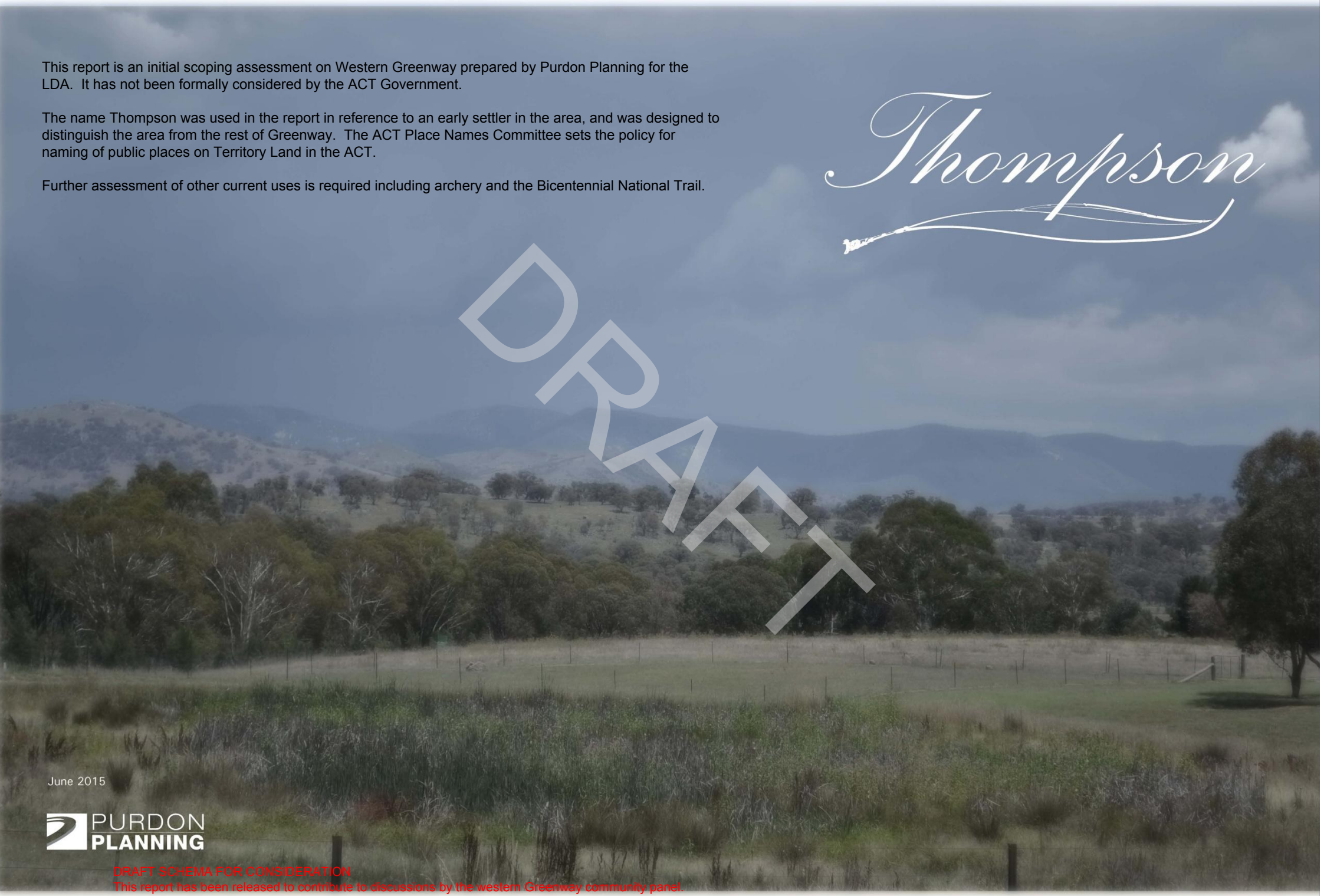

This report is an initial scoping assessment on Western Greenway prepared by Purdon Planning for the LDA. It has not been formally considered by the ACT Government.

The name Thompson was used in the report in reference to an early settler in the area, and was designed to distinguish the area from the rest of Greenway. The ACT Place Names Committee sets the policy for naming of public places on Territory Land in the ACT.

Further assessment of other current uses is required including archery and the Bicentennial National Trail.

Thompson

June 2015

PURDON PLANNING

View looking west, across Tuggeranong Town Centre to the Brindabellas

Source: Wikipedia

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Tables

Figures

1.0 Purpose

This report has been prepared by Purdon Planning Pty Ltd for the Land Development Agency (LDA) to investigate the urban development potential of the area between Tuggeranong Town Centre (TTC) and the Murrumbidgee River Corridor (MRC).

For the purpose of this report, the name Thompson has been used in reference to the name of an early soldier settler in the area.

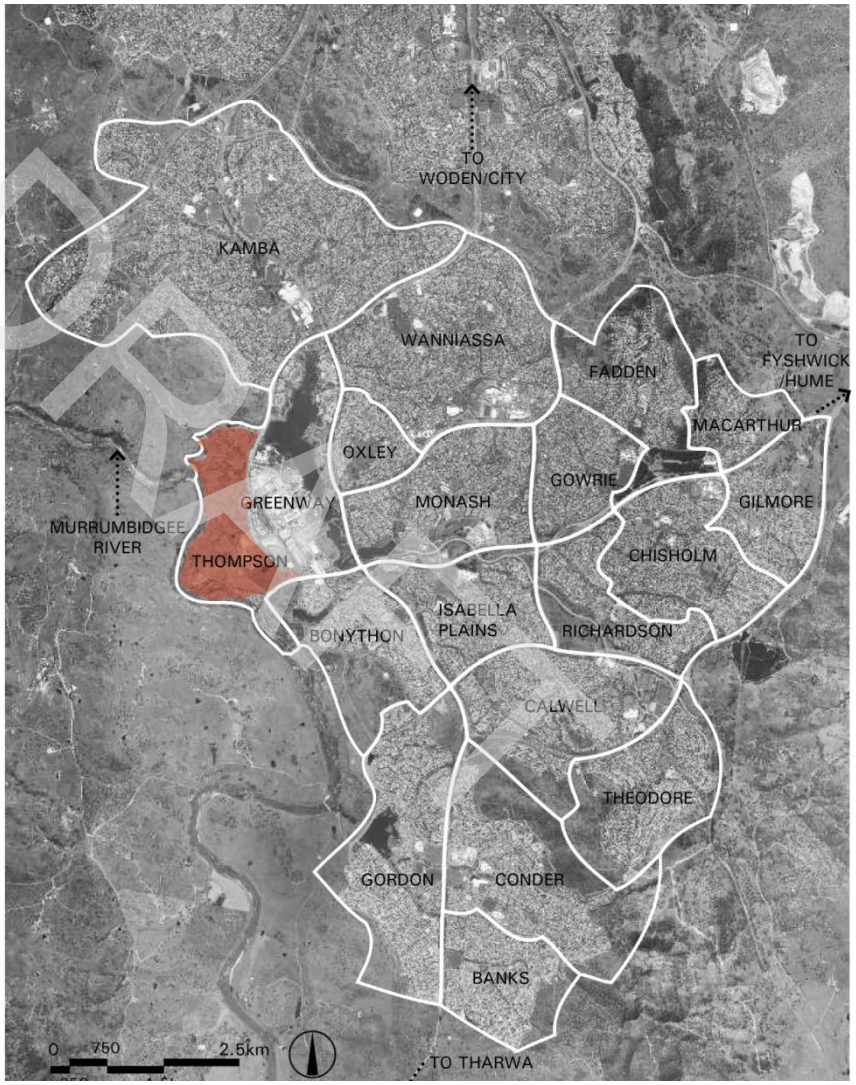
The LDA Brief involves an initial urban development appraisal of the subject area to identify broad development constraints and opportunities, including topography, servicing, cultural and environmental values.

A new urban area, adjacent to the town centre, will provide opportunities to revitalise the commercial area and increase the residential accommodation supply in Tuggeranong. It will also generate new business and investment confidence in the district at a time when the main focus of development has been in northern Canberra and Molonglo.

At this stage of the investigations, there have been no discussions with government agencies or community organisations about potential development of the site.

This report is based on preliminary studies, but is designed to encourage discussion about the potential of this area to accommodate a new residential population of up to 10,000 residents, based on the final settlement pattern and housing mix.

Figure 1-1: Tuggeranong Context



Source: Purdons

2.0 Background & Context

Population levels in Tuggeranong have peaked and are now in gradual decline, reflecting the ageing of population and the lack of new areas for urban expansion.

At the same time there is a growing shortage of land in the ACT for future urban development, especially given the time-line to create development ready sites. There is also a need to provide a range of new housing opportunities across Canberra, catering for different market needs.

Unlike other town centres in Canberra, Tuggeranong town centre is located on the edge of the urban area, with no population catchment on its western side. Anecdotally the commercial viability of the town centre is also suffering.

New residential development associated with land releases in the SouthQuay development will add population to the town centre but there is seen to be a need for more density in the immediate catchment area to help business viability.

Figure 1-1 and Figure 2-1 identify the location of Thompson in the Tuggeranong urban area. It is located immediately west of the town centre in Greenway and north of Bonython.

The Study Area is within a 1km walking distance of the Tuggeranong Town Centre.

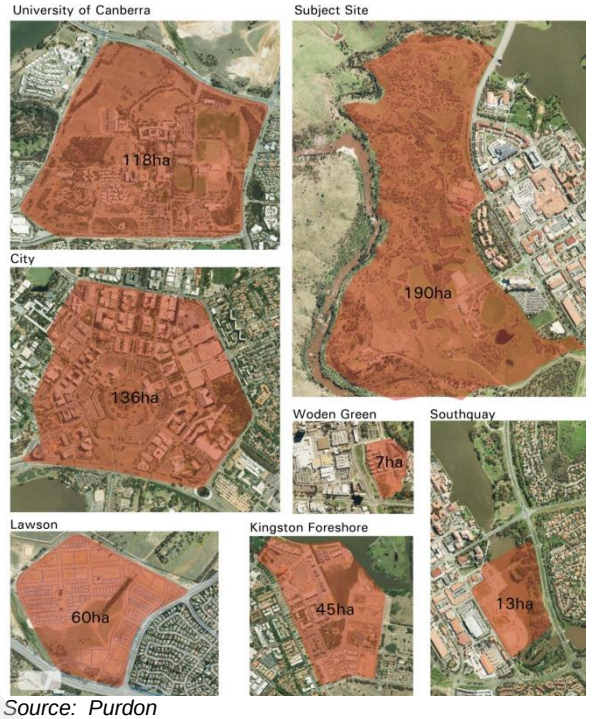
To provide a sense of scale, the Study Area of approximately 190ha has been compared to other relevant areas in Canberra in Figure 2-2. All of these aerials are at the same scale to give a better understanding of the size of the development being proposed. The Study Area is similar in size to that of the city centre (Civic) and the University of Canberra. Lawson south is approximately half of the area, while Kingston Foreshore is around a third of the Study Area. The nearby SouthQuay development, in Greenway, is approximately a tenth the size and it is substantially larger than Woden Green (Phillip).

Bonython is a residential suburb located immediately south of Thompson and covers an area of approximately 275 hectares, including an area of approximately 110 hectares of open space along the river corridor.

Figure 2-1: Locality Plan

Source: Purdon Planning

Figure 2-2: Area Comparison



Source: Purdon
Note: All are to equivalent scale

3.0 Existing Site Features

There are a range of opportunities and site constraints both external and site specific.

3.1 Location

The Study Area is adjacent to the Tuggeranong Town Centre and covers an area of approximately 190 ha, including the river corridor.

The Study Area is constrained by the Murrumbidgee River to the west, the town centre to the east, an unnamed creek to the north, and Pine Island Road to the south.

The site is close to the town centre with most of the potential development area within 500m to 1km form the retail hub (Figure 3-1).

3.2 Area

The Study Area includes Block 16 Section 46, as well as Blocks 5,4,7,6,11,15,14 Section 46, even though, the latter are currently occupied by a variety of land uses.

3.3 Topography & Drainage

The study area has a gentle slope from Athllon Dr in the east towards the Murrumbidgee River, with the steepest elevation immediately adjacent to the river corridor (and not included in the potential development zone).

There are no perennial water courses on the site, with catchment draining to the west, and a minor catchment to the north.

Figure 3-1: Pedestrian Connectivity

Source: Purdon Planning

3.4 Flora and Fauna

There are no registered trees in the subject Study Area.

The study area was previously used as agricultural land. Whilst there has been no detailed investigation of the study area's ecological quality, the site is characterised as disturbed native grassland, native plantings and exotic grasslands and parklands. There are no significant remnant trees on the site.

The Murrumbidgee River Corridor represents the greatest ecological potential. It is considered likely this corridor will contain high quality riparian habitat.

Further environmental assessment will be required to determine habitat quality.

3.5 Existing Land Use and Tenure

Most of the Study Area remains undeveloped, although it does include a number of land uses including public sporting facilities, a dog park, motel, licensed club (with attached sporting facilities), river access road and picnic facilities.

Existing land uses occupy about 21ha and the river corridor/ open space about 61ha, leaving a gross development area of about 108ha.

Most of the land remains in Territory ownership which would benefit a coordinated land release and development approach.

A summary land budget for the Study Area is shown in Figure 8-3.

3.6 Heritage

There are a number of heritage items located within the Study Area:

- The Tuggeranong Boundary Marker Complex
- Thompson Homestead (the Pine Island Homestead) and surrounding area
- A number of Aboriginal Places in the Tuggeranong District.

The Tuggeranong marker would need to be considered during detailed design and could be incorporated into landscaping.

There is a formal Pine Island Homestead Conservation Management Plan that includes the immediate curtilage of the homestead.

A cultural heritage survey would need to be conducted before design, in order to understand the impact and significance of any development on the Aboriginal Places.

However, the initial assessment concludes that heritage values of the general area do not represent a major constraint on future urban development potential.

Tuggeranong Boundary Wall

Pine Island Homestead (Darcy Thompson) Heritage Buffer

Darcy Thompson Farmstead in river corridor

3.7 Utility Services

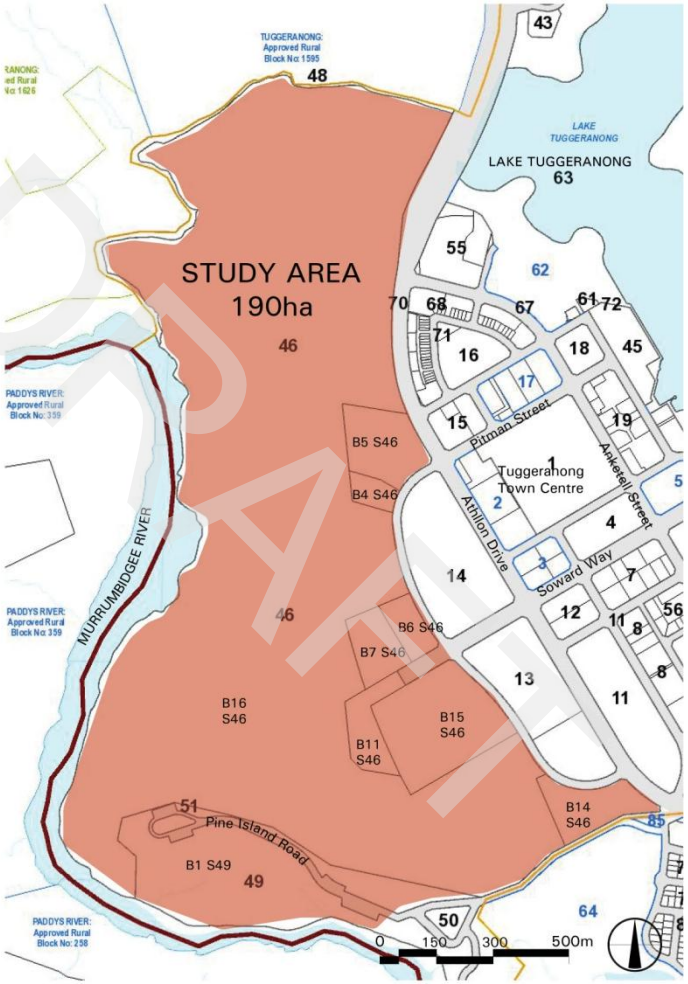
The site is not adequately serviced to accommodate urban development and would require substantial investment in new infrastructure. A Dial-before-you-dig search and investigations by Indesco reveals the following infrastructure in place:

- optic fibre close by to the Study Area
- an existing sewer connection in the north-west corner of the Study Area that could be used to gravity drain sewerage from the site
- an existing water reticulation network on the eastern side of the site that could be used to provide water reticulation
- an existing electrical network and it has been indicated that the existing feeder network has spare capacity for the forecast load of the Study Area which is in the range of 10 – 20 MVA.

The Water Sensitive Urban Design Code requires that water leaving the ACT via the Murrumbidgee River should be of no less quality than water flowing into ACT. To comply with this requirement it is likely that ponds/wetlands/other devices would be required to filter the stormwater prior to discharging to Murrumbidgee River.

Further detailed engineering capacity studies will be required at the next stage of investigation and design (water and sewer) but it is concluded that there does not appear to be any major engineering constricts to future urban development on the site.

Figure 3-2: Cadastral Boundaries



Source: Purdon Planning

3.8 Site Contamination

A contamination search for Block 16 Section 46 Greenway (bulk of Study Area) was carried out for this Study. EPA records indicate that one sheep dip was present onsite that had been identified, but not investigated.

Possible unrecorded areas associated with rural activities of environmental concern have been raised by the EPA. These may include fuel storage, waste disposal sites associated with domestic and chemical waste, animal burial pits, hazardous materials storage (e.g. Pesticides/herbicides, lubricants etc.) and hazardous materials contained in building structures and fittings.

The sheep dip site would be subject to assessment and audit should a change in land use or development take place.

Further detailed investigations, including a Phase One Environmental Assessment, will be required as part of further investigations to ensure no major constraints to urban development from asbestos or unexploded ordinances.

Oval and Grandstand

Pine Island Road looking west

4.0 Statutory Planning Framework

4.1 National Capital Plan

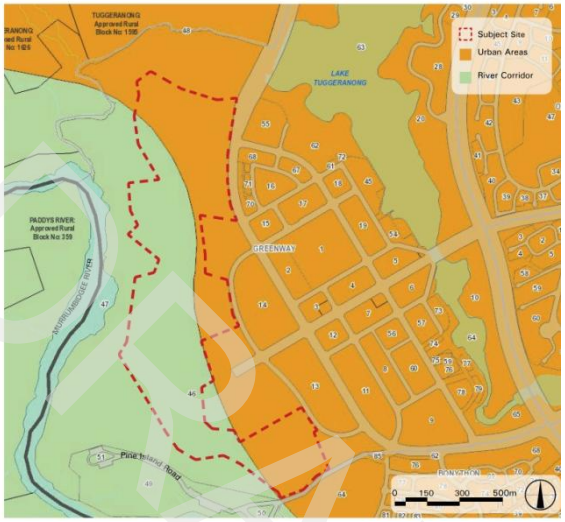
The National Capital Plan (NCP) provides a framework and statutory development control process for areas identified within the ACT as being of national significance.

The subject Study Area is not within a "Designated Area" under the NCP.

The Study Area is only partially zoned as an Urban Area.

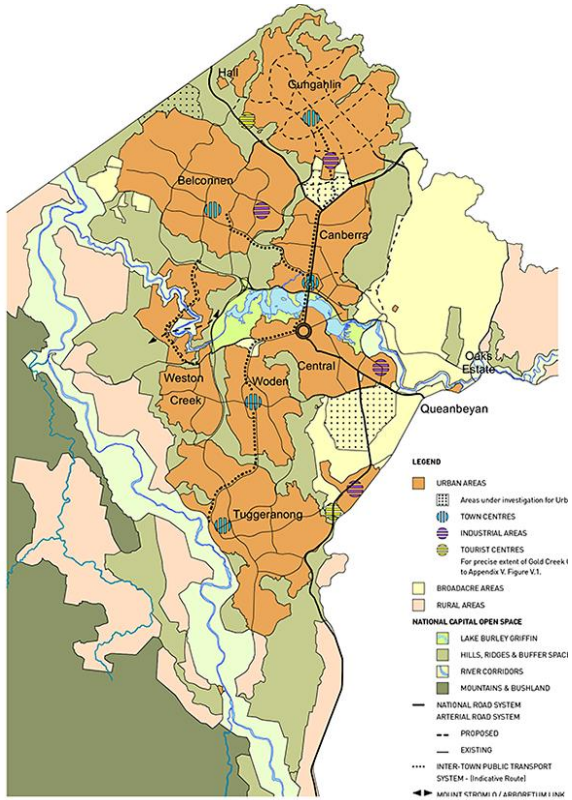
An amendment to the NCP would be required to remove the "River Corridor" status of land in the subject site to permit future urban development. It could be argued that this land is more appropriately zoned "urban" with the advantages as outlined elsewhere in this report.

Figure 4-1: National Capital Plan Extract



Source: National Capital Plan

Figure 4-2: National Capital Plan



Source: National Capital Plan

4.2 Murrumbidgee River Corridor

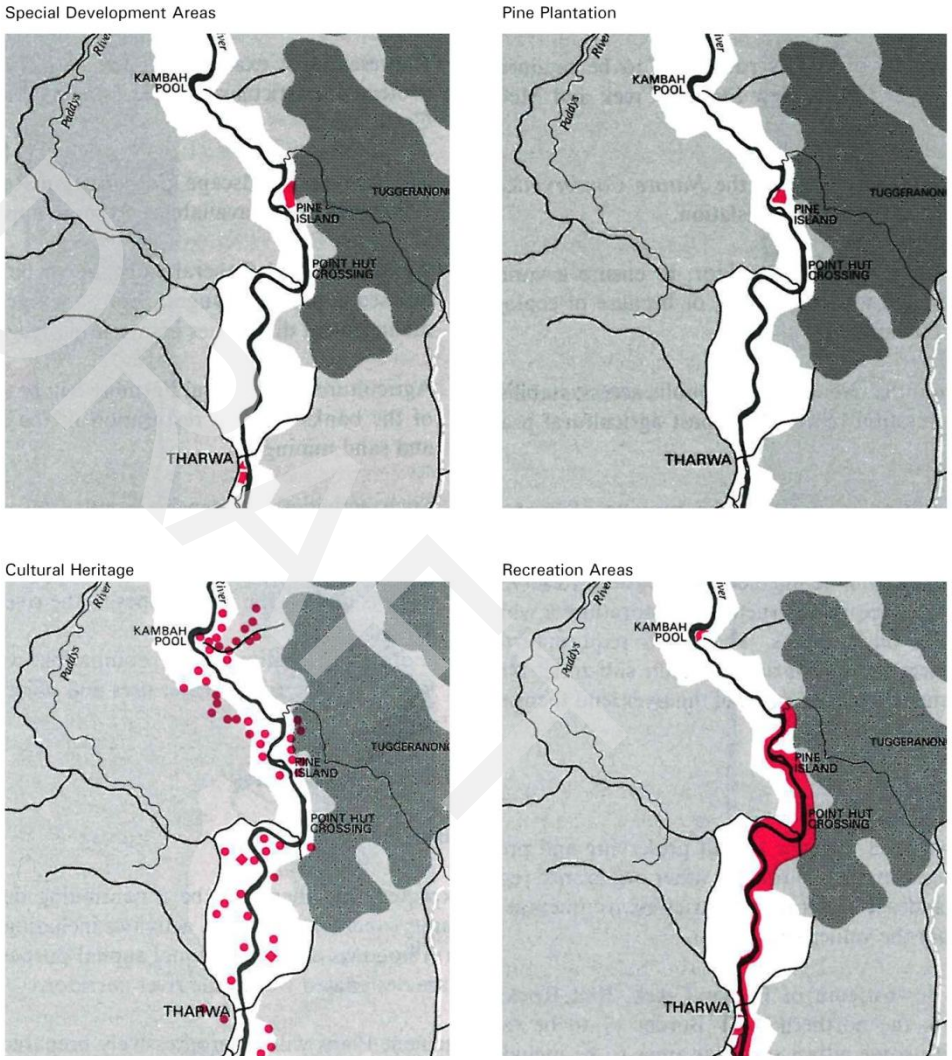
Appendix F of the NCP highlights the issues around development close to the river corridors and it outlines a range of key objectives, including:

- Conservation of the landscape and ecological characteristics as well as natural and cultural values
- Protection of water quality
- Protection and conservation of cultural heritage
- Provide an appropriate balance of recreation types
- Provide public access to Canberra residents and tourists
- Education and scientific study
- Timber production.

The river corridor relevant to our Study Area is designated as a recreation area. Several sites of cultural significance are identified within or close to the Study Area and development needs to be coordinated in a way that makes their conservation possible.

Future urban development could be located, designed and serviced in a way that protects the principles and objectives in the NCP for the River Corridor.

Figure 4-3: NCP Murrumbidgee Corridor



Source: NCP Appendix F

4.3 Territory Plan

The Study Area is zoned as CZ6 (Leisure and Accommodation), NUZ4 (River Corridor), PRZ1 (Urban Open Space).

The remainder of the Study Area would need a Territory Plan Variation in order to achieve the residential developments outlined in this investigation.

The current objectives of the **NUZ4 river Corridor zone** are as follows:

- Conserve the ecological and cultural values of the ACT's major river corridors
- Protect stream flow, water quality and flood plains from adverse impacts
- Ensure that the type and intensity of development is sustainable
- Provide opportunities for a range of ecologically sensitive water and land based recreational activities
- Ensure compatibility between land uses, water uses and the general character of the rivers
- Provide opportunities for appropriate environmental education and scientific research activities
- Prevent development that would significantly increase fire hazard.

The current objectives of the **CZ6 zone** are as follows:

- Provide for the development of entertainment, accommodation and leisure facilities for residents of and visitors to the ACT and surrounding region
- Protect leisure and accommodation uses from competition from higher order commercial uses, and encourage activities that enhance the region's economic diversity and employment prospects
- Ensure leisure and accommodation facilities have convenient access to public transport
- Protect the amenity of nearby residential areas, with regard to noise, traffic, parking and privacy
- Ensure the location of facilities, and their design and landscaping is compatible with environmental values
- Ensure that the bulk, scale, size, design and landscaping of development is compatible with the surrounding landscape
- Encourage activity at street frontage level and provide an appropriate level of surveillance of the public realm.

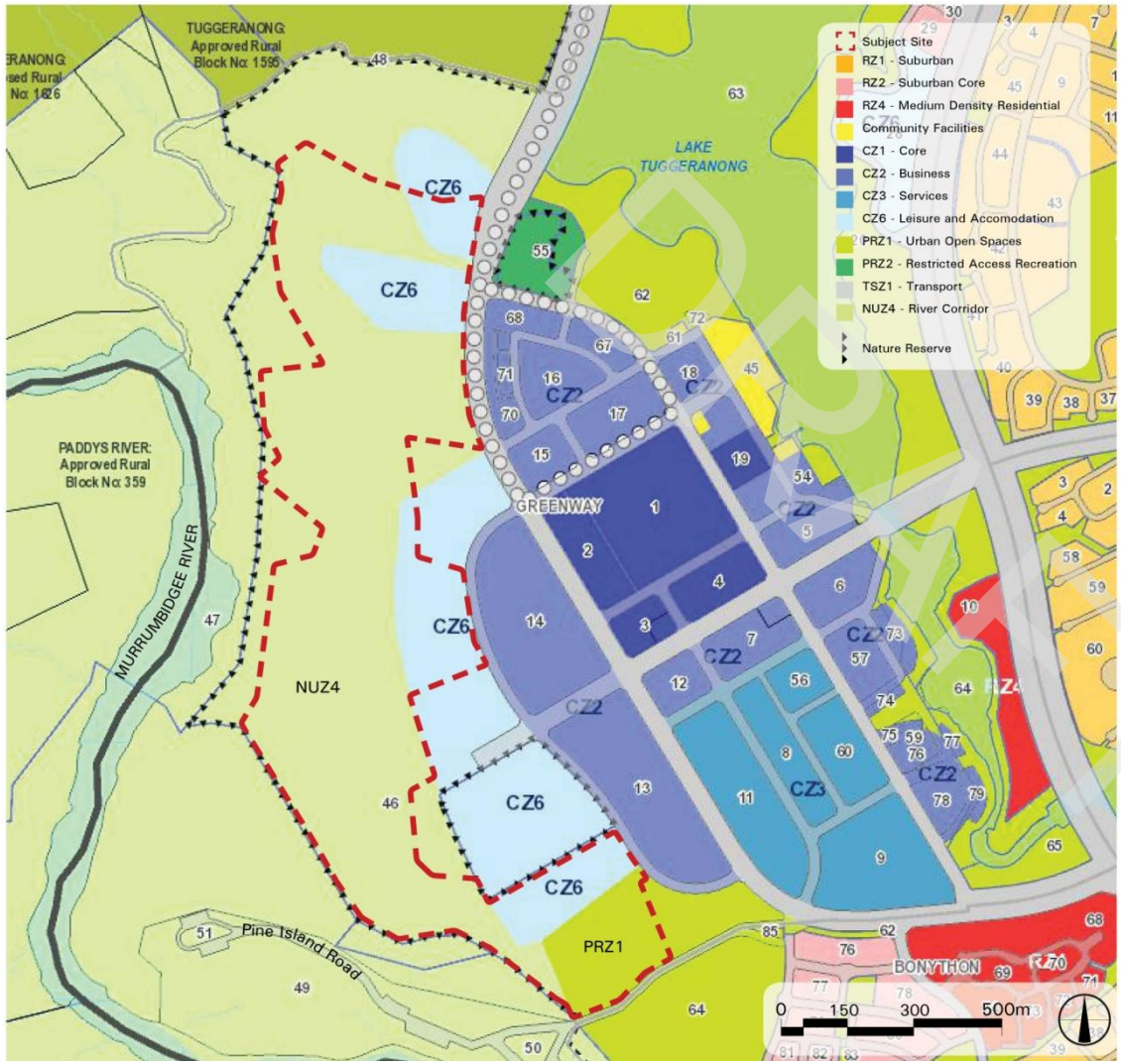
The current objectives of the **PRZ1 Urban Open Space zone** are as follows:

- Provide appropriate open space to meet community needs
- Establish a variety of settings
- Protect water quality
- Allow ancillary land uses
- Ensure development does not adversely affect landscape of scenic values
- Provide for integrated land and water planning.

A carefully planned and designed urban development would be compatible with most of the planning objectives for all three zones covering parts of the study area.

A variation to the Territory Plan would be required to change the land use designation of the Study Area to permit future urban development. A zoning change to permit medium to higher density residential and mixed use development would be desirable to maximise development potential and associated benefits.

Figure 4-4: Territory Plan Extract



Source: Actmapi

4.4 Greenway Precinct Code

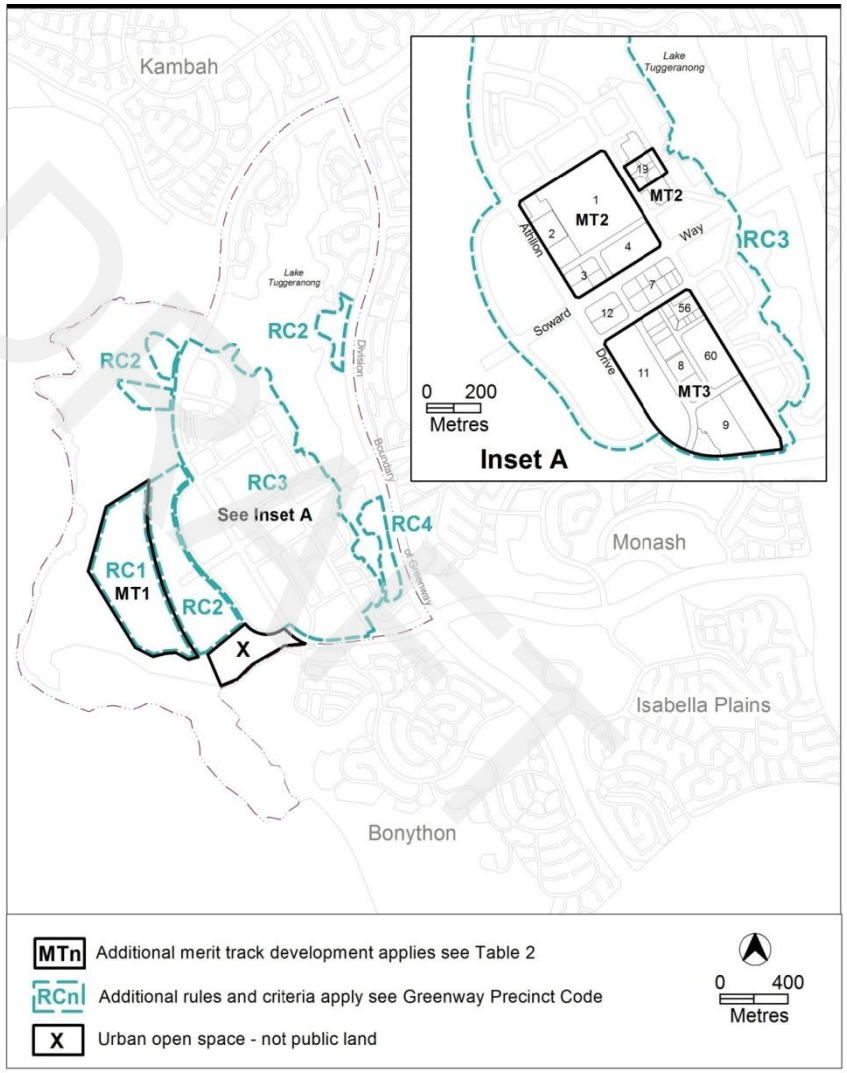
The subject Study Area is partially covered by the Greenway Precinct Code. The areas concerned are RC1, RC2 and MT1 (Figure 4-5).

The Precinct Code shows land uses of a very low intensity such as campsites and tourist facilities.

The proposed land use (urban) would require a variation to the Precinct Code to incorporate the proposed land uses.

The Code also outlines criteria for the protection of water quality, the minimising of impacts on the ecology of the river corridor and the visual amenity of the area. It is expected that these objectives and principles could be addressed and retained in a revised Precinct Code.

Figure 4-5: Greenway Precinct Map



Source: Territory Plan

5.0 Environmental Values

The Study Area demonstrates a range of environmental values that need to be considered before design and development of the Study Area.

Two locations of Perunga grasshopper are indicted on Actmapi. In addition, Pale Pomaderris is shown to be on the edge of the proposed Study Area. There are also several areas of Tuggeranong lignum and Pale Pomaderris to the south of the Study Area.

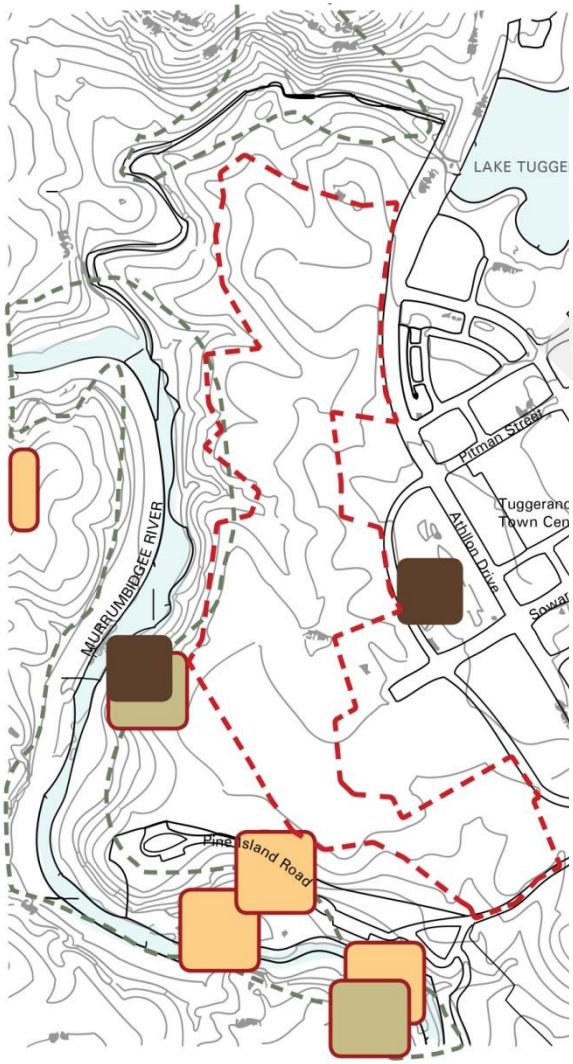
The subject Study Area also has regional linkage value that should be considered during the design of any future development.

The Murrumbidgee River is indicated as an important habitat and would represent a significant ecological corridor to be protected and retained as an asset to any future development.

5.1 Green Energy Potential

There is potential for a future urban village in the study area to utilise a range of innovative energy and water conservation technologies

Figure 5-1: Environment Resources



Perunga grasshopper

Tuggeranong lignum

Pale Pomaderris

Source: Purdon Planning

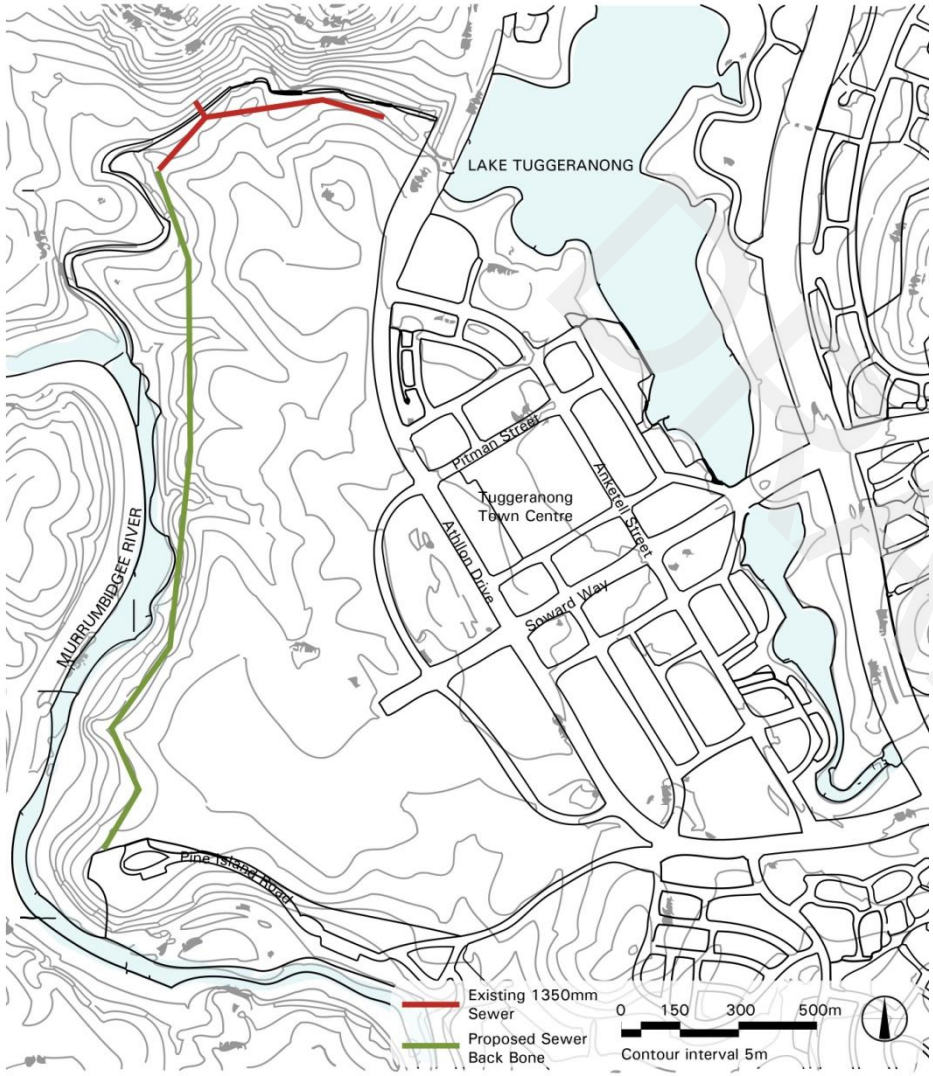
6.0 Engineering Feasibility

Indesco has compiled an initial study on the existing services and capacity of the area for upgrade. This study has investigated an area of approximately 190ha that is west of Tuggeranong Town centre and east of Murrumbidgee River. The Study Area includes Blocks 5, 4, 6, 7, 11, 14, 15 and 16, Section 46, Greenway that is proposed to have between 3,500 to 5,700 dwellings. For the purposes for robust testing of the infrastructure connections to the nominated study area however, yields of up to 7,500 dwellings have been considered.

As part of the Report Indesco looked at the existing services in the area and the natural contours of the land to determine a preferred strategy to service the land and communicate with the relevant service authorities. A summary of the services looked at are listed in the dot points below:

- There is an existing Icon Sewerage main that gravity reticulates sewer from Tuggeranong and traverses the Northern part of the site. It is understood that they have indicated the existing 1350 sewer pipe and 1875 pipe that reticulates to the north has capacity for up to an additional 7,500 dwellings.
  To service the site, a gravity main could be installed adjacent to the Murrumbidgee River, and then as development occurs sewerage could reticulate to this main. The 1200 pipe that reticulates from Tuggeranong does not have any spare capacity. On this basis a new gravity main would need to be built to reticulate the northern part of the site.
- There is an existing Icon Water reticulation on the Eastern part of the site. It is understood that any branch lines will need to extend from the water main in Athllon Drive and need to have a minimum size or upgraded to 225 diameter. Based on four connections to the site, there will be adequate flow and pressure in the water network for up to an additional 7,500 dwellings.
- There is an existing Gas medium pressure network that does not have capacity to supply the proposed Study Area for the upper or lower limits (3,500 and up to 7,500 dwellings). To allow the full Study Area to be developed, it has been advised that a new district regulator (1,050 – 210kPa) would need to be installed in Athllon Drive, as well as a network reinforcement of larger diameter gas main to the Study Area to boost supply in the medium pressure network. It is not known what spare capacity is in the network before the upgrades will need to occur. A request has been made in regards to what the estimated cost would be for the upgrade and a response has not been provided to date.
- A request has been made to ActewAGL in regards to the capacity and constraints in the existing electrical network and it has been indicated that the existing feeder network has spare capacity for the forecast load of the Study Area which is in the range of 10 to 20MVA. The zone substation may impose a constraint in the later stage of the development. A request has been made in regards to what the estimated cost would be for the electrical upgrades and a response has not been provided to date.
- As part of the proposed development the majority of the Study Area would flow directly to the Murrumbidgee River. The Water Sensitive Urban Design (WSUD) General Code requires that "the water leaving the ACT via the Murrumbidgee River should be of no less quality than the water flowing into the ACT". To enable the appropriate treatment of stormwater to occur a number of WSUD devices could be adopted at strategic locations around the Study Area such as ponds, wetlands, vegetated waterways, minimising impervious areas and rainwater reuse.

Figure 6-1: Proposed Sewer Upgrade



Source: Purdon Planning

7.0 Market Demand

Although a detailed market appraisal of supply and demand for new residential development has not been undertaken, it has been assumed that there will be on-going demand for new residential development in the area adjacent to the town centre.

Thompson offers the potential for a range of housing types including

- Medium rise apartments
- Town houses
- individual dwellings
- group accommodation (e.g. retirement village).

Recent release of land by the LDA at SouthQuay has provided some new medium density accommodation in the town centre. There have been earlier developments for housing on the northern edge of the town centre that were also taken up by the market.

Bonython also offered a range of unit title town housing as well as individual titled residential dwellings that were well received by the market.

It is understood that new residential development is being planned along the Athllon Dr frontage that will comprise a range of 6-8 storey apartments and 2 storey town houses. There is also scope for more residential development and or aged persons accommodation.

At this stage, it would be appropriate to plan for a mix of residential types with higher density closer to the town centre and lower density along the river frontage.

2 storey development Bonython

6 storey development in Barton

3 storey development on Flemington Road

8.0 Summary of Development Potential

The Study Area holds a range of development options, ranging from a small amount of infill along Athllon Drive and Rowland Rees Crescent to a large scale development of the area from the edge of Tuggeranong Town Centre to the Murrumbidgee River.

The full potential will be an outcome of thorough analysis of the Study Area and a well developed response to the key issues and priorities. Below is a compiled list of the opportunities and constraints. These opportunities and constraints are compiled with those external to the Study Area, and those that are site specific.

8.1 Opportunities

8.1.1 External Opportunities

- Generate growth for Tuggeranong to help arrest declining population
- Housing affordability associated with a range of housing stock
- Increase range of housing stock
- Close to TTC increasing economic activity
- Support existing business/job
- Ensure amenity for residents
- New job creation
- Close to public open space (lake & river)
- High quality views to mountains to the west
- Good metropolitan road connections
- Close proximity to Tuggeranong bus interchange
- Connections to existing infrastructure (Sewer, Water, Power, Social Facilities)
- Consistent with government policy to increase density in and adjacent to town centres
- Economic benefit to ACT government through land sale
- Connectivity to existing street network
- Support future light rail initiatives.

8.1.2 Site Specific Opportunities

- Large "greenfield" site in predominantly single (Territory) ownership with staging potential
- Gently sloping terrain
- Some existing vegetation on site could be incorporated into future urban design outcomes
- Existing vegetation appear to be recent plantings not remnant vegetation
- River/mountain views
- Scope for a strong urban edge
- Interface with river corridor and open space
- Scope for high density interface with existing TTC
- Range of residential density and housing
- Scope for a range of housing typologies
- Strong environmental quality design.

8.2 Constraints, Risks & Impacts

8.2.1 External Constraints

- Southern most town centre
- Market demand in Tuggeranong not as appealing as other areas of Canberra
- Only partly zoned for urban area. Requires T.P. Variation, NCP Amendment and DCP
- May diminish views from existing developments
- Increased development may put strain on existing services and infrastructure
- Increased traffic and parking demand
- Increased waste for the ACT
- Ecological values of river corridor, to be clarified pending further investigation
- Width of riparian zone along river corridor
- Potential adverse impact on existing vegetation and river corridor including water quality during and post construction
- Impact on recreation values of the river corridor
- ACT Planning Strategy
- NCP implications & National Capital Open Space System
- Declared Nature Reserve
- Past environmental studies
- Bushfire risk
- Community values
- Alternative land uses.

8.2.2 Site Specific Constraints

- Minimal existing infrastructure
- Increased demand on traffic, parking and infrastructure services
- EPBC habitats-Tuggeranong Lignum within riparian zone

- Existing stone fence line
- Heritage constraints- some aboriginal heritage places located nearby Pine Island subject to detailed assessment
- Possible site contamination
- Impact on existing land uses
- Impact on centennial walking track
- Cost of relocation of existing developments
- Land tenure.

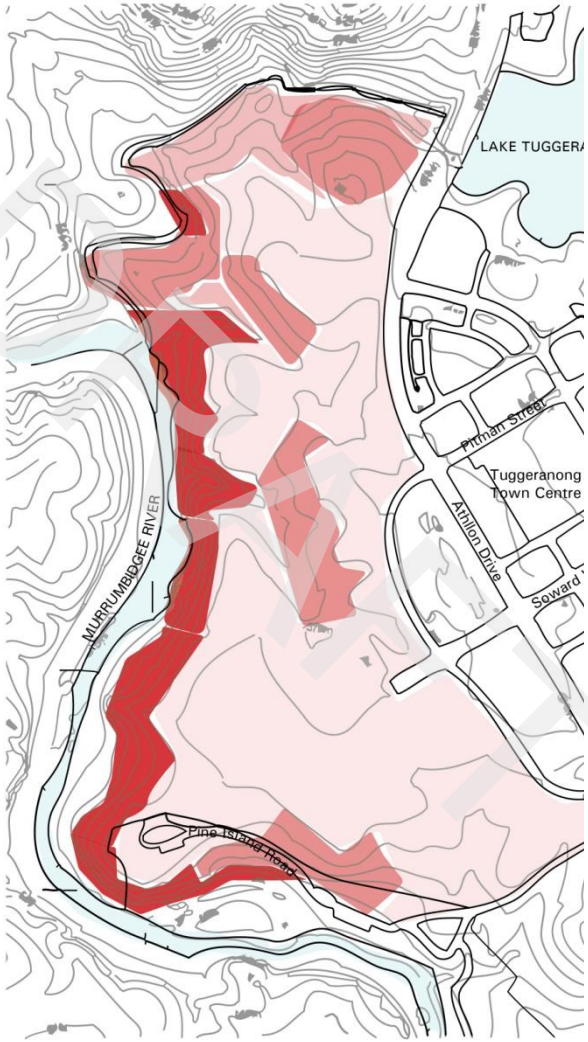
8.3 Terrain Analysis

Land beyond a 20% slope would be increasingly difficult to develop. The topography creates a natural development barrier that would protect the Murrumbidgee River Corridor.

The northern boundary of the Study Area is bound by a hill and the creek that connects the Murrumbidgee River to Lake Tuggeranong. The Southern boundary is also set by the topographical change toward the river.

This plan indicates approximately 115 hectares as highly urban capable.

Figure 8-1: Terrain Assessment



Source: Purdon Planning

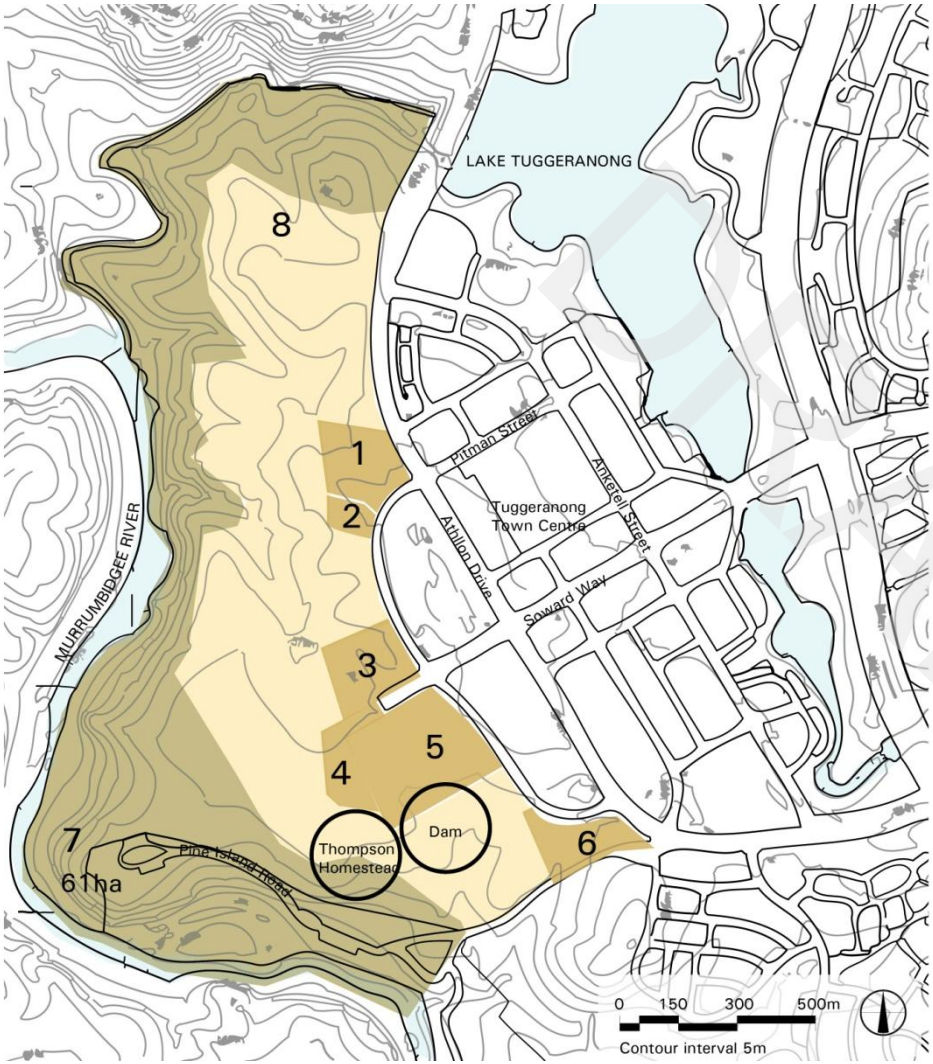
8.4 Site Analysis

Figure 8-2 and Figure 8-3 summarise the physical site features, constraints and land budget to identify urban capable land, and should be read in conjunction with the terrain assessment (Figure 8-1).

Figure 8-2: Site Analysis

Source: Purdon Planning

Figure 8-3: Context and Land Budget



	Land Use	Study Area (ha)	% Area
1	Vikings Club	3.9	2%
2	Motel	1.0	1%
3	Hockey	3.8	2%
4	Archery	2.4	1%
5	Oval	8.2	4%
6	Dog Training facility	3.2	2%
7	River Corridor Open Space/Nature Reserve	87.6	46%
8	Balance of Site (ha)	80	42%
9	**Total Site(ha)**	**190**	**100%**

Source: Purdon Planning

9.0 Urban Design Principles

There a range of desired outcomes that this development would need to incorporate into the final outcome to achieve a high quality urban design.

These include:

- Environmental design to protect river corridor
- Integrate river corridor and the town centre
- Water sensitive urban design
- Corridors of green open space
- Bushfire mitigation
- Predominantly residential
- Mix of residential accommodation
- Staged development
- Building heights sensitive to the topography
- Internal connectivity
- 4 main entries from Anketell Street, Soward Way, Rowland Rees Crescent, Pine Island Road.

Figure 9-1: Urban Design Principles

Source: Purdon Planning

10.0 Concept Master Plan

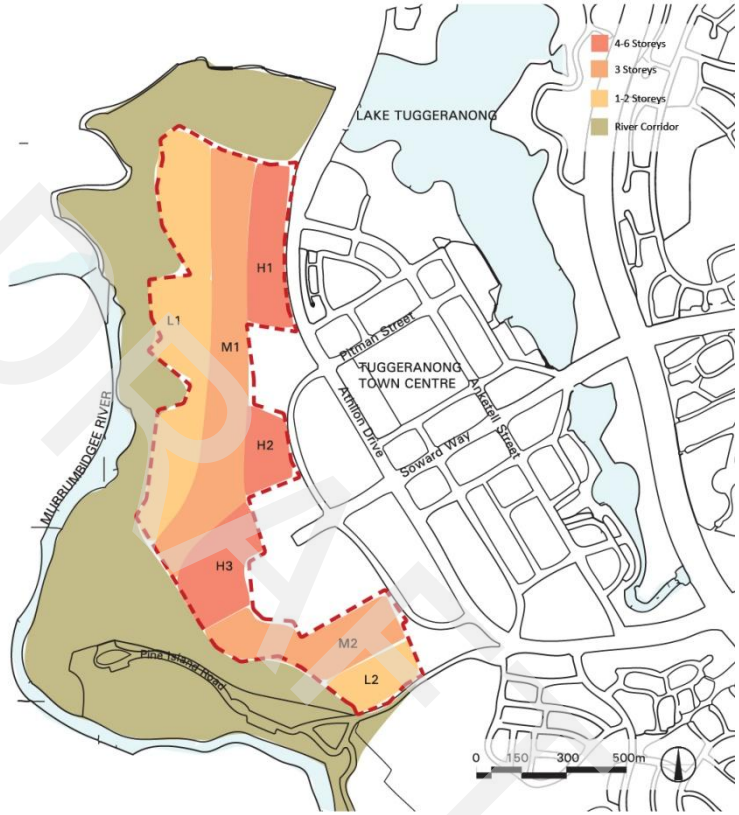
Figure 10-1 shows an indicative concept plan for the Study Area, and is based on the initial site assessment and urban design principles outlined above. Key features of the plan include a gradation of urban density and building height from the town centre edge to the river corridor (open space).

A detailed plan would include green corridors reflecting the local topography as well as maintenance of vistas to the Brindabellas achieved by the local road network.

Pedestrian and bicycle connectivity between the new residential area, town centre and river corridor would be paramount, along with a strong emphasis on WSUD principles to ensure no adverse impact on water quality in the river corridor.

Engineering feasibility studies will be required to confirm the provision of all utility services.

Figure 10-1: Indicative Urban Concept Plan



Indicative Development Yield

Development Zone	Gross development area (ha)	Net Development Area (ha)	Low Density per Hectare	High Density per Hectare	Low Density Yield	High Density Yield
Low	28.1	22.5	35	50	788	1,125
Medium	31.4	25.1	50	80	1,255	2,008
high	20.5	16.4	90	160	1,476	2,624
TOTAL	80	64			3,519	5,757

Source: Purdon Planning

11.0 Potential Development Yield

A number of concept plans using the urban design principles and the urban structure outlined in this investigation have been identified to test indicative housing yields.

Yields in the range of 3,500-5,700 dwellings were identified based on the assumptions outlined in Table 11-1 and a range of site constraints. The final yield calculation will be subject to a range of factors including design elements, site constraints and environmental protection measures.

Based on an average occupancy of 2 persons per dwelling and a range of 1 to 3 bedroom dwellings, the analysis suggests a possible future urban population of between 7,000 -11,000 residents once fully developed.

Table 11-1: Assumptions

Dwelling Type	Low Yield*	High Yield*
2 storey town house	35	50
3 storey	50	80
4-6 storey	90	160

* Dwellings per ha

12.0 Next Steps

This initial urban development potential study has confirmed that there would be substantial benefits for development of part of the study area, as identified above, and that there are no major obstacles to future urban development. It is also concluded that with innovative urban design and sensitive engineering infrastructure none of the environmental values and qualities of the area would be adversely affected.

The following steps are identified as a basis for further consideration of Thompson as a future urban area in Tuggeranong:

- Discussion with Ministers and Local Members to test level of political interest in progressing with urban development investigations
- Discussion with EDD, EPD and NCA as well as other relevant agencies
- Discussion with the local community including Tuggeranong Community Council
- Detail planning and engineering feasibility studies during 2015/16
- Project sponsorship.

Assuming that further detailed investigations support future use of the site for urban development, a number of statutory planning instruments will require amendment including:

- Amendment to the National Capital Plan
- Variation to the Greenway Precinct Code and Plan.