SOUTHERN LINKS 1 RESIDENTIAL

STORMWATER ASSESSMENT REPORT

PROJECT INFORMATION

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AUTHOR	Min Shon Senior Engineer
REVIEWED BY	Sean McDonald Team Leader
APPROVED BY	Dean Morrison Regional Director

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19 Kaimiro Street, Pukete, Hamilton
New Zealand
Phone 07 242 0601
www.maven.co.nz

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1. Statement of Experience

Author

I am Min Shon, a Senior Civil Engineer with Maven Waikato Ltd. I hold a Master of Civil Engineering from the University of Auckland and am a Chartered Professional Engineer (CPEng) registered with Engineering New Zealand. I have over six (6) years of professional experience in civil engineering, with particular experience in land development, including earthworks, roading, and three waters infrastructure design.

I confirm that I have read and understood the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023, and agree to comply with its requirements.

I acknowledge that, as an expert, I have an overriding duty to assist the decision-maker impartially on matters within my area of expertise. In preparing this report, I have exercised my independent professional judgement, and the opinions expressed in this report are my own. I understand that my duty as an expert is not to advocate for the interests of the applicant or any other party.

I confirm that the matters addressed in this report are within my area of expertise, except where I expressly identify that I have relied upon information, assessments or opinions provided by others. I have made all reasonable enquiries and have not knowingly omitted any material facts known to me that might alter or detract from the opinions expressed in this report.

Reviewer

My name is Sean McDonald. I am a Senior Engineer and Team Leader at Maven Waikato Ltd ("Maven") , a firm of consulting engineers and surveyors based in Hamilton. I have been employed by Maven since 2025. I hold a Bachelor of Engineering Technology (Highways) which I graduated form in 2006, hold a New Zealand Certificate of Engineering "Civil" (NZCE) and I am a member of Engineering New Zealand.

I have over 29 years' of experience in the field of civil engineering including as a civil engineering technician, New Zealand army engineer, council engineer and consulting engineer, with over 20years' of experience post degree. Since obtaining my degree I have worked on a variety of civil projects including State Highway works, 3 Waters Infrastructure works, Residential Land Development, Commercial and Industrial Land Development and major Infrastructure projects such as the upgrade of the Port Boteny (Sydney) Naphtha Storage Facilities, the Transpower upgrade and extension of the Whakamuru Substation, the Central Government Rotorua Youth Justice Facility and Contact Energy's new Tauhara Geothermal power station.

I confirm that I have read and understood the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023, and agree to comply with its requirements.

I acknowledge that, as an expert, I have an overriding duty to assist the decision-maker impartially on matters within my area of expertise. In preparing this report, I have exercised my independent professional judgement, and the opinions expressed in this report are my own. I understand that my duty as an expert is not to advocate for the interests of the applicant or any other party.

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2. Executive Summary

2.1. Purpose and Context

This Stormwater Assessment Report (SAR) supports the resource consent application for the Southern Links 1 - Residential development, an approximately 46.2-hectare greenfield site located in the greater Southern Links 1 Growth Cell to the south of Hamilton City, located in the Waipā District, delivering approximately 938 units and a mixed-use commercial hub. The SAR has been prepared in accordance with Waikato Regional Council (WRC) guidelines, the Regional Infrastructure Technical Specifications (RITS V2, 2025) and the Hamilton City Council Draft Mangakōtukutuku Integrated Catchment Management Plan (ICMP) and accompanies the Substantive Application under the Fast-Track Approvals Act 2024.

The site sits within the Mangakōtukutuku catchment, it is bisected by low-lying terrain partially underlain by Holocene Swamp deposits and partially by Hinuera Formation interbedded silt and sand soils. Walton Subgroup forms the base of the hills to the east. Most of the catchment consists of low-lying flat farmland, interspersed with straight artificial farm drains and the Mangakōtukutuku Stream.

2.2. Design Philosophy and Statutory Framework

The SAR adopts an integrated treatment-train approach that addresses stormwater quality, quantity, flood management and hydraulic connectivity across the development. The design is outcome-focused and incorporates Water Sensitive Urban Design (WSUD) principles. Key statutory drivers include the Waikato Regional Policy Statement, the Waikato Regional Plan, the National Environmental Standards for Freshwater, RITS, and the WRC Stormwater Management Guidelines (TR20-07).

The core design targets are:

- Retention of the pre-development initial abstraction depth (10 mm) via on-lot retention;
- Water quality treatment through a treatment train achieving 75% TSS removal;
- Extended detention of the Water Quality Volume (1.2 × WQV over 24 hours);
- Attenuation of the 2-year and 10-year ARI events to pre-development discharge rates and
- Attenuation of the 100-year ARI climate change event to no more than 80% of pre-development discharge.

Climate change allowances use NIWA downscaled end-century SSP5-8.5 (RCP 8.5) projections.

2.3. Flood Modelling and Downstream Effects

A comprehensive 2D flood model was developed using HEC-RAS, with hydrology generated in HEC-HMS using the SCS Curve Number method. The model extends from the upstream contributing catchments through the development site to the downstream Mangakōtukutuku Stream, capturing the full hydraulic system that influences flood behaviour on site.

The existing-condition modelling confirms that the site is currently subject to widespread shallow flooding and poorly defined flow paths.

Post-development modelling demonstrates that the proposed stormwater measures effectively mitigate flood impacts. Peak flow rates are reduced at all assessed sections under the 2-year, 10-year and 100-year climate change events.

Catchment	PRE Development Flows (m^3/s)			POST Development Flows (m^3/s)		
	2YR	10YR	100YR	2YR	10YR	100YR
A	0.6615	1.14	1.512	0.29	0.45	0.6
B	0.4542	0.78	1.0376	0.25	0.4	0.53
C	0.5418	0.93	1.2	0.25	0.4	0.54
D	0.3819	0.65	0.864	0.188	0.3	0.2
E	0.3968	0.68	0.904	0.21	0.34	0.45
F	0.244	0.42	0.55736	0.205	0.342	0.53
	2.6802	**4.6**	**6.07496**	**1.397**	**2.232**	**2.85**

Table 1 – Pre & Post Development Flows

The results indicate that the proposed wetland systems are capable of achieving substantial attenuation of post-development runoff prior to discharge into the existing drainage network.

2.4. Conclusion

The SL1 – Residential Development SAR provides a robust assessment of the regulatory requirements and objectives that form the basis of the integrated stormwater management framework philosophy for the proposed development, and to demonstrate the impact of the flood modelling both pre and post development for that integrated stormwater management framework.

Hydraulic modelling confirms that post-development peak discharges are reduced relative to pre-development conditions across all design events, and overland flow paths safely convey extreme events within road corridors.

Ongoing engagement with WRC, HCC, WDC and local Iwi will allow the final stormwater strategy to be refined further at detailed design if required. These ongoing engagements are not considered impediments to the feasibility of the stormwater strategy, rather an opportunity to ensure the final details of the implementation of the stormwater strategy serve the wider area stormwater management goals and culture values.

3. Introduction

3.1. Overview

This Stormwater Assessment Report (SAR) outlines the regulatory and technical requirements, the objectives that form the basis of the integrated stormwater management framework and also assesses the flooding impacts both pre and post development of that integrated stormwater management framework and the associated effects for the proposed development that supports the resource consent for the SL1 – Residential Development located at 37A Saxby's Road, Hamilton.

This SAR is intended to be read in conjunction with the Stormwater Management Plan (SMP) that provides more detailed information on the technical aspects of the SAR stormwater management philosophy and demonstrates how the stormwater-related resource consent conditions will be implemented and complied with during the development of the site.

This report is to also be read in conjunction with the engineering drawings and calculations and is to accompany the Substantive Application under the Fast-Track Approvals Act 2024.

3.2. Site

The SL1 – Residential area is a circa 46.2ha block of land within the Waipā District and it is contiguous with Hamilton City Council's southwestern boundary. The current site access is through Saxbys Road in Hamilton. The site adjoins with the existing residential houses to the north, and the remainder of the site is surrounded by agricultural land. The site is predominantly utilised for pastoral grazing, with land cover comprising maintained grassland consistent with agricultural use.

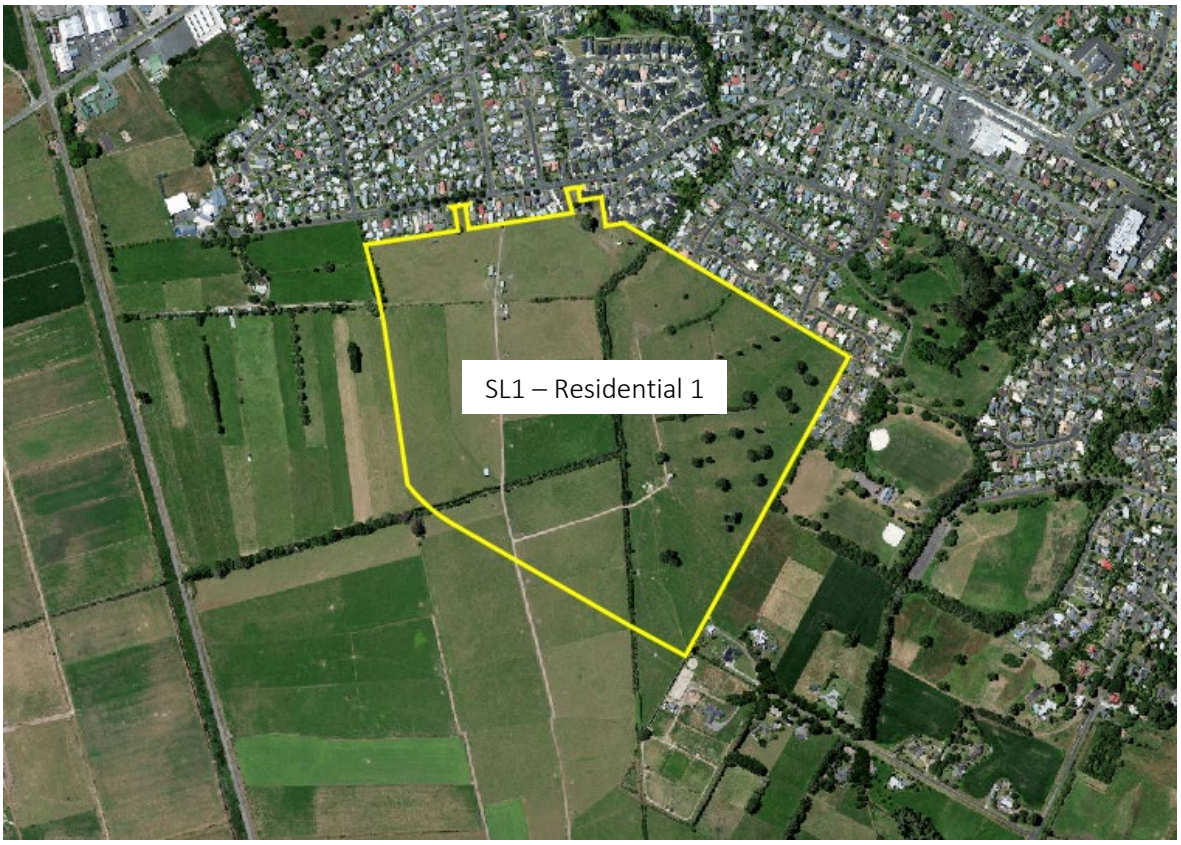


Figure 1: Site Locality

Figure 2: Proposed Master Plan

Figure 3: Indicative Development Staging Plan

3.3. Catchment

The Project forms a part of wider SL1 Growth Cell. The SL1 Growth Cell is a circa 500ha block of land within Waipā District. The Residential Development area has a northwest to southeast orientation within Saxby's Road, and Reynolds Drive bordering HCC boundary is consisting of approx. 46.2ha of land. Most of the catchment is low-lying flat farmland, interspersed with straight artificial farm drains and Mangakōtukutuku Stream.

The Mangakōtukutuku Stream enters the site from south-west flowing towards north-east, meandering through the Residential Site and dividing it into two areas, east and west. This allows major catchment flows through the Residential Site to be managed within the stream.

Figure 4: Existing Site Stormwater Layout

4. Residential Development

This SAR relates solely to the Residential Development. The Residential Development area has been subdivided into a number of stormwater catchments and sub-catchments to support the assessment of stormwater quality, quantity, hydraulic connectivity, and flood management requirements.

Spanning approximately 46.2 ha, the Residential Development includes approximately 938 lots designed with mix of housing typologies and densities.

The key feature of the development is integrated 'Treatment train' approach utilising artificial wetlands, forebays, high flow bypass to convey and attenuate overflows from the road and lot areas releasing at 80% of pre-development flows into the Mangakōtukutuku stream.

5. Statutory Context

Future stormwater discharge from SL1 is required to comply with the Regional Policy Statement and the Regional Resource Management Plan both administered by Waikato Regional Council. The relevant policy criteria are summarised below:

5.1. WAIKATO REGIONAL POLICY STATEMENT (RPS)

The Waikato Regional Policy Statement (Te Tauākī Kaupapa here ā-Rohe) is a mandatory statutory document that provides an overview of the resource management issues within the Waikato Region and establishes the framework for the integrated management of the region's natural and physical resources.

The RPS identifies the significant resource management issues for the region and sets out the objectives, policies, and methods to address these issues. It provides direction for regional and district plans and is a relevant consideration in the assessment of resource consent applications.

Central to the outcomes sought by the RPS is the protection and enhancement of freshwater ecosystems and the sustainable management of stormwater. The following sections identify the key objectives and policies of the Waikato RPS relevant to the proposed stormwater management system and the assessment of this resource consent application.

Relevant objectives include:

1. Integrated management of natural and physical resources;
2. Restoration and protection of the health and wellbeing of the 10 Waikato River;
3. Avoiding the potential adverse effects of climate change;
4. The relationship of tangata whenua with the environment is recognised and provided for;
5. Sustainable and efficient use of resources;
6. Development of the built environment in an integrated, sustainable, and planned manner.
7. Maintain or enhance the mauri and identified values of fresh water bodies;
8. Maintain or enhance riparian areas and wetlands;
9. Historic or cultural heritage sites, areas or landscapes are protected or maintained;
10. Healthy, functioning ecosystems and indigenous biodiversity;
11. Maintenance and enhancement of amenity;
12. Protection of the natural character of wetlands and rivers and their margins;
13. Maintenance and enhancement of public access along rivers; and
14. The effects of natural hazards are managed.

The Waikato RPS states territorial authorities should consider promoting best practice stormwater management for urban areas and preparing stormwater catchment plans for greenfield urban developments.

This SAR supports achievement of the above Waikato RPS objectives. It integrates land-use and three-waters planning within SL1. The SAR identifies the three-waters infrastructure necessary to accommodate urban growth, whilst giving effect to the relevant development principles, to ensure the freshwater ecosystem is protected and improved through urbanisation.

5.2. WAIKATO REGIONAL PLAN

The Waikato Regional Plan is the principal policy tool that enables Waikato Regional Council to conduct its functions to achieve the sustainable management of resources within the Region. With respect to this SAR, the following modules of the Waikato Regional Plan are relevant: matters of significance to Māori, water, river and lake beds, land and soil, and air.

Each module provides an overview of the environmental problems the Regional Council seeks to manage, the objectives to be achieved, policies (actions to be taken) to achieve them, and methods and rules to implement the objectives and policies. Each module also describes the environmental results anticipated and how they will be monitored. Resource consent will be required for any activity that will not comply with permitted activity standards listed under the plan.

Future development of SL1 will need to be supported by resource consents from Waikato Regional Council under the Waikato Regional Plan. Such activities which would trigger consents are listed below:

1. Works in a stream bed – such as for culvert, bridge, pipeline or stormwater pipeline outfall construction or any stream diversion; and
2. Vegetation clearance and earthworks – including for management of sediment-laden runoff and dust.
3. Diversion and discharge of stormwater into water or onto or into land, including management of contaminants.

5.3. COMPREHENSIVE CITY-WIDE DISCHARGE CONSENT

Hamilton City Council holds a Comprehensive Stormwater Discharge Consent (CSDC) that authorises the diversion and discharge of stormwater from the existing urban area of Hamilton City. While the proposed Southern Links Residential Development is not currently covered by the CSDC, the proposed stormwater management system has been developed in accordance with the Mangakōtukutuku Integrated Catchment Management Plan (ICMP), which establishes the strategic framework for future stormwater management within the catchment. The proposed stormwater management approach is therefore consistent with the objectives and principles of the ICMP and has been developed to integrate with the wider catchment stormwater network as urban development progresses.

The CSDC will authorise any new stormwater diversion and discharge activities established after 2012, if the Waikato Regional Council certifies they comply with the consent's conditions.

To achieve such certification, any new stormwater diversion and discharge activity in SL1 must meet these two tests:

1) It must be consistent with the conditions of the CSDC; and

2) Either:

a) Where it is in a greenfield area, it must be consistent with an ICMP; or

b) Where it is to be established in an existing urbanised area, it must not increase peak discharge rates or flow volumes in the receiving water body above those that would have occurred when the CSDC was granted in 2012, unless it is demonstrated that any such increases will have no adverse effects.

New stormwater diversion and discharge activities established in developing catchments that are not consistent with Catchment Management Plans will remain authorised under site specific resource consents. That is the Council's CSDC will not authorise them.

5.4. MANGAKOOTUKUTUKU INTEGRATED CATCHMENT MANAGEMENT PLAN (CONSULTATION REVISION NOVEMBER 2020)

Hamilton City Council has prepared a draft ICMP for the Mangakōtukutuku Catchment, which SL1 falls within. The Mangakōtukutuku Catchment is in the southwest of Hamilton, with some headwater tributaries extending south across the boundary into Waipā District. The Mangakōtukutuku stream flows into the Waikato River directly northeast of the intersection of Peacocke Rd and Norrie St. The SL1 area is located within the Hahawaru sub-catchment.

The preparation of this SAR has been developed in accordance with the draft ICMP, as the future stormwater management within SL1 will need to remain consistent with any approved ICMP. The primary outcomes envisaged within any approved ICMP are summarised below:

1. Water quality in a treatment train (two or more treatment devices in series).
2. The final treatment device is to be artificial wetlands which will also conduct attenuation functions.
3. 24 hour extended detention (ED) to reduce erosion potential and manage stream base flows for the Water Quality Volume (WQV) runoff event.
4. 2 year and 10 year peak flow attenuation to reduce erosion potential resulting from increased runoff from development.
5. 100 year ARI peak flow attenuation (80% pre-development flow) to reduce erosion potential resulting from increased runoff from development
6. Retention of the first 10mm of stormwater, and/or the initial abstraction volume required for new Road surfaces.
7. Retention of On-lot predevelopment initial abstraction depth is required as per WRC stormwater Management Guidelines.
8. Utilisation of soakage for stormwater disposal where practical to replenish groundwater and minimise runoff volume.

5.5. HAMILTON CITY COUNCIL CODE OF PRACTICE FOR SUBDIVISION AND LAND DEVELOPMENT

The Regional Infrastructure Technical Specification (RITS) (Waikato Local Authority Shared Services, 2018) set standards for design and construction of earthworks, transportation, water, wastewater and stormwater infrastructure, landscapes, and accepted materials. Resource consents for subdivisions and developments in the Catchment will require developers to comply with RITS when constructing such infrastructure.

The RITS and Hamilton District Plan require stormwater to be managed according to a hierarchy, which is based on sustainability and efficiency principles. Preference is given to disposing of stormwater by a method that is in the following hierarchy:

a) Retention of rainwater/stormwater for reuse on site.

b) Soakage techniques.

c) Treatment and detention and gradual release to a watercourse.

d) Treatment and detention and gradual release to a piped stormwater system.

Although both the RITS and the Hamilton City District Plan describe these stormwater management measures as a hierarchy, neither document prescribes specific criteria for when it is appropriate to adopt a lower-order measure. Accordingly, the proposed stormwater management system has been developed using engineering judgement taking into account the characteristics of the site, the receiving environment, the proposed land use, and the objectives of the Mangakōtukutuku ICMP.

Below specifies Water Quality Standards (RITS) required to be achieved via use of Treatment Train system.

SECTION 4 – STORMWATER UPDATED MAY 2018

CRITERIA	DESIGN PARAMETER	WHEN REQUIRED
Water quality treatment[12]	Refer to the stormwater management disposal hierarchy (section 4.2.3.1) and treatment devices hierarchy (section 4.2.16) for disposal and treatment preferences. Water quality requirements include: • Total suspended solids (TSS) (75% removal of post development loads taken as measured at the discharge point from site). • Total Metals (copper, zinc) to achieve maximum practical removal possible. • Temperature (<25°C) • Nutrients (total nitrogen, total phosphorus and ammoniacal nitrogen) to achieve maximum practical removal rates.	Always.

Figure 5: Excerpts from RITS specifies Water Quality Standards.

In addition, stormwater quantity control standards specified in RITS table 4-3 are to be complied with which includes:

a. Extended Detention for WQV (1/3 of 2 year ARI storm) – a 1.2 factor is to be applied to the WQV volume/Storage as per Table 48: Minimum device design summary in RITS.

b. 2 year ARI storm – Attenuation back to pre-development flow is required.

c. 10 year ARI storm – Attenuation back to pre-development flow is required.

d. 100 year ARI storm – Attenuation back to 80% predevelopment flow is required.

6. Existing Catchment

The majority of the catchment consists of low-lying flat farmland, interspersed with straight artificial farm drains and the Mangakōtukutuku Stream.

The Mangakōtukutuku Stream enters the site from south-west flowing towards north-east, meandering through the proposed site and dividing the site into two catchment areas, east and west. This allows major catchment flows through the site to be managed within the streams.

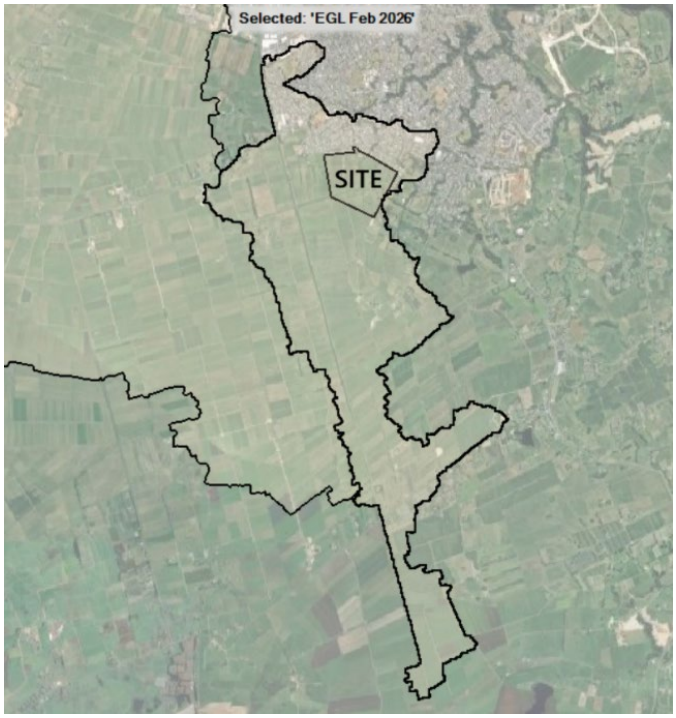


Figure 6: Existing 100YR Catchment

The catchment above has been delineated using HEC-HMS V3.12 based on a 1m grid from LINZ data as detailed below.

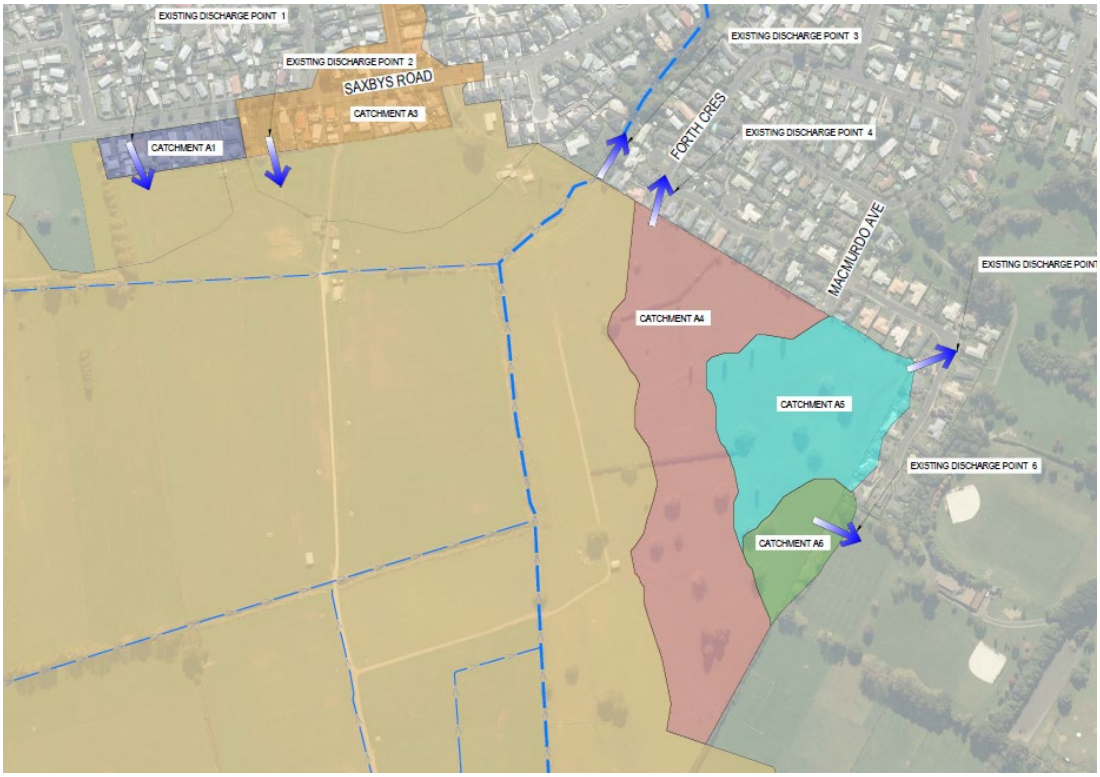


Figure 7: SL1 Residential Existing 100YR Catchment

Catchment desktop study identifies that there are 4 main discharge points, discharging downstream of the site.

The existing catchment comprises a combination of local site runoff and significant upstream contributing catchments draining through the Mangakōtukutuku Stream and associated drainage channels. Understanding these existing flow paths and discharge locations is critical to ensuring future development does not adversely affect upstream or downstream flooding. Accordingly, catchment delineation and hydrological modelling were undertaken to establish baseline flow conditions and inform the proposed stormwater management strategy.

Existing catchment flows were determined using HEC-HMS, with hydrological inputs developed from the TR20 worksheets. Table 1 summarises the modelled existing peak flows, which currently discharge to the existing drainage network. Runoff from external catchments has not been included in the assessment, as these flows are outside the development catchment and continue to discharge directly to the existing drainage system.

Table 2 – Pre Development Flows

Catchment	Pre Development Flows		
	2YR	10YR	100YR
A	0.6615	1.14	1.512
B	0.4542	0.78	1.0376
C	0.5418	0.93	1.2
D	0.3819	0.65	0.864
E	0.3968	0.68	0.904
F	0.244	0.42	0.55736
	2.68 m^3/s	**4.6 m^3/s**	**6.07 m^3/s**

7. Design Approach

The proposal seeks to allow for conveyance of stormwater through the site and discharge at target rate as summarized below.

- 10mm Initial abstraction – Retention tanks or Soakage (where applicable) to provide the overall site retention.
- WQV for Treatment – Artificial Wetlands for Treatment. Refer to WQV Treatment under 6.4 Artificial Wetlands section in this assessment
- ED – Artificial Wetlands to provided extended Detention refer to table as per RITS
- 2year and 10year - to be conveyed through pipe system and be attenuated within the proposed artificial wetlands.
- 100year, to be conveyed through road corridors and discharged into the proposed artificial wetlands to undergo attenuation of flow to 80% Pre development.

7.1. DESIGN PARAMETERS

Rainfall information from the NIWA High Intensity Rainfall Design System V4 (HIRDS) has been used for the site location including an allowance for climate change.

The design shall be based on the following parameters.

- Rainfall Data – NIWA cc adjusted using RITS RCP8.5 2100-2120 (climate change 4 degrees)
- Rainfall data distribution – using Normalised 24hr temporal rainfall intensity (Climate change 3.8degrees)
- Runoff Method: SCS CN – CN used as advised by Geotech and as per Geotech Report.
- Design Events assessed: 2, 10 and 100year existing/historical and RCP8.5 2100-2120

Table 3 – HIRDS hydrology Data

Rainfall Event	Historical Rainfall Depth	RCP 8.5 Rainfall Depth	RCP8.5 Rainfall Intensity
2 Year ARI	65.6mm	84mm	-
WQV		28mm	-
10 Year ARI	99.2mm	131mm	137mm/hr
100 Year ARI	152mm	204mm	-

Table 4 – CN Values

Scenario	Impervious (CN)	Pervious (CN)
Pre Development	98	89
Post Development	98	85

Maximum probable development (MPD) = 70% impervious and 30% pervious as per the draft ICMP, refer to image below.

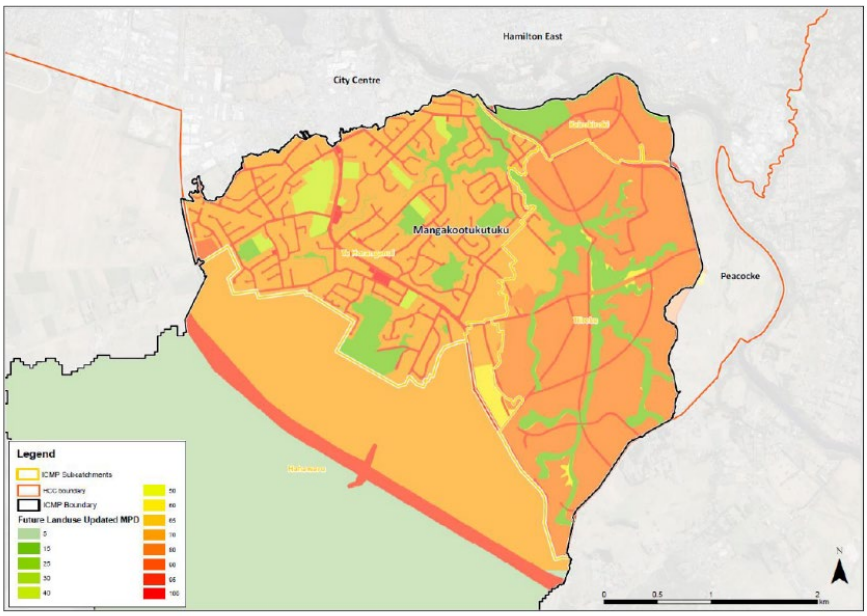


Figure 27: Impervious Percentage Assumptions for Maximum Probable Development, and Hypothetical Development in Hahawaru Sub-catchment.

Figure 8: ICMP excerpts showing MPD for the proposed site

7.2. HYDRAULIC CONNECTIVITY

Hydraulic connectivity across the site is maintained through retention of the Mangakōtukutuku Stream corridor and associated drainage channels. As part of the proposed development, diversion channels are proposed to intercept and convey upstream catchment flows through the development while maintaining existing discharge locations. Proposed artificial wetland systems and culvert crossings have been integrated into the drainage network to ensure flood conveyance and stormwater attenuation objectives are achieved without adversely affecting upstream or downstream hydraulic conditions.

Stormwater management for the developments will include several devices which are considered as water sensitive design elements. These include the following:

- Central Stormwater Reserve along Mangakōtukutuku Stream corridor
- Modified drains/channels with landscaping
- Artificial Stormwater Wetlands, Forebay and spillway
- High flow bypass.
- On-lot stormwater Retention through tanks with overflow into the primary system.
    - With soakage devices where viable
- Protection of existing bush and covenant features
- Planting of riparian areas as per Landscape Values Assessment by B&A

The Water Quality Volume (WQV) is treated at source for on Lot areas. Overflows above the 2-year ARI cc event are directed to Artificial Wetlands. The proposed stormwater solution ensures stormwater is being treated before discharging into the receiving environment.

The General Layout and approach for stormwater design throughout the site is as shown below.

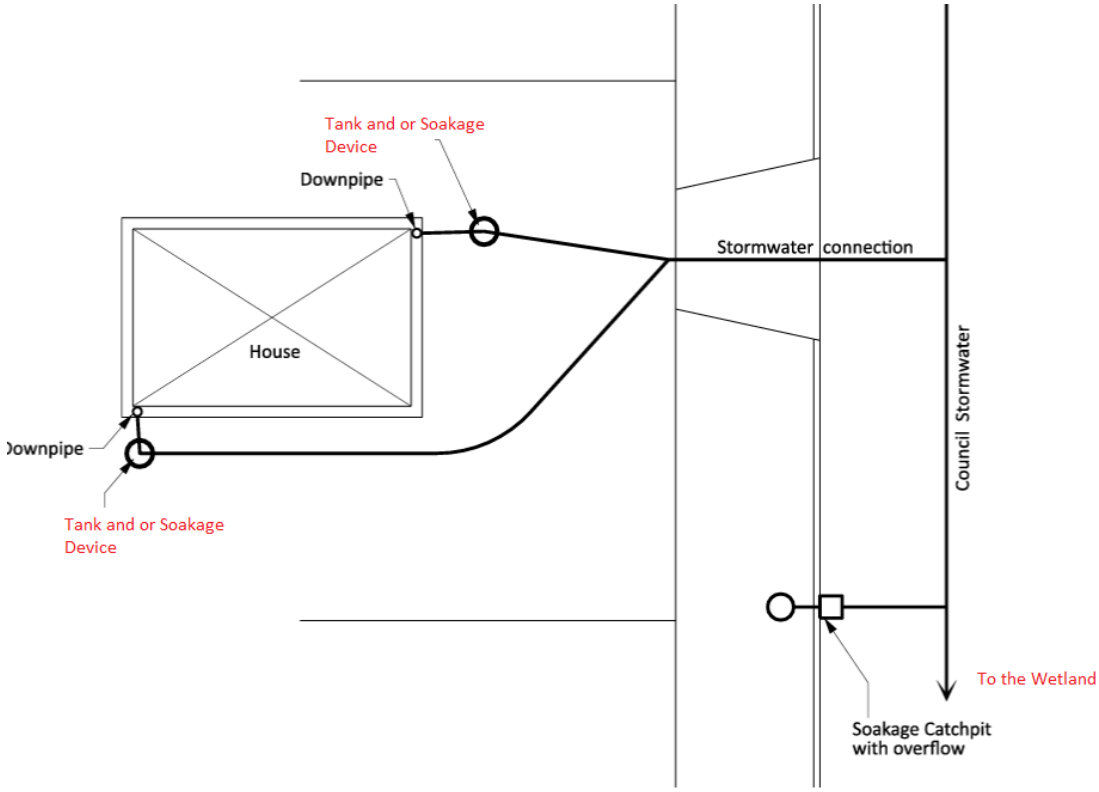


Figure 9: RITS excerpt. D4.5 Drawing with Added Mark up for Conceptual Purposes

On-lot "Rain Harvesting" tanks will collect stormwater from roof areas and soakage devices will be utilised to manage stormwater from roofs, accessways, and parking areas. Overflow will be via lot connections to the primary stormwater network.

Retention of the first 10mm of runoff from impervious surfaces, including the initial abstraction volume required for road surfaces, will be provided within the lot areas. This initial runoff contains the highest concentration of contaminants accumulated on impervious surfaces between rainfall events. Retaining this volume at source reduces the frequency and volume of untreated discharges, promotes infiltration and evapotranspiration where practicable, and contributes to achieving the stormwater quality.

Artificial Stormwater Wetlands are proposed to provide treatment and attenuation/storage for the required flows as specified in the RTIS and ICMP prior to entering the Existing stream/Drain.

8. Stormwater Assessment

The proposed stormwater management system has been developed in accordance with the objectives of the Mangakōtukutuku ICMP and adopts an integrated treatment train approach that addresses stormwater quality, quantity, flood management, and hydraulic connectivity across the development.

The site is influenced by significant upstream catchments, existing drainage channels, and flood-prone areas. Accordingly, the proposed design seeks to maintain and improve existing hydraulic connectivity through the retention of primary drainage corridors, implementation of diversion channels, construction of stream culvert crossings, and provision of wetlands and stormwater storage areas throughout the development.

Initial abstraction requirements will be achieved through distributed on-lot retention tanks provided for each residential lot as per discussion with HCC. The proposed tank provision exceeds the required 10 mm retention volume and forms the first component of the overall stormwater treatment train.

Runoff generated from roads and developed areas will be conveyed through the primary stormwater network and directed to the proposed artificial wetland, forebays, and high-flow bypass systems. These devices provide water quality treatment, extended detention, attenuation, and flood storage functions while supporting the staged development of the site.

Two major stream crossings are proposed to support the collector road network. These crossings have been designed using both 1D Hydroflow and 2D HEC-RAS hydraulic modelling to ensure that existing stream conveyance is maintained while minimising flood impacts and preserving ecological connectivity. Refer to section 5.10. Stormwater Culverts in the Stormwater Management Plan for more information.

Flood management forms a key component of the overall strategy. Existing external catchment flows will be maintained through the site via retained drainage corridors and diversion channels, while wetlands and associated storage areas provide attenuation and flood mitigation from the proposed site. The proposed stormwater system has been developed to manage both development-generated runoff and existing upstream flows, ensuring the site can function within the wider catchment system.

Overall, the proposed stormwater management framework provides an integrated solution that balances urban development, flood management, water quality treatment, and environmental protection while aligning with the long-term objectives of the Mangakōtukutuku ICMP.

8.1. RETENTION OF INITIAL ABSTRACTION

The Mangakōtukutuku ICMP and RITS requires retention of the initial abstraction volume generated by development. This may be achieved through retention of the first 10 mm of rainfall from impervious surfaces or by retaining a volume equivalent to the pre-development initial abstraction.

To ensure a conservative design approach, the 10 mm retention criterion has been applied throughout the development. Based on the contributing catchment areas for each development stage, the total required retention volume is estimated at approximately 4,459m^3. For comparison, the equivalent pre-development initial abstraction volume is estimated at 713m^3. As the 10 mm retention requirement represents the more onerous criterion, it has been adopted as the design basis for the development.

Table 5 - Retention Volume Requirement

	Unit Total	Accumulative	Area - Catchment (m^2)	Retention Volume 10mm (m^3)	Retention Volume 1.6mm (m^3)
Stage 1	320	320	131600	1316	211
Stage 2	220	540	76500	765	122
Stage 3	188	728	125400	1254	201
Stage 4	89	817	53100	531	85
Stage 5	127	944	59300	593	95
				4459	**713**

Retention of the required volume will be achieved by providing on-lot retention tanks for each residential unit. As per Hamilton City Council's Plan Change 12 (Three Waters Rules), standard 5m³ retention tank is proposed for each lot, providing a distributed retention system across the development. While preliminary assessments identified varying storage requirements across individual stages, a consistent 5m³ tank volume has been adopted throughout the development to simplify construction, operation, and long-term maintenance. This approach also provides flexibility during future subdivision and building consent stages while maintaining compliance with the development's stormwater management objectives.

Overflow from the retention tanks will discharge to the downstream stormwater network once the available storage volume has been exceeded. Subsequent treatment, detention, and attenuation will be provided through the proposed on-lot tanks, wetlands, diversion channels, and associated stormwater infrastructure located throughout the development.

Where site-specific ground conditions are demonstrated to be suitable, soakage devices may be incorporated to receive overflow from the retention tanks. The use of soakage will be subject to confirmation through site-specific geotechnical investigations demonstrating adequate infiltration capacity, acceptable groundwater separation. Where these criteria are satisfied, the required retention tank volume may be reduced, subject to detailed hydraulic design demonstrating that the overall stormwater quantity and quality performance of the system is maintained.

The final sizing and configuration of the retention tanks and any associated soakage devices will be confirmed during detailed design in accordance with the parameters and objectives in Stormwater Management Plan (SMP).

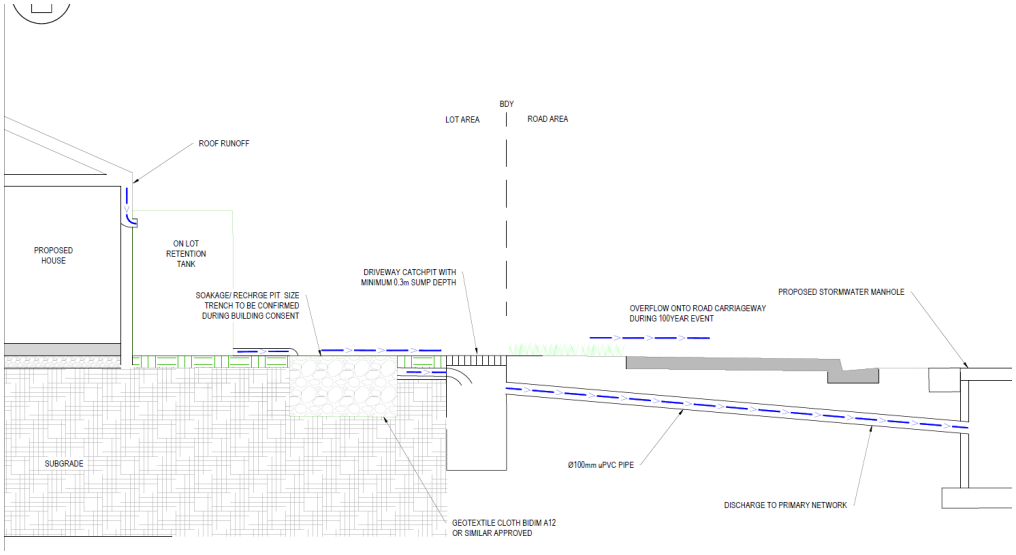


Figure 10: On-lot Stormwater Mitigation Concept

8.2. TREATMENT TRAIN

The proposed stormwater management system adopts a treatment train approach that manages stormwater at multiple stages before discharge to the receiving environment. The treatment train has been developed in accordance with the objectives of the Mangakōtukutuku ICMP and integrates source control, treatment, attenuation, and flood management measures throughout the development.

The first component of the treatment train is the provision of on-lot retention tanks for each residential unit. These tanks provide retention of the required initial abstraction volume and reduce the volume of runoff entering the downstream stormwater network.

Runoff exceeding the available tank storage is conveyed through the primary stormwater network and directed towards the proposed artificial stormwater wetland systems. Prior to entering the wetlands, stormwater passes through forebays which provide sediment capture and assist in reducing maintenance requirements within the primary treatment areas.

The artificial stormwater wetlands form the primary stormwater treatment and attenuation devices within the development. In addition to providing water quality treatment, the artificial stormwater wetlands provide extended detention, attenuation, and flood storage functions. High-flow bypass structures are incorporated into the wetland design to safely convey larger storm events while maintaining treatment performance for more frequent rainfall events.

Following treatment and attenuation, stormwater is discharged via controlled outlet structures incorporating low-flow orifices, spillways, and backflow prevention devices. These outlet structures regulate discharge rates, provide attenuation of post-development flows, and prevent reverse flow from the receiving drainage network during periods of elevated downstream water levels.

Collectively, the treatment train provides an integrated stormwater management solution that addresses water quality, water quantity, flood management, and hydraulic connectivity objectives while supporting the staged development of the SL1 residential area.

8.3. STORMWATER QUALITY AND QUANTITY

The proposed stormwater management system has been developed to address both water quality and water quantity requirements in accordance with the Mangakōtukutuku ICMP, RITS, relevant Waikato Regional Council guidance, and HCC CoP. The overall strategy adopts a treatment train approach that combines source control, treatment, attenuation, flood storage, and conveyance measures throughout the development.

Water Quality Mitigation

Water quality mitigation is achieved through a combination of distributed source control measures and centralised wetland treatment systems. Initial abstraction is provided through on-lot retention tanks located throughout the development, reducing the volume of runoff entering the downstream stormwater network and providing retention of the first flush of stormwater.

Stormwater generated from roads and developed areas is conveyed through the primary stormwater network and directed toward a series of constructed wetlands. The wetlands incorporate forebays and treatment zones designed to capture sediment and improve stormwater quality prior to discharge to the receiving environment. The proposed wetland system forms the primary water quality treatment mechanism for the development and has been configured in accordance with the objectives of the Mangakōtukutuku ICMP.

Water Quantity Mitigation

Water quantity mitigation is achieved through an integrated stormwater management system that combines source control with downstream attenuation and controlled discharge. Runoff from impervious surfaces is initially managed through distributed on-lot retention tanks, which provide the required initial abstraction and reduce runoff volumes at source. Runoff is then conveyed to the proposed artificial stormwater wetlands, where additional attenuation storage is provided before flows are discharged at controlled rates to the receiving environment in accordance with the approved stormwater management design

The site is influenced by significant upstream catchments and existing drainage channels traversing the development area. Accordingly, the stormwater strategy has been designed to manage both development-generated runoff and external catchment flows while maintaining hydraulic connectivity through the site.

Existing drainage corridors are retained and supplemented by diversion channels, stream culvert crossings, wetlands, and associated storage areas. These elements work together to maintain conveyance of external flows, reduce flood risk within the development, and provide attenuation of post-development runoff prior to discharge.

The proposed wetland systems also provide flood storage and attenuation benefits during larger storm events. High-flow bypass structures incorporated within the wetland design allow larger flows to be conveyed safely through the system while preserving treatment performance for more frequent events. Collectively, these measures contribute to the achievement of the stormwater quantity objectives established within the ICMP while supporting the wider flood management strategy for the development.

8.4. ARTIFICIAL WETLANDS

Wetlands will be designed in accordance with Waikato's Regional Infrastructure Technical Specifications (RITS) and other relevant standards including TR20-06 Waikato Stormwater Runoff Modelling Guideline (TR20-06) and TR20-07 Waikato Stormwater management Guideline (TR20-07). Wetlands will provide secondary treatment (following forebay and/or swales) and extended detention prior to discharging to the existing/enhanced stream or primary network. Wetlands will be located offline to the existing/enhanced stream, to allow upstream flows to bypass the wetland.

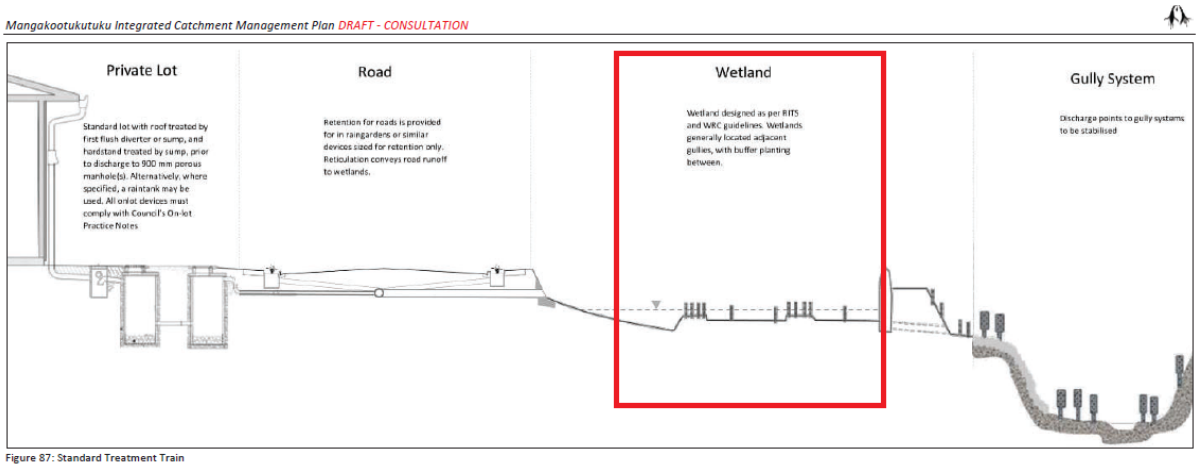


Figure 11: ICMP excerpt

Figure 8 above is an excerpt from the ICMP depicting the overall treatment system, the wetland requirements highlighted as being relevant to this section.

Each wetland is sized to treat the full water quality volume (WQV) including storage and slow release of the extended detention to protect the downstream natural receiving environment. Details of artificial stormwater wetlands are listed in the table below:

TABLE 6 – ARTIFICIAL STORMWATER WETLAND DETAILS

	Catchment	Catchment Area	Permanent Water Level
Artificial SW Wetland A	A	13.16 ha	37.5mRL
Artificial SW Wetland B	B	7.65 ha	37.4mRL
Artificial SW Wetland C	C	8.54 ha	37.4mRL
Artificial SW Wetland D	D	5.31 ha	37.95mRL
Artificial SW Wetland E	E	5.93 ha	37.9mRL
Artificial SW Wetland F	F	3.99 ha	38.8mRL

Any rainfall event larger than the WQV ED will bypass the wetland and be directed via a high-flow bypass to the existing stream.

Wetland bathymetry will be banded and consist of a mix of deep and shallow pools to allow for dispersed flow through vegetated areas per RITS guidelines. The extended detention level or live storage zone (LSZ) will be set at a maximum depth of 0.35m above the permanent water level to support healthy plants per table 4-21 of the RITS document.

According to the TR20-07, when the impervious area for the contributing catchment is less than or equal to 70%, the wetland is to be sized at 3% of the catchment. According to the ICMP, the site is placed within a 70% impervious MPD zone (refer to section 4.2). This would suggest a 3% sizing factor

may be satisfactory for the proposed wetlands. Refer to Maven stormwater drawings for preliminary proposed catchments and wetland locations. Table 6 below provides conceptual wetland sizes for each catchment.

Designs have been undertaken for the artificial wetlands are included in proposed Engineering Plans. Figure 12 below shows the proposed artificial wetlands located within stage 1.

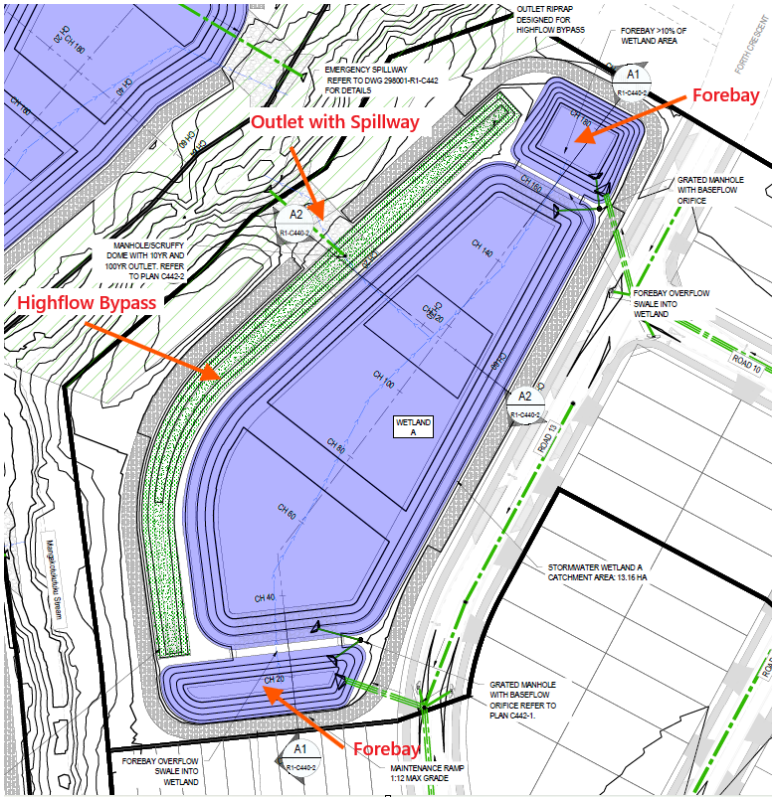


Figure 12: Artificial Stormwater Wetland A Details

Wetlands at the development have been split into 6 wetlands (Wetland 1A to Wetland 1F), to allow it to be constructed in stages as each development occurs. Wetlands are separated by a high-flow bypass and are proposed to treat and attenuate 100yr event including climate change.

Catchment	Area (Ha)	Wetland Pool Area
1A	13.0	0.39ha
1B	7.6	0.23ha
1C	8.5	0.27ha
1D	5.3	0.23ha
1E	5.9	0.16ha
1F	4.0	0.11ha

Table 7 – Wetland Pool Area

To achieve extended detention, an Orifice is to be designed and placed at the permanent water level within the wetland zone to allow slow release of WQV ED storage within 24hrs into the High flow

bypass. An overflow in the form of a weir or similar will be located above the WQV ED Storage level for higher flow events into the high flow bypass.

The Artificial Stormwater Wetlands shall be designed to comply with the below requirements.

Detention/Attenuation

- 2, 10 and 100 year ARI attenuation
- WQV ED Storage and slow discharge over 24hrs

WQV Treatment

- WQV treatment

TABLE 8 – ARTIFICIAL STORMWATER WETLAND CATCHMENT

Stage	Wetland	Catchment	Area (Ha)
1	Wetland A	A	13.16
2	Wetland B	B	7.64
3	Wetland C	C	8.54
4	Wetland D	D	5.31
5	Wetland E	E	5.93
3	Wetland F	F	3.99

Upstream of the wetland a stormwater splitter device is proposed. This will direct the WQV flow into the wetland area for treatment and storage. Higher flows are to be diverted into the high flow bypass to undergo attenuation. This device is currently represented as a stormwater flow splitter manhole, however, could also be a weir device located within the high-flow bypass channel.

When designing/choosing a stormwater mitigation and treatment device upstream from the wetland, it is essential to consider the stormwater base flow into the proposed wetlands. This is to maintain the biodiversity of the wetland and its treatment function.

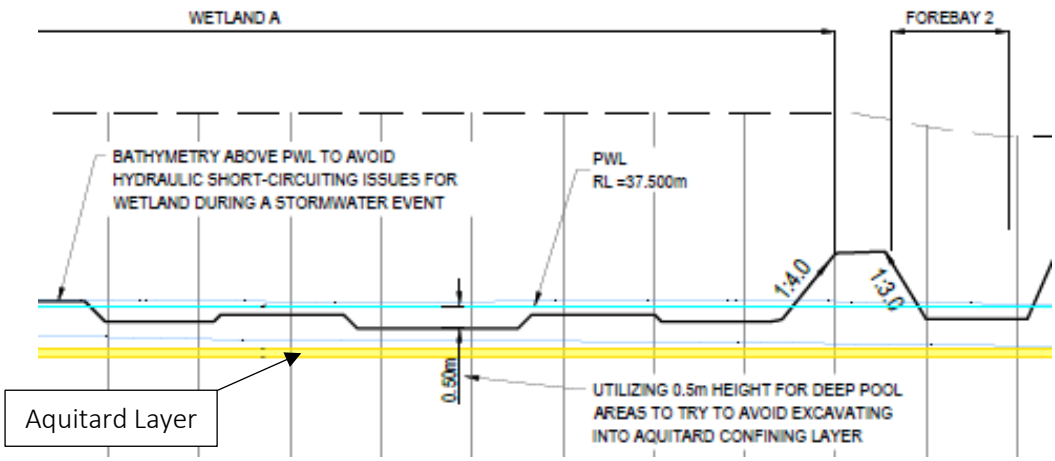


Figure 13: Artificial Stormwater Wetland Section with Aquitard Layer

An existing aquitard layer has been identified across much of the northern portion of the development area, including within the footprint of several proposed wetland systems. The presence of this low-permeability layer has been considered during the conceptual design of the wetlands. To avoid disturbance of the aquitard and maintain the existing subsurface conditions, the permanent water level

(PWL) and wetland base levels have been established above the identified aquitard horizon. This approach avoids excavation into the aquitard, minimises potential impacts on groundwater behaviour, and assists in maintaining the long-term hydraulic performance and stability of the proposed wetland systems

8.5. FOREBAY

Forebays will be sized to meet a minimum area of 10% of the artificial wetland as per RITS. WRC TR20-07 requires a forebay sized to minimum 15% of the WQV. Both RITS and WRC requirements will be achieved for each wetland. Rainfall events less than the 2year event will be directed to the forebays. The forebay will provide energy dissipation of incoming flow and minimizes erosion and scour within the wetlands.

Conceptual minimum forebay sizes based on the current catchment and wetland sizes are provided in the table below. Forebay areas will need to be reviewed and refined as required during Resource Consent and Engineering Plan Approval in accordance with RITS and WRC TR20-07.

Residential Artificial Wetland	**Minimum Forebay Area m2**
1A	19.8
1B	5.5
1C	14.1
1D	8.9
1E	6.2
1F	14

Table 9 – Minimum forebay areas

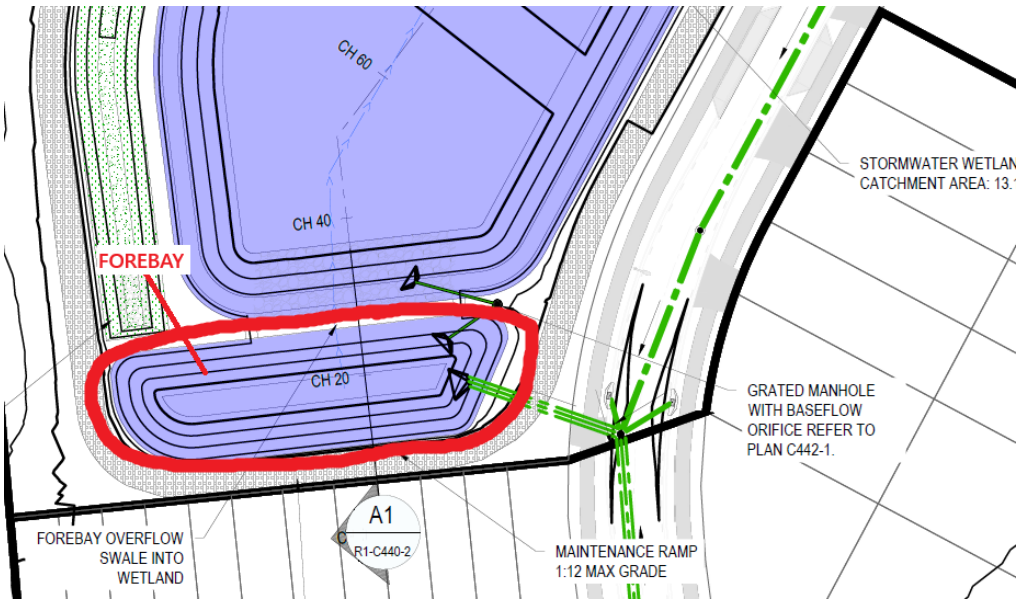


Figure 14: Typical layout forebay as part of the Treatment train.

8.6. HIGH FLOW BYPASS (HBP)

High-flow bypasses are proposed for each sub-catchment which diverts high-flows greater than the 2-year flow, up to the 100-year event around the treatment train (forebay and wetlands) to the downstream channel/stream in accordance with RITS secondary system design section 4.2.3.4.

Each high-flow bypass includes flow splitters to divert high and low flows. Flow splitters will consist of either a manhole with a weir, or a weir structure installed within the high-flow swale. The weir height will overtop during flows larger than the WQV ED storage.

High-flow bypass swales connect to the Existing Stream with wingwalls and riprap. Open channels are HCC's preference for high-flow bypasses/secondary systems. In most cases open channels are proposed, however a few specific locations may require piping.

The high flow bypass (HBP) is proposed to include a discharge device consisting of a 2-10yr ARI orifice and weir or similar to attenuate the 2,10 and 100year flow prior to entering the existing Drain. During the 2,10 and 100yr rainfall events, the High flow bypass discharge device will then enable flows to backup and enter into the wetland, utilizing the wetland for storage. This is in line with RITS guidance.

8.7. WETLAND OUTLET AND OVERFLOW STRATEGY

The proposed wetland systems have been designed to account for elevated water levels within the receiving stream during larger storm events. During extreme events, where downstream water levels exceed the wetland outlet level, discharge through the primary outlet structure may be temporarily restricted due to backwater effects.

To accommodate these conditions, the wetland systems incorporate primary spillways that provide emergency overflow capacity and ensure floodwaters can be safely conveyed through the system during extreme events. These spillways are intended to operate only during larger storm events when water levels within the receiving stream are elevated.

Figure 15: Backflow Device installed on Outlet Pipe.

Once water levels within the receiving stream recede, stored stormwater within the wetlands will progressively discharge through the primary outlet structure, comprising a low-flow orifice and spillway arrangement. A backflow prevention device will be incorporated within the outlet structure to prevent reverse flow from the receiving stream entering the wetland system during periods of elevated downstream water levels.

The outlet structures have been configured to achieve the required attenuation and drawdown performance, with the wetlands designed to fully drain within 48 hours following the design storm event, subject to receiving water levels returning to normal operating conditions.

8.8. STORMWATER CULVERTS

Two road crossings are proposed where the development road network intersects existing drainage channels traversing the site. The purpose of the culverts is to maintain the existing hydraulic connectivity of the stream system while enabling the construction of the proposed collector roads and associated infrastructure.

The culvert crossings have been informed by hydraulic assessment and flood modelling undertaken as part of the stormwater and flood assessment. The sizing and configuration of the culverts have been selected to convey existing stream flows, maintain flood conveyance, and minimise adverse impacts on upstream and downstream water levels for 100 year storm events.

Culvert 1 is located beneath Collector Road 2 and comprises one 5.0 m span by 2.5 m rise arch culvert barrel extending approximately 33.7 m beneath the road corridor. Culvert 2 is located beneath Collector Road 1 and comprises one 3.2 m span by 1.6 m rise arch culvert barrel extending approximately 39.4 m beneath the proposed road corridor. Both arch culverts have been designed with a longitudinal grade of 0.01%, with the existing drain maintained through the structures to preserve drainage continuity.

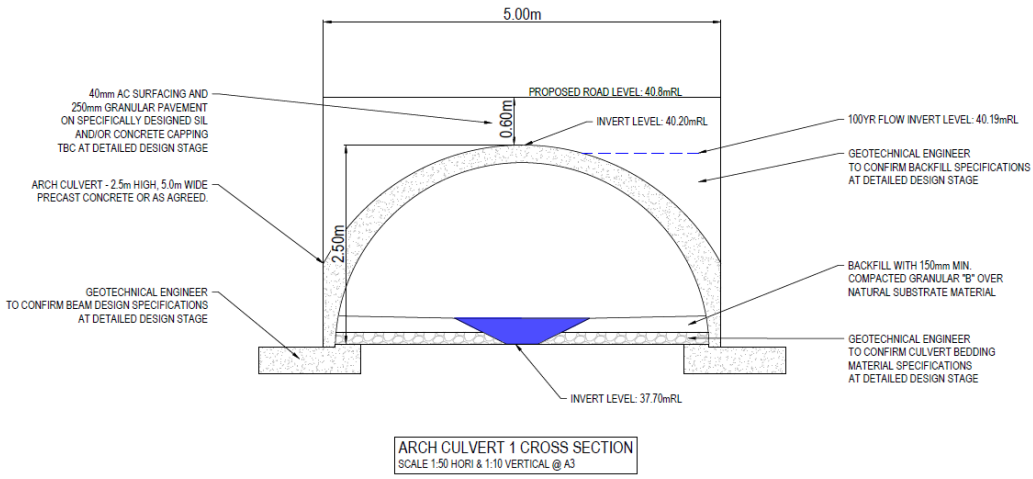


Figure 16: Arch Culvert 1 Cross Section

To support ecological connectivity, the existing drain will be maintained beneath the arch culvert structures, providing continuity of the existing low-flow channel and stream bed. This approach

promotes the retention of natural stream processes and facilitates aquatic organism passage through the crossings. Riprap protection is proposed at the inlet and outlet structures to minimise erosion and protect the receiving environment. Wingwalls will be confirmed during detailed design to provide a stable transition between the stream channel and culvert structures. Please refer to *SL1 Mexted Development Ecological Impact Assessment by EcoLogical Solutions* for more details.

The proposed culvert crossings form an important component of the overall stormwater and flood management strategy by maintaining conveyance of existing catchment flows through the site while supporting the proposed transport network. The hydraulic assessment confirms that the culverts can accommodate the 100-year flows while maintaining the function of the existing drainage system and supporting the broader objectives of the Mangakōtukutuku ICMP.

The culvert crossings have been informed by both 1D hydraulic modelling undertaken using Hydroflow and 2D hydraulic modelling undertaken using HEC-RAS as part of the wider stormwater and flood assessment. These assessments were used to determine the required culvert capacity, assess upstream and downstream water level effects, and confirm that the proposed crossings maintain conveyance during both frequent and extreme storm events. The sizing and configuration of the culverts have therefore been selected to convey existing drain flows, maintain flood conveyance, and minimise adverse impacts on the surrounding floodplain.

8.9. WETLAND DISCHARGE SUMMARY

The following table summarises the modelled peak discharge rates from the proposed wetland catchments and compares these against the corresponding pre-development flows. The assessment has been undertaken using the proposed stormwater management strategy, incorporating on-lot retention tanks, diversion channels, wetland storage, attenuation volumes, and controlled outlet structures. The results provide an indication of the discharge rates expected to enter the existing drainage network under post-development conditions and demonstrate the effectiveness of the proposed mitigation measures.

Table 10 – Pre vs Post Development Flows table

Catchment	PRE Development Flows (m^3/s)			POST Development Flows (m^3/s)		
	2YR	10YR	100YR	2YR	10YR	100YR
A	0.6615	1.14	1.512	0.29	0.45	0.6
B	0.4542	0.78	1.0376	0.25	0.4	0.53
C	0.5418	0.93	1.2	0.25	0.4	0.54
D	0.3819	0.65	0.864	0.188	0.3	0.2
E	0.3968	0.68	0.904	0.21	0.34	0.45
F	0.244	0.42	0.55736	0.205	0.342	0.53
	2.6802	**4.6**	**6.07496**	**1.397**	**2.232**	**2.85**

The results indicate that the proposed wetland systems are capable of achieving substantial attenuation of post-development runoff prior to discharge into the existing drainage network. Post-development discharge rates are below the adopted design targets, providing additional capacity and flexibility within the stormwater system if needed down the line. This demonstrates that the proposed design not only satisfies the stormwater quantity objectives of the development but also provides opportunities for

further refinement during detailed design. Subject to detailed hydraulic assessment, there may be scope for value engineering of wetland storage volumes, outlet structures, and associated infrastructure while continuing to achieve the required stormwater management outcomes.

8.10. SHEET PILING

Continuous sheet pile walls can be installed around the perimeter of the proposed wetland as a permanent groundwater cut-off system. The sheet piles would be embedded into the underlying Walton Subgroup to hydraulically isolate the wetland excavation from the surrounding confined aquifer, allowing local penetration of the confining silt layer while maintaining control of artesian groundwater pressures and reducing the risk of seepage, uplift, piping, and base heave.

Either steel or vinyl sheet piles may be adopted, subject to detailed design and constructability assessment, with the required embedment depth to be confirmed based on groundwater conditions, seepage control requirements, and geotechnical design considerations.

For more details, please refer to Geotechnical Investigation Report (HAM2025-0056AD Rev 4) by CMW.

9. Flooding

Catchment modelling has been undertaken to provide input into the structure planning exercise. This modelling has confirmed the extent and location of flooding and overland flow within SL1 (Figure 11-13).

The following sections provides a summary on the flood modelling completed, investigates the known or assumed downstream constraints before outlining a high-level development framework which will enable the future development of the areas.

9.1. MODELLING SUMMARY AND METHODOLOGY

HEC-HMS was used for the hydrology and HEC-RAS was used to model flooding within SL1. The modelling confirms the extent, location, flow, and depth of flood waters. The Existing flood assessment was modelled by Golovan in 2021. Maven was provided with the raw data of the mentioned model and have conducted assessment based on this data.

Due to more recent survey data using drone topographic survey and with a more recent LINZ terrain made available that were not during the previous assessment, a new existing terrain has been created and used in the HEC RAS model. Results were consistent with the previous model.

Post development Analysis was conducted only to confirm the impact of the proposed wetlands. The modelling involved creation of dummy channels utilised to divert flows within each sub catchment to respective wetlands. These channels will mimic what low volume; local roads will do once established and designed.

A hydraulic assessment of Development was undertaken using HEC-RAS 2D to assess existing and post-development flood behaviour across the site. The model was developed to understand the interaction between upstream catchment flows, existing drainage channels, proposed stormwater infrastructure, and downstream hydraulic controls.

The model incorporated detailed topographic information, proposed earthworks, existing drainage channels, stream corridors, proposed diversion channels, culvert crossings, wetlands, and downstream hydraulic constraints. The assessment focused on understanding flow conveyance, flood storage, overland flow paths, and flood extents under a range of storm events.

Existing condition simulations were initially undertaken to establish baseline flood behaviour across the site and identify key flood conveyance pathways, ponding areas, and hydraulic constraints. Project-specific catchment delineation was completed to refine the upstream contributing catchments identified within the Mangakōtukutuku ICMP and ensure that external catchment flows entering the site were appropriately represented within the model.

Following completion of the existing condition assessment, the proposed development layout and stormwater infrastructure were incorporated into the model. This included the proposed diversion channels, stream culvert crossings, wetlands, flood storage areas, and associated stormwater management measures. The model was then used to assess the effectiveness of the proposed design in maintaining hydraulic connectivity, managing flood risk, and conveying both external catchment flows and development-generated runoff through the site.

The HEC-RAS model formed a key component of the overall stormwater assessment and was used in conjunction with 1D hydraulic assessments undertaken using Hydroflow to support the design of culvert crossings, diversion channels, wetland systems, and flood mitigation measures. The modelling outcomes have informed the proposed stormwater management strategy and provided confidence

that the development can be integrated within the wider catchment while maintaining flood conveyance and stormwater management objectives.

9.2. EXISTING/PRE DEVELOMPMENT FLOODING WITHIN SL1

A 2D flood model has been developed for the site using HEC-RAS software Version 6.7. The model has been used to assess Pre Development and Post Development, using climate change for both scenarios.

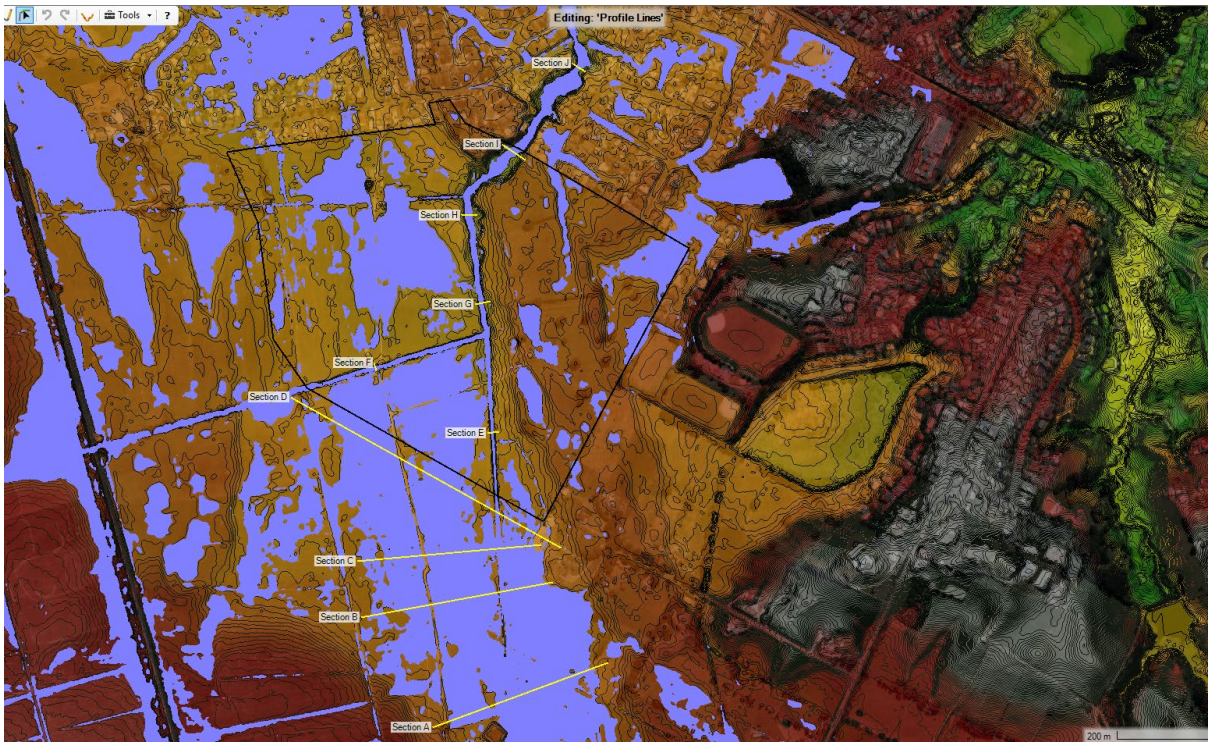
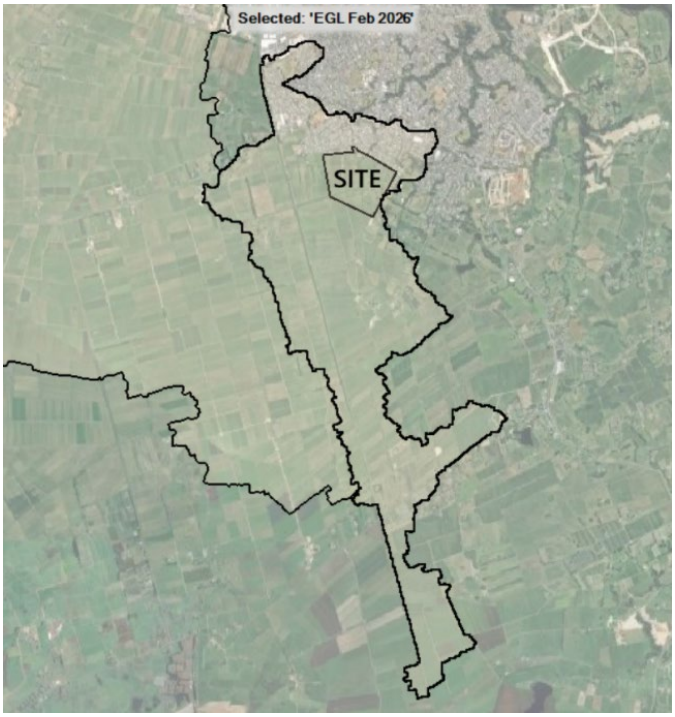


Figure 11: Existing Flood Extent in the 1% AEP Event (100mm)

The above result demonstrates that the site is currently subject to widespread shallow flooding and poorly defined flow paths. This has informed the proposed design approach, which focuses on conveyance through diversion channels, retaining drainage corridors, while incorporating wetlands and storage to Mitigate stormwater events up to the 100YR ARI within the proposed site in line with RITS. this flood management and overall hydraulic performance across the site, is also consistent with the intent of the ICMP.

With Sensitivity Assessment, it is assumed that all stormwater soakage attenuation devices have already reached their capacity. Even under this worst-case condition, the model demonstrates that the development maintains flood immunity, with only minor exceedances expected to be mitigated through detailed design refinements.

The figure below shows the contributing catchment of the site during the 100year event, delineated through QGIS/HEC-HMS based on a 10m grid externally. Data used is comprised of localised site survey and LINZ data capturing the wider extent of the catchment.



(Similar to Figure 3)

The catchment extent is generally consistent with the ICMP catchment framework; however, project specific catchment delineation has been undertaken as part of this assessment to refine upstream contributing areas based on current information for data and modelling.

9.3. POST DEVELOPMENT FLOODING

On the basis of the foregoing, there will be no adverse downstream effects from Residential Development. The preferred stormwater management solution has been established through this assessment. Detailed design will be undertaken to refine engineering details, such as infrastructure dimensions, levels, and construction details, without altering the assessed stormwater management outcomes.

Figures 16 below illustrates post development model outputs during the 100-year ARI storm. The new development will create a barrier right along the southern boundary of the site. This will result in backwater 10-15m from the boundary upstream with an increase in water depth at max 70mm. This effect is confined to the immediate upstream area and does not result in a material increase in flood risk to adjacent landowners or adversely affect neighbouring properties. Refer to HEC RAS results for more details.

Through Residential Development, there is an increase of 10-50mm with elevated flowrates and Water Service levels. However, there is no change in downstream water levels and flows.

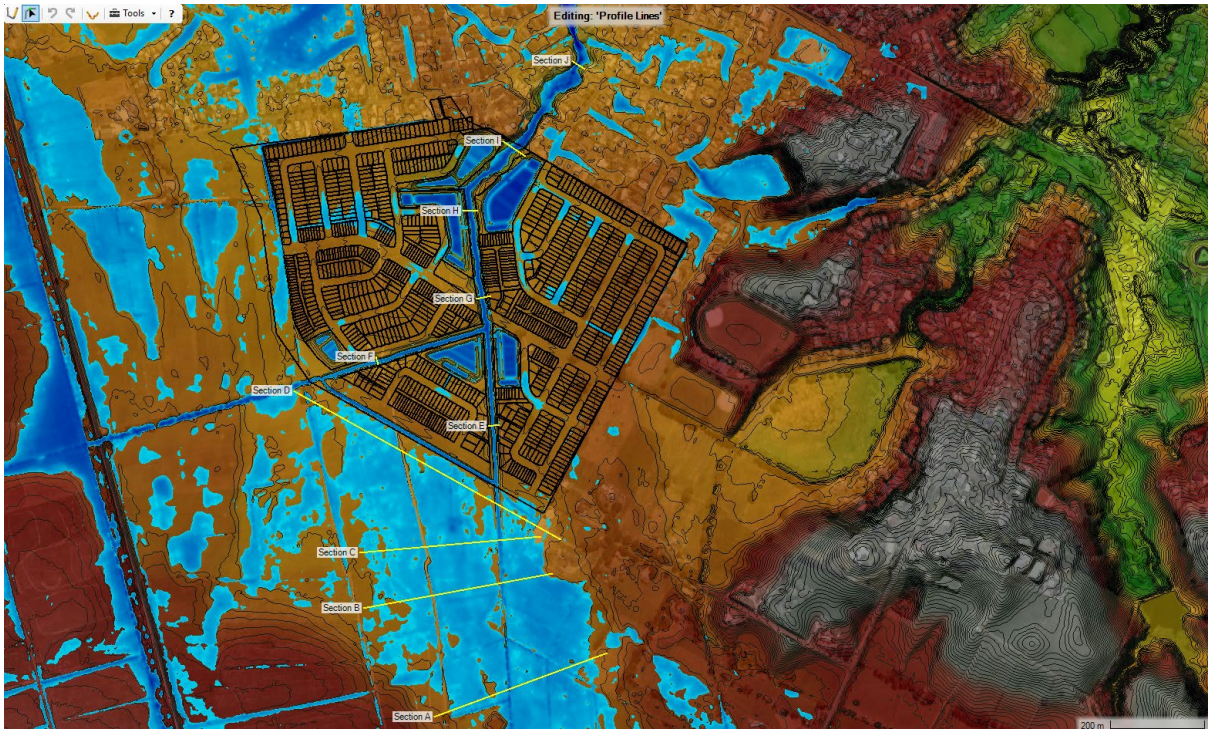


Figure 12: Post-Development Flood Modelling

9.4. DOWNSTREAM FLOODING

Downstream of the Residential Development, HCC flood mapping in the Mangakōtukutuku Catchment shows that there is existing flooding within tributary gullies. Downstream flooding effects was reviewed as part of the draft Mangakōtukutuku ICMP with modelling conducted by AECOM using the Mike Flood modelling suite.

A range of pre- and post-development scenarios were modelled for various rainfall events. The development scenarios included existing development, maximum probable development within the city boundary with climate change, and a sensitivity check of the effects of maximum probable development resulting from urbanisation of Waipa North with climate change. Mitigation scenarios were also run where flood control requirements were considered likely to apply.

The modelled results indicated that there would be increased flooding within the downstream catchment without mitigation.

Further assessment was undertaken taking into account Mitigation which includes use of wetland storage. Results concludes that there are no adverse effects to be encountered downstream based on modelling using parameter stated in this report and calculations.

9.5. DOWNSTREAM FLOOD MITIGATION SOLUTIONS

To avoid any downstream flooding effects, flood mitigation will be required in support of the future stages development of wider SL1 Growth Cell. Post development run-off from the development areas will require attenuation of peak flows from the site to 80% of the pre-development level for storm events up to 100-year ARI (average recurrence interval). Subject to this, there will be no downstream flooding effects.

As detailed in previous sections of this report, the 100year ARI flow rates are proposed to be attenuated within the proposed wetlands and High Flow Bypass areas.

It is expected deepening of the existing stream will be required to allow the 100-year ARI attenuation in order to minimise the size of the wetlands and maximise land-use for private properties.

9.5.1. MINIMUM FLOOR LEVELS

Minimum floor levels freeboard) over the 100-yr flood level will be required for all habitable buildings in accordance with the recommendations provided below:

TABLE 6 - MINIMUM FREEBOARD REQUIREMENTS

Freeboard	Minimum Height
Vulnerable Activities	500mm
Les Vulnerable Activities	300mm

** Vulnerable activities defined as residential activities*

** Less vulnerable activities defined as commerce, industry, and rural activities*

All future freeboard clearances shall be in accordance with the criteria stipulated above and would need to demonstrate compliance with Building Code E1 – Surface Water as required.

9.5.2. RETENTION OF STORAGE VOLUME

Flood volumes and flows during the 100year cc event, are proposed to be managed within each artificial wetland system with flows from upstream routed through the existing drains.

The wetland footprint and high flow bypass to provide flood storage and attenuation. The high flow bypass would include a discharge device to limit flows entering the downstream channel. During a flood event, water backs up into the high flow bypass and wetland and provides the overall storage required. Attenuation and flood storage will be isolated to each catchment and discharge to the existing streams running through the development, will be limited to 80% of the 1:100-year pre-development flow.

As mentioned in section 4, the existing stream is subject to further investigation into further detailed design and is likely to be deepened to allow attenuation.

10. Overland Flow Paths

Additional branches of OLFPs will be created as roading corridors are formed. The following measures will be adopted to mitigate their effects of these overland flow paths on the proposed development.

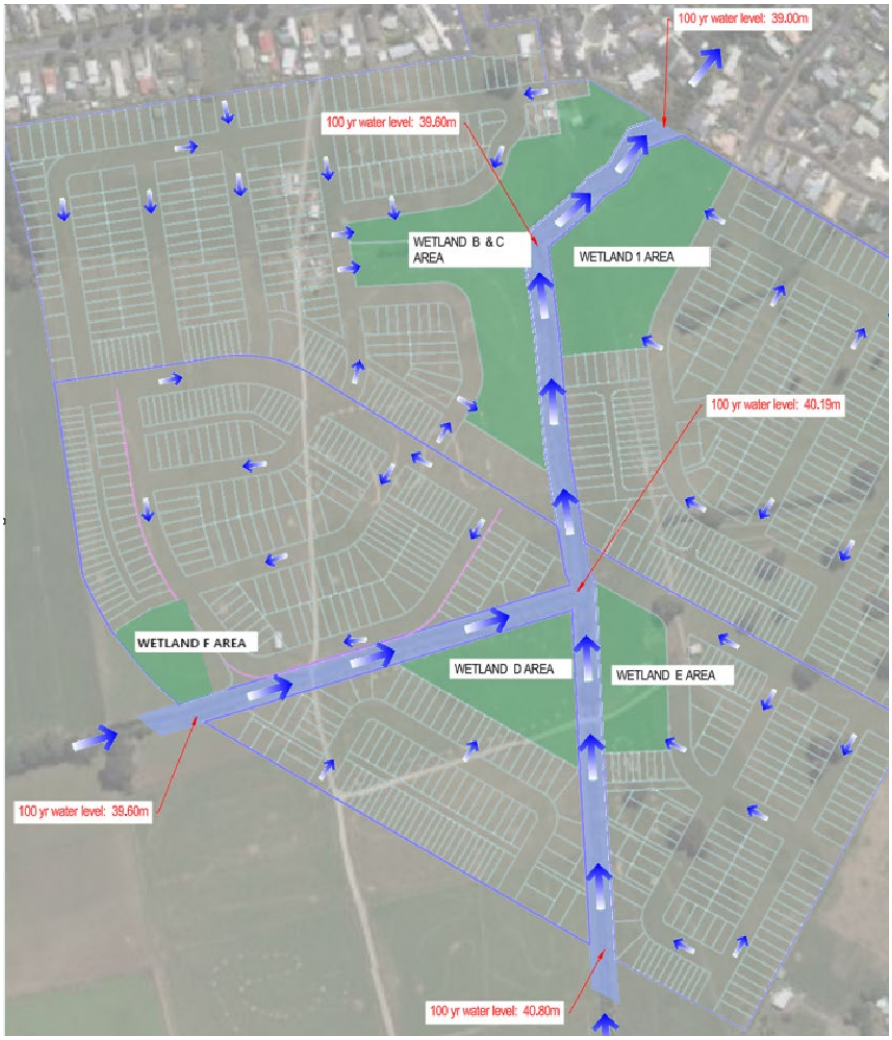


Figure 13: Proposed Overland Flow path.

- Identify and maintain natural overland flow/watercourse locations to convey concentrated stormwater from the site. Utilise existing culverts (where possible) to maintain the same discharge locations, post development.
- Identify and retain any upstream OLFPs and/or watercourses to avoid any upstream flooding.
- Ensure OLFPs are to be designed where possible within the roading network and discharge into watercourses.

The preliminary OLFP design is provided in the SAR and is summarised below.

An assessment of the post development overland flow paths (OLFPs) has been conducted to evaluate the behaviour of surface runoff in the road carriageway under the proposed stormwater management system. The design scenario is based on the 2100-2120 RCP8.5 climate change scenario, incorporating all proposed devices and the assessment is done through HEC RAS 2D. The

OLFPs represents the conveyance of surface runoff because of the proposed system during the 100year storm event.

Flow depths and velocities were assessed at key locations throughout the development covering all the various road/accessway typologies ensuring and confirming conveyance of the OLFP is viable through proposed carriageway.

More than 80% road areas comply with standard design thresholds.

However, the isolated catchment areas listed below have recorded maximum water depths above the 150mm guideline.

- Catchment A: max depth = 220mm
- Catchment B: max depth = 280mm
- Catchment E: max depth = 320mm

Note these depths are likely to be reduced at further refined modelling at detailed design stage via applying the alternative measures listed below:

- Advance the flood model by including catchpits and roading stormwater network;
- Provide sensitivity analysis assuming catchpits are fully blocked;
- Provide proprietary Megapits if required to alleviate ponding;
- Increase vertical curvature length of the roading corridor to increase the spill weir and minimise ponding depth;
- Mono camber transition in the carriageway and/or footpath berms to reduce the depth of spilling headwaters;
- Or a combination of the solutions above

Highest velocity depth of 0.14 (m^2/s) values remain below critical safety thresholds defined in Austroads 2012 Part 5, which specify:

- < $0.4m^2/s$ for pedestrian safety
- < $0.6m^2/s$ for vehicle safety

The highest recorded value was $0.14m^2/s$ confirming safe flow conveyance for both pedestrians and vehicles under design conditions. Flow is primarily routed along proposed roads conveyed into roadside primary networks for the 10-year conveyance to the proposed wetlands.

11. Conclusions

This Stormwater Assessment Report (SAR) has been prepared to support the Residential Development within the Southern Links 1 (SL1) development area and provides the overarching framework for stormwater management throughout the site. The SAR has been developed in accordance with the objectives and requirements of the Mangakōtukutuku Integrated Catchment Management Plan (ICMP), Waikato Regional Council guidelines, and the Regional Infrastructure Technical Specifications (RITS).

The site is influenced by significant upstream contributing catchments, existing drainage channels, overland flow paths, and flood-prone areas. Detailed catchment delineation and hydraulic modelling have been undertaken to refine the understanding of existing stormwater behaviour and to inform the proposed stormwater management strategy. The assessment confirms that maintaining hydraulic connectivity and accommodating external catchment flows are critical components of the overall design approach.

The proposed stormwater management system adopts a treatment train approach incorporating on-lot retention tanks, conveyance systems, wetlands, forebays, high-flow bypass systems, diversion channels, and flood storage areas. Together, these components provide stormwater treatment, detention, attenuation, and conveyance functions in accordance with the objectives of the ICMP and RITS requirements.

Retention of initial abstraction will be achieved through distributed on-lot retention tanks. The proposed 5m³ tank provision for each residential lot provides approximately 4,720m³ of storage, exceeding the required 10mm retention volume of approximately 4,459m³. This demonstrates compliance with the ICMP initial abstraction requirements while providing a simple and consistent solution across all stages of development.

Flood modelling indicates that the site is currently subject to widespread shallow flooding and diffuse flow paths resulting from the flat topography and interaction with upstream catchments. The proposed development seeks to formalise these flow paths through retained drainage corridors, diversion channels, culvert crossings, wetlands, and flood storage areas. Subject to detailed design and implementation of the proposed mitigation measures, stormwater runoff from the development will be managed to achieve the required attenuation targets, including discharge of the 100-year event at 80% of pre-development flow rates.

The proposed staging strategy enables each development stage to function independently while maintaining continuity of upstream flows and providing the required stormwater management outcomes. Interim stormwater management measures will be progressively replaced by permanent infrastructure as development proceeds.

Modelling demonstrates that the proposed wetland systems are capable of achieving discharge rates below the adopted design targets, providing confidence in the proposed stormwater strategy while allowing opportunities for further optimisation during detailed design.

Overall, the proposed stormwater management framework provides a practical and integrated solution that supports future urban development while maintaining catchment function, managing flood risk, protecting receiving environments, and aligning with the long-term objectives of the Mangakōtukutuku ICMP. Further refinement of stormwater infrastructure, hydraulic modelling, wetland design, and flood mitigation measures will be undertaken during detailed design and engineering approval stages.

Appendix A – Stormwater Plans

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
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- PR STORMWATER
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- PROP SWCP SINGLE
- PROP SWCP DOUBLE
- PR LOT CONNECTION

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A	FAST TRACK APP	MKS	06/2026

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Checked	DJM	07/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

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Title

PROPOSED STORMWATER OVERVIEW PLAN

Project no.	298001-R1 SL1		
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Drawing no.	R1-C400	Rev	A

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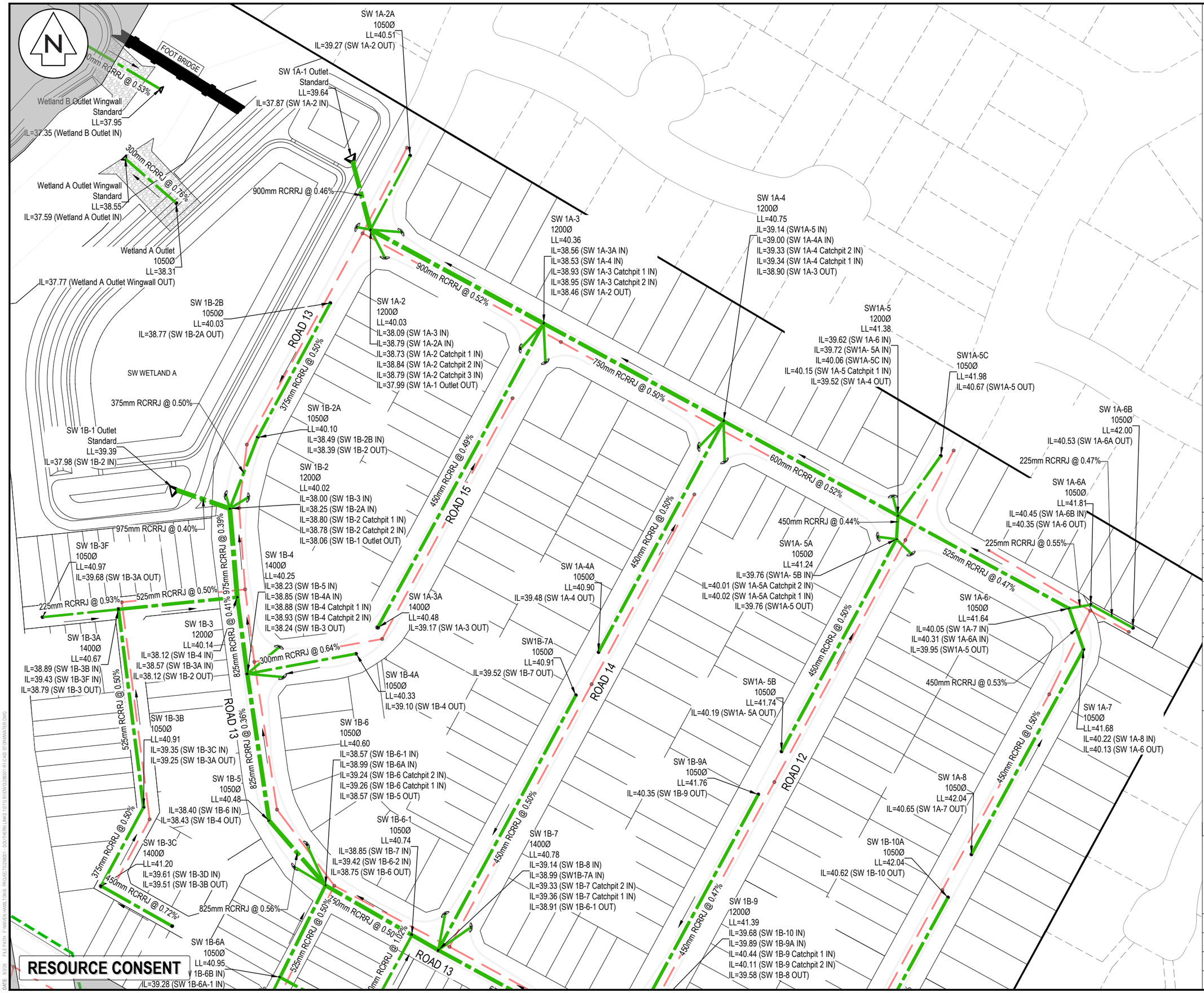

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Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

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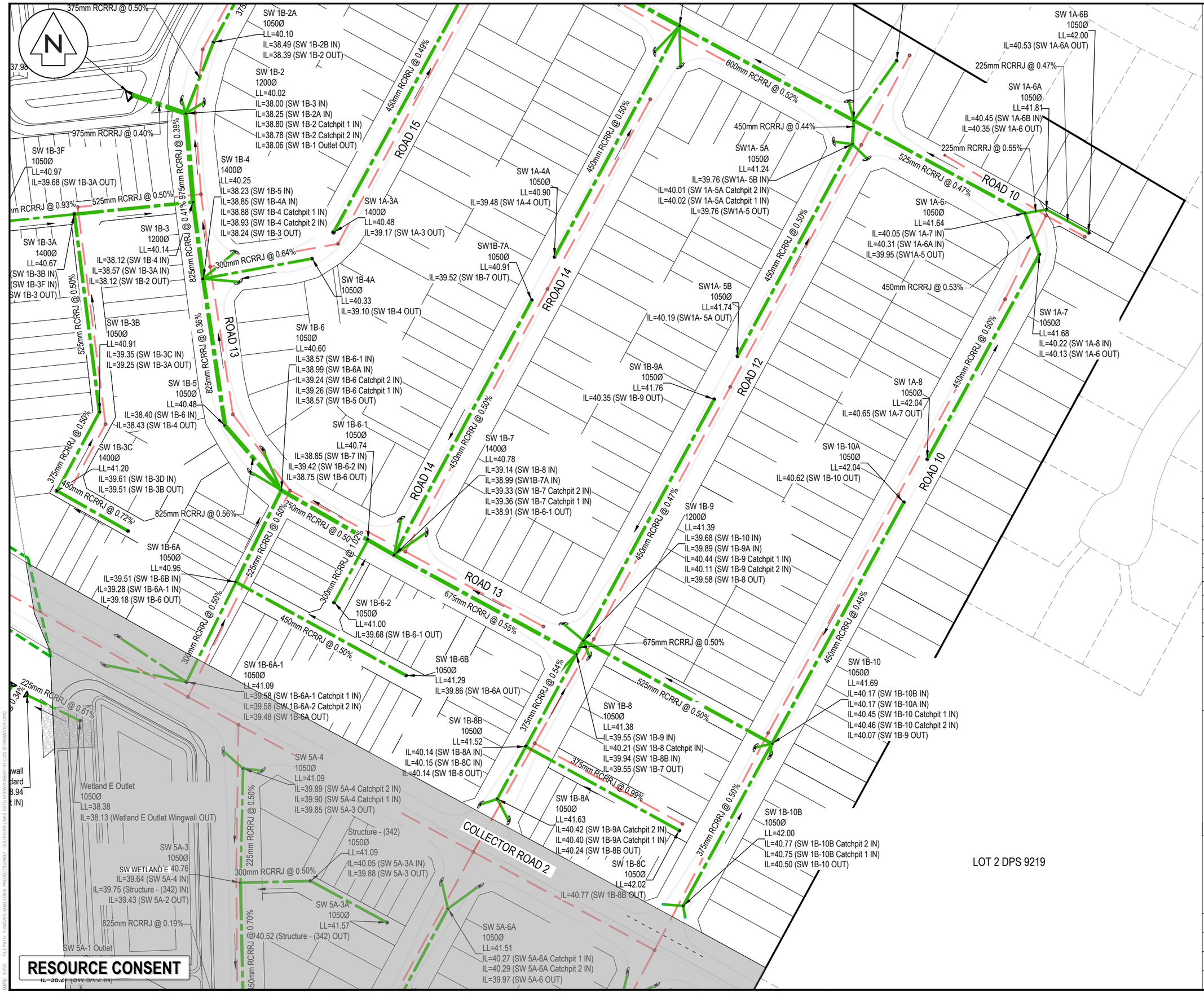

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Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
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Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

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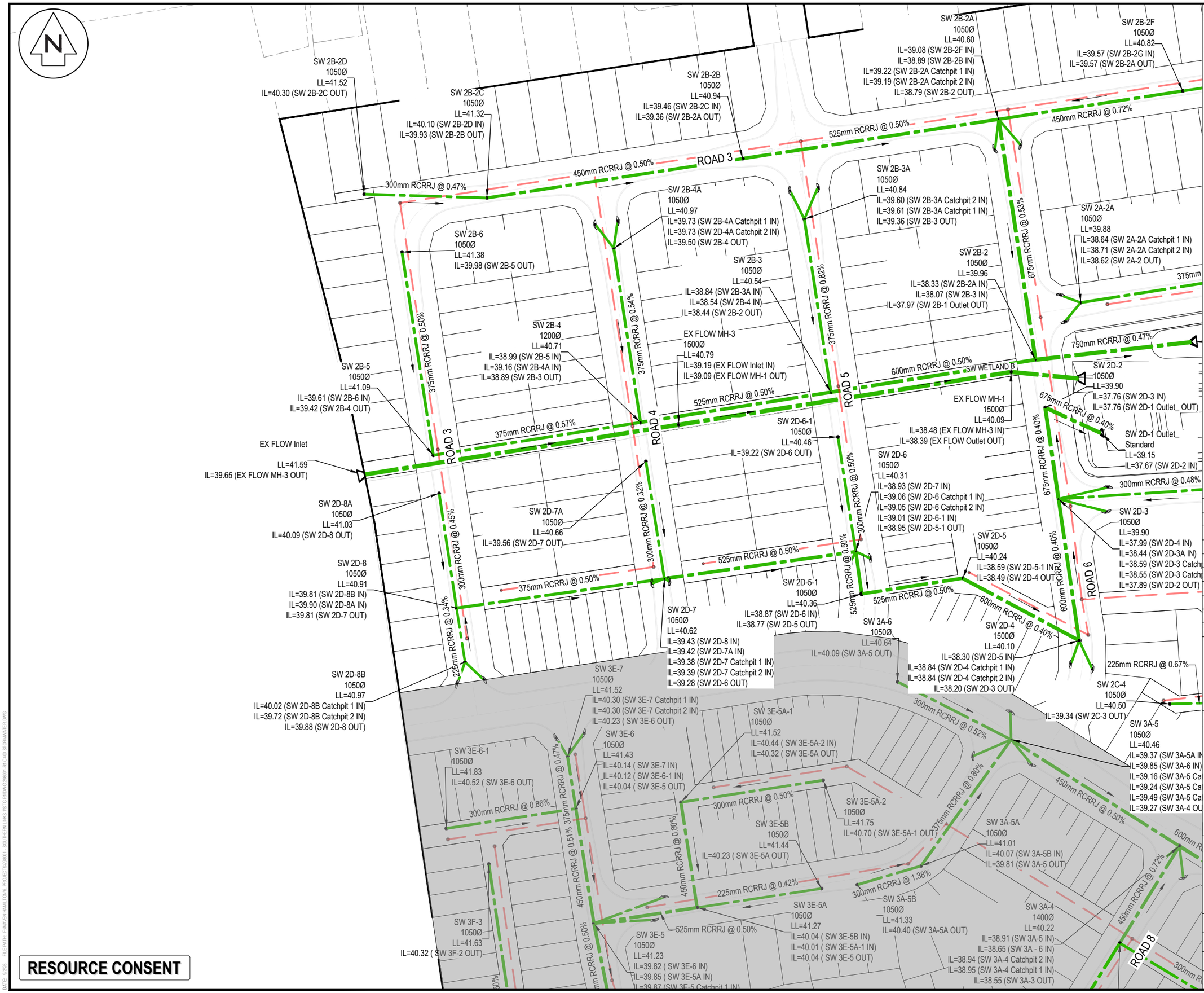

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Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
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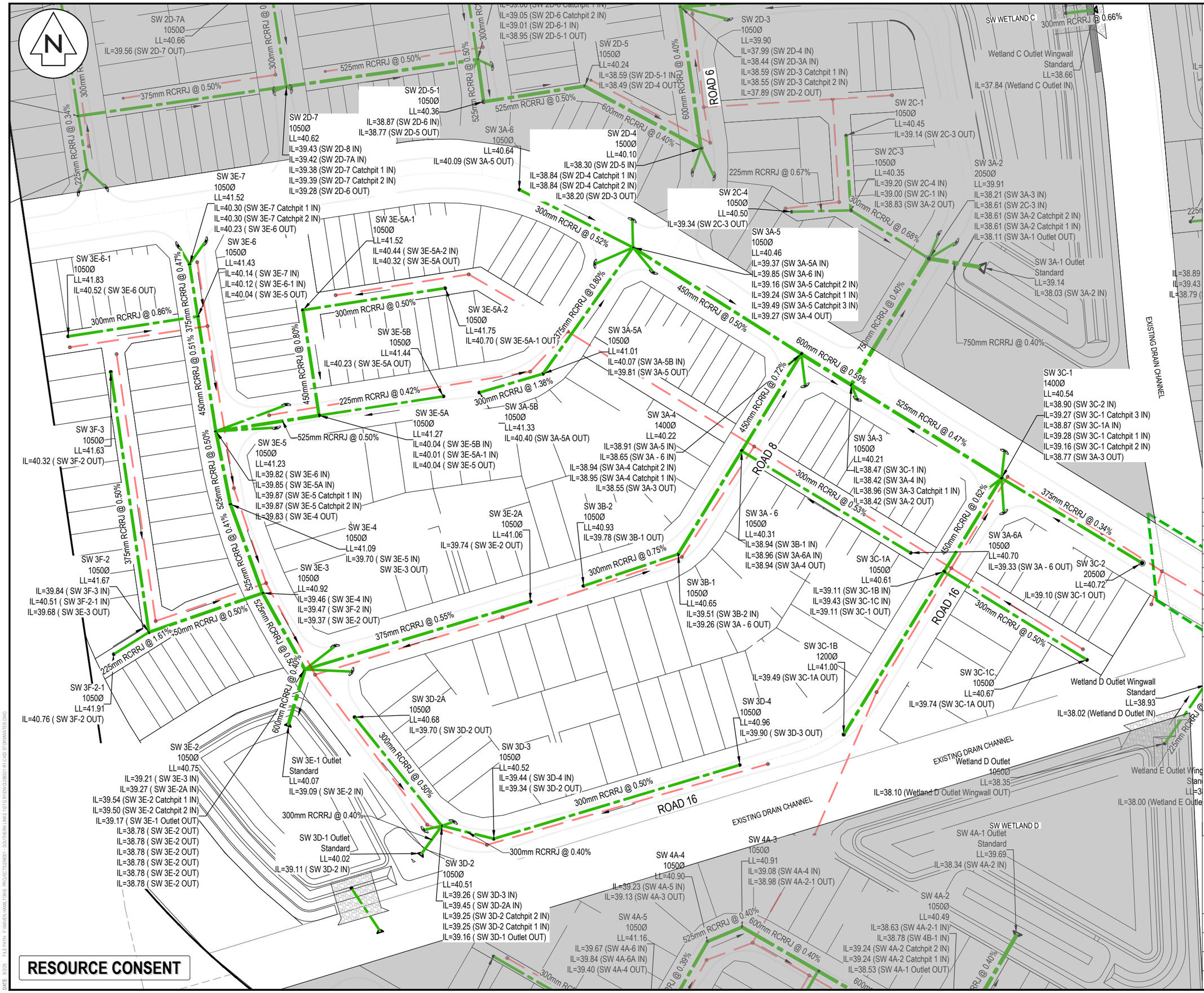

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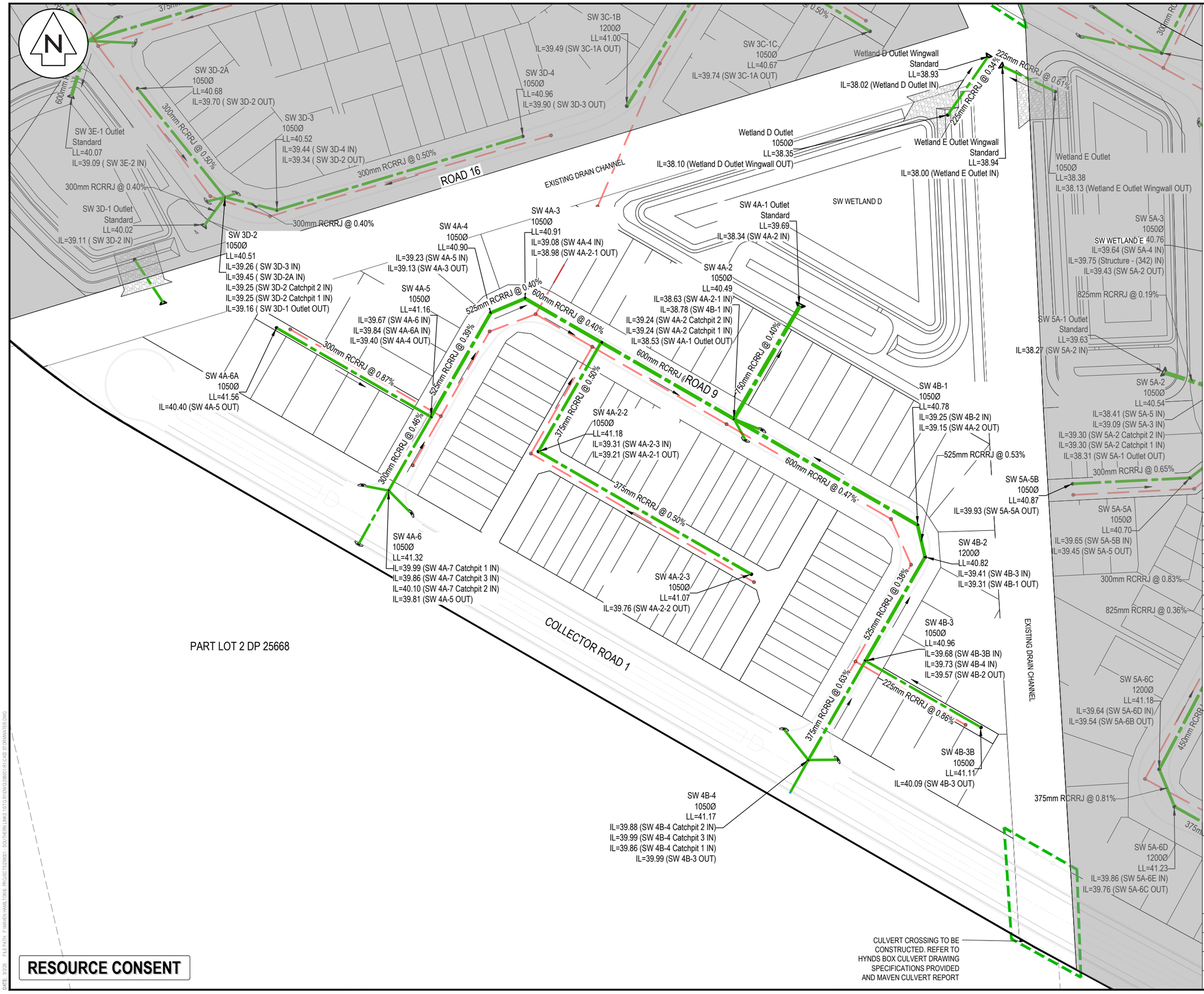

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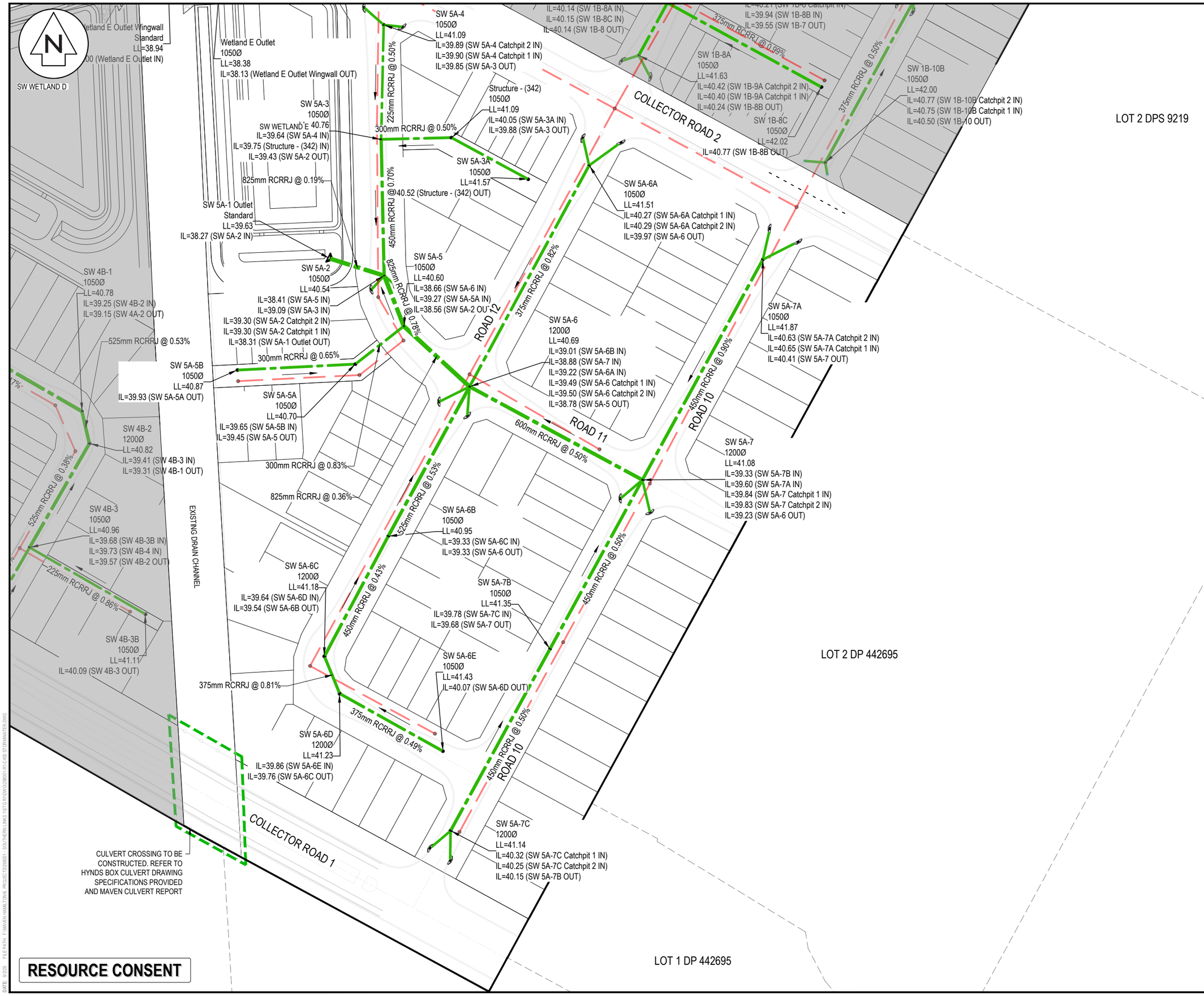

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- EX/PROP SWMH
- PROP SWCP SINGLE
- PROP SWCP DOUBLE
- PR LOT CONNECTION

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MKS	07/2025
Checked	DJM	07/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project

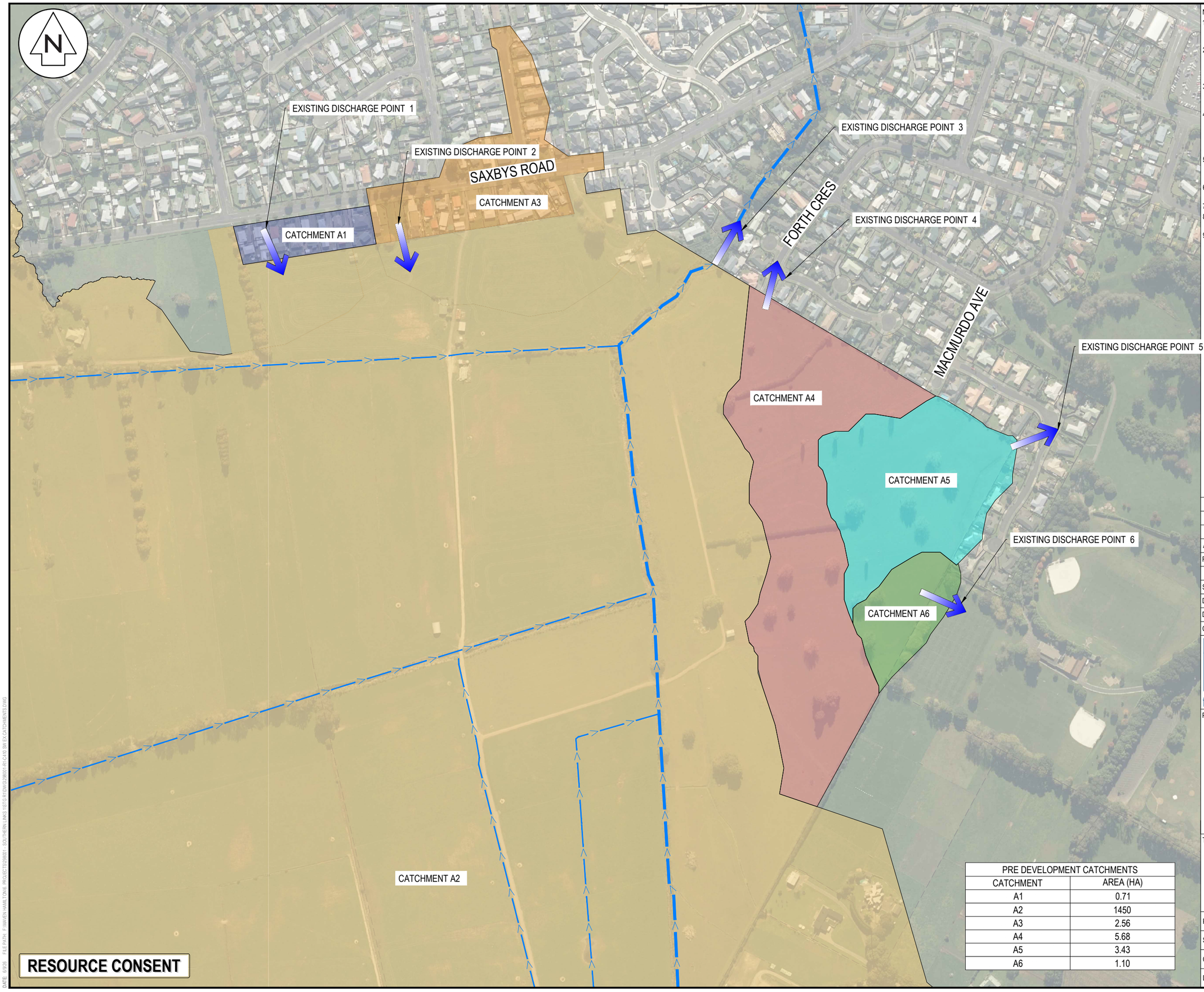
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title

PROPOSED STORMWATER PLAN

Project no.	298001-R1 SL1
Scale	1:1250 @ A3
Cad file	298001-R1-C400 STORMWATER.DWG
Drawing no.	R1-C400-7 Rev A

DATE: 9/26 FILE PATH: P:\MAVEN\HAMILTON\PROJECT\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C400 STORMWATER.DWG



PRE DEVELOPMENT CATCHMENTS	
CATCHMENT	AREA (HA)
A1	0.71
A2	1450
A3	2.56
A4	5.68
A5	3.43
A6	1.10

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
2. CO-ORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000. LEVELS IN TERMS OF THE NEW ZEALAND VERTICAL DATUM 2016. CONVERSION TO MOTURIKI 1953 CAN BE ACHIEVED BY ADDING ???m.
3. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE ALL SERVICES THAT MAY BE AFFECTED BY HIS OPERATIONS.
4. ALL CONCRETE SW PIPE TO BE INSTALLED IN ACCORDANCE WITH AS/NZS 3725:2007 FOR BURIED CONCRETE PIPES AND AS/NZ 4058:2007 FOR PRECAST CONCRETE PIPES (PRESSURE AND NON-PRESSURE) AS STIPULATED IN THE RITS 2018
5. APPROVED HARDFILL IS TO BE USED IN BACKFILLING OF ALL STORMWATER LINES WITHIN THE ROAD RESERVE.
6. HEAVY DUTY MANHOLE LIDS AND FRAMES TO BE USED IN TRAFFICKED AREAS.
7. ALL CESSPIT LEADS SHALL HAVE MIN COVER 0.9m.
8. ALL LINES ARE TO BE CLASS4 RCRRJ UNLESS SHOWN OTHERWISE.
9. ALL LINES TO BE ABANDONED SHALL BE SEALED AT EACH END. TIMING OF ALL SEALING TO BE COORDINATED WITH COUNCIL STAFF.

Legend

- EX BOUNDARY
- CATCHMENT BDY
- PROP LOT BOUNDARY
- EX DRAINS/CHANNELS

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MKS	07/2025
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Project

SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title

EXISTING
SW CATCHMENT
OVERVIEW PLAN

Project no.	298001-R1 SL1		
Scale	1:4000 @ A3		
Cad file	298001-R1-C410 SW EX.CATCHMENTS.DWG		
Drawing no.	R1-C410	Rev	A

DATE 6/26 FILE PATH: J:\MAVEN HAMILTON\PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C410 SW EX.CATCHMENTS.DWG

NOTES

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7. ALL CESSPIT LEADS SHALL HAVE MIN COVER 0.9m.
8. ALL LINES ARE TO BE CLASS4 RCRRJ UNLESS SHOWN OTHERWISE.
9. ALL LINES TO BE ABANDONED SHALL BE SEALED AT EACH END. TIMING OF ALL SEALING TO BE COORDINATED WITH COUNCIL STAFF.

Legend

- EX BOUNDARY
- PR BDY
- CATCHMENT BDY
- PROP LOT BOUNDARY
- EX DRAINS/CHANNELS
- CATCHMENT A
- CATCHMENT B
- CATCHMENT C
- CATCHMENT D
- CATCHMENT E
- CATCHMENT F

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MKS	07/2025
Checked	DJM	07/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

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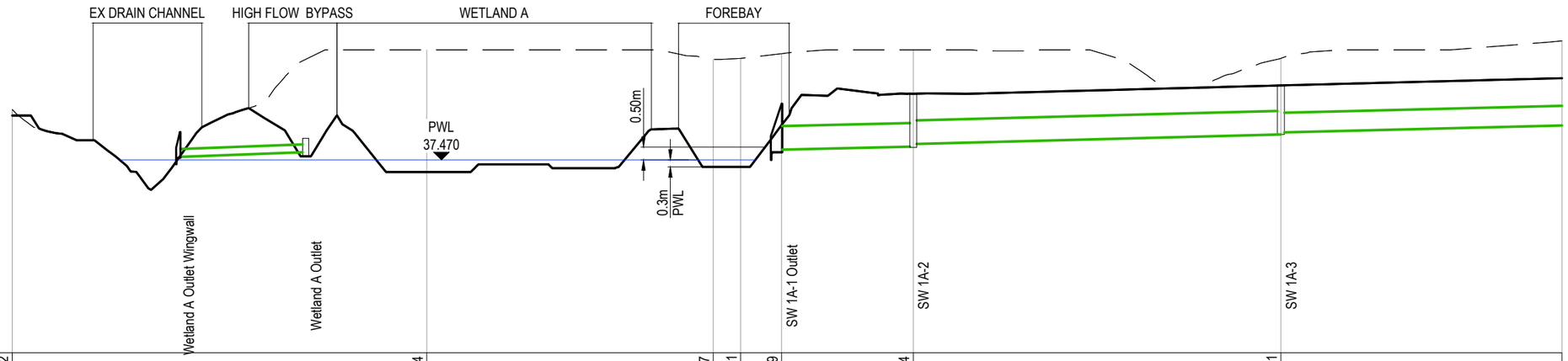
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER POND CATCHMENT OVERVIEW PLAN

Project no.	298001-R1 SL1		
Scale	1:4000 @ A3		
Cad file	298001-R1-C415 SW PR.CATCHMENTS.DWG		
Drawing no.	R1-C415	Rev	A

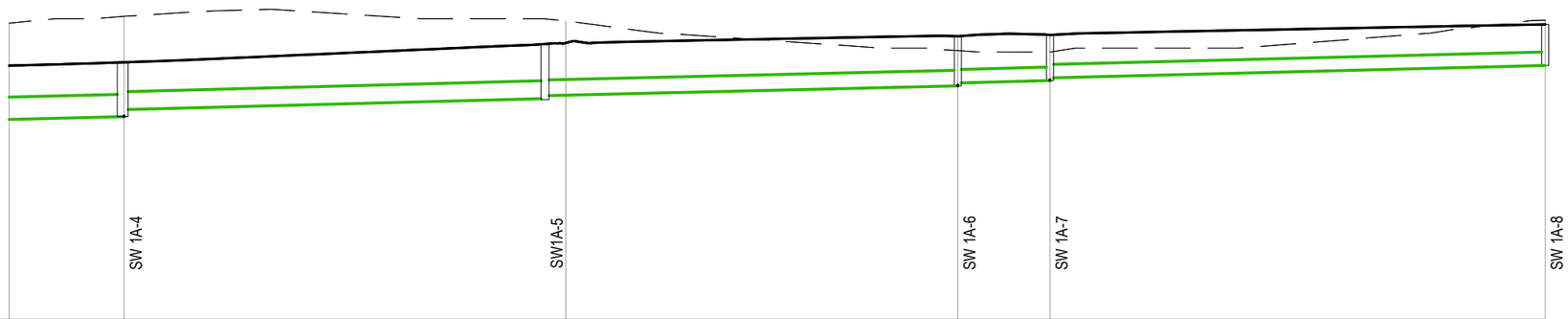
DATE: 7/2026 FILE PATH: F:\MAVEN\HAMILTON\0_PROJECTS\298001 - SOUTHERN LINKS 1\01 R1\DWG\298001-R1-C415 SW PR.CATCHMENTS.DWG



DATUM 30.00m

EXISTING LEVELS	39.42					41.74			41.37	41.41	41.59		41.74			41.41		42.08
DESIGN LEVELS	39.19					37.00			37.20	37.20	38.82		40.03			40.36		40.64
PIPE INVERT			37.59		37.77							37.87	37.99	38.09		38.46	38.53	38.90
STRUCTURE DEPTH (m)		1.18		0.70							2.10		2.08			1.90		
PIPE DEPTH INVERT (m)			0.34		0.34							0.95	2.05	1.95		1.90	1.82	1.85
PIPE / GRADE			300mm RCRRJ 24.33m @ 0.76%									900mm RCRRJ 25.50m @ 0.46%		900mm RCRRJ 71.17m @ 0.52%			750mm RCRRJ 74.01m @ 0.50%	
CHAINAGE	0.00					80.26			135.70	141.00	148.93		174.43			245.60		300.00

PV - Alignment - SW Line 1A-1 Outlet to 1A-8 (1 of 2)
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	42.08		42.32				42.16					41.15		41.10				42.18
DESIGN LEVELS	40.64		40.75				41.41					41.64		41.68				42.04
PIPE INVERT	38.53		38.90	39.14					39.52	39.62			39.95	40.05	40.13	40.22		40.65
STRUCTURE DEPTH (m)			1.85						1.90				1.69		1.55			1.40
PIPE DEPTH INVERT (m)	1.82		1.85	1.61					1.86	1.76			1.69	1.59	1.55	1.46		1.40
PIPE / GRADE		750mm RCRRJ 74.01m @ 0.50%			600mm RCRRJ 71.71m @ 0.52%					525mm RCRRJ 70.34m @ 0.47%					450mm RCRRJ 15.71m @ 0.53%		450mm RCRRJ 84.37m @ 0.50%	
CHAINAGE	300.00		319.62				394.86					461.66		477.37				561.75

PV - Alignment - SW Line 1A-1 Outlet to 1A-8 (2 of 2)
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
2. COORDINATES IN TERMS OF NZ GEODETIC DATUM MOUNT EDEN 2000.
3. LEVELS IN TERMS OF THE NZ VERTICAL DATUM 2016.
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5. APPROVED HARDFILL IS TO BE USED IN BACKFILLING OF ALL ROAD CROSSINGS TO COUNCIL STANDARDS.
6. HEAVY DUTY MANHOLE LIDS AND FRAMES TO BE USED IN TRAFFICKED AREAS, ALL MANHOLES SHALL HAVE STAINLESS GRATES INSTALLED.
7. ALL LOT CONNECTIONS ARE TO BE 100mmØ PVC UNLESS SHOWN OTHERWISE.
8. MANHOLE DIAMETERS SHOWN ON STRUCTURE LABEL ARE INTERNAL DIAMETER.
9. MEASUREMENTS SHOWN ON THE LOT CONNECTIONS ARE THE DISTANCE FROM THE CENTRE OF THE DOWNSTREAM MANHOLE TO THE LOT CONNECTION POSITION WITHIN THE LOT BOUNDARY.
10. MANHOLE SLAB AND COVER TO BE ROTATED TO AVOID THE FOOTPATH EDGE FOR MANHOLES ON FOOTPATH.
11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

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07 242 0601
info@maven.co.nz
www.maven.co.nz
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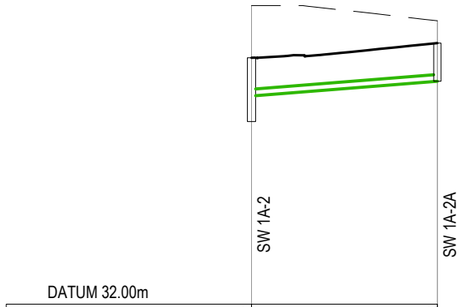
Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-1	Rev	A

DATE: 8/26/26 FILE PATH: F:\MAVEN HAMILTON\PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG

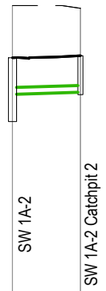


DATUM 32.00m		
EXISTING LEVELS	41.74	41.24
DESIGN LEVELS	40.03	40.51
PIPE INVERT	38.79	39.27
STRUCTURE DEPTH (m)	2.08	1.25
PIPE DEPTH INVERT (m)	1.25	1.25
PIPE / GRADE	225mm RCRRJ 30.31m @ 1.58%	
CHAINAGE	0.00	30.31

PV - Alignment - SW Line 1A-2 to 1A-2A
SCALE: HORI 1:1000 VERT 1:200

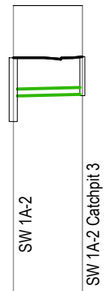
DATUM 32.00m		
EXISTING LEVELS	41.74	41.74
DESIGN LEVELS	40.03	39.91
PIPE INVERT	38.79	38.75
STRUCTURE DEPTH (m)	2.08	1.20
PIPE DEPTH INVERT (m)	1.30	1.15
PIPE / GRADE	225mm RCRRJ 4.91m @ 0.50%	
CHAINAGE	0.00	4.91

PV - Alignment - 1A-2 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



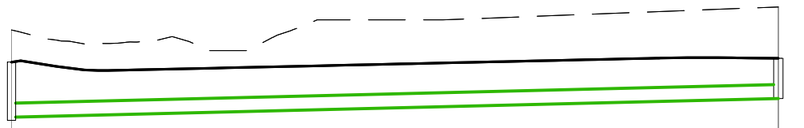
DATUM 32.00m		
EXISTING LEVELS	41.74	41.65
DESIGN LEVELS	40.03	40.10
PIPE INVERT	38.84	38.91
STRUCTURE DEPTH (m)	2.08	1.20
PIPE DEPTH INVERT (m)	1.19	1.19
PIPE / GRADE	225mm RCRRJ 11.08m @ 0.61%	
CHAINAGE	0.00	11.08

PV - Alignment - 1A-2 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200



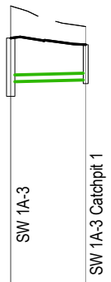
DATUM 32.00m		
EXISTING LEVELS	41.74	41.74
DESIGN LEVELS	40.03	40.07
PIPE INVERT	38.79	38.84
STRUCTURE DEPTH (m)	2.08	1.20
PIPE DEPTH INVERT (m)	1.25	1.22
PIPE / GRADE	225mm RCRRJ 11.27m @ 0.50%	
CHAINAGE	0.00	11.27

PV - Alignment - 1A-2 Catchpit 3
SCALE: HORI 1:1000 VERT 1:200



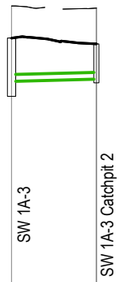
DATUM 32.00m		
EXISTING LEVELS	41.41	42.16
DESIGN LEVELS	40.36	40.48
PIPE INVERT	38.56	39.17
STRUCTURE DEPTH (m)	1.90	1.31
PIPE DEPTH INVERT (m)	1.79	1.31
PIPE / GRADE	450mm RCRRJ 125.09m @ 0.49%	
CHAINAGE	0.00	125.09

PV - Alignment - SW Line 1A-3 to 1A-3A
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m		
EXISTING LEVELS	41.41	40.74
DESIGN LEVELS	40.36	40.15
PIPE INVERT	38.93	38.99
STRUCTURE DEPTH (m)	1.90	1.20
PIPE DEPTH INVERT (m)	1.42	1.15
PIPE / GRADE	225mm RCRRJ 12.24m @ 0.50%	
CHAINAGE	0.00	12.24

PV - Alignment - 1A-3 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m		
EXISTING LEVELS	41.41	41.34
DESIGN LEVELS	40.36	40.17
PIPE INVERT	38.95	39.02
STRUCTURE DEPTH (m)	1.90	1.20
PIPE DEPTH INVERT (m)	1.41	1.15
PIPE / GRADE	225mm RCRRJ 13.83m @ 0.50%	
CHAINAGE	0.00	13.83

PV - Alignment - 1A-3 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

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LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
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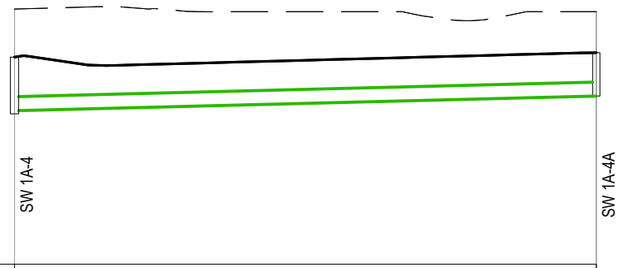
Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-2	Rev	A

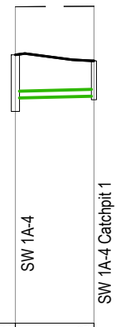
DATE: 8/26/26 FILE PATH: F:\MAVEN HAMILTON\PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 34.00m

EXISTING LEVELS	42.32	42.24
DESIGN LEVELS	40.75	40.90
PIPE INVERT	39.00	39.48
STRUCTURE DEPTH (m)	1.85	1.42
PIPE DEPTH INVERT (m)	1.75	1.42
PIPE / GRADE	450mm RCRRJ 94.90m @ 0.50%	
CHAINAGE	0.00	94.90

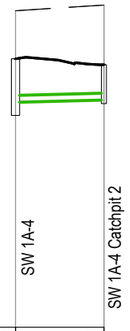
PV - Alignment - SW Line 1A-4 to 4A
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	42.32	42.33
DESIGN LEVELS	40.75	40.56
PIPE INVERT	39.34	39.40
STRUCTURE DEPTH (m)	1.85	1.20
PIPE DEPTH INVERT (m)	1.41	1.15
PIPE / GRADE	225mm RCRRJ 12.83m @ 0.50%	
CHAINAGE	0.00	12.83

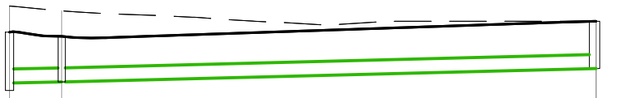
PV - Alignment - 1A-4 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	42.32	42.50
DESIGN LEVELS	40.75	40.56
PIPE INVERT	39.33	39.41
STRUCTURE DEPTH (m)	1.85	1.20
PIPE DEPTH INVERT (m)	1.42	1.15
PIPE / GRADE	225mm RCRRJ 14.42m @ 0.50%	
CHAINAGE	0.00	14.42

PV - Alignment - 1A-4 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200



DATUM 34.00m

EXISTING LEVELS	42.23	42.07	41.74
DESIGN LEVELS	41.38	41.24	41.74
PIPE INVERT	39.52	39.76	40.19
STRUCTURE DEPTH (m)	1.90	1.49	1.54
PIPE DEPTH INVERT (m)	1.86	1.49	1.54
PIPE / GRADE	600mm RCRRJ 71.71m @ 0.52%	450mm RCRRJ 87.16m @ 0.50%	
CHAINAGE	0.00	8.51	95.67

PV - Alignment - SW Line 1A-5 to 1A-5B
SCALE: HORI 1:1000 VERT 1:200

DATUM 34.00m

EXISTING LEVELS	42.07	42.14
DESIGN LEVELS	41.24	41.31
PIPE INVERT	40.02	40.09
STRUCTURE DEPTH (m)	1.49	1.20
PIPE DEPTH INVERT (m)	1.22	1.22
PIPE / GRADE	225mm RCRRJ 6.58m @ 1.04%	
CHAINAGE	0.00	6.58

PV - Alignment - 1A-5A Catchpit 1
SCALE: HORI 1:1000 VERT 1:200

DATUM 34.00m

EXISTING LEVELS	42.07	41.93
DESIGN LEVELS	41.24	41.27
PIPE INVERT	40.01	40.04
STRUCTURE DEPTH (m)	1.49	1.20
PIPE DEPTH INVERT (m)	1.24	1.23
PIPE / GRADE	225mm RCRRJ 7.44m @ 0.50%	
CHAINAGE	0.00	7.44

PV - Alignment - 1A-5A Catchpit 2
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

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3. LEVELS IN TERMS OF THE NZ VERTICAL DATUM 2016.
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5. APPROVED HARDFILL IS TO BE USED IN BACKFILLING OF ALL ROAD CROSSINGS TO COUNCIL STANDARDS.
6. HEAVY DUTY MANHOLE LIDS AND FRAMES TO BE USED IN TRAFFICKED AREAS, ALL MANHOLES SHALL HAVE STAINLESS GRATES INSTALLED.
7. ALL LOT CONNECTIONS ARE TO BE 100mmØ PVC UNLESS SHOWN OTHERWISE.
8. MANHOLE DIAMETERS SHOWN ON STRUCTURE LABEL ARE INTERNAL DIAMETER.
9. MEASUREMENTS SHOWN ON THE LOT CONNECTIONS ARE THE DISTANCE FROM THE CENTRE OF THE DOWNSTREAM MANHOLE TO THE LOT CONNECTION POSITION WITHIN THE LOT BOUNDARY.
10. MANHOLE SLAB AND COVER TO BE ROTATED TO AVOID THE FOOTPATH EDGE FOR MANHOLES ON FOOTPATH.
11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

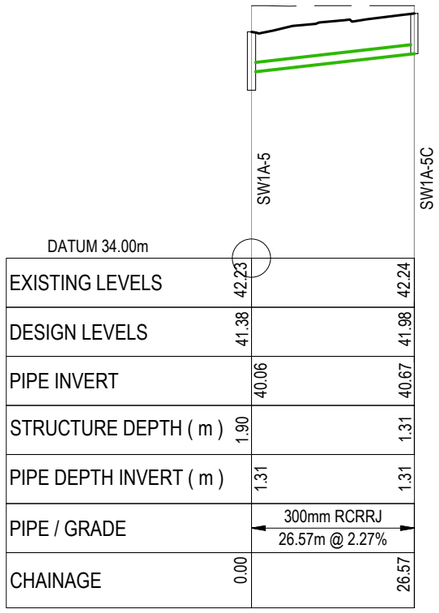
Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

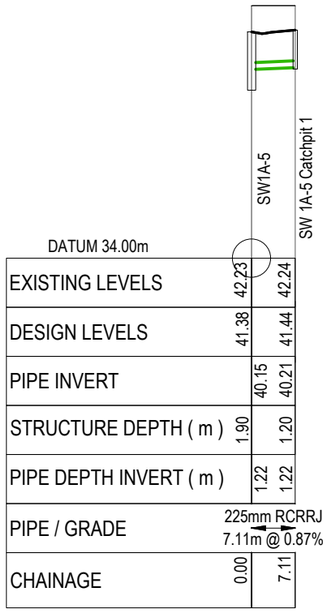
Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-3	Rev	A

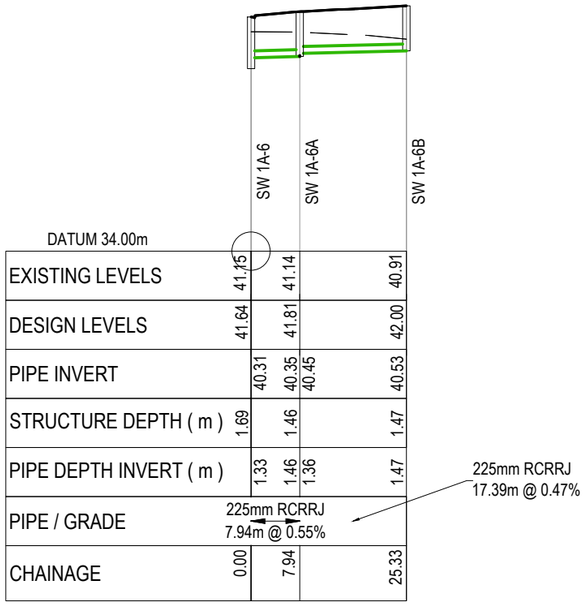
DATE: 8/26/26 FILE PATH: F:\MAVEN HAMILTON\PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



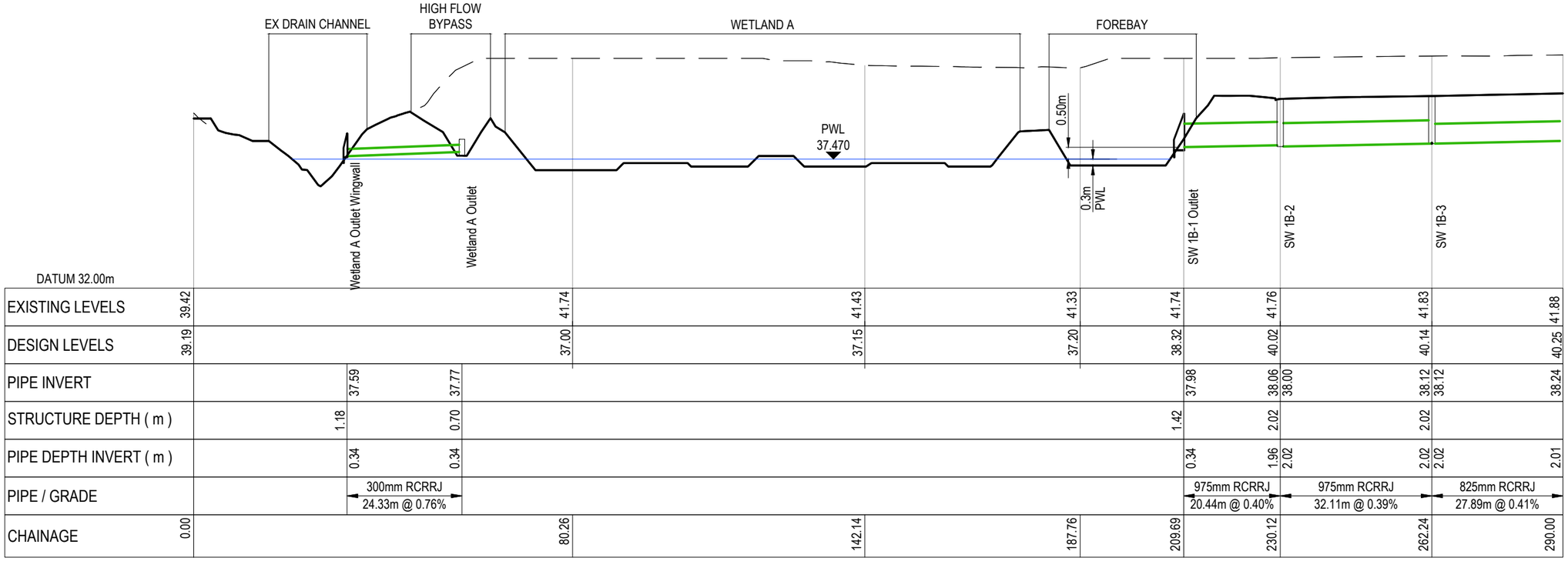
PV - Alignment - SW Line 1A-5 to 1A-5C
SCALE: HORI 1:1000 VERT 1:200



PV - Alignment - 1A-5 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



PV - Alignment - SW Line 1A-6 to 1A-6B
SCALE: HORI 1:1000 VERT 1:200



PV - Alignment - SW Line 1B-1 Outlet to 1B-11 (1 of 2)
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

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LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

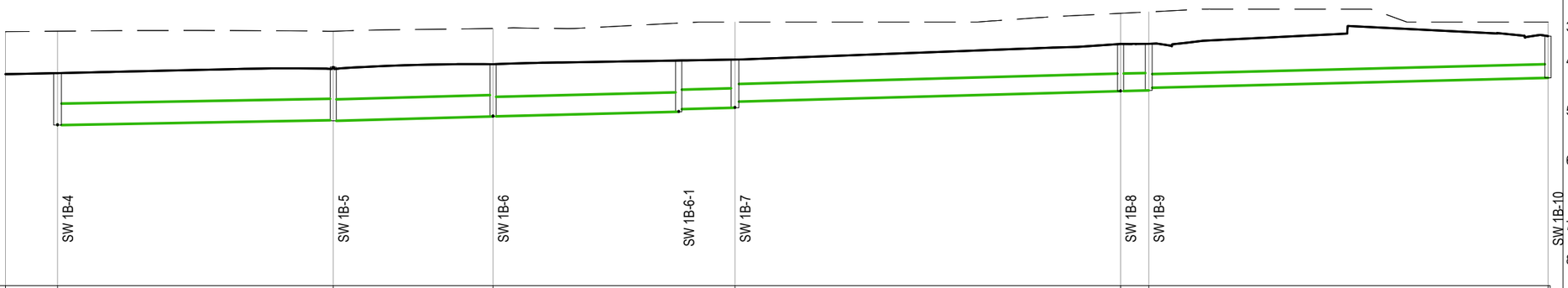
	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton New Zealand

Project
SOUTHERN LINKS 1 RESIDENTIAL STAGE 1 HAMILTON, WAIKATO FOR SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-4	Rev	A



DATUM 32.00m

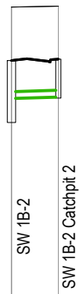
EXISTING LEVELS	41.86	41.88			41.88			41.99					42.24				42.58	42.63				42.24
DESIGN LEVELS	40.21	40.25			40.48			40.60					40.78				41.38	41.39				41.69
PIPE INVERT			38.23		38.43	38.40		38.57	38.57		38.75	38.85	38.91	39.14			39.55	39.55	39.58	39.68		40.07
STRUCTURE DEPTH (m)		2.02			2.08			2.03			1.99		1.87				1.83	1.81				1.62
PIPE DEPTH INVERT (m)			2.02		2.06	2.08		2.03	2.03		1.99	1.89	1.87	1.64			1.83	1.83	1.81	1.71		1.62
PIPE / GRADE			825mm RCRRJ 53.57m @ 0.36%			825mm RCRRJ 31.05m @ 0.56%			750mm RCRRJ 36.08m @ 0.50%		750mm RCRRJ 10.93m @ 0.52%				675mm RCRRJ 74.93m @ 0.55%			675mm RCRRJ 5.48m @ 0.50%			525mm RCRRJ 77.58m @ 0.50%	
CHAINAGE	280.00	290.13			343.70			374.75					421.76				496.69	502.17				580.15

PV - Alignment - SW Line 1B-1 Outlet to 1B-11 (2 of 2)
SCALE: HORI 1:1000 VERT 1:200

DATUM 32.00m

EXISTING LEVELS	41.76		41.75
DESIGN LEVELS	40.02		40.06
PIPE INVERT		38.80 38.84	
STRUCTURE DEPTH (m)	2.02		1.20
PIPE DEPTH INVERT (m)		1.22 1.22	
PIPE / GRADE		225mm RCRRJ 5.04m @ 0.86%	
CHAINAGE	0.00		5.04

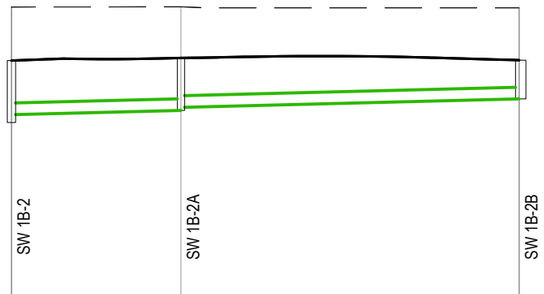
PV - Alignment - 1B-2 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	41.76		41.79
DESIGN LEVELS	40.02		40.06
PIPE INVERT		38.78	38.83
STRUCTURE DEPTH (m)	2.02		1.20
PIPE DEPTH INVERT (m)		1.24	1.24
PIPE / GRADE		225mm RCRRJ 7.65m @ 0.60%	
CHAINAGE	0.00		7.65

PV - Alignment - 1B-2 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	41.76		41.77	41.74
DESIGN LEVELS	40.02		40.10	40.03
PIPE INVERT		38.25	38.39 38.49	38.77
STRUCTURE DEPTH (m)	2.02		1.71	1.26
PIPE DEPTH INVERT (m)		1.76	1.71 1.61	1.26
PIPE / GRADE		375mm RCRRJ 27.63m @ 0.50%	375mm RCRRJ 55.17m @ 0.50%	
CHAINAGE	0.00		27.63	82.81

PV - Alignment - SW 1B-2 to 1B-2B
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

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LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

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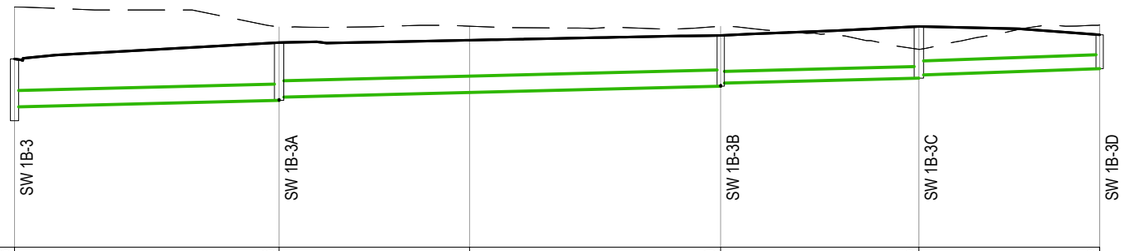
Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-5	Rev	A

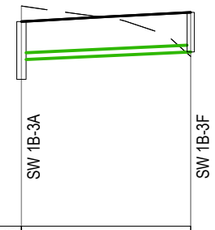
DATE: 8/26/26 FILE PATH: F:\MAVEN HAMILTON\4 PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 34.00m

EXISTING LEVELS	41.83	41.18	41.21	41.20	40.45	41.25
DESIGN LEVELS	40.14	40.67	40.75	40.91	41.20	40.93
PIPE INVERT	38.57	38.79	38.89	39.25	39.51	39.61	39.82
STRUCTURE DEPTH (m)	2.02	1.88	1.66	1.68	1.10
PIPE DEPTH INVERT (m)	1.57	1.88	1.78	1.66	1.56	1.68	1.58	1.10
PIPE / GRADE	525mm RCRRJ 43.16m @ 0.50%	525mm RCRRJ 72.03m @ 0.50%	375mm RCRRJ 32.32m @ 0.50%	450mm RCRRJ 29.49m @ 0.72%
CHAINAGE	0.00	43.16	74.23	115.18	147.52	177.00

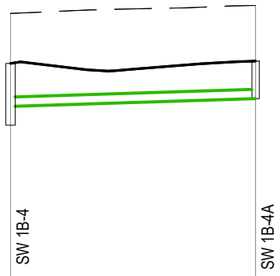
PV - Alignment - SW Line 1B-3 to 1B-3D
SCALE: HORI 1:1000 VERT 1:200



DATUM 34.00m

EXISTING LEVELS	41.18	39.54
DESIGN LEVELS	40.67	40.97
PIPE INVERT	39.43	39.68
STRUCTURE DEPTH (m)	1.88	1.29
PIPE DEPTH INVERT (m)	1.25	1.29
PIPE / GRADE	225mm RCRRJ 27.60m @ 0.93%
CHAINAGE	0.00	27.60

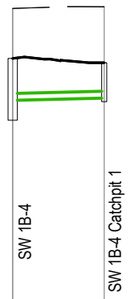
PV - Alignment - SW Line 1B-3A to 1B-3F
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	41.88	42.14
DESIGN LEVELS	40.25	40.33
PIPE INVERT	38.85	39.10
STRUCTURE DEPTH (m)	2.02	1.22
PIPE DEPTH INVERT (m)	1.40	1.22
PIPE / GRADE	300mm RCRRJ 39.98m @ 0.64%
CHAINAGE	0.00	39.98

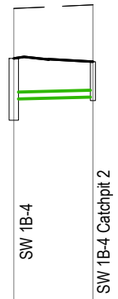
PV - Alignment - SW Line 1B-4 to 1B-4A
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	41.88	41.94
DESIGN LEVELS	40.25	40.11
PIPE INVERT	38.88	38.96
STRUCTURE DEPTH (m)	2.02	1.20
PIPE DEPTH INVERT (m)	1.37	1.15
PIPE / GRADE	225mm RCRRJ 14.94m @ 0.50%
CHAINAGE	0.00	14.94

PV - Alignment - 1B-4 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	41.88	42.00
DESIGN LEVELS	40.25	40.14
PIPE INVERT	38.93	38.99
STRUCTURE DEPTH (m)	2.02	1.20
PIPE DEPTH INVERT (m)	1.33	1.15
PIPE / GRADE	225mm RCRRJ 12.90m @ 0.50%
CHAINAGE	0.00	12.90

PV - Alignment - 1B-4 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

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LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
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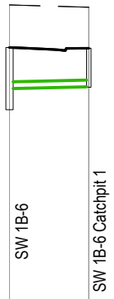
Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

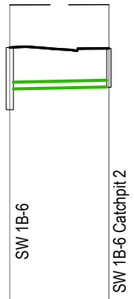
Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-6	Rev	A

DATE: 8/26/26 FILE PATH: F:\MAVEN HAMILTON\4_PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



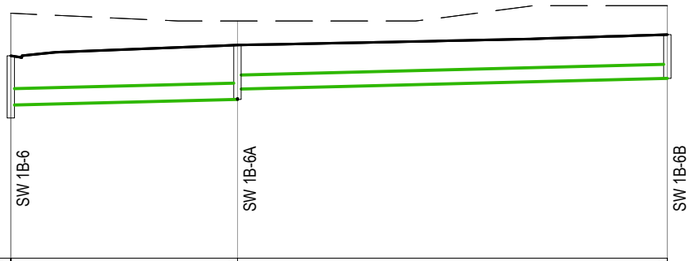
DATUM 32.00m		
EXISTING LEVELS	41.99	41.91
DESIGN LEVELS	40.60	40.57
PIPE INVERT	39.26	39.32
STRUCTURE DEPTH (m)	2.03	1.20
PIPE DEPTH INVERT (m)	1.34	1.26
PIPE / GRADE	225mm RCRRJ 12.94m @ 0.48%	
CHAINAGE	0.00	12.94

PV - Alignment - 1B-6 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



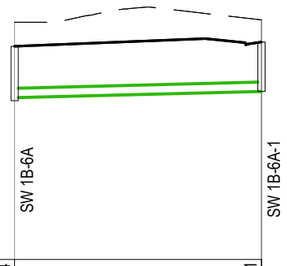
DATUM 32.00m		
EXISTING LEVELS	41.99	42.00
DESIGN LEVELS	40.60	40.57
PIPE INVERT	39.24	39.31
STRUCTURE DEPTH (m)	2.03	1.20
PIPE DEPTH INVERT (m)	1.35	1.25
PIPE / GRADE	225mm RCRRJ 16.17m @ 0.43%	
CHAINAGE	0.00	16.17

PV - Alignment - 1B-6 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200



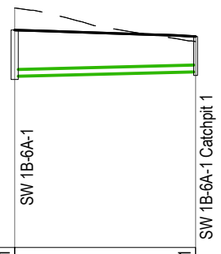
DATUM 34.00m			
EXISTING LEVELS	41.99	41.74	42.24
DESIGN LEVELS	40.60	40.95	41.29
PIPE INVERT	38.99	39.18 / 39.51	39.86
STRUCTURE DEPTH (m)	2.03	1.77	1.43
PIPE DEPTH INVERT (m)	1.61	1.77 / 1.44	1.43
PIPE / GRADE	525mm RCRRJ 37.00m @ 0.50%		450mm RCRRJ 70.12m @ 0.50%
CHAINAGE	0.00	36.98	107.10

PV - Alignment - SW Line 1B-6 to 1B-6B
SCALE: HORI 1:1000 VERT 1:200



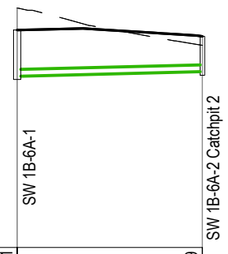
DATUM 34.00m		
EXISTING LEVELS	41.74	41.81
DESIGN LEVELS	40.95	41.09
PIPE INVERT	39.28	39.48
STRUCTURE DEPTH (m)	1.77	1.61
PIPE DEPTH INVERT (m)	1.67	1.61
PIPE / GRADE	300mm RCRRJ 40.26m @ 0.50%	
CHAINAGE	0.00	40.28

PV - Alignment - 1B-6A to 1B-6A-1
SCALE: HORI 1:1000 VERT 1:200



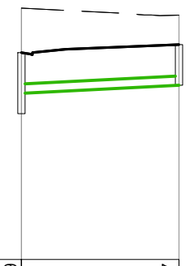
DATUM 34.00m		
EXISTING LEVELS	41.81	40.71
DESIGN LEVELS	41.09	40.88
PIPE INVERT	39.58	39.73
STRUCTURE DEPTH (m)	1.61	1.20
PIPE DEPTH INVERT (m)	1.51	1.15
PIPE / GRADE	225mm RCRRJ 29.51m @ 0.50%	
CHAINAGE	0.00	29.51

PV - Alignment - 1B-6A Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 34.00m		
EXISTING LEVELS	41.81	40.59
DESIGN LEVELS	41.09	40.88
PIPE INVERT	39.58	39.73
STRUCTURE DEPTH (m)	1.61	1.20
PIPE DEPTH INVERT (m)	1.51	1.15
PIPE / GRADE	225mm RCRRJ 30.21m @ 0.50%	
CHAINAGE	0.00	30.21

PV - Alignment - 1B-6A Catchpit 2
SCALE: HORI 1:1000 VERT 1:200



DATUM 34.00m		
EXISTING LEVELS	42.19	41.97
DESIGN LEVELS	40.74	41.00
PIPE INVERT		
STRUCTURE DEPTH (m)		
PIPE DEPTH INVERT (m)		
PIPE / GRADE		
CHAINAGE	0.00	25.69

PV - Alignment - 1B-6-1 to 1B-6-2
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

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11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

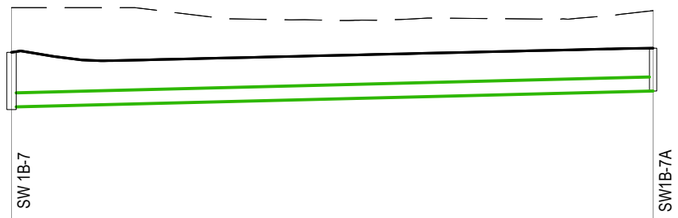
Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-7	Rev	A

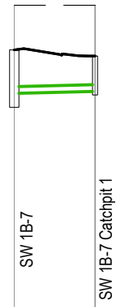
DATE: 6/26/26 FILE PATH: F:\MAVEN HAMILTON\PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 34.00m

	SW 1B-7	SW1B-7A
EXISTING LEVELS	42.24	42.14
DESIGN LEVELS	40.78	40.91
PIPE INVERT	38.99	39.52
STRUCTURE DEPTH (m)	1.87	1.40
PIPE DEPTH INVERT (m)	1.78	1.40
PIPE / GRADE	450mm RCRRJ 104.65m @ 0.50%	
CHAINAGE	0.00	104.65

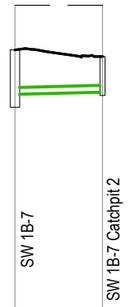
PV - Alignment - SW Line 1B-7 to 1B-7A
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

	SW 1B-7	SW 1B-7 Catchpit 1
EXISTING LEVELS	42.24	42.24
DESIGN LEVELS	40.78	40.58
PIPE INVERT	39.36	39.43
STRUCTURE DEPTH (m)	1.87	1.20
PIPE DEPTH INVERT (m)	1.42	1.15
PIPE / GRADE	225mm RCRRJ 13.18m @ 0.50%	
CHAINAGE	0.00	13.18

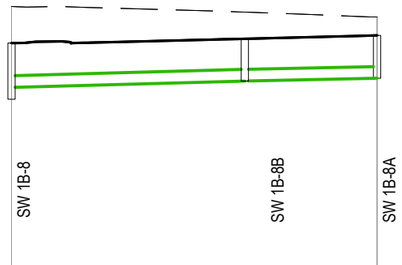
PV - Alignment - 1B-7 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

	SW 1B-7	SW 1B-7 Catchpit 2
EXISTING LEVELS	42.24	42.24
DESIGN LEVELS	40.78	40.57
PIPE INVERT	39.33	39.40
STRUCTURE DEPTH (m)	1.87	1.20
PIPE DEPTH INVERT (m)	1.45	1.16
PIPE / GRADE	225mm RCRRJ 14.27m @ 0.50%	
CHAINAGE	0.00	14.27

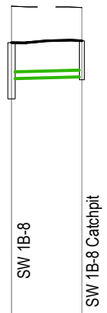
PV - Alignment - 1B-7 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200



DATUM 34.00m

	SW 1B-8	SW 1B-8B	SW 1B-8A
EXISTING LEVELS	42.58		42.24
DESIGN LEVELS	41.38		41.63
PIPE INVERT	39.94	40.14 40.14	40.24
STRUCTURE DEPTH (m)	1.83	1.38	1.40
PIPE DEPTH INVERT (m)	1.45	1.38 1.38	1.40
PIPE / GRADE	375mm RCRRJ 38.07m @ 0.54%	375mm RCRRJ 21.57m @ 0.42%	
CHAINAGE	0.00		59.64

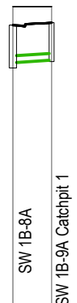
PV - Alignment - SW Line 1B-8 to 1B-8A
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

	SW 1B-8	SW 1B-8 Catchpit
EXISTING LEVELS	42.58	42.53
DESIGN LEVELS	41.38	41.44
PIPE INVERT	40.21	40.27
STRUCTURE DEPTH (m)	1.83	1.20
PIPE DEPTH INVERT (m)	1.17	1.17
PIPE / GRADE	225mm RCRRJ 11.49m @ 0.52%	
CHAINAGE	0.00	11.49

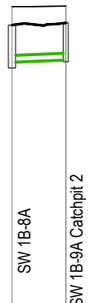
PV - Alignment - 1B-8 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

	SW 1B-8A	SW 1B-9A Catchpit 1
EXISTING LEVELS	42.24	42.24
DESIGN LEVELS	41.63	41.71
PIPE INVERT	40.40	40.49
STRUCTURE DEPTH (m)	1.40	1.20
PIPE DEPTH INVERT (m)	1.23	1.22
PIPE / GRADE	225mm RCRRJ 6.31m @ 1.32%	
CHAINAGE	0.00	6.31

PV - Alignment - SW 1B-8A Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

	SW 1B-8A	SW 1B-9A Catchpit 2
EXISTING LEVELS	42.24	42.25
DESIGN LEVELS	41.63	41.70
PIPE INVERT	40.42	40.49
STRUCTURE DEPTH (m)	1.40	1.20
PIPE DEPTH INVERT (m)	1.21	1.21
PIPE / GRADE	225mm RCRRJ 8.78m @ 0.86%	
CHAINAGE	0.00	8.78

PV - Alignment - SW 1B-8A Catchpit 2
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

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LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

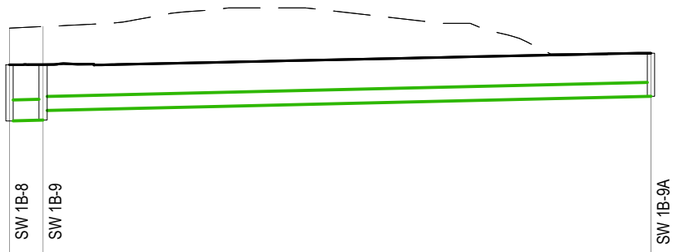
Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-8	Rev	A

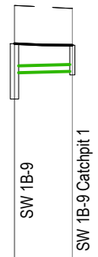
DATE: 6/26/26 FILE PATH: F:\MAVEN HAMILTON\PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 34.00m

	SW 1B-8	SW 1B-9	SW 1B-9A
EXISTING LEVELS	42.58	42.63	41.74
DESIGN LEVELS	41.38	41.39	41.76
PIPE INVERT	39.55 39.58	39.89	40.35
STRUCTURE DEPTH (m)	1.83	1.81	1.41
PIPE DEPTH INVERT (m)	1.83 1.81	1.50	1.41
PIPE / GRADE	675mm RCRRJ 5.48m @ 0.50%	450mm RCRRJ 99.16m @ 0.47%	
CHAINAGE	0.00	5.48	104.64

PV - Alignment - SW 1B-8 to 1B-9A
SCALE: HORI 1:1000 VERT 1:200



DATUM 34.00m

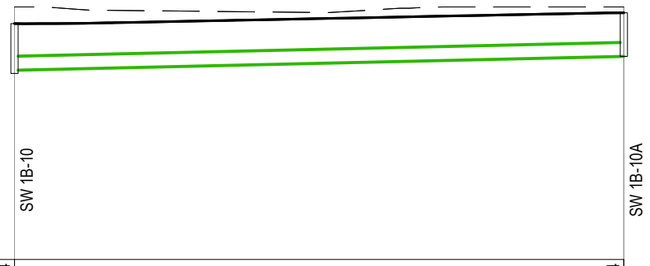
	SW 1B-9	SW 1B-9 Catchpit 1
EXISTING LEVELS	42.63	42.54
DESIGN LEVELS	41.39	41.34
PIPE INVERT	40.44	40.48
STRUCTURE DEPTH (m)	1.81	0.90
PIPE DEPTH INVERT (m)	0.95	0.85
PIPE / GRADE	225mm RCRRJ 9.43m @ 0.50%	
CHAINAGE	0.00	9.43

PV - Alignment - 1B-9 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200

DATUM 34.00m

	SW 1B-9	SW 1B-9 Catchpit 2
EXISTING LEVELS	42.63	42.64
DESIGN LEVELS	41.39	41.30
PIPE INVERT	40.11 40.14	
STRUCTURE DEPTH (m)	1.81	1.20
PIPE DEPTH INVERT (m)	1.27 1.15	
PIPE / GRADE	225mm RCRRJ 5.96m @ 0.50%	
CHAINAGE	0.00	5.96

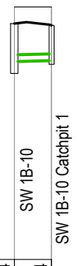
PV - Alignment - 1B-9 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200



DATUM 34.00m

	SW 1B-10	SW 1B-10A
EXISTING LEVELS	42.24	42.24
DESIGN LEVELS	41.69	42.04
PIPE INVERT	40.17	40.62
STRUCTURE DEPTH (m)	1.62	1.42
PIPE DEPTH INVERT (m)	1.52	1.42
PIPE / GRADE	450mm RCRRJ 99.39m @ 0.45%	
CHAINAGE	0.00	99.39

PV - Alignment - SW Line 1B-10 to 1B-10A
SCALE: HORI 1:1000 VERT 1:200



DATUM 34.00m

	SW 1B-10	SW 1B-10 Catchpit 1
EXISTING LEVELS	42.24	42.24
DESIGN LEVELS	41.69	41.63
PIPE INVERT	40.45	40.48
STRUCTURE DEPTH (m)	1.62	1.20
PIPE DEPTH INVERT (m)	1.24	1.15
PIPE / GRADE	225mm RCRRJ 6.07m @ 0.50%	
CHAINAGE	0.00	6.07

PV - Alignment - 1B-10 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200

DATUM 34.00m

	SW 1B-10	SW 1B-10 Catchpit 2
EXISTING LEVELS	42.24	42.24
DESIGN LEVELS	41.69	41.63
PIPE INVERT	40.46	40.48
STRUCTURE DEPTH (m)	1.62	1.20
PIPE DEPTH INVERT (m)	1.23	1.13
PIPE / GRADE	225mm RCRRJ 4.32m @ 0.50%	
CHAINAGE	0.00	4.32

PV - Alignment - 1B-10 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

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LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
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07 242 0601
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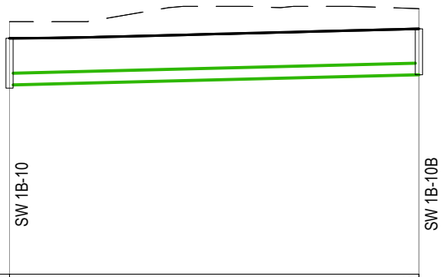
Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-9	Rev	A

DATE: 8/26/26 FILE PATH: F:\MAVEN HAMILTON\4. PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 34.00m

EXISTING LEVELS	42.24	42.66
DESIGN LEVELS	41.69	42.00
PIPE INVERT	40.17	40.50
STRUCTURE DEPTH (m)	1.62	1.50
PIPE DEPTH INVERT (m)	1.52	1.50
PIPE / GRADE	375mm RCRRJ 66.79m @ 0.50%	
CHAINAGE	0.00	66.79

PV - Alignment - SW Line 1B-10 to 1B-10B
SCALE: HORI 1:1000 VERT 1:200

DATUM 34.00m

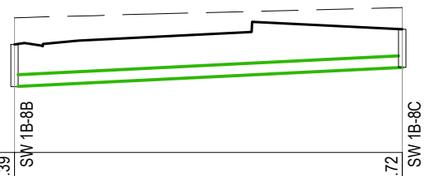
EXISTING LEVELS	42.66	42.59
DESIGN LEVELS	42.00	42.07
PIPE INVERT	40.75	40.82
STRUCTURE DEPTH (m)	1.50	1.20
PIPE DEPTH INVERT (m)	1.25	1.25
PIPE / GRADE	225mm RCRRJ 7.35m @ 0.96%	
CHAINAGE	0.00	7.35

PV - Alignment - SW 1B-10B Catchpit 1
SCALE: HORI 1:1000 VERT 1:200

DATUM 34.00m

EXISTING LEVELS	42.66	42.65
DESIGN LEVELS	42.00	42.05
PIPE INVERT	40.75	40.82
STRUCTURE DEPTH (m)	1.50	1.20
PIPE DEPTH INVERT (m)	1.23	1.23
PIPE / GRADE	225mm RCRRJ 4.24m @ 1.17%	
CHAINAGE	0.00	4.24

PV - Alignment - SW 1B-10B Catchpit 2
SCALE: HORI 1:1000 VERT 1:200



DATUM 38.00m

EXISTING LEVELS	42.39	42.72
DESIGN LEVELS	41.52	42.02
PIPE INVERT	40.15	40.77
STRUCTURE DEPTH (m)	1.38	1.24
PIPE DEPTH INVERT (m)	1.37	1.24
PIPE / GRADE	375mm RCRRJ 63.24m @ 0.99%	
CHAINAGE	0.00	63.24

PV - Alignment - SW Line 1B-8B to 1B-BC (1)
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

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11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

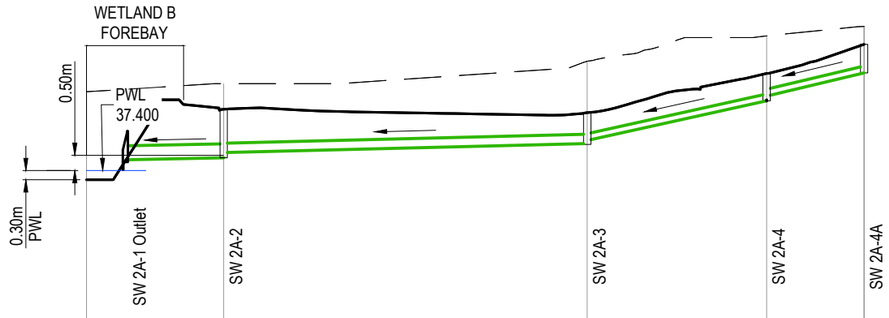
Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-10	Rev	A

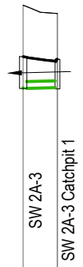
DATE: 6/26/26 FILE PATH: F:\MAVEN HAMILTON\6 PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 32.00m

EXISTING LEVELS	39.97		40.24		40.96		41.79		42.10
DESIGN LEVELS	37.10		39.40		39.29		40.57		41.52
PIPE INVERT		37.75	37.82	37.99	38.28	38.38	39.68	39.83	40.58
STRUCTURE DEPTH (m)		0.93	1.58		1.04		0.89		0.93
PIPE DEPTH INVERT (m)		0.07	1.58	1.41	1.01	0.91	0.89	0.74	0.93
PIPE / GRADE		450mm RCRRJ 15.70m @ 0.40%		300mm RCRRJ 59.30m @ 0.50%		225mm RCRRJ 29.26m @ 4.42%		225mm RCRRJ 15.90m @ 4.74%	
CHAINAGE	0.00		22.38		81.68		110.93		126.84

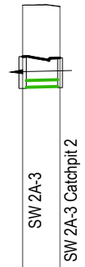
PV - Alignment - SW Line 2A-4A for Modelling
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	40.96		40.70
DESIGN LEVELS	39.29		39.20
PIPE INVERT		38.25	38.28
STRUCTURE DEPTH (m)	1.04		0.90
PIPE DEPTH INVERT (m)		1.04	0.93
PIPE / GRADE		225mm RCRRJ 5.60m @ 0.50%	
CHAINAGE	0.00		5.60

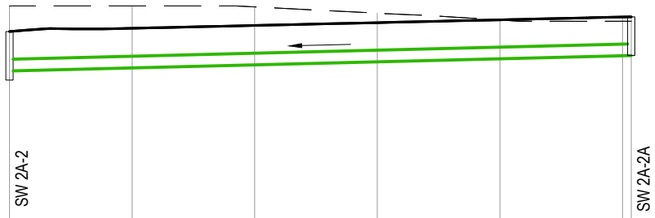
PV - Alignment - SW 2A-3 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	40.96		40.93
DESIGN LEVELS	39.29		39.25
PIPE INVERT		38.29	38.32
STRUCTURE DEPTH (m)	1.04		0.90
PIPE DEPTH INVERT (m)		1.00	0.93
PIPE / GRADE		225mm RCRRJ 6.11m @ 0.50%	
CHAINAGE	0.00		6.11

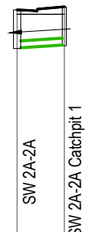
PV - Alignment - SW 2A-3 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	40.24	40.24	40.20	40.00	39.77	39.74	39.74
DESIGN LEVELS	39.40					39.87	39.98
PIPE INVERT	38.11						38.62
STRUCTURE DEPTH (m)	1.58						1.26
PIPE DEPTH INVERT (m)							
PIPE / GRADE		375mm RCRRJ 101.41m @ 0.50%					
CHAINAGE	0.00	20.00	40.00	60.00	80.00		100.00 101.41

PV - Alignment - SW 2A-2 to 2A-2A
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.74		39.74
DESIGN LEVELS	39.88		39.98
PIPE INVERT		38.64	38.74
STRUCTURE DEPTH (m)	1.26		1.20
PIPE DEPTH INVERT (m)		1.24	1.24
PIPE / GRADE		225mm RCRRJ 7.70m @ 1.32%	
CHAINAGE	0.00		7.70

PV - Alignment - SW 2A-2A Catchpit 1
SCALE: HORI 1:1000 VERT 1:200

DATUM 32.00m

EXISTING LEVELS	39.74		39.74
DESIGN LEVELS	39.88		39.96
PIPE INVERT		38.71	38.79
STRUCTURE DEPTH (m)	1.26		1.20
PIPE DEPTH INVERT (m)		1.17	1.17
PIPE / GRADE		225mm RCRRJ 8.71m @ 0.88%	
CHAINAGE	0.00		8.71

PV - Alignment - SW 2A-2A Catchpit 2
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
2. COORDINATES IN TERMS OF NZ GEODETIC DATUM MOUNT EDEN 2000.
3. LEVELS IN TERMS OF THE NZ VERTICAL DATUM 2016.
4. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE ALL SERVICES THAT MAY BE AFFECTED BY HIS OPERATIONS.
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6. HEAVY DUTY MANHOLE LIDS AND FRAMES TO BE USED IN TRAFFICKED AREAS, ALL MANHOLES SHALL HAVE STAINLESS GRATES INSTALLED.
7. ALL LOT CONNECTIONS ARE TO BE 100mmØ PVC UNLESS SHOWN OTHERWISE.
8. MANHOLE DIAMETERS SHOWN ON STRUCTURE LABEL ARE INTERNAL DIAMETER.
9. MEASUREMENTS SHOWN ON THE LOT CONNECTIONS ARE THE DISTANCE FROM THE CENTRE OF THE DOWNSTREAM MANHOLE TO THE LOT CONNECTION POSITION WITHIN THE LOT BOUNDARY.
10. MANHOLE SLAB AND COVER TO BE ROTATED TO AVOID THE FOOTPATH EDGE FOR MANHOLES ON FOOTPATH.
11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
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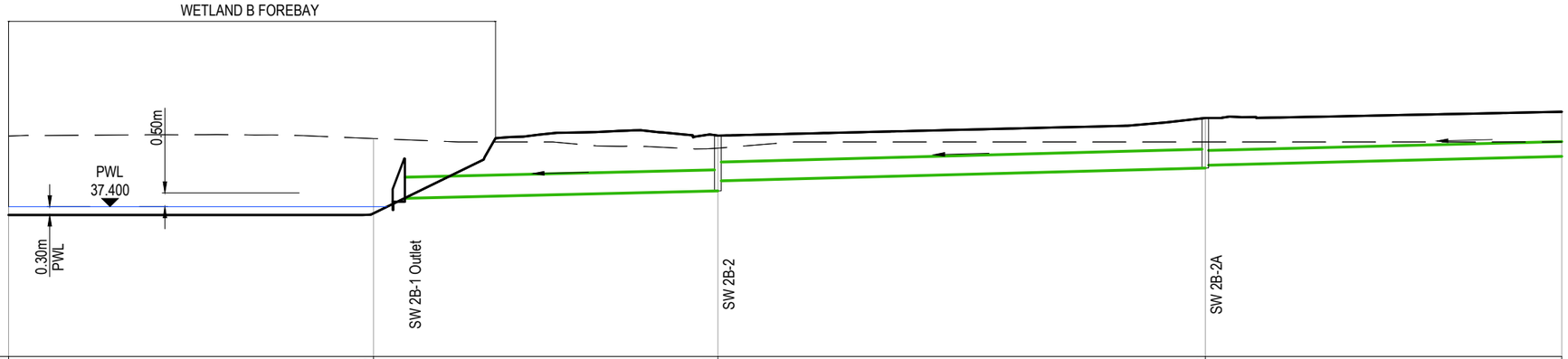
Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

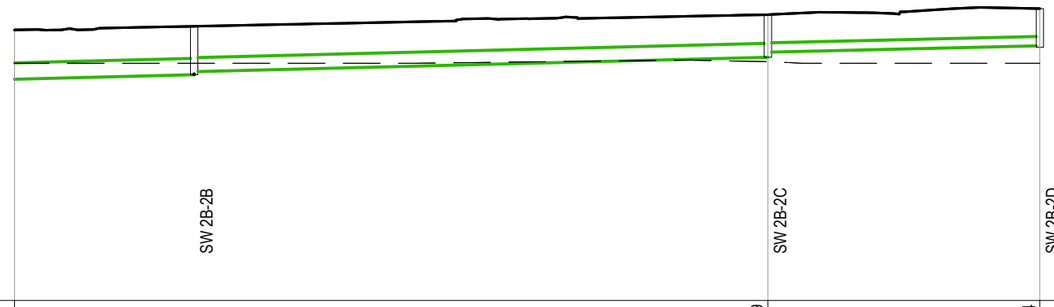
Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-11	Rev	A



DATUM 32.00m

EXISTING LEVELS	39.95		39.86				39.51				39.74				39.74			
DESIGN LEVELS	37.10		37.16				39.96				40.60				40.82			
PIPE INVERT					37.70		37.97	38.33			38.79	38.89			39.36			
STRUCTURE DEPTH (m)				1.43			1.99				1.80							
PIPE DEPTH INVERT (m)					0.00		1.99	1.63			1.80	1.70			1.58			
PIPE / GRADE					750mm RCRRJ 56.56m @ 0.47%				675mm RCRRJ 87.87m @ 0.53%					525mm RCRRJ 93.58m @ 0.50%				
CHAINAGE	0.00		65.79				127.87				215.73				280.00			

PV - Alignment - SW Line 2B-1 Outlet to 2B-2E (1 of 2)
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.74						39.79				39.74							
DESIGN LEVELS	40.82						41.32				41.52							
PIPE INVERT	38.89			39.36	39.46		39.93	40.10			40.30							
STRUCTURE DEPTH (m)				1.58			1.39				1.26							
PIPE DEPTH INVERT (m)	1.70			1.58	1.48		1.39	1.22			1.21							
PIPE / GRADE		525mm RCRRJ 93.58m @ 0.50%			450mm RCRRJ 93.58m @ 0.50%				300mm RCRRJ 44.36m @ 0.47%									
CHAINAGE	280.00						402.89				447.25				460.92			

PV - Alignment - SW Line 2B-1 Outlet to 2B-2E (1 of 2) (1)
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

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LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
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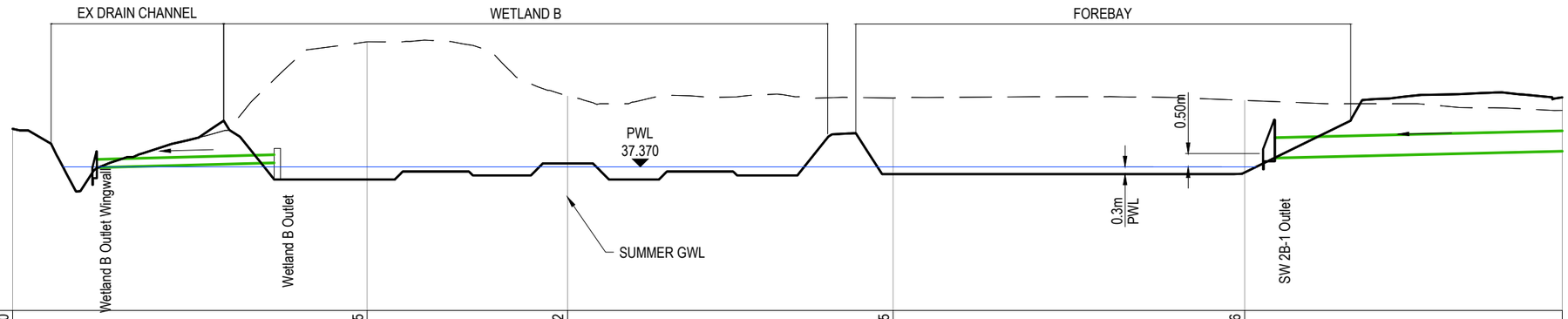
Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-12	Rev	A

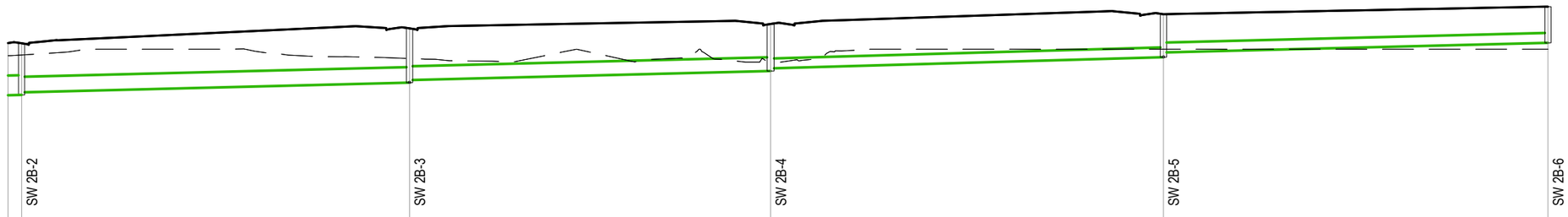
DATE: 8/26/26 FILE PATH: F:\MAVEN HAMILTON\4. PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 32.00m

EXISTING LEVELS	38.80	42.05	40.02	39.95	39.86	39.48	
DESIGN LEVELS	38.80	36.90	37.50	37.10	37.16	39.97	
PIPE INVERT	37.35	37.53				37.70	37.97
STRUCTURE DEPTH (m)	0.60	1.16			1.43		
PIPE DEPTH INVERT (m)	-0.03	-0.63				0.00	1.99
PIPE / GRADE	300mm RCRRJ 33.86m @ 0.53%					750mm RCRRJ 56.56m @ 0.47%	
CHAINAGE	0.00	66.34	103.84	164.76	230.55	290.00	

PV - Alignment - SW Line 2B-1 Outlet to 2B-6 (1 of 2)
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.48 39.51	39.37	39.24	39.74	39.74		
DESIGN LEVELS	39.97 39.96	40.54	40.71	41.09	41.38		
PIPE INVERT	37.90 38.07	38.44 38.54	38.89 38.99	39.42 39.61	39.98		
STRUCTURE DEPTH (m)	1.99	2.09	1.82	1.66	1.40		
PIPE DEPTH INVERT (m)	0.96 1.89	2.09 1.99	1.82 1.72	1.66 1.48	1.40		
PIPE / GRADE	750mm RCRRJ 56.56m @ 0.47%	600mm RCRRJ 74.90m @ 0.50%	525mm RCRRJ 69.69m @ 0.50%	375mm RCRRJ 75.86m @ 0.57%	375mm RCRRJ 74.24m @ 0.50%		
CHAINAGE	290.00 292.63	367.53	437.21	513.08	587.32 590.74		

PV - Alignment - SW Line 2B-1 Outlet to 2B-6 (2 of 2)
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

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LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

Maven Waikato
07 242 0601
info@maven.co.nz
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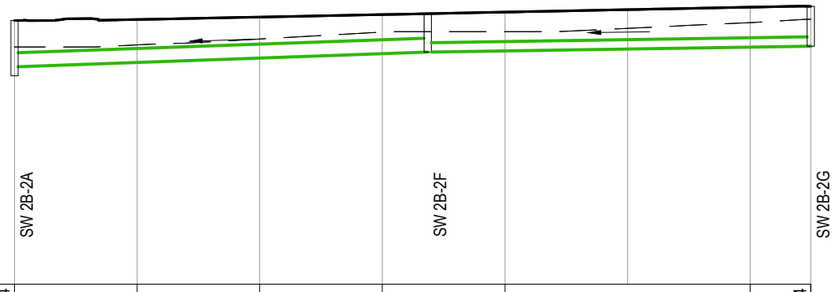
Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-13	Rev	A

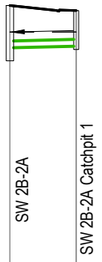
DATE: 8/26/25 FILE PATH: F:\MAVEN HAMILTON\PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 32.00m

EXISTING LEVELS	39.74	39.80	40.00	40.22	40.24	40.34	40.53	40.64
DESIGN LEVELS	40.60					40.95		41.06
PIPE INVERT	39.08			39.57	39.57			39.76
STRUCTURE DEPTH (m)	1.80			1.25				1.30
PIPE DEPTH INVERT (m)	1.51			1.25	1.25			1.30
PIPE / GRADE	450mm RCRRJ 67.40m @ 0.72%				300mm RCRRJ 62.48m @ 0.31%			
CHAINAGE	0.00	20.00	40.00	60.00	80.00	100.00	120.00	129.88

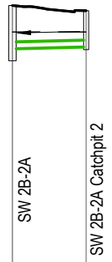
PV - Alignment - SW 2B-4
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.74		39.74
DESIGN LEVELS	40.60		40.43
PIPE INVERT		39.22	39.27
STRUCTURE DEPTH (m)	1.80		1.20
PIPE DEPTH INVERT (m)		1.38	1.16
PIPE / GRADE	225mm RCRRJ 10.81m @ 0.50%		
CHAINAGE	0.00		10.81

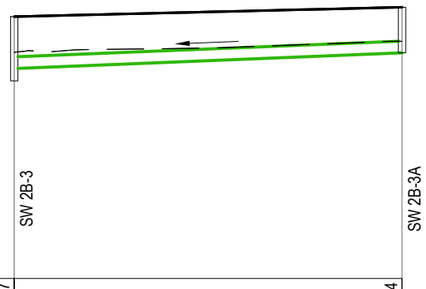
PV - Alignment - SW 2B-2A Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.74		39.74
DESIGN LEVELS	40.60		40.43
PIPE INVERT		39.19	39.25
STRUCTURE DEPTH (m)	1.80		1.20
PIPE DEPTH INVERT (m)		1.41	1.18
PIPE / GRADE	225mm RCRRJ 12.02m @ 0.50%		
CHAINAGE	0.00		12.02

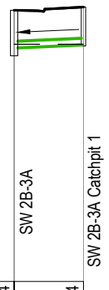
PV - Alignment - SW 2B-2A Catchpit 2
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.37		39.74
DESIGN LEVELS	40.54		40.84
PIPE INVERT	38.84		39.36
STRUCTURE DEPTH (m)	2.09		1.48
PIPE DEPTH INVERT (m)	1.69		1.48
PIPE / GRADE	375mm RCRRJ 63.25m @ 0.82%		
CHAINAGE	0.00		63.25

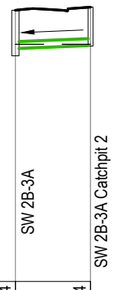
PV - Alignment - SW Line 2B-2B to 2B-2 for Modelling
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.74		39.74
DESIGN LEVELS	40.84		40.95
PIPE INVERT		39.61	39.71
STRUCTURE DEPTH (m)	1.48		1.20
PIPE DEPTH INVERT (m)		1.24	1.24
PIPE / GRADE	225mm RCRRJ 11.31m @ 0.92%		
CHAINAGE	0.00		11.31

PV - Alignment - SW 2B-3A Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.74		39.74
DESIGN LEVELS	40.84		40.95
PIPE INVERT		39.60	39.70
STRUCTURE DEPTH (m)	1.48		1.20
PIPE DEPTH INVERT (m)		1.25	1.25
PIPE / GRADE	225mm RCRRJ 12.26m @ 0.83%		
CHAINAGE	0.00		12.26

PV - Alignment - SW 2B-3A Catchpit 2
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
2. COORDINATES IN TERMS OF NZ GEODETIC DATUM MOUNT EDEN 2000.
3. LEVELS IN TERMS OF THE NZ VERTICAL DATUM 2016.
4. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE ALL SERVICES THAT MAY BE AFFECTED BY HIS OPERATIONS.
5. APPROVED HARDFILL IS TO BE USED IN BACKFILLING OF ALL ROAD CROSSINGS TO COUNCIL STANDARDS.
6. HEAVY DUTY MANHOLE LIDS AND FRAMES TO BE USED IN TRAFFICKED AREAS, ALL MANHOLES SHALL HAVE STAINLESS GRATES INSTALLED.
7. ALL LOT CONNECTIONS ARE TO BE 100mmØ PVC UNLESS SHOWN OTHERWISE.
8. MANHOLE DIAMETERS SHOWN ON STRUCTURE LABEL ARE INTERNAL DIAMETER.
9. MEASUREMENTS SHOWN ON THE LOT CONNECTIONS ARE THE DISTANCE FROM THE CENTRE OF THE DOWNSTREAM MANHOLE TO THE LOT CONNECTION POSITION WITHIN THE LOT BOUNDARY.
10. MANHOLE SLAB AND COVER TO BE ROTATED TO AVOID THE FOOTPATH EDGE FOR MANHOLES ON FOOTPATH.
11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

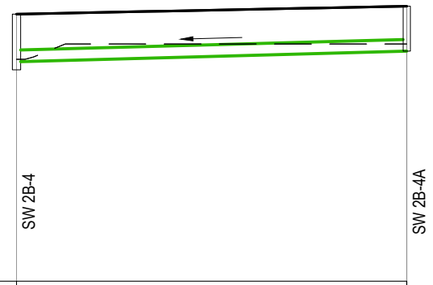
Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-14	Rev	A

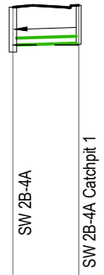
DATE: 6/06/26 FILE PATH: F:\MAVEN HAMILTON\4_PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 32.00m

EXISTING LEVELS	39.24	39.74
DESIGN LEVELS		
PIPE INVERT	39.16	39.50
STRUCTURE DEPTH (m)	1.82	1.46
PIPE DEPTH INVERT (m)	1.55	1.46
PIPE / GRADE	375mm RCRRJ 63.66m @ 0.54%	
CHAINAGE	0.00	63.66

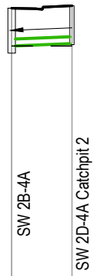
PV - Alignment - SW Line 2B-4 to 2B-4A
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.74	39.74
DESIGN LEVELS	40.97	41.03
PIPE INVERT	39.73	39.80
STRUCTURE DEPTH (m)	1.46	1.20
PIPE DEPTH INVERT (m)	1.23	1.23
PIPE / GRADE	225mm RCRRJ 10.73m @ 0.60%	
CHAINAGE	0.00	10.73

PV - Alignment - SW 2B-4A Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.74	39.74
DESIGN LEVELS	40.97	41.05
PIPE INVERT	39.73	39.81
STRUCTURE DEPTH (m)	1.46	1.20
PIPE DEPTH INVERT (m)	1.23	1.23
PIPE / GRADE	225mm RCRRJ 9.82m @ 0.81%	
CHAINAGE	0.00	9.82

PV - Alignment - SW 2B-4A Catchpit 2
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
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8. MANHOLE DIAMETERS SHOWN ON STRUCTURE LABEL ARE INTERNAL DIAMETER.
9. MEASUREMENTS SHOWN ON THE LOT CONNECTIONS ARE THE DISTANCE FROM THE CENTRE OF THE DOWNSTREAM MANHOLE TO THE LOT CONNECTION POSITION WITHIN THE LOT BOUNDARY.
10. MANHOLE SLAB AND COVER TO BE ROTATED TO AVOID THE FOOTPATH EDGE FOR MANHOLES ON FOOTPATH.
11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

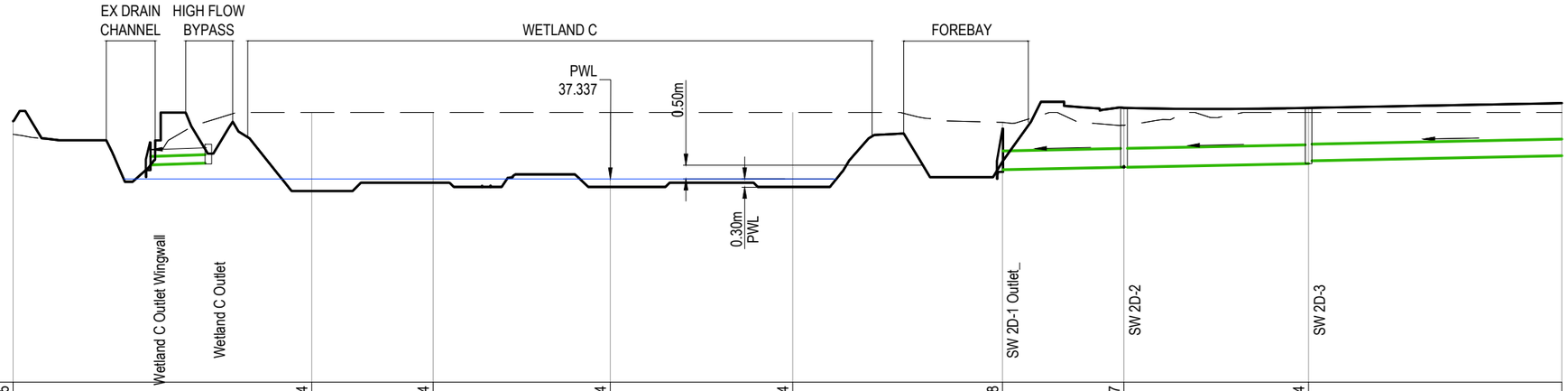
Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-15	Rev	A

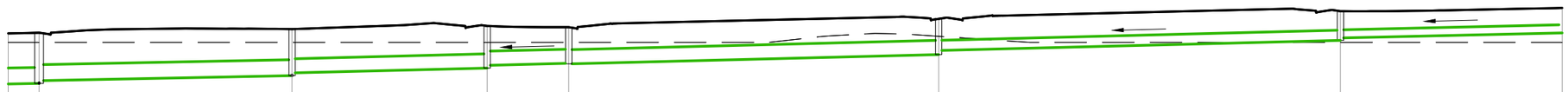
DATE: 6/26/26 FILE PATH: F:\MAVEN HAMILTON\6 PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 30.00m

EXISTING LEVELS	38.95				39.74		39.74		39.74		39.74		39.38		39.27		39.74	39.74
DESIGN LEVELS	39.42				36.90		37.20		37.05		37.05		37.97		39.90		39.90	40.07
PIPE INVERT			37.84	37.91									37.67		37.76	37.76	37.89	37.99 38.20
STRUCTURE DEPTH (m)		0.81		0.71									1.48		2.14		2.01	
PIPE DEPTH INVERT (m)			-0.03	0.34									0.30		2.14	2.14	2.01	1.91 1.90
PIPE / GRADE		300mm RCRRJ 10.56m @ 0.66%											675mm RCRRJ 21.97m @ 0.40%			675mm RCRRJ 33.37m @ 0.40%		600mm RCRRJ 51.63m @ 0.40%
CHAINAGE	0.00				54.01		75.96		107.98		140.95		178.88		200.85		234.22	280.00

PV - Alignment - SW Line 2D-1 Outlet to 2D-8A (1 OF 2)
SCALE: HORI 1:1000 VERT 1:200



DATUM 30.00m

EXISTING LEVELS	39.74	39.74			39.74		39.74		39.74				39.97				39.74	39.74
DESIGN LEVELS	40.07	40.10			40.24		40.36		40.31				40.62				40.91	41.03
PIPE INVERT		37.99 38.20	38.30		38.49	38.59	38.77	38.87	38.95	38.93			39.28	39.43			39.81	39.90 40.09
STRUCTURE DEPTH (m)		1.90			1.75		1.58		1.38				1.34				1.09	
PIPE DEPTH INVERT (m)		1.91 1.90	1.80		1.75	1.65	1.58	1.48	1.36	1.38			1.34	1.19			1.09	1.00 0.94
PIPE / GRADE		600mm RCRRJ 51.63m @ 0.40%		600mm RCRRJ 47.78m @ 0.40%		525mm RCRRJ 36.86m @ 0.50%		525mm RCRRJ 15.41m @ 0.50%		525mm RCRRJ 69.88m @ 0.50%					375mm RCRRJ 75.89m @ 0.50%			300mm RCRRJ 41.88m @ 0.45%
CHAINAGE	280.00	285.85			333.63		370.48		385.89				455.78				531.67	573.55

PV - Alignment - SW Line 2D-1 Outlet to 2D-8A (2 OF 2)
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
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11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

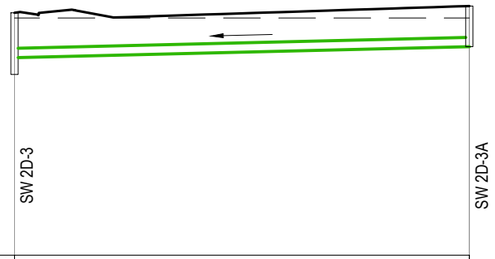
Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1
Scale	AS SHOWN
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG
Drawing no.	R1-C420-16 Rev A

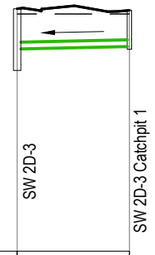
DATE: 8/26/26 FILE PATH: F:\MAVEN HAMILTON\4_PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 32.00m

EXISTING LEVELS	39.74	39.74
DESIGN LEVELS	39.90	40.12
PIPE INVERT	38.44	38.80
STRUCTURE DEPTH (m)	2.01	1.33
PIPE DEPTH INVERT (m)	1.46	1.33
PIPE / GRADE	300mm RCRRJ 74.20m @ 0.48%	
CHAINAGE	0.00	74.20

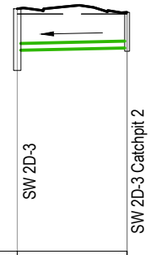
PV - Alignment - SW 2D-3 to 2D-3A
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.74	39.74
DESIGN LEVELS	39.90	39.85
PIPE INVERT	38.59	38.67
STRUCTURE DEPTH (m)	2.01	1.20
PIPE DEPTH INVERT (m)	1.31	1.18
PIPE / GRADE	225mm RCRRJ 18.31m @ 0.44%	
CHAINAGE	0.00	18.31

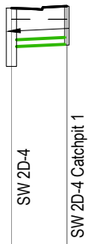
PV - Alignment - SW 2D-3 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.74	39.74
DESIGN LEVELS	39.90	39.79
PIPE INVERT	38.55	38.63
STRUCTURE DEPTH (m)	2.01	1.20
PIPE DEPTH INVERT (m)	1.35	1.16
PIPE / GRADE	225mm RCRRJ 17.92m @ 0.44%	
CHAINAGE	0.00	17.92

PV - Alignment - SW 2D-3 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

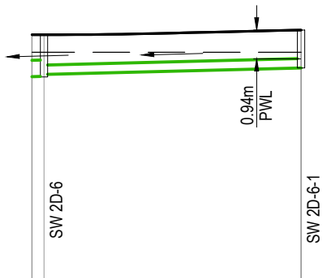
EXISTING LEVELS	39.74	39.74
DESIGN LEVELS	40.10	40.16
PIPE INVERT	38.84	38.92
STRUCTURE DEPTH (m)	1.90	1.20
PIPE DEPTH INVERT (m)	1.26	1.24
PIPE / GRADE	225mm RCRRJ 9.04m @ 0.94%	
CHAINAGE	0.00	9.04

PV - Alignment - SW 2D-4 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200

DATUM 32.00m

EXISTING LEVELS	39.74	39.74
DESIGN LEVELS	40.10	40.15
PIPE INVERT	38.84	38.92
STRUCTURE DEPTH (m)	1.90	1.20
PIPE DEPTH INVERT (m)	1.26	1.23
PIPE / GRADE	225mm RCRRJ 11.15m @ 0.70%	
CHAINAGE	0.00	11.15

PV - Alignment - SW 2D-4 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.74 39.74	39.74
DESIGN LEVELS		
PIPE INVERT	38.85 38.91	39.22
STRUCTURE DEPTH (m)	1.38	1.24
PIPE DEPTH INVERT (m)	1.38 1.23	1.24
PIPE / GRADE	525mm RCRRJ 15.41m @ 0.50% / 300mm RCRRJ 41.93m @ 0.50%	
CHAINAGE	0.00 1.97	43.90

PV - Alignment - SW Line 2D-6A for Modelling
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

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11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

Maven Waikato
07 242 0601
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New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

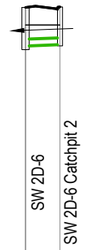
Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-17	Rev	A

DATE: 8/26/26 FILE PATH: F:\MAVEN HAMILTON\4 PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG

DATUM 32.00m

EXISTING LEVELS	39.74	39.74
DESIGN LEVELS	40.31	40.33
PIPE INVERT	39.96	39.96
STRUCTURE DEPTH (m)	1.38	1.20
PIPE DEPTH INVERT (m)	1.35	1.23
PIPE / GRADE	225mm RCRRJ 3.68m @ 1.04%	
CHAINAGE	0.00	3.68

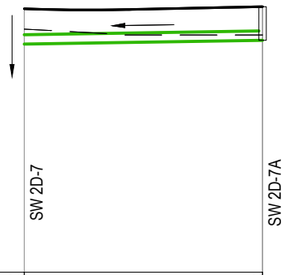
PV - Alignment - SW 2D-6 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.74	39.74
DESIGN LEVELS	40.31	40.32
PIPE INVERT	39.05	39.09
STRUCTURE DEPTH (m)	1.38	1.20
PIPE DEPTH INVERT (m)	1.26	1.23
PIPE / GRADE	225mm RCRRJ 5.62m @ 0.78%	
CHAINAGE	0.00	5.62

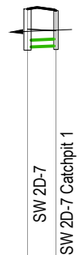
PV - Alignment - SW 2D-6 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.92	39.74
DESIGN LEVELS		
PIPE INVERT	39.42	39.56
STRUCTURE DEPTH (m)	1.34	1.10
PIPE DEPTH INVERT (m)	1.20	1.10
PIPE / GRADE	300mm RCRRJ 42.86m @ 0.32%	
CHAINAGE	0.00	38.86

PV - Alignment - SW Line 2D-7 to 2D-7A
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

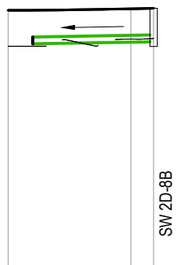
EXISTING LEVELS	39.97	39.92
DESIGN LEVELS	40.62	40.57
PIPE INVERT	39.38	39.42
STRUCTURE DEPTH (m)	1.34	1.20
PIPE DEPTH INVERT (m)	1.24	1.15
PIPE / GRADE	225mm RCRRJ 4.65m @ 0.89%	
CHAINAGE	0.00	4.65

PV - Alignment - SW 2D-7 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200

DATUM 32.00m

EXISTING LEVELS	39.97	39.86
DESIGN LEVELS	40.62	40.57
PIPE INVERT	39.43	39.39
STRUCTURE DEPTH (m)	1.34	1.20
PIPE DEPTH INVERT (m)	1.25	1.22
PIPE / GRADE	225mm RCRRJ 1.83m @ 1.93%	
CHAINAGE	0.00	1.83

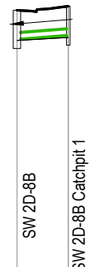
PV - Alignment - SW 2D-7 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.74	39.97	39.99
DESIGN LEVELS	40.91	40.97
PIPE INVERT	39.81	39.88
STRUCTURE DEPTH (m)	1.25
PIPE DEPTH INVERT (m)	1.09	1.09
PIPE / GRADE	225mm RCRRJ 19.70m @ 0.34%	
CHAINAGE	0.00	20.00	23.70

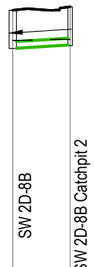
PV - Alignment - SW 2D-8 to 2D-8B
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.99	40.09
DESIGN LEVELS	40.97	41.11
PIPE INVERT	40.02	40.15
STRUCTURE DEPTH (m)	1.25	1.20
PIPE DEPTH INVERT (m)	0.95	0.95
PIPE / GRADE	225mm RCRRJ 8.37m @ 1.60%	
CHAINAGE	0.00	8.37

PV - Alignment - SW 2D-8B Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.99	40.02
DESIGN LEVELS	40.97	41.09
PIPE INVERT	39.72	39.84
STRUCTURE DEPTH (m)	1.25	1.20
PIPE DEPTH INVERT (m)	1.25	1.25
PIPE / GRADE	225mm RCRRJ 9.37m @ 1.26%	
CHAINAGE	0.00	9.37

PV - Alignment - SW 2D-8B Catchpit 2
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
2. COORDINATES IN TERMS OF NZ GEODETIC DATUM MOUNT EDEN 2000.
3. LEVELS IN TERMS OF THE NZ VERTICAL DATUM 2016.
4. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE ALL SERVICES THAT MAY BE AFFECTED BY HIS OPERATIONS.
5. APPROVED HARDFILL IS TO BE USED IN BACKFILLING OF ALL ROAD CROSSINGS TO COUNCIL STANDARDS.
6. HEAVY DUTY MANHOLE LIDS AND FRAMES TO BE USED IN TRAFFICKED AREAS, ALL MANHOLES SHALL HAVE STAINLESS GRATES INSTALLED.
7. ALL LOT CONNECTIONS ARE TO BE 100mmØ PVC UNLESS SHOWN OTHERWISE.
8. MANHOLE DIAMETERS SHOWN ON STRUCTURE LABEL ARE INTERNAL DIAMETER.
9. MEASUREMENTS SHOWN ON THE LOT CONNECTIONS ARE THE DISTANCE FROM THE CENTRE OF THE DOWNSTREAM MANHOLE TO THE LOT CONNECTION POSITION WITHIN THE LOT BOUNDARY.
10. MANHOLE SLAB AND COVER TO BE ROTATED TO AVOID THE FOOTPATH EDGE FOR MANHOLES ON FOOTPATH.
11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

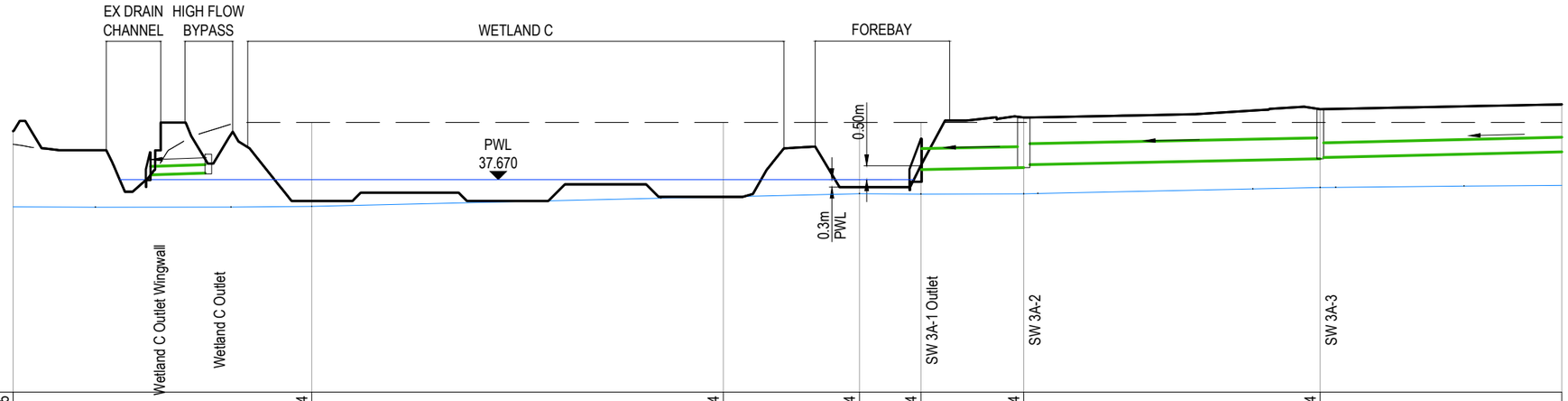
Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-18	Rev	A

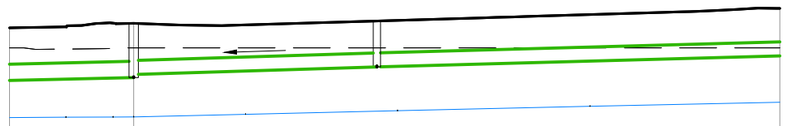
DATE: 8/26/26 FILE PATH: F:\MAVEN HAMILTON\PROJECTS\298001 - SOUTHERN LINKS 1\STD R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 30.00m

EXISTING LEVELS	38.95			39.74		39.74	39.74	39.74	39.74		39.74	39.74
DESIGN LEVELS	38.95			39.74		39.74	39.74	39.74	39.74		39.74	39.74
PIPE INVERT			37.84	37.91				38.03	38.11 38.21		38.42 38.47	38.77
STRUCTURE DEPTH (m)		0.81		0.71				1.11	1.80		1.79	
PIPE DEPTH INVERT (m)			-0.03	0.34				0.15	1.80 1.70		1.79 1.75	1.77
PIPE / GRADE		300mm RCRRJ 10.56m @ 0.66%						750mm RCRRJ 18.58m @ 0.40%		750mm RCRRJ 53.60m @ 0.40%		525mm RCRRJ 63.95m @ 0.47%
CHAINAGE	0.00			54.01		128.40	153.03	164.14	182.72		236.32	280.00

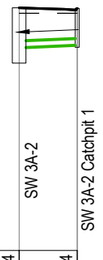
PV - Alignment - SW Line 3A-1 Outlet to 3C-1A (1 of 2)
SCALE: HORI 1:1000 VERT 1:200



DATUM 30.00m

EXISTING LEVELS	39.74		39.74			39.74
DESIGN LEVELS						
PIPE INVERT	38.47		38.77 38.87	39.11	39.11	39.49
STRUCTURE DEPTH (m)			1.77	1.50		
PIPE DEPTH INVERT (m)	1.75		1.77 1.67	1.50	1.50	1.51
PIPE / GRADE		525mm RCRRJ 63.95m @ 0.47%		450mm RCRRJ 39.66m @ 0.62%		450mm RCRRJ 69.05m @ 0.55%
CHAINAGE	280.00		300.27			405.65

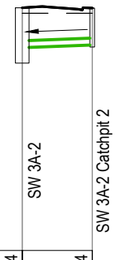
PV - Alignment - SW Line 3A-1 Outlet to 3C-1A (2 of 2)
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.74		39.74
DESIGN LEVELS	39.91		39.90
PIPE INVERT		38.61	38.69
STRUCTURE DEPTH (m)	1.80		1.20
PIPE DEPTH INVERT (m)		1.30	1.21
PIPE / GRADE		225mm RCRRJ 9.47m @ 0.86%	
CHAINAGE	0.00		9.47

PV - Alignment - SW 3A-2 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.74		39.74
DESIGN LEVELS	39.91		39.90
PIPE INVERT		38.61	38.70
STRUCTURE DEPTH (m)	1.80		1.20
PIPE DEPTH INVERT (m)		1.30	1.20
PIPE / GRADE		225mm RCRRJ 11.42m @ 0.78%	
CHAINAGE	0.00		11.44

PV - Alignment - SW 3A-2 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

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3. LEVELS IN TERMS OF THE NZ VERTICAL DATUM 2016.
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9. MEASUREMENTS SHOWN ON THE LOT CONNECTIONS ARE THE DISTANCE FROM THE CENTRE OF THE DOWNSTREAM MANHOLE TO THE LOT CONNECTION POSITION WITHIN THE LOT BOUNDARY.
10. MANHOLE SLAB AND COVER TO BE ROTATED TO AVOID THE FOOTPATH EDGE FOR MANHOLES ON FOOTPATH.
11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

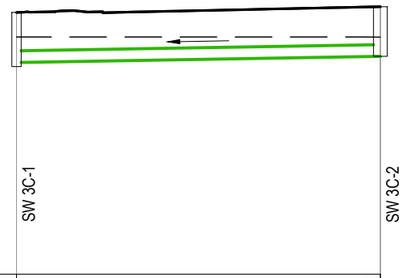
Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

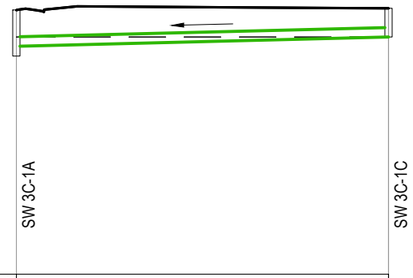
Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-19	Rev	A

DATE: 8/26/26 FILE PATH: F:\MAVEN HAMILTON\PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



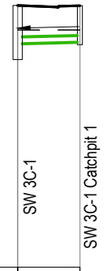
DATUM 32.00m	SW 3C-1	SW 3C-2
EXISTING LEVELS	39.74	39.73
DESIGN LEVELS	40.54	40.72
PIPE INVERT	38.90	39.10
STRUCTURE DEPTH (m)	1.77	1.62
PIPE DEPTH INVERT (m)	1.63	1.62
PIPE / GRADE	375mm RCRRJ 59.35m @ 0.34%	
CHAINAGE	0.00	59.35

PV - Alignment - SW 3C-1 to 3C-2
SCALE: HORI 1:1000 VERT 1:200



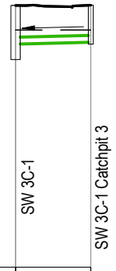
DATUM 32.00m	SW 3C-1A	SW 3C-1C
EXISTING LEVELS	39.74	39.74
DESIGN LEVELS	39.74	39.74
PIPE INVERT	39.43	39.74
STRUCTURE DEPTH (m)	1.50	0.93
PIPE DEPTH INVERT (m)	1.18	0.93
PIPE / GRADE	300mm RCRRJ 60.71m @ 0.50%	
CHAINAGE	0.00	60.71

PV - Alignment - SW 3C-1A to 3C-1C
SCALE: HORI 1:1000 VERT 1:200



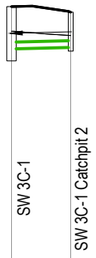
DATUM 32.00m	SW 3C-1	SW 3C-1 Catchpit 1
EXISTING LEVELS	39.74	39.74
DESIGN LEVELS	40.54	40.52
PIPE INVERT	39.28	39.33
STRUCTURE DEPTH (m)	1.77	1.20
PIPE DEPTH INVERT (m)	1.25	1.19
PIPE / GRADE	225mm RCRRJ 10.14m @ 0.50%	
CHAINAGE	0.00	10.14

PV - Alignment - SW 3C-1 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m	SW 3C-1	SW 3C-1 Catchpit 3
EXISTING LEVELS	39.74	39.74
DESIGN LEVELS	40.54	40.54
PIPE INVERT	39.27	39.34
STRUCTURE DEPTH (m)	1.77	1.20
PIPE DEPTH INVERT (m)	1.26	1.21
PIPE / GRADE	225mm RCRRJ 12.28m @ 0.50%	
CHAINAGE	0.00	12.28

PV - Alignment - SW 3C-1 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200

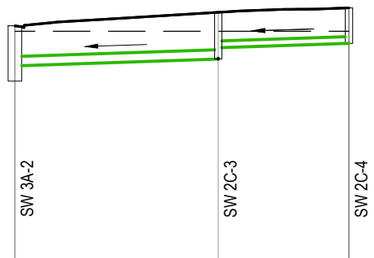


DATUM 32.00m	SW 3C-1	SW 3C-1 Catchpit 2
EXISTING LEVELS	39.74	39.59
DESIGN LEVELS	40.54	40.36
PIPE INVERT	39.16	39.21
STRUCTURE DEPTH (m)	1.77	1.20
PIPE DEPTH INVERT (m)	1.38	1.15
PIPE / GRADE	225mm RCRRJ 9.66m @ 0.50%	
CHAINAGE	0.00	9.66

PV - Alignment - SW 3C-1 Catchpit 3
SCALE: HORI 1:1000 VERT 1:200

DATUM 32.00m	SW 3A-2	SW 2C-3	SW 2C-1
EXISTING LEVELS	39.74	39.74	39.74
DESIGN LEVELS			
PIPE INVERT	38.61	38.83 / 39.00	39.14
STRUCTURE DEPTH (m)	1.80	1.52	1.32
PIPE DEPTH INVERT (m)	1.31	1.52 / 1.35	1.32
PIPE / GRADE		300mm RCRRJ 33.16m @ 0.68%	375mm RCRRJ 27.03m @ 0.50%
CHAINAGE	0.00	33.16	60.20

PV - Alignment - SW Line 3A-1 Outlet to 2C-2
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m	SW 3A-2	SW 2C-3	SW 2C-4
EXISTING LEVELS	39.74	39.74	39.74
DESIGN LEVELS	39.91	40.35	40.50
PIPE INVERT	38.61	38.83 / 39.20	39.34
STRUCTURE DEPTH (m)	1.80	1.52	1.16
PIPE DEPTH INVERT (m)	1.31	1.52 / 1.16	1.16
PIPE / GRADE		300mm RCRRJ 33.16m @ 0.68%	225mm RCRRJ 21.32m @ 0.67%
CHAINAGE	0.00	33.16	54.48

PV - Alignment - SW 2C-3 to 3A-2
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

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11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

Maven Waikato
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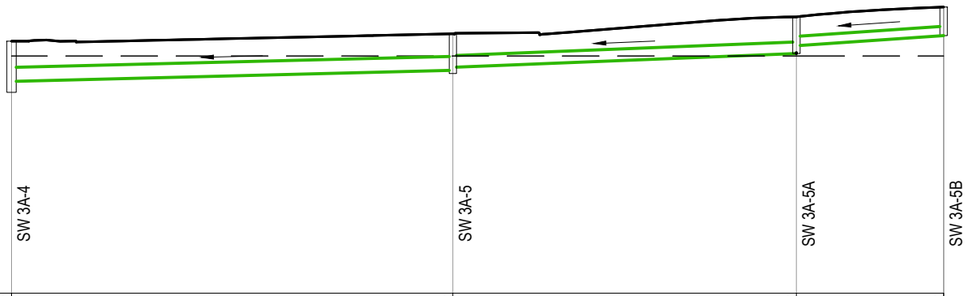
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-20	Rev	A

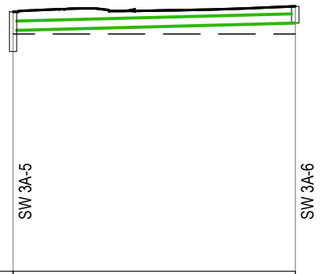
DATE: 6/26/26 FILE PATH: F:\MAVEN HAMILTON\4 PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 32.00m

EXISTING LEVELS	39.74	39.74	39.74	39.74
DESIGN LEVELS	40.22	40.46	41.01	41.33
PIPE INVERT	38.91	39.27 / 39.37	39.81 / 40.07	40.40
STRUCTURE DEPTH (m)	1.67	1.29	1.20	0.93
PIPE DEPTH INVERT (m)	1.31	1.19 / 1.09	1.20 / 0.94	0.93
PIPE / GRADE		450mm RCRRJ 71.99m @ 0.50%	375mm RCRRJ 56.04m @ 0.80%	300mm RCRRJ 24.01m @ 1.38%
CHAINAGE	0.00	71.99	128.03	152.04

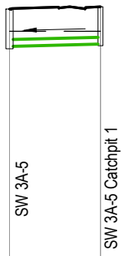
PV - Alignment - SW 3A-4 to 3A-5B
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.74	39.74	
DESIGN LEVELS	40.46	40.64	
PIPE INVERT	39.85	40.09	
STRUCTURE DEPTH (m)	1.29	0.55	
PIPE DEPTH INVERT (m)	0.61	0.55	
PIPE / GRADE		300mm RCRRJ 46.04m @ 0.52%	
CHAINAGE	0.00	46.04	

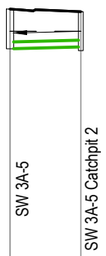
PV - Alignment - SW 3A-5 to 3A-6
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.74	39.74	
DESIGN LEVELS	40.46	40.53	
PIPE INVERT	39.24	39.32	
STRUCTURE DEPTH (m)	1.29	1.20	
PIPE DEPTH INVERT (m)	1.22	1.22	
PIPE / GRADE		225mm RCRRJ 14.84m @ 0.51%	
CHAINAGE	0.00	14.84	

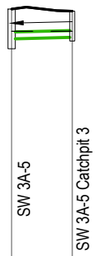
PV - Alignment - SW 3A-5 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.74	39.74	
DESIGN LEVELS	40.46	40.37	
PIPE INVERT	39.16	39.22	
STRUCTURE DEPTH (m)	1.29	1.20	
PIPE DEPTH INVERT (m)	1.29	1.15	
PIPE / GRADE		225mm RCRRJ 11.55m @ 0.50%	
CHAINAGE	0.00	11.55	

PV - Alignment - SW 3A-5 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.74	39.74	
DESIGN LEVELS	40.46	40.39	
PIPE INVERT	39.49	39.54	
STRUCTURE DEPTH (m)	1.29	0.90	
PIPE DEPTH INVERT (m)	0.97	0.85	
PIPE / GRADE		225mm RCRRJ 9.88m @ 0.50%	
CHAINAGE	0.00	9.88	

PV - Alignment - SW 3A-5 Catchpit 3
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
2. COORDINATES IN TERMS OF NZ GEODETIC DATUM MOUNT EDEN 2000.
3. LEVELS IN TERMS OF THE NZ VERTICAL DATUM 2016.
4. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE ALL SERVICES THAT MAY BE AFFECTED BY HIS OPERATIONS.
5. APPROVED HARDFILL IS TO BE USED IN BACKFILLING OF ALL ROAD CROSSINGS TO COUNCIL STANDARDS.
6. HEAVY DUTY MANHOLE LIDS AND FRAMES TO BE USED IN TRAFFICKED AREAS, ALL MANHOLES SHALL HAVE STAINLESS GRATES INSTALLED.
7. ALL LOT CONNECTIONS ARE TO BE 100mmØ PVC UNLESS SHOWN OTHERWISE.
8. MANHOLE DIAMETERS SHOWN ON STRUCTURE LABEL ARE INTERNAL DIAMETER.
9. MEASUREMENTS SHOWN ON THE LOT CONNECTIONS ARE THE DISTANCE FROM THE CENTRE OF THE DOWNSTREAM MANHOLE TO THE LOT CONNECTION POSITION WITHIN THE LOT BOUNDARY.
10. MANHOLE SLAB AND COVER TO BE ROTATED TO AVOID THE FOOTPATH EDGE FOR MANHOLES ON FOOTPATH.
11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

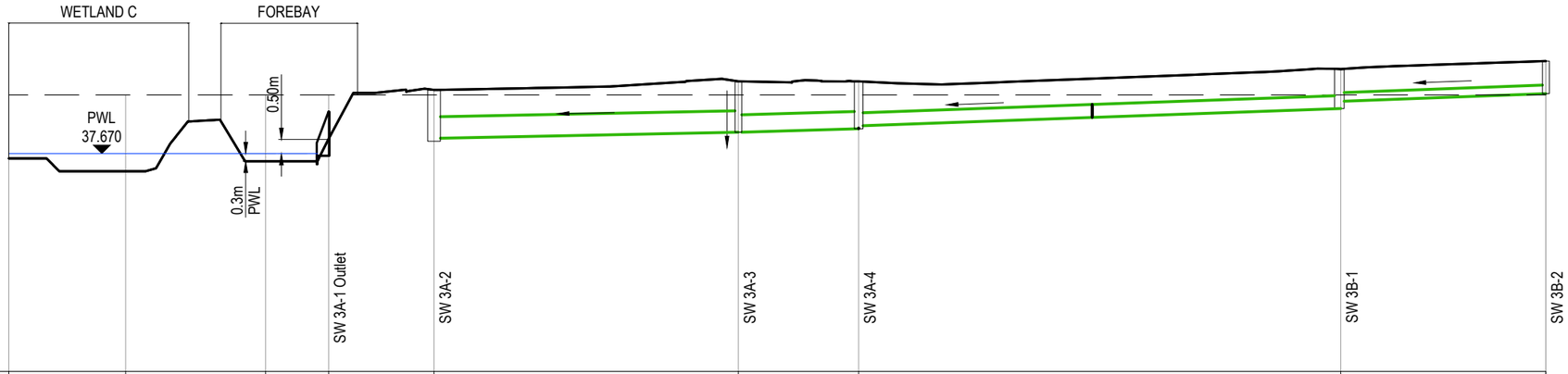
Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-21	Rev	A

DATE: 8/26/26 FILE PATH: F:\MAVEN HAMILTON\PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 30.00m

EXISTING LEVELS	39.74	39.74	39.74	39.74	39.74		39.74	39.74			39.74		39.74
DESIGN LEVELS	37.50	37.05	37.40	38.19	39.91		40.21	40.22			40.65		40.93
PIPE INVERT						38.21	38.42	38.42	38.55	38.65	38.94 38.94	39.26	39.51	39.78
STRUCTURE DEPTH (m)				1.11	1.80		1.79		1.67			1.39		1.15
PIPE DEPTH INVERT (m)						1.70	1.79	1.79	1.67	1.57	1.37 1.37	1.39	1.14	1.15
PIPE / GRADE						750mm RCRRJ 53.60m @ 0.40%		600mm RCRRJ 21.19m @ 0.59%		450mm RCRRJ 41.13m @ 0.72%		450mm RCRRJ 43.76m @ 0.72%		300mm RCRRJ 36.13m @ 0.75%
CHAINAGE	0.00	20.58	45.21	56.33	74.89		128.49		149.68			234.57		270.70

PV - Alignment - SW Line 3A-1 Outlet to 3B-2
SCALE: HORI 1:1000 VERT 1:200

DATUM 32.00m

		SW 3A-3	SW 3A-3 Catchpit 1
EXISTING LEVELS	39.74	39.74	39.74
DESIGN LEVELS	40.21	40.21	40.21
PIPE INVERT		38.96	38.98
STRUCTURE DEPTH (m)	1.79		1.20
PIPE DEPTH INVERT (m)		1.26	1.23
PIPE / GRADE		225mm RCRRJ 5.49m @ 0.50%	
CHAINAGE	0.00		5.49

PV - Alignment - SW 3A-3 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200

DATUM 32.00m

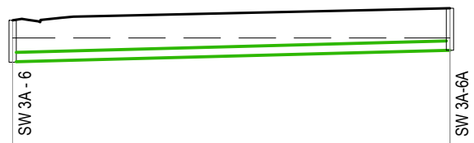
		SW 3A-4	SW 3A-4 Catchpit 1
EXISTING LEVELS	39.74		39.74
DESIGN LEVELS	40.22		40.18
PIPE INVERT		38.95	39.00
STRUCTURE DEPTH (m)	1.67		1.20
PIPE DEPTH INVERT (m)		1.27	1.18
PIPE / GRADE		225mm RCRRJ 10.35m @ 0.50%	
CHAINAGE	0.00		10.35

PV - Alignment - SW 3A-4 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200

DATUM 32.00m

		SW 3A-4	SW 3A-4 Catchpit 2
EXISTING LEVELS	39.74		39.74
DESIGN LEVELS	40.22		40.20
PIPE INVERT		38.94	38.99
STRUCTURE DEPTH (m)	1.67		1.20
PIPE DEPTH INVERT (m)		1.28	1.20
PIPE / GRADE		225mm RCRRJ 11.39m @ 0.50%	
CHAINAGE	0.00		11.39

PV - Alignment - SW 3A-4 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200



DATUM 36.00m

EXISTING LEVELS	39.74		39.74
DESIGN LEVELS	40.31		40.70
PIPE INVERT		38.96	39.33
STRUCTURE DEPTH (m)	1.37		1.37
PIPE DEPTH INVERT (m)		1.35	1.37
PIPE / GRADE		300mm RCRRJ 71.32m @ 0.53%	
CHAINAGE	0.00		71.32

PV - Alignment - SW Line 3A-6 to 3A-6A (1)
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

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4. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE ALL SERVICES THAT MAY BE AFFECTED BY HIS OPERATIONS.
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11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

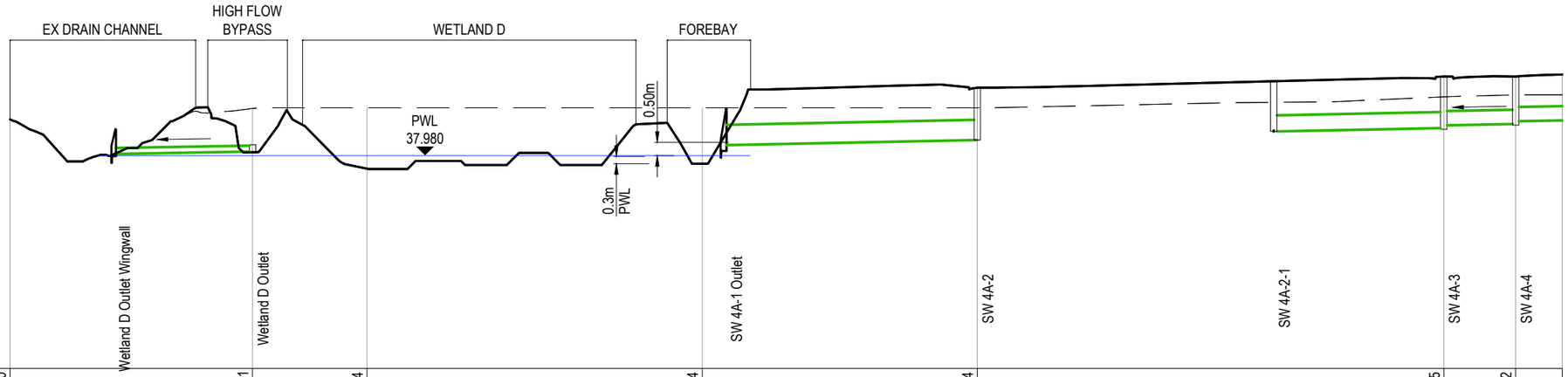
Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-22	Rev	A

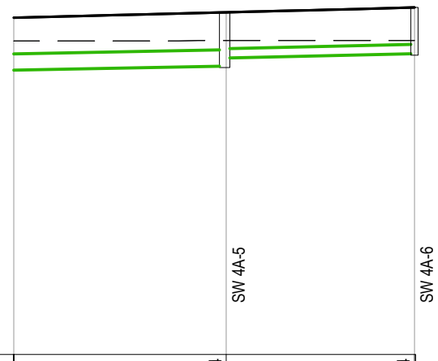
DATE: 6/26/26 FILE PATH: F:\MAVEN HAMILTON\PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 30.00m

EXISTING LEVELS	39.30	39.71	39.74	39.74	39.74	40.15	40.22	40.22			
DESIGN LEVELS											
PIPE INVERT	38.02	38.10	38.34	38.53	38.85	38.98	39.08	39.13	39.23	39.40	
STRUCTURE DEPTH (m)	0.92	0.30	1.34	1.96	1.88	1.98	1.82				
PIPE DEPTH INVERT (m)	0.02	-0.03	0.43	1.96	1.88	1.93	1.83	1.77	1.67	1.75	
PIPE / GRADE	225mm RCRRJ 25.61m @ 0.34%		750mm RCRRJ 46.95m @ 0.40%		600mm RCRRJ 31.77m @ 0.40%		525mm RCRRJ 13.43m @ 0.40%	525mm RCRRJ 43.35m @ 0.39%			
CHAINAGE	0.00	45.31	66.70	129.35	180.71	267.86	281.30	290.00			

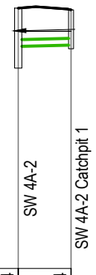
PV - Alignment - SW Line 4A-1 Outlet to 4A-6 (1 of 2)
SCALE: HORI 1:1000 VERT 1:200



DATUM 30.00m

EXISTING LEVELS	40.22	40.24	40.24	
DESIGN LEVELS				
PIPE INVERT	39.23	39.40	39.67	39.81
STRUCTURE DEPTH (m)	1.80	1.56		
PIPE DEPTH INVERT (m)	1.67	1.75	1.49	1.51
PIPE / GRADE	525mm RCRRJ 43.35m @ 0.39%		300mm RCRRJ 30.71m @ 0.46%	
CHAINAGE	290.00	324.65	355.55	355.55

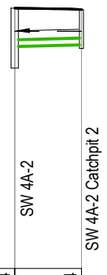
PV - Alignment - SW Line 4A-1 Outlet to 4A-7 (2 of 2)
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.74	39.74
DESIGN LEVELS	40.49	40.43
PIPE INVERT	39.24	39.28
STRUCTURE DEPTH (m)	1.96	1.20
PIPE DEPTH INVERT (m)	1.25	1.15
PIPE / GRADE	225mm RCRRJ 8.63m @ 0.50%	
CHAINAGE	0.00	8.63

PV - Alignment - SW 4A-2 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.74	39.74
DESIGN LEVELS	40.49	40.44
PIPE INVERT	39.24	39.29
STRUCTURE DEPTH (m)	1.96	1.20
PIPE DEPTH INVERT (m)	1.25	1.15
PIPE / GRADE	225mm RCRRJ 10.88m @ 0.50%	
CHAINAGE	0.00	10.88

PV - Alignment - SW 4A-2 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

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9. MEASUREMENTS SHOWN ON THE LOT CONNECTIONS ARE THE DISTANCE FROM THE CENTRE OF THE DOWNSTREAM MANHOLE TO THE LOT CONNECTION POSITION WITHIN THE LOT BOUNDARY.
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11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

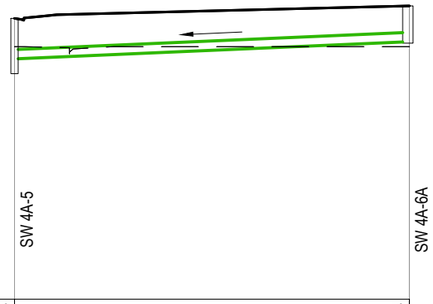
	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-23	Rev	A



DATUM 32.00m

EXISTING LEVELS	40.24	40.24
DESIGN LEVELS		
PIPE INVERT	39.84	40.40
STRUCTURE DEPTH (m)	1.80	1.22
PIPE DEPTH INVERT (m)	1.32	1.17
PIPE / GRADE	300mm RCRRJ 64.41m @ 0.87%	
CHAINAGE	0.00	64.41

PV - Alignment - SW Line 4A-6 to 4A-6A
SCALE: HORI 1:1000 VERT 1:200

DATUM 32.00m

EXISTING LEVELS	40.24	40.24
DESIGN LEVELS	41.32	41.19
PIPE INVERT	39.99	40.04
STRUCTURE DEPTH (m)	1.56	1.20
PIPE DEPTH INVERT (m)	1.33	1.15
PIPE / GRADE	225mm RCRRJ 9.63m @ 0.50%	
CHAINAGE	0.00	9.63

PV - Alignment - SW 4A-7 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200

DATUM 32.00m

EXISTING LEVELS	40.24	40.24
DESIGN LEVELS	41.32	41.31
PIPE INVERT	40.10	40.16
STRUCTURE DEPTH (m)	1.56	1.20
PIPE DEPTH INVERT (m)	1.22	1.15
PIPE / GRADE	225mm RCRRJ 11.62m @ 0.50%	
CHAINAGE	0.00	11.62

PV - Alignment - SW 4A-7 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200

DATUM 32.00m

EXISTING LEVELS	40.24	40.24
DESIGN LEVELS	41.32	41.13
PIPE INVERT	39.86	39.97
STRUCTURE DEPTH (m)	1.56	1.20
PIPE DEPTH INVERT (m)	1.45	1.15
PIPE / GRADE	225mm RCRRJ 22.06m @ 0.50%	
CHAINAGE	0.00	22.06

PV - Alignment - SW 4A-7 Catchpit 3
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

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LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

Maven Waikato
07 242 0601
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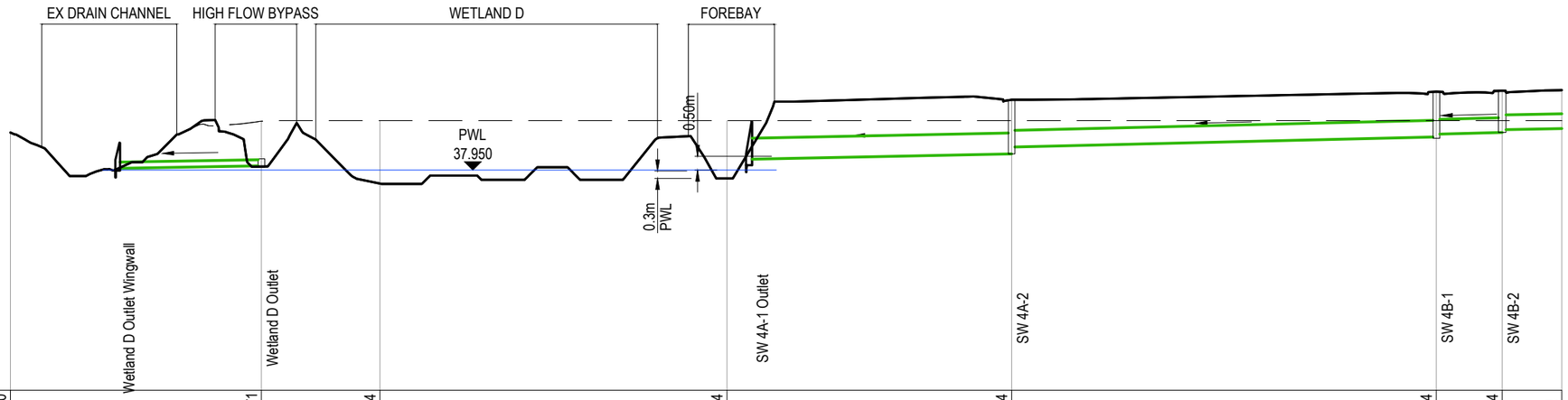
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-24	Rev	A

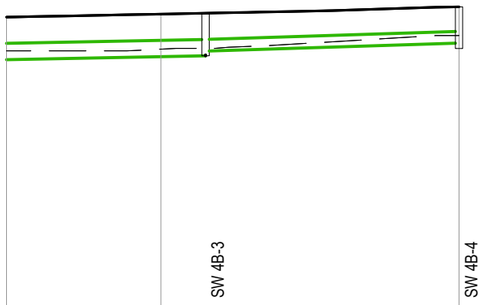
DATE: 6/26/26 FILE PATH: F:\MAVEN HAMILTON\PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 30.00m

EXISTING LEVELS	39.30	39.71	39.74	39.74	39.74	39.74	39.74	39.74	39.74	39.74	
DESIGN LEVELS											
PIPE INVERT		38.02	38.10		38.34	38.53	38.78	39.15	39.25	39.31	39.41	39.57
STRUCTURE DEPTH (m)		0.92	0.30		1.34	1.96		1.68		1.51		
PIPE DEPTH INVERT (m)		0.02	-0.03		0.43	1.96	1.71	1.63	1.53	1.51	1.41	1.39
PIPE / GRADE		225mm RCRRJ 25.61m @ 0.34%			750mm RCRRJ 46.95m @ 0.40%		600mm RCRRJ 76.65m @ 0.47%		525mm R(11.88m @	525mm RCRRJ 43.22m @ 0.38%	
CHAINAGE	0.00	45.31	66.70	129.35	180.71		257.36		269.25	280.00	

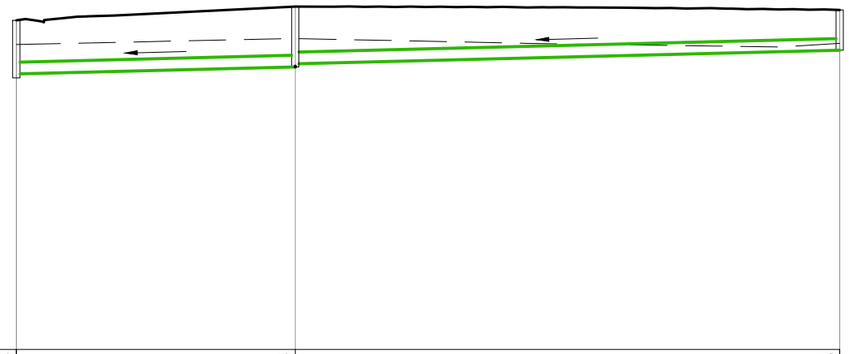
PV - Alignment - SW Line 4A-1 to 4B-4 (1 of 2)
SCALE: HORI 1:1000 VERT 1:200



DATUM 30.00m

EXISTING LEVELS	39.74	39.79		40.24
DESIGN LEVELS				
PIPE INVERT	39.41	39.57	39.73	39.99
STRUCTURE DEPTH (m)		1.39		1.36
PIPE DEPTH INVERT (m)	1.41	1.39	1.24	1.18
PIPE / GRADE		525mm RCRRJ 43.22m @ 0.38%		375mm RCRRJ 41.35m @ 0.63%
CHAINAGE	280.00	305.20		323.82 353.91

PV - Alignment - SW Line 4A-1 to 4B-4 (2 of 2)
SCALE: HORI 1:1000 VERT 1:200



DATUM 30.00m

EXISTING LEVELS	39.94	40.14	39.98
DESIGN LEVELS	40.73	41.18	41.07
PIPE INVERT			
STRUCTURE DEPTH (m)			
PIPE DEPTH INVERT (m)			
PIPE / GRADE			
CHAINAGE	0.00	45.49	134.29

PV - Alignment - 1
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

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9. MEASUREMENTS SHOWN ON THE LOT CONNECTIONS ARE THE DISTANCE FROM THE CENTRE OF THE DOWNSTREAM MANHOLE TO THE LOT CONNECTION POSITION WITHIN THE LOT BOUNDARY.
10. MANHOLE SLAB AND COVER TO BE ROTATED TO AVOID THE FOOTPATH EDGE FOR MANHOLES ON FOOTPATH.
11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

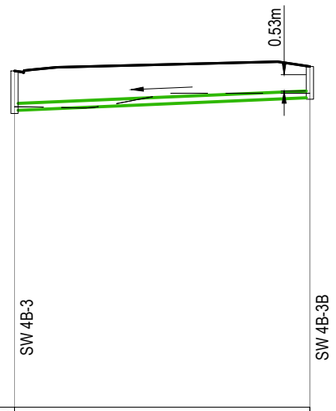
Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-25	Rev	A

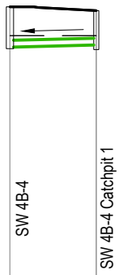
DATE: 8/26/26 FILE PATH: F:\MAVEN HAMILTON\PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 30.00m

EXISTING LEVELS	39.80	40.24
DESIGN LEVELS		
PIPE INVERT	39.68	40.09
STRUCTURE DEPTH (m)	1.39	1.06
PIPE DEPTH INVERT (m)	1.29	1.02
PIPE / GRADE	225mm RCRRJ 48.18m @ 0.86%	
CHAINAGE	0.00	48.18

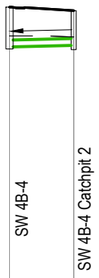
PV - Alignment - SW Line 4B-3 to 4B-3B
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	40.24	40.24
DESIGN LEVELS	41.17	41.05
PIPE INVERT	39.86	39.93
STRUCTURE DEPTH (m)	1.36	1.20
PIPE DEPTH INVERT (m)	1.31	1.12
PIPE / GRADE	225mm RCRRJ 14.08m @ 0.50%	
CHAINAGE	0.00	14.08

PV - Alignment - SW 4B-4 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	40.24	40.20
DESIGN LEVELS	41.17	41.06
PIPE INVERT	39.88	39.93
STRUCTURE DEPTH (m)	1.36	1.20
PIPE DEPTH INVERT (m)	1.30	1.13
PIPE / GRADE	225mm RCRRJ 10.48m @ 0.50%	
CHAINAGE	0.00	10.48

PV - Alignment - SW 4B-4 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200

DATUM 32.00m

EXISTING LEVELS	40.24	40.24
DESIGN LEVELS	41.17	40.91
PIPE INVERT	39.99	40.06
STRUCTURE DEPTH (m)	1.36	0.90
PIPE DEPTH INVERT (m)	1.18	0.85
PIPE / GRADE	225mm RCRRJ 13.35m @ 0.50%	
CHAINAGE	0.00	13.35

PV - Alignment - SW 5A-4B Catchpit 3
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

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LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
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Maven Waikato
07 242 0601
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www.maven.co.nz
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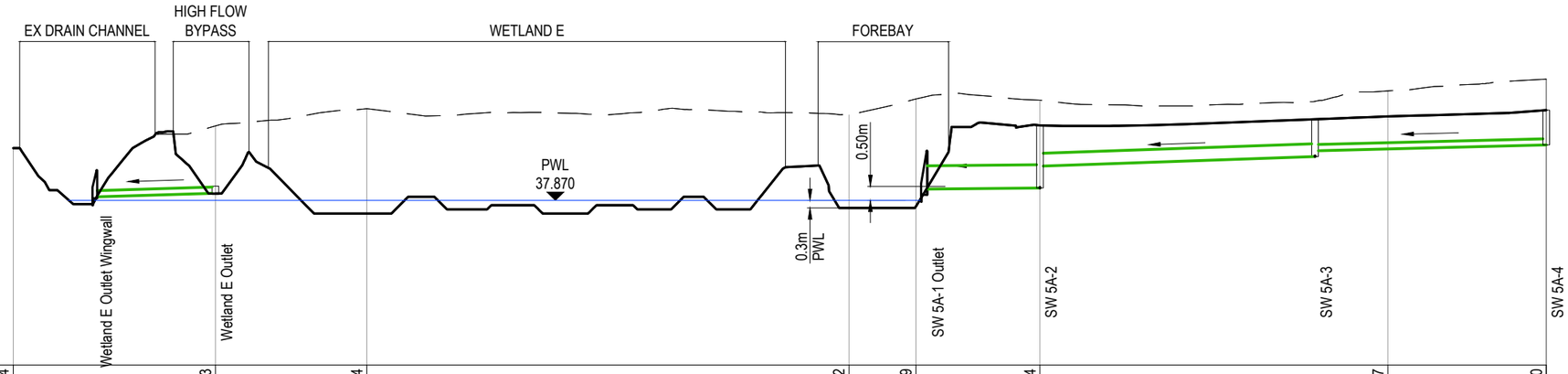
Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-26	Rev	A

DATE: 6/26/26 FILE PATH: F:\MAVEN HAMILTON\6 PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 32.00m

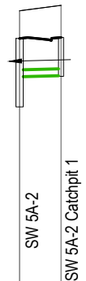
EXISTING LEVELS	39.74	40.53	41.14	40.92	41.49	41.44	41.77	42.20		
DESIGN LEVELS										
PIPE INVERT		38.00	38.13	38.27	38.31	39.09	39.43	39.64	39.85	
STRUCTURE DEPTH (m)	0.95	0.30	1.36	2.23	1.33	1.24				
PIPE DEPTH INVERT (m)		0.00	-0.01	0.01	2.23	1.45	1.33	1.13	1.24	
PIPE / GRADE		225mm RCRRJ 21.20m @ 0.61%		825mm RCRRJ 20.21m @ 0.19%		450mm RCRRJ 49.11m @ 0.70%		225mm RCRRJ 41.26m @ 0.50%		
CHAINAGE										

PV - Alignment - SW Line 5A-1 Outlet to 5A-4
SCALE: HORI 1:1000 VERT 1:200

DATUM 32.00m

EXISTING LEVELS	41.40	42.03	42.24	
DESIGN LEVELS	40.76	41.09	41.57	
PIPE INVERT	39.75	39.88	40.05	40.52
STRUCTURE DEPTH (m)	1.33	1.21	1.06	
PIPE DEPTH INVERT (m)	1.01	1.21	1.04	1.04
PIPE / GRADE		300mm RCRRJ 25.33m @ 0.50%	300mm RCRRJ 31.45m @ 1.52%	
CHAINAGE	0.00	25.33	56.80	

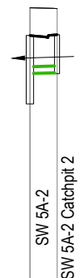
PV - Alignment - SW Line 5A-3 to 5A-3A
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	41.44	41.62	
DESIGN LEVELS	40.54	40.58	
PIPE INVERT	39.30	39.33	
STRUCTURE DEPTH (m)	2.23	1.20	
PIPE DEPTH INVERT (m)	1.25	1.25	
PIPE / GRADE		225mm RCRRJ 6.76m @ 0.53%	
CHAINAGE	0.00	6.76	

PV - Alignment - SW 5A-2 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	41.44	41.42	
DESIGN LEVELS	40.54	40.57	
PIPE INVERT	39.30	39.33	
STRUCTURE DEPTH (m)	2.23	1.20	
PIPE DEPTH INVERT (m)	1.24	1.24	
PIPE / GRADE		225mm RCRRJ 4.42m @ 0.60%	
CHAINAGE	0.00	4.42	

PV - Alignment - SW 5A-2 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

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LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
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Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
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New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-27	Rev	A

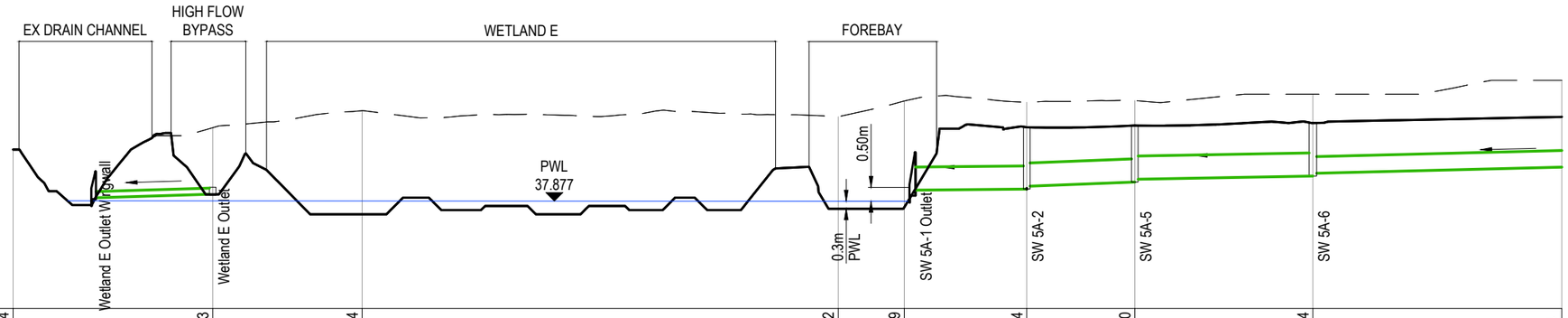
DATE: 6/26/26 FILE PATH: F:\MAVEN HAMILTON\4_PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG

	SW 5A-4	SW 5A-4 Catchpit 1
DATUM 32.00m		
EXISTING LEVELS	42.20	42.00
DESIGN LEVELS	41.09	41.21
PIPE INVERT	39.90	40.02
STRUCTURE DEPTH (m)	1.24	1.20
PIPE DEPTH INVERT (m)	1.19	1.19
PIPE / GRADE	225mm RCRRJ 9.33m @ 1.34%	
CHAINAGE	0.00	9.33

PV - Alignment - SW 5A-4 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200

	SW 5A-4	SW 5A-4 Catchpit 2
DATUM 32.00m		
EXISTING LEVELS	42.20	42.23
DESIGN LEVELS	41.09	41.21
PIPE INVERT	39.89	40.01
STRUCTURE DEPTH (m)	1.24	1.20
PIPE DEPTH INVERT (m)	1.20	1.20
PIPE / GRADE	225mm RCRRJ 6.74m @ 1.80%	
CHAINAGE	0.00	6.74

PV - Alignment - SW 5A-4 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200



	Wetland E Outlet Wingwall	Wetland E Outlet	SW 5A-1 Outlet	SW 5A-2	SW 5A-5	SW 5A-6
DATUM 34.00m						
EXISTING LEVELS	39.74	40.53	41.14	40.92	41.49	41.44	41.50	41.74	42.24
DESIGN LEVELS									
PIPE INVERT	38.00	38.13	38.27	38.31	38.41	38.56	38.66	38.78	38.88	39.23
STRUCTURE DEPTH (m)	0.95	0.30	1.36	2.23	2.04	1.92
PIPE DEPTH INVERT (m)	0.00	-0.01	0.01	2.23	2.13	2.04	1.94	1.92	1.82	1.85
PIPE / GRADE	225mm RCRRJ 21.20m @ 0.61%		825mm RCRRJ 20.21m @ 0.19%	825mm RCRRJ 19.54m @ 0.78%	825mm RCRRJ 32.19m @ 0.36%	600mm RCRRJ 70.76m @ 0.50%
CHAINAGE	0.00	36.10	63.11	149.18	161.13	183.27	202.81	235.00	280.00

PV - Alignment SW Line 5A-1 Outlet to 5A-7 (1 of 2)
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

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LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
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Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
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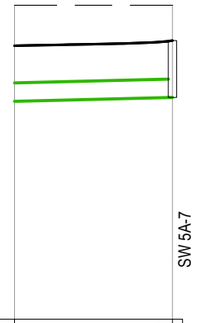
Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-28	Rev	A

DATE: 8/26/26 FILE PATH: F:\MAVEN HAMILTON\4_PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 32.00m

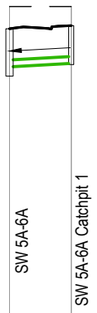
EXISTING LEVELS	42.24	42.24
DESIGN LEVELS	40.92	41.08
PIPE INVERT	38.88	39.23
STRUCTURE DEPTH (m)		1.85
PIPE DEPTH INVERT (m)	1.82	1.85
PIPE / GRADE	600mm RCRRJ 70.76m @ 0.50%	
CHAINAGE	280.00	307.76

PV - Alignment SW Line 5A-1 Outlet to 5A-7 (2 of 2)
SCALE: HORI 1:1000 VERT 1:200

DATUM 32.00m

EXISTING LEVELS	41.74	42.24
DESIGN LEVELS		
PIPE INVERT	39.22	39.97
STRUCTURE DEPTH (m)	1.92	1.55
PIPE DEPTH INVERT (m)	1.47	1.55
PIPE / GRADE	375mm RCRRJ 90.61m @ 0.82%	
CHAINAGE	0.00	90.61

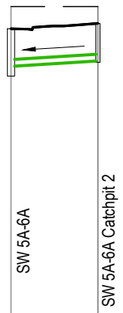
PV - Alignment - SW Line 5A-6 to 5A-6A
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	42.24	42.24
DESIGN LEVELS	41.51	41.61
PIPE INVERT	40.27	40.38
STRUCTURE DEPTH (m)	1.55	1.20
PIPE DEPTH INVERT (m)	1.24	1.23
PIPE / GRADE	225mm RCRRJ 10.08m @ 1.10%	
CHAINAGE	0.00	10.08

PV - Alignment - SW 5A-6A Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	42.24	42.24
DESIGN LEVELS	41.51	41.69
PIPE INVERT	40.29	40.46
STRUCTURE DEPTH (m)	1.55	1.20
PIPE DEPTH INVERT (m)	1.23	1.23
PIPE / GRADE	225mm RCRRJ 14.17m @ 1.24%	
CHAINAGE	0.00	14.17

PV - Alignment - SW 5A-6A Catchpit 2
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

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LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
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RESIDENTIAL STAGE 1
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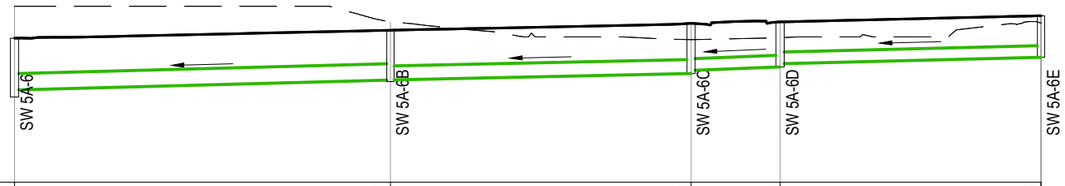
Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-29	Rev	A

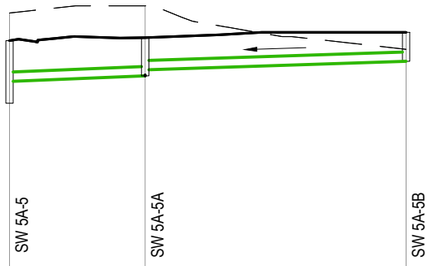
DATE: 6/26/26 FILE PATH: F:\MAVEN HAMILTON\4. PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 36.00m

EXISTING LEVELS	41.74	41.24	40.65	40.71	41.19
DESIGN LEVELS	40.69	40.95	41.18	41.23	41.43
PIPE INVERT	39.01	39.33 / 39.33	39.54 / 39.64	39.76 / 39.86	40.07
STRUCTURE DEPTH (m)	1.92	1.67	1.64	1.47	1.36
PIPE DEPTH INVERT (m)	1.69	1.62 / 1.62	1.64 / 1.54	1.47 / 1.37	1.36
PIPE / GRADE	525mm RCRRJ 61.32m @ 0.53%		450mm RCRRJ 49.04m @ 0.43%	375mm RCRRJ 14.51m @ 0.81%	375mm RCRRJ 42.57m @ 0.49%
CHAINAGE	0.00	61.32	110.36	124.87	167.44

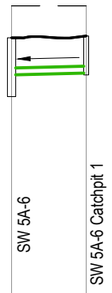
PV - Alignment - SW Line 5A-6 to 5A-6E
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	41.50	41.74	40.32
DESIGN LEVELS			
PIPE INVERT	39.27	39.45 / 39.65	39.93
STRUCTURE DEPTH (m)	2.04	1.24	0.94
PIPE DEPTH INVERT (m)	1.33	1.24 / 1.05	0.94
PIPE / GRADE	300mm RCRRJ 22.13m @ 0.83%	300mm RCRRJ 42.56m @ 0.65%	
CHAINAGE	0.00	22.13	64.69

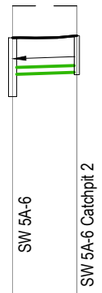
PV - Alignment - SW Line 5A-5 to 5A-5A
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	41.74	41.74
DESIGN LEVELS	40.69	40.75
PIPE INVERT	39.49	39.55
STRUCTURE DEPTH (m)	1.92	1.20
PIPE DEPTH INVERT (m)	1.21	1.21
PIPE / GRADE	225mm RCRRJ 12.18m @ 0.50%	
CHAINAGE	0.00	12.18

PV - Alignment - SW 5A-6 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	41.74	41.74
DESIGN LEVELS	40.69	40.76
PIPE INVERT	39.50	39.57
STRUCTURE DEPTH (m)	1.92	1.20
PIPE DEPTH INVERT (m)	1.19	1.19
PIPE / GRADE	225mm RCRRJ 10.47m @ 0.67%	
CHAINAGE	0.00	10.47

PV - Alignment - SW 5A-6 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
2. COORDINATES IN TERMS OF NZ GEODETIC DATUM MOUNT EDEN 2000.
3. LEVELS IN TERMS OF THE NZ VERTICAL DATUM 2016.
4. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE ALL SERVICES THAT MAY BE AFFECTED BY HIS OPERATIONS.
5. APPROVED HARDFILL IS TO BE USED IN BACKFILLING OF ALL ROAD CROSSINGS TO COUNCIL STANDARDS.
6. HEAVY DUTY MANHOLE LIDS AND FRAMES TO BE USED IN TRAFFICKED AREAS, ALL MANHOLES SHALL HAVE STAINLESS GRATES INSTALLED.
7. ALL LOT CONNECTIONS ARE TO BE 100mmØ PVC UNLESS SHOWN OTHERWISE.
8. MANHOLE DIAMETERS SHOWN ON STRUCTURE LABEL ARE INTERNAL DIAMETER.
9. MEASUREMENTS SHOWN ON THE LOT CONNECTIONS ARE THE DISTANCE FROM THE CENTRE OF THE DOWNSTREAM MANHOLE TO THE LOT CONNECTION POSITION WITHIN THE LOT BOUNDARY.
10. MANHOLE SLAB AND COVER TO BE ROTATED TO AVOID THE FOOTPATH EDGE FOR MANHOLES ON FOOTPATH.
11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

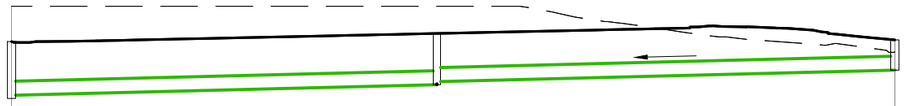
Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-30	Rev	A

DATE: 6/26/26 FILE PATH: F:\MAVEN HAMILTON\4_PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



	SW 5A-7	SW 5A-7B		SW 5A-7C
DATUM 32.00m				
EXISTING LEVELS	42.24			40.76
DESIGN LEVELS	41.08			41.14
PIPE INVERT	39.33	39.68	39.78	40.15
STRUCTURE DEPTH (m)	1.85	1.67		0.99
PIPE DEPTH INVERT (m)	1.75	1.67	1.57	0.99
PIPE / GRADE	450mm RCRRJ 69.39m @ 0.50%		450mm RCRRJ 74.70m @ 0.50%	
CHAINAGE	0.00			144.09

PV - Alignment SW 5A-7 to 5A-7C
SCALE: HORI 1:1000 VERT 1:200

	SW 5A-7C	SW 5A-7C Catchpit 1
DATUM 32.00m		
EXISTING LEVELS	40.76	40.74
DESIGN LEVELS	41.14	41.05
PIPE INVERT	40.32	40.37
STRUCTURE DEPTH (m)	0.99	0.90
PIPE DEPTH INVERT (m)	0.82	0.68
PIPE / GRADE	225mm RCRRJ 9.65m @ 0.50%	
CHAINAGE	0.00	9.65

PV - Alignment - SW 5A-7C Catchpit 1
SCALE: HORI 1:1000 VERT 1:200

	SW 5A-7C	SW 5A-7C Catchpit 2
DATUM 32.00m		
EXISTING LEVELS	40.76	40.86
DESIGN LEVELS	41.14	41.04
PIPE INVERT	40.25	40.31
STRUCTURE DEPTH (m)	0.99	0.90
PIPE DEPTH INVERT (m)	0.89	0.73
PIPE / GRADE	225mm RCRRJ 10.63m @ 0.50%	
CHAINAGE	0.00	10.63

PV - Alignment - SW 5A-7C Catchpit 2
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

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11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

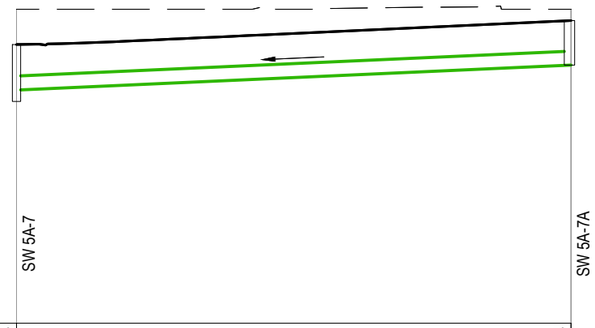
Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

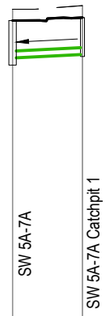
Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-31	Rev	A

DATE: 8/26/26 FILE PATH: F:\MAVEN HAMILTON\4. PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



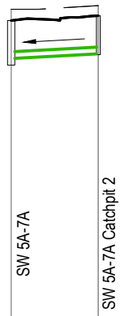
DATUM 32.00m	SW 5A-7	SW 5A-7A
EXISTING LEVELS	42.24	42.24
DESIGN LEVELS		
PIPE INVERT	39.60	40.41
STRUCTURE DEPTH (m)	1.85	1.45
PIPE DEPTH INVERT (m)	1.48	1.45
PIPE / GRADE	450mm RCRRJ 90.45m @ 0.90%	
CHAINAGE	0.00	90.45

PV - Alignment SW 5A-7 TO 5A-7A
SCALE: HORI 1:1000 VERT 1:200



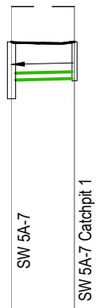
DATUM 32.00m	SW 5A-7A	SW 5A-7A Catchpit 1
EXISTING LEVELS	42.24	42.35
DESIGN LEVELS	41.87	41.97
PIPE INVERT	40.65	40.76
STRUCTURE DEPTH (m)	1.45	1.20
PIPE DEPTH INVERT (m)	1.22	1.20
PIPE / GRADE	225mm RCRRJ 11.41m @ 1.00%	
CHAINAGE	0.00	11.41

PV - Alignment - SW 5A-7A Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



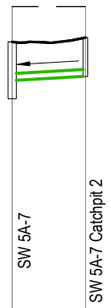
DATUM 32.00m	SW 5A-7A	SW 5A-7A Catchpit 2
EXISTING LEVELS	42.24	42.36
DESIGN LEVELS	41.87	42.02
PIPE INVERT	40.63	40.78
STRUCTURE DEPTH (m)	1.45	1.20
PIPE DEPTH INVERT (m)	1.24	1.24
PIPE / GRADE	225mm RCRRJ 14.22m @ 1.10%	
CHAINAGE	0.00	14.22

PV - Alignment - SW 5A-7A Catchpit 2
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m	SW 5A-7	SW 5A-7 Catchpit 1
EXISTING LEVELS	42.24	42.24
DESIGN LEVELS	41.08	41.08
PIPE INVERT	39.84	39.89
STRUCTURE DEPTH (m)	1.85	1.20
PIPE DEPTH INVERT (m)	1.25	1.19
PIPE / GRADE	225mm RCRRJ 10.28m @ 0.50%	
CHAINAGE	0.00	10.28

PV - Alignment - SW 5A-7 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m	SW 5A-7	SW 5A-7 Catchpit 2
EXISTING LEVELS	42.24	42.24
DESIGN LEVELS	41.08	41.22
PIPE INVERT	39.83	39.96
STRUCTURE DEPTH (m)	1.85	1.20
PIPE DEPTH INVERT (m)	1.26	1.26
PIPE / GRADE	225mm RCRRJ 11.96m @ 1.16%	
CHAINAGE	0.00	11.96

PV - Alignment - SW 5A-7 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
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11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

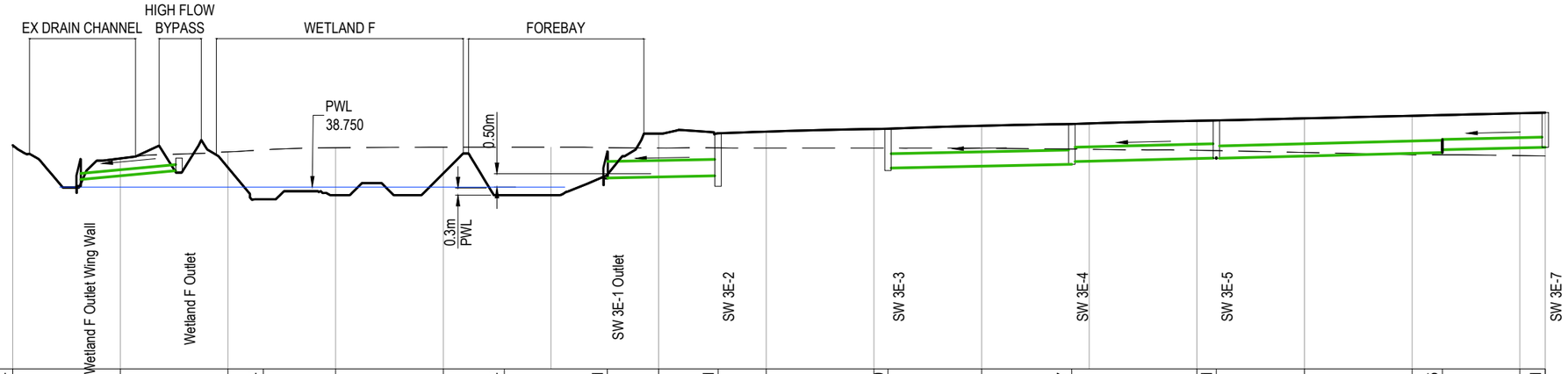
Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-32	Rev	A

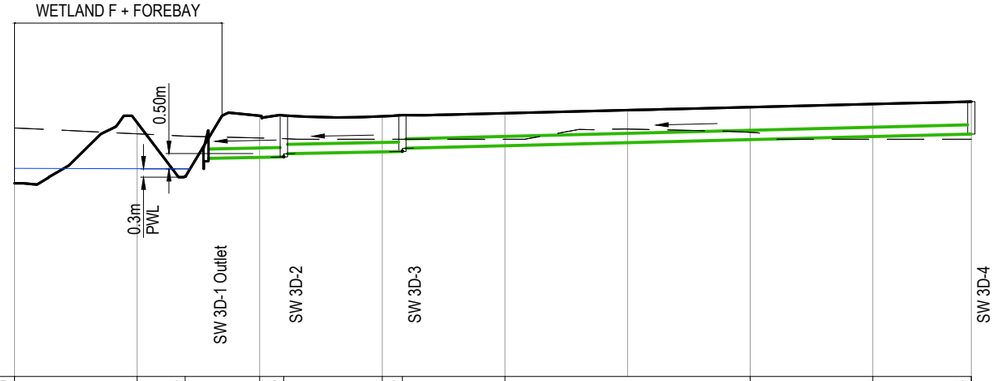
DATE: 8/26/26 FILE PATH: F:\MAVEN HAMILTON\4. PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 32.00m

EXISTING LEVELS	40.24	39.82	40.06	40.14	40.21	40.24	40.24	40.24	40.21	40.20	40.21	40.20	40.20	40.20	40.20	40.17	40.16	40.12	40.11	40.04	39.95	39.95	39.92	39.91
DESIGN LEVELS	40.24			40.14			40.24	40.24	40.21		40.21		40.20		40.20	40.17	40.16		40.11			39.95		39.91
PIPE INVERT		39.04	39.37							39.09	39.17			39.46		39.60	39.70	39.83	39.82			40.04	40.14	40.23
STRUCTURE DEPTH (m)		0.75	0.54						0.98		1.97		1.55			1.50		1.41						1.29
PIPE DEPTH INVERT (m)		-0.18	-0.08							0.12	1.57			1.46		1.50	1.40	1.40	1.41			1.39	1.29	1.29
PIPE / GRADE		225mm RCRRJ 18.32m @ 1.84%								600mm RCRRJ 20.56m @ 0.40%				525mm RCRRJ 34.15m @ 0.41%			525mm RCRRJ 26.85m @ 0.50%			450mm RCRRJ 41.99m @ 0.51%			375mm RCRRJ 19.12m @ 0.47%	
CHAINAGE	0.00	20.00	40.00	46.56	60.00	80.00	91.33	100.00	110.48	120.00	131.04	140.00	160.00 162.61	180.00	196.76 200.00			220.00	223.62	240.00	260.00	265.61	280.00	284.72

PV - Alignment - 6A
SCALE: HORI 1:1000 VERT 1:200

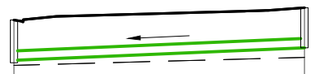


DATUM 32.00m

EXISTING LEVELS	40.10	39.91	39.84	39.78	39.76	39.74	39.74	39.74	40.07	39.96	39.74	39.74
DESIGN LEVELS	38.30		38.53		40.51		40.52		40.68			40.96
PIPE INVERT				39.11	39.16	39.26	39.34	39.44				39.90
STRUCTURE DEPTH (m)				0.91	1.35		1.18					1.06
PIPE DEPTH INVERT (m)				0.63	1.35	1.25	1.18	1.08				1.06
PIPE / GRADE		300mm RCRRJ 12.37m @ 0.40%						300mm RCRRJ 92.80m @ 0.50%				
CHAINAGE	0.00	20.00	27.84	40.00	43.94	60.00	63.28	80.00	100.00	120.00	140.00	156.07

300mm RCRRJ
19.34m @ 0.40%

PV - Alignment - SW 3D-2 to 3D-4
SCALE: HORI 1:1000 VERT 1:200



DATUM 36.00m

EXISTING LEVELS	39.95	40.21
DESIGN LEVELS	41.43	41.83
PIPE INVERT		
STRUCTURE DEPTH (m)		
PIPE DEPTH INVERT (m)		
PIPE / GRADE		
CHAINAGE	0.00	47.38

PV - PV - Alignment - SW 3E-6
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

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11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

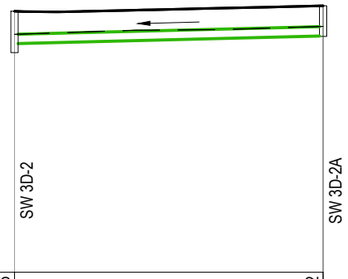
	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton New Zealand

Project
SOUTHERN LINKS 1 RESIDENTIAL STAGE 1 HAMILTON, WAIKATO FOR SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

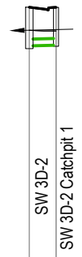
Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-33	Rev	A



DATUM 32.00m

EXISTING LEVELS	39.76	40.02
DESIGN LEVELS	40.51	40.68
PIPE INVERT	39.45	39.70
STRUCTURE DEPTH (m)	1.35	1.00
PIPE DEPTH INVERT (m)	1.05	0.98
PIPE / GRADE	300mm RCRRJ 50.35m @ 0.50%	
CHAINAGE	0.00	50.35

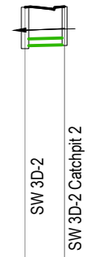
PV - Alignment - SW 3D-2 to SW 3D-2A
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.76	39.74
DESIGN LEVELS	40.51	40.51
PIPE INVERT	39.45	39.27
STRUCTURE DEPTH (m)	1.35	1.20
PIPE DEPTH INVERT (m)	1.26	1.24
PIPE / GRADE	225mm RCRRJ 4.37m @ 0.50%	
CHAINAGE	0.00	4.37

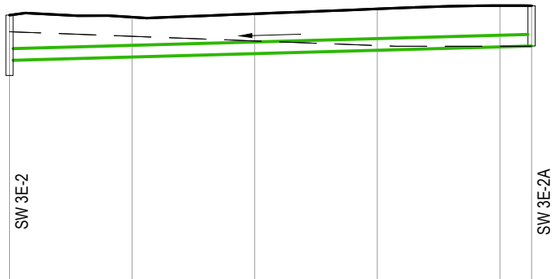
PV - Alignment - SW 3D-2 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.76	39.82
DESIGN LEVELS	40.51	40.53
PIPE INVERT	39.25	39.28
STRUCTURE DEPTH (m)	1.35	1.20
PIPE DEPTH INVERT (m)	1.26	1.25
PIPE / GRADE	225mm RCRRJ 6.45m @ 0.50%	
CHAINAGE	0.00	6.45

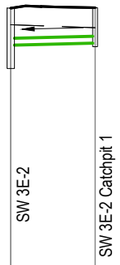
PV - Alignment - SW 3D-2 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	40.21	40.06	39.91	39.76	39.74	39.74
DESIGN LEVELS	40.75					41.06
PIPE INVERT	39.27					39.74
STRUCTURE DEPTH (m)	1.97					1.31
PIPE DEPTH INVERT (m)	1.47					1.31
PIPE / GRADE	375mm RCRRJ 85.16m @ 0.55%					
CHAINAGE	0.00	20.00	40.00	60.00	80.00	85.16

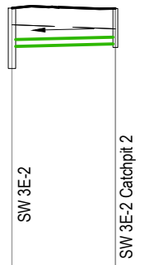
PV - Alignment - SW 3E-2 to 3E-2A
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	40.21	40.11
DESIGN LEVELS	40.75	40.76
PIPE INVERT	39.54	39.61
STRUCTURE DEPTH (m)	1.97	1.20
PIPE DEPTH INVERT (m)	1.21	1.15
PIPE / GRADE	225mm RCRRJ 13.76m @ 0.50%	
CHAINAGE	0.00	13.76

PV - Alignment - SW 3E-2 to 3E-2 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	40.21	40.07
DESIGN LEVELS	40.75	40.74
PIPE INVERT	39.50	39.58
STRUCTURE DEPTH (m)	1.97	1.20
PIPE DEPTH INVERT (m)	1.25	1.15
PIPE / GRADE	225mm RCRRJ 16.87m @ 0.50%	
CHAINAGE	0.00	16.87

PV - Alignment - SW 3E-2 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
2. COORDINATES IN TERMS OF NZ GEODETIC DATUM MOUNT EDEN 2000.
3. LEVELS IN TERMS OF THE NZ VERTICAL DATUM 2016.
4. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE ALL SERVICES THAT MAY BE AFFECTED BY HIS OPERATIONS.
5. APPROVED HARDFILL IS TO BE USED IN BACKFILLING OF ALL ROAD CROSSINGS TO COUNCIL STANDARDS.
6. HEAVY DUTY MANHOLE LIDS AND FRAMES TO BE USED IN TRAFFICKED AREAS, ALL MANHOLES SHALL HAVE STAINLESS GRATES INSTALLED.
7. ALL LOT CONNECTIONS ARE TO BE 100mmØ PVC UNLESS SHOWN OTHERWISE.
8. MANHOLE DIAMETERS SHOWN ON STRUCTURE LABEL ARE INTERNAL DIAMETER.
9. MEASUREMENTS SHOWN ON THE LOT CONNECTIONS ARE THE DISTANCE FROM THE CENTRE OF THE DOWNSTREAM MANHOLE TO THE LOT CONNECTION POSITION WITHIN THE LOT BOUNDARY.
10. MANHOLE SLAB AND COVER TO BE ROTATED TO AVOID THE FOOTPATH EDGE FOR MANHOLES ON FOOTPATH.
11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

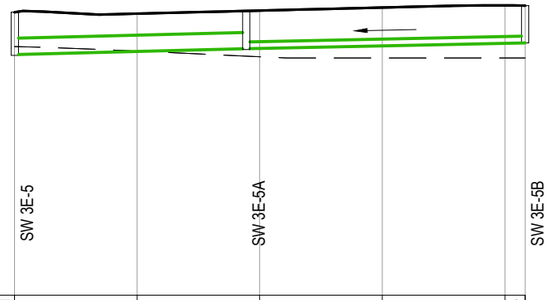
Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-34	Rev	A

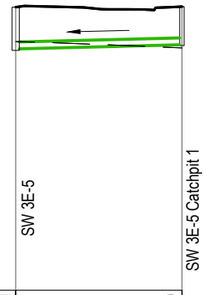
DATE: 8/26/26 FILE PATH: F:\MAVEN HAMILTON\PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 32.00m

EXISTING LEVELS	40.11	39.96	39.77	39.74	39.74	39.74
DESIGN LEVELS	41.22					41.44
PIPE INVERT	39.85		40.04	40.04		40.23
STRUCTURE DEPTH (m)	1.41		1.26			1.22
PIPE DEPTH INVERT (m)	1.38		1.23	1.23		1.22
PIPE / GRADE		525mm RCRRJ 37.75m @ 0.50%		225mm RCRRJ 45.50m @ 0.42%		
CHAINAGE	0.00	20.00	40.00	60.00	80.00	83.30

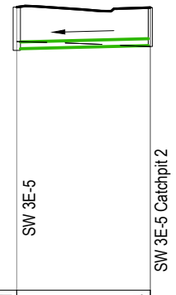
PV - Alignment - SW 3E-5 to 3E-5B
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	40.11		39.90
DESIGN LEVELS	41.23		41.25
PIPE INVERT		39.87	40.00
STRUCTURE DEPTH (m)	1.41		1.20
PIPE DEPTH INVERT (m)		1.36	1.24
PIPE / GRADE		225mm RCRRJ 27.11m @ 0.50%	
CHAINAGE	0.00		27.11

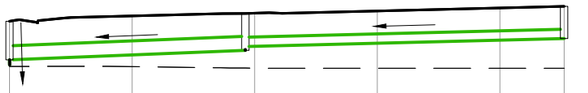
PV - Alignment - SW 3E-5 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	40.11		39.94
DESIGN LEVELS	41.23		41.21
PIPE INVERT		39.87	39.98
STRUCTURE DEPTH (m)	1.41		1.20
PIPE DEPTH INVERT (m)		1.36	1.24
PIPE / GRADE		225mm RCRRJ 21.79m @ 0.50%	
CHAINAGE	0.00		21.79

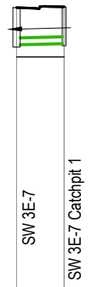
PV - Alignment - SW 3E-5 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.79	39.79	39.74 39.74	39.74	39.74	39.74
DESIGN LEVELS	41.27		41.52			41.75
PIPE INVERT	39.85 40.04		40.32	40.44		40.70
STRUCTURE DEPTH (m)	1.26		1.20			1.05
PIPE DEPTH INVERT (m)	1.38 1.28		1.20	1.08		1.05
PIPE / GRADE	525mm RCRRJ 37.75m @ 0.50%	450mm RCRRJ 38.48m @ 0.80%		300mm RCRRJ 51.99m @ 0.50%		
CHAINAGE	0.00	20.00	38.48 40.00	60.00	80.00	90.47

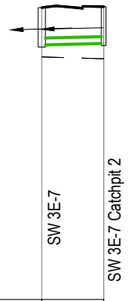
PV - Alignment - SW 3E-6 to 3E-6A
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.91		39.91
DESIGN LEVELS	41.52		41.54
PIPE INVERT		40.30	40.34
STRUCTURE DEPTH (m)	1.29		1.20
PIPE DEPTH INVERT (m)		1.21	1.20
PIPE / GRADE		225mm RCRRJ 7.76m @ 0.50%	
CHAINAGE	0.00		7.76

PV - Alignment - SW 3E-7 Catchpit 1
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.91		39.85
DESIGN LEVELS	41.52		41.54
PIPE INVERT		40.30	40.35
STRUCTURE DEPTH (m)	1.29		1.20
PIPE DEPTH INVERT (m)		1.22	1.19
PIPE / GRADE		225mm RCRRJ 10.09m @ 0.50%	
CHAINAGE	0.00		10.10

PV - Alignment - SW 3E-7 Catchpit 2
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
2. COORDINATES IN TERMS OF NZ GEODETIC DATUM MOUNT EDEN 2000.
3. LEVELS IN TERMS OF THE NZ VERTICAL DATUM 2016.
4. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE ALL SERVICES THAT MAY BE AFFECTED BY HIS OPERATIONS.
5. APPROVED HARDFILL IS TO BE USED IN BACKFILLING OF ALL ROAD CROSSINGS TO COUNCIL STANDARDS.
6. HEAVY DUTY MANHOLE LIDS AND FRAMES TO BE USED IN TRAFFICKED AREAS, ALL MANHOLES SHALL HAVE STAINLESS GRATES INSTALLED.
7. ALL LOT CONNECTIONS ARE TO BE 100mmØ PVC UNLESS SHOWN OTHERWISE.
8. MANHOLE DIAMETERS SHOWN ON STRUCTURE LABEL ARE INTERNAL DIAMETER.
9. MEASUREMENTS SHOWN ON THE LOT CONNECTIONS ARE THE DISTANCE FROM THE CENTRE OF THE DOWNSTREAM MANHOLE TO THE LOT CONNECTION POSITION WITHIN THE LOT BOUNDARY.
10. MANHOLE SLAB AND COVER TO BE ROTATED TO AVOID THE FOOTPATH EDGE FOR MANHOLES ON FOOTPATH.
11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

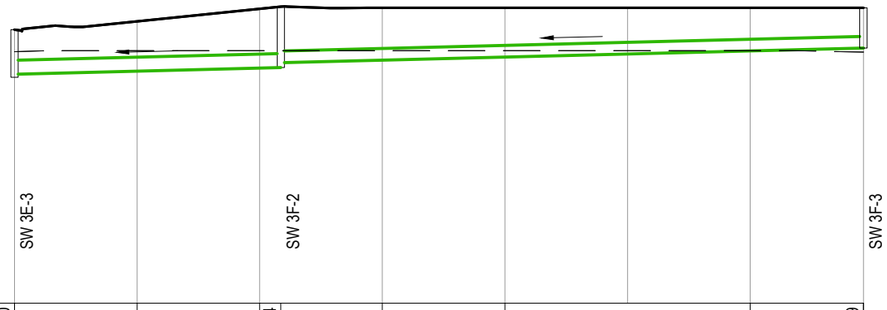
Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-35	Rev	A

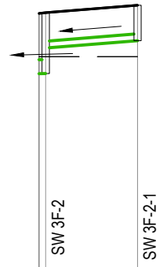
DATE: 6/26/26 FILE PATH: F:\MAVEN HAMILTON\PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 32.00m

EXISTING LEVELS	40.20	40.24	40.24	40.24	40.24	40.24	40.24	40.24	40.19
DESIGN LEVELS	40.92	41.67				41.63			41.63
PIPE INVERT	39.47	39.68	39.84						40.32
STRUCTURE DEPTH (m)	1.55	1.98							1.31
PIPE DEPTH INVERT (m)	1.45	1.98	1.82						1.31
PIPE / GRADE	450mm RCRRJ 43.43m @ 0.50%			375mm RCRRJ 95.04m @ 0.50%					
CHAINAGE	0.00	20.00	40.00	43.43	60.00	80.00	100.00	120.00	138.47

PV - Alignment - SW 3F-1 Outlet to 3F-3
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	40.24	40.24	40.24
DESIGN LEVELS	41.64		41.91
PIPE INVERT	39.68	40.31	40.76
STRUCTURE DEPTH (m)	1.98		1.15
PIPE DEPTH INVERT (m)	1.98	1.15	1.15
PIPE / GRADE	450mm RCRRJ 43.43m	225mm RCRRJ 14.98m @ 1.61%	
CHAINAGE	0.00	0.00	16.07

PV - Alignment - SW 3F-2-1
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
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3. LEVELS IN TERMS OF THE NZ VERTICAL DATUM 2016.
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7. ALL LOT CONNECTIONS ARE TO BE 100mmØ PVC UNLESS SHOWN OTHERWISE.
8. MANHOLE DIAMETERS SHOWN ON STRUCTURE LABEL ARE INTERNAL DIAMETER.
9. MEASUREMENTS SHOWN ON THE LOT CONNECTIONS ARE THE DISTANCE FROM THE CENTRE OF THE DOWNSTREAM MANHOLE TO THE LOT CONNECTION POSITION WITHIN THE LOT BOUNDARY.
10. MANHOLE SLAB AND COVER TO BE ROTATED TO AVOID THE FOOTPATH EDGE FOR MANHOLES ON FOOTPATH.
11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

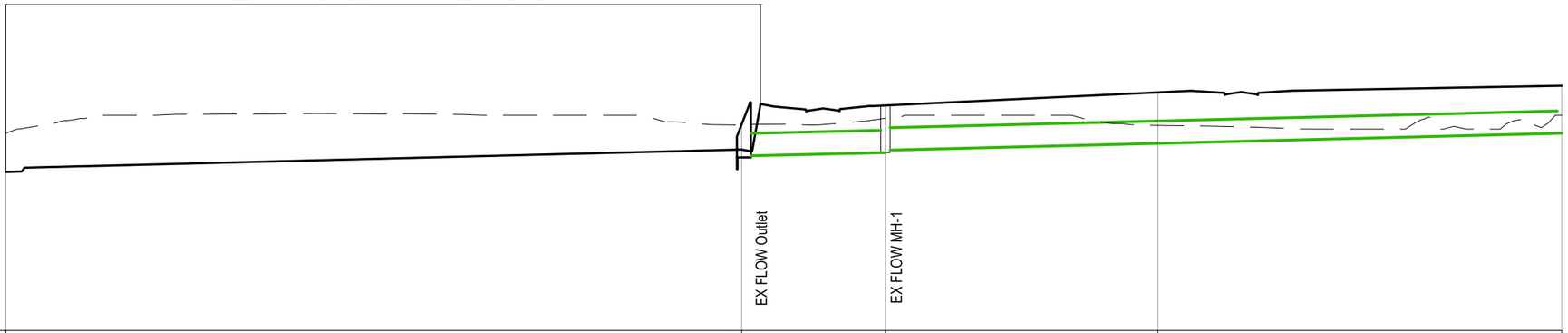
Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-36	Rev	A

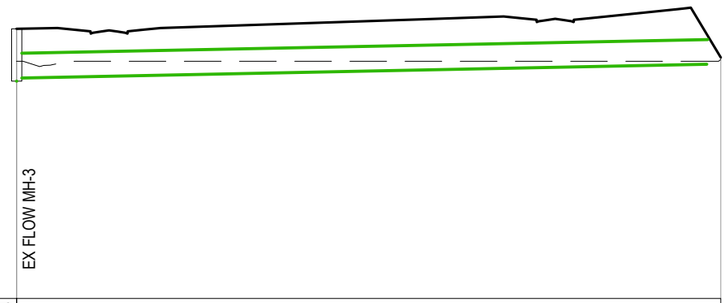
DATE: 6/26/26 FILE PATH: F:\MAVEN HAMILTON\6 PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG



DATUM 32.00m

EXISTING LEVELS	39.09	39.39	39.63	39.37	39.74
DESIGN LEVELS	37.69	38.50	40.09	40.55	40.79
PIPE INVERT		38.28	38.39 / 38.48		39.09
STRUCTURE DEPTH (m)		1.99	1.70		
PIPE DEPTH INVERT (m)		0.19	1.70 / 1.61		1.71
PIPE / GRADE		825mm RCRRJ 24.33m @ 0.47%		825mm RCRRJ 121.77m @ 0.50%	
CHAINAGE	0.00	132.41	158.27	207.34	280.00

PV - Existing Flow to Swale Discharge (1 of 2)
SCALE: HORI 1:1000 VERT 1:200



DATUM 32.00m

EXISTING LEVELS	39.74	39.74	39.79
DESIGN LEVELS	40.79	40.79	39.85
PIPE INVERT	39.09	38.48	39.65
STRUCTURE DEPTH (m)	1.71		
PIPE DEPTH INVERT (m)	1.71	1.61	0.17
PIPE / GRADE	825mm RCRRJ 121.77m @ 0.50%	825mm RCRRJ 114.96m @ 0.40%	
CHAINAGE	280.00	280.00	394.88

PV - Existing Flow to Swale Discharge (1 of 2)
SCALE: HORI 1:1000 VERT 1:200

RESOURCE CONSENT

Notes

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
2. COORDINATES IN TERMS OF NZ GEODETIC DATUM MOUNT EDEN 2000.
3. LEVELS IN TERMS OF THE NZ VERTICAL DATUM 2016.
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6. HEAVY DUTY MANHOLE LIDS AND FRAMES TO BE USED IN TRAFFICKED AREAS, ALL MANHOLES SHALL HAVE STAINLESS GRATES INSTALLED.
7. ALL LOT CONNECTIONS ARE TO BE 100mmØ PVC UNLESS SHOWN OTHERWISE.
8. MANHOLE DIAMETERS SHOWN ON STRUCTURE LABEL ARE INTERNAL DIAMETER.
9. MEASUREMENTS SHOWN ON THE LOT CONNECTIONS ARE THE DISTANCE FROM THE CENTRE OF THE DOWNSTREAM MANHOLE TO THE LOT CONNECTION POSITION WITHIN THE LOT BOUNDARY.
10. MANHOLE SLAB AND COVER TO BE ROTATED TO AVOID THE FOOTPATH EDGE FOR MANHOLES ON FOOTPATH.
11. PIPE LENGTHS SHOWN ON PLAN ARE FROM UPSTREAM PIPE INVERT TO DOWNSTREAM PIPE INVERT.

LEGEND

- EX GROUND LEVEL
- PR GROUND LEVEL
- HARDFILL BACKFILL
- LOT CONNECTION
- CROSSING PIPE

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
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Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER LONG SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C420 SW LONGSECTIONS.DWG		
Drawing no.	R1-C420-37	Rev	A

DATE: 6/26/26 FILE PATH: F:\MAVEN HAMILTON\PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C-420 SW LONGSECTIONS.DWG

RESOURCE CONSENT

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
2. CO-ORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000. LEVELS IN TERMS OF THE NEW ZEALAND VERTICAL DATUM 2016. CONVERSION TO MOTURIKI 1953 CAN BE ACHIEVED BY ADDING ???m.
3. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE ALL SERVICES THAT MAY BE AFFECTED BY HIS OPERATIONS.
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5. APPROVED HARDFILL IS TO BE USED IN BACKFILLING OF ALL STORMWATER LINES WITHIN THE ROAD RESERVE.
6. HEAVY DUTY MANHOLE LIDS AND FRAMES TO BE USED IN TRAFFICKED AREAS.
7. ALL CESSPIT LEADS SHALL HAVE MIN COVER 0.9m.
8. ALL LINES ARE TO BE CLASS4 RCRRJ UNLESS SHOWN OTHERWISE.
9. ALL LINES TO BE ABANDONED SHALL BE SEALED AT EACH END. TIMING OF ALL SEALING TO BE COORDINATED WITH COUNCIL STAFF.

LEGEND

- EX BOUNDARY
- PROP BOUNDARY
- PROP CATCHMENT
- PROP SW NETWORK
- PROP SW SCRUFFY
- PROP SW OUTLET
- PROP SW FOREBAY
- PROP SW WETLAND
- PROP HIGH FLOW BYPASS
- PROP SHARED PATH / MAINTENANCE TRACK
- ROCK RIP RAP
- GABBION BLOCK WALL

Rev	Description	By	Date
A	FAST TRACK APP	MJRA	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project

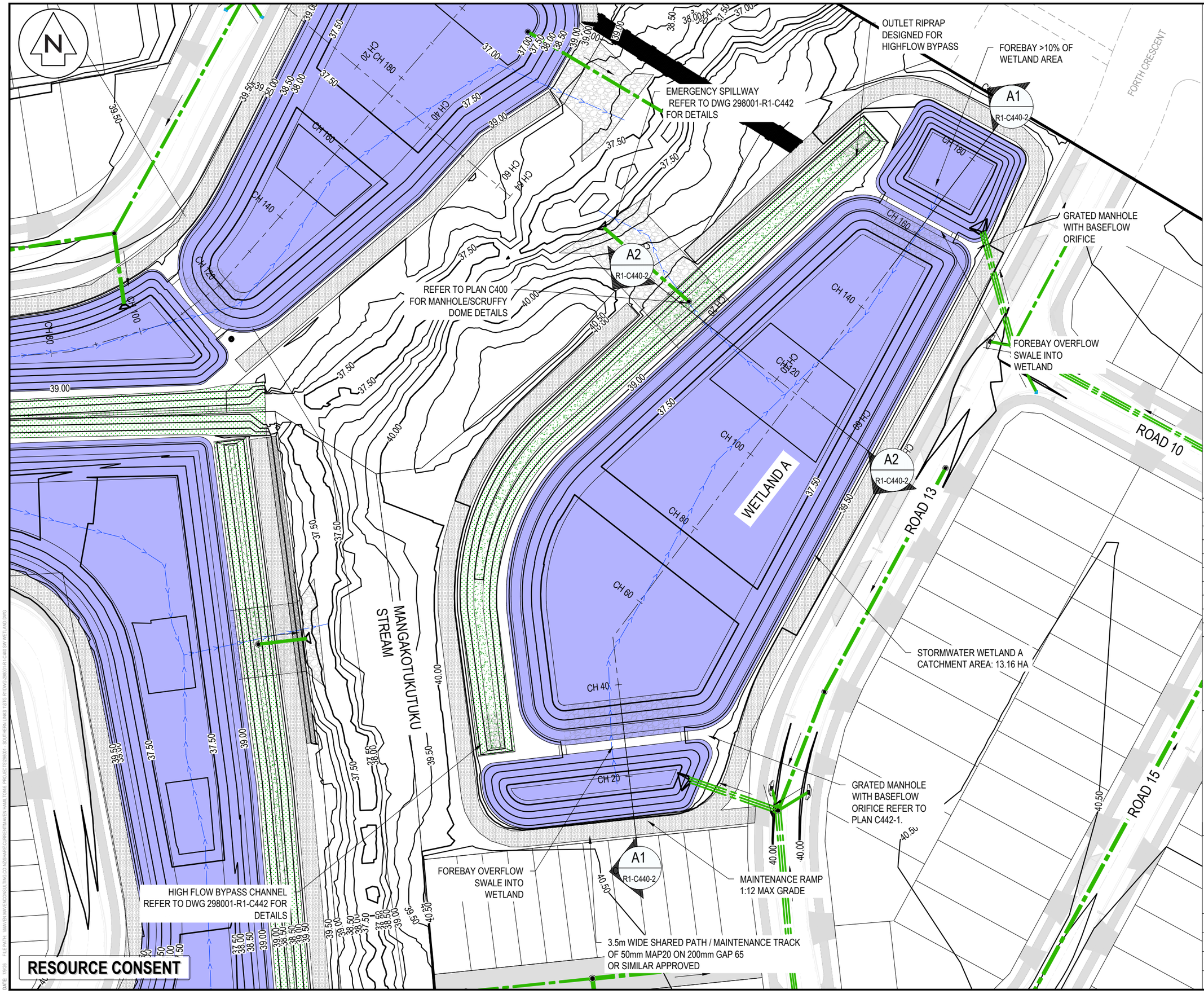
SOUTHERN LINKS 1 RESIDENTIAL STAGE 1 HAMILTON, WAIKATO FOR SAXBY RD JV LIMITED

Title

PROPOSED STORMWATER WETLAND PONDS OVERVIEW PLAN

Project no.	298001-R1 SL1		
Scale	1:4000 @ A3		
Cad file	298001-R1-C440 SW WETLAND.DWG		
Drawing no.	R1-C440	Rev	A

DATE: 7/07/25 FILE PATH: \\MAVEN.MAVEN\CONSULTING\CO NZ\CHARTS\CURRENT\MAVEN HAMILTON\0_PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C440 SW WETLAND.DWG



NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
2. CO-ORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000. LEVELS IN TERMS OF THE NEW ZEALAND VERTICAL DATUM 2016. CONVERSION TO MOTURIKI 1953 CAN BE ACHIEVED BY ADDING ???m.
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LEGEND

- EX BOUNDARY
- PROP BOUNDARY
- PROP CATCHMENT
- PROP SW NETWORK
- PROP SW SCRUFFY
- PROP SW OUTLET
- PROP SW FOREBAY
- PROP SW WETLAND
- PROP HIGH FLOW BYPASS
- PROP SHARED PATH / MAINTENANCE TRACK
- ROCK RIP RAP
- GABBION BLOCK WALL

Rev	Description	By	Date
A	FAST TRACK APP	MJRA	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

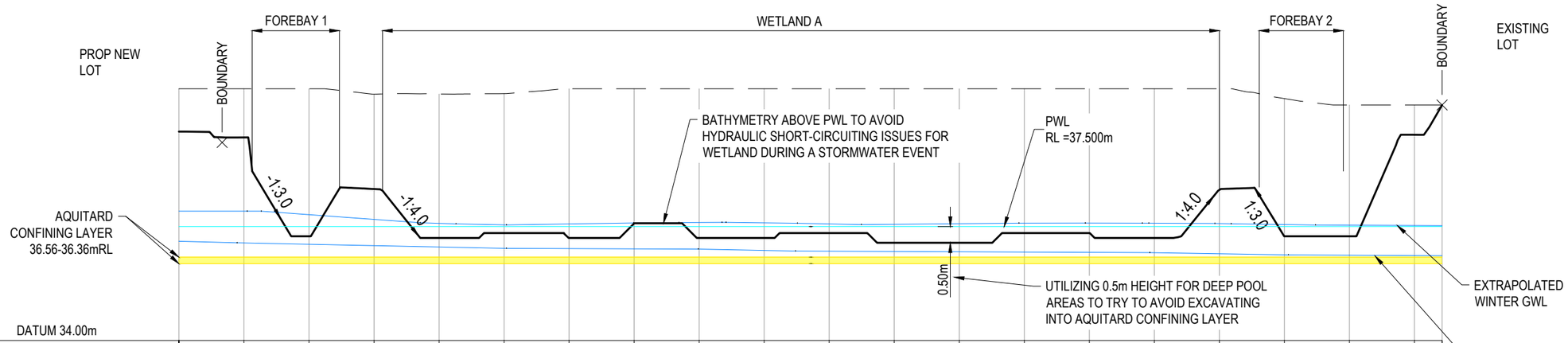
Project

SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title

PROPOSED STORMWATER WETLAND A PLAN

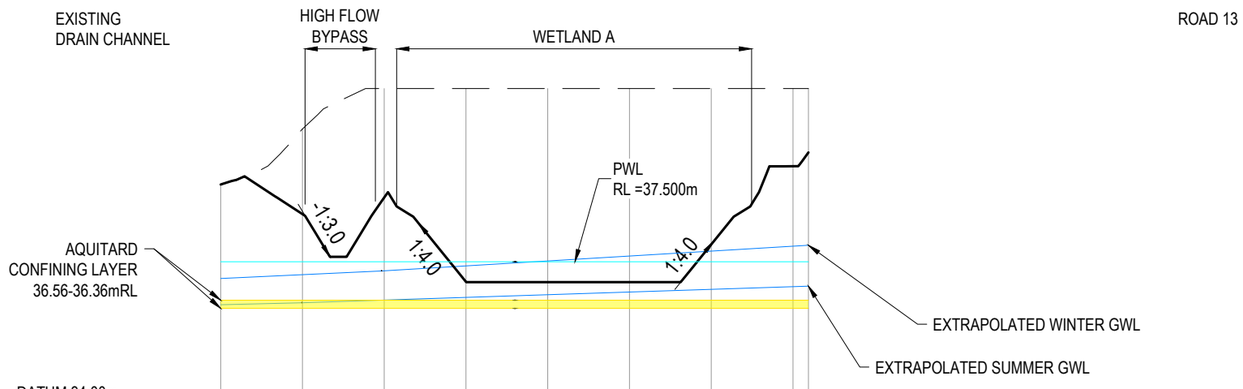
Project no.	298001-R1 SL1		
Scale	1:750 @ A3		
Cad file	298001-R1-C440 SW WETLAND.DWG		
Drawing no.	R1-C440-1	Rev	A



DATUM 34.00m

EXISTING LEVELS	41.74	41.74	41.74	41.57	41.57	41.58	41.73	41.74	41.74	41.74	41.74	41.74	41.74	41.74	41.74	41.74	41.43	41.24	41.24	41.24	
DESIGN LEVELS	40.41	40.24	37.20	38.65	37.15	37.30	37.15	37.60	37.15	37.15	37.30	37.00	37.00	37.30	37.30	37.15	38.63	37.20	37.20	40.32	
CUT/FILL	-1.32	-1.50	-4.54	-2.91	-4.42	-4.28	-4.58	-4.14	-4.58	-4.58	-4.44	-4.74	-4.74	-4.44	-4.44	-4.58	-3.11	-4.23	-4.04	-0.92	
CHAINAGE	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00	110.00	120.00	130.00	140.00	150.00	160.00	170.00	180.00	190.00	194.24

PROPOSED - Section - A1 CH 0+00.00 TO CH 1+94.24
SCALE: 1:750 H / 1:150 V



DATUM 34.00m

EXISTING LEVELS	39.39	40.75	41.74	41.74	41.74	41.74	41.74	41.74	41.74
DESIGN LEVELS	39.39	38.66	39.07	37.01	37.00	37.00	37.92	39.83	40.17
CUT/FILL	0.00	-2.08	-2.66	-4.73	-4.74	-4.74	-3.81	-1.90	-1.56
CHAINAGE	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	71.89

PROPOSED - Section - A2 CH 0+00.00 TO CH 0+71.89
SCALE: 1:750 H / 1:150 V

RESOURCE CONSENT

NOTES

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Legend

- EX GROUND LEVEL
- PROP GROUND LEVEL
- SUMMER/WINTER GWL
- PWL

Rev	Description	By	Date
A	FAST TRACK APP	MJRA	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER WETLAND A SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C440 SW WETLAND.DWG		
Drawing no.	R1-C440-2	Rev	A

DATE 7/5/26 FILE PATH \\MAVEN.MAVENCONSULTING.CO.NZ\SHARE\CORPORATE\MAVEN HAMILTON\6. PROJECTS\298001 - SOUTHERN LINKS 1\STG 1\DWG\298001-R1-C-440 SW WETLAND.DWG

NOTES

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LEGEND

- EX BOUNDARY
- PROP BOUNDARY
- PROP CATCHMENT
- PROP SW NETWORK
- PROP SW SCRUFFY
- PROP SW OUTLET
- PROP SW FOREBAY
- PROP SW WETLAND
- PROP HIGH FLOW BYPASS
- PROP SHARED PATH / MAINTENANCE TRACK
- ROCK RIP RAP
- GABBION BLOCK WALL

Rev	Description	By	Date
A	FAST TRACK APP	MJRA	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

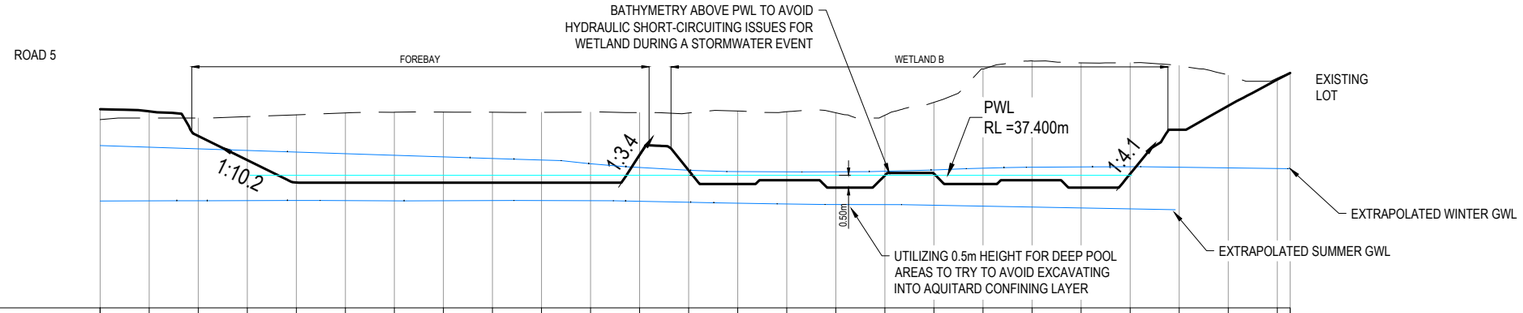
Project

SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title

PROPOSED STORMWATER
WETLAND B
PLAN

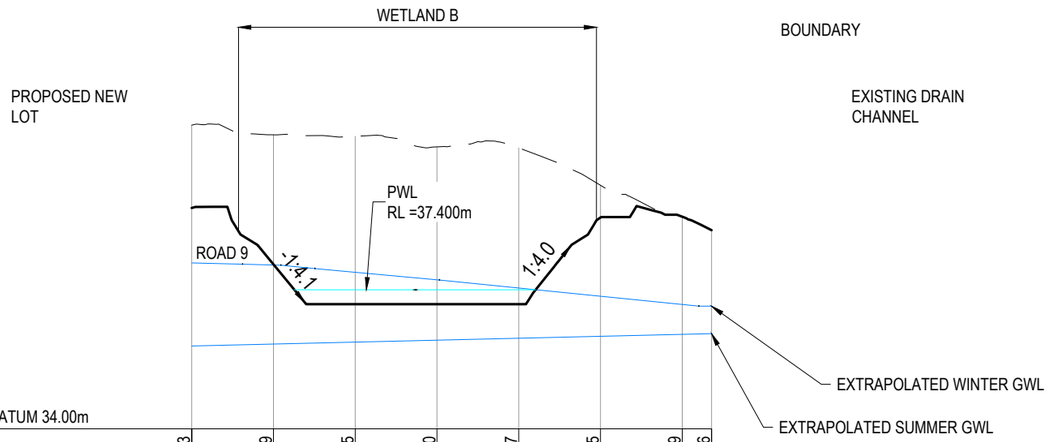
Project no.	298001-R1 SL1		
Scale	1:750 @ A3		
Cad file	298001-R1-C440 SW WETLAND.DWG		
Drawing no.	R1-C440-3	Rev	A



DATUM 32.00m

EXISTING LEVELS	39.67	39.74	39.74	39.79	39.87	39.95	39.97	39.98	39.97	39.97	39.98	39.96	39.94	40.02	39.99	39.95	39.85	40.38	41.73	42.07	41.98	41.99	41.88	41.48	41.36	41.58
DESIGN LEVELS	40.10	40.01	39.00	38.02	37.11	37.10	37.10	37.10	37.10	37.10	37.10	38.24	37.60	37.05	37.20	36.90	37.40	37.47	37.05	37.20	36.90	37.46	39.26	40.23	41.30	41.57
CUT/FILL	0.42	0.28	-0.73	-1.77	-2.76	-2.85	-2.87	-2.88	-2.87	-2.87	-2.88	-1.72	-2.34	-2.97	-2.79	-3.05	-2.45	-2.91	-4.68	-4.87	-5.08	-4.53	-2.62	-1.25	-0.06	-0.01
CHAINAGE	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00	110.00	120.00	130.00	140.00	150.00	160.00	170.00	180.00	190.00	200.00	210.00	220.00	230.00	240.00	242.62

PROPOSED - Section - B1 CH 0+00.00 TO CH 2+42.62
SCALE: HORI 1:1250 VERT 1:250



DATUM 34.00m

EXISTING LEVELS	41.43	41.19	41.15	40.90	40.87	39.95	39.19	38.86
DESIGN LEVELS	39.40	38.02	37.05	37.05	37.05	39.17	39.19	38.86
CUT/FILL	-2.03	-3.17	-4.10	-3.85	-3.82	-0.79	0.00	0.00
CHAINAGE	0.00	10.00	20.00	30.00	40.00	50.00	60.00	63.59

PROPOSED - Section - B2 CH 0+00.00 TO CH 0+63.59
SCALE: 1:750 H / 1:150 V

RESOURCE CONSENT

NOTES

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Legend

- EX GROUND LEVEL
- PROP GROUND LEVEL
- SUMMER/WINTER GWL
- PWL

Rev	Description	By	Date
A	FAST TRACK APP	MJRA	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

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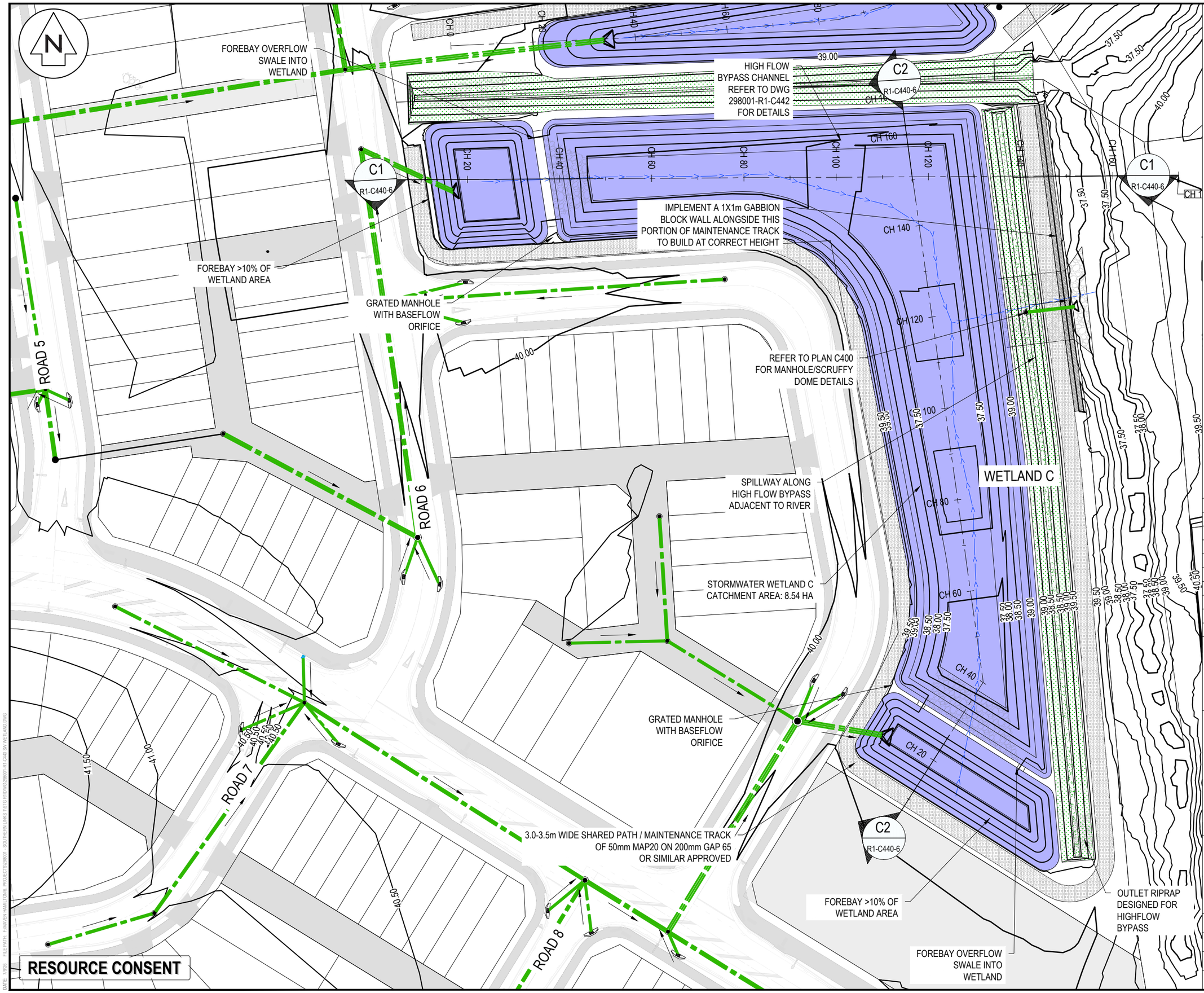
Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER WETLAND B SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C440 SW WETLAND.DWG		
Drawing no.	R1-C440-4	Rev	A

DATE 7/5/26 FILE PATH \\MAVEN.MAVENCONSULTING.CO.NZ\SHARE\CORPORATE\MAVEN HAMILTON\6. PROJECTS\298001 - SOUTHERN LINKS 1\STD R1\DWG\298001-R1-C440 SW WETLAND.DWG



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LEGEND

- EX BOUNDARY
- PROP BOUNDARY
- PROP CATCHMENT
- PROP SW NETWORK
- PROP SW SCRUFFY
- PROP SW OUTLET
- PROP SW FOREBAY
- PROP SW WETLAND
- PROP HIGH FLOW BYPASS
- PROP SHARED PATH / MAINTENANCE TRACK
- ROCK RIP RAP
- GABBION BLOCK WALL

Rev	Description	By	Date
A	FAST TRACK APP	MJRA	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

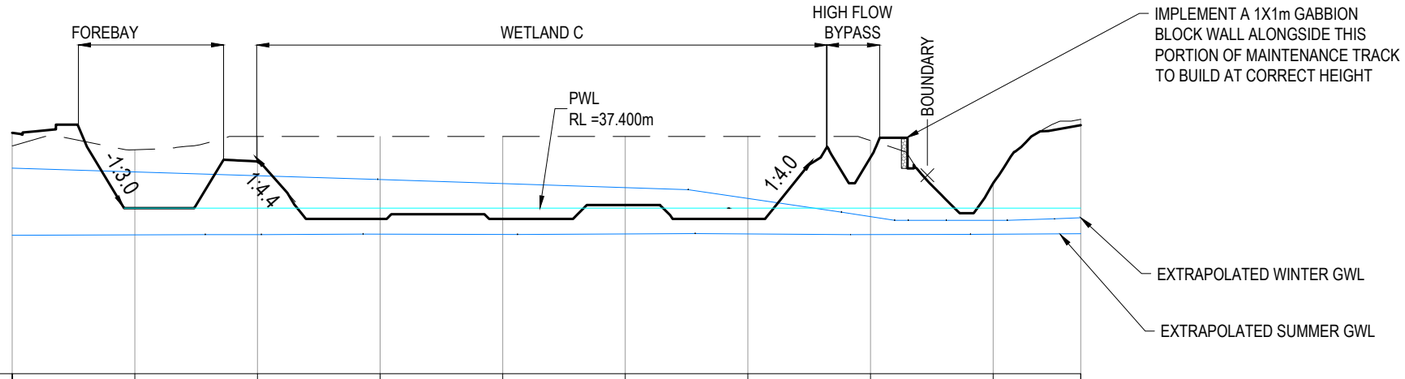
Project

SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title

PROPOSED STORMWATER WETLAND C PLAN

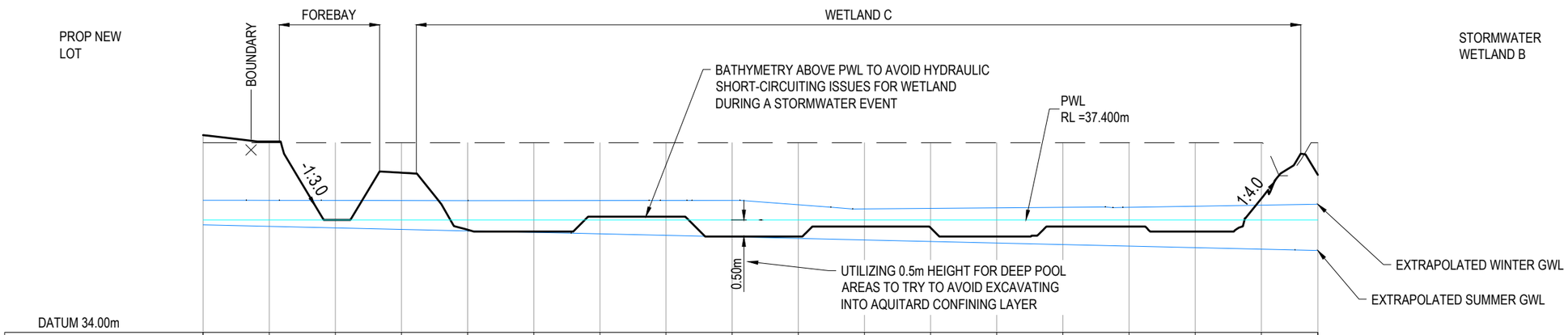
Project no.	298001-R1 SL1		
Scale	1:750 @ A3		
Cad file	298001-R1-C440 SW WETLAND.DWG		
Drawing no.	R1-C440-5	Rev	A



DATUM 32.00m

EXISTING LEVELS	39.44	39.30	39.74	39.74	39.74	39.74	39.74	39.61	38.22	40.30
DESIGN LEVELS	39.86	37.40	38.91	37.05	37.05	37.50	37.05	39.05	38.22	40.10
CUT/FILL	0.42	-1.90	-0.83	-2.68	-2.68	-2.24	-2.68	-0.55	0.00	-0.19
CHAINAGE	0.00	20.00	40.00	60.00	80.00	100.00	120.00	140.00	160.00	174.29

PV - Section - C1
SCALE: HORI 1:1000 VERT 1:200



DATUM 34.00m

EXISTING LEVELS	39.74	39.74	39.74	39.74	39.74	39.74	39.74	39.74	39.74	39.74	39.74	39.74	39.74	39.74	39.74	39.74	39.74	39.74
DESIGN LEVELS	39.96	39.77	37.40	38.83	37.10	37.05	37.50	37.50	36.90	36.90	37.20	37.16	36.90	37.20	37.20	37.05	38.04	38.76
CUT/FILL	0.23	0.04	-2.34	-0.91	-2.63	-2.68	-2.24	-2.24	-2.83	-2.83	-2.54	-2.57	-2.83	-2.54	-2.54	-2.68	-1.69	-0.97
CHAINAGE	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00	110.00	120.00	130.00	140.00	150.00	160.00	168.54

PROPOSED - Section - C2 CH 0+00.00 TO CH 1+68.54
SCALE: 1:750 H / 1:150 V

RESOURCE CONSENT

NOTES

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Legend

- EX GROUND LEVEL
- PROP GROUND LEVEL
- SUMMER/WINTER GWL
- PWL

Rev	Description	By	Date
A	FAST TRACK APP	MJRA	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
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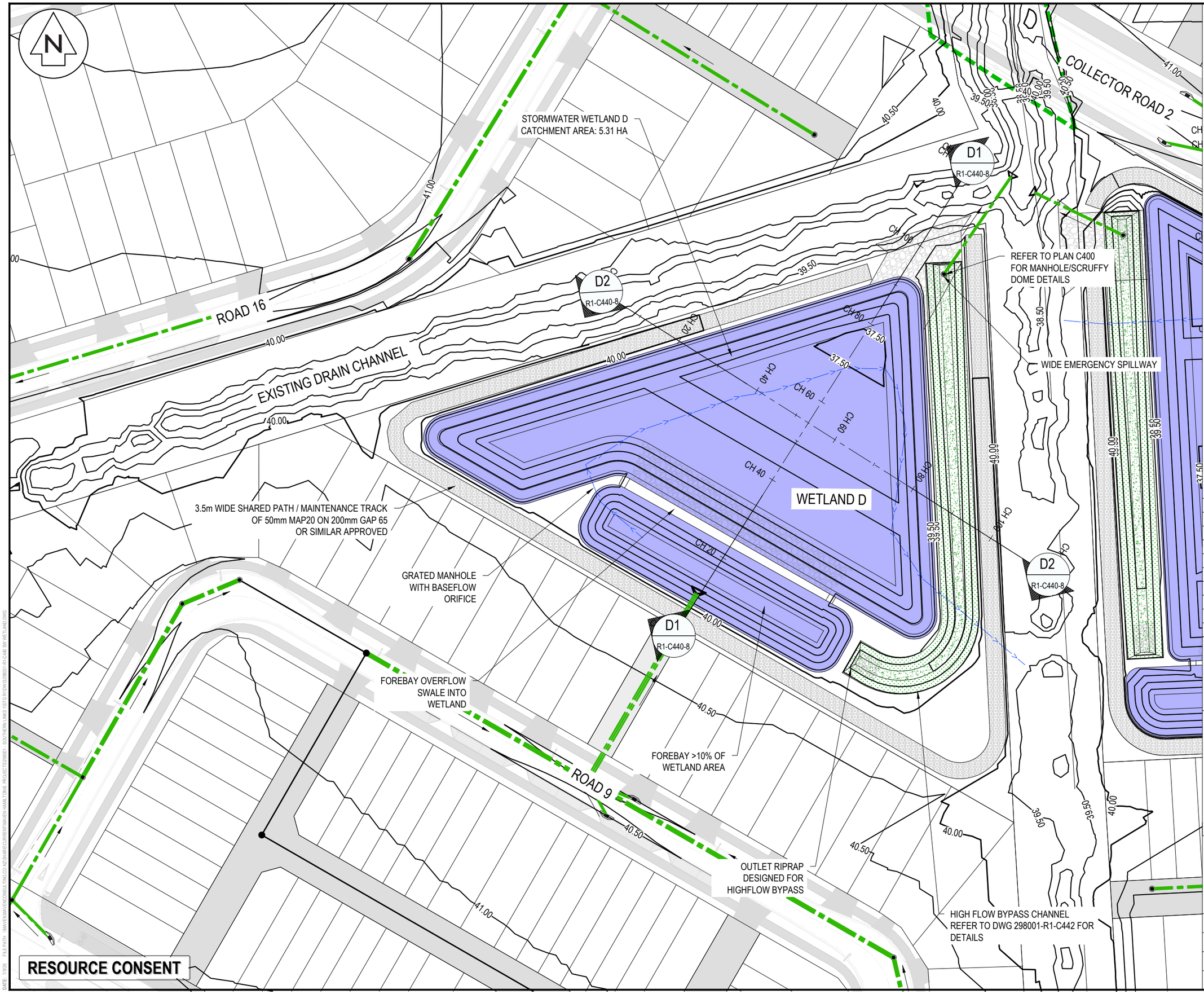
Project
SOUTHERN LINKS 1 RESIDENTIAL STAGE 1 HAMILTON, WAIKATO FOR SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER WETLAND C SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C440 SW WETLAND.DWG		
Drawing no.	R1-C440-6	Rev	A

DATE 7/5/26 FILE PATH \\MAVEN.MAVENCONSULTING.CO.NZ\SHARE\CLIENTS\MAVEN HAMILTON\6 PROJECTS\298001 - SOUTHERN LINKS 1\STD R1\DWG\298001-R1-C440 SW WETLAND.DWG



RESOURCE CONSENT

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
2. CO-ORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000. LEVELS IN TERMS OF THE NEW ZEALAND VERTICAL DATUM 2016. CONVERSION TO MOTURIKI 1953 CAN BE ACHIEVED BY ADDING ???m.
3. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE ALL SERVICES THAT MAY BE AFFECTED BY HIS OPERATIONS.
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5. APPROVED HARDFILL IS TO BE USED IN BACKFILLING OF ALL STORMWATER LINES WITHIN THE ROAD RESERVE.
6. HEAVY DUTY MANHOLE LIDS AND FRAMES TO BE USED IN TRAFFICKED AREAS.
7. ALL CESSPIT LEADS SHALL HAVE MIN COVER 0.9m.
8. ALL LINES ARE TO BE CLASS4 RCRRJ UNLESS SHOWN OTHERWISE.
9. ALL LINES TO BE ABANDONED SHALL BE SEALED AT EACH END. TIMING OF ALL SEALING TO BE COORDINATED WITH COUNCIL STAFF.

LEGEND

- EX BOUNDARY
- PROP BOUNDARY
- PROP CATCHMENT
- PROP SW NETWORK
- PROP SW SCRUFFY
- PROP SW OUTLET
- PROP SW FOREBAY
- PROP SW WETLAND
- PROP HIGH FLOW BYPASS
- PROP SHARED PATH / MAINTENANCE TRACK
- ROCK RIP RAP
- GABBION BLOCK WALL

Rev	Description	By	Date
A	FAST TRACK APP	MJRA	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

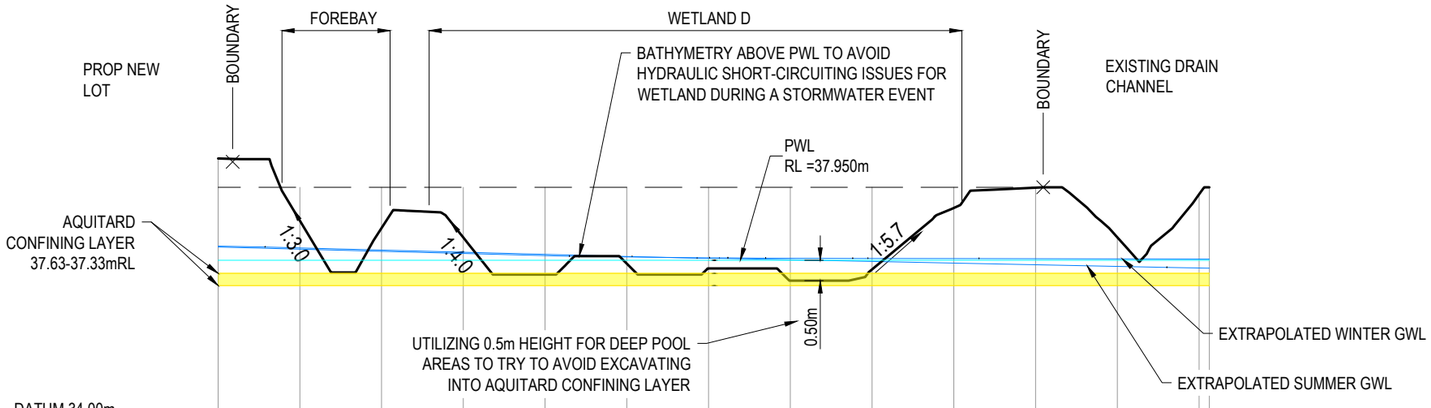
Project

SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title

PROPOSED STORMWATER WETLAND D PLAN

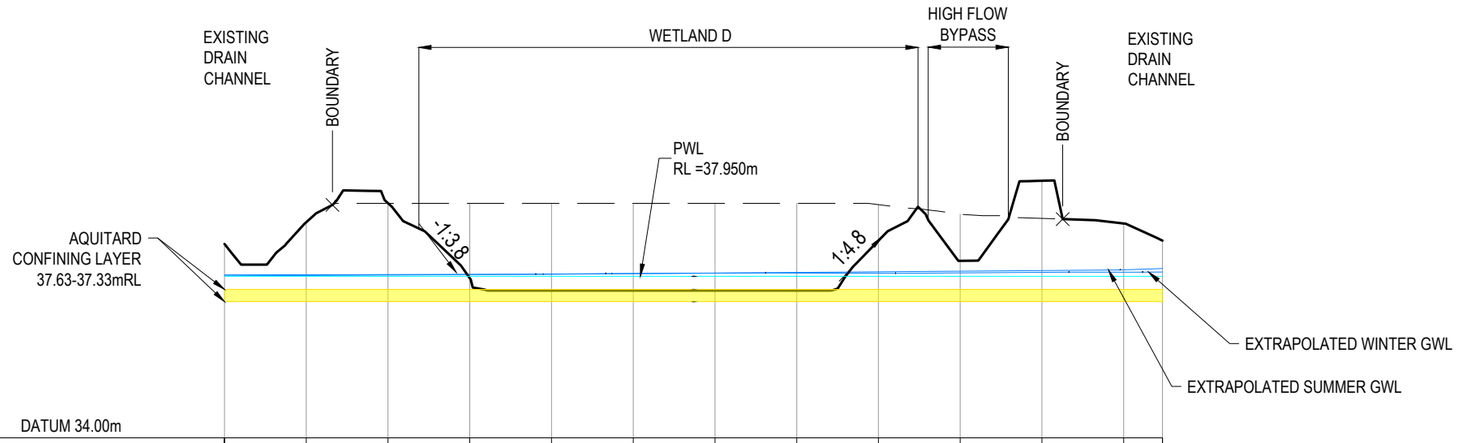
Project no.	298001-R1 SL1		
Scale	1:750 @ A3		
Cad file	298001-R1-C440 SW WETLAND.DWG		
Drawing no.	R1-C440-7	Rev	A



DATUM 34.00m

EXISTING LEVELS	39.74	39.74	39.74	39.74	39.74	39.74	39.74	39.74	39.74	39.74	39.74	38.51	39.56 39.74
DESIGN LEVELS	40.44	38.92	38.74	38.50	37.60	37.87	37.75	37.45	37.73	39.23	39.73	38.51	39.56 39.74
CUT/FILL	0.70	-0.82	-1.00	-1.23	-2.14	-1.87	-1.99	-2.29	-2.01	-0.51	-0.01	0.00	0.00 0.00
CHAINAGE	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00	110.00	120.00 121.26

PROPOSED - Section - D1 CH 0+00.00 TO CH 1+21.26
SCALE: 1:750 H / 1:150 V



DATUM 34.00m

EXISTING LEVELS	38.74	39.27	39.74	39.74	39.74	39.74	39.74	39.74	39.70	39.47	39.36	39.24	38.82
DESIGN LEVELS	38.74	39.27	39.74	37.90	37.60	37.60	37.60	37.60	38.82	38.33	40.29	39.24	38.82
CUT/FILL	0.00	0.00	0.00	-1.83	-2.14	-2.14	-2.14	-2.14	-0.88	-1.14	0.92	0.00	0.00
CHAINAGE	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00	110.00	114.74

PROPOSED - Section - D2 CH 0+00.00 TO CH 1+14.74
SCALE: 1:750 H / 1:150 V

RESOURCE CONSENT

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
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Legend

- EX GROUND LEVEL
- PROP GROUND LEVEL
- SUMMER/WINTER GWL
- PWL

Rev	Description	By	Date
A	FAST TRACK APP	MJRA	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

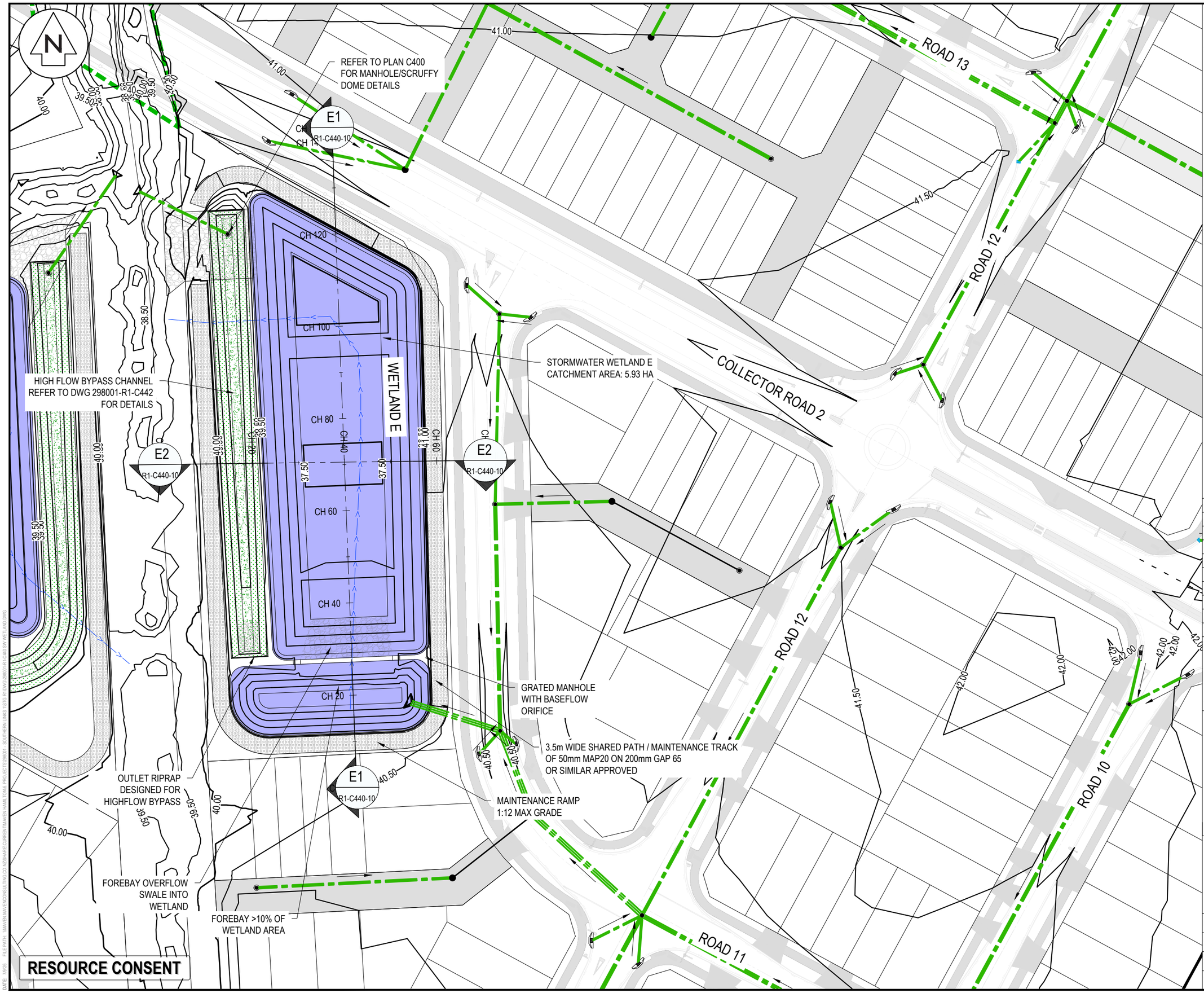
Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER WETLAND D SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C440 SW WETLAND.DWG		
Drawing no.	R1-C440-8	Rev	A

DATE 7/6/26 FILE PATH \\MAVEN.MAVENCONSULTING.CO.NZ\SHARE\CLIENTS\MAVEN HAMILTON\6 PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C440 SW WETLAND.DWG



NOTES

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LEGEND

- EX BOUNDARY
- PROP BOUNDARY
- PROP CATCHMENT
- PROP SW NETWORK
- PROP SW SCRUFFY
- PROP SW OUTLET
- PROP SW FOREBAY
- PROP SW WETLAND
- PROP HIGH FLOW BYPASS
- PROP SHARED PATH / MAINTENANCE TRACK
- ROCK RIP RAP
- GABBION BLOCK WALL

Rev	Description	By	Date
A	FAST TRACK APP	MJRA	06/2026

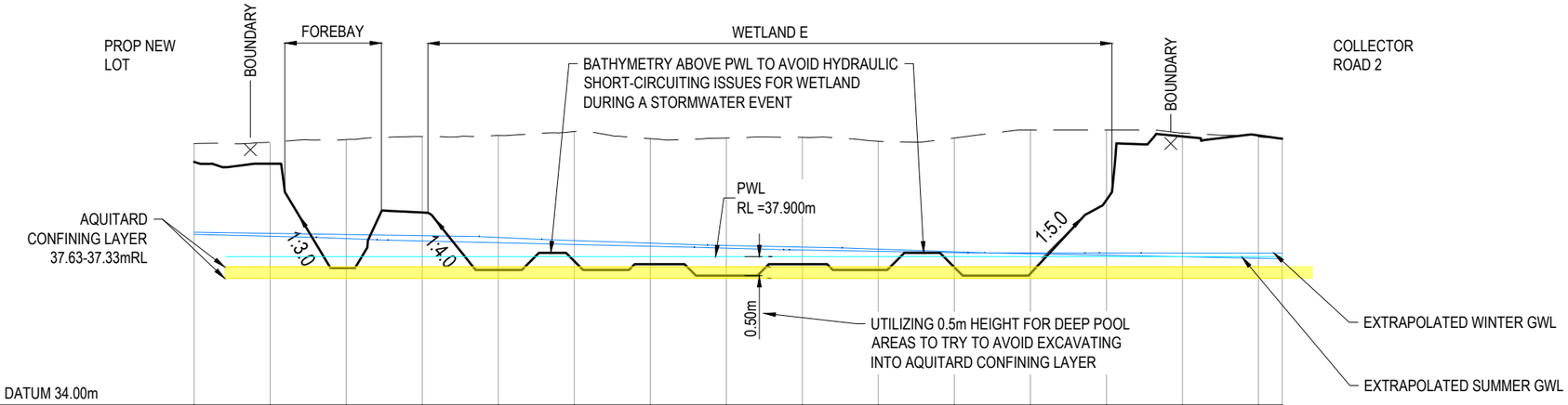
	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER WETLAND E PLAN

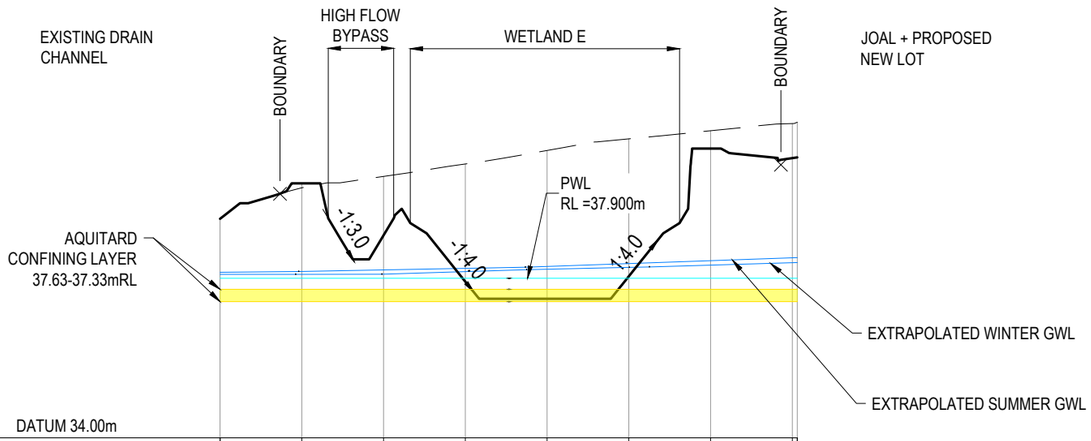
Project no.	298001-R1 SL1		
Scale	1:750 @ A3		
Cad file	298001-R1-C440 SW WETLAND.DWG		
Drawing no.	R1-C440-9	Rev	A



DATUM 34.00m

EXISTING LEVELS	40.88	40.91	40.98	41.06	41.09	41.19	41.01	41.02	41.04	40.94	41.02	41.24	41.24	41.15	41.05	41.02
DESIGN LEVELS	40.39	40.35	37.60	39.06	37.55	37.78	37.70	37.40	37.70	37.55	37.62	37.45	39.39	41.06	41.09	41.00
CUT/FILL	-0.48	-0.56	-3.38	-2.00	-3.54	-3.41	-3.31	-3.62	-3.34	-3.39	-3.40	-3.78	-1.85	-0.09	0.04	-0.02
CHAINAGE	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00	110.00	120.00	130.00	140.00	143.11

PROPOSED - Section - E1 CH 0+00.00 TO CH 1+43.11
SCALE: 1:750 H / 1:150 V



DATUM 34.00m

EXISTING LEVELS	39.35	40.11	40.39	40.69	41.03	41.31	41.51	41.68
DESIGN LEVELS	39.35	40.22	38.95	37.82	37.40	37.95	41.07	40.84
CUT/FILL	0.00	0.11	-1.44	-2.87	-3.63	-3.36	-0.43	-0.84
CHAINAGE	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.61

PROPOSED - Section - E2 CH 0+00.00 TO CH 0+70.61
SCALE: 1:750 H / 1:150 V

RESOURCE CONSENT

NOTES

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Legend

- EX GROUND LEVEL
- PROP GROUND LEVEL
- SUMMER/WINTER GWL
- PWL

Rev	Description	By	Date
A	FAST TRACK APP	MJRA	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

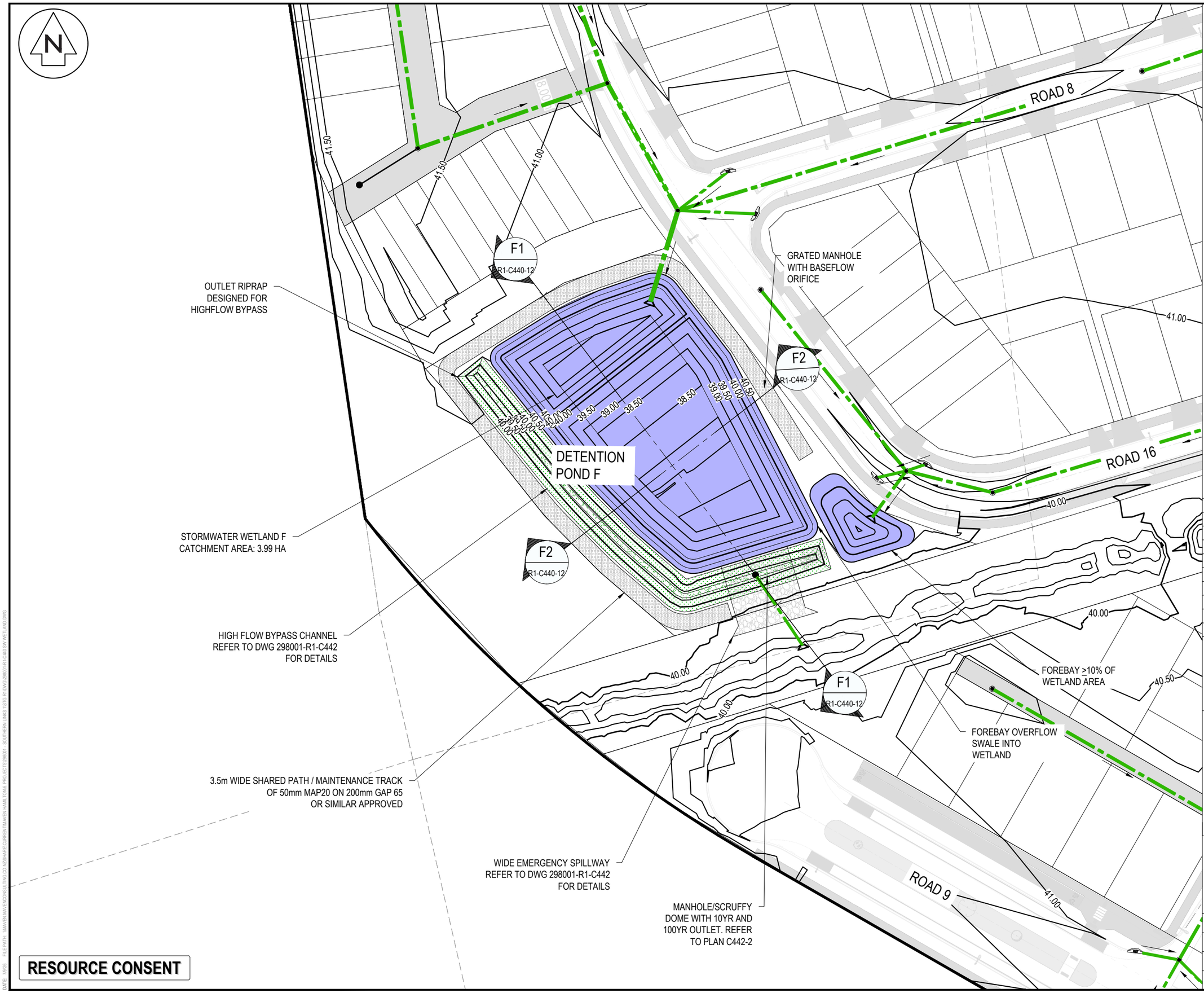
Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER WETLAND E SECTIONS

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C440 SW WETLAND.DWG		
Drawing no.	R1-C440-10	Rev	A

DATE 7/6/26 FILE PATH \\MAVEN.MAVENCONSULTING.CO.NZ\SHARE\CLIENTS\MAVEN HAMILTON\6 PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C440 SW WETLAND.DWG



NOTES

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LEGEND

- EX BOUNDARY
- PROP BOUNDARY
- PROP CATCHMENT
- PROP SW NETWORK
- PROP SW SCRUFFY
- PROP SW OUTLET
- PROP SW FOREBAY
- PROP SW WETLAND
- PROP HIGH FLOW BYPASS
- PROP SHARED PATH / MAINTENANCE TRACK
- ROCK RIP RAP
- GABBION BLOCK WALL

Rev	Description	By	Date
A	FAST TRACK APP	MJRA	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton New Zealand

Project

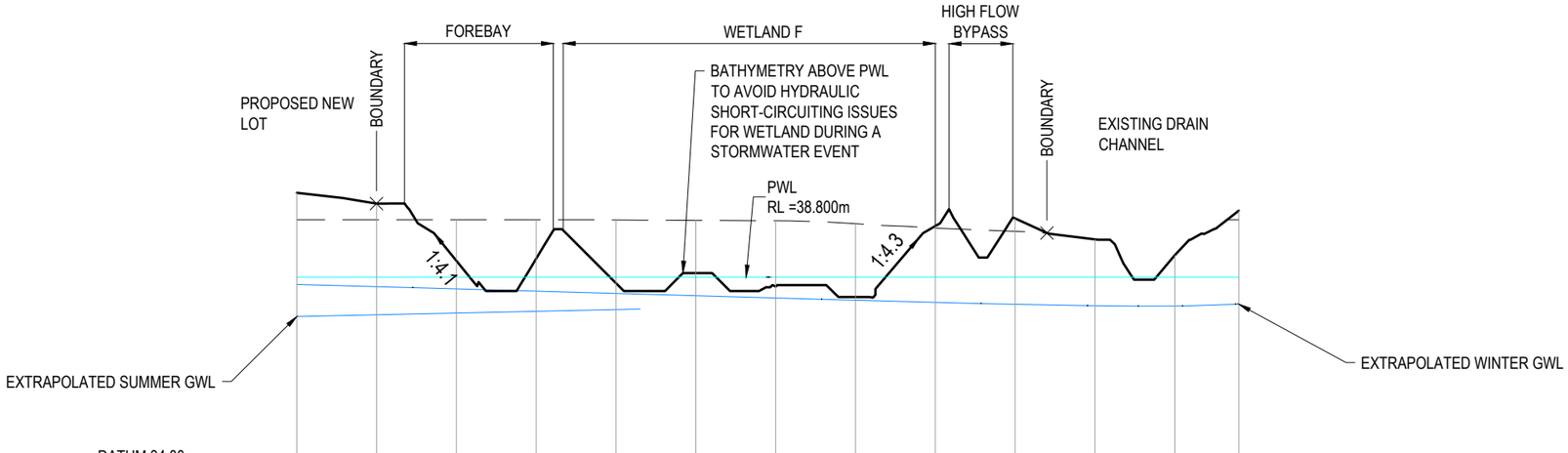
SOUTHERN LINKS 1 RESIDENTIAL STAGE 1 HAMILTON, WAIKATO FOR SAXBY RD JV LIMITED

Title

PROPOSED STORMWATER DETENTION POND F PLAN

Project no.	298001-R1 SL1		
Scale	1:750 @ A3		
Cad file	298001-R1-C440 SW WETLAND.DWG		
Drawing no.	R1-C440-11	Rev	A

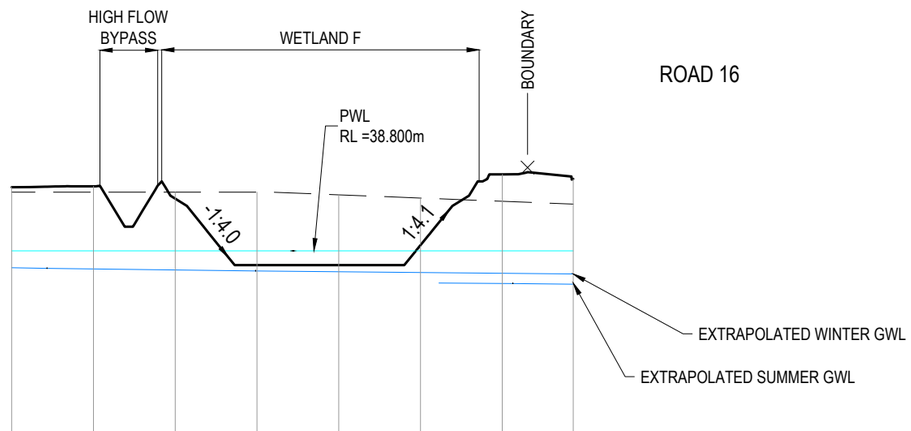
RESOURCE CONSENT



DATUM 34.00m

EXISTING LEVELS	40.24	40.24	40.24	40.24	40.23	40.22	40.21	40.14	40.02	39.95	39.74	39.35	40.24
DESIGN LEVELS	40.91	40.64	39.21	39.26	38.65	38.90	38.56	38.30	40.08	40.27	39.74	39.35	40.46
CUT/FILL	0.68	0.41	-1.03	-0.97	-1.58	-1.32	-1.65	-1.84	0.06	0.32	0.00	0.00	0.23
CHAINAGE	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00	110.00	118.03

PROPOSED - Section - F1 CH 0+00.00 TO CH 1+18.03
SCALE: 1:750 H / 1:150 V



DATUM 34.00m

EXISTING LEVELS	40.24	40.24	40.24	40.24	40.17	40.09	40.01	39.94
DESIGN LEVELS	40.36	40.38	40.08	38.45	38.45	38.94	40.67	40.56
CUT/FILL	0.12	0.14	-0.16	-1.79	-1.72	-1.15	0.66	0.62
CHAINAGE	0.00	10.00	20.00	30.00	40.00	50.00	60.00	68.69

PROPOSED - Section - F2 CH 0+00.00 TO CH 0+68.69
SCALE: 1:750 H / 1:150 V

RESOURCE CONSENT

NOTES

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Legend

- EX GROUND LEVEL
- PROP GROUND LEVEL
- SUMMER/WINTER GWL
- PWL

Rev	Description	By	Date
A	FAST TRACK APP	MJRA	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	07/2025
Drawn	MJRA	11/2025
Checked	DJM	11/2025

Maven Waikato
07 242 0601
info@maven.co.nz
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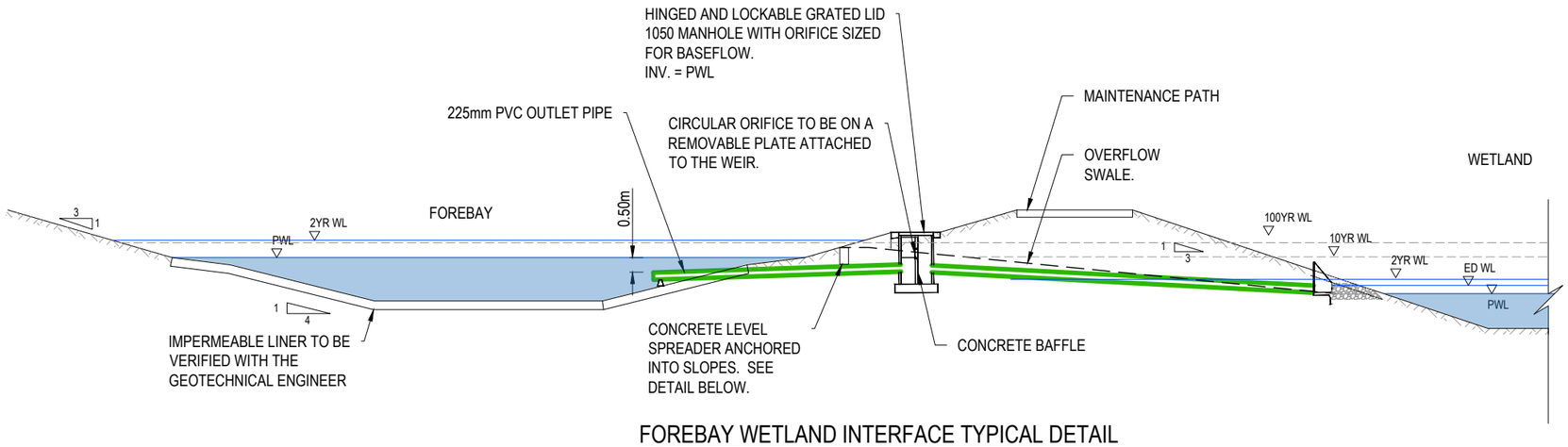
Project
SOUTHERN LINKS 1 RESIDENTIAL STAGE 1 HAMILTON, WAIKATO FOR SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER DETENTION POND F SECTIONS

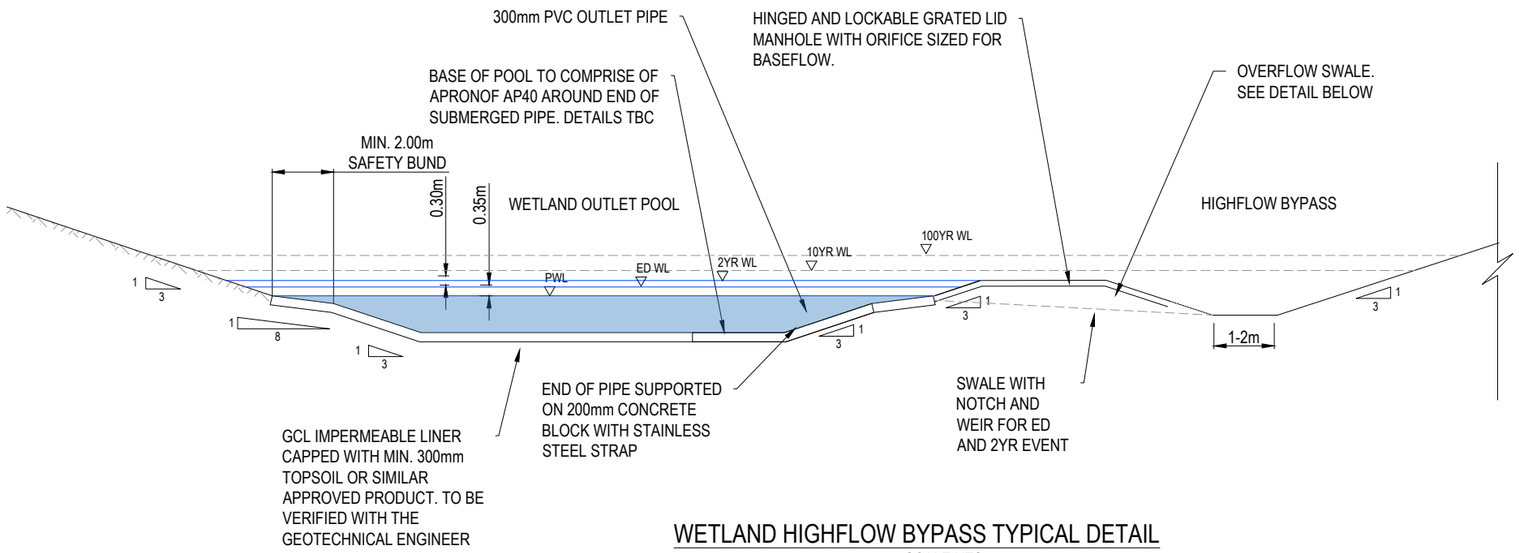
Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C440 SW WETLAND.DWG		
Drawing no.	R1-C440-12	Rev	A

DATE 7/5/26 FILE PATH \\MAVEN.MAVENCONSULTING.CO.NZ\SHARE\CORRIGN\MAVEN HAMILTON\6. PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C440 SW WETLAND.DWG



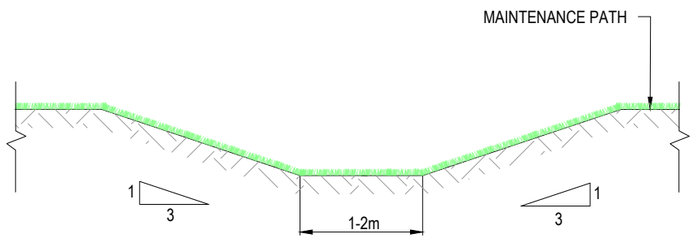
FOREBAY WETLAND INTERFACE TYPICAL DETAIL

SCALE NTS



WETLAND HIGHFLOW BYPASS TYPICAL DETAIL

SCALE NTS



HIGH FLOW BYPASS TYPICAL DETAIL

SCALE NTS

RESOURCE CONSENT

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8. ALL LINES ARE TO BE CLASS4 RCRRJ UNLESS SHOWN OTHERWISE.
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Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	10/2025
Design	NK	10/2025
Drawn	NK	10/2025
Checked	DJM	11/2025

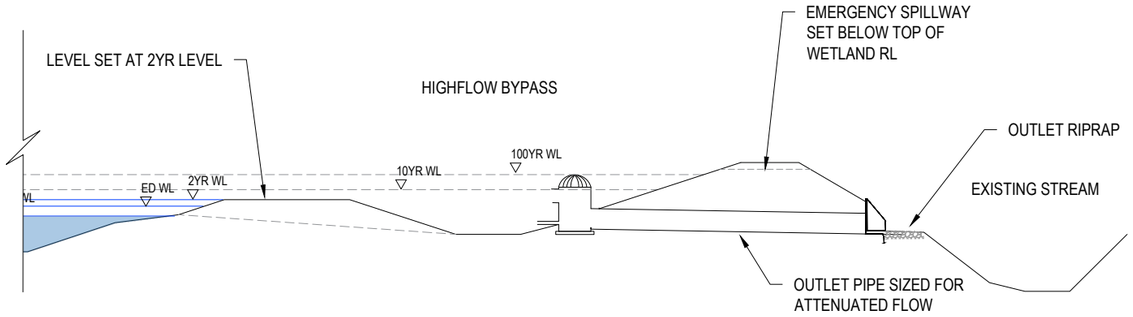
Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED WETLAND DETAILS

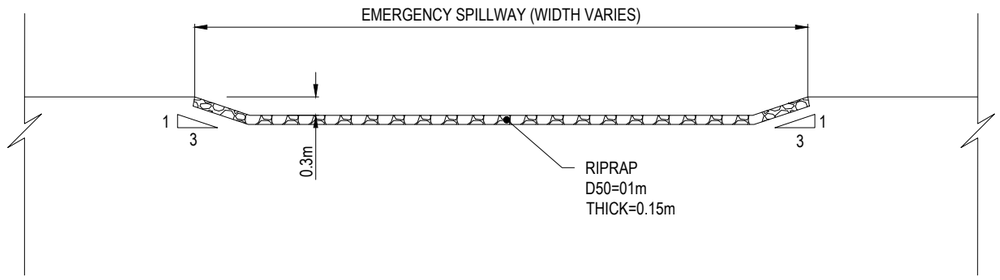
Project no.	298001-R1 SL1
Scale	AS SHOWN @ A3
Cad file	298001-R1-C442 SW WETLAND DETAILS.DWG
Drawing no.	C442-1 Rev A

DATE: 9/9/25 FILE PATH: F:\MAVEN HAMILTON\6. PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C442 SW WETLAND DETAILS.DWG



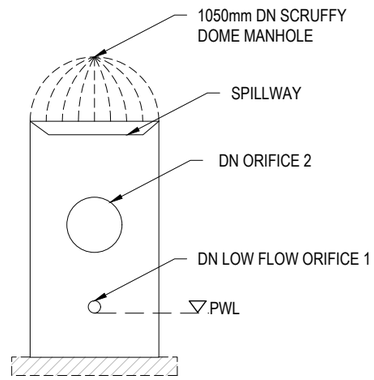
WETLAND OUTLET SECTION DETAILS

SCALE NTS



MERGENCY SPILLWAY SECTION DETAILS

SCALE 1:100



OUTLET MANHOLE TYPICAL DETAIL

SCALE 1:100

RESOURCE CONSENT

NOTES

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07 242 0601
info@maven.co.nz
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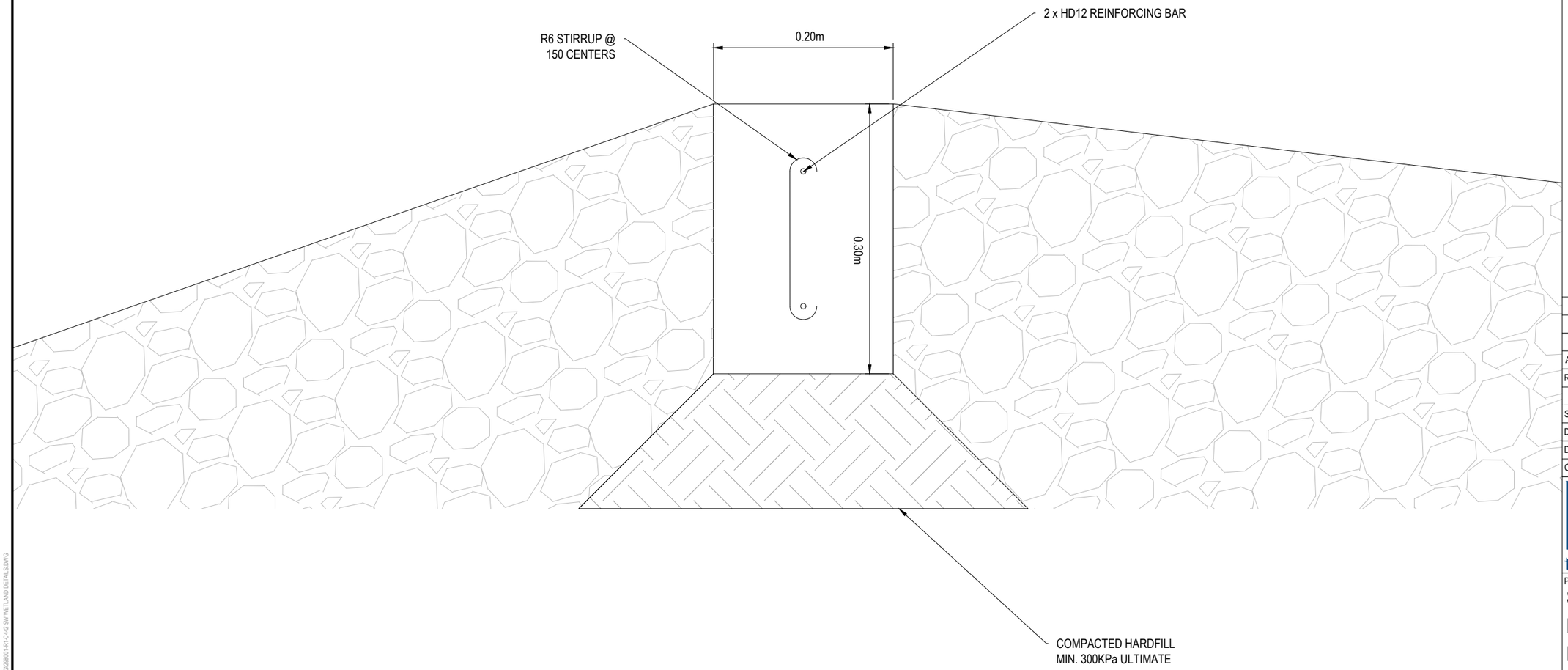
Title
PROPOSED WETLAND DETAILS

Project no.	298001-R1 SL1		
Scale	AS SHOWN @ A3		
Cad file	298001-R1-C442 SW WETLAND DETAILS.DWG		
Drawing no.	C442-2	Rev	A

DATE: 6/9/26 FILE PATH: F:\MAVEN HAMILTON\6. PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C442 SW WETLAND DETAILS.DWG



TYPICAL DETAIL _CONCRETE BEAM LEVEL SPREADER

SCALE 1:5

RESOURCE CONSENT

NOTES

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Cad file	298001-R1-C442 SW WETLAND DETAILS.DWG		
Drawing no.	C442-3	Rev	A

DATE 9/9/26 FILE PATH F:\MAVEN HAMILTON\6_PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C442 SW WETLAND DETAILS.DWG

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LEGEND

- EX BDY
- PROP BDY
- STAGE BOUNDARY
- EXISTING STREAM FLOW
- PR RIPRAP
- PR CULVERT

Rev	Description	By	Date
A	FAST TRACK APP	MKS	08/2026

	By	Date
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Drawn	MKS	08/2026
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Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
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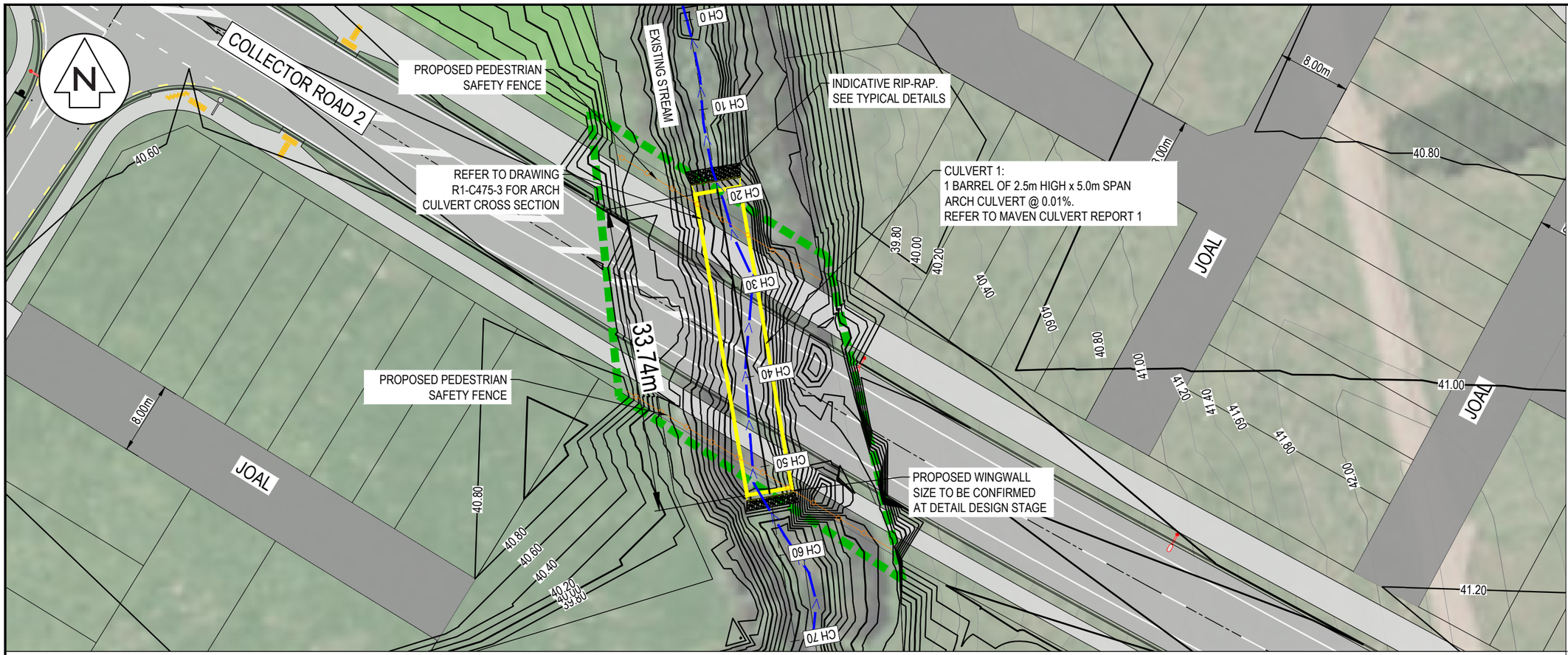
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title

PROPOSED CULVERT OVERVIEW PLAN

Project no.	298001-R1 SL1		
Scale	1:4000 @ A3		
Cad file	298001-R1-C475-SW CULVERTS.DWG		
Drawing no.	R1-C475	Rev	A

RESOURCE CONSENT



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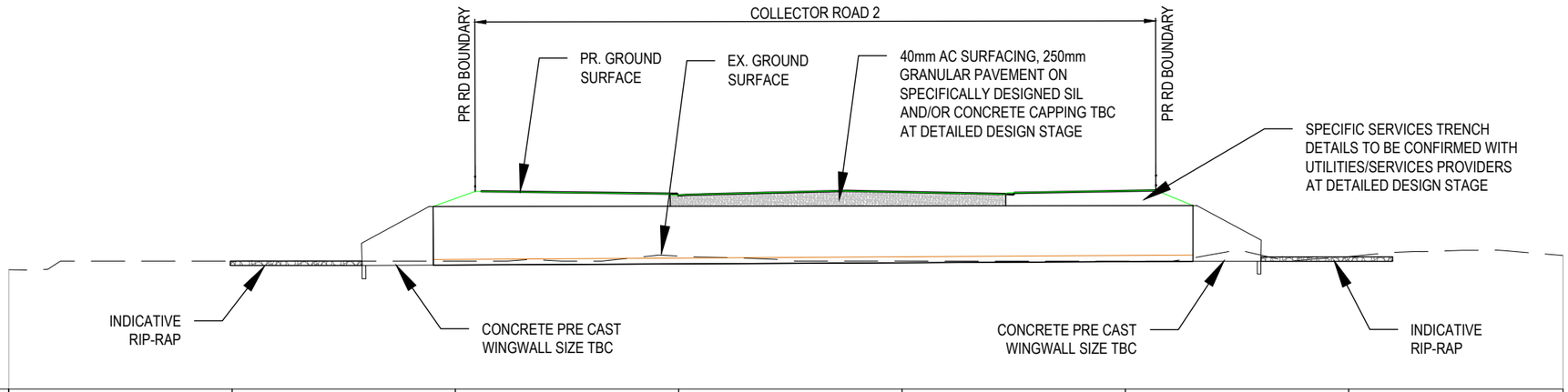
- STAGE BOUNDARY
- EXISTING STREAM FLOW
- PR RIPRAP
- PR CULVERT



DATUM 32.00m

EXISTING LEVELS	37.35	37.74	37.74	37.74	37.96	37.74	37.74	37.93	37.98
DESIGN LEVELS			40.54	40.70	40.82	40.88			
PIPE INVERT			37.73				37.74		
PIPE / GRADE			2,500 x 5,000 mm Conc Arch Culvert 33.74m @ 0.01%						
CHAINAGE	0.00	10.00	20.00	30.00	40.00	50.00	60.00	69.60	

CULVERT 1
SCALE: HORI 1:250 VERT 1:250

RESOURCE CONSENT

Rev	Description	By	Date
A	FAST TRACK APP	MJRA	08/2026

	By	Date
Survey	MAVEN	06/2025
Design	MJRA	08/2026
Drawn	MJRA	08/2026
Checked	DJM	08/2026

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
19 Kaimiro Street, Pukete
Hamilton 3200
New Zealand

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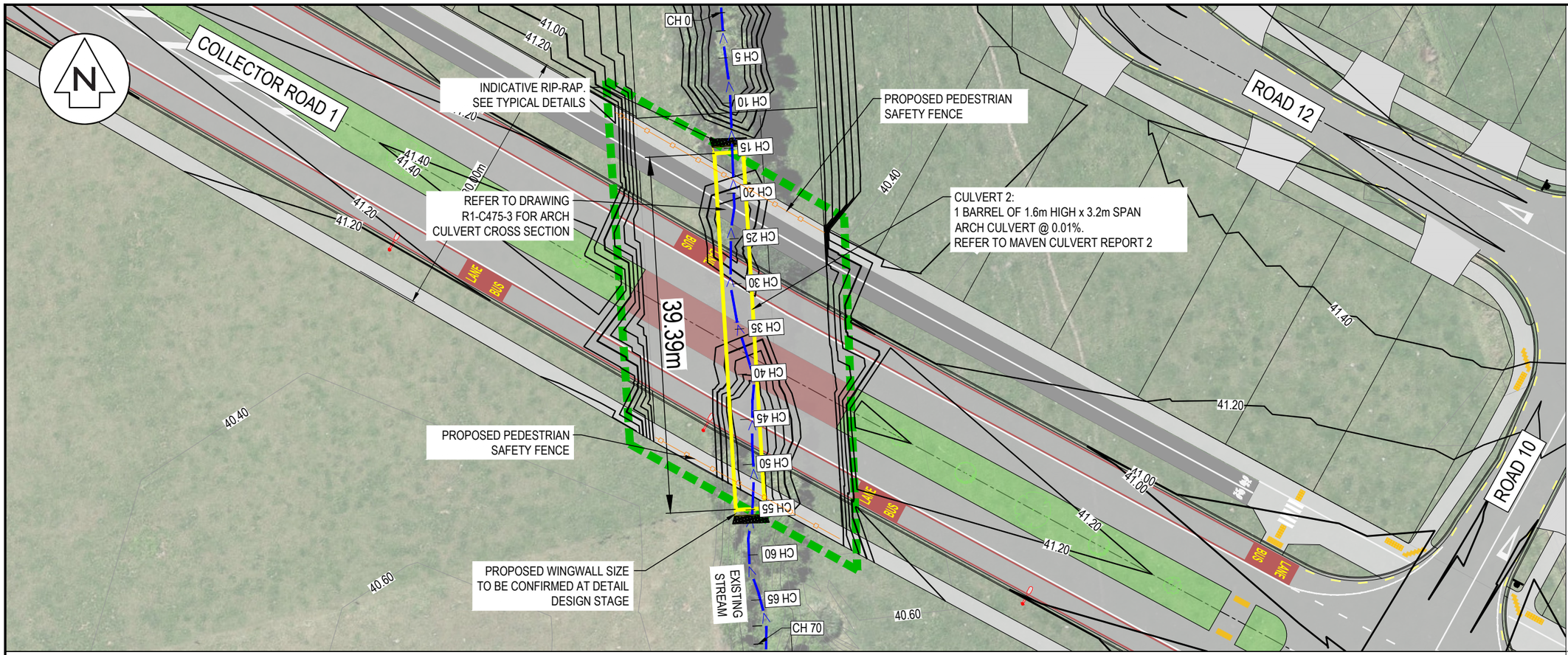
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED CULVERT 1 LONGSECTION

Project no.	298001-R1 SL1		
Scale	1:500 @ A3		
Cad file	298001-R1-C475-SW CULVERTS.DWG		
Drawing no.	R1-C475-1	Rev	A

DATE: 8/26 FILE PATH: F:\MAVEN HAMILTON\ PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C475-SW CULVERTS.DWG



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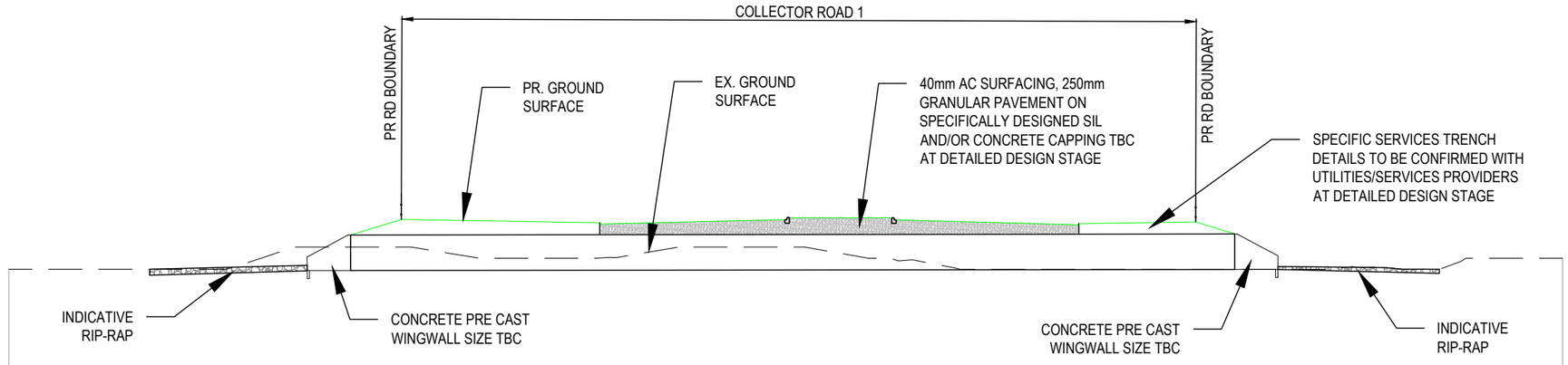
LEGEND

- EX BDY
- PROP BDY
- STAGE BOUNDARY
- EXISTING STREAM FLOW
- PR RIPRAP
- PR CULVERT



DATUM 34.00m

EXISTING LEVELS	39.24	39.30	39.92	40.21	39.61	39.24	39.31	39.74
DESIGN LEVELS			41.44	41.35	41.45	41.32		
PIPE INVERT		39.20				39.20		
PIPE / GRADE		1,600 x 3,200 mm Conc Arch Culvert 39.39m @ 0.01%						
CHAINAGE	0.00	10.00	20.00	30.00	40.00	50.00	60.00	69.87

RESOURCE CONSENT

CULVERT 2
SCALE: HORI 1:250 VERT 1:250

Rev	Description	By	Date
A	FAST TRACK APP	MJRA	08/2026

	By	Date
Survey	MAVEN	06/2025
Design	MJRA	08/2026
Drawn	MJRA	08/2026
Checked	DJM	08/2026

Maven Waikato
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info@maven.co.nz
www.maven.co.nz
19 Kaimiro Street, Pukete
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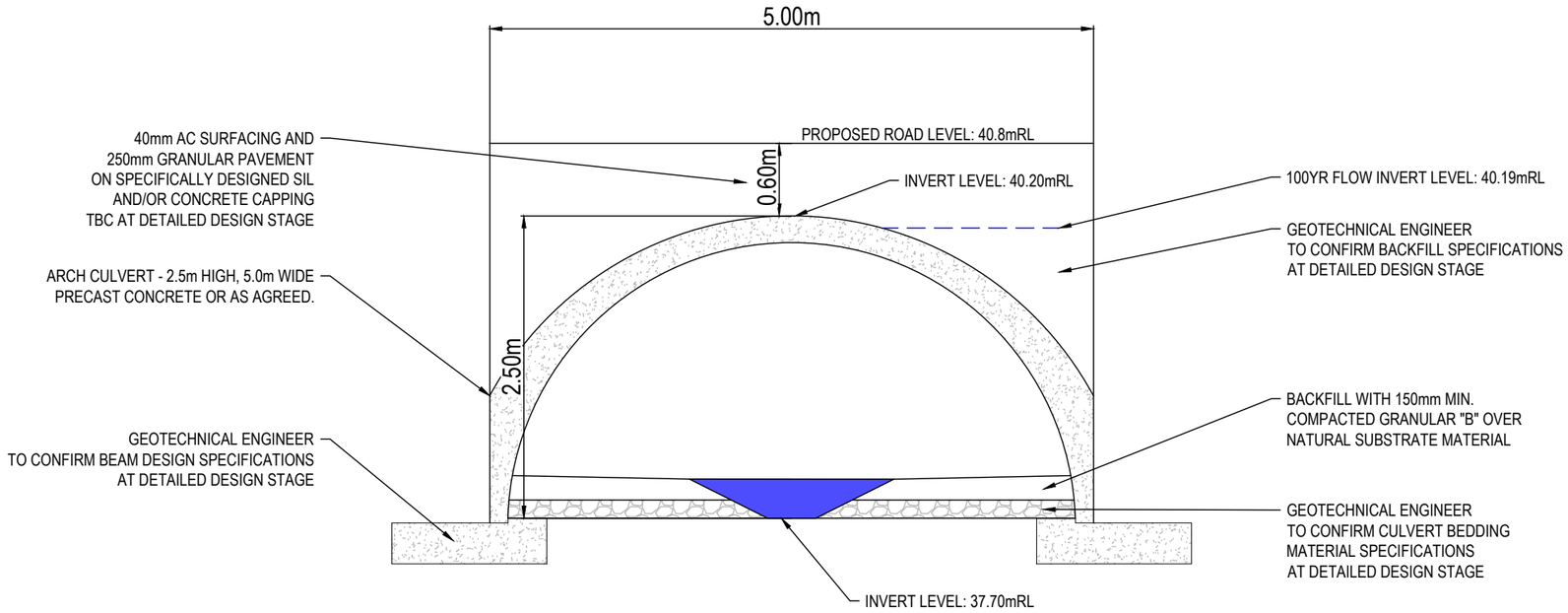
New Zealand

Project
SOUTHERN LINKS 1 RESIDENTIAL STAGE 1 HAMILTON, WAIKATO FOR SAXBY RD JV LIMITED

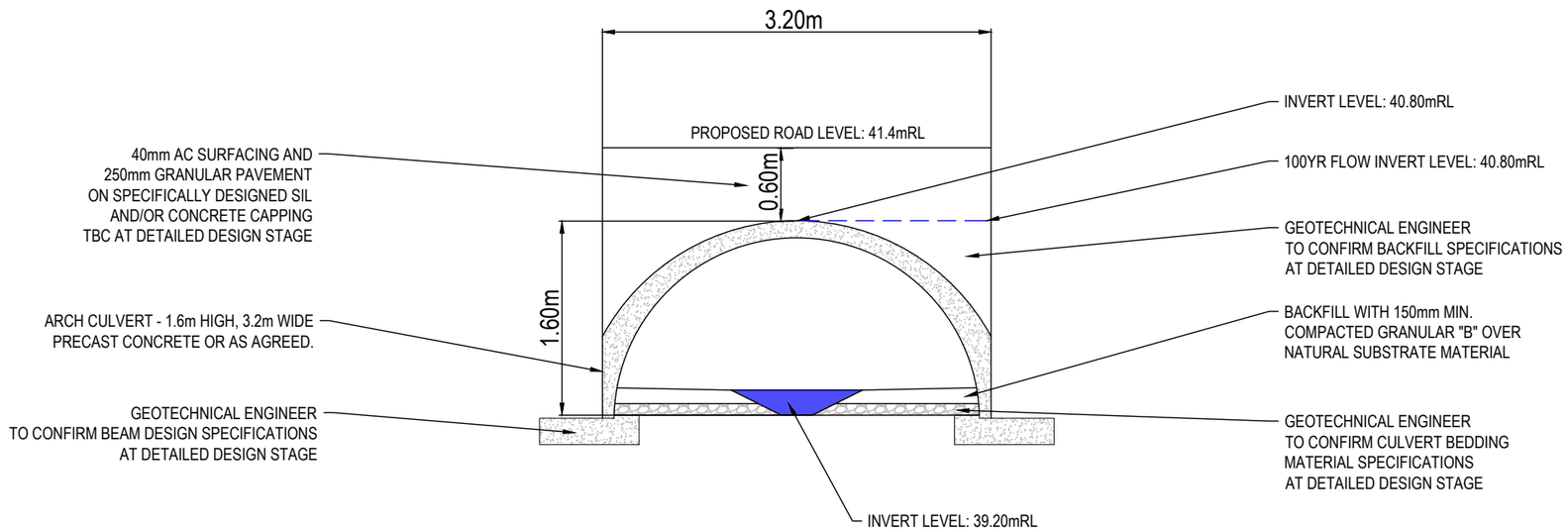
Title
PROPOSED CULVERT 2 LONGSECTION

Project no.	298001-R1 SL1		
Scale	1:500 @ A3		
Cad file	298001-R1-C475-SW CULVERTS.DWG		
Drawing no.	R1-C475-2	Rev	A

DATE: 8/26 FILE PATH: F:\MAVEN HAMILTON\ PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C475-SW CULVERTS.DWG



ARCH CULVERT 1 CROSS SECTION
SCALE 1:50 HORI & 1:10 VERTICAL @ A3



ARCH CULVERT 2 CROSS SECTION
SCALE 1:50 HORI & 1:10 VERTICAL @ A3

RESOURCE CONSENT

Rev	Description	By	Date
A	FAST TRACK APP	MKS	08/2026

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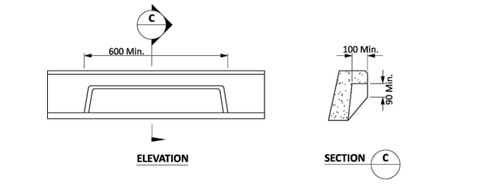
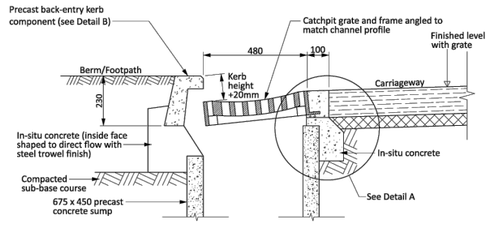
Title
PROPOSED
ARCH CULVERT
CROSS SECTION

Project no.	298001-R1 SL1		
Scale	AS SHOWN		
Cad file	298001-R1-C475-SW CULVERTS.DWG		
Drawing no.	R1-C475-3	Rev	A

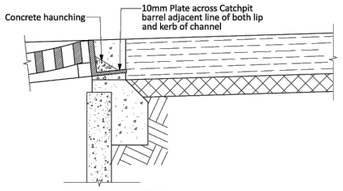
DATE: 9/26 FILE PATH: F:\MAVEN HAMILTON\6_PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001R1-C475-SW CULVERTS.DWG



DETAIL B - PRECAST KERB COMPONENT



BACK ENTRY CATCHPIT



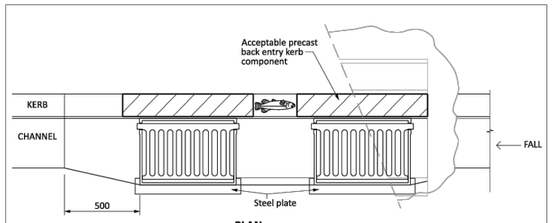
DETAIL A

COLAB BETTER TOGETHER

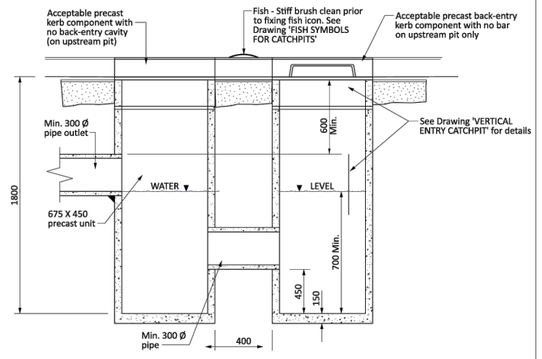
CATCHPIT BACK ENTRY DETAILS

REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATION

Version: April 2021



PLAN



SECTION

NOTES:

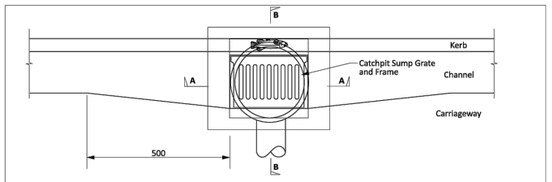
1. Epoxy product to be "ramset epcon C6" 2 pot epoxy or approved equivalent.
2. All in-situ concrete shall have a minimum 28 day strength of 20MPa

COLAB BETTER TOGETHER

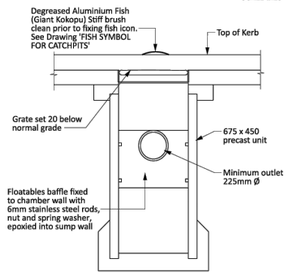
DOUBLE SUMP CATCHPIT DESIGN

REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATION

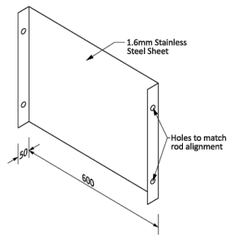
Version: April 2021



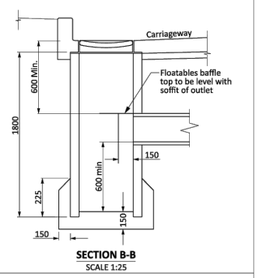
PLAN
SCALE 1:25



SECTION A-A
SCALE 1:25



FLOATABLES BAFFLE DETAIL
Not to Scale



SECTION B-B
SCALE 1:25

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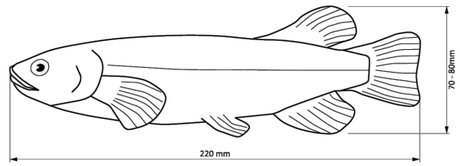
COLAB BETTER TOGETHER

VERTICAL ENTRY CATCHPIT

REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATION

Version: April 2021



GIANT KOKOPU

BLUE NZ NATIVE KOKOPU

NOTES:

1. Giant Kokopu Plate to be cast in aluminium - from catchpit suppliers.
2. Plastic Blue NZ Native Kokopu Plate from fishondrains.com for Waikato District Council.
3. Plate selection to suit outfall conditions.
4. Plates to be orientated for reading from road side.
5. Plates to be fixed to kerbstone using 4 № 6mm dia. 30mm long Ramset Shuredrive anchor bolts.

COLAB BETTER TOGETHER

FISH SYMBOLS FOR CATCHPITS

REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATION

Version: April 2021

NOTES

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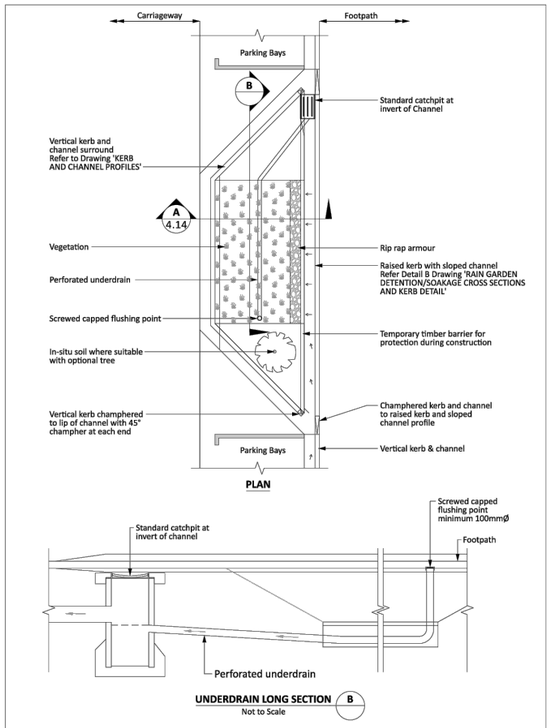
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

Title
PROPOSED STORMWATER STANDARD DETAILS

Project no.	298001-R1 SL1		
Scale	1:85 @ A3		
Cad file	298001-R1-C480 SW STANDARD DETAILS.DWG		
Drawing no.	R1-C480-1	Rev	A

RESOURCE CONSENT

DATE: 6/026 FILE PATH: F:\MAVEN HAMILTON\0_PROJECTS\298001 - SOUTHERN LINKS 1\STG R1\DWG\298001-R1-C480 SW STANDARD DETAILS.DWG

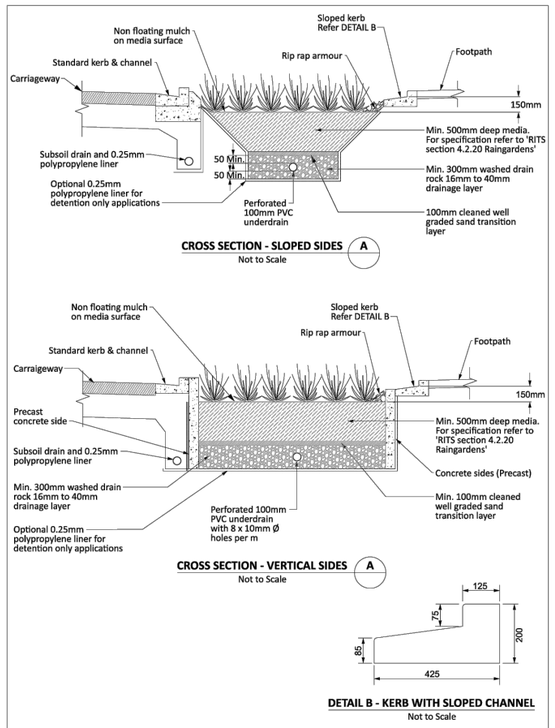


COLAB BETTER TOGETHER

RAIN GARDEN PLAN AND UNDERDRAIN LONG SECTION

REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATION

Version: April 2021



COLAB BETTER TOGETHER

RAIN GARDEN DETENTION/SOAKAGE CROSS SECTIONS AND KERB DETAIL

REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATION

Version: April 2021

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
2. CO-ORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000. LEVELS IN TERMS OF THE NEW ZEALAND VERTICAL DATUM 2016. CONVERSION TO MOTURIKI 1953 CAN BE ACHIEVED BY ADDING ???m.
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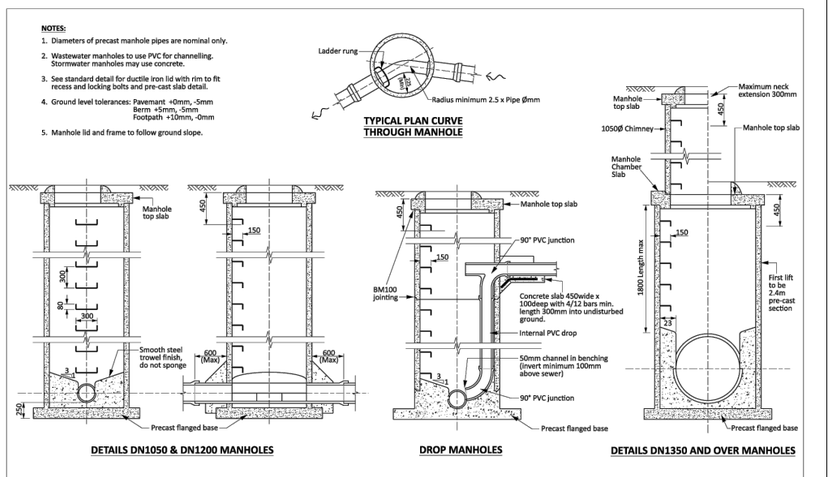
6. HEAVY DUTY MANHOLE LIDS AND FRAMES TO BE USED IN TRAFFICKED AREAS.
7. ALL CESSPIT LEADS SHALL HAVE MIN COVER 0.9m.
8. ALL LINES ARE TO BE CLASS4 RCRRJ UNLESS SHOWN OTHERWISE.
9. ALL LINES TO BE ABANDONED SHALL BE SEALED AT EACH END. TIMING OF ALL SEALING TO BE COORDINATED WITH COUNCIL STAFF.

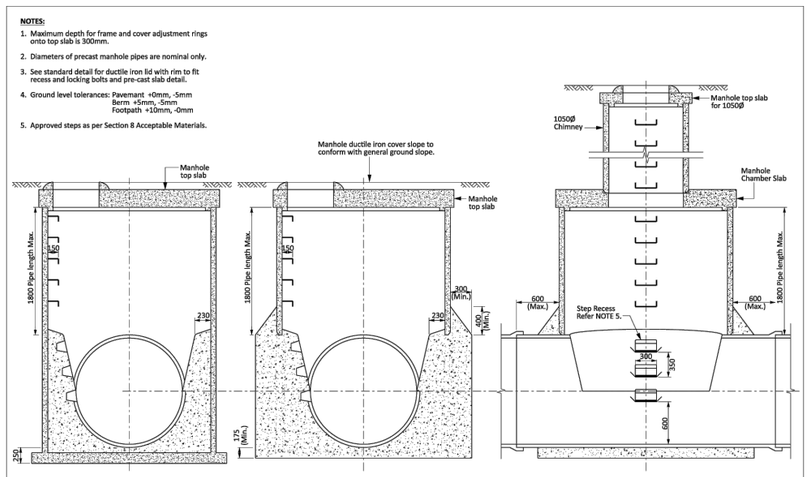


COLAB BETTER TOGETHER

DN1050 - DN1350 MANHOLES

REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATION

Version: April 2021



COLAB BETTER TOGETHER

TYPICAL DIMENSIONS FOR MANHOLES GREATER THAN DN1350

REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATION

Version: April 2021

RESOURCE CONSENT

Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	10/2025
Drawn	MKS	10/2025
Checked	DJM	10/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project

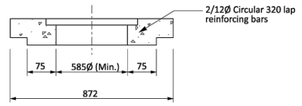
SOUTHERN LINKS 1 RESIDENTIAL STAGE 1 HAMILTON, WAIKATO FOR SAXBY RD JV LIMITED

Title

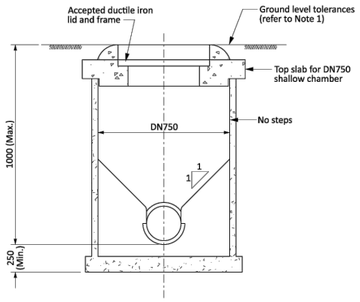
PROPOSED STORMWATER STANDARD DETAILS

Project no.	298001-R1 SL1		
Scale	1:85 @ A3		
Cad file	298001-R1-C480 SW STANDARD DETAILS.DWG		
Drawing no.	R1-C480-2	Rev	A

DATE: 6/9/26 FILE PATH: F:\MAVEN HAMILTON\6. PROJECTS\298001 - SOUTHERN LINKS 1\STD FILES\298001-R1-C480 SW STANDARD DETAILS.DWG



TOP SLAB FOR DN750 SHALLOW CHAMBER



DN750 INTERNAL SHALLOW CHAMBER

To be used only on pipes of DN100 to DN300 and where depth of invert is less than 1000mm

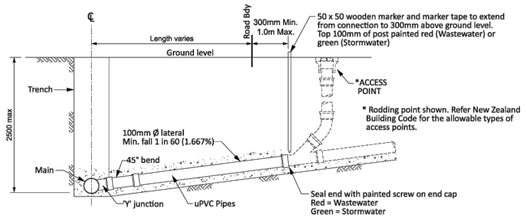
NOTES:

1. Ground level tolerances: Pavemant +0mm, -5mm
   Berm +5mm, -5mm
   Footpath +10mm, -0mm

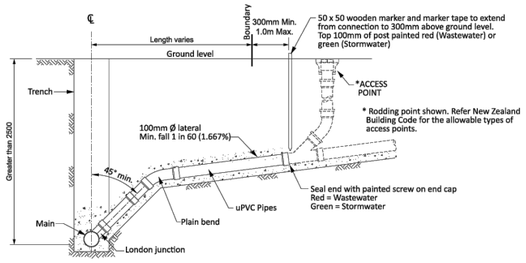
COLAB BETTER TOGETHER

SHALLOW MANHOLE/CHAMBER

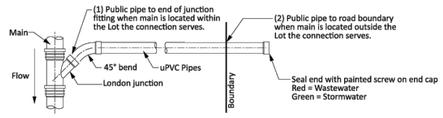
REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATION — Version: April 2021



STANDARD CONNECTION WITH A DEPTH TO INVERT LESS THAN 2500mm - SECTION



RAMP RISER CONNECTION WITH A DEPTH TO INVERT GREATER THAN 2500mm - SECTION

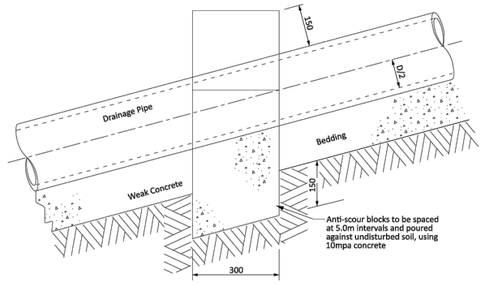


POINT OF DISCHARGE: PUBLIC AND PRIVATE INFRASTRUCTURE

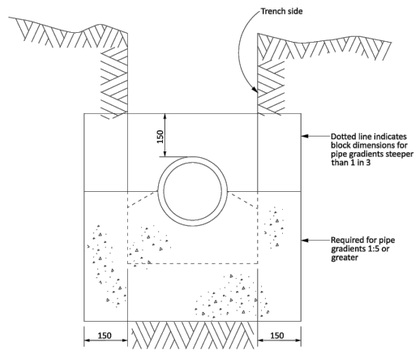
COLAB BETTER TOGETHER

LATERAL CONNECTION

REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATION — Version: April 2021



LONG SECTION

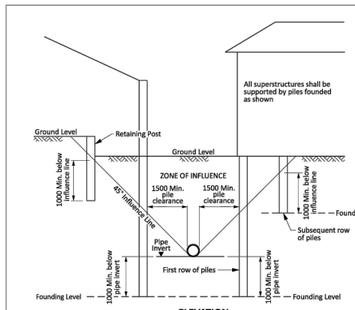


CROSS SECTION

COLAB BETTER TOGETHER

ANTI-SCOUR BLOCKS FOR STEEP DRAINAGE PIPES

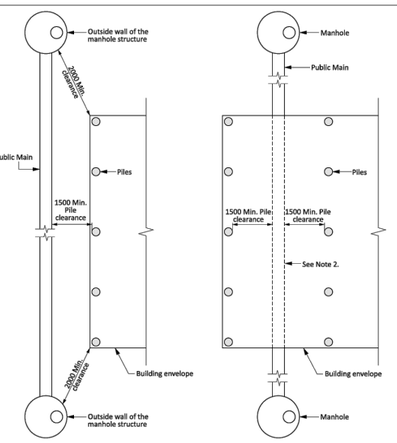
REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATION — Version: April 2021



ELEVATION

NOTES:

1. Building or other works over public sewer or stormwater pipelines is not a practice supported by Council so shall be avoided. Where this is not possible, the building and development shall be so designed that they act independently of the public sewer or stormwater network.
2. Where required by Council, the affected public pipelines or structures shall either be relocated or renewed in place with approved pipe materials at a cost to the development. See section ABC & XYZ for more information.
3. Building is not permitted over manholes or connections under any circumstances.
4. Closed Circuit Television (CCTV) inspections shall be required of Council's assets before and after as a result of any work close to or over Council's assets.
5. No structural loads shall be placed on, or be transferred to the public pipelines, or other public wastewater/stormwater assets. All structural loads shall be absorbed (by means of piles where appropriate) outside of the 45° influence envelope and below the invert level of the sewer pipe for the first row of piles.
6. All piles located within the 45° influence envelope shall be drilled.



PLAN: BUILDING ADJACENT TO A PUBLIC MAIN

PLAN: BUILDING OVER A PUBLIC MAIN
(Only permitted if an alternative alignment is not possible)

COLAB BETTER TOGETHER

BUILDING OVER AND ADJACENT TO PUBLIC WASTEWATER OR STORMWATER PIPELINES

REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATION — Version: April 2021

RESOURCE CONSENT

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Rev	Description	By	Date
A	FAST TRACK APP	MKS	06/2026

	By	Date
Survey	MAVEN	06/2025
Design	MKS	10/2025
Drawn	MKS	10/2025
Checked	DJM	10/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
SOUTHERN LINKS 1
RESIDENTIAL STAGE 1
HAMILTON, WAIKATO
FOR
SAXBY RD JV LIMITED

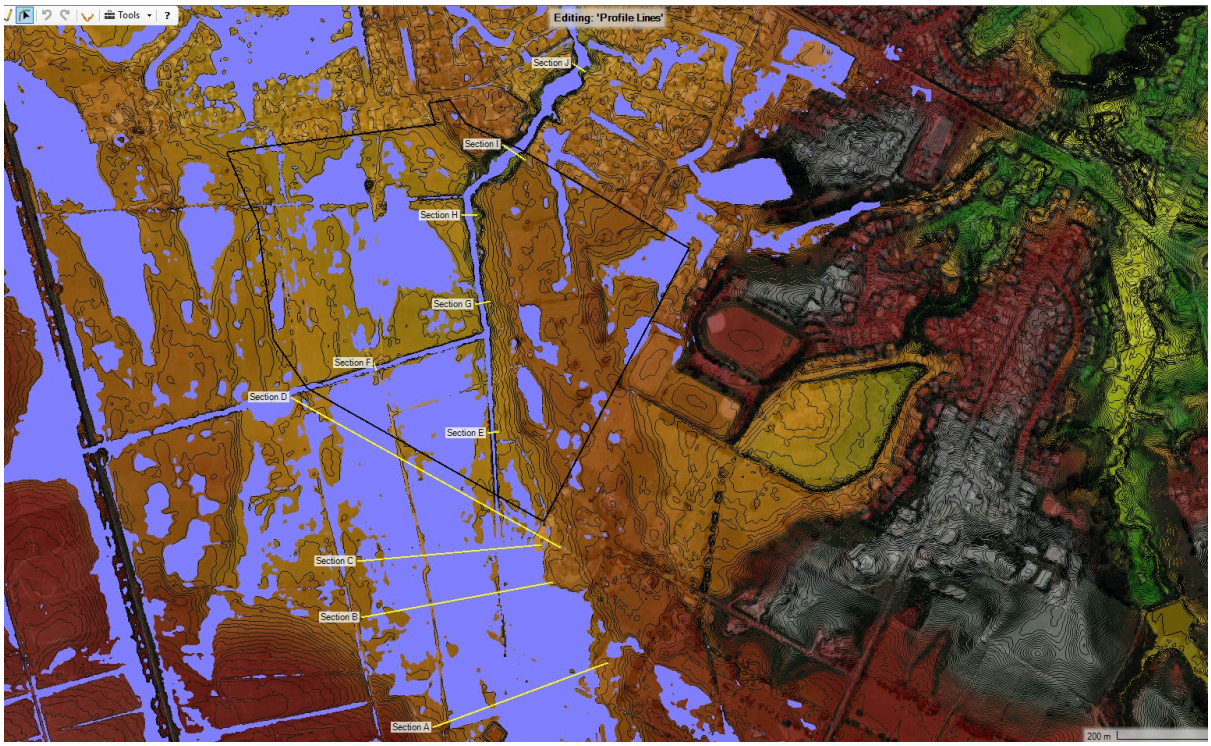
Title
PROPOSED STORMWATER STANDARD DETAILS

Project no.	298001-R1 SL1		
Scale	1:85 @ A3		
Cad file	298001-R1-C480 SW STANDARD DETAILS.DWG		
Drawing no.	R1-C480-3	Rev	A

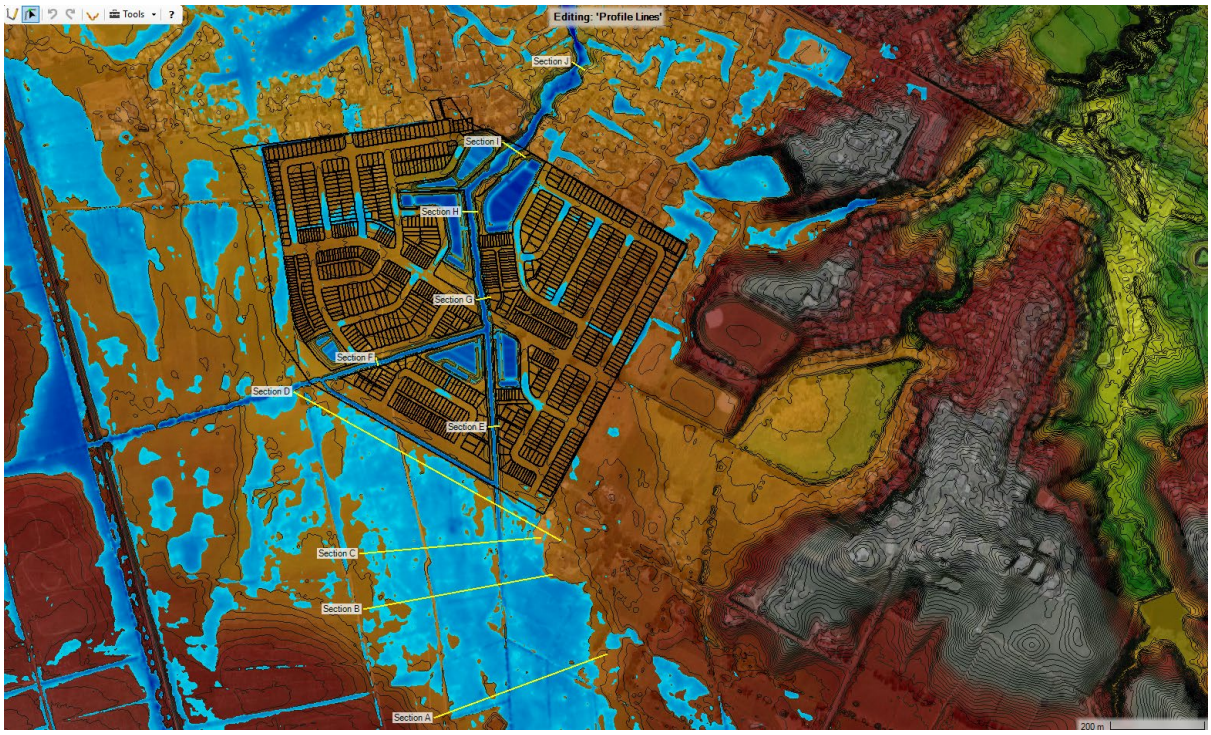
DATE: 6/9/26 FILE PATH: F:\MAVEN HAMILTON\0_PROJECTS\298001 - SOUTHERN LINKS 1\STD R1\DWG\298001-R1-C480 SW STANDARD DETAILS.DWG

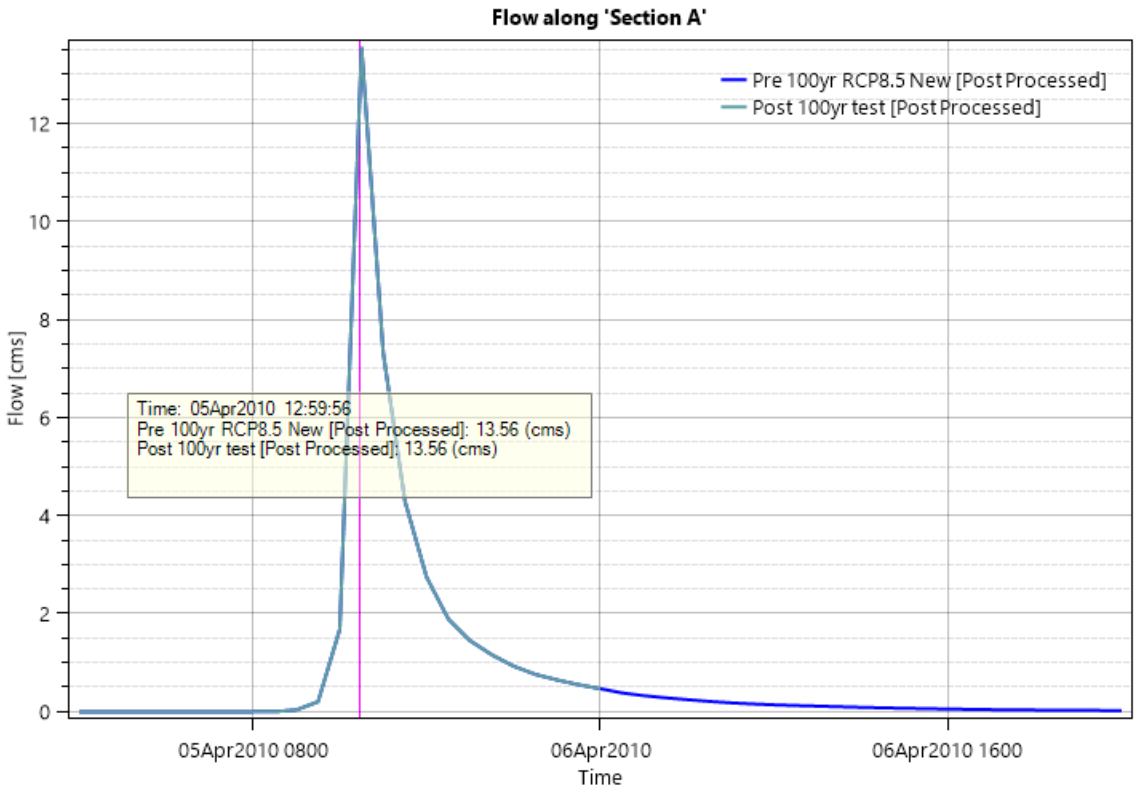
Appendix B – HEC-RAS Results (100year Assessment)

Pre Development Results Ex 100YR ARI RCP 8.5



Post Development Results Ex 100YR ARI RCP 8.5

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Pre 100yr RCP8.5 New [Post Processed]
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Pre 100yr RCP8.5 New [Post Processed]: 13.56 (cms)
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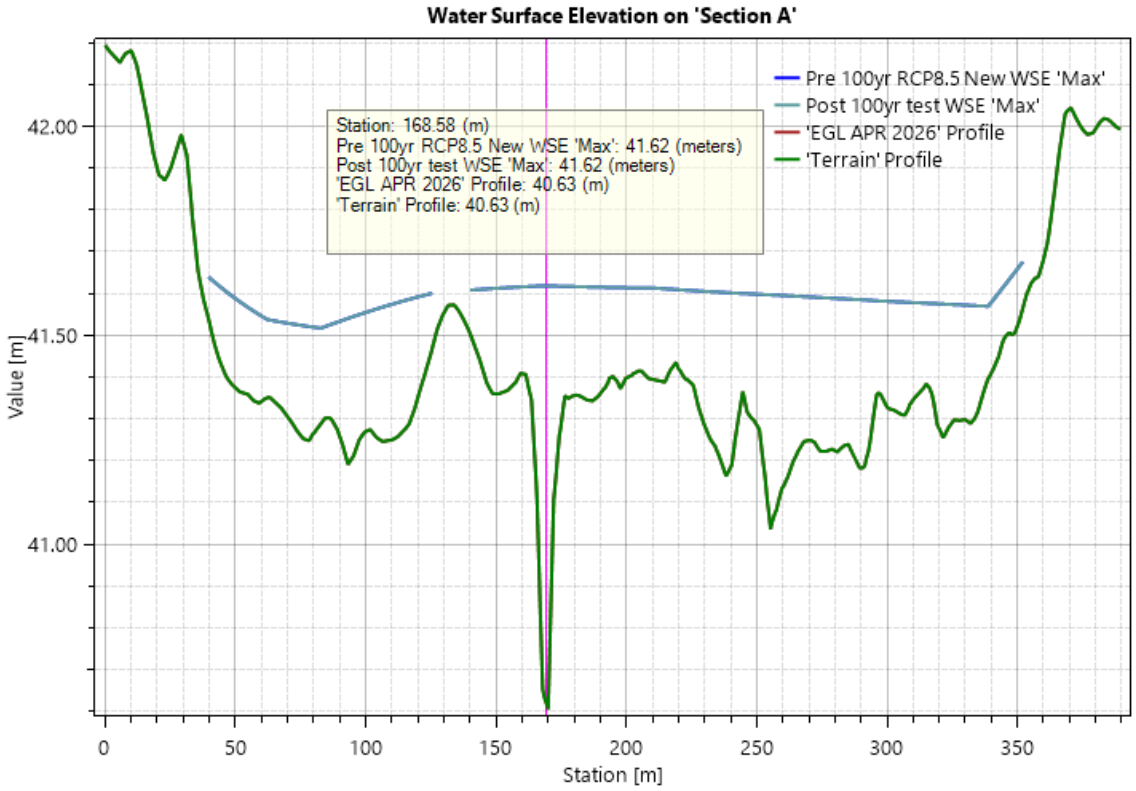
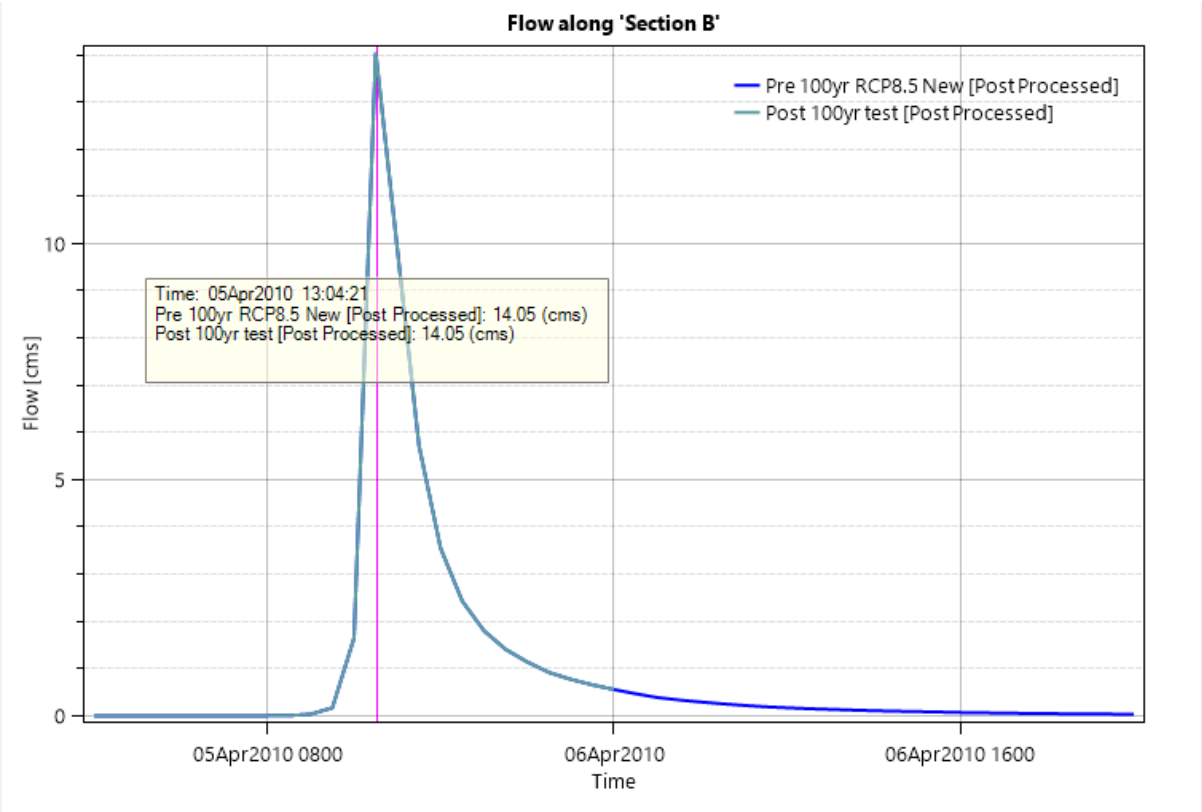
4
6
8
10
12
05Apr2010 0800
06Apr2010
06Apr2010 1600
Time


Water Surface Elevation on 'Section A'
Pre 100yr RCP8.5 New WSE 'Max'
Post 100yr test WSE 'Max'
'EGL APR 2026' Profile
'Terrain' Profile
Station: 168.58 (m)
Pre 100yr RCP8.5 New WSE 'Max': 41.62 (meters)
Post 100yr test WSE 'Max': 41.62 (meters)
'EGL APR 2026' Profile: 40.63 (m)
'Terrain' Profile: 40.63 (m)
Value [m]
41.00
41.50
42.00
0
50
100
150
200
250
300
350
Station [m]


Flow along 'Section B'
Pre 100yr RCP8.5 New [Post Processed]
Post 100yr test [Post Processed]
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Post 100yr test [Post Processed]: 14.05 (cms)
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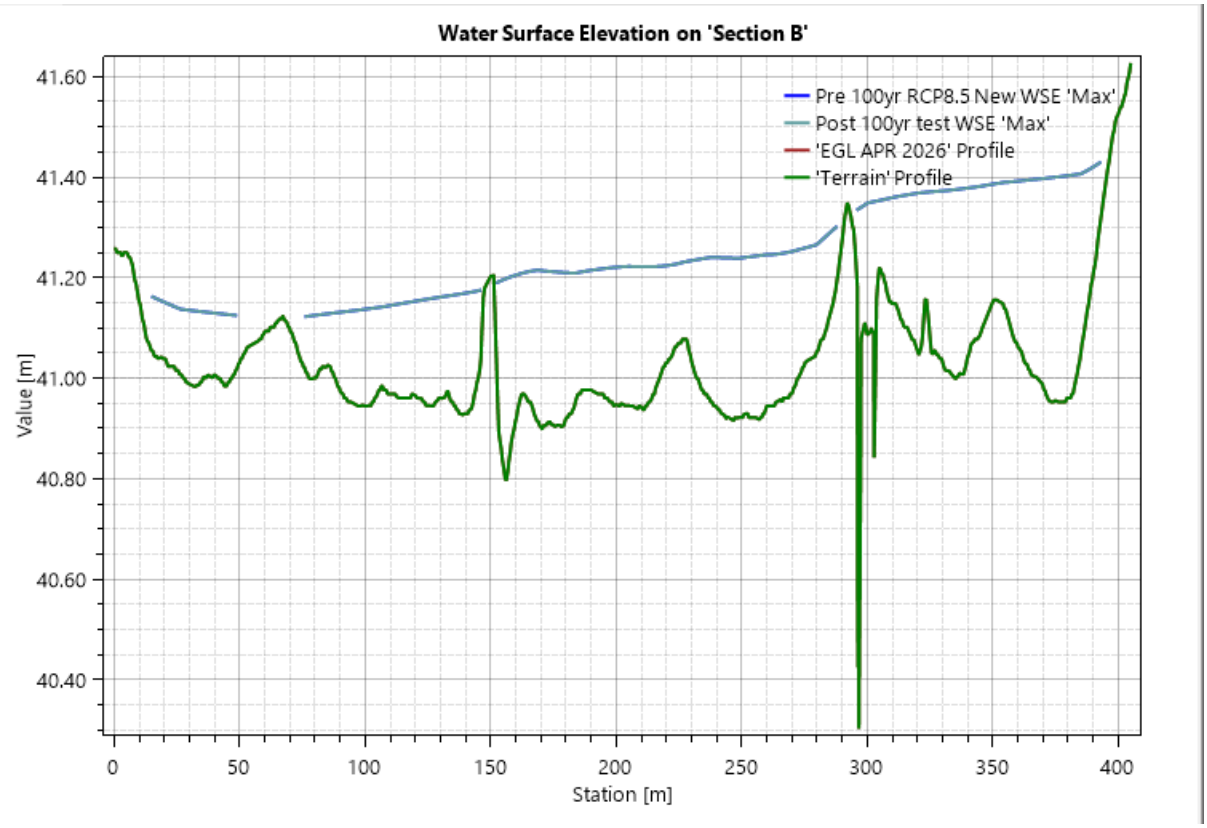
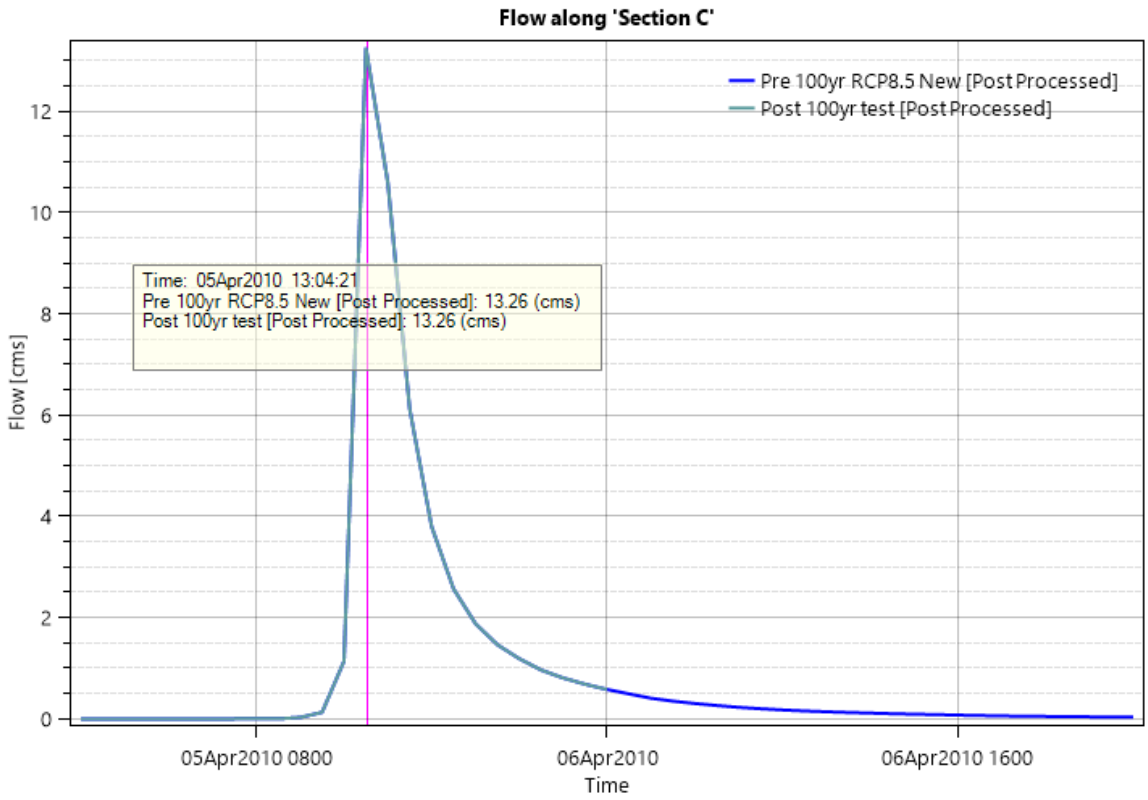
10
05Apr2010 0800
06Apr2010
06Apr2010 1600
Time


Water Surface Elevation on 'Section B'
Pre 100yr RCP8.5 New WSE 'Max'
Post 100yr test WSE 'Max'
'EGL APR 2026' Profile
'Terrain' Profile
Value [m]
41.60
41.40
41.20
41.00
40.80
40.60
40.40
0
50
100
150
200
250
300
350
400
Station [m]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Post 100yr test [Post Processed]: 13.26 (cms)
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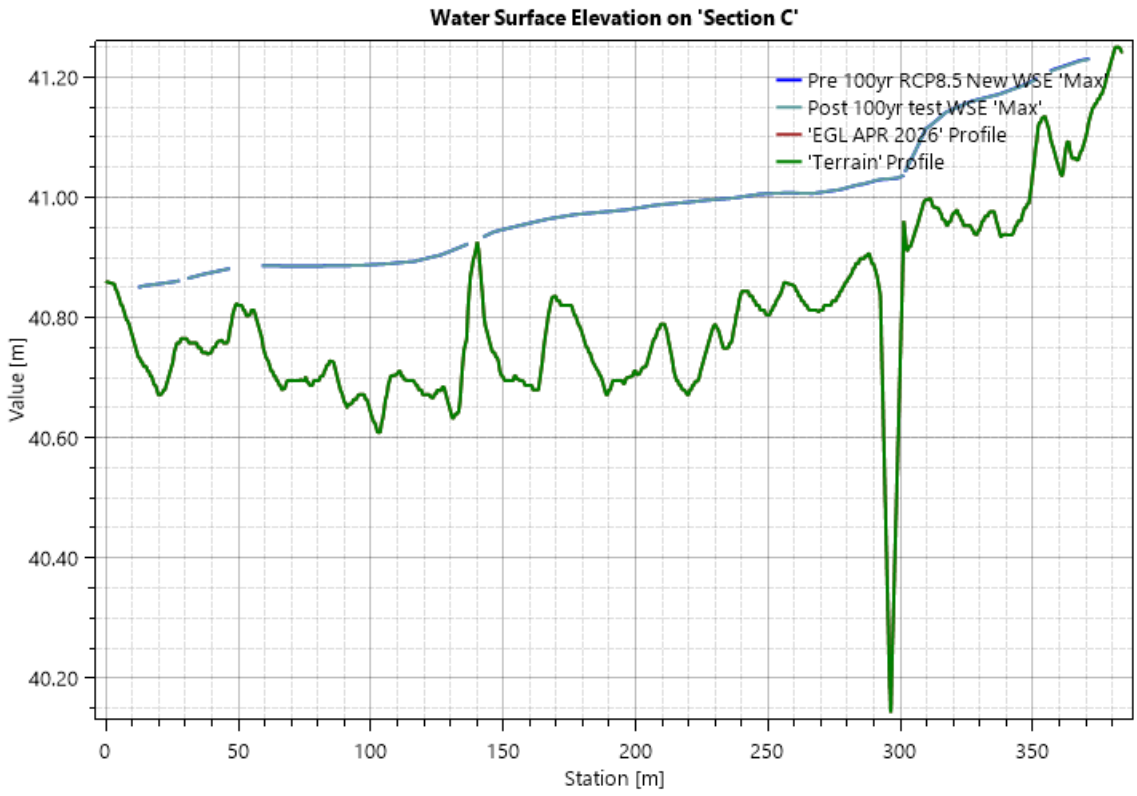
6
8
10
12
05Apr2010 0800
06Apr2010
06Apr2010 1600
Time


Water Surface Elevation on 'Section C'
Pre 100yr RCP8.5 New WSE 'Max'
Post 100yr test WSE 'Max'
'EGL APR 2026' Profile
'Terrain' Profile
Value [m]
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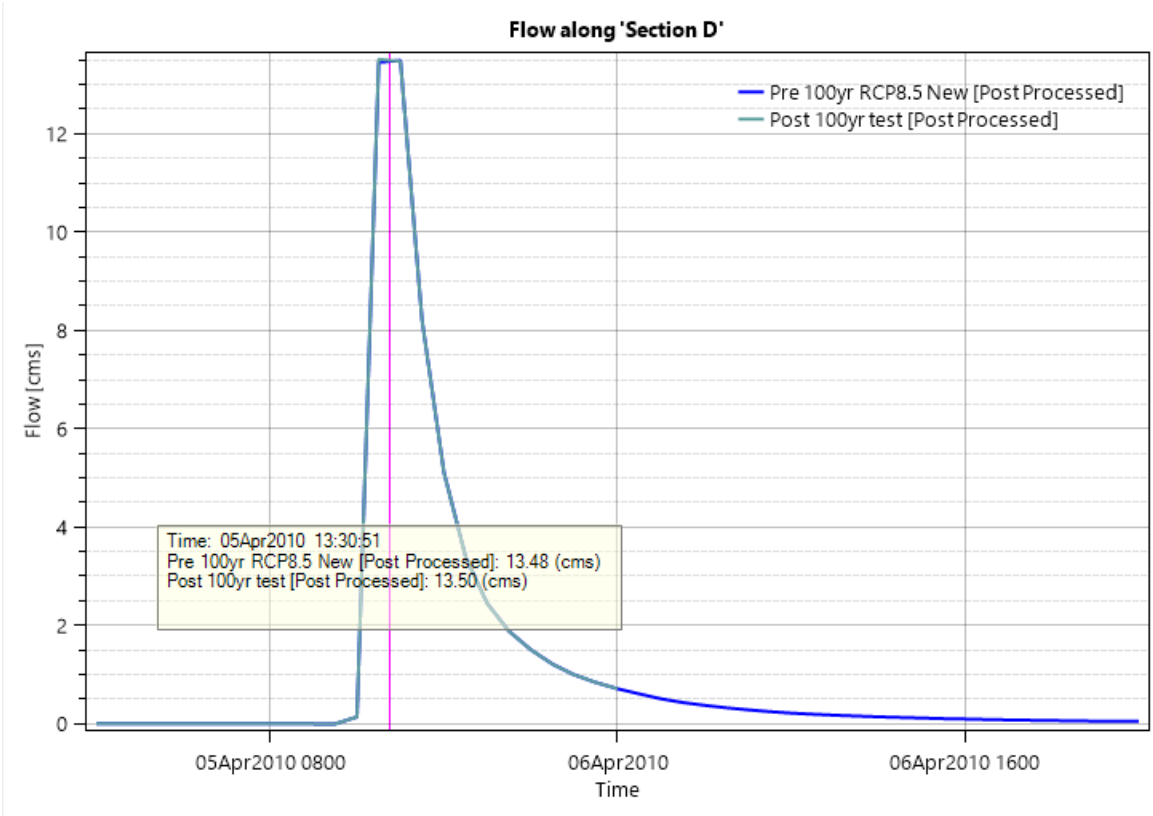
40.60
40.80
41.00
41.20
0
50
100
150
200
250
300
350
Station [m]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Post 100yr test [Post Processed]: 13.50 (cms)
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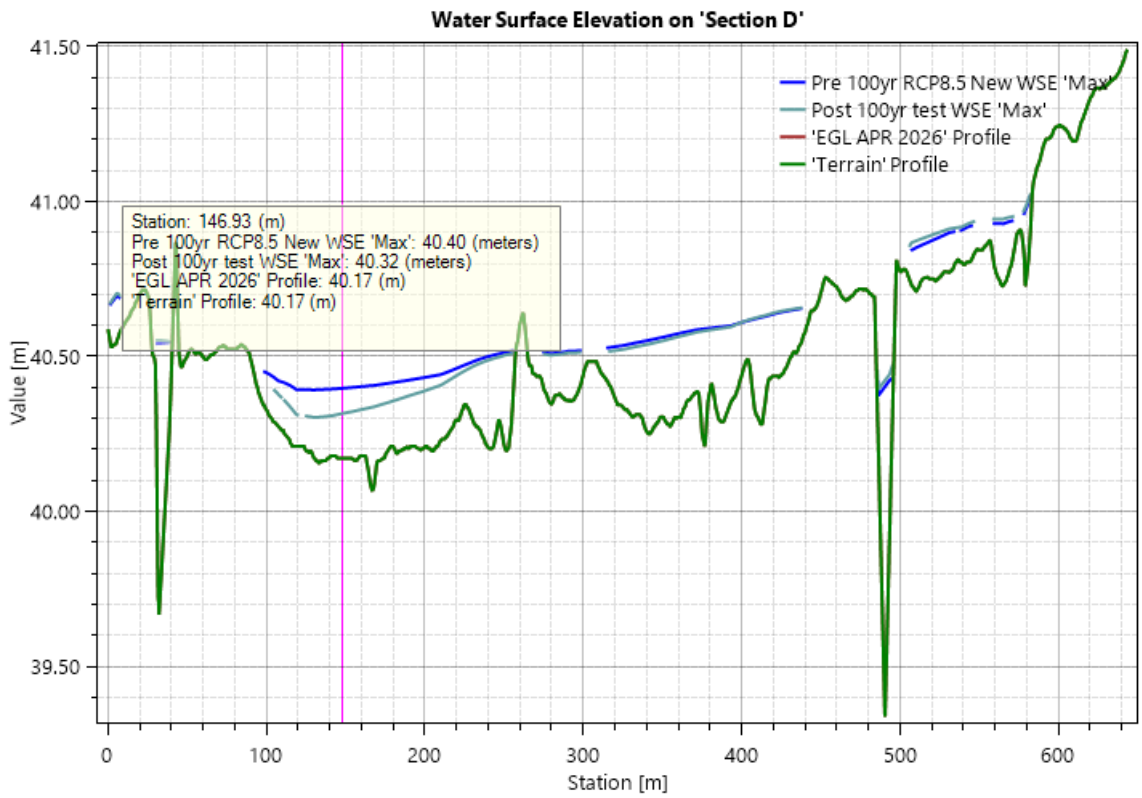
05Apr2010 0800
06Apr2010
06Apr2010 1600
Time


Water Surface Elevation on 'Section D'
Pre 100yr RCP8.5 New WSE 'Max'
Post 100yr test WSE 'Max'
'EGL APR 2026' Profile
'Terrain' Profile
Station: 146.93 (m)
Pre 100yr RCP8.5 New WSE 'Max': 40.40 (meters)
Post 100yr test WSE 'Max': 40.32 (meters)
'EGL APR 2026' Profile: 40.17 (m)
'Terrain' Profile: 40.17 (m)
Value [m]
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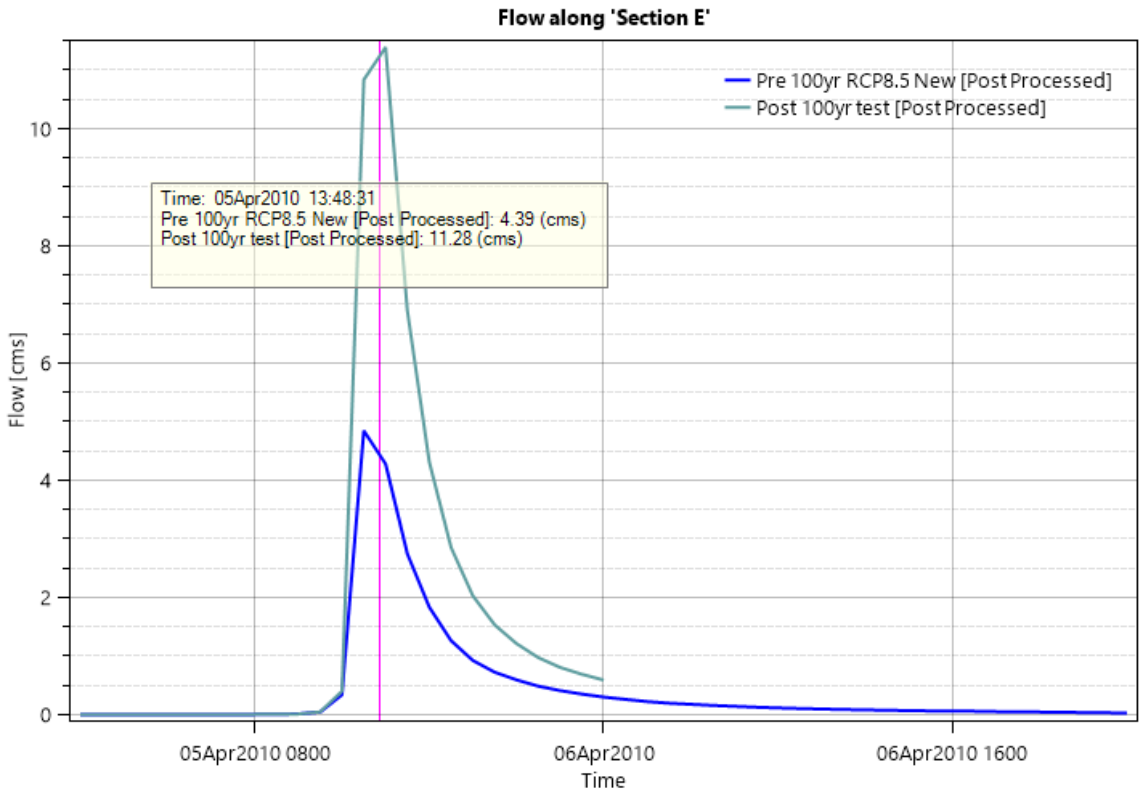
40.00
40.50
41.00
41.50
0
100
200
300
400
500
600
Station [m]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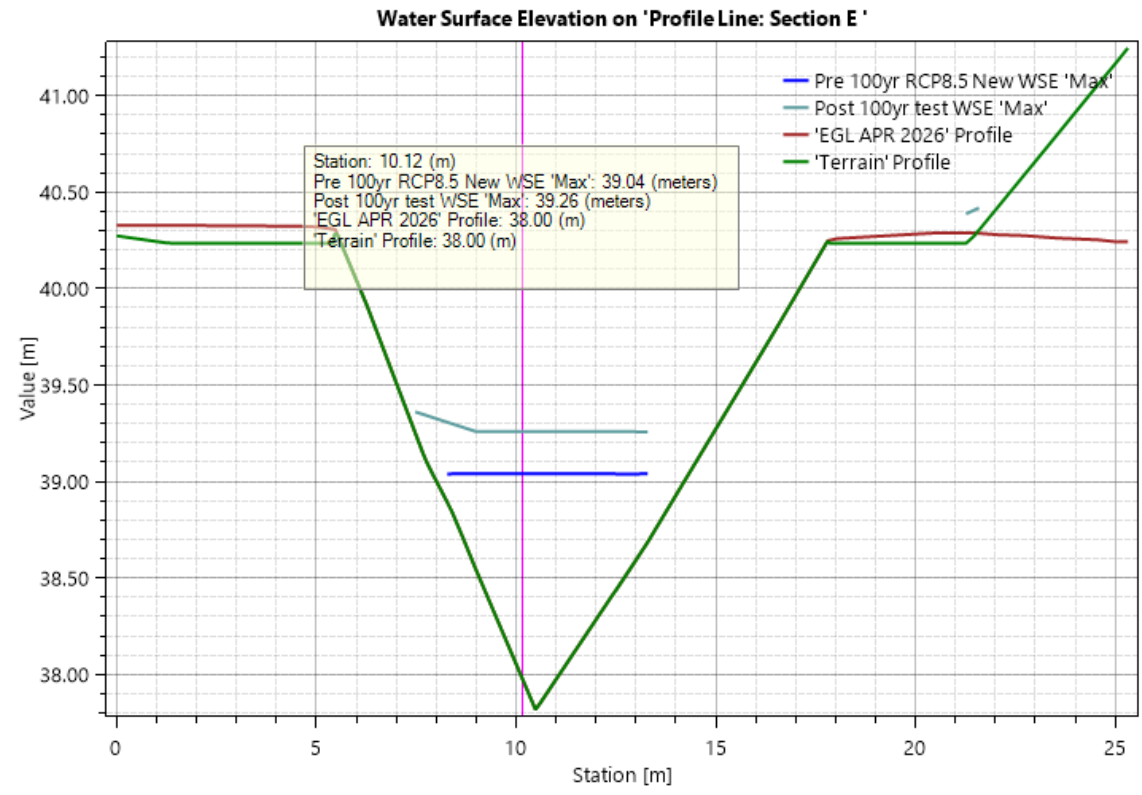
Time


Water Surface Elevation on 'Profile Line: Section E '
Pre 100yr RCP8.5 New WSE 'Max'
Post 100yr test WSE 'Max'
'EGL APR 2026' Profile
'Terrain' Profile
Station: 10.12 (m)
Pre 100yr RCP8.5 New WSE 'Max': 39.04 (meters)
Post 100yr test WSE 'Max': 39.26 (meters)
'EGL APR 2026' Profile: 38.00 (m)
'Terrain' Profile: 38.00 (m)
Value [m]
38.00
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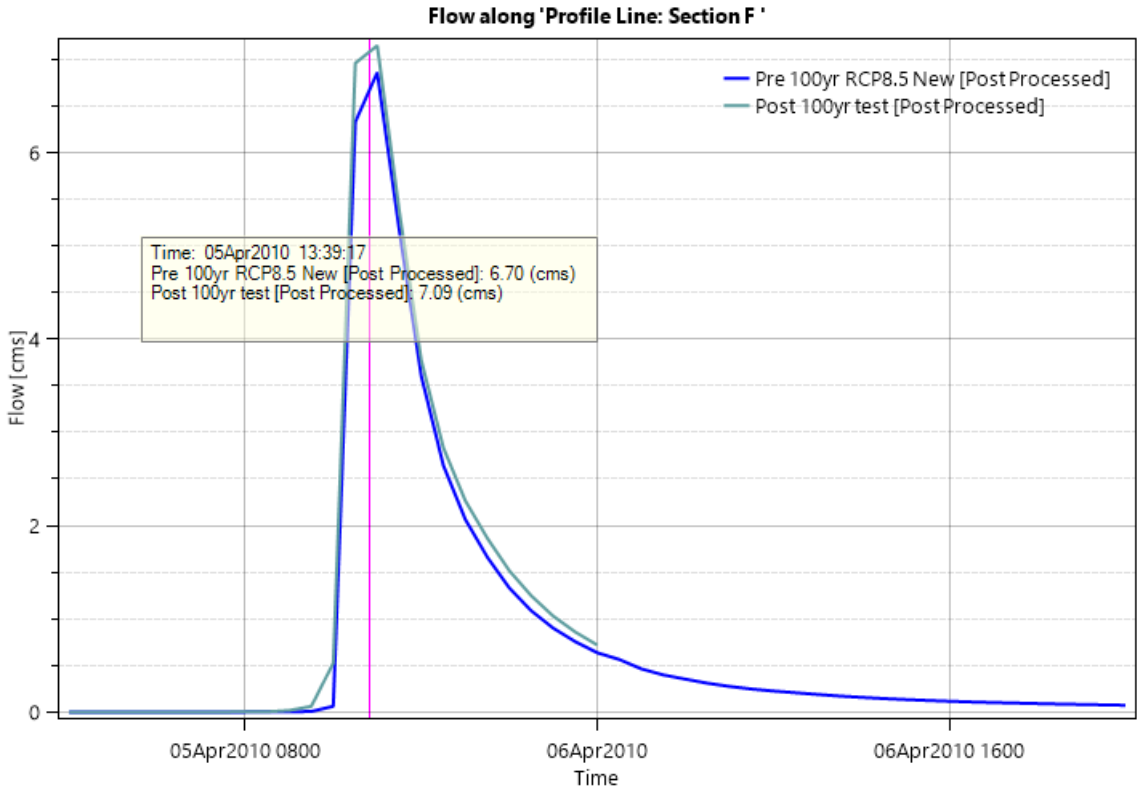
39.00
39.50
40.00
40.50
41.00
0
5
10
15
20
25
Station [m]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Post 100yr test [Post Processed]
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6
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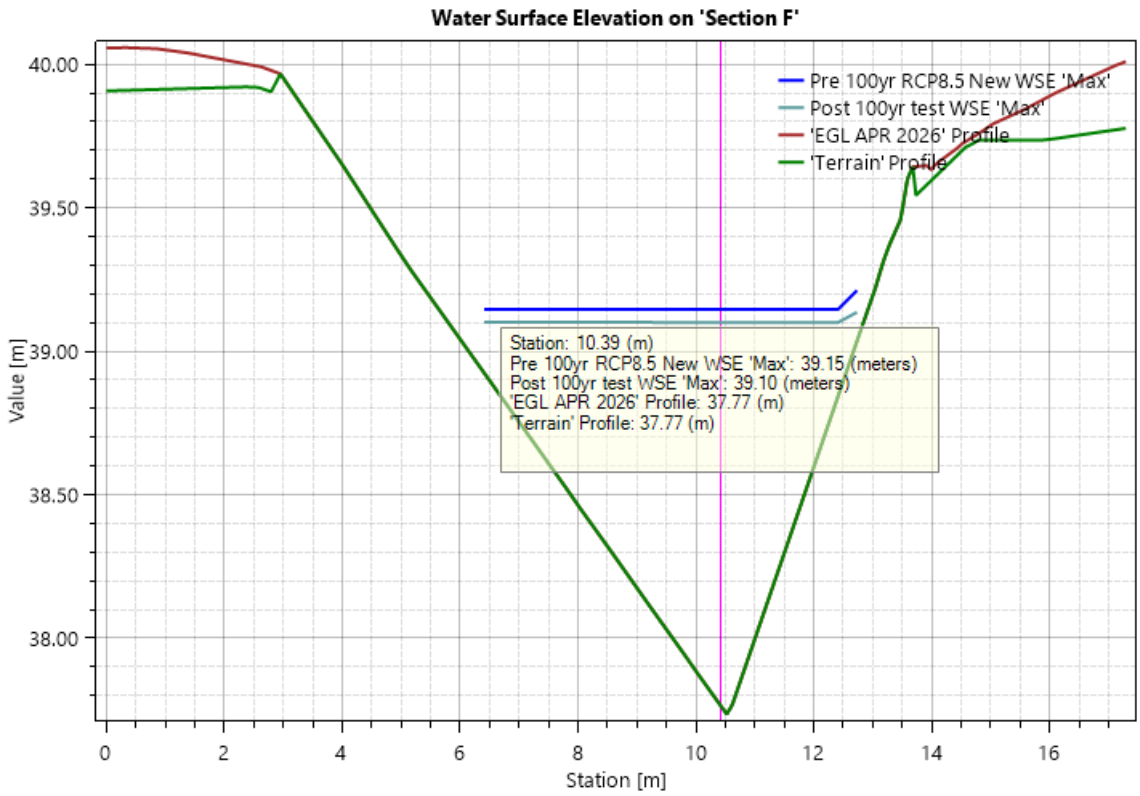
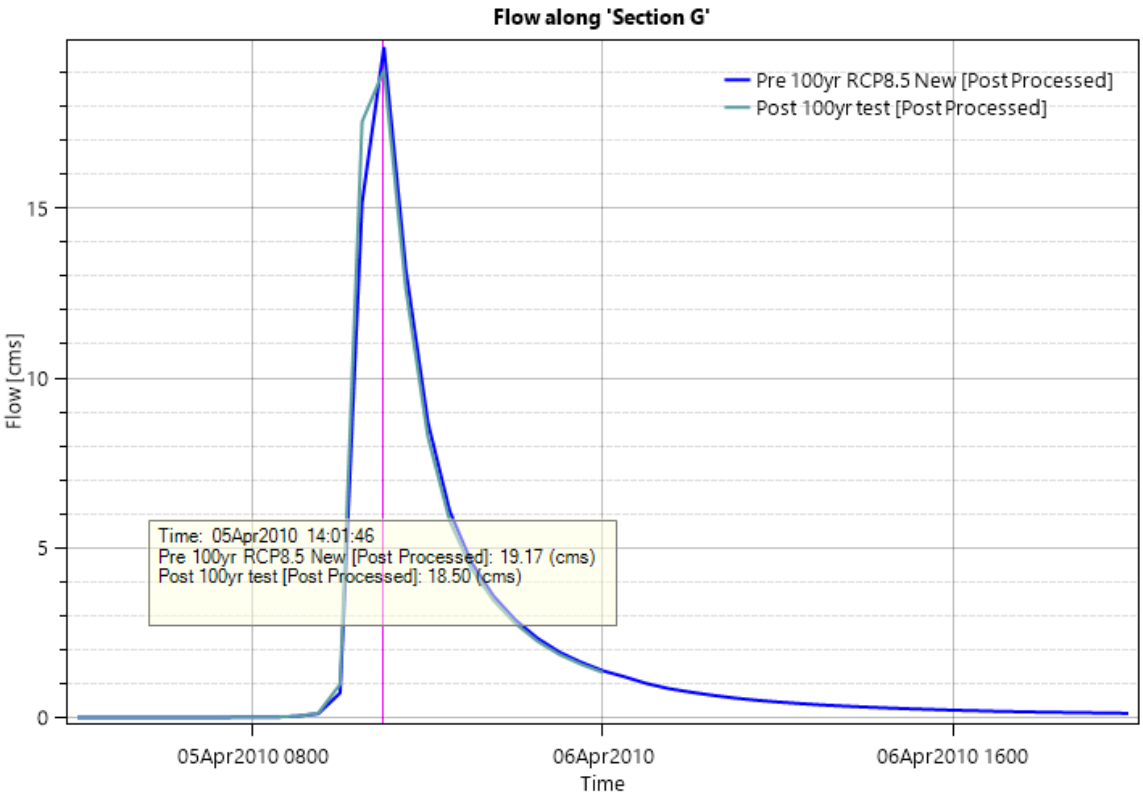
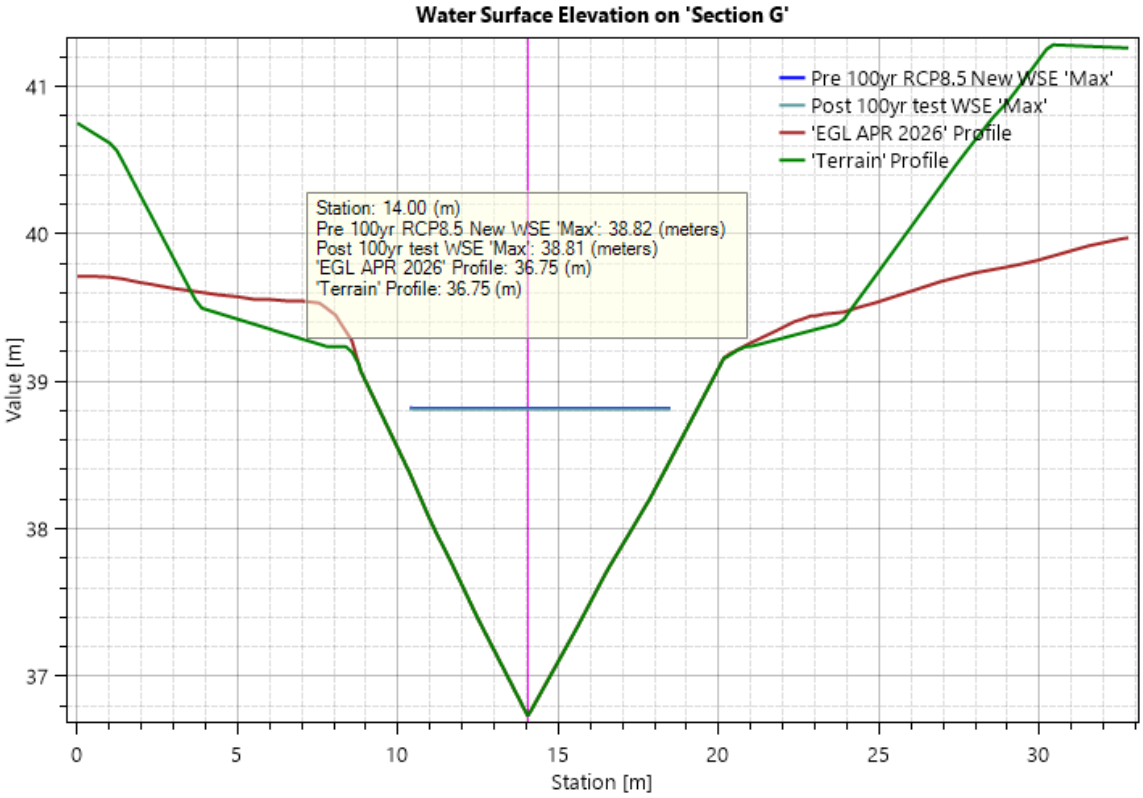
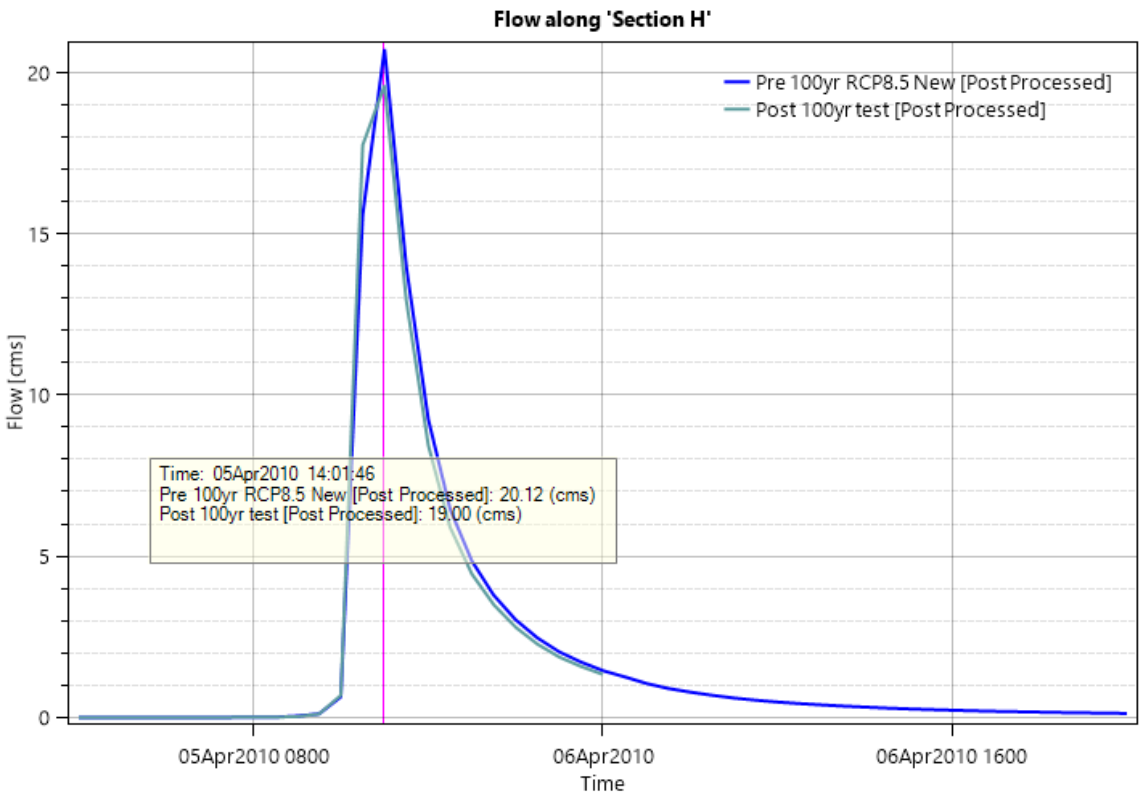
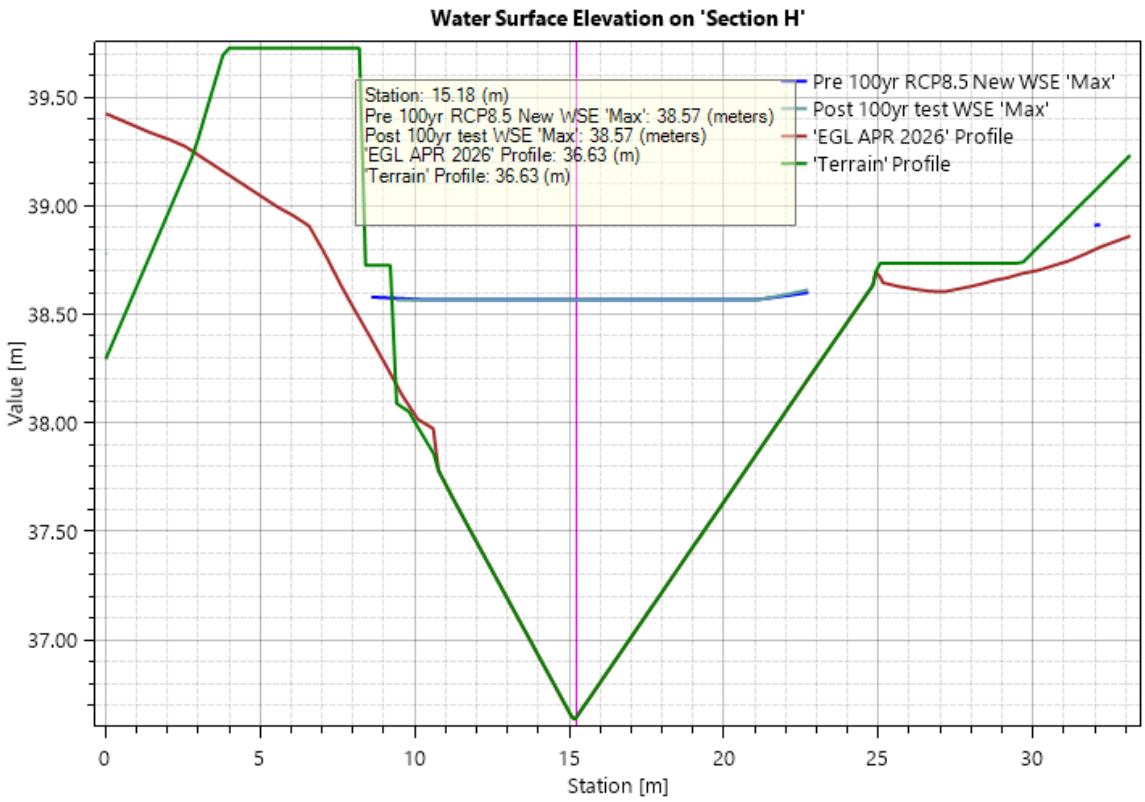
Time

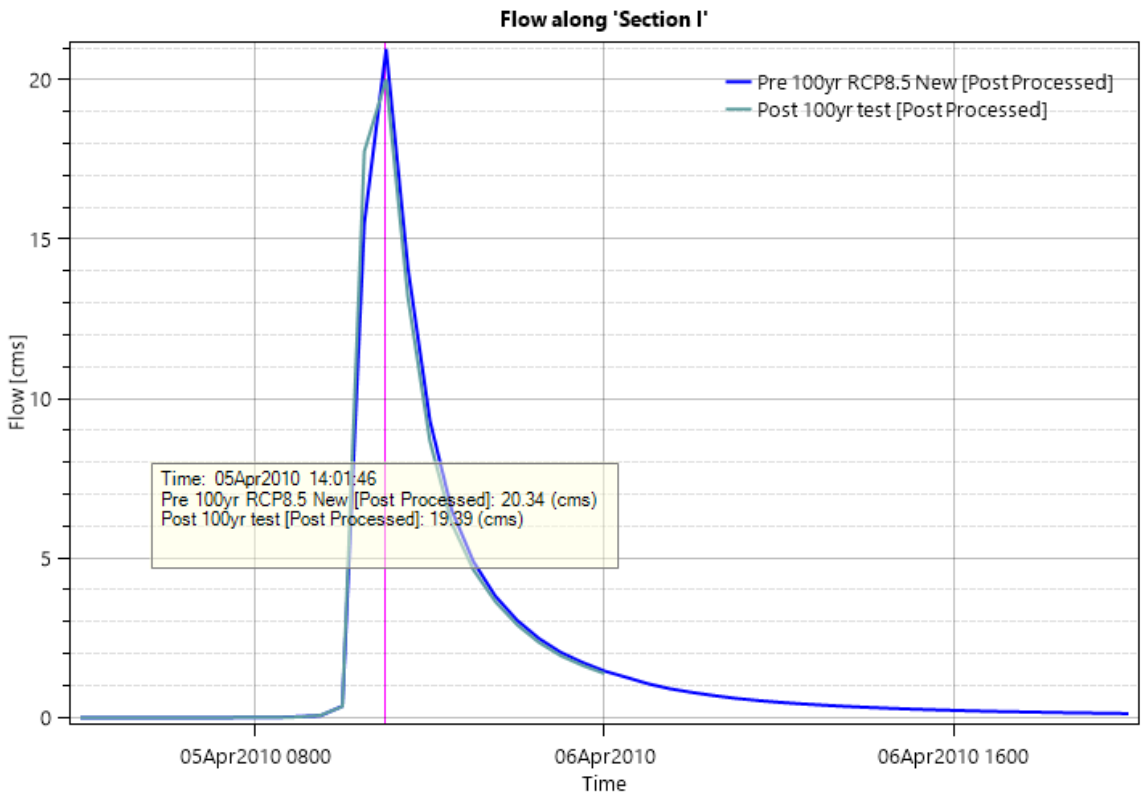

Water Surface Elevation on 'Section F'
Pre 100yr RCP8.5 New WSE 'Max'
Post 100yr test WSE 'Max'
'EGL APR 2026' Profile
'Terrain' Profile
Station: 10.39 (m)
Pre 100yr RCP8.5 New WSE 'Max': 39.15 (meters)
Post 100yr test WSE 'Max': 39.10 (meters)
'EGL APR 2026' Profile: 37.77 (m)
'Terrain' Profile: 37.77 (m)
Value [m]
40.00
39.50
39.00
38.50
38.00
0
2
4
6
8
10
12
14
16
Station [m]

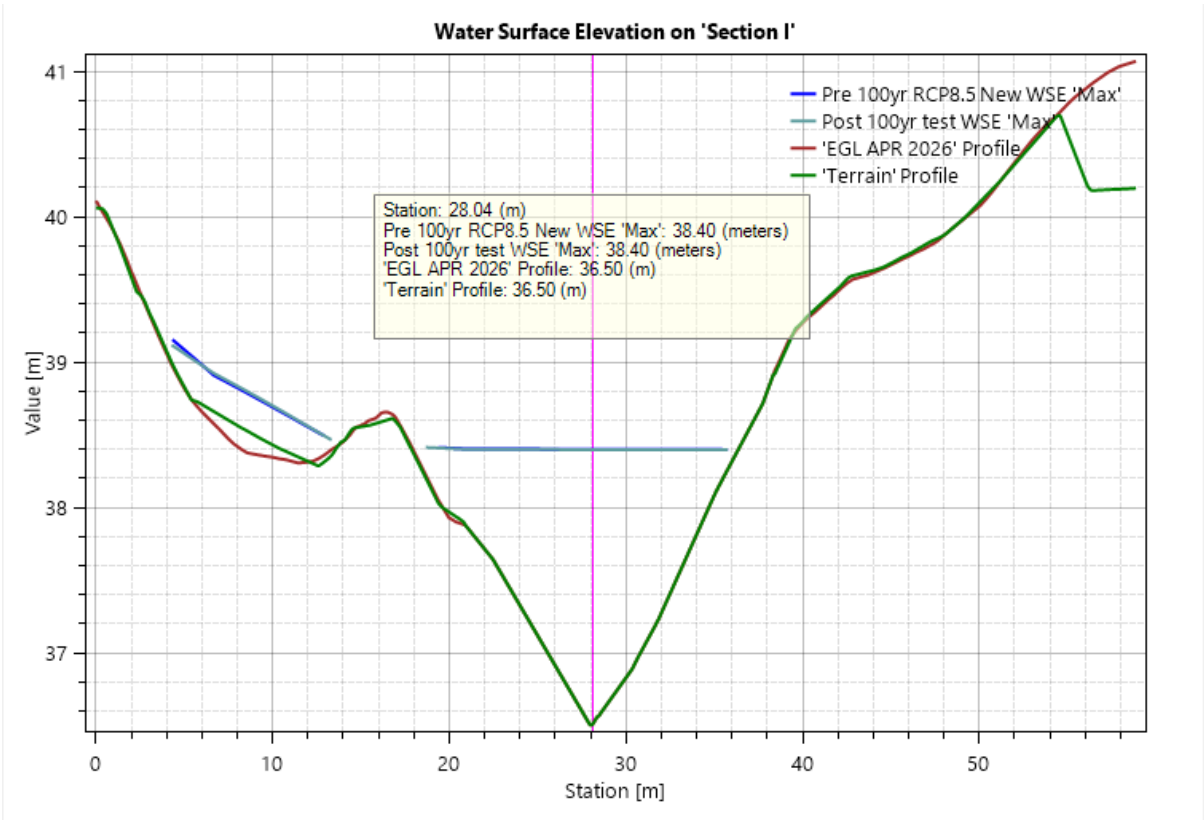

Flow along 'Section G'
Pre 100yr RCP8.5 New [Post Processed]
Post 100yr test [Post Processed]
Time: 05Apr2010 14:01:46
Pre 100yr RCP8.5 New [Post Processed]: 19.17 (cms)
Post 100yr test [Post Processed]: 18.50 (cms)
Flow [cms]
0
5
10
15
05Apr2010 0800
06Apr2010
06Apr2010 1600
Time

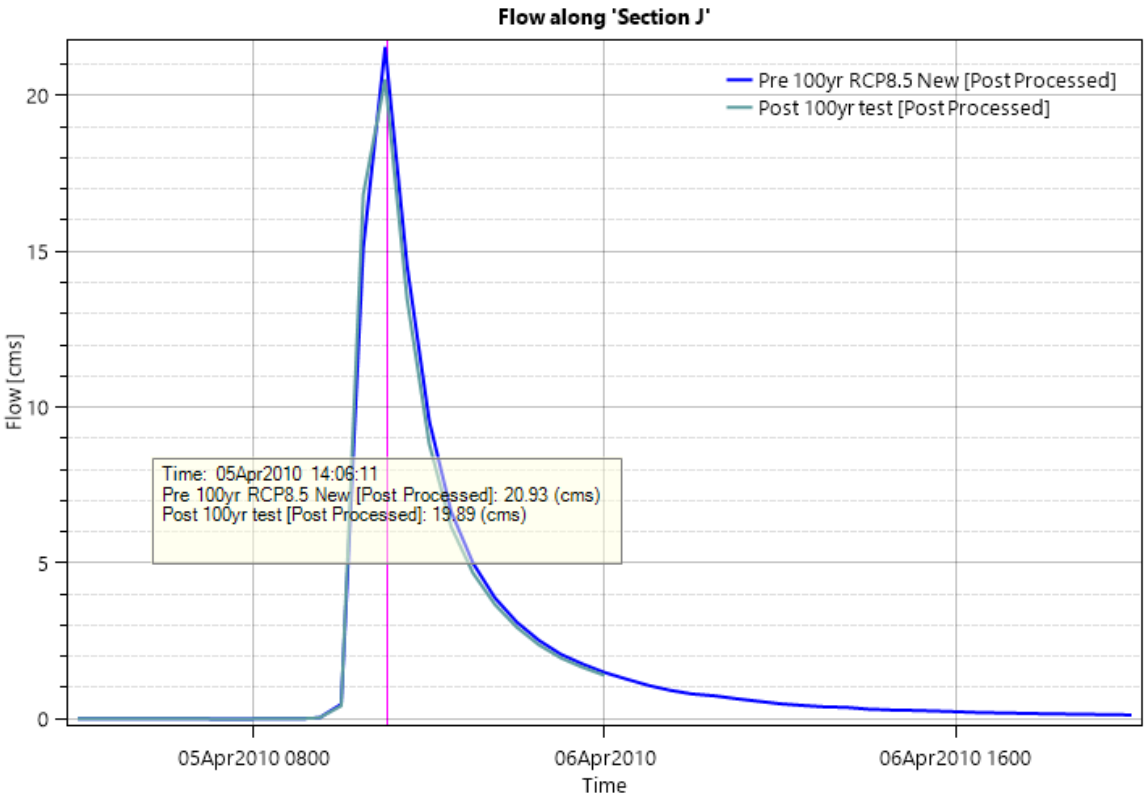

Water Surface Elevation on 'Section G'
Pre 100yr RCP8.5 New WSE 'Max'
Post 100yr test WSE 'Max'
'EGL APR 2026' Profile
'Terrain' Profile
Station: 14.00 (m)
Pre 100yr RCP8.5 New WSE 'Max': 38.82 (meters)
Post 100yr test WSE 'Max': 38.81 (meters)
'EGL APR 2026' Profile: 36.75 (m)
'Terrain' Profile: 36.75 (m)
Value [m]
37
38
39
40
41
0
5
10
15
20
25
30
Station [m]

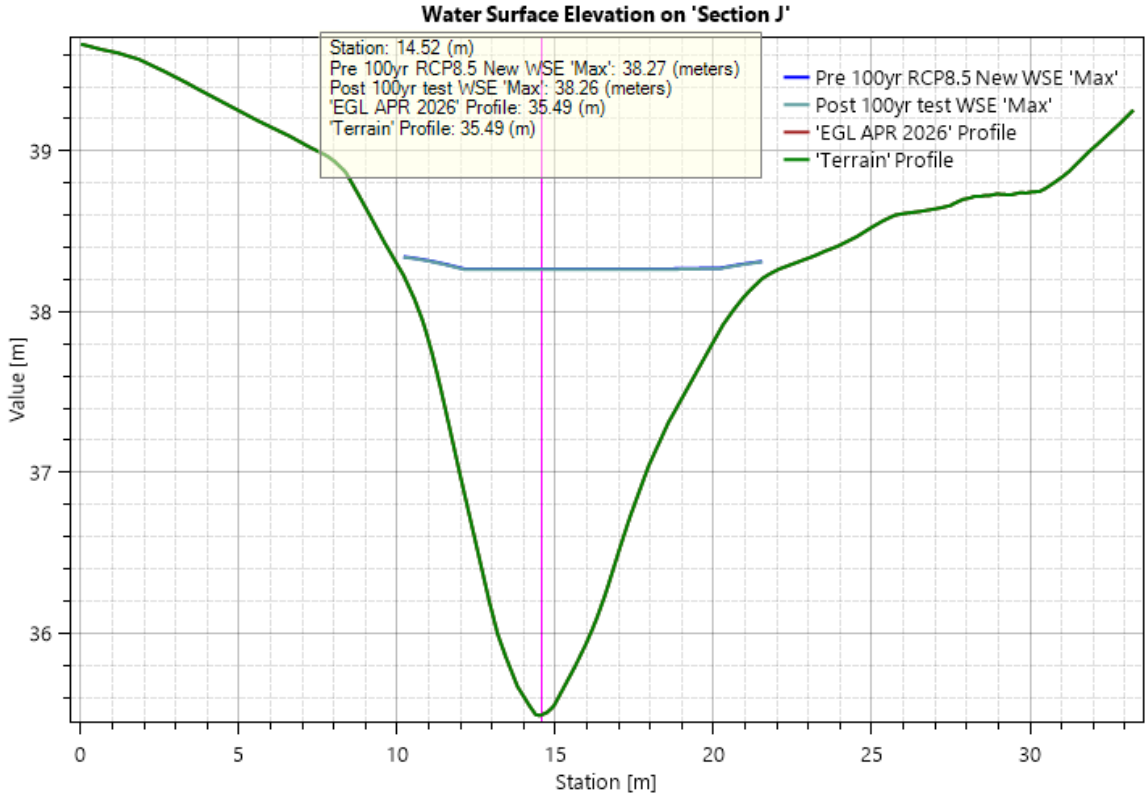

Flow along 'Section H'
Pre 100yr RCP8.5 New [Post Processed]
Post 100yr test [Post Processed]
Time: 05Apr2010 14:01:46
Pre 100yr RCP8.5 New [Post Processed]: 20.12 (cms)
Post 100yr test [Post Processed]: 19.00 (cms)
Flow [cms]
0
5
10
15
20
05Apr2010 0800
06Apr2010
06Apr2010 1600
Time


Water Surface Elevation on 'Section H'
Station: 15.18 (m)
Pre 100yr RCP8.5 New WSE 'Max': 38.57 (meters)
Post 100yr test WSE 'Max': 38.57 (meters)
'EGL APR 2026' Profile: 36.63 (m)
'Terrain' Profile: 36.63 (m)
Pre 100yr RCP8.5 New WSE 'Max'
Post 100yr test WSE 'Max'
'EGL APR 2026' Profile
'Terrain' Profile
Value [m]
37.00
37.50
38.00
38.50
39.00
39.50
0
5
10
15
20
25
30
Station [m]


Flow along 'Section I'
Pre 100yr RCP8.5 New [Post Processed]
Post 100yr test [Post Processed]
Time: 05Apr2010 14:01:46
Pre 100yr RCP8.5 New [Post Processed]: 20.34 (cms)
Post 100yr test [Post Processed]: 19.89 (cms)
Flow [cms]
0
5
10
15
20
05Apr2010 0800
06Apr2010
06Apr2010 1600
Time


Water Surface Elevation on 'Section I'
Pre 100yr RCP8.5 New WSE 'Max'
Post 100yr test WSE 'Max'
'EGL APR 2026' Profile
'Terrain' Profile
Station: 28.04 (m)
Pre 100yr RCP8.5 New WSE 'Max': 38.40 (meters)
Post 100yr test WSE 'Max': 38.40 (meters)
'EGL APR 2026' Profile: 36.50 (m)
'Terrain' Profile: 36.50 (m)
Value [m]
37
38
39
40
41
0
10
20
30
40
50
Station [m]


Flow along 'Section J'
Pre 100yr RCP8.5 New [Post Processed]
Post 100yr test [Post Processed]
Time: 05Apr2010 14:06:11
Pre 100yr RCP8.5 New [Post Processed]: 20.93 (cms)
Post 100yr test [Post Processed]: 19.89 (cms)
Flow [cms]
0
5
10
15
20
05Apr2010 0800
06Apr2010
06Apr2010 1600
Time


Water Surface Elevation on 'Section J'
Station: 14.52 (m)
Pre 100yr RCP8.5 New WSE 'Max': 38.27 (meters)
Post 100yr test WSE 'Max': 38.26 (meters)
'EGL APR 2026' Profile: 35.49 (m)
'Terrain' Profile: 35.49 (m)
Pre 100yr RCP8.5 New WSE 'Max'
Post 100yr test WSE 'Max'
'EGL APR 2026' Profile
'Terrain' Profile
Value [m]
36
37
38
39
0
5
10
15
20
25
30
Station [m]

Maven Associates		**Job Number** **298001**	**Sheet** **1**	**Rev: A**
Job Title **Calc Title**	**Southern Links- STG R1** **Catchment Areas**	**Author** **RK**	**Date** **11/06/2026**	**Checked** **DJM**

Wetland	**Catchment Area (m2)**	Ha
A	130116.8056	13.01
B	76455.9932	7.65
C	85394.2409	8.54
D	53219.7462	5.32
E	59292.1943	5.93
F	39856.6767	3.99

Notes

1 Soil type to be confirmed from geotechs

2 Soil type D, CN number 89 Pre Dev and 85 for Post Dev for pervious very poorly drained grass poor condition

3 Soil type D, CN number 98 for impervious as per WRC TR20-06

Maven Associates		Job Number 298001	Sheet 1	Rev: A
Job Title Calc Title	Southern Links- STG R1 POST-development	Author RK	Date 11/06/2026	Checked DJM

Wetland A
Total Catchment 130117

1. Runoff Curve Number (CN) and initial Abstraction (Ia) CALCS to WRC TR2020/06

Soil name and classification	ID	Cover description (cover type, treatment, and hydrologic condition)	Curve Number CN*	Area (ha) 10000m2=1 ha	Product of CN x area
D		Pervious (30%)	84	2.60	218.60
D		Impervious (70%)	98	10.41	1020.12
					0.00
			Totals =	13.01	1238.71

CN (weighted) = $\frac{\text{total product}}{\text{total area}}$ = $\frac{1238.71}{13.012}$ = **95.2**

S= $\frac{(1000}{CN}$ -10) * 25.4 $\frac{(1000}{95.2}$ - 10) *2 76.5 117.8 **12.8** mm

Ia= 0.05*S 0.05x 12.8 = **0.6** mm

2. Time of Concentration

Sheet and Shallow Flow (to be completed at detail design) L= 400 m
$T=100nL^{0.33}/S^{0.2}$ S= 0.40 %
n= 0.015
T= 13.012 mins

Concentrated Network Flow (to be completed at detail design) 0

Open Channel Flow $V=R^{2/3}S^{1/2}/n$ w= 1 n= 0.04
R= A / Wp 0.33 d= 1 s= 1%
l= 535
(to be completed at detail design) V= 1.0949599 m/s
T= 8.14 mins

$Tc = T_{sheet\ flow} + T_{concentrated\ flow} + T_{open\ channel\ flow}$

= 13.01 + 0.00 + 8.14 = 21.156 mins
0.352597 hrs

SCS Lag for HEC-HMS…. $t_p = 2/3\ t_c$ = 0.236 hrs

OK use **0.24** hrs
14.174401

Worksheet 1: Runoff Parameters and Time of Concentration

Maven Associates		Job Number 298001	Sheet 1	Rev: A
Job Title Calc Title	Southern Links- STG R1 POST-development	Author RK	Date 11/06/2026	Checked DJM

Wetland B
Total Catchment 76456

1. Runoff Curve Number (CN) and initial Abstraction (Ia) CALCS to WRC TR2020/06

Soil name and classification	ID	Cover description (cover type, treatment, and hydrologic condition)	Curve Number CN*	Area (ha) 10000m2=1 ha	Product of CN x area
D		Pervious (20%)	84	1.53	128.45
D		Impervious (80%)	98	6.12	599.41
					0.00
			Totals =	7.65	727.86

CN (weighted) = total product / total area = 727.86 / 7.646 = **95.2**

S= (1000/CN -10) * 25.4 (1000/95.2 - 10) *2 76.5 117.8 **12.8** mm

Ia= 0.05*S 0.05x 12.8 = **0.6** mm

2. Time of Concentration

Sheet and Shallow Flow (to be completed at detail design)
$T=100nL^{0.33}/S^{0.2}$

L= 200 m
S= 1.40 %
n= 0.015
T= 8.058 mins

Concentrated Network Flow (to be completed at detail design) 0

Open Channel Flow $V=R^{2/3}S^{1/2}/n$
R= A / Wp 0.33

w= 1 n= 0.04
d= 1 s= 1%
l= 250

(to be completed at detail design)
V= 1.2605368 m/s
T= 3.31 mins

$Tc = T_{sheet\ flow} + T_{concentrated\ flow} + T_{open\ channel\ flow}$

= 8.058 + 0.00 + 3.31 = 11.363 mins
0.1893845 hrs

SCS Lag for HEC-HMS…. $t_p = 2/3\ t_c$ = 0.127 hrs

NO GOOD use **0.17** hrs
10.2

Worksheet 1: Runoff Parameters and Time of Concentration

Maven Associates		Job Number 298001	Sheet 1	Rev: A
Job Title Calc Title	Southern Links- STG R1 POST-development	Author RK	Date 11/06/2026	Checked DJM

Wetland C
Total Catchment 9

1. Runoff Curve Number (CN) and initial Abstraction (Ia) CALCS to WRC TR2020/06

Soil name and classification	ID	Cover description (cover type, treatment, and hydrologic condition)	Curve Number CN*	Area (ha) 10000m2=1 ha	Product of CN x area
D		Pervious (20%)	84	2.56	215.19
D		Impervious (80%)	98	5.98	585.80
					0.00
			Totals =	8.54	801.00

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{801.00}{8.539} =$ **93.8**

S= $\frac{(1000}{CN} - 10) * 25.4$ $\frac{(1000}{93.8} - 10) *2$ 76.5 117.8 **16.8** mm

Ia= 0.05*S 0.05x 16.8 = **0.8** mm

2. Time of Concentration

Sheet and Shallow Flow (to be completed at detail design)
$T=100nL^{0.33}/S^{0.2}$

L= 350 m
S= 0.30 %
n= 0.015
T= 13.189 mins

Concentrated Network Flow (to be completed at detail design) 0

Open Channel Flow $V=R^{2/3}S^{1/2}/n$
R= A / Wp 0.33

w= 1 n= 0.04
d= 1 s= 1%
l= 560

(to be completed at detail design)
V= 0.8498537 m/s
T= 10.98 mins

$Tc = T_{sheet\ flow} + T_{concentrated\ flow} + T_{open\ channel\ flow}$

= 13.19 + 0.00 + 10.98 = 24.171 mins
0.4028535 hrs

SCS Lag for HEC-HMS…. $t_p = 2/3\ t_c$ = 0.270 hrs

OK use **0.27** hrs
16.19471

Worksheet 1: Runoff Parameters and Time of Concentration

Maven Associates		Job Number 298001	Sheet 1	Rev: A
Job Title Calc Title	Southern Links- STG R1 POST-development	Author RK	Date 11/06/2026	Checked DJM

Wetland D
Total Catchment 53220

1. Runoff Curve Number (CN) and initial Abstraction (Ia) CALCS to WRC TR2020/06

Soil name and classification	ID	Cover description (cover type, treatment, and hydrologic condition)	Curve Number CN*	Area (ha) 10000m2=1 ha	Product of CN x area
D		Pervious (20%)	84	1.60	134.11
D		Impervious (80%)	98	3.73	365.09
					0.00
			Totals =	5.32	499.20

CN (weighted) = $\frac{\text{total product}}{\text{total area}}$ = $\frac{499.20}{5.322}$ = **93.8**

S= $\frac{(1000}{CN}$ -10) * 25.4 $\frac{(1000}{93.8}$ - 10) *2 76.5 117.8 **16.8** mm

Ia= 0.05*S 0.05x 16.8 = **0.8** mm

2. Time of Concentration

Sheet and Shallow Flow (to be completed at detail design) L= 170 m
$T=100nL^{0.33}/S^{0.2}$ S= 0.60 %
n= 0.015
T= 9.047 mins

Concentrated Network Flow (to be completed at detail design) 0

Open Channel Flow $V=R^{2/3}S^{1/2}/n$ w= 1 n= 0.04
R= A / Wp 0.33 d= 1 s= 1%
l= 410
(to be completed at detail design) V= 1.0055605 m/s
T= 6.80 mins

$Tc = T_{sheet\ flow} + T_{concentrated\ flow} + T_{open\ channel\ flow}$

= 9.047 + 0.00 + 6.80 = 15.843 mins
0.264044 hrs

SCS Lag for HEC-HMS…. $t_p = 2/3\ t_c$ = 0.177 hrs

OK use **0.18** hrs
10.61457

Worksheet 1: Runoff Parameters and Time of Concentration

Maven Associates		Job Number 298001	Sheet 1	Rev: A
Job Title Calc Title	Southern Links- STG R1 POST-development	Author RK	Date 11/06/2026	Checked DJM

Wetland E
Total Catchment 59292

1. Runoff Curve Number (CN) and initial Abstraction (Ia) CALCS to WRC TR2020/06

Soil name and classification	ID	Cover description (cover type, treatment, and hydrologic condition)	Curve Number CN*	Area (ha) 10000m2=1 ha	Product of CN x area
D		Pervious (20%)	84	1.78	149.42
D		Impervious (80%)	98	4.15	406.74
					0.00
			Totals =	5.93	556.16

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{556.16}{5.929} =$ **93.8**

S= $\frac{(1000}{CN}$ -10) * 25.4 $\frac{(1000}{93.8}$ - 10) *2 76.5 117.8 **16.8** mm

Ia= 0.05*S 0.05x 16.8 = **0.8** mm

2. Time of Concentration

Sheet and Shallow Flow (to be completed at detail design)
$T=100nL^{0.33}/S^{0.2}$

L= 230 m
S= 0.50 %
n= 0.015
T= 10.367 mins

Concentrated Network Flow (to be completed at detail design) 0

Open Channel Flow $V=R^{2/3}S^{1/2}/n$
R= A / Wp 0.33

w= 1 n= 0.04
d= 1 s= 1%
l= 300

(to be completed at detail design)
V= 0.8498537 m/s
T= 5.88 mins

$Tc = T_{sheet\ flow} + T_{concentrated\ flow} + T_{open\ channel\ flow}$

= 10.37 + 0.00 + 5.88 = 16.251 mins
0.2708451 hrs

SCS Lag for HEC-HMS…. $t_p = 2/3\ t_c$ = 0.181 hrs

OK use **0.18** hrs
10.887974

Worksheet 1: Runoff Parameters and Time of Concentration

Maven Associates		Job Number 298001	Sheet 1	Rev: A
Job Title Calc Title	Southern Links- STG R1 POST-development	Author RK	Date 11/06/2026	Checked DJM

Wetland F
Total Catchment 39857

1. Runoff Curve Number (CN) and initial Abstraction (Ia) CALCS to WRC TR2020/06

Soil name and classification	ID	Cover description (cover type, treatment, and hydrologic condition)	Curve Number CN*	Area (ha) 10000m2=1 ha	Product of CN x area
D		Pervious (20%)	84	1.20	100.44
D		Impervious (80%)	98	2.79	273.42
					0.00
			Totals =	3.99	373.86

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{373.86}{3.986} =$ **93.8**

S= $\frac{(1000}{CN} - 10) * 25.4$ $\frac{(1000}{93.8} - 10) *2$ 76.5 117.8 **16.8** mm

Ia= 0.05*S 0.05x 16.8 = **0.8** mm

2. Time of Concentration

Sheet and Shallow Flow (to be completed at detail design)
$T=100nL^{0.33}/S^{0.2}$

L= 230 m
S= 0.50 %
n= 0.015
T= 10.367 mins

Concentrated Network Flow (to be completed at detail design) 0

Open Channel Flow $V=R^{2/3}S^{1/2}/n$ w= 1 n= 0.04
R= A / Wp 0.33 d= 1 s= 1%
l= 300
(to be completed at detail design) V= 0.8498537 m/s
T= 5.88 mins

$Tc = T_{sheet\ flow} + T_{concentrated\ flow} + T_{open\ channel\ flow}$

= 10.37 + 0.00 + 5.88 = 16.251 mins
0.2708451 hrs

SCS Lag for HEC-HMS…. $t_p = 2/3\ t_c$ = 0.181 hrs

OK use **0.18** hrs
10.887974

Worksheet 1: Runoff Parameters and Time of Concentration

Maven Waikato		Job Number 298001	Sheet 1	Rev: A
Job Title	SL1 - RESIDENTIAL	Author	Date	Checked
Calc Title	Wetland Sizing and dimensions	RK	11/06/2025	DJM
Catchment	Catchment and Wetland A-F			

Key:
input

Catchement Post Development	Ha	Area (m2)
A	13.01	130116.8
B	7.65	76455.99
C	8.54	85394.24
D	5.32	53219.75
E	5.93	59292.19
F	3.99	39856.68

Maven Waikato		Job Number 298001	Sheet 1	Rev: A
Job Title	**SL1 - RESIDENTIAL**	**Author**	**Date**	**Checked**
Calc Title	**Wetland Sizing and dimensions**	**RK**	**11/06/2025**	**DJM**
Catchment	**Catchment and Wetland A**			

References:
WRC 2020/07 8.5.6 Stormwater pond
WRC 2020/07 8.5.7 Wetlands
RITS V2.5 October 2024 - 4.2.18 Constructed Wetlands

Key:
input

Wetland / Pond Sizing and dimensions

Catchment Area	13.01	ha	
Imperviousness <70%?	yes		
Percentage of catchment area	3%		
Wetland surface area	3904	m2	per WRC 2020/06 8.5.7 Govened by EDV volume
Info Table			
	PostDev		
Q2	0.29	m^3/s	See Tab "HEC HMS Results "
V2	8205.00	m^3	
Q10	0.45	m^3/s	
V10	16500.00	m^3	
Q100 (RCP8.5)	0.60	m^3/s	
V100 (RCP8.5)	25037.00	m^3	
Min. WQV	2200.00	m^3	1/3 of the 2-year storm 24hr ARI rainfall event.

SUMMARY TABLE

Min. wetland area (3% catchment)	**3904**	m2	
Designed pwl wetland area	**7600**	m2	From Cad
Min. WQV	**2200**	m3	
Min. ED	2640	m^3	1.2WQV
Designed ED	2660	m3	OK

Fore Bay Volume	(15% of WQV)	=	330.00	m^3	Per WRC
Min Fore Bay Area	(10% of Wetland Area)	=	760.00	m^2	per RITS
Designed ForeBay Area			1200	m^2	from CAD

Maven Waikato		Job Number 298001	Sheet 1	Rev: A
Job Title	**SL1 - RESIDENTIAL**	**Author**	**Date**	**Checked**
Calc Title	**Wetland Sizing and dimensions**	**RK**	**11/06/2025**	**DJM**
Catchment	**Catchment and Wetland B**			

References:
WRC 2020/07 8.5.6 Stormwater pond
WRC 2020/07 8.5.7 Wetlands
RITS V2.5 October 2024 - 4.2.18 Constructed Wetlands

Key:
input

Wetland / Pond Sizing and dimensions

Catchment Area	7.65	ha	
Imperviousness <70%?	yes		
Percentage of catchment area	3%		
Wetland surface area	2294	m2	per WRC 2020/06 8.5.7 Govened by EDV volume
Info Table			
	PostDev		
Q2	0.25	m^3/s	See Tab "HEC HMS Results "
V2	4872.00	m^3	
Q10	0.40	m^3/s	
V10	9807.00	m^3	
Q100 (RC8.5)	0.53	m^3/s	
V100 (RCP8.5)	15340.00	m^3	
Min. WQV	1425.00	m^3	1/3 of the 2-year storm 24hr ARI rainfall event.

SUMMARY TABLE

Min. wetland area (3% catchment)	**2294**	m2	
Designed wetland area	**5625**	m	From CAD
Min. WQV	**1425**	m3	Maximum of calculated WQV vs water depth x wetland area
Min. ED	1710	m^3	1.2WQV
Designed ED	1969	m^3	**OK**

Fore Bay Volume	(15% of WQV)	=	213.75	m^3	Per WRC
Fore Bay Area	(10% of Wetland Area)	=	562.50	m^2	per RITS
Designed ForeBay Area		=	1500	m^2	From CAD

Maven Waikato		Job Number 298001	Sheet 1	Rev: A
Job Title	**SL1 - RESIDENTIAL**	**Author**	**Date**	**Checked**
Calc Title	**Wetland Sizing and dimensions**	**RK**	**11/06/2025**	**DJM**
Catchment	**Catchment and Wetland C**			

References:
WRC 2020/07 8.5.6 Stormwater pond
WRC 2020/07 8.5.7 Wetlands
RITS V2.5 October 2024 - 4.2.18 Constructed Wetlands

Key:
input

Wetland / Pond Sizing and dimensions

Catchment Area	8.54	ha	
Imperviousness <70%?	yes		
Percentage of catchment area	3%		
Wetland surface area	2562	m2	per WRC 2020/06 8.5.7 Govened by EDV volume
Info Table			
	PostDev		
Q2	0.25	m^3/s	See Tab "HEC HMS Results "
V2	5245.00	m^3	
Q10	0.40	m^3/s	
V10	10707.00	m^3	
Q100 (RC6.0)	0.54	m^3/s	
V100 (RCP6.0)	16840.00	m^3	
Min. WQV	1433.35	m^3	1/3 of the 2-year storm 24hr ARI rainfall event.

SUMMARY TABLE

Min. wetland area (3% catchment)	**2562**	m2	
Designed wetland area	**7300**	m	From CAD
Min. WQV	**1433**	m3	Maximum of calculated WQV vs water depth x wetland area
Min. ED	1720	m^3	1.2WQV
Designed ED	2555	m^3	**OK**

Fore Bay Volume	(15% of WQV)	=	215.00	m^3	Per WRC
Fore Bay Area	(10% of Wetland Area)	=	730.00	m^2	per RITS
Designed ForeBay Area		=	1300	m^2	From CAD

Maven Waikato		Job Number 298001	Sheet 1	Rev: A
Job Title	**SL1 - RESIDENTIAL**	**Author**	**Date**	**Checked**
Calc Title	**Wetland Sizing and dimensions**	**RK**	**11/06/2025**	**DJM**
Catchment	**Catchment and Wetland D**			

References:
WRC 2020/07 8.5.6 Stormwater pond
WRC 2020/07 8.5.7 Wetlands
RITS V2.5 October 2024 - 4.2.18 Constructed Wetlands

Key:
input

Wetland / Pond Sizing and dimensions

Catchment Area	5.32	ha	
Imperviousness <70%?	yes		
Percentage of catchment area	3%		
Wetland surface area	1597	m2	per WRC 2020/06 8.5.7 Govened by EDV volume
Info Table			
	PostDev		
Q2	0.19	m^3/s	See Tab "HEC HMS Results "
V2	3313.00	m^3	
Q10	0.30	m^3/s	
V10	6737.00	m^3	
Q100 (RC6.0)	0.40	m^3/s	
V100 (RCP6.0)	10625.00	m^3	
Min. WQV	893.30	m^3	1/3 of the 2-year storm 24hr ARI rainfall event.

SUMMARY TABLE

Min. wetland area (3% catchment)	**1597**	m2	
Designed wetland area	**5395**	m	From CAD
Min. WQV	**893**	m3	Maximum of calculated WQV vs water depth x wetland area
Min. ED	1072	m^3	1.2WQV
Designed ED	1888	m^3	**OK**

Fore Bay Volume Min	(15% of WQV)	=	133.99	m^3	Per WRC
Fore Bay Area Min	(10% of Wetland Area)	=	539.50	m^2	per RITS
Designed ForeBay Area		=	937	m^2	From CAD

Maven Waikato		Job Number 298001	Sheet 1	Rev: A
Job Title	**SL1 - RESIDENTIAL**	**Author**	**Date**	**Checked**
Calc Title	**Wetland Sizing and dimensions**	**RK**	**11/06/2025**	**DJM**
Catchment	**Catchment and Wetland E**			

References:
WRC 2020/07 8.5.6 Stormwater pond
WRC 2020/07 8.5.7 Wetlands
RITS V2.5 October 2024 - 4.2.18 Constructed Wetlands

Key:
input

Wetland / Pond Sizing and dimensions

Catchment Area	5.93	ha	
Imperviousness <70%?	yes		
Percentage of catchment area	3%		
Wetland surface area	1779	m2	per WRC 2020/06 8.5.7 Govened by EDV volume
Info Table			
	PostDev		
Q2	0.21	m^3/s	See Tab "HEC HMS Results "
V2	3773.00	m^3	
Q10	0.34	m^3/s	
V10	7596.00	m^3	
Q100 (RC6.0)	0.45	m^3/s	
V100 (RCP6.0)	11888.00	m^3	
Min. WQV	995.22	m^3	1/3 of the 2-year storm 24hr ARI rainfall event.

SUMMARY TABLE

Min. wetland area (3% catchment)	**1779**	m2	
Designed wetland area	**3900**	m	From CAD
Min. WQV	**995**	m3	Maximum of calculated WQV vs water depth x wetland area
Min. ED	1194	m^3	1.2WQV
Designed ED	1365	m^3	**OK**

Fore Bay Volume	(15% of WQV)	=	149.28	m^3	Per WRC
Fore Bay Area	(10% of Wetland Area)	=	390.00	m^2	per RITS
Designed ForeBay Area		=	630	m^2	From CAD

Maven Waikato		Job Number 298001	Sheet 1	Rev: A
Job Title	**SL1 - RESIDENTIAL**	**Author**	**Date**	**Checked**
Calc Title	**Wetland Sizing and dimensions**	**RK**	**11/06/2025**	**DJM**
Catchment	**Catchment and Wetland F**			

References:
WRC 2020/07 8.5.6 Stormwater pond
WRC 2020/07 8.5.7 Wetlands
RITS V2.5 October 2024 - 4.2.18 Constructed Wetlands

Key:
input

Wetland / Pond Sizing and dimensions

Catchment Area	3.99	ha	
Imperviousness <70%?	yes		
Percentage of catchment area	3%		
Wetland surface area	1196	m2	per WRC 2020/06 8.5.7 Govened by EDV volume
Info Table			
	PostDev		
Q2	0.21	m^3/s	See Tab "HEC HMS Results "
V2	2465.00	m^3	
Q10	0.34	m^3/s	
V10	5057.00	m^3	
Q100 (RC6.0)	0.53	m^3/s	
V100 (RCP6.0)	79510.00	m^3	
Min. WQV	655.00	m^3	1/3 of the 2-year storm 24hr ARI rainfall event.

SUMMARY TABLE

Min. wetland area (3% catchment)	**1196**	m2	
Designed wetland area	**2800**	m	From CAD
Min. WQV	**655**	m3	Maximum of calculated WQV vs water depth x wetland area
Min. ED	786	m^3	1.2WQV
Designed ED	980	m^3	**OK**

Fore Bay Volume	(15% of WQV)	=	98.25	m^3	Per WRC
Fore Bay Area	(10% of Wetland Area)	=	280.00	m^2	per RITS
Designed ForeBay Area		=	239	m^2	From CAD