

- NOTES:**
- NZTA STANDARDS AND SPECIFICATIONS APPLY UNLESS OTHERWISE SHOWN.
 - DRAINAGE PLANS ARE TO BE READ IN CONJUNCTION WITH TYPICAL ROAD CROSS SECTION DRAWINGS.
 - DRAINAGE PLANS ARE TO BE READ IN CONJUNCTION WITH THE STORMWATER DRAINAGE TYPICAL DETAILS ON SHEETS WGR-DES-DNG-00-DRG-1030 TO 1032.
 - EXISTING STREAM DATA SOURCED FROM LINZ DATA SERVICE, NZ RIVER NAME LINES (PILOT).

LEGEND	
	EXISTING STREAM
	EXISTING RAILWAY
	SWALE WHICH DISCHARGES TO STF
	SWALE WHICH DOES NOT DISCHARGE TO STF
	'CLEAN' Paddock RUNOFF DIVERSION DRAINS
	STORMWATER TREATMENT FACILITY
	PROPOSED UNDERPASS SWALE DRAIN
	SCRUFFY DOME
	PROPOSED STORMWATER KERB & CHANNEL PIPED NETWORK
	PROPOSED ROAD CULVERTS
	PROPOSED CROSS CULVERTS
	EXISTING CROSS CULVERTS
	EXISTING ROAD CULVERTS
	PROPOSED FARM ACCESS TRACK CULVERT
	STF OUTLET PIPE
	CONCRETE LINE CHANNEL

PLAN
SCALE 1 : 1000

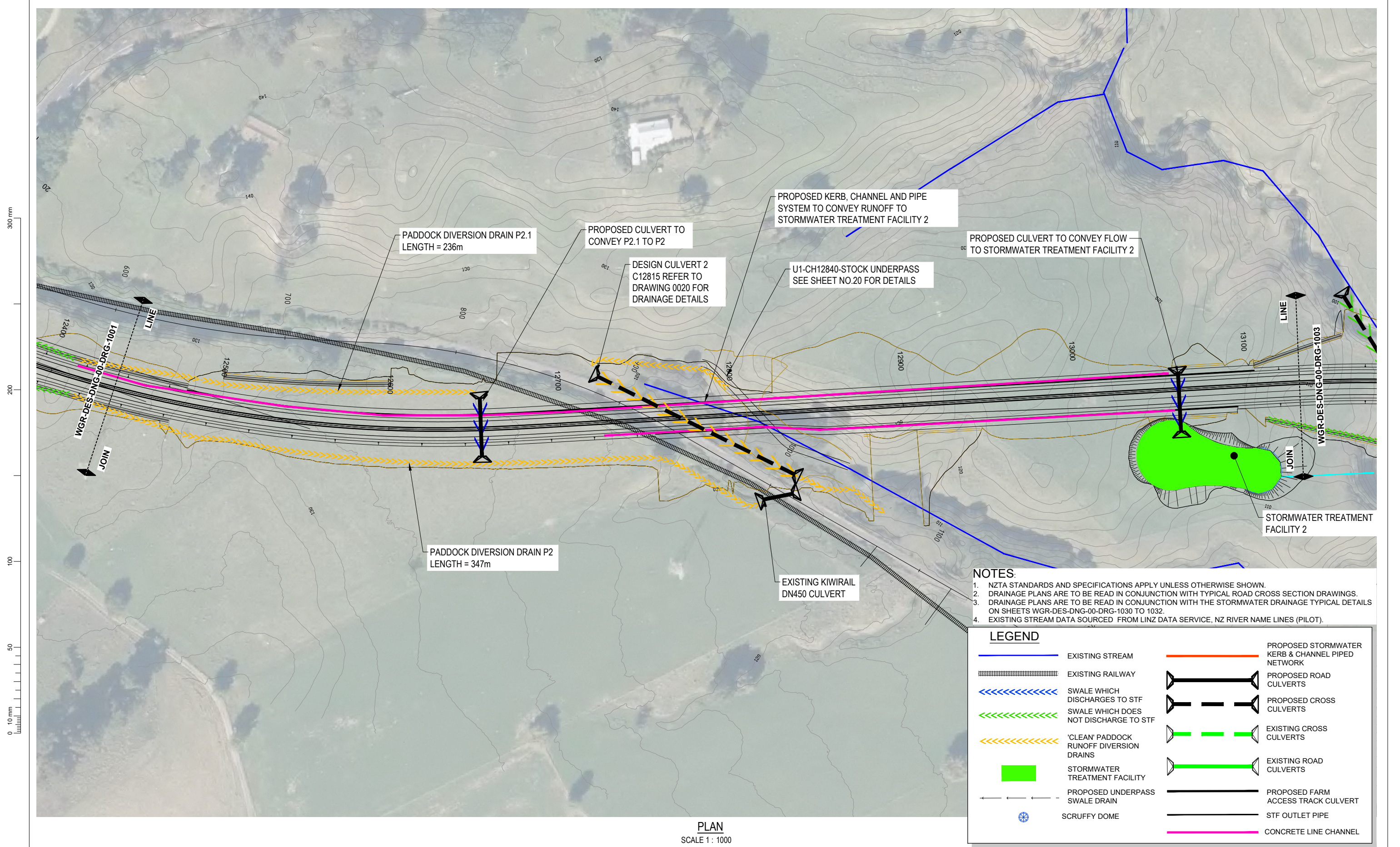
REVISION	AMENDMENT	DRAWN	CHECKED	APPROVED	DATE
A	WORKING PLOT	PAC			10.2021
B	CONCEPT DESIGN	JM	NK	LY	02.2022
C	PRELIMINARY	PAC	NK	LY	08.2022
D	PRELIMINARY	SL	WAH	LY	09.2022



SCALES	DESIGNED	APPROVED
AS SHOWN @ A1	Jess Morgan	Jamie Povall
DRAWN	DESIGN VERIFIED	APPROVED DATE
Jess Morgan	Nick Keenan	09.11.22

PRELIMINARY

PROJECT	SHEET NO.	REVISION
WAKA KOTAHI TAIRAWHITI ROAD PACKAGE PANEL SH2 RP 577/11.600-592/2.500 WAIKARE GORGE REALIGNMENT	0001	D
TITLE	DOCUMENT NO.	
STORMWATER LAYOUT PLAN SHEET 1 OF 6	WGR - DES - DNG - 00 - DRG	



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LEGEND

	EXISTING STREAM		PROPOSED STORMWATER KERB & CHANNEL PIPED NETWORK
	EXISTING RAILWAY		PROPOSED ROAD CULVERTS
	SWALE WHICH DISCHARGES TO STF		PROPOSED CROSS CULVERTS
	SWALE WHICH DOES NOT DISCHARGE TO STF		EXISTING CROSS CULVERTS
	'CLEAN' PADDOCK RUNOFF DIVERSION DRAINS		EXISTING ROAD CULVERTS
	STORMWATER TREATMENT FACILITY		PROPOSED FARM ACCESS TRACK CULVERT
	PROPOSED UNDERPASS SWALE DRAIN		STF OUTLET PIPE
	SCRUFFY DOME		CONCRETE LINE CHANNEL

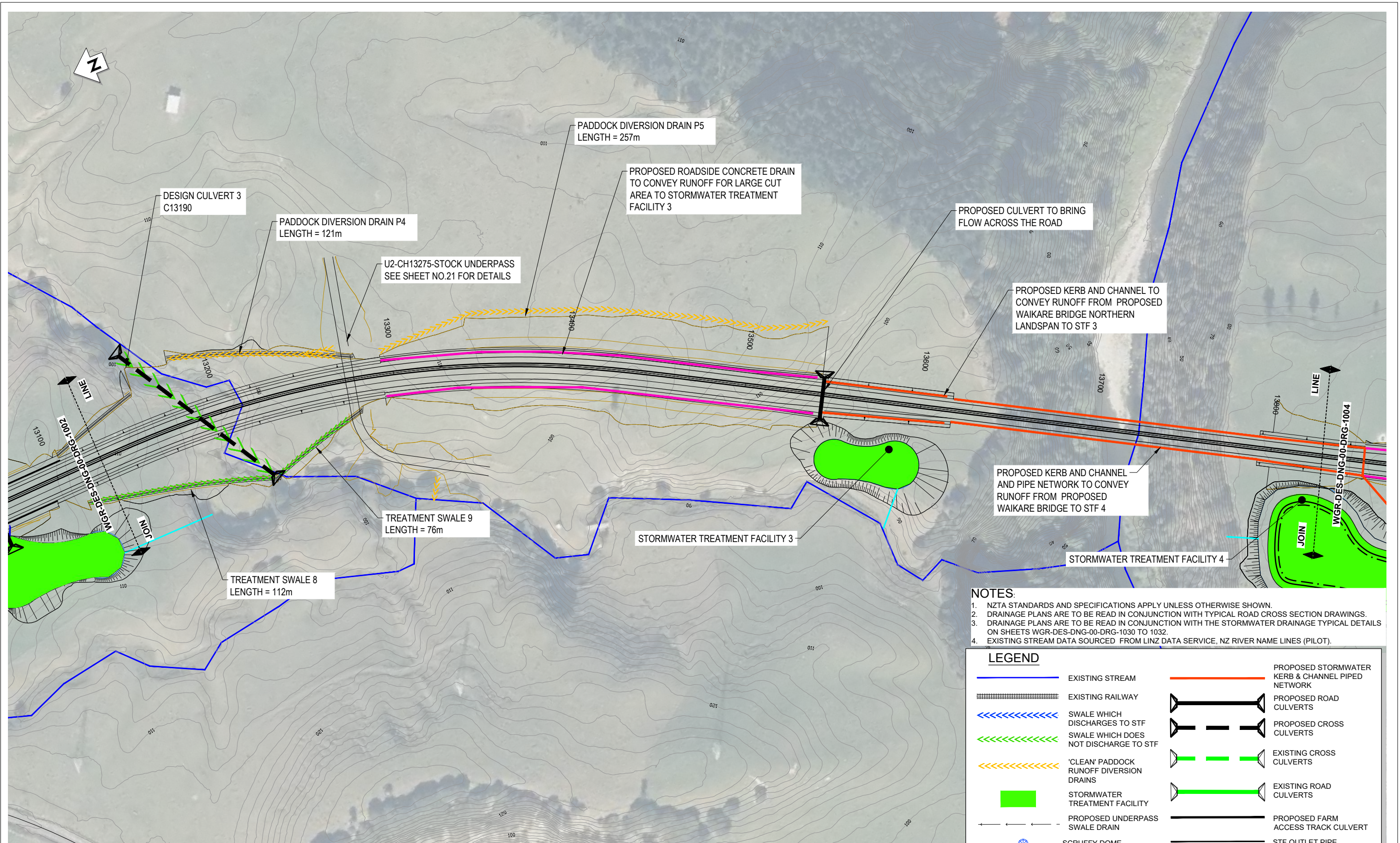
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SCALES		ORIGINAL SIZE
AS SHOWN @ A1		A1
DRAWN	DESIGNED	APPROVED
Jess Morgan	Jess Morgan	Jamie Povall
DRAWING VERIFIED	DESIGN VERIFIED	APPROVED DATE
Paul Chilton	Nick Keenan	09.11.22

PRELIMINARY

PROJECT		
WAKA KOTAHI TAIRAWHITI ROAD PACKAGE PANEL SH2 RP 577/11.600-592/2.500 WAIKARE GORGE REALIGNMENT		
TITLE		
STORMWATER LAYOUT PLAN SHEET 2 OF 6		
DOCUMENT NO.	SHEET NO.	REVISION
WGR - DES - DNG - 00 - DRG	0002	D



PLAN
SCALE 1 : 1000

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	EXISTING STREAM
	EXISTING RAILWAY
	SWALE WHICH DISCHARGES TO STF
	SWALE WHICH DOES NOT DISCHARGE TO STF
	'CLEAN' Paddock RUNOFF DIVERSION DRAINS
	STORMWATER TREATMENT FACILITY
	PROPOSED UNDERPASS SWALE DRAIN
	SCRUFFY DOME
	PROPOSED STORMWATER KERB & CHANNEL PIPED NETWORK
	PROPOSED ROAD CULVERTS
	PROPOSED CROSS CULVERTS
	EXISTING CROSS CULVERTS
	EXISTING ROAD CULVERTS
	PROPOSED FARM ACCESS TRACK CULVERT
	STF OUTLET PIPE
	CONCRETE LINE CHANNEL

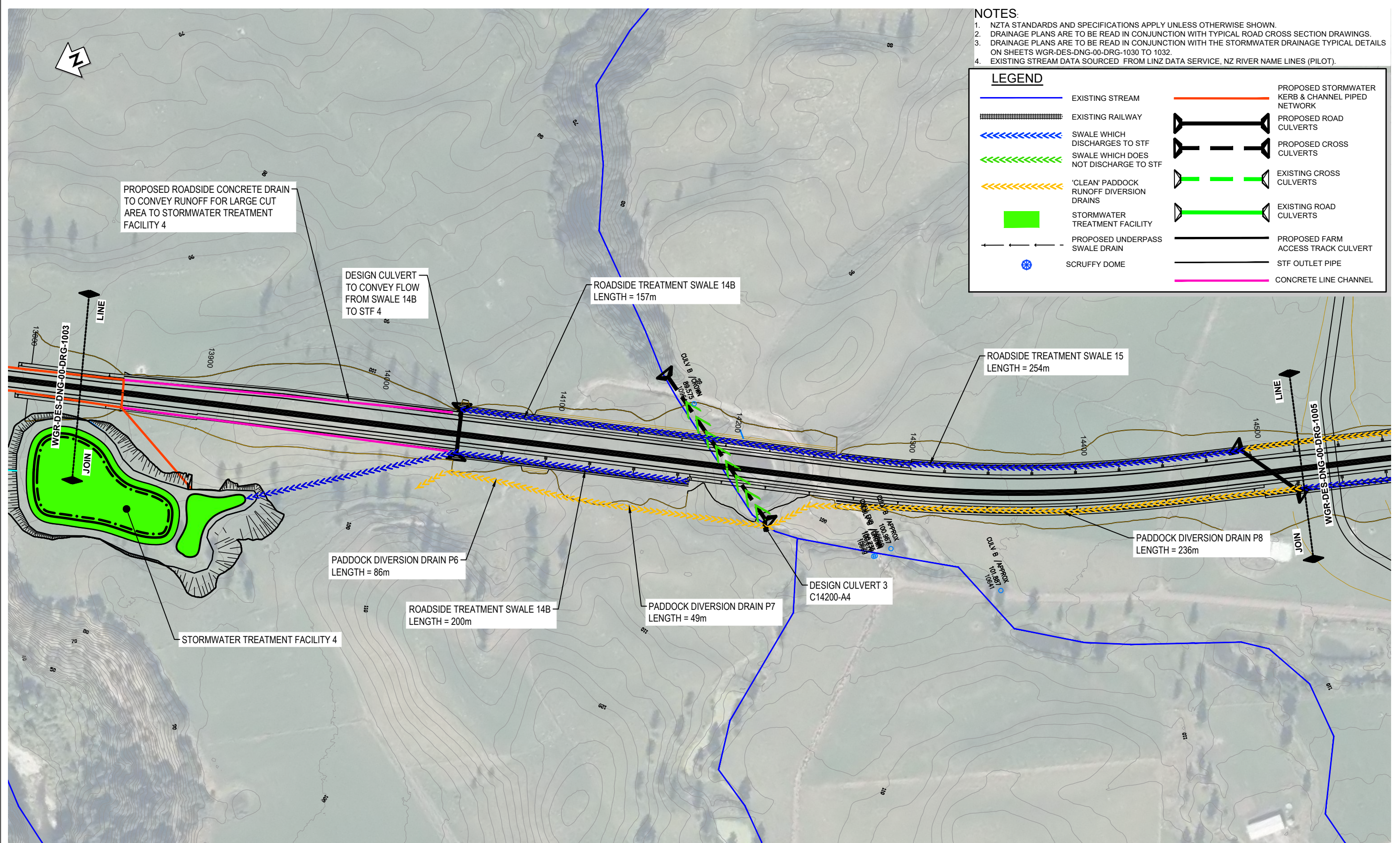
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SCALES	DESIGNED	APPROVED
AS SHOWN @ A1	Jess Morgan	Jamie Povall
	Jess Morgan	Jamie Povall
DRAWING VERIFIED	DESIGN VERIFIED	APPROVED DATE
Paul Chilton	Nick Keenan	09.11.22

PRELIMINARY

PROJECT		
WAKA KOTAHI TAIRAWHITI ROAD PACKAGE PANEL SH2 RP 577/11.600-592/2.500 WAIKARE GORGE REALIGNMENT		
TITLE		
STORMWATER LAYOUT PLAN SHEET 3 OF 6		
DOCUMENT NO.	SHEET NO.	REVISION
WGR - DES - DNG - 00 - DRG	0003	D



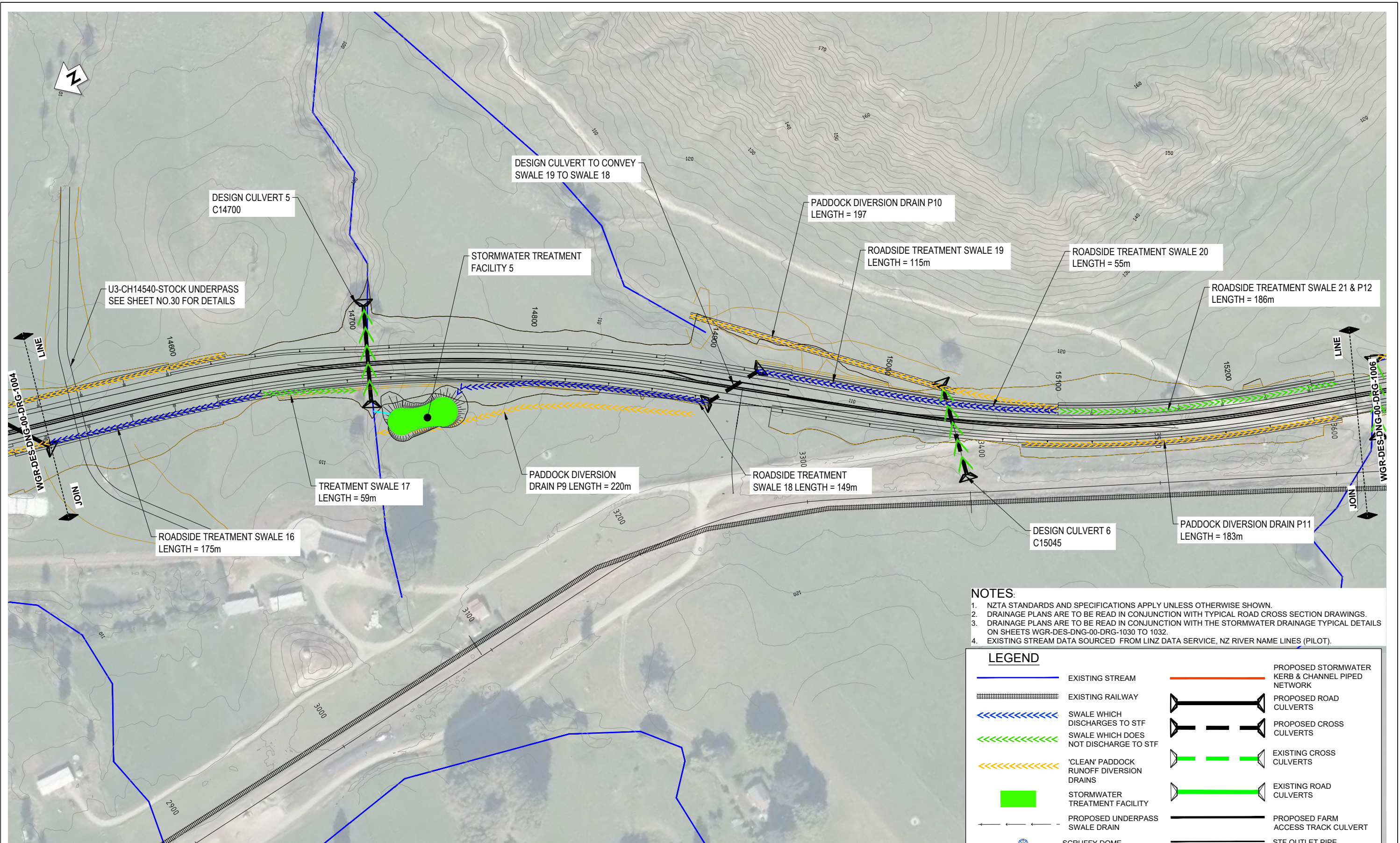
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SCALES		ORIGINAL SIZE
AS SHOWN @ A1		A1
DRAWN	DESIGNED	APPROVED
Jess Morgan	Jess Morgan	Jamie Povall
DRAWING VERIFIED	DESIGN VERIFIED	APPROVED DATE
Paul Chilton	Nick Keenan	09.11.22

PRELIMINARY

PROJECT		
WAKA KOTAHI TAIRAWHITI ROAD PACKAGE PANEL SH2 RP 577/11.600-592/2.500 WAIKARE GORGE REALIGNMENT		
TITLE		
STORMWATER LAYOUT PLAN SHEET 4 OF 6		
DOCUMENT NO.	SHEET NO.	REVISION
WGR - DES - DNG - 00 - DRG	0004	D



PLAN
SCALE 1 : 1000

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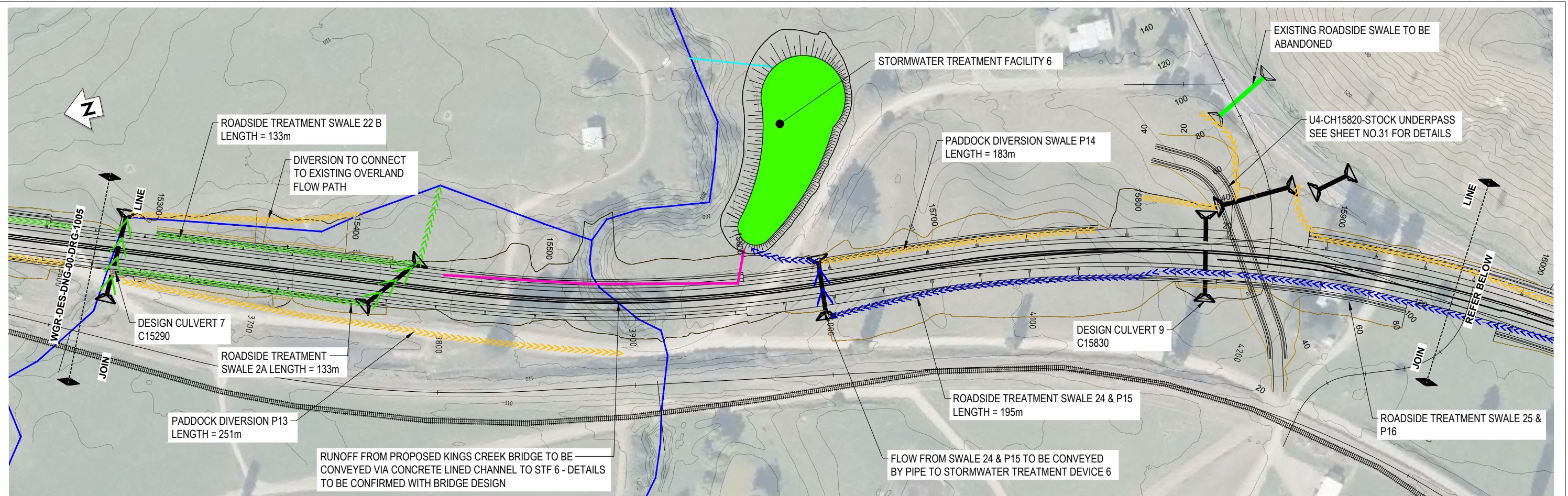
LEGEND			
	EXISTING STREAM		PROPOSED STORMWATER KERB & CHANNEL PIPED NETWORK
	EXISTING RAILWAY		PROPOSED ROAD CULVERTS
	SWALE WHICH DISCHARGES TO STF		PROPOSED CROSS CULVERTS
	SWALE WHICH DOES NOT DISCHARGE TO STF		EXISTING CROSS CULVERTS
	'CLEAN' Paddock RUNOFF DIVERSION DRAINS		EXISTING ROAD CULVERTS
	STORMWATER TREATMENT FACILITY		PROPOSED FARM ACCESS TRACK CULVERT
	PROPOSED UNDERPASS SWALE DRAIN		STF OUTLET PIPE
	SCRUFFY DOME		CONCRETE LINE CHANNEL

REVISION	AMENDMENT	DRAWN	CHECKED	APPROVED	DATE
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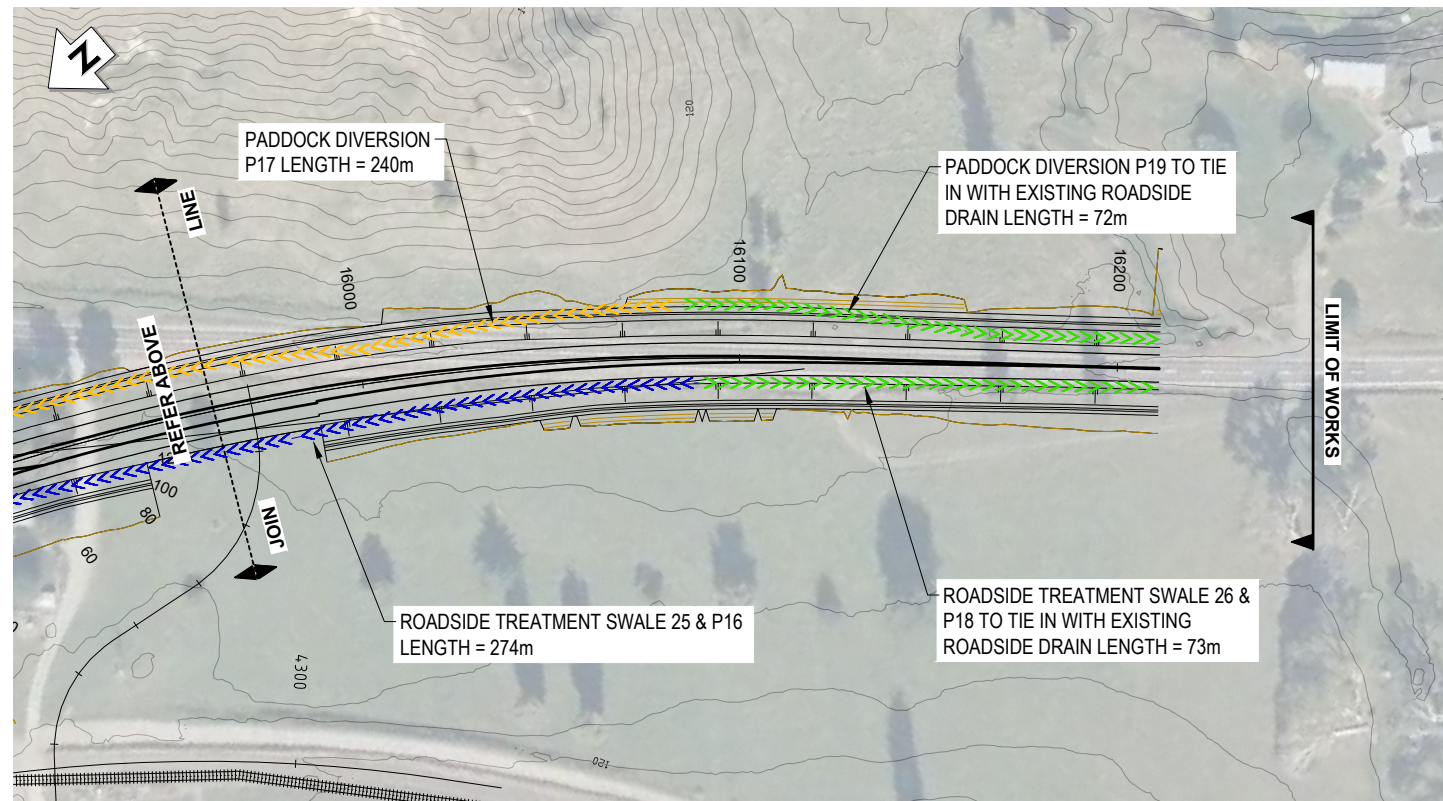


SCALES	ORIGINAL SIZE	
AS SHOWN @ A1	A1	
DRAWN	DESIGNED	APPROVED
Jess Morgan	Jess Morgan	Jamie Povall
DRAWING VERIFIED	DESIGN VERIFIED	APPROVED DATE
Paul Chilton	Nick Keenan	09.11.22
PRELIMINARY		

PROJECT		
WAKA KOTAHI TAIRAWHITI ROAD PACKAGE PANEL SH2 RP 577/11.600-592/2.500 WAIKARE GORGE REALIGNMENT		
TITLE		
STORMWATER LAYOUT PLAN SHEET 5 OF 6		
DOCUMENT NO.	SHEET NO.	REVISION
WGR - DES - DNG - 00 - DRG	0005	D
ORGANISATION JOB CODE: 2-S5416.01		
ORIGINATING ORGANISATION: WSP		



PLAN
SCALE 1 : 1000



PLAN
SCALE 1 : 1000

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LEGEND

	EXISTING STREAM		PROPOSED STORMWATER KERB & CHANNEL PIPED NETWORK
	EXISTING RAILWAY		PROPOSED ROAD CULVERTS
	SWALE WHICH DISCHARGES TO STF		PROPOSED CROSS CULVERTS
	SWALE WHICH DOES NOT DISCHARGE TO STF		EXISTING CROSS CULVERTS
	'CLEAN' PADDOCK RUNOFF DIVERSION DRAINS		EXISTING ROAD CULVERTS
	STORMWATER TREATMENT FACILITY		PROPOSED FARM ACCESS TRACK CULVERT
	PROPOSED UNDERPASS SWALE DRAIN		STF OUTLET PIPE
	SCRUFFY DOME		CONCRETE LINE CHANNEL

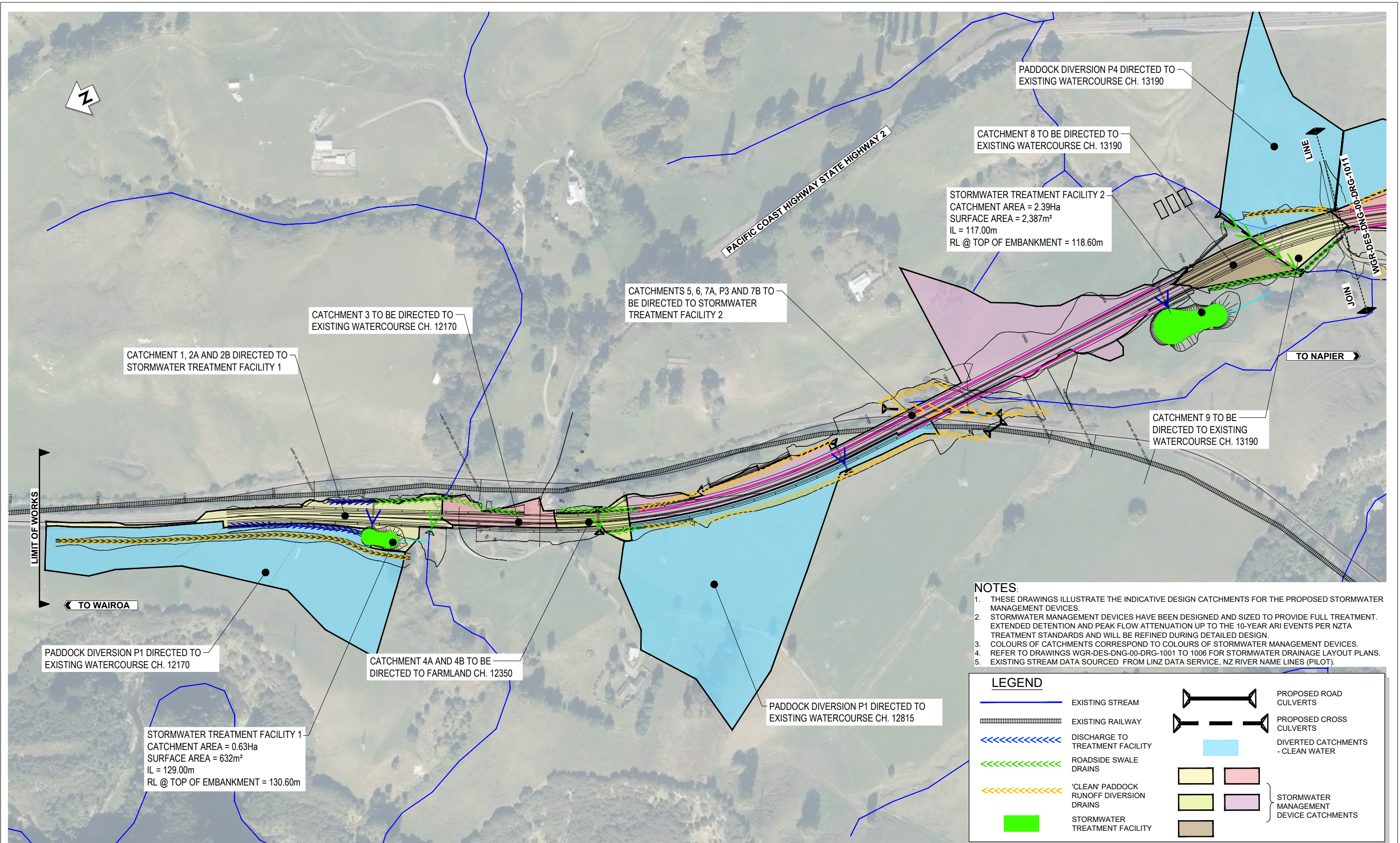
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SCALES		ORIGINAL SIZE
AS SHOWN @ A1		A1
DRAWN	DESIGNED	APPROVED
Jess Morgan	Jess Morgan	Jamie Povall
DRAWING VERIFIED	DESIGN VERIFIED	APPROVED DATE
Paul Chilton	Nick Keenan	09.11.22

PRELIMINARY

PROJECT		
WAKA KOTAHI TAIRAWHITI ROAD PACKAGE PANEL SH2 RP 577/11.600-592/2.500 WAIKARE GORGE REALIGNMENT		
TITLE		
STORMWATER LAYOUT PLAN SHEET 6 OF 6		
DOCUMENT NO.	SHEET NO.	REVISION
WGR - DES - DNG - 00 - DRG	0006	D



PLAN
SCALE 1 : 2000

- NOTES:**
- THESE DRAWINGS ILLUSTRATE THE INDICATIVE DESIGN CATCHMENTS FOR THE PROPOSED STORMWATER MANAGEMENT DEVICES.
 - STORMWATER MANAGEMENT DEVICES HAVE BEEN DESIGNED AND SIZED TO PROVIDE FULL TREATMENT, EXTENDED DETENTION AND PEAK FLOW ATTENUATION UP TO THE 10-YEAR ARI EVENTS PER NZTA TREATMENT STANDARDS AND WILL BE REFINED DURING DETAILED DESIGN.
 - COLOURS OF CATCHMENTS CORRESPOND TO COLOURS OF STORMWATER MANAGEMENT DEVICES.
 - REFER TO DRAWINGS WGR-DES-DNG-00-DRG-1001 TO 1006 FOR STORMWATER DRAINAGE LAYOUT PLANS.
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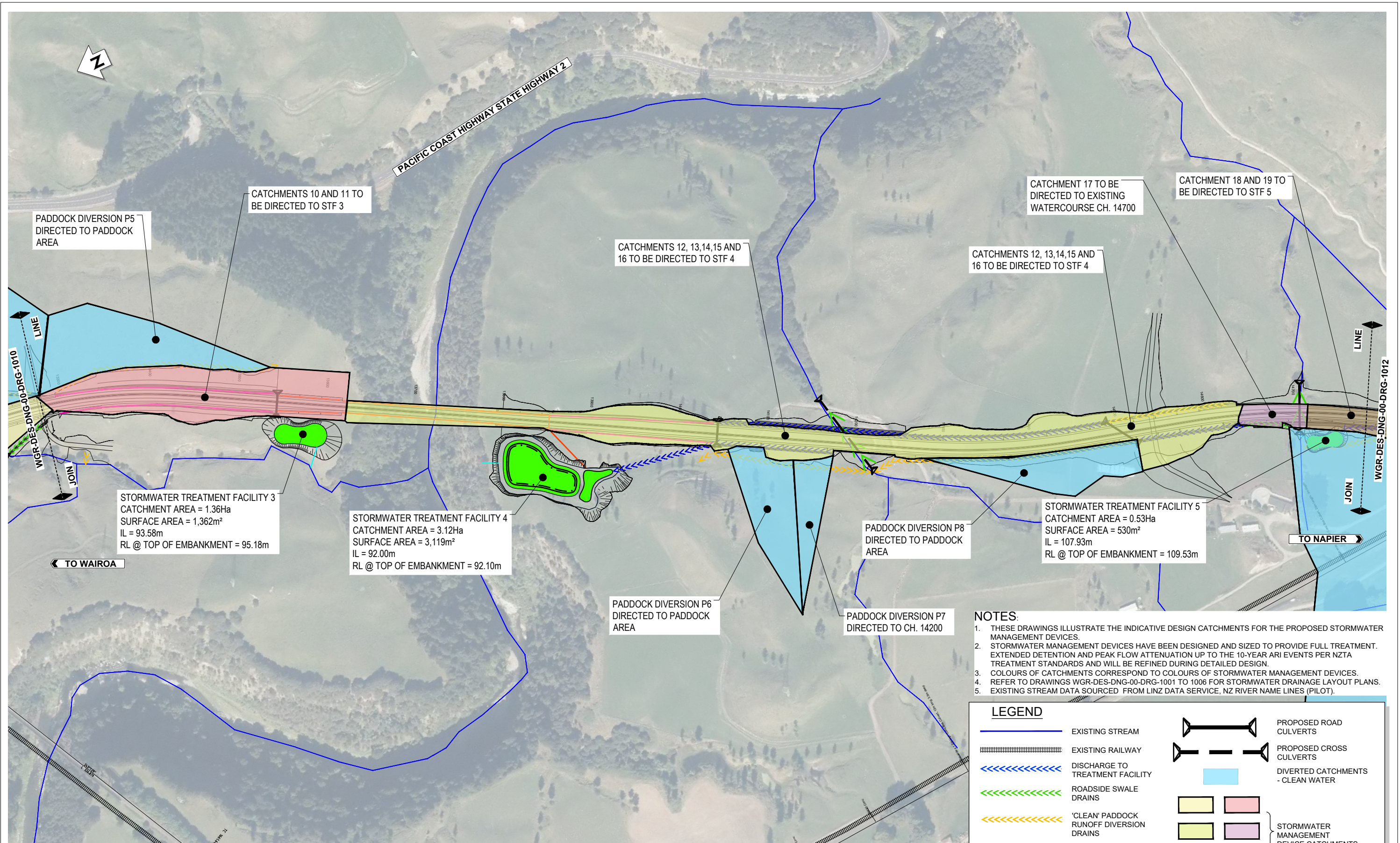
LEGEND	
	EXISTING STREAM
	EXISTING RAILWAY
	DISCHARGE TO TREATMENT FACILITY
	ROADSIDE SWALE DRAINS
	'CLEAN' Paddock RUNOFF DIVERSION DRAINS
	STORMWATER TREATMENT FACILITY
	PROPOSED ROAD CULVERTS
	PROPOSED CROSS CULVERTS
	DIVERTED CATCHMENTS - CLEAN WATER
	STORMWATER MANAGEMENT DEVICE CATCHMENTS

REVISION	AMENDMENT	DRAWN	CHECKED	APPROVED	DATE
A	WORKING PLOT	PAC			11.2021
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SCALES	ORIGINAL SIZE	
AS SHOWN @ A1	A1	
DRAWN	DESIGNED	APPROVED
Jess Morgan	Jess Morgan	Jamie Povall
DRAWING VERIFIED	DESIGN VERIFIED	APPROVED DATE
Paul Chilton	Nick Keenan	09.11.22
PRELIMINARY		

PROJECT	WAKA KOTAHI TAIRAWHITI ROAD PACKAGE PANEL SH2 RP 577/11.600-592/2.500 WAIKARE GORGE REALIGNMENT
TITLE	STORMWATER MANAGEMENT DEVICES SHEET 1 OF 3
DOCUMENT NO.	WGR - DES - DNG - 00 - DRG
SHEET NO.	0007
REVISION	D



PLAN
SCALE 1 : 2000

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 4. REFER TO DRAWINGS WGR-DES-DNG-00-DRG-1001 TO 1006 FOR STORMWATER DRAINAGE LAYOUT PLANS.
 5. EXISTING STREAM DATA SOURCED FROM LINZ DATA SERVICE, NZ RIVER NAME LINES (PILOT).

LEGEND

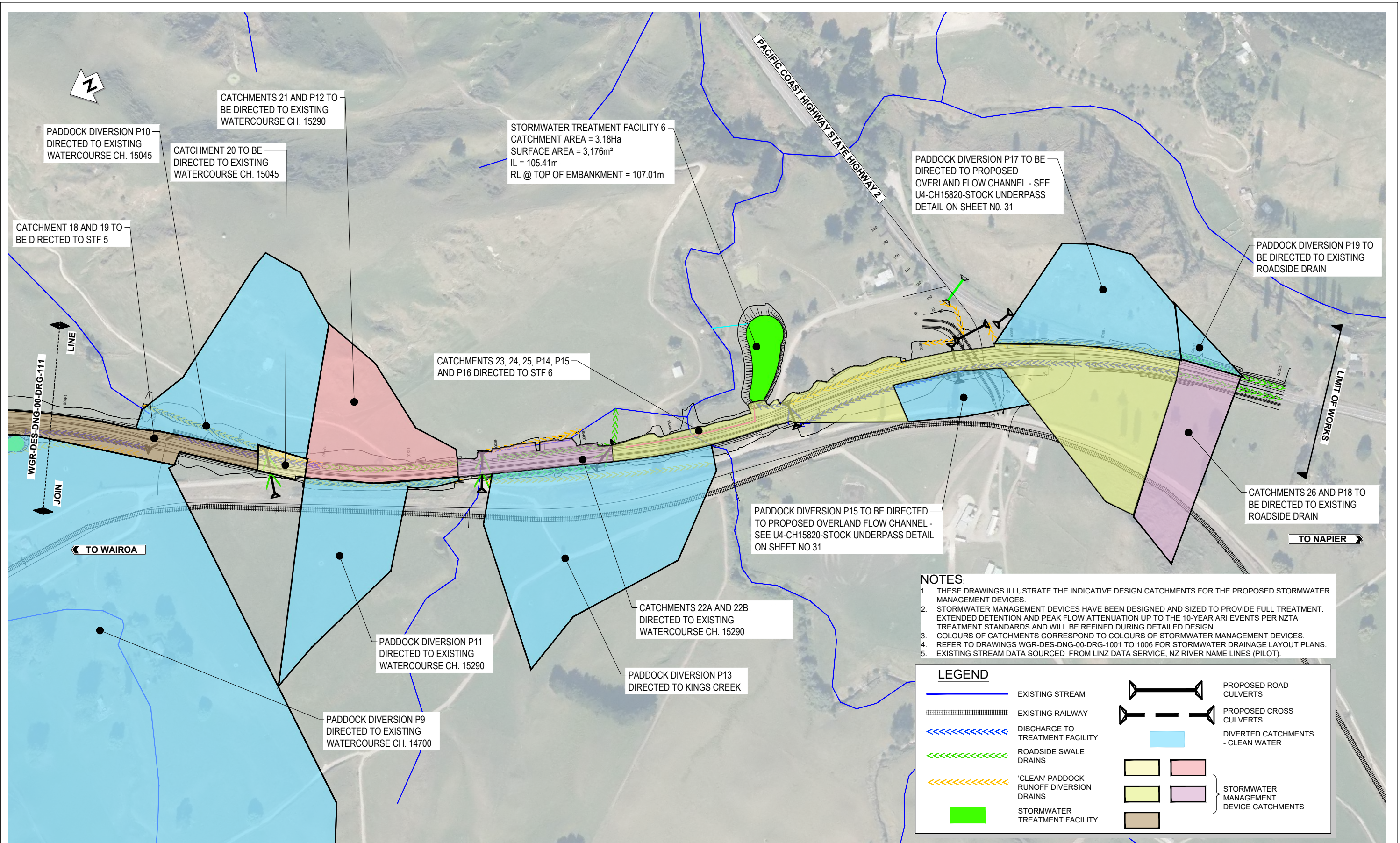
	EXISTING STREAM		PROPOSED ROAD CULVERTS
	EXISTING RAILWAY		PROPOSED CROSS CULVERTS
	DISCHARGE TO TREATMENT FACILITY		DIVERTED CATCHMENTS - CLEAN WATER
	ROADSIDE SWALE DRAINS		STORMWATER MANAGEMENT DEVICE CATCHMENTS
	'CLEAN' PADDOCK RUNOFF DIVERSION DRAINS		
	STORMWATER TREATMENT FACILITY		

REVISION	AMENDMENT	DRAWN	CHECKED	APPROVED	DATE
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SCALES	ORIGINAL SIZE	
AS SHOWN @ A1	A1	
DRAWN	DESIGNED	APPROVED
Jess Morgan	Jess Morgan	Jamie Povall
DRAWING VERIFIED	DESIGN VERIFIED	APPROVED DATE
Paul Chilton	Nick Keenan	09.11.22
PRELIMINARY		

PROJECT	WAKA KOTAHI TAIRAWHITI ROAD PACKAGE PANEL SH2 RP 577/11.600-592/2.500 WAIKARE GORGE REALIGNMENT
TITLE	STORMWATER MANAGEMENT DEVICES SHEET 2 OF 3
DOCUMENT NO.	WGR - DES - DNG - 00 - DRG
SHEET NO.	0008
REVISION	D



CATCHMENTS 21 AND P12 TO BE DIRECTED TO EXISTING WATERCOURSE CH. 15290

PADDOCK DIVERSION P10 DIRECTED TO EXISTING WATERCOURSE CH. 15045

CATCHMENT 20 TO BE DIRECTED TO EXISTING WATERCOURSE CH. 15045

STORMWATER TREATMENT FACILITY 6
CATCHMENT AREA = 3.18Ha
SURFACE AREA = 3,176m²
IL = 105.41m
RL @ TOP OF EMBANKMENT = 107.01m

PADDOCK DIVERSION P17 TO BE DIRECTED TO PROPOSED OVERLAND FLOW CHANNEL - SEE U4-CH15820-STOCK UNDERPASS DETAIL ON SHEET NO. 31

PADDOCK DIVERSION P19 TO BE DIRECTED TO EXISTING ROADSIDE DRAIN

CATCHMENT 18 AND 19 TO BE DIRECTED TO STF 5

CATCHMENTS 23, 24, 25, P14, P15 AND P16 DIRECTED TO STF 6

PADDOCK DIVERSION P15 TO BE DIRECTED TO PROPOSED OVERLAND FLOW CHANNEL - SEE U4-CH15820-STOCK UNDERPASS DETAIL ON SHEET NO.31

CATCHMENTS 26 AND P18 TO BE DIRECTED TO EXISTING ROADSIDE DRAIN

CATCHMENTS 22A AND 22B DIRECTED TO EXISTING WATERCOURSE CH. 15290

PADDOCK DIVERSION P11 DIRECTED TO EXISTING WATERCOURSE CH. 15290

PADDOCK DIVERSION P13 DIRECTED TO KINGS CREEK

PADDOCK DIVERSION P9 DIRECTED TO EXISTING WATERCOURSE CH. 14700

- NOTES:**
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LEGEND

	EXISTING STREAM		PROPOSED ROAD CULVERTS
	EXISTING RAILWAY		PROPOSED CROSS CULVERTS
	DISCHARGE TO TREATMENT FACILITY		DIVERTED CATCHMENTS - CLEAN WATER
	ROADSIDE SWALE DRAINS		STORMWATER MANAGEMENT DEVICE CATCHMENTS
	'CLEAN' PADDOCK RUNOFF DIVERSION DRAINS		
	STORMWATER TREATMENT FACILITY		

PLAN
SCALE 1 : 2000

REVISION	AMENDMENT	DRAWN	CHECKED	APPROVED	DATE
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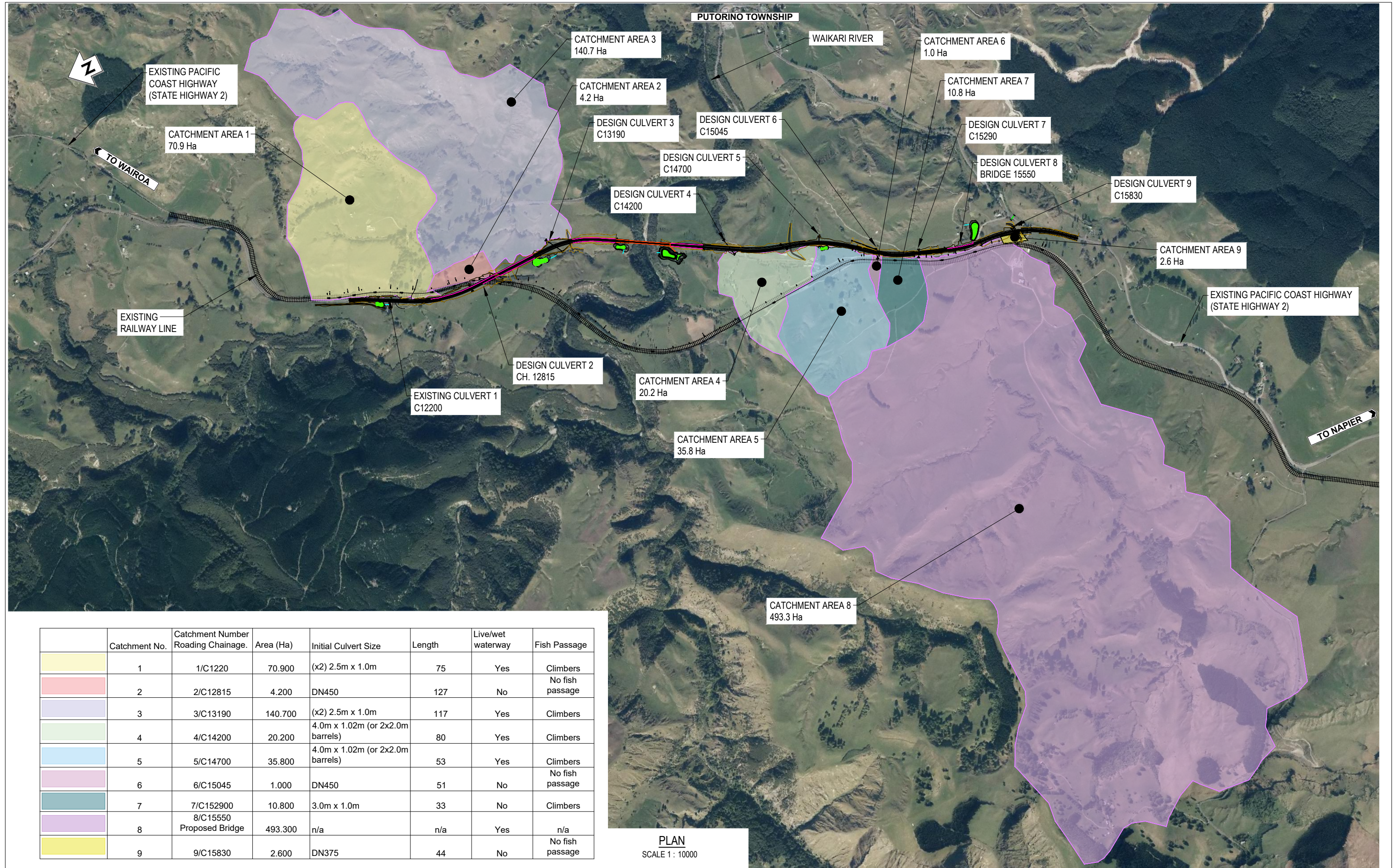


SCALES	DESIGNED	APPROVED
AS SHOWN @ A1	Jess Morgan	Jamie Povall
DRAWN	DESIGN VERIFIED	APPROVED DATE
Jess Morgan	Nick Keenan	09.11.22

ORIGINAL SIZE: A1

PRELIMINARY

PROJECT	
WAKA KOTAHI TAIRAWHITI ROAD PACKAGE PANEL SH2 RP 577/11.600-592/2.500 WAIKARE GORGE REALIGNMENT	
TITLE	
STORMWATER MANAGEMENT DEVICES SHEET 3 OF 3	
DOCUMENT NO.	SHEET NO.
WGR - DES - DNG - 00 - DRG	0009
ORGANISATION JOB CODE: 2-S5416.01	ORIGINATING ORGANISATION: WSP



Catchment No.	Catchment Number Roding Chainage.	Area (Ha)	Initial Culvert Size	Length	Live/wet waterway	Fish Passage
1	1/C1220	70.900	(x2) 2.5m x 1.0m	75	Yes	Climbers
2	2/C12815	4.200	DN450	127	No	No fish passage
3	3/C13190	140.700	(x2) 2.5m x 1.0m	117	Yes	Climbers
4	4/C14200	20.200	4.0m x 1.02m (or 2x2.0m barrels)	80	Yes	Climbers
5	5/C14700	35.800	4.0m x 1.02m (or 2x2.0m barrels)	53	Yes	Climbers
6	6/C15045	1.000	DN450	51	No	No fish passage
7	7/C152900	10.800	3.0m x 1.0m	33	No	Climbers
8	8/C15550 Proposed Bridge	493.300	n/a	n/a	Yes	n/a
9	9/C15830	2.600	DN375	44	No	No fish passage

PLAN
SCALE 1 : 10000

REVISION	AMENDMENT	DRAWN	CHECKED	APPROVED	DATE
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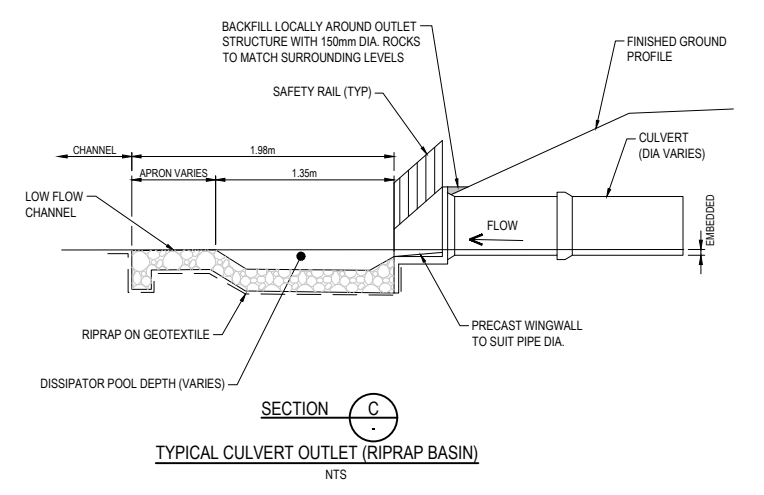
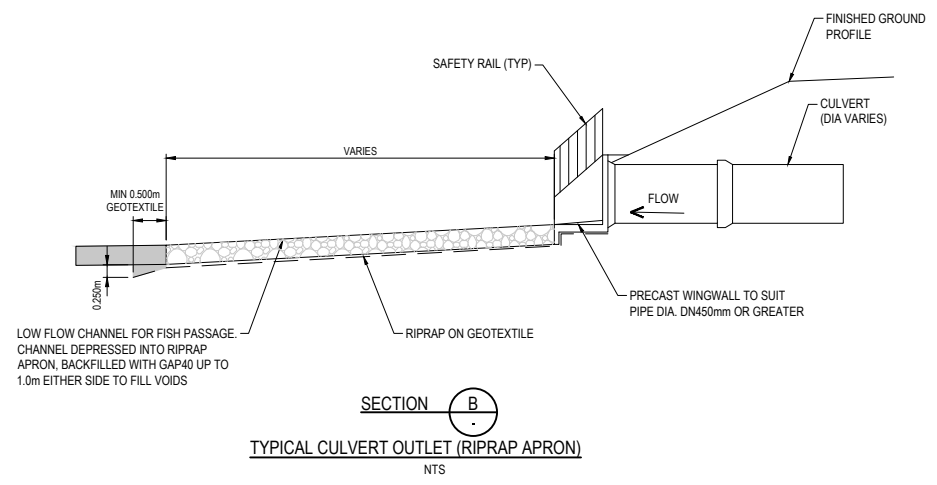
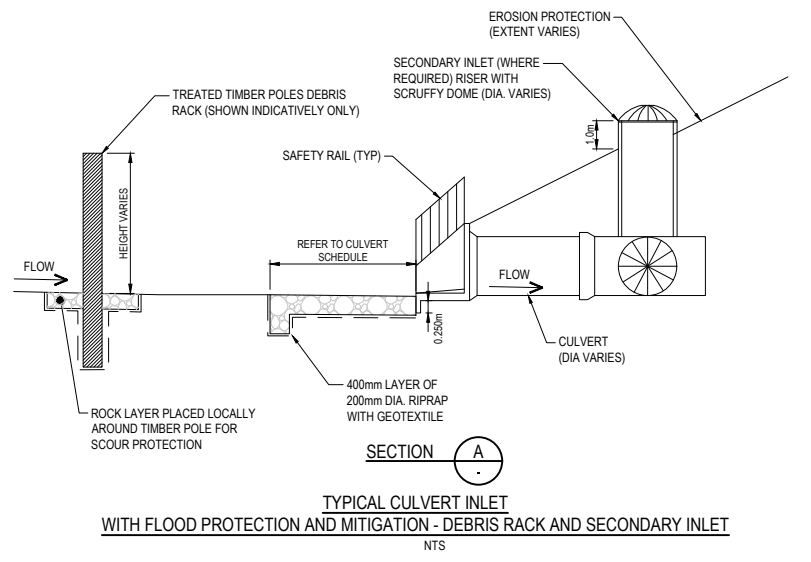
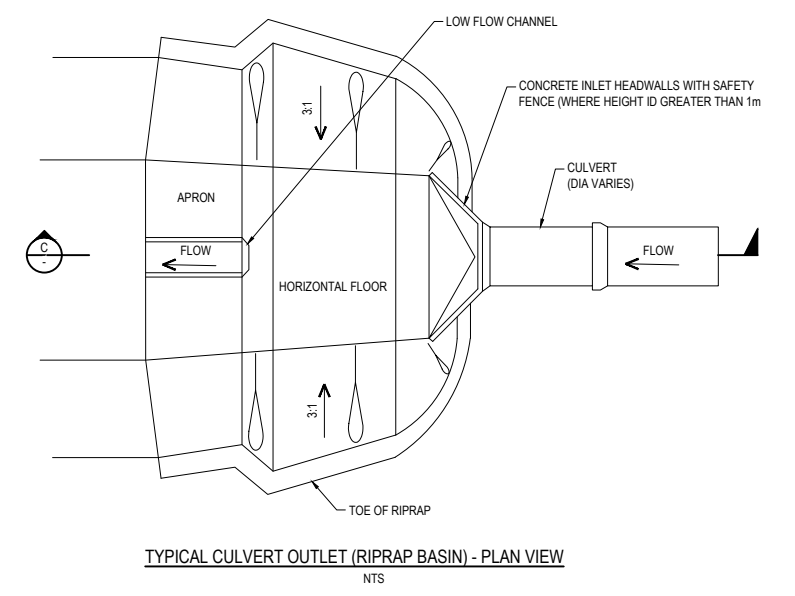
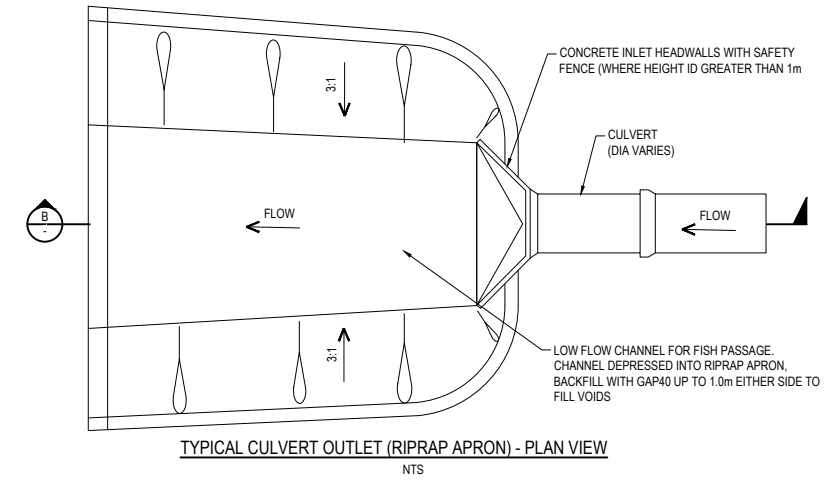
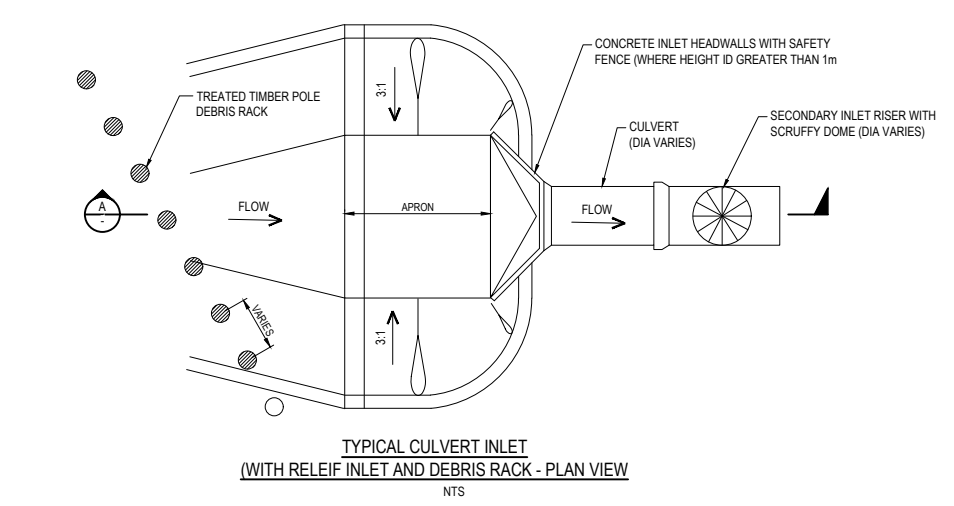
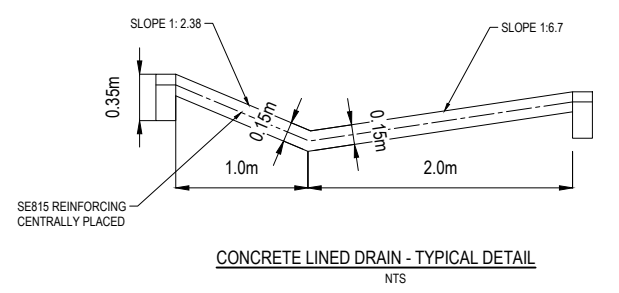
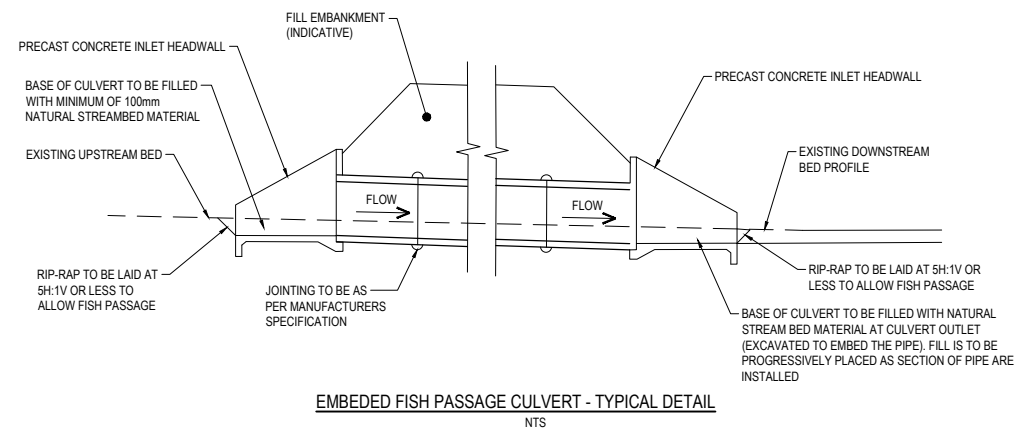


SCALES	DESIGNED	APPROVED
AS SHOWN @ A1	Jess Morgan	Jamie Povall
DRAWN	DESIGN VERIFIED	APPROVED DATE
Jess Morgan	Nick Keenan	09.11.22

PRELIMINARY

PROJECT	SHEET NO.	REVISION
WAKA KOTAHI TAIRAWHITI ROAD PACKAGE PANEL SH2 RP 577/11.600-592/2.500 WAIKARE GORGE REALIGNMENT	0010	D
TITLE	DOCUMENT NO.	ORGANISATION JOB CODE:
STORMWATER CROSS CULVERTS CATCHMENT OVERVIEW PLAN	WGR - DES - DNG - 00 - DRG	2-S5416.01
		ORIGINATING ORGANISATION: WSP

300 mm
200
100
50
0 10 mm



REVISION	AMENDMENT	DRAWN	CHECKED	APPROVED	DATE
A	WORKING PLOT	PAC			11.2021
B	CONCEPT DESIGN	JM	NK	LY	02/2022
C	PRELIMINARY	PAC	NK	LY	08.2022
D	PRELIMINARY	SL	WAH	LY	09.2022

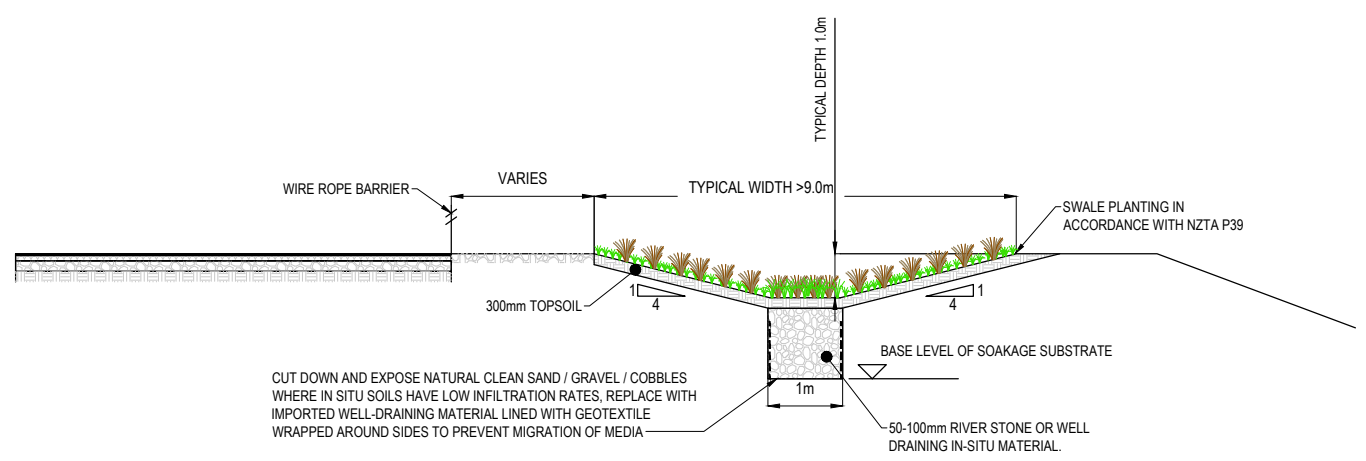


SCALES		ORIGINAL SIZE
AS SHOWN @ A1		A1
DRAWN	DESIGNED	APPROVED
Jess Morgan	Jess Morgan	Jamie Povall
DRAWING VERIFIED	DESIGN VERIFIED	APPROVED DATE
Paul Chilton	Nick Keenan	09.11.22

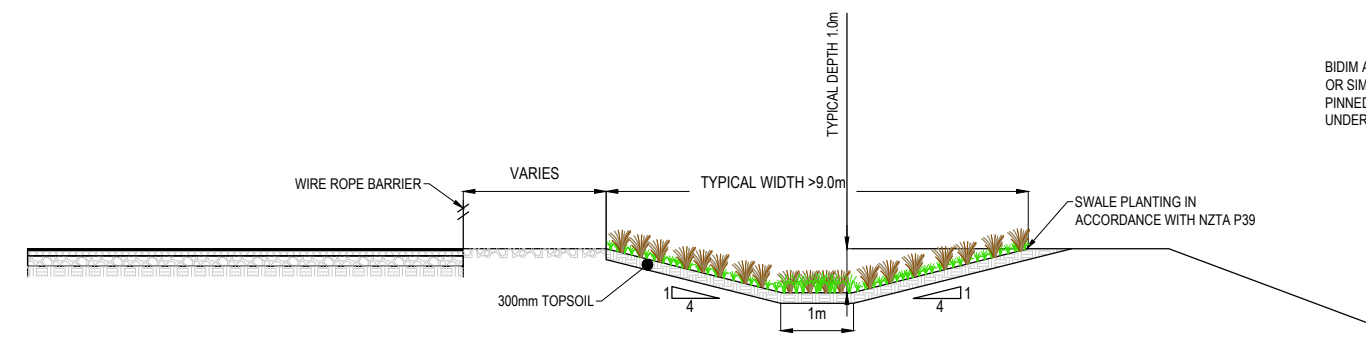
PRELIMINARY

PROJECT		DOCUMENT NO.	SHEET NO.	REVISION
WAKA KOTAHI TAIRAWHITI ROAD PACKAGE PANEL SH2 RP 577/11.600-592/2.500 WAIKARE GORGE REALIGNMENT		WGR - DES - DNG - 00 - DRG	0011	D
TITLE		TYPICAL STORMWATER DETAILS SHEET 1 of 4 CULVERT INLET AND OUTLET DETAILS		
ORGANISATION JOB CODE: 2-S5416.01		ORIGINATING ORGANISATION: WSP		

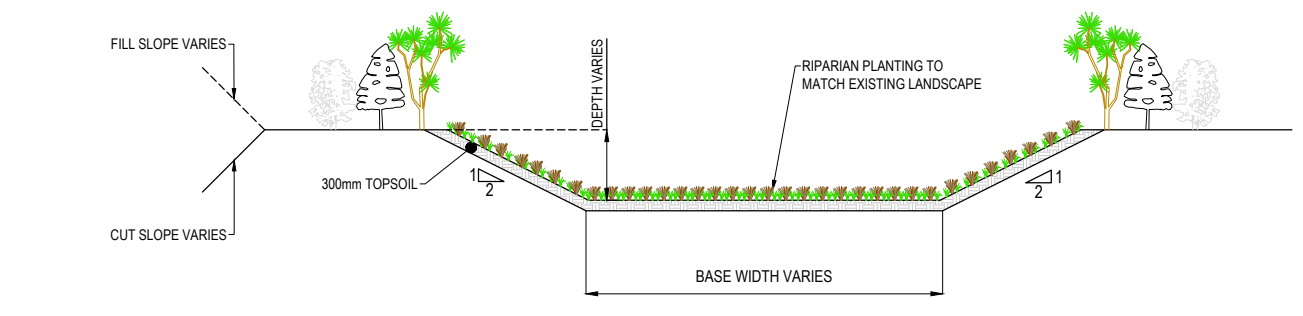
300 mm
200
100
50
0 10 mm



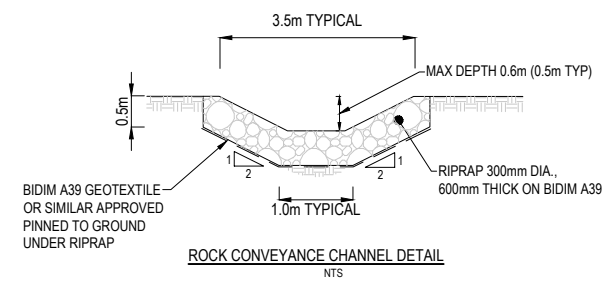
TYPICAL VEGETATED SWALE DETAIL WITH INFILTRATION
NTS



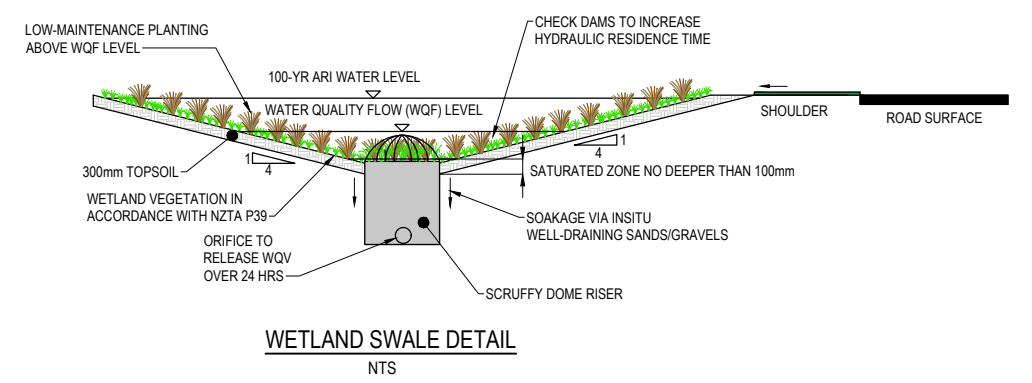
TYPICAL VEGETATED SWALE DETAIL
NTS



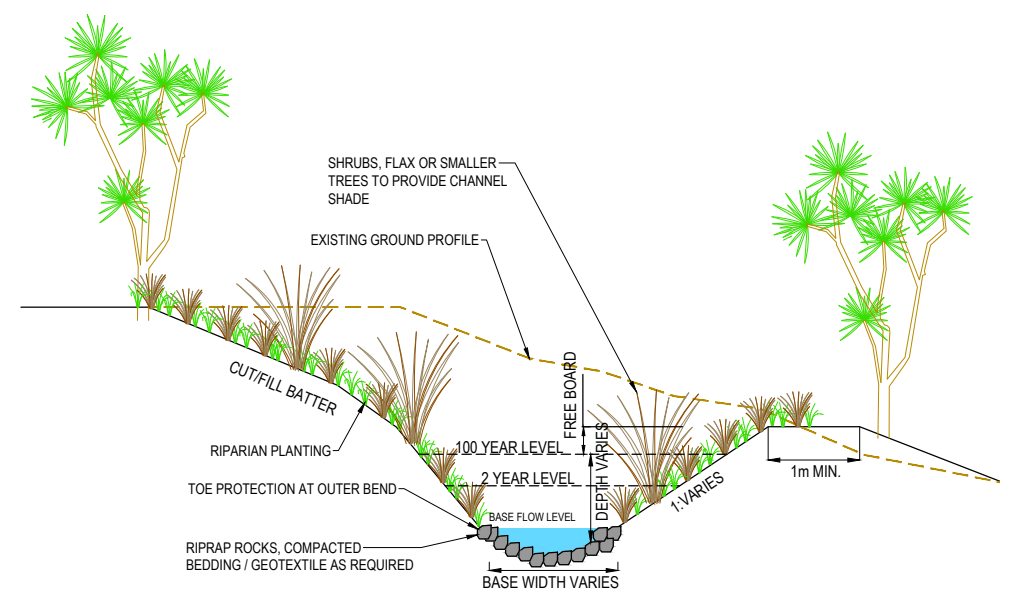
OPEN CHANNEL / TYPICAL CUT-OFF DRAIN - AT BASE OF CUT/FILLS
NTS



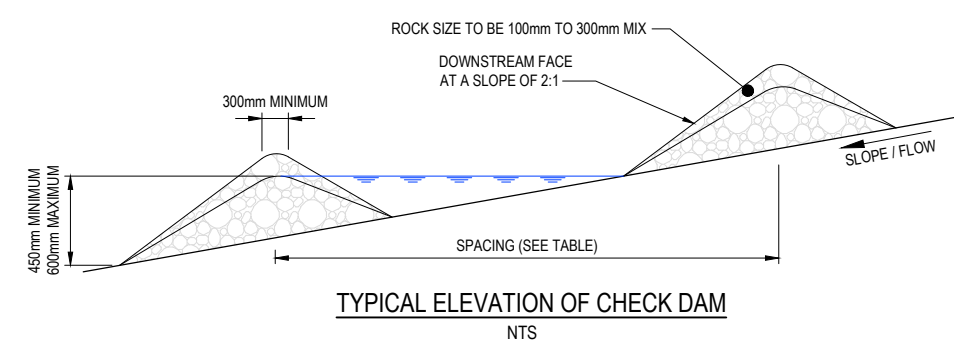
ROCK CONVEYANCE CHANNEL DETAIL
NTS



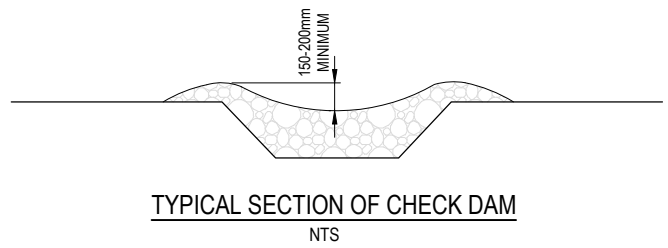
WETLAND SWALE DETAIL
NTS



OPEN CHANNEL / STREAM DIVERSION TYPICAL CROSS SECTION FOR EXTENSION/DIVERSION OF NATURAL STREAMS
NTS



TYPICAL ELEVATION OF CHECK DAM
NTS



TYPICAL SECTION OF CHECK DAM
NTS

POSITIONING OF CHECK DAMS		
SLOPE OF SITE (LESS THAN)	SPACING (m) BETWEEN DAMS WITH A 450mm CENTRE HEIGHT	SPACING (m) BETWEEN DAMS WITH A 600mm CENTRE HEIGHT
2%	24	30
2-4%	12	15
4-7%	8	11
7-10%	5	6
10%	UNSUITABLE - USE STABILISED CHANNEL OR SPECIFIC ENGINEERED DESIGN	UNSUITABLE - USE STABILISED CHANNEL OR SPECIFIC ENGINEERED DESIGN

REVISION	AMENDMENT	DRAWN	CHECKED	APPROVED	DATE
A	WORKING PLOT	PAC			11.2021
B	CONCEPT DESIGN	JM	NK	LY	02.2022
C	PRELIMINARY	PAC	NK	LY	08.2022
D	PRELIMINARY	SL	WAH	LY	09.2022

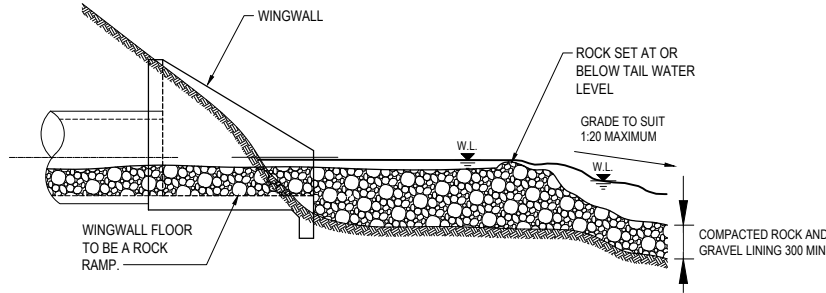


SCALES		ORIGINAL SIZE
AS SHOWN @ A1		A1
DRAWN	DESIGNED	APPROVED
Jess Morgan	Jess Morgan	Jamie Povall
DRAWING VERIFIED	DESIGN VERIFIED	APPROVED DATE
Paul Chilton	Nick Keenan	09.11.22

PRELIMINARY

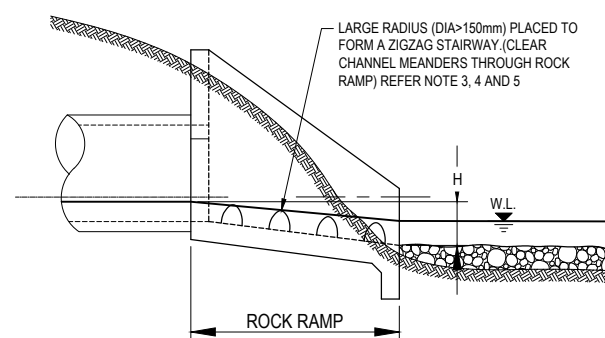
PROJECT	WAKA KOTAHI TAIRAWHITI ROAD PACKAGE PANEL SH2 RP 577/11.600-592/2.500 WAIKARE GORGE REALIGNMENT
TITLE	TYPICAL STORMWATER DETAILS SHEET 2 of 4 TYPICAL SWALE AND CHANNEL DETAILS
DOCUMENT NO.	WGR - DES - DNG - 00 - DRG
SHEET NO.	0012
REVISION	D

300 mm
200
100
50
0 - 10 mm

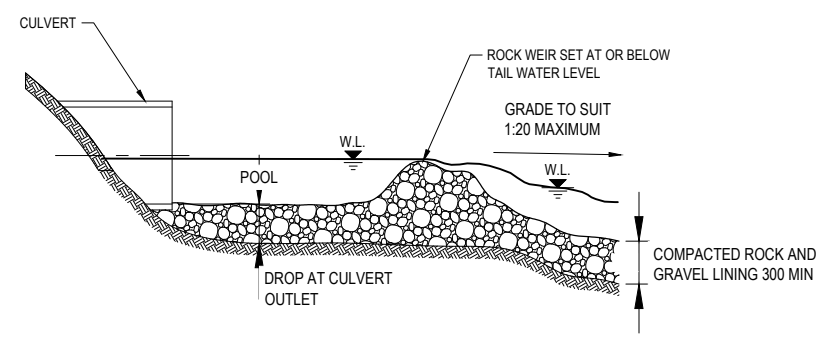


CULVERT OUTLET WITH WINGWALL

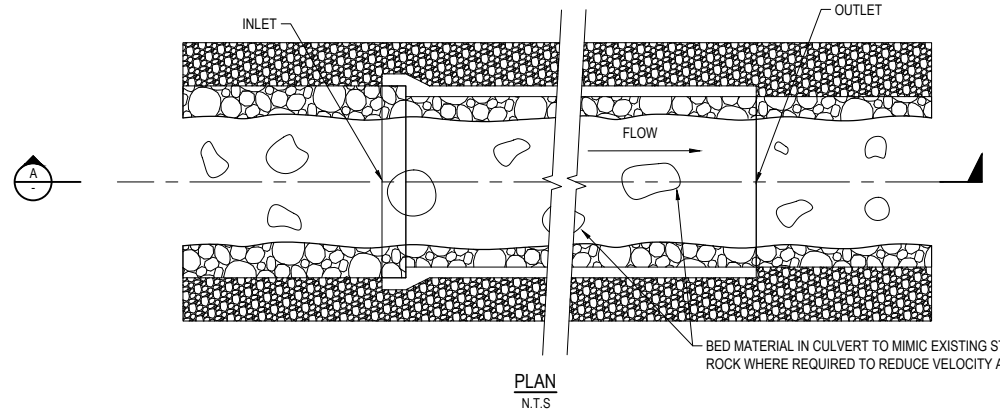
FISH PASSAGE IMPROVEMENT ROCKRAMP AND POOL
NTS



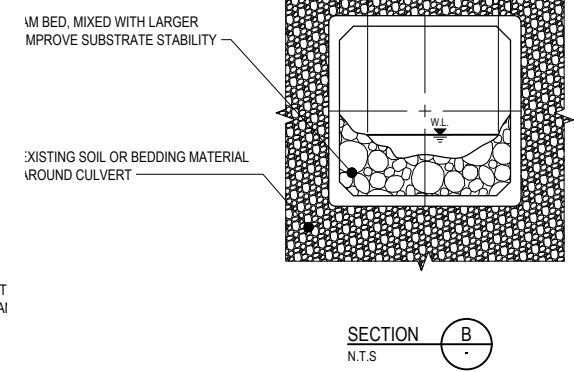
FISH PASSAGE ROCKRAMP ONLY
NTS



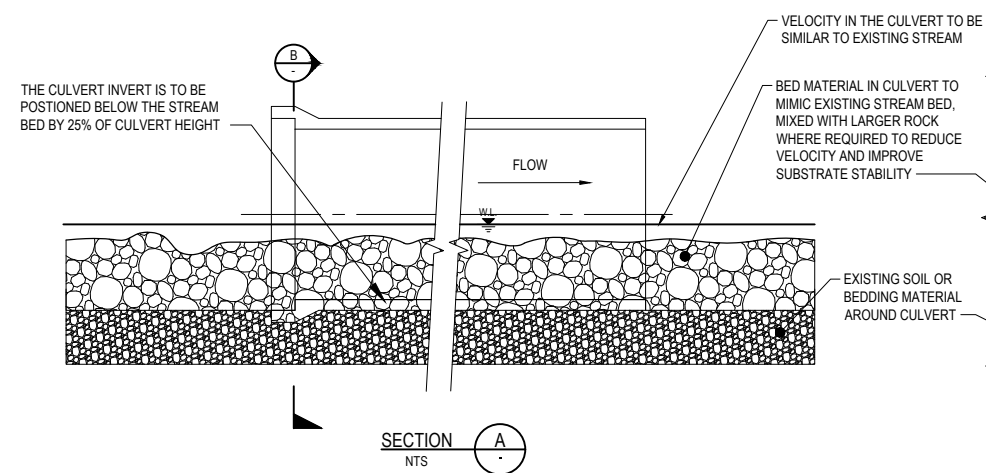
ROCKRAMP AND POOL FOR CULVERT WITHOUT WINGWALL



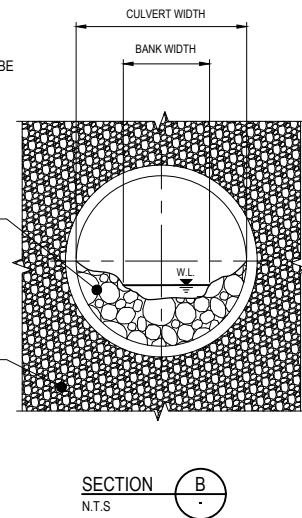
PLAN
N.T.S



SECTION B
N.T.S



SECTION A
N.T.S



SECTION B
N.T.S



PRECAST BOX CULVERT WITH FISH PASSAGE
NTS

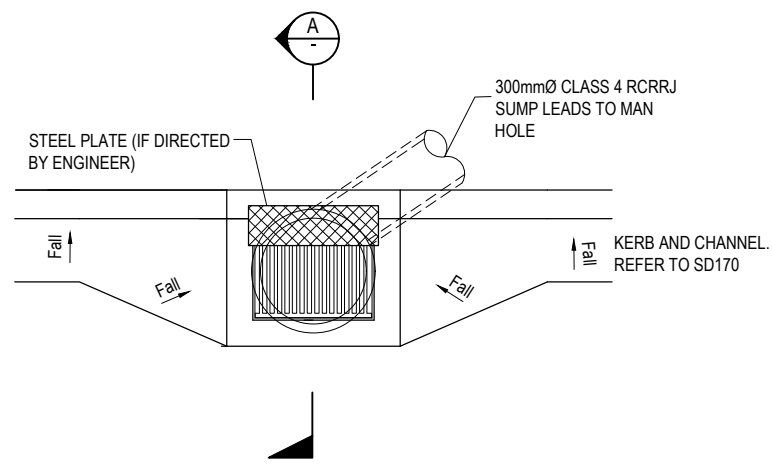
REVISION	AMENDMENT	DRAWN	CHECKED	APPROVED	DATE
A	WORKING PLOT	PAC			11.2021
B	CONCEPT DESIGN	JM	NK	LY	02/2022
C	PRELIMINARY	PAC	NK	LY	08.2022
D	PRELIMINARY	SL	WAH	LY	09.2022



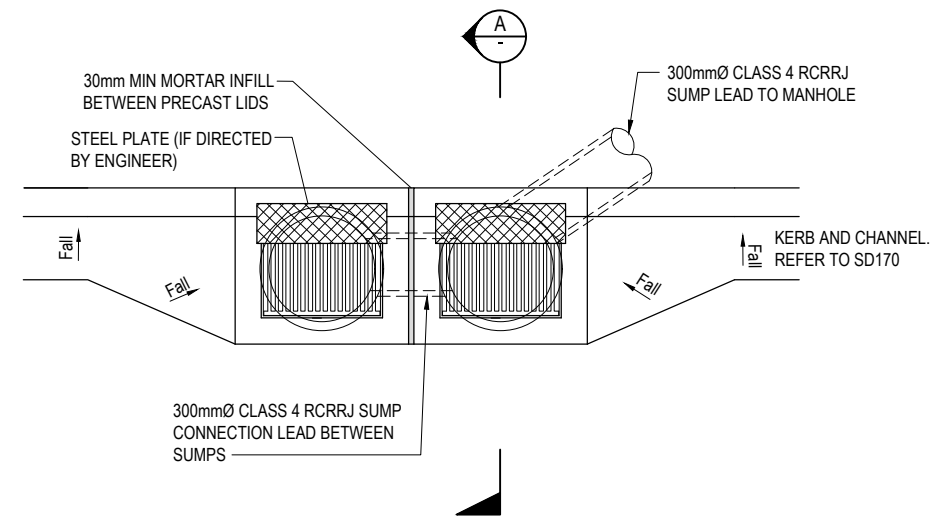
SCALES	DESIGNED	APPROVED	ORIGINAL SIZE
AS SHOWN @ A1			A1
DRAWN	DESIGNED	APPROVED	
Jess Morgan	Jess Morgan	Jamie Povall	
DRAWING VERIFIED	DESIGN VERIFIED	APPROVED DATE	
Paul Chilton	Nick Keenan	09.11.22	

PRELIMINARY

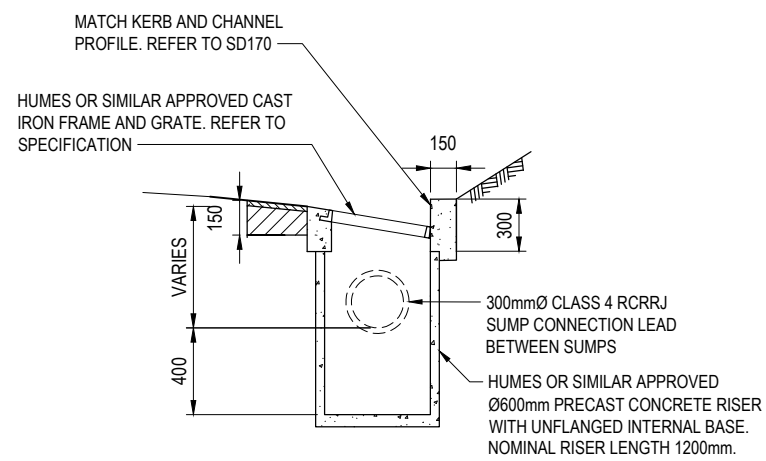
PROJECT	WAKA KOTAHI TAIRAWHITI ROAD PACKAGE PANEL SH2 RP 577/11.600-592/2.500 WAIKARE GORGE REALIGNMENT
TITLE	TYPICAL STORMWATER DETAILS SHEET 3 of 4 FISH PASSAGE DETAILS
DOCUMENT NO.	WGR - DES - DNG - 00 - DRG
SHEET NO.	0013
REVISION	D



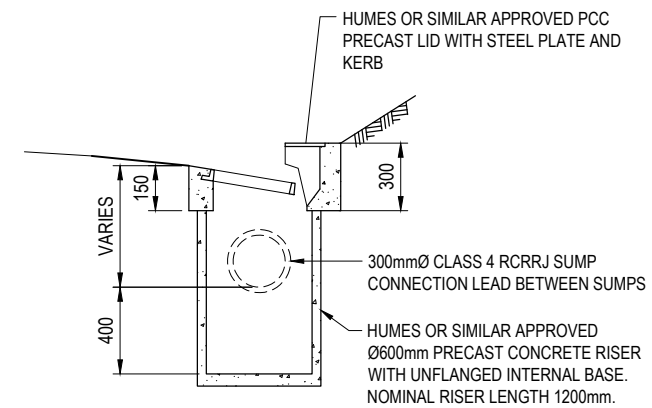
TYPICAL SINGLE BACK ENTRY SUMP/GRATE
NTS



TYPICAL DOUBLE BACK ENTRY SUMP/GRATE
NTS



SECTION WITHOUT BACK ENTRY
SECTION A
NTS



SECTION WITH BACK ENTRY
SECTION A
NTS

TYPICAL ENTRY SUMPS

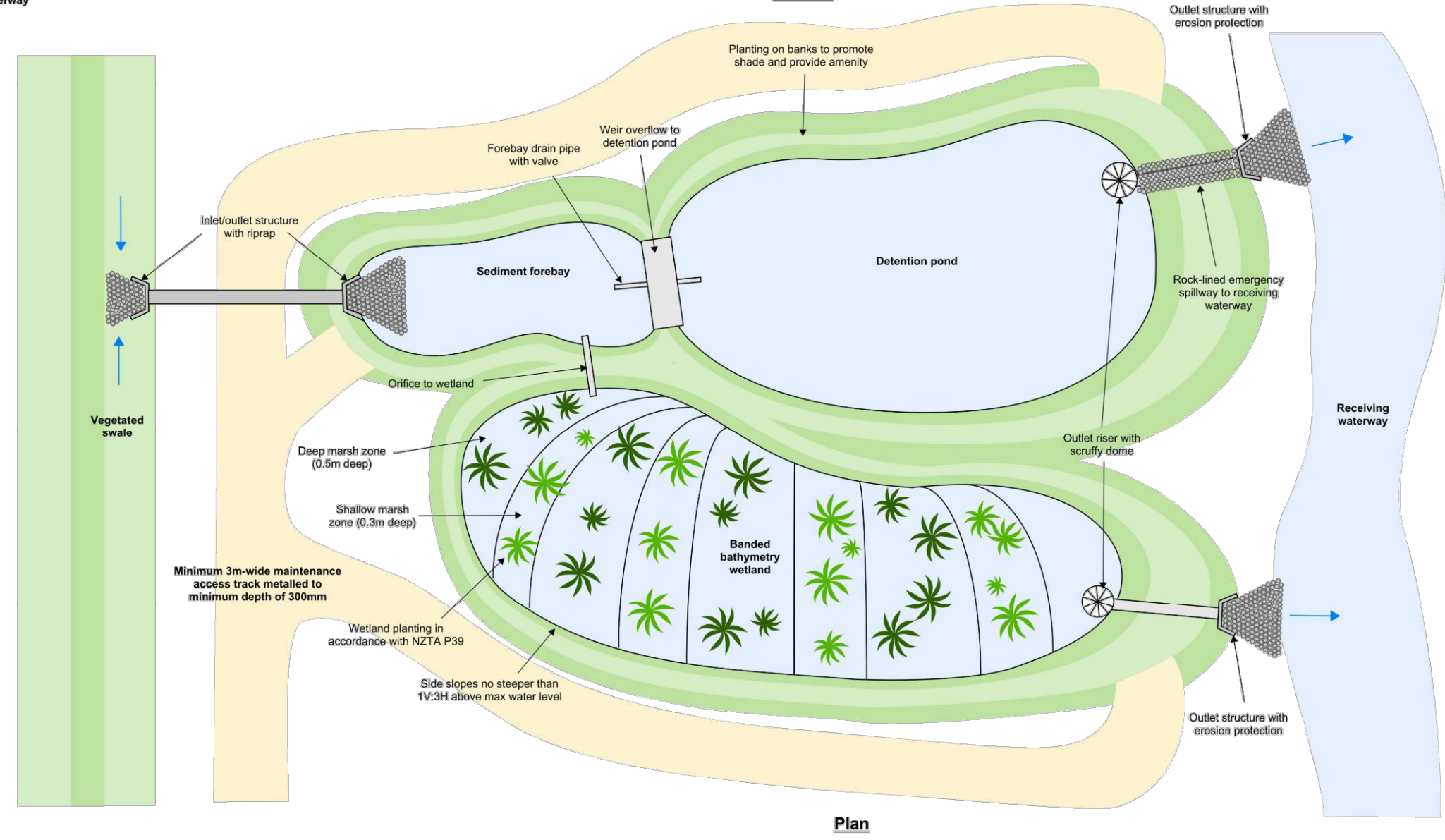
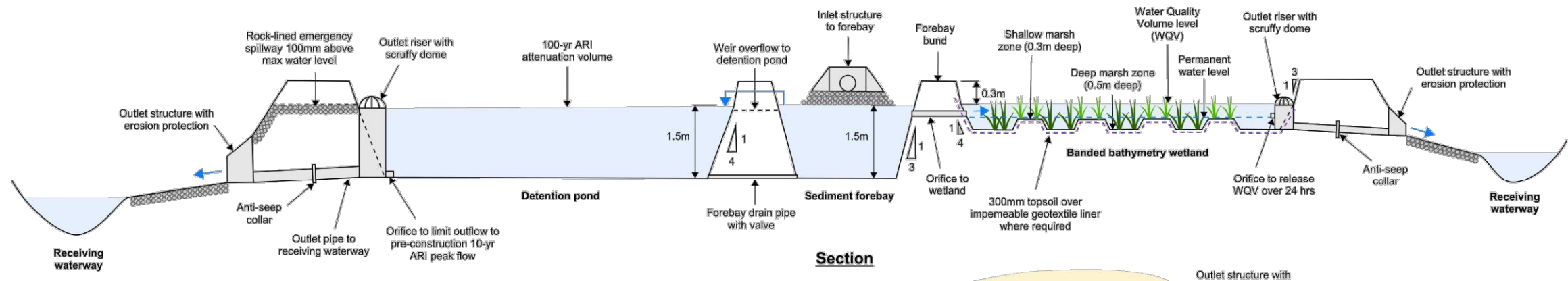
REVISION	AMENDMENT	DRAWN	CHECKED	APPROVED	DATE
A	WORKING PLOT	PAC			
B	CONCEPT DESIGN	JM	NK	LY	02/2022
C	PRELIMINARY	PAC	NK	LY	08.2022
D	PRELIMINARY	SL	WAH	LY	09.2022



SCALES		ORIGINAL SIZE
AS SHOWN @ A1		A1
DRAWN	DESIGNED	APPROVED
Jess Morgan	Jess Morgan	Jamie Povall
DRAWING VERIFIED	DESIGN VERIFIED	APPROVED DATE
Paul Chilton	Nick Keenan	09.11.22
PRELIMINARY		

PROJECT	
WAKA KOTAHI TAIRAWHITI ROAD PACKAGE PANEL SH2 RP 577/11.600-592/2.500 WAIKARE GORGE REALIGNMENT	
TITLE	
TYPICAL STORMWATER DETAILS SHEET 4 of 4 SUMP DETAILS	
DOCUMENT NO.	SHEET NO.
WGR - DES - DNG - 00 - DRG	0014
ORIGINATING ORGANISATION: WSP	REVISION D

300 mm
200
100
50
0 10 mm



Typical forebay-wetland-pond arrangement to receiving waterway arrangement

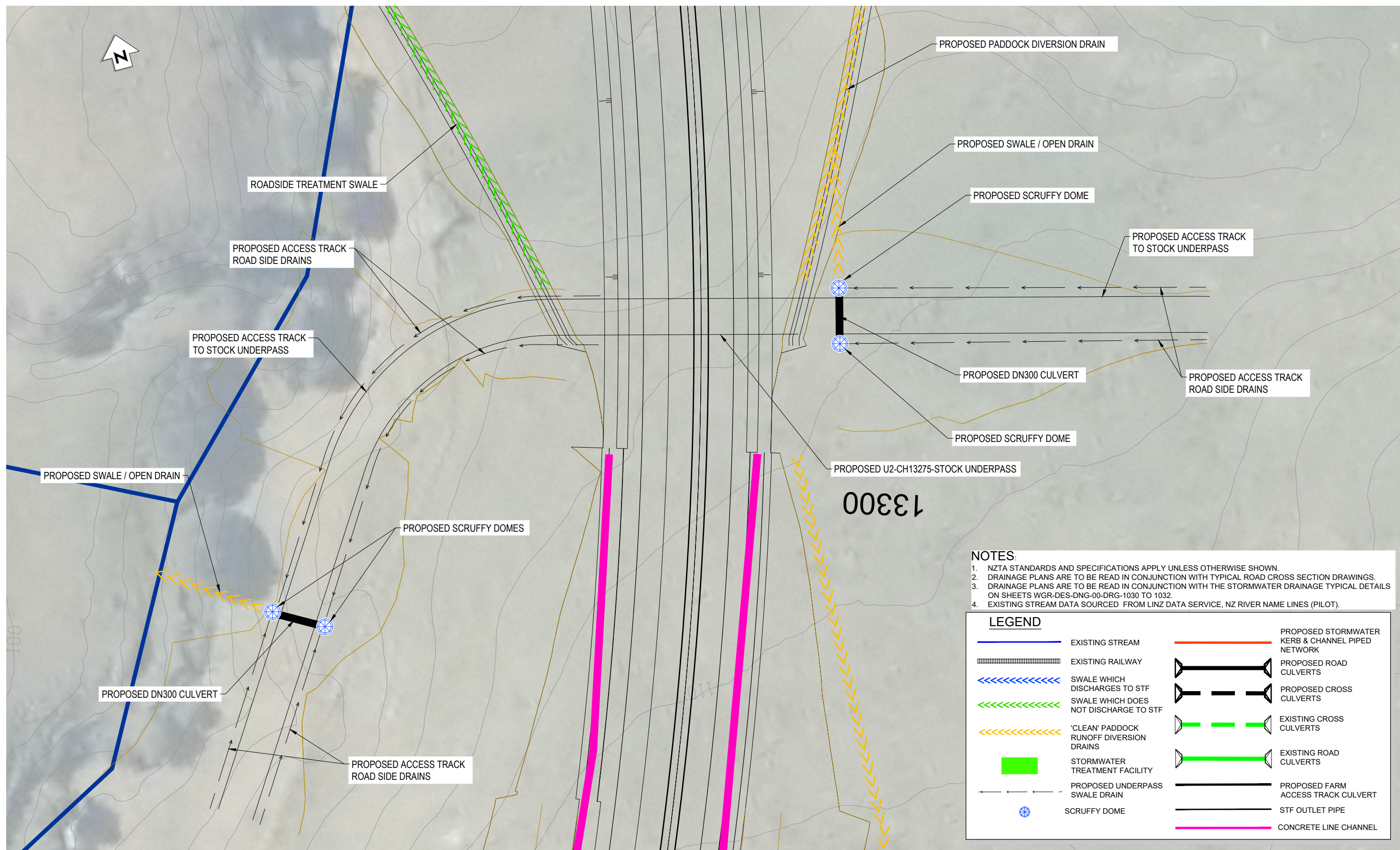
(NOT TO SCALE)

REVISION	AMENDMENT	DRAWN	CHECKED	APPROVED	DATE
A	WORKING PLOT	PAC		LY	11.2021
B	CONCEPT DESIGN	JM	NK	LY	02.2022
C	PRELIMINARY	PAC	NK	LY	08.2022
D	PRELIMINARY	SL	WAH	LY	09.2022



SCALES		ORIGINAL SIZE
AS SHOWN @ A1		A1
DRAWN	DESIGNED	APPROVED
Jess Morgan	Jess Morgan	Jamie Povall
DRAWING VERIFIED	DESIGN VERIFIED	APPROVED DATE
Paul Chilton	Nick Keenan	09.11.22
PRELIMINARY		

PROJECT	WAKA KOTAHI TAIRAWHITI ROAD PACKAGE PANEL SH2 RP 577/11.600-592/2.500 WAIKARE GORGE REALIGNMENT
TITLE	TYPICAL STORMWATER DRAINAGE DETAILS TYPICAL WETLAND GENERAL ARRANGEMENT
DOCUMENT NO.	WGR - DES - DNG - 00 - DRG
SHEET NO.	0015
REVISION	D



- NOTES:**
- NZTA STANDARDS AND SPECIFICATIONS APPLY UNLESS OTHERWISE SHOWN.
 - DRAINAGE PLANS ARE TO BE READ IN CONJUNCTION WITH TYPICAL ROAD CROSS SECTION DRAWINGS.
 - DRAINAGE PLANS ARE TO BE READ IN CONJUNCTION WITH THE STORMWATER DRAINAGE TYPICAL DETAILS ON SHEETS WGR-DES-DNG-00-DRG-1030 TO 1032.
 - EXISTING STREAM DATA SOURCED FROM LINZ DATA SERVICE, NZ RIVER NAME LINES (PILOT).

LEGEND			
	EXISTING STREAM		PROPOSED STORMWATER KERB & CHANNEL PIPED NETWORK
	EXISTING RAILWAY		PROPOSED ROAD CULVERTS
	SWALE WHICH DISCHARGES TO STF		PROPOSED CROSS CULVERTS
	SWALE WHICH DOES NOT DISCHARGE TO STF		EXISTING CROSS CULVERTS
	'CLEAN' Paddock RUNOFF DIVERSION DRAINS		EXISTING ROAD CULVERTS
	STORMWATER TREATMENT FACILITY		PROPOSED FARM ACCESS TRACK CULVERT
	PROPOSED UNDERPASS SWALE DRAIN		STF OUTLET PIPE
	SCRUFFY DOME		CONCRETE LINE CHANNEL

PLAN
SCALE 1 : 250

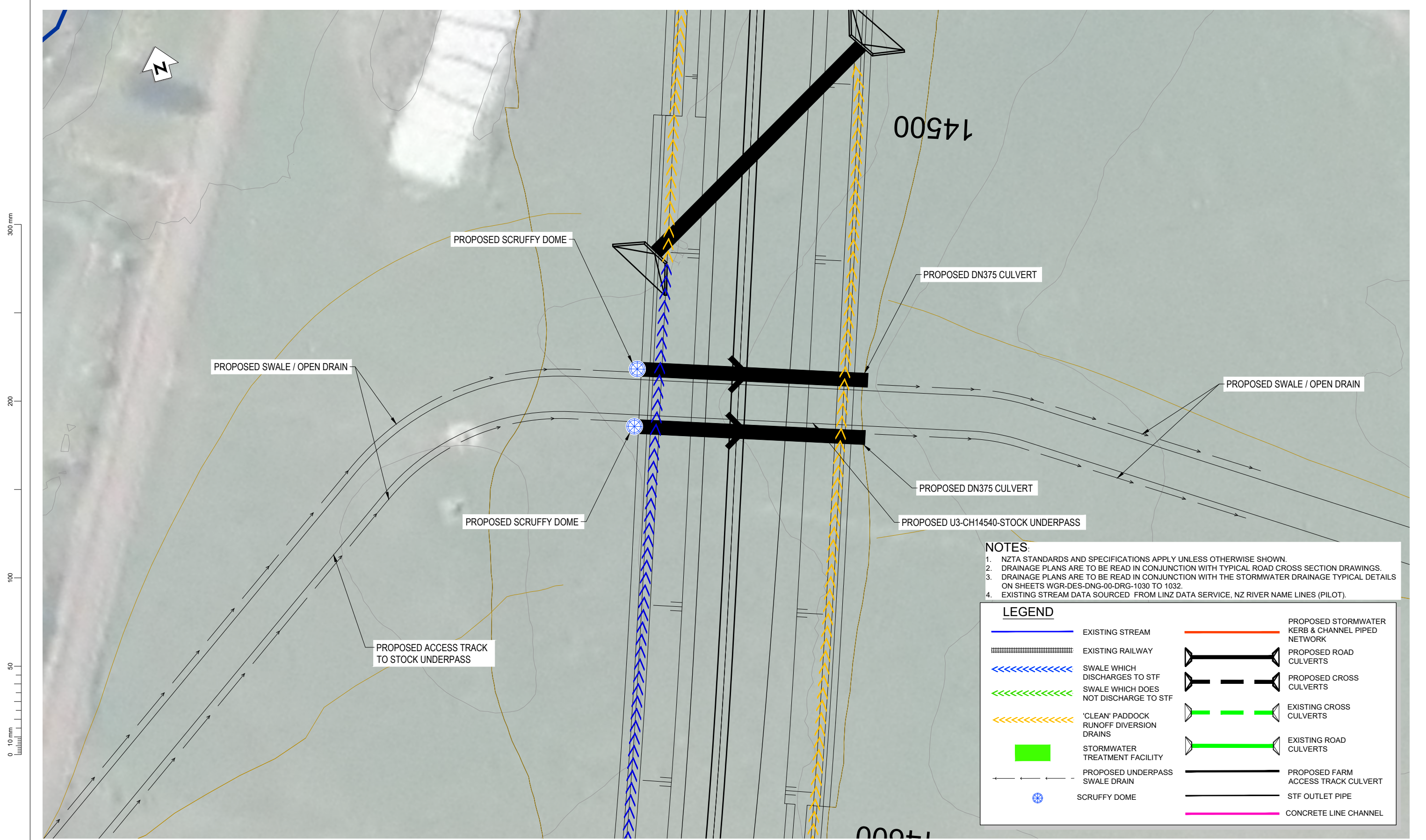
REVISION	AMENDMENT	DRAWN	CHECKED	APPROVED	DATE
C	PRELIMINARY	PAC			08.2022
D	PRELIMINARY	SL	WAH	LY	09.2022



SCALES		ORIGINAL SIZE
		A1
DRAWN	DESIGNED	APPROVED
Jess Morgan	Jess Morgan	Jamie Povall
DRAWING VERIFIED	DESIGN VERIFIED	APPROVED DATE
Paul Chilton	Nick Keenan	09.11.22

PRELIMINARY

PROJECT		
WAKA KOTAHI TAIRAWHITI ROAD PACKAGE PANEL		
SH2 RP 577/11.600-592/2.500 WAIKARE GORGE REALIGNMENT		
TITLE		
U2 - CH13275 - STOCK UNDERPASS		
DOCUMENT NO.	SHEET NO.	REVISION
WGR - DES - DNG - - DRG	0020	D



NOTES:
 1. NZTA STANDARDS AND SPECIFICATIONS APPLY UNLESS OTHERWISE SHOWN.
 2. DRAINAGE PLANS ARE TO BE READ IN CONJUNCTION WITH TYPICAL ROAD CROSS SECTION DRAWINGS.
 3. DRAINAGE PLANS ARE TO BE READ IN CONJUNCTION WITH THE STORMWATER DRAINAGE TYPICAL DETAILS ON SHEETS WGR-DES-DNG-00-DRG-1030 TO 1032.
 4. EXISTING STREAM DATA SOURCED FROM LINZ DATA SERVICE, NZ RIVER NAME LINES (PILOT).

LEGEND			
	EXISTING STREAM		PROPOSED STORMWATER KERB & CHANNEL PIPED NETWORK
	EXISTING RAILWAY		PROPOSED ROAD CULVERTS
	SWALE WHICH DISCHARGES TO STF		PROPOSED CROSS CULVERTS
	SWALE WHICH DOES NOT DISCHARGE TO STF		EXISTING CROSS CULVERTS
	'CLEAN' Paddock RUNOFF DIVERSION DRAINS		EXISTING ROAD CULVERTS
	STORMWATER TREATMENT FACILITY		PROPOSED FARM ACCESS TRACK CULVERT
	PROPOSED UNDERPASS SWALE DRAIN		STF OUTLET PIPE
	SCRUFFY DOME		CONCRETE LINE CHANNEL

PLAN
SCALE 1 : 1000

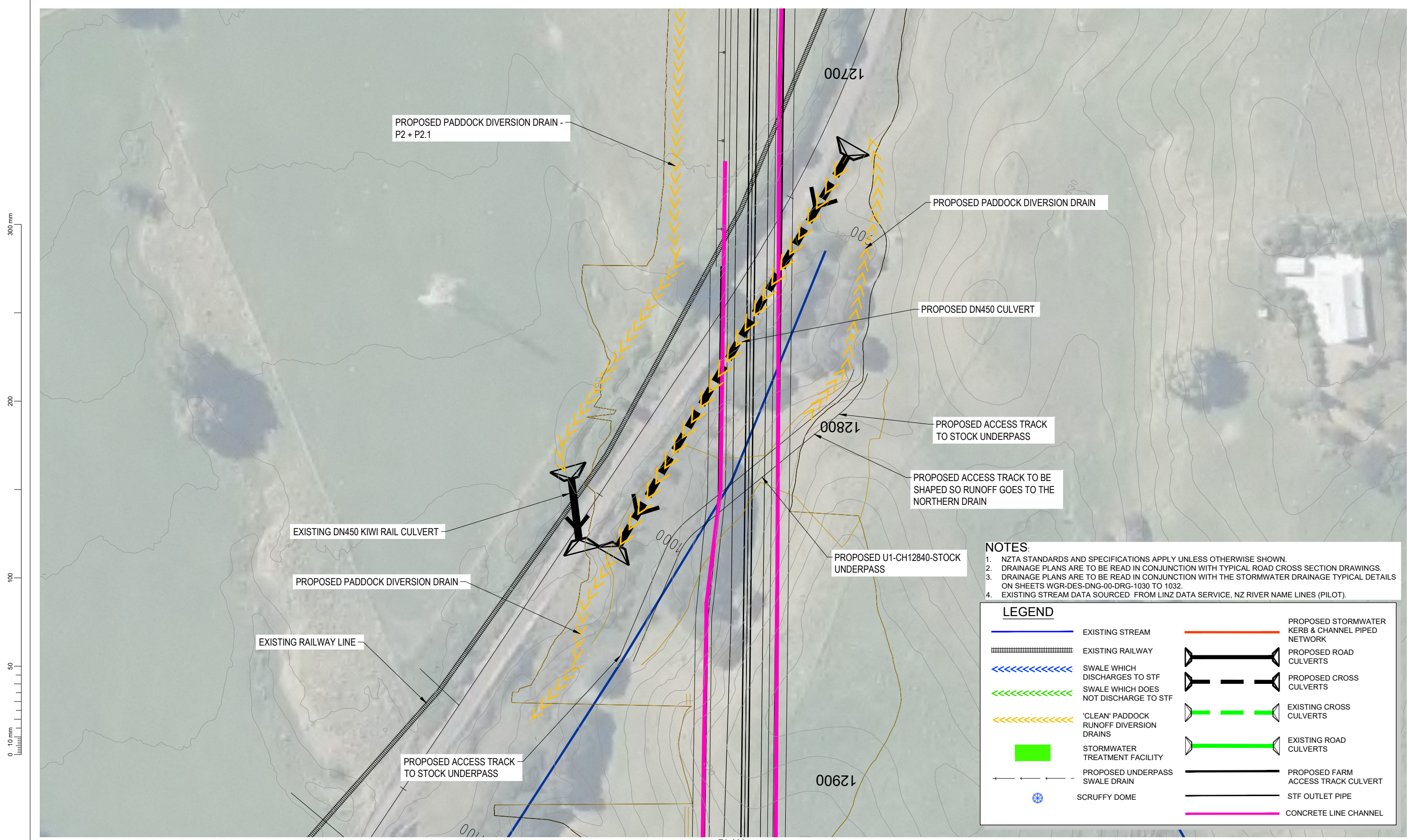
REVISION	AMENDMENT	DRAWN	CHECKED	APPROVED	DATE
C	PRELIMINARY	PAC			08.2022
D	PRELIMINARY	SL	WAH	LY	09.2022



SCALES		ORIGINAL SIZE
		A1
DRAWN	DESIGNED	APPROVED
Jess Morgan	Jess Morgan	Jamie Povall
DRAWING VERIFIED	DESIGN VERIFIED	APPROVED DATE
Paul Chilton	Nick Keenan	09.11.22

PRELIMINARY

PROJECT		
WAKA KOTAHI TAIRAWHITI ROAD PACKAGE PANEL		
SH2 RP 577/11.600-592/2.500 WAIKARE GORGE REALIGNMENT		
TITLE		
U3 - CH14540 - STOCK UNDERPASS		
DOCUMENT NO.	SHEET NO.	REVISION
WGR - DES - DNG - - DRG	0021	D



- NOTES:**
- NZTA STANDARDS AND SPECIFICATIONS APPLY UNLESS OTHERWISE SHOWN.
 - DRAINAGE PLANS ARE TO BE READ IN CONJUNCTION WITH TYPICAL ROAD CROSS SECTION DRAWINGS.
 - DRAINAGE PLANS ARE TO BE READ IN CONJUNCTION WITH THE STORMWATER DRAINAGE TYPICAL DETAILS ON SHEETS WGR-DES-DNG-00-DRG-1030 TO 1032.
 - EXISTING STREAM DATA SOURCED FROM LINZ DATA SERVICE, NZ RIVER NAME LINES (PILOT).

LEGEND			
	EXISTING STREAM		PROPOSED STORMWATER KERB & CHANNEL PIPED NETWORK
	EXISTING RAILWAY		PROPOSED ROAD CULVERTS
	SWALE WHICH DISCHARGES TO STF		PROPOSED CROSS CULVERTS
	SWALE WHICH DOES NOT DISCHARGE TO STF		EXISTING CROSS CULVERTS
	'CLEAN' PADDOCK RUNOFF DIVERSION DRAINS		EXISTING ROAD CULVERTS
	STORMWATER TREATMENT FACILITY		PROPOSED FARM ACCESS TRACK CULVERT
	PROPOSED UNDERPASS SWALE DRAIN		STF OUTLET PIPE
	SCRUFFY DOME		CONCRETE LINE CHANNEL

PLAN
SCALE 1 : 500

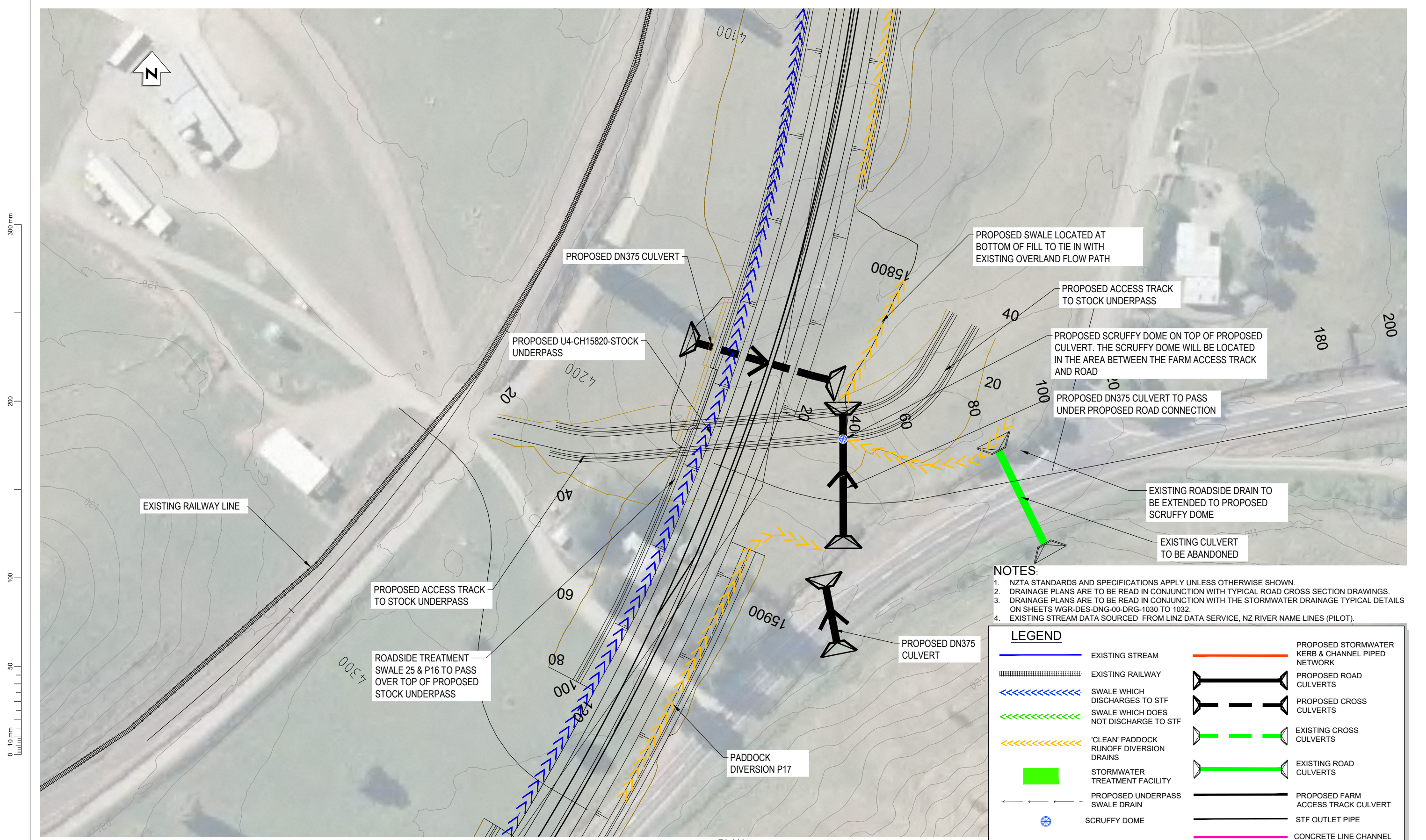
REVISION	AMENDMENT	DRAWN	CHECKED	APPROVED	DATE
C	PAC			08.2022	PRELIMINARY
D	PRELIMINARY	SL	WAH	LY	09.2022



SCALES		ORIGINAL SIZE
		A1
DRAWN	DESIGNED	APPROVED
Jess Morgan	Jess Morgan	Jamie Povall
DRAWING VERIFIED	DESIGN VERIFIED	APPROVED DATE
Paul Chilton	Nick Keenan	09.11.22

PRELIMINARY

PROJECT		
WAKA KOTAHI TAIRAWHITI ROAD PACKAGE PANEL SH2 RP 577/11.600-592/2.500 WAIKARE GORGE REALIGNMENT		
TITLE		
U1 - CH12840 - STOCK UNDERPASS		
DOCUMENT NO.	SHEET NO.	REVISION
WGR - DES - DNG - - DRG	0030	F



PROPOSED SWALE LOCATED AT BOTTOM OF FILL TO TIE IN WITH EXISTING OVERLAND FLOW PATH

PROPOSED ACCESS TRACK TO STOCK UNDERPASS

PROPOSED SCRUFFY DOME ON TOP OF PROPOSED CULVERT. THE SCRUFFY DOME WILL BE LOCATED IN THE AREA BETWEEN THE FARM ACCESS TRACK AND ROAD

PROPOSED DN375 CULVERT TO PASS UNDER PROPOSED ROAD CONNECTION

EXISTING ROADSIDE DRAIN TO BE EXTENDED TO PROPOSED SCRUFFY DOME

EXISTING CULVERT TO BE ABANDONED

- NOTES:**
- NZTA STANDARDS AND SPECIFICATIONS APPLY UNLESS OTHERWISE SHOWN.
 - DRAINAGE PLANS ARE TO BE READ IN CONJUNCTION WITH TYPICAL ROAD CROSS SECTION DRAWINGS.
 - DRAINAGE PLANS ARE TO BE READ IN CONJUNCTION WITH THE STORMWATER DRAINAGE TYPICAL DETAILS ON SHEETS WGR-DES-DNG-00-DRG-1030 TO 1032.
 - EXISTING STREAM DATA SOURCED FROM LINZ DATA SERVICE, NZ RIVER NAME LINES (PILOT).

LEGEND			
	EXISTING STREAM		PROPOSED STORMWATER KERB & CHANNEL PIPED NETWORK
	EXISTING RAILWAY		PROPOSED ROAD CULVERTS
	SWALE WHICH DISCHARGES TO STF		PROPOSED CROSS CULVERTS
	SWALE WHICH DOES NOT DISCHARGE TO STF		EXISTING CROSS CULVERTS
	'CLEAN' Paddock RUNOFF DIVERSION DRAINS		EXISTING ROAD CULVERTS
	STORMWATER TREATMENT FACILITY		PROPOSED FARM ACCESS TRACK CULVERT
	PROPOSED UNDERPASS SWALE DRAIN		STF OUTLET PIPE
	SCRUFFY DOME		CONCRETE LINE CHANNEL

PLAN
SCALE 1 : 500

REVISION	AMENDMENT	DRAWN	CHECKED	APPROVED	DATE
C	PAC			08.2022	PRELIMINARY
D	PRELIMINARY	SL	WAH	LY	09.2022



SCALES		ORIGINAL SIZE
DRAWN	DESIGNED	APPROVED
Jess Morgan	Jess Morgan	Jamie Povall
DRAWING VERIFIED	DESIGN VERIFIED	APPROVED DATE
Paul Chilton	Nick Keenan	09.11.22

PRELIMINARY

PROJECT		
WAKA KOTAHI TAIRAWHITI ROAD PACKAGE PANEL SH2 RP 577/11.600-592/2.500 WAIKARE GORGE REALIGNMENT		
TITLE		
U4 - CH15820 - STOCK UNDERPASS		
DOCUMENT NO.	SHEET NO.	REVISION
WGR - DES - DNG - - DRG	0031	D