Beveridge North West Precinct Structure Plan

Background Report

August 2019
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1 INTRODUCTION

The Victorian Planning Authority (VPA) in consultation with Mitchell Shire Council (MSC) has prepared a precinct structure plan (PSP) for the Beveridge North West precinct (1059). A PSP is a ‘big picture’ plan that sets the vision for developing new communities and is the primary plan for guiding urban development in the growth areas of Melbourne. It is a long-term plan that will determine how the future community of Beveridge North West will develop over the next 20 years.

The precinct is included in the North Growth Corridor Plan (2012) which is a strategy for long term development of the northern corridor of Melbourne.

In summary, the Beveridge North West PSP:

- Sets out plans to guide the delivery of quality urban environments in accordance with the Victorian Government guidelines.
- Enables the transition of non-urban land to urban land.
- Sets the vision for how the land should be developed and the outcomes to be achieved.
- Outlines the projects required to ensure that future residents, visitors and workers within the area can be provided with timely access to services and transport necessary to support a quality and affordable lifestyle.
- Sets out objectives, requirements and guidelines for land use, development and subdivision.
- Provides Government agencies, the Council, developers, investors and local communities with certainty about future development.

1.1 Purpose of this report

The VPA has completed a number of background technical studies for the precinct, including Landscape and Visual Assessment, Aboriginal Heritage Impact Assessment, Economic Assessment and Strategic Transport Modelling Assessment.

The Background Report summarises the key findings presented by the technical reports that informed the preparation of the Beveridge North West PSP; and explains how this information guided the preparation of the future urban structure (FUS) plan.

More specifically, this report:

- summarises the strategic context of the precinct
- outlines the physical context of the site including topography, vegetation, waterways and contamination
- identifies the land use and development needs for the precinct.

1.2 Background Documents

The technical reports listed below, provide specific detail on the key elements outlined in this background report.

Technical investigation and findings that were used to inform the preparation of this report and the Beveridge North West PSP include:

- Arboricultural Assessment, Precinct Structure Plan 1059, Beveridge North West, Tree Logic Pty Ltd, November 2013
Beveridge North – West Landscape and Visual Assessment, Planisphere Planning and Design, October 2014

Beveridge North West Precinct Structure Plan Area, Site Suitability Assessment, VW07335, Jacobs Group Australia Pty Ltd, July 2014

Beveridge North West Precinct Structure Plan, Utilities Servicing and Infrastructure Assessment, Cardno Victoria Pty Ltd, March 2014

Beveridge North West PSP 1059, Beveridge, Aboriginal Heritage Impact Assessment (AHIA), CHMP #12766, Archaeological and Heritage Management Solutions Pty Ltd (AHMS), February 2014

Beveridge North West PSP Groundwater Quality Assessment, VW07335, Jacobs Group Australia Pty Ltd, July 2014

PSP 1059 Beveridge North West Post – Contact Heritage Assessment, HV Report #4372, Archaeological and Heritage Management Solutions Pty Ltd (AHMS), February 2014

Targeted Cultural Values Inspection of PSP 1059 Beveridge North West, Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation, October 2014 (Revised 2019)

Scattered Tree Assessment, Beveridge North West (PSP 1059), Victoria, Ecology and Heritage Partners Pty Ltd, November 2013


Beveridge North West PSP Strategic Transport Modelling Assessment, GTA Consultants (Vic) Pty Ltd, December 2018.

Beveridge North West PSP Infrastructure Designs and Costings, Cardno Victoria Pty Ltd, July 2019

2 STRATEGIC CONTEXT

The Beveridge North West precinct is located in the North Growth Corridor and the Shire of Mitchell. Key strategic documents that are relevant to the PSP are listed below and outlined further in sections 2.1 and 2.2:

- Plan Melbourne 2017-2050
- North Growth Corridor Plan (2012)

2.1 Plan Melbourne 2017-2050

*Plan Melbourne 2017-2050* provides high-level strategic guidance for land use and development across the metropolitan area. It was released in March 2017.

Within *Plan Melbourne 2017-2050*, the PSP area is identified as an ‘urban area’ adjacent to a ‘state significant road corridor’ – the Hume Freeway.
2.2 North Growth Corridor Plan

The Growth Corridor Plans (NGC) were prepared by the VPA (previously Growth Areas Authority) and released by the Minister for Planning in June 2012. The plans seek to accommodate a substantial amount of Melbourne’s future housing and employment land supply over the next 30 to 40 years by providing a framework to guide the planning of new communities in each corridor.

The Beveridge North West PSP area is located in the North Growth Corridor (NGC), which includes land in the municipalities of Hume, Whittlesea and Mitchell. The NGC area is expected to accommodate a population of approximately 260,000 people and has the capacity to provide around 83,000 jobs.

The projected growth within the NGC has informed the broader sub-regional network of service and infrastructure provision. This means that in addition to providing its own local services, the PSP planning needs to ensure there is no shortfall or loss of services within the broader growth area context (refer to Appendix 1 Plan 1).

The NGC plan identifies the Beveridge North West PSP area as ‘residential’ with landscape values areas, a waterway corridor and potential future regional active open space located within the precinct boundary.

The Beveridge North West precinct is shown in the context of the North Growth Corridor Plan in Figure 1 below.

Figure 1 – North Growth Corridor Plan.
3 LOCAL CONTEXT

The Beveridge North West precinct is located in the Shire of Mitchell, situated approximately 40 kilometres north of Melbourne’s Central Business District (CBD) and approximately 4 kilometres south of Wallan.

The PSP is bound by Hadfield Road to the north, the Hume Freeway to the east, Camerons Lane to the south and Old Sydney Road to the west, as illustrated in Appendix 1 Plan 3.

The Northern Growth Corridor Plan identifies the PSP to be predominately residential with landscape values in the north and west of the precinct and Kalkallo Creek running north-south through the precinct.

The majority of the PSP is currently zoned Urban Growth Zone (UGZ) with the Rural Conservation Zone (RCZ) applied in the northern area of the precinct and an Urban Floodway Zone (UFZ) applies along Kalkallo Creek.

Road access to the precinct is currently via the Hume Freeway off Lithgow Street and off Old Sydney Road to the west.

3.1 Lot Size and Ownership Pattern

The Beveridge North West PSP applies to approximately 1250 hectares of land.

The precinct consists of 15 parcels in total, with lot sizes ranging from 2 hectares to approximately 458 hectares. The majority of these parcels are currently vacant.

Landholdings are generally medium to large, corresponding with the use of the land for pastoral purposes and hobby farms.

3.2 Topography, Geology and Waterways

The Beveridge North West terrain intertwines two land form typologies: eastern Victorian plains with hill cones connecting south from Melbourne and hills, typical of eastern Victoria, connecting from the north. The result is a precinct that is characterised by valley plains to the east, punctuated by Spring Hill Cone in the north eastern corner and creek side hills to the west.

The site is divided into 3 catchments. Kalkallo Creek is the dominant waterway system traversing the western side of the PSP area. The northern boundary of the precinct drains to the north and the west drains south along the plain and eventually joins Kalkallo Creek.

The northern portion of the site is characterised by elevated topography including Spring Hill Cone which serves as a dominant visual landmark. The topography at its steepest points has a slope greater than 20% but mostly varies between 5-10%. The topography flattens to the south-east of the PSP.

Kalkallo Creek flows north-south through the precinct and provides an opportunity to create a high amenity ‘blue-green’ corridor within the precinct. However, it should be noted that given the extent of erosion resulting from past farming practices, remediation works are required.

3.3 Surrounding Areas

A number of new settlements are currently planned, been finalised recently or are being developed around Beveridge North West. Surrounding land uses and developments relevant to the precinct include:

Beveridge Central Precinct Structure Plan

Beveridge Central precinct lies to the south-east of Beveridge North West precinct. The PSP applies to approximately 292 hectares of land generally bounded by Rankin Street to the south, Camerons Lane and the existing Beveridge Township to the north and north-east, Stewart Street to the east and Patterson Street to the west.
The Beveridge Central PSP will provide approximately 3,400 homes to accommodate a population of more than 9,500. Community and commercial facilities, including a sports field, local convenience centre, a network of open space and a heritage trail will create an attractive precinct for the future residential population.

Mandalay Estate and Beveridge Township

The Mandalay Estate and the Beveridge Township are located directly south and south east of the PSP respectively. Mandalay Estate is currently over 60% developed and will have a population of more than 6,000 at full build out. The Beveridge Township is an existing low-density residential area located to the south-east of Beveridge North West PSP on the eastern side of the Hume Freeway. The Township is expected to be redeveloped over time to accommodate a future population of more than 1500 residents.

Wallan South PSP

The Wallan South PSP is located directly north of the precinct. Planning has now commenced for this precinct.

Beveridge North East PSP

The Beveridge North East PSP is located directly east of the PSP and planning is yet to commence.
4 ABORIGINAL CULTURAL HERITAGE

The VPA engaged Archaeological and Heritage Management Solutions (AHMS) to complete an Aboriginal Heritage Impact Assessment (AHIA) and a Post Contact Heritage Assessment (PCHA) for the Beveridge North West PSP area.

The precinct is located in Wurundjeri Tribe Land and Compensation Cultural Heritage Council (WTLCCHC). The WTLCCHC is the Registered Aboriginal Party (RAP) relevant to the precinct area.

4.1 AHMS Aboriginal Heritage Impact Assessment

A desktop review revealed that there are seven registered Aboriginal Places (six artefact scatters and one scarred tree) contained within the precinct. A site survey that was undertaken identified an additional artefact scatter and highlighted the loss of two of the artefacts scatters (one due to erosion and the other from the construction of a vehicle track). The north-west portion of Kalkallo Creek has a high level of cultural sensitivity particularly as it contains multiple artefact scatters.

AHMS advised that areas of very high sensitivity should be retained in their current form where possible. Where high and moderate sensitivity has been identified, development impact should be minimised and where possible establish new open space. Areas of low sensitivity have no design and planning recommendations and high impact developments such as town centres should be located in areas of negligible sensitivity.

It is likely that the precinct will yield numerous aboriginal artefacts as part of further Aboriginal Cultural Heritage investigations required at the subdivision stage.

4.1.1 Outcomes & Recommendations

Precinct Structure Plan Design Response

AHMS provided recommendations based on the sensitivity zones and include:

**Very High Sensitivity:** Minimise future development impact on ‘very high’ sensitivity areas where possible, to retain these areas in their current form. Options for retention could include inclusion of parts of the ‘very high’ sensitivity land within open space, riparian, Rural Conservation Zone, bio-link, setbacks and/or asset protection zones. Where possible, the landscape integrity and amenity of these areas should be retained, including appropriate set-backs where relevant. Planning Provisions should be established during the PSP design process. This could include limiting high impact activities and avoiding these locations for bridge crossings or drainage assets.

**High and Moderate Sensitivity:** Development impact should be minimised where practicable. For instance, where there are opportunities to establish open space, these areas could be placed on the ‘high’ and ‘moderate’ sensitivity location. Areas of ‘high’ sensitivity should take precedence over areas of ‘moderate’ sensitivity.

**Low Sensitivity:** No design and planning recommendations.

**Negligible Sensitivity:** These areas could be the focus of development, particularly high impact features of a subdivision like a town centre, medium or high density residential, industrial or commercial development.

Aboriginal Heritage Act 2006 and Aboriginal Heritage Regulation 2007

The Aboriginal Heritage Act 2006 and Aboriginal Heritage Regulations 2007 outline the triggers for the requirement to complete a Cultural Heritage Management Plan (CHMP). In addition, Aboriginal places on the plan titled ‘sensitivity model for Aboriginal cultural heritage within the activity area’ will require the completion of a mandatory CHMP before a permit can be approved. AHMS also recommends that prior to subdivision or development a search of the Aboriginal cultural heritage sensitivity overlay should be undertaken to determine if new site have been recorded and if a CHMP is required.

Complex Assessment
AHMS recommend the use of a landform approach to the complex assessment (test excavation). The approach is an efficient and effective means of assessing the nature extent and significance of Aboriginal cultural heritage across large landscapes. The extent of testing and sample effort should be based on the level of sensitivity.

4.2 Post Contact Heritage

The Post Contact Heritage Assessment had four major stages:

- Identifying any post contact built heritage, historical archaeological features and/or heritage values within the subject land.
- Assessing the significance of any post-contact heritage features identified.
- Identifying legislative and policy requirements for future management of any heritage items identified.
- Providing advice on planning, design and management options.

The precinct was identified as an extensive pastoral landscape from the mid-nineteenth Century and has the characteristics of pastoral land uses employed in the Mitchell Shire area through the nineteenth and most of the Twentieth Century.

AHMS found that there are no known post contact heritage features in the precinct. An archaeological survey carried out in the precinct between the 23 and 26 September 2013 found two dry stone enclosures and one section of a dry-stone wall. All features are in an extremely poor condition and do not meet the criteria to be registered on the Victorian Heritage Register, the Victorian Heritage Inventory or require a Heritage Overlay for protection.

As there was no contextual information, dating these features was difficult. It is assumed that they were constructed sometime in the mid-Nineteenth to early Twentieth Century, when pastoralism was introduced to the area. The report indicated that it is unlikely that further undocumented places/features will be found in the area. The report recommended the retention of post-contact features where possible.

4.2.1 Outcomes & Recommendations

The Post Contact Heritage Assessment revealed that there is one potential dry stone enclosure in the precinct. There were no post contact places recoded within the study area on any of the applicable heritage registers or schedules.

There was no contextual information evident to assist with dating the stone wall and stone wall enclosures; however, it is likely that the stone walls correspond with the introduction of pastoralism in the area in the mid-nineteenth to early twentieth Century. The stone wall and stone wall enclosure do not have sub surface archaeological potential. No other post contact heritage features were identified.

Whilst the stone walls do not meet the criteria to be registered on the Victorian Heritage Register, the Victorian Heritage Inventory or require a Heritage Overlay to be applied, AHMS recommends that where possible the features should be considered for retention or incorporated into the precinct design.

Table 1 - Post Contact Significance Rating

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<th>Scientific Significance</th>
<th>Heritage Victoria Heritage Significance Level</th>
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<tr>
<td>Dry Stone Wall Enclosure One</td>
<td>Low</td>
<td>Nil</td>
</tr>
<tr>
<td>Dry Stone Wall Enclosure Two</td>
<td>Low</td>
<td>Nil</td>
</tr>
<tr>
<td>Dry Stone Wall</td>
<td>Low</td>
<td>Nil</td>
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_Dry Stone Walls:_
In accordance with the Mitchell Planning Scheme and accepted best heritage practice, the dry-stone walls and enclosure located within the study area should be retained and incorporated into development design wherever feasible, provided they are not a risk to the public or compromise the urban structure.

If it is not possible to retain the entire wall, consideration should be given to re-using the stone in new features of the development, such as incorporating them into new stone walls or other landscaping features.

Before any of the dry-stone walls are altered or destroyed they should be archivally recorded in accordance with Heritage Victoria archival photography guidelines and standards. Copies of the archival photographic record should be provided to Council and to Heritage Victoria for their records.

Contingency Plans:

There is always a small possibility that further undocumented post contact heritage places may be present, particularly buried below current ground surfaces within the activity area. The likelihood of discovering additional undocumented places within the activity area is considered to be very low. However, if any such undocumented places or historical archaeological deposits are encountered during works, the following process should take place:

- The surrounding area within 10 meters of the deposit or features should be fenced off and no further work should take place within this zone.
- A suitably qualified heritage consultant or archaeologist should be engaged to assess the deposits and consult with Heritage Victoria and Mitchell Shire Council in order to determine the best way to proceed.
- It should be noted that historical archaeological sites are provided with blanket protection in Victoria under the Heritage Act 1995.
5 CULTURAL VALUES ASSESSMENT

The VPA engaged the Wurundjeri Corporation to undertake a targeted cultural values assessment of the precinct. The assessment and the Corporation’s position were based on the October 2014 Future Urban Structure (FUS) that was provided. It is important to note that changes have been made to the FUS since October 2014. These changes have not been subjected to targeted on-ground inspection by the Wurundjeri Corporation, and are not, at this stage, endorsed by the Corporation.

Post exhibition, further engagement with the Wurundjeri Corporation is planned in order to undertake additional targeted site assessments. The outcome of these assessments will inform any revisions to the PSP.
Jacobs Group were engaged by the VPA to undertake a desktop environmental, hydrological and geotechnical assessment for the precinct. The aim of the assessment was to determine the suitability of land for sensitive uses (including residential, childcare, kindergartens and primary schools) and identify any assessments or remediation works that may be necessary.

The desktop assessment and site visit identified ‘very low’ to ‘medium’ areas of contamination within the precinct. The areas identified as ‘low’ or ‘medium’ potential for contamination are localised around past and current farming practices.

6.1 Contamination

The desktop assessment indicated that there does not appear to be any significant risk from a site contamination perspective that would result in land being unsuitable for residential development. Localised areas of potential contamination can be effectively managed or remediated during the future development of the site. Potential contamination is associated with general agricultural uses around the existing homesteads as well as the potential to find hazard materials such as asbestos and lead based paints from the existing dwellings. Refer to Figure 7 of the consultant’s report for further detail on the areas where these risks are located.

6.2 Geology

The report identified that the eastern part of the precinct is likely to be underlain by highly reactive residual basaltic clay, overlaying basalt rock and the western half underlain by residual soils, overlaying weathered siltstone/sandstone.

Jacobs highlighted the following key geotechnical issues that may impact development:

- depth and reactivity of the basaltic clay in terms of its influence on site classification
- change and interface of variable ground conditions
- foundation selection
- differential settlement
- subgrade performance
- excavations
- site accessibility

6.3 Hydrology

Kalkallo Creek and an unnamed waterway draining in to Kalkallo Creek have been identified within the precinct. Kalkallo Creek has its headwaters in the north west corner of the site and drains to the south west corner. The unnamed waterway drains from the east of the site to the south of the site. The 100-year flood extent and floodway does not cross into this site, indicating no major flood risk. There is an area that is classified as the UFZ zone, which restricts the use of land because of high flood risk. This area is along Kalkallo Creek, with a buffer of approximately 100m on each side of the waterway. The assessment concludes that, overall, there does not appear to be any significant hydrological constraints which would render the land unsuitable for development.

6.4 Hydrogeology

The precinct is covered by a Salinity Management Overlay (SMO) in the Mitchell Shire Planning Scheme which triggers a planning permit as part of the subdivision process. Jacobs Group highlighted that given the vicinity to the Beveridge North West PSP and the lack of observed salinity in the precinct, the SMO may be
removed from the PSP area upon application for removal and with an appropriate environmental assessment.

Jacobs identified that there are opportunities for potential use of extracted groundwater that could include garden watering and irrigation of parks and ovals, depending on salinity of the groundwater. Further investigation into groundwater elevation and quality is recommended.

6.5 Groundwater Quality Assessment

Jacobs tested water quality within previously installed wells in the precinct to identify the nature, extent and significance of contamination (if any) resulting from the use of recycled water from the Wallan Sewerage Treatment Plant for irrigation on Lots 8 and 9 Camerons Lane, Beveridge.

The assessment included:

- Collection of 13 primary groundwater and effluent samples from the site and immediate perimeter as well as relevant quality control samples.
- Laboratory analysis of water sampled for contaminants of primary concern.
- Comparison of laboratory results against relevant assessment criteria endorsed by EPA Victoria for the protection of human health and the environment.
- Comparison of laboratory results against historical results obtained at the site by Yarra Valley Water (YVW) to assess longer term contaminant concentration trends.
- Preparation of a summary report documenting the tasks completed as part of the assessment as well as conclusions and recommendations in relation to the current condition of the site.

6.6 Outcomes & Recommendations

Based on the above assessments, the Jacobs Group makes the following recommendations:

6.6.1 Contamination

- Assessment of potential contamination associated with general agricultural land uses around homesteads of properties 2, 6 and 22. These sites are likely to present the greatest potential for contamination, albeit a small number of localised areas (i.e. around septic tanks, fuel storages, stockyards etc.) This may be undertaken through the preparation of a Sampling, Analysis and Quality Plan (SAQP) followed by a Phase 2 Environmental Site Assessment (which may include targeted sampling of soils and groundwater).
  - Timing: Jacobs recommends that the task be undertaken to coincide with the cessation or scaling down of current site operation at these sites and prior to the commencement of the proposed development and construction works.
- Completion of a hazardous material assessment for properties 2 and 22 to confirm not only the extent of potential asbestos containing materials and lead based paints, but to identify controls that should be implemented during future development to prevent exposure to site workers or future users of the site.
  - Timing: Jacobs recommends that the task be undertaken to coincide with the scaling down of current site operations at these sites and prior to the commencement of the proposed development and construction works.
- Removal of other potentially contaminating infrastructure (e.g. septic tank and above ground storage tanks) followed by soil validation.
  - Timing: This task should be undertaken on a site-by-site basis during future development.
6.6.2 Geology

- Further drilling and collection of soil samples for the purposes of assessing the geotechnical soil properties for building foundations and road design.
  - Timing: This task should be undertaken on a site-by-site basis during future development as part of the buildings permit application process.
- Classification and appropriate removal (if required) of various stockpiles and dumped materials observed at sites across the study area. This includes subsequent validation following removal. It may be the case that sampling of some stockpiles of soil observed may indicate that the material is suitable for re-use as part of future development and as such removal may not be required in all instances.
  - Timing: This task should be undertaken on a site-by-site basis during future development.

6.6.3 Hydrology

- Completion of aquifer hydraulics testing on existing groundwater bores to determine aquifer properties. This should also include assessment of depth to groundwater. This assumes existing wells are in a suitable condition for such an assessment.
  - Timing: Jacobs recommends that the task be undertaken to coincide with the cessation or scaling down of current site operation at these sites and prior to the commencement of the proposed development and construction works.
- Excavation and removal of underground storage tanks, soil remediation and tank pit validation if USTs are found on properties.
  - Timing: The task should be undertaken on a site-by-site basis during future site development.

6.6.4 Hydrogeology

- An application to have the salinity management overlay (SMO) removed from the PSP should also be undertaken, as per the recent Amendment C93 to the Mitchell Planning Scheme for the nearby development area. This will remove the requirement for an intensive planning permit application process for future development.
  - Timing: This task should be undertaken prior to site development.
- Consultation with YVW to establish their intentions in relation to the future use of the winter storage dams. If these structures are retained, a buffer distance may need to be applied in accordance with Environment Protection Authority (EPA) requirements. In their current form the basins would likely require a 50m buffer from the nearest sensitive land uses.
  - Timing: This task should be undertaken prior to finalising future land use zones.

6.6.5 Groundwater quality

Based on the results of the groundwater sampling and laboratory analysis undertaken, heavy metals, sodium, nitrate and TDS were reported to be above the adopted assessment guidelines. Concentrations of heavy metals and sodium are likely reflective of background/regional conditions, given no significant source of these contaminants were identified as part of the recent desktop assessment by Jacobs (Jacobs SKM, 2014). Concentrations of TDS and nitrate are likely reflective of background/regional conditions, based on concentrations reported as part of SKM’s 2002 ‘pre-irrigation’ groundwater sampling program (SKM, 2002). Jacobs note that some increases in nitrate concentrations were reported as part of the 2014 groundwater sampling program; however, concentrations were still below applicable guidelines adopted for this assessment.

Elevated nitrite and cyanide were reported in the surface water sample collected from the winter storage facility, which holds the treated effluent used for irrigation. However, none of the concentrations of these...
contaminants were reported above adopted assessment guidelines as of part of the actual ground water sampling program.

Therefore, no beneficial uses of groundwater are considered to be precluded based on the detected concentrations of contaminants.

Based on these results Jacobs make the following recommendations:

- Groundwater be monitored by YVW (or others) while irrigation is being undertaken to help ensure the underlying groundwater quality remains acceptable for the relevant protected beneficial uses.
- If groundwater quality deterioration is reported during this routine, it is recommended that further detailed assessment and/or management be undertaken.

Deterioration in this case could be:

- A notable increase in concentration of contaminants of concern in groundwater above the concentrations that have historically been reported at the site; and/or
- Relevant assessment criteria for protected beneficial uses of groundwater at the site.
LANDSCAPE & VISUAL ASSESSMENT

The VPA engaged Planisphere to conduct a landscape and visual assessment of the Beveridge North West precinct. The objectives of the assessment were to:

- complete a landscape and visual assessment for the precinct
- identify key landscape features in and around the precinct
- identify key links internal and external to the precinct
- identify design outcomes of key landscape features.

Planisphere identified three distinct landscape character areas:

- Open Plains
- Creek Side Hills
- Spring Hill Cone.

7.1 Open Plains area

The Open Plains character area is less significant than the other identified character areas as they are less visible from long distances, have minimal land forming, and less landscape character elements. The Beveridge Open Plain slopes to the south and the Wallan Open Plain slopes to the north, forming a ridge that runs east west between the plains. The ridge is highly visible from outside the site, increasing its relative landscape significance.

7.2 Creek Side Hills area

The Creek Side Hills character area is considered less significant in terms of visual assessment compared to the Spring Hill Cone area as it is less visible from longer distances. Therefore development would have less of a visual impact on the surrounding context. Although, the landscape is more significant in places with some components of higher significance, development that is sensitive to landform and does not impact significant components would be more acceptable.

7.3 Spring Hill Cone area

The Spring Hill Cone has the highest significance of the three identified landscape character areas. This character area is considered more significant due to its high visibility from long and short distances and the quality of the landscape.

7.4 Outcomes & Recommendations

Planisphere recommends the following be included in the PSP:

Landscape Character Areas

- **Open Plain**: retain significant trees and waterway features.
- **Creek Side Hills**: retain undulating topography and the creek valley.
- **Spring Hill Cone**: retain the smooth land form and rock outcropped surface free of building.

Waterways

- Provide pedestrian and visual connections along waterway corridors.
- Retain existing dams where possible to provide wetland and water features.
• Utilise waterway corridors to provide linkages between open space areas.
• Extend connections along waterways.
• Development along creeks and water features should front the spaces to provide an attractive interface and passive surveillance, with minimal fencing.

Landform

• Retain Spring Hill Cone as a significant visual landmark in the area.
• Utilise high points to provide public views over the surrounding landscape.
• Development on undulating landforms should incorporate larger lot sizes and frontages to allow for more sensitive development.
• Buildings on steeper slopes (eg. >20%) should be avoided.
• Design roadways to minimise development on uphill side of roadways.
• Any quarry development on the site should avoid the Spring Hill Cone slopes if possible and be well screened by informal native or indigenous planting.

Landscape

• Retain ‘High’ and ‘Very High’ value trees, preferably within the public realm, along roadsides, in public open space.
• Retain stone outcrops and incorporate into the public realm where possible.
• Provide vegetative screening along the Hume Freeway interface where elevated above the site.
8 ARBORICULTURAL ASSESSMENT

The VPA engaged Tree Logic to undertake an arboricultural assessment for the precinct. A total of 335 trees were inspected which include 233 individual trees and 102 tree groups comprising approximately 6,700 additional trees.

The tree population in the precinct is relatively sparse with most of the trees being concentrated into grouped planting for the purpose of windbreaks, woodlots, revegetation, creek bank stabilisation, shade and ornamental garden plantings.

The arboricultural ratings for those trees assessed are shown in Table 2 below (table extracted from report).

### Table 2 Arboircultural Ratings

<table>
<thead>
<tr>
<th>Arboricultural Rating</th>
<th>Total Trees</th>
<th>Total tree Groups</th>
<th>Trees in tree groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very High</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>30</td>
<td>3</td>
<td>Approx - 505</td>
</tr>
<tr>
<td>Moderate</td>
<td>101</td>
<td>29</td>
<td>Approx – 1,759</td>
</tr>
<tr>
<td>Low</td>
<td>93</td>
<td>67</td>
<td>Approx – 2,967</td>
</tr>
<tr>
<td>None</td>
<td>7</td>
<td>1</td>
<td>Approx - 67</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>233</strong></td>
<td><strong>102</strong></td>
<td><strong>Approx – 2,990</strong></td>
</tr>
</tbody>
</table>

### 8.1 Outcomes & Recommendations

Tree Logic makes the following recommendations:

- Preference be given to retaining trees of a ‘very high’ or ‘high’ arboricultural rating on the basis of their arboricultural value and contribution to the amenity of the precinct.

- Areas of public open space are best suited for the retention of ‘high’ and ‘very high’ quality rated trees. However, where existing trees are to be retained in private subdivisions, lot sizes must be large enough to adequately accommodate the tree protection zone.

- Retain trees of ‘moderate’ and ‘low’ arboricultural value, either as an interim canopy or as longer-term landscape elements, provided the risks associated with retention are acceptable.
9  BIODIVERSITY

9.1 Biodiversity Conservation Strategy

The Biodiversity Conservation Strategy (BCS) was approved by the Minister for Environment, Heritage and Water on 5 September 2013. The BCS provides strategic direction for the retention and removal of ‘Matters of Environment Significance’ (MNES).

A series of documents form part of the BCS objectives and implementation. The documents relevant to the precinct are:

- Sub-regional Species Strategy for the Growling Grass Frog
- Sub-regional Species Strategy for the Golden Sun Moth
- Striped Legless Lizard Salvage and Translocation Plan
- Draft Habitat compensation under the Biodiversity Conservation Strategy.

9.2 Retention & Offset Requirements

The 1750s mapping for Beveridge North West showed that the precinct was dominated by Plains Grassland, Plains Grassy Woodland, Grassy Woodland, Valley Grassy Forest (with small pockets of Plains Grassy Wetland) and Swampy Riparian Complex. Kalkallo Creek runs north-south in the western part of the precinct and an unknown water body straddles the northern boundary.

The BCS identified a small patch of Plain Grassland in the northern part of the precinct and a small patch that retains tree canopy of former Grass Eucalypt Woodland but is not classified as Grassy Eucalypt Woodland. The BCS does not require retention of native vegetation patches or scattered trees. The precinct has low levels of significance regarding biodiversity with the majority of the area being highly modified through previous and current agricultural practices.

9.2.1 Scattered Tree Assessment

Ecology and Heritage Partners completed a Scattered Tree Assessment and recorded a total of 27 scattered trees (see figure 1 of BCS report). All scattered trees recorded are of ‘high conservation significance’ and require habitat compensation fees under the BCS for their removal. Scattered trees in the PSP consist of River Red Gum *Eucalyptus camaldulensis*, Swamp Gum *Eucalyptus ovata* and Manna Gum *Eucalyptus viminalis subsp. Viminalis*. The assessment also recorded approximately five Matted Flax-Lilies, which can be salvaged and translocated under the BCS.

9.2.2 Fauna

The BCS identifies Category 2 Growling Grass Frog along the Kalkallo Creek and its tributaries. The BCS allows for Category 2 habitat to be offset and cleared. The BCS identifies that prior to the removal of priority habitat, salvage and/or translocation needs to occur.

Salvage and/or translocation apply to the Striped Legless Lizard as well as threatened reptiles and amphibians, where they are incidental to the Growling Grass Frog.

9.2.3 Conservation Concept Plan

The BCS does not identify any conservation areas in the precinct; therefore, a Conservation Concept Plan does not apply.
10 BUSHFIRE DEVELOPMENT ASSESSMENT

The VPA engaged Terramatrix to prepare a bushfire development report for the Beveridge North West precinct.

The objectives of the report were to:

- assess the bushfire hazard
- identify how development of the precinct can appropriately mitigate any bushfire risk
- respond to and comply with the applicable bushfire planning and building controls.

10.1 Outcomes & Recommendations

The report identified that the landscape is one of low to moderate bushfire risk, which will lessen as additional urban residential areas and associated low threat or non-vegetated land develops.

It is identified that the hazard is largely restricted to Grassland, and bushfire behaviour can reasonably be expected to be within AS 3959-2018 presumptions and design parameters. Accordingly, it is considered that the risk can be mitigated to an acceptable level and that the proposed development is appropriate, if dwellings are separated from hazardous vegetation to allow BAL-12.5 construction, in accordance with the building regulations and Clause 13.02.

Additional recommendations are as follows:

- Future dwellings in the precinct, and other buildings requiring a BA, should be sufficiently setback from classified vegetation to enable BAL-12.5 construction standard.
- Ensure that the BAL-12.5 setbacks required in response to Grassland and Woodland are 19m and 33m respectively.
- Ensure that the proposed planning scheme amendment includes an application requirement that all subdivision/development permits provide a Site Management Plan.
- Perimeter road be provided between future development and Hilltops and Spring Hill Reserves.
- Where possible a service road should be considered adjacent and parallel to the Old Sydney Road reserve to ensure sufficient separation from dwellings on lots fronting the service road/Old Sydney Road.
- Avoid the creation of lots that back on to Old Sydney Road reserve or any other large area of hazardous vegetation.
ECONOMIC ASSESSMENT

Ethos Urban were engaged by the VPA to provide guidance relating to the future retail and employment opportunities in Beveridge North West, including an assessment of retail and commercial floorspace at the town centre locations identified by the VPA. The advice relates to the opportunity for local and neighbourhood retail facilities based on a population of 40,300 people at full development.

The VPA provided a preliminary future urban structure that outlined potential locations for town centres which were reviewed as part of this assessment.

11.1 Retail & Commercial Floorspace

Ethos Urban concluded that the Southern, Western and Northern local town centres (LTCs) are likely to be the largest town centres and could accommodate up to 9,000m² of retail and commercial floorspace. The Eastern centre is likely to be smaller, accommodating up to 4,700m² of retail and commercial floorspace and would be anchored by a mid-sized supermarket. The local convenience centre in the north-west of the precinct will service the day to day needs of the surrounding population, accommodating 500 to 1,000m².

11.2 Supermarkets

It is estimated that the PSP could support approximately 13,400m² of supermarket floorspace, which equates to approximately 330m² of supermarket floorspace for 1,000 residents. An estimated 84% of households in the PSP will be located within 1km of a supermarket, which is within the 80-90% range identified in the PSP Guidelines.

The assessment details that the Southern LTC could support a relatively strong-performing full-line supermarket that would be able to capture 65% of the catchment’s retail spending. It is identified that both Northern and Western LTCs has the capacity to support full-line supermarkets, with the potential to capture 65% of its catchments’ retail spending directed to supermarkets.

The report identifies that the Eastern LTC is unlikely to have a sufficient catchment population to support a full-line supermarket. It assumes that, if mid-sized supermarket is provided, it could potentially capture 50% of its catchment’s retail spending directed to supermarkets. The report asserts that the market share will be lower than the other LTCs due to the anticipated lower format store.

11.3 Employment

An analysis of the future employment outcomes within the precinct concluded that the four LTCs, LCC and a mixed-used area in the Beveridge North West PSP would directly employ an estimated 1,630 persons on an ongoing basis, including full-time, part-time and casual positions.

The table below indicates the potential employment outcomes within the LTCs and the mixed-use areas.

<table>
<thead>
<tr>
<th>Locations</th>
<th>No. Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern LTC</td>
<td>380</td>
</tr>
<tr>
<td>Eastern LTC</td>
<td>180</td>
</tr>
<tr>
<td>Western LTC</td>
<td>350</td>
</tr>
<tr>
<td>Northern LTC</td>
<td>350</td>
</tr>
<tr>
<td>LCC (assuming 1,000m² of retail/commercial uses)</td>
<td>40</td>
</tr>
<tr>
<td>Mixed Use Areas</td>
<td>330</td>
</tr>
<tr>
<td><strong>Total PSP</strong></td>
<td><strong>1,630</strong></td>
</tr>
</tbody>
</table>

Source Ethos Urban
11.4 Outcomes & Recommendations

11.4.1 Planned Centre Network

The review of the town centres concluded that the network of four LTCs and one Local Convenience Centre (LCC) identified, as appropriate for the following reasons:

- The identified locations of the LTCs enable the centres to have residential catchments of sufficient sizes to support supermarkets as anchor tenants. As such, three LTCs will be able to support full-line supermarkets, while one will be able to support a mid-sized supermarket.
- The planned LCC is considered to be an appropriate location as it is situated in an area that has limited accessibility to LTCs.
- The proposed location of centres is not considered to undermine the hierarchy of centres in the surrounding region.

11.4.2 Summary of Floorspace Potential

A summary of the floorspace and land requirements of the four town centres is provided below in Table 4.

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Southern LTC</th>
<th>Eastern LTC</th>
<th>Western LTC</th>
<th>Northern LTC</th>
<th>Total PSP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supportable Floorspace</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supermarket</td>
<td>3,800m²</td>
<td>2,000m²</td>
<td>3,800m²</td>
<td>3,800m²</td>
<td>13,400m²</td>
</tr>
<tr>
<td>Speciality Retail</td>
<td>2,500m²</td>
<td>1,300m²</td>
<td>2,500m²</td>
<td>2,500m²</td>
<td>8,800m²</td>
</tr>
<tr>
<td>Total Retail</td>
<td>6,300m²</td>
<td>3,300m²</td>
<td>6,300m²</td>
<td>6,300m²</td>
<td>22,200m²</td>
</tr>
<tr>
<td>Commercial/office</td>
<td>2,700m²</td>
<td>1,400m²</td>
<td>2,700m²</td>
<td>2,700m²</td>
<td>9,500m²</td>
</tr>
<tr>
<td>Total Retail and Commercial</td>
<td>9,000m²</td>
<td>4,700m²</td>
<td>9,000m²</td>
<td>9,000m²</td>
<td>31,700m²</td>
</tr>
<tr>
<td>Floorspace</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land requirements</td>
<td>2.3ha – 3.0ha</td>
<td>1.2ha – 1.6ha</td>
<td>2.3ha – 3.0ha</td>
<td>2.3ha-3.0ha</td>
<td>7.9ha – 10.6ha</td>
</tr>
</tbody>
</table>

Source: Ethos Urban

11.4.3 Other Considerations

The review outlines other key considerations for the PSP:

- Potential for the Southern LTC to expand: it may be appropriate to nominate the Southern LTC as a centre that has the potential for an expanded retail role subject to future planning.
- Mixed Used Areas: potential exists for the planned mixed-use areas to accommodate a range of commercial uses including a petrol station.
- Employment outcomes: when fully developed, the four LTCs, one LCC and one mixed-use area in the Beveridge North West PSP would directly employ an estimated 1,630 persons on an ongoing basis, including full-time and casual positions.
TRANSPORT AND MOVEMENT

The VPA engaged GTA Consultants to complete a strategic transport modelling assessment and to determine the anticipated demands on the transport network for Beveridge North West. The Northern Growth Corridor Plan (GCP) proposed to include two north-south and three east-west arterial roads to form a single mile grid providing additional capacity for trip choice and less congestion on the primary arterial roads.

The current PSP layout provides four arterial roads for movements north/south and east/west within the PSP. The vehicle movement numbers give an indication of the traffic generation expected for these roads at interim and ultimate build out, years 2031 and 2046 respectively. Table 5 shows the outcomes and recommendations of road classifications made by GTA Consultants. As evident in the table and acknowledged in the report, the strategic modelling has revealed that the proposed road network has the capacity to accommodate the trips generated by the future community.

Outcomes & Recommendations

The Strategic modelling undertaken for Beveridge North West using the Victorian Integrated Transport Model (VITM) revealed that the original proposed road network has the capacity to accommodate the trips generated by the future community.

The report concluded that, overall, the proposed future road network within Beveridge North West PSP will perform at acceptable levels by 2046 based on traffic capacity. GTA notes that the interim road network will experience congestion on Patterson Road and Camerons Lane and may require these roads to be upgraded from two lanes to four lanes to mitigate congestion.

Based on these analysis, GTA made the following recommendation:

- As part of the detailed design and delivery of the PSP, further investigation into appropriate road space management of the road network be undertaken in consultation with key agencies and stakeholders.

Table 5 - GTA Outcomes and Recommendations

<table>
<thead>
<tr>
<th>Road Name</th>
<th>Expected daily traffic volume</th>
<th>Proposed classification and No. lanes</th>
<th>Austroads capacity limit (based on No. lanes)</th>
<th>Proposed classification is considered appropriate?</th>
<th>Recommended No. lanes (two ways)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposed WNS Arterial Road (North of Camerons Lane)</td>
<td>19,000</td>
<td>Secondary Arterial (4 lanes)</td>
<td>36,000vpd</td>
<td>Yes</td>
<td>4 lanes</td>
</tr>
<tr>
<td>Proposed Patterson Road (North of Camerons Lane)</td>
<td>21,700</td>
<td>Secondary Arterial (4 lanes)</td>
<td>36,000vpd</td>
<td>Yes</td>
<td>4 lanes</td>
</tr>
<tr>
<td>Camerons Lane (West of Hume Fwy)</td>
<td>23,000</td>
<td>Secondary Arterial (4 lanes)</td>
<td>36,000vpd</td>
<td>Yes</td>
<td>4 lanes</td>
</tr>
<tr>
<td>Hadfield Road (West of Hume Fwy)</td>
<td>11,000</td>
<td>Secondary Arterial (4 lanes)</td>
<td>36,000vpd</td>
<td>Yes</td>
<td>2 lanes</td>
</tr>
</tbody>
</table>
Cardno were engaged by the VPA to undertake an assessment of the capacity of utilities and infrastructure to service future development across the precinct. The scope of the assessment was to identify existing and likely future infrastructure requirements. Services that were investigated were main drainage, drinking water, recycled water, sewerage, electricity, gas and telecommunications.

The outcomes and recommendations by Cardno will inform the PSP through the identification of utilities and infrastructure requirements of each service and identify the provision of services may impact on staging and timeframes.

As part of this assessment, Cardno consulted with the following authorities:

- SP Ausnet (electricity transmission & gas reticulation);
- Telstra (communications);
- NBN Co (communications);
- APA Group (gas transmission);
- Yarra Valley Water (sewer, water, and recycled water) and;
- Melbourne Water (drainage).

Current constraints for the precinct identified by Cardno are:

- Road infrastructure is limited to the east and north;
- Land required to be reserved for stormwater retarding basins, wetlands and channels;
- Limited infrastructure in the precinct, electrical, sewer and water services within close proximity to the precinct in the interim; and
- Trunk infrastructure services for sewer, water and electricity is required to service the PSP with development limited to 500 lots in the short term. As a result, major augmentation and expansion will be required in the future.

Note: Due to the time that has lapsed since the initial assessment was completed, an update to the Report is being undertaken by Cardno to ensure that information conveyed in the document is the most up to date.

13.1 Sewerage

Yarra Valley Water (YVW) is the responsible authority for the provision of sewerage facilities.

The precinct will be serviced internally by the construction of the Kalkallo Branch Sewer and three other gravity branch sewers – Kalkallo Creek North, Hazelwynde and Beveridge North. These assets are not included in the 2013-2017 Water Plan therefore, early construction would bring forward costs.

The ultimate sewer outlet will be the Kalkallo Creek Main Sewer, however, this infrastructure is not scheduled for construction for 15-20 years. As such the precinct will be serviced in 3 stages.

As a result, the current conditions allow for the construction of up to 500 lots, excluding Mandalay and Beveridge Central. Development beyond 500 lots will require the construction of a new temporary sewer pump station and rising main.

13.2 Drainage

Majority of the precinct is located within the Kalkallo Drainage Service Scheme (DSS). At the time of this report the DSS was under review by Melbourne Water.
The Kalkallo DSS has identified three outlets along the southern boundary of the precinct with the main outlet being located where Kalkallo Creek crosses Camerons Lane. The existing culverts will need to be upgraded to accommodate the 100 year flood flows and drainage infrastructure under Camerons Lane is also required for the other two outlets.

Three retarding basins with associated drainage channels and underground drains are also identified in the Kalkallo DSS.

A portion of the precinct drains north and is within the Taylors Creek DSS where land is identified as flood prone and subject to inundation. No drainage infrastructure for the Taylors Creek DSS falls within the precinct.

A small area in the north east of the precinct is located within a separate scheme to the Kalkallo and Taylors Creek DSS. This section of the precinct drains east towards the Hume Freeway.

### 13.3 Water Supply

YVW is the responsible authority for the provision of water supply facilities. The only water asset in the precinct is an existing 300mm diameter recycled water main within Camerons Lane. YVW is working on finalising their servicing strategy for the northern growth corridor.

Early development of the precinct will result in bringing forward costs, typically funded by developers. The infrastructure delivery has been included in YVW’s 2018-2023 Water Plan.

#### 13.3.1 Potable Water Supply

Planned potable water supply to the precinct will be via two pressure zones including a low pressure zone in the southern portion of the site located below the 285m contour line and a high pressure zone in the north above the 285m contour line. The southern low pressure zone will initially be serviced by the 375mm distribution main (Hazelwynde South Main). Reticulation mains will need to be accommodated in the future road reserves.

The trigger for the construction of the Mandalay Loop (225mm diameter) is development of more than 500 lots.

#### 13.3.2 Recycled Water Supply

No recycled water is currently available in the precinct. The precinct will be serviced in a low and high pressure zone delineated by the 285m contour line. There is an existing 300mm diameter Mandalay Distribution Main that has been installed part way along Camerons Lane. Development beyond 500 lots will require the construction of a second source of supply which can be achieved by the proposed 225mm diameter Mandalay Internal Loop Main.

Construction of the Hazelwynde South Main and Mandalay Internal Loop Main has been identified in Water Plan 4, between 2018 and 2023. Internal infrastructure may require additional land take of between 0.5-1.0m. Five internal infrastructure items have been identified – Hazelwynde Link Main, Hazelwynde Main, Hazelwynde Central Main, Hazelwynde North Main and Hazelwynde West Main.

Any development beyond the 4000 lots for the Beveridge-Wallan area would require early construction of the assets and would bring forward costs.

### 13.4 Electricity Supply

SP-Ausnet controls the electricity supply network across the Northern Growth Corridor.

Existing rural overhead RV lines are located along Old Sydney Road and Camerons Lane. The lines would require re-conducting at the developer’s expense in order to service any development.
SP AusNet has advised that initial development within the precinct would be limited to approximately 500 lots. The precinct will be supplied from the new Kalkallo Zone Substation. The precinct would require at least 2-4 No. 22kV feeders and would be financed by the developers, less a contribution from SP Ausnet.

A new 66kV feeder from Kalkallo to Doreen Substation has been budgeted with detailed design works and construction to be completed by late 2014-2015. A new substation is planned at Wallan East in 2034 that may have the capacity to supply the precinct. Local service within the development will be via a network of underground high voltage cables located within road reserves and kiosk substations (approximately 8 x 4.2 metres).

13.5 Gas Supply

APA is the responsible service provider for the provision of gas supply in this area. There is an existing APA 300mm diameter transmission gas main located to the east of the Hume Freeway.

Installation of new mains extending from the gas main would be developer funded. Installation of mains within the precinct would typically be undertaken at APA’s expense subject to commercial analysis and with developers providing shared trenching. APA’s current servicing strategy identified no transmission pipelines or other major infrastructure requiring easements or land acquisition.

13.6 Telecommunications

NBN Co is the responsible agency for the delivery of the National Broadband Network (NBN). The precinct is located within the NBN ‘fibre footprint.’

Developers within the precinct will be required to install pit and pipe infrastructure as part of their subdivision works, with the installation of fibre optic cable to be carried out by NBN Co. Developers can make alternative arrangements with other telecommunication providers for fibre optic systems.
PROPOSED QUARRY (WA1473)

A quarry has been proposed in the Beveridge North West precinct on the western side of Spring Hill Cone. A works authority number has been allocated to the quarry proposal (WA 1473); however, the planning permit application for the quarry was refused by Mitchell Shire Council and, accordingly, a Works Authority approval has not been provided.

The Department of Jobs, Precincts and Regions (DJPR) has considered the underlying resource identified by works authority number WA1473 (see Wallan/Beveridge Extractive Resource Analysis, Coffey Services, 2017). DJPR recognises the value of the resource and recommends that the resource should be extracted. DJPR recognises the competing demands of urban development and resource extraction and defers to Plan Melbourne’s Policy 1.4.2 regarding extracting resources before urban development.

The Minister for Planning has determined that the PSP will be exhibited without the quarry shown on the Future Urban Structure and this has been communicated to land owners and affected parties.
APPENDIX 1

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