PRECINCT 5 - BALLAN

STORMWATER MANAGEMENT STRATEGY
16/1/2024

PREPARED FOR WEL.CO

This report has been prepared by the office of Spiire:

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Issue Date	Rev No	Authors	Checked	Approved
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29/06/2023	B	C Barros	T Cousland	T Cousland
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15/1/2023	D	C Barros	T Cousland	K. Wilkinson

Spiire Job Number: 310024

Citation: Spiire 2024, PRECINCT 5 - BALLAN Report for WEL.CO.
Authors: C Barros Spiire Australia Pty Ltd. Project Number 310024

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1. INTRODUCTION

Spiire has been engaged by Wel.Co to produce a stormwater management strategy (SWMS) to rezone the precinct which includes the future development currently referred to as “The Cedar”. This report details the drainage strategy for the current Melbourne Water (MWC) Drainage Service Scheme (DSS) in order to assist with the rezoning application of the entire precinct 5 area. The vast majority of the DSS is comprised of several parcels of land controlled by Wel.Co making up “The Cedar” development, which is located on Old Melbourne Road, Ballan. The entire precinct area is shown in the green hatch in Figure 1. The red hatch shows the extent of the proposed “The Cedar” development, which makes up the majority of the precinct.

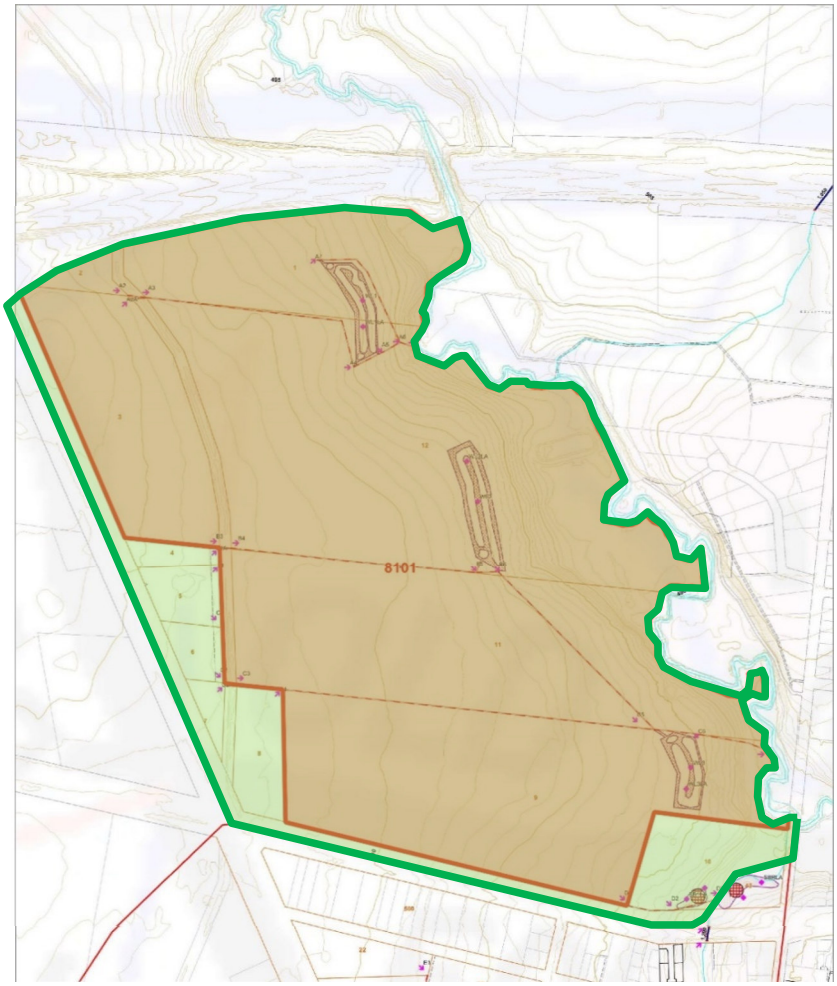

Figure 1: Precinct Extents (green) and The Cedar extents (red) overlayed on the DSS

Overall, this strategy will support the rezoning application and will form the basis of drainage design as the precinct proceeds to further planning phases. The SWMS aims to provide a formal drainage concept for precinct 5 to adequately address conveyance, capture and stormwater treatment requirements.

1.1 LOCATION

The site is located over several parcels at Old Melbourne Road, Ballan, approximately 70km west of Melbourne.

The precinct area is situated on approximately 98.5 ha of historically agricultural land. The land generally grades from east, ultimately draining towards Werribee River which forms the eastern boundary of the site.

2. EXISTING SITE CONDITIONS

2.1 EXISTING TERRAIN

The area falls from west to east towards the Werribee River with an escarpment above the river floodplain located along in the east of the property. Current site conditions are shown in Figure 2. The Werribee River 1% AEP (Average Exceedance Probability) flood extent is also shown, which does not impact future development within the site.

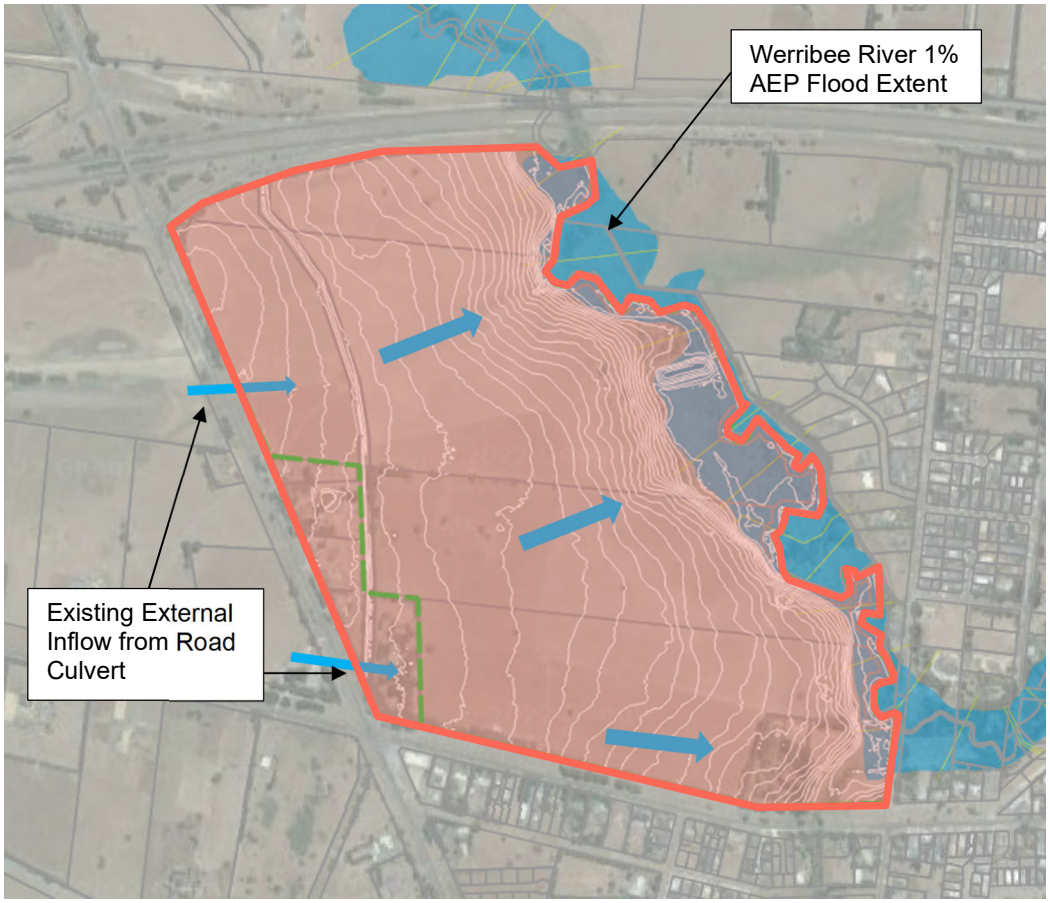

Figure 2: Existing Site Conditions at Precinct 5 (red outline)

3. CURRENT PRELIMINARY DRAINAGE STRATEGY

3.1 CURRENT MELBOURNE WATER DSS

The precinct site is located within Melbourne Water's Ballan North West DSS (8101) as shown in Figure 3. The current DSS stipulates the requirement for three wetlands each with sediment ponds. Early advice from Melbourne Water indicates that no retardation is required in the 1% AEP storm event, however smaller storm events are required to be controlled by the drainage assets.

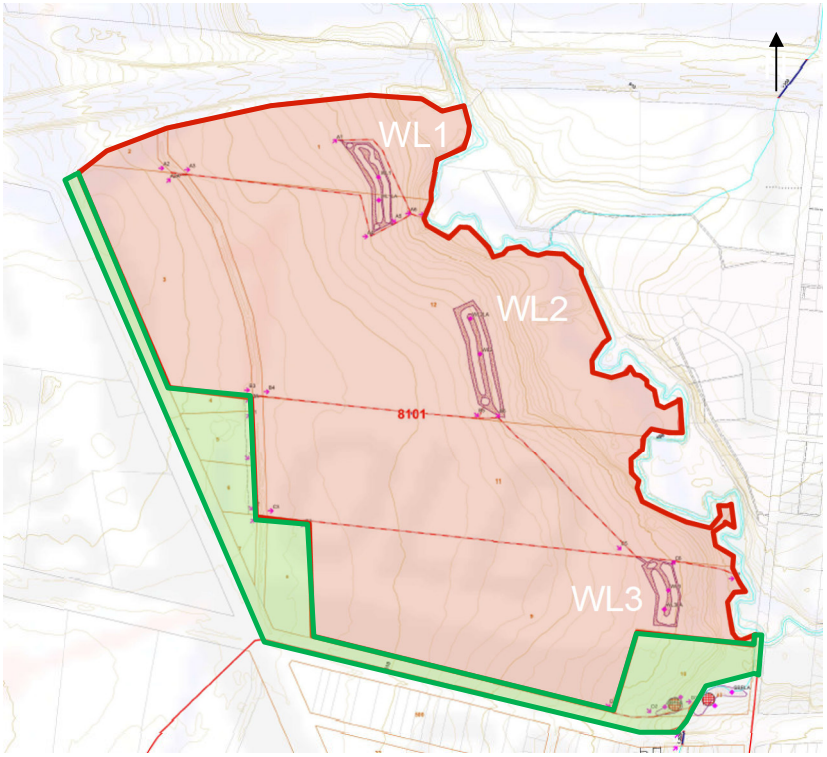

Figure 3: Melbourne Water's Ballan North West DSS. Subject Site (Red), External Sites (Green)

3.2 DEVELOPER CONTRIBUTIONS

The Melbourne Water Drainage Scheme system requires that developers pay monetary contributions for the land they intend to develop. The purpose of Scheme contributions is to enable delivery of centralised, major drainage infrastructure for the whole catchment. The contribution rates are to be paid for both hydraulic and water quality infrastructure. A drainage agreement usually includes the payment of drainage contributions, where a property is being developed. These contributions are used to recover the cost of constructing drainage works such as:

- Main drains, retarding basins, waterway improvements and flood mitigation works that will mitigate hydraulic impacts of the development/subdivision.
- Wetlands and Water Sensitive Urban Design WSUD elements to mitigate stormwater quality risks to Melbourne Water's drainage system.

The contributions are based on the increased load to the drainage system created by the development. The site in question is located within Melbourne Water's Ballan North-west DS (8101) Melbourne Water advises that the current residential contribution rates are:

- $80,899/ha, comprising of a hydraulic charge of $40,295/ha and a stormwater quality charge of $40,604/ha (as of Jan 2024)

3.3 DEVELOPMENT MASTERPLAN

The current development masterplan for the precinct has been developed by Patch Design+Plan is shown in Figure 4.

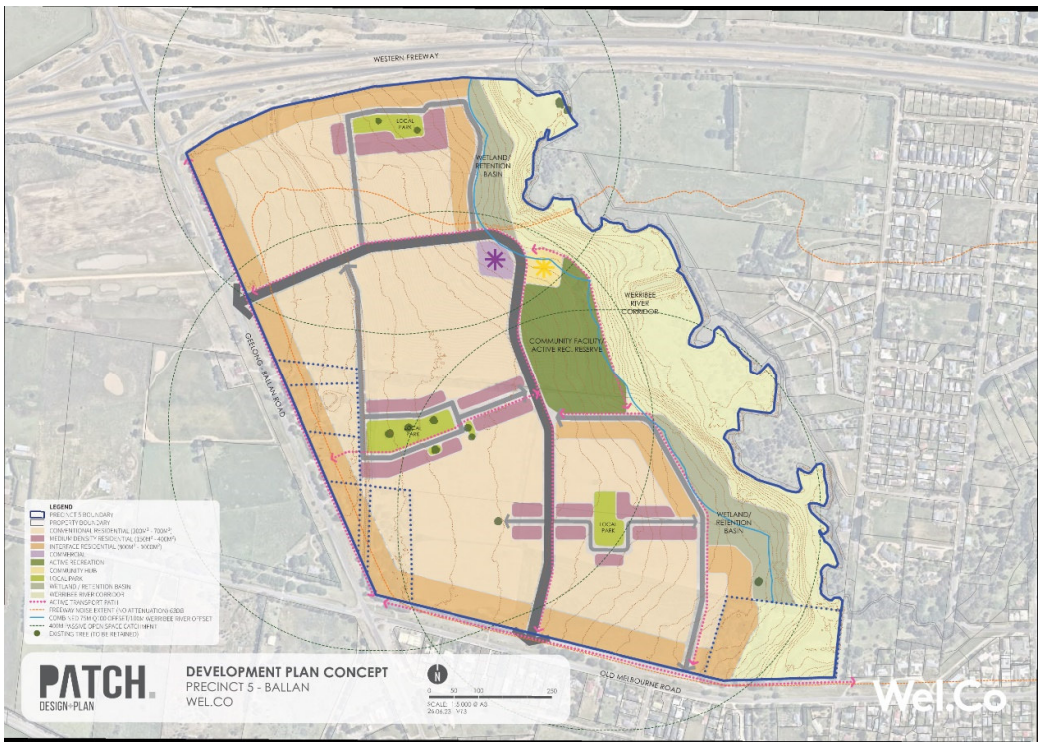

Figure 4: Current Development Masterplan

3.4 PROPOSED DRAINAGE STRATEGY

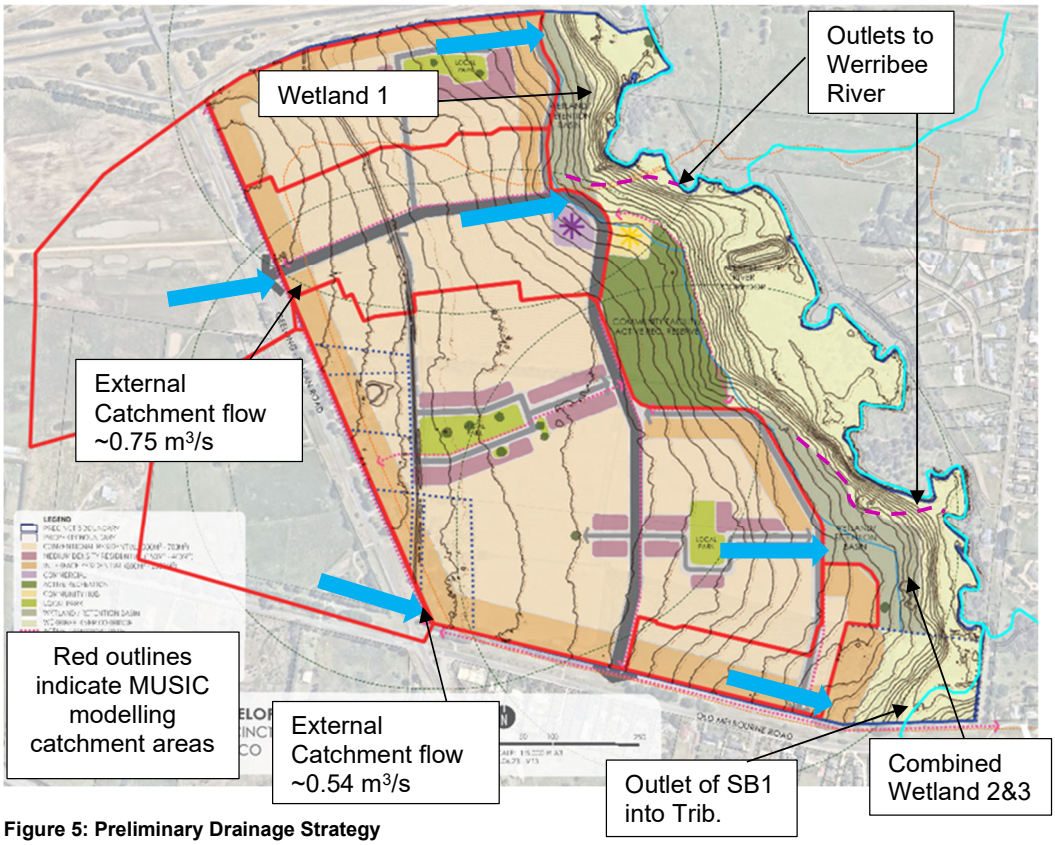

Figure 5: Preliminary Drainage Strategy

Figure 5 illustrates the layout of the proposed drainage strategy for the precinct site. The strategy proposes to modify the Melbourne Water DSS by combining two of the water quality assets (WL2 and WL3) into a single asset at the south-east corner of the site. This merging of assets is to provide more efficiency in the reserve area required to provide water quality treatment.

As per the DSS, two outfalls to the Werribee River are proposed from the wetland assets and a third outfall from a standalone sediment basin. The final form of these outfalls will be determined though the design process, however it is proposed in this strategy that the outfalls will require 1% AEP pipelines down the escarpment to minimise the erosion potential of the outfalls. Velocity dissipation pools may also be required on the outlet of the outfalls prior to flows entering the Werribee River.

It is proposed that the minor drainage network (20% AEP event) will be conveyed by pipes within the development, with the major rainfall event (1%-20% AEP event) will be conveyed overland via the subdivisional road network. Preliminary internal drainage network alignment is shown in Figure 6, with these alignments updated as the engineering designs progress. Roadway conveyance capacity has been checked at critical locations shown in Figure 6, with the resultant capacity and flood safety criteria performance shown in Table 1.

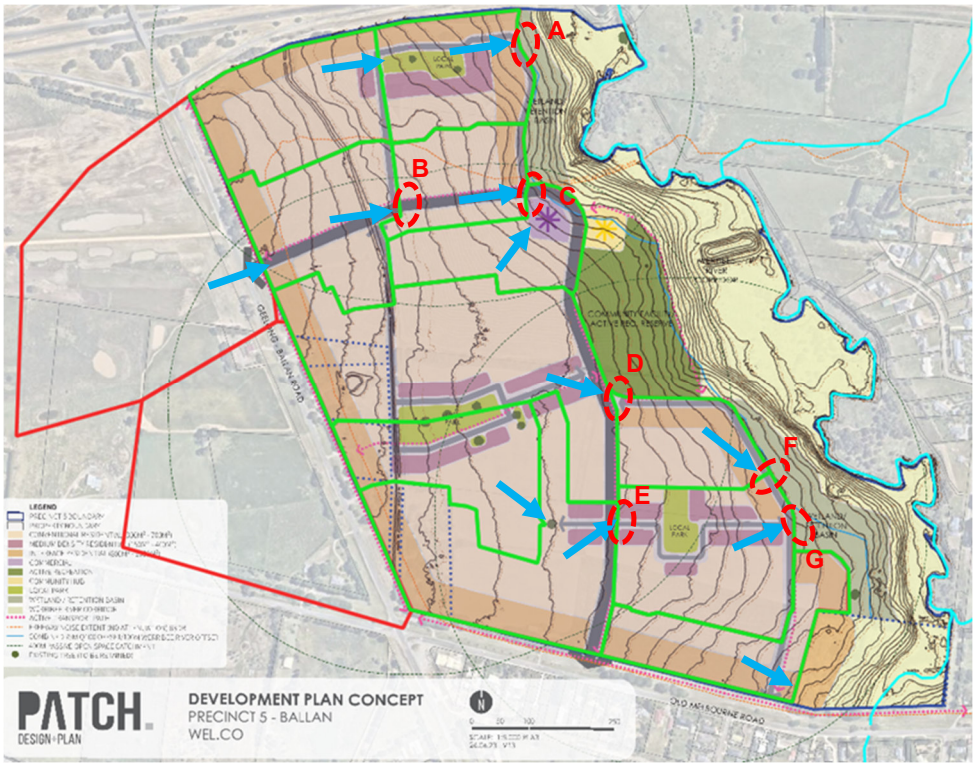

Figure 6: Preliminary Internal Drainage layout

Table 1: Road Overland Flow Capacity

Flow Location	1% AEP Flow rate (m^3/s)	20% AEP Flow Rate (m^3/s)	Estimated pipe Dia and Grade (mm/1 in..)	Pipe Capacity (m^3/s)
A	2.75	1.28	750mm / 1 in 50*	1.57
B	1.84	0.98	675 mm / 1 in 50	1.19
C	2.54	1.42	750 mm / 1 in 50	1.57
D	2.83	1.35	900 mm / 1 in 120	1.65
E	3.59	1.68	825 mm / 1 in 50	2.03
F	2.82	1.44	900 mm / 1 in 120	1.65
G	4.71	2.34	900 mm / 1 in 50	2.56

*1 in 50 assumed to be the steepest grade allowable to control velocities

Table 2: Overland Flow Conveyance Performance

Flow Location	1% AEP Flow rate (m^3/s)	Gap Flow Rate (m^3/s)	Road Grade (1 in …)	Road Width (m)	Road Cap (m^3/s)	D_{ave}/D_{max} (m)	V_{ave} (m/s)	V_{ave}* D_{ave} (m^2/s)
A	2.75	1.47	30	16	3.87	0.09/0.20	1.77	0.15
B	1.84	0.86	25	25	9.65	0.07/0.16	1.61	0.11
C	2.54	1.12	35	25	8.15	0.07/0.19	1.45	0.10
D	2.83	1.48	140	21	4.23	0.09/0.26	1.64	0.14
E	3.59	1.91	65	21	6.20	0.11/0.24	1.35	0.15
F	2.82	1.38	140	21	4.23	0.11/0.25	0.97	0.11
G	4.71	2.36	50	21	7.07	0.11/0.25	1.62	0.18

The current Melbourne Water floodway safety guidelines have been used to assess the overland flow performance, which are as follows:

- V_{ave}*D_{ave} <= 0.35 m^2/s
- Dave <0.3 m

Retardation for events up to the 50% AEP to limit outflows to pre-developed rates is proposed within the two wetland assets as per advice from Melbourne Water, retardation of peak flows also occurs in larger AEP events, although peak flows do not meet 1% AEP pre-developed rates, in accordance with advice from Melbourne Water.

As per the DSS intent, a small portion of the south-east of the site is proposed to drain towards a future pipe drain within the property at 400 Old Melbourne Road, Ballan.

3.4.1 WATER QUALITY ASSET SIZING

Preliminary modelling was performed in order to determine asset sizes of the combined wetland that meet the Victoria Planning Provision's (VPP) Best Practice treatment objectives. These objectives aim to achieve a percentage reduction of 80% of Total Suspended Solids and 45% of both Total Phosphorus and Nitrogen. Note that treatment for the portion of the site draining to Ballan North-West DSS node D1 is accommodated off-site.

Table 3 illustrates the proposed asset sizing's. Refer to Figure 7 for MUSIC modelling arrangement and Table 4 & Table 5 for results

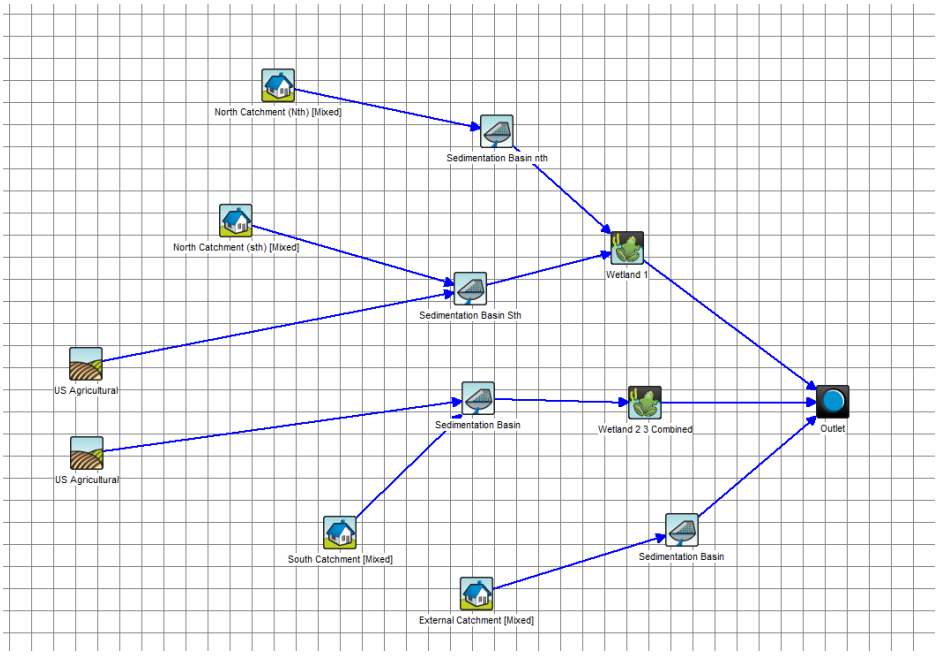

Figure 7: MUSIC Model Layout

Table 3: Water Quality Treatment Details

Asset	Treatment Area (m^2)	Extended Detention Depth (mm)	Permanent Pool Volume (mm)
WL1 Sed Basin North	525	350	290
WL1 Sed Basin South	580	350	340
WL1 Macrophyte Zone	5,700	350	2,320
WL2&3 Sed Basin	1,020	350	780
WL2&3 Macrophyte Zone	9,500	350	3,800
SB1 Sed Basin	400	350	162

Table 4: Wetland 1 MUSIC Results

	Dev Sources*	Load Removed	% Reduction
Total Suspended Solids (kg/yr)	23,210	21,120	91.0
Total Phosphorus (kg/yr)	47.3	38.1	80.5
Total Nitrogen (kg/yr)	335.9	167	49.7
Gross Pollutants (kg/yr)	4,443	4,850	109.2

*Wetland 1 is currently sized to treat the DSS catchment, however the upstream untreated agricultural catchment is proposed to drain towards wetland 1, and results in a slightly grater treatment performance. Refer to Appendix D for calculations

Table 5: Wetland 2 & 3 "Combined" MUSIC Results

	Dev Sources*	Residual Load	% Reduction
Total Suspended Solids (kg/yr)	35,660	7,420	87.7
Total Phosphorus (kg/yr)	72.7	26	77.1
Total Nitrogen (kg/yr)	522.6	336	49
Gross Pollutants (kg/yr)	6,887	0	100

*Wetland 2 is currently sized to treat the DSS catchment, however the upstream untreated agricultural catchment is proposed to drain towards Wetland 2, and results in a slightly greater treatment performance. Refer to Appendix D for calculations.

Both wetlands were sized based on the above MUSIC model. The sediment basins were sized based on catchment size an assumed sediment loading rate and a clean-out frequency of 5 years. Asset sizes are displayed in Table 6.

Table 6: Proposed Asset Sizes

	Wetland 1	Combined Wetland 2 & 3	SB1
Sediment Basin(s)	1,105 m^2	1,020 m^2	375 m^2
Wetland	5,700 m^2	9,500 m^2	-
Drainage Reserve	13,800 m^2	33,550 m^2	1,700 m^2

As discussed, the MUSIC modelling includes post processing of the agricultural catchments. Refer to Appendix E for spreadsheet on how treatment for each asset was calculated.

3.4.2 WATER QUALITY CONCEPT DESIGN

Due to the proximity to the escarpment along Werribee River further geotechnical advice will be required in order to proceed with design. The future design concepts will be further explored in the functional design phase. These wetland concepts will be designed in accordance with Melbourne Water's "Constructed Wetlands Design Manual: Deemed to Comply Criteria" as well as any council requirements and the aforementioned geotechnical advice, when made available.

It has been identified that minor embankment works may be required and preliminary ANCOLD assessments to also be undertaken as part of future design work.

The sediment basin (SB1) is not located near the escarpment.

Refer to Table 7 for information on water levels, noting these levels may change in functional design.

Table 7: Asset Water Levels

		NWL	ED
Northern Wetland	Sediment Pond	497.70	500.05
	Wetland	499.35	499.70
Southern Wetland	Sediment Pond	497.10	497.45
	Wetland	496.75	497.10
Sediment Basin (SB1)	-	497.50	497.85

3.4.3 RORB MODELLING

Advice from Melbourne Water has indicated that stormwater detention is not required for larger storm events as part of the DSS. Stormwater detention is required however for smaller events (up to the 50% AEP). To determine the outflow rates in smaller AEP rainfall events, a RORB model has been created for pre and post development conditions, with the water quality asset shown in Section 3.4.1 included in the modelling. The pre and post RORB modelling catchment delineation is shown in Figure 8 and Figure 9, with the RORB run parameters shown in Table 8.

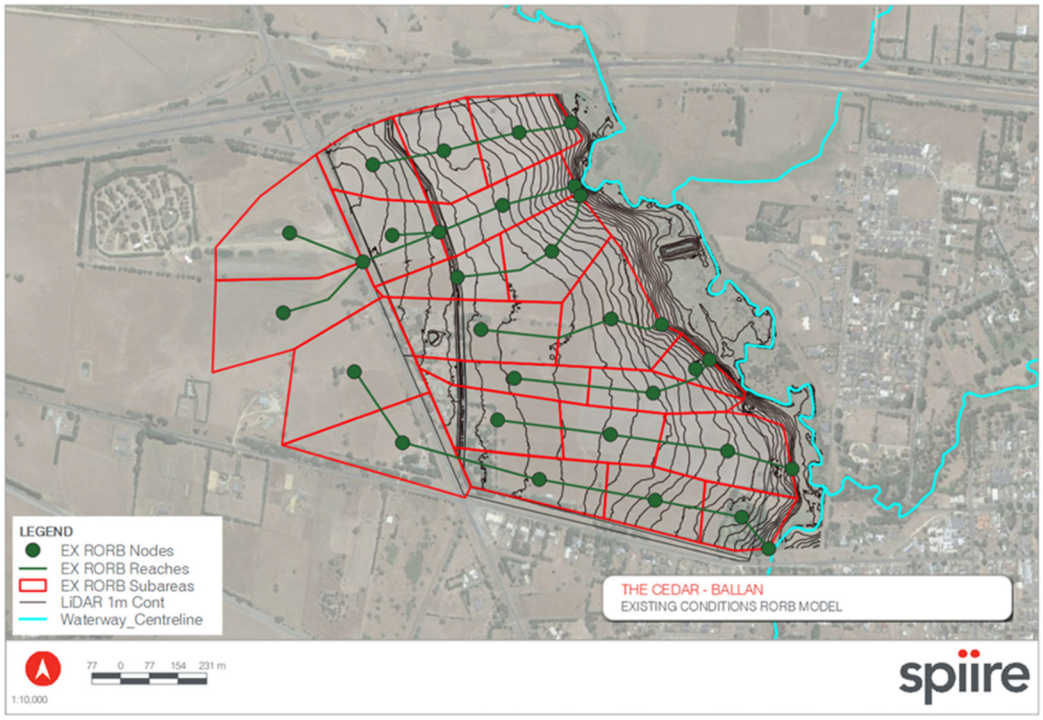

Figure 8: Existing Conditions RORB Model Catchment Delineation

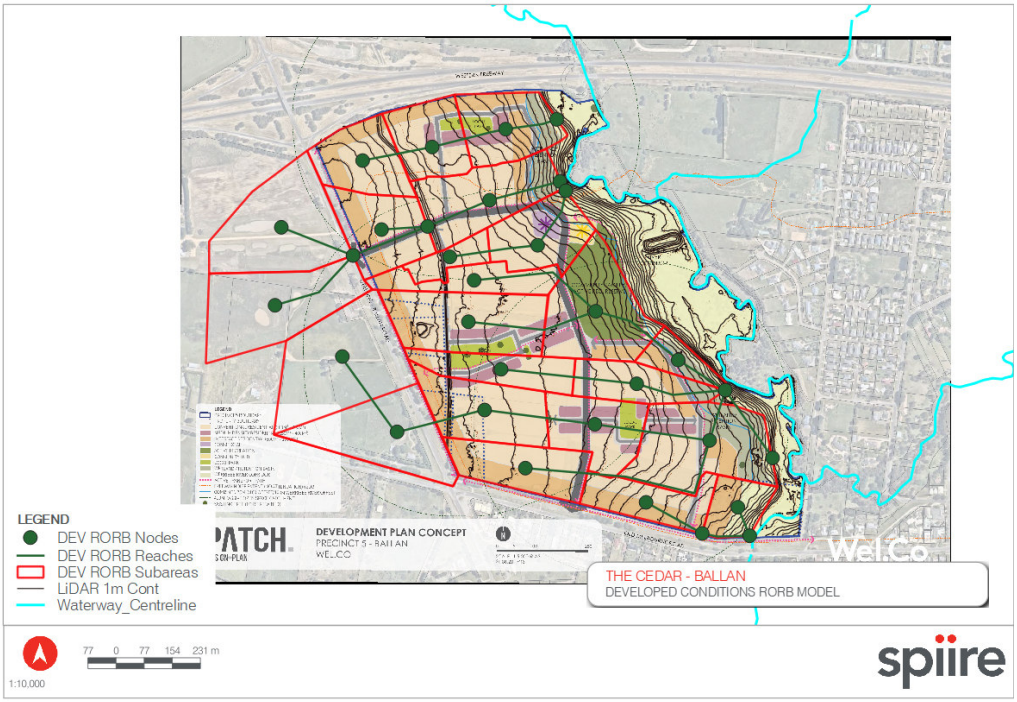

Figure 9: Developed Conditions RORB Model Catchment Delineation

Table 8: RORB modelling Parameters

	KC	Dav	IL (mm/hr)	CL (mm/hr)
EXISTING	2.2	0.44	20*	2.5
DEVELOPED	2.45	0.49	10*	2.5

* IL modified to account for the Median Pre-burst depths from Datahub website.

Table 9: RORB Storage Details

WL1		WL2	
Height (m AHD)	**Storage (m^3)**	**Height (m AHD)**	**Storage (m^3)**
501	0	497.15	0
501.1	606	497.2	706
501.2	1,236	497.3	1,889
501.3	1,890	497.4	3,121
501.4	2,573	497.5	4,404
501.5	3,285	497.6	6,039

WL1		WL2	
501.6	4,124	497.7	7,777
501.7	4,987	497.8	9,605
501.8	5,875	497.9	11,511
501.9	6,790	498	13,472
502	7,724	498.1	15,480
502.1	8,676	498.2	17,530
502.2	9,642	498.3	19,619
502.3	10,620	498.4	21,743
Outlet – 225mm Dia pipe at 501.0m AHD**		Outlet – 300mm pipe at 497.15m AHD**	
spillway - 502.0, 10m length		Spillway - 498.0, 10m length	

** outfall sizing down the escarpment will be larger to accommodate the basin spillway flow also.

Table 10: RORB Modelling Results

AEP	Existing Northern Flow Rate (m^3/s)	Existing Southern Flow Rate (m^3/s)	Developed Northern Flow Rate (m^3/s)	Developed Southern Flow Rate (m^3/s)
1%	1.14	1.22	2.11	1.70
50%	0.15	0.18	0.14	0.16
63.20%	0.10	0.13	0.09	0.13

The results of the RORB modelling comparing pre and post development are shown in Table 10 which illustrates that the proposed water quality assets provide stormwater detention so restricted peak flows in storm events up to the 50% AEP.

3.5 OUTFALL LOCATIONS

It is currently proposed that each asset will have a single, consolidated outfall location discharging flows directly into Werribee Creek. All flows that discharge to the river will have limited velocities to prevent erosion and damage to the receiving waterway.

Further information on these outfalls will be provided in the functional design and associated report. The exact location of these outfalls is dependent upon information received by the forthcoming geotechnical survey as well as the ecology report. An approximate location of the outfall is shown in Figure 5.

4. SUMMARY

This Stormwater Management Strategy outlines how Melbourne Water's proposed Water's Ballan North West DSS will cater for developed stormwater flows both through the subject site and external sites in accordance with the Victoria Planning provisions.

It is proposed that that two wetland assets are constructed within the precinct, which requires the combination to two wetland assets proposed in the DSS as well as a temporary sediment basin in the south-east corner. This merging of assets will provide more efficiency in the reserve area required to provide water quality treatment. These wetland assets provide stormwater quality treatment and also provide stormwater detention for lower flow events up to the 50% AEP. Outfalls to Werribee River from each basin is proposed to convey the 1% AEP developed flows.

A small portion of the precinct along the Old Melbourne Road frontage is proposed to drain towards an existing property at 400 Old Melbourne Road, as per the Melbourne Water DSS. This small catchment will require sediment treatment as well as an outfall into Werribee Creek.

APPENDIX A

MELBOURNE WATER PRE-DEVELOPMENT ADVICE

06 June 2022

Enuri Ranepura
Spiire - Melbourne, VIC

Proposal: Pre-development advice
Site location: Ballan Strategic Directions - Western Growth Precinct - Precinct 5
Melbourne Water reference: MWA-1247774
Date referred: 08/04/2022
Development Services Scheme: Ballan North West DS, Ballan South West DS, Moorabool Shire

Thank you for your request for pre-development advice for the above land parcel(s) within the Ballan North West Development Services Scheme (DSS). The Ballan Strategic Directions (Amendment C88) identifies the future development potential of this precinct (Precinct 5), however, the detailed background assessments and associated planning process is yet to be undertaken to rezone the relevant land parcel(s).

Whilst the Ballan North West DSS is a final rate scheme, further assessments (i.e. environmental, engineering, geomorphology and planning) will need to be undertaken by the proponent (proposing the rezoning) to determine an appropriate development proposal for this precinct and to guide an appropriate drainage servicing strategy. The current version of Ballan North West DSS should be used as a guide only.

The following items would need to be considered as a component of any proponent led drainage servicing strategy:

- Compliance with all relevant acts, standards and requirements
- Compliance with the current design and modelling guidelines/manuals
- Development line to be set above the Werribee River flood levels/extents and to include an appropriate set-back to achieve waterway health and maintenance objectives/requirements (set-back likely to be determined from top of escarpments)
- The current Ballan North West DSS does not propose 1% AEP retardation, however, it is expected that low regular flow retardation (100% AEP, 63% AEP and 50% AEP) will be required to protect downstream water course, significant ecologic values, geomorphology and limit risk of erosion
- Outfalls to Werribee River must meet Melbourne Water's requirements and address any site specific limitations, including the steep topography and high risks of erosion

MUSIC Modelling:

- The current Music modelling (attached to this correspondence) for the Ballan North West DSS was completed in 2013 and does not reflect the current industry standards/requirements and Melbourne Water's Music Guidelines. This modelling would have to be updated to current standards to inform any proposed drainage servicing strategy, and should only be used as a guide.

Specific Commentary:

It has been identified the setback criteria is to be considered and confirmed, which is additional to the consideration of the 1% AEP. These factors include

- Potential bank erosion.
- Ecological corridor
- Waterway vegetation
- Maintenance access
- Recreational pathways
- Cultural Heritage

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The wetland shapes provided in the DSS already presents some setback, but internally within Melbourne Water we are to determine formally what these setbacks will be. Therefore in the scheme the wetland locations are indicative only and will be updated with the process.

- Siting of DSS assets
  - Noted that currently located on the conservation area at the top of the escarpment, further work must be undertaken to consider soil and potential for bedrock (basalt flows).
  - The siting of major drainage infrastructure (i.e. retarding basins or wetlands) should support the retention of mature/remnant trees in close proximity to the escarpment.
  - Appropriate consideration of Cultural Sensitivity should be made in the planning, design and construction of all major drainage infrastructure (i.e. retarding basins or wetlands), including completion of a CHMP (as required). The opportunity for engagement with the RAP/TO should be considered, to incorporate their vision into this significant escarpment site.
  - Significant further work would need to be undertaken to confirm the practicality and constructability of any major drainage infrastructure (i.e. retarding basins or wetlands) on the slopes.

- Paths and maintenance tracks
  - Must be set back from top of escarpment, current alignment may not be appropriate for safety, protection of Cultural Heritage values or remnant values remnant values.
  - Access track for maintenance must be included to northern wetland.

- Outfall Locations for Urban Stormwater
  - Significant further work would need to be undertaken to confirm how urban flows will be conveyed down the escarpment into the flood-plain, including the practicality and constructability of any formal or informal conveyance assets (i.e. swale or pipe) on the slopes. This must appropriately consider and mitigate the potential erosion risks, including the floodplain sediments.
  - The siting of formal and informal outfalls must appropriately consider the any mapped or significant vegetation.
  - Piped outlets are not to do is dig up and liberate the floodplain sediments. Flow velocities and shear at the outlet are critical, dissipation device/structures should be considered to help to reduce the impact on our riverine asset and floodplain.

- Flood (Hydrologic) Modelling
  - Update flood modelling due to increased development since original development advice was given (2012).
  - Determine hydrologic volume criteria based on Werribee River requirements.

- It is not a requirement of the drainage design, however it has been identified there is potential to consider stormwater harvesting and opportunity for innovative design of streets. Werribee River is identified as a high priority waterway in the Healthy Waterway Strategy for reduction of stormwater volumes. Low flows (accumulative) across this catchment pose a threat to waterway resilience and habitats for platypus, native fish and frogs.

Please contact Moorabool Shire Council for any queries relating to the rezoning of this land parcel.

Should you require any further information please don't hesitate to contact myself on 03 9679 7183 or laurence.newcome@melbournewater.com.au

Kind Regards

Laurence Newcome
Statutory Developer Services

APPENDIX B

BALLAN NORTH WEST DSS

8101 - Ballan North West DSS Infrastructure 1/1

N

VicMap Ref: 294 E2

Author: Rebekah Campbell

Scale @ A1 1:3000

DSCM Legend

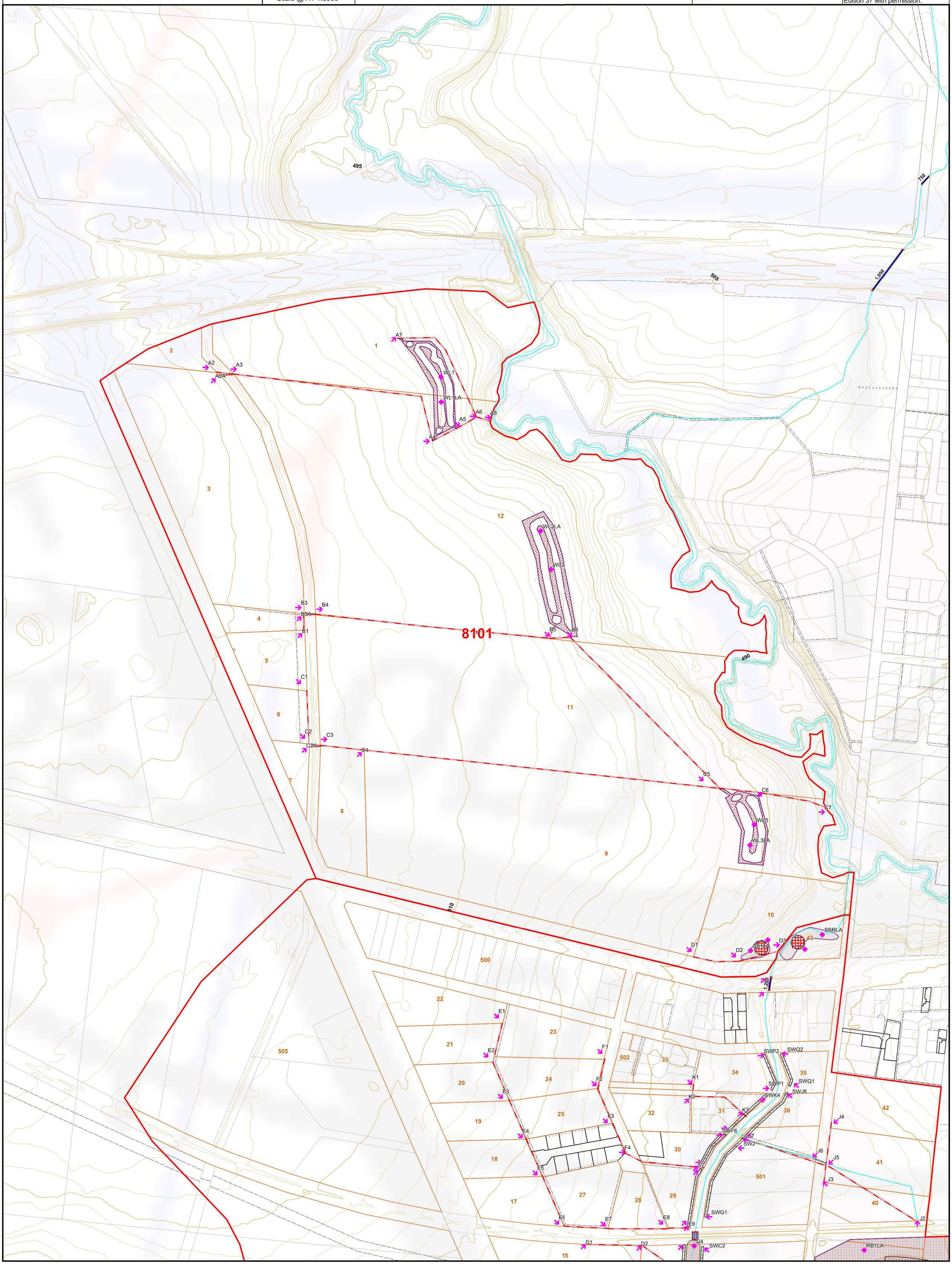
- DSS Boundary
- DS Strategy Boundary
- DSCM Property
- Stage (Allocated)
- Stage (Works in Progress)
- Stage (Finalised)
- Nodes
- Bio-Retention Swale
- Channel
- Cleanout works
- Culvert
- Grassed Swale
- Low flow pipe with Channel
- Overland flow path
- Pipeline
- Soft Engineering
- Bio-Retention Basin
- Buffer Strip
- Inlet/Outlet Structure
- Junction Pit
- Litter trap
- Retarding Basin
- Sediment trap
- Wetland

As Constructed Legend

- Channel
- Natural Waterway
- Sewer Main
- Underground Drain
- Water Main
- Flood Extents
- Lake
- Retarding Basin
- Sediment Trap
- Wetland

Plan Date: April 2017

Melbourne Water is providing our indicative assets information and is not to be used as the basis of future design and expects that the appointed engineering consultant will perform their own calculations as part of requirements for their development.
Please note that as schemes develop and Melbourne Water receives additional information, the conceptual/indicative advice you have been provided as part of the feasibility request may become ou-dated. Under the QA process it is the responsibility of the consultant to ensure that Melbourne Water's feasibility advice is current and to certify that all information ultimately provided to Melbourne Water for acceptance is correct having completed their own detailed catchment analysis.

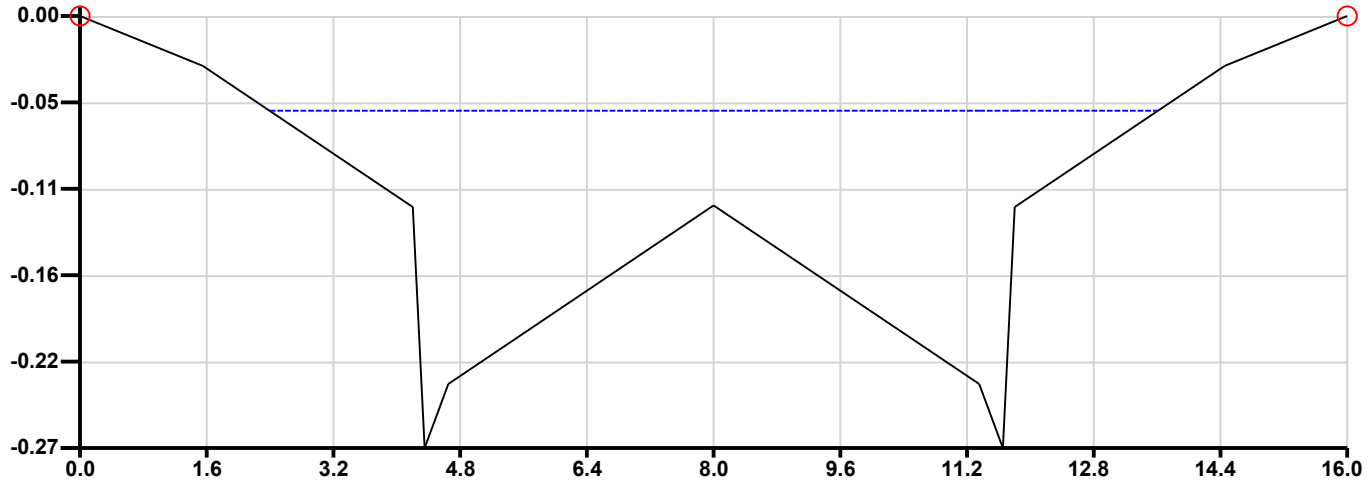


APPENDIX C

OVERLAND FLOW CALCULATIONS

PROJECT: Project name
Comment
Print-out date: 31/10/2022 - Time: 10:31
Data File: G:\31\310024\Water\Stormwater Modelling\PC CONVEY\A.dat

1. CROSS-SECTION:



2. DISCHARGE INFORMATION:

Not specified

3. RESULTS:

Note: Q = discharge, Ave. Vel. = average flow velocity for cross-section at this water surface elevation.
Fr. No. = Froude Number at this water surface elevation; if Fr < 1 then flow is subcritical.
WP = wetted perimeter, Hydr. Rads. = hydraulic radius = Area/WP at this water surface elevation.
SF indicates whether or not Split Flow occurs at this water surface elevation.
Comp n = composite Manning's n value for cross-section at this water surface elevation.

High Flow Channel grade = 1 in 30, Main Channel / Low Flow Channel grade = 1 in 30.

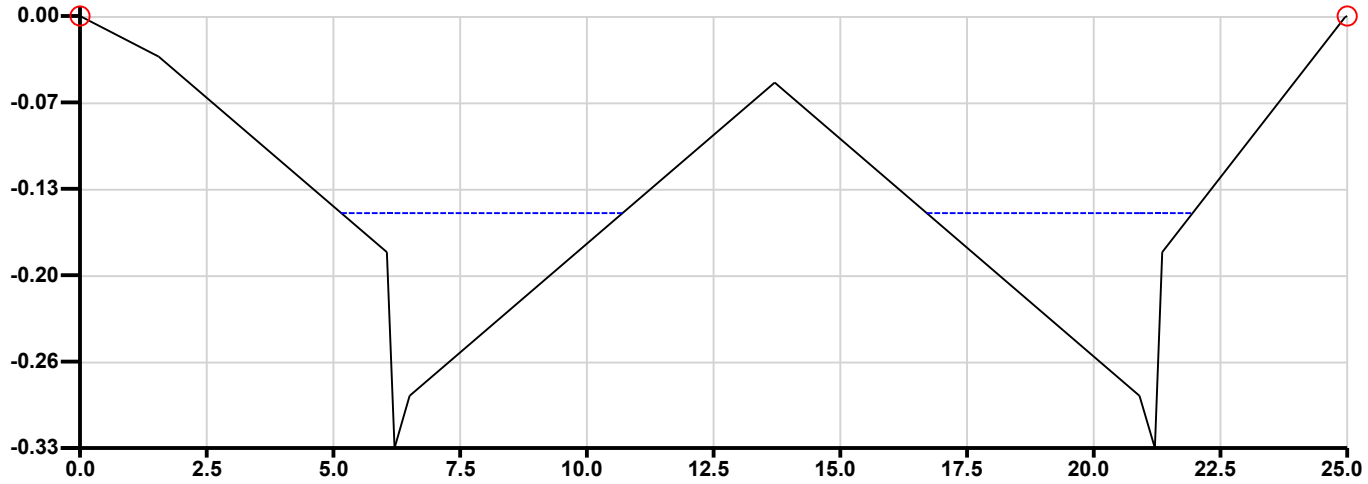
Water Surface Elevation (m)	Q (m^3/s)	Ave. Vel. (m/s)	D(Ave) (m)	D(Ave) x V(Ave) (m^3/s-m)	Fr. No.	Area (m^2)	WP (m)	Flow Width (m)	Hydr. Rads. (m)	Comp. n	SF?
-0.26	0.0	0.20	0.00	0.00	*	0.00	0.18	0.17	0.00	*	Yes
-0.25	0.0	0.32	0.01	0.00	*	0.00	0.36	0.34	0.01	*	Yes
-0.24	0.0	0.41	0.02	0.01	*	0.01	0.54	0.51	0.01	*	Yes
-0.23	0.0	0.50	0.02	0.01	*	0.01	0.72	0.68	0.02	*	Yes
-0.22	0.0	0.48	0.02	0.01	*	0.02	1.35	1.30	0.02	*	Yes
-0.21	0.0	0.52	0.02	0.01	*	0.04	1.98	1.93	0.02	*	Yes
-0.20	0.0	0.58	0.02	0.01	*	0.06	2.62	2.55	0.02	*	Yes
-0.19	0.1	0.65	0.03	0.02	*	0.09	3.25	3.17	0.03	*	Yes
-0.18	0.1	0.72	0.03	0.02	*	0.13	3.88	3.80	0.03	*	Yes
-0.17	0.1	0.78	0.04	0.03	*	0.17	4.51	4.42	0.04	*	Yes
-0.16	0.2	0.85	0.04	0.04	*	0.21	5.14	5.05	0.04	*	Yes
-0.15	0.2	0.91	0.05	0.04	*	0.27	5.78	5.67	0.05	*	Yes
-0.14	0.3	0.97	0.05	0.05	*	0.33	6.41	6.29	0.05	*	Yes
-0.13	0.4	1.03	0.06	0.06	*	0.39	7.04	6.92	0.06	*	Yes
-0.12	0.5	1.09	0.06	0.07	*	0.47	7.67	7.54	0.06	*	Yes
-0.11	0.6	1.15	0.07	0.08	1.83	0.54	8.34	8.20	0.07	0.020	No
-0.10	0.8	1.21	0.07	0.09	1.86	0.63	8.94	8.80	0.07	0.020	No
-0.09	0.9	1.26	0.08	0.10	1.88	0.72	9.54	9.41	0.08	0.020	No
-0.08	1.1	1.32	0.08	0.11	1.90	0.82	10.14	10.01	0.08	0.020	No
-0.07	1.3	1.37	0.09	0.12	1.92	0.92	10.75	10.61	0.09	0.020	No
-0.06	1.5	1.43	0.09	0.13	1.94	1.03	11.35	11.21	0.09	0.020	No
-0.05	1.7	1.48	0.10	0.14	1.96	1.15	11.95	11.82	0.10	0.020	No
-0.04	1.9	1.53	0.10	0.16	1.98	1.27	12.55	12.42	0.10	0.020	No
-0.03	2.2	1.58	0.11	0.17	1.99	1.39	13.24	13.10	0.11	0.020	No
-0.02	2.4	1.60	0.11	0.17	2.00	1.53	14.24	14.10	0.11	0.020	No
-0.01	2.7	1.62	0.11	0.18	2.01	1.68	15.24	15.10	0.11	0.020	No

4. CROSS-SECTION DATA:

	LEFT HAND POINT		RIGHT HAND POINT		
SEGMENT NO.	CHAINAGE (m)	R.L. (m)	CHAINAGE (m)	R.L. (m)	MANNING'S N
1	0.000	0.000	1.550	-0.031	0.020
2	1.550	-0.031	4.200	-0.119	0.020
3	4.200	-0.119	4.350	-0.269	0.020
4	4.350	-0.269	4.650	-0.229	0.020
5	4.650	-0.229	8.000	-0.118	0.020
6	8.000	-0.118	11.350	-0.229	0.020
7	11.350	-0.229	11.650	-0.269	0.020
8	11.650	-0.269	11.800	-0.119	0.020
9	11.800	-0.119	14.450	-0.031	0.020
10	14.450	-0.031	16.000	0.000	0.020

PROJECT: Project name
Comment
Print-out date: 31/10/2022 - Time: 10:31
Data File: G:\31\310024\Water\Stormwater Modelling\PC CONVEY\B.dat

1. CROSS-SECTION:



2. DISCHARGE INFORMATION:

100 year (1%) storm event

Total discharge = 0.86 cumecs

There is no pipe discharge
Overland / Channel / Watercourse discharge = 0.860 cumecs

3. RESULTS:

Note: Q = discharge, Ave. Vel. = average flow velocity for cross-section at this water surface elevation.
Fr. No. = Froude Number at this water surface elevation; if Fr < 1 then flow is subcritical.
WP = wetted perimeter, Hydr. Rads. = hydraulic radius = Area/WP at this water surface elevation.
SF indicates whether or not Split Flow occurs at this water surface elevation.
Comp n = composite Manning's n value for cross-section at this water surface elevation.

High Flow Channel grade = 1 in 25, Main Channel / Low Flow Channel grade = 1 in 25.

Water Surface Elevation (m)	Q (m^3/s)	Ave. Vel. (m/s)	D(Ave) (m)	D(Ave) x V(Ave) (m^3/s-m)	Fr. No.	Area (m^2)	WP (m)	Flow Width (m)	Hydr. Rads. (m)	Comp. n	SF?
-0.32	0.0	0.20	0.00	0.00	*	0.00	0.18	0.17	0.00	*	Yes
-0.31	0.0	0.32	0.01	0.00	*	0.00	0.36	0.34	0.01	*	Yes
-0.30	0.0	0.41	0.02	0.01	*	0.01	0.54	0.51	0.01	*	Yes
-0.29	0.0	0.50	0.02	0.01	*	0.01	0.72	0.68	0.02	*	Yes
-0.28	0.0	0.48	0.02	0.01	*	0.02	1.35	1.30	0.02	*	Yes
-0.27	0.0	0.52	0.02	0.01	*	0.04	1.98	1.92	0.02	*	Yes
-0.26	0.0	0.58	0.02	0.01	*	0.06	2.60	2.54	0.02	*	Yes
-0.25	0.1	0.65	0.03	0.02	*	0.09	3.23	3.16	0.03	*	Yes
-0.24	0.1	0.72	0.03	0.02	*	0.13	3.86	3.78	0.03	*	Yes
-0.23	0.1	0.78	0.04	0.03	*	0.17	4.49	4.40	0.04	*	Yes
-0.22	0.2	0.85	0.04	0.04	*	0.21	5.12	5.02	0.04	*	Yes
-0.21	0.2	0.91	0.05	0.04	*	0.27	5.75	5.64	0.05	*	Yes
-0.20	0.3	0.97	0.05	0.05	*	0.33	6.38	6.26	0.05	*	Yes
-0.19	0.4	1.03	0.06	0.06	*	0.39	7.00	6.88	0.06	*	Yes
-0.18	0.5	1.09	0.06	0.07	*	0.46	7.63	7.50	0.06	*	Yes
-0.17	0.6	1.11	0.06	0.07	*	0.54	8.73	8.60	0.06	*	Yes
-0.16	0.7	1.14	0.07	0.07	*	0.64	9.83	9.70	0.06	*	Yes
-0.15	0.9	1.17	0.07	0.08	*	0.74	10.94	10.80	0.07	*	Yes
-0.14	1.0	1.21	0.07	0.09	*	0.85	12.04	11.90	0.07	*	Yes
-0.13	1.2	1.25	0.08	0.09	*	0.98	13.14	13.00	0.07	*	Yes
-0.12	1.4	1.29	0.08	0.10	*	1.11	14.24	14.10	0.08	*	Yes

3. RESULTS: (continued)

Note: Q = discharge, Ave. Vel. = average flow velocity for cross-section at this water surface elevation.
Fr. No. = Froude Number at this water surface elevation; if Fr < 1 then flow is subcritical.
WP = wetted perimeter, Hydr. Rads. = hydraulic radius = Area/WP at this water surface elevation.
SF indicates whether or not Split Flow occurs at this water surface elevation.
Comp n = composite Manning's n value for cross-section at this water surface elevation.

High Flow Channel grade = 1 in 25, Main Channel / Low Flow Channel grade = 1 in 25.

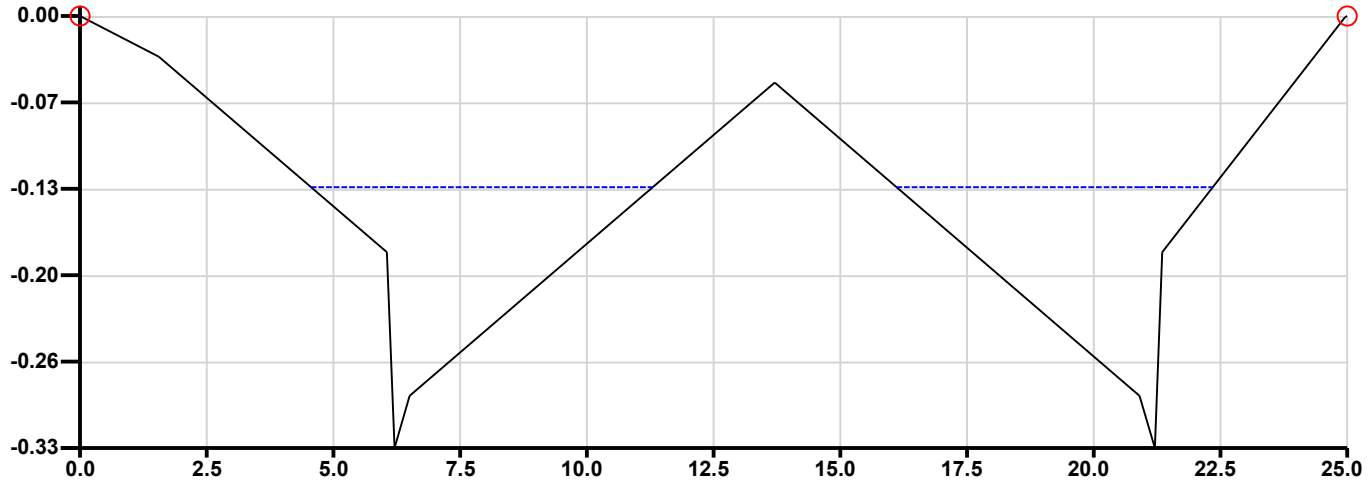
Water Surface Elevation (m)	Q (m^3/s)	Ave. Vel. (m/s)	D(Ave) (m)	D(Ave) x V(Ave) (m^3/s-m)	Fr. No.	Area (m^2)	WP (m)	Flow Width (m)	Hydr. Rads. (m)	Comp. n	SF?
-0.11	1.7	1.33	0.08	0.11	*	1.26	15.34	15.20	0.08	*	Yes
-0.10	2.0	1.38	0.09	0.12	*	1.42	16.44	16.30	0.09	*	Yes
-0.09	2.3	1.42	0.09	0.13	*	1.58	17.54	17.40	0.09	*	Yes
-0.08	2.6	1.47	0.10	0.14	*	1.76	18.64	18.50	0.09	*	Yes
-0.07	3.0	1.51	0.10	0.15	*	1.95	19.74	19.60	0.10	*	Yes
-0.06	3.4	1.56	0.10	0.16	*	2.16	20.84	20.70	0.10	*	Yes
-0.05	3.8	1.60	0.11	0.17	*	2.37	21.94	21.80	0.11	*	Yes
-0.04	4.3	1.68	0.12	0.19	2.22	2.59	22.44	22.30	0.12	0.020	No
-0.03	4.9	1.75	0.12	0.22	2.24	2.81	22.94	22.80	0.12	0.020	No
-0.02	5.5	1.80	0.13	0.23	2.26	3.05	23.64	23.50	0.13	0.020	No
-0.01	6.1	1.86	0.14	0.25	2.28	3.28	24.34	24.20	0.13	0.020	No
0.00	6.8	1.91	0.14	0.27	2.30	3.53	25.04	24.90	0.14	0.020	No

4. CROSS-SECTION DATA:

	LEFT HAND POINT		RIGHT HAND POINT		
SEGMENT NO.	CHAINAGE (m)	R.L. (m)	CHAINAGE (m)	R.L. (m)	MANNING'S N
1	0.000	0.000	1.550	-0.031	0.020
2	1.550	-0.031	6.050	-0.181	0.020
3	6.050	-0.181	6.200	-0.331	0.020
4	6.200	-0.331	6.500	-0.291	0.020
5	6.500	-0.291	13.700	-0.051	0.020
6	13.700	-0.051	20.900	-0.291	0.020
7	20.900	-0.291	21.200	-0.331	0.020
8	21.200	-0.331	21.350	-0.181	0.020
9	21.350	-0.181	24.950	-0.001	0.020
10	24.950	-0.001	25.000	0.000	0.020

PROJECT: Project name
Comment
Print-out date: 31/10/2022 - Time: 10:32
Data File: G:\31\310024\Water\Stormwater Modelling\PC CONVEY\C.dat

1. CROSS-SECTION:



2. DISCHARGE INFORMATION:

100 year (1%) storm event

Total discharge = 1.12 cumecs

There is no pipe discharge
Overland / Channel / Watercourse discharge = 1.120 cumecs

3. RESULTS:

Note: Q = discharge, Ave. Vel. = average flow velocity for cross-section at this water surface elevation.
Fr. No. = Froude Number at this water surface elevation; if Fr < 1 then flow is subcritical.
WP = wetted perimeter, Hydr. Rads. = hydraulic radius = Area/WP at this water surface elevation.
SF indicates whether or not Split Flow occurs at this water surface elevation.
Comp n = composite Manning's n value for cross-section at this water surface elevation.

High Flow Channel grade = 1 in 35, Main Channel / Low Flow Channel grade = 1 in 35.

Water Surface Elevation (m)	Q (m^3/s)	Ave. Vel. (m/s)	D(Ave) (m)	D(Ave) x V(Ave) (m^3/s-m)	Fr. No.	Area (m^2)	WP (m)	Flow Width (m)	Hydr. Rads. (m)	Comp. n	SF?
-0.32	0.0	0.20	0.00	0.00	*	0.00	0.18	0.17	0.00	*	Yes
-0.31	0.0	0.32	0.01	0.00	*	0.00	0.36	0.34	0.01	*	Yes
-0.30	0.0	0.41	0.02	0.01	*	0.01	0.54	0.51	0.01	*	Yes
-0.29	0.0	0.50	0.02	0.01	*	0.01	0.72	0.68	0.02	*	Yes
-0.28	0.0	0.48	0.02	0.01	*	0.02	1.35	1.30	0.02	*	Yes
-0.27	0.0	0.52	0.02	0.01	*	0.04	1.98	1.92	0.02	*	Yes
-0.26	0.0	0.58	0.02	0.01	*	0.06	2.60	2.54	0.02	*	Yes
-0.25	0.1	0.65	0.03	0.02	*	0.09	3.23	3.16	0.03	*	Yes
-0.24	0.1	0.72	0.03	0.02	*	0.13	3.86	3.78	0.03	*	Yes
-0.23	0.1	0.78	0.04	0.03	*	0.17	4.49	4.40	0.04	*	Yes
-0.22	0.2	0.85	0.04	0.04	*	0.21	5.12	5.02	0.04	*	Yes
-0.21	0.2	0.91	0.05	0.04	*	0.27	5.75	5.64	0.05	*	Yes
-0.20	0.3	0.97	0.05	0.05	*	0.33	6.38	6.26	0.05	*	Yes
-0.19	0.4	1.03	0.06	0.06	*	0.39	7.00	6.88	0.06	*	Yes
-0.18	0.5	1.09	0.06	0.07	*	0.46	7.63	7.50	0.06	*	Yes
-0.17	0.6	1.11	0.06	0.07	*	0.54	8.73	8.60	0.06	*	Yes
-0.16	0.7	1.14	0.07	0.07	*	0.64	9.83	9.70	0.06	*	Yes
-0.15	0.9	1.17	0.07	0.08	*	0.74	10.94	10.80	0.07	*	Yes
-0.14	1.0	1.21	0.07	0.09	*	0.85	12.04	11.90	0.07	*	Yes
-0.13	1.2	1.25	0.08	0.09	*	0.98	13.14	13.00	0.07	*	Yes
-0.12	1.4	1.29	0.08	0.10	*	1.11	14.24	14.10	0.08	*	Yes

3. RESULTS: (continued)

Note: Q = discharge, Ave. Vel. = average flow velocity for cross-section at this water surface elevation.
Fr. No. = Froude Number at this water surface elevation; if Fr < 1 then flow is subcritical.
WP = wetted perimeter, Hydr. Rads. = hydraulic radius = Area/WP at this water surface elevation.
SF indicates whether or not Split Flow occurs at this water surface elevation.
Comp n = composite Manning's n value for cross-section at this water surface elevation.

High Flow Channel grade = 1 in 35, Main Channel / Low Flow Channel grade = 1 in 35.

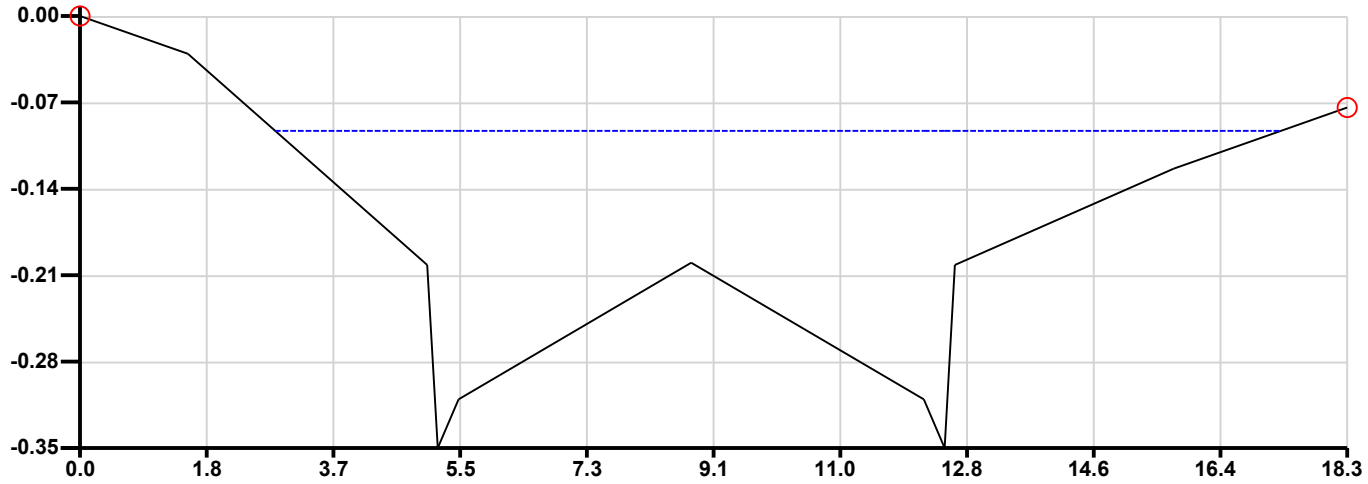
Water Surface Elevation (m)	Q (m^3/s)	Ave. Vel. (m/s)	D(Ave) (m)	D(Ave) x V(Ave) (m^3/s-m)	Fr. No.	Area (m^2)	WP (m)	Flow Width (m)	Hydr. Rads. (m)	Comp. n	SF?
-0.11	1.7	1.33	0.08	0.11	*	1.26	15.34	15.20	0.08	*	Yes
-0.10	2.0	1.38	0.09	0.12	*	1.42	16.44	16.30	0.09	*	Yes
-0.09	2.3	1.42	0.09	0.13	*	1.58	17.54	17.40	0.09	*	Yes
-0.08	2.6	1.47	0.10	0.14	*	1.76	18.64	18.50	0.09	*	Yes
-0.07	3.0	1.51	0.10	0.15	*	1.95	19.74	19.60	0.10	*	Yes
-0.06	3.4	1.56	0.10	0.16	*	2.16	20.84	20.70	0.10	*	Yes
-0.05	3.8	1.60	0.11	0.17	*	2.37	21.94	21.80	0.11	*	Yes
-0.04	4.3	1.68	0.12	0.19	1.88	2.59	22.44	22.30	0.12	0.020	No
-0.03	4.9	1.75	0.12	0.22	1.90	2.81	22.94	22.80	0.12	0.020	No
-0.02	5.5	1.80	0.13	0.23	1.91	3.05	23.64	23.50	0.13	0.020	No
-0.01	6.1	1.86	0.14	0.25	1.93	3.28	24.34	24.20	0.13	0.020	No
0.00	6.8	1.91	0.14	0.27	1.94	3.53	25.04	24.90	0.14	0.020	No

4. CROSS-SECTION DATA:

SEGMENT NO.	LEFT HAND POINT CHAINAGE (m)	LEFT HAND POINT R.L. (m)	RIGHT HAND POINT CHAINAGE (m)	RIGHT HAND POINT R.L. (m)	MANNING'S N
1	0.000	0.000	1.550	-0.031	0.020
2	1.550	-0.031	6.050	-0.181	0.020
3	6.050	-0.181	6.200	-0.331	0.020
4	6.200	-0.331	6.500	-0.291	0.020
5	6.500	-0.291	13.700	-0.051	0.020
6	13.700	-0.051	20.900	-0.291	0.020
7	20.900	-0.291	21.200	-0.331	0.020
8	21.200	-0.331	21.350	-0.181	0.020
9	21.350	-0.181	24.950	-0.001	0.020
10	24.950	-0.001	25.000	0.000	0.020

PROJECT: Project name
Comment
Print-out date: 31/10/2022 - Time: 10:26
Data File: G:\31\310024\Water\Stormwater Modelling\PC CONVEY\D.dat

1. CROSS-SECTION:



2. DISCHARGE INFORMATION:

100 year (1%) storm event

Total discharge = 1.48 cumecs

There is no pipe discharge
Overland / Channel / Watercourse discharge = 1.480 cumecs

3. RESULTS:

Note: Q = discharge, Ave. Vel. = average flow velocity for cross-section at this water surface elevation.
Fr. No. = Froude Number at this water surface elevation; if Fr < 1 then flow is subcritical.
WP = wetted perimeter, Hydr. Rads. = hydraulic radius = Area/WP at this water surface elevation.
SF indicates whether or not Split Flow occurs at this water surface elevation.
Comp n = composite Manning's n value for cross-section at this water surface elevation.

High Flow Channel grade = 1 in 140, Main Channel / Low Flow Channel grade = 1 in 140.

Water Surface Elevation (m)	Q (m^3/s)	Ave. Vel. (m/s)	D(Max) (m)	D(Max) x V(Ave) (m^3/s-m)	Fr. No.	Area (m^2)	WP (m)	Flow Width (m)	Hydr. Rads. (m)	Comp. n	SF?
-0.34	0.0	0.12	0.01	0.00	*	0.00	0.18	0.17	0.00	*	Yes
-0.33	0.0	0.19	0.02	0.00	*	0.00	0.36	0.34	0.01	*	Yes
-0.32	0.0	0.25	0.03	0.01	*	0.01	0.54	0.51	0.01	*	Yes
-0.31	0.0	0.30	0.04	0.01	*	0.01	0.72	0.68	0.02	*	Yes
-0.30	0.0	0.28	0.05	0.01	*	0.02	1.35	1.30	0.02	*	Yes
-0.29	0.0	0.31	0.06	0.02	*	0.04	1.97	1.92	0.02	*	Yes
-0.28	0.0	0.35	0.07	0.02	*	0.06	2.60	2.53	0.02	*	Yes
-0.27	0.0	0.39	0.08	0.03	*	0.09	3.23	3.15	0.03	*	Yes
-0.26	0.1	0.43	0.09	0.04	*	0.12	3.85	3.77	0.03	*	Yes
-0.25	0.1	0.47	0.10	0.05	*	0.17	4.48	4.39	0.04	*	Yes
-0.24	0.1	0.51	0.11	0.06	*	0.21	5.11	5.01	0.04	*	Yes
-0.23	0.1	0.55	0.12	0.07	*	0.27	5.73	5.63	0.05	*	Yes
-0.22	0.2	0.58	0.13	0.08	*	0.33	6.36	6.24	0.05	*	Yes
-0.21	0.2	0.62	0.14	0.09	*	0.39	6.99	6.86	0.06	*	Yes
-0.20	0.3	0.65	0.15	0.10	*	0.46	7.61	7.48	0.06	*	Yes
-0.19	0.4	0.68	0.16	0.11	0.85	0.54	8.33	8.20	0.06	0.020	No
-0.18	0.5	0.72	0.17	0.12	0.86	0.63	8.93	8.80	0.07	0.020	No
-0.17	0.5	0.75	0.18	0.14	0.87	0.72	9.53	9.39	0.08	0.020	No
-0.16	0.6	0.79	0.19	0.15	0.88	0.81	10.13	9.99	0.08	0.020	No
-0.15	0.8	0.82	0.20	0.16	0.89	0.92	10.73	10.59	0.09	0.020	No
-0.14	0.9	0.85	0.21	0.18	0.90	1.03	11.32	11.19	0.09	0.020	No

3. RESULTS: (continued)

Note: Q = discharge, Ave. Vel. = average flow velocity for cross-section at this water surface elevation.
Fr. No. = Froude Number at this water surface elevation; if Fr < 1 then flow is subcritical.
WP = wetted perimeter, Hydr. Rads. = hydraulic radius = Area/WP at this water surface elevation.
SF indicates whether or not Split Flow occurs at this water surface elevation.
Comp n = composite Manning's n value for cross-section at this water surface elevation.

High Flow Channel grade = 1 in 140, Main Channel / Low Flow Channel grade = 1 in 140.

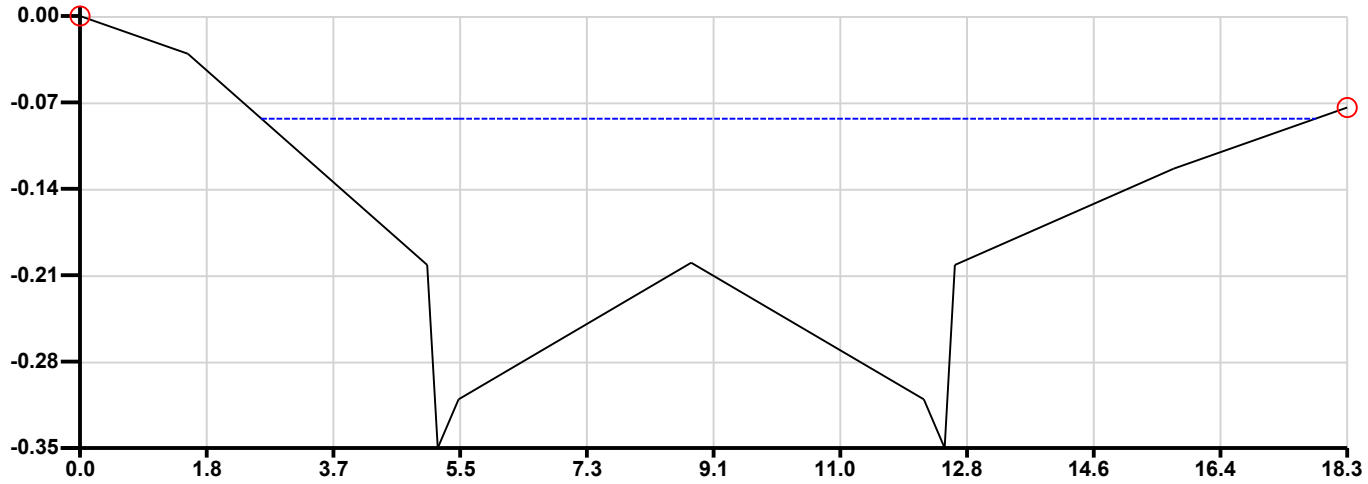
Water Surface Elevation (m)	Q (m^3/s)	Ave. Vel. (m/s)	D(Max) (m)	D(Max) x V(Ave) (m^3/s-m)	Fr. No.	Area (m^2)	WP (m)	Flow Width (m)	Hydr. Rads. (m)	Comp. n	SF?
-0.13	1.0	0.88	0.22	0.19	0.91	1.14	11.92	11.79	0.10	0.020	No
-0.12	1.2	0.91	0.23	0.21	0.92	1.26	12.53	12.40	0.10	0.020	No
-0.11	1.3	0.94	0.24	0.23	0.92	1.39	13.23	13.09	0.10	0.020	No
-0.10	1.5	0.97	0.25	0.24	0.93	1.52	13.93	13.79	0.11	0.020	No
-0.09	1.7	0.99	0.26	0.26	0.93	1.67	14.63	14.49	0.11	0.020	No
-0.08	1.8	1.02	0.27	0.27	0.94	1.81	15.33	15.19	0.12	0.020	No

4. CROSS-SECTION DATA:

	LEFT HAND POINT		RIGHT HAND POINT		
SEGMENT NO.	CHAINAGE (m)	R.L. (m)	CHAINAGE (m)	R.L. (m)	MANNING'S N
1	0.000	0.000	1.550	-0.031	0.020
2	1.550	-0.031	5.000	-0.204	0.020
3	5.000	-0.204	5.150	-0.354	0.020
4	5.150	-0.354	5.450	-0.314	0.020
5	5.450	-0.314	8.800	-0.202	0.020
6	8.800	-0.202	12.150	-0.314	0.020
7	12.150	-0.314	12.450	-0.354	0.020
8	12.450	-0.354	12.600	-0.204	0.020
9	12.600	-0.204	15.750	-0.125	0.020
10	15.750	-0.125	18.250	-0.075	0.020

PROJECT: Project name
Comment
Print-out date: 31/10/2022 - Time: 10:27
Data File: G:\31\310024\Water\Stormwater Modelling\PC CONVEY\E.dat

1. CROSS-SECTION:



2. DISCHARGE INFORMATION:

100 year (1%) storm event

Total discharge = 1.91 cumecs

There is no pipe discharge
Overland / Channel / Watercourse discharge = 1.910 cumecs

3. RESULTS:

Note: Q = discharge, Ave. Vel. = average flow velocity for cross-section at this water surface elevation.
Fr. No. = Froude Number at this water surface elevation; if Fr < 1 then flow is subcritical.
WP = wetted perimeter, Hydr. Rads. = hydraulic radius = Area/WP at this water surface elevation.
SF indicates whether or not Split Flow occurs at this water surface elevation.
Comp n = composite Manning's n value for cross-section at this water surface elevation.

High Flow Channel grade = 1 in 65, Main Channel / Low Flow Channel grade = 1 in 65.

Water Surface Elevation (m)	Q (m^3/s)	Ave. Vel. (m/s)	D(Max) (m)	D(Max) x V(Ave) (m^3/s-m)	Fr. No.	Area (m^2)	WP (m)	Flow Width (m)	Hydr. Rads. (m)	Comp. n	SF?
-0.34	0.0	0.12	0.01	0.00	*	0.00	0.18	0.17	0.00	*	Yes
-0.33	0.0	0.19	0.02	0.00	*	0.00	0.36	0.34	0.01	*	Yes
-0.32	0.0	0.25	0.03	0.01	*	0.01	0.54	0.51	0.01	*	Yes
-0.31	0.0	0.30	0.04	0.01	*	0.01	0.72	0.68	0.02	*	Yes
-0.30	0.0	0.28	0.05	0.01	*	0.02	1.35	1.30	0.02	*	Yes
-0.29	0.0	0.31	0.06	0.02	*	0.04	1.97	1.92	0.02	*	Yes
-0.28	0.0	0.35	0.07	0.02	*	0.06	2.60	2.53	0.02	*	Yes
-0.27	0.0	0.39	0.08	0.03	*	0.09	3.23	3.15	0.03	*	Yes
-0.26	0.1	0.43	0.09	0.04	*	0.12	3.85	3.77	0.03	*	Yes
-0.25	0.1	0.47	0.10	0.05	*	0.17	4.48	4.39	0.04	*	Yes
-0.24	0.1	0.51	0.11	0.06	*	0.21	5.11	5.01	0.04	*	Yes
-0.23	0.1	0.55	0.12	0.07	*	0.27	5.73	5.63	0.05	*	Yes
-0.22	0.2	0.58	0.13	0.08	*	0.33	6.36	6.24	0.05	*	Yes
-0.21	0.2	0.62	0.14	0.09	*	0.39	6.99	6.86	0.06	*	Yes
-0.20	0.3	0.65	0.15	0.10	*	0.46	7.61	7.48	0.06	*	Yes
-0.19	0.4	0.68	0.16	0.11	1.25	0.54	8.33	8.20	0.06	0.020	No
-0.18	0.5	0.72	0.17	0.12	1.26	0.63	8.93	8.80	0.07	0.020	No
-0.17	0.5	0.75	0.18	0.14	1.28	0.72	9.53	9.39	0.08	0.020	No
-0.16	0.6	0.79	0.19	0.15	1.29	0.81	10.13	9.99	0.08	0.020	No
-0.15	0.8	0.82	0.20	0.16	1.31	0.92	10.73	10.59	0.09	0.020	No
-0.14	0.9	0.85	0.21	0.18	1.32	1.03	11.32	11.19	0.09	0.020	No

3. RESULTS: (continued)

Note: Q = discharge, Ave. Vel. = average flow velocity for cross-section at this water surface elevation.
Fr. No. = Froude Number at this water surface elevation; if Fr < 1 then flow is subcritical.
WP = wetted perimeter, Hydr. Rads. = hydraulic radius = Area/WP at this water surface elevation.
SF indicates whether or not Split Flow occurs at this water surface elevation.
Comp n = composite Manning's n value for cross-section at this water surface elevation.

High Flow Channel grade = 1 in 65, Main Channel / Low Flow Channel grade = 1 in 65.

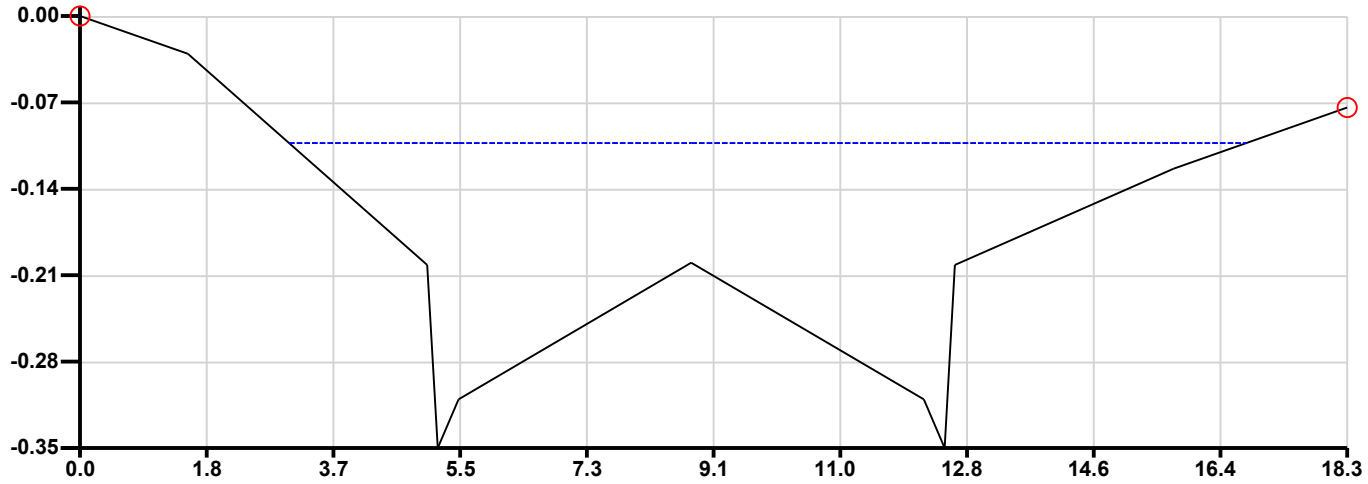
Water Surface Elevation (m)	Q (m^3/s)	Ave. Vel. (m/s)	D(Max) (m)	D(Max) x V(Ave) (m^3/s-m)	Fr. No.	Area (m^2)	WP (m)	Flow Width (m)	Hydr. Rads. (m)	Comp. n	SF?
-0.13	1.0	0.88	0.22	0.19	1.33	1.14	11.92	11.79	0.10	0.020	No
-0.12	1.2	0.91	0.23	0.21	1.34	1.26	12.53	12.40	0.10	0.020	No
-0.11	1.3	0.94	0.24	0.23	1.35	1.39	13.23	13.09	0.10	0.020	No
-0.10	1.5	0.97	0.25	0.24	1.36	1.52	13.93	13.79	0.11	0.020	No
-0.09	1.7	0.99	0.26	0.26	1.37	1.67	14.63	14.49	0.11	0.020	No
-0.08	1.8	1.02	0.27	0.27	1.38	1.81	15.33	15.19	0.12	0.020	No

4. CROSS-SECTION DATA:

	LEFT HAND POINT		RIGHT HAND POINT		
SEGMENT NO.	CHAINAGE (m)	R.L. (m)	CHAINAGE (m)	R.L. (m)	MANNING'S N
1	0.000	0.000	1.550	-0.031	0.020
2	1.550	-0.031	5.000	-0.204	0.020
3	5.000	-0.204	5.150	-0.354	0.020
4	5.150	-0.354	5.450	-0.314	0.020
5	5.450	-0.314	8.800	-0.202	0.020
6	8.800	-0.202	12.150	-0.314	0.020
7	12.150	-0.314	12.450	-0.354	0.020
8	12.450	-0.354	12.600	-0.204	0.020
9	12.600	-0.204	15.750	-0.125	0.020
10	15.750	-0.125	18.250	-0.075	0.020

PROJECT: Project name
Comment
Print-out date: 31/10/2022 - Time: 10:28
Data File: G:\31\310024\Water\Stormwater Modelling\PC CONVEY\F.dat

1. CROSS-SECTION:



2. DISCHARGE INFORMATION:

100 year (1%) storm event

Total discharge = 1.38 cumecs

There is no pipe discharge
Overland / Channel / Watercourse discharge = 1.380 cumecs

3. RESULTS:

Note: Q = discharge, Ave. Vel. = average flow velocity for cross-section at this water surface elevation.
Fr. No. = Froude Number at this water surface elevation; if Fr < 1 then flow is subcritical.
WP = wetted perimeter, Hydr. Rads. = hydraulic radius = Area/WP at this water surface elevation.
SF indicates whether or not Split Flow occurs at this water surface elevation.
Comp n = composite Manning's n value for cross-section at this water surface elevation.

High Flow Channel grade = 1 in 140, Main Channel / Low Flow Channel grade = 1 in 140.

Water Surface Elevation (m)	Q (m^3/s)	Ave. Vel. (m/s)	D(Max) (m)	D(Max) x V(Ave) (m^3/s-m)	Fr. No.	Area (m^2)	WP (m)	Flow Width (m)	Hydr. Rads. (m)	Comp. n	SF?
-0.34	0.0	0.12	0.01	0.00	*	0.00	0.18	0.17	0.00	*	Yes
-0.33	0.0	0.19	0.02	0.00	*	0.00	0.36	0.34	0.01	*	Yes
-0.32	0.0	0.25	0.03	0.01	*	0.01	0.54	0.51	0.01	*	Yes
-0.31	0.0	0.30	0.04	0.01	*	0.01	0.72	0.68	0.02	*	Yes
-0.30	0.0	0.28	0.05	0.01	*	0.02	1.35	1.30	0.02	*	Yes
-0.29	0.0	0.31	0.06	0.02	*	0.04	1.97	1.92	0.02	*	Yes
-0.28	0.0	0.35	0.07	0.02	*	0.06	2.60	2.53	0.02	*	Yes
-0.27	0.0	0.39	0.08	0.03	*	0.09	3.23	3.15	0.03	*	Yes
-0.26	0.1	0.43	0.09	0.04	*	0.12	3.85	3.77	0.03	*	Yes
-0.25	0.1	0.47	0.10	0.05	*	0.17	4.48	4.39	0.04	*	Yes
-0.24	0.1	0.51	0.11	0.06	*	0.21	5.11	5.01	0.04	*	Yes
-0.23	0.1	0.55	0.12	0.07	*	0.27	5.73	5.63	0.05	*	Yes
-0.22	0.2	0.58	0.13	0.08	*	0.33	6.36	6.24	0.05	*	Yes
-0.21	0.2	0.62	0.14	0.09	*	0.39	6.99	6.86	0.06	*	Yes
-0.20	0.3	0.65	0.15	0.10	*	0.46	7.61	7.48	0.06	*	Yes
-0.19	0.4	0.68	0.16	0.11	0.85	0.54	8.33	8.20	0.06	0.020	No
-0.18	0.5	0.72	0.17	0.12	0.86	0.63	8.93	8.80	0.07	0.020	No
-0.17	0.5	0.75	0.18	0.14	0.87	0.72	9.53	9.39	0.08	0.020	No
-0.16	0.6	0.79	0.19	0.15	0.88	0.81	10.13	9.99	0.08	0.020	No
-0.15	0.8	0.82	0.20	0.16	0.89	0.92	10.73	10.59	0.09	0.020	No
-0.14	0.9	0.85	0.21	0.18	0.90	1.03	11.32	11.19	0.09	0.020	No

3. RESULTS: (continued)

Note: Q = discharge, Ave. Vel. = average flow velocity for cross-section at this water surface elevation.
Fr. No. = Froude Number at this water surface elevation; if Fr < 1 then flow is subcritical.
WP = wetted perimeter, Hydr. Rads. = hydraulic radius = Area/WP at this water surface elevation.
SF indicates whether or not Split Flow occurs at this water surface elevation.
Comp n = composite Manning's n value for cross-section at this water surface elevation.

High Flow Channel grade = 1 in 140, Main Channel / Low Flow Channel grade = 1 in 140.

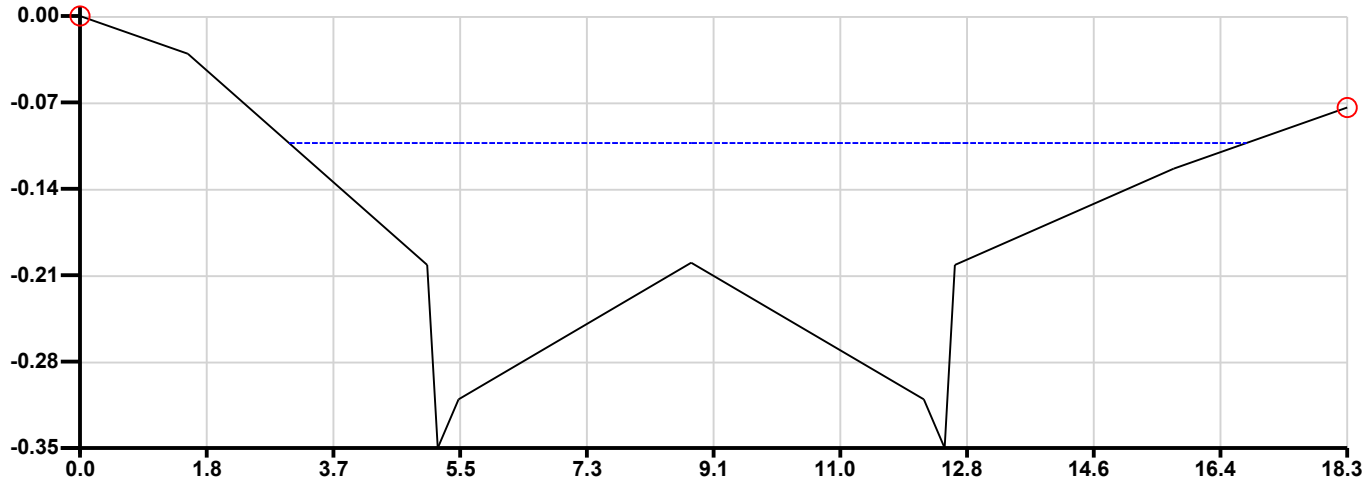
Water Surface Elevation (m)	Q (m^3/s)	Ave. Vel. (m/s)	D(Max) (m)	D(Max) x V(Ave) (m^3/s-m)	Fr. No.	Area (m^2)	WP (m)	Flow Width (m)	Hydr. Rads. (m)	Comp. n	SF?
-0.13	1.0	0.88	0.22	0.19	0.91	1.14	11.92	11.79	0.10	0.020	No
-0.12	1.2	0.91	0.23	0.21	0.92	1.26	12.53	12.40	0.10	0.020	No
-0.11	1.3	0.94	0.24	0.23	0.92	1.39	13.23	13.09	0.10	0.020	No
-0.10	1.5	0.97	0.25	0.24	0.93	1.52	13.93	13.79	0.11	0.020	No
-0.09	1.7	0.99	0.26	0.26	0.93	1.67	14.63	14.49	0.11	0.020	No
-0.08	1.8	1.02	0.27	0.27	0.94	1.81	15.33	15.19	0.12	0.020	No

4. CROSS-SECTION DATA:

	LEFT HAND POINT		RIGHT HAND POINT		
SEGMENT NO.	CHAINAGE (m)	R.L. (m)	CHAINAGE (m)	R.L. (m)	MANNING'S N
1	0.000	0.000	1.550	-0.031	0.020
2	1.550	-0.031	5.000	-0.204	0.020
3	5.000	-0.204	5.150	-0.354	0.020
4	5.150	-0.354	5.450	-0.314	0.020
5	5.450	-0.314	8.800	-0.202	0.020
6	8.800	-0.202	12.150	-0.314	0.020
7	12.150	-0.314	12.450	-0.354	0.020
8	12.450	-0.354	12.600	-0.204	0.020
9	12.600	-0.204	15.750	-0.125	0.020
10	15.750	-0.125	18.250	-0.075	0.020

PROJECT: Project name
Comment
Print-out date: 31/10/2022 - Time: 10:30
Data File: G:\31\310024\Water\Stormwater Modelling\PC CONVEY\G.dat

1. CROSS-SECTION:



2. DISCHARGE INFORMATION:

100 year (1%) storm event

Total discharge = 2.36 cumecs

There is no pipe discharge
Overland / Channel / Watercourse discharge = 2.360 cumecs

3. RESULTS:

Note: Q = discharge, Ave. Vel. = average flow velocity for cross-section at this water surface elevation.
Fr. No. = Froude Number at this water surface elevation; if Fr < 1 then flow is subcritical.
WP = wetted perimeter, Hydr. Rads. = hydraulic radius = Area/WP at this water surface elevation.
SF indicates whether or not Split Flow occurs at this water surface elevation.
Comp n = composite Manning's n value for cross-section at this water surface elevation.

High Flow Channel grade = 1 in 50, Main Channel / Low Flow Channel grade = 1 in 50.

Water Surface Elevation (m)	Q (m^3/s)	Ave. Vel. (m/s)	D(Ave) (m)	D(Ave) x V(Ave) (m^3/s-m)	Fr. No.	Area (m^2)	WP (m)	Flow Width (m)	Hydr. Rads. (m)	Comp. n	SF?
-0.34	0.0	0.20	0.00	0.00	*	0.00	0.18	0.17	0.00	*	Yes
-0.33	0.0	0.32	0.01	0.00	*	0.00	0.36	0.34	0.01	*	Yes
-0.32	0.0	0.41	0.02	0.01	*	0.01	0.54	0.51	0.01	*	Yes
-0.31	0.0	0.50	0.02	0.01	*	0.01	0.72	0.68	0.02	*	Yes
-0.30	0.0	0.48	0.02	0.01	*	0.02	1.35	1.30	0.02	*	Yes
-0.29	0.0	0.52	0.02	0.01	*	0.04	1.97	1.92	0.02	*	Yes
-0.28	0.0	0.58	0.02	0.01	*	0.06	2.60	2.53	0.02	*	Yes
-0.27	0.1	0.65	0.03	0.02	*	0.09	3.23	3.15	0.03	*	Yes
-0.26	0.1	0.72	0.03	0.02	*	0.12	3.85	3.77	0.03	*	Yes
-0.25	0.1	0.78	0.04	0.03	*	0.17	4.48	4.39	0.04	*	Yes
-0.24	0.2	0.85	0.04	0.04	*	0.21	5.11	5.01	0.04	*	Yes
-0.23	0.2	0.91	0.05	0.04	*	0.27	5.73	5.63	0.05	*	Yes
-0.22	0.3	0.97	0.05	0.05	*	0.33	6.36	6.24	0.05	*	Yes
-0.21	0.4	1.03	0.06	0.06	*	0.39	6.99	6.86	0.06	*	Yes
-0.20	0.5	1.09	0.06	0.07	*	0.46	7.61	7.48	0.06	*	Yes
-0.19	0.6	1.14	0.07	0.08	1.42	0.54	8.33	8.20	0.06	0.020	No
-0.18	0.8	1.20	0.07	0.09	1.44	0.63	8.93	8.80	0.07	0.020	No
-0.17	0.9	1.26	0.08	0.10	1.46	0.72	9.53	9.39	0.08	0.020	No
-0.16	1.1	1.32	0.08	0.11	1.47	0.81	10.13	9.99	0.08	0.020	No
-0.15	1.3	1.37	0.09	0.12	1.49	0.92	10.73	10.59	0.09	0.020	No
-0.14	1.5	1.43	0.09	0.13	1.50	1.03	11.32	11.19	0.09	0.020	No

APPENDIX D

MASTERPLAN

WESTERN FREEWAY

LOCAL PARK

WETLAND/ RETENTION BASIN

FREEWAY NOISE EXTENT (NO ATTENUATION) 63DB

WERRIBEE RIVER CORRIDOR

COMMUNITY FACILITY/ ACTIVE REC. RESERVE

GEELONG - BALLAN ROAD

LOCAL PARK

LOCAL PARK

WETLAND/ RETENTION BASIN

OLD MELBOURNE ROAD

LEGEND

- PRECINCT 5 BOUNDARY
- PROPERTY BOUNDARY
- CONVENTIONAL RESIDENTIAL (300M^2 - 700M^2)
- MEDIUM DENSITY RESIDENTIAL (150M^2 - 400M^2)
- INTERFACE RESIDENTIAL (800M^2 - 1000M^2)
- COMMERCIAL
- ACTIVE RECREATION
- COMMUNITY HUB
- LOCAL PARK
- WETLAND / RETENTION BASIN
- WERRIBEE RIVER CORRIDOR
- ACTIVE TRANSPORT PATH
- FREEWAY NOISE EXTENT (NO ATTENUATION) 63DB
- COMBINED 75M Q100 OFFSET/100M WERRIBEE RIVER OFFSET
- 400M PASSIVE OPEN SPACE CATCHMENT
- EXISTING TREE (TO BE RETAINED)

PATCH. DESIGN+PLAN

DEVELOPMENT PLAN CONCEPT

PRECINCT 5 - BALLAN

WEL.CO

N

0 50 100 250

SCALE: 1:5,000 @ A3

26.06.23 V13

Wel.Co

APPENDIX E

POST PROCESSING MUSIC CALCS

	Agri. Loads	WL1 Source	Developed Source (WL Source - Agri Loads)	WL Residual Loads	Loads Removed (WL Source - WL Residual)	% Reduction (Load Removed / Dev. Source)	
Suspended Solids	3190	26400	23210.0	5280	21120	91.0%	**WL1**
Phos.	9.68	57	47.3	18.9	38.1	80.5%	
Nitrogen	73.1	409	335.9	242	167	49.7%	
Gross Pollutants	407	4850	4443.0	0	4850	109.2%	

	Agri. Loads	WL1 Source	Developed Source (WL Source - Agri Loads)	WL Residual Loads	Loads Removed (WL Source - WL Residual)	% Reduction (Load Removed / Dev. Source)	
Suspended Solids	3040	38700	35660.0	7420	31280	87.7%	**WL2**
Phos.	9.36	82.1	72.7	26	56.1	77.1%	
Nitrogen	69.4	592	522.6	336	256	49.0%	
Gross Pollutants	353	7240	6887.0	0	7240	105.1%	

APPENDIX F

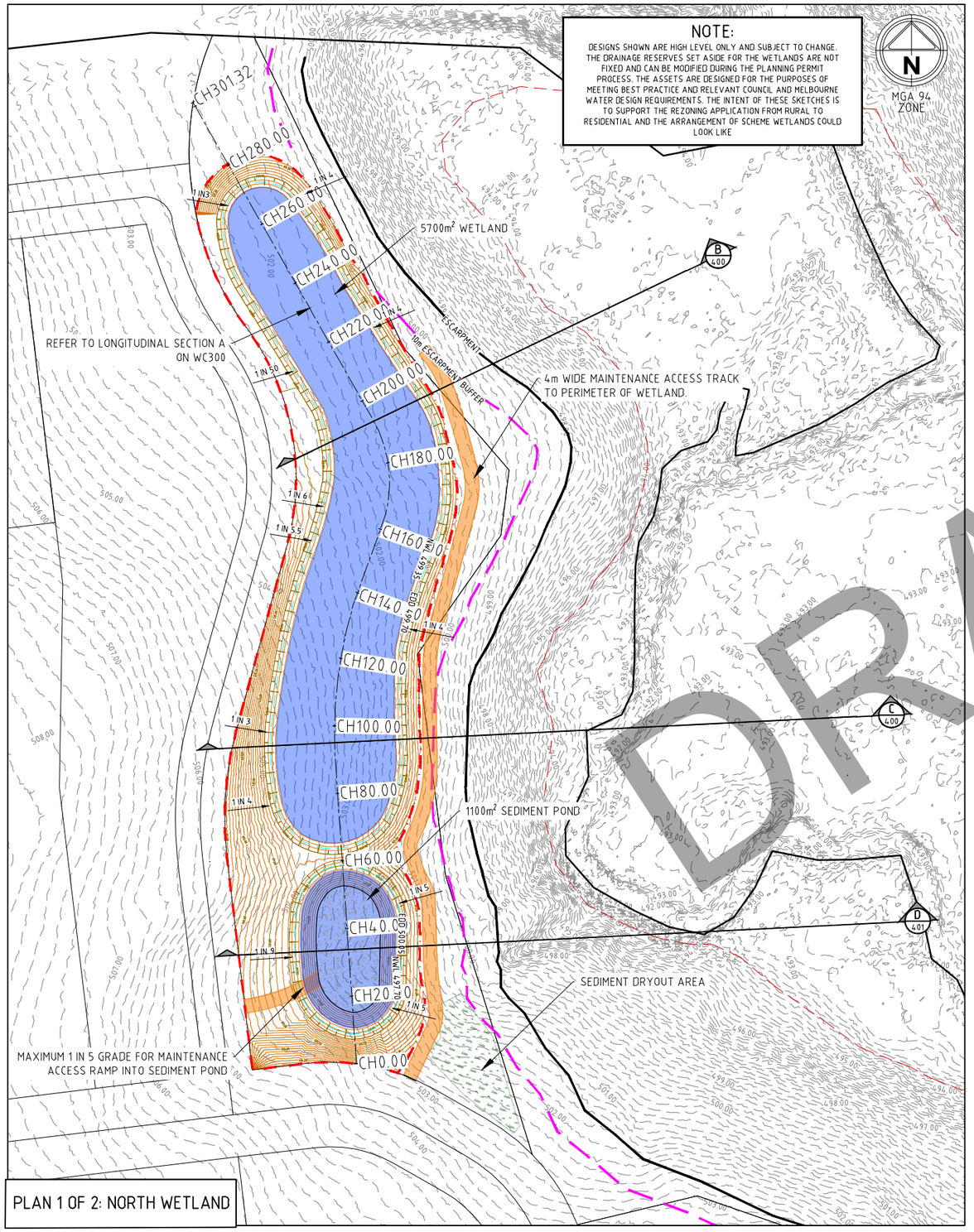
WETLAND CONCEPT DRAWINGS

NOTE:

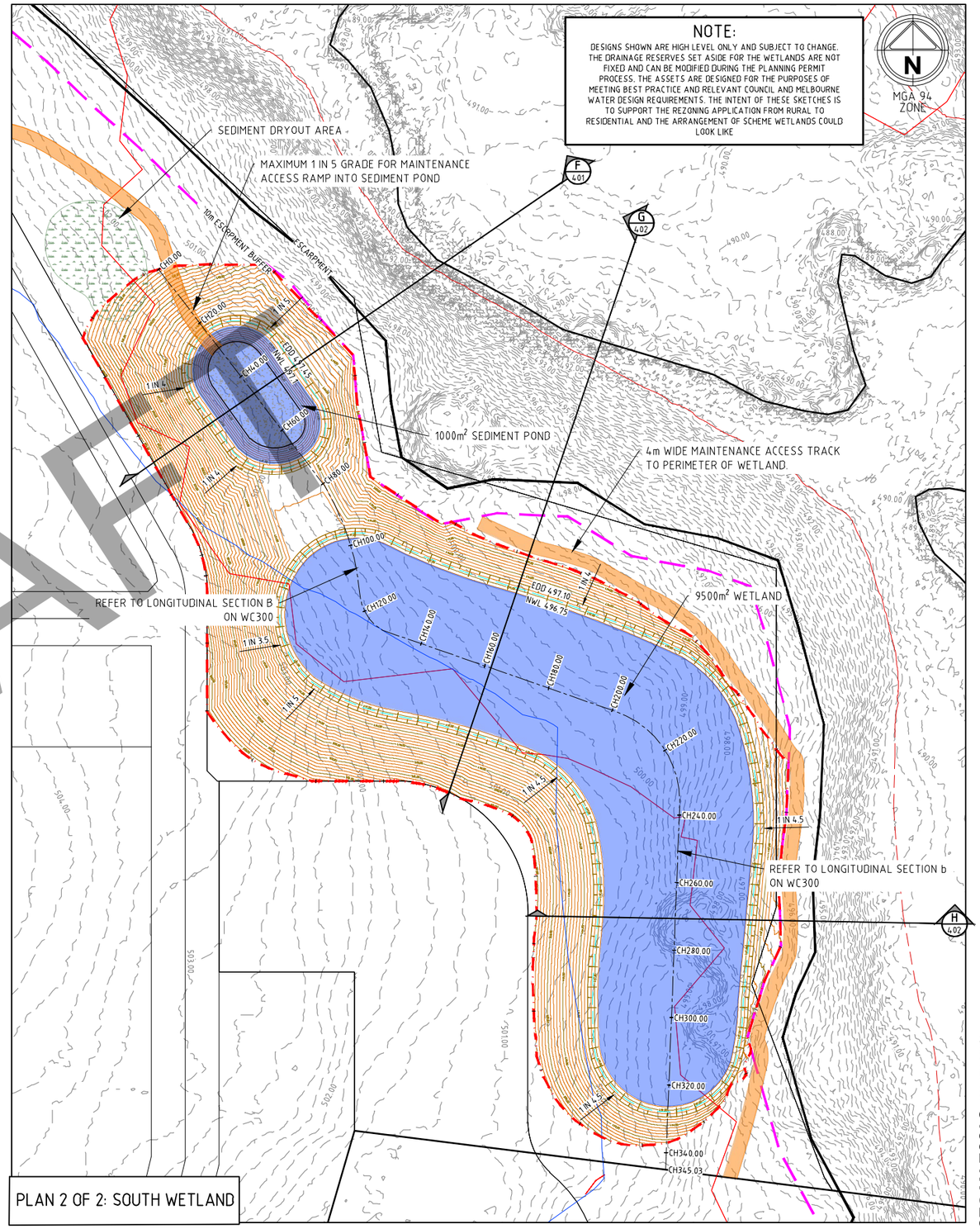
DESIGNS SHOWN ARE HIGH LEVEL ONLY AND SUBJECT TO CHANGE. THE DRAINAGE RESERVES SET ASIDE FOR THE WETLANDS ARE NOT FIXED AND CAN BE MODIFIED DURING THE PLANNING PERMIT PROCESS. THE ASSETS ARE DESIGNED FOR THE PURPOSES OF MEETING BEST PRACTICE AND RELEVANT COUNCIL AND MELBOURNE WATER DESIGN REQUIREMENTS. THE INTENT OF THESE SKETCHES IS TO SUPPORT THE REZONING APPLICATION FROM RURAL TO RESIDENTIAL AND THE ARRANGEMENT OF SCHEME WETLANDS COULD LOOK LIKE

N

MGA 94 ZONE



PLAN 1 OF 2: NORTH WETLAND



PLAN 2 OF 2: SOUTH WETLAND

Spiire REF No. 310024WC200

REV.	AMENDMENTS	APP'D	DATE
A	FOR INFORMATION ONLY	K.W.	13/12/23

H 1:750 SCALE @ A1 (0, 7.5, 15, 22.5, 30, 37.5)

Melbourne Water

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MELWAY REFERENCE	000
PLAN REFERENCE	310024
MELBOURNE WATER OFFER FILE No.	310024

spiire

spiire.com.au ABN 55 050 029 635

DRAWN BY	M.T.
DESIGNED	C.B.
CHECKED	K.W.
AUTHORISED	
SHEET	2 OF 6

OMRB DEVELOPMENTS
MELBOURNE WATER CORPORATION
MOORABOOL SHIRE COUNCIL

WETLAND LONGITUDINAL SECTIONS

DRAFT

DWG NO. 310024 / 2

REV. A

file name 310024WC200.dwg layout name WC200
file location G:\31\310024\Water\ACAD plotted by Cristian Barros plot date 15/12/2023 4:35:24 PM

NOTE:
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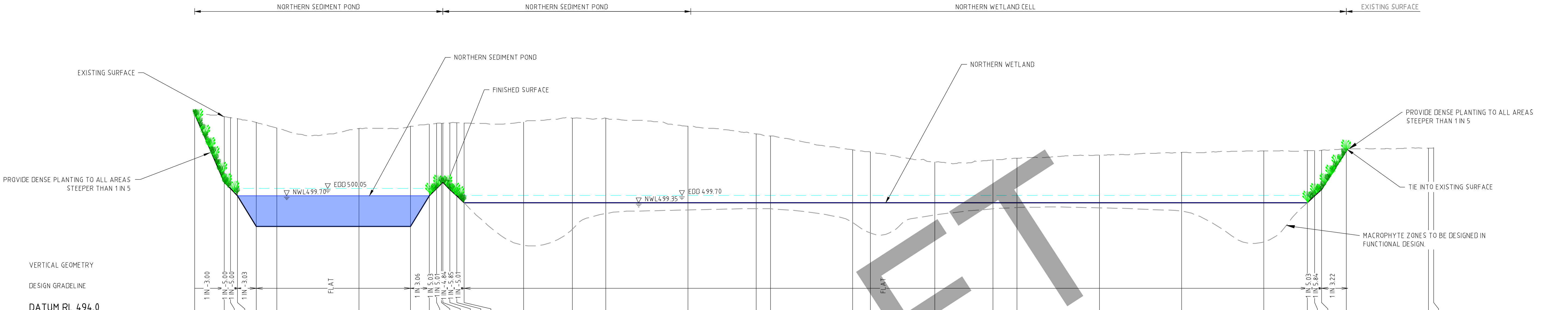
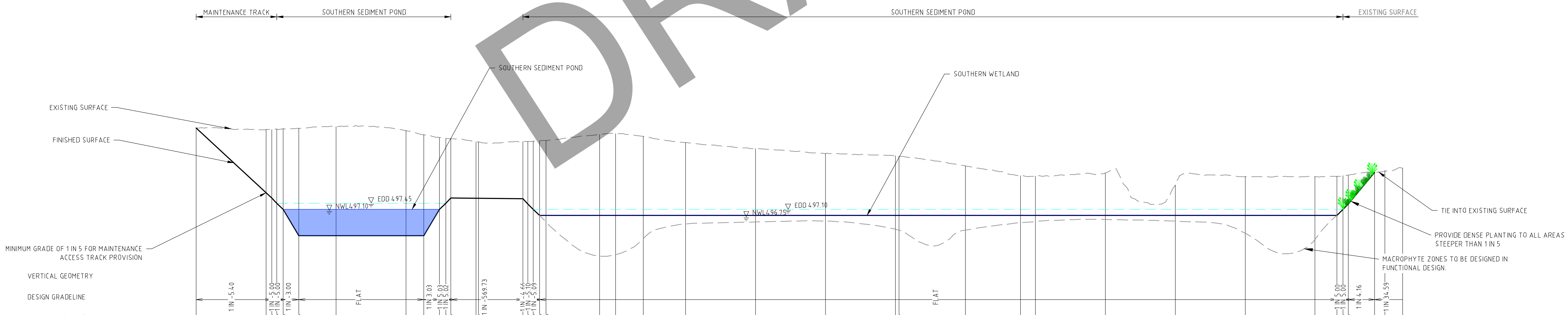


DATUM RL 494.0

CHAINAGE	DESIGN CENTRELINE	EXISTING SURFACE
0.000	503.694	
7.206	500.350	503.555
8.706	500.050	503.499
10.457	499.700	503.453
15.005	498.200	503.269
20.000	498.200	502.988
40.000	498.200	502.974
52.495	498.200	503.078
57.080	499.700	503.190
58.839	500.050	503.220
60.000	500.282	503.218
60.341	500.350	503.223
62.036	500.000	503.243
63.791	499.700	503.251
65.543	499.350	503.236
80.000	499.350	503.278
91.845	499.350	503.466
100.000	499.350	503.472
120.000	499.350	503.082
136.576	499.350	502.713
140.000	499.350	502.610
160.000	499.350	501.932
164.347	499.350	501.830
180.000	499.350	501.331
194.083	499.350	501.455
200.000	499.350	501.527
220.000	499.350	501.683
240.000	499.350	501.805
260.000	499.350	501.887
270.533	499.350	501.896
272.294	499.700	501.900
274.045	500.000	501.920
280.000	501.851	501.970
300.000		502.017
301.321		502.028

NORTHERN WETLAND - LONG SECTION A



DATUM RL 490.5

CHAINAGE	DESIGN CENTRELINE	EXISTING SURFACE
0.000		501.751
20.000	498.045	501.663
21.590	497.750	501.669
23.090	497.450	501.683
24.841	497.100	501.701
29.341	495.600	501.734
40.000	495.600	501.837
60.000	495.600	501.599
65.053	495.600	501.365
69.600	497.100	501.205
71.359	497.450	501.170
72.865	497.750	501.137
80.000	497.737	500.967
80.705	497.736	500.951
93.416	497.714	500.975
94.879	497.400	500.974
96.408	497.100	500.989
98.191	496.750	501.014
100.000	496.750	501.034
115.334	496.750	501.382
120.000	496.750	501.435
127.854	496.750	501.266
140.000	496.750	500.910
160.000	496.750	500.576
180.000	496.750	500.293
200.000	496.750	500.160
200.965	496.750	500.136
220.000	496.750	499.583
235.718	496.750	499.024
240.000	496.750	499.009
260.000	496.750	499.175
280.000	496.750	498.494
300.000	496.750	498.966
320.000	496.750	498.968
326.237	496.750	498.980
327.988	497.100	499.021
329.490	497.400	499.056
337.059	499.220	499.220
340.000		499.286
345.030		499.463

SOUTHERN WETLAND - LONG SECTION E

DRAFT

Spiire REF No. 310024WC300

file name 310024WC300.dwg layout name WC300
file location G:\31\310024\Water\ACAD plotted by Cristian Barros plot date 15/12/2023 4:35:28 PM

REV.	AMENDMENTS	APP'D	DATE
A	FOR INFORMATION ONLY	K.W.	13/12/23

Melbourne Water

H 1:500 SCALE @ A1 V 1:100

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MELWAY REFERENCE 000

PLAN REFERENCE 310024

MELBOURNE WATER OFFER FILE No. 310024

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DESIGNED C.B.
CHECKED K.W.
AUTHORISED

SHEET 3 OF 6

OMRB DEVELOPMENTS
MELBOURNE WATER CORPORATION
MOORABOOL SHIRE COUNCIL

SHEET 1

DRAFT

DWG NO. 310024 / 3

REV. A

NOTE:
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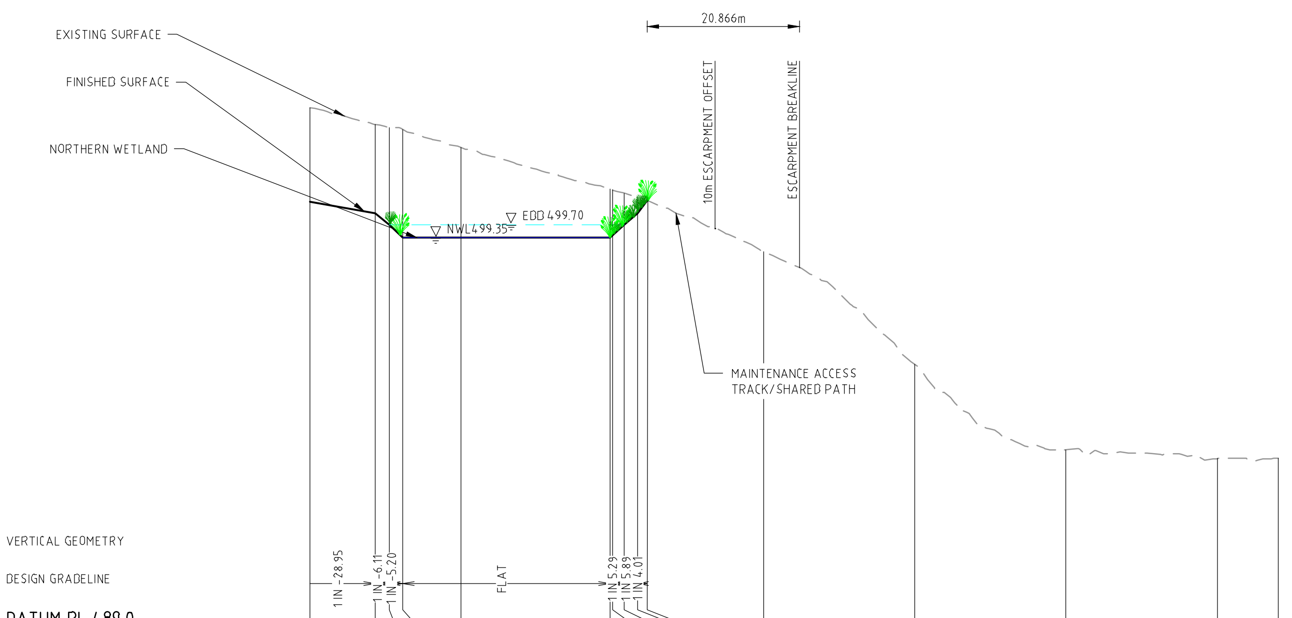
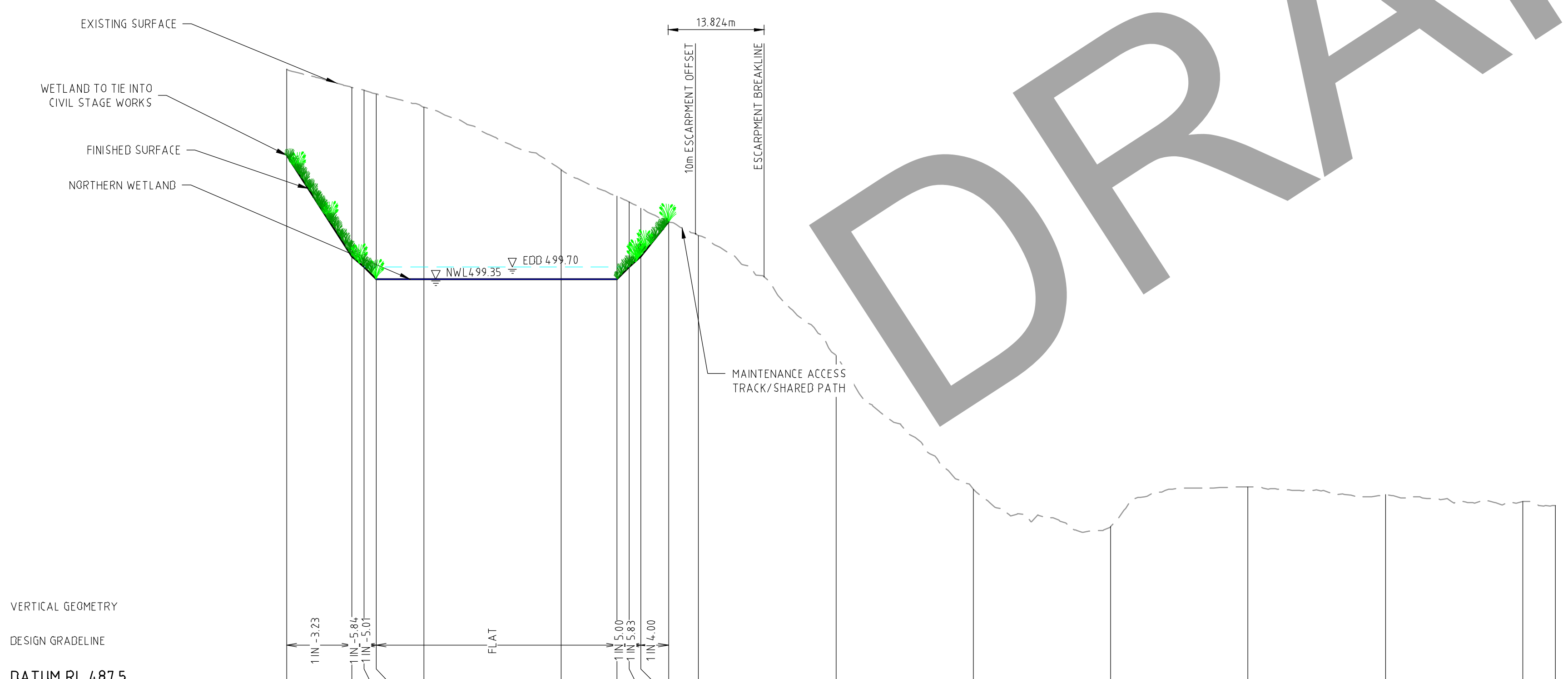


DESIGN CENTRELINE	500.298	500.000	499.700	499.350	499.350	499.350	499.412	499.700	500.000	500.335					
EXISTING SURFACE	502.797	502.353	502.260	502.217	501.741	500.637	500.619	500.530	500.425	500.335	498.981	495.995	493.733	493.506	493.515
CHAINAGE	0.000	8.616	10.448	12.266	20.000	39.672	40.000	41.525	43.291	44.638	60.000	80.000	100.000	120.000	128.082

NORTHERN WETLAND - CROSS SECTION B



DESIGN CENTRELINE		500.000	499.700	499.350	499.350	499.350	499.350	499.700	500.000	501.012								
EXISTING SURFACE	505.450	504.926	504.840	504.734	504.354	502.526	501.758	501.595	501.417	501.012	500.615	497.130	493.234	492.143	493.303	493.071	492.870	492.761
CHAINAGE	0.000	9.546	11.299	13.052	20.000	40.000	48.125	49.875	51.625	55.671	60.000	80.000	100.000	120.000	140.000	160.000	180.000	184.722

NORTHERN WETLAND - CROSS SECTION C

DRAFT

Spiire REF No. 310024WC400

REV.	AMENDMENTS	APP'D	DATE

Melbourne Water

H 1:500 SCALE @ A1 V 1:100 — 0 5 10 15 20 25 / 0 1 2 3 4 5

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MELWAY REFERENCE 000
PLAN REFERENCE 310024
MELBOURNE WATER OFFER FILE No. 310024

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DESIGNED C.B.
CHECKED K.W.
AUTHORISED

SHEET 4 OF 6

OMRB DEVELOPMENTS
MELBOURNE WATER CORPORATION
MOORABOOL SHIRE COUNCIL
SHEET 1

DRAFT

DWG NO. 310024 4

REV. -

file name 310024WC400.dwg layout name WC400
file location G:\31\310024\Water\ACAD plotted by Cristian Barros plot date 15/12/2023 4:35:34 PM

NOTE:

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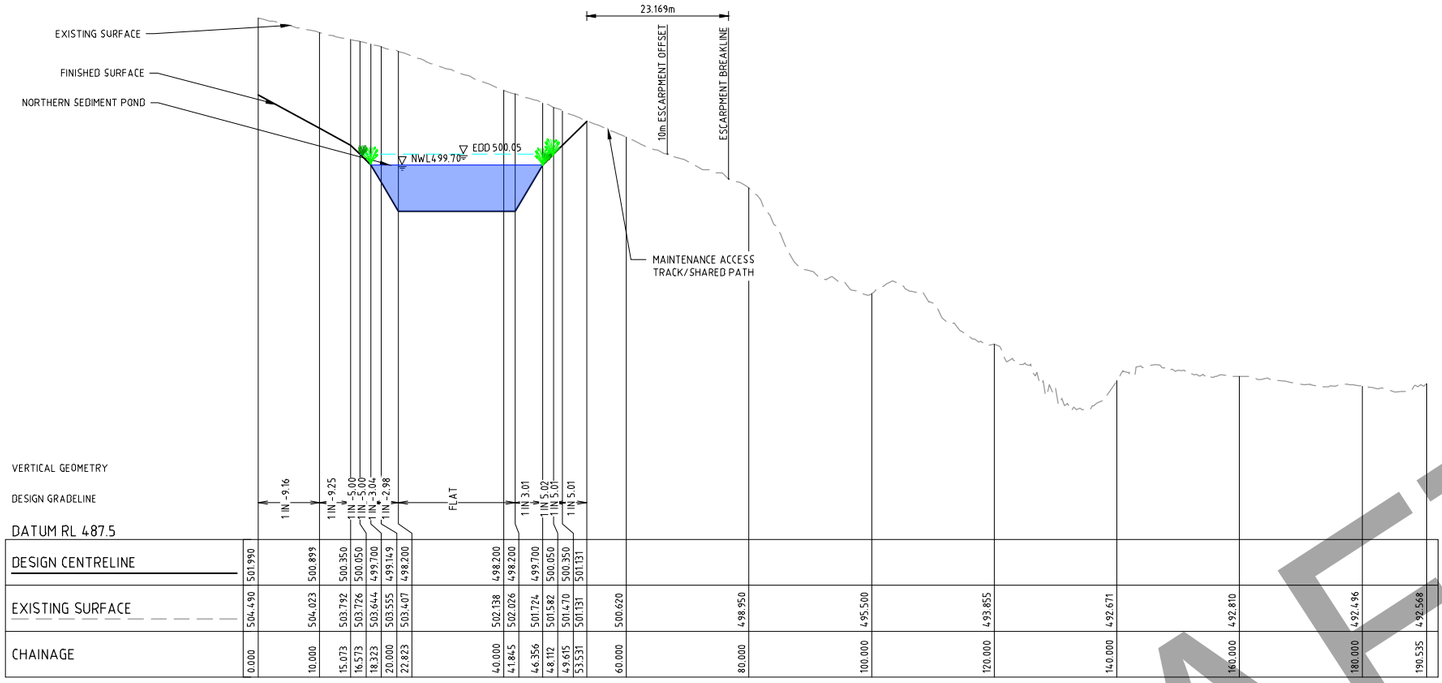
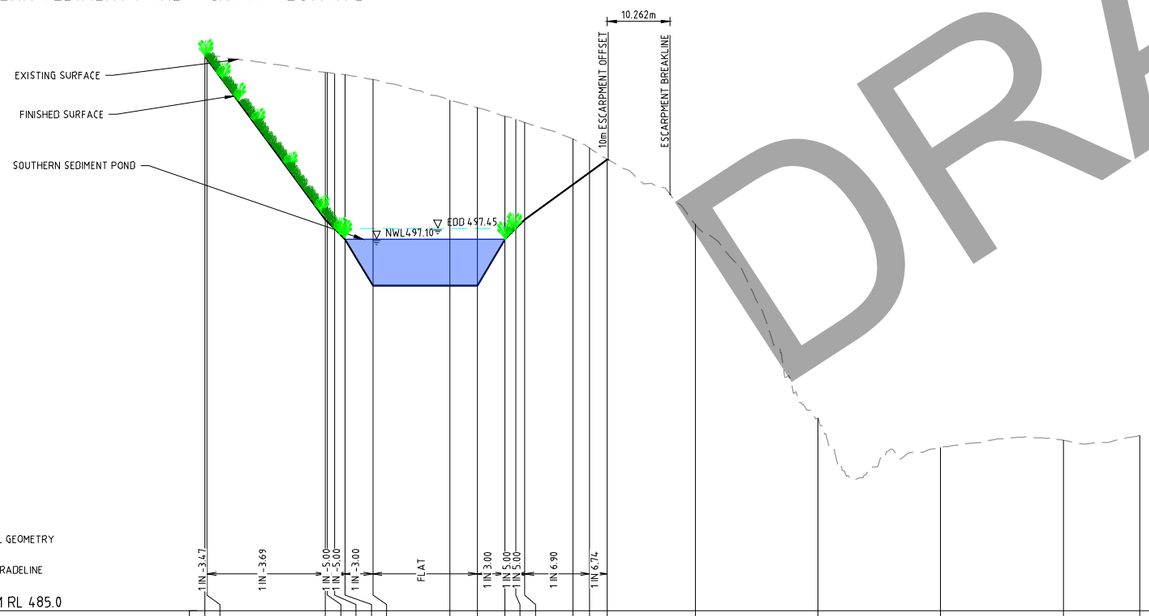


VERTICAL GEOMETRY		1 IN -9.16	1 IN -9.25	1 IN -5.00	1 IN -5.00	1 IN -3.04	1 IN -2.98	FLAT	1 IN 3.01	1 IN 5.02	1 IN 5.01	1 IN 5.01								
DESIGN GRADELINE																				
DATUM RL 487.5																				
DESIGN CENTRELINE	501.990		500.899	500.350	500.050	499.700	498.200		498.200	498.200	499.700	500.050	500.350	501.131						
EXISTING SURFACE	504.490		504.023	503.792	503.726	502.644	503.555	503.407	502.138	502.026	501.724	501.582	501.470	501.131	500.620	498.950	495.500	493.855	492.671	492.810	492.496	492.568
CHAINAGE	0.000		10.000	15.073	16.573	18.323	20.000	22.823	40.000	41.845	46.356	48.112	49.615	53.531	60.000	80.000	100.000	120.000	140.000	160.000	180.000	190.535

NORTHERN SEDIMENT POND - CROSS SECTION D



VERTICAL GEOMETRY		1 IN -3.47	1 IN -3.69	1 IN -5.00	1 IN -5.00	1 IN -3.00	FLAT	1 IN 3.00	1 IN 5.00	1 IN 5.00	1 IN 6.90	1 IN 6.74							
DESIGN GRADELINE																			
DATUM RL 485.0																			
DESIGN CENTRELINE	503.087			497.750	497.682	497.450	495.600		495.600	495.600	497.100	497.450	497.750	498.882	499.283	499.691			
EXISTING SURFACE	503.096	503.092		502.541	502.534	502.507	502.468	502.309	501.630	501.396	501.111	501.015	500.909	500.372	500.073	499.691	497.584	491.263	490.313	490.554	490.706	
CHAINAGE	0.000	0.347		19.659	20.000	21.159	22.910	27.410	40.000	44.443	48.944	50.695	52.195	60.000	62.767	65.831	80.000	100.000	120.000	140.000	152.462	

SOUTHERN SEDIMENT POND - CROSS SECTION F

Spiire REF No. 310024WC401

REV.	AMENDMENTS	APP'D	DATE

Melbourne Water

H 1:500 SCALE @ A1 V 1:100

0 5 10 15 20 25
0 1 2 3 4 5

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MELWAY REFERENCE 000

PLAN REFERENCE 310024

MELBOURNE WATER OFFER FILE No. 310024

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VICTORIA 8007 AUSTRALIA T 61 3 9993 7888
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DESIGNED C.B.
CHECKED K.W.
AUTHORISED

SHEET 5 OF 6

OMRB DEVELOPMENTS
MELBOURNE WATER CORPORATION
MOORABOOL SHIRE COUNCIL

SHEET 2

DRAFT

DWG NO. 310024 / 5

REV. -

file name 310024WC400.dwg layout name WC401
file location G:\31\310024\Water\ACAD plotted by Cristian Barros plot date 15/12/2023 4:35:35 PM

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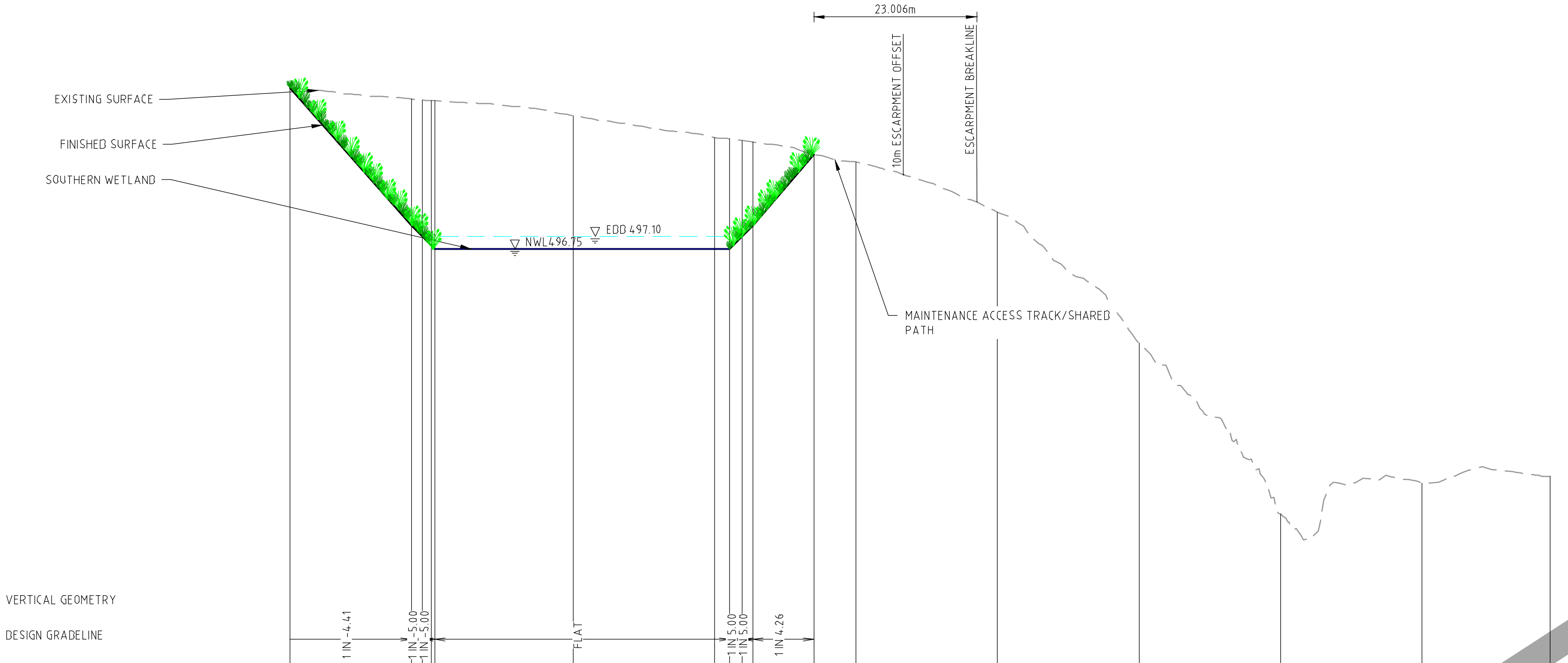
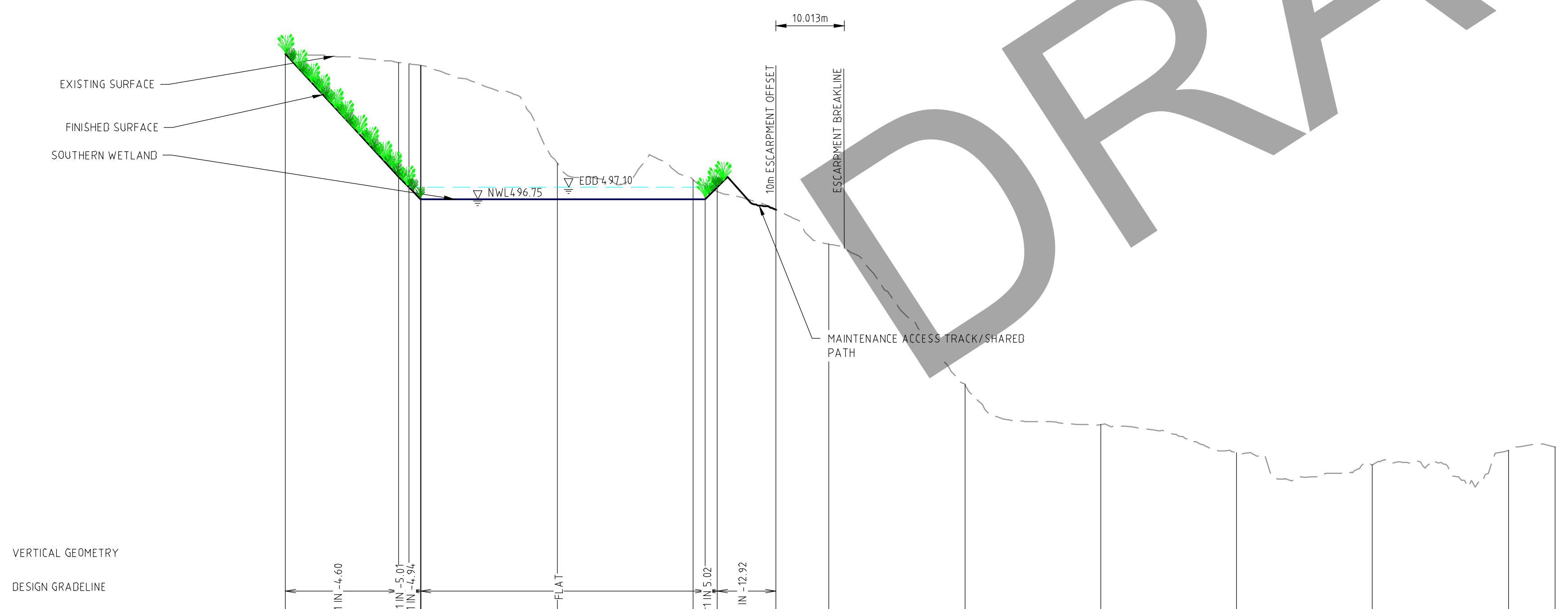


DATUM RL 484.5

DESIGN CENTRELINE	501.297	497.400	497.100	496.838	496.750	496.750	496.750	496.750	497.100	497.400	498.428						
EXISTING SURFACE	501.308	500.989	500.961	500.944	500.939	500.525	499.905	499.863	499.817	499.775	499.428	499.207	497.789	494.087	489.250	490.119	490.321
CHAINAGE	0.000	17.188	18.688	20.000	20.439	40.000	60.000	62.143	63.895	65.396	74.027	80.000	100.000	120.000	140.000	160.000	178.076

SOUTHERN WETLAND - CROSS SECTION G



DATUM RL 484.0

DESIGN CENTRELINE	501.028	497.400	497.100	496.750	496.750	496.750	496.750	496.750	497.100	496.432							
EXISTING SURFACE	501.028	500.776	500.736	500.693	500.689	497.813	497.316	497.130	496.978	496.432	495.418	491.296	490.105	489.280	488.920	489.343	489.451
CHAINAGE	0.000	16.683	18.186	19.914	20.000	40.000	60.000	61.794	63.550	72.227	80.000	100.000	120.000	140.000	160.000	180.000	186.890

SOUTHERN WETLAND - CROSS SECTION H

Spiire REF No. 310024WC402

REV.	AMENDMENTS	APP'D	DATE
A	FOR INFORMATION ONLY	K.W.	13/12/23

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MELWAY REFERENCE 000

PLAN REFERENCE 310024

MELBOURNE WATER OFFER FILE No. 310024

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AUTHORISED

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OMRB DEVELOPMENTS
MELBOURNE WATER CORPORATION
MOORABOOL SHIRE COUNCIL

SHEET 3

DRAFT

DWG NO. 310024 6

REV. A