



BEVERIDGE NORTH WEST PSP 1059

BACKGROUND REPORT OVERVIEW

SEPTEMBER 2014

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1.0 Introduction

1.1 Introduction

The Metropolitan Planning Authority (MPA) has commenced the process to prepare a Precinct Structure Plan (PSP) for Beveridge North West. A Precinct Structure Plan (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.

The precinct is included in the Northern Growth Corridor Plan which is a strategy for long term development in the northern corridor of Melbourne. The Northern Growth Corridor Plan identifies population growth over this time to increase by 260,000 – 330,000 residents and employment to increase by approximately 83,000 – 105,000 jobs.

The MPA has completed a number of background technical studies for the precinct. The purpose of this document is to provide a summary of the findings of these reports and to highlight issues and opportunities to be considered in the preparation of the PSP.

2.0 Precinct Context

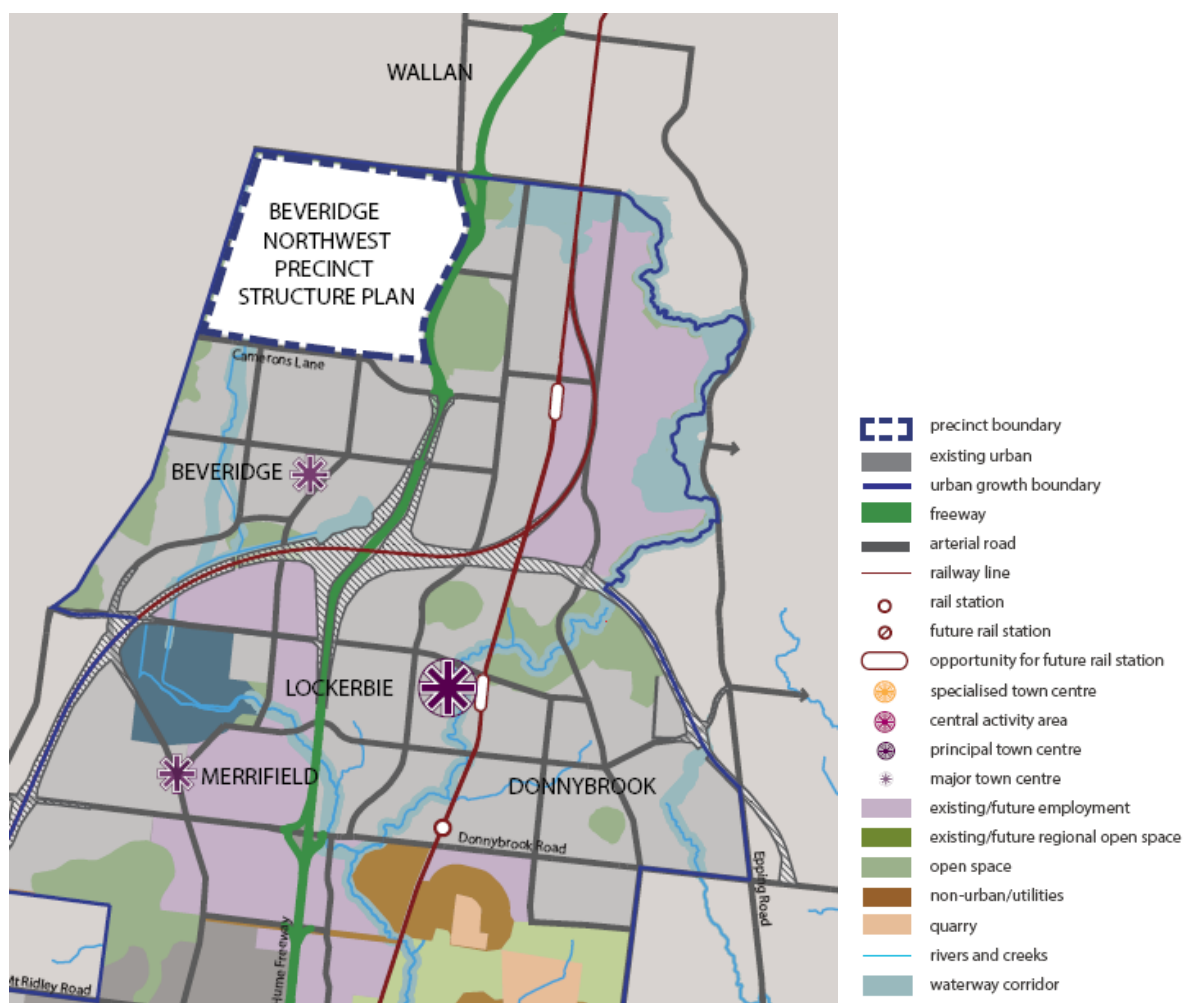
2.1 Metropolitan Context

The Beveridge North West precinct (PSP 1059) is located in Mitchell Shire. The precinct is situated approximately 45 kilometres north of Melbourne City 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 and is shown in Plan 1 below.

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 and western area of the precinct and an Urban Floodway Zone (UFZ) applied along Kalkallo Creek.

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

Plan 1 – Beveridge North West PSP Context Plan



3.0 Arboricultural

3.1 Tree Logic Report Overview

The MPA 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 group features comprising of 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 1 below.

Table 1 – Arboricultural Ratings

Arboricultural Rating	Total Trees	Total tree Groups	Trees in tree groups
Very High	2	0	
High	30	3	Approx - 505
Moderate	101	29	Approx - 1,759
Low	93	67	Approx - 2,967
None	7	1	Approx - 67
Total	233	102	Approx - 2,990

3.2 Outcomes & Recommendations

Tree Logic have identified that preference should 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. The assessment explains that ideally trees should be located in public open space; however where existing trees are to be retained in private subdivisions, lot sizes must be large enough to adequately protect the tree protection zone.

The assessment also identifies an opportunity to retain trees of 'moderate' and 'low' arboricultural value, either as an interim canopy or as longer term landscape elements, where risk associated with the retention is acceptable.

4.0 Biodiversity

4.1 Biosis Report Overview & 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; and*
- *Draft Habitat compensation under the Biodiversity Conservation Strategy.*

4.2 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.

5.2.1 Scattered Tree Assessment

The MPA engaged Ecology and Heritage Partners to complete a Scattered Tree Assessment. The survey locations were provided by the Department of Environment and Primary Industries (DEPI).

A total of 27 scattered trees were recorded consisting of River Red Gum *Eucalyptus camaldulensis*, Swamp Gum *Eucalyptus ovata* and Manna Gum *Eucalyptus viminalis subsp. Viminalis*. All scattered trees recorded are of 'high conservation significance.'

Of those scattered trees recorded:

- 21 are 'Very Large Old Trees' (VLOTs);
- 5 are Large Old Trees (LOTs); and
- 1 is a Medium Old Tree (MOT).

All trees correspond to Higher Rainfall Grassy Woodland (EVC 55_63). Four scattered trees identified by DEPI are not present within the precinct.

5.2.2 Scattered Tree Assessment

The assessment recorded, approximately five Matted Flax-Lilies identified on property 112242. The plants had been slightly grazed by the cattle present in the paddock but appeared to be in good health. Under the BCS the Matted Flax-Lily can be salvaged and translocated.

5.2.3 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.

5.2.4 Conservation Concept Plan

The BCS does not identify any conservation areas in the precinct; therefore a Conservation Concept Plan does not apply.

5.0 Cultural Heritage

5.1 Archaeological and Heritage Management Solutions Report Overview

The Metropolitan Planning Authority engaged Archaeological and Heritage Management Solutions (AHMS) to complete an Aboriginal Heritage Impact Assessment (AHIA) and Post Contact Heritage Assessment (PCHA).

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

5.1.1 AHMS Aboriginal Heritage Impact Assessment Overview

The AHIA assessment focused on identifying areas of sensitivity in the precinct by producing a predictive model. The predictive model was created through GIS analysis of known patterns of Aboriginal land occupation (including variables such as topography, vegetation, and land use) to determine levels of archaeological sensitivity. For the purposes of the predictive model, the term 'archaeological sensitivity' was defined as a combination of density, integrity and research value of archaeological deposits within any given area.

As a part of the AHIA, the desktop assessment identified more than 2,500 Aboriginal places within the geographic region (Yarra River Basin), the majority of which are located in close proximity to watercourses. Seven Aboriginal Places, six artefact scatters and one scarred tree had been previously registered within the precinct.

The desktop assessment concluded that prior land use activities have an effect on the potential for and integrity of archaeological deposits. Nevertheless, higher density stone artefact scatters are more likely to be located on the crests and slope of rises, especially those adjacent to watercourses and swamps. Isolated artefacts are likely to occur across the landscape.

After the desktop assessment, the standard assessment identified one low density artefact scatter. AHMS re-surveyed the recorded sites and found that two sites could no longer be located. Gilbo 1 (VAHR 7823-0101) was unable to be located and is likely to have been destroyed by the level of erosion in this location. Creek 5 IA (VAHR 7823-0240) was also unable to be located and has been subject to disturbance through the construction of a vehicle track. Ground visibility was poor as most of the precinct was under crop.

The results of the desktop and standard assessment informed the archaeological sensitivity map. The list of variables identified by AHMS to inform the archaeological sensitivity map, consist of:

- proximity to water courses
- crest and elevated landforms; and
- areas of cut and fill disturbance.

The archaeological sensitivity map identified four levels of sensitivity including 'very high,' 'high,' 'moderate,' 'low' and 'negligible.'

5.1.2 Recommendations & Outcomes

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. Option 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 Precinct Structure Plan design process. This could include limiting high impact activities and avoid 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.

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 (text 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.

The recommended sampling densities are shown below in Table 2.

Table 2 – Recommended Sampling Densities

Sensitivity Level	Resting Required (per 100 hectares for larger properties)*
Low	10 Square Metres
Moderate	15 Square Metres
High	20 square Metres
Very High	25 Square Metres

*For properties that are less than 100 hectares the same sampling densities would also apply. For example, a 25 hectare property in high sensitivity zoning would still require 20 square metres sample because it is a minimum sample required to understand the nature, extent and significance of sub surface deposits. For properties that include a range of sensitivity zones, the sampling should be weighted according to the proportion of the land in different sensitivity zones.

Further testing and completion of a CHMP should include consultation with the WTLCHC to identify site specific cultural values and to discuss proposed mythologies and sampling specifics.

Table 3 – Known Heritage Places

Aboriginal place name and number (VAHR)	Aboriginal place type	Registered/reinspected
Gilbo 1 (VAHR 7823-100)	Artefact Scatter	Re-inspected/destroyed
Lewis 1 (VAHR 7823 – 0101)	Scarred tree	Re-inspected
Kalkallo Creek 1 (VAHR 7823 – 0236)	Artefact Scatter	Re-inspected
Kalkallo Creek 2 (VAHR 7823 – 0237)	Artefact Scatter	Re-inspected
Kalkallo Creek 3 (VAHR 7823 – 0238)	Artefact Scatter	Re-inspected
Kalkallo Creek 4 IA (VAHR 7823 – 0239)	Isolated Artefact	Re-inspected
Kalkallo Creek 5 IA (VAHR 7823 – 0240)	Isolated Artefact	Re-inspected/destroyed
Beveridge North LDAD (VAHR 7823 – 0307)	Low density artefact distribution	Registered

5.1.3 Post Contact Heritage

AHMS Post Contact Heritage Assessment Review

AHMS was engaged by the MPA to undertake a Post Contact Heritage Assessment. The assessment consisted of:

- 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; and
- 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 Century and most of the twentieth Century. It is therefore likely that any post contact features present in the precinct will be associated with historic farming practices.

5.1.4 Recommendations & Outcomes

As a part of the Post Contact Heritage Assessment, the desktop assessment revealed that there was 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.

An archaeological survey was undertaken to identify any built heritage items or archaeological sites within the precinct. The survey located two dry stone wall enclosures and one section of dry stone wall. All the features were in an extremely poor condition with just one course of stone remaining.

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 4 - Post Contact Significance Rating

Site Description	Scientific Significance	Heritage Victoria Heritage Significance Level
Dry Stone Wall Enclosure One	Low	Nil
Dry Stone Wall Enclosure Two	Low	Nil
Dry Stone Wall	Low	Nil

5.1.5 AHMS Recommendations:

Dry Stone Walls:

- In accordance with the Mitchell Shire 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 disturbed 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 risk that further as yet undocumented places are present within the activity area is considered to be very low.
- If any such undocumented places or historical archaeological deposits are encountered during works, the surrounding area within 10 meters of the deposit or features should be fenced off and no further ♦□□& 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*.

6.0 Servicing & Utilities Capacity

6.1 Cardno Report Overview

Cardno were engaged by the MPA 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.

6.2 Outcomes & Recommendations

Table 5 below summarises the findings of the Cardno assessment.

Table 5 - Servicing Overview

Category	Summary
Electricity	<p>Existing rural over head 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.</p> <p>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.</p> <p>The precinct would require at least 2-4 No. 22kv feeders and would be financed by the developers, less a contribution from SP Ausnet.</p> <p>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.</p> <p>A new substation is planned at Wallan East in 2034 that may have the capacity to supply the precinct.</p> <p>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).</p>
Communications	<p>The precinct is located within the NBN 'fibre footprint.'</p> <p>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.</p> <p>Developers can make alternative arrangements with other telecommunication providers for fibre optic systems.</p>
Gas	<p>An existing APA 300mm diameter transmission gas main is located to the east of the Hume Freeway.</p> <p>Installation of new mains extending from the gas main would be developer funded.</p> <p>Installation of mains within the precinct would typically be undertaken at APA's expense subject to commercial analysis and with developer's providing shared trenching.</p> <p>APA's current servicing strategy identified no transmission pipelines or other major infrastructure requiring easements or land acquisition.</p>
Sewer	<p>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 attract bring forward costs.</p>

	<p>The ultimate sewer outlet will be the Kalkallo Creek Main Sewer. This infrastructure is not scheduled for construction for 15-20 years. As such the precinct will be serviced in 3 stages.</p> <p>The current conditions allow for the construction of up to 500 lots not including Mandalay and Beveridge Central. Development beyond 500 lots will require the construction of a new temporary sewer pump station and rising main.</p>
Water	<p>The only water asset in the precinct is an existing 300mm diameter recycled water main within Camerons Lane. Yarra Valley Water is working on finalising their servicing strategy for the northern growth corridor.</p> <p>Infrastructure delivery in this precinct has not been identified in Yarra Valley Water's next five year plan 2013-2017. Early development of the precinct will result in bringing forward costs, typically funded by developers. The infrastructure delivery has been included in Yarra Valley Water's 2018-2023 Water Plan.</p> <p><i>Potable Water</i></p> <p>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 285m contour line. The southern low pressure zone will be initially serviced by the 375mm diameter Distribution Main (Hazelwynde South Main). Reticulation mains will need to be accommodated in the future road reserves.</p> <p>The trigger for the construction of the Mandalay Loop (225mm diameter) is development of more than 500 lots.</p> <p><i>Recycled Water:</i></p> <p>No recycled water is currently 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.</p> <p>Construction of the Hazelwynde South Main and Mandalay Internal Loop Main has been identified in Water Plan 4, between 2018 and 2023.</p> <p>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.</p> <p>Any development beyond the 4000 lots for the Beveridge-Wallan area would require early construction of the assets and would bring forward costs.</p>
Drainage	<p>The majority of the precinct is located in the Kalkallo Drainage Service Scheme (DSS). At the time of this report the DSS was under review by Melbourne Water.</p> <p>The Kalkallo DSS has identified three outlets along the southern boundary of the precinct with the main outlet being located where Kalkallo Creek crosses</p>

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.

* Since the finalisation of the report, Melbourne Water has updated the DSS. The updated DSS is shown in the PSP documents.

7.0 Land Capability

7.1 Jacobs Report Overview

Jacobs were engaged by the MPA 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 assessment included two parts:

- Part 1: Assessment included the gathering of relevant information (including the use of literature sources) for the purpose of identifying potential sources of contamination, hydrogeological and geotechnical issues; and
- Part 2: Assessment included inspecting the site for potential sources of contamination, and areas of geotechnical and hydrogeological significance (i.e. areas of water logging, existing groundwater bores, etc).

7.2 Outcomes & Recommendation

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.

7.2.1 Contamination

Based on the assessment 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.

7.2.2 Geotechnical

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.

Key geotechnical issues identified by Jacobs relate to development. Jacobs highlighted the following 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 and site accessibility.

7.2.3 Hydrology

Kalkallo Creek and an unnamed waterway draining in to Kalkallo Creek have been identified within the precinct. The Newer Volcanics form the major aquifer at the site. The assessment identified that there does not appear to be any significant hydrological constraints which would render the land unsuitable for development.

7.2.4 Hydrogeological

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 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.

7.2.5 Outcomes & Recommendations

Jacobs recommends the following:

- 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 likely 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 under taken to coincide with the scaling down of current site operations at these sites and property to the commencement of the proposed development and construction works.
- 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.

- 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.
- 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.
- 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.
- 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 Yarra Valley Water 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.

7.2.6 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 to assess longer term contaminant concentration trends; and
- 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.

7.2.7 Outcomes & Recommendations

Based on the results of the groundwater sampling and laboratory analysis undertaken, heavy metals, sodium, nitrate and TDS were reported above 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 Jacobs desktop assessment (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, no contaminant concentration 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.

Jacobs recommends that the groundwater should be monitored by Yarra Valley Water (or other) 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, monitoring this should act as a trigger for further detailed assessment and/or management.

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.

8.0 Economic & Employment Needs Assessment

8.1 Essential Economics Report Overview

Essential Economics were engaged by the MPA to provide guidance to the future retail and employment opportunities in Beveridge North West, including an assessment of retail and commercial floorspace at the centre location identified by the MPA. The advice relates to the opportunity for local and neighbourhood retail facilities based on a population between 25,000-30,000 people.

The MPA provided a plan showing potential locations for town centres which were reviewed as part of this assessment.

8.2 Outcomes & Recommendations

Essential Economics reviewed the proposed locations of the town centres and concluded that the potential location of the three town centres, potential catchment and retail floorspace was appropriate.

8.2.1 Retail & Commercial Floorspace

Essential Economics concluded that the middle town centre (Centre A) is likely to be the largest town centre and could accommodate up to 11,000m² of retail floorspace, including multiple supermarkets. The east (Centre C) and west (Centre B) centres are likely to be smaller, accommodating up to 4,500m² of retail floorspace and anchored by mid-sized supermarkets. The local convenience centre (Centre D) services the day to day needs of the surrounding population accommodating 1,000m².

Recommendations on the extent of floorspace and land required are shown in Table 6 below.

Table 6 – Floorspace and Land Required

Land Use	Centre A (LTC)	Centre B (LTC)*	Centre C (LTC)	Centre D (LCC)	Total PSP
Recommended retail floorspace	11,000m ²	5,500m ²	4,500m ²	1,000m ²	21,000m ²
Commercial/Office	4,700m ²	2,400m ²	1,900m ²	1,300m ²	8,800m ²
Total retail and commercial floorspace	15,700m ²	7,900m ²	6,400m ²	1,300m ²	29,800m ²
Land requirements	3.9ha – 5.2ha	2.0ha – 2.6 ha	1.6ha – 2.1ha	0.3ha – 0.5ha	7.5ha – 10 ha

*includes increased land for residential.

8.2.2 Supermarkets

Essential Economics completed an analysis of the number of households located within 1 km of a supermarket facility compared to the number of households planned in the precinct. From this analysis Essential Economics determined that 80% of households within the precinct will be located within 1km of a supermarket.

Essential Economics identified that 'Centre A' could accommodate up to two full line supermarkets and 'Centres B and C' could provide surrounding residents with access to medium-sized supermarkets.

8.2.3 Employment

Essential Economics analysed future employment outcomes within the precinct and concluded that the town centres would employ an estimated 1,160 people on an ongoing basis, including full time, part time and casual positions.

An estimate of the potential employment outcomes are shown below in Table 7.

Table 7 – Potential Employment Outcomes

Category	Centre A	Centre B	Centre C	Centre D	Total PSP
Retail jobs	370 jobs	150 jobs	150 jobs	30 jobs	700 jobs
Non-retail commercial jobs	240 jobs	100 jobs	100 jobs	20 jobs	460 jobs
Total retail and commercial jobs	610 jobs	250 jobs	250 jobs	50 jobs	1,160 jobs

9.0 Traffic & Transport

9.1 GTA Report Overview

The MPA engaged GTA to complete a strategic transport modelling assessment and to determine the anticipated demands on the transport network for Beveridge North West. The report prepared by GTA is in draft form at the time of writing this report.

The aim of the assessment was to:

- Determine the likely volumes generated by land uses in and surrounding the precinct; and
- Determine the number of lanes required in the interim (2026) and ultimate (2046) road network.

9.2 Outcomes & Recommendations

The Strategic modelling undertaken for Beveridge North West by GTA revealed that the original proposed road network has the capacity to accommodate the trips generated by the future community.

Table 8 - GTA Outcomes and Recommendations

Road Name	Expected Daily Traffic Volume	Modelled Classification and No lanes	<u>Proposed</u> Classification and No. lanes	Daily Traffic Limit Associated with Classification
Old Sydney Road (north of Camerons Lane)	3,600	Secondary Arterial (2 lanes)	Connector Street (2 lanes)	3,000 to 7,000 vpd
Proposed E14 (north of Camerons Lane)	26,400	Primary Arterial (6 lanes)	Primary Arterial (4 lanes)	Greater than 40,000 vpd
Patterson Street (north of Camerons Lane)	14,200	Secondary Arterial (4 lanes)	Secondary Arterial (4 lanes)	12,000 to 40,000 vpd
Camerons Lane (east of Proposed E14)	2,400	Secondary Arterial (4 lanes)	Secondary Arterial (4 lanes)	12,000 to 40,000 vpd
East-west Connector (east of	3,600	Secondary Arterial (4 lanes)	Connector Street (2 lanes)	12,000 to 40,000 vpd

proposed E14)				
Hadfield Road (east of Proposed E14)	3,900	Secondary Arterial (4 lanes)	Secondary Arterial (4 lanes)	12,000 to 40,000 vpd
East-west Connector (at Hume Freeway)	6,000	Connector Street (2 lanes)	Connector Street (2 lanes)	3,000 to 7,000 vpd

GTA concluded that the proposed road categorisation aligned with the daily traffic volume ranges associated with the classification and Austroads based road capacity limits. GTA also notes that many of the roads in the precinct could be considered to provide more capacity than what is required, based on the traffic volumes alone. GTA recommend future investigation through the PSP to include consideration of road management within local town centres and through school precincts.

10.0 Landscape & Visual Assessment

10.1 Planisphere Report Overview

The MPA engaged Planisphere to complete a landscape and visual assessment. 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; and
- Identify design outcomes of key landscape features.

10.2 Outcomes & Recommendations

At the time of publishing this report the landscape and visual assessment was in draft form.

Planisphere identified three distinct landscape character areas:

- open plain area;
- creek side hills area; and
- spring hill cone area.

10.2.1 Open Plain Area

The Open Plain area is flat with minimal tree planting. There are long views to and from the area to the surrounding landscape. The open plain area is characterised by the Western Plains of Victoria and slopes to the north.

10.2.2 Creek Side Hills Area

The Creek Side Hill character covers the western area of the precinct from Kalkallo Creek to Old Sydney Road. Views to and from this area are more obscured with long views from high points that encircle the creek.

10.2.3 Spring Hill Cone

The onsite hill cone is part of a series of cones that run north-south in the centre of the wider valley. The landscape is void of trees and is characterised by the hill cone and a rocky pasture surface.

Planisphere recommends the following to be included in the PSP:

Character Areas

- **Open Plain:** retain significant trees and waterway features;
- **Creek Side Hills:** undulating topography and the creek valley; and
- **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; and
- 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; and
- 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; and
- Provide vegetation screening along the Hume Freeway interface where elevated above the site.

11.0 References

The following reports have been used to inform this report. Plans have not been included in this report and reference should be made to the original documents when reading this report. The original documents are located on our website at www.mpa.vic.gov.au.

- *Arboricultural Assessment, Precinct Structure Plan 1059*, Beveridge North West, Tree Logic Pty Ltd, October 2013
- *Beveridge North – West Landscape and Visual Assessment, Consultation Draft*, Planisphere Planning and Design, August 2014
- *Beveridge North West Precinct Structure Plan Area, Site Suitability Assessment, VW07335*, Jacobs Group Australia Pty Ltd, June 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, June 2014
- *PSP 1059 Beveridge North West Post – Contact Heritage Assessment, HV Report #4372*, Archaeological and Heritage Management Solutions Pty Ltd (AHMS), February 2014
- *Scattered Tree Assessment, Beveridge North West (PSP 1059), Victoria*, Ecology and Heritage Partners Pty Ltd, November 2013
- *Traffic Modelling for PSP 1059 Beveridge North West*, GTA Consultants (Vic) Pty Ltd, August 2014

