

**98-102 TOTARA ROAD, WHENUAPAI
WHENUAPAI GREEN**

FOR: RESOURCE CONSENT

NEIL CONSTRUCTION LIMITED

JOB No. 4520

DECEMBER 2022

AUTHORITY: AUCKLAND COUNCIL

DESIGN DATUMS:

**HORIZONTAL: MT EDEN 2020
VERTICAL: AUCKLAND 1946**



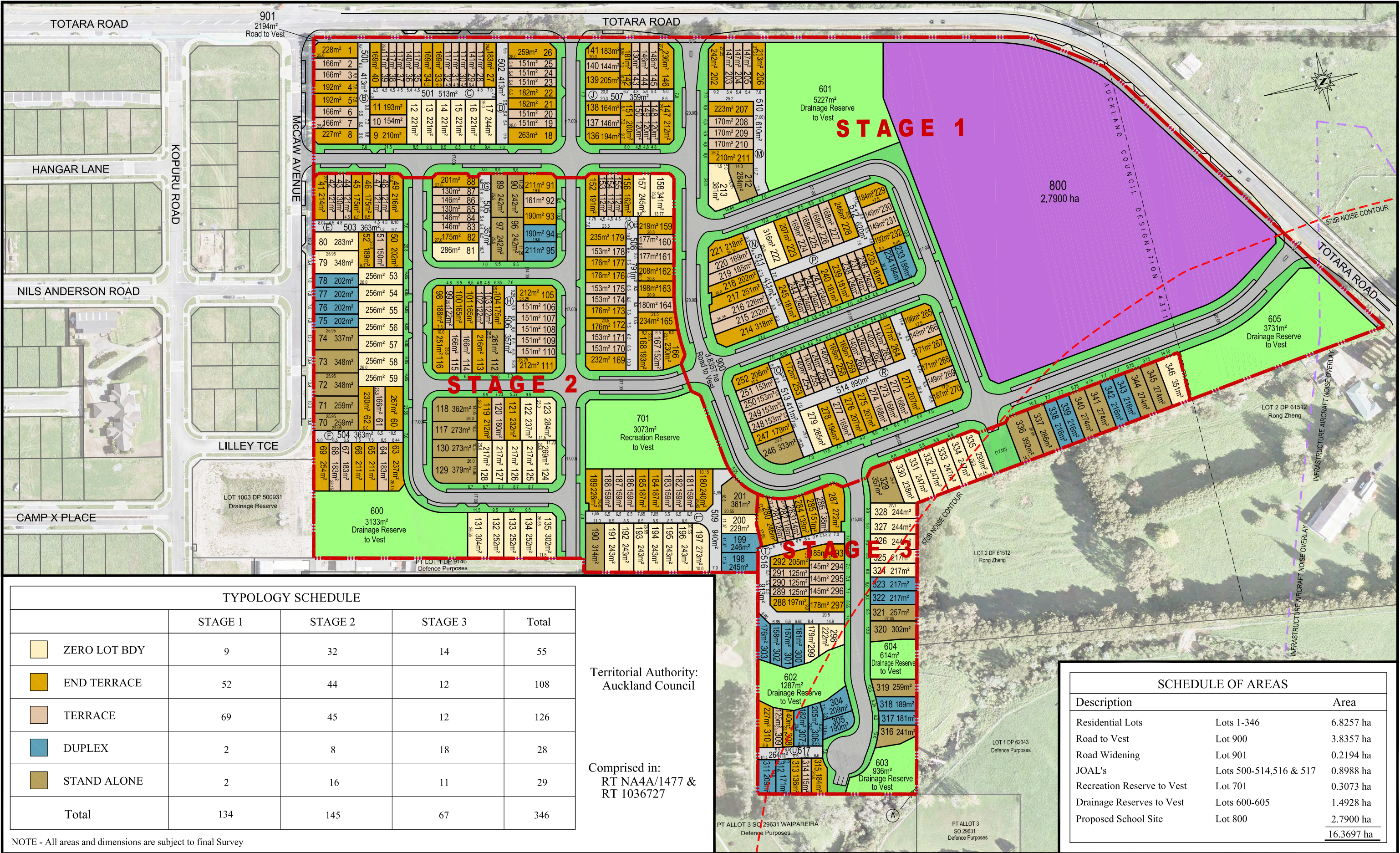
98-102 TOTARA ROAD, WHENUAPAI (WHENUAPAI GREEN)

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EXTERNAL SUPPLIERS:

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TYPOLOGY SCHEDULE				
	STAGE 1	STAGE 2	STAGE 3	Total
ZERO LOT BDY	9	32	14	55
END TERRACE	52	44	12	108
TERRACE	69	45	12	126
DUPLEX	2	8	18	28
STAND ALONE	2	16	11	29
Total	134	145	67	346

NOTE - All areas and dimensions are subject to final Survey

Territorial Authority:
Auckland Council

Comprised in:
RT NA4A/1477 &
RT 1036727

SCHEDULE OF AREAS		
Description		Area
Residential Lots	Lots 1-346	6.8257 ha
Road to Vest	Lot 900	3.8357 ha
Road Widening	Lot 901	0.2194 ha
JOAL's	Lots 500-514,516 & 517	0.8988 ha
Recreation Reserve to Vest	Lot 701	0.3073 ha
Drainage Reserves to Vest	Lots 600-605	1.4928 ha
Proposed School Site	Lot 800	2.7900 ha
		16.3697 ha

Rev	Description	By	Date
7	SCHED OF AREAS AMENDED, LOT 515 REMVD	DP	12/12/22
6	LOTS REVISED	CK	21/11/22
5	LOTS 180-201 & 701 REVISED	MA	12/10/22

THIS DRAWING AND DESIGN REMAINS THE PROPERTY OF
NEIL CONSTRUCTION LIMITED
LAND DEVELOPERS

THE NEIL GROUP LIMITED
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8 NUGENT STREET
GRAFTON

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Job Title

WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI

Drawing Title

PROPOSED SUBDIVISION OF
LOT 1 DP 53062 & LOT 2 DP 81411

	By	Date	Scale	Job No.	
Surveyed:			1:1000 @ A1 1:2000 @ A3	Drawing No.	Rev
Designed:					
Drawn:	MDC	18/11/21		4520-00-RC-01	7
Approved:					
CAD FILE					

	ZERO LOT BDY 9 LOTS
	END TERRACE 52 LOTS
	TERRACE 69 LOTS
	DUPLEX 2 LOTS
	STAND ALONE 2 LOTS

Territorial Authority:
Auckland Council

Comprised in:
RT NA4A/1477 &
RT 1036727

Memorandum of Easements			
Shown	Purpose	Servient Tenement Burdened Land	Dominant Tenement Benefited Land
(B)	Right to convey power, water, gas, telecommunications & computer media	Lot 500 hereon	Lots 1-11 & 27-40 hereon
(C)		Lot 501 hereon	Lots 1-11 & 18-40 hereon
(D)		Lot 502 hereon	Lots 18-40 hereon
(J)		Lot 507 hereon	Lots 142-151 hereon
(M)		Lot 510 hereon	Lots 202-211 hereon
(N)		Lot 511 hereon	Lots 214-228 & 235-245 hereon
(P)		Lot 512 hereon	Lots 222-228 & 235-245 hereon
(Q)		Right of Way	Lot 513 hereon
(R)		Lot 514 hereon	Lots 253-264 & 271-279 hereon

Schedule of Easements in Gross			
Shown	Purpose	Servient Tenement Burdened Land	Grantee
(B)	Right to convey power	Lot 500 hereon	Vector Limited
(C)		Lot 501 hereon	
(D)		Lot 502 hereon	
(J)		Lot 507 hereon	
(M)		Lot 510 hereon	
(N)		Lot 511 hereon	
(P)		Lot 512 hereon	
(Q)		Lot 513 hereon	
(R)		Lot 514 hereon	

Schedule of Easements in Gross			
Shown	Purpose	Servient Tenement Burdened Land	Grantee
(B)	Right to convey telecommunications	Lot 500 hereon	Chorus New Zealand Limited
(C)		Lot 501 hereon	
(D)		Lot 502 hereon	
(J)		Lot 507 hereon	
(M)		Lot 510 hereon	
(N)		Lot 511 hereon	
(P)		Lot 512 hereon	
(Q)		Lot 513 hereon	
(R)		Lot 514 hereon	

NOTE - All areas and dimensions are subject to final Survey

Rev	Description	By	Date
4	SCHED OF AREAS AMENDED, LOT 515 REMVD	DP	12/12/22
3	LOTS REVISED	DP	05/12/22
2	LOTS REVISED	DP	12/10/22
1	FOR REVIEW	DP	04/04/22



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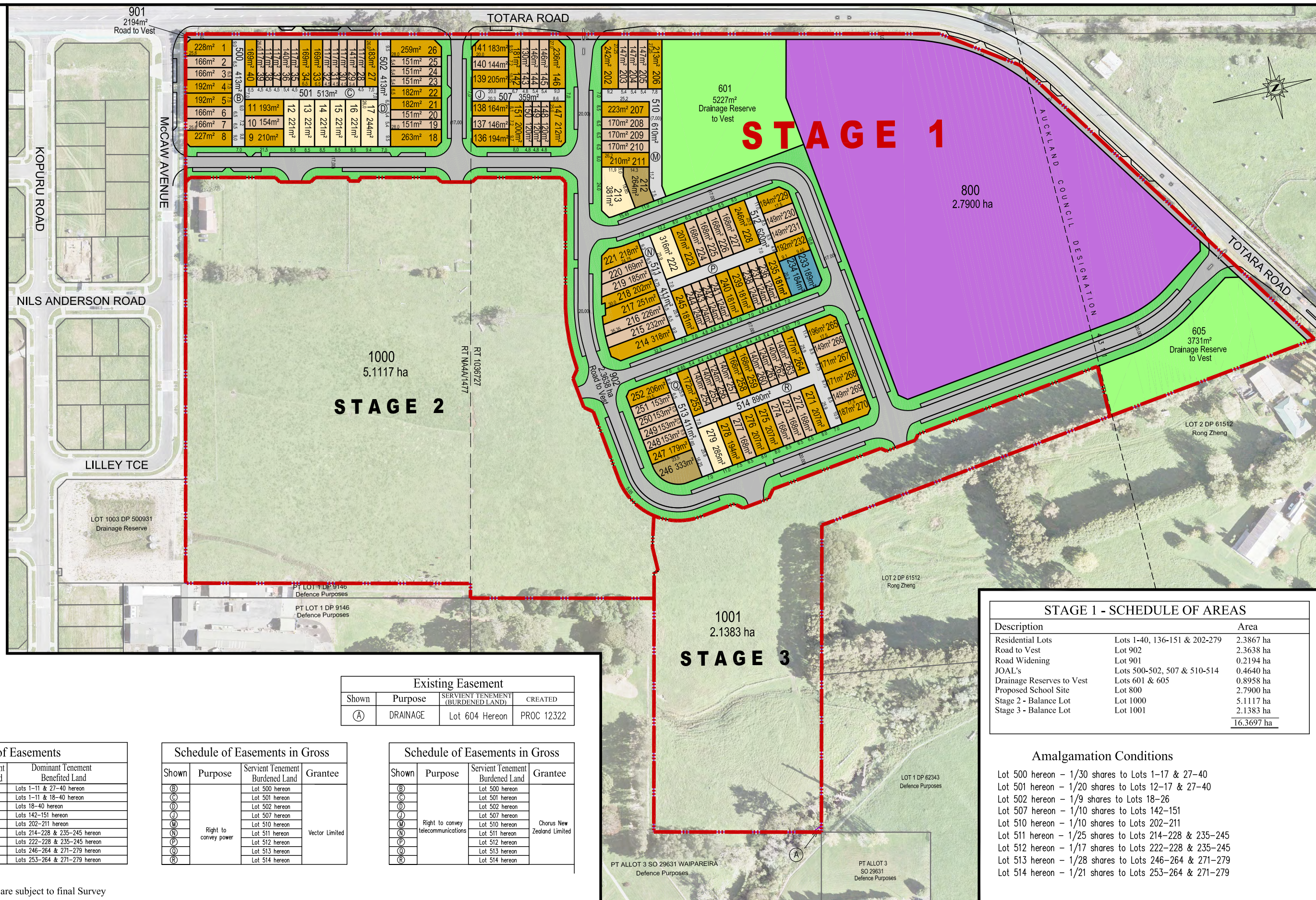
Job Title
WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI

Drawing Title

PROPOSED SUBDIVISION OF
LOT 1 DP 53062 & LOT 1 DP 571646

	By	Date	Scale	Job No.	
Surveyed:			1:1000 @ A1	Drawing No.	Rev
Designed:			1:2000 @ A3	4520-01-RC-01	4
Drawn:	MDC	05/12/22			
Approved:					
CAD FILE					

F:_PROJECTS\TOTARA RD - Wpai\Wpai Green - Harre\4520-01-RC-01 - Rev4.dwg





Rev	Description	By	Date
4	SCHED OF AREAS AMENDED, LOT 515 REMVD	DP	12/12/22
3	LOTS REVISED	DP	05/12/22
2	LOTS REVISED	DP	12/10/22
1	FOR REVIEW	DP	04/04/22



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Job Title

WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI

Drawing Title

PROPOSED SUBDIVISION OF
LOT 1 DP 53062 & LOT 1 DP 571646

	By	Date	Scale	Job No.	Rev
Surveyed:			1:500 @ A1	Drawing No.	
Designed:			1:1000 @ A3	4520-03-RC-02	4
Drawn:	MDC	05/12/22			
Approved:					
CAD FILE					

TYPOLOGY

ZERO LOT BDY
32 LOTS

END TERRACE
44 LOTS

TERRACE
45 LOTS

DUPLEX
8 LOTS

STAND ALONE
16 LOTS

TOTAL = 145 LOTS

Territorial Authority:
Auckland Council

Comprised in:
RT XXXXXX

Amalgamation Conditions

Lot 503 hereon - 1/12 shares to Lots 41-52
Lot 504 hereon - 1/10 shares to Lots 60-69
Lot 505 hereon - 1/8 shares to Lots 81-88
Lot 506 hereon - 1/7 shares to Lots 105-111
Lot 508 hereon - 1/12 shares to Lots 152-156 & 159-165
Lot 509 hereon - 1/19 shares to Lots 180-189 & 193-201

Memorandum of Easements

Shown	Purpose	Servient Tenement Burdened Land	Dominant Tenement Benefited Land
(E)	Right to convey power, water, gas, telecommunications & computer media	Lot 503 hereon	Lots 41-52 hereon
(F)		Lot 504 hereon	Lots 60-69 hereon
(G)		Lot 505 hereon	Lots 81-88 hereon
(H)		Lot 506 hereon	Lots 105-111 hereon
(K)	Right of Way	Lot 508 hereon	Lots 152-156 & 159-165 hereon
(L)		Lot 509 hereon	Lots 180-189 & 193-201 hereon

STAGE 2 - SCHEDULE OF AREAS

Description	Area
Residential Lots	Lots 41-135 & 152-201 3.0461 ha
Road to Vest	Lot 903 1.1279 ha
JOAL's	Lots 503-506, 508 & 509 0.3171 ha
Drainage Reserve to Vest	Lot 600 0.3133 ha
Recreation Reserve to Vest	Lot 701 0.3073 ha
	5.1117 ha

Schedule of Easements in Gross

Shown	Purpose	Servient Tenement Burdened Land	Grantee
(E)	Right to convey power	Lot 503 hereon	Vector Limited
(F)		Lot 504 hereon	
(G)		Lot 505 hereon	
(H)		Lot 506 hereon	
(K)		Lot 508 hereon	
(L)		Lot 509 hereon	

Schedule of Easements in Gross

Shown	Purpose	Servient Tenement Burdened Land	Grantee
(E)	Right to convey telecommunications	Lot 503 hereon	Chorus New Zealand Limited
(F)		Lot 504 hereon	
(G)		Lot 505 hereon	
(H)		Lot 506 hereon	
(K)		Lot 508 hereon	
(L)		Lot 509 hereon	

NOTE - All areas and dimensions are subject to final Survey

Rev	Description	By	Date
4	SCHEDULE OF AREAS AMENDED	DP	12/12/22
3	LOTS REVISED	DP	05/12/22
2	LOTS REVISED	DP	12/10/22
1	FOR REVIEW	DP	04/04/22



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Job Title

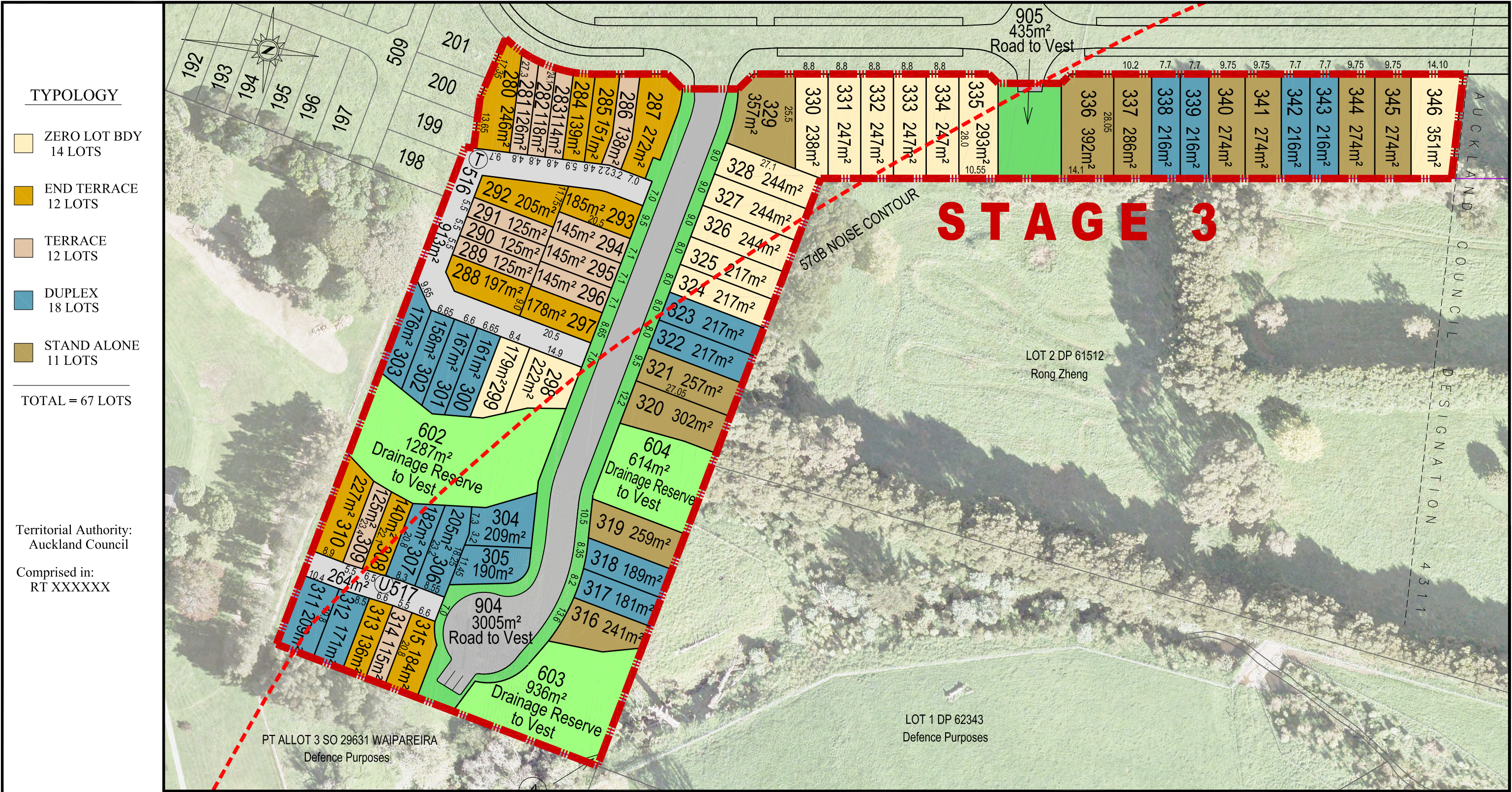
WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI

Drawing Title

PROPOSED SUBDIVISION OF
LOT 1000 DP XXXXXX

	By	Date	Scale	Job No.	Rev
Surveyed:			1:500 @ A1	4520-02-RC-01	4
Designed:			1:1000 @ A3		
Drawn:	MDC	04/04/22			
Approved:					
CAD FILE					

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Memorandum of Easements			
Shown	Purpose	Servient Tenement Burdened Land	Dominant Tenement Benefited Land
①	Right to convey power, water, gas, telecommunications & computer media	Lot 516 hereon	Lots 280-292 & 298-303 hereon
②	Right of Way	Lot 517 hereon	Lots 306-315 hereon

NOTE - All areas and dimensions are subject to final Survey

Schedule of Easements in Gross			
Shown	Purpose	Servient Tenement Burdened Land	Grantee
①	Right to convey power	Lot 516 hereon	Vector Limited
②	Right to convey power	Lot 517 hereon	Vector Limited

Schedule of Easements in Gross			
Shown	Purpose	Servient Tenement Burdened Land	Grantee
①	Right to convey telecommunications	Lot 516 hereon	Chorus New Zealand Limited
②	Right to convey telecommunications	Lot 517 hereon	Chorus New Zealand Limited

Amalgamation Conditions

Lot 516 hereon - 1/19 shares to Lots 280-292 & 298-303
Lot 517 hereon - 1/10 shares to Lots 306-315

Existing Easement			
Shown	Purpose	SERVIENT TENEMENT (BURDENED LAND)	CREATED
①	DRAINAGE	Lot 604 Hereon	PROC 12322

STAGE 3 - SCHEDULE OF AREAS		
Description	Area	
Residential Lots	Lots 280-346	1.3929 ha
Roads to Vest	Lots 904 & 905	0.3440 ha
JOAL's	Lots 516 & 517	0.1177 ha
Drainage Reserves to Vest	Lots 602-604	0.2837 ha
		<u>2.1383 ha</u>

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4	SCHEDULE OF AREAS AMENDED	DP	12/12/22
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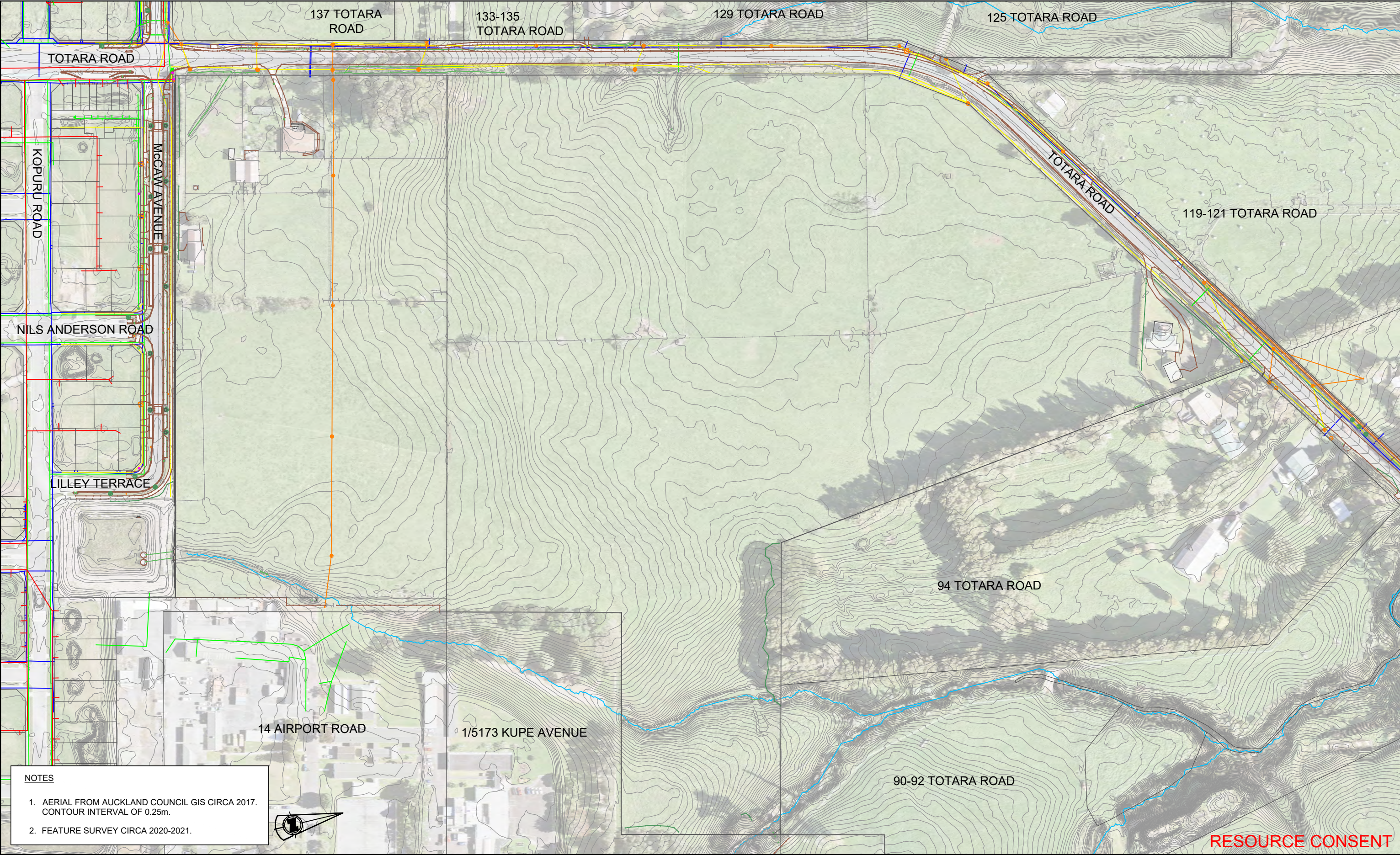
Job Title

WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI

Drawing Title

PROPOSED SUBDIVISION OF
LOT 1001 DP XXXXXX

	By	Date	Scale	Job No.	Rev
Surveyed:			1:500 @ A1	Drawing No.	
Designed:			1:1000 @ A3	4520-03-RC-01	4
Drawn:	MDC	04/04/22			
Approved:					
CAD FILE					



Rev	Description	By	Date
A	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022

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FACSIMILE: +64 9 918 6567
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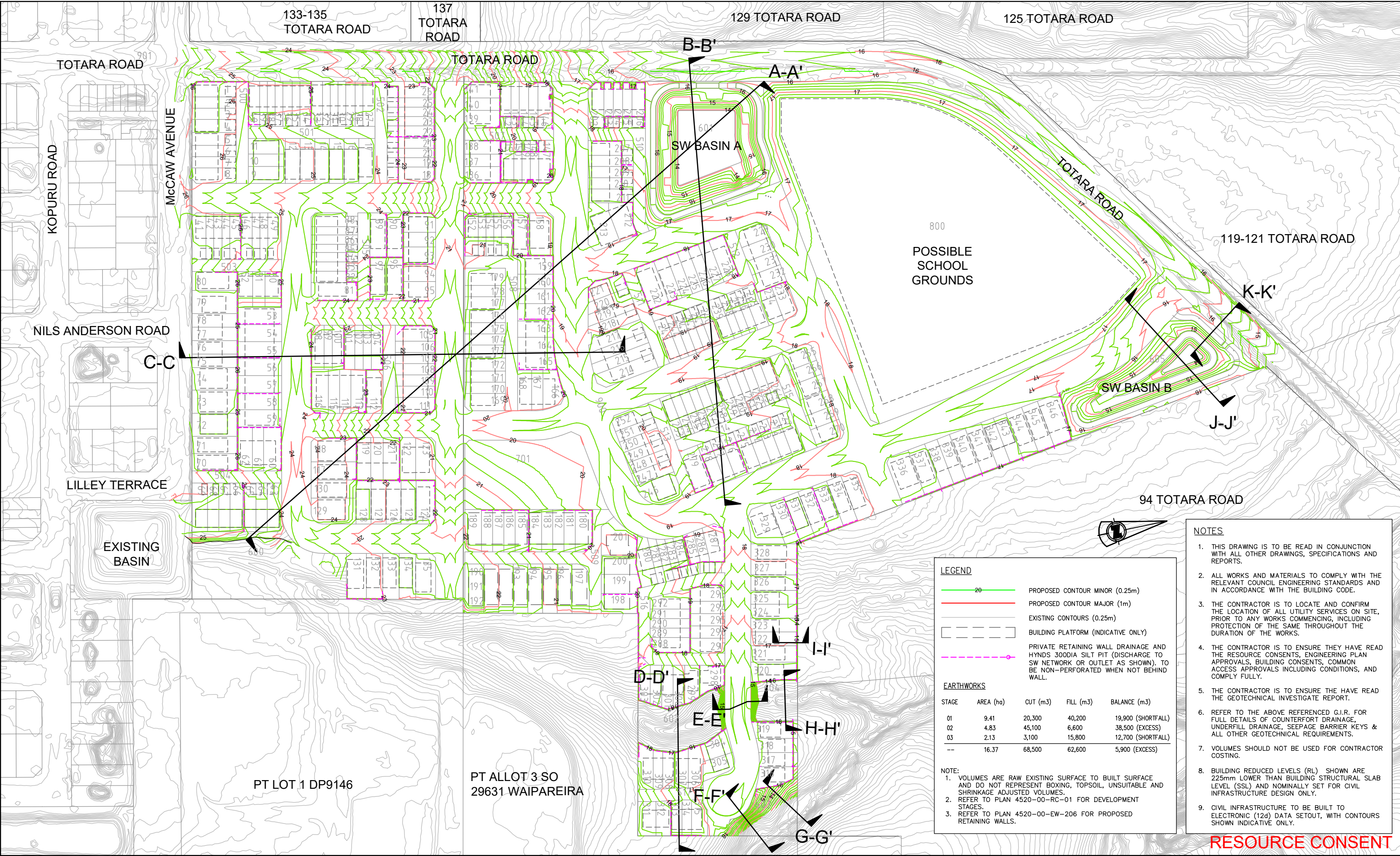
Job Title

WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI

Drawing Title

EXISTING SITE
AC GIS & TOPOGRAPHIC DATA

By	Date	Scale	Job No.	Drawing No.	Rev
MS / CP		1:2000@A3	4520	4520-01-GN-110	A
Designed: KLP					
Drawn: KLP	12/2022				
Approved: CK					
CAD FILE					



LEGEND

20

PROPOSED CONTOUR MINOR (0.25m)

PROPOSED CONTOUR MAJOR (1m)

EXISTING CONTOURS (0.25m)

BUILDING PLATFORM (INDICATIVE ONLY)

PRIVATE RETAINING WALL DRAINAGE AND
HYNDS 300DIA SILT PIT (DISCHARGE TO
SW NETWORK OR OUTLET AS SHOWN). TO
BE NON-PERFORATED WHEN NOT BEHIND
WALL.

EARTHWORKS

STAGE	AREA (ha)	CUT (m3)	FILL (m3)	BALANCE (m3)
01	9.41	20,300	40,200	19,900 (SHORTFALL)
02	4.83	45,100	6,600	38,500 (EXCESS)
03	2.13	3,100	15,800	12,700 (SHORTFALL)
--	16.37	68,500	62,600	5,900 (EXCESS)

NOTE:

- VOLUMES ARE RAW EXISTING SURFACE TO BUILT SURFACE AND DO NOT REPRESENT BOXING, TOPSOIL, UNSUITABLE AND SHRINKAGE ADJUSTED VOLUMES.
- REFER TO PLAN 4520-00-RC-01 FOR DEVELOPMENT STAGES.
- REFER TO PLAN 4520-00-EW-206 FOR PROPOSED RETAINING WALLS.

- NOTES**
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS, SPECIFICATIONS AND REPORTS.
 - ALL WORKS AND MATERIALS TO COMPLY WITH THE RELEVANT COUNCIL ENGINEERING STANDARDS AND IN ACCORDANCE WITH THE BUILDING CODE.
 - THE CONTRACTOR IS TO LOCATE AND CONFIRM THE LOCATION OF ALL UTILITY SERVICES ON SITE, PRIOR TO ANY WORKS COMMENCING, INCLUDING PROTECTION OF THE SAME THROUGHOUT THE DURATION OF THE WORKS.
 - THE CONTRACTOR IS TO ENSURE THEY HAVE READ THE RESOURCE CONSENTS, ENGINEERING PLAN APPROVALS, BUILDING CONSENTS, COMMON ACCESS APPROVALS INCLUDING CONDITIONS, AND COMPLY FULLY.
 - THE CONTRACTOR IS TO ENSURE THEY HAVE READ THE GEOTECHNICAL INVESTIGATE REPORT.
 - REFER TO THE ABOVE REFERENCED G.I.R. FOR FULL DETAILS OF COUNTERFORT DRAINAGE, UNDERFILL DRAINAGE, SEEPAGE BARRIER KEYS & ALL OTHER GEOTECHNICAL REQUIREMENTS.
 - VOLUMES SHOULD NOT BE USED FOR CONTRACTOR COSTING.
 - BUILDING REDUCED LEVELS (RL) SHOWN ARE 225mm LOWER THAN BUILDING STRUCTURAL SLAB LEVEL (SSL) AND NOMINALLY SET FOR CIVIL INFRASTRUCTURE DESIGN ONLY.
 - CIVIL INFRASTRUCTURE TO BE BUILT TO ELECTRONIC (12d) DATA SETOUT, WITH CONTOURS SHOWN INDICATIVE ONLY.

RESOURCE CONSENT

Rev	Description	By	Date
A	ISSUED FOR RESOURCE CONSENT	BJ	01/12/2022

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LAND DEVELOPERS

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8 NUGENT STREET
GRAFTON

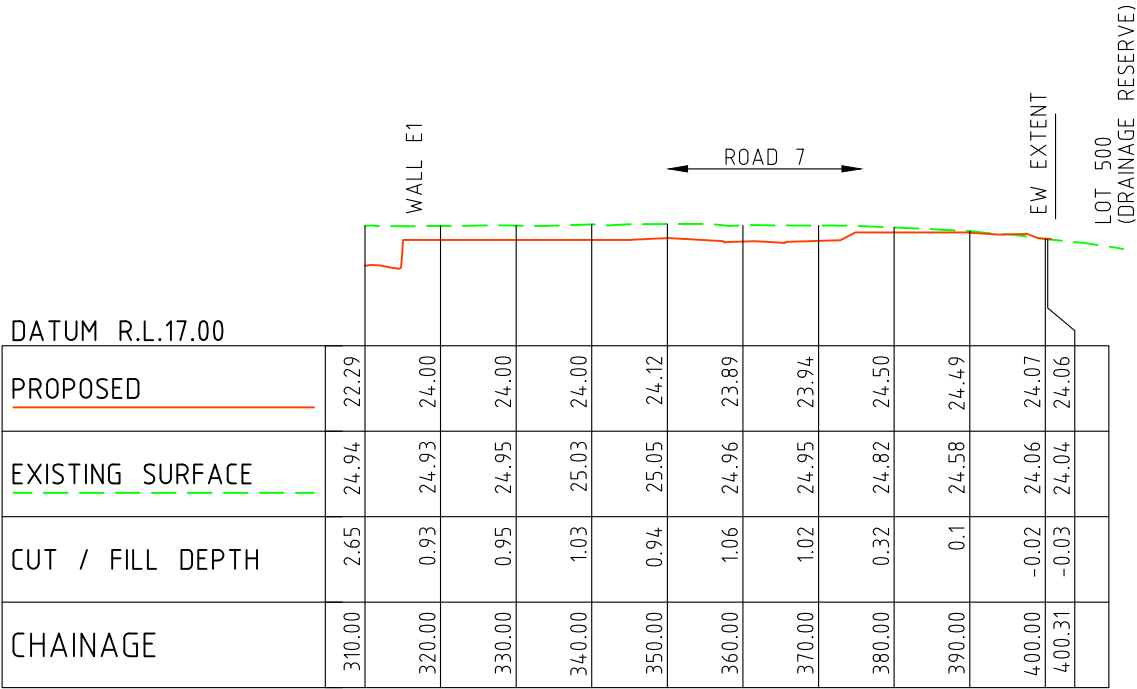
PO BOX 8751, SYMONDS STREET
AUCKLAND, NEW ZEALAND

TELEPHONE: +64 9 918 6565
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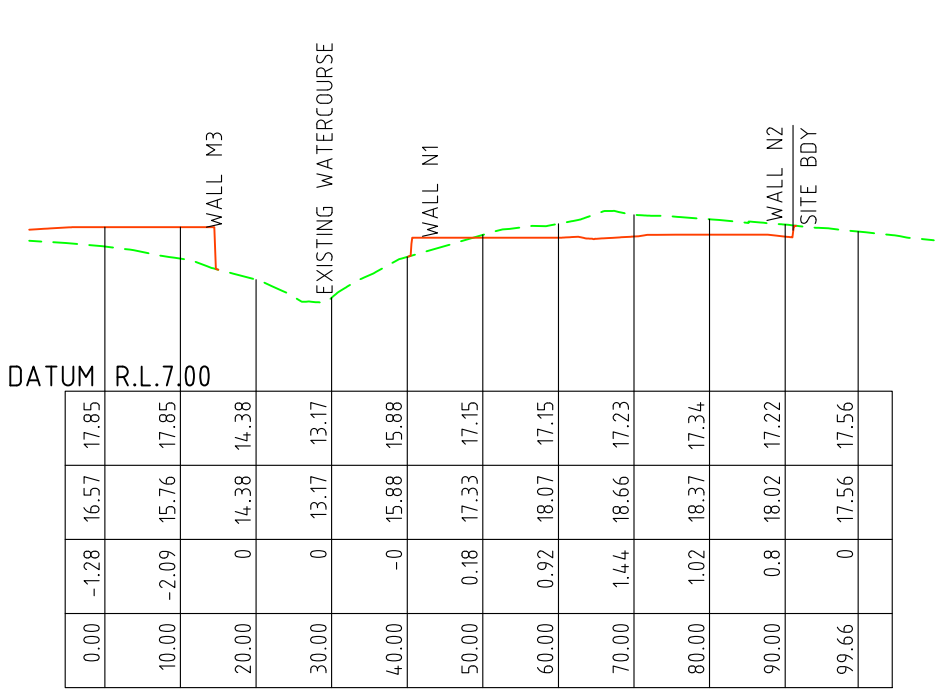
Job Title	WHENUAPAI GREEN 98-102 TOTARA ROAD WHENUAPAI
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Drawing Title	EARTHWORKS PROPOSED CONTOURS
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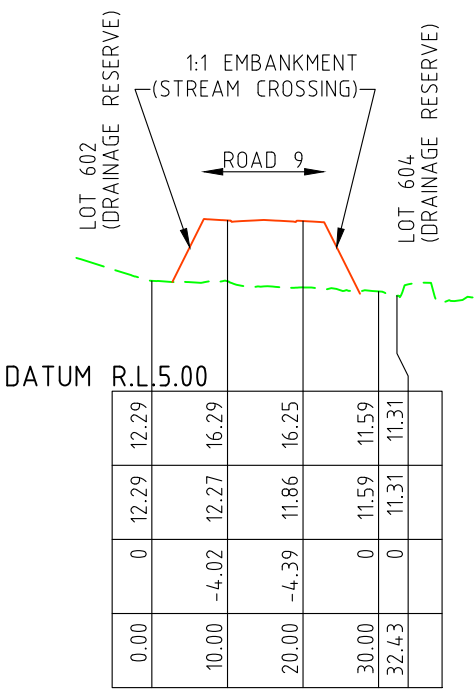
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Designed: KLP					
Drawn: KLP	12/2022				
Approved: BJ					



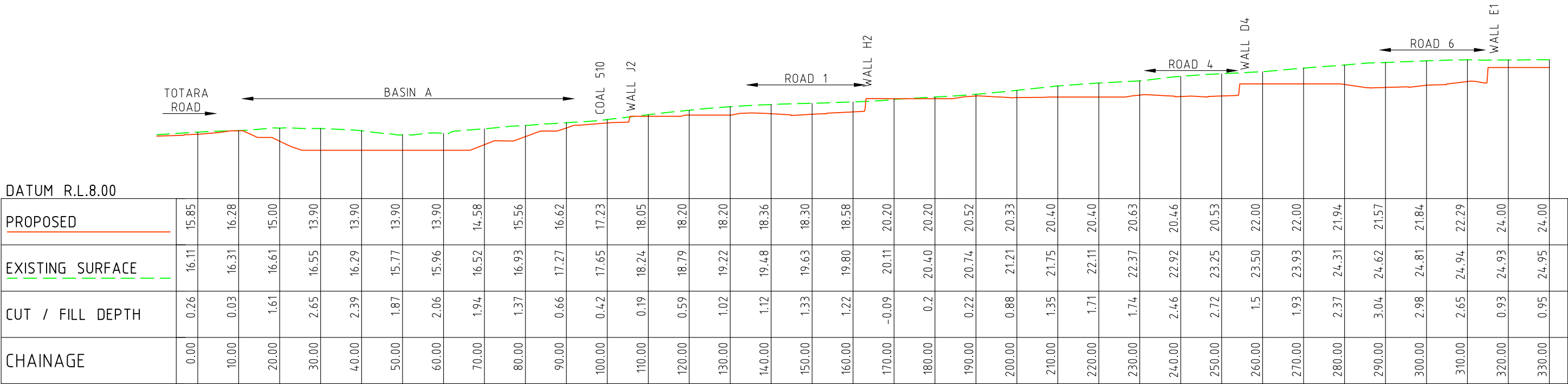
SECTION A-A' (CONT.)



SECTION D-D'



SECTION E-E'



SECTION A-A'

RESOURCE CONSENT

Rev	Description	By	Date
A	ISSUED FOR RESOURCE CONSENT	BJ	01/12/2022



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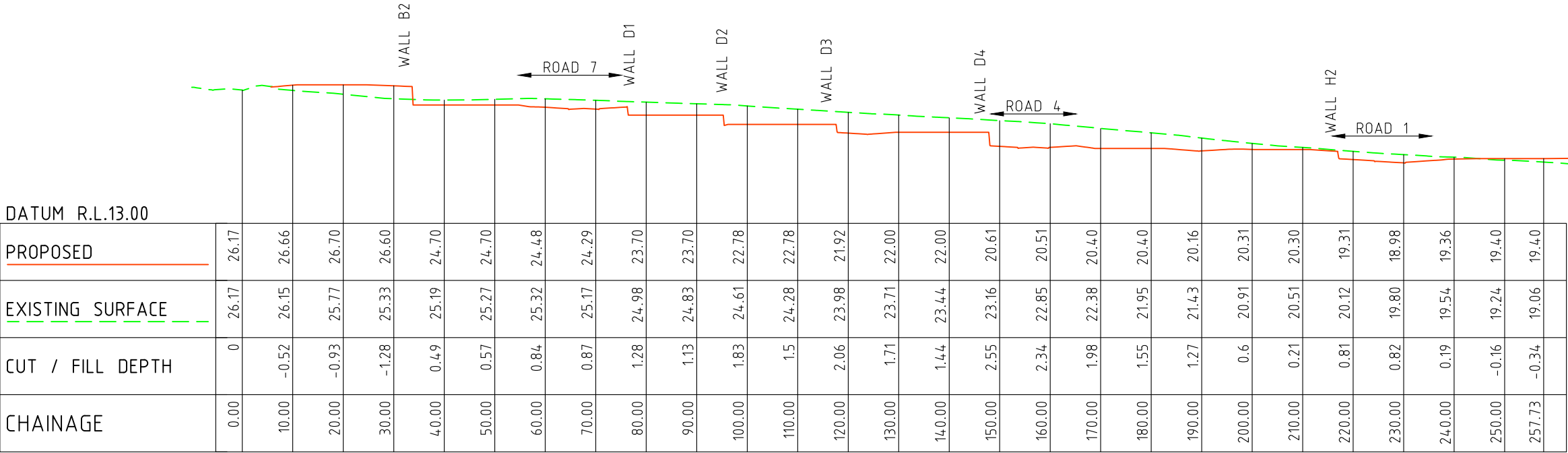
PO BOX 8751, SYMONDS STREET
AUCKLAND, NEW ZEALAND

TELEPHONE: +64 9 918 6565
FACSIMILE: +64 9 918 6567
WEB: www.neilgroup.co.nz

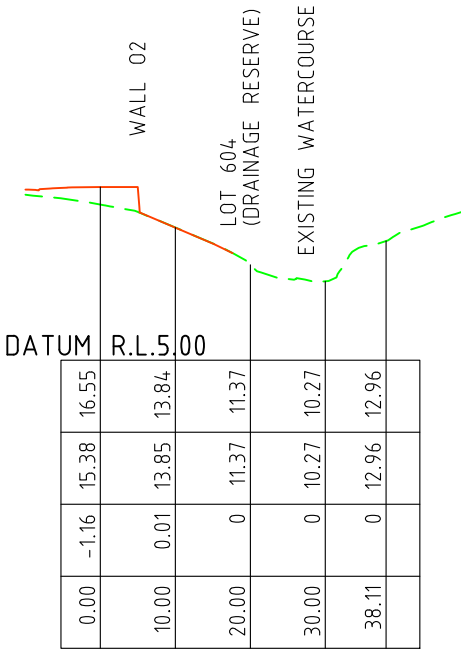
Job Title	WHENUAPAI GREEN 98-102 TOTARA ROAD WHENUAPAI
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Drawing Title	EARTHWORKS SITE SECTIONS
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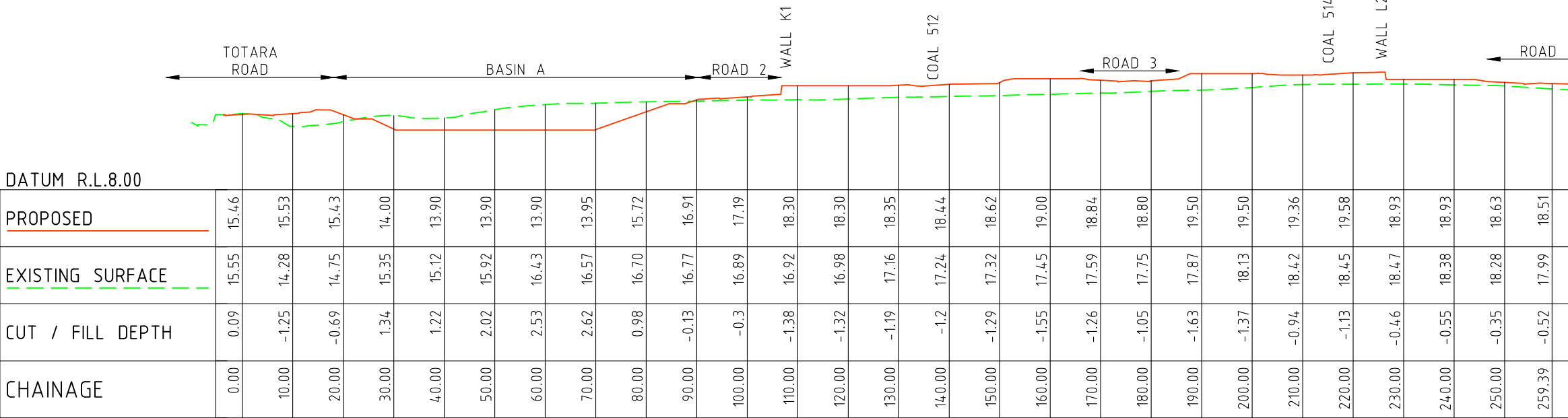
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Designed: KLP					
Drawn: KLP	12/2022				
Approved: BJ					



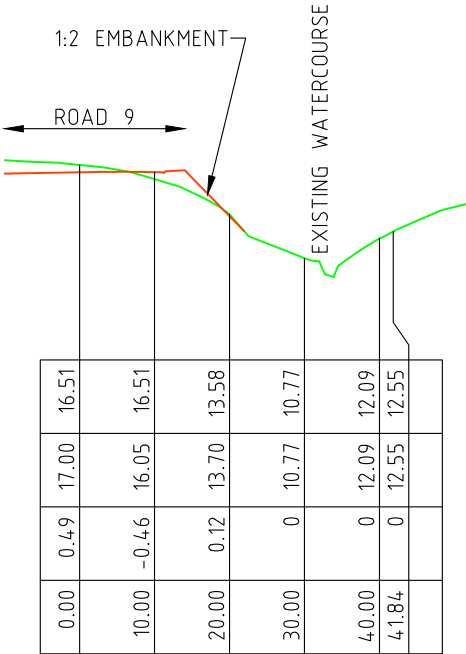
SECTION C-C'



SECTION G-G'



SECTION B-B'



SECTION F-F'

RESOURCE CONSENT

Rev	Description	By	Date
A	ISSUED FOR RESOURCE CONSENT	BJ	01/12/2022

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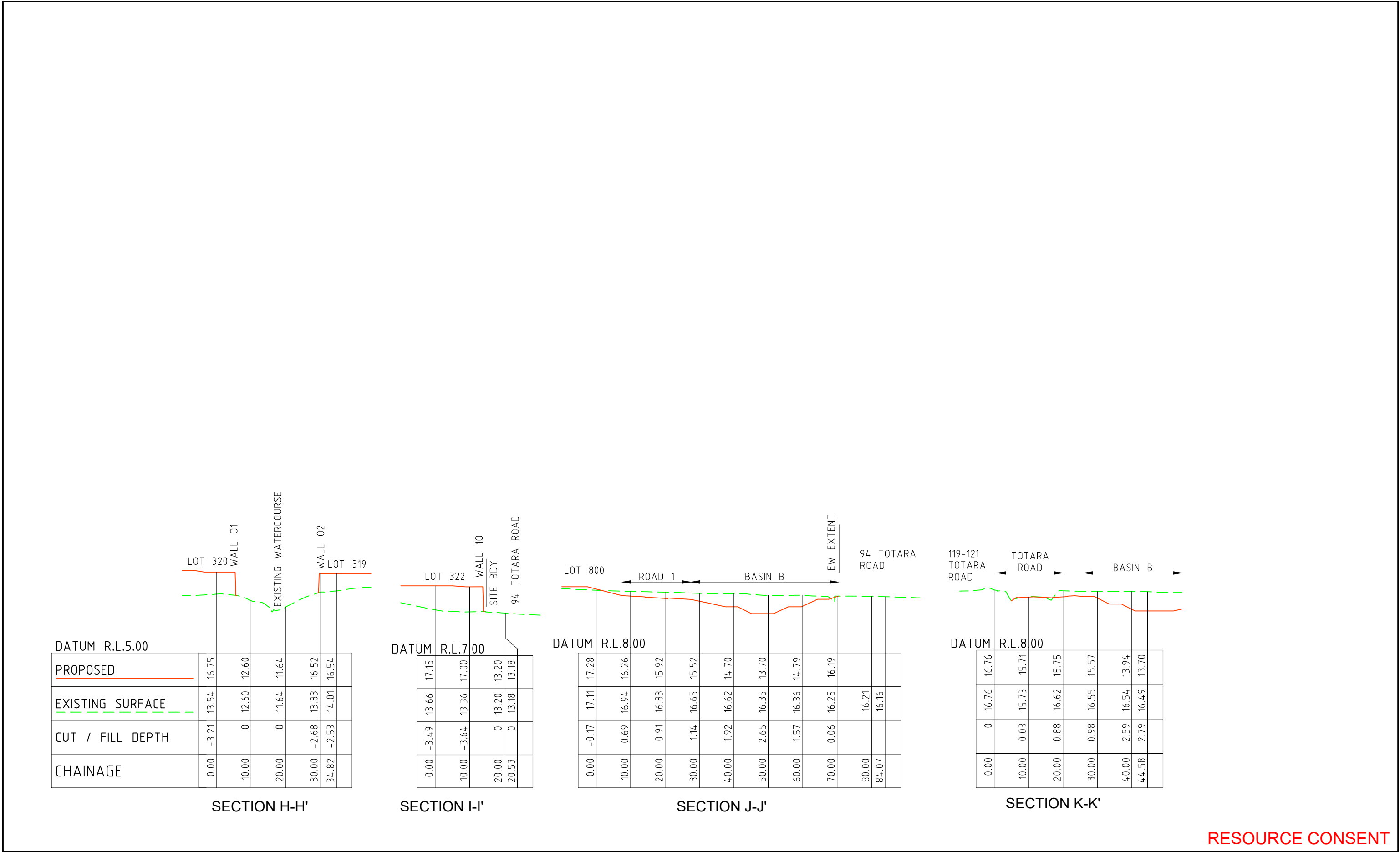
Job Title

**WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI**

Drawing Title

**EARTHWORKS
SITE SECTIONS**

By	Date	Scale	Job No.	Rev
Surveyed: MS/CP		1:1000@A3	Drawing No.	
Designed: KLP			4520-01-EW-202	A
Drawn: KLP	12/2022			
Approved: BJ				



RESOURCE CONSENT

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A	ISSUED FOR RESOURCE CONSENT	BJ	01/12/2022



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FACSIMILE: +64 9 918 6567
WEB: www.neilgroup.co.nz

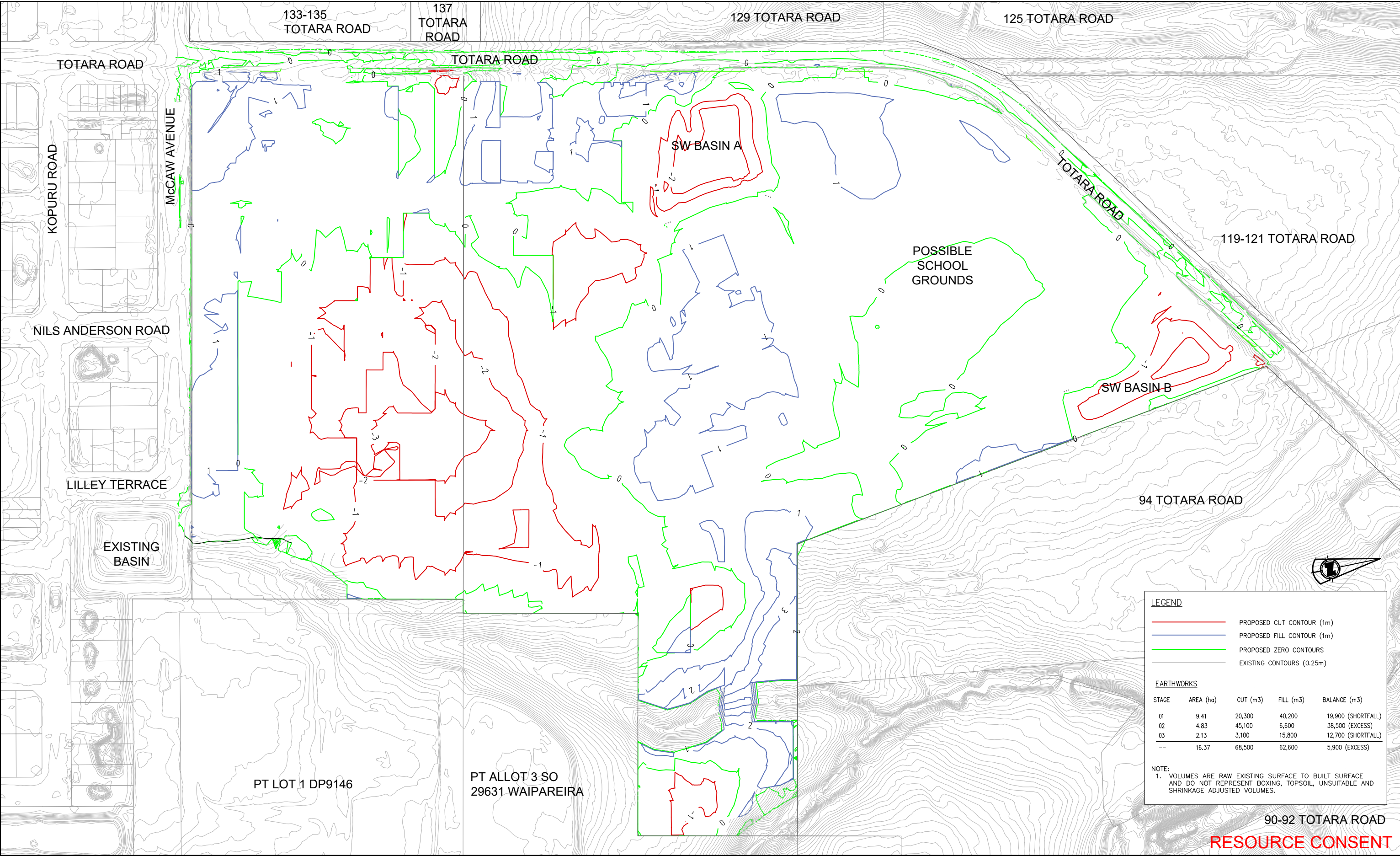
Job Title

WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI

Drawing Title

EARTHWORKS
SITE SECTIONS

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Surveyed:	MS/CP		1:1000@A3	Drawing No. 4520-01-EW-203	A
Designed:	KLP				
Drawn:	KLP	12/2022			
Approved:	BJ				



Rev	Description	By	Date
A	ISSUED FOR RESOURCE CONSENT	BJ	01/12/2022

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WEB: www.neilgroup.co.nz

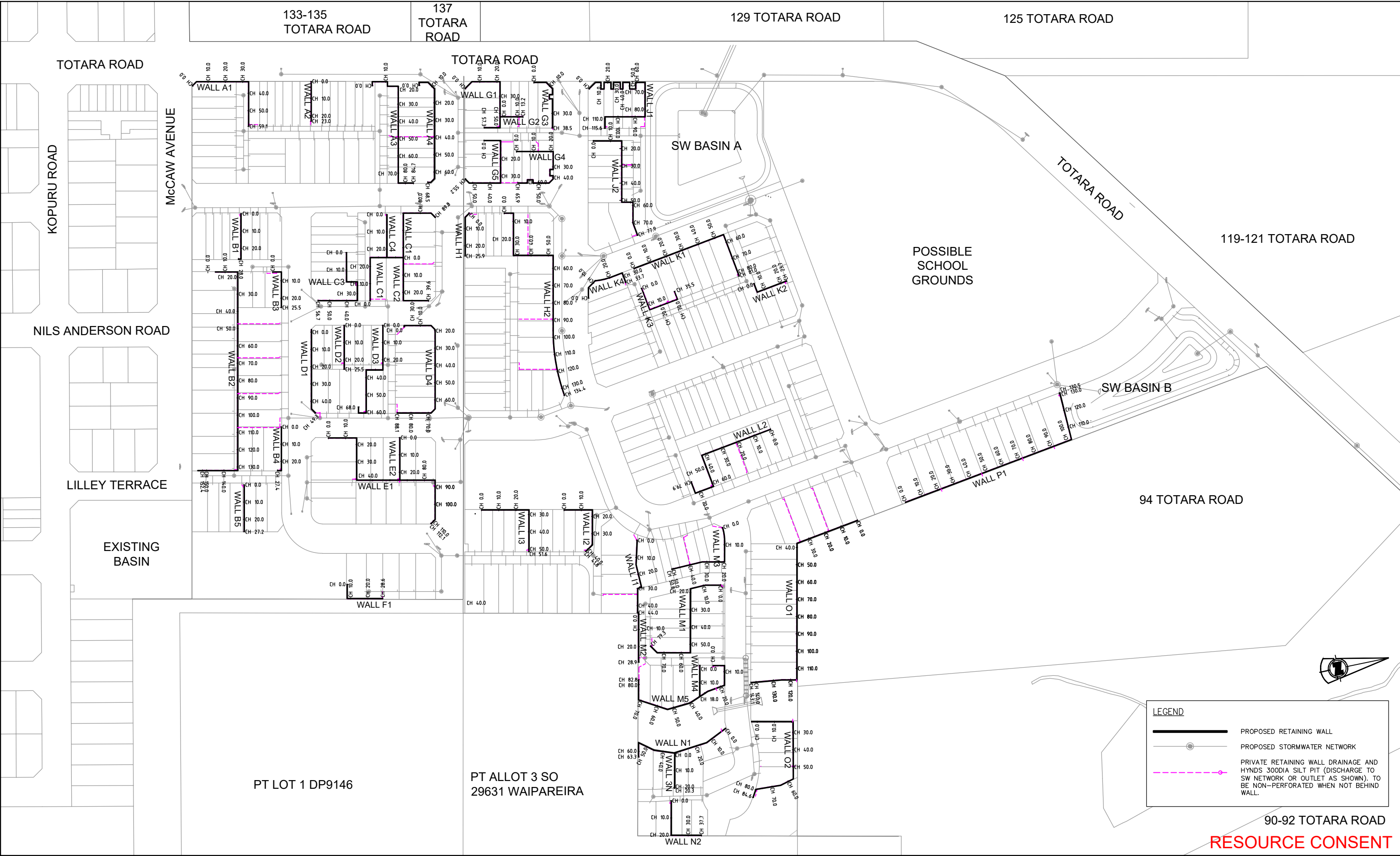
Job Title

**WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI**

Drawing Title

**EARTHWORKS
CUTFILL CONTOURS**

	By	Date	Scale	Job No.	
Surveyed:	MS/CP		1:2000@A3	Drawing No.	Rev
Designed:	KLP			4520-01-EW-205	A
Drawn:	KLP	12/2022			
Approved:	Bj				



LEGEND

- PROPOSED RETAINING WALL
- PROPOSED STORMWATER NETWORK
- PRIVATE RETAINING WALL DRAINAGE AND HYNDS 300DIA SILT PIT (DISCHARGE TO SW NETWORK OR OUTLET AS SHOWN), TO BE NON-PERFORATED WHEN NOT BEHIND WALL.

90-92 TOTARA ROAD
RESOURCE CONSENT

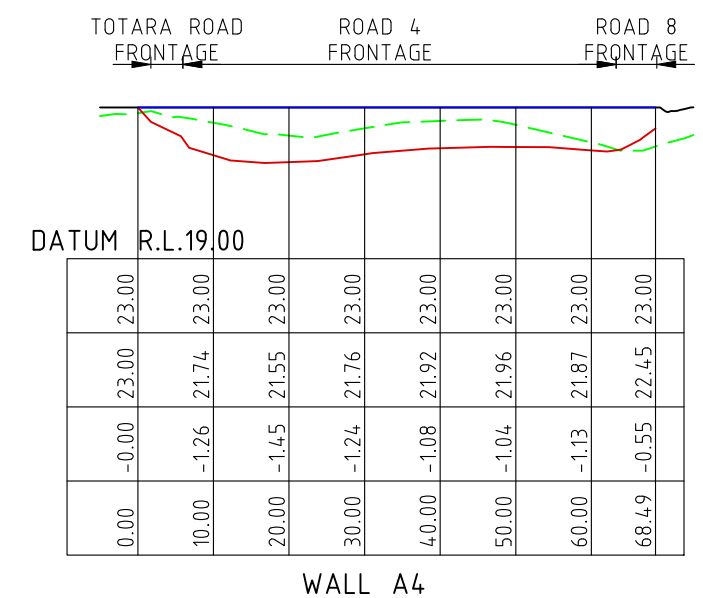
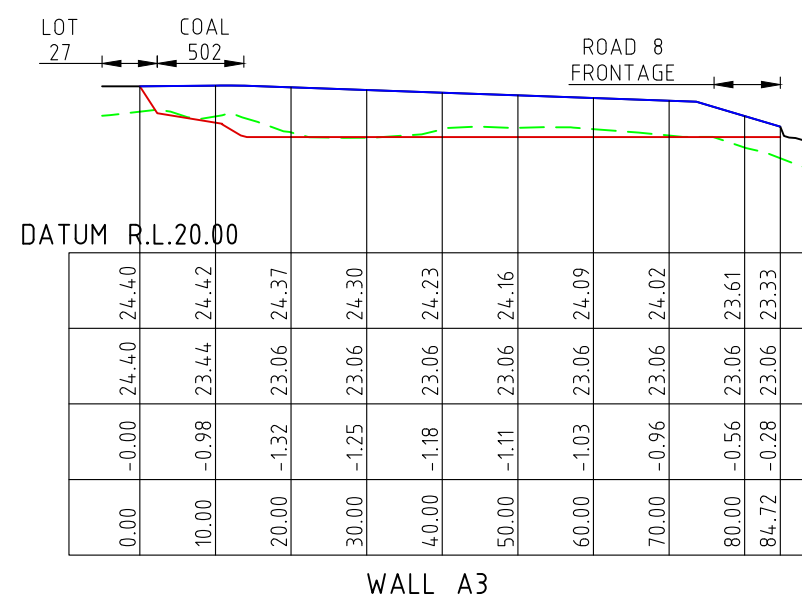
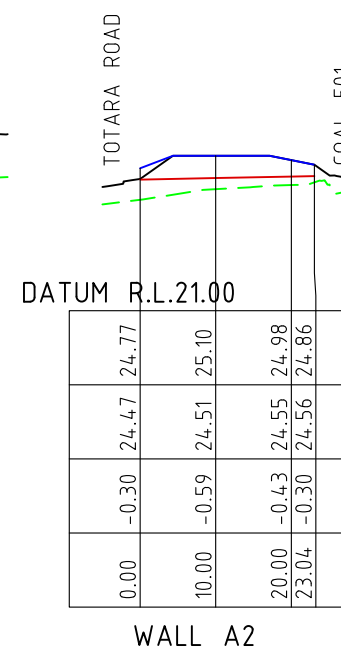
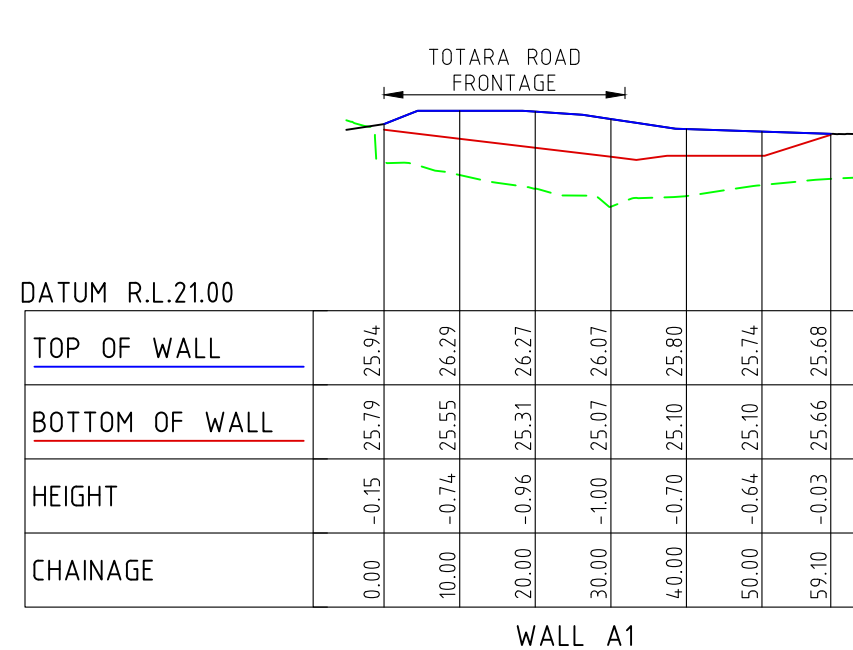
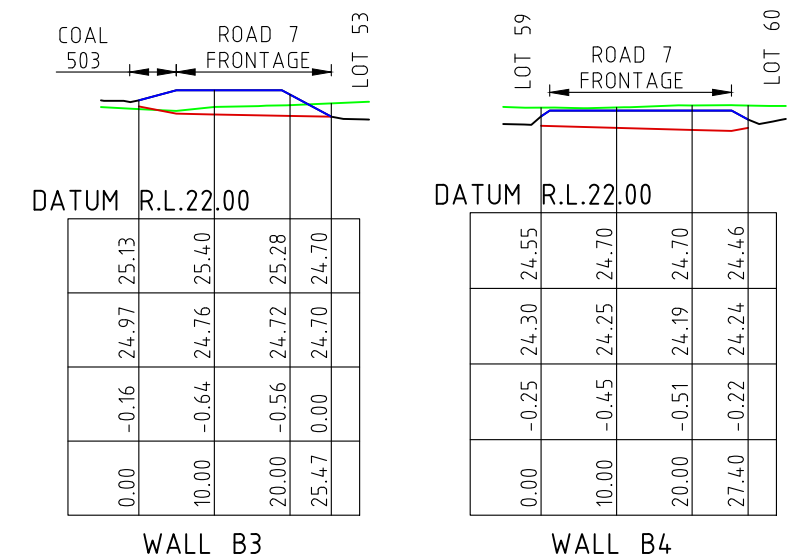
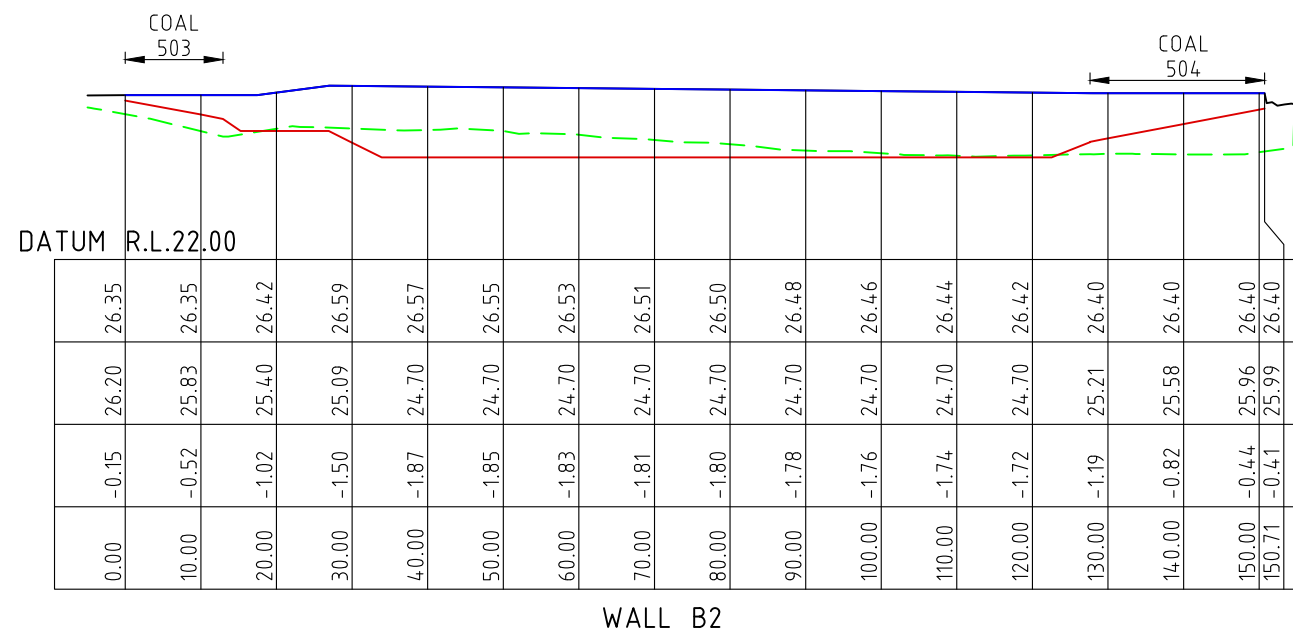
Rev	Description	By	Date
A	ISSUED FOR RESOURCE CONSENT	BJ	01/12/2022

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FACSIMILE: +64 9 918 6567
WEB: www.neilgroup.co.nz

Job Title
**WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI**

Drawing Title
**EARTHWORKS
RETAINING WALLS
LOCATION PLAN**

	By	Date	Scale	Job No.	Rev
Surveyed:	MS/CP		1:2000@A3	Drawing No.	
Designed:	KLP			4520-01-EW-206	A
Drawn:	KLP	12/2022			
Approved:	BJ				



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AUKLAND, NEW ZEALAND

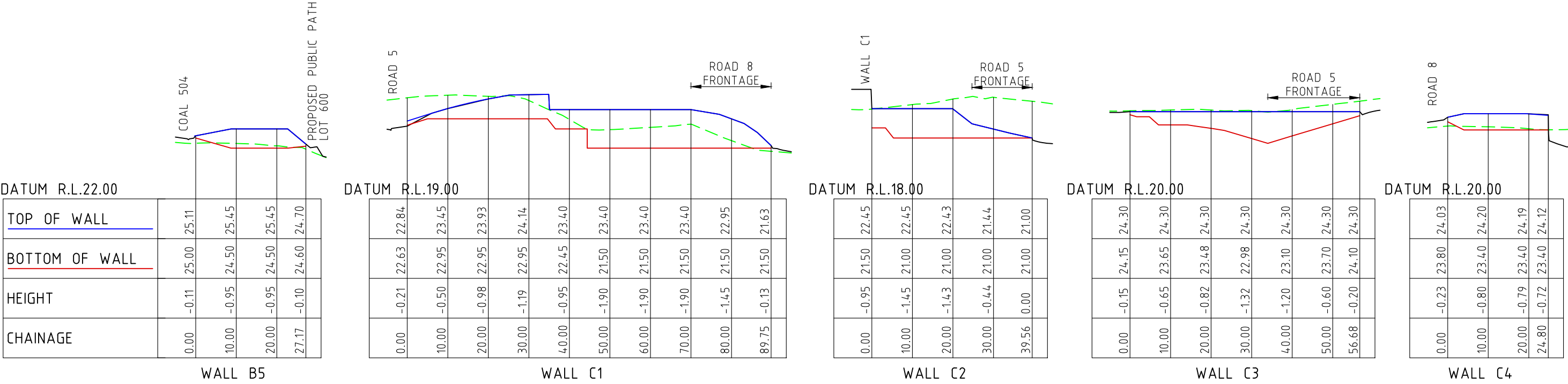
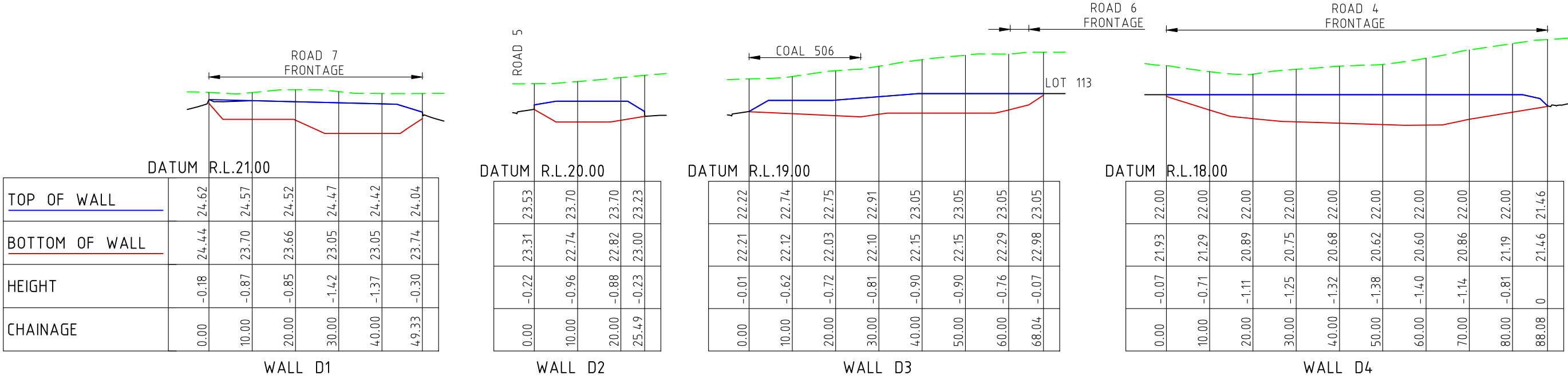
TELEPHONE: +64 9 918 6955
FACSIMILE: +64 9 918 6567
WEB: www.neilgroup.co.nz

Job Title
WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI

Drawing Title

EARTHWORKS
RETAINING WALL
ELEVATIONS

Surveyed:	---	1:1000@A3 5 x VERT.	Drawing No. 4520-01-EW-207	Rev A
Designed:	KLP			
Drawn:	KLP 12/2022			
Approved:	BJ			



RESOURCE CONSENT

Rev	Description	By	Date
A	ISSUED FOR RESOURCE CONSENT	BJ	01/12/2022



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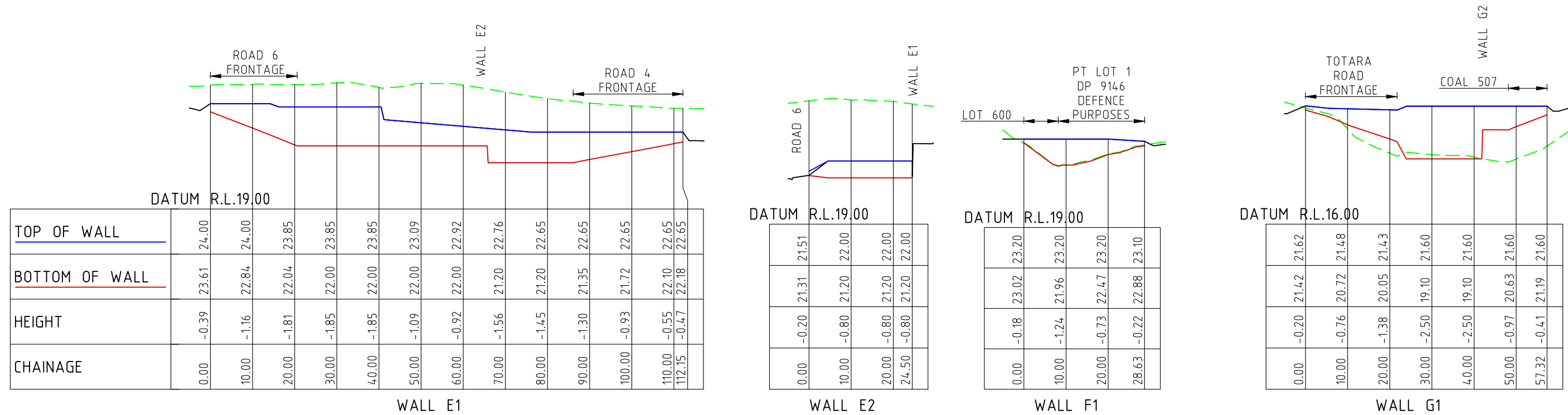
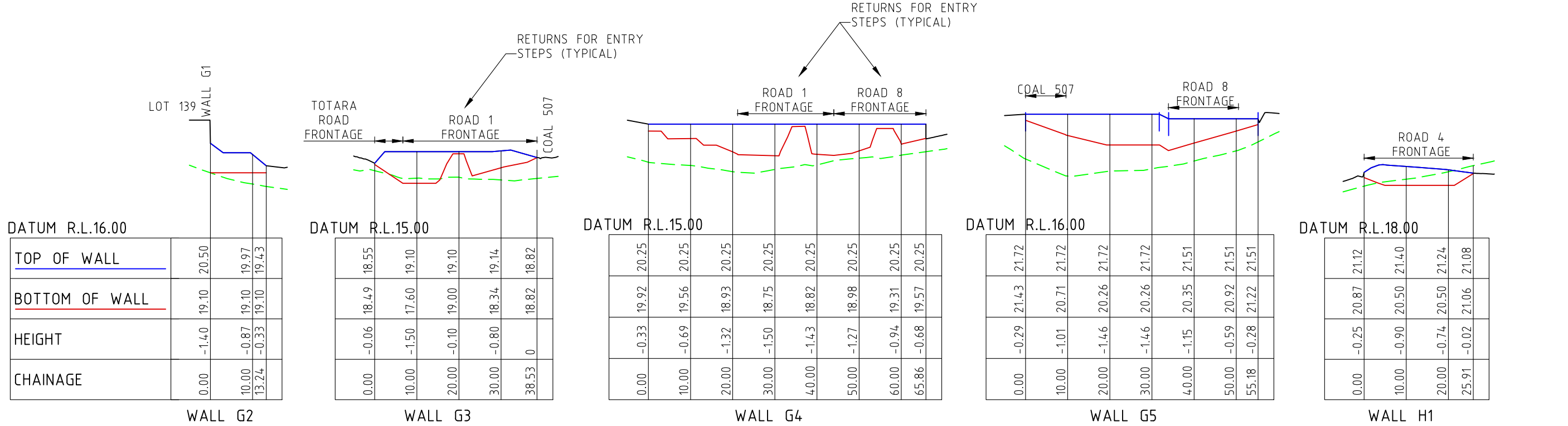
Job Title

WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI

Drawing Title

EARTHWORKS
RETAINING WALL
ELEVATIONS

	By	Date	Scale	Job No.	Rev
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Designed:	KLP		5 x VERT.	4520-01-EW-208	A
Drawn:	KLP	12/2022			
Approved:	BJ				



RESOURCE CONSENT

Rev	Description	By	Date
A	ISSUED FOR RESOURCE CONSENT	BJ	01/12/2022

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FACSIMILE: +64 9 918 6567
WEB: www.neilgroup.co.nz

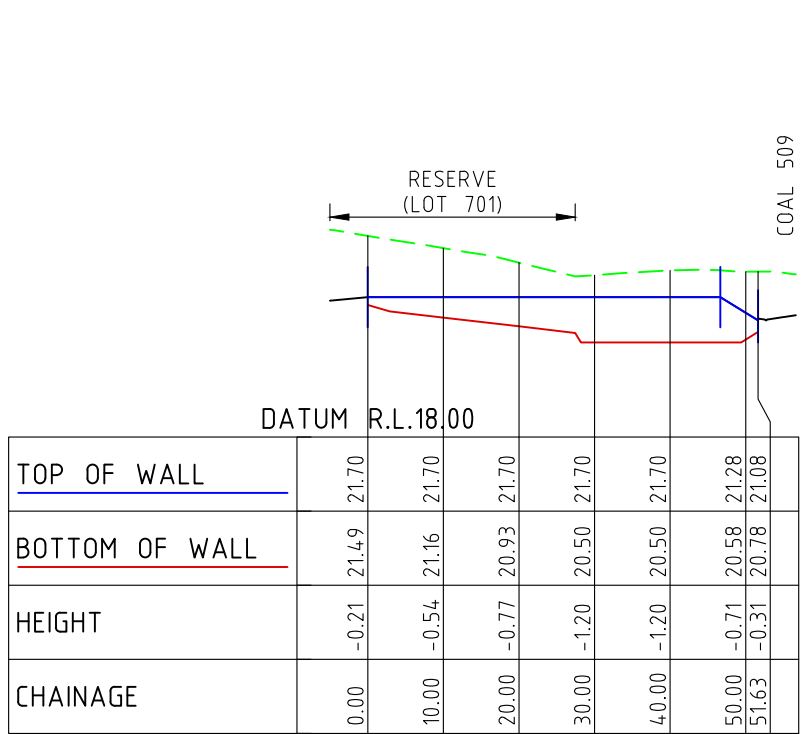
Job Title

**WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI**

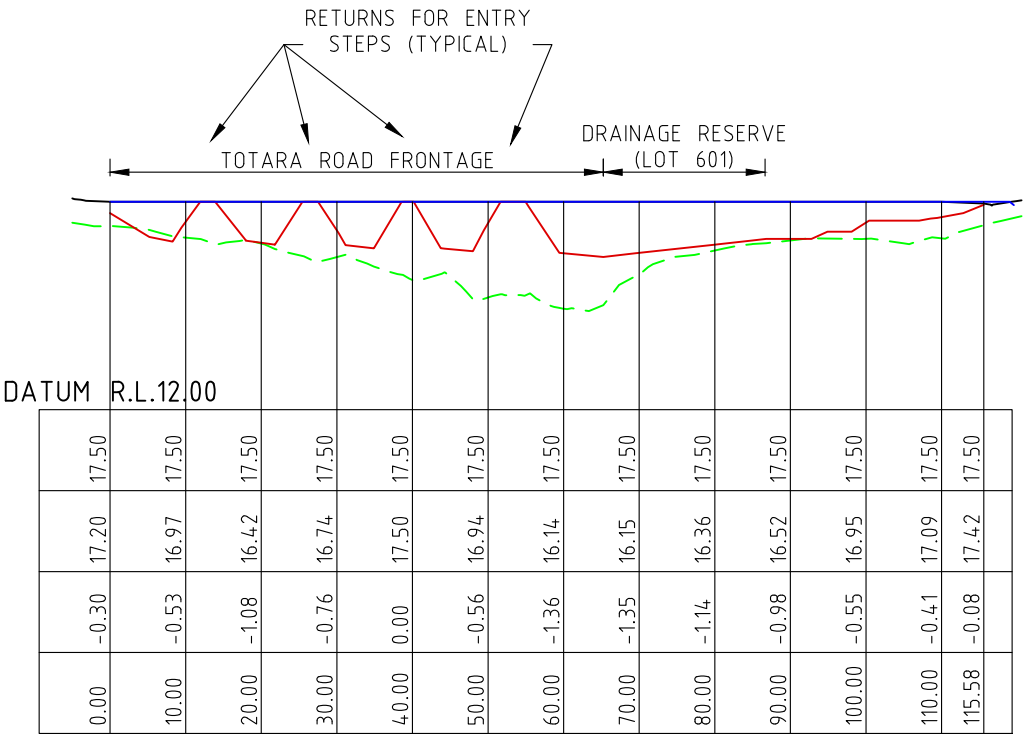
Drawing Title

**EARTHWORKS
RETAINING WALL
ELEVATIONS**

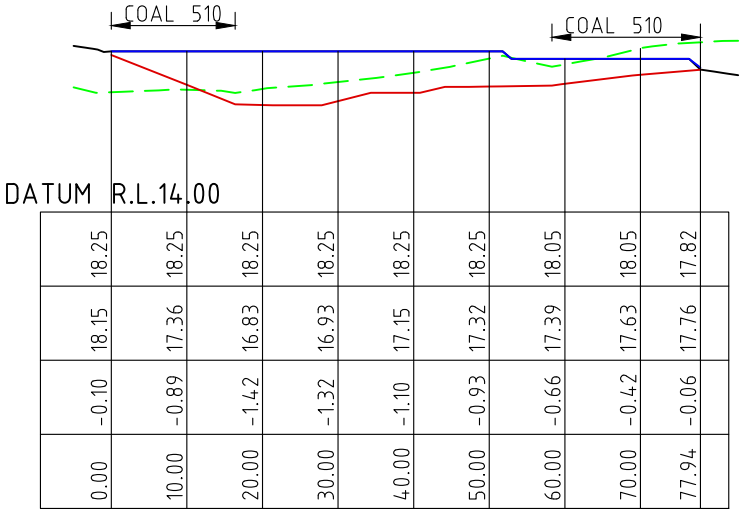
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Drawn:	KLP	12/2022			
Approved:	BJ				



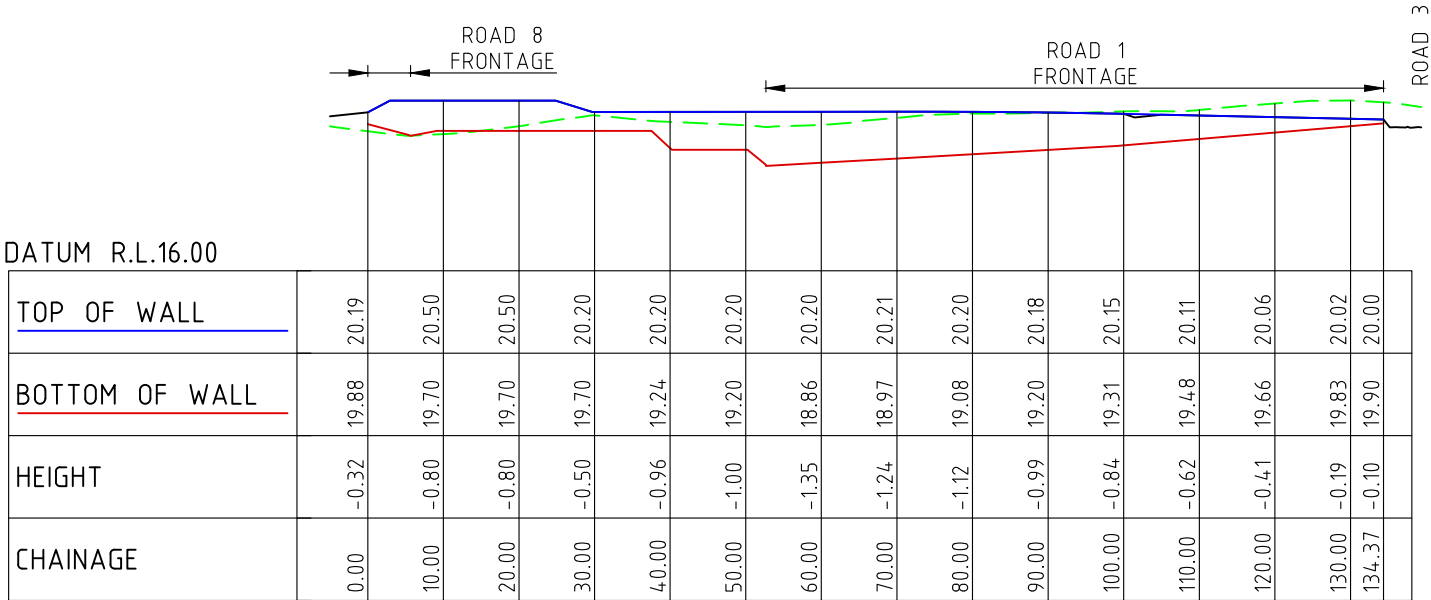
WALL I3



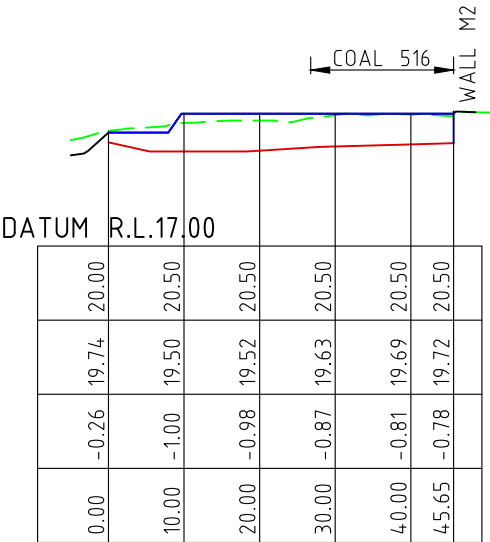
WALL J1



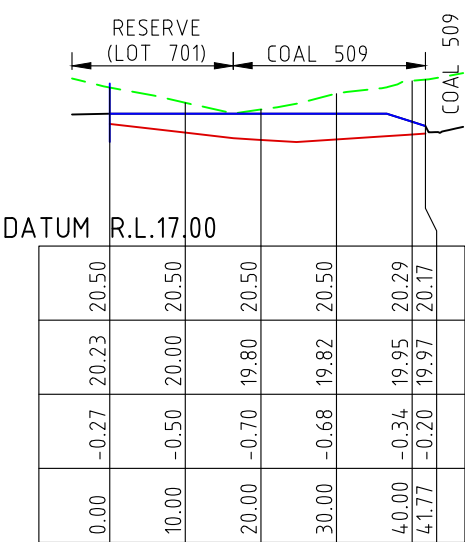
WALL J2



WALL H2



WALL I1



WALL I2

RESOURCE CONSENT

Rev	Description	By	Date
A	ISSUED FOR RESOURCE CONSENT	BJ	01/12/2022

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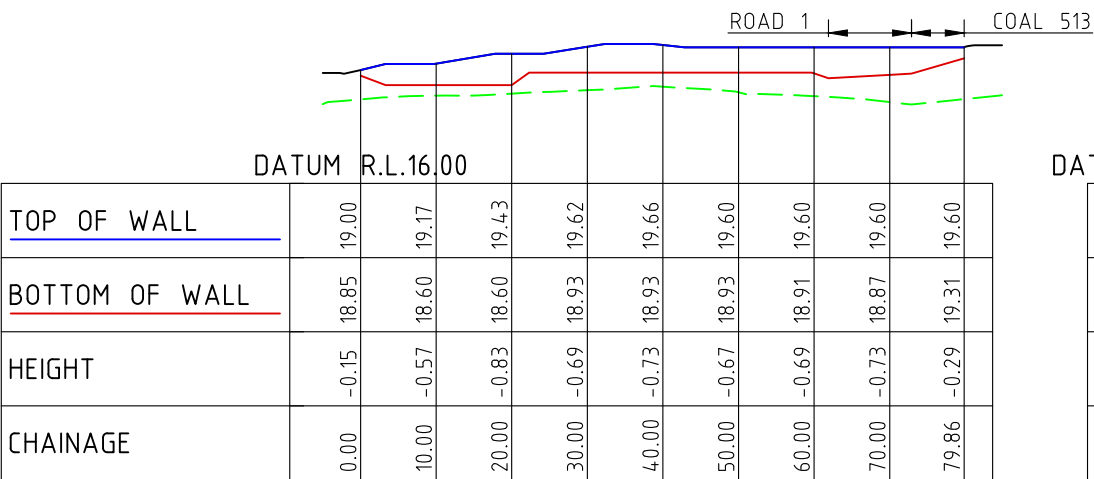
Job Title

**WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI**

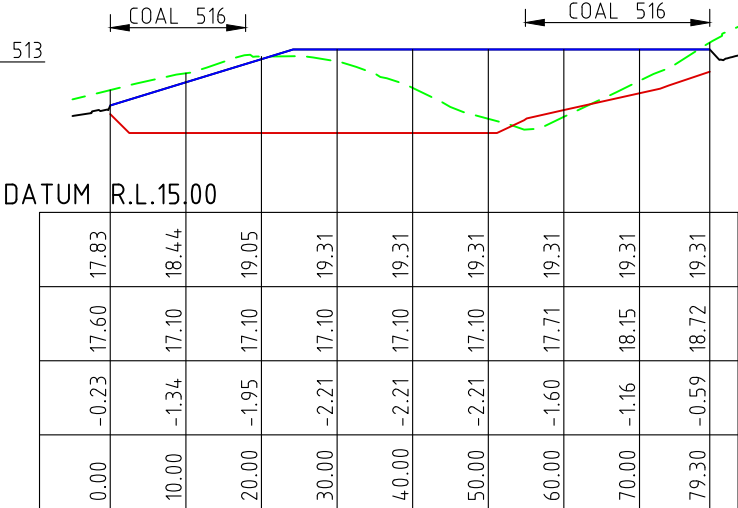
Drawing Title

**EARTHWORKS
RETAINING WALL
ELEVATIONS**

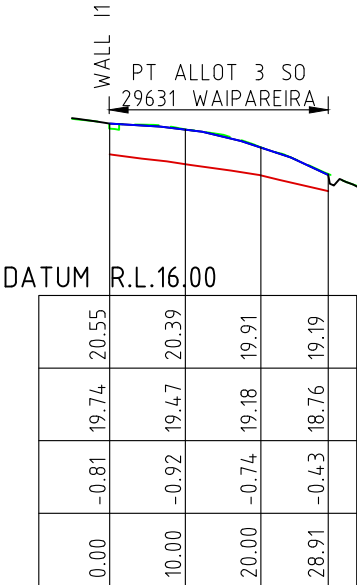
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Drawn:	KLP	12/2022			
Approved:	BJ				



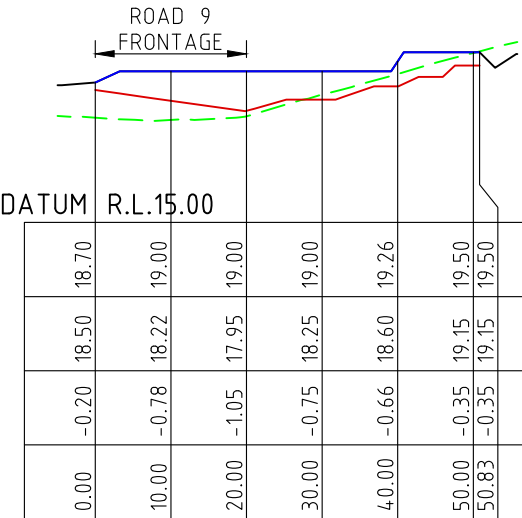
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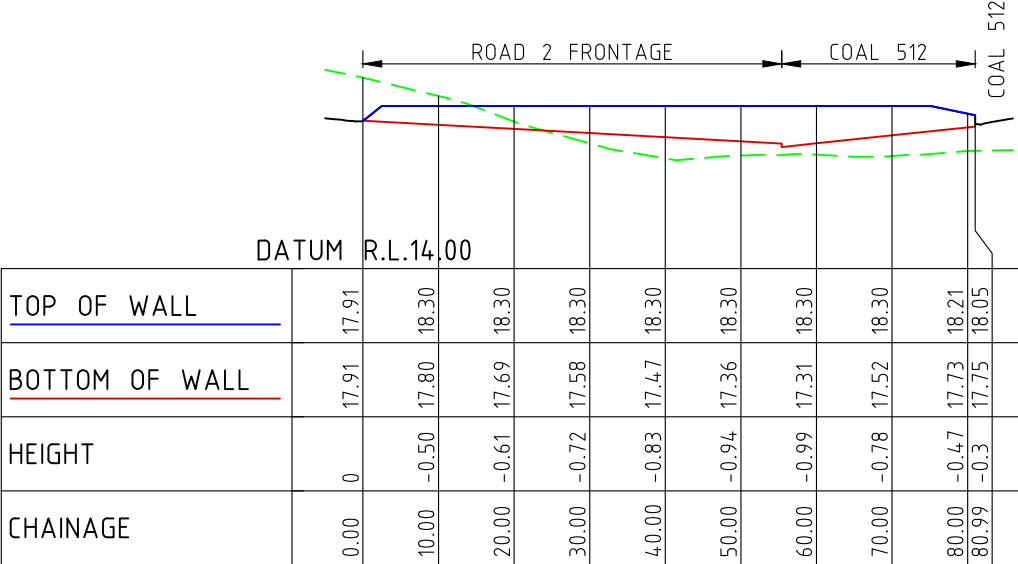
WALL M1



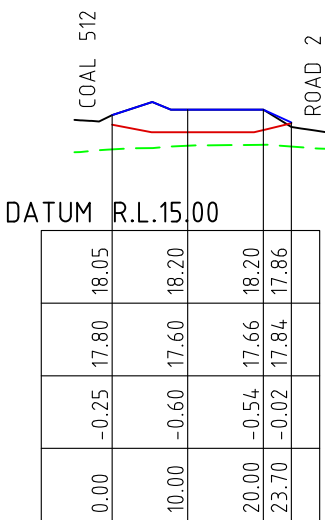
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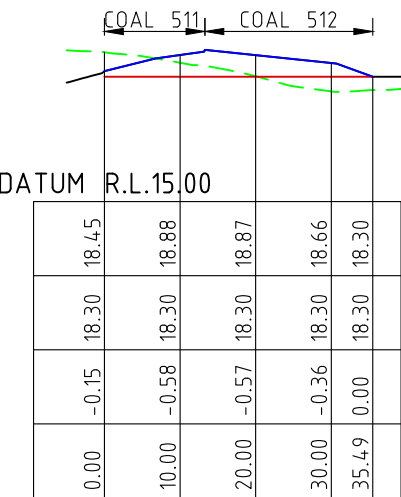
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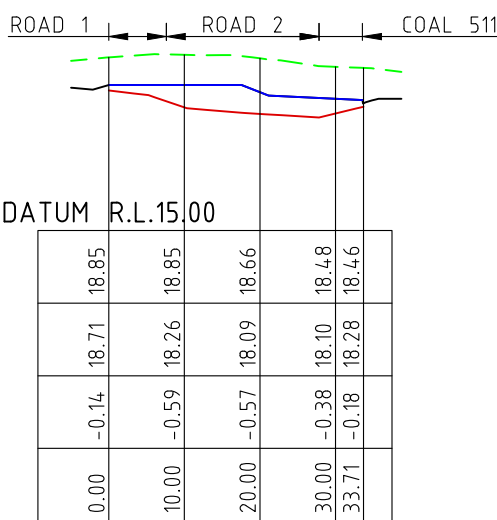
WALL K1



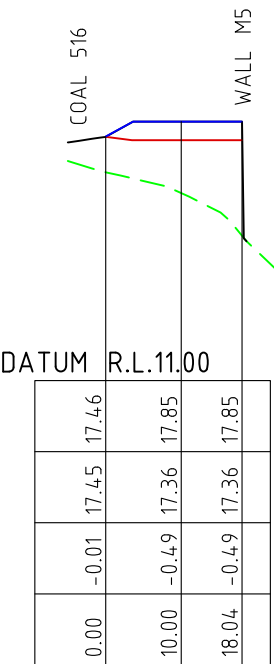
WALL K2



WALL K3



WALL K4



WALL M4

RESOURCE CONSENT

Rev	Description	By	Date
A	ISSUED FOR RESOURCE CONSENT	BJ	01/12/2022

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8 NUGENT STREET
GRAFTON

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FACSIMILE: +64 9 918 6567
WEB: www.neilgroup.co.nz

Job Title

WHENUAPAI GREEN

98-102 TOTARA ROAD

WHENUAPAI

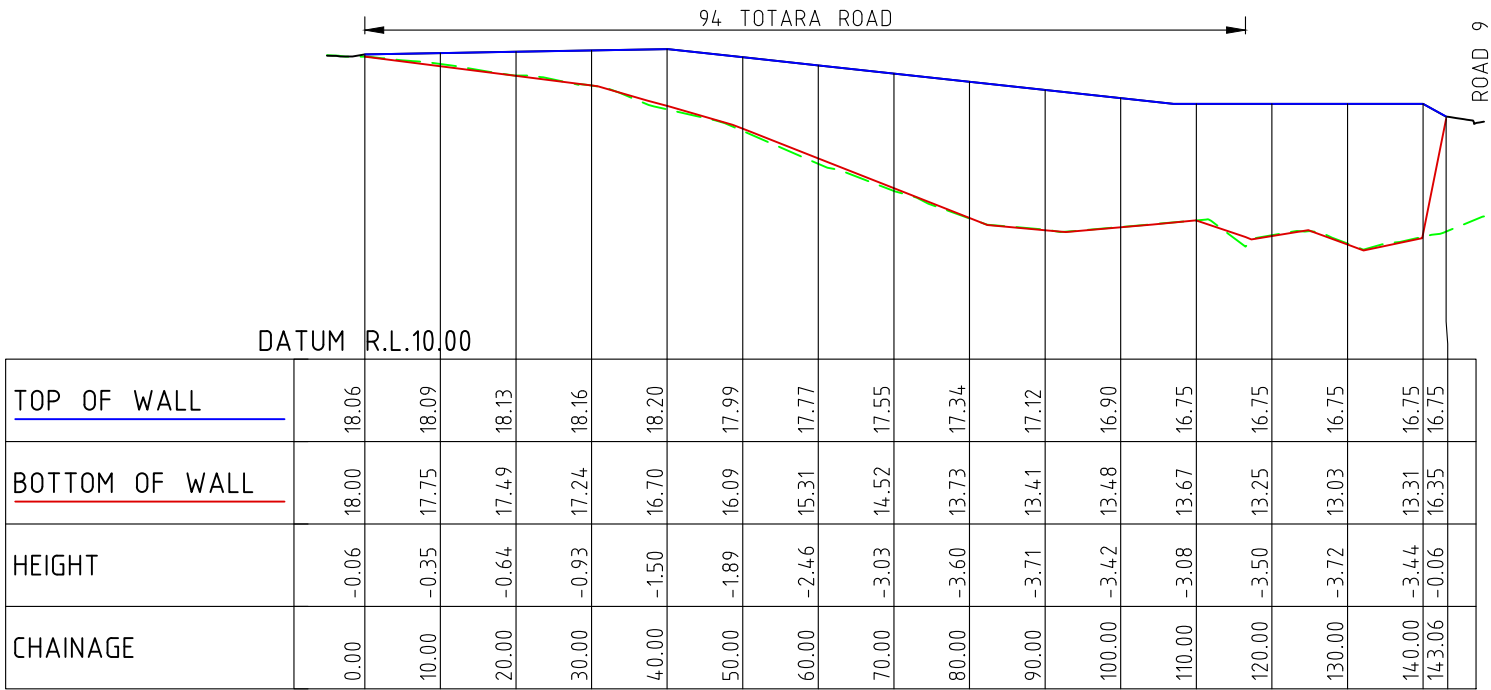
Drawing Title

EARTHWORKS

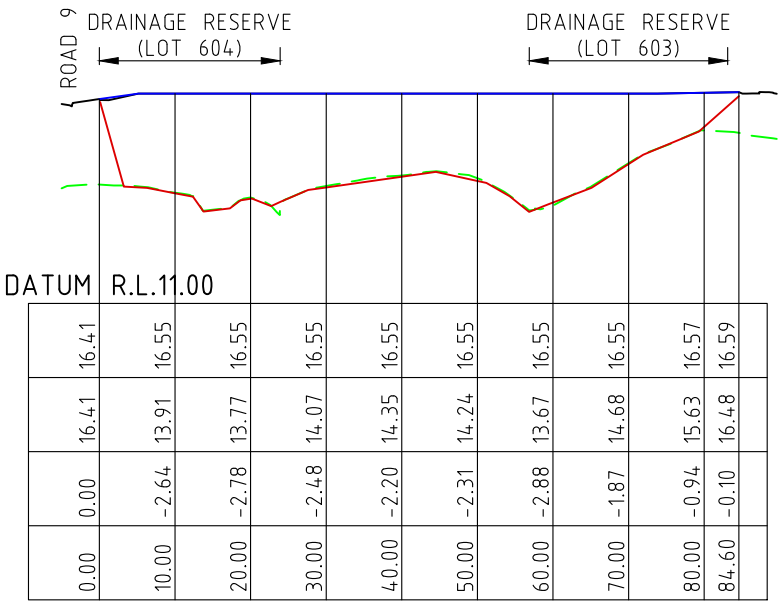
RETAINING WALL

ELEVATIONS

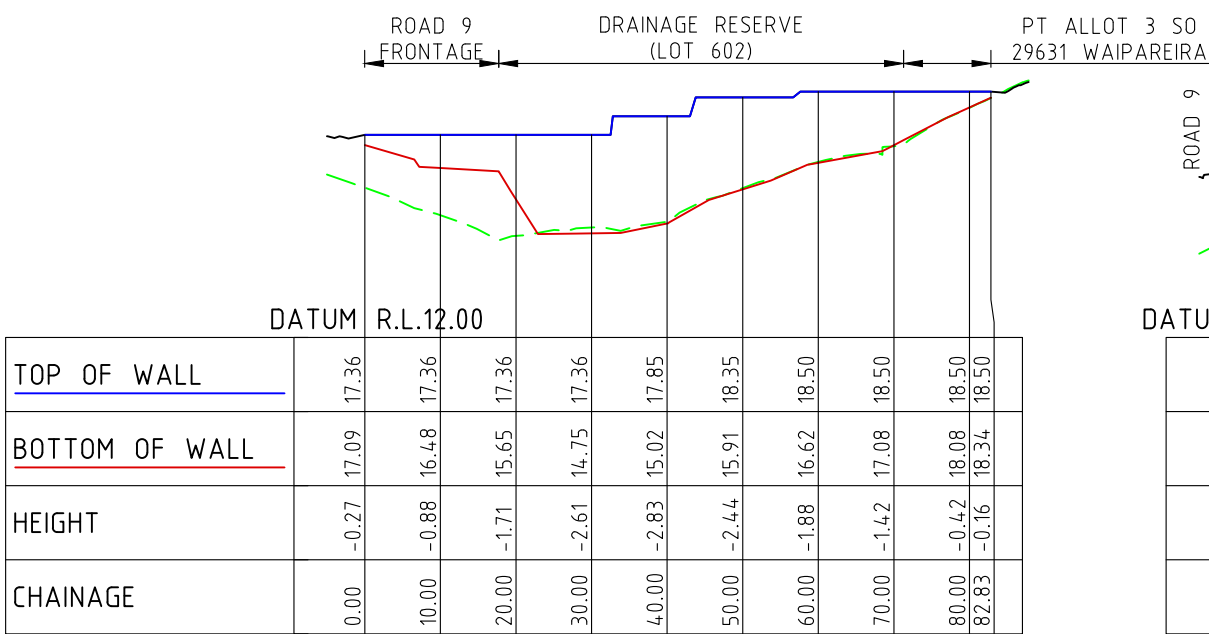
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Surveyed: --		1:1000@A3	Drawing No.	
Designed: KLP		5 x VERT.	4520-01-EW-211	A
Drawn: KLP	12/2022			
Approved: BJ				



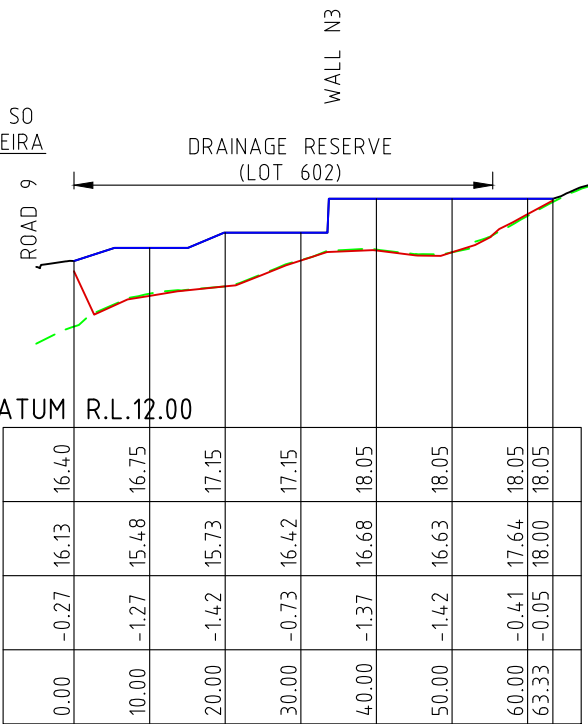
WALL 01



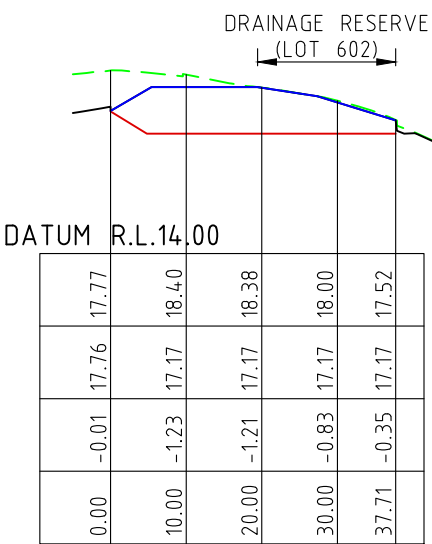
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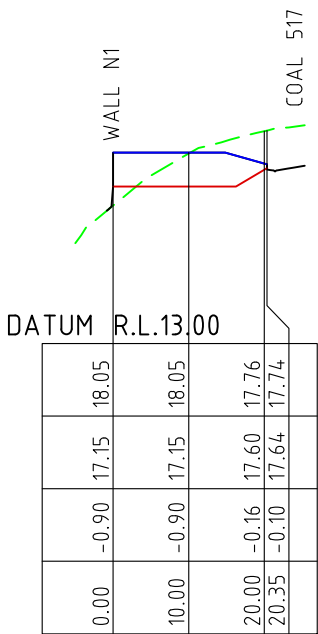
WALL M5



WALL N1



WALL N2



WALL N3

RESOURCE CONSENT

Rev	Description	By	Date
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WEB: www.neilgroup.co.nz

Job Title

WHENUAPAI GREEN

98-102 TOTARA ROAD

WHENUAPAI

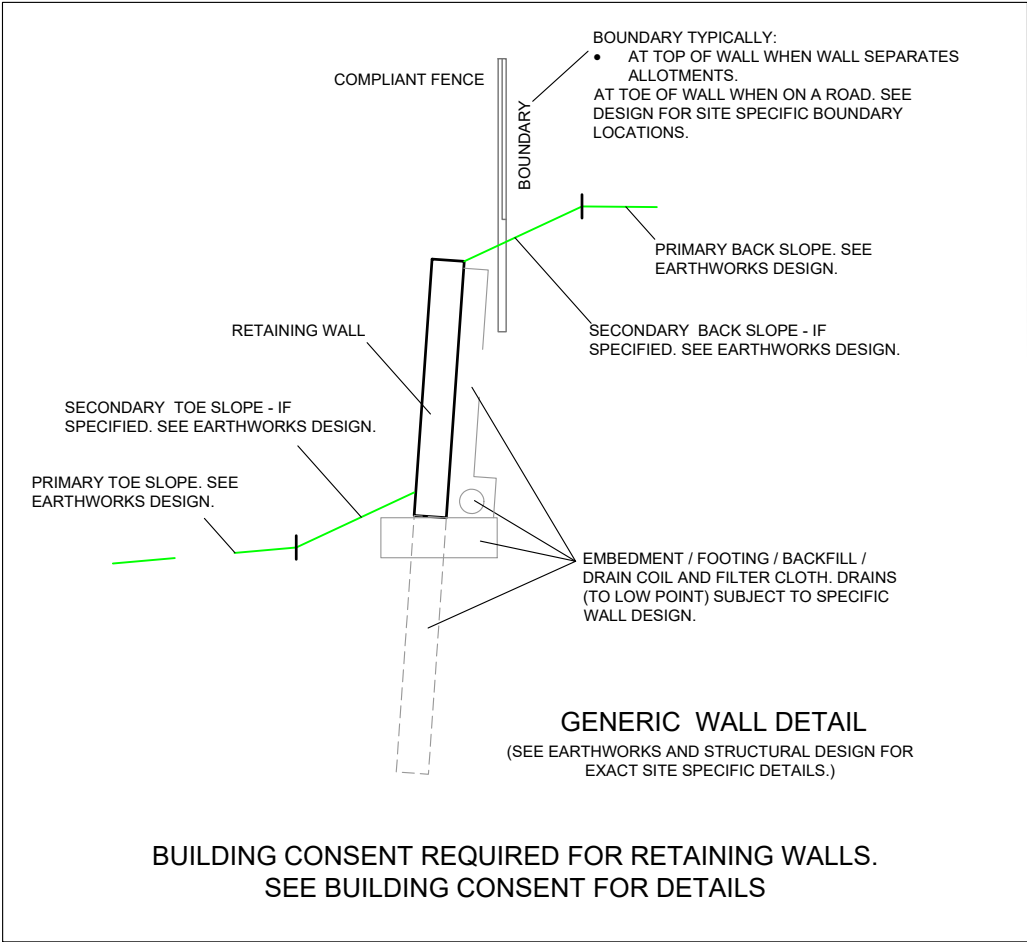
Drawing Title

EARTHWORKS

RETAINING WALL

ELEVATIONS

	By	Date	Scale	Job No.	Rev
Surveyed:	--		1:1000@A3 5 x VERT.	Drawing No. 4520-01-EW-212	A
Designed:	KLP				
Drawn:	KLP	12/2022			
Approved:	BJ				



RETAINING WALL - EXAMPLE
FINISH (ALLAN BLOCK -
APPROX 1.5m HIGH)



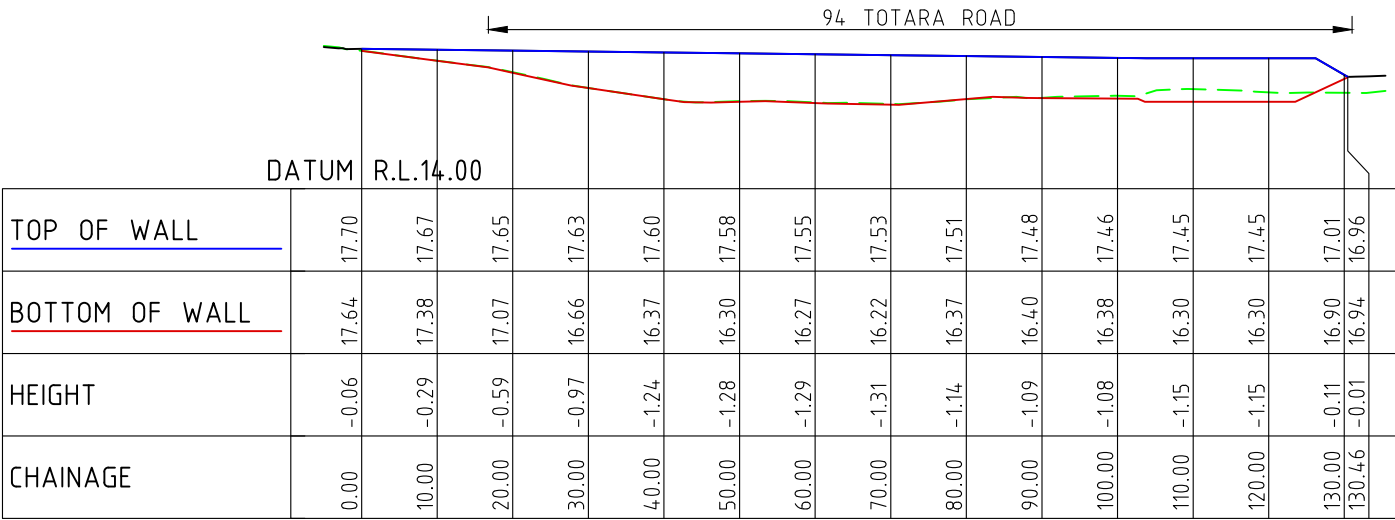
WALL FENCING EXAMPLE
(WOODEN 50% VISUALLY
PERVIOUS)



RETAINING WALL - EXAMPLE FINISH (STEEL
POSTS AND TIMBER RAILS - APPROX 2m HIGH)



WALL FENCING EXAMPLE
(STEEL 80% VISUALLY
PERVIOUS)



WALL P1

NOTES:

1. RETAINING WALLS FACING ROAD RESERVE TO BE "ALLAN BLOCK" SEGMENTAL WALL.
2. ALL OTHER RETAINING WALLS TO BE STEEL POST AND TIMBER RAIL.
3. TOP AND BOTTOM OF WALL ARE FINISHED TOPSOIL LEVEL. TOPSOIL TO BE 150mm DEEP.
4. STEEL POST AND RAIL FENCE:
4.1. FENCE FIXED TO WALL FACE IN COMPOSITE WALLS AND SLEEVED FOR BLOCK WALL.

RESOURCE CONSENT

Rev	Description	By	Date
A	ISSUED FOR RESOURCE CONSENT	CK	01/11/2022

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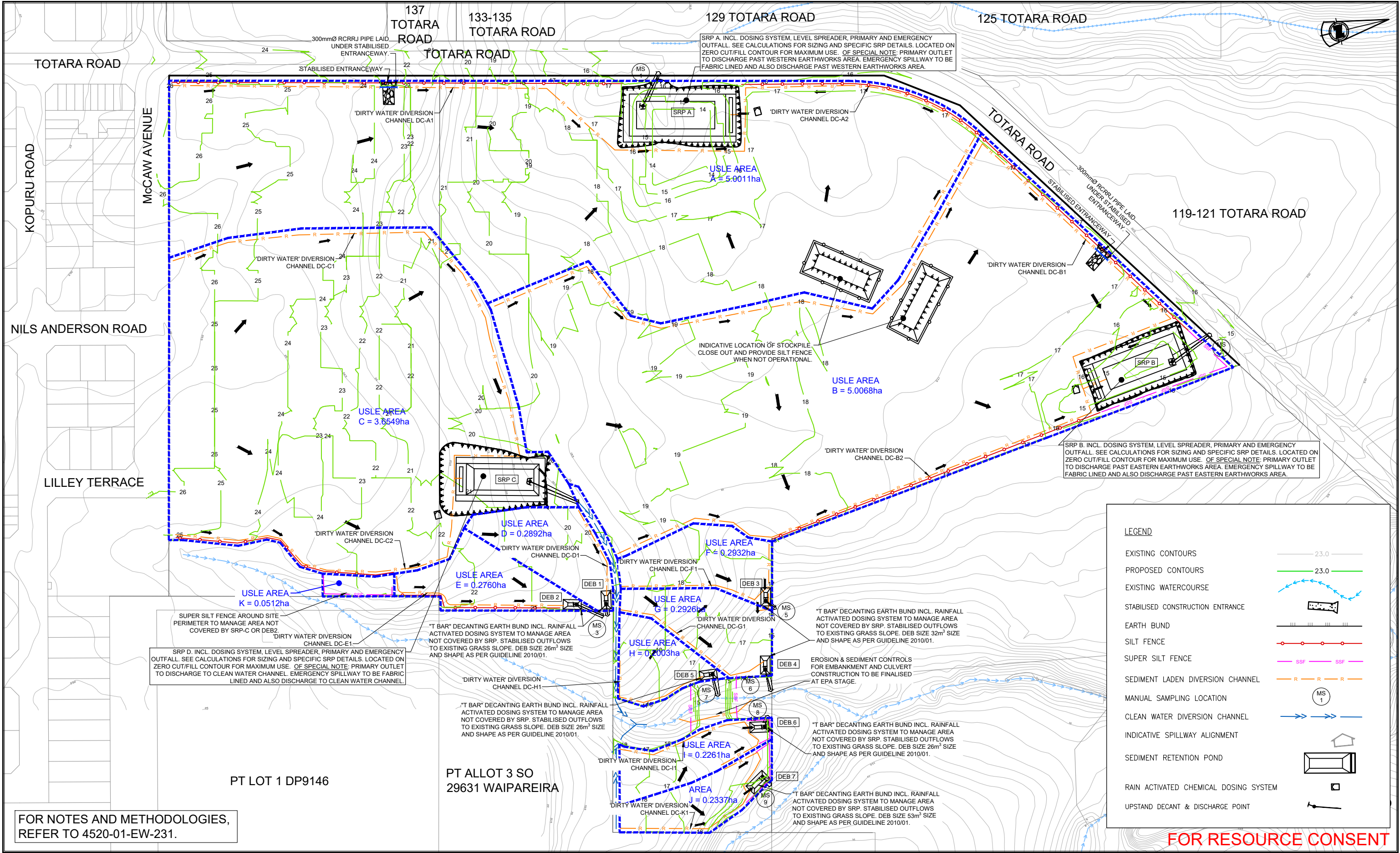
Job Title

**WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI**

Drawing Title

**EARTHWORKS
RETAINING WALL ELEVATIONS
EXAMPLES AND DETAILS**

By	Date	Scale	Job No.	Rev
Surveyed: MS		1:1000@A3	Drawing No.	
Designed: KLP		5 x VERT.	4520-01-EW-213	A
Drawn: KLP	11/2022			
Approved: BJ				



FOR NOTES AND METHODOLOGIES,
REFER TO 4520-01-EW-231.

LEGEND

- EXISTING CONTOURS
- PROPOSED CONTOURS
- EXISTING WATERCOURSE
- STABILISED CONSTRUCTION ENTRANCE
- EARTH BUND
- SILT FENCE
- SUPER SILT FENCE
- SEDIMENT LADEN DIVERSION CHANNEL
- MANUAL SAMPLING LOCATION
- CLEAN WATER DIVERSION CHANNEL
- INDICATIVE SPILLWAY ALIGNMENT
- SEDIMENT RETENTION POND
- RAIN ACTIVATED CHEMICAL DOSING SYSTEM
- UPSTAND DECANT & DISCHARGE POINT

FOR RESOURCE CONSENT

Rev	Description	By	Date
A	ISSUED FOR RESOURCE CONSENT	BJ	11/2022

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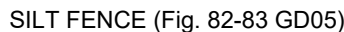
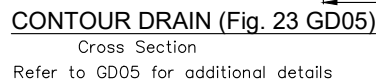
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Job Title
WHENUAPAI GREEN 98-102 TOTARA ROAD WHENUAPAI

Drawing Title
EARTHWORKS EROSION & SEDIMENT CONTROL MANAGEMENT PLAN

	By	Date	Scale	Job No.	4520
Surveyed:	CP		1: 2000@A3	Drawing No.	Rev
Designed:	KLP			4520-01-EW-230	A
Drawn:	KLP	10/2022			
Approved:	BJ				
CAD FILE					



FOR RESOURCE CONSENT

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GENERAL NOTES:

ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE AUCKLAND COUNCIL GUIDELINE DOCUMENT 2016/005 (GD05), INCLUDING ALL SUBSEQUENT AMENDMENTS.

ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE OPERATIONAL PRIOR TO ANY OTHER WORKS COMMENCING ON SITE.

ANY MODIFICATIONS TO THE CONSENTED EROSION AND SEDIMENT CONTROL DRAWING MUST BE APPROVED BY THE ENGINEER AND AUCKLAND COUNCIL PRIOR TO CONSTRUCTION.

A COPY OF THE EROSION MANAGEMENT PLAN SHALL BE AVAILABLE ON THE SITE DURING WORK HOURS AND ALL PERSONNEL INVOLVED IN EARTHWORK ACTIVITIES ON THE SITE (INCLUSIVE OF SUBCONTRACTORS) SHALL BE FAMILIAR WITH THE CONSENT AND PLAN REQUIREMENTS AS THEY RELATE TO EROSION AND SEDIMENT CONTROL.

SEDIMENT POND NOTES:

FINAL LOCATION OF PONDS TO BE DETERMINED ON SITE BY THE ENGINEER IN CONJUNCTION WITH AUCKLAND COUNCIL.

VOLUMES SHOWN FOR SEDIMENT PONDS ARE MINIMUM REQUIREMENTS. ALL PONDS ARE TO BE CONSTRUCTED TO DIMENSIONS STATED, SPECIFIC TO EACH POND.

- PONDS ARE TO BE CONSTRUCTED BASED ON THE FOLLOWING CRITERIA AND THE RELEVANT DRAWINGS AND CALCULATIONS:
- THE POND LENGTH TO WIDTH RATIO IS 1:3 TO 1:5
 - BASE OF POND IS TO BE LEVEL
 - DIVERSION DRAINS SHOULD DISCHARGE IN TO THE LEVEL SPREADER OPPOSITE THE OUTLET
 - WORKING VOLUME IS MEASURED FROM THE BASE OF THE POND TO THE TOP OF THE PRIMARY OUTLET RISER x THE CROSS SECTIONAL AREA
 - ALL BATTERS SHOULD BE TOPSOILED AND GRASSED OR HYDROSEEDDED.

THE DE-WATERING DEVICE LOWEST LEVEL IS TO BE AT LEAST 400mm ABOVE POND BASE AND TO CALCULATIONS.

ALL SEDIMENT RETENTION PONDS ARE TO BE CLEANED OUT BEFORE THE BASE SEDIMENT REACHES 20% OF POND VOLUME.

CONTOUR DRAIN NOTES:

CONTOUR DRAINS SHOULD BE USED TO CONTROL RUNOFF ON CONSTRUCTION AREAS AND ARE GENERALLY OF A TEMPORARY NATURE. THEY ARE COMMONLY USED ON LONG NARROW SLOPING AREAS.

CONTOUR DRAINS TO BE FORMED AT INTERVALS INDICATED BELOW AT THE COMPLETION OF EACH DAYS WORK.

GRADES SHOULD BE NO GREATER THAN 2% AND DRAINS KEPT AS SHORT AS PRACTICABLE. AS WITH DIVERSION DRAINS THESE MUST BE CHECKED AFTER RAINFALL AND DURING PROLONGED PERIODS OF HEAVY RAINFALL. THESE DRAINS MUST BE MAINTAINED TO ENSURE THEIR EFFECTIVENESS

SLOPE OF SITE (%)	SPACING OF CONTOUR DRAINS (m)
LESS THAN 5	50
5-10	40
10-15	30
15-30	20

SEDIMENT CONTROL AND MONITORING NOTES:

SEDIMENT CONTROL MEASURES MUST BE MAINTAINED TO ENSURE EFFECTIVE OPERATION.

THE CONTRACTOR MUST INSPECT ALL CONTROL MEASURES ON A DAILY BASIS AND AFTER ALL STORM EVENTS.

CONTRACTOR INSPECTIONS ARE TO BE CARRIED OUT BY AN APPROPRIATELY QUALIFIED AND EXPERIENCED ENGINEER TO CERTIFY THAT THE EROSION AND SEDIMENT CONTROLS HAVE BEEN CONSTRUCTED IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL PLAN.

A CERTIFICATE AND ASBUILT INDICATING THAT ALL THE APPROPRIATE SEDIMENT CONTROL MEASURES ARE INSTALLED WILL BE SUBMITTED TO THE ARC WITHIN 7 DAYS FOLLOWING THE CONSTRUCTION OF THE CONTROLS.

DIVERSION DRAIN NOTES:

AS FAR AS PRACTICAL ALL CLEAN WATER IS TO BE DIVERTED AWAY FROM THE AREA OF WORKS. CLEAN WATER DIVERSION DRAINS ARE TO BE STABILISED PRIOR TO DIVERTING THE WATER. MINIMUM DRAIN SIZES BEING 0.5m BASE WIDTH x 0.3m DEEP (INCLUDING 0.3m FREE BOARD) SIDE SLOPE BATTERS 1v TO 3H.

DECANTING EARTH BUND NOTES:

DECANTING EARTH BUNDS TO SERVICE A MAXIMUM CATCHMENT OF 0.3ha AND CONSIST OF A MINIMUM SRP T-BAR DECANT SYSTEM WITH RECOMMENDED DECANT RATE OF 0.3L/S/1000m³. DECANT SIZE TO BE 1% CONTRIBUTING AREA FOR UP TO 18% SLOPES AND 2% FOR OVER 18% SLOPES. BUND TO BE MINIMUM 2m WIDE AT BASE WITH 3:1 TO 5:1 LENGTH TO WIDTH RATIO. PRIMARY SPILLWAY TO BE 150mm UPSTAND WITH EMERGENCY SPILLWAY SIZED LARGER OF 1% AEP OR 1.5m

STOCKPILE NOTES:

TOPSOIL & CLAY STOCKPILES ARE TO COMPRISE OF EITHER DECANTING EARTH BUNDS OR SILT FENCE LOCATED AT THE TOE OF THE STOCKPILE.

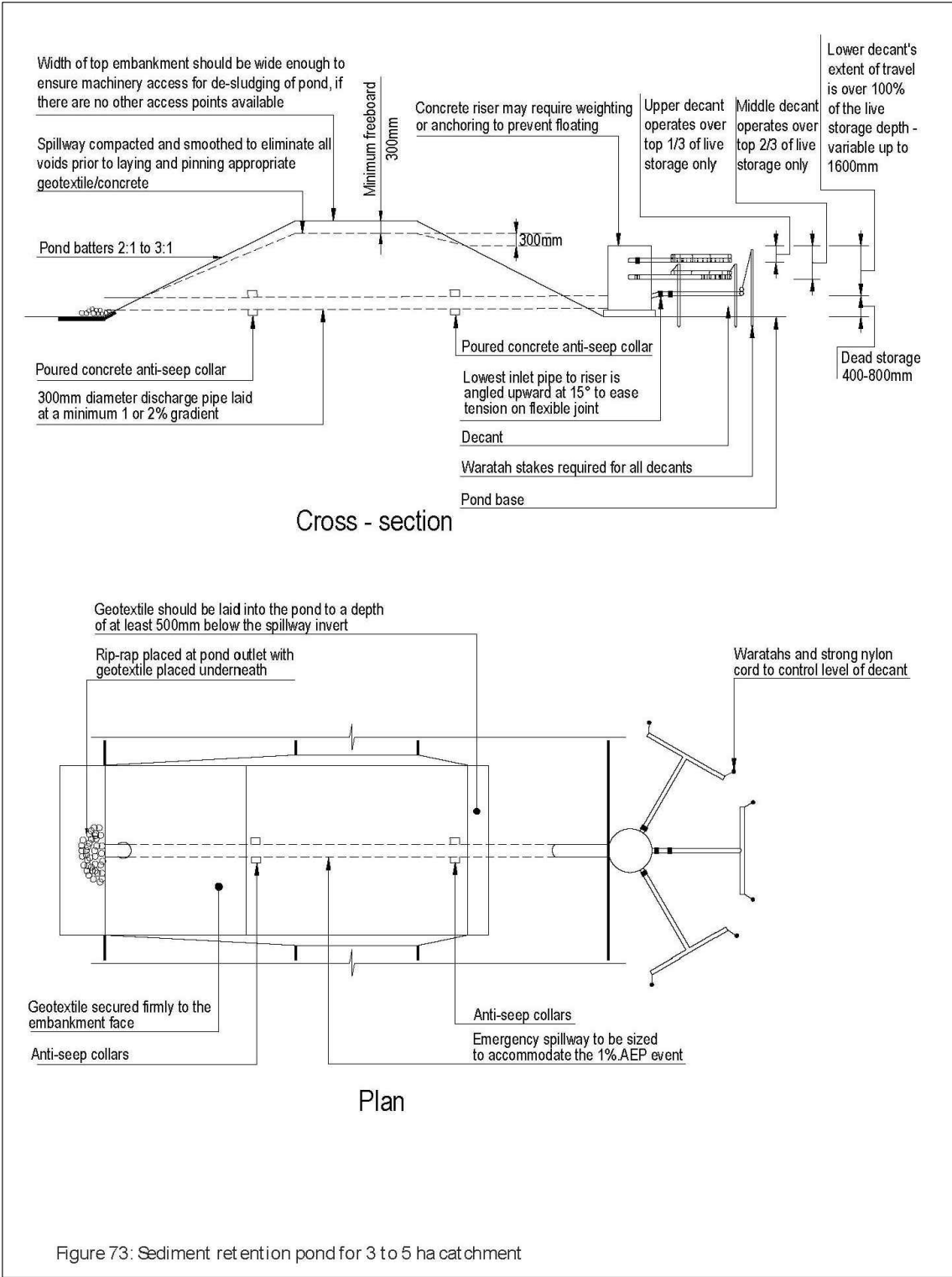


Figure 73: Sediment retention pond for 3 to 5 ha catchment

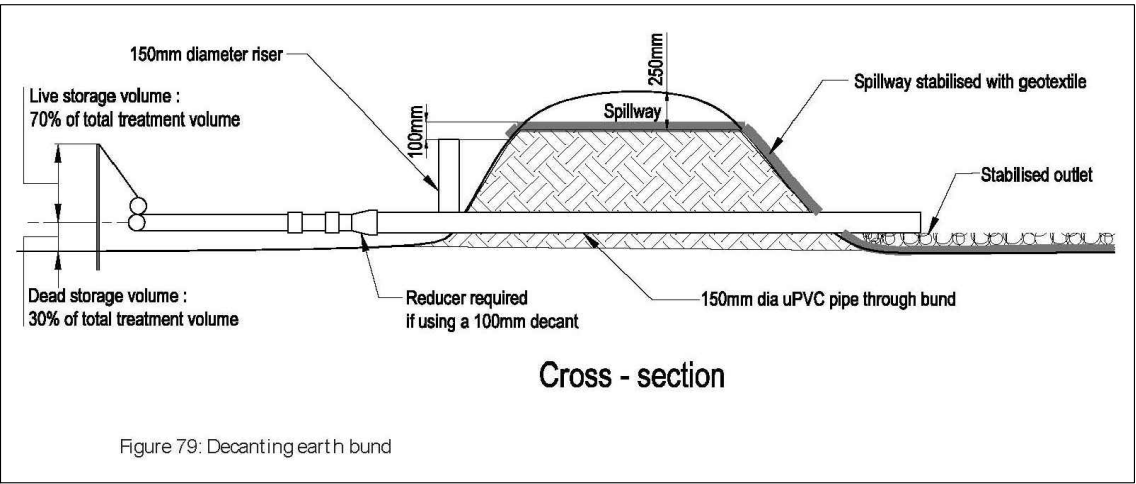


Figure 79: Decanting earth bund

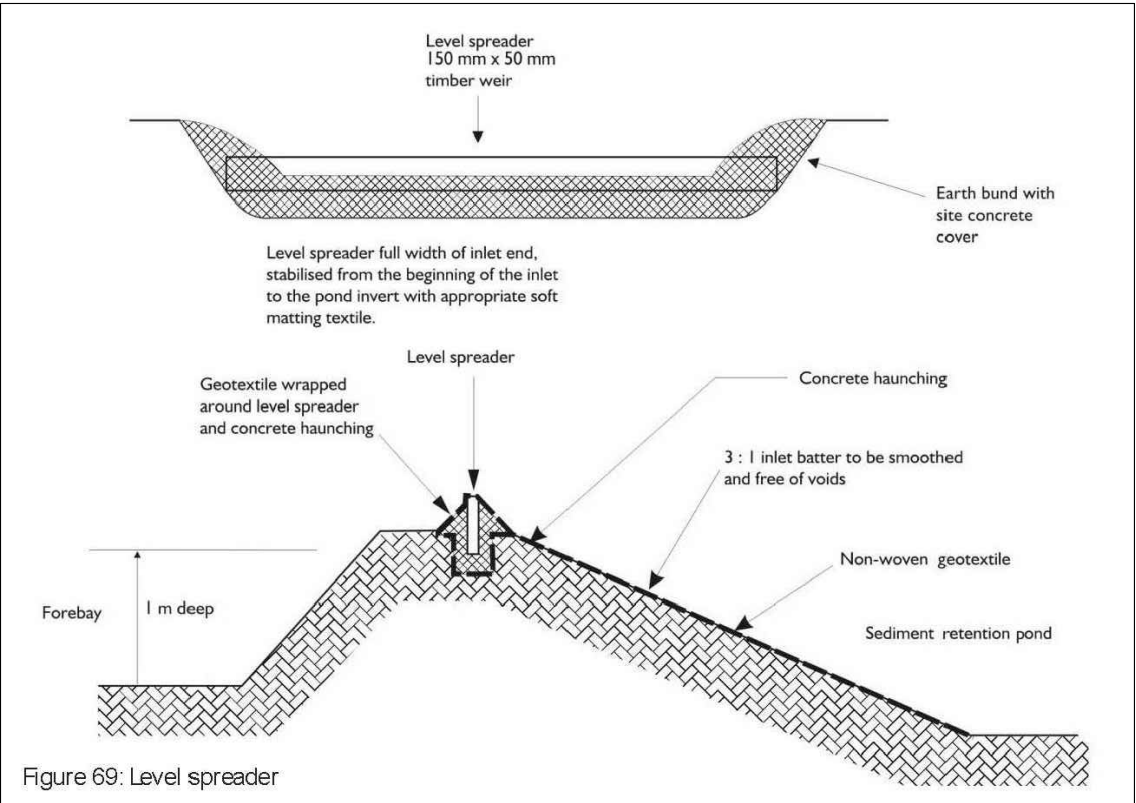


Figure 69: Level spreader

FOR RESOURCE CONSENT

Rev	Description	By	Date
A	ISSUED FOR RESOURCE CONSENT	BJ	11/2022

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Job Title
WHENUAPAI GREEN 98-102 TOTARA ROAD WHENUAPAI

Drawing Title
EARTHWORKS EROSION & SEDIMENT CONTROL STANDARD & NOTES

	By	Date	Scale	Job No.	Drawing No.	Rev
Surveyed:	GP		N.T.S.	4520	4520-01-EW-232	A
Designed:	KLP					
Drawn:	KLP	10/2022				
Approved:	BJ					
CAD FILE						

EROSION & SEDIMENT CONTROL CALCULATIONS:
[\"DIRTY WATER\" DIVERSION CHANNEL]

PROJECT DATA

PROJECT NO.:	4520-01 WHENUAPAI GREEN	BY:	KLP
DATE:	Nov-22 Rev A	SITE DESCRIPTION:	98-102 Totara Road, Whenuapai

DESIGN LIMITATIONS

* Based in Auckland Council Design Guideline - GD005/2016

- >> Longitudinal grade must be <2% otherwise channel lining will be required
- >> Capacity to carry the flow safely from a 20yr storm event (5% AEP) + 300mm freeboard
- >> Velocities not to exceed 1.0m/s or channel liner is required
- >> Channel shape (cross-section) should be trapezoidal or parabolic

CATCHMENT RUNOFF DETERMINATION - RATIONAL METHOD

Catchment ID:	DC-A1	DC-A2	DC-B1	DC-B2	DC-C1	DC-C2	DC-D1	DC-E1	DC-F1	DC-G1	DC-H1	DC-I1	DC-J1
Sub-catchment Area (ha):	3.36	1.17	2.61	1.90	2.17	1.09	0.24	0.23	0.27	0.24	0.18	0.20	0.19
Rainfall Intensity(mm/hr):	140	140	140	140	140	140	140	140	140	140	140	140	140
Run-off coefficient C:	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3

$$Q_c = \frac{CIA}{360}$$
$$Q_{capacity} = \frac{A R^{2/3} s^{1/2}}{n}$$

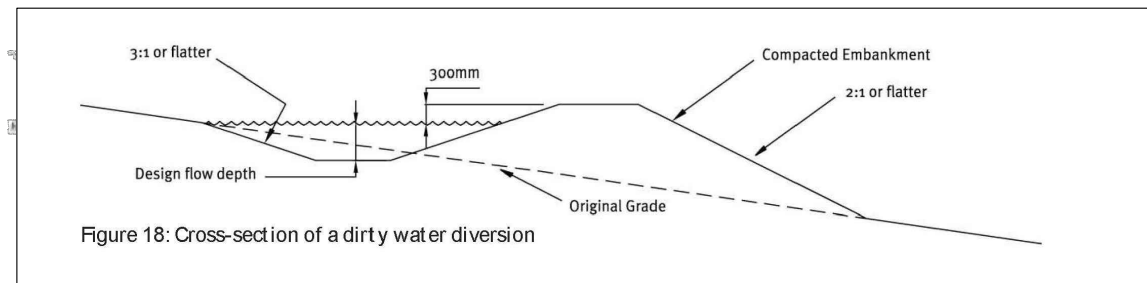
Q_c = 0.392m³/s 0.137m³/s 0.304m³/s 0.222m³/s 0.253m³/s 0.127m³/s 0.028m³/s 0.027m³/s 0.031m³/s 0.028m³/s 0.020m³/s 0.023m³/s 0.022m³/s

\"DIRTY WATER\" DIVERSION CHANNEL CAPACITY

*Hydraulic Design based in Manning's formulae

Diversion channel ID =	DC-A1	DC-A2	DC-B1	DC-B2	DC-C1	DC-C2	DC-D1	DC-E1	DC-F1	DC-G1	DC-H1	DC-I1	DC-J1
Channel Slope (s)=	0.95%	0.01%	0.06%	0.80%	0.35%	0.30%	0.50%	1.60%	7.00%	5.90%	4.70%	4.15%	5.50%
Channel Roughness (n)=	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
Channel side slope (z)=	3H:1V	3H:1V	3H:1V	3H:1V	3H:1V	3H:1V	3H:1V	3H:1V	3H:1V	3H:1V	3H:1V	3H:1V	3H:1V
Bottom width (b)=	0.50m	0.50m	1.00m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m
Water Depth (d)=	0.27m	0.46m	0.38m	0.21m	0.27m	0.21m	0.09m	0.06m	0.04m	0.04m	0.04m	0.04m	0.04m
Top width (T)=	2.09m	3.25m	3.27m	1.77m	2.14m	1.73m	1.01m	0.86m	0.76m	0.76m	0.73m	0.76m	0.73m
Wetted perimeter(P)=	2.18m	3.40m	3.39m	1.84m	2.23m	1.80m	1.04m	0.88m	0.78m	0.78m	0.75m	0.77m	0.74m
Cross-sectional Area (A)=	0.34m^2	0.86m^2	0.81m^2	0.24m^2	0.36m^2	0.23m^2	0.06m^2	0.04m^2	0.03m^2	0.03m^2	0.02m^2	0.03m^2	0.02m^2
Hydraulic radius (R)=	0.158m	0.253m	0.238m	0.131m	0.162m	0.127m	0.062m	0.047m	0.035m	0.035m	0.032m	0.035m	0.032m
Channel capacity Q _{capacity} =	0.39m ³ /s	0.14m ³ /s	0.30m ³ /s	0.22m ³ /s	0.25m ³ /s	0.13m ³ /s	0.03m ³ /s	0.03m ³ /s	0.03m ³ /s	0.03m ³ /s	0.02m ³ /s	0.02m ³ /s	0.02m ³ /s
Flow velocity (v)=	0.88m/s	6.26m/s	2.66m/s	1.08m/s	1.42m/s	1.80m/s	2.25m/s	1.52m/s	0.88m/s	0.95m/s	1.14m/s	1.15m/s	1.06m/s

\"DIRTY WATER\" CHANNEL CROSS-SECTION / GD05 2016



GD005 SEDIMENT RETENTION POND SIZING

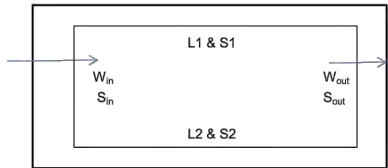
PROJECT DATA

PROJECT NO.:	4520	DATE:	Nov-22	BY:	KLP
SITE DESCRIPTION:	98-102 Totara Road - Whenuapai Green				

SEDIMENT RETENTION POND SIZING

Labels for pond base dimensions

W = Width
L = Length
S = Slope



PLAN VIEW OF POND

	Units	ESC DEVICE ID										Notes
		SRP A	SRP B	SRP C	DEB 1	DEB 2	DEB 3	DEB 4	DEB 5	DEB 6	DEB 7	
Contributing Catchment	ha	5	5	3.6549	0.2892	0.276	0.2932	0.2926	0.2003	0.2261	0.2337	2% if catchment slope is <18% and <200m in length 3% if catchment slope is >18% and >200m in length slope immediately (within 20 m) above the SRP
Min Volume Design Criteria	%	3%	3%	2%	1%	1%	1%	1%	1%	1%	2%	
Min Storage Volume	m³	1500	1500	730.98	28.92	27.6	29.32	29.26	20.03	22.61	46.74	
Slope Angle	%	3	3	3	4	6	12	15	12	12	20	
Target Pond L:W ratio	xL:1w	3:1	3:1	3:1	3:1	3:1	3:1	3:1	3:1	3:1	3:1	Ideal is between 3:1 and 5:1
Trial Length (L1 = L2)	m	48.0	42.0	33.0	6.0	6.0	6.0	6.0	6.0	6.0	8.0	Base Length
Internal batter slope (S1)	xH:1V	2:1	2:1	2:1	2:1	2:1	2:1	2:1	2:1	2:1	2:1	2:1 is normal side batter slope
Internal batter slope (S2)	xH:1V	2:1	2:1	2:1	2:1	2:1	2:1	2:1	2:1	2:1	2:1	2:1 is normal side batter slope
Width (W _{in} = W _{out})	m	16.0	14.0	11.0	2.0	2.0	2.0	2.0	2.0	2.0	2.6	Base Width
Batter slope in (S _{in})	xH:1V	3:1	3:1	3:1	3:1	3:1	3:1	3:1	3:1	3:1	3:1	3:1 is normal entry batter slope
Batter slope out (S _{out})	xH:1V	2:1	2:1	2:1	2:1	2:1	2:1	2:1	2:1	2:1	2:1	2:1 is normal exit batter slope
Base Area = L1 x W _{in}	m²	768.0	588.0	363.0	12.0	12.0	12.0	12.0	12.0	12.0	20.8	
Trial Pond Depth (D)	m	1.6	1.8	1.5	0.9	0.9	0.9	0.9	0.8	0.8	1.0	maximum depth (2m FOR SRP and 1m FOR DEB)
(Permanent Depth / Sed. Storage)	m	0.48	0.54	0.45	0.4	0.4	0.4	0.4	0.4	0.4	0.4	30% of total storage, 0.4-0.8m in depth, 0.5m typical
(Working volume depth)	m	1.12	1.26	1.05	0.50	0.50	0.50	0.50	0.40	0.40	0.60	70% of total storage, 1.5m maximum preferable.
Top Length	m	56	51	40.5	10.5	10.5	10.5	10.5	10	10	13	Total Storage Water Level Length (Not Device Top)
Top Width	m	22.4	21.2	17	5.6	5.6	5.6	5.6	5.2	5.2	6.6	Total Storage Water Level Length (Not Device Top)
Top Area	m²	1254	1081	689	59	59	59	59	52	52	86	Total Storage Water Area
Top Embankment Length	m	59	52.75	42.25	12.25	12.25	12.25	12.25	11.75	11.75	14.75	SRP (0.6m above Max WL) - DEB (0.35m above Max WL)
Top Embankment Width	m	24.8	22.6	18.4	7	7	7	7	6.6	6.6	8	SRP (0.6m above Max WL) - DEB (0.35m above Max WL)
Volume of Pond at Depth D	m³	1618	1502	789	32	32	32	32	26	26	53	Total ESC device storage volume
Is Actual Vol larger than min Vol?		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Decanting System		Triple	Triple	Triple	Single	Single	Single	Single	Single	Single	Single	
Outlet Pipe Diameter	mm	300	300	300	150	150	150	150	150	150	150	
Overflow Riser Diameter	mm	1050	1050	1050	100	146	147	148	149	150	150	Conc. MH riser for SRP and 150mm upstand for DEB
Freeboard	m	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	
Overflow embankment Freeboard	m	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
Length	m	16.0	14.0	11.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Approximate Pond Levels:												
Top of Embankment Level	RL	15.7	16	20.5	20.5	21	14.5	13.5	14	14	14	
Level Spreader Weir Level	RL	15.5	15.8	20.3	20.3	20.8	14.3	13.3	13.8	13.8	13.8	200mm below top of embankment
Emergency Spillway Level	RL	15.4	15.7	20.2	20.2	20.7	14.2	13.2	13.7	13.7	13.7	300mm below top of embankment
Overflow Riser Level	RL	15.05	15.35	19.85	19.85	20.35	13.85	12.85	13.35	13.35	13.35	300mm below spillway, 600mm below embankment.
Maximum Operating Water Level	RL	15.05	15.35	19.85	19.85	20.35	13.85	12.85	13.35	13.35	13.35	
Minimum Operating Water Level	RL	13.9	14.1	18.8	19.4	19.9	13.4	12.4	13.0	13.0	12.8	Working Vol Depth below Maximum Water Level
Pond Base Level	RL	13.5	13.6	18.4	19.0	19.5	13.0	12.0	12.6	12.6	12.4	
20% Sediment Clean Out Level	RL	13.8	13.9	18.7	19.1	19.6	13.1	12.1	12.7	12.7	12.6	20% of total storage / pond depth
Chemical dosing		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Typically poly aluminium chloride (PAC)

FOR RESOURCE CONSENT

Rev	Description	By	Date
A	ISSUED FOR RESOURCE CONSENT	BJ	11/2022

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Job Title	WHENUAPAI GREEN 98-102 TOTARA ROAD WHENUAPAI
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Drawing Title	EARTHWORKS EROSION & SEDIMENT CONTROL CALCULATIONS
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	By	Date	Scale	Job No.	4520	
Surveyed:	CP		N.T.S.	Drawing No.	4520-01-EW-233	Rev
Designed:	KLP			A		
Drawn:	KLP	10/2022				
Approved:	BJ					
CAD FILE						

ESTIMATION OF SEDIMENT YIELD BY THE UNIVERSAL SOIL LOSS EQUATION

(Based on Auckland Regional Council - 05 Landfile Outlines Notes)

PROJECT NO.: 4520 DATE: Nov-22 BY: KLP

SITE DESCRIPTION: 98-102 Totara Road, Whenuapai (WHENUAPAI GREEN)

PRE CONSTRUCTION WORKS USLE CALCULATION

CATCHMENT

	Area A	Area B	Area C	Area D	Area E	Area F	Area G	Area H	Area I	Area J	Area K	Total
Works Area (ha)	5.00	5.00	3.65	0.29	0.28	0.29	0.29	0.20	0.23	0.23	0.05	15.52
Works Duration (yrs)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	

WORKING FORMULA (USLE)

A = R K L S C P A = soil loss (tonnes/ha/year)

Rainfall erosion index (R): R = 0.00828 * (P)^2.2 * 1.70 P = 6hr 2yr rainfall event from TP 108 Fig A.1 and / or <http://hirds.niwa.co.nz/> (depth - duration - frequency)

2 yr ARI (24hr) 85 mm P = 53 mm H = 89 (J/hectare)

Soil erodibility index (K): K = tonnes/units of R

(from figure 1 triangular nomogram and correction table 1)

% Sand 20 20 20 20 20 20 20 20 20 20 20 20

% Clay 60 60 60 60 60 60 60 60 60 60 60 60

% Silt 20 20 20 20 20 20 20 20 20 20 20 20

K_{corrected} 0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.18

Organic (0%-4%) -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06

K_{erosion} 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12

K_{erosion} 0.16 0.16 0.16 0.16 0.16 0.16 0.16 0.16 0.16 0.16 0.16 0.16

Slope length and steepness factor (LS):

(from appendix 1: LS values)

Length (m) 300 390 170 88 70 83 86 61 88 80 15

Slope (%) 1.0 0.1 4.0 5.0 15.0 15.0 15.0 12.0 10.0 10.0 10.0

LS 0.3 0.2 0.4 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5

LS 0.26 0.12 0.80 0.61 0.81 2.26 4.30 1.94 3.07 2.22 0.90

Vegetation cover factor and Erosion control practice factor (C & P):

(from table 2)

C 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02

P 1 1 1 1 1 1 1 1 1 1 1

The USLE predicts the total yield of sediment generated but makes no allowance for that retained on site. A Sediment Delivery Ratio (SDR) and Sediment Control Measure Efficiency (%) must be selected.

ESTIMATION OF SEDIMENT

(tonnes for nominated duration and area)

Estimated Gross Sediment Yield (A) (Tonnes) 0.09 0.04 0.20 0.02 0.02 0.05 0.09 0.03 0.05 0.04 0.00

Sediment Delivery Ratio (SDR) (0.0-1.0) 0.5 0.5 0.5 0.5 0.5 1.5 2.5 3.5 4.5 5.5

Sediment Control Measure Efficiency (SCE) (%) - - - - - - - - - -

Net Estimated Sediment Loss (Tonnes) 0.0 0.0 0.1 0.0 0.0 0.0 0.1 0.1 0.2 0.2 0.0

Total Site Estimated Gross Sediment Yield (A) (Tonnes) 0.62

Total Site Estimated Net Sediment Loss (Tonnes) 0.76

(tonnes for nominated duration and area)

(tonnes for nominated duration and area)

(tonnes for nominated duration and area)

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(tonnes for nominated duration and area)

ESTIMATION OF SEDIMENT YIELD BY THE UNIVERSAL SOIL LOSS EQUATION

(Based on Auckland Regional Council - 05 Landfile Outlines Notes)

PROJECT NO.: 4520 DATE: Nov-22 BY: KLP

SITE DESCRIPTION: 98-102 Totara Road, Whenuapai (WHENUAPAI GREEN)

DURING CONSTRUCTION USLE CALCULATION

CATCHMENT

	Area A	Area B	Area C	Area D	Area E	Area F	Area G	Area H	Area I	Area J	Area K	Total
Works Area (ha)	5.00	5.00	3.65	0.29	0.28	0.29	0.29	0.20	0.23	0.23	0.05	15.52
Works Duration (yrs)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	

WORKING FORMULA (USLE)

A = R K L S C P A = soil loss (tonnes/ha/year)

Rainfall erosion index (R): R = 0.00828 * (P)^2.2 * 1.70 P = 6hr 2yr rainfall event from TP 108 Fig A.1 and / or <http://hirds.niwa.co.nz/> (depth - duration - frequency)

2 yr ARI (24hr) 85 mm P = 53 mm H = 89

Soil erodibility index (K): K = tonnes/units of R

(from figure 1 triangular nomogram and correction table 1)

% Sand 20 20 20 20 20 20 20 20 20 20 20 20

% Clay 60 60 60 60 60 60 60 60 60 60 60 60

% Silt 20 20 20 20 20 20 20 20 20 20 20 20

K_{corrected} 0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.18

Organic (0%-4%) -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06

K_{erosion} 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12

K_{erosion} 0.16 0.16 0.16 0.16 0.16 0.16 0.16 0.16 0.16 0.16 0.16 0.16

Slope length and steepness factor (LS):

(from appendix 1: LS values)

Length (m) 30 30 30 30 30 30 30 30 30 30 30 30

Slope (%) 1 0.1 4.0 5.0 15.0 15.0 15.0 12.0 10.0 10.0 10.0

LS 0.3 0.2 0.4 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5

LS 0.13 0.07 0.40 0.63 0.63 1.16 2.94 1.36 1.71 1.36 1.36

Vegetation cover factor and Erosion control practice factor (C & P):

(from table 2)

C 1 1 1 1 1 1 1 1 1 1 1 1

P 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2

The USLE predicts the total yield of sediment generated but makes no allowance for that retained on site. A Sediment Delivery Ratio (SDR) and Sediment Control Measure Efficiency (%) must be selected.

ESTIMATION OF SEDIMENT

(tonnes for nominated duration and area)

Estimated Gross Sediment Yield (A) (Tonnes) 5.42 3.13 12.27 1.30 1.24 3.36 6.28 2.30 3.42 2.68 0.59

Sediment Delivery Ratio (SDR) (0.0-1.0) 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5

Sediment Control Measure Efficiency (SCE) (%) 95.0% 95.0% 95.0% 65.0% 65% 65% 65% 65% 65% 65% 30%

Sediment and Erosion Control Devices SRP SRP SRP DEB DEB DEB DEB DEB DEB DEB SF

Net Estimated Sediment Loss (Tonnes) 0.14 0.08 0.31 0.23 0.22 0.59 1.10 0.40 0.60 0.47 0.21

Total Site Estimated Gross Sediment Yield (A) (Tonnes) 41.98

Total Site Estimated Net Sediment Loss (Tonnes) 4.33

(tonnes for nominated duration and area)

(tonnes for nominated duration and area)

(tonnes for nominated duration and area)

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(tonnes for nominated duration and area)

ESTIMATION OF SEDIMENT YIELD BY THE UNIVERSAL SOIL LOSS EQUATION

(Based on Auckland Regional Council - 05 Landfile Outlines Notes)

PROJECT NO.: 4520 DATE: Nov-22 BY: KLP

SITE DESCRIPTION: 98-102 Totara Road, Whenuapai (WHENUAPAI GREEN)

POST CONSTRUCTION USLE CALCULATION

CATCHMENT

	Area A	Area B	Area C	Area D	Area E	Area F	Area G	Area H	Area I	Area J	Area K	Total
Works Area (ha)	5.00	5.00	3.65	0.29	0.28	0.29	0.29	0.20	0.23	0.23	0.05	15.52
Works Duration (yrs)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	

WORKING FORMULA (USLE)

A = R K L S C P A = soil loss (tonnes/ha/year)

Rainfall erosion index (R): R = 0.00828 * (P)^2.2 * 1.70 P = 6hr 2yr rainfall event from TP 108 Fig A.1 and / or <http://hirds.niwa.co.nz/> (depth - duration - frequency)

2 yr ARI (24hr) 85 mm P = 53 mm H = 89

Soil erodibility index (K): K = tonnes/units of R

(from figure 1 triangular nomogram and correction table 1)

% Sand 20 20 20 20 20 20 20 20 20 20 20 20

% Clay 60 60 60 60 60 60 60 60 60 60 60 60

% Silt 20 20 20 20 20 20 20 20 20 20 20 20

K_{corrected} 0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.18

Organic (0%-4%) -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06

K_{erosion} 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12

K_{erosion} 0.16 0.16 0.16 0.16 0.16 0.16 0.16 0.16 0.16 0.16 0.16 0.16

Slope length and steepness factor (LS):

(from appendix 1: LS values)

Length (m) 30 30 30 30 30 30 30 30 30 30 30 30

Slope (%) 1 0.1 4.0 5.0 15.0 15.0 15.0 12.0 10.0 10.0 10.0

LS 0.3 0.2 0.4 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5

LS 0.13 0.07 0.40 0.63 0.63 1.16 2.94 1.36 1.71 1.36 1.36

Vegetation cover factor and Erosion control practice factor (C & P):

(from table 2)

C 1 1 1 1 1 1 1 1 1 1 1 1

P 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2

The USLE predicts the total yield of sediment generated but makes no allowance for that retained on site. A Sediment Delivery Ratio (SDR) and Sediment Control Measure Efficiency (%) must be selected.

ESTIMATION OF SEDIMENT

(tonnes for nominated duration and area)

Estimated Gross Sediment Yield (A) (Tonnes) 0.23 0.13 0.50 0.02 0.02 0.03 0.00 0.00 0.00 0.00 0.00

Sediment Delivery Ratio (SDR) (0.0-1.0) 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5

Sediment Control Measure Efficiency (SCE) (%) 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15

Sediment and Erosion Control Devices SF SF SF SF SF SF SF SF SF SF SF

Net Estimated Sediment Loss (Tonnes) 0.10 0.06 0.21 0.01 0.01 0.01 0.00 0.00 0.00 0.00 0.00

Total Site Estimated Gross Sediment Yield (A) (Tonnes) 0.94

Total Site Estimated Net Sediment Loss (Tonnes) 0.40

(tonnes for nominated duration and area)

(tonnes for nominated duration and area)

(tonnes for nominated duration and area)

(tonnes for nominated duration and area)

(tonnes for nominated duration and area)

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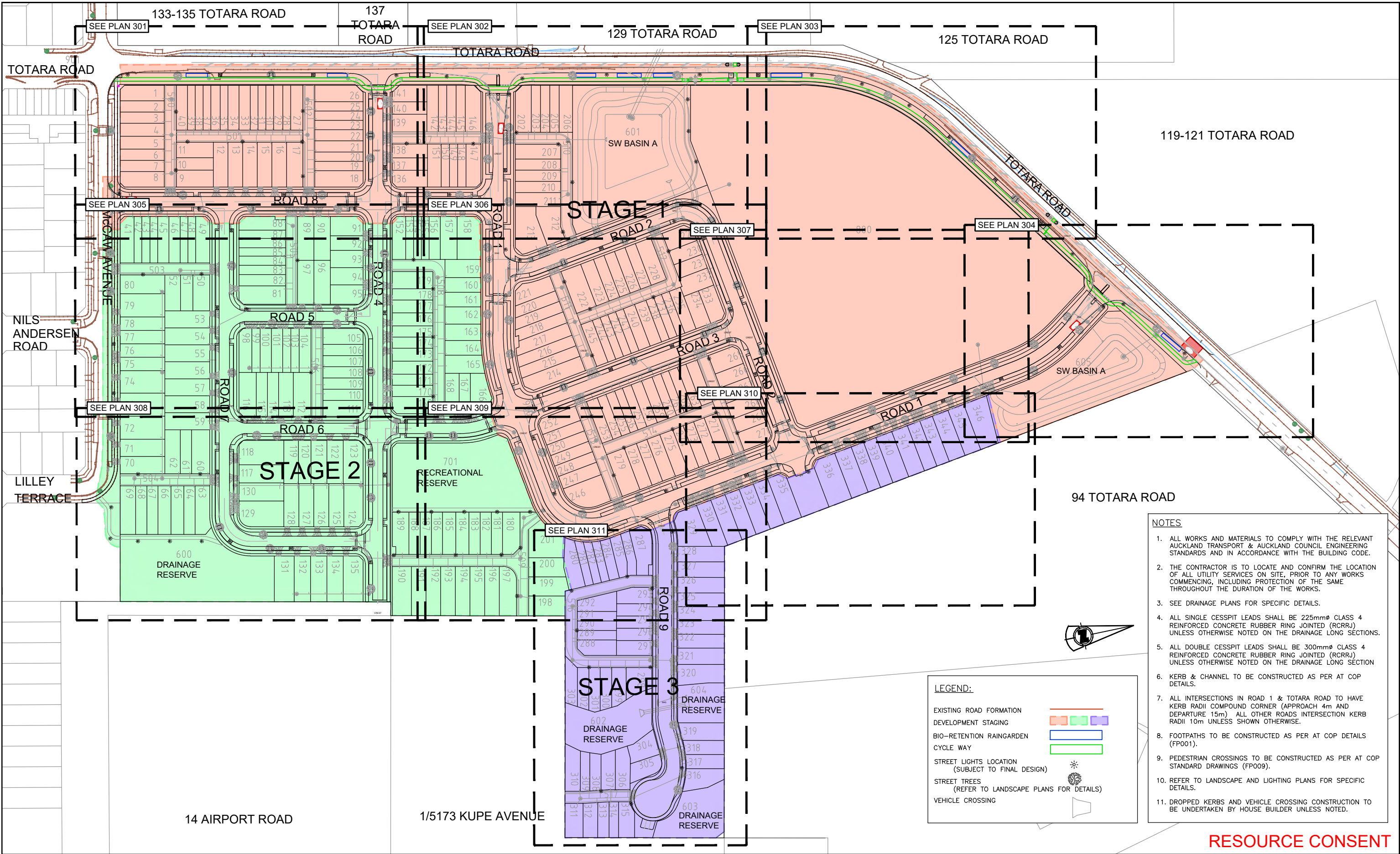
(tonnes for nominated duration and area)

(tonnes for nominated duration and area)

(tonnes for nominated duration and area)

(tonnes for nominated duration and area)

(tonnes for nominated duration and area)



- NOTES**
1. ALL WORKS AND MATERIALS TO COMPLY WITH THE RELEVANT AUCKLAND TRANSPORT & AUCKLAND COUNCIL ENGINEERING STANDARDS AND IN ACCORDANCE WITH THE BUILDING CODE.
 2. THE CONTRACTOR IS TO LOCATE AND CONFIRM THE LOCATION OF ALL UTILITY SERVICES ON SITE, PRIOR TO ANY WORKS COMMENCING, INCLUDING PROTECTION OF THE SAME THROUGHOUT THE DURATION OF THE WORKS.
 3. SEE DRAINAGE PLANS FOR SPECIFIC DETAILS.
 4. ALL SINGLE CESSPIT LEADS SHALL BE 225mmØ CLASS 4 REINFORCED CONCRETE RUBBER RING JOINTED (RCRRJ) UNLESS OTHERWISE NOTED ON THE DRAINAGE LONG SECTIONS.
 5. ALL DOUBLE CESSPIT LEADS SHALL BE 300mmØ CLASS 4 REINFORCED CONCRETE RUBBER RING JOINTED (RCRRJ) UNLESS OTHERWISE NOTED ON THE DRAINAGE LONG SECTION
 6. KERB & CHANNEL TO BE CONSTRUCTED AS PER AT COP DETAILS.
 7. ALL INTERSECTIONS IN ROAD 1 & TOTARA ROAD TO HAVE KERB RADII COMPOUND CORNER (APPROACH 4m AND DEPARTURE 15m) ALL OTHER ROADS INTERSECTION KERB RADII 10m UNLESS SHOWN OTHERWISE.
 8. FOOTPATHS TO BE CONSTRUCTED AS PER AT COP DETAILS (FP001).
 9. PEDESTRIAN CROSSINGS TO BE CONSTRUCTED AS PER AT COP STANDARD DRAWINGS (FP009).
 10. REFER TO LANDSCAPE AND LIGHTING PLANS FOR SPECIFIC DETAILS.
 11. DROPPED KERBS AND VEHICLE CROSSING CONSTRUCTION TO BE UNDERTAKEN BY HOUSE BUILDER UNLESS NOTED.

LEGEND:

EXISTING ROAD FORMATION	
DEVELOPMENT STAGING	
BIO-RETENTION RAINGARDEN	
CYCLE WAY	
STREET LIGHTS LOCATION (SUBJECT TO FINAL DESIGN)	
STREET TREES (REFER TO LANDSCAPE PLANS FOR DETAILS)	
VEHICLE CROSSING	

RESOURCE CONSENT

Rev	Description	By	Date
B	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022
A	ISSUED FOR TRAFFIC REPORT	BJ	08/12/2022

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LAND DEVELOPERS

THE NEIL GROUP LIMITED
LEVEL 3, BUILDING B
8 NUGENT STREET
GRAFTON

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AUCKLAND, NEW ZEALAND
TELEPHONE: +64 9 918 6565
FACSIMILE: +64 9 918 6567
WEB: www.neilgroup.co.nz

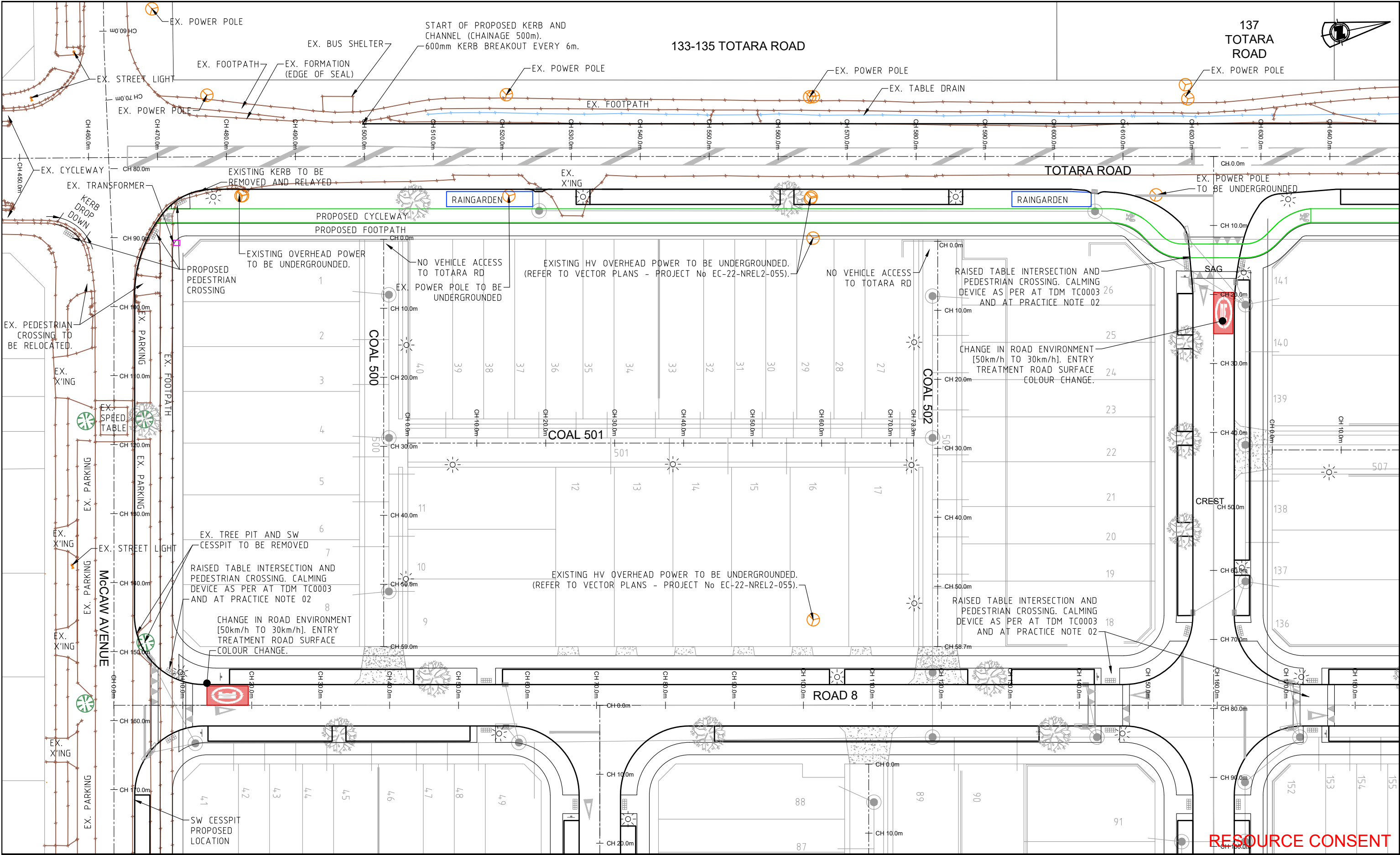
Job Title

**WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI**

Drawing Title

**ROADING
LAYOUT PLAN**

By	Date	Scale	Job No.	Rev
Surveyed: MS		1:2000@A3	Drawing No.	
Designed: KLP			4520-01-RD-300	B
Drawn: KLP	11/2022			
Approved: BJ				



RESOURCE CONSENT

Rev	Description	By	Date
B	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022
A	ISSUED FOR TRAFFIC REPORT	BJ	08/12/2022

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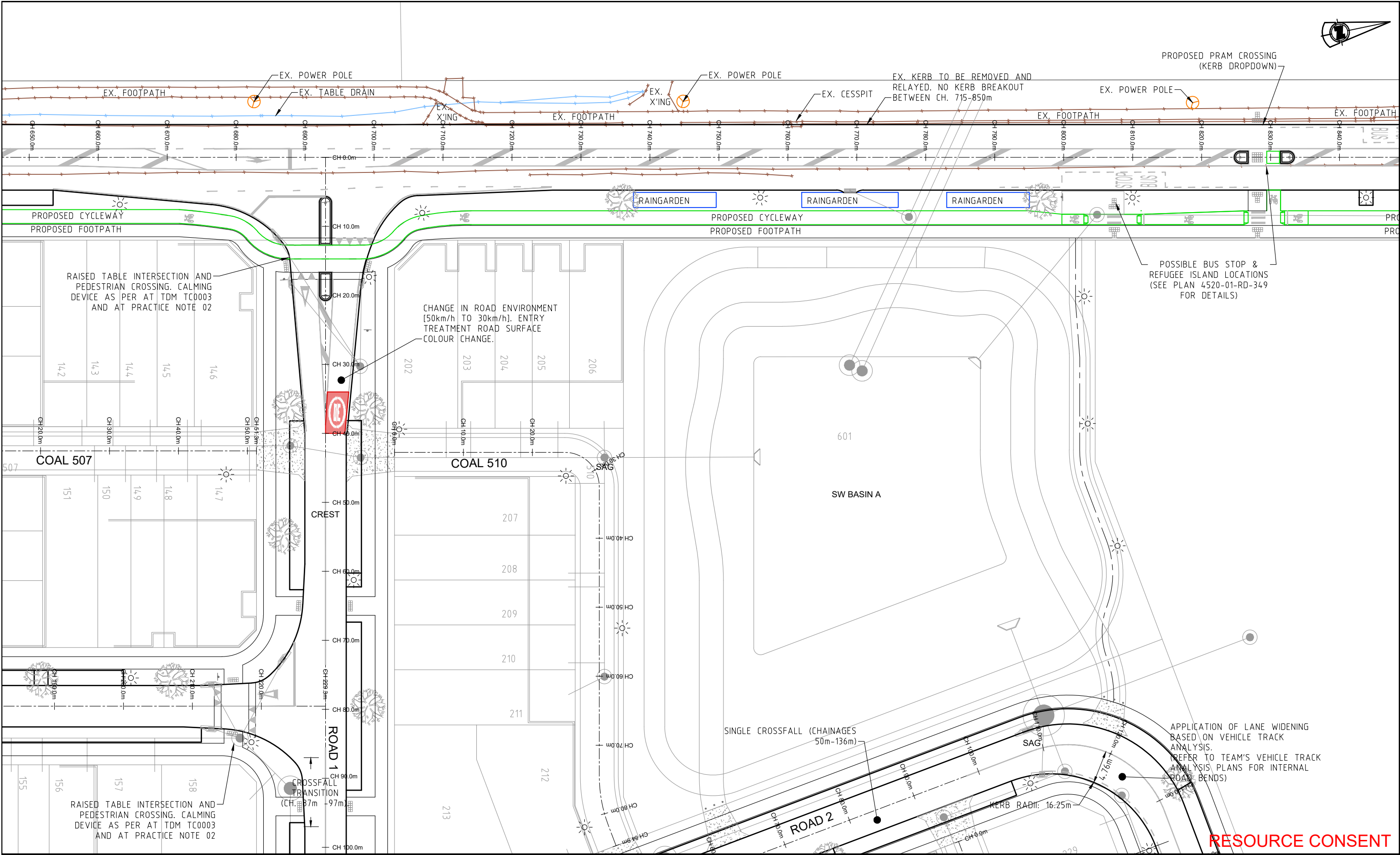
Job Title

WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI

Drawing Title

ROADING
LOCATION PLAN

	By	Date	Scale	Job No.	Drawing No.	Rev
Surveyed:	MS		1:500@A3	4520-01-RD-301	4520-01-RD-301	B
Designed:	KLP					
Drawn:	KLP	11/2022				
Approved:	BJ					



RESOURCE CONSENT

Rev	Description	By	Date
B	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022
A	ISSUED FOR TRAFFIC REPORT	BJ	08/12/2022



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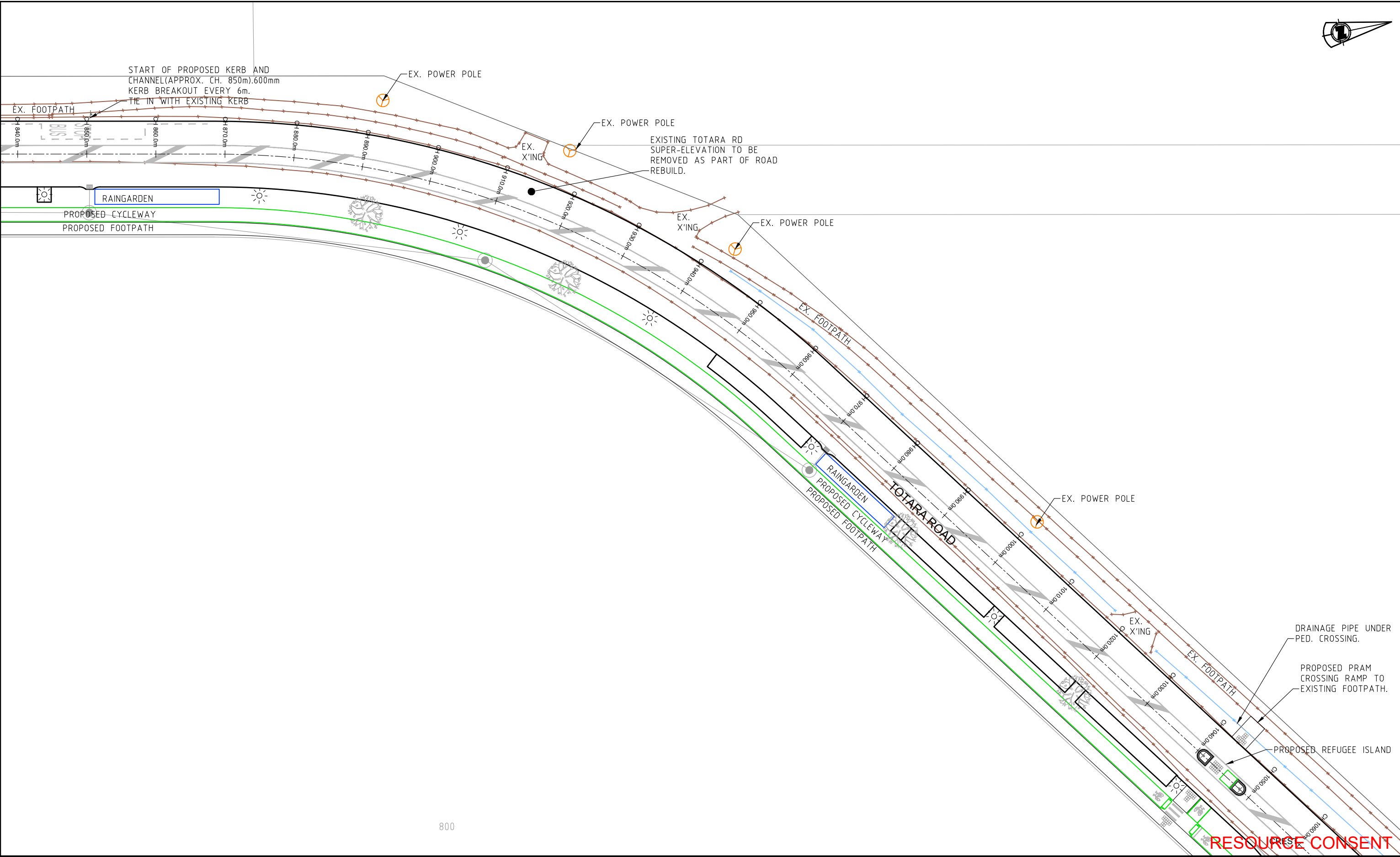
Job Title

**WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI**

Drawing Title

**ROADING
LOCATION PLAN**

	By	Date	Scale	Job No.	Rev
Surveyed:	MS		1:500@A3	4520-01-RD-302	B
Designed:	KLP	11/2022			
Drawn:	KLP				
Approved:	BJ				



Rev	Description	By	Date
B	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022
A	ISSUED FOR TRAFFIC REPORT	BJ	08/12/2022

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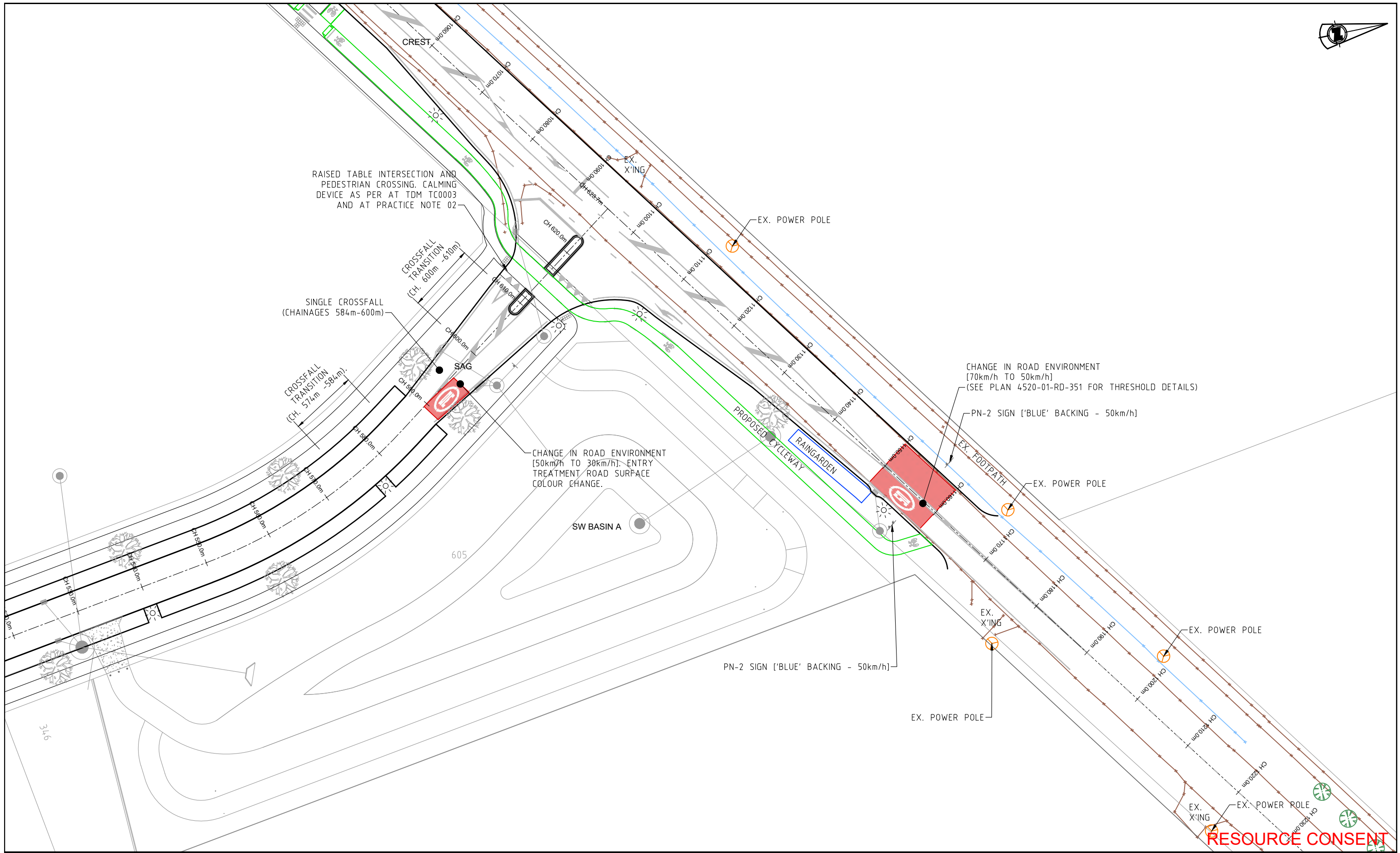
Job Title

**WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI**

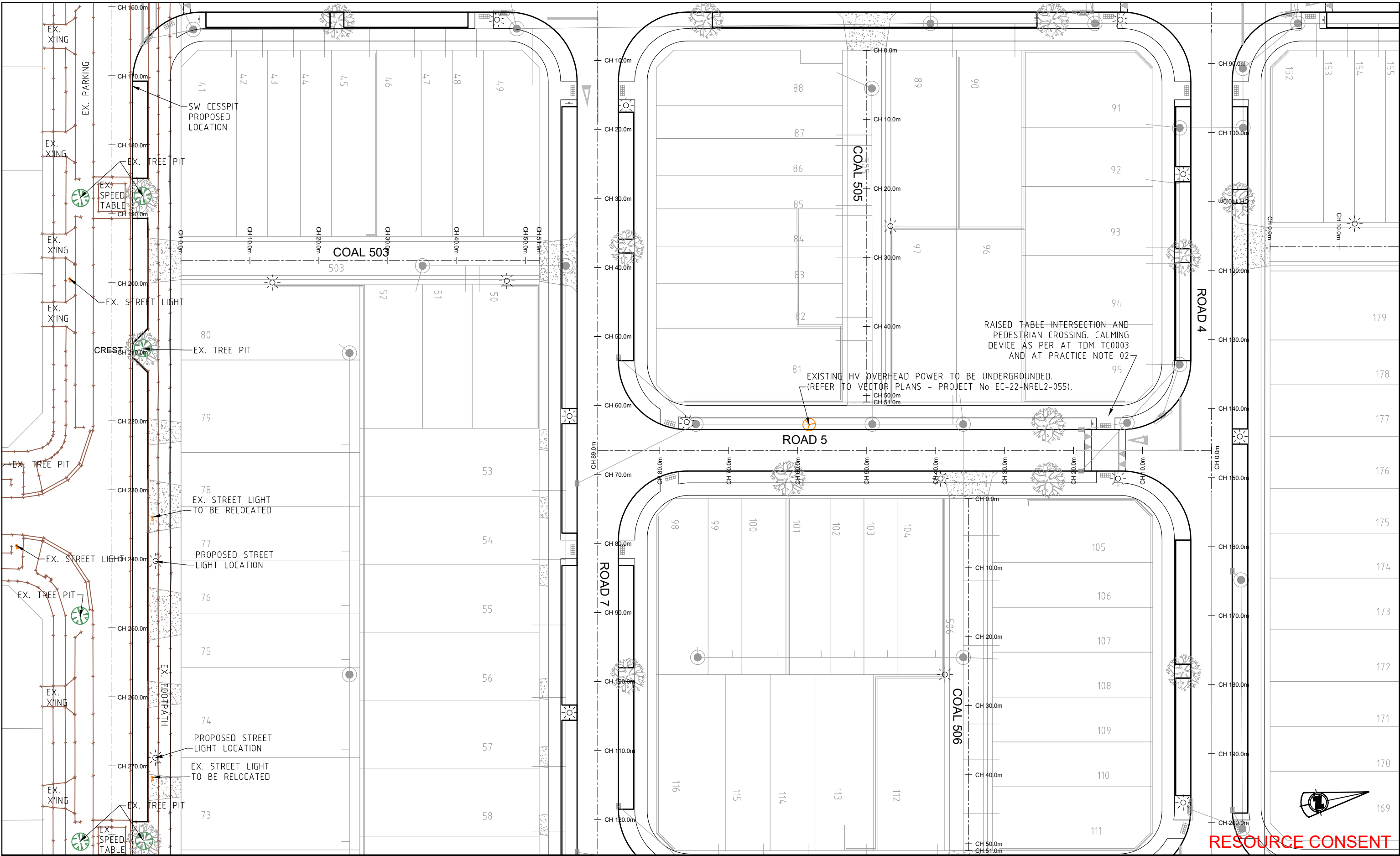
Drawing Title

**ROADING
LOCATION PLAN**

By	Date	Scale	Job No.	Rev
Surveyed: MS		1:500@A3	Drawing No. 4520-01-RD-303	B
Designed: KLP				
Drawn: KLP	11/2022			
Approved: BJ				



	By	Date	Scale	Job No.	
Surveyed:	MS		1: 500@A3	Drawing No.	Rev
Designed:	KLP			4520-01-RD-304	B
Drawn:	KLP	11/2022			
Approved:	BJ				



Rev	Description	By	Date
B	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022
A	ISSUED FOR TRAFFIC REPORT	BJ	08/12/2022



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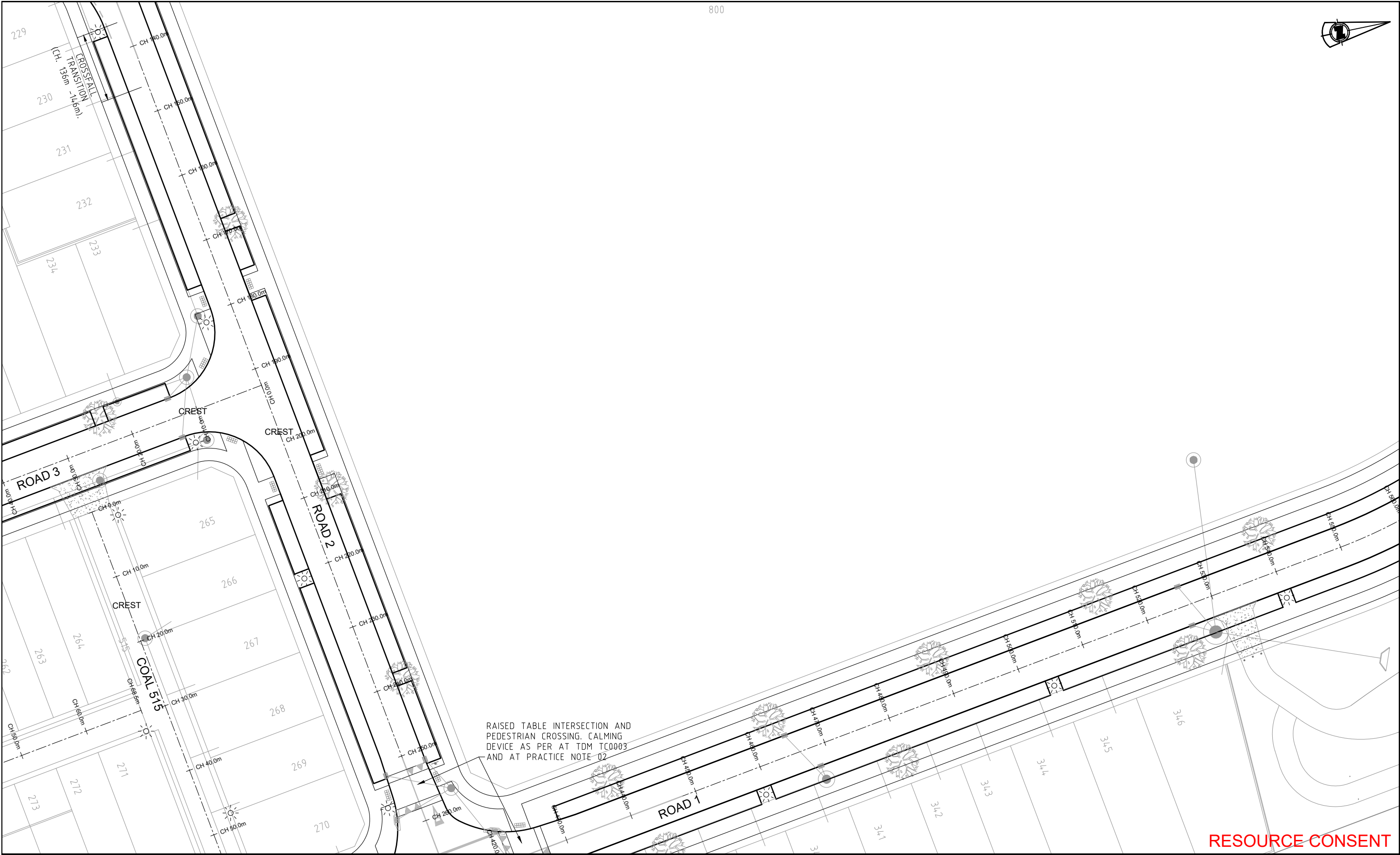
Job Title

WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI

Drawing Title

ROADING
LOCATION PLAN

By	Date	Scale	Job No.	Drawing No.	Rev
Surveyed: MS		1:500@A3	4520-01-RD-305	4520-01-RD-305	B
Designed: KLP	11/2022				
Drawn: KLP					
Approved: BJ					



RESOURCE CONSENT

Rev	Description	By	Date
B	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022
A	ISSUED FOR TRAFFIC REPORT	BJ	08/12/2022



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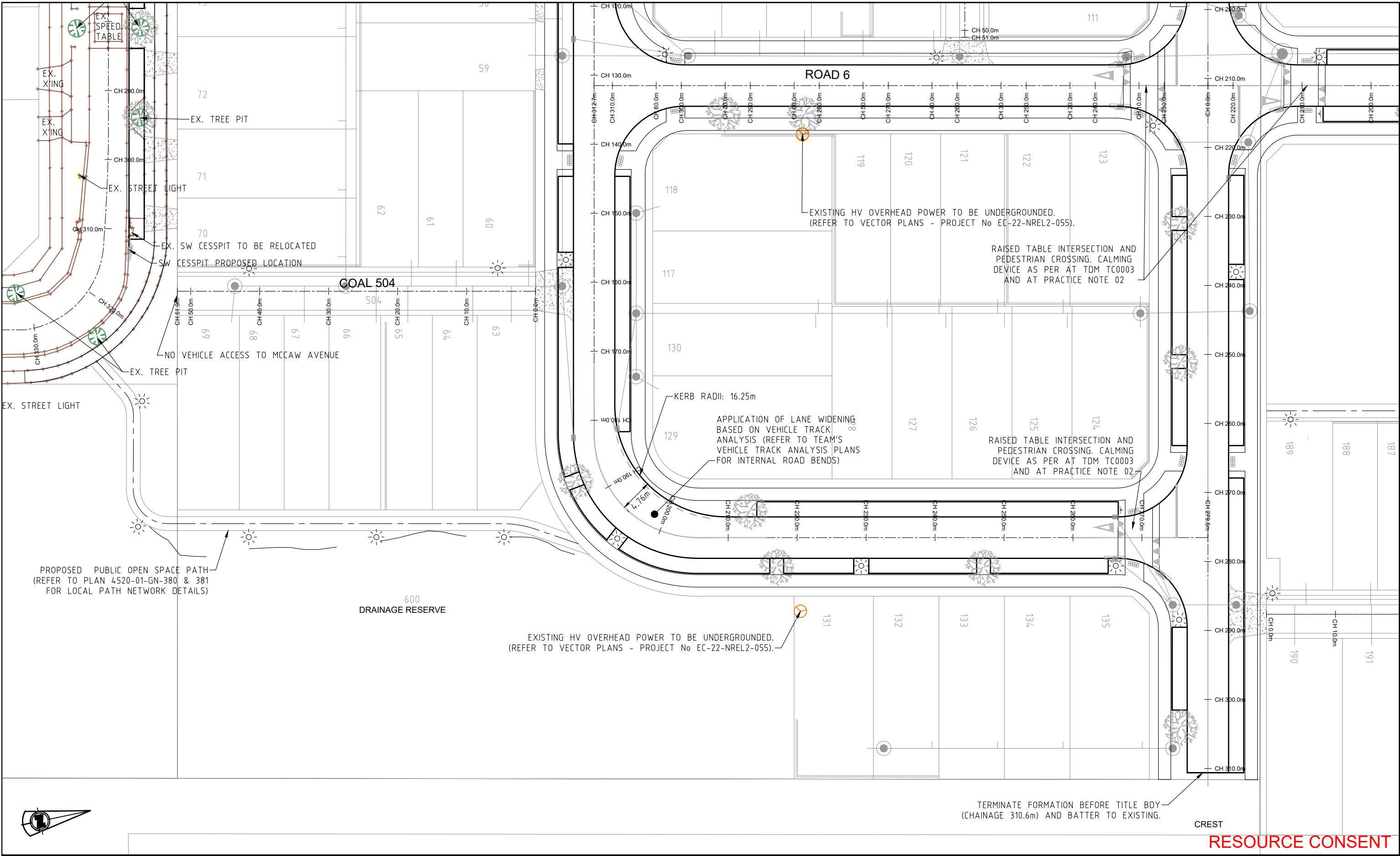
Job Title

**WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI**

Drawing Title

**ROADING
LOCATION PLAN**

	By	Date	Scale	Job No.	Rev
Surveyed:	MS		1:500@A3	Drawing No. 4520-01-RD-307	B
Designed:	KLP				
Drawn:	KLP	11/2022			
Approved:	BJ				



RESOURCE CONSENT

Rev	Description	By	Date
B	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022
A	ISSUED FOR TRAFFIC REPORT	BJ	08/12/2022

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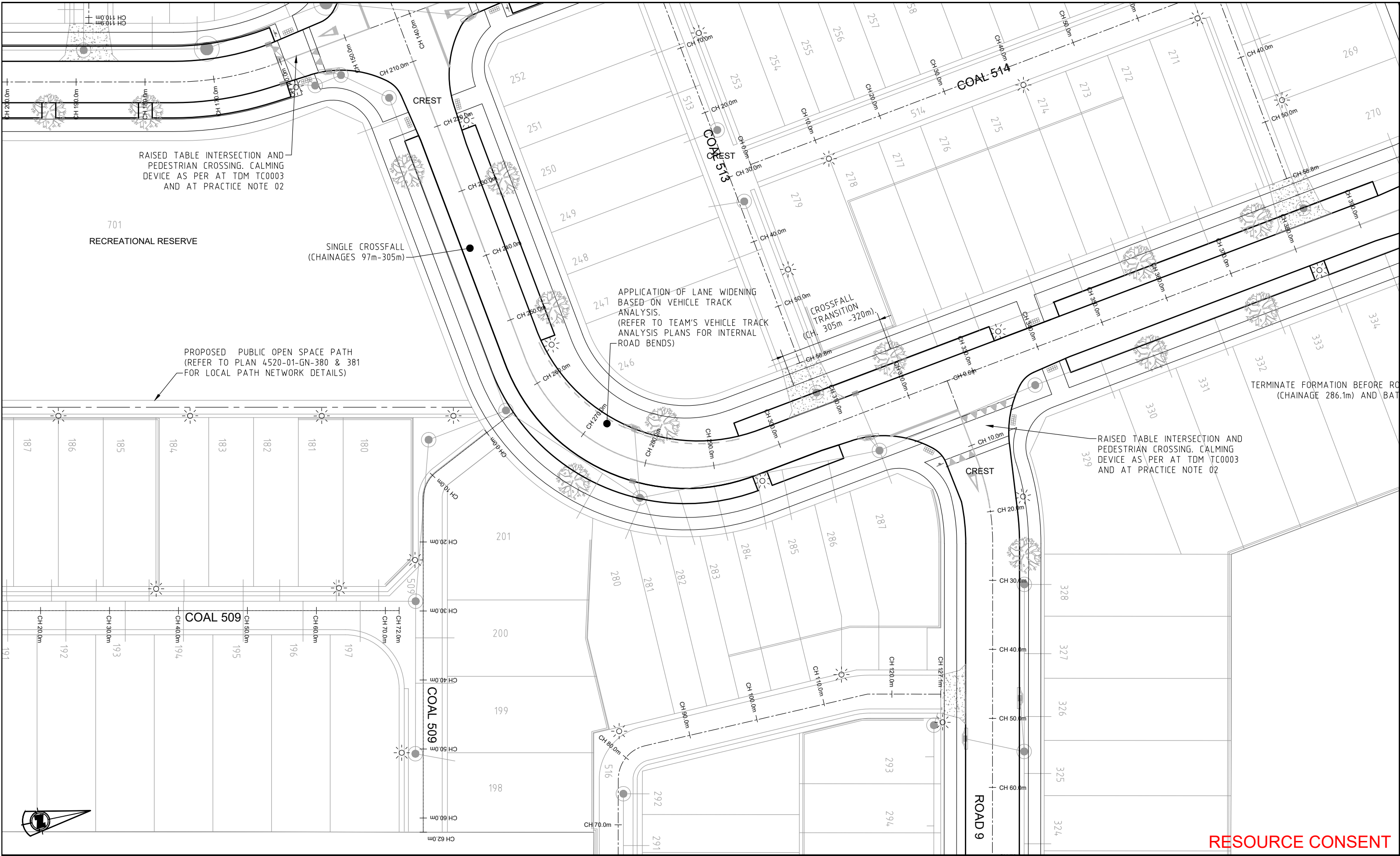
Job Title

**WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI**

Drawing Title

**ROADING
LOCATION PLAN**

By	Date	Scale	Job No.	Drawing No.	Rev
Surveyed: MS		1:500@A3	4520-01-RD-308		B
Designed: KLP	11/2022				
Drawn: KLP					
Approved: BJ					



RESOURCE CONSENT

Rev	Description	By	Date
B	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022
A	ISSUED FOR TRAFFIC REPORT	BJ	08/12/2022

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FACSIMILE: +64 9 918 6567
WEB: www.neilgroup.co.nz

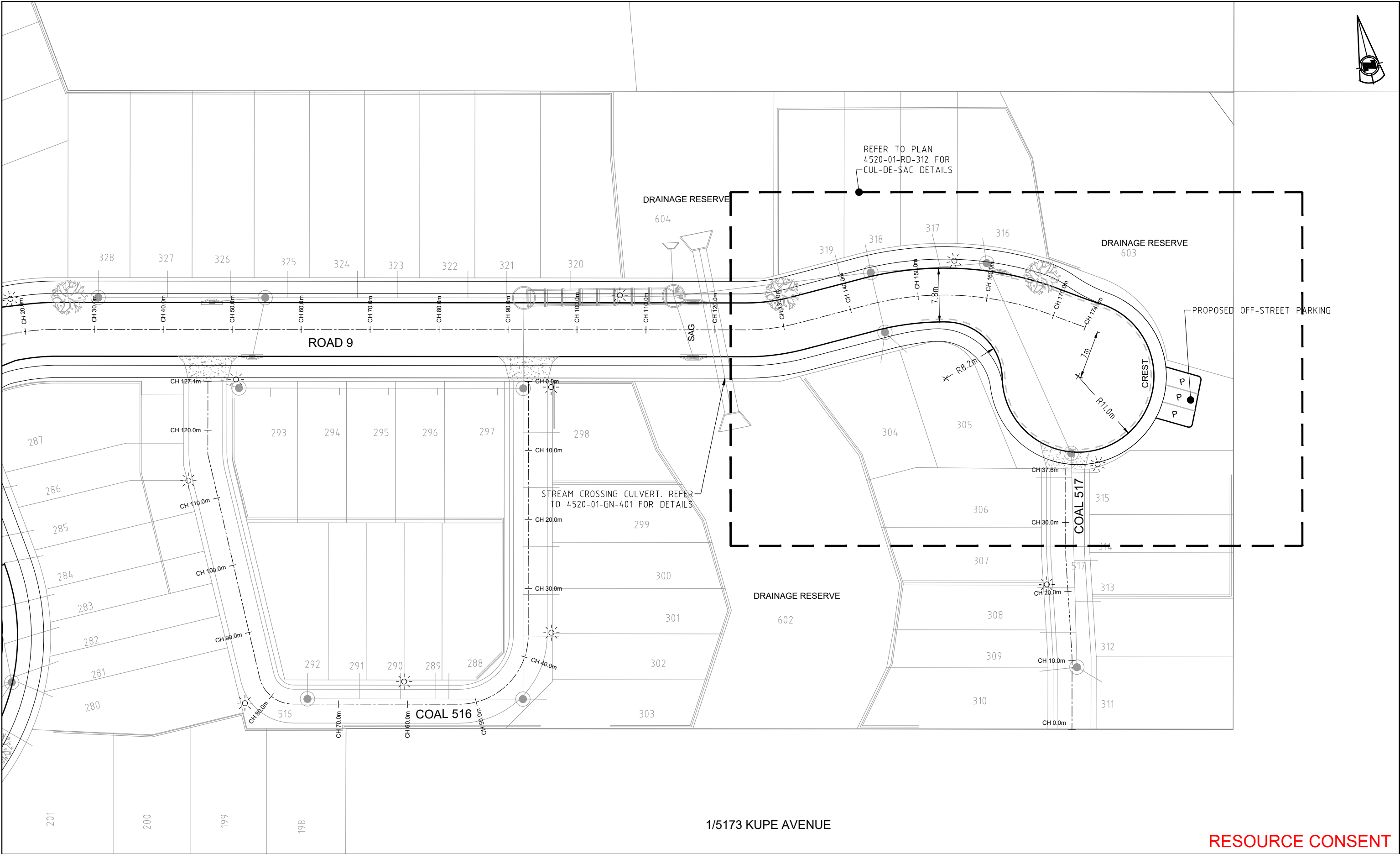
Job Title

WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI

Drawing Title

ROADING
LOCATION PLAN

By	Date	Scale	Job No.	Drawing No.	Rev
Surveyed: MS		1:500@A3	4520-01-RD-300	4520-01-RD-309	B
Designed: KLP	11/2022				
Drawn: KLP					
Approved: BJ					



RESOURCE CONSENT

Rev	Description	By	Date
B	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022
A	ISSUED FOR TRAFFIC REPORT	BJ	08/12/2022



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FACSIMILE: +64 9 918 6567
WEB: www.neilgroup.co.nz

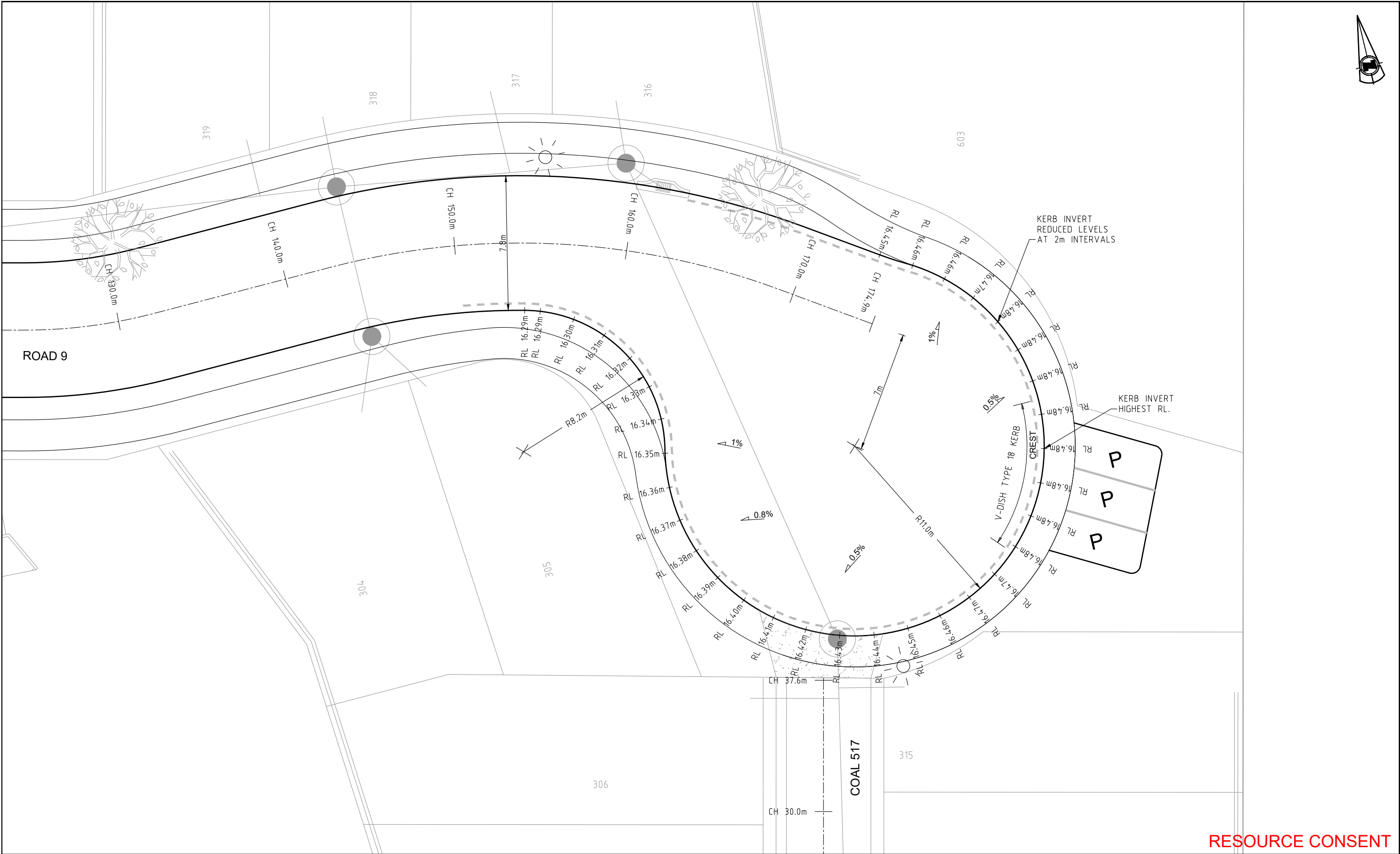
Job Title

WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI

Drawing Title

ROADING
LOCATION PLAN

By	Date	Scale	Job No.	Rev
Surveyed: MS		1:500@A3	Drawing No. 4520-01-RD-311	B
Designed: KLP	11/2022			
Drawn: KLP				
Approved: BJ				



RESOURCE CONSENT

Rev	Description	By	Date
B	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022
A	ISSUED FOR TRAFFIC REPORT	BJ	08/12/2022

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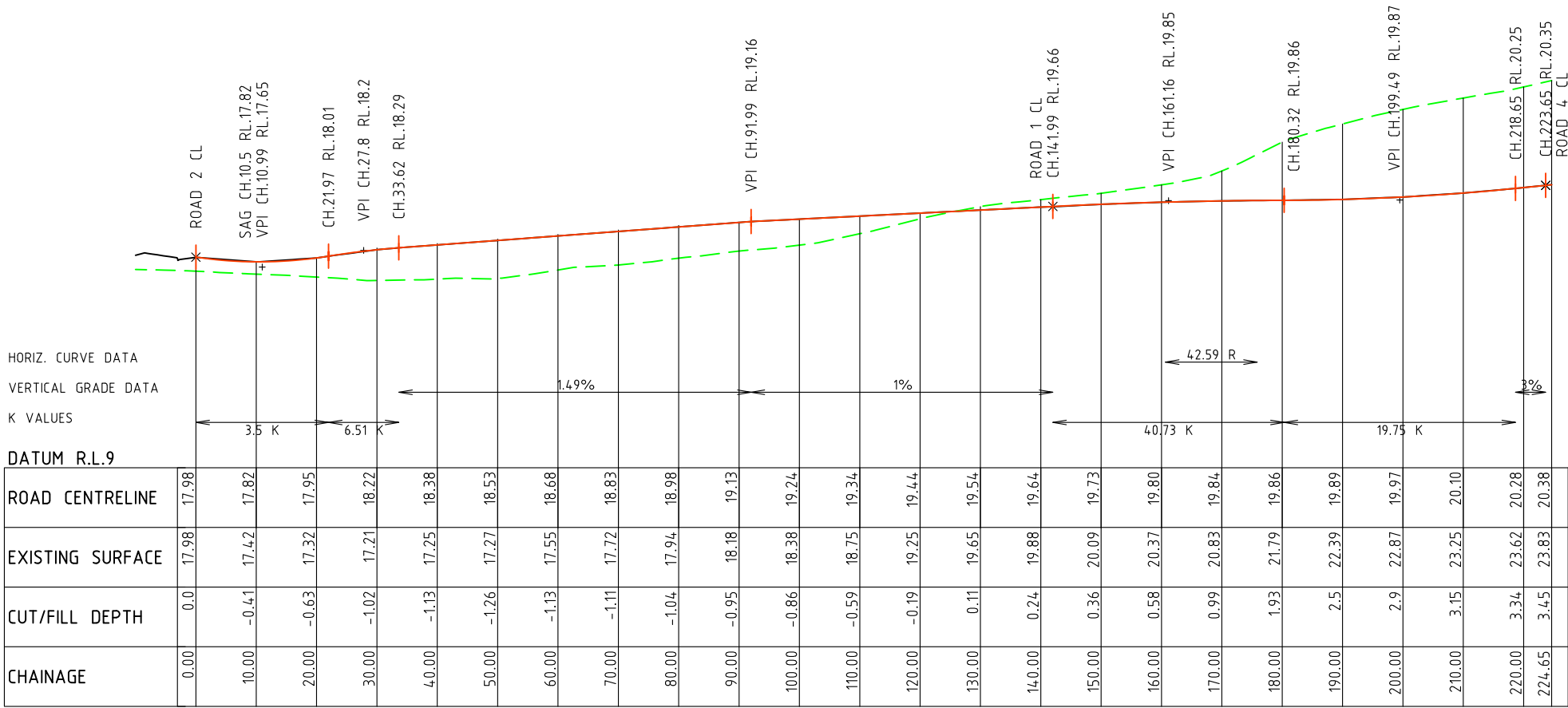
THE NEIL GROUP LIMITED
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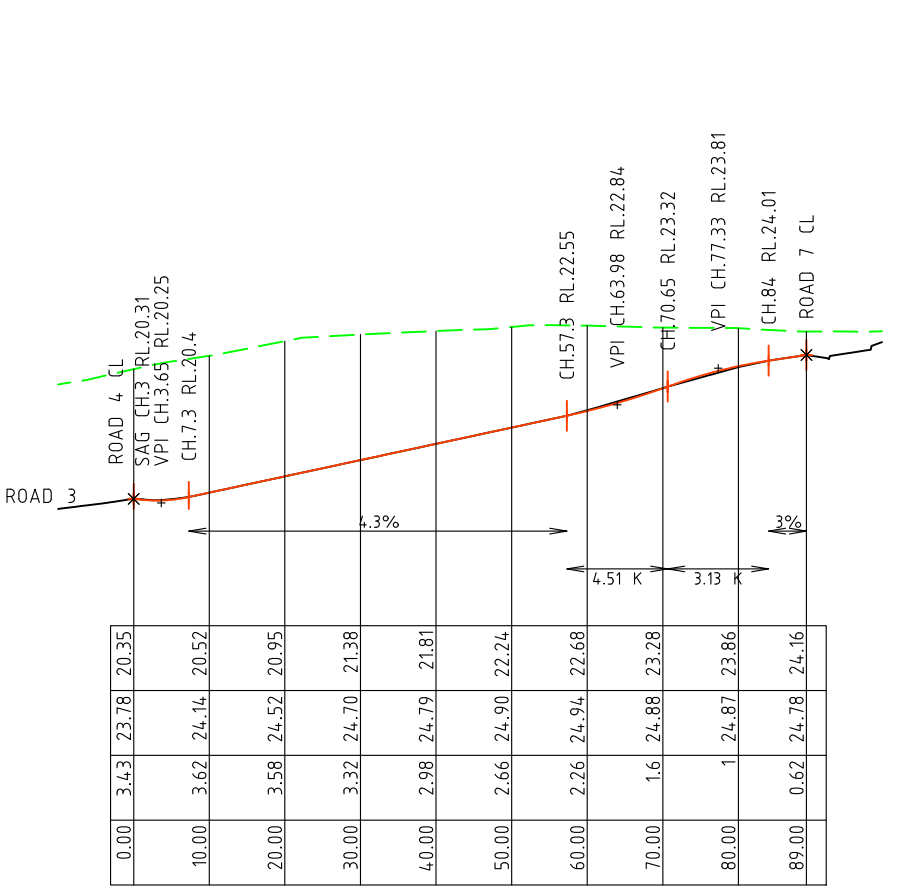
Job Title	WHENUAPAI GREEN 98-102 TOTARA ROAD WHENUAPAI
-----------	--

Drawing Title	ROADING CUL DE SAC DETAILS AND PARAMETERS
---------------	---

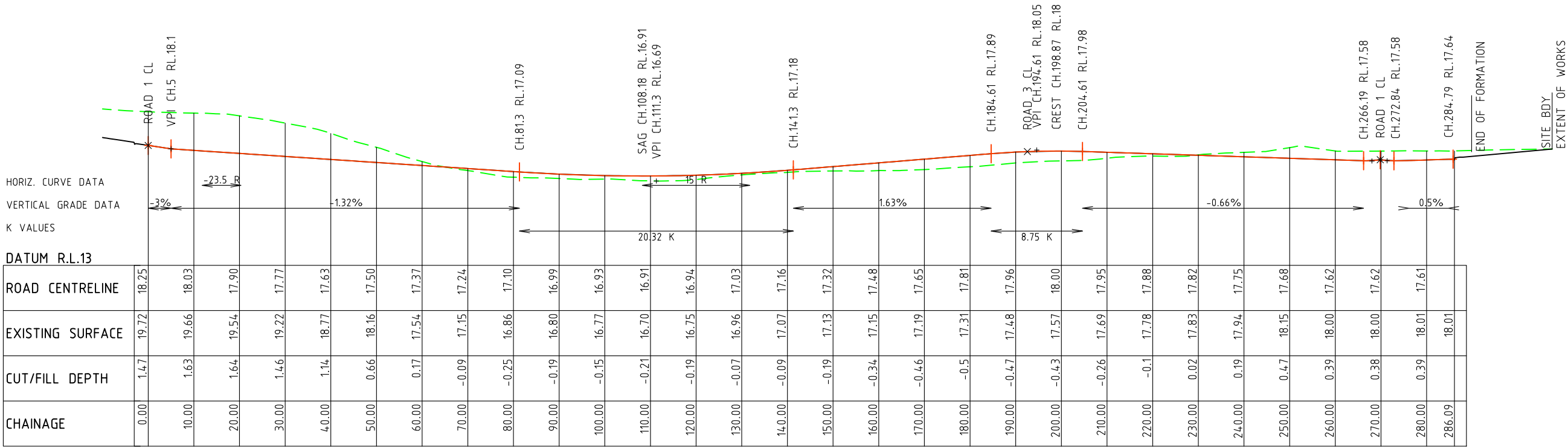
By	Date	Scale	Job No.	Rev
Surveyed: MS		1:200@A3	Drawing No.	
Designed: KLP	11/2022		4520-01-RD-312	B
Drawn: KLP				
Approved: BJ				



ROAD 3



ROAD 4



ROAD 2

RESOURCE CONSENT

Rev	Description	By	Date
B	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022
A	ISSUED FOR TRAFFIC REPORT	BJ	08/12/2022

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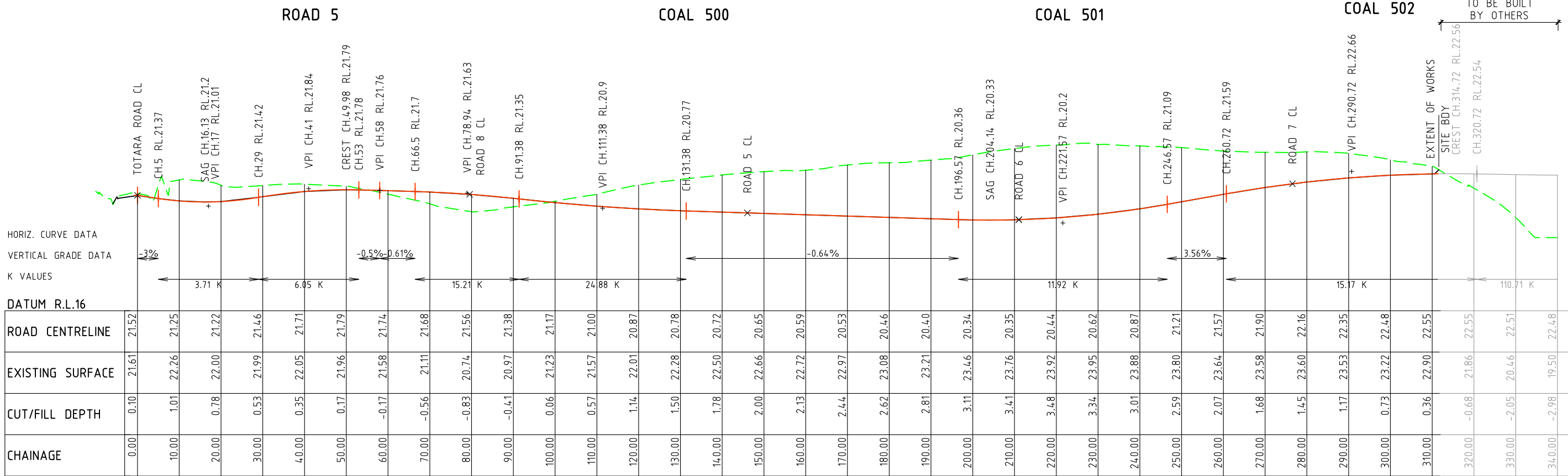
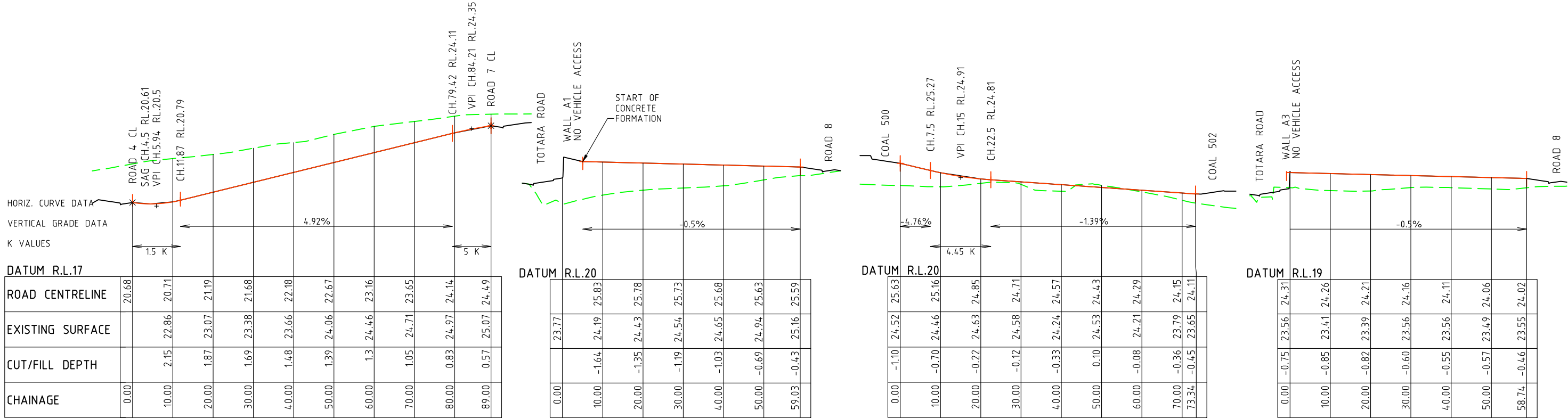
Job Title

**WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI**

Drawing Title

**ROADING
ROAD LONGSECTIONS**

By	Date	Scale	Job No.	Drawing No.	Rev
Surveyed: MS		1:1000@A3 5x VERT	4520-01-RD-314		B
Designed: KLP	11/2022				
Drawn: KLP					
Approved: BJ					



RESOURCE CONSENT

Rev	Description	By	Date
B	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022
A	ISSUED FOR TRAFFIC REPORT	BJ	08/12/2022



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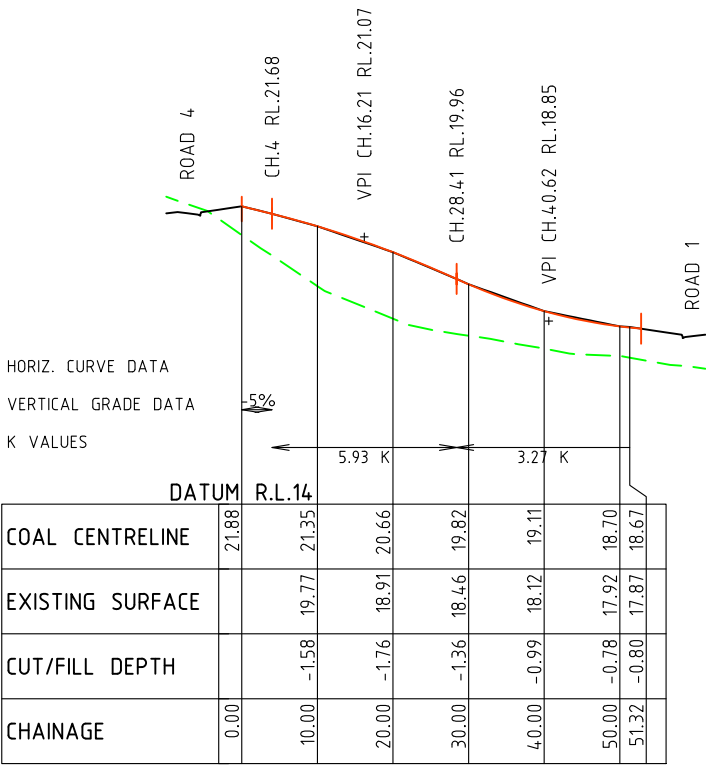
Job Title

WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI

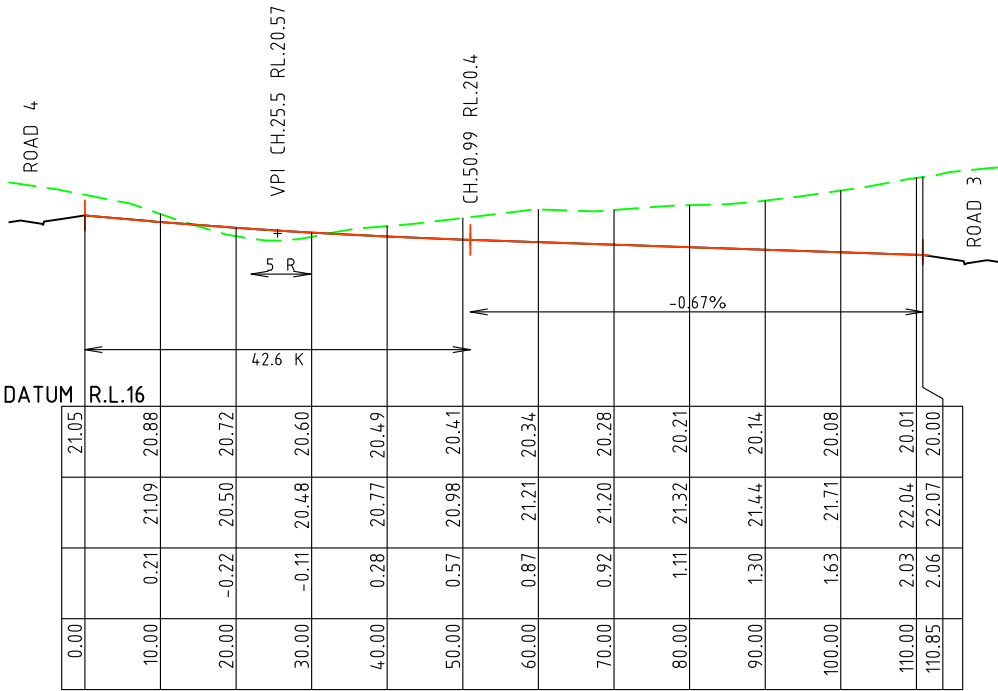
Drawing Title

ROADING
ROAD LONGSECTIONS

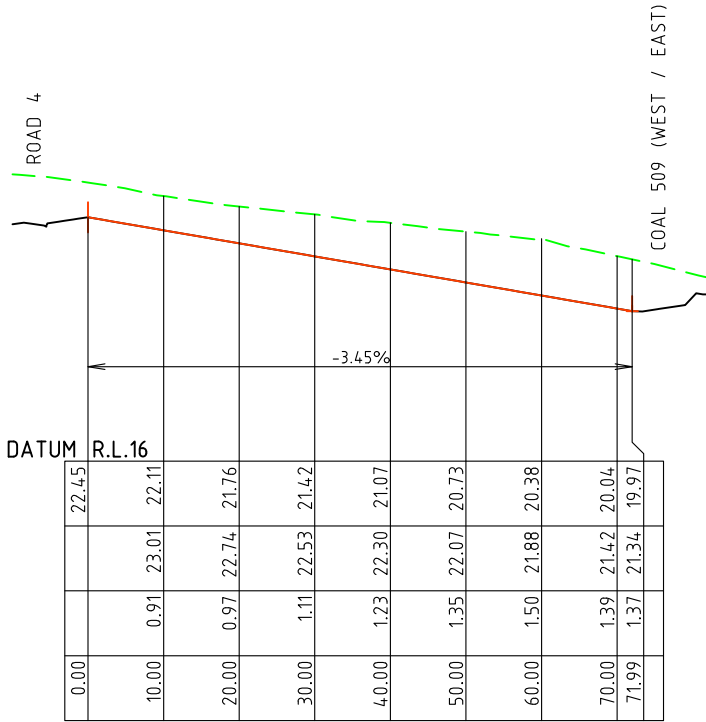
By	Date	Scale	Job No.	Drawing No.	Rev
Surveyed: MS		1:1000@A3 5x VERT	4520-01-RD-315		B
Designed: KLP	11/2022				
Drawn: KLP					
Approved: BJ					



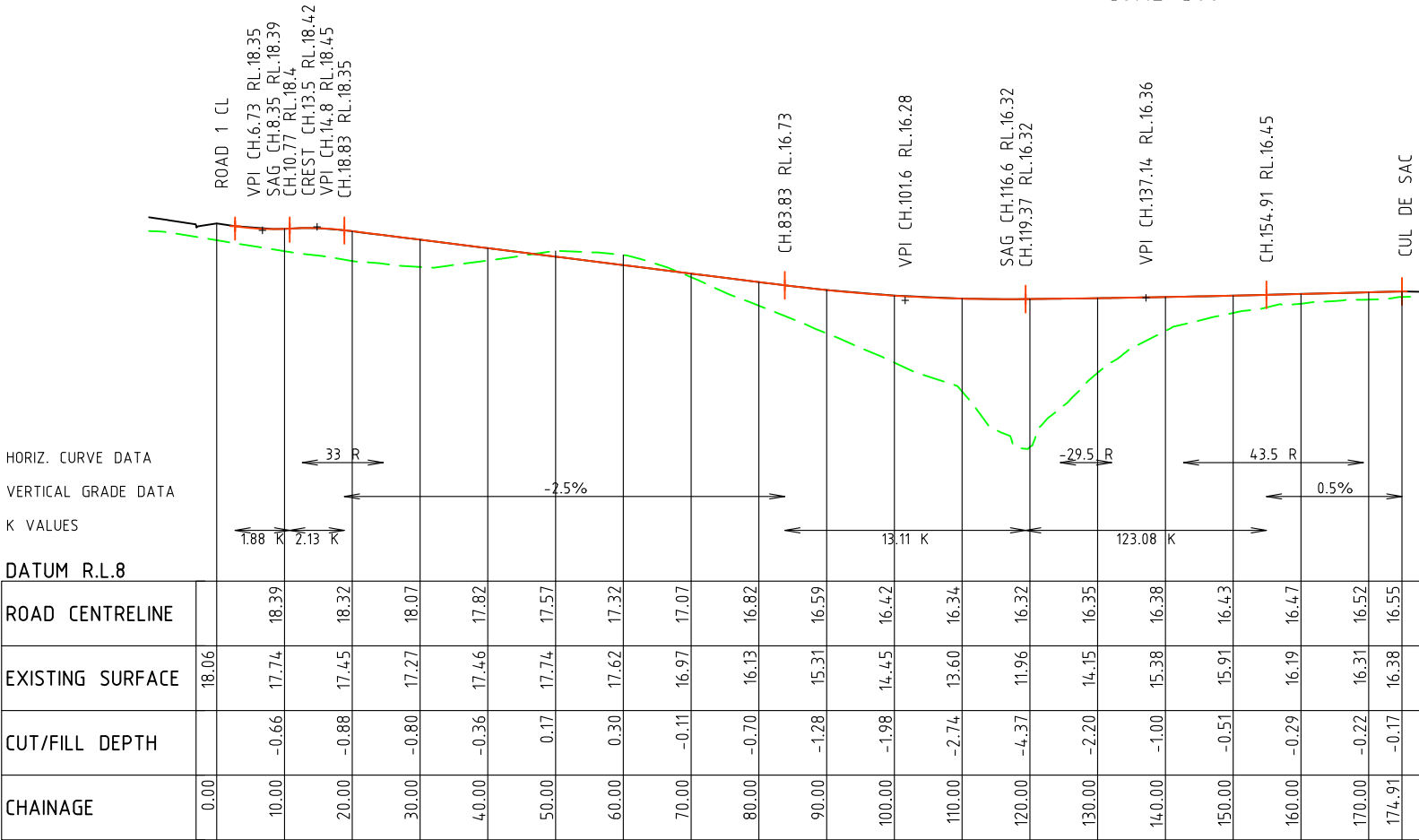
COAL 507



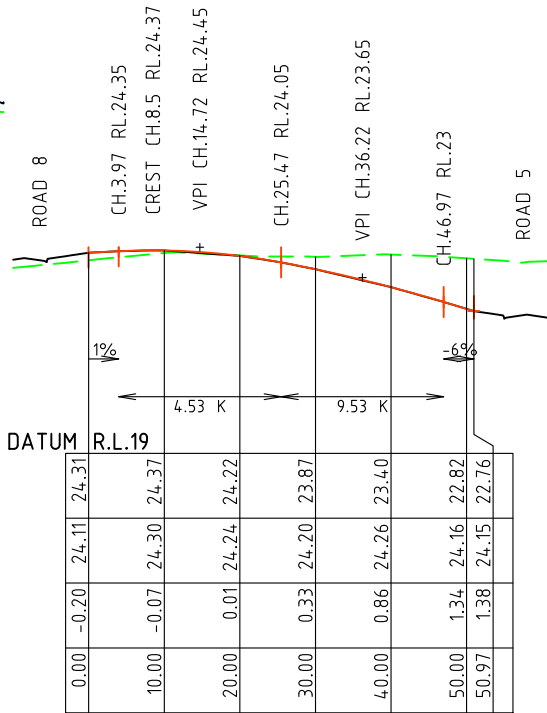
COAL 508



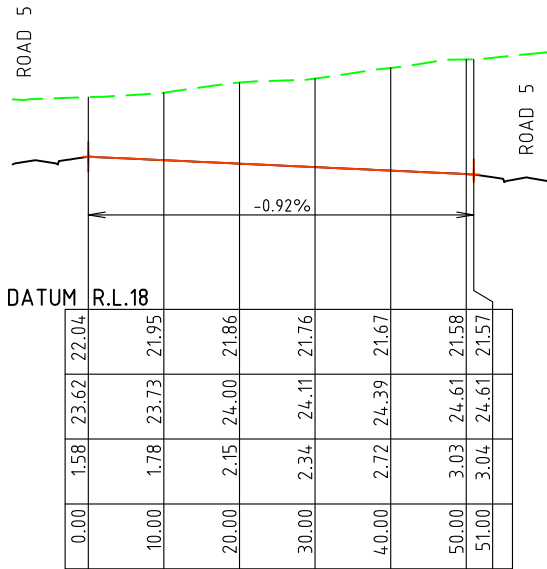
COAL 509 (SOUTH / NORTH)



ROAD 9



COAL 505



COAL 506

RESOURCE CONSENT

Rev	Description	By	Date
B	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022
A	ISSUED FOR TRAFFIC REPORT	BJ	08/12/2022

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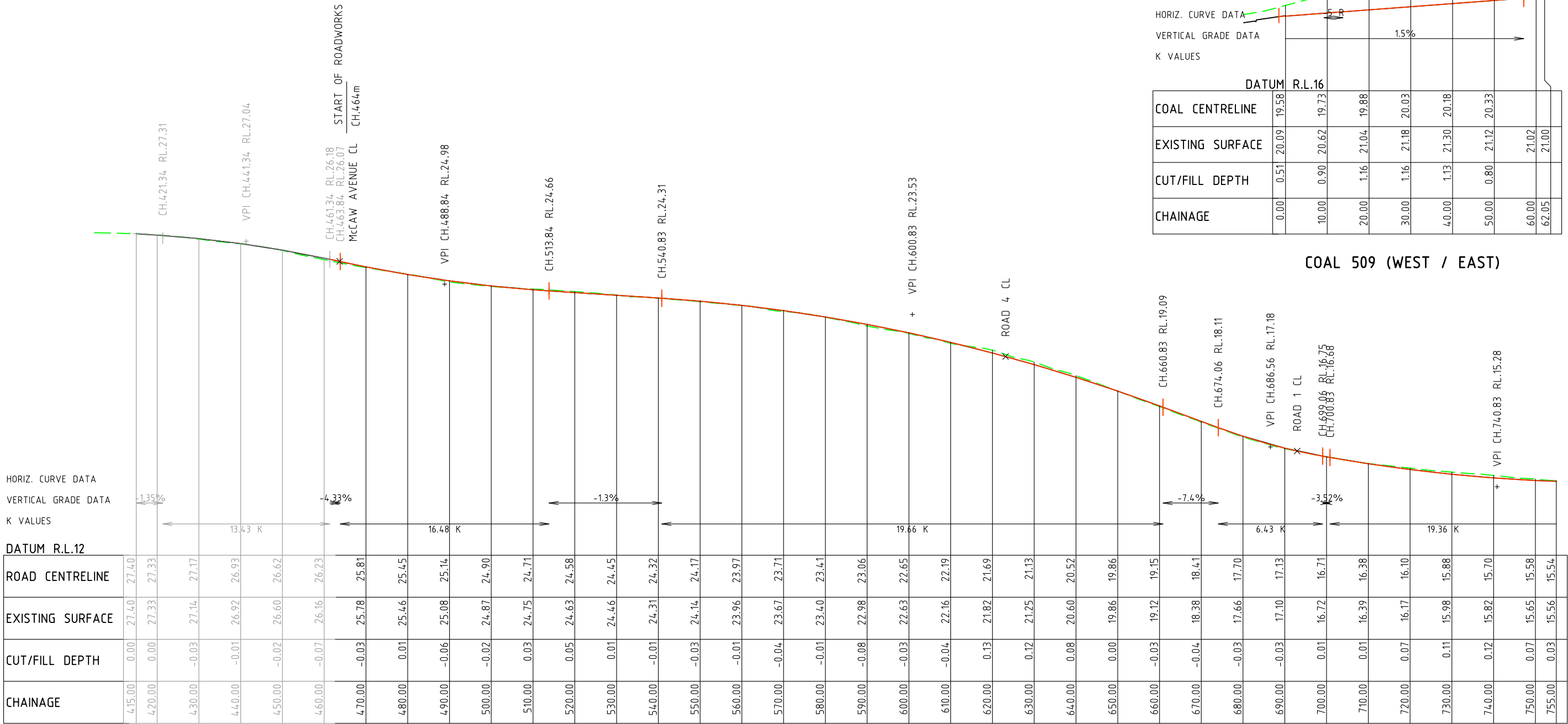
Job Title

**WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI**

Drawing Title

**ROADING
ROAD LONGSECTIONS**

	By	Date	Scale	Job No.	Drawing No.	Rev
Surveyed:	MS		1:1000@A3 5x VERT	4520-01-RD-317		B
Designed:	KLP	11/2022				
Drawn:	KLP					
Approved:	BJ					



TOTARA ROAD

RESOURCE CONSENT

Rev	Description	By	Date
B	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022
A	ISSUED FOR TRAFFIC REPORT	BJ	08/12/2022

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WEB: www.neilgroup.co.nz

Job Title	WHENUAPAI GREEN 98-102 TOTARA ROAD WHENUAPAI
-----------	--

Drawing Title	ROADING ROAD LONGSECTIONS
---------------	------------------------------

By	Date	Scale	Job No.	Drawing No.	Rev
MS		1:1000@A3 5x VERT	4520-01-RD-318		B
Designed: KLP	11/2022				
Drawn: KLP					
Approved: BJ					

HORIZ. CURVE DATA
VERTICAL GRADE DATA
K VALUES

DATUM R.L.6

CHAINAGE	CUT/FILL DEPTH	EXISTING SURFACE	ROAD CENTRELINE
1065.00	-0.02	16.87	16.89
1070.00	-0.03	16.84	16.87
1080.00	-0.03	16.76	16.79
1090.00	-0.03	16.63	16.67
1100.00	-0.01	16.48	16.49
1110.00	-0.04	16.24	16.27
1120.00	-0.02	15.99	16.01
1130.00	0.02	15.72	15.69
1140.00	-0.06	15.27	15.33
1150.00	0.03	14.99	14.96
1160.00	-0.00	14.58	14.58
1170.00	-0.02	14.19	14.21
1180.00	-0.02	13.81	13.83
1190.00	-0.01	13.44	13.45
1200.00	-0.04	13.04	13.08
1210.00	-0.06	12.64	12.70
1220.00	-0.06	12.27	12.33
1230.00	-0.06	11.89	11.95
1240.00	-0.05	11.52	11.58
1250.00	-0.03	11.16	11.20
1260.00	0.00	10.83	10.83
1270.00	0.02	10.55	10.53
1280.00	0.04	10.34	10.31
1290.00	0.01	10.17	10.16
1300.00	-0.01	10.08	10.09
1310.00	0.02	10.12	10.10
1320.00	-0.02	10.15	10.18
1330.00	-0.00	10.26	10.26
1331.11	-0.27	10.00	10.27

TOTARA ROAD

HORIZ. CURVE DATA
VERTICAL GRADE DATA
K VALUES

DATUM R.L.12

CHAINAGE	CUT/FILL DEPTH	EXISTING SURFACE	ROAD CENTRELINE
740.00	0.12	15.82	15.70
750.00	0.07	15.65	15.58
760.00	-0.02	15.49	15.51
770.00	-0.02	15.47	15.49
780.00	-0.03	15.49	15.52
790.00	-0.01	15.57	15.57
800.00	0.08	15.70	15.62
810.00	0.03	15.71	15.68
820.00	0.02	15.74	15.73
830.00	-0.05	15.73	15.78
840.00	-0.06	15.76	15.83
850.00	-0.09	15.79	15.88
860.00	-0.03	15.90	15.93
870.00	0.03	16.01	15.98
880.00	0.08	16.10	16.03
890.00	0.12	16.20	16.08
900.00	0.11	16.23	16.13
910.00	0.04	16.22	16.18
920.00	-0.02	16.21	16.23
930.00	-0.06	16.22	16.28
940.00	-0.02	16.31	16.33
950.00	0.03	16.41	16.38
960.00	0.04	16.47	16.43
970.00	-0.02	16.46	16.48
980.00	-0.05	16.47	16.53
990.00	-0.06	16.52	16.58
1000.00	-0.09	16.54	16.63
1010.00	-0.08	16.60	16.68
1020.00	0.00	16.73	16.73
1030.00	-0.00	16.78	16.78
1040.00	0.01	16.84	16.83
1050.00	-0.01	16.87	16.88
1060.00	-0.02	16.88	16.90
1070.00	-0.03	16.84	16.87
1080.00	-0.03	16.76	16.79

TOTARA ROAD

RESOURCE CONSENT

Rev	Description	By	Date
B	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022
A	ISSUED FOR TRAFFIC REPORT	BJ	08/12/2022



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FAX/EMAIL: +64 9 918 6567
WEB: www.neilgroup.co.nz

Job Title

WHENUAPAI GREEN

98–102 TOTARA ROAD

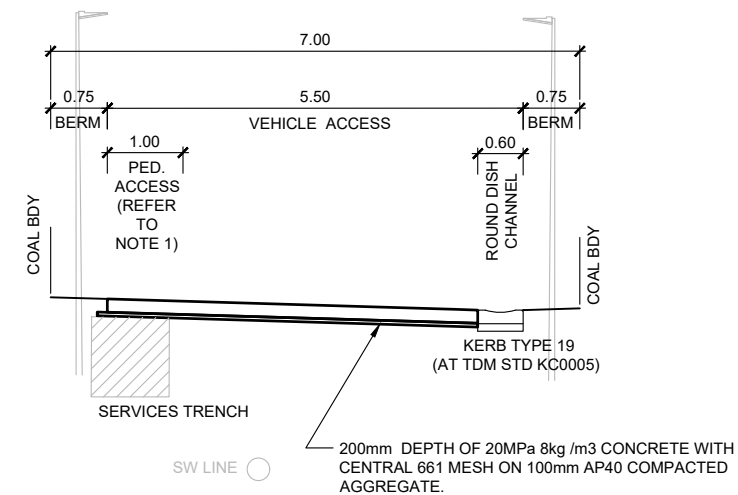
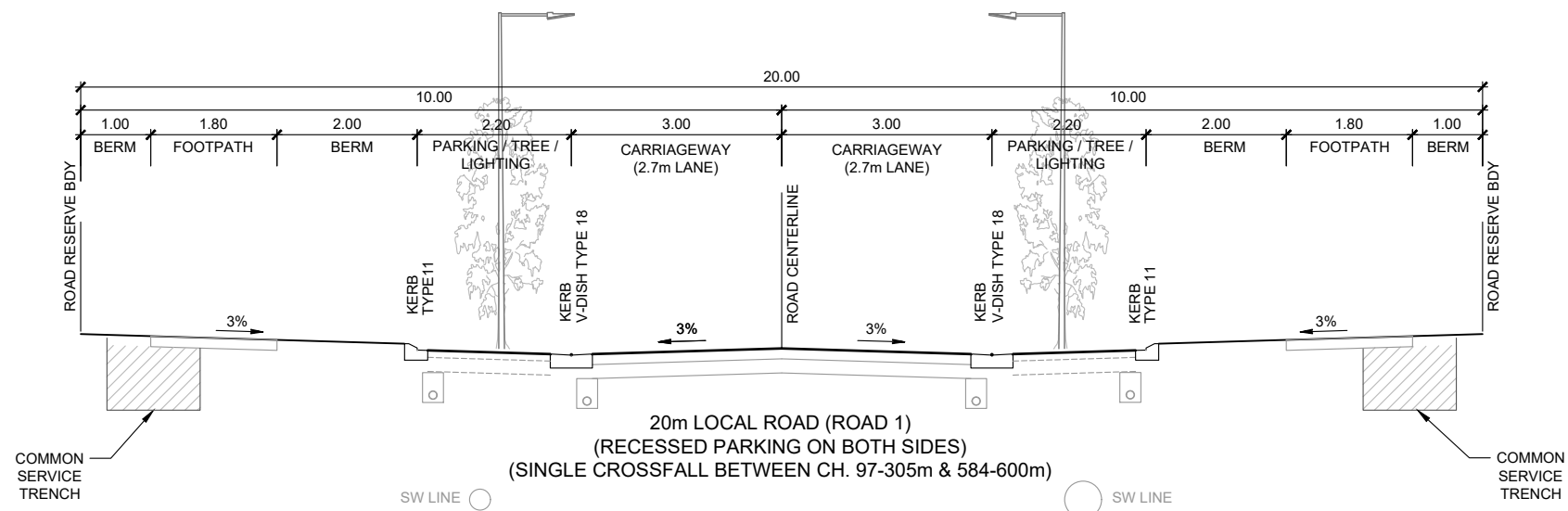
WHENUAPAI

Drawing Title

ROADING

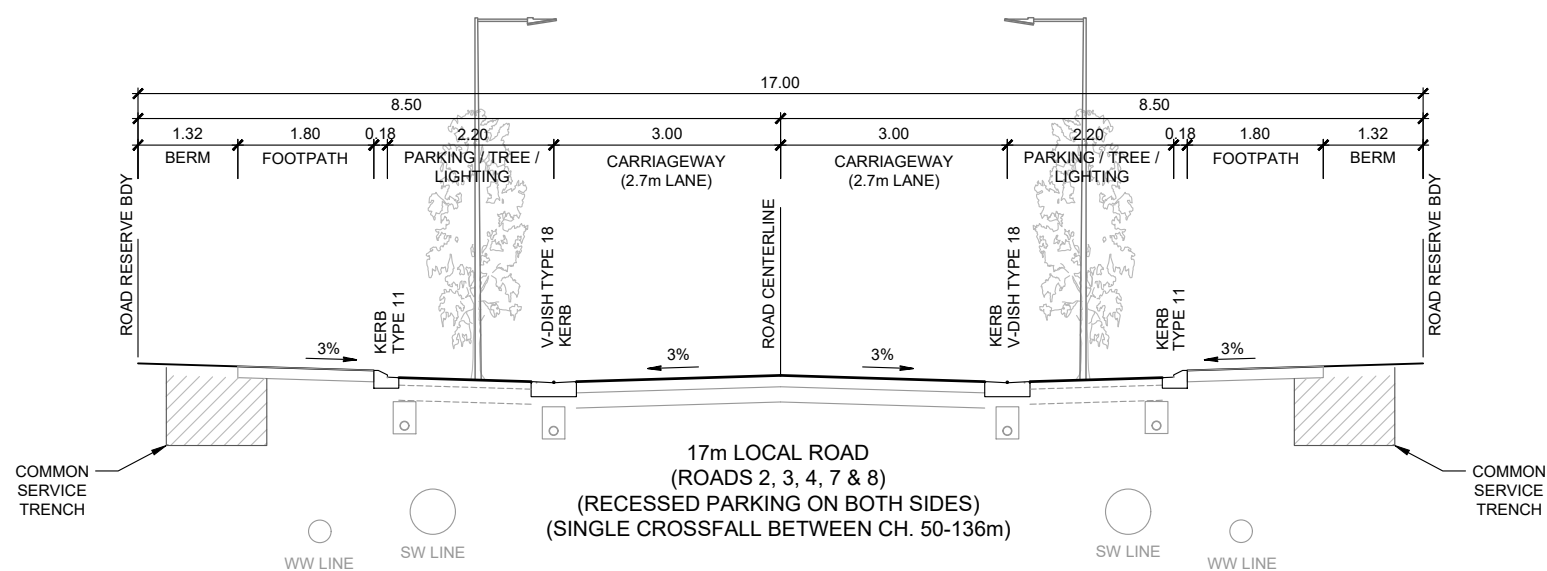
ROAD LONGSECTIONS

	By	Date	Scale	Job No.	Rev
Surveyed:	MS		1:1000@A3 5x VERT	Drawing No. 4520–01–RD–319	B
Designed:	KLP				
Drawn:	KLP	11/2022			
Approved:	BJ				



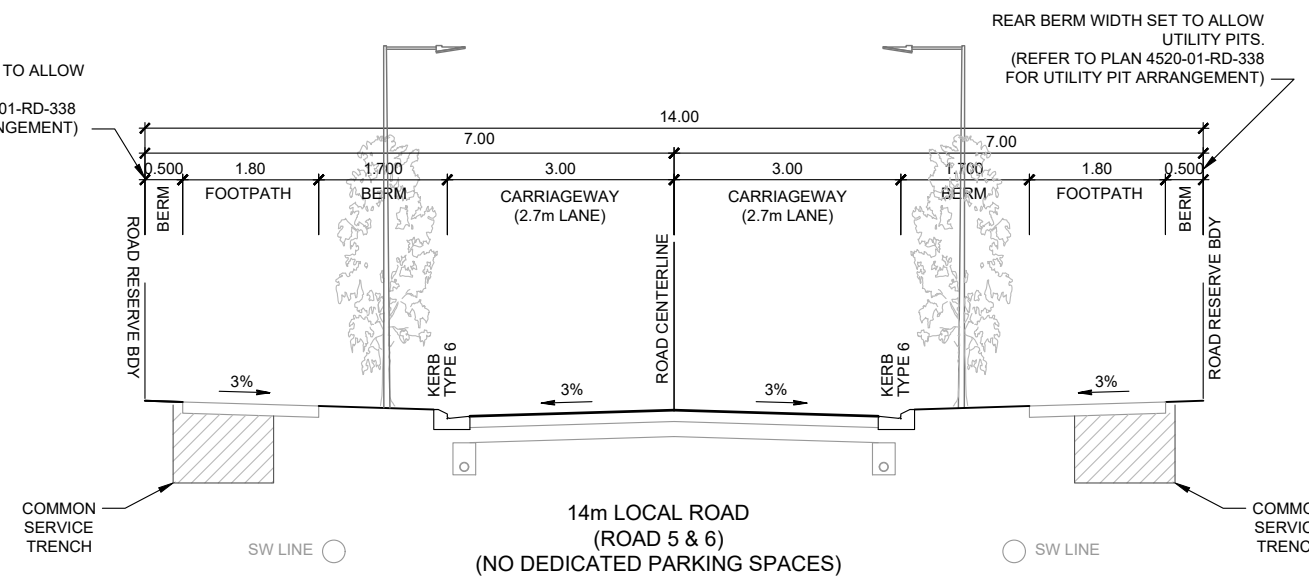
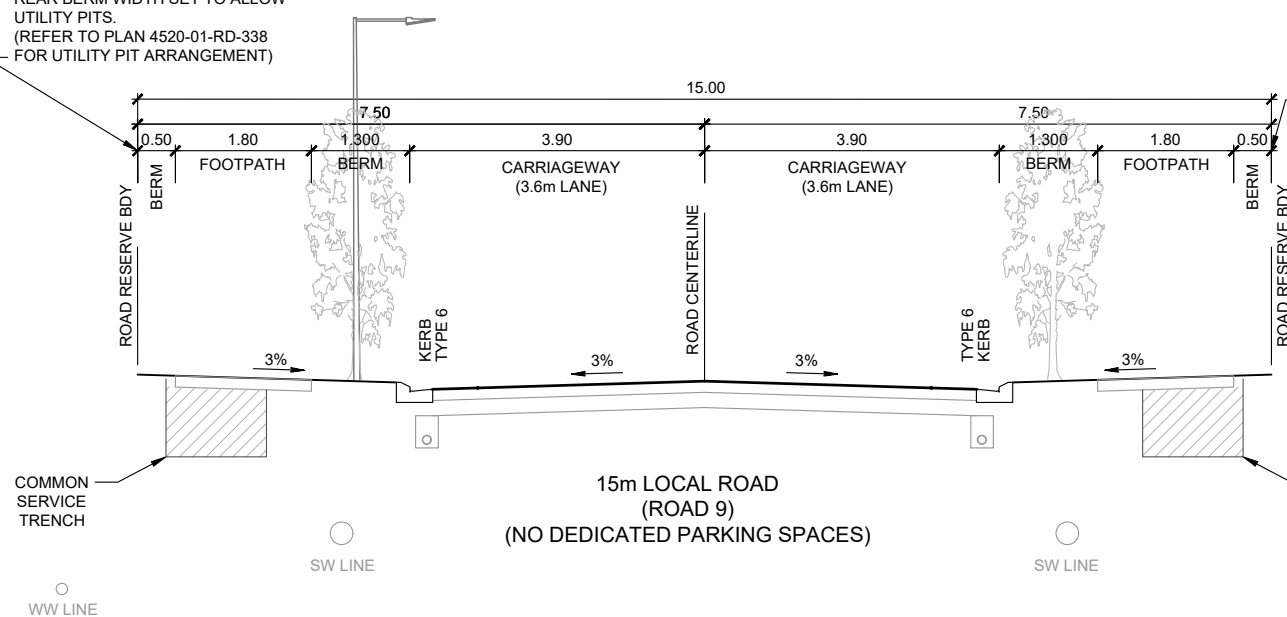
TYPICAL COAL CROSS SECTION
(SURFACE FINISHING DETAILS TBC)

NOTE 1: PEDESTRIAN ACCESS ONLY PROVIDED
FOR COALS 504, 509, 516 AND 517.
(REFER TO LANDSCAPE PLANS FOR DETAILS)



REAR BERM WIDTH SET TO ALLOW
UTILITY PITS.
(REFER TO PLAN 4520-01-RD-338
FOR UTILITY PIT ARRANGEMENT)

REAR BERM WIDTH SET TO ALLOW
UTILITY PITS.
(REFER TO PLAN 4520-01-RD-338
FOR UTILITY PIT ARRANGEMENT)



RESOURCE CONSENT

Rev	Description	By	Date
B	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022
A	ISSUED FOR TRAFFIC REPORT	BJ	08/12/2022

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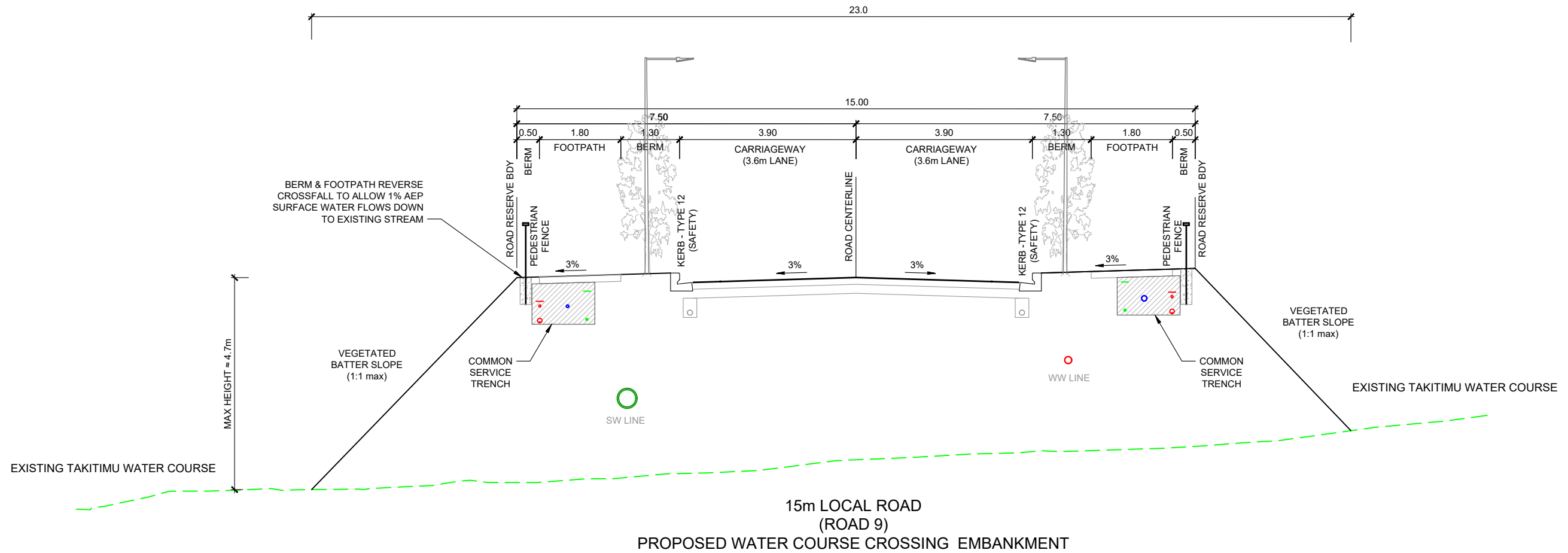
Job Title

**WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI**

Drawing Title

**ROADWORKS
TYPICAL CROSS SECTIONS**

By	Date	Scale	Job No.	Rev
Surveyed: MS		1:100@A3	Drawing No.	
Designed: KLP			4520-01-RD-330	B
Drawn: KLP	11/2022			
Approved: BJ				



RESOURCE CONSENT

Rev	Description	By	Date
B	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022
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WEB: www.neilgroup.co.nz

Job Title

**WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI**

Drawing Title

**ROADWORKS
TYPICAL CROSS SECTIONS
WATER COURSE CROSSING**

	By	Date	Scale	Job No.	Rev
Surveyed:	MS		1:100@A3	Drawing No. 4520-01-RD-331	B
Designed:	KLP				
Drawn:	KLP	11/2022			
Approved:	BJ				

TOTARA ROAD EXISTING FORMATION
(20.12m COLLECTOR) [80km/h]
(CROSS FALL & BATTER SLOPE VARIES)

24m COLLECTOR (TOTARA ROAD) [50km/h]
(PROPOSED INTERIM DESIGN)
(WHEN ADJACENT TO RESIDENTIAL LOTS)
(THIS DEVELOPMENT)

24m COLLECTOR (TOTARA ROAD) [50km/h]
(ULTIMATE DESIGN)
(WHEN ADJACENT TO RESIDENTIAL LOTS)
(COMPLETED BY OTHERS)

RESOURCE CONSENT

Rev	Description	By	Date
B	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022
A	ISSUED FOR TRAFFIC REPORT	BJ	08/12/2022



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FAX/EMAIL: +64 9 918 6567
WEB: www.neilgroup.co.nz

Job Title	98-102 TOTARA ROAD WHENUAPAI GREEN WHENUAPAI
-----------	--

Drawing Title	ROADWORKS TOTARA ROAD WIDENING TYPICAL CROSS SECTION
---------------	--

By	Date	Scale	Job No.	Drawing No.	Rev
Surveyed: MS		1:100@A3	4520-01-RD-332	4520-01-RD-332	B
Designed: KLP					
Drawn: KLP	11/2022				
Approved: BJ					

TOTARA ROAD EXISTING FORMATION
(20.12m COLLECTOR) [80km/h]
(CROSS FALL & BATTER SLOPE VARIES)

24m COLLECTOR (TOTARA ROAD) [50km/h]
(ULTIMATE DESIGN)
(RECESSED PARKING ON ONE SIDE)
(WHEN ADJACENT TO SCHOOL / RESERVE)
(THIS DEVELOPMENT)

24m COLLECTOR (TOTARA ROAD) [50km/h]
(ULTIMATE DESIGN)
(RECESSED PARKING ON BOTH SIDES)
(WHEN ADJACENT TO SCHOOL / RESERVE)
(COMPLETED BY OTHERS)

RESOURCE CONSENT

Rev	Description	By	Date
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A	ISSUED FOR TRAFFIC REPORT	BJ	08/12/2022



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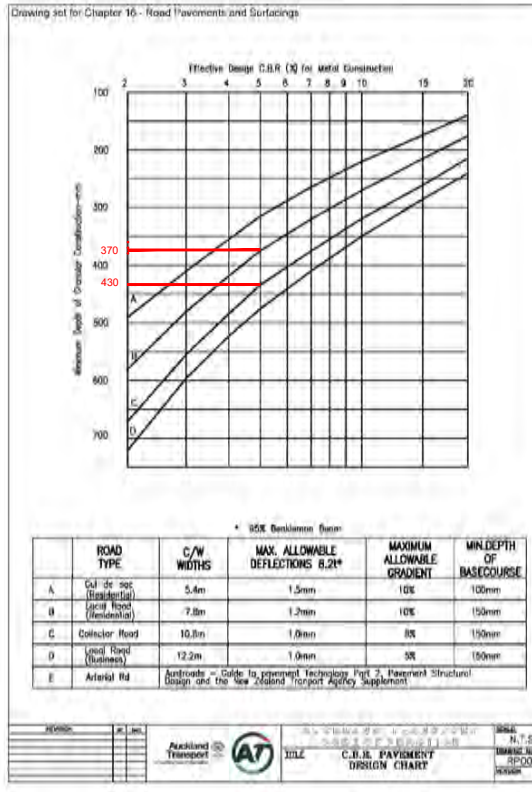
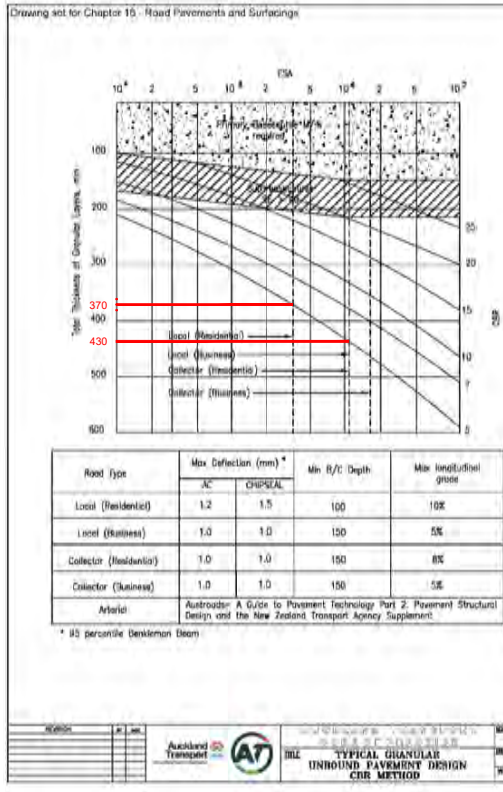
Job Title

98-102 TOTARA ROAD
WHENUAPAI GREEN
WHENUAPAI

Drawing Title

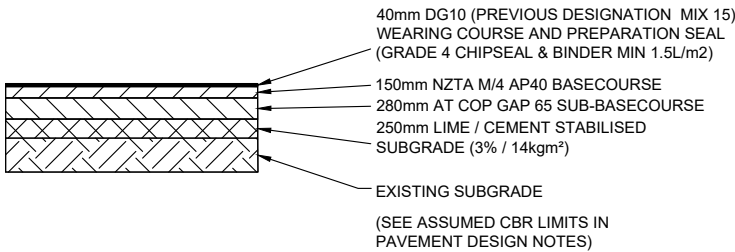
ROADWORKS
TOTARA ROAD WIDENING
TYPICAL CROSS SECTION

	By	Date	Scale	Job No.	Rev
Surveyed:	MS		1:100@A3	Drawing No. 4520-01-RD-333	B
Designed:	KLP				
Drawn:	KLP	11/2022			
Approved:	BJ				



TOTARA ROAD PAVEMENT DESIGN

TOTAL GRANULAR PAVEMENT = 430m.

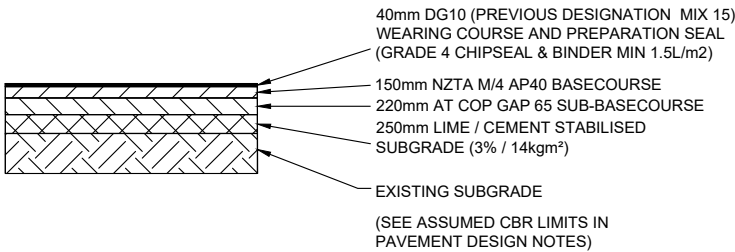


PAVEMENT DESIGN NOTES:

- TO BE REVIEWED AND SIGNED OFF ONSITE WITH AUCKLAND TRANSPORT SITE ENGINEERING AND GEOTECHNICAL ENGINEER TO TAKE INTO ACCOUNT UNCOVERED SITE GROUND CONDITIONS.
- ALL FINDINGS TO BE RECORDED IN ACCORDANCE WITH AUCKLAND COUNCIL QUALITY ASSURANCE MANUAL.
- PAVEMENT STRUCTURE BASED ON AT COP TABLE 52 :
 - TOTARA ROAD BEING COLLECTOR WITH BUSES WITH TARGET BENKELMAN BEAM DEFLECTION AND CURVATURE FUNCTION VALUES OF 1.0mm AND 0.15mm ON TOP OF BASE LAYER , (FROM CERTIFIED BY IANZ ACCREDITED LABORATORY).
- DESIGN ASSUMES A PRE STABILISED SUBGRADE OF CBR 3.5%. WHERE NOT ACHIEVED, THE SUBGRADE SHALL BE REPLACED WITH ENGINEERING FILL OF A MINIMUM CBR 5%, TO A DEPTH WHERE CBR OF 3.5% IS ACHIEVED. TO BE DETERMINED ONSITE BY SITE AND GEOTECHNICAL ENGINEER.
- SUBGRADE STABILISATION METHOD (CEMENT AND/OR LIME) TO BE AGREED ONSITE WITH ENGINEER TO TAKE INTO ACCOUNT UNCOVERED SITE GROUND CONDITIONS.

ROADS 1-9 PAVEMENT DESIGN

TOTAL GRANULAR PAVEMENT = 370m.



PAVEMENT DESIGN NOTES:

- TO BE REVIEWED AND SIGNED OFF ONSITE WITH AUCKLAND TRANSPORT SITE ENGINEERING AND GEOTECHNICAL ENGINEER TO TAKE INTO ACCOUNT UNCOVERED SITE GROUND CONDITIONS.
- ALL FINDINGS TO BE RECORDED IN ACCORDANCE WITH AUCKLAND COUNCIL QUALITY ASSURANCE MANUAL.
- PAVEMENT STRUCTURE BASED ON AT COP TABLE 52 :
 - ALL LOCAL ROADS BEING (RESIDENTIAL WITHOUT BUSES), WITH TARGET BENKELMAN BEAM DEFLECTION AND CURVATURE FUNCTION VALUES OF 1.4mm AND 0.18mm ON TOP OF BASE LAYER, (FROM CERTIFIED BY IANZ ACCREDITED LABORATORY).
- DESIGN ASSUMES A PRE STABILISED SUBGRADE OF CBR 3.5%. WHERE NOT ACHIEVED, THE SUBGRADE SHALL BE REPLACED WITH ENGINEERING FILL OF A MINIMUM CBR 5%, TO A DEPTH WHERE CBR OF 3.5% IS ACHIEVED. TO BE DETERMINED ONSITE BY SITE AND GEOTECHNICAL ENGINEER.
- SUBGRADE STABILISATION METHOD (CEMENT AND/OR LIME) TO BE AGREED ONSITE WITH ENGINEER TO TAKE INTO ACCOUNT UNCOVERED SITE GROUND CONDITIONS.

CONSTRUCTION NOTES:

THE CONSTRUCTION DRAWINGS AND CONTRACTORS SHOULD REFLECT THE BELOW NOTES.

- EARTHWORKS TO BE COMPLETED AS PER NZTA F/1.
- SUBSOIL CONSTRUCTION SHALL BE CARRIED OUT AS PER AT TDM AND NZTA F/2 ON BOTH SIDES OF THE CARRIAGEWAY.
- SUBGRADE SCALA PENETROMETER TESTING IS TO BE CARRIED OUT ON THE EXISTING SUBGRADE (PRIOR TO STABILISATION) AT 10M INTERVALS (STAGGERED BETWEEN WHEEL PATHS) IN EACH LANE TO CONFIRM THE UNDERLYING SUBGRADE IS CBR ≥ 3.5%. WHERE SHALLOW AREAS OF SUBGRADE STRENGTH LESS THAN 3.5% ARE ENCOUNTERED THE SUBGRADE SHALL BE REPLACED WITH ENGINEERED FILL OF MINIMUM CBR 5% TO A DEPTH WHERE THE DESIGN SUBGRADE STRENGTH IS ACHIEVED.
- FOR DEEP AREAS OF CBR < 3.5% BUT ≥ 2%, THE GRANULAR UNDERCUT CONTINGENCY SHALL BE COMPLETED FOLLOWING SUBGRADE STABILISATION IF SCALA PENETROMETER RESULTS INDICATE A LOWER SUBGRADE OF LESS THAN 3.5%. BENKELMAN BEAMS MAY BE USED AS AN ALTERNATIVE AT THE CONTRACTOR'S DISCRETION WITH A BENKELMAN BEAM TARGET OF 2.2MM ON THE STABILISED SUBGRADE.
- IF SIGNIFICANT AREAS OF CBR 3.5% ARE IDENTIFIED DURING EARTHWORKS THE PAVEMENT DESIGN ENGINEER SHALL BE CONSULTED.
- IF DEEP AREAS OF CBR LESS THAN CBR 2% ARE ENCOUNTERED THAT CANNOT BE REMEDIED THROUGH EARTHWORKS THE PAVEMENT DESIGN ENGINEER SHALL BE CONSULTED.
- GRANULAR MATERIALS ARE TO BE CONSTRUCTED AS PER NZTA B/2.
- ALL ASPHALT SHALL BE CONSTRUCTED IN ACCORDANCE WITH NZTA M/10.
- THE MAXIMUM 90TH PERCENTILE CENTRAL DEFLECTION AND CURVATURE ON TOP OF THE BASE COURSE IS 1.4mm AND 0.18mm, RESPECTIVELY, AS REQUIRED BY AT.
- CONSTRUCTION DURING WINTER MONTHS IS TO BE AVOIDED.
- THE SUBGRADE SHALL BE GRADED SO THAT NO SUBSURFACE PONDING OF WATER IS POSSIBLE.
- SUBSOIL DEPTH SHALL BE A MINIMUM OF 1.1m WHERE THE GRANULAR CONTINGENCY UNDERCUT IS IMPLEMENTED.
- THE SUBGRADE REACTIVITY SHALL BE VALIDATED THROUGH LABORATORY TESTING ON REPRESENTATIVE SUBGRADE SAMPLES FOR ALL SUBGRADE MATERIALS WHICH ARE BEING STABILISED. THE MINIMUM REQUIRED SOAKED CBR AFTER ADDITIVES SHALL BE 15%.
- SUBGRADE STABILISATION SHALL BE CARRIED OUT IN ACCORDANCE WITH NZTA B/09 PILOT SPECIFICATION.
- THE GRADE 4 CHIPSEAL SHALL BE DESIGNED IN ACCORDANCE WITH THE GUIDE "CHIPSEALING IN NEW ZEALAND". THE GRADE 4 CHIPSEAL SHALL BE REPLACED WITH A TWO-COAT GRADE 3/5 SEAL IF THE SEAL IS TO BE TRAFFICKED PRIOR TO ASPHALT CONSTRUCTION.

RESOURCE CONSENT

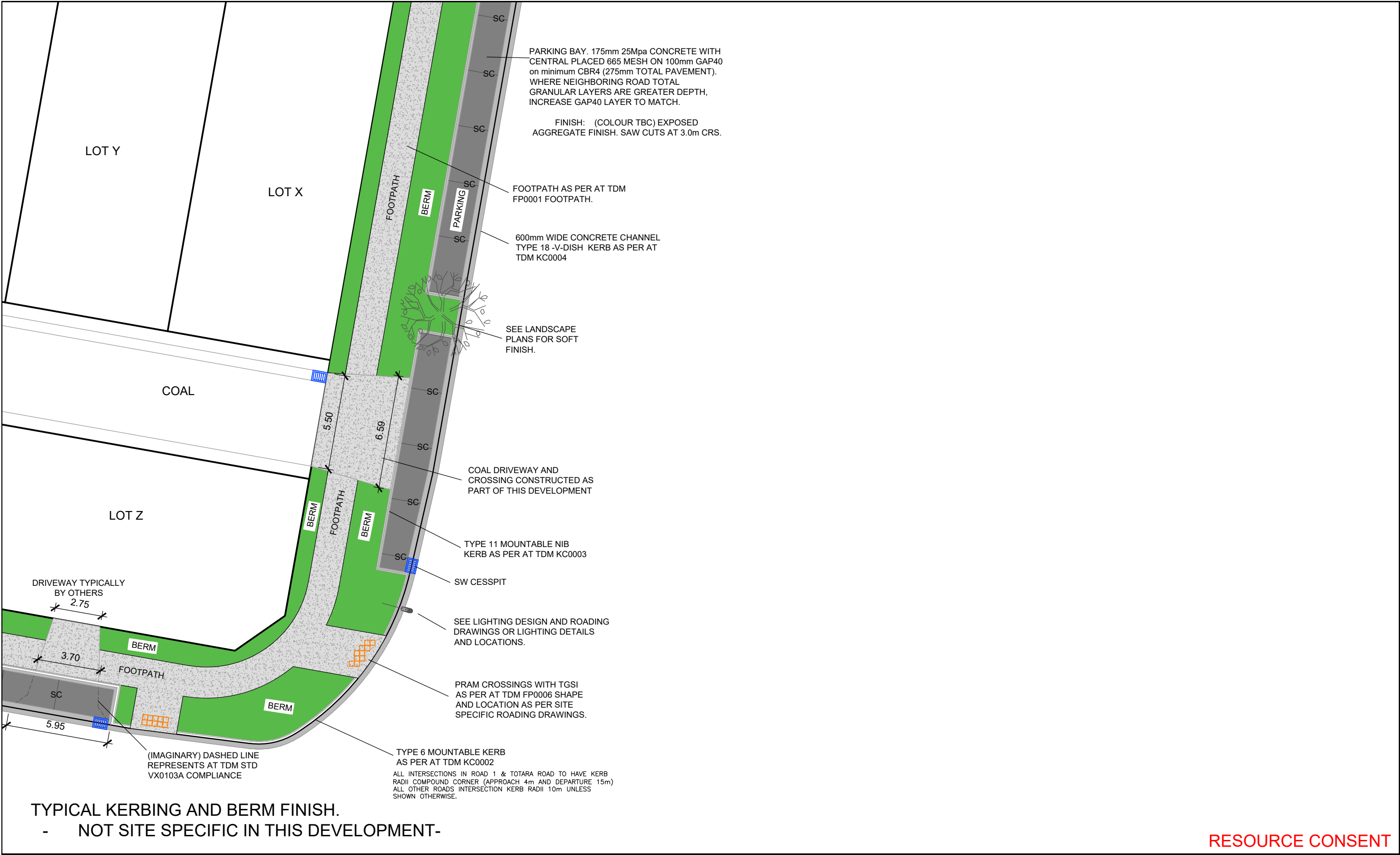
Rev	Description	By	Date
B	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022
A	ISSUED FOR TRAFFIC REPORT	BJ	08/12/2022

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GRAFTON	
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FACSIMILE: +64 9 918 6567	
WEB: www.neilgroup.co.nz	

Job Title	98-102 TOTARA ROAD WHENUAPAI GREEN WHENUAPAI
-----------	--

Drawing Title	ROADWORKS ROAD PAVEMENT DESIGN DETAILS
---------------	--

	By	Date	Scale	Job No.		
Surveyed:	MS		--	Drawing No.	Rev	
Designed:	KLP			4520-01-RD-334		B
Drawn:	KLP	11/2022				
Approved:	BJ					



TYPICAL KERBING AND BERM FINISH.
- NOT SITE SPECIFIC IN THIS DEVELOPMENT-

RESOURCE CONSENT

Rev	Description	By	Date
B	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022
A	ISSUED FOR TRAFFIC REPORT	BJ	08/12/2022



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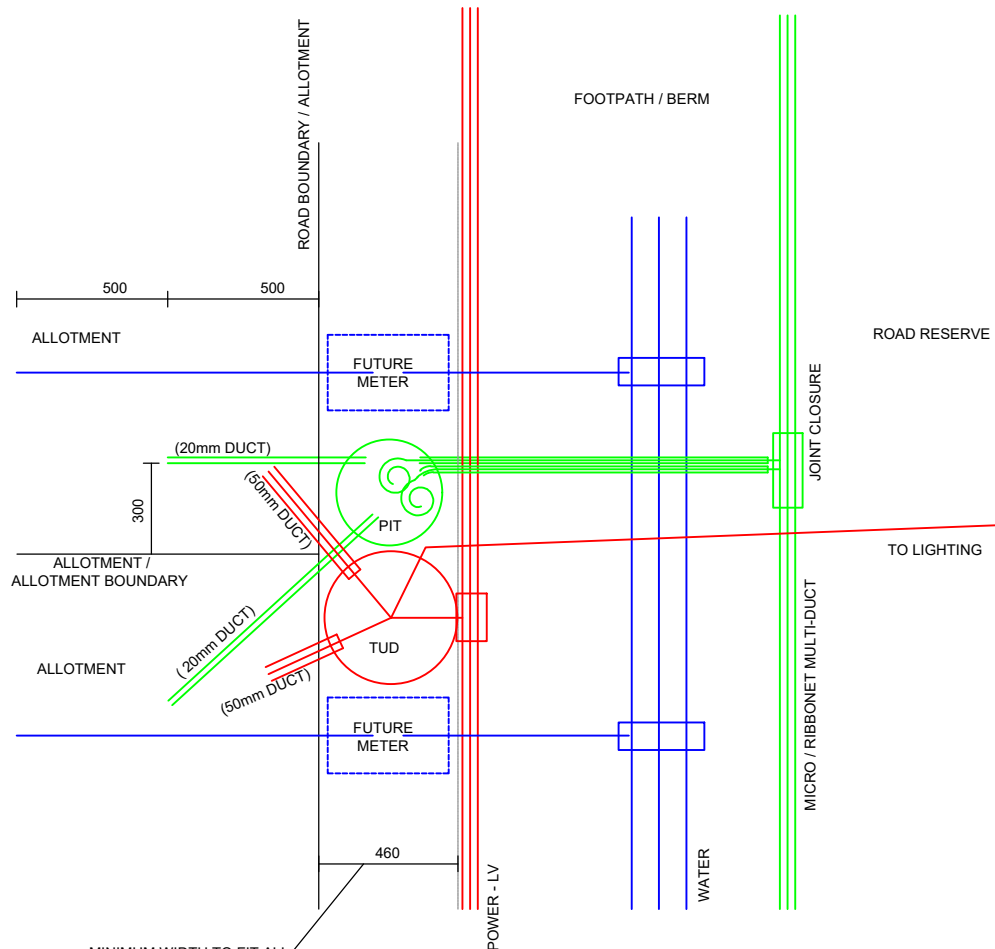
Job Title

98-102 TOTARA ROAD
WHENUAPAI GREEN
WHENUAPAI

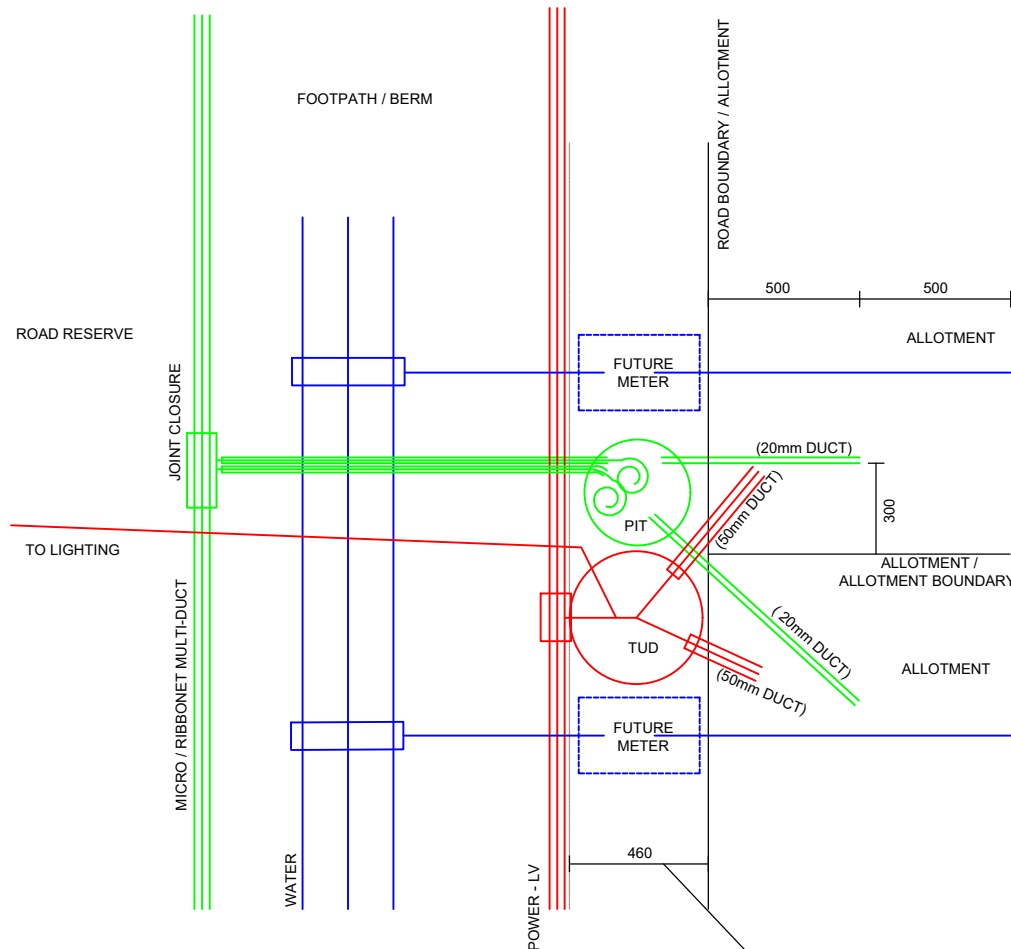
Drawing Title

ROADWORKS
BERM AND SURFACE FINISHES &

	By	Date	Scale	Job No.	
Surveyed:	MS		--	Drawing No.	Rev
Designed:	KLP			4520-01-RD-338	B
Drawn:	KLP	11/2022			
Approved:	BJ				



TYPICAL UTILITY PITS ARRANGEMENT

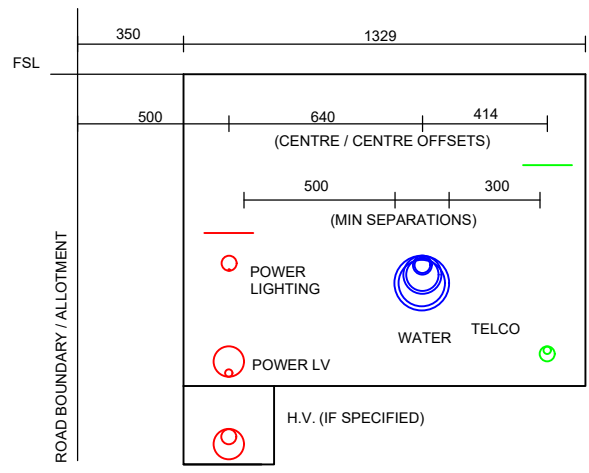


TYPICAL UTILITY PITS ARRANGEMENT

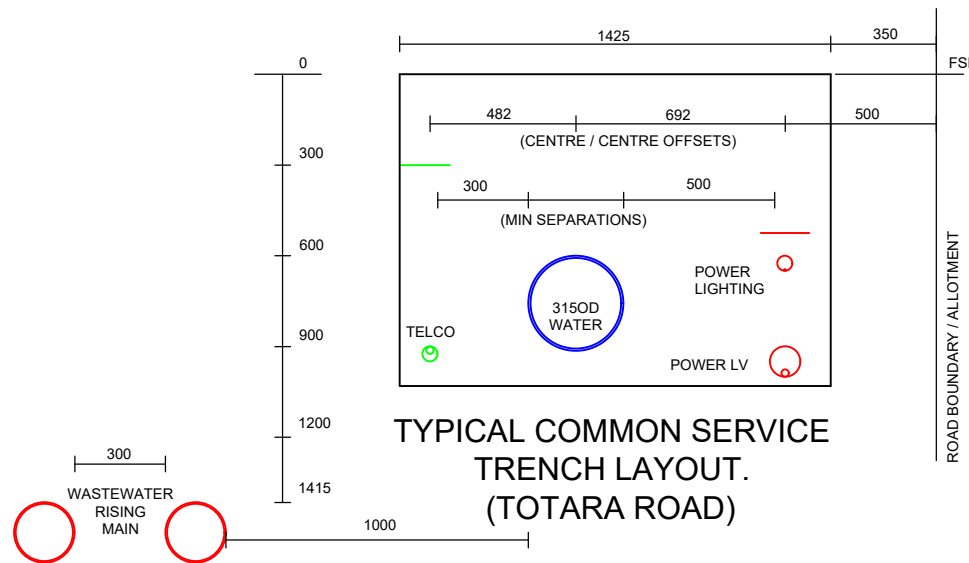
MINIMUM WIDTH TO FIT ALL UTILITIES PITS
(DOES NOT APPLY WHERE NO RESIDENTIAL ALLOTMENTS
FRONTAGE TOTARA ROAD - CHAINAGES 705-1165m)

NOTES:

1. TELCO SERVICE NUMBERS AND SIZES TO BE CONFIRMED ONSITE WITH CHORUS PRIOR TO TRENCHING AND INSTALLATION.
2. POWER SERVICE NUMBERS AND SIZES TO BE CONFIRMED ONSITE WITH VECTOR PRIOR TO TRENCHING AND INSTALLATION.
3. TO BE READ IN CONJUNCTION WITH SERVICE PROVIDER APPROVAL, SPECIFICATIONS AND DESIGN.
4. POWER MINIMUM COVER IN CARRIAGEWAY 900mm
5. TELCO MINIMUM COVER IN CARRIAGEWAY AND BERMS 600mm
6. WATER COVER IN CARRIAGEWAY 900-1200mm
7. WATER COVER IN BERMS 600-1000mm
8. TYPICALLY MINIMUM 300mm HORIZONTAL SEPARATION IN SERVICES.
9. CONFIRM ONSITE WITH PRINCIPAL PRIOR TO INSTALLING ANY METER BOXES



TYPICAL COMMON SERVICE TRENCH LAYOUT. (ROADS 1-9)



TYPICAL COMMON SERVICE TRENCH LAYOUT. (TOTARA ROAD)

RESOURCE CONSENT

Rev	Description	By	Date
B	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022
A	ISSUED FOR TRAFFIC REPORT	BJ	08/12/2022

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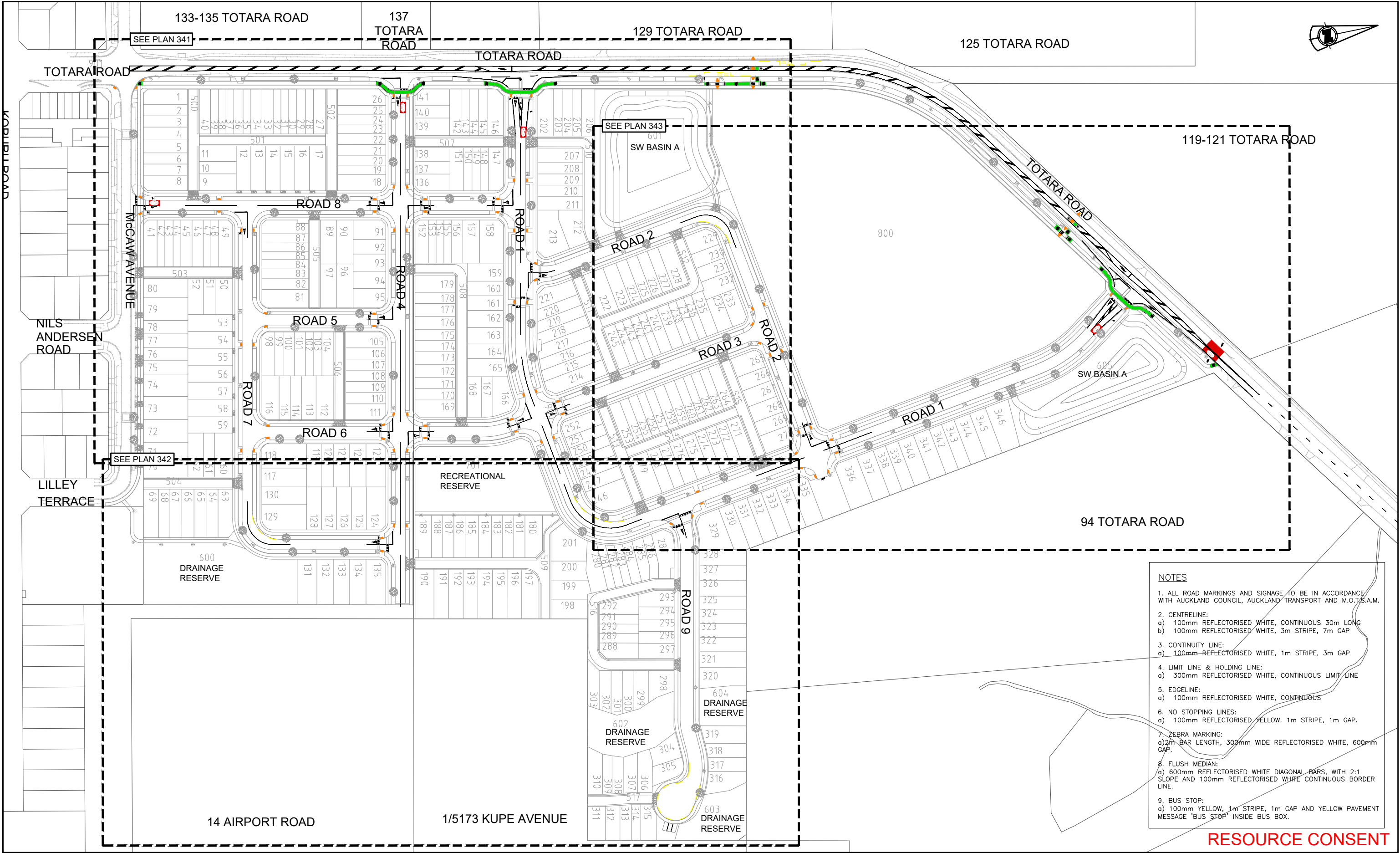
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WEB: www.neilgroup.co.nz

Job Title	98-102 TOTARA ROAD WHENUAPAI GREEN WHENUAPAI
-----------	--

Drawing Title	ROADWORKS COMMON SERVICE TRENCH DETAILS
---------------	--

By	Date	Scale	Job No.	Rev
Surveyed: MS			Drawing No.	
Designed: KLP			4520-01-RD-339	B
Drawn: KLP	11/2022			
Approved: BJ				



- NOTES**
- ALL ROAD MARKINGS AND SIGNAGE TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL, AUCKLAND TRANSPORT AND M.O.T.S.A.M.
 - CENTRELINE:
 - 100mm REFLECTORISED WHITE, CONTINUOUS 30m LONG
 - 100mm REFLECTORISED WHITE, 3m STRIPE, 7m GAP
 - CONTINUITY LINE:
 - 100mm REFLECTORISED WHITE, 1m STRIPE, 3m GAP
 - LIMIT LINE & HOLDING LINE:
 - 300mm REFLECTORISED WHITE, CONTINUOUS LIMIT LINE
 - EDGE LINE:
 - 100mm REFLECTORISED WHITE, CONTINUOUS
 - NO STOPPING LINES:
 - 100mm REFLECTORISED YELLOW, 1m STRIPE, 1m GAP.
 - ZEBRA MARKING:
 - 2m BAR LENGTH, 300mm WIDE REFLECTORISED WHITE, 600mm GAP.
 - FLUSH MEDIAN:
 - 600mm REFLECTORISED WHITE DIAGONAL BARS, WITH 2:1 SLOPE AND 100mm REFLECTORISED WHITE CONTINUOUS BORDER LINE.
 - BUS STOP:
 - 100mm YELLOW, 1m STRIPE, 1m GAP AND YELLOW PAVEMENT MESSAGE 'BUS STOP' INSIDE BUS BOX.

RESOURCE CONSENT

Rev	Description	By	Date
A	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022

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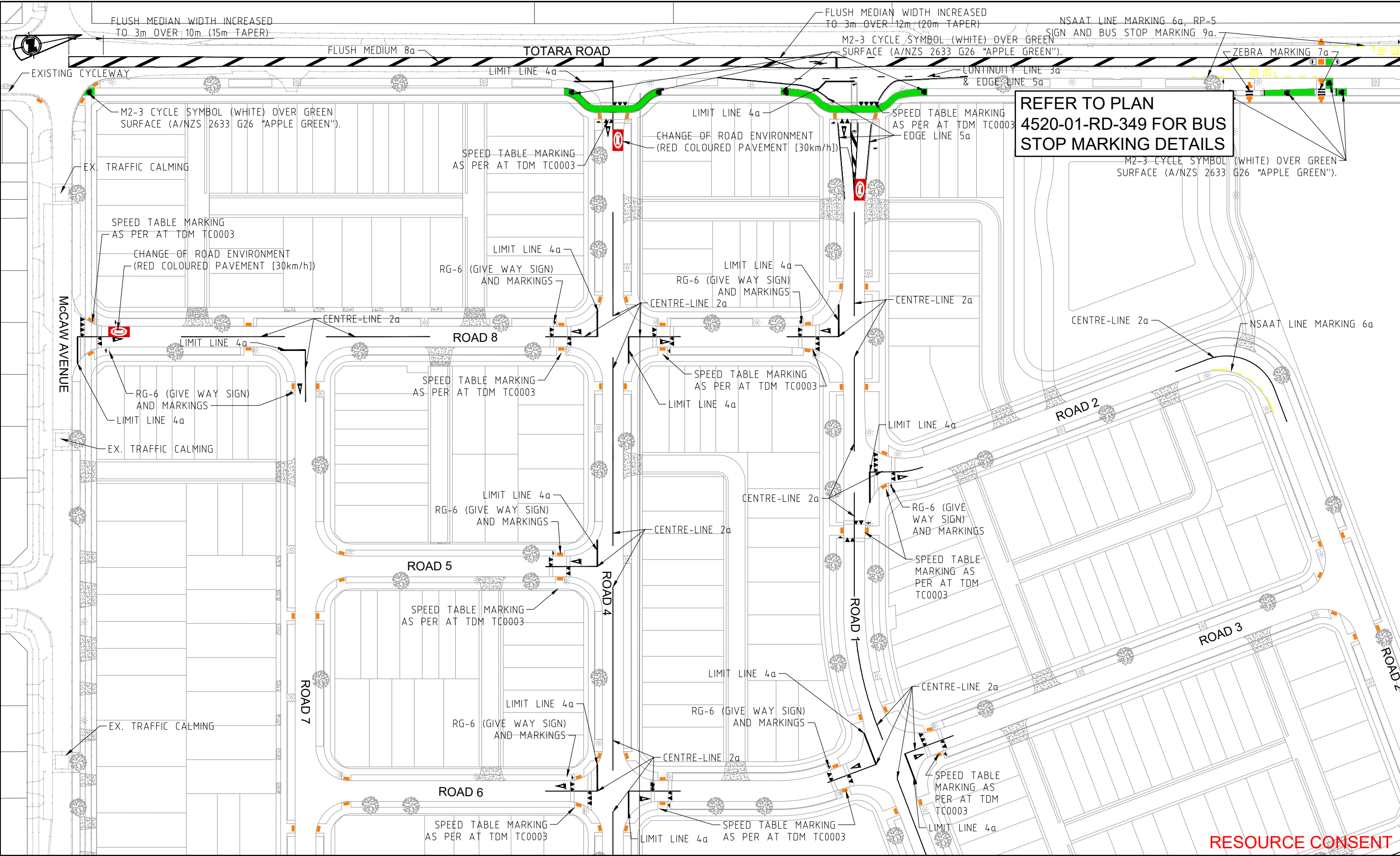
Job Title

**WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI**

Drawing Title

**ROADWORKS
MARKING AND SIGNAGE
LAYOUT PLAN**

By	Date	Scale	Job No.	Drawing No.	Rev
MS / CP		1:2000@A3	4520-01	4520-01-RD-340	A
Designed:	KLP				
Drawn:	KLP	12/2022			
Approved:	CK				
CAD FILE					



Rev	Description	By	Date
A	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022

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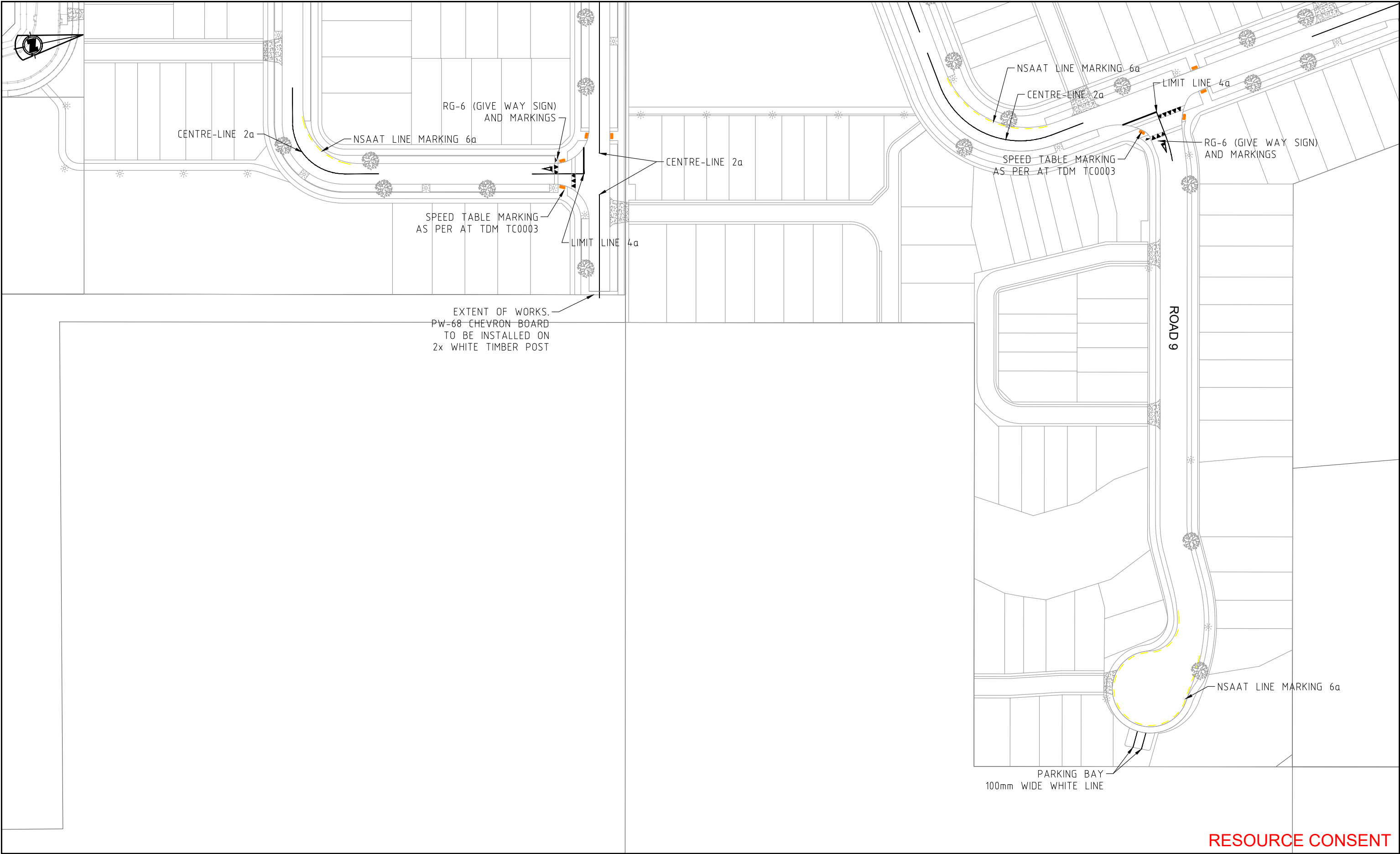
Job Title

WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI

Drawing Title

ROADWORKS
MARKING AND SIGNAGE
LOCATION PLAN

By	Date	Scale	Job No.	Drawing No.	Rev
MS / CP		1:1000@A3	4520-01	4520-01-RD-341	A
Designed:	KLP				
Drawn:	KLP	12/2022			
Approved:	CK				
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RESOURCE CONSENT

Rev	Description	By	Date
A	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022



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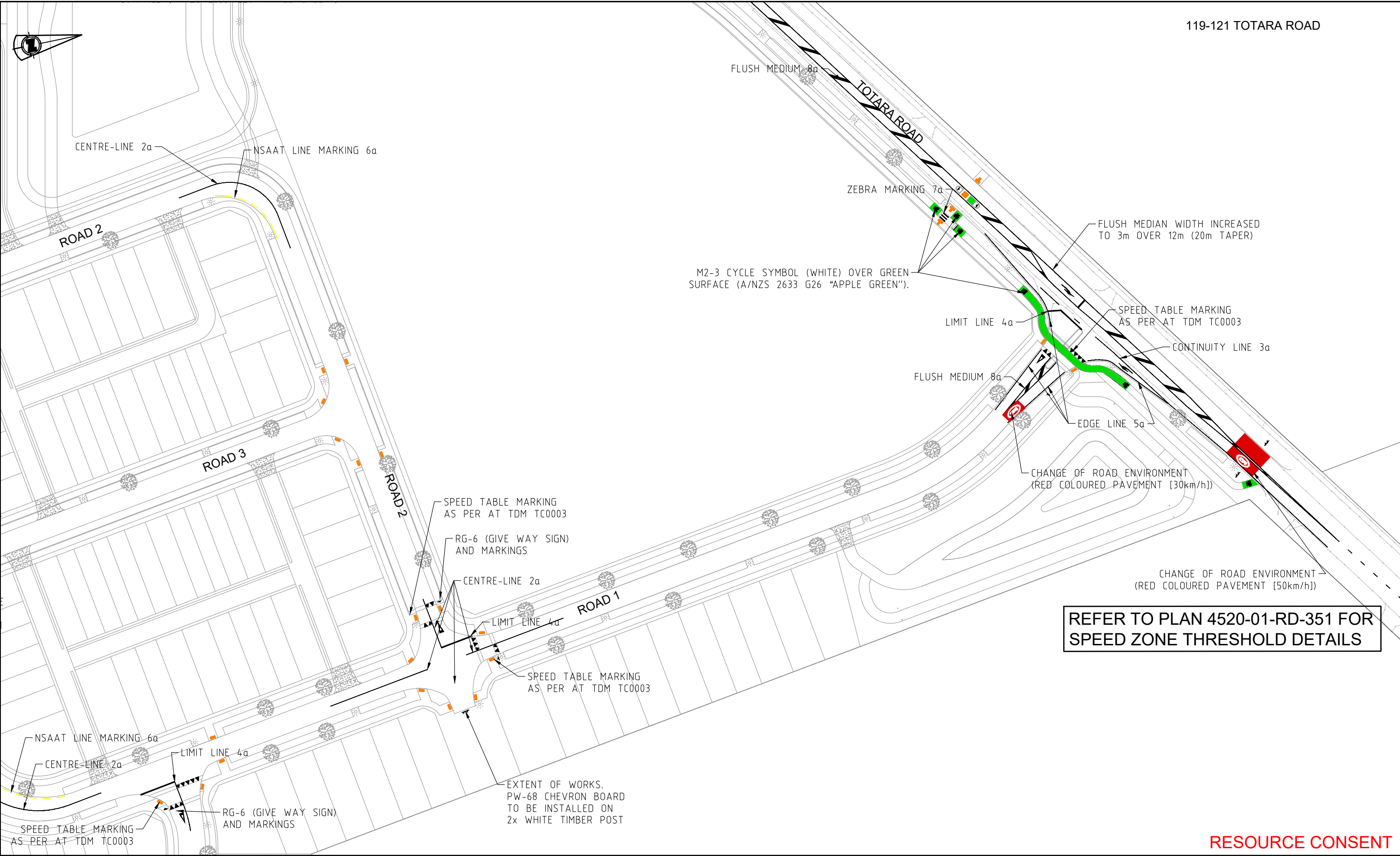
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Job Title
WHENUAPAI GREEN 98-102 TOTARA ROAD WHENUAPAI

Drawing Title
ROADWORKS MARKING AND SIGNAGE LOCATION PLAN

	By	Date	Scale	Job No.	4520-01	Rev
Surveyed:	MS / CP		1:1000@A3	Drawing No.	4520-01-RD-342	A
Designed:	KLP					
Drawn:	KLP	12/2022				
Approved:	CK					
CAD FILE						



RESOURCE CONSENT

Rev	Description	By	Date
A	ISSUED FOR RESOURCE CONSENT	CK	16/12/2022



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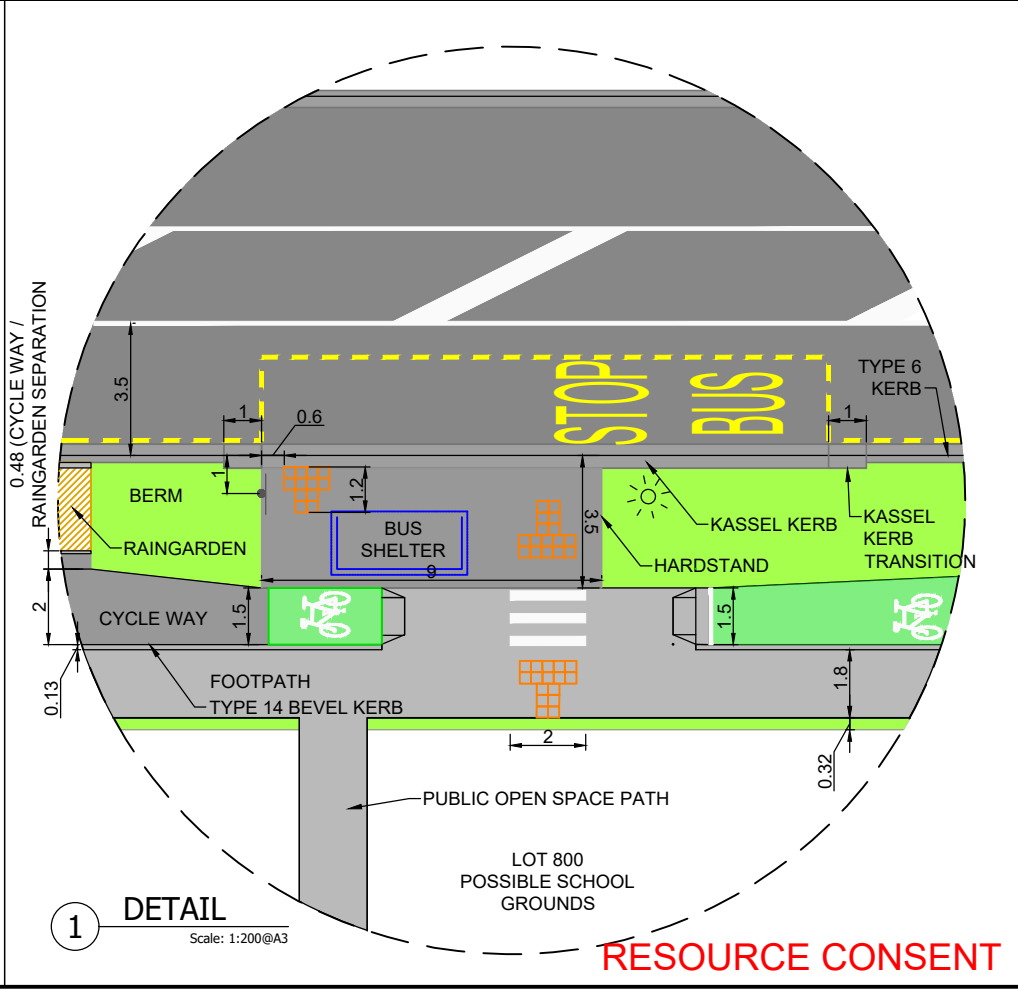
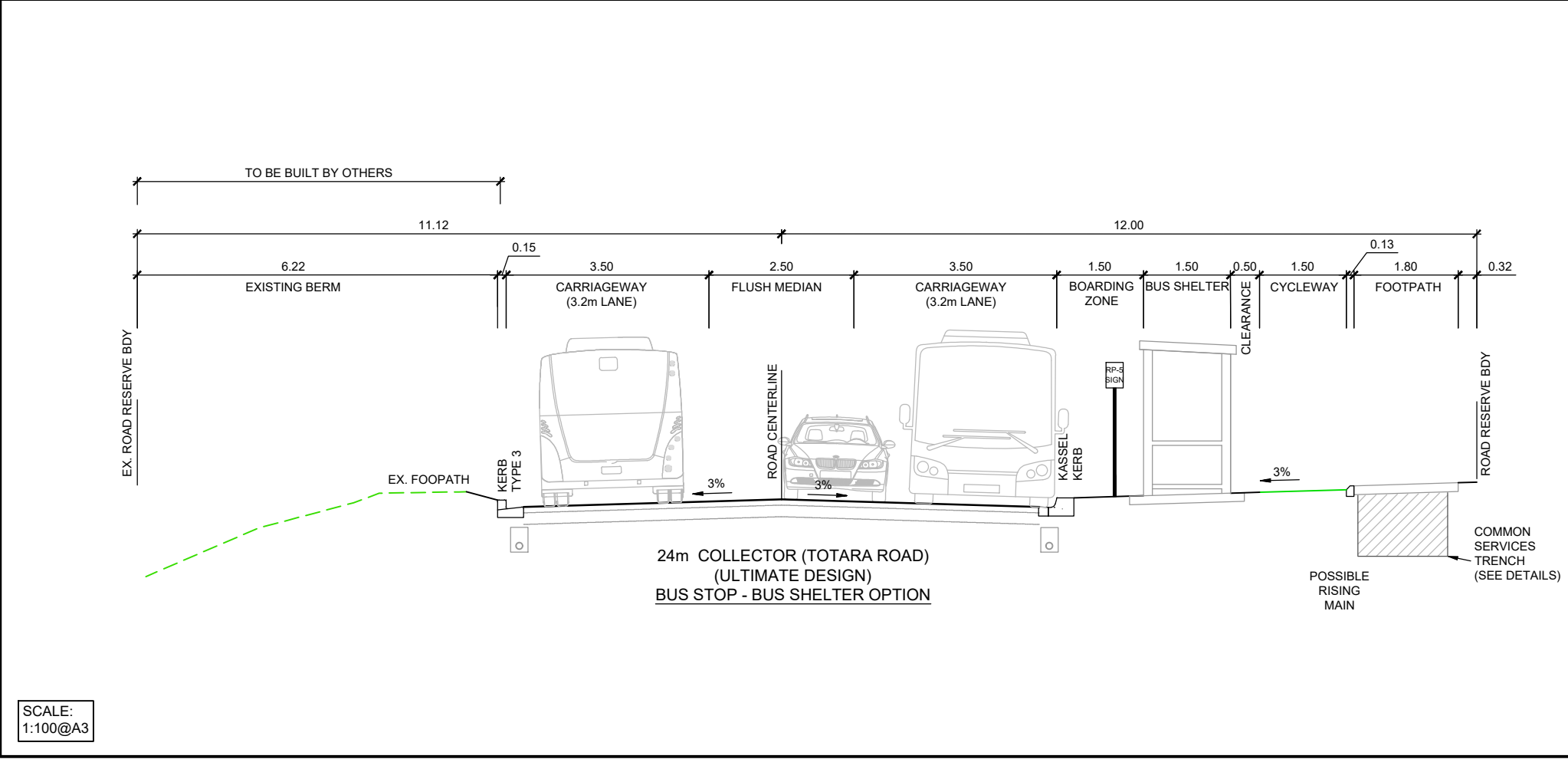
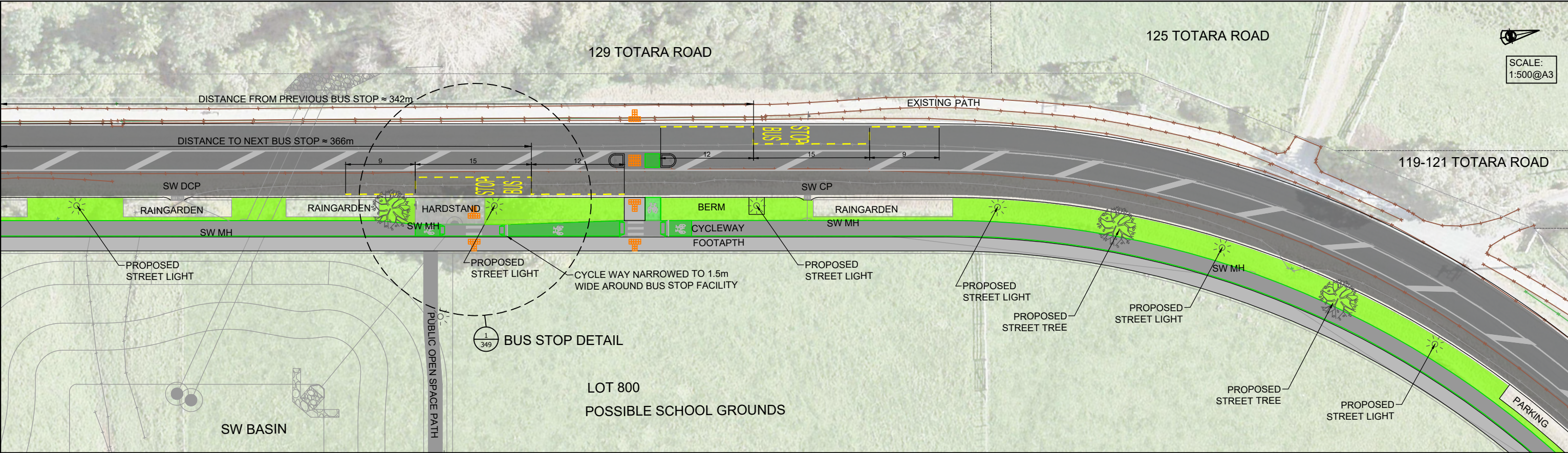
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Job Title
WHENUAPAI GREEN 98-102 TOTARA ROAD WHENUAPAI

Drawing Title
ROADWORKS MARKING AND SIGNAGE LOCATION PLAN

By	Date	Scale	Job No.	4520-01
Surveyed: MS / CP		1:1000@A3	Drawing No.	4520-01-RD-343
Designed: KLP				
Drawn: KLP	12/2022			
Approved: CK				
CAD FILE				
Rev	A			



Rev		Description	By	Date	Job Title				Drawing Title				By		Date	Scale	Job No. 4520-01		Drawing No. 4520-01-RD-349	Rev A
					98-102 TOTARA ROAD WHENUAPAI GREEN WHENUAPAI				ROADWORKS TOTARA ROAD WIDENING PUBLIC TRANSPORT							AS SHOWN				
A		ISSUED FOR RESOURCE CONSENT	BJ	01/12/2022											12/2022					

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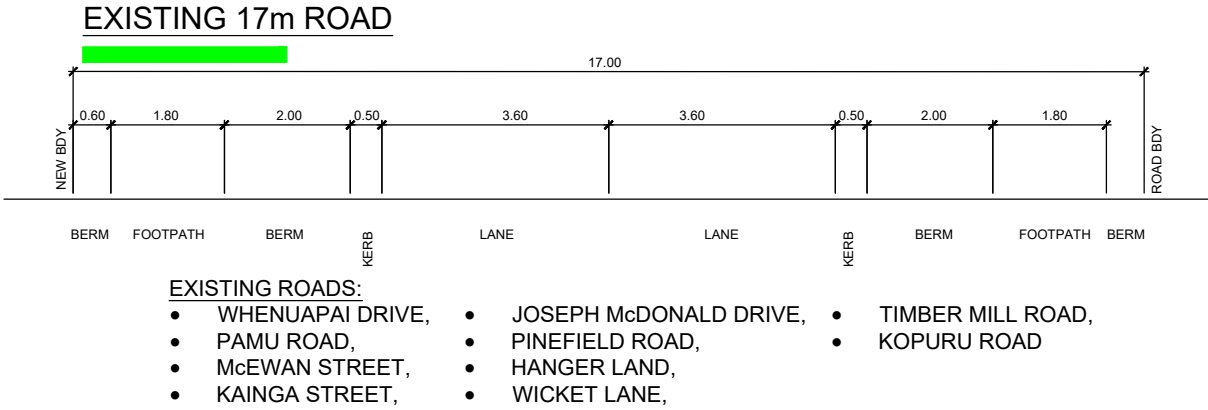
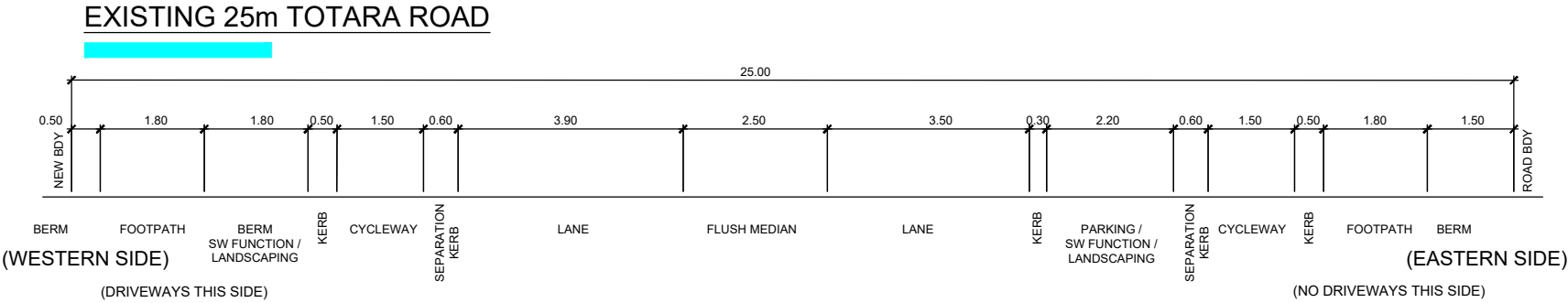
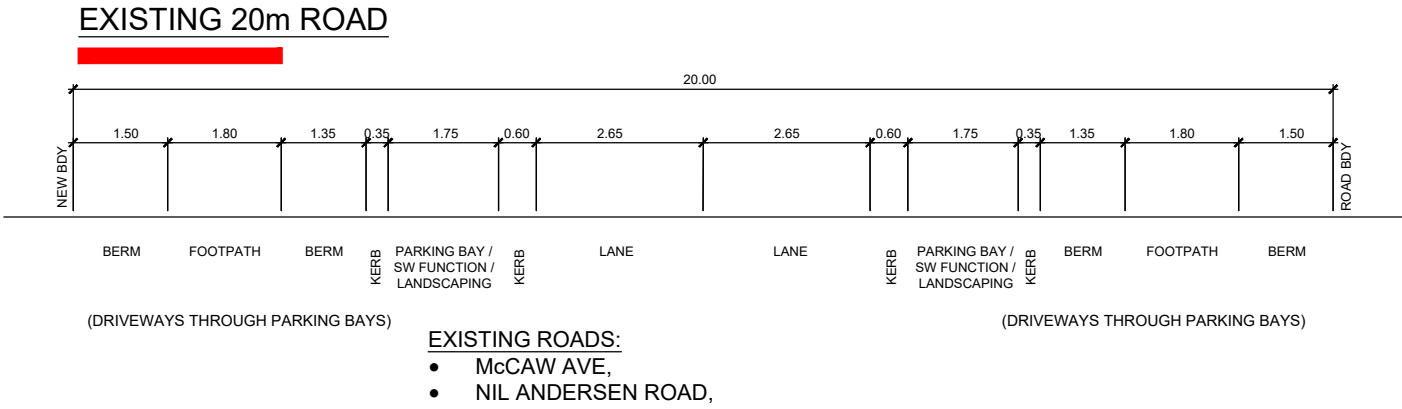
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FOR INFORMATION

Rev	Description	By	Date
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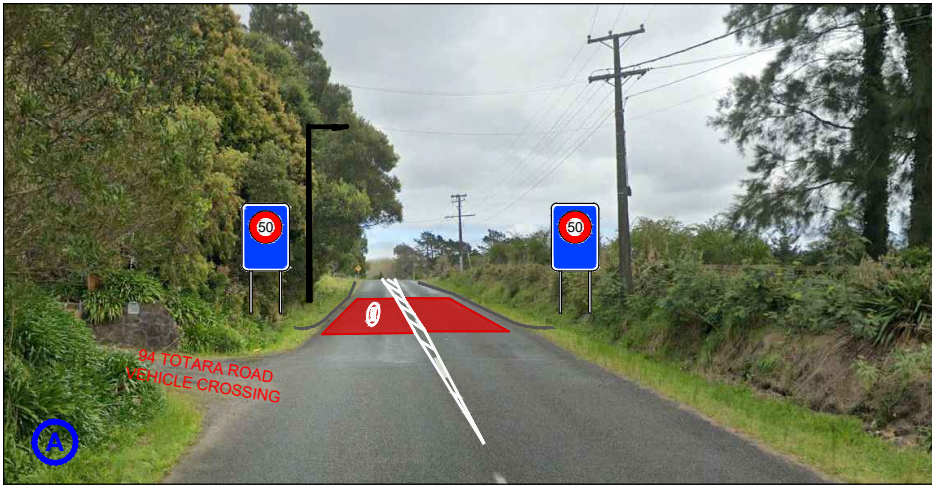
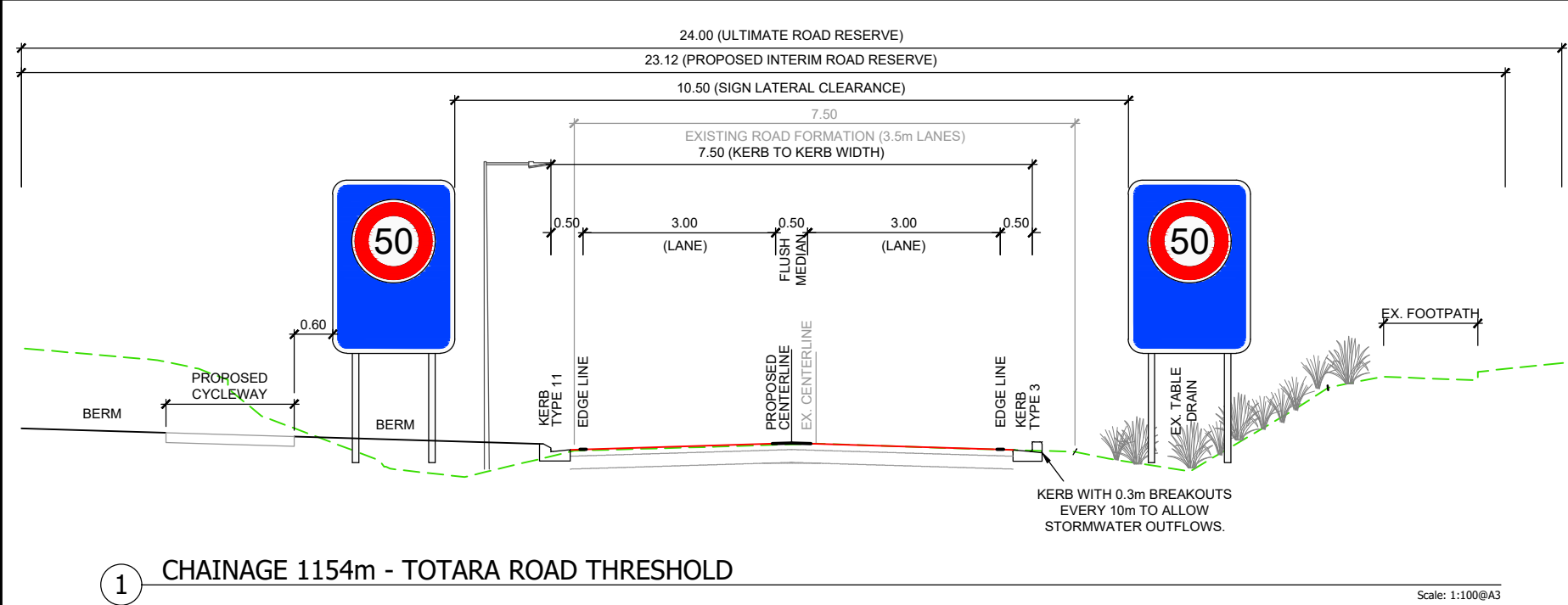
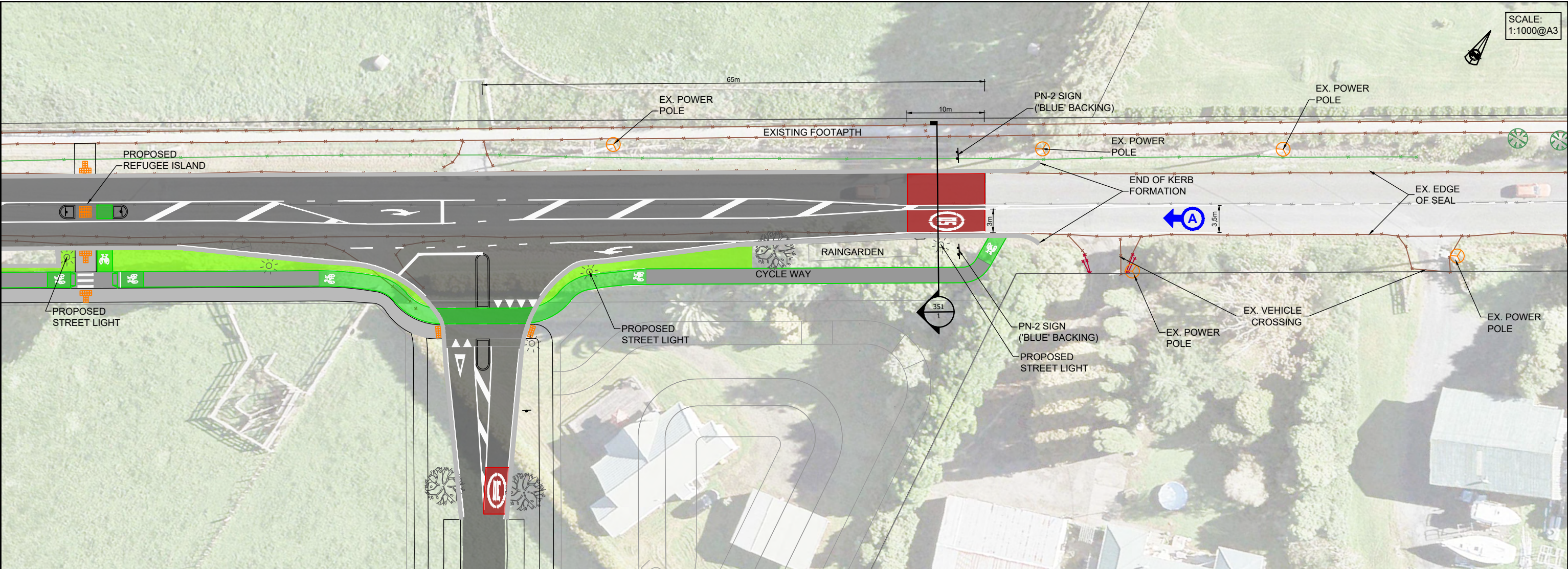
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Job Title	WHENUAPAI GREEN CONCEPT PHASE
-----------	----------------------------------

Drawing Title	ROADING EXISTING ROAD CROSS SECTIONS
---------------	--

	By	Date	Scale	Job No.	Rev
Surveyed:	—		—	Drawing No.	
Designed:	CK			4520-01-GN-350	A
Drawn:	CK	05/22			
Approved:	CK				
CAD FILE					



TOTARA ROAD (APPROX. CH 1190) FACING SOUTHWEST.
(EXISTING / PROPOSED LAYOUT)

RESOURCE CONSENT

Rev	Description	By	Date
A	ISSUED FOR RESOURCE CONSENT	BJ	11/2022

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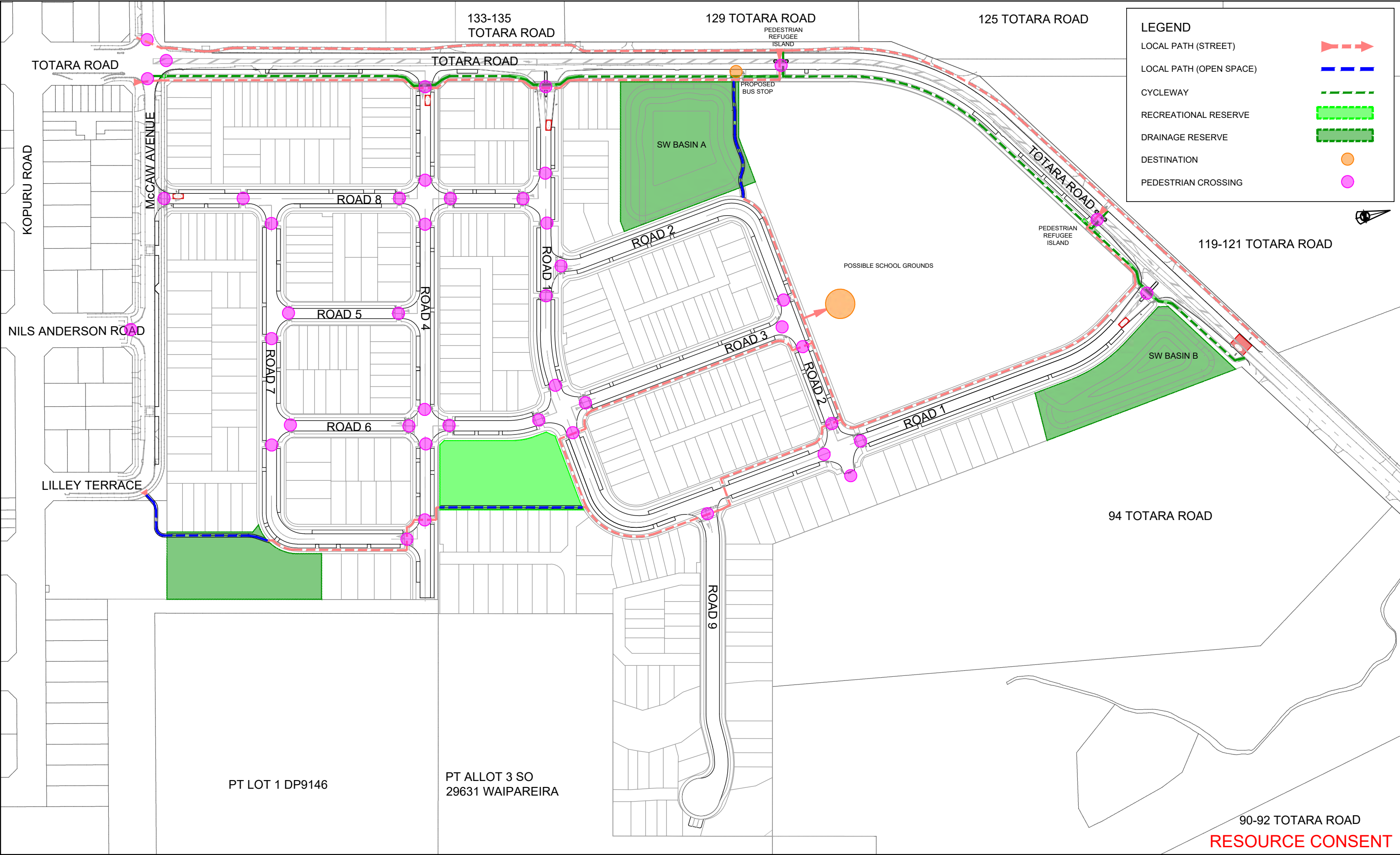
Job Title

**WHENUAPAI GREEN
98-102 TOTARA ROAD
WHENUAPAI**

Drawing Title

**ROADWORKS
TOTARA ROAD
SPEED MANAGEMENT-THRESHOLD**

By	Date	Scale	Job No.	Drawing No.	Rev
DS		AS SHOWN	4520	4520-01-RD-351	A
KLP/CK	05/21				
CK					
CAD FILE					



Rev	Description	By	Date
A	ISSUED FOR RESOURCE CONSENT	BJ	01/12/2022

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Job Title

98–102 TOTARA ROAD
WHENUAPAI GREEN
WHENUAPAI

Drawing Title

LOCAL PATH NETWORK
LOCATION PLAN

	By	Date	Scale	Job No.	Drawing No.	Rev
Surveyed:	CP/MS		1:2000@A3	4520	4520–01–RD–380	A
Designed:	KLP					
Drawn:	KLP	10/2022				
Approved:	BJ					
CAD FILE						