Preliminary Sketch Plan Report

February 2017

for

Procurement and Capital Works

on behalf of

Transport Canberra and City Services (TCCS)

by

Harris Hobbs Landscapes
Preparation, review and approval

Anketell Street (North) public area
Upgrade stage 1
Preliminary sketch plan report

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Date: 3/2/17

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Anketell Street (North) Public Area Upgrading stage 1 Preliminary Sketch Plan Report
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1.0 Executive summary

This report outlines how the Anketell Street north public space upgrade project has developed from the Tuggeranong Town Centre Master Plan (2012), beginning with site analysis and concepts for a design through to preliminary sketch plans (PSP). The report has been prepared by a consultant team led by Harris Hobbs Landscapes.

Preliminary Sketch Plan Objectives

The objectives of planning for the upgrade are to implement the first steps in the Town Centre Master Plan by preparing a preliminary design for the public spaces of Anketell Street, between Reed and Pittman Streets. The plans will be used to inform future detailed design and construction. A portion of the preliminary design will be developed in detail and constructed in 2017.

In keeping with Master Plan objectives, the design considers measures that will encourage people to linger in and use the Tuggeranong Town Centre more frequently. The design will promote more pedestrian activity along the building frontages and will improve access to the laneway to the lake by removing obstacles at the laneway to the lake entry; street furniture will be renewed and more suitable trees are proposed.

Specifically, the preliminary plan:

- promotes Anketell Street (north) as the core activity hub for the Tuggeranong town centre
- creates a pedestrian focused street that attracts people to be active, and to help stimulate economic activity
- connects Anketell Street (north) visually and physically to its surrounds – the laneway to the lake, Urambi Hills, Tuggeranong Town Park, and the new Greenway Development to the south-east
- establishes a cohesive and distinctive landscaping and furniture theme along Anketell St (north) that can later be expanded to the rest of Anketell St and the town centre.
- ensures consistency with the objectives that encourage more people to walk and cycle by:
  - improving conditions for pedestrians and cyclists
  - complementing the ACT Government’s aspirations of urban renewal and revitalisation of Canberra’s major centres by designing then constructing high quality public spaces that invite use.

The planning and design process has involved close liaison between the consultation team, led by Tania Parkes Consulting, with inputs from Transport Canberra and City Services officers, other government stakeholders, and Procurement Capital Works project officers.

Once the Anketell Street upgrade is implemented, the street will become a more comfortable and safer place to linger and gather. The enhancement works to Anketell Street (north) can set the character of the rest of the Tuggeranong Town Centre.
Safety in Design
During the preliminary design, existing safety risks and design risks were reviewed by the consultant team and were incorporated into a safety in design report. This report also identifies inherent risks, resolved risks, and residual risks inherent in the site conditions that are outside the scope of this project.

Preliminary Sketch Plans
A series of detail landscape plans, 3D images and images of proposed street furniture has been prepared for the final PSP submission.

The public consultations have shown a high level of community satisfaction with the PSP proposal. However the government stakeholder consultations have shown that the objectives of activating the town centre by encouraging pedestrian activity and improving opportunities for cyclists, as well as considering the requirements of public transport, needs further consideration. This will be undertaken at future stages of the project as these are funded. Within the current project scope the design team will finalise the following:

- Anketell Street PSP, noting matters to be resolved at future design stages;
- Detailed design for a first construction stage which will improve access to and the amenity of the entry to the laneway to the lake. The works are planned to begin in early 2017.
1.1 Project background

1.2 Master planning context

The ACT Government’s urban renewal initiative of “Better Connections to Better Places” is to create vibrant, connected town centres that support active, healthy lifestyles and stimulate economic activity, resulting in more liveable, sustainable and prosperous places.

In support of this, the ACT Planning Strategy and Transport for Canberra sets out the overarching planning and transport framework to guide future growth in the ACT. In line with these frameworks and with similar objectives, the program of master planning undertaken by the Environment Sustainability and Planning Directorate (ESPD), sets out long term visions for town centres, group centres and transport corridors.

The Tuggeranong Town Centre Master Plan 2012 outlines a vision to guide growth and development over the next 30 years. It defines what is important about the centre, how its character and quality can be conserved, improved and enhanced. The Master Plan vision is that Tuggeranong town centre is:

“Canberra’s urban gateway to the mountains, which offers a unique, urban lifestyle with easy access to open spaces and waterways.”

Currently the Town Centre has over-sized blocks, and poor quality pedestrian and cyclist connections. It is dominated by car parks and roads, with buildings that do not engage with the public domain or the lake.

As the new Greenway residential area is developed, the increasing population density in Tuggeranong will help support businesses and generate a local community. In line with this there is opportunity to create a better sense of place and character for Anketell Street. This project proposes to upgrade Anketell Street and is the first step in the longer term revitalisation of Tuggeranong Town Centre and is consistent with Master Plan objectives.

Extensive stakeholder and community consultation was undertaken for the Master Plan. The Anketell Street public space upgrade project continued the consultation with community, businesses and government stakeholders in 2016. The consultation report prepared by Tania Parkes is appended to this report. Refer to Attachment D

Detailed design of a portion of the preliminary plan is being developed in readiness for construction in 2017.
1.3 Project objectives

The project objectives are to prepare designs to improve the public realm as well as pedestrian and cyclist experience within the core of the Town Centre, as stated in the executive summary.

This project will:

1. Finalise preliminary plans for public realm enhancements that will make Anketell Street and surrounding pedestrian pavements more accessible, useable and attractive with better surfaces and wider verges. Renewed street furniture and other public amenity; improved public area lighting and replacement street trees will be planted where these are required.

   Detailed outcomes will be
   • Improved character for Anketell Street as a people and activity-focused street with an easily recognisable and cohesive character.
   • Improved legibility and accessibility from the surrounding areas through better pedestrian links, including movement to and from the Hyperdome and Lake Tuggeranong.
   • Better spaces that provide opportunity for community and economic activity as well as relaxation.
   • Improved public amenity and landscape features for all seasons.
   • Improved comfort and safety for those visiting the town centre.

2. Develop and finalise detailed plans to construct a first stage of works. The detail plans will specify new landscaping, civil and electrical works including plant schedules and material schedules.
2.0 Site context

2.1 Site and planning context
The study area is the public space and road between Sections 1, 4, 5, 17, 18 and 19. Anketell Street (north) starts at the intersection of Soward Way and connects to Athllon Drive. The area of this street prioritised for the Anketell Street upgrade project is between Reed Street North and Pitman Street. This includes the entry to the town square, also known as the laneway to the lake.

Figure 1: Aerial image showing the Anketell Street (north) study area in the surrounding Tuggeranong Town Centre context.
2.2 Site description

Tuggeranong town centre is located towards the south-western end of Canberra. As the Tuggeranong district did not develop further south, the population catchment area for Tuggeranong became significantly less than intended. Tuggeranong town centre has developed with over-sized blocks, and poor quality pedestrian and cyclist connections. The centre is dominated by car parks and roads, with buildings that do not engage with the public domain or the lake.

With the development of the new residential area, Greenway, the increasing density will help support businesses and generate a local community. There is opportunity to reinvent the centre’s streets to create a better sense of place and character.
Anketell Street (north)
Anketell Street (north) is the core activity hub for the Tuggeranong town centre. Over time, the intent is to integrate commercial, community and residential uses along this street.

Anketell Street (north) in front of the Hyperdome is the main outdoor dining area in the Town Centre. It is also the main street that carries heavy traffic, including buses on their way to the interchange. However the opposite side of the street is relatively inactive, with only one cafe and little amenity or street appeal. Much of the lake side consists of offices and blank walls. The southern orientation limits outdoor use during cooler seasons.

The laneway from Anketell Street to the lake is an important connection that, with improved access and amenity, could help activate the southern side of Anketell Street. However there are several vacant shops and ground level tenancies; the public realm is uninviting, not easy to access and is viewed negatively by the community. Currently, pedestrians from the library or the college funnel through unlit back lanes to Anketell Street, crossing it at various points to access the Hyperdome. There is a lack of quality space for people to linger. This potentially key pedestrian link could be improved to better connect the commercial area in the Town Centre with community activities closer to the lake shore.

Anketell Street and its intersections are wide, and uninviting for pedestrians to cross the road to other areas. While there is a zebra crossing from the Hyperdome entry, a bin, light pole and the dated amenity in the laneway does not invite people beyond the shopping centre. Outdoor café blinds and structure impede visibility at the crossing. Visible or instinctive connections to Tuggeranong Lake are nonexistent from Anketell Street north.

There are no bus stops along Anketell Street (north) however it is a key route for buses to access the bus interchange on Pitman Street.
### 2.3 Site inventory and conditions
Refer to drawings 16012/101-106

**Accessibility**
Generally the footpaths and paved public realm are flat and at easy grades for accessibility, however they are in very poor condition due to root uplift from the street trees.

However the southern portion of the Hyperdome side of the street has excessively steep cross falls from the building level to the kerb and makes pedestrian access difficult.

There are connectivity gaps with kerb ramp crossings which do not correspond at crossing points on either side of the road.

The raised planter beds at the entry to the laneway to the lake are an obstacle to easy movement and restrict use of the space. The walls are in poor condition due to tree root uplift and are breaking up, and are a possible safety issue.

**Public Realm Amenity**
Existing public amenities along the street are minimal and old, comprising some seats, dated bins and old bike racks.

Several timber benches and small planters are associated with the outdoor dining concession areas adjacent to the Hyperdome. These seats are in poor condition, with cracked stone bases caused by tree root uplift. Lowered blinds on the outdoor dining structures limit views for people wanting to use the pedestrian crossing.

**Existing trees – Anketell Street**
The existing street trees to Anketell Street are causing significant pavement uplift, which is a safety risk for pedestrians. The regular and ongoing repairs required to keep them safe are costly.

The poor condition of the pavements is a constant remark from the community and traders. The trees species (*Liquidamber styraciflua*) is unsuited to an urban pedestrian environment as it has a shallow root system that lifts pavements. A tree renewal strategy is proposed in the preliminary sketch plan.

**Laneway to the lake and Gazebo**
The trees within the laneway to the lake (*Fraxinus oxycarpa*) are lifting the pavement causing safety and maintenance issues. They are in poor condition. The planter bed walls have been cracked and lifted by the tree roots. The general level of decline in the public realm is reflected in the number of vacant ground level tenancies, and the vandalised and run down gazebo. The lack of visibility makes the laneway uninviting and it is little used by the community.

**Lighting – Anketell Street**
There are 10.5 metre tall street lights illuminating the road to “V” category style illumination, yet there is no pedestrian level lighting along Anketell Street. A pedestrian
crossing flood installation has been provided for the pedestrian crossing immediately opposites the Hyperdome. There have been recent lighting upgrades in the laneway to the lake. It appears the Hyperdome have installed additional lighting at the pedestrian level in front of the outdoor dining area, along with some public seating.

The majority of the fittings are high pressure sodium of Sylvania B2229 / Roadster luminaire type. These are generally in poor condition. An audit or the existing lighting is appended.

**Lighting – Town Square and Gazebo**

The town square was formally lit with older style illuminated orbs (in poor condition) and Bega Post top fittings, consistent with a pedestrian landscape. After the preparation of the audit, TCCS have upgraded these fittings to LED We VFL 530 fittings. For optimal output from these fittings and illumination to the square, they should be placed to the perimeter mimicking a street / laneway arrangement.

Note that only the entry area of the laneway to the lake is included in this project. An upgrade of the laneway to the lake is outside this project scope.

**Services**

**Water and hydrants**

A large yellow fire hydrant, located just off the laneway connection is an obstruction directly in the middle of the pedestrian path. The design team has raised the point with ICON Water, who may have plans to upgrade the fire hydrant as it is an older model.
Potable water and sewer lines are located on the lake side of the street. The water line is located very close to the line of existing street trees. There is limited space to locate a line of new trees between the existing sewer and potable water lines.

Storm water infrastructure must be considered in any design proposal for the pavement.
2.4 SWOT analysis

The design team undertook an analysis of the strengths, weaknesses, opportunities and threats (SWOT) to the public realm to Anketell Street and the laneway to the lake.

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<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
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<tbody>
<tr>
<td>Good solar access to western (river) side of Anketell Street;</td>
<td>Poor sun levels on the east (lake) side of the street;</td>
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<tr>
<td>Broad pedestrian verges both sides of the street;</td>
<td>Through buses and other heavy traffic result in noise and safety issues.</td>
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<tr>
<td>Views to north and partial views to east;</td>
<td>Adverse effect of noise and fumes on people at outdoor cafes on Anketell Street;</td>
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<tr>
<td>Busy, well patronised street level shops on the western (river) side of street;</td>
<td>No bus stops within this portion of Anketell Street;</td>
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<tr>
<td>Fine grain of east (lake) side of street providing connections to the lake and cultural/community facilities to the east.</td>
<td>Outdoor café blinds restrict visibility on the approach to the designated pedestrian crossing</td>
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<td>Broad, generally easily accessible paved areas over bulk of pedestrian areas</td>
<td>‘Broad’ road carriageway with little human scale;</td>
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<td>Poor quality street trees/damaged pavement/trip hazards;</td>
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<td>Poor quality urban realm, dated facilities, clutter from plethora of sitting walls/screen/seating materials on west side of street;</td>
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<td>Inactive frontages to northern end of street, both sides (Hyperdome and ACT Government offices);</td>
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<td>Kerbs/trees and existing walls prevent easy access into the laneway across the street;</td>
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<td>Poor quality pedestrian lighting</td>
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<td>Lack of accessible crossing points to northern end of street;</td>
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<td>Poor access, uninviting appearance has resulted in some undesirable activity which discourages many from using the laneway and links to east;</td>
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### Opportunities

- Enhance the public realm at the entrance to the existing laneway to the lake; remove obstacles to easy access and improve the spatial arrangement; include more functional and attractive street furniture,
- Tree renewal: removal or replace with tree species more suited to paved urban areas;
- Increase activation of the northern section of the street by placing trees and furniture to better ‘connect’ this area with more ‘active’ space;
- Increase ‘kerb-free’ transitions from the footpath across Anketell Street by constructing a raised zone, in conjunction with WSUD initiatives and relative to new tree planting;
- Allow for re-purposing of kerb side use by taxi/private vehicles, increasing potential verge space for pedestrians;
- Redirect buses from the street to improve conditions for outdoor dining;

### Private lease opportunities

- Improvements to the public realm may encourage building owners to invest in redevelopment of poor quality commercial buildings on the east side of Anketell Street as well as potentially change the mix of ground level uses. This could result in more pedestrian activity at street level.
- Redevelopment of laneway commercial building may also increase activation and pedestrian use at street/square level

### Threats

- Loss of amenity when some trees are first replaced;
- Unnecessarily extended construction activity within busy urban environment – dust/noise/delay – could adversely affect activity in the area. This will be managed through early planning to minimize disturbance, open communication between the design team, construction team and adjacent businesses as the work progresses.
- Possible conflict between increased pedestrian use and continued use of Anketell Street by buses.
- Continued use of Anketell Street by buses accessing the interchange will restrict the open flow and use of the street, counter to the design objective to improve and enhance pedestrian and cyclist amenity.
2.5 Consultation
The public consultation has been managed by Tania Parkes Consulting (TPC). There has been a multi-level consultation strategy, during which the draft plans were presented to the community, business, government stakeholders and community organization representatives. The outcomes of the consultation are detailed in the consultation report prepared by TPC. The preliminary plan was amended to reflect community responses and balanced with the government asset manager requirements for cost effective long term maintenance, and the need for compliance with Australian and Territory design and construction Standards.

Overall the proposed design has been very well received, in particular the proposal to improve pedestrian safety and amenity, opportunity for more on street activation, and lighting feature as functional art.

Key comments from the community on the draft preliminary sketch plan include:

- Anketell Street and the entry to Tuggeranong Square/laneway were generally considered to be ‘tired, ugly, cold and without street appeal but with promise and potential’
- Create a low speed traffic environment.
- Redirect buses from Anketell Street; a Town Centre bus loop was suggested.
- Improve steep and irregular pavement gradients and surfaces where tree roots have raised paving to enable easy access, especially for those who are mobility impaired, prams, shopping trolleys and frail people.
- Improve safety with better lighting and CCTV
- Introduce more ‘colour and life’ on the footpaths through flowers, upgraded landscaping, event space, street art, a space for children preferably away from traffic
- Additional seating along the footpath on both sides of the street

Stakeholder comments relevant to the design follow:

- All stakeholders welcomed any improvements that would make Anketell Street safer and more interesting for all demographic groups and particularly those from lower socio-economic backgrounds.

- All stakeholders welcomed any upgrades to public infrastructure and amenity that might attract more commercial activity to the area.

- Need to maintain flexibility along the street for deliveries, short term parking, provision for taxis, parking spaces for the disabled and retain current parking capacity.
3.0 Recommendations

3.1 Preliminary sketch plan recommendation

The public consultations have shown that the large proportion of the community welcomes the draft design proposal. However, more government stakeholder consultations will need to be held at future design stages to fully resolve the objectives of activating the town centre by encouraging pedestrian activity and improving opportunities for cyclists, as well as considering the requirements of public transport. These matters will be addressed at future detailed design stages.

Managing the expectations and competing uses between pedestrians, private vehicles, public transport and cyclists is key to the delivery of the project objectives.

Matters requiring resolution are noted below:

Issues to resolve at future detailed design stages

1. Carriageway minimum width (either 8m [2 x 4.0m ‘lanes], or 10.2m, made up of 2 x 3.6m vehicle lanes and 2 x 1.5m cycle lanes)

2. Bike lane/parking alignment along street – either bikes on drivers side of road or cycle lane on passenger side

3. Speed limit (10kph vs 40kph)

4. Length of raised zone and treatment at each transition back to existing bitumen level;

5. Length of bus slip lane/bus queuing for left turn into bus interchange

6. Bike box arrangements at head of traffic lights – how to access – depends on how (2) is resolved

7. Colour/surface treatment of bike lane (noting green paint not supported)

8. Bike lanes separated by median; painted line flush with all road users; or painted line and kerb as per current situation

3.2 Design recommendations

The following design recommendations flow from the key issues identified during the community and stakeholder consultations. The recommendations address safety, accessibility and non-conformances with Australian Standards and Territory design standards. Where the consultation resulted in divergent views, for example of removal or
retention of trees, the majority view or a proposal that was consistent with project objectives has been developed through the PSP.

1. **Pavement uplift from tree roots**

Tree removal and replacement in accordance with contemporary best practice root cell and subsurface structural soil systems will largely eliminate risk of pavement uplift. Proposals include:

- selection of less invasive tree species;
- a combination of a plastic stackable cell based system surrounding the tree, and of graded rock and topsoil to an extended area beyond the tree, providing 30-40m3 of available soil volume for each new tree, consistent with best practice;
- Inclusion of ‘rain gardens’ or areas of low planting that can capture rainfall and runoff from road pavements, slowing down stormwater flows and contributing to water quality improvements while providing variety in planting to the ground plane that will enhance the visual amenity of the area.

2. **Excessive cross-fall to paving**

A section of the footpath near the Commonwealth bank has excessive pavement cross fall grades. As part of tree replacement strategy, provide low concrete wall and new concrete steps and handrails to provide compliant grades along footpath and allow for maximum flexibility for use of footpath. Note that there is a stormwater blockage issue identified with the adjacent stormwater sumps in this vicinity that requires further hydraulic engineering investigation in the next phase of the design – refer section .6 following.

3. **Laneway entry upgrade – Stage 1 Construction**

The existing trees and raised grass areas are proposed to be removed and replaced with paving flush with ground floor levels. This will provide for a flexible space that will encourage use. New furniture is proposed. New street tree plantings are proposed to be planted into a combination of proprietary structured soil and stabilised soil. Lighting post layout will be reconfigured using recently replaced light poles. A power bollard that enables events use is proposed.

Engineered pavement is proposed to allow access for water truck for tree watering and maintenance over the first five years during tree establishment. ‘Trihex’ paving is proposed, which also permits some water infiltration into the tree root zones.

A drinking fountain is proposed and a rubbish bin will be replaced.

4. **Feature lighting / Area Lighting**
A feature light is proposed using a bespoke structure to light the junction of the town square with Anketell Street. This will act as a beacon or marker for the space, and encourage a range of uses such as night markets, weekend markets, and community events.

The feature light will be connected to the existing (unmetered) street lighting supply. The feature light uses standard TCCS approved fittings (albeit in a non-standard configuration). The lights will be fitted with a Red/Green/Blue control for highlight lighting effects.

General street lighting is proposed to be upgraded to LED to current TCCS specification, producing a better quality of white light, and improving night time illumination levels.

General street lighting will be placed to effectively light furniture, lane changes and traffic islands. The net effect of this will be boosted light levels along the raised zone.

5. **Raised Zone/Active Travel/carriageway/bike lane arrangement/parking**

Subject to resolution of issues in 2.1 above, the raised zone configuration may change, however at PSP stage the recommendations are:

- Raised pavement, reinforced concrete, 10kph speed limit, central marked and lit pedestrian crossing.

- Priority for users at the pedestrian crossing: *pedestrians, cyclists, deliveries, buses, general vehicles*.

- Priority for cyclists is provided over motorised vehicles outside channelized cycle lanes, in accordance with ACT Road rules and associated legislation.

- Central section allows free movement in all directions; each end of zone includes indented parking for loading zones, DDA spaces.

- Opportunity for water sensitive urban design (WSUD) rain gardens in conjunction with indented parking spaces.

- Central section is 8m minimum width.

- Cycle lanes proposed in each direction on each side of road. Lake side (south) separated by median from parking lane then traverses the raised zone. River side (north) lane has several ‘blister’ parking lanes on kerbside.

- ‘River’ side of street allows for blister parking set within secondary row of tree planting. Parking bays are on inside of the proposed active travel cycle lane.
Changes to road carriageway to accommodate cycle lanes and enhanced raised zone. Minor realignment of kerb to lake side of street to allow for required clearances and offsets to separate cycles/buses/parking lanes as per code.

Parking numbers and distribution have been enhanced from the existing conditions. 31 total spaces are proposed, being a mix of DDA spaces, loading zones (double length to cater for larger vehicles), taxi spaces, 5 minute and 30 minutes general parking.

Proposed changes to car parking:

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<td>7 x Taxi</td>
<td>4 x Taxi</td>
</tr>
<tr>
<td>2 x DDA – Disabled</td>
<td>2 x DDA – Disabled</td>
</tr>
<tr>
<td>4 x 1 hour</td>
<td>10 x 30 minutes</td>
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<tr>
<td>9 x 5 minutes</td>
<td>9 x 5 minutes</td>
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<tr>
<td>6 x loading</td>
<td>6 x loading (Day) general use after hours</td>
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<td>28 Total</td>
<td>31 total</td>
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6. Further design development

Southern end of Anketell Street – Hyperdome side – a stormwater blockage issue has been identified with the adjacent stormwater sumps in this vicinity that requires further hydraulic engineering investigation in the next phase of the design.

Feature light – the design and selection of luminaires are to be developed and approved at detailed design stage for stage one construction.

The extent and configuration of the Anketell carriageway resolved at future detailed design stages after further considering the requirements of public transport, pedestrians and cyclists.

3.3 Community safety

Proposed pavement upgrading works, such as new steps, ramps and lighting have been designed with regard for community safety. The design has been developed with regard to CPTED principles and is in accordance with Australian Standards and TCCS design standards. The removal of the raised beds and poor quality trees to the laneway will allow much better sightlines and surveillance across the space, and will encourage more people to use the space.

3.4 Services – potable water/stormwater

Potable water
A water refill point is proposed in the Town Square at the junction with Anketell Street.

Stormwater
Existing stormwater pits on Anketell Street will require modification to suit the raised zone. This will be a combination of retained side entry pits and grated drains along the open concrete invert that will run close to the alignment of the existing kerb.

3.5 Amenities
New seats, rubbish bins, a drinking fountain and new bike racks are proposed for the upgraded public areas. Materials and colours have been selected for durability, amenity and level of maintenance.

Refer plans for schedules of proposed materials

The following amenities are proposed:

- 1 x 240 litre steel bin surround + canopy over, (compliant with AS 1428.1 <1130 to the opening);
- 8 no. bicycle racks;
- seats, benches and tables
- 1 x drinking fountain/water bottle refill station
- 1 x power bollard

3.6 Potential for artworks

The consultation phase drew several responses regarding potential for artworks. These could be through temporary interventions in the Town Square, and more permanent installations, perhaps to blank facades to the laneways accessing Anketell Street from the lakeside car parks.

It is noted that artworks would be subject to separate funding as they are not included in the scope of a public realm upgrade.

However a feature light of a stainless steel ellipse is proposed as a sculptural element at the head of the Town Square and Anketell Street. Refer to detail drawings and structural design options.

3.7 Streetlighting

Street lighting is proposed to be upgraded to AS1158. Refer appended plans. The lighting design proposals provide for an increased level of illumination at crossing points, and generally through the raised area, in order to respond to the kerbing, lane changes, etc. Upgrades will comprise new LED luminaires with improved output and improved colour rendering for night-time use.

The feature light provides the opportunity to provide an access portal to the town square space, draw attention to the pedestrian access, and encourage legitimate night-time uses.

As the feature light will be non-standard, two versions are proposed. The first is an option targeted at the maximization of the intended lighting effect, but may be harder to achieve within existing TCCS standards for fittings. The second option uses TCCS
approved fittings and modifies the pole arrangement; this minimises maintenance and makes replacing parts easier should this become necessary.

3.8 Materials and maintenance

Proposed materials and facilities have been selected for vandalism resistant qualities. Generally the existing hexagonal pavers will be retained and re-used in the new paving arrangements, subject to redesign for engineered paving for truck access for watering and other maintenance.

Furniture and fixtures such as balustrades, handrails and bicycle racks are proposed to be stainless steel for ease of maintenance.

3.9 Recycled materials

All existing hard pavements are to be recycled. Existing roadworks subgrades are to be excavated and could be reused as sub-grades for the new pavements if suitable, or recycled as clean filling as appropriate.

3.10 Water sensitive urban design

Areas for water sensitive urban design have been identified and will result in passive watering of trees and other planting. No specific targets have been identified, however water draining into the storm water system should improve and there will be less need for irrigation as trees establish. Overland flow from these passive watering locations has been designed to discharge to adjacent storm water pits. Subsoil drainage from the tree watering pits is to be provided, with direct drainage connection to storm water mains.

Given that the design street arrangement modifications have been to provide a level surface, much of the existing sumps are designed to be modified to provide a grated inlet on the lid of the sump. Heel guard grates on sumps are intended.

Additional R-Type sumps and kerb inlet sumps will provide drainage at locations that are otherwise un-drained. Kerb inlet sumps are to be used at locations where the kerb has been modified to be close to existing verge water mains. This is to limit the effect on the water mains.

Detailed design of all storm water catchments will be completed at detail design stages to confirm inlet capacities, and to mitigate risks of excessive overland flow.

Anecdotal advice regarding existing storm water blockages has been provided with regard to storm water at the corner of Anketell St and Reed St (north), from ACT Government maintenance section. Site investigations have noted that there is an existing pipe (375mm diameter) connecting to the 1050ND storm water main that is smaller than the upstream tie (600mm diameter) draining from the Hyperdome. The downstream pipe has been designed to be upgraded to be 600mm diameter, the same size as the upstream pipe. A new service pit is required on the main at the upgraded connection point.
**Anketell Street and new street trees**

There is significant potential to promote tree pit absorption of sheet flow rain water as it flows across the new pavement. The tree surrounds are proposed to be a gravel/epoxy bonded matrix, allowing fast infiltration directly into the tree pit.

Several ‘rain gardens’ containing *Scirpus nodosa* are proposed to assist with general drainage of the road carriageway and pedestrian paths.

**Laneway**

The proposed ‘Trihex’ pavers to the engineered and trafficable section of the paving are partially permeable, allowing for water infiltration into the wider tree root zones.

**3.11 Planting**

The proposed tree renewal strategy is supported by Urban Treescapes. The existing *Liquidamber styraciflua* and *Fraxinus oxycarpa* are proposed to be removed and replaced with a deciduous broad leaved maple, and an evergreen tree:

- *Acer Warrensred ‘Pacific Sunset’* 11m x 6m canopy diameter
- *Magnolia grandiflora ‘Kay Parris’* 6-9m x 3m canopy diameter

These species have been selected due to the relatively narrow form vs height, minimizing potential impacts on the existing building awnings while allowing for regularly spaced trees that will frame the streetscape and provide a high level of shade in summer once established.

**3.12 Design standards**

The Preliminary Sketch Plan has been designed to comply with all relevant and current ACT standards, Guidelines, Acts and Ordinances and TCCS Design Standards.

**TCCS Drafting Standards**

Drafting standards reflect Design Acceptance and Operational Acceptance requirements.

**Australian Standards**

Upgrade works for lighting comply with AS1158
All upgraded pedestrian areas conform to AS1428.1
Carparking and off-street civil works comply with AS2970