provide new and to upgrade existing road infrastructure to support Canberra's growth. Even with a successful public transport systems the majority of trips are

expected to be by private motor vehicles for the foreseeable future. So one key aspect of the Transport Plan is to identify the most appropriate road network for the City to meet current and emerging transport demands over the next 20 to 30 years. The road network to serve the current and future needs of Gungahlin is an important issue to be addressed by the Plan.

*Forecast Impact:* Potential for some increase in greenhouse gases. Some congestion on arterial road connections from Gungahlin to the rest of Canberra during peak periods as occurs on the existing road network across Canberra. Total number of commuters leaving Gungahlin to attend place of employment will increase, however some offset will occur once the suburbs become established as installation of technological infrastructure is complete and home based employment becomes increasingly viable as the population increases.

#### *Schools*

Areas to benefit from a slight increase in population would be school and commercial catchments. This would assist these facilities to become more viable in the long term.

*Forecast Impact:* Schools may be required to provide temporary facilities during peak demand periods.

#### *Community Facilities*

The EIS (1989) assumed that Gungahlin would be planned on the 'neighbourhood' planning principle, which sets out the neighbourhood with the school, shops playing field as the social centre of the area. The only departure from this planning principle was to increase the area of the 'neighbourhood' in an attempt to assist in the longer-term viability of the shops and schools.

Key objectives of the proposed Draft Variation to the Territory Plan for community facility requirements in East Gungahlin include:

- contribute to the development of a district which supports and promotes the community life of its residents;
- provide a full range of community facilities and services; and
- locate centres, facilities and open space so as to maximise their accessibility and viability.

*Forecast Impact:* The provision of community facility sites in the East Gungahlin proposed Draft Variation to the Territory Plan is considered to be appropriate, with the flexibility incorporated into policies to provide for a range of future sites and uses. Monitoring of needs will be an on-going process.

#### *Natural Resources*

The East Gungahlin area contains a large component of remnant native vegetation that varies in terms of its ecological integrity, depending on the nature of previous land uses. The value of the area for wildlife depends to a significant degree on this previous land use history, and current land uses.

In order to provide for balanced planning outcomes, it is not feasible to preserve all ecological elements. However, the ACT planning process allows flexibility in its approach to accommodate conservation imperatives outlined in Action Plans for threatened species and

ecological communities prepared under the *Nature Conservation Act (1980)*. These plans indicate that some natural features are not proposed to be protected in full but could be considered for incorporation into the urban fabric as part of the detailed planning process.

This practice is being implemented in the planning for the East Gungahlin proposed Draft Variation to the Territory Plan where ecological assets, including the area of Yellow Box/Red Gum woodland in the north of the area will be maintained and protected within the proposed Gorooyarroo Nature Reserve and scattered trees within urban open space. These practices indicate that protection of the environment plays an important role in planning in the ACT and will be continued through the implementation of the East Gungahlin Draft Variation to the Territory Plan and subsequent stages of the detailed planning process for this area.

*Forecast Impact.* Implementation of the Draft Variation to the Territory Plan will have far lesser impact on natural resources of this part of East Gungahlin than would have occurred had the policy plan contained in the EIS (1989) been implemented. In fact, implementation of the Draft Variation to the Territory Plan will have significant environmental benefits through the protection of the conservation significance of large areas of partially modified Yellow Box – Red Gum woodland, secondary grassland and habitat for threatened birds at Gorooyarroo and the border hills.

However, the development of Kenny will lead to the loss of the majority of the existing Striped Legless Lizard habitat within the area, although most of this is exotic pasture rather than natural temperate grassland. There is the option of salvaging some lizards from this area and translocating them to alternative habitat areas or using them for research and educational purposes. Any translocation would be subject to rigorous protocols, must be done in an experimental framework, and should desirably be based on the results of translocation trials conducted elsewhere (e.g. in Victoria).

The issues associated with the conservation of the Striped Legless Lizard in the Kenny area are discussed further in Appendix A.

#### *Water quality*

The approach indicated by the EIS could be described as a reasonably conventional solution to stormwater management.

An ACTPLA study, managed in collaboration with Environment ACT and City Management, is under way to develop draft ACT Design Guidelines for Sustainable Urban Water Management. These guidelines are intended to establish appropriate objectives for pollutant loads, on-site detention etc. as well as support a fundamental shift in the way stormwater run-off from urban developments is managed. The approach to reducing the quantity and peak flows of stormwater run-off as close as possible to the source from urban developments has a number of potential benefits, including improvements to water quality in downstream receiving waters.

*Forecast Impact.* Possible impacts on water quality and flow resulting from any increase in population will be negated by greater control and enforcement in relation to stormwater run off from urban areas achieved through the implementation of sustainable urban water management design techniques.

### *Air quality*

Since the EIS (1989) was produced, an Australian Standard has been developed and implemented for wood burning appliances in the ACT. The costs of these appliances and wood fuel have increased and there is a heightened community awareness about air quality impacts. Additionally, no encouragement is given to install new appliances, with consideration being given to incentives to remove such appliances, subsidies for alternative heating forms etc.

In Dunlop proposals for the installation of wood fire heaters are referred to Environment ACT for consideration before any approval is given. Similar consideration may be required in East Gungahlin.

*Forecast Impact:* Some minor impact may occur due to climatic conditions, however due to the higher standards proposed to be enforced, reduced vehicle emissions resulting from lead free fuel and an anticipated increase in public transport use, this impact will be lesser than that forecast at the time the EIS (1989) was prepared

### **D. Urban Open Space**

The Territory Plan Map currently shows a limited amount of Urban Open Space, mainly in the form of a green corridor, along Sullivans Creek, south of Horse Park Drive that widens at the northern end to incorporate District Playing Fields.

The proposed Draft Variation to the Territory Plan for East Gungahlin puts an emphasis on the importance of urban open space as a structural element as well as providing a recreational resource and visual amenity for the future residents. The open spaces proposed gives identity to the suburbs as well as meeting local open space needs.

The resultant linear open space system (**Figure 3**) is designed not only to protect the natural drainage system, but also to create the opportunity for an off-road movement system suitable for pedestrian and cycle use. It is intended that the landscape principles identified in the *Gungahlin Landscape Policy* (1996) will assist in achieving an attractive landscape that will positively contribute to the environmental quality of future residents of Kenny and Throsby. In general, landscape proposals for these suburbs will be required to satisfy a number of objectives relating to streetscape, buffers to nature conservation areas, urban open space, landscaping of parks and natural creek systems and utilisation and enhancement of existing vegetation in new residential areas.

The Draft Variation to the Territory Plan proposes at least one large pond for water quality control as well as aesthetic purposes on Sullivans Creek. There is the possibility of creating additional ponds along Sullivans Creek, however, this will require further engineering and urban design investigation.

The draft variation also proposes a Neighbourhood Oval adjacent to and co-located with the proposed Primary School site at Kenny.

## E. Stormwater

The current Territory Plan Map does not identify any water quality control ponds (“Water Features”) in the East Gungahlin area. The existing Plan does however show a stormwater corridor, following the line of the existing Sullivans Creek system through Kenny to Horse Park Drive, located in an Urban Open Space Land Use Policy area.

Stormwater drainage planning for Kenny was reviewed during 2003 by ACTPLA (*Review of Infrastructure Planning for Sullivans Creek Catchment, Bill Guy and Partners Pty Ltd, July 2003*) in conjunction with the overall master plan for the whole Sullivans Creek catchment area. Water Sensitive Urban Design (WSUD) principles will be adopted for the development of Gungahlin. WSUD is a philosophical approach to urban planning and design that aims to integrate the management of the total water cycle into the urban development process. Initially focused on reducing the impacts of urban development and redevelopment on stormwater runoff, the definition of WSUD has been broadened to encompass management of the total urban water cycle. 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 pre-development levels.

The Draft Variation to the Territory Plan proposes a comprehensive stormwater system, where overland stormwater and flood movements are accommodated mainly in the Sullivans Creek urban open space/drainage corridor. The proposal allows for a number of other goals to be achieved in addition to management of stormwater, including provision for off road bicycle paths and walking trails, and a wildlife corridors. This is consistent with current thinking where stormwater is now regarded as a resource rather than a problem to be exported as quickly as possible.

## F. Transport Network

The only transport infrastructure shown on the current Territory Plan Map is the distributor roads and arterial road network which consists of Horse Park Drive, an extended Sandford St to link with the Federal Highway, and Wells Station Drive linking Gungahlin Drive with Horse Park Drive.

The Draft Variation to the Territory Plan proposes a comprehensive transport network, including arterial and local collector roads linking with the Inter Town Public Transport (IPT) route, local bus routes, cycleways and pathways. The road network will support public transport with bus priority on Flemington Road. The pedestrian and cycle network will link residential areas with schools, group and local centres and recreational resources (**Figure 4**).

The two key arterial roads for East Gungahlin are Horse Park Drive and Flemington Road. Horse Park Drive provides the trunk route in and out of the area. It protects existing and planned urban areas from traffic infiltration and carries traffic to destinations outside of

Gungahlin by linking to the Federal Highway to the Barton Highway via Clarrie Hermes Drive. Flemington Road provides a direct connection from southern areas of Gungahlin to the town centre. It is also the IPT route.

Sub-arterial and collector roads will service new neighbourhoods.

The key public transport corridor is the Gungahlin IPT route, along Flemington Road through to the Town Centre. It is proposed that local bus services will mainly use the collector road network.

The Draft Variation to the Territory Plan (Figure 3) proposes to maximise the potential to increase public transport usage by increasing residential density around centres and catering for bus services to pass through these centres. The collector road network is located to maximise population within reasonable walking distances of likely bus stops. Current ACTION policy requires that 90% of the population lie within 500m of a bus stop. The proposed Draft Variation to the Territory Plan aims to achieve a very high standard of accessibility and provides for:

- 90% of all dwellings within 400m of a potential bus route; and
- 95% of all dwellings within 500m of a potential bus stop.

An off-road recreation and cycle network is proposed, as part of the urban open space system.

## **G. Community Facilities**

The existing Territory Plan Map (Figure 1) identifies only a limited number of community facility sites and does not differentiate which of these are intended school sites. Two community facility sites are indicated in Kenny.

The Draft Variation to the Territory Plan for East Gungahlin re-allocates community facility sites in East Gungahlin in order to improve distribution and access to these facilities.

In terms of the location of community facilities, the following are widely accepted principles of site selection:

- locations in places where people already have cause to congregate, rather than stand alone sites, for reasons of safety, accessibility, convenience, visibility and capacity for a “one stop shop”. Shopping centres and schools are recognised as the key places where people tend to congregate;
- accessibility by public transport, cycling and walking as well as safe and adequate parking provision; and
- proximity to other personal services for similar reasons and to provide opportunities for the shared use of resources.

Sites for Community Facilities in East Gungahlin, including schools, have generally been identified within or adjacent to the group centres and local centres to maximise locational

advantages. A Community Facility is an accepted purpose in other Land Use Policy Areas in the Territory Plan, including Residential and Urban Open Space, where sites for smaller community uses can be used, without a further Plan Variation, as demand arises.

The Draft Variation to the Territory Plan Map identifies a site for a government primary school in Kenny and a primary school in Throsby. Primary schools are located to ensure their long term viability by staging residential development in their catchments. This should enable enrolments to be kept stable over time, as compared to other parts of Canberra where falling enrolments has led to questions about continuing school viability, and in some cases school closures.

There is no provision for a government high school site in either Kenny or Throsby, as an alternative site has been identified outside the Draft Variation to the Territory Plan boundary in the neighbouring suburb of Harrison. The proposed high school will serve future communities in Kenny, Harrison, Franklin and Throsby.

In addition to intended school sites, other possible community facility sites are identified within the open space system for smaller community facilities (e.g. churches, community halls etc). Demand for the development of these sites will be established during later detailed planning processes.

## **H. Centres**

The current Territory Plan (Figure 1) as it applies to this part of East Gungahlin identifies a large shopping centre (group centre) in the urban area north of Horse Park Drive. The NCDC Gungahlin Policy Plan, on which the current Territory Plan is based, contained objectives for the establishment of a Local centres in each suburb. Their precise locations were not identified on the Territory Plan Map as further detailed planning work was required to determine the overall design of the proposed suburbs.

The Draft Variation to the Territory Plan proposes one group centre in Kenny, south of Horse Park Drive. The Group Centre at Kenny will be carefully planned with its development staged to accord with the residential development of the catchment. When fully developed, the group centre will be 8000 m<sup>2</sup> in size. It is to be located on Horse Park Drive to make it visible in the long term and be easily accessible. Effective pedestrian and bicycle access will be integrated within its development.

The group centre will act as a node for employment, retailing, community and entertainment facilities. There will also be an opportunity for the co-location of “urban housing”, i.e. higher density multi-unit residential developments, so that an effective mixed use character can be established. The residential sites closest to the retail core will have a land use policy that allows a vertical mix of commercial and residential uses.

## **I. Population and Housing**

The existing Territory Plan identifies residential areas where a range of housing types would be provided consistent with Schedule 1 of the Residential Land Use Policies. The Draft Variation to the Territory Plan, consistent with principles of sustainability, has adopted a more

explicit approach to housing type and density. Housing adjacent to shopping centres will be allowed at higher densities, which will not only support the commercial and community activities of the centres, but also help reinforce the viability of the public transport system. This proposal will be implemented by area specific policies under the Territory Plan that provide for higher maximum densities (B9) around Local Centres and Group Centres.

If these multi-unit sites are developed at densities in the order of 20 dwellings per hectare, and the remainder of the proposed residential areas developed at more traditional detached housing densities i.e. 13 dwellings per hectare, then the following approximate capacities will be achieved in the area that is the subject of this Preliminary Assessment.

Total Dwellings Urban Housing Areas (B8 and B9)	200 dwellings
Total Dwellings Standard Residential	3800 dwellings
<b>Total Dwellings</b>	<b>4000 dwellings</b>

20-30% is considered a realistic target for intended higher density urban housing adjacent to the shopping centres. The Draft Variation to the Territory Plan proposes the identification of B9 areas adjacent to the Kenny Group Centre (see **Figure 3**).

Given the above estimated housing yields, the approximate peak population capacity of the area covered by the DVP and this PA will be approximately 10,000

The basic structure of each suburb in East Gungahlin is characterised by the following elements:

- a retail core, which would typically incorporate a small group of adaptable buildings together with a park and in some cases a primary school;
- local parks of approximately 0.25 to 1 hectare within 300m of dwellings, containing significant landscape features deliberately located to conserve representative areas of native vegetation;
- a linear open space network based primarily on drainage lines, incorporating pedestrian paths and cycleways, and interlocking with centres and bus stops;
- clearly articulated road hierarchy where the engineering design and landscape treatment reflect the intended traffic function of each street; and
- defined local bus routes with potential bus stops within 500m of at least 95% of dwellings.

### **1.5.2 Purpose and Need for the Project**

Based on current growth rates and considerations of land supply and housing preference, it is estimated that Gungahlin’s population will increase to approximately 25,000 by 2004, with its ultimate population being reached in the mid 2020’s.

The ACT Government endorsed the current Gungahlin development sequence in 1999. The sequence identified was for residential land releases in Kenny and Throsby between 2019 to 2023, based on current population growth assumptions. The development sequence (2002) is shown on **Figure 5** as it applies to East Gungahlin.

The sequence has been reviewed recently in the light of changed parameters affecting development in Gungahlin in particular the earlier than anticipated development of Flemington Road and Horse Park Drive and the proposed changes to the planning of East Gungahlin. Two alternative sequence options were evaluated. The first sequence option was essentially the current approved sequence with future development focused on the Ginninderra Creek catchment to utilise investment in infrastructure. The second sequence option that was evaluated placed the next development close to the town centre with development in Harrison, and Franklin, followed by Forde, Throsby, Bonner, Casey, Moncrieff, Jacka, and Kenny.

The two options were evaluated against a number of criteria; particularly support for the town centre and effective use of existing infrastructure and the first option emerged as the preferred option. This means that development sequencing for Kenny remains unchanged from the previous review and development in Throsby may occur slightly earlier in the southern part of the suburb, close to the town centre in 2016-2019.

Whilst some of the demand will be met through infill and redevelopment proposals in established areas, including large projects such as Kingston Foreshore, there is an ongoing need for greenfield development in the ACT.

Given that greenfield development in Tuggeranong and West Belconnen is largely completed, a continuing land supply in Gungahlin will be critical in meeting metropolitan housing demand for new areas. The need for a Draft Variation to the Territory Plan is therefore derived mainly from the essential requirement to ensure continuity in the supply of residential land in the metropolitan area over the next 10 to 20 years.

Gungahlin as Canberra's fourth new town is now well under way, with houses available for sale or under construction, and new estates being developed. It is essential that development continue at acceptable rates in order to achieve population thresholds necessary to sustain the on-going provision of commercial, community, recreation, leisure and other basic amenities needed by a new community, many of which will contribute to an attractive, convenient and vibrant town centre. Continuing development is therefore essential in ensuring the ongoing social and economic viability of Gungahlin as a new urban district that contains an acceptable level of basic services and facilities for its residents. This part of East Gungahlin, which is within the Sullivans Creek catchment, represents a cost effective, efficient and logical area which would be available for future stages of Gungahlin's development.

The draft Variation to the Territory Plan for East Gungahlin is an important step in a planning and design process that will eventually lead to development and construction activity. The Variation will provide the framework within which more detailed planning, design, and implementation can occur. It not only identifies the uses to which land can be put, but also includes the principles and policies that will guide detailed planning and development.

In regard to nature conservation, the draft Variation to the Territory Plan establishes the boundary of a new Nature Reserve in Gungahlin to be known as Gorooyaroo Nature Reserve. The Gorooyaroo Nature Reserve will protect large areas of Yellow Box Red Gum Grassy Woodlands, an endangered ecological community which provides habitat for many threatened species, including birds. The new nature reserve will also ensure connectivity

between Mulligans Flat and Ainslie-Majura nature reserves. The area of the Goorooyarroo Nature Reserve is approximately 750 hectares.

### **1.5.3 Relationship of the Project to Surrounding Development**

The development of East Gungahlin represents an integral part of the on-going development of Gungahlin. The development of Gungahlin started in 1991, with the majority of Amaroo, Palmerston, Ngunnawal and Nicholls being largely developed. Today, the population is estimated to be about 25,000 people. The ultimate population capacity is estimated to be approximately 100,000. Most of the on-going development in the next 10 to 15 years will be in the North Gungahlin area, to maximise the benefits of the significant investment already made in the Ginninderra Creek catchment. The other main area of development during this period will be the Gungahlin Town Centre and Central Area of Harrison and Franklin.

## **2. EXISTING ENVIRONMENTAL CONDITIONS**

### **2.1 Description of Project Site**

#### **2.1.1 History**

The Gungahlin district displays a rich cultural heritage which reflects its history of Aboriginal and European settlement. Throughout the Gungahlin district there is evidence of Aboriginal occupation (the Ngun(n)awal people), mostly in the form of camp sites and scatters of stone artefacts. The first recorded Europeans to visit the Gungahlin area were part of a party sent by Governor Macquarie to discover the Murrumbidgee River in 1820. By the 1850s, European settlement extended along Ginninderra Creek within the present boundaries of Gungahlin.

With the passage of the Seat of Government Act in 1911, the Commonwealth began resuming land in the Gungahlin district and the old NSW land portions were replaced by a smaller number of large pastoral leases. Many of the original families left the district around this time.

#### **2.1.2 Heritage**

Current archaeological evidence indicates Aboriginal occupation of the area for at least the last 5,000 years. Hundreds of Aboriginal sites have so far been recorded in the wider Gungahlin district and include campsites, scarred trees, chert quarries, grinding grooves and an ochre source. The most common sites recorded are surface scatters of stone artefacts. The distribution of Aboriginal sites reveals a past way of life which depended on a detailed knowledge of the environment and its useable resources. The main drainage lines across Gungahlin were a focus of Aboriginal occupation.

Various sites have been investigated for conservation, including Aboriginal campsites, quarries and scarred trees, nineteenth century homesteads and associated agricultural features, and archaeological building sites dating back to early European settlement. In each case, the conservation option objectives are to conserve significant sites and places within an

appropriate context and promote a sense of place and local identity by maintaining links with the past.

Environment ACT are currently preparing a draft entry to the interim heritage places Register for all currently known (c 500) Aboriginal cultural sites within the District of Gungahlin, inclusive of the places recorded in the most recent June 2000 archaeological survey. The ultimate management options for the sites will depend upon the outcomes of the Registration Process and are likely to include varying combinations of the following:

- collection of surface artefacts with no further action necessary;
- collection of artefacts with some subsurface testing;
- subsurface testing of areas with archaeological potential and retention *in situ*.

Further discoveries of unregistered Aboriginal places will be administered according to the provisions of the *Land (Planning and Environment) Act 1991*

In May 2000 Planning and Land Management commissioned a detailed Cultural Heritage Survey of land within the Sullivans Creek catchment in East Gungahlin. The Sullivans Creek catchment comprises approximately 1300 hectares of land in the northeast corner of Gungahlin, of this area; approximately 390ha had not been comprehensively surveyed in recent years. The following is a brief summary of the findings of this survey.

#### Aboriginal Heritage

Fourteen Aboriginal sites, including a previously recorded artefact scatter and a possible Aboriginal scarred tree were recorded during the survey (see **Figure 15**). In addition to the scarred tree other Aboriginal sites identified comprised nine small low-density open artefact scatters and four isolated finds. Seven of the sites were recorded along Sullivans Creek. The remaining six sites were recorded in the northeast area of Throsby.

#### European Heritage

The following European cultural heritage sites have been identified in the PA area:

- o William Ginns Hut
- o Canberra Park Homestead
- o Dungarvon
- o Burton's House Site
- o ACT Border Marker
- o Stone Fence Line

Each site is discussed below.

#### William Ginns Hut

William Ginns Hut is located on the boundary of the urban area of Kenny and Designated Land near the Federal Highway. The National Capital Authority requires Conservation Plans to be prepared for heritage sites within Designated Areas. The hut site is of medium local significance and fulfils criteria 3,5,6,7 and 11 of Schedule 2 of the *Land Planning And Environment Act 1991*.

### Canberra Park Homestead

Canberra Park homestead is approximately 100 years old and is currently being assessed by the Heritage Council. Most of the area in which the homestead is situated is in Designated Land that is in Hills Ridges and Buffer Land Use Policy area. A rubbish dump near the homestead has been identified as a significant element of the Canberra Park Precinct. The rubbish dump has the potential to be impacted upon

### Dungarvon

The Dungarvon site is on the boundary of the PA area and was the home of William Ginn. The hut site consists of remnant stone foundations, a chimney mound and a scatter of hand-made bricks. A shearing shed and the yards were formerly located to the north of the hut, within Mulligans Flat Nature Reserve. A heritage assessment and a Conservation and Management Plan will be prepared for the place to inform the planning process and there will be an option to protect Dungarvon in an urban open space reserve.

### Burttons House Site

A nomination has been received for a small stone ruin within the future suburb of Kenny. The place has not been assessed and the Heritage Council is considering a draft assessment at a forthcoming meeting.

### ACT Border Marker

A border marker is located along the ACT/NSW border within the Goorooyarloo nature Reserve and will not be impacted upon by urban development.

### Stone Fence Line

A stone fence line is located along the ACT/NSW border within the Goorooraroo Nature Reserve and will not be subjected to development pressure.

### Ploughlands

Three ploughland sites have been identified in the East Gungahlin area, Winters Ruin, Sullivans Creek / Wells Station Ploughland, and Mulligans Flat Ploughland. Mulligans Flat ploughland is one of 16 examples with substantial evidence of ridge and furrow plough features surviving in the ACT and one of seven ACT ploughlands recommended for nomination to the ACT Heritage Places Register

## **2.1.3 Topography, Geology and Soils**

### *Topography*

The area covered by this PA is approximately 995 hectares. It is bounded to the northeast by a rim of hills that form the northern edge of the ACT. These hills are the dominant feature of the local topography and together with lower ridgelines (oriented in a general north-east to south-west pattern) define topographic zones of different character of metropolitan significance (see **Figure 6**). This area is visually important in providing the backdrop to the future development in East Gungahlin and will be retained in its natural state for scenic and natural qualities. This area is identified in the Territory Plan as Hills, Ridges and Buffer Land Use Policy Areas and in the National Capital Plan as National Capital Open Space.

Within the Sullivans Creek catchment, the land drains southwest towards North Canberra,

and eventually into Lake Burley Griffin. Slopes within the catchments (**Figure 6**) range from 1-3% along the Sullivans Creek floodplain, and up to 20% on the hillside slopes along the northern, eastern and southern sides of the catchment. The area ranges in elevation from about 595 metres along Sullivans Creek directly east of Mitchell Industrial Area to steep hilly areas in the north, including Old Joe Hill, that are above 700 metres.

### *Geology*

In the northeast areas, resistant dacite and dacite tuffs of the Hawkins and Ainslie volcanics respectively, form dominant ridges and slopes. Areas of harder rock have, as a result of differential erosion, formed prominent, moderately to steeply sloping ridges in this area. At the southern end, the wide plains of Sullivans Creek consist primarily of rocks of Canberra formation including calcareous siltstone and mudstone with minor shale, sandstone and volcanic units form a broad undulating to moderately sloping surface. This has been sheared and faulted and is often characterised by rock at shallow depth or outcropping at the surface.

A formation of particular interest is known as the 'City East Fault Zone' which is also found in Civic. In Gungahlin, the Zone extends north through Sullivans Creek to the Gungaharra Homestead and then through to the ACT-NSW border. This formation is composed of an altered, partly sheared and extremely weathered sequence of mudstone and siltstone of low load bearing strength.

### *Soils*

The analysis of soils of Gungahlin indicated large areas being characterised by texture-contrast (duplex soils) up to 1.5m deep. Deeper soils are confined to drainage lines and flood plains. The duplex soils are subject to waterlogging due to relatively impermeable heavy clay subsoil, this being generally yellow in colour with grey mottling. In better-drained areas the soils are generally whole coloured and reddish.

Extensive areas of shallow, erodible lithosols (uniform texture soils) are associated with ridges and steep sideslopes in the northeast part of Goorooyarroo Nature Reserve. In these soils, where groundwater seepage's are perched over shallow rock, highly erodible conditions exist following disturbance of the natural vegetation. Small areas of gradational (earthy) soils are present which are less susceptible to erosion.

#### **2.1.4 Climate and Air Quality**

The climate of the Gungahlin area is generally similar to that experienced in Canberra as a whole, but with local variations in rainfall, cold air drainage and wind patterns, due in part to the specific topography and vegetation. The broad undulating plains, which cover much of East Gungahlin, form effective cold air drainage from the upland areas in the north to the lower plains. Tree clearance in the valleys has altered cold airflow and fog patterns and accentuated ground temperature extremes. North westerly winds prevail from April to November.

While no specific measurements have been taken in this part of East Gungahlin, the existing air quality is very high due to its present undeveloped state. Air movements tend to cause a movement of air away from Gungahlin towards developed areas of Canberra due to predominantly north- westerly winds and cold air drainage. The air pollution potential of East Gungahlin in relation to internal emissions is low as the area is relatively open and well

ventilated by winds.

### **2.1.5 Landscape**

The scenic environment of the area (**Figure 6**) is characterised by flat to gently sloping wide plains along Sullivans Creek. In this area, the vegetation ranges from small shrubs to tall trees. These vegetation communities include Yellow Box/Red Gum Grassy Woodland, other woodland types, native grasslands and cleared pastures with exotic grasses. Dispersed rural residences, outbuildings, ruins of several historic homesteads and associated dams are scattered throughout the landscape.

As a result of past management practices, the ridges are generally well treed compared to the valleys, although shallow soils and continued grazing have prevented significant growth in some areas. There has been some planting of native species on these ridges, particularly on the sides of the prominent hill north of Horse Park Drive. This is important in improving the visual landscape and will enhance the visual containment of development offered by the ridges.

### **2.1.6 Hydrology**

The land covered by this PA is primarily within the Sullivans Creek water catchment (**Figure 7**). Sullivans Creek drains in a south-westerly direction, with numerous minor flood paths draining off the surrounding hills into the creek. The headwaters of Sullivans Creek encompass the proposed suburb of Kenny, part Throsby and the lower end of the proposed Goorooyarroo Nature Reserve. Sullivans Creek drains through the suburbs of North Canberra and into Lake Burley Griffin.

### **2.1.7 Natural Resources**

The ACT Flora and Fauna Committee, established under the *Nature Conservation Act 1980* is responsible for assessing the conservation status of flora and fauna in the ACT, and the ecological significance of potentially threatening processes. Where in its opinion a species or community is under threat, a recommendation for declaration is made, and if adopted, an Action Plan is prepared in response by the Conservator of Flora and Fauna. An Action Plan includes proposals for the identification, protection and survival of a threatened species or community.

In April 2004 the Government launched the *ACT Lowland Woodland Conservation Strategy* (Action Plan No 27) that addresses the conservation needs of an endangered ecological community and the threatened plants and animals that are dependent upon it. Previously each species had a separate Action Plan which inhibited consideration of the management requirements of multiple species in an integrated way. Since then a *Lowland Native Grassland Conservation Strategy*, that focuses on native grasslands and threatened grassland animals and plants, has also been prepared.

The Goro area in East Gungahlin contains significant areas of Yellow Box/Red Gum

Grassy Woodlands and threatened animals and plants. The following is a summary of the ecological character of this area that draws upon relevant information contained within the *ACT Lowland Woodland Conservation Strategy* and the draft *Lowland Native Grassland Conservation Strategy*.

### **(a) Yellow Box/Red Gum Grassy Woodlands and other Woodlands**

The ACT Woodland Conservation Strategy identifies the Gooroo area of east Gungahlin as part of a larger woodland complex in Gungahlin that also includes the Mulligans Flat Nature Reserve and is referred to as the Gooroo-Mulligans flat Unit in the Strategy. About 360 ha of Yellow Box/Red Gum Grassy Woodland together with other woodlands types with significant conservation values are currently in Gungahlin and protected within the Mulligans Flat Nature Reserve. Much of the Unit is in very good condition, including areas of secondary grassland that are derived from Yellow Box-Red Gum. The unit contains one of the largest, most intact and contiguous areas of Yellow Box Red Gum grassy woodlands and other woodland types remaining in the ACT, providing habitat for threatened birds and other species, with records of Hooded Robin, Regent Honeyeater and Brown Treecreeper and six other species of declining woodland birds.

In the Gooroo part of the Unit in east Gungahlin, there is an extensive area of Yellow Box/Red Gum Grassy Woodland (**Figure 8**) of very high conservation value. The Lowland Woodland Conservation Strategy identifies that a key planning and conservation objective is to finalise the boundary between urban development in east Gungahlin and these Gooroo woodlands. The boundary has now been finalised and approximately 750 hectares of high conservation value Yellow Box/Red Gum will be protected in a new nature reserve to be known as the Goorooyarroo Nature Reserve. Ecological connectivity from Mulligans Flat nature Reserve, through Goorooyarroo Nature Reserve to Mt Majura has been achieved with the creation of the new nature reserve.

Part of the new nature reserve is located within the existing Hills Ridges and Buffer Areas policy on the Territory Plan or the inner hills (Designated Area) on the National Capital Plan. However, a significant proportion (approximately 300 hectares) is currently covered by the Residential Land Use Policy. The draft variation proposes to protect this land from development by changing the current Residential Land Use Policy to the Hills Ridges and Buffer Areas Policy. At the same time the boundary of the nature reserve will be defined by including the Public Land 'pc' (nature reserve) Overlay on the Territory Plan Map.

The East Gungahlin Area also contains other lowland woodlands, particularly south of Horse Park Drive within the future suburb of Kenny (**Figure 8**). These Kenny woodlands consist of open woodland and scattered trees of mature Yellow Box, Blakely's Red Gum, Apple Box and some candlebark over a predominantly exotic understorey and they represent the original natural grassland frost hollow areas.

Most of these areas of woodland in Kenny, outside the proposed Goorooyarroo Nature Reserve, are classified as lowland woodland vegetation that is in part substantially and severely modified (*ACT Lowland Conservation Strategy 2004*). These woodlands represent fragmented remnants where the native understorey has been destroyed or so highly modified that the remnants no longer represent the community of interrelated native plants and

animals. The generally poor condition of these woodlands reflect the high level of clearance due to pastoral activities. Although some native plants may remain, for most of these areas the native understorey is effectively irretrievable. However, the tree cover may still be valuable habitat particularly for birds.

Wherever possible these woodland remnants will be retained in urban parks or roadside reserves or as part of the landscape setting for community purposes or other less intensive land uses. Conservation of these woodlands in Kenny will be addressed at the Concept Planning stage for Kenny, where a detailed tree survey and assessment of individual trees will be undertaken.

**Woodland habitat value:** In the ACT, woodlands support a wide diversity of animals, including birds, bats, reptiles, ground dwelling and arboreal mammals, and invertebrates. Tree hollows developed in older trunks and branches, together with fallen timber, provide habitat for many of these species. In the better woodlands, structural complexity is created by the presence of tree hollows, trees of different ages, a mid-level shrub layer and a grassy understorey which provide nesting sites, shelter and food resources for fauna.

About fifty bird species including some that are listed as threatened species in the ACT (eg Hooded Robin, Brown Treecreeper, Regent Honeyeater & Varied Sitella) occur as residents or summer migrants in woodland which is important breeding habitat for many species (Taylor 1992). Many woodland birds rely on fallen timber or native shrubs as key habitat features which are now depleted due to past land use practices. Small fragmented patches of woodland separated from larger areas and sometimes with depleted understorey vegetation are also of reduced value to birds and other animals.

### **(b) Forestry Plantation**

In the Gooroo area adjacent to the ACT/NSW border, advanced planting (forestry plantations) to rehabilitate previously cleared hillsides has been undertaken (see **Figure 9**). These forestry plantation areas will be incorporated into the Goorooyarroo Nature Reserve.

### **(c) Natural Temperate Grasslands**

In 2002 the ACT Government introduced a *New Focus for Nature Conservation in the ACT*, which includes a program to establish strategies for priority species/ecological communities. To implement this program, Environment ACT initiated a three-year review of existing Action Plans for threatened species and ecological communities. The first review in 2002-2003 resulted in the ACT Woodland Conservation Strategy covering Yellow Box-Red Gum Grassy Woodlands. The *Lowland Native Grassland Conservation Strategy* was produced under the second review covering natural temperate grassland.

Reflecting Government Policy, the *Lowland Native Grassland Conservation Strategy 2004* (Action Plan 28) takes an integrated, territory – wide approach within a regional context, to the protection of the remaining lowland native grasslands. The *Strategy* seeks to maintain and improve the natural integrity of the remaining lowland native grassland ecosystems.

The Strategy recognises that in addition to natural temperate grassland, which is an

endangered ecological community, there are also areas of native pasture and secondary grassland (included in the *Lowland Woodland Conservation Strategy* as it is derived from cleared woodland).

The *Lowland Native Grassland Conservation Strategy* supersedes seven separate Action Plans previously published for the natural temperate grassland ecological community, four threatened animal species associated with lowland grassland and two plant species, all declared threatened under the Nature Conservation Act 1980. The statutory requirement for the ACT Conservator of Flora and Fauna to prepare Action Plans for declared threatened species and ecological communities remains.

There were previously several original natural temperate grassland remnants totalling 1.7 hectares in the Kenny area. Since the Action Plan for natural temperate grassland was prepared in 1997 there have been changes to some grassland sites in terms of size, botanical significance rating and condition. Several sites have been destroyed and others have been degraded beyond recovery. The Kenny site is now classified as degraded beyond recovery.

The Wildlife Research and Monitoring Unit of Environment ACT have also identified an area of lowland woodland-secondary grassland of 38.3 hectares. Secondary grasslands are derived from grassy woodlands or forests that have been extensively cleared of trees since European settlement, through intentional removal, dieback or prevention of natural regeneration. Reflecting their origins, secondary grasslands in the ACT are considered to be part of the Yellow Box – Red Gum Grassy Woodland endangered ecological community and are included in the *ACT Lowland woodland Conservation Strategy*.

This Gooroo secondary grassland area is now protected within the Goorooyarroo Nature Reserve.

#### **(d) Wildlife**

As detailed above, ACT woodlands support a wide diversity of animals, in particular birds. The Mulligans Flat Nature Reserve, to the west of the proposed future East Gungahlin suburbs contains many of the species that occur in the area, either as residents or summer migrants. The ACT Parks and Conservation Service produced a brochure in February 2000 titled *Birds of Mulligans Flat* which contains a comprehensive listing of the native bird species known to occur in the Nature Reserve.

Woodlands in the ACT provide important habitat for six animal species (see below) declared as threatened in the ACT under the Nature Conservation Act 1980. All of these are birds. The ACT Lowland Woodland Conservation Strategy (Action Plan No 27) provides descriptions of the six bird species and the Canberra Ornithologist Group has provided records of their distribution in the ACT. Five of the bird species have been recorded in the Mulligans Flat / Gooroo area.

The Hooded Robin (*Melanodryas cucullata*) has been reported as being in decline in its known habitat range, and reported locally extinct in several areas of the ACT. Small groups have been observed in the grassy woodlands in the north of the ACT and Mulligans Flat, often with scattered Yellow Box or Blakely's Red Gum with long grass, low shrubs & fallen

logs.

The Swift Parrot (*Lathamus discolor*) breeds in Tasmania and over-winters on the Australian mainland from April/May until October. Small numbers of the species have been recorded intermittently in the ACT, though not each year. They inhabit mainly dry open eucalypt forests and woodlands, usually box-ironbark communities and the Yellow Box/Red Gum Grassy Woodland community.

The Superb Parrot (*Polytelis swainsonii*) is known to occur in the ACT region, where the Yellow Box Red Gum Grassy Woodlands form the major habitat of the species. Most recorded sightings of the species in the ACT have occurred in the Hall/Kinlyside area and Mulligans Flat Nature Reserve, during their spring-summer breeding season. They are sparsely distributed between the ACT and surrounding region, coinciding with Yellow Box/Red Gum Grassy Woodland communities.

The Brown Treecreeper (*Climacteris picumnus*) is found in dry woodlands and open forest below 1000 metres. Populations of this species occur in the northern part of the ACT, particularly in the Mulligans Flat Nature Reserve. The species is recorded as in decline since 1994, and has become locally extinct in some parts of the ACT. It is known to frequent drier forests and relatively undisturbed woodlands, where the native understorey, particularly grasses, have been preserved.

The Regent Honeyeater *Xanthomyza phrygia*, declared an endangered species in the ACT and also nationally and internationally. Yellow Box has been identified as one of the key habitat species for the Regent Honeyeater. Locally, the majority of records of the species are from naturally occurring, flowering Yellow Box/Red Gum Grassy Woodlands in the northern parts of the ACT.

Recorded occurrences in the ACT are located throughout Gungahlin and in the Mulligans Flat Nature Reserve. Once fairly common, it is now rarely observed in the ACT region, and thought to be in decline nationally since the 1920's.

The Painted Honeyeater (*Grantiella picta*) is known or suspected to occur in the ACT region and is already recognised as endangered. In the ACT, the species has historically been associated with River Oak along river systems, especially the Murrumbidgee River.

Varied Sitella (*Daphnoenositta chrysoptera*) has recently been listed as a vulnerable species and occurs in the East Gungahlin area. There is no specific action plan for this species but it is included in Action plan No 27.

The Common Dunnart (*Sminthopsis murina*) locally uncommon but widely distributed across south-east Australia, has been recorded in the Mulligans Flat area.

The Eastern Grey Kangaroo *Macropus giganteus* is abundant in the ACT and occurs in all types of grassy woodland on both rural and reserve lands in the Gungahlin area. Other mammals typically found in ACT woodlands include the Swamp Wallaby *Wallabia bicolor*, Red-necked Wallaby *Macropus rufogriseus*, arboreal Brush-tailed Possum *Trichosurus vulpecula*, Sugar Glider *Petaurus breviceps*. The Echidna *Tachyglossus aculeata* is a known

terrestrial woodland inhabitant in this part of the ACT.

Three species of bats *Vespadelus vulturnus*, *V. regulus* and *Nyctinomus australis* occur in lowland woodland and use hollows have formed in the branches and trunks of trees.

Thirteen reptile species have been recorded in the Mulligans Flat area, including snakes, skinks, geckos, lizards and the Long-necked Turtle *Chelodina longicollis*, in addition to eight frog species. Of these the Black-headed Snake *Unechis dwyeri*, Shingleback *Trachydosaurus rugosus*, unnamed skink *Ctenotus uber orientalis*, Spotted Burrowing Frog *Neobatrachus sudelli* and Whistling Treefrog *Litoria verreauxi* are uncommon in the ACT.

#### Striped Legless Lizard (*Delma impar*)

Under the nature conservation Act 1980 *Delma impar* has been declared a vulnerable species. Action Plan 28 *Natural Temperate Grassland Conservation Strategy* now supersedes Action Plan No 2 - 'the Striped Legless Lizard (*Delma impar*)'.

While the natural habitat of the Striped Legless Lizard is characterised by native tussock grasses, it has adapted to surviving in introduced pastures which have a well developed structure of tussock grasses, such as *Phalaris*. In the Kenny area, the majority of its potential habitat is *Phalaris* pasture which is not subject to ploughing or heavy grazing, and retains a tussock structure. Such pasture is present particularly on both sides of Wells Station Road, north of the EPIC site and nearby horse paddocks. A more detailed description of the recorded distribution of the Striped Legless Lizard in the Kenny area is provided in **Appendix A**.

### **2.1.8 Existing Land Use**

There are a number of existing land uses in and adjacent to East Gungahlin as described below and as shown at **Figure 9**.

#### (a) Forestry

In the hilly upland areas in the north east part of the PA Area which adjoin the ACT/NSW border, areas of forestry plantation have been established on Block 664 & 711 Gungahlin.

#### (b) Rural Leases

The majority of the land in the PA Area is currently taken up by rural uses, particularly sheep and cattle grazing. Since the 1950's much of the rural land has been amalgamated into single large leases and since the 1980's, rural lessees have been issued with shorter-term leases than previously. As a result, land management practices among lessees have changed because of increased uncertainty of tenure.

There are several large rural properties leased for grazing and agricultural purposes within East Gungahlin (see **Figure 9**). These leases contain withdrawal clauses allowing for the future use of the land for public purposes. Details of these rural lessees are shown in Table 1 below.

**Table 1: Rural leases in East Gungahlin**

LEASE DETAILS	PURPOSE
Block 671, 654 & 656 Gungahlin Term: Quarterly lease Area: 230.2 hectares	Grazing and agriculture
Block 730, 726, 699, 698 Gungahlin Term: Yearly lease Area: 1454 hectares	Grazing and agriculture
Block 712 Gungahlin Term: Quarterly lease Area: 216.4 hectares	Grazing and agriculture
Block 322 Term: 30-4-2000 (Block 322) Area: 1.55 hectares	Grazing and agriculture
Block 722 Gungahlin Term: 30-4-2000 Area: 12.54 hectares	Grazing, agriculture, boarding kennels & cattery, stables

(c) Urban Area

This part of East Gungahlin has no adjoining development at this time. As the future development front in East Gungahlin progresses, it will adjoin the future suburbs of Harrison, Throsby and Franklin.

(d) Broadacre

Areas of mixed land use activities adjoining the Federal Highway include:

- A radio transmitter and broadcast facility (Block 393);
- Belconnen dog obedience club (Block 601);
- AGL Depot (Block 344).

(e) Industrial Land

The Territory Plan shows Industrial land to the east of Mitchell. A major portion of this land (Block 654) is currently occupied by the Mitchell Resource Recycling Centre. The site covers an area of approximately 10 hectares.

Although the majority of the Mitchell Industrial area is not part of the area that is the subject of this PA, its future expansion needs to be considered and may impact upon the amount of land in Kenny that is ultimately available for future urban use. Industrial Land in Mitchell is limited and there may be a need to expand the industrial area to the east of Flemington Road.

In summary, the 16.5 hectares of industrial land remaining undeveloped in Mitchell after 2005 includes small blocks around the Local Centre in Mitchell, the remainder of the brickworks redevelopment, a large block with a lease until 2009, 5 hectares north of the waste recovery estate in east Mitchell and three blocks currently Urban Open Space Land Use Policy. This land could be taken up by 2013 based on a take up of 2 hectares per year. There is likely to be a future demand for large blocks for building manufacture, transport and storage uses and concrete plants in Mitchell.

(f) Adjacent Uses

Not included within the area subject to this PA, but adjacent to it is:

- o Exhibition Park in Canberra;
- o Mitchell Industrial Area;
- o Mulligans Flat Nature Reserve;
- o The entertainment, accommodation and leisure component of the suburb of Watson;
- o Wells Station Heritage Precinct (approx 42 Ha); and
- o Area of designated land under the National Capital Plan.

### **2.1.9 Physical Infrastructure**

Existing engineering services and roads within or close to East Gungahlin are as follows:

#### **Roads**

The existing road network (**Figure 4**) is shown on Figure 4. The area is bounded by the Federal Highway to the south and Flemington Road to the west. Flemington Road provides access to the Mitchell Industrial Area and Gungahlin Town Centre. Horse Park Drive, now completed, provides a key access route from Gungahlin Town Centre to the Federal Highway.

#### **Equestrian Trails**

An existing equestrian trail (**Figure 10**) crosses Flemington Road to the north of the EPIC site. The historic Wells Station Road, (parallel with Flemington Road) will be utilised as a pedestrian / cycleway by future residents of Harrison and Kenny.

#### **Water Supply**

There is no water supply infrastructure in East Gungahlin.

#### **Sewerage**

East Gungahlin (Kenny/Throsby) is currently un-sewered. A 675mm-trunk sewer traverses the main stormwater channel upstream of Flemington Road. This sewer presently services the industrial suburb of Mitchell and will also cater for the proposed suburb of Kenny (see **Figure 11**).

### **Stormwater**

There is no stormwater infrastructure in area covered by this PA. Sullivans Creek is the principal water catchment for the future suburb of Kenny. In the north, part of the future suburb of Throsby is within the Gininderra Creek catchment.

### **Gas Supply**

There is a main trunk gas supply line (**Figure 11**) in East Gungahlin, which enters the ACT via the Mulligans Flat Nature Reserve and runs south towards the Federal Highway. The gas supply line is located within a 20 m wide reserve.

### **Telecommunications**

A fibre optic cable enters the ACT through the Mulligans Flat Nature Reserve. The cable is installed inside the Moomba-Sydney Gas Pipeline easement from the northern boundary of the Mulligans Flat Nature Reserve south to the Federal Highway. (see **Figure 11**).

#### **2.1.10 Social Infrastructure**

There is no social infrastructure in East Gungahlin as it is mainly leased rural land with limited public access. There is however a large range of community facilities operating within established areas of Gungahlin including schools, community halls, a youth centre, health facilities, recreation and sporting facilities. A number of community services and organisations operate from temporary facilities and private homes, including scout and guide groups and religious organisations.

Government and private schools will be developed in East Gungahlin. The locational details are as follows:

- A government high school and primary school will be developed in Harrison, east of Flemington Road (between Gungaderra Homestead and the Wells Station Heritage Precinct).
- A site for a Catholic primary school, sharing the government school sports ovals in Harrison, has been identified directly south of Gungaderra Homestead.
- A government primary school and playing field has been identified in Kenny.

A comprehensive range of community facilities are located in the Gungahlin Town Centre and at group and local centres in the nearby suburbs of Watson, Dickson and Lyneham (**Figure 12**). These facilities include retail and community facilities, government and non-government primary and high schools, several denomination churches and medical centres.

The Gungahlin Town Centre provides a broad range of retail and community facilities. These include a Woolworths supermarket, many speciality retail shops, restaurants and takeaway food outlets, major hardware centre, veterinary centre, service station, Joint Emergency Services Centre, Club, Community Centre and Library, and Town Centre residential areas.

It will be important in the East Gungahlin area, as in other areas of Gungahlin, to develop a range of community facilities to meet the needs of residents. The first step in this process has

been achieved through the reservation of school sites in Harrison and Kenny, early in the planning process.

The profile of the community is changing and this will affect the type of facilities that are required as well as their location. It will also be necessary to ensure that facilities are provided efficiently and that planning and site identification and reservation are sufficiently flexible to meet changing needs and requirements.

### **2.1.11 Site Opportunities and Constraints**

The above description of existing characteristics, land use and features has allowed constraints and opportunities to be identified, and taken into account in the preparation of the East Gungahlin Draft Variation to the Territory Plan and the DVP.

East Gungahlin presents a very significant opportunity for applying sustainability principles. Careful planning and management are capable of converting many of the environmental constraints referred to above into valuable opportunities to trial highly self contained development, and to implement best practice in areas such as water cycle management, energy efficient subdivision and housing design and reduced dependency on private transport.

Because of its historical pastoral use, some parts of the area have been degraded, but the natural ecosystems show evidence of regeneration. With varying degrees of significance, the main opportunities and constraints in relation to future urban development in this area can be summarised as follows:

#### **Opportunities**

- To establish a new Goorooyarroo Nature Reserve that will protect significant areas of Yellow Box Red Gum grassy woodland and threatened species;
- Land in Kenny is generally flat which makes it suitable for urban development;
- To incorporate Water Sustainable Urban Design (WSUD) principles in the design of future residential areas;
- To preserve Sullivans Creek in a linear stormwater park for recreational use with a continuous pedestrian and cycle network in a variety of recreational settings;
- To incorporate a significant number of mature trees within the urban framework, which will increase residential block value and assist in maintaining bird populations, water absorption and protection against soil erosion;
- To preserve the bushland periphery along the eastern edge of the site as a scenic backdrop and recreation setting;
- To take advantage of views from areas of higher land;
- To incorporate sites of heritage significance into urban open space; and
- To incorporate high quality urban design principles in the built environment.

#### **Constraints**

- The need to conserve significant areas of woodlands and fauna habitat in the Gooroo area of Gungahlin;
- Special challenges and risks due to slopes, terrain, and soils in upland areas of Throsby (fire risk, erosion prone soils, limited access and costly servicing);
- Shallow rocky soils in the northern upland valleys which may add to development costs

- and limit landscaping opportunities, even in terrain which is gently sloping;
- A 20 m wide reserve set aside for a gas pipeline and fibre optic cable cannot be built on;
- Areas of land within the 1 in 100 year flood level on Sullivans Creek;
- The need to protect significant heritage sites;
- The need to preserve the bushland periphery along the eastern edge of the site as a natural scenic backdrop to urban development;
- The need to preserve significant landscape features;
- The need to ensure the flow and quality of water from future urban development in Sullivans Creek catchment does not adversely affect water quality lower in the catchment; and
- The need to set aside sufficient land to allow for the future expansion of the Mitchell Industrial Area with an adequate buffer zone to residential areas;
- Need to conserve significant vegetation and fauna habitat.
- Possible noise, dust and odour from the Mitchell Resource Recycling Centre.

## **2.2 Description of the Region Surrounding the Site**

The Gungahlin District is located in the northern part of the ACT, and is located between the Federal Highway, Barton Highway and NSW/ACT border. To the south-west is the Belconnen town centre, with the suburbs of Giralang and Kaleen extending almost to the edge of Gungahlin. North Canberra also abuts the southern edge of East Gungahlin, including a large broadacre area that accommodates metropolitan functions such as Exhibition Park and the Canberra Racecourse.

Gungahlin is enclosed by a rim of hills that run along its northern boundary. The nature and character of these hills has been described in the previous sections. The land use policy that applies is Hills, Ridges and Buffers as shown on both the Territory Plan and National Capital Plan, which will be retained by this proposal, except where changes to the urban edge are identified in the proposed DVP.

The land adjacent to Gungahlin in NSW is mostly part of the Shire of Yarrowlumla and consists mainly of large rural holdings which are accessed via the Gundaroo Road through Gungahlin, and via the Federal Highway. Further north are extensive rural residential areas.

The land adjacent to Gungahlin, over the NSW-ACT border falls within the scope of the 1998 *ACT and Sub-Region Planning Strategy*, produced jointly by, and formally adopted by the Commonwealth, Territory and NSW Governments, and five NSW sub-regional Councils. The Strategy sets out objectives and establishes a framework for cross-border co-ordination on planning matters. The Strategy also identifies the importance of a regional strategic planning approach to the protection of natural resources including flora and fauna. While the proposed Draft Variation to the Territory Plan is not impacted by the Sub-region Strategy, it does provide a planning framework for management of surrounding non-urban land within the context of long term expectations about settlement needs.

East Gungahlin is within the recognised boundaries of the area identified within the Territory Plan, which is consistent with the future long-term growth development options set out in the Strategy.

## **2.3 CURRENT LAND USE POLICY & LEASE CONDITIONS OF THE SITE**

The planning policies which apply to East Gungahlin are contained in the Territory Plan and the National Capital Plan. The current policies are as follows:

### ***National Capital Plan***

The National Capital Plan (NCP) identifies areas of special national significance as 'Designated areas' for which planning responsibility is vested in the National Capital Authority (NCA). There are no designated areas within the area subject to this PA, however land adjacent to the east of the area is identified as Designated Land in the National Capital Plan, and part of the National Capital Open Space System of Hills Ridges and Buffer areas.

The suburbs of Kenny, part Harrison and part Throsby are identified in the NCP as urban areas (**Figure 13**). Under this policy a number of principles and policies are defined regarding the nature of suitable urban development in the ACT. Confirmation may need to be obtained from the NCA that the boundaries are not inconsistent with the National Capital Plan prior to the finalisation of the suburb boundaries.

The NCP identifies the land in south Mitchell as 'Future Urban Land and Areas Under Investigation'. While not part of the Draft Variation to the Territory Plan, this land has been the subject of various land use proposals in the past including a business park, additional facilities for the Canberra Racecourse and the National Exhibition Centre.

The Federal Highway, which borders the area, is identified as an 'Approach Route' in the NCP. The Plan states "It is in the interests of the National Capital that development flanking Approach Routes is of a type and quality complimentary to the role and status of the city". Special requirements, which are outlined in approved Development Control Plans, apply to development on land adjacent to Approach Routes.

### ***The Territory Plan***

Land in East Gungahlin falls primarily within the Residential (B1), Broadacre (B10) and Hills, Ridges and Buffer Area (B12) land use policy areas on the Territory Plan Map (see **Figure 1**). An area of Industrial land (B3) is located east of Mitchell. Provision is also made for major access roads (B16). Within the Residential Area there is provision for a Group Centre (B2) on Horse Park Drive and nearby, on the opposite side of Horse Park Drive, land is set aside for a community facility (B4) site. Land is also identified throughout the proposed future suburbs of Kenny and Throsby for Urban Open Space (B9).

The objectives set out in the Territory Plan for residential areas, among other things, seek to provide Canberra with a range of housing opportunities that are affordable and sustainable. The Territory Plan provides a schedule of permitted land uses in residential land use policy areas. The current Territory Plan Map covering East Gungahlin identifies a basic planning framework showing a minimal level of detail aside from the arterial road network and various land use policy areas. The provisions applying to various land use policy areas are included in the written statement.

A large area of land to the west of PA Area is 'Defined Land'. Areas of Defined Land on the Territory Plan Map are enclosed by a red line within which the letter 'D' appears. It is

important that the planning of an area the size of East Gungahlin is not unduly constrained during its period of development. The Defined Land process enables the Territory Plan to be progressively updated in line with current best practice while maintaining principles and policies identified for each area.

#### ***Lease Conditions of the Site***

In regard to lease conditions of the site, the majority of the land in the PA Area is currently taken up by rural uses, particularly sheep and cattle grazing. Details of the current rural leases are outlined in Section 2.1.8 above 'Existing Land Use'.

### **3. POTENTIAL IMPACTS ON THE ENVIRONMENT**

#### **3.1 Potential impacts on the physical environment**

##### ***3.1.1 Stormwater, Sewerage and Water Supply Infrastructure Provision***

#### **Stormwater**

There is currently no stormwater infrastructure in Kenny or Throsby. Urban development in these areas will require new stormwater infrastructure to be established and there will also be the cost of upgrading existing infrastructure in North Canberra to accommodate development in the new areas.

Stormwater drainage planning for Kenny was reviewed during 2003 by ACTPLA (*Review of Infrastructure Planning for Sullivans Creek Catchment, Bill Guy and Partners Pty Ltd, July 2003*) in conjunction with the overall master plan for the whole Sullivans Creek catchment area. The following section discusses the impacts of developing new stormwater infrastructure in Kenny.

#### Forecast Impacts

Erosion and Water Quality: The Kenny part of Sullivans Creek is situated on gently sloping land and may be described as a meandering erosion gully, which has been eroded to stable rock. It is typically 1 to 2m deep with bare surfaces in the top parts of the channel, which is still actively eroding. While the beds of these channels are generally stable, the upper parts of their banks are bare and subject to ongoing erosion.

With increased flows anticipated after urban development, the erosion risks are likely to increase and a more stable channel design will be required. The natural creek will be retained and is in line with current policy on Water Sensitive Urban Design (WSUD). However, the creek will require modification to improve its ecological value and to create an asset for the surrounding developments. The construction of engineered floodways to replace the existing eroded gully is seen as an unsuitable solution and is unnecessary. Thus a sympathetic solution will be required for the creek where stable and suitable sections are retained and eroded sections are stabilised and enhanced.

It is also proposed that the stormwater drainage for Kenny will include retarding basins/ponds

to restrict outflows and allow the retention of the natural creek system. The retarding basins will protect water quality downstream, including water quality in Lake Burley Griffin. The development of the stormwater masterplan for Kenny will need to be taken further to outline the characteristics of the retarding basins for future design and implementation. The model for the development of the main creek will also need to be detailed with input from landscape architects and soil conservation experts covering both the retarding basin outline and planning for the creek works.

The North Throsby area, near Mulligans Flat Nature Reserve, comprises a separate catchment from the Sullivans Creek catchment, consisting of approximately 750 hectares to the Mulligans Flat dam. The catchment drains to Yerrabi Pond via the east arm of Ginninderra Creek. The catchment can be divided into a northern catchment, which extends to the NSW border, and a southern catchment, which extends to Gooroo Hill. These catchments have an area of 340 hectares and 290 hectares respectively.

In 2003 a strategic stormwater master plan was developed for Gungaharra Creek catchment (*Strategic Stormwater Master Plan for Gungaharra Creek, Young Consulting Engineers, June 2003*). As part of this work a conceptual stormwater masterplan for north Throsby was developed. Major elements proposed for the strategic stormwater masterplan for the area includes open water ponds and wetlands immediately upstream of the Mulligans Flat Nature Reserve. Retarding basins would be integrated into any playing fields and open space and could be combined with shallow ephemeral wetlands. The notional location of these measures is shown on the Stormwater Masterplan for Gungaharra Creek.

Detailed hydrological, hydraulic and water quality modelling will be undertaken as part of the development of a Concept Plan for Throsby. In particular, this would involve a study to review the catchment draining to Mulligans Flat and a review of water quality issues for catchments draining to Yerrabi Pond.

Ecology: The main ecological values of the Kenny Area lie in its remnant woodland trees within an area which was originally Yellow Box Red Gum grassy woodland. The groundcover in the vicinity of Sullivans Creek now consists of introduced, improved pasture which is still under regular grazing. There is no significant amount of native grassland, eucalypt regeneration or woodland understorey in the areas along the main creek in the flatter parts of the catchment, although regenerating woodland is well developed in some higher parts of the catchment remote from the creek. The modified nature of the area along Sullivans Creek means that its ultimate aquatic ecological values will depend primarily on the environment that is created in the course of developing the urban stormwater drainage system.

The ultimate stormwater drainage system will require at least one large retardation basin to be constructed in the location shown in **Figure 3**. This is a large, almost treeless site, with two existing creek channels through it. The pond could be constructed with no need for tree removal. The site is close to where *Delma impar* has previously been recorded. It is possible that if the retarding basin area is managed to return it to native grassland, this area may develop as localised *Delma impar* habitat within the urban area.

#### Water Sensitive Urban Design

Water sensitive urban design (WSUD) is a philosophical approach to urban planning and

design that aims to integrate the management of the total water cycle into the urban development process. Initially focussed on reducing the impacts of urban development and redevelopment on stormwater runoff, the definition of WSUD has been broadened to encompass management of the total urban water cycle.

The implementation of WSUD involves the application of a broad range of measures aimed at:

- Reducing the reliance on mains water;
- Optimising opportunities for the reuse of wastewater (both treated effluent and greywater) and stormwater; and
- Reducing the export of stormwater runoff and associated pollutants.

The ACT Government is committed to the sustainable use and management of water resources and has committed to implementing best practice water management strategies. *Think Water, Act Water, a strategy for sustainable water resource management in the ACT* was launched by the Chief Minister in April 2004. The strategy provides long-term guidance for the management of ACT water resources. One of the key objectives specified in the strategy is to “facilitate the incorporation of water sensitive urban design (WSUD) principles into urban, commercial and industrial development”.

The strategy also includes the following targets:

- A 12 per cent reduction in mains water use per capita by 2013 and a 25 per cent reduction by 2023 (compared with 2003), achieved through water efficiency, sustainable water recycling and use of stormwater and rainwater.
- By 2013, increase the use of treated wastewater (reclaimed water) from 5 per cent to 20 per cent,
- The level of nutrients and sediments entering ACT waterways is no greater than from a well-managed rural landscape.
- Reduce the intensity and volume of urban stormwater flows so that the runoff event that occurs once every 3 months is no more than predevelopment size.

These targets apply to the ACT urban area as a whole. For this development, the following targets are to be achieved:

- A reduction in mains water usage per capita of at least 25% compared with 2003 levels. The 2003 level shall be taken as 174 kilolitres per person per year.
- The level of nutrients and sediments discharged from the site is no greater than from a well managed rural landscape.
- The intensity and volume of stormwater runoff from the estate for a runoff events that occurs once every 3 months is no more that if the site were in an undeveloped rural state.

Think water act water requires amendments to the plumbing rules to require:

- Separation of greywater and blackwater drainage to the building edge for all ground floor single residential dwellings
- Separation of water supply to toilets and washing machine cold water taps to enable future supply to these from a rainwater tank or other alternative water supply.

ACTPLA is in the process of implementing the necessary changes to the plumbing regulations to mandate these requirements. Although this work is not yet complete, these requirements will be included in the Lease and Development conditions for all residential leases in this development.

ACTPLA is in the process of developing guidelines for the implementation of WSUD. These guidelines will not be available until early 2005. Once published, the requirements of these guidelines will be complied with in this development. In the interim, the following 'Guiding Principles for Water Sensitive Urban Design' are to be used:

- Edge roads where grades do not exceed 3% shall have flush kerbing allowing stormwater to discharge as sheet flow to grassed swales;
- On any street with flush kerb, standard kerb and gutter or modified layback kerb shall be installed on internal bends to prevent vehicles from cutting corners. The ends of these sections of kerb and gutter shall be transitioned back to the flush kerb;
- Within streets, swales may be adopted only where it is considered flush kerb is acceptable. Flush kerb will not be adopted in any street where the width of sealed pavement (including the flush kerb) is less than required to allow parking and the passing of vehicles within the paved area;
- Where swales and/or flush kerb are adopted then the minimum spacing between driveways shall provide for a minimum of one (1) vehicle to parallel park on the road pavement in front of each block;
- Any verge adjacent to flush kerbing would be finished with reinforced turf to ensure its ability to cope with vehicular loading for a minimum width of 2 metres;
- Within streets swales may be adopted within the verge where it can be demonstrated that:
  - The swale and stormwater drainage pipes have a combined capacity designed for a 5 year Average Recurrence Interval (ARI) capacity.
  - For any locations requiring stormwater service ties (ie blocks), driveway crossing or footpath crossing then stormwater drainage piping is required. This piping can be combined with swales where appropriate.
  - Driveways across swales shall incorporate a field gully trap on the higher side of the driveway.
- The gradient of any swale shall not be less than 1 in 150 with a maximum slope of 3%. Drop structures will not be permitted.
- On any street with swales, the construction of the driveway at grade across the swale for each block shall be carried out at the time of the road construction;
- Contouring of public open space to elongate and interrupt flow paths.
- Use of bio-retention systems below swales should be considered, provided they do no impact on road sub-grade strength.
- Use of depression storages in garden areas not subject to regular use to allow for increased soil infiltration and prolonging the rate of discharge of stormwater flows.
- Use of non-irrigated, non evasive grasses and plants requiring limited moisture for verges and open spaces will be encouraged;
- Design within Blocks should:
  - Encourage indirect drainage, ie downpipes and impervious pavements should not be directly connected to a piped stormwater system to prolong the rate of discharge

- of stormwater flows.
- Encourage landscape features that provide pondage and/or filtration features;
- Provide rainwater tanks for garden watering and some internal uses (such as toilet flushing and washing machine cold water). Rainwater tanks perform the dual function of providing an alternative water supply and of reducing stormwater runoff;
- Encourage the creation of xeriscape gardens instead of irrigated gardens to reduce water demand.
- Encourage the mulching of gardens to reduce water demand.

A summary table outlining the type of WSUD principles, which may be considered for each land use category, is at **Table 3**.

Given that the urban area on the proposed Draft Variation to the Territory Plan is a reduction in area to that shown on the current Territory Plan and assessed as part of the 1989 Gungahlin EIS, impacts on water quality will not be exacerbated by the proposals contained in the proposed Draft Variation to the Territory Plan. Adoption of the proposed guidelines and continued implementation of sustainable urban water management techniques will further ensure reduced impacts by development on flow rates and water quality within and downstream of East Gungahlin.

### **Sewerage**

Kenny is currently un-sewered. The following section discusses the potential impacts of developing a sewer network in Kenny.

#### Forecast Impacts

Urban development in Kenny will require the upgrading of the sewer network connecting to existing trunk sewer infrastructure in North Canberra. Pumped drainage to adjacent catchments would not be acceptable. A trunk sewer will therefore need to be installed along Sullivans Creek to provide gravity drainage of the catchment.

In addition, the downstream North Canberra Trunk Sewerage System has limited capacity and wet weather flows from Sullivans Creek Catchment would require peak flow attenuation so that the existing system downstream is not surcharged during major storms where infiltration and inflow to the sewer system occurs.

The most likely means for such augmentation would involve the installation of an attenuation tank. At this time, a potential site for the attenuation tank facility has been identified as being on Block 4 of Section 49 Lyneham adjacent to Northbourne Avenue and north of the Barton Highway intersection, at a cost of approximately \$8 Million. It is expected that this facility would need to be constructed once more than 500 houses have been developed in the catchment upstream.

### **Water Supply**

Throsby and the higher portion of Kenny (intermediate zone) will be fed from a new 675mm main along Horse Park Drive from Gungahlin Drive. Ultimately this main will connect to an extension of the bulk supply main from Campbell and Hackett which will provide a third source of supply to Gungahlin.

The lower portion of Kenny will be supplied from the existing 375 main through Mitchell and backed up from the intermediate zone mains in Gungahlin and Harrison.

### **3.1.2 Traffic Impacts**

New urban areas require a network of public and private transport links internally and need to interface with external transport connections. Without adequate consideration of these connections, the potential for impacts on traffic movement exists.

The Draft Variation to the Territory Plan for East Gungahlin has produced some important changes to the transport network compared to the existing Territory Plan, having given in depth consideration to the most appropriate form of the internal transport hierarchy for the East Gungahlin area. There are three main areas where there is potential for transport impacts to arise from the proposed Draft Variation to the Territory Plan:

- Transport links required outside East Gungahlin that will need to be constructed or enlarged;
- The accessibility of public transport; and
- The greenhouse gas implications of the form of transport planned for East Gungahlin.

The revised retail strategy and the rationalisation of the provision of schools in East Gungahlin has resulted in fewer major facilities in the proposed Draft Variation to the Territory Plan compared to the inherent assumptions in the NCDC Policy Plan and Territory Plan. A consequence of these decisions is that there may be an increase in travel resulting in longer trip lengths. This may require an increased level of road provision. Trip length may also determine the mode of transport used, and a range of options will be required to minimise the impacts of additional traffic movements.

The Sustainable Transport Plan (STP), currently being prepared, recognises the benefits of increased public transport use, and proposes a range of policies and programs to achieve this objective. A goal of the STP is to maximise accessibility and therefore reduce the need for some trips, and to encourage alternative modes of travel. The proposed Draft Variation to the Territory Plan contains a range of features aimed at encouraging use of public transport and reducing total trips by:

- Adopting a pattern of development that supports higher residential densities adjacent to retail centres;
- Providing for mixed use development at the group centre that increases opportunities for local service provision, and includes “shop-top” residential development opportunities;
- Encouraging home based employment;
- Providing for a comprehensive network of off-road cycle and pedestrian paths; and
- Allowing for a route structure, which provides for terminus or layover facilities at the group centre.

The most significant road network change from the previous Territory Plan is the re-alignment of Wells Station Drive. The reason for this change was to re-route the road away from the

Wells Station Heritage precinct to protect the landscape and historical values.

Increases in the total population in Gungahlin (including North Gungahlin) may lead to some increases in congestion on existing roads, particularly in North Canberra. As the analysis of future road capacity needs in the John Deadman Parkway Preliminary Assessment (Maunsell Pty Ltd 1997) illustrated, even with significantly increased public transport usage across the Canberra network, additional road capacity will be needed to meet Gungahlin's travel demand.

### **3.1.3 New Road and Cycling Infrastructure**

The existing ACT Government road construction program for the five years to 2007 provides for the completion of major road projects in Gungahlin that will substantially increase capacity to meet the growing demand for both private and public transport generated by Gungahlin's growth. Of the following two road projects Horse Park Drive is completed and the other is in progress.

#### Horse Park Drive

Horse Park from Gundaroo Drive to the Federal Highway has now been completed. It forms an important alternative access to the Gungahlin region and will provide an important transport link for future residents of Kenny and Throsby. Gungahlin residents travelling to south Canberra and Tuggeranong will be provided with a convenient alternative route via Horse Park Drive and Majura Road over the current Northbourne Avenue route option. One carriageway will be completed by the end of 2003 under the ACT Government Capital Works Program. The final carriageway of Horse Park Drive will be constructed in approximately 10 years time when traffic volumes warrant. The road alignment will be on fill for the majority of its length.

#### Sandford Street Extension

A proposed extension of Sandford Street from Mitchell to the Federal Highway will provide an alternative access between the Federal and Barton Highways (see **Figure 4**). Locally, Sandford Street will be used for access between Mitchell and Gungahlin. Traffic modelling by consultants WP Brown as part of the Sandford Street Extension Feasibility Study (January 2001), forecasts a low demand for Sandford Street until 2011. The modelling demonstrates that until Kenny is significantly developed, the proposed Sandford Street extension will attract relatively low traffic volumes and may not be required until after 2011.

The traffic model suggests that Sandford Street will be required as a high capacity arterial based on the forecast 2026 development level in Gungahlin. The modelling demonstrates that the proposed Sandford Street extension will provide an important link between Mitchell and Antill Street and the Federal Highway.

A distributor from Sandford Street to provide access to the future urban area of Kenny is expected to connect with the Gungahlin Town Centre and Wells Station Drive, therefore carrying significant through volumes from the time it is opened to traffic. Sometime after the Kenny distributor is in place, Sandford Street between the Kenny distributor and the Federal Highway will require duplication.

Current planning for additional capital works items includes provision for a range of capacity improvement works in the Majura Road/Pialligo Avenue/Fairbairn Avenue area between 2007 and 2012. Identification of a possible route for a future Majura Parkway, linking to the Monaro Highway at Pialligo Avenue, is expected in the next few years.

The completion of Horse Park Drive to the Federal Highway/Majura Road interchange has significantly enhanced accessibility for Gungahlin residents. Also, progressive upgrading of Majura Road that began in 2003 and will continue over the next five to ten years, will provide additional peripheral route capacity. With the proposed Gungahlin Drive extension (linking Gungahlin Drive/Barton Highway to Belconnen Way/Caswell Drive), these two peripheral arterial roads should provide adequate capacity to meet Gungahlin's travel demands generated by the developments in the areas to which the proposed Draft Variation to the Territory Plan applies.

The proposed road system will meet demands from public and private transport to and from Gungahlin, as well as within Gungahlin. There will be some congestion on arterial road connections from Gungahlin to the rest of Canberra during peak periods, as occurs on the existing road network across Canberra. Most of the road network functions, and will continue to function, adequately during peak times.

### **Cycleways**

There is currently limited cycling infrastructure in the East Gungahlin area (see **Figure 4**). The existing North Canberra cycle path network extends north of the City to Lyneham and Dickson. An existing cycle path follows the alignment of Gungahlin Drive to Civic and the Gungahlin Town Centre. The continued development of Gungahlin will require the extension of the existing cycle path network to provide an integrated cycling network in North and eventually East Gungahlin.

Arup Feilman and Margules prepared a Trunk Cycle path Masterplan for Gungahlin in 1992. The trunk community path network recommended for southern Gungahlin and Kenny is shown on **Figure 4**. This Figure also shows that a number of trunk cycle paths will be successively connected to a proposed trunk cycle path on the western edge of the Federal Highway/Northbourne Avenue, between the Barton Highway in the south and Horse Park Drive in the north. The cycle path masterplan indicates a cycle path passing through the EPIC site.

The development of future arterial roads in the East Gungahlin area, including Horse Park Drive and Wells Station Drive, will provide the opportunity to develop on-road cycling facilities to connect with the Gungahlin Town Centre and Civic. The extension of Flemington Road from Mitchell to the Gungahlin Town Centre has provided an excellent opportunity for on road cycling with 2 metre wide shoulders on each side of the carriageway for bicycles.

A future open space corridor along Sullivans Creek will provide an opportunity for the development of a trunk pedestrian movement corridor and cycleway for recreational use and commuter cycling.

### 3.1.4 Public Transport

The Sustainable Transport Plan for the ACT (STP) seeks to integrate a range of policies, programs and tools to produce a set of specific strategies and actions to achieve government's economic, social, and environmental objectives in the transport sector. The STP recognises that increased use of public transport could improve transport efficiency and reduce the rate of production of transport related greenhouse gas emissions. The Plan supports land use and transport integration and policies that encourage trips by alternative modes and public transport. Policies designed to encourage greater public transport usage that affect the city as a whole can be assumed to also have an affect on East Gungahlin.

The existing public transport routes serviced by ACTION are shown on **Figure 14**.

A feature of the East Gungahlin Draft Variation to the Territory Plan is the heightened emphasis on encouraging increased use of public transport. This is reflected in three ways as follows:

- Increased residential densities at Kenny Group Centre corresponding to a general 400m radius;
- Location of the local collector road network to meet the objective that 95% of all potential residents lie within 500m of a potential bus stop; and
- Allowing for a route structure that provides for terminus/layover facilities at a "place" e.g. group centre.

The pattern of development proposed in the Draft Variation to the Territory Plan supports higher residential densities adjacent to the centre in Kenny. One aim is to encourage a greater use of public transport, particularly for commuting, with resultant reductions in private car use. The proposed Draft Variation to the Territory Plan also provides for a network of both trunk on-road and off road cycle routes. The off-road routes follow the recreation and drainage path along the Sullivans Creek stormwater drainage corridor.

Since the preparation of the Gungahlin EIS (1989), on which the current planning is based, numerous changes have occurred that will also contribute to lesser reliance on private car usage for trips. They include increases in petrol costs, the introduction of pay parking, particularly around employment and retail nodes and improvements to public transport service delivery and fee structures. As an example, ACTION has recently revised the bus fare structure, enabling more flexibility and economical travel across the ACT.

The inter-town public transport system shown on the existing Territory Plan map has largely been retained. It assumes utilisation of the median of Flemington Avenue, with the potential to serve much of Gungahlin's central area, Mitchell and North Canberra suburbs along the Northbourne Avenue spine. An alternative route will be offered by Gungahlin Drive extension, which can provide a relatively fast route for buses between Gungahlin Town Centre and Civic, especially during peak periods.

As a result of changed Commonwealth employment strategies, the Gungahlin Town Centre is likely to provide less employment than envisaged in the Gungahlin EIS (1989). A lower town centre employment level has the potential for an increase in vehicle trips as residents travel to

work outside the East Gungahlin area.

Compared to the existing level of public transport use, a high level of public transport use has been assumed. Given the time frame for the development of East Gungahlin, it is reasonable to assume that a balance of policy initiatives designed to encourage greater public transport use will have that effect. Public transport may be considered more and more as an alternative as parking prices increase and long-stay car parking supply diminishes in the city and other centres.

### **3.1.5 Visual Impact of Proposed Development in East Gungahlin**

#### **Existing Scenic Character**

##### **Forecast Impact**

Urban development in East Gungahlin will result in a noticeable change in the physical characteristics of the existing environment with a change from a rural landscape to an urban landscape. The existing scenic environment in Kenny is characterised by flat to gently sloping wide plains along Sullivans Creek. The area has a pastoral character, with grasslands and native trees in scattered groupings and individual mature specimens.

Urban development, particularly in Kenny, will involve the construction of new roads, stormwater drainage infrastructure, residential and commercial buildings, Telecommunication facilities and sewerage and water and electrical supply infrastructure. This process of urbanisation will involve the removal of existing vegetation with resulting changes to the existing scenic environment. However, there is considerable scope to ameliorate these impacts by careful landscape development of future urban areas and measures to protect scenic views.

It is intended that the landscape principles identified in the *Gungahlin Landscape Policy* (1996) will assist in achieving an attractive landscape that will positively contribute to the environmental quality of future residents of Kenny and Throsby. In general, landscape proposals for these suburbs will be required to satisfy a number of objectives relating to streetscape, buffers to nature conservation areas, urban open space, landscaping of parks and natural creek systems and utilisation and enhancement of existing vegetation in new residential areas.

When development proceeds in Kenny the changing character of this part of Gungahlin will be evident to people travelling along the Federal Highway, particularly when vehicles emerge from the saddle north of Mt Majura. What is now a broad rural landscape in Kenny will become largely urban. This impression, not unlike the first view gained of Tuggeranong from the Monaro Highway, will let visitors know that they have arrived in Canberra. The steep sideslopes below the highway in this location offer little scope for planting to moderate this view.

#### **Desired Development Outcomes**

The Structure Plan for East Gungahlin provides for residential development and nature conservation which reflects the capabilities of the land while protecting the natural scenic qualities and attributes of the area. It is envisaged that future housing and block sizes will

respect the natural setting and will not dominate views, particularly to the north towards the upland areas in Goorooyarroo Nature Reserve and east to the Majura Range. Future residential development will generally be of low to medium density and will be no greater than 2 storeys, except in the vicinity of Kenny Group Centre where three storeys will be permissible. The following underlying principles and policies will apply to future urban development in Kenny:

- Maintain northerly views to hill-tops and upland areas within the Goorooyarroo Nature Reserve (eg Old Joe Hill), east to the Majura Range and to Up-Top Hill in Harrison.
- Achieve well-designed urban form that respects the scenic value of the locality.
- Ensure that residential development reflects land capability.
- Utilise landscaping to enhance the visual quality of development.
- Establish a linear open space system along Sullivans Creek to maintain and enhance existing landscape values.
- A Landscape plan, including street trees, will be prepared for all residential estate proposals to assist in minimising visual impacts.

### **3.1.6 Urban Land Assessment**

Development of an area for residential occupation can result in significant ground surface disturbance and soil erosion, impacting on downstream water quality. Urban land assessment is the tool used to ensure that such effects do not create significant impacts.

Urban land assessment involves determining the susceptibility of different parts of an area to erosion loss when it is disturbed. Following this, the next step is the identification of areas suitable for development, followed by the determination of appropriate amelioration measures to be applied in those areas, according to the specific erosion risk.

The original Gungahlin planning is based on detailed urban land assessment included in the Gungahlin EIS (1989), and the East Gungahlin Scoping Study 2001. From an urban land assessment point of view, the proposed changes to the urban area as shown on the Territory Plan are not inconsistent with this earlier work. However, the application of the principles enunciated in the *ACT Land Capability Guidelines*, will be dealt with in more detail at the later detailed planning stage where required.

In the context of the description of existing soils in East Gungahlin in section 2.1.3, they may pose problems for development, both from erosion potential during construction and later from instability and drainage problems on steeper slopes.

A range of erosion and sediment control measures and the specific principles that apply to the management of land development projects are detailed in *Erosion and Sediment Control During Land Development, 1998*. Produced by Environment ACT, the guidelines assist to determine the erosion control measures most appropriate for commonly experienced

situations in the ACT.

The proposed development will take into account best environmental practice by employing a range of these measures to control erosion and retain sediments on site, including diversion structures to convey upstream runoff away from the site, off-stream sediment retention ponds, silt fences, and progressive revegetation to aid site stabilisation in order to minimise the risk of erosion.

## **3.2 Potential Impacts on The Human Environment**

### **3.2.1 Aboriginal and European Heritage issues**

In May 2000 Planning and Land Management commissioned a cultural heritage investigation (P. Saunders, May 2000) of the Sullivans Creek catchment in Kenny and Throsby. The Sullivans Creek catchment comprises approximately 1300 hectares of land in the northeast corner of Gungahlin, of this area; approximately 390ha had not been comprehensively surveyed in recent years. Areas requiring survey were the southwest corner of the catchment, east of Mitchell, and the northeast corner along the Federal Highway. The investigation comprised documentary research and a comprehensive field survey. **Figure 15** shows the European Heritage sites that were assessed during the May 2000 survey and previous surveys of East Gungahlin. It should be noted that Figure 15 does not show the location of all Aboriginal heritage sites that were recorded in the May 2000 survey and previous surveys. For full locational details of these sites reference should be made to the *Cultural Heritage Survey of Sullivans Creek Catchment* by Patricia Saunders, May 2000.

#### Aboriginal Heritage

Fourteen Aboriginal sites, including a previously recorded artefact scatter; a possible Aboriginal scarred tree and three European historical sites were recorded in the survey. In addition to the scarred tree, Aboriginal sites comprised nine small, low-density open artefact scatters and four isolated finds. Seven of the sites were recorded along Sullivans Creek. The remaining six sites were recorded in the northeast area identified for comprehensive survey. European sites comprised a surveyor's border marker tree, three posts in a fenced enclosure and the ruins of William Ginn's house, just outside the area covered by this Preliminary Assessment, which has been previously recorded. The sites were assessed in terms of Schedule 2 of the *Land (Planning and Environment) Act 1991*.

The scarred tree is located within the future suburb of Kenny. The tree has high heritage significance at a local level and its retention in its existing location in a context, which will not jeopardise its survival is recommended by Environment ACT. The following is the recommended management strategy for the scarred tree.

1. Botanical assessment of the long-term health of the tree and potential hazards its retention might pose to public safety to guide planning decisions.
2. Depending on the outcome of the botanical assessment, planning provisions to retain the tree within proposed development in an area of urban open space.

Environment ACT are currently preparing a draft entry to the interim heritage places Register for all currently known (c 500) Aboriginal cultural sites within the District of Gungahlin, inclusive of the places recorded in the most recent June 2000 archaeological survey. The ultimate management options for the sites will depend upon the outcomes of the Registration Process and are likely to include varying combinations of the following:

- Collection of surface artefacts with no further action necessary;
- Collection of artefacts with some subsurface testing;
- Subsurface testing of areas with archaeological potential and retention *in situ*.

Further discoveries of unregistered Aboriginal places will be administered according to the provisions of the *Land (Planning and Environment) Act 1991*.

#### Forecast Impacts – Stormwater Infrastructure Provision

There is currently no stormwater infrastructure in Kenny or Throsby. Urban development in these areas will require new stormwater infrastructure to be established, which will require the construction of retardation basins and rehabilitation of the existing Sullivans Creek channel.

The Sullivans Creek valley has high archaeological potential for aboriginal sites based on the survey of Sullivans Creek catchment area by Saunders during July 2000. The survey and report summarised the sites which have been previously recorded and, in some cases, salvaged, as well as identifying some additional sites which have been located. While the recorded sites do not appear to be directly affected by any of the proposed retardation basins, many of them are spread along the creek channel and would be disturbed by any works undertaken to rehabilitate the creek channel.

At present all of these archaeological sites are currently unregistered and to disturb damage or destroy them would constitute an offence under the *Land (Planning and Environment) Act 1991*. The ACT Heritage Unit has advised that all Aboriginal sites in the Gungahlin District are currently being prepared for entry to the ACT Heritage Places Register. This will include specific requirements for each site which would allow for their management, including possible salvage if the preferred strategy of avoiding impacts in the course of development is not feasible. Any salvage strategy would be subject to negotiation by the ACT Heritage Council with relevant Aboriginal organisations.

There is the possibility that earthworks associated with rehabilitation of the creek could expose additional archaeological evidence. It is standard procedure, that, should subsurface archaeological sites be unearthed, work in that location should cease immediately and the ACT Heritage Unit be contacted regarding the appropriate course of action. This issue would need to be addressed in the subsequent implementation of any works along the creek.

#### European Heritage

The area subject to the PA contains the following European cultural heritage sites:

William Ginns Hut  
 Canberra Park Homestead  
 Dungarvon  
 Burton's House Site  
 ACT Border Marker  
 Stone Fence Line  
 Ploughlands

Each of these sites is discussed separately below.

### William Ginns Hut

William Ginns Hut is located on the boundary of the urban area of Kenny and the Designated Land (National Capital Open Space System). The NCA requires Conservation Plans to be prepared for heritage sites within Designated Areas. The site is of medium local significance and fulfils criteria 3,5,6,7 and 11 of Schedule 2 of the *Land Planning And Environment Act 1991*.

Although the place is outside the PA area it is close to an area of future residential development and may be impacted upon by development. Environment ACT recommends that a conservation and management plan be prepared for the site.

The site consists of fragmentary house remains; a standing single roomed stone structure with a door and three windows and the foundation of a tank stand.

Possible management options include:

1. Retention of the site as a ruin, allowing natural deterioration.
2. Retention of the site with stabilisation and conservation of the single-roomed standing stone structure
3. Removal of the surviving site elements, if options 1 and 2 prove impractical or the site poses a threat to public safety

### Canberra Park Homestead

This homestead is within the land covered by this PA. Canberra Park homestead is approximately 100 years old. The place is currently being assessed by the Heritage Council. Most of the area in which the homestead is situated is in Designated Land that is in Hills Ridges and Buffer Land Use Policy area. Its rubbish dump has been identified as a significant element of the Canberra Park Precinct. The rubbish dump has the potential to be impacted upon

### Dungarvon

Dungarvon is on the boundary of the PA area in the future Suburb of Throsby and was the home of William Ginn. The hut site consists of remnant stone foundations, a chimney mound and a scatter of hand-made bricks. A shearing shed and the yards were formerly located to the north of the hut, within Mulligans Flat Nature Reserve. A heritage assessment and a Conservation and Management Plan will be prepared for the place to inform the planning process and there will be an option to protect Dungarvan in an urban open space reserve.

### Burtons House Site

A nomination has been received for a small stone ruin within the future suburb of Kenny. The place has not been assessed and the Heritage Council is considering a draft assessment at a forthcoming meeting.

### ACT Border Marker

A border marker is located along the ACT/NSW border within the Gorooyaroo nature Reserve and will not be impacted upon by future development.

### Stone Fence Line

A stone fence line is located along the ACT/NSW border within the Gorooraroo Nature Reserve and is thus not the subject of development pressure.

### Ploughlands

Ploughlands are areas of land ploughed for the planting of crops, usually cereals and orchards. Ploughlands have been created by draft animals generally using a single-share mouldboard plough producing broad parallel ridges separated by deep furrows.

Three ploughland sites have been identified in the East Gungahlin area, Winters Ruin Ploughland, Sullivans Creek / Wells Station Ploughland, and Mulligans Flat Ploughland. Mulligans Flat ploughland is one of 16 examples with substantial evidence of ridge and furrow plough features surviving in the ACT and one of seven ACT ploughlands recommended for nomination to the ACT Heritage Places Register

These places are outside the area covered by this PA, however their presence is noted and they will be assessed and their future determined based upon significance.

### Summary

The significant heritage sites and places in East Gungahlin, as noted above, are recognised as important community assets in the development and use of the area, and are accommodated in ways appropriate to the character of particular sites. With this strategy in place, the implementation of the proposed Draft Variation to the Territory Plan will not have a deleterious effect on the heritage values in the area, rather, it will protect and enhance the appreciation of these sites and places.

Further discussion will need to occur with Environment ACT as detailed planning progresses in Throsby and Kenny to ensure that goals for achieving in-situ conservation of these sites are achieved, and future opportunities for preservation and interpretation of the sites are explored.

The incorporation of these sites in open space areas intended for other uses such as recreation and transport and drainage infrastructure will raise issues for their future management by the responsible agencies. Increased costs associated with the possible development of management plans, modifications to traditional development methods and departures from routine landscaping may be incurred. Foreseeable management challenges include sites that create access issues, and historic sites that may require conservation maintenance and possible adaptive redevelopment of their surrounds. Additionally, Aboriginal sites will not have a substantial visual presence in the landscape, and will not tolerate surface ground disturbance.

### 3.2.2 Social Issues

In comparison to the existing Territory Plan, the proposed Draft Variation to the Territory Plan for East Gungahlin identifies a slightly lower level of social infrastructure specifically in relation to the provision of government schools. However, the level of social infrastructure remains sufficient to confer many benefits on the future East Gungahlin community in terms of social infrastructure and community facilities.

Key community objectives include:

- To develop a district which supports and promotes the community life of its residents and produces a built environment which meets the different needs of the community;
- To provide a full range of community facilities, including schools and services in accordance with the needs of residents; and
- To locate facilities and services in centres such as Kenny Group Centre to maximise their accessibility and viability.

In line with these objectives, the proposed Draft Variation to the Territory Plan contributes to the provision of a range of benefits for future residents in East Gungahlin. It recognises cultural diversity and changing community values and lifestyles, provides opportunities for a range of informal and formal community activities, and integrates these into the land use proposals and overall design for the urban environment.

To ensure these benefits will be realised for future generations, the proposed Draft Variation to the Territory Plan contributes to the articulation of a series of community principles to support the overall goal that *'all residents have the right to opportunities that maximise their capacity to participate in the everyday life of the community'*. These principles reflect those adopted in the Community Brief for the Territory Plan Variation for the Gungahlin Town Centre in 1995 and were reiterated during the development of the proposed Draft Variation to the Territory Plan, building on previous community involvement.

#### Centres

The identification of a Group Centre in the proposed Draft Variation to the Territory Plan and its development as a mixed-use area is consistent with Government objectives for the future directions for the provision of retail services in the ACT. The retail objectives for Canberra as a whole are to:

- ensure that retailing provides convenient access for the community to a wide range of goods and retail opportunities in a competitive market;
- encourage retail trade which stimulates investment and employment and contributes to community facilities; and
- ensure that retail centres and their associated public places are designed to be functional and attractive to all users and contribute to public place infrastructure.

Development of retail centres in East Gungahlin may initially have some impact on North Canberra centres that are serving the Gungahlin catchment such as the Kaleen and Dickson Group Centres. By the time the first of the retail centres planned for East Gungahlin are operational, the loss of Gungahlin consumers at the Kaleen centre may be accounted for by

the residents of Lawson as it develops.

While these and other retail centres may perform better financially if their catchments were increased, without new centres to serve the future population in East Gungahlin, accessibility will become an issue as the demand for services rises above the ability of the centres to cater to the increased demands.

The proposed group centre in Kenny will be staged in accordance with the land development sequence and population growth. It will encourage the provision of retail services that optimise consumer demands and convenience, and ensure a level of provision for East Gungahlin residents equal to that in any other part of Canberra.

#### Community facility provision

To respond to the changing dynamics of the community, the proposed Draft Variation to the Territory Plan retains sufficient scope and flexibility to meet emerging and potential needs, particularly for community facilities and services. It identifies community facility sites as part of the overall site provision in the East Gungahlin District. The sites will meet all known school demands as well as other community needs. It identifies a range of factors that are impacting on current planning for community facilities and outlines strategies for maintaining accessibility and flexibility.

#### *The potential impacts include:*

- that some residents may have to travel marginally further to facilities than residents in other districts as a result of the different centres structure. Although this is a significant impact for some members of the community, the proposal for high levels of public transport accessibility will assist in overcoming this problem;
- the centres structure will allow better co-location of community facilities and other land uses;
- a higher proportion of community facilities will be provided in the town centre and group centre, although there is a small mixed use site available in the Kenny neighbourhood;
- that a slower growth rate may mean that it takes longer to reach a sufficient population to support some community facilities, reinforcing the advantage of locating them mainly at centres;
- fewer numbers of a type of facility than in other towns, though those provided will generally be larger (and of a higher standard) and therefore will cater for the same per capita demand, with the school having a similar maximum capacity to schools built in Canberra in the past ten years;
- that larger geographic catchments will enhance the support of a school and maintain higher long term enrolment levels and increased viability compared with many schools in Canberra; and
- that fewer schools may be required to support a given population and therefore schools are less likely to occur in every suburb.

Recognising that these factors will require a different planning approach from other districts of Canberra, the measures in the proposed Draft Variation to the Territory Plan, which attempt to achieve an equitable outcome for existing and future residents of East Gungahlin, include:

- community facilities sites closely related to public transport routes, improving accessibility, particularly for those who do not use private transport; and
- the opportunity for co-location of community facilities with other activities is maintained.

Evidence is available e.g. Belconnen and Tuggeranong Town Centre planning studies, sufficient to conclude that those community facilities e.g. libraries, community halls, health centres etc, which co-locate with other commercial and community activity, and enhance a multi-purpose trip, have higher levels of usage than freestanding and isolated facilities.

This co-location not only caters for multi-purpose trips, recognising the changing pattern of people's lives, but also allows for more efficient use of sites and for a higher standard of facility.

As part of the overall Strategy, the proposed Draft Variation to the Territory Plan provides for a range of opportunities for future community facilities to be located in East Gungahlin. With options for co-location and joint use facilities, these sites should be sufficient to meet a range of potential community uses, including sport and recreation, places of worship, community and cultural centres, and scout and guide halls. Additional sites for community facilities can be identified in residential areas, urban open space and centres as demand arises, particular for smaller facilities having a smaller catchment.

A number of possible sites have been identified within the open space system that will provide benefits for community organisations that require access to open space as well as providing broader community benefits. If the site is not required, it can be incorporated into the open space system, avoiding potential safety problems and costs associated with vacant blocks. It will be important that, in implementing the plan, these sites continue to be available for a range of community uses. In some cases, such as places of worship, sites in residential areas may be preferable.

Site-selection is based on established criteria for well-located and accessible facilities and is consistent with the ACT Government's *Location Guidelines for Community and Recreation Facilities*. As sites are allocated, it will be important to identify locations that satisfy the specific recommendations for each facility, and the criteria contained within the relevant land use policy in the Territory Plan. Ongoing monitoring and consultation with the community will be needed to ensure that sufficient sites are available in locations to meet the diverse needs of the community. In addition to community facility sites, areas of open space, which can be used for informal and cultural activities, are essential elements of the community fabric. Ongoing opportunities for a range of activities in formal and informal locations will need to be monitored as part of later detailed planning stages.

### Schools

The proposed Draft Variation to the Territory Plan identifies a site for a primary school in the suburb of Kenny. Based on current projections by the ACT Department of Education and

Community Services, this level of provision should satisfy projected school enrolments. Although this represents a requirement for fewer educational facilities compared to other parts of Canberra, it reflects changing community trends including significantly lower numbers of children per household.

The Department of Education, Youth and Family Services (DEYFS) reviewed government high school requirements in East Gungahlin in early 2003. They confirmed that there would be a need for only one government high school to serve the whole of East Gungahlin. Earlier forecasts by the Department indicated that two government high schools would be required in East Gungahlin, one to serve the proposed areas known as Town Centre, Harrison, Franklin and Mulanggari, with the other site serving Throsby and Kenny. DEYFS earlier requirements were reflected in the Territory Plan 1995 (**Figure 1**).

DEYFS based their advice on estimates of trends in household size, the relatively large number of planned multi-unit and medium density houses in the area and other demographic changes. A significant factor taken into consideration by DEYFS is that the expected population of East Gungahlin will be less than originally forecast because significant areas of potential residential land will be incorporated into the proposed Gooroo Nature Reserve. Notwithstanding this estimate, it is still expected that the overall population of the Gungahlin District will be 100,000.

ACTPLA, in consultation with the Department of Education assessed a number of possible high school/primary school site locations in East Gungahlin. Each location was assessed against a number of town planning, engineering and transport planning criteria with the result that a location was chosen east of Flemington Road in the suburb of Harrison (see **Figure 3**). This location provides good levels of accessibility for students and is central to the student population catchment.

In relation to timing, DEYFS have advised that the government high school (catering for years 7-10) will be required in 2013 and the primary school by 2008. These factors together indicate that the long term needs of the East Gungahlin population can be met by one government high school.

### Housing choice

The proposed Draft Variation to the Territory Plan recognises the demand for a range of housing choices, including higher density dwellings in areas with good transport access such as the Kenny Group Centre. This early planning for well-located and accessible housing offers potential benefits for the aged and people with limited mobility. While the Draft Variation to the Territory Plan provides the scope for this to occur, it will be important to ensure affordable and accessible housing is made available in key locations during the implementation phase.

In addition to ensuring that housing is available to meet a range of needs, including households with mobility issues, it is important that the surrounding public realm is also well designed (eg paths and kerbs are wheelchair accessible) and allows for access to public transport, shops and services.

To meet the needs of an ageing population, larger sites may be required for future retirement complexes in the East Gungahlin District. These sites should be integrated into the urban fabric.

### Potential Social Benefits

With a focus on outcomes for residents and sustainable development, the proposed Draft Variation to the Territory Plan contributes to a strategic framework for achieving a range of community benefits and a quality urban environment in the East Gungahlin District. It also provides for open space within easy access for most residents, and a range of housing choices. Issues of employment growth in Gungahlin will need to be monitored to identify any further social impacts, such as impact of commuter traffic. While there are a number of changes in planning from previous areas of Canberra, the proposed Draft Variation to the Territory Plan identifies a range of potential benefits, particularly:

- More strategic linking of community facilities with transport networks, open space, retail centres and residential development;
- The potential for improved access and reduced trips to community facilities by both private and public transport, with the potential for pedestrian access by those living in centre housing precincts; and
- Planning for residential development and mixed-use development at Kenny Group Centre at an early stage.

In summary, the East Gungahlin Draft Variation to the Territory Plan is expected to produce a high quality urban environment. Its principles and objectives reflect those supported by the Gungahlin community and it adopts a range of integrated strategies for sustainable development. The overall impact on residents in surrounding areas is expected to be mainly positive with increases in the population supporting a greater range of services, such as public transport, retail, employment and community facilities.

### **3.2.3 Air Quality**

As the area of existing development in Gungahlin is limited to four suburbs and the Town centre, there is little air pollution at present. Air movements during cold stable conditions, tend to be southward due to cold air drainage patterns determining wind direction. During the summer months the prevailing winds are from the north-west and from the east. Overall good air movement during this season will prevent the retention of airborne pollutants in any localised areas. However, in winter months, cold, stable conditions lead to the development of temperature inversions, trapping lower quality air at ground level, as happens in all other parts of Canberra.

In any urban environment, there is potential for degradation of air quality. The principal factors that will affect air quality in East Gungahlin are emissions from motor vehicle and wood heaters for domestic heating.

The development of the East Gungahlin District will see an increase in vehicle usage as

previously discussed. To assist in maintaining emission levels within the required standards the design of each of the suburbs will incorporate the following design features:

- wide verges on major arterial road networks;
- good accessibility to public transport routes;
- co-location of shops and higher density housing within a 400m radius to facilitate access through good pedestrian and cycle links; and
- mixed use development at group and local centres to increase opportunities for locally based service provision.

These features will assist in minimising short vehicle trips by facilitating the use of public transport and walking/cycling, while the provision of wide verges on arterial roads will ensure that sensitive uses, such as child care centres, are well set back from roads and any potential emission sources.

Transport related air emissions are not expected to lead to levels of pollutants at which health and environmental guidelines would be exceeded. Experience elsewhere in the ACT, including Belconnen and Tuggeranong where air quality monitoring has or is being undertaken, demonstrates that air emission levels are well below relevant health or environmental criteria in all cases. Exceedances of these levels are rare events in the ACT and this trend is expected to continue.

In terms of greenhouse gas emissions, there is little difference in the overall contribution to ACT-wide emissions whether the existing Territory Plan road network or the East Gungahlin draft variation road network are used. Improved air emissions technologies used by vehicles in the ACT fleet, conversion of the ACTION bus network to using compressed natural gas as fuel and other policies to encourage lower private car use, should work to contain the growth in greenhouse gas emissions as the ACT population grows.

It is acknowledged that smoke from wood heaters in Canberra is a cause of air pollution. In fact, during winter, wood heaters can produce two to three times as much particle pollution as cars. Wood smoke contains a number of noxious gases (including carbon monoxide, oxides of nitrogen, and a range of organic compounds, some of which are toxic or carcinogenic) and fine particles. These pollutants can cause breathing difficulties even at relatively low levels, especially for people suffering existing respiratory conditions, such as asthmatics, and for very young children and frail older people.

In winter, there is more air particle pollution caused by wood smoke than any other single source. In Sydney, solid fuel heaters contribute 40% of air particle pollution. On a winter weekend it can be as high as 50%. In colder climates, such as Canberra, the contribution of wood smoke to pollution is also high during the winter months from June to August. The fine particles in wood smoke contribute to the brown haze often seen on still winter mornings in parts of Canberra. Weather patterns during the winter months together with the increase in wood fire smoke have an impact on air quality in Canberra.

These issues will be considered at an early stage in the planning and development of East Gungahlin so that there is a good understanding of the likely impacts on air quality. Options available to reduce the impact of wood heaters on air quality include public education on the correct use of heaters to prohibition of the use of heaters in specific urban areas.

The introduction of more stringent arrangements for the installation of solid fuel heaters, including Territory approval and compliance with minimum emission standards, and the government's ongoing public education campaign on correct heater operation should ensure that the air quality impacts resulting from these appliances are reduced.

### **3.2.4 Contaminated Sites**

Environment Act reviewed their records on potentially contaminated sites and have advised that the following sites have been recorded.

There is a plunge sheep dip located on Block 666 adjacent to the Federal Highway. There are also uncontrolled builders spoil dumps located on Blocks 601 and 399 Gungahlin. There is an historic landfill at the site of an old disused limestone quarry located on Block 696 (formerly Block 237) Gungahlin. The sheep dip and landfills have been identified but not investigated.

An area of acid sulphate bearing rock has been identified in the proximity of the Majura Road and Federal Highway intersection. The rock when disturbed can produce highly acidic leachate. The acid leachate, if not managed appropriately, has the potential to cause adverse impacts on both the natural environment and built environment. This geological formation may extend through the northern parts of Kenny.

Environment ACT's Contaminated Sites Environment Protection Policy (November 2000) and the Assessment of Site Contamination National Environment Protection Measure (NEPM) 1999, lists sheep dips and landfills as activities associated in the past with land contamination, which may present a risk to human health and the environment. The ACT Strategic Plan 1995 for 'Contaminated Sites Management recommends that prior to potentially contaminated land being used for other purposes an assessment by suitably qualified consultants and independent audit by an accredited contaminated land auditor would be required to ensure the area is suitable for the proposed and permitted uses

Prior to development, detailed investigations will be undertaken to ensure that all areas of potential concern are identified. Appropriate remedial action, specific to the identified chemicals of concern will be implemented as part of the detailed planning undertaken for Kenny and Throsby. The results of the assessment and any required remedial work will be independently audited by an accredited contaminated land auditor prior to the commencement of any development to ensure the areas are suitable for the proposed land use. The remediation strategy employed when dealing with other contaminated sites in the ACT has been dependent on the sensitivity of the proposed future land use and the level of contamination determined. The strategy employed for any sites in the area covered by this Preliminary Assessment will be site specific.

### **3.2.5 Noise**

#### **(a) Aircraft Noise**

In 1995, Airservices Australia introduced a Noise Abatement Area (NAA) covering all of the existing residential areas of Canberra and most of those in Queanbeyan. The NAA seeks to

ensure a high degree of residential amenity by requiring jet aircraft to fly at 5,000 feet or more above ground level over residential suburbs within the NAA boundary. The requirement for heavy general aviation aircraft is that they should not fly lower than 3,000 feet above ground level over areas within the NAA. The northern NAA boundary roughly bisects Gungahlin on a north-west alignment through the lower end of Kenny, Mitchell and the Gungahlin town centre.

Development in East Gungahlin is not constrained by the proposed NAA boundary. In practice, most heavy aircraft flying across the NAA boundary are well above the minimum heights required. The existing Australian Standards provide for residential development in areas up to 20 ANEF (Australian Noise Exposure Forecast), with such development permissible up to 25 ANEF with noise mitigation techniques for structures being recommended. Areas suitable for future residential development in Gungahlin lie well outside the areas seriously or moderately affected by aircraft noise.

The NAA boundary is capable of review. Re-alignment of the boundary would eliminate heavy jet and general aviation aircraft flying at low altitudes over the eastern part of Gungahlin. The possibility of extending the NAA boundary to the north-east over Gungahlin's future residential areas has been raised with Airservices Australia and discussions are continuing in appropriate forums.

#### (b) Construction Noise

As the development and construction of East Gungahlin occurs, existing residents on interface areas with the new suburbs, and new residents moving into the newly developed areas may be subject to higher than usual noise levels associated with construction and traffic activities.

Some activities that are acceptable to the community make noise above the permitted standards. These activities may be conducted in residential areas provided they comply with the relevant noise standards and conditions as set out in the *Environment Protection Act 1997*.

### **3.3 Potential Impacts on the non-human biological environment**

#### **3.3.1 Conservation of Natural Resources**

Over recent years there has been a growing awareness of environmental issues and better understanding of ecological and conservation principles. The current planning processes for new and established areas in the ACT recognise the importance of the environment, with land use decisions dependent on the completion of detailed studies, thus ensuring careful consideration of ways to protect and/or incorporate significant environmental assets within the urban framework. These practices have been adopted in the development of the East Gungahlin Draft Variation to the Territory Plan.

The part East Gungahlin area contains a large component of native vegetation, particularly in the Gooroo area, which will be protected in a new reserve to be known as Goorooyarroo Nature Reserve. The area has been substantially reviewed by ACTPLA in the light of its status as an area containing the endangered ecological community, Yellow Box/Red Gum

Grassy Woodland. Approximately 750 hectares of endangered lowland woodland will be protected within a new nature reserve, to be known as the Gorooyarroo Nature Reserve (**Figure 16**). After land is set aside for conservation purposes there will be a development opportunity to provide for approximately 4000 dwellings (standard residential and medium density) in the PA Area. The proposed development is considered to be the optimum compromise between protecting the woodland and providing high quality residential development opportunities.

**Balancing Urban Development and Conservation Outcomes**

Conservation plays an important role in the planning process. Since 1988, approximately 709 hectares of land previously zoned for urban use (including residential, commercial and community facility purposes) have been added into Canberra Nature Park. An additional 470 ha of YBRG and native grassland (see Table 5 next page) is proposed for reservation in the near future in the ACT (300 hectares in this PA area). Altogether the total figure (700 + 470 = 1170 Ha) represents approximately 18000 dwellings (@15 dwellings/ha) and a potential population of approximately 47000 people (@2.6 persons/household) at gross densities.

Allowing for open space, roads, schools etc and assuming a density of 8 dwellings/ha these figures are adjusted to 9600 dwellings and a population of 25,000. Further adjustments can be made given ACT Government sustainability initiatives, which support higher densities around shopping centres, schools and transport routes. Assuming a density of 25 dwellings/ha around these facilities (representing 25% of all dwellings) 14800 dwellings and a population 40000 people are the figures obtained. Table 5 below shows the location and areas of urban-zoned land placed into reserve during this period and those proposed for incorporation in the future.

**Table 5: Urban Areas Placed into Reserve/Urban Open Space or Proposed For Reservation**

EXISTING	LOCATION	AREA (Ha)	COMMUNITY
	Mulligans Flat/ Gungaderra/ Mullanggari	300	YBRGW
	Gungaderra	117	Grassland
	Mullanggarri	124	Grassland
	Dunlop	31	Grassland
	North Watson	20	Other woodland
	Crace	117	Grassland
	Conder	13	YBRG
	Forde	19	YBRG
	East O'Malley	60	YBRG
	<b>Total</b>	<b>801</b>	
PROPOSED (Subject To Outcomes of Statutory Processes)	South Bruce	8	Other woodland
	Lawson	100	Grassland
	Gooroo	300	YBRG
	<b>Total</b>	<b>408</b>	

Note: Proposed areas are only approximate.

YBRG = Yellow Box/Red Gum Grassy Woodland

In addition to this land zoned for urban uses the ACT Government announced in 2000 that the Jerrabomberra Valley (Broadacre Land Use Policy) would not be developed as the next town in the ACT due to a number of constraints. These included, ANEF noise contours, defence and quarry clearance zones, 100 year flood levels and ecological constraints. This decision creates the opportunity to conserve significant areas of woodland and grassland. In terms of potential residential development this means that an additional area of approximately 30 000 homes (equivalent of Weston Creek) is no longer available for this purpose.

In order to provide for balanced planning outcomes, it is not possible to reserve all ecological elements. The ACT planning system has considerable flexibility in its approach to accommodating conservation imperatives outlined in Action Plans prepared under the *Nature Conservation Act (1980)*. The Action Plans identify that ecological values can be protected in urban open space, road reserves and parks. During the detailed planning process there will be opportunities to ensure that areas of ecological value are protected through incorporation into future urban parks and open space.

In summary, this information indicates the important role that the environment plays in planning in the ACT. These practices will continue during the planning for urban development in East Gungahlin.

#### (a) Woodland

##### Yellow Box/Red Gum Grassy Woodland

In 1997-2003 the Wildlife Research and Monitoring Unit (WRMU) of Environment ACT undertook an assessment of the extent and quality of native vegetation in the ACT. This work resulted in important areas of high quality woodland in the Gooroo area of East Gungahlin being identified. The area was found to contain significant patches of the endangered Yellow Box/Red Gum Grassy Woodland community that provides a wildlife corridor linking Mulligans Flat Nature Reserve to Majura.

In response to the need for more information about the Gooroo area, an understorey vegetation and potential fauna habitat survey was conducted by WRMU during March 2001. The aim of the survey was to re-assess the understorey vegetation of woodlands in the Gooroo area north of Horse Park Drive and to assist ACTPLA in defining the urban interface with conservation areas. The March 2001 survey took into account more attributes of the entire ecological community than the 1997 preliminary woodland assessment which was largely based on tree species composition and density.

The high conservation value Yellow Box/Red Gum grassy woodlands defined the limit of urban development in the Gooroo area. Areas having 'above average ratings' were used by ACTPLA to develop a number of possible spatial conservation options. A follow up survey of the secondary grassland in Gooroo during December 2001 assisted in confirming the extent of the possible conservation areas. The area was further refined in early 2003 to coincide with the release of the draft LWCS which proposed a nature reserve in the Gooroo area to protect the remnant Yellow Box/Red Gum Grassy Woodlands.

ACTPLA and the Land Development Authority worked closely with the Wildlife Research and Monitoring Unit (WRMU) of Environment ACT to resolve a range of town planning and

environmental planning issues in the Gooroo area of East Gungahlin. The ecological surveys by WRMU provided a detailed assessment of the woodlands, grasslands and wildlife in the area.

A planning balance sheet was adopted as the basis for comparison of a number of conservation options for the Yellow Box/Red Gum Grassy Woodlands. The major objectives against which the options were assessed comprised:

- Conservation of significant environmental values;
- Maximising access and urban design quality;
- Connectivity with Mulligans Flat;
- Protection of lower altitude woodlands and secondary grasslands.

The work resulted in agreement being reached on the extent of the areas requiring protection from urban development and the definition of the boundary between urban areas and areas to be reserved for conservation in an area to be known as the Goorooyarroo Nature Reserve

There is now a finalised boundary between urban development in East Gungahlin and woodland areas to be managed for nature conservation.

#### Yellow Box/Red Gum Grassy Woodlands in a Regional Context

The decision to protect significant areas of Yellow Box/Red Gum Grassy Woodland ecological communities in Gooroo is consistent with the *Lowland Woodland Conservation Strategy* (LWCS). The LWCS was released in 2003 and replaced nine separate Action Plans previously published for the Yellow Box/Red Gum Grassy Woodland Ecological Community, six threatened bird species associated with lowland woodland and two plant species.

The LWCS takes an integrated, Territory wide approach within a regional context, to the protection of the remaining lowland grassy woodlands. The LWCS seeks to maintain and improve the natural integrity of the remaining lowland woodland ecosystems. Within the woodland remnants, this means maintaining and improving the viability of the grassy woodland ecosystem. Externally, it means maintaining and improving connectivity to other native vegetation including woodland, avoiding further fragmentation, and minimising harmful effects from adjacent land uses.

The Lowland Woodland Conservation Strategy identifies the Gooroo-Mulligans Flat area as containing one of the most intact and contiguous areas of YBRG and other woodland types remaining in the ACT and provides habitat for threatened birds and other species. The draft LWCS identified as a priority, protection of 750 Ha of woodland in East Gungahlin at Gooroo. Therefore the proposal to protect the Gooroo woodlands is consistent with the objectives of the LWCS (Action Plan 27).

#### **Summary**

The environmental impact of the proposal is positive and will result in the protection of significant areas of regionally significant Yellow Box/Red gum Grassy Woodlands that also provide habitat for threatened species. The proposal will result in approximately 250 hectares of land (3500 dwellings), currently identified in the Territory Plan for residential development, being withdrawn from the Land Release Program. Reduction in land sales revenue for the

Gooroo area is estimated to be \$150 million, unless alternative urban land sources are identified.

Detailed urban edge planning will need to take into account the risks associated with fire fuel management and will be implemented through bushfire fuel management plans.

### **Other woodland**

The East Gungahlin Area also contains other woodlands of good tree diversity, particularly south of Horse Park Drive within the future suburb of Kenny. These Kenny woodlands consist of open woodland and scattered trees of mature Yellow Box, Blakely's Red Gum, Apple Box and some candlebark over a predominantly exotic understorey and they represent the original natural grassland frost hollow areas.

Most of these areas of woodland in Kenny, outside the proposed Gorooyarroo Nature Reserve, are classified as lowland woodland vegetation that is in part substantially and severely modified (*ACT Lowland Conservation Strategy 2004*). These woodlands represent fragmented remnants where the native understorey has been destroyed or so highly modified that the remnants no longer represent the community of interrelated native plants and animals. The generally poor condition of these woodlands reflect the high level of clearance due to pastoral activities. Although some native plants may remain, for most of these areas the native understorey is effectively irretrievable. However, the tree cover may still be valuable habitat particularly for birds.

The scattered nature of many of these small, fragmented woodland areas across the lower slopes of the Preliminary Assessment area makes their integration and/or conservation as isolated communities within the urban fabric difficult. However, it is anticipated that there will be trees that have individual value independent of their role in a forest or woodland ecosystem ie trees with particularly good nesting hollows. Trees with high ecological value will be identified by a tree survey conducted during the later, detailed planning stages for Kenny, part Harrison and part Throsby. The survey will identify trees that meet the definition of significant trees under the *Tree Protection (Interim Scheme) Act 2001*. Such trees may not be damaged by clearing, lopping or ground work in a protection zone without an approval under the Act by the Conservator. High value trees that are identified will be protected by mechanisms such as incorporation in road reserves or pocket parks in urban areas.

Wherever possible individual trees and woodland patches will be retained in urban parks or roadside reserves or as part of the landscape setting for community purposes or other less intensive land uses. Conservation of these woodlands in Kenny will be addressed at the Concept Planning stage for Kenny.

### Natural Temperate Grassland

There is relatively little natural temperate grassland within the East Gungahlin area. Several small natural temperate grassland remnants totalling 1.7 hectares were previously recorded in the Kenny area. Since the original Action Plan for natural temperate grassland was prepared in 1997 a draft *ACT Lowland Native Grassland Conservation Strategy* has been prepared. The Strategy recognises that there have been changes to some grassland sites in terms of

size, botanical significance rating and condition. Several sites have been destroyed and others have been degraded beyond recovery. The Kenny site is now classified as degraded beyond recovery.

### Striped Legless Lizard (*Delma impar*)

The Draft Variation to the Territory Plan (DVP) for part East Gungahlin has been prepared having regard to the proposal in Action Plan No. 2 to protect small areas of Striped Legless Lizard habitat within the Kenny development. However, while the Action Plan suggested that such areas may be protected along roadsides and within urban parks, the DVP for part East Gungahlin proposes retaining a larger, more continuous area of habitat within suitable parts of the Broadacre Land Use Policy Area north of Sandford Street and its extension, as well as in the adjacent Hills, Ridges and Buffer Area.

This proposal has the potential to retain up to about 34 ha of suitable habitat (*Austrostipa* or *Phalaris* pasture) on gently sloping, open terrain, with an additional area of open woodland on the hill to the north. This would be smaller than any of the other existing or proposed grassland reserves in the ACT which conserve the species, and need not be a formal conservation reserve. It nevertheless offers the best opportunity in Kenny to conserve some habitat which is compact and relatively well protected from the impacts of urban development, and would be comparable in size with some areas in Victoria which support the Striped Legless Lizard.

There is insufficient information about the species to state confidently whether a habitat area of this size would maintain a viable population in the long term. There would be the benefit, however, of maintaining a protected population in a location which will be essentially isolated from the other grassland reserves from the viewpoint of fire risk, once the intervening development is complete. The decision to maintain this area as Striped Legless Lizard habitat is subject to confirmation of its presence through further monitoring.

A compact habitat area on the edge of the urban development would be less prone than remnant habitat areas within the suburb to the impacts of adjacent residential development, including trampling, predation by cats and dogs and rubbish dumping. It would also be easier to establish an appropriate mowing or grazing regime which would not conflict with other community values. The success of the habitat management would depend on finding appropriate uses within the Broadacre area which would permit the retention of pasture with a tussock grass structure suitable for the Striped Legless Lizard. The existing use of part of the area as a radio transmitter site is one example of an appropriate use.

At the regional strategic level, the habitat retained in Kenny would complement the three existing grassland reserves in Gungahlin, as well as other proposed or potential reserves in the Jerrabomberra and Majura Valleys and an area of habitat maintained by the Commonwealth Government within the Majura Field Firing Range. This system of reserves and other habitat is consistent with the obligations of the ACT to contribute to the Natural Recovery Plan for the Striped Legless Lizard by providing an adequate cluster of conservation reserves protecting the species within the Territory.

The development of Kenny will nevertheless lead to the loss of the majority of the existing

Striped Legless Lizard habitat within the area, although most of this is introduced pasture rather than natural temperate grassland. There is the option of salvaging some lizards from this area and translocating them to alternative habitat areas or using them for research and educational purposes. Any translocation would be subject to rigorous protocols, must be done in an experimental framework, and should desirably be based on the results of translocation trials conducted elsewhere (e.g. in Victoria).

The issues associated with the conservation of the Striped Legless Lizard in the Kenny area are discussed further in the report at **Appendix A**.

### Wildlife

As identified in section 2.1.7, the East Gungahlin area contains potential woodland habitat for varied bird species and there have been opportunistic sightings of Hooded Robin, Common Dunnart, Diamond Firetail and Brown Treecreeper in the Gooroo Area by Wildlife Research and Monitoring Unit during a survey in March 2001. (*Assessment of the Conservation value of Remnant Woodland in the Gooroo Area of Gungahlin during March 2001*, Wildlife Research and Monitoring Unit August 2001)

Management prescriptions to enhance or conserve these woodland will be beneficial to their preservation. In particular, the Action Plans recommend that clusters of large dead or living trees should be conserved where possible.

A systematic bird survey has not been carried out in the Gooroo area. Wildlife Research and Monitoring Unit, Environment ACT records are based on birds observed during woodland surveys. Canberra Ornithologist Group (COG) records are mainly from fixed COG monitoring sites within the Gooroo area. It is therefore important that the records are not interpreted as representing the full extent of the distribution of these species within the East Gungahlin Area.

Recorded Sightings in East Gungahlin are as follows:

#### ***Hooded Robin (Melanodryas cuculatta)***

Block 620 Gungahlin (COG and WRM records)

Block 662 Gungahlin (WRM record)

#### ***Brown Treecreeper (Climacteris picumnus)***(COG record)

Block 620 Gungahlin (COG record)

Block 662 Gungahlin (WRM records)

#### ***Regent Honeyeater (Xanthomyza phrygia)***

Block 620 Gungahlin (COG record)

An endangered bird species, the Regent Honeyeater has been reported to occur in woodlands near Mitchell. The preferred habitat of the Regent Honeyeater is Yellow Box/Red Gum Grassy Woodland. Draft Variation to the Territory Planning for Kenny has identified the majority of the woodlands directly east of Mitchell as non-urban land (Hills Ridges and Buffer Land Use Policy Area).

### **3.3.2 Referrals Under the Environment Protection and Biodiversity Conservation Act**

The Striped Legless Lizard is a nationally vulnerable species under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Development is proposed in an area (future suburb of Kenny) where the species has previously been recorded. The impact of development of Kenny on the Striped Legless Lizard as a nationally vulnerable species is assessed as not being significant under EPBC Act Administrative Guidelines (see 'Appendix A' for full assessment details).

However, it is still proposed to refer the proposal to the Commonwealth Environment Minister. It is intended that this referral be made subsequent to the public exhibition of this Preliminary Assessment report, as the PA will provide supporting information which is likely to be sought by the Department of the Environment and Heritage in its assessment of the referral. The purpose of the referral stage is to determine whether a proposed action requires approval under the EPBC Act. If the Minister determines an approval is required, the proposed action will proceed through the assessment and approval processes.

### **3.3.3 Assessment of Urban Edge Impacts**

#### *Bushfire*

ACTPLA has undertaken a Bushfire Risk Analysis in June 2004 (**Appendix B**) for the future suburb of Throsby in East Gungahlin. Both previous fire history and planning considerations adopted in other parts of Australia confirm that the proposed suburb of Throsby, particularly the northern part, is in a fire prone area. The most likely ways that bushfires could spread into the area of the proposed suburb is from the nature reserves or from Horse Park Drive, conversely, fires would be able to spread from the suburb into the reserves.

The draft Bushfire Risk Analysis Report concludes that Throsby can be developed for residential purposes and the risks can be reduced to acceptable levels by a range of measures outlined in the draft report. The report has been circulated to ACT Government Agencies and it has received in principle support for its findings.

In summary, protecting the future residential communities in Throsby from bushfire impacts will require the successful integration of policy strategies as follows:

- *Land Use Planning* – including urban design, type of use, landscaping, utilities placement, Building Code of Australia enforcement, development guidelines;
- *Bushfire Fuel Management* - including appropriate land management objectives, risk management assessments, hazard reduction strategies such as fuel removal, fuel reduction, and/or fuel isolation practices;
- *Community Awareness and Resilience* – including awareness campaigns, encouraging and supporting a self help culture, education programs, partnerships with industry and the community, Landcare and Parkcare groups, neighbourhood watch type programs, community risk advice on-line;

- *Landscape Design and Vegetation Type* – the type of vegetation found or introduced into an area can add to its bush or grass fire capability. Interface landscaping and vegetation types to reduce bushfire impacts should be included as part of all urban edge development proposals;
- *Access and Egress* – road and street design at the interface should provide safe access for fire fighting units and for easy egress for those who wish to evacuate if threatened by fire.

To ensure that the level of risk from the threat of bushfire is reduced at the interface with the new suburbs, the East Gungahlin Draft Variation to the Territory Plan recognises provision for buffer area or fire management zones to be incorporated into the detail design of future residential areas. These buffer areas will consist of edge roads and fuel free zones in residential area that have an interface with nature reserves.

Implementation of strategies such as bushfire fuel reduction would be reflected in a fire management plan prepared by the relevant land manager. Awareness and education strategies targeted at the resident population can be implemented as the community becomes established on these interim and final interface areas.

#### Mulligans Flat Nature Reserve & Goorooyaroo Nature Reserve – Interface Issues

The future suburb of Throsby has Mulligans Flat Nature Reserve to the north and Goorooyaroo Nature Reserve to the east of the suburb. It is important that the nature reserves are appropriately buffered against potential threats from suburban development, including weed invasion, dumping of rubbish and removal of plants. It is proposed that a buffer area (within the residential area) will contain several elements, including edge roads, appropriate fencing and a fuel free zone to create an overall buffer that fulfils both conservation protection and fire management requirements. This conservation management area will assist in reducing the potential impacts associated with nearby residential areas including the incursion of weeds, predation by domestic pets, dumping of rubbish, inappropriate access and removal of plants/timber. This buffer will also form part of the fire management zone, similar to that described earlier in this section between residential areas and Hills Ridges and Buffer land use areas or the Nature Reserve.

#### Cat Containment & Native Wildlife

In March 2004 the Legislative assembly supported a motion to permanently confine cats to their owners premises in the future suburbs of Forde and Bonner. The suburbs adjoin the Mulligans Flat Nature Reserve and containment is aimed at keeping cats away from woodland habitat in the nearby nature reserve. The measures are particularly important as Mulligans Flat Nature Reserve has populations of two resident bird species, namely the Hooded Robin and the Brown Treecreeper which are threatened with extinction.

The statutory and policy issues will be finalised by Environment Act with planning issues to be handled by ACT Planning and Land Authority.

The proposed suburb of Throsby has an interface with Mulligans Flat Nature Reserve and the Gorooyaroo Nature Reserve. As discussed in this DVP, the two reserves contain a diversity of native wildlife. It is anticipated that similar to the proposed measures in Forde and Bonner, cat containment measures may also need to apply in Throsby. This issue will be considered in further detail at the Concept Planning Stage for the suburbs east of Horse park Drive.

### **3.4 Potentially beneficial impacts**

The main benefits of the proposed changes to the Territory Plan for the East Gungahlin area are summarised below:

**Protecting Biodiversity.** The creation of a 750 hectare nature reserve (Gorooyaroo Nature Reserve) to protect high conservation value Yellow Box/Red Gum Grassy Woodlands secondary grassland, and habitat for threatened birds. An area of predominantly introduced pasture which provides habitat for the Striped Legless Lizard will be retained in Kenny under appropriate management within the proposed Broadacre land use.

**Implementing sustainability principles by the integration of environment and development.** Environmental conservation and ecologically sustainable development are integral to the planning of the area and have determined both the physical nature of the plans and the principles, policies and codes, which will govern development. A review of the planning permits the accommodation of and continual update on sustainability principles in such areas as water resource use. It also permits new knowledge on threatened species and communities and urban edge interfaces to be incorporated into the planning process to ensure informed decisions are made.

**Economic sustainability.** Within the limits set by environmental and social considerations, land is used to its maximum productive extent within a framework that recognises the requirements for both short-term viability and long-term investment security to both the public and private sectors.

**Mixed use.** A Group centre in Kenny will provide an opportunity to mix land uses, with retail and commercial activities on the ground floor and residential uses above. This initiative is predicted to give vitality to both the residential and commercial areas, and result in a greater level of viability and accessibility for a greater range of services such as public transport, retail, employment and community facilities.

**Cultural development.** Planning will take advantage of the natural, Aboriginal and European cultural heritage characteristics of the area and build on them to create a program to support and strengthen the community's identity.

**Integrated transport.** The proposed changes to the Territory Plan will provide safe and easy access to convenience facilities, open space and public transport. A comprehensive cycleway network is planned for both recreation and commuting. At the same time, vehicle access aims to be quick, safe and convenient. The result of this is the provision of choice for

residents and workers, with a high degree of amenity.

**High standards of design.** Principles have been developed which incorporate high standards of design into all development and spaces. These controls are aimed at creating a sustainable environment of high quality and environmental sensitivity.

## 4. SUMMARY AND CONCLUSIONS

Adoption of the East Gungahlin Draft Variation to the Territory Plan has important benefits for the ACT as follows:

- Will result in the protection of significant areas of Yellow Box/Red Gum Grassy Woodlands and other woodland types that provides habitat for threatened birds and other species;
- Will retain under Broadacre land use an area of pasture which provides habitat for Striped Legless Lizard which will contribute to the long-term conservation of the species in ACT.
- It meets future demand for new housing in a location close to Inner Canberra and Belconnen, with ready access to social, employment and cultural opportunities in these areas.
- It reinforces the Gungahlin Town Centre;
- It contains development within the ACT;
- it reinforces the future potential to maximise the use of public transport, using extension of an IPT route from Civic to the Gungahlin Town Centre; and
- It is consistent with the proposals contained in the draft Spatial Plan.

A major issue relates to the ability to achieve a level of local employment in the East Gungahlin District similar to or preferably higher than levels in Belconnen and Tuggeranong thereby minimising external travel, air pollution within the central Canberra basin, and greenhouse gas emissions as a whole.

The Draft Variation to the Territory Plan will also make a substantial positive contribution to the development of, and provision of community services and amenity in the Gungahlin area. Considerable effort has been expended to ensure that development will be consistent with ESD principles, and that natural areas, cultural areas and threatened species will be conserved.

It is concluded, that on balance, the proposal will not impact significantly on the human environment, and presents a significant opportunity to achieve a positive result for the natural environment. The main factors are summarised below:

- Characteristics of this part of East Gungahlin, including heritage, existing land uses, topography and geology, landscape, hydrology, ecology, climate and air quality and existing infrastructure and services, determine the constraints and opportunities of the site;
- Implementation of the East Gungahlin Draft Variation to the Territory Plan will result in the protection of approximately 750 hectares of high conservation value Yellow Box/Red Gum Grassy Woodlands and secondary grassland in a nature reserve. This involves the withdrawal of approximately 250 hectares of land currently zoned residential from the land release program as part of the protection program.

- The constraints of the site are related primarily to: its previous use for rural purposes leading to degradation in some areas; the presence of significant areas of Yellow Box/Red Gum Grassy woodlands of high conservation value in the north east part of the area;
- The opportunities in relation to the future development of this part of East Gungahlin emanate from the fact that the site area is relatively large. It is therefore capable of supplying affordable urban land for an extended period in a way that recognises and preserves a representative range of habitats within open space and drainage corridors. It redefines the urban edge (interface between the urban and non-urban areas) in a way that facilitates edge management (weeds, pets, fire) and satisfies landscape considerations.
- Detailed analysis of the opportunities and constraints of the site has enabled the locations and boundaries of land uses to be specified in much greater detail than is currently shown on the Territory Plan.

#### **4.1 Draft Variation to the Territory Plan East Gungahlin – A Summary**

The East Gungahlin draft variation will result in a clearer and more detailed version of the Territory Plan as it relates to the East Gungahlin area. It establishes a robust and flexible framework of objectives, principles and land use policies to guide the continuing development of the area within the context of ecologically sustainable development.

ACTPLA has commenced the process of land withdrawals in the Gooroo area, however, the mechanism for formally establishing the Goorooyaroo Nature Reserve is through a Draft Variation to the Territory Plan. There are a range of planning implications that flow from the establishment of the nature reserve affecting adjoining areas of proposed urban development, including the suburb of Kenny. These changes will need to be incorporated into the Territory Plan.

The DVP for East Gungahlin provides for the new suburb of Kenny and parts of Harrison and Throsby. Major facilities in these suburbs include:

- A new government primary school;
- A Group Centre in Kenny; and
- New arterial road connection (Horse Park Drive) from Gungahlin Town Centre to the Federal Highway.

The estimated residential population for urban areas within the East Gungahlin area is approximately 10,000 (approx 4000 new dwellings). This figure is based on a gross residential density of 20 dwellings per hectare within the identified urban housing (B8 and B9) areas adjacent to Kenny Group Centre and primary school site. A gross residential density of 13 dwellings/ha is proposed for other residential areas.

Other major elements of the proposed Draft Variation to the Territory Plan include the movement systems (roads and paths) and open space network. These are integrated with a range of land uses and therefore have the potential to achieve major gains in public transport

usage as well as pedestrian and cycle movement.

In addition to its use as a movement corridor, the open space network along Sullivans Creek is designed to incorporate a system of natural floodways and, where possible, a representative range of the remaining native vegetation. Open space areas provide a scenic backdrop to the urban environment and will become a valuable conservation and recreational resource. The open space system is responsive to topography and other natural and cultural elements.

Development in the subject area will be assessed against the Principles and Policies of the Territory Plan, and associated Design and Siting Codes, including the proposed new ACT Code for Residential Development, when adopted (Draft Territory Plan Variation No 125). ACTPLA has in parallel with the new code, implemented a program to achieve High Quality Design and Sustainability, including new assessment processes. Variation No. 200 to the Territory Plan introduces policies and provisions that protect the residential amenity and neighbourhood character of suburban areas, provides strategic guidance on the preferred location of residential redevelopment and promotes more sustainable development and housing choice. The suburban area provisions introduce a further layer of controls aimed at protecting the low rise, leafy character of suburban areas, and introduce some key changes to the existing residential design and siting codes in the Territory Plan. These programs are designed to achieve high quality urban outcomes and will be an important tool in ensuring that development in the area is at a high standard.

A draft Variation for East Gungahlin will identify the area as Defined Land in accordance with the provisions of the Land Act. The Territory Plan Map will be amended to add the defined land overlay to the site. Section 7(3)(e) of the Land Act stated that where the Territory Plan identifies land as Defined Land, it shall also set the principles and policies for its development. The Defined Land process will enable the Territory Plan to be progressively updated as the detailed designs for the area unfold. Detailed principles and policies for the development of the area will be included in the draft Variation.

## **4.2 Guiding Principles**

### **4.2.1 Sustainability Principles**

An important overarching objective of the East Gungahlin Draft Variation to the Territory Plan is to move towards achieving sustainability in the development of Gungahlin. Sustainability principles are about much more than preserving valuable environmental resources. They encompass social, cultural and economic considerations and aim to:

- Enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations;
- Provide for equity within and between generations; and
- Protect biological diversity and maintain essential ecological processes and life-support systems.

The ultimate goal is to achieve development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends.

### **4.2.2 Urban Design Principles**

Town planning can foster sustainable development by focussing on a number of specific aims. Urban design is concerned with the physical arrangement and functioning of urban activities, the physical appearance of the built environment and its relationship to the natural environment, the way in which people experience it, and the social and economic factors that influence its character.

In order to achieve a high standard of urban design in the new area of Gungahlin, seven principles are identified to guide development. These are as follows:

- Development will endeavour to distribute benefits widely in the population;
- The new areas of Gungahlin will produce environmental benefits;
- The interests of the community will be defined and engaged;
- Development will respond to local features and needs;
- Development will pay tribute to the past and present in creating the future;
- Design and development will offer the possibility for continuing adaptation and change; and
- Design and development will attain a high standard of urban design.

### **4.2.3 References and Information Sources**

1. *National Capital Plan*.
2. *The Territory Plan*, 1998.
3. *Territory Plan Variation No 53, Gungahlin Town Centre and Central Area*.
4. *East Gungahlin Scoping Study Report*, ACTPLA March 2002.
5. *Gungahlin Development Sequence – Draft Preliminary Review*, PALM, March 2002.
6. *Wells Station Draft Citation* (ACT Heritage).
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9. *Preliminary Cultural Resource Survey of Future Suburbs at Gungahlin*, ACT (1994).
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11. *Forward Tree Planting 1996/97 – Upper Sullivans Creek Catchment – Design Studies Report*,

Department of Urban Services, 1996.

12. *Mitchell and Gungahlin Access Road* – Final Report (RA Young and Associates 1991).
13. *Wells Station Drive/Flemington Road Intersection Feasibility Study* -Maunsell McIntyre Pty Ltd, November 1998.
14. *Industrial Land Use Strategy* – PALM.
15. *Cultural Heritage Survey of Sullivans Creek Catchment Area*, Gungahlin, Patricia Saunders, July 2000.
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17. *Gungahlin Urban Structure Review*, Planning and Land Management, February 2002.
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19. *Sullivans Creek Catchment Stormwater Masterplan Report*, SMEC Australia , April 2003.
20. *Gungahlin Environmental Impact Statement* – Final Statement, January 1989.
21. *Gungahlin Creek and Associated Landscape and Hydraulic Works – Concept Report*, Maunsell McIntyre Pty Ltd.
22. *Review of Infrastructure Planning for Sullivans Creek Catchment*, Bill Guy and Partners , July 2003.
23. *Gungahlin Creek Catchment – Strategic Stormwater Masterplan Report*, Young Consulting Engineers, June 2003
24. *Gungahlin Creek Catchment – Transport Study*, Snowy Mountain Engineering Corporation, 2003
25. *Gungahlin Landscape Policy Plan*, 1996
26. *ACT Lowland Woodland Conservation Strategy, Action Plan No 27, Environment ACT, March 2004*
27. *Draft ACT Natural Temperate Grassland Conservation Strategy, Action Plan No 28, Environment ACT*

# APPENDIX A

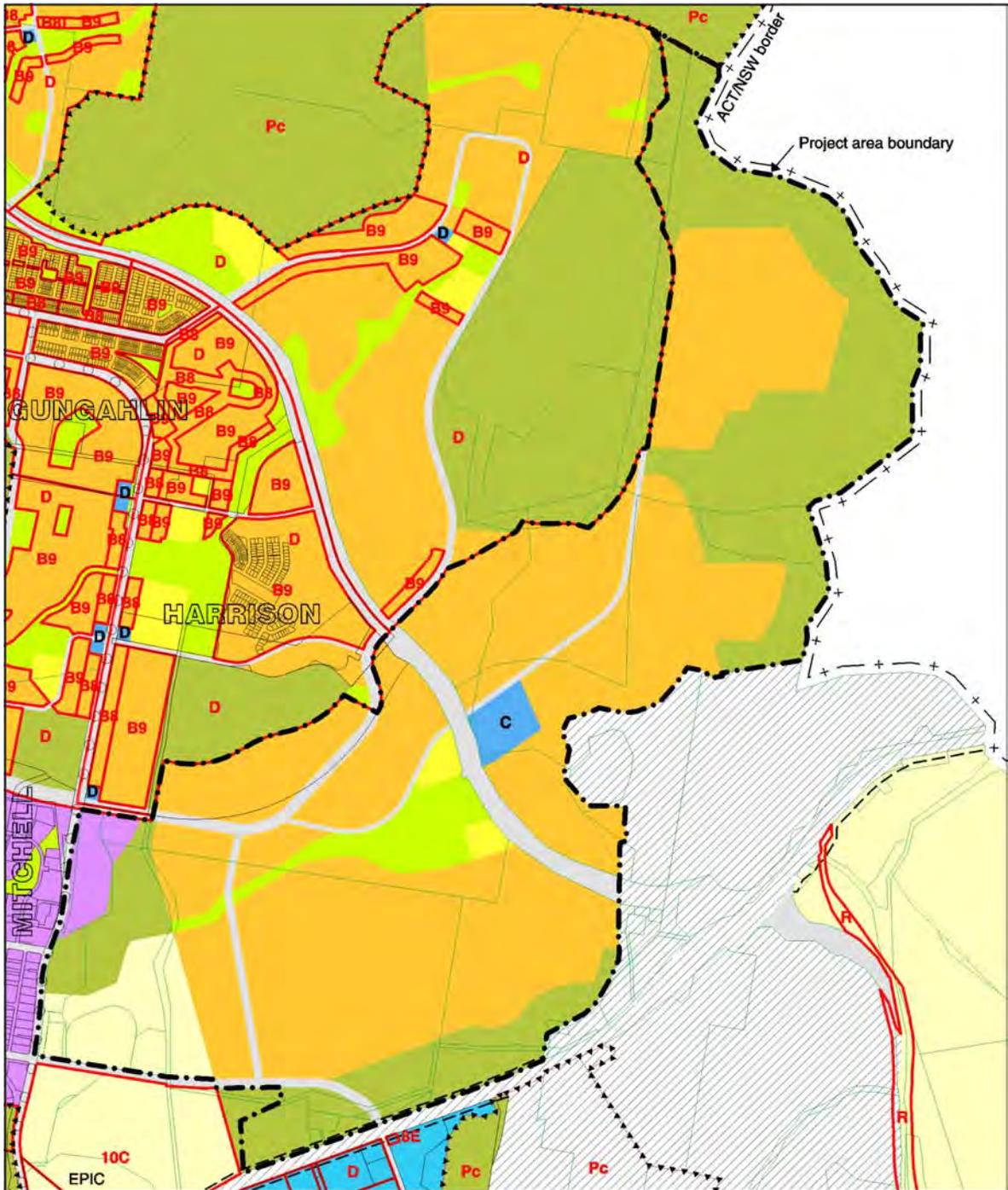
Report to the ACT Planning and Land Authority – June 2004  
The Striped Legless Lizard (*Delma impar*) in the Proposed Suburb  
of Kenny: Implications for Urban Development

# **APPENDIX B**

Report to the ACT Planning and Land Authority – June 2004  
Bushfire Risk Assessment for the Proposed Housing  
Development at Throsby, ACT

<b>Principles</b>	<b>Application to site level</b>	<b>Application to neighbourhood level</b>	<b>Application to major movement and drainage links</b>
<b>Design &amp; siting guided by land use capability</b>	Use of hazard areas limited to special development capable of incorporating risk management measures	Open space accommodating hazard areas & incorporating risk management measures	Accommodation of movement trails & recreational areas into flood zone, with appropriate hazard management measures
<b>Minimise disruption to natural drainage pathways</b>	Maintain natural soil infiltration, interflow & through flow path ways; avoid development across natural overland flow paths, gullies, streams & their corridors	Maintain natural soil infiltration, interflow & through flow path ways; avoid development across natural overland flow paths, gullies, streams & their corridors	Maintain natural channel morphology & vegetation, riparian vegetation & floodplain wetlands & vegetation. Avoid development of structures across natural flow paths
<b>Minimise impervious areas</b>	Limit level of permissible building envelope, use of porous pavements.	Use of porous pavements, swales. Minimise area of roads	Use of porous pavements for traffic & parking areas and minimise area of roads.
<b>Offset losses in pervious areas</b>	Installation of infiltration trenches, swales	Installation of infiltration trenches & basins	
<b>Minimise hydraulic connectivity</b>	Use of swales, drainage cells, ponds. Disconnect downpipes where appropriate.	Use of swales, drainage cells, ponds.	Maintain natural waterways and floodplains. Construction of vegetated waterways & ponds in case of erosion gullies.
<b>Offset increases in hydraulic connectivity</b>	Provision of retention and detention storage in rainwater tanks, ponds, swales, drainage cells, soil storage	Provision of retention and detention storage in extended detention ponds, swales	Provision of detention storage in extended detention ponds and basins.
<b>Landscape planting appropriate to soils, slope, etc</b>	Use of ground covers, suitable grasses & mulching in areas not subject to frequent traffic, and contour swales	Use of ground covers, suitable grasses & mulching in areas not subject to frequent traffic and contour swales.	Maintenance or restoration of native vegetation and riparian zones. Use of ground covers, suitable grasses & mulching in areas not subject to frequent traffic
<b>Conservation of water</b>	Water efficient showerheads, dual flushing toilets, washing machines, automatic irrigation systems, mulching.	Automatic irrigation systems, mulching	Automatic irrigation systems in recreation areas, mulching in case of parks
<b>Local harvesting and use of rainwater</b>	Rainwater tanks to store and use roof drainage.	Neighbourhood ponds.	Re-use of stormwater detained in ponds, lakes
<b>Recycling of greywater/sewer mining/ treated sewage.</b>	Treatment and reuse of grey-water for garden irrigation	Treatment and reuse of effluent for garden irrigation	Treatment and reuse of effluent for recreation area irrigation & commercial use
<b>Integrated urban land &amp; water based design and management</b>	Multiple roles of facilities such as rainwater tanks, ponds, porous pavements, landscape areas	Multiple roles of facilities such as ponds, porous pavements, landscape areas. Integration of side gullies draining neighbourhoods with sub-catchment drainage corridors.	Multiple roles of facilities such as ponds, porous pavements, landscape areas. Integration of side gullies draining neighbourhoods with sub-catchment drainage corridors.

**TABLE 3 - SUMMARY OF WATER SENSITIVE URBAN DESIGN PRINCIPLES**



**LAND USE POLICIES (See Part B of Written Statement)**

	Designated Areas <i>See National Capital Plan</i>		8. Entertainment, Accommodation and Leisure
	1. Residential		9. Urban Open Space - Public Land <i>unless specifically excluded by X Overlay</i>
	2. Commercial: A - Civic centre B - Town centre C - Group centre D - Local centre E - Corridors and Office sites		10. Broadacre
	3. Industrial		11. Rural
	4. Community Facility		12. Hills, Ridges and Buffer Areas
	5. Restricted Access Recreation		13. River Corridor
	6. Water Feature		14. Mountains & Bushland
	7. Municipal Services		15. Plantation Forestry
			16. Major Roads

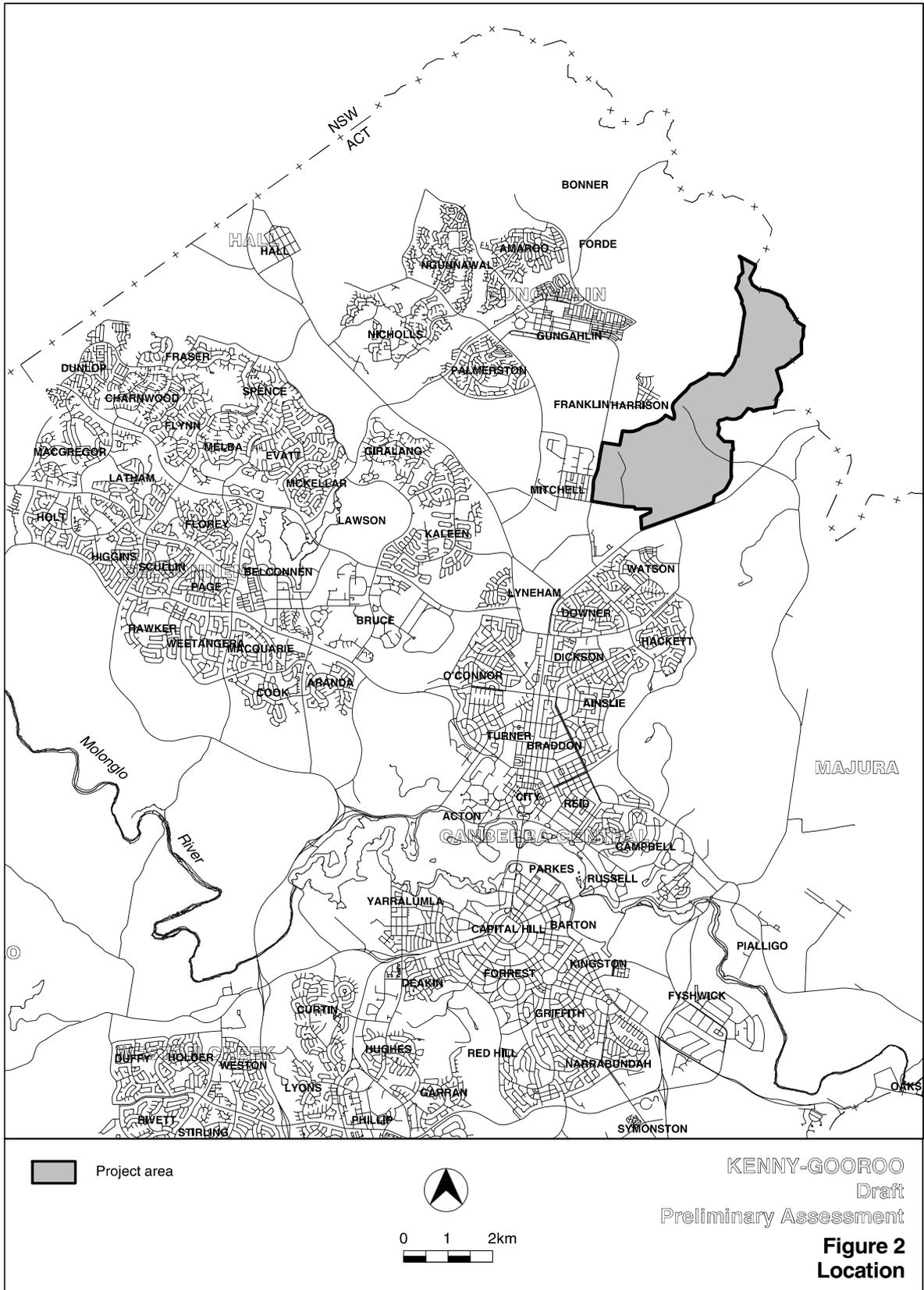
**OVERLAYS (See Part C of W.S.)**

	A1-14B Area Specific Policies
	R Subject to Review
	D Defined Land <i>See also Part 2 of Land Act</i>
	V Draft Variation to the Plan having interim effect. <i>See Part 2 of Land Act</i>
	Pw-h Type of Public Land Reserve <i>See also Schedule 1 of Land Act</i>
	Public Land (Arrows point inwards) <i>See also Part 5 of Land Act</i>
	Special requirements apply flanking Main Avenues and Approach Routes <i>See National Capital Plan</i>
	Intertown Public Transport Route

0 500m



**KENNY-GOOROO**  
**Draft Preliminary**  
**Assessment**  
**Figure 1**  
**Territory Plan Map**



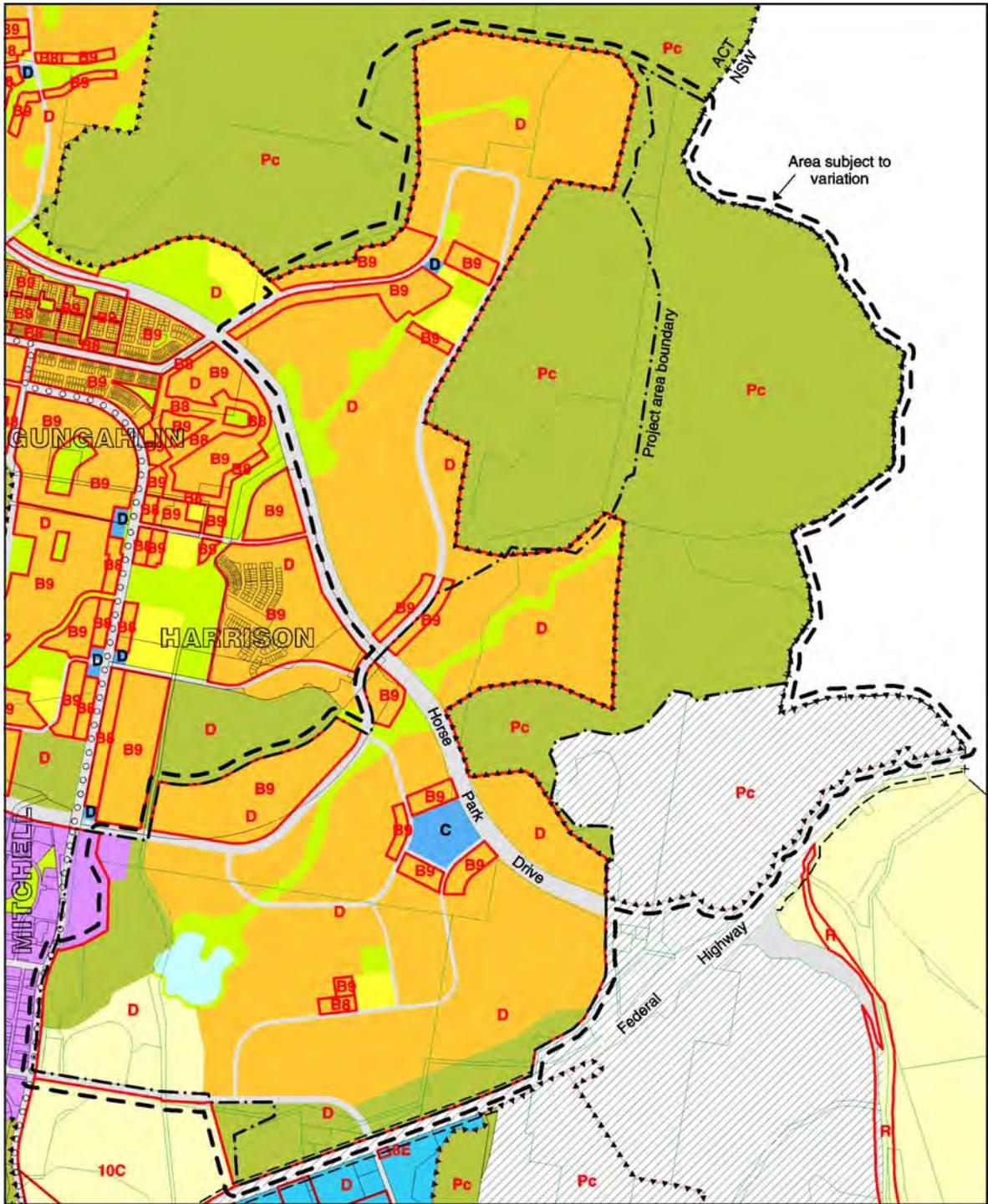
 Project area



0 1 2km  


KENNY-GOOROO  
 Draft  
 Preliminary Assessment

**Figure 2**  
**Location**



**LAND USE POLICIES (See Part B of Written Statement)**

	Designated Areas See National Capital Plan		8. Entertainment, Accommodation and Leisure
	1. Residential		9. Urban Open Space - Public Land unless specifically excluded by X Overlay
	2. Commercial: A - Civic centre B - Town centre C - Group centre D - Local centre E - Corridors and Office sites		10. Broadacre
	3. Industrial		11. Rural
	4. Community Facility		12. Hills, Ridges and Buffer Areas
	5. Restricted Access Recreation		13. River Corridor
	6. Water Feature		14. Mountains & Bushland
	7. Municipal Services		15. Plantation Forestry
			16. Major Roads

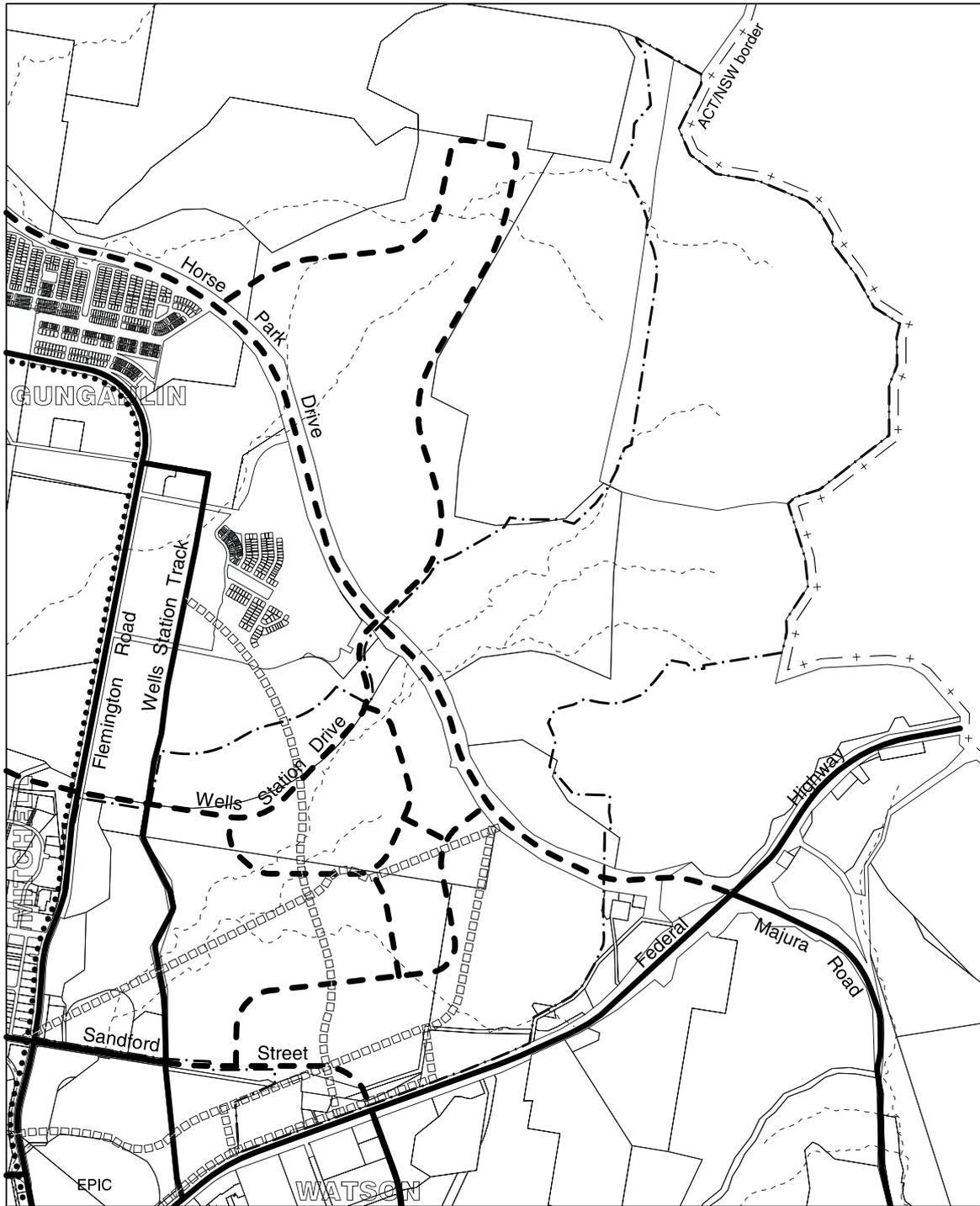
**OVERLAYS (See Part C of W.S.)**

	A1-14B Area Specific Policies
	R Subject to Review See also Part 2 of Land Act
	D Defined Land See also Part 2 of Land Act
	V Draft Variation to the Plan having interim effect. See Part 2 of Land Act
	Po-h Type of Public Land Reserve See also Schedule 1 of Land Act
	Public Land (Arrows point inwards) See also Part 5 of Land Act
	Special requirements apply flanking Main Avenues and Approach Routes See National Capital Plan
	Intertown Public Transport Route

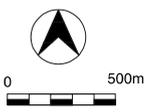


**KENNY-GOOROO**  
Draft Preliminary  
Assessment

**Figure 3**  
Draft Variation  
to Territory Plan

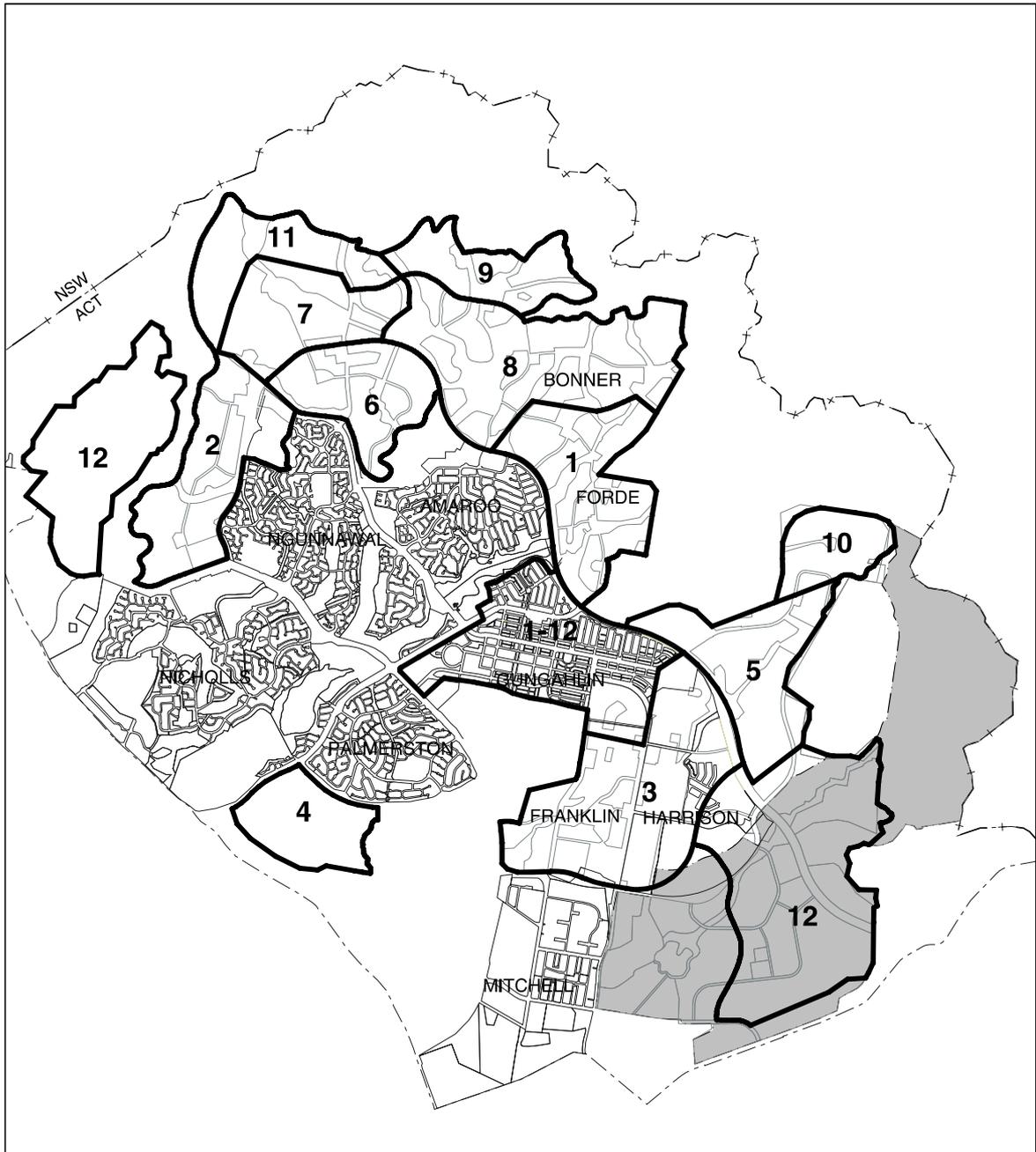


- Project area boundary
- ..... Proposed trunk cyclepath
- Trunk cyclepath (Gungahlin Master Plan)
- Existing road
- - - Proposed major road

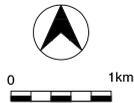


KENNY-GOOROO  
 Draft  
 Preliminary Assessment

**Figure 4**  
**Existing /Proposed Roads and Cyclepaths**

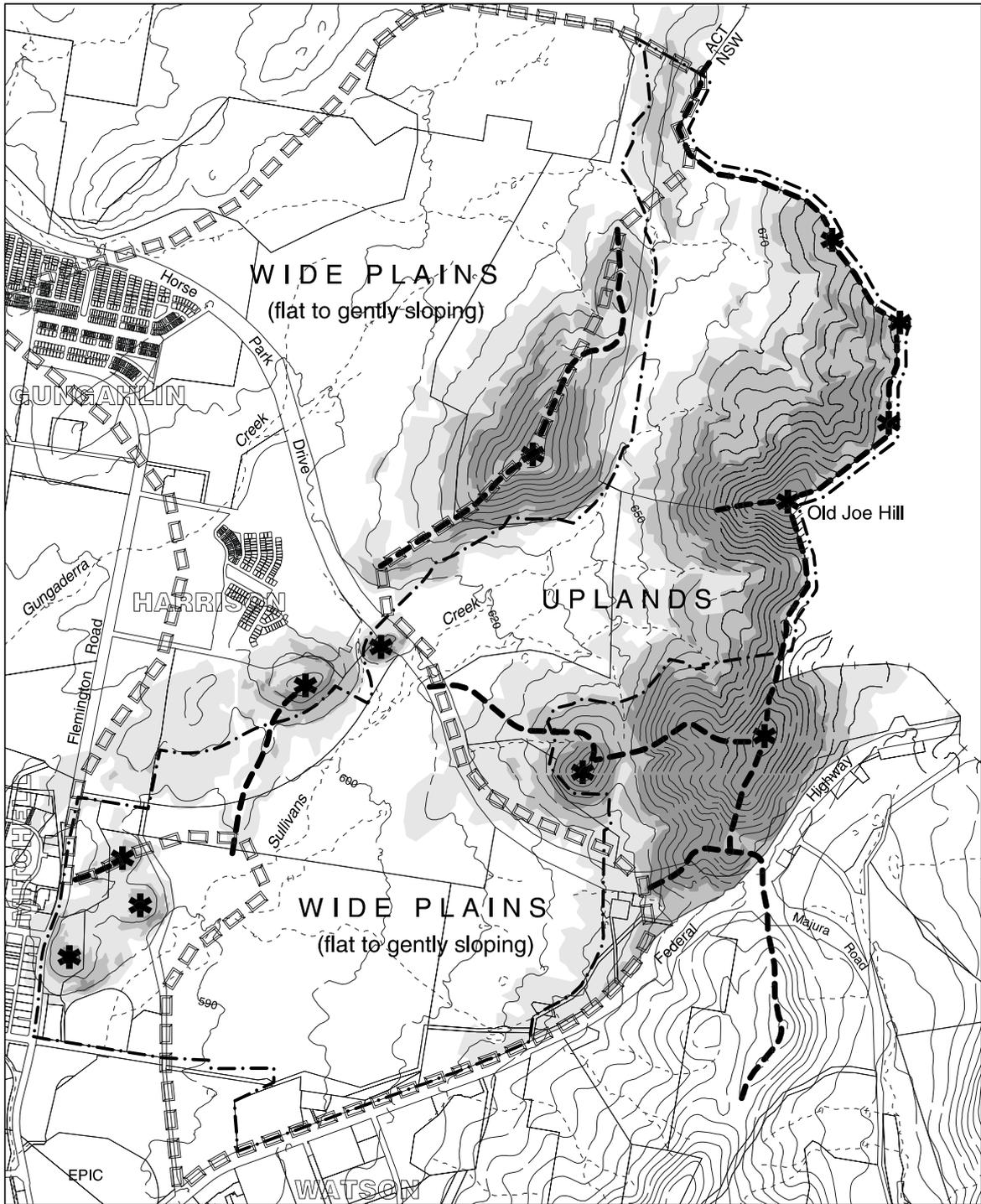


Project area

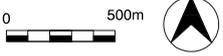


KENNY-GOOROO  
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Preliminary Assessment

**Figure 5**  
**Gungahlin Development Sequence 2002**

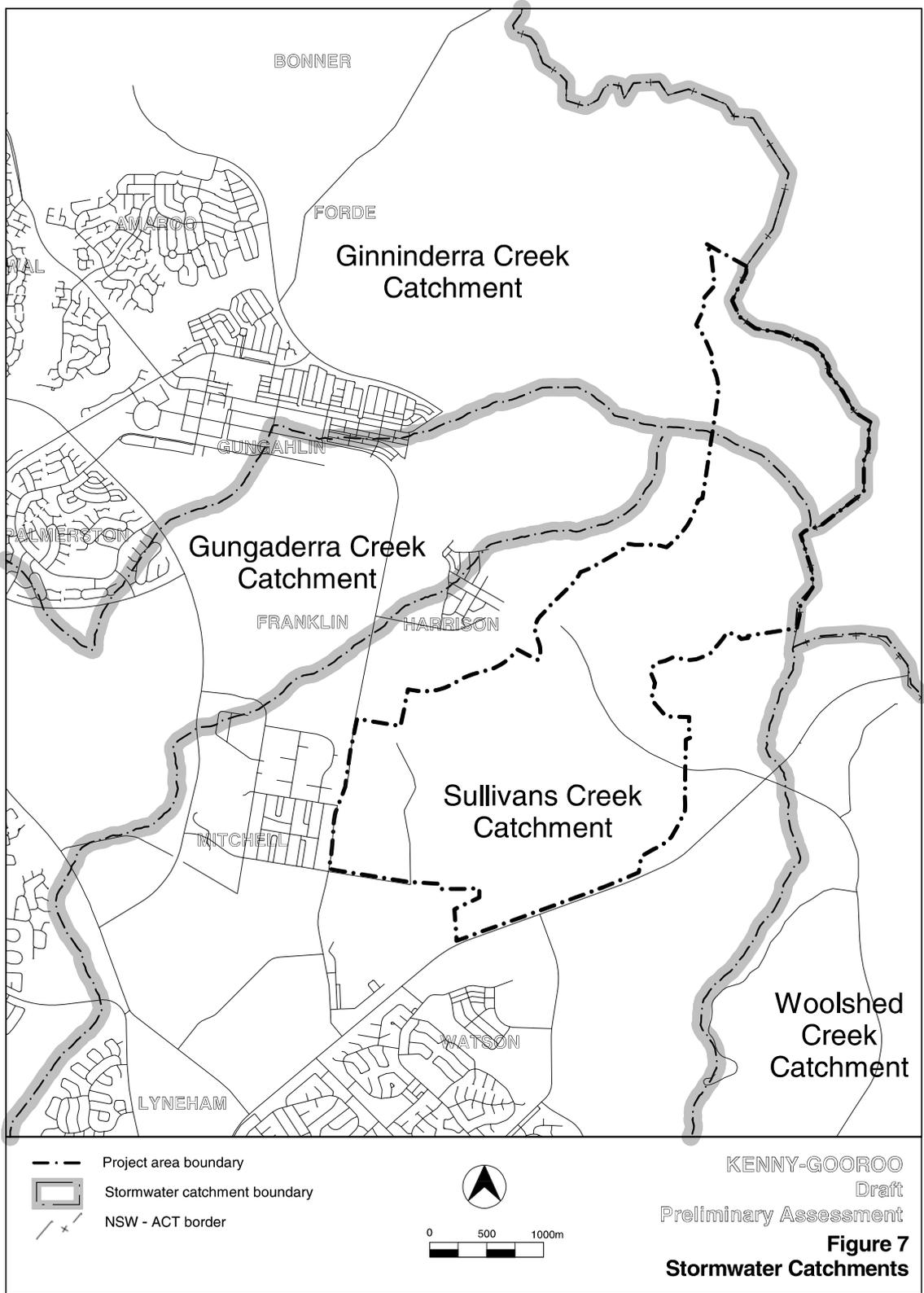


-  Project area boundary
-  Ridgeline
-  Hilltop
-  Creek, Dam
-  Topographical boundary
-  Contour (10m interval)

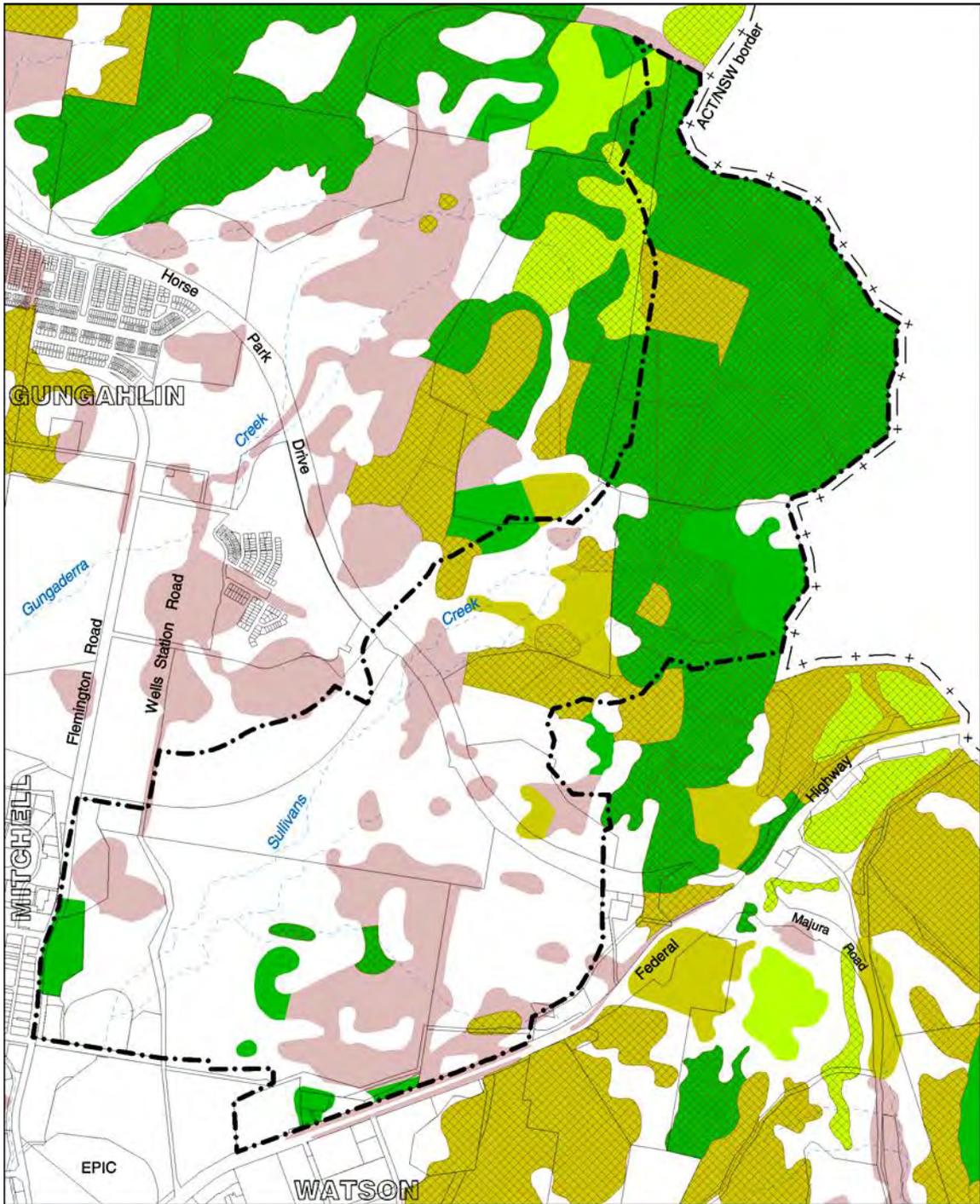


-  Land slope 5-10%
-  Land slope 10-20%
-  Land slope greater than 20%

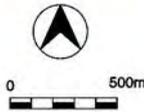
**KENNY-GOOROO**  
 Draft  
 Preliminary Assessment  
**Figure 6**  
**Topography and Landscape**



KENNY-GOOROO  
 Draft  
 Preliminary Assessment  
**Figure 7**  
**Stormwater Catchments**

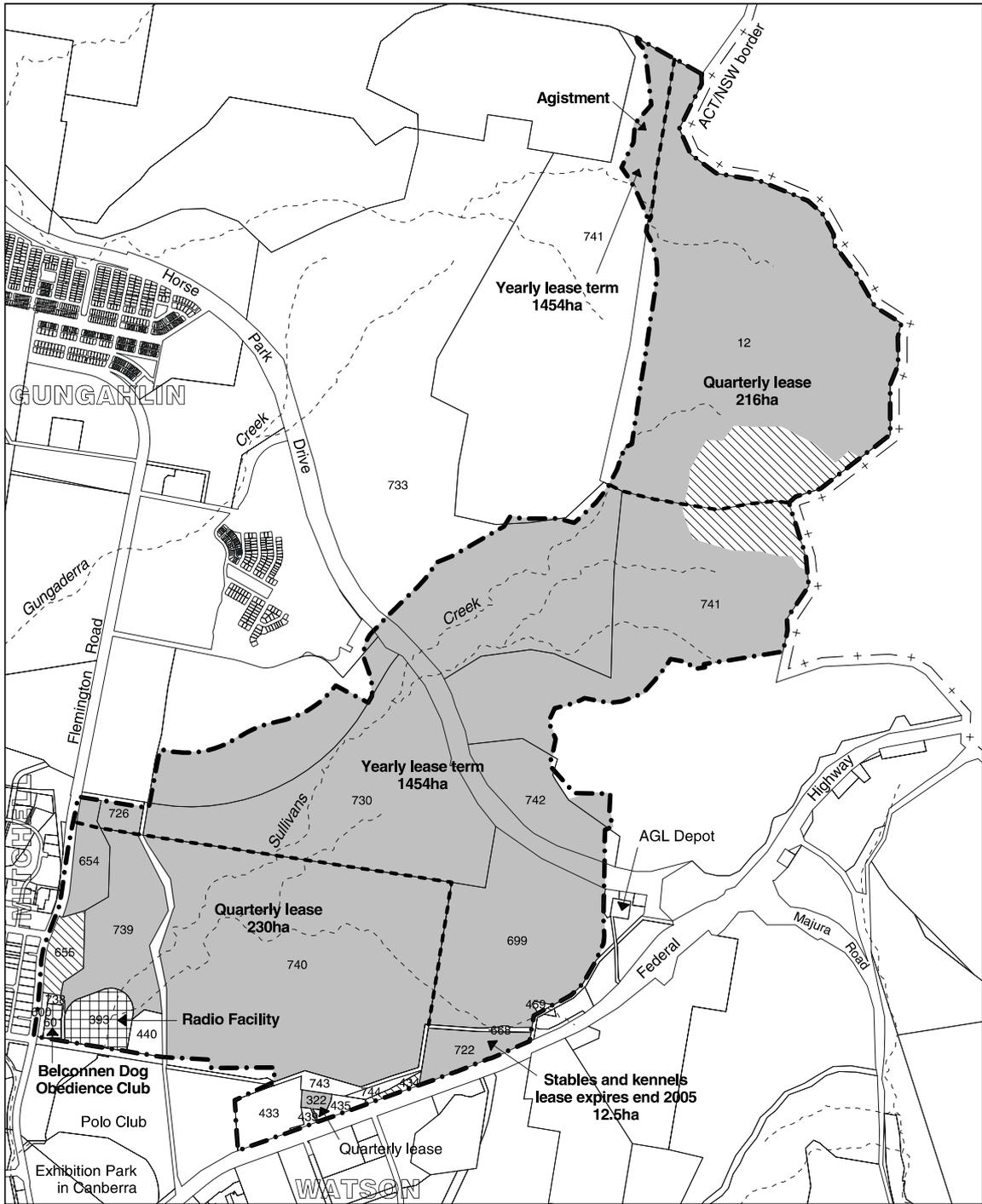


- Project area boundary
- Yellow Box Red Gum Grassy Woodland - *endangered ecological community*
- Lowland woodland (partially modified)
- Lowland woodland (moderately modified)
- Secondary grassland (moderately modified)
- Other lowland woodland (substantially/severely modified)

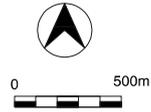


KENNY-GOOROO  
Draft  
Preliminary Assessment

**Figure 8**  
**Lowland Woodland**  
**Ecological Communities**

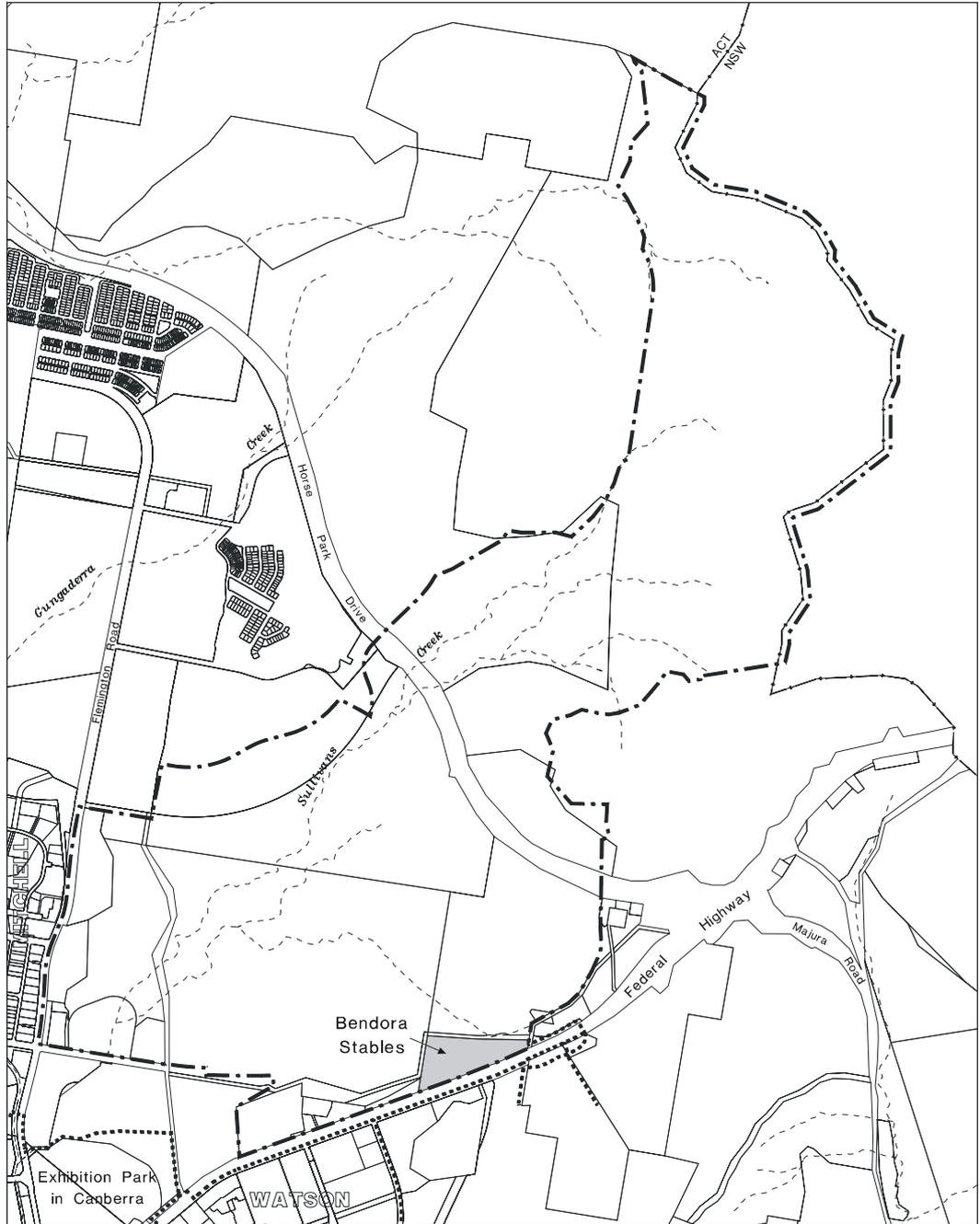


-  Project area boundary
-  Grazing and/or agriculture
-  Tree plantation
-  Other uses
-  Boundary between rural leases

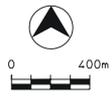


KENNY-GOOROO  
Draft  
Preliminary Assessment

**Figure 9**  
**Land Use and Tenure**

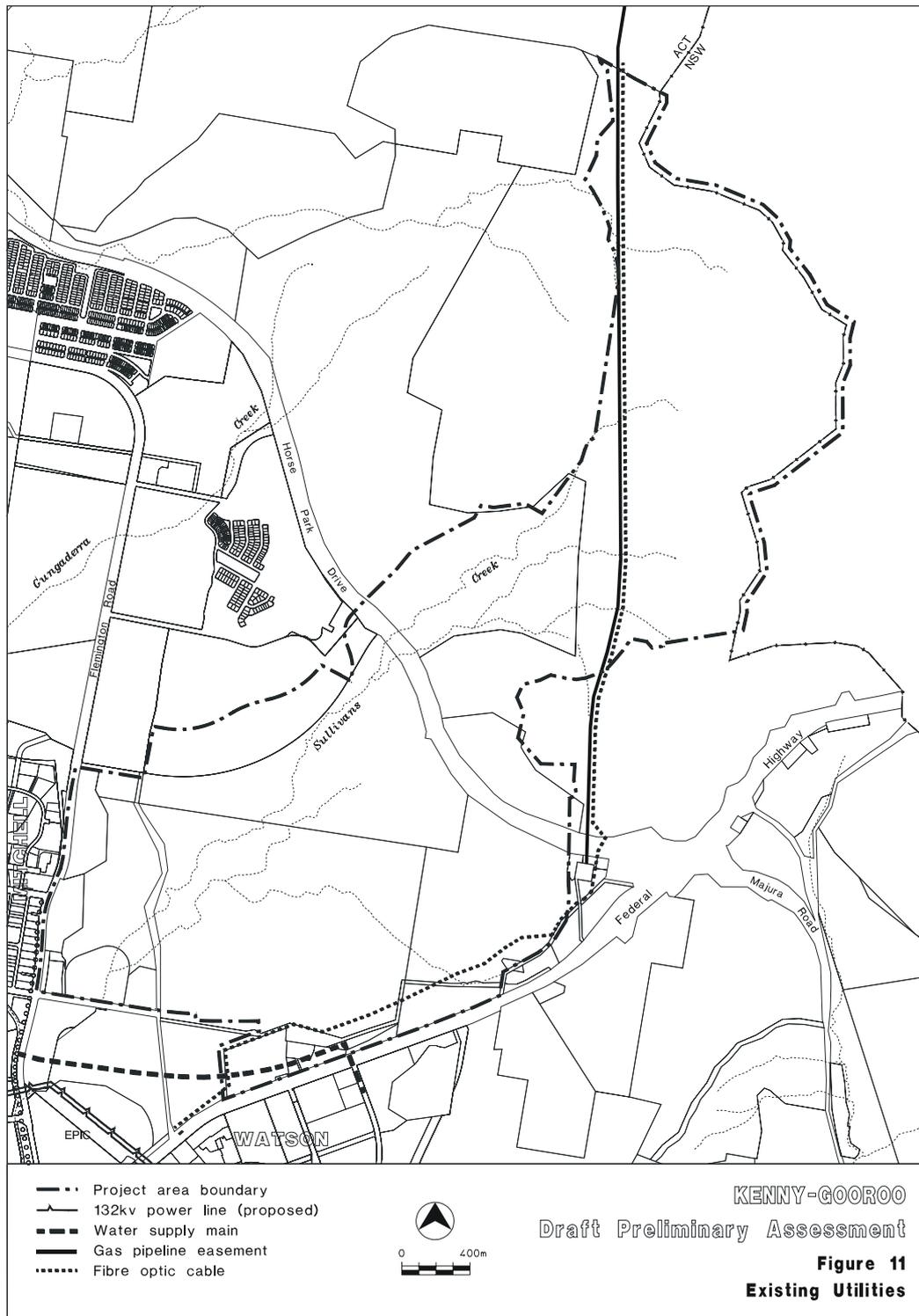


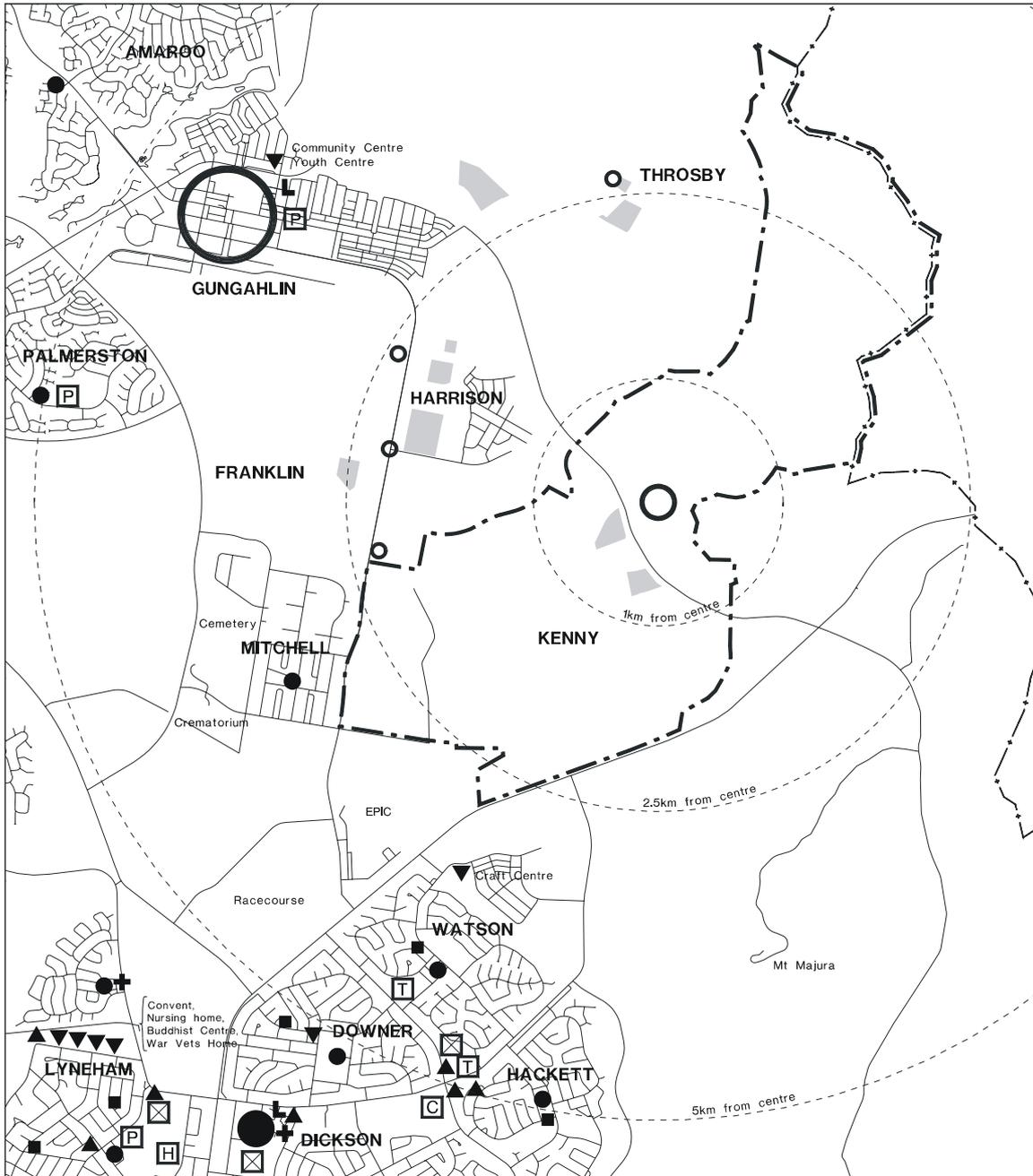
- · · · Project area boundary
- · · · · Equestrian trail
- Equestrian facility



KENNY-GOOROO  
 Draft Preliminary Assessment

**Figure 10**  
**Equestrian Facilities**



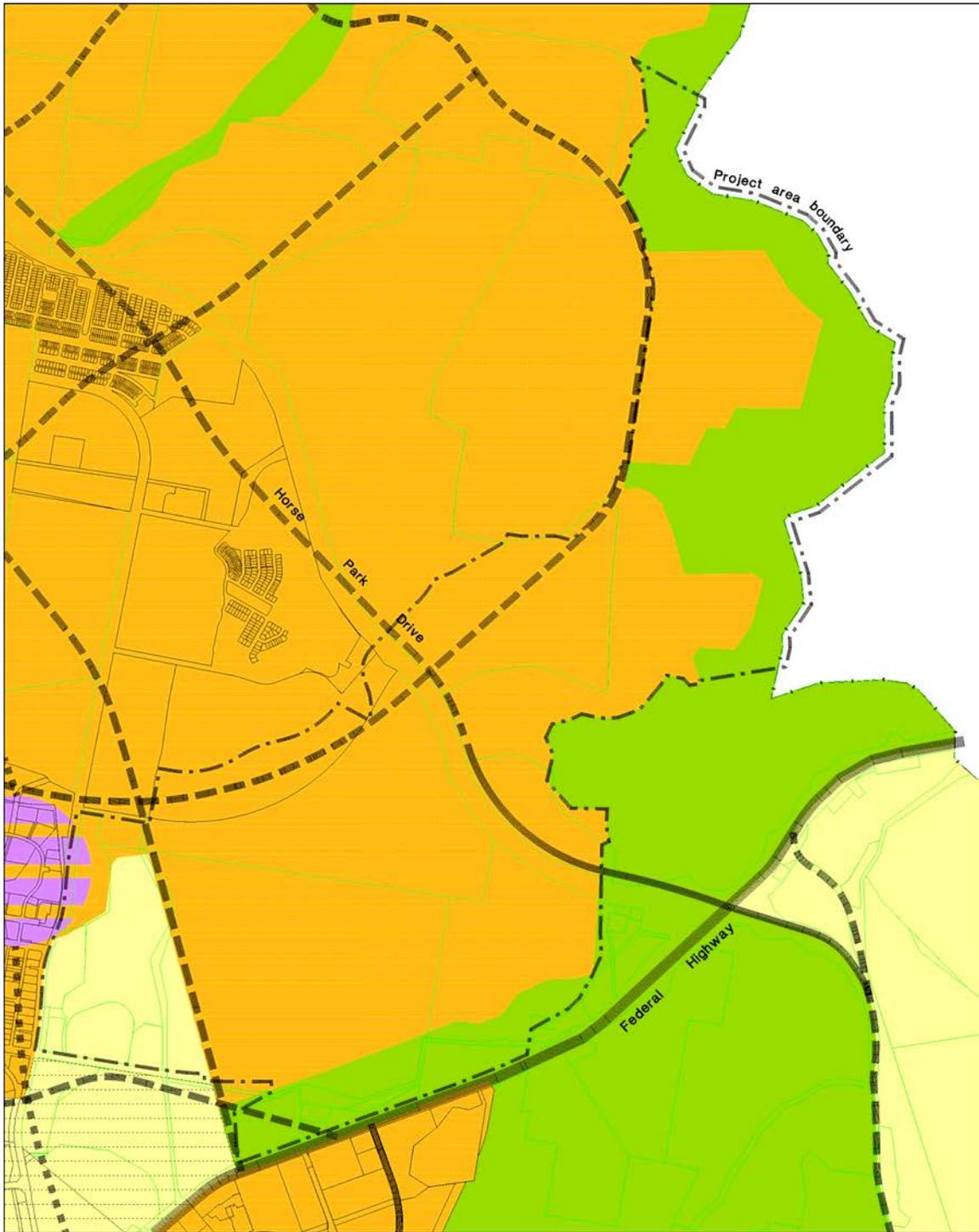


- Pre-school
- P Primary School
- H High School
- C College
- T Tertiary institution
- X Private School
- ▲ Church
- ✚ Medical Centre
- ⊥ Library
- ▼ Other

- Shopping Centres:
- ● Local Centre (planned/existing)
  - ● Group Centre (planned/existing)
  - ● Town Centre (under construction)
  - Future community facility sites (Territory Plan)
  - Project area boundary

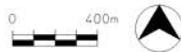


**KENNY-GOOROO**  
 Draft Preliminary  
 Assessment  
**Figure 12**  
**Community Facilities**



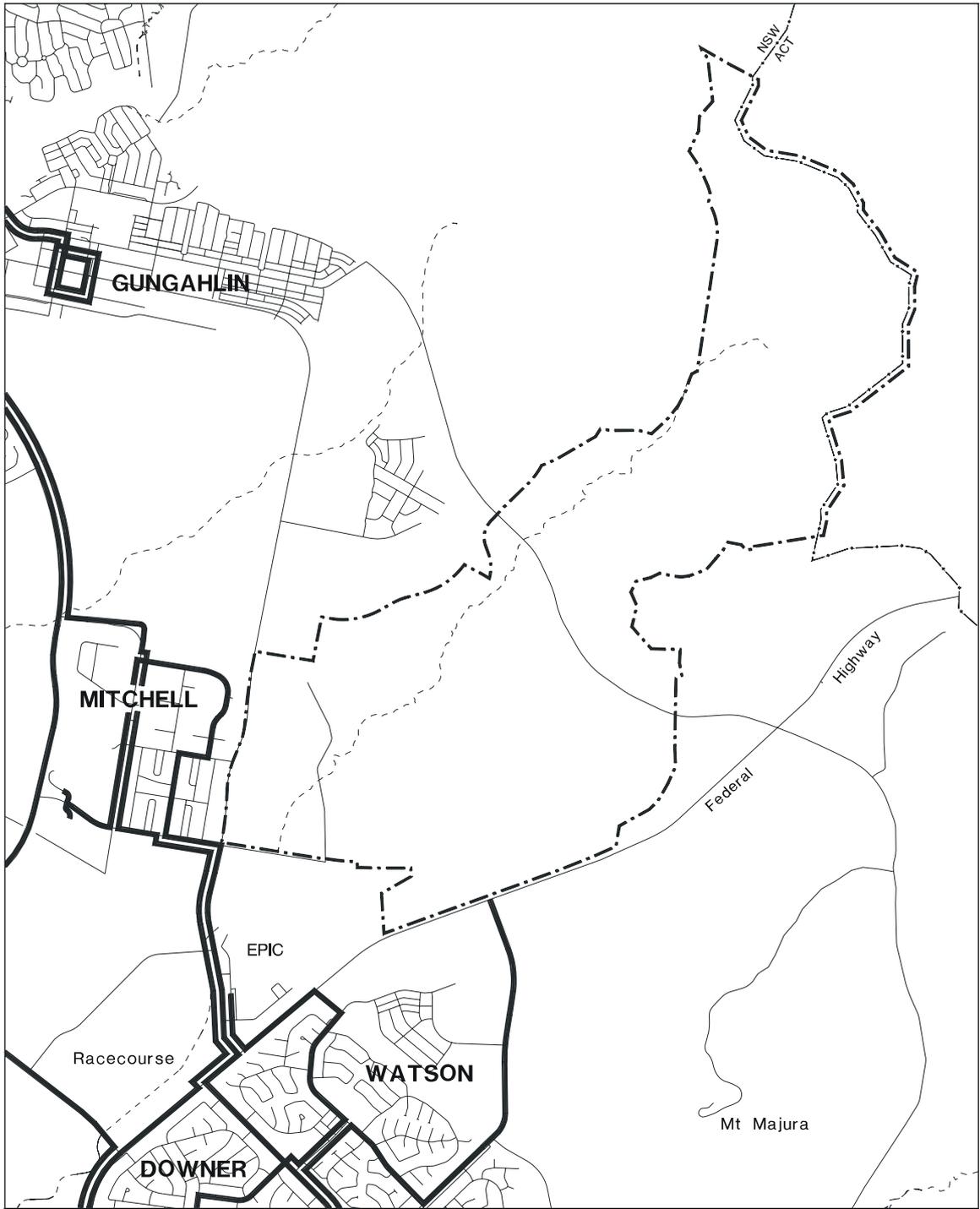
GENERAL POLICY PLAN - Metropolitan Canberra

- |   |  |
|---|--|
|  Urban Areas   |  National Road System   |
|  Areas under investigation for urban use                     |  Existing Arterial Road |
|  Industrial Centre   |  Proposed Arterial Road |
|  Broadacre Areas   |  |
|  Hills, Ridges & Buffer Spaces (National Capital Open Space) |  |
|  Inter-town Public Transport System                          |  |

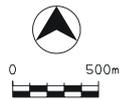


KENNY-GOOROO  
Draft Preliminary  
Assessment

**Figure 13**  
**National Capital Plan**

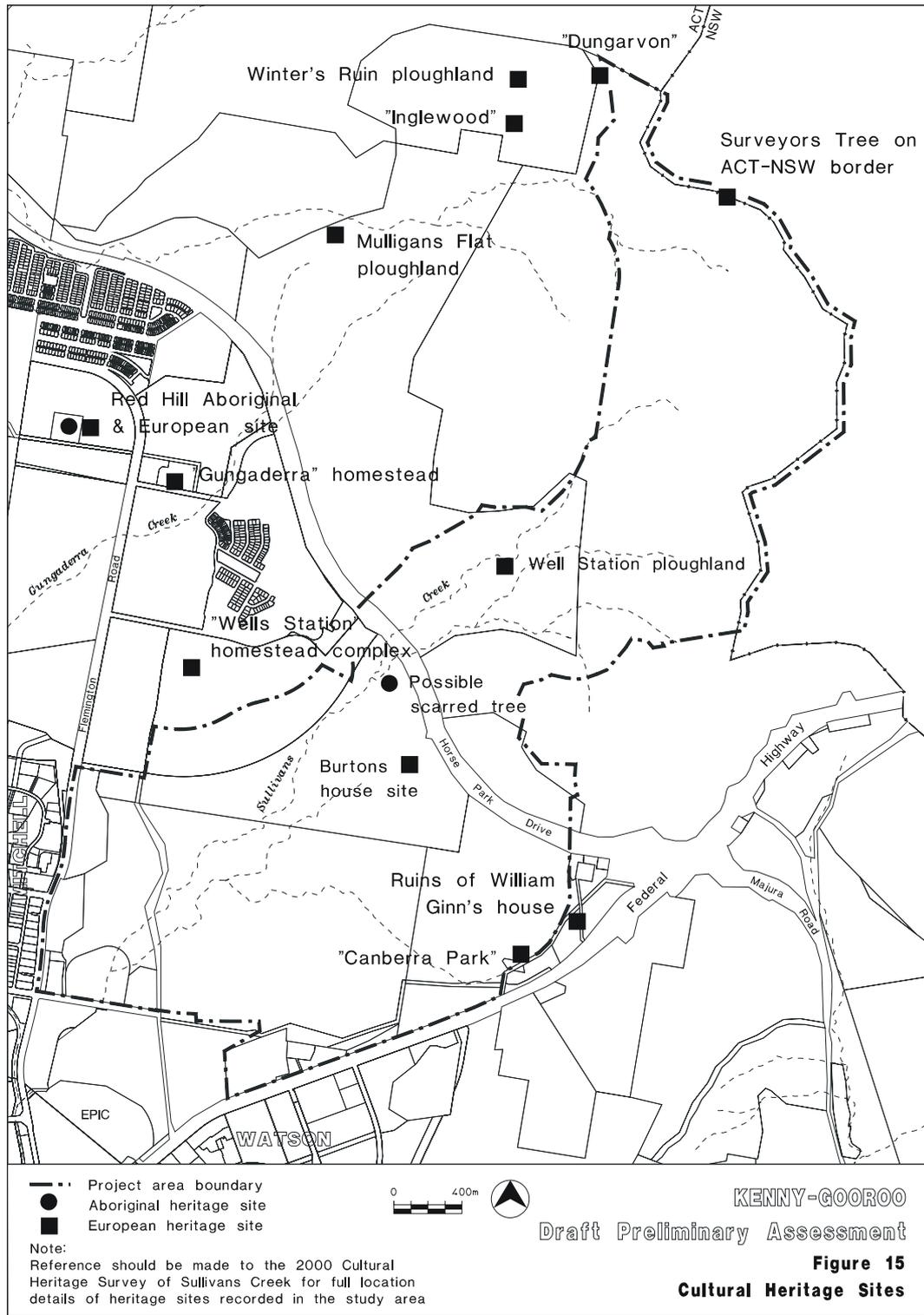


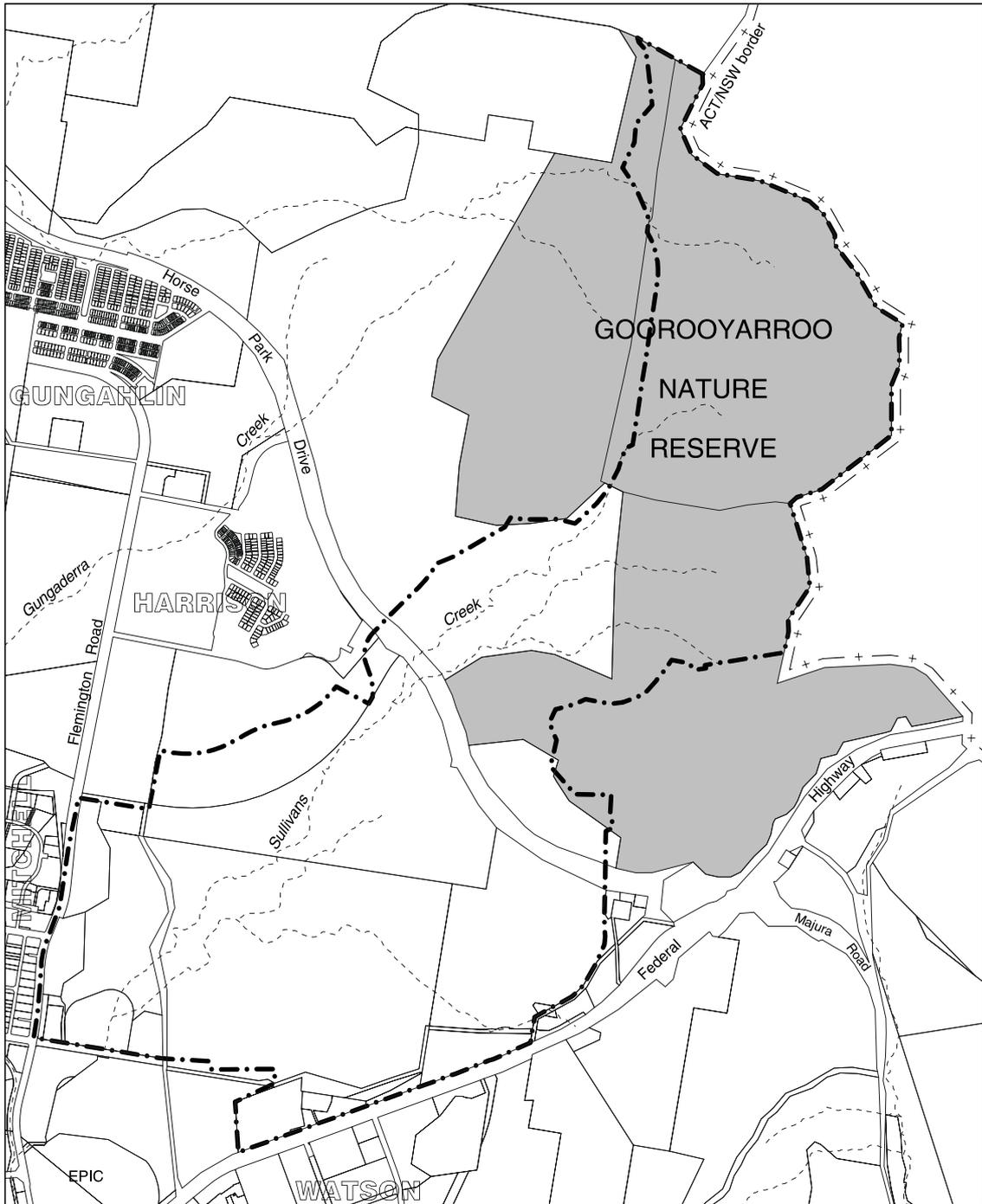
- Project area boundary
- Action bus route



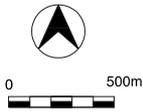
KENNY-GOOROO  
Draft Preliminary Assessment

**Figure 14**  
**Existing Public Transport Routes**





- - - Project area boundary
- New Nature Reserve



KENNY-GOOROO  
Draft  
Preliminary Assessment

**Figure 16**  
**Goorooyarro Nature Reserve**



ACT Government

PLANNING AND LAND MANAGEMENT GROUP  
URBAN SERVICES

*LAND (PLANNING AND ENVIRONMENT) ACT 1991*

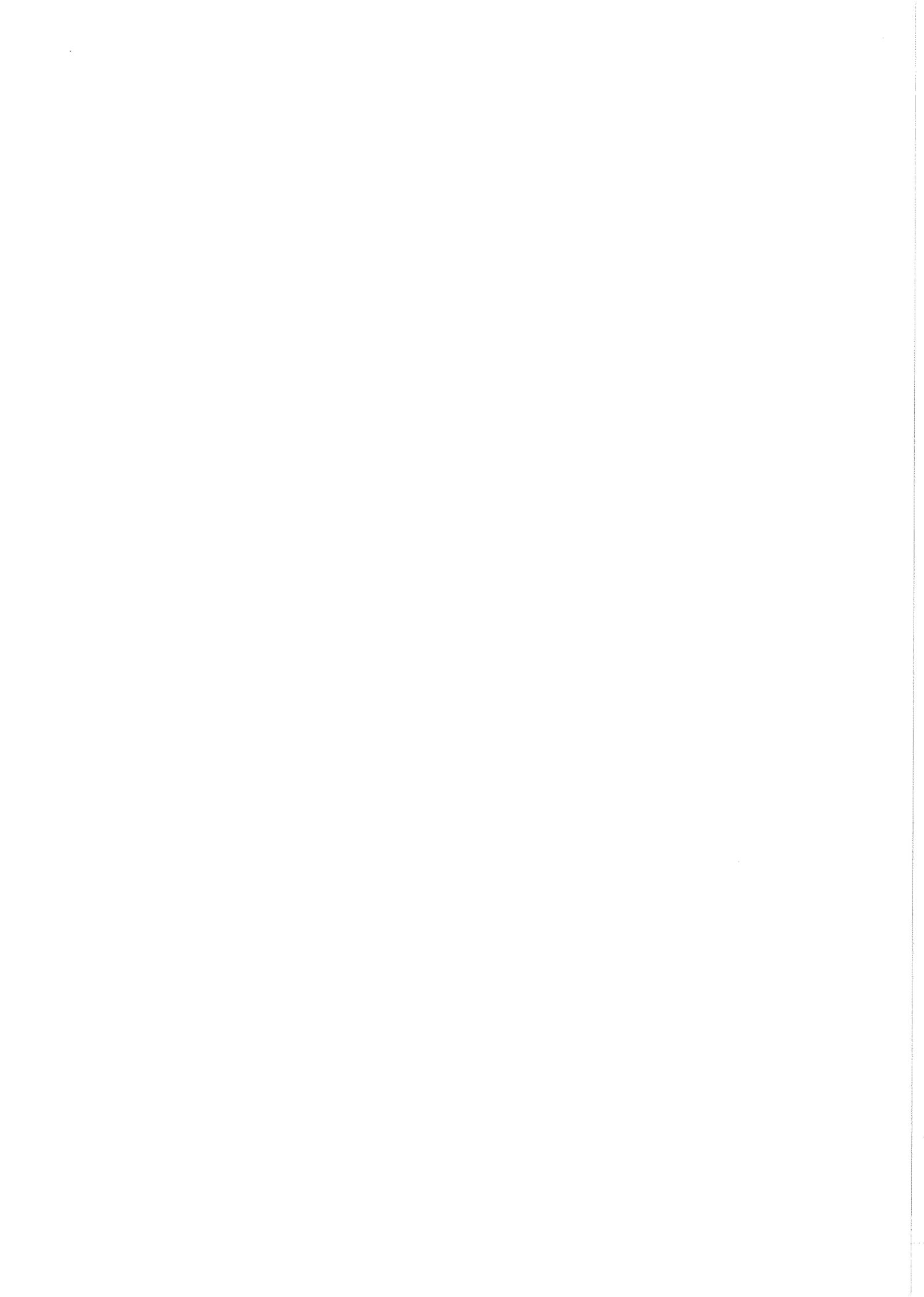
**DRAFT VARIATION TO THE  
TERRITORY PLAN**

**No.130**

**North Gungahlin**

**(the suburbs of Bonner, Casey, Forde, Jacka,  
Moncrieff, Taylor and Part of Amaroo and  
Ngunnawal)**

**October 2002**



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# FOREWORD

Aboriginal people have lived in the region now known as the Australian Capital Territory for tens of thousands of years. The European colonisation of Australia disrupted Aboriginal traditional land use and has constrained the association of Aboriginal people with land, to their detriment. The ACT and wider region is still occupied by descendants of the Aboriginal people who lived in this area and places of Aboriginal cultural heritage places provide tangible reminders of their traditional land use.

PALM would like to acknowledge the relationship of Aboriginal people to the lands that are the subject of this Draft Variation to the Territory Plan and the significance of the cultural heritage places that demonstrate traditional Aboriginal land use, to the Aboriginal and wider community.

# INTRODUCTION

The Territory Plan came into effect in October 1993, and consists of the Territory Plan Map and the Written Statement. Planning and Land Management (PALM) (incorporating the ACT Planning Authority), has undertaken a review which has examined and revised the planning for the undeveloped areas of North Gungahlin. This includes the suburbs of Bonner, Casey, Forde, Jacka, Moncrieff, Taylor, and parts of Amaroo and Ngunnawal. PALM is therefore proposing a draft Variation to the Territory Plan, which, if adopted, would set the future land use policy framework and urban structure for this area.

This draft Variation document consists of the following sections:

- **The Explanatory Statement which describes the proposed changes and the reasons for the draft Variation.**
- **Attachment A which identifies the precise changes to the Plan that PALM proposes to recommend to the Executive (subject to the outcome of the consultation process).**

As the proposed Variation covers a large area of new development, there are features which will progressively be the subject of more detailed plans. Formulation of these details will be required before new developments are implemented.

Comments are invited on the proposed changes. Subject to consideration of responses received, PALM proposes to submit this draft Variation to the Executive in accordance with the provisions of the *Land (Planning and Environment) Act 1991*. People wishing to comment on the draft Variation must lodge their submission in writing by  
**20 December 2002**

Submissions should be addressed to:

**The Executive Director  
Planning and Land Management  
Urban Services  
GPO Box 1908  
CANBERRA ACT 2601**

**Attention: Mr P Harris**

**E-mail: [terrplan@act.gov.au](mailto:terrplan@act.gov.au)**

**Facsimile: 62071710**

**Copies of the draft Variation may be obtained from the PALM Customer Services Centre, Dame Pattie Menzies House, 16 Challis Street Dickson between 8:30am-4:30pm weekdays.**

**The draft Variation is also on the PALM website at: [www.palm.act.gov.au](http://www.palm.act.gov.au)**

# EXPLANATORY STATEMENT

## 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, two major variations in Gungahlin have been gazetted. The Mulligans Flat Variation (Number 15, 1994) significantly expanded the Nature Reserve, and the 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.

Further work has also occurred, through the preparation of Action Plans, to protect and manage threatened species and ecological communities declared under the *Nature Conservation Act 1980*. Action Plans that are relevant to the area subject to this draft Variation have been developed for Natural Temperate Grassland, the Yellow Box-Red Gum Grassy Woodland (YBRG), and species including the Golden Sun Moth and several birds. The locations of these communities and species are recognised in the planning for this area.

A review of Action Plan 10 (Yellow Box/Red Gum Grassy Woodland) is currently being undertaken by Environment ACT. This review takes into account significant areas of Yellow Box/Red Gum Grassy Woodland requiring further study at Gooroo (East Gungahlin) and Kinlyside, both adjacent to the area subject to this Variation, and Symonston. The outcome of these studies will become part of a draft strategic plan for woodlands in the ACT. The outcomes of this review will be taken into consideration in finalising the North Gungahlin Structure Plan.

Changes in trends for urban management and a growing emphasis on principles of sustainable development have also impacted on initial planning. These include the development of alternative approaches to urban water management and the co-location of community facilities, incorporation of Aboriginal and European heritage and the location of retail centres as a result of changing shopping trends.

Canberra's population growth in greenfield developments over the next 15 to 20 years will be concentrated in Gungahlin. The Gungahlin Development Sequence (April 2000) provided an agreed order for development to occur in Gungahlin, to guide decisions about a wide range of infrastructure and support services, many of which require a lead-time of several years.

Now under review, the sequence focuses development for the foreseeable future (based on current growth rates) in the Ginninderra Creek catchment and ensures that effective use will be made of the major existing investment in schools, roads, stormwater and other infrastructure networks.

Subject to the Variation process, further detailed planning will be undertaken. This detailed planning could take the form of Development Control Plans, Estate Development Plans and Implementation Plans, consistent with existing land use policies, design and siting codes and any relevant principles and policies for Defined Land. Other areas, notably the plans for Commercial Centres, major public open space and conservation areas, may require the preparation of Centre Master Plans and related Land Management Plans respectively.

The Gungahlin community will continue to evolve as new technologies and trends emerge. In response to these changes, and those outlined above the government has undertaken a review of the existing planning for the undeveloped northern areas of Gungahlin to ensure that development now will be appropriate for the future.

## **2. *North Gungahlin Structure Plan (the Structure Plan)***

The purpose of the North Gungahlin Structure Plan, comprising a Background Report, Preliminary Assessment, and draft Variation to the Territory Plan, is to re-examine and revise the planning for the northern, undeveloped area of Gungahlin. This revision is necessary due to changes in approaches to urban management and government policies, the relocation of the Gungahlin Town Centre, and a better understanding of cultural heritage and ecological issues.

The Structure Plan establishes a robust and flexible framework of objectives, principles and land use policies to guide the continuing development of the area within the context of sustainable development.

The Structure Plan places a great deal of emphasis on the design of suburbs and neighbourhoods, which are intended to foster a strong sense of community among residents. Each suburb has a centre, which includes a local centre, an area of mixed uses, medium density residential developments and in the case of Bonner, Jacka and Taylor, a primary school. To provide access to these facilities the fundamental determinant in the suburb design process is a 400m unit of walking distance or approximately 5 minute walk from local centres.

Groups of suburbs will focus on group centres, while the whole urban area is designed to focus on the Gungahlin Town Centre. In total, the Structure Plan provides for six new suburbs and the completion of Amaroo and Ngunnawal.

The open space network is designed to incorporate a system of natural floodways and, where possible, a representative range of woodlands and grasslands as well as significant Aboriginal and European heritage sites. The open space system is responsive to topography and other natural and cultural features.

A draft Variation to the Territory Plan is required to implement the proposed Structure Plan. The process also triggers a Preliminary Assessment (PA) in accordance with the requirements of Part 4 of the Land Act, which examines the potential impact of the proposed changes on the physical, natural and human environments.

The PA has been released for comment in parallel with the Draft Variation to the Territory Plan. Whilst this process enables public notification to run concurrently, a separate evaluation of the PA by the Environment Minister must be undertaken. Any recommendations resulting from the PA evaluation will need to be incorporated into the final documentation for the Variation.

### **3. *The Proposal***

The Structure Plan covers an area of approximately 1,500 hectares, located predominantly north of the existing established area of Gungahlin. At the furthest point of residential development is approximately 15 kilometres from Civic and 5 kilometres from the Gungahlin Town Centre.

The Structure Plan proposes to confirm the planning for the remaining undeveloped areas of the existing suburbs Amaroo and Ngunnawal and introduce a revised structure for six additional suburbs. It is anticipated that these suburbs will provide around 14,100 dwellings, accommodating approximately 34,500 persons when fully developed.

The Structure Plan also provides for 3 group centre sites, 5 local centres, one new high school and at least 3 new primary schools (A fourth primary school may be located at Forde if necessary).

The urban open space system is further refined with a web of open space giving definition and identity to each of the six North Gungahlin suburbs as well as meeting traditional open space needs.

An arterial and collector road network is designed to service high and medium density housing nodes adjacent to all retail centres and community facilities, providing for a potential increase in public transport usage.

Stormwater management systems are also refined on the basis of more recent studies and attitudes to the implementation of sustainable urban water management design principles.

Extension of the Mulligans Flat Nature Reserve to accommodate a further area of Yellow Box/Red Gum Grassy Woodland (YBRG), retention of some remnant patches of YBRG and retention of the Horse Park Homestead and Wetland precinct are provided for in the Structure Plan.

#### 4. *Existing Territory Plan Policies*

This draft Variation applies to land on the Territory Plan Map within the suburbs currently identified as Casey, Forde, Moncrieff and Taylor and undeveloped parts of Amaroo and Ngunnawal. The policy framework reflects the 1989 Gungahlin Policy Plan and shows a minimum level of detail. Later outline planning gazetted in 1991 introduced a more detailed layout for the suburbs of Amaroo, Casey and Ngunnawal. These areas are identified as Defined Land and have been subject to the Defined Land process (refer to Section 8). The layout of these areas has been progressively amended in response to changes made by detailed Implementation Plans lodged prior to development.

The existing Territory Plan Map, as it relates to North Gungahlin, is shown at **Figure 1** and identifies Residential, Commercial, Community Facilities, Urban Open Space, Hills Ridges and Buffer Areas, and Major Roads land use policies.

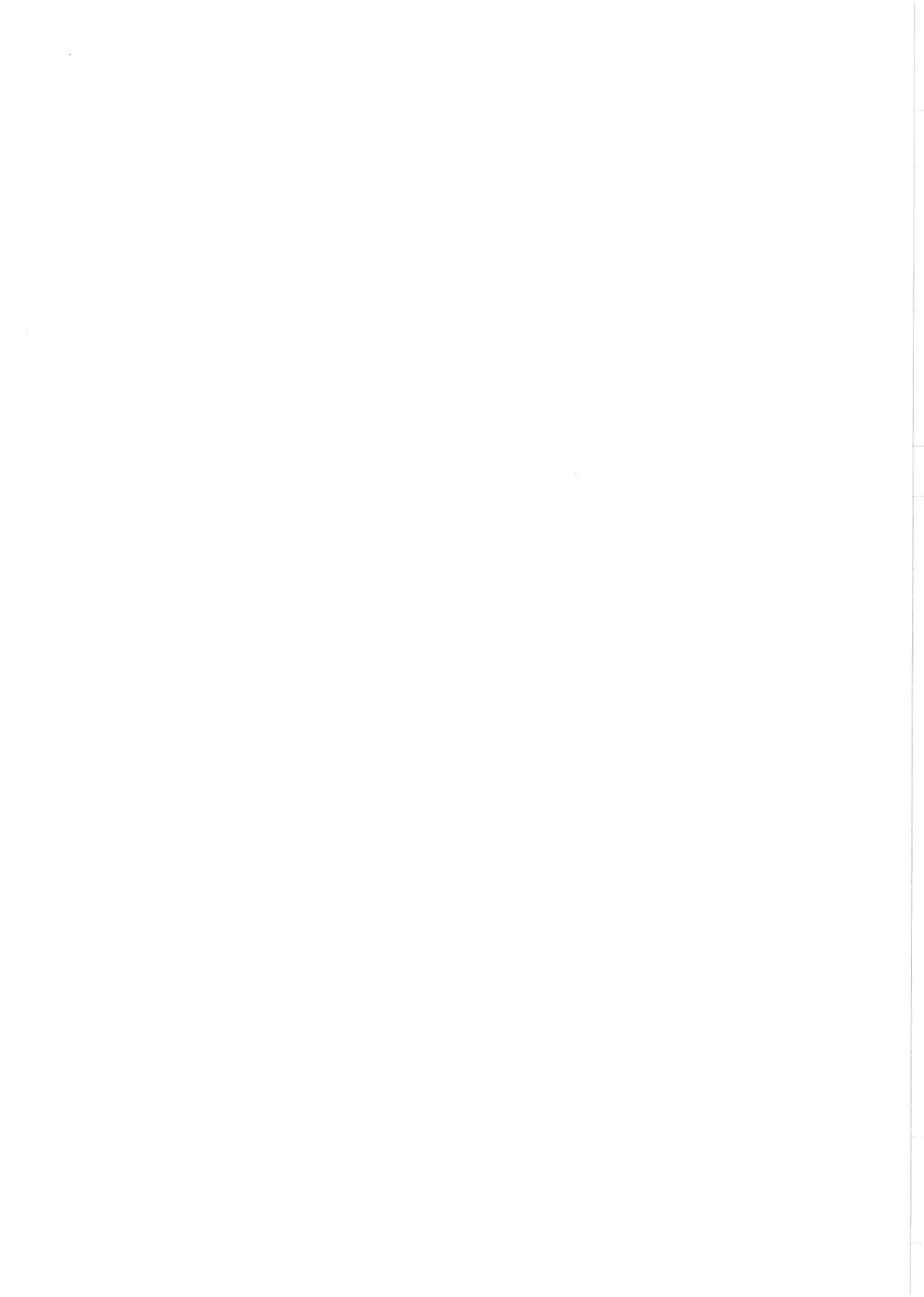
Relatively large shopping centres (Group Centres) are located at Forde and Ngunnawal and a local centre at Casey. The NCDC Gungahlin Policy Plan, however, proposed the establishment of a local centre in each neighbourhood even though locations are not shown on the Territory Plan Map.

The Territory Plan also provides for a primary school at Casey, a primary school, high school and district playing field at Taylor, and a possible college site and playing field at Moncrieff.

Urban Open Space policy areas mainly align with the creek corridors through Forde and Taylor.

Three large water quality control ponds are also identified. Of these, two have been constructed, (Gungahlin and Yerrabi Ponds). The third, at Amaroo, is amended to be a dry retardation basin.

Major Roads shown on the current Territory Plan Map are Horse Park Drive (the major east-west arterial) and Mirrabei Drive linking through to Horse Park Drive. A new road linking Gundaroo Road with Horse Park Drive is also shown. The Old Gundaroo Road alignment bisects Forde.



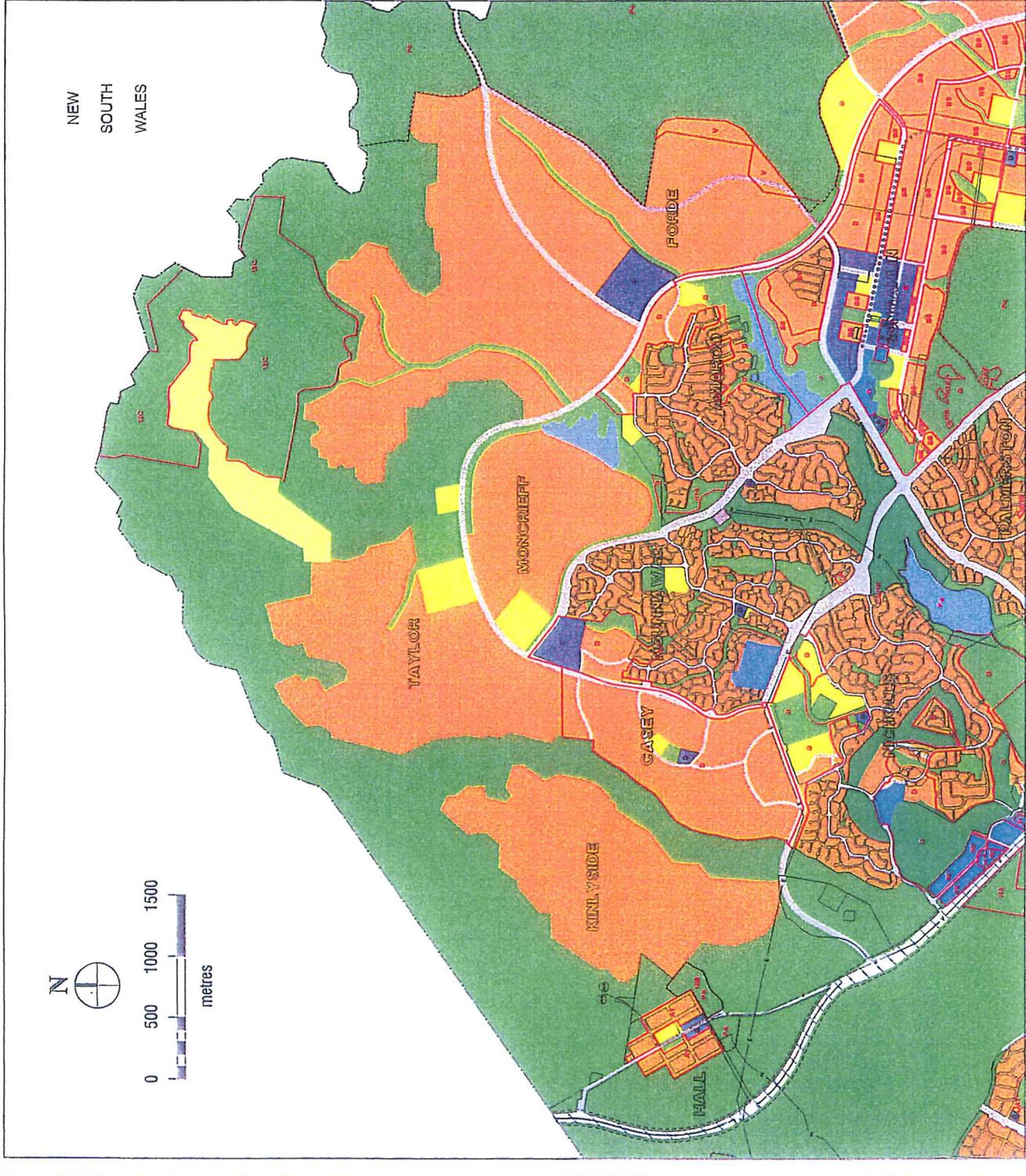
**LAND USE POLICIES**  
(See Part B of Written Statement)

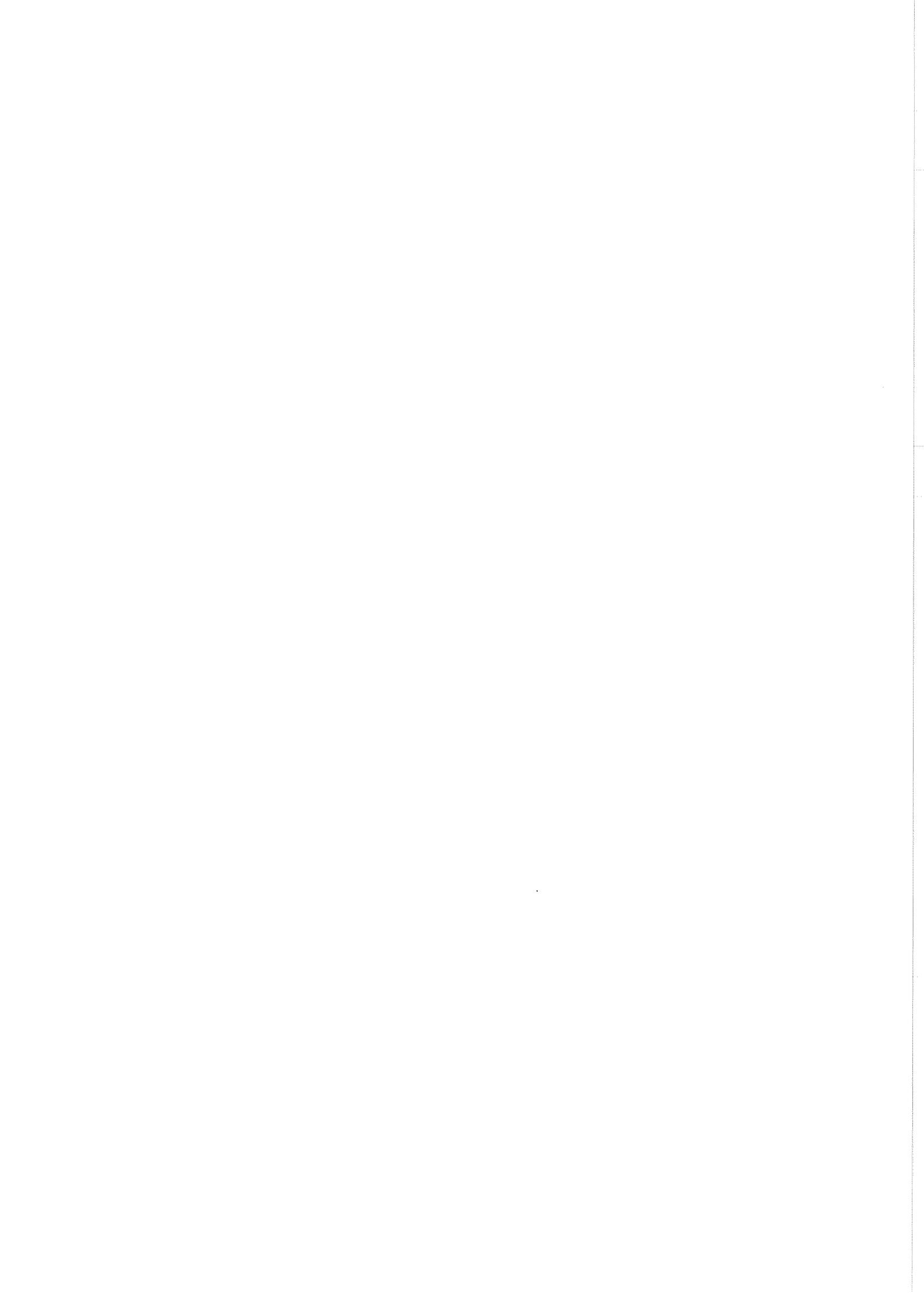
- Designated Areas  
(See National Capital Plan)
1. Residential
  2. Commercial Centres  
A. Town Centre  
B. Group Centre  
C. Office Centre  
D. Office Corridors & Office Sites  
E. Industrial
  3. Industrial
  4. Community Facility
  5. Restricted Access Recreation
  6. Water Features
  7. Municipal Services
  8. Entertainment, Accommodation and Leisure
  9. Urban Open Space (Public Land, except where specifically excluded and Overlays below)
  10. Broadacre
  11. Rural
  12. Hills, Ridges & Buffer Areas
  13. River Corridors
  14. Mountains & Bushlands
  15. Plantation Forestry
  16. Major Roads

**OVERLAYS**  
(See Section C1 of Written Statement)

- Area Specific Policies  
Special Requirements apply under National Capital Plan (See NCFP)  
Sites Listed on Heritage Places Register (See also Part III of the Land Act)  
Subject to Review
- Delineated Land (See also Part II of the Land Act)  
Draft Variation to the Plan having effect (See also Part II of the Land Act)  
Urban Open Space - Not Public Land  
Type of Public Land Reserve (See also Schedule 1 of the Land Act)  
Public Land, arrow point inward (See also Part V of the Land Act)  
Special Requirements apply (fencing Main Avenues and Approach Routes (See NCFP))
- Electrical Transmission Line  
Water Main  
Sewer Main  
Intertown Public Transport Route

**Figure 1**  
**Existing Territory Plan map**  
**Northern Gungahlin**





## 5. *Proposed Changes to the Territory Plan Map*

The draft Variation reflects changes included in the Structure Plan and proposes to vary the Territory Plan Map to redefine the basic land use policy framework and introduce a greater level of detail. Detailed planning and the landscape characteristics of the site generate a series of suburbs divided by major transport routes or open space corridors incorporating ridgelines, natural drainage lines and other significant landscape, ecological and heritage features. Mirrabei Drive, a major north-south arterial, will be realigned and the collector road network identified. The Structure Plan adopts recommendations of engineering studies on stormwater management by replacing a single large pond with a series of smaller water quality and retardation ponds. The location of major commercial and community facilities is revised and new sites are identified for local facilities. The urban edge is further redefined together with the Hill Ridges and Buffer Area boundary. The area will be covered by a Defined Land Overlay (see Section 8) to enable further refinement during later detailed planning stages.

The principal planning philosophy supporting the draft Variation is to provide a sustainable base for the integration of the natural and human settings. The natural environment is therefore better protected and integrated with the layout of the individual suburbs. The urban environment is rearranged to provide stronger focal points for the community to use, and at the same time more intensely developed uses are sited to encourage use of public transport.

The planning principles and policies for the broad structure are that:

- development should encourage an environment that facilitates sustainability in terms of ecological, cultural, social and economic considerations;
- the landscape setting and values of the site should be recognised and enhanced. Existing significant landscape features will be retained;
- the local neighbourhood should be based on a walkable radius of 400m, and focussed on an activity node such as a basic unit of open space (such as a park and potential community facility);
- residential areas should be based on a series of inter-connected suburbs (each containing 3 or 4 neighbourhoods) with their own local centre, typically adjoining a primary school site and open space corridor;
- mixed and multiple uses will be permitted at all levels of the urban structure;
- group centres serving larger populations should be well located on major roads in order to serve a cluster of suburbs to ensure the long term viability of the centre;
- an integrated cycling route network should be created within and between communities consistent with national standards;
- the open space system should form a continuous web of spaces that contains a sequence of destinations eg. centres, schools, parks, community facilities, ovals, ponds and hilltop lookouts;
- the road hierarchy should be clearly legible and provide good and safe access to all users and encourage high levels of public transport usage;

- the links between sustainable urban water management and downstream ecological impacts on flora and fauna, both through the direct impact of altered flow regimes caused by urban development and through water quality impacts partially driven by these altered flow regimes should be recognised. Appropriate sustainable urban water management measures will be adopted to protect downstream ecology; and
- Aboriginal and historic heritage place will be recognised and significant sites conserved in public open space where appropriate.

The proposed changes to the Territory Plan Map are detailed at Attachment A of the draft Variation. These changes reflect the various elements of the Structure Plan.

## **5.1 Residential Areas**

The residential areas further refine the boundary between the natural landscape setting and urban development, and closely correspond to the current Territory Plan boundary. There are six new suburbs, Bonner, Casey, Forde, Jacka, Moncrieff, and Taylor, which will be incorporated in the Residential Land Use Policy. The basic structure of each suburb is characterised by the following elements:

- a neighbourhood or local centre, which typically incorporates a small group of buildings (retail/commercial) together with a park and/or site for community facilities;
- a linear open space network based primarily on drainage lines, incorporating pedestrian paths and cycleways;
- a clearly articulated road hierarchy where the engineering design and landscape treatment reflect the proposed traffic function of each street;
- local parks sited in locations that conserve natural or cultural heritage features wherever possible;
- defined local bus routes with bus stops within 500m of at least 95% of dwellings; and
- housing choice with increased densities close to major nodes and transport corridors.

The Structure Plan proposes a mixture of housing types with increased densities close to activity nodes, such as group centres and local centres. It is estimated that this will comprise around 20% of the total housing yield. In these areas the Structure Plan proposes to apply the Residential B8 and B9 Area Specific Policies. PALM has recently undertaken a review of these policies to assess their relevance in light of more recent developments in the Gungahlin Town Centre and proposed development in North Gungahlin. The proposed changes to the B8 and B9 policies are described at Section 6, (Proposed Changes to the Territory Plan Written Statement) and detailed at Attachment A, Part 2.

## **5.2 Shopping Centres**

The Structure Plan proposes three group centres, at Casey, Moncrieff (Mirrabai) and Amaroo, and five local centres at Bonner, Casey, Forde, Jacka and Taylor. The retail structure is consistent with the BIS Retail Study released in early 1999 and the outcomes of community consultation processes.

The group centre developments will be carefully planned, being aligned with the staged development of Gungahlin. Centre sizes will be reviewed close to the time of their release, but will generally vary in site area from 4,000m<sup>2</sup> to 10,000m<sup>2</sup>. Effective

pedestrian and bicycle access will be integrated with their development, as will strong public transport links.

The group centres will act as 'nodes' for employment, retailing, community and entertainment facilities and will provide a focal point for several suburbs. Each of the group centres will incorporate significant opportunities for the co-location of 'urban housing' ie. higher density multi-unit residential developments so that an effective mixed use character can be established. The residential land use policy of sites closest to the retail core will permit a vertical mix of commercial and residential uses.

The five local centres aim to provide convenience shopping with 'mixed use' characteristics within walking distance of the adjoining residential areas. These centres will be designed to be flexible to accommodate the changes in community demands over time. Local centres will also be supported by concentrations of medium density housing which will foster the 'mixed use' characteristics of the precinct.

### **5.3 Community Facilities**

The Structure Plan identifies community facility sites throughout the new suburbs, introducing a greater level of detail in terms of their location. Most community facility sites are located close to commercial centres thus providing good access to public transport, open space, and schools, and facilitating a sense of community.

Current site identification is based on estimated demand at the time of structure planning. Detailed facilities planning and provision is based on estimated demand and demographic characteristics before and during the development of an area.

The location and distribution of facilities with specialised siting requirements and large land take, such as schools, need to be refined prior to more detailed planning. Changing community needs will affect the number and types of facilities required, resulting in the need for planning to retain a degree of flexibility. Sites for government primary schools are identified at Bonner, Jacka and Taylor, with a further potential site at Forde. The site at Taylor is co-located with a government high school. A further site is set aside for a possible education facility (college) at Moncrieff.

In addition to intended school sites, other possible community facility sites are identified within the open space system for community facilities requiring a smaller land take, such as churches, scout halls and community halls. Demonstrated demand for the development of these sites will be established in later detailed planning stages.

### **5.4 Open Space and Hills Ridges and Buffer Areas**

The Structure Plan 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 the future residents of North Gungahlin. The 'web' of open space defines, and gives identity to, each of the six North Gungahlin suburbs as well as meeting traditional open space needs.

The resultant linear open space system shown on the Structure Plan is designed not only to protect the natural drainage system and major ridgelines, but also to create the opportunity for a comprehensive off-road movement system suitable for pedestrian, cycle and, to a lesser extent, equestrian users. A further important feature of the open space system is that it connects local centres, group centres and bus routes to optimise land use relationships and to encourage multi-purpose trips.

Within the suburb of Jacka, the Horse Park Homestead and Wetlands area is to be retained and protected in the urban open space system, and will be subject to specific planning policies and management practices. The area includes cultural and heritage values associated with both European and Aboriginal occupation. The wetlands are identified as an area of high aquatic ecosystem value and provide habitat for Latham's Snipe, a species subject to international migratory bird agreements.

In Forde the open space system reflects the cultural heritage significance of the Gundaroo Road, with the alignment being retained and utilised as an open space corridor. A former road alignment adjacent to Horse Park Drive near Casey, encompasses areas of Yellow Box/Red Gum woodland which is also being retained within urban open space.

Adjustments will also be made to the boundary of the Hills, Ridges and Buffer Policy Areas to reflect more detailed planning and facilitate urban edge management, including consideration of bushfire hazard reduction. Such fire protection measures would be reflected in a fire management plan prepared by the relevant land manager.

The Structure Plan 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 web of open space.

## **5.5 Natural Resources**

The North Gungahlin area contains a large component of remnant native vegetation that varies in terms of its ecological integrity, depending on the nature of previous land uses. The value of the area for wildlife depends to a significant degree on this previous land use history, and current land uses.

The ACT Flora and Fauna Committee, established under the *Nature Conservation Act 1980* is responsible for assessing the conservation status of flora and fauna in the ACT, and the ecological significance of potentially threatening processes. Where in its opinion a species or community is under threat, a recommendation for declaration is made, and if adopted, an Action Plan is prepared in response by the Conservator of Flora and Fauna. An Action Plan includes proposals for the identification, protection and survival of a threatened species or community.

All Action Plans were reviewed to determine the extent of recorded information and conservation recommendations for endangered communities or vulnerable/threatened species in the ACT, and the following were found to be relevant to the North Gungahlin Structure Plan:

- Action Plan No. 1 Natural Temperate Grassland
- Action Plan No. 7 Golden Sun Moth (*Synemon plana*)
- Action Plan No. 10 Yellow Box/Red Gum Grassy Woodland

- Action Plan No. 15 Hooded Robin (*Melanodryas cucullata*)
- Action Plan No. 16 Swift Parrot (*Lathamus discolor*)
- Action Plan No. 17 Superb Parrot (*Polytelis swainsonii*)
- Action Plan No. 18 Brown Treecreeper (*Climacteris picumnus*)
- Action Plan No. 20 Regent Honeyeater (*Xanthomyza phryga*)

In order to provide for balanced planning outcomes, it is not feasible to preserve all ecological elements. However, the ACT planning process allows flexibility in its approach to accommodate conservation imperatives outlined in Action Plans prepared under the *Nature Conservation Act (1980)*. These plans indicate that some natural features are not proposed to be protected in full but elements could be considered for incorporation into the urban fabric as part of the detailed planning process.

This principle is implemented in the planning for the North Gungahlin Structure Plan where ecological assets, including the Horse Park Wetland, some remnant patches of Yellow Box/Red Gum woodland such as the eucalypt arcade in Casey and some areas of Natural Temperate Grassland will be maintained and protected within open space and parks. These outcomes demonstrate that protection of the environment plays an important role in planning in the ACT and will be continued through the implementation of the North Gungahlin Structure Plan area and subsequent stages of the detailed planning process.

#### Yellow Box/Red Gum Grassy Woodland

The most significant of the woodland communities in the ACT, the Yellow Box/Red Gum (YBRG) Grassy Woodland community occurs throughout the ACT. Declaration of this ecological community as endangered in May 1997 emphasised the significance of the woodland community locally and its role in the provision of habitat for a variety of common and vulnerable animal and bird species. Very high conservation value woodland areas identified by Action Plan No. 10 are located in the Mulligans Flat Nature Reserve and Gooroo to the east, and Kinlyside to the west, of North Gungahlin. Smaller remnant patches (totalling 147 ha) of high conservation value woodland are identified in areas proposed for future urban development in North Gungahlin.

Adjoining the eastern boundary of Forde, a 28.4 ha area of very high and high conservation value woodland is identified in Action Plan No.10. 19 ha of this woodland has now been incorporated into Mulligans Flat Nature Reserve under Variation to the Territory Plan No. 182. The North Gungahlin Structure Plan takes this into account by modifying the structure of the proposed future suburb of Forde and incorporates planning principles and policies to address the buffer area between the future urban area of Forde and the Nature Reserve. The remaining woodland in Forde will not be retained as a woodland community, however high value individual trees and stands of trees capable of being incorporated into the urban fabric will be retained in open space.

Several remnant patches of high and moderate conservation value YBRG grassy woodland are located within the North Gungahlin area. The distribution of these remnant patches within the Structure Plan, and the proposed future management options for these areas within the urban fabric are summarised in the tables below.

Distribution of Yellow Box/Red Gum Grassy Woodland – North Gungahlin

North Gungahlin Suburbs	Area of Remnant YBRG by suburb (ha)	Proposed result for remaining woodland	
		Included within urban open space (ha)	May be incorporated into urban fabric subject to later & more detailed planning processes (ha)
<b>Forde*</b>	43.3	3.3	40
<b>Bonner</b>	60.1	19.2	40.9
<b>Jacka</b>	14.6	2.5	12.1
<b>Moncrieff</b>	10	3.2	6.8
<b>Casey</b>	19	18	1
<b>TOTAL</b>	147 100%	46.2 31%	100.8** 69%

Note:

Areas of YBRG stated, are polygon areas ie areas around individual trees or groups. The density of trees within these polygons could vary.

\*An additional 19ha area was recently removed from Forde and incorporated into the Mulligans Flat Nature Reserve under Variation No. 182 to the Territory Plan, August 2002.

\*\*Individual trees and stands of trees will be incorporated into the urban area as appropriate.

Distribution of Yellow Box/Red Gum Grassy Woodland – Gungahlin District

Gungahlin District Areas (see Fig 12)	TOTAL AREA OF YBRG WOODLAND (HA)	Future management options for YBRG community
<b>Mulligans Flat Nature Reserve</b>	362 ha	362 ha retained in Reserve (includes 19ha from DVP182)
<b>Gooroo</b>	648 ha	570 ha subject to assessment as part of 2002 review of Action Plan 10 and planning studies
<b>Kinlyside</b>	251	251 ha subject to assessment as part of 2002 review of Action Plan 10 and planning studies
<b>North Gungahlin</b>	147	100.8ha incorporated into urban fabric 46.2ha included within urban open space
<b>TOTAL</b>	<b>1408 ha (100%)</b>	

ACT SCALE

Total Area YBRGGW = 7888 ha (100%)

North Gungahlin area affected = 100.8 ha (1.3%)

Note : Areas of YBRG stated, are polygon areas ie areas around individual trees or groups. The density of trees within these polygons could vary.

Retention of remnant patches as viable ecological communities within a matrix of urban development is unlikely as they are small, fragmented and subject to competing land use pressures. It is not proposed to retain remnant patches as viable examples of their vegetation type within the areas of urban development. Later more detailed planning will look at options for incorporating the trees into the urban fabric where possible. Action Plan 10 states that some of these areas may be included in urban parks, roadside reserves or as part of the landscape setting for community purposes. Opportunities to retain and enhance groups of trees may also occur where areas of open space associated with natural creek corridors and internal ridgelines between the suburbs proposed by the Structure Plan co-incide with the location of these remnant areas. Individual trees identified as having ecological value by surveys for the detailed suburb planning will be protected to the extent possible by mechanisms such as incorporation within the urban fabric. These trees may be eligible for protection under the ACT's tree protection legislation when development occurs and leases are issued.

Action Plan No. 10 acknowledges that while conservation of the YBRG grassy woodland community as a viable and well represented ecological community in the ACT is its objective, protective actions will be selectively applied in the context of Canberra's future development needs and protection measures across the ACT. The Action Plan indicated that there were no specific areas of YBRG grassy woodland in the North Gungahlin area that were so critical to the survival of the community that they would be an absolute constraint on other land uses. It should be recognised that the extent and quality of both woodlands in general and the YBRG woodland within the Mulligans Flat Nature Reserve and Gooroo area are significantly greater than elsewhere in the North Gungahlin area.

Additional planning studies are being undertaken in the Kinlyside and Gooroo areas (west and east respectively of North Gungahlin) to assess the conservation value of the remaining areas of YBRG Grassy Woodland communities. These areas are identified in Action Plan No. 10 as having the greatest potential in this area for conservation, in particular, the Gooroo area which functions as an important ecological link between Mulligans Flat Reserve and the Mt Majura Reserve.

#### Other woodlands

Both botanical and ecological values are also attributed to other woodland communities, primarily for wildlife habitat and wildlife corridors. North Gungahlin contains areas of regenerating woodland which are of potentially high conservation value in the context of the ecological resources of the ACT and the local area. The proposed urban development will impact on these other woodland communities.

The North Gungahlin Structure Plan limits development on the higher slopes, and considered the presence woodlands in the design and location of the outer edge of urban development. The Structure Plan retains the woodland communities to the north as a continuous native woodland corridor in the Hills, Ridges and Buffer areas land use policy of the Territory Plan, and NCOSS under the National Capital Plan.

The scattered nature of small, fragmented woodland areas across the lower slopes of the study area makes their integration and/or conservation as isolated communities within the urban fabric virtually impossible. However, it is anticipated that there will be trees that have individual value independent of their role in a forest or woodland ecosystem ie trees with particularly good nesting hollows. A tree survey conducted during the detailed planning stage for each suburb will identify trees with high ecological values. Further design work at the detailed planning stage will then offer feasible retention and protection

options for these trees within the urban area, such as incorporation in small parks, village centres and road reserves. These trees also may be eligible for protection under the ACT's tree protection legislation when development occurs and leases are issued.

#### Forestry Plantation

The plantation area to the north of the urban development area of North Gungahlin was established for the production and supply of fuelwood for the ACT. The eucalypt plantings have been in place for over 20 years, during which time they have matured sufficiently to integrate with the existing native woodland vegetation in that location, to form a modified woodland community, to which some ecological and landscape value can now be attributed.

The implementation of the North Gungahlin Structure Plan will not have any impact on this plantation. Future harvesting for fuelwood is unlikely to occur. As a result it will be allowed to mature and contribute to the continuous woodland corridor skirting the north of the ACT along the NSW border. The decision not to harvest the plantation to provide a supply of fuelwood to the ACT is also consistent with current initiatives aimed at the reduction of the use of fuelwood appliances, to prevent deterioration in air quality over the ACT.

Individual trees and stands of trees within the areas of forward tree plantation in Jacka and Taylor are to be incorporated into the urban fabric where practicable for landscape purposes.

#### Natural Temperate Grassland

Due to a range of pastoral uses, very little remains of the native grassland communities once thought to be present in North Gungahlin. Declaration of the Natural Temperate Grassland as an endangered ecological community in April 1996 recognised the decline in the distribution of the grassland community and its changing composition as a result of land use history. Action Plan No. 1 identifies several areas containing Natural Temperate Grassland within the Gungahlin District, some of which are now protected in reserves to the south of the North Gungahlin study area (Mulanggarri, Gungahlin and Crace Nature Reserves). Within North Gungahlin, Grassland Action Plan (GAP) Site No.1, of approximately 32 ha in size, is identified to the south east of the Horse Park Homestead and is assessed as having moderate to low botanical significance.

Development of the proposed future suburb of Bonner will impact on Grassland Action Plan Site No.1. The Action Plan has assigned a moderate botanical significance rating to the 10.3 ha *Wet Themeda* component of this grassland, and a low conservation value to the remaining 21.8 ha *Danthonia* grassland. The Structure Plan does not propose to retain the entire grassland area although parts may feature as landscape elements within the urban fabric such as within areas of open space associated with natural drainage lines, internal ridgelines and/or local parks. Further consideration of these options will occur at later detailed planning stages.

Parts of the grasslands are habitat for an uncommon plant species, the Emu Foot *Cullen tenax*. The species has also been recorded at a site on the eastern side of Gundaroo Rd in the proposed urban areas of Forde. Further consideration of this species in these two locations will be required in conjunction with Environment ACT at the detailed planning stage to determine future management options.

### Wetlands

The Horse Park Wetland is identified as the most significant wetland within the North Gungahlin area, and in the Gungahlin District. The significance of its cultural and ecological values is demonstrated by its listing as part of the Horse Park precinct on the Register of the National Estate, inclusion in "A Directory of Important Wetlands in Australia", classification by the National Trust of Australia (ACT) and nomination for listing on the ACT Heritage Register.

The *Directory of Important Wetlands in Australia* noted the potential threat to the Horse Park wetlands from suburban development, and that it needed to be carefully managed to minimise impacts on the hydrology of the site. Potential impacts on the population of Latham's Snipe by domestic pets was also noted.

The Structure Plan proposes to protect the wetland by including it within a substantial area of Urban Open Space (generally incorporating the curtilage boundaries identified by the Register of the National Estate listing for the wetland) which will be subject to specific planning policies and management practices. At the detailed planning stage, further consideration of sensitive edge development, access options and future permissible uses for passive recreation will be undertaken.

The conservation of this wetland within an urban environment depends not only on its physical protection, but also on regulating the flow and quality of water flowing into it from future urban development. Options for managing stormwater with a view to maintaining the natural flow regime through the wetland will require further investigation. A decision on the appropriate action will depend on detailed evaluation of geotechnical and hydraulic investigations of the areas around the wetland.

Other wetland and aquatic ecosystem habitat occurs through drainage lines in the North Gungahlin area. The possible treatment of these areas to enhance their ecological values, consistent with the principles of sustainable urban stormwater management, will be subject to further investigation during later detailed planning stages in the land development process.

### Wildlife

North Gungahlin and the surrounding region support a diversity of native mammals, birds, reptiles and invertebrates. The presence of many of these species in the area can largely be attributed to high value habitat contained within the various types of woodland and grassland communities found throughout the region.

Action Plans have been prepared for the ecological communities and species listed as threatened in the ACT and several of these items occur in the North Gungahlin area. Earlier in this section, Action Plans for YBRG Grassy Woodland community and Natural Temperate Grassland communities were discussed, including Structure Plan proposals for the incorporation of elements of these communities in the future development. Coupled with the existing reservation of large tracts of the YBRG Grassy Woodland community in the Mulligans Flat Nature Reserve, high quality habitat beneficial to their associated fauna species will be retained elsewhere.

Five bird species, declared as either vulnerable or endangered, which are known to occur in the North Gungahlin area, are the subject of Action Plan No.s 15 to 18 and 20. For each of the identified species, their distribution occurs predominantly in and around the Mulligans Flat Nature Reserve, and in some instances the Gungahlin District, including the

Village of Hall and its environs. The major habitat for these bird species is the YBRG grassy woodland, and the retention of large tracts in the Mulligans Flat Nature Reserve and the adjoining area of Gooroo will create one of the largest areas of protected endangered communities of this type in the region, making a substantial contribution towards the achievement of the Action Plan conservation objectives for these threatened bird species.

In addition to the areas of woodland retained around the periphery of and adjacent to the North Gungahlin development area, the proposed 'web' of open space throughout North Gungahlin will also contribute to a network of natural corridors, linking key areas of habitat within the urban fabric to these peripheral areas. Principles and policies are included in the Structure Plan to address the management of the buffer areas between the proposed future suburbs and the Nature Reserve.

While it may not be feasible to preserve the entire ecological community within the urban fabric, the habitat value of individual trees and stands of trees, and their landscape amenity value will be retained. Additional habitat resources for some bird species can be expected in the longer term from native gardens established by new residents.

As discussed in the wetlands section above, a substantial area incorporating the Horse Park wetlands is to be placed into Urban Open Space as public land with specific management requirements. This action, in part, responds to the habitat value of the wetlands for the migratory Latham's Snipe, and recognition of the importance of retaining this wetland habitat within the future North Gungahlin development area. The large curtilage area retained will assist to prevent intrusion of the wetlands by domestic pets from the surrounding areas.

The wetland will also provide habitat for several of the frog species known to occur in North Gungahlin. The Structure Plan proposes to retain the creeks and corridors to minimise change within the urban fabric in their natural location, where possible, assisting ecological connectivity through the urban area. Several off-line ponds proposed by the Structure Plan to contribute to the management of stormwater may also contain some alternative habitat value for frogs and other species in place of farm dams, removed as the development front progresses.

The endangered Golden Sun Moth (Action Plan No. 7) has been recorded at Mulligans Flat North, in the hills, ridges and buffer area north of the proposed North Gungahlin urban area. This area is already contained in the Mulligans Flat Nature Reserve, on the northern side of Gundaroo Road. The Structure Plan does not propose any disturbance or development of this area.

Mulligans Flat Nature Reserve provides a refuge and habitat for the known reptile species that occur in North Gungahlin. The potential impact of the Structure Plan on these species outside the Nature Reserve due to habitat disturbance and destruction will be significant given previous experience with land development. In addition, there is not a strong tolerance to many reptile species, particularly snakes, by residents in urban areas, so retention or improvement of remnant habitat areas by residents, such as occurs for birds, is unlikely to occur.

## 5.6 *Urban Edge Interface*

To ensure that the level of risk from the threat of bushfire is reduced at the interface with the new suburbs, the Structure Plan recognises provision for buffer or fire management zones extending into the Hills Ridges and Buffer areas of the Territory Plan to create a fuel load modified area between the residential and bushland areas. These zones may range from between 60m to 100m in width, depending on adjacent topography and aspect. In addition to their function for fire management, these zones will also contain a service corridor that may include infrastructure services, access tracks for land management purposes, recreation (equestrian) trails, and catch drains for water management purposes in accordance with the Urban Edge Zone section of the Canberra Landscape Guidelines.

The Hills Ridges and Buffers land use area boundaries are adjusted at the suburb interface to reflect more detailed planning and consideration of topographic features surrounding and within the new suburbs. Whether the interfaces are permanent or in transition, (ie the interface is only temporary due to further development) they will require different management applications to reduce the impact of bushfires on the immediate community.

These adjustments will continue to be made during later detailed planning stages, in addition to the inclusion of more detailed measures to minimise the effects of fire. These include ensuring that adequate reticulated water supply infrastructure for both domestic and fire fighting purposes is made available, that road design and location ensures multiple safe access and egress points for fire fighting and evacuation, and that the design and siting of buildings and proposed vegetation at the interface reduces the potential for increased fire risk.

### Mulligans Flat Nature Reserve

To fulfil this important conservation requirement, the proposed buffer area for the urban interface between Forde and Bonner with the Mulligans Flat Nature Reserve will contain several elements to create an overall zone which fulfils both conservation and fire management requirements. The zone will include a fenced area of between 30m to 60m wide within the standard buffer between the residential area and Nature Reserve. This will create a higher maintenance conservation management area within the buffer area. This conservation management area will assist in reducing the potential impacts associated with nearby residential areas including the incursion of weeds, predation by domestic pets, dumping of rubbish, inappropriate access and removal of plants/timber. This buffer will also form part of the fire management zone, similar to that described earlier in this section between residential areas and Hills Ridges and Buffer land use areas or the Nature Reserve.

### Equestrian Trails

An off-road trail for equestrian and other uses is intended to follow the urban edge. It will link the existing National Trail entering the ACT from NSW along Gundaroo Road, with the existing trail, showground and horse facilities at Hall to the west of North Gungahlin. It will require the widening of the road reserve alongside Gundaroo Road where it passes adjacent to the Nature Reserve to accommodate the parallel trail, then follow the edge of the existing urban development and will move incrementally as the urban edge develops.

This urban edge trail will function both as a local equestrian trail and as a section of the National Trail. Future planning studies will investigate opportunities for further development of recreation/equestrian trails in North Gungahlin, including the possibility of trails extending into the Hills, Ridges and Buffer areas.

## **5.7 Transport Network**

The transport network is comprehensive, including roads, an inter-town public transport route (IPT), local bus routes, cycle ways and pathways. The road network has been established using a range of road types including arterial, boulevard, avenue, local road, minor road and laneways. A feature of the boulevards is the provision of service roads, which allow for residential frontage but not necessarily access to these key roads. They will also contain continuous verge planting, footpaths and trunk cycle paths. Avenues are a smaller version of boulevards, without the service roads and catering to a lower vehicle capacity. The collector road network is designed to maximise public transport usage, with the pedestrian and cycle network linking residential areas with schools, commercial centres and recreational resources. Generally roads of collector status and above are shown on the Structure Plan.

Of the two key roads for the North Gungahlin area, Horse Park Drive provides the trunk route in and out of the area. It protects existing and planned urban areas from traffic infiltration and directs traffic to destinations outside of Gungahlin. Horse Park Drive is supplemented by Mirrabai Drive, which provides the direct connection from the northern areas of Gungahlin to the Town Centre. Both the alignments of Horse Park and Mirrabai Drives are slightly changed to reflect the new structure.

The Gungahlin IPT is a major public transport corridor, which runs along Flemington Road, through the Town Centre to Mirrabai Drive, and terminates at the Moncrieff Group Centre.

The collector road network is designed to encourage greater public transport usage and supplement the ITP system. The road network satisfies the ACTION criteria, 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.

An extensive off-road equestrian/recreation and cycle network is proposed, as part of the open space system, to serve the Town Centre, schools and other activity nodes. An off-road network will also be provided serving main employment centres and connections to the ITP route.

## **5.8 Stormwater Management**

The current Territory Plan Map identifies three large water quality control ponds ("Water Features") in the Gungahlin District. Two are built (Yerrabi Pond and Gungahlin Pond), and the third identified pond, between Amaroo and Moncrieff, remains unconstructed. The existing Plan also shows a stormwater corridor, following the line of the existing Ginninderra Creek system through Jacka, located in an Urban Open Space Land Use Policy area.

Recent research and a better understanding of catchment land use and management practices since the initial planning of Gungahlin, has identified more sustainable management practices that improve water quality in receiving waters, enhance ecological values and amenity, reduce potable water demand, and potentially provide long term cost savings.

Sustainable urban water management design principles are to be adopted for the development of North Gungahlin. The principal objective is to secure economic, social and environmental benefits of integrated 'water in the landscape' (including water sensitive design techniques) and 'total water cycle' based designs to achieve a balance of water across the landscape, at the block, neighbourhood, district and catchment levels.

The Structure Plan proposes a more comprehensive stormwater system, where overland stormwater and flood movements are accommodated mainly in the proposed web of urban open space. 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 off road bicycle paths and walking trails, and the provision of wildlife corridors. This is consistent with current thinking where stormwater is now regarded as a major resource rather than a problem to be exported as quickly as possible.

The stormwater strategy embodied in the Structure Plan also allows the opportunity for smaller ponds to be constructed as shown on the Structure Plan Map (See **Figure 2**). These are capable of being designed with a more natural appearance than the larger ponds, and for water quality reasons will be constructed "off-line", ie to the side of the creek rather than on the line of the creek (such as the facility on David Street in Turner). Their benefits are related to the establishment of water features and habitats within the open space system, as well as assisting with stormwater management.

The proposed large water quality control pond between Amaroo and Moncrieff is replaced by a series of smaller, localised ponds further upstream. A small pond will still be required together with a dry retardation basin for flood management purposes. It is proposed, as a secondary use, that the district playing fields associated with the proposed Amaroo High School be located within the dry retardation basin.

## **6. *Proposed Changes to the Territory Plan Written Statement*** ***Residential B8 and B9 Area Specific Policy Review***

Currently the B8 policy aims to allow for higher density mixed use development and provides for residential development up to a maximum of four storeys. Small scale offices, restaurants, community facilities and shops may be permitted at ground floor level. The B8 policy applies to land adjacent to the Town Centre and along the main boulevards in the Gungahlin Central Area.

The B9 policy aims to provide for a range of intensive residential uses including a variety of medium to high density housing types. The policy allows for development up to three storeys and applies to the remaining residential areas in the Gungahlin Central Area.

The Structure Plan proposes to apply the Residential B8 and B9 Area Specific Policies in strategic locations close to activity nodes, such as at group and local centres.

## 6.1 Residential B8 Area Specific Policy

While the concept of mixed uses and higher densities is supported, some of the existing controls and uses in the B8 policy are not considered appropriate in a mixed-use context. This draft Variation proposes to amend the B8 policy as follows:

- (i) Amend the title and objectives of the policy to be more generic and have a wider application.
- (ii) Delete some of the existing permitted uses as they are considered to be inappropriate or unnecessary in a mixed-use context. These include:
  - Car park (only appropriate as an ancillary use)
  - Club (Impacts not appropriate and more likely to be located in commercial areas)
  - Emergency services facility (Impacts not appropriate)
  - Outdoor recreation facility (Large land take facilities not consistent with intensive higher density development. Smaller facilities may occur as ancillary to Parkland.)
  - Recyclable materials collection (Scale and impacts not appropriate)
  - Service station (Impacts not appropriate)
  - Place of Assembly (Scale not appropriate, more likely to occur as community activity centre)
- (iii) Exempt the land use restrictions at Clause 2.10 and Performance Controls of the Residential Policy and replace individual uses with the Group definitions listed below:

COMMUNITY USE means a *child care centre, a community activity centre, a community theatre, a cultural facility, an educational establishment, a health facility, a hospital, a place of worship, and/or a religious associated use.*

COMMERCIAL ACCOMMODATION USE means a commercial accommodation unit, guesthouse, hotel, motel or tourist resort but does not include a caravan park/camping ground or group or organised camp. (refer Variation 158, Group Centre Policies)

NON RETAIL COMMERCIAL USE means a business agency, financial establishment, office or public agency. (refer Variation 158)

The changes have the effect of removing some of the restrictions on gross floor area, concentration and location that apply to uses such as guest house, community activity centre and health facility, through the general residential policy. The current policy does not treat additional uses consistently because some are subject to the more general restrictions in the Residential Policy, while others are not. In the standard residential context, the restrictions are aimed at protecting amenity and ensuring development is compatible with the surrounding residential area. However the general residential controls are not considered appropriate in a mixed-use context.

- (iv) Introduce new controls for noise attenuation for potential noise generating uses where they are located adjacent to residential/ commercial accommodation use.

- (v) Expand the range of uses subject to the existing gross floor area restriction of 200m<sup>2</sup> to include other relevant uses to limit scale of development and potential impacts on town/commercial centres and adjacent residential development. These include:
- COMMUNITY USE
  - Craft workshop
  - Drink establishment

It is also proposed to clarify the restriction so that it applies per tenancy as well as per establishment.

- (vi) Reword the restriction on upper floor uses to limit uses, other than residential or commercial accommodation, to the ground floor level.
- (vii) Amend the building height control so that the general building height is 3 storeys. However buildings up to a maximum of 4 storeys may be permitted where provided for in a Building Envelope Plan. (refer Variation 176 Bruce Central Precinct).

This Building Envelope Plan specifies building envelopes and any other specific block development controls and is linked to, and approved along with, an Estate Development Plan. An Estate Development Plan sets out the proposed pattern of subdivision and infrastructure works for an estate. This Estate Development Plan needs to be approved before works are undertaken and leases are granted for the subdivided blocks. The Estate Development Plan may also include a streetscape concept plan. Estate Development Plans will need to be prepared for logical parcels of land before development proceeds.

- (viii) Amend the Design and Siting Clause so that the Urban Housing Code applies to multi unit development. This code is based on the Australian Model Code for Residential Development and was introduced in conjunction with the Residential B11 and B12 Area Specific Policies to promote well designed medium density development.

## **6.2 Residential B9 Area Specific Policy**

This draft Variation also proposes to amend the title and objectives of the B9 policy. This will enable the policy to apply to areas beyond the Gungahlin Town Centre. The clause relating to building height will be amended to refer to the term 'Building Envelope Plan.' The Design and Siting Clause will also be amended to apply the Urban Housing Code to medium density development.

## **7. Reason for the Proposal**

Gungahlin will provide the major focus for 'greenfield' development during the next 10 to 15 years. The Structure Plan responds primarily to the need to provide more detailed planning to enable locations and boundaries of land uses to be specified in greater detail than is currently shown on the Territory Plan.

In addition, significant changes in the thinking on sustainable urban developments have impacted on the urban structure for Gungahlin since the originally proposed 1988 NCDC Policy Plan. The following specific considerations have formed the basis for the revised Structure Plan.

## **7.1 Population Trends**

The following population trends are expected to affect the demand for housing.

- An ageing population, together with increases in the formation of single-person households is likely to boost demand for higher quality medium-density and adaptable housing;
- Growth of single-parent families and a continuing need for “affordable housing”;
- Increasing numbers of home based businesses; and
- Increasing awareness by the general public of environmental issues, which in turn is likely to boost demand for inclusion of lower-impact residential designs and the use of solar energy, natural gas, rainwater collection and grey water recycling.

These trends indicate a continuing need to provide opportunities for a wide range of housing choices within both established and developing areas.

## **7.2 Sustainable Development**

The term sustainability has many definitions. The *Towards a Sustainable ACT: A Discussion Paper* released in June 2002 for comment proposes the following definition. “In the ACT, sustainability is about how we meet the needs of people today without compromising the ability of future generations to meet their needs. It is an approach to decision making that recognises that social, economic and environmental issues are interconnected and decisions must incorporate each of these aspects if they are to be good decisions in the longer term.”

One of the primary objectives of the Structure Plan is to ensure that the development of North Gungahlin incorporates sustainability principles including ecological, social, cultural and economic considerations. Ecological studies have played a major role in the planning of Gungahlin from its initial stages. As ecological knowledge has expanded there have been significant changes to the planning of Gungahlin, including the establishment and expansion of the Mulligans Flat Nature Reserve at Forde and the relocation and redesign of the town centre to conserve native grassland habitat.

Whilst the planning principles and policies recognise the importance of conservation of native grasslands and grassy woodlands, it will not be feasible to preserve remnants of endangered communities in every place they occur. Retention of remnants in urban areas may only occasionally be realistic when considering urban development and infrastructure requirements against the size, ecological quality and connectivity of grassland and woodland remnants.

Sites of Aboriginal and European cultural heritage significance, including the Horse Park precinct and Gundaroo Road are identified and conserved within the urban fabric.

The Structure Plan aims to provide for an accessible and efficient public transport system. The proposed commercial centres contain the highest residential densities with further medium density housing areas located within easy walking distance of public transport services.

The pedestrian and cycle networks will establish effective links between residential areas, schools, neighbourhood centres, recreational resources and public transport networks.

As a result of changing community profiles and attitudes with a greater emphasis on home based care, the Structure Plan identifies community facility sites in each neighbourhood, with further sites potentially available in commercial centres.

Sustainable urban water management design principles are to be adopted for the development of North Gungahlin. The principal objective is to secure economic, social and environmental benefits of integrated 'water in the landscape' (including water sensitive urban design techniques) and 'total water cycle' based designs to achieve a better balance of water across the landscape, at the block, neighbourhood, district and catchment levels. Adoption of these principles by the Structure Plan will improve water quality in receiving waters, enhance ecological values and amenity, reduce potable water demand, and potentially provide long term cost savings.

### ***7.3 Responding to Changing Community Needs***

#### ***Shopping Centres***

The BIS Retail Study, released in early 1999, indicates that fewer shopping centres will be needed in Gungahlin. The town centre and three mid-sized group centres (located at major junctions) will serve most of the population's shopping needs, together with the existing and future shopping centres in other areas of Gungahlin, Belconnen, Dickson, Civic, and Mitchell. Five smaller local centres are proposed to serve local convenience shopping needs. These centres replace the two group centres and three local centres currently shown on the Territory Plan.

#### ***Community Facilities***

The profile of the community is changing and this will influence the number and types of facilities that are required as well as their location. There have been many changes over the years to the delivery of services and the provision of facilities, with a greater focus on multi-use and co-located facilities. An increasing emphasis on the service to be provided rather than the facility from which the service is delivered has generated a move toward mobile services and the provision of home based care rather than facility based assistance, particularly in the health area. At the same time, government, non-government and community organisations are now seeking evidence of a demonstrated need for a facility, rather than providing a facility in anticipation of demand.

The Structure Plan highlights the role of community facility sites in contributing to a cohesive community and retains a range of sites for future facilities. Each neighbourhood includes at least one community facility site with further smaller sites potentially available within mixed-use areas and in the open space system.

## 8. *Defined Land*

The draft Variation proposes to identify the North Gungahlin Structure Plan area as defined land in accordance with the provisions of the Land Act. The Territory Plan Map will be amended to add the defined land overlay to the site. Section 7(3)(e) 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.

It is important that the planning of an area the size of North Gungahlin is not unduly constrained during its period of development. The Defined Land process enables the Territory Plan to be progressively updated in line with the current best practices while maintaining principles and policies identified for each area. In summary, the process is:

- The land is identified as Defined Land and the principles and policies for its development are set out in the Territory Plan through the normal Plan Variation process. This draft Variation constitutes the first stage of the process and is subject to full statutory public consultation, Executive approval and possible disallowance by the Legislative Assembly;
- Detailed subdivision plans for the development of the site are prepared progressively in accordance with the principles and policies set out in the approved Variation; and
- On approval of the subdivision plans, PALM subsequently varies the Territory Plan by a notice in the Government Gazette pursuant to section 32 of the Land Act. This Variation specifies the boundaries and purposes for which the various parts of the land may be used. On gazettal of the subsequent Variation, the land ceases to be Defined Land.

The principles and policies for the development of Defined Land are detailed at Part 3 of Attachment A.

## 9. *Effect of the Draft Plan Variation*

In accordance with the Land Act, this draft Variation is to have interim effect for the 'defined period'. 'Defined period' means the period commencing on the date that the draft Variation is notified in the Government Gazette and terminating at the expiration of the day before -

- (a) the date the draft Variation comes into effect;
- (b) the date the draft Variation is rejected by the Legislative Assembly;
- (c) the date the Executive revokes its approval of the Variation; or
- (d) the date the draft Variation is withdrawn.

The maximum 'defined period' for the interim effect of a draft Variation is twelve months.

During the 'defined period' the Territory, the Executive, a Minister or a Territory Authority shall not do any act, or approve of the doing of any act that would be inconsistent with the Territory Plan if it were varied in accordance with the draft Variation; or would be inconsistent with the Territory Plan.

**In cases where there is a discrepancy between two policies which both have effect, the most onerous requirement will apply.**

## 10. *Comments by Conservator of Flora and Fauna*

In preparing this draft Variation, PALM is required under Section 16 of the *Land Planning and Environment) Act 1991* to consider any recommendations made by the Conservator of Flora and Fauna.

The Conservator has provided the following comments (PALM's response to the comments is identified in italicised text in square brackets):

"The DVP provides a summary of the known natural resources in the North Gungahlin area. It is based on this information that the following comments are given."

### **"Ecological Issues**

The DVP identifies several locations where conservation of the natural environment is to be a significant priority and where conservation measures will be implemented. The DVP also makes clear that urban development will result in the clearing of some native vegetation (woodland and grassland) and exotic pastures to make way for infrastructure, residential housing and other urban development.

As you are aware, in considering the impact of the proposed development you and I met with the Commissioner for the Environment as the proposed development contains Yellow Box - Red Gum Grassy Woodland. This woodland is listed as an endangered ecological community under the *Nature Conservation Act 1980*. The Commissioner for the Environment agreed that the presentation of the North Gungahlin Structure Plan to the community could proceed concurrently with the review of Action Plan 10 (Yellow Box - Red Gum Grassy Woodland) now being undertaken by Environment ACT. This agreement was subject to the public being informed that the outcomes of the review of Action Plan 10 would be taken consideration in finalising the Gungahlin Structure Plan.

Action Plan 10 noted that there are significant areas of Yellow Box - Red Gum Grassy Woodland requiring further study at Gooroo (east Gungahlin), Kinlyside (east of Hall) and Callum Brae (Symonston). These studies are nearing completion and land use proposals for these areas will be part of a draft strategic plan for woodlands in the ACT (including Yellow Box - Red Gum Grassy Woodland and threatened and declining animals and plants) which is to be completed by April 2003.

I have noted that although the proposed development of North Gungahlin will not retain about 100 hectares of Yellow Box - Red Gum Grassy Woodland community it is intended, where appropriate, to incorporate individual trees and stands of trees within the urban fabric. Action Plan 10 acknowledges that although the Yellow Box - Red Gum Grassy Woodland is listed as an endangered ecological community it will not be feasible to preserve it in every place it occurs. Retention of remnants in urban areas may only occasionally be a realistic option when balancing the many planning considerations including urban development considerations and the size, ecological quality and connectivity of woodland remnants.

I note that the DVP for North Gungahlin states that an additional 46 hectares of the remaining patches of Yellow Box - Red Gum Grassy Woodland (mostly individual trees or groups of trees) are proposed to be retained as part of urban parks, natural creek corridors, road reserves and other open spaces. Some mature trees now growing in rural land in North Gungahlin will also be retained after assessment of their health and suitability for an urban setting. This will result in substantial habitat elements being

retained for native fauna tolerant of urban environments, such as some native birds and arboreal mammals, as is the experience in other parts of Canberra. I also note that 19 hectares of Yellow Box - Red Gum Grassy Woodland was added to the Mulligans Flat Nature Reserve as a result of DVP No. 182 (April 2002).

I will advise PALM of the outcomes of the studies into Action Plan 10 (Yellow Box-Red Gum Grassy Woodland) as they progress. It is expected that PALM would take any advice that comes out of these studies, as well as that contained in this letter, into consideration in finalising the Gungahlin Structure Plan. I bring it to your attention that the Commissioner for the Environment has requested that in any information concerning the Gungahlin Structure Plan, it be clearly stated that Action Plan 10 is currently being reviewed and findings from this review will inform the Structure Plan. I trust you will ensure that the public notices and documentation reflect this message. I also flag that if the studies or public consultation reveal any matters of which I am currently unaware that I may need to modify my current advice. Given this, and the Commissioner for the Environment's position, as noted above, it is appropriate for PALM to make the DVP available for public comment at this time." *[Comments in relation to the review of Action Plan 10 are noted. The outcomes of the review will be considered in finalising the North Gungahlin Structure Plan. The Commissioner for the Environment's request to include advice on the Action Plan 10 review in any information concerning the North Gungahlin Structure Plan is noted and will be undertaken where possible.]*

#### **"Water Management**

Planning requirements have the potential to greatly influence water management. This DVP provides an opportunity to promote sustainable urban water management by explicitly including it as a principle and by including suitable measures, and thus foster an improvement in ecological values in the Territory.

Section 5 (Page 9), the planning principles and policies should be amended from:

- "the adoption of water sensitive urban design as a means of implementing the principles of sustainable urban water management."

to:

- the links between sustainable urban water management and downstream ecological impacts on flora and fauna, both through the direct impact of altered flow regimes caused by urban development and through water quality impacts partially driven by these altered flow regimes should be recognised. Appropriate sustainable urban water management measures will be adopted to protect downstream ecology." *[Noted. This planning principle has been amended.]*
- "promote sustainable urban water management.
- there shall be sufficient on block retention and detention to ensure that runoff from the one in three month rainfall event does not exceed pre-development runoff."
- The General Policies for each suburb (Attachment A of the DVP) need to explicitly promote sustainable urban water management as a key element in achieving sustainable urban forms. As such, the above principles should be included within the General Policies for each suburb." *[Noted. PALM is currently working with Environment ACT on the development of sustainable urban water guidelines and will, where necessary following this work, propose further changes to the Territory Plan to assist in achieving this objective.]*

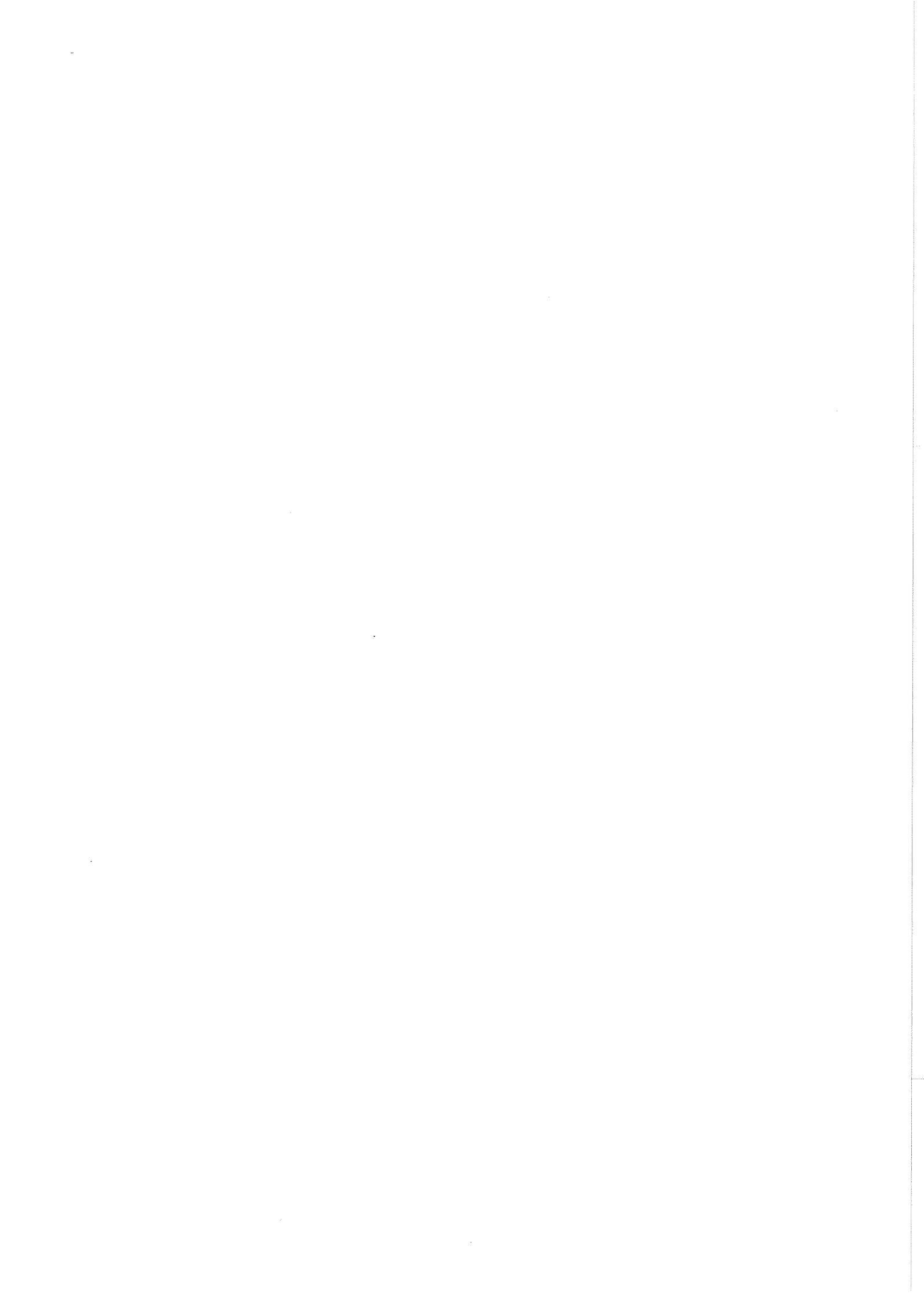
# ATTACHMENT A

## 1. *Variation to the Territory Plan Map*

The Territory Plan Map is varied for the area identified in Figure 1 as "Area Subject to the Variation" as follows:

1. Residential Land Use Policy
  - define the suburbs of Bonner, Casey, Forde, Jacka, Moncrieff, and Taylor and adjust the suburbs of Amaroo and Ngunnawal.
  - add Residential B8 and B9 Area Specific Policy Overlays.
2. Roads Land Use Policy
  - amend alignments of Horse Park Drive and Mirrabei Drive and identify internal road network.
3. Commercial Land Use Policy
  - relocate the two group centres previously proposed at Forde and at the intersection of Horse Park and Mirrabei Drives and identify a third group centre at Casey.
  - identify five local centres in the suburbs of Bonner, Casey, Forde, Jacka and Taylor.
4. Urban Open Space Land Use Policy
  - define revised open space system.
5. Community Facility Land Use Policy
  - identify community facility sites.
6. Water Feature Land Use Policy
  - reduce the size of the water management pond in Amaroo and identify a series of smaller ponds.
7. Hills Ridges and Buffer Areas Land Use Policy
  - revise the urban development edge, and
8. Add the Defined Land Overlay.

as indicated in **Figure 2**.



**LAND USE POLICIES**  
(See Part B of Written Statement)

- Designated Areas  
(See National Capital Plan)
1. Residential
  2. Commercial
    - A Civic Centre
    - B Town Centre
    - C Local Centre
    - D Local Centre
    - E Corridors & Office Sites
  3. Industrial
  4. Community Facility
  5. Restricted Access Recreation
  6. Water Feature
  7. Municipal Services
  8. Entertainment, Accommodation and Leisure
  9. Urban Open Space (Public Land except where specifically excluded see Overlays below)
  10. Broadacre
  11. Rural
  12. Hills, Ridges & Buffer Areas
  13. River Corridors
  14. Mountains & Bushlands
  15. Plantation Forestry
  16. Major Roads

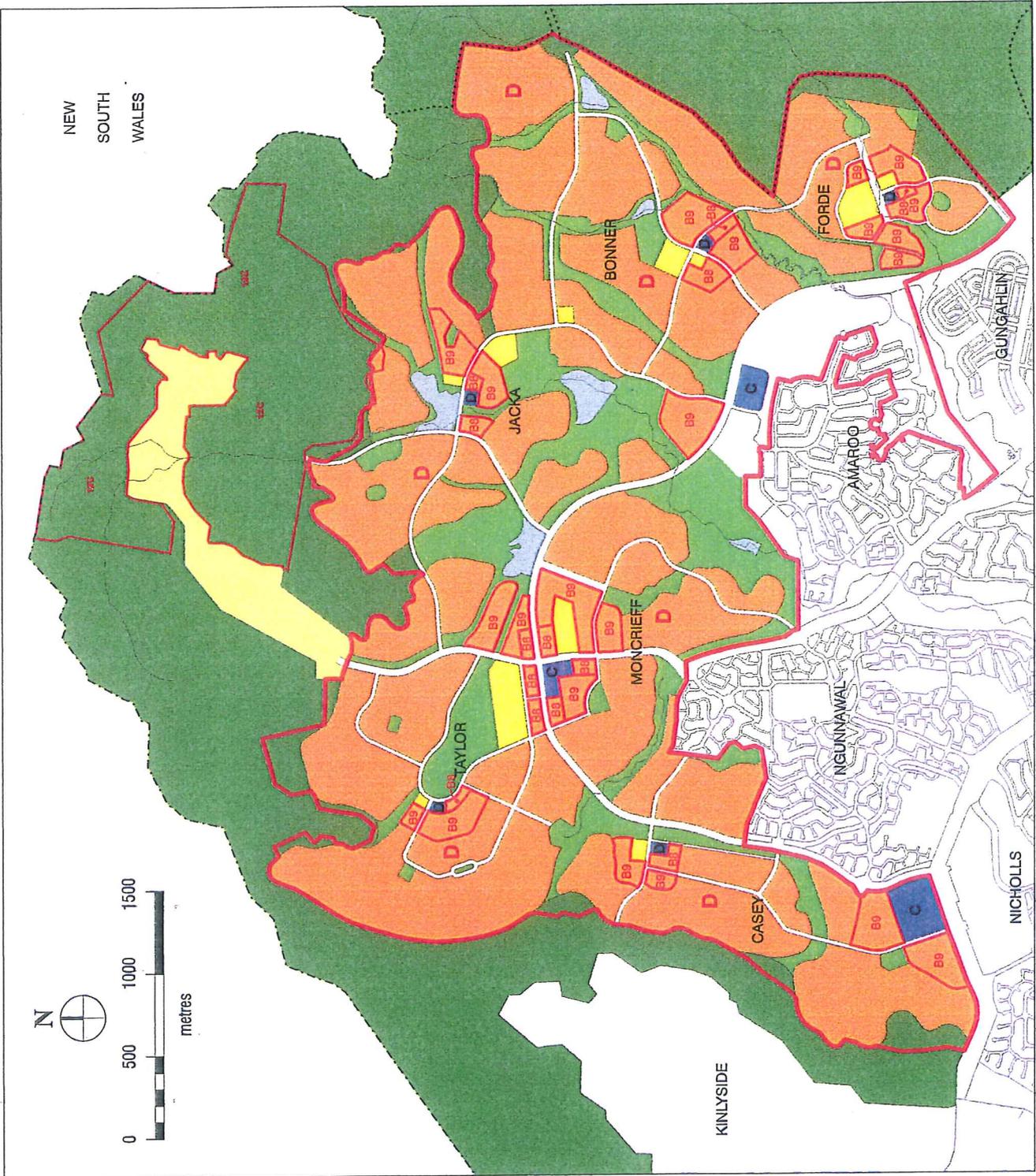


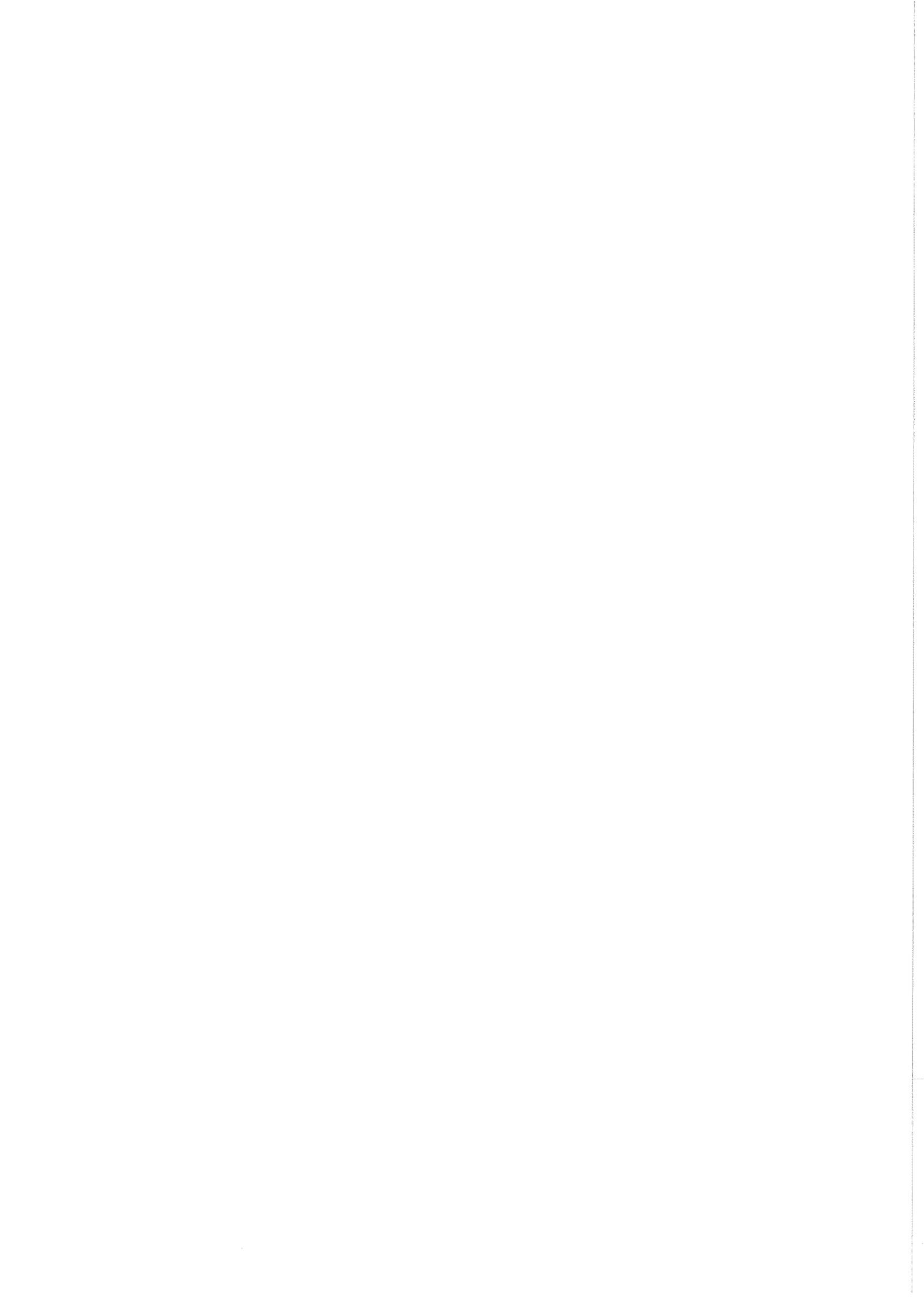
**OVERLAYS**  
(See Section C1 of Written Statement)

- Area Specific Policies  
Special Requirements apply under National Capital Plan (See NCP.)  
Sites Listed on Heritage Places Register (See also Part II of the Land Act)  
Subject to Review
- Defined Land (See also Part II of the Land Act)  
Draft Variation to the Plan having effect (See also Part II of the Land Act)  
Urban Open Space - Not Public Land  
Type of Public Land Reserve (See also Schedule 1 of the Land Act)  
Public Land, arrows point inwards (See also Part V of the Land Act)  
Special Requirements apply (flanking Main Avenues and Approach Routes (See NCP))
- Electrical Transmission Line  
Water Main  
Sewer Main  
Intertown Public Transport Route



**Figure 2**  
**Proposed North Gungahlin Structure Plan**





## 2. *Variation to the Territory Plan Written Statement*

- (i) At Part B1 Residential Land Use Policies, Clause 4 Area Specific Policies replace Area B8 Gungahlin Town Centre – Residential Mixed Use, as follows:

### **“Area B8: Residential Mixed Use**

#### **Objectives**

- To promote a range of intensive residential uses combined with appropriate non-residential uses in highly accessible locations adjacent to the Gungahlin Town Centre and other identified commercial centres.
- To provide for small-scale leisure, recreation, community and commercial activities in conjunction with intensive residential development.

#### **Controls**

##### Land Use

Add to Schedule 1: Communications facility<sup>+</sup>, COMMERCIAL ACCOMMODATION USE, COMMUNITY USE, Craft workshop, Drink establishment<sup>+</sup>, Indoor entertainment facility<sup>+</sup>, Indoor recreation facility, NON RETAIL COMMERCIAL USE, Pedestrian plaza, Restaurant and Shop.

<sup>+</sup> may be subject to mandatory preliminary assessment in accordance with Appendix II of the Plan.

##### Land Use Restrictions

**COMMUNITY USE, Craft workshop, Drink establishment, Indoor entertainment facility, Indoor recreation facility, NON RETAIL COMMERCIAL USE, Restaurant, Shop**

- shall be designed and located to minimise impacts on residential or commercial accommodation development. All noise-generating activities are to meet relevant criteria including Environment Protection Regulations.
- shall not be permitted above ground floor level.
- except for Indoor recreation facility shall be limited to 200m<sup>2</sup> in gross floor area per establishment or tenancy.

**COMMUNITY USE, COMMERCIAL ACCOMMODATION USE** – relevant land use restrictions at Clause 2.10 do not apply.

### Building Height

Replace Clause 2.2 with: The maximum height of buildings shall generally be 3 storeys. Buildings may be built to a maximum of 4 storeys where provided for in an approved Building Envelope Plan.

### Design and Siting

Development of multi unit housing shall be in accordance with the Urban Housing Code at Appendix III.3 or its replacement.

### Performance Controls

**COMMUNITY USE, COMMERCIAL ACCOMMODATION USE Home business** – relevant performance controls at Clause 2.11 do not apply.”

- (ii) **At Part B1 Residential Land Use Policies, Clause 4 Area Specific Policies replace Area B9 Gungahlin Central Area – Residential, as follows:**

#### **“Area B9 Urban Residential**

##### **“Objectives**

- . To promote a range of intensive residential uses including a variety of medium and high density housing types adjacent to commercial centres.

##### **Controls**

#### Building Height

Replace Clause 2.2 with: The maximum height of buildings shall generally be 2 storeys. Buildings may be built to a maximum of 3 storeys where provided for in an approved Building Envelope Plan.

#### Design and Siting

Development of multi unit housing shall be in accordance with the Urban Housing Code at Appendix III .3 or its replacement.

### **3. Principles and Policies for Development of Defined Land**

Section 7(3)(e) 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 draft Variation is proposed to be 'Defined Land' pursuant to section 7(3)(e) 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.

#### **3.1 General Planning Principles**

- The development of North Gungahlin should incorporate sustainability principles including economic, social, cultural and economic considerations.
- The landscape setting and values of the North Gungahlin urban area are to be recognised and enhanced. Boundary hills and significant internal ridges within the urban fabric are to be protected from development and planted with native vegetation. Significant trees should be incorporated into the urban fabric where possible.
- Conservation and Heritage Precincts such as Horse Park Homestead and Wetlands are to be retained and protected within urban open space.
- Detailed planning is to take advantage of the natural, cultural and heritage characteristics of the area and extend them to create a program to support and strengthen the community's identity.
- The local neighbourhood is to be based on a walkable radius of 400m, and focussed on an activity node such as shops, community facility or school.
- Community facility sites should be located close to public transport and in places where, for reasons of safety, people already have a cause to congregate particularly at shopping centres and schools.
- Public open space, within close proximity to, local centres, together with various other nominated sites, may be utilised for possible community and recreation facility uses. The size and type of facility will be determined at a later detailed planning stage.
- Retail centres serving larger populations should be well located on major roads in order to serve a cluster of suburbs and ensure the long-term viability of the centre.
- Sustainable urban water management design principles are to be adopted to secure economic, social and environmental benefits of integrated 'water in the landscape' (including water sensitive urban design techniques) and 'total water cycle' based designs to achieve a better balance of water across the landscape.
- An integrated cycling and pedestrian network should connect commercial centres, schools, parks, ovals, and hilltops and provide links to trunk routes.
- The road hierarchy should be legible and provide good and safe access to all users and encourage high levels of public transport usage. Boulevards and Avenues are identified in specific locations.
- 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 and transport routes.

- Ensure that the national equestrian trail will be planned to move incrementally to follow the urban edge as development areas progress.
- 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 where appropriate.

### **3.2 Suburbs**

The Outline Plan generators diagrams and the Outline Plans indicate the manner in which the Territory Plan will be implemented for each suburb. The Outline Plans are included to assist in the understanding of the implications of the draft Variation to the Territory Plan.

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

The Outline Plans indicate the location of the various land uses proposed for each suburb and reflect the requirements shown on the Outline Plan generators diagrams.

### *Forde*

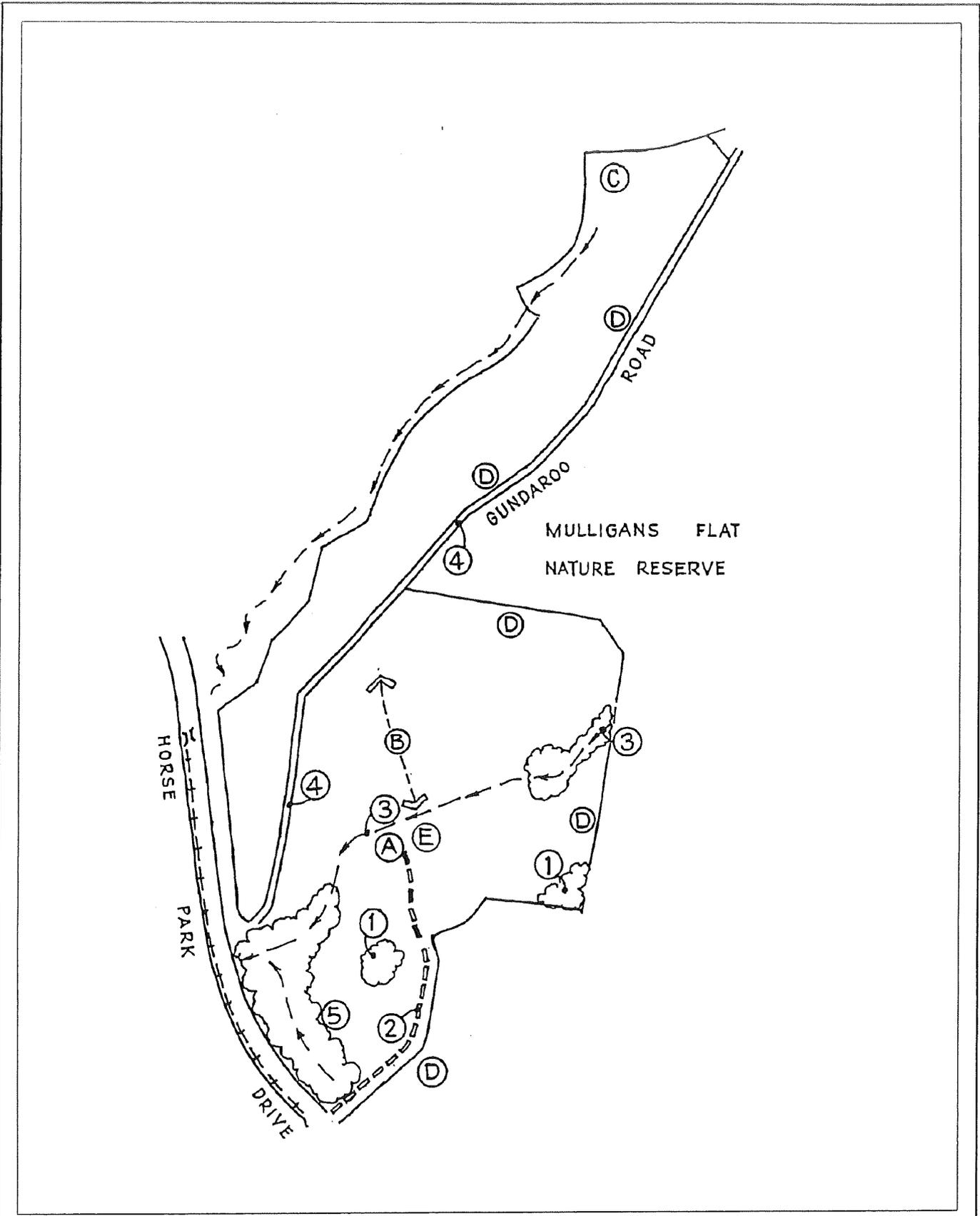
Forde is a highly defined suburb being contained by Mulligans Flat Nature Reserve, the Gundaroo Road connection into NSW and the major east-west arterial, Horse Park Drive. The suburb is located in the south east of the Structure Plan and is adjacent to the Gungahlin Town Centre.

#### GENERAL POLICIES (Refer to Fig. 3)

- A. The local centre, will incorporate and be adjacent to areas of high density residential, community facilities and the central open space spine.
- B. A local bus route will be accommodated through the suburb via the local centre and areas of higher density.
- C. A water detention feature is required to the north and is to be located within the natural drainage line in open space.
- D. Edge roads to be utilised wherever possible as a buffer between residential development and areas of open space. An edge road shall be predominantly used as a buffer where the adjoining open space contains substantial cultural heritage or environmental value.
- E. Provide an area close to the local centre for a community facility site.
- F. Provide for an urban edge trail (equestrian and other uses) that will move incrementally as the urban edge develops.

#### SPECIFIC POLICIES (Refer to Figs. 3 and 4)

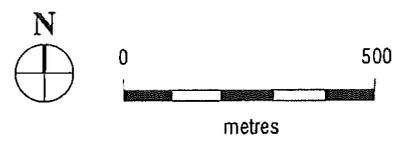
- 1. Two areas are identified for open space, parkland, specifically to protect existing remnant tree patches with conservation values and to create an active recreation interface with Mulligans Flat Nature Reserve.
- 2. The main road access to the suburb from Horse Park Drive is to be of boulevard character up to the first major southern intersection, at which point it will continue north as an avenue to the local centre.
- 3. An open space spine, along the natural creek line, is proposed through the suburb linking Mulligans Flat to the central and mixed-use higher density housing area and potential education facility. This spine will also accommodate such facilities as pedestrian pathways and cycleways.
- 4. Gundaroo Road reservation (within Forde) is to be retained in urban open space, thereby preserving the existing lines of trees. To the north, Gundaroo Road will form a buffer between the urban edge and Mulligan's Flat. This interface will be subject to special controls.
- 5. An area of swampy lowlands is to be retained in urban open space, adjacent to Horse Park Drive to the south of the suburb. The area is to be treated in a manner, which enhances its ecological value, consistent with the principles of sustainable urban water management.



**LEGEND**

-  Boulevard
-  Avenue
-  Drainage line
-  Possible bus route
-  Trunk cycleway (on-road)
-  Pedestrian underpass

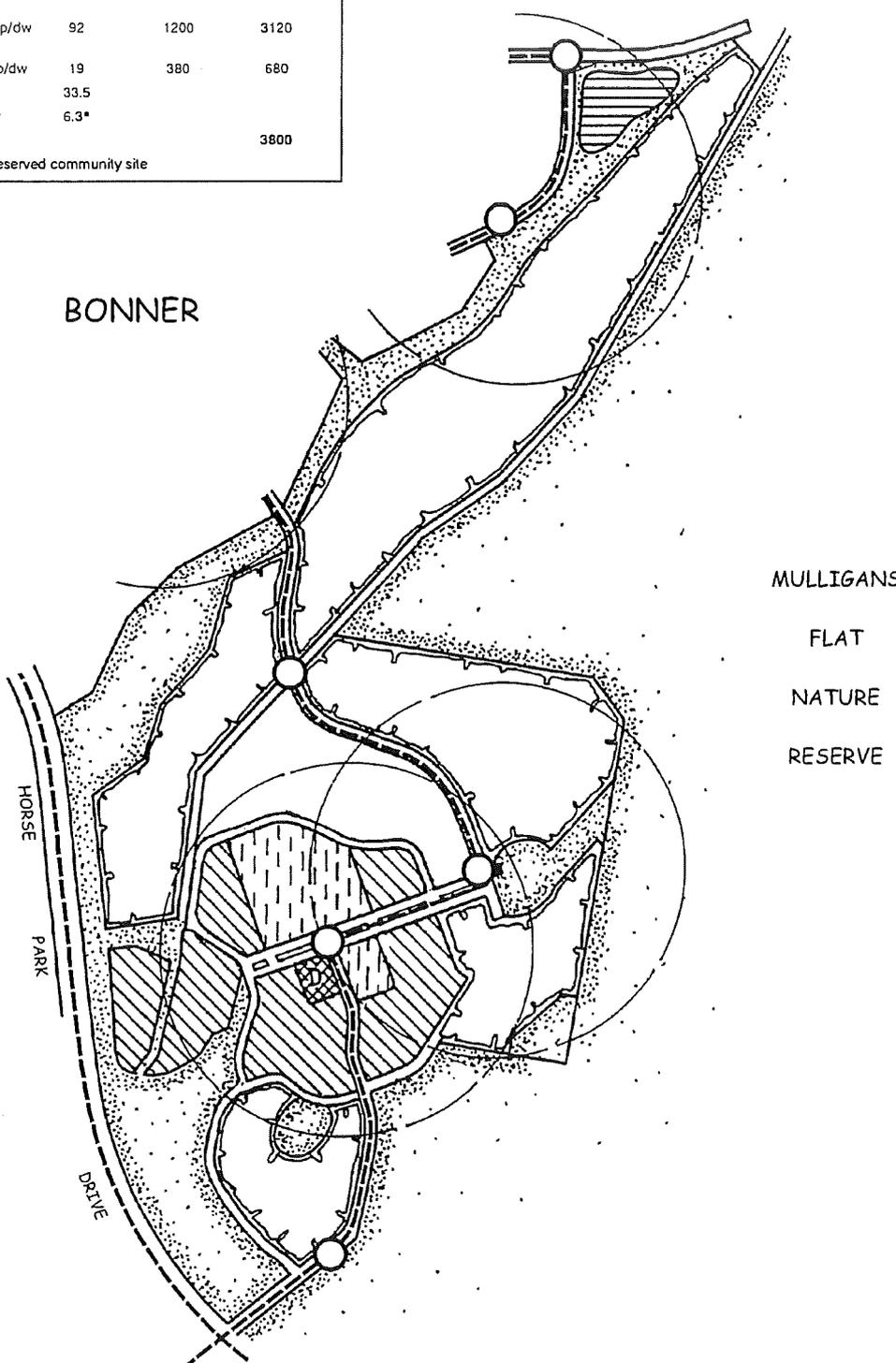
 Trees to be retained



**Figure 3**  
**Forde**  
**Outline Plan generators**

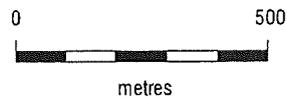
LAND TYPE	AREA(ha) approx	DWELLINGS approx.	POPULATION approx
Residential @ 13dw/ha and 2.6p/dw	92	1200	3120
Urban residential @20dw/ha and 1.8p/dw	19	380	680
Open space	33.5		
Community facility	6.3*		
<b>Population Total</b>			<b>3800</b>

Note: \*includes a reserved community site



**LEGEND**

-  Residential
-  Higher density residential
-  Open space
-  Community facility (including schools)
-  Local centre
-  Water detention feature
-  Possible community facility site
-  Possible bus route
-  Possible bus stop
-  Possible bus terminus
-  400m radius - 5min walk



**Figure 4  
Forde - Outline Plan**

### **Bonner**

Natural landscape features generally delineate the edges of this suburb with a ridge adjoining the western flank, open space to the east and woodlands within Hills, Ridges and Buffer land use area along the northern edge.

The suburb is located generally north of Forde and north east of Amaroo.

#### GENERAL POLICIES (Refer to Fig.5)

- A. Both the central north-south and eastern open space spines are based on existing drainage paths.
- B. A centrally located primary school and neighbourhood oval, adjacent to a mixed-use/higher density housing area, is required.
- C. The location of a local centre and associated higher density residential areas are placed at the intersection of the collector road system and bus routes to maximise exposure and encourage higher public transport usage.
- D. Opportunities are to be provided for small-scale community facility sites in open space in convenient locations predominantly along public transport routes.
- E. Edge roads are to be utilised wherever possible as a buffer between residential development and areas of open space. An edge road shall be predominantly used as a buffer where the adjoining open space contains substantial cultural heritage or environmental values.
- F. A water detention feature is required adjacent to the north-south open space spine.
- G. Local bus routes are to be provided through the suburb, encouraging public transport usage.
- H. Provide an area close to the local centre for a possible community facility site.
- I. Provide for an urban edge trail (equestrian and other uses) that will move incrementally as the urban edge develops.

#### SPECIFIC POLICIES (Refer to Figs. 5 and 6)

1. The north-south ridge to the west of the suburb is to be retained and protected in urban open space.
2. The suburb is accessed from Horse Park Drive by two roads, each of which shall be boulevard status both in design and nature.
3. Trunk cycleway to be provided to connect to Horse Park Drive trunk cycleway.
4. Higher density housing is to be provided adjacent to the local centre.
5. Cultural and/or heritage site (Aboriginal Heritage) to be preserved within open space.

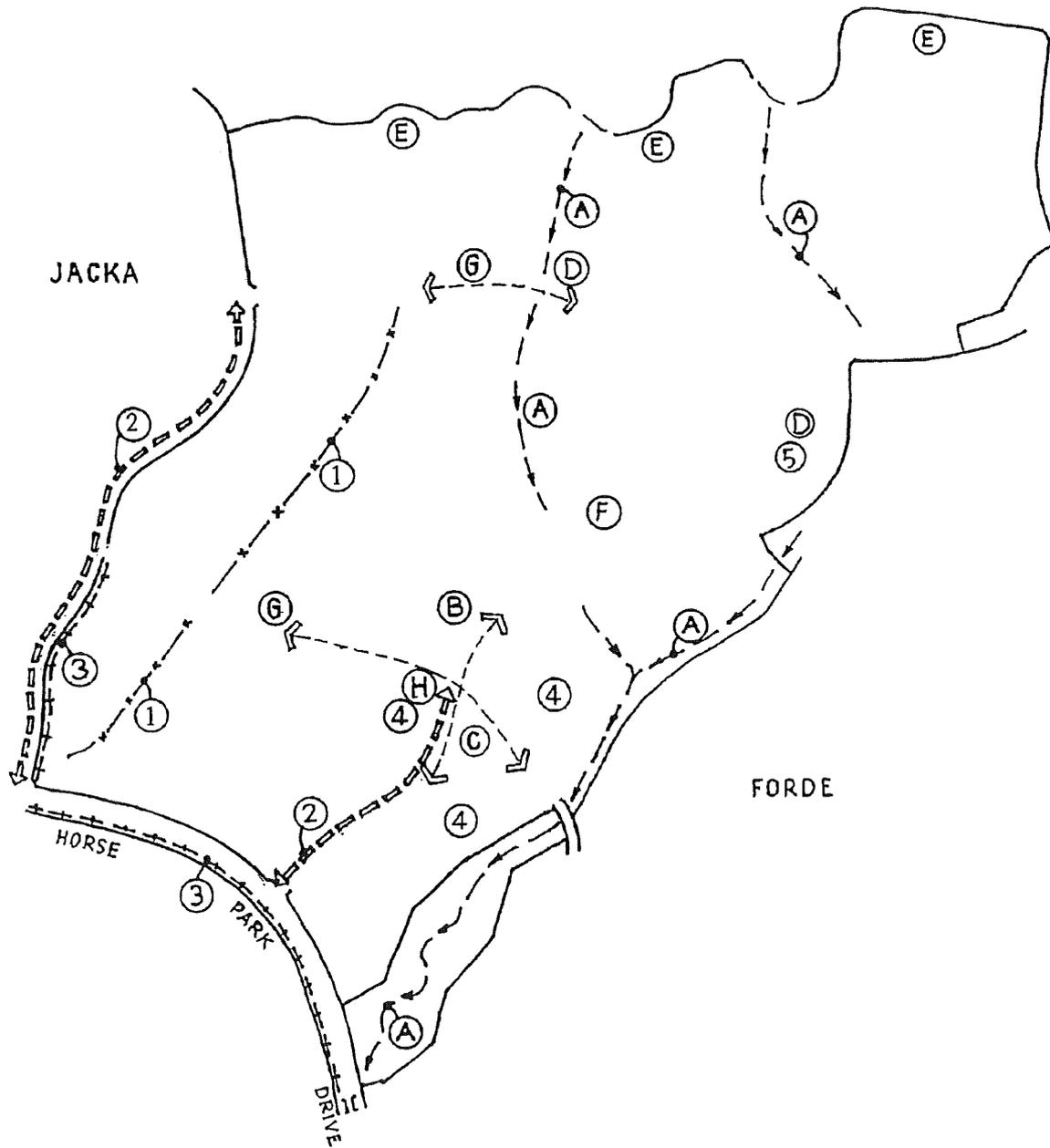
*Horse Park wetlands - specifically stated it*

MULLIGANS

FLAT

NATURE

RESERVE



LEGEND

-  Boulevard
-  Ridge line
-  Drainage line
-  Possible bus route
-  Trunk cycleway (on-road)
-  Pedestrian underpass

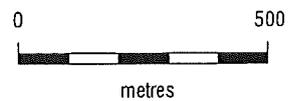


Figure 5  
Bonner  
Outline Plan generators

LAND TYPE	AREA (ha) approx	DWELLINGS approx.	POPULATION approx
Residential @ 13dw/ha and 2.6p/dw	177	2300	6000
Urban residential @20dw/ha and 1.8p/dw	17	340	600
Open space	50.2		
Community facility	4.3*		
Population Total			6600

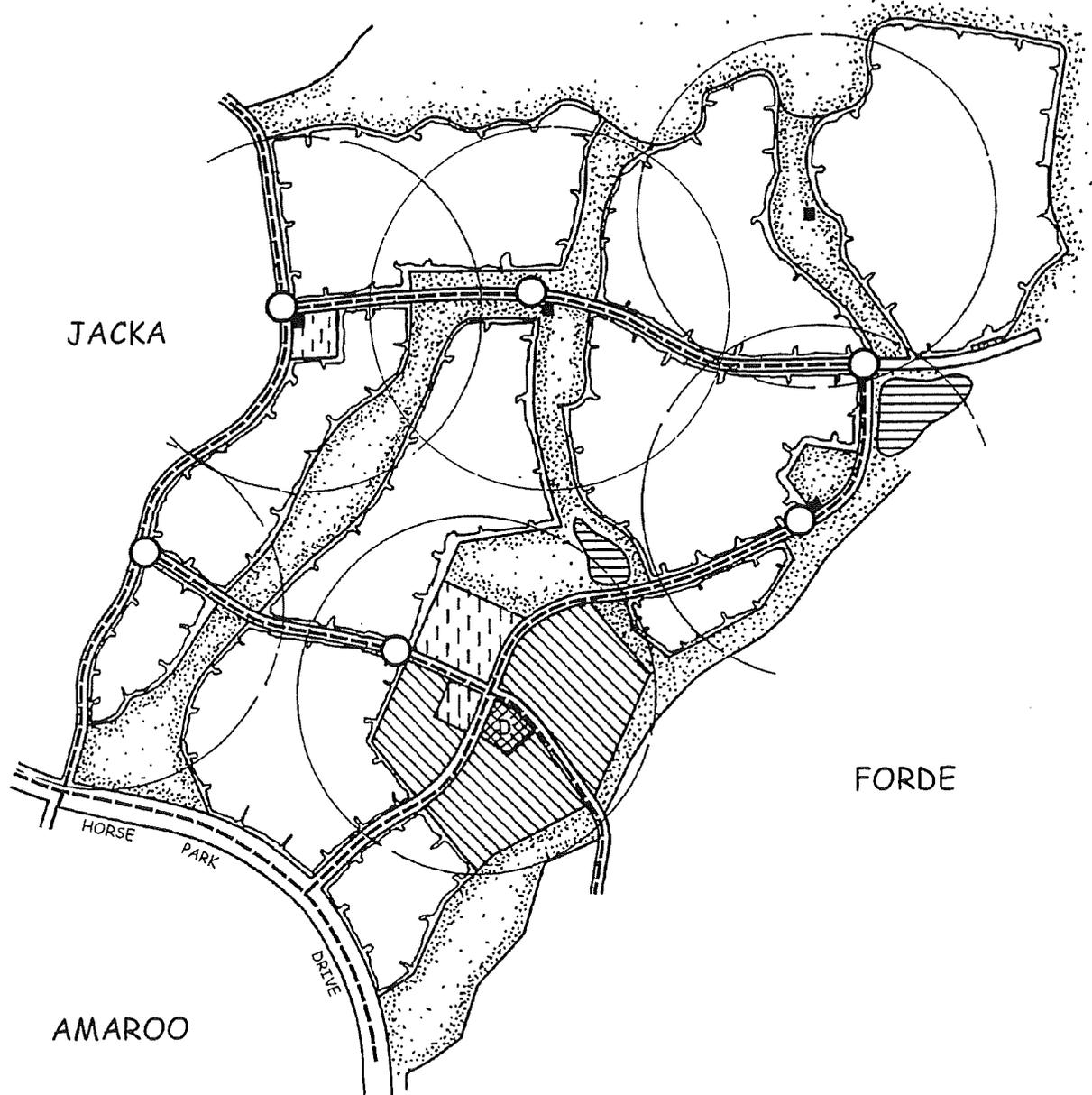
Note: \*includes a school site

MULLIGANS

FLAT

NATURE

RESERVE



LEGEND

- Residential
- Higher density residential
- Open space
- Community facility (including schools)
- Local centre
- Water detention feature

- Possible community facility site
- Possible bus route
- Possible bus stop
- 400m radius - 5min walk

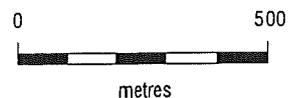


Figure 6  
Bonner - Outline Plan

## *Jacka*

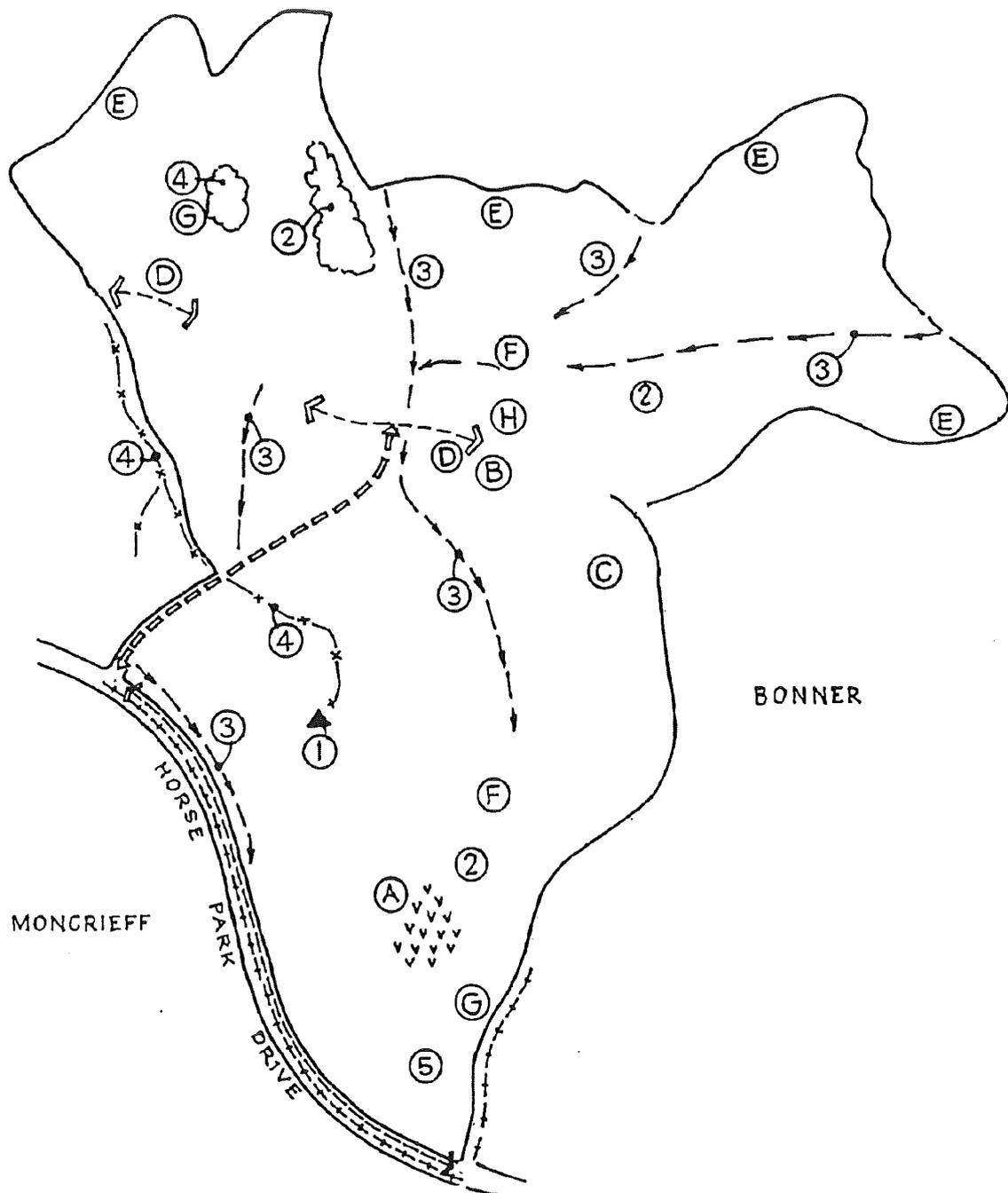
This is a relatively large, physically complex and interesting suburb located centrally within the Structure Plan area, and focuses on the Horse Park Wetlands and heritage precinct.

### GENERAL POLICIES (Refer to Fig. 7)

- A. The Horse Park Wetlands and heritage precinct is to be protected by inclusion within a substantial area of Urban Open Space (generally incorporating the curtilage boundaries identified by the Register of the National Estate listing for the wetland) which will be subject to specific planning policies and management practices. The precinct shall have high visibility and ease of access. The wetlands are to be protected by upstream stormwater management techniques.
- B. A local centre is to be located in the centre of the suburb incorporating areas of higher residential density.
- C. A primary school, neighbourhood oval and district playing fields are to be located upstream of the wetlands and central to the school catchment.
- D. Local bus routes to be provided through the suburb, encouraging public transport use.
- E. Edge roads are to be utilised wherever possible as a buffer between residential development and areas of open space. An edge road shall be predominantly used as a buffer where the adjoining open space contains substantial cultural heritage or environmental values.
- F. To ensure the integrity of water quality and flow to the wetland area, water management features are to be located upstream. The formation and design of these features will be the subject of further hydraulic studies.
- G. Opportunities are to be provided for small-scale community facility sites generally located in open space in convenient locations predominantly along public transport routes.
- H. Provide an area close to the local centre for a possible community facility site.
- I. Provide for an urban edge trail (equestrian and other uses) that will move incrementally as the urban edge develops.

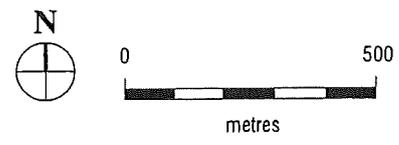
### SPECIFIC POLICIES (Refer to Figs.7 and 8)

- 1. A hilltop reserve lookout is to be located on the major spur of higher country to the west of wetlands area. This spur is to connect back to the permanent non-urban land to the north via open space.
- 2. Cultural natural and/or heritage sites are to be preserved within open space.
- 3. Existing drainage lines are to contribute to a linear park system.
- 4. Significant hilltops and ridges are to be retained in urban open space.
- 5. An area of higher density housing is to be provided adjacent to Amaroo Group Centre.



**LEGEND**

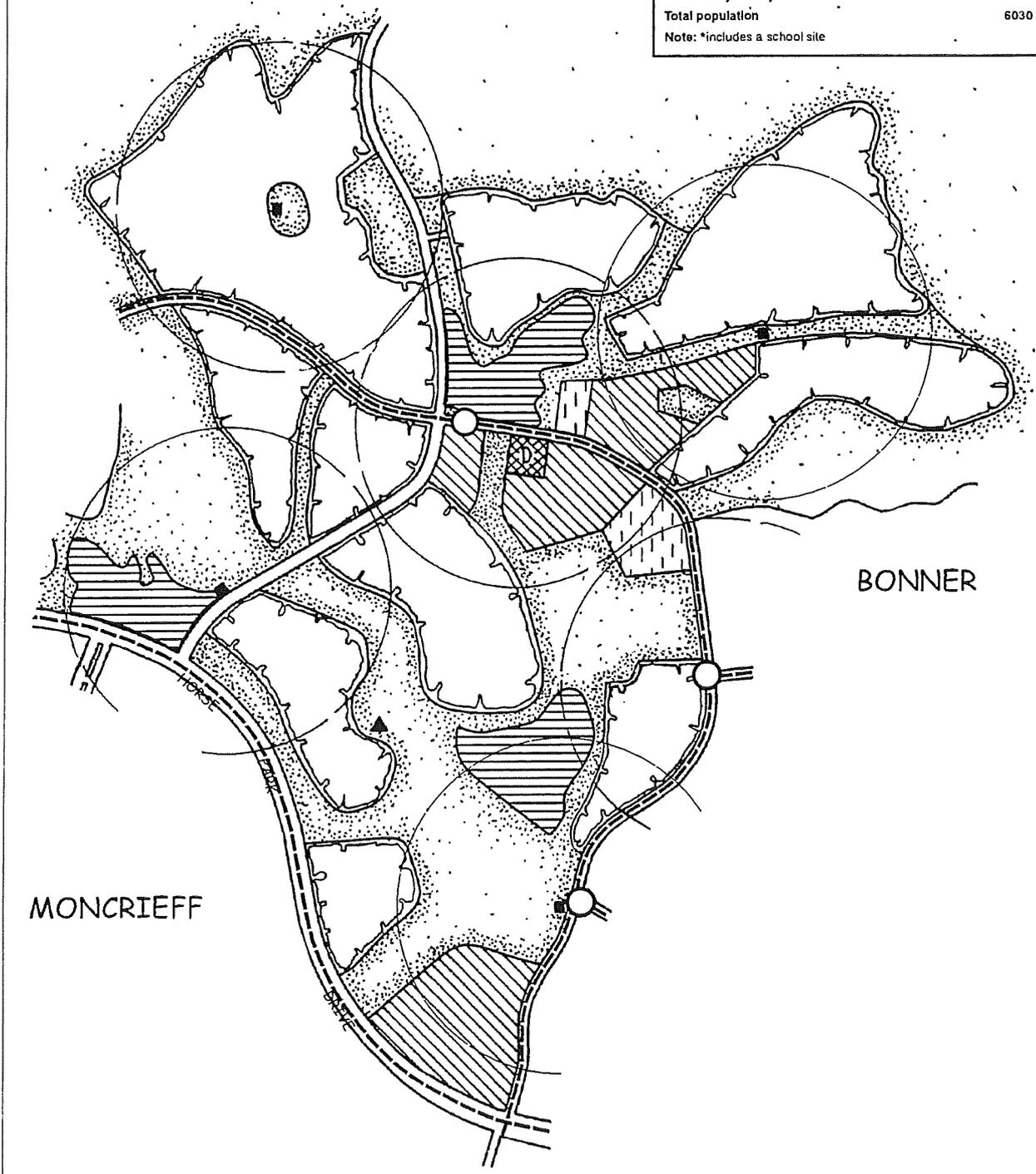
-  Boulevard
-  Ridge line
-  Drainage line
-  Possible bus route
-  Trunk cycleway (on-road)
-  Pedestrian underpass
-  Trees to be retained
-  Existing wetlands



**Figure 7**  
**Jacka**  
**Outline Plan generators**

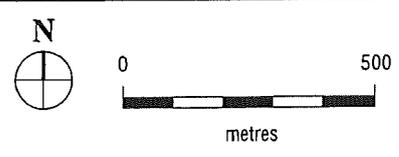
LAND TYPE	AREA(ha) approx	DWELLINGS approx.	POPULATION approx
Residential @ 13dw/ha and 2.6p/dw	153	1990	5170
Urban residential @20dw/ha and 1.8p/dw	24	480	860
Open space	90.2		
Community facility	4.3*		
<b>Total population</b>			<b>6030</b>

Note: \*includes a school site



**LEGEND**

-  Residential
-  Higher density residential
-  Open space
-  Community facility (including schools)
-  Local centre
-  Water detention feature
-  Lookout
-  Possible community facility site
-  Possible bus route
-  Possible bus stop
-  400m radius - 5min walk



**Figure 8  
Jacka - Outline Plan**

### **Moncrieff**

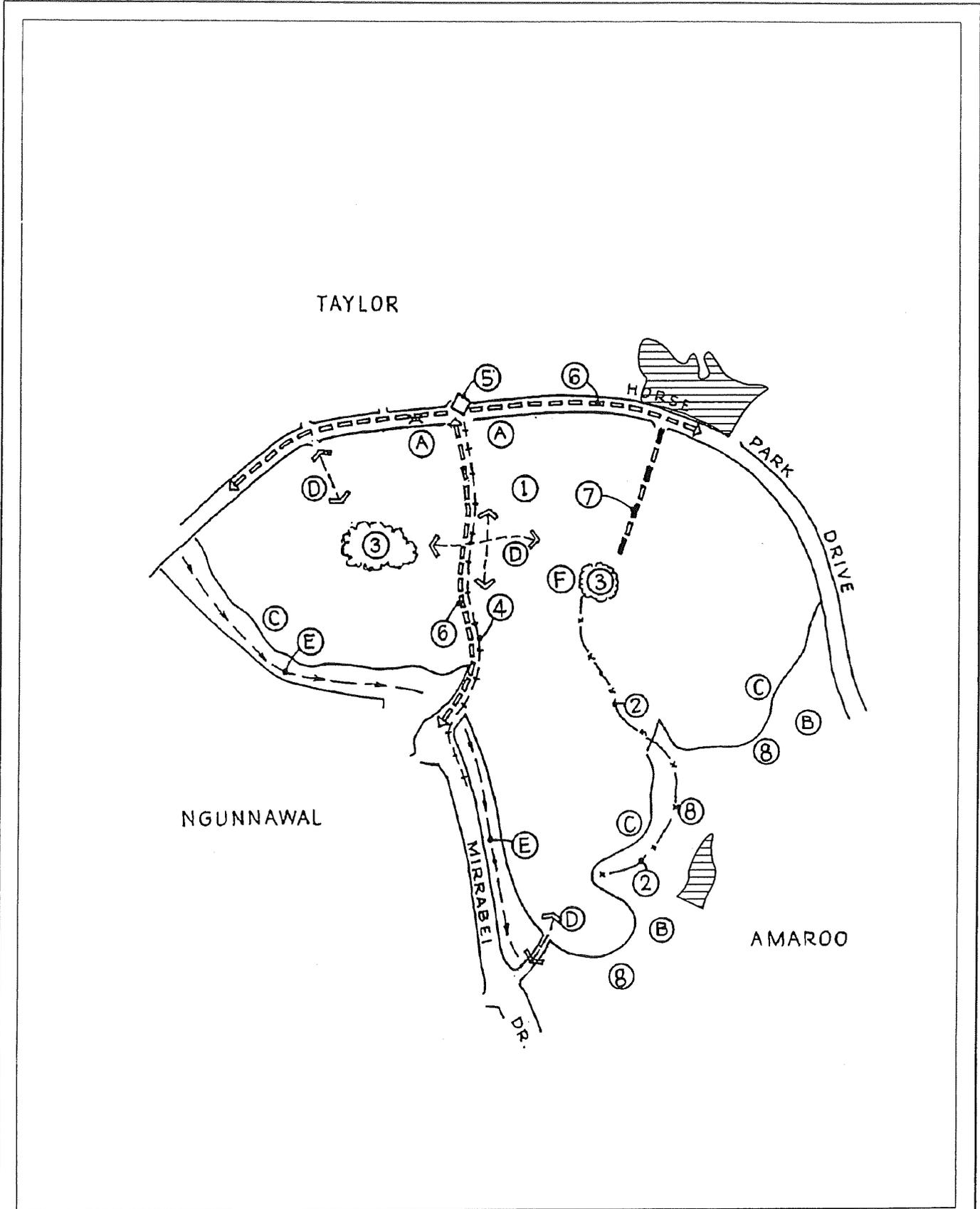
This is a relatively small suburb, essentially made up of three hills and defined around its north, eastern and western boundaries by Horse Park Drive and is located north of the existing suburbs of Ngunnawal and Amaroo. The suburb is to be developed to provide a strong sense of local identity, achieved by creating hilltop parks.

#### GENERAL POLICIES ( Refer to Fig.9)

- A. A group centre and higher density housing at the intersection of Horse Park and Mirrabai Drives shall be developed, in layout and design, on the principles of an 'urban village', closely aligned towards public transport use. Each of the intersecting roads shall be designed as urban boulevards, with at-grade pedestrian crossings. The precinct shall be integrated with the major open space system, directly to the north.
- B. Bushland revegetation shall be undertaken on the steeply sloped ridge on the eastern edge of Moncrieff overlooking the Amaroo District Playing Fields.
- C. Edge roads are to be utilised wherever possible as a buffer between residential development and areas of open space. An edge road shall be predominantly used as a buffer where the adjoining open space contains substantial cultural heritage or environmental values.
- D. Local bus routes are to be provided through the suburb, encouraging public transport usage.
- E. Open space spine is to be based on existing drainage paths.
- F. Opportunities are to be provided for small-scale community facility sites in open space in convenient locations predominantly along public transport routes.

#### SPECIFIC POLICIES (Refer to Figs.9 and 10)

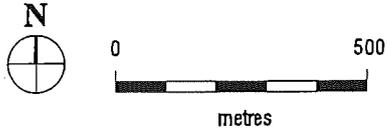
- 1. A site is to be reserved for a potential secondary college adjacent to the group centre.
- 2. The east-west ridge that connects to a generally north-south avenue to Horse Park Drive is to be retained and protected.
- 3. Significant hilltops and ridges are to be retained in urban open space.
- 4. A trunk cycleway is to be provided along Mirrabai Drive connecting with trunk cycleway on Horse Park Drive.
- 5. An Inter-town Public Transport (IPT) route is to be provided along Mirrabai Drive with a terminus to be located at the group centre.
- 6. Roads are to be designed as boulevards.
- 7. The road connection to be designed as an avenue and align with water management feature as a terminating view.
- 8. No development is to be permitted on eastern escarpment.



**LEGEND**

-  Boulevard
-  Avenue
-  Ridge line
-  Drainage line
-  Possible bus route
-  Trunk cycleway (on-road)

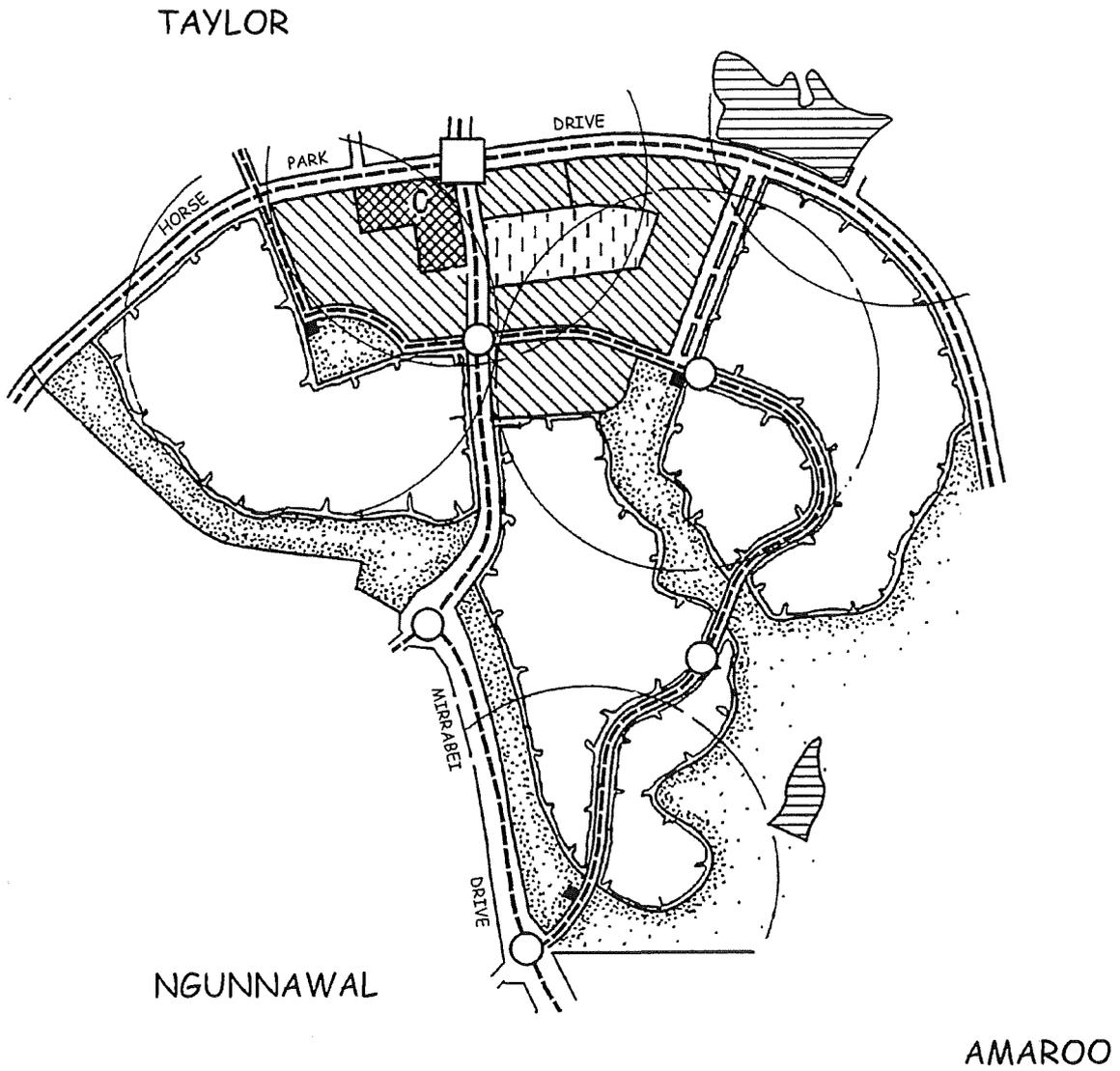
-  Trees to be retained
-  Bus terminus



**Figure 9  
Moncrieff  
Outline Plan generators**

LAND TYPE	AREA(ha) approx	DWELLINGS approx.	POPULATION approx
Residential @ 13dw/ha and 2.6p/dw	100	1300	3380
Urban residential @20dw/ha and 1.8p/dw	24	480	860
Open space	22		
Community facility	4.5*		
<b>Total population</b>			<b>4240</b>

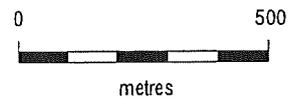
Note: \*includes a reserved community site



**LEGEND**

- Residential
- Higher density residential
- Open space
- Community facility (including schools)
- Group centre
- Water detention feature

- Possible community facility site
- Possible bus route
- Possible bus stop
- Possible bus terminus
- 400m radius - 5min walk



**Figure 10  
Moncrieff - Outline Plan**

## *Taylor*

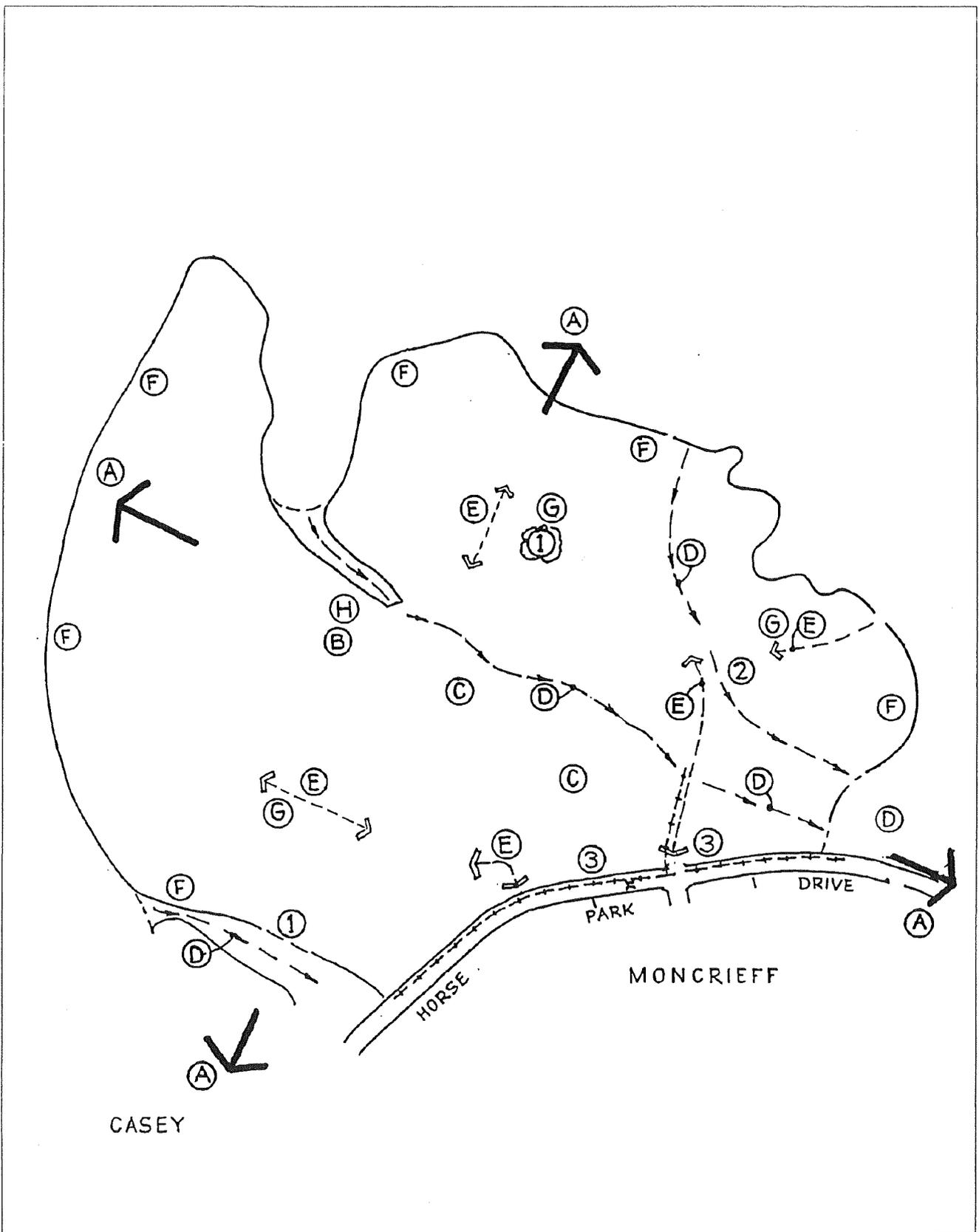
A relatively large suburb which provides the highest (Australian Height Datum) residential land in Canberra, is located in the north west corner of North Gungahlin.

### GENERAL POLICIES (Refer to Fig. 11)

- A. Two axes are defined which give structure to the area; North-south from the high country north of Taylor with a line of site to Black Mountain Tower, and east-west from Horse Park Wetland to One Tree Hill. These axes then form the basis for road and open space alignments.
- B. A local centre together with adjacent higher density housing is to be centrally located.
- C. District playing fields and a neighbourhood oval are to be located adjacent to government primary and high school sites.
- D. Landscaped floodways interconnect throughout the north of the suburb and terminate at a landscaped water management feature to the east.
- E. Local bus routes are to be provided through the suburb, encouraging public transport usage.
- F. Edge roads are to be utilised wherever possible as a buffer between residential development and areas of open space. An edge road shall be predominantly used as a buffer where the adjoining open space contains substantial cultural heritage or environmental values.
- G. Opportunities are to be provided for small-scale community facility sites in open space in convenient locations predominantly along public transport routes.
- H. Provide an area close to the local centre for a possible community facility site.
- I. Provide for an urban edge trail (equestrian and other uses) that will move incrementally as the urban edge develops.

### SPECIFIC POLICIES (Refer to Fig. 11 and 12)

- 1. A park is to be located on the hilltop.
- 2. Heritage site (European heritage - ruins) and adjacent significant trees are to be located in urban open space.
- 3. Part of the group centre and higher density housing shall be co-located opposite Moncrieff at intersection of major roads.



- LEGEND**
- Boulevard
  - Drainage line
  - Possible bus route
  - Trunk cycleway (on-road)
  - Trees to be retained

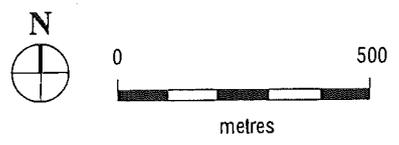
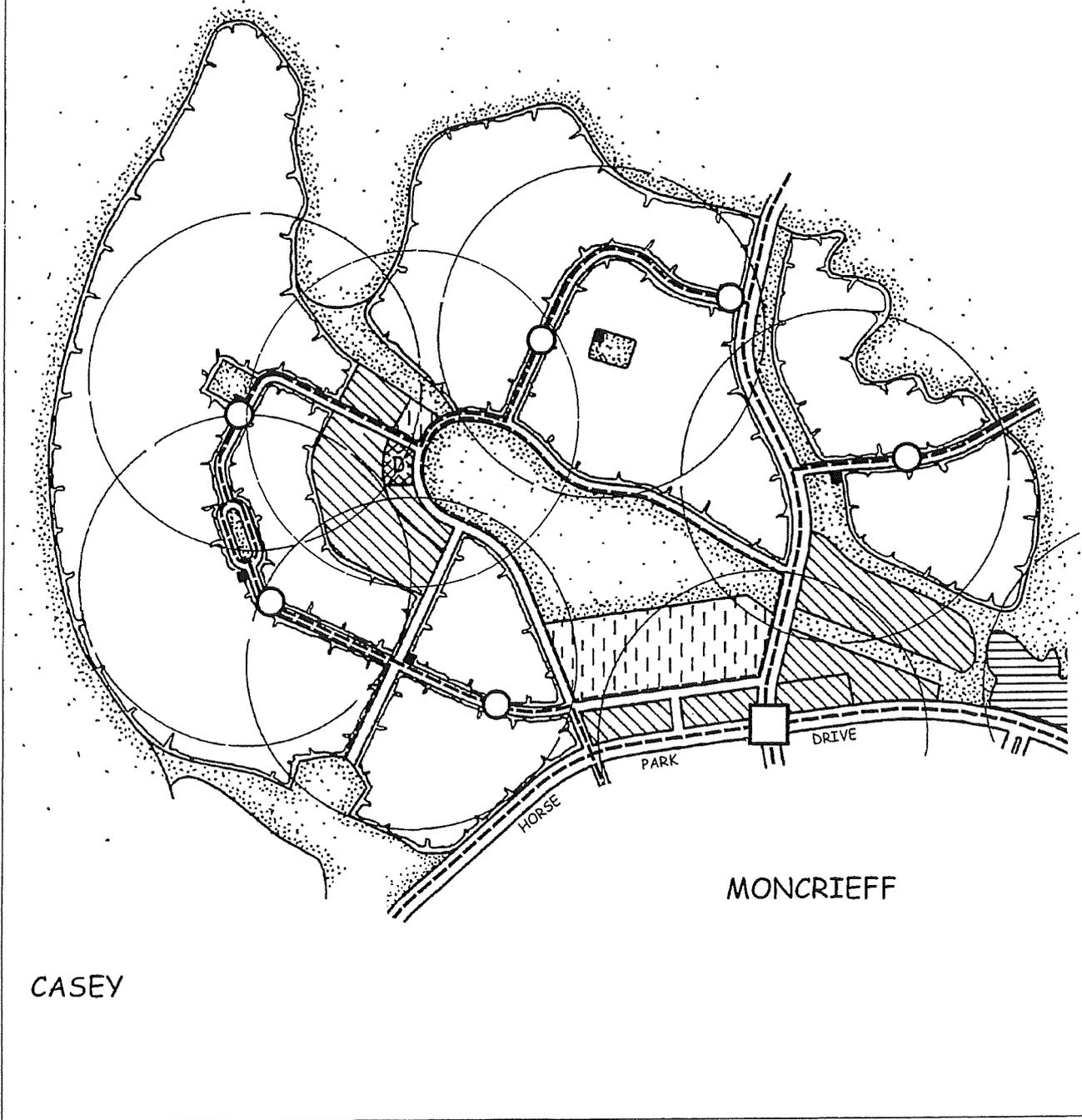


Figure 11  
**Taylor**  
**Outline Plan generators**

LAND TYPE	AREA (ha) approx	DWELLINGS approx.	POPULATION approx
Residential @ 13dw/ha and 2.6p/dw	206	2680	6970
Urban residential @ 20dw/ha and 1.8p/dw	23	460	830
Open space	48		
Community facility	10.6		
<b>Total population</b>			<b>7800</b>



LEGEND

-  Residential
-  Higher density residential
-  Open space
-  Community facility (including schools)
-  Local centre
-  Water detention feature

-  Possible community facility site
-  Possible bus route
-  Possible bus stop
-  Possible bus terminus
-  400m radius - 5min walk

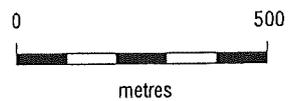


Figure 12  
Taylor - Outline Plan

## Casey

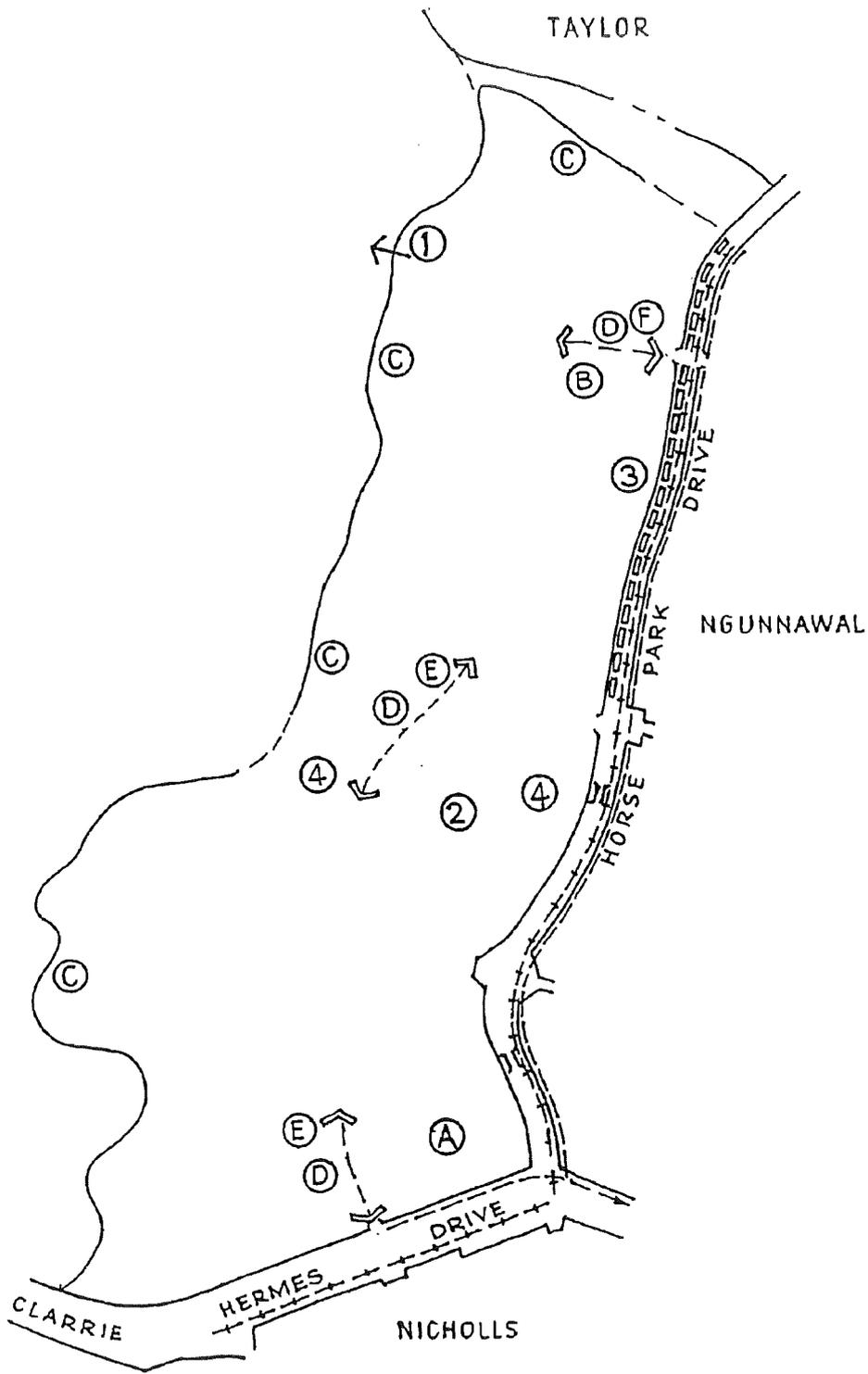
This suburb forms the western edge of North Gungahlin and occupies a relatively narrow strip of land between Horse Park Drive and the treed ridge lines to the west which form the visual backdrops, separating the suburb from Hall and the Kinlyside valley.

### GENERAL POLICIES (Refer to Fig. 13)

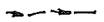
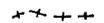
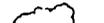
- A. A group centre with adjoining higher density housing and an open space site is to be developed in the southeastern corner at the intersection of Horse Park and Clarrie Hermes Drives.
- B. A local centre with adjoining higher density housing and an open space site is to be located to the north of the suburb.
- C. Edge roads are to be utilised wherever possible as a buffer between residential development and urban open space. An edge road shall be predominantly used as a buffer where the adjoining open space contains substantial cultural heritage or environmental values.
- D. A local bus route is to be provided through the suburb via the local and group centres and areas of higher density.
- E. Opportunities are to be provided for small-scale community facility sites in open space in convenient locations predominantly along public transport routes.
- F. Provide an area close to the local centre for a possible community facility site.

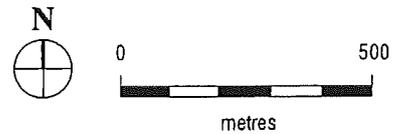
### SPECIFIC POLICIES (Refer to Figs.13 and14)

- 1. A possible road connection to the Kinlyside Valley is to be identified to the north of the suburb.
- 2. A neighbourhood playing field to be located within the east-west linear park.
- 3. A significant stand of trees with high conservation value marking an old north-south road alignment adjacent to Horse Park Drive is to be protected, retained and managed within the urban open space system. An edge road is to be provided adjacent to the old north-south road alignment and adjacent trees.
- 4. Stands of trees with high conservation value bisect the suburb and enhance the bushland character of the resultant open space linkage back to the ridge. This link is to be preserved in the form of an east-west linear park.



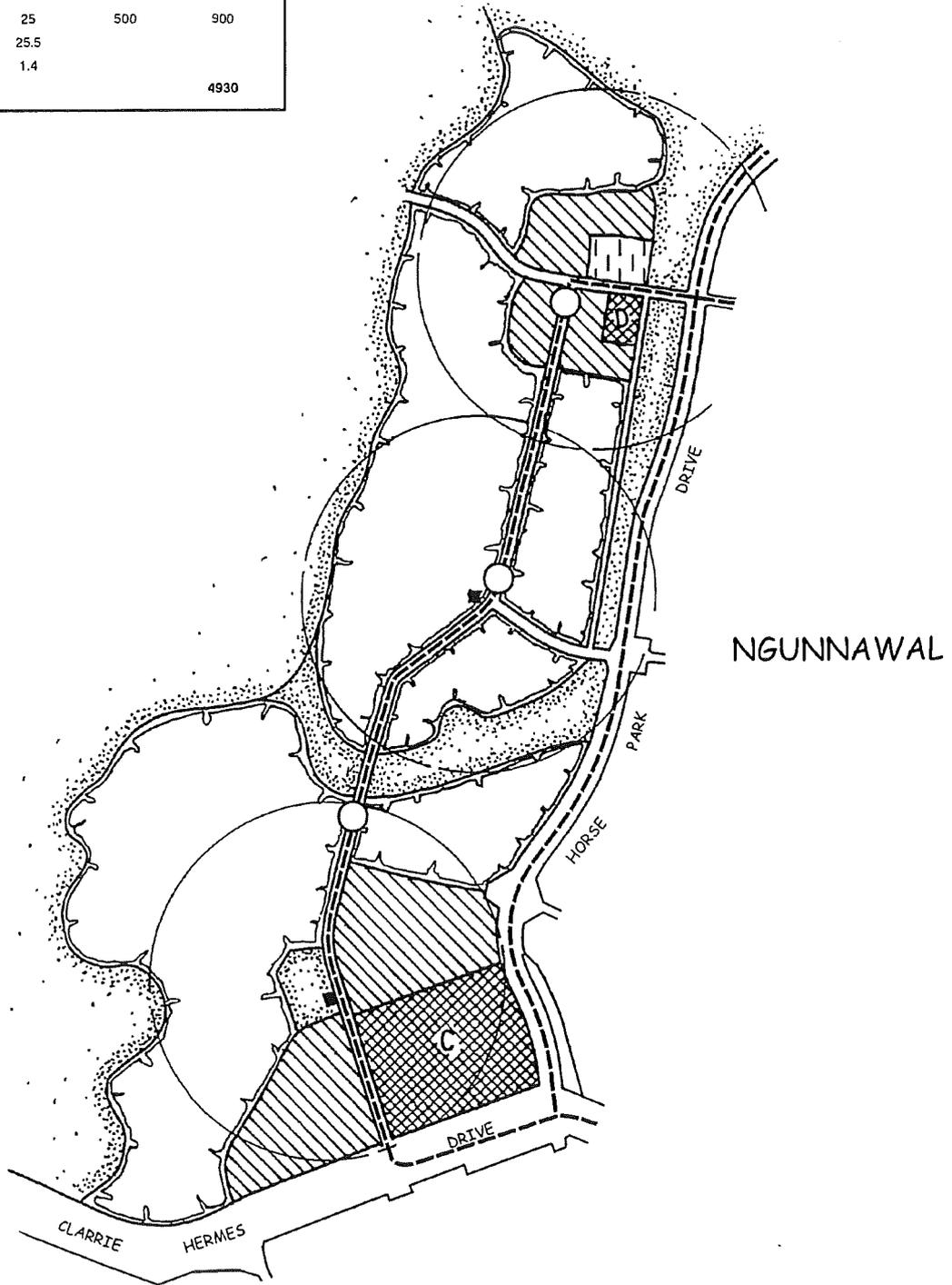
**LEGEND**

-  Boulevard
-  Drainage line
-  Possible bus route
-  Trunk cycleway (on-road)
-  Pedestrian underpass
-  Trees to be retained



**Figure 13**  
**Casey**  
**Outline Plan generators**

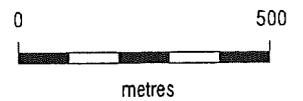
LAND TYPE	AREA(ha) approx	DWELLINGS approx.	POPULATION approx
Residential @ 13dw/ha and 2.6p/dw	119	1550	4030
Urban residential @20dw/ha and 1.8p/dw	25	500	900
Open space	25.5		
Community facility	1.4		
<b>Population Total</b>			<b>4930</b>



**LEGEND**

-  Residential
-  Higher density residential
-  Open space
-  Community facility (including schools)
-  Local centre
-  Group centre

-  Possible community facility site
-  Possible bus route
-  Possible bus stop
-  400m radius - 5min walk



**Figure 14  
Casey - Outline Plan**

### ***Part Ngunnawal***

(Refer to Fig. 15A)

A relatively small area of low-density housing remains to be developed in north west Ngunnawal.

A local park protecting existing stands of trees is to be established on the small ridge along the eastern flank of this area. Identify possible site for community facility.

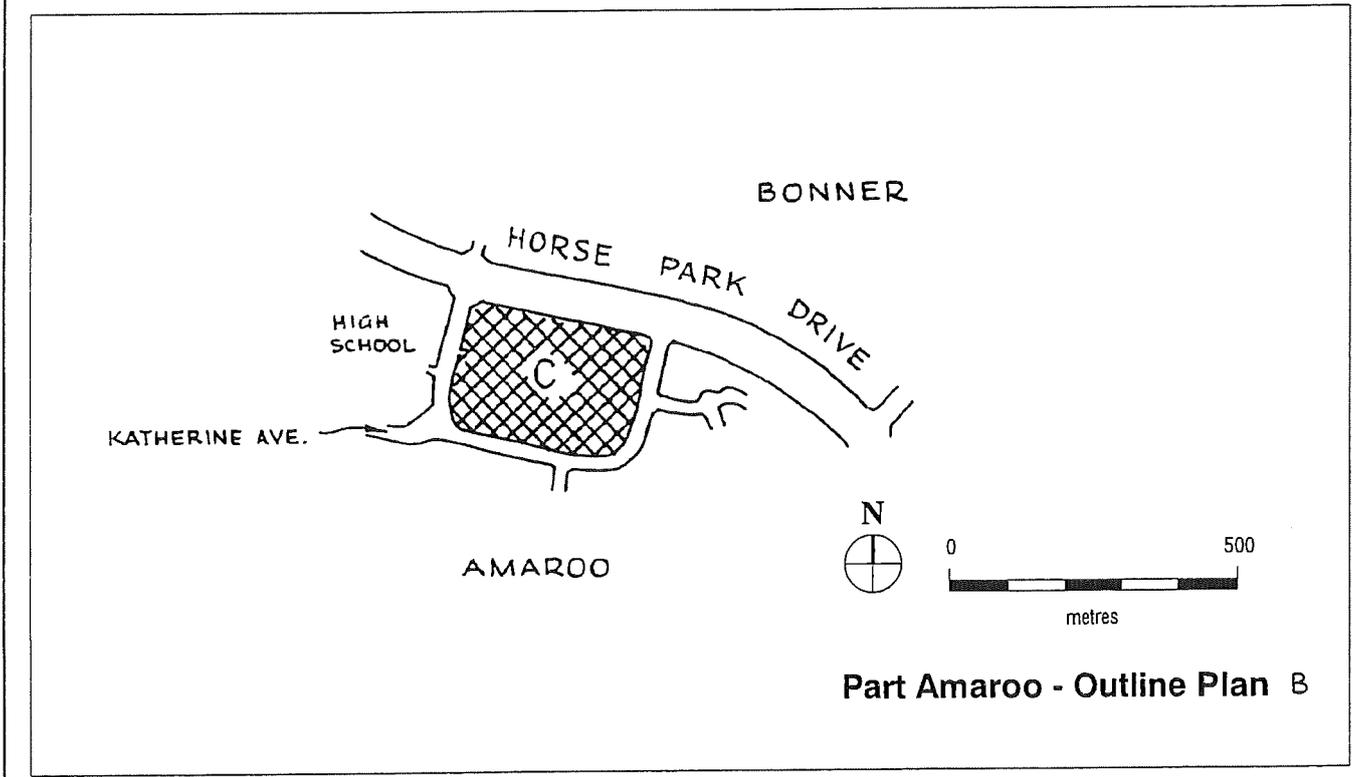
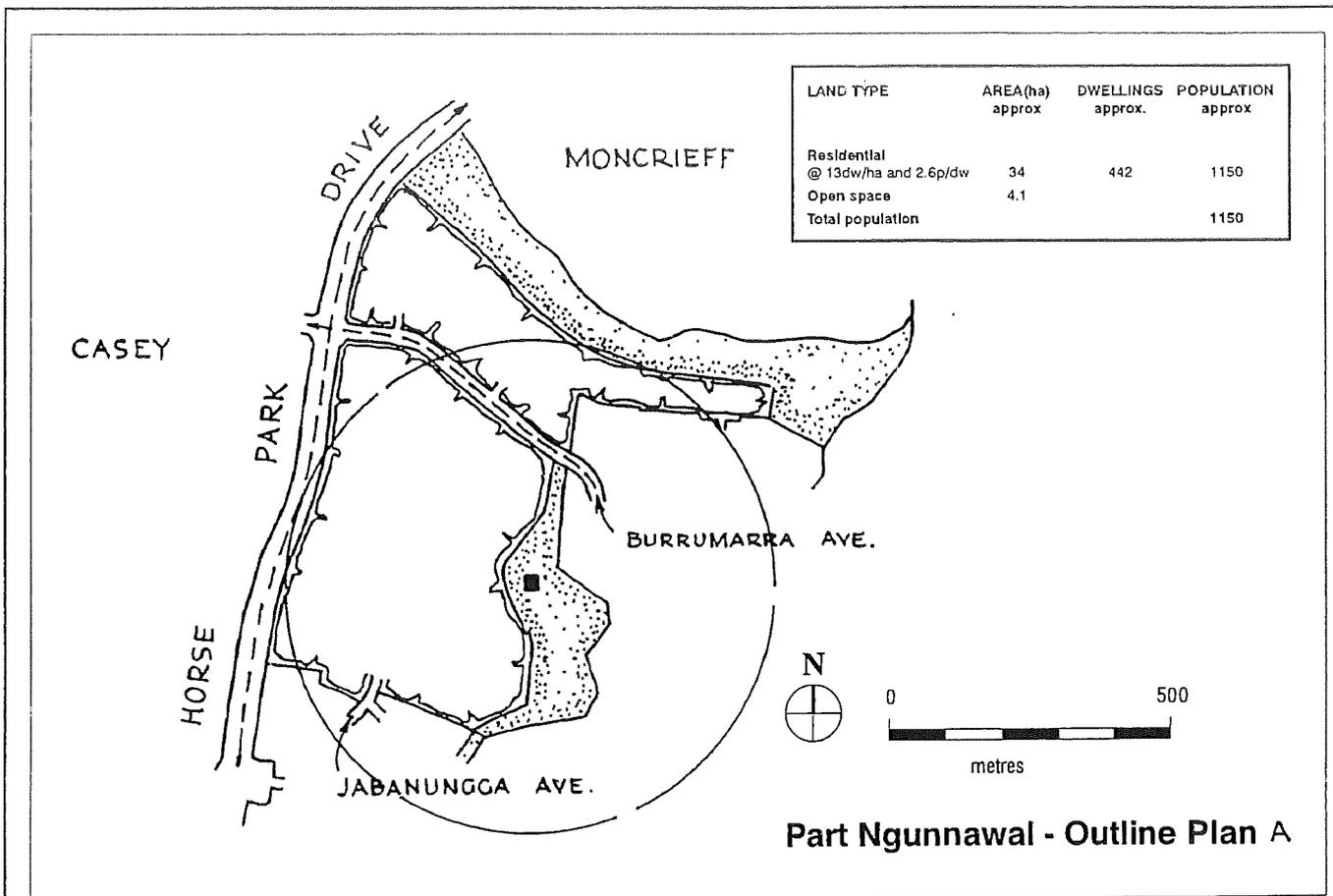
Burrumarra Avenue is to be extended through the precinct as the main collector road, providing a direct link to Casey Local Centre.

### ***Part Amaroo***

(Refer to Fig. 15B)

The area comprises that part of the Amaroo Community Precinct containing a proposed group centre.

Development of the group centre shall be in stages and incorporate opportunities for commercial uses, community facilities and higher density residential housing.



**LEGEND**

- |   |  |   |                                  |
|---|--|---|----------------------------------|
|  | Residential                            |  | Water detention feature          |
|  | Higher density residential             |  | Possible community facility site |
|  | Open space                             |  | Possible bus route and stop      |
|  | Community facility (including schools) |  | 400m radius - 5min walk          |
|  | Local centre                           |  | Bus terminus                     |
|  | Group centre                           |   |                                  |

**Figure 15  
Ngunnawal/Amaroo -  
Outline Plans**