31 March 2025

Mr. Dean Rochfort
Acting Chief Executive Officer
Victorian Planning Authority
RE: Casey Fields South (Employment) and Devon Meadows

Sent by email: CFSDM@vpa.vic.gov.au

Dear Dean,

**Submission to Draft Amendment C295 to the Casey Planning Scheme - Casey Fields South (Employment) and Devon Meadows Precinct Structure Plan (PSP)**

MAB is pleased to provide the attached submission to the Victorian Planning Authority (VPA) in relation to draft Amendment C295 to the Casey Planning Schene (the Amendment).

MAB looks forward to continuing its collaborative and positive approach to progressing this PSP with the VPA. MAB respectfully request the opportunity for further discussion with the VPA and Melbourne Water to reach agreement on our responses to all or specific parts of its submission well prior to the Standing Advisory Committee (SAC) hearing.

MAB is completing a technical review in response to specific components of the Amendment and supporting PSP documents, including:

- Precinct Structure Plan (PSP) Infrastructure and Development Staging Background Report – March 2025;
- Biodiversity Assessment Report (WSP) March 2025;
- Aboriginal Cultural Heritage Impact Assessment (Ecology and Heritage) February 2025;
- Arboricultural Assessment (ENSPEC) September 2024 and March 2025;
- Integrated Water Management – Issues and Opportunities (Draft) Alluvium, February 2023; and
- Landscape and Visual Character Assessment (Tract) February 2023.

Given the above, MAB reserves its rights to make further submissions prior to and during the Standing Advisory Committee process.

Should you require any further information or have any queries regarding the above, please contact me on [redacted]

Yours sincerely,

[redacted]
**Director, Planning**

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# Submission to draft Amendment C295 - Casey Planning Scheme

## Casey Fields South (Employment) and Devon Meadows Precinct Structure Plan

MAB Property Developments Pty Ltd
Submission to the Casey Fields South (Employment) & Devon Meadows Precinct Structure Plan
31.03.2025

# 1. Executive Summary

## 1.1 MAB's Submission

MAB Property Developments Pty Ltd (**MAB**) is pleased to provide this submission to the Victorian Planning Authority (**VPA**) in relation to proposed Amendment C295 to the Casey Planning Scheme (the Amendment) Casey Fields South (Employment) and Devon Meadows Precinct Structure Plan (the **PSP**).

The focus of this submission is on the Devon Meadows component of the PSP (**DMPSP**) where MAB has an interest in 35.3 hectares (approx.) of land which it intends to develop for residential purposes.

This submission comprises five (5) components as outlined below. MAB reserves its right to make further submissions.

### 1. Plan 2-Place Based Plan

MAB requests changes to the Place Based Plan to ensure that a greater net community benefit can be achieved.

### 2. Drainage-DMPSP

MAB requests amendment to Plan 6 (Water) to:

- Remove the proposed constructed waterway located in the north-west of the DMPSP area. This waterway is not required to convey stormwater, which can be adequately accommodated within underground pipes and road network. Deletion of the proposed waterway will improve the residential neighbourhood and subdivision design outcome for the DMPSP;
- Incorporate and develop the existing Craig Road Retarding Basin at 40-42 Craig Road, Devon Meadows (**MWC land**) to treat and retard drainage flows from the northern portion of the DMPSP area; and
- Re-align the south-western waterway alongside existing vegetation to ensure the proposed active open space reserve can be efficiently designed and delivered to maximise functional land for sporting and recreational purposes.

### 3. Development Staging-DMPSP

MAB requests that Plan 9 (Infrastructure and Development Staging) be amended to include its land within Stage 1a (Development) as it is capable of being serviced in accordance with the Objectives contained in Section 3.7 including Requirements R19 – R29.

### 4. Tree Retention and Native Vegetation (Plan 13)-DMPSP

MAB requests significant amendments to the Native Vegetation Retention and Removal Plan (Plan 13) and deletion of requirements R10 and R13. All vegetation within the DMPSP is capable of being removed in accordance with the *Melbourne Strategic Assessment (Environment Mitigation Levy) Act* 2020. The schedule to Clause 52.17 will also require amendment to reflect the above.

Guidelines for managing native vegetation removal can be included in the DMPSP.

### 5. PSP and Urban Growth Zone (UGZ) Schedule document changes-DMPSP

MAB requests a range of PSP plan-related changes in addition to those referred to above. These changes will assist in simplifying and clarifying the outcomes sought by the PSP.

MAB requests further specific drafting changes to the PSP and the proposed UGZ Schedule 15 to Clause 37.07 (Section 3.0) to remove the requirement for an arboriculture report.

MAB requests further specific discussion with the VPA and MWC, as appropriate, with a view to reaching an agreed position well in advance of the proposed Standing Advisory Committee Hearing.

# 2. Introduction

## 2.1 The MAB Properties

MAB has an interest in 36.19 hectares (approx.) of land across nine (9) individual properties, generally located within the northern portion of the Devon Meadows component of the PSP. Table 1 below contains the property details and are also shown in **Figure 1.**

**Table 1 – MAB properties**

| Site Address | PSP property ID | Area (ha) | Lot/Plan details |
|---|---|---|---|
| 28A Craig Road | DM-03 | 1.00 | 2\PS348801 |
| 28B Craig Road | DM-04 | 1.00 | 3\PS348801 |
| 30A Craig Road | DM-05 | 1.06 | 1\PS348801 |
| 30B Craig Road | DM-06 | 1.09 | 4\PS348801 |
| 32-34 Craig Road | DM-11 | 7.48 | 1\PS841883 |
| 36-38 Craig Road | DM-23 | 9.35 | 1\LP128889 |
| 55 Devon Road | DM-26 | 8.34 | 2\PS712706 |
| 65 Devon Road | DM-42 | 3.35 | 16\LP7829 |
| 78-80 Devon Road | DM-47 | 3.52 | 2\PS430090 |
| **TOTAL** | | **36.19** | |

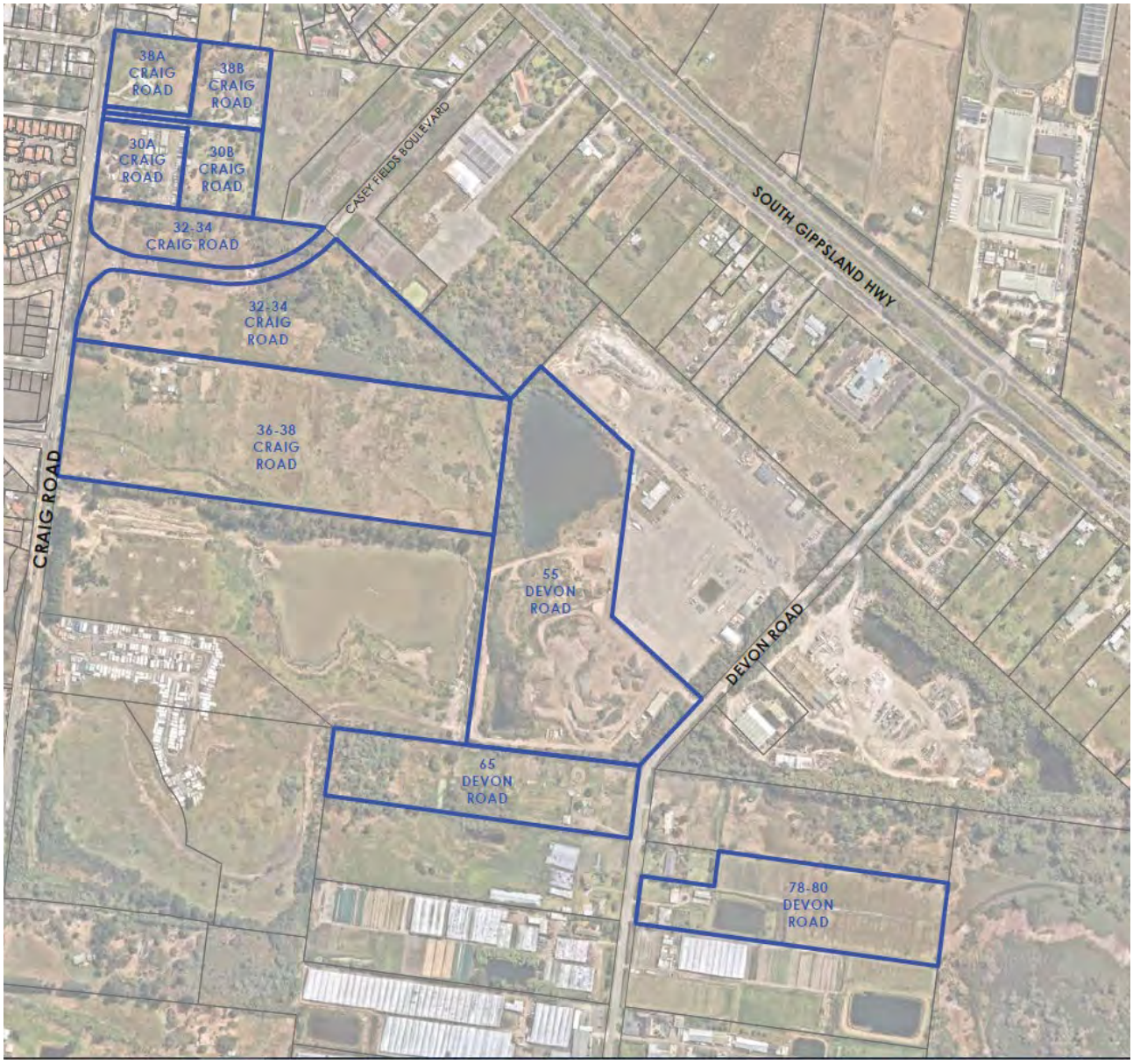
The majority of the properties are contiguous and have a 550 metre (approx.) frontage to Craig Road, extending to the south-west with frontage along the bend of Devon Road, generally in the centre of the DMPSP area. The properties are surrounded by irregular shaped land parcels used for various rural-residential and lifestyle pursuits as well as extractive industries and transport storage.

The planned Casey Fields Boulevard extension bisects the 32-34 Craig Road property where it will intersect with the South Gippsland Highway and extend north. Properties located at 36-38 Craig Road and 55 and 65 Devon Road abut the MWC land that forms part of the Botanic Ridge Development Services Scheme (**DSS**).

A single parcel located at 78-80 Devon Road is situated on the eastern side of Devon Road.

The properties contain a mix of native and exotic vegetation of various forms and quality associated with the current and former uses, with some containing existing single storey dwellings.

**Figure 1 – MAB properties**




MAB has a long-established and enviable track record for delivering large-scale mixed-use master planned urban communities in Victoria, particularly Melbourne's growth areas – including University Hill, Bundoora and Merrifield, Mickleham.

MAB is passionate about creating, liveable sustainable and safe communities and takes pride in shaping the fabric of the built environment and stands by its legacy of originality, quality and excellence.

The success of MAB's projects has been underpinned by planning controls that allow a high degree of flexibility with the capability of responding to changing housing and housing market needs.

# 3. Plan 2-Place Based Plan

## 3.1 MAB's revised Place Based Plan

Fundamental changes are required to enable the delivery of high-quality urban development, in response to the objectives of the PSP.

A revised Place Based Plan is shown below in **Figure 2** that includes:

- Deletion of the proposed constructed waterway within the north-west of the DMPSP area, resulting in more higher density housing as it is not required for drainage purpose;
- Deletion of the Public Acquisition Overlay associated with the planned Casey Fields Boulevard as the land as already been acquired by the City of Casey;
- Re-alignment of the connector road between Casey Fields Boulevard and Devon Road;
- A revised configuration of the passive open space area to maximise view lines and an improved public realm;
- Re-aligned constructed waterway along the northern boundary of the Active Open Space to significantly improve the functionality of the reserve;
- Reshaped retarding basins in the southern area of the DMPSP for a more efficient subdivision outcome, maximising developable land; and
- Re-aligned Public Acquisition Overlay for drainage along the southern boundary of the DMPSP area.

The specific changes and more detailed rationale to support these requested changes and, the changes required to other PSP plans, are outlined in this submission.

**Figure 2 – Revised Place Based Plan**

# 4. Drainage-DMPSP

## 4.1 MAB's Alternative Drainage Scheme

MAB acknowledges the extensive work undertaken by the VPA and MWC to balance planning and drainage objectives for the DMPSP - to enable the development of a high-quality urban structure for the future Devon Meadows community.

MAB has identified that there is a significant opportunity to reduce and modify the proposed extent of constructed waterways in the DMPSP to improve Plan 2 (Place Based Plan) and ultimately deliver a more cohesive urban structure for the future residential community.

**Figures 3 and 4** highlight the consolidated suite of changes to Plan 6 (Water) and specifically MAB's land for further consideration and agreement with the VPA and Melbourne Water.

Prior to public consultation of the PSP, MAB highlighted to the VPA and MWC through engineering-led meetings that the proposed constructed waterway in the north-western part of the DMPSP is not required to convey the low volumes of stormwater flows from Junction Village and that it should be removed to enable an improved urban structure. This change will also increase the net developable area of the PSP which in turn will increase the PSP yield and increase the ICP levies available to Council from the standard levy.

In addition, MAB highlighted the opportunity to utilise the existing MWC land to treat and retard drainage flows for the majority of the northern portion of the DMPSP. This land is already owned by MWC and has the potential to be incorporated and enhanced as an open space asset for the PSP.

Following in-principle support from MWC and the VPA that deletion of the waterway would be favourably considered (subject to further investigation using parameters set by MWC), MAB engaged Verve Projects and Afflux Consulting to undertake a comprehensive investigation which has revealed that:

- **There is no requirement or justification for a constructed waterway to convey the flows from Junction Village at Craig Road through the northwest section of the DMPSP to the Craig Road Quarry.**
- **The MWC land has the capacity to accommodate the drainage from approximately 50 hectares of land development in the northern extent of the DMPSP.**

Included in **Appendix 1** is a joint memo prepared by Verve and Afflux that provides further reasoning for MAB's alternative drainage scheme for the DMPSP and the technical basis of the investigation.

**Figure 3 – Updated Plan 6 (Water)**

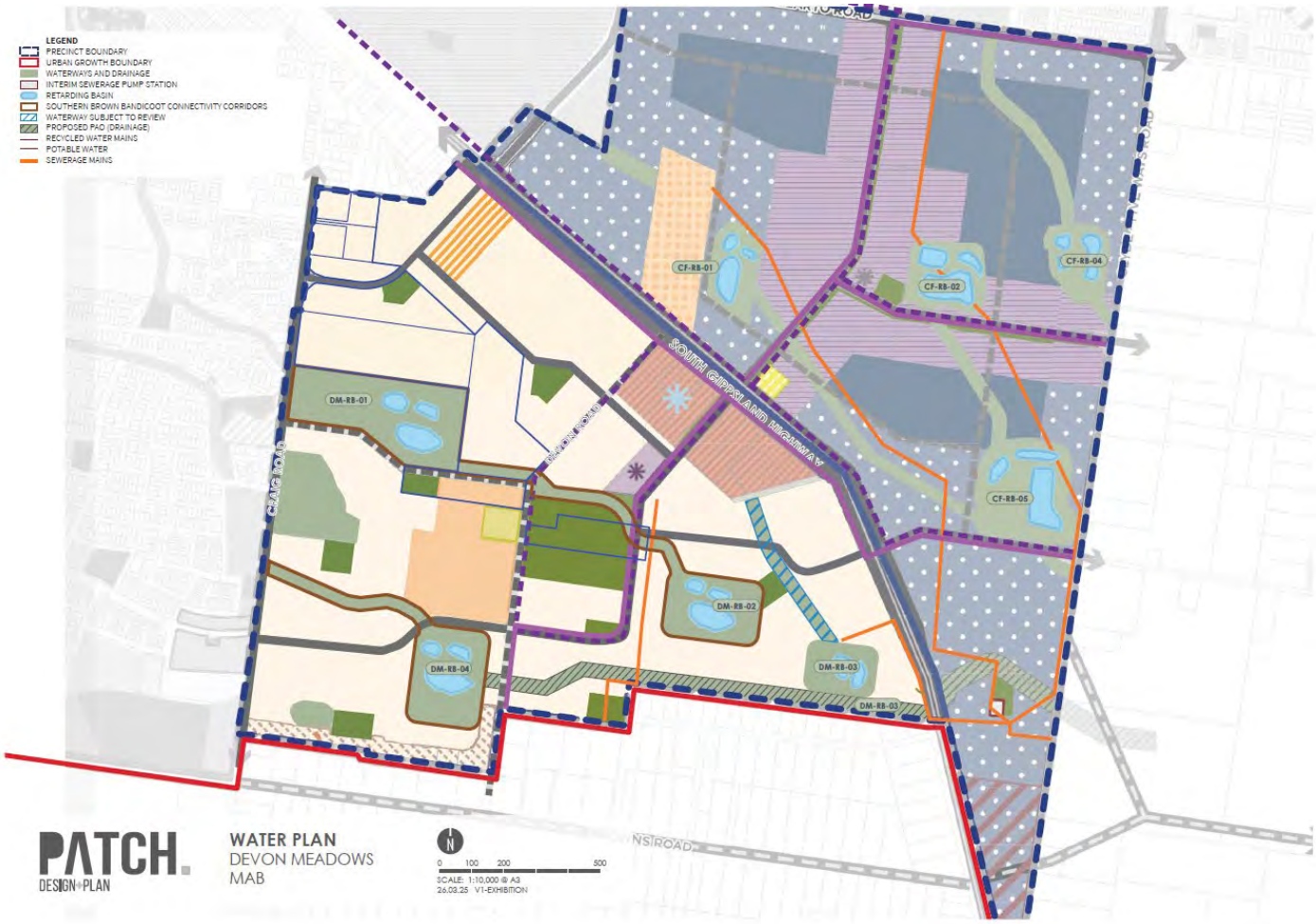
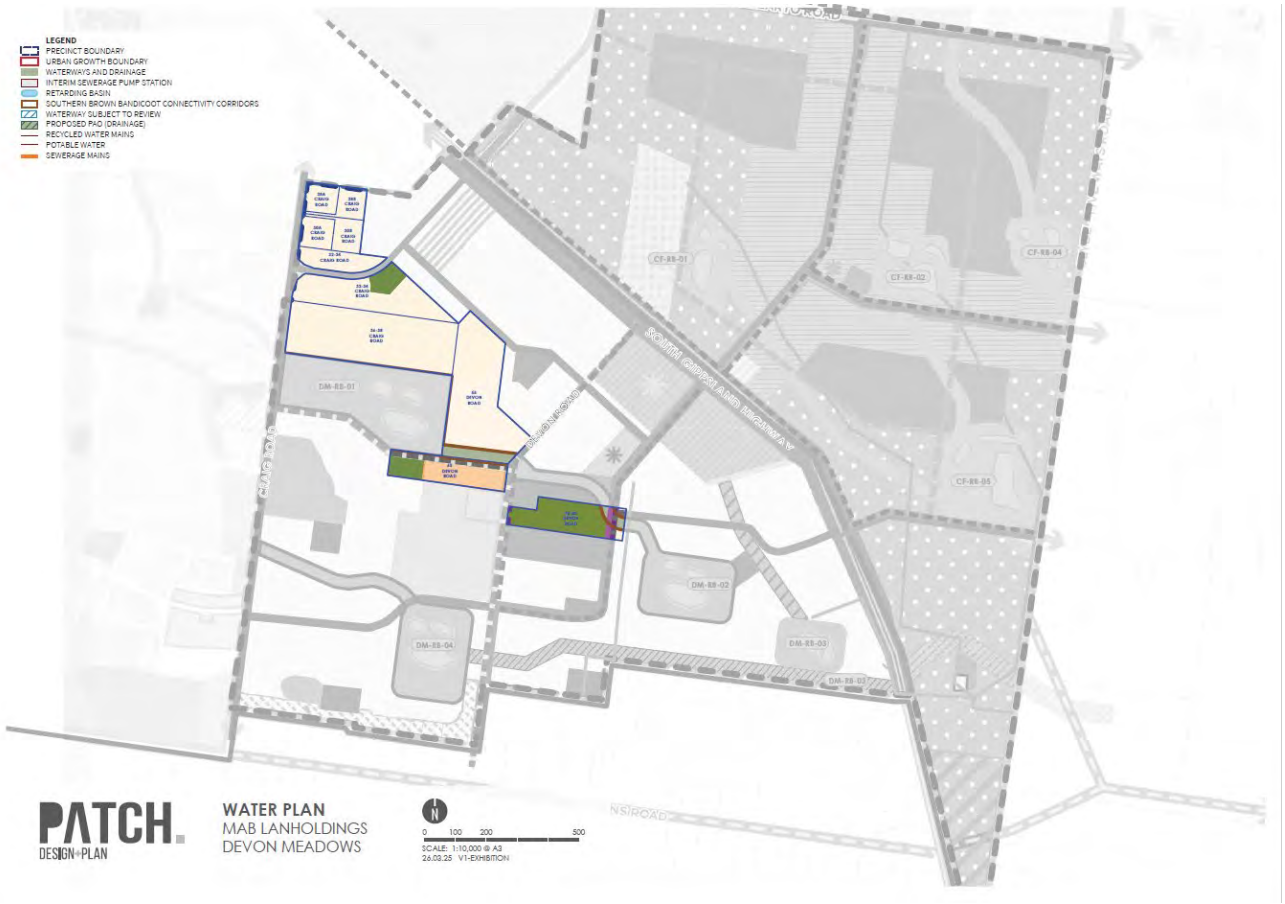


**Figure 4 - Updated Plan 6 (Water) – MAB properties**




# 5. Development Staging-DMPSP

## 5.1 Amend Plan 9 (Infrastructure and Development Staging)

The objective of Clause 19.03-2S (Infrastructure design and provision) of the Casey Planning Scheme is to *"provide timely, efficient and cost-effective development infrastructure that meets the needs of the community."*

This is reinforced through Section 3 (Implementation) of the draft PSP in O31 that identifies the need to ensure *"development is staged in an orderly manner that is consistent with the planned delivery of necessary infrastructure"*. Moreover, leveraging existing and planned infrastructure is also a key Objective as identified in O29 and is especially relevant to the DMPSP and its role in contributing to reduced timeframes to construct allotments for houses in the City of Casey in line with the principles of the Victorian government's Housing Statement.

Plan 9 of the DMPSP should be amended (refer to **Figure 5** below) to reflect MAB's alternative drainage scheme as:

- It leverages the use of the existing and underutilised MWC land for drainage purposes by "unlocking" the area of land in S1A shown in Figure 5 for immediate urban development; and

- The northern section of MAB's revised S1A is not reliant on the acquisition of land for WD1-WD4 or the South Gippsland Culvert identified in Plan 9 in the southern portion of the PSP and only requires the necessary works to construct a wetland / retention basin in line with MWC DSS requirements.

MAB acknowledges that MWC has confirmed its preparedness to commence the acquisition process for the parcels of land in the PSP required to facilitate drainage. However, in MAB's experience, this process could be readily delayed thereby also delaying the delivery potential of much needed housing consistent with the State's housing strategy.

The MWC land, in combination with the removal of the north-western constructed waterway, provides a substantive opportunity to fast-track development of land for housing in the City of Casey post gazettal of the PSP.

As a further measure, more generally in relation to the PSP delivery beyond MAB's interests, MAB requests that the PSP be amended to facilitate private developers to acquire easements under the provisions of s36 of the Subdivision Act.

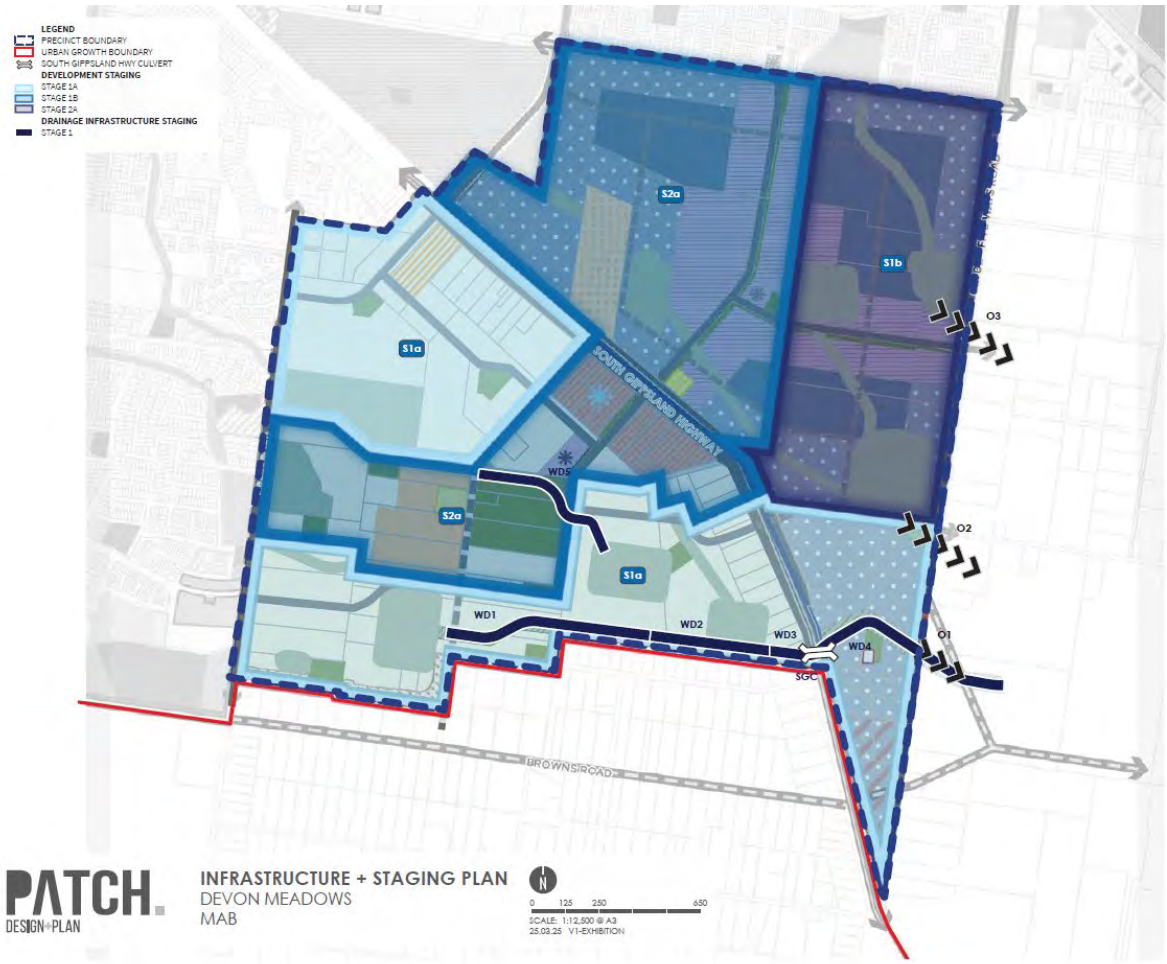
In summary, s36 of the Subdivision Action provides that if Council or MWC states in writing that it considers that the economical and efficient subdivision, servicing or access to land covered by planning proposal requires the owner of land to acquire an easement over other land in the vicinity and that the removal or acquisition will not result in an unreasonable loss of amenity, then the owner may apply to the Victorian Civil and Administrative Tribunal (VCAT) for leave to compulsorily acquire the easement or right of way.

Given the staging requirements of the PSP, it is submitted that the PSP be amended to include a new heading in the implementation section to address "Access to Land for Economic and Efficient Subdivision, Servicing or Access". This section can then nominate land that is essential to the achievement of economical and efficient subdivision, servicing or access to land. This can be reference s36 of the Subdivision Act and relate the concept to the Staging Plan. MAB can assist in the drafting of a provision for the consideration of the VPA, Council and MWC.

### 5.1.1 Devon Road

The PSP is largely silent on the mechanism for land acquisition and staging of construction for Devon Road. MAB is concerned to ensure that the road construction is not the default responsibility of the first developer. Clarity from the VPA is also required regarding the funding mechanism and ultimate cross section to accommodate a bus capable carriageway. MAB requests that the PSP be amended to address the above.

**Figure 5 – Updated Plan 9 (Infrastructure and Development Staging)**



## 5.2 Active Open Space – constructed waterway re-alignment

The proposed constructed waterway through the Active Open Space (east of Devon Road) shown on the Place Based Plan is capable of being re-aligned to the north and east, providing for improved usability of this important community asset whilst:

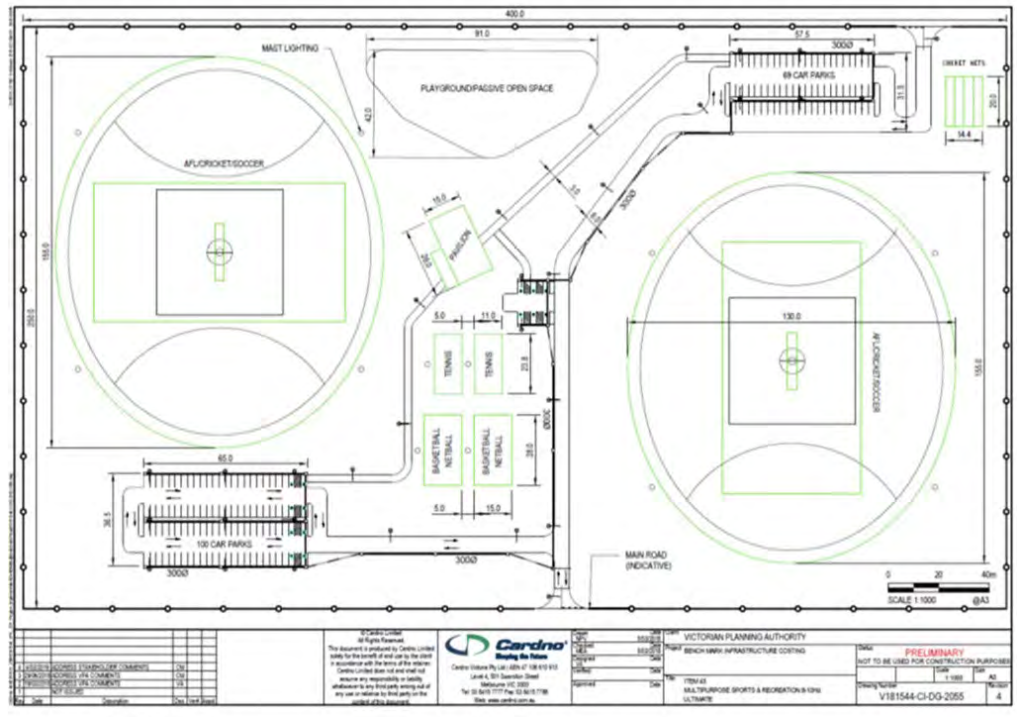
- Incorporating established mature vegetation identified for retention at 60 Devon Road that provides 'instant character', close to the proposed Local Town Centre, and
- Facilitating the enhancement and connectivity of Eastern Brown Bandicoot habitat / corridor.

To provide for a practical and deliverable active open space reserve, the VPA and the MWC should apply a Public Acquisition Overlay (**PAO**) to the re-aligned waterway. Given the unique circumstance in the DMPSP area with small land parcels and fragmentation of ownership, a PAO is essential to secure the future delivery of both the required drainage and community infrastructure and will provide greater certainty regarding the intended function of this component of the PSP.

An active open space reserve is a long-term asset for Council to manage on behalf of the community. It is important that the urban structure provides the greater long-term flexibility for Council to manage and redevelop recreation facilities over time. Relocation of the constructed waterway as proposed by MAB will provide this necessary flexibility.

The VPA's Benchmark Costing Report provides the template shown in **Figure 6** below depicts the typical build out of an active recreation reserve. Space is at a premium and the facilities have certain functional requirements and location synergies that the exhibited VPA recreation reserve concept is not able to provide.

**Figure 6 – Active Open Space Template (VPA)**

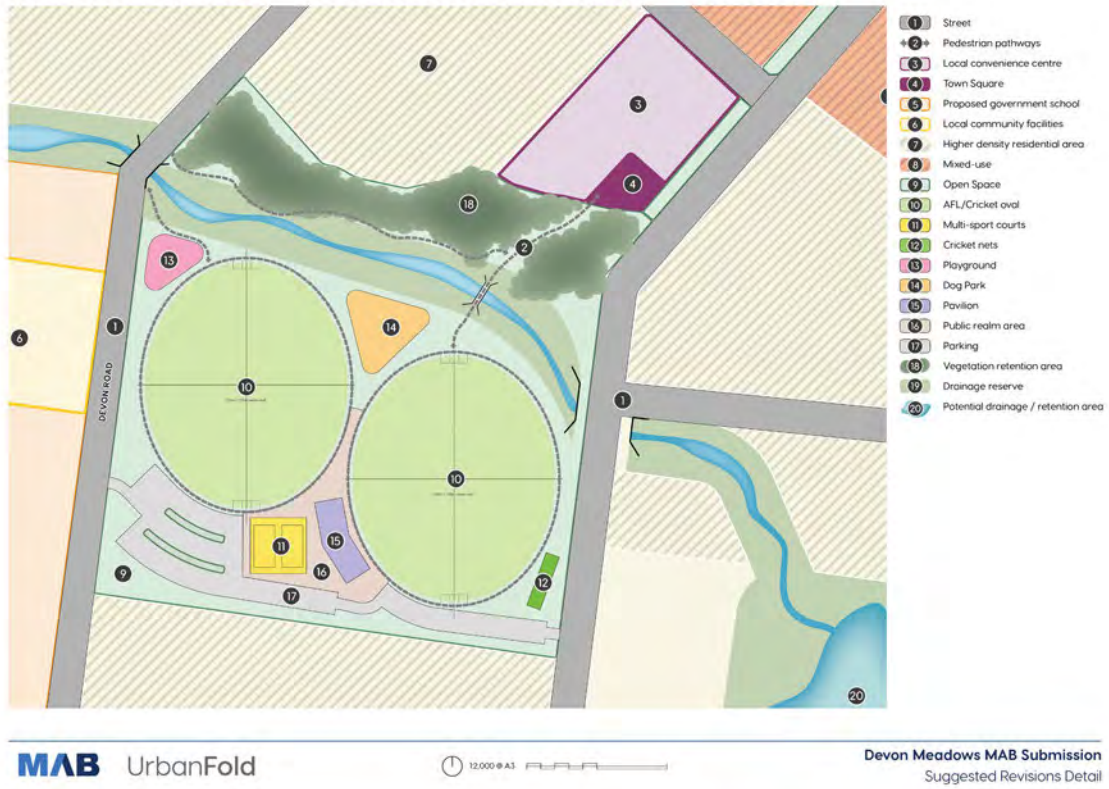



**Figures 7 and 8** below depict MAB's revised layout of the Active Open Space as a result of the re-alignment of the constructed waterway. Two senior AFL ovals have been shown; however, the same

principle would apply to the delivery of soccer facilities on the reserve. The relocated waterway provides greater flexibility for the delivery of soccer facilities.

**Figure 7 – Updated Active Open Space (broad scale)**


**Figure 8 - Updated Active Open Space**



# 6. Tree retention and Native Vegetation (Plan 13)-DMPSP

## 6.1 Amend Plan 13 – Native Vegetation and Retention & Removal

MAB recognises the inherent value of existing mature vegetation (both exotic and native) and its role to provide instant character for growth area communities and is supportive of retaining (where possible and practicable) existing significant trees in key public realm areas, designated public open space areas and within the verges of public roads.

Plan 13 should be substantially amended to show all native vegetation within the PSP area, remove references to vegetation "to be retained" and replace with "which may be removed", as all native vegetation within the PSP area is covered by the Melbourne Strategic Assessment (**MSA**).

**All native vegetation within the MSA can be removed without a planning permit under Clause 52.17 of the Casey Planning Scheme.**

The MSA program uses the environment mitigation levy to fund conservation programs and the acquisition of land for inclusion within reserves to protect important areas of habitat and threatened species. Under the MSA, none of the vegetation on MAB's properties or across the broader PSP was deemed to be critical for retention.

The PSP should only encourage, through appropriate Guidelines, subdivision design to have regard to the opportunities to retain arborist assessed trees where practical, safe and reasonable to do so within public realm areas (including road reserves) as well as open space but subject to the consideration of the following:

- Professionally assessed useful life expectancy and feasibility of tree retention in a future residential context;
- Alterations to the existing overland flood paths and soil profile as a result of urban development;
- The need for earthworks, excavation and cut and fill requirements for subdivision; and
- Works that are necessary to deliver public infrastructure such as road widening and constructed waterways.
- The need to balance tree retention with objectives relating to the achievement of affordable housing and the economic and feasible development of the land.

# 7. Other Matters

## 7.1 Section 3 - Affordable Housing

MAB supports the broad planning policy objective that encourages new communities to include affordable housing and considers that it has a strong role to play in facilitating housing diversity in growth areas.

Section 3 of the PSP and the proposed UGZ schedule requires as part of the subdivision and development approval process, a response to how development contributes to the delivery of affordable housing. We note that the VPA has relied on the broad approach suggested by SGS to guiding the delivery of affordable housing.

MAB has identified the following challenges with the approach to the provision of affordable housing in the PSP:

- A permit must be generally in accordance with the PSP. The PSP includes a clear objective to deliver 10% affordable housing and through **Table 3** a guideline-based direction around a high percentage of social housing to very low-income households (e.g.1 bedroom dwellings).
- Although affordable housing is considered voluntary, the PSP drafting makes it clear that a significant response is required at the planning permit stage for subdivision. A permit that does

not provide a significant response may not be considered to be generally in accordance with the PSP, especially given the PSP objective in relation to affordable housing.

- The level and type of contribution sought by the PSP will not be feasible to deliver at the scale intended and imposes an unreasonable burden on private developers that has the potential to lead to a delay in the delivery of lots and housing.
- It is noted that the SGS Report considers that the role of the delivery of affordable housing is split across the Commonwealth, the State and private developers. However, the VPA, in implementing the SGS findings do not appear to apportion the responsibilities with respect to this PSP.

Proposed specific changes to the Objectives and Guidelines in the PSP regarding the provision of affordable housing and plan changes are included in **Table 2 and 3** below.

# 8. PSP and Urban Growth Zone (UGZ) Schedule document changes-DMPSP

## 8.1 PSP Plan Changes

**Table 2**

| Submission Ref | Change(s) sought | Justification |
|---|---|---|
| Plan 9 | MAB land to be shown as Stage 1 (development) | Refer to Figure 7. |
| Plan 6 | Correctly define the Southern Brown Bandicoot Connectivity Corridor (SBBCC). | Due to the deletion of the north-western waterway. SBBCC follows the MWC land and the waterway west of Devon Road. |
| Plan 6 | MWC land to be included within the PSP plan and labelled as 'DM-RB-01'.<br>Show PAO on revised constructed waterway alignment on land identified as Active Open Space. | This existing public asset has been agreed as being an appropriate asset in the drainage scheme in the DMPSP.<br>Enables certainty regarding drainage connections. |
| Plan 4 | Devon Road should be a bus capable road. | Devon Road will serve as the primary access for the proposed schools and active open space. It is also an existing road in the PSP and requires further details regarding the funding of its upgrade (land and construction). |
| Plan 2 (Item 1 as shown on the attached plan) | DMPSP North-west waterway to be deleted. | Stormwater flows within this area do not warrant a constructed waterway to convey flows. The proposed constructed waterway also significantly impacts residential subdivision design. Refer to Appendix 1 Verve / Afflux Memo. |
| Plan 2 (Item 2 attached plan) | Obsolete PAO to be removed from Place Based Plan. | PAO is not required. |
| Plan 2 (Item 3 Item 2 attached plan) | Connector Road between Casey Fields Boulevard and Devon Road to be relocated slightly north-east. | Reduces number of landowners required to deliver full length of road. The adjustment also allows for better urban design outcome and park location within 35 Devon Road. |

| Submission Ref | Change(s) sought | Justification |
|---|---|---|
| Plan 2 (Item 4 Item 2 attached plan) | DM-LP-02 to be repositioned and reshaped to connector road. | Park reshaped and located on bends of connector road to provide for green view lines for the community. |
| Plan 2 (Item 2 and item 2 attached plan) | Higher Density Housing to be included in nominated area where DMPSP north-western waterway was deleted. | Gap from waterway removal to be filled with surrounding land use. |
| Plan 2 (Item 6 attached plan) | Higher density housing to be included. | Looks to be error in plan. |
| Plan 2 (Item 7 attached plan) | Waterway to be realigned along northern boundary of Active Open Space. | See Section 4.2 above. |
| Plan 2 (Item 8 attached plan) | Melbourne Water retarding basins DM-RB-02 to DM-RB-04 to be reshaped. | Current shape of retarding basins inhibits good urban design outcomes. |
| Plan 2,6 and 9 (Item 9 on attached plan) | Melbourne Water Drainage PAO to abut the southern boundary of the PSP. | Re-alignment along southern boundary will enable more efficient acquisition for drainage purposes and removes undevelopable residential land as currently shown on the plan. The additional undevelopable land south of the PAO would incur a cost to Melbourne Water through a Before and After compensation assessment. |

## 8.2 PSP Objectives, Requirements and Guidelines Changes

**Table 3**

| PSP reference | Summary of change sought | Justification |
|---|---|---|
| O1 | The wording is vague, and the objective should be clearer about the type of urban development that is sought to be delivered through this PSP. | • Wording is unclear |
| O3 | Amend as follows:<br>*"To encourage private market affordable housing and encourage partnerships to deliver market subsidised affordable housing and social housing"* | • Acknowledge the role of private market in the provision of affordable housing. |
| O16 | Delete. This Objective should not be at the detriment of good urban design. | • O17 provides sufficient guidance regarding stormwater. |
| G2 | Delete and amend as follows:<br>*"Residential subdivision that provides increased amounts of market affordable housing which reduces pressure for subsidised housing is encouraged"* | • Encourages the role of the private market in the provision of affordable housing. |
| G3 | Delete and amend as follows:<br>*"Residential developments should demonstrate how they have maximised the provision of subsidised market housing and social housing to the extent reasonably practicable."* | • Encourages the role of the private market in the provision of affordable housing. |
| G4 | Amend as follows:<br>*"Affordable housing provision should have regard to the recommendations of the Casey Affordable Housing Strategy and the VPA Affordable Housing Report prepared in* | • Encourages the role of the private market in the provision of affordable housing. |

| PSP reference | Summary of change sought | Justification |
|---|---|---|
| | *conjunction with the PSP and the SGS Report AHNAM Method Report – Greenfield, Victorian Planning Authority"* | |
| G23 | Delete. This Guideline is too prescriptive, and it is unclear how this is to be achieved as part of detailed design and construction, particularly given the need to accommodate a range of service agency requirements that often conflict with planning policy objectives at the strategic planning phase.<br><br>G22 provides adequate recognition and guidance to achieve canopy coverage in line with state planning policy objectives. | • It is expected that this will be difficult to achieve in the absence of multi-agency collaboration to avoid infrastructure services conflict. |
| G24 (b & (c | Delete. | • Stormwater harvesting opportunities for the catchment exist and should not be approached on a site-by-site basis.<br>• To complement the overall drainage strategy and outfall east of South Gippsland Highway, there is a major opportunity within the Green Wedge Zone to the south-east of the PSP to enable stormwater harvesting and re-use which should be further investigated by Melbourne Water.<br>• Passive irrigation is not expected to be capable of being achieved in the PSP area due to the soil type and extent of low level of drainage flows.<br>• Flora and Fauna values must be managed in a balanced manner having regard to the requirements of the MSA findings. |
| G25 | Amend this Guideline as follows:<br><br>*"Passive irrigation of streets should be provided. Alternative approaches to irrigation may be considered to the satisfaction of the responsible authority"* | • The current wording is too prescriptive to be a Guideline and provides limited flexibility for innovation in response to site-specific conditions. |

| PSP reference | Summary of change sought | Justification |
|---|---|---|
| Table 3 – Affordable Housing Delivery Guidance | Delete Table. | • The Table is prescriptive and the ability to adequately respond to changing housing demand in a new community should be the priority.<br>• It is unclear how these affordable housing types will be delivered. |
| R1 | Delete as a Requirement and include as Guideline. | • As per Section 1.1 of the PSP, a Requirement must be adhered to and provides no opportunity for variation. |
| R9 & R13 | Delete as a Requirement and include as Guideline. | • The description of the SBBCC in Plans 5 and 6 are insufficiently accurate and should be a Guideline.<br>• R 9 and R13 refer to the *Southern Brown Bandicoot Habitat Connectivity Design Standards (DEECA 2023*) our understanding is that this document has not been finalised or released to the public. |
| R10 | There is no control on removal of native vegetation within the MSA area. As a result, R10 is not required and should be deleted. | • In its place, a Guideline could be included which encourages patches of native vegetation and individual trees to be retained in the public realm including public open space areas where it is practical, safe and reasonable to do so. |
| R11and R12 | Convert to Guidelines. | • Subdivision design will enable an assessment of specific trees that are capable of being integrated into future development. |
| R14 | Amend Plan 2 (Place Based Plan) to re-align the proposed constructed waterway away from the proposed Active Open Space reserve (as highlighted above). | • It will enable the proposed Active Open Space to function as intended by the PSP Objectives. |
| R19, R27 & R28 | Include as a Guideline and amend to read as follows:<br>*"Staging of infrastructure should be generally in accordance with Plan 9 (Infrastructure and Development and Table 8 Water) unless it can be demonstrated that an alternative solution is achievable, which could include* | • The need for staging of infrastructure in the DMPSP is unclear. MAB's land is shown in Stage 2a and it is stated that no development within this stage should proceed until the outfall drainage in Stage 1a is constructed. |

| PSP reference | Summary of change sought | Justification |
|---|---|---|
| | *temporary works or ultimate works, to the satisfaction of the responsible authority"* | • If drainage outfalls can be connected to the outfall corridors utilising ultimate drainage assets, it should then enable development anywhere within the DMPSP under a "deemed to comply" arrangement. If drainage cannot be directly connected to the outfall drainage corridors, evidence must be provided to justify a proposed alternative arrangement. The overriding objective of the PSP is to enable development to occur on several fronts rather than being reliant on downstream landowners to construct ultimate assets, irrespective of the application of public acquisition overlays.<br>• As the PSP is incorporated into the Casey Planning Scheme with the City of Casey as Responsible Authority, Melbourne Water should not be the sole determining authority for subdivision approval.<br>• There will be opportunity for alternative drainage infrastructure provision and staging which will be determined at the subdivision stage. |
| R21 | Convert to a Guideline. | • The approach to service delivery and the avoidance of conservation areas are supported however this outcome should be reflected as a Guideline. |
| R25 | Convert to a Guideline. | • A Requirement cannot refer to a set of guidelines which are contained in another document. |
| R27/28 | Delete. | • Each Requirement is unreasonable and impractical. |
| R29 | Delete as a Requirement and include as a Guideline.<br>Delete reference to DEECA and Melbourne Water. | • It is onerous and unreasonable to require approval to the satisfaction of DEECA /MW and the RA. |

| PSP reference | Summary of change sought | Justification |
|---|---|---|
| | | • There is an adequate connection between planning permits, the UGZ schedule and approved PSP which makes clear expected outcomes without need for further referral. |

## 8.3 Other Changes

**Table 4**

| Submission Ref | Summary of change sought | Justification |
|---|---|---|
| Section 1.1 – Part 3 Implementation | Remove references to "seven hallmarks" as it is unclear how these will be interpreted and implemented by the responsible authority. | • It is unclear what role "the seven hallmarks" have on implementing Objectives, Requirements and Guidelines. |

## 8.4 Planning Scheme Ordinance Changes

**Table 5**

| Clause | Summary of change sought | Justification |
|---|---|---|
| Clause 66.04 Schedule 15 to UGZ | Application to subdivide land containing "SBB connectivity" as shown on Public Realm and Water Plan should not be referred to DEECA. | • Referrals are unnecessary, inefficient and will result in delayed approval including VCAT challenges to the views of a determining referral authority (disinterested in supporting development in a designated urban area). The RA is capable of making an informed decision without reference to DEECA based on the content of the PSP. |
| Clause 72.03 | Include additional PAO areas for drainage as outlined above. | • As outlined above. |
| Clause 37.07, Section 3 | Amend to delete reference to arboricultural assessment for subdivision applications. | • Clause 52.17 schedule will enable the removal of vegetation in accordance with the MSA. |

# Appendix

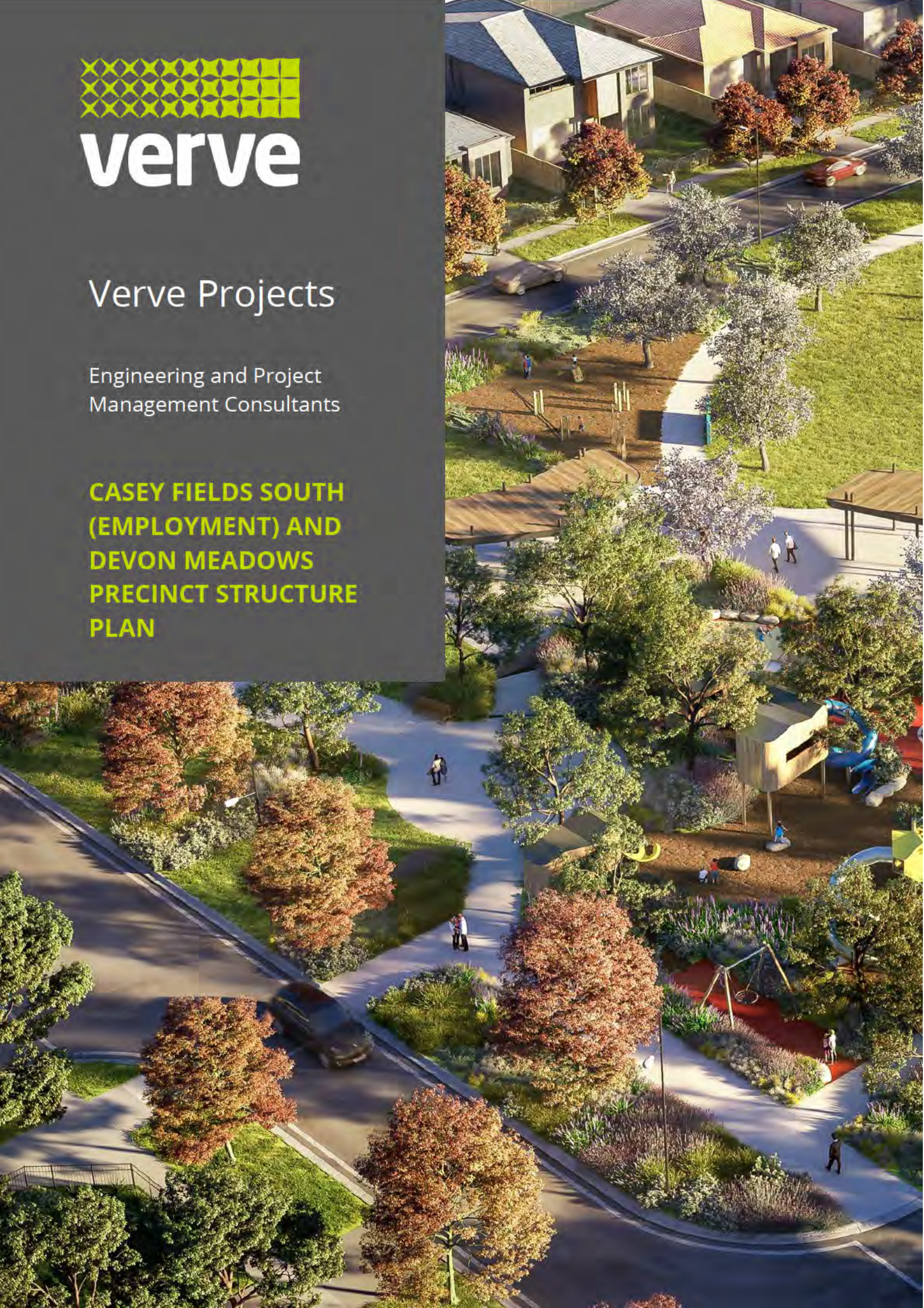
- Appendix 1 - Verve Projects – Casey Fields South (Employment) and Devon Meadows Precinct Structure Plan

verve

# Verve Projects

Engineering and Project Management Consultants

## CASEY FIELDS SOUTH (EMPLOYMENT) AND DEVON MEADOWS PRECINCT STRUCTURE PLAN



# PREPARED FOR

**Client** **MAB Property Developments Pty Ltd**

**Subject** **Casey Fields South (Employment) and Devon Meadows Precinct Structure Plan**

| | | |
|---|---|---|
| **Ref** | 22021-00 | |
| **Revision** | B | |
| **Prepared By** | [redacted] | [redacted] |
| | General Manager Operations | |
| **Reviewed By** | [redacted] | Managing Director |
| **Issue Date** | 26 March 2025 | |

trace. Carbon Neutral Organisation

Expires Jun 2025

# Contents

# 1 Introduction

MAB Property Developments Pty Ltd (MAB) has engaged Verve Projects and Afflux Consulting to investigate the predicted flow regime within the Casey Fields South (Employment) and Devon Meadows Precinct Structure Plan (PSP). The focus of this investigation is on the land controlled by MAB located in the northern portion of the Devon Meadows component of the PSP (DMPSP) which it intends to develop for residential purposes. A report by Afflux Consulting titled "Devon Meadows and Casey Fields PSP - Flood Modelling North-West Catchment" - 5 March 2025 is attached as Appendix A to this memo and is referred to in the body of this memo.

This investigation follows a meeting held with the Victorian Planning Authority (VPA) and Melbourne Water (MW) on 28 November 2024 where it was identified that MW's retarding basin located at 40-42 Craig Road, Devon Meadows has the potential to be enhanced to service a large portion of the northern section of the DMPSP. MW indicated its in-principle support for this approach to managing drainage in the DMPSP, subject to further detailed investigation to prove the acceptability of this approach.

There are three main findings resulting from this investigation:

1. **There is no requirement or justification for a constructed waterway to convey flows from Junction Village at Craig Road through the northwest section of the DMPSP to the Craig Road Quarry.**
2. **The existing MW retention basin located at 40-42 Craig Road, Devon Meadows has the capacity to enable development of the northern extent of the DMPSP prior to the construction of the proposed downstream retarding basins and eastern outfall channel. This warrants an amendment to the staging regime proposed within the PSP such that the north western part of the PSP can proceed without Outfall 1 and the associated waterway.**
3. **The proposed constructed waterway through the Active Open Space east of Devon Road shown on Plan 2 (Place Based Plan) of the PSP can be realigned to the north and east, providing improved usability of this important community asset whilst incorporating existing vegetation identified for retention in the PSP supporting habitat for the Eastern Brown Bandicoot and providing mature vegetation within the new urban area.**

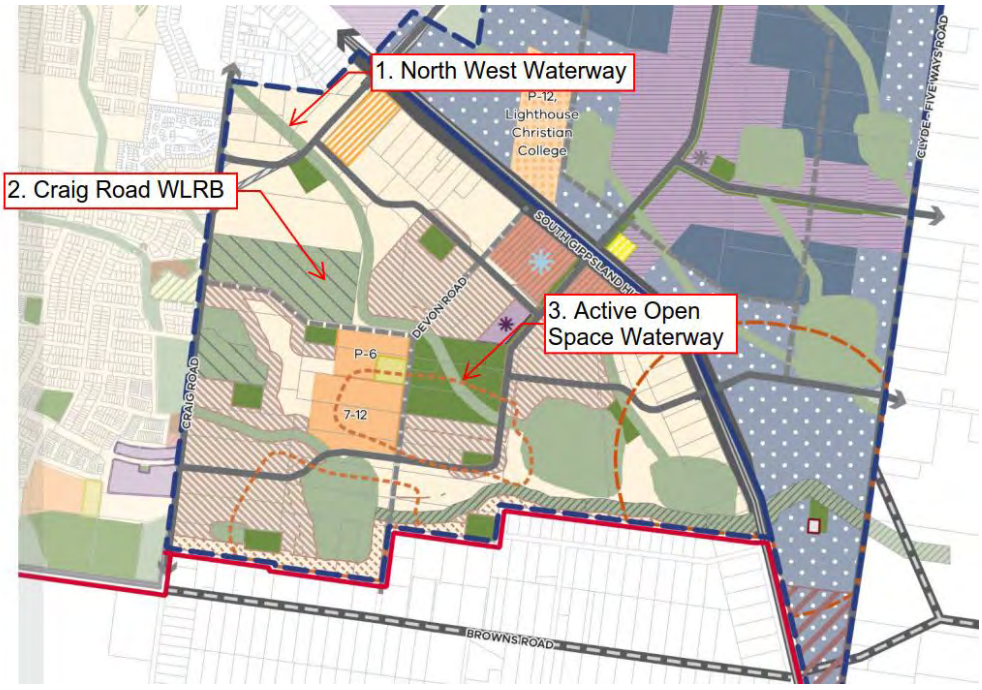



*Figure 1 – Draft PSP Place Based Plan (VPA)*

## 1.1 Previous Submission

MAB has previously made a submission relating to drainage in the DMPSP area which successfully demonstrated that the PSP area could be developed without impact on the properties to the south. The inclusion of a series of wetlands and retarding basins in the southern portion of the PSP, combined with a proposed new outfall under South Gippsland Highway to the east will avoid impacts to those properties.

Verve and Afflux understand that the recommendations within the previous submission have been largely adopted and reflected in the PSP with treatment assets and outfall channel shown as recommended in the report.


*Figure 2 – Aerial photograph showing location of Craig Road wetland (Nearmap)*

# 2 North Western Waterway

MAB has been actively engaging with MW and VPA for several months regarding as to whether the proposed constructed waterway is required through the north-western portion of the DMPSP. In the absence of usable data from MW, Verve and Afflux have prepared hydrologic and hydraulic models to understand the flow regime in Junction Village, and therefore model the flows that would need to be conveyed from Craig Road in the north west corner of the DMPSP, through to the proposed Craig Road wetland retarding basin. The results of the modelling were presented to MW and its consultant GHD for consideration.

After considering the models, MW provided an alternate hydrologic model. Afflux adopted the flows from the alternate model and revised its hydraulic model accordingly. Refer to Appendix A - "Devon Meadows and Casey Fields PSP - Flood Modelling North-West Catchment – Afflux."

A preliminary design surface for the development of the north-western portion of the PSP was prepared, allowing for conveyance of flows in pipes and overland within future streets. It provides for multiple overland flow paths and piped drainage alignments to minimise flood risk. The revised hydraulic model shows that the post developed climate change flows can be safely conveyed within the pipes and streets.

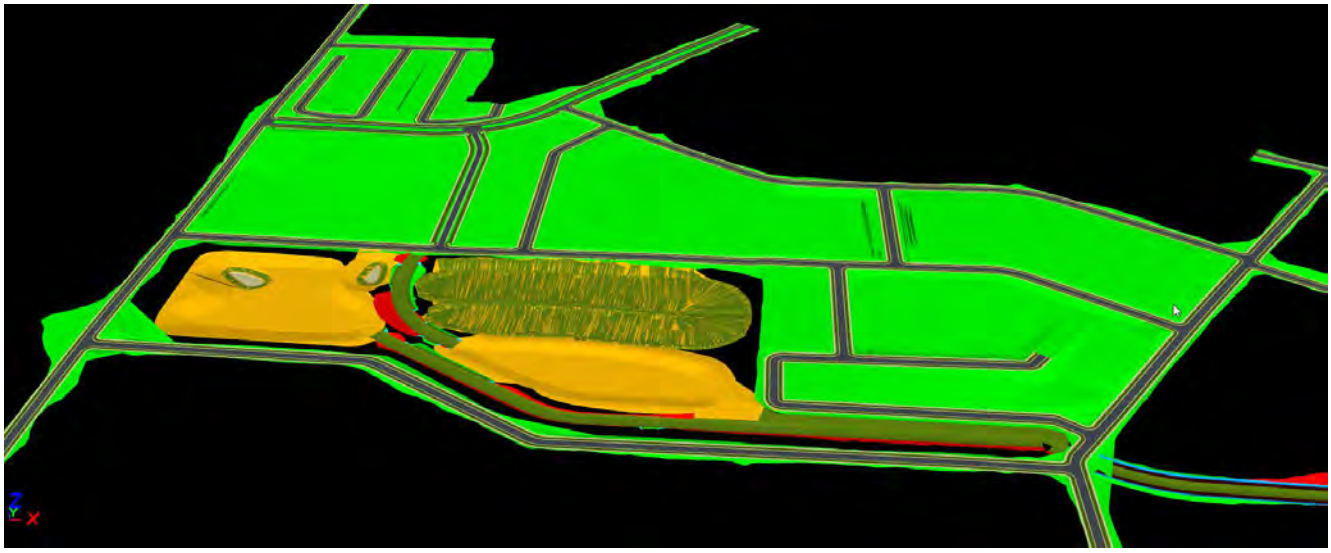


*Figure 3 – Image showing potential road grading north of Craig Road wetland (Verve Projects)*

# 3 Craig Road Wetland/Retarding Basin

The property located at 40-42 Craig Road is owned by Melbourne Water and was acquired to be developed as a wetland/retarding basin to treat stormwater runoff from Botanic Ridge on the west side of Craig Road. The property is currently included within the Botanic Ridge DSS area.

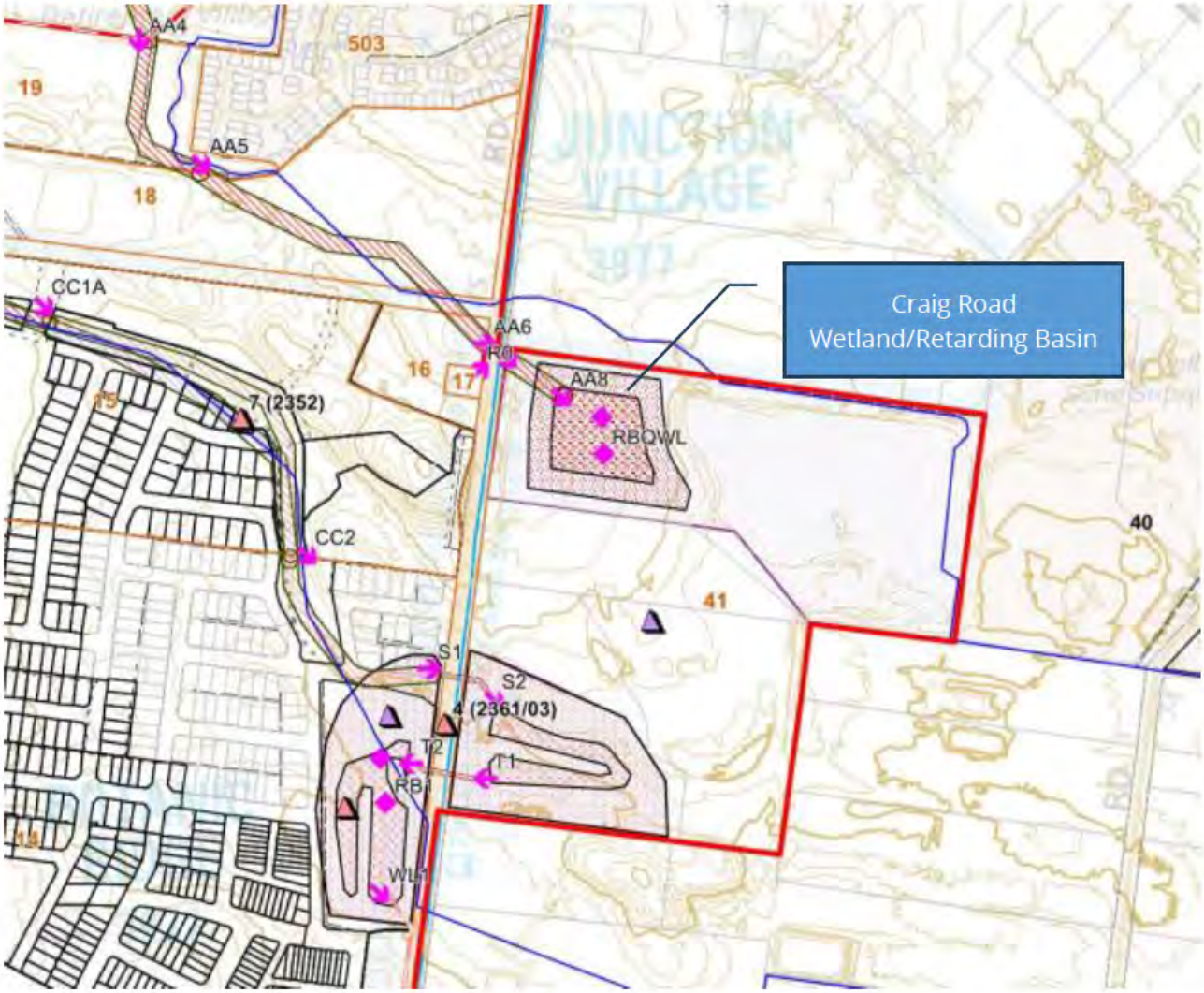



*Figure 4 – Extract from Botanic Ridge DSS showing Craig Road retarding basin.*

The land has not yet been constructed to function as its intended purpose as a drainage asset, however the portion of land that was a former quarry pit is currently utilised as a temporary retarding basin, capturing and retarding flows from Botanic Ridge before being discharged to the downstream channel. There is currently no water quality treatment or stormwater volume reduction being achieved.

## 3.1 Existing Design Concepts

**Engeny Concept design**

MW previously engaged Engeny to develop a concept design for the land. The concept (Figure 5) provides for a large retarding basin in the western part of the land, and for filling the former quarry area to provide for a wetland in the eastern part of the land. Bypass channels convey outflows from the retarding basin, and untreated flows from the (undeveloped) northern part of the DMPSP to the existing drainage channel towards the south-east corner of the land.

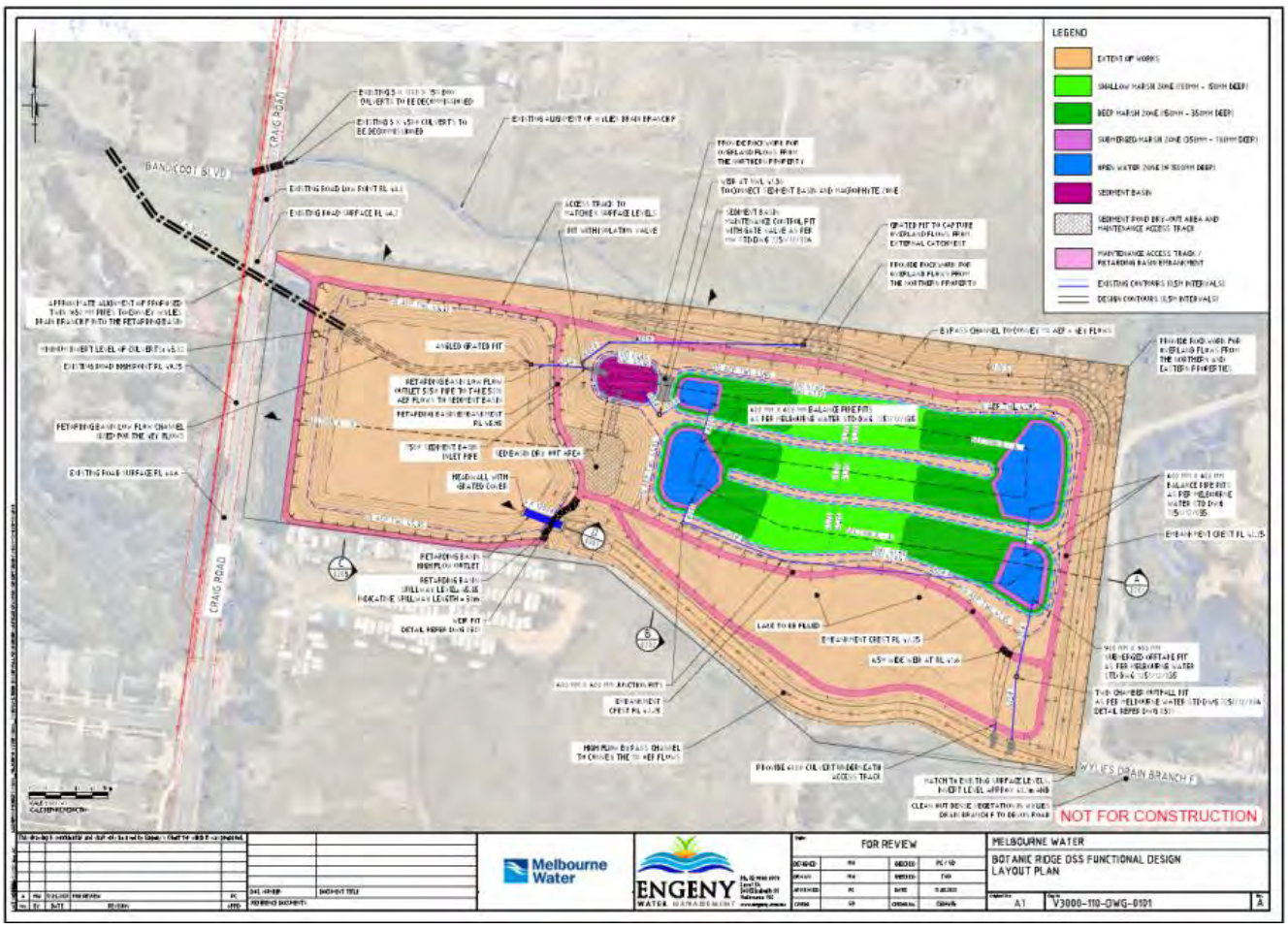



*Figure 5 – Engeny concept Plan*

## 3.2 Stormy Water Solutions Concept Plan

Stormy Waters Solutions (SWS) were engaged in 2021 by Melbourne Water to conduct a peer review of the Engeny concept design. SWS made several recommendations relating to the Engeny design, including the creation of a sediment pond at the inlet to the retarding basin, and utilising the area south of the wetland for a stormwater harvesting pond.

It is understood that there is no existing demand for the harvested stormwater. Rather, the harvesting pond is included for potential future use should a demand arise.

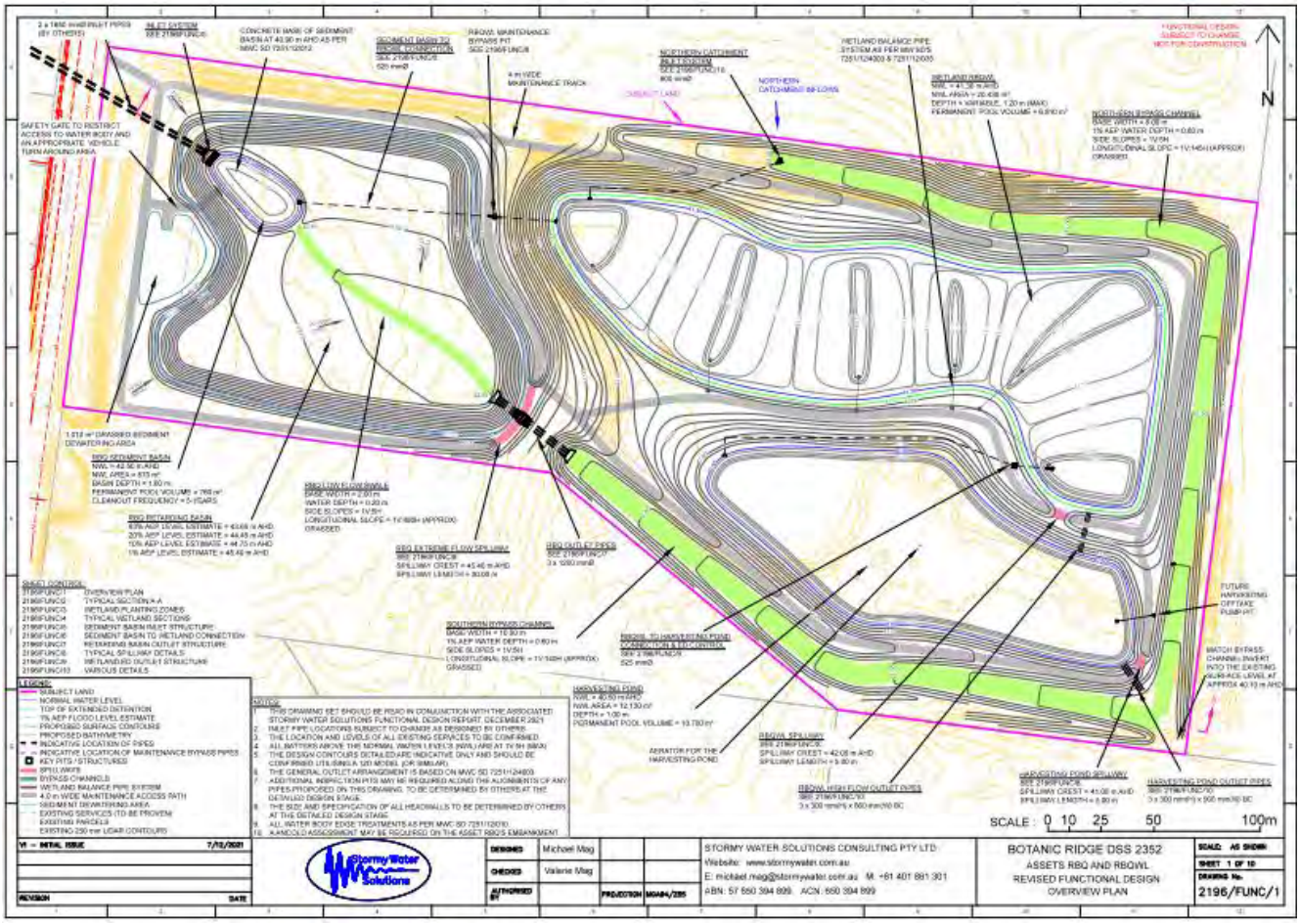



*Figure 6 – Stormy Waters Solutions concept Plan (Stormy Waters - 2021)*

## 3.3 Verve revised design

Verve Projects has considered the previous work and investigated opportunity to maximise the treatment area and storage volumes as shown in Figure 7 below.

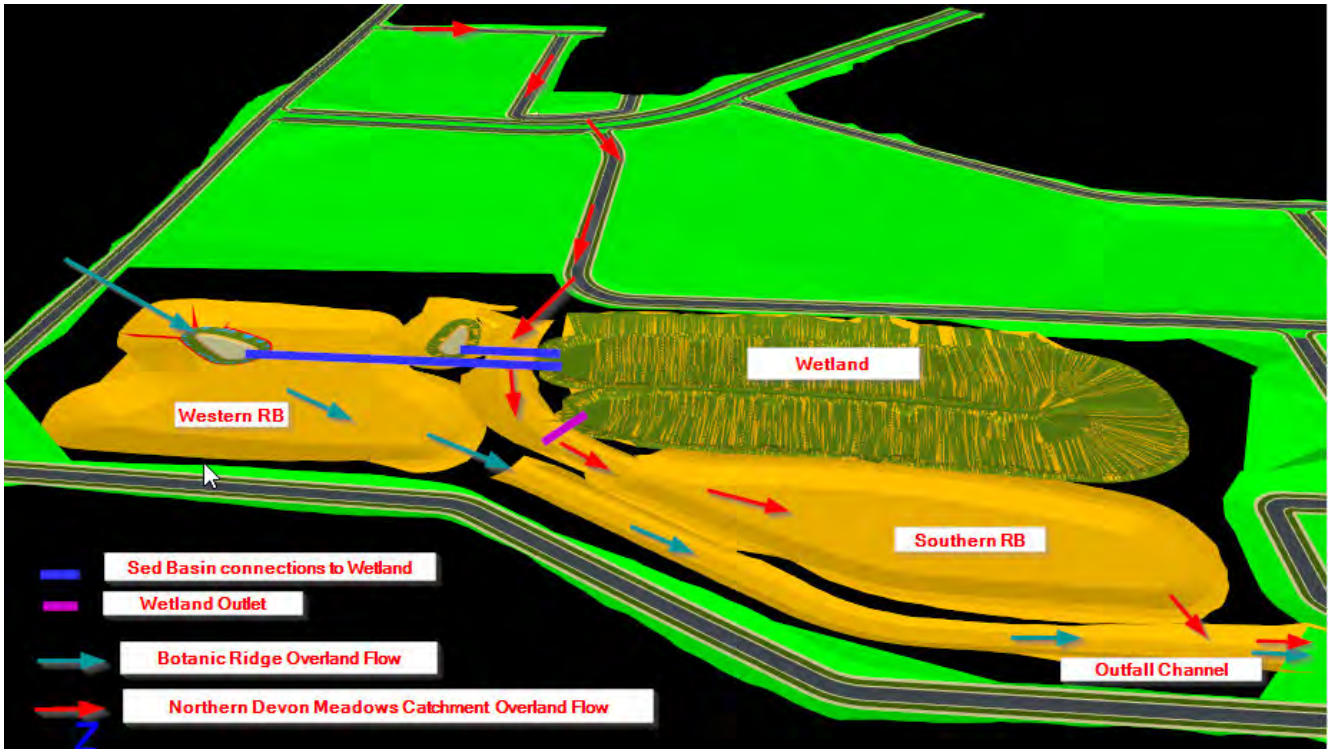



*Figure 7 – Proposed Concept Plan (Verve)*

The updated concept design provides an inlet to the western sedimentation basin which is incorporated within the retarding basin for the Botanic Ridge catchment. The minor flows are piped from the sediment basin to the wetland for treatment. The larger event flows will be retarded by the basin and discharged to the outfall channel along the southern boundary. This arrangement is the same as the SWS concept design.

The Devon Meadows catchment to the north of the land including the additional catchment to the north west that crosses Craig Road, connects to the site mid-way along the northern boundary. Minor flows enter the reserve mid-way along the northern boundary via a sedimentation basin and are then connected to the wetland. The wetland provides treatment for both the Botanic Ridge catchment and the northern Devon Meadows catchment. Both the connections from the sedimentation basins have sufficient clearance below the central bypass channel.

Any overland flows from the northern catchment are directed into the channel between the sedimentation basin and the wetland which connects to the southern retarding basin between the wetland and the outfall channel. The outlet from this retarding basin joins the outlet of the western RB at the south-east corner and connects to the channel along the southern boundary.

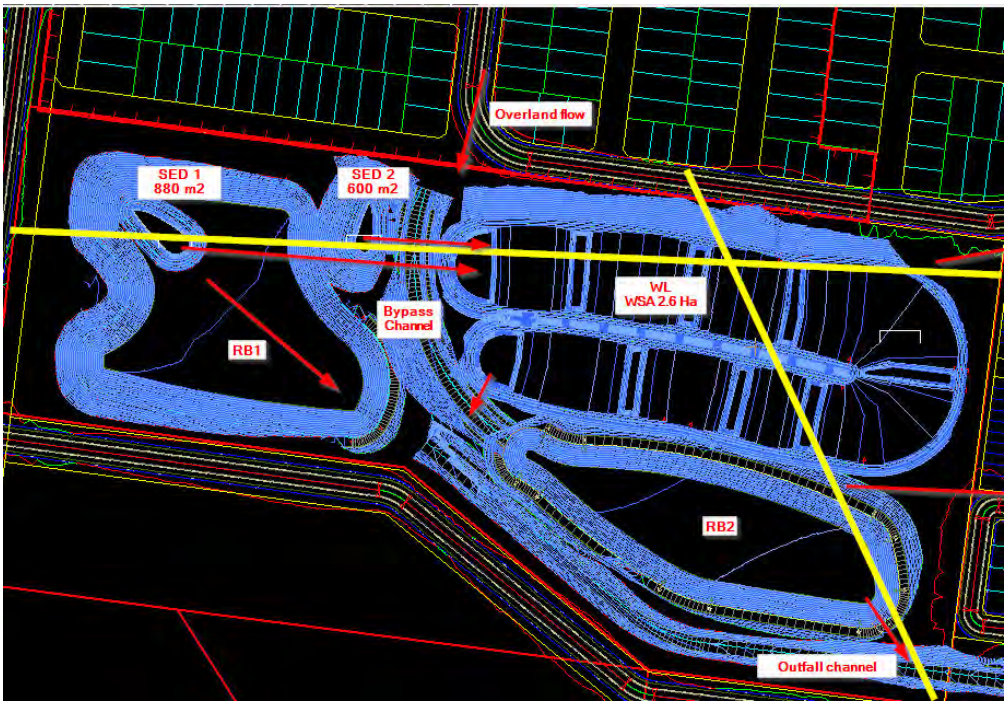



*Figure 8a – Proposed wetland/RB concept.*

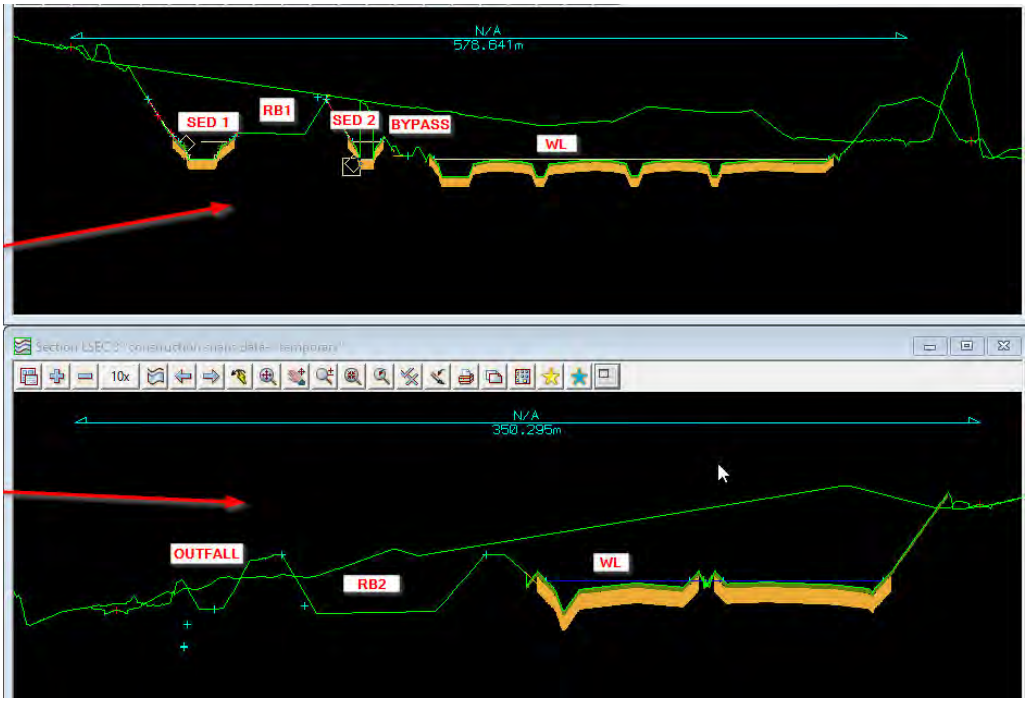



*Figure 8b – Proposed wetland/RB Sections*

### 3.3.1 Retardation of flow rate

**Hydrologic Model**

The GHD post developed RORB model showed a small part of the northern catchment (catchment EJ – Figure 9) being routed into the Craig Road WLRB. The majority of the flows (0.5m3/s) is diverted into the wetland, with the remaining bypassing via the northern bypass channel (Figure 10).

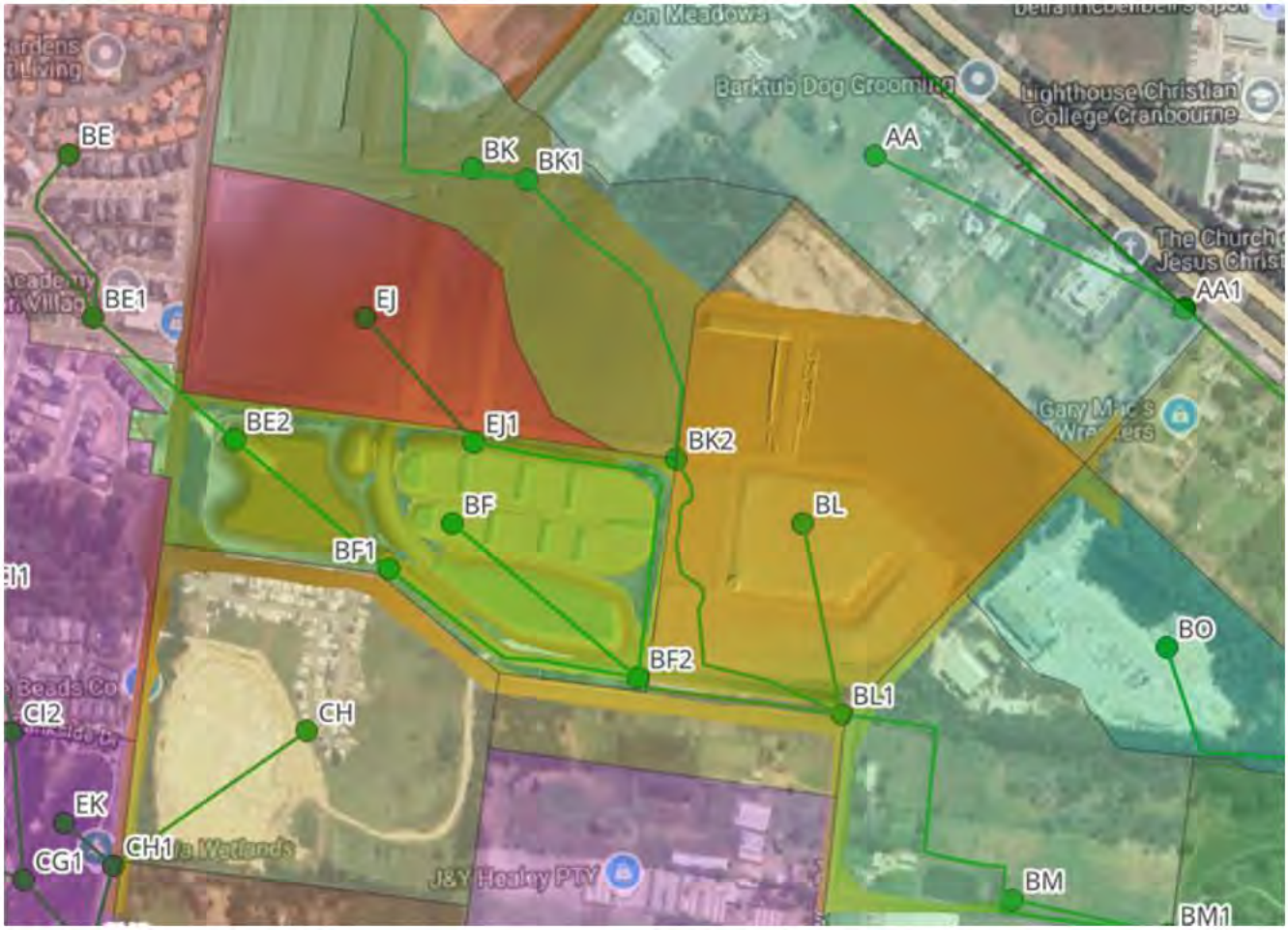



*Figure 9 – GHD RORB model routing, overlayed on Verve WLRB concept*

*Figure 10 – Catchment EJ wetland diversion*

Afflux have rerouted the flows at BK2 into the Craig Rd WLRB at EJ1, and produced the flows downstream of the basin at Devon Road (BL1). The below table shows the initial results.

| | | BF2 | | BK2 | | BL1 | | |
|---|---|---|---|---|---|---|---|---|
| **Scenario** | Kc | Flow ($m^3/s$) | Critical Storm | Flow ($m^3/s$) | Critical Storm | Flow ($m^3/s$) | Critical Storm | **Description** |
| **GHD Predev** | 2.94 | 3.86 | 9hourTP25 | 5.39 | 1.5hourTP27 | 4.54 | 1.5hourTP28 | No changes |
| **GHD Postdev** | 3.93 | 3.56 | 9hourTP25 | 6.17 | 1hourTP26 | 5.54 | 1hourTP27 | No changes |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Post-dev Scenario 2** | 3.93 | 3.18 | 9hourTP25 | 5.05 | 1hourTP23 | 5.62 | 9hourTP27 | Node BK2 directed to EJ1, diversion set to 4.51, previously 0.51 |
| **Post-dev Scenario 3** | 3.93 | 2.39 | 9hourTP25 | 5.05 | 1hourTP23 | 4.71 | 9hourTP27 | Same as above, plus stage-Storages calculated from Verve DEMs |

The results indicate that the flow rate from the northern catchment can be significantly retarded in the post developed conditions to 4.71m3/s. This compares with the pre-developed flow rate of 4.54m3/s. While the flow rate does not match pre-developed at this stage, this is based on the first cut of the retarding basin concept. We are entirely confident that with further optimisation the post developed flow rate can be lowered to the same or less than the pre-developed rate. This could involve:

- Optimising the volume of storage and the stage storage relationship in the retarding basin
- Diversion of catchment BL (or part of BL) into the basin
- Use of the channel as storage between BL2 and BL1 (temporary option)
- Combinations of the above.

**Hydraulic Model**

Afflux also prepared a hydraulic model for the proposed asset. Hydrographs (peak flows) were extracted from the GHD RORB model for the DMPSP as shown in Figure 11 below.

These flows were then applied to the TUFLOW model (extents in red hashed lines).

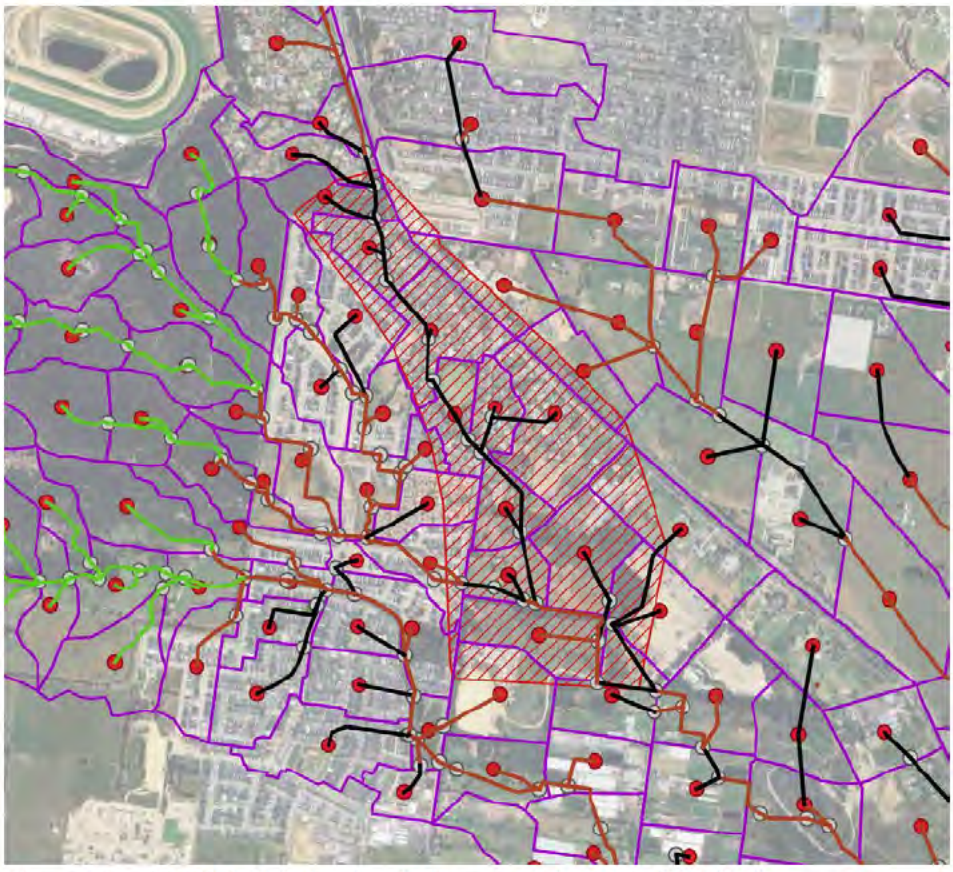


*Figure 11 – RORB Model showing TuFlow model extents (Hatched)*

**TUFLOW Modelling**

The detail of the hydraulic modelling is included in the Afflux report "Devon Meadows and Casey Fields PSP - Flood Modelling North-West Catchment - 5 March 2025 (Appendix A). Shown below is the flood depth in the system for different climate change scenarios. The blue colours being of a lessor depth than the oranges and reds.

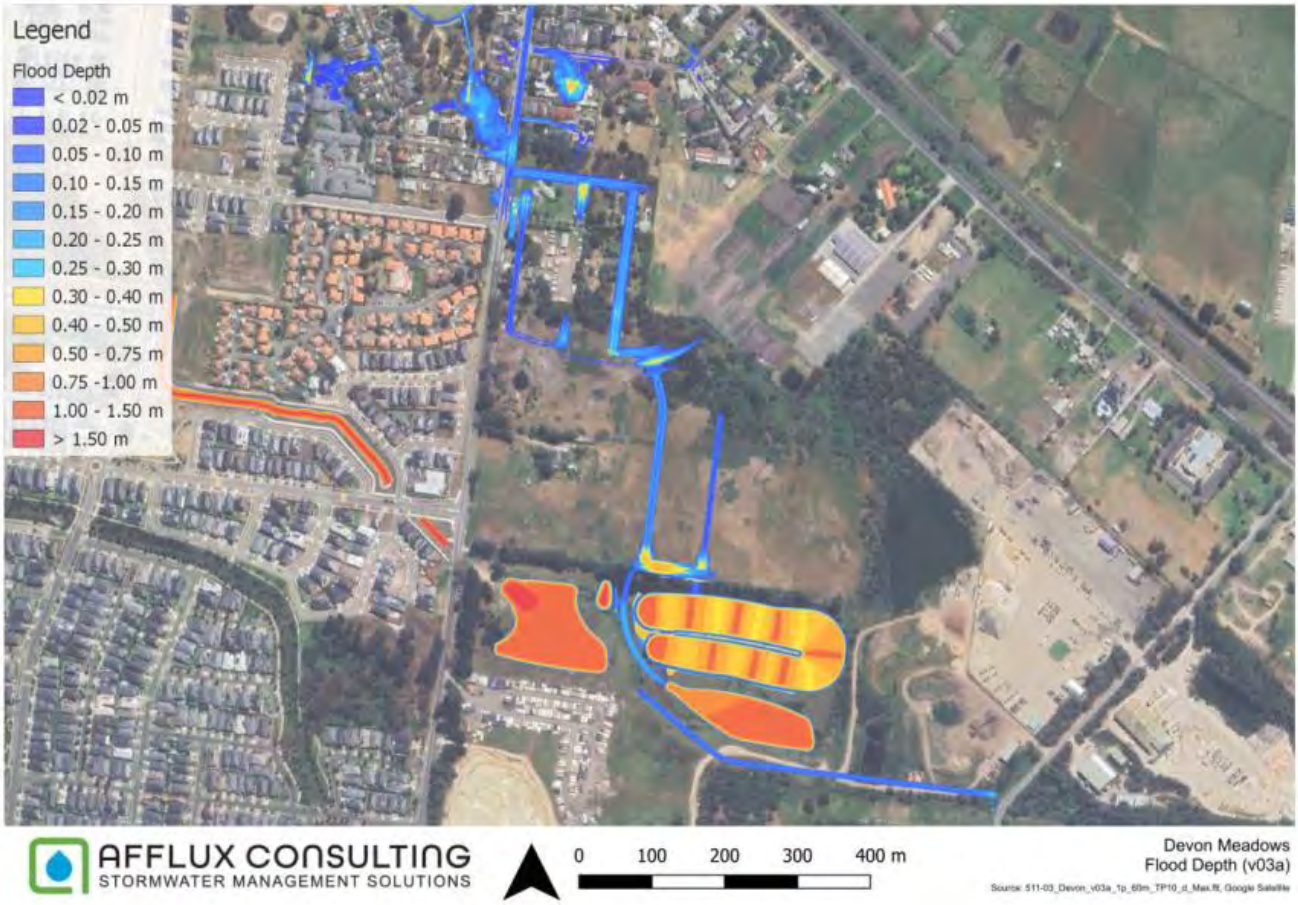



*Figure 12 – Flood Depth V03a*


*Figure 13 – Flood Depth V03a_CC*

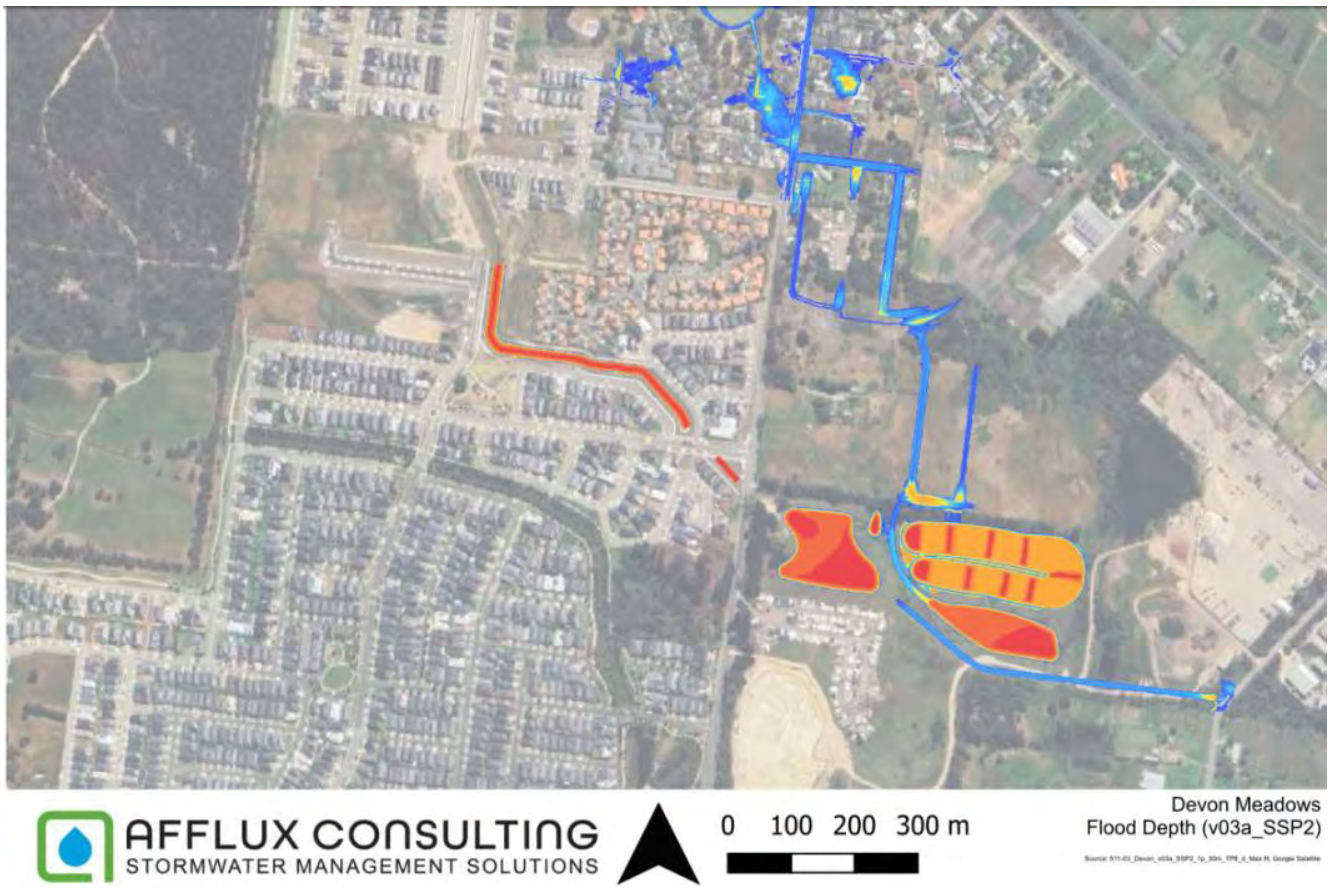



*Figure 14 – Flood Depth V03_SSP2*

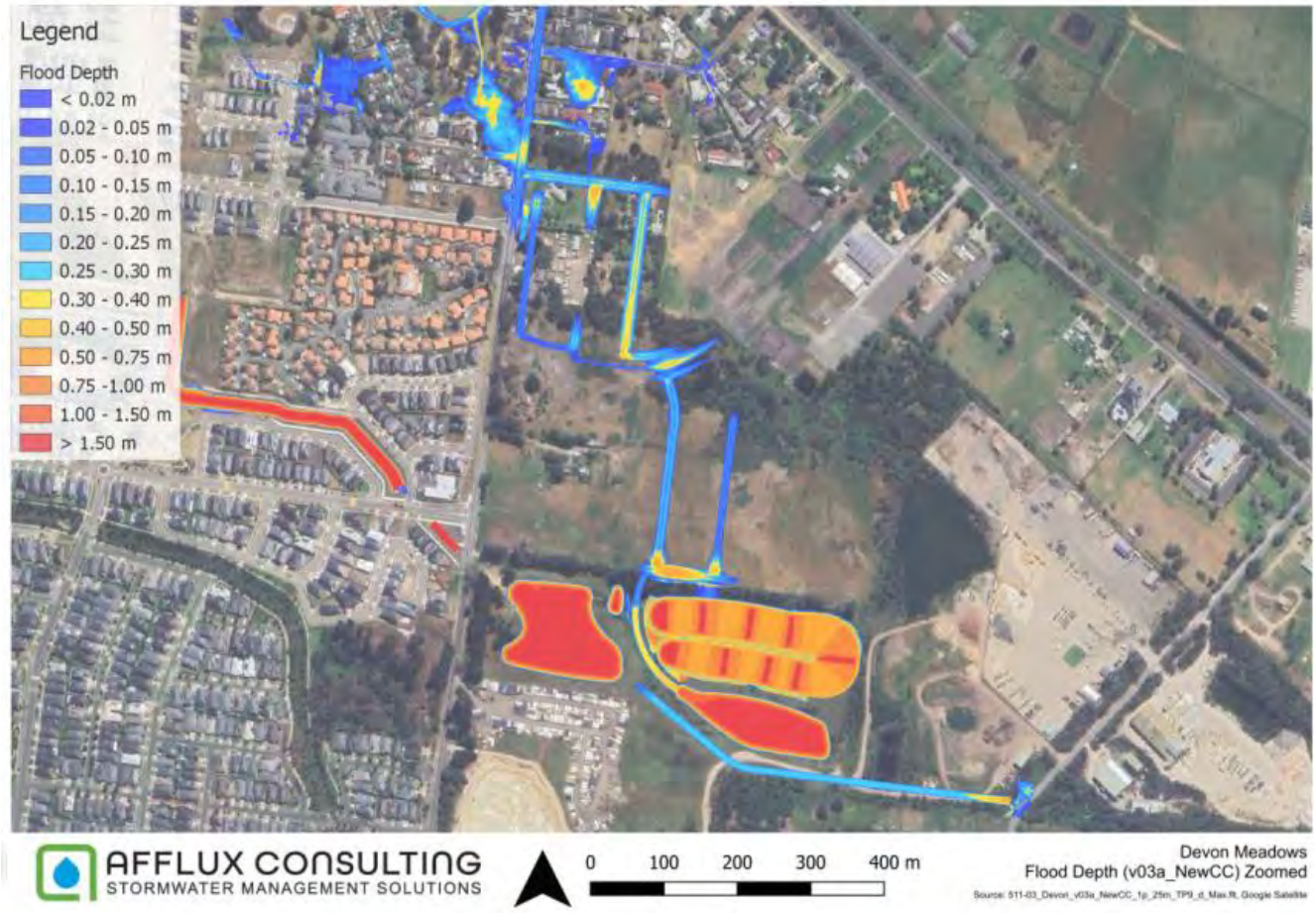



*Figure 15 – Flood Depth V03_NewCC (SSP5) – Worst Case Scenario*

Flood hazard and safety criteria have also been modelled and are within acceptable criteria. Refer Appendix A for further details.

### 3.3.2 Water quality

The proposed wetland has been modelled using MUSIC to confirm the treatment provided. The modelling provided the following results:

- The wetland size will treat 120 hectares (approx.) of catchment area with standard development assumptions in the northern portion of the DMPSP;
- By optimising the MW Wetland as proposed by Verve and Afflux, approximately 70 ha of the PSP upstream of this land could be developed without relying on any drainage infrastructure downstream.

A greater understanding of the Botanic Ridge catchment during the functional design stage will allow optimisation of the wetland area.

*Figure 16 – Additional Catchment Area able to be treated by Craig Road WLRB*

### 3.3.3 Volume

MW has advised that a proposal to utilise the Craig Road wetland to treat flows from the north-west part of Devon Meadows PSP should also consider volume reductions. There are no formal requirements for volume reduction in Victoria. The EPA's Urban Stormwater Management Guidelines (Publication 1739.1) provide some guidance to a suitable approach to this issue. However, it should be noted that in Section 1.1 How to use this Guide, the guideline states one can use it to "help minimise risks from urban stormwater so far as reasonably practicable".[1]

In Section 1.3 Status, the guideline states "This is not a compliance document. It contributes to the state of knowledge."[2]

The alluvium IWM report for the PSP refers to a preference to volume reductions through wetland evaporation and tree planting through boulevards. This proposal includes enhanced boulevards for flow conveyance, providing opportunity for additional tree planting, and use of the wetland for evaporation. Our proposal is to direct flows through the wetland as per the Alluvium IWMP recommendations, in line with the background reports to the PSP.

**Reuse opportunities**

The previous Melbourne Water concept design provided for a harvesting pond for future stormwater reuse and is the best opportunity to reduce stormwater volumes from the developed catchment. This proposal is easily incorporated into the revised concept, through allowing extra depth in one or both retarding basins. This is a theoretical approach to volume reduction. No demand for the extra water has been identified, no treatment or movement of the water has been considered and no authority has been identified to operate a reuse system. However, opportunities within the broader catchment could be

[1] EPA urban-stormwater-management Guideline-1739-1 – Section 1.1
[2] EPA urban-stormwater-management Guideline-1739-1 – Section 1.3

considered, such as supply to the non-food growers to the south and east, or to the proposed sports fields in the active open space as per Casey Fields.

Lot scale reuse can be mandated throughout the north west portion of the DMPSP. This north west portion has the lowest dwelling density in the DMPSP area and is likely to generate a reasonable demand for irrigating gardens.

**Evaporation**
The proposed wetland provides for a means of volume reduction through evaporation. This can be further added to with a retarding basin doubling as a retention pond, holding the water for longer periods and allowing significant evaporation of the stormwater.

The above opportunities provide a reasonably practical approach to the reduction of stormwater volumes from generated from the catchment.

## 3.4 PSP Staging

The PSP (March 2025) contains three "Requirements" which relate to staging, as follows:

| | |
|---|---|
| **R19** | Staging of infrastructure and development must be generally in accordance with Plan 9 - Infrastructure and Development Staging and Table 8 - Water Infrastructure, and must provide for the timely provision and delivery of infrastructure to the satisfaction of Melbourne Water and the responsible authority. |
| **R27** | Prior to the issue of a statement of compliance for any stage of the subdivision of a PSP parcel or the commencement of development of a PSP parcel, DSS assets WD1, WD2, WD3, SGC, WD4, O1, O2, O3 identified within the respective stage shown on Plan 9 Infrastructure and Development Staging and Table 8 Water infrastructure must be delivered unless otherwise agreed to in writing by Melbourne Water and the responsible authority. |
| **R28** | Development must provide for the delivery of ultimate waterway and drainage infrastructure as detailed in the DSS, including stormwater detention and quality treatment, and outfalls to the satisfaction of Melbourne Water and the responsible authority.<br><br>Where it can be demonstrated that this is not possible, development proposals must demonstrate how any interim solution adequately manages flow rates, treats stormwater generated from the development (without causing adverse impacts to the other properties within or outside the precinct, the environment, cultural heritage, or other infrastructure), to the satisfaction of Melbourne Water and the responsible authority.<br><br>An interim solution will not be considered for assets WD1, WD2, WD3, SGC, WD4, O1, O2, O3. These assets must be delivered in their ultimate form.<br><br>Development construction and interim solutions must avoid or mitigate the risk of soil erosion and waterway degradation. |


*Figure 17 – Draft Devon Meadows PSP Plan 9*

Table 8 Water infrastructure

| DRAINAGE SCHEME STAGED INFRASTRUCTURE | | | | |
|---|---|---|---|---|
| **PROJECT ID** | **DESCRIPTION** | **LOCATION** | **AREA (HA)** | **STAGE** |
| WD1 | Waterway diversion 1 | DM-49, DM-77, DM-78 | 3.63 | S1a |
| WD2 | Waterway diversion 2 | DM-49, DM-56 | 2.25 | S1a |
| WD3 | Waterway diversion 3 | DM-56 | 1.23 | S1a |
| WD4 | Waterway diversion 4 | CF-29, CF-26, CF-28, CF-30 | 5.20 | S1a |
| SGC | South Gippsland Highway Culvert | South Gippsland Highway | N/A | S1a |
| O1 | Outfall 1 | CF-28, CF-30 | N/A | S1a |
| O2 | Outfall 2 | CF-25, CF-28 | N/A | S1b |
| O3 | Outfall 3 | CF-23 | N/A | S1b |

Note: Refer to Melbourne Water's Casey Fields South (Employment) & Devon Meadows PSP drainage strategy for further information.

*Figure 18 – Draft Devon Meadows PSP Table 8*

The PSP requirements do not articulate the intent of the staging. To fully grasp that, the PSP Infrastructure and Development Staging Background Report - March 2025 must be reviewed. The background report better outlines the requirement.

| Stage 2a: Devon Meadows | |
|---|---|
| **Enabling development and access in this stage** | To enable any development within this stage, drainage **must** be delivered and connected to the outfall corridors established in Stage 1a. |

Effectively, the intent is that no development within Stage 2 should proceed until the outfall corridors in Stage 1a are constructed, and the drainage within Stage 2 can be connected to those outfall corridors. While not explicitly explained, this has the effect of protecting the downstream properties from changed drainage conditions due to development upstream.

This should be rephrased. The above wording would be suitable as a "deemed to comply" criteria with an option to propose an alternate solution if the deemed to comply criteria cannot be met. That is, if drainage outfalls can be connected to the outfall corridors utilising ultimate drainage asset construction, development anywhere within the PSP can proceed under a deemed to comply arrangement. If drainage cannot be directly connected to the outfall corridors, evidence must be provided to justify such as arrangement.

Rephrasing in this way would allow development of the entire Devon Meadows PSP to occur from the outset, rather than development of the whole of the PSP area being delayed awaiting a downstream developer to construct the outfalls, including the culverts under South Gippsland Highway and the eastern outfall external to the PSP.

# 4 Active Open Space

The PSP shows a constructed waterway located diagonally through the centre of the proposed Active Open Space (AOS). This is at odds with Objective O22 of the PSP which states:

> *To ensure that the location and design quality of community facilities and public spaces makes them safe, functional and inviting places.*

A high-level analysis has been undertaken on the Active Open Space Area and how it would be impacted by the proposed constructed waterway which bisects the area, significantly limiting the usability of the facilities.

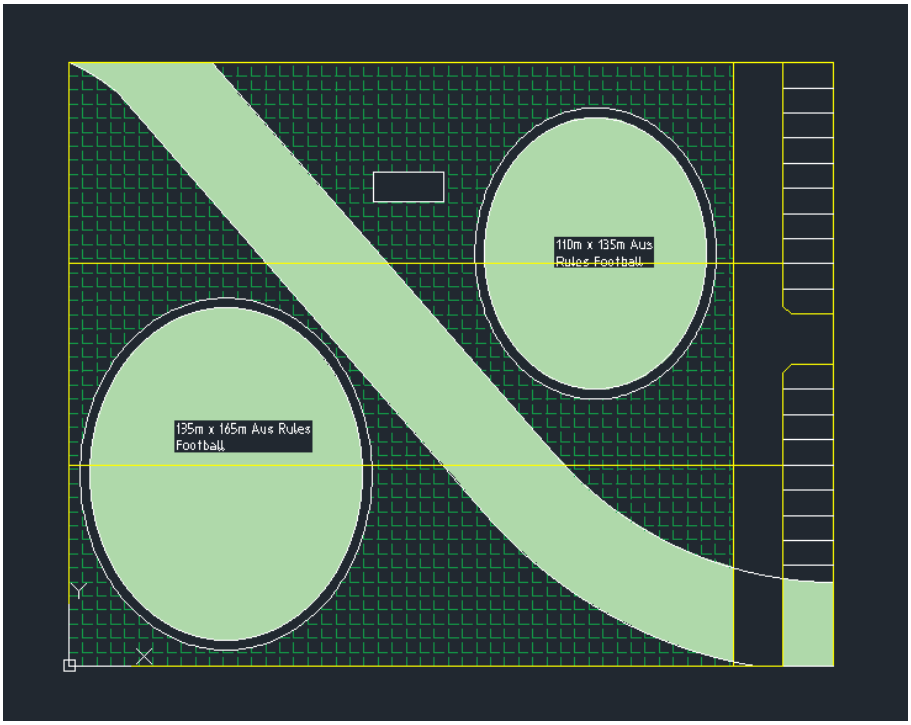



*Figure 19 – Sketch layout as shown in the draft PSP*

Given the constraints placed on the sports facilities by the proposed diagonal waterway, an alternative waterway alignment and configuration of the AoS is provided below in **Figure 20.**

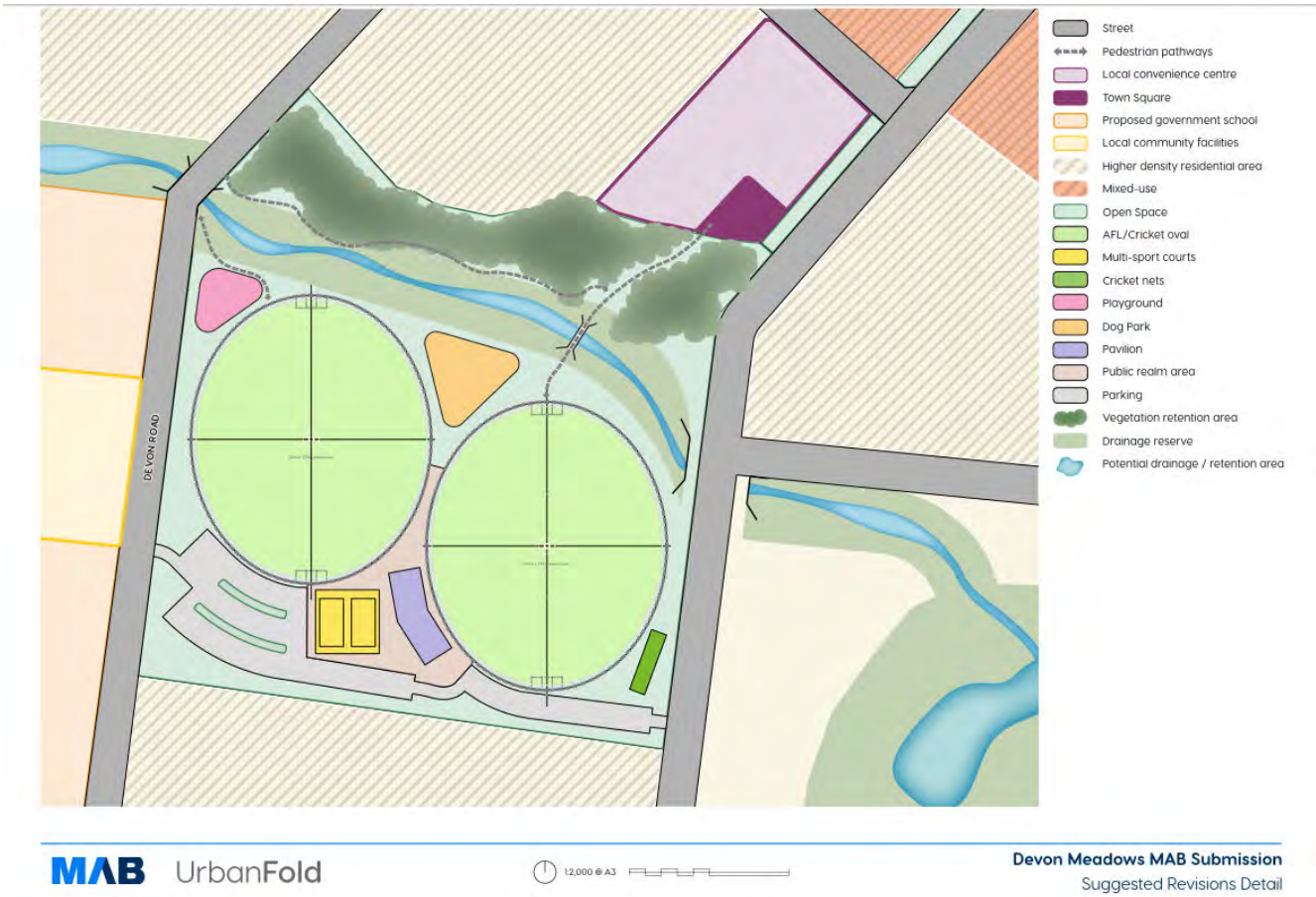



*Figure 20 – Alternative concept layout AOS and waterway*

Key benefits for the re-design of the AoS and the waterway if re-aligned per Figure 20 include:

- Retention of a stand of trees identified in Plan 13 (Native Vegetation Retention and Removal) as a "vegetation path to be retained" in the PSP providing significant opportunity to maximise and integrate valuable habitat for the Eastern Brown Bandicoots;
- A re-aligned waterway that enables a much improved arrangement of sporting facilities and accessibility from the community;
- The opportunity to co-locate other sporting facilities and associated car parking; and
- Stronger and more direct access from the western and eastern catchments, especially from the proposed local town centre.

## 4.1 PSP Modification Recommendations

1. Removal of the constructed waterway in the north-western portion of the Devon Meadows PSP.

2. Incorporation of the Craig Road WLRB into the Devon Meadows Drainage Scheme and DSS.

3. Rephrase Requirements R19, R27 and R28 such that the connection to the outfall corridors utilising ultimate drainage assets is considered “deemed to comply” and if a proposal is non-compliant, further justification will be required.

4. The waterway through the Active Open Space area is realigned to optimise sporting facilities, improve the connection to the tree stand to the north of the AOS for improved habitat for the Eastern Brown Bandicoot.

[redacted]
General Manager Operations
[redacted]
**Verve Projects Australia Pty Ltd**

# 5 Assumptions and Limitations

This document / report has been prepared by Verve Projects Pty Ltd ("Verve") for the use solely by Verve's Client – **MAB Property Developments Pty Ltd** ("Client") and persons acting on the Client's behalf. This document /report has been prepared utilising information, in part, supplied by the Client, their consultants, and possibly other stakeholders. Verve has assumed the accuracy of the information supplied by the Client, their consultants, and possibly other stakeholders and does not accept responsibility for any information that was incorrect or inaccurate. Verve has not considered any matters or information that may have existed when the document was prepared, but which were only later disclosed to Verve. Verve accepts no responsibility for the use of or reliance upon this document, in whole or in part, in any other context or circumstance by any person other than the Client.

# 6 Appendix A

# Memo

# Devon Meadows and Casey Fields PSP - Flood Modelling North West Catchment

**To:** [redacted]

**From:** [redacted] Principal Engineer - Afflux Consulting

**Date:** Wednesday 5 March 2025

## Executive Summary

The Devon Meadows and Casey Fields PSP's are will guide future developments in the area for the next 10 to 20 years. The underpinning stormwater management of the area drives the urban design, and sets the framework for this development.

Throughout our consultation over the last 2 years with Melbourne Water and the VPA, we have advocated that there are a number of hydraulic controls and considerations that require more detail than the typical hydrologic investigations (see Appendix E for key definitions). This is a unique sand dune driven topography with many trapped low points.

This memo details these hydraulic controls and the flood conditions of the Devon Meadows north west catchments, centred around Junction Village – Craig Rd. Using the Melbourne Water supplied hydrology model, a 2D flood model was built and simulated to reflect pre-development and post-development conditions. The following is concluded:

- Existing overland flows of 2.8 m³/s were recorded at Craig Rd using the existing conditions Rorb model, and hydraulic model to measure flows. This is well below any waterway requirement (typically ~10m³/s).
- Doubling the capacity of Craig Rd crossing provides a reduction of up to 70mm to the flood levels across Craig Rd. This could be further improved with better design inlets and provide an overall benefit to the region at very low cost.
- Post-developed conditions flows at Craig Rd can be conveyed by a pipe and road system, with low depths (under 300mm SSP2.5 conditions) and under 450mm even in the SSP5 conditions.
- Flood hazard rating of the development is found to be at the lowest risk category in a roads and pipe arrangement.
- The urban design of this area should consider these findings. No waterway is required or justified based on this investigation.
- Further the urban design of this area should consider the future wetland system at the former quarry site.
- Given the results, if the former quarry site could be used for staging of this northwest catchment. The northwest catchment could be developed without downstream outfalls, improving the staging flexibility of the PSP.

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## Background

As part of the development of the Devon Meadows PSP (Figure 1), Afflux Consulting have conducted drainage investigations to assess changes in regional hydrology and hydraulics over a number of years. These discussions have resulted in a number of changes to the hydrological model that informs the asset sizing and locations as seen in the PSP.

The PSP will guide future developments in the area, and it is therefore crucial to implement the stormwater assets. This is vital not only for cost efficiency but also for ensuring the safety of future residents from flood hazards. Throughout our consultation with Melbourne Water and the VPA, we have advocated that there are a number of hydraulic controls and considerations that require more detail than the typical hydrologic investigations (see Appendix E for key definitions).

Melbourne Waters consultants have confirmed that their engagement only extends to the hydrological investigations, with hydraulic investigations outside of their scope. This memorandum seeks to bring these two disciplines together, along with a designed urban form to provide a more wholistic assessment.

This memorandum shall be read in conjunction with the following references:

- Interim report – Casey Fields South (Employment) and Devon Meadows Precinct Structure Plan – Issued by MW/GHD dated 21 Feb 2025
- Technical memo re: Devon Meadows RORB Model – Issued by Afflux Consulting dated 25 March 2024
- Technical memo re: Proposed Waterways – Devon Meadows PSP – Issued by Afflux Consulting dated 28 Sept 2023
- Botanic Ridge DSS 2352 Assets RBQ and RBQWL Revised Functional Design – Issued by Stormy Water Solutions Consulting dated 7 Dec 2021

This technical memorandum expands on the flood modelling conducted on February – March 2025, and aims to determine the feasibility of MAB's position to remove the proposed open waterway from Craig Rd to Wylies Drain Branch F.

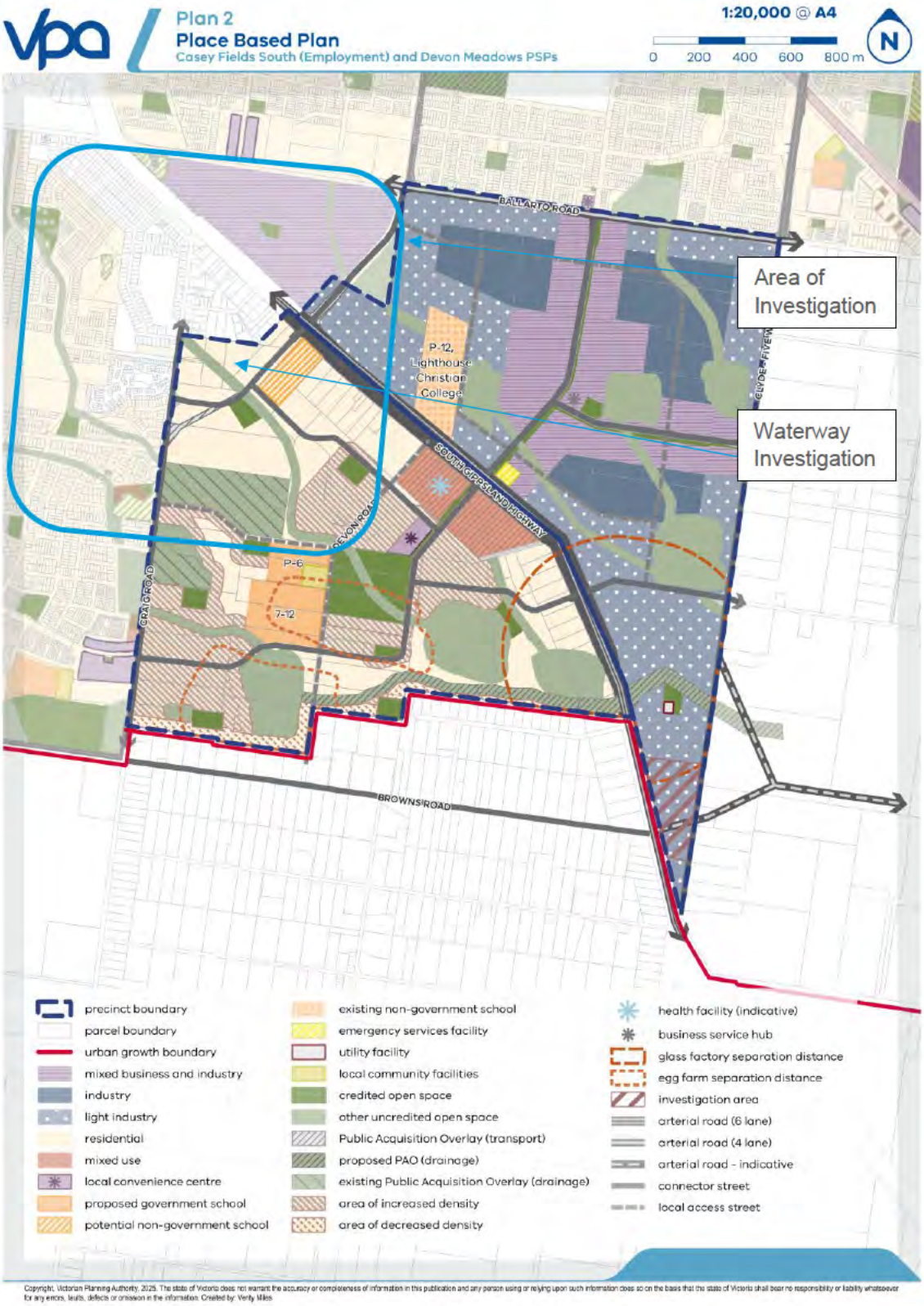





*Figure 1. Devon Meadows and Casey Fields South place based plan (February, 2025)*

## Hydrology

Melbourne Water have supplied the PSP hydrology models and it is accepted for the purposes of this modelling that the GHD RORB models (Figure 2 and Figure 3) are representative of the site hydrology. Accordingly, the aforementioned models, as well as the provided rainfall data and loss models, were fully adopted and utilised in the modelling process. The parameters of these models are summarised in Table 1:.

A discrepancy in the Kc value for pre-developed conditions was noted between the MW-GHD report (2.94) and the provided RORB .par file value (3.74). Upon testing these values, it was found that the lower Kc produces more conservative results. This prompted the decision to use Kc = 2.94 for this purpose. Meanwhile, the post-development Kc value is considerably higher at 3.93, which results in significantly reduced flows. Therefore, the pre-development flows were maintained for use in the post-development conditions, as they provide a more conservative assessment.

It is suggested that an interstation area at the PSP interface may help with this issue, but would also result in a more complex model.

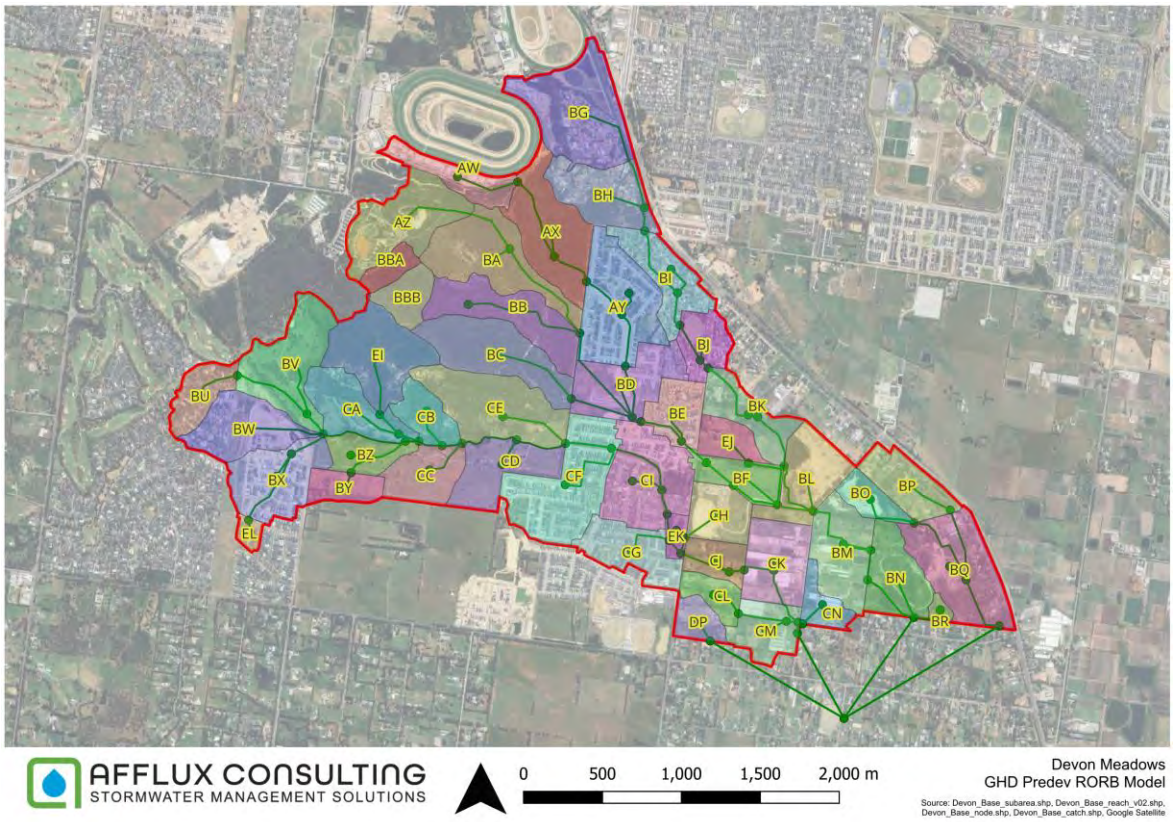



*Figure 2. MW-GHD Predeveloped conditions RORB Model*

The flows as supplied from Melbourne Water are listed in Table 2:. A number of items are noted from these flows:

- It is noted that the existing conditions flow is listed as 5.4m³/s well below the hydraulic width requiring a waterway (typically the industry standards for a waterway hydraulic width is around 10m³/s). It is wondered why we are discussing a waterway for this level of flow in a location with no existing waterway layer.
- The Croskel PSP used a climate change scenario of SSP2. The SSP5 scenario is an extreme scenario, and is not recommended for use for design of assets by the federal government guidance documents. It is acceptable as a extreme scenario check.
- The Developed conditions Kc used for the sizing of downstream assets has a much lower flow than the existing conditions. This is largely a schematisation issue with the model.

- It is noted that we had difficulty matching the flow data in the report using the supplied loss models and design rainfall. We suspect that the changes are in the application of the loss models. We have adopted similar flows (with minor changes to TC and TP) to match the reported flows and stay conservative.

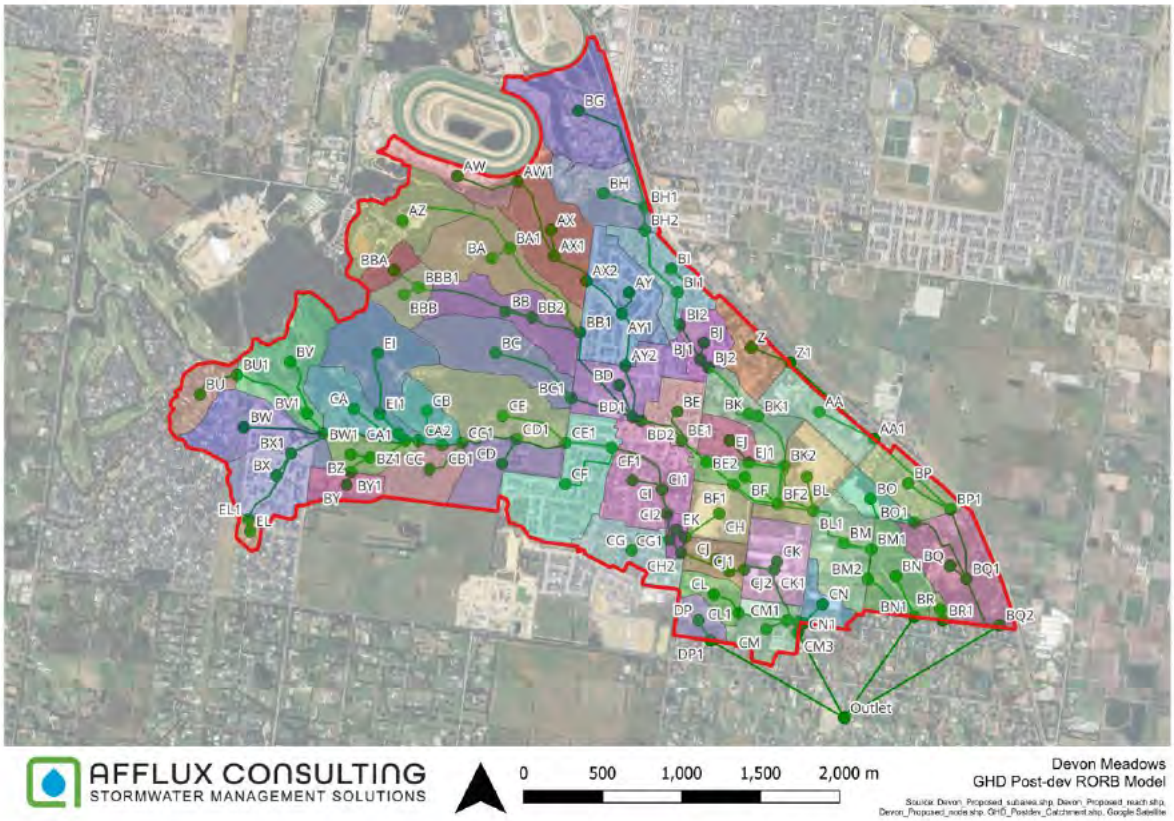



*Figure 3. MW-GHD Post-developed conditions RORB Model*

*Table 1: MW-GHD RORB Parameters*

| Parameter | Base Case/ARR19 v4.1 Climate Change (18.5%) | ARR19 v4.2 CC (SSP 5) | SSP2, 2100 Climate Change (Afflux) |
|---|---|---|---|
| Kc | 2.94 | 2.94 | 2.94 |
| m | 0.8 | 0.8 | 0.8 |
| IL (mm) | 25 | 29.2 | 25.09 |
| CL (mm) | 2.5 | 3.5 | 2.7 |

*Table 2: Flows at Craig Road as supplied by MW (Hydrology Model only)*

| Craig Road Flow | Peak Flow ($m^3/s$) | Comment |
|---|---|---|
| Existing Conditions | 5.4 | Well below $10m^3/s$ waterway requirement |
| 2100 18.5% Flow increase | 7.2 | |
| 2100 SSP5 | 13.0 | Extreme flow. Use with caution |
| Existing flow with Dev Kc | 3.7 | Note if Dev model used this is the flow at Craig Road. This is not shown in the GHD report. |
| 2100 SSP2-4.5 | 7.5 | Comparable with the 18.5% CC |

## Hydraulics

Two-dimensional flood modelling was performed using TUFLOW. The delineation of model extents encompasses the relevant upstream catchments flowing into Craig Rd crossing at Junction Village, extending to the proposed location of Wylies RB branch F. The recently constructed waterway upstream of RBQ (the proposed basin at the former quarry) was also incorporated into the model to take into account the flows from the northwest catchments.

Terrain inputs for the model consist of a combination of 2017 LiDAR tiles and the design surfaces issued by Verve Projects Pty for post-developed conditions (see accompanying Verve cover report). The TUFLOW parameters used are summarised in Table 1. The model setup, roughness values, and LiDAR coverage can be found in the Appendix.

*Table 3: TUFLOW Parameters Used*

| Model Parameter/ output | | |
|---|---|---|
| **Grid Cell Size** | 1 m | High-resolution model to characterise flow across land. |
| **Time Step** | 0.5 seconds | Adaptive - HPC solver selected |
| **Start Time** | 5.08-5.5 h mark | Start time set before any flows into the model |
| **End Time** | 10 h mark | Allows sufficient time for peak flows to pass through the site. |
| **Model Solver** | GPU | HPC adaptive Times |
| **Manning's Roughness** | Appendix A | Manning's Roughness applied to cells not covered by materials layer set to a value of 0.02 |
| **Terrain** | Appendix A | Combinations of 2017 LiDAR tiles, survey DEMs and design DEMs |
| **Inflow** | QT | Flow over time hydrographs at the identified upstream locations. All flows have been input as hydrograph to pit as per MW preferred method. |
| **Outflow Boundaries (2D)** | HQ | Three (3) outflow boundary lines are located across the model, having a grade of 0.7-1.7% |
| **Mass Balance** | | N/A – HPC Solver Selected |

### *Inflow*

Inflow was applied to the model through rainfall-excess to pit methodology. A number of 2D_sa polygons were configured to match the catchment plan from the MW-GHD hydrology model, conveying the respective sub-catchments' extracted rainfall excess hydrographs. All upstream retarding basins (storages) were removed to ensure the most conservative flows were included.

A junction flow hydrograph was applied approximately 700m upstream of Craig Road into the newly constructed waterway south of junction Village to represent the channel flows.

This undertaking is centred on flows occurring through the north west portion of the PSP and the conveyance through the Junction Village area, hence the flows from the downstream catchments were considered to be irrelevant for this purpose. Model schematisation can be seen in Appendix A.

### *Pipe Network*

Pipe network information for the area was obtained from Casey council data. This stretches from the upstream catchments down to the catchment immediately downstream of Junction Village - Craig Rd area. Pit data were unavailable, as such these were assumed with standard cover.

Post-development pipe network was modelled to incorporate the changes to the terrain and consequently, additional overland flows.

### *Scenarios Modelled*

Below is a list of the scenarios modelled:

*Table 4: Modelling Scenarios*

| Scenario | Description | Remarks |
|---|---|---|
| **v02** | Existing conditions | |
| **v02_CC** | Existing conditions with 2100 climate change (18.5% increase MW Tech specs) | |
| **v02_NewCC** | Existing conditions with 2100 SSP5 climate change | |
| **v03** | Post-development conditions, single 750mm pipe under Craig Rd | 750mm pipe continued to RBQ |
| **v03a** | Post-development conditions, dual 750mm pipe under Craig Rd | Preferred outcome. Opportunity to improve flood conditions at Craig Road. 750mm pipes continued to RBQ on separate roads for further redundancy. |
| **v03a_CC** | Post-development conditions with 2100 climate change (18.5% increase MW Tech specs), dual 750mm pipe under Craig Rd | |
| **V03a_NewCC** | Post-development conditions with 2100 SSP5 climate change, dual 750mm pipe under Craig Rd | |
| **V03b** | Post-development conditions, dual 750mm pipe with 50% blockage under Craig Rd | |
| **V03a_SSP2** | Post-development conditions with SSP2, 2100 climate change, dual 750mm pipe under Craig Rd | |

## *Results*

The results of the hydrology simulations, compared to the hydraulic simulations, are summarised in Table 5:. As indicated by the findings, the flows predicted by the RORB model are significantly higher than those generated by the TUFLOW models. This discrepancy is primarily due to the differences between hydrological modelling. While the RORB model considers some diversions across the region, it fails to account for the actual terrain conditions that influence the flow regime. This is a sand dune dominated upper catchment, with many trapped low points only connected through the Council pipe network. This significantly reduces the flow through the area (as can be seen by approximately 50%).

Flood maps for the base case of pre-developed and post-developed conditions are shown in Figure 4 through Figure 7 while the flood maps for the scenarios with climate change can be seen on Appendix C. In addition to the trapped storages, as illustrated in these flood maps, breakout flows from Devon Meadows cross over the South Gippsland Highway and are effectively removed from the system, resulting in a considerable volume loss.

*Table 5: Recorded 1%AEP Flows at Craig Rd (Hydraulic model informed by hydrology model)*

| Scenario | Peak 1%AEP Flows Over Craig Rd (m³/s) | | | |
|---|---|---|---|---|
| | Base case | ARR19 v4.1 (18.5% increase) | ARR19 v4.2 (SSP5, 2100) | SSP2-4.5 **2100** |
| **RORB (hydrology)** | | | | |
| **Pre-dev (provided in report)** | 5.4 (1h TP29) | 7.2 (45min TP21) | 13.0 (45min TP26) | N/A |
| **RORB (Adopted)** | 5.5 (1h TP30) | 7.2 (1h TP30) | 12.6 (25min TP29) | 7.5 (30min TP28) |
| **TUFLOW (hydraulic)** | | | | |
| **Pre-dev** | (1h TP30) | (1h TP30) | (25m TP29) | |
| Overland Flow | 2.8 | 3.6 | 5.8 | N/A |
| Pipe Flow | 0.47 | 0.26 | 0.25 | |
| **Post-dev (1x750mm)** | (1h TP30) | | | |
| Overland Flow | 1.5 | N/A | N/A | N/A |
| Pipe Flow | 0.8 | | | |
| **Post-dev (2x750mm)** | (1h TP30) | (1h TP30) | (25m TP29) | (30min TP28) |
| Overland Flow | 1.1 | 1.5 | 2.9 | 1.5 |
| Pipe Flow | 0.8 | 1 | 1.1 | 1 |
| **Post-dev with blockage** | (1h TP30) | | | |
| Overland Flow | 1.1 | N/A | N/A | N/A |
| Pipe Flow | 0.8 | | | |

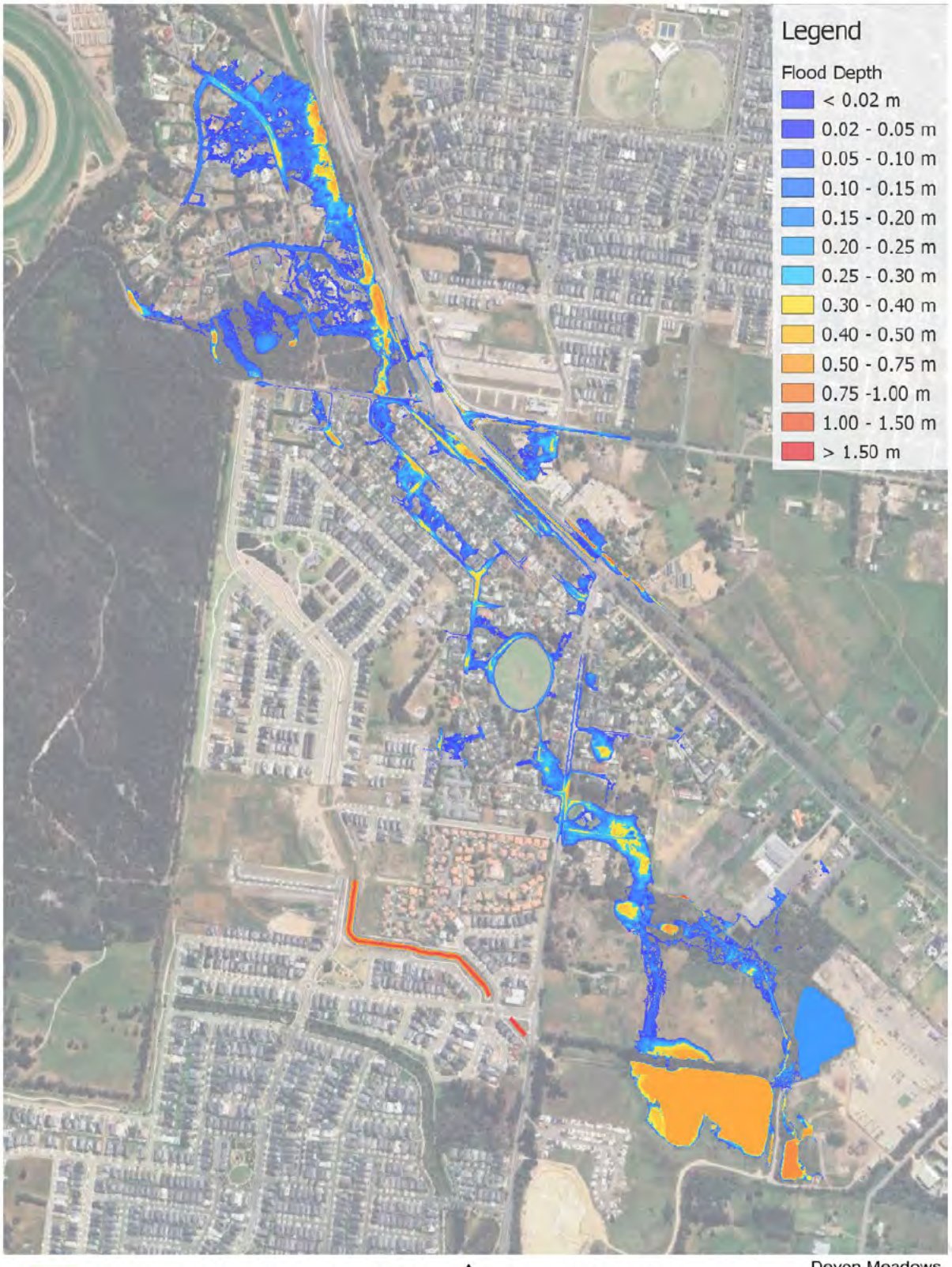



*Figure 4. Flood depth map for pre-developed conditions*

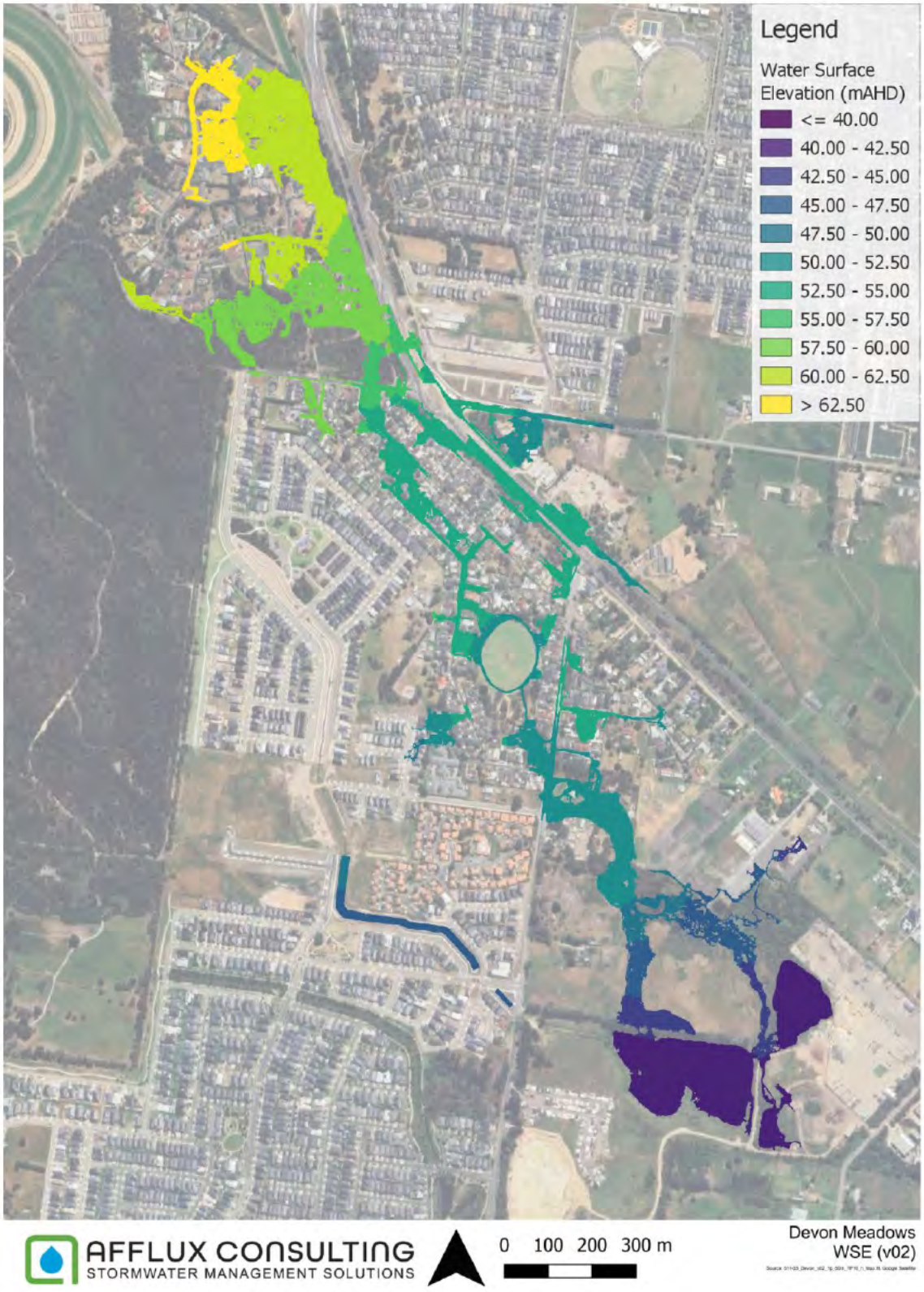



*Figure 5. WSE map for pre-developed conditions*

## Developed Conditions Modelling

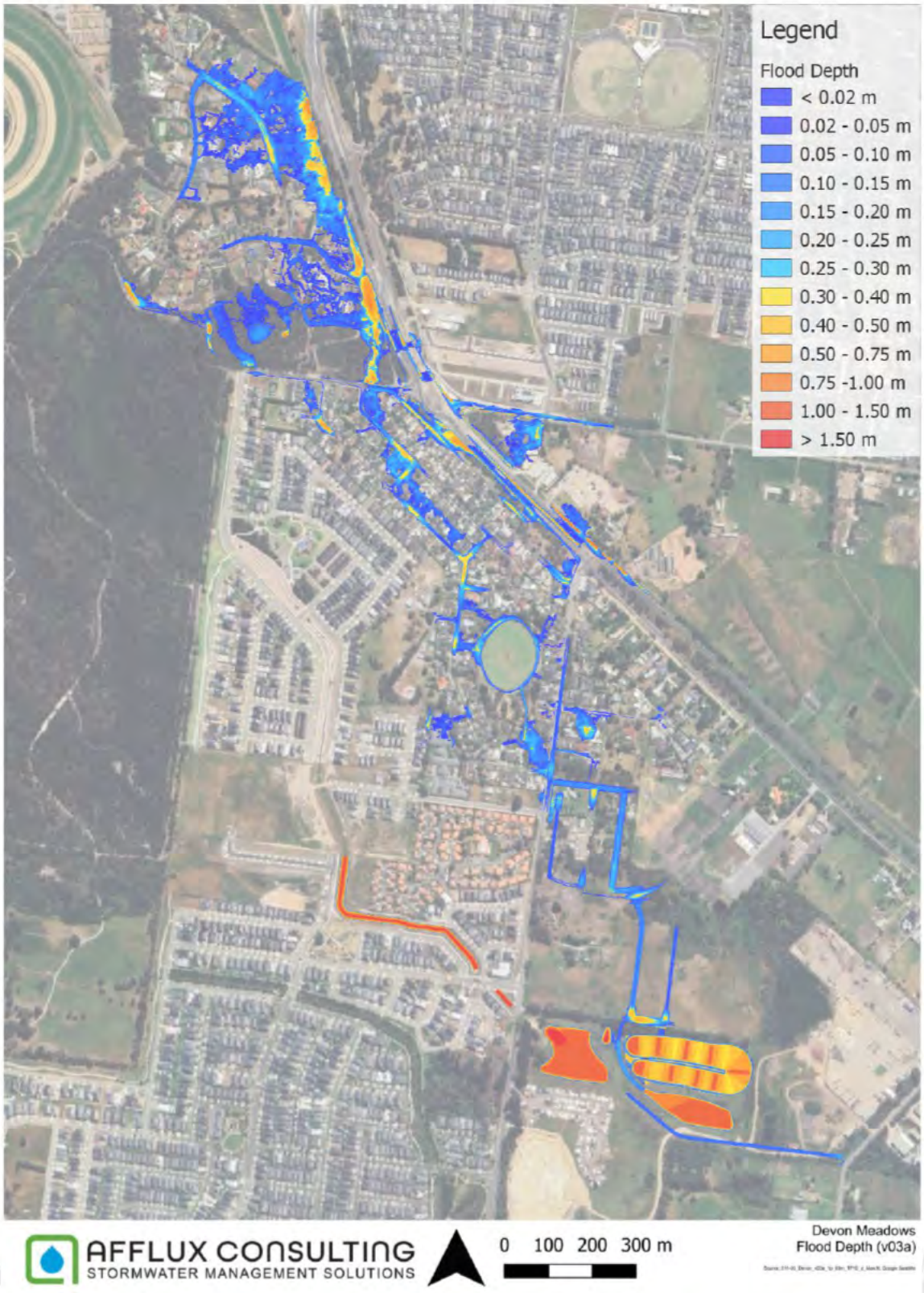



*Figure 6. Flood depth map for post-developed conditions (2x750mm culverts under Craig Rd)*

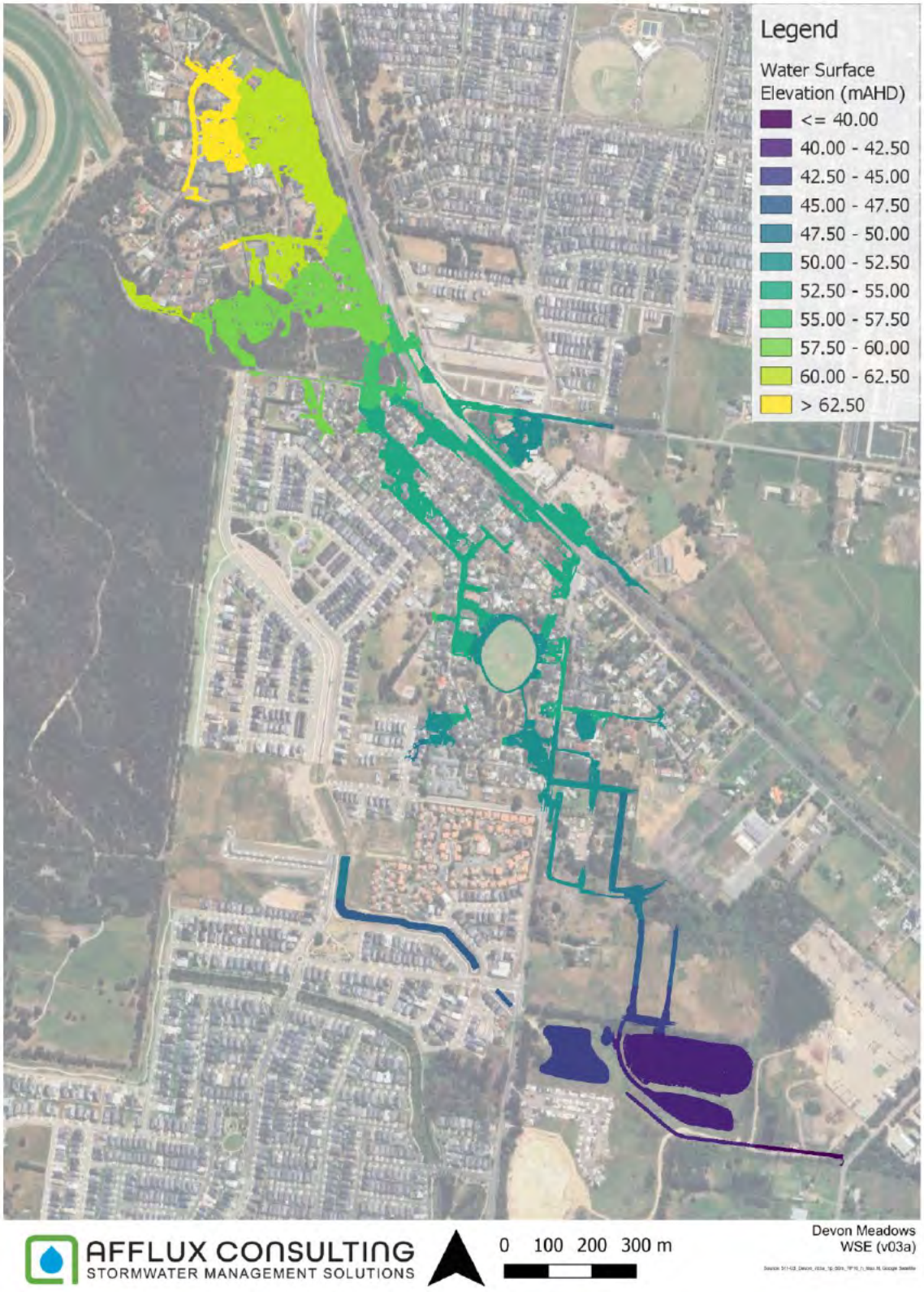



*Figure 7. WSE map for post-developed conditions (2x750mm culverts under Craig Rd)*

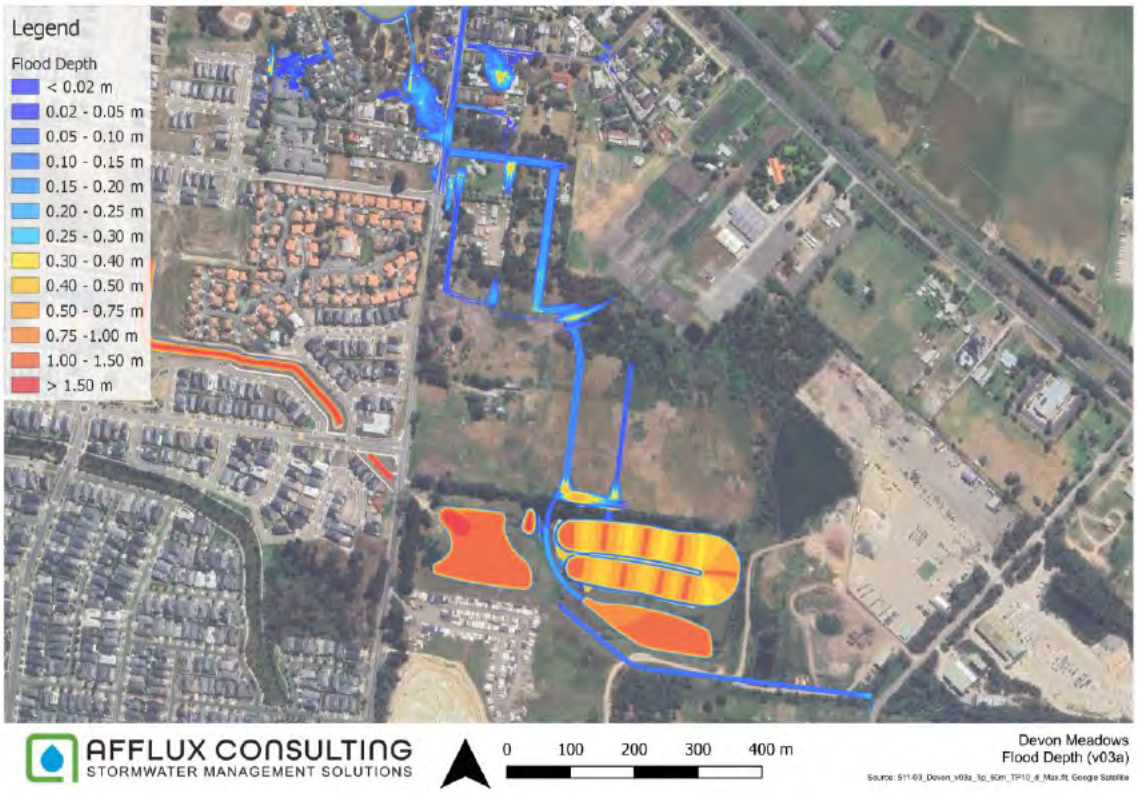



*Figure 8. Flood Depth V03a (zoomed in)*

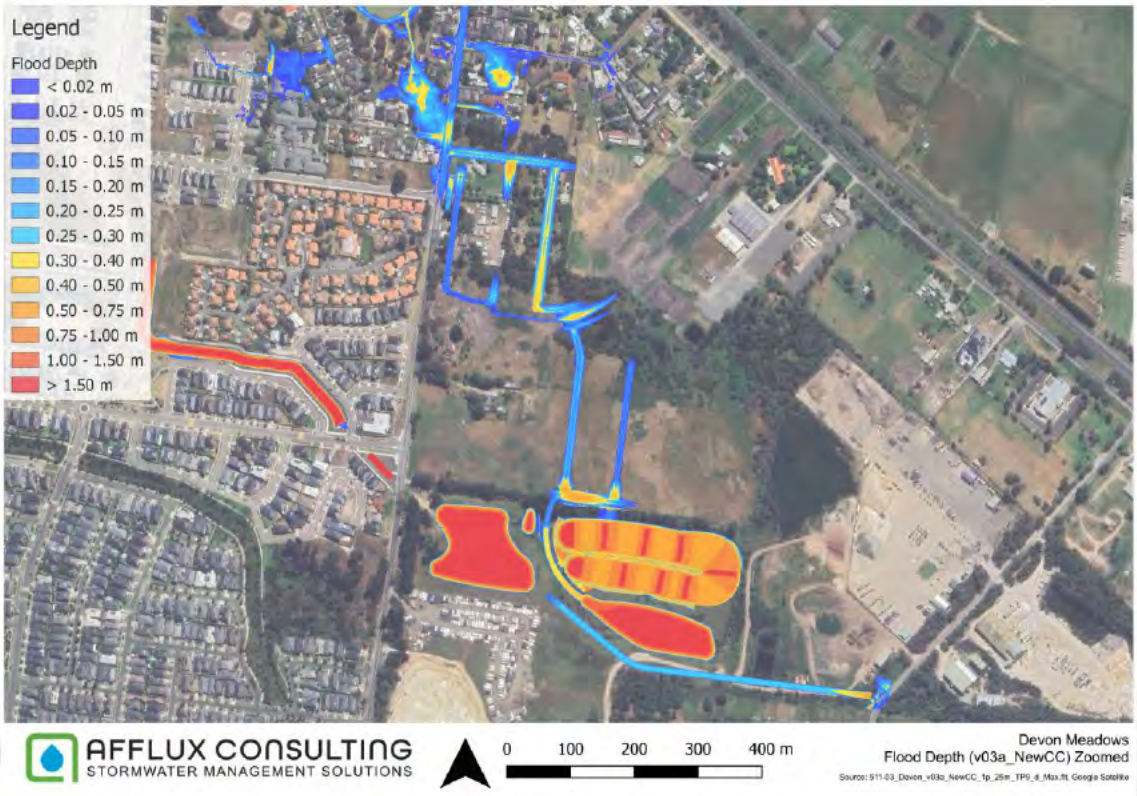



*Figure 9. Flood depth map for V03_NewCC (SSP5) (zoomed in) – Worst case scenario*

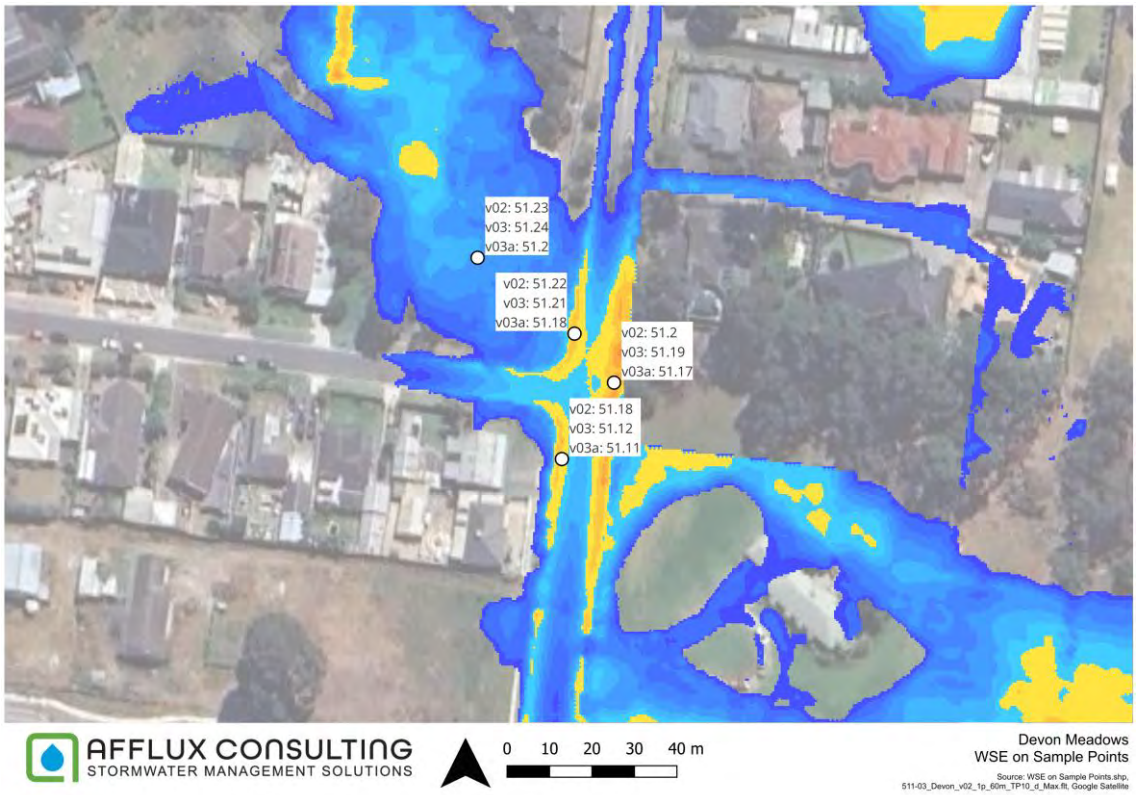



*Figure 10. Flood levels on sample points (note reductions in development proposals)*

## Flood Hazard Considerations

The flood hazard associated with the proposed development is assessed using both ARR19 and DELWP guidelines. For this purpose, it is deemed that v4.1 climate change is the appropriate scenario to use, as the ARR19 v4.2 (SSP5) climate change is deemed to be too conservative.

Both assessments show that the flood hazard for the ARR v4.1 climate change scenario is generally low as shown in Figure 11and Figure 12 (noting that this is an extreme condition). Craig Rd, as well as the proposed roads are under the H1-H2 category, while the H3 and above ratings are contained in the RB and the wetland.

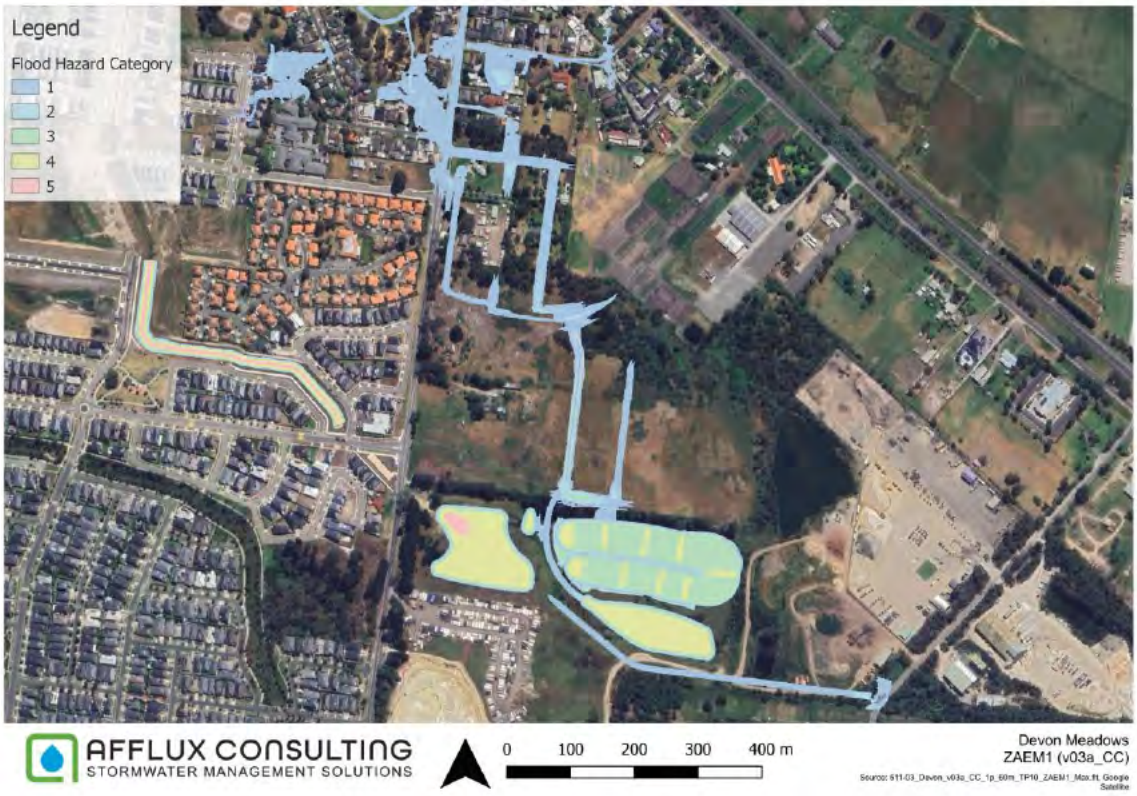
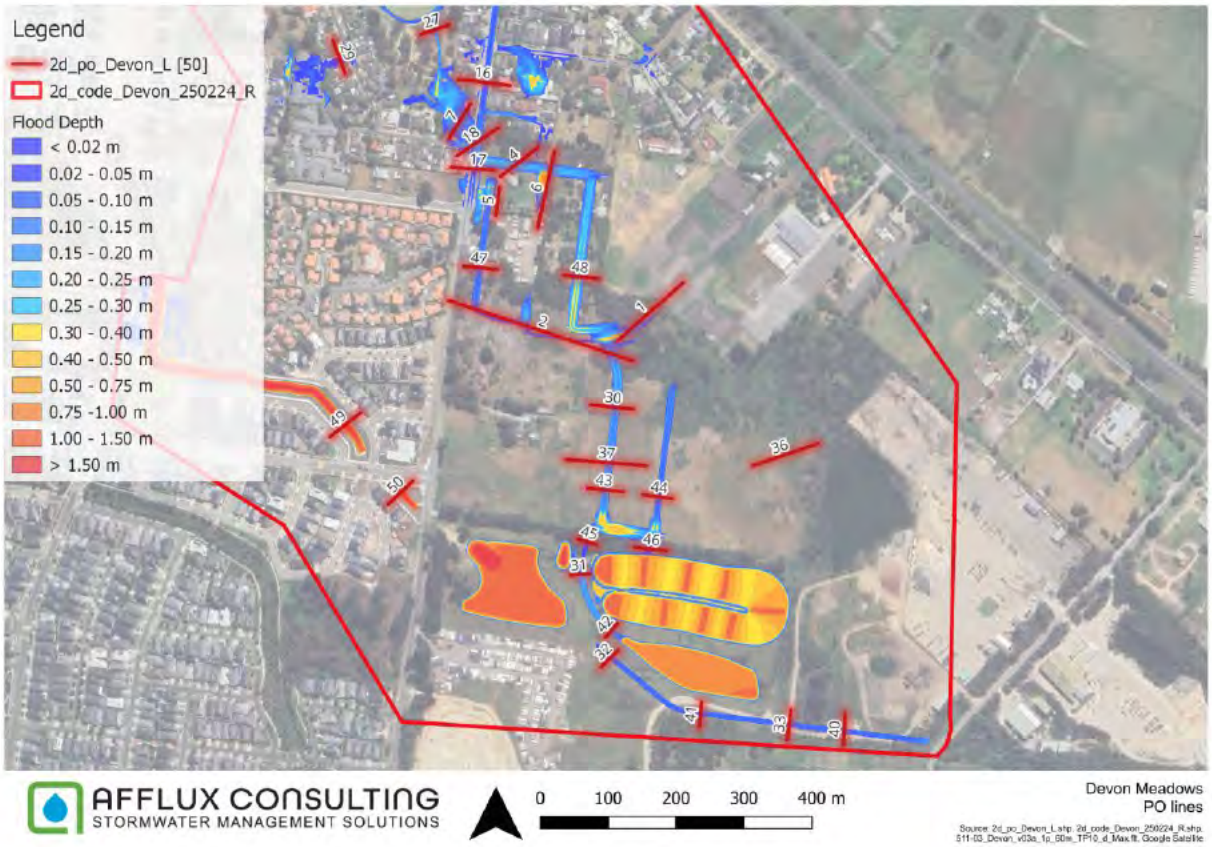



*Figure 11. ARR19 Flood risk rating for post-development with v4.1 climate change scenario (18.5% flow increase)*


*Figure 12. DELWP Flood hazard rating for post-development with v4.1 climate change scenario (18.5% flow increase)*

## Flow Measurements




Flows Measured at Catchment locations (Developed conditions)

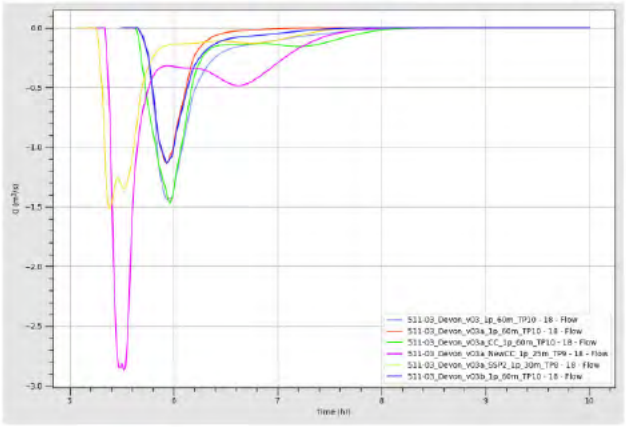


*Figure 13. Flow hydrographs at line 18 (Craig Rd)*

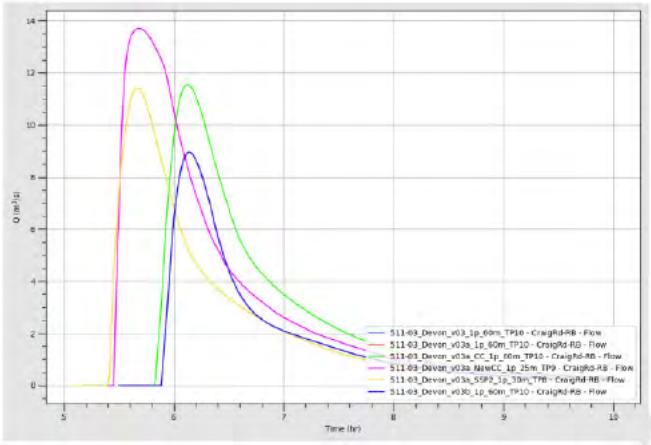


*Figure 14. Flow hydrographs at the waterway-RB culvert*

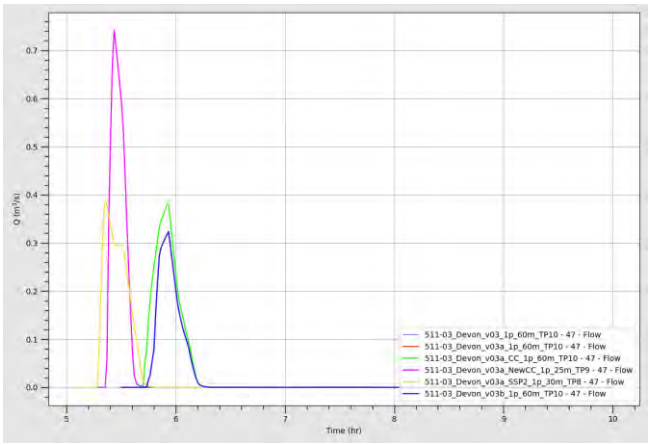



*Figure 15. Flow hydrographs at line 47*

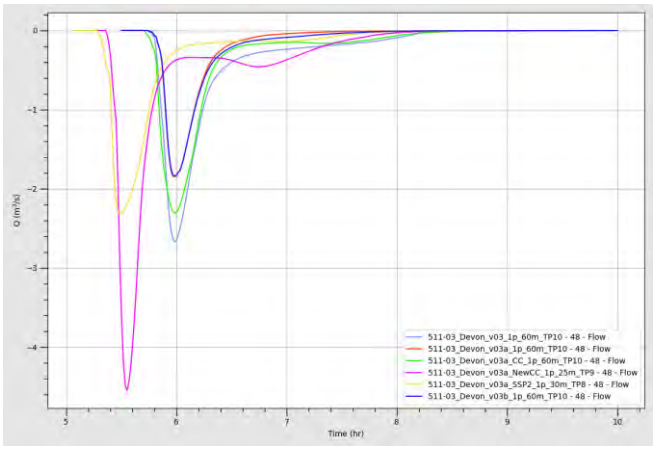



*Figure 16. Flow hydrographs at line 48*

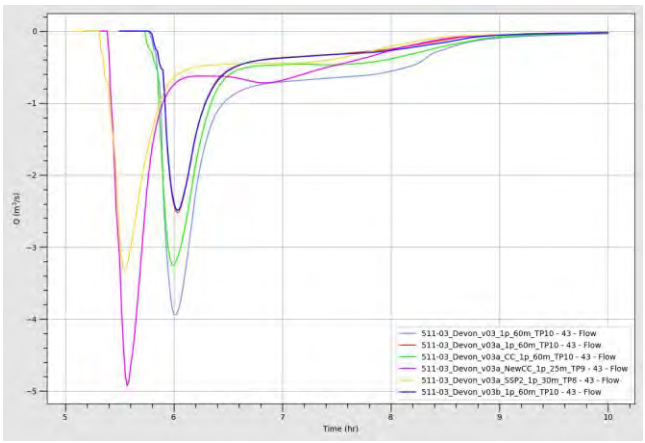



*Figure 17. Flow hydrographs at line 43*

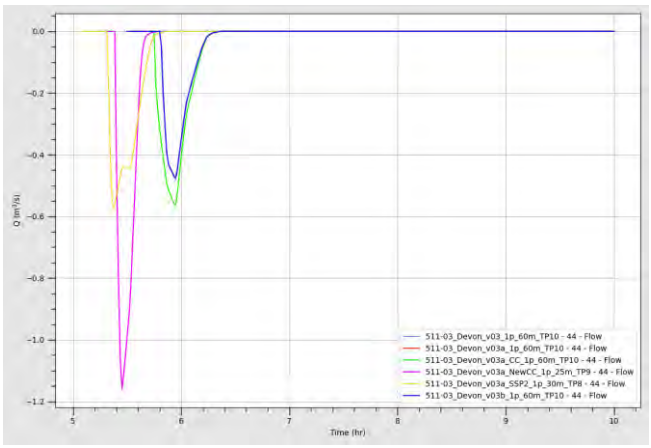



*Figure 18. Flow hydrographs at line 44*

## Conclusion and Recommendations

This undertaking provides a context to the flood conditions of the Devon Meadows area, centred at Junction Village – Craig Rd. Using MW-GHD hydrology supplied model, a 2D flood model was built and simulated to reflect pre-development and post-development conditions. The following is concluded:

- Existing overland flows of 2.8 $m^3/s$ were recorded at Craig Rd using the existing conditions Rorb model, and hydraulic model to measure flows. This is well below any waterway requirement.
- Doubling the capacity of Craig Rd crossing provides a reduction of up to 70mm to the flood levels across Craig Rd. This could be further improved with better design inlets and provide an overall benefit to the region at very low cost.
- Post-developed conditions flows at Craig Rd can be conveyed by a pipe and road system, with low depths (under 300mm SSP2.5 conditions) and under 450mm even in the SSP5 conditions.
- Flood hazard rating of the development is considered to be at the lowest risk category.
- This design is considered to be preliminary and would logically be further optimised at a future detailed design stage. The pipes considered in this report are conservative, and could be increased to further reduce road/surface flows.
- Based on this modelling there is no justification for a waterway to be included in this urban design.
- Peer review of the model to be undertaken.

# Appendix A – Hydraulic Model Setup

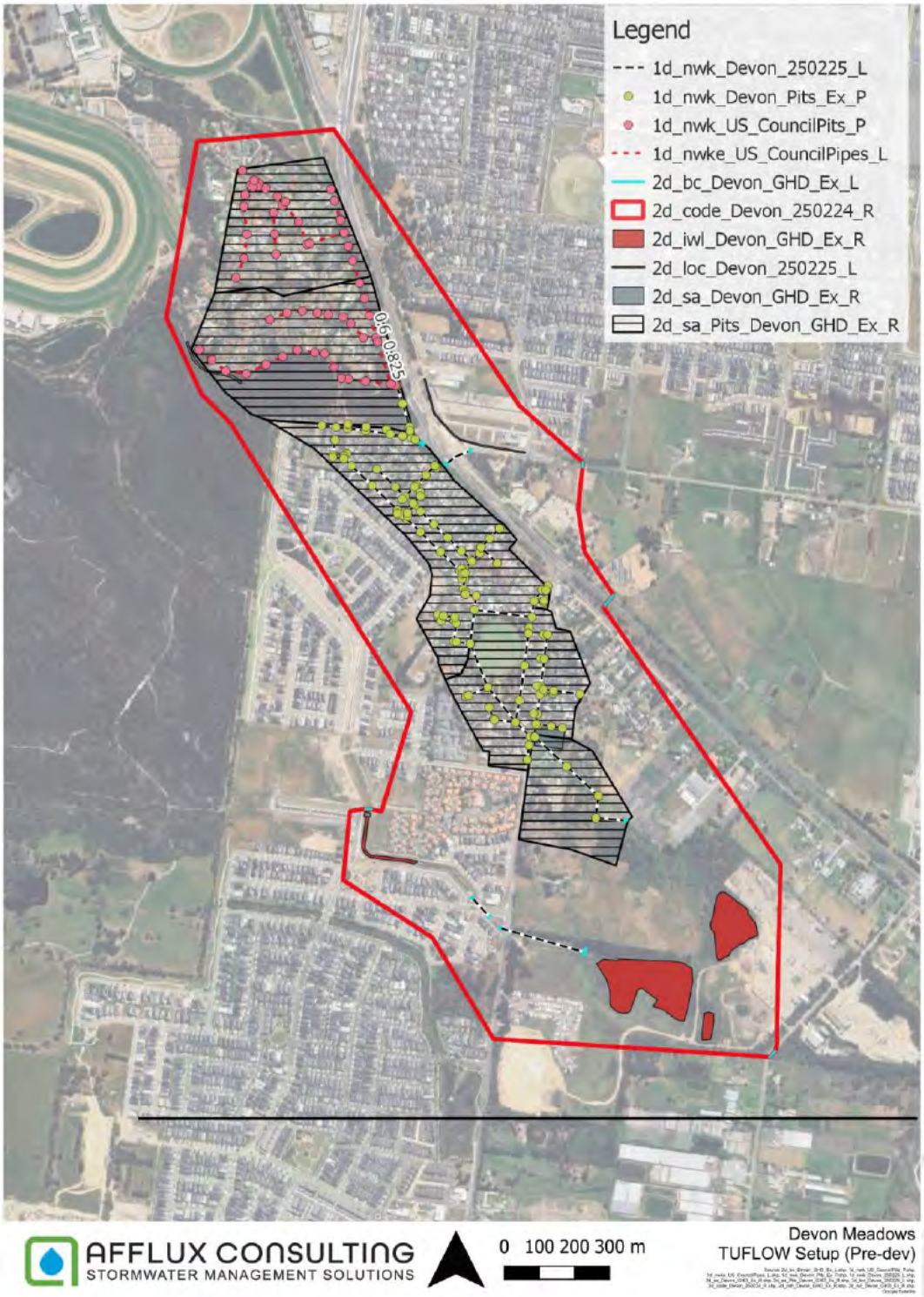



*Figure 19. Pre-developed conditions TUFLOW setup*

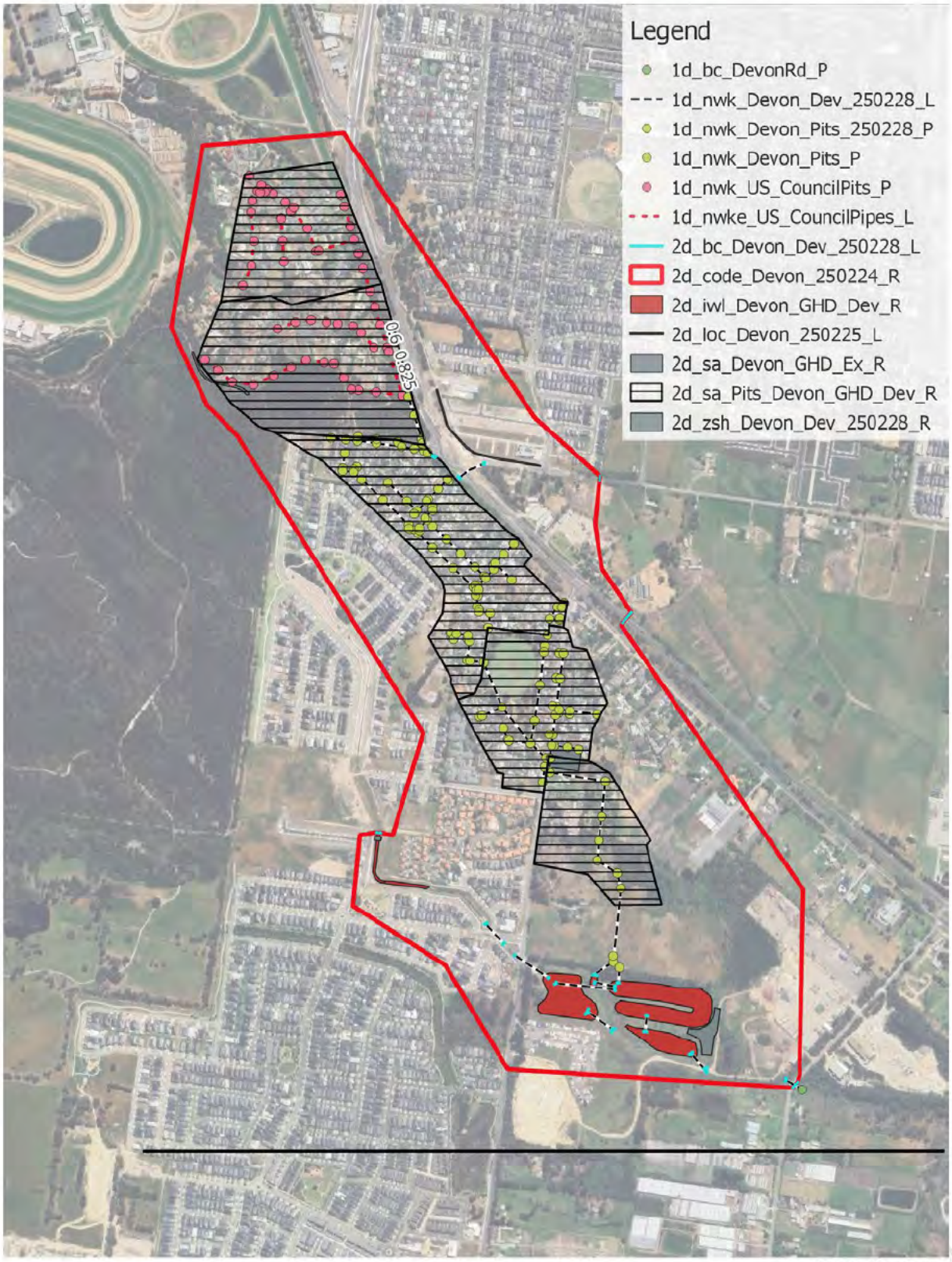



*Figure 20. Post-developed conditions TUFLOW setup*

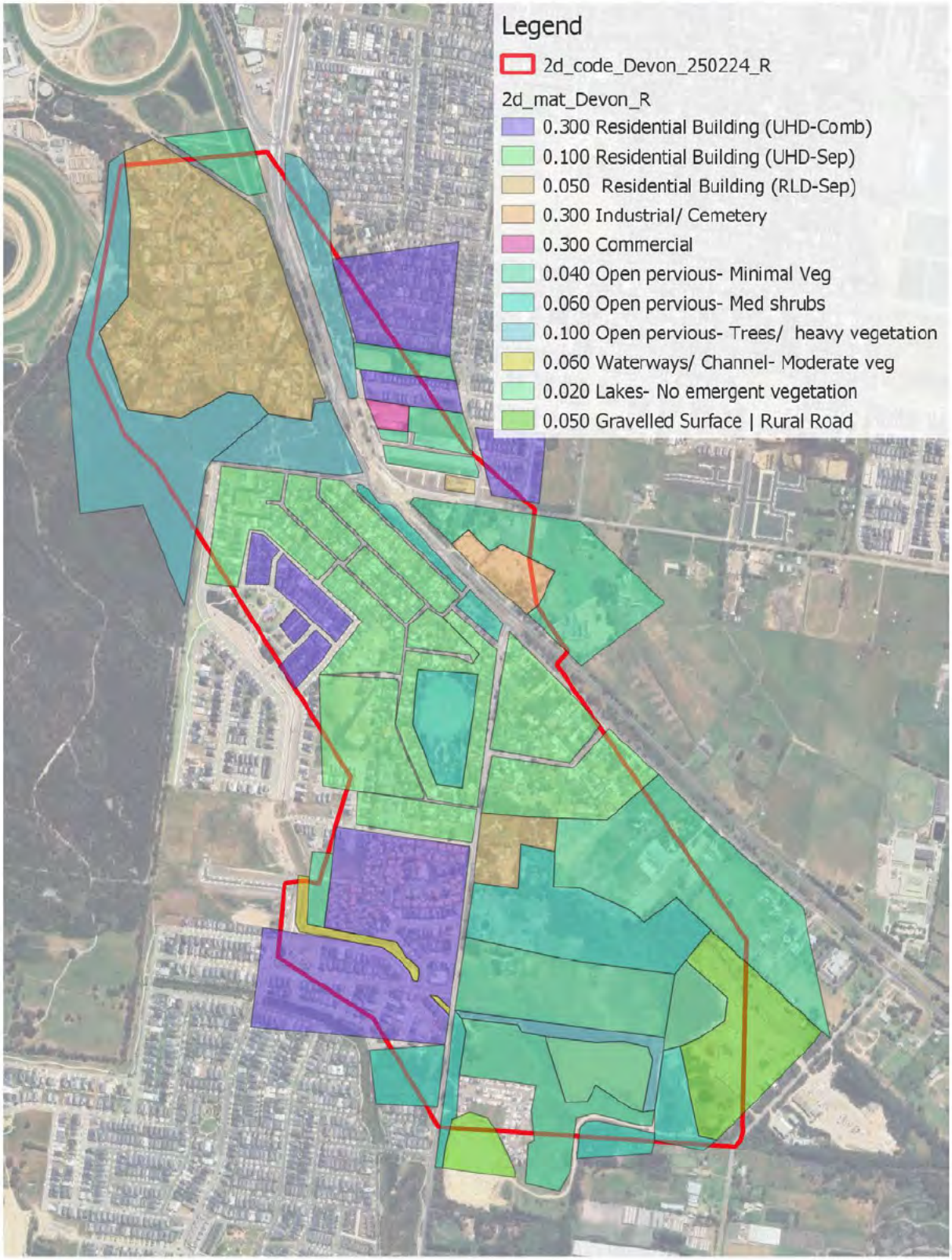



*Figure 21. Mannings Map Existing Conditions*

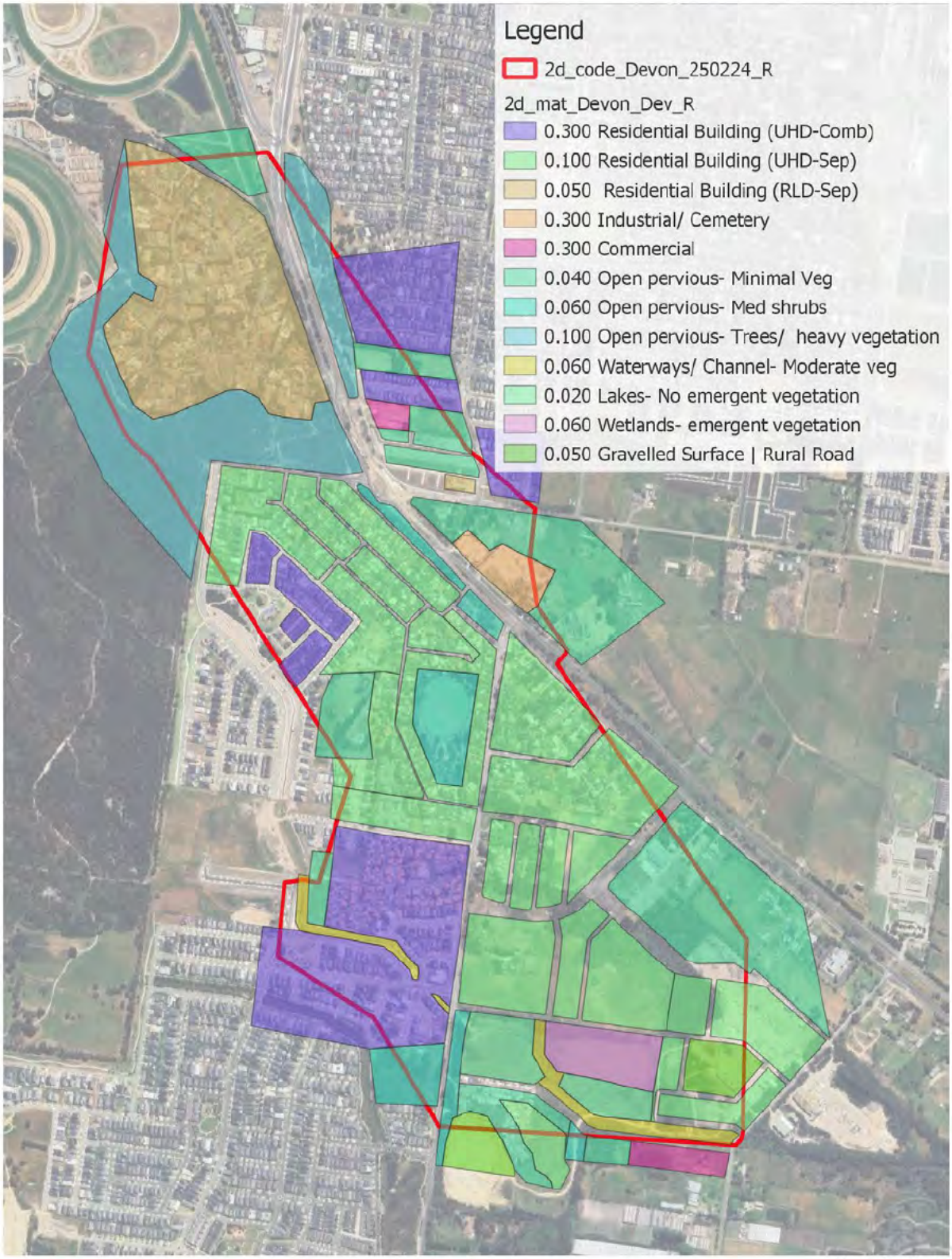



*Figure 22. Mannings Map Developed Conditions*

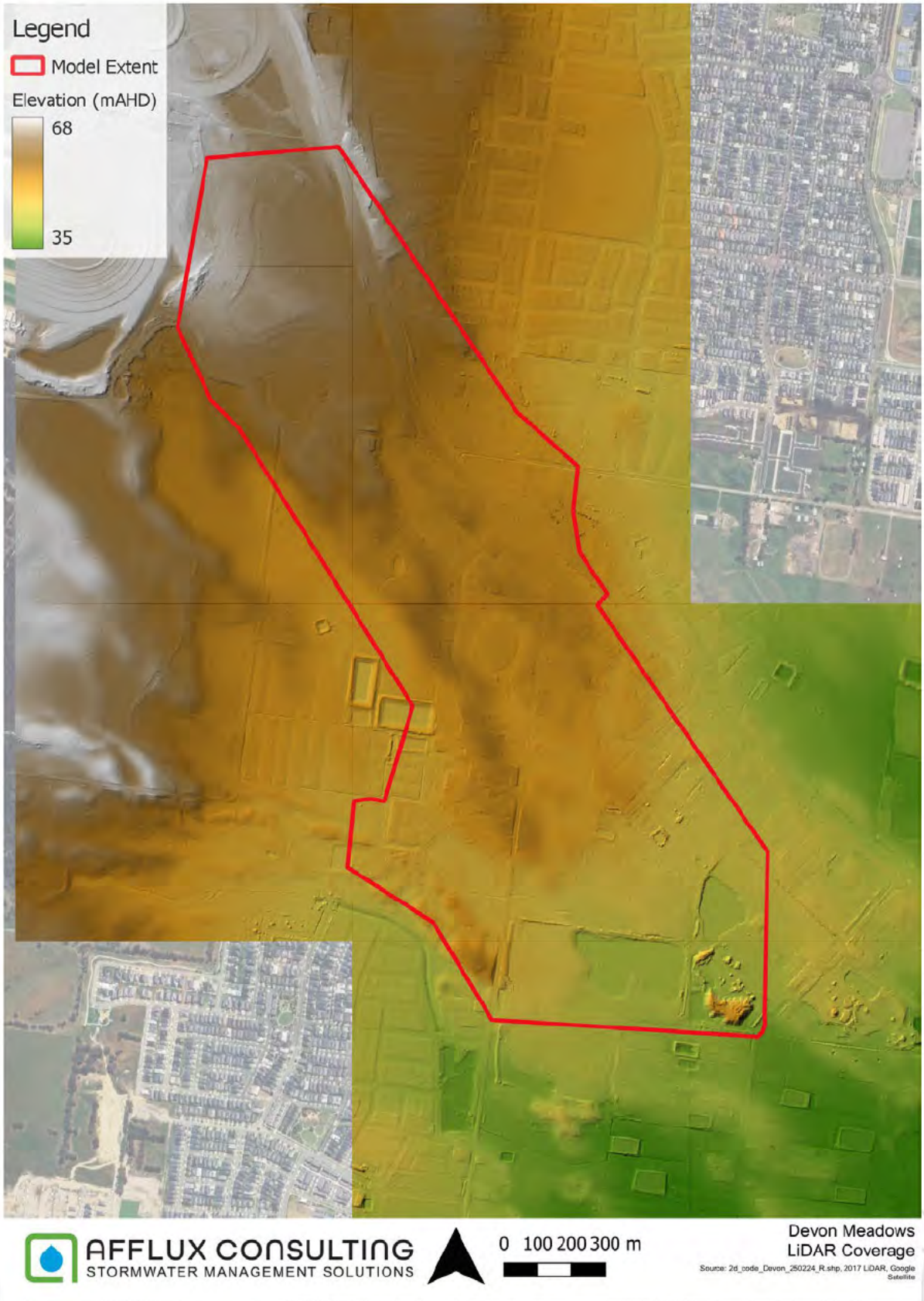



*Figure 23. LiDAR Coverage*

# Appendix B – Model Checks

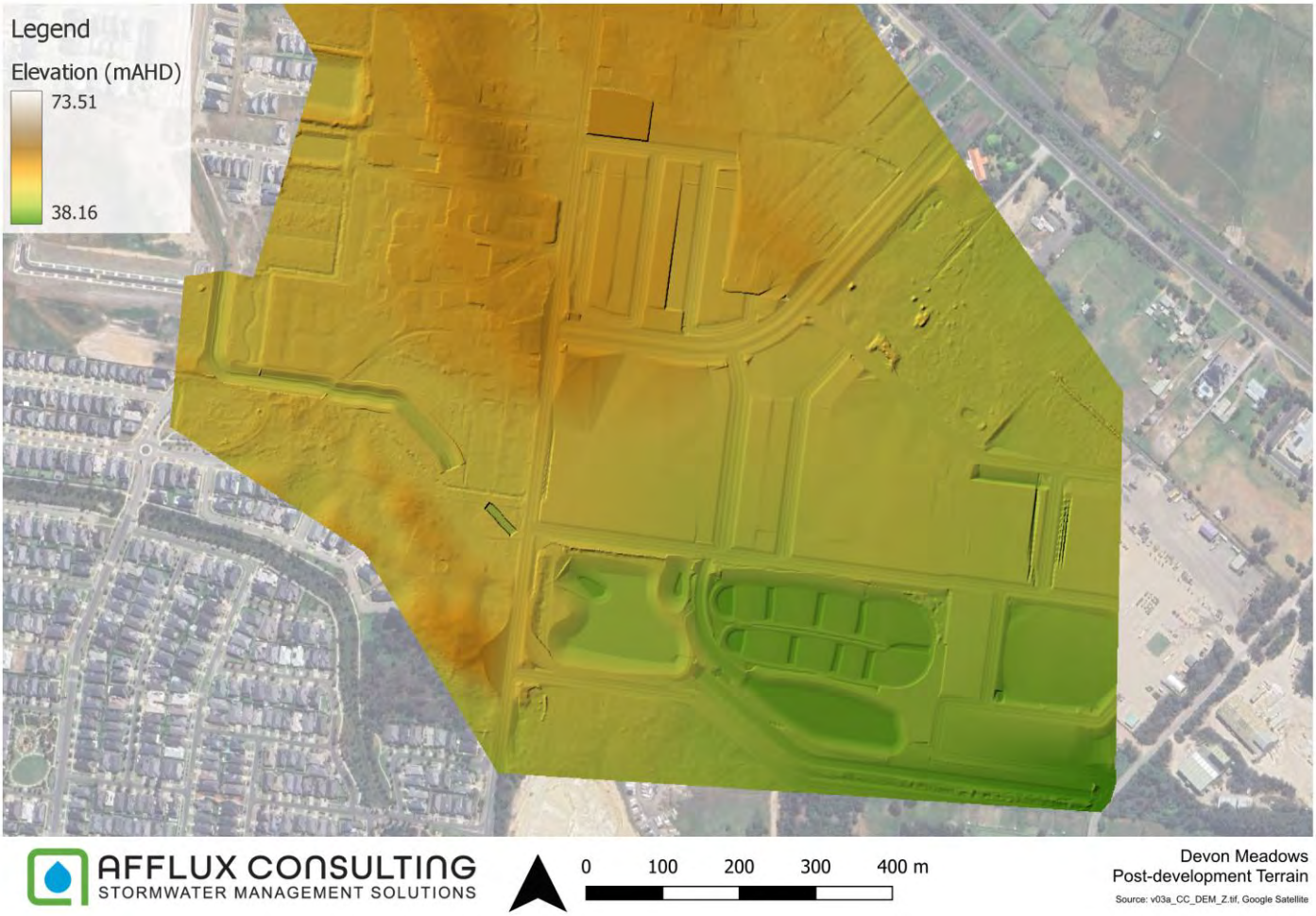



*Figure 24. Developed Conditions 2d Z Check terrain*

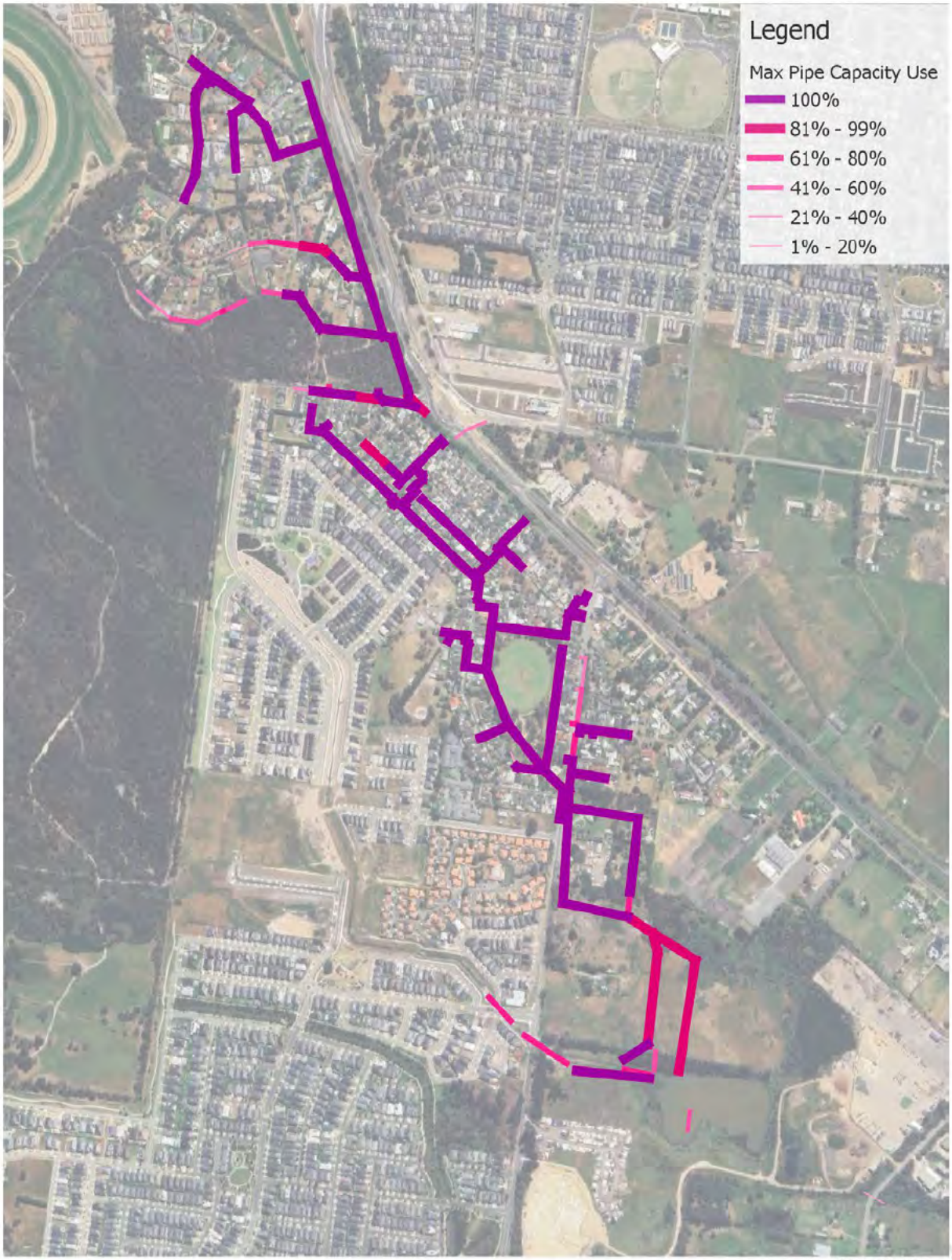



*Figure 25. 1d CCA map for developed conditions*

# Appendix C – Flood Maps for Climate Change Scenarios

## Pre-development Conditions

### ARR19 v4.1 (Year 2100, 18% flow increase)

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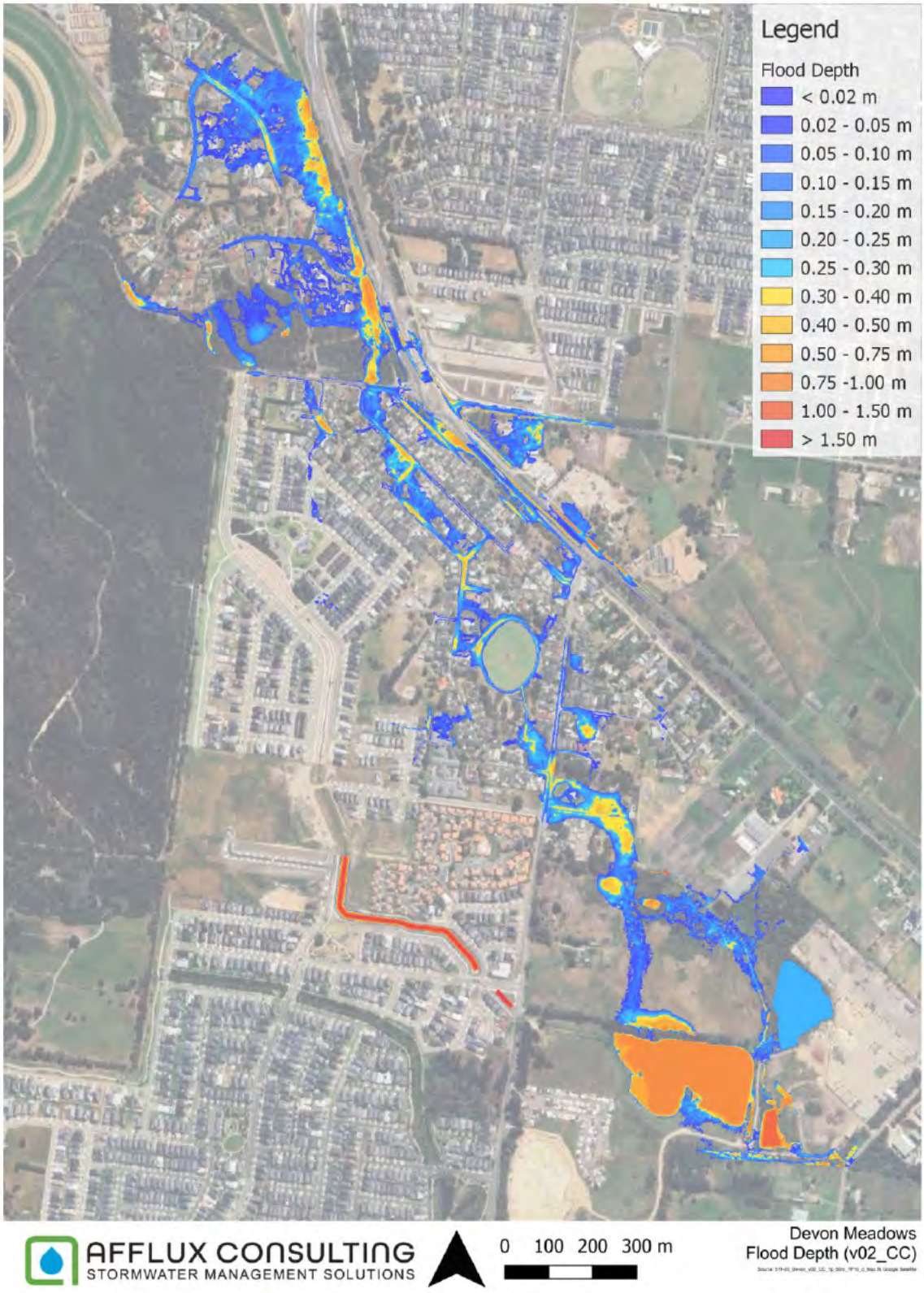


*Figure 26. Flood depth map for scenario v02_CC*

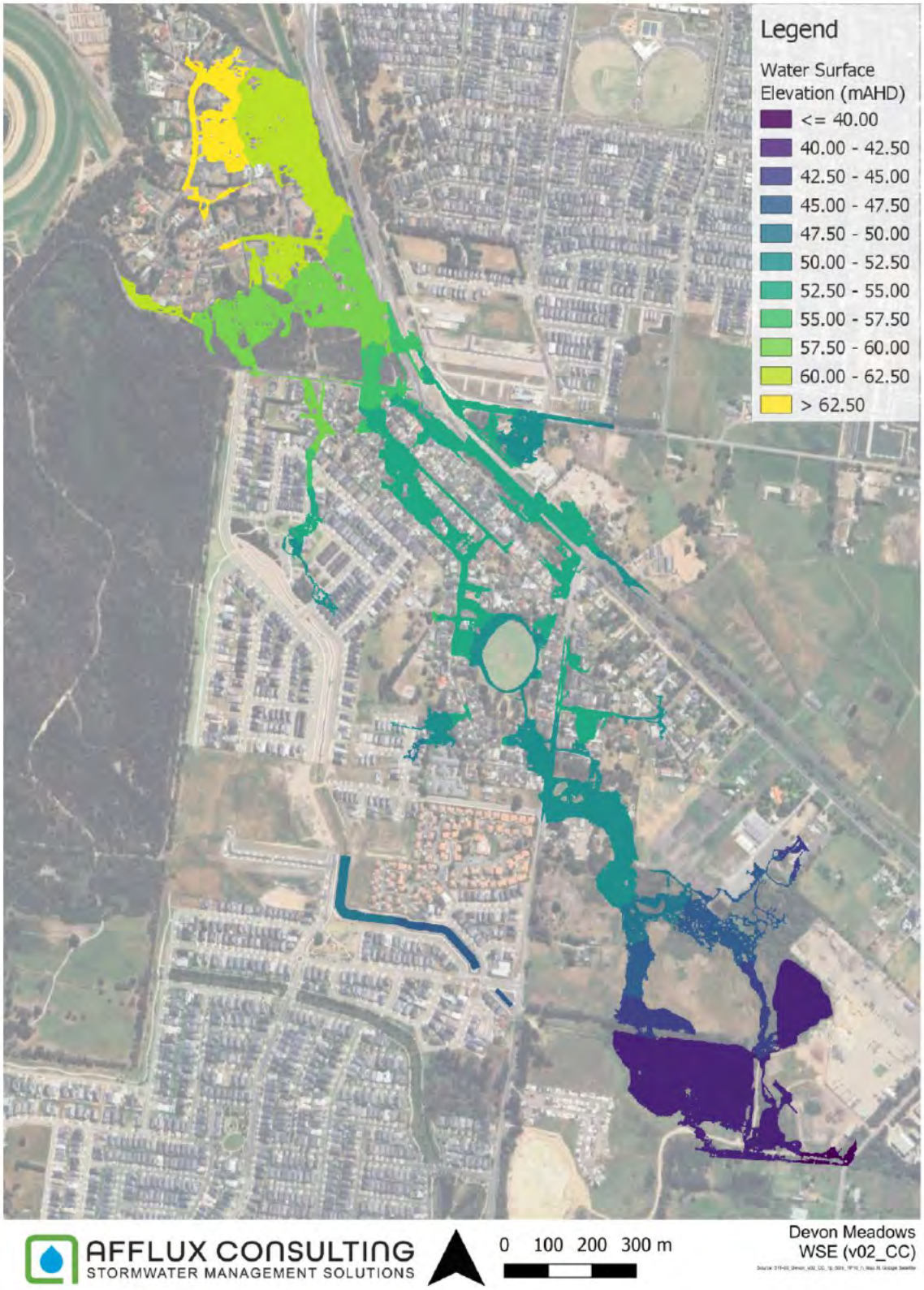


*Figure 27. WSE map for scenario v02_CC*

## ARR19 v4.2 (Year 2100, SSP5)

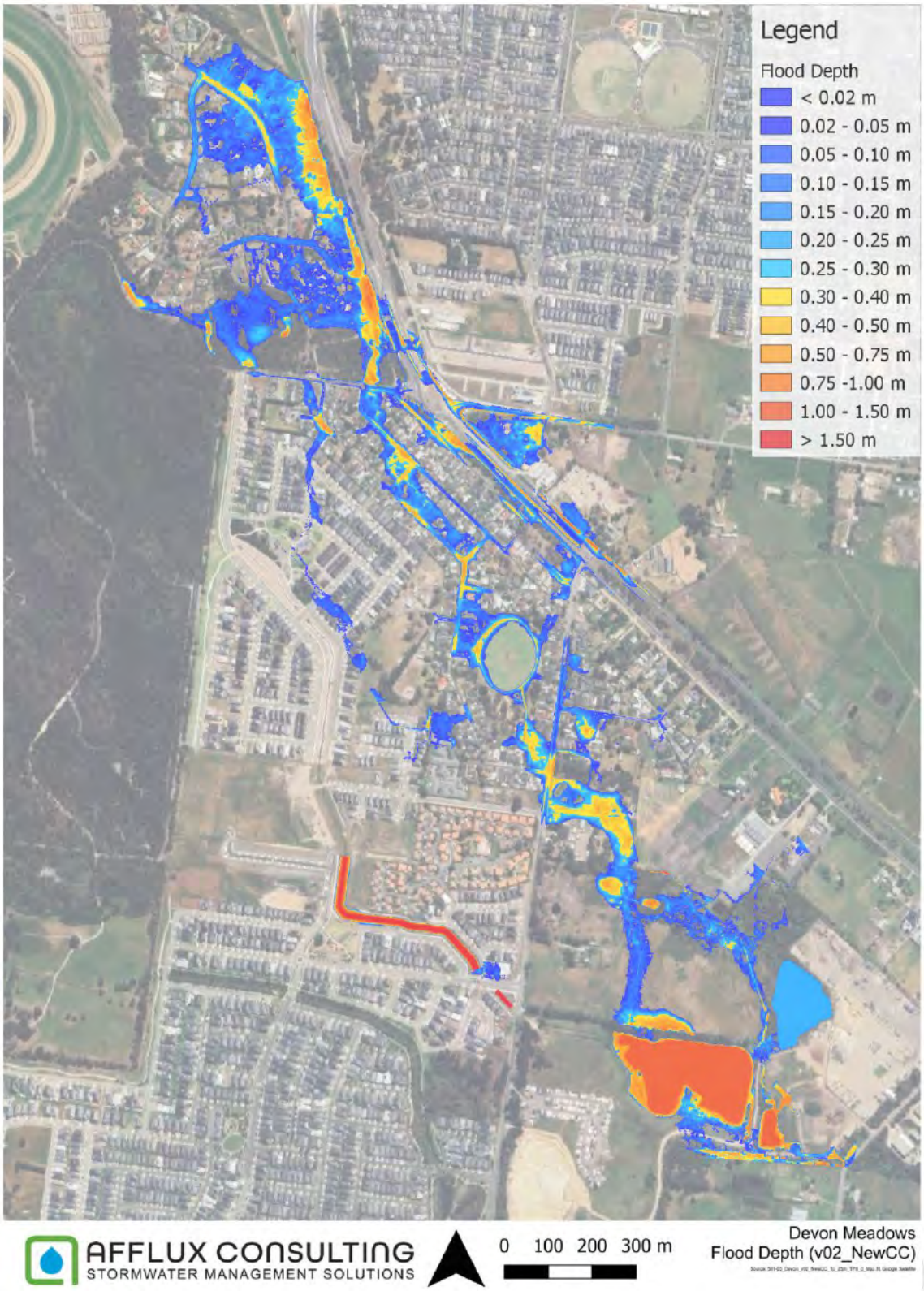


*Figure 28. c*

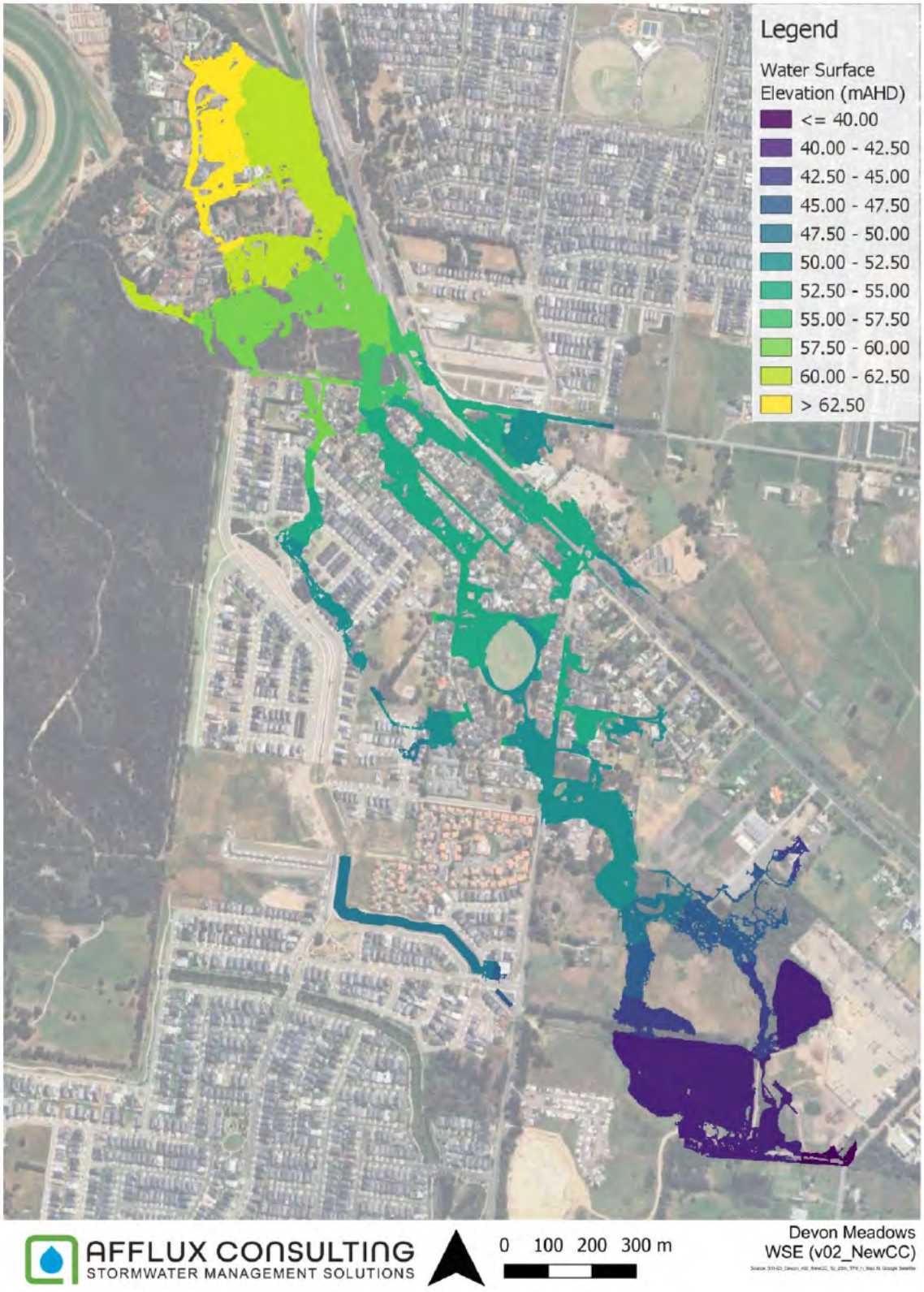


*Figure 29. WSE map for scenario v02_NewCC*

# Post-development Conditions

## ARR19 v4.1 (Year 2100, 18% flow increase)

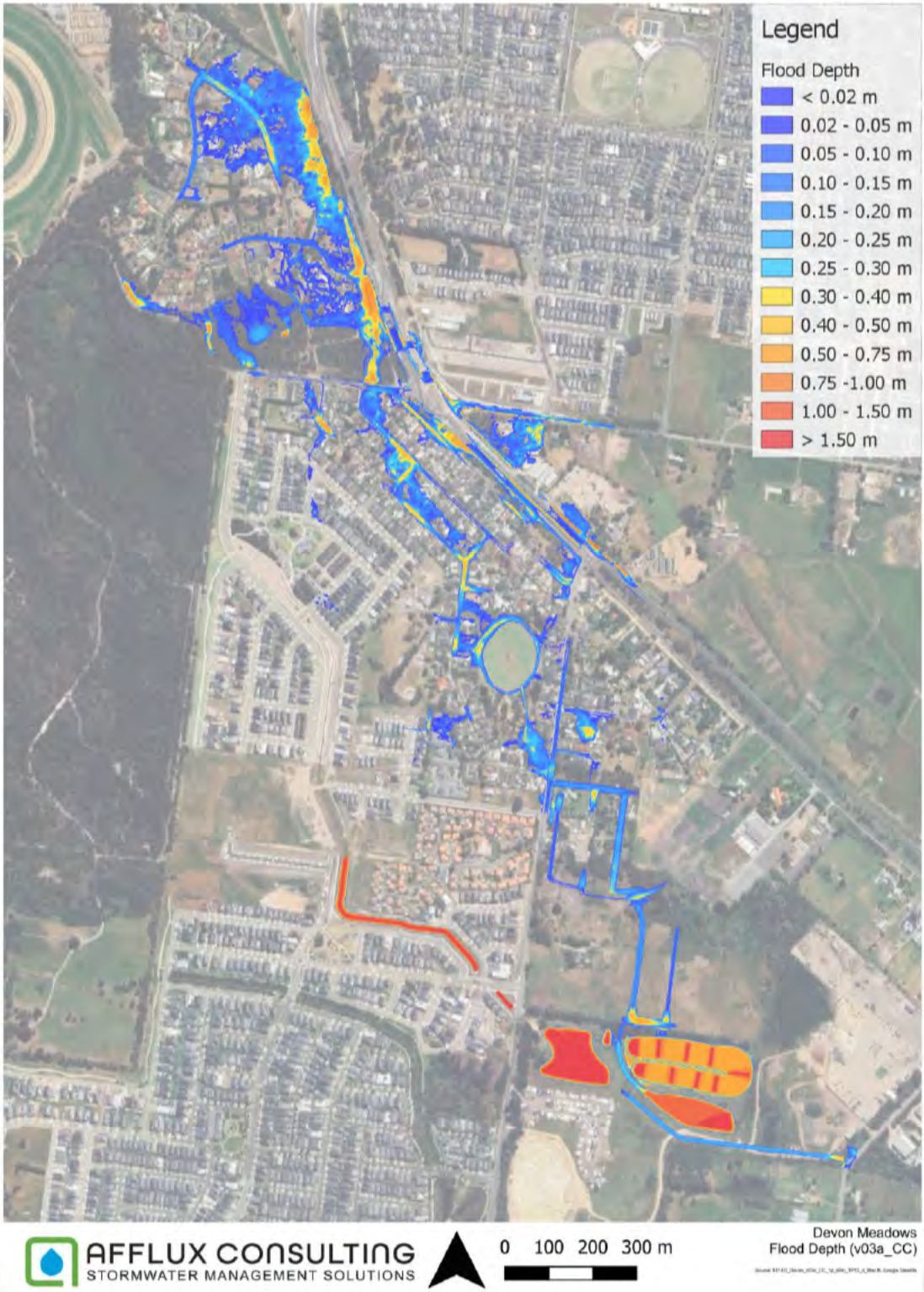


*Figure 30. Flood depth map for scenario v03a_CC*

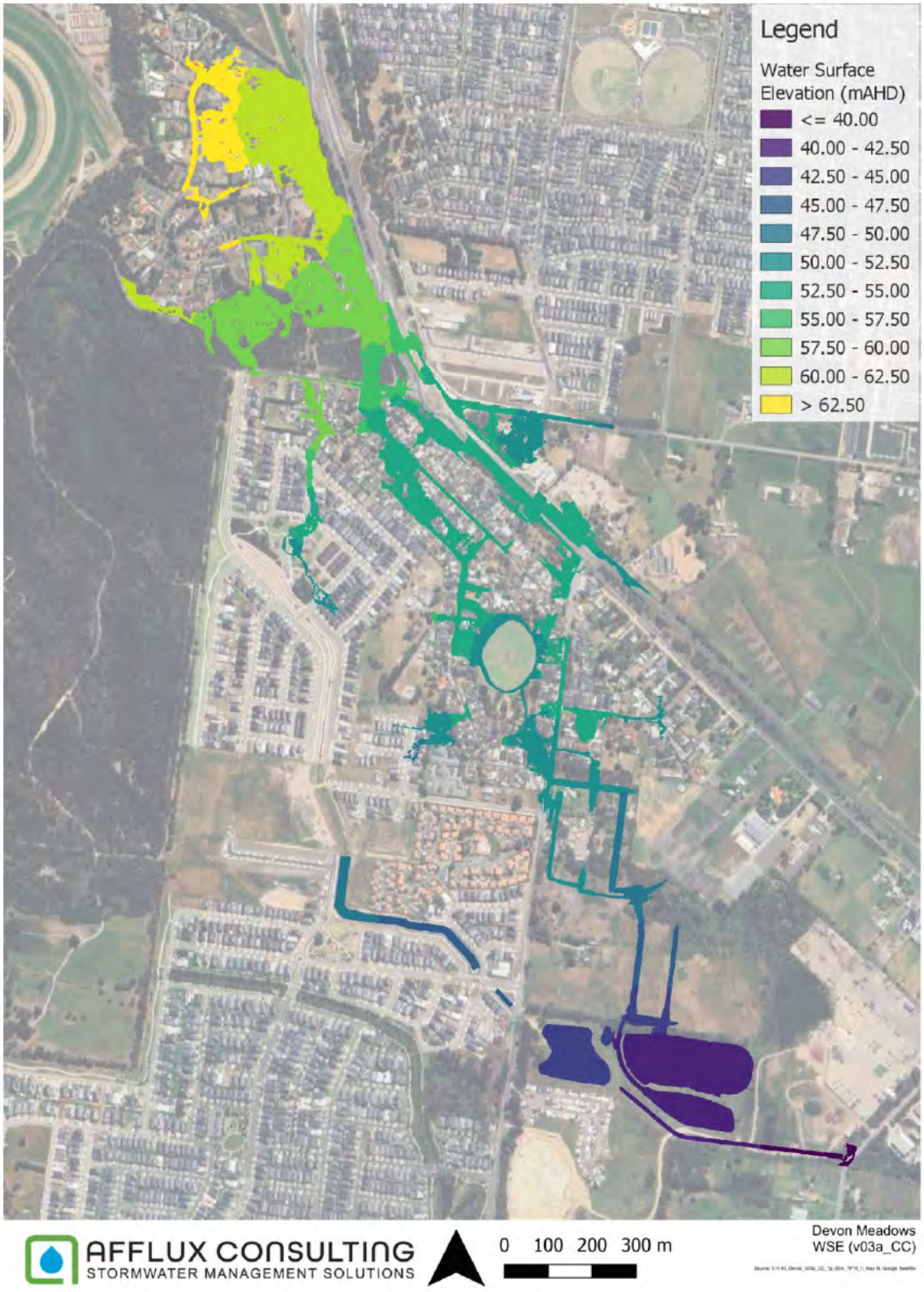


*Figure 31. WSE map for scenario v03a_CC*

## ARR19 v4.2 (Year 2100, SSP5)

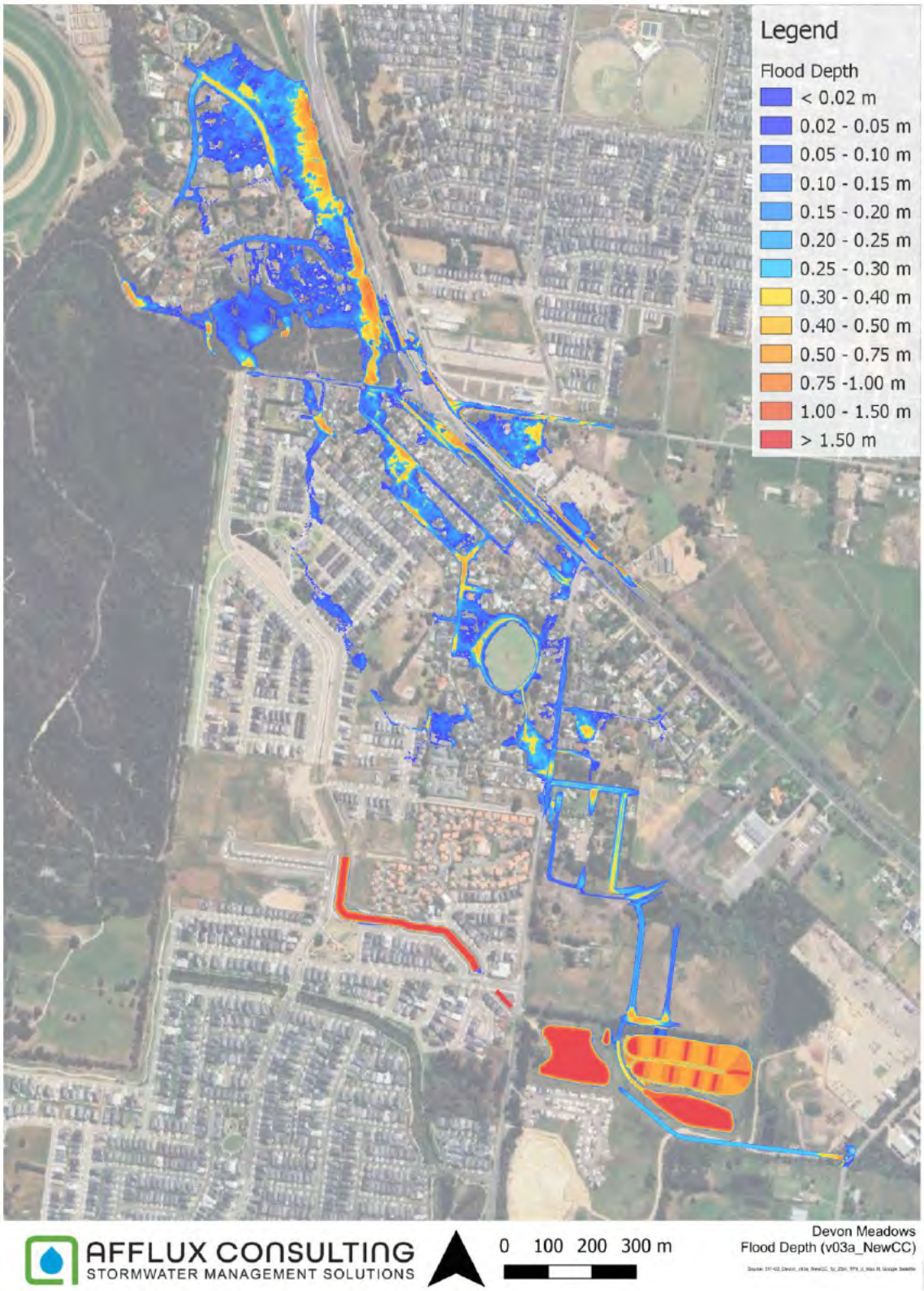


*Figure 32. Flood depth map for scenario v03a_NewCC*

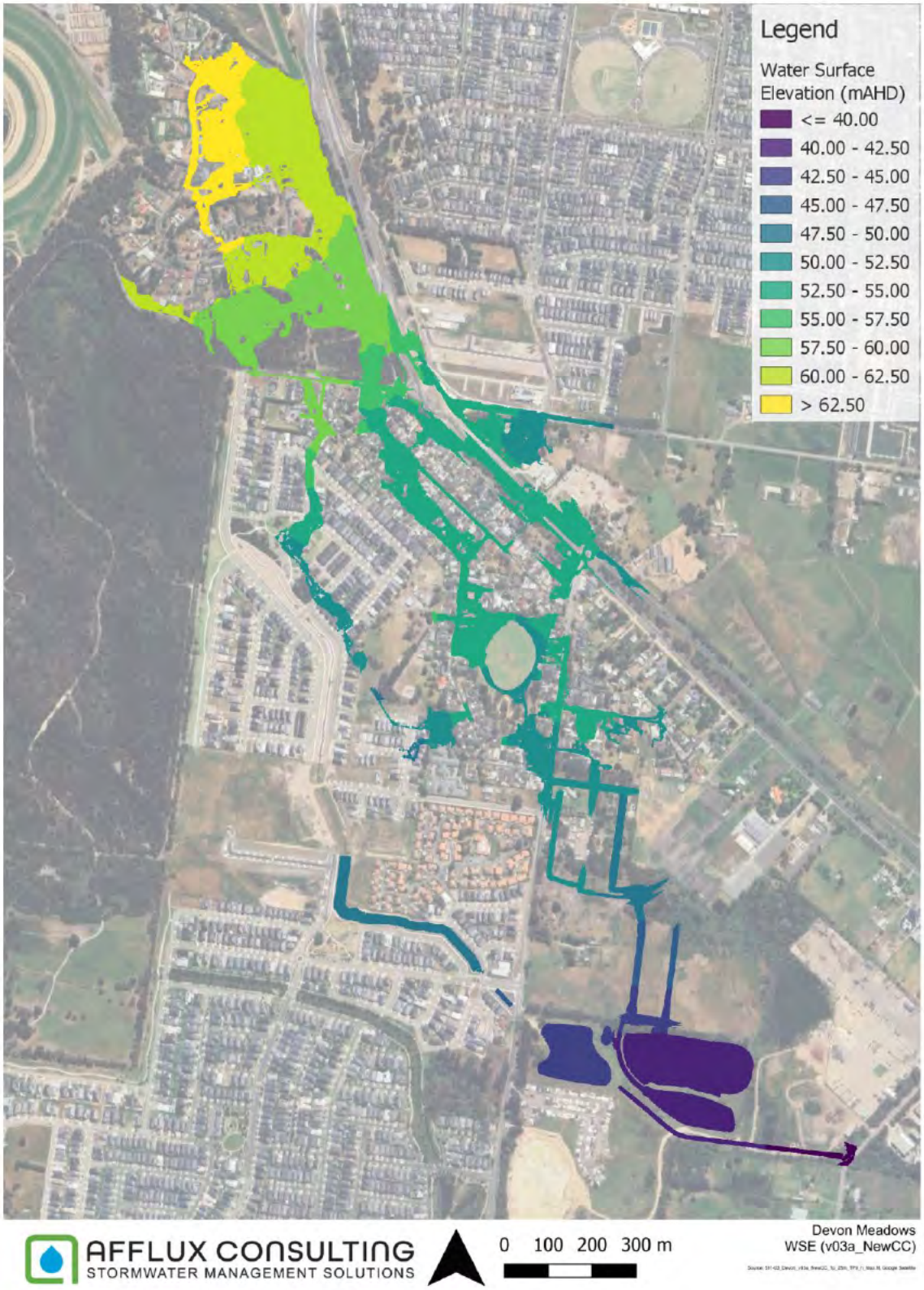


*Figure 33. WSE map for scenario v03a_NewCC*

## SSP2-4.5 Year 2100 ( 2.4°C Temperature Increase)

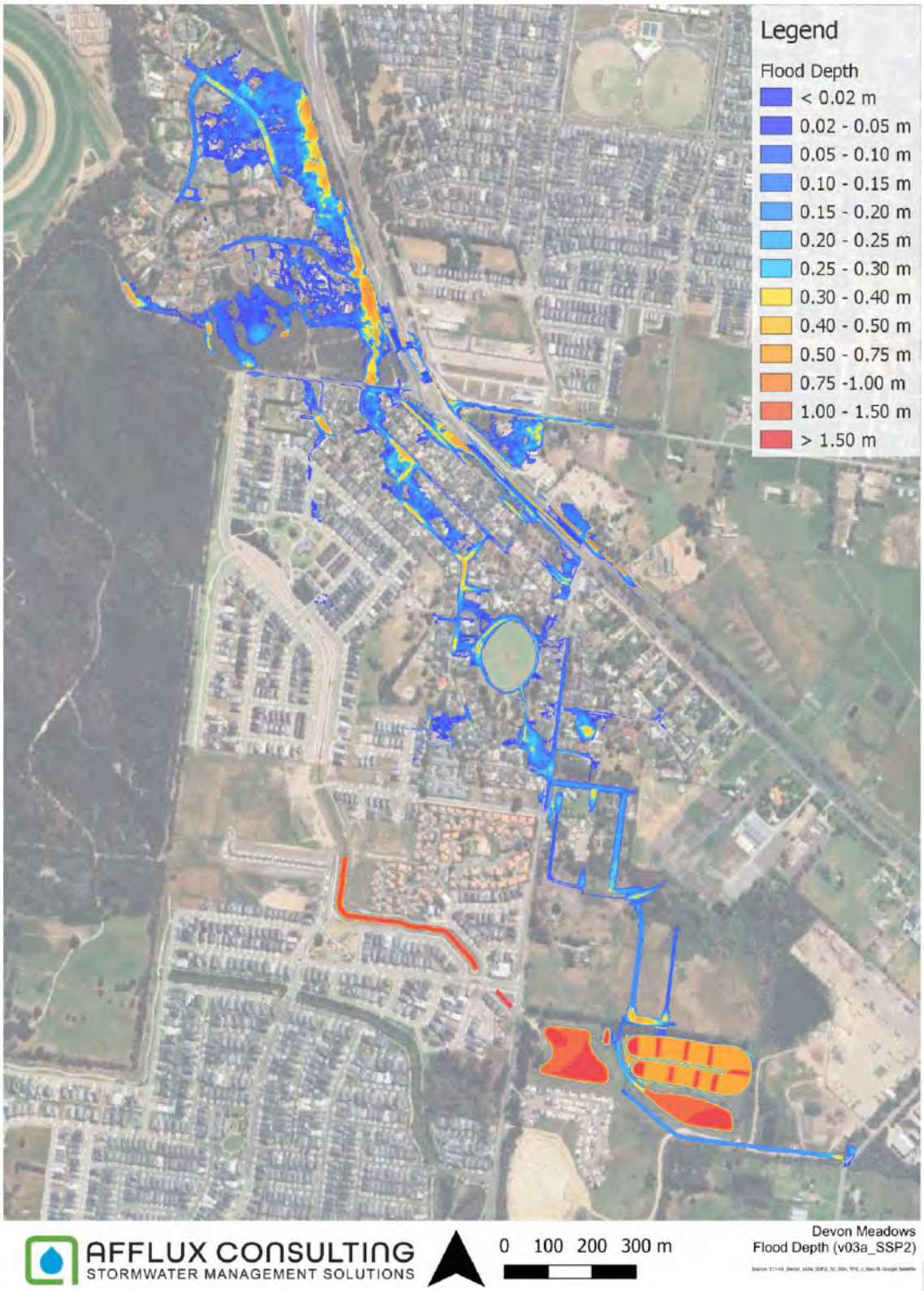


*Figure 34. Flood depth map for scenario v03_SSP2*

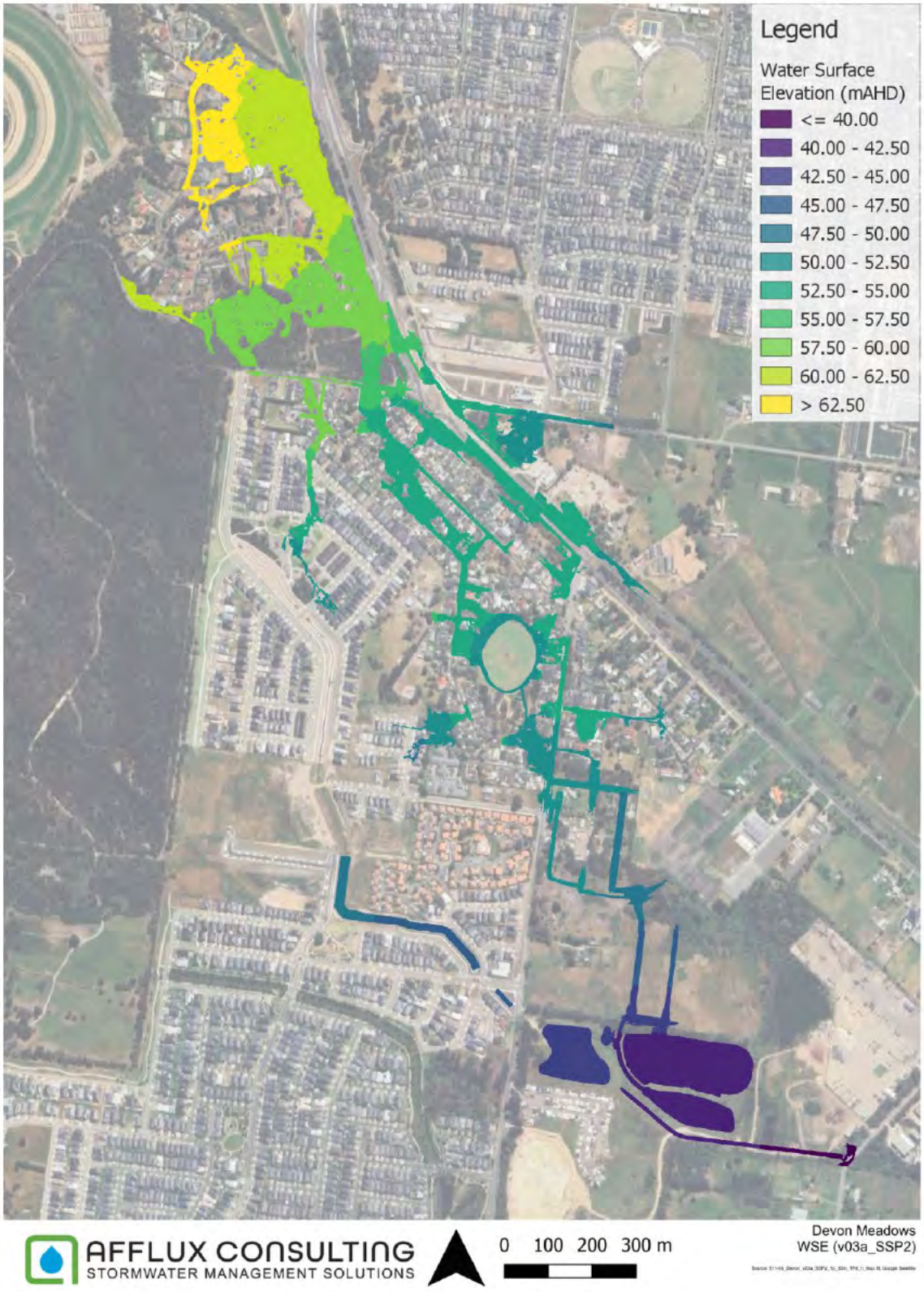


*Figure 35. WSE map for scenario v03a_SSP2*

# Appendix D – Flood Maps for 50% Blockage Scenario

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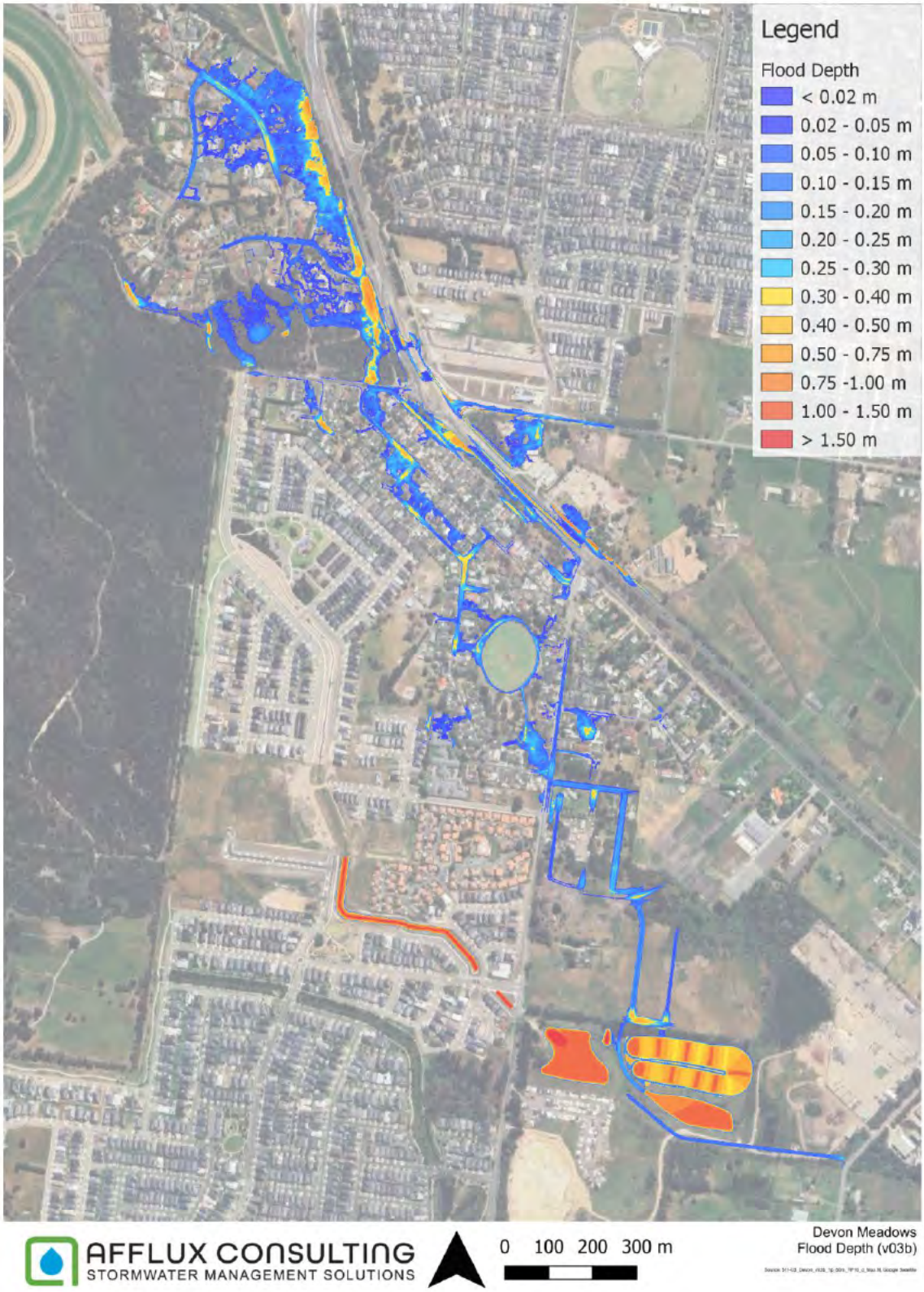


*Figure 36. Flood depth map for scenario v03b*

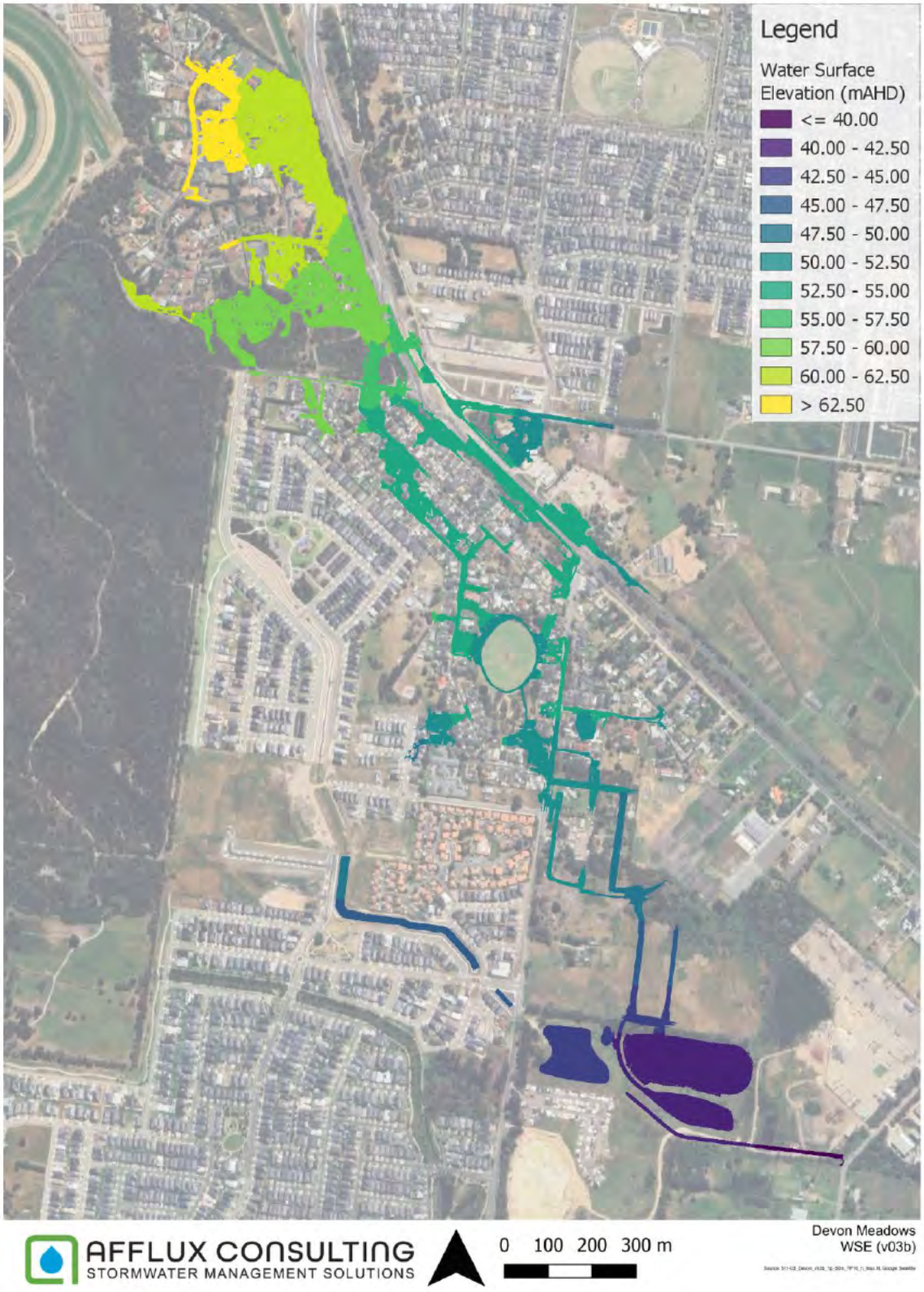


*Figure 37. WSE map for scenario v03b*

# Appendix E – Definitions of Hydrologic and Hydraulic Investigation

**Hydrological and hydraulic model investigations** are both methods used to study and analyse water systems, but they focus on different aspects of water behaviour.

1. **Hydrological Model Investigation:**
    - A hydrological model investigation refers to the study of the movement, distribution, and quality of water across a landscape, particularly focusing on the water cycle (precipitation, evaporation, runoff, infiltration, etc.).
    - Hydrological models simulate the processes that govern the flow of water through a watershed or river basin, including rainfall-runoff relationships, groundwater flow, and streamflow predictions.
    - These models are used for managing water resources, forecasting floods, evaluating water availability, and understanding how water behaves in natural environments.
    - Common examples of hydrological models include the RORB model that Melbourne Water has used.
2. **Hydraulic Model Investigation:**
    - A hydraulic model investigation focuses on the behaviour of water flow within engineered systems such as rivers, canals, pipes, and drainage systems. It deals with the physical properties of water, including flow velocity, pressure, and the effects of various structures (like waterways, retarding basins, or bridges/pipes).
    - Hydraulic models simulate the movement of water in specific channels/waterways or engineered systems (pipes) to understand how water will behave under different conditions, such as during storms or high-water events.
    - These models help design flood control systems, water distribution systems, or to assess the effects of infrastructure on water flow.
    - Examples of hydraulic models include TUFLOW, HEC-RAS (Hydraulic Engineering Centre River Analysis System) and MIKE 21.

**Key Differences:**

- **Hydrological Models** focus on water processes across larger areas (watersheds, river basins), considering rainfall, runoff, and groundwater flow (not investigated in this case).
- **Hydraulic Models** focus on water flow within specific channels or structures (rivers, pipes, canals), analysing water movement and pressure in those systems.

Both types of investigations are crucial for managing water resources, preventing floods, and designing infrastructure related to water systems.