Melton East PSP

Submission to Amendment C244melt

3L Alliance

31 MARCH 2025

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Contents

1. Overview

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Overview

This submission has been prepared by Mesh Planning on behalf of 3L Alliance (3L) in response to exhibition of Amendment C244melt to the Melton Planning Scheme.

3L is a leading privately owned property developer, specialising in high-rise, mixed-use projects and the creation of greenfield communities. 3L strives to deliver exceptional design and lifestyle outcomes for those who live, work and visit their communities across Victoria.

In relation to the Melton East PSP (ME PSP), 3L is the major landowner within the precinct, owning a total of 352 hectares (ha). The exhibited ME PSP identifies the 3L landholdings as having a total Net Developable Area (NDA) of 236 ha which equates to 67% NDA of its landholding area and 47% of the total NDA being approximately 5,500 lots.

Critically, 3L holds the land known as Neighbourhood 1, Figure 1 (NH1). The majority of lots in the ME PSP as well as ~5000 lots across the Toolern and Rockbank PSPs are reliant on 3L delivering NH1 and in doing so extending sewer and providing drainage outfall to unlock these areas for development.

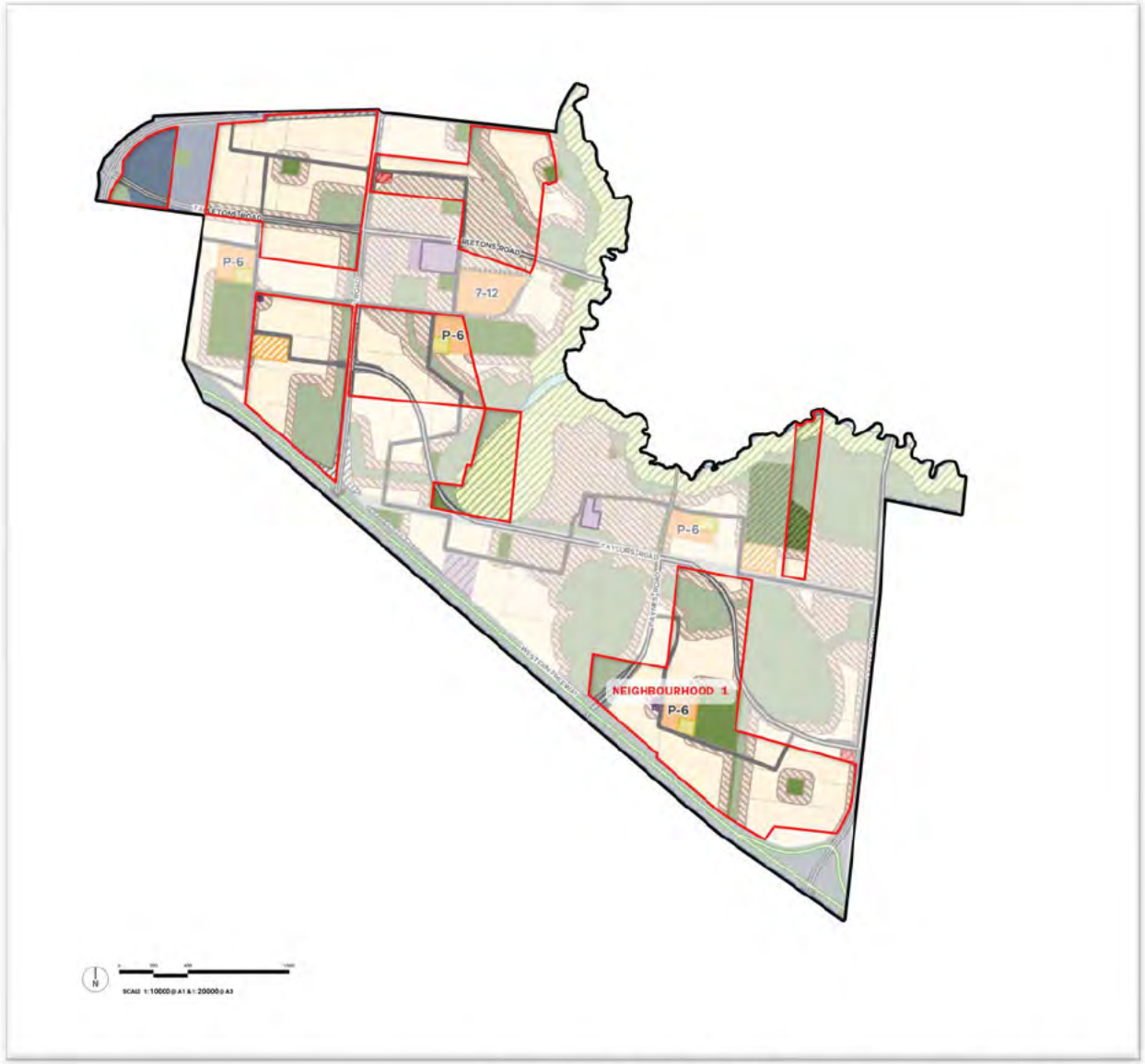

Figure 1 – Melton East PSP – 3L Alliance landholdings

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1. Executive Summary

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Executive Summary

Upon review of the exhibited documentation 3L has significant concerns in relation to the viability and deliverability of the ME PSP.

It is submitted that the ME PSP:

- is significantly under performing in NDA <50% when compared with other comparable PSPs;
- is far too detailed and prescriptive with numerous prohibitive Objectives, Requirements and Guidelines that exceed and are inconsistent with the PSP Guidelines; and
- will create implementation challenges due to high ICP rates, significant funding gaps and no provision for access through adjoining properties required for services.

3L has identified major key issues with the ME PSP which are summarised on page 7. Where applicable a summary of how these issues apply spatially are identified on the marked-up Future Urban Structure (FUS) in Figure 2 (p.8).

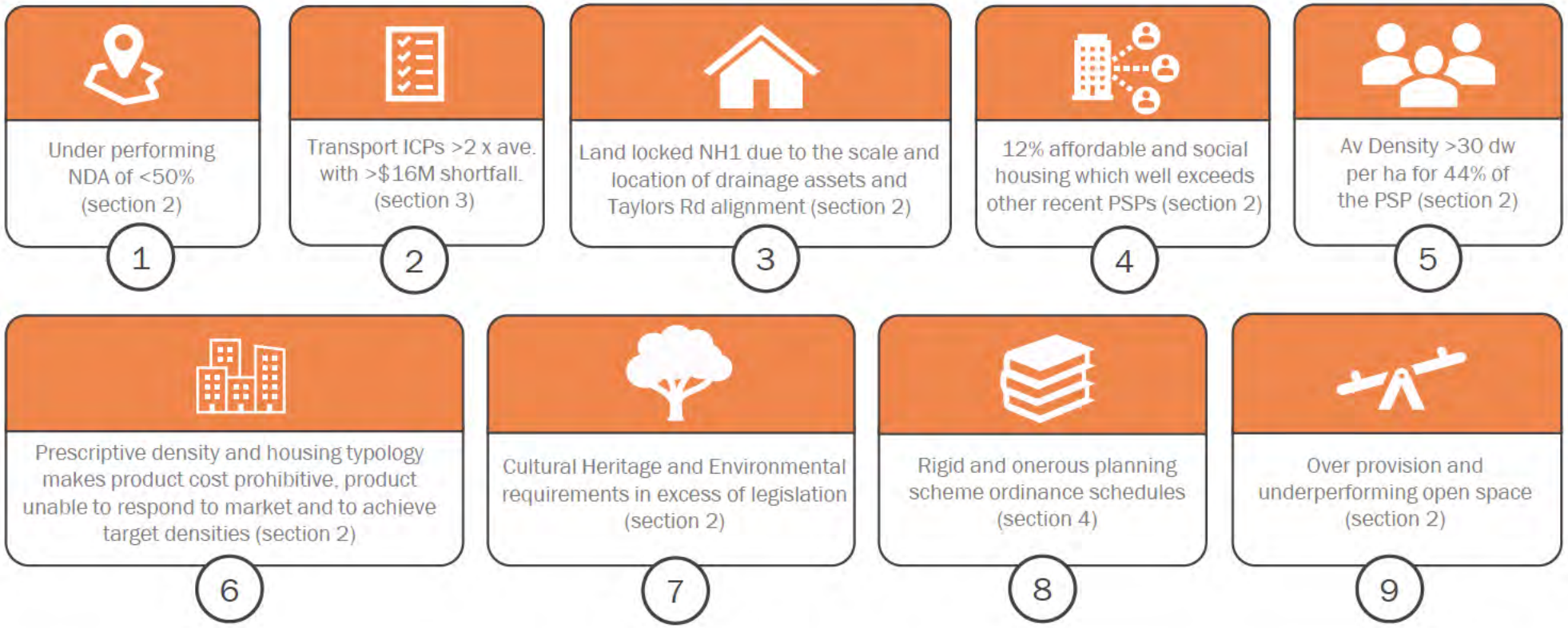
Each of these key issues will create either housing affordability & / or supply issues and we submit these need to be addressed to ensure the ME PSP can be delivered to achieve housing targets.

Figure 3 (p.9) identifies the refinements to the ME PSP which 3L is seeking and which, in our view, will significantly improve the deliverability of the ME PSP.

It is the strong view of 3L that the ME PSP would significantly benefit from the inclusion of overarching objectives and targets while providing enough flexibility to support detailed design and market shifts. This would enable development to be delivered generally in accordance with the ME PSP but also to ensure that design flexibility is possible when moving from PSP objectives to detailed design. This is essential for timely delivery of housing.

As set out in this submission, there are number of opportunities to increase the amount of NDA in the ME PSP while still complying with planning, environmental and cultural heritage regimes. Increasing NDA is core to improving affordability by spreading delivery cost over more land while also reducing pressure to provide unviable densities so the ME PSP can achieve its housing target.

Key Issues


Under performing NDA of <50% (section 2)
1
Transport ICPs >2 x ave. with >$16M shortfall. (section 3)
2
Land locked NH1 due to the scale and location of drainage assets and Taylors Rd alignment (section 2)
3
12% affordable and social housing which well exceeds other recent PSPs (section 2)
4
Av Density >30 dw per ha for 44% of the PSP (section 2)
5
Prescriptive density and housing typology makes product cost prohibitive, product unable to respond to market and to achieve target densities (section 2)
6
Cultural Heritage and Environmental requirements in excess of legislation (section 2)
7
Rigid and onerous planning scheme ordinance schedules (section 4)
8
Over provision and underperforming open space (section 2)
9

Key Issues

3L's overarching key issues are identified spatially through a marked up version of the Future Urban Structure (FUS) (Figure 2) and can be summarised into the following eight key matters.

1. Significantly less NDA than average PSP's through extensive drainage, Pre-European wetlands and conservation land allocations.
2. Lack of north-south connectivity over Taylors Road, land locking NH1 and preventing NH1 access to the MAC.
3. Alignment of Taylors Road creates land fragmentation and does not work seamlessly with drainage areas.
4. Key community and activity centre infrastructure not co-located to support placemaking
5. Expansive drainage corridors
6. Intersection with Taylors Road and Mt Cottrell Road dissecting 3L land.
7. Poor distribution of open space resulting in accessibility 'gaps'.
8. Drainage and road asset alignments create ineffective and fragmented NDA.
9. Unfeasible proposed densities in 40 dwellings/ha areas

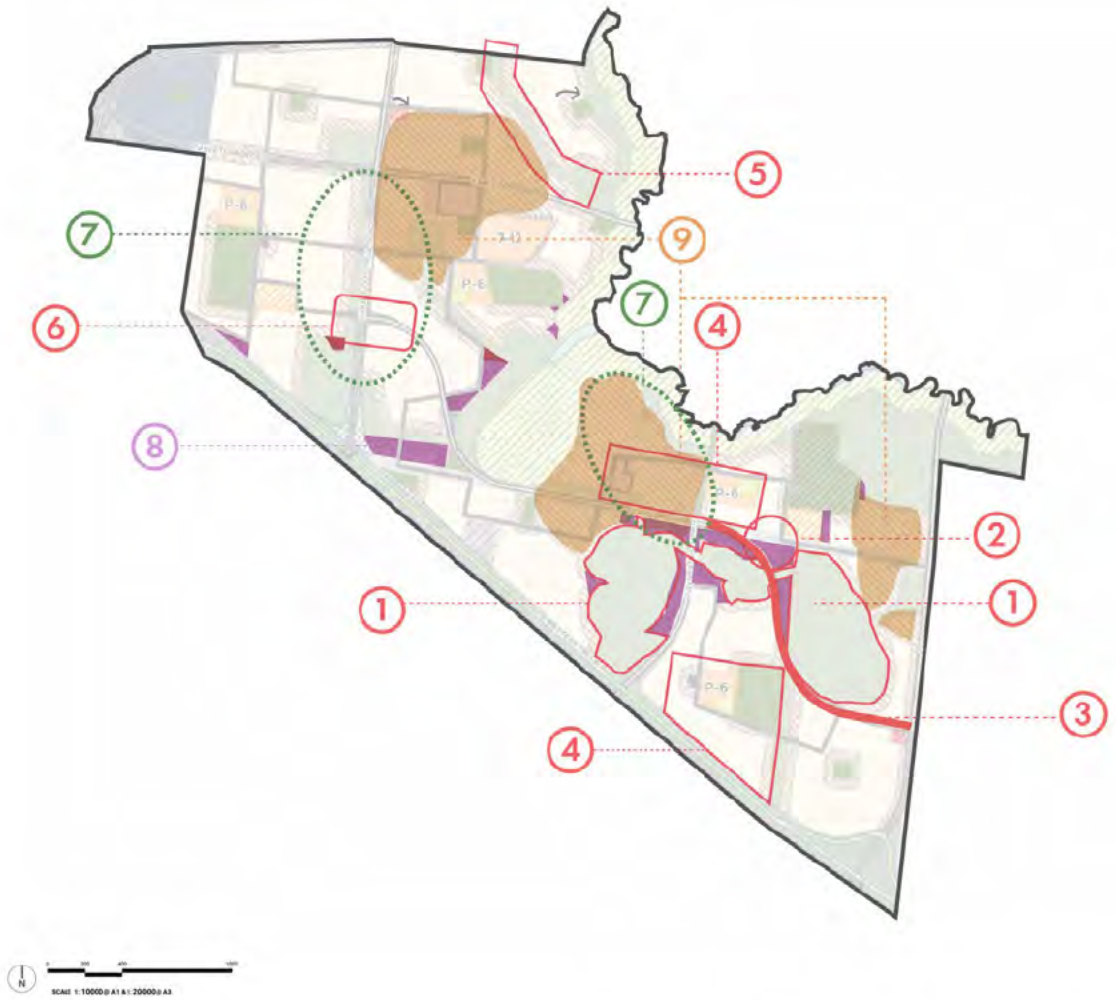


Figure 2 – Melton East PSP – Key Identified Issues

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1.4 Proposed Refinements

In response to the key issues identified, 3L proposes the following refinements to the FUS. We note in considering the proposed refinements 3L has undertaken a comprehensive analysis to determine the appropriateness of these changes. It is 3L's strong opinion, as detailed in this submission, that the proposed refinements will significantly improve the deliverability and functionality of the ME PSP.

1. Increase NDA in NH1 through refinement and relocation of drainage assets.
2. Establish a connection across Taylors Road allowing Beattys Road to connect into NH1.
3. Refine the alignment of Taylors Road to "hug" drainage assets and minimise land fragmentation.
4. Refine location of active open space in NH1 and relocate school closer to activity centre.
5. Co-locate key uses to strengthen activity centre as a destination.
6. Shift local parks away from arterial roads, where possible.
7. Relocate Mt Cottrell Road & Taylors Road intersection further south to increase NDA.
8. Implement refinements to drainage corridors supported in DSS workshops.
9. Realign Paynes Road to the east to hug K4 wetland.

The proposed refinements are estimated to increase NDA by a minimum of 15ha to 51.5%.

Figure 3 – Melton East PSP – Proposed Refinements

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2. Melton East PSP Submissions

The following submissions raise a significant number of issues in relation to the exhibited ME PSP and accompanying documents. Given the number of issues raised we have taken the approach of following the same structure and numbering of the PSP, ICP and supporting documentation and, where relevant, submissions to each section have been provided. As part of this submission, we have identified a number of issues and subsequent amendments that 3L is seeking to be made to the exhibited documentation and that 3L considers will significantly enhance the viability and deliverability of the PSP.

Page 53 includes a consolidated table of the amendments sought by 3L and that have been raised throughout this submission. We note each issue and amendment sought has been numbered throughout the submission and the same numbering has been applied in the summary table.

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2 ME PSP Outcomes

Vision and Purpose

2.1 Vision (ME PSP)

The PSP sets out as a vision:

"As an important piece in the Melton Economic Corridor located along the Western Freeway, the PSP will unite the surrounding precincts and key destinations, including Cobblebank Metropolitan Activity Centre, Aintree Major Town Centre and the Melton Township."

It is our view that the FUS in its current form does not allow for this vision to be realised. This is due, in particular, to poor connectivity for NH1 including:

- No connectivity across Taylors Road for future residents to access the Aintree MAC which is located to the north-east of NH1.
- No access from Beattys road to NH1 due to the size of K6 and associated treatment wetlands as a result of avoiding the Pre-european wetland (see Figure 1).
- NH1 will include a population of over 4,000 residents. The FUS is limiting the ability for NH1 to 'unite' with the surrounding precincts.

Improving connectivity for NH1 is critical to achieving the PSP vision and for the Aintree MAC's success.

2.2 Purpose (ME PSP)

The PSP purpose at 2.2 a requirement to incorporate 'best-practice urban design principles in natural settings.'

This is ambiguous wording as it is not clear what 'best-practice' is expected to look like in this context – creating development uncertainty.

The Purpose wording should be revised to bring language into alignment with other PSP's where specific urban design principles such as WSUD are identified.

What is 3L Alliance seeking?

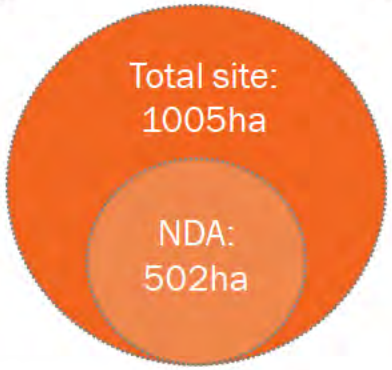
1. 3L has submitted an alternative proposal for the K6 wetlands which has been provided to Melbourne Water and VPA as part of the DSS workshops and now as part of this submission (see Appendix 1). This proposal has been assumed in the FUS in Figure 3. Figure 3 demonstrates improved outcomes in relation to providing a northern connection into NH1 as well as improvements to NDA. The inclusion of a northern connection will significantly improve connectivity while also meeting the PSP vision by delivering a 'united' PSP. 3L seeks the following amendments to the PSP:
    a) The ME PSP FUS adopt the K6 principles in Figure 3, and access from Beattys Road directly to Property 73 is provided.
    b) Reference to 'best-practice urban design principles in natural settings' should be revised to include less ambiguous wording around any expectations on environmental performance in the PSP.

2 ME PSP Outcomes

ME PSP Performance Summary (Figure 1)

Population targets (Figure 1 ME PSP)

12,908 dwellings = 40,014 residents



To achieve the estimated population an average household size of 3.1 residents is required. This is the accepted rate in standard growth areas that average 20 dwellings per ha. In this PSP, average of 30-40 dwellings per ha targets cover more than 43% of the PSP. This will inevitably reduce the average household size. At 2.8 residents per home it reduces this PSP to only supplying 36,142 residents with homes, but we expect it will be less.

Density (Figure 1 ME PSP)

27 dwellings per ha

30 dwellings per ha for amenity areas*

The total residence for the PSP should be updated to reflect the actual likely dwelling types in the higher density locations.

While the PSP Guidelines identify minimum targets, the increase from minimum 30 to average. 40 dwellings per ha is extreme and well above recently approved PSPs that seek a minimum target of 30 dwellings per ha.

As is further discussed in our submissions in relation to Viable Densities, ***delivering 40 dwellings per ha is not achieved in a 'real-world' context without reliance on the delivery of apartment buildings which are not feasible within the Melton East market.***

*Noting that the Melton East PSP Background Report, March 2025 states approximately 35 dwellings per ha for amenity areas.

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2 ME PSP Outcomes

ME PSP Performance Summary (Figure 1)

Open space distribution (Figure 1 ME PSP)

32.6% open space

Dwellings within 400m of a local park

82%

Target: 95%

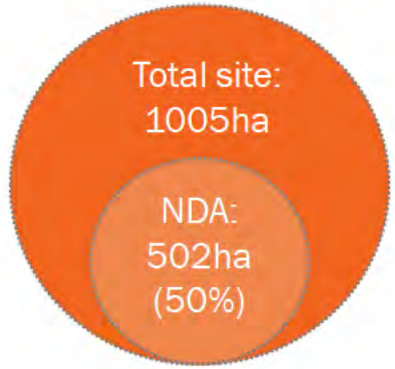
Dwellings within 800m of a sports reserve or open space

85%

Target: 100%

The distribution of open space and the urban design response are not to a satisfactory level to meet future residents open space needs.

Net Developable Area (Figure 1 ME PSP)



A 50% NDA is well below NDA's being achieved in other PSP areas, with 67% being the average NDA (see Appendix 2) in other PSPs. The under performing NDA is largely due to the extensive scale of land set aside for drainage purposes. We have significant concerns in relation to the scale of land set aside for drainage purposes and have made submissions to Melbourne Water in this regard, including proposed amendments to the DSS (see Figure 3 and Appendix 1). It is not a desirable, or feasible outcome to increase densities beyond reasonable density targets to make up the shortfall in NDA.

Further the PSP delivers a number of fragmented areas of NDA (approximately 25ha) which are unlikely to be able to be efficiently realised for development due to awkward shapes, PSP requirements and being heavily constrained by surrounding drainage and road assets (see Figures 4 and 5).

2 ME PSP Outcomes

ME PSP Performance Summary (cont.)

Unrealisable or heavily constrained NDA locations

3L is concerned that the already low NDA of 50% is further impacted by a small but significant amount of land (approximately 2.5% of the total PSP area) that is counted as NDA but, upon review, is either so heavily constrained by the proximity, alignment and extent of drainage, ecological or road infrastructure, that it is effectively undevelopable or constrained to the point of being inefficient to develop.

- These areas exist primarily around the Taylors Road alignment between Beattys Road and Paynes Road;
- They are created through the extensive and irregular forms and locations of the drainage assets running through the area;
- The cumulative constraints of the Taylors Road alignment and the series of drainage assets extents create many 'fragments' of NDA that face significant constraints to develop;
- Some of these areas are of insufficient width to deliver lots on either side of the street. They are also irregular and discourage the efficient layout of development;
- Their proximity to arterial roads makes providing local road access highly problematic requiring circuitous access; and
- Compounding this problem is the fact that these area are often located in areas that are designated as locations of high amenity and therefore where higher densities should be supported, but are effectively unattainable.

If these areas of inefficient development are subtracted from the total proposed NDA, the NDA drops further to approximately 47.5% of the total PSP area which is of significant concern to 3L as NDA is a key indicator of the viability of the PSP overall.

25.4ha of the PSP is located in areas where the NDA is either unrealisable or heavily constrained.

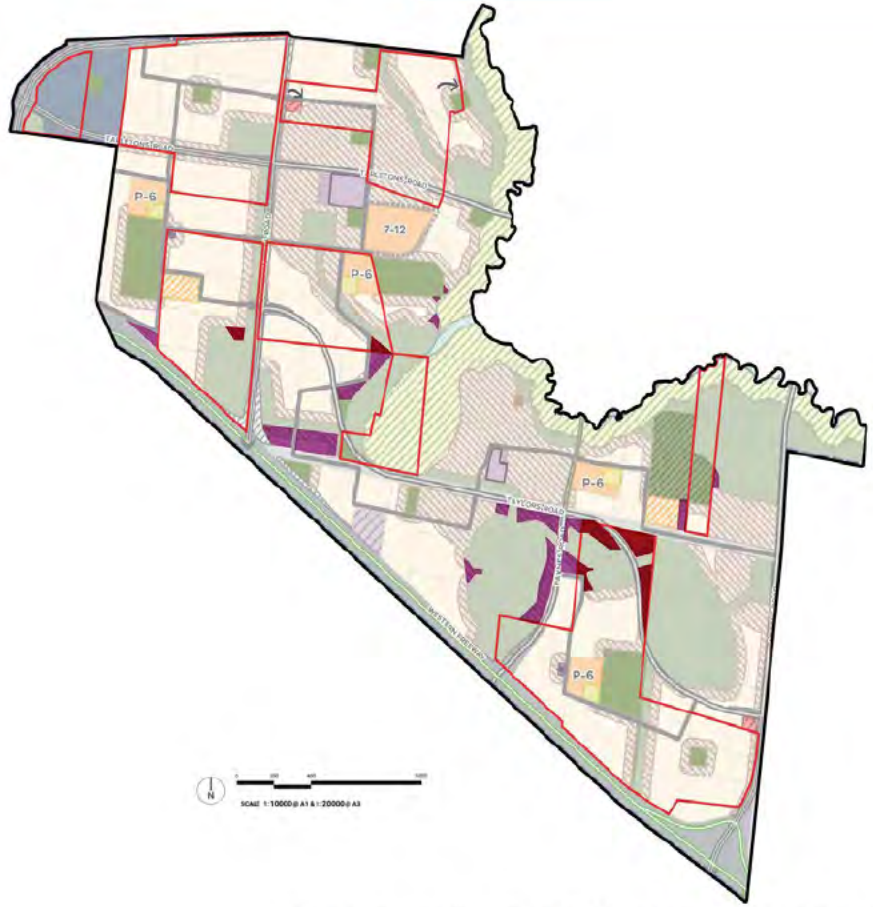


Figure 4 – Melton East PSP – Areas of unrealisable or heavily constrained NDA

2 ME PSP Outcomes

PSP Performance Summary ME PSP (cont.)

Unrealisable or heavily constrained NDA locations

A summary of concerns regarding each area of unrealisable NDA is outlined below:

1. **0.7ha** – narrow dimensions, constrained by freeway and connector road.
2. **0.5ha** – irregular shape. Impacted by buffers from drainage reserve.
3. **3.2ha** – irregular dimensions, constrained by key assets
4. **5.0ha** – isolated, constrained by Beattys Road reserve to south and drainage to north.
5. **1.1ha** – irregular shape. Impacted by buffers from drainage reserve.
6. **3.3ha** – narrow irregular site constrained by drainage and arterial roads
7. **0.5ha** – undevelopable corner, constrained by ecological and open space assets
8. **0.7ha** – negligible development area for single lot owner development, 3L controls land to east.
9. **0.4ha** – negligible development area, narrow dimensions
10. **2.2ha** – overly constrained by arterial, drainage and existing road reserve.
11. **1.7ha** – narrow dimensions, drainage assets, access of arterial road, property boundaries.
12. **1.7ha** – narrow dimensions wedged between drainage and Paynes Road alignment, unclear access
13. **4.3ha** – narrow dimension wedged between drainage and Taylors Road, unclear access.

Figure 5 – Melton East PSP –Unrealisable NDA

2 PSP Outcomes

PSP Performance Summary (cont.)

What is 3L Alliance seeking?

3L considers that the PSP will be significantly improved if the following amendments are made:

2. Average household size be revised down from 3.1 for ME PSP to reflect densities and smaller product mix.

3. For reasons discussed later in these submissions (see response to Viable Densities p19), it is our strong view that ave. 40 dwellings per ha is not a viable development outcome within the context of ME PSP. A density target should be set at a minimum of 23 dwellings per ha for the whole PSP with objectives to ensure appropriate density is directed towards amenity areas.

4. A redistribution of open space to locate local parks away from arterial roads where possible to improve amenity and ensure that access standards per the PSP Guidelines are met, particularly as many of the 'gap areas' are located in areas where higher density is being sought by the PSP (see page 25 for further submissions on open space).

5. As per our submissions to the Kororoit DSS (Appendix 1) there is an opportunity to review the scale and function of the drainage assets which would significantly assist in increasing NDA across the PSP while also removing significant areas of constrained NDA.

6. Further refinement to the alignment of Taylors Road & Paynes Road to 'hug' the resulting drainage area reducing land fragmentation (See Figure 3).

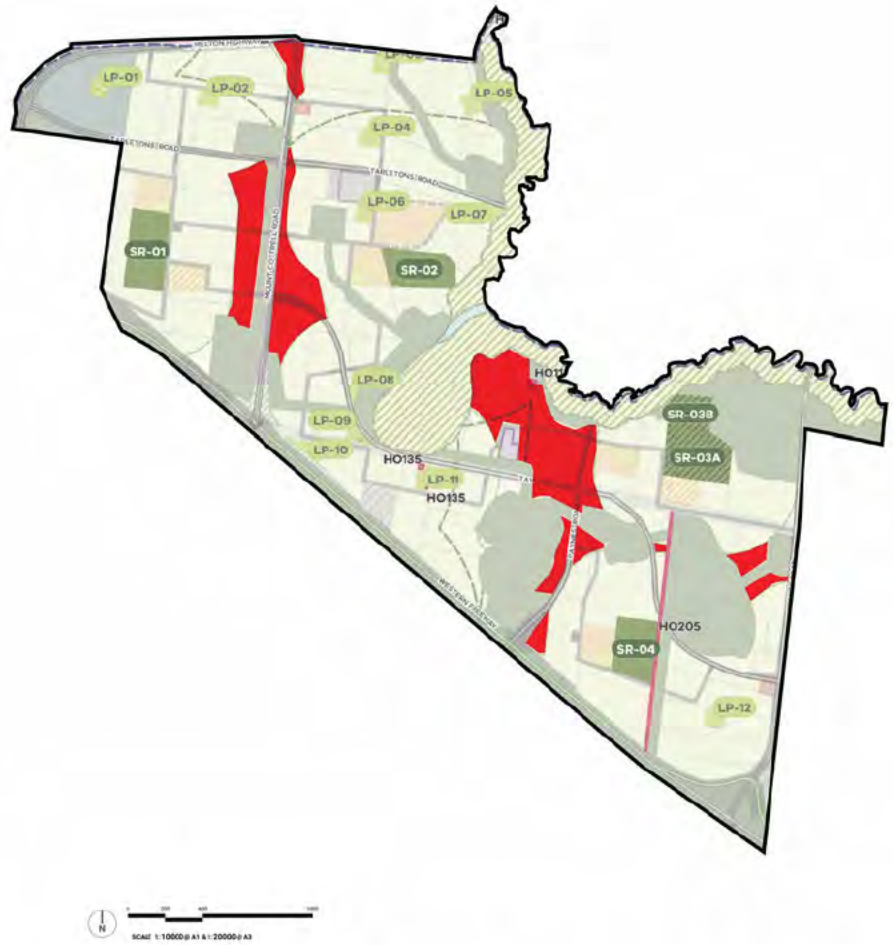


Figure 6 – Melton East PSP –Areas outside walkable catchments to key open spaces

3.1 ME PSP Viable Densities

Overview

Section 3.1 Viable Densities of the ME PSP identifies a number of objectives to ensure the PSP delivers a diverse range of housing product through a range of lot sizes and housing typologies, including affordable housing.

3L response

While the principle of these objectives is generally supported by 3L, there are a number of concerns in relation to the incorporation of highly prescriptive requirements into the PSP and whether development can be viably delivered in a manner that is generally in accordance with these requirements.

The following section sets out our concerns with the proposed densities and objectives, including examples to demonstrate the outcomes the PSP is seeking to achieve and why they are not a desirable outcome for a developer, government or the community. Our key issues in relation to viable densities relate to:

- The ability to deliver 12% affordable housing which is above industry standards;
- The density distributions and diversity targets proposed;
- The need to deliver three housing typologies that limit the ability to respond to market demand;
- Specialised housing forms such as lifestyle communities, retirement living or aged care being directed to amenity areas;
- The requirement for lots to be rear loaded where they have a frontage of less than 10.5m;
- Discouragement of access to lots of any size of a connector road;
- A poor distribution of open space below the targets set in the PSP Guidelines; and
- Extensive area identified for acoustic treatments.

3.1 ME PSP Viable Densities

Affordable Housing

To provide a certain framework for this PSP to deliver affordable housing, there should be clear targets, which enable this PSP to contribute to the affordable housing solution fairly but also give the developer certainty in relation to the proposed maximum monetary contribution.

3L supports delivering affordable housing within ME PSP. However, the quantum in this PSP is unprecedented and unreasonably high at 12%, and there is ambiguity as to amount of the developers' contribution.

The PSP Guidelines state "a minimum target of affordable housing in accordance with affordable housing policy, evidence and guidance." 12% significantly exceeds other recent PSPs and no justification as to why it is substantially higher than other PSPs has been provided. This includes Fishermens Bend at 6% and 10% on Arden Macaulay (noting this is on Government land only) and Jetty Road, Geelong at 5%.

The ME PSP requires affordable housing to be delivered within high amenity areas close to services and community facilities. However, when layering the additional constraints that the PSP identifies for amenity areas (such as bushfire setbacks, rear loaded lots for lots less than 10.5m, three dwelling typologies) including the need to deliver an average of 40 dwellings per ha, it is our view there is a misalignment between the PSP requirements and the type of housing product that is generally being delivered for affordable housing, noting that delivering apartments within this setting is unlikely to be in alignment with market demand.

There is also concern in relation to all the affordable housing being directed to high amenity areas as these are the areas where land is more valuable. This will significantly increase the cost of delivering affordable housing or requires developers to discount land which is unlikely to be viable from 3L's perspective.

An increased level of flexibility is required in housing types across the PSP to ensure equitable affordable housing can be delivered.

What is 3L Alliance seeking?

7. Given the reduced NDA in this PSP, and the fact that the cost base is significantly higher than other PSPs, 3L considers that the percentage of affordable housing across the PSP should be reduced to ***5% serviced lots at a 20% market discount.*** Any more than this will place excessive cost obligations on the developer which will add to the cost base of all other dwellings and reduce overall affordability of housing in the area.

8. Further, in alignment with the Jetty Road Panel report commentary 3L submits that the following should be adopted:

    a) Express the Primary Obligation as a requirement to deliver a percentage of all housing as affordable, with flexibility in the way the obligation is delivered; and
    b) Delete all reference to how the affordable housing is to be provided across the subject land, including the references to the distribution, mix and design presentation of the affordable housing.

9. Relaxation of overly prescriptive housing types and locations to enable affordable housing where the land cost is lower. I.e. larger amount of small lot housing cost product in locations with min 20 dwellings per ha, & / or low amenity areas.

3.1 ME PSP Viable Densities

Density Distribution and Diversity Targets

As previously stated, the PSP proposes an underperforming NDA of 50%, which places significant pressure on the density of development proposed including high amenity areas earmarked for 40 dwellings per ha.

We understand this is the first PSP in a metropolitan growth area to propose such significant areas of density at this scale and well exceeds the 30 dwellings per ha minimum target set by the PSP Guidelines for amenity areas.

There are a number of requirements set out in the PSP which are not only restrictive and counter productive to achieving 40 dwellings per ha but are likely to deliver very poor urban design outcomes. Pages 20 and 21 include a comprehensive analysis of what development outcomes can be achieved within the high amenity areas while also taking into account the requirements of the PSP. The assessment clearly demonstrates less than desirable outcomes will result.

In relation to the distribution of high amenity and amenity areas, the PSP proposes:

- High amenity areas within a 400m walkable catchment of an activity centre or train station; and
- Amenity areas within 50m of open space or major public transport routes.

While we do not dispute the principles used to identify amenity areas which are consistent with the PSP Guidelines, the PSP Guidelines do not differentiate between high and amenity areas.

It is our view that splitting the high amenity and amenity areas will have a significant impact on the ability to deliver a diverse range of housing product across the amenity areas, and to respond to market conditions and housing needs as they evolve over time.

Further, there are significant concerns in relation to the potential market implications for high amenity areas including the saleability of more intensified development that will have higher construction costs and will be competing against the price of more conventional development in surrounding PSP areas.

Additionally, the inclusion of the requirement to deliver a minimum of three housing typologies is too restrictive. ***While 3L is supportive of delivering a diverse range of lots sizes and housing typologies, the PSP requirements do not allow the delivery of housing product to respond to market demands.***

There is also a misalignment between the prescriptive housing typologies and densities proposed. This includes the Balance Areas which limits the amount of product delivered under the Small Lot Housing Code. The type of product that can be delivered under the Code supports the deliverability of genuine affordable housing and should not be restricted in these areas. Further, Balance Areas are identified as including Multi Unit low-rise social and affordable housing as a housing typology. It is our strong view that this typology will not be appropriate in these locations and not consistent with the densities that are sought to be achieved in the Balance Areas.

3.1 ME PSP Viable Densities

Cumulative Impact of Development Constraints on Feasibility

The ambition to achieve higher densities in ME PSP is admirable. However, our testing confirms that once the PSP's requirements for bushfire buffers, rear loaded lots <10.5m, short laneway lengths and preference to avoid access off connector roads are applied to sites, the capacity to deliver the desired 40 dwellings/ha is not feasible or desired from an urban design perspective.

While 40 dwellings per ha is theoretically possible (Scenario 1) it will be unlikely to be feasible once real site conditions (irregular boundaries, non-ideal dimensions, buffers and other PSP requirements) are implemented. Additional scenarios (see following page) were also tested and demonstrate how achieving 40 dwellings/ha is impossible once additional constraints are applied.

It highlights that 40 dwellings per ha is not achieved in a 'real-world' context without reliance on the delivery of apartment buildings which are not feasible within the Melton East market.

Infrastructure Victoria's 2023* research highlights the benefits of growth areas for affordability and larger living spaces, resulting in consumers often opting for detached houses or townhomes rather than apartments.

Also, unless there is a substantial purchase price / rental reductionfrom townhouses to apartments, (as there is the in middle ring & CBD areas) purchasers will opt for the larger product because if its relative affordability. The cost of apartment construction means that apartments in growth areas are not able to be sold at a significantly lower price than townhouses and still cover costs to construct them

**March 2023 Measuring home price differences How features, location and infrastructure affect Melbourne's home prices Modelling report*

We expect that in time, and with the maturity of the market, some apartments will be viable adjacent to amenity areas, but not to the scale and distribution currently proposed by the ME PSP.

The alternative to apartments to attain 40 dwellings/ha requires 100% of building stock to be narrow urban townhouses, resulting in extensive rear laneways throughout the PSP, regardless of requirements on length and will reduce the opportunity for building and typology variation.

Scenario 1 - No constraints 'ideal'

Achieves 40 dwellings/ha but not realistic and also not compliant with minimum 3 typologies required

Figure 7 – Melton East PSP – Density Testing Scenario 1

3.1 ME PSP Viable Densities

Cumulative Impact of Development Constraints on Feasibility cont.

How did we test this?

Scenarios 2 and 3 to the right progressively tested the impact of PSP constraints such as bushfire buffers and rear loaded lot requirements on optimally dimensioned 1.0ha test sites.

Both the scenarios demonstrate very quickly that even the delivery of narrow (6.5m) medium density block widths is insufficient to deliver the necessary density unless block dimensions are ideal.

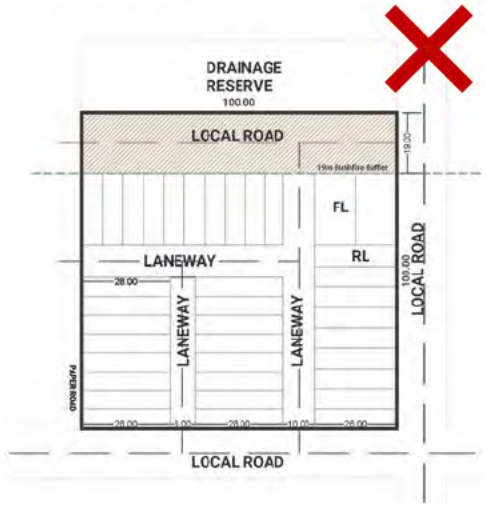
The PSP requirements for rear loading also increase the extent of roadways required – generally two between 45-50% of the total test area. This is also an important consideration in over-reliance on rear loaded lots as the provision of additional laneways increases asphalt, increases construction cost per dwelling and reduces rear yard opportunities.

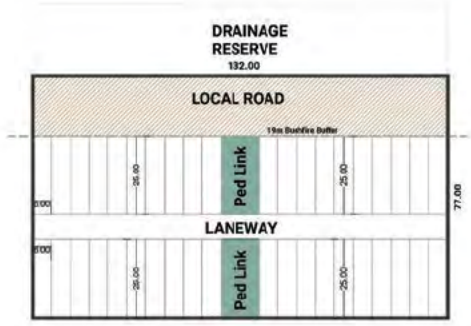
What is 3L Alliance seeking?

10. Removal of average 40 dwellings/ha as an expected density within the PSP.
11. The requirement to distinguish between high amenity and amenity areas be removed. Amenity should be defined as per the PSP Guidelines – *"locations where communities will be naturally supported by key features such as open space, activity centers, community facilities and access to public transport."*
12. All amenity areas should be refined to aspire to a preferred density of minimum 30 dwellings/ha.
13. That an overarching PSP target for a minimum of 23 dwellings per ha be nominated in order to ensure viable densities are achieved across the PSP.
14. Densities be described as a minimum rather than an average.
15. The prescriptive nature of the requirements in the PSP should be reduced to allow a more adaptable response to housing diversity over time.

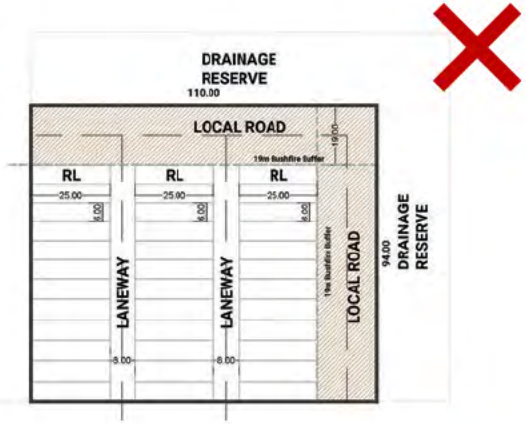
Figure 8 – Melton East PSP – density testing Scenarios 2 & 3

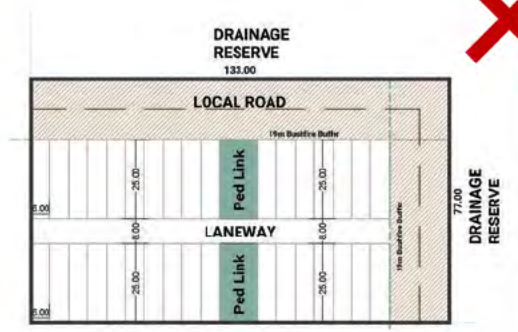
Scenario 2 - Bushfire constraints to one boundaries and PSP requirements





Scenario 3 – Bushfire constraints to two boundaries and PSP requirements





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3.1 ME PSP Viable Densities

Specialised housing forms

G6 relates to specialised housing forms, such as lifestyle communities, retirement living, or aged care.

While the inclusion of specialised housing forms is supported, there is concern in relation to the prescriptive nature of the Guideline requiring these uses to be directed to amenity areas.

It is our experience that on average a Retirement Village or **lifestyle community** in growth areas is usually 25-40 dwellings per ha for sites usually >5ha so they are viable. This demonstrate that they are not dense enough to be within a high amenity area and too dense to be in a Balance area (ave 20 dwelling per ha)

From our experience, traditionally retirement villages have not been directed to high amenity areas due to the facilities often providing a number of services in house including transport to local services and facilities. Further, similar to our comments in relation to affordable housing, land within high amenity areas will be higher valued land, therefore increasing the cost to deliver specilaised housing forms in high amenity areas.

What is 3L Alliance seeking?

16. The requirement for specialised housing to be near amenity be removed.

17. Specialised housing may be located where feasible, desirable to the end users and where a new minimum density her hectare supports it.

3.1 ME PSP Viable Densities

Frontages

Requirement 5 (R5) requires lots to front waterways, connector streets and open spaces (including easements) unless the lot abuts a bushfire hazard setback area. While 3L supports the activation of key open space areas, this requirement is unduly restrictive and should be incorporated as a discretionary guideline encouraging orientation towards such interfaces where feasible. This will allow for flexibility for the designs to achieve the most suitable outcome based on the specific conditions of the site.

Guideline 11 (G11) seeks to discourage vehicular access to lots from connector streets favouring rear loaded access regardless of lot size. This is not supported. Vehicular access directly from connector streets is a typical design outcome within a greenfield context. Precedent examples illustrating the entirely appropriate arrangements are shown adjacent, illustrating that adequate parking, nature strip and canopy tree planting opportunities are retained within the streetscape alongside vehicular access.

What is 3L Alliance seeking?

18. Reword R5 to a guideline encouraging lots to front waterways, connector streets and open spaces where feasible.

19. Remove G11 from the ME PSP.

Front loaded housing to connector streets, Quay2 Torquay (Nearmaps & Google Maps)

Front loaded housing to connector streets, Aintree (Nearmaps & Google Maps)

mesh

3.1 ME PSP Viable Densities

Rear Loaded lots

R4 sets out a requirement for lots with frontage widths of less than 10.5 metres to be rear loaded, unless the layout ensures the provision of canopy street trees, streetscape shading, servicing, infrastructure and on-street car parking to the satisfaction of the responsible authority.

While 3L is supportive of delivering rear loaded product, requiring all lots with a frontage of less than 10.5m to be rear loaded is overly restrictive, unnecessarily reduces NDA and increases development cost by requiring more roads to be constructed.

The adjacent examples illustrate high quality medium density typologies that would not be allowed if R4 was retained. It is important that these opportunities are retained to support diversity and affordability. Creating an over-reliance on rear loaded product increases development costs while also increasing hardscape through devoting more land to lanes and roadways.

What is 3L Alliance seeking?

20. Amend R4 to allow front loaded access to any lot width based on performance based criteria that demonstrate that the fronting street includes sufficient space for street trees at regular intervals and on-street visitor parking.

Keysborough – 9.0m wide front loaded townhomes delivering streetscape amenity (Nearmaps & Avant Townhomes)

Aintree – 7.5m wide front loaded townhouses delivering streetscape amenity (Nearmaps & Google Maps)

3.1 ME PSP Viable Densities

Access to Open Space

Despite the low levels of NDA across the PSP, significant gaps exist in the open space network which fails to achieve the PSP Guidelines' targets in relation to convenient walkable catchments, leaving proposed future communities to be located outside reasonable walking distance to sports reserves and local parks.

Only 85% (target 100%) of dwellings are within 800m of a sports reserve. Only 82% (target 95%) of dwellings are within 400m of a local park. 3L submits this is not satisfactory to meet future resident needs.

Further, it is deeply concerning that some of the identified 'gap areas' are located in areas where increased housing densities are intended to be supported, including up to a theoretical level of 40 dwellings/ha in and around the Neighbourhood Activity Centre.

The PSP's justification to push for densities beyond the PSP Guidelines in known open space 'gap areas' effectively intensifies population in precisely the areas where access to key open space is least. The locations of local open space requires refinement to ensure an equitable distribution of open space that also aligns with higher densities.

What is 3L Alliance seeking?

21. The location of local parks be revisited to ensure equitable distribution and accessibility to the local park network across the PSP consistent with the PSP Guideline targets.

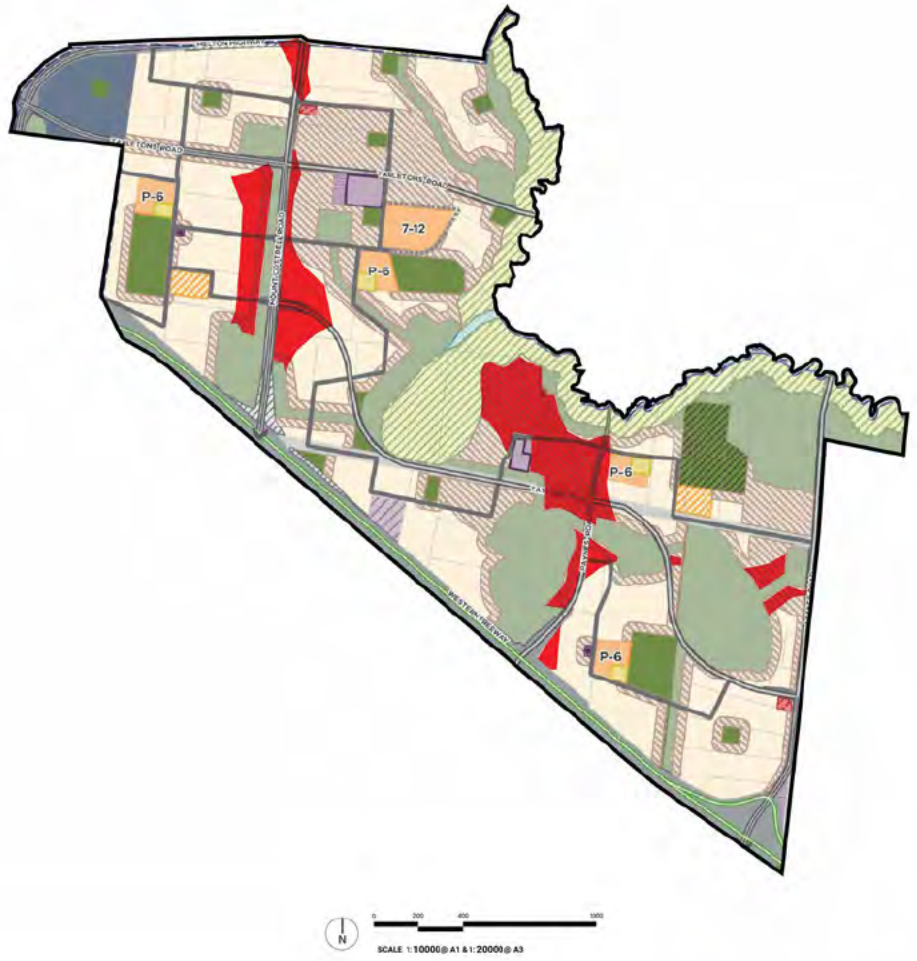

Figure 7 – Melton East PSP –Areas outside walkable catchments to key open spaces overlaid on areas of density

3.1 ME PSP Viable Densities

Acoustic Wall

The ME PSP includes extensive areas affected by acoustic requirements which exceeds the equivalent requirements in other PSPs where treatments are typically limited to major highways and strategic arterial road interfaces.

Limited information is provided within the ME PSP on the exact requirements for the provision of acoustic walls but we note that the Western Freeway, Leakes Road, Mt Cottrell Road, Tarletons Road and Melton Highway all appear to require acoustic interventions. Such extensive acoustic treatments are unusual and 3L does not support these requirements being imposed on any roads other than the Western Freeway.

R3 requires that for lots proposed adjacent to an acoustic wall, dwellings must front an internal road which runs directly parallel to the acoustic wall unless otherwise agreed with the responsible authority. The proposed requirements and significant extent of acoustic wall impacts creates a significant level of uncertainty in relation to these interface requirements and will potentially reduce the amenity of key development areas, particularly as they are listed as a mandatory requirement.

What is 3L Alliance seeking?

22. The requirement for acoustic treatments per cross section "Freeway Interface" be limited to the interface with the Western Freeway only.

Figure 8 – Melton East PSP –Noise Influence Areas

3.2 ME PSP Safe, accessible and well- connected

Overview

In relation to the movement network there are significant concerns in the ME PSPs ability to achieve the PSP objective of delivering an integrated development with adjoining established areas and active neighbourhoods. Our key concerns relate to:

- The significant barrier Taylors Road is creating for access to established areas to and from NH1;
- The intersection of Taylors Road and Mount Cottrell Road dissecting 3L Alliance land;
- Truncation of Beattys Road;
- Street tree planting requirements to achieve 30% canopy tree coverage in the public realm;
- Limiting direct access from connector roads; and
- Laneways designs lengths.

3.2 ME PSP Safe, accessible and well- connected

Road alignments

There are a number of road alignments that with some refinement could significantly improve the deliverability of ME PSP. This includes the intersection of Mt Cottrell Road and Taylors Road which carves directly through 3L land. We acknowledge that moving this intersection too far to the south will cause connectivity issues further west and pushing the road north will likely create challenges with intersection distances. Despite these challenges we consider refinements to the intersection by moving the intersection just south of its proposed location will improve the developability of the 3L land by creating a larger area of developable land on the northern side of Taylors Road, while ensuring acceptable connectivity through the PSP is achieved.

Further the ME PSP requires Beattys Road to be truncated at its western end prior to the proposed extension of Taylors Road. It is our view this is a missed opportunity and including an intersection at Beattys Road and Taylors Road will significantly improve connectivity to NH1 (see Figure 3 - Refinements to the PSP which includes this connection).

What is 3L Alliance seeking?

23. The Mount Cottrell/Taylors R intersection be moved further south to improve the development potential on the northern side of the intersection/road alignment.

24. The inclusion of an intersection at western end of Beattys Road - the inclusion of an intersection in this location to unlock NH1 and improve connective to the MAC (see Figure 3, point 2).

25. To improve the effective NDA, review of the alignment of Paynes Road over the freeway is essential to return it to a north south alignment which hugs the K4 wetlands.

30% canopy coverage

Government has recently released the Townhouse and Lowrise Code. ***The Code includes a Standard for 10% canopy cover up to 20% canopy coverage on sites greater than 1,000sqm.*** Given the Code is the current Government position in relation to canopy coverage for development and the Code will be applied to some future development within the ME PSP, there should be alignment between the requirements of both documents.

30% canopy coverage is not seen as realistic to achieve across the PSP and is well above established standards. Additionally, it is unfeasible to achieve this heightened level of canopy coverage whilst also pursuing densities up to 40 dwellings/ha. Further, there is concern from a bushfire perspective that requiring a 30% canopy coverage will be at odds with the setbacks required to open space areas, as a 30% coverage has the potential to elevate the vegetation type and therefore increase bushfire setbacks that are already prohibitive.

What is 3L Alliance seeking?

26. The reduction of canopy tree coverage in the public realm from 30% to a minimum 10% and preferred level of 20% to align with the Townhouse and Low Rise Code.

3.2 ME PSP Safe, accessible and well - connected

Connector Road access

The PSP includes at G11, that direct vehicle access to lots from connector roads should be minimised through rear loaded lots with laneway access, vehicle access from side streets or restricting direct access to residential lots from connector roads.

It has been common practice in greenfield development for lots that have a frontage to a connector road to be able to be directly accessed from the connector road. We note that the recently exhibited Devon Meadows PSP does not include this requirement.

Limiting access to connector roads will require a significant increase in the amount of road area being required to be delivered which will contribute to increased construction costs and subsequently impact affordability. Page 23 demonstrates how a positive traffic and urban design outcome can be achieved for lots that have direct access off a connector road.

What is 3L Alliance seeking?

27. That the wording of G11 be amended to allow lots with a frontage to a connector road to have direct access subject to the achievement of safe traffic outcomes.

Laneway Designs

G12 Laneway design and layout states laneways should:

- *Provide a laneway length between 50 metres to 80 metres.*
- *Service a maximum of 8 to 10 dwellings per side.*
- *Provide good passive surveillance into, along and through the laneway.*
- *For laneways longer than 70 metres in length or L or T style arrangements.*
- *Ensure passive surveillance is provided to the laneway via direct line of view from a habitable room on an adjoining rear loaded dwelling.*

This Guideline is far too prescriptive and will drastically increase the extent of laneways required throughout the PSP, increasing total roads and cost per dwelling, and reduce yield (see density testing on page 20 & 21). Requirements to service a maximum of 8-10 dwellings per side drastically impacts the opportunity to deliver narrower lot typologies without requiring excessive numbers of separated rear laneways.

The requirement for 'direct line of sight from habitable rooms' to rear laneways is problematic, will create conflicts with protecting privacy from upper storey views and it is our strong view that this is not appropriate to be applied at the PSP level.

What is 3L Alliance seeking?

28. The removal of a maximum number dwellings per side to allow for flexibility in the delivery of different housing typologies within a given lane.

29. Removal of the need for 'direct line of view from a habitable room on an adjoining rear loaded dwelling' from G12, replace with ' buildings should ensure visibility and surveillance of the public environment.'

30. Total laneway lengths should be increased to 120m to support appropriate urban block lengths.

3.2 ME PSP Safe, accessible and well - connected

Standard Road Cross Sections (Appendix 5)

Delivery of public footpaths along arterial road profiles

A number of key arterial road profiles show pedestrian paths occurring outside the nominated road reserves but are included in funding (refer Figure 9).

Taylors Road – shared path vs two-bike path configuration

The Plan view of Taylors Road (pg.81) does not correspond to any associated section and needs to be clarified. The Sections currently show on-street cycle lanes and off-street shared path while the sections show two-way bike paths and no shared path.

Provision of Paths Conservation area / Waterway & Connector Street

Paths contribute to heat sink effect and add cost, so in cases where there is a cross section and a provision of a 3m bike way, plus a 1.5m pedestrian path on one or both side, discretion should be provided as to whether this is essential.

Mt Cottrell Road – Street section requested

From plan scaling, we understand the road width of Mt Cottrell Road extends to 55m in some locations. This is significantly larger than the VPA Standard cross-sections which do not provide support or justification for such a road configuration.

Figure 9 – Primary Arterial Section

What is 3L Alliance seeking?

31. Paths outside of the road cross section should not be included in the costing.

32. That separate road sections be provided for Mt Cottrell Road at key locations to provide confidence in future road interfaces.

33. Flexibility be provided on the type and number of paths to be required if there is not the traffic to support them.

34. Mt Cottrell Road reserve width be reviewed.

3.4 ME PSP High Quality Public Realm

Overview

Delivering a high quality public realm is critical to the success of any development, and where opportunities are created for a developer to deliver a point of difference within their development as compared with their competitors.

3L has a strong desire to ensure its development within the ME PSP creates a highly desirable and attractive public realm for both future residents and visitors to the development.

The ME PSP objectives in relation to the public realm seek to protect, enhance and integrate into development Kororoit Creek, waterways, wetlands and cultural heritage, post European value and flora and fauna.

While 3L is fully supportive of protecting these values, it is submitted there must be a balance between protecting and enhancing the public realm and the viability of development.

The following section provides an overview of 3L's key issues in relation to delivering a high-quality public realm with a key focus on the following issues:

- A conservative DSS has been prepared and is having significant flow on effects to the deliverability of the ME PSP;
- Dry stone walls and, in particular, Heritage Overlay HO205 which includes a dry-stone wall that traverses through NH1;
- Bushfire requirements that are onerous and significantly impacting the interfaces to the open space networks;
- Aboriginal Cultural Heritage that has not been ground truthed;
- Extensive protection of pre European values;
- Conservation areas and servicing requirements that are not identified with the PSP; and
- Environmentally Sensitive Design requirements which are ambiguous as to their extent and applicability throughout the ME PSP.

3.4 ME PSP High Quality Public Realm

Drainage Services Scheme

Through the DSS consultation process 3L has provided recommendations concerning amendments to the DSS to Melbourne Water. The recommendations propose amendments which maintain drainage functionality but aim to reduce cost and land take (refer Appendix 1). If adopted, this would result in >15ha increase to NDA and a significant reduction in cost per ha.

The major concern with ME PSP is the impact of Wetlands K4 & K6 and the decision to protect pre-European wetlands. This has resulted in unusable open space which lacks any tangible community benefit. It also creates management costs for the authority designated to manage the asset (although it is noted that the authority to be designated in this case is not clear), and increases the cost per home as ICPs and infrastructure service cost are spread over less NDA.

Equally concerning is the fact that the DSS has been placed on public exhibition, without providing the preliminary DSS costings to support it. Given the over sizing of drainage assets and significant land take we expect this will be a costly DSS. It is essential that the preliminary DSS costings be provided as it is core to understanding the viability of this PSP.

What is 3L Alliance seeking?

35. The preliminary DSS costing is requested urgently so that the cost base of developing the ME PSP is understood ahead of the Standing Advisory Committee hearing.

36. Principles which should be adopted to increase NDA and reduce the DSS cost are summarised below.

    a) Pre-European wetlands need to be identified upfront through the MSA and if not identified should be able to be removed. K4 & K6 were not identified in the MSA and should be removed.
    b) CVA & the ACHIA should be used as a guide to inform land planning and development outcomes only.
    c) Once cultural heritage values that have been ground truthed by way of Standard and Complex assessments under the CHMP process this should inform detailed design and land use and management of heritage values.
    d) Where there is the need for drainage assets, but it has been identified as sensitive under the AH regime, the areas should be subject to 'Cultural Heritage Investigations' until this work is completed.
    e) Wetlands should be considered as community assets rather than just drainage infrastructure and where possible should have multi-use functionality.
    f) Landowners that have DSS assets on their property should be fairly compensated for land required for the DSS where that land would otherwise be developable.

Note: Our full submissions to the DSS workshops provide alternate drainage solutions and area details in Appendix 1.

3.4 ME PSP High quality public realm

Dry Stone Walls

R46 Heritage Overlay HO205 (Selection Wall) states that the wall must be retained unless otherwise agreed by the responsible authority. ***Unfortunately, due to the location of the wall traversing through NH1, it will be near impossible to deliver this neighbourhood without some impact on the wall.*** This is largely due to the site levels and the requirement of mains servicing, road crossings and level requirements to deliver the planned drainage reserves abutting the stone wall.

What is 3L Alliance seeking?

37. R46 be amended to:

a) allow modifications to the wall, subject to a planning permit process, that evaluates the need to impact the wall in the delivery of essential aspects of the PSP: roads services, wetlands; and

b) give recognition to the need to potentially harm the wall, where the cost to retain will add excessive cost to the supply of housing.

Figure 10 – Melton East PSP – Dry Stone Wall Location

3.4 ME PSP High quality public realm

Bushfire requirements

Clause R51 & R52 and Plan 9 of the ME PSP set out the bushfire requirements for the PSP, however they are very specific to management requirements without having regard to individual site circumstances. There are opportunities to reduce fire risk in detailed design, while recognising that fire risk will also reduce as development progresses and the area becomes more urbanised.

Applying blanket setbacks without an understanding of actual fire risk will unnecessarily further compromise an already under performing NDA.

Examples below:

- Water Sensitive Urban Design features in the ME PSP, that comprise reliably open water or wet areas and little or no vegetation, may be deemed non-vegetated or low threat, thus not requiring a 19m setback or any setback at all.
- Open Space reserves can be framed with paths, and low threat vegetation that can be excluded from classification under Section 2.2.3.2 (f) of AS 3959-2018, in which case no setbacks for adjacent development will apply.

It seems counter intuitive to put buffers in place if this land is to be removed from the BPA.

What is 3L Alliance seeking?

38. R51 & R52 be amended so that:
    a) They refer to the objectives in Clause 13.02-1S.
    b) This is assessed at the time of permit application and when detailed design is completed.
    c) Design guidelines could be added but should be guidelines only.

39. Plan 9 be removed or included as indicative only.

40. If included Plan 9 should be noted as indicative only and:
    a) Remove bushfire hazards A from water corridors; and
    b) Areas A & B be noted only and subject to detailed assessment against Clause 13.02-1S.

41. Acknowledgment that areas within the ME PSP that will be removed from the Bushfire Prone Area in the future as development progresses and reduces fire risk, AND that interim Bush Fire Safety measure may be required in the interim until they are removed from Bushfire Prone Area.

3.4 ME PSP High quality public realm

Aboriginal cultural heritage

As was recognised in the Officer South SAC Report, the Victorian Aboriginal Heritage Act 2006 and associated regulations (the AH regime) are the appropriate and most suitable tool for identifying, protecting and managing Aboriginal cultural heritage.

In accordance with the AH regime, it was recommended in both ME PSP background ACHIA and CVA reports that CHMP assessments should be undertaken in areas of sensitivity, with the results of these more intensive field assessments then informing any drainage designs.

However, ***ME PSP has taken the intangible untested potential values from the ACHIA and CVA and assumed their existence*** as per the following examples:

- As in the case of the eastern depressions: setting aside large areas for their 'potential' cultural heritage values; or
- Per G33 requiring that voluntary Cultural Heritage Management Plan **should** be undertaken in circumstances listed.

Understating the importance of CH values has required 3L to undertake a complex assessment of Neighbourhood 1, including 90 days of testing with the RAPs involvement. This testing has ground truthed these assumptions resulting in more effective and efficient design (>10ha NDA improvement) but also preserving more heritage values than proposed by the PSP & MW DSS (refer Appendix 1 – Alternative Design K4 & K6).

Another example of the ACHIA and CVA being guides only is Plan 10: the 'potential rise area' & 'land identified as rock outcrops' in 3Ls neighbourhood one (where the majority are located), where our field work found there to be surface basalt only, with no cultural value which has been agreed with the RAP.

What is 3L Alliance seeking?

42. The ACHIA and CVA reports be applied as per their intended purpose, being to guide how development is undertaken.

43. The CH regime continue to apply to the management of CH values; and
    a) Where decisions need to be made on land use, but there is a high risk of potential heritage values, the ME PSP identify these areas as Cultural Value Investigation Area (similar to Officer South PSP) , to highlight that detailed design and land use is subject to a CHMP. This is particularly relevant for the K4 wetlands.

44. Plan 10 makes reference to potential rise area within the K6 wetlands, however the extensive cultural heritage field work undertaken by 3L cultural heritage consultant to ground truth cultural heritage values on site has not identified any rise areas/rocky outcrops in these locations (see Appendix 1 for further details). We therefore request:
    a) Plan 10 be updated to delete the reference to potential rise areas; and
    b) Clarification in regard to what living cultural values are sought and how they impact urban development.

3.4 ME PSP High quality Public Realm

Conservation area & services

Figure 11 shows two drainage pipe outfalls through conservation areas, and one trunk sewer traversing it. The drainage assets are shown in the draft Alluvium DSS, and the sewer trunk main is shown in Greater Western Water's Network Servicing Plans.

What is 3L Alliance seeking?

45. Asset crossings in Figure 11 be included in Plan 6 and 7 of the ME PSP to ensure they are recognised within the PSP and are appropriately planned for.

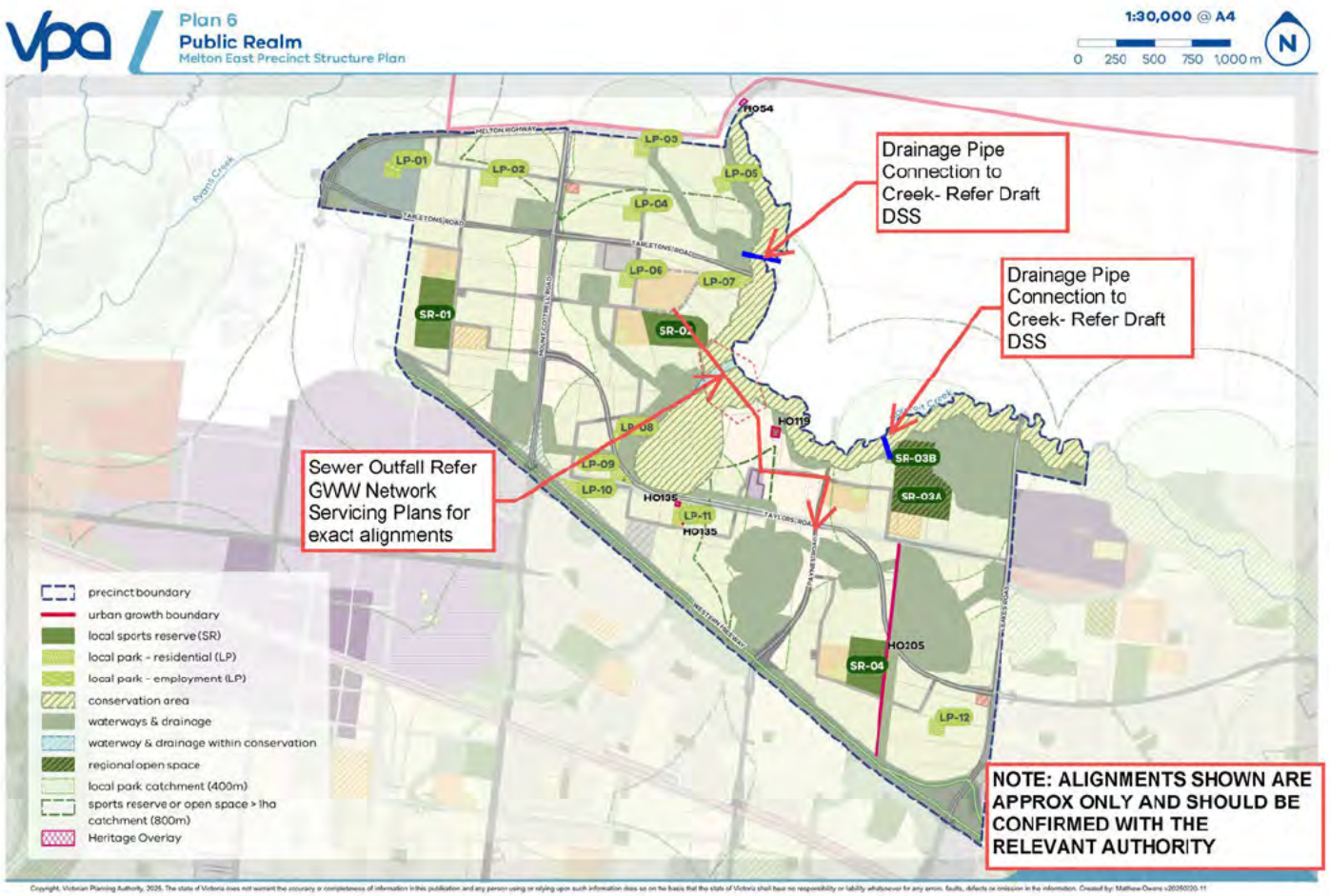

Figure 11 – Melton East PSP –Drainage assets

3.4 ME PSP High quality Public Realm

Conservation Area Concept Plans and Interface Cross Sections (Appendix 6)

3L has reviewed the standard road cross sections and provides the following key comments.

Reference to the 19.0M fuel reduction zone and bushfire buffer area should be removed from relevant Interface Cross Sections. This is a duplication of the requirements of the PSP and, as previously raised, will become obsolete when the area is removed from the Bushfire Prone Area (BPA) designation.

What is 3L Alliance seeking?

46. Removal of reference to the Bushfire buffer per comments raised in Bushfire requirements (Slide 34).

Figure 5. Conservation Area Concept Plan - Central

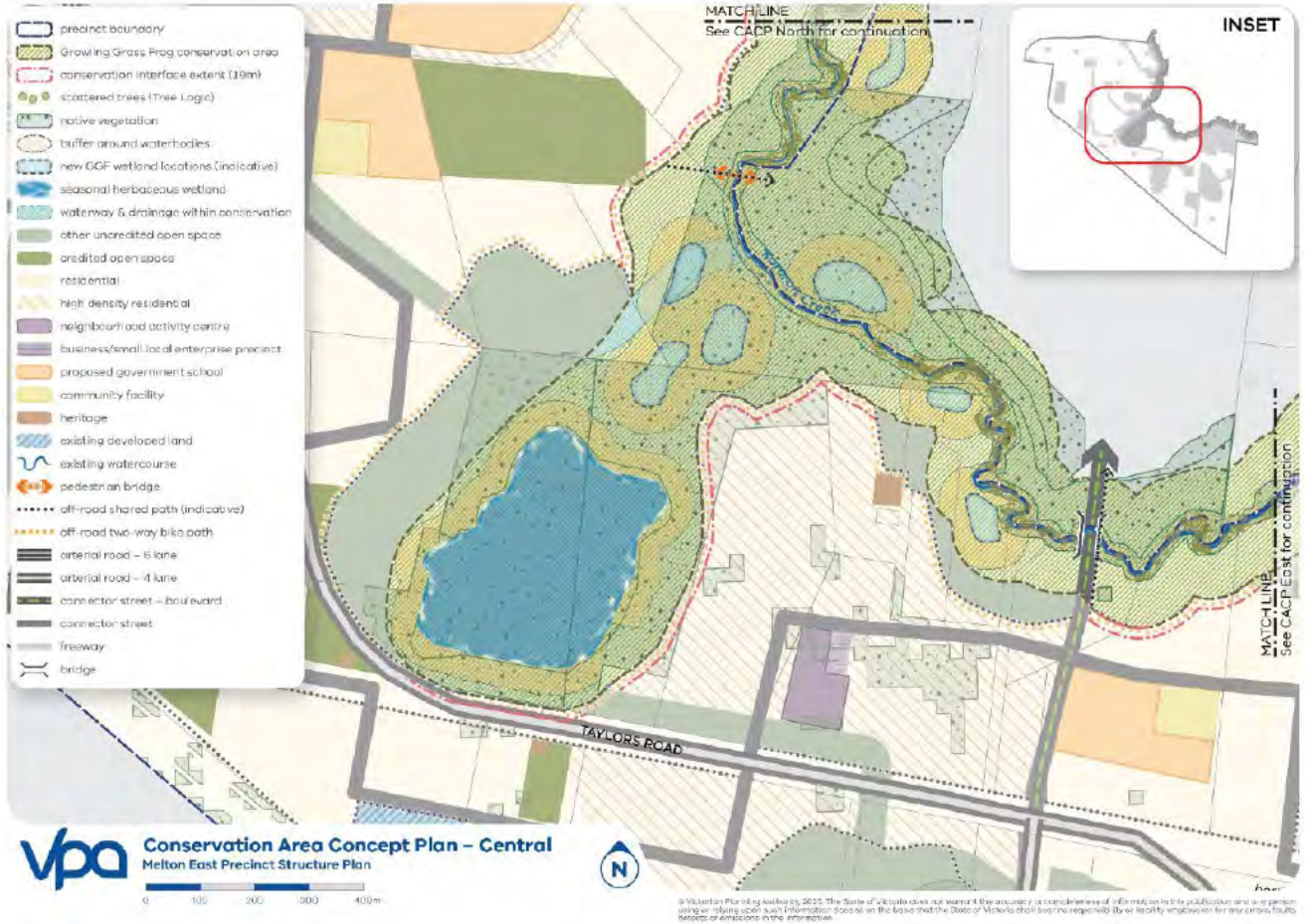

Figure 12 – Melton East PSP –Figure 5

3.4 ME PSP High quality public realm

Environmental Sustainable Design

While the PSP does not explicitly contain ESD Guidelines, there are a number of references through the PSP that require further refinement to create a genuine improved sustainability outcome while not unreasonably increasing the cost of housing.

The ESD standards in the ME PSP are not well defined and introduce the need to negotiate an outcome. This approach will delay planning permits and associated approvals, thus delaying housing supply and creating additional cost in consultant fees alone. The ESD standards are also not reconciled with the NCC and with IWM standards. ***There should be clarity on what is proposed and a cost-benefit analysis undertaken to ensure that ESD requirements are worthwhile and viable prior to enforcing developers to implement them.***

In relation to G35 which seeks to minimise levels of embodied carbon within construction materials by favouring the use of locally sourced materials with high recycled content and low embodied carbon, it is our view this is an onerous guideline and will negatively impact on housing affordability.

What is 3L Alliance seeking?

47. The ME PSP relies on the existing ESD standard (NatHERS, IWM etc) and thereafter encourages sustainable outcomes, including but not limited to using local supplied products and recycling wherever possible.

48. The requirement G35 be deleted due to being unnecessarily onerous.

3.4 ME PSP High quality public realm

Native Vegetation Removal and Retention

We support the objectives that create high quality environmentally sustainable public realm. 3Ls has committed to delivering open spaces and streetscapes that are durable and respond to the natural environment, rehabilitate or reintroduce ecological relevant values and at the same time are enjoyable and are a net value add to the community.

In relation to native vegetation removal and retention, the ME PSP forms part of the Biodiversity Conservation Strategy (BCS) and therefore vegetation has already previously been assessed under that process. This is reflected in Plan 8 Native Vegetation Retention and Removal.

We note however that Melbourne Water has introduced the 'Pre European wetlands' to its DSS and that their value contradicts that which was established under the BCS.
By allocating this value it has in turn reduced NDA by more >15ha, increased land take of the DSS and the DSS cost of land acquisition and ongoing management obligations of the provision of open space.

We also highlight that Plan 10 Aboriginal Cultural Value picks up trees & tree groups, but these do not match the tree layer in Plan 8.

What is 3L Alliance seeking?

49. We request that:

a) The environmental value and treatment of the Pre-European wetland be consistent with the BCS.

b) DSS supports drainage assets being organized in their most cost effective & functional locations subject to the ground truthing of Cultural Heritage values and agreement of management conditions under a Cultural Heritage Management Plan where required.

c) The DSS encourages (not mandates) re-introduction of natural systems where reasonably viable long term.

d) VPA clarify the implications (if any) of the vegetation in Plan 10 on development.

3.5 ME PSP Services & Destinations

Overview

The ME PSP at R56 states that the proposed school sites must have a minimum of two connector road frontages (three preferred). ***While the inclusion of three road frontages is supported and in alignment with our experience in delivering school sites previously, we are unaware of other schools requiring a minimum of two connector roads.***

The Government's Land Acquisition Guidance Criteria for new schools states:

Access (street design network, traffic movement)

New school sites should be located on connector roads to ensure that the surrounding street network is able to accommodate on-street indented parking (that can incorporate a student drop-off zone) and two-way traffic movement in addition to other street functions to facilitate safety and efficiency of traffic and pedestrian movement, especially at school pick-up and drop-off times.

Roads abutting new school sites should also be designed to achieve slow vehicle speeds and provide designated pedestrian crossing points in the vicinity of the school site.

New school sites should not be located on arterial roads (declared or undeclared). This is to minimise the impact of busy roads on school sites and improve the amenity and safety of schools.

What is 3L Alliance seeking?

50. R56 be amended to require a connector road on one frontage in accordance with Government's Guidance Criteria.

3.3 ME PSP Connect people to jobs & 3.6 Thriving local economies

Overview

The Economic and Retail Assessment, Urbis August 2022 as a background report to the ME PSP incorrectly assumes an NDA of 585ha which is at odds with the NDA proposed of 502ha. Further, the Assessment is based on an assumption of 3.1 people per dwelling which we consider to be far too high (as outlined above) As such the allocation & size of Activity Centres should be considered in light of reduced population targets.

While the objectives to connect people to jobs and high order services are supported, the objectives fail to recognise the importance of responding to the economic environment, including local demands and market forces which change over time. Covid is an example of this.

The ME PSP provides Appendix 3 and Appendix 4 to inform Activity Centre Design and use. The Activity Centres will be subject to market forces and retailer operation. There is concern that these designs are too specific and therefore will create challenges in delivering 'generally in accordance with' outcomes. This will cause approval delays & in turn delays in delivering jobs and amenity.

Similarly, the location of these Activity Centres should be reviewed, as they will be more successful near major thoroughfares which increases traffic to support retail.

3L's NH1 includes a Local Convenience Centre (LCC). Table 10 states that an LCC requires 40ha and will create approximately 41-530 jobs. It is likely there is an error with the 530 figure as creating this number of jobs within an LCC is not a likely outcome.

The ME PSP provides concept plans for both Neighbourhood Activity Centres (NAC) to provide a broad framework for the configuration of these precincts in the future.

Figure 13 – Central and Northern NAC Concept Plans

What is 3L Alliance seeking?

51. A revised Economic and Retail Assessment should be prepared that accurately informs the commercial requirements for the ME PSP based on the adopted NDA & density targets.

52. It is critical that an objective be included in the ME PSP that recognises the importance of providing commercial/retail development that is responsive to the economic environment including local demands & that the PSP include some flexible wording that recognises that demands change overtime.

53. Table 10 be updated to reflect the accurate job figures.

54. Neighbourhood Activity Centre Concept Plans (Appendix 4) should be a guide only. A requirement should be included in the PSP for the approval of an Urban Design Framework for each of the Neighbourhood Activity Centres to ensure the NAC's are designed in a way that supports economic viability alongside required urban amenity.

3.7 ME PSP Infrastructure coordination

Staging

The ME PSP identifies two development fronts for Stage 1: Stage 1 West (west of Leakes Road) and Stage 1 North (north of Tarletons Road) with the balance land as Stage 2. Spiire has reviewed the staging approach proposed by the ME PSP and provides a range of recommendations to reduce cost and issues associated with neighbouring property access (see detailed staging memo included at Appendix 3).

3L's NH1 is the priority neighbourhood for the commencement of the ME PSP eastern growth front. This neighbourhood will unlock the balance of the PSP & ~5000 lots in Rockbank PSP. For development to commence access through 5 properties for drainage and 5 properties for sewer is required.

These properties not only need services extended through them, but also early CHMP and other investigatory works, which create significant lead times prior to commencing the design process. Any protracted negotiation with landowners will further delay the commencement of this PSP.

To provide development certainty neighbouring property access arrangements are required in addition to staging. Without these arrangements in place this is a significant risk to commence delivery of the ME PSP.

In relation to the northern Stage 1, we are uncertain of the viability for Stages 1 due to requirements for extensive drainage and sewer infrastructure. Our proposed alternate for Stage 1 significantly improves the opportunity for development to commence on both the eastern and western fronts.

Further, the ME PSP provides no directions in relation to when stage 2 could commence. We support the staging being a guide rather than explicit. From our previous experience it will be unlikely that land within stage 1 will be fully developed prior to demand for development within stage 2. *We note G46 in relation to out of sequence development, however the PSP could be reinforced to allow for appropriately sequenced development in the context of the staging plan.*

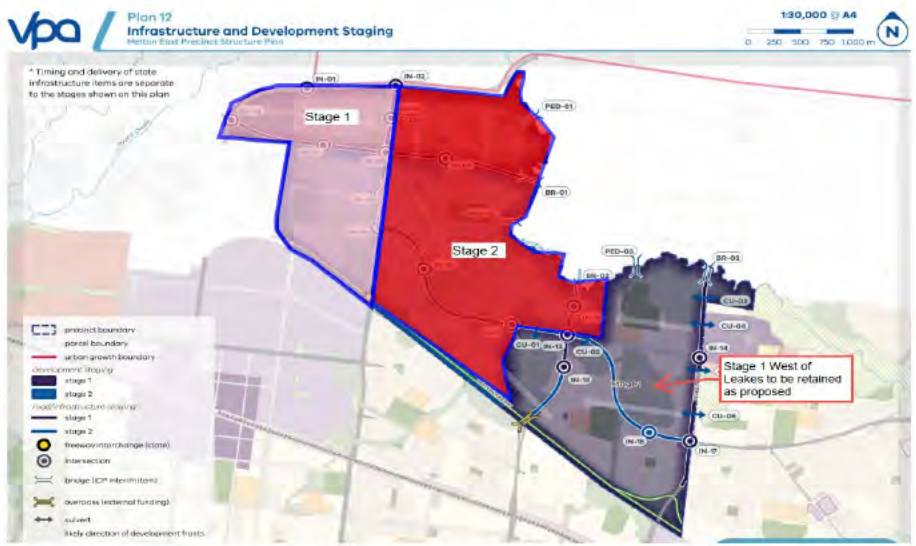

Figure 14 – Revised staging plan

What is 3L Alliance seeking?

55. As per the recommended approach to staging included at Appendix 3 and Figure 14, we seek:
    a) a revised staging approach to ensure orderly servicing and the delivery of incremental infrastructure to support the growing population;
    b) sub-staging which supports interim / part delivery of assets to reduce cashflow demands;
    c) the inclusion of mechanisms be built into the PSP to deal with access to neighbouring land that will be required for servicing and drainage purposes, for example, through the application of PAOs;
    d) the Beattys / Taylors Road intersection detail in Appendix 3 to access NH1; and
    e) flexibility to bring forward Stage 2 land where developers are prepared to fund infrastructure.

3. Infrastructure Contributions Plan

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Key ICP issues

Proposed levies

The proposed levies are considerably higher compared to all current 2024/25 ICP levy rates, with supplementary levies higher than the standard levy. Review is required of ICP to underpin affordability and ensure there is a level of charge that can be sustained.

Costing Basis

The transport construction costs appear to omit allowances for key components including earthworks, total land take, environmental and heritage. Seek confirmation regarding updating assumptions for costing of utilities, retaining walls and allowance for splays at intersections.

Funding Gaps

The proposed ICP includes $418M worth of projects of which $366M are apportioned to the proposed ICP and PSP area. The remaining $52M of supplementary transport items are apportioned to the neighbouring Warrensbrook ICP.

However, of the $90M of standard levy transport items only $74M will be funded via the standard transport levy leaving a $16M funding gap (we expect this to be more).

The proposed ICP also includes $103M of community and recreation projects. However, due to the capped standard levy only $52M will be recouped via the ICP, leaving a funding gap of $51M that the development agency must fund via alternative, as yet unidentified, sources of revenue.

The proposed ICP funding gaps pose implementation challenges as they impact the availability of funds to deliver projects in a timely manner.

Standard & Supplementary Levies Proposed

The proposed ICP introduces a standard and supplementary levy monetary component for both residential and commercial and industrial land uses which is estimated to raise approximately $298.6M for infrastructure, of which 57% or $172M is for supplementary transport projects.

The proposed ICP monetary component total levies include:

- $599,583 per net developable hectare for residential land uses
- $490,495 per net developable hectare for commercial and industrial land uses.

These proposed levies are significantly higher than all other previously approved ICP levies in 24/25 dollars. For example, existing ICP residential levies range from $256,650 - $371,991 per NDha and current ICP commercial and industrial levies range from $147,562 to $265,194 for 2024/25 financial year.

The high proposed levies are in a large part due to the projected population of 40,000+residents combined with a small NDA, as the total ICP construction costs are apportioned across the NDA.

The construction cost of the proposed 17 standard levy transport projects is $89.9M which equates to a levy of $179,089 per hectare. However, the capped standard levy rate for transport construction is $147,562 for the 2024/25 financial year which leaves a gap of $31,527 per hectare or >$16M which is unfunded (and is estimated to be higher ref pg. 49).

In addition, project ME-IN-12 appears to have been incorrectly classified as a standard levy transport item and project ME-IN-14 appears to have been incorrectly classified as a supplementary levy and as such they are inconsistent with the *Ministerial Direction on the Preparation and Content of Infrastructure Contributions Plans (February 2021).*

What is 3L Alliance seeking?

56. Impact on affordability to housing supply needs to be reviewed. For this PSP to be affordable the supplementary ICP needs to reduce inline with other recent PSPs (see Figure 15).

57. Further we seek review of the following:
    a) Project ME-IN-12 serves as a connector boulevard to a connector road intersection and can only be included in an Infrastructure Contributions Plan (ICP) as a supplementary levy item in accordance with Table 5 of the *Ministerial Direction on the Preparation and Content of Infrastructure Contributions Plans* (February 2021). Consequently, project ME-IN-12 should be removed from the standard levy project list and placed in the supplementary levy list; and

    b) Project ME-IN-14 does not meet the minimum construction cost as per 25(b) of the *Ministerial Direction on the Preparation and Content of Infrastructure Contributions Plans* (February 2021) therefore this should be classified as a standard levy item

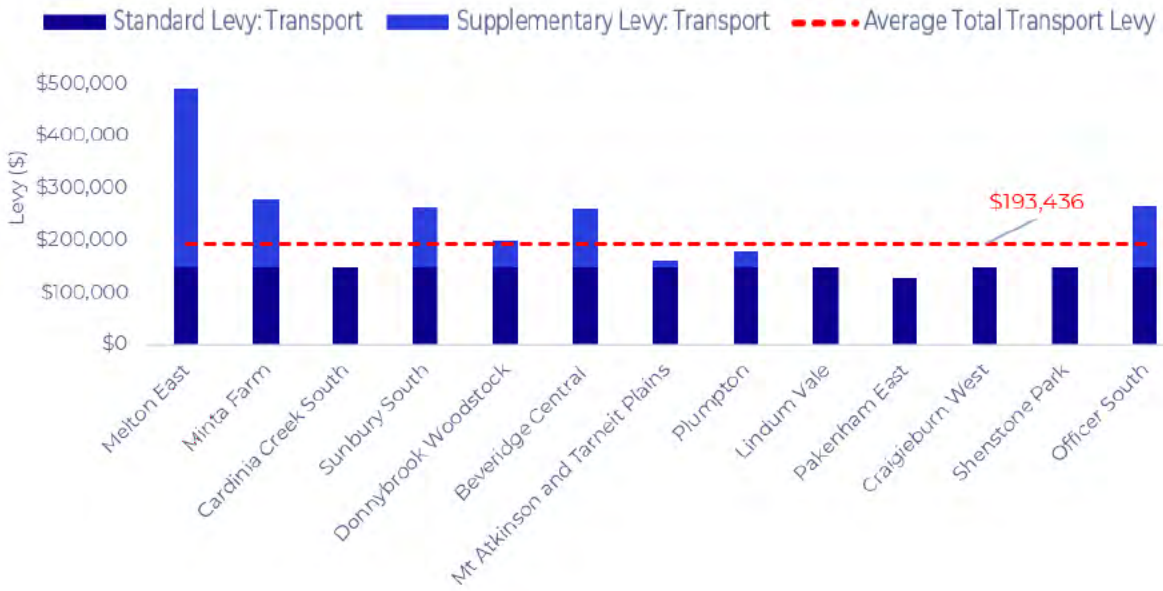

Figure 15: Comparison of ICP Transport Levies

Source: Ethos Urban, based on gazetted ICP documents. Values indexed to 2024/25 year.

Land Component

A land component is required under the proposed ICP to secure 77.1 hectares of land for inner public purpose land and the land contribution percentages required include: -

- 13.11% for residential land uses
- 10.06% for commercial and industrial land uses

There are several discrepancies as to the exact amount of inner public purpose land to be funded via the land component and whether the land for project SR-03A has been included. The table below sets out the various inconsistencies in the draft ICP that need to be corrected.

Inner public purpose land data inconsistencies throughout draft Melton East ICP, March 2025

Draft Melton East ICP Table Number	**Table 8**	**Table 9**	**Table 11**	**Table 16**	**Table 17**
Table Name	**Inner Public Purpose Land**	**Public purposes land summary**	**Public purpose land credit & equalisation amounts**	**Summary Land Use Budget**	**Parcel Specific Land Budget**
Total inner public purpose land (ICP Land)	82.83	77.10	77.10	92.11	77.10
Transport Land	31.90	35.66	35.66	35.66	35.66
Residential Community & Recreation Land	50.92	40.45	40.45	56.45	40.45
Commercial & Industrial Community & Recreation Land			1		1
Residential Total		74.62	74.62		
Commercial and Industrial Total		2.48	2.48		

What is 3L Alliance seeking?

58. That the discrepancy between the proposed ICP tables regarding the quantity of inner public purpose land that is funded via the land component is clarified and all discrepancies corrected.

59. Clarification regarding whether the 10 hectare land take for project SR-03A is included in the inner public purpose land.

60. That the land credit amounts and land equalisation amounts are made available so that landowners can review and that affected land owners are given notice in accordance with section 46GO if the *Planning and Environment Act 1987*.

Funding Gaps

The proposed ICP includes several funding gaps due to external apportionment and the application of the capped standard levy transport and recreation and community rates including:

Transport Standard Levy

$16M funding gap is created through the standard transport levy not collecting the necessary revenue to fund the $89M in transport construction costs.

Our initial review is that this $16M is underestimated by > $22M as a result of:

- Land take does not account for the full road reserve (splays, batters, services),
- Earthworks & ground conditions not properly accounted for
- Cultural Heritage and environmental cost not included

This >$38M funding gap is equivalent to a levy of at least $63kper contribution hectare

Transport Supplementary Levy

$52M assigned to future Warrensbrook ICP by way of external apportionment.

Community & Recreation Standard Levy

$51M funding gap due to cap of the community & recreation standard levy monetary component.

All funding gaps pose implementation challenges as they impact the availability of funds to deliver projects in a timely manner via either direct delivery as the collecting and development agency will need to source significant additional revenue or via works in kind as it is unclear how these funding gaps will impact on the credit value for projects delivered as works in kind.

What is 3L Alliance requesting?

61. We request that the cost for the ICP be reviewed in detail, and the real gap be confirmed:
    a) NDA be reviewed and any opportunity to reasonably increase NDA should be considered.

    b) remove the suggestion that the gap will be covered by 'Developers Works in Kind'. This is the same as increasing the supplementary levy and will directly go to the cost of housing. However, developers absorbing this gap via WIK will be unfairly disadvantaged them as they are carrying more costs; and

    c) External apportionment be reviewed, where infrastructure is of benefit to the region, then its funding should be externally allocated

    d) Confirm which assets the gap applies to, how they will be funded and when so that they can be properly accounted for in the ICP.

Costing Basis

In preparing the proposed ICP the VPA has applied its ICP DCP Benchmark Costs to all community and recreation construction costs. These are the 2019 VPA Benchmark costs that have been indexed to the current year. Application of the indexed VPA Benchmark costs to the community and recreation construction projects is considered standard practice.

Review of the indexed pavilion construction costs highlights that they do not reflect current order of costs and as a result these projects appear to be underfunded. SMEC has prepared all transport project costings and these have been reviewed by Stantec who note the following:

- The design plans prepared show that on the Primary Arterial Roads the footpaths are located outside of the standard 34m cross section. However, the cost of these have been included in the ICP. Specifically, this is shown on Mt Cottrell Road, Tarletons Road and Taylors Road.
- The roads within the ICP have been designed to be within one meter of the surface levels however it does vary to up to 3m on some roads. Notably, the drawings do not include batter slopes that identify the land take that will be required as a result of them. Our design review also indicates that there will be substantially more fill required to deliver the waterway and road infrastructure, particularly on Taylors Road. This has the potential to impact the NDA by up to 12,000 sqm.
- Allowance for flaring or splays at intersections has not been considered in land take areas, currently shown spilling into adjacent property boundaries. The cumulative result of all intersections could impact by up to 10,000sqm of land area.
- Allowance does not appear to have been made for relocation of existing utilities, retaining walls, or other infrastructure outside of the VPA's typical benchmark costing. There is a risk that the current costings do not make adequate allowance for actual construction works.
- Given the uncertainty in construction cost, we reserve the right to undertake a peer review of the costings by a quantity surveyor.

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[1] *ICP DCP Benchmark Costs - Annual Indexation | Calculations 2024-25*

What is 3L Alliance seeking?

62. Road costs to be updated so that footpaths outside the standard cross section are removed from the cost of the ICP.
63. Batter slopes to be included in the designs and calculation of land take requirements.
64. Land take calculations to include the full cross section including allowance for splays at intersections as per the Figure 16.
65. ICP to be updated to include assumptions around utilities, retaining walls or other infrastructure.
66. Request that the VPA will advance the designs to provide more detail on the items listed to minimise risk and provide more certainty on their cost, alternatively if sufficient contingency has been provided in the figures.
67. That the construction costs for the sporting pavilions are reviewed to ensure they adequately reflect current building costs.
68. BR-02 & RD-04-01 be removed from the ICP as they will only be required if the Paynes Road overpass is delivered. Timing of which is currently unknown.
69. Review the apportionment of supplementary ICP roads that will support transport external to the PSP including but not limited to BR-01 & BR-03.

Costing Basis (continued)

Paynes Road Bridge across Kororoit Creek (RD-04-01)

In relation to Paynes Road Bridge across Kororoit Creek we make the following comments:

- We note that RD-04-01 is designated as a Connector Street – Boulevard across Kororoit Creek, which is a single lane in each direction.
- We note that the cost of the bridge within the ICP is based on 2023 rates provided by GHD.
- It is recognised that the cost of the RD-04-01 has been removed from the ICP and the cost of the bridge across the Western Freeway will be delivered by the State. The delivery of the Paynes Road Bridge will have a direct implication on the need and performance of BR-02 as this provides a broader regional role.
- Paynes Road Designs for RD-04-02, RD-04-03 and RD-04-04 have been removed from the SMEC design and costing report.

What is 3L Alliance seeking?

70. That the land area for RD-04-01 be reviewed to match the cost and cross section of the bridge.

71. That the design be reviewed by a Quantity Surveyor to reflect recent cost escalation and construction costs.

72. That the VPA removes the cost of BR-02 from the ICP and be delivered by the State as part of the overall Paynes Road overpass project.

73. That the designs for RD-04-02, RD-04-03 and RD-04-04 be provided to confirm the land take requirements for the bridge, noting our position that the overall design of Paynes Road should be reviewed as part of the cultural and heritage outcomes.

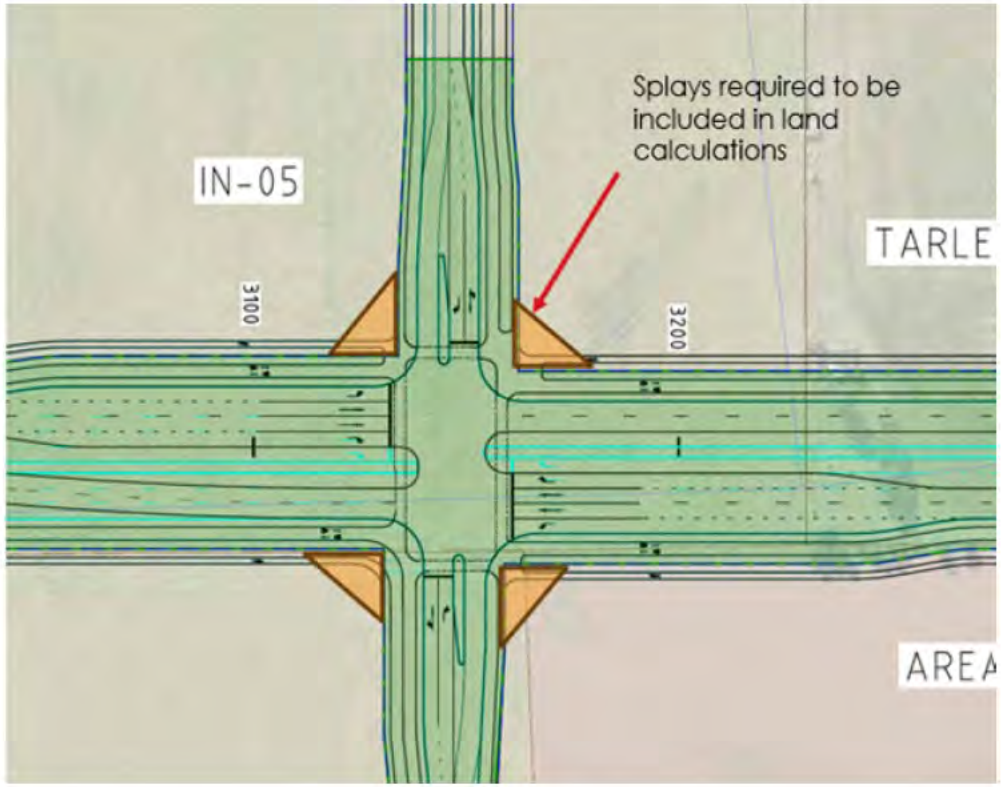

Figure 16: Land Take not recognized in Land budget

Typographical, drafting and calculation errors

A review of the proposed ICP has identified a number of typographical, calculation and drafting errors including: -

- Inconsistency in calculation of contribution land area. Table 4 of the proposed ICP states that the ICP plan applies to 593.98 hectares, known as the contribution land. However, this area does not align with the contribution area of 594.72 hectares identified in Table 17: Parcel Specific Land Budget of the proposed ICP. A comparison of the contribution area listed in Table 11 and that in Table 17 identifies that the discrepancy is attributed to parcels 76, 77, 78 and 79.
- Inconsistency in Arterial Road – Public Acquisition Overlay area. Proposed ICP Table 16 identifies 6.97 hectares whereas Table 17 identifies 6.23 hectares for this land classification.
- Inconsistency in calculation of inner public purpose land throughout the document.
- Clarification required regarding the regional sports reserve. Table 17 of the proposed ICP includes a column titled "Regional Sports Reserve (ICP land)" and a total area of 15 hectares is nominated for this project, however the 15 hectares which is shown to be split across parcels 55, 56 and 57 is not identified as 'Residential Community and Recreation hectares' and as such it is not included in the calculation of the total inner public purpose land.
- Project ME-IN-12 as it is a connector boulevard to connector road intersection and is therefore only able to be included in an ICP as a supplementary levy allowable item but is incorrectly classified as a standard levy item.
- The project titles are missing i.e. name of the road, intersection etc from Tables 5, 6 and 7.
- Plans 3 and 4 of the proposed ICP include a label SR-03B but there is no corresponding project in the Table 7.
- Section 5.13 of the proposed ICP only makes reference to the indexation of the standard levy rates, given a supplementary transport levy is proposed this section should also refer to the indexation of the supplementary levy.
- Section 2.4 states that the proposed ICP adopts a long term output but an estimated timeframe is not specified which is unusual.

What are 3L Alliance seeking?

74. That the land budget calculation errors, including calculation of the inner public purpose land and contribution land are addressed throughout the ICP.
75. Clarification is provided regarding how the regional sports reserve land will be funded.
76. Project titles are included in the ICP.
77. Provision for indexation of the supplementary levy is included in Section 5.13.
78. The proposed ICP timeframe is specified in Section 2.4

4. Planning Scheme Ordinance

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Planning Scheme Ordinance

Overview

On review of the planning scheme ordinance it is evident that the Schedules to the Urban Growth Zone (UGZ) (and IPO6) continue to evolve and become more onerous with every PSP that is approved. This includes requirements around Preliminary Risk Screen Assessments, ESD, Acoustic, Bushfire Management, sodic soils, conservation areas and pre European wetlands.

It is critical that developers are not required to prepare unnecessary technical work that provides minimal value to assessing permit applications.

Schedules are required to be drafted in a flexible manner that clearly state where a requirement is not relevant to a subject permit application and that those application requirements and or permit conditions will not be required as part of a permit application or subsequent permit.

In relation to the Incorporated Plan Overlay, Schedule 6 (IPO6), the Schedule references Plan 5, however the bushfire hazard plan is Plan 9 in the PSP.

Public Acquisition Overlays (PAO14 and PAO15) – On review of the proposed PAO there is concern that the alignments do not accurately represent the land required to deliver the intersections/road networks including land for splays, batters or other ancillary requirements for road construction.

What is 3L Alliance seeking?

79. That the Schedule is drafted in a flexible manner that clearly states where a requirement is not relevant to a subject permit application and that those application requirements and or permit conditions will not be required as part of a permit application or subsequent permit.

80. That ICPO6 be updated to reference the correct plan, that being the bushfire hazard plan, Plan 9 in the PSP.

81. That the PAOs are reviewed to ensure they include appropriate dimensions to incorporate the full land requirements to deliver the intersection/road and any other ancillary land requirements for the road construction.

Note: We will submit recommended changes to the planning scheme ordinance in the coming days.

5. Summary of issues/requests

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ME PSP	3L Alliance requests
2 PSP Outcomes	
Vision and Purpose	1. 3L has submitted an alternative proposal for the K6 wetlands which has been provided to Melbourne Water and VPA as part of the DSS workshops and now as part of this submission (ref Appendix 1). This proposal has been assumed in the FUS in Figure 3. Figure 3 demonstrates improved outcomes in relation to providing a northern connection into NH1 as well as improvements to NDA. The inclusion of a northern connection will significantly improve connectivity while also meeting the PSP vision by delivering a 'united' PSP. 3L seeks the following amendments to the PSP: a) The ME PSP FUS adopt the K6 principles in Figure 3, and access from Beattys Road directly to Property 73 is provided. b) Reference to 'best-practice urban design principles in natural settings' should be revised to include less ambiguous wording around any expectations on environmental performance in the PSP.
PSP Performance Summary	2. Average household size be revised down from 3.1 for ME PSP to reflect densities and smaller product mix. 3. For reasons discussed later in these submissions (see response to Viable Densities p19), it is our strong view that 40 dwellings per ha is not a viable development outcome within the context of ME PSP. A density target should be set at a minimum of 23 dwellings per ha for the whole PSP with objectives to ensure appropriate density is directed towards amenity areas. 4. A redistribution of open space to locate local parks away from arterial roads where possible to improve amenity and ensure that access standards per the PSP Guidelines are met, particularly as many of the 'gap areas' are located in areas where higher density is being sought by the PSP (see page 25 for further submissions on open space). 5. As per our submissions to the Kororoit DSS (Appendix 1) there is an opportunity to review the scale and function of the drainage assets which would significantly assist in increasing NDA across the PSP while also removing significant areas of constrained NDA. 6. Further refinement to the alignment of Taylors Road to 'hug' the resulting drainage area reducing land fragmentation (See Figure 3).

ME PSP	3L Alliance requests
3.1 Viable Densities	
Affordable Housing	7. Given the reduced NDA in this PSP, and the fact that the cost base is significantly higher than other PSPs, 3L considers that the percentage of affordable housing across the PSP should be reduced to 5% serviced lots at a 20% market discount. Any more than this will place excessive cost obligations on the developer which will add to the cost bases of all other dwellings and reduce overall affordability of housing in the area. 8. Further, in alignment with the Jetty Road Panel report commentary 3L submits that the following should be adopted: a) Express the Primary Obligation as a requirement to deliver a percentage of all housing as affordable, with flexibility in the way the obligation is delivered; and b) Delete all reference to how the affordable housing is to be provided across the subject land, including the references to the distribution, mix and design presentation of the affordable housing. 9. Relaxation of overly prescriptive housing types and locations to enable affordable housing where the land cost is lower. I.e. larger amount of small lot housing cost product in locations with min 20 dwellings per ha, or low amenity
Cumulative Impact of Development Constraints on Feasibility	10. Removal of average 40 dwellings/ha as an expected density within the PSP. 11. The requirement to distinguish between high amenity and amenity areas be removed. Amenity should be defined as per the PSP Guidelines – *"locations where communities will be naturally supported by key features such as open space, activity centres, community facilities and access to public transport."* 12. All amenity areas should be refined to seek a preferred density of minimum 30 dwellings/ha. 13. That an overarching PSP requirement for a minimum of 23 dwellings per ha be nominated to ensure appropriate densities are achieved across the PSP. 14. Densities be described as a minimum rather than an average. 15. The prescriptive nature of the requirements in the PSP should be reduced to allow a more adaptable response to housing diversity
Specialised housing forms	16. The requirement for specialised housing to be near amenity be removed. 17. Specialised housing may be located where feasible, desirable to the end users and relevant to the product type rather than as requirement of the density location.

ME PSP	3L Alliance requests
3.1 Viable Densities	
Frontages	18. Reword R5 to a guideline encouraging lots to front waterways, connector streets and open spaces where feasible. 19. Remove G11 from the ME PSP.
Rear loaded lots	20. Amend R4 to allow front loaded access to any lot width based on performance based criteria that demonstrate that the fronting street includes sufficient space for street trees at regular intervals and on-street visitor parking
Access to open space	21. The location of local parks be revisited to ensure equitable distribution and accessibility to the local park network across the PSP consistent with the PSP Guideline targets.
Acoustic wall	22. The requirement for acoustic treatments per cross section "Freeway Interface" be limited to the interface with the Western Freeway only
3.2 Safe, accessible and well- connected	
Road alignments	23. The Mount Cottrell/Taylors Rd intersection be moved further south to improve the development potential on the northern side of the intersection/road alignment. 24. The inclusion of an intersection at western end of Beattys Road - the inclusion of an intersection in this location to unlock NH1 and improve connective to the MAC (see Figure 3. point 2). 25. To improve the effective NDA, review of the alignment of Paynes Road over the freeway is essential to return it to a north south alignment which hugs the K4 wetlands
30% canopy coverage	26. The reduction of canopy tree coverage in the public realm from 30% to a minimum 10% and preferred level of 20% to align with the Townhouse and Low Rise Code.
Connector road access	27. That the wording of G11 be amended to allow lots with a frontage to a connector road to have direct access subject to the achievement of safe traffic outcomes.

ME PSP	3L Alliance requests
3.2 Safe, accessible and well- connected	
Laneway design	28. The removal of a maximum number dwellings per side to allow for flexibility in the delivery of different housing typologies within a given lane. 29. Removal of the need for 'direct line of view from a habitable room on an adjoining rear loaded dwelling' from G12, replace with ' buildings should ensure visibility and surveillance of the public environment.' 30. Total laneway lengths should be increased to 120m to support appropriate urban block lengths.
Standard road cross sections (Appendix 5)	31. Paths outside of the road cross section should not be included in the costing. 32. That separate road sections be provided for Mt Cottrell Road at key locations to provide confidence in future road interfaces. 33. Flexibility be provided on the type and number of paths to be required if there is not the traffic to support them. 34. Mt Cottrell Road reserve be reviewed.

ME PSP	3L Alliance requests
3.4 High Quality Public Realm	
Drainage Services Scheme	35. The preliminary DDS costing is requested urgently so that the cost base of developing the ME PSP is understood ahead of the Standing Advisory Committee. 36. Principles which should be adopted to improve NDA and reduces DSS are summarised below. a) Pre-European wetlands need to be identified upfront through the MSA and if not identified should be able to be removed. K4 & K6 were not identified in the MSA and should be removed. b) CVA & the ACHIA should be used as a guide to inform land planning and development outcomes only. c) Once cultural heritage values that have been ground truthed by way of Standard and Complex assessments under the CHMP process this should inform detailed design and land use and management of heritage values. d) Where there is the need for drainage assets, but it has been identified as sensitive under the AH regime, the areas should be subject to 'Cultural Heritage Investigations' until this work is completed. e) Wetlands should be considered as community assets rather than just drainage infrastructure and where possible should have multi-use functionality. f) Landowners that have DSS assets on their property should be fairly compensated for land required for the DSS where that land would otherwise be developable. *Note: Our full submissions to the DSS workshops provide alternate drainage solutions and area details in Appendix 1.*
Dry stone walls	37. R46 be amended to: a) allow modifications to the wall, subject to a planning permit process, that evaluates the need to impact the wall in the delivery of essential aspects of the PSP: roads services, wetlands; and b) give recognition to the need to potentially harm the wall, where the cost to retain will add excessive cost to the supply of housing.

ME PSP	3L Alliance requests
3.4 High Quality Public Realm	
Bushfire requirements	38. R51 & R52 be amended so that: a) They refer to the objectives in Clause 13.02-1S b) This is assessed at the time of permit application and when detailed design is completed. c) Design guidelines could be added but should be guidelines only. 39. Plan 9 be removed or included as indicative only. 40. If included Plan 9 should be noted as indicative only and: a) Remove bushfire hazards A from water corridors; and b) Areas A & B be noted only and subject to detailed assessment against Clause 13.02-1S. 41. Acknowledgment that areas within the ME PSP that will be removed from the Bushfire Prone Area in the future as development progress and reduces fire risk, AND that interim Bush Fore Safety measure may be required in the interim until they are removed from Bushfire Prone Area.
Aboriginal cultural heritage	42. The ACHIA and CVA reports be applied as per their intended purpose that being to guide to how development is undertaken. 43. The CH regime continue to apply to the management of CH values; and a) Where decisions need to be made on land use, but there is a high risk of potential heritage values, the ME PSP identify these areas as Cultural Value Investigation Area (similar to Officer South PSP) , to highlight that detailed design and land use is subject to a CHMP. This is particularly relevant for the K4 wetlands. 44. Plan 10 makes reference to potential rise area within the K6 wetlands, however the extensive cultural heritage field work undertaken by 3L cultural heritage consultant to ground truth cultural heritage values on site has not identified any rise areas/rocky outcrops in this locations (see Appendix 1 for further details). We therefore request: a) Plan 10 be updated to delete the reference to potential rise areas; and b) Clarification in regard to what living cultural values are is requested and how they impact urban development.
Conservation areas and services	45. Asset crossings in Figures 11 be included in Plan 6 and 7 of the ME PSP to ensure they are recognised within the PSP to and are appropriately planned for.

ME PSP	3L Alliance requests
3.4 High Quality Public Realm	
Conservation Area Concept Plans and Interface Cross Sections (Appendix 6)	46. Removal of reference to the Bushfire buffer per comments raised in Bushfire requirements (Slide 34).
Environmental Sustainable Design	47. The PSP rely on the existing ESD standard (NatHERS, IWM etc) and thereafter encourages sustainable outcomes, including but not by using local supplied and recycling wherever possible. 48. The requirement G35 be deleted due to being unnecessarily onerous.
Native vegetation retention and removal	49. We request that: a) The environmental value and treatment of the Pre-European wetland be consistent with the BCS. b) DSS supports drainage assets being organized in their most cost effective & functional locations subject to the ground truthing of Cultural Heritage values and agreement of management conditions under a Cultural Heritage Management Plan were required. c) The DSS encourages (not mandates) re-introduction of natural systems were reasonably viable long term. d) VPA clarify the implications (if any) of the vegetation in Plan 10 on development.
Services & Destinations	
Overview	50. R56 be amended to require a connector road on one frontage in accordance with Government's Guidance Criteria.
3.3 Connect people to jobs & 3.6 Thriving local economies	
Overview	51. A revised Assessment should be prepared that accurately informs the commercial requirements for the ME PSP based on the adopted NDA & density targets. 52. It is critical that an objective be included in the ME PSP that recognises the importance of providing commercial/retail development that is responsive to the economic environment including local demands & that the PSP to include some flexible wording that recognises that demands change overtime. 53. That Table 10 be updated to reflect the accurate job figures. 54. Neighbourhood Activity Centre Concept Plans (Appendix 4) should be a guide only. A requirement should be included in the PSP for the approval of an Urban Design Framework for each of the Neighbourhood Activity Centres to ensure the NAC's are designed in a way that supports economic viability alongside urban amenity.

ME PSP & ICP	3L Alliance requests
3.7 Infrastructure coordination	
Staging	55. As per the recommended approach to staging included at Appendix 3 and Figure 14, we request: a) a revised staging approach to ensure orderly servicing and the delivery of incremental infrastructure to support the growing population; b) sub-staging which supports interim / part delivery of assets to reduce cashflow demands; c) the inclusion of mechanisms be built into the PSP to deal with access to neighbouring land that will be required for servicing and drainage purposes, for example, through the application of PAOs; d) the Beattys / Taylors Road intersection detail in Appendix 3 to access NH1; and e) flexibility to bring forward Stage 2 were developers area prepared to fund.
Infrastructure Contributions Plan	
Standard & Supplementary Levies Proposed	56. Impact on affordability to housing supply needs to be reviewed. For this PSP to be affordable the supplementary ICP needs to reduce inline with other recent PSPs (see Figure 15). 57. Further we request review of the following: a) Project ME-IN-12 serves as a connector boulevard to a connector road intersection and can only be included in an Infrastructure Contributions Plan (ICP) as a supplementary levy item in accordance with Table 5 of the Ministerial Direction on the Preparation and Content of Infrastructure Contributions Plans (February 2021). Consequently, project ME-IN-12 should be removed from the standard levy project list and placed in the supplementary levy list; and b) Project ME-IN-14 does not meet the minimum construction cost as per 25(b) of the *Ministerial Direction on the Preparation and Content of Infrastructure Contributions Plans* (February 2021) therefore this should be classified as a standard levy item.
Land component	58. That the discrepancy between the proposed ICP tables regarding the quantity of inner public purpose land that is funded via the land component is clarified and all discrepancies corrected. 59. Clarification regarding whether the 10 hectare land take for project SR-03A is included in the inner public purpose land. 60. That the land credit amounts and land equalisation amounts are made available so that landowners and that affected land owners are given notice in accordance with section 46GO if the *Planning and Environment Act 1987*.

ME PSP & ICP	3L Alliance requests
Infrastructure Contributions Plan	
Funding gaps	61. We request that the cost for the ICP be reviewed in detail, and the real gap be confirmed: a) NDA be reviewed and any opportunity to reasonable increase NDA should be considered. For example, an increase of NDA by 26ha would address the $16M b) remove the suggestion that the gap will be covered by 'Developers Works in Kind'. This is the same as increasing the supplementary levy and will directly go to the cost of housing. However, developers absorbing this gap via WIK will be unfairly disadvantaged them as they are carrying more costs; and c) External apportionment be reviewed, where infrastructure is of benefit to the region, then it should be externally allocated d) Confirm which assets the gap applies to, how they will be funded and when so that they can be properly accounted for in the ICP.
Costing basis	62. Road costs to be updated so that footpaths outside the standard cross section or removed from the cost of the ICP. 63. Batter slopes to be included in the designs and calculation of land take requirements. 64. Land take calculations to include the full cross section including allowance for splays at intersections as per the figure below. 65. ICP to be updated to include assumptions around utilities, retaining walls or other infrastructure. 66. Request that the VPA will advance the designs to provide more detail on the items listed to minimise risk and provide more certainty on their cost, alternatively if sufficient contingency has been provided in the figures. 67. That the construction costs for the sporting pavilions are reviewed to ensure they adequately reflect current building costs. 68. BR-02 & RD-04-01 be removed from the ICP as they will only be required if the Paynes Road overpass is delivered. Timing of which is currently unknown. 69. Review the apportionment of supplementary ICP roads that will support transport external to the PSP including but not limited to BR-01 & BR-03. 70. That the land area for RD-04-01 be reviewed to match the cost and cross section of the bridge. 71. That the design be reviewed by a Quantity Surveyor to reflect recent cost escalation and construction costs. 72. That the VPA remove the cost of BR-02 from the ICP and be delivery by the State as part of the overall Paynes Road overpass project. 73. That the designs for RD-04-02, RD-04-03 and RD-04-04 be provided to confirm the land take requirements for the bridge, noting our position that the overall design of Paynes Road should be reviewed as part of the cultural and heritage outcomes.

ME PSP & ICP	3L Alliance requests
Infrastructure Contributions Plan	
Typographical, drafting and calculation errors	74. That the land budget calculation errors, including calculation of the inner public purpose land and contribution land are addressed throughout the ICP. 75. Clarification is provided regarding how the regional sports reserve land will be funded. 76. Project titles are included in the ICP. 77. Provision for indexation of the supplementary levy is included in Section 5.13. 78. The proposed ICP timeframe is specified in Section 2.4
Planning Scheme Ordinance	
Overview	79. That the Schedule is drafted in a flexible manner that clearly states where a requirement is not relevant to a subject permit application that these application requirements and or permit conditions will not be required as part of a permit application or subsequent permit. 80. That ICPO6 be updated to reference the correct plan, that being the bushfire hazard plan, Plan 9 in the PSP. 81. That the PAO's are reviewed to ensure they include appropriate dimensions to incorporate the full land requirements to deliver the intersection/road and any other ancillary land requirements for the road construction. *Note: We will submit recommended changes to the planning scheme ordinance in the coming days.*

Appendices

mesh

Appendix 1: Submissions to DSS

MEMO

To:	Melbourne Water and VPA
From:	[redacted] on behalf of **3L Alliance**
Date:	21 March 2025
Reference:	307078
Project name:	Melton East DSS
Subject:	DSS Workshop 4- Northern Portion of DSS and Kororoit Creek Outfall

0. PURPOSE OF MEMO

Spiire are engaged by 3L Alliance to provide drainage advice and design solutions for the Melton East PSP and the associated land parcels in their ownership.

As such, Spiire have reviewed the *Kororoit Creek Upper and High Street Melton, DSS Design, Functional Design Report* prepared by Alluvium Consulting (Feb 2025).

This memo provides details of concerns, and suggested improvements to the DSS for the **South East Portion (K6 depression and downstream outfall to Kororoit Creek)**.

This memo is an expansion on the memo completed for Workshop 3, completed on the 14th march 2025. This memo includes discussions around K4 and K6 depressions and how they may be resolved.

1. ECOLOGY ASSESSMENT

SMEC Australia Pty Ltd (SMEC) was commissioned by 3L Alliance to undertake a ground-truthing exercise of the two depressions south of Beattys Road, Grangefields. The full review is within the appendices of this report and thus below is the key outcomes of SMEC's review.`

Melbourne Water Melbourne Water's Draft DSS proposes a functional design premised on preserving areas it considers to be of 'high sensitivity'. We summarise the potential for environmental values in this area so they may be considered in any alternative design solution:

- Melbourne Strategic Assessment (MSA) area. The MSA framework is designed to streamline development approvals in growth areas by imposing a levy on development which can then be used to offset the environmental impact of such development, in accordance with the Melbourne Strategic Assessment (Environment Mitigation Levy) Act 2020 (MSA Act). Under the Melbourne Strategic Assessment K6 has not strategic environmental value, which cannot be dealt with by way of offsets.

- Rakali (2013) report identified the K4 and K6 wetland as not supporting the SHW with no indicator flora species identified, and an Index of Wetland Condition (IWC) score of 4 (poor). The assessment identified the wetland as supporting Plains Grassy Wetland (EVC 125) and Plains Swampy Woodland/Lignum Swamp Complex (EVC 784) (Rakali 2013). While not classified as SHW, the Plains Swampy Woodland/Lignum Swamp Complex EVC was considered a significant component of the wetland, providing wildlife habitat and mature River Red-gums providing amenity and aesthetic value (Rakali 2013). The K6 wetland was also considered to provide potential habitat values for Growling Grass Frog (Rakali 2013).

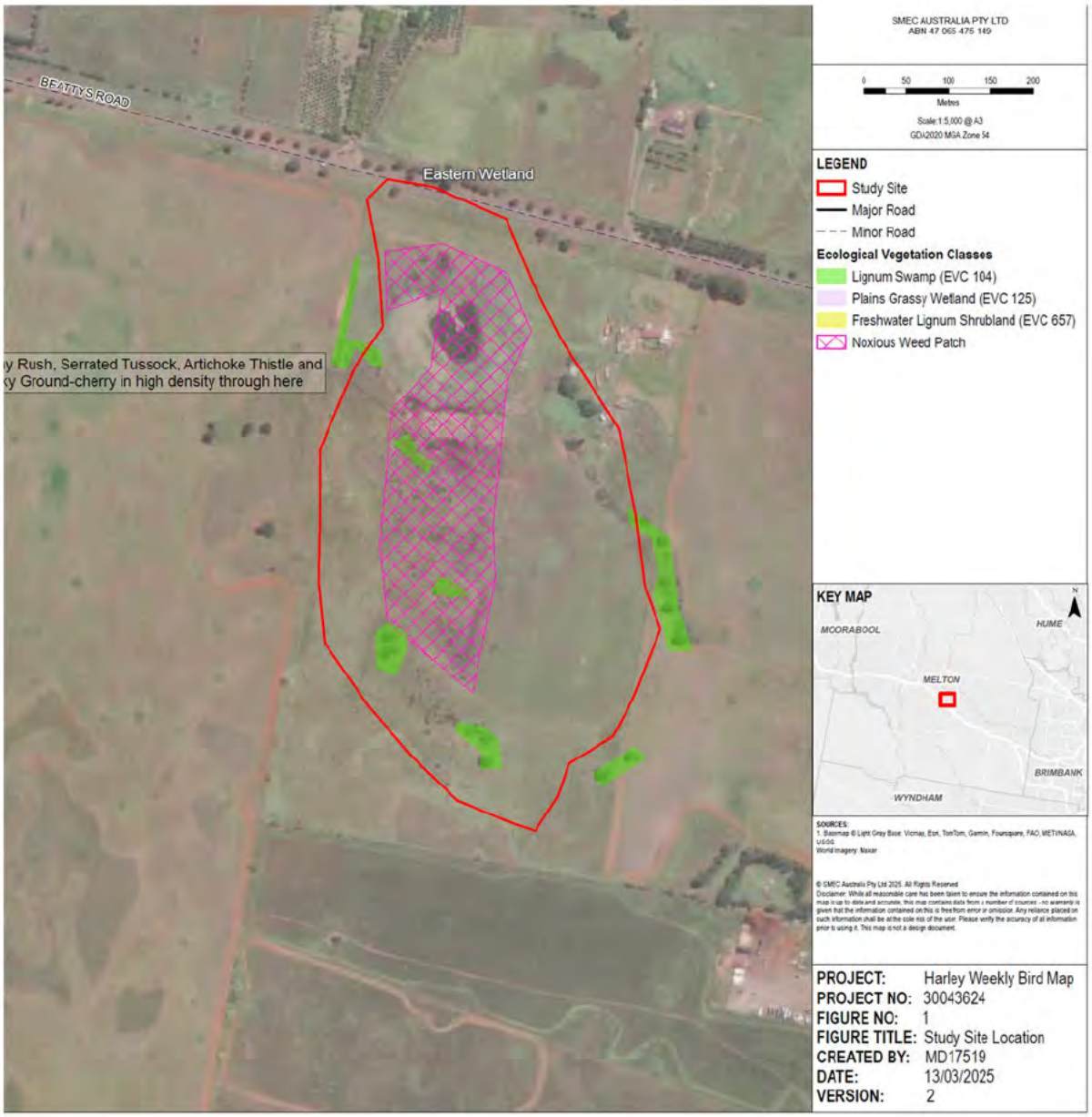
- Rakali (2020) did not cover K6.

- Ground Water Dependant Eco System: K6 is identified is incorrectly identified as 'high potential GDE' when it mapped as medium potential GDE'. From ground truthing we expect there is no GDE. Note: SHW & GDE cannot occur in the same location. The water regime supports one or the other.

- Site Survey SMEC Environmental 5th March 2025: It is noted that the northern portion of the K6 wetland has a constructed dam which would likely restrict the spread of water from the wider wetland extent. This would require filling and reshaping of previously excavated spoil to facilitate water entering the remainder of the wetland area to the south. Additionally, wetland K6 has a significant cover of weeds including Spiny Rush. While many of the terrestrial weed species are likely to perish with inundation (e.g. Serrated Tussock, Stick Ground-cherry etc.), Spiny Rush is a wetland adapted species and without removal, would likely spread further across the K6 wetland area. Seed material may also be transported downstream and establish in other wetland or waterway areas, potentially leading to further infestation and displacement of native vegetation outside of the Melton East PSP. To achieve the above interventions, significant ground disturbance is likely to be required within wetland K6.

So, currently there is **no evidence** of there being environmental values other than the EVCs recorded in K6, and left as is this depression proposes a threat to down stream eco systems. SMEC notes that environmental values could be introduced through careful planning of this area and control of the water flow regime.

The alternative design of K6 utilises the existing farm dam as the location for a stormwater wetland and integrates another two stormwater assets around the margins of the K6 depression. This option may provide breeding opportunities for Growling Grass Frog. Alternatively, to support the SHW in the future, SMEC recommends investigating the feasibility of installing a structure (such as bunding set at the appropriate level with high flow bypass) to enable the remaining area of the K6 wetland area to be intermittently flooded annually. Both opportunities should be explored with any alternative design. The full SMEC report can be provided on request.


BEATTYS ROAD
Eastern Wetland
y Rush, Serrated Tussock, Artichoke Thistle and
ky Ground-cherry in high density through here
SMEC AUSTRALIA PTY LTD
ABN 47 065 475 149
0 50 100 150 200
Metres
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GDA2020 MGA Zone 54
LEGEND
Study Site
Major Road
Minor Road
Ecological Vegetation Classes
Lignum Swamp (EVC 104)
Plains Grassy Wetland (EVC 125)
Freshwater Lignum Shrubland (EVC 657)
Noxious Weed Patch
KEY MAP
N
MOORABOOL
HUME
MELTON
BRIMBANK
WYNDHAM
SOURCES:
1. Basemap © Light Grey Base: Vicmap, Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS
World Imagery: Maxar
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Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, this map contains data from x number of sources - no warranty is given that the information contained on this is free from error or omission. Any reliance placed on such information shall be at the sole risk of the user. Please verify the accuracy of all information prior to using it. This map is not a design document.
PROJECT: Harley Weekly Bird Map
PROJECT NO: 30043624
FIGURE NO: 1
FIGURE TITLE: Study Site Location
CREATED BY: MD17519
DATE: 13/03/2025
VERSION: 2

2. CULTURAL HERITAGE VALUES ASSESSMENT

Jodie Mitchell, principal heritage advisor at Alpha Archaeology Pty Ltd, has undertaken a review of a number of background reports directly related to the Melton East PSP. The full review is within the appendices of this report and thus below is the key outcomes of Alpha's review.

The CVA included Statement of Significance on page 3 states "…where harm cannot be avoided, proper management of the disturbance of those values, and the protection and revitalisation of those values is integral in the management of these significant cultural places".

The ACHIA involves a very broad scale standard assessment was undertaken; over 1,000 hectares of land sample surveyed in 4 days. This provides a broad-brush predictive modelling for 'potential' Aboriginal heritage and recommends further measures to be undertaken to properly determine values and thereafter manage them.

The outcome of this that a CHMP would be required 3L's Neighbourhood One, which includes testing for standard and complex assessments

Pre-empting this requirement and on 3L's behalf, over the past year Alpha has progressed works to support the CHMP. In doing so has completed almost 90 days of fieldwork for the standard and complex assessments. The results of this intensive archaeological investigation have resulted in a number of Aboriginal Places (AP) being discovered and subsequently registered. These findings were not considered in the ACHIA, and in fact are the next level of detailed required to avoid and minimis harm. The majority of the Aboriginal Places (AP) found are located within the 1031 Beattys Road property.

These findings have informed the K6 Depression Optimisation design and have resulting in **less harm** than the proposed MW DSS K6 and associated wetlands design.

A Summary of Aboriginal Places/Artefacts Impacted below:

MW DSS plan impacts	Spiire – K6 Depression Optimisation
Drainage Assets: *Beattys Rd Grangefields LDAD1 (VAHR 7822-4937)* ○ 2 artefacts impacted by the drainage basin located on the north side of the waterway running between the two depressions. ○ 1 artefact impacted by pipeline at north end of 1031 Beattys Rd property. ○ 1 artefact impacted by pipeline on west side of 2414 Western Highway property. *1031 Beattys Rd LDAD1 (VAHR 7822-4937)* ○ 1 artefact impacted by the SE drainage basin (just under AS3 scatter), ○ 2 artefacts impacted by waterways running through 1031 Beattys Rd property. *1031 Beattys Rd AS8 (VAHR7822-4933)* this is a large artefact scatter comprising 70 flaked stone artefacts found on both the surface and subsurface. The waterway runs right through the place. *Kororoit Creek LDAD 1 (VAHR 7822-4657)* a cluster of 5 artefacts are impacted by the SE drainage basin, and a further artefact impacted by the waterway that runs east out of 1031 Beattys Rd property. *Beattys Rd Grangefields AS1 (VAHR 7822-4936)* this artefact scatter comprises 37 flaked stone artefacts. It will be impacted by a pipeline. *1031 Beattys Rd AS10 (VAHR 7822-4934)* this artefact scatter comprises 101 flaked stone artefact and will be impacted by a pipeline. **Taylors Rd PSP alignment** Avoids impacts to all Aboriginal Places.	**Drainage Assets:** Avoids impacts to all Aboriginal Places. **Taylors Rd Spiire re-alignment** A small cluster of artefacts would be impacted by the re-alignment, totalling 5 artefacts from the following Aboriginal LDADs *1031 Beattys Rd LDAD1 (VAHR 7822-4937)* ○ 1 artefact *Beattys Rd Grangefields LDAD1 (VAHR 7822-4937)* ○ 3 artefacts *Kororoit Creek LDAD 1 (VAHR 7822-4657)* ○ 1 artefact

3. CO-LOCATION OF ASSETS WITHIN **K6 DEPRESSION**

Spiire has reviewed the hydrological and hydraulic arrangement of the K4 and K6 depressions along with the supporting documentation and studies made available by Melbourne Water as part of the PSP consultation process. This includes the location of assets surrounding both depressions.

Issue/Opportunity:

- Spiire has reviewed the hydrological, hydraulic arrangement of the K6 depression. This also includes the water quality assets surrounding the K6 depression.
- Key points are as follows:
  - There has been no consideration of the future amenity and community interface to this asset.
  - The configuration of Melbourne Water's DSS (refer Figure 56 in Alluvium 2025) identifies complete avoidance of K6 depression rather than integration of drainage assets that are compatible with the land.
  - The K6 depression area is highly disturbed and has been farmed for many years.
  - K6 is not reported to have a retardation function within the Alluvium Functional Design Report. That being said the Hydrological model (RORB) has been setup with some consideration of storage, however K6 outlet configuration is very inefficient.
  - Both our ecological assessment above and noting there is no reported flood storage requirements needed within the depression, put into question the need for the significant land take of the K6 depression area.
  - The current low-flow bypass is directed through the middle of the biggest artifact scatter in the K6 depression.
  - Rakali (2013) identified the K6 depression as not supporting the SHW with no indicator flora species identified, and an Index of Wetland Condition (IWC) score of 4 (poor). The assessment identified the wetland as supporting Plains Grassy Wetland (EVC 125) and Plains Swampy Woodland/Lignum Swamp Complex (EVC 784) (Rakali 2013). While not classified as SHW, the Plains Swampy Woodland/Lignum Swamp Complex EVC was considered a significant component of the wetland, providing wildlife habitat and mature River Red-gums providing amenity and aesthetic value (Rakali 2013). The K6 wetland was also considered to provide potential habitat values for Growling Grass Frog (Rakali 2013).
  - K6 depression does not currently support the site conditions to be considered the SHW community. There is potential that the SHW community could occur in the future, under improved land management practises including weed management and implementation of a more natural wetting and drying hydrological regime.
  - There appears to be an incompatibility between the hydraulic arrangement described within the eco-hydrology model and the report. Within figure 75 of the report, pictured below, a low flow bypass is shown trisecting the existing depression. Spiire understands that the low-flow pass is intended to let regular flows (0.9 m^3/sec) to bypass the K6 depression, with flows exceeding this to surcharge into the depression. This arrangement is intended to manage developed flows while also retain as much as possible the historical wetting regime of the depression. The use of the term 'historical' is not explained within the report.

– In our opinion the “historic” wetting regime would have only been the rainfall that falls within the depression. Hence it would not have great depth’s of water and would be more “water logged” in wet periods. Our modelling shows K6 as holding water for 10% of the time.

– Water balance models with large infiltrating areas are highly sensitive to the exfiltration rate applied within the model. It is unclear how this rate was chosen Spiire adopted the value from the recurved model.

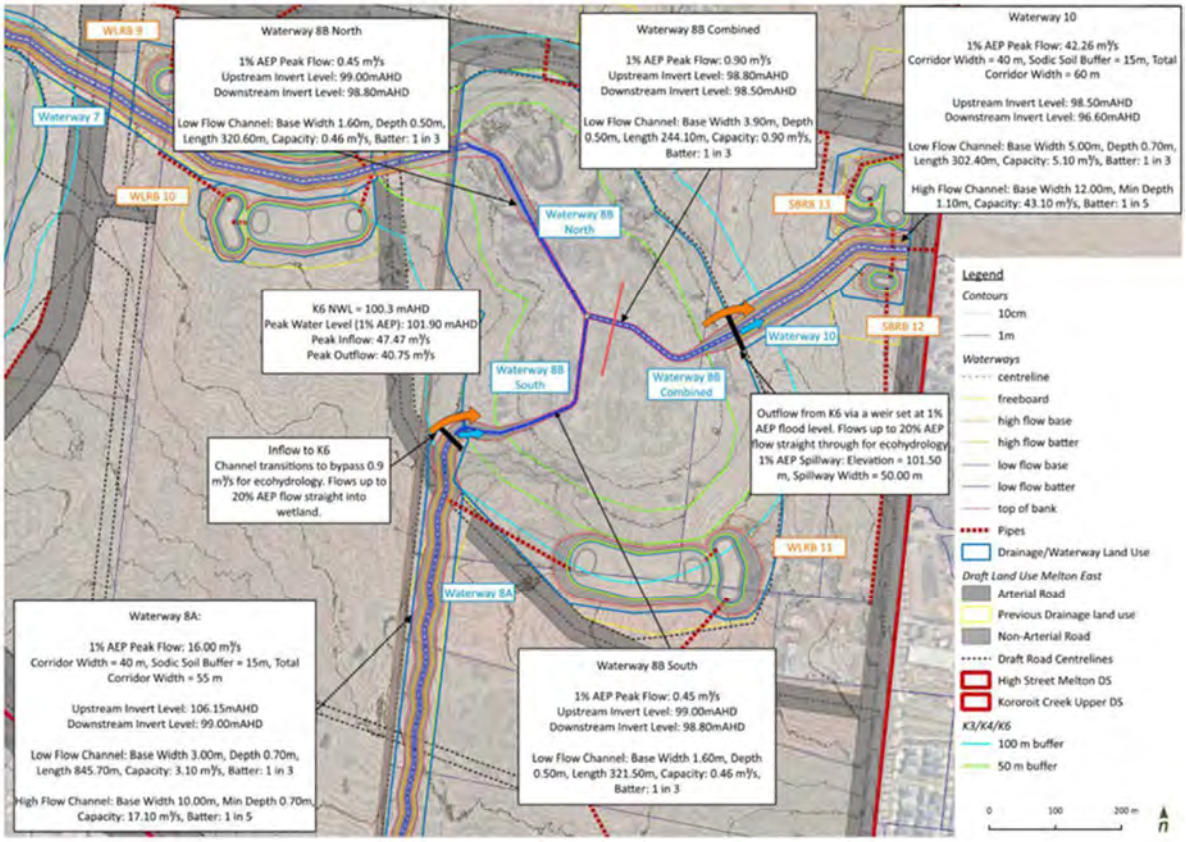


Figure 75. *Waterway 8&10 functional design (Kororoit Creek Upper DSS)*

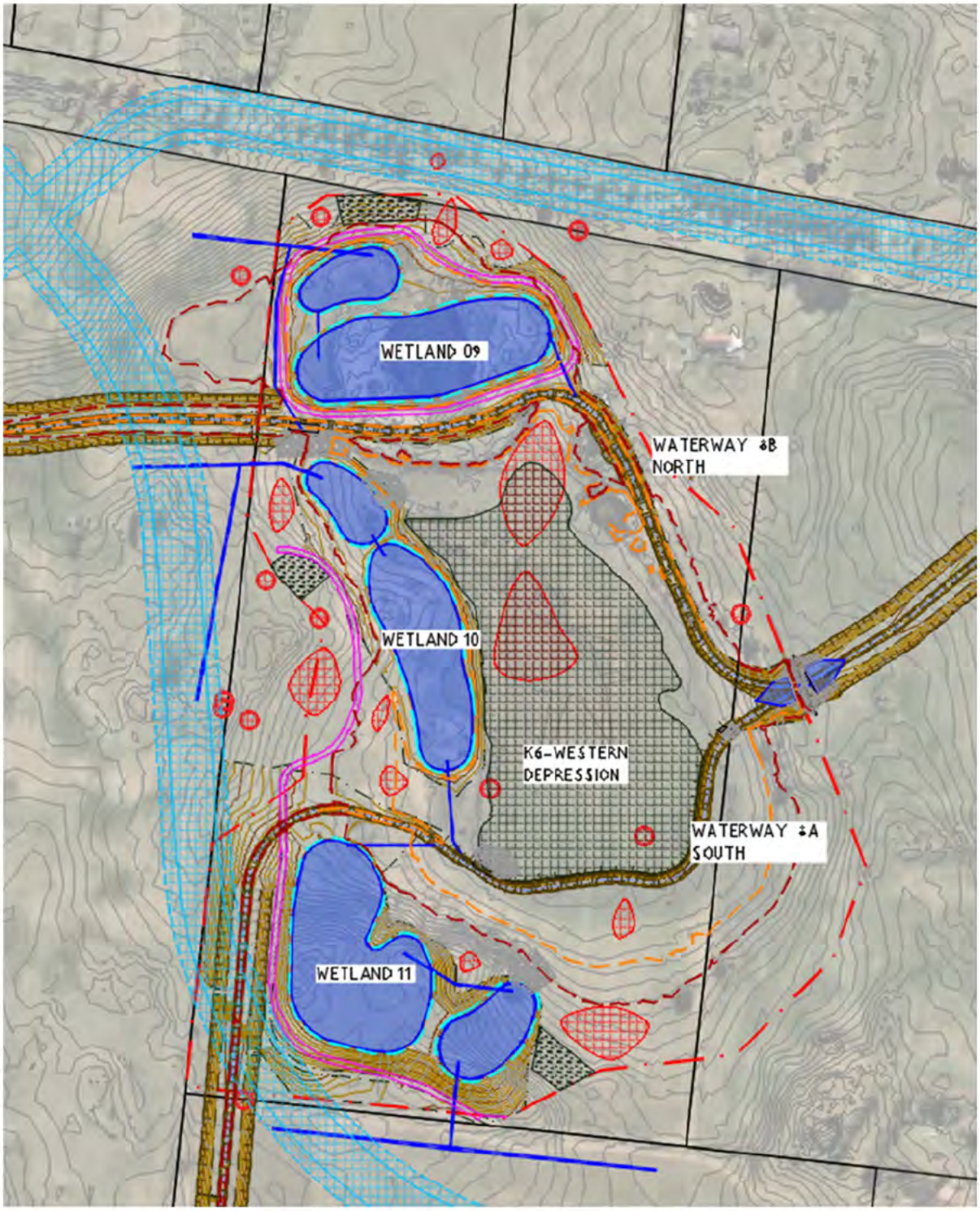
– According to figure 75, the low -low bypass is free draining up until the 20% event, however the K6 depression is intended to hold water for an extended period.

– The pond node, representing K6, within the MUSIC model does not have a free flowing outlet until the water reaches 1.0 m of depth. This contrasts with having an outlet free flowing up to the 20% event at the invert of the depression.

– In-line with Figure 75, at an outflow of 0.9 m3/sec the pond will empty within 72 hours from full. The volume for this was taken from the music model.

3.1 Solution

Spiire have iterated and refined from the proposed DSS to determine how the K6 depression can be optimised to the urban form and ecological function, the image below details a concept landscape plan and the functional design of K6 is attached.



The key aspects of the solution are as follows:

- As per the cultural heritage assessment above this proposal has no impacts on cultural heritage artefacts within the depression. All proposed assets within the K6 depression can be constructed with acceptable slopes (flatter than 1 in 6) and horizontal offsets.
- The potential for environmental management has been retained and improved.
  - Twin low flow bypasses maximise the area allotted for the SHW basin. Waterway 8B south and waterway 8B north now meet at the outlet of K4.

- A bund, approximately 0.5m high, running the length of waterway 8B South, within K6, on the side of the SHW (northern bank) creates a contained basin to retain ecohydrological flows. Water within the basin will either infiltrate or evapotranspirate.

- High flow diversion structures have been proposed and located to divert high flows from Waterway 8B North and South into the SHW basin, when inflows reach 7.5 m^3/sec, flows above this will be diverted into the SHW basin.

- An emergency and maintenance outlet for the SHW basin has been proposed and located. This will allow the SHW basin to empty (not withstanding existing local depression within this area) to increase flood storage within K6 and allow for maintenance works.

- An over flow weir from the SHW basin to the K6 outlet will be located atop the maintenance outlet structure to localise flow and prevent erosion of the Waterway 8B bund.

- Flows > 4EY from WL10 will flow directly into the SHW basin to simplify the design and maintenance for this asset. This has been accounted for within the bater balance modelling.

- Engineering levels of wetland 09 and 10 have been assessed to ensure functionality, further minimisation of engineered fill, free draining outfalls.

  - WL 09 NWL has been dropped from 101.50 to 99.25 m, reducing the fill required.

  - WL 10 NWL has been dropped from 100.00 m to 99.5 m, reducing the fill required.

- Concept for revitalisation and much improved amenity. Within the K6 reserve there is ample area for the unencumbered open space above the 10%AEP flood level (100.12 mAHD).

  - The proposed bund currently sits 0.12 m below the 10% AEP flood level. With refinement this could be raised to be above the 10%AEP flood level or a boardwalk to create public access and amenity opportunities.

- Reduced construction complexity and costs can be achieved by moving water quality assets into the K6 depression.

  - Matching assets to the existing surface and as the wetland do not require their own flood storage, the volume of cut required for construction is reduced.

  - Bypass structures can be removed or simplified (I.e. channels rather than pipes) due to the assets proximity to nearby assets (bypass channels, SHW basin, etc.) that can readily accept bypassed flows.

- We recommend shifting Taylors Road further east and improve the functionality of the urban form.

- No impact to storage volume of basin, even though flood mitigation has not been required by MW.

  - Flood storage has been assessed with climate changes 1% AEP and 10% AEP indicated within the plans.

  - K6 can act as flood storage without flood storage needing to be constructed (I.e. excavated).

- Wetland 10 and 11 being located within the bank, rather than the base of a retarding basin, will be over-inundated less often. 1% AEP flows are diverted before the macrophyte zone, nullifying the impact of shear force by flow velocities in these events. Together this improves the conditions for plant survival.

- Wetland 09 will have the same immunity to 1% AEP events as previously proposed in the Alluvium FD.

- There is further opportunity for refinements and reducing the area of the depression on the basis that environmental considerations.
- Potential opportunity to contain depression land take to single land title.
- Further refinement of this arrangement will occur within following design stages.

Cost Analysis:

Relocating assets WLRB9, WLRB10 & WLRB11 into the K6 depression will result in a reduced land cost of $24.25m to the DSS as reimbursements will no longer be due on the land associated with these assets.

Asset	Area	$/ha		Cost
WLRB 9	3.6	$ 2,500,000.00	$	9,000,000.00
WLRB10	2.8	$ 2,500,000.00	$	7,000,000.00
WLRB11	3.3	$ 2,500,000.00	$	8,250,000.00
Total Land Cost			$	24,250,000.00

Summary

- The proposed design has a $24.5M land cost benefit.
- The design now provides multiple benefits, reduces harm further to previous concepts whilst maintaining the functionality of drainage and environmental considerations.

Suggested Actions:

- MW to review the concepts and indicate whether they concur that the proposed design can be
- Spiire/3L to further document technical performance of
- VPA to engage the RAP if MW is in principle agreement to the proposal.
- MW to review technical considerations in the coming weeks.

4. CO-LOCATION OF ASSETS WITHIN K4

Issue/Opportunity:

Significant area has been set aside Cultural Values without them being ground truthed in accordance with Aboriginal Heritage Regulations. As detailed earlier in this document ACHIA provided Predictive Archaeological Sensitivity maps, that were intended to be used as a broad guide only. It was recommended in both the ACHIA and CVA reports that CHMP assessments should be undertaken, with the results of these more intensive field assessments then informing any drainage designs.

Unlike K6, there has been no standard or complex assessment over these activity areas to inform a CHMP and in turn design. As such, any design proposed may result in disturbance which is unacceptable to the RAP (noting the proposed new wetlands outside the depression). Alternatively, more intensive field assessment may disprove the potential values proposed ACHIA thus providing opportunity to consolidate drainage assets in the depression and improve opportunities for environmental values (ref Growling Gress Frog Guidelines). Like K6, consolidating wetlands may also reduce harm if the wetlands outside of the depression are found to be in the locations of Scatters.

As such, our client requests is that this area be defined as the 'Cultural Value Investigation Area' in the PSP (refer Officer South PSP precedent) so that the necessary CHMP and supporting assessment can be completed which is essential to properly identify and manage Heritage values.

Assuming the retention of the depression is required, Spiire has reviewed the hydrological, hydraulic arrangement of the K4 depression. This also includes the water quality assets surrounding the K4 depression.

Key points are as follows:

- Rakali (2013) identified K4 as having high potential to be very high quality SWH, despite a lack of indicator species, and considered to provide potential habitat values for Growling Grass Frog (Rakali 2013). K4 was described as having an EVC of plains Grassy Wetland & Freshwater lignum Shrubland. The assessment noted that K4 should be considered, 'high quality until proven otherwise' and that an additional survey should be undertaken, 'under appropriate conditions.'

- Currently K4 forms the pumped outlet pond from the Thornhill Park Development. Stormwater collects here after rain events and is then pumped to Kororoit Creek. It is not known the impact of this arrangement has had on the ecology within the depression. This arrangement occurred following the Rakali 2013 study.

- For the Alluvium functional design the following are noted:

  - 1% AEP spillway (104.5 m) within the K4 depression is higher in elevation than the low-flow inlet weir (103.6 m). The 1% AEP outlet flow is totally accounted for by the 1% spillway. As the low flow spillway will be inundated, backflow over this will occur.

  - K4 is not described as a retarding basin within the functional design report developed by Alluvium however is modelled as so within the hydrological model. The outlet arrangement does not include the low flow inlet spillway.

  - K4 featured no provision to outlet stored volumes below the 1%AEP spillway, this would cause extended over-inundation of the upstream wetland within Thornhill Park, negatively affecting plant survivability within that asset.

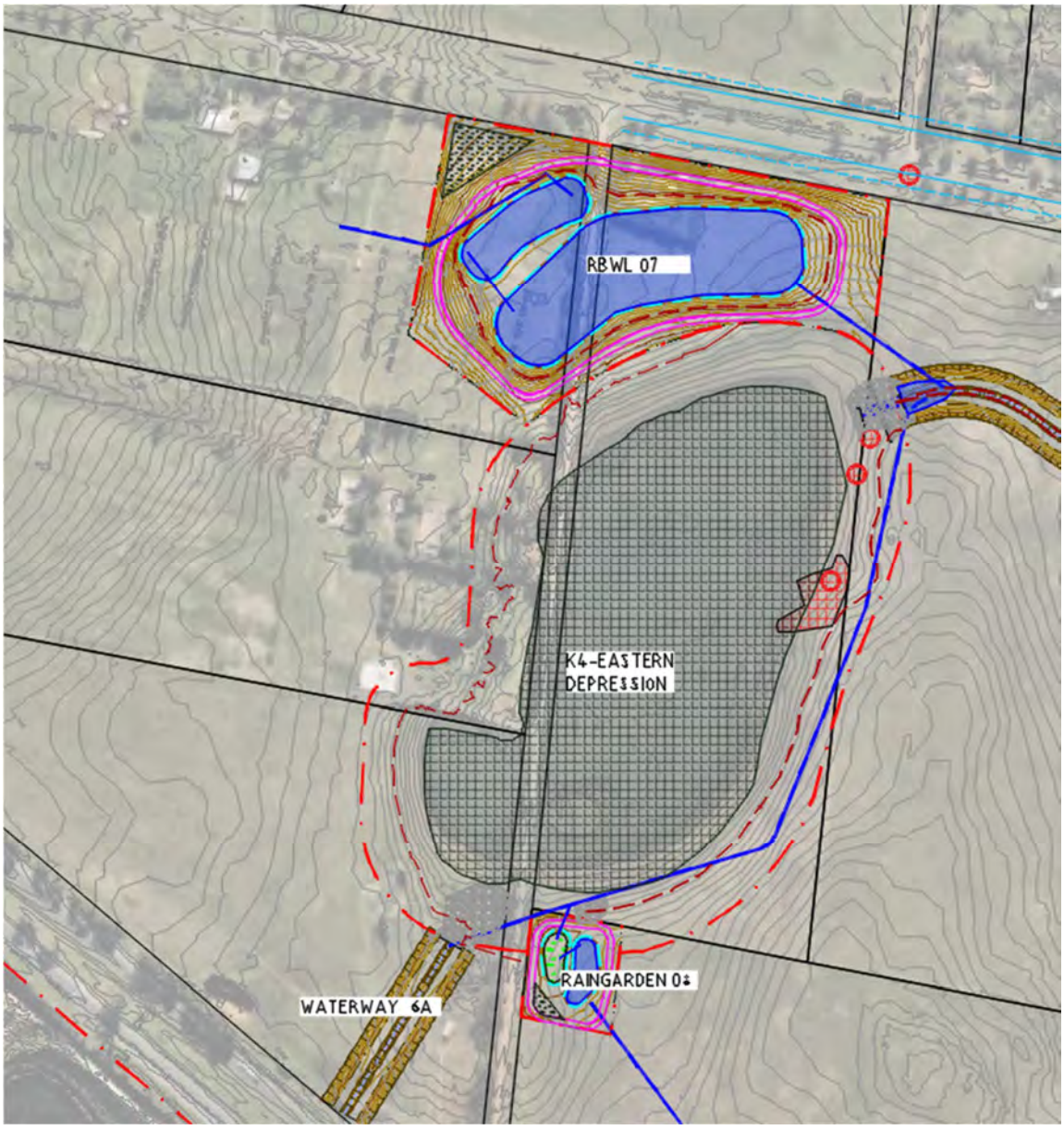
  - Water balance models with large infiltrating areas are highly sensitive to the exfiltration rate applied within the model. It is unclear how this rate was chosen Spiire adopted the value from the received model.

  - The construction of a waterway to convey 0.2 m3/sec is excessive.

- Spiire has modelled that a low-flow diversion of 2.0 m3/sec around K4 would best replicate the pre-development wetting regime of K4.
- Within the MUSIC modelling the catchment feeding RBWL 08 is larger than the existing surface would indicate. Spiire proposes the catchment be revised.

4.1 Solution

Refer to below extract and attached drawings.



- A pipe should be adopted to replace the waterway. A 1200mm dia pipe at a grade of 1 in 300 would convey the required flow (2.0 m3/sec) and be constructable. This pipe can sit within the allotted K4 boundary with minimum cover achieved.
  - A pipe creates back pressure when it has reaches the designed capacity better than a weir does, this means flows targeted for ecohydrology will more effectively enter the K4 SWH basin.

- The Spiire arrangement retains the high-flow weir (>2.0 m^3/sec) diverting ecohydrology flows into the the K4 SHW basin. This weir would be set at 104.0 mAHD.

- Replacing Waterway 6B with the diversion pipe with the K4 boundary means that the land-take for Waterway 6B is greatly reduced (circa 80%) . This also means that WLRB 07 can be relocated to better interface with the urban form, the K4 depression and Waterway 7 (the outfall for K4 and WLRB 07).

  - The proposed NWL for the macrophyte zone RBWL 07 has been dropped by 1.0 m, this reduces the fill requirements for the adjacent development.

- All proposed works within and adjacent to the K4 depression can be undertaken without disturbing known artefact locations. Refer to the attached plans for asset and artefact locations.

- All proposed assets are free-flowing and tie into existing upstream (Thornhill Park) and proposed (Waterway 7) levels.

- It is recommended that Paynes Road be moved further to the west as the strip of land between Paynes Rd and K4 is unserviceable from an urban layout perspective.

- An emergency and maintenance outlet for the SHW basin has been proposed and located. This will allow the SHW basin to empty (not withstanding existing local depressions within this area) to increase flood storage within K4 and allow for maintenance works.

- High flow culverts (10 X 900 mm dia) at the NWL for the SWH basin (103.3 mAHD) reduce the time the K4 depression will be inundated above this level.

- For RBWL 08 the revised catchment means the asset can be a raingarden. This reduces land-take and the existing levels may (FML: 104.5 m) remain as the outlet will still have a free-flowing outlet with protection against backflow.

  - Raingarden 08 is located in the bank of the retarding basin and above 1% level and bypassed flows into the sediment basin are diverted into the SWH basin within K4. The Raingarden is therefore protected from shear forces and over-inundation.

  - The raingarden outlet pipe will tie-into the bypass pipe. The outlet pipe has a proposed IL of 103.00 mAHD and the bypass pipe has an invert at this location of 102.75 mAHD.

- Further refinement of this arrangement will occur within following design stages.

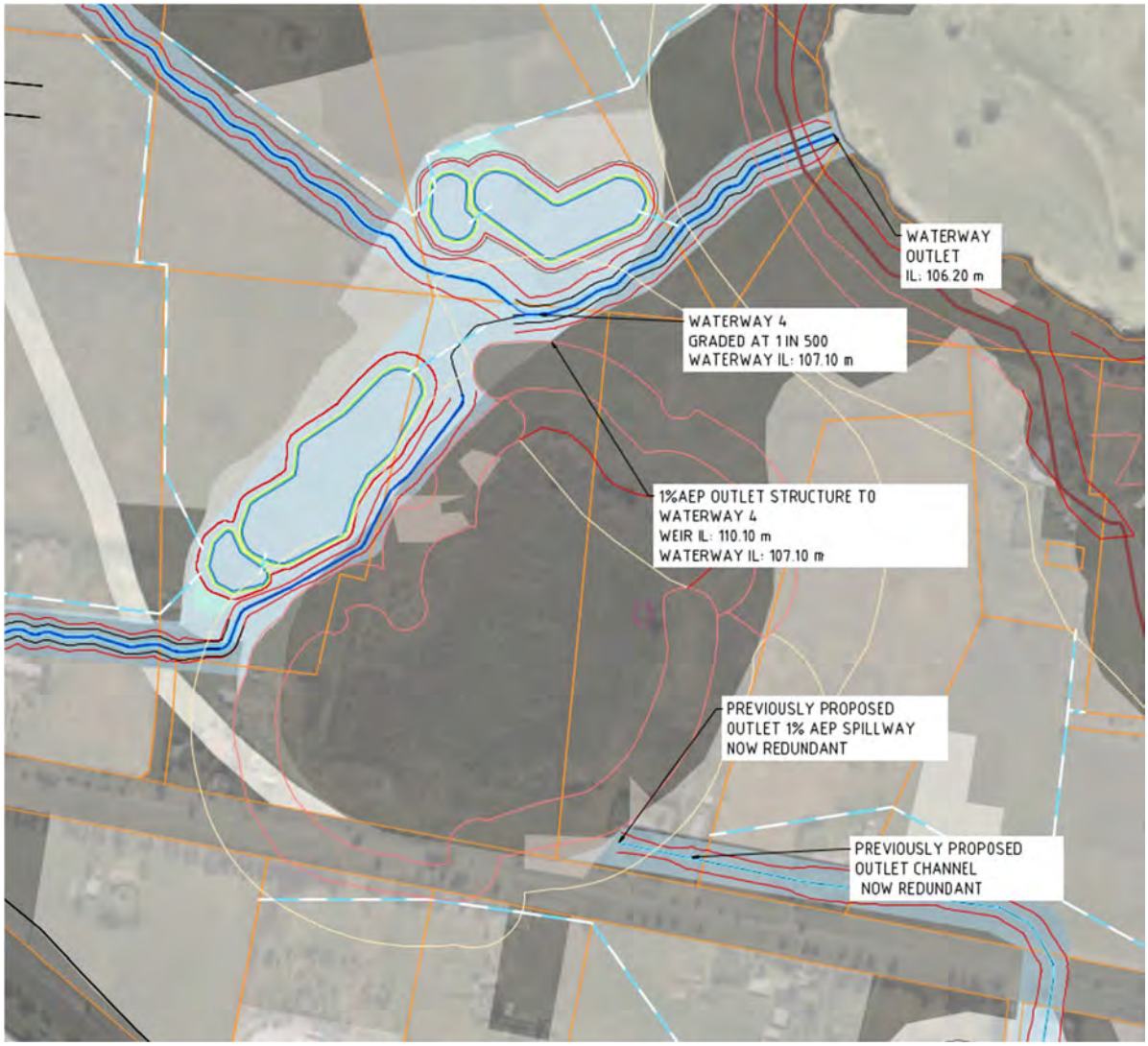
- Both Melbourne Water and Spiire modelling are required to be validated through TUFLOW modelling.

5. K3 DEPRESSION

The K3 depression is proposed to be retained as a growling grass frog pond and has low flows directed to it. In rare events the control structure diverting low flows to K3 overtops and K3 acts as a retarding basin, with a spillway and channel conveying flows towards K4. The spillway engages at the 1% AEP level within K3. This is an inefficient use of land as the waterway will only irregularly convey storm flows (1% AEP) and there is opportunity via Waterway 4 to convey these flows safely.

The 1% AEP flood level within K3 is 3.3 m above the proposed invert of Waterway 4 at the outfall location. Spiire proposes that 1% AEP flows from K3 are directed towards Waterway 4 via a control structure located at the northern most point of K3.

The existing spill level will be retained 110.1 mAHD.



6. URBAN DESIGN REFINEMENTS

- Mesh has conducted a review of the Melton East PSP from an urban design perspective.
- Mesh's key observations were as follows:
  - Developable land on the east side of Taylors Road and the drainage reserve is overly constrained and is not realistically developable.
  - Developable land on the east side of Paynes Road and to the north and south of the drainage reserve is overly constrained resulting in the northern component being not realistically developable.
  - Similarly, the developability of land to the west of Paynes Road is heavily impacted (subject of further study)
  - Location of drainage reserves restricts north-south connectivity between future residential south of Taylors Road to nearby future Activity Centres (future MAC and NAC)
- The key findings are provided within the appendices of this memo.

7. OVERPROVISION OF UNCREDITED LAND FOR FLOOD MITIGATION

Melbourne Water provided Pre-development Conditions for a 1% AEP.

Upon review of the uncredited open space adjacent to Kororoit Creek, additional space has been allocated for what appears to be flooding issues with no associated flooding to support this designation.

We request Melbourne Water review this designation along the entirity of Kororoit Creek with a view of reallocating uncredited open space that is not identified as being inundated (in Melbourne Water provided Pre-development Conditions for a 1% AEP) as developable area.

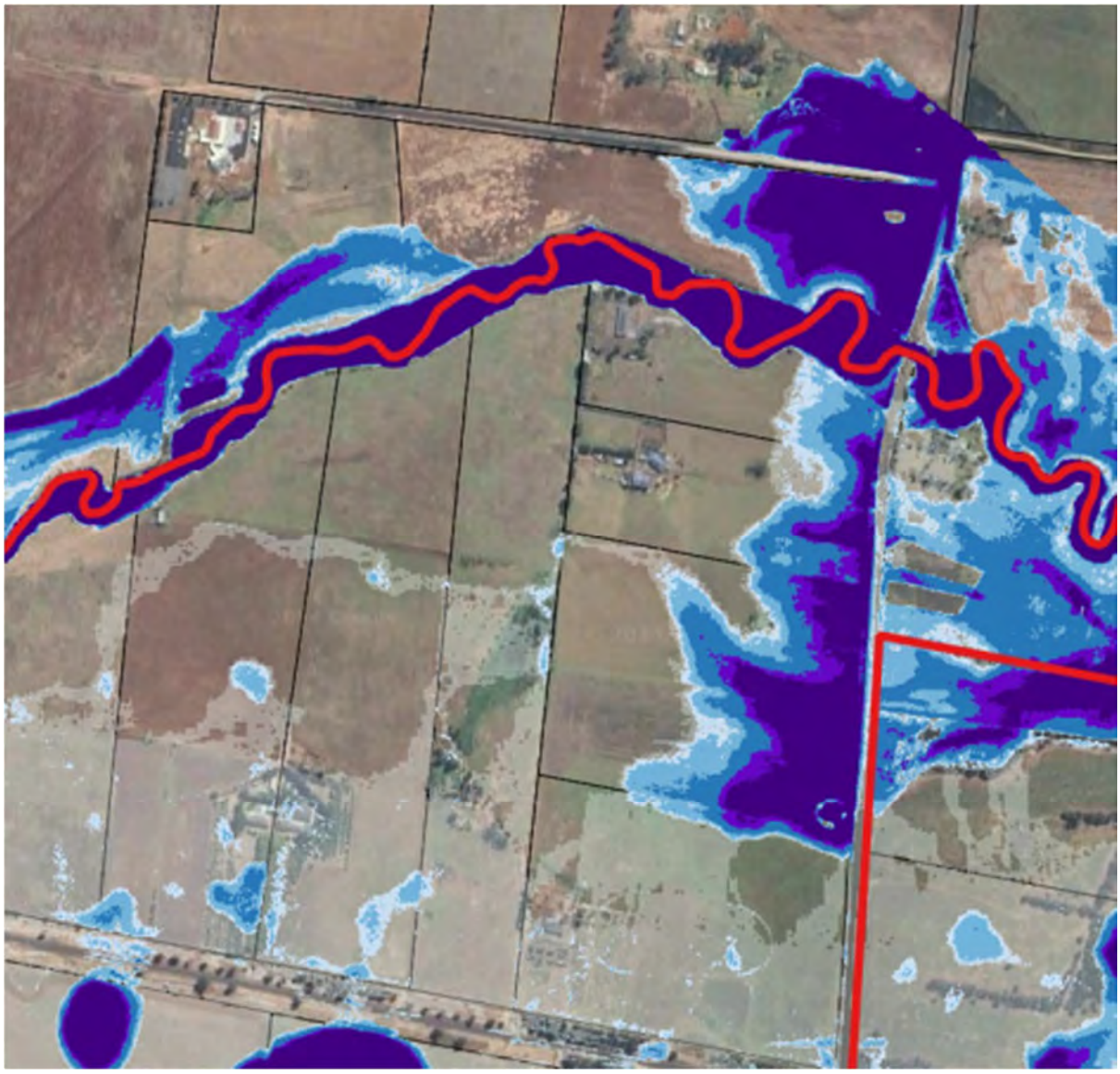


Figure: 1% AEP Pre Development Conditions -Extract

Figure PSP Extract

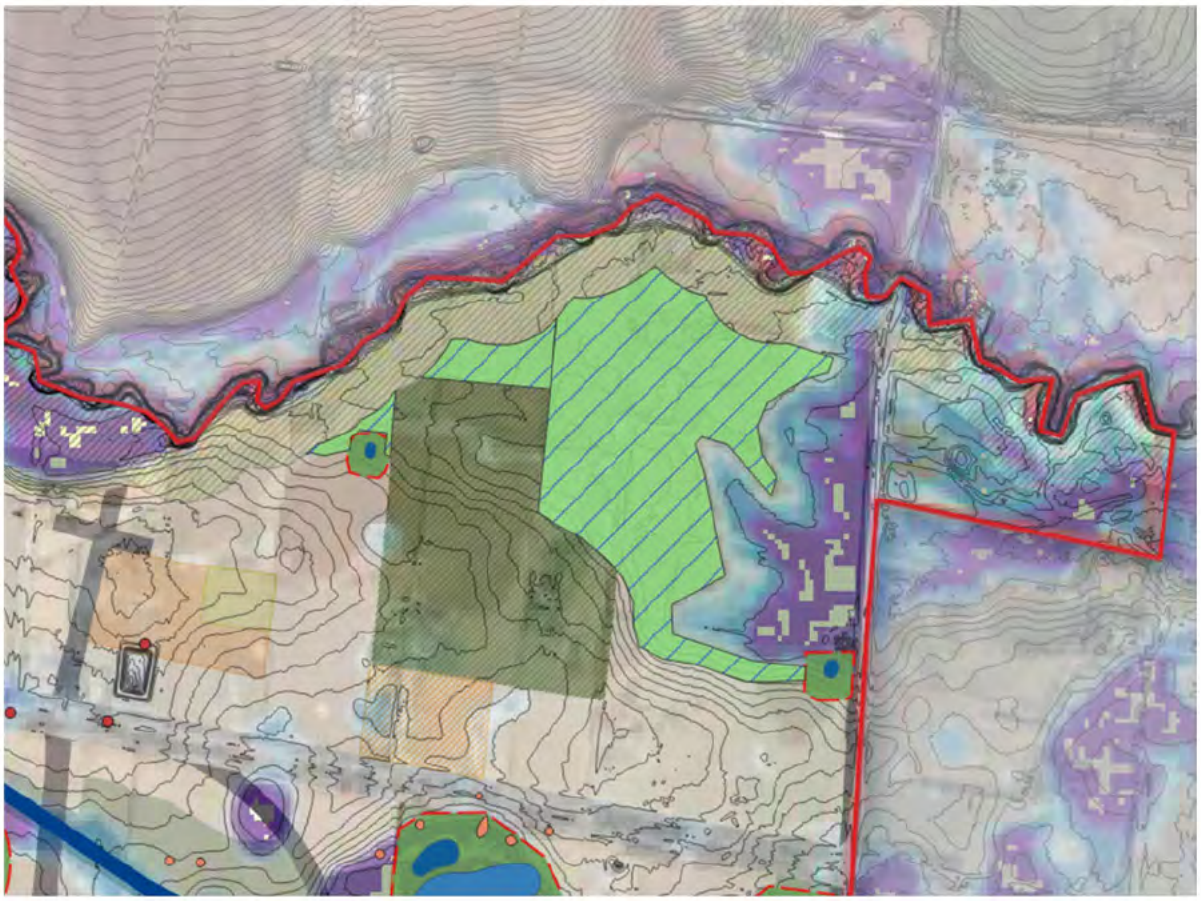


Figure: Example Area defined as uncredited open space not subject to flood inundation (green hatch with blue diagonal).

8. SUMMARY

The arrangement described here and within the attached plans achieves and demonstrates and the practicability of the following:

- Reducing land-take for drainage reserves by:
  - Removing waterways where alternate structures and arrangements can achieve the same outcome.
  - Moving water quality assets fully or partially into the K4 and K6 depressions.
  - Propose land-take efficient alternate asset types (raingarden in-place of macrophyte zones) where possible.
- Improve ecohydrological function and demonstrate a practical hydraulic arrangement to service this, while considering maintenance and public access provisions.
  - Maximise area allotted to the K6 SHW basin by re-routing low-flow bypass channels.
- Demonstrated public amenity by showing access tracks and unencumbered open space above the 10%AEP level.
- Reduce construction cost and complexity by proposing assets (where possible) be constructed at or near the existing surface.
  - Some high-flow bypasses are redundant where a nearby structure can readily accept flows.
  - Access tracks, sediment dry-out areas are above the 10% flood levels and batter grades are acceptable (flatter than 1 in 6).
- Reduce the need for constructed retarding volumes by utilizing the existing depressions (K4 and K6) as retarding basins where possible
- Improve the interface with the proposed urban form and reduced incursion on potential developable area.
- Reduce, where possible, the filling requirements across areas earmarked for development by dropping water quality asset levels, whilst maintaining a free-flowing hydraulic arrangement.
- Avoid harm to identified artefact areas.

The arrangement described herein is an advanced concept plan and intended to demonstrate practicability whilst allowing for refinement in following design stages.

9. APPENDICES

WARNING

BEWARE OF UNDERGROUND/OVERHEAD SERVICES

THE LOCATION OF SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN. SPECIAL CONSIDERATION SHOULD BE GIVEN TO CONSTRUCTION PROCEDURES UNDER OVERHEAD ELECTRICITY TRANSMISSION LINES.

Rev	Amendments	Approved	Date
A	ISSUED FOR INFORMATION	L.HOLMES	21/03/25

Scale: AS SHOWN

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Designed: MD
Checked: LH
Authorised:
Date: 2023/12/04

MELTON EAST DSS SERVICING K4 AND K6
CONCEPT DESIGN
LAYOUTS & CATCHMENT PLANS - SHEET 1
MELTON EAST
3L ALLIANCE

PRELIMINARY

Drg No: 307078WC200 Rev: A

LEGEND
LIMIT OF WORKS
CONTOURS
NORMAL WATER LEVEL (NWL)
EXTENDED DETENTION DEPTH (EDD)
10%AEP 101.12
1%AEP 100.12
PERMANENT POOLING (BELOW NWL)
ROCK BEACHING
SEASONAL HERBACEOUS WETLAND
ARTIFACT LOCATION
SEDIMENT DRY OUT AREA
STORMWATER DRAINAGE (PIT AND PIPE)
FOOTPATH
SEDIMENT DRY-OUT AREA
SEDIMENT POND 07 AREA: 3,500 m² NWL: 102.90 m EDD:103.25 m
WETLAND POND 07 AREA: 16,200 m² NWL:102.70 m EDD:103.05 m
WETLAND 07 OUTLET PIPE DOWNSTREAM IL: 100.67 m
OUTLET POOL NWL: 101.00 m
K4 OUTLET TO FEATURE A MAINTENANCE OUTLET IL: 102.80 m
K4 OUTLET CULVERT 10X900 DIA INLET IL: 103.3
AUXILIARY OVERFLOW WIER IL: 104.5 mAHD LENGTH: 55 m
ARTIFACTS TO NOT BE DISTURBED
WATERWAY INVERT IL: 100.55 m
BYPASS OUTLET IL: 100.55 m
OUTLET ARRANGEMENT WILL DEPENDING ON THE ALIGNMENT OF PAYNES ROAD.
INDICATIVE ROAD RE-ALIGNMENT
ROCK CHUTE
RG08 OUTLET PIPE TIES INTO BYPASS RG OUTLET IL: 103.00 m BYPASS IL: 102.38 m
K4 BYPASS PIPE GRADE: 1 IN 300 Q: 2.0 M³/SEC
HIGH FLOW WEIR IL: 104.00 m
K4 LOW-FLOW BYPASS INLET IL: 102.70 m
ROCKED OVERFLOW FROM SEDPOND EDD IL:
RAINGARDEN 08 AREA: 560 m² FML: 104.50 m EDD: 104.85 m
SEDIMENT POND 08 AREA: 800 m² FML: 104.70 m EDD: 105.05 m
SEDIMENT DRY-OUT AREA
BEFORE YOU DIG
www.byda.com.au
Zero Damage - Zero Harm
WARNING
BEWARE OF UNDERGROUND/OVERHEAD SERVICES
THE LOCATION OF SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN. SPECIAL CONSIDERATION SHOULD BE GIVEN TO CONSTRUCTION PROCEDURES UNDER OVERHEAD ELECTRICITY TRANSMISSION LINES.

Rev	Amendments	Approved	Date
A	ISSUED FOR INFORMATION	L.HOLMES	21/03/25

Scale H 1:500 SCALE @ A1 0 5 10 15 20 25

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MELTON EAST DSS SERVICING K4 AND K6
CONCEPT DESIGN

MELTON EAST
3L ALLIANCE

PRELIMINARY Drg No 307078WC201 Rev A

file name 307078WC200.dwg Layout name WC201 plotted by Brendan Paule
file location \\spiire.com.au\melbdata\Data\30\307078\Water\ACAD plot date 21/03/2025 4:49 PM Sheet 3 of 9 Sheets

file name 307078WC200.dwg layout name WC202 plotted by Brendan Paule
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Rev	Amendments	Approved	Date
A	ISSUED FOR INFORMATION	L.HOLMES	21/03/25

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Authorised | Date

MELTON EAST DSS SERVICING
K4 AND K6
CONCEPT DESIGN
LAYOUTS & CATCHMENT PLANS - SHEET 3
MELTON EAST
3L ALLIANCE

PRELIMINARY Drg No 307078WC202 Rev A

CULVERT POOL
K6 OUTLET CULVERTS
6X1200 DIA
IL: 98.00 mAHD
AUXILIARY OVERFLOW
WEIR
IL: 101.5 mAHD
LENGTH: 50 m
SEASONAL HERBACEOUS
WETLAND MAINTENANCE AND
EMERGENCY OUTFLOW
STRUCTURE
SEASONAL HERBACEOUS
WETLAND TO RETAIN WATER
VIA THE CONSTRUCTED BUND.
WATER TO INFILTRATE AND
EVAPOTRANSPIRATE
OUTLET FROM WETLAND
10
ARTIFACTS TO NOT BE
DISTURBED
WETLAND OUTLET PIPE
OUTLET IL: 99.90 m
ROCK CHUTE
BUND TO CONTAIN
ECOHYDROLOGY FLOWS
WITHIN RETAINED
SEASONAL HERBACEOUS
WETLAND
RL: 100.00 mAHD
HIGHFLOW STRUCTURE
DIVERTING ECOLOGICAL
FLOWS INTO K6
DEPRESSION
7.5 m³/sec
ARTIFACTS TO NOT BE
DISTURBED
K4 LOW FLOW BYPASS
CHANNEL
FLOW: 7.50 m³/sec
ROCK CHUTE,
FLOWS ARE CONVEYED
TO THE BYPASS
CHANNEL
ARTIFACTS TO NOT BE
DISTURBED
WETLAND 11
AREA: 13,500 m²
NWL: 100.50 m
EDD: 100.85 m
ARTIFACTS TO NOT BE
DISTURBED
SEDIMENT DRY-OUT
AREA
SEDIMENT POND OUTLET
PIPE
SEDIMENT POND 11
AREA: 3,700 m²
NWL: 100.70 m
EDD: 101.05 m
WATERWAY AND CULVERT
ARRANGEMENT WILL DEPEND
ON THE ALIGNMENT OF
TAYLORS ROAD
1 IN 22
1 IN 38
1 IN 17
1 IN 41
1 IN 15
1 IN 18
1 IN 8
1 IN 8
1 IN 8
1 IN 17
1 IN 10
1 IN 7
1 IN 10
LEGEND
LIMIT OF WORKS
CONTOURS
NORMAL WATER LEVEL (NWL)
EXTENDED DETENTION DEPTH (EDD)
10%AEP
1%AEP
PERMANENT POOLING (BELOW NWL)
ROCK BEACHING
SEASONAL HERBACEOUS WETLAND
ARTIFACT LOCATION
SEDIMENT DRY OUT AREA
STORMWATER DRAINAGE
(PIT AND PIPE)
FOOTPATH
BEFORE YOU DIG
www.byda.com.au
Zero Damage - Zero Harm

WARNING

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file name 307078WC200.dwg, layout name WC203, plotted by Brendan Paule
file location \\spiire.com.au\melbdata\Data\30\307078\Water\ACAD plot date 21/03/2025 4:49 PM Sheet 5 of 9 Sheets

Rev	Amendments	Approved	Date
A	ISSUED FOR INFORMATION	L.HOLMES	21/03/25

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MELTON EAST DSS SERVICING
K4 AND K6
CONCEPT DESIGN
LAYOUTS & CATCHMENT PLANS - SHEET 4
MELTON EAST
3L ALLIANCE

PRELIMINARY Drg No 307078WC203 Rev A

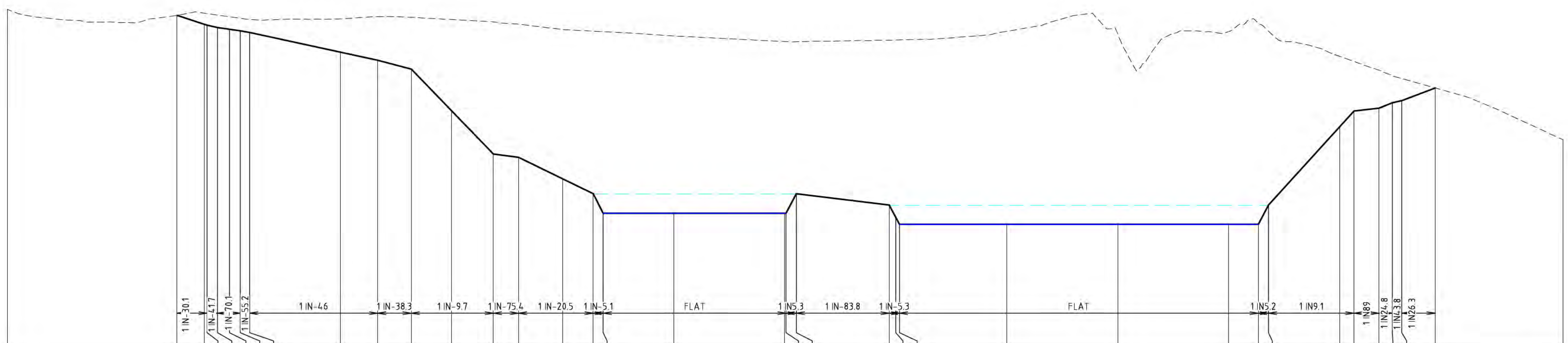
LEGENDS

WATER LEVEL AEP 1%

WATER LEVEL AEP 10%

WATER LEVEL EDD

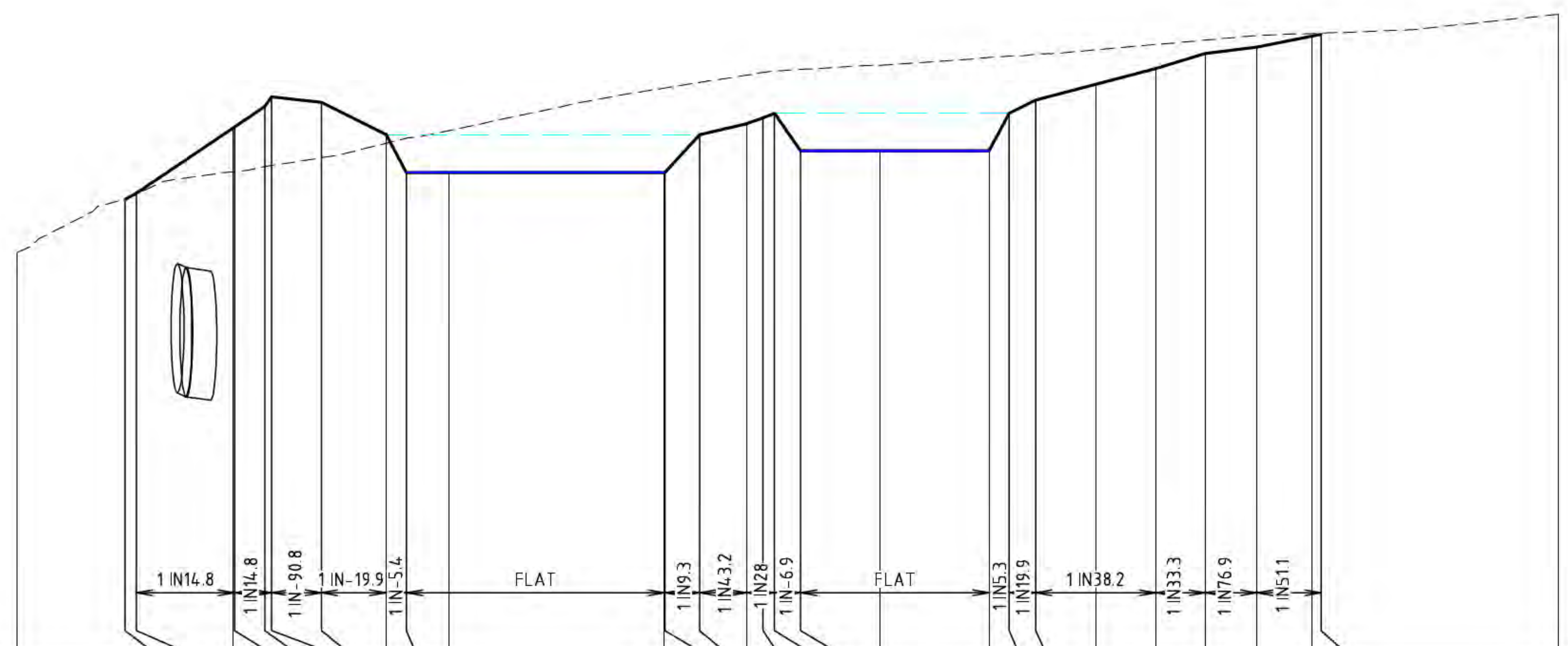
WATER LEVEL NWL



DATUM RL 100.5

CHAINAGE	DESIGN CENTRELINE	EXISTING SURFACE
30.584	106.464	106.463
35.455	106.302	106.503
36.011	106.287	106.494
37.846	106.243	106.468
40.000	106.213	106.438
41.941	106.185	106.411
43.651	106.154	106.391
60.000	105.799	106.400
66.690	105.653	106.444
72.769	105.495	106.428
80.000	104.748	106.388
87.550	103.967	106.347
92.069	103.907	106.304
100.000	103.520	106.209
105.525	103.250	106.179
107.327	102.900	106.169
120.000	102.900	106.092
140.000	102.900	105.992
140.251	102.900	105.991
142.089	103.250	105.988
158.846	103.050	106.019
160.000	102.831	106.021
160.692	102.700	106.022
180.000	102.700	106.176
200.000	102.700	106.126
220.000	102.700	106.172
225.320	102.700	106.321
227.143	103.050	106.181
240.000	104.461	105.725
242.535	104.740	105.633
247.040	104.790	105.475
249.461	104.888	105.376
251.168	104.927	105.326
257.191	105.156	105.156

SECTION A



DATUM RL 100.0

CHAINAGE	DESIGN CENTRELINE	EXISTING SURFACE
0.000		103.758
10.008	104.251	104.251
11.031	104.309	104.299
20.000	104.915	104.507
20.142	104.924	104.509
22.935	105.113	104.554
23.595	105.202	104.565
28.191	105.152	104.637
34.186	104.850	104.771
36.070	104.500	104.817
40.000	104.500	104.888
60.000	104.500	105.282
60.015	104.500	105.283
63.259	104.850	105.334
67.590	104.950	105.403
69.130	105.005	105.428
70.200	105.050	105.443
72.604	104.700	105.456
80.000	104.700	105.496
90.080	104.700	105.565
91.929	105.050	105.578
94.391	105.174	105.597
100.000	105.321	105.637
105.514	105.465	105.687
110.115	105.603	105.728
114.895	105.665	105.771
120.000	105.765	105.790
120.859	105.782	105.793
142.860		105.968

SECTION B

file name 307078WC300.dwg Layout name WC300 plotted by Brendan Paule
file location \\spiire.com.au\meldata\Data\30\307078\Water\ACAD plot date 21/03/2025 4:50 PM Sheet 6 of 9 Sheets

Rev	Amendments	Approved	Date
A	ISSUED FOR INFORMATION	L.HOLMES	21/03/25

Scale
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SCALE @ A1
V 1:50 — 0 0.5 1 1.5 2 2.5

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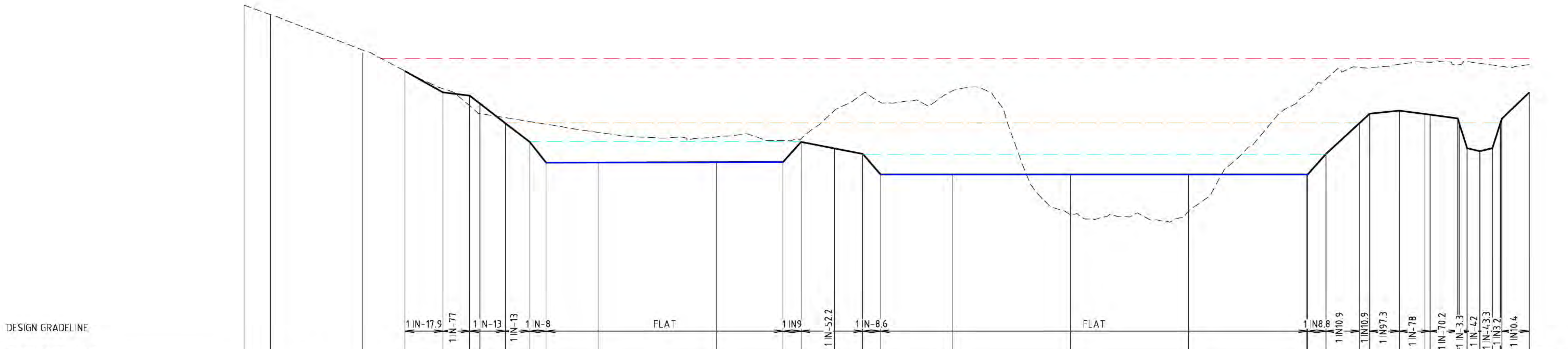
MELTON EAST DSS SERVICING
K4 AND K6
CONCEPT DESIGN
TYPICAL SECTIONS & DETAILS - SHEET 1
MELTON EAST
3L ALLIANCE

PRELIMINARY Drg No **307078WC300** Rev **A**



DATUM RL 96.0

DESIGN CENTRELINE					100.641	100.582	100.448	100.120	99.800	99.450	99.453	99.459	99.462	99.800	99.692	99.600	99.250	99.250	99.250	99.250	99.250	99.250	99.600	100.120	100.280	100.332	100.276	100.264	100.198	100.120	99.697	99.646	99.695	100.120	100.194	100.636
EXISTING SURFACE	102.115	101.954	101.360	101.001	100.702	100.410	100.280	100.212	100.145	100.100	99.963	99.886	99.821	99.854	100.328	100.613	100.471	100.665	98.567	98.635	100.605	100.617	100.862	101.061	101.053	101.115	101.151	101.149	101.105	101.108	101.162	101.131	101.101	101.082	101.079	101.111
CHAINAGE	0.000	4.553	20.000	27.295	33.721	38.262	40.000	44.255	48.413	51.220	60.000	80.000	91.327	94.373	100.000	104.822	107.832	120.000	140.000	160.000	180.000	180.182	183.268	188.960	190.701	195.686	200.000	200.917	205.614	205.867	207.216	209.357	211.483	212.840	213.083	217.693

SECTION C

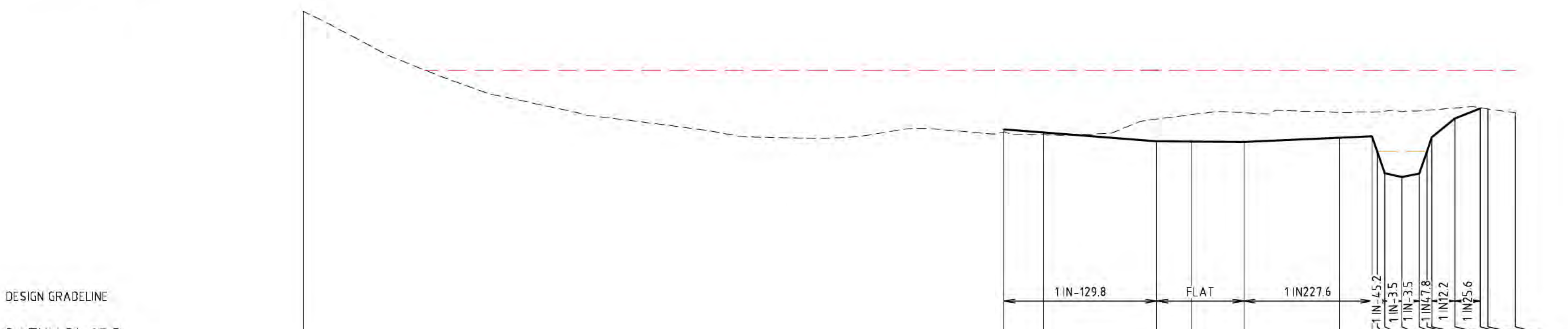
LEGENDS

WATER LEVEL AEP 1%

WATER LEVEL AEP 10%

WATER LEVEL EDD

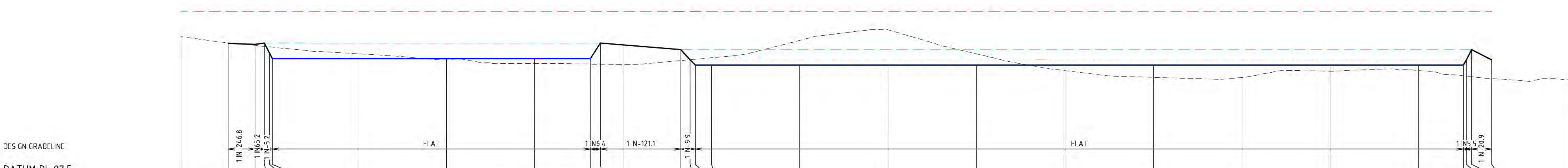
WATER LEVEL NWL



DATUM RL 97.5

DESIGN CENTRELINE		100.418	100.377	100.259	100.255	100.250	100.307	100.326	100.120	99.825	99.774	99.822	100.120	100.311	100.566	100.700		
EXISTING SURFACE		100.382	100.346	100.557	100.617	100.644	100.647	100.652	100.653	100.664	100.661	100.670	100.678	100.683	100.707	100.709	100.695	100.644
CHAINAGE	0.00	94.631	100.000	115.279	120.000	127.057	140.000	144.356	145.079	146.099	148.422	150.745	151.791	152.453	155.559	159.004	160.000	163.723

SECTION D



DATUM RL 97.5

DESIGN CENTRELINE		100.493	100.468	100.500	100.275	100.150	100.150	100.150	100.150	100.150	100.500	100.458	100.350	100.120	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.120	100.350	100.120	
EXISTING SURFACE	100.644	100.507	100.446	100.424	100.412	100.406	100.257	100.132	100.034	100.023	100.019	100.011	100.102	100.122	100.132	100.165	100.561	100.798	100.254	99.875	99.722	99.719	99.863	99.877	99.757	99.750	99.736	99.691	99.665
CHAINAGE	163.327	173.997	180.083	182.16	183.327	183.973	203.327	223.327	243.327	255.96	258.2	263.327	276.372	278.508	279.691	283.379	303.327	323.327	343.327	200.000	363.327	403.327	423.327	443.327	453.465	454.126	455.329	459.846	477.537

SECTION D

file name 307078WC300.dwg layout name WC301 plotted by Brendan Paule
file location \\spiire.com.au\meldata\Data\30\307078\Water\ACAD plot date 21/03/2025 4:50 PM Sheet 7 of 9 Sheets

Rev	Amendments	Approved	Date
A	ISSUED FOR INFORMATION	L.HOLMES	21/03/25

Scale
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SCALE @ A1
V 1:50 0 0.5 1 1.5 2 2.5

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Date

MELTON EAST DSS SERVICING K4 AND K6
CONCEPT DESIGN
TYPICAL SECTIONS & DETAILS - SHEET 2
MELTON EAST
3L ALLIANCE

PRELIMINARY
Drg No 307078WC301
Rev A

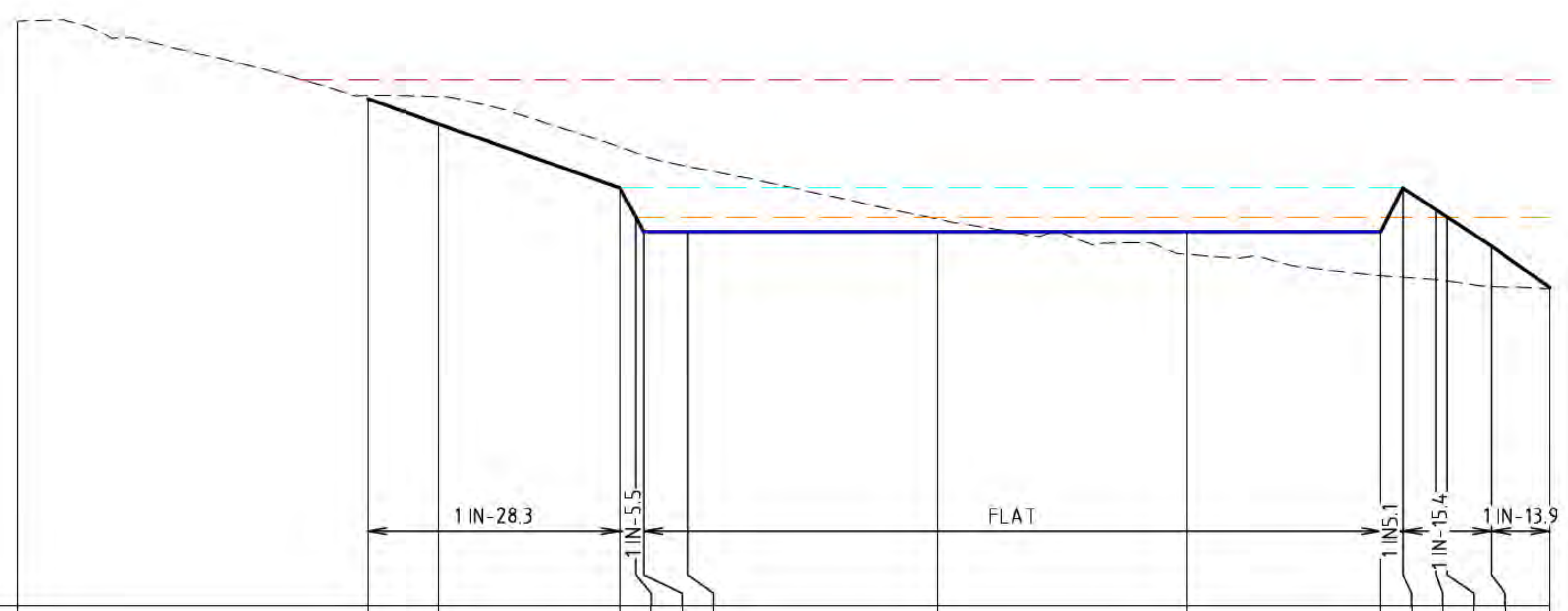
LEGENDS

WATER LEVEL AEP 1%

WATER LEVEL AEP 10%

WATER LEVEL EDD

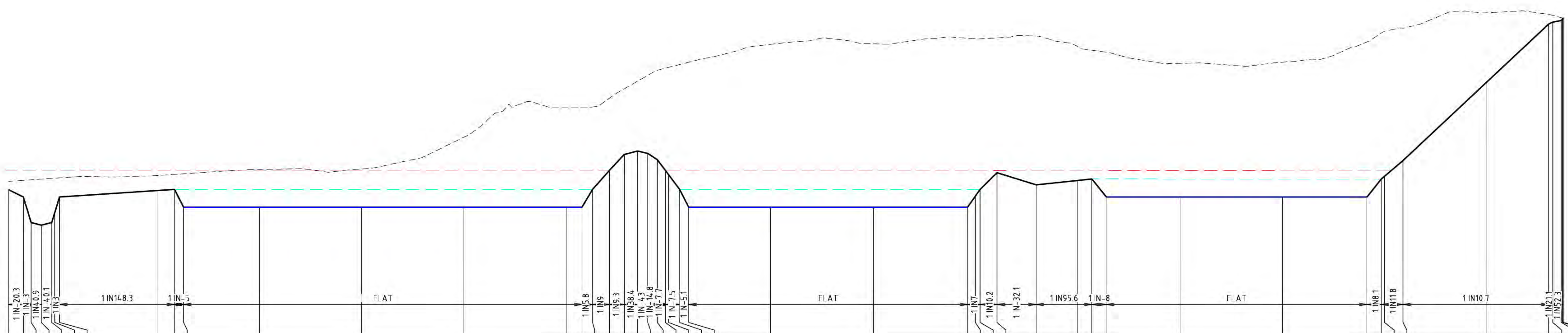
WATER LEVEL NWL



DATUM RL 97.0

Chainage	Design Centreline	Existing Surface
0.000		102.880
74.286	101.066	101.092
80.000	100.864	101.084
94.534	100.350	100.681
95.800	100.120	100.634
96.461	100.000	100.608
100.000	100.000	100.523
120.000	100.000	100.102
140.000	100.000	99.821
155.562	100.000	99.646
157.364	100.350	99.634
160.000	100.178	99.617
160.896	100.120	99.605
164.480	99.887	99.562
169.152	99.551	99.541

SECTION E



DATUM RL 98.0

CHAINAGE	DESIGN CENTRELINE	EXISTING SURFACE
11.028	100.841	101.006
13.881	100.700	101.026
15.399	100.200	101.036
17.416	100.149	101.049
19.447	100.199	101.063
20.000	100.381	101.067
20.965	100.698	101.073
40.000	100.827	101.119
43.429	100.850	101.141
45.184	100.500	101.153
60.000	100.500	101.234
80.000	100.500	101.247
100.000	100.500	101.867
120.000	100.500	102.438
123.099	100.500	102.438
125.141	100.850	102.456
128.474	101.220	102.632
131.360	101.531	102.812
133.960	101.599	102.962
135.947	101.552	103.076
137.809	101.426	103.175
139.396	101.220	103.216
140.000	101.139	103.231
142.161	100.850	103.287
143.962	100.500	103.333
160.000	100.500	103.681
180.000	100.500	103.690
198.483	100.500	103.799
200.000	100.716	103.787
200.938	100.850	103.788
204.241	101.174	103.807
211.886	100.936	103.843
220.000	101.021	103.636
222.785	101.050	103.565
225.587	100.700	103.529
240.000	100.700	103.311
260.000	100.700	103.333
276.548	100.700	103.729
279.374	101.050	103.902
280.000	101.103	103.938
283.605	101.410	103.997
300.000	102.945	104.298
312.098	104.078	104.269
312.899	104.116	104.246
314.534	104.147	104.200
314.767	104.178	104.194
314.929	104.191	104.189

SECTION F

Rev	Amendments	Approved	Date
A	ISSUED FOR INFORMATION	L.HOLMES	21/03/25

Scale
H 1:500 / SCALE @ A1 / V 1:50 (0 5 10 15 20 25 / 0 0.5 1 1.5 2 2.5)

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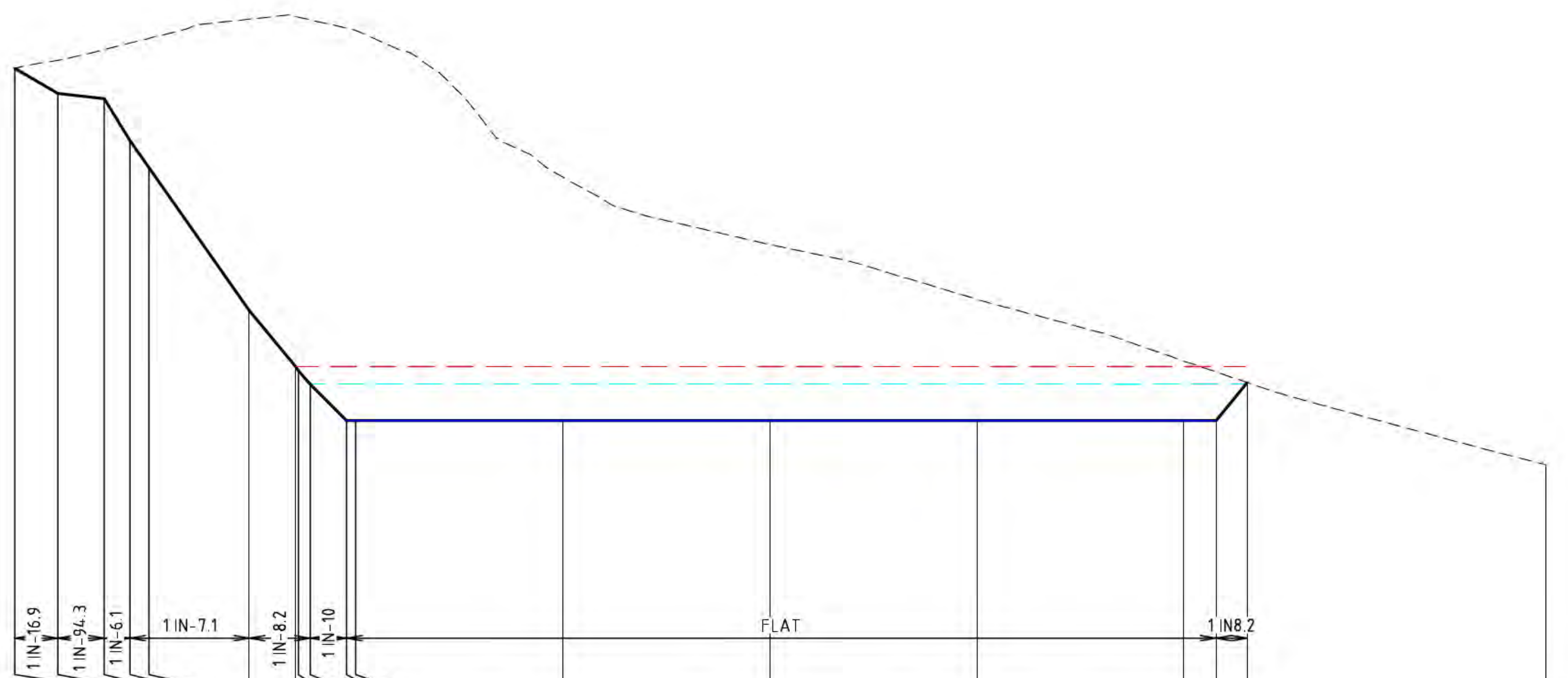
MELTON EAST DSS SERVICING K4 AND K6
CONCEPT DESIGN
TYPICAL SECTIONS & DETAILS - SHEET 3
MELTON EAST
3L ALLIANCE

PRELIMINARY Drg No **307078WC302** Rev **A**

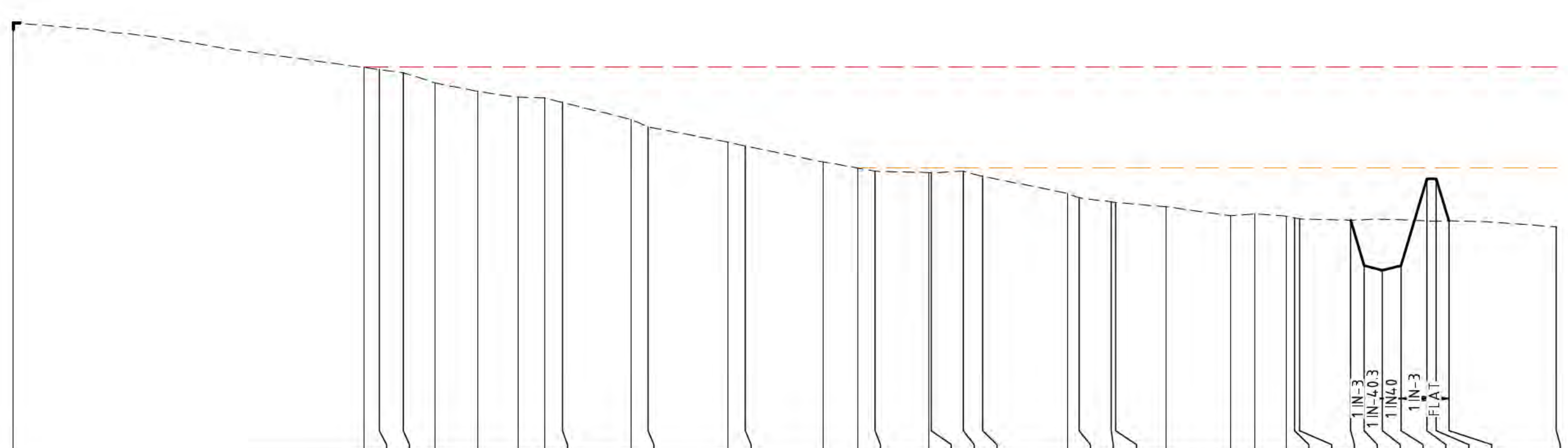
file name 307078WC300.dwg Layout name WC302 plotted by Brendan Paule
file location \\spiire.com.au\meldata\Data\30\307078\Water\ACAD plot date 21/03/2025 4:50 PM Sheet 8 of 9 Sheets



DATUM RL 98.0

CHAINAGE	DESIGN CENTRELINE	EXISTING SURFACE
47.060	104.100	104.099
51.187	103.856	104.178
55.692	103.808	104.281
58.175	103.400	104.343
60.000	103.142	104.388
69.720	101.764	104.574
74.182	101.220	104.600
74.444	101.184	104.594
75.606	101.050	104.567
79.108	100.700	104.487
80.000	100.700	104.465
100.000	100.700	103.050
120.000	100.700	102.400
140.000	100.700	101.872
160.000	100.700	101.276
163.106	100.700	101.170
166.116	101.067	101.067
195.008	100.565	100.274

SECTION G



DATUM RL 97.0

CHAINAGE	DESIGN CENTRELINE	EXISTING SURFACE
38.308		101.220
40.000		101.197
42.606		101.162
46.104		101.051
50.748		100.956
55.136		100.893
58.068		100.886
60.000		100.837
67.486		100.653
69.360		100.568
78.124		100.402
80.000		100.363
88.554		100.187
92.263		100.120
94.169		100.085
100.000		100.070
100.311		100.069
103.814		100.085
105.931		100.031
115.224		99.842
116.497		99.795
120.000		99.750
120.444		99.744
126.022		99.697
133.047		99.600
135.686		99.618
139.068		99.595
140.000		99.575
140.558		99.563
146.130	99.552	99.550
147.628	99.052	99.556
149.635	99.002	99.560
151.642	99.052	99.554
154.496	100.000	99.546
155.500	100.000	99.544
156.893	99.542	99.542
168.635		99.477

SECTION H

Rev	Amendments	Approved	Date
A	ISSUED FOR INFORMATION	L.HOLMES	21/03/25

Scale
H 1:500 0 5 10 15 20 25
SCALE @ A1
V 1:50 0 0.5 1 1.5 2 2.5

System Certified

L6 414 LA TROBE STREET PO BOX 16084 MELBOURNE
VICTORIA 8007 AUSTRALIA T 61 3 9993 7888
spiire.com.au ABN 55 050 029 635

Designed Checked
Authorised Date

MELTON EAST DSS SERVICING
K4 AND K6
CONCEPT DESIGN
TYPICAL SECTIONS & DETAILS - SHEET 4
MELTON EAST
3L ALLIANCE

PRELIMINARY Drg No **307078WC303** Rev **A**

file name 307078WC300.dwg layout name WC303 plotted by Brendan Paule
file location \\spiire.com.au\meldata\Data\30\307078\Water\ACAD plot date 21/03/2025 4:50 PM Sheet 9 of 9 Sheets

Melton East PSP

3L ALLIANCE

Taylors Road DSS
Urban design refinements

Exhibited Plan 28/02/25

mesh

March 2025

Taylors Road DSS – PSP exhibition

The configuration and alignment of land uses in and around Taylors Road and the drainage reserves in the south-east of the PSP are complex.

We appreciate the proposed arrangement is a complex interplay between road, drainage and cultural heritage (both indigenous and post-settlement) priorities.

From an urban design perspective, the outcomes results in fragmentation of developable land that creates real difficulties in realizing coherent communities.

There are opportunities to refine this further while responding appropriately to these differing priorities.

Known Priorities

1. Cultural Heritage There are a range of artefact scatters and LDAD's to which disturbance is being sought to be minimized.
2. Heritage Stone Wall - The heritage stone wall runs through the site (noting that levels and grading necessary for the drainage reserves as proposed will also impact this)
3. Drainage Reserves - The DSS has been reviewed by SPIIRE who have identified opportunities to consolidate drainage assets east of Taylors Road.
4. Taylors Road alignment - Stantec have identified opportunities to shift the alignment of Taylors Road to reduce fragmentation of developable land.

mesh

Taylors Road DSS – UD observations

Our urban design review identifies a number of attributes where opportunities for refinement would improve development outcomes.

Observations

1. **Developable land on the east side of Taylors Road** and the drainage reserve is overly constrained and is not realistically developable.
2. **Developable land on the east side of Paynes Road** and to the north and south of the drainage reserve is overly constrained resulting in the northern component being not realistically developable.
3. Similarly, **the developability of land to the west of Paynes Road** is heavily impacted (subject of further study)
4. **Location of drainage reserves restricts north-south connectivity** between future residential south of Taylors Road to nearby future Activity Centres (future MAC and NAC)

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Taylors Road DSS – UD development testing

Rapid testing of the constrained areas of developable area were undertaken to understand the feasibility of delivering housing within these locations.

A zoom plan of the rapid outcomes is provided on the following page but the studies raised concerns about the viability of delivering feasible development in these area of concern.

This testing reinforces the recommendation to refine the DSS and alignment of Taylors Road to reduce the creation of areas of unrealizable developable area.

Taylors Road DSS and Alignment

We have tested the ability to realise the NDA in the identified area of concerns.

Our testing demonstrates that these areas would be:

- **Highly fragmented** - relying on single loaded streets and cul-de-sacs squeezed between drainage and road infrastructure assets.
- **Low yield** - The overall development outcome results in a low yield, fragmented neighbourhood that is unlikely to be feasible.
- **Of the 4 areas tested**, we consider that all except for the south-western location (east of Paynes Road) would not be feasible to realise.
- **This amounts to approximately 6.0ha of NDA that is not effectively realizable within the current PSP.**

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Taylors Road DSS and Alignment

The areas identified in red are not considered to be realizable NDA after rapid testing of potential residential layouts.

Developable land between Taylors Road and the drainage reserve is overly constrained with approximately 6.0ha of unrealisable NDA.

The following pages outline recommended refinements that address the same priorities as the currently exhibited PSP layout while improving outcomes.

mesh

Taylors Road DSS – key UD refinements

The recommended refinements to the drainage strategy improve the urban design outcomes in the PSP while preserving cultural heritage and appropriate road links. The benefits are outlined below.

The refinements deliver a net increase in NDA of approximately 10ha.

A further 5ha of previously unrealizable NDA is also unlocked resulting in a net benefit of 15ha.

No increased impact on artefact and LDAD scatters.

3 LDAD scatters are impacted equivalent to the PSP.

Reduced drainage reserve east of Taylors Road

From 35.9ha to 31.7ha while retaining arterfacts and drainage assets.

Reduced drainage reserve west of Taylors Road

Becomes drainage corridor reducing from 8.4ha to 2.8ha

Taylors Road alignment shifted to hug drainage reserve

Marginal increase in road reserve by 0.1ha

Consolidates developable area

Dramatically reduce unrealisable NDA

From 6.0ha to 0.6ha.

Facilitates direct connection to southern neighbourhood

Opportunity for Connector road refinements

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Taylors Road DSS – net developable area (PSP)

The refinements to the Taylors Road DSS would result in an improvement of approximately 10ha in Net Developable Area within PSP .

Further, land consolidation from this improvement will improve development layout efficiency, supporting overall yield.

**N.B – figures listed in Table 1 are approximated from PSP exhibited documentation. Actual figures may vary and subject to confirmation.*

LAND USE DESIGNATION	Exhibited PSP AREA (Hectares)	Updated per SPIIRE Waterway 1 recommendations & Taylors Road DSS AREA (Hectares)
TOTAL SITE AREA	1005.3	1005.3
TOTAL ENCUMBERED LAND	382.6	377.6
ROAD RESERVES & WIDENING	114.9	114.9
6 lane Primary Arterial Rd (Melton Highway : 41m)	62.7	62.7
6 lane Primary Arterial Rd (Western Tarletons Rd & Southern Mt Cottrell: 41m)	12.3	12.3
4 lane Secondary Arterial Rd (Northern Mt Cottrell: 34m)	2.3	2.3
4 Lane Secondary Arterial Rd (Eastern Tarletons Rd: 34m)	5.0	5.0
4 lane Secondary Arterial Rd (Taylors Road / Leakes Rd: 34m)	20.0	20.1
4 lane Secondary Arterial Rd Paynes Rd: 34m)	2.3	2.3
Arterial Rd- Road Widening/Flaring/Freeway	3.1	3.1
Public Acquisition Overlay	7.2	7.2
DRAINAGE	176.3	161.5
Drainage Reserve and uncredited open space	176.3	161.5
CONSERVATION	91.1	91.1
BCS Conservation Area	91.1	91.1
HERITAGE	0.3	0.3
Selection Wall & Nissan Hut	0.3	0.3
TOTAL OPEN SPACE	52.2	52.2
Regional Active Recreation Reserve (30ha)	0.0	0.0
Regional Open Space	14.9	14.9
Local Park	10.6	10.6
Local Active Recreation Reserve (10ha)	10.0	10.0
Local Active Recreation Reserve (7.5ha)	15.2	15.2
Linear Link (nominal 20m wide)	1.4	1.4
TOTAL COMMUNITY USES	37.2	37.2
Proposed Government School	22.1	22.1
Potential Non Government School	6.2	6.2
Local Community Centre	4.0	4.0
Existing Development	3.7	3.7
Emergency Services Facility	1.2	1.2
TOTAL ACTIVITY CENTRES	8.4	8.4
Enterprise Precinct	2.9	2.9
Neighbourhood AC (3.5 ha north centre)	3.5	3.5
Neighbourhood AC (1.5 ha central centre)	1.5	1.5
Local Convenience Centre (0.8 ha)	0.5	0.5
TOTAL EMPLOYMENT / INDUSTRIAL (24ha?)	19.8	19.8
GROSS RESIDENTIAL DEVELOPABLE AREA	505.1	519.8
RESIDENTIAL YIELD based on 20 Dwellings /Ha	10102	10398

mesh

Comparison Melbourne Water Melton East DSS plans with Spiire Drainage Design

And proposed re-alignment of Taylors Road design by Spiire

Cultural Heritage Review - focus 1031 Beattys Rd, Grangefields

The following provides a comparison of the Melbourne Water (MW) DSS plans for the Melton East PSP and those developed by Spiire, focussing on the Depression area within the property known as 1031 Beattys Road, Grangefields in relation to cultural heritage. Also reviewed is a proposed re-alignment of the Taylors Road design provided by Spiire.

Jodie Mitchell, principal heritage advisor at Alpha Archaeology Pty Ltd, has undertaken a review of a number of background reports directly related to the Melton East PSP. These reports include a Cultural Values Assessment (CVA) dated 18 December 2024 and an Aboriginal Cultural Heritage Impact Assessment (ACHIA) dated 27 February 2025, both prepared by Unearthed Heritage in consultation with Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation (Wurundjeri). Also included is CHMP 18078 (the CHMP) currently being undertaken by Alpha Archaeology Pty Ltd (Alpha) that includes a number of properties in the activity area, including 1031 Beattys Road, and meetings held with Wurundjeri regarding Aboriginal cultural heritage in the CHMP activity area.

CHMP 18078

Alpha is undertaking a CHMP assessment of a number of properties in the Melton East PSP and has completed almost 90 days of fieldwork for the standard and complex assessments. The results of this intensive archaeological investigation have resulted in a number of Aboriginal Places (AP) being discovered and subsequently registered. The majority of the AP found are located within the 1031 Beattys Road property.

The fieldwork revealed that the land within the activity area was very consistent with the Volcanic Plains landform, comprising a relatively flat, but very gently undulating, plains and a shallow clayey silt overlying a basal clay, with large areas of exposed bedrock. The soil profile in and around the depression in the 1031 Beattys Road property was slightly different to that of the remainder of the activity area, differentiating the depression landform from the surrounding volcanic plains.

Meetings and correspondence with Wurundjeri have taken place as part of the consultation for the CHMP. The most recent meeting, held on 8 January 2025, discussed the AP in the activity area and the management of them. A draft Drainage Plan prepared by Spiire was presented at this meeting, whereby the aim was to incorporate the drainage basins within the 1031 Beattys Road property, whilst avoiding as many of the AP as possible, in accordance with S.61 of the Victorian *Aboriginal Heritage Act 2006* (the Act). The drainage plan showed almost all of the AP were being avoided, except for three that would be impacted. Discussions following this resulted in Wurundjeri requesting that Spiire further refine the drainage design to see if harm to more of the AP could be avoided, and if harm

could not be avoided or minimized to some of the AP, then management of those (potentially including salvage) would be considered appropriate.

During the meeting Wurundjeri queried if any stony rises were identified in the activity area, as it had been suggested that these archaeologically sensitive landforms may be present. Alpha advised Wurundjeri that during the almost 90 days of fieldwork in the activity area, including intensive ground surveys, that no stony rises were located in the activity area. Alpha showed a map of Survey Results to Wurundjeri that has mapped large areas of exposed bedrock throughout the activity area. It was agreed that the exposed bedrock may have initially been thought to have been stony rises, however is in fact exposed bedrock which is common in the volcanic plains with thin topsoil often eroding to expose the underlying bedrock.

CVA

The CVA introduction states that the primary purpose is to assist in planning work and development designs. The CVA addresses the 'intangible' – acknowledging that archaeological remains form only part of a Cultural Landscape and noting that cultural values include a variety of landforms, ecological niches and habitats and continuing cultural practices. The waterways, stony escarpments, land and vegetation in/near the Melton East PSP provided a resource base including food, materials and possibly stone quarries for traditional Woi-wurrung speaking people. The high impact European farming/occupation has had on the Aboriginal landscape was noted. Much of the focus of the CVA is the importance of Kororoit Creek.

The final sentence in the Statement of Significance on page 3 states "...where harm cannot be avoided, proper management of the disturbance of those values, and the protection and **revitalisation** of those values is integral in the management of these significant cultural places" (emphasis added by Alpha).

A series of recommendations were made in relation to cultural values:-

- Recommendation 1 – to prepare CHMPs, engagement with Wurundjeri, ensure that development within 200m of a water source avoids harms in accordance with a CHMP.
- Recommendation 2 – refers to waterways, including wetlands - ensure flowing and meandering waterways, healthy water strategy implementation, **improve and maintain health of Kororoit Creek and wetland**s, connection of the creek and wetlands, storage of water and design of wetland should be prominent features.
- Recommendation 4 – wetland protection and identification and design. This series of recommendations are referring to the design and development of the wetlands and waterways – **acknowledging that the current depressions will need drainage work.** Refers to works in these areas complying with CHMPs, that are to be prepared. It does not prohibit works in the depression areas.

ACHIA

This study included a desktop assessment, standard assessment (field survey), meetings with Wurundjeri and subsequent discussions.

A desktop assessment was undertaken, including the usual information required for a CHMP desktop; reviews and summaries of previous archaeological work in the region, climate, flora & fauna, geological information, registered Aboriginal places, historical and ethnohistorical summaries, land use history post-contact.

During the meetings emphasis was placed on the sensitivity of Kororoit Creek.

A very broad scale standard assessment was undertaken; over 1,000 hectares of land sample surveyed in only 4 days. These type of studies provide broad-brush predictive modelling for 'potential' Aboriginal heritage, as opposed to more rigorous field surveys conducted under CHMP assessments.

Table 5-2 summarized the survey outcome of each property in the PSP; 35 out of 85 properties were not accessed, and 18 properties were viewed from the road or the adjacent property. This equates to well over half of the properties in the PSP not having been accessed or surveyed. Ground surface visibility of those properties surveyed was mostly less than 1% and only sample survey areas were undertaken within those properties. This equates to very small sample areas having been archaeologically surveyed throughout the PSP area.

Archaeological predictive mapping was developed using results from the desktop assessment and further refined from the results of the sample survey. This resulted in areas deemed to have predicted high, moderate or low archaeological potential (i.e. identifying areas that would or would not likely have Aboriginal cultural material).

Not surprisingly the mapping identified Kororoit Creek, and the Depression landforms (or swamps/wetlands) as having high archaeological potential. Figure 7-2 legend shows the 'wetland extents' were derived from contour mapping.

Section 8 of the ACHIA provided a series of recommendations. This included mandatory CHMPs required for properties in the PSP being developed with high impact activities and areas of cultural heritage sensitivity, recommending these CHMPs be initiated early so the design remains flexible to avoid any Aboriginal heritage found. It recommends voluntary CHMPs where mandatory ones are not required.

MW DSS

The proposed Drainage plan currently provided in the Melton East PSP shows the eastern depression (in the 1031 Beattys Road property) as Open Space area, with connecting waterways running from the Paynes Road depression across and into the Eastern

depression. Two drainage basins are shown either side of the main connecting waterway between these two areas. This design has been based off the Predictive Archaeological Potential mapping from the CVA and ACHIA reports, seeking to avoid areas deemed to be of 'archaeological potential'.

However, the connecting waterways between and through the Eastern Depression will cause significant ground impact. The waterways will be several metres wide, and down to some depth, thereby affecting a significant footprint of ground. Therefore it is noted that whilst the MW DSS plans seek to avoid impacting the eastern depression, the plans in practice do impact the depression.

As detailed above Alpha has undertaken a significant amount of field testing in and around the eastern depression under the CHMP. This ground truthing has revealed the locations of Aboriginal cultural material and has also revealed those areas in and around the eastern depression where Aboriginal cultural material has not been found.

The MW DSS plans have not considered the location of the Aboriginal Places that have been found in and around the eastern depression, and in fact the waterways as shown in the plans run through one of the larger, more significant Aboriginal artefact scatters. There are opportunities for drainage assets to be located in and around the eastern depression, whilst still avoiding the Aboriginal heritage that has been found, however the current MW DSS plans do not reflect this. Nor do the MW DSS plans provide for the decommissioning of the large dam at the north end of the Eastern Depression.

Spiire – K6 Depression Optimisation

The drainage plan proposed by Spiire has considered the results of the extensive field testing undertaken by Alpha for the CHMP. In particular the Spiire plan has located all of the drainage basins in and around the eastern depression area, whilst avoiding impact to all of the Aboriginal places.

It has considered the large dam at the northern end of the Eastern Depression, and has placed drainage assets in this already disturbed area, further reducing impact to the surrounding area.

Spiire has also re-aligned the connecting waterways so they now avoid impact to the Aboriginal heritage in this area, whilst also taking into consideration the Cultural Values recommendations of waterways meandering in design, rather than straight channels.

Conclusions

The Spiire **K6 Depression Optimisation** design is the preferred drainage option for the Melton East PSP regarding the Eastern Depression and connecting waterways.

The ACHIA provided Predictive Archaeological Sensitivity maps, that were intended to be used as a broad guide only. It was recommended in both the ACHIA and CVA reports that

CHMP assessments should be undertaken, with the results of these more intensive field assessments then informing any drainage designs.

Alpha has undertaken an intensive field assessment, resulting in the identification, recording and mapping of Aboriginal places in and around the Eastern Depression area. The CHMP assessment was undertaken in advance of the Melton East PSP being finalised, in order to inform the design of the PSP in this area, and this is also in alignment with the recommendations of the ACHIA and CVA.

Both the ACHIA and CVA recommend avoiding harm to Aboriginal heritage wherever possible. The Spiire DSS Optioneering 3 design avoids harm to all of the Aboriginal heritage in and around the Eastern Depression area, and this outcome is in accordance with the ACHIA and CVA recommendations, together with S.61 of the Act where harm to Aboriginal heritage should be avoided where possible.

The MW DSS has not considered the outcome of the detailed CHMP field assessment, and its design impacts Aboriginal cultural heritage. Therefore the MW DSS in not a preferred option for drainage design in and around the Eastern Depression area.

Taylors Road Alternative Alignment

With the consolidate of the drainage assets Spiire proposes moving Taylors Roadslightly to the east and closer to the Eastern Depression area to improve NDA. This alignment would impact several registered Aboriginal artefacts, which are isolated Low Density Artefact Distribution (LDAD) components.

Although moving Taylors Road east closer to drainage area would harm some LDAD components, the improved **Spiire – K6 Depression Optimisation** X plan serves to protect all of the Aboriginal heritage in the eastern depression area, and improves the waterways to a meandering design in accordance with the recommendations with the CVA.

The improved Spiire drainage design has avoided large areas of artefacts as opposed to MW DSS design. It protects in and around the central depression area, better protecting the cultural landscape of this area.

The LDAD components that would be impacted by moving Taylors Road east are peripheral to the central cultural area. Therefore it would be considered that the Alternative Alignment plan by Spiire, moving Taylors Road alignment sightly to the east, would be an acceptable outcome in relation to cultural heritage management of this area.

Management conditions relating to the impact of the LDAD components would be included in the CHMP currently in development for this area.

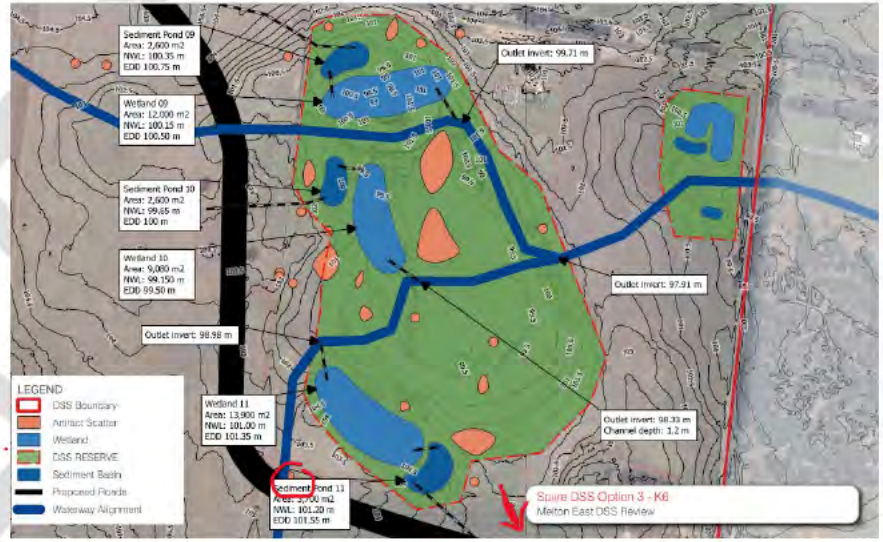
Melbourne Water DSS

Taylors Rd PSP alignment
Avoids impacts to all Aboriginal Places

Drainage Assets:

Property	Number of Artefacts
Total artifacts disturbed	***219***
Beattys Rd Grangefields LDAD1 (VAHR 7822-4937)	
impacted by the drainage basin located on the north side of the waterway running between the two depressions.	2
impacted by pipeline at north end of 1031 Beattys Rd property.	1
impacted by pipeline on west side of 2414 Western Highway property.	1
1031 Beattys Rd LDAD1 (VAHR 7822-4937)	

Spiire Alternative Design



Taylors Rd Spiire re-alignment

Property	Number of Artefacts
Total artifacts disturbed	**5**
A small cluster of artefacts would be impacted by the re-alignment, totalling 5 artefacts from the following Aboriginal LDADs:	
1031 Beattys Rd LDAD1 (VAHR 7822-4937)	1
1031 Beattys Rd LDAD1 (VAHR 7822-4937)	3
Kororoit Creek LDAD 1 (VAHR 7822-4657)	1

Drainage Assets:
Avoids impacts to all Aboriginal Places.

impacted by the SE drainage basin (just under AS3 scatter)	1
impacted by waterways running through 1031 Beattys Rd property.	1
1031 Beattys Rd AS8 (VAHR7822-4933)	
this is a large artefact scatter comprising 70 flaked stone artefacts found on both the surface and subsurface. The waterway runs rightthrough the place.	70
Kororoit Creek LDAD 1 (VAHR 7822-4657)	
a cluster of 5 artefacts are impacted by the SE drainage basin, and a further artefact impacted by the waterway that runs east out of 1031 Beattys Rd property.	5
Beattys Rd Grangefields AS1 (VAHR 7822-4936)	
this artefact scatter comprises 37 flaked stone artefacts. It will be impacted by a pipeline.	37
1031 Beattys Rd AS10 (VAHR 7822-4934)	
this artefact scatter comprises 101 flaked stone artefact and will be impacted by a pipeline.	101

Technical Memorandum

Memo No.	V1	**Date of Issue**	14 March 2025
Subject	Melton East PSP Wetland Assessment (K4 and K6)	**Revision**	V1
Project Title	Grangefields Development	**Project No.**	30043624
Authors	[redacted]		
Reviewed by	[redacted]	**Approved by**	[redacted]
Prepared for	3L Alliance	**Attention to**	[redacted]
Attachments	N/A		

1. Introduction

1.1 Background

SMEC Australia Pty Ltd (SMEC) was commissioned by 3L Alliance to undertake a ground-truthing exercise of the two wetlands south of Beattys Road, Grangefields (the study site). The two wetlands are identified as K4 and K6 within Melbourne Water's draft concept drainage strategy and are situated within the Melton East Precinct Structure Plan (PSP). 3L Alliance are investigating integrated water management issues and opportunities for the Melton East PSP (the Project), including the current status of two wetlands (K4 and K6) south of Beattys Road.

The western wetland (K4) has been sporadically inundated by diversion of stormwater to the south of the Western Highway since 2020 and was previously identified as supporting *Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowlands Plains* (SHW), an ecological community protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (Rakali 2021). Prior to the inundation in 2020, wetland K4 had remained dry for nearly a decade (Rakali 2021). The eastern wetland (K6) was assessed by Rakali in 2013 via aerial imagery and desktop assessments and has reportedly remained dry for >50 year (anecdotal evidence from the landowner).

To determine whether the study site still supports the SHW community (given fairly consistent inundation for 4 years), SMEC undertook an initial desktop assessment followed by a ground-truthing exercise in March 2025 to assess the current condition of the wetlands. The purpose of the assessment is to identify the wetlands current status and identify what opportunities may arise in maintaining ecological values of the wetlands throughout the implementation of the Melton East PSP. This report outlines the findings of the desktop and site assessment and provides information regarding the current condition of the wetlands, and future opportunities for the Melton East PSP.

1.2 Overview of wetland systems

Seasonal Herbaceous Wetlands (SHW) are isolated freshwater wetlands that are seasonally or intermittently filled by rainfall. These wetlands are typically inundated during the cooler months (winter – spring) and generally dry out by late summer, meaning surface water is not permanently present (DSEWPC 2012, Frood and Papas 2016 2016). The temporary nature of inundation causes these wetlands to seemingly "disappear" during dry periods. as a result, during dry periods, native flora and fauna species may not be visible but persist in a dormant state as seeds, spores, and eggs in the soil. Once inundated, these wetlands can quickly revert to thriving, diverse ecological communities (DSEWPC 2012).

A typical and ideal wetting and drying regime for functioning seasonal herbaceous wetlands in Victoria varies depending on the annual or seasonal rainfall and location within the landscape, however, it generally follows a 6 to 8-month wet phase from Autumn through to Spring followed by a 4 to 6-month dry phase from late spring through to summer (DELWP 2022). Within a Plains Grassy Wetland Ecological Vegetation Class (EVC), inundation can be seasonal or intermittent, with the duration of waterlogging occurring from 1 to 6 months annually or near annually (Frood and

Papas 2016). The dry phase is important to expose seedbanks for germination in the next cycle, whilst gradual drying following a period of inundation encourages wetland plants to flower and set seed (DELWP 2022).

SHWs are usually found in agricultural landscapes on fertile soils, making them vulnerable to land-use changes, including cropping and drainage. Over time, this has contributed to their significant reduction in their extent and ecological quality. As a result, SHWs are now listed as Critically Endangered under the EPBC Act (DSEWPC 2012). The hydrological variability and dynamic nature of SHWs are essential to their ecological function. These wetlands provide habitat for various native species, including flora and fauna adapted to shifting wet and dry conditions. However, the ongoing alteration of their hydrology due to human activity poses a significant threat to their survival (DSEWPC 2012, DELWP 2022).

1.3 Scope of works

The scope of works includes the following:

- Review desktop information (SMEC 2025, Rakali 2013; 2021);
- Undertake a site assessment to ascertain the current conditions of wetlands K4 and K6;
- Determine the presence and condition (if relevant) of the EPBC Act-listed SHW community;
- Provide a comparison of the current status of the SHW at wetland K4 (Figure 1) with previous findings by Rakali Ecological Consulting (Rakali) (2021);
- Provide a high-level assessment of the ongoing feasibility and possible ecological outcomes for the wetlands following development utilising Melbourne Water's draft Development Services Scheme (DSS) and the proposed DSS scenarios presented by Spiire (Appendix A); and
- Provide recommendations to maintain/enable regeneration of SHW at both wetland sites (if possible).

1.4 Study site

The study site refers to the areas that were surveyed on-ground by SMEC ecologists (Figure 1) and includes two seasonal wetland areas identified as K4 and K6, described in further detail below:

- **K4 wetland:**
  - Located immediately east of Paynes Road, between Beattys Road and Western Freeway, Grangefields.
  - Approximately 9 ha in area.
- **K6 wetland:**
  - Located 300 m west of Leakes Road, between Beattys Road Western Highway.
  - Approximately 13 ha in area.

The following describes the study site and immediate surrounds:

- *Traditional owners:* The study site is located on the land of the Wurundjeri People.
- *Nearest town:* The study site is located within suburb of Grangefields, just north of Thornhill Park, Victoria.
- *Local bioregion:* Victorian Volcanic Plain.
- *Local Government Area (LGA):* Melton City.
- *Catchment Management Authority (CMA):* Melbourne Water.

1.5 Limitations

The survey was conducted in March 2025, following an extensive dry period over summer. As such, both wetlands being dry at the time of assessment. Confirming the presence of the SHW community is most reliable during periods of inundation when wetland and aquatic species are evident. However, indicator species such as Common Swamp Wallaby-grass (*Amphibromus nervosus*) may still be detectable in dry conditions.

Access to the K4 Wetland was not granted, so the assessment was conducted from the roadside along Paynes Road.

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ABN 47 065 475 149

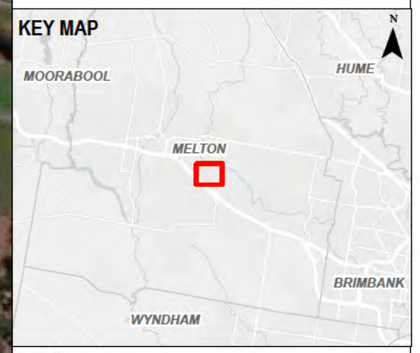
0 60 120 180 240
Metres

Scale:1:6,000 @ A3
GDA2020 MGA Zone 54

LEGEND

- Study Site
- Wetland Current
- Major Road
- Minor Road
- River

KEY MAP



SOURCES:
1. Basemap © Light Gray Base: Vicmap, Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS
World Imagery: Maxar

PROJECT:	Harley Weekly Bird Map
PROJECT NO:	30043624
FIGURE NO:	1
FIGURE TITLE:	Study Site Location
CREATED BY:	MD17519
DATE:	13/03/2025
VERSION:	2

2. Methods

2.1 Database and literature review

A desktop assessment was undertaken by SMEC with the following resources reviewed:

- Australian Government EPBC Act Protected Matters Search Tool (PMST) (DCCEEW 2025a);
- Victorian Biodiversity Atlas database (DEECA 2025a) and Atlas of Living Australia (ALA 2025) databases;
- NatureKit Map (DEECA 2025b) for Ecological Vegetation Class (EVC) mapping of native vegetation;
- The draft Melton Precinct Structure Plan (VPA 2025);
- Kororoit Creek Upper and High Street Melton DSS Design (Alluvium 2025)
- Previous wetland ecological assessment reports:
  - Flora and Fauna Survey and Condition Assessment of the Paynes Road Wetland, Grangefields, Victoria (Rakali 2021)
  - Rockbank Area Wetland Survey (Rakali 2013)
- The proposed DSS scenarios presented by Alluvium (2025); and
- Aerial imagery of the study site.

2.2 Site assessment

On the 5 March 2025, two SMEC ecologists undertook a site assessment to ascertain the current condition of both K4 and K6 wetlands and to determine the presence and condition of the EPBC Act-listed community - SHW.

The following tasks were undertaken:

- Confirm the EVCs present within/bordering both wetlands. This included mapping their extent where possible;
- Map area of current inundation, if possible;
- Utilise the “Key Diagnostic Characteristics and Condition Thresholds” available within the SHW listing advice (DSEWPaC 2012) to determine if either wetland currently/potentially meets the criteria to be classified as the SHW community;
- Record an inventory of all flora and fauna species encountered; and
- Map locations of any threatened species encountered and areas of noxious weed infestations.

Site access was not permitted within the property containing the western wetland (K4). Therefore, the assessment was undertaken from the roadside only (Paynes Road), which limits the level of detail from the ground-truthing exercise. SMEC has supplemented this information with desktop information and past reports where possible.

3. Results

3.1 Wetland description summary

3.1.1 K6 wetland

At the time of the assessment, the K6 wetland was dry and based on anecdotal information provided by the landowner, has been for 50+ years. The existing wetland area is likely to have been ephemeral, being a low-lying depression relative to the surrounding landscape. There is a large artificial dam (also currently dry) which has been excavated in the north of the existing wetland's extent, which restricts inundation to the remainder of the wetland. It is possible that altered hydrology due to farming practises and surrounding rural development has resulted in significant variation to the existing hydroperiod of the K6 wetland. As a result, the continued succession and persistence of native wetland flora species has been impacted. It is possible that under a more natural wetting and drying regime, this wetland could return to a natural SHW community. However, the EPBC Act-listed SHW community is not considered present within this wetland in its current condition.

The wetland area is now overrun with extensive patches of noxious weeds listed as Weeds of National Significance (WoNS) and/or under the *Catchment and Land Protection Act 1994* (CaLP Act). Typical species recorded in high density throughout the wetland area included Sticky Ground-cherry (*Physalis hederifolia*), Serrated Tussock (*Nassella trichotoma*), Artichoke Thistle (*Cynara cardunculus*), Spiny Rush (*Juncus acutus*), African Boxthorn (*Lycium ferocissimum*) and Horehound (*Marrubium vulgare*) (Image 1, Figure 2). A full list of flora species recorded within the wetland are provided in Appendix B.

Narrow strips of native vegetation that are commonly recorded at the edges of remnant wetlands have persisted along the fence-line boundary of the property, most likely belonging to the Lignum Swamp Ecological Vegetation Class (EVC 104, Image 2, Figure 2). This indicates that the site has historically supported a wetland ecosystem, which also aligns with DEECA's current wetland layer (DEECA 2025b). Native species were sparse and species diversity was poor, with narrow extents of Tangled Lignum (*Duma florulenta*) and large, old, remnant River Red-gums (*Eucalyptus camaldulensis*) present in fragmented patches. The understorey in these areas largely comprised dense carpets of Serrated Tussock. A summary of key findings is provided below in Table 1.

3.1.2 K4 wetland

SMEC were unable to access the property to investigate the state of the wetland in detail, an assessment was undertaken from the roadside, along Paynes Road, which limits our capacity to undertake a detailed assessment. However, it was noted that the SHW community still persists within the K4 wetland (refer to Table 2 for details). The EPBC Act-listed SHW community has been previously recorded within this wetland by Rakali in 2021 (Rakali Consulting, 2021).

The wetland appears to be in worse condition to what was recorded by Rakali in 2021, likely due to its current and possibly prolonged dry state (i.e. >12 months)[1], with much of the vegetation brown or dying due to the absence of water. Native species that dominated the wetland included Common Swamp Wallaby-grass (*Amphibromus nervosus*) and Common Blown-grass (*Lachnagrostis filiformis*) (Image 4). Additional native herbs were scattered along the edge of the wetland (and likely persist throughout the centre as well), including Creeping Knotweed (*Persicaria prostrata*), Lesser Joyweed (*Alternanthera denticulata*) and Variable Willow-herb (*Epilobium billardiereanum*) (Image 3 and 4, Figure 2). Native species were recorded at approximately 50-60% cover, indicating the SHW community remains present, albeit in reduced quality, as per the condition thresholds for the community (refer to Table 2). Scattered occurrences of Tangled Lignum were observed at the edge of the wetland, particularly at the eastern shoreline, and the EVC mapping for this area aligns with Rakali's assessment in 2021 (i.e., Freshwater Lignum Shrubland, EVC 657). A full list of flora species recorded within the wetland are provided in Appendix B.

Introduced species were recorded in high density, making up approximately 40-50% of the vegetation within the wetland. Species typically recorded throughout the centre of the wetland included perennials and annuals that would likely become drowned out following inundation, such as Aster-weed (*Symphyotrichum subulatum*), Curled Dock (*Rumex crispus*), Flaxleaf Fleabane (*Erigeron bonariensis*) and Buchan Weed (*Hirschfeldia incana*) (Image 4). These weedy species are not as invasive and detrimental in nature compared to the weeds found dominating much of the K6

[1] Google Earth satellite imagery shows that water was absent in the K4 wetland in March 2024.

wetland. Introduced species, including noxious weeds, were present along the edge of the wetland, notably within the road reserve, including African Boxthorn, Pepper Tree (*Schinus molle*) and Serrated Tussock.

A summary of key findings from both wetlands is provided below in Table 1 and location of ecological values for both wetlands is illustrated on Figure 2.

Table 1: Summary of current wetland assessment

Category	K4 wetland	K6 wetland
Introduced species cover (%)	40-50%	90-95%
Native species cover (%)	50-60%	5%
Water cover (%)	0%	0%
Water depth (cm)	0	0
SHW community presence	Present	Not present
SHW community quality (i.e., very high-quality or not)	Low (no indicator species recorded)	N/A
EVCs present	Plains Grassy Wetland (EVC 125) throughout the majority of the wetland. Freshwater Lignum Shrubland (EVC 657) on the eastern borders.	Lignum Swamp (EVC 104) along the border of the wetland.

Image 1: K6 wetland containing high density of invasive introduced species (such as Spiny Rush, pictured).

Image 2: Lignum Swamp (EVC 104), including Tangled Lignum in the foreground and large old remnant River Red-gums in the background, recorded within the K6 wetland.

Image 3: Plains Grassy Wetland (EVC 125) recorded to the west of Paynes Road within the K4 wetland.

Image 4: Extensive areas of Buchan Weed and Aster Weed amongst native Common Swamp Wallaby-grass and Common Blown Grass within Plains Grassy Wetland (EVC 125) within the K4 wetland.

3.2 Comparison of site characteristics with the listing advice for the SHW community and previous assessment

3.2.1 Previous assessment

3.2.1.1 K6 wetland

Rakali (2013) identified the K6 wetland as not supporting the SHW with no indicator flora species identified, and an Index of Wetland Condition (IWC) score of 4 (poor). The assessment identified the wetland as supporting Plains Grassy Wetland (EVC 125) and Plains Swampy Woodland/Lignum Swamp Complex (EVC 784) (Rakali 2013). While not classified as SHW, the Plains Swampy Woodland/Lignum Swamp Complex EVC was considered a significant component of the wetland, providing wildlife habitat and mature River Red-gums providing amenity and aesthetic value (Rakali 2013). The K6 wetland was also considered to provide potential habitat values for Growling Grass Frog (Rakali 2013).

3.2.1.2 K4 wetland

Rakali (2013) identified the K4 wetland as potentially supporting 'high quality' SHW with one indicator species present. The assessment identified the wetland as supporting Plains Grassy Wetland (EVC 125) and Freshwater Lignum Shrubland (EVC 657) and the IWC score for wetland K4 was 6 (moderate) (Rakali 2013). As the wetland was dry during the assessment, it was determined that K4 wetland should be assumed to support 'high quality' SHW until proven otherwise through a floristic survey under appropriate conditions (Rakali 2013).

Rakali (2021) identified the SHW community persisting within the K4 wetland and was determined to meet the 'high-quality' criteria in the EPBC Act listing advice (DSEWPC 2012) due to the presence of three high-quality indicator species. The condition of the 2021 assessment had improved due to recent stormwater diversion by Melbourne Water into the K4 wetland to allow inundation to occur. Incidental fauna observations included two threatened species listed under the *Flora and Fauna Guarantee Act* 1988 (FFG Act) including Australasian Shoveler (*Anas rhynchotis*) and Tussock Skink (*Pseudemoia pagenstecheri*), however is noted the latter was not associated with wetland habitat. Five wetland bird species were observed nesting within the wetland including Black Swan (*Cygnus atratus),* Black-winged Stilt (Himantopus leucocephalus), Grey Teal (*Anas gracilis*), Hoary-headed Grebe (*Poliocephalus poliocephalus*) and White-fronted Chat (*Epthianura albifrons*).

3.2.2 Current assessment

3.2.2.1 K6 wetland

The eastern wetland does not currently support the site conditions to be considered the SHW community (refer to Table 2). There is potential that the SHW community could occur in the future, under improved land management practises including weed management and implementation of a more natural wetting and drying hydrological regime.

3.2.2.2 K4 wetland

During the current wetland assessment, the SHW community was recorded within the K4 wetland. However, it appeared to be in poor condition relative to previous assessments, with a high proportion of weed cover (40-50%) occurring across the wetland. The current wetland assessment was undertaken in sub-optimal conditions, in this instance, following a likely prolonged dry period, where the wetland appeared to have not been inundated for some time (possibly up to 12 months). Furthermore, the current wetland assessment did not allow for a detailed investigation (i.e., it was undertaken from the roadside only), meaning many species that may have been present, such as high-quality indicator species, were unable to be detected. It is therefore assumed that given an appropriate hydrological regime, SHW may persist within wetland K4.

A summary of the key diagnostic criteria and condition thresholds provided alongside Rakali's assessment from 2020 is provided below in Table 2.

Table 2: Assessment against the key diagnostic characteristics and condition thresholds for the SHW community

Scientific determination criteria	Rakali response (2021) for K4 wetland	K4 wetland response (current assessment)	K6 wetland response (current assessment)
Key diagnostic characterises			
Landscape			
Limited to the temperate zone of mainland south-eastern Australia. The ecological community occurs in south-east SA, Victoria and southern NSW.	Yes	Yes	Yes
On flat plains grading into slopes, below 500 m asl.	Yes	Yes	Yes
Associated soils are generally fertile but poorly draining clays derived from a range of geologies.	Yes	Yes	Yes
Typically in rainfall zones with a Winter seasonal rainfall pattern, extending into a uniform seasonal rainfall pattern at the edge of its range. The mean annual rainfall is usually 400 to 800 mm/year but can be lower at the northern edge of its range.	Yes	Yes	Yes
Hydrology			
On isolated drainage lines or depressions which are seasonally inundated (typically during winter-spring) and subsequently dry (typically by late summer).	Yes, within a depression that is historically seasonally inundated.	Yes, within a depression that is historically seasonally inundated.	Yes, however, no recent evidence of inundation and anecdotal evidence from landowner claims the wetland has not been inundated in >50 years. The dam excavation in the northern area of the wetland may limit inundation within the existing extent of the wetland area.
Rainfall is the main water source. These wetlands are not dependent on overbank flooding from riverine systems.	Yes, rainfall is the main water source	Yes, rainfall is the main water source	Yes, rainfall is the main water source.
Salinity of the water is fresh to slightly brackish. Salinity mostly lies within the range, 0 to 1000 mg/L but can be up to 3000 mg/L, typically exhibiting a progressive increase in salinity as wetlands dry.	Yes	Yes	Yes
Biota			

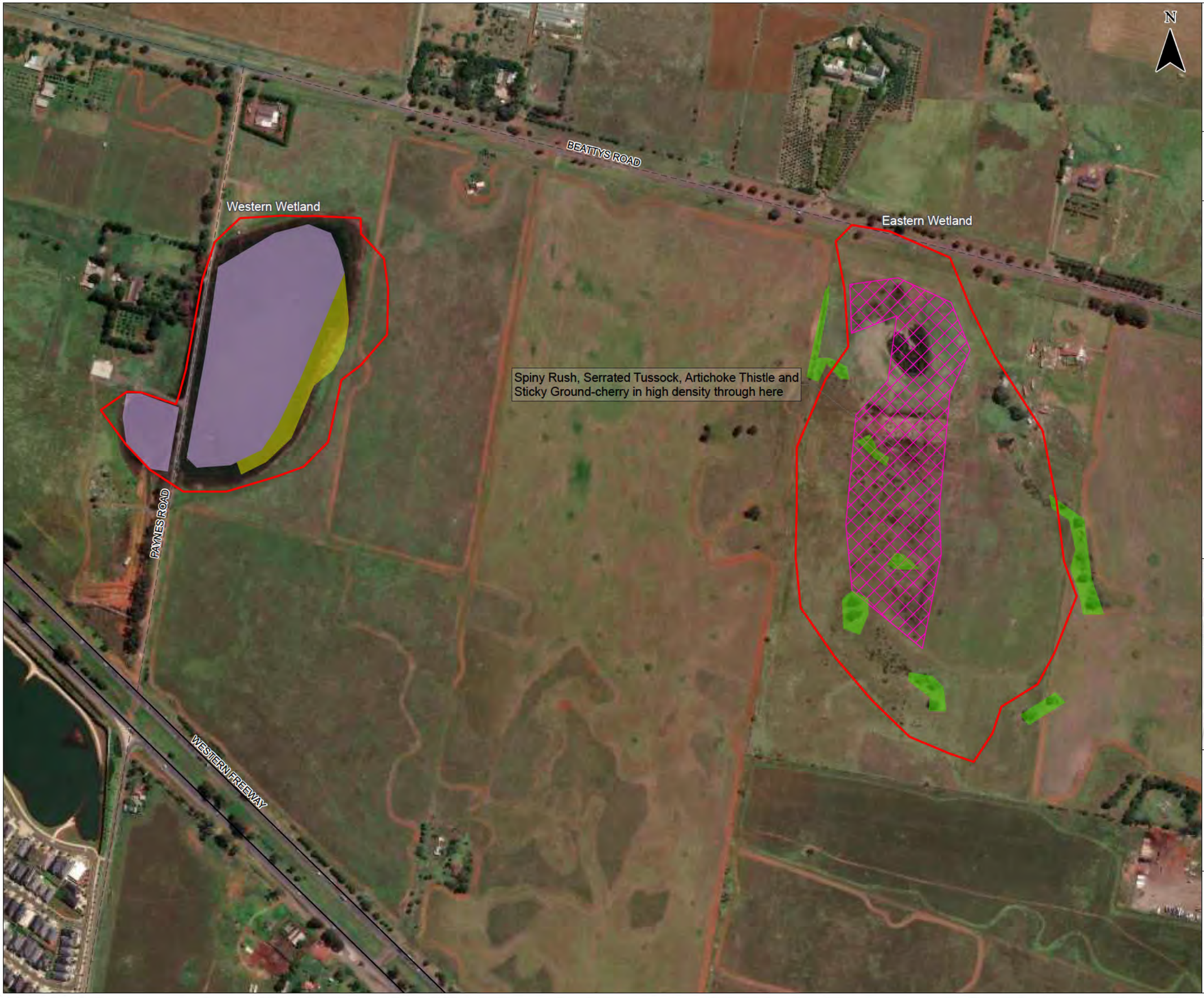
Scientific determination criteria	Rakali response (2021) for K4 wetland	K4 wetland response (current assessment)	K6 wetland response (current assessment)
Trees and shrubs are sparse to absent. When present, they mostly occur as fringing or scattered individuals. The cover of woody species accounts for no more than 10% projective foliage cover across the wetland.	Yes, there is a sparse cover of Tangled Lignum (*Duma florulenta*) on the eastern side.	Yes, there is a sparse cover of Tangled Lignum on the eastern side at <10% projective foliage cover across the wetland.	Yes, there is a sparse cover of Tangled Lignum and River Red-gums along the border of the wetland.
The vegetative cover of the ecological community is dominated by a ground layer of native wetland graminoids and/or native wetland forbs.	Yes	Yes, although weedy incursions are present in a high cover (40-50%), native wetland graminoids and forbs remain the dominant ground layer feature at >50% cover.	No – not the SHW community
A range of graminoids is often present and typically includes one or more of the following taxa: *Amphibromus* spp., *Carex tereticaulis, Deyeuxia* spp., *Glyceria* spp., *Lachnagrostis* spp., *Poa labillardieri,* and *Rytidosperma duttonianum*. Note that other graminoid taxa may also occur, though are not necessarily common.	Species recorded included: *Amphibromus nervosus, Eleocharis acuta, Juncus flavidus Rytidosperma duttonianum* and *Lachnagrostis filiformis.*	Species recorded included: *Amphibromus nervosus* and *Lachnagrostis filiformis*.	No – no native graminoids recorded during the current assessment. Not the SHW community.
At least one native wetland forb species must be present (preferably more) after the ecological community is inundated. The suite of forbs that may occur within the ecological community's range is variable and potentially large.	Species recorded included: *Haloragis aspera, Damasonium minus, Marsilea drummondii* and *Lythrum hyssopifolia*	Species recorded included: *Alternanthera denticulata, Epilobium billardiereanum* and *Persicaria prostrata*. It is possible more forbs are present; however the wetland was unable to be observed in detail (i.e., roadside observations only).	No – no native wetland forb species detected during the current assessment. Not the SHW community.
Freshwater algae often are present when the wetland is, or recently has been, wet. The most evident representatives are green algae from the groups Charales (stoneworts) and Zygnematales (pond scums).	None	Not determined – the wetland was unable to be observed in detail, however no algae were recorded from the roadside assessment.	N/A – wetland has not been recently wet.
Characteristic fauna that may be associated with the ecological community include invertebrate groups that are temporary water specialists. The types of fauna present can be highly variable, depending on the inundation history, current conditions and other factors.	Species recorded included: Grey Teal, Pacific Black Duck, Black-winged Stilt, Hardhead, Australasian Shoveler, Black Swan and White-fronted Chat.	No wetland fauna recorded.	No wetland fauna recorded.
Modified wetlands			

Scientific determination criteria	Rakali response (2021) for K4 wetland	K4 wetland response (current assessment)	K6 wetland response (current assessment)
Modifications to other types of wetlands may result in the ecological community being present where it was formerly absent. These modified wetland sites are included as part of the national ecological community, if they remain a functional natural wetland and conform to the description of the ecological community.	Natural SHW	Natural SHW	The wetland should function as a natural SHW, however, due to surrounding landscape modifications (creation and formation of nearby artificial farm dams), it is possible that the topography of the site has changed and the depression may not function as a natural SHW.
Condition thresholds			
Part A) Condition during 'typical' wet cycles			
Step A1) Is the wetland consistent with the key diagnostic characteristics, noted above? • If yes, go to Step A2. • If no, the wetland is of a different type to the Seasonal Herbaceous Wetlands	Yes	Yes	No – not the SHW community.
Step A2) Is 50% or more of the total cover of plants in the ground layer of the wetland dominated by native species characteristic of the Seasonal Herbaceous Wetlands ecological community? • If the answer is yes, the wetland retains sufficient native cover. Go to Part C Minimum wetland size. • If the answer is no, the wetland no longer retains sufficient natural values to be considered part of the national ecological community	Yes	Yes	N/A
Part B) For dry conditions (e.g. drought):			
Step B1. Determine landscape position, including any modifications of the surrounds. • If the landscape does not, or is no longer able to, support a seasonal wetland, then the ecological community is unlikely to be present. • If the landscape is consistent with the formation of a functional seasonal wetland, then go to Step B2.	N/A	The landscape in which the wetland is positioned is consistent with the formation of a functional seasonal wetland.	The location of the wetland within the landscape suggests it may be able to support a seasonal wetland following heavy rainfall, however anecdotal evidence from the landowner suggests that the wetland has not been inundated in >50 years and therefore has likely not been functioning as a wetland for >50 years.

Scientific determination criteria	Rakali response (2021) for K4 wetland	K4 wetland response (current assessment)	K6 wetland response (current assessment)
Step B2. Investigate the known or inferred history of the likely wetland. Is the wetland known to be a natural wetland from existing information? For instance, its floristic composition, when wet, is known from past vegetation surveys or maps, detailed flora lists, wetland directories, reliable modelling of pre-European vegetation, or on-ground evidence that native wetland vegetation is present. • If yes, and the information on plant species composition is sufficiently detailed, then the site may be assessed according to Parts C and D, below, using the existing information. • If no, or not as above, then go to Step B3.	N/A	Yes – the wetland was previously assessed by Rakali in 2021 and was confirmed to contain the SHW community.	Yes – the wetlands which form the eastern wetland area are modelled under the DEECA current wetland layer (Wetland numbers 70458 and 72810, VVB 2025). These wetlands are described as *temporary freshwater marshes and meadows* that are periodically inundated. The dominant vegetation is supposedly sedges, grasses and forbs, and they are described as naturally occurring wetlands within the SHW dataset (VVB 2025).
Step B3. Determine the nature of the vegetation surrounding the wetland. Is the wetland surrounded by or adjoining a native vegetation remnant. For instance, the wetland is within or next to natural temperate grassland, grassy woodland, other wetland types or other native vegetation communities present in the region. • If yes, the wetland ecological community is likely to be present. Go to Part C Minimum wetland size, below. • If no, and the area immediately around and within the wetland is cropped, then the wetland ecological community is unlikely to be present. This is especially likely if there has been long-term, ongoing cropping. • If no, and the area immediately around and within the wetland is grazed, then the wetland ecological community may be present, but potentially degraded. Evidence of heavy or continuous grazing is likely to promote degradation of the wetland. However, more sustainable grazing regimes, e.g. cell grazing, may be less damaging. Actual impacts due to grazing would best be assessed after the next inundation. Go to Part C Minimum wetland size, below.	N/A	N/A	Vegetation surrounding the wetland includes Tangled Lignum and large, old remnant River Red-gums, which are typically found along the border of wetlands.

Scientific determination criteria	Rakali response (2021) for K4 wetland	K4 wetland response (current assessment)	K6 wetland response (current assessment)
Part C) Minimum wetland size			
If the wetland occurs as a single isolated wetland, then it must be 0.5 ha or larger in size; OR If the wetland occurs as a cluster of many small wetlands in reasonably close proximity, then the cluster effectively functions as a single unit. The wetlands within the cluster must total at least 0.5 ha and this area of wetland must lie across a polygon (i.e. total area of wetland plus non-wetland in the cluster site) of at least 5ha. This means the area of wetland proper accounts for 10% or more of the total cluster area; OR If an individual wetland or wetland cluster is smaller than 0.5 ha, it may be included as part of the national ecological community if: i) the actual wetland or wetland cluster is 0.1 ha or more in size; AND ii) the wetland is contiguous with a native vegetation remnant; AND iii) the total area of the wetland plus other native vegetation remnant or type of natural wetland is 1 ha or more. If the wetland meets the size and other thresholds above, it is part of the Seasonal Herbaceous Wetlands ecological community. Go to Part D Very high-quality wetlands to determine if the wetland is of very high quality. If the wetland falls outside of the situations described above, the wetland is too small for consideration as a matter of national environmental significance.	Yes; patch >0.5 ha	Yes; patch >0.5 ha	Yes; the combined area that should contain the wetland is >0.5 ha in size.
Part D) Very high-quality wetlands			

Scientific determination criteria	Rakali response (2021) for K4 wetland	K4 wetland response (current assessment)	K6 wetland response (current assessment)
Are three or more native plant taxa listed in Table 1 of the listing advice (DSEWPC 2012) present within the wetland? • If yes, the wetland is considered to be of very high quality. • If no, the ecological community is still present if the criteria under Parts A to C are met but is not considered to be of very high quality. A wetland may merit further consideration for protection as outlined in the Additional considerations: surrounding environmental and landscape context in (DSEWPC 2012).	Yes, three indicator species recorded.	No, no indicator species recorded. However, it should be noted that a detailed assessment was not undertaken due to site access restrictions. It is likely that the wetland contains a high diversity of native forbs, including at least one, if not more, species listed in Table 1 of the listing advice (DSEWPC 2012). A follow up spring flora survey is recommended to be undertaken to determine the quality of the SHW present within the western wetland.	No, no indicator species recorded.
Final determination	**Present**	**Present**	**Not present (did not meet the key diagnostic characteristics in it's current state). However, it is recommended a survey is undertake after the wetland has been inundated/following heavy rainfall to determine whether the wetland will naturally become inundated.**
Quality (i.e., very high-quality or not)	High quality	Not very high-quality (further assessment recommended)	N/A



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SMEC AUSTRALIA PTY LTD
ABN 47 065 475 149

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Metres

Scale:1:5,000 @ A3
GDA2020 MGA Zone 54

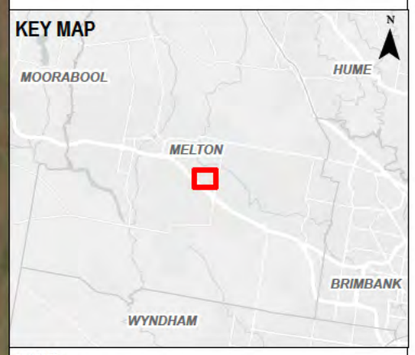
LEGEND

- Study Site
- Major Road
- Minor Road

Ecological Vegetation Classes

- Lignum Swamp (EVC 104)
- Plains Grassy Wetland (EVC 125)
- Freshwater Lignum Shrubland (EVC 657)
- Noxious Weed Patch

KEY MAP



SOURCES:
1. Basemap © Light Gray Base: Vicmap, Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS
World Imagery: Maxar

PROJECT: Harley Weekly Bird Map
PROJECT NO: 30043624
FIGURE NO: 1
FIGURE TITLE: Study Site Location
CREATED BY: MD17519
DATE: 13/03/2025
VERSION: 2

3.3 Fauna results

As the two wetlands were dry during the assessment, no wetland-dependant fauna were observed within either wetland. High numbers of invasive species were evident in the K6 wetland, with numerous European Brown Hare (*Lepus europaeus*) and European Rabbit (*Oryctolagus cuniculus*) observed during the assessment, along with evidence of Red Fox (*Vulpes vulpes*) in the form of dens.

Several native bird species were observed in habitats surrounding the K4 wetland including Zebra Finch (*Taeniopygia guttata*), Red-browed Finch (*Neochmia temporalis*) and Wedge-tailed Eagle foraging overhead (*Aquila audax*).

3.3.1 Growling Grass Frog habitat

The Kororoit Creek and nearby wetlands are considered to be a high priority reach for the conservation of Growling Grass Frog (*Litoria raniformis*) within the western Growth Corridor. Another wetland in the Melton East PSP, wetland K3 (not part of this study), occurs just north of Beattys Road, approximately 700 m and 1.5 km north-west from the K4 and K6 wetlands, respectively. This wetland is to be retained within a conservation area identified within the Melbourne Strategic Assessment (MSA) area and has previously been recorded as providing breeding habitat for Growling Grass Frog in 2010 (Rakali 2013). Rakali (2013) identified both K4 and K6 wetlands as potential habitat for Growling Grass Frog, given their similar habitat attributes of Lignum wetland EVCs.

In their current dry state, the wetlands do not currently provide habitat for Growling Grass Frog. To support breeding, the wetlands must remain inundated for at least six months of the year during the breeding season, generally between November and March (DCCEW 2025). This period of inundation is not necessarily aligned with the requirements of SHW, which are generally dry over summer.

4. Discussion of DSS options

In its current conditions, the K6 wetland has remained dry for many years and is not displaying the pre-development hydrological condition of SHW, which generally includes wetting and drying cycles, with inundation occurring every one-two years (refer Section 1.2). The SHW community was present in high quality condition within the K4 wetland in 2021 following diversion of stormwater in the K4 wetland which occurred throughout 2020 and 2021. The SHW community remains present within the K4 wetland due to the hydrological intervention from stormwater diversion. Following development of the PSP and without engineering or hydrology interventions, both wetlands will likely either cease to function (with stormwater diverted into constructed assets) or remain inundated, which would be detrimental to the species composition and SHW present within wetland K4 (Frood and Papas 2016).

Treated stormwater can play a crucial role in replenishing the existing natural wetlands by capturing and filtering runoff water before it flows into these areas. There is potential for the wetlands to function as SHW utilising stormwater to mimic the natural drying and wetting cycles by way of an engineered solution such as overflow redirection from the nearby catchments during wetter periods or installation of water management infrastructure (i.e. pumps, sluice gates, adjustable outfalls). Additionally, stormwater wetlands may provide habitat for Growling Grass Frog with a permanent water source available year-round (DELWP 2017).

4.1 Melbourne Water DSS option

The configuration of Melbourne Water's DSS (refer Figure 56 in Alluvium 2025) identifies complete avoidance of both K4 and K6 wetlands, with low flows diverted via a diversion channel and all other flows entering the wetlands. Alluvium (2025) note that this arrangement will provide suitable drying and wetting cycles to support SHW in the K4 wetland.

It is noted that the northern portion of the K6 wetland has a constructed dam which would likely restrict the spread of water from the wider wetland extent. This would require filling and reshaping of previously excavated spoil to facilitate water entering the remainder of the wetland area to the south. Additionally, wetland K6 has a significant cover of weeds including Spiny Rush. While many of the terrestrial weed species are likely to perish with inundation (e.g. Serrated Tussock, Stick Ground-cherry etc.), Spiny Rush is a wetland adapted species and without removal, would likely spread further across the K6 wetland area. Seed material may also be transported downstream and establish in other wetland or waterway areas, potentially leading to further infestation and displacement of native vegetation outside of the Melton East PSP.

In order to achieve the above interventions, significant ground disturbance is likely to be required within wetland K6, however, with considered planning and management, it is feasible that the wetland could support SHW again in the future.

4.2 Spiire DSS option (K6)

The Spiire DSS option (option 3) for wetland K6 utilises the existing farm dam as the location for a stormwater wetland and integrates another two stormwater assets around the margins of the K6 depression. This option provides a mosaic of habitats within the K6 wetland and may provide breeding opportunities for Growling Grass Frog, with permanent water available in constructed stormwater wetlands over the summer period, whilst still supporting an ephemeral wetland within the lower part of the depression. Stormwater wetlands should be designed and constructed to align with habitat attributes of Growling Grass Frog, in accordance with the *Growling Grass Frog Habitat Design Standards* (DELWP 2017).

To enable the K6 wetland to support the SHW in the future, SMEC recommends investigating the feasibility of installing a structure (such as bunding set at the appropriate level with high flow bypass) to enable the remaining area of the K6 wetland area to be intermittently flooded annually. Stormwater assets labelled A, B and C in Appendix A should be set at a higher topography and at the appropriate level such that they are not flooded when the remainder of the K6 is inundated.

5. Summary and recommendations

The K6 wetland has reportedly remained dry for over 50 years, with extensive weed invasion from high-threat weeds. The prolonged dry period has prevented the establishment of the SHW ecological community. Restoration of the K6 wetland would require substantial hydrological interventions and intensive weed management.

In contrast, the K4 wetland retains the SHW community but at a reduced quality in comparison to what Rakali noted from 2021, with 50% native vegetation cover and a high presence of introduced perennial weed species (40-50% cover). It is likely that prolonged dry conditions in the last 12 months have reduced its overall quality. However, previous assessments indicate the potential for recovery with appropriate management. The diversion of stormwater into the K4 wetland has previously resulted in positive ecological responses, as reported by Rakali (2021), such as the suppression of terrestrial weeds, the regeneration of indigenous wetland vegetation, and the return of native waterbird and frog species. To maintain SHW at the K4 wetland, careful hydrological and ecological management is required, particularly as urbanisation progresses in the surrounding catchment. Permanent inundation of the K4 wetland would also be detrimental to the persistence of SHW.

It is likely that ongoing management will be required to either restore the wetlands to a high-quality condition or maintain their integrity as functioning seasonal wetlands. Management and monitoring measures may include:

- Investigating the feasibility of installing a structure (such as bunding set at the appropriate level with high flow bypass) to enable the remaining area of the K6 wetland area to be intermittently flooded annually and to function as a more natural SHW system under the Spiire DS;
- Maintain and improve the condition of the K4 wetland under Melbourne Water's current regime (i.e., intermittent diversion of stormwater from the south of the Western Highway);
- Implementation of hydrological interventions to restore natural wetting and drying cycles, through controlled water diversions. It is possible that once the hydrological regime in the K6 wetland returns to a natural, seasonal wetting and drying cycle, native species persisting in the seedbank may begin to regenerate or re-colonise the wetland extent. Flooding may also assist with the management of terrestrial weeds in this area, such as Serrated Tussock;
- Avoiding a scenario where either wetland is subject to permeant inundation: Enable the option to divert water when required into wetlands on a seasonal basis, and ensure wetlands are able to dry out intermittently via drainage if evaporation is insufficient;
- Implementation of ongoing ecological monitoring within both wetlands to inform and evaluate when hydrology interventions may be required: Prepare and implement a monitoring program to inform and evaluate the requirement for diversion of water into the wetlands and inform managers when wetlands may need staged draining. Monitoring could also involve targeted surveys for threatened species, such as Growling Grass Frog;
- Prepare and undertake a comprehensive weed management plan in both wetlands to improve native vegetation cover, prioritising the removal of WoNS and other high-impact invasive species, such as Spiny Rush, African Boxthorn, Serrated Tussock and Sticky Ground-cherry;
- Developing a comprehensive management plan outlining hydrological and ecological strategies to enhance SHW conditions in the K4 wetland and encourage its establishment in the K6 wetland; and
- Creation of Growling Grass Frog habitat: Ensuring stormwater assets are designed to promote breeding habitat for Growling Grass Frog, in accordance with DEECA habitat design standards (DLEWP 2017).

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Appendix A Spiire DSS Option (K6)


Sediment Pond 09
Area: 2,600 m2
NWL: 100.35 m
EDD 100.75 m
Wetland 09
Area: 12,000 m2
NWL: 100.15 m
EDD 100.50 m
Sediment Pond 10
Area: 2,600 m2
NWL: 99.65 m
EDD 100 m
Wetland 10
Area: 9,080 m2
NWL: 99.150 m
EDD 99.50 m
Outlet invert: 98.98 m
Wetland 11
Area: 13,900 m2
NWL: 101.00 m
EDD 101.35 m
Sediment Pond 11
Area: 3,700 m2
NWL: 101.20 m
EDD 101.55 m
Outlet invert: 99.71 m
Outlet invert: 97.91 m
Outlet invert: 98.33 m
Channel depth: 1.2 m
A
B
C
LEGEND
DSS Boundary
Artifact Scatter
Wetland
DSS RESERVE
Sediment Basin
Proposed Roads
Waterway Alignment
Spiire DSS Option 3 - K6
Melton East DSS Review
0 50 100 150 200 m
1:5,000
spiire

Appendix B Flora species recorded within the study site

KEY

Introduced species:

CaLP	*Catchment and Land Protection Act 1994*
CaLP (C)	Listed as controlled under the CaLP Act
CaLP (R)	Listed as restricted under the CaLP Act
WONS	Weed of National Significance
*	Introduced species
#	Native but may be alien species

Threatened species:

EPBC	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
FFG	*Flora and Fauna Guarantee Act 1988*
CR	Critically Endangered under the EPBC Act
EN	Endangered under the EPBC Act
VU	Vulnerable under the EPBC Act
cr	Critically Endangered under the FFG Act
en	Endangered under the FFG Act
vu	Vulnerable under the FFG Act
Re-Use	Restricted use protected flora (no permit required for the Project)

Scientific Name	Common Name	Status	K6 Wetland	K4 Wetland
Native Species				
Amphibromus nervosus	Common Swamp Wallaby-grass	-	-	✓
Alternanthera denticulata	Lesser Joyweed	-	-	✓
Duma florulenta	Tangled Lignum	-	✓	✓
Epilobium billardiereanum	Variable Willow-herb	-	-	✓
Eucalyptus botryoides	Southern Mahogany	-	-	✓
Eucalyptus camaldulensis	River Red Gum	-	✓	-
Juncus sp.	Rush species	-	-	✓
Lachnagrostis filiformis	Common Blown-grass	-	-	✓
Persicaria prostrata	Creeping Knotweed	-	-	✓
Typha sp.	Cumbungi	-	-	✓
Introduced species				
Aizoon pubescens	Galenia	*	✓	✓
Brassica fruticulosa	Twiggy Turnip	*	-	✓
Cyperus eragrostis	Drain Flat-sedge	*		
Cynara cardunculus	Artichoke Thistle	CaLP (C) *	✓	-
Erigeron bonariensis	Flaxleaf Fleabane	*	-	✓
Helminthotheca echioides	Ox-tongue	*	✓	-
Hirschfeldia incana	Buchan Weed	*	-	✓
Holcus lanatus	Yorkshire Fog Grass	*	-	✓
Hypochaeris radicata	Cat's Ear	*	✓	-

Scientific Name	Common Name	Status	K6 Wetland	K4 Wetland
Juncus acutus	Spiny Rush	CaLP (C) *	✓	-
Lycium ferocissimum	African Boxthorn	WoNS, CaLP (C) *	✓	✓
Marrubium vulgare	Horehound	CaLP (C) *	✓	✓
Nassella trichotoma	Serrated Tussock	WoNS, CaLP (P) *	✓	✓
Opuntia sp.	Prickly Pear	WoNS, CaLP (C) *	-	✓
Echium plantagineum	Paterson's Curse	CaLP (C) *	✓	-
Physalis hederifolia	Sticky Ground Cherry	CaLP (C) *	✓	-
Plantago lanceolata	Ribwort	*	-	✓
Reseda luteola	Weld	*	-	✓
Rumex conglomeratus	Clustered Dock	*	-	✓
Rumex crispus	Curled Dock	*	-	✓
Schinus molle	Peppercorn Tree	*	-	✓
Symphyotrichum subulatum	Aster Weed	*	-	✓

MEMO

To:	Melbourne Water and VPA
From:	[redacted] on behalf of **3L Alliance**
Date:	5 March 2025
Reference:	307078
Project name:	Melton East DSS
Subject:	DSS Workshop 2- Northern Portion of DSS and Kororoit Creek Outfall

0. PURPOSE OF MEMO

Spiire are engaged by 3L Alliance to provide drainage advice and design solutions for the Melton East PSP and the associated land parcels in their ownership.

As such, Spiire have reviewed the *Kororoit Creek Upper and High Street Melton, DSS Design, Functional Design Report* prepared by Alluvium Consulting (Feb 2025).

This memo provides details of concerns, and suggested improvements to the DSS for the Northern Portion of the DSS and the Kororoit Creek Outfall which is being reviewed in Workshop 2 to be held on Tuesday 11th March 2025.

1. WLRB0 TO WLRB1 OUFTALL

Issue/Opportunity:

WLRB0 has been identified as draining east via a 1.4km dedicated scheme drain through a ridge in the opposite direction of the existing outfall of the site.

Solution:

- Remove scheme drain and discharge asset to Melton Highway drainage, refer figure below.
- Based on site inspections- there is existing piped drainage and a swale in Melton Hwy which this catchment can discharge to:

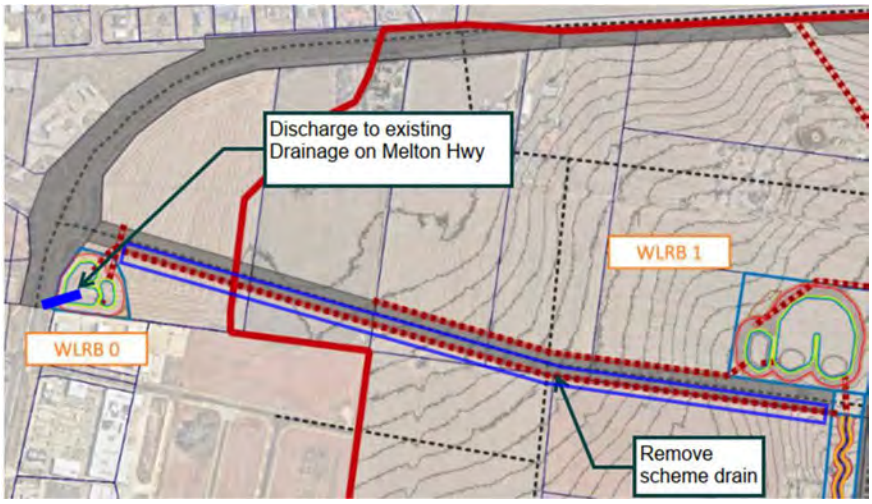


Figure- WLRB0 Suggested Outfall.

Cost Analysis:

The below compares the cost of the current DSS Proposal and the Alternate Proposal:

Current Cost DSS				
DN900 Pipeline				
DN900 Pipe	Lm	$ 1,070.00	1400	$ 1,498,000.00
Pits	Item	$ 13,000.00	8	$ 104,000.00
Preliminaries and Overheads	Item	10%	1	$ 160,200.00
Sub Total Construction				***$ 1,762,200.00***
Consulting (ACEA scale fee)	%	9.50%		$ 167,409.00
Plan Checking and Supervision	%	3.25%		$ 57,271.50
Total Estimated Project Cost				***$ 1,986,880.50***

Alternate Proposal Cost				
Item	**Unit**	**Rate**	**No.**	**Total**
Outlet to Melton Hwy				
Outlet Pipe	Lm	$ 1,070.00	20	$ 21,400.00
Pits- Construct Over Existing Drain	Item	$ 25,000.00	1	$ 25,000.00
Preliminaries and Overheads	%	10%	1	$ 4,640.00
Sub Total Contstuction				***$ 51,040.00***
Consulting (ACEA scale fee)	%	18.10%		$ 9,238.24
Plan Checking and Supervision	%	3.25%		$ 1,658.80
Total Estimated Project Cost				**$ 61,937.04**

Cost Saving	**$ 1,924,943.46**

Figure- Cost Comparison WLRB0 Suggested Outfall.

Summary

The proposed alternative offers a **$1.9m cost saving to the DSS.**

This also allows the parcel at 2231 Melton Hwy to obtain a drainage outfall independent of any downstream developments and will likely see the **early delivery of IN-04** (intersection of Melton Hwy, Federation Drive) and activation of this key front of the PSP.

Suggested Actions:

- Melbourne Water to consult with Melton Council to confirm suitability of outfall including any capacity limitations that may result in amendments to sizing of WLRB0.
- Scheme to be amended accordingly.

2. WATERWAY 1 REMOVAL AND CONSOLIDATION OF WLRB3A AND WLRB3B INTO A SINGLE ASSET

Issue/Opportunity

- Waterway 1 has been provided to cater for a fully developed catchment (8.25m3/s of flow for a 1% AEP) north of Melton Highway.
- The area to the north is zoned as Green Wedge Zone (GWZ) and therefore outside the urban growth boundary. Further to this, the area is in the vicinity of the Melbourne Airport third runway flight path. It is therefore extremely unlikely that this area will ever be developed.
- Spiire conservatively estimate flows from this Green Wedge Zone as 2.1m3/s for a 1% AEP. We have calculated the catchment area upstream of Melton Hwy being 49ha. However, this is likely conservative as we believe some flows will likely be directed east along Highett Rd and hence further reduce the catchment area further.
- In accordance with flood modelling provided by Melbourne Water, current flows from the north do not overtop Melton Highway in the 1% AEP as they are conveyed east along the north side of Melton Hwy to Kororoit Creek. Refer figure below.
- If the area was ever to be developed, there are numerous opportunities to divert flows east to Kororoit Creek north of Melton Hwy (including the current flow path).
- As advised in Workshop 1 (held on 4/3/2025) the ICP/DSS will not fund a culvert crossing of the existing Melton Highway. This is subject to funding by DTP and would likely be completed in future upgrades of Melton Hwy. There is currently no funding for any upgrades of Melton Highway west of Plumpton Road.
- The DSS is therefore making provision for a waterway catering for a fully developed external Green Wedge Zone catchment where there is no funding to convey any of the flows from the north side of Melton Hwy into this asset
- With the removal of Waterway 1, there is then the opportunity to consolidate WLRB3A and WLRB3B into one asset. This is because the waterway no longer divides the catchments.
- Local overland flows in the associated catchment can be conveyed in road reserves, discharging into the retarding basin of the consolidated asset with provisions for a high flow bypass being incorporated within the asset itself to further protect the wetland from these high flows.
- The catchment associated with one wetland is 56.6ha and as such is not a significant catchment to be considered online. In our opinion this is still considered an “offline” wetland.

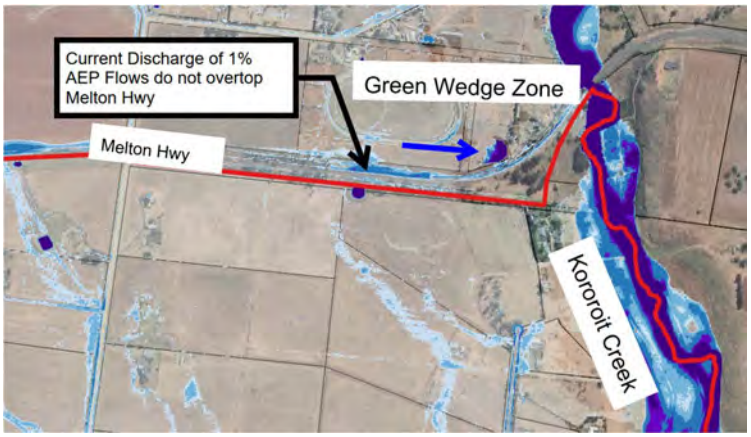


Figure- Pre-Development 1% AEP

Solution:

- Remove Waterway 1.
- Consolidate WLRB3A and WLRB3B into 1 asset.

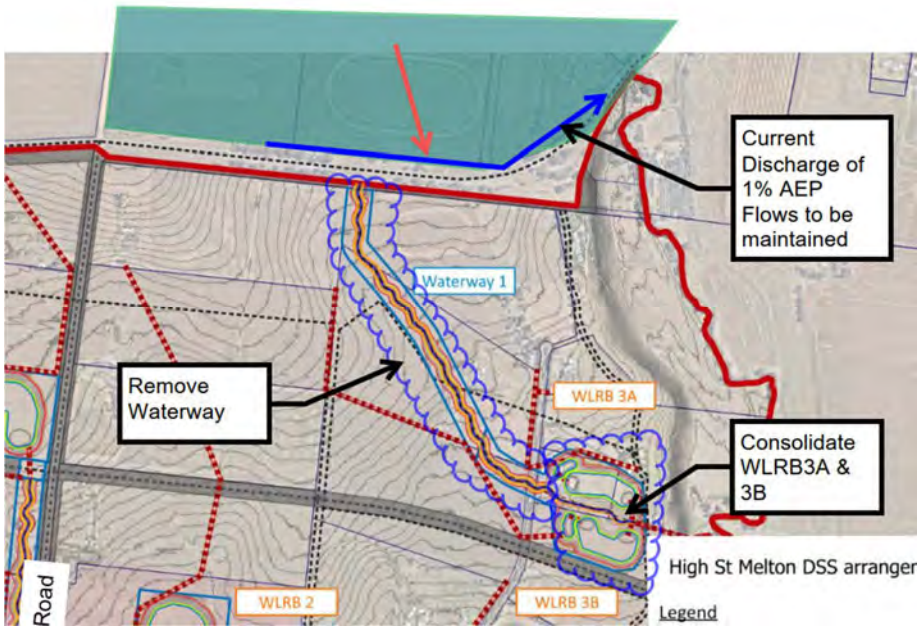


Figure- Waterway 1 removal and WLRB3A/

Cost Analysis:

The below compares the cost of the current DSS Proposal and the Alternate Proposal to remove the waterway and consolidate WLRB3A and WLRB3B into one inline asset:

Current Cost DSS				
Item	**Unit**	**Rate**	**No.**	**Total**
Waterway 1				
Waterway	Lm	$ 5,000.00	1040	$ 5,200,000.00
Landscape	m2	$ 50.00	44000	$ 2,200,000.00
WLRB3A				
Civil and Landscape Works	ha	$ 3,000,000.00	1.8	$ 5,400,000.00
WLRB3B				
Civil and Landscape Works	ha	$ 3,000,000.00	1.8	$ 5,400,000.00
Sub Total Contstuction				***$ 18,200,000.00***
Land				
WLRB3A	***ha***	$ 2,000,000.00	1.8	***$ 3,600,000.00***
WLRB3B	***ha***	$ 2,000,000.00	1.8	***$ 3,600,000.00***
Consulting	%	8.00%		$ 1,456,000.00
Total Estimated Project Cost				***$ 26,856,000.00***

Alternate Proposal Cost				
Item	**Unit**	**Rate**	**No.**	**Total**
Consolidated WLRB3A/3B				
Civil and Landscape Works	ha	$ 3,000,000.00	3	$ 9,000,000.00
Sub Total Contstuction				***$ 9,000,000.00***
Land				
WLRB3A/3B Combined	***ha***	$ 2,000,000.00	3	$ 6,000,000.00
Consulting	%	8.00%		$ 720,000.00
Total Estimated Project Cost				**$ 15,720,000.00**

Cost Saving	**$ 11,136,000.00**

Figure- Cost Comparison Removal of Waterway 1 and Consolidation of WLRB3A/3B.

Summary

The proposed alternative offers a **$11.1m cost saving to the DSS.**

Local depression within Melton East can be addressed utilising the conveyance of local overland flows via roadways (no different than the treatment of the properties south of WLRB11-adjacent Leakes Road).

This provides an **additional 5ha of NDA** (4.4ha attributed to waterway removal and 0.6ha attributed to wetland amalgamation) **which is equal to more than 100 homes** (conservatively at 20 dwellings/ha).

Refer Appendix A for more detail:

Suggested Actions:

- Melbourne Water review catchment assumptions north of Melton Hwy.
- Melbourne Water remove Waterway 1 from DSS.
- Melbourne Water remove catchment north of Melton Highway from entering Melton East PSP
- Melbourne Water conduct modelling to amalgamate WLRB3A/3B into one inline asset.

Conservative Alternative

We acknowledge that provision may be conservatively desired for the Green Wedge Zone catchment to drain through Melton East PSP.

As such flows are estimated at 2.1m3/s flow for a 1% AEP resulting in approximately a DN1200 pipeline. Costs associated with pipeline which can be accommodated within road reserve:

Alternate Conservative Proposal Cost				
DN1200 Pipeline				
DN1200 Pipe	Lm	$ 1,400.00	1400	$ 1,960,000.00
Pits	Item	$ 13,000.00	11	$ 143,000.00
Preliminaries and Overheads	Item	10%	1	$ 210,300.00
Sub Total Construction				***$ 2,313,300.00***
Consulting (ACEA scale fee)	%	9.19%		$ 212,592.27
Plan Checking and Supervision	%	3.25%		$ 75,182.25
Total Estimated Project Cost				***$ 2,601,074.52***
Revised Cost Saving				**$ 8,534,925.48**

This option results in a revised cost saving of **$8.5m to the DSS** for the proposed amendments to this area.

The conservative alternative also provides the **additional 5ha of NDA** (4.4ha attributed to waterway removal and 0.6ha attributed to wetland amalgamation) **which is equal to more than 100 homes** (conservatively at 20 dwellings/ha).

We again raise the fact that there is no funding to construct a crossing of Melton Highway to pick up these flows.

3. TAYLORS ROAD/MOUNT COTTRELL ROAD (IN-09) INTERSECTION

Issue/Opportunity:

- With the reduction in size of WLRB4, there is now an opportunity to move Taylors Road and Mount Cottrell Road intersection (IN-09) approximately 120m further south to line up with the northern boundary of WLRB4.
- This will remove the hard to develop and awkward area between the road to the west and the WLRB4.
- We understand that good practice is to have Taylors Road 400m offset from the Mount Cottrell "half diamond", however we have been advised by 3L's transport consultant that it is possible to have the Taylors Rd intersection closer depending on the configuration and design intent of the half diamond.

Solution:

Realign Taylors Road and Mount Cottrell Road intersection per figure below:

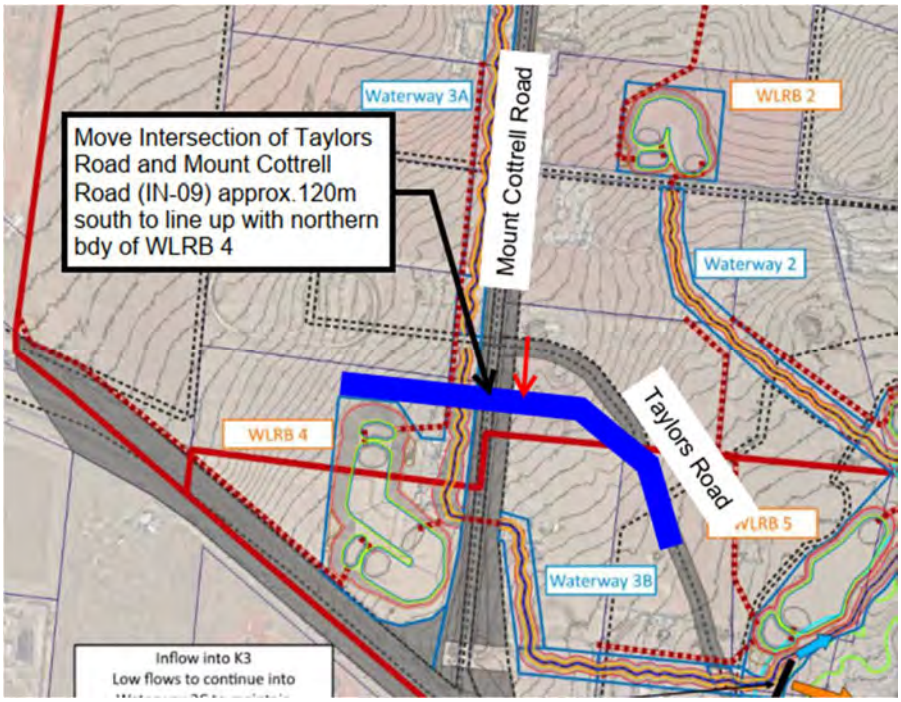


Figure- Realigned Taylors Road/Mount Cottrell Road Intersection

Cost Analysis:

This is expected to be a generally cost neutral exercise in terms of construction cost with reduced length of Taylors Road however increased length of Mount Cottrell Road.

However, we do expect a reduction in the Public Purpose Land.

The revised alignment results in 0.16ha reduction in land for Taylors Road/ Intersection of Taylors Road and Mount Cottrell Road.

At an assumed land value of $2,000,000 per ha this equates to a **cost saving of approximately $320,000 for the ICP.**

Summary

The proposed alternative offers a **$320,000 cost saving to the ICP.**

This will remove the hard to develop and awkward area between the road to the west and the WLRB4.

Suggested Actions:

- Melbourne Water confirm with VPA there is no drainage reason the road cannot be relocated south.
- VPA consult with DTP to consider integration with the future interchange of Mount Cottrell Road and Western Freeway.

Alternative Option:

- Elongate shape of WLRB4 to better utilise space between Connector Road and Highway.
- This will provide for a more efficient urban design outcome.

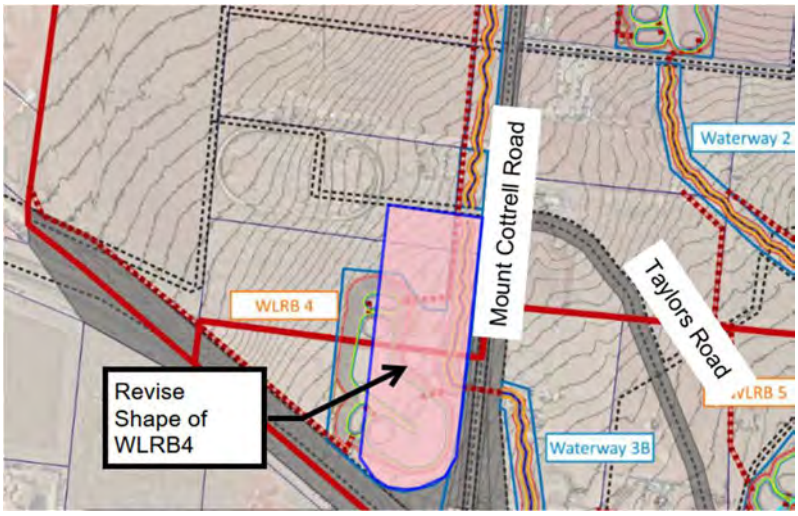


Figure- Elongation of WLRB4

4. APPENDIX 4- MESH ANALYSIS

Waterway 1 – proposed refinements

The removal of Waterway 1 and consolidation of WLRB3A and WLRB3B as recommended by SPIIRE creates a number of benefits including:

- **Increased Net developable area (+5.0ha)**
- **Reduced land fragmentation**
- **Improved development feasibility.**

approx. +5.0ha NDA

Exhibited PSP

Outcome of Spiire Waterway 1 recommendation

mesh

Waterway 1 – net developable area (PSP)

These refinements would result in an improvement of approximately 5.0ha in Net Developable Area within PSP.

Further, land consolidation from this improvement will improve development layout efficiency, supporting overall yield.

**N.B – figures listed in Table 1 are approximated from PSP exhibited documentation. Actual figures may vary and subject to confirmation.*

LAND USE DESIGNATION	Exhibited PSP AREA (Hectares)	Updated per SPIIRE Waterway 1 recommendations AREA (Hectares)
TOTAL SITE AREA	1005.3	1005.3
TOTAL ENCUMBERED LAND	382.6	377.6
ROAD RESERVES & WIDENING	114.9	114.9
6 lane Primary Arterial Rd (Melton Highway : 41m)	62.7	62.7
6 lane Primary Arterial Rd (Western Tarletons Rd & Southern Mt Cottrell: 41m)	12.3	12.3
4 lane Secondary Arterial Rd (Northern Mt Cottrell: 34m)	2.3	2.3
4 Lane Secondary Arterial Rd (Eastern Tarletons Rd: 34m)	5.0	5.0
4 lane Secondary Arterial Rd (Taylors Road / Leakes Rd: 34m)	20.0	20.0
4 lane Secondary Arterial Rd Paynes Rd: 34m)	2.3	2.3
Arterial Rd- Road Widening/Flaring/Freeway	3.1	3.1
Public Acquisition Overlay	7.2	7.2
DRAINAGE	176.3	171.3
Drainage Reserve and uncredited open space	176.3	171.3
CONSERVATION	91.1	91.1
BCS Conservation Area	91.1	91.1
HERITAGE	0.3	0.3
Selection Wall & Nissan Hut	0.3	0.3
TOTAL OPEN SPACE	52.2	52.2
Regional Active Recreation Reserve (30ha)	0.0	0.0
Regional Open Space	14.9	14.9
Local Park	10.6	10.6
Local Active Recreation Reserve (10ha)	10.0	10.0
Local Active Recreation Reserve (7.5ha)	15.2	15.2
Linear Link (nominal 20m wide)	1.4	1.4
TOTAL COMMUNITY USES	37.2	37.2
Proposed Government School	22.1	22.1
Potential Non Government School	6.2	6.2
Local Community Centre	4.0	4.0
Existing Development	3.7	3.7
Emergency Services Facility	1.2	1.2
TOTAL ACTIVITY CENTRES	8.4	8.4
Enterprise Precinct	2.9	2.9
Neighbourhood AC (3.5 ha north centre)	3.5	3.5
Neighbourhood AC (1.5 ha central centre)	1.5	1.5
Local Convenience Centre (0.8 ha)	0.5	0.5
TOTAL EMPLOYMENT / INDUSTRIAL (24ha?)	19.8	19.8
GROSS RESIDENTIAL DEVELOPABLE AREA	505.1	510.1
RESIDENTIAL YIELD based on 20 Dwellings /Ha	10102	10202

mesh

From:
To:

Cc:
Subject: RE: Session 4 Public Consultation: Melton East - VPA & MW - Landowner discussions for DSS
Date: Wednesday, 26 March 2025 6:39:16 PM
Attachments: image007.png
G01 003 MEMO- VPA- STAGING.pdf
Importance: High

Good Afternoon All

Following 3Ls submissions at yesterday's workshops I provide the following by way of a formal submission:

1. **Staging:** We have proposed an alternative for consideration (memo attached). Our target being orderly delivery of servicing, cost reduction and reduced risk by way of reducing requirements to access neighbours land for services
2. **Timing of DSS resolution**: due to the material impacts of the DSS to the PSP in terms of land use, land take and cost, we request that the next iteration of the DSS, taking onboard the outcomes of the DSS workshops be provided by **end of April at the latest** so that there is time to incorporate it into the PSP well in advance of the Practice Day Hearing (PDH) **26 May 2025.** We are keen to resolve as many issues as possible ahead of PDH. And, as you know, the PDH is to detail our submissions and plan the Standing Advisory Committee.
3. **Cost of DSS**: The cost of DSS is central to our ability to deliver affordable housing (both in land take and the cost of deliver). Without it known, we do not know if this PSP will be able to achieve its objective: affordable housing supply. As such we request preliminary costs by the **end of April**. As above, this timing is critical so we can prepare for the Practice Day Hearing **26 May 2025**
4. **K6 Depression:** Spiire provided an overview of 3L's proposal for the K6 wetland detailing how it incorporates multiple benefits (Water Quality, Flood mitigation, potential ecology benefits and improve NDA). Detailed technical information is within the memo provided to VPA.
5. **K4 Depression:** 3L submits that this should be recorded Cultural Heritage Investigations to enable complex assessments be undertake to inform the CHMP and land use before a wetland design is resolved. Spiire provided options to improve efficiency assuming the K4 depression needed to be retained and there were no other heritage issues surrounding. Detailed technical information is within the memo provided to VPA.
6. **Wetland Flows**: It was noted that 4EY flows into the wetlands have not been used by Alluvium/MW. A reduced flow has been used as Alluvium explained that they were struggling to achieve MW's velocity requirements and reducing the flows did not impact the overall water quality results greatly. Spiire noted that this needs to be clearer for future designers.
7. **Review of NDA opportunities adjacent to Kororoit Creek:** Comparing the flood overlay to the uncredited open space along Kororoit Creek, there looks to be areas which do not flood which as earmarked as uncredited open space. We ask that this be reviewed, and we are informed if there is another reason for this land to be set aside uncredited open space.

c

MEMO

To:	Melbourne Water and VPA
From:	[redacted] on behalf of **3L Alliance**
Date:	28 March 2025
Reference:	307078
Project name:	Melton East DSS
Subject:	DSS Workshop 5 - Northern Portion of DSS and Kororoit Creek Outfall

1. PURPOSE OF MEMO

Spiire are engaged by 3L Alliance to provide drainage advice and design solutions for the Melton East PSP and the associated land parcels in their ownership.

As such, Spiire have reviewed the *Kororoit Creek Upper and High Street Melton, DSS Design, Functional Design Report* prepared by Alluvium Consulting (Feb 2025).

This memo provides details of concerns, and suggested improvements to the DSS.

2. WATERWAY WIDTHS

Spiire assessed the Alluvium FD waterway arrangement to determine the suitability of the width of corridors for each waterway. The widths were assessed by determining the hydraulic width of each waterway using PC Convey, using a cross section of each waterway from the Alluvium FD and taking the grade calculated from the design surface. A Mannings coefficient of 0.045 was applied to each cross section. The hydraulic width was then compared to Table 3 of the Melbourne Water document; Waterway Corridors, guidelines for greenfield development areas within the Port Phillip and Westernport Region, 2013.

Spiire found that the corridor widths specified by Alluvium were consistent with this guideline when including the sodic soils buffer.

The additional sodic soils buffer (15 m) is only required during the construction phase and should not be applied to the finished corridor width. Spiire is of the opinion that the 15 m applied to each corridor width for sodic soils be removed.

Where Spiire is proposing to alter the grade of waterways to allow for a continuous free-flowing drainage arrangement, the corridor widths were assessed against these grades as well. Pertinently this was the case for Waterway 7, as it needed to be deeper at the upstream extent to allow for the construction of the proposed low-flow diversion pipe around K4. Pipes have a steeper minimum allowable grade (typically 1 in 200-300) than waterways (typically 1 in 1000), and so Waterway 7 was flattened to 1 in 800 to create the depth needed for the low-flow pipe to have an acceptable grade (1 in 300) and be free-flowing. Flattening Waterway 7 to 1 in 800 does not increase the corridor width overall compared to the per the Alluvium FD (1 in 200).

As previously discussed, Spiire proposes that Waterway 1 and 6B be replaced by a pipe and 5 be removed altogether. As per Spiire memo 1, waterway 1 conveys approximately 2.1 m^3/sec in the existing setting from the upstream catchment, the pipe replacing waterway 6B is proposed to convey 2.0 m^3/sec, both are proposed to be replaced by a 1200 mm internal diameter pipe at a grade of 1 in 200 and 1 in 300 for waterway 1 and 6B respectively.

Where Spiire modelled waterways that differ from the Alluvium FD, flows were modelled based on flows from the hydrology model Spiire altered to reflect the hydrological regime Spiire is proposing. Sections of these waterways will be affected by 1%AEP flood levels within the assets they outfall too, this methodology does not capture the impact this will have on hydraulic width and should be validated through TUFLOW modelling.

Spiire adopted values from Table 4 of the Melbourne Water Waterway Corridors guidelines. Table 4 includes provision for the inclusion of maintenance/access tracks within the corridor above that included in Table 3. The adoption of the corridor widths from Table 4 improves constructability and is a balanced outcome when removing the sodic soils buffer.

For details of the waterway corridor widths assessment refer to Table 1. Waterways, 1, 2, 3A, 3B and 4 are shown in Figure 1 and Waterways 5, 6A, 7, 8A and 10 are shown in Figure 2.

Table 1: Waterway Corridor Width Attributes

Waterway	Alluvium FD				Spiire FD			
	Grade (1 in X)	Flow (m3/sec)	Hydraulic Width (m)	Corridor Widths* (m)	Grade (1 in X)	Flow (m3/sec)	Hydraulic Width (m)	Corridor Widths (m)
1	225	8.27	13.6	55	-	-	-	NA**
2	216	3.96	9.3	45	-	-	-	40

Waterway	Alluvium FD				Spiire FD			
	Grade (1 in X)	Flow (m3/sec)	Hydraulic Width (m)	Corridor Widths* (m)	Grade (1 in X)	Flow (m3/sec)	Hydraulic Width (m)	Corridor Widths (m)
3A	200	5.66	11.6	55	-	-	-	45
3B	200	10.5	14.3	55	-	-	-	45
4	385	12.85	17.5	55	-	-	-	50
5	200	2.7	7.8	45	-	-	-	NA**
6A	700	21.8	22.6	60	-	-	-	55
7	250	25.55	20.9	60	800	22.31	24.6	55
08A	200	16	15.8	55	-	-	-	50
10	160	42.27	22.7	60	300	34.59	23.8	55

*Reserve width including sodic soils buffer.
**Replaced with a pipe.

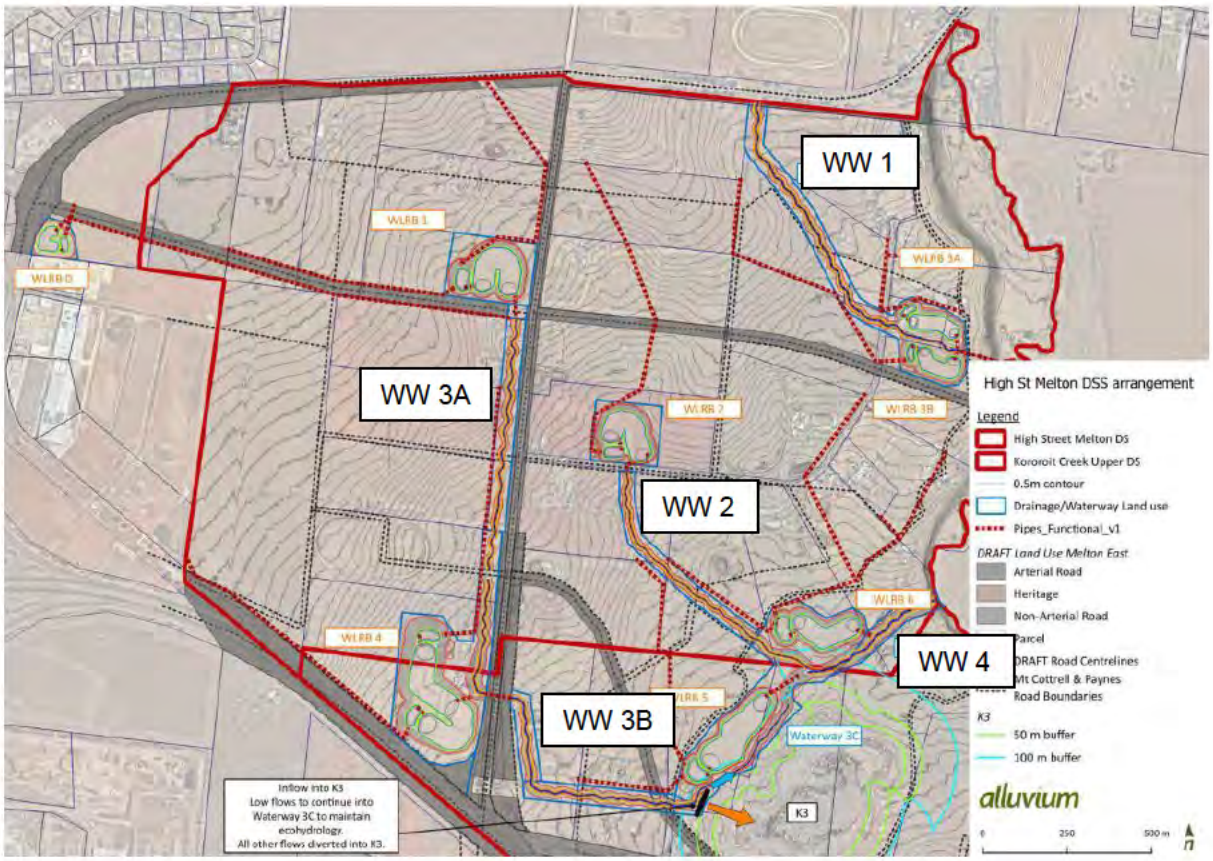


Figure 1: Waterways, 1, 2, 3A, 3B & 4.

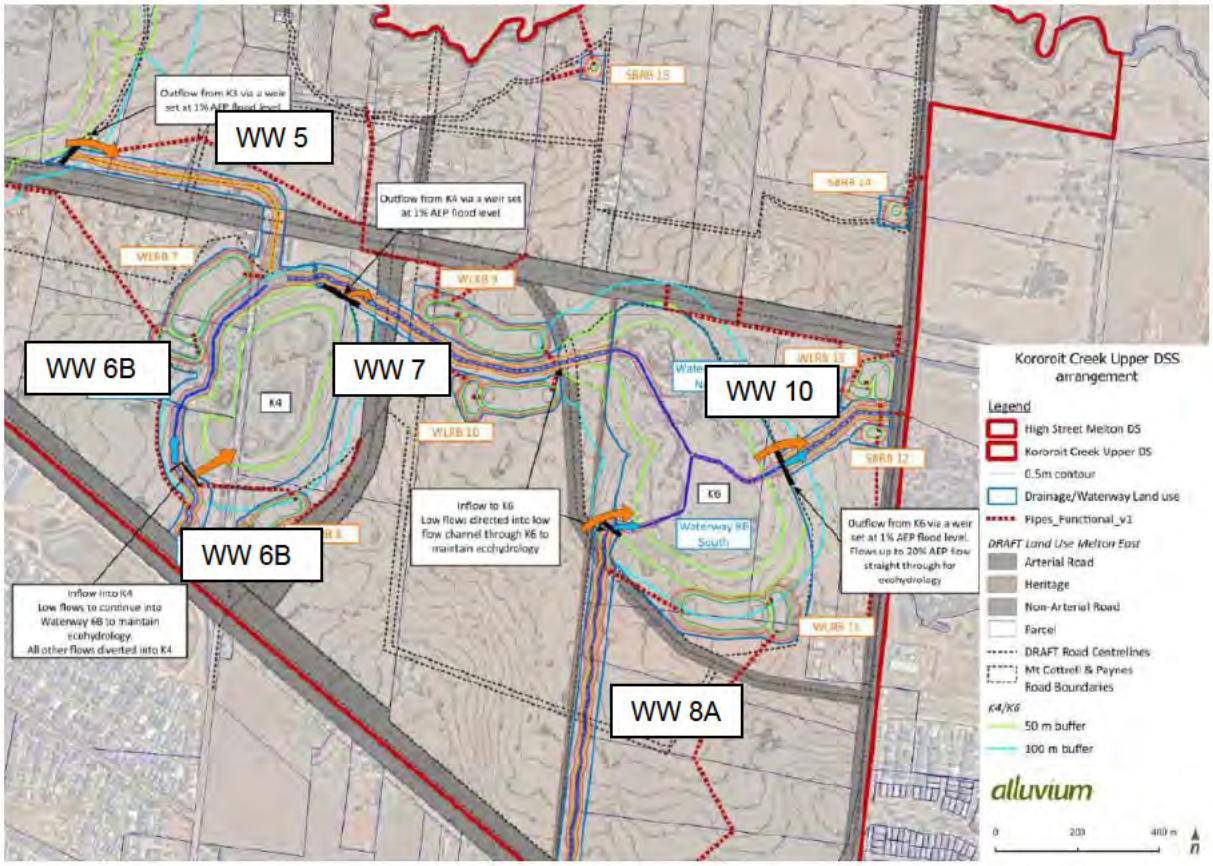


Figure 2: Waterways 5, 6A, 6B, 7, 8A & 10.

3. DSS OUTLET, LEAKES ROAD CULVERTS

The Kororoit Creek Upper DSS will outfall to future culverts underneath Leakes Rd, these will convey flows towards the Woodlea Estate 5B waterway which is in construction. The upstream extent of the waterway is Culvert Pool, 6 which has a normal water level (NWL) of 96.70 mAHD. The Alluvium FD details a downstream IL for Waterway 10 at 96.61 mAHD, at Leakes Rd, this is impractical as this is lower than the downstream level and approximately 300 m away.

Solution:

As Culvert Pool 6 is in construction and is the most upstream invert to be confirmed, Spiire has used the NWL of Culvert Pool 6 as the downstream depth constraint to work back from. All levels proposed within the Spiire Kororoit Creek Upper DSS FD are worked back from this elevation, 96.70 mAHD.

Spiire proposes that the waterway from Culvert Pool 6 be graded back towards the Leakes Rd culvert at 1 in 800, this gives an outlet and inlet IL for the culverts of 97.06 and 97.19 mAHD respectively and a culvert grade of 1 in 200. Waterway 10 will then be graded at 1 in 300 towards K6. See Table 1 for details of Waterway 10 as per the Spiire FD.

The Leakes Rd Culverts are proposed to be 5 X 2,400 mm wide X 1,200 mm high box culverts. Culverts this height are constructable underneath Leakes Rd in its current form, some services may require re-location. This was modelled using HY-8, adopting the downstream waterway geometry to the generate tailwater out of the culverts. This arrangement is proposed to minimise the tailwater created by the culverts on Waterway 10, as this reduces the 1%AEP flood level within waterway 10

and potentially within K6. Should the tailwater produced by the Leakes Rd culverts increase, this could create increased fill requirements across the DSS.

Both Melbourne Water and Spiire modelling are required to be validated through TUFLOW modelling.

The HY-8 inputs and output are shown below.

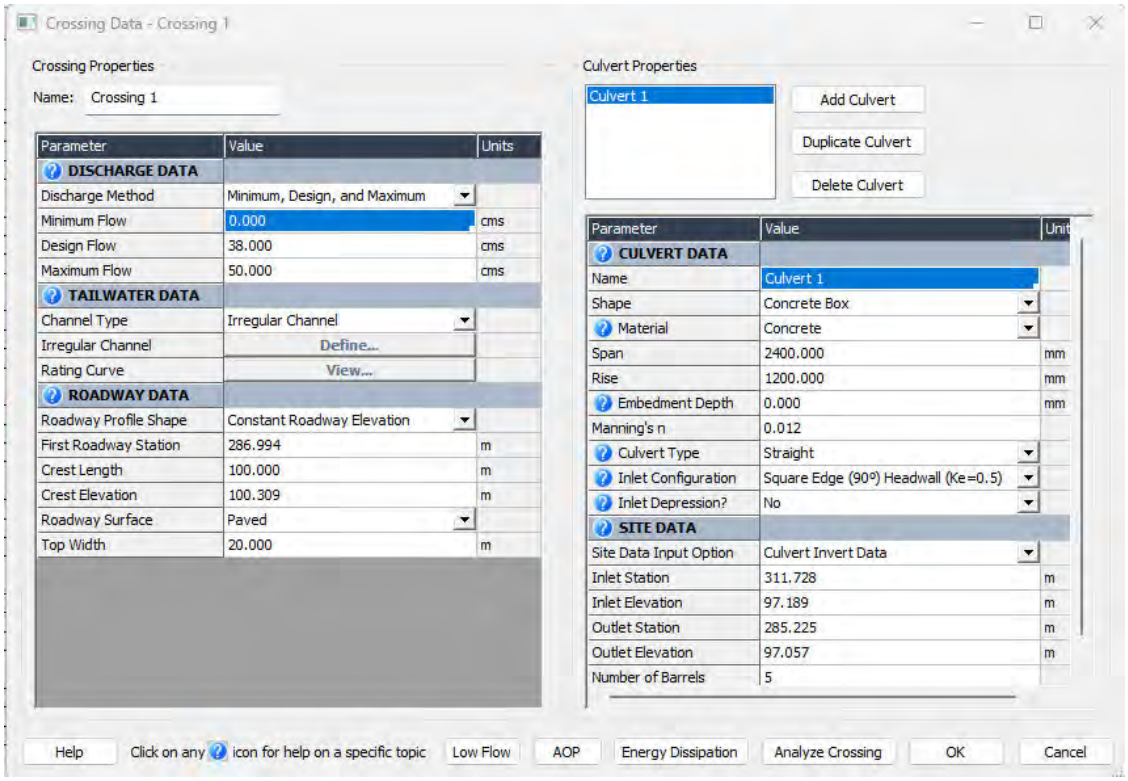


Figure 3: HY-8 Inputs

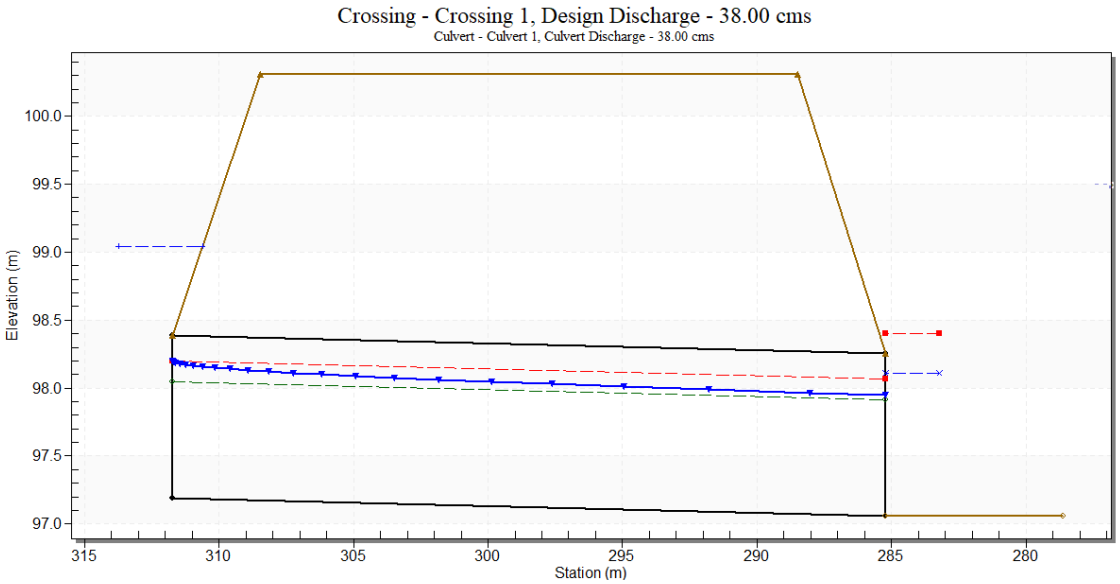


Figure 4: HY-8 Output

4. K6 RESERVE EXTENT

As discussed in the workshop 4 memo produced by Spiire, there is opportunity to limit the extent of K6 to a single title. The majority of the K6 depression is within 1031-1085 Beattys Rd, with a minor and elevated portion of the depression within 989 Beattys Rd. 989 Beattys Rd is free of identified artefact locations.

Using the hydrological model Spiire altered to represent their proposed arrangement, and the design surface of K6, the 1%AEP storage volume was assessed. This was done including and excluding the storage volume within 989 Beattys Rd, Grangefields. A 3D surface was produced to assess storage volumes, this surface excluded water stored within the SHW and between the NWL and EDD.

With the Spiire arrangement and the current K6 boundary, K6 has a 1% AEP flood level of 100.69 m AHD and holds approximately 126,600 m^3.

The screenshot below details the flooding extent during a 1%AEP storm within K6, with its current proposed boundary extent.

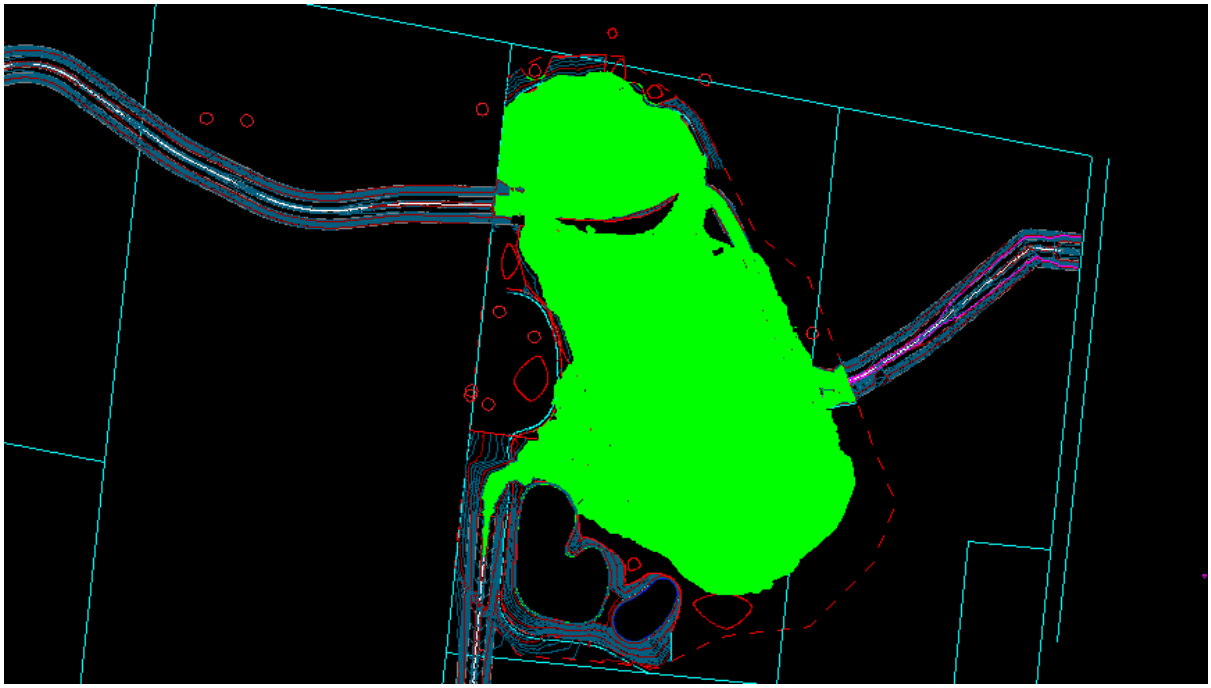


Figure 5: K6 1%AEP Flooding Over Two Titles

When excluding 989 Beattys Rd from the height storage table within the RORB model to simulate that property be filled, the flood level for the median +1 event is 100.70 m AHD while storing 123,0000 m^3. This is an increase of 10 mm and still below the Alluvium peak flood level of 101.90 m AHD. A screenshot of the flooding extent in this situation is shown below.

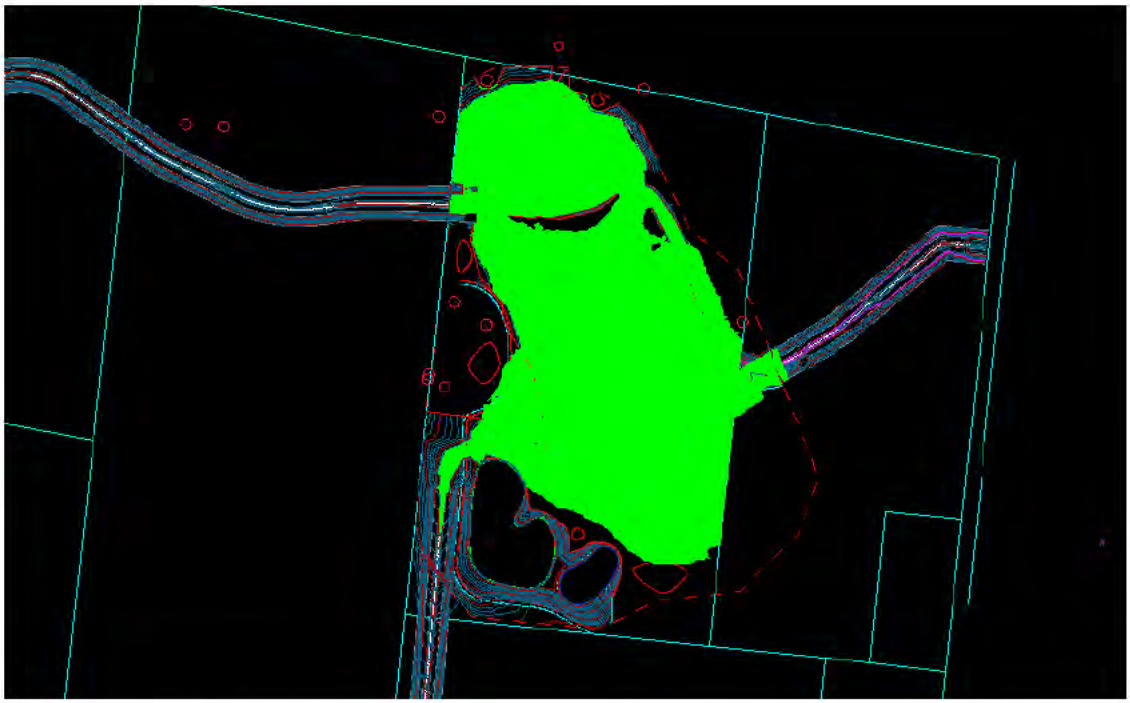


Figure 6: K6 1%AEP Flooding Over One Title

5. CO-LOCATING WATER QUALITY ASSETS WITHIN K6 – ASSET SIZING

As discussed in the workshop 4 memo produced by Spiire, Spiire proposes to co-locate wetlands, 9, 10 and 11 within the K6 depression and to convert RBWL 08 into a rain garden and partially co-locate this within K4. Catchment previously attributed to RBWL 08 was diverted to wetland 10, and the recovered NDA was applied to the catchment feeding each water quality asset to determine if the wetland sizing previously described is still suitable. Wetlands 07 and 11 were still suitable with the adjusted catchments, wetlands 09 and 10 were increased to reach BPEM targets. The increased size is practical in the locations detailed within the Spiire FD.

Table 2: Spiire FD Catchment and Asset Sizing

Catchment Comparison					Asset Comparison		
Catchment	Alluvium FD (ha)	Transferred Catchment (ha)	Recovered NDA (ha)	Spiire FD (ha)	Asset	Alluvium FD Wetland Size (m2)	Spiire FD Wetland/Raingarden* Size (m2)
19	68.8	0	3.6	72.4	WL 09	12,000	13,000
24	75.63	0	4.01	79.64	RBWL 07	16,000	-
25	23.4	-13.4	0	10	RG 08	5,000	500*
26	52.93	13.4	2.8	69.13	WL 10	9,000	11,000
27	59.35	0	3.3	62.65	WL 11	13,500	-

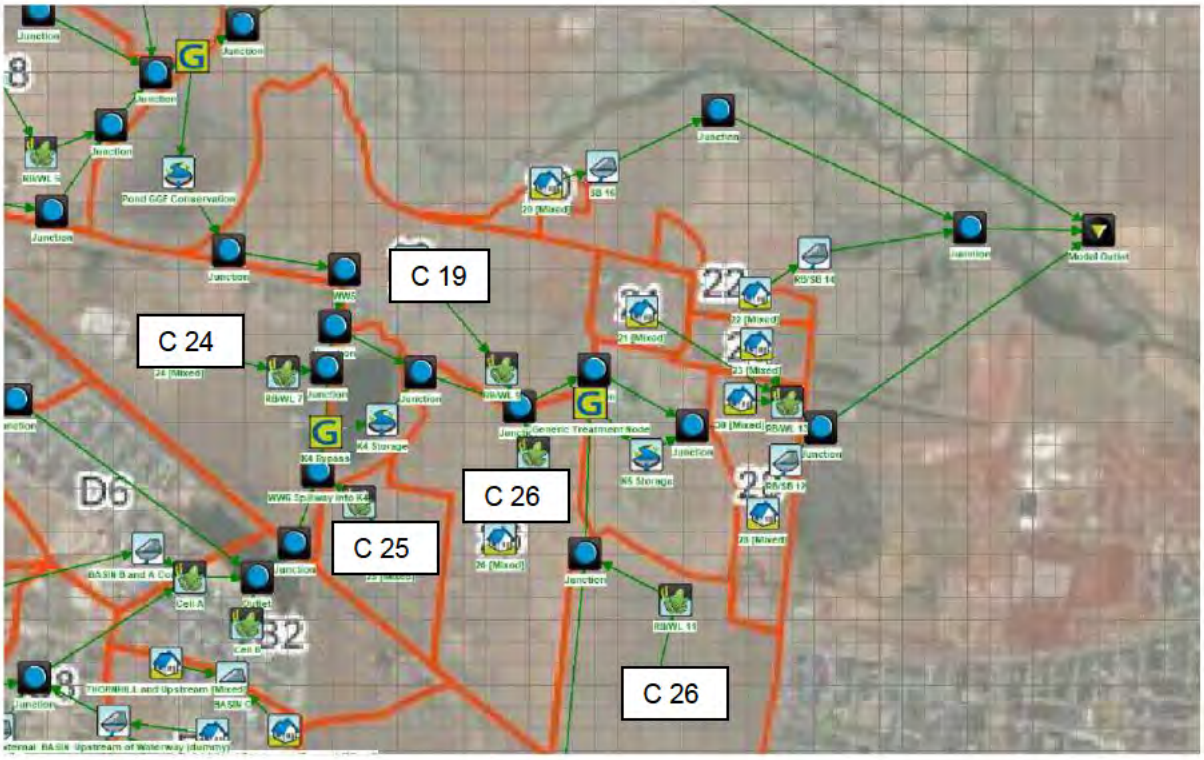
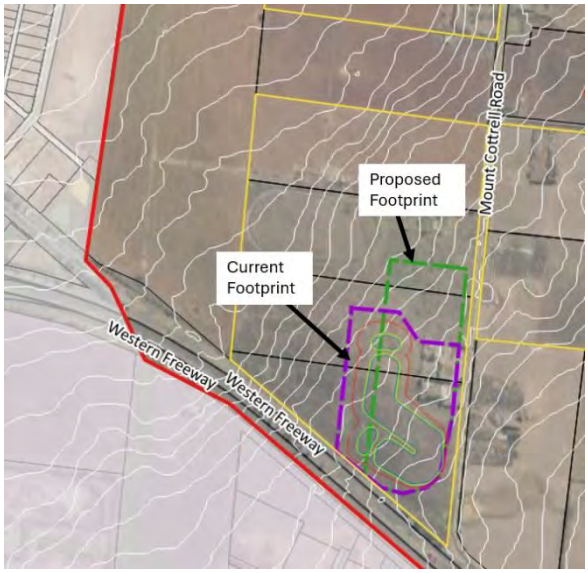


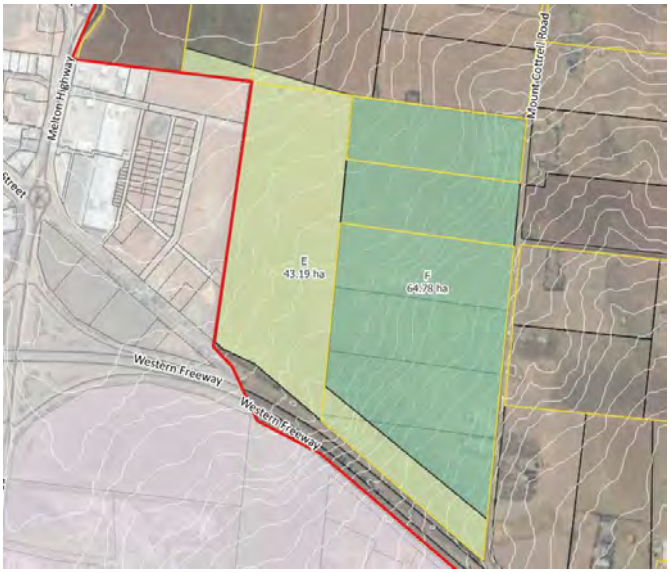
Figure 7: Catchments Feeding Assets Co-located Within K4 and K6

6. ELONGATION OF WLRB 4

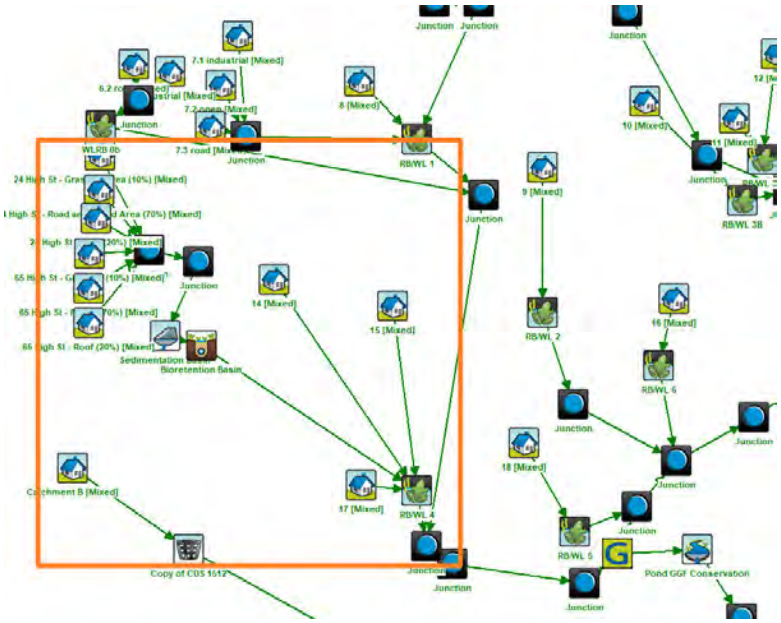
6.1 Issue/ Opportunity:

Spiire has conducted a review of the hydrological arrangement and water quality aspects of the WLRB4 asset. Based on this review, there is an opportunity to extend the wetland to align within the proposed footprint.





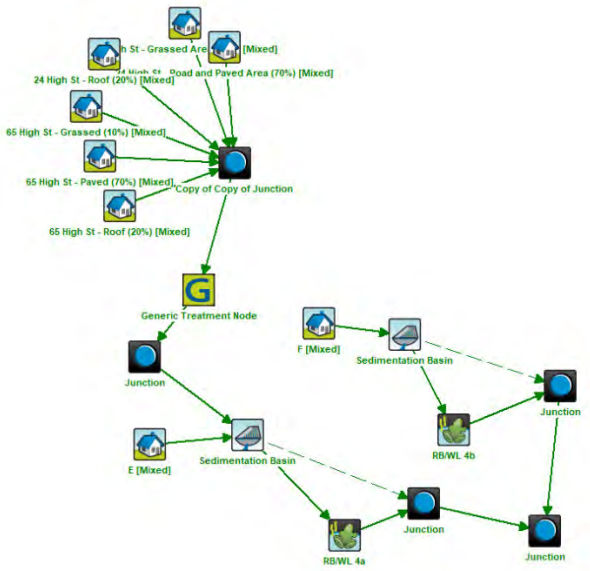
- Key points are as follows:
  - Previous MUSIC model shows that all catchments are directed to a single asset, however the functional design have shown that the asset has been split to have two sediment basin and a single wetland.
  - The Alluvium FD wetland could not accept the 4EY flows as this created velocity issues due to the wetland width. Reducing wetland performance.
  - MUSIC model has included a bioretention basin with a sediment basin having an extended depth of 1m.



6.2 Solution

Catchment has been split into two to represent a more accurately model treatment.

The upstream catchment going into the bioretention basin has been maintained from the Alluvium FD MUSIC model, and a generic treatment node has been added to model compliance with BPEM targets. The MUSIC model has been adjusted to incorporate a bypass, and the sediment basin and wetland have been designed as separate nodes to align with the newly proposed design.



The wetland and sediment basin NWL were maintained from the Alluvium FD so the outfall and waterway arrangement can be retained.

Storage has been checked and kept the same as per the required functional design of 41,100 m^3. The current storage area based on the output is 63,000m^3. The batters as shown are generally flatter than 1 in 6 and the access track has been included around the perimeter of the reserve, this alignment is indicative. The arrangement as shown here over-treats the water quality and the assets can be reduced in size in following design stages. This asset can accept the 4EY flows, it is wide enough that velocities criteria is achieved for the 4EY flows.

	Source	Residual Load	% Reduction
Flow (ML/yr)	503	459	9
Total Suspended Solids (kg/yr)	99,500	16,000	84
Total Phosphorus (kg/yr)	205	61	70
Total Nitrogen (kg/yr)	1,440	708	51
Gross Pollutants (kg/yr)	20,600	1,290	94

The arrangement shown here is a concept for the purpose of demonstrating the viability of achieving all criteria within the proposed reserve. Further refinements can be made in following design stages.

An enlarged version of the arrangement plan is attached.

WARNING
BEWARE OF UNDERGROUND/OVERHEAD SERVICES
THE LOCATION OF SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN. SPECIAL CONSIDERATION SHOULD BE GIVEN TO CONSTRUCTION PROCEDURES UNDER OVERHEAD ELECTRICITY TRANSMISSION LINES.

Rev	Amendments	Approved	Date

Scale
H 1:500
SCALE @ A1
0 5 10 15 20 25

System Certified

spiire

L6 414 LA TROBE STREET PO BOX 16084 MELBOURNE VICTORIA 8007 AUSTRALIA T 61 3 9993 7888
spiire.com.au ABN 55 050 029 635

Designed Checked
Authorised Date

MELTON EAST DSS SERVICING K4 AND K6

CONCEPT DESIGN
LAYOUTS & CATCHMENT PLANS - SHEET 5
MELTON EAST
3L ALLIANCE

PRELIMINARY

Drg No 307078WC204 Rev -

file name 307078WC200.dwg layout name WC204 plotted by Brendan Paule
file location \\spiire.com.au\melidata\Data\30\307078\Water\ACAD plot date 28/03/2025 3:52 PM Sheet 6 of 10 Sheets

Appendix 2: Average NDA across other PSPs

Precinct Structure Plan	Council	Status	Year Gazetted	Total Site Area (Ha)	NDA (Ha)	NDA as % of Total Site Area	% Difference
Beveridge North West ICP	Mitchell	Draft		1,279	793	62%	11%
Beveridge Central ICP	Mitchell	Gazetted	2021	291	225	77%	16%
Lockerbie North DCP	Mitchell	Gazetted	2012 Am. 2017	516	296	57%	6%
Donnybrook-Woodstock ICP	Mitchell & Whittlesea	Gazetted	2020	1,786	1,033	58%	7%
Lockerbie DCP	Mitchell, Hume & Whittlesea	Gazetted	2012 Am. 2017	1,122	690	61%	10%
Wollert	Whittlesea	Gazetted	2017 Am. 2022	1,435	951	66%	15%
Shenstone Park	Whittlesea	Gazetted	2022	628	323	51%	10%
Craigieburn West	Hume City Council	Gazetted	2022	562	417	74%	23%
Sunbury South & Lancefield Road ICP*	Hume	Gazetted	2019 Am.2022	2,866	1,346	47%	-4%
Merrifield West DCP	Hume	Gazetted	2012	723	454	63%	12%
Pakenham East	Cardinia	Gazetted	2021	630	415	66%	15%
Minta Farm ICP	Casey	Gazetted	2021	284	209	74%	23%
Cardinia Creek South	Casey	Gazetted	2019	849	600	71%	20%
Mt Atkinson & Tarneit Plains ICP	Melton	Gazetted	2020	1,532	907	59%	8%
Plumpton & Kororoit ICP	Melton	Gazetted	2019 Am.2023	1,942	1,243	64%	13%
Wyndham North (4 combined PSPs)	Wyndham	Gazetted	2014 Am.2017	4,318	2,818	65%	14%
Horseshoe Bend	Greater Geelong	Gazetted	2014	640	464	73%	22%
Armstrong Creek East	Greater Geelong	Gazetted	2011	794	475	60%	9%
Armstrong Creek West	Greater Geelong	Gazetted	2013	559	369	66%	15%
Armstrong Creek Town Centre	Greater Geelong	Gazetted	2014	93	70	75%	24%
Wonthaggi North East	Bass Coast	Gazetted	2024	632	507	80%	29%
NDA Average of all PSPs gazetted since 2020						**67%**	16%

***Excluded due to presence of extensive undevelopable areas**

Accumulated average NDA to site area (all sites_	**23481**	**14605**	**62%**
Accumulated average NDA to site area (2020+)	**6345**	**4036**	**64%**

Appendix 3: Staging Memo

MEMO

To:	Victorian Planning Authority (VPA)
From:	[redacted] on behalf of **3L Alliance**
Date:	24 March 2025
Reference:	307078
Project name:	Melton East PSP
Subject:	Staging

0. PURPOSE OF MEMO

Spiire has been engaged by 3L Alliance to provide advice on the staging of the Melton East PSP and the associated land parcels they own. As part of this engagement, Spiire has reviewed several key documents, including the Melton East PSP - Infrastructure and Development Staging Plan Background Document (VPA, March 2025), the Melton East PSP 2.0 Precinct Structure Plan (VPA, March 2025), and the Infrastructure Coordination: Infrastructure and Development Staging Guidance Note (VPA, February 2025).

This memo outlines our concerns and suggests improvements to the staging of the Melton East PSP, with a particular focus on infrastructure staging (sewerage, water, and drainage), costs, and the necessary landholder access and negotiations.

1. BACKGROUND DOCUMENTS AND LEGISLATION

We consider the following documents and legislation to be the guiding basis for the provision of staging within a PSP. The key elements related to infrastructure and servicing are summarized below.

1.1 Infrastructure Coordination: Infrastructure and Development Staging Guidance Note prepared by the VPA (February 2025)

In reviewing the Infrastructure Coordination: Infrastructure and Development Staging Guidance Note prepared by the VPA (February 2025), we understand that with respect to Infrastructure that the intended outcome of PSP staging is to:

- Ensure development occurs in **an orderly manner, aligning with infrastructure delivery** to avoid out-of-sequence and disconnected subdivisions.
- Provide **basic and essential infrastructure** early, maintain infrastructure capacity, and support a viable rate of development.
- Align with planning guidelines and state policies to ensure infrastructure is delivered at the right time.

In accordance with the Guidance Note, staging is not intended to create a “queue” where those at the “head of the queue” can control the pace of land development.

1.2 Planning and Environment Act 1987

Infrastructure and Development Staging is intended to accord with the objectives of planning in Victoria stipulated in section 4(1) of the Planning and Environment Act 1987.

In particular, the following objectives are met:

(a) To provide for the **fair, orderly, economic, and sustainable use,** and development of land.

(c) To secure a pleasant, efficient, and safe working, living and recreational environment for all Victorians and visitors to Victoria.

(e) **To protect public utilities and other assets and enable the orderly provision and co-ordination of public utilities** and other facilities for the benefit of the community.

1.3 A 10-Year Plan for Melbourne’s Greenfields, (October 2024)

The 10-year plan also outlines Government’s intent for infrastructure and development staging, noting that “staging provisions will be included in future PSPs as required to ensure infrastructure delivery keeps pace with development and **land can be adequately serviced when it is released**”.

2. OVERVIEW OF STAGING

According to the Melton East PSP - Infrastructure and Development Staging Plan Background Document (VPA, March 2025), the proposed staging of the Melton East PSP includes two fronts for Stage 1: Stage 1 West (west of Leakes Road) and Stage 1 North (north of Tarletons Road).

This is illustrated in the figure below:

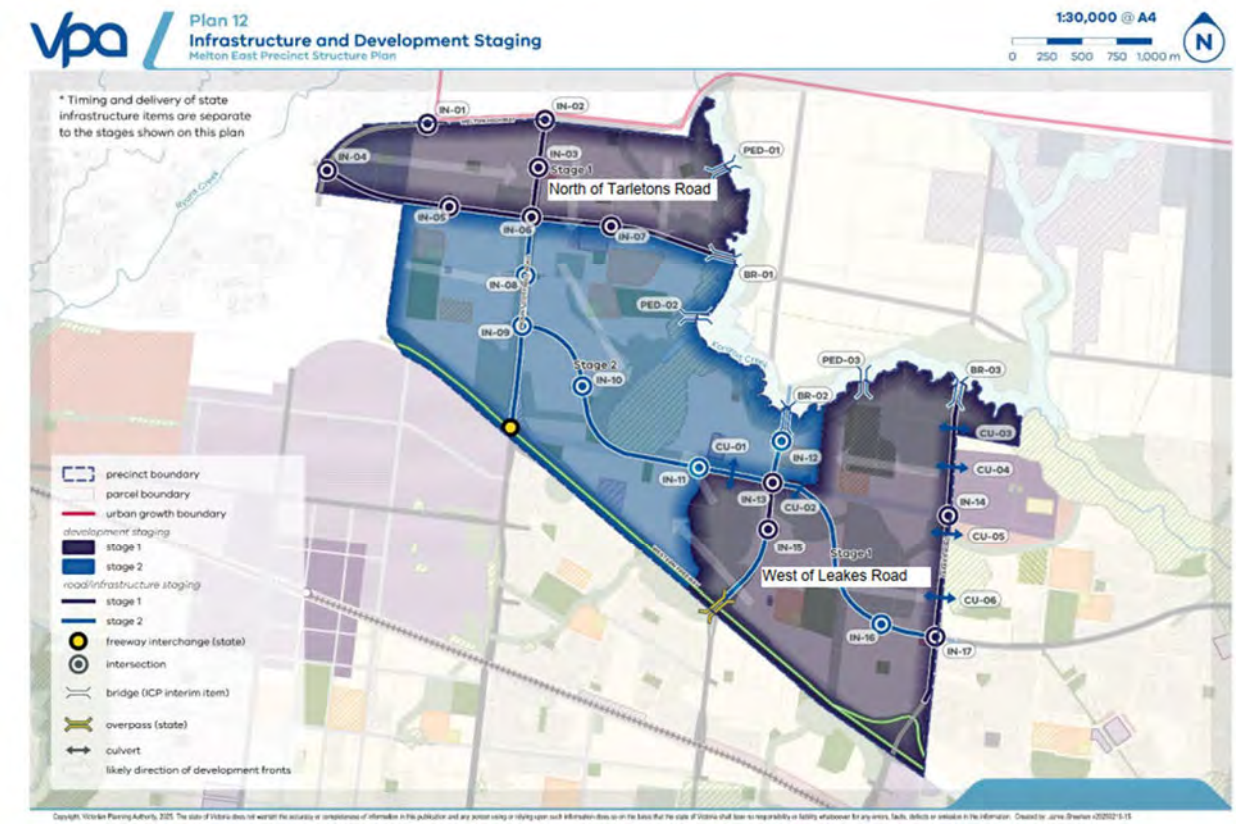


Figure- Staging Plan-Extracted from PSP

3. ALTERNATIVE PROPOSED STAGING

To better align with the principles outlined in the aforementioned governing documents and legislation, the following alternate staging is proposed. The rationale and justification for this proposal are detailed in the subsequent sections of this submission.

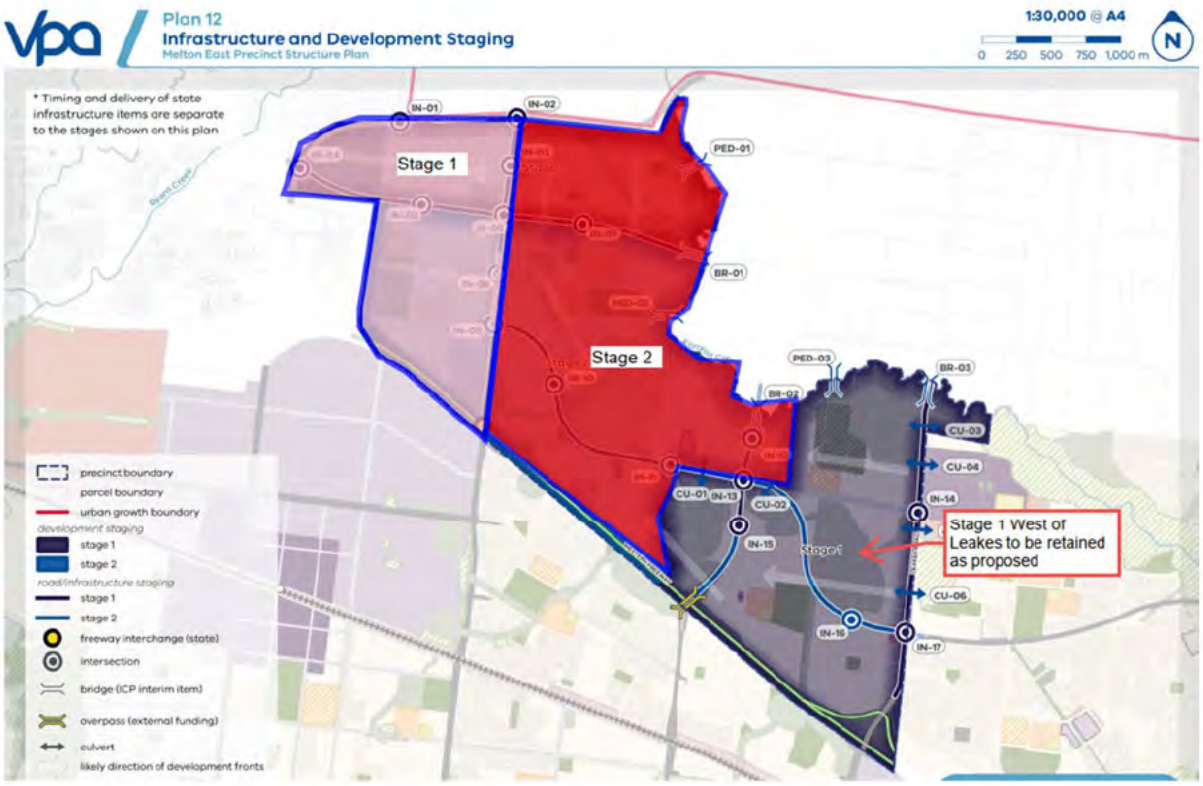


Figure- Proposed Alternate Staging Plan

4. ANALYSIS OF WATER AND SEWER STAGING

4.1 Greater Western Water Network Servicing Plans

Greater Western Water (GWW) are the responsible authority for the provision of Sewer and Water services for the Melton East Precinct.

GWW publish Network Servicing Plans (NSP'S) in accordance with the Essential Services Commission (ESC) New Customer Contribution framework.

GWW have published a policy in regards to NSP's- 'Network Servicing Plan Policy' (29/03/2023).

Key elements from the Policy in relation to staging include.

- The Network Servicing Plans will reflect GWW's planned investments in water and sewer network expansion assets as contained in the capital program for the Price Determination. The Price Determination determines customer tariffs and New Customer Contributions.
- Infrastructure investment – The timing of GWW's investment in infrastructure will provide sufficient development land to meet the rate of population growth forecasts.
- Logically-sequenced expansion – GWW will prepare Network Servicing Plans depicting investment in a logically-sequenced expansion of the water and sewer networks. •
- Determination of logically-sequenced development – GWW will consider the locations of current and upcoming development activity relative to the connection points on the existing water and sewer networks with sufficient spare capacity. Logically sequenced development areas will be balanced across GWW's region, taking into account the rate of development activity and the spare capacity in the existing networks.
- Incremental-financing-costs – Developers who require GWW to build assets earlier than planned will be charged incremental-financing costs, based on the date that GWW issues Acceptance of Works for the assets and the date shown on the Network Servicing Plans against the corresponding assets.

4.2 Sewer

Sewerage for the Melton East PSP gravitates from west to east, discharging at a single point: an existing DN600 Branch Sewer, which is being constructed as part of the Woodlea Estate.

Currently, the sewer extends just east of Leakes Road. It's important to note that this section is within private property and will require landowner access to service any lot within the Melton East PSP.

The figure below is an extract from GWW's NSP and shows the currently proposed Melton East PSP staging overlaid.

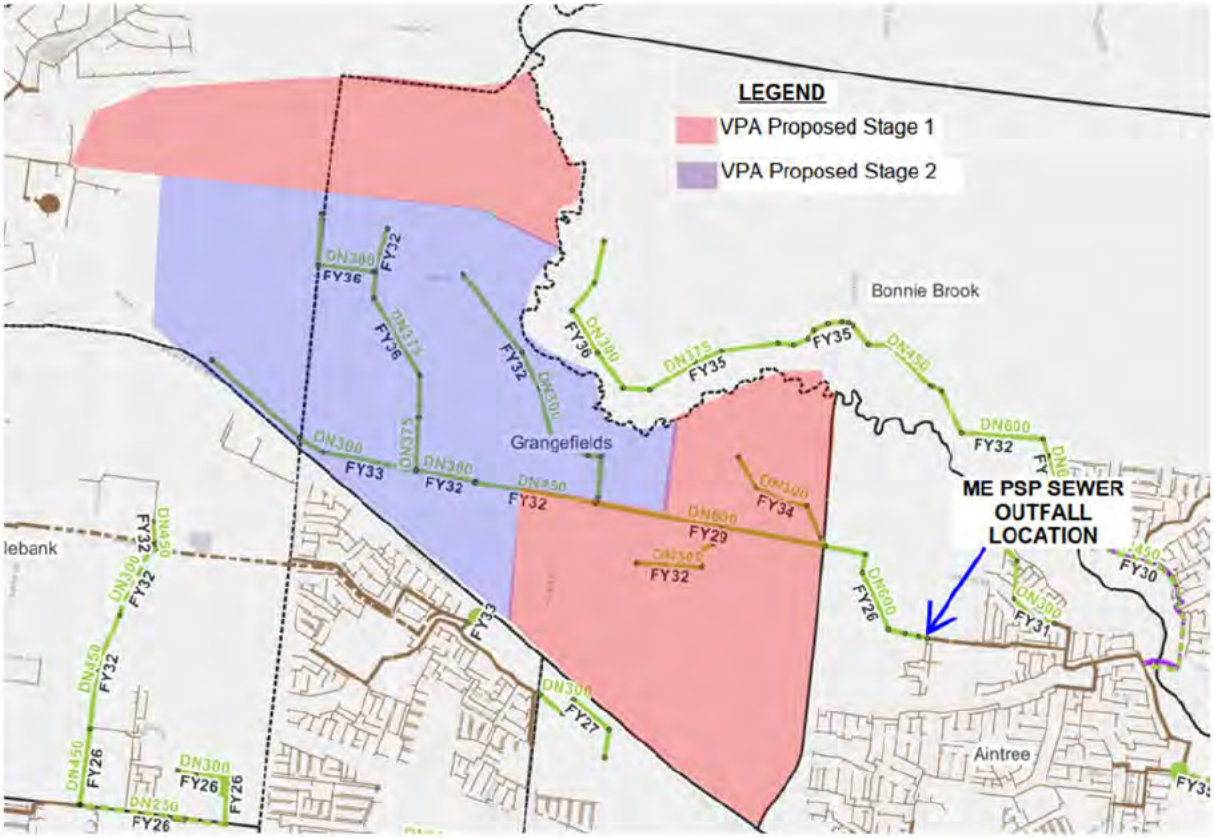


Figure- GWW Sewer NSP 2024 (Extract) with Melton East VPA Proposed Staging

It is noted that the 'FY' (financial year) dates shown in the figure above correspond to GWW's budgeted timing for the respective assets, driven by logically sequenced development. If a developer chooses (or is required) to deliver a creditable trunk asset ahead of the scheduled FY year, they must pay incremental financing costs. These costs are based on the number of years the asset is needed sooner than planned and are a direct cost to the developer. The percentage of capital cost that the developer must cover is summarized in the table below, extracted from GWW's Land Development Manual.

Table 8.4.1: Capital Costs Percentages

Number of years the asset is required sooner than planned	Incremental Financing Cost (% of capital cost)
1	3.34%
2	6.57%
3	9.69%
4	12.71%
5	15.62%
6	18.44%
7	21.16%
8	23.80%
9	26.34%
10	28.80%
11	31.18%
12	33.48%
13	35.70%
14	37.85%

Figure- Capital Costs Percentage- Extracted from GWW Land Development Manual July 2024

It is further noted that, based on GWW's NSP, it can be inferred that GWW interprets **logically sequenced development** as progressing from east to west, as indicated by the ascending 'FY' dates moving in that direction.

4.2.1 Sewer- Stage 1 West Review

Regarding Stage 1 West, the proposed staging of the PSP follows a logical sequence by extending existing sewer assets. The outlet point at Woodlea Estate extends west along Beattys Road, forming the main branch that services developments both north and south of Beattys Road.

4.2.2 Sewer- Stage 1 North Review

Regarding Stage 1 North, the proposed staging of the PSP does not follow a logical sequence of development. To sewer the first lot in Stage 1 North as per the VPA's proposed staging, approximately 2.5 km of external trunk sewer is required to connect to the western boundary of Stage 1 West on Beattys Road (refer to the outlet of Catchment 1 below). The remainder of the VPA's proposed Stage 1 North requires an additional 1.7 km of external trunk sewer to connect to Stage 1 West.

Bringing forward this sewer requires access agreements with approximately 11 landowners, all of whom are in the proposed Stage 2. These landowners may not be willing to consider development outcomes early in the PSP delivery while Stage 1 is being rolled out. There is significant risk in installing sewerage through future development areas, as the respective installation alignments restrict flexibility in urban design without costly relocation works. If any of the 11 landowners do not cooperate, Stage 1 North may be unable to be delivered at all.

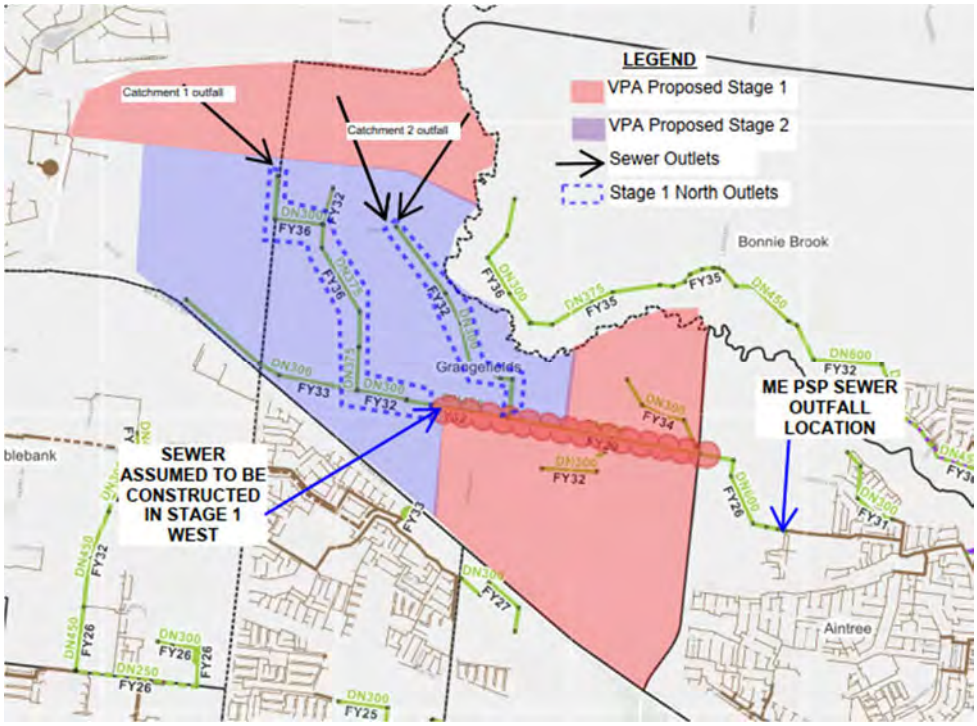


Figure- GWW Sewer NSP 2024 (Extract) with Melton East Proposed Staging and Stage 1 Delivery Requirements

The construction and incremental financing costs of the two outfall sewers are as follows:

Sewer Outfall Cost Estimate Catchment 1 VPA Proposed Stage 1 North Outfall Through VPA Proposed Stage 2				
Item	**Unit**	**Rate**	**No.**	**Total**
Catchment 1				
FY 32'				
DN300	LM	$ 700.00	355	$ 248,500.00
DN450	LM	$ 1,100.00	255	$ 280,500.00
Structures	No.	$ 10,000.00	6	$ 60,000.00
Overheads and Preliminaries	%	20%		$ 117,800.00
Consulting	%	9%		$ 63,612.00
Subtotal Catchment 1 FY32				**$ 770,412.00**
FY36'				
DN300	LM	$ 700.00	803	$ 562,100.00
DN375	LM	$ 900.00	1110	$ 999,000.00
Structures	No.	$ 10,000.00	19	$ 190,000.00
Overheads and Preliminaries	%	20%		$ 350,220.00
Consulting	%	9%		$ 189,118.80
Subtotal Catchment 1 FY36				**$ 2,290,438.80**
Total Estimated Catchment 1 Outfall Cost				***$ 3,060,850.80***
Bring Forward Costs Assume (2028 Construction)				
FY 32 Works	%	*13%*		*$ 100,153.56*
FY 36 Works	%	*24%*		*$ 549,705.31*
Total Bring Forward Costs Payable				***$ 649,858.87***

Table- Stage 1 North VPA Proposed Sewer Outfall Catchment 1- Costs Estimate

Sewer Outfall Cost Estimate Catchment 2 VPA Proposed Stage 1 North Outfall Through VPA Proposed Stage 2				
Item	**Unit**	**Rate**	**No.**	**Total**
Catchment 1				
FY 32'				
DN300	LM	$ 700.00	1736	$ 1,215,200.00
Structures	No.	$ 10,000.00	17	$ 170,000.00
Overheads and Preliminaries	%	20%		$ 277,040.00
Consulting	%	9%		$ 149,601.60
Total Estimated Catchment 1 Outfall Cost				***$ 1,811,841.60***
Bring Forward Costs Assume (2028 Construction)				
FY 32 Works	%	*13%*		*$ 235,539.41*
Total Bring Forward Costs Payable				***$ 235,539.41***

Table- Stage 1 North VPA Proposed Sewer Outfall Catchment 2- Costs Estimate

- Legal, cultural heritage, and delay costs have not been considered but are expected in relation to the delivery of these assets.
- The total cost of sewer works through VPA Proposed Stage 2, to provide a sewer outfall for Stage 1 North, is $4.9 million.
- These works incur a $900,000 bring-forward cost to developers based on a 2028 delivery.

  The works are required through approximately 11 private landholdings.

4.3 Sewer Strategy Benefits- Alternate Proposed Staging

The below figure depicts the sewer strategy based on the alternate staging proposal:

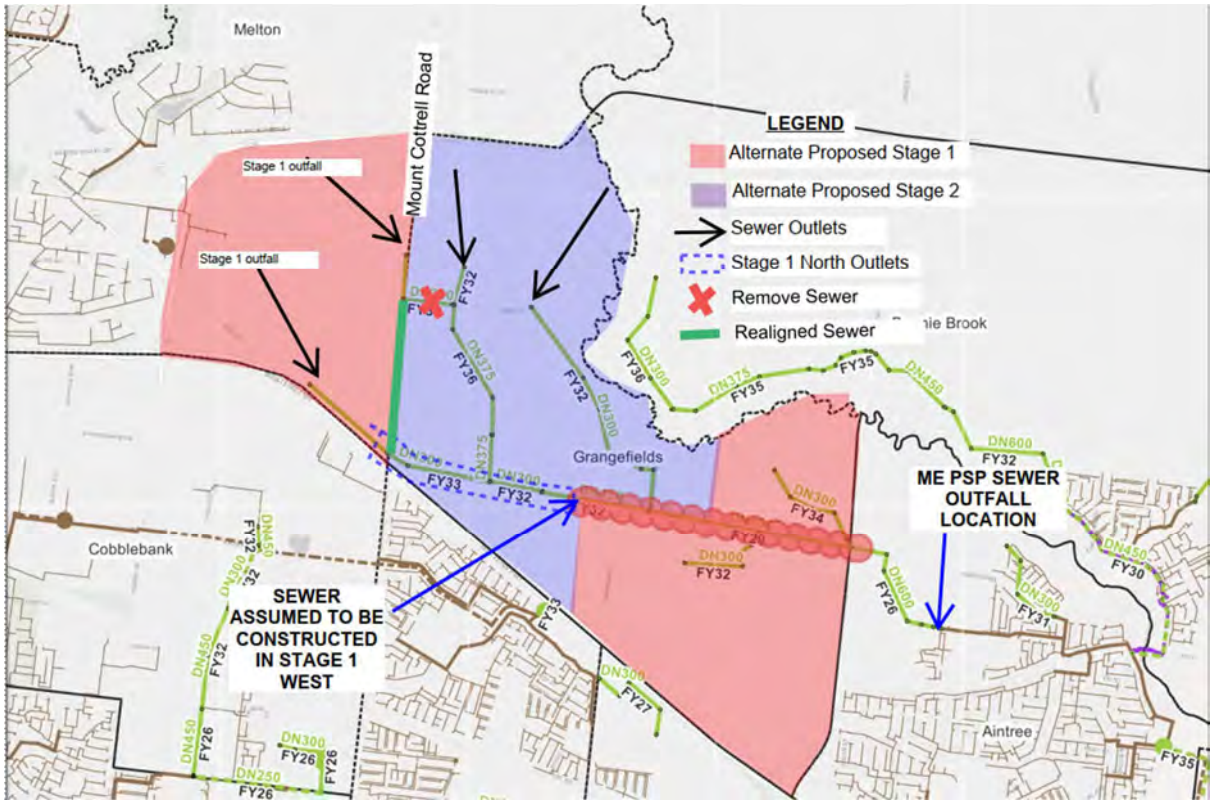


Figure- GWW Sewer NSP 2024 (Amended Extract) with Melton East Alternate Staging

The outfall costs associated with the revised staging are as follows:

Sewer Outfall Cost Estimate Stage 1 North- Alternate Proposal				
Item	**Unit**	**Rate**	**No.**	**Total**
FY 32'				
DN450	LM	$ 1,100.00	255	$ 280,500.00
Structures	No.	$ 10,000.00	3	$ 30,000.00
Overheads and Preliminaries	%	20%		$ 62,100.00
Consulting	%	9%		$ 33,534.00
Subtotal Catchment 1 FY32				**$ 406,134.00**
FY33'				
DN300	LM	$ 700.00	500	$ 350,000.00
Structures	No.	$ 10,000.00	5	$ 50,000.00
Overheads and Preliminaries	%	20%		$ 80,000.00
Consulting	%	9%		$ 43,200.00
Subtotal Catchment 1 FY36				**$ 523,200.00**
Total Estimated Sewer Outfall Cost Outside Stage 1 North				***$ 929,334.00***
Bring Forward Costs Assume (2028 Construction)				
FY 32 Works	%	*13%*		*$ 52,797.42*
FY 33 Works	%	*16%*		*$ 83,712.00*
Total Bring Forward Costs Payable				***$ 136,509.42***

Table- Stage 1 North Alternate Proposed Staging-Sewer Outfall- Costs Estimate

Adopting the alternative proposed staging provides for:

- A $4 million dollar cost reduction in works outside of the Stage 1 North boundary.
- Logical extension of Stage 1 West sewer along Beattys Road Reserve to service the new stage 1 north
- Only 1.2km of sewer to be extended through stage 2 to service stage 1 north in comparison to 4.3km of sewer required to service the original PSP Proposed Stage 1 North
- **No landowner negotiations required for sewer.**
- **The sewer proposed can be constructed in the existing Beattys Road and Mount Cottrell Road.**
- Avoiding negotiating access agreements with approximately 11 individual landowners

Comparison provided in the below table:

Summary		
Item		Value
VPA Proposed Stage 1 North- Sewer Outfall Through Stage 2		
Catchment 1	$	*3,060,850.80*
Catchment 2	$	*1,811,841.60*
Total VPA Proposed Stage 1 North- Outfall Costs in Stage 2	$	4,872,692.40
Alternate Stage 1 North Proposal- Outfall Costs in Stage 2	$	929,334.00
Difference	-$	3,943,358.40
Private Landowner Access Required (ouitside Stage 1 North)		
VPA Propoosed Stage 1 North		11
Alternate Stage 1 North Proposal		0
Difference		-11.00

Table- Stage 1 North Alternate Proposal Summary-Sewer

4.4 Water

We note that trunk watermains are readily available for connection on multiple fronts of the PSP. Therefore, they are not considered an impacting factor on the staging, and no analysis is provided in this submission.

5.1.1 Drainage- Stage 1 West Review

Regarding Stage 1 West, the proposed staging of the PSP clearly follows a logical sequence for the extension of drainage assets. The outlet point at Woodlea Estate extends west to Beattys Road. Refer to the extract below from the Kororoit Creek Upper and High Street Melton DSS Design, Functional Design Report prepared by Alluvium Consulting (February 2025).

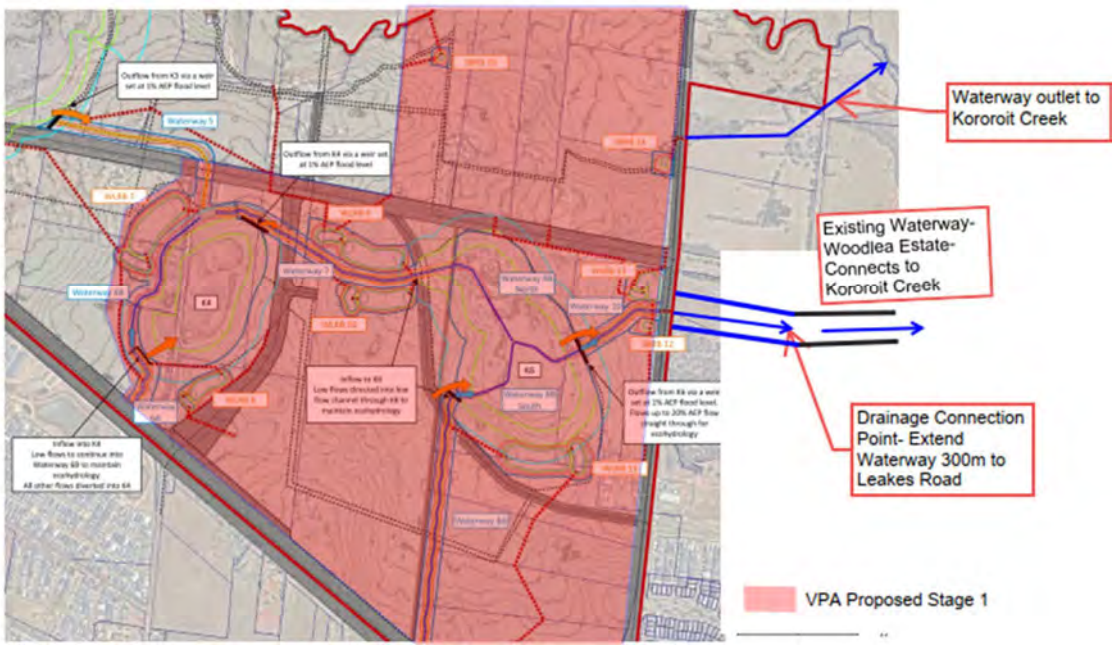


Figure- Stage 1 West Drainage Outfall

5.1.2 Drainage- Stage 1 North Review

The VPA proposed Stage 1 North is situated at the top of the drainage catchment. Seventy percent of the drainage catchment drains south through VPA Proposed Stage 2 to discharge into Kororoit Creek. The remaining 30% of the Stage 1 North area, associated with Waterway 1 and WLRB 3A/3B, has a direct connection to Kororoit Creek within Stage 1 North. However, road access to this area is via Mount Cottrell and/or Tarletons Road, both of which trigger drainage outfalls south through Proposed Stage 2.

There is not a single lot that can be constructed in VPA Stage 1 North without triggering a drainage outfall through VPA Stage 2. To secure drainage from VPA Proposed Stage 1 North to Kororoit Creek, two external outlets are required, as shown in the figure below.

External Outfall 1

- 3km outfall
- 2 Wetlands
- 11 Private Landowners

External Outfall 2

- 1.3 km outfall (+400m included in external outfall 1 above)
- 1 Wetland
- 7 Private Landowners

There are a total of 15 different Private Landowners (due to overlap between External Outfall 1 and 2) to negotiate access with to obtain drainage outfalls for Stage 1 North.

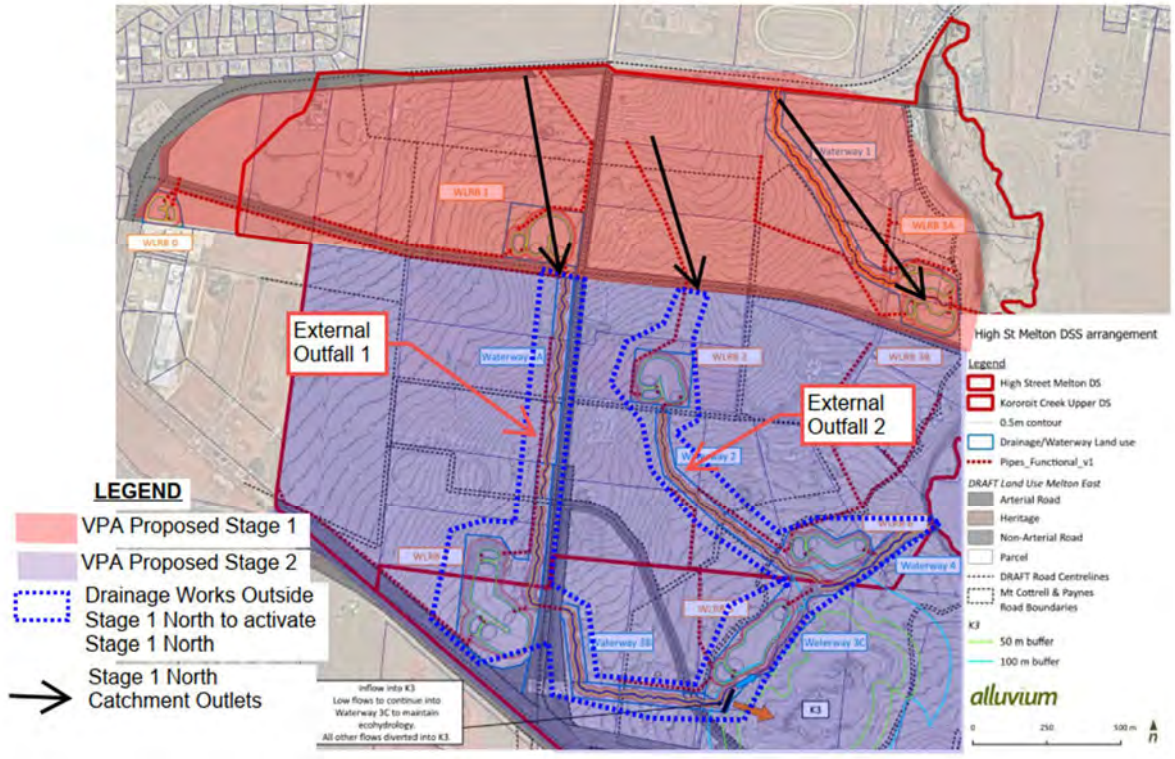


Figure- Stage 1 North Drainage Outfall

The Cost of these outfalls are estimated as follows:

- External Outfall 1

Current DSS Cost Estimate External Outfall 1 VPA Proposed Stage 1 North Outfall Through VPA Proposed Stage 2				
Item	**Unit**	**Rate**	**No.**	**Total**
Waterway 3A				
Civil	Lm	$ 5,000.00	1120	$ 5,600,000.00
Landscape	m2	$ 75.00	61600	$ 4,620,000.00
WLRB4				
Civil and Landscape Works	ha	$ 3,000,000.00	10.14	$ 30,420,000.00
Culvert Crossing Mount Cottrell Road	Item	$ 2,000,000.00	1	$ 2,000,000.00
Waterway 3B				
Civil	Lm	$ 5,000.00	780	$ 3,900,000.00
Landscape	m2	$ 75.00	42900	$ 3,217,500.00
WLRB5				
Civil and Landscape Works	ha	$ 3,000,000.00	6.1	$ 18,300,000.00
Waterway 4				
Civil	Lm	$ 5,000.00	470	$ 2,350,000.00
Landscape	m2	$ 75.00	25850	$ 1,938,750.00
Sub Total Contstuction				***$ 72,346,250.00***
Land				
WLRB4	***ha***	$ 2,500,000.00	10.14	*$ 25,350,000.00*
WLRB5	***ha***	$ 2,500,000.00	6.1	*$ 15,250,000.00*
Consulting (ACEA scale fee)	%	8.00%		$ 5,787,700.00
Total Estimated Outfall 1 Cost				***$ 118,733,950.00***

Table- Stage 1 North VPA Proposed External Outfall 1- Costs Estimate 1

- External Outfall 2

Current DSS Cost Estimate External Outfall 2 VPA Proposed Stage 1 North Outfall Through VPA Proposed Stage 2				
Item	**Unit**	**Rate**	**No.**	**Total**
WLRB2				
Civil and Landscape Works	ha	$ 3,000,000.00	2.7	$ 8,100,000.00
Waterway 2				
Civil	Lm	$ 5,000.00	830	$ 4,150,000.00
Landscape	m2	$ 75.00	45650	$ 3,423,750.00
WLRB6				
Civil and Landscape Works	ha	$ 3,000,000.00	5.3	$ 15,900,000.00
Sub Total Contstuction				***$ 31,573,750.00***
Land				
WLRB2	***ha***	$ 2,500,000.00	2.7	$ *6,750,000.00*
WLRB6	***ha***	$ 2,500,000.00	5.3	$ *13,250,000.00*
Consulting (ACEA scale fee)	%	8.00%		$ 2,525,900.00
Total Estimated Outfall 1 Cost				***$ 54,099,650.00***
Note that waterway 4 is also part of this outfall however is included in Outfall 1				

Table- Stage 1 North VPA Proposed External Outfall 2- Costs Estimate 1

The total cost of the ultimate drainage outfall works through VPA Proposed Stage 2, to provide the ultimate outfall for Stage 1 North, is **$173 million.**

5.2 Drainage Strategy Benefits- Alternate Proposed Staging

The below figure depicts the drainage strategy based on the alternate staging proposal:

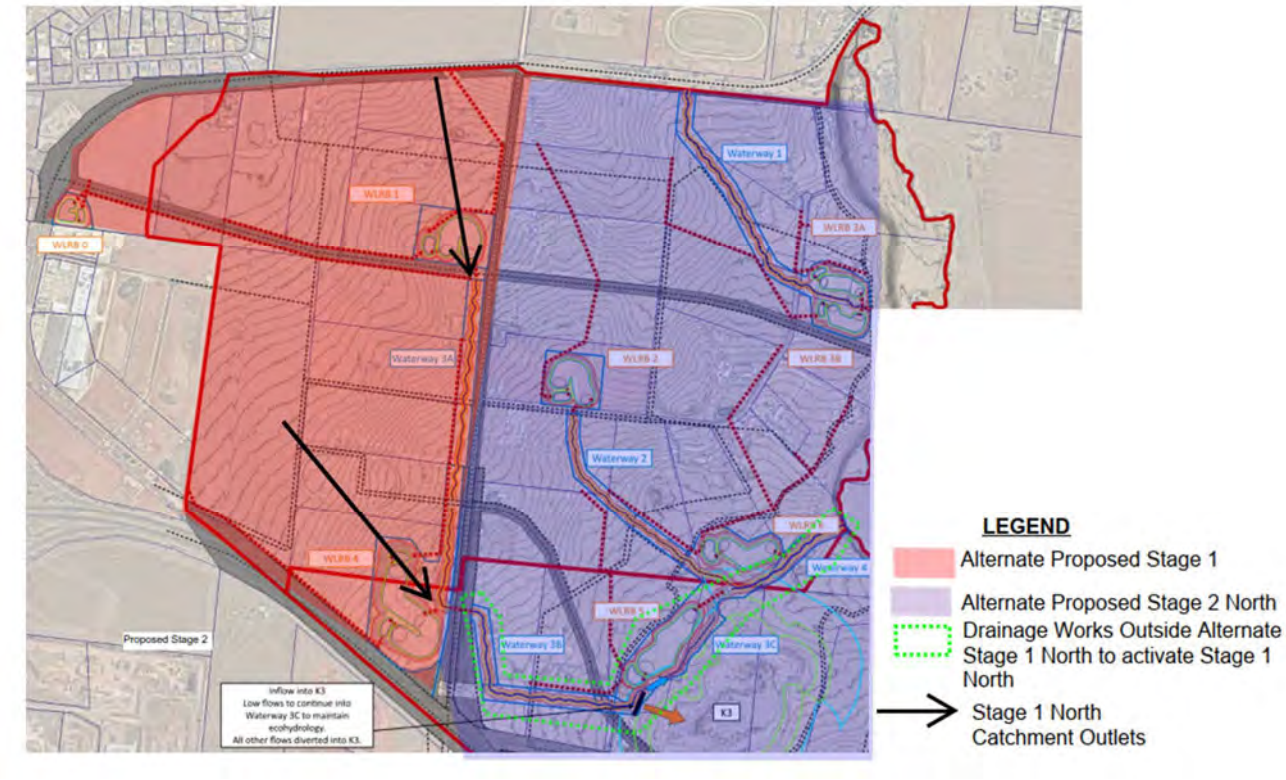


Figure- Stage 1 North VPA Proposed External Outfall

The costs associated with the revised staging are as follows:

DSS Cost Estimate External Outfall Stage 1 North- Alternate Proposal				
Item	**Unit**	**Rate**	**No.**	**Total**
Waterway 3B				
Civil	Lm	$ 5,000.00	780	$ 3,900,000.00
Landscape	m2	$ 75.00	42900	$ 3,217,500.00
WLRB5				
Civil and Landscape Works	ha	$ 3,000,000.00	6.1	$ 18,300,000.00
Sub Total Contstuction				***$ 25,417,500.00***
Land				
WLRB5	***ha***	$ 2,500,000.00	2.8	$ 7,000,000.00
Consulting (ACEA scale fee)	%	8.00%		$ 2,033,400.00
Plan Checking and Supervision	%	3.25%		$ 826,068.75
Total Estimated Outfall Cost Outside Stage 1 North				**$ 35,276,968.75**

Table- Stage 1 North Alternate Proposal Summary-Drainage

Adopting the alternative proposed staging provides for:

- A $137 million cost reduction in works outside of the Stage 1 North boundary.
- **A reduction in the number of landowner access agreements required outside the stage 1 north boundary from 15 to 5.**

This is summarised in the below table:

Summary	
Item	**Value**
VPA Proposed Stage 1 North- Outfall Costs in Stage 2	
External Outfall 1	*$ 118,733,950.00*
External Outfall 2	*$ 54,099,650.00*
Total VPA Proposed Stage 1 North- Outfall Costs in Stage 2	**$ 172,833,600.00**
Alternate Stage 1 North Proposal- Outfall Costs in Stage 2	**$ 35,276,968.75**
Difference	**-$ 137,556,631.25**
Private Landowner Access Required (ouitside Stage 1 North)	
VPA Propoosed Stage 1 North	15
Alternate Stage 1 North Proposal	5
Difference	**-10.00**

Table- Stage 1 North Alternate Proposal Comparison-Drainage

6. CONCLUSION

Stage 1 West of Leakes Road is a logical extension of the existing infrastructure. It utilizes the existing road network, sewerage, and drainage outfalls of Woodlea Estate, following the principles intended by PSP Staging.

In contrast, Stage 1 North of Tarletons Road, as proposed by the VPA, fails to adhere to the intended principles of PSP Staging. Extensive drainage and sewer infrastructure must be constructed through future Stage 2 to service Stage 1, which is cost-prohibitive and requires access agreements with approximately 15 private landowners. Engaging with landowners in future Stage 2 is fraught with issues, as they are unlikely to actively pursue development in the early phases of Stage 1.

As demonstrated in the analysis, Stage 1 North of Tarletons Road fails to meet the principles set out in the governing documents and legislation intended to guide the staging within a PSP. This is highlighted with respect to the following intentions:

- **Planning and Environment Act 1987:**
  - To provide for the fair, orderly, economic, and sustainable use, and development of land.
  - **To enable the orderly provision and co-ordination of public utilities**
- **A 10-Year Plan for Melbourne's Greenfields, (October 2024)**
  - Land cannot be adequately serviced when released.
- **Infrastructure Coordination: Infrastructure and Development Staging Guidance Note prepared by the VPA (February 2025)**
  - **Fails** to ensure development occur in an orderly manner, aligning with infrastructure delivery.
  - It aims to provide **basic and essential infrastructure early,** maintain infrastructure capacity, and support a viable rate of development.

As it currently stands, Stage 1 North of Tarletons Road will likely result in an Iramoo Circuit-style outcome, where thousands of PSP Gazetted lots are unable to be developed due to servicing constraints. We therefore request that the VPA review Stage 1 North of Tarletons Road and adjust the stage boundaries to reflect those proposed in the figure below.

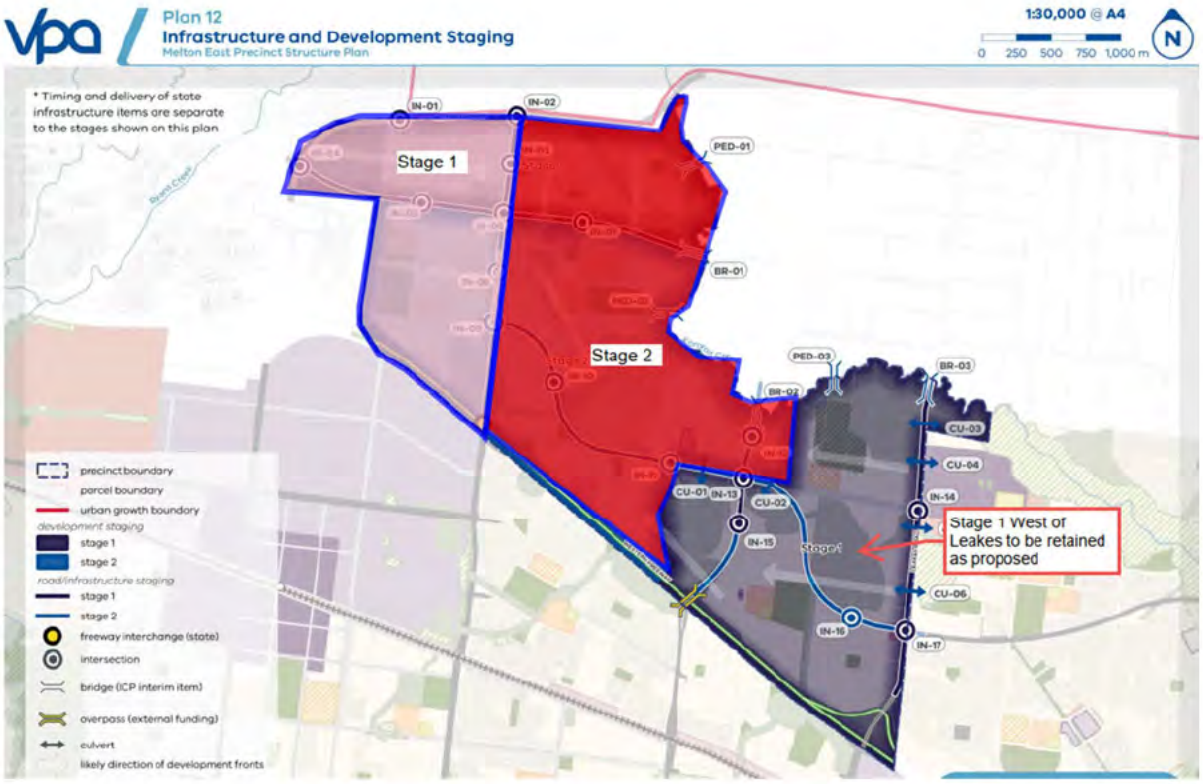


Figure- Proposed Alternate Staging Plan

Appendix 4: Traffic Memo

Stantec

Technical Memorandum

Project:	Melton East PSP - Taylors Road and Beatty's Road Alignments	**Office:**	Melbourne
Project №:	301400494	**Status:**	Draft
Client:	3L Alliance	**Prepared by:**	[redacted]
Date:	26 March 2025	**Approved by:**	[redacted]
Subject:	**Basis of Design Technical Memorandum**		

1. Introduction

As part of planning for the Melton East Precinct Structure Plan (PSP), Stantec have been engaged by 3L Alliance to review the alignment of Taylors Road and Beatty's Road at the eastern extent of the PSP.

This technical memorandum serves to document the outcomes of this investigation of the Taylors Road and Beatty's Road alignments.

1.1 Site Location

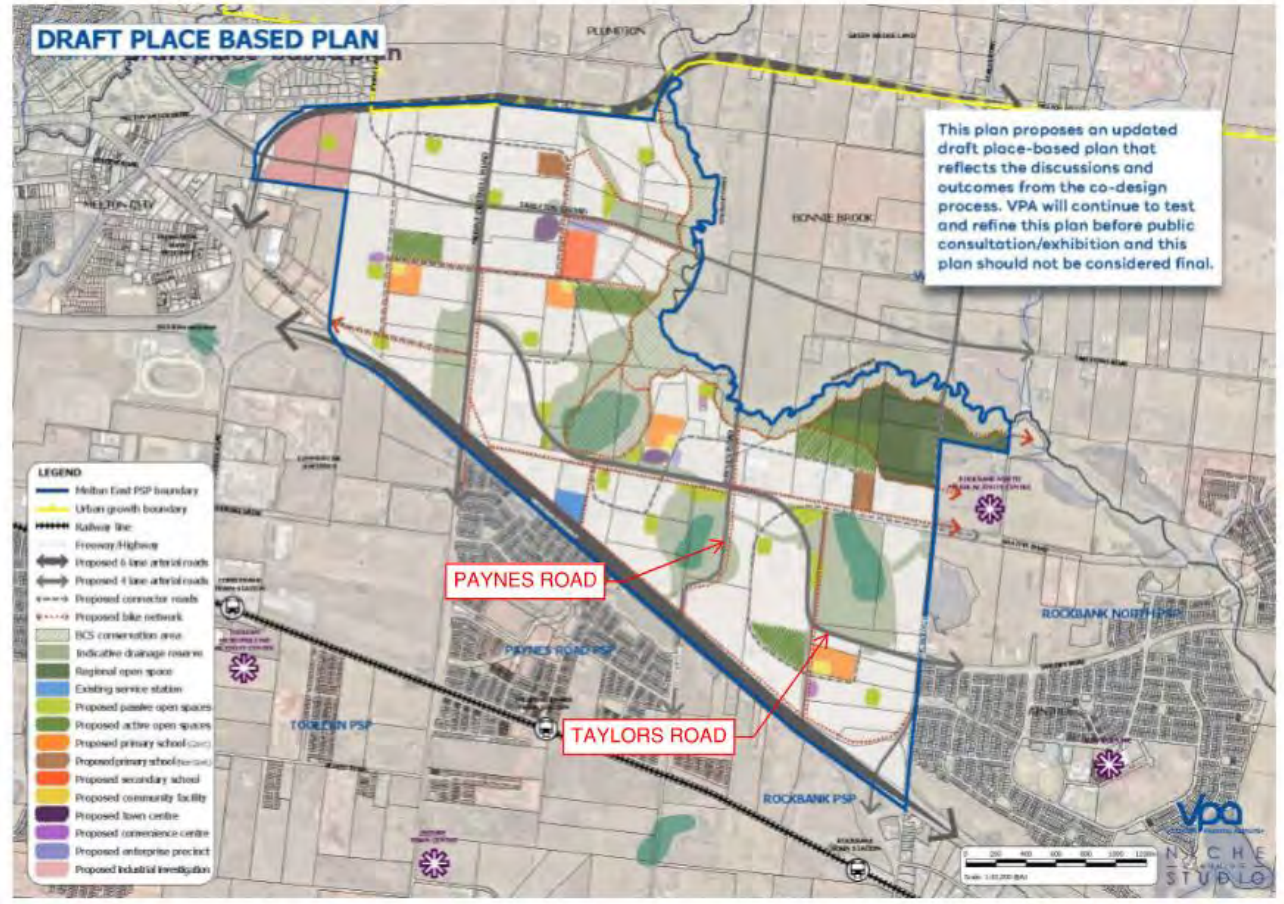
The site of this investigation focused on the greenfield area Taylors Road between Paynes Road and Leakes Road and Beatty's Road including the intersections with Taylors Road in Grangefields, east of Melton in Victoria. This contains 4 no. properties under ownership of the 3L alliance, namely 1010 and 1026 Leakes Road, and 2414 and 2344 Western Freeway (highlighted pink in Figure 1.1 below).

Figure 1.1 – Site Location (image sourced from Nearmap)

1.2 Future Urban Structure

A Draft Place Based Plan has been developed by the Victorian Planning Authority (VPA) in April 2023 that shows the alignment of Taylors Road and Paynes Road through the PSP, which has been reproduced in Figure 1.2. The general alignment of these two (2) roads has been adopted as part of these investigations to provide more clarity on their likely alignments.

Figure 1.2 – VPA Draft Place Based Plan (image sourced from VPA's Co-Design Workshop Summary Report dated April 2023 and modified by Stantec).



1.3 Reference Documents

A number of background information has been provided to inform the design of Taylors Road. Table 1.1 below provides a summary of the reference documents supplied to Stantec and used as the basis of this investigation.

Table 1.1 – Reference Documents (to be completed)

Data Description	File Name	Provided By	Prepared By	Original Date of Receipt
Before-You-Dig-Australia existing services information		Various	Various	02.09.2024
Cultural Heritage mapping	ALPHA30 - Aboriginal Places in Activity Area - 1031 Beattys Road.pdf ALPHA30 - Aboriginal Places in Activity Area.pdf		Alpha Archaeology Pty Ltd	
Waterway Alignment	307078WC200 - WATERWAY ALIGNMENT.pdf		Spiire	
	TL_Melton East_PSP_1076_QGIS_DXF_20220624	Mesh		
	TL_Melton East_PSP_1076_Tree_data_20220624.shp	Mesh		
	EHP15991_DryStoneWall_N232.shp EHP15991_Nissen_Hut.shp EHP15991_Nissen_Hut_Curtilage.shp	Mesh		
	RPT_Grangefields_DesktopFF_FINAL_28112019.pdf BCS_Habitats.DWG Conservation_areas.DWG Current_Wetlands.DWG GGF_Areas_of_Strategic_Importance.DWG NV2011_TimeStamped_Vegetation.DWG Scattered_Trees.DWG	Mesh	SMEC	
	CulturalSensitivityAreas.dwg HistoricalPlaces.dwg SensitivityAreasUpdate.dwg			
	307078-Spiire Aboriginal Overlay.pdf 307078-Spiire VPA Overlay.pdf 307078-Spiire VPA Overlay1.pdf		Spiire	
Feature survey for 3L properties	21894-D1_V1.pdf	Mesh	Taylors	
Cultural Heritage mapping files	Place_Extent_1031_Beattys_Rd_AS1 to AS11.zip Place_Extent_1031_Beattys_Rd_Grangefields_AS1.zip	Alpha Archaeology Pty Ltd		
Draft PSP Place Based Plan	Image as shown in 241014_3L_VPA plan Proposed refinements.pptx	Mesh	VPA	

2. Design Criteria

The design criteria and parameters used in this review have been adopted from those used in the Beveridge Northwest PSP for secondary arterial roads. Refer Tables 2.1 and 2.2 below for further details.

Table 2.1 – Horizontal Design Parameters

Description	Value	Reference	Conformance
Design Speed – Taylors Road	80 km/h	Primary Arterial Road.	Yes
Cross Section – Taylors Road	41m	Primary Arterial 4 Lanes	Yes
Min. Horizontal Curve Length	180m	AGRD03 Table 7.7	Yes
Min. Horizontal Curve Radius	350mR	AGRD03 Table 7.3 and Table 7.13 Curve Widening (19m Semi) 5% with 0.2m lane widening.	Yes
Min. Horizontal length of straight between curves	80m	AGRD03 Section 7.5.3 V = Design Speed	Yes
Design Speed – Beatty's Road	60 km/h	Secondary Arterial Road.	Yes
Cross Section – Beatty's Road	34m	Secondary Arterial 4 Lanes	Yes
Min. Horizontal Curve Length – Betty's Road	100m	AGRD03 Table 7.7	Yes
Min. Horizontal Curve Radius – Beatty's Road	350mR	AGRD03 Table 7.3 and Table 7.13 Curve Widening (19m Semi) 5% with 0.2m lane widening.	Yes
Min. Horizontal length of straight between curves – Beatty's Road	60m	AGRD03 Section 7.5.3 V = Design Speed	Yes
Drive Reaction Time	2.0 s	AGRD03 Table 8.7	Yes
Coefficient of Deceleration	0.36 car	AGRD03 Table 5.2	Yes
Stopping Sight Distance (SSD) car	103m	AGRD03 Table 5.5	Yes
Stopping Sight Distance (SSD) truck	120m	AGRD03 Table 5.5	Yes
Safe Intersection Sight Distance (SISD)	170m	AGRD04	Yes

Approach Sight Distance (ASD)	103m	AGRD03 Table 5.5	Yes

Table 2.2 – Vertical Design Parameters

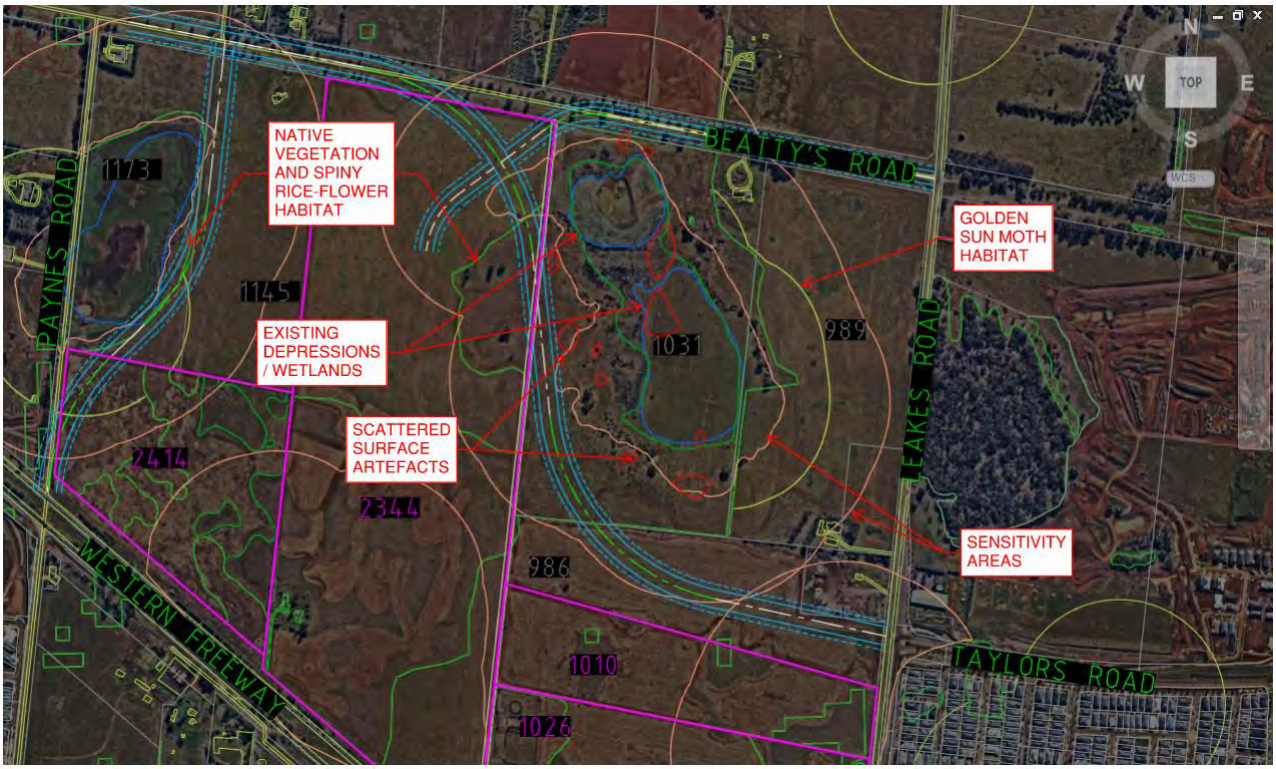
Description	Value	Reference	Conformance
Max.Grade	6%	AGRD03 Table 8.3	N/A
Min. Grade	0.5%	AGRD03 Table 8.5	N/A
Min. Length of vertical Curves for new constructon	60m	AGRD03 Table 8.10	N/A
Min. Sag K Value	10 - 17	AGRD03 Figure 8.9	N/A
Min. Crest K Value	29.3	AGRD03 Table 8.7	N/A

3. Site Constraints

A review of the documentation provided in Table 1.1, Nearmap imagery and Google Streetview, the following constraints that could have an impact on proposed road alignments were identified for consideration:

- Site Topography – Existing terrain is noted to be generally flat, with grades ranging from 1 – 3% across the site.
- Environmental – Native vegetation, spiny rice-flower habitats, golden sun moth habitats and areas of sensitivity were noted in reference documents.
- Cultural Heritage – No artefacts are impacted by this intersection. There is a small cluster of 5 artefacts impacted south of the K6 wetland by Taylors road, but on balance, this is considerably less than the DSS K6 wetlands and road alignments.
- Water – Existing depressions/wetlands were noted in property no's 1031 and 1173 Beatty's Road.
- Existing Services – Largely contained to existing Leakes Road, Paynes Road and Beatty's Road reservations.

Figure 3.1 – Site Constraints



4. Taylors Road / Beatty's Road

4.1 Overview

Taking into consideration the reference documentation, design criteria and site constraints mentioned in the preceding Sections of this memorandum, an alignment of the Taylors Road and the intersection with Beatty's Road Figure 4.1 and Figure 4.2.

Taylors Road.

Features of this road alignment include:

- Road geometry compliant for a design speed of 80 km/h, Primary Arterial Road 4 Lanes.
- A 90-degree angle (i.e. perpendicular) of intersection in accordance with Austroads Guide to Road Design and DTP Supplements.
- Remains west of existing depression located in northern corner of property no. 1031 Beatty's Road.
- Avoids scattered artefacts and existing depression in property no. 1031 Beatty's Road, while minimising extent of intrusion into 3L Alliance properties.
- A 10m buffer on the eastern side of the alignment has been maintained to scattered artefacts. This makes allowance for earthworks batters required to achieve flood immunity and superelevation for road curvature.

Beatty's Road

Features of this intersection include:

- Road geometry on Beatty's Road compliant for a design speed of 60 km/h. Secondary Arterial 4 lanes.
- A 90-degree angle (i.e. perpendicular) of intersection between Taylors Road and Beatty's Road in accordance with Austroads Guide to Road Design and DTP Supplements.
- Location of the intersection meets sight distance requirements on Taylors Road and Beatty's Road for their respective design speeds. Locating this further west will limit sight distance on Beatty's Road resulting in non-conformance, while further east will impact the existing depression in the northern corner of property no. 1031 Beatty's Road.

- Location of intersection will not allow for tighter road geometry, and therefore greater superelevation, on the curvature of Taylors Road.
- A Connector Road approach to the south that could provide access properties located further south.

Straight Through Intersection – Figure 4.1

- Taylors Road having broken back curve which as per AustRoad standards should be avoided wherever possible. It is virtually impossible to provide the correct amount of super elevation and it is equally difficult to produce a pleasing grading of the pavement.
- Minimum length of straight between the curves and minimum curve lengths have met.
- All sight distances checks have been checked and comply.
- Taylors Road using the 350mR curve for 80 km/h will require lane widening of 0.2m
- Beatty's Road using the 150mR curve for 60 km/h will require lane widening of 0.5m

Continuous Radius Intersection – Figure 4.2

- Minimum length of straight between the curves and minimum curve lengths have met.
- All sight distances checks have been checked and comply.
- Taylors Road using the 350mR curve for 80 km/h will require lane widening of 0.2m
- Beatty's Road using the 150mR curve for 60 km/h will require lane widening of 0.5m

Figure 4.1 – Taylors Road and Beatty's Road Intersection – Straight through within intersection.

Figure 4.2 – Taylors Road and Beatty's Road – Continuous radius through intersection.

5. Summary

When reviewing the design standards, the intersection of Taylors Road and Beatty"s Road can be achieved with a continuous radius. Should DTP prefer a broken back curve arrangement, the intersection can also be achieved.

Both of these intersection treatments are able to be designed to meet the relevant road design standards.

Whilst initial access is able to be provided via a left in left from Leakes Road, our initial analysis suggests that this will only be able to support 475 lots until further upgrades are required. In this regard, providing the Beatty's Road / Taylors Road intersection within the PSP will allow access to neighbourhood to commence with more certainty as providing access to neighbourhood 1 via Paynes Road is subject to the owners of Property 71 providing access.

Melton East PSP

Submission to Amendment C244melt

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