

Norwich Western Link

Drainage Strategy Report

Appendix 14 :

Ground Investigation Reports

Part 6 of 8

Author: Ramboll

Document Reference: 4.04.14

Version Number: 00

Date: March 2024

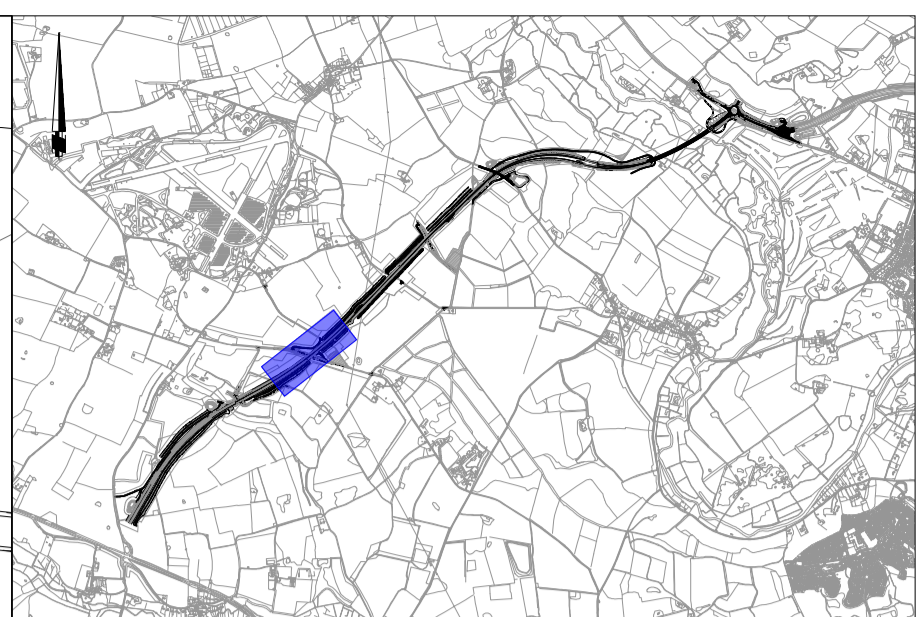
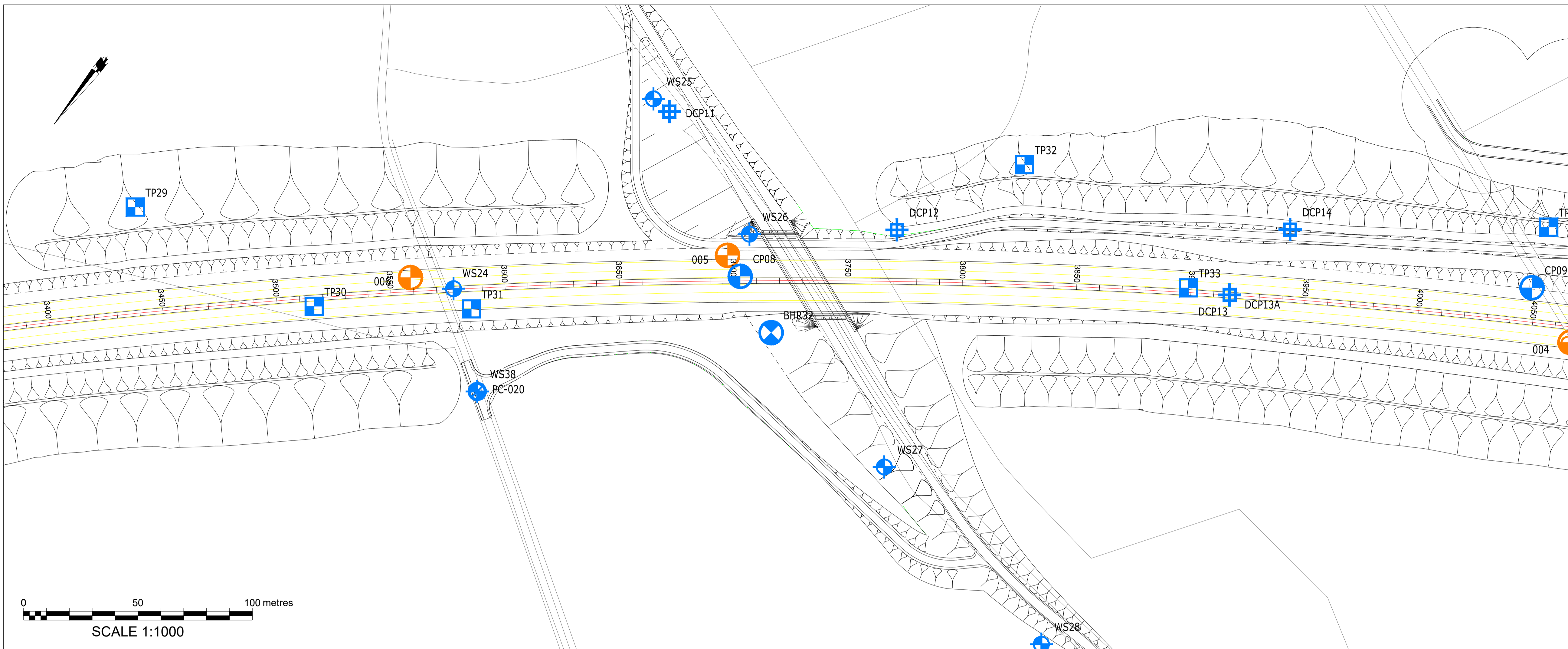


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1 Introduction

- 1.1.1 This document contains geotechnical long section drawings that are part of the Ramboll Ground Investigation report. The geotechnical long sections show the different soil types with depth across the scheme and are intended to provide evidence of the existing ground conditions that are stated within the Drainage Strategy Report.
- 1.1.2 We have included a summary of key information shown in this document in an accessible format. However, some users may not be able to access all technical details. If you require this document in a more accessible format please contact: norwichwesternlink@norfolk.gov.uk



- Notes:**
- DO NOT SCALE FROM THIS DRAWING.
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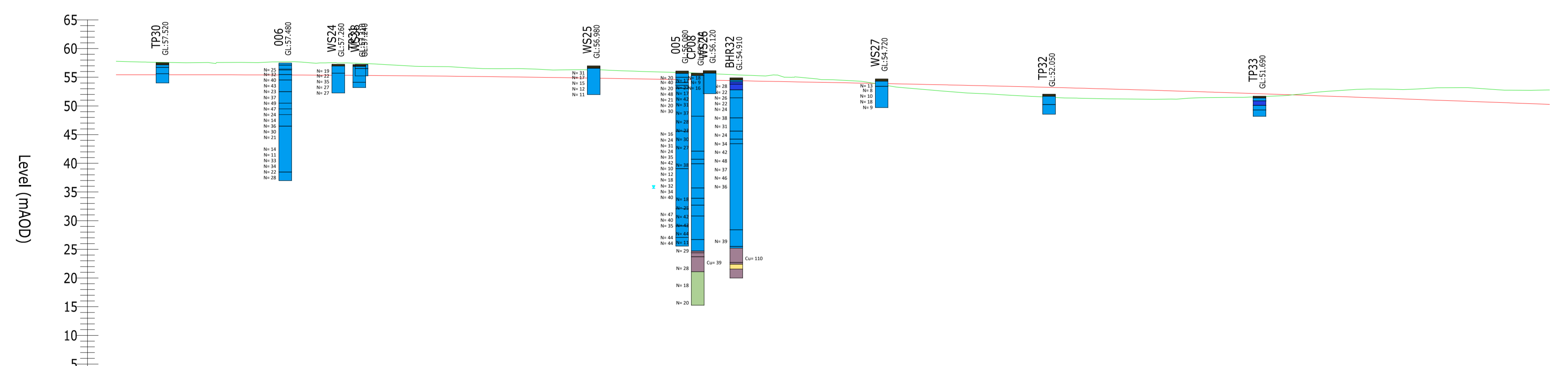
- GEOLOGY LEGEND**
- Topsoil
 - Flexible Pavement
 - Made Ground (Granular)
 - Made Ground (Cohesive)
 - Concrete
 - Peat
 - Alluvium (Granular)
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 - Structureless Chalk
 - Structured Chalk

- EXPLORATORY HOLE LEGEND**
- Ground Level
 - Uncorrected SPT 'N' Value
 - Undrained Shear Strength Value (kPa)
 - Water Strike
 - Water level recorded following strike
 - Menard Limit Pressure (MPa)

- GROUND INVESTIGATION PHASES**
- 2022 ALIGNMENT REFINEMENT GROUND INVESTIGATION
 - 2021 SUPPLEMENTARY STAGE 1 GROUND INVESTIGATION
 - 2019/20 PRELIMINARY GROUND INVESTIGATION

- PLAN LEGEND**
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 - CABLE PERCUSSION BOREHOLE
 - ROTARY OPEN HOLE BOREHOLE
 - CABLE PERCUSSION WITH ROTARY FOLLOW ON BOREHOLE
 - WINDOWLESS SAMPLE
 - DYNAMIC PROBE
 - TRIAL PIT/TRENCH
 - CPT LOCATION
 - DYNAMIC CONE PENETROMETER
 - PAVEMENT CORE

NWL-MAINLINE-(SHEET 12)
SCALE: H 1:1000,V 1:500. DATUM: 5.000



Chainage	Existing Levels	Proposed Levels	Level Difference
3+500	55.423	55.423	-2.247
510	57.656	55.431	-2.225
520	57.572	55.434	-2.138
530	57.559	55.431	-2.128
540	57.577	55.423	-2.154
550	57.588	55.410	-2.158
560	57.700	55.390	-2.310
570	57.459	55.366	-2.093
580	57.498	55.336	-2.162
590	57.316	55.301	-2.015
3+600	57.024	55.261	-1.773
610	56.898	55.215	-1.685
620	56.879	55.163	-1.587
630	56.502	55.106	-1.395
640	56.502	55.044	-1.458
3+650	56.319	54.976	-1.342
660	56.308	54.903	-1.406
670	56.269	54.825	-1.444
680	56.086	54.747	-1.325
690	56.911	54.662	-1.259
3+700	55.774	54.557	-1.216
710	55.558	54.460	-1.097
720	55.447	54.361	-1.082
730	55.382	54.287	-1.125
740	54.917	54.170	-0.748
3+750	54.558	54.073	-0.485
760	54.286	53.976	-0.319
770	53.886	53.878	0.412
780	52.944	53.776	0.832
790	52.529	53.667	1.138
3+800	52.183	53.553	1.370
810	51.922	53.434	1.512
820	51.651	53.306	1.659
830	51.462	53.179	1.776
840	51.305	53.043	1.738
3+850	51.213	52.902	1.688
860	51.163	52.755	1.591
870	51.181	52.602	1.421
880	51.443	52.446	1.002
890	51.482	52.281	0.797
3+900	51.645	52.112	0.468
910	51.921	51.938	0.018
920	52.439	51.759	-0.680
930	52.804	51.574	-1.230
940	52.582	51.388	-1.554
3+950	52.867	51.203	-1.664
960	53.142	51.017	-2.125
970	53.186	50.832	-2.384
980	52.897	50.646	-2.250
990	52.798	50.461	-2.277
4+000	50.276	50.276	-2.513

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First Issue

P01	DH	JS	AR	02/02/23
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Norfolk County Council
Tom McCabe
Executive Director of
Community and Environmental Services
Norfolk County Council
County Hall, Martineau Lane
Norwich NR1 2SG

PROJECT

Norfolk Western Link
ferrovial construction
RAMBOLL

DRAWING TITLE

NORWICH WESTERN LINK
GEOLOGICAL LONG SECTION
SHEET 12
MAINLINE

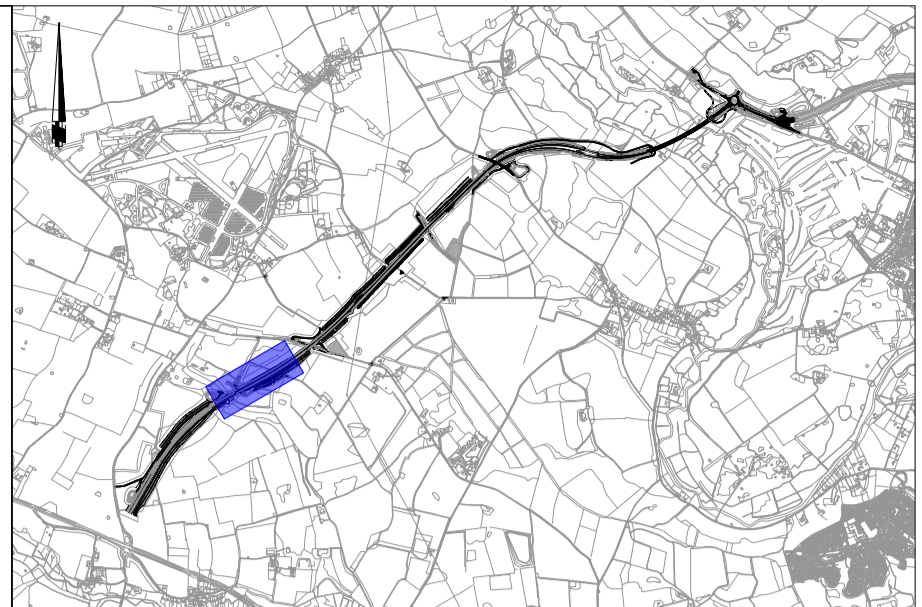
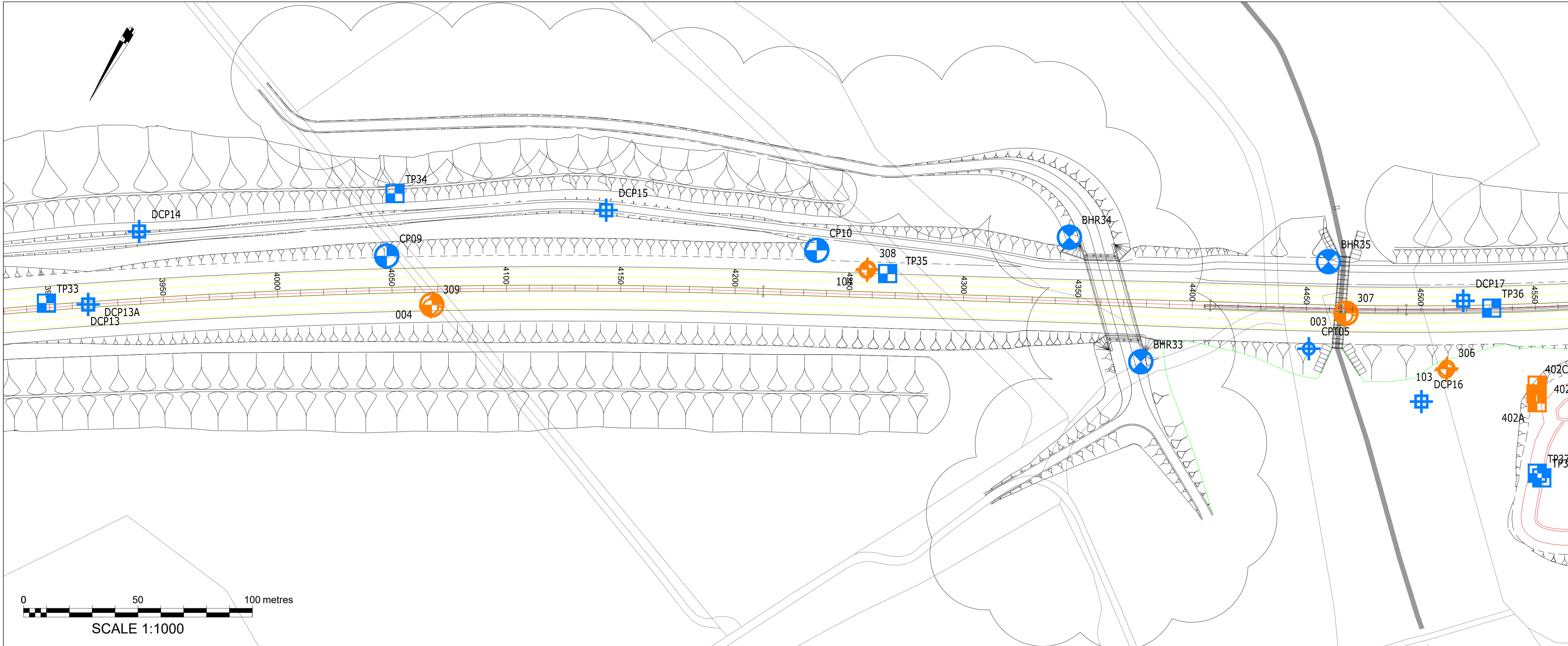
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S5 SUITABLE FOR REVIEW AND ACCEPTANCE

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SCALE @ A1 SIZE	DATE	REVISION	
1:1000	02/02/23	P01	

DRAWING NUMBER

NCCT41793-RAM-HGT-MLE-DR-GI-2612



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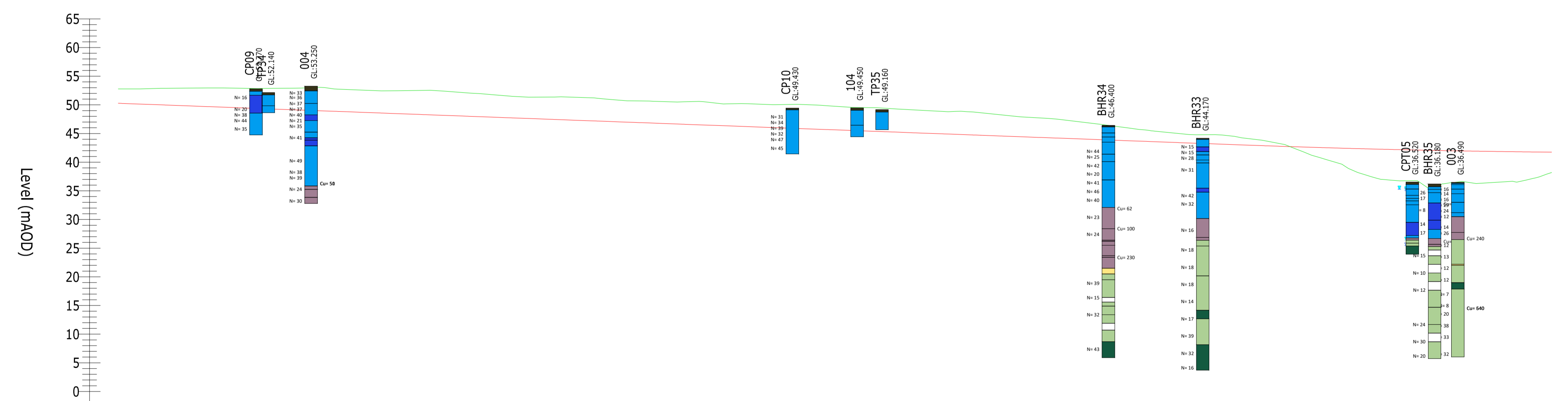
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 - ⑥ Water level recorded following strike
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NWL-MAINLINE-(SHEET 13)
SCALE: H 1:1000, V 1:500. DATUM: 0.000



Chainage	Existing Levels	Proposed Levels	Level Difference
4+000		50.276	-2.513
010	52.817	50.080	-2.727
020	52.911	49.905	-3.006
030	52.943	49.720	-3.224
040	52.924	49.534	-3.390
4+050	52.866	49.349	-3.507
060	52.884	49.163	-3.747
070	53.060	48.978	-4.083
080	52.878	48.792	-3.885
090	52.474	48.607	-3.867
4+100	52.488	48.421	-4.066
52.535			
52.508			
110	52.508	48.236	-4.272
120	52.159	48.051	-4.109
130	51.793	47.885	-3.928
140	51.419	47.680	-3.740
4+150	51.351	47.495	-3.856
160	51.907	47.309	-3.997
170	51.209	47.124	-3.891
180	50.697	46.938	-3.758
190	50.568	46.753	-3.815
4+200	50.574	46.567	-4.006
210	50.224	46.382	-3.842
220	50.200	46.197	-4.003
230	50.029	46.011	-4.018
240	50.030	45.826	-4.204
4+250	49.753	45.641	-4.113
260	49.522	45.455	-4.067
270	49.357	45.270	-4.067
280	49.044	45.084	-3.960
290	48.823	44.899	-3.924
4+300	48.673	44.713	-3.960
310	48.149	44.528	-3.621
320	47.752	44.343	-3.414
330	47.589	44.157	-3.212
340	46.770	43.972	-2.798
4+350	46.117	43.786	-2.331
360	45.510	43.601	-1.909
370	44.992	43.416	-1.577
380	44.790	43.230	-1.572
390	44.437	43.045	-1.393
4+400	43.739	42.864	-0.874
410	42.468	42.687	0.228
420	40.662	42.541	1.880
430	39.628	42.399	3.666
440	38.714	42.288	5.193
4+450	36.757	42.150	5.394
460	35.484	42.045	6.562
470	36.550	41.952	5.403
480	36.377	41.872	5.498
490	36.747	41.804	5.057
4+500	36.747	41.749	3.541

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First Issue

P01	DH	JS	AR	02/02/23
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Tom McCabe
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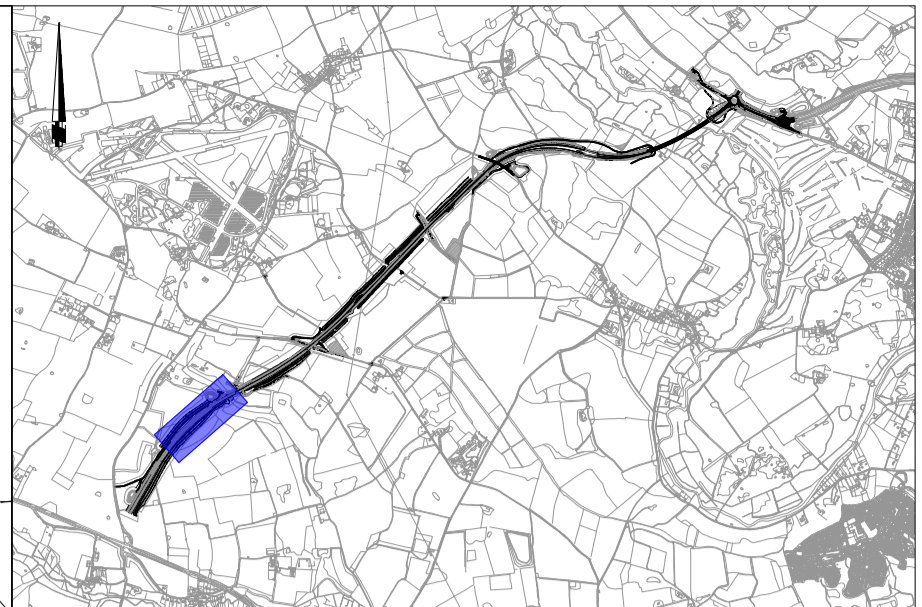
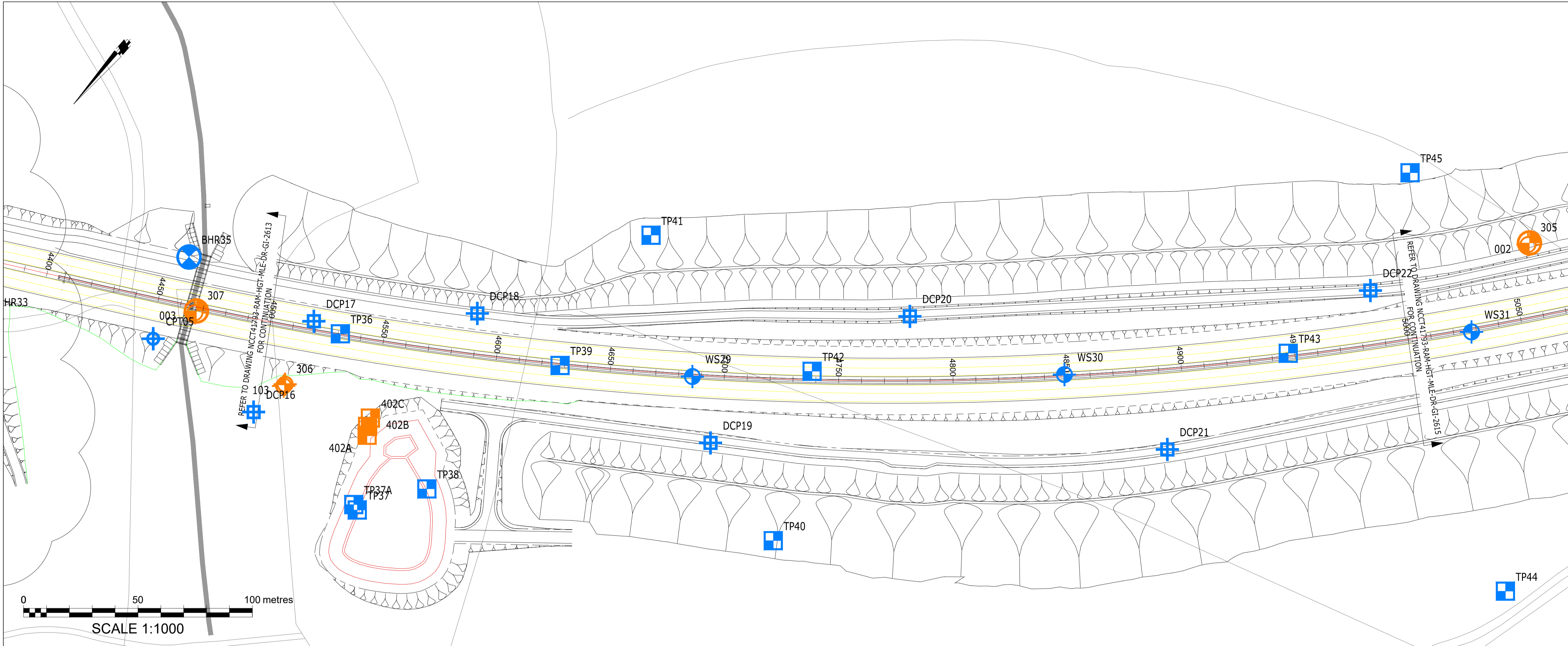
Norwich Western Link
ferrovial construction
RAMBOLL

DRAWING TITLE
NORWICH WESTERN LINK
GEOLOGICAL LONG SECTION
SHEET 13
MAINLINE

DRAWING STATUS
S5 SUITABLE FOR REVIEW AND ACCEPTANCE

DRAWN	CHECKED	APPROVED	AUTHORISED
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SCALE @ A1 SIZE	DATE	REVISION	
1:1000	02/02/23	P01	

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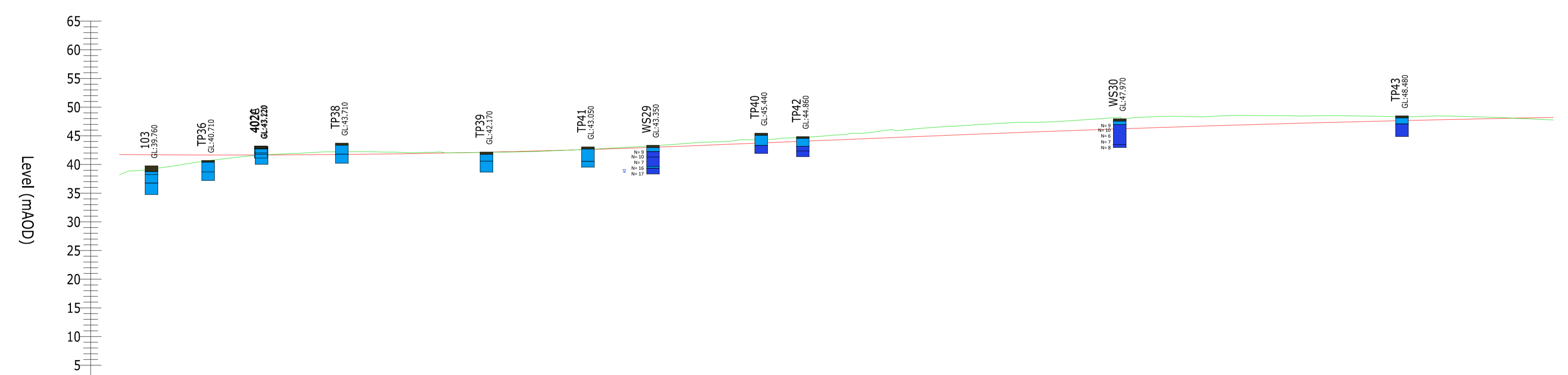
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NWL-MAINLINE-(SHEET 14)
SCALE: H 1:1000, V 1:500. DATUM: 5.000



Chainage	Existing Levels	Proposed Levels	Level Difference
4+500			
510	38.110	41.749	3.641
520	38.829	41.706	2.876
530	40.628	41.675	1.047
540	41.200	41.658	0.458
4+550	41.677	41.660	0.017
560	41.807	41.679	-0.128
570	42.174	41.712	-0.462
580	42.223	41.756	-0.467
590	42.190	41.814	-0.376
4+600	42.074	41.883	-0.191
610	42.143	41.966	-0.176
620	42.054	42.060	0.006
630	42.136	42.167	0.031
640	42.209	42.287	0.078
4+650	42.364	42.419	0.055
660	42.562	42.564	0.002
670	42.805	42.721	-0.084
680	43.088	42.891	-0.196
690	43.393	43.073	-0.321
4+700	43.767	43.267	-0.500
710	43.972	43.472	-0.500
720	44.306	43.677	-0.629
730	44.537	43.882	-0.655
740	44.778	44.087	-0.691
4+750	45.130	44.292	-0.838
760	45.886	44.467	-0.999
770	45.995	44.702	-1.292
780	46.319	44.807	-1.412
790	46.654	45.112	-1.542
4+800	46.966	45.314	-1.652
810	47.586	45.509	-1.748
820	47.368	45.700	-1.668
830	47.583	45.885	-1.698
840	47.905	46.065	-1.841
4+850	47.891	46.239	-1.652
860	48.388	46.408	-1.910
870	48.384	46.571	-1.813
880	48.363	46.729	-1.634
890	48.571	46.882	-1.689
4+900	48.522	47.029	-1.492
910	48.470	47.171	-1.299
920	48.493	47.308	-1.201
930	48.477	47.439	-1.038
940	48.388	47.565	-0.823
4+950	48.324	47.685	-0.639
960	48.477	47.800	-0.677
970	48.888	47.809	-0.458
980	48.211	48.013	-0.198
990	47.990	48.112	0.122
5+000	48.205	48.205	0.450

First Issue

P01	DH	JS	AR	02/02/23
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 Norwich NR1 2SG

PROJECT

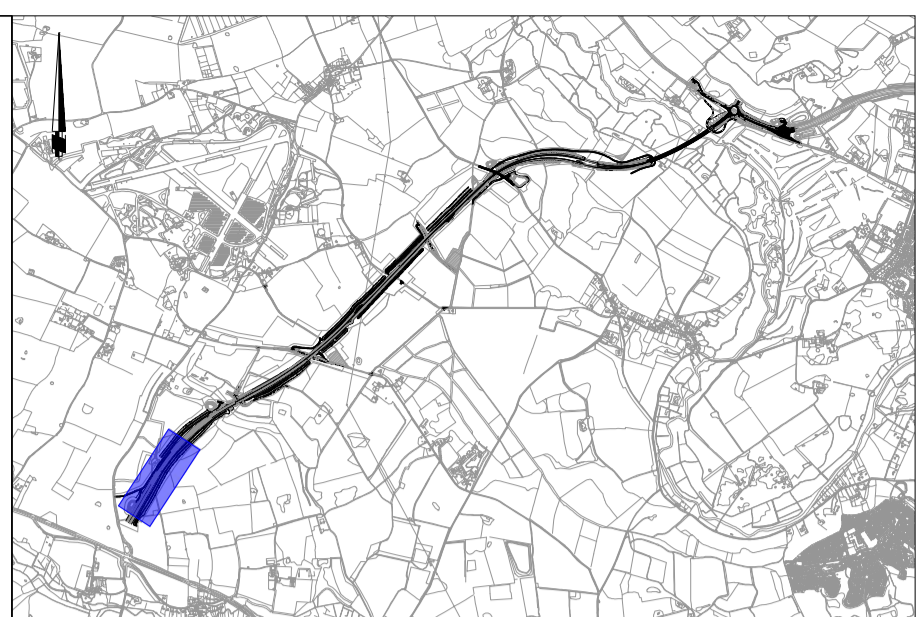
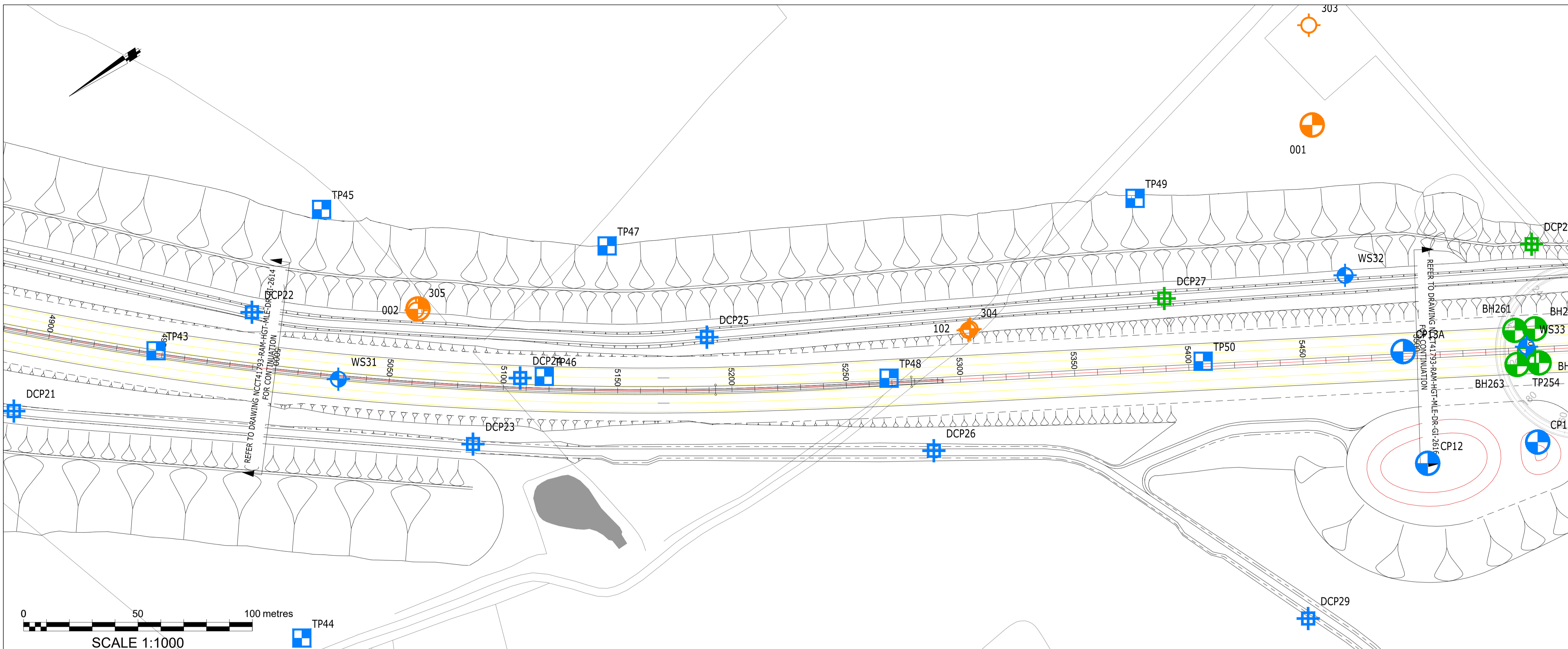
Norwich Western Link
 ferrovial construction
 RAMBOLL

DRAWING TITLE
 NORWICH WESTERN LINK
 GEOLOGICAL LONG SECTION
 SHEET 14
 MAINLINE

DRAWING STATUS
 S5 SUITABLE FOR REVIEW AND ACCEPTANCE

DRAWN	CHECKED	APPROVED	AUTHORISED
DH	JS	AR	
SCALE @ A1 SIZE	DATE	REVISION	
1:1000	02/02/23	P01	

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NWL-MAINLINE-(SHEET 15)
SCALE: H 1:1000,V 1:500. DATUM: 5.000



Chainage	Existing Levels	Proposed Levels	Level Difference
5+000		48.205	0.450
010	47.416	48.293	0.877
020	47.270	48.375	1.105
030	47.116	48.452	1.336
040	47.079	48.524	1.445
5+050	47.198	48.590	1.432
060	47.243	48.651	1.398
070	47.227	48.706	1.379
080	47.413	48.756	1.343
090	47.488	48.800	1.312
5+100	47.693	48.840	1.147
110	47.916	48.873	0.957
120	48.076	48.902	0.826
130	48.187	48.925	0.738
140	48.138	48.943	0.805
5+150	48.279	48.955	0.676
160	48.333	48.961	0.627
170	48.514	48.963	0.448
180	48.629	48.958	0.329
190	49.008	48.949	-0.059
5+200	49.185	48.934	-0.250
210	49.368	48.914	-0.450
220	49.667	48.888	-0.779
230	49.801	48.857	-0.944
240	49.974	48.821	-1.153
5+250	50.062	48.779	-1.273
260	50.268	48.731	-1.453
270	50.461	48.679	-1.783
280	50.702	48.621	-2.082
290	50.817	48.557	-2.260
5+300	51.056	48.488	-2.568
310	51.158	48.414	-2.744
320	51.155	48.334	-2.821
330	51.145	48.249	-2.896
340	51.173	48.158	-3.015
5+350	51.192	48.062	-3.129
360	51.204	47.961	-3.243
370	51.266	47.854	-3.411
380	51.288	47.742	-3.546
390	51.319	47.624	-3.694
5+400	51.299	47.501	-3.798
410	51.340	47.373	-3.967
420	51.261	47.239	-4.022
430	51.202	47.100	-4.071
440	51.171	46.956	-4.176
5+450	50.967	46.812	-4.155
460	50.877	46.667	-4.210
470	50.819	46.523	-4.296
480	50.795	46.379	-4.418
490	50.742	46.235	-4.508
5+500	46.090	46.070	-4.670

First Issue

P01	DH	JS	AR	02/02/23
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CLIENT

Norfolk County Council
Tom McCabe
Executive Director of
Community and Environmental Services
Norfolk County Council
County Hall, Martineau Lane
Norwich NR1 2SG

PROJECT

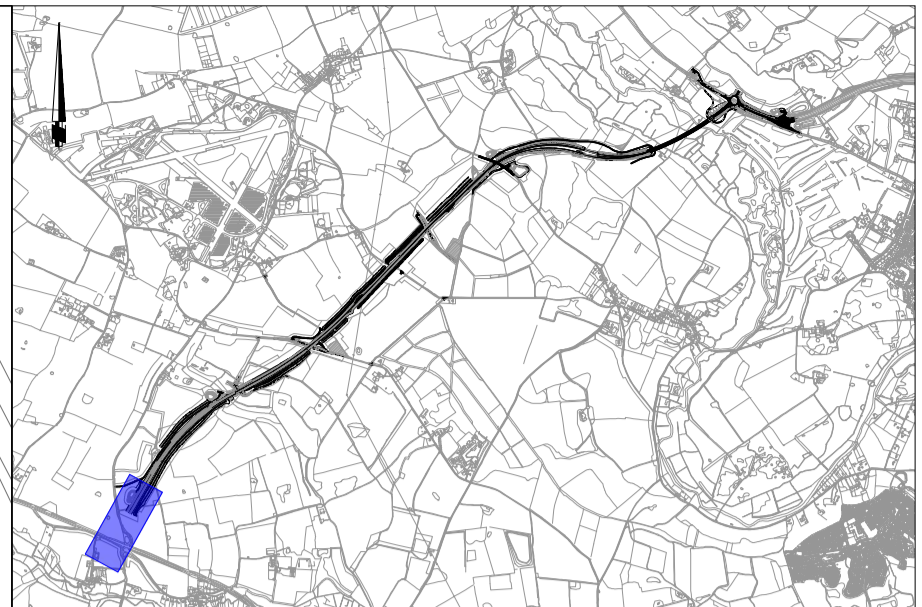
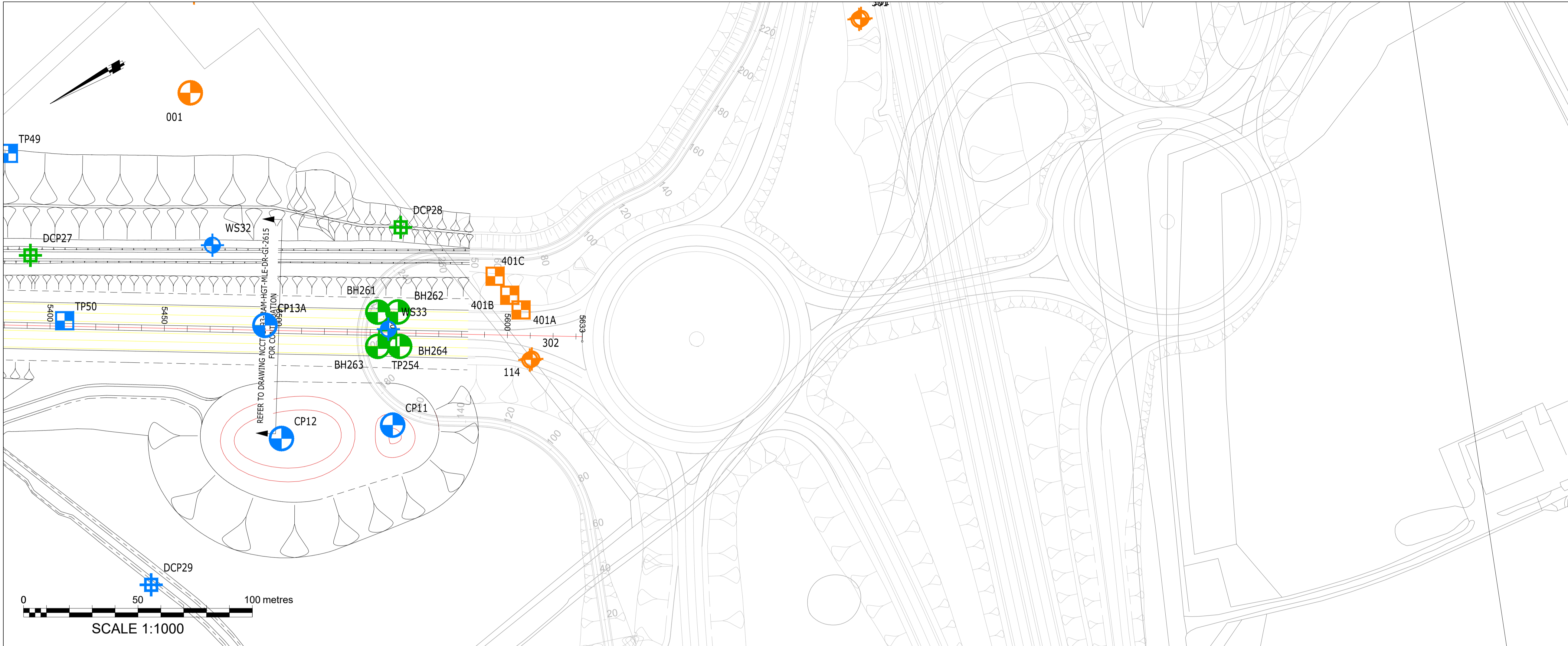
Norwich Western Link
ferrovial construction
RAMBOLL

DRAWING TITLE
NORWICH WESTERN LINK
GEOLOGICAL LONG SECTION
SHEET 15
MAINLINE

DRAWING STATUS
S5 SUITABLE FOR REVIEW AND ACCEPTANCE

DRAWN	CHECKED	APPROVED	AUTHORISED
DH	JS	AR	
SCALE @ A1 SIZE	DATE	REVISION	
1:1000	02/02/23	P01	

DRAWING NUMBER
NCCT41793-RAM-HGT-MLE-DR-GI-2615



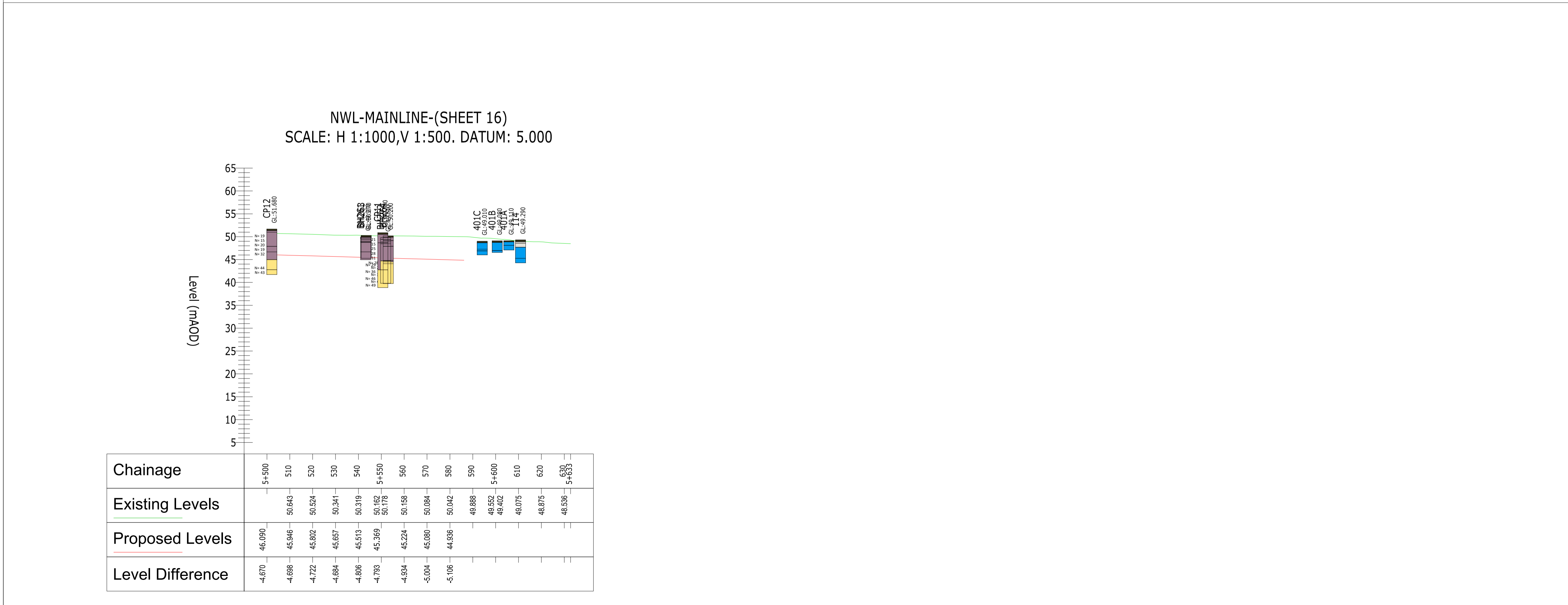
- Notes:**
- DO NOT SCALE FROM THIS DRAWING.
 - ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
 - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
 - THE DESIGN IS BASED ON THE LOCAL GRID.
 - ZONES OF NO RECOVERY AND AREAS OF CORE LOSS WERE RECORDED WITHIN THE CHALK STRATUM. THESE HAVE BEEN IDENTIFIED AS DRILLING/IN-SITU TESTS INDUCED OR DUE TO PRESENCE OF FLINT COBBLES AND BOULDERS. THE FACTUAL REPORT AND GROUND INVESTIGATION REPORT SHOULD BE REFERRED TO FOR FURTHER DETAILS.

- GEOLOGY LEGEND**
- Topsoil
 - Flexible Pavement
 - Made Ground (Granular)
 - Made Ground (Cohesive)
 - Concrete
 - Peat
 - Alluvium (Granular)
 - Alluvium (Cohesive)
 - Glacial Deposits (Granular)
 - Glacial Deposits (Cohesive)
 - No Recovery
 - Head Deposits (Granular)
 - Head Deposits (Cohesive)
 - River Terrace Deposits
 - Lowestoft Formation (Granular)
 - Lowestoft Formation (Till)
 - Sheringham Cliffs Formation (Cohesive)
 - Sheringham Cliffs Formation (Granular)
 - Structureless Chalk
 - Structured Chalk

- EXPLORATORY HOLE LEGEND**
- ① BH ID
 - ② Ground Level
 - ③ Uncorrected SPT 'N' Value
 - ④ Undrained Shear Strength Value (kPa)
 - ⑤ Cu
 - ⑥ P_u
 - ⑦ Water Strike
 - ⑧ Water level recorded following strike
 - ⑨ Menard Limit Pressure (MPa)

- GROUND INVESTIGATION PHASES**
- 2022 ALIGNMENT REFINEMENT GROUND INVESTIGATION
 - 2021 SUPPLEMENTARY STAGE 1 GROUND INVESTIGATION
 - 2019/20 PRELIMINARY GROUND INVESTIGATION

- PLAN LEGEND**
- SITE EXTENTS BOUNDARY
 - ⊕ CABLE PERCUSSION BOREHOLE
 - ⊖ ROTARY OPEN HOLE BOREHOLE
 - ⊕ CABLE PERCUSSION WITH ROTARY FOLLOW ON BOREHOLE
 - ⊕ WINDOWLESS SAMPLE
 - ⊖ DYNAMIC PROBE
 - ⊕ TRIAL PIT/TRENCH
 - ⊕ CPT LOCATION
 - ⊕ DYNAMIC CONE PENETROMETER
 - ⊕ PAVEMENT CORE



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DRAWING TITLE
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SHEET 16
MAINLINE

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DRAWN DH	CHECKED JS	APPROVED AR	AUTHORISED
SCALE @ A1 SIZE 1:1000		DATE 02/02/23	REVISION P01

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