

**Network Rail (Huddersfield to Westtown
(Dewsbury) Improvements) Order**

**Condition 10: Phase 2 Land Contamination Risk Assessment –
Stage 3**

Document Ref: 151667-TSA-00-TRU-REP-W-EN-001238

Network Rail

April 2023



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1. INTRODUCTION

1.1 Background

- 1.1.1 The Scheme is part of a wider programme of works under the Transpennine Route Upgrade (TRU) which will improve the Transpennine railway between Manchester, Huddersfield, Leeds and York and improve connections between key towns and cities across the north of England.
- 1.1.2 Planning Direction for the Huddersfield to Westtown (Dewsbury) section of the TRU was received from the Department for Transport, referenced TWA/21/APP/03, dated 13 October 2022.
- 1.1.3 This Phase 2 Land Contamination Risk Assessment sets out details in relation to Condition 10 of the Deemed Planning Permission (DPP).

2. STAGED APPROACH TO DISCHARGE

- 2.1.1 As set out in document ref 151667-TSA-00-TRU-REP-W-EN-001189 version 3 (submitted in relation to Condition 3 of the Deemed Planning) a staged approach is proposed in relation to discharge of the deemed planning conditions.
- 2.1.2 This document sets out details in relation to the Stage 3 works for the Huddersfield to Westtown (Dewsbury) Scheme.
- 2.1.3 Stage 3 comprises of the mining remediation works required in advance of construction of the Scheme. The mining remediation works required are set out in Table 2-1 and remediation methodologies described in paragraph 2.1.4, with location details set out in drawing 151667-TSA-00-TRU-REP-W-EN-001288 P04 in Appendix A.

Table 2-1 Proposed mining remediation mitigation measures

Area ID	Location of works	Mitigation measures
W3.1	Huddersfield South Tunnel	<ul style="list-style-type: none"> Grouting of 2 mine shafts and 2 wells. All from tunnel level and below.
W3.1-3.3	Huddersfield Station	<ul style="list-style-type: none"> Grid probing and grouting of voids for new structures: canopies, footbridge and subway extension. Probe hole at proposed locations of Overhead Line Equipment (OLE) foundations. Grouting of voids if encountered. Geosynthetic reinforcement for mining for track
W3.2-1, W3-2-3	Hillhouse Mainline	<ul style="list-style-type: none"> Probe hole at proposed locations of OLE foundations. Grouting of voids if encountered. Geosynthetic reinforcement for mining for track
W3.3	West of Deighton Station (Area of Peels Pit underbridge)	<ul style="list-style-type: none"> Capping and if necessary grouting of 2 mine shafts.
W3.3-1	Area of Bradley's No. 2 (BBW/1) Overbridge (MVL3/105)	<ul style="list-style-type: none"> Grid probing and grouting of voids for track, OLE and adit.
W3.3-3	East of Bradley Junction - Earthworks E9	<ul style="list-style-type: none"> Probe hole at proposed locations of OLE foundations. Grouting of voids if encountered. Geosynthetic reinforcement for mining for track
W3.4-1 W3.4-3	Heaton Lodge curve (MVL3 and MVN4)	<ul style="list-style-type: none"> Probe hole at proposed locations of OLE foundations. Grouting of voids if encountered.
W3.5-1	Mirfield Station	<ul style="list-style-type: none"> Geosynthetic reinforcement for mining for track
W3.5-2	West of Sands Lane	<ul style="list-style-type: none"> Probe hole at proposed locations of OLE foundations. Grouting of voids if encountered. Geosynthetic reinforcement for mining for track

- 2.1.4 The following measures will be employed:
- Probe and grout – this will typically comprise of rotary open holes on a 6m grid, closing to 3m and finer if required. The area of the grid will be enclosed on the down dip side by perimeter holes at 3m closing to 1.5m spacing to confine grouting in the area of the grid, and prevent grout escaping beyond the area of works. Where voids are encountered around the perimeter, these will be filled with pea gravel and a viscous grout, to form an underground cutoff. In the area of the main grid of open holes, these will be filled with grout, with grout takes monitored, and paused at certain grout takes. Works will generally target new foundations and new structures, where considered necessary. Water will be needed during the drilling and grouting process. The wastewater will be treated on site (Siltbuster) and this water will be fed back into the water tank for reuse within the process. Any waste material will be removed from site by a licenced carrier.
 - Track – where shallow workings are anticipated underneath the track alignment, a high strength geosynthetic reinforcement will be employed below the track bed.
 - Where required at locations of OLE foundations, a targeted probe hole will be drilled, and any voids will be grouted (process above).
 - Adits – where assessed as requiring treatment, these will be sealed/excavated out depending on depth and relationship to the main works. Where necessary probing and grouting may be used on shallow adits.
 - Shafts – where assessed as requiring treatment, shafts will typically either be capped (reinforced concrete slab, typically 2x shaft diameter) or infilled with grout / bulk fill and grout.
- 2.1.5 Mining remediation works covering the Ravensthorpe area are considered within the Stage 1 documentation (previously submitted planning application ref 2022/44/93858/W).
- 2.1.6 It is anticipated that works within Stage 3 will commence in July 2023 and are anticipated to be completed by September 2024.

3. RELEVANT PLANNING CONDITION

3.1.1 The wording of Condition 10 is reproduced as follows:

10. In relation to contaminated land:

a) Where the Environmental Statement (Volume 2i, Chapter 12: Geology, soils and land contamination) indicates that intrusive investigation is necessary for that stage, no development in the relevant stage is to commence until a Phase II Site Investigation Report for that stage has been submitted to, and approved in writing by, the Local Planning Authority.

b) Where remediation measures are shown to be necessary in the Environmental Statement or the Phase II Reports undertaken pursuant to (a) above confirm remediation measures are necessary for the relevant stage, no development in the relevant stage is to commence until a Remediation Statement, demonstrating how the site will be made suitable for the intended use, has been submitted to and approved in writing by the local planning authority. The Remediation Statement must include a programme for all works and for the provision of and timescale for the submission to the local planning authority of Verification Reports for written approval.

c) Remediation of the site shall be carried out and completed in accordance with the approved Remediation Statement. In the event that remediation is unable to proceed in accordance with the approved Remediation Statement, the local planning authority must be notified in writing immediately and where agreed as necessary, operations on the affected part of the site must cease. An amended or new Remediation Statement must be submitted to, and approved in writing by, the local planning authority prior to any further remediation works which must thereafter be carried out in accordance with the revised approved Statement.

Reason: *To ensure that the presence of contamination is identified, risks assessed and proposed remediation works are agreed in order to make the site suitable for use.*

4. EXISTING REPORTS

4.1.1 Mining Risk Assessments (MRAs) for the different sections of W3 have been previously prepared by the TRU West Alliance on behalf of Network Rail as below:

Area ID	Report Reference	Associated works
TRU West Project W3 Area 3.1	MRA, 2021 (151667-TSA-30-MVL3-REP-W-GE-030400)	<ul style="list-style-type: none"> • Grouting of 2 mine shafts and 2 wells in Huddersfield south tunnel (all from tunnel level and below). • Grid probing and grouting of voids for new structures: canopies, footbridge and subway extension. • Probe hole at proposed locations of Overhead Line Equipment (OLE) foundations. Grouting of voids if encountered. • Geosynthetic reinforcement for mining for track
TRU West Project W3 Area 3.2	MRA, 2021 (151667-TSA-31-MVL3-REP-W-GE-030400)	<ul style="list-style-type: none"> • Probe hole at proposed locations of OLE foundations. Grouting of voids if encountered. • Geosynthetic reinforcement for mining for track
TRU West Project W3 Area 3.3	MRA, 2021 (151667-TSA-32-MVL3-REP-W-GE-030400)	<ul style="list-style-type: none"> • Capping and if necessary grouting of 2 mine shafts • Grid probing and grouting of voids for track, OLE and adit. • Probe hole at proposed locations of OLE foundations. Grouting of voids if encountered. • Geosynthetic reinforcement for mining for track
TRU West Project W3 Area 3.4	MRA, 2021 (151667-TSA-32-MVL3-REP-W-GE-030400)	<ul style="list-style-type: none"> • Probe hole at proposed locations of OLE foundations. Grouting of voids if encountered.
TRU West Project W3 Area 3.5	MRA, 2022 (151667-TSA-34-MVN2-REP-W-GE-030400)	<ul style="list-style-type: none"> • Geosynthetic reinforcement for mining for track • Probe hole at proposed locations of OLE foundations. Grouting of voids if encountered.

4.1.2 The MRA reports were prepared to assess potential mining risks relating to construction of new infrastructure as part of the TRU Scheme.

4.1.3 A Mining Risk Mitigation Remit Report (MRMR) (reference 151667-TSA-W3-000-REP-GE-030510) was also prepared for W3 to present proposed mitigation measures for the high risk areas identified by the MRAs, and to summarise residual risks based on the mitigation measures.

4.1.4 The outputs of these documents have been discussed and agreed with Network Rail, including the Network Rail mining team. Applications for permits will be made to the Coal Authority by the TRU West Alliance at the appropriate time (circa 2 months prior to any works taking place). This will ensure that the potential risks and required mitigation associated with the mining works are reviewed and authorised prior to works commencing.

5. CONTAMINATION RISKS RELATING TO MINE REMEDIATION ACTIVITIES

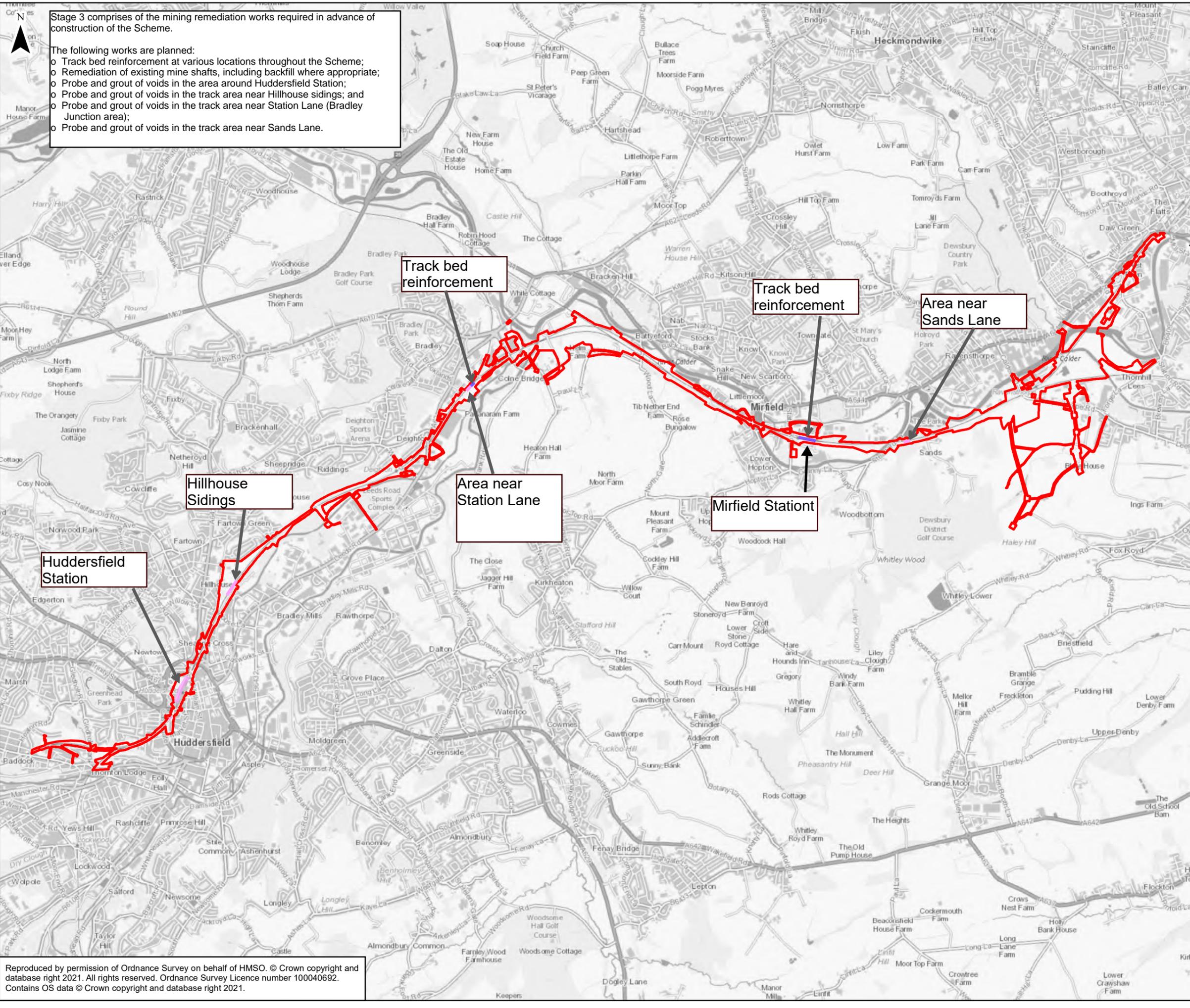
- 5.1.1 As set out in paragraph 2.1.4, two principle approaches to mining remediation are proposed
- Probe and grout,
 - Employment of a geosynthetic liner.
- 5.1.2 Based on the proposed mining risk mitigation measures of grid probing, grouting of voids and geosynthetic reinforcement below the track, the following risks from contamination to human health and controlled waters receptors relating to contamination would be applicable arising from the mining remediation activities:
- Migration of mine gas following displacement as a result of void grouting;
 - Migration of contaminated groundwater where grouting displaces contaminated mine waters; and
 - Vertical migration of contaminants during probing and grouting works.
- 5.1.3 Where grids of probing and grouting is planned, groundwater levels are to be monitored by installs within the grouting area, before and during grouting with any significant level changes prompting a pause in grouting to understand if the grouting activities are causing this. Further, as described previously, grid areas will have a perimeter drilled and grouted first, with the tighter hole spacing and to form a cut off wall in the workings / broken ground to prevent grout escape beyond the area being targeted. As part of the detailed design for the grouting works, groundwater risks will be assessed. Where grouting works are to be carried out where groundwater may be high relative to the coal seam/workings being targeted, this assessment will consider sources, pathways and receptors and detail how any risks will be managed.
- 5.1.4 Where geosynthetic reinforcement is installed, these act as a reinforcing element to increase the stability but is primarily to manage load distribution if settlement was to occur. The geosynthetic will be installed below the trackbed area under the subbase. This is likely to be a high strength uniaxial geogrid, rather than a high strength geotextile, to ensure it does not impede drainage or disrupt groundwater fluctuations in the track / embankments. This mitigation is not considered to introduce any additional contaminant pathways to controlled waters receptors (Secondary A superficial and bedrock aquifers) or create any preferential pathways for gas migration.
- 5.1.5 This stage of development relates to the works associated with mining remediation. The risks to human health and controlled waters receptors from other construction activities and for the final development have been or will be addressed in other reports as the Scheme progresses (Stages 1 and 2 previously submitted, Stages 4-6 and Stage 8 will be submitted in due course).
- 5.1.6 The design and implementation of the mining risk mitigation measures will be designed and undertaken with recourse to the previously prepared MRA and MRMR reports and in accordance with relevant Coal Authority guidance such as 'Guidance on managing the risk of hazardous gases when drilling or piling near coal' and the CIRIA guidance document C758D 'Abandoned mine workings manual'.
- 5.1.7 If the relevant Coal Authority guidance is adhered to and site specific conditions as reported in the MRA reports are considered in the design of the mining remediation, the mining remediation activities are not expected to result in any additional contamination risks to controlled waters or human health.
- 5.1.8 If any unexpected contamination is encountered during the grid probing and grouting works, it is recommended that the works cease until further risk assessment by a suitably qualified environmental consultant and, if appropriate, a review of the method for the mining mitigation in that area, in line with Condition 11 of the Deemed Planning Permission.

6. CONCLUSIONS

- 6.1.1 To address potential geohazards relating to potential mining instability for the TRU W3 Project, mining remediation activities comprising probing and grouting of voids and track bed reinforcement are proposed to be designed and undertaken on behalf of Network Rail.
- 6.1.2 Potential contamination risks to human health and controlled waters receptors in the areas where mining remediation works are proposed comprise:
- Migration of mine gas following displacement as a result of void grouting;
 - Migration of contaminated groundwater where grouting displaces contaminated mine waters; and
 - Vertical migration of contaminants during probing and grouting works.
- 6.1.3 The relevant Coal Authority guidance will be adhered to and site specific conditions as reported in the MRA reports have been considered in the design of the mining remediation, the mining remediation activities are therefore not anticipated to result in any additional contamination risks to controlled waters or human health.
- 6.1.4 Applications for permits will be made to the Coal Authority by the TRU West Alliance at the appropriate time. This will ensure that the potential risks associated with the mining works are reviewed and authorised prior to works commencing.

Appendices

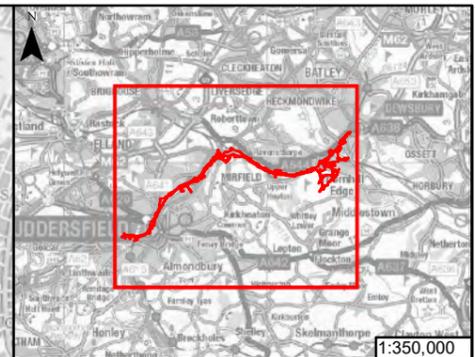
APPENDIX A – LOCATIONS OF MINING REMEDIATION WORKS



Stage 3 comprises of the mining remediation works required in advance of construction of the Scheme.

The following works are planned:

- o Track bed reinforcement at various locations throughout the Scheme;
- o Remediation of existing mine shafts, including backfill where appropriate;
- o Probe and grout of voids in the area around Huddersfield Station;
- o Probe and grout of voids in the track area near Hillhouse sidings; and
- o Probe and grout of voids in the track area near Station Lane (Bradley Junction area);
- o Probe and grout of voids in the track area near Sands Lane.



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- Scheme Boundary
- Probe and grout
- Track bed reinforcement
- Works to mine shafts and adits

0 125 250 500 750 1000 1250 1500 Metres

SCALE 1:35,000

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Rev	Date	Description of Revisions	Drwn	Chkd	Appr
Status	SHARED				Suitability



Project
TRANSPENNINE ROUTE UPGRADE

Contract No.
151667

Scheme Title
THE NETWORK RAIL (HUDDERSFIELD TO WESTTOWN (DEWSBURY) IMPROVEMENTS) ORDER

Drawing Title
Stage 3 works

Designed	K.Stenson	Signed Electronically	Date	19/03/2021
Drawn	P.Butler	Signed Electronically	Date	06/12/2022
Checked	P.Butler	Signed Electronically	Date	06/12/2022
Approved	P.Butler	Signed Electronically	Date	06/12/2022

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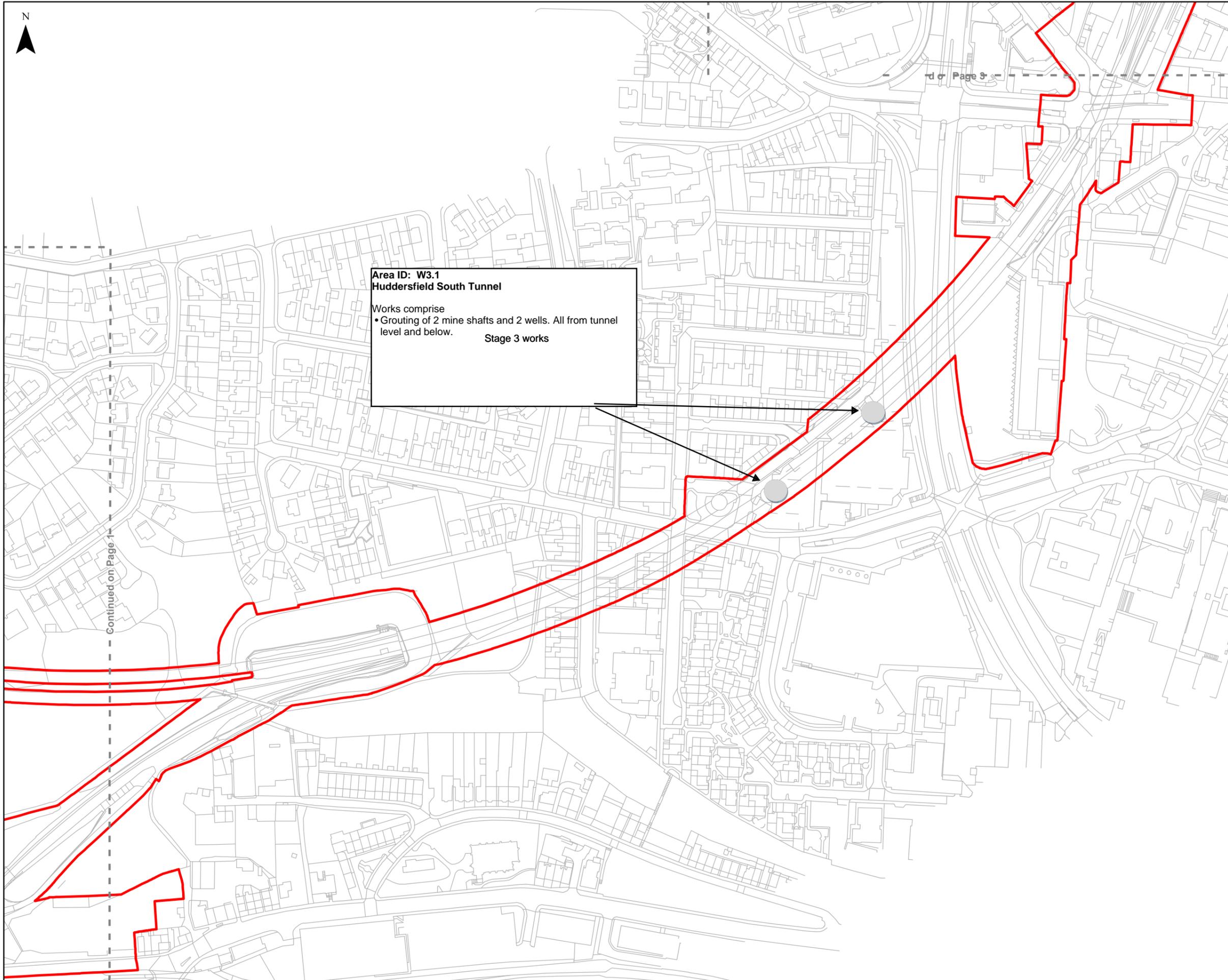
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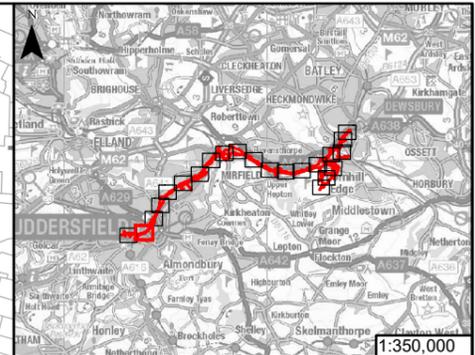
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Area ID: W3.1
Huddersfield South Tunnel

Works comprise
 • Grouting of 2 mine shafts and 2 wells. All from tunnel level and below. **Stage 3 works**



- Scheme Boundary
- Adjacent Map Sheet
- Probe and grout
- Track bed reinforcement
- Works to mine shafts and adits



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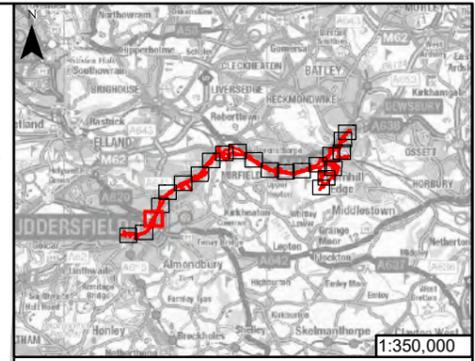
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**Area ID: W3.1-3.3
Huddersfield Station**

Works comprise

- Grid probing and grouting of voids for new structures: canopies, footbridge and subway extension.
- Probe hole at proposed locations of Overhead Line Equipment (OLE) foundations. Grouting of voids if encountered.
- Geosynthetic reinforcement for mining for track

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-  Scheme Boundary
-  Adjacent Map Sheet
-  Probe and grout
-  Track bed reinforcement
-  Works to mine shafts and adits



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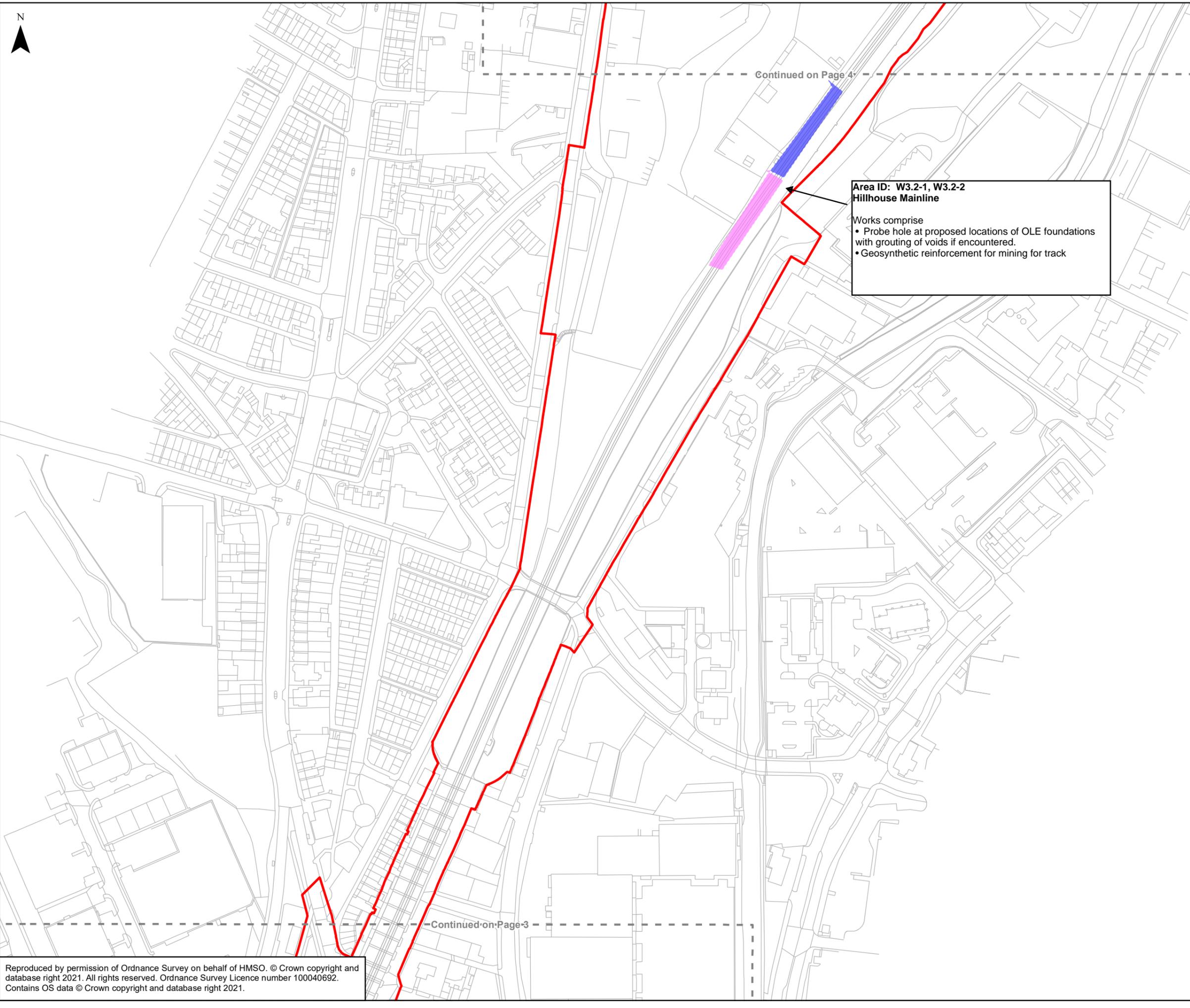
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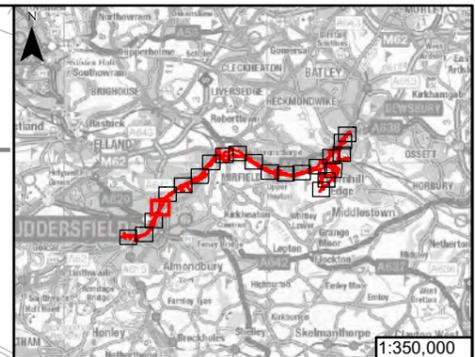
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**Area ID: W3.2-1, W3.2-2
Hillhouse Mainline**

Works comprise

- Probe hole at proposed locations of OLE foundations with grouting of voids if encountered.
- Geosynthetic reinforcement for mining for track



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-  Scheme Boundary
-  Adjacent Map Sheet
-  Probe and grout
-  Track bed reinforcement
-  Works to mine shafts and adits



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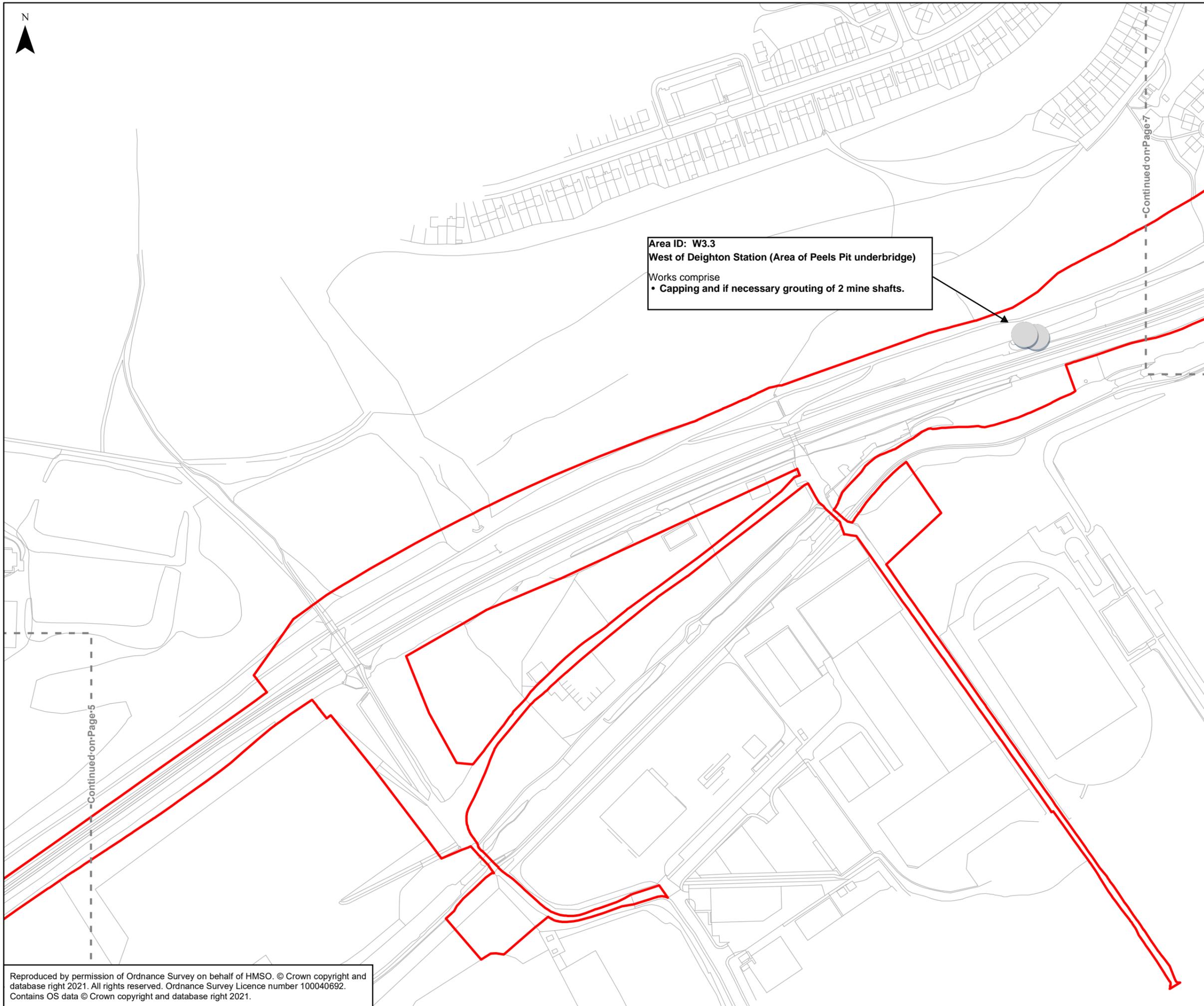
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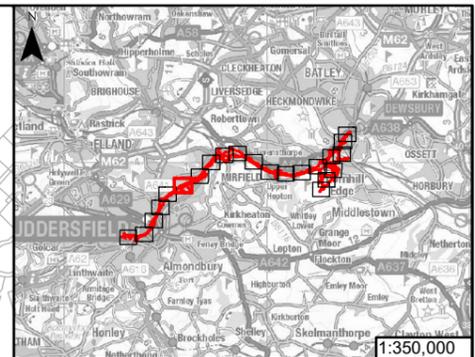
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Area ID: W3.3
West of Deighton Station (Area of Peels Pit underbridge)
 Works comprise

- Capping and if necessary grouting of 2 mine shafts.



- Scheme Boundary
- Adjacent Map Sheet
- Probe and grout
- Track bed reinforcement
- Works to mine shafts and adits



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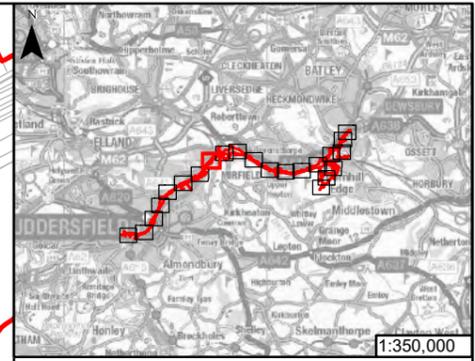
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- Scheme Boundary
- Adjacent Map Sheet
- Probe and grout
- Track bed reinforcement
- Works to mine shafts and adits

Area ID: W3.3-1
Area of Bradley's No. 2 (BBW/1)
Overbridge (MVL3/105)

Works comprise

- Grid probing and grouting of voids for track, OLE and adit.



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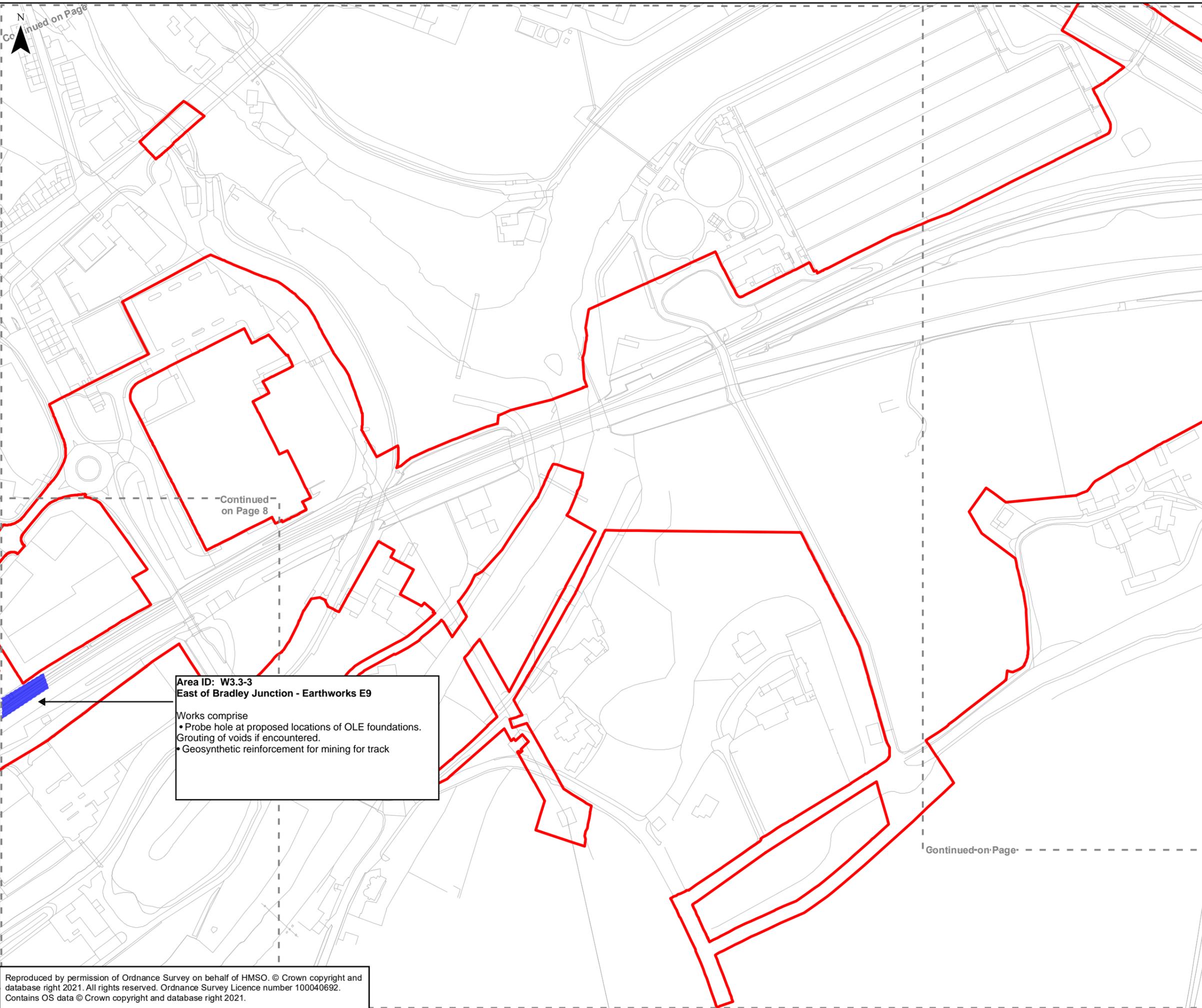
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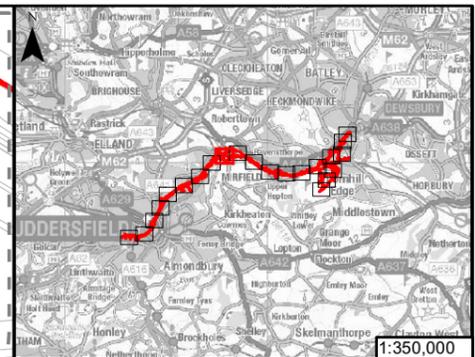
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Area ID: W3.3-3
East of Bradley Junction - Earthworks E9

Works comprise

- Probe hole at proposed locations of OLE foundations.
- Grouting of voids if encountered.
- Geosynthetic reinforcement for mining for track



Legend

- Scheme Boundary
- Adjacent Map Sheet
- Probe and grout
- Track bed reinforcement
- Works to mine shafts and adits



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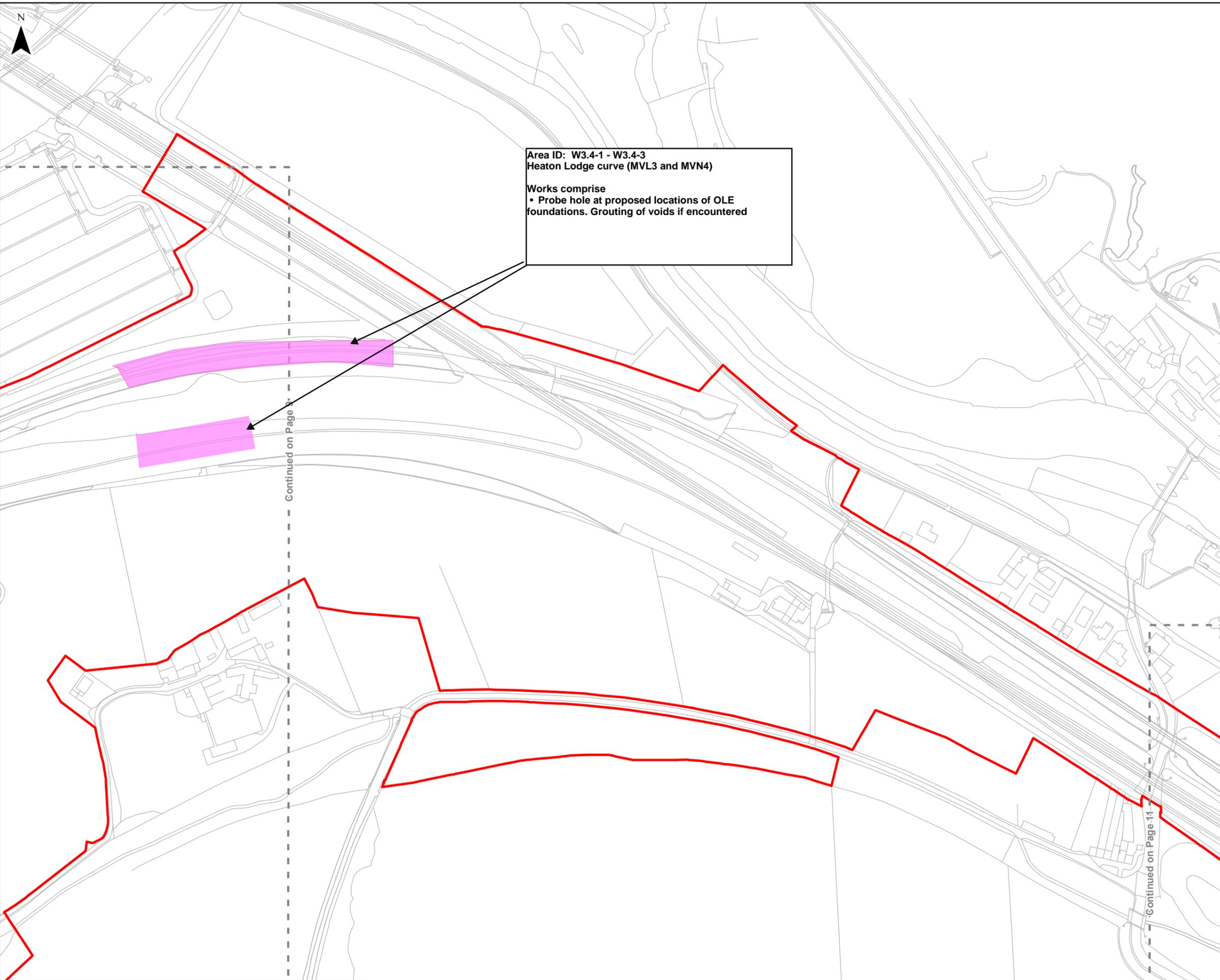
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				P04

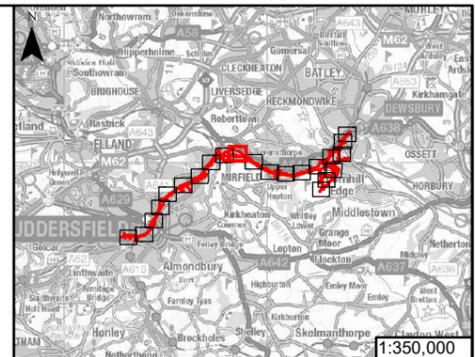
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Area ID: W3.4-1 - W3.4-3
 Heaton Lodge curve (MVL3 and MVN4)

Works comprise

- Probe hole at proposed locations of OLE foundations. Grouting of voids if encountered



- Scheme Boundary
- Adjacent Map Sheet
- Probe and grout
- Track bed reinforcement
- Works to mine shafts and adits



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Status					Suitability
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TRANSPENNINE ROUTE UPGRADE

Contract No.
151667

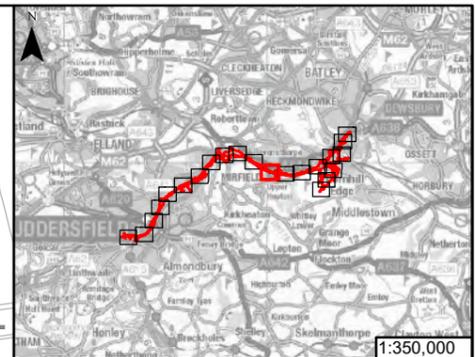
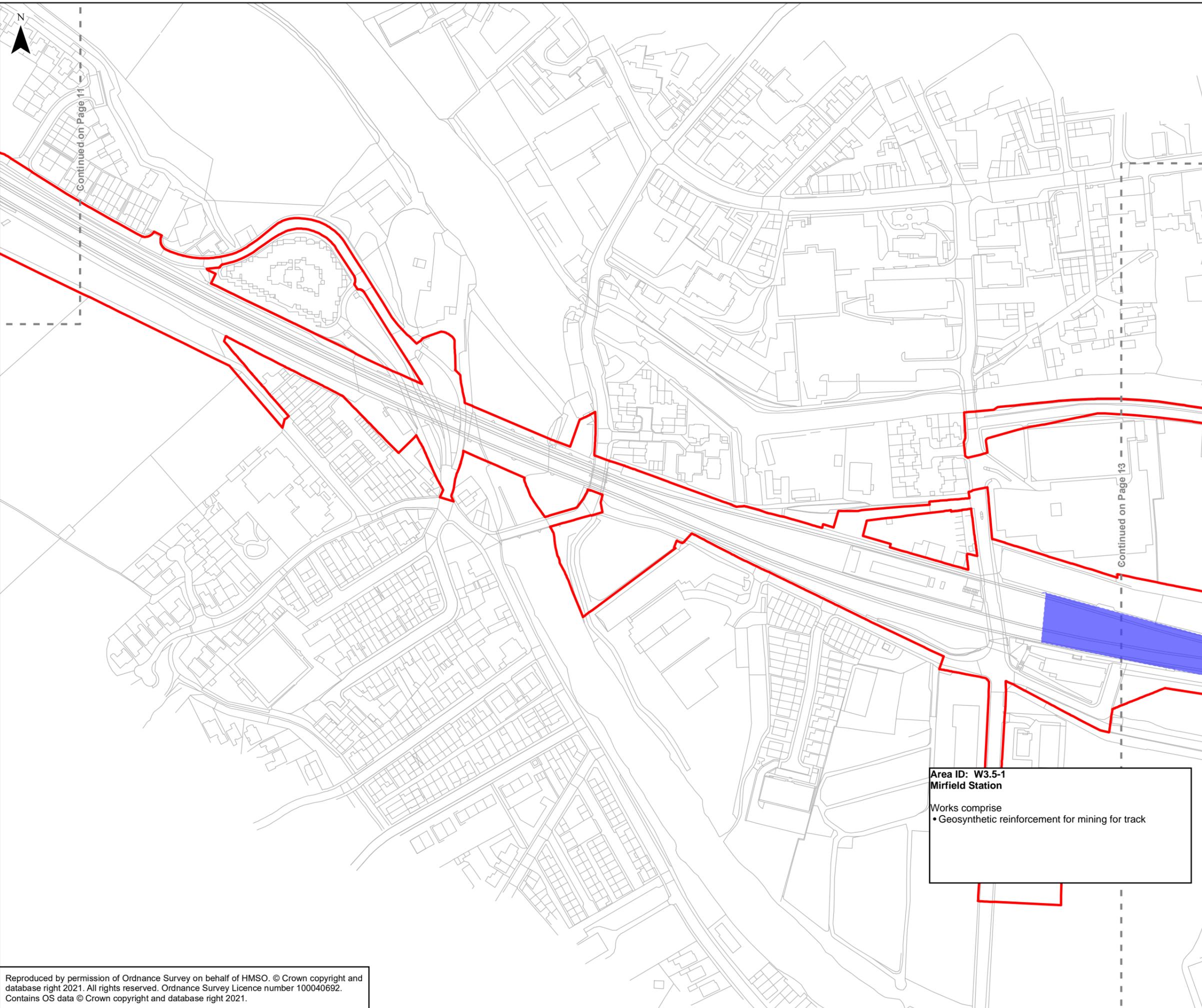
Scheme Title
THE NETWORK RAIL (HUDDERSFIELD TO WESTTOWN (DEWSBURY) IMPROVEMENTS) ORDER

Drawing Title			
Stage 3 works			
Designed	R.Bowes	Signed Electronically	Date 12/02/2021
Drawn	R.Bowes	Signed Electronically	Date 12/02/2021
Checked	P.Butler	Signed Electronically	Date 12/02/2021
Approved	P.Butler	Signed Electronically	Date 12/02/2021

Scale(s)	1:2,500	ELR & Project Chainage	---
Alternative Reference	---	Sheet	8 of 11
Drawing Number	DRAFT	Revision	P04

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- Scheme Boundary
- Adjacent Map Sheet
- Probe and grout
- Track bed reinforcement
- Works to mine shafts and adits



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Project
TRANSPENNINE ROUTE UPGRADE

Contract No.
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Scheme Title
THE NETWORK RAIL (HUDDERSFIELD TO WESTTOWN (DEWSBURY) IMPROVEMENTS) ORDER

Drawing Title
Stage 3 works

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Drawn	R.Bowes	Signed Electronically	Date	12/02/2021
Checked	P.Butler	Signed Electronically	Date	12/02/2021
Approved	P.Butler	Signed Electronically	Date	12/02/2021

Scale(s)
1:2,500

ELR & Project Chainage

Alternative Reference

Sheet
9 of 11

Drawing Number
151667-TSA-00-TRU-REP-W-EN-001288

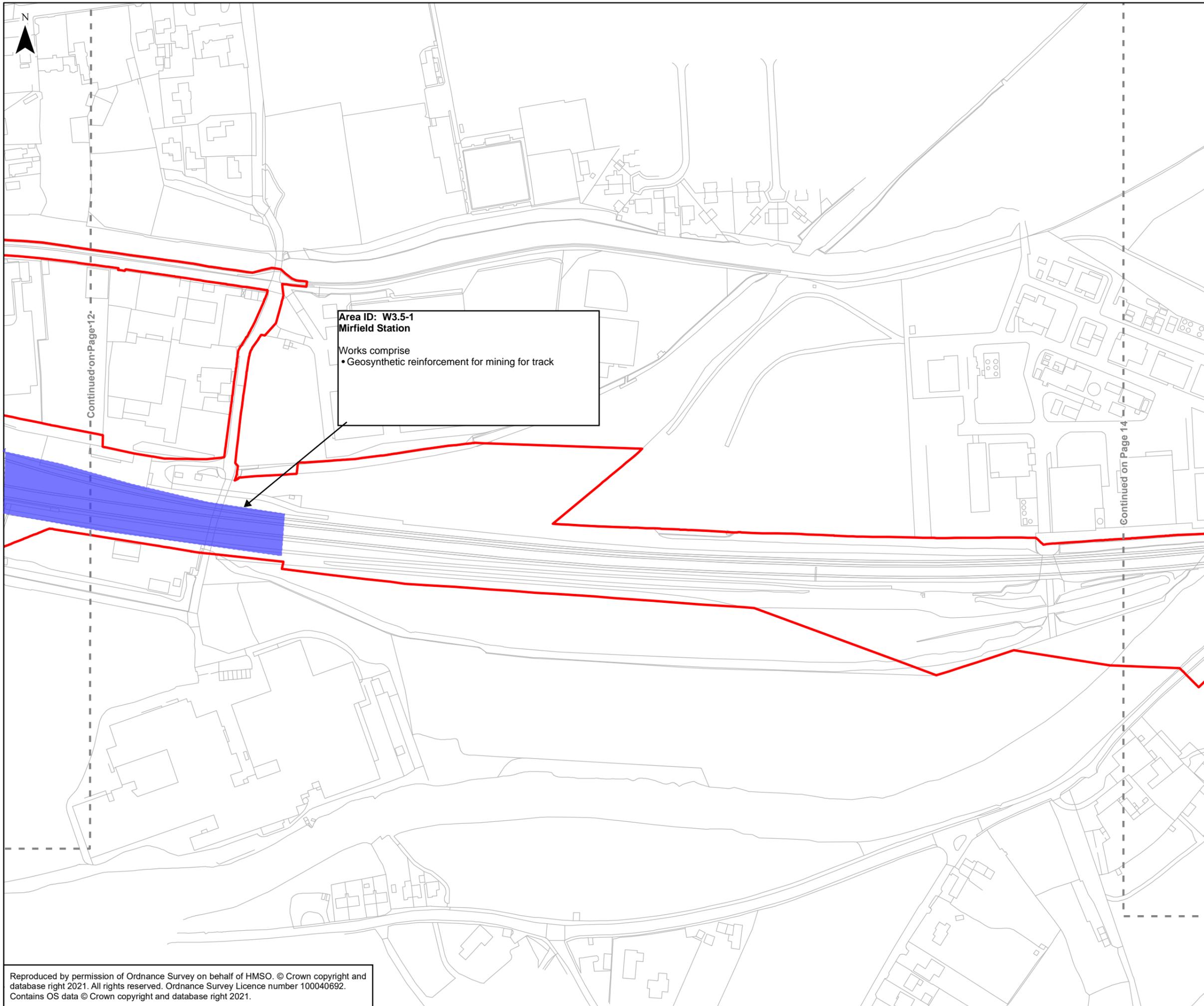
Revision
P04

Area ID: W3.5-1
Mirfield Station

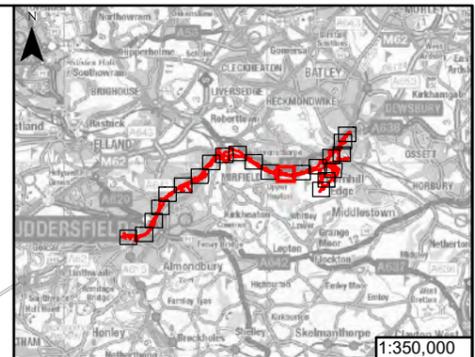
Works comprise

- Geosynthetic reinforcement for mining for track

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**Area ID: W3.5-1
Mirfield Station**
Works comprise
• Geosynthetic reinforcement for mining for track



1:350,000

- Scheme Boundary
- Adjacent Map Sheet

Stage 3 works

- Probe and grout
- Track bed reinforcement
- Works to mine shafts and adits

0 10 20 40 60 80 100 Metres
SCALE 1:2,500

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Status				Suitability	
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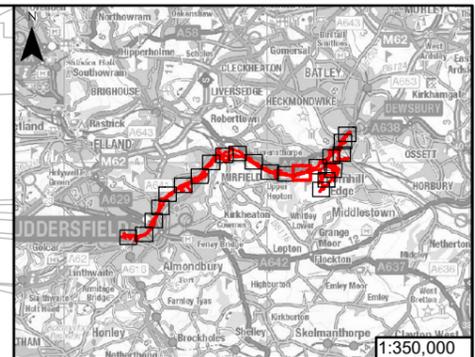
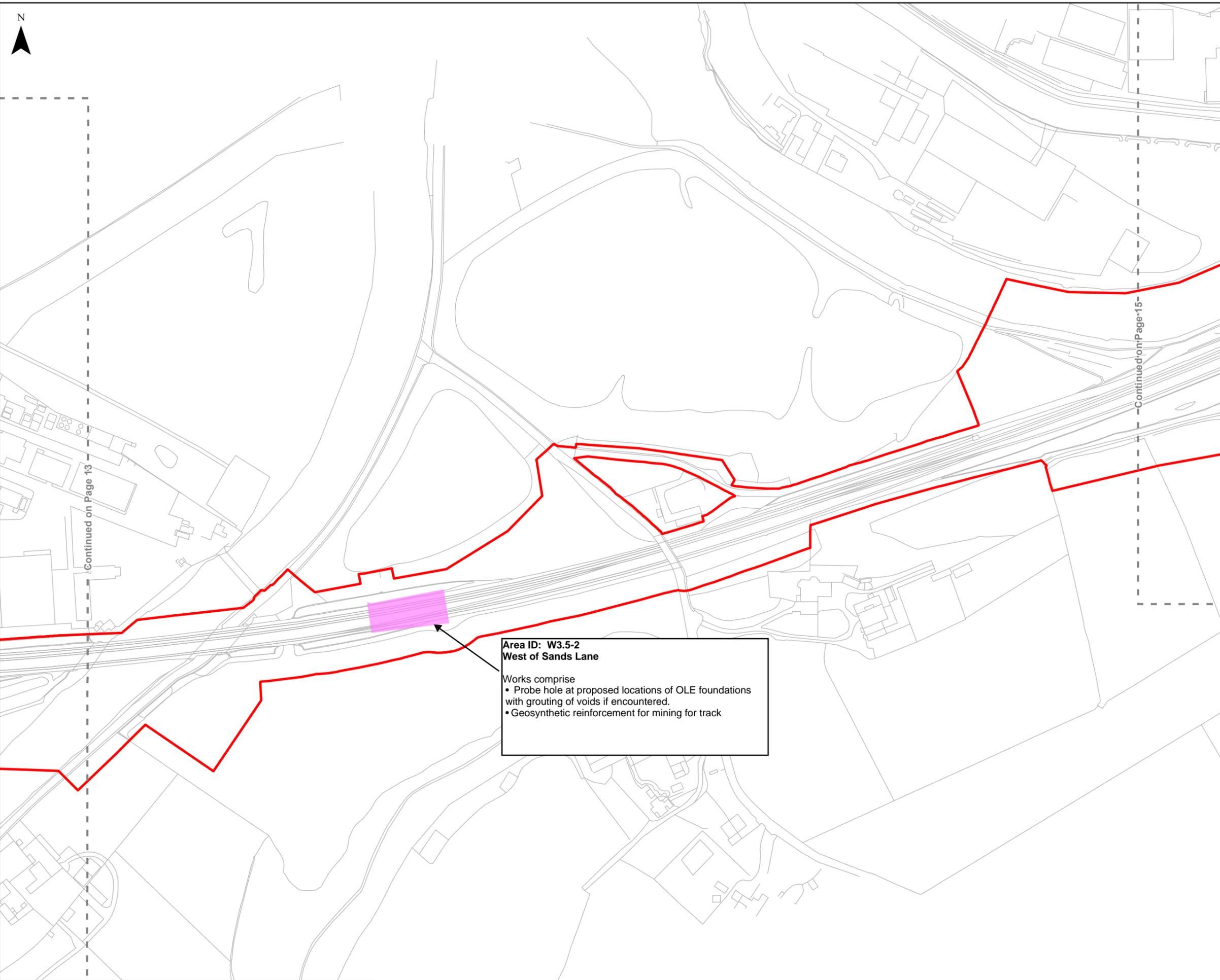
Contract No.
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Scheme Title
THE NETWORK RAIL (HUDDERSFIELD TO WESTTOWN (DEWSBURY) IMPROVEMENTS) ORDER

Drawing Title
Stage 3 works

Designed	R.Bowes	Signed Electronically	Date	12/02/2021
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Approved	P.Butler	Signed Electronically	Date	12/02/2021
Scale(s) 1:2,500		ELR & Project Chainage ---		
Alternative Reference ---				Sheet 10 of 11
Drawing Number 151667-TSA-00-TRU-REP-W-EN-001288				Revision P04

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- Scheme Boundary
- Adjacent Map Sheet
- Probe and grout
- Track bed reinforcement
- Works to mine shafts and adits



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Project
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Contract No.
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Scheme Title
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Drawing Title
Stage 3 works

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Approved	P.Butler	Signed Electronically	Date	12/02/2021

Scale(s)
1:2,500

ELR & Project Chainage

Alternative Reference

Sheet
11 of 11

Drawing Number
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Revision
P04

**Area ID: W3.5-2
West of Sands Lane**

Works comprise

- Probe hole at proposed locations of OLE foundations with grouting of voids if encountered.
- Geosynthetic reinforcement for mining for track

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