

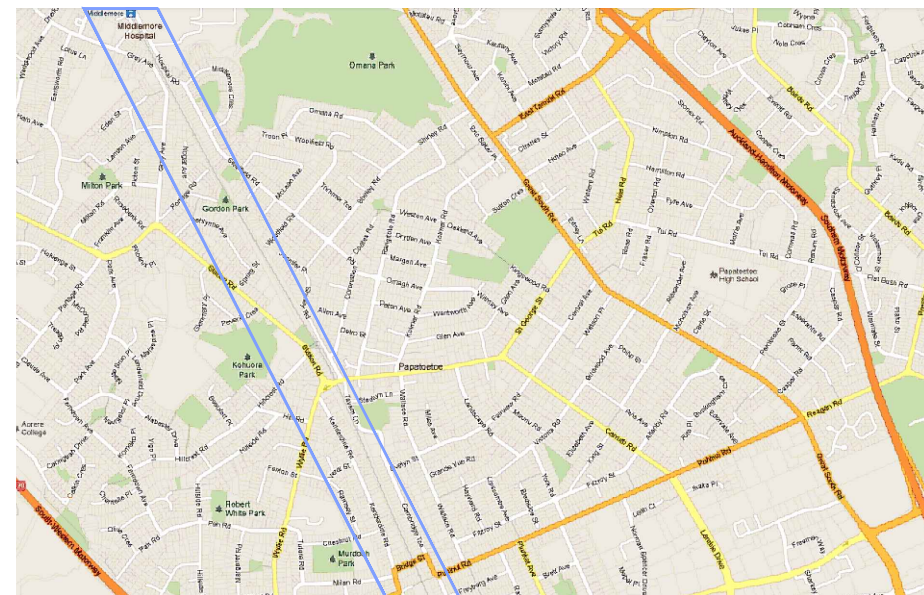


KIWIRAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2 CIVIL DRAWINGS

85% DETAILED DESIGN

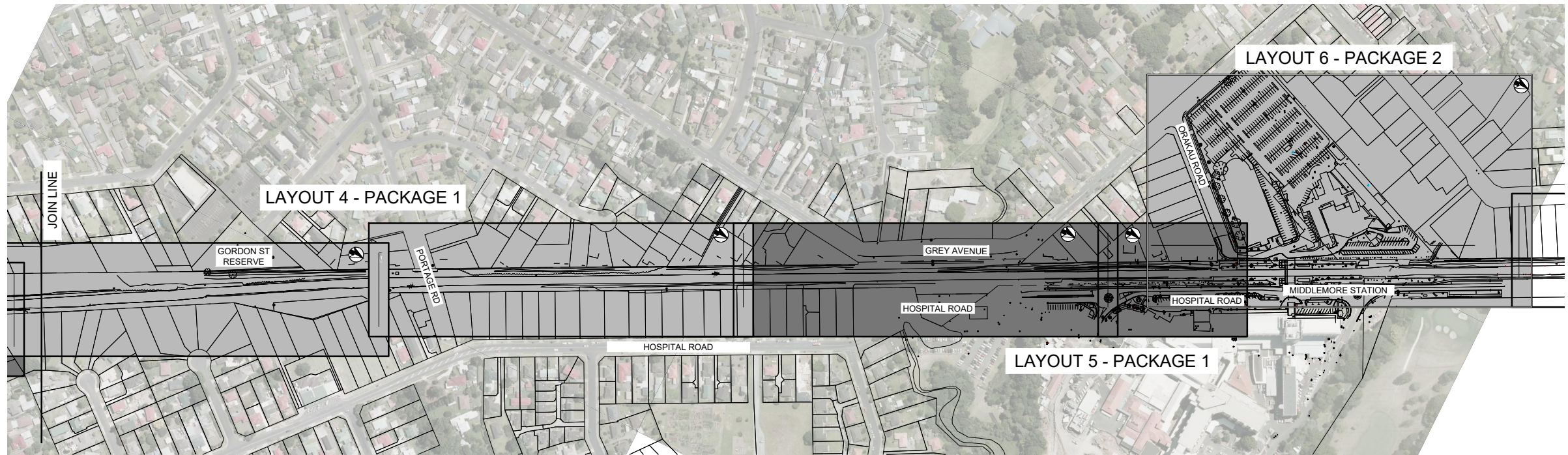
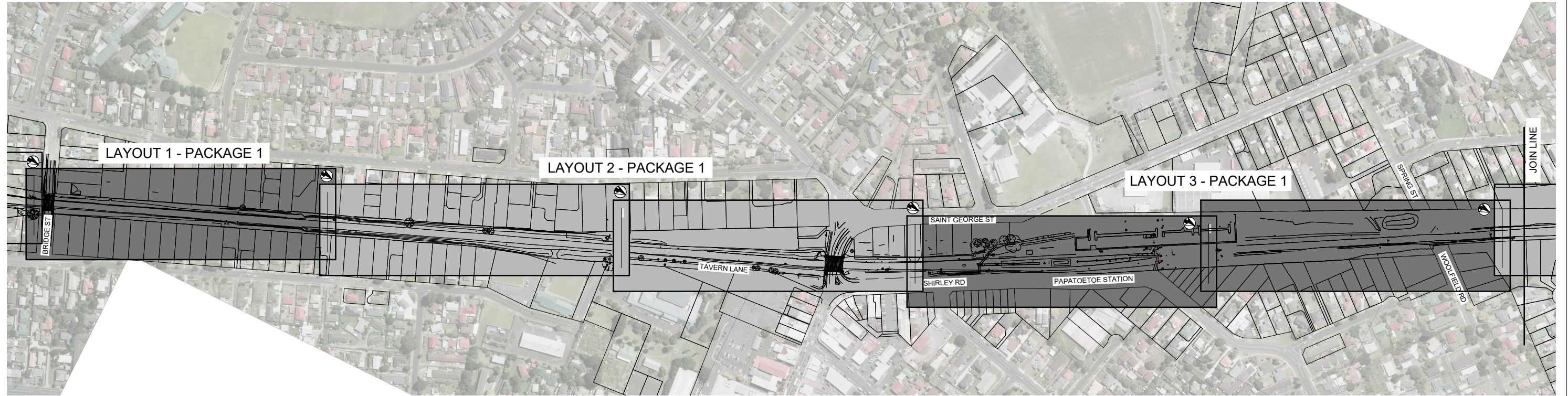
Drawing No: 1 / 6057 / 19 / 5104 /
Project No: 1-M9001.86

Date: 16th DECEMBER 2016



LOCALITY PLAN - NTS





300 mm
200
100
50
0 10 mm

PRELIMINARY

Revision	Amendment	Approved	Revision Date
RA	ISSUED IN INFRASTRUCTURE REPORT	TW	20.04.12
RB	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RC	MIDDLEMORE PRELIMINARY DESIGN	TW	20.06.12
RD	ISSUED FOR CONSENT	TW	03.07.12
RE	DETAILED DESIGN ISSUE	TW	06.07.12



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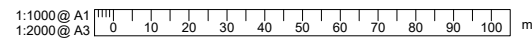
Project
KIWIRAIL
MIDDLEMORE TO PUHINUI
NEW THIRD MAIN - STAGE 2

Drawn	Designed	Approved	Revision Date
A.COOK	A.COOK	T.WILSON	20.04.12

SHEET OVERVIEW
LAYOUT 1 OF 1

Project No.	Scale
1-C0681.00	1:2500 @ A1

Drawing No.	Sheet No.	Revision
1/6057/19/5104	10	RE



LEGEND - SURVEYED SERVICES

- SERVICE LIDS UNKNOWN
- STORMWATER CATCHPIT, MANHOLE, CULVERT, DOWNPIPE
- STORMWATER OPEN DRAIN, SLOT DRAIN
- WATER HYDRANT, METER, VALVE, MANHOLE
- GAS BOX, VENT
- POWER POLE, LIGHT MAST, BOX, METER, CABLE MARKER
- TELEPHONE BOX, PULL PIT
- SEWER MANHOLE

LEGEND - RELOCATED SERVICES

- RELOCATED ARTA FIBRE OPTICS
- RELOCATED FIBRE OPTICS
- RELOCATED FIBRE OPTICS KRN
- RELOCATED SIGNAL CABLE DUCT KRN
- RELOCATED TELSTRACLEAR COMMS
- NEW ACCESS CHAMBER
- PROPOSED OLE SUPPORT EXCLUSION ZONE

LEGEND - OTHER

- RAILWAY BOUNDARY
- EXISTING RAIL TRACK
- PROPOSED TRACK
- PROPERTY BOUNDARY
- STORMWATER OPEN DRAIN

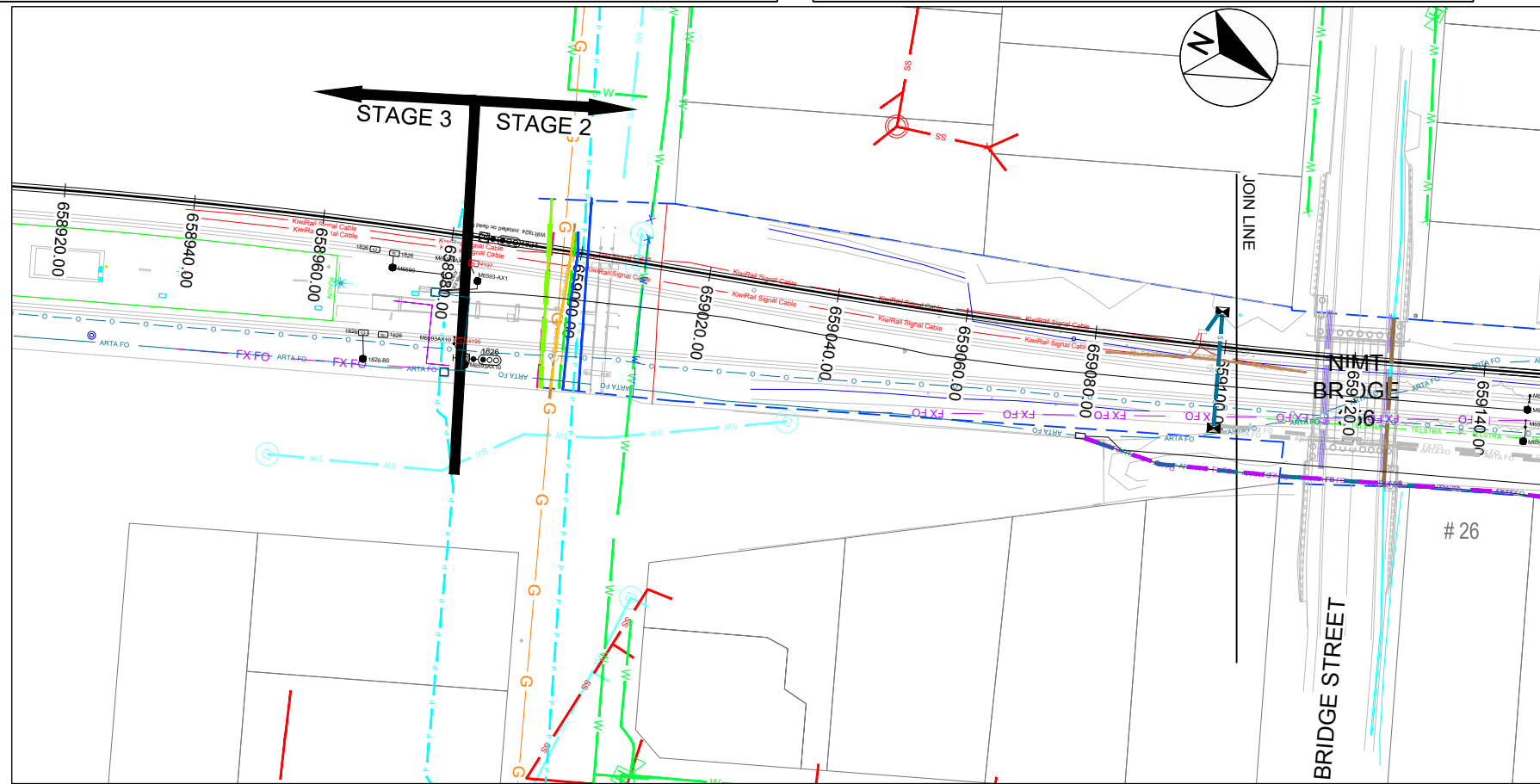
LEGEND - EXISTING SERVICES

- UNKNOWN SERVICE, FUTURE DUCTS
- AUCKLAND COUNCIL STORMWATER
- AUCKLAND COUNCIL SW MANHOLE, FITTING, CULVERT
- SURVEYED STORMWATER
- AUCKLAND COUNCIL SANITARY SEWER
- SURVEYED SANITARY SEWER
- AUCKLAND COUNCIL SS MANHOLE, FITTING, PUMP STATION, CHAMBER
- SURVEYED WATER
- WATERCARE WATER
- WATERCARE WATER VALVE, FITTING, HYDRANT, STRUCTURE
- WATERCARE TRACE
- VECTOR GAS DUCT OR OTHER
- VECTOR LOW PRESSURE GAS
- VECTOR HIGH PRESSURE GAS
- OVERHEAD TRANSPOWER
- POWER
- POWER DUCT, CABLE MARKER
- KIWI RAIL SIGNAL TRACE
- KIWI RAIL SIGNAL TRACE POWER SUPPLY
- TELSTRA CLEAR COMMUNICATIONS
- TELECOM COMMUNICATIONS
- CHORUS COMMUNICATIONS
- FIBRE OPTICS ABANDONED
- FIBRE OPTICS KIWI RAIL NEW ZEALAND ABANDONED
- FIBRE OPTICS AUCKLAND REGIONAL TRANSPORT AUTHORITY
- EXTRA PRECAUTION REQUIRED AROUND THESE SERVICES

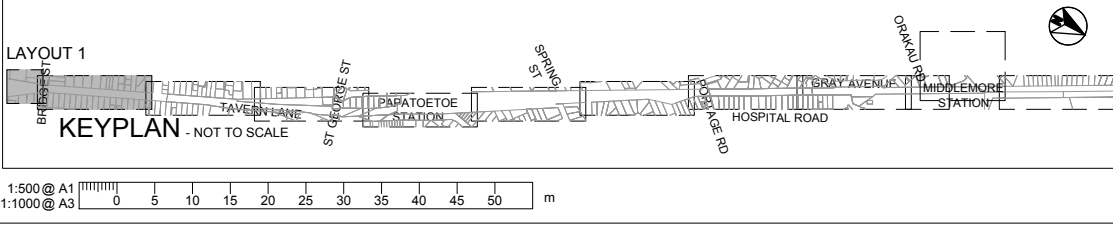
SERVICES NOTES:

- LOCATION OF ALL EXISTING SERVICES ARE INDICATIVE ONLY AND ARE BASED ON INFORMATION PROVIDED BY
 - UTILITIES COMPANIES
 - OPUS SURVEYS
 - KIWI RAIL SURVEYS
 - INTERPOLATING AS-BUILT RECORDS
 - CKL SURVEYS
 - ADDITIONAL SURVEYS (SOMETIMES HARDCOPY ONLY)
 - KIWI RAIL SURVEYS
- EXISTING SERVICES LOCATIONS TO BE CONFIRMED ON SITE BY CONTRACTOR AFTER LIAISON WITH APPROPRIATE UTILITIES COMPANIES
- EXISTING LOCATION OF SIGNAL EQUIPMENT / LINES IS INDICATIVE ONLY AND ARE BASED ON DRAWING NO. "MA 50 SIGNAL DESIGN - REV 16" WHICH SHOULD BE CONFIRMED ON SITE BY A KIWI RAIL REPRESENTATIVE
- SERVICES RELOCATIONS AND PROTECTIONS CARRIED OUT BY A SUITABLY QUALIFIED CONTRACTOR AS PART OF THE TEMPORARY/ENABLING WORKS. INFORMATION SUPPLIED BY KIWI RAIL HAS BEEN ADDED
- FIBRE OPTIC BACKBONE ENABLING WORKS SHOWN BOLD COLOUR AS PER LEGEND AND DISUSED ONES ARE REPRESENTED IN THIN LINE TYPES.
- LEVEL DATUM IN TERMS OF LINZ DATUM 1946
- EXISTING LEVELS SHOWN ARE TAKEN FROM EITHER SURVEY (PREFERENCE) OR GIS RECORDS, IL = INVERT LEVEL (CLOCKWISE FROM NORTH) LL = LID LEVEL, OL = OVERT LEVEL
- ALL LEVELS SHOWN ARE IN TERMS OF REDUCED LEVEL, IN METER UNITS
- ALL DIAMETER DIMENSIONS ARE GIVEN IN MILLIMETRES EG 1050Ø = 1.050m DIAMETER
- EXTRA PRECAUTION IS NEEDED AROUND SERVICES HIGHLIGHTED YELLOW
- KIWI RAIL SIGNAL REQUIREMENTS REFER TO MA50 SIGNAL DESIGN - REV16
- DO NOT SCALE FROM THESE DRAWINGS
- RAIL DESIGNATION AND PROPERTY BOUNDARIES AS PROVIDED BY AC AND TERRAVIEW RESPECTIVELY.
- THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND AVOIDING CLASHES WITH ALL OTHER SERVICES.
- CABLE ROUTES ARE INDICATIVE. FINAL POSITION TO BE APPROVED BY CLIENT REPRESENTATIVE
- THE FINAL POSITION OF THE DUCTS SHALL BE APPROVED APPROPRIATE SERVICES PROVIDER

300 mm
DM
200
100
50
0 10 mm



85% ISSUE



Revision	Amendment	Approved	Revision Date
RA	ISSUED IN INFRASTRUCTURE REPORT	TW	20.04.12
RB	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RC	DETAILED DESIGN ISSUE	TW	06.07.12
RD	85% ISSUE	PW	16.12.16



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Drawn: VARIOUS
Designed: VARIOUS
Approved: T.WILSON
Revision Date: 20.04.12

Project No: 1-C0681.00
Scale: 1:500 @ A1

Project: KIWI RAIL MIDDLEMORE TO PUHINUI NEW THIRD MAIN - STAGE 2

Sheet: EXISTING SERVICES LAYOUT 1 OF 8

Drawing No: 1/6057/19/5104

Sheet No: 20
Revision: RD

LEGEND - SURVEYED SERVICES

- SERVICE LIDS UNKNOWN
- STORMWATER CATCHPIT, MANHOLE, CULVERT, DOWNPIPE
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- WATER HYDRANT, METER, VALVE, MANHOLE
- GAS BOX, VENT
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- NEW ACCESS CHAMBER
- PROPOSED OLE SUPPORT EXCLUSION ZONE

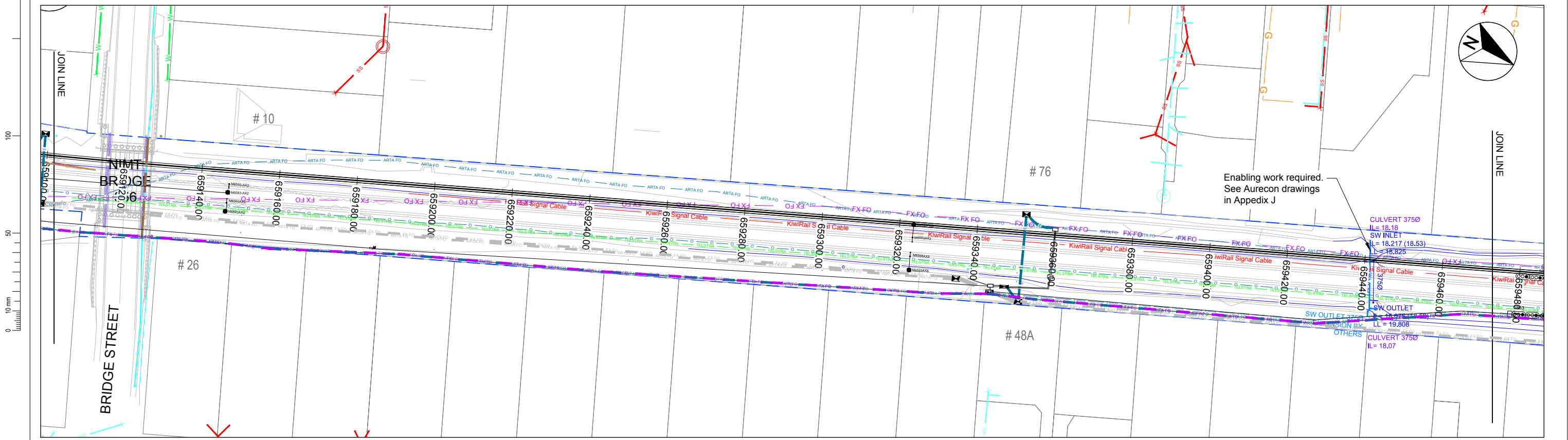
LEGEND - OTHER

- RAILWAY BOUNDARY
- EXISTING RAIL TRACK
- PROPOSED TRACK
- PROPERTY BOUNDARY
- STORMWATER OPEN DRAIN

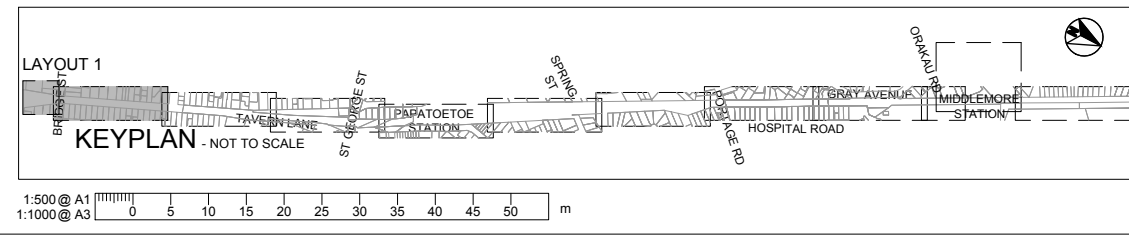
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- POWER DUCT, CABLE MARKER
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- KIWI RAIL SIGNAL TRACE POWER SUPPLY
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85% ISSUE



Revision	Amendment	Approved	Revision Date
RA	ISSUED IN INFRASTRUCTURE REPORT	TW	20.04.12
RB	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RC	DETAILED DESIGN ISSUE	TW	06.07.12
RD	85% ISSUE	PW	16.12.16



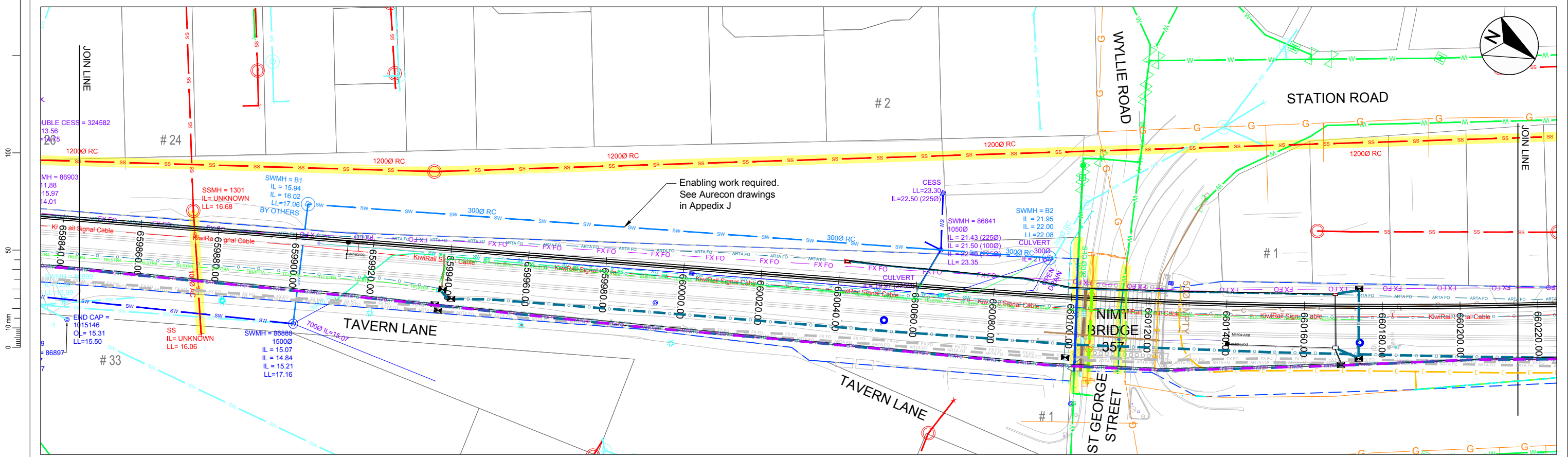
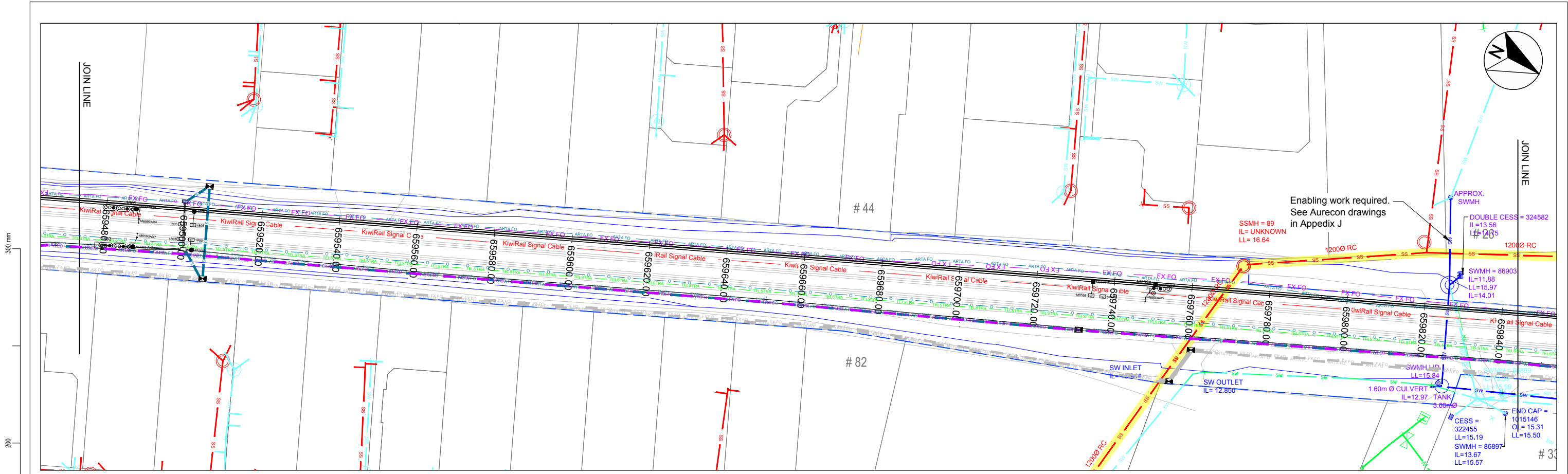
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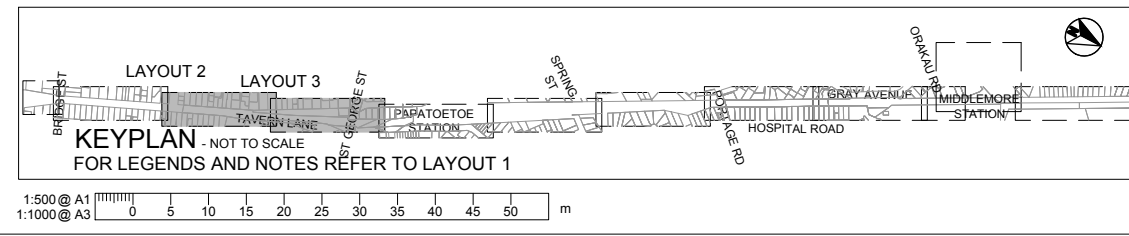
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Designed: VARIOUS
Approved: T.WILSON
Revision Date: 20.04.12

Project No: 1-C0681.00
Scale: 1:500 @ A1

Project	KIWI RAIL MIDDLEMORE TO PUHINUI NEW THIRD MAIN - STAGE 2
Sheet	EXISTING SERVICES LAYOUT 2 OF 8
Drawn No.	1/6057/19/5104
Sheet No.	21
Revision	RD



85% ISSUE



Revision	Amendment	Approved	Revision Date
RA	ISSUED IN INFRASTRUCTURE REPORT	TW	20.04.12
RB	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RC	DETAILED DESIGN ISSUE	TW	06.07.12
RD	85% ISSUE	PW	16.12.16



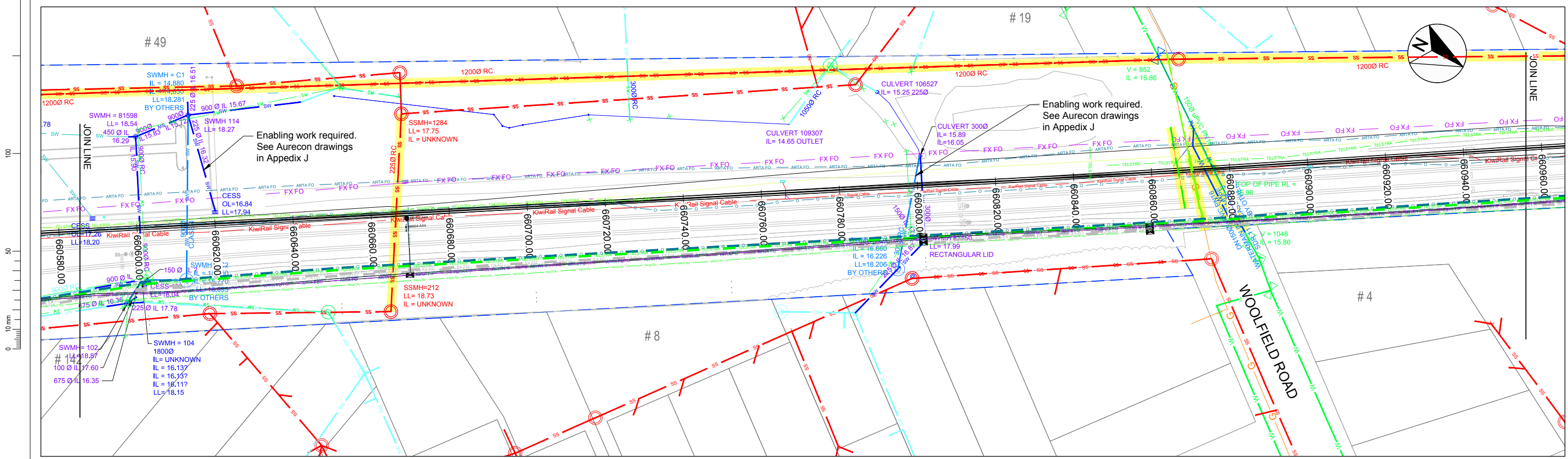
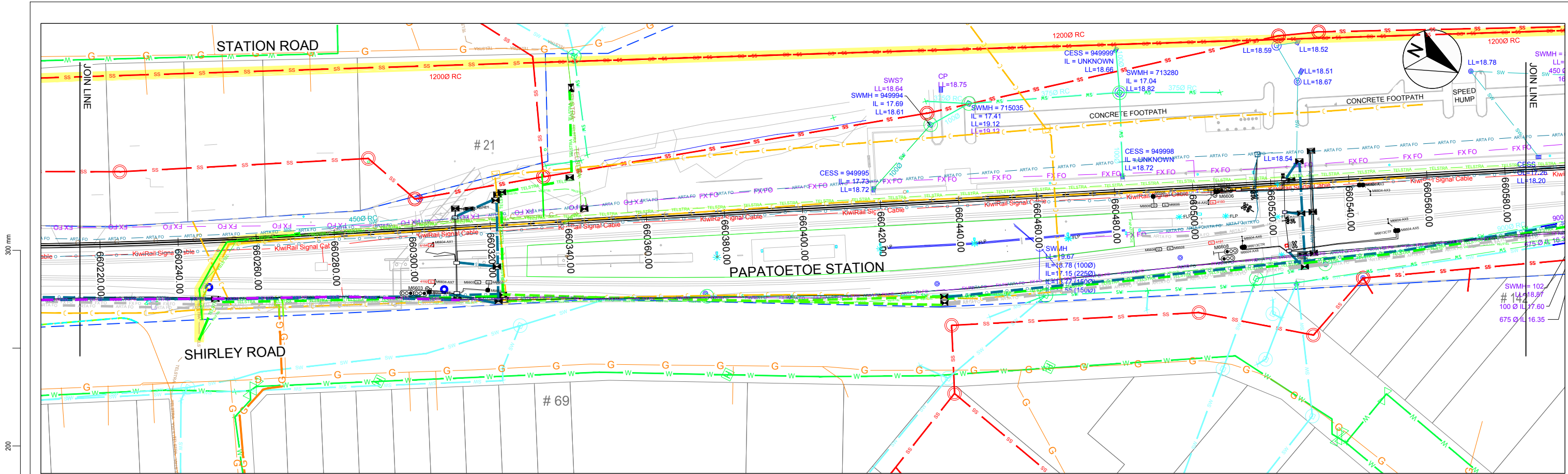
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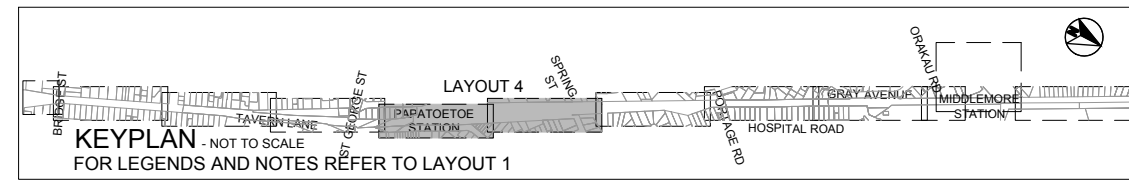
Drawn: VARIOUS
Designed: VARIOUS
Approved: T.WILSON
Revision Date: 20.04.12

Project No: 1-C0681.00
Scale: 1:500 @ A1

Project		Sheet	
KIWI RAIL MIDDLEMORE TO PUHINUI NEW THIRD MAIN - STAGE 2		EXISTING SERVICES LAYOUT 3 OF 8	
Drawn No:	1/6057/19/5104	Sheet No:	22
Revision:	RD	Revision:	



85% ISSUE



Revision	Amendment	Approved	Revision Date
RA	ISSUED IN INFRASTRUCTURE REPORT	TW	20.04.12
RB	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RC	DETAILED DESIGN ISSUE	TW	06.07.12
RD	85% ISSUE	PW	16.12.16



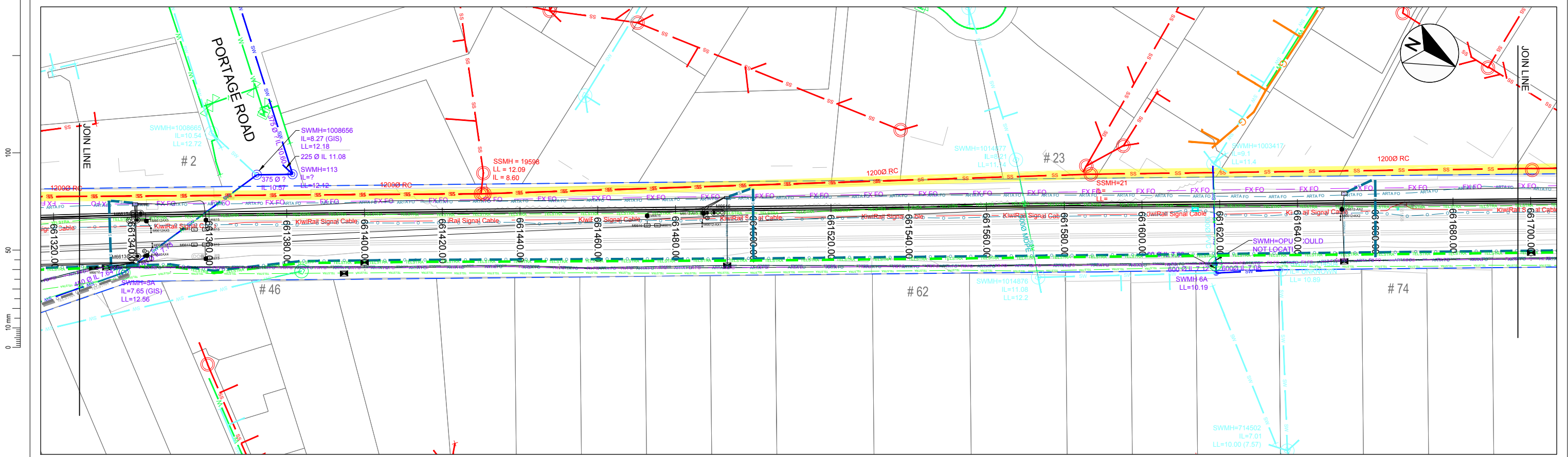
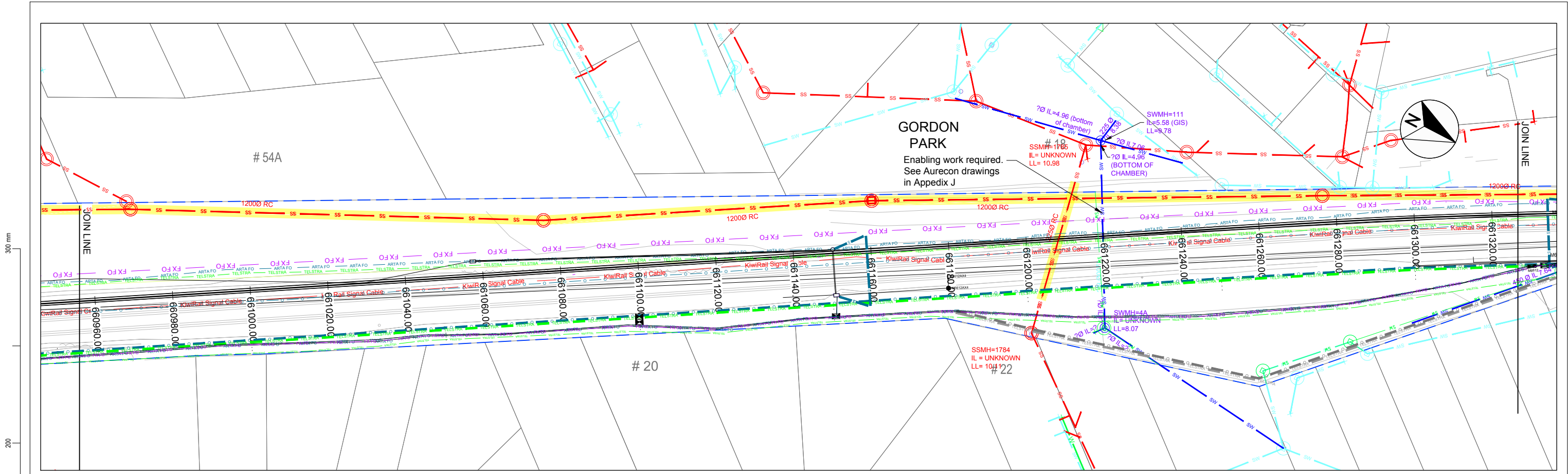
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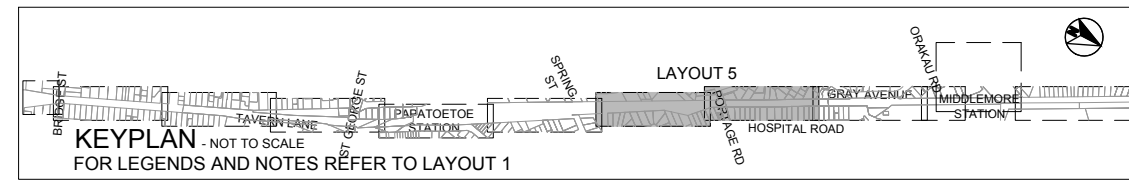
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Designed: VARIOUS
Approved: T.WILSON
Revision Date: 20.04.12

Project No: 1-C0681.00
Scale: 1:500 @ A1

Project		Sheet	
KIWI RAIL MIDDLEMORE TO PUHINI NEW THIRD MAIN - STAGE 2		EXISTING SERVICES LAYOUT 4 OF 8	
Sheet No:	23	Revision:	RD
Project No:	1-C0681.00	Scale:	1:500 @ A1
Revision Date:	20.04.12	Drawing No:	1/6057/19/5104



85% ISSUE



Revision	Amendment	Approved	Revision Date
RA	ISSUED IN INFRASTRUCTURE REPORT	TW	20.04.12
RB	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RC	DETAILED DESIGN ISSUE	TW	06.07.12
RD	85% ISSUE	PW	16.12.16



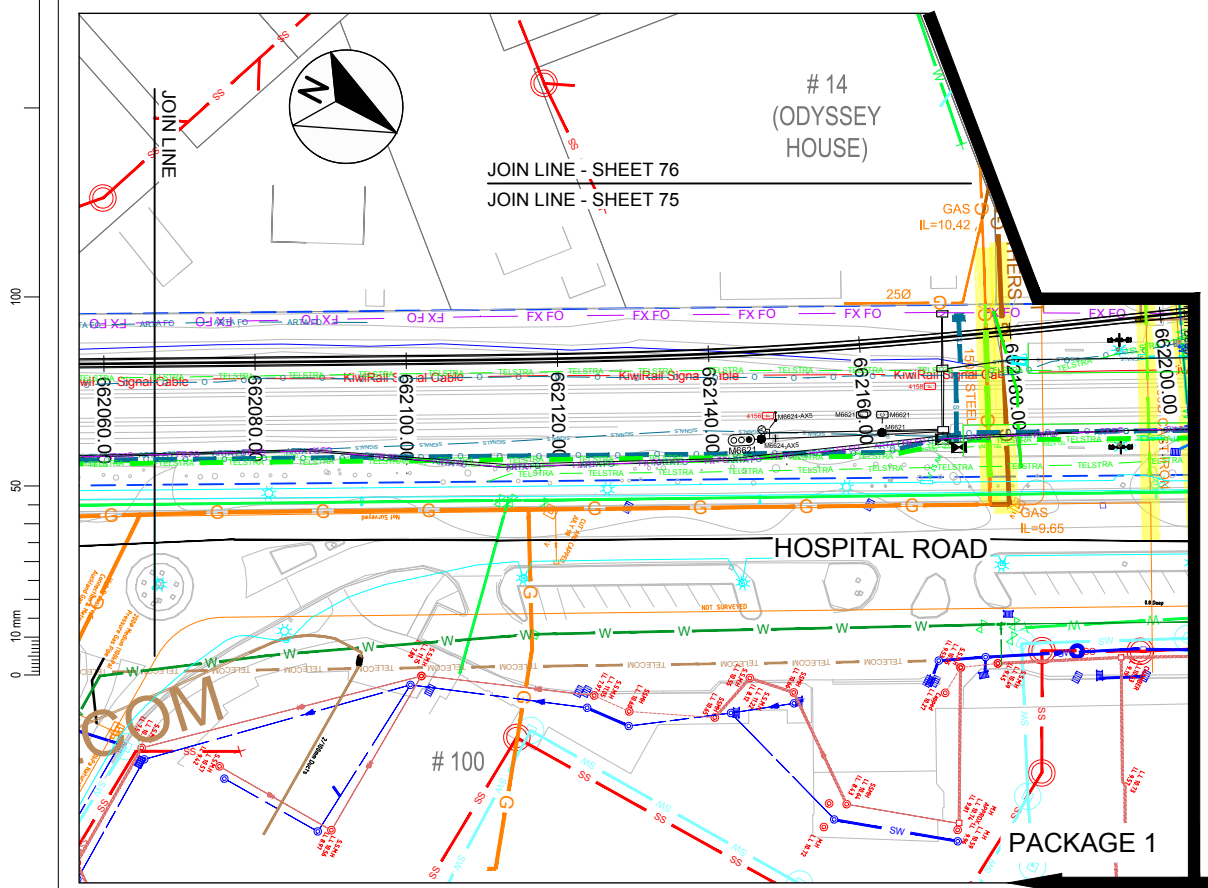
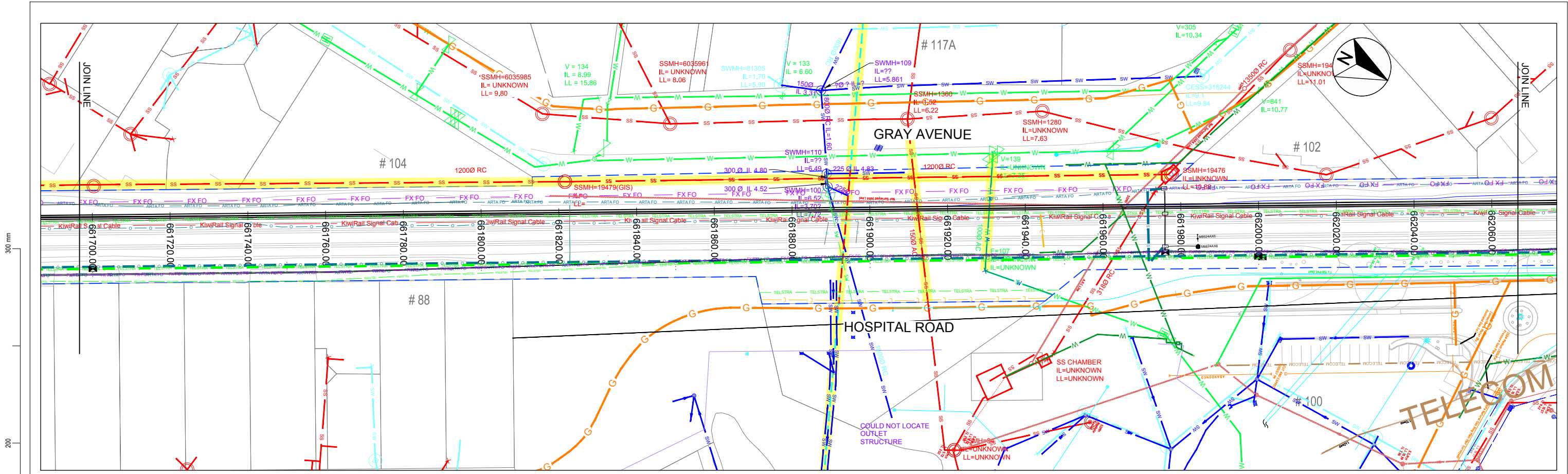
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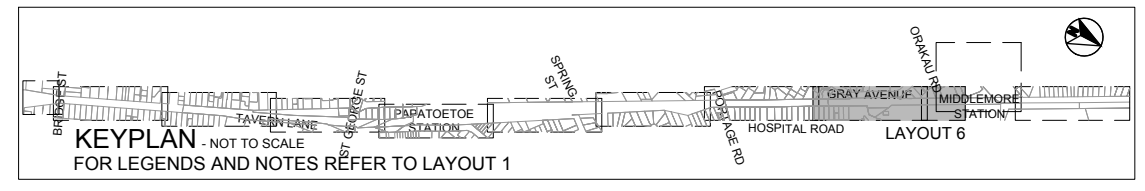
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Designed: VARIOUS
Approved: T.WILSON
Revision Date: 20.04.12

Project No: 1-C0681.00
Scale: 1:500 @ A1

Project		Sheet	Revision
KIWI RAIL MIDDLEMORE TO PUHINI NEW THIRD MAIN - STAGE 2		EXISTING SERVICES LAYOUT 5 OF 8	
Project No:	1-C0681.00	Sheet No:	24
Revision No:	1/6057/19/5104	Revision:	RD



NOTE:
LAYOUT 6 CONTAINS
MIDDLEMORE STATION
(PACKAGE 2 - ISSUED SEPARATELY)



Revision	Amendment	Approved	Revision Date
RA	ISSUED IN INFRASTRUCTURE REPORT	TW	20.04.12
RB	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RC	DETAILED DESIGN ISSUE	TW	06.07.12
RD	85% ISSUE	PW	16.12.16



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Drawn	Designed	Approved	Revision Date
VARIOUS	VARIOUS	T.WILSON	20.04.12
Project No.	Scale	Drawing No.	
1-C0681.00	1:500 @ A1	1/6057/19/5104	

Project
KIWI RAIL
MIDDLEMORE TO PUHINUI
NEW THIRD MAIN - STAGE 2

Sheet
EXISTING SERVICES
LAYOUT 6 OF 8

Sheet No.	Revision
25	RD

85% ISSUE

LEGEND - SURVEYED SERVICES

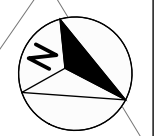
- ○ SERVICE LIDS UNKNOWN
- ⊕ ⊗ ⊙ ⊕ STORMWATER CATCHPIT, MANHOLE, CULVERT, DOWNPIPE
- STORMWATER OPEN DRAIN, SLOT DRAIN
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- ⊕ ⊗ ⊙ ⊕ GAS BOX, VENT
- ⊕ ⊗ ⊙ ⊕ POWER POLE, LIGHT MAST, BOX, METER, CABLE MARKER
- ⊕ ⊗ ⊙ ⊕ TELEPHONE BOX, PULL PIT
- ⊕ ⊗ ⊙ ⊕ SEWER MANHOLE

SERVICES NOTES:

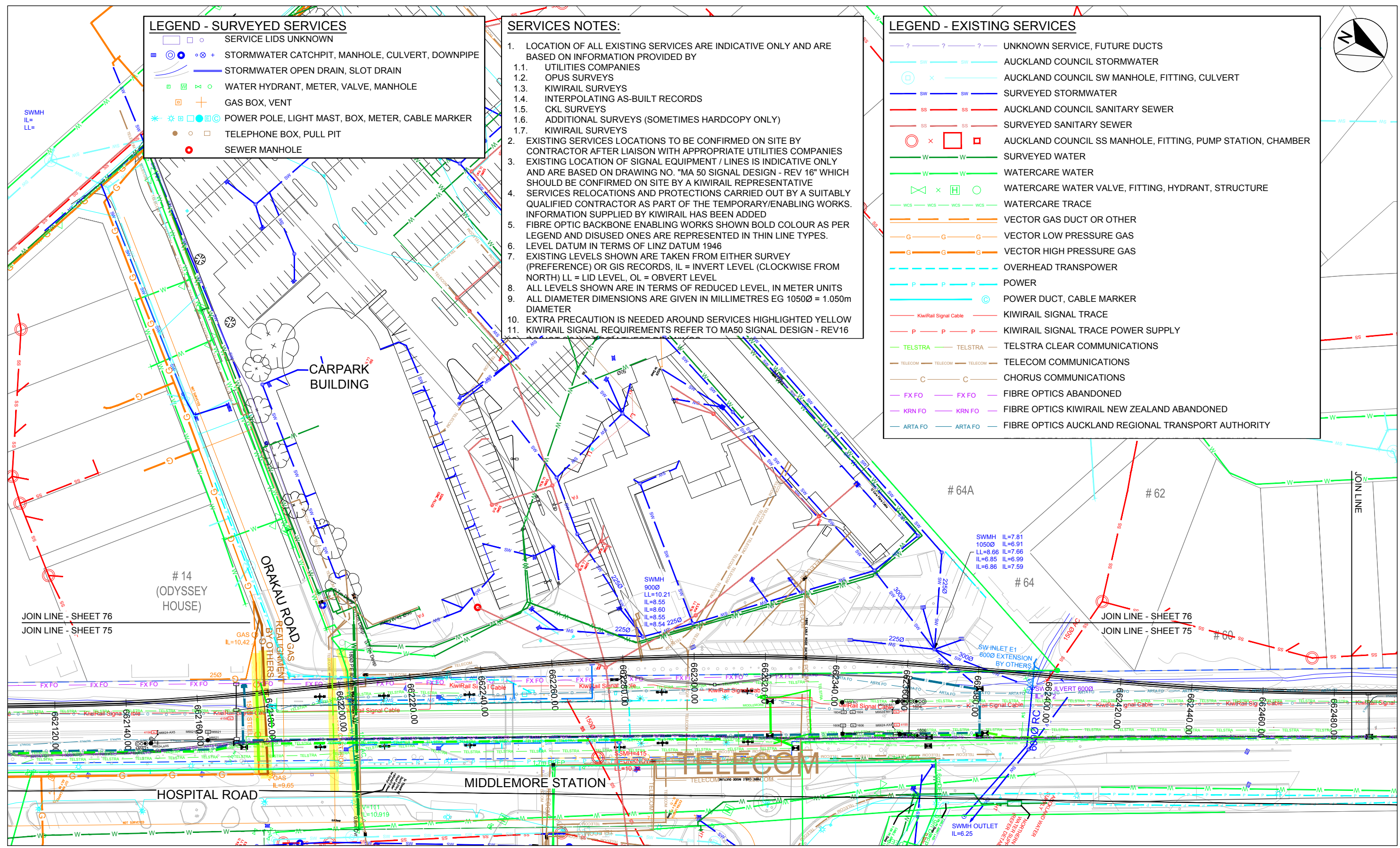
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LEGEND - EXISTING SERVICES

- ? ? ? ? UNKNOWN SERVICE, FUTURE DUCTS
- SW — SW AUCKLAND COUNCIL STORMWATER
- ⊕ ⊗ ⊙ ⊕ AUCKLAND COUNCIL SW MANHOLE, FITTING, CULVERT
- SS — SS SURVEYED STORMWATER
- ⊕ ⊗ ⊙ ⊕ AUCKLAND COUNCIL SS MANHOLE, FITTING, PUMP STATION, CHAMBER
- W — W SURVEYED WATER
- W — W WATERCARE WATER
- WCS — WCS WATERCARE TRACE
- G — G VECTOR GAS DUCT OR OTHER
- G — G VECTOR LOW PRESSURE GAS
- G — G VECTOR HIGH PRESSURE GAS
- P — P OVERHEAD TRANSPOWER
- P — P POWER
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- TELECOM — TELECOM TELECOM COMMUNICATIONS
- C — C CHORUS COMMUNICATIONS
- FX FO — FX FO FIBRE OPTICS ABANDONED
- KRN FO — KRN FO FIBRE OPTICS KIWRIL NEW ZEALAND ABANDONED
- ARTA FO — ARTA FO FIBRE OPTICS AUCKLAND REGIONAL TRANSPORT AUTHORITY

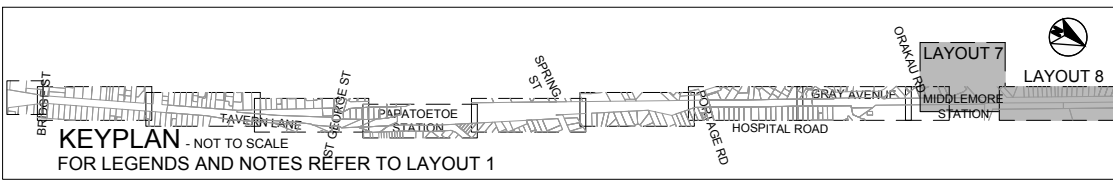


300 mm
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100
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JOIN LINE - SHEET 76
JOIN LINE - SHEET 75

JOIN LINE - SHEET 76
JOIN LINE - SHEET 75



Revision	Amendment	Approved	Revision Date
RA	MIDDLEMORE PRELIMINARY DESIGN	TW	15.06.12
RB	85% ISSUE	PW	16.12.16



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Drawn: VARIOUS
Designed: VARIOUS
Approved: T.WILSON
Revision Date: 15.06.12

Project No: 1-C0681.00
Scale: 1:500 @ A1

Project KIWRIL MIDDLEMORE TO PUHINUI NEW THIRD MAIN - STAGE 2	
Sheet No. 26	
Revision RB	
Drawing No. 1/6057/19/5104	

85% ISSUE

LEGEND - SURVEYED SERVICES

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- ⊕ ⊗ ⊙ ⊕ STORMWATER CATCHPIT, MANHOLE, CULVERT, DOWNPIPE
- STORMWATER OPEN DRAIN, SLOT DRAIN
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- ⊕ ⊗ ⊙ ⊕ GAS BOX, VENT
- ⊕ ⊗ ⊙ ⊕ POWER POLE, LIGHT MAST, BOX, METER, CABLE MARKER
- ⊕ ⊗ ⊙ ⊕ TELEPHONE BOX, PULL PIT
- ⊕ ⊗ ⊙ ⊕ SEWER MANHOLE

SERVICES NOTES:

1. LOCATION OF ALL EXISTING SERVICES ARE INDICATIVE ONLY AND ARE BASED ON INFORMATION PROVIDED BY
 - 1.1. UTILITIES COMPANIES
 - 1.2. OPUS SURVEYS
 - 1.3. KIWIRAIL SURVEYS
 - 1.4. INTERPOLATING AS-BUILT RECORDS
 - 1.5. CKL SURVEYS
 - 1.6. ADDITIONAL SURVEYS (SOMETIMES HARDCOPY ONLY)
 - 1.7. KIWIRAIL SURVEYS
2. EXISTING SERVICES LOCATIONS TO BE CONFIRMED ON SITE BY CONTRACTOR AFTER LIAISON WITH APPROPRIATE UTILITIES COMPANIES
3. EXISTING LOCATION OF SIGNAL EQUIPMENT / LINES IS INDICATIVE ONLY AND ARE BASED ON DRAWING NO. "MA 50 SIGNAL DESIGN - REV 16" WHICH SHOULD BE CONFIRMED ON SITE BY A KIWIRAIL REPRESENTATIVE
4. SERVICES RELOCATIONS AND PROTECTIONS CARRIED OUT BY A SUITABLY QUALIFIED CONTRACTOR AS PART OF THE TEMPORARY/ENABLING WORKS. INFORMATION SUPPLIED BY KIWIRAIL HAS BEEN ADDED
5. FIBRE OPTIC BACKBONE ENABLING WORKS SHOWN BOLD COLOUR AS PER LEGEND AND DISUSED ONES ARE REPRESENTED IN THIN LINE TYPES.
6. LEVEL DATUM IN TERMS OF LINZ DATUM 1946
7. EXISTING LEVELS SHOWN ARE TAKEN FROM EITHER SURVEY (PREFERENCE) OR GIS RECORDS, IL = INVERT LEVEL (CLOCKWISE FROM NORTH) LL = LID LEVEL, OL = OVERT LEVEL
8. ALL LEVELS SHOWN ARE IN TERMS OF REDUCED LEVEL, IN METER UNITS
9. ALL DIAMETER DIMENSIONS ARE GIVEN IN MILLIMETRES EG 1050Ø = 1.050m DIAMETER
10. EXTRA PRECAUTION IS NEEDED AROUND SERVICES HIGHLIGHTED YELLOW
11. KIWIRAIL SIGNAL REQUIREMENTS REFER TO MA50 SIGNAL DESIGN - REV16
12. DO NOT SCALE FROM THESE DRAWINGS
13. RAIL DESIGNATION AND PROPERTY BOUNDARIES AS PROVIDED BY AC AND TERRAVIEW RESPECTIVELY.
14. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND AVOIDING CLASHES WITH ALL OTHER SERVICES.
15. CABLE ROUTES ARE INDICATIVE. FINAL POSITION TO BE APPROVED BY CLIENT REPRESENTATIVE
16. THE FINAL POSITION OF THE DUCTS SHALL BE APPROVED APPROPRIATE SERVICES PROVIDER

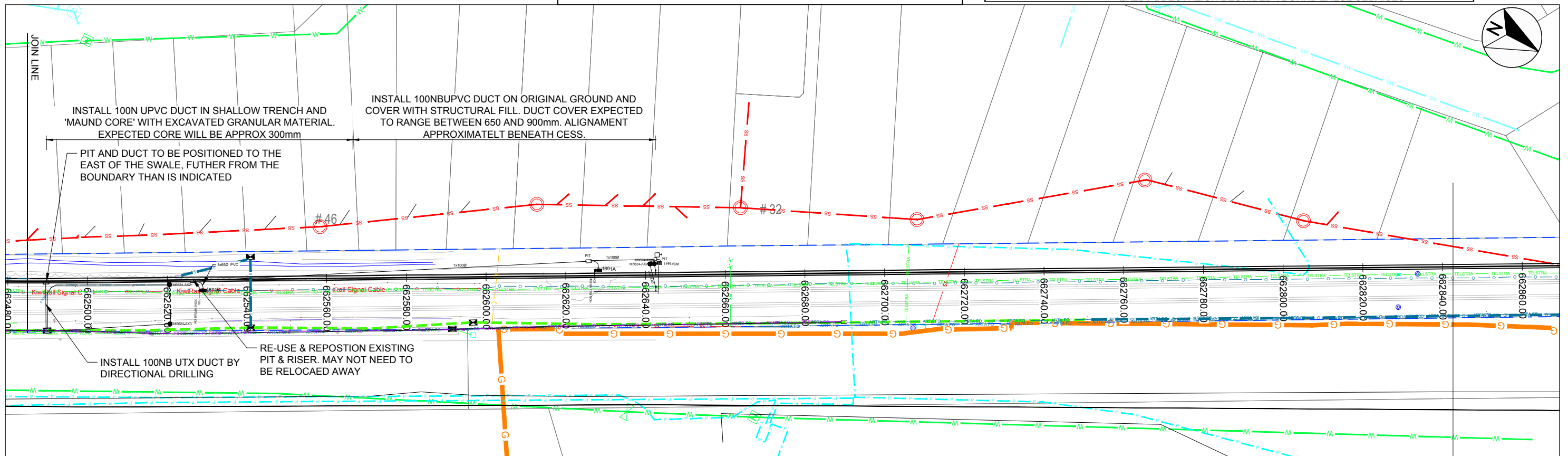
LEGEND - EXISTING SERVICES

- ? — ? — ? — UNKNOWN SERVICE, FUTURE DUCTS
- SW — SW — SW — AUCKLAND COUNCIL STORMWATER
- ⊕ ⊗ ⊙ ⊕ AUCKLAND COUNCIL SW MANHOLE, FITTING, CULVERT
- SW — SW — SW — SURVEYED STORMWATER
- SS — SS — SS — AUCKLAND COUNCIL SANITARY SEWER
- SS — SS — SS — SURVEYED SANITARY SEWER
- ⊕ ⊗ ⊙ ⊕ AUCKLAND COUNCIL SS MANHOLE, FITTING, PUMP STATION, CHAMBER
- W — W — W — SURVEYED WATER
- W — W — W — WATERCARE WATER
- ⊕ ⊗ ⊙ ⊕ WATERCARE WATER VALVE, FITTING, HYDRANT, STRUCTURE
- WCS — WCS — WCS — WCS — WATERCARE TRACE
- G — G — G — VECTOR GAS DUCT OR OTHER
- G — G — G — VECTOR LOW PRESSURE GAS
- G — G — G — VECTOR HIGH PRESSURE GAS
- — — — OVERHEAD TRANSPOWER
- P — P — P — POWER
- ⊕ ⊗ ⊙ ⊕ POWER DUCT, CABLE MARKER
- KiwiRail Signal Cable — — — KIWIRAIL SIGNAL TRACE
- P — P — P — KIWIRAIL SIGNAL TRACE POWER SUPPLY
- TELSTRA — TELSTRA — TELSTRA — TELSTRA CLEAR COMMUNICATIONS
- TELECOM — TELECOM — TELECOM — TELECOM COMMUNICATIONS
- C — C — C — CHORUS COMMUNICATIONS
- FX FO — FX FO — FX FO — FIBRE OPTICS ABANDONED
- KRN FO — KRN FO — KRN FO — FIBRE OPTICS KIWIRAIL NEW ZEALAND ABANDONED
- ARTA FO — ARTA FO — ARTA FO — FIBRE OPTICS AUCKLAND REGIONAL TRANSPORT AUTHORITY

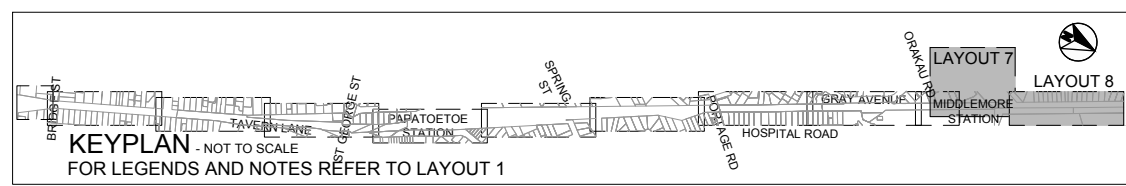
LEGEND

- ROUTE TO BE INSTALLED BY CIVIL CONTRACTOR
- CONCRETE SIGNAL BASE
- 600x600 PIT. STANDARD PIT TO BE INSTALLED
- 1200x600 PIT (EITHER ONE PIECE OR KIT SET, WITH RISERS AS REQUIRED. STANDARD PIT TO BE INSTALLED.
- FLEXIBLE HOSE OR DUCT INSTALLED BY SIGNALLING CONTRACTOR OR KR SIGNAL STAFF.

300 mm
200
100
50
10 mm
0



85% ISSUE



1:500 @ A1
1:1000 @ A3

Revision	Amendment	Approved	Revision Date
RA	MIDDLEMORE PRELIMINARY DESIGN	TW	15.06.12
RB	85% ISSUE	PW	16.12.16



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Drawn: VARIOUS
Designed: VARIOUS
Approved: T.WILSON
Revision Date: 15.06.12

Project No: 1-C0681.00
Scale: 1:500 @ A1

Project KIWIRAIL MIDDLEMORE TO PUHINUI NEW THIRD MAIN - STAGE 2	
Sheet EXISTING SERVICES LAYOUT 8 OF 8	
Drawn No: 1/6057/19/5104	Sheet No: 27
Revision RB	

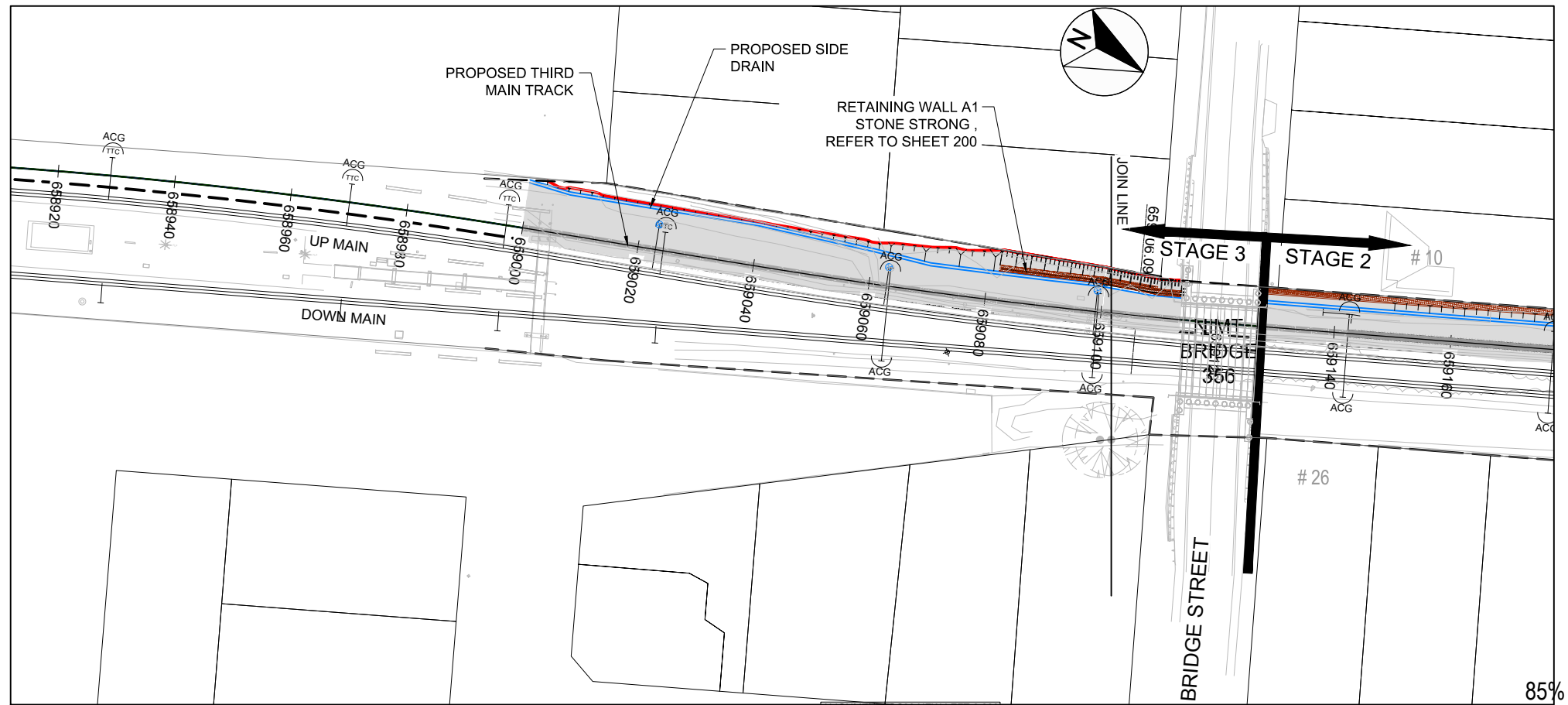
NOTES:

1. ALL DRAWINGS TO BE READ IN CONJUNCTION WITH CIVIL SPECIFICATION
2. FOR ADDITIONAL DESIGN INFORMATION AROUND MIDDLEMORE STATION, REFER TO ARCHITECTURAL, MECHANICAL AND ELECTRICAL, AND STRUCTURAL DRAWINGS
3. FOR STORMWATER DESIGN INFORMATION REFER TO PLANS 300-327

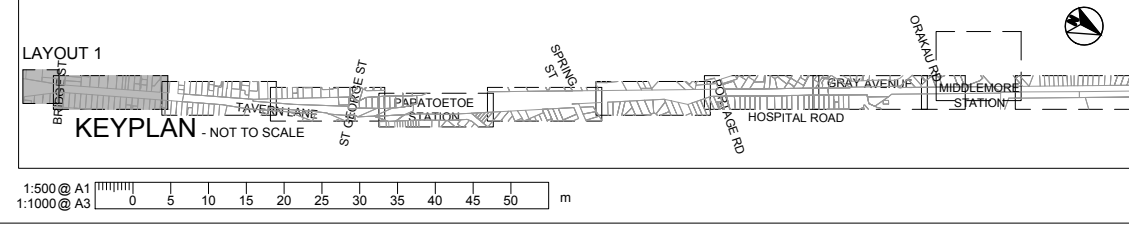
LEGEND:

- LEGAL BOUNDARIES
- RAIL BOUNDARIES
- PROPOSED BOUNDARY
- SURVEY
- ==== EXISTING TRACK
- ==== NEW THIRD MAIN
- ACG (TTC) OVERHEAD LINE EQUIPMENT (OLE)
- WALL
- EARTHWORKS EXTENT - CUT
- EARTHWORKS EXTENT - FILL
- SIDE DRAIN
- EXTENT OF WORKS

300 mm
200
100
50
0 10 mm



85% ISSUE



Revision	Amendment	Approved	Revision Date
RA	ISSUED FOR OUTLINE PLAN OF WORKS	AC	12.04.12
RB	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RC	ISSUED FOR CONSENT	TW	03.07.12
RD	DETAILED DESIGN ISSUE	TW	06.07.12
RE	85% ISSUE	PW	19.07.16
RF	85% ISSUE UPDATED	PW	08.11.16



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Drawn	Designed	Approved	Revision Date
N.BOYTE	A.COOK	T.WILSON	12.04.12

Project No. 1-M9001.86
Scale 1:500 @ A1

Project	
KIWIRAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2	
Sheet	
CIVIL SITE PLAN LAYOUT 1 OF 8	
Drawing No.	1/6057/19/5104
Sheet No.	70
Revision	RF

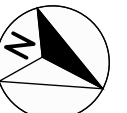
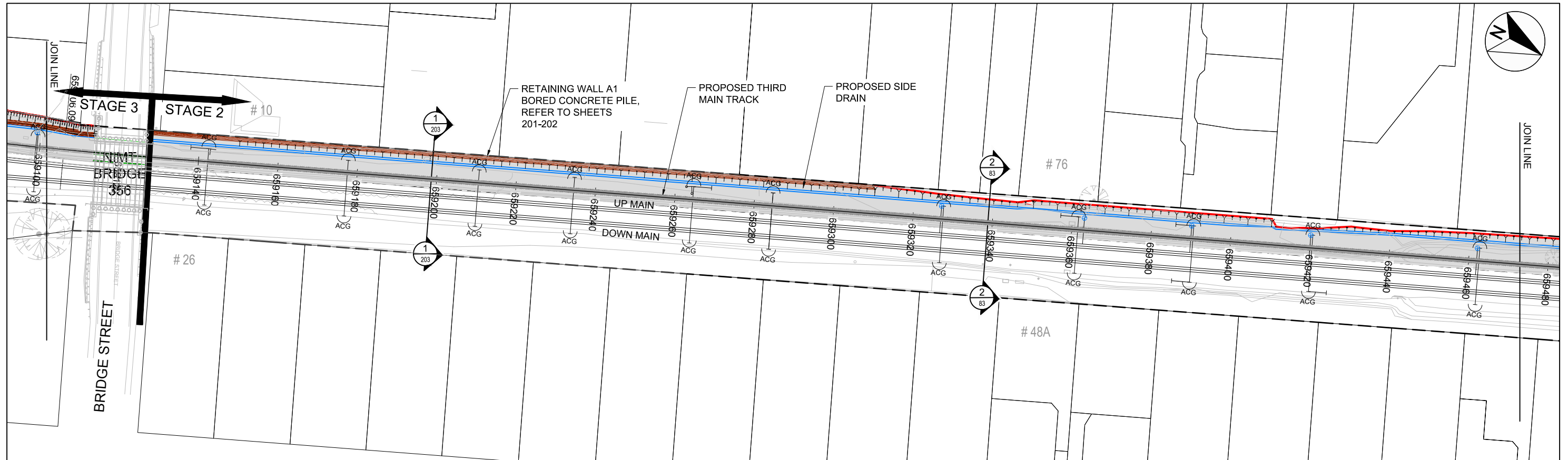
NOTES:

1. ALL DRAWINGS TO BE READ IN CONJUNCTION WITH CIVIL SPECIFICATION
2. FOR ADDITIONAL DESIGN INFORMATION AROUND MIDDLEMORE STATION, REFER TO ARCHITECTURAL, MECHANICAL AND ELECTRICAL, AND STRUCTURAL DRAWINGS
3. FOR STORMWATER DESIGN INFORMATION REFER TO PLANS 300-327

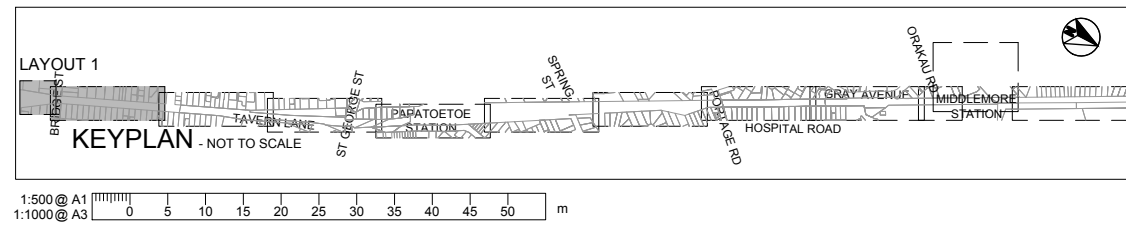
LEGEND:

- LEGAL BOUNDARIES
- RAIL BOUNDARIES
- PROPOSED BOUNDARY
- SURVEY
- ==== EXISTING TRACK
- ==== NEW THIRD MAIN
- ACG
TTC
T OVERHEAD LINE EQUIPMENT (OLE)
- WALL
- EARTHWORKS EXTENT - CUT
- EARTHWORKS EXTENT - FILL
- SIDE DRAIN
- EXTENT OF WORKS

300 mm
200
100
50
10 mm
0



85% ISSUE



Revision	Amendment	Approved	Revision Date
RA	ISSUED FOR OUTLINE PLAN OF WORKS	AC	12.04.12
RB	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RC	ISSUED FOR CONSENT	TW	03.07.12
RD	DETAILED DESIGN ISSUE	TW	06.07.12
RE	85% ISSUE	PW	19.07.16
RF	85% ISSUE UPDATED	PW	08.11.16



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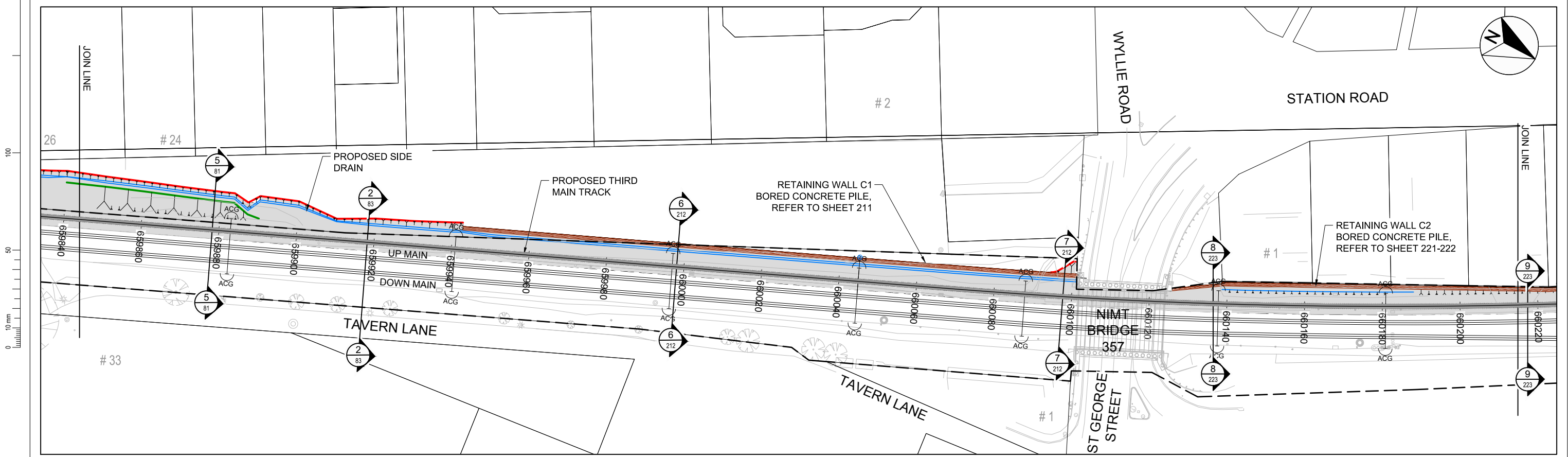
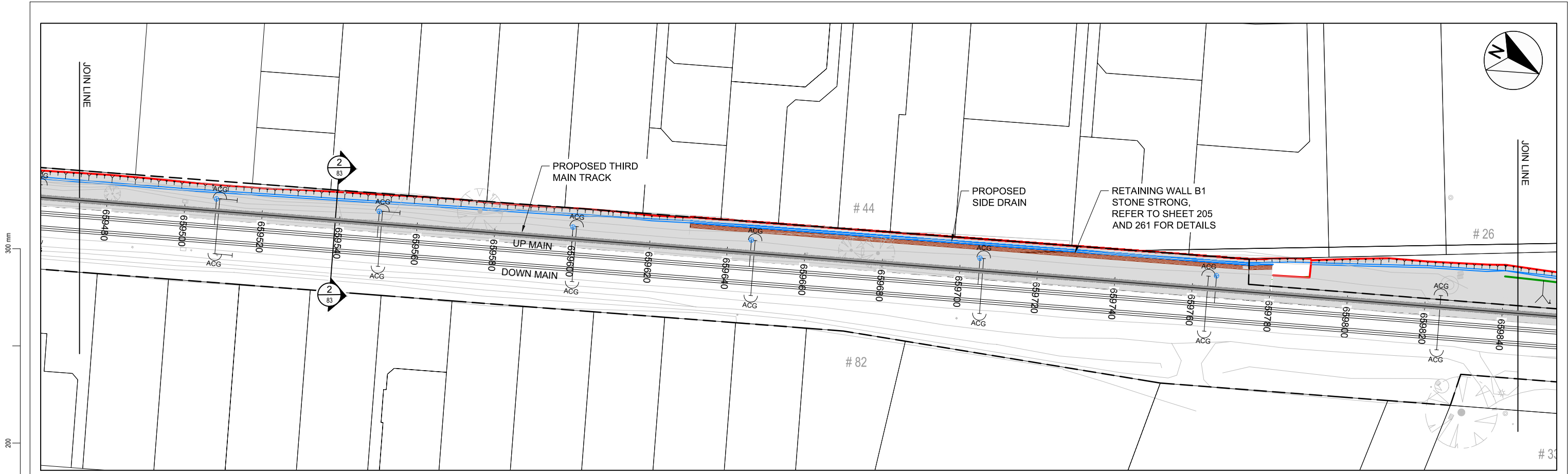
Drawn	Designed	Approved	Revision Date
N.BOYTE	A.COOK	T.WILSON	12.04.12

Project No. 1-M9001.86 Scale 1:500 @ A1

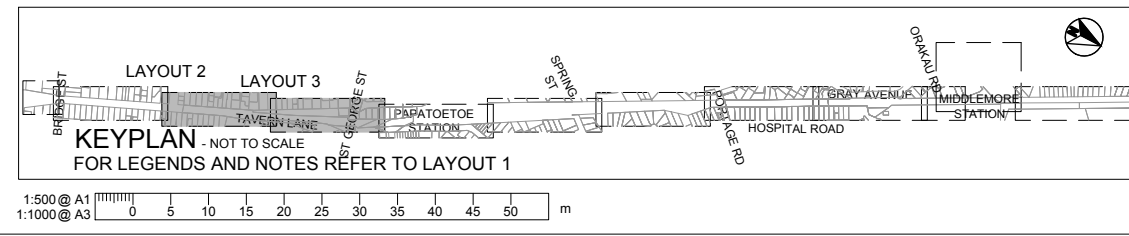
Project
KIWIRAIL
MIDDLEMORE (662,600m) TO PUHINUI (659,000m)
NEW THIRD MAIN - STAGE 2

Sheet
CIVIL SITE PLAN
LAYOUT 2 OF 8

Drawn No.	Sheet No.	Revision
1/6057/19/5104	71	RF



85% ISSUE



Revision	Amendment	Approved	Revision Date
RA	ISSUED FOR OUTLINE PLAN OF WORKS	AC	12.04.12
RB	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RC	ISSUED FOR CONSENT	TW	03.07.12
RD	DETAILED DESIGN ISSUE	TW	06.07.12
RE	85% ISSUE	PW	19.07.16
RF	85% ISSUE UPDATED	PW	08.11.16



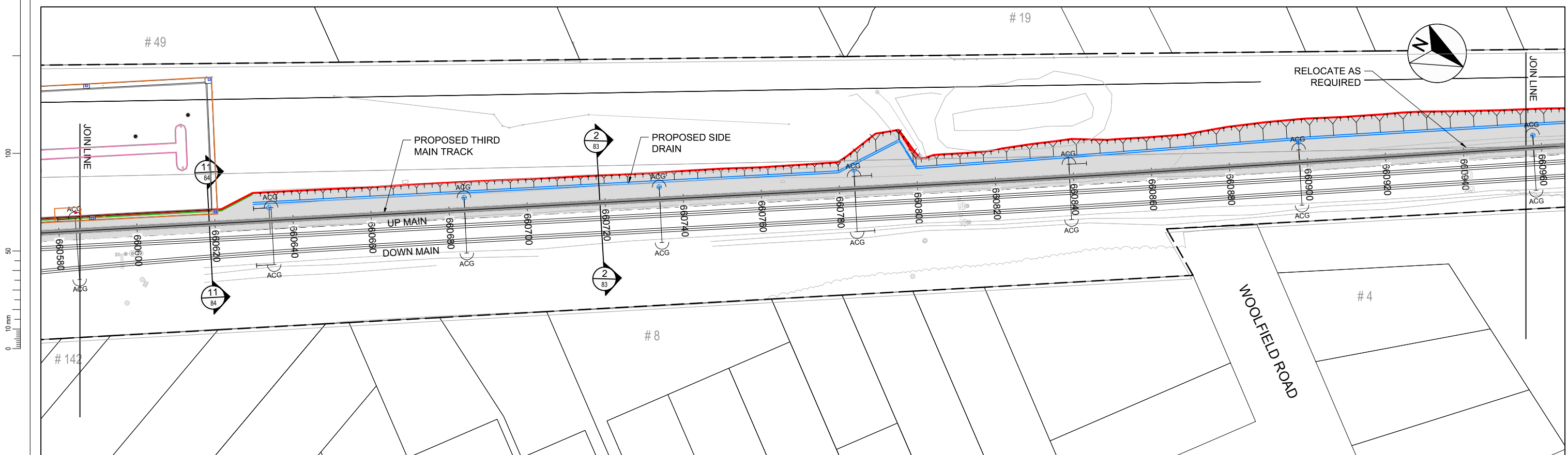
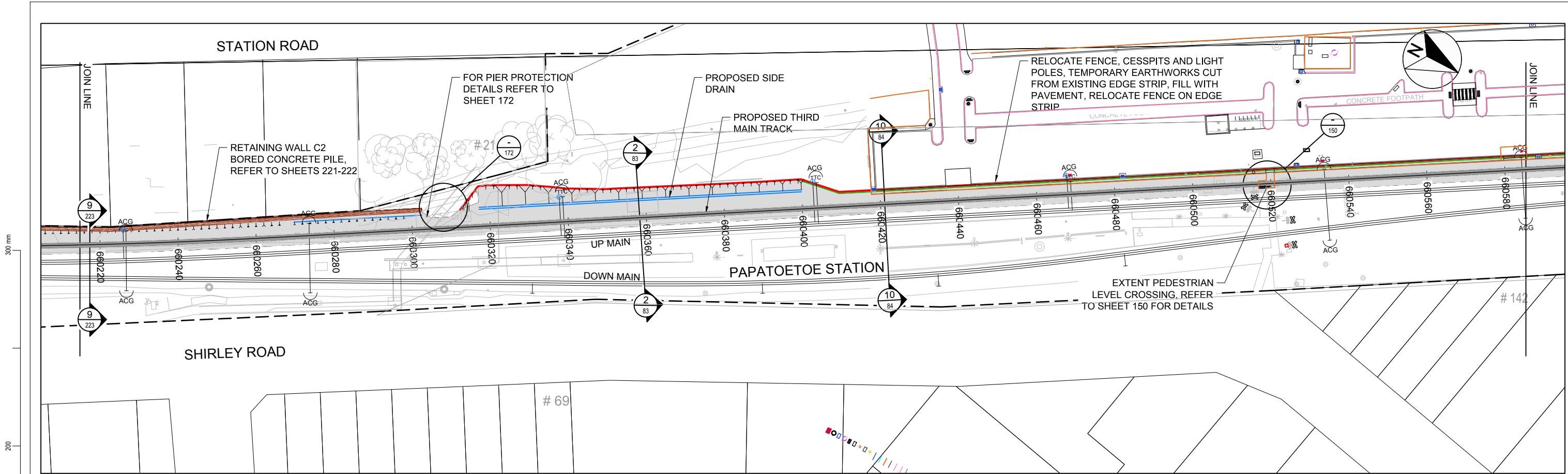
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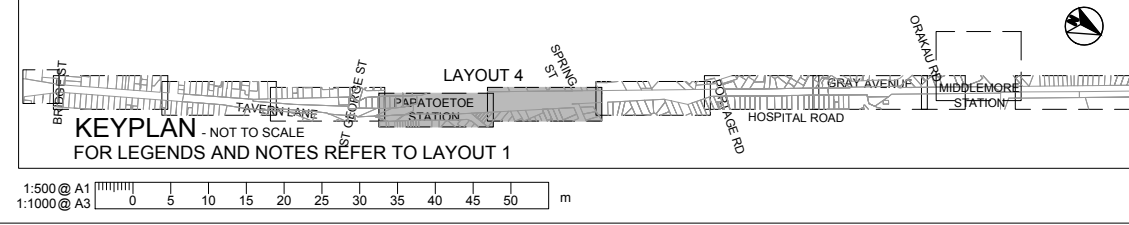
Drawn: N.BOYTE
Designed: A.COOK
Approved: T.WILSON
Revision Date: 12.04.12

Project No: 1-M9001.86
Scale: 1:500 @ A1

Project	KIWIRAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2
Sheet	CIVIL SITE PLAN LAYOUT 3 OF 8
Sheet No.	72
Revision	RF



85% ISSUE



Revision	Amendment	Approved	Revision Date
RA	ISSUED FOR OUTLINE PLAN OF WORKS	AC	12.04.12
RB	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RC	ISSUED FOR CONSENT	TW	03.07.12
RD	DETAILED DESIGN ISSUE	TW	06.07.12
RE	85% ISSUE	PW	19.07.16
RF	85% ISSUE UPDATED	PW	08.11.16



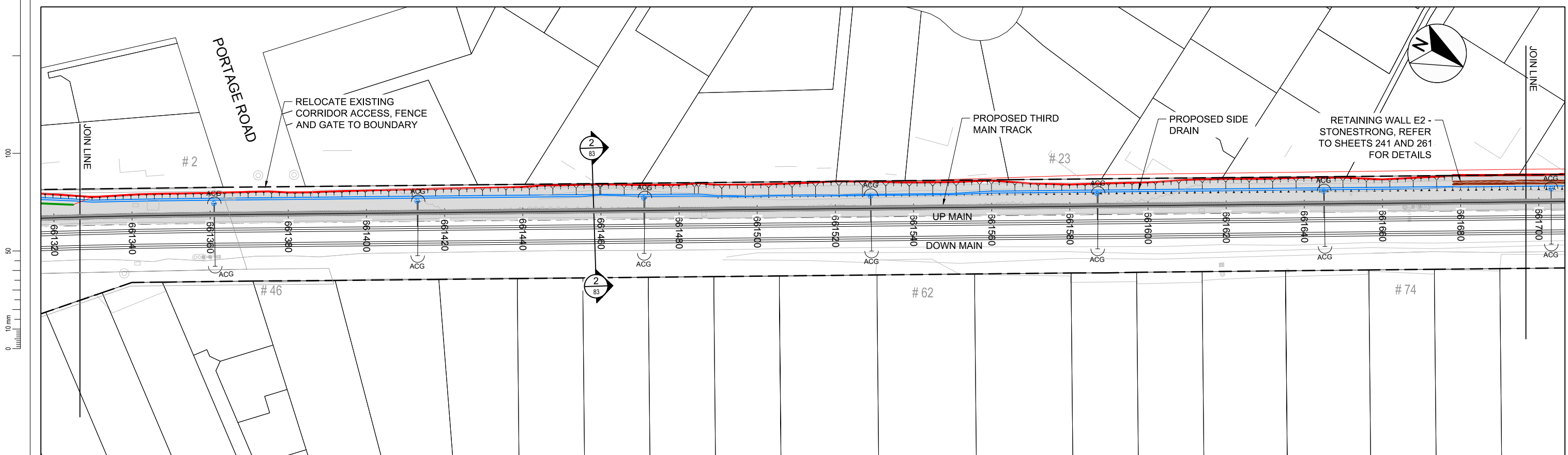
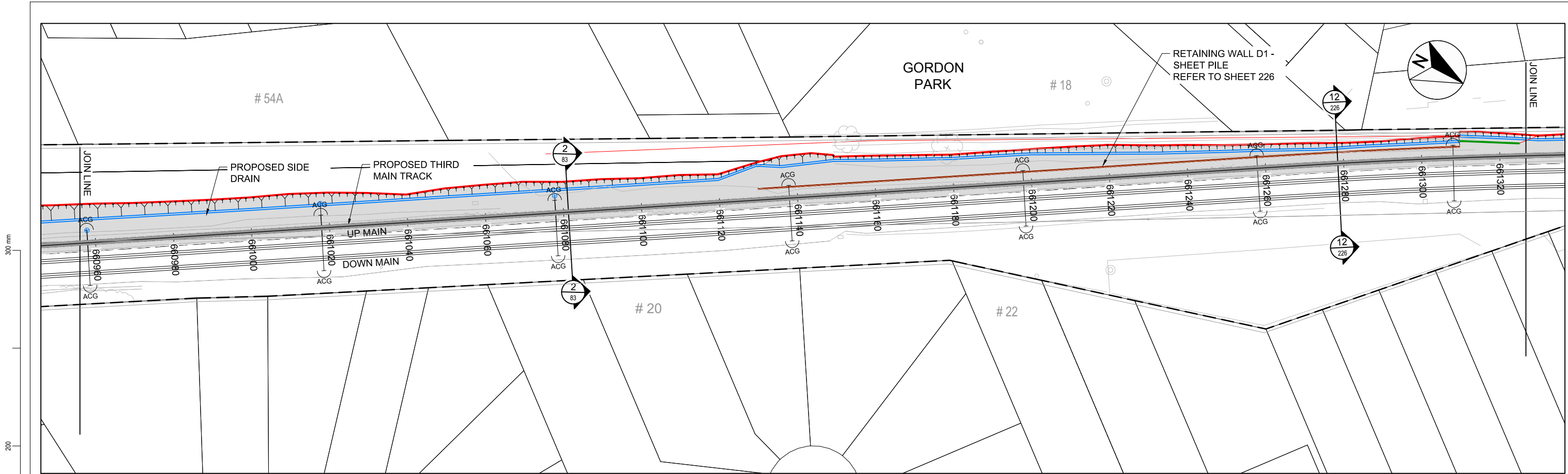
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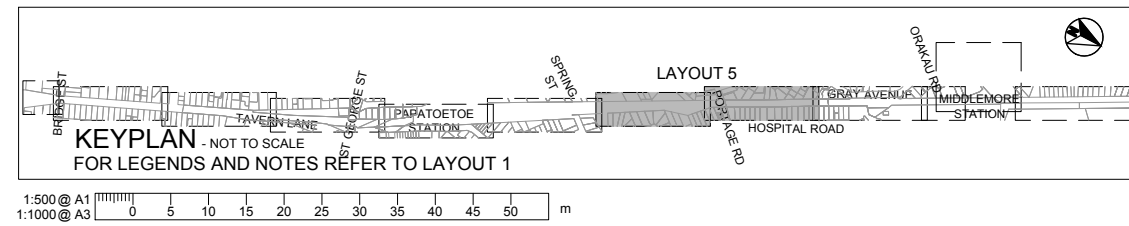
Drawn	Designed	Approved	Revision Date
N.BOYTE	A.COOK	T.WILSON	12.04.12

Project No. 1-M9001.86
Scale 1:500 @ A1

Project		Sheet No.	Revision
KIWI RAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2			
Sheet		73	RF
CIVIL SITE PLAN LAYOUT 4 OF 8			
Drawing No. 1/6057/19/5104			



85% ISSUE



Revision	Amendment	Approved	Revision Date
RA	ISSUED FOR OUTLINE PLAN OF WORKS	AC	12.04.12
RB	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RC	ISSUED FOR CONSENT	TW	03.07.12
RD	DETAILED DESIGN ISSUE	TW	06.07.12
RE	85% ISSUE	PW	19.07.16
RF	85% ISSUE UPDATED	PW	08.11.16



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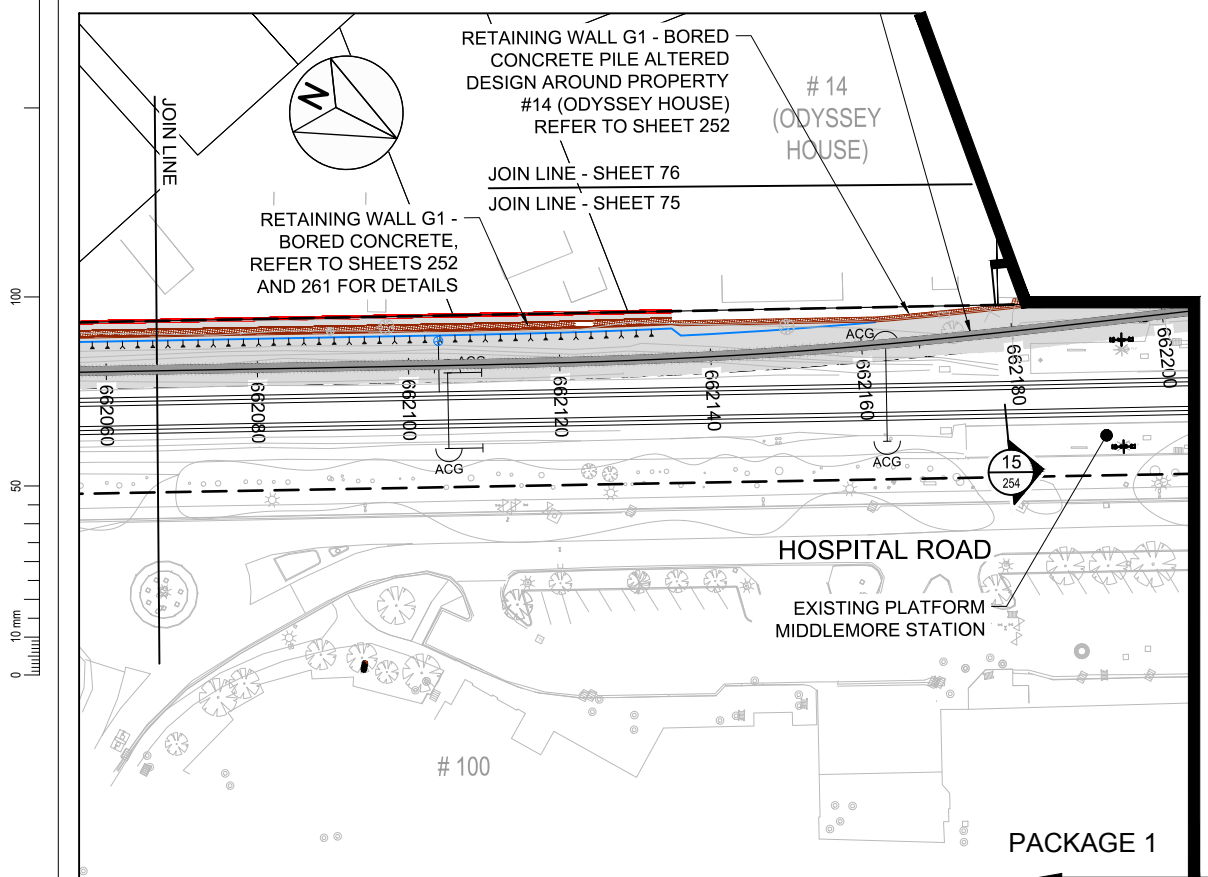
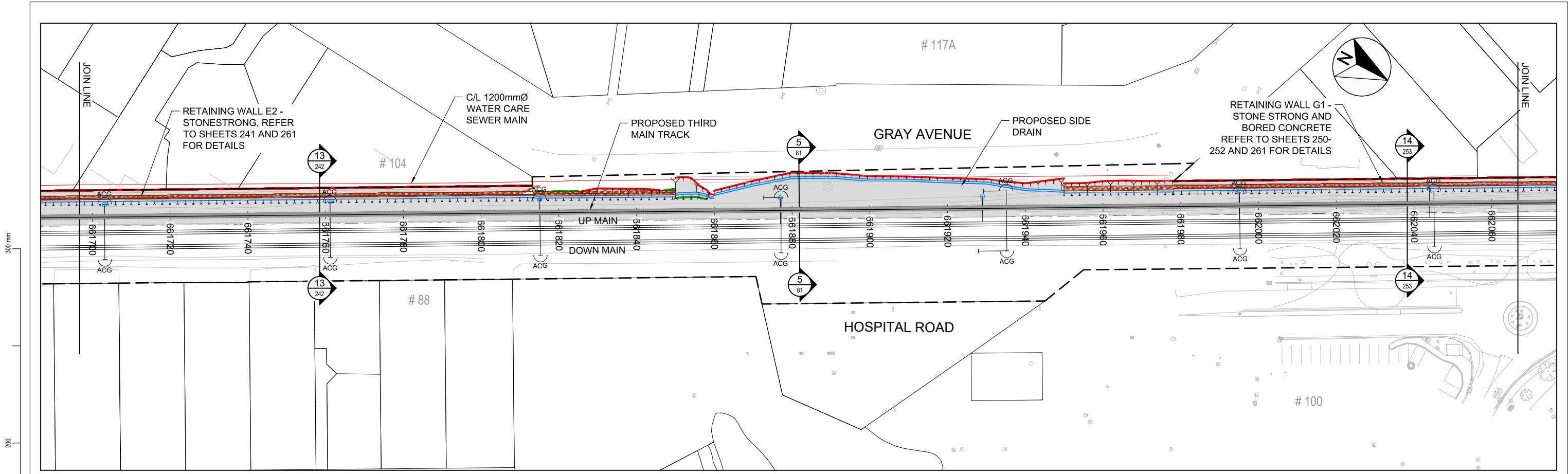
Drawn	Designed	Approved	Revision Date
N.BOYTE	A.COOK	T.WILSON	12.04.12

Project No. 1-M9001.86 Scale 1:500 @ A1

Project
**KIWI RAIL
MIDDLEMORE (662,600m) TO PUHINUI (659,000m)
NEW THIRD MAIN - STAGE 2**

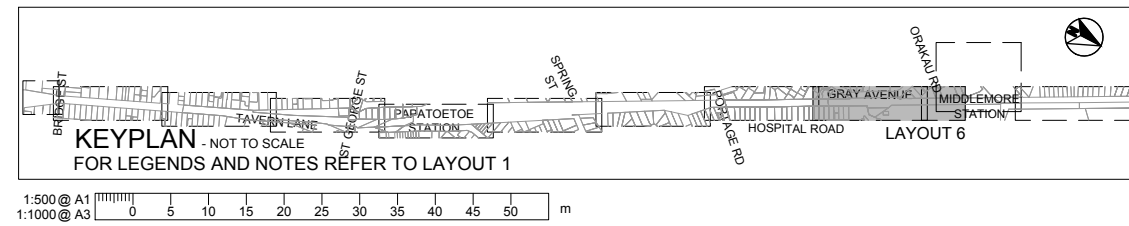
Sheet
**CIVIL SITE PLAN
LAYOUT 5 OF 8**

Drawn No.	Sheet No.	Revision
1/6057/19/5104	74	RF



NOTE:
LAYOUT 7 CONTAINS
MIDDLEMORE STATION
(MIDDLEMORE PACKAGE 2 - ISSUED
SEPARATELY)

85% ISSUE



Revision	Amendment	Approved	Revision Date
RA	ISSUED FOR OUTLINE PLAN OF WORKS	AC	12.04.12
RB	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RC	ISSUED FOR CONSENT	TW	03.07.12
RD	DETAILED DESIGN ISSUE	TW	06.07.12
RE	85% ISSUE	PW	19.07.16
RF	85% ISSUE UPDATED	PW	08.11.16



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Drawn	Designed	Approved	Revision Date
N.BOYTE	A.COOK	T.WILSON	12.04.12

Project No. 1-M9001.86
Scale 1:500 @ A1

Project
KIWIRAIL
MIDDLEMORE (662,600m) TO PUHINUI (659,000m)
NEW THIRD MAIN - STAGE 2

Sheet
CIVIL SITE PLAN
LAYOUT 6 OF 8

Drawn No.	Sheet No.	Revision
1/6057/19/5104	75	RF

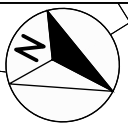
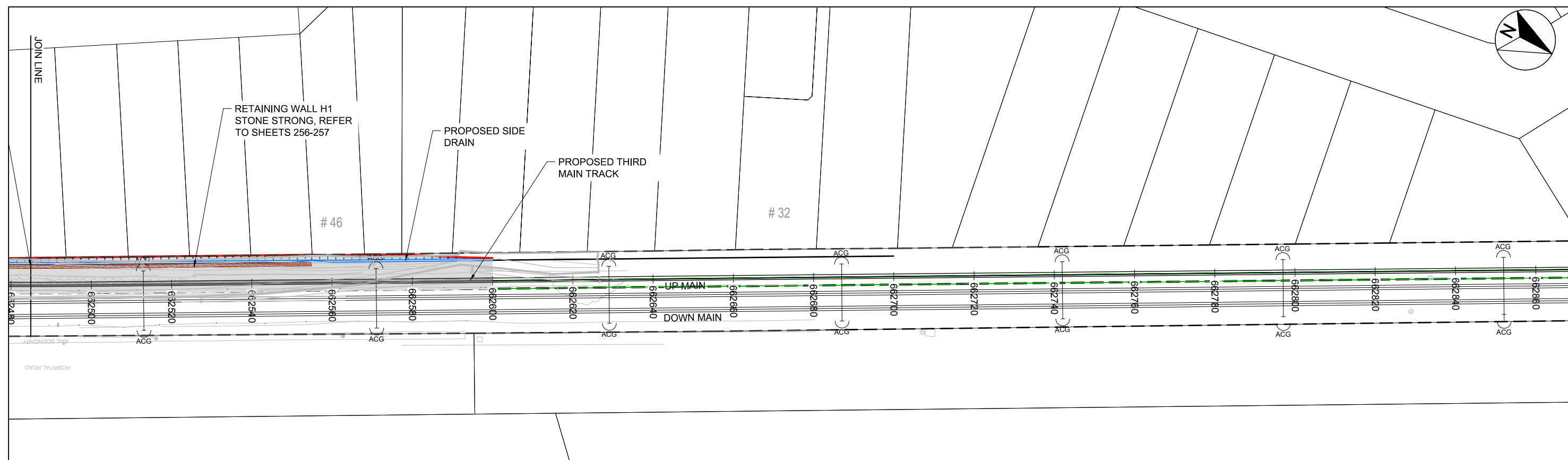
NOTES:

1. ALL DRAWINGS TO BE READ IN CONJUNCTION WITH CIVIL SPECIFICATION
2. FOR ADDITIONAL DESIGN INFORMATION AROUND MIDDLEMORE STATION, REFER TO ARCHITECTURAL, MECHANICAL AND ELECTRICAL, AND STRUCTURAL DRAWINGS
3. FOR STORMWATER DESIGN INFORMATION REFER TO PLANS 300-327

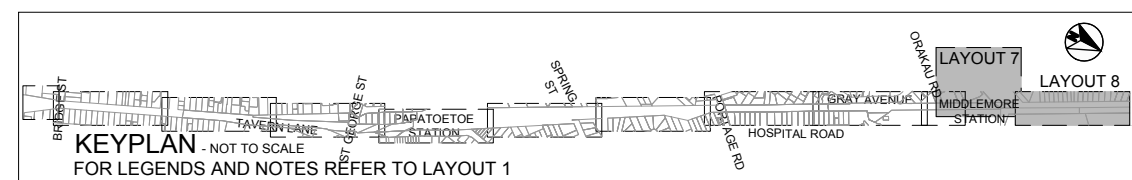
LEGEND:

- LEGAL BOUNDARIES
- RAIL BOUNDARIES
- PROPOSED BOUNDARY
- SURVEY
- ==== EXISTING TRACK
- ==== NEW THIRD MAIN
- ACG
T T OVERHEAD LINE EQUIPMENT (OLE)
- WALL
- EARTHWORKS EXTENT - CUT
- EARTHWORKS EXTENT - FILL
- SIDE DRAIN
- EXTENT OF WORKS

300 mm
200
100
50
10 mm
0



85% ISSUE



1:500 @ A1
1:1000 @ A3

Revision	Amendment	Approved	Revision Date
RA	MIDDLEMORE OPTION 4 CONCEPT	TW	11.05.12
RB	MIDDLEMORE PRELIMINARY DESIGN	TW	20.06.12
RC	85% ISSUE	PW	19.07.16
RD	85% ISSUE UPDATED	PW	08.11.16



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Drawn	Designed	Approved	Revision Date
VARIOUS	VARIOUS	T.WILSON	11.05.12

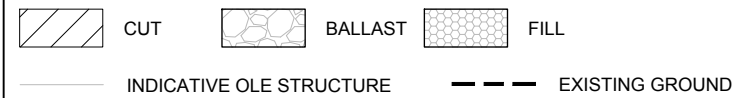
Project No. 1-M9001.86 Scale 1:500 @ A1

Project	
KIWI RAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2	
Sheet	
CIVIL SITE PLAN LAYOUT 8 OF 8	
Drawing No.	Sheet No.
1/6057/19/5104	77
Revision	RD

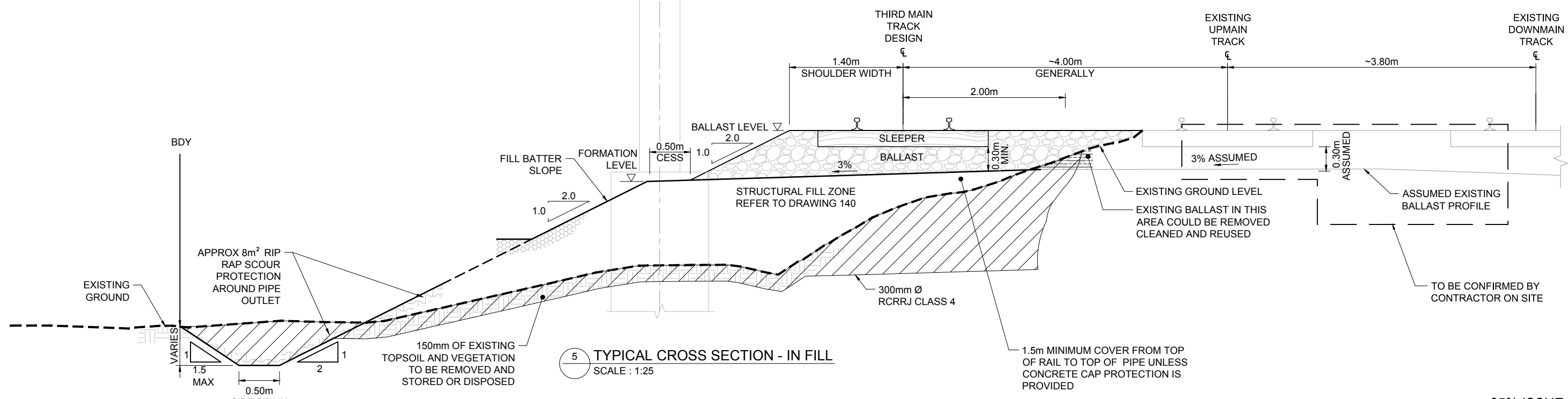
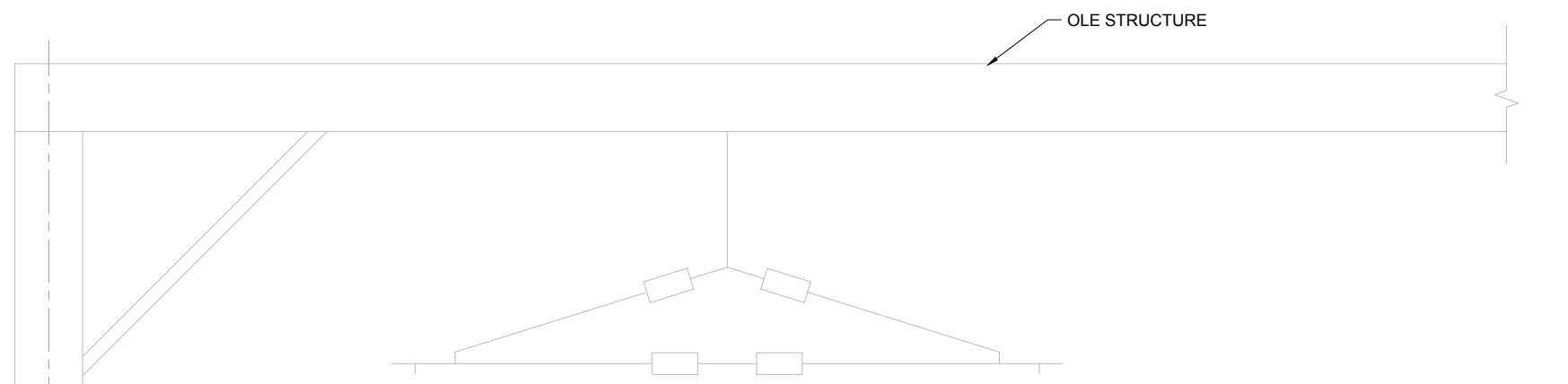
NOTES:

1. GEOTECHNICAL SUPERVISION BY A SUITABLY QUALIFIED ENGINEER, WILL BE REQUIRED DURING THE CONSTRUCTION OF THE STRUCTURAL FILL ZONE TO DETERMINE APPROPRIATE DEPTHS AND MATERIALS
2. FOR CLARITY RAILS ARE SHOWN LEVEL, MINIMUM DIMENSIONS STILL
3. APPLY ON CURVES
4. TYPICAL DETAIL IS GENERATED FROM ONTRACK FORMATION GUIDELINES AND T:200 SPECIFICALLY CLAUSES 211 & 404
5. NEW SLEEPERS ASSUMED TO BE TIMBER 150mm W x 200mm D x 2100 L
6. GAUGE 1068mm, NO ACCOUNT FOR WIDENING OF CURVES SHOWN
7. TOP OF STRUCTURAL FILL ZONE REQUIRES A CBR OF 15%
8. BALLAST MATERIAL SUBJECT TO KIWIRAIL APPROVAL
9. ALL CONSTRUCTION WORKS TO COMPLY WITH KIWIRAILS RAIL SAFETY STANDARDS AND GUIDELINES
10. REFER TO SHEET 140 FOR STRUCTURAL FILL ZONE DETAILS

LEGEND:

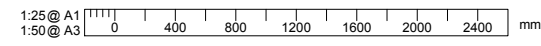


300 mm
200
100
50
10 mm



5 TYPICAL CROSS SECTION - IN FILL
SCALE : 1:25

85% ISSUE



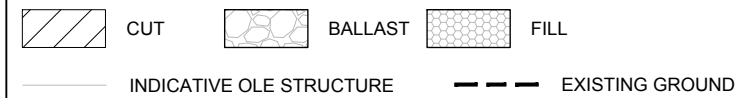
Revision	Amendment	Approved	Revision Date
RA	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RB	DETAILED DESIGN ISSUE	TW	06.07.12
RC	85% ISSUE	PW	16.12.16

			Auckland Office PO Box 5848 Auckland 1141, New Zealand + 64 9 355 9500		Project KIWIRAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2		
			Drawn N.BOYTE		Designed VARIOUS		Approved T.WILSON
Project No. 1-M9001.86		Scale 1:25 @ A1		Revision Date 07.05.12		Sheet TYPICAL SECTIONS LAYOUT 1 OF 3	
Drawing No. 1/6057/19/5104				Sheet No. 81		Revision RC	

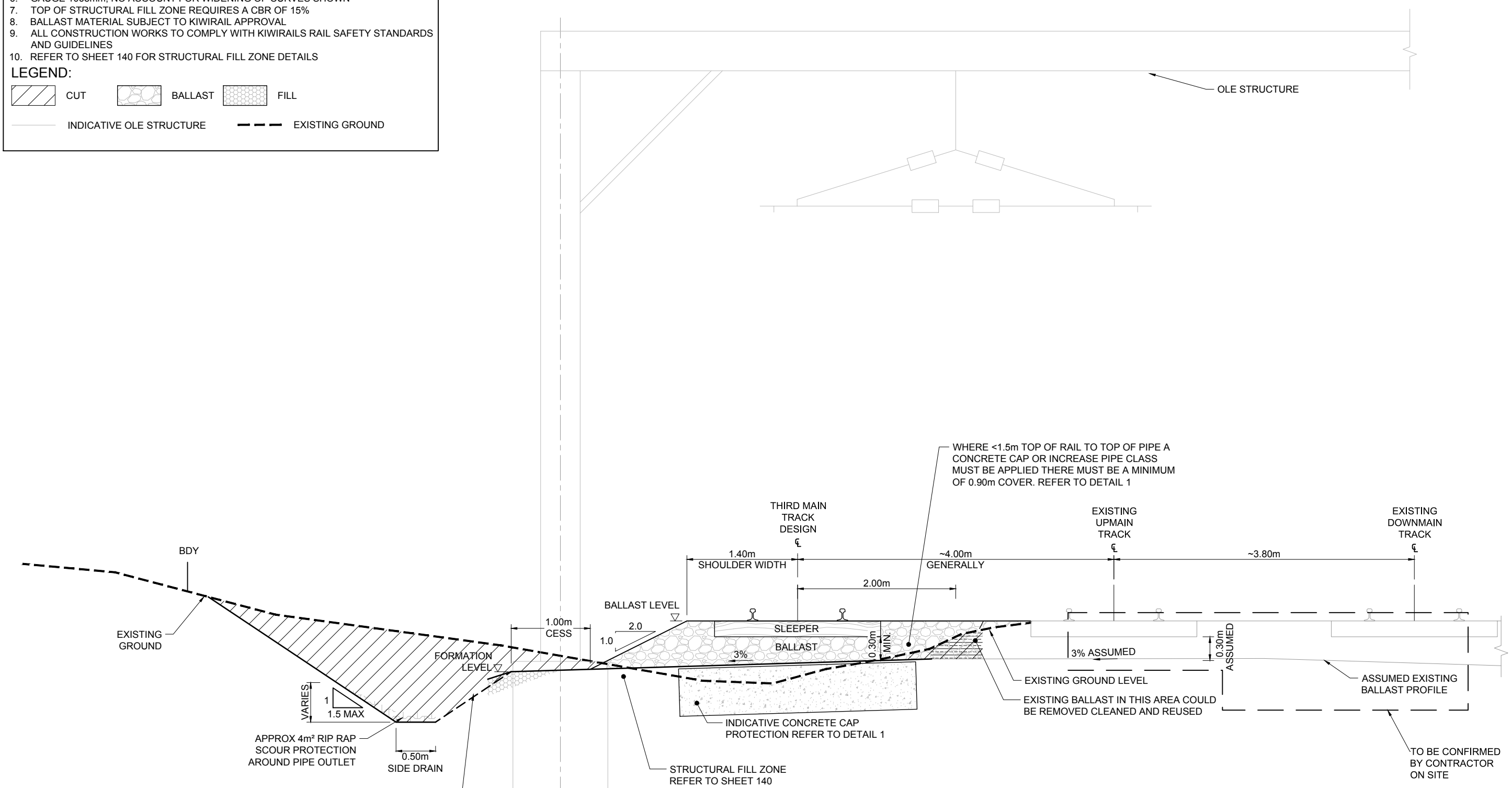
NOTES:

1. GEOTECHNICAL SUPERVISION BY A SUITABLY QUALIFIED ENGINEER, WILL BE REQUIRED DURING THE CONSTRUCTION OF THE STRUCTURAL FILL ZONE TO DETERMINE APPROPRIATE DEPTHS AND MATERIALS
2. FOR CLARITY RAILS ARE SHOWN LEVEL, MINIMUM DIMENSIONS STILL APPLY ON CURVES
3. APPLY ON CURVES
4. TYPICAL DETAIL IS GENERATED FROM ONTRACK FORMATION GUIDELINES AND T:200 SPECIFICALLY CLAUSES 211 & 404
5. NEW SLEEPERS ASSUMED TO BE TIMBER 150mm W x 200mm D x 2100 L
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8. BALLAST MATERIAL SUBJECT TO KIWIRAIL APPROVAL
9. ALL CONSTRUCTION WORKS TO COMPLY WITH KIWIRAILS RAIL SAFETY STANDARDS AND GUIDELINES
10. REFER TO SHEET 140 FOR STRUCTURAL FILL ZONE DETAILS

LEGEND:

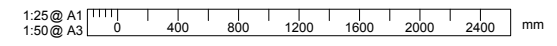


300 mm
200
100
50
0 10 mm



2 TYPICAL CROSS SECTION - IN CUT
SCALE : 1:25

85% ISSUE

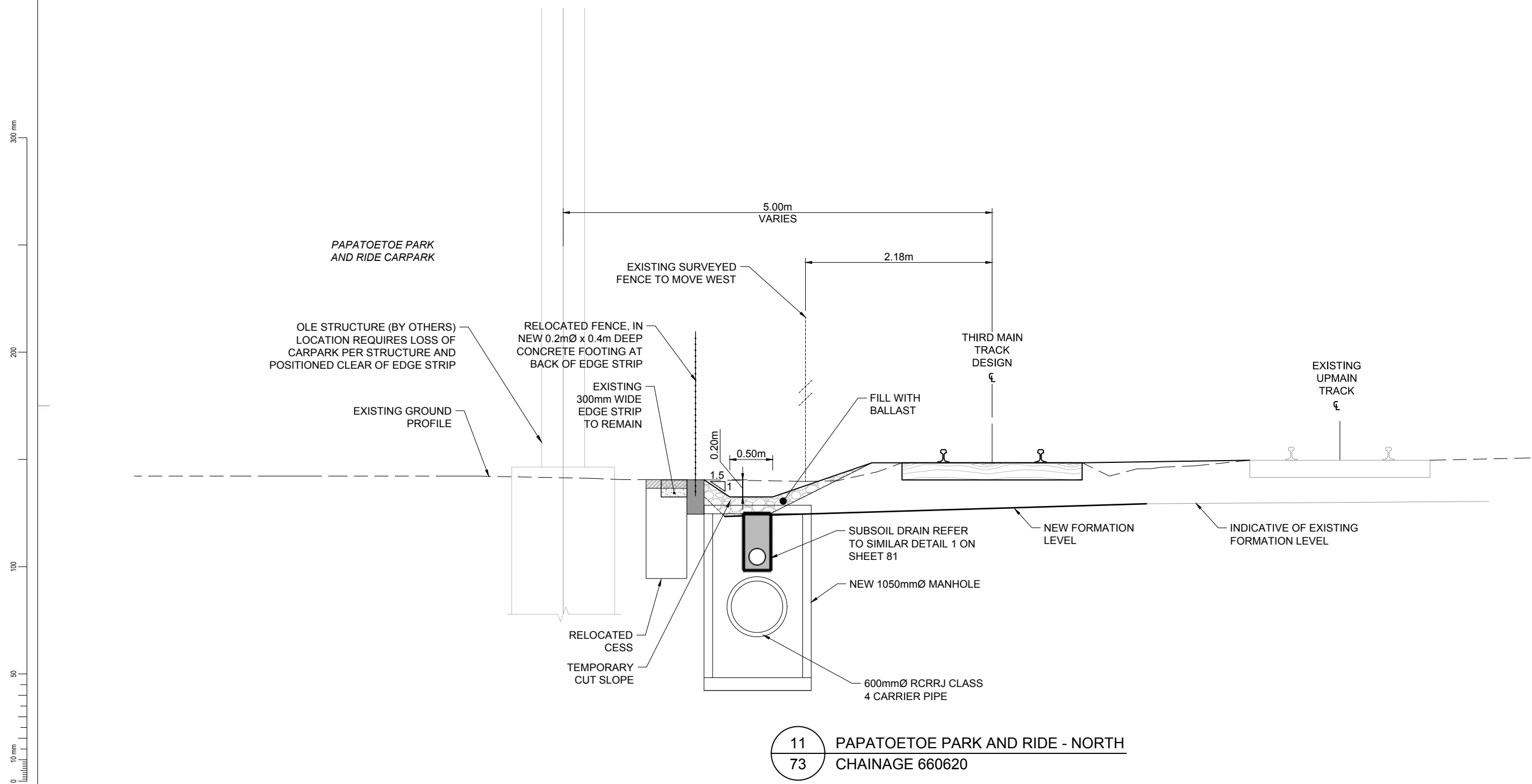


Revision	Amendment	Approved	Revision Date
RA	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RB	DETAILED DESIGN ISSUE	TW	06.07.12
RC	85% ISSUE	PW	16.12.16

			Auckland Office PO Box 5848 Auckland 1141, New Zealand + 64 9 355 9500		Project KIWIRAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2		
			Drawn N.BOYTE		Designed VARIOUS		Approved T.WILSON
Project No. 1-M9001.86		Scale 1:25 @ A1		Revision Date 07.05.12		Sheet TYPICAL SECTIONS LAYOUT 2 OF 3	
Drawing No. 1/6057/19/5104				Sheet No. 83		Revision RC	

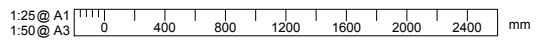
NOTES:

1. REFER TO SHEETS 81 AND 83 FOR TYPICAL TRACK MEASUREMENTS AND DETAIL
2. FOR STANDARD TRACK MEASUREMENTS AND DETAILS REFER TO KIWIRAIL 'INFRASTRUCTURE AND ENGINEERING T200 TRACK HANDBOOK' REVISED ISSUE DATED JAN 2015 & KIWIRAIL DRAWINGS 100 862 - 1 TO 6 DATED JAN 2015
3. ALL CONSTRUCTION WORKS TO COMPLY WITH KIWIRAIL'S RAIL SAFETY



11
73
PAPATOETOE PARK AND RIDE - NORTH
CHAINAGE 660620

85% ISSUE

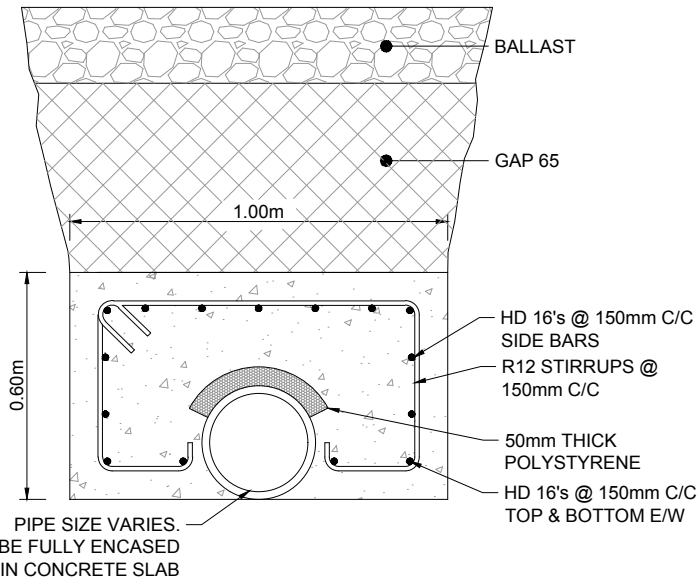


Revision	Amendment	Approved	Revision Date
RA	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RB	AMENDED TITLE FOR OPW ISSUE	TW	30.05.12
RC	DETAILED DESIGN ISSUE	TW	06.07.12
RD	85% ISSUE	PW	16.12.16

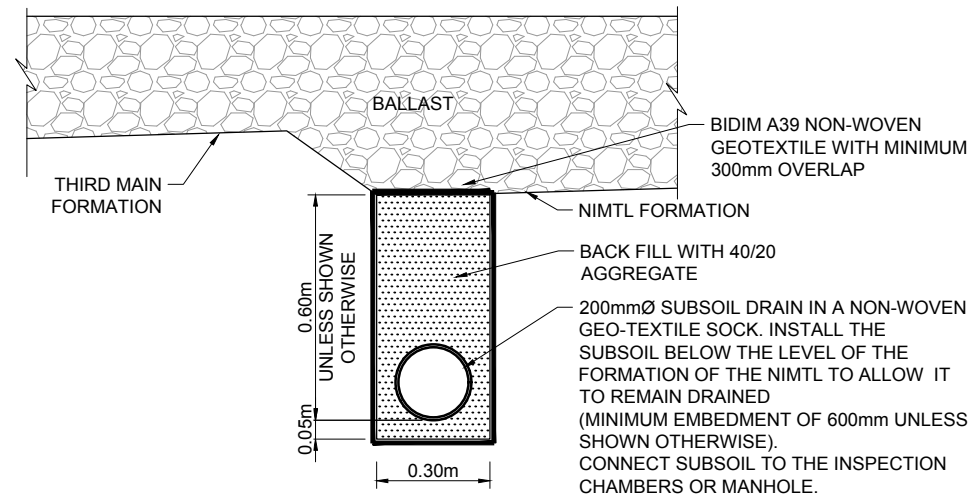
				Auckland Office PO Box 5848 Auckland 1141, New Zealand + 64 9 355 9500		Project KIWIRAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2	
		Drawn A. COOK	Designed VARIOUS	Approved T. WILSON	Revision Date 07.05.12	Sheet TYPICAL SECTIONS LAYOUT 3 OF 3	
Project No. 1-M9001.86		Scale 1:25 @ A1		Drawing No. 1/6057/19/5104		Sheet No. 84	Revision RD

NOTES:

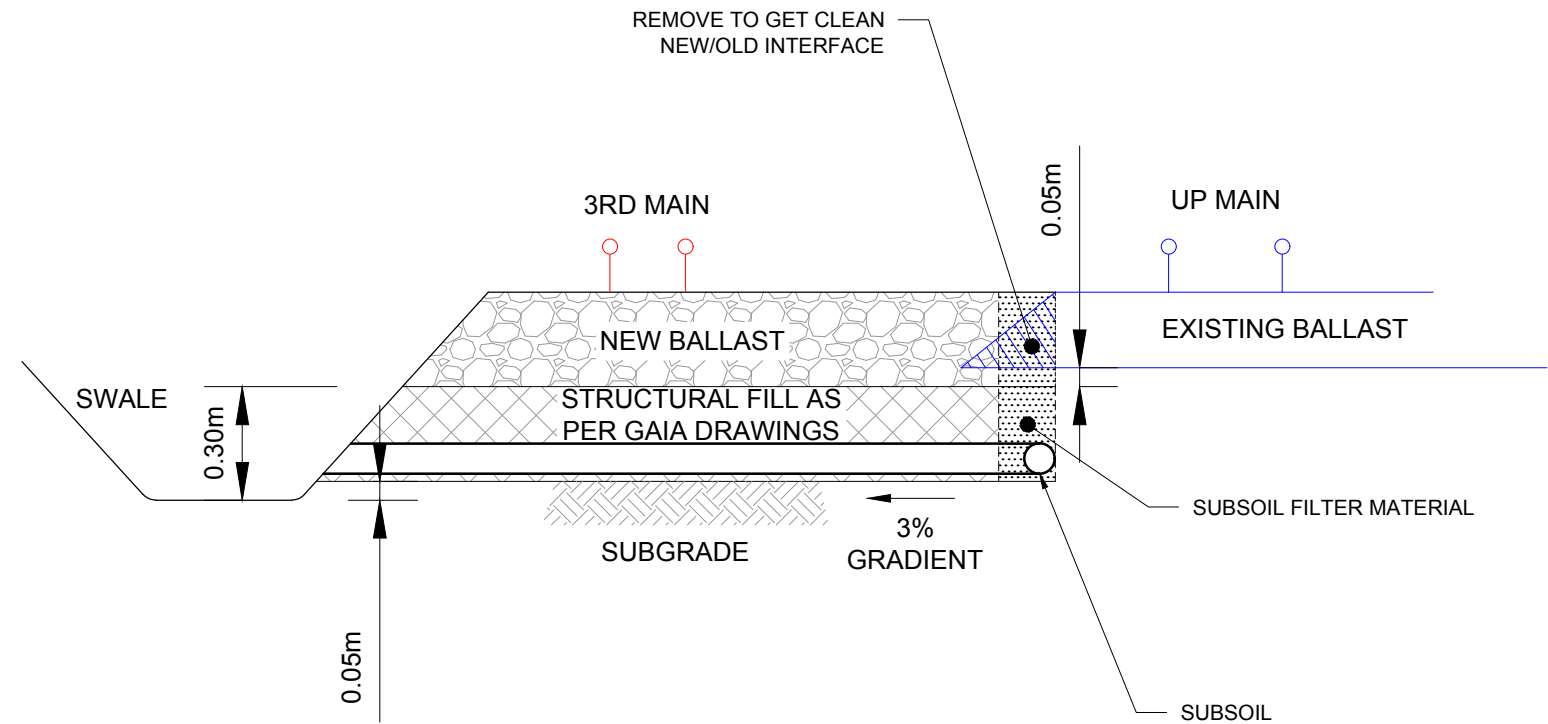
1. REFER TO SHEETS 301 - 306 FOR PROPOSED DRAINAGE LAY OUT.
2. REFER TO SHEET 140 FOR GAIA STANDARD DETAILS.



1 DETAIL - TYPICAL PIPE PROTECTION DETAIL (COVER <1.5m T.O.R.)
SCALE: 1:10



1 DETAIL - SUBSOIL DRAIN
SCALE: 1:10



TYPICAL LOCALISED SUBSOIL TREATMENT FOR AREAS WITH DRAINAGE PROBLEM

85% ISSUE

Revision	Amendment	Approved	Revision Date
RA	85% ISSUE	PW	16.12.16



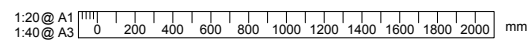
OPUS
Auckland South
+64 9 263 2500

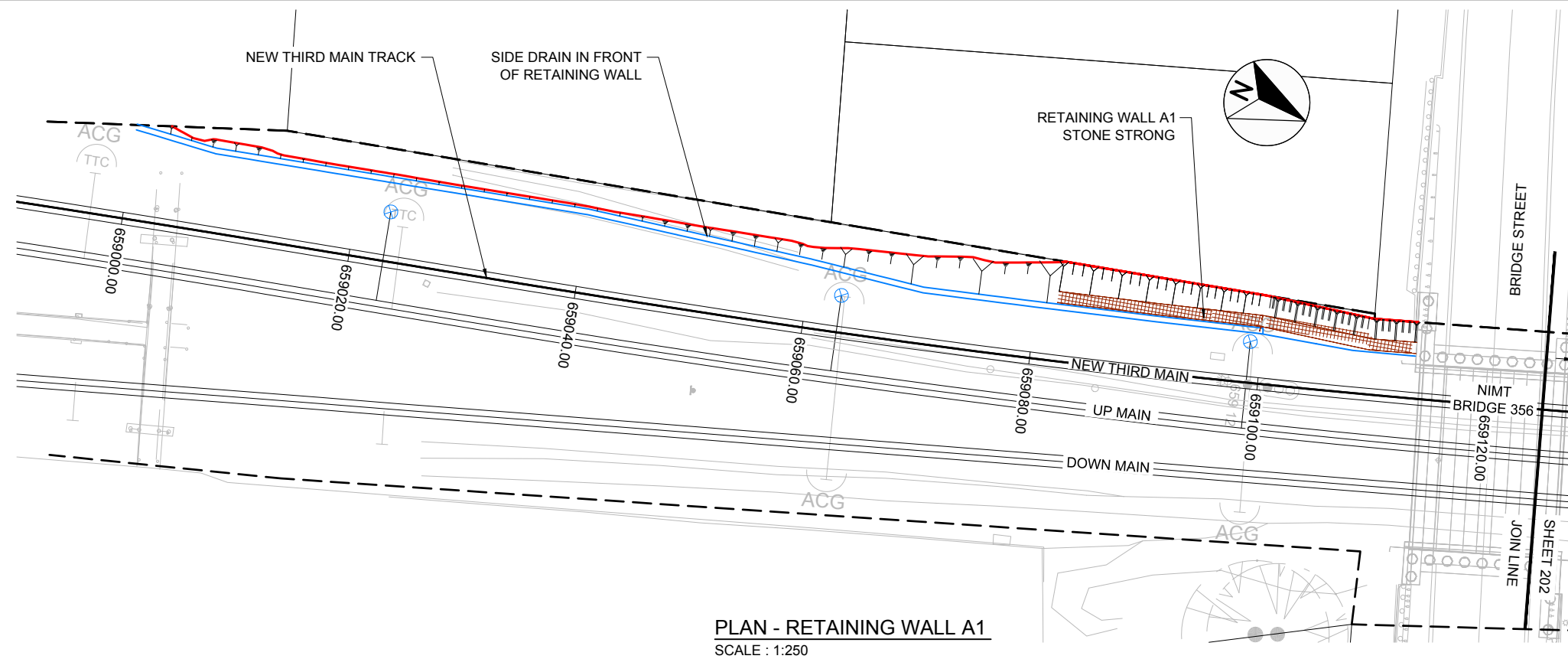
PO Box 76 725
Manukau 2241
New Zealand

Drawn	Designed	Approved	Revision Date
D CONLON	P WILLEY		

Project No. 1-M9001.86 Scale 1:10 @ A1

Project	
KIWIRAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2	
Sheet	
TYPICAL LOCALISED SUB SOIL TREATMENT	
Drawing No.	Sheet No. / Revision
1/6057/19/5104	88 / RA

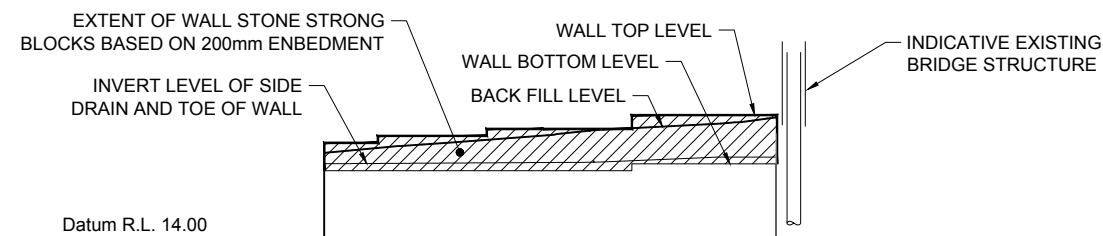




LEGEND:

- LEGAL BOUNDARIES
- RAIL BOUNDARIES
- SURVEY
- EXISTING TRACK
- NEW THIRD MAIN
- EARTHWORKS - CUT
- OVERHEAD LINE EQUIPMENT (OLE)
- SIDE DRAIN
- STONE STRONG WALL
- OLE AS BUILT LOCATION

PLAN - RETAINING WALL A1
SCALE : 1:250



Datum R.L. 14.00

TOP OF WALL LEVEL	18.50	18.96	19.39	19.86	20.34	20.80	21.26	21.72	22.18	22.64	23.10	23.56	24.02	24.48	24.94	25.40	25.86	26.32	26.78	27.24	27.70	28.16	28.62	29.08	29.54	30.00	
BACK FILL LEVEL	18.50	18.97	19.86	20.05	20.80	20.80	20.63	20.78	21.26	21.26	21.26	21.26	21.26	21.26	21.26	21.26	21.26	21.26	21.26	21.26	21.26	21.26	21.26	21.26	21.26	21.26	21.26
TOE OF WALL LEVEL	18.50	18.96	18.96	18.99	20.19	20.80	20.80	19.02	19.03	19.05	19.06	19.14	19.23	19.31	19.39	19.39	19.39	19.39	19.39	19.39	19.39	19.39	19.39	19.39	19.39	19.39	19.39
BOTTOM OF WALL LEVEL	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50
WALL INFORMATION	← STONE STRONG BLOCKS, AT LEAST 200mm EMBEDMENT →																										
	2x24SF		2x24SF + 1x6SF				3x24SF				3x24SF + 1x6SF																
WALL STATION	0.00	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00	26.00	28.00	30.00											
RAIL CHAINAGE	659082					659092					659102					659112											

Wall A1 Part 0
SECTION BETWEEN CH: 0.00 AND 30.00
1xVERTICAL EXAGGERATION

LONG SECTION - RETAINING WALL A1
SCALE : 1:250

NOTE:
EXACT LOCATION OF EXISTING OLE STRUCTURES IS TO BE CONFIRMED BY SURVEY TO ENSURE NO CLASH WITH RETAINING WALL DESIGNS

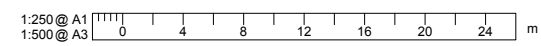
85% ISSUE

Revision	Amendment	Approved	Revision Date
RA	DETAILED DESIGN ISSUE	GE	06.07.12
RB	85% ISSUE	PW	20.07.16
RC	WALL STRUCTURE CHANGED TO STONE WALL	PW	08.11.16

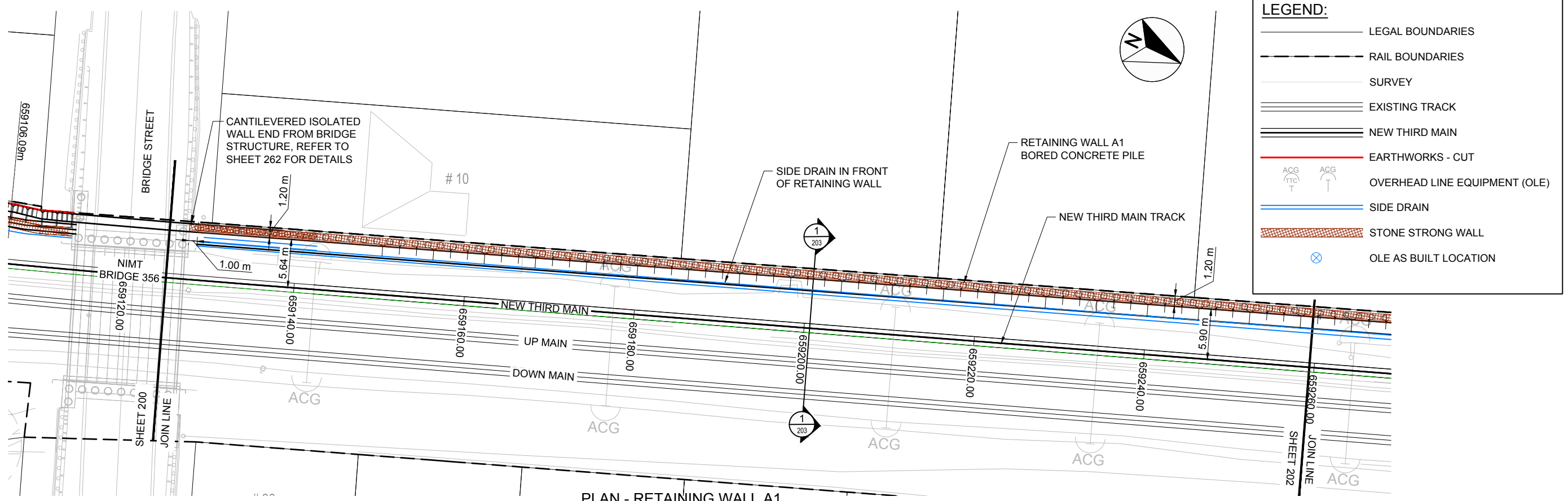


Drawn	Designed	Approved	Revision Date
A. COOK	DARRELL O	G. EAST	06.07.12
Project No. 1-M9001.86		Scale 1:250 @ A1	Revision Date

Project	
KIWIRAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2	
Sheet	
RETAINING WALL A1 PLAN AND LONG SECTION LAYOUT 1 OF 3	
Sheet No.	Revision
200	RC



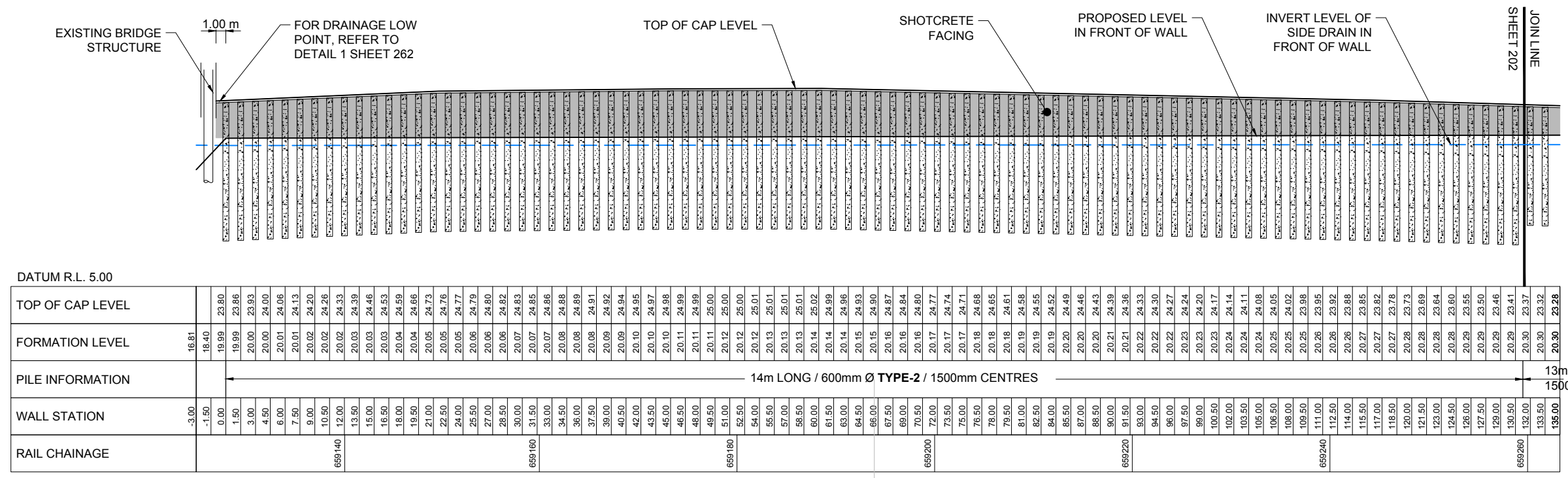
300 mm
200
100
50
10 mm



LEGEND:

- LEGAL BOUNDARIES
- RAIL BOUNDARIES
- SURVEY
- EXISTING TRACK
- NEW THIRD MAIN
- EARTHWORKS - CUT
- OVERHEAD LINE EQUIPMENT (OLE)
- SIDE DRAIN
- STONE STRONG WALL
- OLE AS BUILT LOCATION

PLAN - RETAINING WALL A1
SCALE: 1:250



LONG SECTION - RETAINING WALL A1
SCALE: 1:250

RETAINING WALL A1 - PART 1
1x VERTICAL EXAGGERATION

	DATUM R.L. 5.00	
TOP OF CAP LEVEL	16.81	20.28
FORMATION LEVEL	18.40	20.30
PILE INFORMATION	14m LONG / 600mm Ø TYPE-2 / 1500mm CENTRES	
WALL STATION	-3.00	135.00
RAIL CHAINAGE	659140	659260

NOTE:
EXACT LOCATION OF EXISTING OLE STRUCTURES IS TO BE CONFIRMED BY SURVEY TO ENSURE NO CLASH WITH RETAINING WALL DESIGNS

85% ISSUE

Revision	Amendment	Approved	Revision Date
RA	DETAILED DESIGN ISSUE	GE	06.07.12
RB	85% ISSUE	PW	20.07.16
RC	85% ISSUE UPDATED	PW	08.11.16



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Project
**KIWI RAIL
MIDDLEMORE (662,600m) TO PUHINUI (659,000m)
NEW THIRD MAIN - STAGE 2**

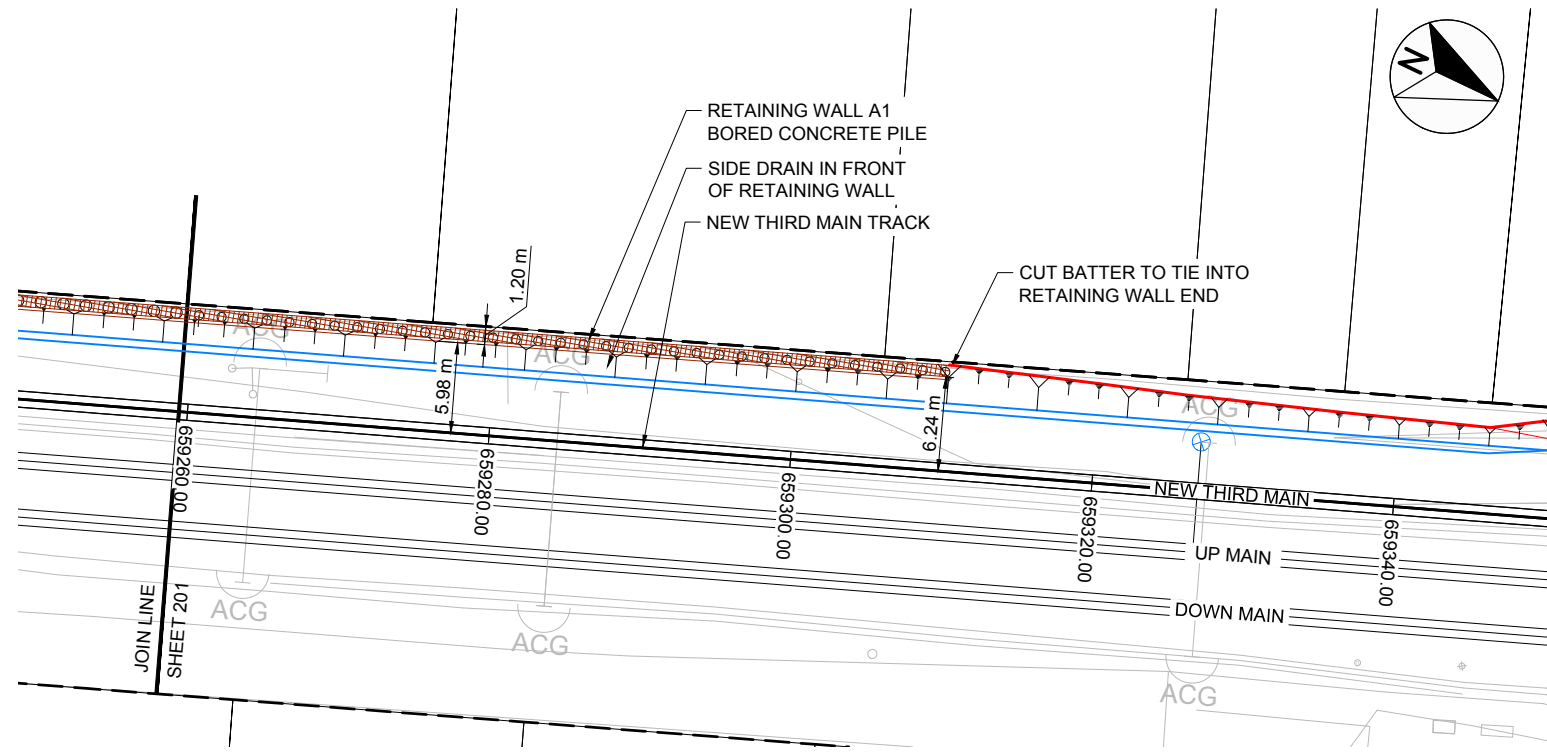
Drawn	Design	Approved	Revision Date
A. COOK	DARRELL O.	G. EAST	06.07.12

Sheet
**RETAINING WALL A1
PLAN AND LONG SECTION LAYOUT 2 OF 3**

Project No.	Scale	Drawing No.	Sheet No.	Revision
1-M9001.86	1:250 @ A1	1/6057/19/5104	201	RC

Scale	Sheet No.	Revision
1:250 @ A1 1:500 @ A3	201	RC

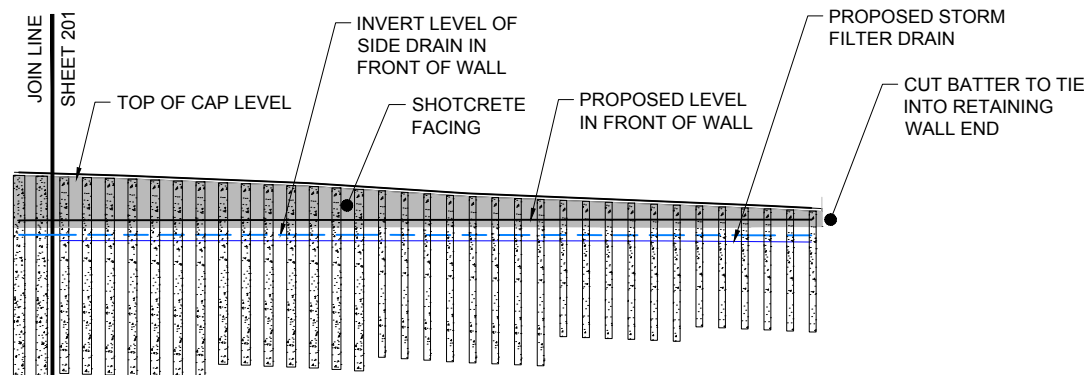
300 mm
200
100
50
10 mm
0



LEGEND:

- LEGAL BOUNDARIES
- RAIL BOUNDARIES
- SURVEY
- EXISTING TRACK
- NEW THIRD MAIN
- EARTHWORKS - CUT
- OVERHEAD LINE EQUIPMENT (OLE)
- SIDE DRAIN
- STONE STRONG WALL
- OLE AS BUILT LOCATION

PLAN - RETAINING WALL A1
SCALE : 1:250



DATUM R.L. 5.00						
20.29	23.46	20.29	23.41	20.30	23.37	TOP OF CAP LEVEL
20.30	23.32	20.30	23.32	20.30	23.28	FORMATION LEVEL
20.30	23.23	20.31	23.16	20.31	23.10	PILE INFORMATION
20.31	23.03	20.31	22.96	20.31	22.90	
20.32	22.83	20.32	22.76	20.32	22.72	
20.32	22.61	20.32	22.49	20.32	22.37	
20.32	22.26	20.33	22.19	20.33	22.13	
20.33	22.06	20.33	22.00	20.33	21.94	WALL STATION
20.33	21.87	20.33	21.81	20.34	21.75	
20.34	21.68	20.34	21.62	20.34	21.56	
20.34	21.56	20.34	21.50	20.34	21.44	
20.34	21.32	20.34	21.26	20.34	21.13	
20.34	21.13	20.34	21.02			RAIL CHAINAGE

14m LONG / 600mm Ø TYPE 2
1500mm CENTRES

LONG SECTION - RETAINING WALL A1
SCALE : 1:250

RETAINING WALL A1 - PART 2
1x VERTICAL EXAGGERATION

NOTE:
EXACT LOCATION OF EXISTING OLE STRUCTURES IS TO BE CONFIRMED BY SURVEY TO ENSURE NO CLASH WITH RETAINING WALL DESIGNS

Revision	Amendment	Approved	Revision Date
RA	ISSUED FOR OUTLINE PLAN OF WORKS	TW	24.04.12
RB	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RC	AMENDED TITLE FOR OPW ISSUE	TW	30.05.12
RD	DETAILED DESIGN ISSUE	GE	06.07.12
RE	85% ISSUE	PW	20.07.16
RF	85% ISSUE UPDATED	PW	08.11.16



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Drawn	Designed	Approved	Revision Date
A. COOK	DARRELL O	G. EAST	06.07.12

Project No.	Scale
1-M9001.86	1:250 @ A1

Project
KIWIRAIL
MIDDLEMORE (662,600m) TO PUHINUI (659,000m)
NEW THIRD MAIN - STAGE 2

Sheet
RETAINING WALL A1
PLAN AND LONG SECTION LAYOUT 3 OF 3

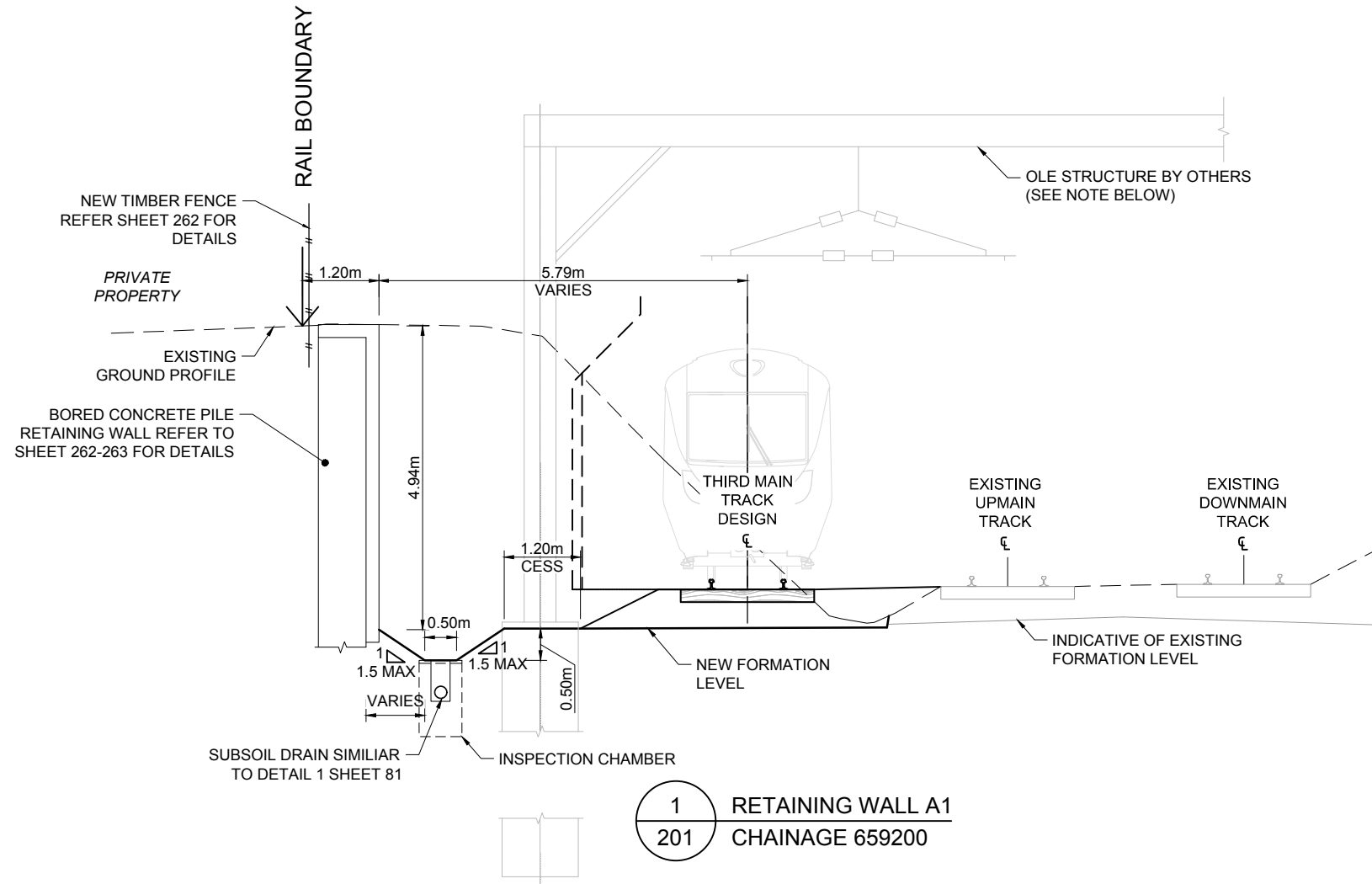
Drawing No.	Sheet No.	Revision
1/6057/19/5104	202	RF

85% ISSUE

1:250 @ A1
1:500 @ A3

NOTES:

1. REFER TO SHEETS 81 AND 83 FOR TYPICAL TRACK MEASUREMENTS AND DETAILS
2. FOR STANDARD TRACK MEASUREMENTS AND DETAILS REFER TO KIWIRAIL 'INFRASTRUCTURE AND ENGINEERING T200 TRACK HANDBOOK' REVISED ISSUE 5 DATED JAN 2015 & KIWIRAIL DRAWINGS 100 862 - 1 TO 6 DATED JAN 2015
3. ALL CONSTRUCTION WORKS TO COMPLY WITH KIWIRAIL'S RAIL SAFETY STANDARDS AND GUIDELINES
4. REFER TO GAIA FORMATION DESIGN DOCUMENTATION FOR RAIL PAVEMENT DESIGN



1 RETAINING WALL A1
201 CHAINAGE 659200

NOTE:

EXACT LOCATION OF EXISTING OLE STRUCTURES IS TO BE CONFIRMED BY SURVEY TO ENSURE NO CLASH WITH RETAINING WALL DESIGNS

85% ISSUE

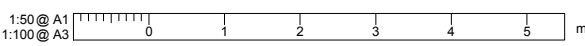
Revision	Amendment	Approved	Revision Date
RA	ISSUED FOR CONSENT	TW	03.07.12
RB	DETAILED DESIGN ISSUE	TW	06.07.12
RC	85% ISSUE	PW	20.07.16
RD	85% ISSUE UPDATED	PW	10.11.16



Drawn	Designed	Approved	Revision Date
A.COOK	VARIOUS	T.WILSON	03.07.12

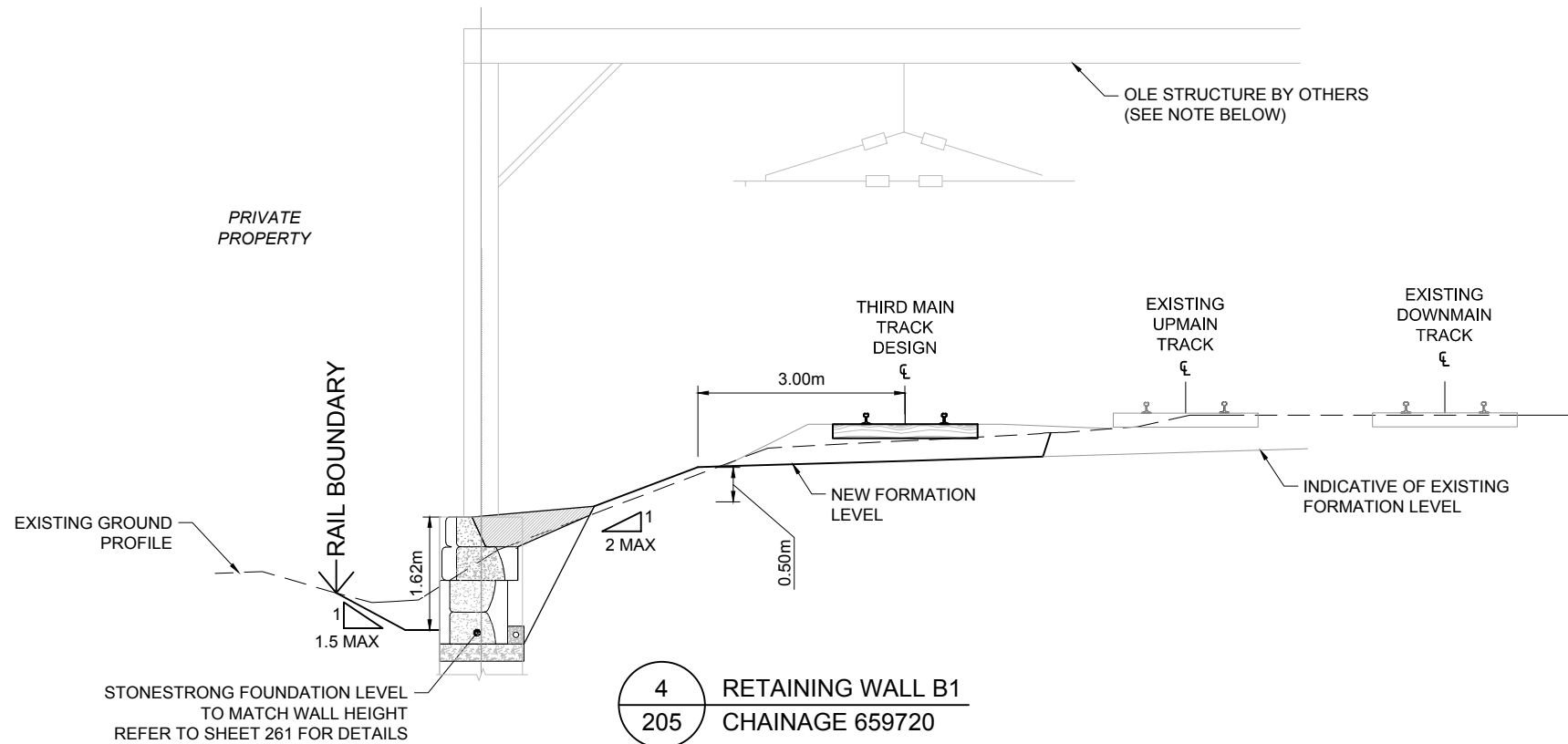
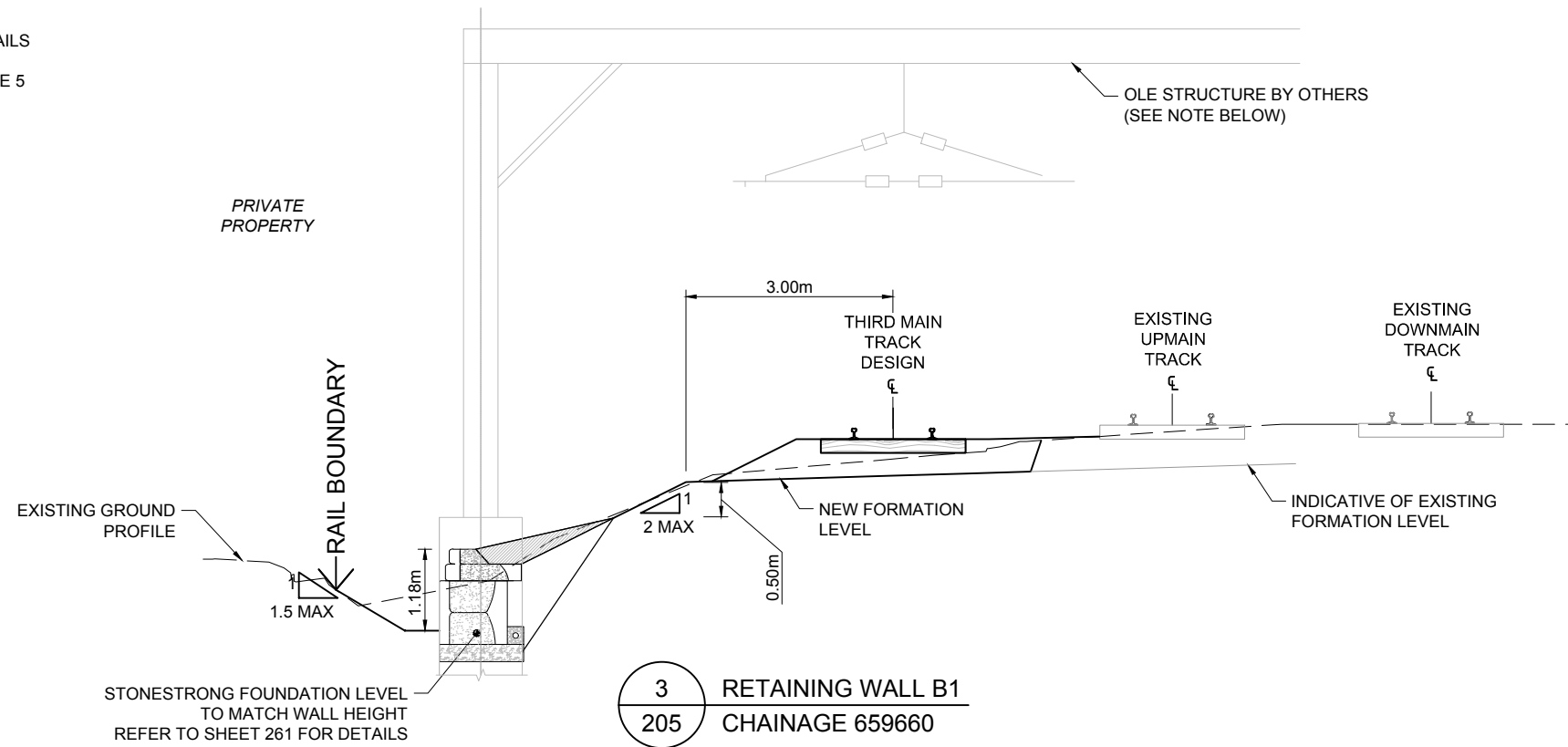
Project No.	Scale
1-M9001.86	1:50 @ A1

Project	Sheet	Sheet No.	Revision
KIWIRAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2	RETAINING WALL A1 SECTION	203	RD



NOTES:

1. REFER TO SHEETS 81 AND 83 FOR TYPICAL TRACK MEASUREMENTS AND DETAILS
2. FOR STANDARD TRACK MEASUREMENTS AND DETAILS REFER TO KIWIRAIL 'INFRASTRUCTURE AND ENGINEERING T200 TRACK HANDBOOK' REVISED ISSUE 5 DATED JAN 2015 & KIWIRAIL DRAWINGS 100 862 - 1 TO 6 DATED JAN 2015
3. ALL CONSTRUCTION WORKS TO COMPLY WITH KIWIRAIL'S RAIL SAFETY STANDARDS AND GUIDELINES
4. REFER TO GAIA FORMATION DESIGN DOCUMENTATION FOR RAIL PAVEMENT DESIGN



85% ISSUE

NOTE:

EXACT LOCATION OF EXISTING OLE STRUCTURES IS TO BE CONFIRMED BY SURVEY TO ENSURE NO CLASH WITH RETAINING WALL DESIGNS

Revision	Amendment	Approved	Revision Date
RA	ISSUED FOR CONSENT	TW	03.07.12
RB	DETAILED DESIGN ISSUE	TW	06.07.12
RC	85% ISSUE	PW	20.07.16
RD	85% ISSUE UPDATED	PW	10.11.16



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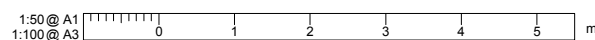
Project
KIWIRAIL
MIDDLEMORE (662,600m) TO PUHINUI (659,000m)
NEW THIRD MAIN - STAGE 2

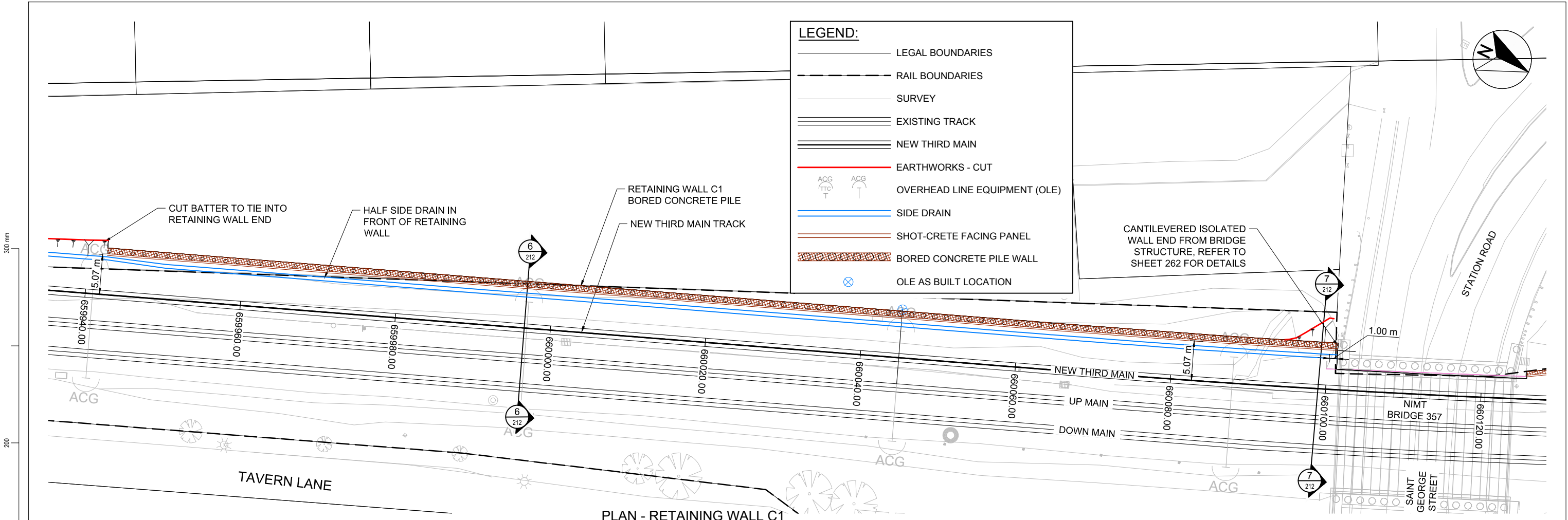
Drawn	Designed	Approved	Revision Date
A. COOK	VARIOUS	T. WILSON	03.07.12

Project No.	Scale
1-M9001.86	1:50 @ A1

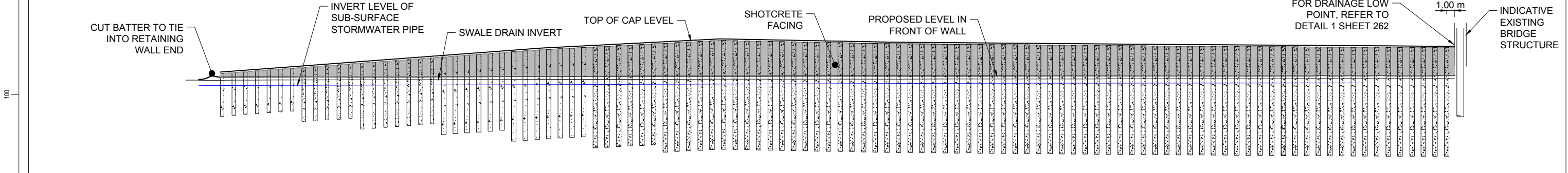
Sheet
RETAINING WALL B1
SECTION

Drawing No.	Sheet No.	Revision
1/6057/19/5104	206	RD





PLAN - RETAINING WALL C1
SCALE : 1:250



LONG SECTION - RETAINING WALL C1
SCALE : 1:250

DATUM R.L. 3.00

TOP OF CAP LEVEL	FORMATION LEVEL	PILE INFORMATION	WALL STATION	RAIL CHAINAGE
17.74	18.13		-3.00	65994.26
18.03	18.83	5.5m LONG 450mm Ø 1500mm C/C	-1.50	65994.66
18.03	18.94		3.00	65995.06
18.04	19.05	7m LONG 450mm Ø 1500mm C/C	4.50	65995.46
18.04	19.16		6.00	65995.86
18.05	19.27	8.5m LONG 450mm Ø 1500mm C/C	7.50	65996.26
18.05	19.39		9.00	65996.66
18.06	19.61	10m LONG 600mm Ø TYPE1 1500mm C/C	10.50	65997.06
18.06	19.72		12.00	65997.46
18.07	19.83	11.5m LONG 600mm Ø TYPE1 1500mm C/C	13.50	65997.86
18.07	19.94		15.00	65998.26
18.07	20.06	13m LONG 600mm Ø TYPE2 1500mm C/C	16.50	65998.66
18.08	20.17		18.00	65999.06
18.08	20.28	14m LONG / 600mm Ø TYPE 2 / 1500mm CENTRES	19.50	66000.00
18.09	20.39		21.00	66000.40
18.09	20.50		22.50	66000.80
18.09	20.62		24.00	66001.20
18.10	20.73		25.50	66001.60
18.10	20.84		27.00	66002.00
18.10	20.95		28.50	66002.40
18.11	21.06		30.00	66002.80
18.11	21.18		31.50	66003.20
18.11	21.29		33.00	66003.60
18.12	21.40		34.50	66004.00
18.12	21.51		36.00	66004.40
18.12	21.62		37.50	66004.80
18.12	21.74		39.00	66005.20
18.12	21.83		40.50	66005.60
18.13	21.90		42.00	66006.00
18.13	21.98		43.50	66006.40
18.13	22.06		45.00	66006.80
18.13	22.14		46.50	66007.20
18.13	22.21		48.00	66007.60
18.14	22.29		51.00	66008.00
18.14	22.37		52.50	66008.40
18.14	22.45		54.00	66008.80
18.14	22.52		55.50	66009.20
18.14	22.60		57.00	66009.60
18.14	22.68		58.50	66010.00
18.14	22.76		60.00	66010.40
18.15	22.83		61.50	66010.80
18.15	22.91		63.00	66011.20
18.15	22.96		64.50	66011.60
18.15	22.99		66.00	66012.00
18.15	22.90		67.50	66012.40
18.15	22.87		69.00	66012.80
18.15	22.84		70.50	66013.20
18.15	22.81		72.00	66013.60
18.16	22.78		73.50	66014.00
18.16	22.76		75.00	66014.40
18.16	22.73		76.50	66014.80
18.16	22.70		78.00	66015.20
18.16	22.67		79.50	66015.60
18.16	22.64		81.00	66016.00
18.16	22.61		82.50	66016.40
18.16	22.59		84.00	66016.80
18.17	22.56		85.50	66017.20
18.17	22.54		87.00	66017.60
18.17	22.52		88.50	66018.00
18.17	22.51		90.00	66018.40
18.17	22.50		91.50	66018.80
18.17	22.49		93.00	66019.20
18.17	22.47		94.50	66019.60
18.17	22.46		96.00	66020.00
18.18	22.45		97.50	66020.40
18.18	22.43		99.00	66020.80
18.18	22.42		100.50	66021.20
18.18	22.41		102.00	66021.60
18.18	22.40		103.50	66022.00
18.18	22.38		105.00	66022.40
18.18	22.37		106.50	66022.80
18.18	22.36		108.00	66023.20
18.18	22.35		109.50	66023.60
18.19	22.33		111.00	66024.00
18.19	22.32		112.50	66024.40
18.19	22.31		114.00	66024.80
18.19	22.29		115.50	66025.20
18.20	22.28		117.00	66025.60
18.20	22.26		118.50	66026.00
18.20	22.25		120.00	66026.40
18.20	22.24		121.50	66026.80
18.20	22.24		123.00	66027.20
18.21	22.23		124.50	66027.60
18.21	22.22		126.00	66028.00
18.21	22.21		127.50	66028.40
18.21	22.20		129.00	66028.80
18.20	22.19		130.50	66029.20
18.21	22.18		132.00	66029.60
18.21	22.17		133.50	66030.00
18.21	22.16		135.00	66030.40
18.22	22.15		136.50	66030.80
18.22	22.14		138.00	66031.20
18.22	22.13		139.50	66031.60
18.24	22.12		141.00	66032.00
18.23	22.11		142.50	66032.40
18.23	22.10		144.00	66032.80
18.24	22.09		145.50	66033.20
18.22	22.08		147.00	66033.60
18.24	22.07		148.50	66034.00
18.23	22.06		150.00	66034.40
18.22	22.05		151.50	66034.80
18.23	22.04		153.00	66035.20
18.23	22.03		154.50	66035.60
18.24	22.02		156.00	66036.00
18.25	22.02		157.50	66036.40
			159.00	66036.80
			160.50	66037.20

RETAINING WALL C1
1x VERTICAL EXAGGERATION

NOTE:
EXACT LOCATION OF EXISTING OLE STRUCTURES IS TO BE CONFIRMED BY SURVEY TO ENSURE NO CLASH WITH RETAINING WALL DESIGNS

Revision	Amendment	Approved	Revision Date
RA	DETAILED DESIGN ISSUE	GE	06.07.12
RB	85% ISSUE	PW	20.07.16
RC	85% ISSUE UPDATED	PW	08.11.16

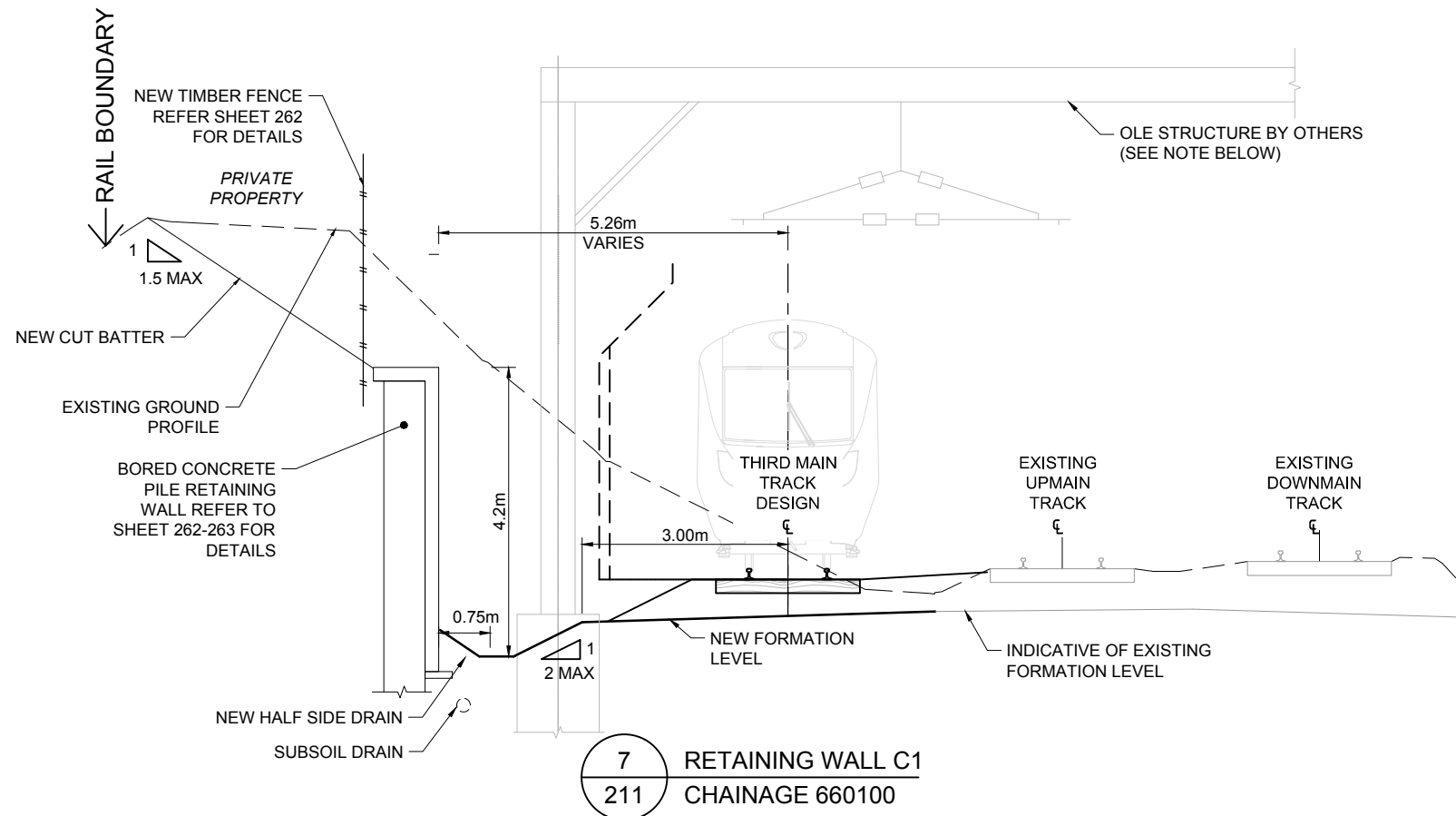
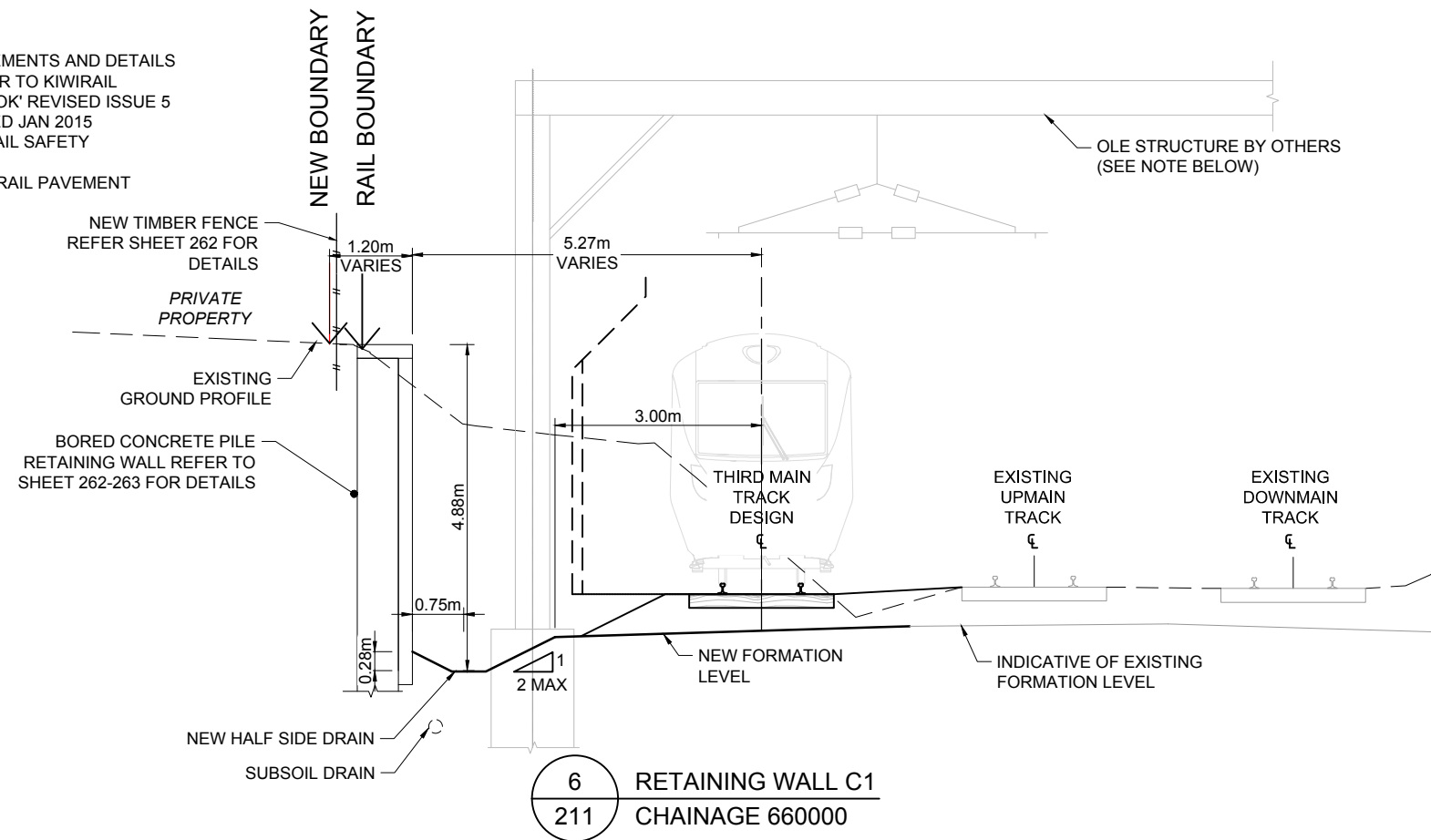


Project			
KIWI RAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2			
Sheet			
RETAINING WALL C1 PLAN AND LONG SECTION			
Drawn	Designed	Approved	Revision Date
A. COOK	DARRELO	G. EAST	06.07.12
Project No.	Scale	Drawing No.	
1-M9001.86	1:250 @ A1	1/6057/19/5104	
Sheet No.	Revision		
211	RC		

85% ISSUE

NOTES:

1. REFER TO SHEETS 81 AND 83 FOR TYPICAL TRACK MEASUREMENTS AND DETAILS
2. FOR STANDARD TRACK MEASUREMENTS AND DETAILS REFER TO KIWRIL 'INFRASTRUCTURE AND ENGINEERING T200 TRACK HANDBOOK' REVISED ISSUE 5 DATED JAN 2015 & KIWRIL DRAWINGS 100 862 - 1 TO 6 DATED JAN 2015
3. ALL CONSTRUCTION WORKS TO COMPLY WITH KIWRIL'S RAIL SAFETY STANDARDS AND GUIDELINES
4. REFER TO GAIA FORMATION DESIGN DOCUMENTATION FOR RAIL PAVEMENT DESIGN



85% ISSUE

NOTE:

EXACT LOCATION OF EXISTING OLE STRUCTURES IS TO BE CONFIRMED BY SURVEY TO ENSURE NO CLASH WITH RETAINING WALL DESIGNS

Revision	Amendment	Approved	Revision Date
RA	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RB	AMENDED TITLE FOR OPW ISSUE	TW	30.05.12
RC	ISSUED FOR CONSENT	TW	03.07.12
RD	DETAILED DESIGN ISSUE	TW	06.07.12
RE	85% ISSUE	PW	20.07.16
RF	85% ISSUE UPDATED	PW	10.11.16

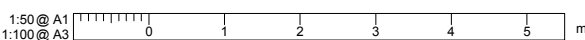


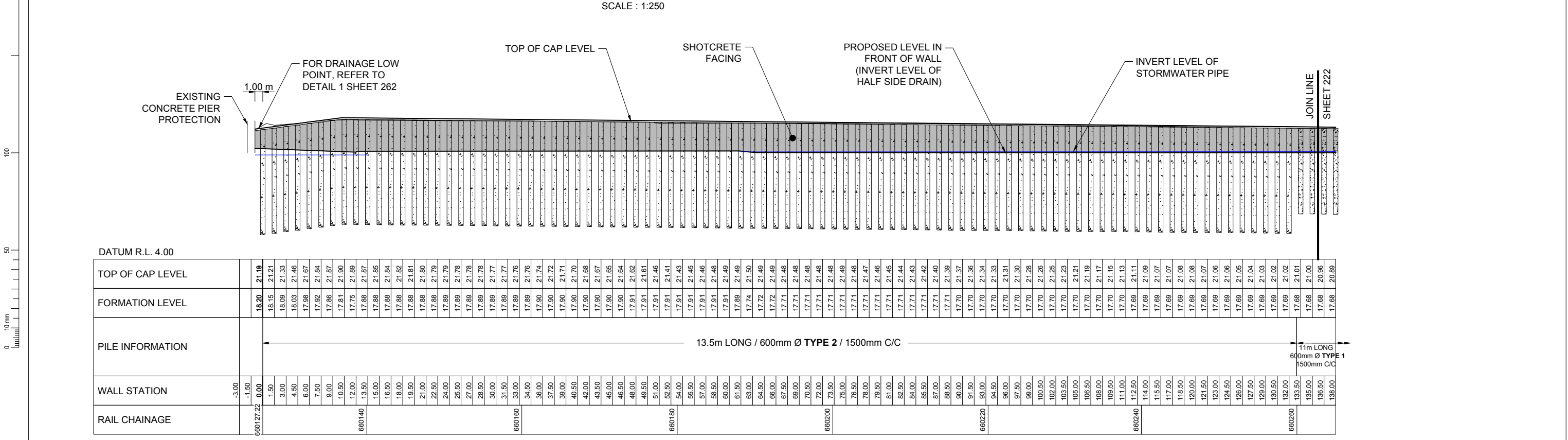
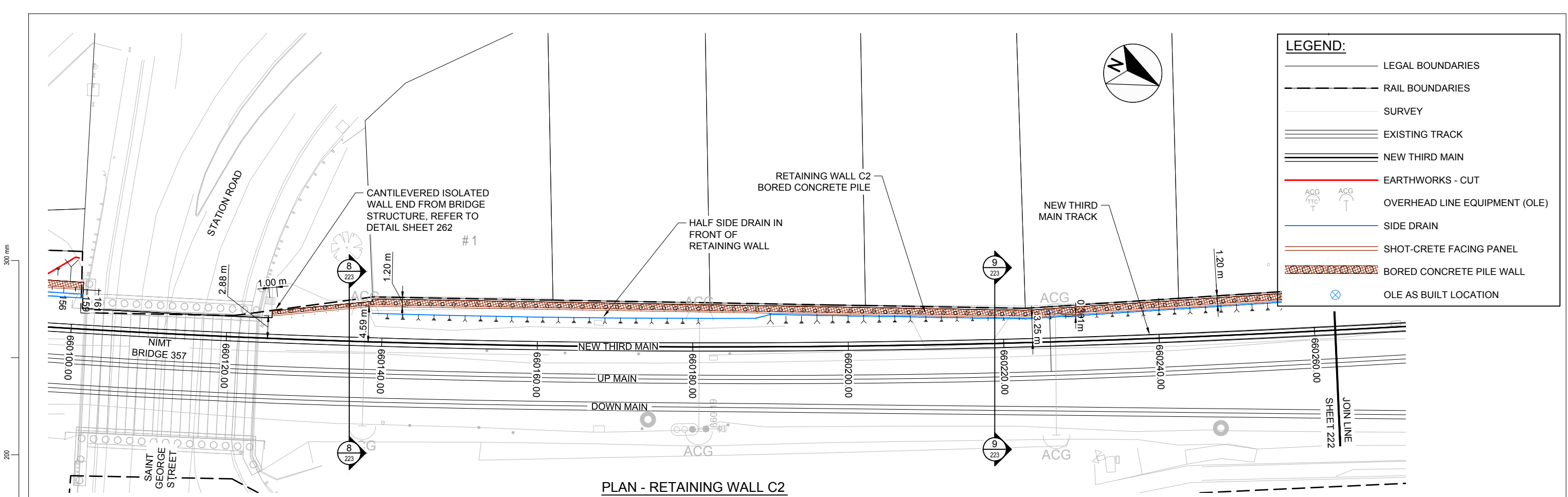
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Drawn	Designed	Approved	Revision Date
A.COOK	VARIOUS	T.WILSON	07.05.12

Project No.	Scale
1-M9001.86	1:50 @ A1

Project	
KIWRIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2	
Sheet	
RETAINING WALL C1 SECTIONS	
Sheet No.	Revision
212	RF





RETAINING WALL C2 - PART 1
1x VERTICAL EXAGGERATION

NOTE:
EXACT LOCATION OF EXISTING OLE STRUCTURES IS TO BE CONFIRMED BY SURVEY TO ENSURE NO CLASH WITH RETAINING WALL DESIGNS

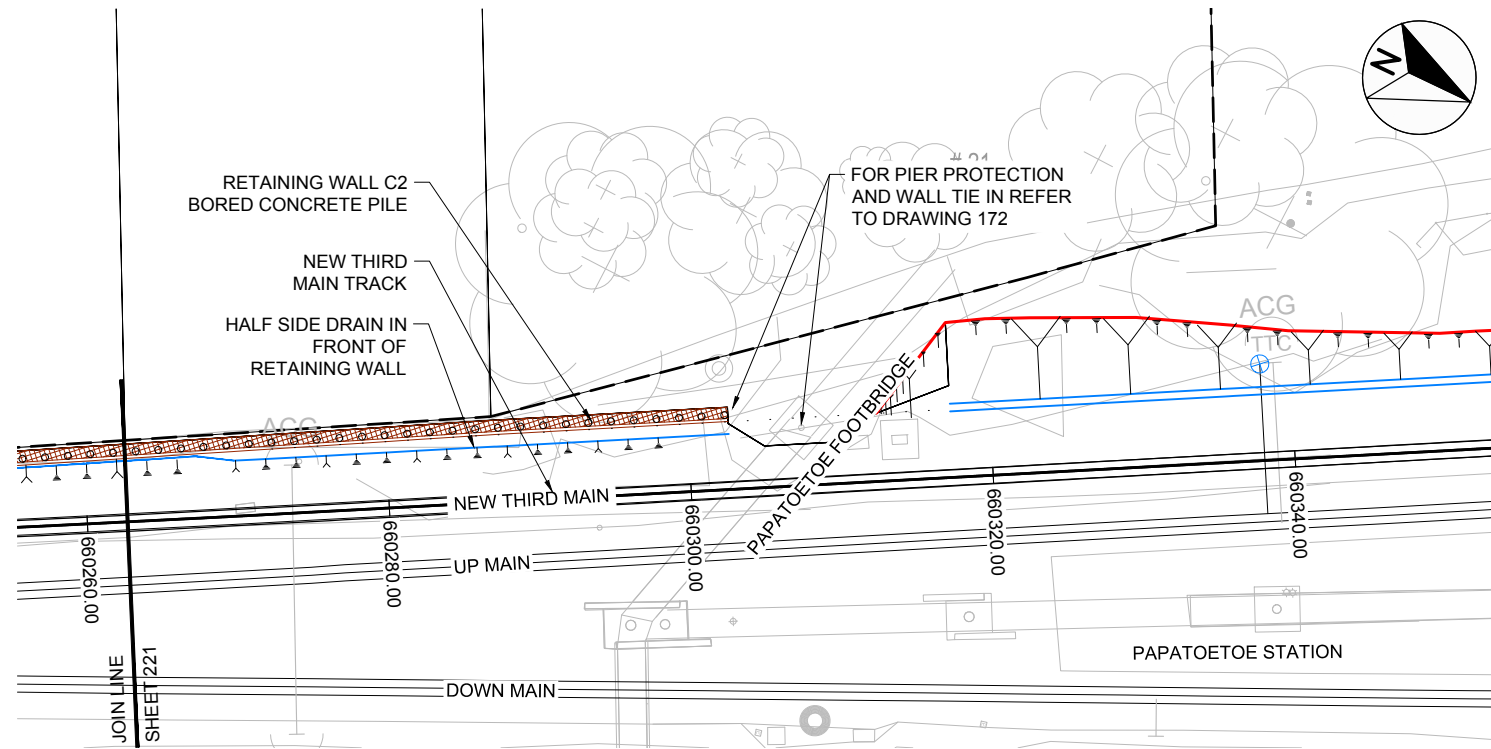
Revision	Amendment	Approved	Revision Date
RA	DETAILED DESIGN ISSUE	GE	06.07.12
RB	85% ISSUE	PW	20.07.16
RC	85% ISSUE UPDATED	PW	08.11.16

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Project
KIWI RAIL
MIDDLEMORE (662,600m) TO PUHINUI (659,000m)
NEW THIRD MAIN - STAGE 2

Sheet
RETAINING WALL C2
PLAN AND LONG SECTION LAYOUT 1 OF 2

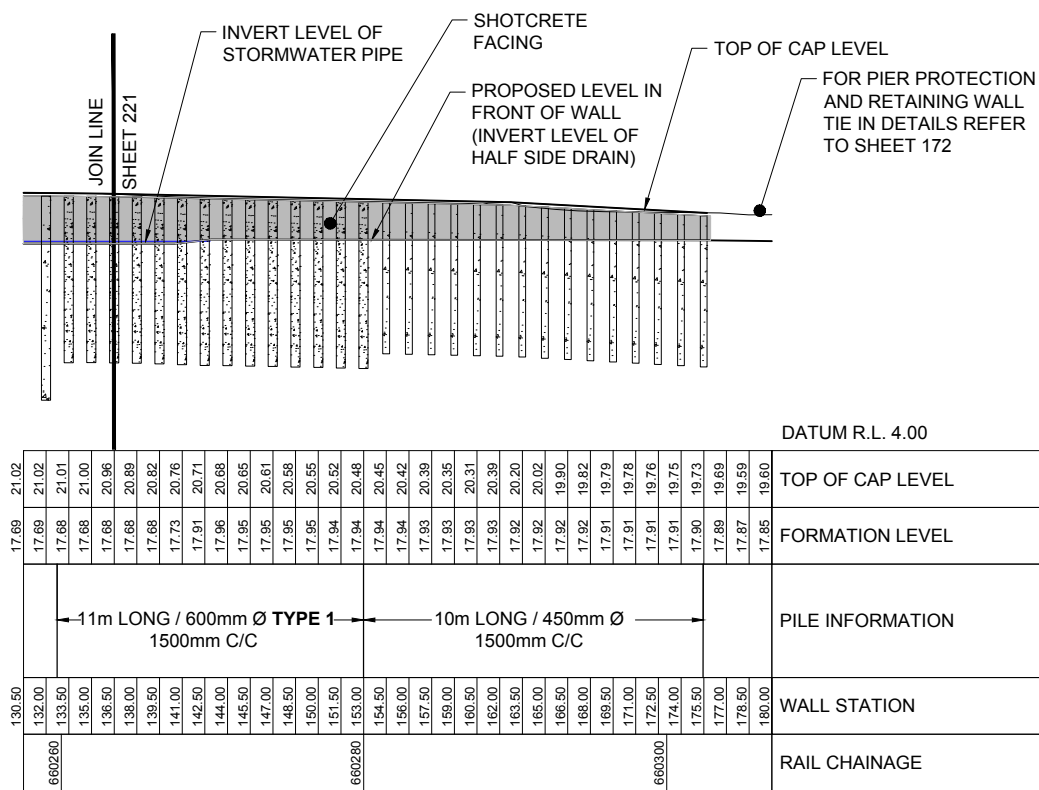
Drawn A. COOK	Designed DARRELL O	Approved G. EAST	Revision Date 06.07.12
Project No. 1-M9001.86	Scale 1:250 @ A1	Drawing No. 1/6057/19/5104	Sheet No. 221
			Revision RC



LEGEND:

- LEGAL BOUNDARIES
- - - RAIL BOUNDARIES
- SURVEY
- ==== EXISTING TRACK
- ==== NEW THIRD MAIN
- EARTHWORKS - CUT
- ACG (TTC) OVERHEAD LINE EQUIPMENT (OLE)
- SIDE DRAIN
- SHOT-CRETE FACING PANEL
- ▨ BORED CONCRETE PILE WALL
- ⊗ OLE AS BUILT LOCATION

PLAN - RETAINING WALL C2
SCALE : 1:250



RETAINING WALL C2 - PART 2
1x VERTICAL EXAGGERATION

LONG SECTION - RETAINING WALL C2
SCALE : 1:250

NOTE:
EXACT LOCATION OF EXISTING OLE STRUCTURES IS TO BE CONFIRMED BY SURVEY TO ENSURE NO CLASH WITH RETAINING WALL DESIGNS

Revision	Amendment	Approved	Revision Date
RA	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RB	AMENDED TITLE FOR OPW ISSUE	TW	30.05.12
RC	DETAILED DESIGN ISSUE	GE	06.07.12
RD	85% ISSUE	PW	20.07.16
RE	85% ISSUE UPDATED	PW	08.11.16

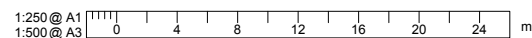


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Drawn	Designed	Approved	Revision Date
A. COOK	DARRELL O	G. EAST	06.07.12

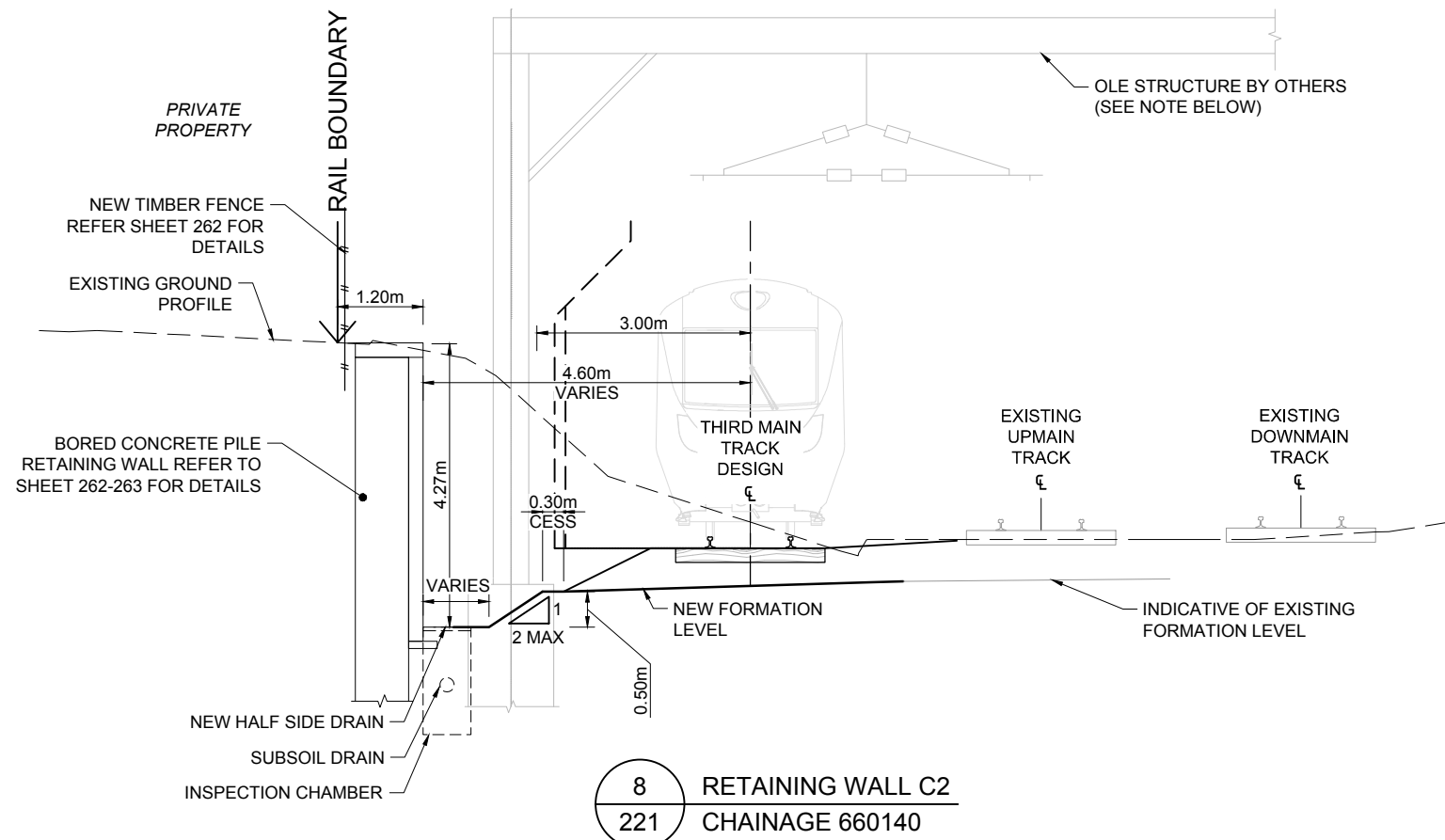
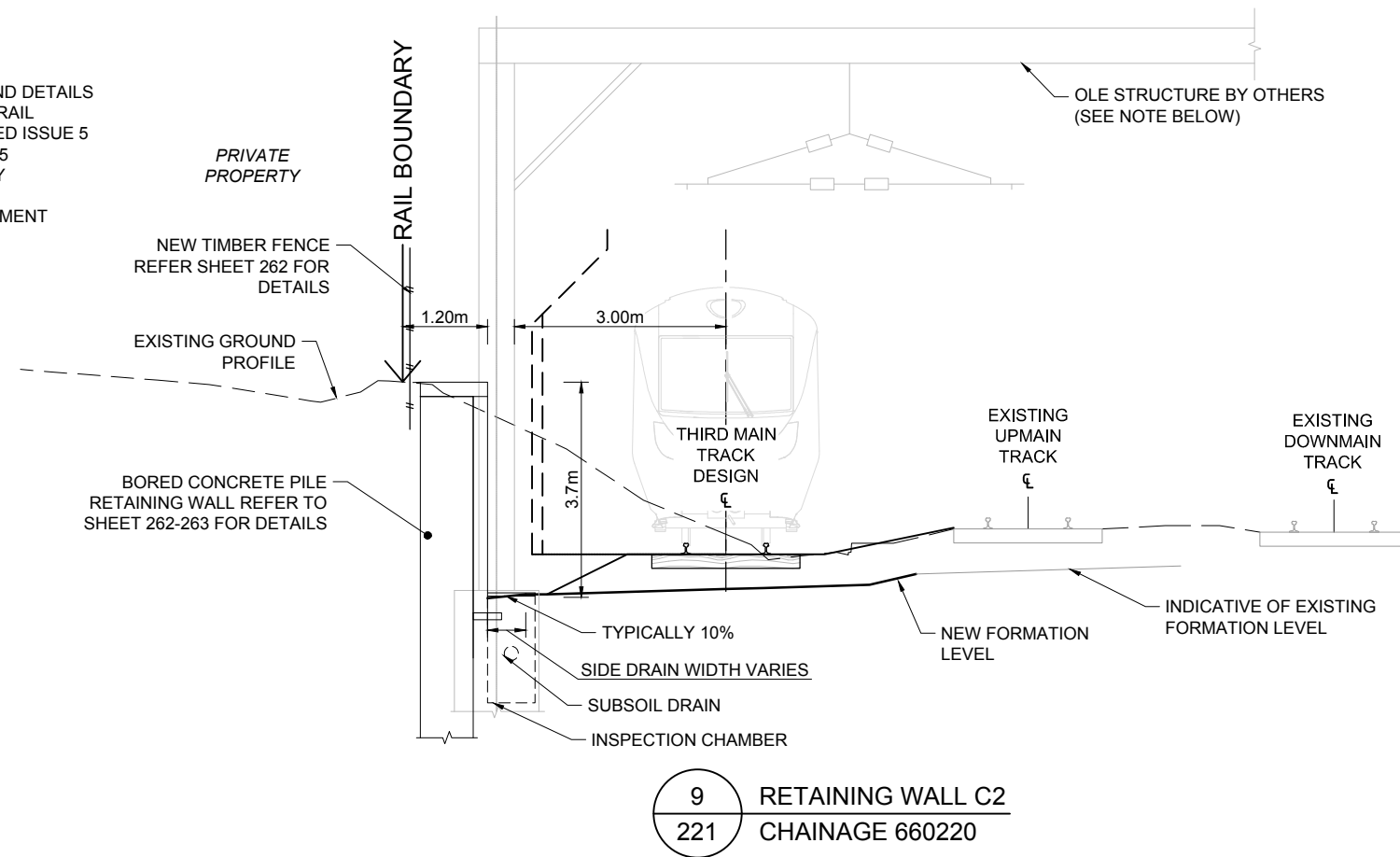
Project No.	Scale	Drawing No.
1-M9001.86	1:250 @ A1	1/6057/19/5104

Project	
KIWIRAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2	
Sheet	
RETAINING WALL C2 PLAN AND LONG SECTION LAYOUT 2 OF 2	
Sheet No.	Revision
222	RE



NOTES:

1. REFER TO SHEETS 81 AND 83 FOR TYPICAL TRACK MEASUREMENTS AND DETAILS
2. FOR STANDARD TRACK MEASUREMENTS AND DETAILS REFER TO KIWIRAIL 'INFRASTRUCTURE AND ENGINEERING T200 TRACK HANDBOOK' REVISED ISSUE 5 DATED JAN 2015 & KIWIRAIL DRAWINGS 100 862 - 1 TO 6 DATED JAN 2015
3. ALL CONSTRUCTION WORKS TO COMPLY WITH KIWIRAIL'S RAIL SAFETY STANDARDS AND GUIDELINES
4. REFER TO GAIA FORMATION DESIGN DOCUMENTATION FOR RAIL PAVEMENT DESIGN



NOTE:

EXACT LOCATION OF EXISTING OLE STRUCTURES IS TO BE CONFIRMED BY SURVEY TO ENSURE NO CLASH WITH RETAINING WALL DESIGNS

Revision	Amendment	Approved	Revision Date
RA	ISSUED FOR CONSENT	TW	03.07.12
RB	DETAILED DESIGN ISSUE	TW	06.07.12
RC	85% ISSUE	PW	20.07.16
RD	85% ISSUE UPDATED	PW	10.11.16



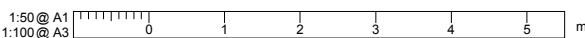
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PO Box 5848
Auckland 1141, New Zealand
+ 64 9 355 9500

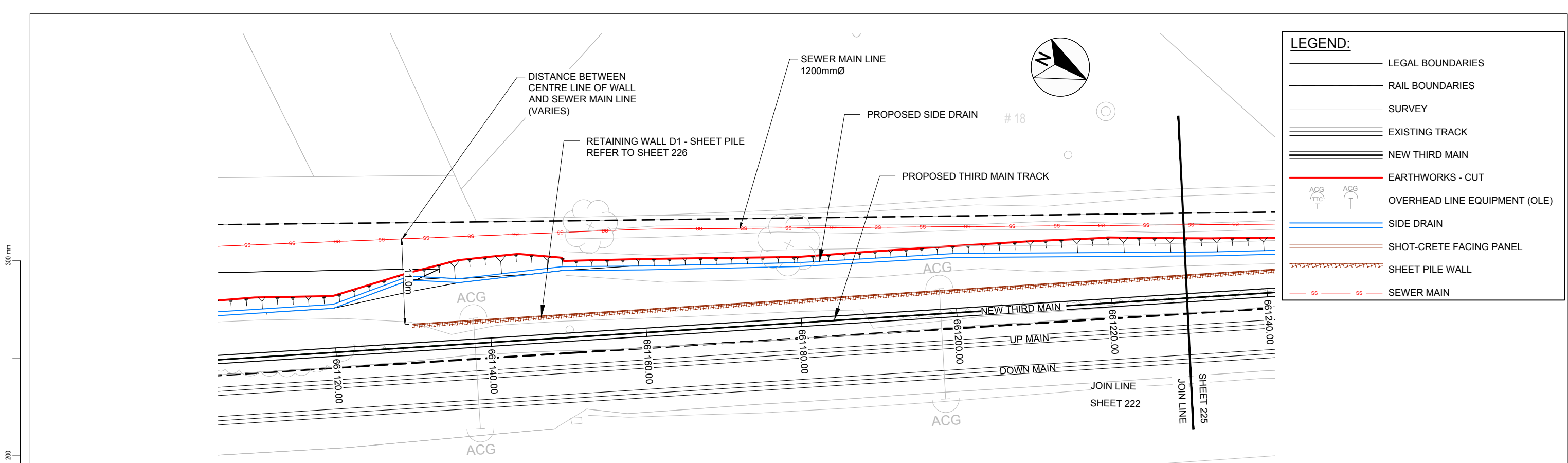
Project
KIWIRAIL
MIDDLEMORE (662,600m) TO PUHINUI (659,000m)
NEW THIRD MAIN - STAGE 2

Drawn	Designed	Approved	Revision Date
A.COOK	VARIOUS	T.WILSON	03.07.12

Project No.	Scale
1-M9001.86	1:50 @ A1

Sheet		Sheet No.	Revision
RETAINING WALL C2 SECTIONS		223	RD

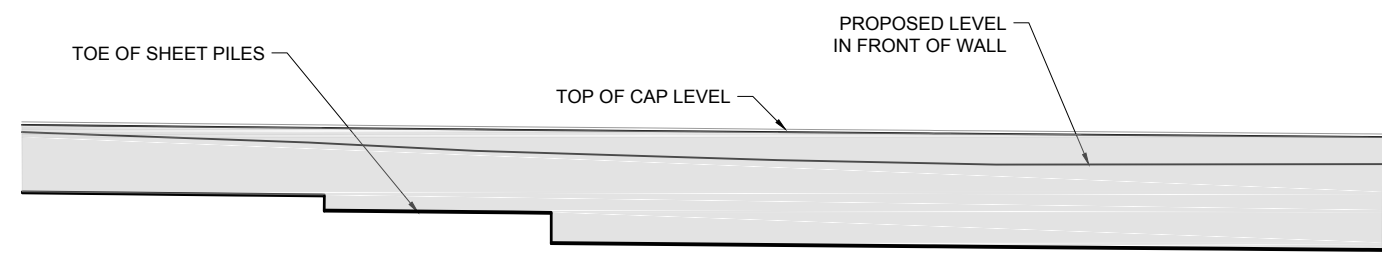




LEGEND:

- LEGAL BOUNDARIES
- - - RAIL BOUNDARIES
- SURVEY
- ==== EXISTING TRACK
- ==== NEW THIRD MAIN
- EARTHWORKS - CUT
- ACG (TTC) OVERHEAD LINE EQUIPMENT (OLE)
- SIDE DRAIN
- SHOT-CRETE FACING PANEL
- ||||| SHEET PILE WALL
- SS — SEWER MAIN

PLAN - RETAINING WALL D1
SCALE : 1:250



Datum R.L. 3.00

Station	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00	50.00	52.00	54.00	56.00	58.00	60.00	62.00	64.00	66.00	68.00	70.00	72.00	74.00	76.00	78.00	80.00	82.00	84.00	86.00	88.00	90.00	92.00	94.00	96.00	98.00	100.00		
TOP OF CAP LEVEL	14.22	14.20	14.18	14.15	14.13	14.11	14.09	14.07	14.05	14.03	14.01	13.99	13.97	13.95	13.93	13.91	13.90	13.88	13.86	13.84	13.82	13.80	13.79	13.77	13.75	13.73	13.72	13.70	13.68	13.67	13.65	13.64	13.62	13.60	13.59	13.57	13.56	13.54	13.52	13.51	13.49	13.48	13.46	13.44	13.43	13.41		
FORMATION LEVEL	13.74	13.66	13.59	13.52	13.45	13.37	13.30	13.23	13.16	13.09	13.00	12.90	12.80	12.70	12.60	12.50	12.44	12.38	12.32	12.25	12.19	12.13	12.07	12.01	11.95	11.89	11.85	11.81	11.77	11.73	11.69	11.64	11.60	11.60	11.60	11.60	11.60	11.60	11.61	11.61	11.61	11.61	11.62	11.62	11.62	11.63		
SHEET PILE INFORMATION	4.5m LONG AZ 12 - 770 SHEET PILES												5.5m LONG AZ 12 - 770 SHEET PILES					7.5m LONG AZ 12 - 770 SHEET PILES																														
WALL STATION	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00	50.00	52.00	54.00	56.00	58.00	60.00	62.00	64.00	66.00	68.00	70.00	72.00	74.00	76.00	78.00	80.00	82.00	84.00	86.00	88.00	90.00	92.00	94.00	96.00	98.00	100.00		
RAIL CHAINAGE	661130				661140						661150					661160											661180																			661220		

LONG SECTION - RETAINING WALL D1
SCALE : 1:250

NOTE:
EXACT LOCATION OF EXISTING OLE STRUCTURES IS TO BE CONFIRMED BY SURVEY TO ENSURE NO CLASH WITH RETAINING WALL DESIGNS

Revision	Amendment	Approved	Revision Date
RA	ISSUED FOR OUTLINE PLAN OF WORKS	AC	12.04.12
RB	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RC	ISSUED FOR CONSENT	TW	03.07.12
RD	DETAILED DESIGN ISSUE	TW	06.07.12
RE	85% ISSUE	PW	20.07.16
RF	85% ISSUE UPDATED	PW	08.11.16

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Drawn	Designed	Approved	Revision Date
N.BOYTE	A.COOK	T.WILSON	12.04.12
Project No.	Scale	Sheet No.	Revision
1-M9001.86	1:500 @ A1	224	RE

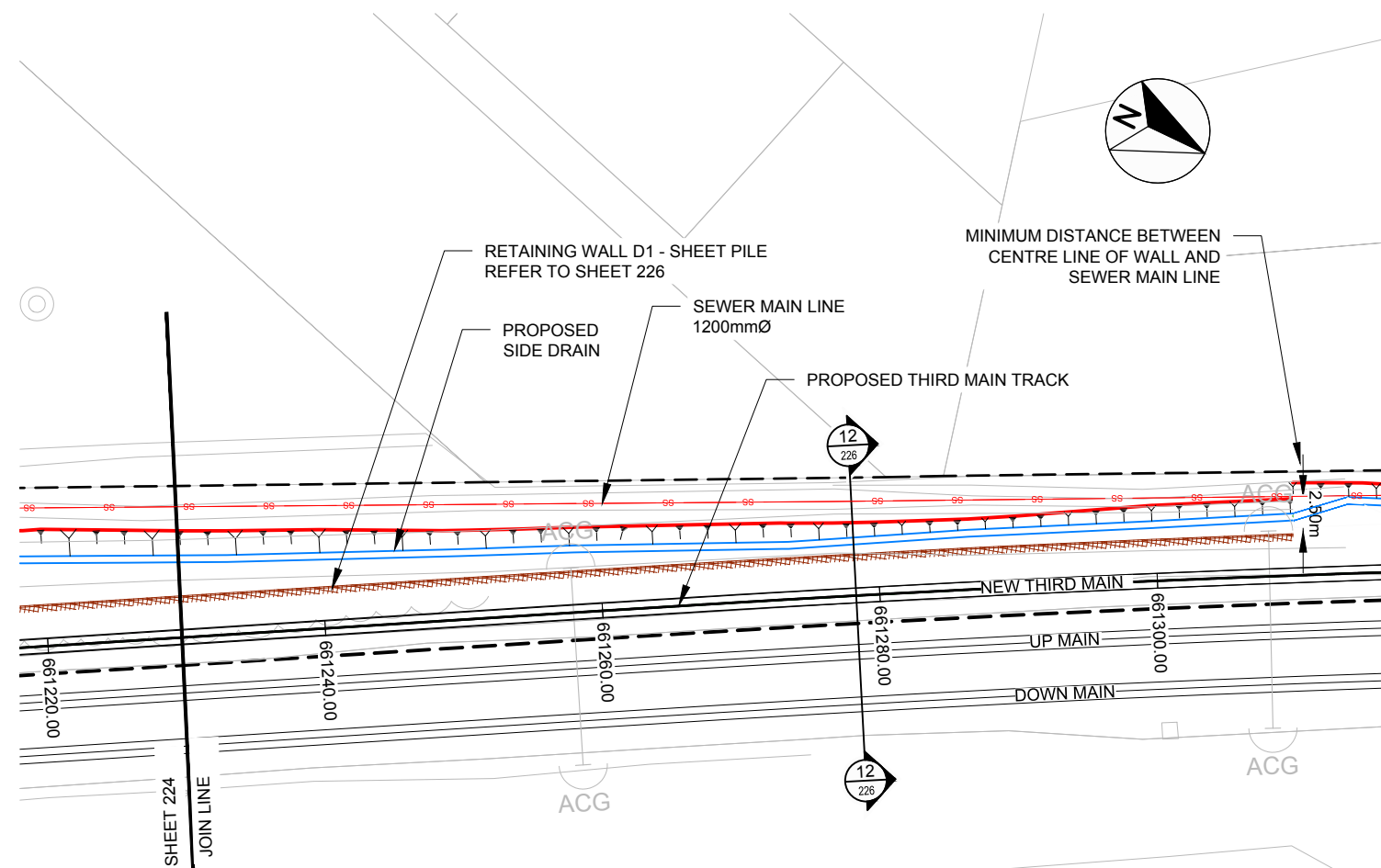
Project
KIWI RAIL
MIDDLEMORE (662,600m) TO PUHINUI (659,000m)
NEW THIRD MAIN - STAGE 2

Sheet
RETAINING WALL D1
PLAN AND LONG SECTION LAYOUT 1 OF 2

Drawn No. 1/6057/19/5104
Sheet No. 224
Revision RE

85% ISSUE

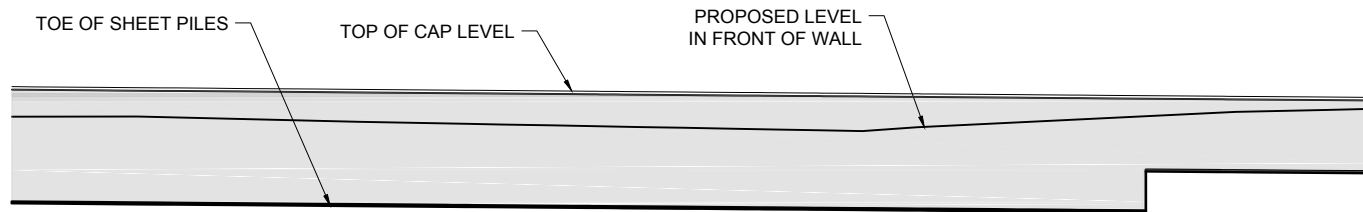
300 mm
200
100
50
0 10 mm



LEGEND:

(---)	LEGAL BOUNDARIES
(- - - -)	RAIL BOUNDARIES
(...)	SURVEY
(=====)	EXISTING TRACK
(=====)	NEW THIRD MAIN
(-----)	EARTHWORKS - CUT
(ACG T/C)	OVERHEAD LINE EQUIPMENT (OLE)
(=====)	SIDE DRAIN
(=====)	SHOT-CRETE FACING PANEL
([])	SHEET PILE WALL
(--- SS ---)	SEWER MAIN

PLAN - RETAINING WALL D1
SCALE : 1:250



	Datum R.L. 3.00																																																																																														
TOP OF CAP LEVEL	11.63	13.40	11.63	13.38	11.64	13.37	11.64	13.35	11.60	13.33	11.55	13.32	11.50	13.30	11.45	13.29	11.41	13.27	11.36	13.25	11.31	13.24	11.27	13.22	11.23	13.21	11.19	13.19	11.16	13.17	11.12	13.16	11.08	13.14	11.05	13.13	11.01	13.11	10.97	13.10	10.94	13.08	10.90	13.06	10.86	13.05	10.83	13.03	10.79	13.02	10.76	13.00	10.72	12.98	10.68	12.97	10.64	12.95	10.60	12.94	11.03	12.92	11.13	12.90	11.22	12.89	11.32	12.87	11.42	12.86	11.52	12.84	11.61	12.83	11.71	12.81	11.81	12.79	11.90	12.78	11.97	12.76	12.01	12.75	12.06	12.73	12.10	12.71	12.15	12.70					
FORMATION LEVEL	11.63	13.40	11.63	13.38	11.64	13.37	11.64	13.35	11.60	13.33	11.55	13.32	11.50	13.30	11.45	13.29	11.41	13.27	11.36	13.25	11.31	13.24	11.27	13.22	11.23	13.21	11.19	13.19	11.16	13.17	11.12	13.16	11.08	13.14	11.05	13.13	11.01	13.11	10.97	13.10	10.94	13.08	10.90	13.06	10.86	13.05	10.83	13.03	10.79	13.02	10.76	13.00	10.72	12.98	10.68	12.97	10.64	12.95	10.60	12.94	11.03	12.92	11.13	12.90	11.22	12.89	11.32	12.87	11.42	12.86	11.52	12.84	11.61	12.83	11.71	12.81	11.81	12.79	11.90	12.78	11.97	12.76	12.01	12.75	12.06	12.73	12.10	12.71	12.15	12.70					
SHEET PILE INFORMATION	7.5m LONG AZ 12 - 770 SHEET PILES																												4.8m LONG AZ 12 - 770 SHEET PILES																																																																		
WALL STATION	100.00	102.00	104.00	106.00	108.00	110.00	112.00	114.00	116.00	118.00	120.00	122.00	124.00	126.00	128.00	130.00	132.00	134.00	136.00	138.00	140.00	142.00	144.00	146.00	148.00	150.00	152.00	154.00	156.00	158.00	160.00	162.00	164.00	166.00	168.00	170.00	172.00	174.00	176.00	178.00	180.00	182.00	184.00	186.00	188.00	190.00	192.00	194.00	196.00	198.00	200.00	202.00	204.00	206.00	208.00	210.00	212.00	214.00	216.00	218.00	220.00	222.00	224.00	226.00	228.00	230.00	232.00	234.00	236.00	238.00	240.00	242.00	244.00	246.00	248.00	250.00																			
RAIL CHAINAGE	661220	661240	661260	661280	661300	661320	661340	661360	661380	661400	661420	661440	661460	661480	661500	661520	661540	661560	661580	661600	661620	661640	661660	661680	661700	661720	661740	661760	661780	661800	661820	661840	661860	661880	661900	661920	661940	661960	661980	662000	662020	662040	662060	662080	662100	662120	662140	662160	662180	662200	662220	662240	662260	662280	662300	662320	662340	662360	662380	662400	662420	662440	662460	662480	662500	662520	662540	662560	662580	662600	662620	662640	662660	662680	662700	662720	662740	662760	662780	662800	662820	662840	662860	662880	662900	662920	662940	662960	662980	663000	663020	663040	663060	663080	663100

LONG SECTION - RETAINING WALL D1
SCALE : 1:250

85% ISSUE

NOTE:
EXACT LOCATION OF EXISTING OLE STRUCTURES IS TO BE CONFIRMED BY SURVEY TO ENSURE NO CLASH WITH RETAINING WALL DESIGNS

Revision	Amendment	Approved	Revision Date
RA	ISSUED FOR OUTLINE PLAN OF WORKS	AC	12.04.12
RB	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RC	ISSUED FOR CONSENT	TW	03.07.12
RD	DETAILED DESIGN ISSUE	TW	06.07.12
RE	85% ISSUE	PW	20.07.16
RF	85% ISSUE UPDATED	PW	08.11.16



Drawn	Designed	Approved	Revision Date
N.BOYTE	A.COOK	T.WILSON	12.04.12

Project No.	Scale
1-M9001.86	1:500 @ A1

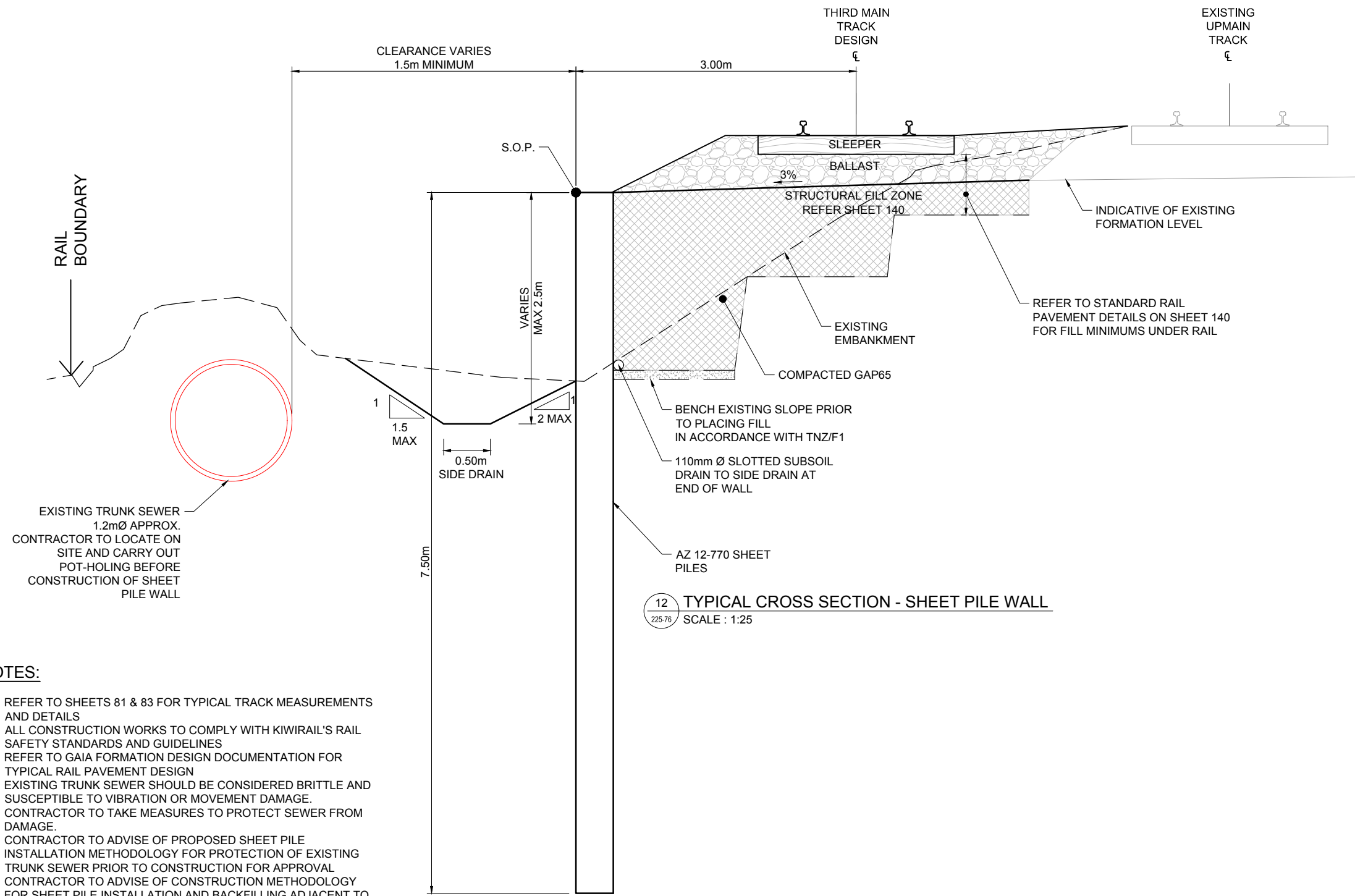
Project
KIWIRAIL
MIDDLEMORE (662,600m) TO PUHINUI (659,000m)
NEW THIRD MAIN - STAGE 2

Sheet
**RETAINING WALL D1
PLAN AND LONG SECTION LAYOUT 2 OF 2**

Drawn No.	Sheet No.	Revision
1/6057/19/5104	225	RF

1:500 @ A1
1:1000 @ A3

300 mm
200
100
0 10 mm



12 TYPICAL CROSS SECTION - SHEET PILE WALL
SCALE : 1:25

NOTES:

1. REFER TO SHEETS 81 & 83 FOR TYPICAL TRACK MEASUREMENTS AND DETAILS
2. ALL CONSTRUCTION WORKS TO COMPLY WITH KIWIRAIL'S RAIL SAFETY STANDARDS AND GUIDELINES
3. REFER TO GAIA FORMATION DESIGN DOCUMENTATION FOR TYPICAL RAIL PAVEMENT DESIGN
4. EXISTING TRUNK SEWER SHOULD BE CONSIDERED BRITTLE AND SUSCEPTIBLE TO VIBRATION OR MOVEMENT DAMAGE. CONTRACTOR TO TAKE MEASURES TO PROTECT SEWER FROM DAMAGE.
5. CONTRACTOR TO ADVISE OF PROPOSED SHEET PILE INSTALLATION METHODOLOGY FOR PROTECTION OF EXISTING TRUNK SEWER PRIOR TO CONSTRUCTION FOR APPROVAL
6. CONTRACTOR TO ADVISE OF CONSTRUCTION METHODOLOGY FOR SHEET PILE INSTALLATION AND BACKFILLING ADJACENT TO EXISTING UP-MAIN PRIOR TO CONSTRUCTION FOR APPROVAL.

85% ISSUE

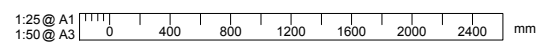
Revision	Amendment	Approved	Revision Date
RA	DETAILED DESIGN ISSUE	TW	06.07.12
RB	85% ISSUE	PW	20.07.16
RC	85% ISSUE UPDATED	PW	11.11.16

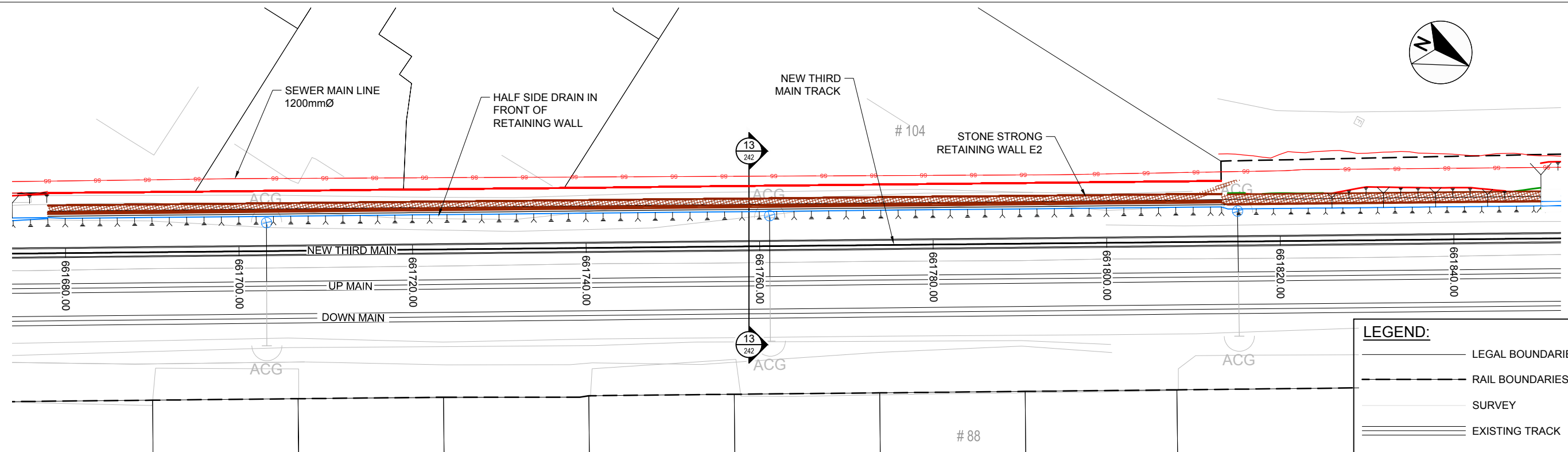


Drawn	Designed	Approved	Revision Date
N.BOYTE	DARRELL O	T.WILSON	07.05.12

Project No.	Scale
1-M9001.86	1:25 @ A1

Project	
KIWIRAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2	
Sheet	
RETAINING WALL D1 SECTION	
Sheet No.	Revision
226	RC

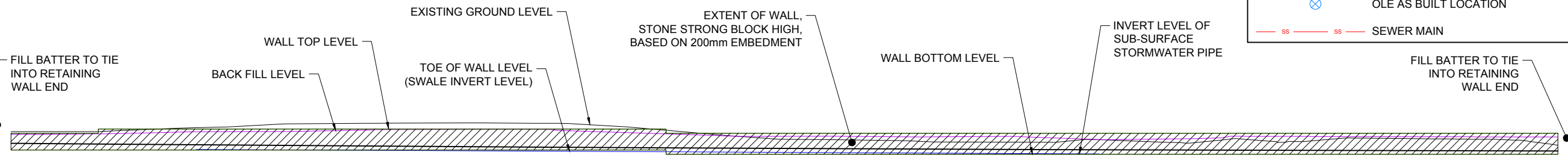




PLAN - RETAINING WALL E2
SCALE : 1:250

LEGEND:

- LEGAL BOUNDARIES
- - - RAIL BOUNDARIES
- SURVEY
- EXISTING TRACK
- NEW THIRD MAIN
- EARTHWORKS - CUT
- ACG TTC T OVERHEAD LINE EQUIPMENT (OLE)
- SIDE DRAIN
- STONE STRONG WALL
- ⊗ OLE AS BUILT LOCATION
- SS — SEWER MAIN



TOP OF WALL LEVEL	BACK FILL LEVEL	TOE OF WALL LEVEL	BOTTOM OF WALL LEVEL	WALL INFORMATION	WALL STATION	RAIL CHAINAGE
10.36	10.23	9.25	8.52	2 x 24SF Stone Strong Blocks (200mm Embedment)	2.00	661680
10.36	10.24	9.24	8.52		4.00	
10.36	10.26	9.22	8.52	2 x 24SF + 1 x 6SF STONE STRONG BLOCKS AT LEAST 200mm EMBEDMENT	6.00	
10.36	10.27	9.21	8.52		8.00	
10.36	10.28	9.19	8.52		10.00	
10.82	10.30	9.17	8.52		12.00	
10.82	10.34	9.16	8.52		14.00	
10.82	10.38	9.15	8.52		16.00	
10.82	10.42	9.13	8.52		18.00	
10.82	10.48	9.12	8.52		20.00	
10.82	10.53	9.10	8.52		22.00	
10.82	10.53	9.09	8.52		24.00	
10.82	10.54	9.07	8.52		26.00	
10.82	10.54	9.06	8.52		28.00	
10.82	10.54	9.04	8.52		30.00	
10.82	10.55	9.03	8.52		32.00	
10.82	10.58	9.01	8.52		34.00	
10.82	10.62	9.00	8.52		36.00	
10.82	10.65	8.98	8.52		38.00	
10.82	10.69	8.97	8.52		40.00	
10.82	10.75	8.96	8.52		42.00	
10.82	10.76	8.94	8.52		44.00	
10.82	10.77	8.93	8.52		46.00	
10.82	10.78	8.92	8.52		48.00	
10.82	10.79	8.90	8.52		50.00	
10.82	10.80	8.89	8.52		52.00	
10.82	10.80	8.88	8.52		54.00	
10.82	10.80	8.87	8.52		56.00	
10.82	10.80	8.85	8.52		58.00	
10.82	10.82	8.84	8.52		60.00	
10.82	10.82	8.83	8.52		62.00	
10.82	10.82	8.82	8.52		64.00	
10.82	10.82	8.81	8.52		66.00	
10.82	10.82	8.80	8.52		68.00	
10.82	10.82	8.78	8.52		70.00	
10.82	10.82	8.77	8.52		72.00	
10.82	10.82	8.76	8.52		74.00	
10.82	10.82	8.75	8.52		76.00	
10.82	10.82	8.74	8.52		78.00	
10.82	10.82	8.73	8.52		80.00	
10.82	10.82	8.72	8.52		82.00	
10.82	10.82	8.71	8.52		84.00	
10.82	10.82	8.70	8.52		86.00	
10.82	10.82	8.70	8.52		88.00	
10.82	10.82	8.69	8.52		90.00	
10.82	10.82	8.68	8.52		92.00	
10.82	10.82	8.67	8.52		94.00	
10.82	10.82	8.66	8.52		96.00	
10.82	10.82	8.65	8.52		98.00	
10.82	10.82	8.64	8.52		100.00	
10.82	10.82	8.63	8.52		102.00	
10.82	10.82	8.62	8.52		104.00	
10.82	10.82	8.61	8.52		106.00	
10.82	10.82	8.60	8.52		108.00	
10.82	10.82	8.59	8.52		110.00	
10.82	10.82	8.59	8.52		112.00	
10.82	10.82	8.58	8.52		114.00	
10.82	10.82	8.57	8.52		116.00	
10.82	10.82	8.56	8.52		118.00	
10.82	10.82	8.55	8.52		120.00	
10.82	10.82	8.55	8.52		122.00	
10.82	10.82	8.54	8.52		124.00	
10.82	10.82	8.53	8.52		126.00	
10.82	10.82	8.53	8.52		128.00	
10.82	10.82	8.52	8.52		130.00	
10.82	10.82	8.51	8.52		132.00	
10.82	10.82	8.51	8.52		134.00	
10.82	10.82	8.50	8.52		136.00	
10.82	10.82	8.49	8.52		138.00	
10.82	10.82	8.48	8.52		140.00	
10.82	10.82	8.48	8.52		142.00	
10.82	10.82	8.48	8.52		144.00	
10.82	10.82	8.47	8.52		146.00	
10.82	10.82	8.47	8.52		148.00	
10.82	10.82	8.47	8.52		150.00	
10.82	10.82	8.46	8.52		152.00	
10.82	10.82	8.46	8.52		154.00	
10.82	10.82	8.45	8.52		156.00	
10.82	10.82	8.45	8.52		158.00	
10.82	10.82	8.44	8.52		160.00	
10.82	10.82	8.44	8.52		162.00	
10.82	10.82	8.44	8.52		164.00	
10.82	10.82	8.43	8.52		166.00	
10.82	10.82	8.42	8.52		168.00	
10.82	10.82	8.42	8.52		170.00	
10.82	10.82	8.42	8.52		172.00	

Wall E2
SECTION BETWEEN CH: 2.00 AND 172.00
1 x VERTICAL EXAGGERATION

LONG SECTION - RETAINING WALL E2
SCALE : 1:250

NOTE:
EXACT LOCATION OF EXISTING OLE STRUCTURES IS TO BE CONFIRMED BY SURVEY TO ENSURE NO CLASH WITH RETAINING WALL DESIGNS

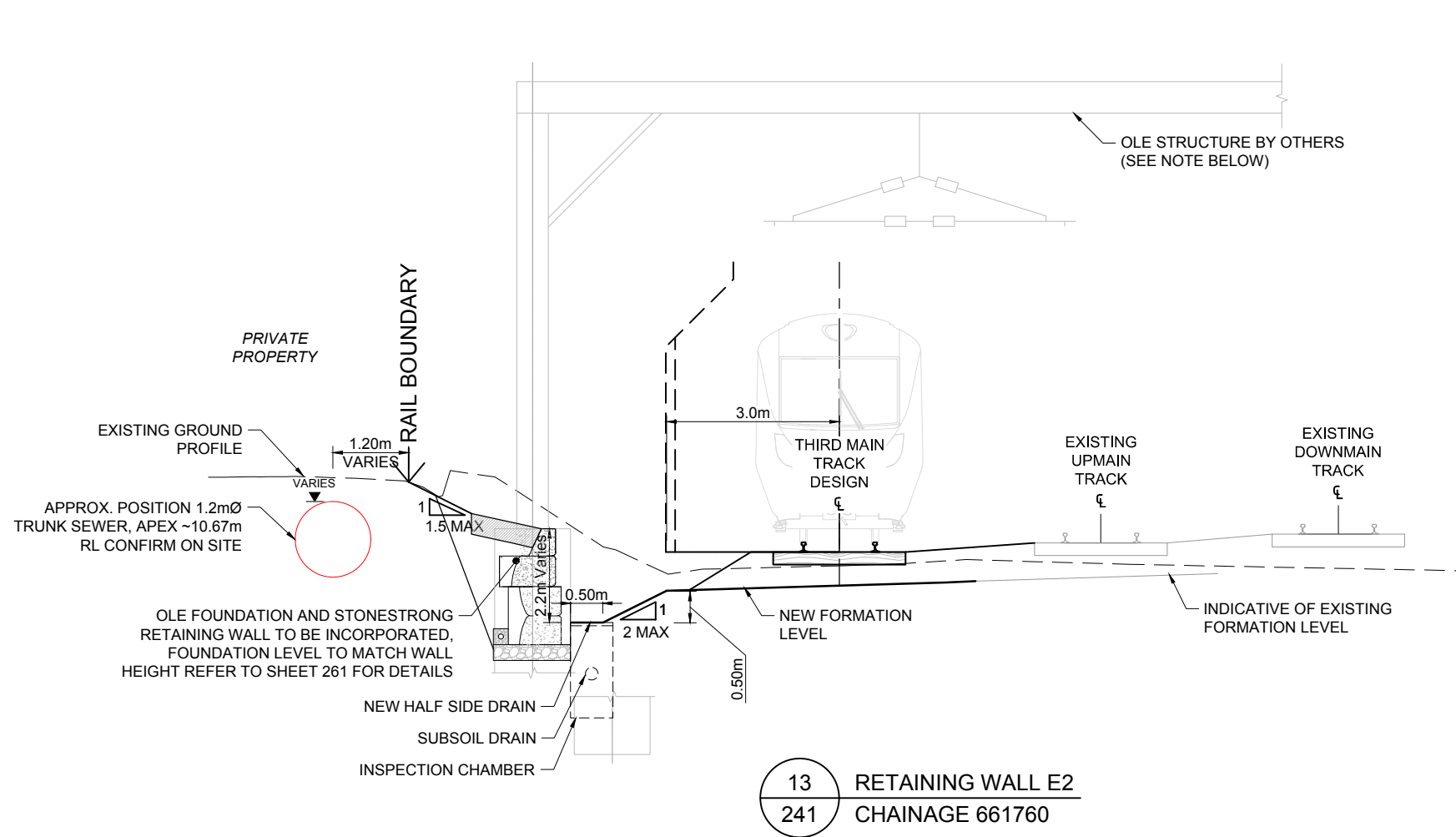
Revision	Amendment	Approved	Revision Date
RB	85% ISSUE	PW	20.07.16
RC	85% ISSUE UPDATED	PW	08.11.16



Project		KIWI RAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2	
Sheet		RETAINING WALL E2 PLAN AND LONG SECTION	
Drawn	Designed	Approved	Revision Date
A. COOK	S. HUSZAK	PAUL WILLEY	20.07.16
Project No.	Scale	Drawing No.	
1-M9001.86	1:500 @ A1	1/6057/19/5104	
Sheet No.	Revision		
241	RC		

NOTES:

1. REFER TO SHEETS 81 AND 83 FOR TYPICAL TRACK MEASUREMENTS AND DETAILS
2. FOR STANDARD TRACK MEASUREMENTS AND DETAILS REFER TO KIWIRAIL 'INFRASTRUCTURE AND ENGINEERING T200 TRACK HANDBOOK' REVISED ISSUE 5 DATED JAN 2015 & KIWIRAIL DRAWINGS 100 862 - 1 TO 6 DATED JAN 2015
3. ALL CONSTRUCTION WORKS TO COMPLY WITH KIWIRAIL'S RAIL SAFETY STANDARDS AND GUIDELINES
4. REFER TO GAIA FORMATION DESIGN DOCUMENTATION FOR RAIL PAVEMENT DESIGN



NOTE:

EXACT LOCATION OF EXISTING OLE STRUCTURES IS TO BE CONFIRMED BY SURVEY TO ENSURE NO CLASH WITH RETAINING WALL DESIGNS

85% ISSUE

Revision	Amendment	Approved	Revision Date
RA	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RB	AMENDED TITLE FOR OPW ISSUE	TW	30.05.12
RC	ISSUED FOR CONSENT	TW	03.07.12
RD	DETAILED DESIGN ISSUE	TW	06.07.12
RE	85% ISSUE	PW	20.07.16
RF	85% ISSUE UPDATED	PW	10.11.16

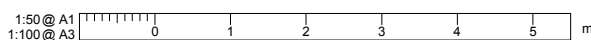


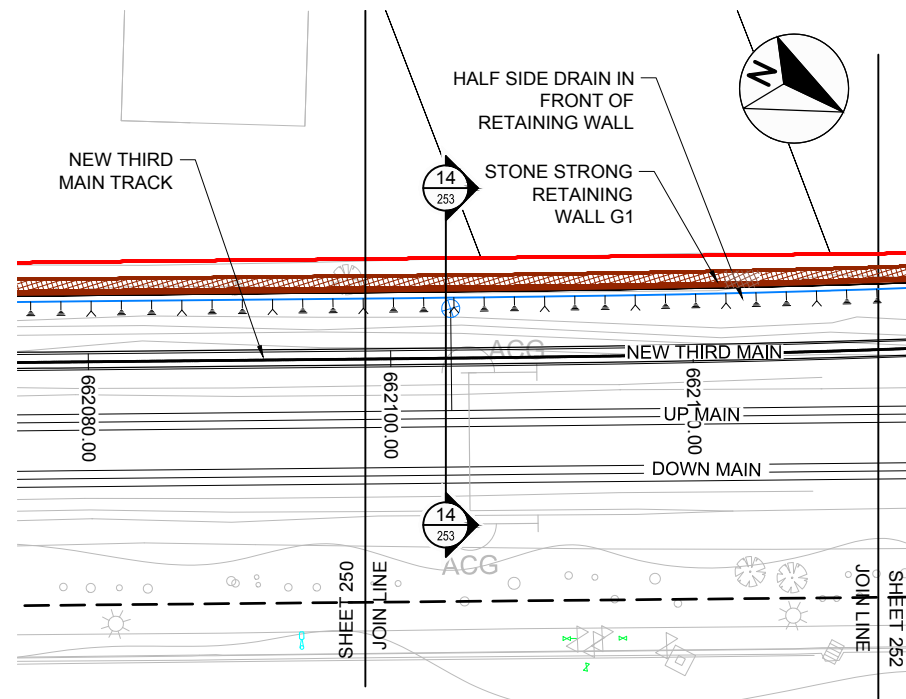
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Drawn	Designed	Approved	Revision Date
N.BOYTE	VARIOUS	T.WILSON	07.05.12

Project No.	Scale
1-M9001.86	1:50 @ A1

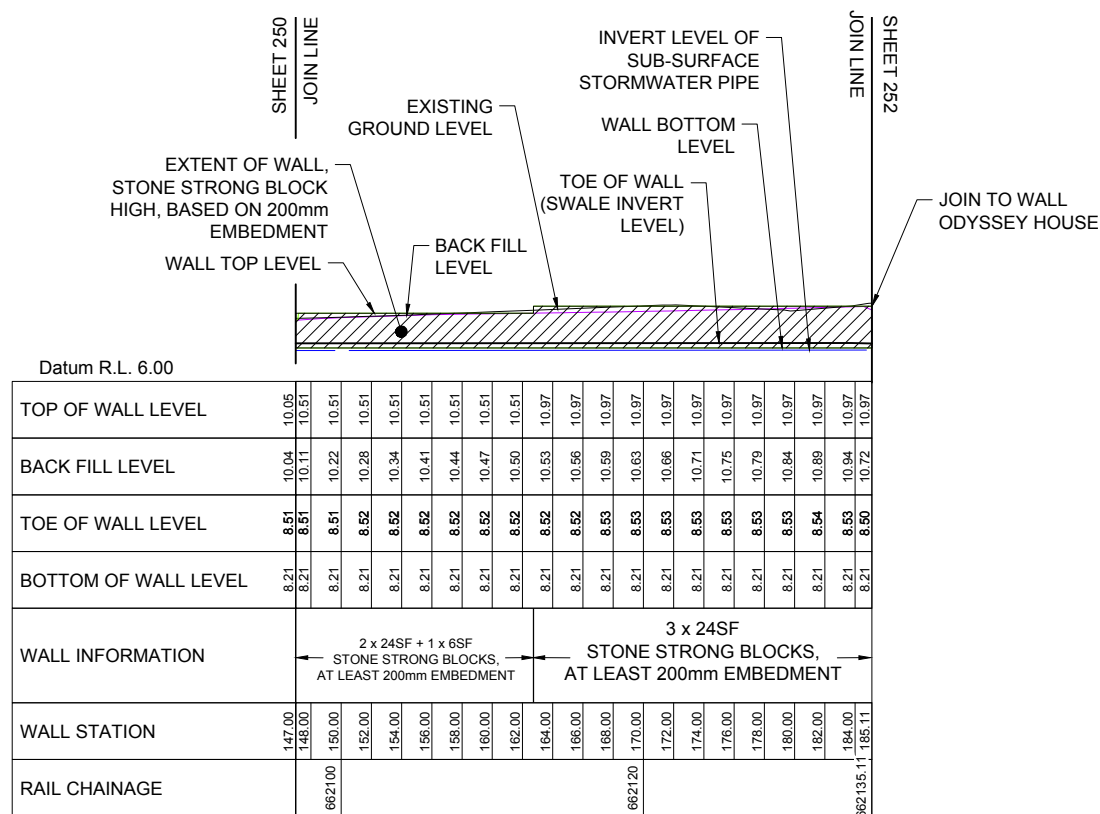
Project		Sheet
KIWIRAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2		RETAINING WALL E2 SECTION
Drawing No.	Sheet No.	Revision
1/6057/19/5104	242	RF





PLAN - RETAINING WALL G1 STONE STRONG WALL
SCALE : 1:250

LEGEND:	
	LEGAL BOUNDARIES
	RAIL BOUNDARIES
	SURVEY
	EXISTING TRACK
	NEW THIRD MAIN
	EARTHWORKS - CUT
	OVERHEAD LINE EQUIPMENT (OLE)
	SIDE DRAIN
	STONE STRONG WALL
	OLE AS BUILT LOCATION



Wall G 1_Stone Strong Wall
SECTION BETWEEN CH: 147.00 AND 185.11
1xVERTICAL EXAGGERATION

LONG SECTION - RETAINING WALL G1 STONE STRONG WALL
SCALE : 1:250

NOTE:

EXACT LOCATION OF EXISTING OLE STRUCTURES IS TO BE CONFIRMED BY SURVEY TO ENSURE NO CLASH WITH RETAINING WALL DESIGNS

Revision	Amendment	Approved	Revision Date
RB	85% ISSUE	PW	20.07.16
RC	85% ISSUE UPDATED	PW	08.11.16

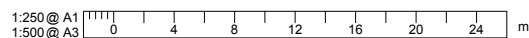


Drawn	Designed	Approved	Revision Date
A. COOK	S. HUSZAK	PAUL WILLEY	20.07.16

Project No.	Scale
1-M9001.86	AS SHOWN @ A1

Project	
KIWIRAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2	
Sheet	
RETAINING WALL G1 PLAN AND LONG SECTION - LAYOUT 2 OF 3	
Drawing No.	Sheet No.
1/6057/19/5104	251
Revision	RC

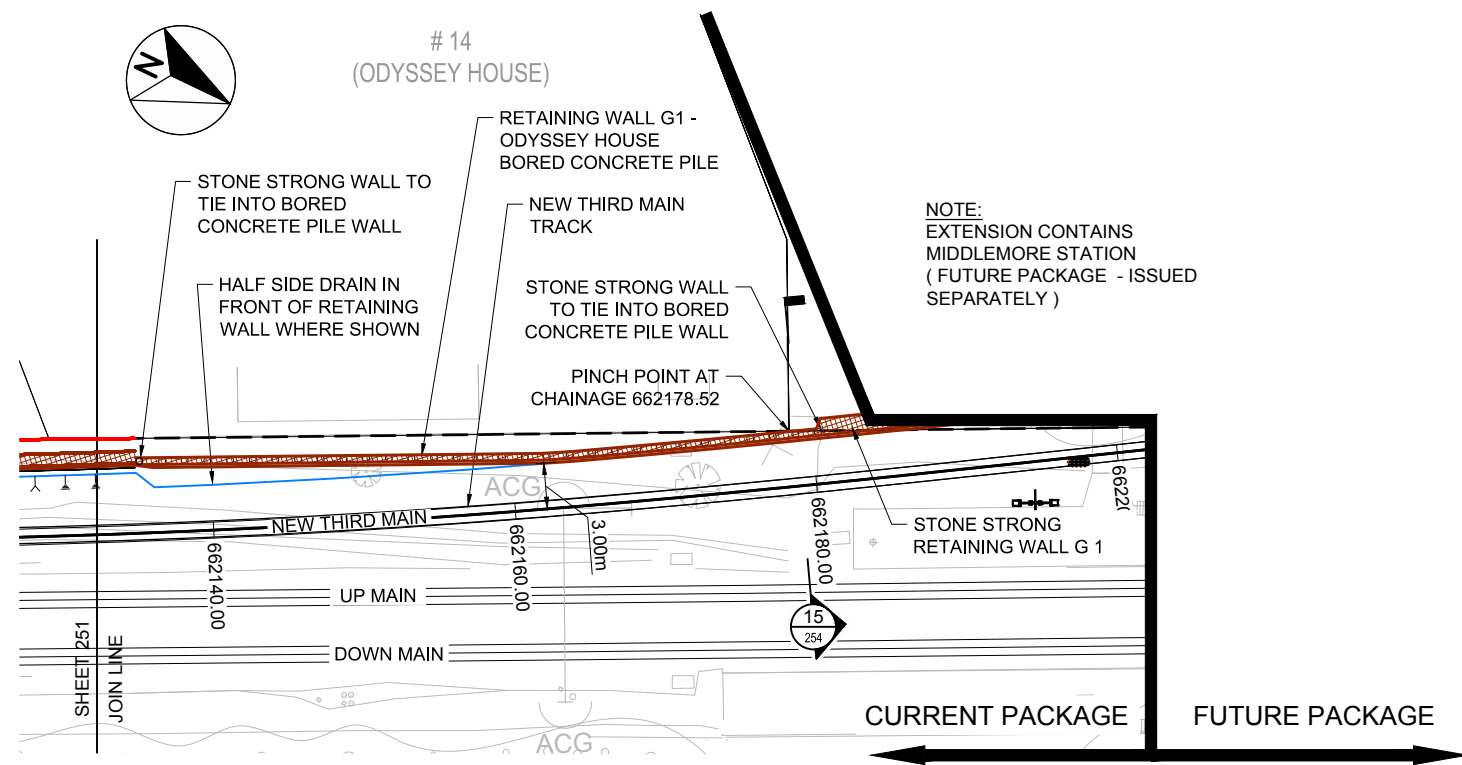
85% ISSUE



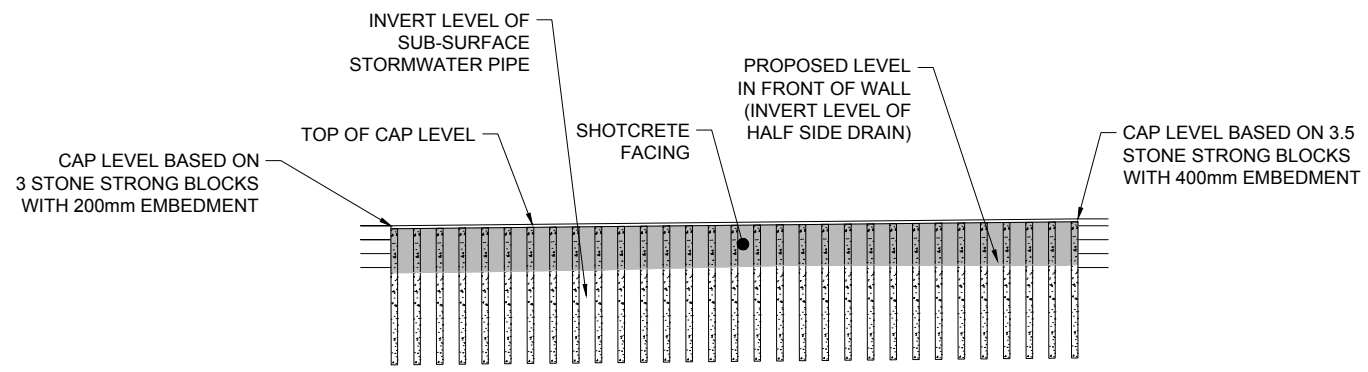
LEGEND:

- LEGAL BOUNDARIES
- RAIL BOUNDARIES
- SURVEY
- ==== EXISTING TRACK
- ==== NEW THIRD MAIN
- EARTHWORKS - CUT
- ACG / TTC / T OVERHEAD LINE EQUIPMENT (OLE)
- SIDE DRAIN
- SHOT-CRETE FACING PANEL
- ▨ BORED CONCRETE PILE WALL
- ⊗ OLE AS BUILT LOCATION

300 mm
200
100
50
0 10 mm



PLAN - RETAINING WALL G1 CONCRETE BORED PILE WALL
SCALE : 1:250



DATUM R.L. -2.00

TOP OF CAP LEVEL		8.54	8.54	11.50	11.50	11.51	11.53	11.54	11.56	11.57	11.59	11.60	11.62	11.63	11.65	11.66	11.68	11.70	11.71	11.73	11.74	11.76	11.77	11.79	11.80	11.82	11.83	11.85	11.86	11.88	11.88	11.91	11.92	11.94	11.95	11.95	11.98	11.99	
FORMATION LEVEL	8.54	8.54	8.52	8.54	8.56	8.59	8.61	8.64	8.66	8.69	8.72	8.75	8.78	8.82	8.85	8.89	8.93	8.97	9.01	9.10	9.17	9.52	9.54	9.50	9.41	9.28	9.33	9.36	9.37	9.35	9.29	9.21	9.16	9.18	9.19				
PILE INFORMATION	9m LONG / 450mm Ø / 1500mm CENTRES																																						
WALL STATION	-3.00	-1.50	1.50	3.00	4.50	6.00	7.50	9.00	10.50	12.00	13.50	15.00	16.50	18.00	19.50	21.00	22.50	24.00	25.50	27.00	28.50	30.00	31.50	33.00	34.50	36.00	37.50	39.00	40.50	42.00	43.50	45.00	46.50	48.00					
RAIL CHAINAGE	662135.12		662140													662160																662180	662180.42						

RETAINING WALL G1 - ODYSSEY HOUSE
1x VERTICAL EXAGGERATION

LONG SECTION - RETAINING WALL G1 CONCRETE BORED PILE WALL
SCALE : 1:250

85% ISSUE

NOTE:
EXACT LOCATION OF EXISTING OLE STRUCTURES IS TO BE CONFIRMED BY SURVEY TO ENSURE NO CLASH WITH RETAINING WALL DESIGNS

Revision	Amendment	Approved	Revision Date
RA	DETAILED DESIGN ISSUE	GE	06.07.12
RB	85% ISSUE	PW	20.07.16
RC	85% ISSUE UPDATED	PW	08.11.16



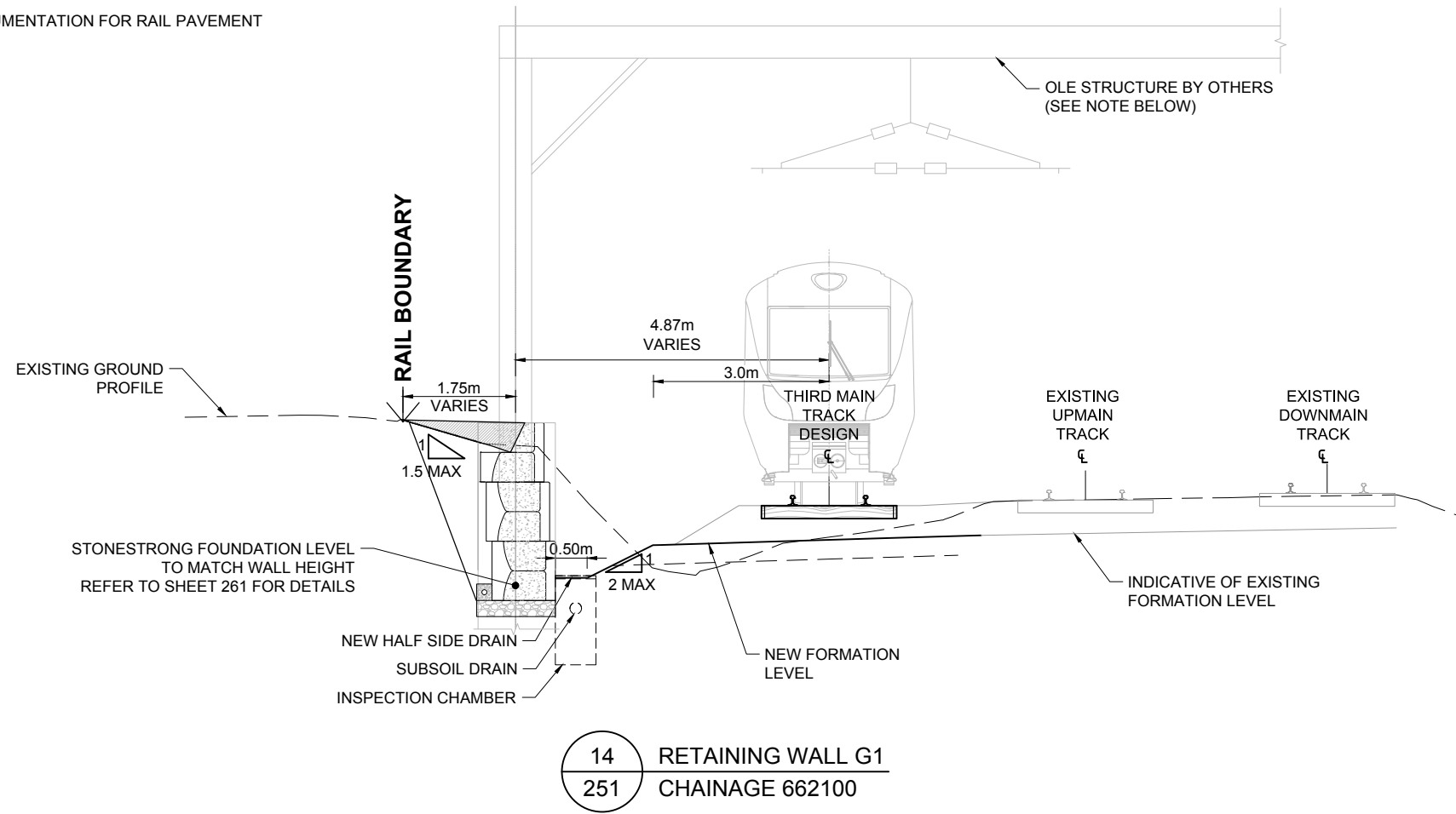
Drawn	Designed	Approved	Revision Date
A. COOK	DARRELL O	G. EAST	06.07.12

Project		KIWIRAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2	
Sheet		RETAINING WALL G1 PLAN AND LONG SECTION - LAYOUT 3 OF 3	
Project No.	Scale	Drawing No.	Sheet No.
1-M9001.86	1:250 @ A1	1/6057/19/5104	252
			Revision
			RC

1:250 @ A1
1:500 @ A3

NOTES:

1. REFER TO SHEETS 81 AND 83 FOR TYPICAL TRACK MEASUREMENTS AND DETAILS
2. FOR STANDARD TRACK MEASUREMENTS AND DETAILS REFER TO KIWIRAIL 'INFRASTRUCTURE AND ENGINEERING T200 TRACK HANDBOOK' REVISED ISSUE 5 DATED JAN 2015 & KIWIRAIL DRAWINGS 100 862 - 1 TO 6 DATED JAN 2015
3. ALL CONSTRUCTION WORKS TO COMPLY WITH KIWIRAIL'S RAIL SAFETY STANDARDS AND GUIDELINES
4. REFER TO GAIA FORMATION DESIGN DOCUMENTATION FOR RAIL PAVEMENT DESIGN



NOTE:

EXACT LOCATION OF EXISTING OLE STRUCTURES IS TO BE CONFIRMED BY SURVEY TO ENSURE NO CLASH WITH RETAINING WALL DESIGNS

85% ISSUE

Revision	Amendment	Approved	Revision Date
RA	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RB	MIDDLEMORE PRELIMINARY DESIGN	TW	20.06.12
RC	DETAILED DESIGN ISSUE	TW	06.07.12
RD	85% ISSUE	PW	20.07.16
RE	85% ISSUE UPDATED	PW	10.11.16

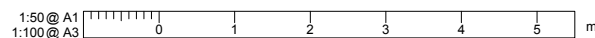


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Drawn	Designed	Approved	Revision Date
A. COOK	VARIOUS	T. WILSON	07.05.12

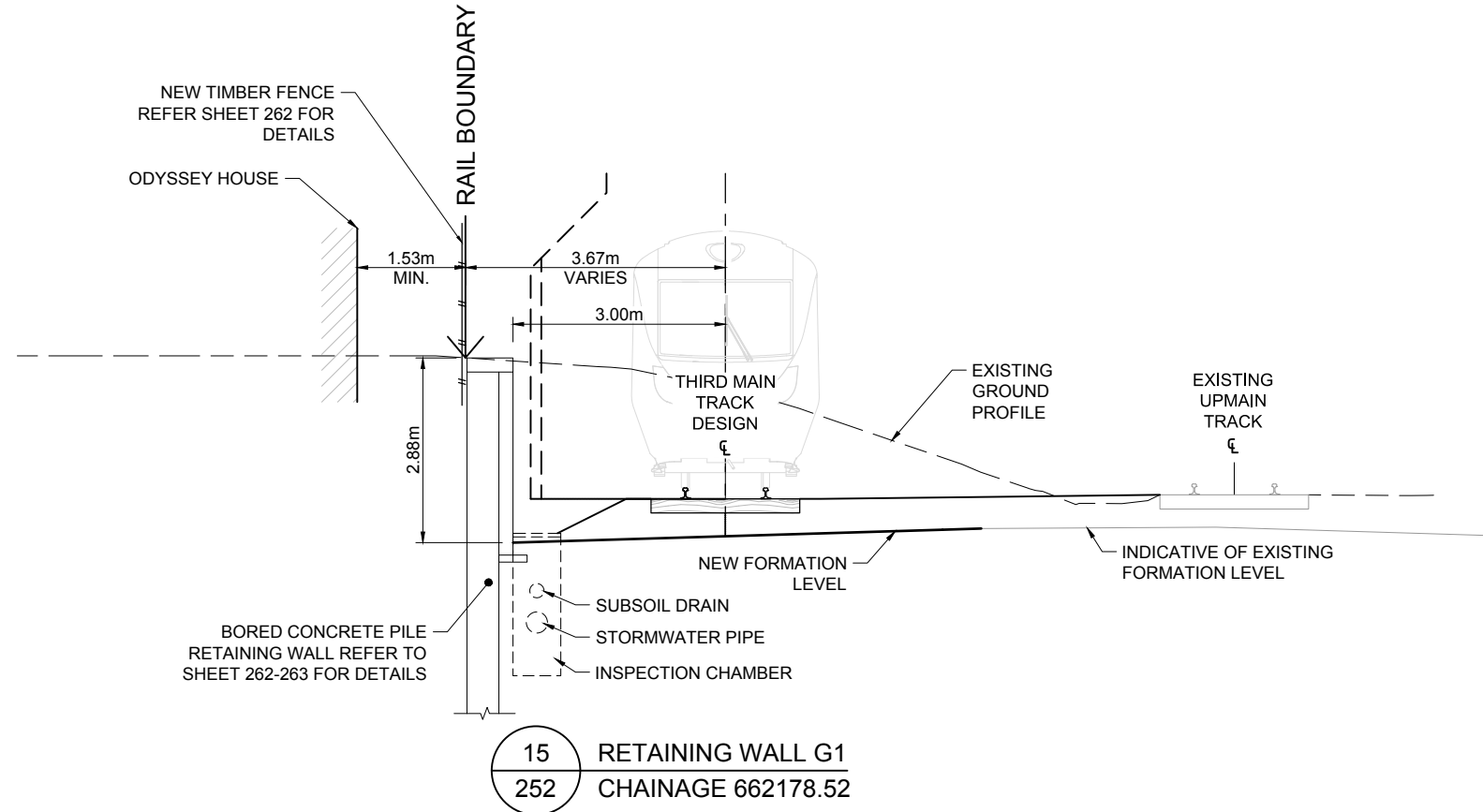
Project No.	Scale
1-M9001.86	1:50 @ A1

Project	
KIWIRAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2	
Sheet	
RETAINING WALL G1 SECTIONS 1 OF 2	
Sheet No.	Revision
253	RE



NOTES:

1. REFER TO SHEETS 81 AND 83 FOR TYPICAL TRACK MEASUREMENTS AND DETAILS
2. FOR STANDARD TRACK MEASUREMENTS AND DETAILS REFER TO KIWIRAIL 'INFRASTRUCTURE AND ENGINEERING T200 TRACK HANDBOOK' REVISED ISSUE 5 DATED JAN 2015 & KIWIRAIL DRAWINGS 100 862 - 1 TO 6 DATED JAN 2015
3. ALL CONSTRUCTION WORKS TO COMPLY WITH KIWIRAIL'S RAIL SAFETY STANDARDS AND GUIDELINES
4. REFER TO GAIA FORMATION DESIGN DOCUMENTATION FOR RAIL PAVEMENT DESIGN



NOTE:

EXACT LOCATION OF EXISTING OLE STRUCTURES IS TO BE CONFIRMED BY SURVEY TO ENSURE NO CLASH WITH RETAINING WALL DESIGNS

85% ISSUE

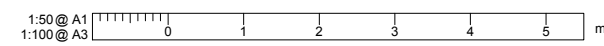
Revision	Amendment	Approved	Revision Date
RA	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RB	85% ISSUE	PW	20.07.16
RC	85% ISSUE UPDATED	PW	10.11.16

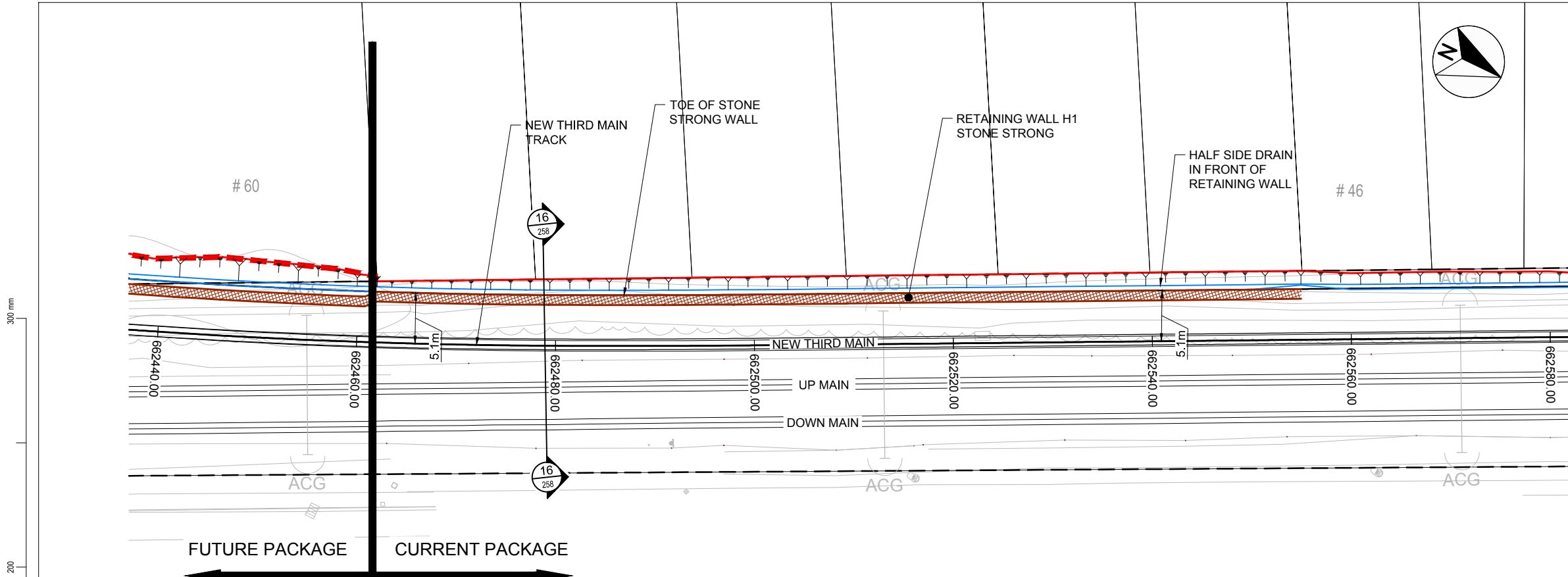


Drawn	Designed	Approved	Revision Date
A. COOK	VARIOUS	T. WILSON	07.05.12

Project No.	Scale
1-M9001.86	1:50 @ A1

Project	
KIWIRAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2	
Sheet	
RETAINING WALL G1 SECTIONS 2 OF 2	
Sheet No.	Revision
254	RC

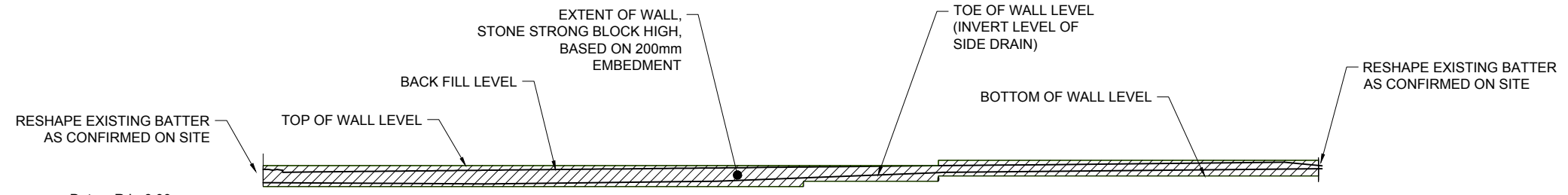




LEGEND:

- LEGAL BOUNDARIES
- - - RAIL BOUNDARIES
- ... SURVEY
- ==== EXISTING TRACK
- ==== NEW THIRD MAIN
- EARTHWORKS - CUT
- ACG (TTCT) OVERHEAD LINE EQUIPMENT (OLE)
- SIDE DRAIN
- ▨ STONE STRONG WALL
- ⊗ OLE AS BUILT LOCATION

PLAN - RETAINING WALL H1
SCALE : 1:250



Datum R.L. 6.00	
TOP OF WALL LEVEL	9.91
BACK FILL LEVEL	9.55
TOE OF WALL LEVEL	8.39
BOTTOM OF WALL LEVEL	8.07
WALL INFORMATION	2 x 24SF STONE STRONG BLOCKS, AT LEAST 200mm EMBEDMENT
WALL INFORMATION	1 x 24 SF + 1 x 6SF STONE STRONG BLOCKS, AT LEAST 200mm EMBEDMENT
WALL STATION	60.00
RAIL CHAINAGE	662460

Wall H-1
SECTION BETWEEN CH: 60.00 AND 153.00

LONG SECTION - RETAINING WALL H1
SCALE : 1:250

NOTE:
EXACT LOCATION OF EXISTING OLE STRUCTURES IS TO BE CONFIRMED BY SURVEY TO ENSURE NO CLASH WITH RETAINING WALL DESIGNS

Revision	Amendment	Approved	Revision Date
RA	DETAILED DESIGN ISSUE	GE	06.07.12
RB	85% ISSUE	PW	20.07.16
RC	85% ISSUE UPDATED	PW	08.11.16

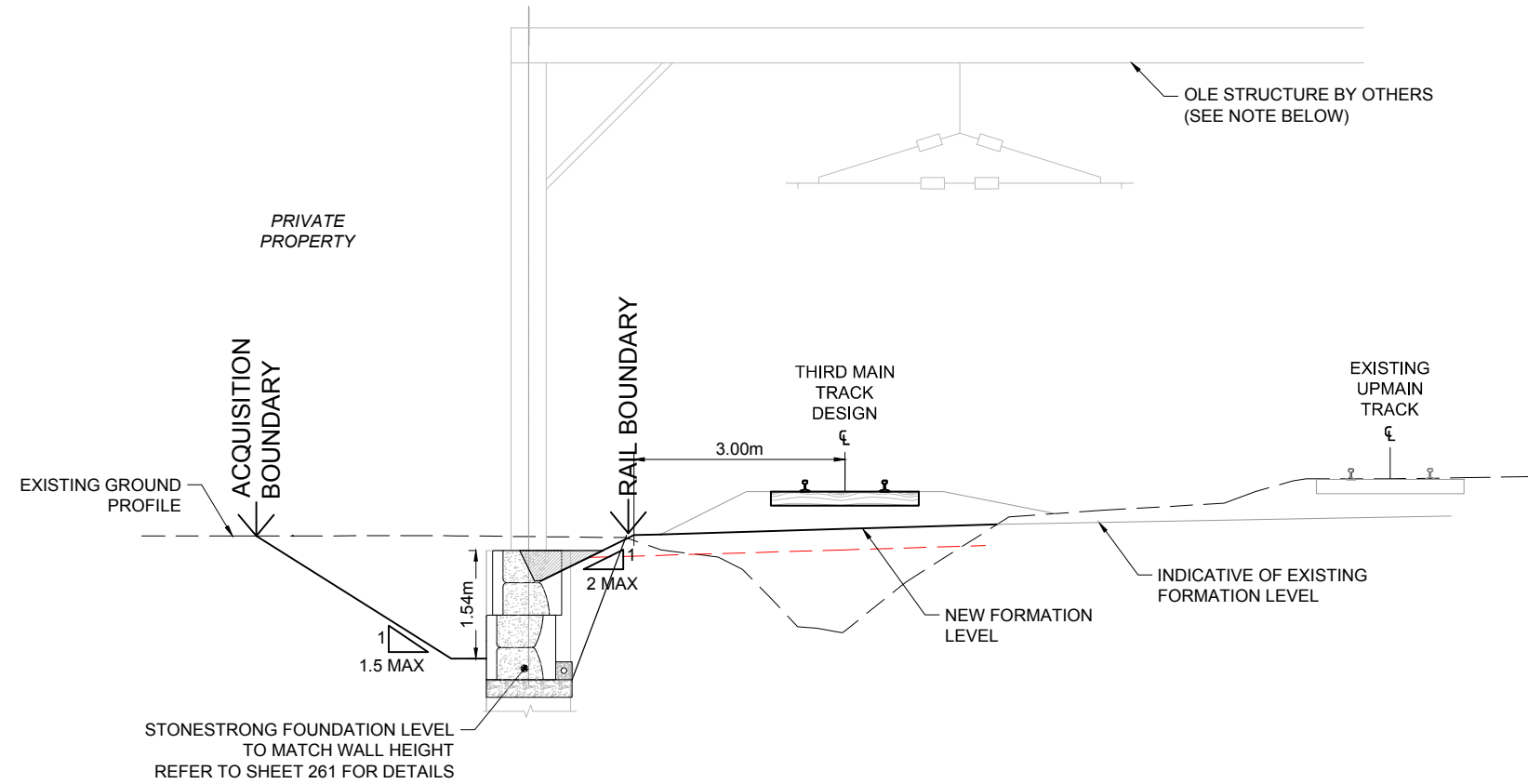


Project				Sheet	
KIWIRAIL MIDDLEMORE TO PUHINUI NEW THIRD MAIN - STAGE 2				RETAINING WALL H1 PLAN AND LONG SECTION	
Drawn	Designed	Approved	Revision Date	Sheet No.	Revision
A COOK	DARRELL O	G.EAST	06.07.12	256	RC
Project No.			Scale	Drawing No.	
1-C0681.00			1:250 @ A1	1/6057/19/5104	

NOTES:

1. REFER TO SHEETS 81 AND 83 FOR TYPICAL TRACK MEASUREMENTS AND DETAILS
2. FOR STANDARD TRACK MEASUREMENTS AND DETAILS REFER TO KIWIRAIL 'INFRASTRUCTURE AND ENGINEERING T200 TRACK HANDBOOK' REVISED ISSUE 5 DATED JAN 2015 & KIWIRAIL DRAWINGS 100 862 - 1 TO 6 DATED JAN 2015
3. ALL CONSTRUCTION WORKS TO COMPLY WITH KIWIRAIL'S RAIL SAFETY STANDARDS AND GUIDELINES
4. REFER TO GAIA FORMATION DESIGN DOCUMENTATION FOR RAIL PAVEMENT DESIGN

300 mm
200
100
50
0 10 mm



16
256

RETAINING WALL H1
CHAINAGE 662480

NOTE ON OLE OBJECTS:

EXACT LOCATION OF EXISTING OLE STRUCTURES IS TO BE CONFIRMED BY SURVEY TO ENSURE WITH RETAINING WALL DESIGNS

85% ISSUE

Revision	Amendment	Approved	Revision Date
RA	ISSUED FOR CONSENT	TW	03.07.12
RB	DETAILED DESIGN ISSUE	TW	06.07.12
RC	85% ISSUE	PW	20.07.16
RD	85% ISSUE UPDATED	PW	10.11.16



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Drawn	Designed	Approved	Revision Date
A.COOK	VARIOUS	T.WILSON	03.07.12

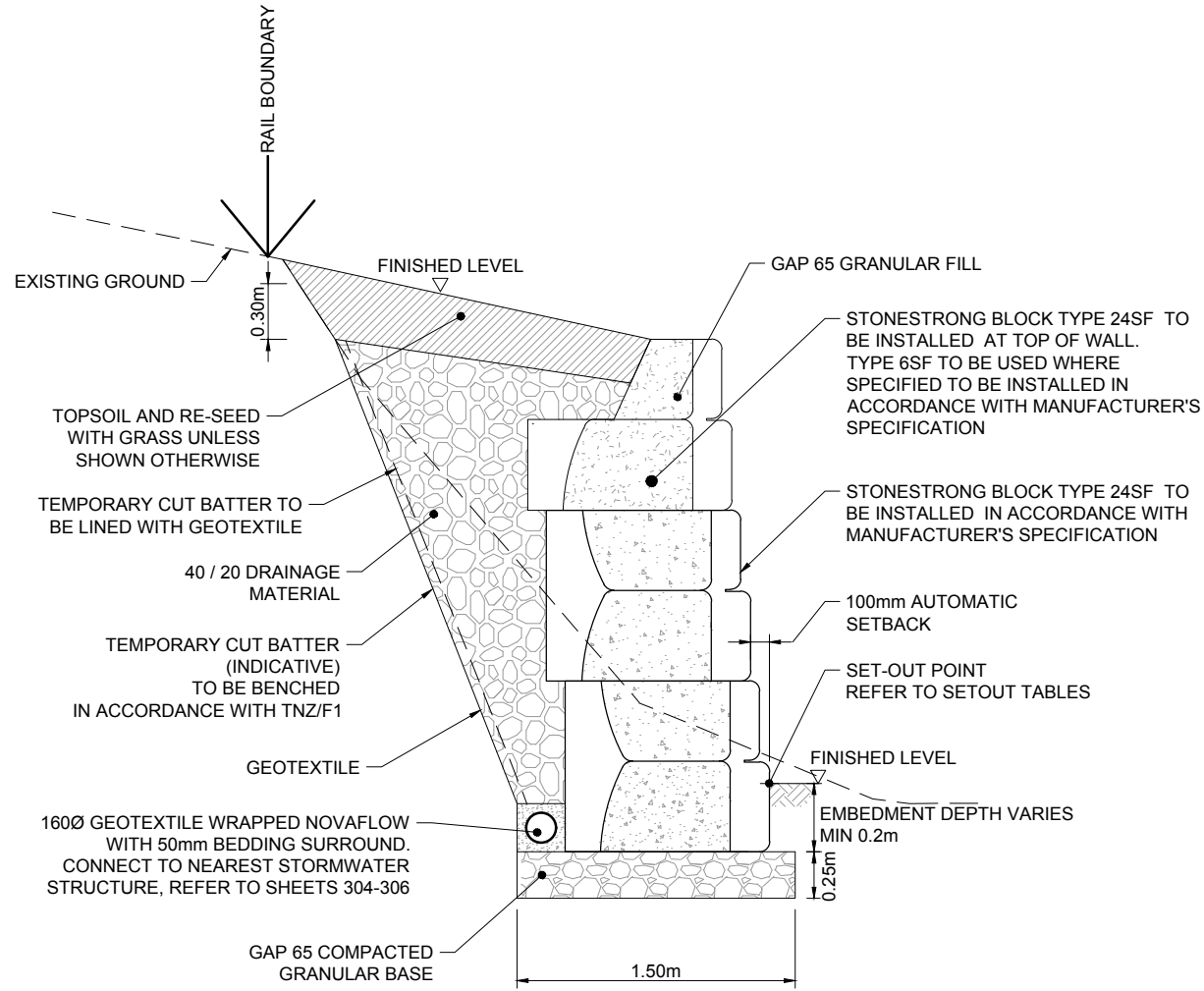
Project No. 1-M9001.86 Scale 1:50 @ A1

Project		Sheet	
KIWIRAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2		RETAINING WALL H1 SECTION	
1/6057/19/5104	258	RD	

1:50 @ A1
1:100 @ A3

NOTES:

1. RETAINED HEIGHTS AND STONE STRONG BLOCK CONFIGURATIONS DIFFER BETWEEN RETAINING WALLS REFER TO CORRESPONDING PLAN AND LONG SECTION DRAWINGS AND SECTION DRAWINGS
2. STONE STRONG BLOCK CONFIGURATIONS UTILISE BOTH TYPE 24SF AND TYPE 6SF BLOCKS
3. SLOPE OF BACKFILL BEHIND TOP OF WALL TO BE MAXIMUM OF 2H : 1V WHERE AFFECTED BY RAILWAY LOADING AND MAXIMUM OF 1.5H : 1V WHERE OUTSIDE OF ZONE OF INFLUENCE OF RAILWAY LOADING



DETAILS - STONE STRONG RETAINING WALL
SCALE: 1:20

85% ISSUE

Revision	Amendment	Approved	Revision Date
RA	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RB	MIDDLEMORE PRELIMINARY DESIGN	TW	20.06.12
RC	DETAILED DESIGN ISSUE	GE	06.07.12
RD	85% ISSUE	PW	20.07.16
RE	85% ISSUE UPDATED	PW	08.11.16



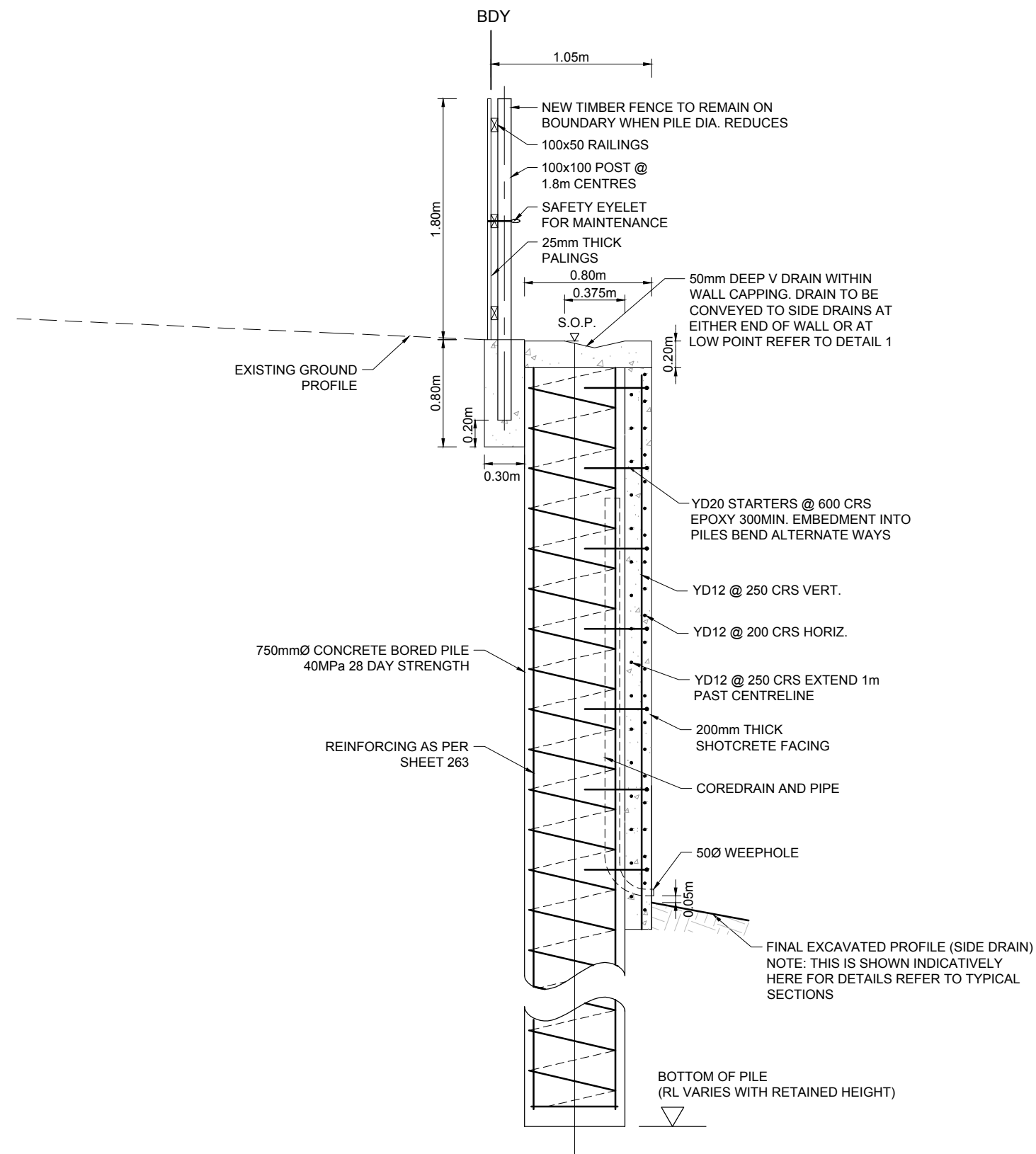
Drawn	Designed	Approved	Revision Date
N.BOYTE	DARRELL O	G.EAST	06.07.12

Project No.	Scale
1-M9001.86	1:20 @ A1

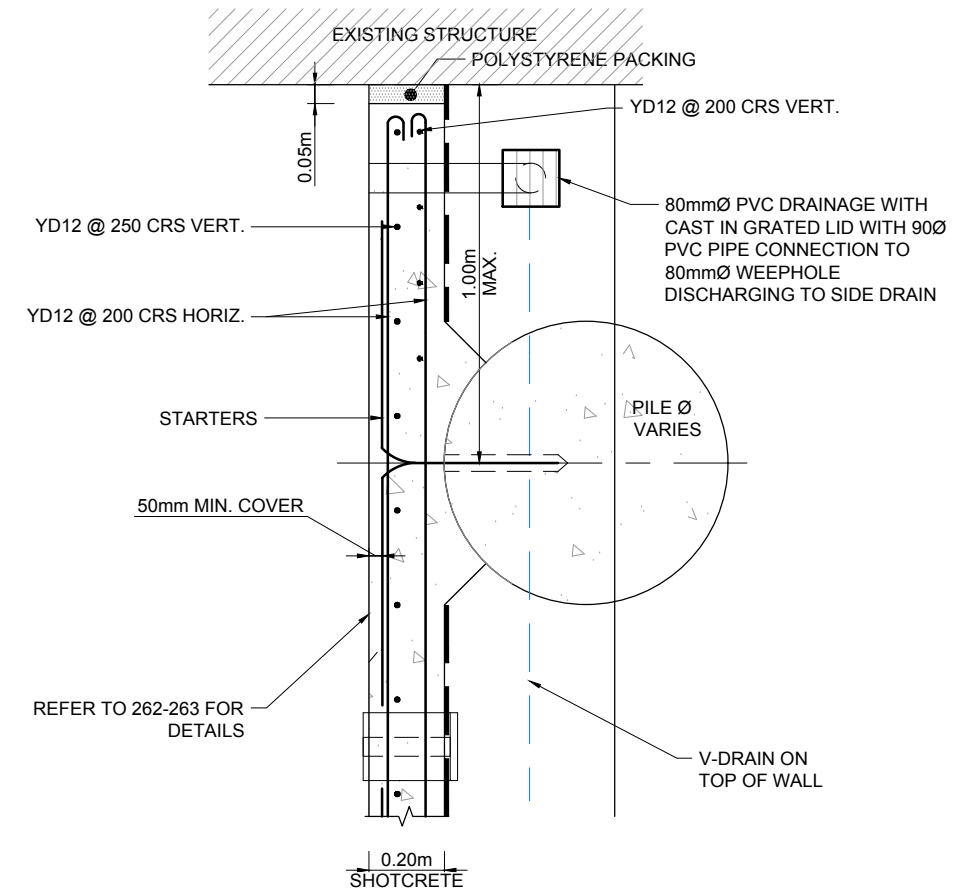
Project	Sheet	Sheet No.	Revision
KIWIRAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2	RETAINING WALL DETAILS STONE STRONG	261	RE

1:20 @ A1
1:40 @ A3
0 200 400 600 800 1000 1200 1400 1600 1800 2000 mm

300 mm
200
100
50
10 mm
0



SECTION - 600Ø BORED PILE RETAINING WALL
SCALE: 1:20
450Ø SIMILAR



DETAIL 1 - WALL END CANTILEVER AND LOW POINT DRAINAGE DETAIL
SCALE: 1:10

85% ISSUE

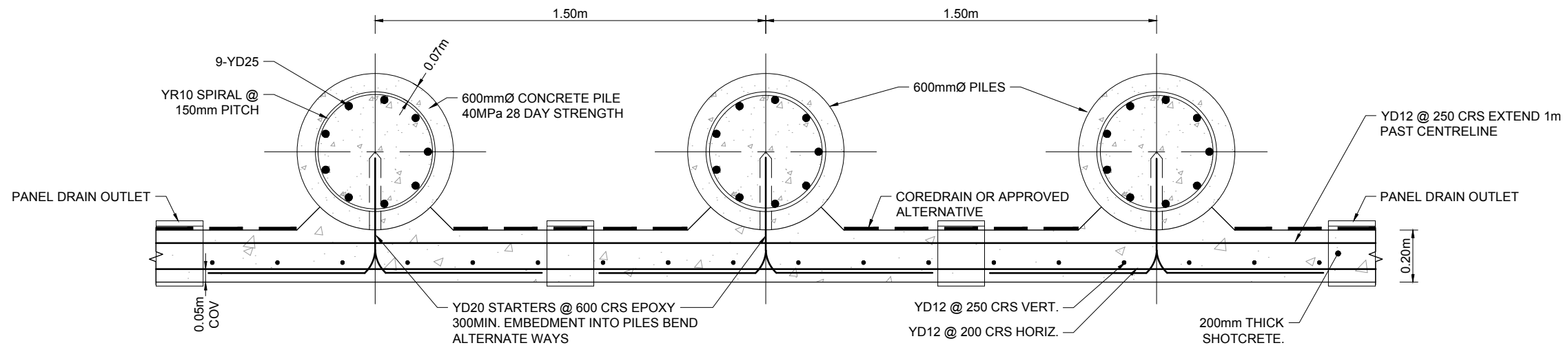
Revision	Amendment	Approved	Revision Date
RA	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RB	DETAILED DESIGN ISSUE	TW	06.07.12
RC	85% ISSUE	PW	20.07.16
RD	85% ISSUE UPDATED	PW	08.11.16



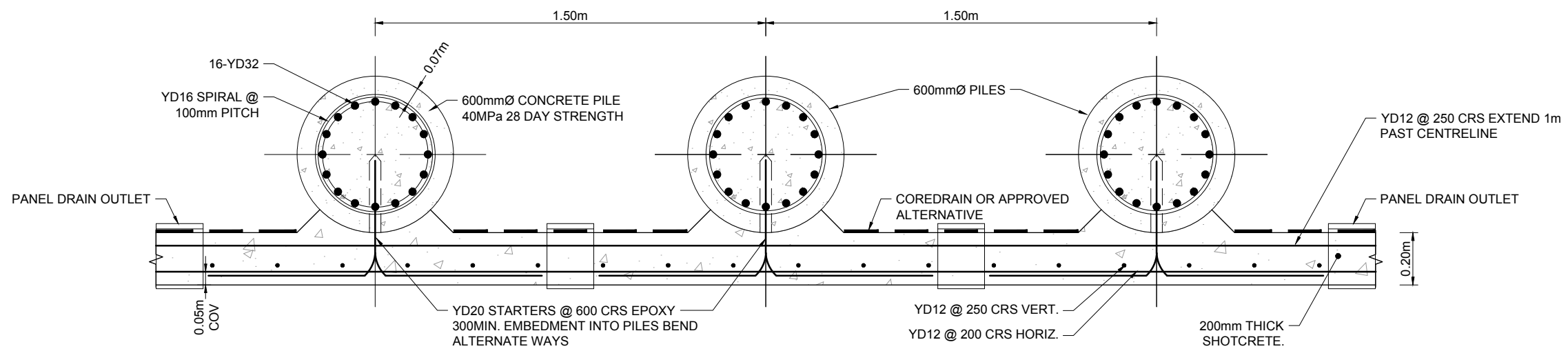
Drawn	Designed	Approved	Revision Date
N.BOYTE	DARRELL O	T.WILSON	07.05.12

Project		
KIWIRAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2		
Sheet		
RETAINING WALL DETAILS BORED PILE LAYOUT 1 OF 2		
Project No.	Scale	
1-M9001.86	1:20 @ A1	
Drawing No.	Sheet No.	Revision
1/6057/19/5104	262	RD

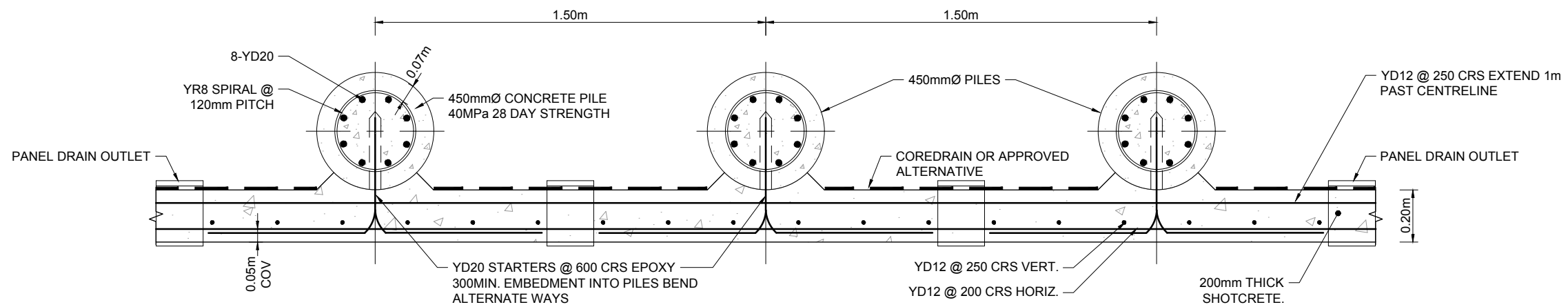
1:20 @ A1
1:40 @ A3



SHOTCRETE TREATMENT TO 600Ø TYPE1 BORED PILE RETAINING WALL
SCALE: 1:10



SHOTCRETE TREATMENT TO 600Ø TYPE2 BORED PILE RETAINING WALL
SCALE: 1:10



SHOTCRETE TREATMENT TO 450Ø BORED PILE RETAINING WALL
SCALE: 1:10

85% ISSUE

Revision	Amendment	Approved	Revision Date
RA	DETAILED DESIGN ISSUE	TW	06.07.12
RB	85% ISSUE	PW	20.07.16
RC	85% ISSUE UPDATED	PW	08.11.16



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Drawn	Designed	Approved	Revision Date
N.BOYTE	A.HARRISON	T.WILSON	.06.12

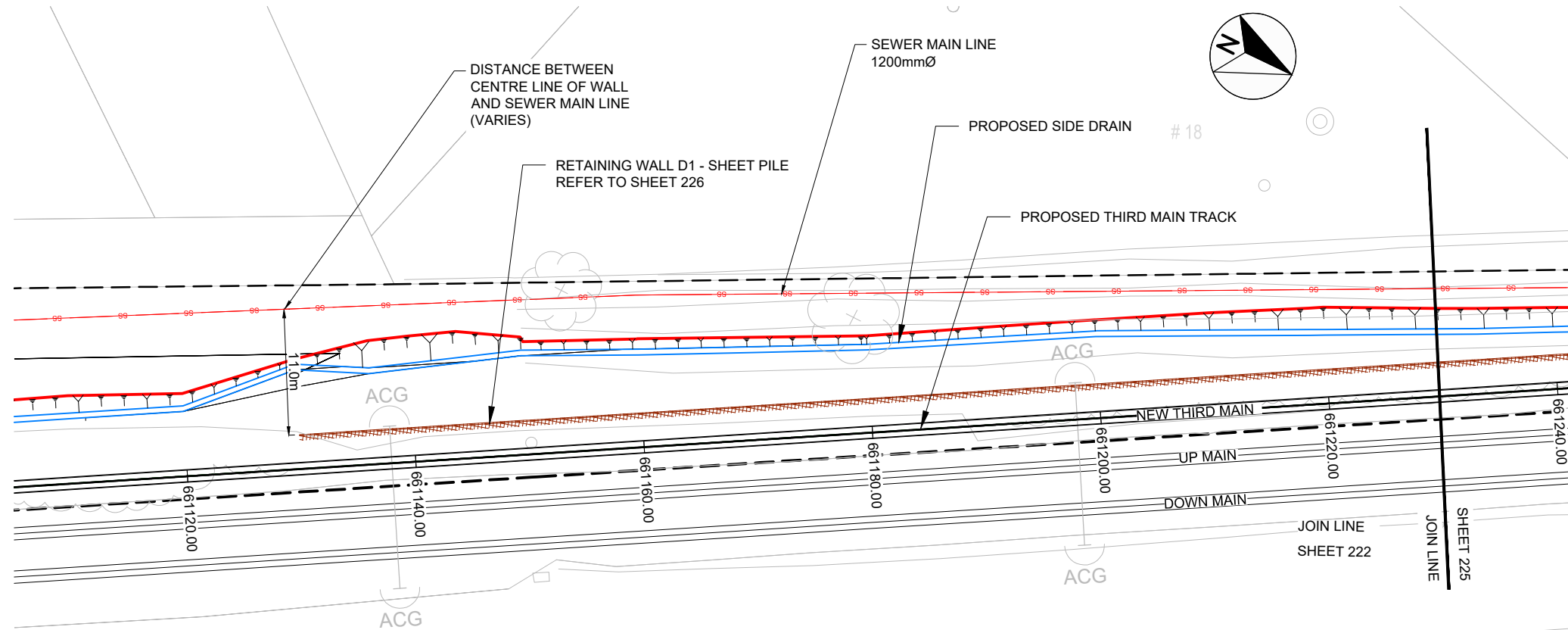
Project No.	Scale
1-M9001.86	1:10 @ A1

Project
KIWIRAIL
MIDDLEMORE (662,600m) TO PUHINUI (659,000m)
NEW THIRD MAIN - STAGE 2

Sheet
RETAINING WALL DETAILS
BORED PILE LAYOUT 2 OF 2

Drawing No.	Sheet No.	Revision
1/6057/19/5104	263	RC

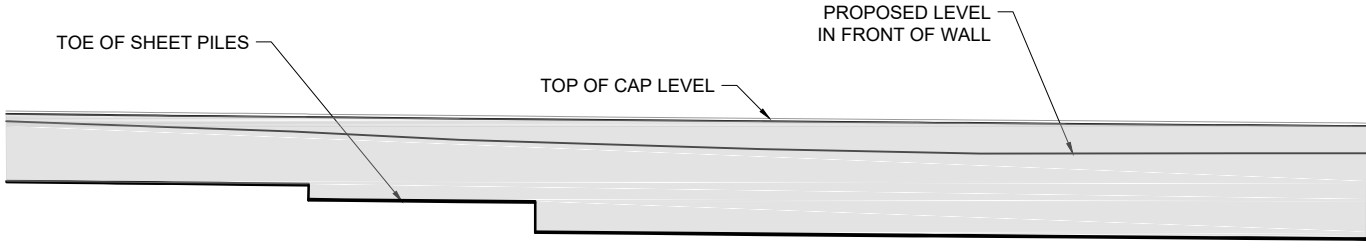
1:10 @ A1
1:20 @ A3
0 100 200 300 400 500 600 700 800 900 1000 mm



LEGEND:

- LEGAL BOUNDARIES
- - - RAIL BOUNDARIES
- SURVEY
- ==== EXISTING TRACK
- ==== NEW THIRD MAIN
- EARTHWORKS - CUT
- ACG (TTC) OVERHEAD LINE EQUIPMENT (OLE)
- SIDE DRAIN
- SHOT-CRETE FACING PANEL
- ||||| SHEET PILE WALL
- SS — SEWER MAIN

PLAN - RETAINING WALL D1
SCALE : 1:250



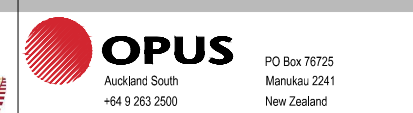
Datum R.L. 3.00

TOP OF CAP LEVEL	13.74	14.22	13.66	14.20	13.59	14.18	13.52	14.15	13.45	14.13	13.37	14.11	13.30	14.09	13.23	14.07	13.16	14.05	13.09	14.03	13.00	14.01	12.90	13.99	12.80	13.97	12.70	13.95	12.60	13.93	12.50	13.91	12.44	13.90	12.38	13.88	12.32	13.86	12.25	13.84	12.19	13.82	12.13	13.80	12.07	13.79	12.01	13.77	11.95	13.75	11.89	13.73	11.85	13.72	11.81	13.70	11.77	13.68	11.73	13.67	11.69	13.65	11.64	13.64	11.61	13.62	11.60	13.60	11.60	13.59	11.60	13.57	11.60	13.56	11.60	13.54	11.61	13.52	11.61	13.51	11.61	13.51	11.61	13.49	11.61	13.48	11.62	13.46	11.62	13.44	11.62	13.43	11.63	13.41
FORMATION LEVEL	13.74	14.22	13.66	14.20	13.59	14.18	13.52	14.15	13.45	14.13	13.37	14.11	13.30	14.09	13.23	14.07	13.16	14.05	13.09	14.03	13.00	14.01	12.90	13.99	12.80	13.97	12.70	13.95	12.60	13.93	12.50	13.91	12.44	13.90	12.38	13.88	12.32	13.86	12.25	13.84	12.19	13.82	12.13	13.80	12.07	13.79	12.01	13.77	11.95	13.75	11.89	13.73	11.85	13.72	11.81	13.70	11.77	13.68	11.73	13.67	11.69	13.65	11.64	13.64	11.61	13.62	11.60	13.60	11.60	13.59	11.60	13.57	11.60	13.56	11.60	13.54	11.61	13.52	11.61	13.51	11.61	13.51	11.61	13.49	11.61	13.48	11.62	13.46	11.62	13.44	11.62	13.43	11.63	13.41
SHEET PILE INFORMATION	4.5m LONG AZ 12 - 770 SHEET PILES										5.5m LONG AZ 12 - 770 SHEET PILES										7.5m LONG AZ 12 - 770 SHEET PILES																																																																									
WALL STATION	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00	50.00	52.00	54.00	56.00	58.00	60.00	62.00	64.00	66.00	68.00	70.00	72.00	74.00	76.00	78.00	80.00	82.00	84.00	86.00	88.00	90.00	92.00	94.00	96.00	98.00	100.00																																																
RAIL CHAINAGE	661130	661140	661150	661160	661165	661180	661200	661220	661240	661250	661260	661270	661280	661290	661300	661310	661320	661330	661340	661350	661360	661370	661380	661390	661400	661410	661420	661430	661440	661450	661460	661470	661480	661490	661500	661510	661520	661530	661540	661550	661560	661570	661580	661590	661600	661610	661620	661630	661640	661650	661660	661670	661680	661690	661700	661710	661720	661730	661740	661750	661760	661770	661780	661790	661800	661810	661820	661830	661840	661850	661860	661870	661880	661890	661900	661910	661920	661930	661940	661950	661960	661970	661980	661990	662000									

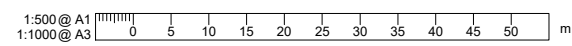
LONG SECTION - RETAINING WALL D1
SCALE : 1:250

NOTE:
EXACT LOCATION OF EXISTING OLE STRUCTURES IS TO BE CONFIRMED BY SURVEY TO ENSURE NO CLASH WITH RETAINING WALL DESIGNS

Revision	Amendment	Approved	Revision Date
RA	ISSUED FOR OUTLINE PLAN OF WORKS	AC	12.04.12
RB	PRELIMINARY DESIGN ISSUE	TW	07.05.12
RC	ISSUED FOR CONSENT	TW	03.07.12
RD	DETAILED DESIGN ISSUE	TW	06.07.12
RE	85% ISSUE	PW	20.07.16
RF	85% ISSUE UPDATED	PW	08.11.16



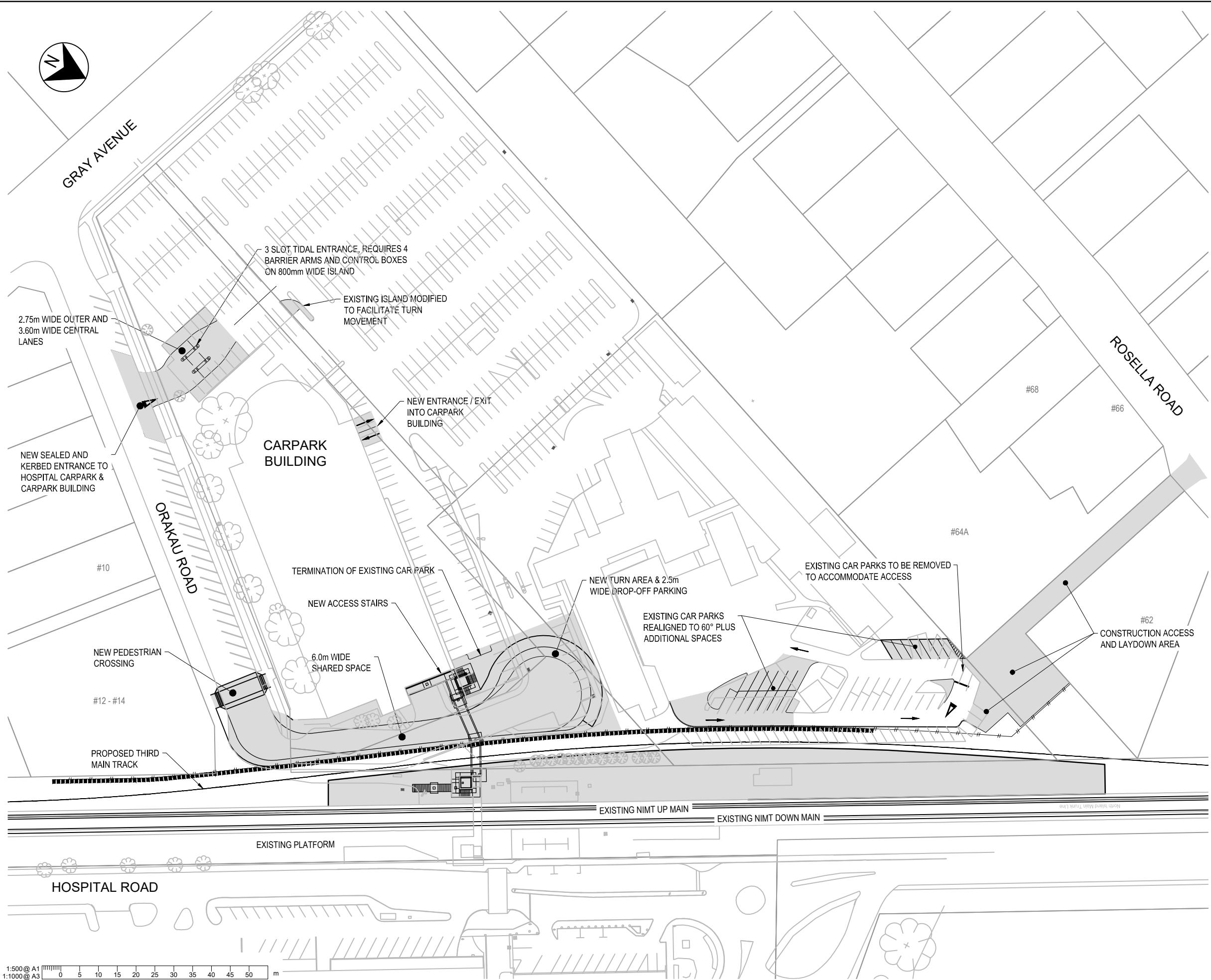
Project		KIWIRAIL MIDDLEMORE (662,600m) TO PUHINUI (659,000m) NEW THIRD MAIN - STAGE 2	
Sheet		RETAINING WALL D1 PLAN AND LONG SECTION LAYOUT 1 OF 2	
Drawn	Designed	Approved	Revision Date
N.BOYTE	A.COOK	T.WILSON	12.04.12
Project No.	Scale	Drawing No.	Sheet No.
1-M9001.86	1:500 @ A1	1/6057/19/5104	224
			Revision
			RF





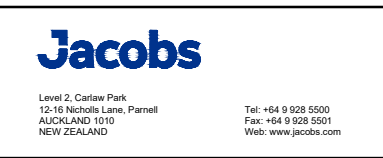
LEGEND:

	LEGAL BOUNDARIES
	EXISTING TRACK
	NEW THIRD MAIN
	EXTENT OF WORKS
	PROPOSED RETAINING WALL
	PROPOSED FENCE



CONSENT ISSUE

REV	DATE	DRAWN	REV'D	APP'D	REVISION	DRAWING NUMBER	REFERENCE DRAWING TITLE
A	14/07/20	MC	TH	MM	ISSUED FOR NOTICE OF REQUIREMENT		



CLIENT KIWIRAIL		DRAWING CHECK NB		REVIEWED TH	APPROVED MM
PROJECT THIRD MAIN MIDDLEMORE TO PUHINUI		DESIGNED MC		DATE 14/07/2020	DATE 14/07/2020

TITLE MIDDLEMORE STATION PROPOSED CIVIL LAYOUT PLAN		SCALE 1:500 (A3)	DRAWING No. 601001-DR-NIMT-CV-LY-01136	REV 0
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