PROVIDENCE WEST ROL 2

WATERWAY STRATEGY REPORT

VERSION 2

DesignFlow

Prepared for Stockland

November 2025

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1 INTRODUCTION

1.1 SITE

Development approval is currently being sought for the Reconfiguration of a Lot on land at 833-865 Ripley Road, South Ripley. The subject site is located on Lot 196 on SP157517. The Providence West ROL2 development area is located within a wider development zone, where several developments are currently either in planning or construction to the north. The site is presented in Figure 1.

1.2 PURPOSE

The current site consists of a cleared and grass drainage pathway with very few trees and some isolated pools and channels. Stockland propose to create a revegetated waterway corridor along the southern boundary of the site consisting of a series of continuous naturalised waterway channels. The channels will create a define bed and bank and move across the floodplain in an organic sinusoidal form.

The intent of the Providence West waterway is to establish a natural waterway feature inspired by Ipswich City Council's award winning 'Small Creek' project in the nearby Deebing Creek catchment. Stockland wish to build on this leadership by Council and deliver a similar waterway outcome for Providence West.

The following report presents the waterway strategy proposed for the Providence West ROL 2 by:

- Describing the current site and waterways
- Reviewing requirements of the planning scheme
- Presenting the approved waterway (refer Context Plan Approval DEV2012/283 and Development Approval 9820/2019/MAPDA/A)
- Presenting the new waterway design including design intent, design concept and integration with parkland.
- Outlining next steps in the design process

The waterway assessment and strategy has been completed generally in accordance with *PDA Guidelines No. 14 Environmental Values and Sustainable Resource Use* (EDQ, 2015) noting the existing approvals set the head of power for the site.



Figure 1: Locality plan (source: Nearmap)

2 SITE APPRAISAL

2.1 TOPOGRAPHY AND SITE DRAINAGE

Figure 2 shows the topography and drainage associated with the site.

The site is characterised by moderate to steep topography (10-15% typical) in the north half of the site with flat grades along the floodplain areas (1-3%) to the south and east. The majority of the development zone drains south off ridge lines and then east along the lower floodplain areas.

Drainage is characterised by sheet flow and then overland flow gullies in the steeper topography. On the floodplain conveyance occurs via ephemeral overland sheet flow in lower zones with some isolated areas of previous erosion creating disconnected ephemeral channels / ponds on the floodplain. A large external catchment enters the site from the south west and drains from west to east through the site along the floodplain alignment.

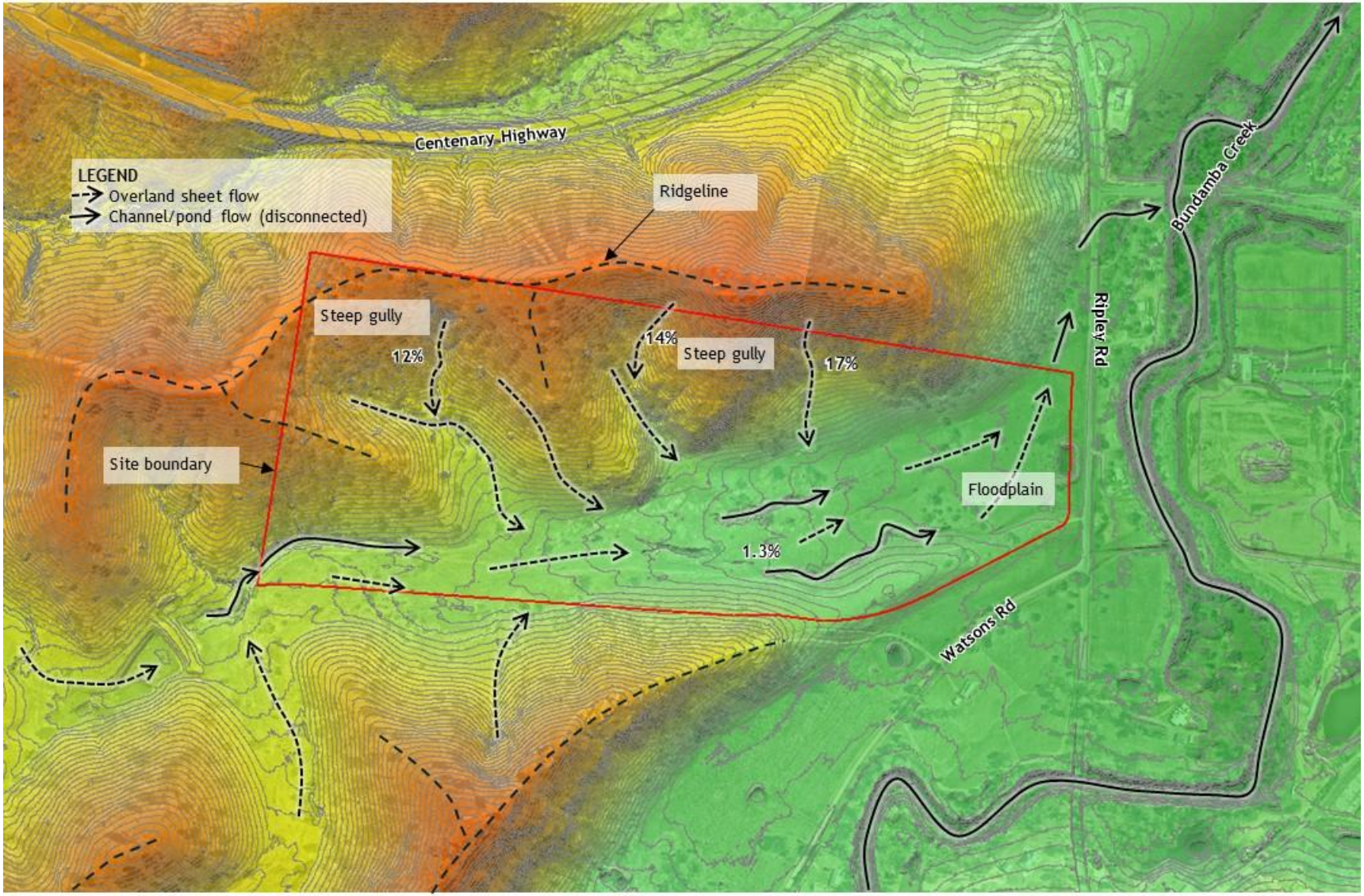


Figure 2: Existing topography and drainage

2.2 WATERWAY / MAIN DRAINAGE PATH

The state waterway mapping for the site is misleading so more accurate mapping of waterway channels was completed and presented in Figure 3.

The main drainage path through the site runs from west to east along the southern part of the development site. The drainage and associated floodplain are highly modified due to widespread historical clearance of vegetation, ongoing grazing practices and the presence of farm dams. The drainage path is characterised by the following:

- Sandy clay soils with fine material component which based on observations is likely dispersive. Fi
- Broad low level zone and floodplain with ephemeral grass-lined swales as flow paths.
- Disconnected and isolated pond/dams and eroded channels are located on the floodplain which are present due to farming works (to construct the dams) or erosion resulting from track crossings or other features. The following description is provided from upstream to downstream:
  - Upstream – Stable chain of ponds with vegetation separated by grass lined swales. Elongation of some pools indicates past channelisation or construction of dams by farmer. The value of this reach of channel is considered moderate, and the channels will be preserved.
  - Middle Upstream – Overland sheet flow with no defined channel and minimal vegetation, therefore waterway values are non-existent.
  - Middle - Channel incision occurring along the southern and northern banks of valley margin (i.e. floodplain) creating isolated reaches of defined channels. Several headcuts were noted within the chain of ponds reach indicating a level of instability. There is essentially no remnant vegetation associated with the channels other than isolated trees. The value of the existing channels is considered low.
  - Downstream - Broad floodplain with overland sheet flow with no defined channel, therefore waterway values are non-existent. A grass lined swale occurred to the northeast direction indicating a preferred flow path.

2.2.1 Soils

Soils samples were collected longitudinally within the drainage path and associated floodplain to provide an initial characterisation of in-situ soils, potential risks associated with soils (erosion, dispersivity, nutrients), and potential management approaches to mitigate identified risks. Sampling locations are illustrated in Figure 3 Soils are a mix of with a summary of findings provided below:

- Soils of a mix of sandy clay loams, light clays and sands with colours ranging from dark grey to pale brown

- All soils are alkaline (pH 7.2–9.2), indicating potential for carbonate accumulation and structural instability when disturbed.

- Electric conductivity (EC) values (38–522 µS/cm) show generally low salinity, but *Site 2* (0.4 m) exhibit moderate salt concentrations, which may exacerbate soil dispersion.
- Emerson Class values 1–4 indicate moderate to poor aggregate stability. When exposed near an intermittent waterway, these dispersive and fine-textured soils may form crusts, lose cohesion, and mobilise as sediment, posing risks to drainage infrastructure and water quality.
- Exchangeable Sodium Percent (ESP) is elevated at Site 2 indicating moderate sodic levels. Sites 1 and 3 are non-sodic but may still be susceptible to surface erosion due to weak structure or sandy composition.
- Low Ca/Mg ratios (<1) at Site 2 indicate magnesium dominance, which can contribute to clay dispersion and reduced aggregate strength.
- Soils at Sites 2 pose the greatest risk of structural degradation, dispersion, and erosion when disturbed, especially under fluctuating moisture near an intermittent waterway.
- Site 3 presents moderate to high erosion potential due to its coarse, unconsolidated sands and proximity to drainage paths.
- Site 1 is comparatively stable, though surface sealing and rill erosion could occur given the current lack of vegetation.

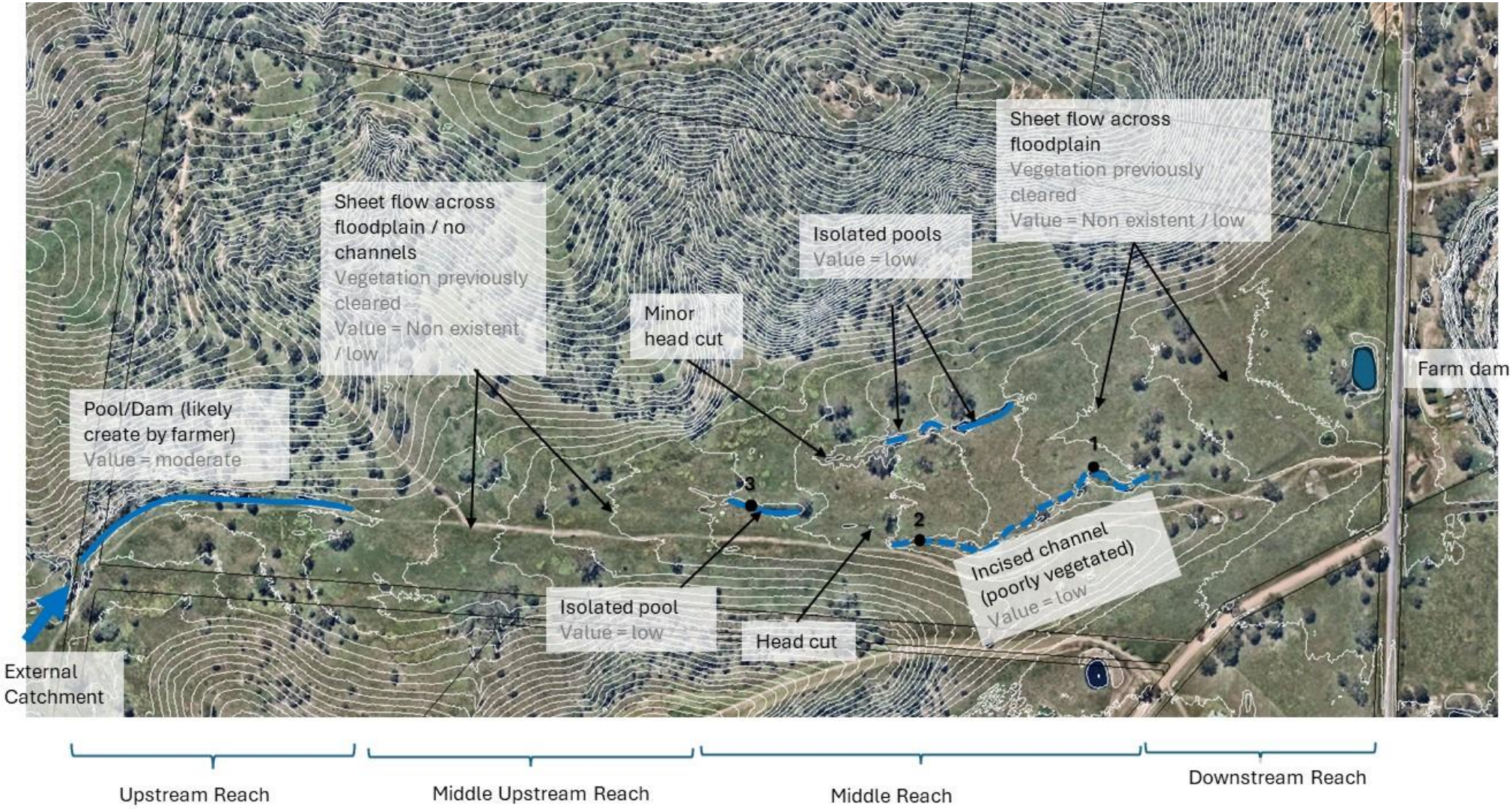


Figure 3: Existing waterway features, soils sampling locations, vegetation and values



Photo: Upper farm dam - channel



Photo: Upper middle sheet flow (no channel)





Photo: Middle isolated incised channel



Photo: Downstream floodplain (no channel)

3 RIPLEY VALLEY STRUCTURE PLAN

The Ripley Structure Plan is the fundamental planning guide for development within Ripley Valley, which include Providence west. An extract of the Structure Plan is provided in **Figure 4** and show there is one 'significant waterway' mapped through the Providence West site.

The following is noted:

- The mapping shows this waterway is mapped along the southern portion of the site adjacent to the future road (known as the Catalyst Road) and Watsons Road.

- The Structure Plan recommends a waterway corridor is provided of thirty (30) metres from the top of bank of other significant watercourses (i.e. a minimum sixty (60) metre wide corridor).

- The Structure Plan acknowledges the corridors can be design to provide the following functions:

  (A) areas of public open space that provide a mixture of passive and active recreation opportunities;

  (B) areas for the collection, treatment and conveyance of stormwater run-off; and

  (C) areas through which it may be necessary to establish some essential community infrastructure (e.g. sewers, roadways etc).



Figure 4: Ripley Valley Structure Plan Extract

4 APPROVED CONTEXT AND DEVELOPMENT PLAN

The following approvals exist for the Provide West ROL2 site:

- Context Plan (Material Change of Use) - DEV2012/283 (latest 14 November 2023)
    - Approved Documents
        - *Amex Ripley project (ARP) West Flood Study* (Cardno, 27 June 2013) – Condition 11
        - *Site Based Stormwater Quality Management Report for proposed development at 813-843 Ripley Road, South Ripley 4306 for AMEX Corporation Pty Ltd* (ETS Engineering, 28 May 2013) – Conditions 11
        - *Ripley Valley Development Scheme and PDA guideline* – Condition 13
    - Supporting Documents
        - *MCU Open Space Plan* (Cardno, 27 July 2012)
- Development Approval 9820/2019/MAPDA/A (latest 26 July 2021)
    - Approved Documents
        - *Amex Ripley project (ARP) West Flood Study* (Cardno, 27 June 2013) – Condition 11
        - *Site Based Stormwater Quality Management Report for proposed development at 813-843 Ripley Road, South Ripley 4306 for AMEX Corporation Pty Ltd* (ETS Engineering, 28 May 2013) – Conditions 11

Relevant waterway details of the approval are described in the following sections.

4.1 WATERWAY CORRIDORS

The following figures discussed below:

- **Figure 5** presents the waterway and public open space plan for Providence West in the supporting document *MCU Open Space Plan* (Cardno, 27 July 2012)
- **Figure 6** presents the approved stormwater quality management plan for Provide West

- **Figure 7** presents the approved corridor widths including parkland and stormwater management and estimates of the corridor widths excluding the parkland/stormwater management.

The following comments are provided regarding the approved plans:

- The existing disconnected ponds and incised channels are not preserved. A new single low flow channel is proposed through the waterway corridor.
- A Feature Neighbourhood Park and Neighbourhood park are proposed within the corridor. The Feature Neighbourhood Park is a large area within the corridor.
- A lake is proposed/approved at the downstream end of the corridor adjacent to Ripley Road.
- Stormwater treatment systems are proposed along the edge of the corridor (within the corridor) at six (6) locations.
- Waterway corridors vary in width from 40m up to 200m including the parkland and stormwater treatment systems as marked in **Figure 7**. The waterway corridor width excluding the parkland and stormwater treatment systems is smaller at approximately 40m to 160m.



Figure 5: waterway and public open space



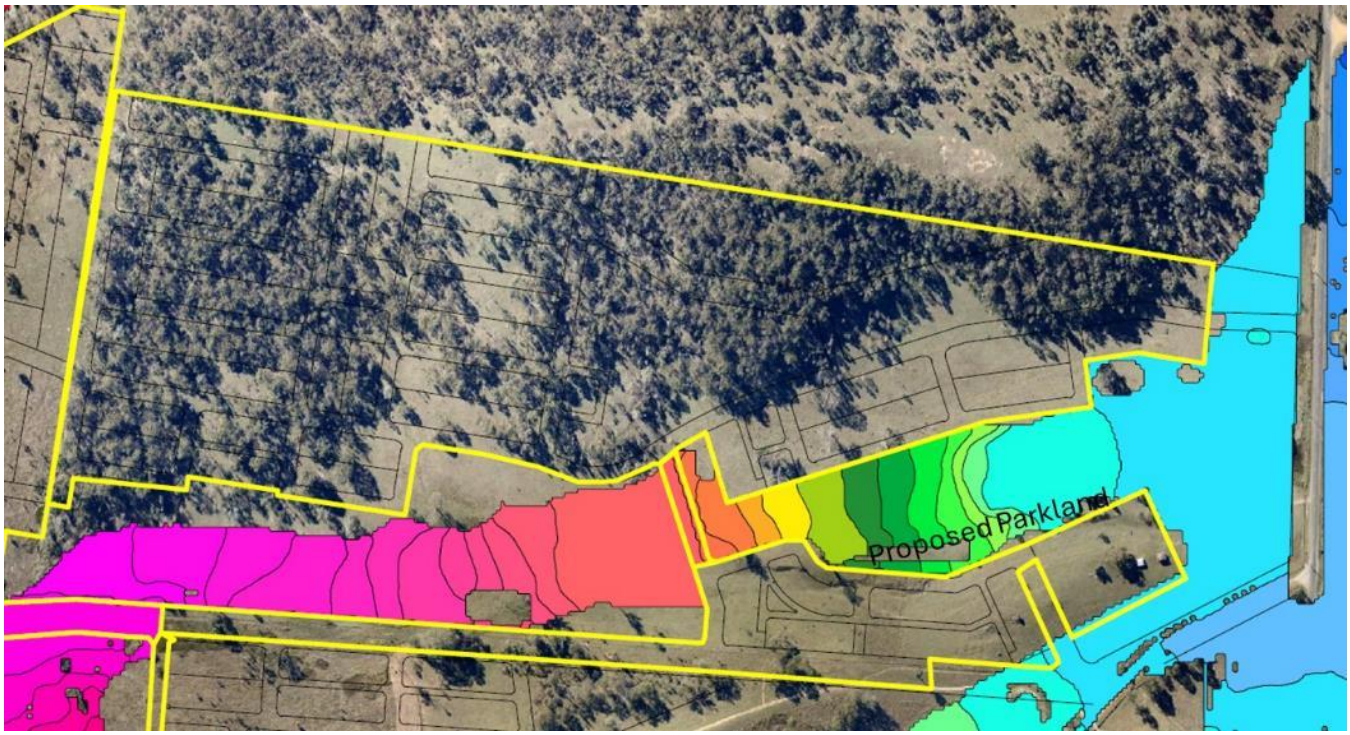
Figure 6: Approved Stormwater Quality Management



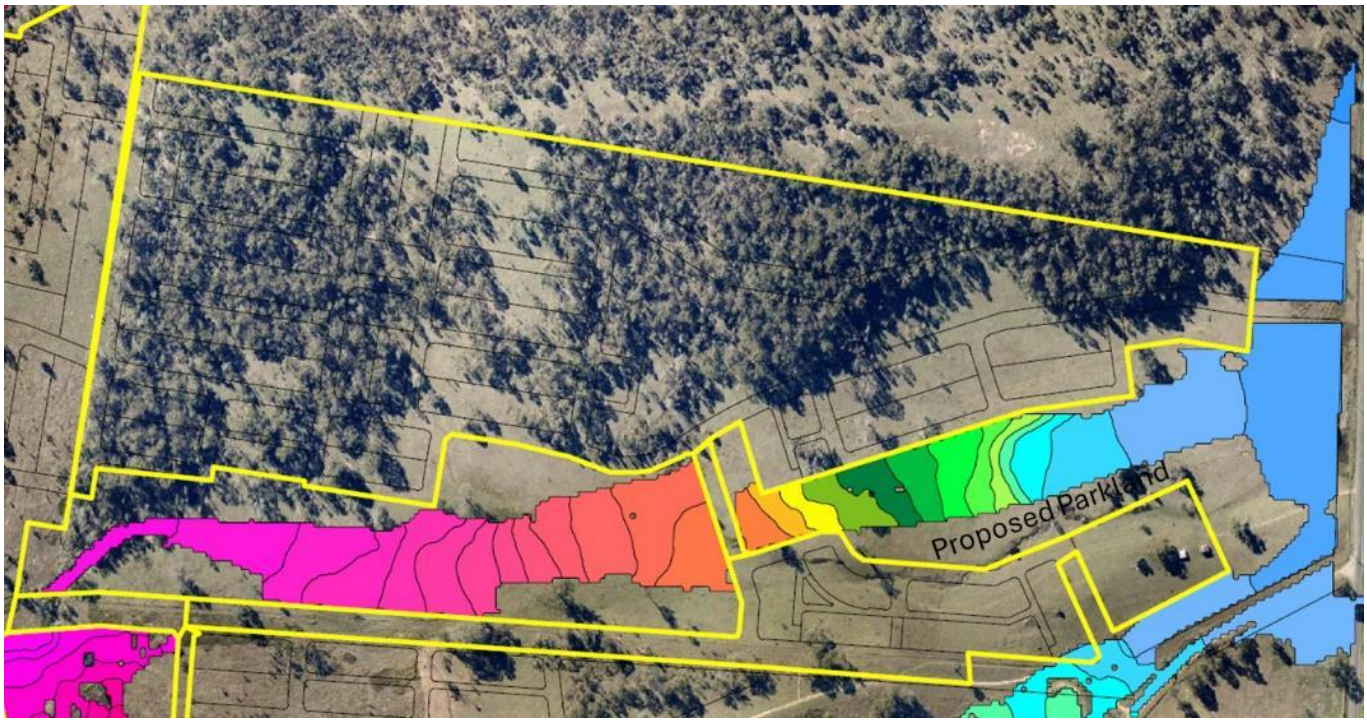
Figure 7: Approved Corridor Widths

4.2 FLOODING

Figure 8 shows the approved flooding for Providence West. The figures show that the whole corridor downstream of the central road crossing is inundated in the 1% AEP including the proposed Feature Neighbourhood Park. During the 50% AEP, less inundation occurs but still a portion of the Feature Neighbourhood Park appears to flood.



1% AEP



50% AEP

Figure 8: Approved flood study – flood extents

5 PROPOSED WATERWAY CONCEPT DESIGN

5.1 INTENT (SMALL CREEK)

The intent for the Providence West waterway is similar to Ipswich City Council's award winning 'Small Creek' project in the nearby Deebing Creek catchment. The Small Creek project created a naturalised waterway within a previously cleared channel. The waterway formed part of Councils Voluntary Stormwater Offset Program to provide stormwater quality treatment while also delivering important ecological and recreational outcomes for the region.

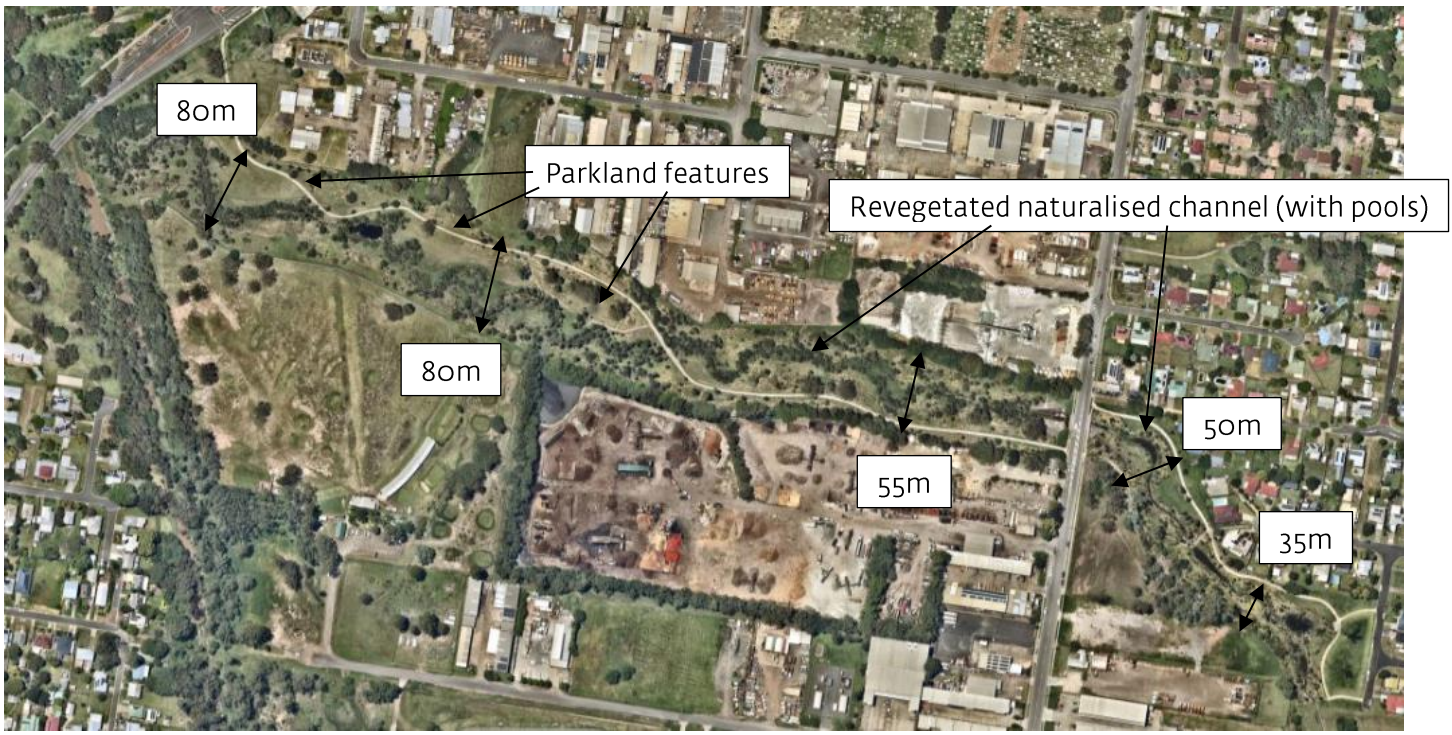
Stockland wish to build on this leadership by Council and deliver a similar waterway outcome within a greenfield development. **Figure 9** shows the layout of Small Creek with photos provided below.

Key features which Stockland wish to replicate from Small Creek include:

- Vegetated waterway corridor involving the establishment of floodplain, riparian and terrestrial vegetation (trees, shrubs and groundcovers) endemic to the area.
- Waterway corridor width varies between 35m to 80m with this corridor width including a number of parkland features.
- Where practical existing trees will be preserved within the corridor.
- Low flow channels and perennial/ephemeral pools which provide habitat for fish and other flora / fauna both aquatic and terrestrial.
- Provision of stormwater treatment function which is achieved through vegetation and interaction with stormwater flows (i.e. Small Creek is a stormwater quality offset project which means the system provides stormwater pollutant load removal).
- Management of dispersive soils and channel scour protection at certain locations.
- Colocation with parklands and pathways for passive recreation and visual amenity.
- Provision of shade and other urban heat island benefits within the future urban zone.

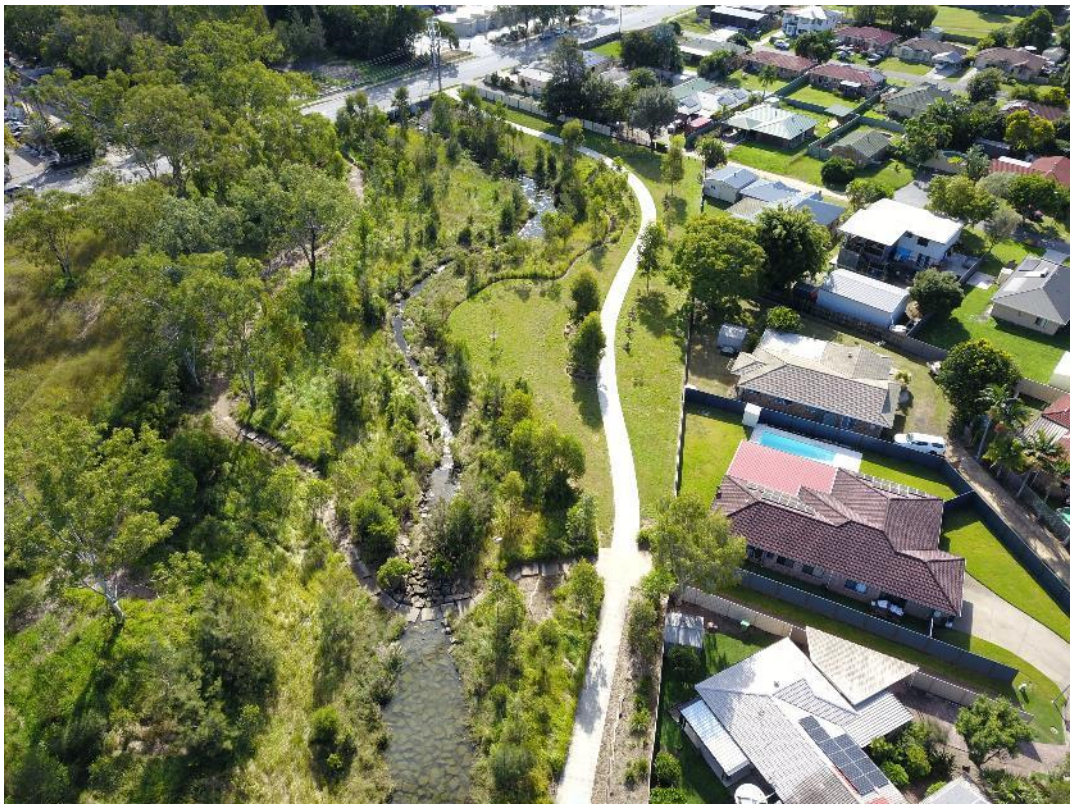


Year 2017



Year 2025

Figure 9: Small Creek Layout





Photos: Small Creek, Deebing

5.2 WATERWAY CONCEPT DESIGN

The proposed new waterway is presented in Figure 10 and Figure 11 with more detailed functional plans provided in Appendix A. The key features of the design are summarised below:

- The waterway is to be located to the southern portion of the development site parallel with the Future Catalyst Road. This is consistent with the Ripley Valley Structure Plan.

- The waterway and associated parklands will create an important natural landscape feature along the Catalyst Road. It will set the scene for the remainder of Providence west which will be designed around the waterways.

- Portions of the existing isolated channels/pools will be retained, managed (for dispersive soils) and revegetated.

- New low flow channels will be created along the corridor to join the isolated channels and pools. The final low flow channel will comprise reaches of analogous connected and anabranching waterway(s) with natural features. The channels will be treated for dispersive soils, topsoiled and revegetated.

- Habitat pools will be created along the length of the low flow channels for fish and other fauna.

- The retained portion of the floodplain will be revegetated with a dense structure of riparian and floodplain trees and groundcovers. Shrubs will also be adopted in more natural areas but restricted at pedestrian crossings and other zones where public interaction occurs (i.e. crossings).

- Recreation parklands have been collocated with the waterway corridor. This is consistent with the Ripley Structure Plan recommendations (refer Section 3). Collocating the park and waterway corridor will dramatically increase the passive recreation opportunities for visitors and maximise the visual amenity of the corridor.

- Stormwater treatment systems are collocated with the waterway corridor (i.e. along the edge of the corridor) as well as per the recommendations in the Ripley Structure Plan (refer Section 3) and the previous approvals for the site (refer Section 4).

The new design represents a significant improvement on the previously approved design for the following reasons:

- Waterway corridor width – The total width of the waterway corridor (including the parklands and WSUD) is larger than the previous design in most locations. The waterway corridor net of parkland and WSUD has a logical increase in

width with movement downstream. The previous design choked the waterway in the middle to lower reaches, potentially causing poor geomorphic and other environmental outcomes. This restriction has been removed in the current design.

- Greater visual connection – Moving the waterway corridor to abut the Future Catalyst Road significantly increase the visual amenity of the waterway for residents and passersby. The waterway will become and prominently landscape feature for the South Ripley area.

- Parkland immunity – A much greater area of recreational parkland is flood free compared to the approved design. This is a significant outcome for Stockland and Council. Further description is provided below.



Figure 10: Providence West Waterway – Rendered Layout

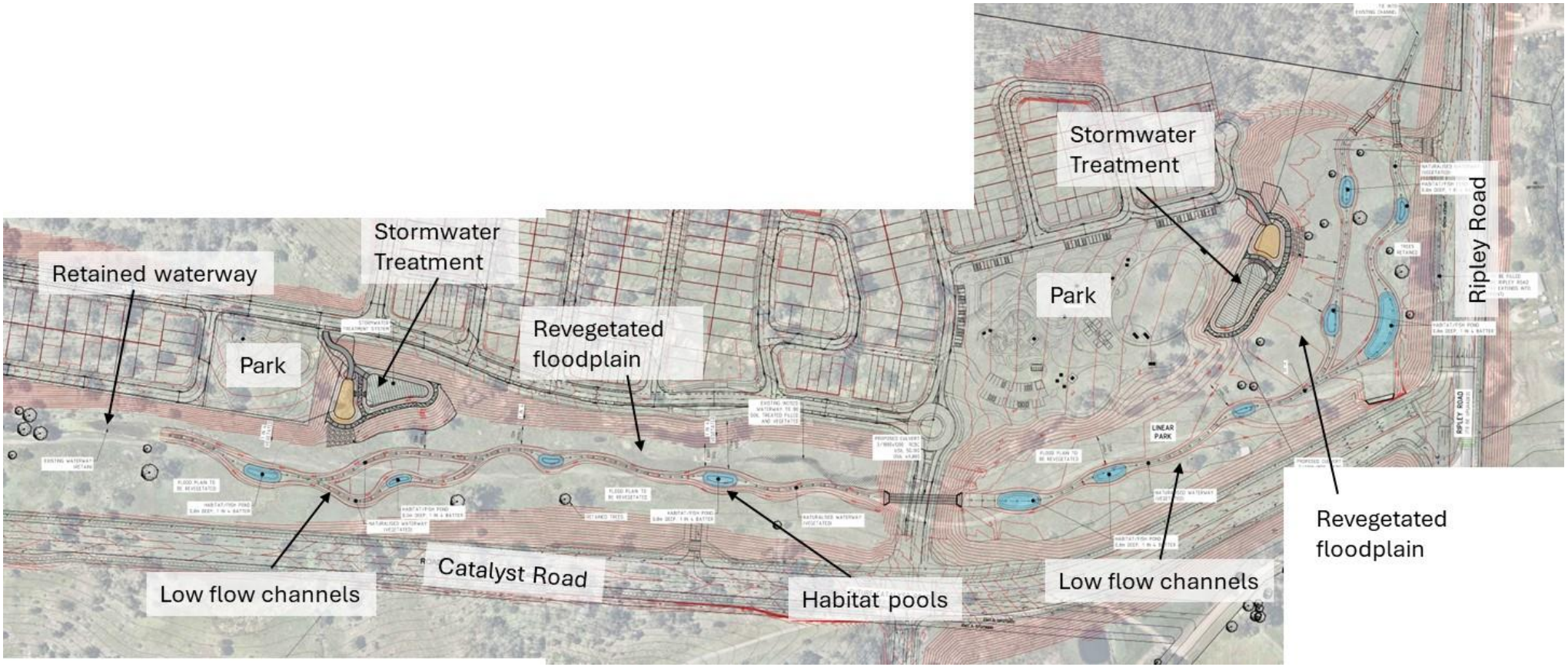
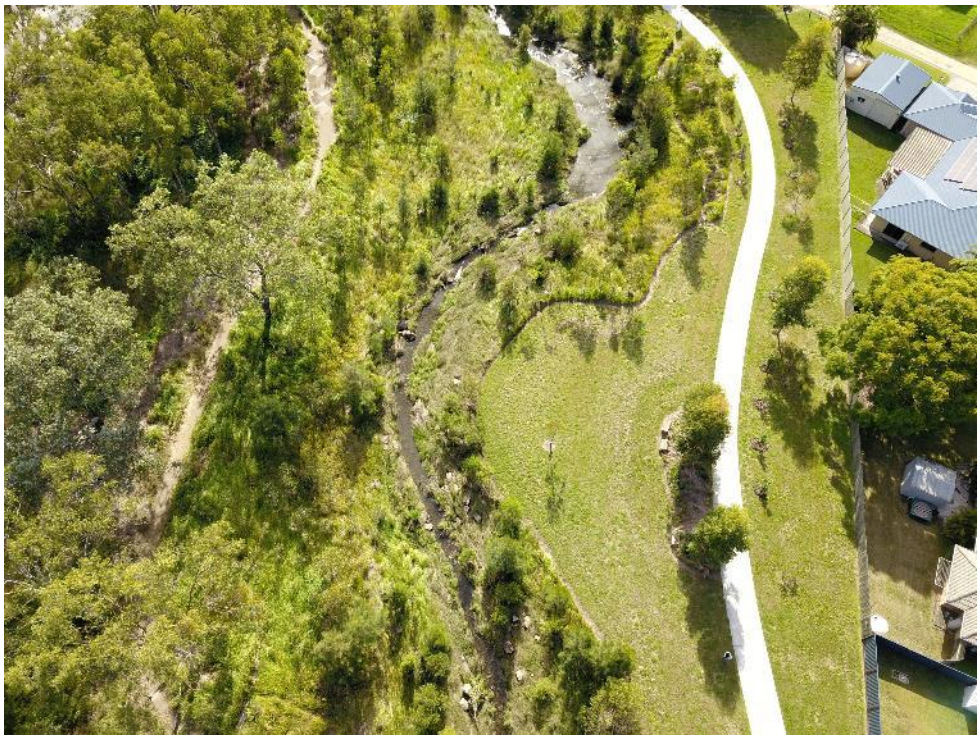


Figure 11: Providence West Waterway – Functional Layout





Example Photos: Small Creek, low flow pool (Council project)



Example Photos: Aura low flow channel (Stockland project)



Example Photos: Newport (Stockland project)

5.3 CORRIDOR WIDTHS

Figure 12 provides the corridor widths delivered by the design including:

- Total width including waterway, parkland and WSUD
- Width excluding parkland and WSUD
- Minimum offsets from low flow channel to toe batter - This is not a mandatory requirement under PDA guidelines requirements but has been provided in consultation with Council. The width of the offset increases with movement downstream.

The proposed design achieves the requirements of the Ripley Structure Plan (60m corridor including parkland and stormwater management function). In fact, the design achieves the 60m excluding the parkland and stormwater management function. Furthermore, the proposed design represents a significant improvement on the corridor widths designed in the approved in the Context Plan (Material Change of Use) - DEV2012/283 (latest 14 November 2023) and Development Approval 9820/2019/MAPDA/A (latest 26 July 2021) as outlined in Section 4.1.



Figure 12: Providence West Waterway – Corridor Widths

5.4 FLOODING EXTENT AND VELOCITY

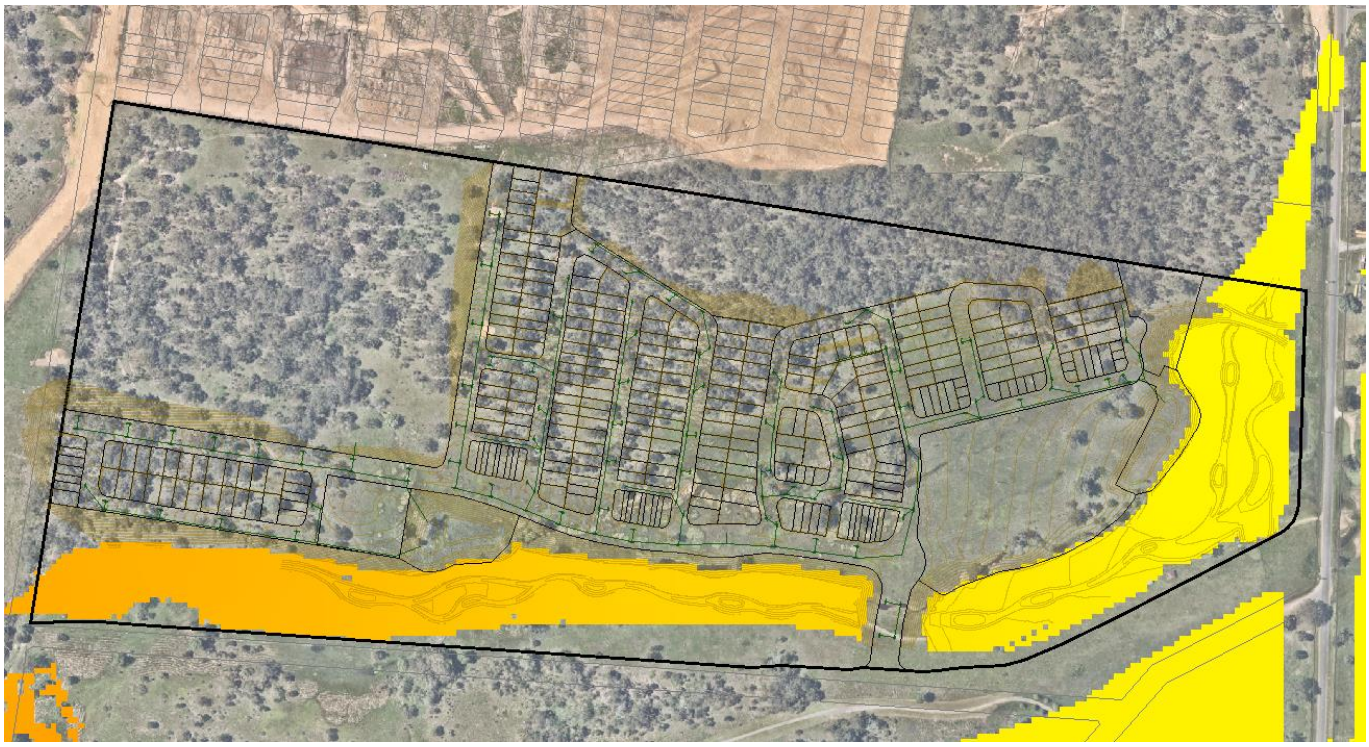
Figure 13 provides the flood extent for the 1% AEP and 50% AEP events. A few items to note:

- The flooding is confined to the main corridor in the 1% AEP
- The proposed low flow channel works act to create a braided flow during the 50% AEP and small events.
- A significant portion of the parkland (i.e. >3ha or >70%) remains flood free in the new design. This is a significant improvement compared to the approved design which had only ~20% of the parkland flood free.

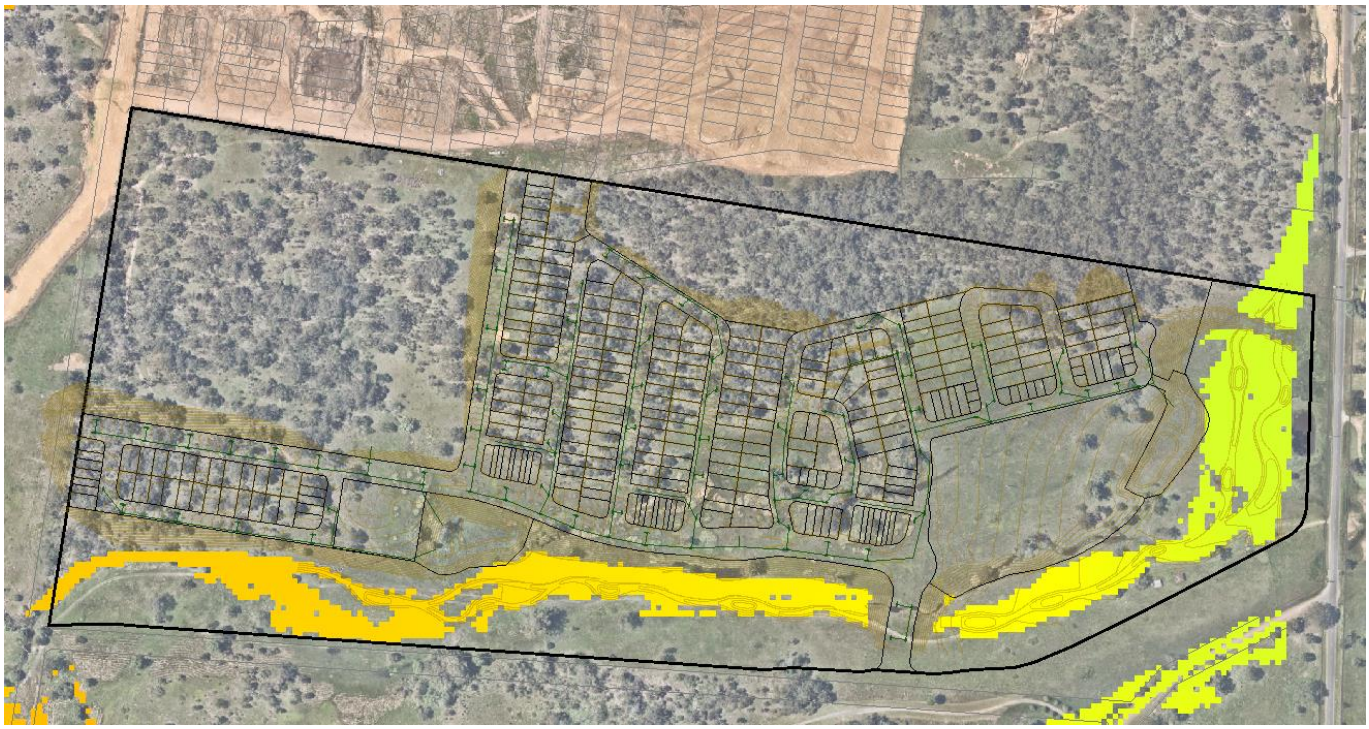
Figure 14 provides the flood velocities for the 1% AEP and 50% AEP events. A few items to note:

- Velocity during the 50% AEP is less than 0.5m/s
- Velocity during the 1% AEP is less than 1.0m/s
- Flow velocities are well within suitable ranges for a stable vegetated waterway (refer Queensland Urban Drainage Manual).
- Note that bed shear is appropriate for assessing the erosion potential for bare soil but not for well vegetated waterways. Velocity provides a better parameter for assessment for vegetated waterways generally.

The updated waterway corridor design manages flood flows and velocities effectively and is a significant improvement on the approved design.

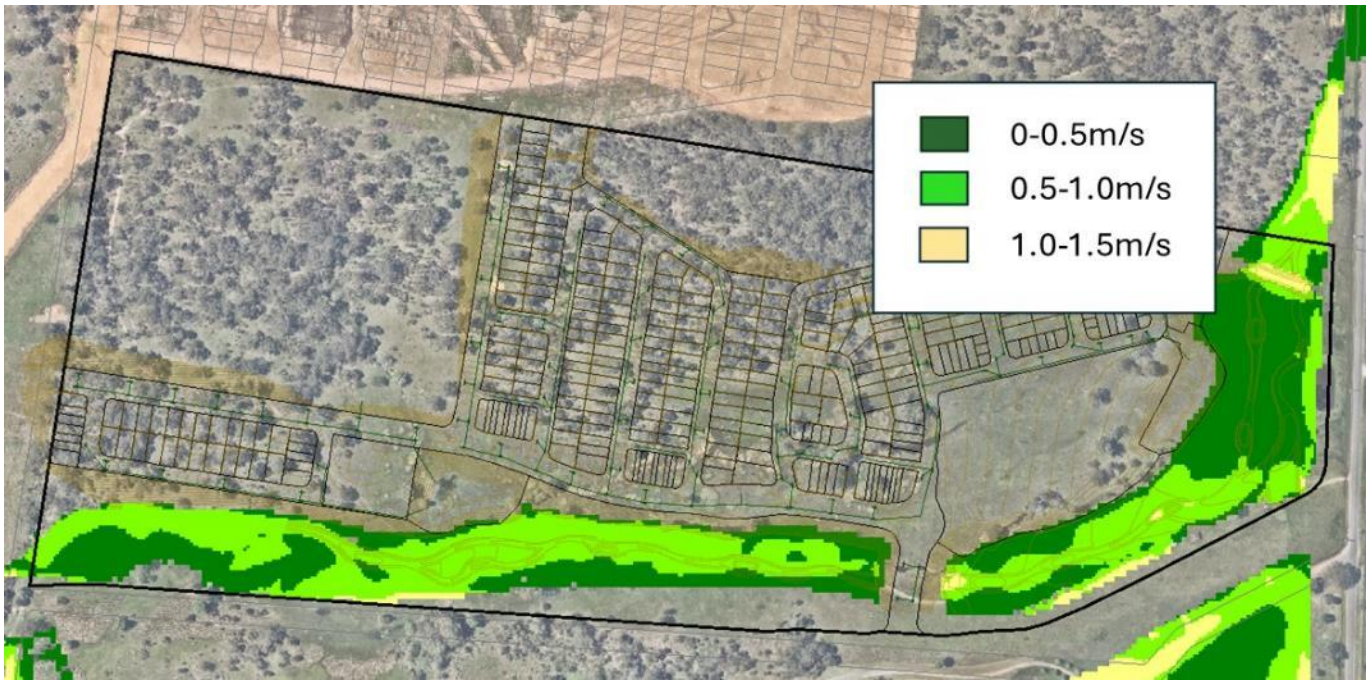


1% AEP

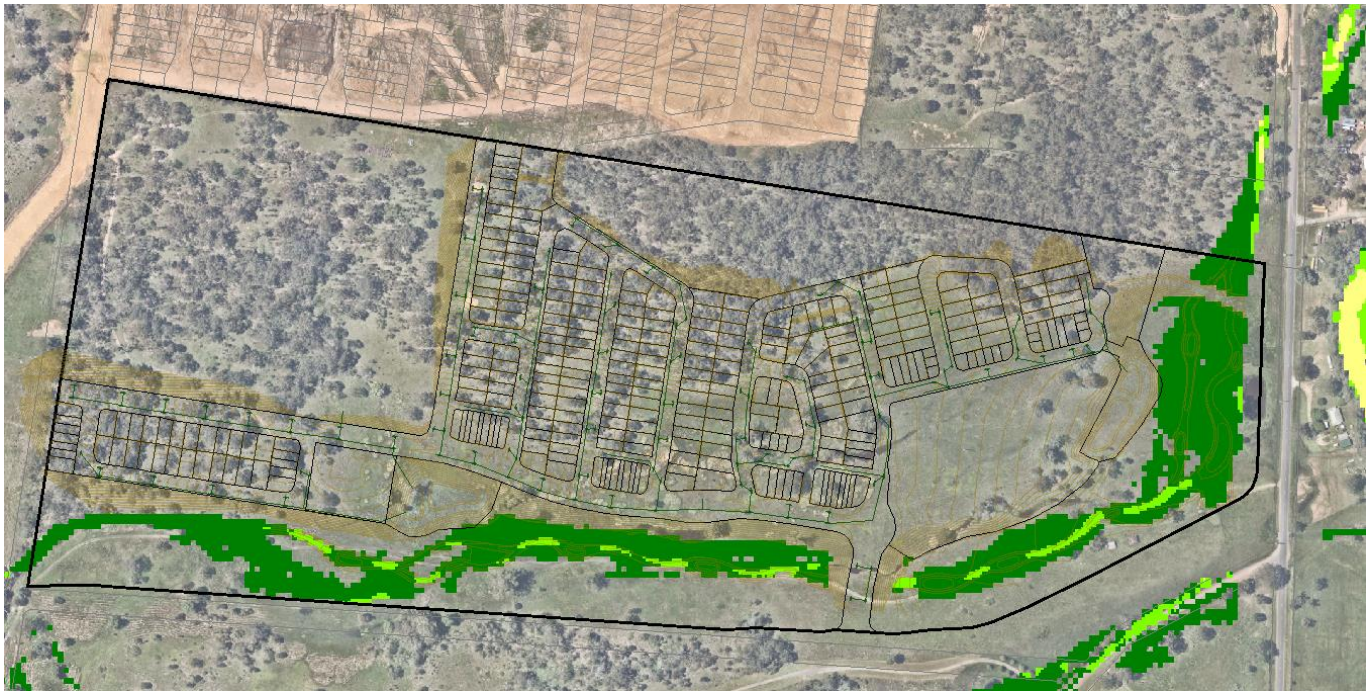


50% AEP

Figure 13: Providence West Waterway – Flood Extents



1% AEP



50% AEP

Figure 14: Providence West Waterway – Flow Velocity

6 DESIGN DEVELOPMENT

As part of design development and detailed design, the following is being completed to inform the design:

- Soils assessment – Soil testing will be completed to confirm the dispersive and agronomic characteristics of the soils and identify amelioration requirements. This will be used to inform the design and specifications.

- Refined geomorphic assessment – A preliminary geomorphic assessment has been completed to inform the waterway design presented in this report. As part of design development, a refined geomorphic assessment will be completed to finalise the waterway shape, form and specification. This will involve review of the soils assessment, review of the flood modelling results to assess the bed shear influence on planting and stabilisation design and refining the design based on best practice, nature based waterway design principles.

- Waterway barrier application – An application will be made to the State Government in accordance with the State Code 18. The proposed waterway design will greatly improve waterway connection and the area of fish habitat, so we expect the application to be successful.

APPENDIX A: WATERWAY CORRIDOR FUNCTIONAL LAYOUT

DATE PLOTTED: 3 November 2025 BY: STEPHEN TOLPUTT

NORTH

STORMWATER TREATMENT SYSTEM

PARK

1 IN 4 VEGETATED

10m (MIN.)

1 IN 4

10m (MIN.)

HABITAT/FISH POND
0.8m DEEP,
1 IN 4 BATTER

30m (MIN.)

15m (MIN.)

EXISTING WATERWAY (RETAIN)

FLOOD PLAIN TO BE REVEGETATED

HABITAT/FISH POND
0.8m DEEP, 1 IN 4 BATTER

HABITAT/FISH POND
0.5m DEEP, 1 IN 4 BATTER

NATURALISED WATERWAY (VEGETATED)

FLOOD PLAIN TO BE REVEGETATED

ROAD

FUTURE CATALYST ROAD

JOINS DRG. NO. SK17

15 0 15 30 45 60 75m

SCALE 1:750 @ A1 SCALE 1:1 500 @ A3

REVISION	DESCRIPTION	DRAFTED INITS	DRAFTED DATE	APPROVED INITS	APPROVED DATE
C	ISSUE FOR APPROVAL	S.T.	27.10.25	S.L.	27.10.25
B	ISSUE FOR APPROVAL	S.B.Y.	19.10.25	S.L.	19.10.25
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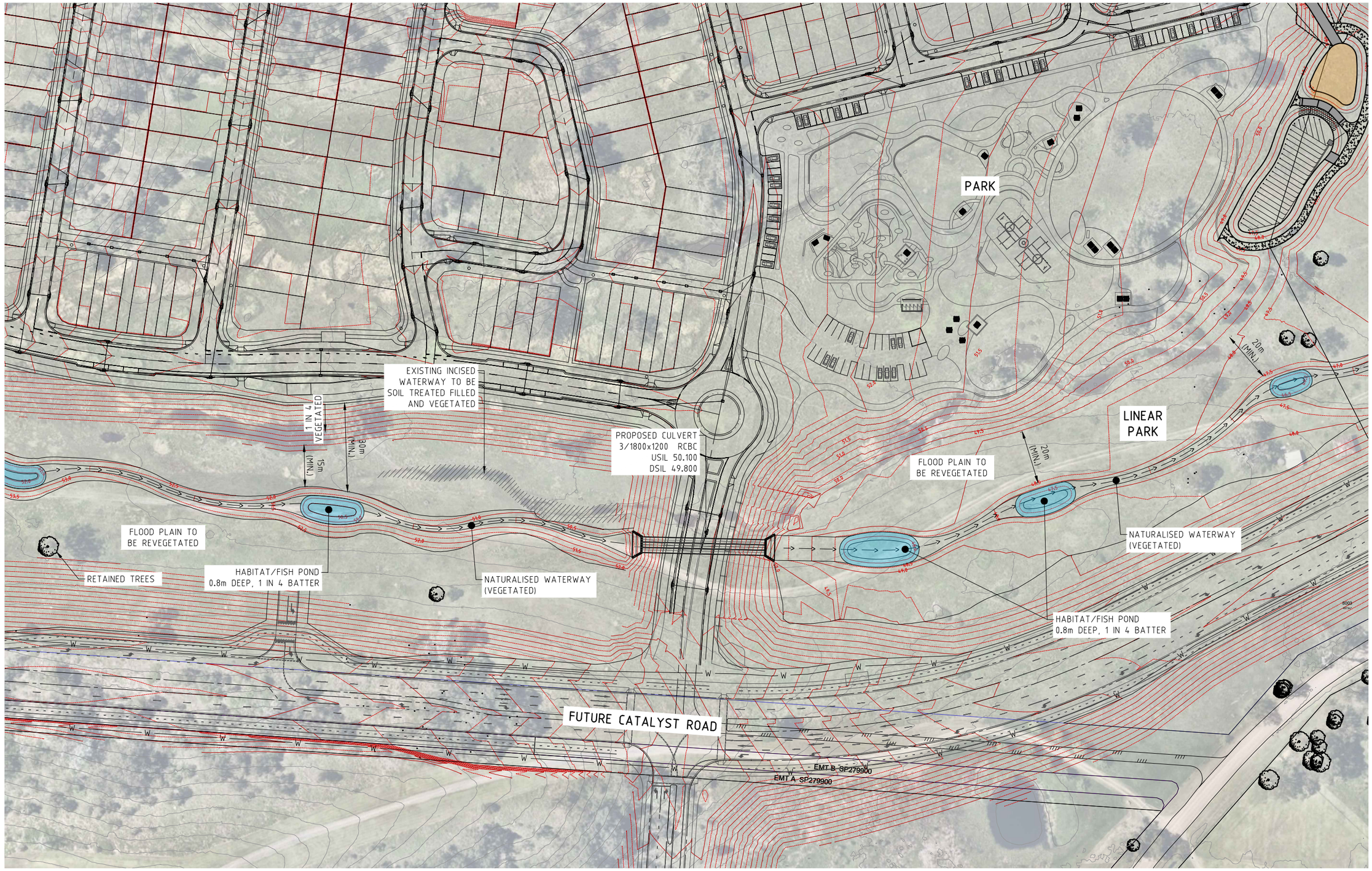
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DESIGNED: S.L. DATE: 27.10.2025
SCALE: 1 : 750 A1

PROJECT: PROVIDENCE WEST
DRAWING TITLE: WATERWAY CONCEPTUAL DESIGN
WATERWAY LAYOUT - PLAN 1 OF 3
PROJECT No: 4540 DRAWING No: SK16 REVISION: C

XREF:
FILE: C:\JOBS\DESIGNFLOW\4540 - PROVIDENCE WEST\ACAD\4540-SK16 TO SK18 (WATERWAY).DWG

DATE PLOTTED: 3 November 2025 BY: STEPHEN TOLPUTT



15 0 15 30 45 60 75m

SCALE 1:750 @ A1 SCALE 1:1 500 @ A3

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SCALE: 1 : 750 A1

PROJECT: PROVIDENCE WEST
DRAWING TITLE: WATERWAY CONCEPTUAL DESIGN WATERWAY LAYOUT - PLAN 2 OF 3
PROJECT No: 4540 DRAWING No: SK17 REVISION: C

XREF:
FILE: C:\JOBS\DESIGNFLOW\4540 - PROVIDENCE WEST\ACAD\4540-SK16 TO SK18 (WATERWAY).DWG

DATE PLOTTED: 3 November 2025 BY: STEPHEN TOLPUTT

NORTH

TIE INTO EXISTING CHANNEL

BUNDAMBA CREEK

NATURALISED WATERWAY (VEGETATED)

HABITAT/FISH POND 0.8m DEEP, 1 IN 4 BATTER

96 SP157517

RIPLEY ROAD

TREES RETAINED

DAM TO BE FILLED (FUTURE RIPLEY ROAD BATTER EXTENDS INTO FOOTPRINT)

STORMWATER TREATMENT SYSTEM

PARK

25m

25m (MIN.)

HABITAT/FISH POND 0.8m DEEP, 1 IN 4 BATTER

NATURALISED WATERWAY (VEGETATED)

20m (MIN.)

HABITAT/FISH POND 0.8m DEEP, 1 IN 4 BATTER

1 IN 4 VEGETATED

FLOOD PLAIN TO BE REVEGETATED

RIPLEY ROAD (TO BE UPGRADED)

PROPOSED CULVERT 7/2100x1800 RCBC USIL 46.000 DSIL 45.800

JOINS DRG. NO. SK17

15 0 15 30 45 60 75m

SCALE 1:750 @ A1 SCALE 1:1 500 @ A3

REVISION	DESCRIPTION	DRAFTED		APPROVED	
		INITS	DATE	INITS	DATE
C	ISSUE FOR APPROVAL	S.T.	27.10.25	S.L.	27.10.25
B	ISSUE FOR APPROVAL	S.B.Y.	19.10.25	S.L.	19.10.25
A	PRELIMINARY ISSUE - NOT FOR CONSTRUCTION	S.B.Y.	14.10.25	S.L.	14.10.25

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Approved RPEQ Date

CLIENT	STOCKLAND
DRAWN / DATE	S.B.Y. / S.T. — 27.10.2025
DESIGNED / DATE	S.L. — 27.10.2025
SCALE	1 : 750
	A1
PROJECT	PROVIDENCE WEST
DRAWING TITLE	WATERWAY CONCEPTUAL DESIGN WATERWAY LAYOUT - PLAN 3 OF 3
PROJECT No	4540
DRAWING No	SK18
REVISION	C

XREF:
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