GREENHITHE BRIDGE WATERMAIN DUPLICATION DRAWINGS

DRAWING No.	DRAWING TITLE
	01 GENERAL
2010673.001	DRAWINGS COVER SHEET
2010673.002	DRAWING INDEX SHEET
2010673.006	SCOPE OF RESOURCE CONSENTS
2010673.007	CAUSEWAY LAYOUT
2010673.008	CAUSEWAY LAYOUT - CAUSEWAY WESTERN EMBAYMENT - CONSTRUCTION ACCESS AND LAY DOWN AREA - LAYOUT PLAN
	GEOTECHNICAL DESIGN
2010673.850	CAUSEWAY DESIGN SECTION LOCATIONS - SHEET 1 OF 2
2010673.851	CAUSEWAY DESIGN SECTION LOCATIONS - SHEET 2 OF 2
2010673.852	CAUSEWAY DESIGN SECTIONS A & C
2010673.853	CAUSEWAY DESIGN SECTIONS B & D
2010673.854	CAUSEWAY DESIGN SECTIONS E
2010673.855	CAUSEWAY DESIGN SECTIONS F
	02 CIVIL
2010674.001	LOCATION PLAN
2010674.002	GBWD PIPELINE LONGITUDINAL SECTION - SHEET 1 OF 3
2010674.003	GBWD PIPELINE LONGITUDINAL SECTION - SHEET 2 OF 3
2010674.004	GBWD PIPELINE LONGITUDINAL SECTION - SHEET 3 OF 3
2010674.005	NH1 TO GBWD PIPELINE CROSS CONNECTION (WEST) - PLAN AND LONG SECTION
2010674.006	PIPE TRANSITION AT EASTERN ABUTMENT AND NH1 TO NH2 CROSS CONNECTION
2010674.007	PIPE TRANSITION STRUCTURE AT WESTERN ABUTMENT - LAYOUT PLAN
2010674.030	STORMWATER CULVERT EXTENSIONS - SECTIONS A-A AND B-B
2010674.031	STORMWATER CULVERT EXTENSIONS - SECTIONS C-C AND D-D
2010674.032	STORMWATER CULVERT EXTENSIONS - SECTION E-E
2010674.040	EROSION AND SEDIMENT CONTROL ARRANGEMENT - LOCATION PLAN
2010674.041	EROSION AND SEDIMENT CONTROL ARRANGEMENT - WA 1, 2 AND 3 EROSION AND SEDIMENT CONTROL LOCATION PLAN
2010674.042	EROSION AND SEDIMENT CONTROL ARRANGEMENT - WA 7 EROSION AND SEDIMENT CONTROL LOCATION PLAN
2010674.043	EROSION AND SEDIMENT CONTROL ARRANGEMENT - STABILISED ENTRANCE AND SUPER SILT FENCE DETAIL
2010674.044	EROSION AND SEDIMENT CONTROL ARRANGEMENT - CATCHPIT PROTECTION, RUNOFF DIVERSION BUND AND CAUSEWAY WIDENING ARRANGEMENT
	03 STRUCTURAL
2010675.003	GREENHITHE BRIDGE WATERMAIN DUPLICATION AND CAUSEWAY - PIPE SUPPORT BRACKETS - DETAILS
	BOFFA MISKELL LTD
A14192-BASE1-20150610	INDICATIVE LANDSCAPE CONCEPT PLAN

FOR CONSENT

ISSUE	DATE	AMENDMENT	BY	APPD.
3	01.07.15	ISSUED FOR CONSENT	A.T.S.	M.A.E.
2	09.03.15	ISSUED FOR CONSENT	H.L.A.	M.A.E.
1	13.02.15	ISSUED FOR CONSENT	P.K.	M.A.E

DESIGNED	A.T.S.	02.15
DES. CHECKED	A.H.	02.15
DRAWN	H.L.A.	02.15
DWG. CHECKED	A.T.S.	02.15
PROJECT LEADER	M.A.E.	02.15
INFRAST'R APP'D		

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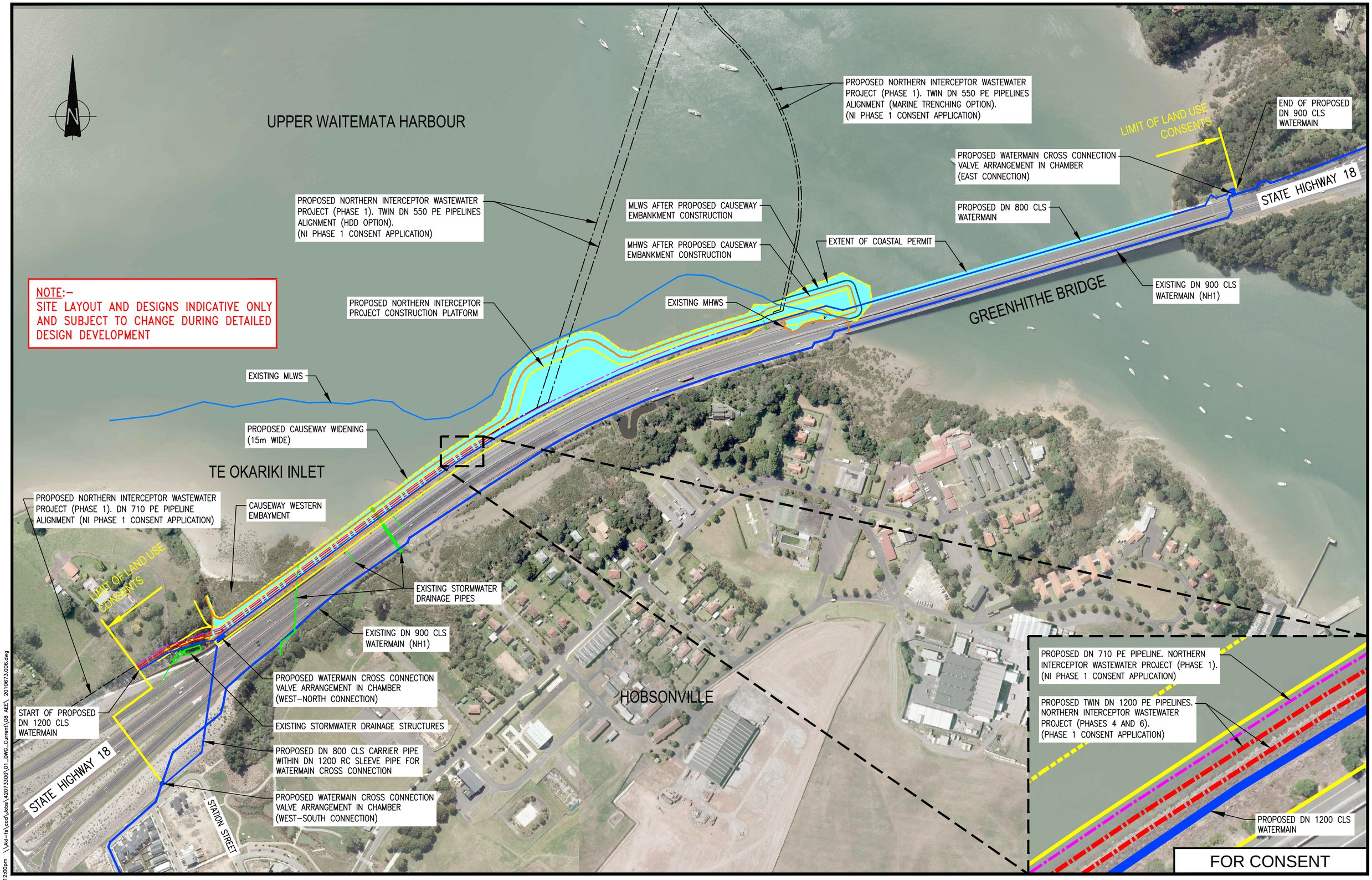
GREENHITHE BRIDGE WATERMAIN DUPLICATION AND CAUSEWAY

DRAWING INDEX

CAD FILE 2010673.002	DATE 01.07.15
ORIGINAL SCALE A3 NO SCALE	CONTRACT No. –
REF No. –	ISSUE –
DWG No. 2010673.002	3

Plot Date: Jul 09, 2015 – 12:01pm \\Akl-fs\cad\Jobs\42073300\01_DWG_Current\08 AEE\ 2010673.002.dwg



ISSUE	DATE	AMENDMENT	BY	APPD.
3	01.07.15	ISSUED FOR CONSENT	A.T.S.	M.A.E.
2	09.03.15	ISSUED FOR CONSENT	H.L.A.	M.A.E.
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DESIGNED	A.T.S.	02.15
DES. CHECKED	A.H.	02.15
DRAWN	H.L.A.	02.15
DWG. CHECKED	A.T.S.	02.15
PROJECT LEADER	M.A.E.	02.15
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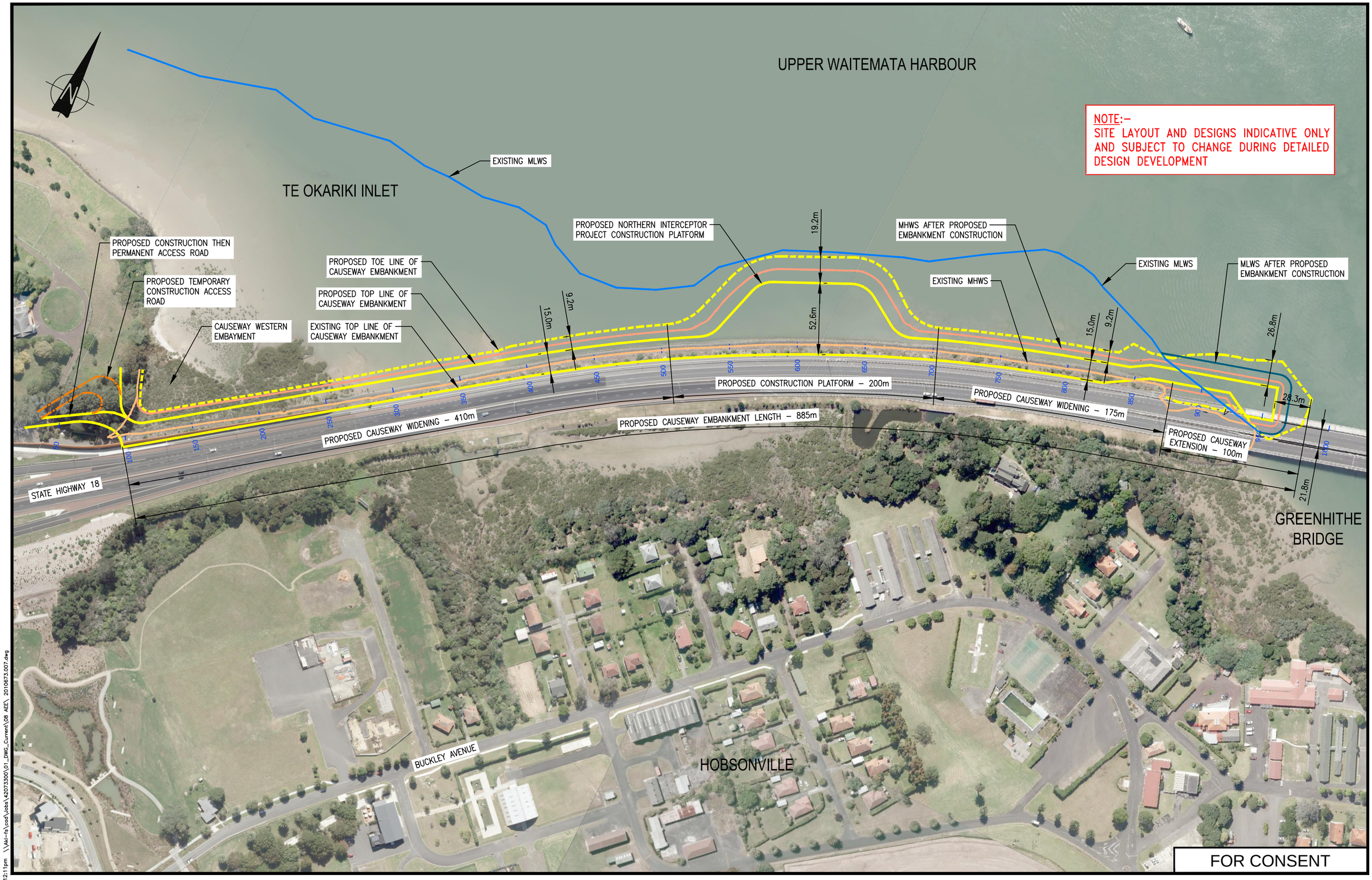
GREENHITHE BRIDGE WATERMAIN DUPLICATION AND CAUSEWAY SCOPE OF RESOURCE CONSENTS

CAD FILE 2010673.850–851
DATE 01.07.15
ORIGINAL SCALE A3 1:4,000 & 1:500
CONTRACT No. –
REF No. –
ISSUE –
DWG No. 2010673.006
3

Plot Date: Jul 09, 2015 – 12:00pm \\Akl-fs\cad\Jobs\42073300\01_DWG_Current\08 AEE\ 2010673.006.dwg



FOR CONSENT

ISSUE	DATE	AMENDMENT	BY	APPD.
3	01.07.15	ISSUED FOR CONSENT	A.T.S.	M.A.E.
2	09.03.15	ISSUED FOR CONSENT	H.L.A.	M.A.E.
1	13.02.15	ISSUED FOR CONSENT	P.K.	M.A.E.

DESIGNED	Y.T.	02.15
DES. CHECKED	A.H.	02.15
DRAWN	H.L.A.	02.15
DWG. CHECKED	Y.T.	02.15
PROJECT LEADER	M.A.E.	02.15
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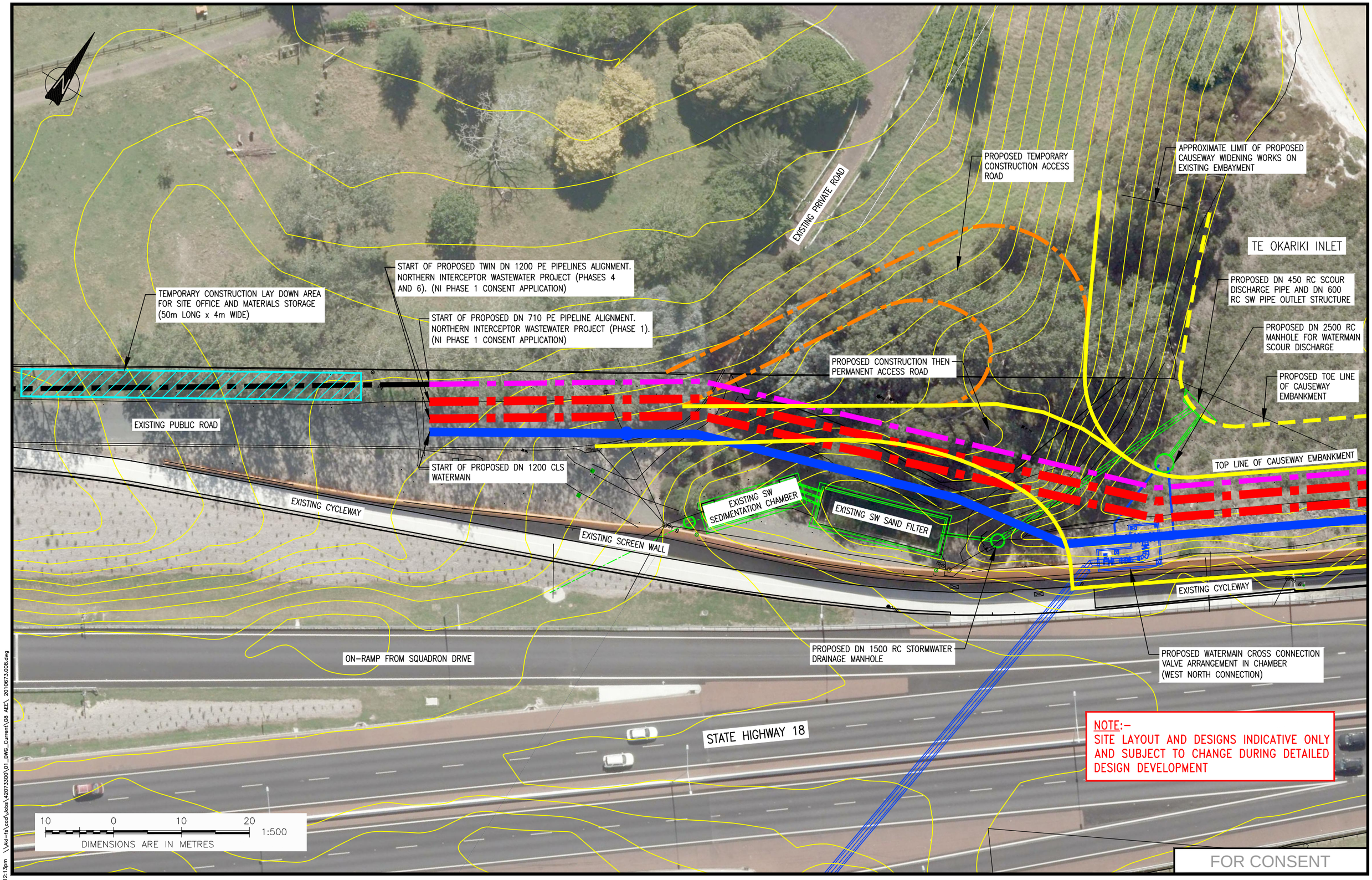
GREENHITHE BRIDGE WATERMAIN DUPLICATION AND CAUSEWAY
CAUSEWAY LAYOUT

CAD FILE 2010673.007	DATE 01.07.15
ORIGINAL SCALE A3 1:2,500	CONTRACT No. –
REF No. –	ISSUE –
DWG No. 2010673.007	3

Plot Date: Jul 09, 2015 – 12:11pm \\Akl-fs\cad\Jobs\42073300\01_DWG_Current\08 AEE\ 2010673.007.dwg



Plot Date: Jul 09, 2015 - 12:13pm \\Akl-fs\cad\Jobs\42073300\01_DWG_Current\08 AEE\ 2010673.008.dwg

ISSUE	DATE	AMENDMENT	BY	APPD.
2	01.07.15	ISSUED FOR CONSENT	A.T.S.	M.A.E.
1	09.03.15	ISSUED FOR CONSENT	H.L.A.	A.T.S.

DESIGNED	A.T.S.	03.15
DES. CHECKED	M.A.E.	03.15
DRAWN	A.T.S.	03.15
DWG. CHECKED	M.A.E.	03.15
PROJECT LEADER	M.A.E.	03.15
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GREENHITHE BRIDGE WATERMAIN DUPLICATION AND CAUSEWAY

CAUSEWAY LAYOUT

CAUSEWAY WESTERN EMBAYMENT – CONSTRUCTION ACCESS AND LAY DOWN AREA – LAYOUT PLAN

CAD FILE 2010674.008	DATE 01.07.15
ORIGINAL SCALE A3 1:500	CONTRACT No. –
REF No. –	ISSUE –
DWG No. 2010673 .008	2

NOTE:–
SITE LAYOUT AND DESIGNS INDICATIVE ONLY AND SUBJECT TO CHANGE DURING DETAILED DESIGN DEVELOPMENT

DESIGN SECTION A

DESIGN SECTION B

PROPOSED CAUSEWAY EMBANKMENT (TOP OF SLOPE)

PROPOSED CAUSEWAY EMBANKMENT (TOE OF SLOPE)

PROPOSED TEMPORARY CONSTRUCTION ACCESS ROAD

PROPOSED DN 1200 CLS WATERMAIN ALIGNMENT GREENHITHE BRIDGE WATERMAIN DUPLICATION

PROPOSED GREENHITHE BRIDGE WATERMAIN DUPLICATION DISTANCE

0 50 100 150 200 250 300 350 400

MOTORWAY CENTRE LINE

MOTORWAY CHAINAGE

8400 8300 8200 8100 8000 7900 7800 7700

EXISTING DN 900 CLS WATERMAIN (NH1)

PROPOSED DN 800 CLS CARRIER PIPE WITHIN DN 1200 RC SLEEVE PIPE FOR WATERMAIN CROSS CONNECTION

JOIN LINE – SHEET 2

NOTE:

REFER TO DRAWINGS 2010673.852 TO 2010673.855 FOR PROPOSED CAUSEWAY DESIGN CROSS SECTIONS.

FOR CONSENT

Plot Date: Jul 09, 2015 – 12:17pm \\akl-fs\cad\Jobs\42073300\01_DWG_Current\08 AEE\ 2010673.850-851.dwg

ISSUE	DATE	AMENDMENT	BY	APPD.
3	01.07.15	ISSUED FOR CONSENT	A.T.S.	M.A.E.
2	09.03.15	ISSUED FOR CONSENT	H.L.A.	M.A.E.
1	13.02.15	ISSUED FOR CONSENT	H.L.A.	M.A.E.

DESIGNED	Y.T.	10.14
DES. CHECKED	A.H.	10.14
DRAWN	H.L.A.	10.14
DWG. CHECKED	Y.T.	10.14
PROJECT LEADER	M.A.E.	10.14
INFRAST'R APP'D		

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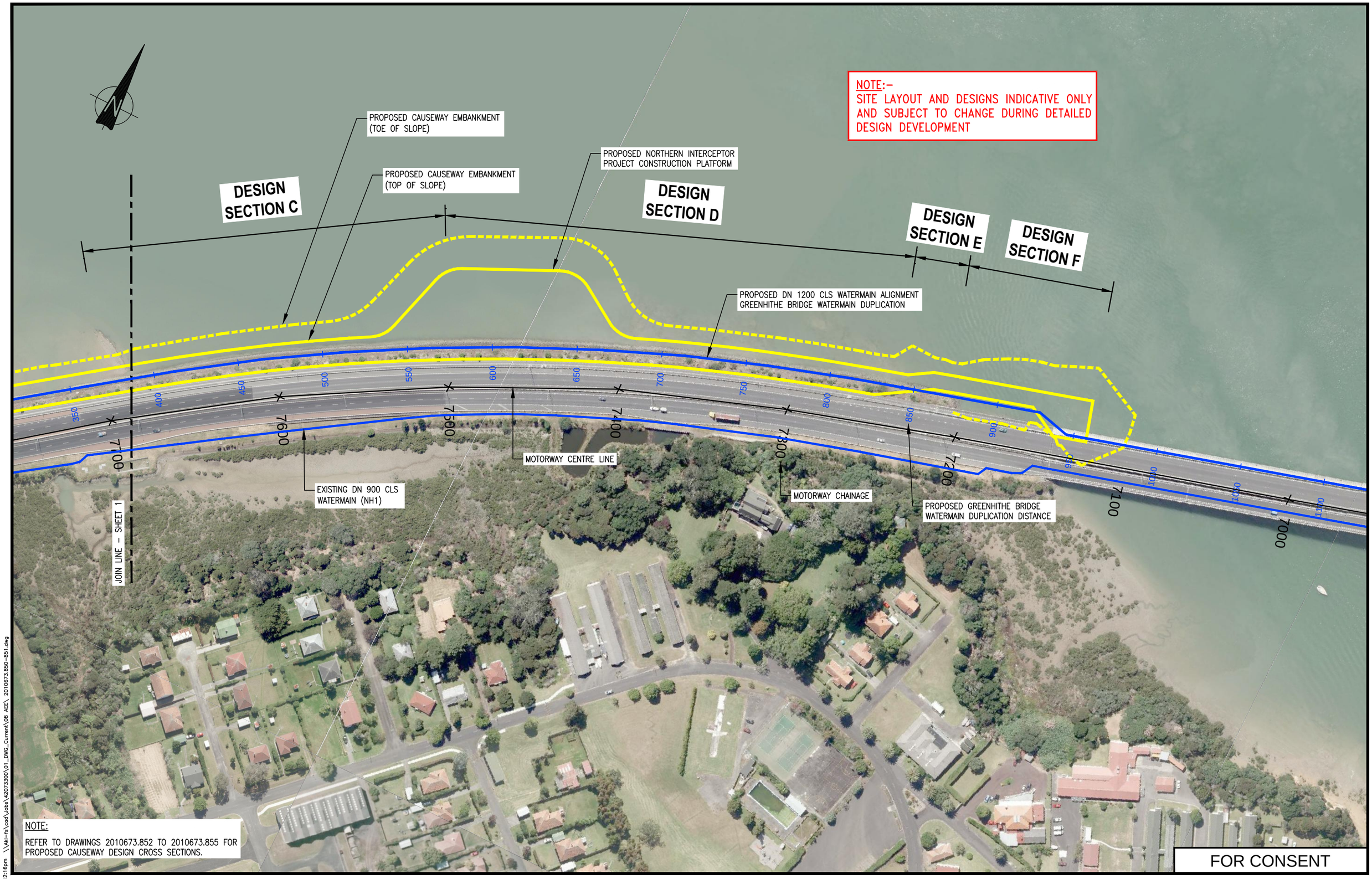
GREENHITHE BRIDGE WATERMAIN DUPLICATION AND CAUSEWAY GEOTECHNICAL DESIGN

CAUSEWAY DESIGN SECTION LOCATIONS – SHEET 1 OF 2

CAD FILE 2010673.850–851	DATE 01.07.15
ORIGINAL SCALE A3 1:2,000	CONTRACT No. –
REF No. –	ISSUE –
DWG No. 2010673.850	3



Plot Date: Jul 09, 2015 – 12:16pm \\Akl-fs\cad\Jobs\42073300\01_DWG_Current\08 AEE\ 2010673.850-851.dwg

ISSUE	DATE	AMENDMENT	BY	APPD.
3	01.07.15	ISSUED FOR CONSENT	A.T.S.	M.A.E.
2	09.03.15	ISSUED FOR CONSENT	H.L.A.	M.A.E.
1	13.02.15	ISSUED FOR CONSENT	P.K.	M.A.E.

DESIGNED	Y.T.	10.14
DES. CHECKED	A.H.	10.14
DRAWN	H.L.A.	10.14
DWG. CHECKED	Y.T.	10.14
PROJECT LEADER	M.A.E.	10.14
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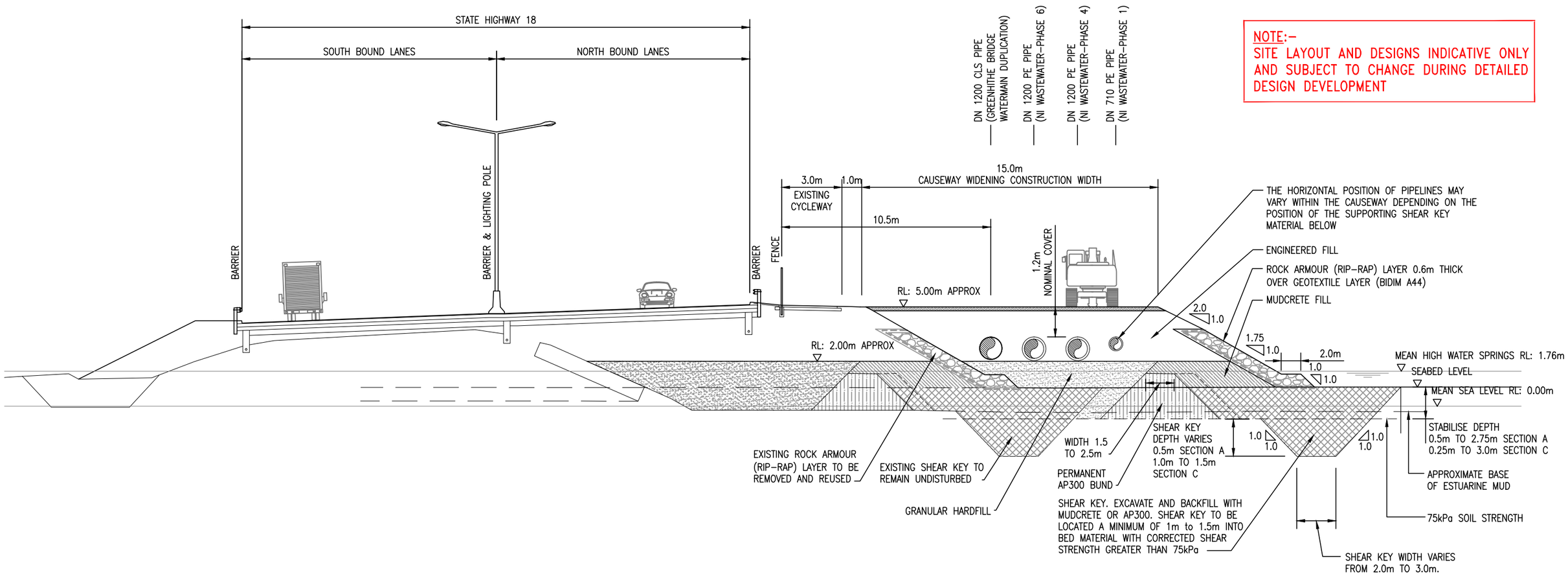
GREENHITHE BRIDGE WATERMAIN DUPLICATION AND CAUSEWAY GEOTECHNICAL DESIGN

CAUSEWAY DESIGN SECTION LOCATIONS – SHEET 2 OF 2

CAD FILE 2010673.850–851	DATE 01.07.15
ORIGINAL SCALE A3 1:2,000	CONTRACT No. –
REF No. –	ISSUE –
DWG No. 2010673.851	3



NOTE:-
SITE LAYOUT AND DESIGNS INDICATIVE ONLY AND SUBJECT TO CHANGE DURING DETAILED DESIGN DEVELOPMENT

SECTION A/C
SCALE: 1:200 –

CAUSEWAY WIDENING FOR PIPELINES
TYPICAL CROSS SECTION VIEW TO WEST
AT SECTION A – PIPELINE DISTANCE 96m TO 270m (MOTORWAY CHAINAGE 7800m–7974m)
AT SECTION C – PIPELINE DISTANCE 371m TO 574m (MOTORWAY CHAINAGE 7500m–7700m)

NOTE:

REFER TO DRAWING 2010673.850 TO 851 FOR DESIGN SECTION LOCATIONS.

FOR CONSENT

ISSUE	DATE	AMENDMENT	BY	APPD.
3	01.07.15	ISSUED FOR CONSENT	A.T.S.	M.A.E.
2	09.03.15	ISSUED FOR CONSENT	H.L.A.	M.A.E.
1	13.02.15	ISSUED FOR CONSENT	P.K.	M.A.E.

DESIGNED	M.J.	10.14
DES. CHECKED	Y.T.	10.14
DRAWN	G.W.	10.14
DWG. CHECKED	N.H.	10.14
PROJECT LEADER	M.A.E.	10.14
INFRAST'R APP'D		

SIGNATORY 1 – OPERATIONS

SIGNATORY 2 – INFRASTRUCTURE

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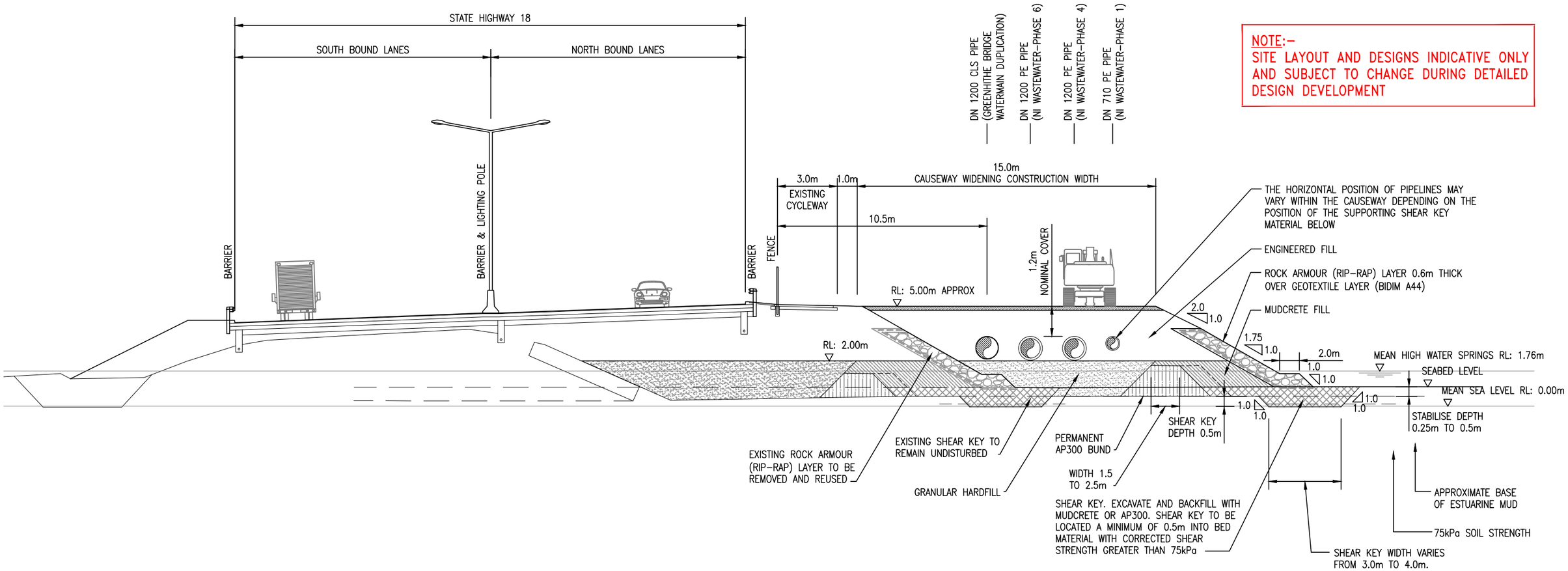
GREENHITHE BRIDGE WATERMAIN DUPLICATION AND CAUSEWAY GEOTECHNICAL DESIGN

CAUSEWAY DESIGN SECTIONS A & C

CAD FILE 2010673.852–855 DATE 01.07.15
ORIGINAL SCALE A3 AS SHOWN
CONTRACT No. –
REF No. –
ISSUE –
DWG No. 2010673 .852
3

Plot Date: Jul 09, 2015 – 2:43pm \\Akl-fs\cad\Jobs\42073300\01_DWG_Current\08 AEE\ 2010673.852-855.dwg



NOTE:-
SITE LAYOUT AND DESIGNS INDICATIVE ONLY AND SUBJECT TO CHANGE DURING DETAILED DESIGN DEVELOPMENT

SECTION B/D
SCALE: 1:200 –

CAUSEWAY WIDENING FOR PIPELINES
TYPICAL CROSS SECTION VIEW TO WEST
AT SECTION B – PIPELINE DISTANCE 270m TO 371m (MOTORWAY CHANAGE 7700m–7800m)
AT SECTION D – PIPELINE DISTANCE 574m TO 838m (MOTORWAY CHAINAGE 7230m–7500m)

NOTE:

REFER TO DRAWING 2010673.850 TO 851 FOR DESIGN SECTION LOCATIONS.

FOR CONSENT

ISSUE	DATE	AMENDMENT	BY	APPD.
3	01.07.15	ISSUED FOR CONSENT	A.T.S.	M.A.E.
2	09.03.15	ISSUED FOR CONSENT	H.L.A.	M.A.E.
1	13.02.15	ISSUED FOR CONSENT	P.K.	M.A.E.

DESIGNED	M.J.	10.14
DES. CHECKED	Y.T.	10.14
DRAWN	G.W.	10.14
DWG. CHECKED	N.H.	10.14
PROJECT LEADER	M.A.E.	10.14
INFRAST'R APP'D		

SIGNATORY 1 — OPERATIONS

SIGNATORY 2 — INFRASTRUCTURE

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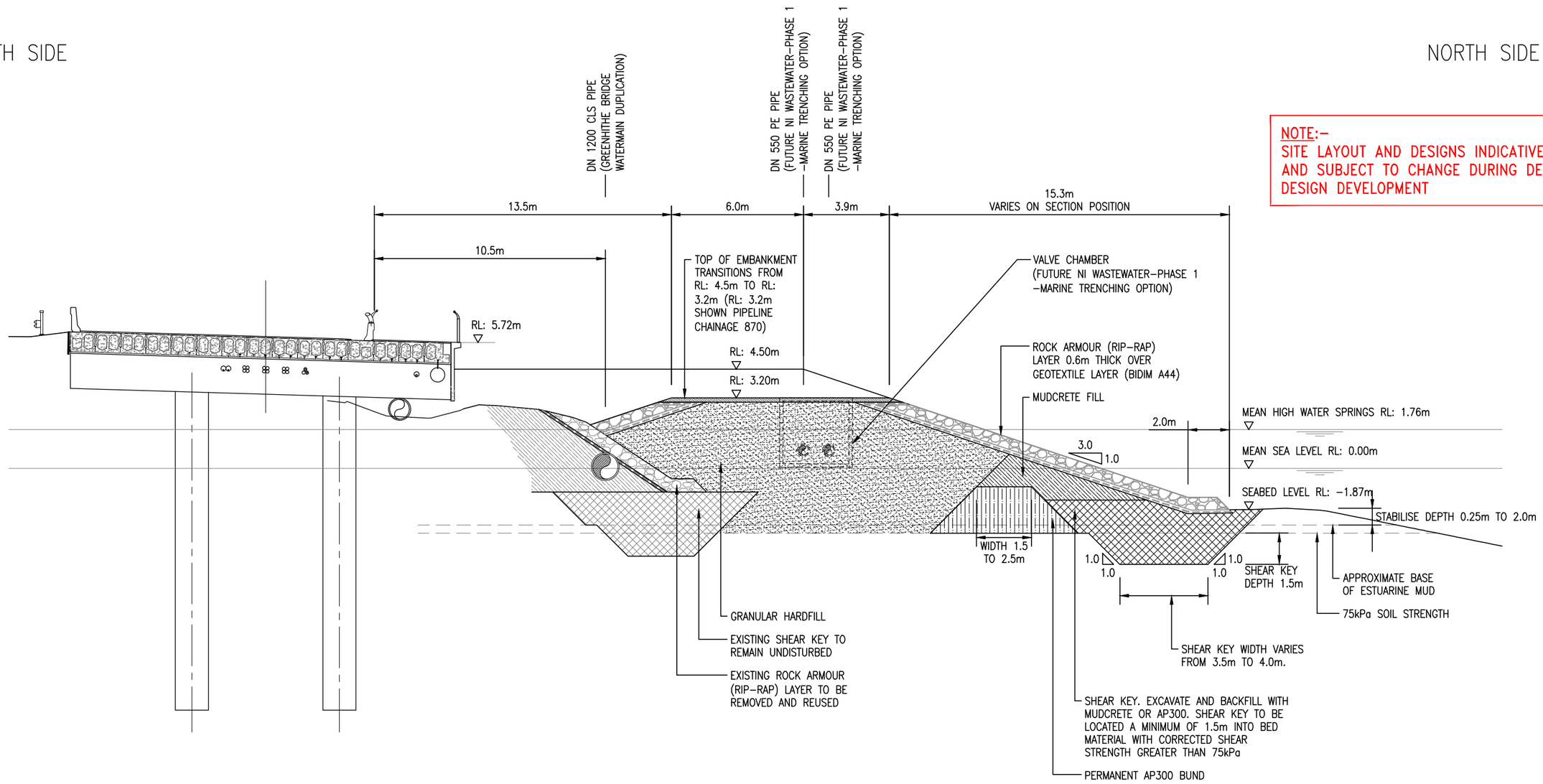
GREENHITHE BRIDGE WATERMAIN DUPLICATION AND CAUSEWAY GEOTECHNICAL DESIGN

CAUSEWAY DESIGN SECTIONS B & D

CAD FILE 2010673.852–855 DATE 01.07.15
ORIGINAL SCALE A3 AS SHOWN
CONTRACT No. –
REF No. –
ISSUE –
DWG No. 2010673 .853
3

Plot Date: Jul 09, 2015 – 2:42pm \\Akl-fs\cad\Jobs\42073300\01_DWG_Current\08 AEE\ 2010673.852-855.dwg



NOTE:–
SITE LAYOUT AND DESIGNS INDICATIVE ONLY AND SUBJECT TO CHANGE DURING DETAILED DESIGN DEVELOPMENT

SECTION E
SCALE: 1:200 –

CAUSEWAY WIDENING FOR PIPELINES
TYPICAL CROSS SECTION VIEW TO WEST (PIPELINE DISTANCE 870m SHOWN)
DESIGN SECTION E – PIPELINE DISTANCE 838m TO 870m (MOTORWAY CHAINAGE 7240m–7208m)

NOTE:

REFER TO DRAWING 2010673.850 TO 851 FOR DESIGN SECTION LOCATIONS.

FOR CONSENT

ISSUE	DATE	AMENDMENT	BY	APPD.
3	01.07.15	ISSUED FOR CONSENT	A.T.S.	M.A.E.
2	09.03.15	ISSUED FOR CONSENT	H.L.A.	M.A.E.
1	13.02.15	ISSUED FOR CONSENT	P.K.	M.A.E.

DESIGNED	M.J.	10.14
DES. CHECKED	Y.T.	10.14
DRAWN	H.L.A.	10.14
DWG. CHECKED	N.H.	10.14
PROJECT LEADER	M.A.E.	10.14
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SIGNATORY 2 – INFRASTRUCTURE

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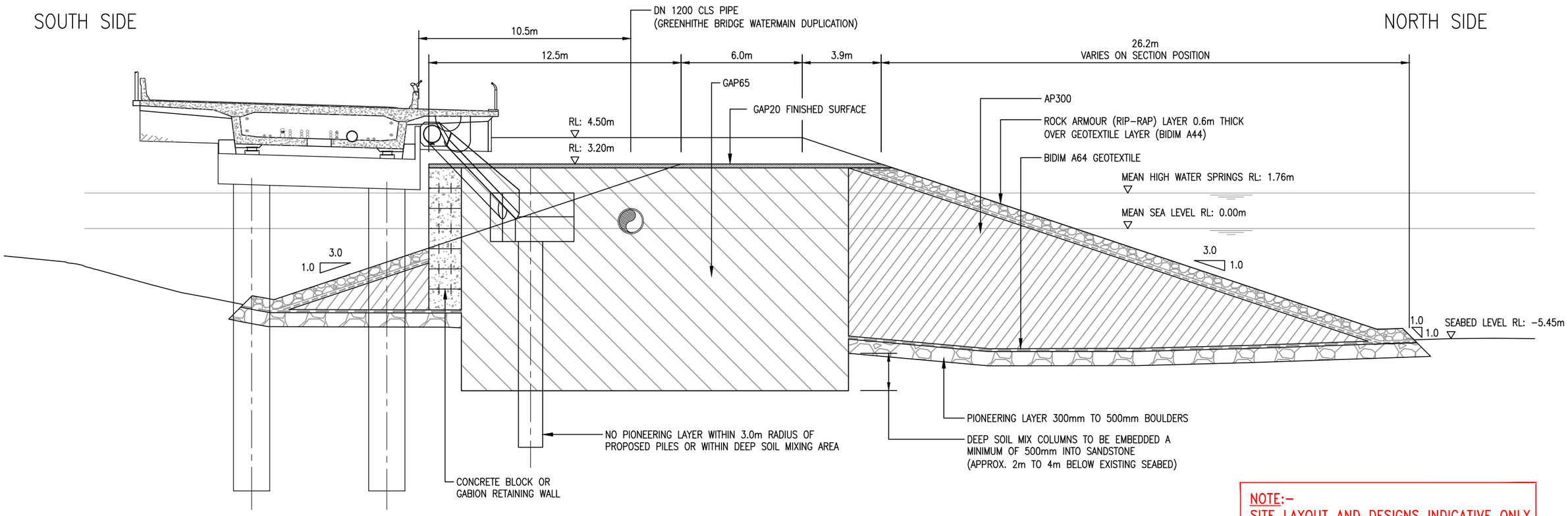
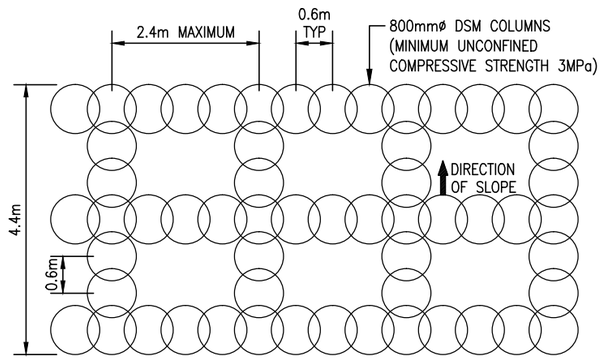
GREENHITHE BRIDGE WATERMAIN DUPLICATION AND CAUSEWAY GEOTECHNICAL DESIGN
CAUSEWAY DESIGN SECTION E

CAD FILE 2010673.852–855 DATE 01.07.15
ORIGINAL SCALE A3 AS SHOWN
CONTRACT No. –
REF No. –
ISSUE –
DWG No. 2010673.854
3

Plot Date: Jul 09, 2015 – 12:19pm \\Akl-fs\cad\Jobs\42073300\01_DWG_Current\08 AEE\ 2010673.852-855.dwg



NOTE:-
SITE LAYOUT AND DESIGNS INDICATIVE ONLY AND SUBJECT TO CHANGE DURING DETAILED DESIGN DEVELOPMENT



DETAIL DEEP SOIL MIX COLUMNS GRID: 4.4m WIDE SHOWN
SCALE: 1:100

SECTION F
SCALE: 1:200 –

CAUSEWAY WIDENING FOR PIPELINES
TYPICAL CROSS SECTION VIEW TO WEST (PIPELINE DISTANCE 957m SHOWN)
DESIGN SECTION F – PIPELINE DISTANCE 870m TO 957m (MOTORWAY CHAINAGE 7208m–7124m)

NOTE:

REFER TO DRAWING 2010673.850 TO 851 FOR DESIGN SECTION LOCATIONS.

FOR CONSENT

ISSUE	DATE	AMENDMENT	BY	APPD.
3	01.07.15	ISSUED FOR CONSENT	A.T.S.	M.A.E.
2	09.03.15	ISSUED OFR CONSENT	H.L.A.	M.A.E.
1	13.02.15	ISSUED FOR CONSENT	P.K.	M.A.E.

DESIGNED	M.J.	10.14
DES. CHECKED	Y.T.	10.14
DRAWN	H.L.A.	10.14
DWG. CHECKED	N.H.	10.14
PROJECT LEADER	M.A.E.	10.14
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SIGNATORY 1
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SIGNATORY 2
INFRASTRUCTURE

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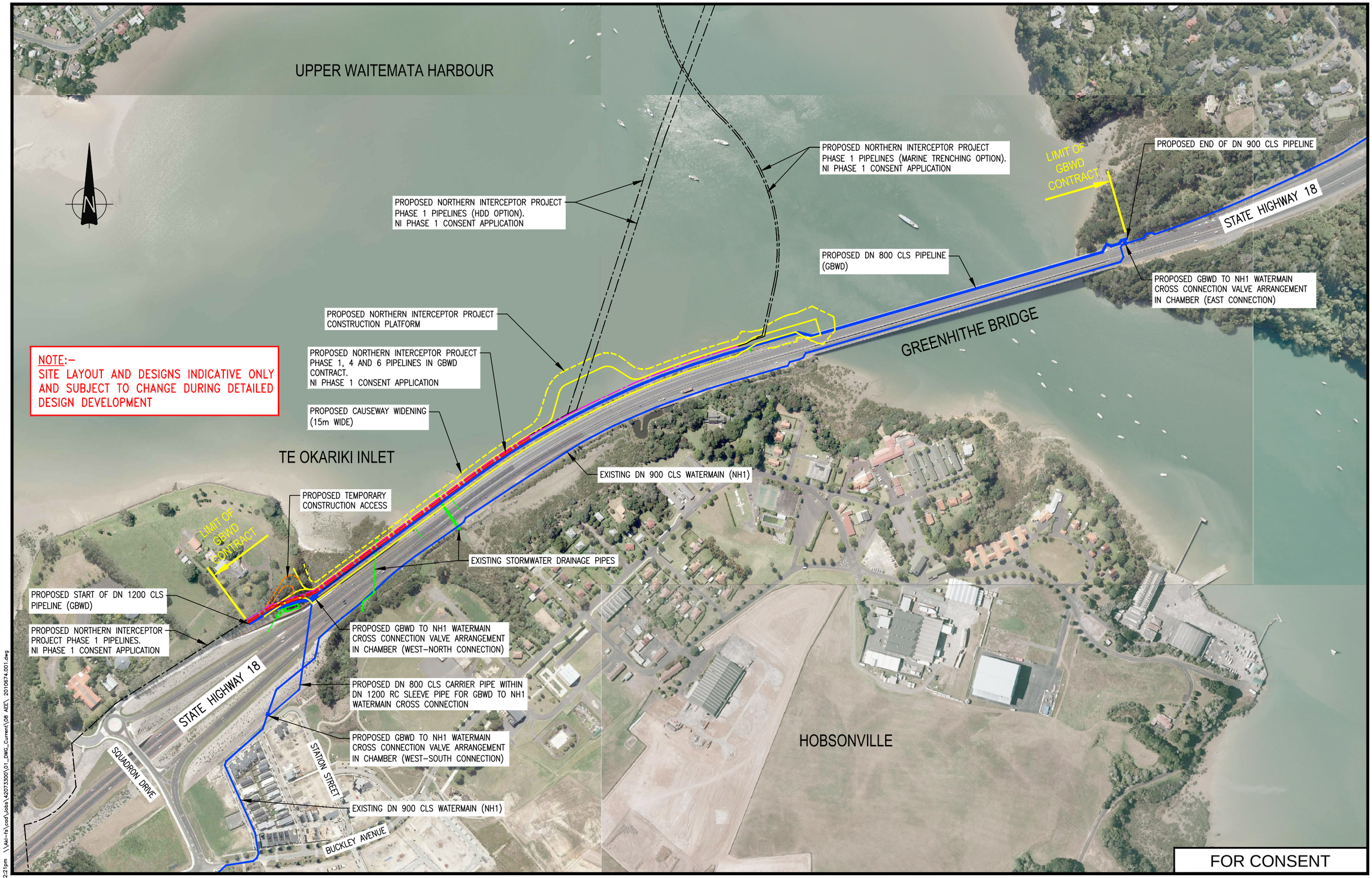
GREENHITHE BRIDGE WATERMAIN DUPLICATION AND CAUSEWAY GEOTECHNICAL DESIGN
CAUSEWAY DESIGN SECTION F

CAD FILE 2010673.852–855 DATE 01.07.15
ORIGINAL SCALE A3 AS SHOWN
CONTRACT No. –
REF No. –
ISSUE –
DWG No. 2010673.855
3

Plot Date: Jul 09, 2015 – 12:19pm \\Akl-fs\cad\Jobs\42073300\01_DWG_Current\08 AEE\ 2010673.852-855.dwg



NOTE:-
SITE LAYOUT AND DESIGNS INDICATIVE ONLY AND SUBJECT TO CHANGE DURING DETAILED DESIGN DEVELOPMENT

FOR CONSENT

ISSUE	DATE	AMENDMENT	BY	APPD.
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DESIGNED	N.H.	10.14
DES. CHECKED	A.H.	10.14
DRAWN	H.L.A.	10.14
DWG. CHECKED	A.H.	10.14
PROJECT LEADER	M.A.E.	10.14
INFRAST'R APP'D		

OPERATIONS

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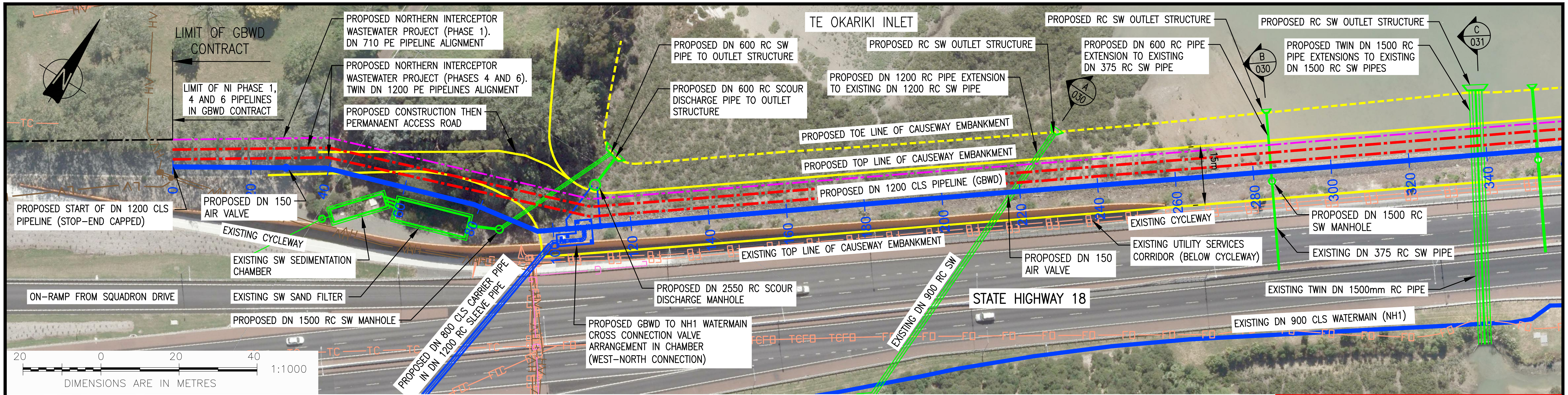
GREENHITHE BRIDGE WATERMAIN DUPLICATION AND CAUSEWAY CIVIL DESIGN

LOCATION PLAN

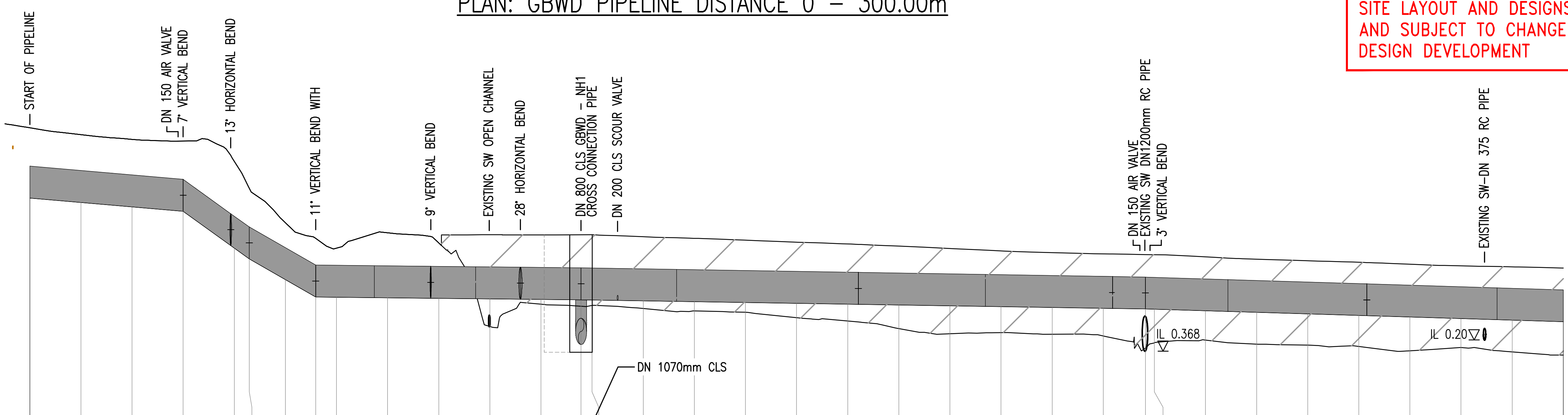
CAD FILE 2010674.001	DATE 01.07.15
ORIGINAL SCALE A3 1:5,000	CONTRACT No. –
REF No. –	ISSUE –
DWG No. 2010674 .001	3

Plot Date: Jul 09, 2015 – 12:21pm \\Akl-fs\cad\Jobs\42073300\01_DWG_Current\08 AEE\ 2010674.001.dwg



PLAN: GBWD PIPELINE DISTANCE 0 – 300.00m

NOTE:–
SITE LAYOUT AND DESIGNS INDICATIVE ONLY AND SUBJECT TO CHANGE DURING DETAILED DESIGN DEVELOPMENT



DATUM RL: –2.00

PIPE DIAMETER AND MATERIAL: DN 1200mm CLS

PIPE GRADE	Length
–1.72%	30m
–14.42%	12.94m
–11.46%	13m
–0.21%	51.91m
–0.33%	110.41m
–0.61%	124.37m

DISTANCE (m)	EXISTING SURFACE LEVEL (m)	FINISHED SURFACE LEVEL (m)	DEPTH TO INVERT (m)	INVERT LEVEL (m)
0.00	9.33	9.33	2.75	6.58
10.00	9.06	9.06	2.65	6.41
20.00	8.87	8.87	2.64	6.23
30.00	8.81	8.81	2.75	6.06
40.00	8.02	8.02	3.40	4.62
42.94	6.96	6.96	2.77	4.20
50.00	5.62	5.62	2.23	3.39
55.93	5.00	5.00	2.30	2.71
60.00	4.62	4.62	1.92	2.70
70.00	5.22	5.22	2.54	2.68
80.00	4.82	4.82	2.17	2.66
90.00	1.55	5.15	2.51	2.64
100.00	2.43	5.14	2.52	2.62
107.84	2.35	5.14	2.54	2.60
110.00	2.38	5.14	2.55	2.59
120.00	2.26	5.07	2.51	2.56
130.00	2.17	5.01	2.48	2.53
140.00	2.11	4.93	2.44	2.50
150.00	1.90	4.86	2.39	2.46
160.00	1.77	4.78	2.35	2.43
170.00	1.48	4.70	2.30	2.40
180.00	1.27	4.61	2.24	2.37
190.00	1.32	4.51	2.18	2.33
200.00	1.25	4.45	2.15	2.30
210.00	1.19	4.40	2.13	2.27
218.25	0.71	4.37	2.13	2.24
220.00	0.91	4.37	2.13	2.23
230.00	1.03	4.28	2.11	2.17
240.00	0.87	4.19	2.08	2.11
250.00	0.83	4.13	2.08	2.05
260.00	0.77	4.07	2.08	1.99
270.00	0.60	3.99	2.07	1.93
280.00	0.73	3.93	2.06	1.86
290.00	0.56	3.89	2.09	1.80
300.00	0.44	3.84	2.10	1.74

LONGITUDINAL SECTION: GBWD PIPELINE DISTANCE 0 – 300.00m

SCALES: HORIZ 1:1000, VERT 1:200

FOR CONSENT

ISSUE	DATE	AMENDMENT	BY	APPD.
3	01.07.15	ISSUED FOR CONSENT	A.T.S.	M.A.E.
2	09.03.15	ISSUED FOR CONSENT	H.L.A.	M.A.E.
1	13.02.15	ISSUED FOR CONSENT	P.K.	M.A.E.

DESIGNED	N.H.	10.14
DES. CHECKED	A.T.S.	10.14
DRAWN	M.N.V.	10.14
DWG. CHECKED	A.T.S.	10.14
PROJECT LEADER	M.A.E.	10.14
INFRAST'R APP'D		

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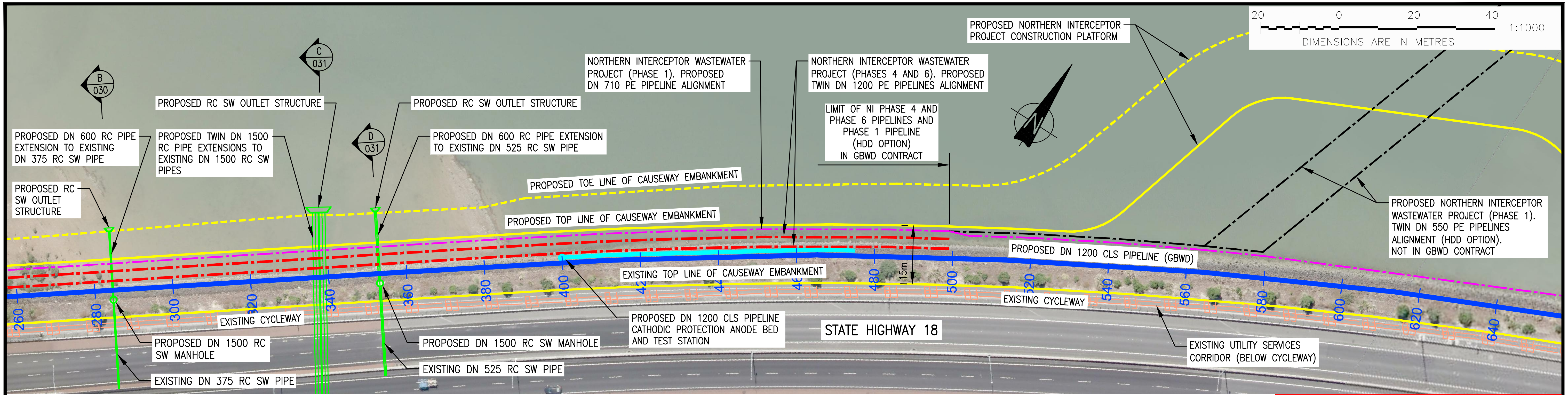
GREENHITHE BRIDGE WATERMAIN DUPLICATION AND CAUSEWAY CIVIL DESIGN

WATERMAIN LAYOUT PLAN AND LONGITUDINAL SECTION – SHEET 1 OF 3

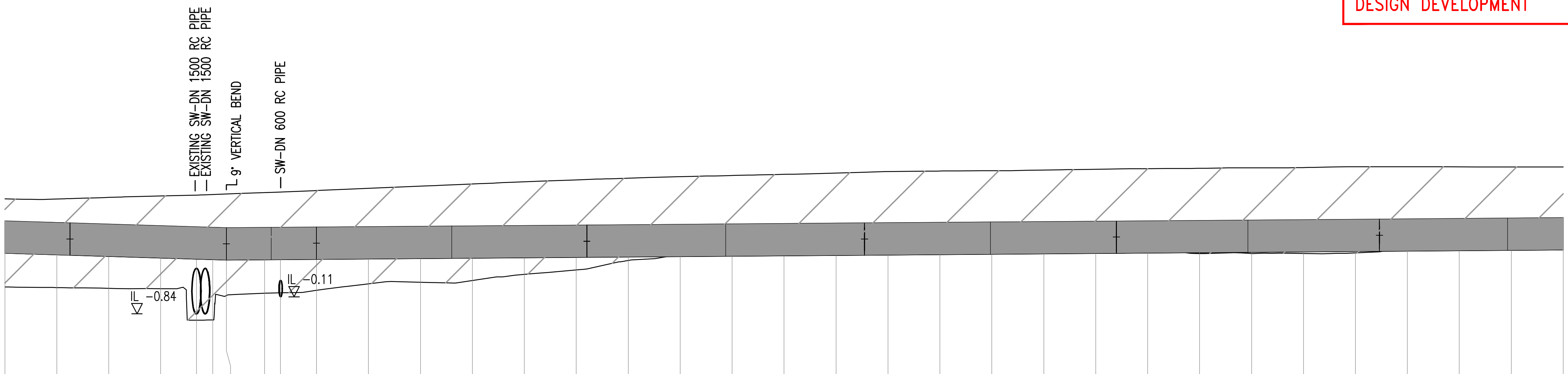
CAD FILE	2010674.002–005
DATE	01.07.15
ORIGINAL SCALE A3	1:1,000
CONTRACT No.	–
REF No.	–
ISSUE	–
DWG No.	2010674 .002
	3

Plot Date: Jul 09, 2015 – 12:25pm \\Akl-fs\cad\Jobs\42073300\01_DWG_Current\08 AEE\ 2010674.002-005.dwg



PLAN: GBWD PIPELINE DISTANCE 300.00 – 600.00m

NOTE:–
SITE LAYOUT AND DESIGNS INDICATIVE ONLY AND SUBJECT TO CHANGE DURING DETAILED DESIGN DEVELOPMENT



DATUM RL: –3.00

PIPE DIAMETER AND MATERIAL: DN 1200mm CLS

PIPE GRADE: –0.61% 124.37m; 0.15% 502.06m

DISTANCE (m)	300.00	310.00	320.00	330.00	338.00	340.00	342.62	350.00	353.00
EXISTING SURFACE LEVEL (m)	0.44	0.42	0.40	0.38	–0.83	–0.82	0.11	0.21	0.22
FINISHED SURFACE LEVEL (m)	3.84	3.84	3.90	3.95	4.00	4.01	4.03	4.08	4.10
DEPTH TO INVERT (m)	2.10	2.16	2.28	2.39	2.48	2.51	2.55	2.59	2.61
INVERT LEVEL (m)	1.74	1.68	1.62	1.56	1.52	1.50	1.48	1.49	1.49

DISTANCE (m)	360.00	370.00	380.00	390.00	400.00	410.00	420.00	430.00	440.00	450.00	460.00	470.00	480.00
EXISTING SURFACE LEVEL (m)	0.32	0.57	0.63	0.70	0.93	1.10	1.47	1.70	1.87	1.87	1.82	1.79	1.89
FINISHED SURFACE LEVEL (m)	4.16	4.24	4.33	4.41	4.50	4.57	4.64	4.70	4.74	4.78	4.83	4.89	4.91
DEPTH TO INVERT (m)	2.65	2.72	2.79	2.86	2.93	2.99	3.04	3.08	3.11	3.14	3.17	3.22	3.23
INVERT LEVEL (m)	1.51	1.52	1.54	1.55	1.57	1.58	1.60	1.61	1.63	1.64	1.66	1.67	1.69

DISTANCE (m)	490.00	500.00	510.00	520.00	530.00	540.00	550.00	560.00	570.00	580.00	590.00	600.00
EXISTING SURFACE LEVEL (m)	1.86	1.88	1.90	1.83	1.74	1.74	1.74	1.76	1.93	2.09	2.05	2.00
FINISHED SURFACE LEVEL (m)	4.93	4.95	4.98	5.00	5.02	5.04	5.05	5.08	5.08	5.07	5.07	5.07
DEPTH TO INVERT (m)	3.22	3.23	3.25	3.25	3.25	3.26	3.25	3.27	3.26	3.23	3.22	3.20
INVERT LEVEL (m)	1.70	1.72	1.73	1.75	1.76	1.78	1.79	1.81	1.82	1.84	1.85	1.87

LONGITUDINAL SECTION: GBWD PIPELINE DISTANCE 300.00 – 600.00m

SCALES: HORIZ 1:1000, VERT 1:200

FOR CONSENT

ISSUE	DATE	AMENDMENT	BY	APPD.
3	17.07.15	ISSUED FOR CONSENT	A.T.S.	M.A.E.
2	09.03.15	ISSUED FOR CONSENT	H.L.A.	M.A.E.
1	13.02.15	ISSUED FOR CONSENT	P.K.	M.A.E.

DESIGNED	N.H.	10.14
DES. CHECKED	A.T.S.	10.14
DRAWN	M.N.V.	10.14
DWG. CHECKED	A.T.S.	10.14
PROJECT LEADER	M.A.E.	10.14
INFRAST'R APP'D		

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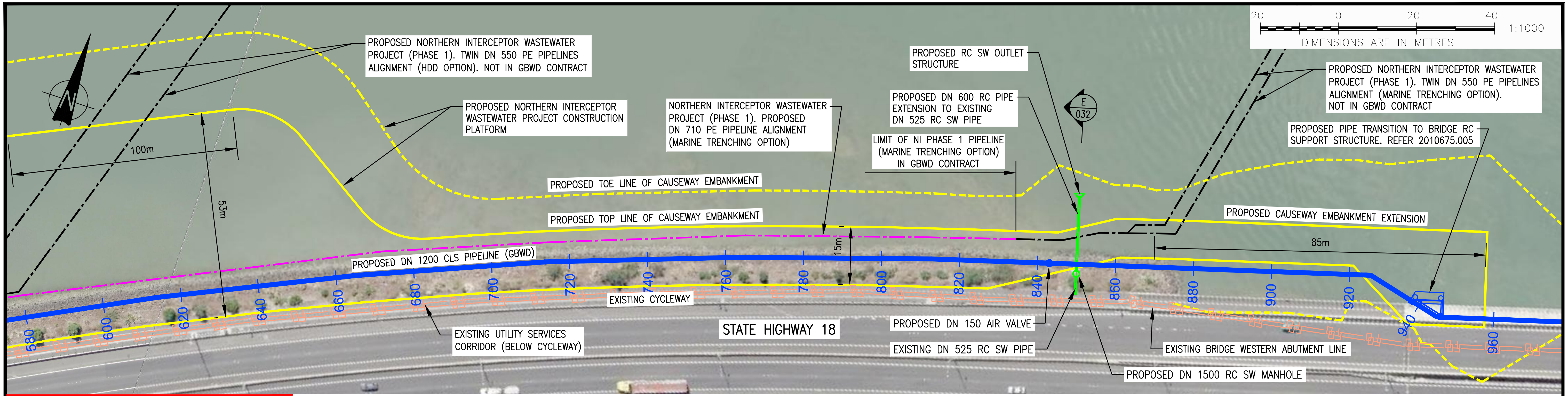
GREENHITHE BRIDGE WATERMAIN DUPLICATION AND CAUSEWAY CIVIL DESIGN

WATERMAIN LAYOUT PLAN AND LONGITUDINAL SECTION – SHEET 2 OF 3

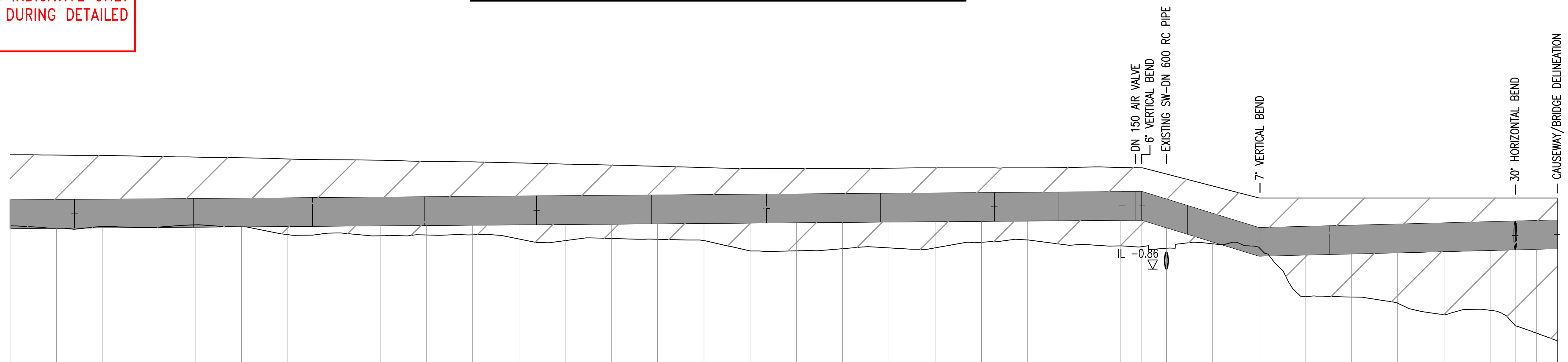
CAD FILE 2010674.002–005 DATE 17.07.15
ORIGINAL SCALE A3 1:1,000
CONTRACT No. –
REF No. –
ISSUE –
DWG No. 2010674 .003 | 3

Plot Date: Jul 20, 2015 – 10:23am \\Akl-fs\cad\Jobs\42073300\01_DWG_Current\08 AEE\ 2010674.002-005.dwg



NOTE:–
SITE LAYOUT AND DESIGNS INDICATIVE ONLY AND SUBJECT TO CHANGE DURING DETAILED DESIGN DEVELOPMENT

PLAN: GBWD PIPELINE DISTANCE 600.00 – 940.00m



DATUM RL: –4.00

PIPE DIAMETER AND MATERIAL: DN 1200mm CLS

PIPE GRADE: 0.15% (502.06m); –6.10% (25.55m); 0.50% (64.28m)

DISTANCE (m)	EXISTING SURFACE LEVEL (m)	FINISHED SURFACE LEVEL (m)	DEPTH TO INVERT (m)	INVERT LEVEL (m)
600.00	2.00	5.07	3.20	1.87
610.00	1.89	5.06	3.17	1.88
620.00	1.96	5.04	3.14	1.90
630.00	1.91	5.00	3.09	1.91
640.00	2.04	4.97	3.04	1.93
650.00	1.95	4.94	2.99	1.94
660.00	1.61	4.89	2.93	1.96
670.00	1.68	4.85	2.88	1.97
680.00	1.56	4.83	2.84	1.99
690.00	1.59	4.78	2.78	2.00
700.00	1.60	4.76	2.74	2.02
710.00	1.43	4.71	2.68	2.03
720.00	1.35	4.67	2.62	2.05
730.00	1.44	4.63	2.56	2.06
740.00	1.41	4.57	2.49	2.08
750.00	1.35	4.51	2.42	2.09
760.00	0.90	4.48	2.37	2.11
770.00	0.91	4.47	2.35	2.12
780.00	1.00	4.48	2.34	2.14
790.00	1.04	4.49	2.33	2.15
800.00	1.04	4.50	2.33	2.17
810.00	1.28	4.50	2.31	2.18
820.00	1.38	4.50	2.30	2.20
830.00	1.16	4.52	2.31	2.21
840.00	1.12	4.52	2.29	2.23
844.68	1.09	4.50	2.26	2.24
850.00	1.02	4.23	2.57	1.66
860.00	1.22	3.72	2.43	1.29
870.00	1.06	3.20	2.50	0.70
880.00	–1.06	3.20	2.48	0.72
890.00	–1.09	3.20	2.43	0.77
900.00	–1.36	3.20	2.38	0.82
910.00	–1.84	3.20	2.33	0.87
920.00	–1.67	3.20	2.28	0.92
925.44	–2.33	3.20	2.25	0.95
930.00	–2.65	3.20	2.22	0.98
934.50	–2.95	3.20	2.20	1.00

LONGITUDINAL SECTION: GBWD PIPELINE DISTANCE 600.00 – 940.00m

SCALES: HORIZ 1:1000, VERT 1:200

FOR CONSENT

ISSUE	DATE	AMENDMENT	BY	APPD.
3	01.07.15	ISSUED FOR CONSENT	A.T.S.	M.A.E.
2	09.03.15	ISSUED FOR CONSENT	H.L.A.	M.A.E.
1	13.02.15	ISSUED FOR CONSENT	P.K.	M.A.E.

DESIGNED	N.H.	10.14
DES. CHECKED	A.T.S.	10.14
DRAWN	M.N.V.	10.14
DWG. CHECKED	A.T.S.	10.14
PROJECT LEADER	M.A.E.	10.14
INFRAST'R APP'D		

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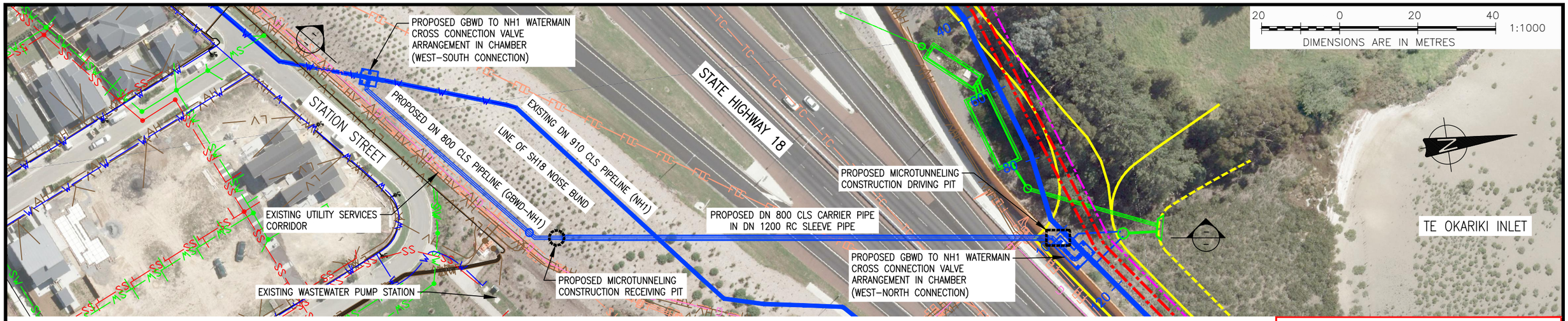
GREENHITHE BRIDGE WATERMAIN DUPLICATION AND CAUSEWAY

CIVIL DESIGN

WATERMAIN LAYOUT PLAN AND LONGITUDINAL SECTION – SHEET 3 OF 3

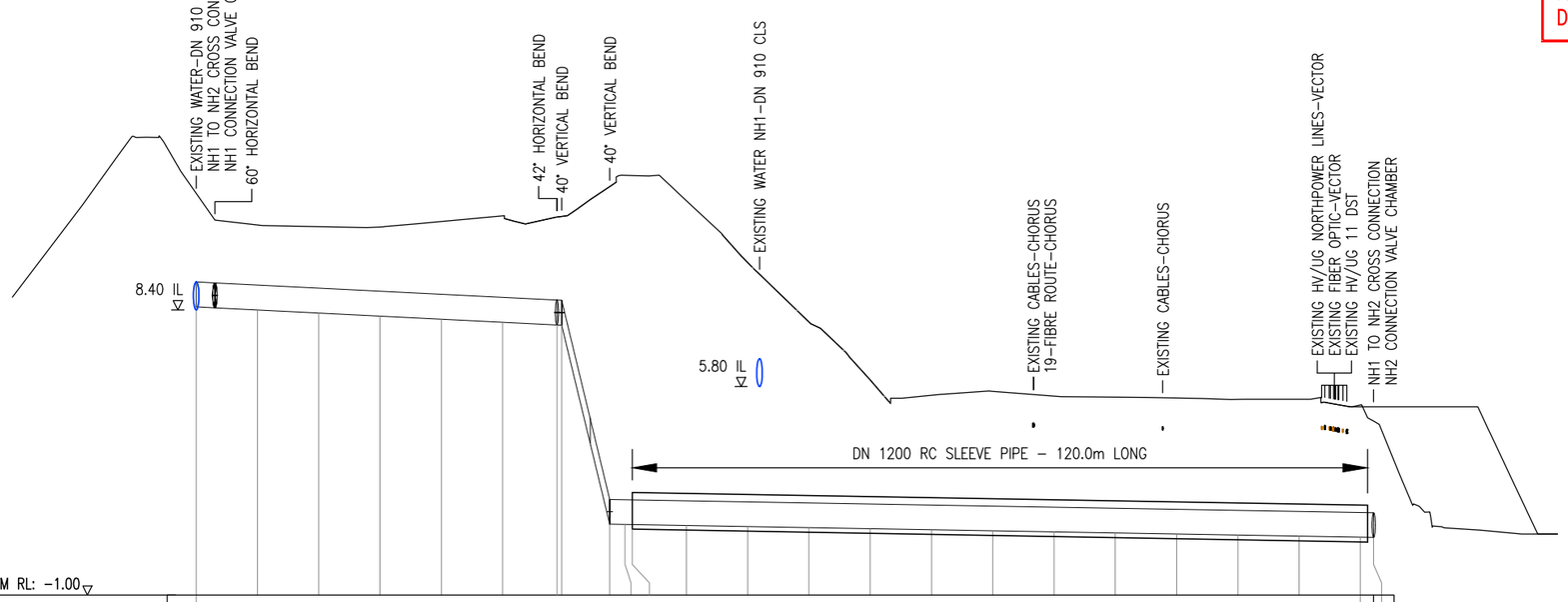
CAD FILE 2010674.002–005 DATE 01.07.15
ORIGINAL SCALE A3 1:1,000
CONTRACT No. –
REF No. –
ISSUE –
DWG No. 2010674 .004 3

Plot Date: Jul 09, 2015 – 1:57pm \\Akl-fs\cad\Jobs\42073300\01_DWG_Current\08 AEE\ 2010674.002-005.dwg



NOTE:–
SITE LAYOUT AND DESIGNS INDICATIVE ONLY AND SUBJECT TO CHANGE DURING DETAILED DESIGN DEVELOPMENT

PLAN: GBWD TO NH1 PIPELINE CROSS CONNECTION DISTANCE 0 – 192.16m



DATUM RL: –1.00

PIPE DIAMETER AND MATERIAL	DN 800mm CLS																								
PIPE GRADE	–1.01% 59.66m							–82.72% 7.84m		–0.35% 124.66m															
EXISTING SURFACE LEVEL (m)							11.35	11.35	12.32			9.85	7.91	6.02									5.20	4.67
FINISHED SURFACE LEVEL (m)	12.11	11.07	11.01	11.00	11.18	11.36	11.35	11.35	12.32	12.69	11.86	9.85	7.91	6.02	5.52	5.64	5.49	5.46	5.43	5.38	5.39	5.14	5.14
DEPTH TO INVERT (m)	3.71	2.77	2.81	2.91	3.18	3.47	3.54	3.55	11.01	11.39	10.59	8.61	6.71	4.85	4.39	4.55	4.43	4.43	4.44	4.42	4.46	4.25	4.26
INVERT LEVEL (m)	8.40	8.30	8.20	8.10	8.00	7.90	7.81	7.80	1.31	1.30	1.27	1.23	1.20	1.17	1.13	1.10	1.06	1.03	0.99	0.96	0.92	0.89	0.88
DISTANCE (m)	0.00	10.00	20.00	30.00	40.00	50.00	58.87	59.66	67.50	70.00	71.16	80.00	90.00	100.00	110.00	120.00	130.00	140.00	150.00	160.00	170.00	180.00	190.00	192.16

LONGITUDINAL SECTION: GBWD TO NH1 PIPELINE CROSS CONNECTION DISTANCE 0 – 192.16m

SCALES: HORIZ 1:1000, VERT 1:200

FOR CONSENT

ISSUE	DATE	AMENDMENT	BY	APPD.
3	01.07.15	ISSUED FOR CONSENT	A.T.S.	M.A.E.
2	09.03.15	ISSUED FOR CONSENT	H.L.A.	M.A.E.
1	13.02.15	ISSUED FOR CONSENT	P.K.	M.A.E.

DESIGNED	N.H.	10.14
DES. CHECKED	A.H.	10.14
DRAWN	H.L.A.	10.14
DWG. CHECKED	A.H.	10.14
PROJECT LEADER	M.A.E.	10.14
INFRAST'R APP'D		

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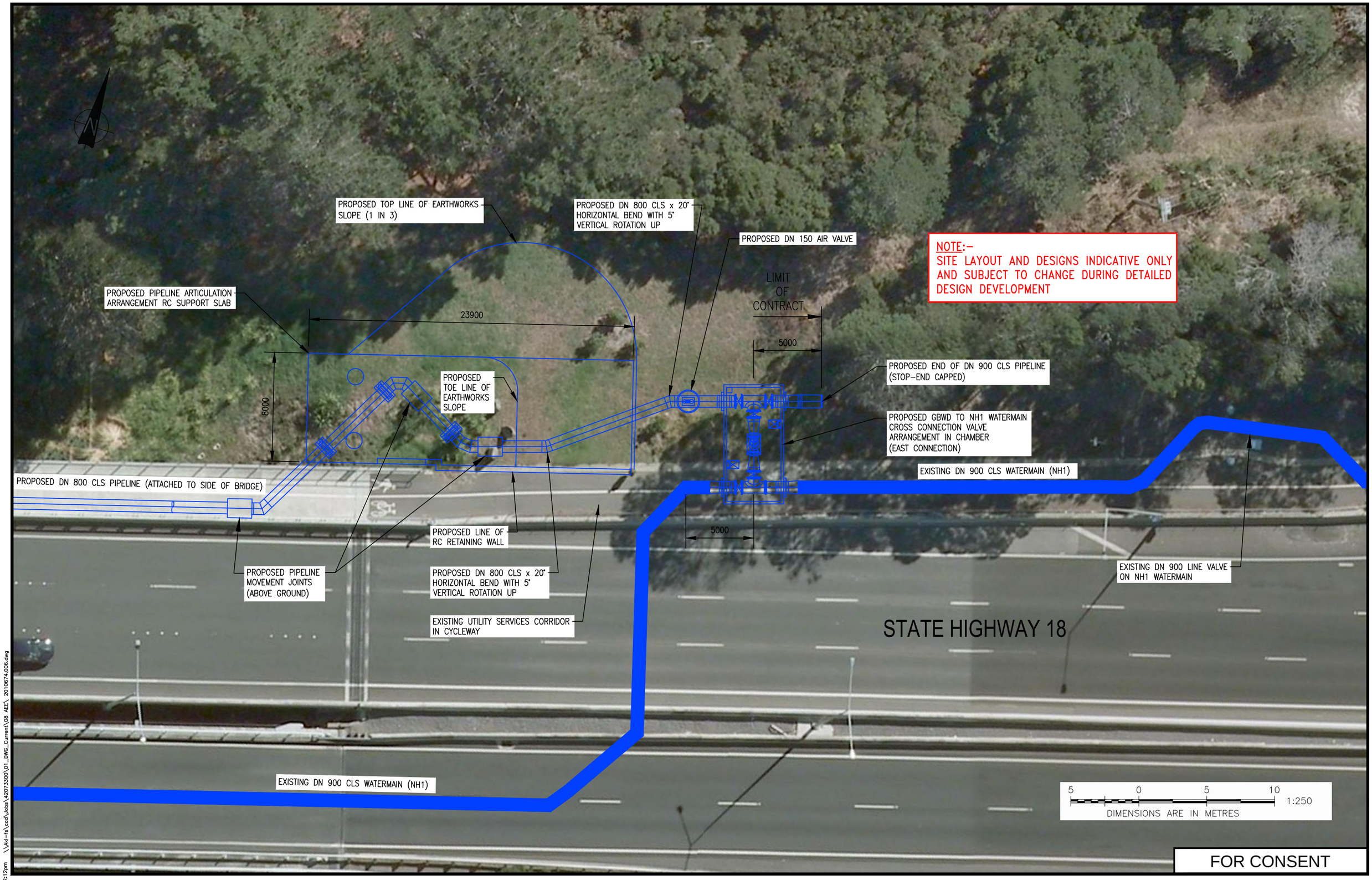
GREENHITHE BRIDGE WATERMAIN DUPLICATION AND CAUSEWAY CIVIL DESIGN

NH1 TO NH2 PIPELINE CROSS CONNECTION (WEST) – LAYOUT PLAN AND LONGITUDINAL SECTION

CAD FILE 2010674.002–005	DATE 01.07.15
ORIGINAL SCALE A3 1:1,000	CONTRACT No. –
REF No. –	ISSUE –
DWG No. 2010674 .005	3

Plot Date: Jul 09, 2015 – 2:06pm \\akl-fs\cad\Jobs\42073300\01_DWG_Current\08 AEE\ 2010674.002-005.dwg



FOR CONSENT

ISSUE	DATE	AMENDMENT	BY	APPD.
3	01.07.15	ISSUED FOR CONSENT	A.T.S.	M.A.E.
2	09.03.15	ISSUED FOR CONSENT	H.L.A.	M.A.E.
1	13.02.15	ISSUED FOR CONSENT	P.K.	M.A.E.

DESIGNED	N.H.	10.14
DES. CHECKED	A.H.	10.14
DRAWN	H.L.A.	10.14
DWG. CHECKED	A.H.	10.14
PROJECT LEADER	M.A.E.	10.14
INFRAST'R APP'D		

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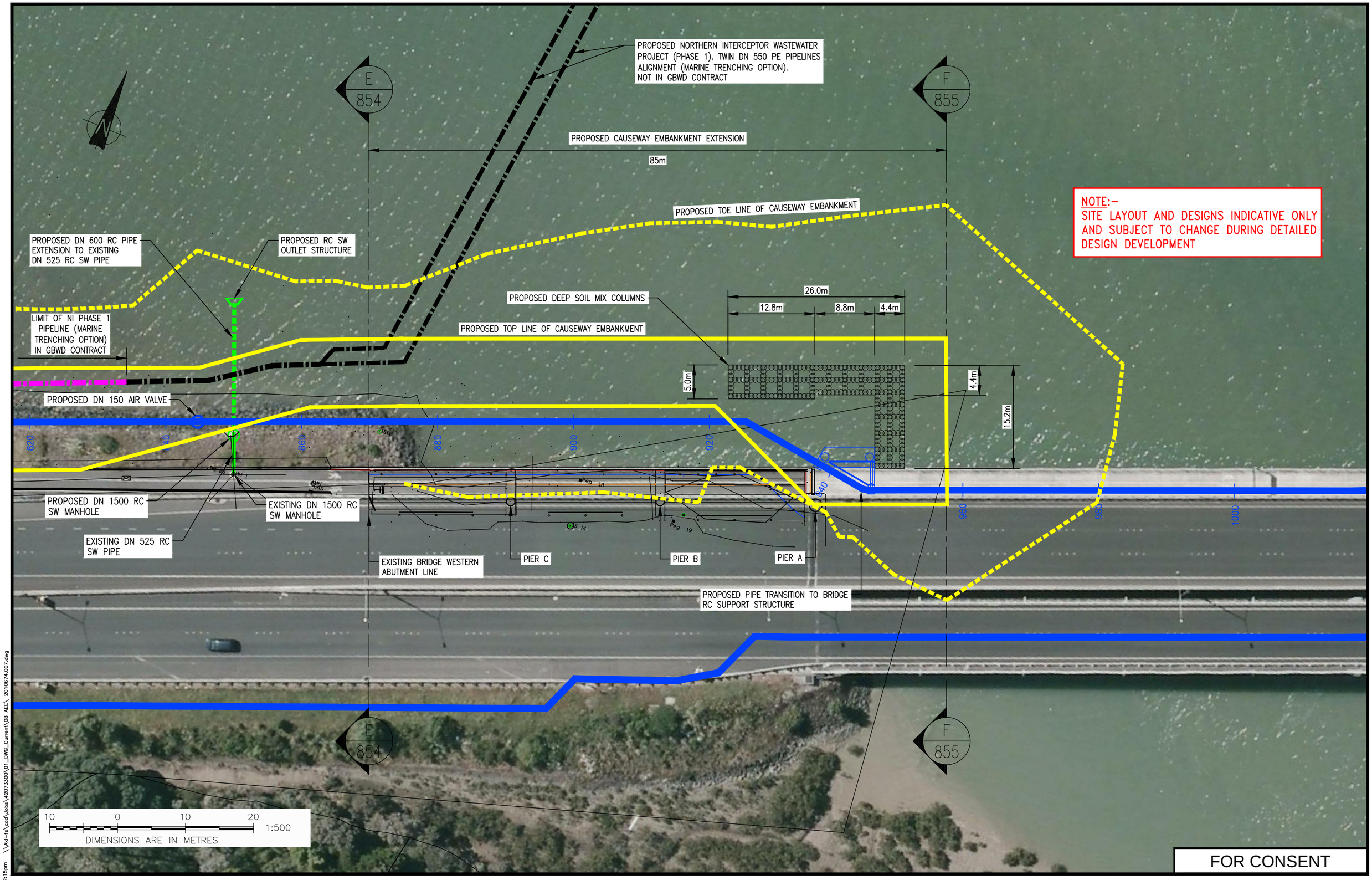
GREENHITHE BRIDGE WATERMAIN DUPLICATION AND CAUSEWAY
CIVIL DESIGN

PIPE TRANSITION AT EASTERN ABUTMENT AND NH1 TO NH2 CROSS CONNECTION – LAYOUT PLAN

CAD FILE 2010674.006	DATE 01.07.15
ORIGINAL SCALE A3 1:250	CONTRACT No. –
REF No. –	ISSUE –
DWG No. 2010674 .006	3

Plot Date: Jul 09, 2015 – 2:12pm \\Akl-fs\cad\Jobs\42073300\01_DWG_Current\08 AEE\ 2010674.006.dwg



FOR CONSENT

ISSUE	DATE	AMENDMENT	BY	APPD.
3	01.07.15	ISSUED FOR CONSENT	A.T.S.	M.A.E.
2	09.03.15	ISSUED FOR CONSENT	H.L.A.	M.A.E.
1	13.02.15	ISSUED FOR CONSENT	P.K.	M.A.E.

DESIGNED	N.H.	10.14
DES. CHECKED	A.T.S.	10.14
DRAWN	H.L.A.	10.14
DWG. CHECKED	A.T.S.	10.14
PROJECT LEADER	M.A.E.	10.14
INFRAST'R APP'D		

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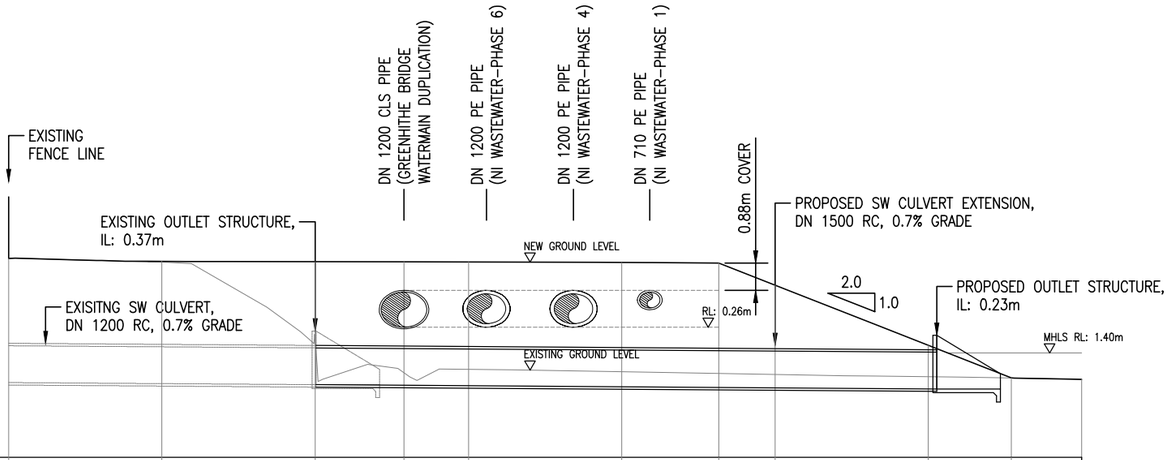
GREENHITHE BRIDGE WATERMAIN DUPLICATION AND CAUSEWAY CIVIL DESIGN

PIPELINE AND TRANSITION STRUCTURE AT WESTERN ABUTMENT – LAYOUT PLAN

CAD FILE 2010674.007	DATE 01.07.15
ORIGINAL SCALE A3 1:500	CONTRACT No. –
REF No. –	ISSUE –
DWG No. 2010674 .007	3

Plot Date: Jul 09, 2015 – 2:15pm \\Akl-fs\cad\Jobs\42073300\01_DWG_Current\08 AEE\ 2010674.007.dwg

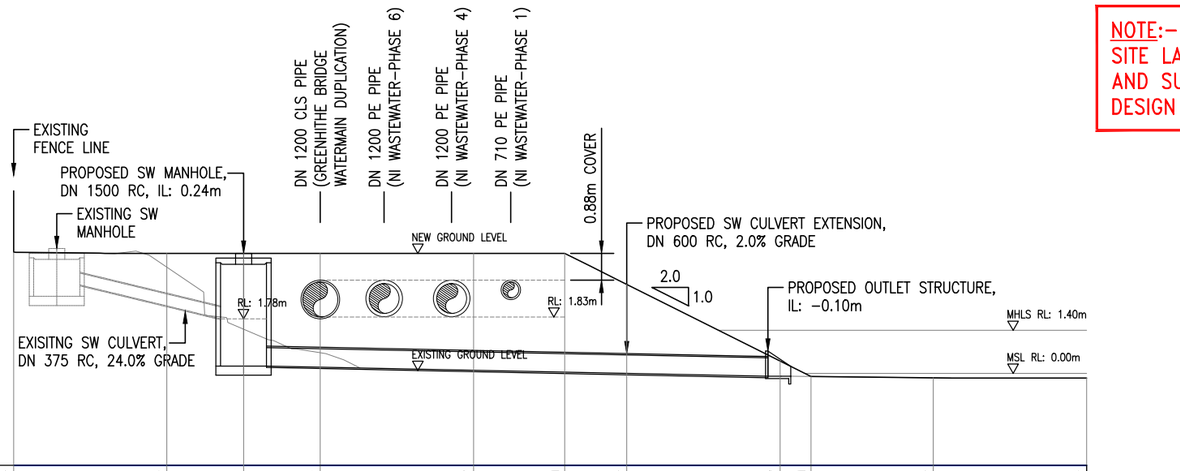


DATUM RL: −2.00

EXISTING LEVEL (m)	4.49	4.37	1.81	0.76	0.87	0.79	0.73	0.70	0.63	0.59	0.54
FINISHED LEVEL (m)	4.49	4.39	4.38	4.37	4.37	4.35	4.33	3.61	1.65	0.59	0.54
OFFSET FROM CL (m)	0.00	5.00	10.00	12.90	15.00	20.00	23.17	25.00	30.00	32.71	35.00

1200mm RC CULVERT
SECTION A–A AT DISTANCE: 218m

SCALES: HORIZ 1:200, VERT 1:200



DATUM RL: −3.00

EXISTING LEVEL (m)	3.95	3.46	1.44	0.67	0.10	0.01	−0.05	−0.09	−0.11	−0.15	−0.16
FINISHED LEVEL (m)	3.95	3.91	3.91	3.91	3.91	3.91	2.90	0.40	−0.11	−0.15	−0.16
OFFSET FROM CL (m)	0.00	5.00	7.50	10.00	15.00	17.97	20.00	25.00	26.01	30.00	35.00

375mm RC CULVERT
SECTION B–B AT DISTANCE: 284m

SCALES: HORIZ 1:200, VERT 1:200

NOTE:–
SITE LAYOUT AND DESIGNS INDICATIVE ONLY AND SUBJECT TO CHANGE DURING DETAILED DESIGN DEVELOPMENT

FOR CONSENT

ISSUE	DATE	AMENDMENT	BY	APPD.
3	01.07.15	ISSUED FOR CONSENT	A.T.S.	M.A.E.
2	09.03.15	ISSUED FOR CONSENT	H.L.A.	M.A.E.
1	13.02.15	ISSUED FOR CONSENT	P.K.	M.A.E.

DESIGNED	H.L.A.	10.14
DES. CHECKED	A.H.	10.14
DRAWN	H.L.A.	10.14
DWG. CHECKED	A.H.	10.14
PROJECT LEADER	M.A.E.	10.14
INFRAST'R APP'D		

SIGNATORY 1 – OPERATIONS

SIGNATORY 2 – INFRASTRUCTURE

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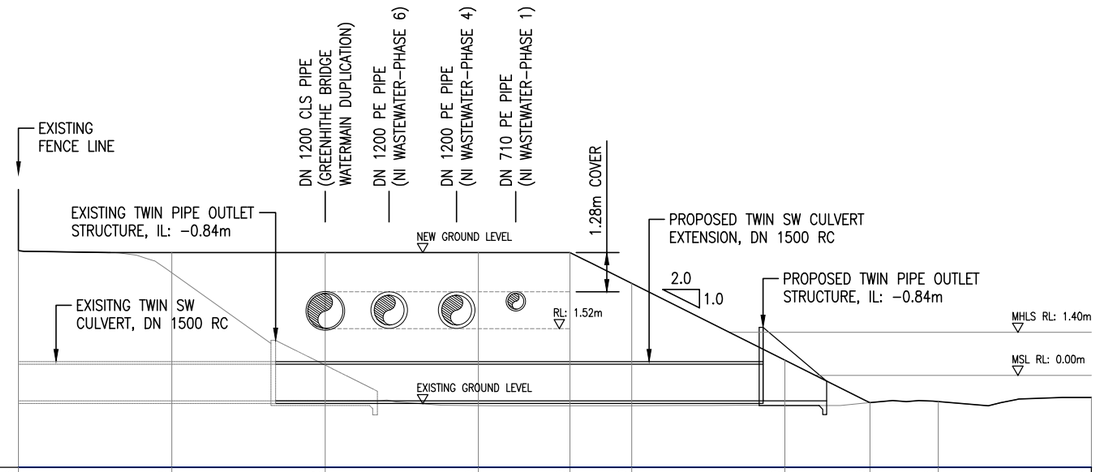
GREENHITHE BRIDGE WATERMAIN DUPLICATION AND CAUSEWAY
CIVIL DESIGN
STORMWATER CULVERT EXTENSIONS – SECTIONS A–A AND B–B

CAD FILE 2010674.030–032	DATE 01.07.15
ORIGINAL SCALE A3 AS SHOWN	CONTRACT No. –
REF No. –	ISSUE –
DWG No. 2010674 .030	3

Plot Date: Jul 09, 2015 – 2:19pm \\Akl-fs\cad\Jobs\42073300\01_DWG_Current\08 AEE\ 2010674.030-032.dwg



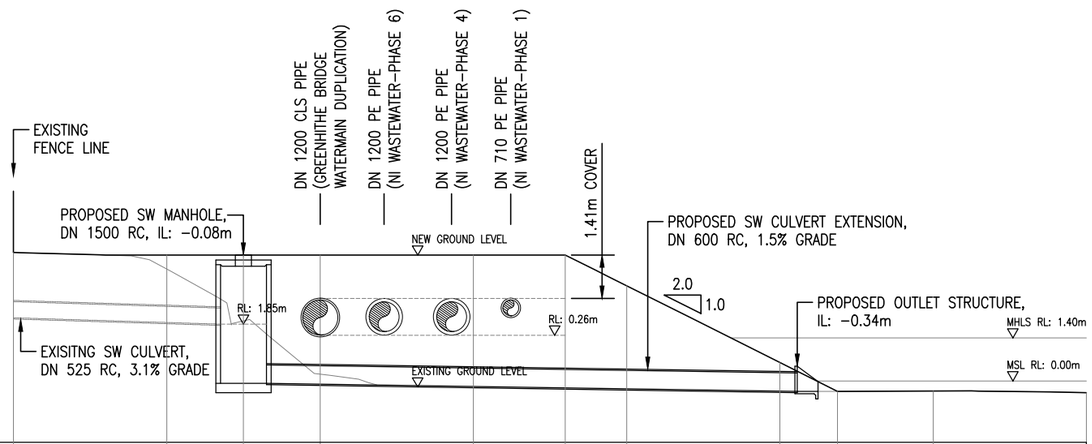
DATUM RL: -3.00

EXISTING LEVEL (m)	4.06	3.34	-0.83	-0.99	-0.99	-0.99	-0.99	-0.89	-0.86	-0.72
FINISHED LEVEL (m)	4.06	4.00	4.00	4.00	4.00	3.00	0.50	-0.89	-0.86	-0.72
OFFSET FROM CL (m)	0.00	5.00	10.00	15.00	18.00	20.00	25.00	27.78	30.00	35.00

TWIN 1500mm RC CULVERT
SECTION C-C AT DISTANCE: 338m

SCALES: HORIZ 1:200, VERT 1:200

NOTE:-
SITE LAYOUT AND DESIGNS INDICATIVE ONLY AND SUBJECT TO CHANGE DURING DETAILED DESIGN DEVELOPMENT



DATUM RL: -3.00

EXISTING LEVEL (m)	3.65	3.65	3.65	0.22	-0.20	-0.20	-0.30	-0.34	-0.34	-0.33	-0.38
FINISHED LEVEL (m)	4.19	4.10	4.10	4.10	4.10	4.10	3.10	0.60	-0.34	-0.33	-0.38
OFFSET FROM CL (m)	0.00	5.00	7.50	10.00	15.00	18.00	20.00	25.00	26.88	30.00	35.00

525mm RC CULVERT
SECTION D-D AT DISTANCE: 353m

SCALES: HORIZ 1:200, VERT 1:200

FOR CONSENT

ISSUE	DATE	AMENDMENT	BY	APPD.
3	01.07.15	ISSUED FOR CONSENT	A.T.S.	M.A.E.
2	09.03.15	ISSUED FOR CONSENT	H.L.A.	M.A.E.
1	13.02.15	ISSUED FOR CONSENT	P.K.	M.A.E.

DESIGNED	H.L.A.	10.14
DES. CHECKED	A.H.	10.14
DRAWN	H.L.A.	10.14
DWG. CHECKED	A.H.	10.14
PROJECT LEADER	M.A.E.	10.14
INFRAST'R APP'D		

SIGNATORY 1 — OPERATIONS

SIGNATORY 2 — INFRASTRUCTURE

Watercare

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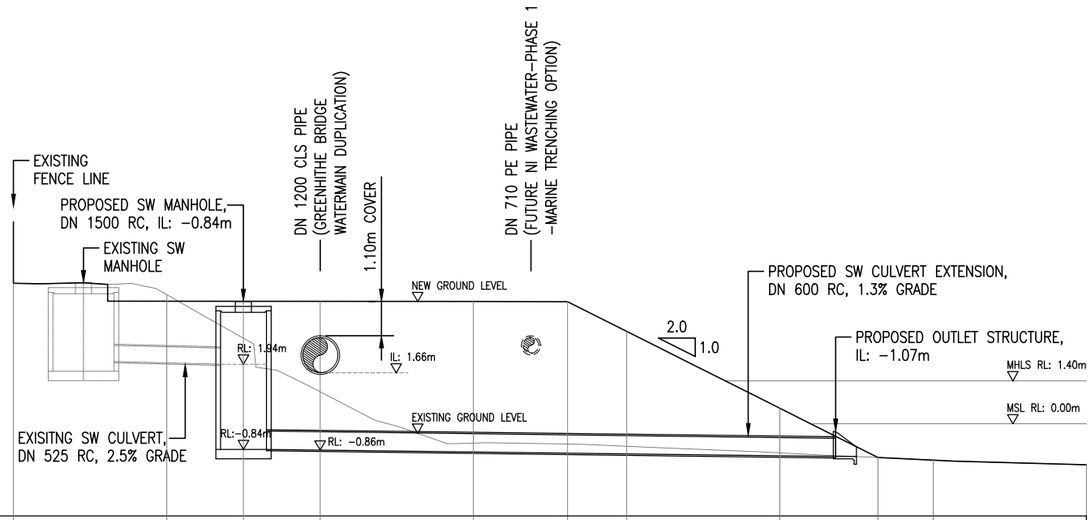
GREENHITHE BRIDGE WATERMAIN DUPLICATION AND CAUSEWAY CIVIL DESIGN

STORMWATER CULVERT EXTENSIONS – SECTION C-C AND D-D

CAD FILE 2010674.030-032	DATE 01.07.15
ORIGINAL SCALE A3 AS SHOWN	CONTRACT No. –
REF No. –	ISSUE –
DWG No. 2010674 .031	3

Plot Date: Jul 09, 2015 – 2:21pm \\Akl-fs\cad\Jobs\42073300\01_DWG_Current\08 AEE\ 2010674.030-032.dwg

NOTE:–
SITE LAYOUT AND DESIGNS INDICATIVE ONLY AND SUBJECT TO CHANGE DURING DETAILED DESIGN DEVELOPMENT



DATUM RL: −3.00

EXISTING LEVEL (m)	4.58	4.20	2.79	1.05	−0.63	−0.66	−0.73	−0.95	−1.10	−1.18	−1.34
FINISHED LEVEL (m)	4.58	3.99	3.99	3.99	3.98	3.98	3.01	0.50	−1.10	−1.18	−1.34
OFFSET FROM CL (m)	0.00	5.00	7.50	10.00	15.00	18.07	20.00	25.00	28.20	30.00	35.00

525mm RC CULVERT
SECTION E–E AT DISTANCE: 850m

SCALES: HORIZ 1:200, VERT 1:200

FOR CONSENT

ISSUE	DATE	AMENDMENT	BY	APPD.
3	01.07.15	ISSUED FOR CONSENT	A.T.S.	M.A.E.
2	09.03.15	ISSUED FOR CONSENT	H.L.A.	M.A.E.
1	13.02.15	ISSUED FOR CONSENT	P.K.	M.A.E.

DESIGNED	H.L.A.	10.14
DES. CHECKED	A.H.	10.14
DRAWN	H.L.A.	10.14
DWG. CHECKED	A.H.	10.14
PROJECT LEADER	M.A.E.	10.14
INFRAST'R APP'D		

SIGNATORY 1
OPERATIONS
SIGNATORY 2
INFRASTRUCTURE

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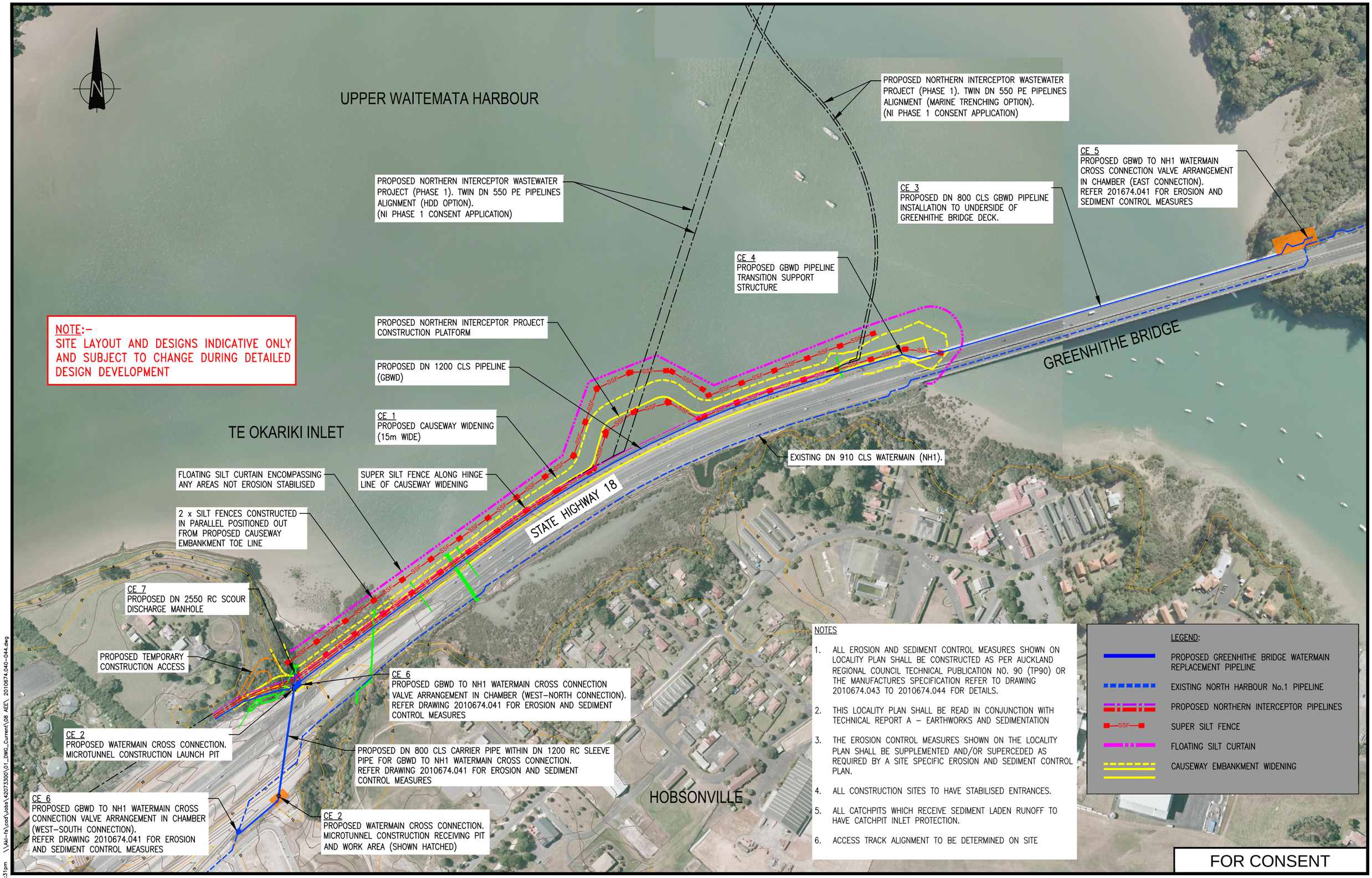
GREENHITHE BRIDGE WATERMAIN DUPLICATION AND CAUSEWAY CIVIL DESIGN

STORMWATER CULVERT EXTENSIONS – SECTION E–E

CAD FILE 2010674.030–032	DATE 01.07.15
ORIGINAL SCALE A3 AS SHOWN	CONTRACT No. –
REF No. –	ISSUE –
DWG No. 2010674 .032	3

Plot Date: Jul 09, 2015 – 2:24pm \\Akl-fs\cad\Jobs\42073300\01_DWG_Current\08 AEE\ 2010674.030-032.dwg



FOR CONSENT

ISSUE	DATE	AMENDMENT	BY	APPD.
3	01.07.15	ISSUED FOR CONSENT	A.T.S.	J.B.
2	03.03.15	ISSUED FOR CONSENT	P.K.	J.B.
1	19.12.14	ISSUED FOR CONSENT	P.K.	J.B.

DESIGNED	P.K.	19.12.14
DES. CHECKED	D.P.	19.12.14
DRAWN	P.K.	19.12.14
DWG. CHECKED	D.P.	19.12.14
PROJECT LEADER	J.B.	19.12.14
INFRAST'R APP'D		

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GREENHITHE BRIDGE WATERMAIN DUPLICATION
EROSION AND SEDIMENT CONTROL ARRANGEMENT
EROSION AND SEDIMENT CONTROL LOCATION PLAN

CAD FILE 2010674.040–044 DATE 01.07.15
ORIGINAL SCALE A3 1:8,000 CONTRACT No. –
REF No. – ISSUE –
DWG No. 2010674 .040 3

Plot Date: Jul 09, 2015 – 2:31pm \\Akl-fs\cad\jobs\42073300\01_DWG_Current\08 AEE\ 2010674.040-044.dwg

PROPOSED TEMPORARY CONSTRUCTION ACCESS

EXISTING STORMWATER SEDIMENTATION AND SAND FILTER STRUCTURES

CE 7
PROPOSED DN 2550 RC SCOUR DISCHARGE MANHOLE

EXISTING STORMWATER DRAINAGE PIPE

CE 6
PROPOSED GBWD TO NH1 WATERMAIN CROSS CONNECTION VALVE ARRANGEMENT IN CHAMBER (WEST–NORTH CONNECTION)

CE 2
PROPOSED WATERMAIN CROSS CONNECTION. MICROTUNNEL CONSTRUCTION LAUNCH PIT

PROPOSED DN 800 CLS CARRIER PIPE WITHIN DN 1200 RC SLEEVE PIPE FOR GBWD TO NH1 WATERMAIN CROSS CONNECTION. TO BE CONSTRUCTED BY MICROTUNNEL

EXISTING DN 900 CLS WATERMAIN (NH1)

STATE HIGHWAY 18

CE 2
PROPOSED WATERMAIN CROSS CONNECTION. MICROTUNNEL CONSTRUCTION RECEIVING PIT AND WORK AREA (SHOWN HATCHED)

PROPOSED DN 800 CLS PIPE FOR GBWD TO NH1 WATERMAIN CROSS CONNECTION. TO BE CONSTRUCTED BY OPEN TRENCH

PROPOSED WORK SITE ARRANGEMENT TO BE CONFIRMED. SUPER SILT FENCE SHALL EXTEND ALONG THE DOWNSTREAM SIDE OF THE WORK SITE INCLUDING ACCESS TRACK

CE 6
PROPOSED GBWD TO NH1 WATERMAIN CROSS CONNECTION VALVE ARRANGEMENT IN CHAMBER (WEST–SOUTH CONNECTION)

STATION STREET

NOTES

1. ALL EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON LOCALITY PLAN SHALL BE CONSTRUCTED AS PER AUCKLAND REGIONAL COUNCIL TECHNICAL PUBLICATION NO. 90 (TP90) OR THE MANUFACTURES SPECIFICATION REFER TO DRAWING 2010674.043 TO 2010674.044 FOR DETAILS.
2. THIS LOCALITY PLAN SHALL BE READ IN CONJUNCTION WITH TECHNICAL REPORT A – EARTHWORKS AND SEDIMENTATION
3. THE EROSION CONTROL MEASURES SHOWN ON THE LOCALITY PLAN SHALL BE SUPPLEMENTED AND/OR SUPERCEDED AS REQUIRED BY A SITE SPECIFIC EROSION AND SEDIMENT CONTROL PLAN.
4. ALL CONSTRUCTION SITES TO HAVE STABILISED ENTRANCES.
5. ALL CATCHPITS WHICH RECEIVE SEDIMENT LADEN RUNOFF TO HAVE CATCHPIT INLET PROTECTION.
6. ACCESS TRACK ALIGNMENT TO BE DETERMINED ON SITE

LEGEND:

- PROPOSED GREENHITHE BRIDGE WATERMAIN REPLACEMENT PIPELINE
- EXISTING NORTH HARBOUR No.1 PIPELINE
- PROPOSED NORTHERN INTERCEPTOR PIPELINES
- SUPER SILT FENCE
- FLOATING SILT CURTAIN
- CAUSEWAY EMBANKMENT WIDENING

FOR CONSENT

ISSUE	DATE	AMENDMENT	BY	APPD.
3	01.07.15	ISSUED FOR CONSENT	A.T.S.	J.B.
2	23.03.15	ISSUED FOR CONSENT	P.K.	J.B.
1	19.12.14	ISSUED FOR CONSENT	P.K.	J.B.

DESIGNED	P.K.	19.12.14
DES. CHECKED	D.P.	19.12.14
DRAWN	P.K.	19.12.14
DWG. CHECKED	D.P.	19.12.14
PROJECT LEADER	J.B.	19.12.14
INFRAST'R APP'D		

OPERATIONS

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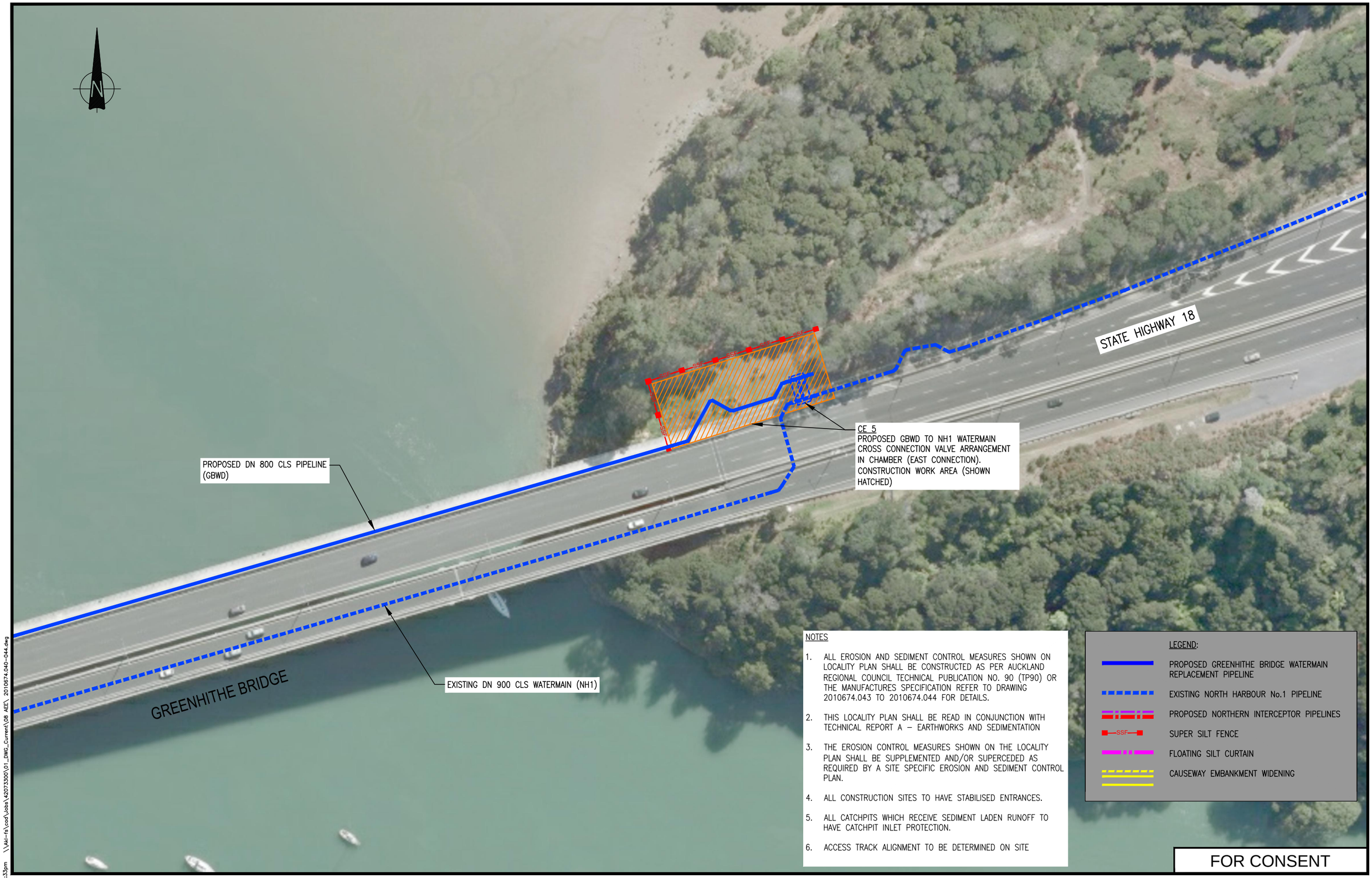
GREENHITHE BRIDGE WATERMAIN DUPLICATION
EROSION AND SEDIMENT CONTROL ARRANGEMENT
WA 1, 2 & 3 EROSION AND SEDIMENT CONTROL LOCATION PLAN

CAD FILE 2010674.040–044 DATE 01.07.15
ORIGINAL SCALE A3 1:2,000 CONTRACT No. –
REF No. – ISSUE –
DWG No. 2010674 .041 3

Plot Date: Jul 09, 2015 – 2:32pm \\Akl-fs\cad\Jobs\42073300\01_DWG_Current\08 AEE\ 2010674.040-044.dwg



NOTES

1. ALL EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON LOCALITY PLAN SHALL BE CONSTRUCTED AS PER AUCKLAND REGIONAL COUNCIL TECHNICAL PUBLICATION NO. 90 (TP90) OR THE MANUFACTURES SPECIFICATION REFER TO DRAWING 2010674.043 TO 2010674.044 FOR DETAILS.
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3. THE EROSION CONTROL MEASURES SHOWN ON THE LOCALITY PLAN SHALL BE SUPPLEMENTED AND/OR SUPERCEDED AS REQUIRED BY A SITE SPECIFIC EROSION AND SEDIMENT CONTROL PLAN.
4. ALL CONSTRUCTION SITES TO HAVE STABILISED ENTRANCES.
5. ALL CATCHPITS WHICH RECEIVE SEDIMENT LADEN RUNOFF TO HAVE CATCHPIT INLET PROTECTION.
6. ACCESS TRACK ALIGNMENT TO BE DETERMINED ON SITE

FOR CONSENT

ISSUE	DATE	AMENDMENT	BY	APPD.
3	01.07.15	ISSUED FOR CONSENT	A.T.S.	J.B.
2	23.03.15	ISSUED FOR CONSENT	P.K.	J.B.
1	19.12.14	ISSUED FOR CONSENT	P.K.	J.B.

DESIGNED	P.K.	19.12.14
DES. CHECKED	D.P.	19.12.14
DRAWN	P.K.	19.12.14
DWG. CHECKED	D.P.	19.12.14
PROJECT LEADER	J.B.	19.12.14
INFRAST'R APP'D		

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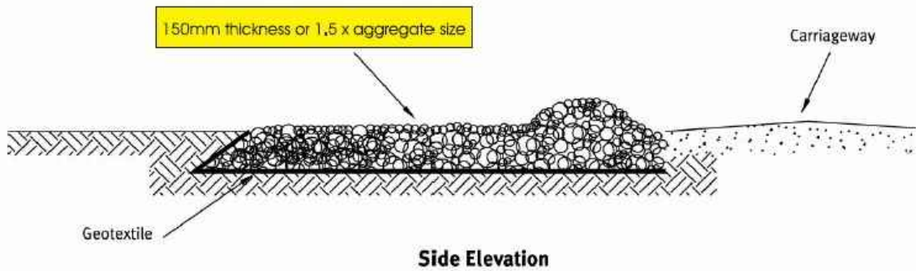
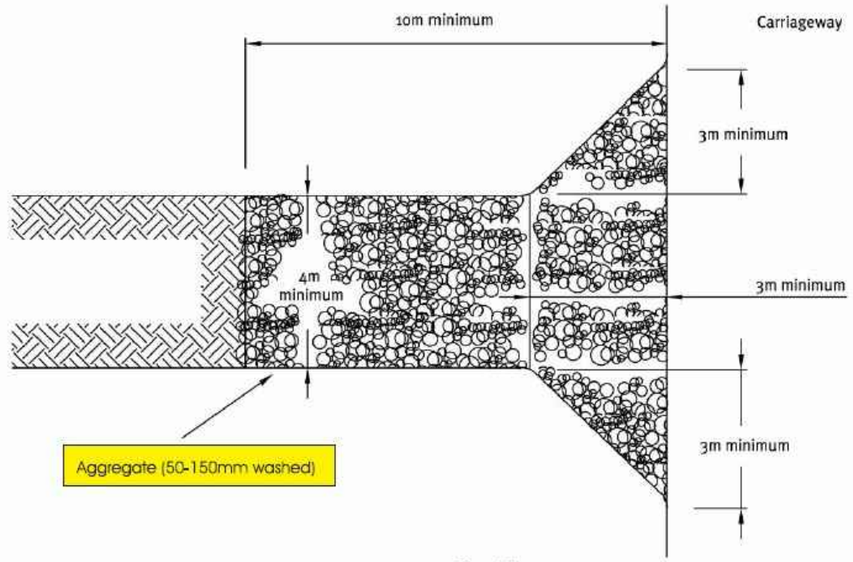
GREENHITHE BRIDGE WATERMAIN DUPLICATION
EROSION AND SEDIMENT CONTROL ARRANGEMENT
WA 7 EROSION AND SEDIMENT CONTROL LOCATION PLAN

CAD FILE 2010674.040–044 DATE 01.07.15
ORIGINAL SCALE A3 1:2,000
CONTRACT No. –
REF No. –
ISSUE –
DWG No. 2010674 .042
3

Plot Date: Jul 09, 2015 – 2:33pm \\Akl-fs\cad\Jobs\42073350\01_DWG_Current\08 AEE\ 2010674.040-044.dwg



Side Elevation

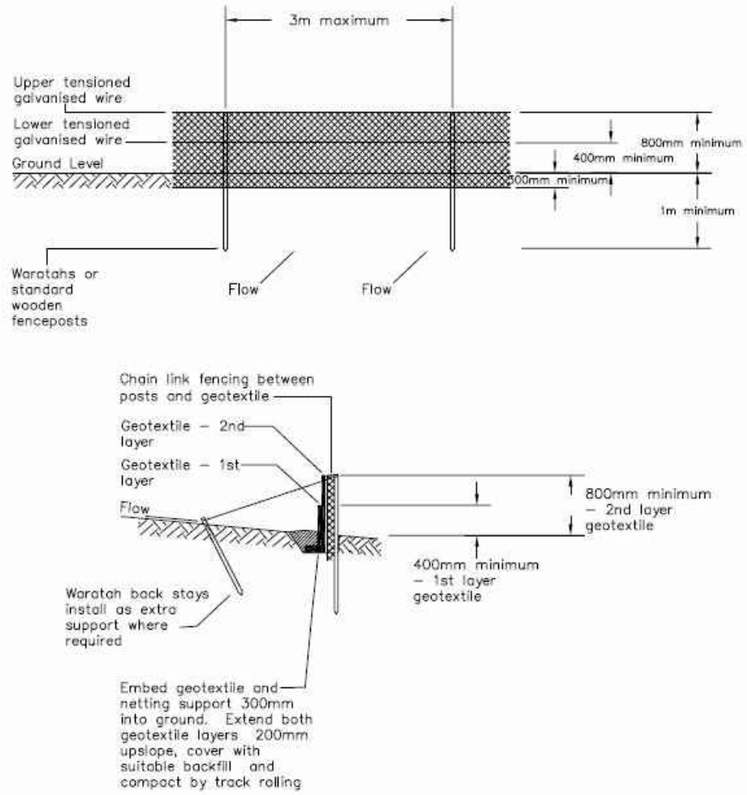


Plan View

STABILISED ENTRANCE
SCALE. N.T.S

Aggregate Range	50 – 150mm washed aggregate
Thickness	150mm minimum or 1.5 x aggregate size
Length	10m minimum length recommended
Width	4m minimum

STABILISED ENTRANCE DETAIL
SCALE. N.T.S



SUPER SILT FENCE ARRANGEMENT
SCALE. N.T.S

Slope %	Slope Lenght (m) (maximum)	Super Silt Fence Length (m) (maximum)	Spacing of Returns (m)
0-10	Unlimited	Unlimited	60
10-20	60	450	50
20-33	30	300	40
33-50	30	150	30
>50	15	75	20

SUPER SILT FENCE DESIGN CRITERIA

FOR CONSENT

ISSUE	DATE	AMENDMENT	BY	APPD.
2	01.07.15	ISSUED FOR CONSENT	A.T.S.	J.B.
1	19.12.14	ISSUED FOR CONSENT	PK	JB

DESIGNED	P.K.	19.12.14
DES. CHECKED	D.P.	19.12.14
DRAWN	P.K.	19.12.14
DWG. CHECKED	D.P.	19.12.14
PROJECT LEADER	J.B.	19.12.14
INFRAST'R APP'D		

OPERATIONS

INFRASTRUCTURE

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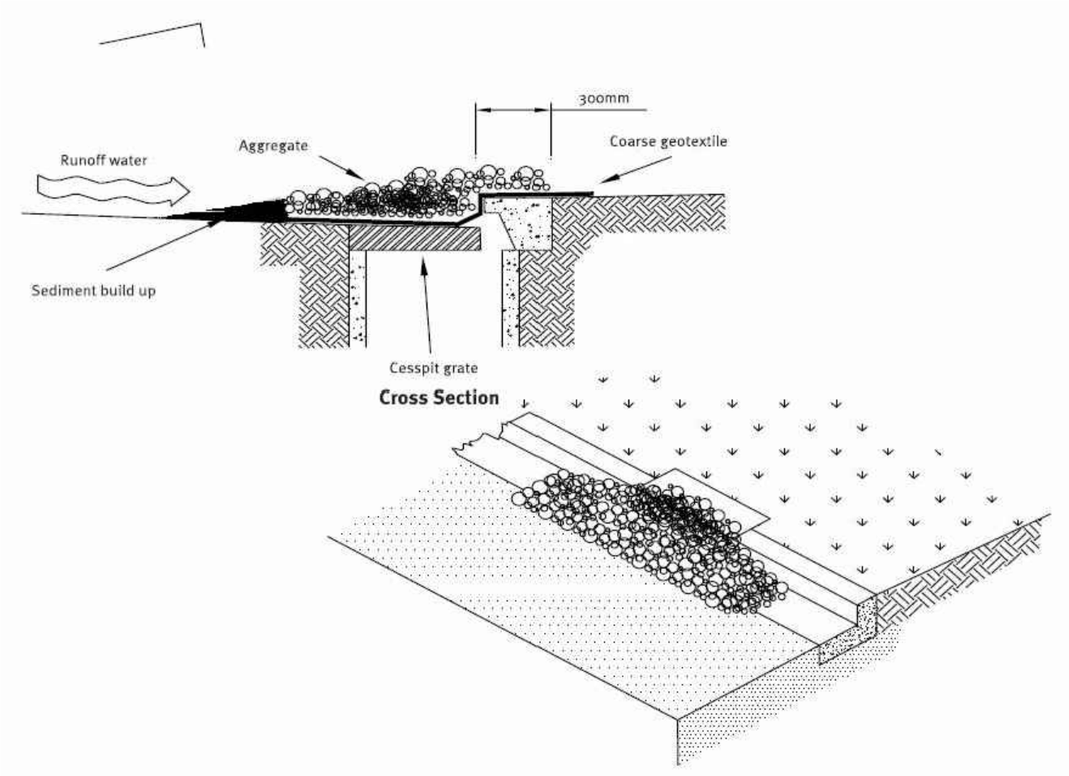
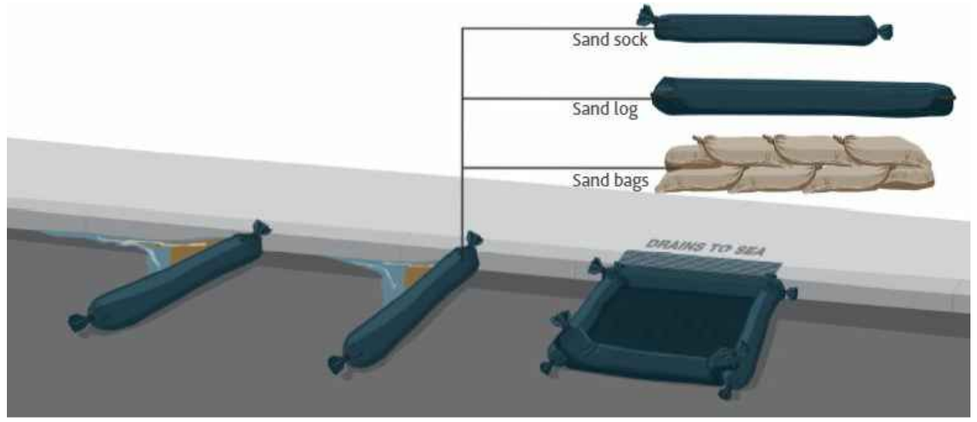
GREENHITHE BRIDGE WATERMAIN DUPLICATION
EROSION AND SEDIMENT CONTROL ARRANGEMENT
STABILISED ENTRANCE AND SUPER SILT FENCE DETAIL

CAD FILE 2010674.040–044 DATE 01.07.15
ORIGINAL SCALE A3 N.T.S
CONTRACT No. –
REF No. –
ISSUE –
DWG No. 2010674 .043
2

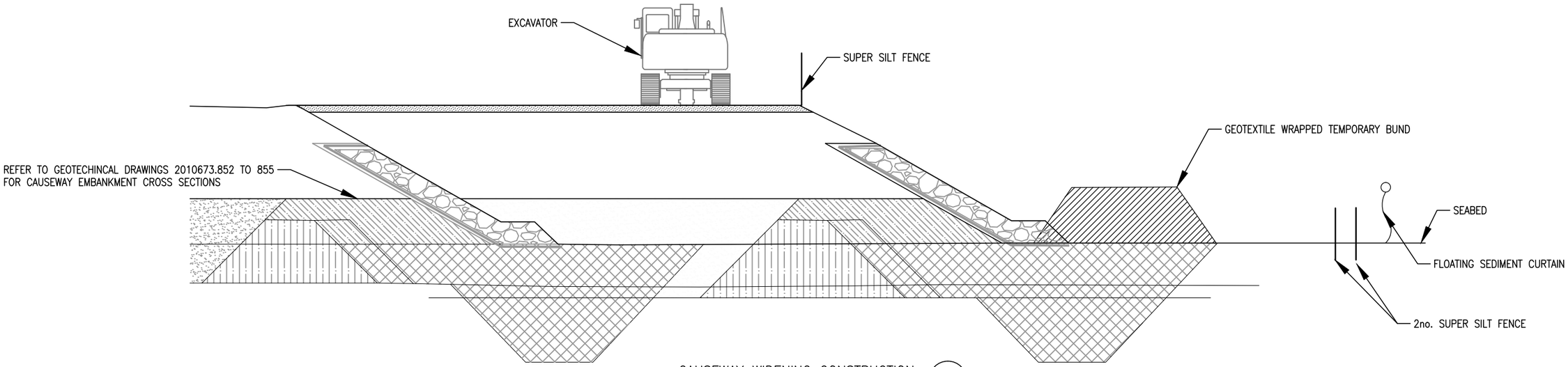
Plot Date: Jul 09, 2015 – 2:33pm



STORMWATER INLET PROTECTION
SCALE. N.T.S



CATCHPIT PROTECTION ARRANGEMENT
SCALE. N.T.S



CAUSEWAY WIDENING CONSTRUCTION
SCALE. N.T.S

FOR CONSENT

ISSUE	DATE	AMENDMENT	BY	APPD.
3	01.07.15	ISSUED FOR CONSENT	A.T.S.	J.B.
2	23.03.15	ISSUED FOR CONSENT	P.K.	J.B.
1	19.12.14	ISSUED FOR CONSENT	P.K.	J.B.

DESIGNED	P.K.	19.12.14
DES. CHECKED	D.P.	19.12.14
DRAWN	P.K.	19.12.14
DWG. CHECKED	D.P.	19.12.14
PROJECT LEADER	J.B.	19.12.14
INFRAST'R APP'D		

OPERATIONS

INFRASTRUCTURE

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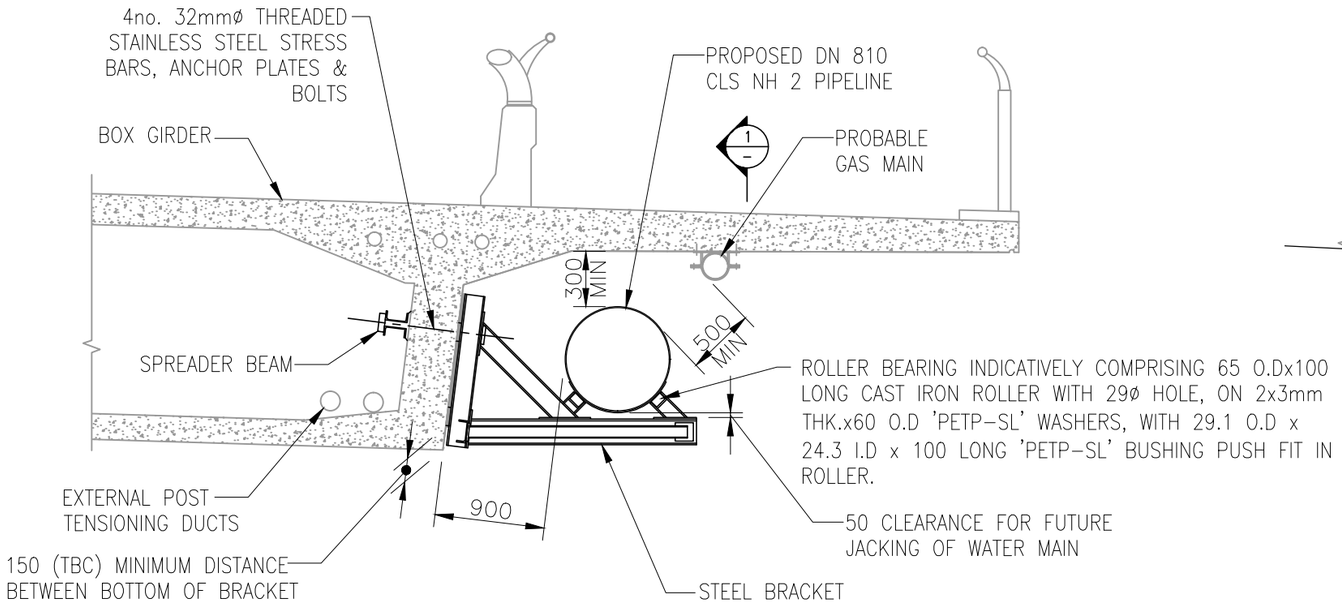
GREENHITHE BRIDGE WATERMAIN DUPLICATION
EROSION AND SEDIMENT CONTROL ARRANGEMENT
CATCHPIT PROTECTION, RUNOFF DIVERSION BUND AND CAUSEWAY WIDENING ARRANGEMENT

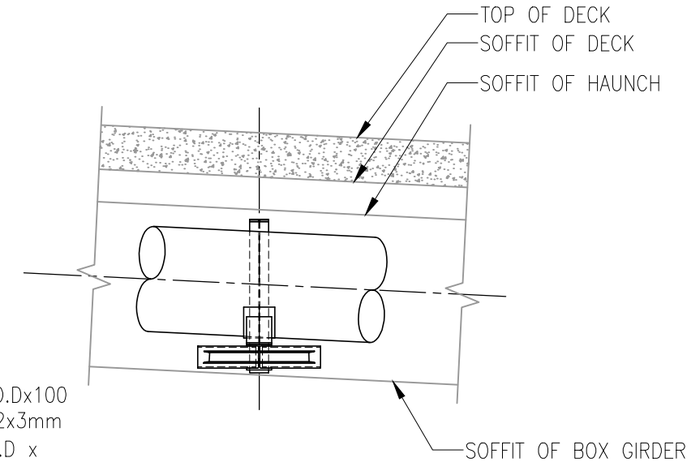
CAD FILE 2010674.040–044 DATE 01.07.15
ORIGINAL SCALE A3 N.T.S
CONTRACT No. –
REF No. –
ISSUE –
DWG No. 2010674 .044
3

Plot Date: Jul 09, 2015 – 2:55pm



PIPE SUPPORT BRACKET – TYPE 1

SCALE. 1:50 (A3)



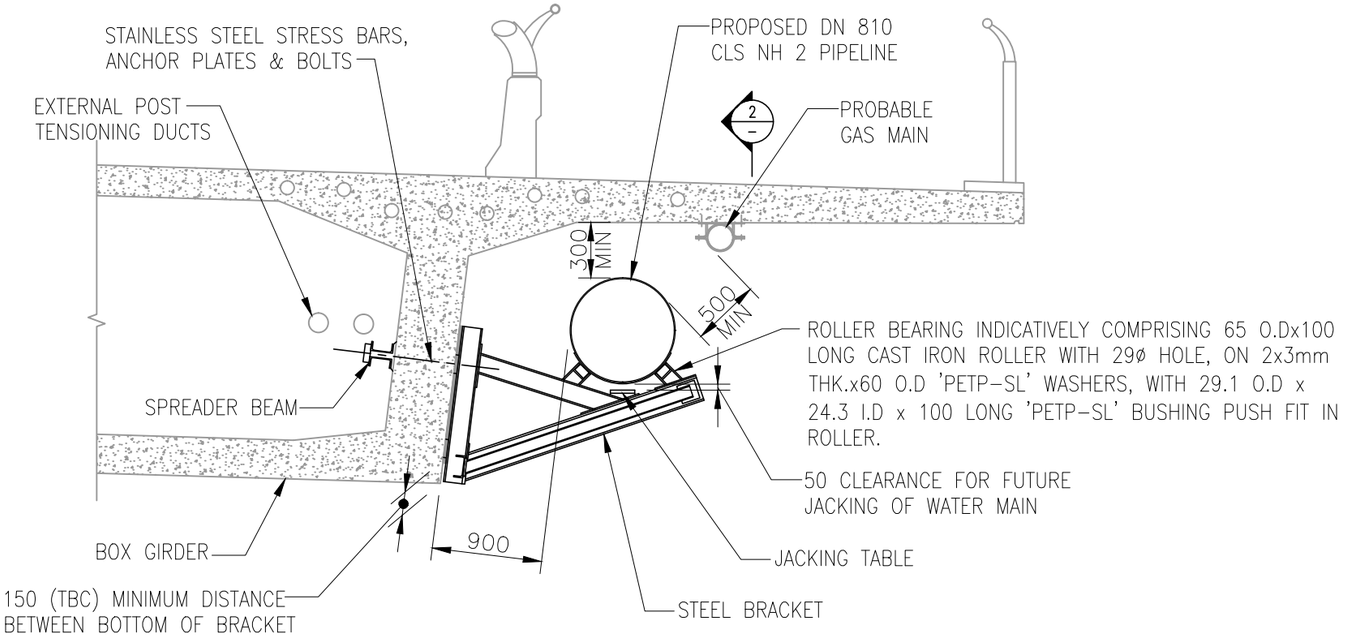
SECTION 1 / –

SCALE. 1:50

NOTES:

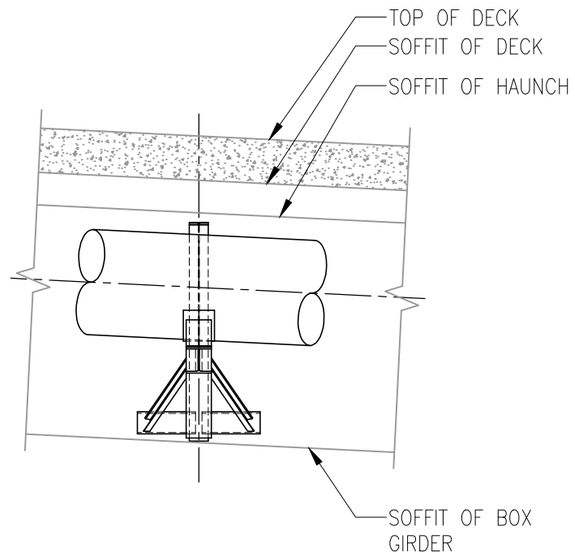
1. ALL DIMENSIONS ARE GIVEN IN MILLIMETRES, UNO.
2. BRACKETS ARE STRESSED ONTO EXISTING BOX GIRDER THROUGH WEB.
3. SUPPORT TO PIPE IS PROVIDED BY FRICTION BETWEEN BRACKETS AND BOX GIRDER
4. SPREADER BEAM WITH BOX GIRDER DISTRIBUTES BRACKET LOADING TO REDUCE ADDITIONAL STRESSES IN WEB TO ACCEPTABLE LEVELS.
5. STRESS BARS, ANCHORAGE NUTS & BEARING PLATES SHALL BE ATMS/UNS S32205 OR S31803.

NOTE:–
SITE LAYOUT AND DESIGNS INDICATIVE ONLY AND SUBJECT TO CHANGE DURING DETAILED DESIGN DEVELOPMENT



PIPE SUPPORT BRACKET – TYPE 2

SCALE. 1:50 (A3)



SECTION 2 / –

SCALE. 1:50

FOR CONSENT

ISSUE	DATE	AMENDMENT	BY	APPD.
2	01.07.15	ISSUED FOR CONSENT	A.T.S.	M.A.E.
1	13.02.15	ISSUED FOR CONSENT	P.K.	M.A.E.

DESIGNED	P.E.	05-14
DES. CHECKED	–	05-14
DRAWN	L.K.	05-14
DWG. CHECKED	–	05-14
PROJECT LEADER	–	05-14
INFRAST'R APP'D	–	05-14

OPERATIONS

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GREENHITHE BRIDGE WATERMAIN DUPLICATION AND CAUSEWAY
STRUCTURAL DESIGN

PIPE SUPPORT BRACKETS – DETAILS

CAD FILE 2010675.003 | DATE 01.07.15
ORIGINAL SCALE A3 1:50 | CONTRACT No. –
REF No. – | ISSUE –
DWG No. 2010675 .003 | 2

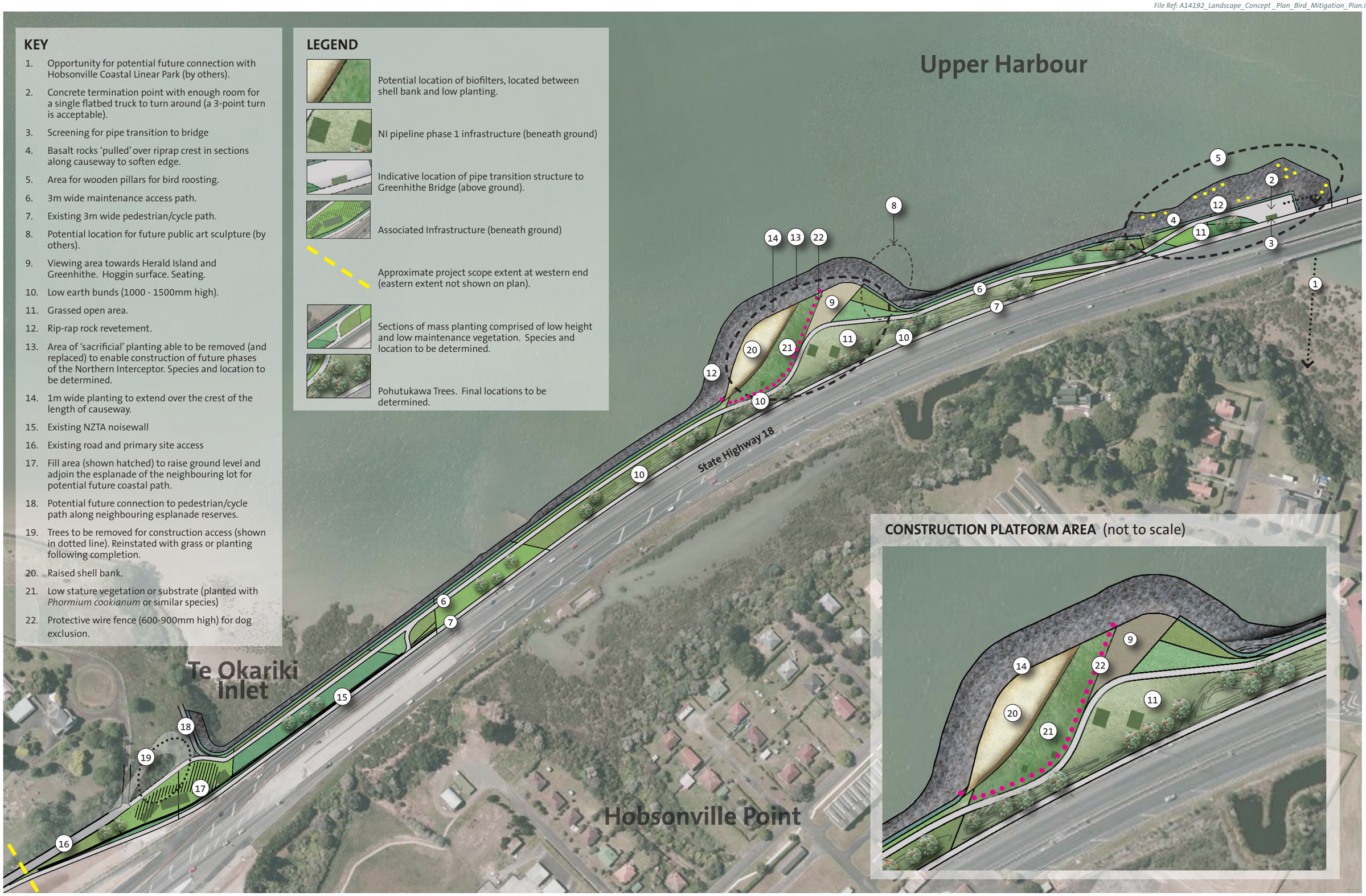
Plot Date: Jul 09, 2015 – 2:25pm \\Akl-fs\cad\Jobs\42073300\01_DWG_Current\08 AEE\ 2010675.003.dwg

KEY

1. Opportunity for potential future connection with Hobsonville Coastal Linear Park (by others).
2. Concrete termination point with enough room for a single flatbed truck to turn around (a 3-point turn is acceptable).
3. Screening for pipe transition to bridge
4. Basalt rocks 'pulled' over riprap crest in sections along causeway to soften edge.
5. Area for wooden pillars for bird roosting.
6. 3m wide maintenance access path.
7. Existing 3m wide pedestrian/cycle path.
8. Potential location for future public art sculpture (by others).
9. Viewing area towards Herald Island and Greenhithe. Hoggin surface. Seating.
10. Low earth bunds (1000 - 1500mm high).
11. Grassed open area.
12. Rip-rap rock revetement.
13. Area of 'sacrificial' planting able to be removed (and replaced) to enable construction of future phases of the Northern Interceptor. Species and location to be determined.
14. 1m wide planting to extend over the crest of the length of causeway.
15. Existing NZTA noisewall
16. Existing road and primary site access
17. Fill area (shown hatched) to raise ground level and adjoin the esplanade of the neighbouring lot for potential future coastal path.
18. Potential future connection to pedestrian/cycle path along neighbouring esplanade reserves.
19. Trees to be removed for construction access (shown in dotted line). Reinstated with grass or planting following completion.
20. Raised shell bank.
21. Low stature vegetation or substrate (planted with *Phormium cookianum* or similar species)
22. Protective wire fence (600-900mm high) for dog exclusion.

LEGEND

- Potential location of biofilters, located between shell bank and low planting.
- NI pipeline phase 1 infrastructure (beneath ground)
- Indicative location of pipe transition structure to Greenhithe Bridge (above ground).
- Associated Infrastructure (beneath ground)
- Approximate project scope extent at western end (eastern extent not shown on plan).
- Sections of mass planting comprised of low height and low maintenance vegetation. Species and location to be determined.
- Pohutukawa Trees. Final locations to be determined.



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Data Sources:
Design Based on Watercare and URS Engineering drawings NH2x149a_NI_Reclamation_Layout_RevB_500scale.dwg. Model, received: 10.03.2015

N

1:1,200 @ A3

GREENHITHE BRIDGE WATERMAIN DUPLICATION & CAUSEWAY RECLAMATION

Indicative Landscape Concept Plan

Drawing No. A14192_Base1_20150610.dgn | Date: 30 June 2015 | Revision: _ 2 |

Plan prepared for Watercare by Boffa Miskell Limited

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