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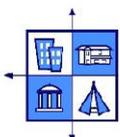
## Planning Study Report

Prepared for Riverview Projects (ACT) Pty Ltd

# West Belconnen

# Proposed Draft Amendment to the National Capital Plan

14 November 2014



**RIVERVIEW PROJECTS (ACT)**  
ABN 165 870 539  
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**ACT**  
Government  
Economic Development



Land  
Development  
Agency

CANBERRA FIRST



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## INTRODUCTION

The National Capital Authority (NCA) is established under the *Australian Capital Territory (Planning and Land Management) Act 1988* (the Act). The National Capital Plan came into effect on 21 January 1990. In accordance with the Act, the NCA is required to keep the National Capital Plan under constant review and to propose Amendments to it where necessary.

The object of the National Capital Plan is *'to ensure that Canberra and the Territory are planned and developed in accordance with their national significance.'*

The National Capital Plan identifies matters of national significance in the planning and development of Canberra and the Territory. These are:

- The pre-eminence of the role of Canberra and the Territory as the National Capital.
- Preservation and enhancement of the landscape features which give the National Capital its character and setting.
- Respect for the key elements of Walter Burley 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.
- The development of a city which both respects the environmental values and reflects national concerns with sustainability of Australia's urban areas.

Within this legislative framework, key objectives of the National Capital Plan are to:

- Maintain and enhance the landscape character of Canberra and the Territory as the setting for the National Capital.
- Provide a plan offering flexibility and choice to enable the Territory Government to fulfill its functions properly.
- Support and promote environmentally responsible urban development practices.

The ACT Government's ACT Planning Strategy (2012) provides for Canberra's future growth over the next 30 years; it identifies the West Belconnen for 'urban investigation' following the earlier identification of a portion of the site (in the Canberra Spatial Plan 2004) as being suitable for residential development.

This report proposes that an amendment be made to the National Capital Plan to enable urban development to occur at West Belconnen. The amendment will provide for the continuation of urban development in the Territory, while ensuring adequate protection of the National Capital Open Space System and other key elements of the National Capital Plan.

The ACT Planning and Land Authority (ACTPLA) will be progressing a Draft Variation to the Territory Plan in parallel with the proposed amendment. An amendment to the National Capital Plan is required before the Draft Variation to the Territory Plan can be implemented.

The ACT Land Development Agency has principal carriage of this matter within the ACT administration and has appointed Riverview Projects (ACT) Pty Ltd (previously referred to as the Riverview Group) to manage the project.

# 1 BACKGROUND

The ACT Land Development Agency, on behalf of the ACT Government, has proposed that the town of Belconnen be extended to the west to provide for urban growth. This follows the identification of this area as a future urban investigation area in the ACT Planning Strategy 2012.

The West Belconnen proposal is for the development of the land at West Belconnen and in adjacent NSW for residential and related purposes and for a contiguous conservation corridor along the Murrumbidgee River and Ginninderra Creek. The urban residential area will include open space, community, school and recreation facilities, wetlands and Creeks, roads, streets and an off-road movement system as well as retailing and employment uses.

42% of the ACT site area and 34% of the NSW area is proposed to be zoned as a conservation corridor along the Murrumbidgee River and Ginninderra creek. The balance of the land is anticipated to yield up to 6,500 dwellings in the ACT and 5,000 in NSW.

Development is intended to commence at Stockdill Drive (the eastern boundary of the site), and extend westward in stages to the ACT/NSW border. Assuming a sales rate of approximately 300 dwellings per year the project will extend over a period of approximately forty years following commencement of sales. If sales proceed at a slower or faster rate the program will be adjusted accordingly.

This Planning Report provides the basis for a rezoning (and subsequent urban development) of the ACT land at West Belconnen. The land is proposed for rezoning by way of a variation to the National Capital Plan under the procedures established by the *Australian Capital Territory (Planning and Land Management) Act 1998*.

It is proposed that the Territory Plan will subsequently be amended under the procedures set out in Section 57 of the *Planning and Development Act 2007*.

Prior to the commencement of this report a Preliminary Risk Assessment (PRA) was prepared to define the scope of matters that warranted assessment. The PRA was prepared initially as a draft and circulated to the National Capital Authority and to ACT Government agencies. Comments were received and the PRA was amended to accommodate these. The PRA identified all matters at risk of being adversely impacted by the proposed rezoning and subsequent development of the land. Where these are relevant considerations under the National Capital Plan they are addressed in this report. The Territory Plan amendment will be supported by a planning study report that will address in detail a wide range of matters of interest to ACT Government Agencies, and particularly the ACT Planning Authority.

The West Belconnen project land includes areas in both the ACT and neighbouring NSW. As noted above this report will specifically address the requirements for the rezoning of the land under Commonwealth legislation; The NSW component of the site is subject to statutory controls pursuant to the *Yass Valley Local Environmental Plan 2013* which controls land use zoning and development in the NSW portion of the project area. A rezoning proposal has been prepared for submission to the Yass Valley Shire concurrently with the National Capital Plan and Territory Plan rezoning process.

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides statutory controls over certain matters of national environmental significance – typically species or habitats that are subject to environmental threat. It also covers Commonwealth land and, in the ACT land that is defined as “national land”; however there is no national or commonwealth land at the West Belconnen site. The project area contains three such elements: the pink tailed worm lizard, the golden sun moth and an area of yellow box red gum grassy woodland. Consequently the Commonwealth Department of the Environment has determined that a “strategic assessment” under part 10 of the EPBC Act should be conducted to assess the potential impact of the proposal on the lizard, moth and woodland. Rather than duplicate the assessment of these three matters this report references the Commonwealth assessment.

### 1.1 IMPLEMENTING THE ACT PLANNING STRATEGY

The proposal to rezone land at West Belconnen for urban development is in line with the ACT Government’s strategic planning intentions for the growth and development of Canberra. A portion of the West Belconnen site was identified for future residential development in the Canberra Spatial Plan (2004) and the development potential has been confirmed in the ACT Planning Strategy, (2012). In the Strategy the land is identified as being a “future urban investigation area” (ACTPLA, 2012, p. 40 fig 1.),(Figure 1).

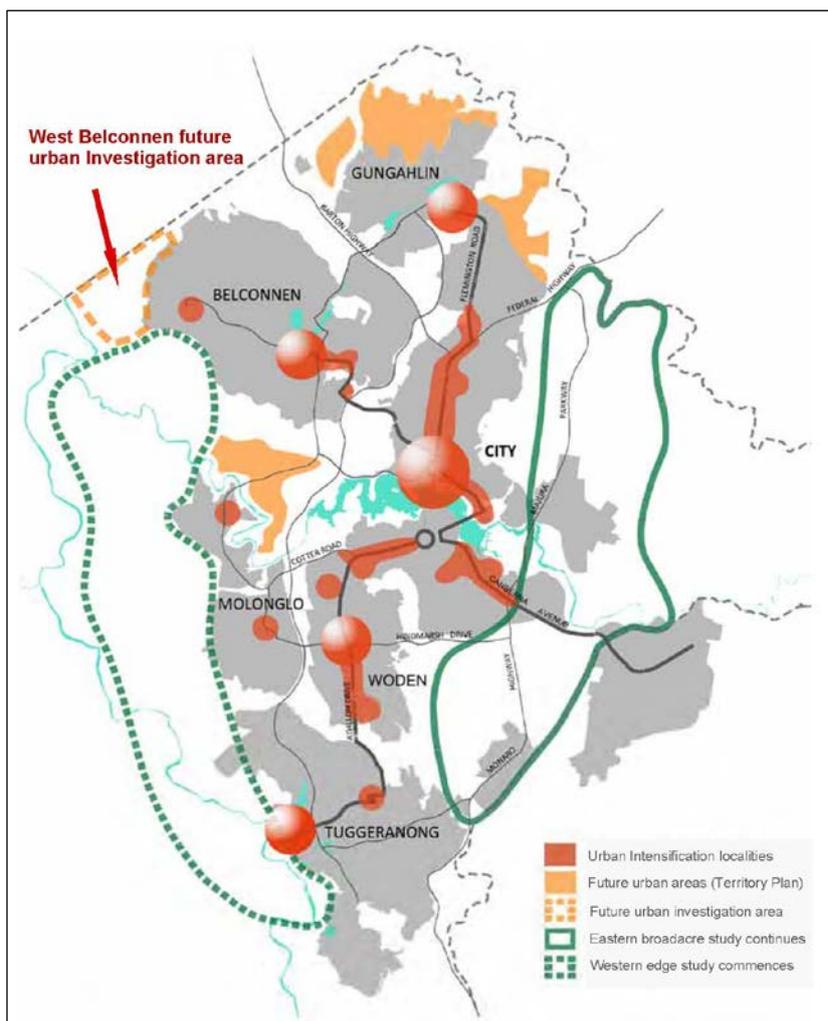


Figure 1: ACT Planning Strategy 2012

## 1.2 WEST BELCONNEN PROJECT VISION

The West Belconnen project is underpinned by a commitment to excellence in urban planning, commensurate with the role of Canberra as the National Capital. This commitment was articulated as a sustainability vision statement in 2009, provided below, which guides all aspects of the project.



### The Belconnen Project Sustainability Vision

"Creating a sustainable community of international significance in the Nation's capital."

The Riverview Group, working with the ACT and NSW Governments, will develop the site at Belconnen to achieve a vision of inspiring sustainable living, development practice and awareness. Achieving a high quality of life for the people living at Belconnen is at the heart of our project planning and design.

We will create a community that exemplifies World's Best Practice in its design, construction and long-term liveability. As a model of sustainable community living it will be a place and community that can be showcased throughout Australia and internationally.

**Project objectives:**  
To achieve our Vision we will challenge conventional industry thinking. We will employ practices, processes and systems that embody innovation and design excellence.

This project has been conceived and will be delivered on a fully integrated and audited triple bottom line basis.

Our project will:

- » Be sustainable over time, socially, economically and ecologically (with a low and reducing ecological footprint)
- » Respond to the local and global environment
- » Provide for future beneficial change to occur in design, infrastructure and regulatory mechanisms
- » Be cost effective, replicable and measurable
- » Act as a new model that others can follow.





## Guiding Principles for Sustainable Results

The principles below will direct decision-making by all project management, sub-consultants and referral agencies in the delivery and development of the Belconnen site. They reflect national priorities and Federal, State and Territory Government policies on housing affordability, climate change and environmental protection.

### PARTNERING PRINCIPLES

- Ptnr 1. Partnering is essential to this project and the scale and timeframe will allow for positive partnerships to grow and thrive
- Ptnr 2. Partnering with public agencies is a cornerstone of our approach
- Ptnr 3. Engaging the community in design and governance is fundamental to the delivery of the project.
- Ptnr 4. Designing the project for community ownership and ultimate community control
- Ptnr 5. Supporting community housing through public and private partnering arrangements
- Ptnr 6. Collaborating with research and educational institutions to drive innovation.

### EVALUATION PRINCIPLES

- Eva 1. Identifying and delivering realistic and costed initiatives
- Eva 2. Providing independent peer review of project proposals and project outcomes
- Eva 3. Using recognised international and national benchmarks for sustainability performance to publicly report and raise awareness of project outcomes
- Eva 4. Empowering resident and community monitoring and management of sustainability performance
- Eva 5. Encouraging a culture of continuous improvement.

### ECOLOGICAL PRINCIPLES

- Eco 1. Acknowledging the intrinsic value of all species and the special role and regional significance of the Murrumbidgee river corridor and Gininnderra Creek
- Eco 2. Respecting and supporting the ecosystem functions of air, soil and water, recognising the importance of living and non-living environmental resources
- Eco 3. Reducing greenhouse gas emissions through innovative products and place design, material selection and service provision
- Eco 4. Recognising our natural ecological limits and minimising our resource, water and energy consumption
- Eco 5. Using existing local infrastructure to deliver efficient renewable services and reusable resources
- Eco 6. Enhancing local opportunities for food production and production of materials
- Eco 7. Fostering a deep sense of respect for and connection to the land, flora and fauna.

### SOCIAL AND CULTURAL PRINCIPLES

- Soc 1. Respecting and honouring Aboriginal and non-Aboriginal cultural, historical and spiritual values, including integrating with the existing rich, social fabric of Belconnen
- Soc 2. Designing for social equity, affordability, diversity and interdependence, honouring differences and catering for the needs of individuals through all stages of life
- Soc 3. Maximising health, safety and comfort of the built environment to provide enduring quality of life
- Soc 4. Instilling awareness and supporting education of sustainability values, technology and lifestyles
- Soc 5. Using creative and robust design solutions to create a continuing sense of place and beauty that inspires, affirms and ennobles
- Soc 6. Designing neighbourhoods that support and encourage community interactions through imaginative, functional and enjoyable public spaces

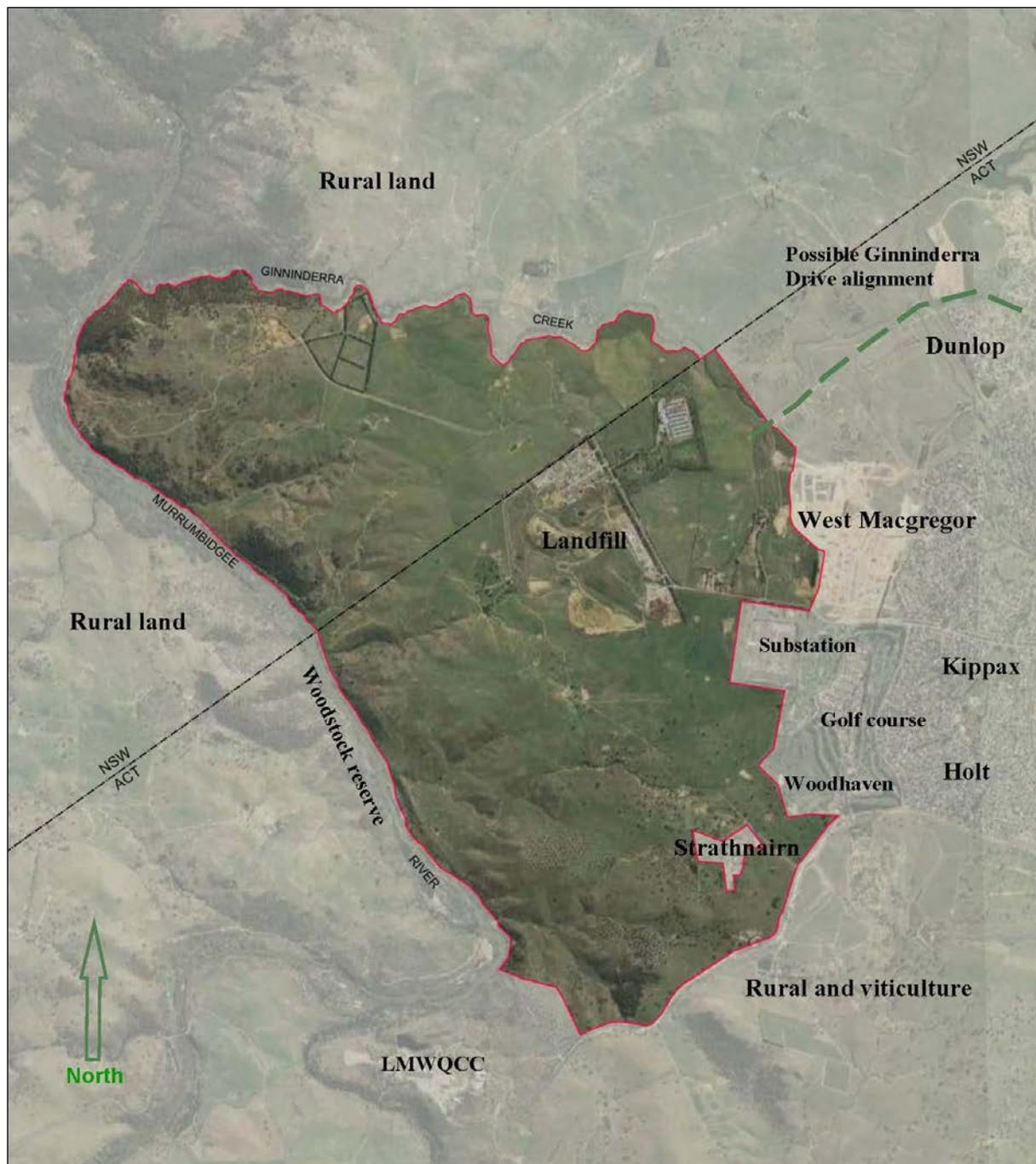
### ECONOMIC PRINCIPLES

- Econ 1. Delivering a financial return to the ACT Government recognising their sovereign interest in the land
- Econ 2. Recognising the opportunities provided by the project's scale and low capital base to achieve high-level sustainability outcomes while delivering profitability to joint venture partners
- Econ 3. Building on existing local infrastructure
- Econ 4. Ensuring long-term economic viability through design excellence and community building
- Econ 5. Minimising obsolescence through design of enduring component life cycle, allowing for disassembly and change
- Econ 6. Integrating with the Belconnen commercial, retail and employment networks
- Econ 7. Growing a formal and informal green economy that fosters local jobs and builds regional learning around green innovation and technology

### 1.3 SITE DESCRIPTION

The land that is the subject of the West Belconnen rezoning proposal is shown in Figure 2. It includes the bulk of the land in the ACT that has been identified in the ACT Planning Strategy as suitable for “urban investigation”, as well as adjoining land in NSW.

The site is at West Belconnen, immediately beyond the existing suburbs of Holt and West Macgregor. The Murrumbidgee River provides the south western and western boundary and Ginninderra Creek is the northern boundary for the NSW land. The site is immediately adjacent to



**Figure 2: West Belconnen Study Area**

the Canberra Substation and the Magpies Golf Club, a portion of which has been rezoned (in 2012) for the Woodhaven residential development. Vineyard plantings and rural uses occupy the land to the east of the project site across Stockdill Drive and the Lower Molonglo Water Quality Control Centre (LMWQCC) is at the end of Stockdill Drive to the south of the site. Woodstock Nature Reserve is located along the southern bank of the Murrumbidgee River immediately opposite the site in the ACT as well as between the project site and the LMWQCC. The Strathnairn Arts Centre is located on a separate parcel of land within Block 1605.

The balance of the neighbouring land in the ACT and all of the land in NSW is devoted to rural uses.

The largest portion of the ACT land , block 1605 (refer to Figure 3), is rural land extending from the land fill site to the Murrumbidgee River; blocks 1606 and 1607 (which currently accommodates a sewer vent and the Bicentennial National Trail) are contiguous with block 1605. This land is held as leasehold by a Riverview company; it will be surrendered to the Territory at rural value if the rezoning proceeds. In the north of the site, across Parkwood Road, is an area of Territory Land which is largely unleased and undeveloped but which has possible urban potential and has been identified as such in the ACT Planning Strategy. This land is bounded by Parkwood Road, West Macgregor, Ginninderra creek and the Parkwood Egg farm adjacent to the ACT border. It is currently utilized as horse agistment paddocks. The Parkwood egg farm site (block 1322) and several smaller lots along Parkwood road currently used for business enterprises including a vet, plant nursery and boarding kennels, are also included in the study area.

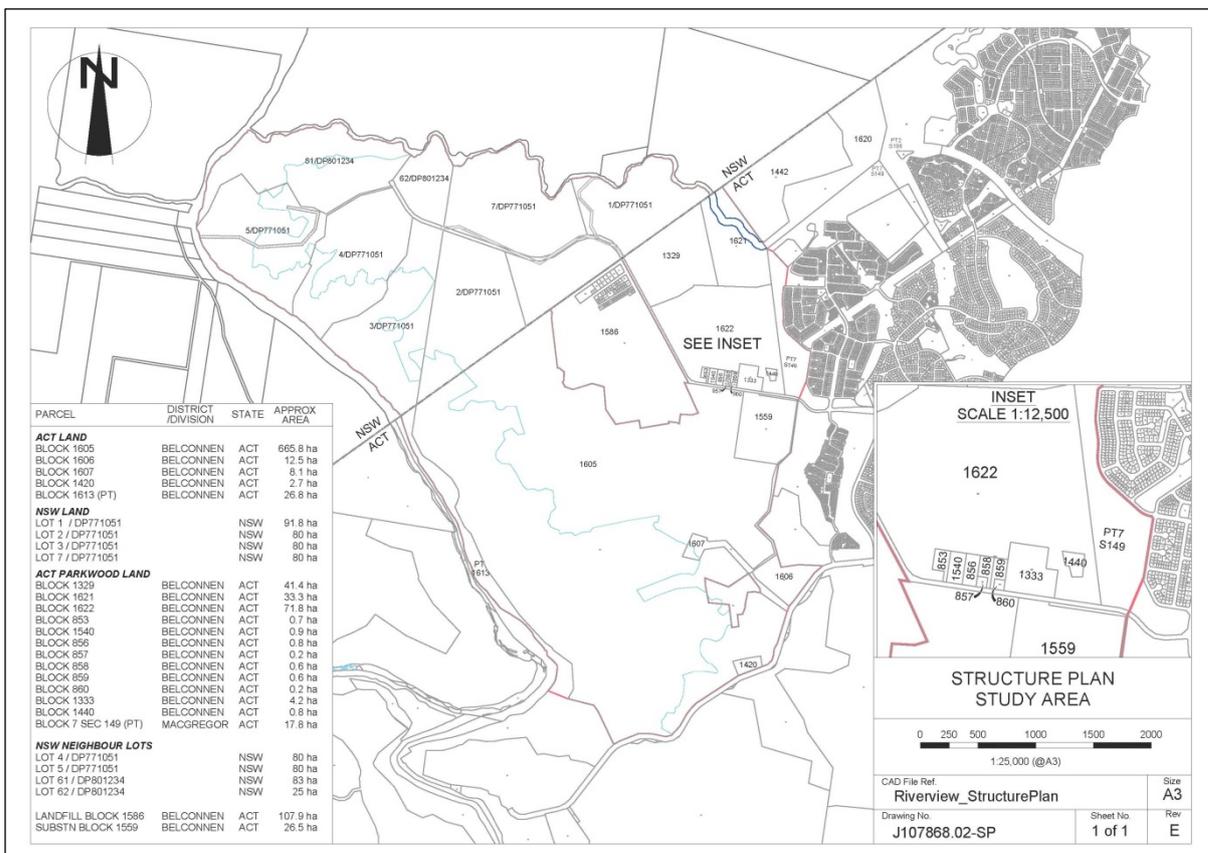


Figure 3: Cadastral Boundaries

The land immediately further north east (principally blocks 1442 & 1620), bordered on its eastern and southern sides by Ginninderra Creek is known as the Jarramlee and Macgregor offset areas (see Figure 10) and has been identified as an environmental offset area related to the development of the suburb of Lawson. There is a possibility that Ginninderra Drive may connect through this area, subject to environmental considerations, and consequently it will be included for consideration in this report to the extent required to establish the potential impact of a road connection.

The Belconnen land fill site is central to the project area between the block 1605 and Parkwood Road.

Riverview interests also own 332ha of freehold land over 4 lots in NSW which is adjacent to the rural lease land. This land has urban development potential and has been identified in the Yass Shire Local Environment Plan as being subject to potential rezoning. This land, together with an area of neighbouring NSW land (4 lots held under 4 ownerships) is bounded by the Murrumbidgee River and Ginninderra Creek; it is a “peninsula” that is only accessible from the ACT.

The ACT Planning and Land Authority has advised that proposals for rezoning blocks 1605 & 1606 should be set with a broader structure planning context that incorporates the land fill site and the surrounding land north of Parkwood Road. This view has been echoed by NSW planning authorities who have said that consideration of the NSW land should be set within a broader context as it is closely integrated to the ACT. The larger area that is proposed to be included in the master planning exercise is depicted at Figure 2.

## 2 LANDSCAPE

### 2.1 THE NATIONAL CAPITAL LANDSCAPE SETTING

The introduction to the National Capital Plan elaborates in detail the importance of the landscape setting, and the design response to the landscape, as a basis for the planning of Canberra. At page VII the National Capital Plan says as follows:

*“Adherence to the vision of the National Capital as a “great and beautiful city”, has ensured that the immediate landscape setting of the City as well as the distant mountains in the Australian Capital Territory have been consciously protected from development; has protected the environment of the ACT from excessive pollution; has created the open space system which separates the individual towns yet binds the whole together into the city of Canberra; and has preserved the integrity of land and buildings for national purposes.”*

The introduction also lists (again on page VII) several “matters of national significance in the planning and development of Canberra...” and includes:

*“Preservation and enhancement of the landscape features which give the National Capital its character and setting”*

The Plan is explicit in its references to the legacy of the original Griffin plan and the need to protect the Griffin legacy. This is set out in detail commencing on page IX of the introduction to the Plan. The legacy is to be protected in three ways, two of which are particularly relevant to the West Belconnen proposal (the third relates to existing built elements and is not relevant); these are:

*“a. fostering recognition of the 1918 Griffin Plan as a work of national and international cultural significance, and conserve those elements that contribute to this significance in a sustainable manner whilst allowing for the evolution of the city in contemporary terms, and*

*b. recognising that Canberra is a young city and ensure that future development continues to give expression to the visual geometry, built form, landscape and cultural vitality of the 1918 Griffin Plan.”*

A number of prescriptions (listed below) for building on the legacy are also provided, but these relate specifically to the central national Area, its landscape setting and approaches which will not be affected by the West Belconnen project.

The use of topography as an integral design feature and as a setting is highlighted on page XV of the plan where the design philosophy is summarized as follows:

*“Canberra has been developed as a series of separate but linked towns, established in valleys and shaped and separated from each other by a system of open space. This arrangement has protected the major hills and ridges from development, and has created a scenic backdrop and natural setting for the urban areas. It has reinforced the garden character for which Canberra is renowned. This landscape setting makes a major contribution to the environmental quality which is a feature of Canberra’s character. There is a need to conserve and enhance the landscape setting.”*

Against this background an evaluation of the West Belconnen proposal in a landscape context was conducted as an early step in the planning process. This evaluation has found that the site, which will involve contiguous development to NSW land, will enhance the landscape principles of the Plan as discussed below. Importantly, it will provide a “scenic backdrop and natural setting” for West Belconnen, with containment of the western extension of Belconnen by geographic features (the Murrumbidgee River and adjacent hills) rather than by the current artificial line of the ACT/NSW border. The great majority of the length of the ACT border is defined by natural water catchment boundaries, the border at Belconnen is a simple straight line, without any reference to geography or the landscape setting.

This is elaborated on in more detail below and in the five following diagrams.

Figure 4 illustrates the way in which, at the metropolitan scale, the currently existing urban Canberra is set against and within a backdrop of inner hills; this diagram highlights the contours and emphasises the ridgelines that contain each of the separate towns that together comprise the metropolitan area – the Woden Valley is clearly defined as a valley, inner north Canberra is set between the Black Mountain and the Ainslie/Majura Ridges, and so on. The more recent development of East Molonglo can be seen to be a logical northward extension of Weston Creek with Mt Stromlo on its west and a prominent ridge separating it from Belconnen.

At the broader landscape scale it also illustrates the more dramatic backdrop that the Brindabella Ranges provide to the south and west of the City; the longer views to the Brindabellas are a prominent feature of the cityscape.

Figure 5 illustrates the way in which the landscape setting has been confirmed and given statutory effect. This diagram overlays the National Capital plan zonings (Hills Ridges and Buffers, River Corridors, Canberra Nature Park and Lake Burley Griffin) on the diagram. These constitute the metropolitan open space network which provides the landscape structure for the city.

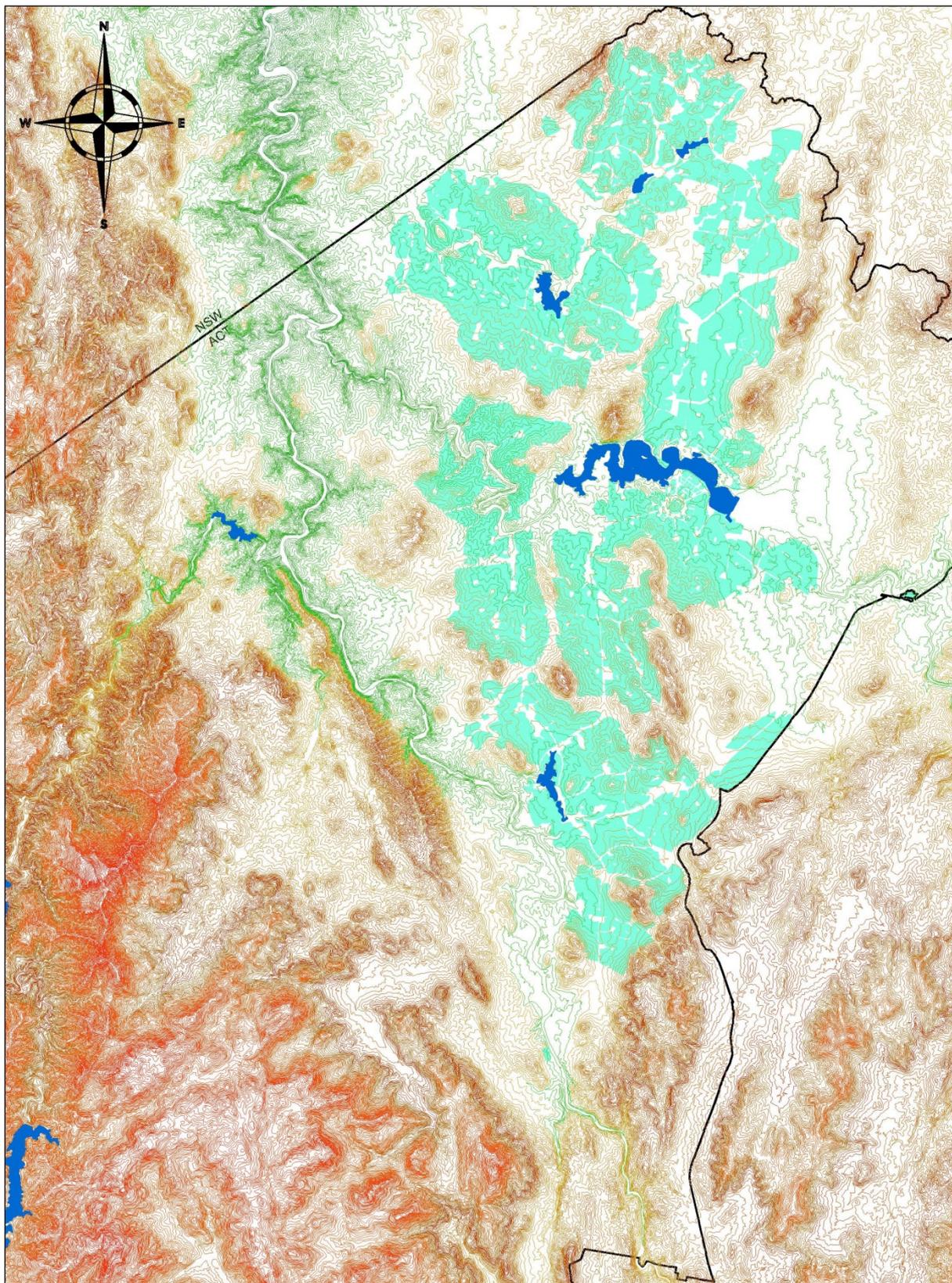
It is apparent in Figure 5 that the open space buffer that provides containment for the north western edge of Belconnen is aligned with the ACT/NSW border rather than to any geographic feature. This is contrary to the landscape design philosophy that has informed planning for each of the other towns over the metropolitan area. It is also interrupted by the Belconnen land fill site which includes a number of industrial and quasi industrial uses including an industrial estate abutting the border, the antithesis of a landscape buffer. The West Belconnen proposal offers an opportunity to review and improve on this position.

Figure 6 again shows urban Canberra at the metropolitan scale, with the proposed West Belconnen development included, and extending across the border. The westward extension is contained by the Murrumbidgee River and a range of hills immediately to the north and the hills and ranges beyond the Murrumbidgee to the west.

Figure 7 shows the statutory control extending across the border. The ACT River corridor zoning extends to the border, with similar zoning surrounding the extended urban area in NSW.

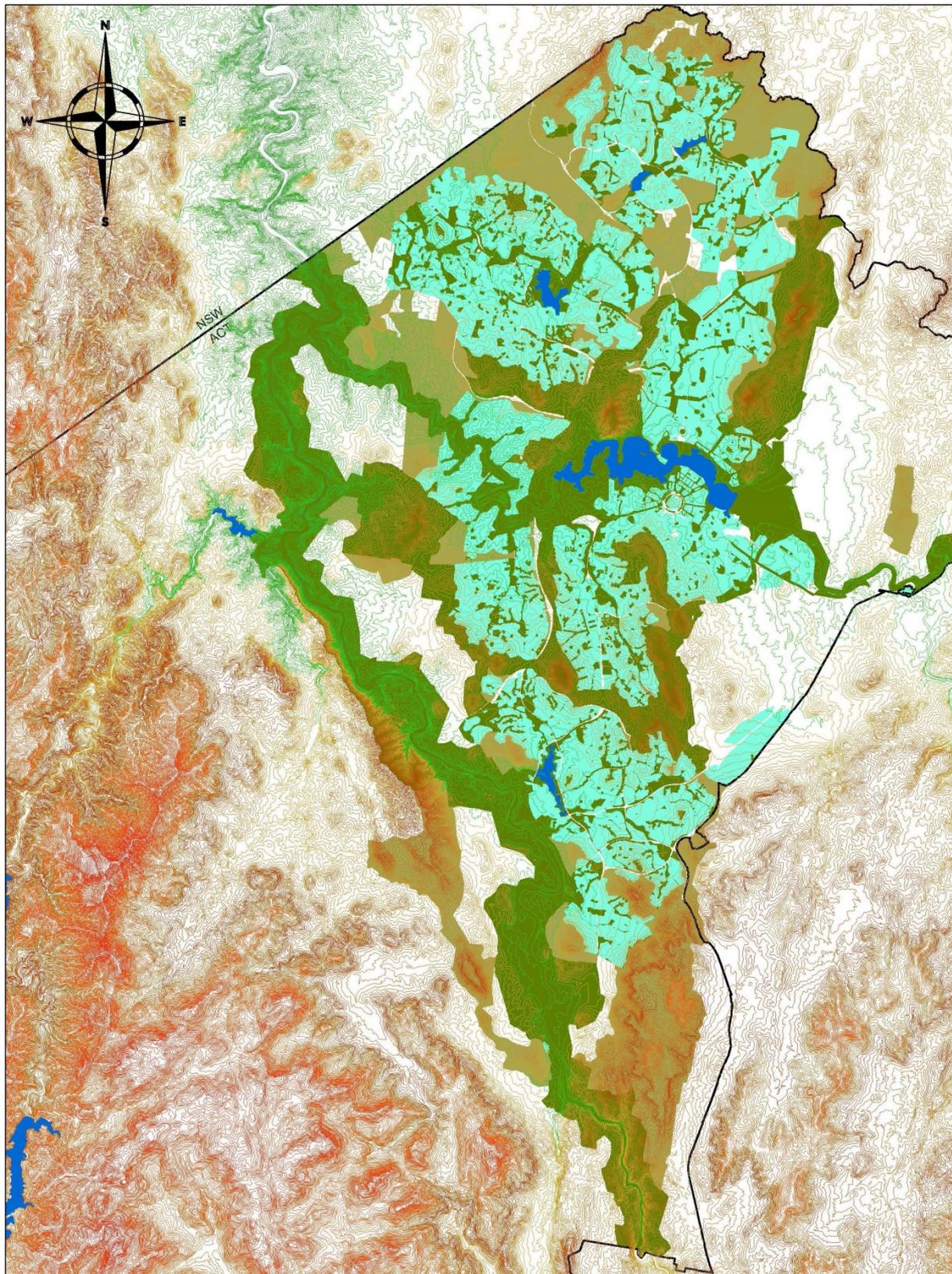
Figure 8 focuses at a larger scale on Belconnen, and shows in detail the zonings that contain the proposed West Belconnen urban development across the ACT/NSW border; the zoning is largely “Environmental management E(3)” with some “Primary production A(1)” under the Yass Valley Local

Environment plan. The landscape buffer that will be formed by the River, the creek and the inner hills will be contained within these statutory land use zones; these zonings are not proposed to be changed by this project. Both of these zones preclude any substantial development and will ensure that the rural and bushland landscape setting is maintained



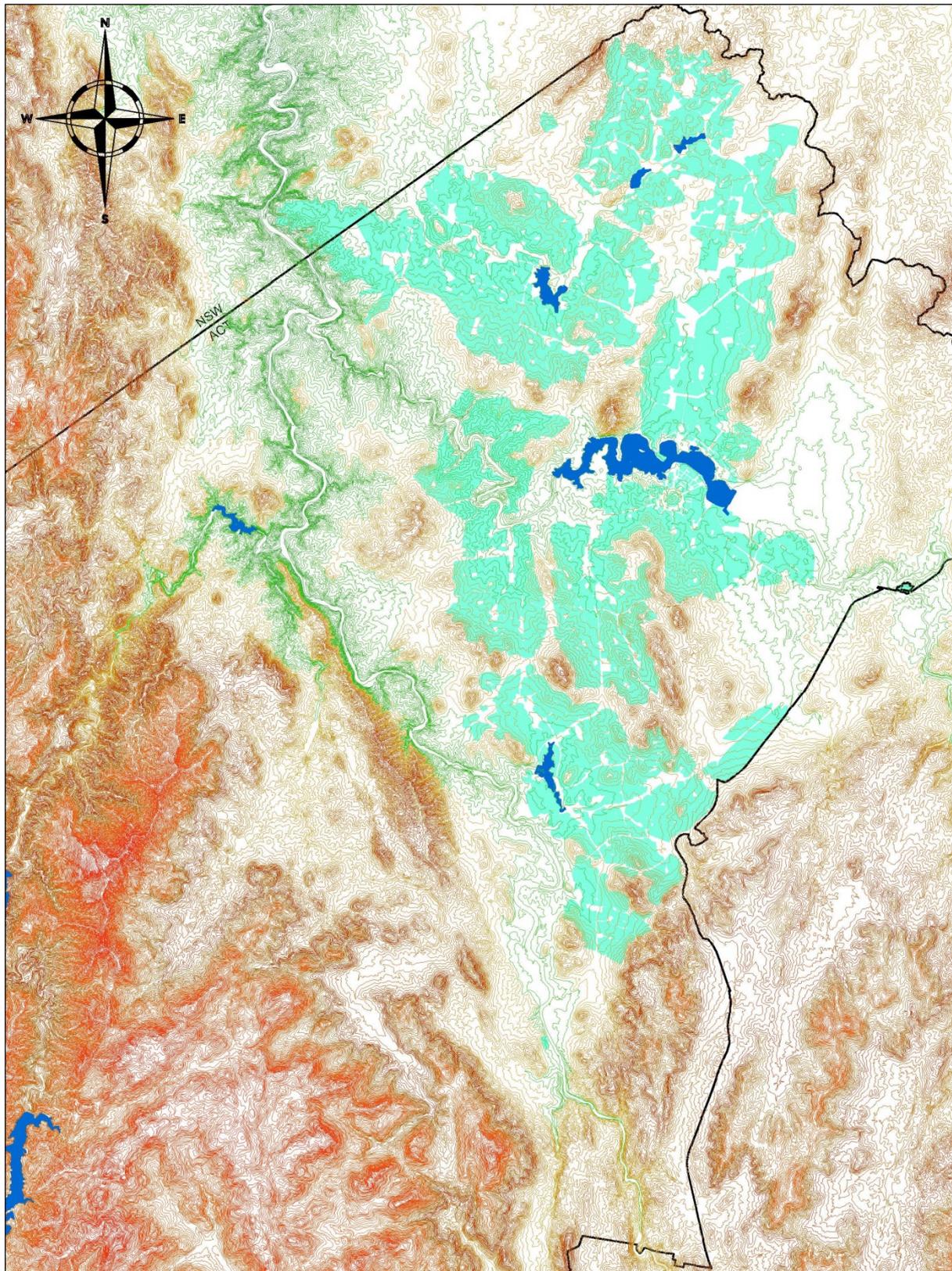
**Figure 4: Existing Urban Canberra set within the landscape**

- A series of separate towns defined by the inner hills and watercourses – the National Capital Open Space System – with the distant mountain backdrop of the Brindabellas to the south-east.



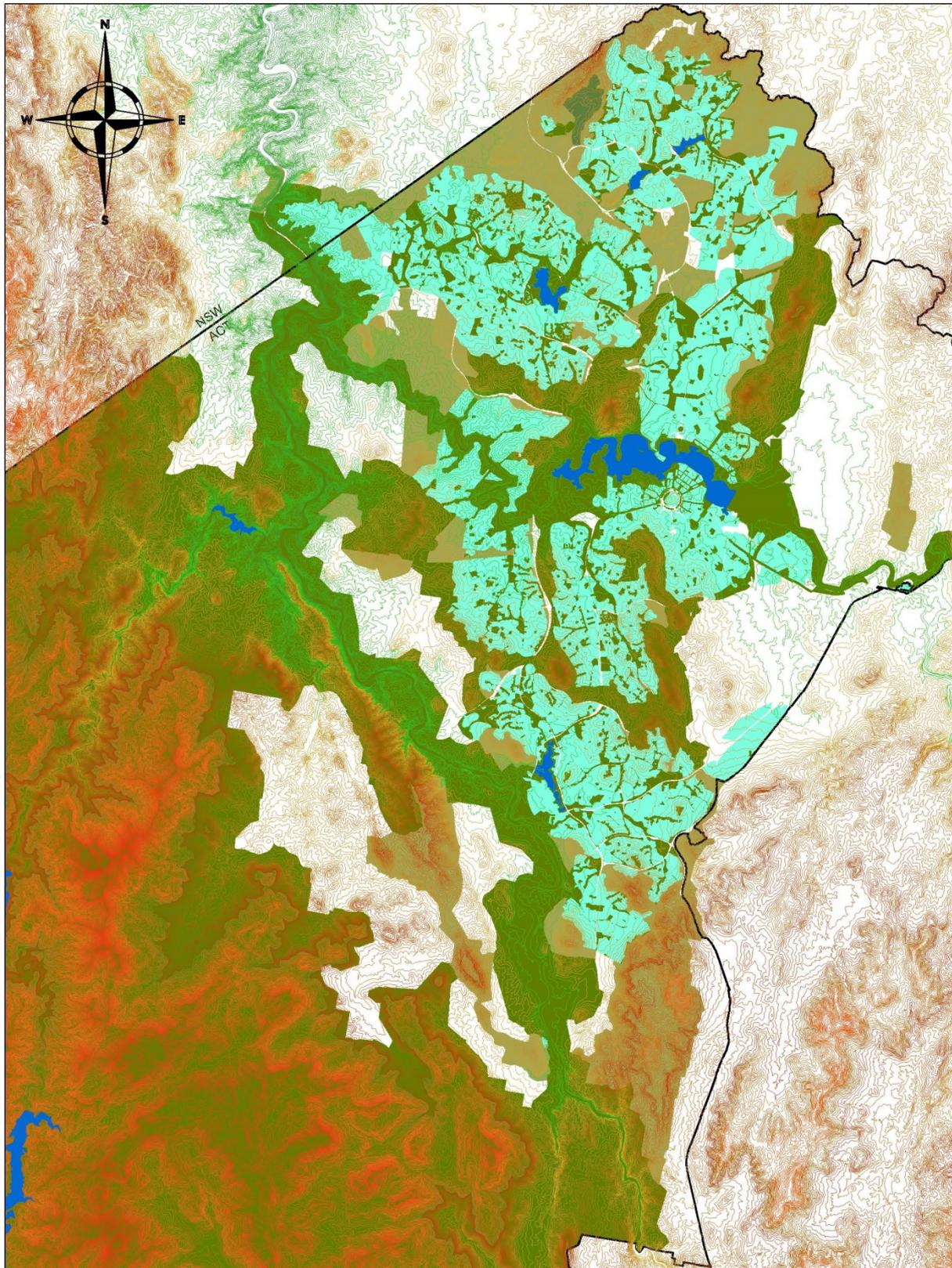
**Figure 5: Statutory protection for the NCOSS.**

- *The buffer zone on the ACT/NSW border at Belconnen is not defined by topography and is interrupted by the Belconnen landfill site.*



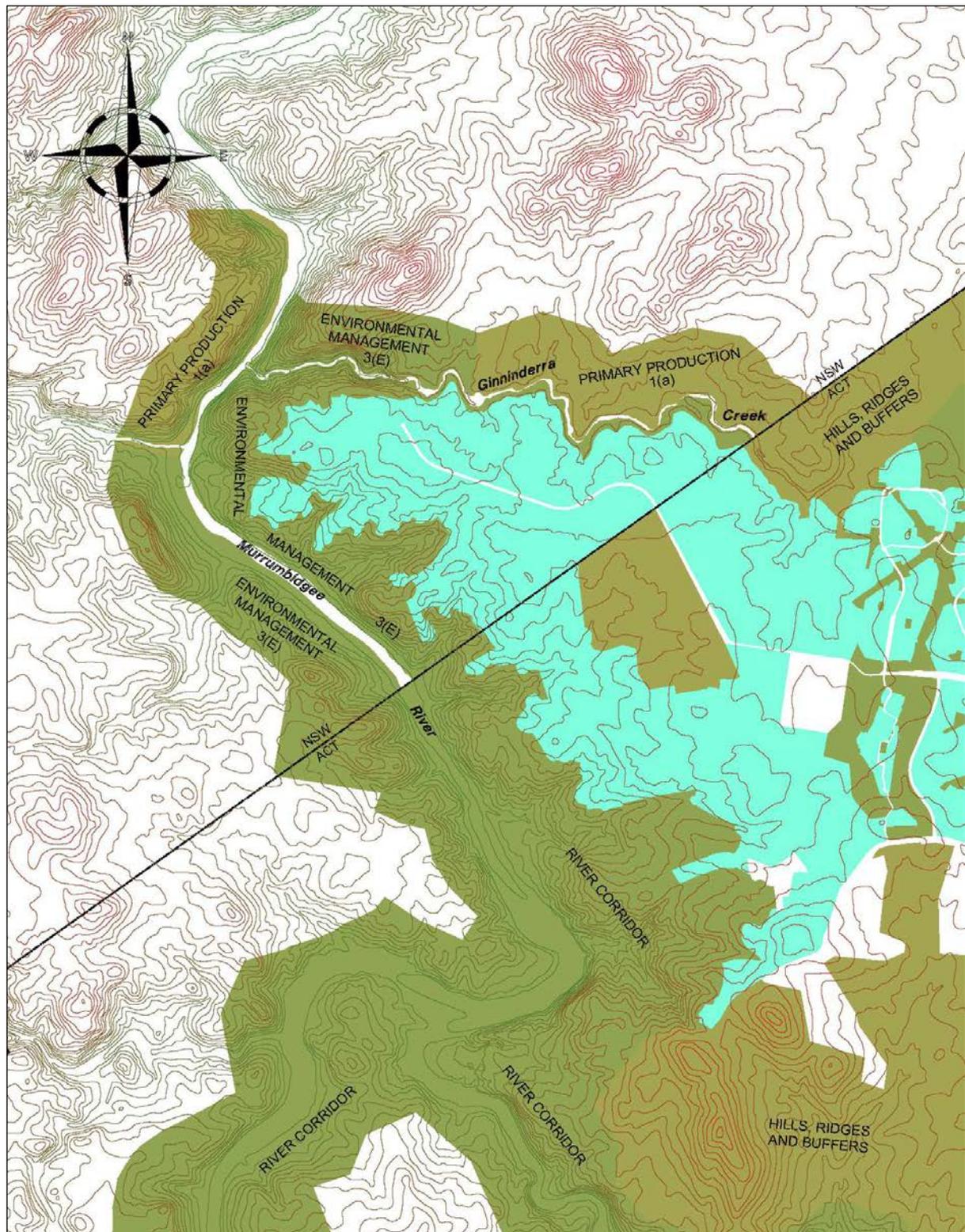
**Figure 6: Urban Canberra extended to include West Belconnen**

- *The Murrumbidgee River and hills immediately north of Ginninderra creek provide landscape containment for the urban expansion.*



**Figure 7: Statutory protection for the buffer in NSW.**

- Zoning in NSW under the Yass Valley Local Environment Plan provides statutory protection for the buffer



**Figure 8: Landscape buffer zoning details.**

- The NCOSS zoning in the ACT is complemented by landscape and rural zoning in NSW.

## 2.2 THE SITE IN THE LANDSCAPE

The planning approach that has been taken to the West Belconnen project has involved intensive collaboration between the professional project team, a broad range of government agencies and the community – including special interest groups and the broader population of Belconnen and Canberra. Key early steps in the development of a master plan for the site were a stakeholder vision workshop and a “planning and design forum” (PDF).

The Community and Stakeholder Vision Workshop was held at the Holt Community Hub on 11 November 2013. This was an interactive session designed to enable interested community members and stakeholder groups to express their concerns, ideas, and visions for the West Belconnen project.

Over 90 attendees participated in the workshop, including community members and stakeholder groups, as well as members of the project’s consultant team. The majority of community participants were residents of the existing West Belconnen community, particularly Holt and Macgregor.

The PDF, held at the Sustainability Hub, CIT Bruce on the 12, 13 and 14 November 2013 was an interactive series of workshops which combined the skills and experience of decision makers, technical experts and key community representative to jointly resolve project challenges and explore design options that reflect the West Belconnen sustainability vision and the emerging community vision.

The preliminary draft master plan that evolved from the PDF was aimed at ensuring that the West Belconnen development will create an inspiring, diverse and sustainable community. It was seeking to apply best contemporary planning and design practice to create a 21st century suburb, built on the legacy of Canberra’s Garden City Heritage. An outcomes report (Elton, 2013) documents the processes and outcomes of the Community and Stakeholder Visions Workshop and the Planning and Design Forum.

These collaborative processes are of great value in defining both the practicalities of the proposed development and the aspirations of stakeholders, focusing on the site and the project. The project team was conscious of the need to also maintain recognition of the larger planning perspective and particularly the role that West Belconnen would fulfill within the larger planning vision for Canberra as a whole. For this reason Rodney Moss FRAIA and Cox Architecture were commissioned to undertake a high level design study (Appendix A) at the conceptual level to explore the way in which the site may be related to the metropolitan context and how elements within the site could be addressed through the planning process in ways that recognised the early Griffin and later NCDC approaches to metropolitan planning.

The design study material was used as a basis for Rodney Moss to engage with and advise participants at both the Vision workshop and the PDF. It is instructive to compare this work with the final master plan design outcome discussed at Section 7.1. Key design elements – the central park and edge river and creek corridors are maintained. The plan has evolved with more formal geometric street patterns on the northern side, where the land is significantly flatter to a more organic layout on the southern side where the topography is undulating. This echoes the Griffin approach evident in the inner south with the transition from a geometric street layout at Kingston to organic design on the slopes of Red Hill, Ainslie, and O’Connor are further examples.

## 3 THE NATURAL ENVIRONMENT

### 3.1 ENVIRONMENT PROTECTION & BIODIVERSITY CONSERVATION ACT

The *Environment Protection & Biodiversity Conservation Act 1999* (the EPBC Act) is Australian Government environmental legislation. The Commonwealth Department of the Environment (DOE) administers the strategic assessment provisions of the EPBC Act and provides advice to the relevant Commonwealth Minister. The Act is concerned with environmental assessment of proposals on Commonwealth Land (not relevant to West Belconnen) and matters of national environmental significance (MNES) on any land which include:

- World heritage sites;
- National heritage places;
- Wetlands of international importance;
- Nationally threatened species and ecological communities;
- Migratory species;
- Commonwealth marine areas;
- Nuclear actions; and
- The Great Barrier Reef Marine Park.

At West Belconnen there are known to be three MNES that occupy the area at all times as follows:

- Pink tailed worm lizard (*Aprasia parapulchella*)
- Golden sun moth (*Synemon plana*)
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland<sup>1</sup>

Several species of birds may occasionally move through and forage in the area, such as the Superb Parrot, Swift Parrot and Regent Honeyeater and migratory species.

The listed Murray Cod, Macquarie Perch, Silver Perch and Trout Cod may occur within the Murrumbidgee River, just outside of the development area.

Consequently the provisions of the EPBC Act apply. The Act provides mechanisms for the assessment of impacts of proposed development on MNES. The appropriate mechanism in the case of West Belconnen has been determined by DOE to be a "strategic assessment", under part 10 of the Act.

Strategic assessments provide a mechanism to move away from project-by-project impact assessment and examine proposed developments at a broader landscape scale in relation to the requirements of the EPBC Act.

A strategic assessment to meet the requirements of the EPBC Act with regard to the MNES matters described above is being conducted concurrently with the Draft Amendment that is the subject of this report.

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<sup>1</sup> This community is equivalent, in the ACT, to the "Yellow Box Red Gum Grassy Woodland" community which is listed as an endangered ecological community under the *ACT Nature Conservation Act 1980*, both are referred to in this report as "grassy woodland".

### **3.1.1 MOLONGLO NES PLAN**

A substantial area of the West Belconnen ACT land (approximately 167ha within block 1605) was identified as “West Molonglo”, intended for future residential use, in the 2004 ACT Strategic Plan. This land was subsequently rezoned to “broadacre” (a peri urban use) as part of the Molonglo rezoning process (Territory Plan variation 281 & National Capital Plan Amendment 63 in 2008). It was consequently included in environmental investigations as part of the greater Molonglo project which included both “East” and “West” Molonglo. West Molonglo is now part of the West Belconnen project.

The Molonglo studies concluded with the approval (on 7 October 2011) by Minister Burke of the “Molonglo Valley Plan for the Protection of Matters of National Environmental Significance” (the NES plan). At West Belconnen the NES plan identified about 60ha of woodland within the 167ha that was to be preserved, subject to further work to refine the boundary of the woodland area. The balance of the 167ha was found to have no environmental constraints.

Scientific investigations (refer to section 3.2) have been undertaken during the spring of 2012 to comply with the NES plan requirements and refine and finalise the boundary of the woodland area. With this work being concluded the option is now available to refer to the Commonwealth for final endorsement of the NES Plan. An alternative approach, given that the “West Molonglo” parcel constitutes only a portion (albeit a large portion) of the total West Belconnen project, is to simply include this land in the strategic assessment that is being prepared for the total project. In the interests of efficiency and clarity of process the proponent has opted for the latter of these two alternatives.

### **3.1.2 GINNINDERRA DRIVE COMPLETION**

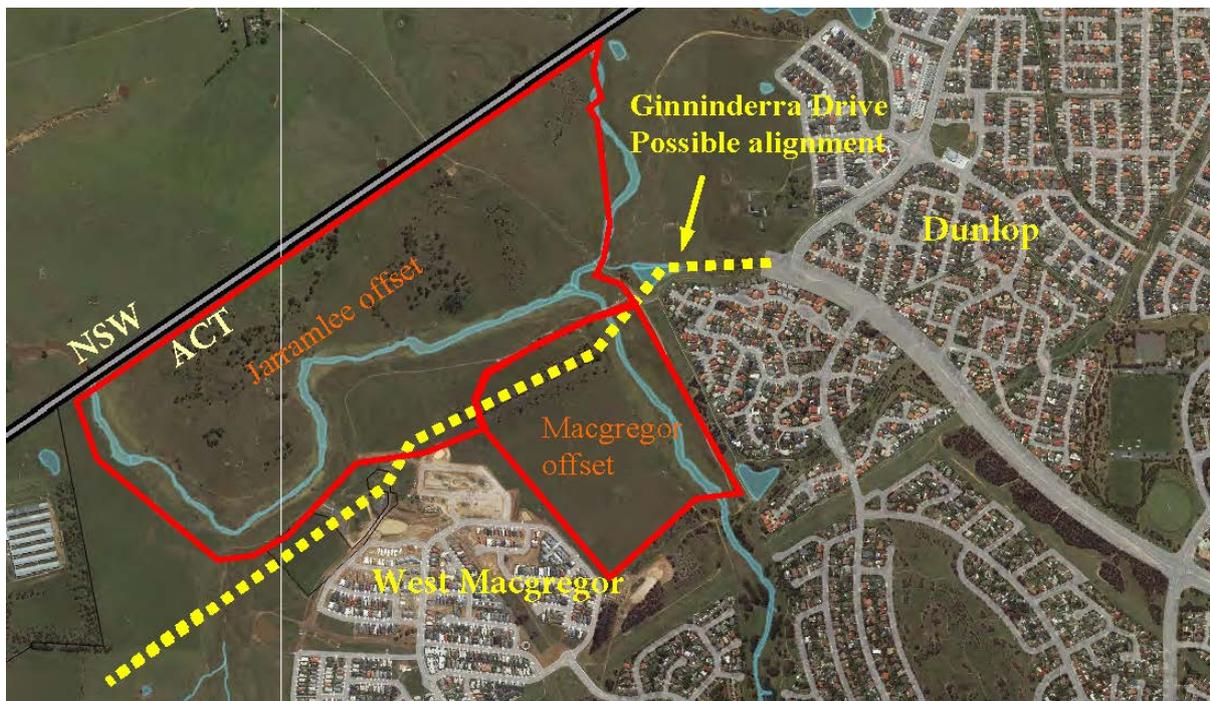
The West Belconnen proposal includes the completion of a connection between Ginninderra Drive and the proposed development area. Ginninderra Drive is currently constructed to the western extremity of the suburb of Dunlop at which point it is a single carriageway pavement. The road reserve is very wide (80 metres), having been planned with the intention of the road being extended westward, ultimately to service development to the west and provide an intertown transit corridor and road link to the (then) proposed “Gooramon” development area in NSW. This design proposal was included in the “Y” plan prepared by the National Capital Development Commission in 1967 which, together with the Metropolitan Policy Plan in 1984, remained as the key strategic planning documents until the release of the Canberra Spatial Plan in 2004, in concert with the national Capital plan which commenced in 2009. The road reserve and adjacent suburbs is shown in Figure 9.

The existing road operates below capacity and, in turn, the road is constructed to a standard that is well below that for which the reserve was intended. As only minimal future development is likely to occur at Dunlop Ginninderra Drive represents an under-utilisation of a significant infrastructure item if it is not completed to service future development to the west.

A number of options for a possible alignment for the road have been explored and assessed on the basis of their relative impacts on moth habitat, engineering feasibility and cost. As a result of this research the proposed Ginninderra Drive connection link passes to the west of Macgregor to ultimately join Parkwood Road. This alignment traverses two parcels of land that provide habitat for the Golden Sun Moth, listed as an endangered species under ACT and Commonwealth legislation.



**Figure 9: Ginninderra Drive Road Reserve**



**Figure 10: Ginninderra Drive possible alignment**

The blocks containing the habitat areas, known as Jarramlee and Macgregor (Figure 10), have been set aside by the ACT Government as “offset areas” in place of habitat areas lost as a consequence of urban development at, respectively, Lawson and Macgregor.

The road alignment options and impacts have been discussed and evaluated at two workshops involving representatives from:

- Commonwealth Department of the Environment,
- ACT conservation agencies,
- West Belconnen project consultant engineers,
- Scientific experts with knowledge and experience in the Golden Sun Moth, including experience with recent successful experiments in the relocation of moths subject to a road construction project,
- Experts with experience in the processes for the selection of environmental offset areas, and
- The Friends of Grasslands conservation group.

The outcome of these deliberations to date is that the West Belconnen project is recommending an alignment as shown on Figure 10. The advice from the Planning and Environment Directorate has been that options that avoid the offset areas should be vigorously pursued and alignments that utilize part or all of the ACTEW powerline easement that bisects Macgregor and west Macgregor are under review. Initial advice from ACTEW is that these would not be feasible due to safety concerns due to the proximity of the road to electricity transmission infrastructure.

The proposed road alignment passes through the Macgregor and, to a lesser extent, the Jarramlee offset areas. This is a matter for assessment under the provisions of the EPBC Act and has been referred to the Commonwealth Department of the Environment.

The Macgregor West offset area was established in response to the impacts resulting from the Macgregor West 2 Estate development. The offset was comprised of establishing a protected tenure with accompanying management obligations over a part of the total development area that was avoided as a result of likely impacts to golden sun moth (*Synemon plana*). The location of this offset was determined opportunistically by the presence of golden sun moth on the development site as opposed to it having been selected through a process of strategic evaluation. Nevertheless the offset contains one of the largest populations of the moth in the ACT. Other environmental values within this offset area are limited.

The Jarramlee offset was established to compensate for the unavoidable impacts of the development of Lawson South as a result of impacts to golden sun moth principally, but also natural temperate grassland. This offset was selected on the basis of proximity to the Macgregor West offset and availability of land that met the general requirements of the then draft policy on the use of offsets under the EPBC Act. This land was under a Hills Ridges and Buffers zone under the Territory Plan and was unlikely to be considered for urban development. Accordingly the value of the Jarramlee offset was the result of increasing the total area of co-located offset sites and increasing the protection status of the subject land to also include a management plan to maintain the values for which it was established.

Together the Jaramalee and MacGregor offsets constitute the fourth largest habitat area of the moth remaining in the ACT.

Both offset areas continue to be managed under the conditions of separate agreements with the Commonwealth and while sharing a common boundary, are not managed together. Additionally, both offsets were assessed and approved under the 2007 draft policy on the use of biodiversity offsets under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

The proposed extension to Ginninderra Drive would result in a narrow corridor of impact through components of each offset area impacting on known golden sun moth habitat. While this impact is unavoidable and undesirable, it may present an opportunity to enhance management of golden sun moth habitat in the west Belconnen area more broadly. This is as a result of the strategic approach that is being taken not only to project planning but also for the identification, protection and management of matters of national environmental significance (MNES) under the EPBC Act. Due to the impact of the proposed Ginninderra Drive extension on established offset areas in addition to impacts on the values for which the offset areas were established, this is regarded as significant and as a result consideration of further offsets may be appropriate.

Offsets are only an option when all feasible and prudent measures to avoid and mitigate impact have been undertaken. As offsets are designed to be enduring and legally secure, offsetting an offset is problematic.

Aecom have conducted an assessment (Aecom, 2014a) of the likely consequences of not constructing the Ginninderra Drive connection because the possibility remains that approval for the connection may not be forthcoming. The conclusion of the analysis is that the existing roads will cater for the expected traffic volume increases when the project is fully developed although the nature of the proposed works on these roads will differ from those required if the Ginninderra link were to be implemented. As a consequence it can be concluded that the Ginninderra Drive completion, whilst highly desirable from a traffic connectivity viewpoint, is not an essential pre-requisite for the rezoning of the project area.

### **3.2 BIOLOGICAL RESEARCH**

A series of scientific field research studies have been undertaken across the project area between 2009 and 2013, as follows:

A preliminary “overview” research study was conducted by Kevin Mills & Associates (KMA) in January 2009 (KMA, 2009a). The intent of this study was to identify the likely significant flora and fauna issues present in the study area and undertake a survey program to address these issues; particular note was to be taken of the likelihood of the presence of threatened and other significant species and communities, as listed in New South Wales and/or the Australian Capital Territory and under the Commonwealth EPBC Act. The overview study led to the commissioning of a series of targeted investigations:

- Supplementary research by KMA in July 2009 (KMA, 2009b) to add to the findings of the January 2009 report and investigate in more detail matters such as pink tailed worm lizard habitat.
- KMA conducted field research and a review of other studies in relation to the NSW land in 2013 (KMA, 2013a).
- In September 2013, KMA investigated the land in the far north-eastern part of the West Belconnen Project Area which had not been investigated in detail previously as it had not

previously been included in the project land area. This report (KMA, 2013b) addresses this omission by providing an ecological description and assessment of the land and its biota.

- The 2009 KMA research indicated the need for a targeted bird survey across both the NSW and ACT land which was conducted by KMA in September 2013 (KMA, 2013c).
- The KMA research identified the need for further research into listed species including the Golden Sun Moth. An expert in this field, Alison Rowell, was commissioned to undertake research and report on findings (Rowell, 2013)
- The KMA research identified the need for further research into listed species including the Pink Tailed Worm Lizard. Experts in this field, Will Osborne and David Wong of the Institute of Applied Ecology at the University of Canberra, were commissioned to undertake research and report on findings (Osborne & Wong, 2013).
- The KMA research identified the need for further research into area of grassy woodland, an endangered ecological community. Experts in this field, Kris Nash and David Hogg, were commissioned to undertake research and report on findings (Nash & Hogg, 2013).
- Following identification of a little eagle presence on the site in late December 2013 and following subsequent consultation with ACT Conservation a report was prepared by ACT Conservation specifying measures to ensure the protection of the eagle nest site, including protection of the foraging area and a 200m clearance zone around the nest site itself.
- A final report was then prepared by KMA. This report (KMA, 2014) collates the findings of the earlier reports and sets out the rationale for the definition of the conservation corridor boundary.

The key findings of this research program are set out in the next sections.

### **3.2.1      NATIONALLY SIGNIFICANT SPECIES AND COMMUNITIES**

The material in this section is largely extracted and summarised from the final report by KMA cited above. The KMA report in turn draws on the extensive material contained in the full series of research reports cited above. The reader should refer to these reports for a full understanding of this subject area.

#### **GRASSY WOODLAND**

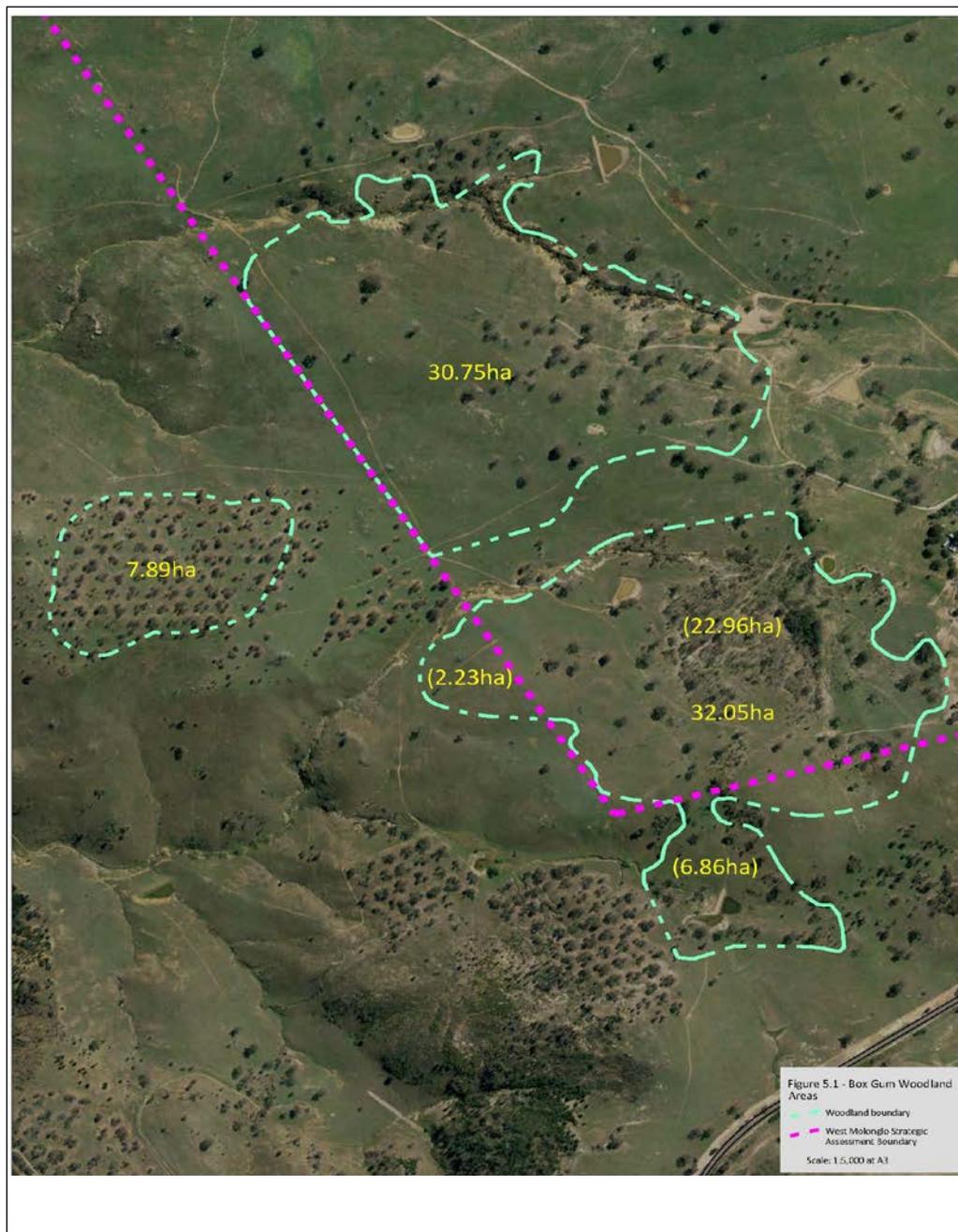
Yellow Box Red Gum Grassy Woodland is listed as an endangered ecological community under both the Environment Protection and Biodiversity Conservation Act 1999 (C'th) and the Nature Conservation Act 1980 (ACT).

The presence of Box-Gum Woodland was initially identified within the Project Area by KMA (KMA, 2009a) and EcoLogical Australia (2010). More detailed work undertaken in spring 2012 is described in the report by Nash and Hogg (2013). That study carried out a robust investigation of the southern portion of the project area previously identified as contained areas of woodland. The 2012 woodland surveys were carried out in spring and followed the guidelines and criteria set out by the Australian and ACT Government environment agencies for identifying and assessing Box-Gum Woodland and Derived Grasslands.

Woodland patches that are regarded as the endangered ecological community Yellow Box-Blakely's Red Gum Grassy Woodland are those where:

- *E. melliodora* and/or *E. blakelyi* contribute 40% or more of the crown cover;
- There is a species-rich understorey of native tussock grasses, herbs and scattered shrubs. The understorey is not exotic pasture or degraded beyond recovery.

- A species-rich native understorey of native tussock grasses, herbaceous species and scattered shrubs remains but the Yellow Box and/or Red Gum trees have been removed or reduced (ACT Government 2004 page 30).



**Figure 11: Grassy Woodland**

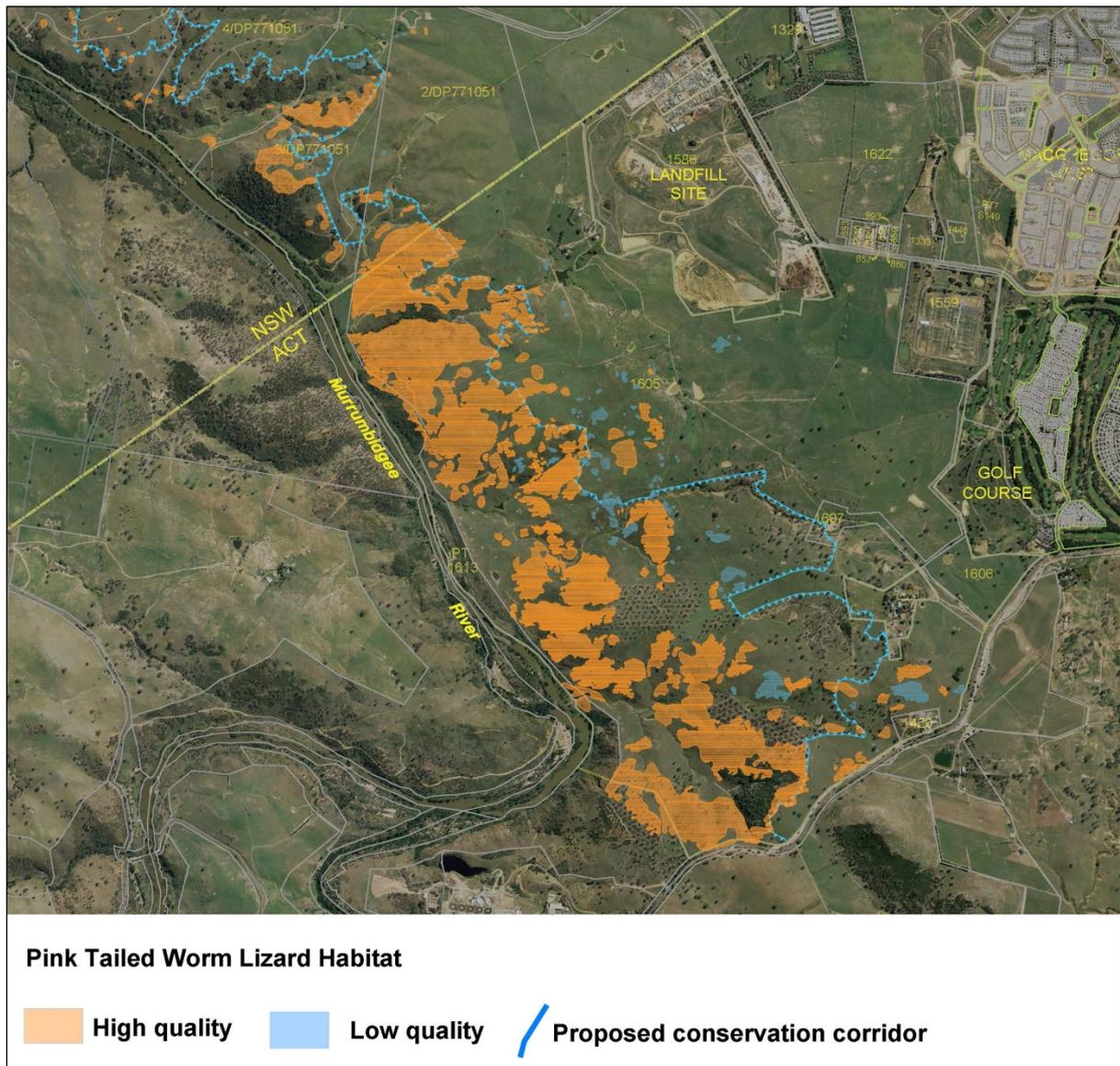
The extent of the Box-Gum Woodland as identified in this study is shown on the accompanying map; see Figure 11. The area of this community that meets the minimum criteria under both jurisdictions is 70.7 hectares; this includes the 11.7 hectares of woodland inside and 59 hectares outside the pre-existing definition of the river corridor. The woodland is almost completely contiguous with the river corridor and the habitat of the Pink-tailed Worm Lizard, which it adjoins to the west. The woodland

area is divided into two approximately equal halves by a strip of exotic grassland about 200 metres wide that does not meet the required criteria for the endangered ecological community.

All of the area identified as woodland (with minor boundary adjustments to facilitate land management) is proposed for inclusion in a new conservation corridor. The woodland is relatively degraded and the conservation corridor management plan will include provisions for rehabilitation.

**PINK TAILED WORM LIZARD**

The Pink-tailed Worm Lizard *Aprasia parapulchella* is listed as vulnerable under both the *Environment Protection and Biodiversity Conservation Act 1999* (C'th) and the *Nature Conservation Act 1980* (ACT)



*Figure 12: Pink tailed worm lizard habitat*

The presence of the Pink-tailed Worm Lizard and general extent of suitable habitat in the Project Area was first established in the study by KMA (KMA, 2009a). More recently, Osborne and Wong (Osborne & Wong, 2013) carried out further field investigations using methodology adopted for previous surveys of this species in the ACT.

They digitally mapped the extent and quality of habitat, according to two classes based on suitability of habitat for the lizard, (i) potential habitat for the lizard, incorporating known occurrences, and (ii) low quality potential habitat, where rocky habitat occurs but the lizard was not encountered in the field surveys (Osborne & Wong 2013).

Most of the larger rock outcrop habitats in the western section of the Project Area, and within the pre-existing river corridor, contain the Pink-tailed Worm Lizard, while small isolated rock outcrop habitat located in pasture improved paddocks do not support the lizard. The grassland in the latter sites is also largely exotic and suitable rocks are not as extensive (KMA 2009b; Osborne & Wong 2013).

The ACT Aquatic Species and Riparian Zone Conservation Strategy includes the pink tailed worm lizard and has provided a basis for the assessment of conservation requirements for the species at West Belconnen. The population of Pink Tailed Worm Lizard in the Project Area is effectively part of a larger Murrumbidgee River population and is one of three areas of national conservation significance for the species.

The comprehensive mapping by Osborne and Wong (Osborne & Wong, 2013) of the known and potential habitat of the lizard is the ecological basis for defining the boundary of the lizard habitat that is proposed to be included the corridor reserve. That habitat edge has subsequently been checked and refined on the ground by field inspection by the consultant team in consultation with officers from the ACT Environment and Sustainability Directorate (ESDD) and TAMS in September 2013 (KMA, 2014). The conservation corridor has a total area of 371 hectares in the ACT and a further 206 hectares in NSW, of which 128.6 hectares or 35% of the ACT component is lizard habitat, the great bulk of which is rated as being high quality. 16.1 hectares of the NSW component have been identified as lizard habitat. The habitat areas are shown on Figure 12. Refinement of the corridor boundary was primarily based on ensuring all core habitat was included, and practical management considerations. Vestigial areas of habitat, considered to be not logical for inclusion in the corridor, totaled 16 ha. (13 ha. in the ACT and 3 ha. in NSW). This represents 10% of the total habitat area spread over a large number of small and isolated parcels. Its exclusion from the corridor was not considered to be deleterious to the overall objective of preservation of the species at this site.

#### **GOLDEN SUN MOTH**

The Golden Sun Moth is listed as critically endangered under the Environment Protection and Biodiversity Conservation Act 1999 (C'th) and as endangered under the Nature Conservation Act 1980 (ACT).

Surveys for the locations and extent of potential Golden Sun Moth (GSM) habitat in the Project Area were undertaken from October to December 2012 (Rowell, 2013).

No GSM were recorded in the Project Area, despite repeated surveys of potential habitat under suitable weather conditions during the period when there were many records of GSM activity in the north of the ACT and adjacent parts of NSW. No pupal cases were found in ground searches of the better quality potential habitat in December and January.

Due to poor habitat condition and the negative survey results, Rowell considered it unlikely that GSM occur in the Project Area. GSM do occur on sites at West Macgregor, and may extend down the Ginninderra Creek valley, at least in some seasons, but these areas are not within the current Project Area.

It is important however to note that the GSM does occur immediately to the north of the project area at Jarramlee and West Macgregor, and that the West Belconnen development includes the proposed completion of Ginninderra Drive through these areas. This would impact on known moth habitat, discussed in Section 3.1.2.

Both the West Macgregor and Jarramlee sites have been reserved as moth habitat areas under an offset agreement arrangement between the Village Building Company (which developed West Macgregor), the ACT Government and the Australian Government. Under current Commonwealth policies related to the Environment Conservation and Biodiversity Conservation Act, the disturbance of a habitat area triggers a requirement for an offsetting area to be identified and preserved.

#### **SUPERB PARROT**

The Superb Parrot is listed as vulnerable under both the Environment Protection and Biodiversity Conservation Act 1999 (C'th) and the Nature Conservation Act 1980 (ACT).

The Superb Parrot is a summer breeding visitor to the ACT, primarily in the northern third of the Territory, where increasing numbers of birds have been observed in recent years.

The Superb Parrot was seen several times in the Project Area between 2008 and 2013, two of which were incidental observations outside the formal bird surveys. Out of a total of 28 bird surveys up to mid-2013, this species was observed four times. No evidence of breeding in the Project Area was found during the bird surveys or the tree hollow surveys.

Birds were observed flying south, towards the 2011/2012 breeding area in central Molonglo to the south of Holt.

#### **SWIFT PARROT**

The Swift Parrot (*Lathamus discolor*) is listed as an endangered species under the Environment Protection and Biodiversity Conservation Act 1999 (C'th) and as a vulnerable species under the Nature Conservation Act 1980 (ACT). The Swift Parrot is a winter visitor to the ACT region, it is not resident and does not breed in the region; at most, it is an occasional and itinerant migrant. None were observed on the site.

#### **DIURNAL BIRDS OF PREY**

Surveys for birds specifically included diurnal birds of prey; the observations for 2008 to 2013 identified 11 species. The only breeding species found during the surveys is the Australian Kestrel, which is by far the most common bird of prey in the area. The little eagle was not recorded in any of

the field surveys but a breeding pair has since been found. This is discussed separately in section 3.2.2. Apart from the little eagle the kestrel is probably the only resident species within the upper, eastern part of the Project Area, although some species may be resident within the river valley. For example there is a Peregrine Falcon nesting site on cliffs in the river gorge, just outside the main Project Area. In total, 11 species of diurnal birds of prey were recorded in the Project Area; however, only the Nankeen Kestrel appears to be a common and breeding species.

### **3.2.2 TERRITORY SIGNIFICANT SPECIES AND COMMUNITIES**

#### **YELLOW BOX RED GUM GRASSY WOODLAND**

Yellow Box Red Gum Grassy Woodland is listed as an endangered ecological community under the ACT Nature Conservation Act 1980.

#### **PINK TAILED WORM LIZARD**

The Pink-tailed Worm Lizard is listed as vulnerable to extinction under the ACT Nature Conservation Act 1980 (ACT).

#### **GOLDEN SUN MOTH**

The Golden Sun Moth is listed as vulnerable to extinction under the ACT Nature Conservation Act 1980 (ACT).

#### **LITTLE EAGLE**

The Little Eagle is listed as Vulnerable under the ACT Conservation Act 1980. In late December 2013 evidence was provided to the project team of a pair of little eagles nesting on the project site (in the vicinity of Strathnairn). The little eagle is listed as a “vulnerable” species in the ACT and also in NSW; it had not been recorded in any of the earlier surveys although was known on nearby sites at Molonglo. Consultation with ACT Conservation led to the preparation of a report by ACT Conservation specifying measures to ensure the protection of the eagle nest site, including protection of the foraging area and a 200m clearance zone around the nest site itself. Appropriate provisions will be incorporated in the Territory Plan.

#### **OTHER SPECIES AND COMMUNITIES**

Superb Parrots, Swift parrots and some diurnal birds of prey are significant in the ACT and are discussed above (Section 3.2.1). Species of woodland birds (White winged triller and Varied sitella), the Perunga Grasshopper and aquatic species (Murray Cod, Murray crayfish, Macquarie perch, Trout cod and Silver perch) are also likely to occur.

### **3.2.3 NSW SIGNIFICANT SPECIES AND COMMUNITIES**

Similarly to the ACT, under NSW legislation the Pink Tailed Worm Lizard, Golden Sun Moth and Yellow Box Grassy Woodland are listed as endangered, and the Little Eagle is listed as vulnerable.

## **3.3 WATER QUALITY**

The sustainability vision adopted for the West Belconnen development has been characterised as “creating a sustainable community of international significance in the nation’s capital”. To determine how this vision could be applied to the management of the urban water cycle, a review was carried

out of the site context (including the hydrology and topography, environmental water needs, opportunities for water recycling, etc.), international practices and innovations in integrated urban water cycle management, and the relevant local planning and design codes (in particular the ACT's Water Sensitive Urban Design [WSUD] Code). Further, the Green Building Council of Australia's (GBCA's) Green Star Communities Rating Tool has been adopted to guide and evaluate the delivery of sustainable design measures at the site – pertinently the rating tool contains objectives and scoring criteria that relate to potable water demands, stormwater quality and flow management, water recycling, and climate management. As such, the master plan of a water sensitive community at West Belconnen has been founded on the following principles:

- Working toward a 'Water Neutral Community' - Minimising potable water demand and wastewater discharges into the adjacent Murrumbidgee River, and mimicking predevelopment hydrology of the site to protect the ephemeral creek lines
- Understanding that 'The City is your Catchment' – Explore harvesting and using the stormwater as an alternative water source (e.g. as a 'third pipe' for irrigation and non-potable domestic uses), how deploying sensible onsite rainwater capture and use on blocks can reduce potable water demands, and whether the capture and reuse can prevent loads of contaminants entering waterways
- 'Make the Landscape Work' - Using functional landscapes for stormwater treatment and maintaining soil and vegetation health and contribute to more liveable urban environments
- 'Produce the Food you Consume' – Explore opportunities to use stormwater and/or wastewater to support urban planting and food production, noting that local food production is a component of a sustainable community and one of the beneficial uses of harvested stormwater
- 'Make the Cities Work for Waterways' – Develop a new model for urbanism, reduce and manage pollution to waterways and repair riparian corridors. Creating new communities does not need to come at the cost of our environment

Consultants Aecom (Aecom, 2014c) have considered the water sensitive urban design principles for the project, and have examined options ranging from base case (i.e. compliance with the ACT WSUD Code) all the way through to stretch targets towards water neutrality. Options for implementation at West Belconnen will be assessed against sustainable triple bottom line considerations to determine the most appropriate stormwater treatment system, in consultation with the relevant ACT and NSW agencies. Vegetation/tree survey

### **3.4 TREES**

The site contains a large number of trees, largely remnant eucalypts, that may be affected by development. The location, crown spread, aesthetic quality and health condition of each tree in areas likely to be developed has been recorded and mapped to survey accuracy. Trees that provide hollows which may be utilized by birds and other fauna have also been recorded. The ACT Conservator of Wildlife has special responsibilities with regard to trees and, under the terms of the *Planning and Land Management Act 2007*, activities that may affect trees must be referred to the Conservator for advice. Where appropriate existing trees will be preserved and integrated into the urban development.

## 4 HERITAGE

### 4.1 HISTORY OF THE SITE

Occupation of the southern highlands, and consequently the ACT region and the project site, site by aboriginal peoples is estimated to date from 21,000BP (EMA, 2014a). Consequently the vast majority of the human history of the site has been one of occupation by indigenous people.

The original Belconnen farm was the result of a grant in 1835 of 5,000 acres of land to Charles Sturt, in recognition of his contribution as an explorer to the then Colony of New South Wales. The original grant included most of the project study area. Sturt held the property for about a year and then sold it to the Campbell family of Duntroon who managed it as an active rural property. During this period (in about 1850-1860) a stone cottage was built to accommodate a farm overseer. This now forms an important component of the Belconnen Farm heritage precinct.

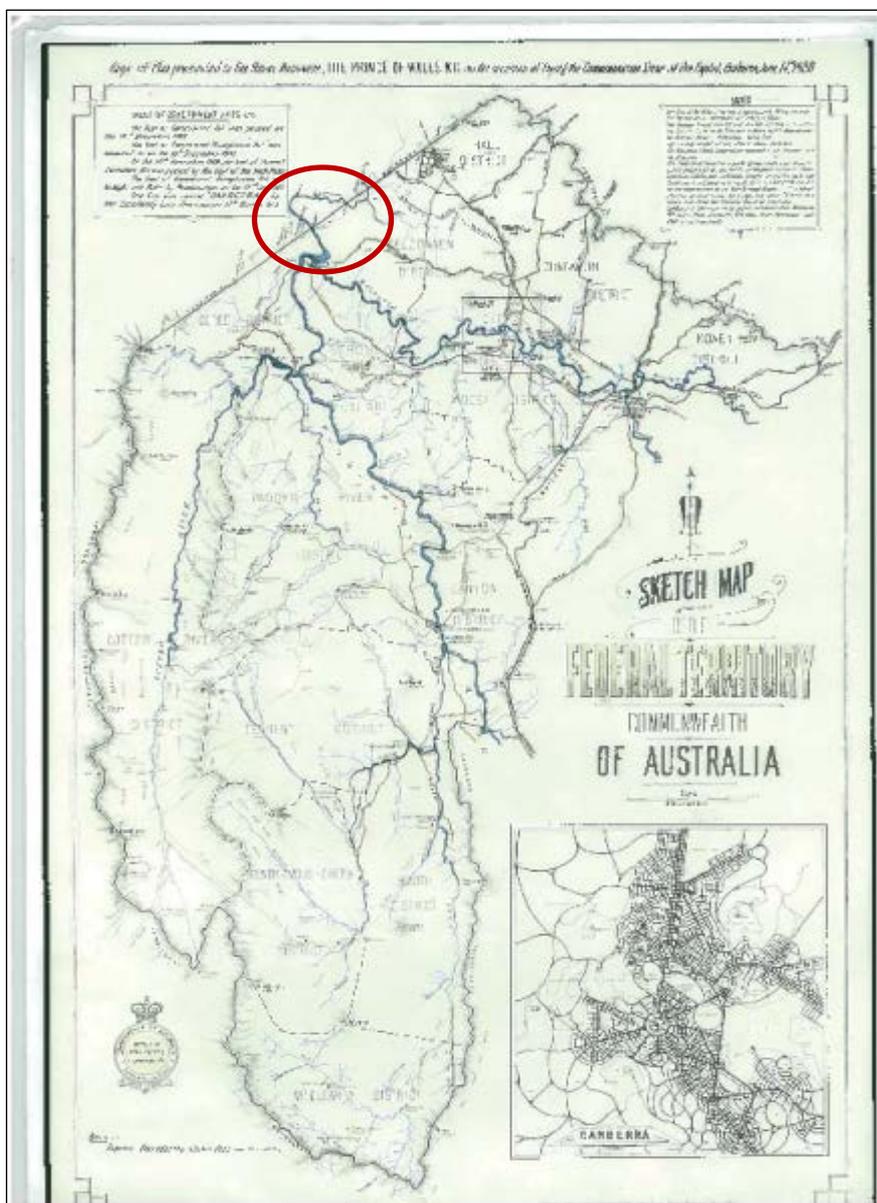


Figure 13: Prince of Wales Plan of the ACT 1920

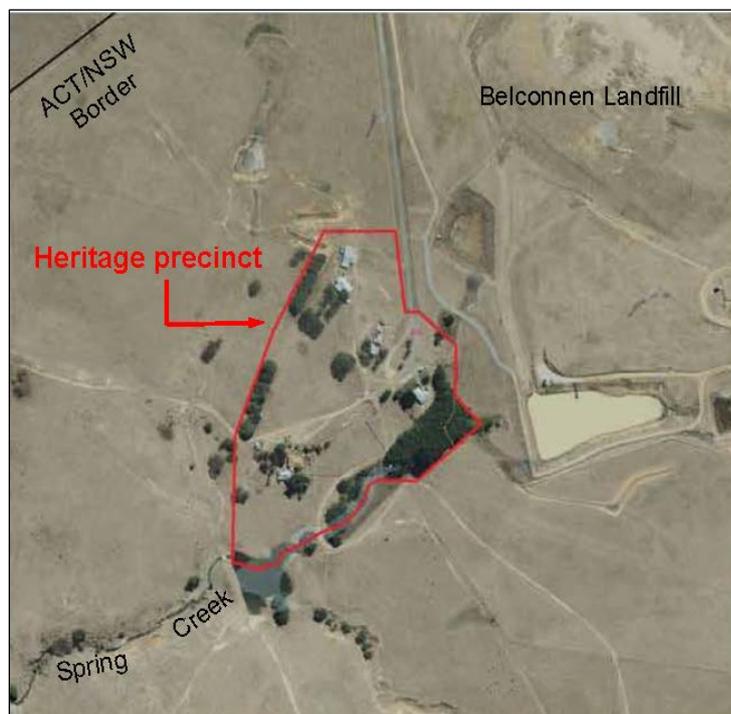
Early in the 20<sup>th</sup> century the border for the newly created Australian Capital Territory was created and dissected the land. This component of the ACT border is an arbitrary straight line, unlike the majority of the length of the border which is aligned to natural water catchments. Since that time, through the 20<sup>th</sup> and into the 21<sup>st</sup> centuries, the land has been used for grazing, landfill, and a number of rural and rural related uses including a commercial accommodation business (Ginninderry Homestead). The landfill site also accommodates an industrial area focused on recycling enterprises and a number of other remediation and recycling functions. Ginninderra Falls was a popular recreation venue for a period but is now closed to public access; the landowners advise that this is due to difficulties associated with obtaining public liability insurance on what is a hazardous site.

A logical boundary, from a land tenure and land planning perspective, would have included the “peninsula” land (bounded by the Murrumbidgee River and Ginninderra Creek) within the ACT. Historical research (CBRE, 2009) has shown that it is a matter of chance that all or some of this land was not in fact included in the ACT at that time. A plan prepared for the Prince of Wales in 1920 (Figure 13) shows the straight line boundary as well as the “peninsula” land.

This illustrates the position that has been expressed by both the ACT and NSW planning agencies that the planning of the land should take an holistic cross border approach, recognising the geographical and cultural rather than artificial boundary constraints.

## 4.2 EXISTING HERITAGE REQUIREMENTS

A portion of the site (7.4ha ref Figure 14) has been entered on the ACT Heritage Register to ensure the conservation of buildings and related infrastructure at the Belconnen Farm precinct. The boundary of this precinct has been determined and a conservation management plan has been prepared. The precinct has been integrated into the structure plan design.



**Figure 14: Belconnen Farm heritage precinct**

A number of other matters of heritage interest have been identified as a consequence of research into the European and indigenous history of the site. None of these have warranted the reservation of land for heritage purposes within the portion of the site proposed for development. A number require various actions (related to recovery of artefacts and the like) to be taken prior to development proceeding in the vicinity of the relevant sites.

### 4.3 INDIGENOUS HERITAGE

An understanding of indigenous cultural heritage is an important pre-requisite in the land development process to ensure that heritage values, where they exist, are identified and protected and managed appropriately. Biosis, who have appropriate expertise in cultural archaeology was commissioned to undertake the necessary consultation with local indigenous groups and, in company with these groups, conduct extensive field research. The findings of the Biosis work are set out in two reports covering the ACT and NSW components of the site. The (ACT) *Heritage Act 2004* provides that material relating to indigenous archaeology should remain confidential to ensure that any such material is secure and protected from vandalism, theft or damage. The reports are consequently not available for public review but will be available as appropriate throughout the planning and development process to ensure that the recommendations are fully implemented.

In summary, within the ACT, the field survey identified 11 previously unrecorded Aboriginal archaeological sites within the Development Area and 39 unrecorded Aboriginal archaeological sites within the Conservation Corridor. In addition 32 previously recorded sites are located within the Development Area and seven within the Conservation Corridor.

The majority of the sites consisted of small artefact scatters with less than 10 artefacts or isolated finds. These sites have been assessed as holding low cultural and scientific significance. Scarred trees and larger open sites (n=16) also occur within the Project Area. These sites are ranked as holding moderate significance as the majority of the previously recorded sites have been subject to a program of collection and/or subsurface testing. One rock shelter site holding high significance was relocated within the Conservation Corridor.

In NSW the field survey identified 18 previously unrecorded Aboriginal archaeological sites within the Development Area. No previously recorded sites are located within the Development Area.

Ten previously registered sites are located within the NSW component of the Conservation Area. The majority of the sites consist of small artefact scatters with less than ten artefacts or isolated finds. These sites have been assessed as holding low cultural and scientific significance. One site is a large scatter and has been assessed as holding moderate significance.

Eleven previously unrecorded Aboriginal Archaeological sites were identified within the NSW component of the Conservation Area. The majority of these sites are of low significance with one site being of high significance. Threenew areas of (archaeological) sensitivity were identified – all associated with surface sites.

The scarred trees and rock shelter site will be preserved. In all cases except for one scarred tree these are located within the conservation corridor. In the remaining case the tree will be located within parkland within the future urban environment. Artefact scatter sites that are likely to be disturbed by urban development are recommended for salvage and appropriate storage. Sites

identified as potential archaeological deposits (PADs) will be investigated, including by excavation, prior to development.

#### 4.4 EUROPEAN HERITAGE

The West Belconnen project area was occupied at an early stage in the history of European settlement in Australia, and has significant connections to early European history through a linkage with Charles Sturt. Investigations into the European history and heritage of the site have been conducted by Eric Martin and Associates (EMA) and recorded in a series of reports. A preliminary advice report was prepared in 2011 (EMA, 2011). A significant finding of this report was that the Belconnen Farm precinct was of heritage significance and subject to an assessment by the ACT Heritage Unit. Subsequently the farm precinct (an area of approximately 7.4ha) has been listed on the ACT Heritage Register. The next step was the preparation of a heritage Conservation Management Plan (CMP) for the precinct. This was commissioned by the West Belconnen project proponent and has now been completed by EMA (EMA, 2014a). It has been prepared in close consultation with the ACT Heritage Unit and has their final approval.

Detailed heritage assessments have also been conducted over the whole site and are reported on in a series of four reports by EMA. (EMA, 2014b; EMA, 2014c; EMA, 2014d; EMA, 2014e) Matters of European heritage that have been found to be significant as reported by EMA are as follows:

In the ACT:

- The Belconnen Farm precinct
- Parkwood Road
  - The southern section being part of the boundary of Sturt and Campbell's land.
  - Previously the road/right of way to the Southwell/Kilby property, Parkwood.
- ACT border alignment.
- The short section of fence line marking the historic boundary of Charles Sturt's 1837 grant and Charles Campbell's eastern estate boundary (within part of Block 7 Section 149 adjoining housing along Eccles Circuit in Macgregor).
- Road to Belconnen Farm
- House
  - There is a house indicated on an old parish plan (Fig 36 in the EMA report) but there is no obvious evidence of it today. A watching brief should be established when work is proposed for this area so any evidence of it may be recorded.
- Stock Yards
  - These are shown on a 1945 site plan (Figure 37 in the EMA report). There is no obvious evidence of the stockyards today but a watching brief should be established when work is proposed for this area so any evidence of it may be recorded.

In NSW:

- The western boundary of Sturt/Campbell land.
- The alignment of the original access road to Parkwood/Kilby Park.
- Some tree planting along Ginninderra Creek to protect views from Parkwood/Kilby Park
- Retention of vistas/views to distant ranges and the Murrumbidgee River valley.
- The ACT border alignment.

- The alignment of the access road to Cusack's Crossing.
- Retention of vistas/views to distant hills and mountain ranges, the Murrumbidgee River valley and Ginninderra Creek.
- Cusack's Crossing site.

The Belconnen Farm heritage precinct has been included on the ACT heritage register and steps are now being taken to create the site as a separate land parcel. Ultimately it will be an integral component of the urban development with potential to provide for a range of community based activities in keeping with its overarching heritage significance.

Other heritage items identified above will be incorporated where feasible in the design of the project site. Parkwood Road will become the principal "main street" of the development. The Sturt property boundary is recognised with road and open space alignments in the master Plan as is the alignment of the road to Parkwood farm. The house and stock yard sites will be further investigated.

## 5 SITE CONSIDERATIONS

### 5.1 LAND USE

The principal use of the site is for agriculture however there are a range of other activities as outlined below, with reference to the land parcels shown on Table 1:

*Table 1: Existing Land Use*

Land Parcel	Area	Current Use
<b>ACT LAND</b>		
BLOCK 1605	665.8 ha	Agriculture (also includes Belconnen Farm house precinct which is heritage listed)
BLOCK 1606	12.5 ha	Agriculture
BLOCK 1607	8.1 ha	ACTEW vent & Bicentennial Trail
BLOCK 1420	2.7 ha	Billabong Aboriginal Development Corp community and education services
BLOCK 1613 (PT)	26.8 ha	River foreshore (Incorporated in Woodstock Reserve)
Block 1332	9.64 ha	Strathnairn Arts Association
BLOCK 1329	41.4 ha	Agriculture (poultry)
BLOCK 1621	33.3 ha	Unleased Territory land (horse agistment)
BLOCK 1622	71.8 ha	Unleased Territory land (horse agistment)
BLOCK 853	0.7 ha	Unleased Territory land (horse agistment)
BLOCK 1540	0.9 ha	Landscape supply business
BLOCK 856	0.8 ha	Plant nursery
BLOCK 857	0.2 ha	Unleased Territory land
BLOCK 858	0.6 ha	Kennels
BLOCK 859	0.6 ha	Veterinary surgery
BLOCK 860	0.2 ha	Unleased Territory land
BLOCK 1333	4.2 ha	Pony Club

BLOCK 1440	0.8 ha	ACTEW vent
BLOCK 7 SEC 149 (PT)	17.8 ha	Unleased Territory land (horse agistment)
BLOCK 1586	108 ha	Old Belconnen Land Fill, includes Parkwood recycling estate (secondary industrial area), green waste recycling, asbestos disposal, hydrocarbon affected soil treatment area, emergency land fill site.
<b>NSW LAND</b>		
LOT 1 / DP771051	91.8 ha	Agriculture
LOT 2 / DP771051	80 ha	Agriculture
LOT 3 / DP771051	80 ha	Agriculture
LOT 7 / DP771051	80 ha	Agriculture
LOT 4 / DP771051	80 ha	Rural residential (unoccupied)
LOT 5 / DP771051	80 ha	Rural residential (single residence)
LOT 61 / DP801234	83 ha	Gravel quarry and agriculture
LOT 62 / DP801234	25 ha	Commercial accommodation and function centre.

## 5.2 LAND CAPABILITY

Expert reports (Douglas Partners, 2014a) (Douglas Partners, 2013b) (Douglas Partners, 2014c) have been prepared to assess the urban capability of the West Belconnen site. The principal finding has been that the great majority of the area assessed is considered to be suitable for residential development from a geotechnical perspective. Comments and recommendations are made relating to various geotechnical aspects and remedial measures to alleviate possible constraints on development. These will be taken into account as the development is implemented post rezoning.

## 5.3 BUSHFIRE

A bushfire risk assessment (Ecological, 2014) has been conducted of the proposed re-zoning for the West Belconnen Project. It specifically addresses:

- Whether the statutory and policy requirements for bushfire protection in ACT and NSW are met by the proposal; and
- The extent to which best practice approaches to bushfire planning are able to be achieved.

The existing and potential bushfire hazard and associated risk (post development) was assessed using the respective State and Territory bushfire planning provisions. This has included consideration of both the ACT and NSW jurisdictions; under the ACT Planning for Bushfire Risk Mitigation General Code (2008) and Planning for Bushfire Protection Guidelines (NSW RFS, 2006).

The application of these codes which include provisions for asset protection zones on exposed urban edges and utilization of building code standards designed for bushfire protection, will ensure that bushfire risk is minimised.

## 5.4 FLOODING

The West Belconnen site is bordered on its southern side by the Murrumbidgee River and on its northern side by Ginninderra Creek. The Murrumbidgee River is within a deeply incised river valley up to 100m below the area proposed for development. Consequently there is no flood risk to residential development from the Murrumbidgee River. Recreation activity along the river is likely to increase substantially and any recreation facilities or activities should be implemented with regard to possible flood risk, which should be assessed on a case by case basis.

Ginninderra Creek, upstream of Ginninderra falls, runs at a similar elevation to the surrounding land. Below the falls it is in a deep gorge. There is a potential flooding risk from Ginninderra Creek upstream of the falls, affecting parts of the site in NSW and the ACT. Consultants have been commissioned by the ACT Government Territory and Municipal Services Directorate to undertake flood risk analysis for the length of Ginninderra Creek below Lake Ginninderra within the ACT. Their commission has been extended on behalf of the West Belconnen project to include the length of Ginninderra Creek in NSW as far as Ginninderra Falls. Interim advice has been sought from the consultants as to flood impact at West Belconnen. The standard approach to flood risk in urban development in the ACT and elsewhere in Australia is to establish the "100 year" (or "1%") flood line, with urban development being permissible above the line but not below it.

Whilst their work is currently incomplete the consultants have been asked to provide preliminary advice as to the likely location of the 100 year flood line along Ginninderra Creek, and as a precautionary measure because their work is not yet complete, to add a 1 metre elevation to this line. The consultant has provided a plan (SKM, 2014) showing the 1% plus 1 metre flood line which has been adopted as a constraint on development for the purposes of master planning at West Belconnen. This line will be subject to adjustment when the consultant project is complete but it is anticipated that such adjustment will be minor.

## 5.5 CONTAMINATION

A consultant research project, including site investigations, has been commissioned to examine blocks 1605 and 1606 which will comprise the early stages of development of the site and determine the extent, if any, of any contamination that may be present (GHD, 2009). Isolated contaminated sites and areas of possible contamination have been identified; typically these are disused sheep dips areas in the vicinity of machinery sheds and the like. All identified sites will be investigated in further detail and remediated as part of the land development process.

A continuing program of site investigation will be conducted as the development proceeds, noting the long timeframe over which the development will occur.

## 5.6 ODOUR

### PARKWOOD EGG FARM

The Parkwood Egg Farm is located off Parkwood road, close to the NSW border in the ACT. The farm is a “barn” egg farm consisting of 7 enclosed sheds with capacity for 3 more. The total chicken population is up to 300,000 birds at full capacity. It is understood that the crown lease for the farm has recently been renewed (on a reduced site area) for a further term of 20 years and that, in order to convert the facility from a “battery” to a “barn” operation substantial capital investment has been made. In light of this it is unlikely that the site will be redeveloped for some time. Nevertheless the farm site itself and the land within its buffer zone has substantial potential for residential and related uses and it is unlikely that this land will be permanently assigned to poultry farm uses. It would also be very inefficient from an urban infrastructure point of view to permanently sterilize land that will eventually be central to an extensive urban development. It is anticipated that at the end of the lease term, this land will be available for development. This timing sits within the overall timeframe for the West Belconnen project which is anticipated to be developed over a 30-40 year period. For these reasons the Parkwood site has been included in the West Belconnen master planning process and in the overall rezoning proposal.

Poultry farms are known to emit odours which are a constraint on residential and similar development. The poultry farm currently sits within a 500m radius clearance zone that is incorporated in the Territory Plan. Within this buffer, residential or community use is not permitted. CEE (Consulting Environmental Engineers) was commissioned (CEE, 2014a) to review the buffer in light of the proposed West Belconnen development, given that the proposed development includes land within the buffer and the Parkwood farm site itself, and noting the operational change from “battery” to “barn” and reduction in the site area which may allow a reduction in the extent of the buffer. CEE have recommended a 500m buffer, extending to 600m down-slope from the sheds (the path of night drainage breezes) to the north-east, north and west of the sheds.

These parameters have been adopted in the rezoning proposals and will constrain residential and community facility development as long as the farm is operational. It is proposed that the future long term use of the land as urban be controlled by way of a provision in the Territory Plan Variation to require deferral of residential or community use pending cessation of operations or relocation of the egg farm. The farm crown lease is for a period of 20 years commencing in 2013. This is an appropriate period that would lead to the urban development of the site in the latter half of the overall West Belconnen project timeframe.

### GINNINDERRA TRUNK SEWER VENTS

The Ginninderra Trunk Sewer runs under the West Belconnen site from north (near Dunlop) to the lower Molonglo treatment plant. The sewer is a tunnel and relatively deep underground. There are three vents associated with the sewer as follows:

- Immediately north of Parkwood Road near the Belconnen Pony Club (3GIN)
- Immediately west of Strathnairn (4GIN)
- In the conservation corridor (5GIN).

The first of these (3GIN) is close to the recently developed area of West Macgregor. Because of this

proximity odour emissions from the facility have been mitigated to levels compatible with residential development by the installation of a taller vent stack and odour scrubbing technology. This facility is therefore unlikely to impose a constraint to urban development other than the need for it to be retained on its current site.

A research project to define the technology requirements for the two remaining vents has been commissioned jointly by the Economic Development Directorate and ACTEWAGL. Preliminary results (ACTEW, 2014a) indicate that there are no odour issues associated with the 4GIN stack which is located within the proposed development area near Strathnairn. A 130m radius clearance zone is recommended for the 5GIN stack; this would be wholly within the proposed conservation corridor.

#### **LOWER MOLONGLO WATER QUALITY CONTROL CENTRE**

The Lower Molonglo Water Quality Control Centre (LMWQCC) is protected by a statutory 1km radius clearance zone incorporated into the Territory Plan. Within this zone residential and other sensitive uses are prohibited. Within the subject site the clearance zone falls within the proposed conservation corridor and the nearest area of proposed residential development is approximately 200 metres outside the clearance zone.

The clearance zone was determined some time ago and it is understood that since then the operational characteristics of the plant may have evolved. CEE was commissioned to review the buffer against interstate practice and also to undertake odour modelling. The CEE report (CEE, 2014b) finds as follows:

*“Preliminary odour modelling in this study indicates that odours from LMWQCC do extend beyond the 1 km radius buffer zone. While it is likely that this preliminary modelling exaggerates the extent of odour, .. it is still considered that a higher degree of odour control at LMWQCC will be required with urban development extending to within 1.2 km of the plant.*

*The urban development proposed in the Riverview proposal will require LMWQCC to manage odour emissions from the existing treatment units, the emergency storage and solids handling to a higher level than occurs at present.*

*In response to this change in circumstances, ACTEW will need to undertake investigations into odour control, and seek approval from the environmental and funding regulators to undertake ameliorative actions at the plant. It is expected that ACTEW’s work for investigations, designs, approvals, construction and commissioning will take several years.*

*.....the Riverview project extends over a long timeframe and ..... development is not programmed to occur close to LMWQCC for 8 to 10 years. Given this timing, the proponent has committed to not proceed with urban development on any land within a zone 600 m outside the current clearance zone for a period of six years from January 2014. It also is noted that development is not proposed to encroach closer to the plant than 200 m outside the current clearance zone.”*

#### **OLD BELCONNEN LAND FILL**

The Belconnen Land Fill site is no longer utilized as a public land fill – all ACT municipal waste goes to the Mugga facility with the exception of some waste recently disposed of at the site to alleviate a short term issue related to the expansion of Mugga which is now complete. It has also been

proposed that the Belconnen site be utilised for sequestration of loose fill asbestos from demolished “Mr Fluffy” homes. If this proceeds it will complete within 3 – 5 years, before the development front is close to the landfill site. There are a number of uses remaining in operation on the land fill site that would be incompatible with residential development and past activities may have left a legacy of contaminants. Consultants have been commissioned to review the land fill site in light of potential nearby urban development.

The report prepared by the consultants (GHD, 2014e) has confirmed that certain activities currently underway on the site are incompatible with residential development. Most or all of these are either of a temporary nature, or can be relocated to more suitable locations within the site, or have their impacts ameliorated by other means, for example by being enclosed within buildings. The development “front” will not reach the landfill site for several years; in the interim it is proposed that the territory plan retain the current clearance zone that will preclude residential and community development pending relocation or appropriate amelioration of the impacts of the relevant activities.

## 5.7 ZONOSIS

Zoonosis is the process whereby disease is transferred from one species to another. At West Belconnen the Parkwood Egg Farm is a facility where zoonosis presents an operational risk that warrants attention; the risk being the potential for a bird disease to be transmitted from wild bird populations to the farm chicken population and vice versa. CEE was commissioned to examine the potential risk (CEE, 2014a) and consider that precautionary measures are advisable. The risk that has been identified is that wild birds (particularly ducks which are known to transmit diseases) may be attracted to wetlands that are to be constructed as part of the development project. To minimise this risk CEE has recommended as follows:

*“There should be a buffer of 800 m from the sheds to any constructed wetland, to provide adequate biosecurity against transmission of disease from wild water birds to the farm.”*

This constraint has been adopted and will be applied by way of an overlay provision in the Territory Plan which will prohibit wetlands within this clearance zone while ever the Parkwood egg facility is operational.

## 5.8 AIR QUALITY

An assessment of air quality matters (AQR) related to West Belconnen (Aecom, 2014b) reviewed the climate and geographic setting of the development area and identified existing air quality issues in the Australian Capital Territory (ACT) region that might affect the West Belconnen development and potential changes to air quality that the development may cause. Additionally, mitigation measures were recommended to minimise any potential adverse effects.

The key finding of the AQR was that the primary potential pollution sources likely to affect air quality in the development area are bushfires (including back-burning/hazard reduction activities), wood heaters and vehicles. The AQR identified several sources of knowledge and options for the control and mitigation of wood smoke emissions, with the control measures pertinent to the West Belconnen planning process being summarised as follows:

- Continuation of the ACT Government education and information programs such as the 'Don't Burn Tonight' campaign;
- Wood heater efficiency standard of 60% or better ;
- Wood heater emissions standard of 3 g/kg or better;
- Education on the use of wood heaters;
- Controls on installation of second-hand heaters;
- Encouragement for the use of pellet heaters over standard wood heaters; and
- Continual review of relevant legislation, industry standards and guidelines and documents prepared such as the impending delivery of the National Plan for clean Air and Council of Australian Governments response to the Regulation Impact Statement.

## 5.9 TRANSMISSION LINES

The site is traversed by a number of 330kV transmission lines feeding to the Canberra Sub Station located on Parkwood Road. The line alignments can be seen on Figure 16 the illustrative masterplan which shows the potential for the areas under the power lines to be utilized for a range of activities, including urban agriculture and off road movement systems.

Transgrid have advised of their requirement for a 60m easement for each powerline, within which residential and other uses that may be sensitive to electro-magnetic radiation are not permitted. The proposed Territory Plan amendment will include these easement restrictions.

## 5.10 VISUAL ANALYSIS

An assessment of the visual impact of the proposed development has been prepared by Roberts Day (Roberts Day, 2014b). The visual impact was assessed from a number of vantage points:

- Hollows Circuit in West Macgregor
- The Golf Course residential estate
- Dunlop
- Rural properties adjoining Ginninderra creek and Murrumbidgee River
- Shepherds lookout
- Belconnen Farm
- National Triangle

The key findings of the assessment are:

- The significant amount of land set aside for conservation and recreation purposes reduces the visual impact of the proposed development resulting in the overall visual impact being predominantly low
- The retention of topography on the site preserves and enhances the visual amenity and reduces the visibility of sections of the development
- No development will be visible from the National Triangle
- The draft Master Plan protects the view corridor the heritage listed Belconnen Farmhouse to the Brindabella ranges and therefore the visual impact from this viewing location is rated as nil
- The visual impact from most of the viewing locations will increase over a 30-40 year period as the project develops but for all development phases it is generally ranked as low, and in some cases nil
- The greatest visual impacts were found to be from the existing adjacent urban areas with the Hollows Circuit, West Macgregor revealing a 'Medium' visual impact by 2031 and at full development

## 6 KEY INFRASTRUCTURE

### 6.1 SEWERAGE

A main ridge line runs east-west through the site dividing the development into a northern and southern catchment. The northern catchment falls towards Ginninderra Creek and the southern catchment falls towards the Murrumbidgee River.

ACTEW Water has confirmed that the southern catchment can discharge to the existing overflow structure on the Ginninderra Sewer Tunnel (GST) and the northern catchment can discharge at the existing vortex drop structure.

Two options (G1 and G2) have been investigated to service the Ginninderra Creek Catchment and five options (M1 to M5) have been investigated to service the Murrumbidgee River Catchment (Brown, 2014). Details of these options are summarised in the Table 2 below.

**Table 2: Sewer infrastructure options**

Trunk Sewer	Option No.	Total Sewer length (km)	Capital costs (\$M)	O&M Costs (\$M)	Comments
Ginninderra Creek	G1	6.5	12.7	-	Gravity sewer only including 1km microtunnel
	G2	6.0	8.6	0.17	Two SPS Open trench gravity sewer
Murrumbidgee River	M1	12.2	10.6	-	Open trench gravity sewer affects 5.8ha PTWL habitat. Small pump stations excluded
	M2	9.1	34.9	-	Open trench and Microtunnel gravity sewer affects 5.8ha PTWL habitat. Small pump stations excluded
	M3	10.9	29.5	0.34	Large pump station. Open trench gravity sewer
	M4	9.2	26.5	0.34	Large pump station. Open trench gravity sewer
	M5	11.1	25.4	0.34	Large pump station. Gravity sewer discharges to Ginninderra creek catchment.

Several of the options, including the most economical, in the Murrumbidgee catchment involve traversing the conservation corridor with impacts on woodland and pink tailed worm lizard habitat. The options which substantially mitigate these impacts, particularly those involving microtunneling, are feasible but substantially more costly with the difference between the least and most cost options being approximately \$25m.

All of these options will be evaluated by the project team in the context of a referral to the Commonwealth Department of the Environment under the provisions of the Environment Protection and Biodiversity Conservation Act as the woodland and worm lizard are listed under that Act. A strategic assessment process, to be conducted in accord with the requirements of the Act has commenced and will determine the most appropriate solution.

ACTEW has advised that the provision of sewerage services to the site to meet the anticipated demand is feasible.

## **6.2 WATER**

ACTEW has advised that the supply of water to the site to meet the anticipated demand is feasible. A water concept plan based on the ACTEW Corporation- Water Supply and Sewerage Standard (AWSSS) has been prepared (Brown, 2014). Subject to finalisation of the preferred Water Sensitive Urban Design (WSUD) and water recycling strategy, this report and concept plans for water are based on meeting the current AWSSS to provide a base case workable concept for servicing the site.

ACTEW Water is continuing to investigate the Water Supply Strategy and proposed bulk water supply infrastructure for servicing the proposed West Belconnen development.

## **6.3 GAS, TELECOMMUNICATIONS & ELECTRICITY**

The provision of energy and telecommunications services to the site has been examined in discussion with the relevant agencies. All services are able to be made available to the site and, with appropriate upgrades, will be able to service the development to full completion.

## **6.4 STORM WATER**

Consideration of factors such as the proximity of the Murrumbidgee River and Ginninderra Creek, an appreciation of the need for conservation of potable water as a scarce resource, the topography of the site and the need to prevent scouring runoff and altered soil water regimes in environmentally sensitive areas, have influenced the approach that has been taken to on-site water management. The proposed storm water management system is principally focused around the capture and re-use of stormwater on the site. This has the effect of avoiding the environmental impacts of excessive runoff as well as reducing overall demand for potable water from the Canberra water supply network.

A range of water management options are being explored; the minimal objective is to meet current ACT Government standard requirements for stormwater management and there are options, with the implementation of various levels of technology, to achieve improved outcomes over and above this minimum requirement. These options come at various levels of cost and will be evaluated on a triple bottom line basis.

## **6.5 TRANSGRID**

TransGrid is the owner, operator and manager of the NSW high voltage transmission network. It is TransGrid's job to ensure the safe and reliable delivery of high voltage electricity around NSW and also to the ACT.

The ACT, until recently, had one bulk power supply point: Canberra Substation at Belconnen. From this substation, ActewAGL distributed electricity to homes and businesses around the ACT and surrounding areas. To ensure the security and reliability of electricity supply, a second independent bulk supply has been constructed at Williamsdale ACT and connected to the ActewAGL distribution system serving Canberra. In order to achieve effective security of supply a switching station is required to enable the power supply to be switched between Williamsdale and Belconnen in the event of a problem occurring at either facility.

A preferred site for the switching station has been selected to the south of Stockdill Drive. This would be connected to the Canberra Substation via a 330kv line that would utilize the existing easement provided for the existing 132kv line that traverses the extreme eastern corner of the site in the vicinity of the golf course. There may also be a requirement for an additional temporary 330kv line within the project site to link the Yass and Williamsdale lines. This will have minimal impact on the proposed development and does not affect the rezoning as an easement will be created within the zoned land as required.

## 6.6 TRANSPORT

### DISTANCES FROM CANBERRA CENTRES

The West Belconnen project will provide a substantial component of future housing development in Canberra over the next 30-40 years; it is a greenfields site and consequently is part of the “greenfields” half of the ACT Government 50/50 policy whereby 50% of future housing growth is to be in infill areas and 50% on greenfield sites. Whilst it is a fringe area it does have good levels of connectivity to areas of Canberra beyond Belconnen and compares well with other outer areas in this regard.

Figure 15 illustrates the relative distances from Belconnen Town centre and central Canberra to West Belconnen and other parts of urban Canberra. West Belconnen is between 6 and 12 kilometres from Belconnen Town Centre and about the same distance as Wanniasa to central Canberra. It is substantially closer to central Canberra than much of Tuggeranong and is closer than the newer suburbs of Gungahlin. It is a similar distance (although with much better road connectivity) to the Kowen plateau which has previously been proposed for residential development.

West Belconnen will form part of the town of Belconnen, adding to the current population of approximately 90,000 people. Belconnen Town centre is a substantial retail commercial and office employment hub, supplemented by several group centres with Kippax being located at West Belconnen.

Accessibility, measured in terms of travel times, to Belconnen and to central Canberra is very good. The results of a preliminary travel time survey conducted in 2012 are illustrated in Table 3 below. The times are based on a start/finish point within the project area west of the Strathnairn entry gate, in what is likely to be stage 1 of the project, accessed via Stockdill Drive. Travel times to Kippax by car are less than 5 minutes, bicycle about 10 minutes. Belconnen Town Centre is only about 10 minutes by car, Civic is only 15 minutes. A bike trip to the Belconnen Town centre (Westfield) takes less than 25 minutes. More detailed traffic analysis has also been conducted and is discussed further below

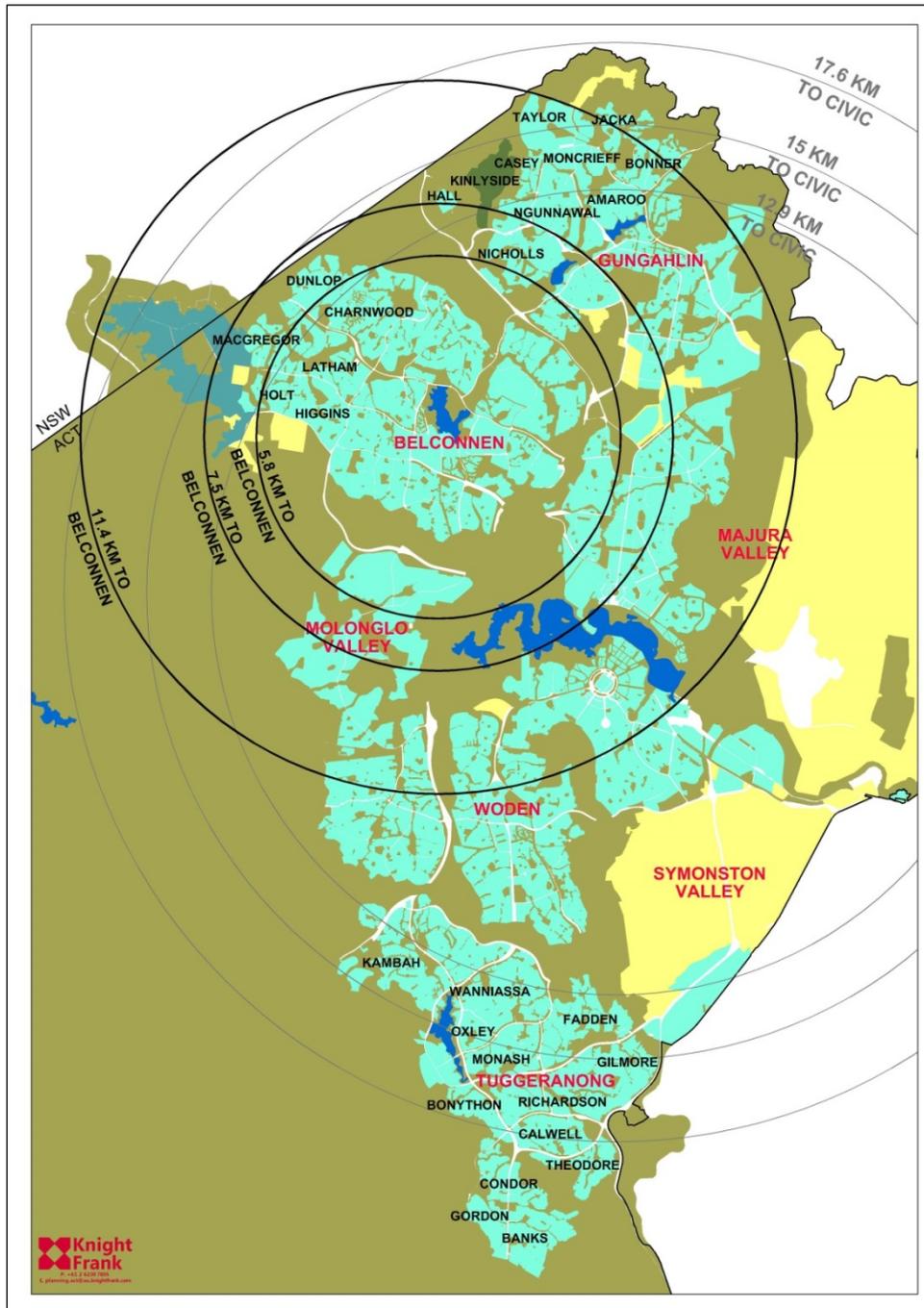


Figure 15: Radial distances

**Table 3: West Belconnen Travel Time Data**

<b>WEST BELCONNEN TRAVEL TIME DATA</b>				
MODE	ORIGIN	DESTINATION	DISTANCE (KM)	TIME (MIN:SEC)
Car	Civic GPO	Project site (via Belconnen Way)	15	25:45
Car	Project site	Holt Shops	2.3	3:00
Car	Project site	Kingsford Smith School	3.3	3:20
Car	Project site	Kippax	4.4	4:40
Car	Project site	Hawker Group Centre	5.6	6:00
Car	Project site	Belconnen TC	8.2	10:00
Car	Project site	Civic GPO (via William Hovell Drive)	17	14:45
Bicycle	Project site	Kippax	3.5	9:05
Bicycle	Kippax	Project site	3.5	10:25
Bicycle	Project site	Belconnen TC	8.5	23:35
Action Bus	Civic bus interchange	Kippax		37:00
Action Bus	Kippax	Civic bus Interchange		35:00
Note:	All trips mid-morning weekdays July/August 2012 Project site start/finish point within the project area west of the Strathnairn entry gate, in what is likely to be stage 1 of the project, accessed via Stockdill Drive			
Source:	Riverview Pty Ltd, 2012.			

**ROADS AND TRAFFIC CONDITIONS**

Traffic analysis and modelling, based on the proposed yield of approximately 11,500 dwellings and 30,000 people has been conducted by Aecom, specialist traffic consultants (Aecom, 2014a). The strategic level traffic model (Canberra Strategic Traffic Model or CSTM) has been developed for the Environment and Planning Directorate and is used for all strategic level transportation planning in Canberra. Aecom have utilised this model for strategic analysis and with output from the CSTM have constructed a detailed model (using “microsym” software) to assess roads and traffic in the western portion of the existing Belconnen urban area and in the proposed west Belconnen project area.

The key roads that will serve the proposed development are Southern Cross Drive, Drake Brockman Drive and potentially Ginninderra Drive. William Hovell Drive and Florey Drive are also important. Currently, these roads are operating satisfactorily during peak periods although William Hovell Drive is operating with little spare capacity and has a relatively high crash rate.

It is anticipated that a connection to Ginninderra Drive will be provided to West Belconnen. This will ensure better access to Charnwood and beyond to east Belconnen, Gungahlin and Civic. One of the key advantages of good access to Charnwood is reduced travel times from the Emergency Services Centre in Charnwood to new housing and services in West Belconnen.

The ACT Government “Transport for Canberra” policy proposes that the city move to an increasingly sustainable transportation system, with less reliance on cars and increasing levels of travel on buses, bikes and on foot. Aecom have analysed the traffic volumes and patterns that will be generated by the West Belconnen project initially and through to the complete build out of the project. The proportion of travel that occurs in cars compared to non-car modes – the “mode split” is a critical consideration when forecasting likely future traffic volumes and patterns. The mode split will be influenced by a range of factors that may vary widely over the life of this project, including:

- Fuel pricing and availability
- The availability and cost of alternative technologies such as electric vehicles
- Costs of public transport
- Costs of parking
- Provision of road infrastructure
- Public transport levels of service
- Community attitudes and preferences
- Changing work patterns, for example telecommuting.

Some of these factors are within the control of Government whilst some are not. The Transport for Canberra policy sets goals for more sustainable transport, focusing on trips to work. The Policy proposes that for car, bike and bus trips to work in 2026, 25% of total trips should be by one of the non-car modes. This compares with 15% in 2011.

The Aecom traffic modelling estimates future traffic volumes based on considerations of travel times and costs, home and workplace locations, roadspace availability, parking costs, public transport and bike availability and other factors. The projections are made for stages of the development, at 2021, 2031 and 2041 (when full build out is assumed for modelling purposes, although this may occur later). A key consideration is the traffic volumes predicted to occur on the main roads that provide access to the site. This provides a basis for determining where road upgrades will be required, and when. These upgrades are then factored into the model to test their effectiveness and through an iterative process a final suite of works is selected which will satisfy the traffic requirements.

When the model was applied at west Belconnen a range of necessary road upgrades were identified. The assumptions in this run of the model included relatively high car parking charges (e.g. at Civic) which would discourage some car travel and increase public transport patronage. The model predicts that in 2026, 81% of car/bus/bike travel would be by car, falling to 77% in 2041. These figures are higher than the Transport for Canberra projection of 75% in 2026.

The predicted amount of travel to work by bike is low (3 – 3.4% from 2011 to 2041) and well below the Transport for Canberra level of 7.5% in 2026. This is likely to be an under-estimate. The proposed level of on and off road bicycle infrastructure for the west Belconnen project is very high (Refer to “Other modes of transport”, below) reflecting the aspirations of the Transport for Canberra policy and the uptake of electric bicycles, which open up this transport mode to a new tranche of users, is rapidly gaining momentum.

The analysis has shown that relatively small changes in factors such as parking charges or bike usage can make significant differences to demand for car travel and this in turn affects the need for road infrastructure upgrades or the timing of the upgrades. The unpredictability of these factors, particularly beyond the ten or twenty year horizon, exacerbates the issue. It will be necessary therefore to evaluate and re-evaluate infrastructure requirements periodically in order to ensure that capital works investment is both prudent and responsive to need. The project team, working together with EDP and TAMS traffic specialists, is continuing to review and assess alternative future scenarios. This includes consideration of road planning to service the new Molonglo development which, whilst factored into current modelling, is also subject to review and possible change. For example consideration is being given to grade separation at the intersection of William Hovell Drive and John Gorton Drive and the upgrading of William Hovell to “parkway” standard.

Nevertheless it is necessary to provide a degree of certainty regarding the intentions and commitments that will be made to address traffic impacts from the west Belconnen project based on current information. For this reason, and based on the traffic modelling outcomes as presented in the Aecom report, the following is proposed:

### **2016-2018**

The first phase of road improvement works are expected to be required by the time 600 dwellings are occupied in the new development between 2016 and 2018. Works will mostly be required along Drake Brockman Drive.

Proposed works include:

- Widening and re-alignment of Stockdill Drive to form the new entry into the project with a change in priority at Spofforth Street;
- Provision of Right Turn lanes at T intersections along Drake Brockman Drive; and
- Provision of Bus queue jump lanes at the intersection of Southern Cross Drive and Kingsford Smith Drive.

In addition it is noted that Phase 1 works may also include some safety improvements to William Hovell Drive subject to the findings of further studies that are currently being commissioned by TAMS.

### **2023 – 2027**

The second phase of road improvement works are expected to be required by the time 2,900 dwellings are occupied in the new development between 2023 and 2027.

Proposed works include:

- Further augmentation along Drake Brockman Drive including the provision of a service road and modified intersection layouts for existing homes between McNaughton Street and Spofforth Street;
- Widening of pavement and realignment of Parkwood Road to form new entry;
- Signal metering at the roundabout intersection of Drake Brockman Drive and Kingsford Smith Drive; and
- Provision of priority 2 local area traffic management (LATM) measures to streets in Holt and new traffic signals at intersection of Southern Cross Drive and Starke Street.

**2032 – 2038**

The third phase of road improvement works are expected to be required by the time 5,600 dwellings are occupied in the new development between 2032 and 2038.

Proposed works include:

- Duplication for the full extent of Drake Brockman Drive and new traffic signals at Trickett & McNaughton Streets; and
- Construction of left turn bypass lane from William Hovell Drive onto Drake Brockman Drive.

**2045 – 2055**

The final phase of road improvement works are expected to be required by the time approximately 8,500 dwellings are occupied in the new development between 2045 and 2055.

Proposed works include:

- Additional adjustments to intersection layouts along Drake Brockman Drive;
- Service road on the Southern side of Southern Cross Drive for existing homes between Spofforth Street intersection and Starke Street west intersection;
- Provide eastbound queue jump lane for buses at Florey Drive intersection; and
- Provide new road connection for completion of Ginninderra Drive as the third entry for the project along with modified intersection layouts along Ginninderra Drive through Dunlop and Macgregor.

Separate to this project, there has been ongoing consultation with the local residents of Holt concerning the implementation of LATM in the suburb. In the past, there has also been consultation for implementation of LATM in the nearby suburbs of Macgregor, Dunlop and Charnwood. There are concerns that the West Belconnen development could cause increased traffic in these suburbs. The various improvements listed above are intended to discourage through traffic within existing suburbs.

**OTHER MODES OF TRANSPORT**

A comprehensive examination of requirements for public transport and active transport modes for the proposed development has been conducted by MR Cagney, specialist transportation consultants (MRC, 2014). The approach has been based on the premise that successful sustainable transport planning in the context of urban communities can be defined as the provision of an integrated suite of initiatives that minimises the dependence of residents and businesses on the use of the private motor vehicle.

The report recommends that at least peak hour bus services be provided from the start of stage one of the project to ensure that patterns of public transport use are established early. At this early stage a full size Action bus would not be feasible and it is recommended that the engagement of an alternative transport service provider be considered for the first one to two years. The number of organisations ranging from commercial operators including ACTION through to not-for-profit entities would be able to provide the service using smaller vehicles.

In the third year of development, the population of West Belconnen will exceed 2,000 people. At this point, it becomes appropriate for bus services to start being provided by ACTION as part of their regular operations, and funded by the ACT Government. ACTION would also elect to use a small bus, although it is likely to be more operationally efficient for them to use their regular fleet.

Beyond the third year the service will continue to expand to provide services with 15 minute peak and 30 minute off peak frequency servicing all of the development area. The proposed road layout is intended to facilitate simple and efficient bus route planning. Careful siting of bus stop locations, bike and ride and park and ride facilities are also proposed.

Active transport (walking, cycling and other non-motorised forms of transport) is the most sustainable and has a significant role to play in the transport system. The provision of a well-considered active transport network will encourage social interaction, community cohesion and increase liveability of areas. A draft active transport plan has been prepared to provide a basis for future detailed planning. The proposed active transport movement network is a combination of shared off-road and segregated on-road cycling lanes, combined with a permeable pedestrian network. Secondary routes will be based on a street by street design. The network will be designed with regard to the following principles:

- Maintain grid network pattern with a high density of connections to maximise network legibility and connectivity.
- Casual surveillance improves real and perceived safety on paths. Consider the following:
  - Location of off-road paths.
  - Lighting.
  - Minimise visual barriers.
  - Provide rest stops in suitable locations.
  - Shade and shelter.
- Provision of cycle parking at key destinations such as public transport stops, rest stops, key attractors etc. is crucial in order to foster an environment conducive to active transport use.
- Adequate wayfinding signage must be provided.
- Footpaths typically should be provided on both sides of all streets.
- Walking and cycling routes must be maintained to a high standard to ensure continuous, accessible paths of travel.
- High quality lighting along routes where night use is expected must be provided, consistent with Crime Prevention Through Environmental Design Principles;
- Walking and cycling routes should be linked to local destination and activity centres, such as major work and retail centres, schools, parks, residential areas, and public transport stops via the most direct and convenient routes possible to encourage commuting by active forms of transport.
- Route continuity through local streets is essential, linking footpaths with shared paths and providing safe access through road closures and cul-de-sacs.
- Clear, legible and safe connections may be achieved through the use of signage, landscaping, lighting and active edge treatments.
- Expanses of ground level blank walls along street frontages, and large driveways and entrances to car parks are to be avoided.
- Footpaths have ramps at all kerb corners and tactile ground indicator tiles.
- Street furniture is attractive but does not obstruct footpaths. Blind spots are avoided and footpaths are of adequate width and grade.
- Creation of stimulating and attractive routes will encourage active transport use.

- Walking and cycling routes may be designed around local landmarks and points of interest to encourage active transport use.
- Reduce vehicle speeds in residential areas, shopping streets and around schools.

#### **NOISE**

The introduction of development to the west of Belconnen will result in increased traffic on the three arterial roads that serve the area. In some instances these roads have residential development along them and it is therefore important to consider the possible impacts of increased traffic noise on residents. In concert with the traffic modelling (discussed above) the noise impacts on all residential dwellings in the vicinity of the arterial roads has been assessed (SLR, 2014b)). In the cases of Ginninderra Drive and Drake Brockman Drive the research has found that the predicted noise levels are either within current ACT Government planning criteria or that appropriate mitigation to achieve this is readily possible and recommended for implementation. On one section of Southern Cross Drive predicted noise levels are expected to exceed planning criteria. The consultant has advised that on this section of road noise levels are already high and that the expected increase is only 2dB, which is considered to be marginal only. Because these properties have driveway access to the road mitigation with the use of mounds or barriers is not possible. Alternative measures, such as the installation of double glazing will be explored.

## 7 MASTER PLANNING

### 7.1 MASTER PLAN

An important part of the planning process that has led to the development of the draft amendment has been the preparation of a master plan. The master plan provides an illustration of the potential for the development of the site, based on the technical studies and public consultation. The master plan was developed by a multi-disciplinary team including the various specialists responsible for the preparation of the range of technical studies that are referred to in this report. Importantly, the master planning work was underpinned by a planning and design forum, held over a three day period and involving the multi-disciplinary team, government agencies and stakeholder groups. The master plan is a non-statutory document. Its purpose is to

1. Provide a readily understandable picture of the likely development outcomes as the structure plan is implemented over time
2. As it was being developed, the master plan provided a mechanism for evaluating various options, opportunities and constraints presented by the technical studies and community input, to test these, and confirm the practicality and veracity of the content of the structure plan.

Determination of the site design, numbers and sizes of blocks, provisions for schools, other community facilities, open space and the like has been subject to the outcomes of the master planning process. Detailed design for each stage will proceed following the rezoning of the land and will be in accord with the framework established by the master plan as well as the more general requirements of the Territory Plan.

The master plan is described in full in a separate report by Roberts Day (Roberts Day, 2014). The plan itself is at Figure 16. It is supported by and based on a suite of technical and design studies, listed in the bibliography; of particular interest is the Landscape and Open Space Study (McGC, 2014) completed by McGregor Coxall landscape Architects.

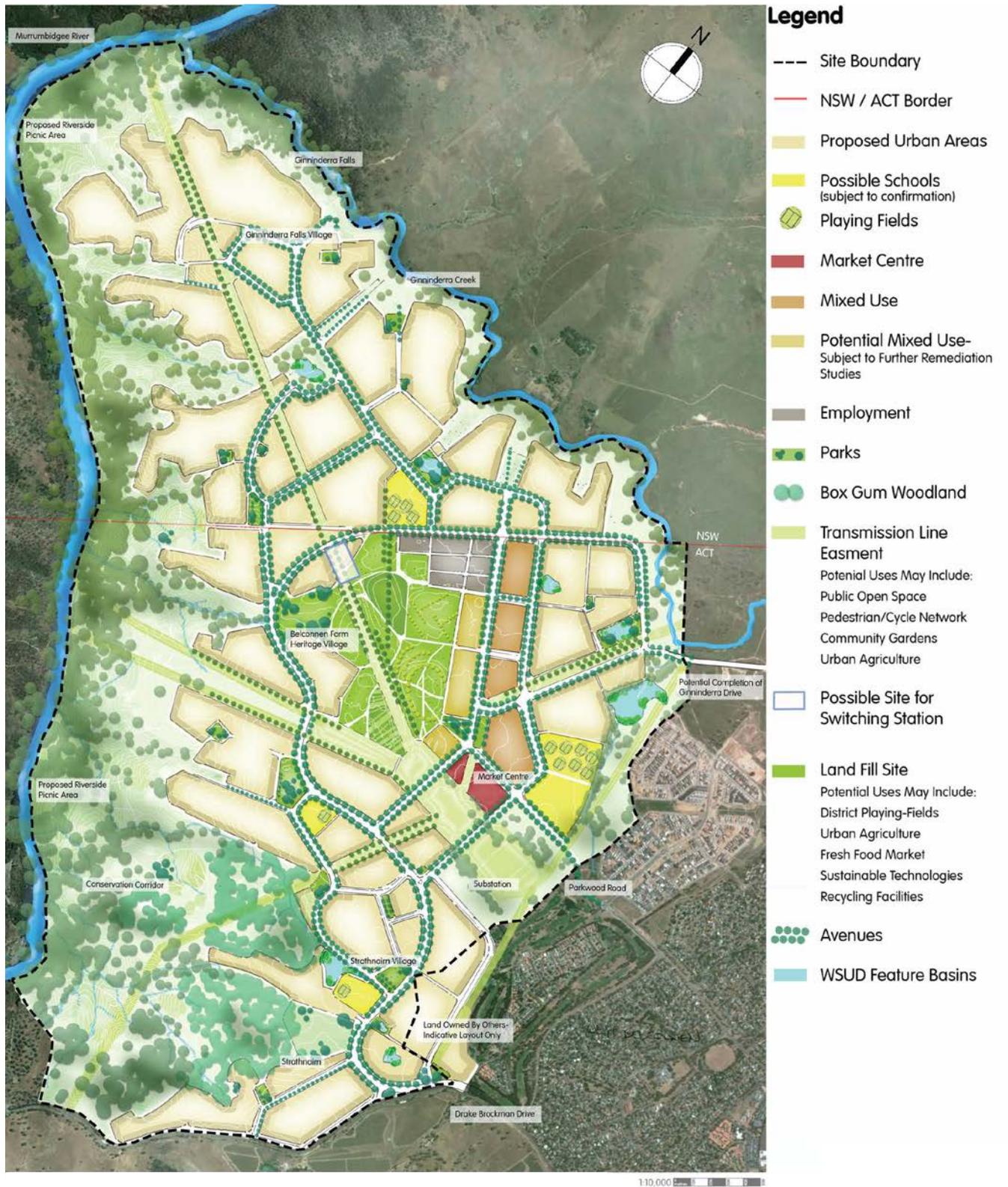


Figure 16: Illustrative master plan

## 7.2 KEY PLANNING & DESIGN DRIVERS

### 7.2.1 A SUSTAINABLE COMMUNITY

The West Belconnen project has been founded on a vision of

“creating a sustainable community of international significance in the nation’s capital”.

This vision has provided the basis for all of the various aspects of the project that are reported on in this document. This section sets out key aspects of the sustainability vision, some of which are also elaborated on in more detail elsewhere in the report.

### 7.2.2 CANBERRA AS A COMPETITIVE COMMUNITY

Canberra, as an urban economy, competes with other cities in Australia. The extent to which the Canberra region is competitive with other cities will influence the rate and nature of growth that will occur and the resilience and robustness of the community will be strengthened to the extent that the region competes successfully for people, jobs and resources. The relative competitiveness of the Canberra region has been examined by the University of Canberra (UCAN) in a report prepared for the West Belconnen Project (ANZSOG, 2013). The UCAN report finds as follows:

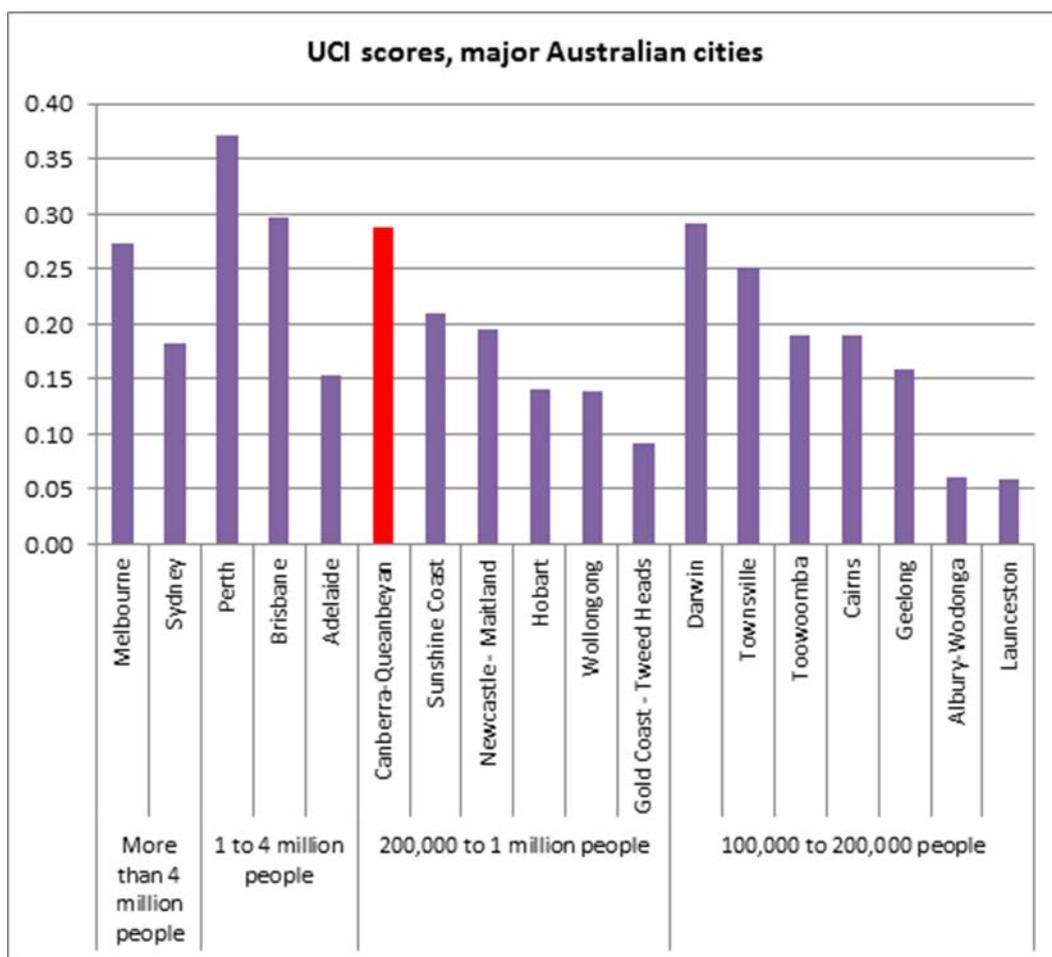


Figure 17: Canberra as a Competitive Community

*“The Canberra region is one of the most economically competitive and liveable urban centres in Australia. A comparison on a range of factors between the Canberra region and Australia’s 17 other cities with populations greater than 100,000 ..., provides a backdrop for the Canberra region as a desirable place to live and work. This desirability is blighted, however, by housing affordability issues. Canberra region’s competitiveness could be enhanced if affordability issues are addressed; housing affordability is an issue of strategic importance for the Canberra region’s sustainable development in economic, social and environmental dimensions.”*

The UCAN report refers to an “urban competitiveness index” which UCAN have developed to enable meaningful comparisons to be drawn between cities. Figure 17 illustrates the position of Canberra relative to a number of other Australian cities. Canberra is significantly more competitive than Sydney and a similar level to Melbourne; within the 0.2 – 1.0 million population size bracket Canberra is pre-eminent.

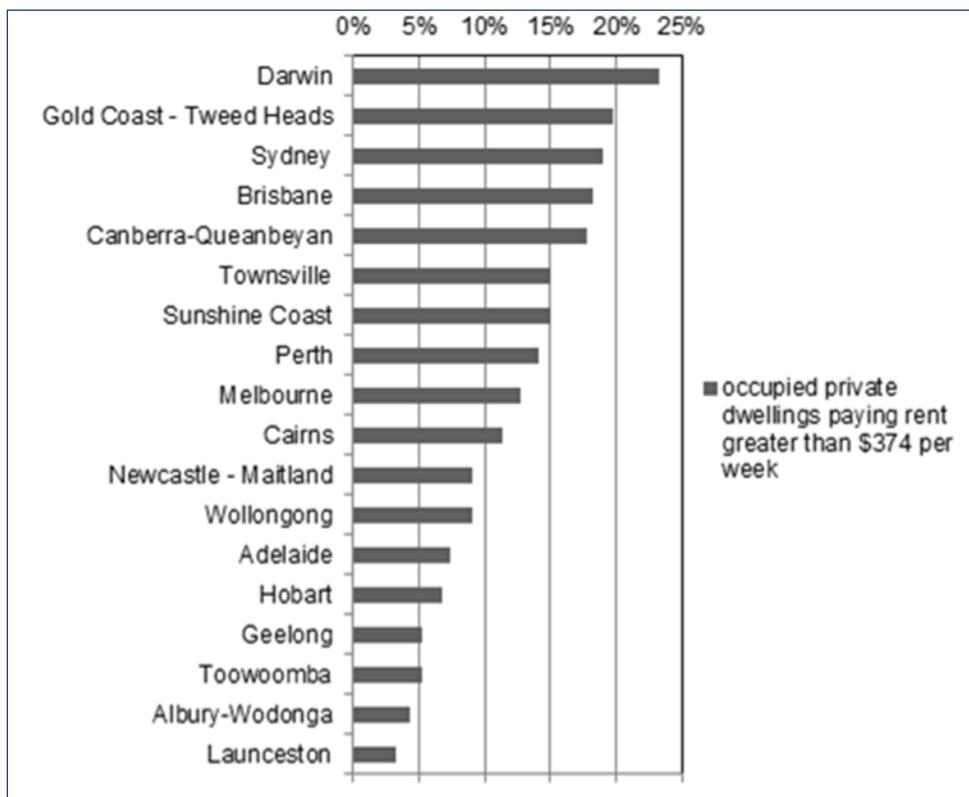
An important factor in the development of the competitiveness index is housing affordability. It is plain that cities where house prices cost more are less attractive and therefore less competitive. Canberra housing prices are high when compared nationally. “Affordability” of housing in Canberra is however sometimes reported as being good. This is because average income levels in Canberra are high and when these are matched with average house prices (even though these are high) the impression is that housing is affordable. Average levels of income are not a good basis for this type of analysis because, depending on the spread of income, a proportion of the people, possibly half the population or more, will be living on less than the average income. Canberra, like other cities, includes large numbers of people on relatively low incomes. These include the group known as “key workers” – police, nurses, teachers and the like. Housing for these groups in Canberra is unaffordable.

The UCAN report includes an analysis of rental prices across cities as a measure of affordability; it says as follows:

*“High rental prices have been adopted as one of several proxies in this study to measure the cost of living in Australia’s 18 largest cities. High cost of rent for this study has been classified as the proportion of private dwellings paying more than \$374 per week in rent. Launceston (3.3%) and Albury-Wodonga (4.4%) had the lowest proportion of dwellings paying more than \$374 a week for rent. Hobart (5th, 6.8%) had the lowest proportion of high rental prices of the eight capital cities. Darwin (23.2%) had the highest proportion of dwellings paying greater than \$374 per week for rent. It was followed by Gold Coast-Tweed Heads (19.8%) and Sydney (19.1%).*

*Seventeen per cent of Canberra-Queanbeyan private dwellings are paying a high level of weekly rent. This was the 5th highest proportion of the 18 major cities, more expensive than cities such as Perth, Melbourne and Adelaide.”*

This data is illustrated in Figure 18 below:



**Figure 18: Comparative City Rent Costs**

Additional UCAN research (ANZSOG, 2014) further illustrates the problem and indicates that it is worsening. The levels of both median monthly mortgage payments and median weekly rentals have increased at rates significantly greater than increases in incomes in the decade 2001 – 2011. Over the ten year period, incomes increased by 75%. Mortgage and rental payments increased by 127% and 130% respectively. The rate of increase in both measures was marginally higher in the latter half of the decade compared to the earlier half – indicating that the problem is worsening and presumably will continue to do so.

There is potential for West Belconnen to address this issue; primarily this will result simply from the downward pressure that will be put on house prices because of an increase in supply. It will also flow from a range of market intervention affordability measures that will be delivered by the project. These are discussed in more detail later in this report.

**7.2.3 GREEN STAR COMMUNITY**

West Belconnen is a Green Star Communities Pilot Project. The Green Star Communities rating tool, developed by the Green Building Council of Australia (GBCA), is Australia’s first fully independent, national sustainability rating tool for communities. It is a voluntary rating tool which provides best practice benchmarks and third-party verification of the sustainability of communities and precinct wide developments.

Green Star – Communities Pilot defines 38 best practice benchmarks across five sustainability categories, plus innovation for the planning, design and delivery of sustainable communities:

- Governance
- Design
- Liveability
- Economic Prosperity
- Environment.

Within each category there are a number of criteria that are allocated points. To gain points for a credit, a project team must complete documentation requirements that demonstrate they have met the aims of the credit. The points assigned to each credit are tallied and translated into an overall single Green Star rating.

The West Belconnen Project is required to complete the assessment process within three years of becoming a Pilot Project. It is anticipated that it will complete the process by the end of 2015.

#### **7.2.4 ADAPTIVE RE-USE – THE OLD LAND FILL SITE**

The old Belconnen land fill site comprises a 107ha site in the centre of the West Belconnen project area. The site is highly problematic because of its prior use as a landfill facility and because of its past and ongoing use for a range of activities that are incompatible with many forms of development. The site is in large part unable to accommodate buildings and unsuitable for residential use. As it stands, the long term management and maintenance of the site represents a liability for the people of the ACT. The West Belconnen project provides the opportunity to reverse this position and utilize the site as a community asset. Potential uses that are being investigated include:

- Resource recovery
- Green waste recycling
- Solar farm
- Light industry
- Commercial plant nursery
- Community gardens
- Mountain bike trails
- Equestrian activity
- Passive recreation
- Forestry/tree planting
- Administrative/education facilities (related to on-site activities).

It is proposed that the landfill site should be incorporated in the West Belconnen project area and that it ultimately be developed on the basis of a masterplan that incorporates whichever of the above uses are deemed to be appropriate and that it become and remain a community owned and managed resource.

#### **7.2.5 WATER SENSITIVE URBAN DESIGN**

Consideration of factors such as the proximity of the Murrumbidgee River and Ginninderra Creek, an appreciation of the need for conservation of potable water as a scarce resource, the topography of the site and the need to prevent scouring runoff and altered soil water regimes in environmentally sensitive areas, have influenced the approach that has been taken to on-site water management. The proposed storm water management system is principally focused around the capture and re-use of stormwater on the site, and controlling both the quality and quantity of stormwater discharged to the Murrumbidgee River and Ginninderra creek. This has the effect of avoiding the adverse

environmental impacts of excessive runoff as well as reducing overall demand for potable water from the Canberra water supply network.

### **7.2.6 CONSERVATION CORRIDOR**

A conservation corridor encompassing areas of habitat for the endangered Pink Tailed Worm Lizard and Yellow Box Red Gum Grassy woodland is proposed. The corridor adjoins both the Murrumbidgee River and Ginninderra Creek and includes a total area in the ACT of approximately 371 ha and an additional 206 ha in NSW, a combined area of 577 ha. The creation of this reserve will mean that the Ginninderra Creek corridor, which commences at Mulligans Flat in Gungahlin and extends through Gungahlin and Belconnen, will be linked to the Murrumbidgee River which it then connects to the Molonglo and upstream Murrumbidgee corridors, respectively into Canberra City and to Namadgi National Park.

It is proposed that the West Belconnen Conservation Corridor be managed as a single unit (ACT & NSW components) which is logical given that it is essentially a single landscape unit, and that the management be by way of an independently funded community trust; the community trust Board would include community and relevant Government agency representatives. Conservation, fire management and recreation and cultural objectives would be equally represented (Elton, 2014f).

### **7.2.7 URBAN AGRICULTURE**

Local food production is, to some degree at least, an important part of the community response to a range of environmental issues. It is certain that local food production, to whatever extent it can be achieved, can be highly beneficial to local communities. At West Belconnen several factors have come together so that food production is likely to be viable and widespread through the development. These factors are as follows:

- Local food production, community gardens and city farm concepts have been and continue to be regularly raised during community engagement forums, indicating a very high level of support for these concepts.
- The soil and climate of the site is amenable to agriculture
- The landfill site has a total area of 107ha, some of which could readily be devoted to community gardens or similar ventures
- The power line easements traverse the site, these are all 60 m wide and in total add up to 86 ha. They would be available and suitable for community farms or gardens.

Consequently the opportunity exists and will be actively pursued, to establish community gardens and urban farming at a scale that is unprecedented in any other similar urban area in Australia.

### **7.2.8 HOUSING AND URBAN DESIGN CODE**

The approach that has been taken to West Belconnen has been to develop the master plan in response to:

- The physical form of the site
- The landscape setting, particularly the dramatic visual relationship of the site to the Brindabella ranges and to the hills to the north and north west

- The need to protect the local and global environment and to achieve a 6 star new community rating
- The extensive urban edge between residential development and the Conservation Corridor
- The need for a full spectrum of housing types across all affordability levels
- The need, recognising that Canberra land prices are amongst the highest in Australia, to achieve land development economies wherever practical
- The need to focus density along transport routes and near centres
- The need to create a sense of place for West Belconnen as a whole and for neighbourhood scale precincts within it; this is an essential element if resilient and robust communities are to form, and grow over time

Rather than adopt a “one size fits all” approach to development control on the site a precinct code will be developed for incorporation into the Territory Plan that imposes controls to achieve design outcomes that are specifically suited to the site and directly responsive to the objectives for the project. This site specific approach will ensure that triple bottom line sustainability outcomes are maximised. Development of the site specific controls has commenced with the preparation of detailed site analysis work, integrated with the development of suitable housing typologies. This work will continue in close consultation with the ACT Planning and Land Authority immediately following rezoning.

### **7.2.9 ENERGY EFFICIENCY**

There are significant energy efficiencies and greenhouse gas emission reductions achievable within the context of West Belconnen’s residential sector. In recognition of this, the project proponent commissioned an investigative review (Stiebel, 2014) of options for improved energy outcomes at West Belconnen. The report is summarized as follows:

In 2009-10 the residential sector in Australia accounted for 26% of total net energy use (ABS, 2012). This includes household energy usage and petrol for transport.

More recent data for the ACT (Figure 19) shows that greenhouse gas emissions arising from energy use in the residential sector account for 31% of total emissions, with emissions from petrol contributing an additional 17% (ICRC, 2013). Heating is the dominant factor in in-house energy use (Figure 20), with appliances also being very significant, followed by hot water. Unlike in hotter parts of Australia, household cooling is not a significant factor in energy usage. The ACT Government has set ambitious reduction targets in line with the international scientific consensus on global warming. These include an overall zero emission target by 2060 as well as a 90% renewable energy target by 2020 (ACT, 2012).

West Belconnen embraces these targets and will contribute towards them. The proponent intends to seek accreditation for the project as a 6 Star Community by the Green Building Council of Australia’s Green Star Communities Pilot Scheme. It will seek to match or exceed the residential energy production and usage criteria set by this certification scheme. The project will consider installation of a mix of distributed generation including rooftop solar photovoltaic and building integrated photovoltaic at the household level and larger scale ground-mount solar PV or ‘solar farm’. Other innovations may be incorporated and /or evolve over time based on various factors including community needs, technology and economics.

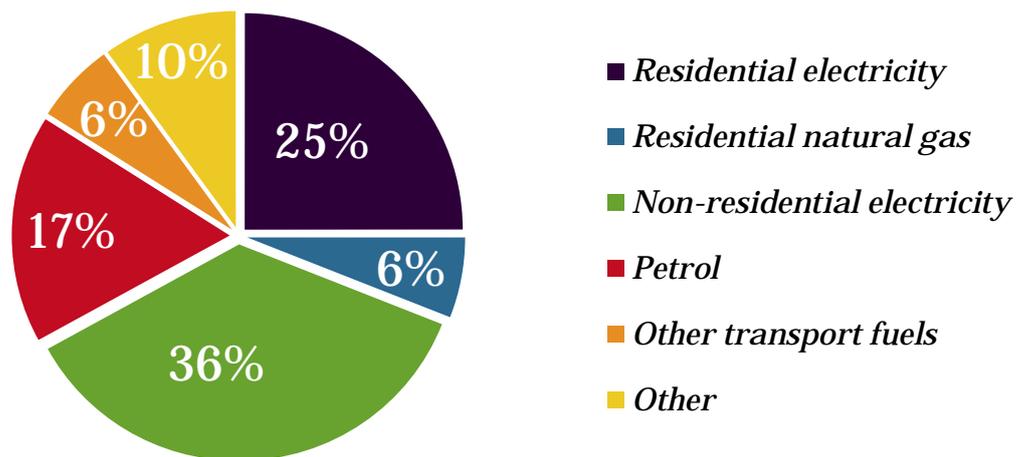


Figure 19: ACT Household Energy Use

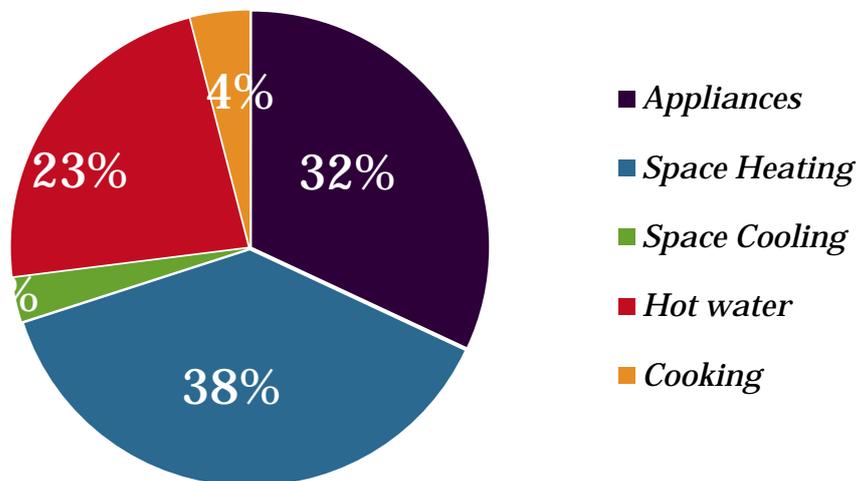


Figure 20: In-house Energy use

There is an extensive array of commercially viable building design and construction methods as well as energy saving and energy generating technologies and innovations that will be deployed. The Stiebel report outlines the housing construction methods which could be applied at West Belconnen which are specifically designed to reduce energy usage and deliver on-site energy generation. It also identifies end use energy efficiency measures. The west Belconnen project has committed to sourcing 100% of household electricity from sustainable technologies.

### 7.2.10 WASTE MANAGEMENT

The re-use or disposal of waste generated from urban areas has substantial impacts and with a project the size of West Belconnen this warrants careful consideration. For this reason for this reason two reports were commissioned as follows:

- Strategic Construction Waste Management Plan (GHD, 2014b)
- Strategic Waste Management Plan (GHD, 2014c)

The first of these examines options for the management of waste from construction activities on the site. A centralized recycling facility located on the land fill site is proposed to enable 100% of building waste to be re-processed on site. The second examines options for the collection and re-use or disposal of municipal waste from households and other developments on the site. It proposes a centralized transfer station which would be co-located with a recycling facility, on the land fill site. This enables the use of smaller collection vehicles and overall saving in energy use as well as improved options for recycling.

### 7.2.11 SUPPLY CHAIN SOLUTIONS

The West Belconnen project will potentially involve the construction of 11,500 dwellings at a reasonably steady rate over a 30 to 40 year period. This will involve the importation to the site of a massive volume of products with a very high level of commonality – in simple terms, the same products will be used in many houses. This provides the potential for the application of supply chain management techniques to improve the efficiency of the importation and distribution process.

A good example of this concept is the London Construction Consolidation Centre which acts as a distribution centre and delivery service area for construction materials to four major building projects in Central London. A report (UK DoT, 2007) prepared by the UK Department of Transport says that in its first 18 months of operation the LCCC has achieved the following environmental and economic benefits:

- Reduced CO<sup>2</sup> - an estimated reduction of 73% CO<sup>2</sup> emissions from 43,317kgs to 11,895kgs across the four sites
- Congestion - a 70% decrease in the number of delivery vehicles travelling to the construction sites including the removal of deliveries by articulated lorries
- Improved service levels - fewer failed and late deliveries as the LCCC manages the final delivery stage
- Greater delivery flexibility - companies can order smaller quantities for each site while suppliers can send full loads to the LCCC
- Fewer unnecessarily early deliveries – without a consolidation centre, deliveries from further afield would generally arrive early to avoid late delivery penalties. This leads to certain logistical problems including:
  - Trucks waiting to be unloaded at site, causing local congestion issues
  - Deliveries being tipped and product sitting around on site before required
  - Deliveries being turned away altogether

Similar beneficial impacts can potentially be achieved at West Belconnen and it is proposed that a 1 – 2 ha site within the landfill area be tentatively allocated to a supply chain solution depot site and management centre to be available in the event that this approach is assessed as being economically feasible.

## 7.2.12 EMPLOYMENT

### JOBS AND JOB CREATION

A report on the employment aspects of the West Belconnen project has been prepared by Urbis (Urbis, 2014b). The report reviews existing and potential future employment patterns in the project area and in nearby areas. A zone within a 5 km radius of the centre of the project area was selected for analysis, aligning with the guidelines for assessing employment under the pilot green communities rating system. This zone includes the existing western suburbs of Belconnen, including the Kippax and Charnwood group centres.

The Urbis report shows that, in 2011, the population of this area was 33,100. Of these 18,200 were in the labour force; key findings from the Urbis report are:

- Local jobs (i.e. jobs available within this area) totaled 3,800. This gives a “job containment” figure of 22%. That is, there is approximately 1 job for every 5 workers within the local area. Whilst this is low it is not unusual for an outer suburban area. A large proportion of these jobs (as shown on Figure 21) are occupied by workers who live locally.
- The types of jobs available locally are also typical of an outer urban area with an emphasis of education services, retail and public administration. The workers employed in local jobs tend to also live locally or nearby with the majority living in Belconnen.
- In contrast to the jobs available in the local area, the majority (28%) of the workers who work outside the local area are employed in public administration and safety. This outcome is consistent with the employment profile of the broader ACT labour force. Large proportions of local workers are also employed in education and training; professional, scientific and technical services; healthcare and social services, construction; and retail trade.
- There is a high concentration of local workers who are employed in Belconnen, and around the Canberra CBD with lesser numbers in Woden and fewer still further afield.
- Most of the current jobs in the local area are concentrated in and around the Kippax and Charnwood Group Centres. The current employment provision in the local area is a very small fraction of the jobs available in and around the Belconnen Town Centre and the Canberra CBD.

From this data it seems apparent that local jobs, if created, are likely to be filled by local residents; this would lead to higher levels of job containment, and consequent reduced travel times and energy costs. It is also apparent that, whilst a large proportion of local workers will travel out of the local area for work, many of these trips go only as far as Belconnen town centre which is very close, or the Canberra CBD which is relatively close. Both of these centres will be easily accessible by public transport.

The rapid pace of technological change is also likely to affect employment patterns. The opportunities that are now available for home based work are rapidly expanding and will increase further as broadband high speed internet services become standard, as is proposed at West Belconnen. The University of Canberra (UCAN, March 2014) has explored the concept of West Belconnen as a “creative community” with employee connectivity being available via “digital work hubs”(DWH) . The DWH provides a local centre where office infrastructure such as printers and meeting rooms, and high level technology based connectivity, is available. This concept allows people to work at home and, when they need, collaborate with a global community of colleagues via a digital hub.

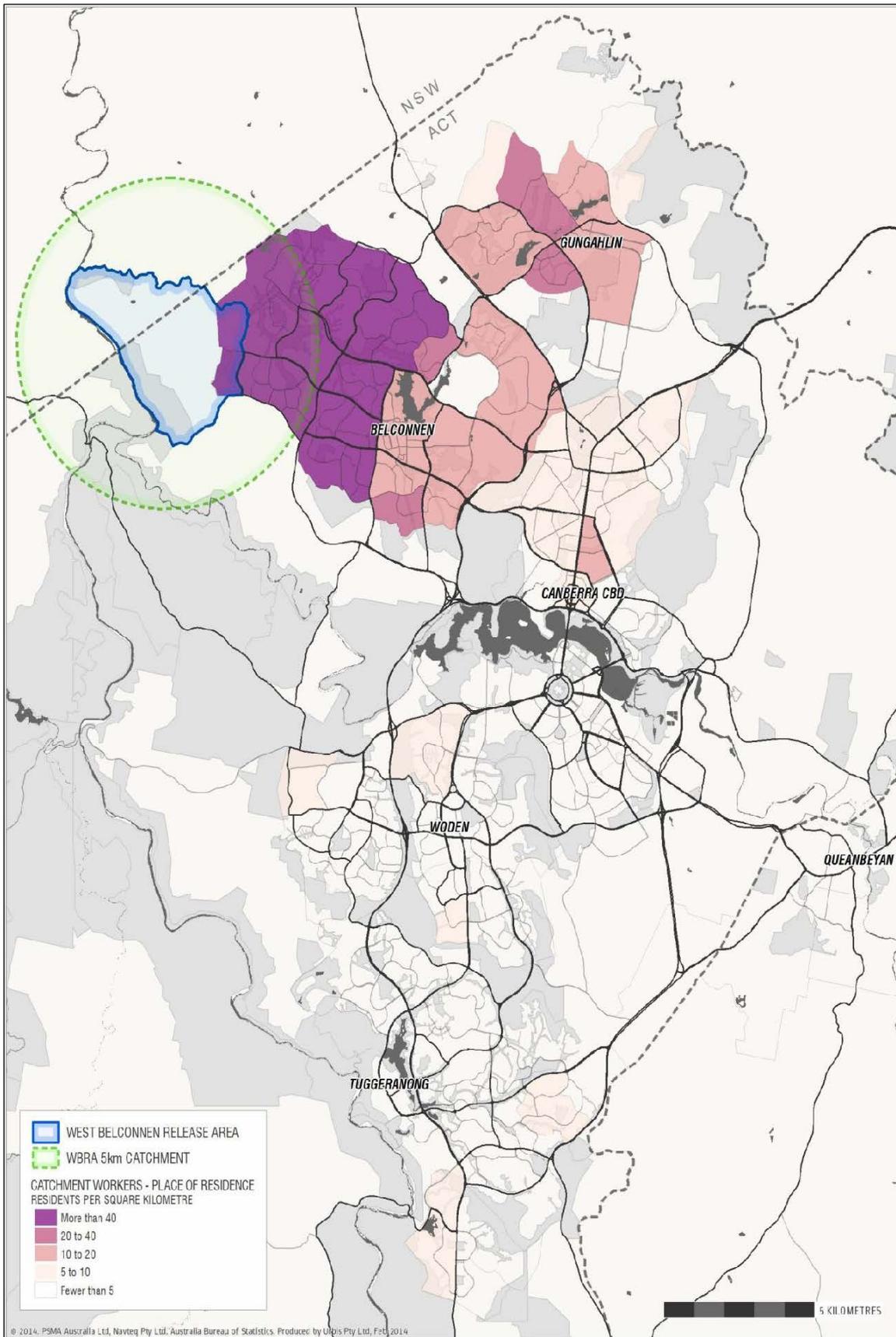


Figure 21: West Belconnen workforce place of residence

Statistics cited by UCAN suggest that the incentives for teleworking are very strong and that if the facilities are provided the take up rate will be high. For example:

- 42% of businesses surveyed have employees who telework
- 8 out of 10 Australians already have a computer in their home
- 7 out of 10 people are more productive when working remotely
- If 10% of Australians worked from home for 50% of the year this would save:
  - 41 million commuting hours, this would translate directly to family or leisure time, or increased work productivity.
  - 1.3 billion car kilometres
  - 120 million litres of fuel
  - 320,000 tons of carbon dioxide

The nature of the Canberra workforce, with high levels of employment in public administration and the knowledge intensive professional services sector is particularly well suited to tele-working.

#### **TRAINING AND EMPLOYMENT INITIATIVE**

One of the most important factors that underpins social sustainability is employment. The existing west Belconnen suburbs currently experience some of the highest rates of unemployment in the ACT and a major construction and development project such as West Belconnen provides a potential opportunity to address this issue, as it will create a large number of jobs. Targeting specific sectors within the unemployed population – people whose employment prospects are exacerbated by factors such as social disadvantage, language, cultural issues and the like – is also important to ensure that job availability can be used to leverage overall social improvement. This can only occur if pro-active action is taken to assist the less employable into employment, with particular focus on local employment as part of contracts for works and close cooperation with vocational training and employment service providers. A program that has been achieving this at Playford in Adelaide has been examined and provides a model for action at West Belconnen. A similar program is proposed for West Belconnen, which will require dedicated resourcing if the South Australian success is to be replicated (SDA, 2014).

#### **7.2.13 CULTURAL CURATOR**

The West Belconnen project team has included a professional curatorial consultant whose role is described in a separate report (Haynes, 2014). A project such as West Belconnen is concerned with both place and community; the role of the curator in helping to achieve successful places and communities is described in the report as:

*“.....concerned ..... with objects but also with artists, the community (or communities) and especially with place. The role is key in changing people’s perceptions, instilling the beginnings of community pride and a new sense of place into the lives of those that choose to live in West Belconnen. For this to be achieved ..... the curatorial scope required for a project of such depth must relate to every stage of the project.”*

The role will focus particularly on the Strathnairn Arts centre (which already exists within the development area), the Belconnen farm heritage precinct and the overall landscape of the site and will engineer the engagement of the community in art and cultural events and programs as a key part of the community building process.

### 7.2.14 COMMUNITY FACILITIES AND SERVICES

The range and scale of community facilities that will be required at West Belconnen have been reviewed by Elton Consulting (Elton, 2014c) (Elton, 2014d) (Elton, 2014e). The review has assessed the likely requirements for community facilities and human services for the West Belconnen Project and prepared a community plan, based upon :

- The demographic forecasts outlined in part one of the Community Plan
- Assessment of the availability, distance to and capacity in existing facilities and services (in part one of the Community Plan)
- Discussions with government agencies, and agency standards and benchmarks
- The anticipated needs and preferences of the future population
- The scope to promote cost effective provision by means of co-location or shared facilities
- Issues of transport access, ongoing management costs, funding provision and facility ownership.

Social infrastructure is provided by a wide variety of agencies including a range of government agencies, non-government organisations and the private sector. At the master planning phase, the strategy needs to focus on the facilities which may have known land requirements, to ensure that sufficient land is identified in appropriate locations to meet future need. This focuses particularly on facilities and services provided by the ACT Government (such as schools). Services provided by the Australian Government (eg employment services, some family services, veterans' services,) have land requirements that are likely to be relatively modest, and most likely will use available commercial office space within designated centres. Such sites can be identified in subsequent detailed levels of planning.

Also important are community type uses provided by the non-government and private sectors that may have land requirements. These include private schools, private health care services, churches, private childcare services, commercial gym and fitness facilities, residential aged care facilities and entertainment facilities such as licensed clubs. The master plan will allow sufficient scope and flexibility to accommodate these types of uses as demand emerges.

### 7.2.15 THE FUTURE

The West Belconnen project is different to many other recent land development projects in Canberra. The principal difference is one of scale. The project has the potential to accommodate approximately 30,000 people and will be developed over a long period, possibly up to 40 years, with full completion in the year 2056. Given this, the project design team has approached the project on the basis that change and the impacts of change over the very long term, beyond normal subdivision estate planning horizons, should be given some consideration. To this end a futurist has been engaged as a member of the project team throughout the master planning design phase, and has an ongoing role. The futurist report (Delaney Foresight, 2014) opens with a quotation from Somerset Maugham (1874-1965):

*“There is only one thing about which I am certain,  
and that is that there is very little about which one can be certain.”*

A community which takes no account of the likelihood of change is most likely to be heavily impacted, possibly to the point of breakdown, when some unforeseen major event occurs. The

report sets out a process of “scenario development” which facilitates a process whereby an engaged community is able to critically examine a range of alternative futures (for West Belconnen) against “what-if” possibilities for change. An understanding of the real possibility of substantial change occurring and the possible impacts of such change enables communities to plan responsibly for change and to avoid or mitigate impacts. This capacity is the hallmark of a “resilient” community that can be self-sustaining into the long term.

Positive steps have been and will be taken to look to the “over the horizon” needs of the community, to build resilience and a capacity to cope with the impacts of change, including unforeseen change.

## 8 DRAFT VARIATION TO THE TERRITORY PLAN

Land in the West Belconnen project area falls within three Territory Plan land use zones, equivalent to the National Capital Plan zones shown on Figure 22.:

- River Corridor
- Hills Ridges and Buffers, and
- Broadacre

These are the equivalent zones and cover the same areas as in the National Capital Plan. The proposed West Belconnen development will require the amendment of these zones. The River Corridor zone will remain although over an enlarged area. The Broadacre and Hills Ridges and Buffer zones will be replaced with various zones to permit urban development. The river corridor is currently defined as “public land”, the public land boundary will be amended to accord with the revised River Corridor zone boundary.

Under the Territory Plan rezoning the proposed urban area will be subject to a “Future Urban Area” (FUA) overlay, a “structure plan” and a “concept plan”. The Territory Plan describes the functions of these instruments as follows:

### *“Future Urban Areas*

*The Plan may identify future urban areas and include the structure plans that apply to those areas. Future Urban Areas are identified on the Map by an ‘FUA’ Overlay.*

### *Structure Plans*

*Structure Plans contain the principles and policies for preparation of future urban areas. They guide the development, where appropriate, of concept plans.*

### *Concept Plans*

*Concept Plans apply the principles and policies found in a structure plan. Concept Plans are taken to be precinct codes that are used to guide the preparation and assessment of development in the area to which the Concept Plan applies. Where they contain rules or criteria relevant to development once the FUA overlay is removed, they continue to be a consideration in assessing developments.”*

The principles and polices set out in this report and in more detail in the documentation accompanying the Territory Plan Variation will be incorporated into the Territory Plan by these instruments.

Amendments to the National Capital Plan provisions for the site will be a pre-requisite to the Territory Plan amendments as, under the Commonwealth *ACT Planning and Land Management Act 1988*, the Territory Plan is required to be “not incompatible” with the National Capital plan. The proposed National Capital Plan amendments are discussed in section 10.

## 9 NATIONAL CAPITAL PLAN PROVISIONS

### 9.1 STATUTORY EFFECT

The National Capital Plan controls the development potential of the site through the General Policy Plan and accompanying general written policies; the legislative requirements (the *Australian Capital Territory Planning and Land Management Act 1988*) are such that the provisions of the General Policy Plan and written policies must be reflected in the Territory Plan.

### 9.2 KEY OBJECTIVES OF THE NATIONAL CAPITAL PLAN

The National Capital Plan is the strategic plan for Canberra and the Territory. It ensures that *“Canberra and the Territory are planned and developed in accordance with their national significance”*. The proposed urban area at West Belconnen site is not “designated land” or subject to any “special requirements” (as noted below) under the National Capital Plan. Special requirements do apply to the Murrumbidgee River Corridor. The key objectives of the National Capital Plan are included in Table 4.

The proposal to vary the Territory Plan and the National Capital Plan to provide for development at West Belconnen is not inconsistent with the key objectives of the National Capital Plan.

**Table 4: National Capital Plan Objectives**

The National Capital Plan Key Objectives	Significance to Proposal
Recognise the pre-eminence of the role of Canberra and the Territory as Australia’s National Capital	The proposal is not inconsistent with the objective. It will provide for the continued growth of the city in an orderly and managed fashion consistent with the high levels of planning standards that have been applied to the National Capital to date.
Further develop and enhance a Central National Area which includes the Parliamentary Zone and its setting and the main diplomatic sites and national institutions, as the heart of the National Capital	The proposal is not in the Central National Area.
Emphasise the national significance of the main approach routes and avenues	The proposal is not located on or near a main avenue or approach route.
Respect the geometry and intent of Walter Burley Griffin’s formally adopted plan for Canberra.	The proposal will not alter the formally adopted plan. The Griffin plan was limited to inner north and south Canberra, it did not include Belconnen however the intent of the Griffin Plan to have a city set within landscape is met by the west Belconnen proposal..
Maintain and enhance the landscape character of Canberra and the Territory as the setting for the National Capital.	The proposal will maintain and enhance the landscape character of the city. It provides for the western edge of Belconnen to be contained by strong landscape features – the Murrumbidgee River and nearby hills rather than by the artificial border line which has no reference to landscape.

Protect the undeveloped hill tops and the open spaces which divide and give form to Canberra's urban areas.	The proposal is not located on or near a hill top. The proposal will respect the open spaces. The highest point within the proposed development area is the Belconnen land fill site which will be retained as a "central park" element in the design.
Provide a plan offering flexibility and choice to enable the Territory Government properly to fulfil its functions.	<p>The proposal is not inconsistent with the objective. The provision of quality affordable housing accommodation is a key function of the ACT Government. Housing costs in the ACT are at historically high levels; in recent years Canberra house prices have been the second highest in Australia after Sydney; median house prices have risen from under \$200,000 in the year 2000 to over \$500,000 in 2011 (ACTPLA, 2012).</p> <p>The high prices are largely due, as in other cities, to constraints on land supply. There are currently only two development "fronts" in the ACT, at Gungahlin and at East Molonglo. West Belconnen will introduce a much needed third choice, at more affordable levels. The latter is particularly significant and flows firstly from the economic effect of an increase in supply and secondly from the fact that development costs at West Belconnen will be lower than at Gungahlin and substantially lower than at East Molonglo.</p>
Support and promote environmentally responsible urban development practices.	<p>The proposal will meet this objective to an exemplary standard. West Belconnen has been registered as a Green Star Communities Pilot project with the Green Building Council of Australia. Under this scheme it will be seeking to achieve a six star rating which equates to worlds best practice.</p> <p>The West Belconnen proposal represents an expansion of the overall Canberra urban footprint and the application of the green star communities standards will ensure that this is done in the most sustainable way.</p>

### 9.3 LAND USE ZONES

The National Capital Plan, through the General Policy Plan (Metropolitan Canberra), sets out broad land use categories across the Territory. Land in the West Belconnen project area falls within three land use categories (zones), as shown on Figure 22:

- River Corridors
- Hills Ridges and Buffer Spaces, and
- Broadacre Areas

The background and intent that the Plan prescribes for each of these zones is discussed below in the West Belconnen context.

The Plan also includes a number of broader policies, also discussed below. They are:

- The National Capital Open Space System (this includes River Corridors; Hills, Ridges and Buffer Spaces, and Special Requirements for the Murrumbidgee River Corridor).
- Employment Location
- Urban Areas
- Transport

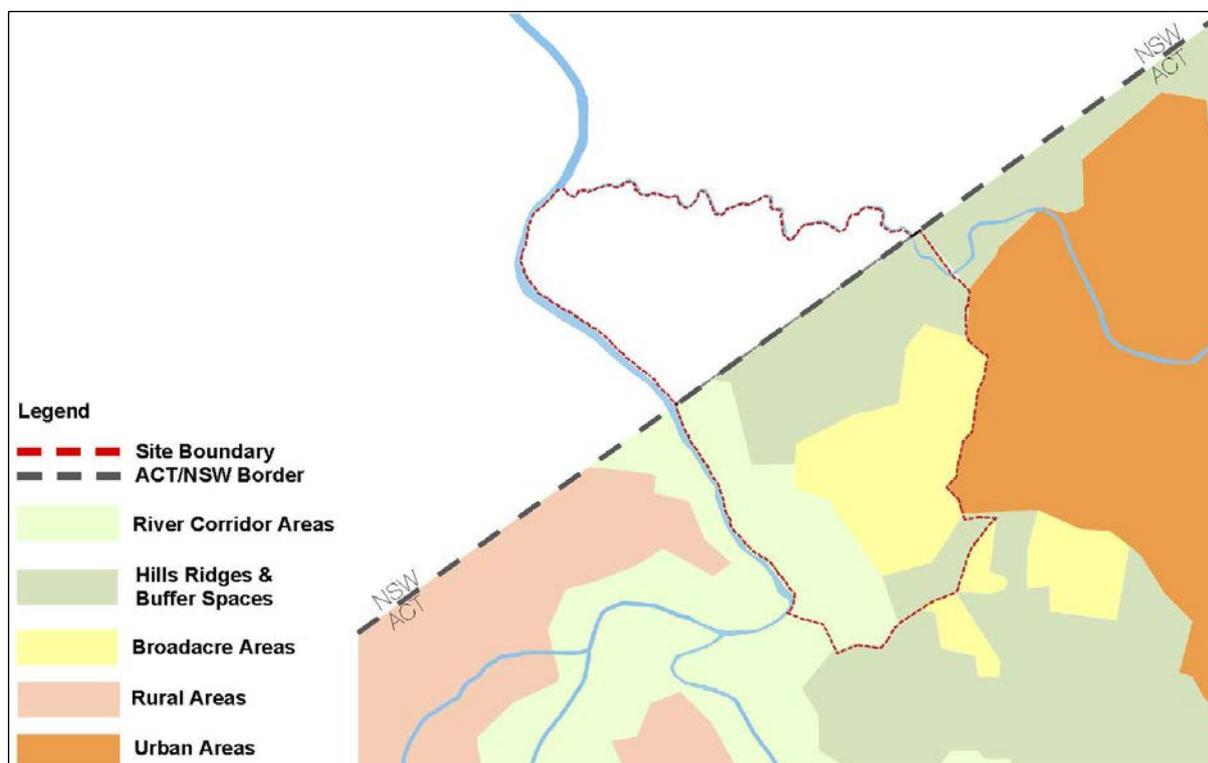
#### 9.4 NATIONAL CAPITAL OPEN SPACE SYSTEM

The importance of the natural setting of the National Capital has been recognised by the creation and formal adoption of the concept of the National Capital Open Space System (NCOSS) as a component of the National Capital Plan. This system essentially comprises the inner hills and ridges which surround and frame the urban areas, the major lakes and river corridors, and the distant mountains and bushland to the west of the Murrumbidgee River.

The policies for the NCOSS generally seek to protect the “nationally significant open space framework, visual backdrop and landscape setting for the National Capital”. Relevant policies include:-

*8.3(a) NCOSS will be planned as an integrated system so as to protect its environmental qualities, to promote a continuum of natural and park like settings for the National Capital, and to frame and enhance existing and future urban areas.*

*8.3(b) The natural and cultural resources of NCOSS shall be protected in order to provide educational, cultural and recreational opportunities.*



**Figure 22: Current National Capital Plan Zones**

Both the river corridor and hills ridges and buffer zones at the West Belconnen project site currently form part of the NCOSS. The National Capital Open Space system has been the subject of a review conducted by the National Capital Authority. The NCOSS review report (NCA, 2014) provides a series of recommendations describing ways to establish a framework for future reviews, greater promotion of the NCOSS, and better engagement with stakeholders in managing the values of the NCOSS.

The report reiterated the four different types of open space provided for in the National Capital Plan:

- Symbolic spaces provide the unique and monumental landscapes integral to a National Capital.
- Conservation spaces protect the natural and cultural heritage of the ACT and consist generally of national park, heritage and wilderness areas and nature parks and reserves.
- Living space consists of the network of regional and metropolitan parks which are generally accessible for a broad variety of recreation and tourist uses.
- Linking spaces consist of fingers of urban land and open space that physically join and visually unite the city and the countryside (NCA, 2014).

It also reported on the extensive community consultation that had been conducted during the preparation of the report. The consultation process found that the community recognised the importance of four functions of the NCOSS (to varying degrees):

- the visual and symbolic importance of the NCOSS to the overall look and feel of Canberra
- the contribution of the NCOSS to a sustainable environment that provides many social and health benefits
- the biodiversity values of the NCOSS which help provide resilient spaces for plants and animals
- the NCOSS as a place for recreation (such as walking, riding and running).

The West Belconnen expansion proposal impacts on two “buffer” areas of NCOSS. These adjoin Stockdill Drive and the ACT/NSW border, they do not readily match any of the four types of open space provided for in the NCOSS review. They are not symbolic spaces as they are remote from the central national area and do not contribute to the monumental landscape backdrop of the city. They do not have conservation value. They do not form part of the metropolitan parks system (they are private property) and do not provide any linking or recreational function. It is probable that for some people these spaces contribute to the current “look and feel” of Belconnen - they define the edge of the urban area; this will be replaced by the more significant urban edge that will be created by the Murrumbidgee River corridor which will provide both geographic containment and an accessible recreation corridor.

Nor do they fulfill any of the four functions identified by the community as being of importance; they do not contribute in any significant way to the overall look and feel of Canberra, they do not make any specific contribution to the NCOSS as a sustainable environment, and do not provide any recreation opportunities. Detailed analysis of the biodiversity values of the West Belconnen project area has concluded that the biodiversity values of the area are best preserved and enhanced by the expansion of the existing river corridor zone to encompass areas of pink tailed worm lizard habitat and yellow box grassy woodland (ref section 2). Preservation of the hills ridges and buffer zones would not contribute to biodiversity values.

The report makes a number of recommendations in response to the terms of reference set for the review. The recommendations include provision for periodic review of the NCOSS, at intervals no

greater than seven years. Inter alia, the intent is that periodic reviews should recommend boundary changes and improvements as required. The West Belconnen project as set out in this report is proposed on the premise that two areas of NCOSS land currently zoned as “hills ridges and buffer” should be removed from the NCOSS. The rationale for this is discussed further below.

#### **9.4.1 HILLS RIDGES AND BUFFER SPACES**

The National Capital Plan specifies that Hills, Ridges and Buffer Spaces (Hills Ridges and Buffers) are to remain substantially undeveloped in order to protect the symbolic role and Australian landscape character of the Capital, to maintain visual definition and physical containment of the surrounding towns, and to ensure that their landscape, environmental and recreational values become an integral part of the National Capital.

There are two Hills Ridges and Buffer zone areas identified on the site: adjacent to Stockdill Drive in the east and adjacent to the ACT/NSW border in the west (Figure 22). Neither of these areas is a hill or ridge that could provide a landscape containment effect to nearby developed areas as is the case with the majority of Hills Ridges and Buffers zoned areas elsewhere in the ACT. Their function is that of a buffer only, in the one case between the urban area of the ACT and NSW, and in the second case along Stockdill Drive which is currently a rural road. The continuing need for this, in the context of the West Belconnen project proposal, is discussed below.

The Stockdill Drive Hills Ridges and Buffers zone originally provided a buffer between Central and West Molonglo. All of the land to the south of Stockdill Drive extending to Weston Creek was identified in the 2004 Canberra Spatial Plan as “future greenfield residential”. It was intended to be developed as “Central Molonglo”, complementing the East Molonglo development (now under construction) and “west Molonglo” which is within the West Belconnen project area.

Following more detailed environmental investigations the great bulk of central Molonglo was removed from the proposed development area. This was reflected in the subsequent finalisation of variations to both the National Capital and Territory plans. Central Molonglo is currently devoted to agriculture and conservation uses, providing a substantial buffer between East Molonglo and the West Molonglo/West Belconnen development. The consequence of this is that the Stockdill Drive buffer function has been supplanted by Central Molonglo.

The function of the Hills Ridges and Buffers land along the ACT/NSW border is referred to in National Capital Plan Policy 8.5.3(f); it says as follows:-

*“The rural landscape in the areas adjacent to the ACT border between Hall and the Murrumbidgee River ..... will be retained as an intrinsic part of the National Capital Character and with additional landscape treatment provide physical containment to this part of Belconnen .....*”

As discussed in section 4.1 the buffer is along the only “straight line” segment of the ACT border and consequently it is unrelated to the surrounding landform. The “buffer” is also interrupted by the Belconnen landfill site and the Parkwood industrial estate, which together total approximately 107ha, abutting the border.

The preamble statement regarding the Hills Ridges and Buffer zone in the National Capital Plan (P 111) says as follows:

*“Hills, ridges and buffer spaces are to remain substantially undeveloped in order to protect the symbolic role and Australian landscape character of the hills and ridges as the scenic backdrop to the Parliamentary Zone, Civic and other National Capital precincts, to maintain the visual definition and physical containment of the surrounding towns and to ensure that their landscape, environmental and recreation values become an integral part of the National Capital.”*

In the case of West Belconnen this objective is met by the presence of a range of hills immediately to the west of the Murrumbidgee river, and beyond that the Brindabella Range, and a group of hills to the north of Ginninderra creek.

The geographic character of the study area resulted in the West Belconnen site being considered holistically. The landform and development potential is contiguous across the border. This is reinforced by detailed consideration of the NSW component of the site (the “peninsula”), which is only accessible and able to be serviced from the ACT. There are no public road connections from the peninsula to other parts of NSW, and none are planned.

Taken together these factors have led to a review being undertaken of an appropriate location for a buffer to provide, in the long term, an appropriate geographic containment line between Belconnen and the natural environment to the west.

Appropriate natural containment lines are provided by the Murrumbidgee River and hills to the west, and a prominent ridge of hills immediately to the north of Ginninderra creek. This is illustrated on Figure 5 which shows the West Belconnen site as an extension of greater Belconnen and within physical containment lines similar to other areas of metropolitan Canberra. The geography that provides the containment line is in NSW, this is a function of the “straight line” border which has been drawn without reference to topography.

For these reasons it is proposed that the Hills Ridges and Buffers Spaces within the West Belconnen project site may be changed to allow urban use. The necessary protection for the landscape buffer will be afforded by the existing and proposed zoning controls in NSW.

#### **9.4.2 RIVER CORRIDOR**

The National Capital Plan identifies the Murrumbidgee River corridor portion of the site as forming part of the NCOSS. Currently the land zoned as “river corridor” (in both the National Capital and Territory Plans) totals approximately 291ha. Substantial and detailed environmental research (refer to section 2) has resulted in a proposal to reconfigure the boundary of this zone to better reflect the actual habitat areas of the pink tailed worm lizard as well as to incorporate an area of yellow box red gum grassy woodland as part of the larger reserve. Both of these are matters of national environmental significance. With these changes in place the total area of the zone will expand by the addition of 68ha to total 359ha, an increase of 23%.

The intent of the river corridor zone is set out in the National Capital Plan as follows (p 119):

*“The corridors of the Murrumbidgee and Molonglo Rivers define zones for which the primary aim is to reinforce and preserve their landscape and heritage values and their ecological continuity, while providing for a balanced range of recreational and tourist related uses.”*

The proposed expansion of the zone area to accommodate nationally important environmental outcomes is in accord with this intent and consequently would align well with overall planning policy.

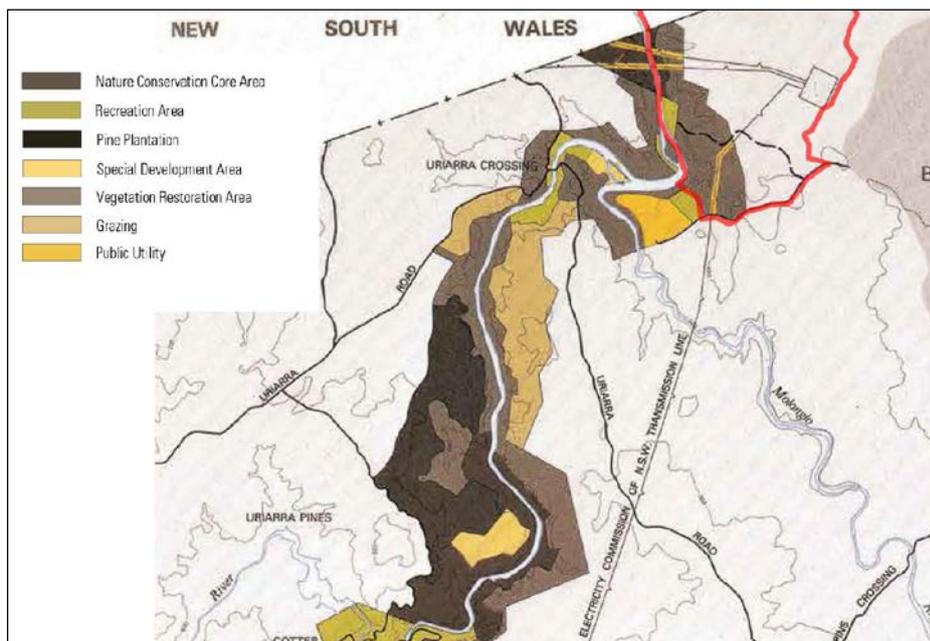
Appendix F of the National Capital Plan sets out requirements for the planning and development of the Murrumbidgee River Corridor. Under the West Belconnen proposal the areal extent of the corridor at West Belconnen is proposed to be expanded, as compared to the area currently shown in the plan at Figure 1 in Appendix F. This expansion is to accommodate areas of Pink tailed Worm Lizard habitat and Yellow Box Red Gum Grassy Woodland, both of which are listed as matters of national environmental significance under the Environment Protection and Biodiversity Conservation Act. The proposed expansion is shown on Figure 24.

It is proposed that the corridor area be incorporated in a larger “conservation corridor” extending along the river into New South Wales to the confluence with Ginninderra Creek and then along the creek corridor including the Ginninderra Falls. The total area of this conservation corridor will be approximately 580 ha, of which 359ha will be in the ACT.

A master plan will be prepared for the conservation corridor and will include recreational access and the development of a riverside recreation focal point. This will be a substantial benefit as this six kilometre reach of river frontage is currently virtually inaccessible to the general public.

## 9.5 BROADACRE

A portion of the project site, refer to Figure 22, is zoned “broadacre” in the National Capital Plan.



**Figure 23: Murrumbidgee River Corridor**

Section 5.1 of the Plan says the following in relation to broadacre land:

*“Broadacre Areas may act as buffers between towns, provide sites for uses which require large land areas or may benefit from or be best located within a non-urban setting, and in some cases provide a land bank for future urban areas.”*

The West Belconnen broadacre land (then known as west Molonglo) was reconfigured in 2008 as an outcome of Amendment 63 to the National Capital Plan, part of a planning process for the Molonglo Valley conducted jointly by the National Capital Authority and the ACT Planning and Land Authority following completion of the Canberra Spatial Plan in 2004. Planning investigative and design studies were brought together in the Molonglo Valley Structure Plan prepared for the ACT Planning Authority (Annand Alcock, 2006).

The NCA draft amendment 63 report (September 2007) says as follows:

*“The Structure Plan identifies three distinct areas for development, namely east, central and west Molonglo. It is anticipated that east and central Molonglo (including North Weston) could ultimately cater for up to 73,000 people. The west Molonglo area has been found suitable for Broadacre rather than residential development.”*

It is now proposed that, as part of the West Belconnen project, the broadacre land at west Molonglo be rezoned for urban (substantially residential) use. The reasons for this proposed change are as follows:

- West Molonglo was a relatively small area (compared to central and east Molonglo) and separated from central and east Molonglo, relating to the Murrumbidgee River valley rather than to the Molonglo valley which was the focus of the Molonglo planning process. These issues fall away with the new proposal; west Molonglo, as part of the greater West Belconnen project, is a larger size, certainly achieving the critical mass for a logical development front, and it is intentionally related to the Murrumbidgee valley.
- The actual suitability of west Molonglo for residential development was originally confirmed by the Spatial Plan in 2004. It was not nominated for residential use as part of the Molonglo planning process because it was considered to be not needed, it was zoned as “broadacre” and intended for “peri urban” use.
- The Molonglo Structure Plan did identify the potential for housing development at West Molonglo (1945 dwellings) but suggested that it would be “in the very long term dependent of further study and housing need”. The extent of housing need in the Canberra region has been researched for the West Belconnen project (UCAN, March 2014) and found to be pressing. This is exacerbated by the fact that the central Molonglo development area proposed by the Structure plan to accommodate 9776 dwellings has ultimately not been zoned for development due to environmental constraints.
- During the period that this strategic planning has been taking place, since the year 2000, median house prices in the ACT have more than doubled, largely due to constraints on land supply.
- Recognising the need for the provision of additional more affordable housing land the ACT Planning Strategy (2012) identifies West Belconnen as a “future urban investigation area” .
- The loss of potential housing land at central Molonglo, albeit for sound environmental reasons, will in the long term impact on housing availability and affordability across the region. This can be ameliorated by the creation of potential housing land at West Belconnen.

An additional important consideration, as background to the rezoning process, is the loss of the potential for landuses that are available under the current zoning, if the zoning changes. There are four points relevant to this question:

- The ACT Government has commissioned a major investigative study into the eastern broadacre area of metropolitan Canberra– the “Eastern Broadacre Study” which included the Majura – Jerrabomberra corridor (Macroplan, 2009). The purpose of the study was to identify likely future demand for employment land in the ACT and assess opportunities for employment uses in the eastern broadacre area. The study found that the eastern broadacre area contains a total of some 2,876ha of developable land; 612ha of this land was subject to further investigation, 2,264 ha was classified as “developable”. Against this the study also found that, to the year 2051 and based on a moderate growth scenario, there would be a demand for up to 1,240ha of new employment land across the ACT. It is apparent that there is more than sufficient capacity in the Majura – Jerrabomberra corridor to accommodate this demand.
- The old Belconnen land fill site totals 107ha. This site already accommodates a number of employment generating activities and has the potential for more if it is, in the future, located as the central element in a new urban population area. It is being progressively rehabilitated and will be made available for new uses but is unable to be used for residential. It will have the capacity to accommodate the types of activity that are currently possible in the broadacre land. The broadacre land, unlike the land fill site, is well suited to residential use and, especially given the availability of the landfill site for broadacre uses, would be better used for this purpose.
- The location of the broadacre land is not well suited to employment generating activities. It is not central to an urban population which it could service (as would be the landfill site as discussed above), it is not near any of the national highways that serve Canberra, nor is it near the rail or Airport facilities.
- Very extensive tracts of undeveloped broadacre land are available on the eastern side of the metropolitan area at Majura and Jerrabomberra. Those sites are well located along the Federal Highway/Monaro Highway corridor and are co-located with rail and air infrastructure.

In summary, the West Belconnen Broadacre land:

- Is suitable for residential development
- Has the potential, as part of the greater West Belconnen project, to partially replace the loss of potential residential land due to the deferral of central Molonglo and the removal of Kowen due to infrastructure costs.
- Has the potential to meet an identified demand for housing
- Is identified in the ACT planning Strategy as potential urban rather than broadacre land
- Will not, if it is removed, cause any deleterious economic impact because the uses that it may have accommodated will either be able to be located on the land fill site or are better located at Majura or Jerrabomberra.

## 9.6 EMPLOYMENT LOCATION

Chapter 3 of the National Capital Plan sets out principles and policies for employment location in the Territory. The principles and policies focus on office employment and nominate specific areas where such employment should be concentrated. Two employment nodes are nominated in Belconnen – the town centre and Bruce; as no substantial office employment is proposed at West Belconnen it can be concluded that the proposed development will not counter or work against the policies and principles.

The planning philosophy that underpins the employment location policies is also discussed in Section 3 of the Plan (NCA, 2014, p. 52). The logic for the development of Canberra with discrete town centres supported by suburban development was confirmed as an outcome of the 1984 Metropolitan Canberra Policy Plan which nominated the town centres as major employment centres. This was reconfirmed in a 1987 review of Canberra metropolitan development by the Commonwealth Government Joint Parliamentary Committee on the ACT.

The proposed West Belconnen development has ready access to both the Belconnen Town Centre and Bruce employment nodes. The project site is approximately 8.5km from the town centre - a 10 minute car drive or a 23 minute bicycle ride. A bus trip in the future will take 15 – 20 minutes. The West Belconnen development will strengthen the population base and economic support for the Belconnen Town Centre and Bruce employment nodes.

## 9.7 URBAN AREAS

The West Belconnen proposal is for the expansion of the urban area of Belconnen to encompass land that is currently assigned to broadacre and non-urban uses. Chapter 4 of the National Capital Plan sets out principles and policies for urban areas (NCA, 2014, p. 58). There are three principles of which the first two are relevant to West Belconnen (the third relates to industrial land) as follows:

*“1. Canberra’s future growth is to be accommodated by continuing the development of distinct and relatively self-contained towns.*

*2. A hierarchy of centres will be maintained, with each town having a centre acting as a focal point for higher order retail functions, commercial services, offices and community facilities.”*

The West Belconnen proposal represents a logical extension of the Belconnen town; it will reinforce the function of the town and the town centre and its position within the metropolitan hierarchy of centres. It is in accord with these principles.

The Plan sets out 12 policies applicable to urban areas. These are discussed with reference to West Belconnen in Table 5. The West Belconnen proposal is in accord with the relevant policies.

**Table 5: Policies for Urban Areas**

<b>The National Capital Plan Policies for Urban Areas</b>	<b>Commentary re West Belconnen</b>
<p>a. The urban area of Canberra will comprise:</p> <ul style="list-style-type: none"> <li>• the towns of Canberra Central, Woden/Weston Creek, Belconnen and Tuggeranong</li> <li>• the villages of Hall, Oaks Estate and Tharwa</li> <li>• the new town of Gungahlin</li> <li>• Molonglo and North Weston</li> <li>• land at Hume and Mitchell.</li> </ul>	<p>The proposed development is an expansion of the Belconnen town.</p>

<p>b. The planning of urban areas should seek to introduce measures through which urban consolidation may occur.</p>	<p>Detailed planning is intended to facilitate redevelopment over the long term. The ACT Government planning policies relating to infill development are working in parallel with greenfield planning policies to ensure that appropriate measures are in place to foster infill development and ensure that it occurs in appropriate inner urban locations, for example along the Civic – Gungahlin transit corridor.</p>
<p>c. The hills, ridges and other major open space will form the separation between towns and will be kept largely free of urban development, to act as a backdrop and setting for the City.</p>	<p>The overall intent of this policy is being retained. The current western boundary of Belconnen is defined by the ACT/NSW border. The West Belconnen development will extend the urban area to a logical enclosure boundary defined by geographic features – the Murrumbidgee River and fringing hills.</p>
<p>d. Except where the boundaries are aligned with an existing leasehold, the detailed planning of urban development by the Territory planning authority will determine the boundary between Urban Areas and other land use categories. Before detailed plans are approved, certification shall be obtained from the National Capital Authority that the proposals are not inconsistent with the National Capital Plan.</p>	<p>Not relevant at this time.</p>
<p>e. Industrial development shall be located in the main industrial areas of Fyshwick, Mitchell and Hume and in the Fern Hill Technology Park at Bruce and the Advanced Technology Park at Symonston.</p>	<p>Industrial development is not proposed.</p>
<p>f. The Authority will co-operate with the Territory Planning Authority to investigate and define appropriate areas for new industrial development.</p>	<p>Industrial development is not proposed.</p>
<p>g. Within 5km of Mount Stromlo, development or installations which may, through night time illumination or significant vibration, adversely affect the operation of the Mount Stromlo Observatory or the associated seismological vault at Mount Stromlo, shall be referred to the Australian National University for examination and comment and reasonable steps shall be taken to mitigate adverse impacts.</p>	<p>This policy is not relevant. West Belconnen is approximately 10km from Mount Stromlo.</p>
<p>h. Development proposals for National Land, including subdivision, and proposals to lease National Land, shall be referred to the National Capital Planning Authority. The Authority will assess proposals to ensure they are not inconsistent with the provisions of the National Capital Plan.</p>	<p>West Belconnen does not include any national land.</p>
<p>i. The range and nature of uses permitted in Urban Areas includes those uses generally compatible with residential, commercial, community, cultural, recreational and industrial activity, other than uses not permitted in the Territory Plan. In particular, however, the range of permitted uses includes:</p> <ul style="list-style-type: none"> <li>• Parliamentary Use, National Capital Use and Diplomatic Missions, within Designated Areas</li> <li>• other Commonwealth purposes, on National Land.</li> </ul>	<p>The proposed uses at West Belconnen include residential, commercial, community and recreational land uses and are therefore compatible urban uses.</p>

j. 'Hazardous Industry' and 'Offensive Industry' are not permitted uses on Block 8 Section 1 and Sections 112, 113, 115, 116 and 117 Symonston. Environmental protection measures are required to ensure sensitive elements of the site, including the environment of Jerrabomberra Creek, are protected.	Not applicable.
k. Any areas potentially affected by Scrivener Dam flood inundation may only be developed where it is demonstrated that Scrivener Dam meets flood safety and operational requirements, based on the applicable Australian National Committee on Large Dams (ANCOLD) guidelines.	Not applicable.
l. Planning of urban areas in Molonglo should make provision for a distinct, accessible and legible link, of a minimum width of seventy (70) metres between Stromlo Forest Park and Canberra International Arboretum and Gardens.	Not applicable.

## 9.8 TRANSPORT

The National Capital Plan is required to set out general principles and policies to be implemented throughout the Territory for planning national and arterial road systems and it identifies the routes of the intertown public transport network. There are no national roads affected by the West Belconnen proposal. The metropolitan arterial road network will be required to provide access to the site and will require upgrading, and augmentation in some instances, as the project is developed. This will occur over a long period of up to 40 years. Chapter 6 of the National Capital Plan sets out principles and policies for the provision of transport infrastructure in the Territory.

The Plan prescribes two principles for transport planning as follows:

*“Transport planning and provision will:*

- *reserve a route for the development of a public transport service to link major employment nodes. As far as practicable the service will be segregated from other transport systems and will operate with priority of right-of-way*
- *incorporate nationally recognised practices and standards consistent with the role and function of each road, or additional standards set out for the Designated Areas of this Plan.”*

The intertown public transport route from Civic identified in the National Capital Plan terminates at the Belconnen town centre; A public transport route, currently a high frequency bus service and potentially in the future a light rail service, continues to the Kippax centre and this could ultimately be extended to West Belconnen. This route and the potential extension is not identified in the National Capital Plan, and would not be required to be, as neither Kippax or West Belconnen are nominated as major employment centres in the Plan. Planning for the West Belconnen project will incorporate a public transport spine continuing from Kippax through the centre of the proposed urban area. Nationally recognised standards, administered by ACT Government agencies will apply to all road upgrades and augmentation. These are proposed to include works to provide capacity

improvements on Drake Brockman Drive, Southern cross Drive, Ginninderra Drive and various intersections, and the extension of Ginninderra Drive to service the proposed urban area.

The National Capital Plan also prescribes four “policies and standards for transport”. These are discussed in the table below:

**Table 6: Policies and Standards for Transport**

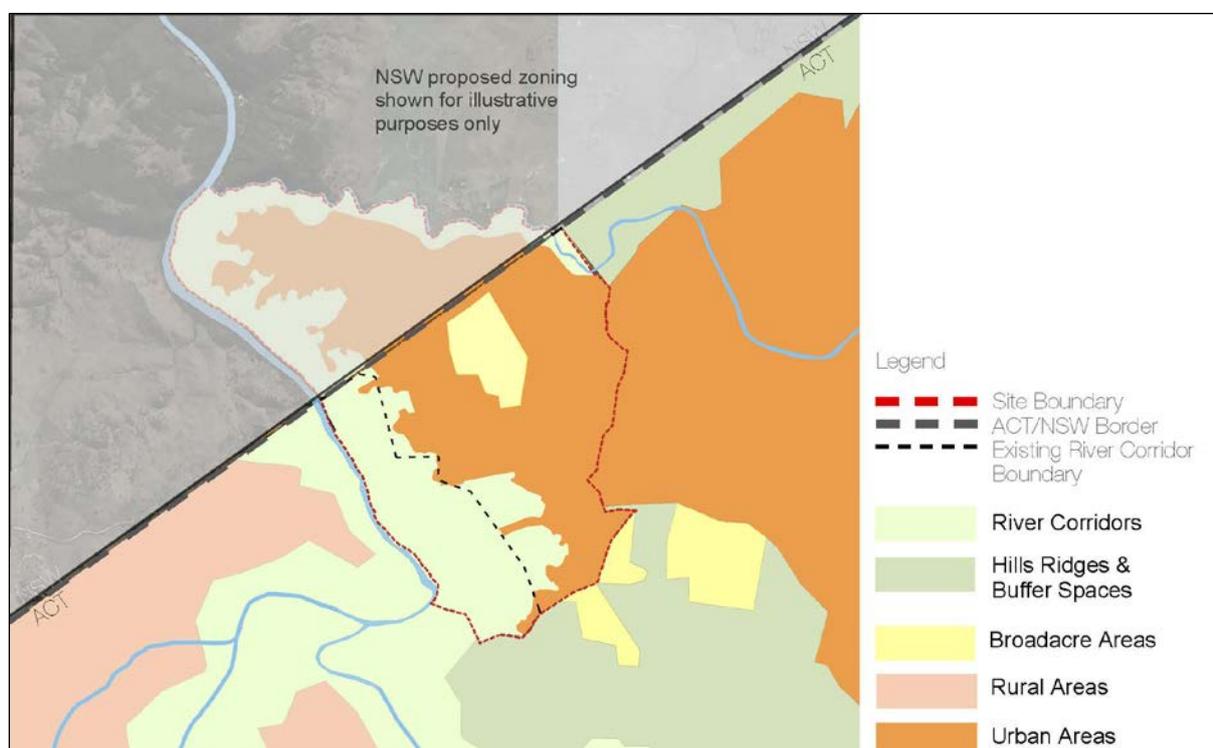
<b>The National Capital Plan Policies and Standards for Transport</b>	<b>Commentary re West Belconnen</b>
<p>a. The National and Arterial Roads System will:</p> <ul style="list-style-type: none"> <li>• generally not provide frontage access to development except where such access will meet appropriate design standards and road safety needs</li> <li>• generally intersect with the local road network through distributor roads.</li> </ul>	<p>There will generally be no frontage access to arterial roads. Road hierarchy design will accord with Territory design standards with distributor roads incorporated as appropriate.</p>
<p>b. A corridor between Civic, the town centres and major employment nodes, suitable for priority or segregated right-of-way for use by public transport services will be reserved against a possible future need to develop a system of inter town and express routes suitable for buses or other technologies as appropriate.</p>	<p>The proposal does not include a town centre or major employment node.</p>
<p>c. Transport strategies should promote the convenience and efficiency of public transport use.</p>	<p>West Belconnen will be developed to accord with the “Transport for Canberra, Transport for a Sustainable City 2012 – 2031”, published by the ACT Government. This is a pro-active policy statement that places heavy emphasis on the promotion of public transport as a significant element in future transport provision in Canberra.</p>
<p>d. The final alignment of proposed arterial roads shall be subject to consultation with the Authority and to a determination by the Authority that proposals are not inconsistent with the Plan.</p>	<p>The national Capital Authority will be consulted with regard to the alignments of proposed arterial roads.</p>

## 10 PROPOSED NATIONAL CAPITAL PLAN AMENDMENT

The proposed amendment to the National Capital Plan would:

- Extend the Urban Areas land use policy over West Belconnen into those areas identified as suitable for urban development.
- Adjustment of the Murrumbidgee River Corridor boundary, expanding the size of the corridor.
- Delete two areas identified as Hills, Ridges & Buffer Spaces.
- Delete a Broadacre area and creation of a new Broadacre Area over a portion of the Belconnen land fill site
- A number of consequential changes to the text of the Plan, reflecting the above.

The General Policy Plan – Metropolitan Canberra National Capital Plan map would be as shown in Figure 24.



**Figure 24: Proposed National Capital Plan Zoning**

## 11 PUBLIC CONSULTATION

Both the National Capital Authority and the ACT Government are required to undertake processes of formal consultation on proposals to amend the National Capital Plan and Territory Plan respectively. This report will form part of the background information available when the National Capital plan is publicly notified, the Territory Plan draft variation will be supported by a similar report and substantial supporting material.

A comprehensive program of public consultation has been and continues to be a dominant feature of the approach that has been taken to the West Belconnen project. Informal consultation commenced in 2007 with government agencies. In July 2011 the project gained broader public knowledge and the proposal was reported in the Canberra Times. This triggered a program of one to one meetings with neighbours and affected stakeholder groups. Project records indicate that between June 2010 and July 2013 (when the ACT Government announced the formal commencement of the project) 165 meetings were held with stakeholders.

This ensured a high level of public knowledge and stakeholder engagement with the project prior to its formal commencement. It has led to a generally high level of public and stakeholder acceptance of the project and endorsement of its vision and objectives. Engagement strategies have included, and include on an ongoing basis, the following:

- Meetings and presentations with individuals and groups
- Local Community liaison
- A people and Places group
- A community shopfront and project office at Kippax
- A project web site
- A range of social media connections
- Newsletters
- A community vision and values workshop
- A 3 day planning and design forum
- Community information and feedback sessions
- A community office at Kippax with staff available to respond to general public enquiries was opened February 2014, open business hours and to 7:00pm on Tuesday evenings.

The detailed outcomes of the process to date are recorded in three reports prepared by Elton Consulting covering the consultation program to December 2013 (Elton, 2014a), the program from January 2014 to the lodgement date (Elton, 2014b) and a report on the outcomes of the planning and design Forum held in November of 2013 (Elton, 2013).

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All of the documents cited below will be made available via the West Belconnen project website unless otherwise noted:

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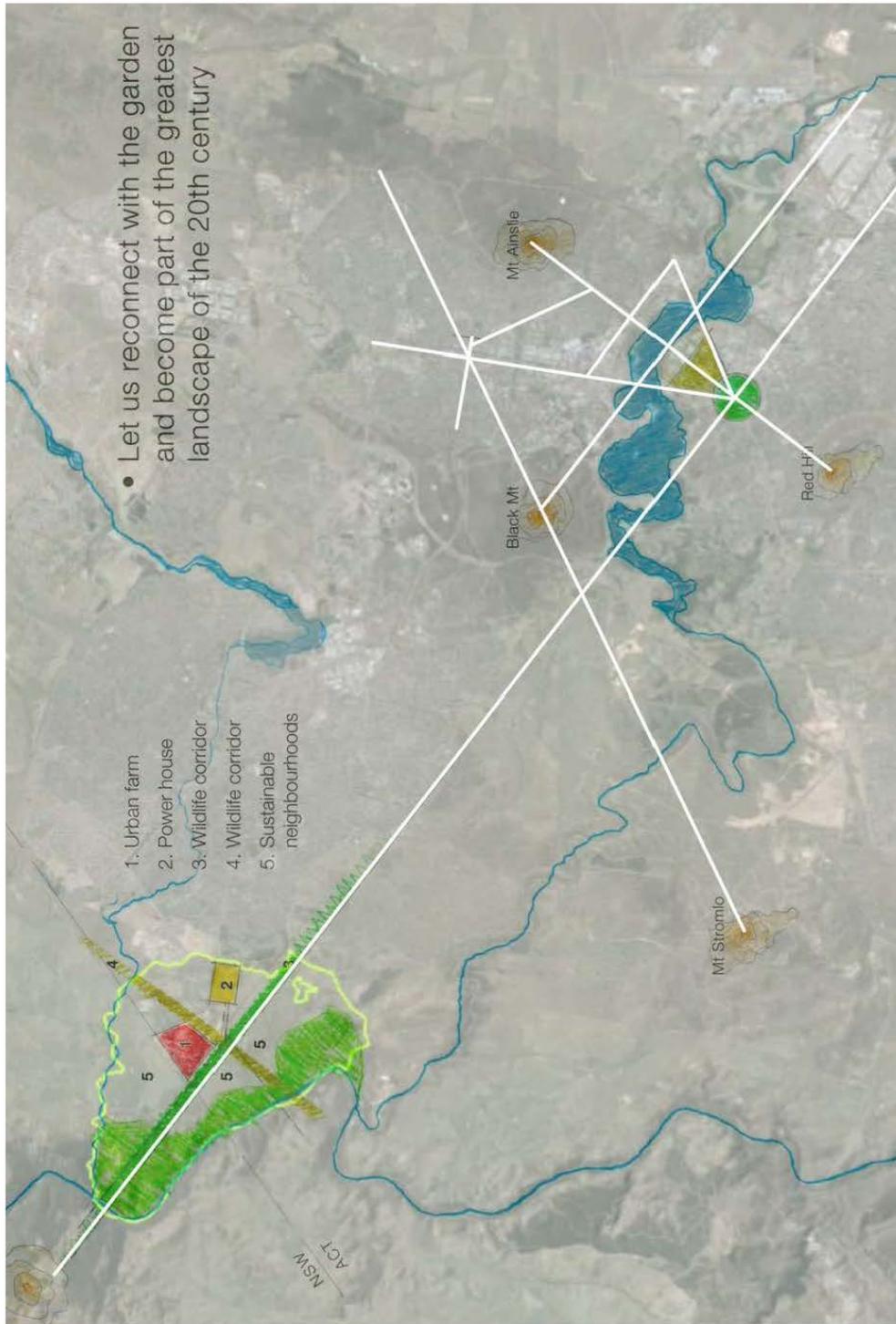
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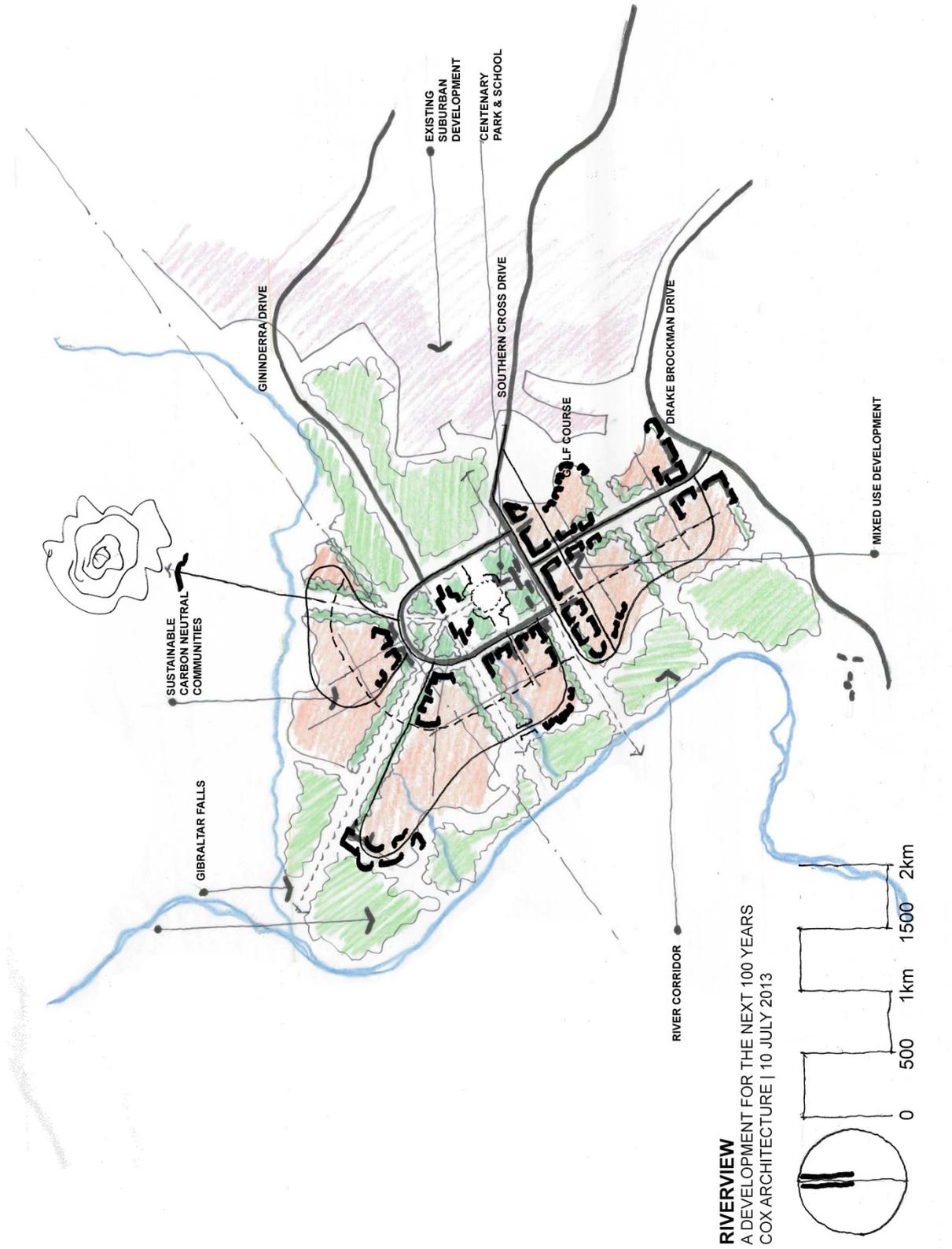
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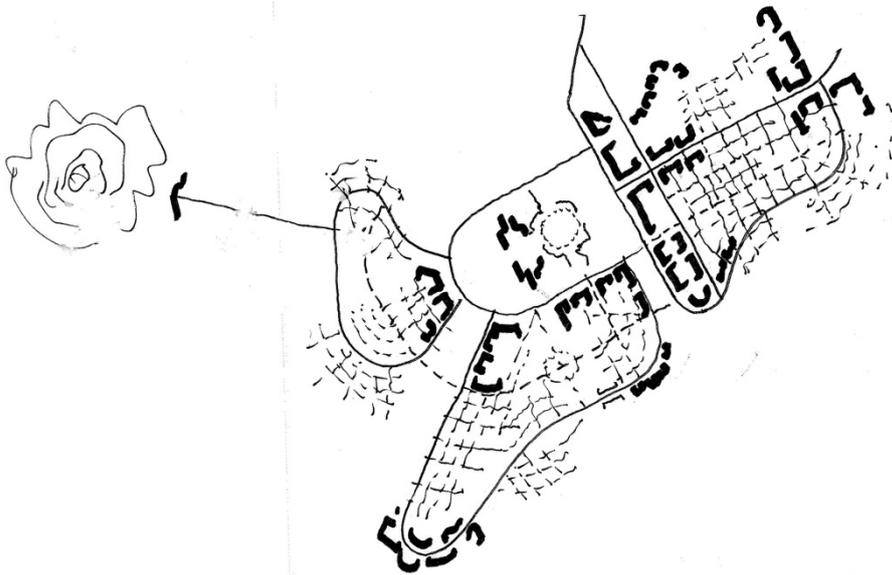
**APPENDIX A:  
RODNEY MOSS / COX DESIGN STUDY**



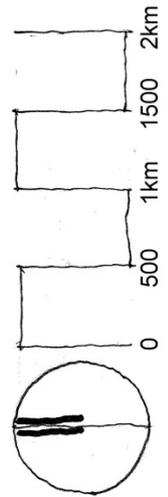


**RIVERVIEW**  
A DEVELOPMENT FOR THE NEXT 100 YEARS  
COX ARCHITECTURE | 10 JULY 2013





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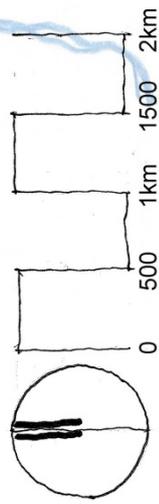






**TELOPEA PARK COMPARISON**

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**CENTENARY PARK COMPARISON**

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