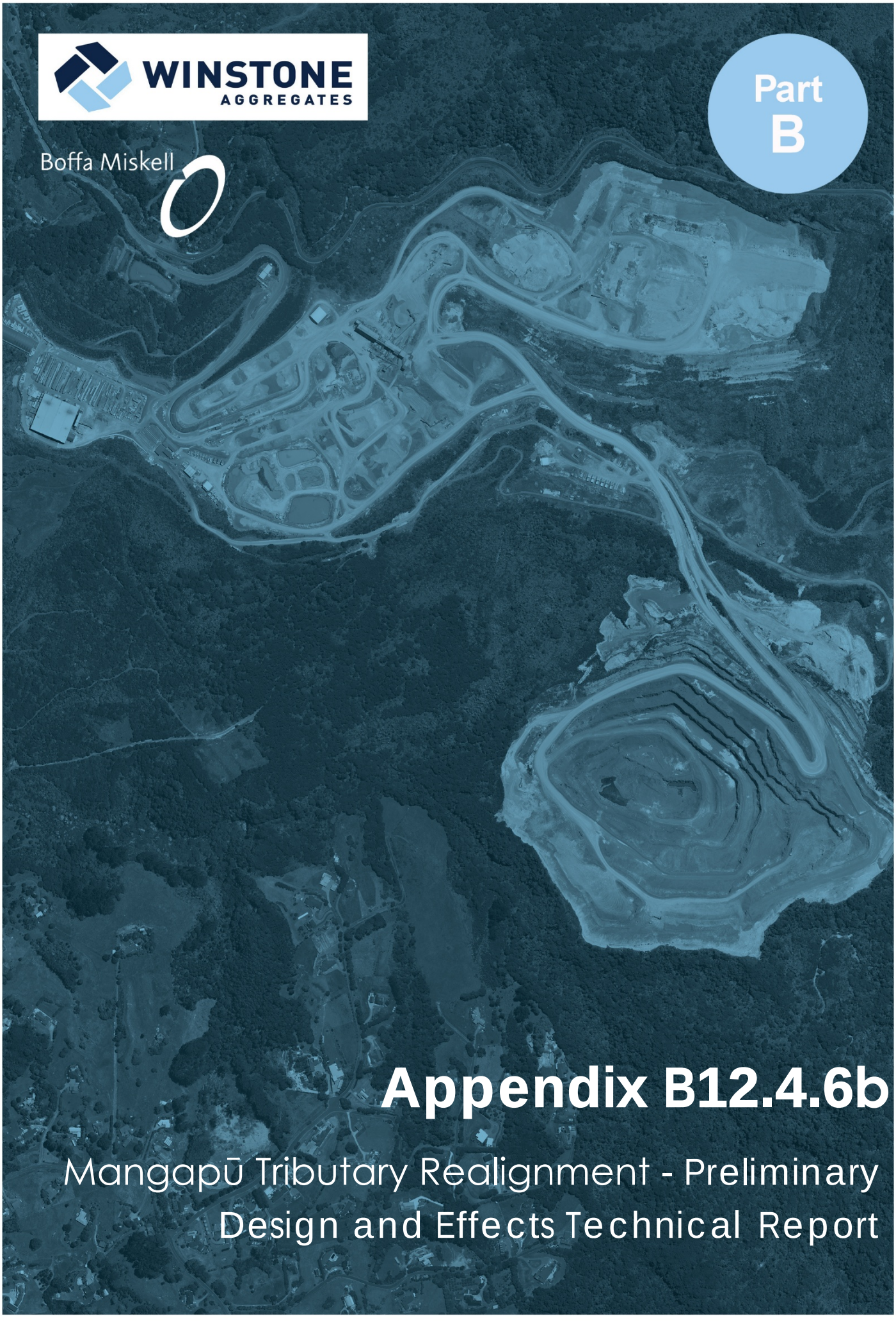
WINSTONE AGGREGATES

Boffa Miskell

Part B



Appendix B12.4.6b

Mangapū Tributary Realignment - Preliminary Design and Effects Technical Report

Appendix A: Site Visit Photos

Figure 1: Mangapū Tributary gauging location.

Figure 2: Approximate upstream tie-in location for the realignment channel, on the Managpū Tributary

Figure 3: Mangapū Stream gauging location and future downstream confluence of the realigned stream.

Figure 4: Proposed realigned steam confluence with the Mangapū Stream location.

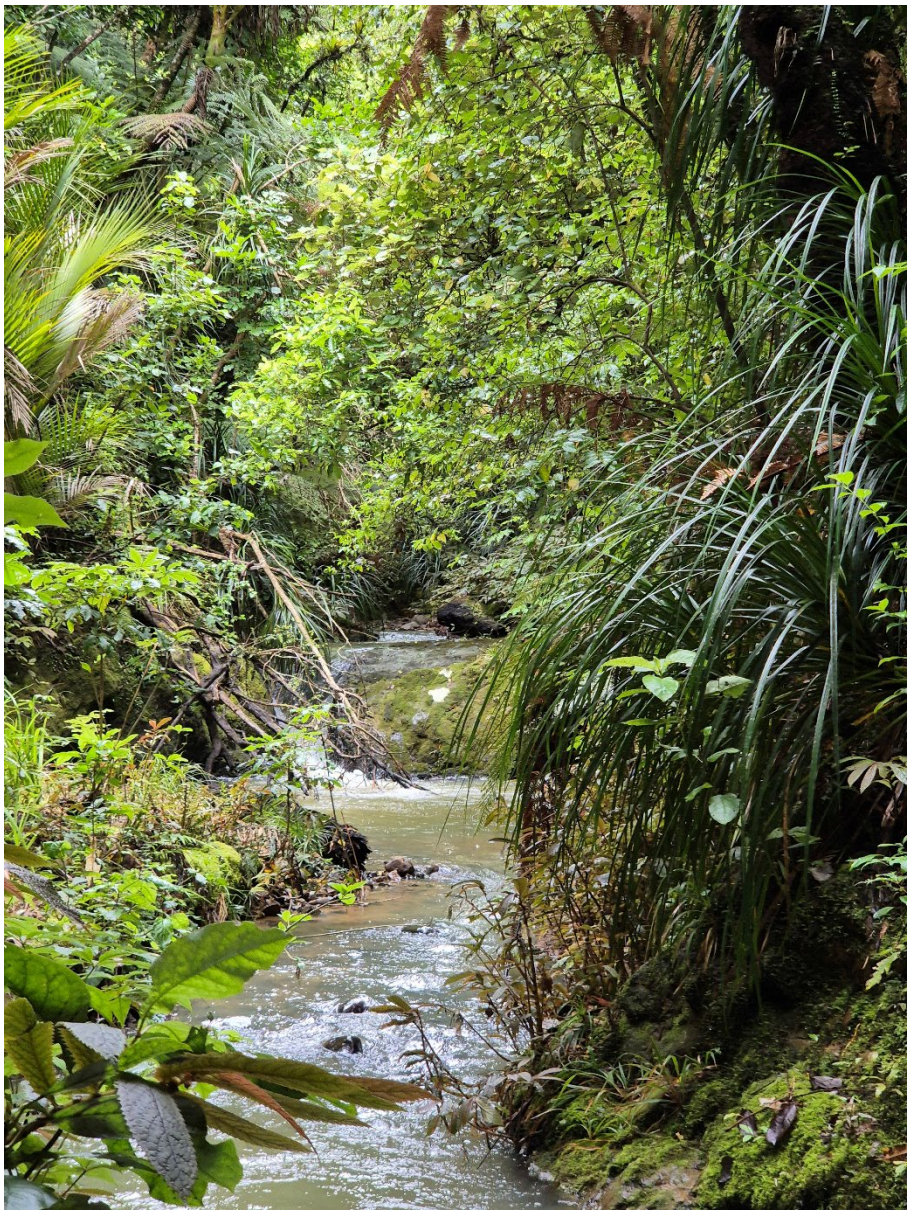


Figure 5: Upstream of Mangapū Stream gauging location.

Figure 6: Typical stream bed substrate in the Mangapū Stream

Figure 7: Typical stream characteristics in the Mangapū Stream

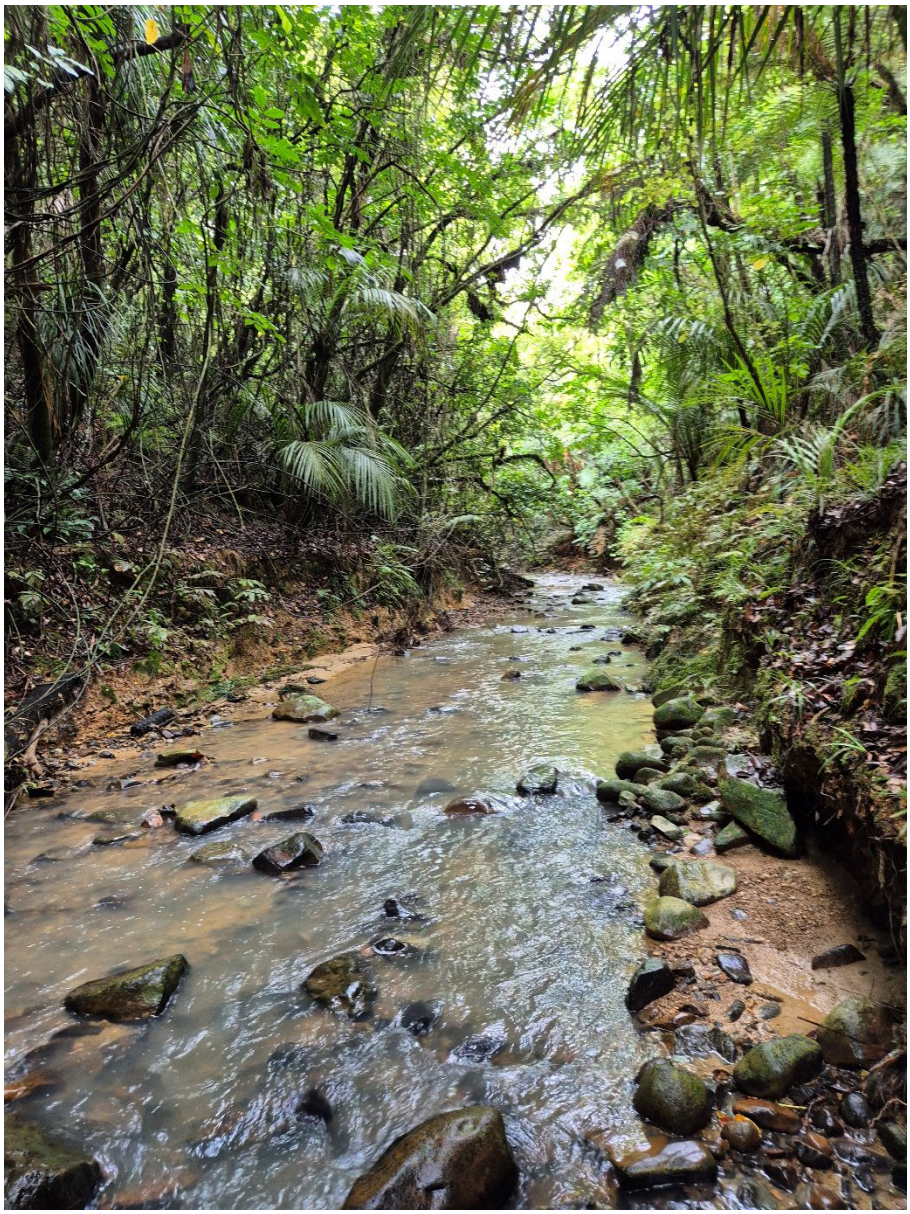


Figure 8: Typical stream characteristics in the Managpū Stream

Figure 9: Existing confluence of the Mangapū Tributary and the Mangapū Stream

Figure 10: Mangapū Stream downstream of the existing confluence with the Mangapū Tributary

Figure 11: Mangapū Stream at Ponga Road.

Appendix B: Hydraulic Modelling Results & Flood Map

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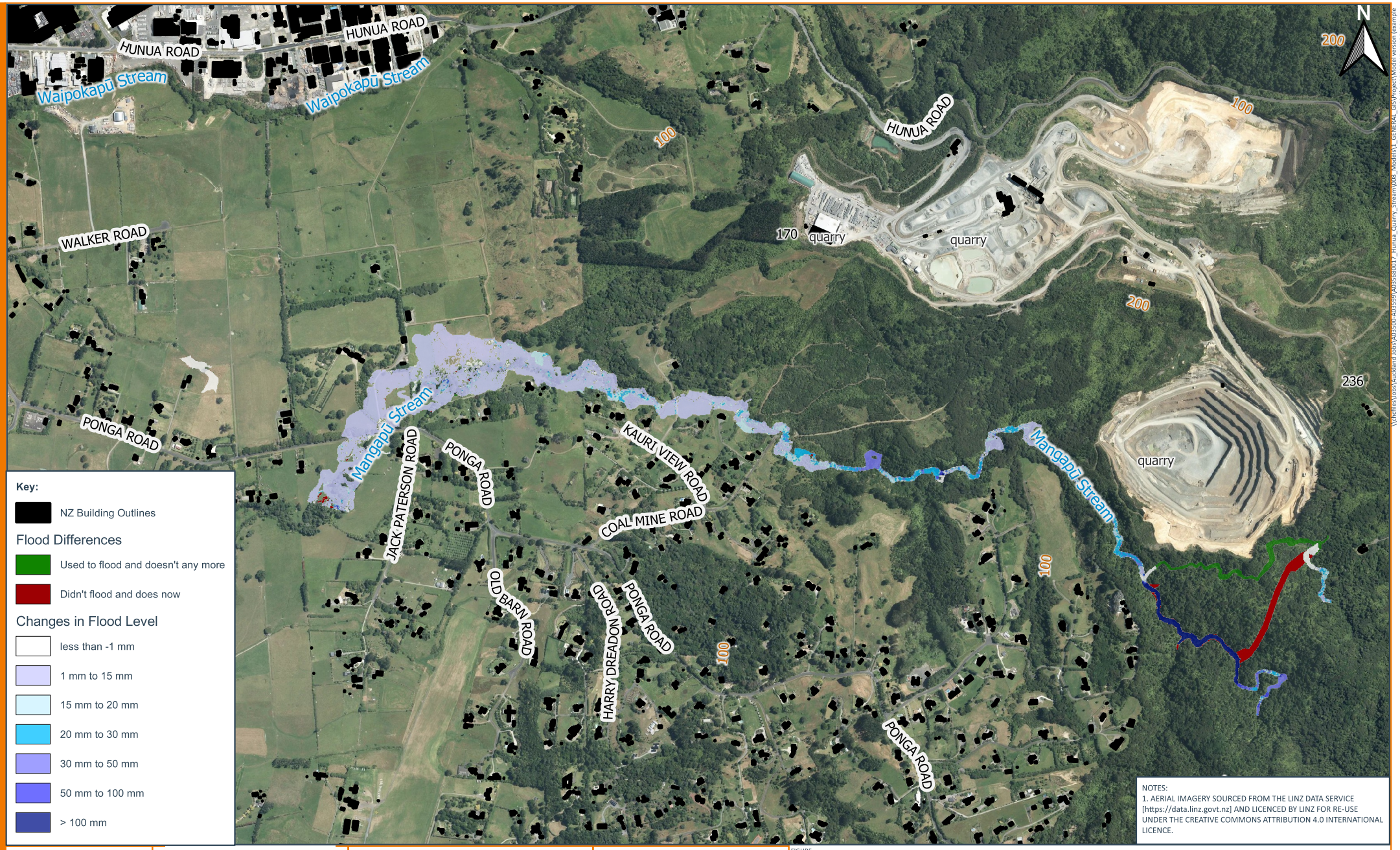

250 500 m

METRES

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A	Draft	DEC 25	TC

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FIGURE

FIGURE A1: FLOOD DIFFERENCE (NEW ALIGNMENT - EXISTING) 1% AEP WITH 3.8 DEGREES OF WARMING

PROJECT MANGAPŪ HYDRAULIC MODEL

C:\1\AD\395688017_HNOS_001.aprx
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Appendix C: Temporal Changes in Stream Conditions

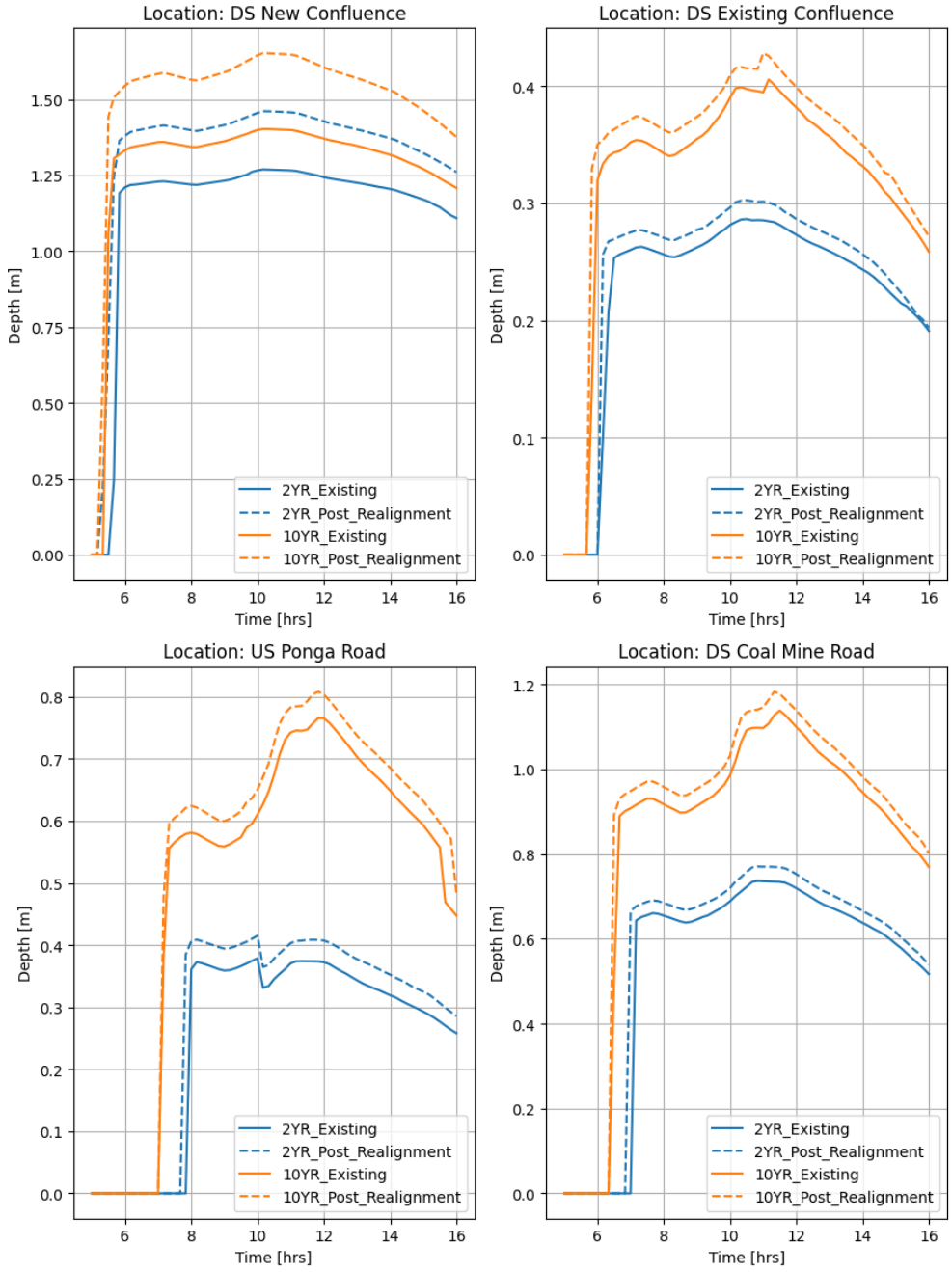

Figure C1: 2 & 10 Year ARI flood depths (m) for extraction locations see Figure 11.

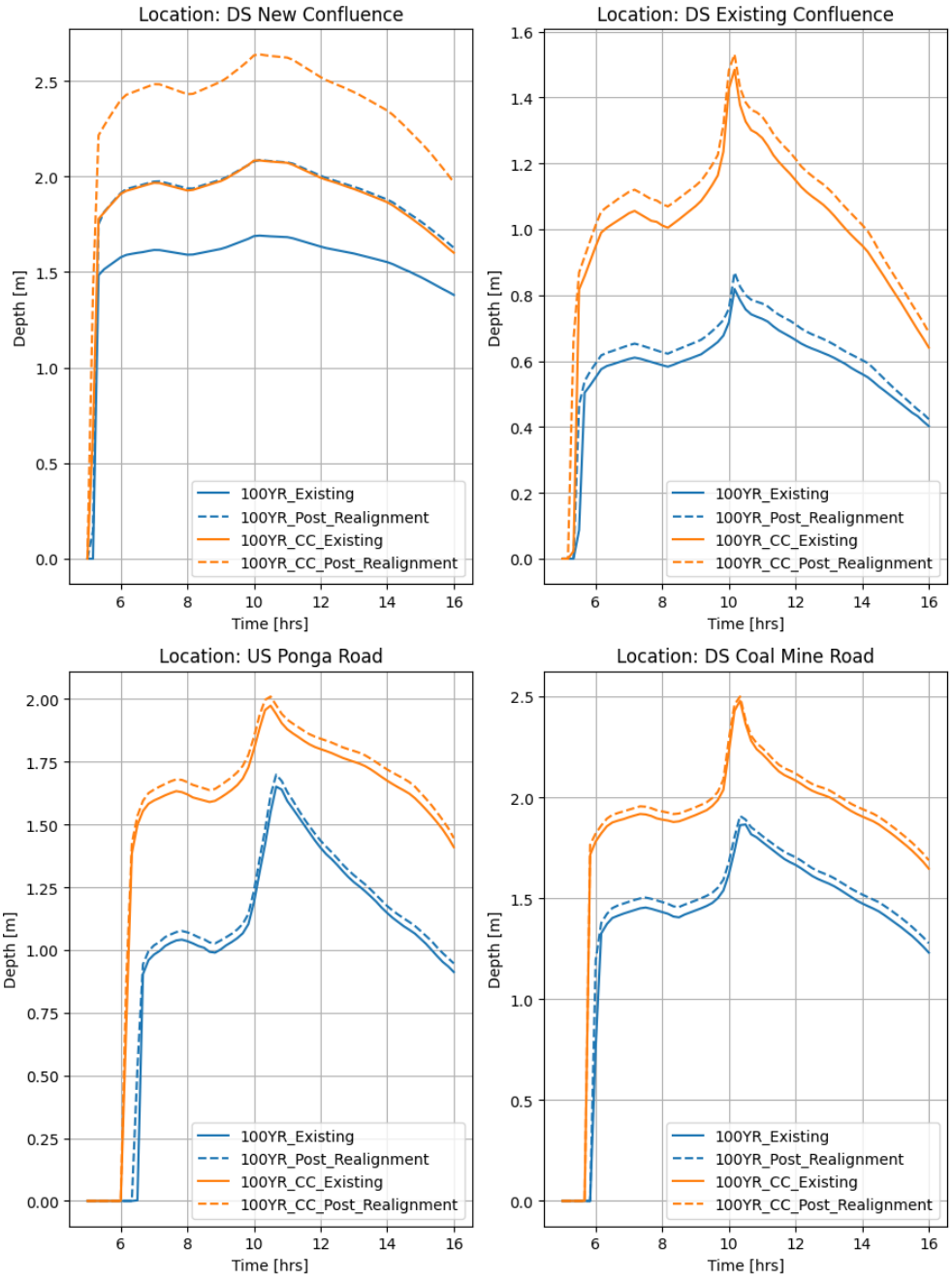

Figure C2: 100 Year ARI flood depths (m) for extraction locations see Figure 11.

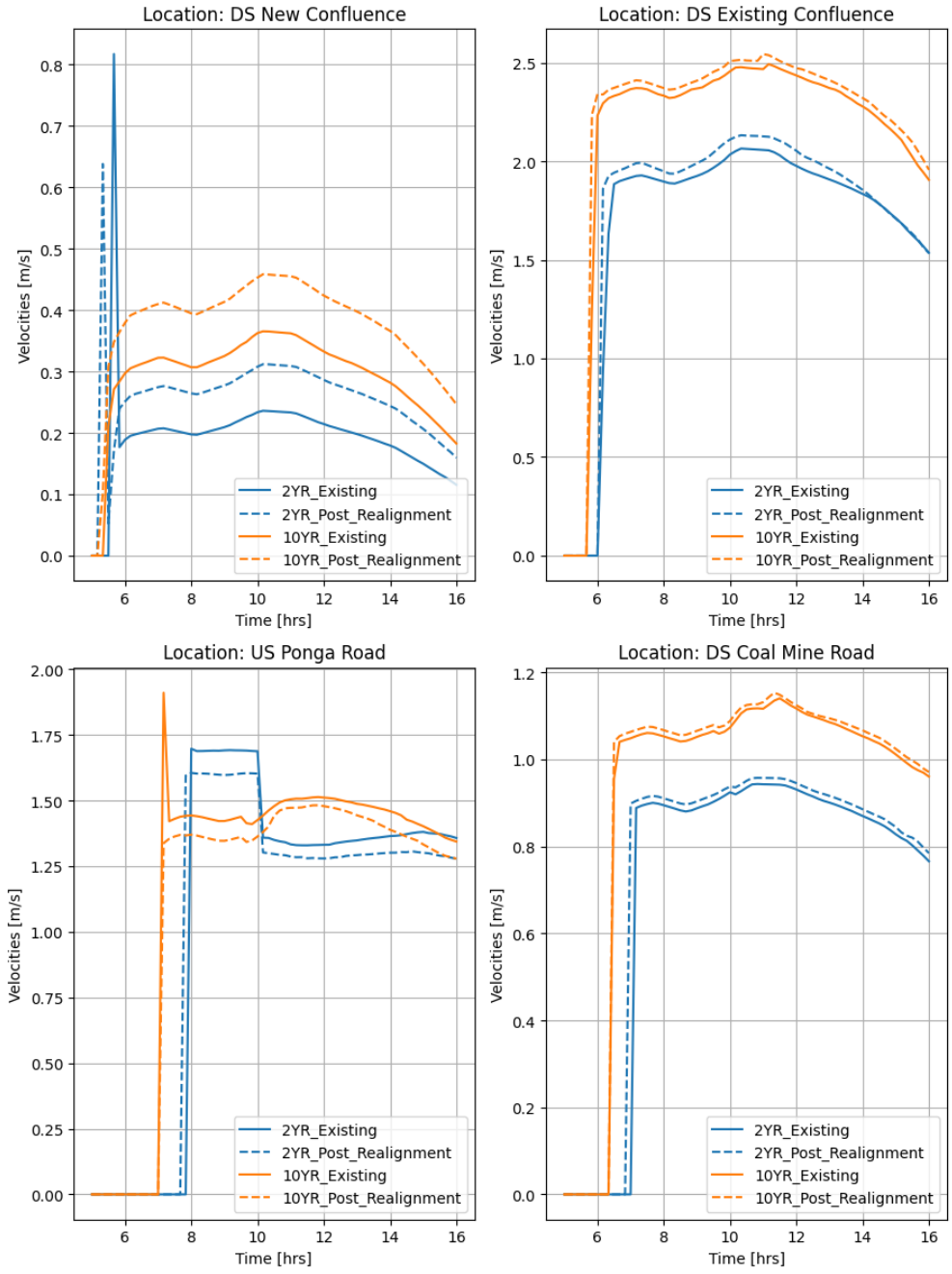

Figure C3: 2- & 10-Year ARI flood velocities (m/s) for extraction locations see Figure 11.

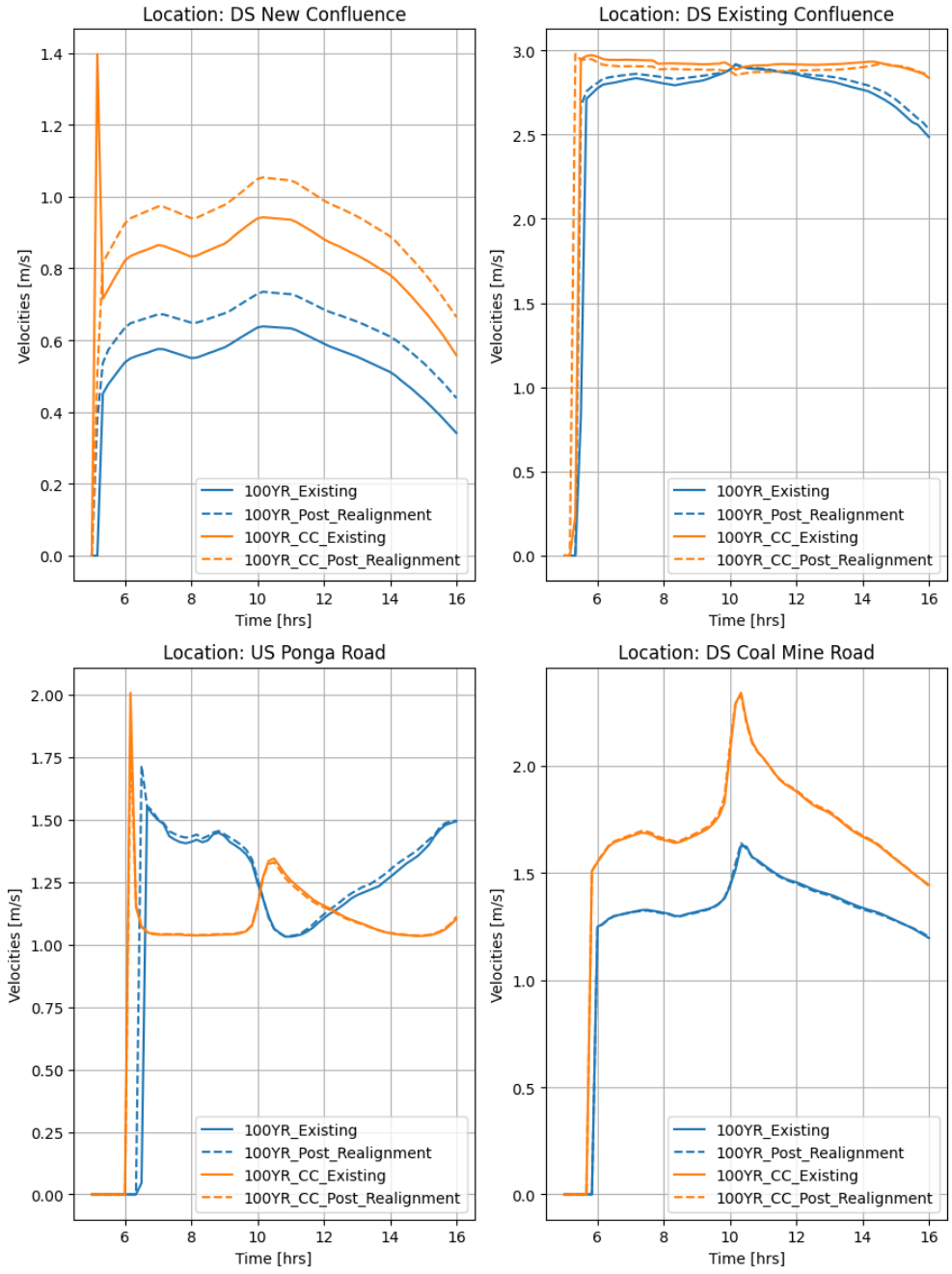

Figure C4: 100 Year ARI flood velocities (m/s) for extraction locations see Figure 11.

Appendix D: Preliminary Design Drawings

WINSTONE AGGREGATES: A DIVISION OF FLETCHER CONCRETE AND INFRASTRUCTURE LIMITED.

HUNUA QUARRY DEVELOPMENT - MANGAPŪ TRIBUTARY REALIGNMENT

DRAWING INDEX			
DRG No.	TITLE	ISSUE DATE	REV
A035680017-GN-000	LOCALITY PLAN AND DRAWING INDEX	FEB 26	A
A035680017-GN-001	GENERAL NOTES	FEB 26	A
A035680017-WR-010	STREAM REALIGNMENT GENERAL ARRANGEMENT	FEB 26	A
A035680017-WR-101	STREAM REALIGNMENT PLAN AND SECTION (SHEET 1 OF 4)	FEB 26	A
A035680017-WR-102	STREAM REALIGNMENT PLAN AND SECTION (SHEET 2 OF 4)	FEB 26	A
A035680017-WR-103	STREAM REALIGNMENT PLAN AND SECTION (SHEET 3 OF 4)	FEB 26	A
A035680017-WR-104	STREAM REALIGNMENT PLAN AND SECTION (SHEET 4 OF 4)	FEB 26	A
A035680017-WR-201	STREAM REALIGNMENT CROSS SECTION (SHEET 1 OF 2)	FEB 26	A
A035680017-WR-202	STREAM REALIGNMENT CROSS SECTION (SHEET 2 OF 2)	FEB 26	A
A035680017-WR-301	STREAM REALIGNMENT UPSTREAM TIE IN 01 PLAN & SECTION	FEB 26	A

DRAWING ISSUE :

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DRAWING TITLE :

LOCALITY PLAN AND DRAWING INDEX

DRAWING NO. : REV :

A035680017-GN-000 A

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P.O. Box 9528, Auckland 1149, New Zealand.
Telephone : +64 9 523 6900
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2. DRAWINGS SHALL NOT BE SCALED AND ONLY STATED DIMENSIONS SHALL BE USED.
3. ALL GROUND LEVELS IN METERS UNLESS OTHERWISE STATED.
4. BULK EARTH WORK LEVEL, FLOOD LEVELS AND CHANNEL GEOMETRY ARE BASED ON EARLY CONCEPT DESIGN AND SUBJECT TO CHANGE
5. DETAILS REGARDING FLOOD LEVELS REFER TO DESIGN REPORT A035680017R001
6. THESE DRAWINGS HAVE BEEN PREPARED TO SUPPORT A FAST TRACK CONSENT APPLICATION AND SHALL NOT BE CONSTRUCTED FROM.
7. COORDINATE SYSTEM: MOUNT EDEN CIRCUIT 2000
   LEVEL DATUM: AUCKLAND 1946
8. DRAWINGS TO BE PRINTED IN COLOUR FOR CLARITY.

SOURCE

1. DRONE AERIAL IMAGERY (FLOWN OCTOBER EOM 2025) PROVIDED BY WINSTONE AGGREGATES (FLETCHER CONCRETE & INFRASTRUCTURE LTD)
2. AERIAL IMAGERY (FLOWN 2024-2025) PROVIDED UNDER LICENCE FROM AUCKLAND COUNCIL FOR RE-USE UNDER THE CREATIVE COMMONS ATTRIBUTION 4.0 INTERNATIONAL LICENCE.
3. SURVEY PROVIDED BY WINSTONE AGGREGATES (FLETCHER CONCRETE & INFRASTRUCTURE LTD) SURVEYORS - CKL NZ - RECIEVED 10/12/2025
4. CADASTRAL INFORMATION (AS AT 08/09/2019) AND INSET DERIVED FROM LINZ DATA.

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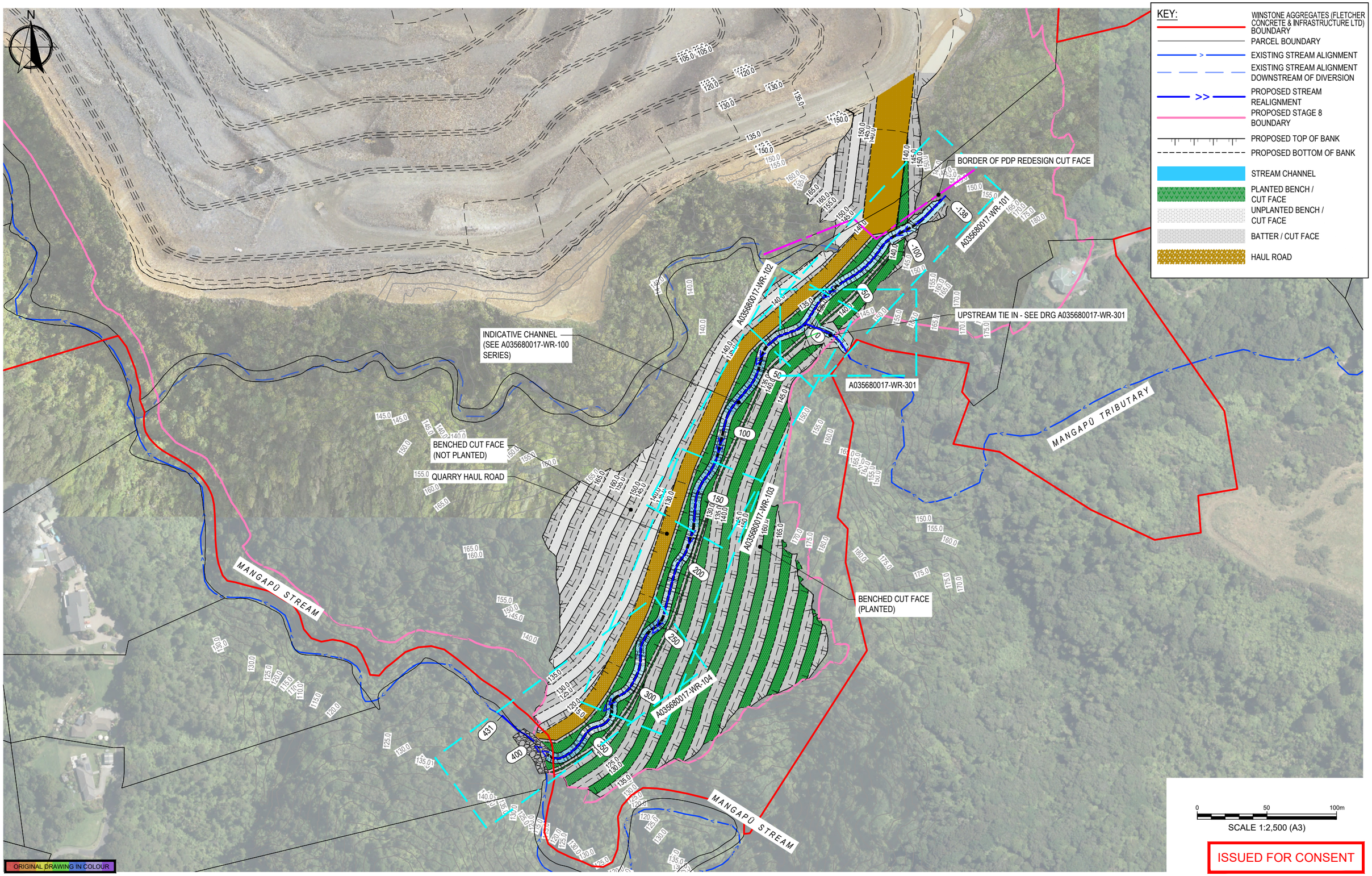

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STREAM REALIGNMENT GENERAL ARRANGEMENT

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- PROPOSED STREAM REALIGNMENT
- PROPOSED STAGE 8 BOUNDARY
- PROPOSED TOP OF BANK
- PROPOSED BOTTOM OF BANK
- PLANTED BENCH / CUT FACE
- UNPLANTED BENCH / CUT FACE
- BATTER / CUT FACE
- HAUL ROAD
- STREAM CHANNEL - WATERFALL
- STREAM CHANNEL - CASCADE
- STREAM CHANNEL - RUN
- STREAM CHANNEL - RIFFLE
- STREAM CHANNEL - POOL

NOTES

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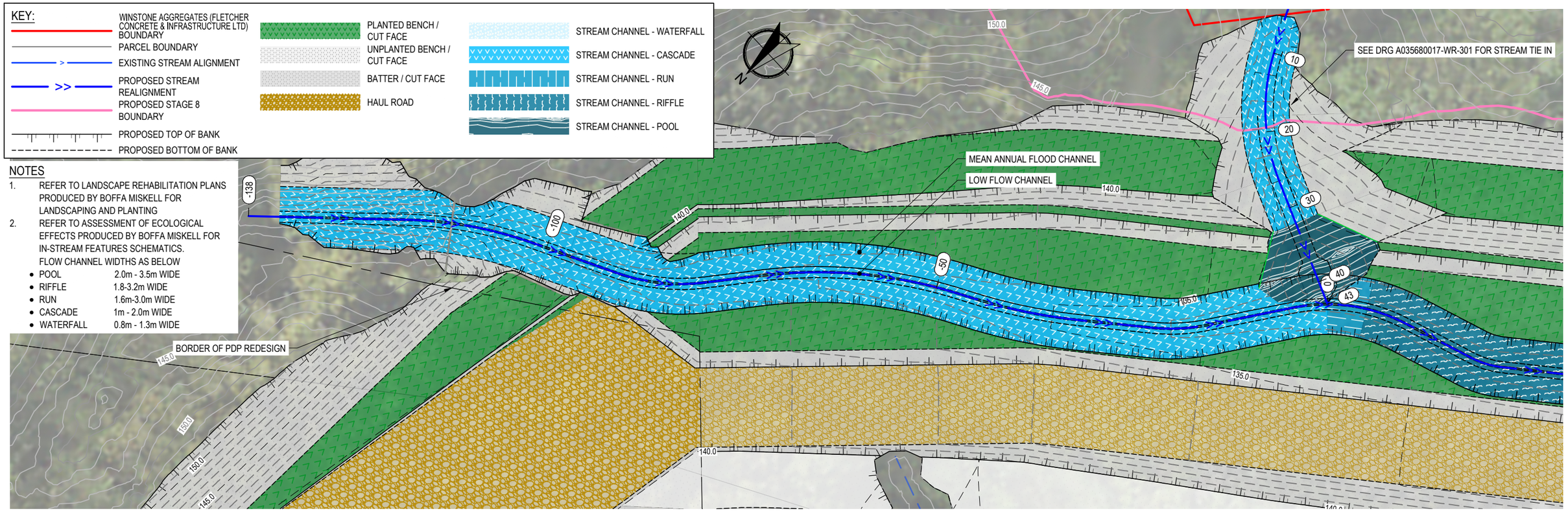
   - CASCADE 1m - 2.0m WIDE
   - WATERFALL 0.8m - 1.3m WIDE



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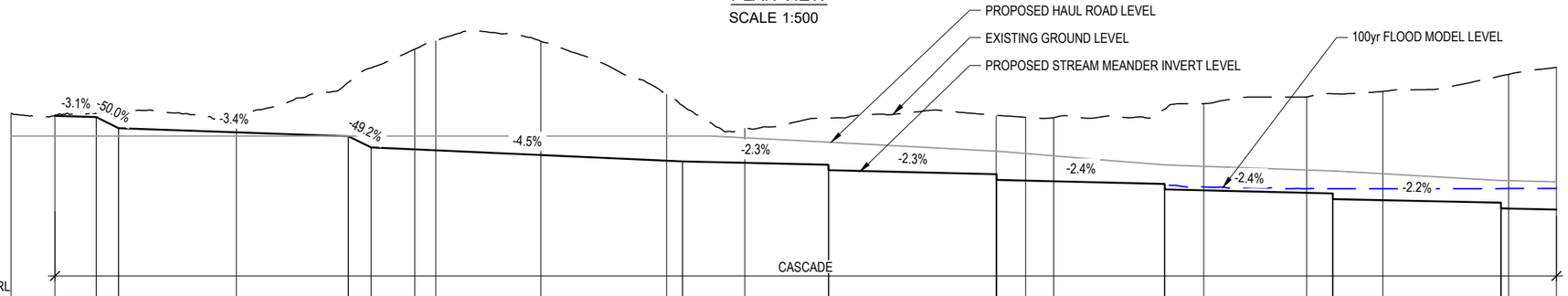

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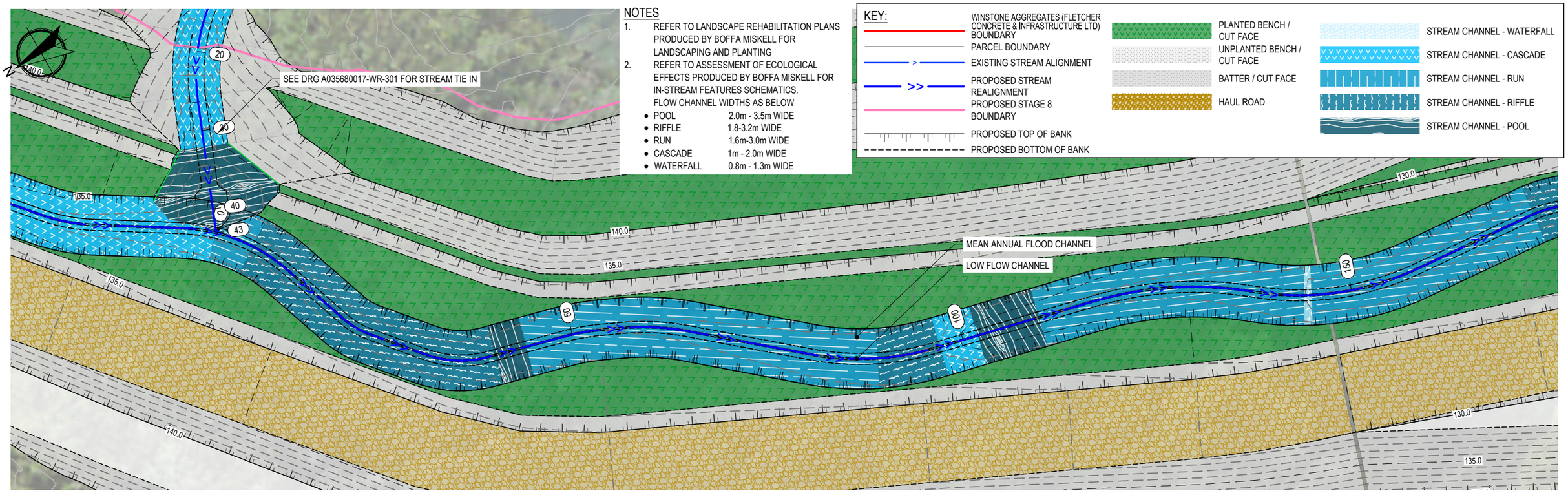

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- STREAM CHANNEL - RUN
- STREAM CHANNEL - RIFFLE
- STREAM CHANNEL - POOL

PLAN VIEW

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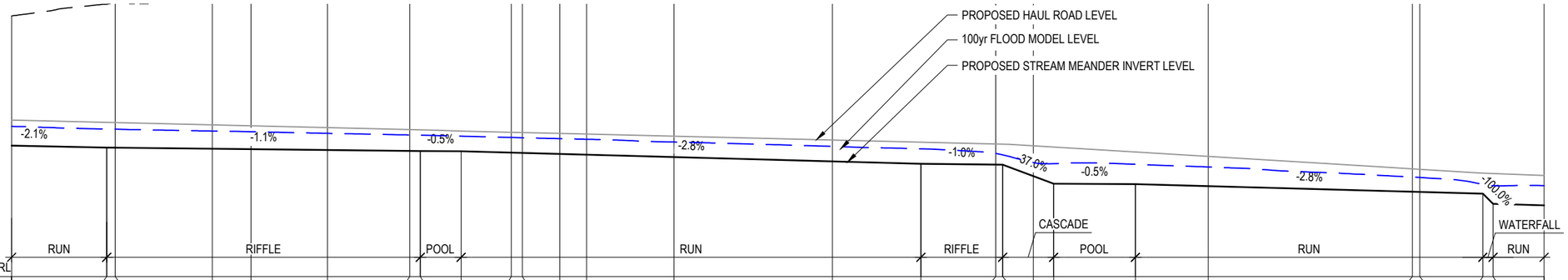

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EXISTING GROUND LEVEL (m RL)	145.48		146.63	146.72		146.86	147.02		147.64		148.64	148.75	149.17	149.51	149.68	150.03	150.23	151.30		154.09		156.71	159.54	159.76	161.30	162.16		166.37	169.34		175.93	175.94	177.05	177.28	177.93
PROPOSED DESIGN LEVELS (m RL)	132.80		132.60	132.59		132.49	132.45		132.37		132.28	132.27	132.25	132.12	132.09	131.99	131.91	131.68		131.25		131.01	130.94	130.93	129.82	129.08		129.04	128.85		128.30	128.28	128.11	127.11	126.97
PROPOSED HAUL ROAD DESIGN LEVELS (m RL)	135.29		135.07	135.05		134.83	134.74		134.56		134.37	134.34	134.23	134.11	134.08	133.99	133.93	133.72		133.35		133.14	132.96	132.95	132.79	132.67		132.18	131.74		130.53	130.49	130.10	130.07	129.87
CUT/FILL DEPTH (m)	-12.68		-14.03	-14.12		-14.37	-14.57		-15.27		-16.36	-16.48	-16.92	-17.40	-17.59	-18.05	-18.32	-19.62		-22.84		-25.70	-28.60	-28.83	-31.48	-33.07		-37.33	-40.49		-47.64	-47.66	-48.95	-50.17	-50.96
100YR DESIGN FLOOD MODEL LEVEL (m RL)	134.68		134.42	134.40		134.23	134.16		134.00		133.84	133.82	133.72	133.60	133.57	133.48	133.42	133.15		132.72		132.49	132.04	131.89	131.14	131.04		130.97	130.71		129.73	129.68	129.03	128.88	128.90
HORIZONTAL GEOMETRY		L: 14.41 R: 21.20			L: 9.51		L: 3.79 R: 10.30	L: 7.48		L: 8.05 R: 13.13			L: 9.96	L: 4.73 R: 27.14	L: 2.62	L: 8.56 R: 30.88			L: 15.52		L: 15.98 R: 33.72				L: 20.80				L: 19.99 R: 45.26		L: 0.71	L: 20.90 R: 35.18		
CHAINAGE (m)	0.00		9.33	10.14		19.65	23.44		30.92		38.97	40.00	44.00	48.92	50.00	53.65	56.27	64.83		80.35		89.00	96.33	97.00	100.00	102.00		110.00	117.13		137.12	137.83	144.00	145.00	150.00

CL-STREAM CHANNEL LONG SECTION (CH0.00-CH150.00)

SCALE 1:500

0 10 20m

SCALE 1:500 (A3)

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STREAM REALIGNMENT PLAN AND SECTION (SHEET 2 OF 4)

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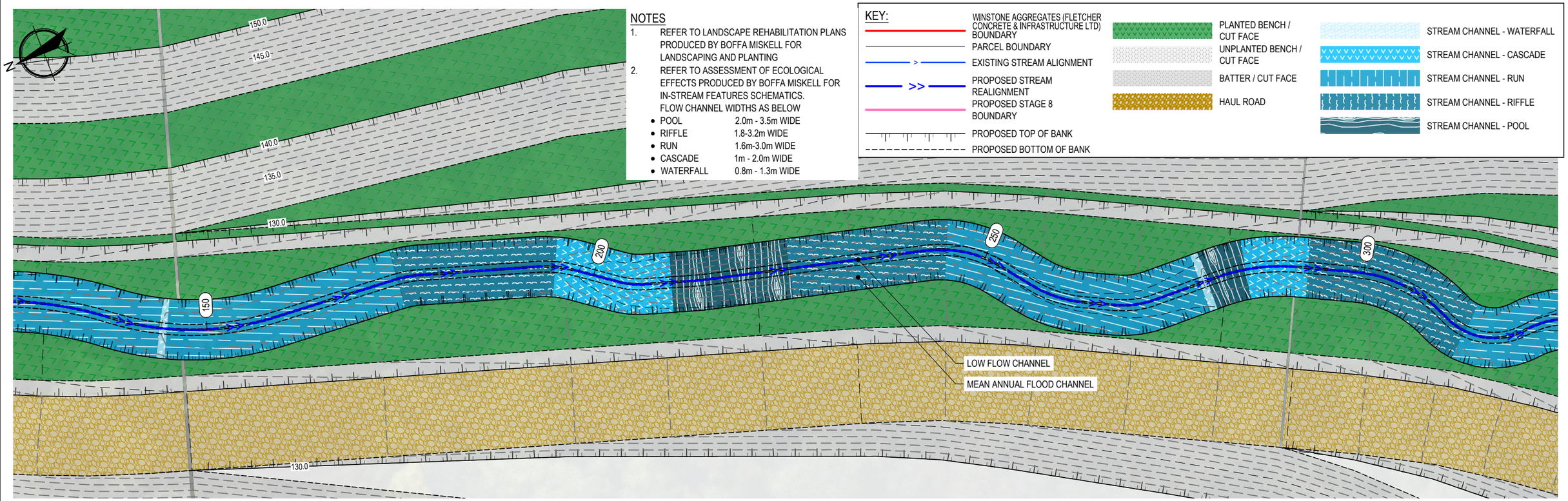

NOTES

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   FLOW CHANNEL WIDTHS AS BELOW
   - POOL 2.0m - 3.5m WIDE
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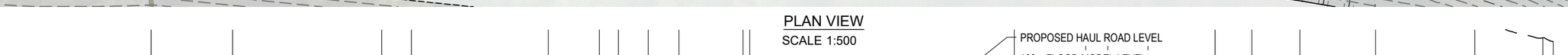
- STREAM CHANNEL - RIFFLE
- STREAM CHANNEL - POOL

PLAN VIEW

SCALE 1:500



| HA.DATUM 110m RL | | |

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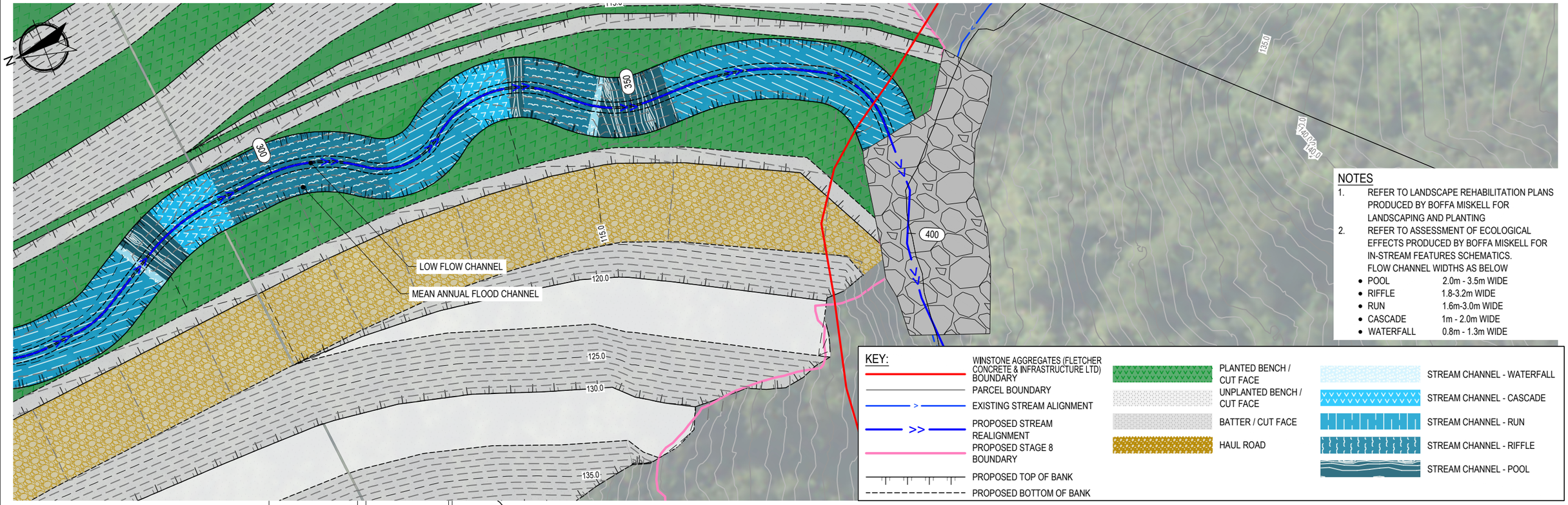

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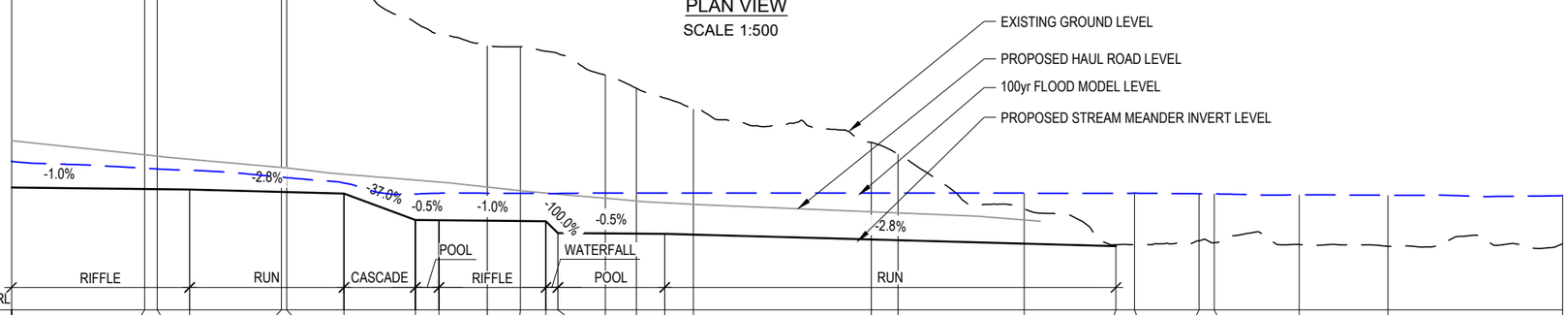
PLAN VIEW
SCALE 1:500



HA.DATUM 105m RL																														
EXISTING GROUND LEVEL (m RL)	136.00		138.84	139.38	139.81		136.24	136.02	133.25		129.16	128.19	127.20	127.11	126.74	126.54	124.73	123.63	122.80	121.88		119.06	118.09	113.47	110.47	110.47	110.81	110.65	110.49	110.33	110.56
PROPOSED DESIGN LEVELS (m RL)	115.27		115.16	115.15	115.12		114.91	114.89	114.76		112.54	112.53	112.49	112.46	112.44	111.44	111.42	111.41	111.40	111.33		110.92	110.86	110.56	110.35						
PROPOSED HAUL ROAD DESIGN LEVELS (m RL)	119.21		118.03	117.91	117.64		116.96	116.92	116.39		115.90	115.74	115.32	115.01	114.82	114.72	114.39	114.15	113.99	113.87		113.24	113.15	112.55							
CUT/FILL DEPTH (m)	-20.73		-23.68	-24.23	-24.69		-21.33	-21.13	-18.49		-16.62	-15.66	-14.71	-14.65	-14.30	-15.10	-13.31	-12.22	-11.40	-10.55		-8.15	-7.23	-2.90	-0.12						
100YR FLOOD DEPTH TO DESIGN+EX (m)	-1.11		0.56	0.52	-0.54		0.24	0.23	-0.03		-1.76	-1.61	1.36	1.21	-1.16	-2.16	2.18	2.03	-1.87	1.77		1.03	0.92	0.82							
HORIZONTAL GEOMETRY		L: 12.31 R: 17.48		L: 1.06	L: 10.44 R: 8.26	L: 0.45				L: 16.89 R: 12.14				L: 2.80	L: 9.75 R: 13.12			L: 4.80			L: 14.99 R: 30.00		L: 2.24	L: 10.63 R: 9.73	L: 9.31	L: 6.70	L: 7.17	L: 7.45	L: 14.72	
CHAINAGE (m)	300.00		311.21	312.27	315.00		322.71	323.16	328.00		334.00	336.00	340.05	342.85	345.00	346.09	350.00	352.60	355.00	357.41		372.40	374.64	385.26	393.00	394.57	400.00	401.27	408.44	415.89	430.61	430.61

CL-STREAM CHANNEL LONG SECTION (CH-300.00-CH430.61)
SCALE 1:500

0 10 20m
SCALE 1:500 (A3)

ISSUED FOR CONSENT

ORIGINAL DRAWING IN COLOUR

NO.	REVISION	DATE	APP.
A	ISSUED FOR CONSENT	FEB 26	

WINSTONE AGGREGATES

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ace MEMBER

CLIENT: WINSTONE AGGREGATES: A DIVISION OF FLETCHER CONCRETE AND INFRASTRUCTURE LIMITED.

PROJECT: HUNUA QUARRY DEVELOPMENT - MANGAPŪ TRIBUTARY REALIGNMENT

DESIGNED	DESIGN REVIEW	DATE	APPROVED	DATE
T.C	V.J	FEB 26		
DRAWN	DRAWING CHECK	DATE	THIS DRAWING IS NOT FOR CONSTRUCTION UNLESS SIGNED AS APPROVED	
D.F.P		FEB 26		

STREAM REALIGNMENT PLAN AND SECTION (SHEET 4 OF 4)

SCALE :	DRAWING NO. :	REV :
AS SHOWN (A3)	A035680017-WR-104	A

DO NOT SCALE DRAWING Plot: 18/02/2026 9:15:27 am FILED: A035680017-WR-104.dwg

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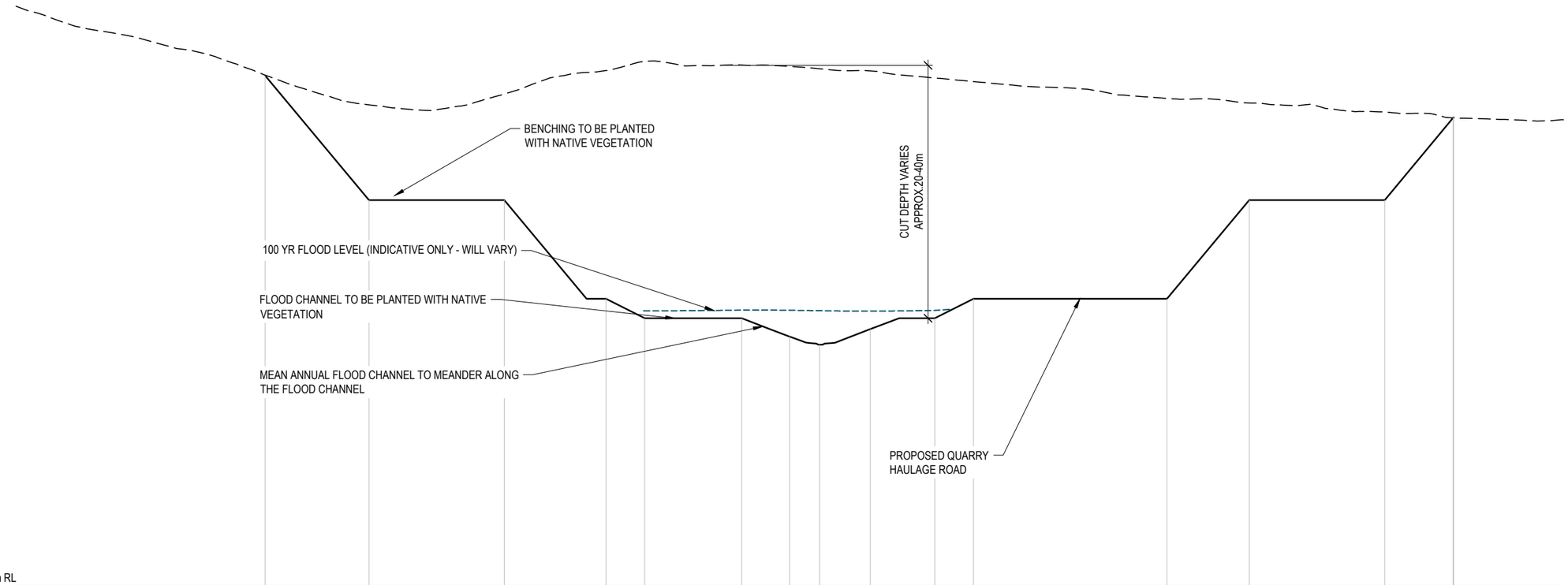
KEY:
- EXISTING GROUND
- PROPOSED GROUND
- 100yr FLOOD MODEL LEVEL



H.A.DATUM: 120m RL

| | | |

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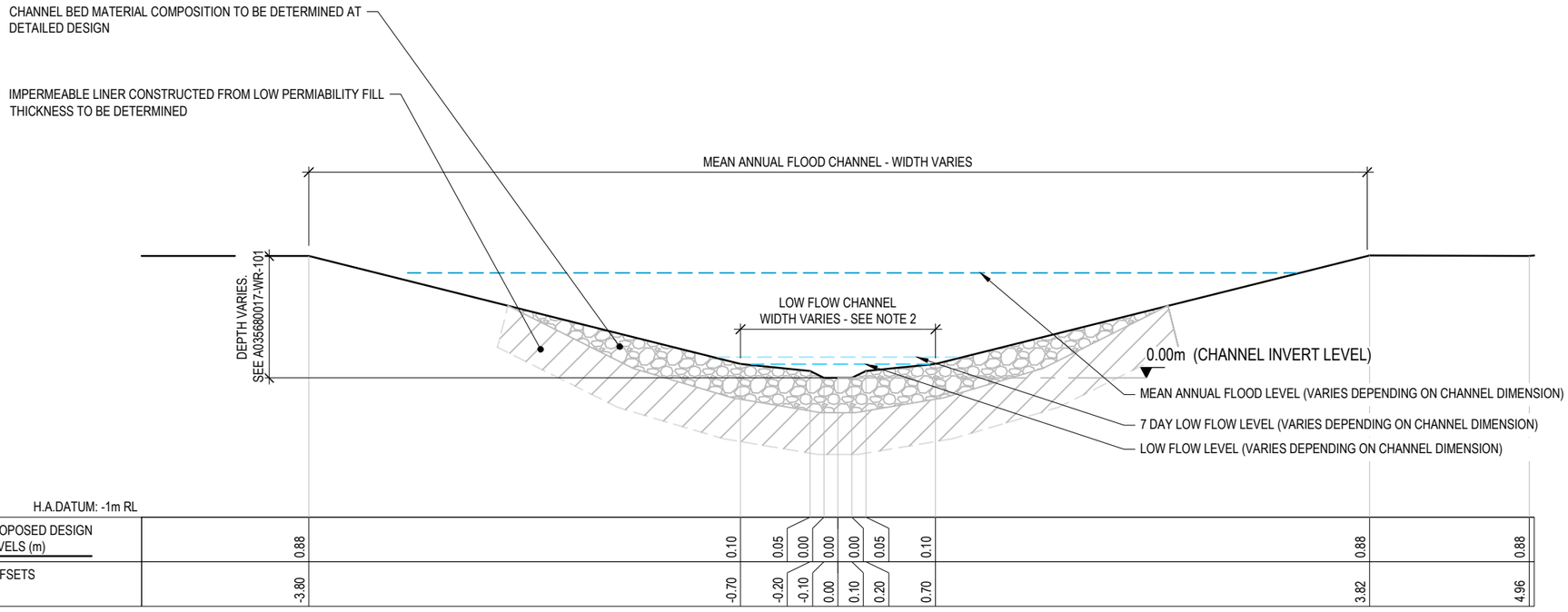
KEY:

- PROPOSED GROUND
- 7DAY LOW FLOW FLOOD LEVEL
- LOW FLOW LEVEL
- MEAN ANNUAL FLOOD LEVEL

NOTES

1. REFER TO LANDSCAPE REHABILITATION PLANS PRODUCED BY BOFFA MISKELL FOR LANDSCAPING AND PLANTING
2. REFER TO ASSESSMENT OF ECOLOGICAL EFFECTS PRODUCED BY BOFFA MISKELL FOR IN-STREAM FEATURES SCHEMATICS. FLOW CHANNEL WIDTHS AS BELOW
   - POOL 2.0m - 3.5m WIDE
   - RIFFLE 1.8-3.2m WIDE
   - RUN 1.6m-3.0m WIDE
   - CASCADE 1m - 2.0m WIDE
   - WATERFALL 0.8m - 1.3m WIDE



H.A.DATUM: -1m RL

PROPOSED DESIGN LEVELS (m)	0.88	0.10	0.05	0.00	0.00	0.00	0.05	0.10	0.88	0.88
OFFSETS (m)	-3.80	-0.70	-0.20	-0.10	0.00	0.10	0.20	0.70	3.82	4.96

TYPICAL LOW FLOW CROSS SECTION

SCALE 1:40

ISSUED FOR CONSENT

ORIGINAL DRAWING IN COLOUR

NO.	REVISION	DATE	APP.
A	ISSUED FOR CONSENT	FEB 26	

WINSTONE AGGREGATES

PATTLE DELAMORE PARTNERS

ace NEW ZEALAND MEMBER

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CLIENT: WINSTONE AGGREGATES: A DIVISION OF FLETCHER CONCRETE AND INFRASTRUCTURE LIMITED.

PROJECT: HUNUA QUARRY DEVELOPMENT - MANGAPŪ TRIBUTARY REALIGNMENT

DESIGNED	DESIGN REVIEW	DATE	APPROVED	DATE
T.C	V.J	FEB 26		
DRAWN	DRAWING CHECK	DATE	THIS DRAWING IS NOT FOR CONSTRUCTION UNLESS SIGNED AS APPROVED	
D.F.P		FEB 26		

STREAM REALIGNMENT CROSS SECTION (SHEET 2 OF 2)

SCALE :	DRAWING NO. :	REV :
AS SHOWN (A3)	A035680017-WR-202	A

DO NOT SCALE DRAWING

Plot: 18/02/2026 9:15:59 am

FILED: A035680017-WR-202.dwg

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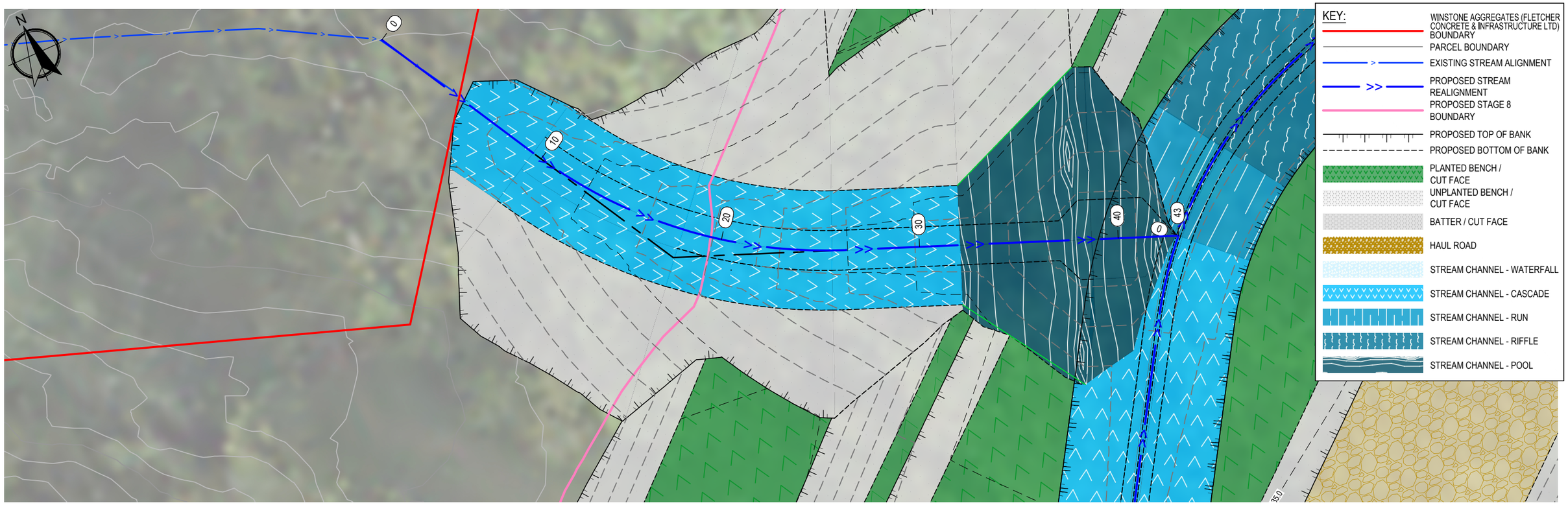
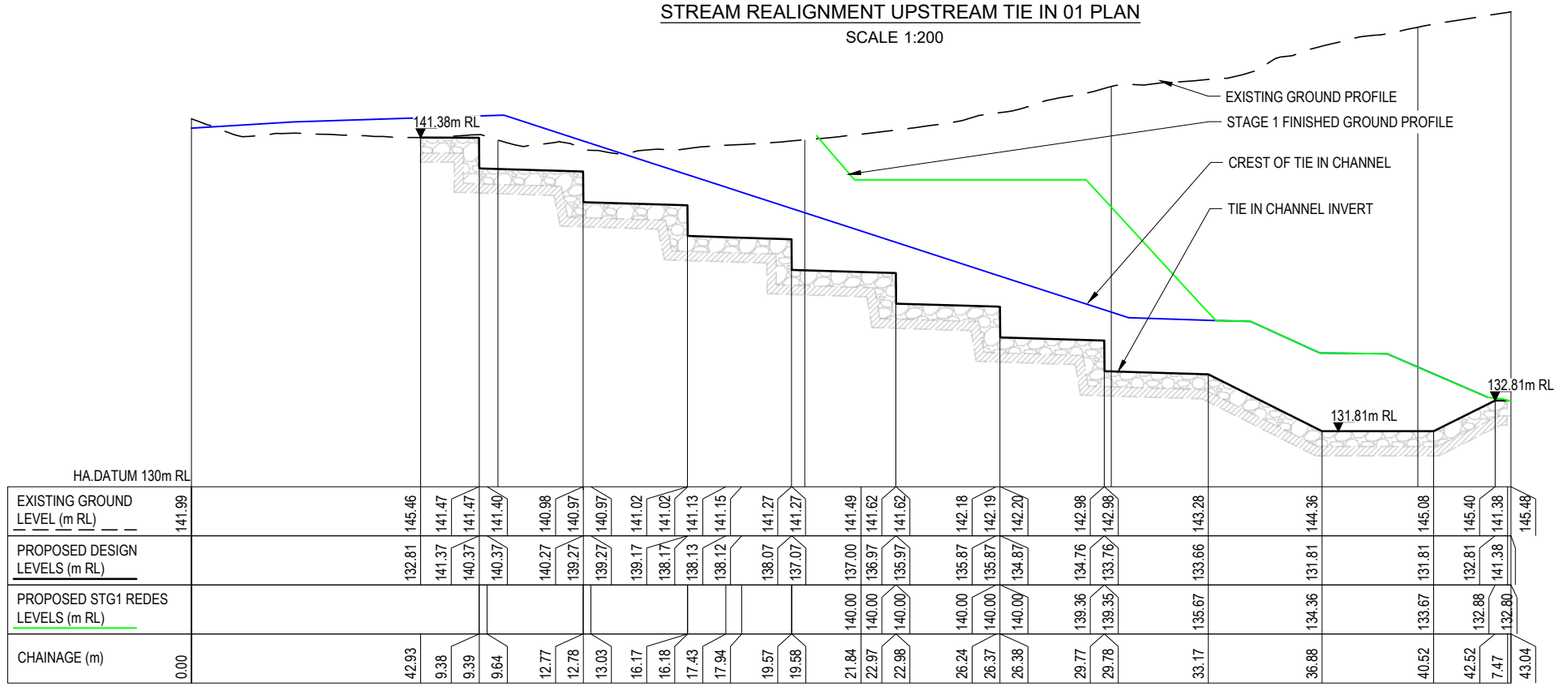
DO NOT SCALE DRAWING
Plot: 18/02/2026 9:15:56 am
FILED: A035680017-WR-301.dwg



STREAM REALIGNMENT UPSTREAM TIE IN 01 PLAN

SCALE 1:200



| HA.DATUM 130m RL | | |

Appendix E: Authors' CVs

Tylan Collins

Stormwater Engineer

Tylan is an Environmental Engineer with over 4 years of experience. Tylan has experience across civil engineering having worked on variety of flood resilience works including Cyclone Gabrielle Recovery. Tylan has a strong interest in stormwater and river engineering and trying to find innovative solutions to design problems.

Qualifications

Bachelor of Engineering (Honours), (Natural Resources), University of Canterbury, 2021

Affiliations

Member of Engineering New Zealand

Member of Water New Zealand

Career Summary

August 2022 – Present
Environmental Engineer, Pattle Delamore Partners Ltd,
Wellington

EXPERTISE

- Hydraulic Modelling
- Flood Hydrology
- Flood risk mapping & assessment of effects
- Stormwater modelling and design
- River erosion protection
- Flood resilience works

CAREER SUMMARY

Since starting at PDP Tylan has worked on a variety of three waters design projects, hydraulic modelling, and hydrologic analysis projects, for both private and public clients. Tylan's recent projects have involved flood modelling, and river and stormwater design. Tylan has worked on projects from feasibility and options assessments to detailed design and construction monitoring. Tylan studied Natural Resources Engineering at the University of Canterbury with a focus on environmental fluid mechanics, stormwater, hydrology and flood modelling and management.

PROJECT EXPERIENCE

Golding Meadow Developments Ltd – Pukekohe Flood Modelling
Hydraulic Modeller

Golding Meadow Developments is working on a Plan Change in Pukekohoe along the Tutaenui Stream upstream of Yates Road. Tylan developed a flood model using hydrological inputs following the TP108 guideline and successfully calibrated the model to the existing Auckland Council hydraulic model of Pukekohoe.

Tylan assessed the flooding effects of the proposed development on the downstream communities. Following the assessment of effects, an options assessment was undertaken that tested an extensive range of options in the hydraulic model to determine where key hydraulic constraints are located to target what could reduce the flood effects. This is being used to confirm the best practicla option in the catchment stormwater management plan

BOPRC – Ngongotahā Stream Flood Resilience & Design
Engineer/Hydraulic Modeller

Tylan worked on developing and refining an existing TUFLOW model to further develop flood mitigation solutions to issues identified during the 2018 Floods. This involved developing a detailed design solutions in the hydraulic model for a major floodway and stream bypasses.. The effects of the flood resilence works were assessed and developed such that no existing properties expericened a loss of freeboard. The geomphoric changes from the changes to the stream flow regieme was also assessed.

The work was used for the detailed design of stopbanks, overflow weirs and floodways, used to for a scheme econmic assessment and to identify properties for Council to purchase.

Watchman Residential - Waiteti Stream Modelling and Flood hazard Mapping
Hydraulic Modeller

A TUFLOW hydraulic model was developed to assess the infilling effects of a 250 Lot plan change on the adjacent floodplain associated with the Waiteti Stream. This included hydrological inputs from the 60 km^2 catchment and the adjacent urban area. A flood hazard assessment was completed for flood events up to approximately 10,000 year return period flood

The Waiteti Stream is adjacent to the Ngongotataha Stream, where flooding of over 90 residential properties occurred in a flooded in 2018. This caused considerable public interest and concern. The work was independently peer reviewed and Fast-track approval for the work without the need for any caucusing other prolonged delays in the process.

HBRC - Esk Valley Flood Resilience Works
Design Engineer/Hydraulic Modeller

Flood resillence works including flood modelling and stopbank design in the Esk Valley following Cyclone Gabrielle. With the aim to determine design a stopbank to protect an industrial site and residential community. Tylan worked on calibrating the hydraulic model to Cyclone Gabrielle, developing the design model for determining the stopbank design height, alignment, and an assessment of the flood effects from the proposed stopbank. Tylan also assessed the freeboard of the stopbank using a risk/ uncertainty based approach in line with local and international standards.

Tylan was also involved in the design work for the project including, cuvlert design, scour protection option assessment and design, and stopbank details and design.

HBRC - Esk Valley Flood Hazard Assessment
Hydraulic Modeller

Following the development of the hydraulic model, Tylan assessed the flood risk to the wider Esk Valley with the purpose of of developing a flood hazard map that can be used to inform and restrict housing developments. This involved determing the hazard zone criteria with the client and assessing the sensitivty to model changes and the residual risk of the proposed stopbank.

First Gas Ltd - Takapu Stream River Engineering Options Assessment and Erosion Protection Design
Design Engineer

This project was across two sites in the Takapu Valley and was looking at protection for shallow and exposed gas pipes in the Takapu Stream. The works included a site visit to understand the site constraints and geomphorliogical drivers for erosion, catchment delineation, runoff calculations, flood modelling using TUFLOW and an options assessment to determine what to progress to the design stage. The detailed design involved developing various solutions for the different sites to optimise cost effectiveness, including developing details for rock revetments, concrete protections, turf matting and stream re alignment.

Invercargill Airport Rental Carpark Flooding Assessment
Hydraulic Modeller

Tylan Developed a rain on grid TUFLOW model to assess the existing flooding and changes a proposed building would have at Invercargill Airport. The work involved identifying existing overland flow paths and high-risk buildings, quantifying the impact the new build would have on flow paths. Once it was identified that the building was in a flow path and mitigations and recommended floor levels were provided.

Bush Road Swale Erosion Risk Assessment
Hydraulic Modeller

Tylan used and modified an existing hydraulic model of a proposed development to determine it could cause an increased risk of channel erosion. Tylan assessed the erosion risk by reviewing photos of the existing channel and comparing the pre and post velocities for a range of events and durations and compared it to recommended velocity ranges from relevant guidelines and where required proposed an appropriate remediation.

Verity Kirstein

Service Leader – River Engineering (Christchurch)

Verity is a river engineer with over 20 years of working in waterway management. Her knowledge spans land drainage, river engineering and flood and coastal risk management. Her river engineering experience includes the operational delivery of flood & erosion protection and land drainage, gravel management, design and construction of river protection and drainage assets such as stopbanks, outfalls and erosion control structures. She is an experienced asset manager with an in depth understanding of asset lifecycles.

Qualifications

BEng (Hons) Civil Engineering, University of East London, 2011

BSc (Hons) Physical Geography, University of Greenwich, 1999

Affiliations

Engineering New Zealand Member

Rivers Group (SIG) Member

ENZ / Water NZ Rivers Group Committee Member

Training

KiwiRail HSE Induction

Field-based First Aid

4WD Driver training

Career Summary

July 2025– Present
Service Leader – River Engineering, Pattle Delamore Partners Ltd, Christchurch

April 2024 – July 2025
Senior Environmental Engineer, Pattle Delamore Partners Ltd, Christchurch

June 2017 – March 2024
Senior River Engineer, Canterbury Regional Council, Christchurch

July 2015 – June 2017
Area Engineer (Central), Canterbury Regional Council, Christchurch

Nov 2013 – June 2015
Land Drainage Asset Engineer, Christchurch City Council, Christchurch

June 2003 – April 2013
Flood & Coastal Risk Management Engineer, Environment Agency, Maidstone, UK

EXPERTISE

- Design and construction of flood & erosion mitigation works
- Asset management
- Design and construction project management
- Construction site engineering
- Gravel management
- Fluvial geomorphological assessments
- Operational river & drainage management and flood response

CAREER SUMMARY

Verity is a Civil Engineer and Geographer with specific expertise in river engineering, asset management and flood risk management. Verity has worked as an environmental engineer at PDP since April 2024. Prior to this she worked as an Engineer for Canterbury Regional Council where she developed practical, operational skills in river engineering.

Prior to moving to New Zealand, Verity spent 11 years with the Environment Agency in the UK, a government body responsible for taking strategic overview of the management of all sources of flooding and coastal erosion, where she managed local engineering projects, worked on large-scale flood and coastal protection schemes and oversaw the management of flood protection and drainage assets in her designated work area.

Through her work at PDP, Verity has further developed her skills in engineering design, technical report writing and contract management, working for a range of clients from individual property owners, irrigation companies to regional councils and network utility providers.

Her experience is a combination of practical, operational, and technical approaches to river engineering through a holistic lens. She is an experienced contract/project manager having managed annual maintenance programmes and specific design and construction projects. She has a good understanding of consenting and RMA processes, having contributed to consent applications and reviewing applications for works in riverbeds.

Verity is a member of Engineering New Zealand and committee member for the ENZ/Water NZ Rivers Group where she actively advocates for best practice river management.

PROJECT EXPERIENCE

First Gas Ltd - Waitōtara River Crossing (PDP)

Design Engineer/Project Manager (May 2024 – Present)

Verity is the project manager and design engineer delivering the design of pipe protection for a gas main crossing a major river in the Taranaki region. Her work involved designing a cost-effective solution suitable for the local environment. The design package was used for consenting and contractor tendering. Additionally, she produced construction management documentation to support the consent application. She is now assisting the project into the construction phase.

Masterton District Council - Mōtūwairaka Stream Bank Protection (PDP)

Design Engineer/Project Manager (Nov 2024 – May 2025)

Verity was the project manager and design engineer delivering the design of a rock revetment in an estuary in the Wairarapa region. The design supported a retrospective consent and was used for open tender by the client. The construction works were successfully completed in Autumn 2025.

Hawke's Bay Regional Council - Pakowhai & Raupare Stopbank Upgrades (PDP)

Design Engineer/Project Manager (Dec 2024 – Sept 2025)

Verity was the project manager and design engineer leading the geotechnical investigations and preliminary design to upgrade two Hawke's Bay stopbanks. She led a multi-disciplinary team to complete geotechnical investigations to inform the necessary structural upgrades and deliver the preliminary designs.

Tasman District Council - Murchison River Management Assessment (PDP)

River Engineer (Sept – Nov 2024)

Verity completed the assessment of riverbank erosion on the Buller River which included a geomorphological assessment to inform the district council of future river management options.

Bay of Plenty Regional Council - Ōhineangaanga Stream Erosion Control (PDP)

Design Engineer (May – Dec 2024)

Verity provided technical input into the design of erosion control measures on an urban waterway. To support the consent application, she produced the Erosion and Sediment Control Plan and the Construction Management Plan. The design and construction planning dealt with the complexities of multiple third-party assets, private property and the need for an engineered solution. She incorporated best practice approaches of river engineering, with ecological enhancement to a modified watercourse.

Canterbury Regional Council – Waikirikiri Coes Ford Wetland (ECan)

Technical Advisor (2023)

Verity provided technical advice to the project team and the design consultant in developing the design of the proposed wetland adjacent to the Selwyn/Waikirikiri River.

Waitarakao Outfall Upgrade (ECan)

Project Manager (2024)

Verity oversaw the design and construction of pipe protection for the outfall structure at the Waitarakao coastal lagoon. She managed the project from contractor procurement to on-site construction and site remediation within an ecologically and culturally significant environment.

Orakipaoa Outfalls (ECan)

Design Engineer/Project Manager (2020)

Verity oversaw the design and build of a twin outfall with fish friendly floodgates which passed through a tidal stopbank, connecting a coastal wetland to the Orakipaoa/Milford Lagoon in South Canterbury. She managed multiple tasks (design, procurement, contractor management, landowner liaison) through to completion of construction.