



EARTHWORKS DESIGN STATEMENT

Employment Land, Barnsley West

Reference

4848-JPG-XX-XX-RP-G-0611-S2-P01

Date

June 2023

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CONTENTS

Confidentiality Statement

Document History

1.0	Introduction	1
1.1	Instruction	1
1.2	Objectives	1
1.3	Location	1
1.4	Site Description and Topography	1
1.5	Development Proposals	2
1.6	Previous Reports	2
2.0	Summary of Existing Ground Conditions	3
3.0	Recommendations for Additional investigative works	4
3.1	Additional Coal Mining Investigation	4
3.2	Material Suitability for Re-Use in Earthworks	5
3.3	Geotechnical Properties of Site-Won Material	5
3.4	Post-Earthwork Ground Gas Monitoring	6
4.0	Site Preparatory Works	7
4.1	Proposed Enabling Works	7
4.2	Materials for use in Earthworks	7
4.3	Earthworks Methodology and Ground Treatment Options	8
5.0	Recommendations	11

APPENDICES

Appendix A Figures and Drawings

Figure 1 - Site Location Plan

Figure 2 - Aerial Photograph

JPG (Leeds) Limited. Commercial Boundary Plan. Barnsley West. Drawing Ref: 4848-JPG-ZZ-ZZ-DR-C-1001-S2-P01. Dated March 2023.

JPG (Leeds) Limited. Barnsley West. Proposed Earthwork Cut/Fill Analysis. Drawing No: 4848-JPG-ZZ-ZZ-DR-C-1201-S2-P03, dated March 2023.

JPG (Leeds) Limited. Barnsley West. Proposed Earthworks Levels. Drawing No: 4848-JPG-ZZ-ZZ-DR-C-1200-S2-P03, dated March 2023.

JPG (Leeds) Limited. Barnsley West. Typical Treatment Section. Drawing No: 4848-JPG-ZZ-ZZ-DR-C-1200-S2-P01, dated April 2023.



CONFIDENTIALITY STATEMENT

This report is addressed to and may be relied upon by the following:

Strata Sterling Barnsley West Limited
Quay Point
Lakeside
DONCASTER
DN4 5PL

This report has been prepared for the use and reliance of the above-named party. This report shall not be relied upon or transferred to any other parties without the express written authorisation of JPG (Leeds) Limited. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party.

DOCUMENT HISTORY

Revision	Date	Revision Details	Status	Author(s)	Approved
P01	05.06.2023	Final	Information	DMH	JBW



1.0 INTRODUCTION

1.1 Instruction

JPG (Leeds) Limited (JPG) has been instructed by Strata Sterling Barnsley West Limited to provide an earthworks design statement for the proposed employment land at Barnsley West.

1.2 Objectives

The main objective of the earthwork design statement is to outline a series of pre-construction earthworks and provide sufficient guidance and information on the ground treatment options available with the objective of providing suitably engineered development platforms for the proposed development.

1.3 Location

The site is located approximately 3km to the west of Barnsley town centre. The approximate centre of the site is located at NGR 431833, 406683.

The site is located to the north east of the M1 motorway and to the south of Hermit Lane. A site location plan is presented as Figure 1 in Appendix A.

1.4 Site Description and Topography

The site is irregular in shape and occupies an area of approximately 37 hectares. Ground levels are approximately 146m AOD in the west, generally falling to approximately 120m AOD in the north east. The site generally comprises sloping arable and grazing land, which is divided into fields by hedgerows, fences and small watercourses.

A steep valley with a drainage ditch at its base extends northwards from the east; the drainage ditch is culverted where it passes below Hermit Lane. A second steep sided valley is present in the centre of the site and trends to the north.

The northern boundary is defined by Hermit Lane, beyond which is undeveloped farmland. A raised plateau of grassland is present to the east of the site, beyond which is the town of Pogmoor. The southern boundary is defined by the M1 motorway, beyond which is the town of Dodworth and the western boundary is defined by Higham Lane and the M1 motorway.

An aerial photograph of the site is presented as Figure 2 in Appendix A.



1.5 Development Proposals

It is proposed to develop the site for commercial end use. A plan outlining the proposed commercial red line boundary is referenced below and provided in Appendix A.

- JPG Leeds Limited. Commercial Boundary Plan. Barnsley West. Drawing Ref: 4848-JPG-ZZ-ZZ-DR-C-1001-S2-P01. Dated March 2023.

1.6 Previous Reports

JPG have completed a geoenvironmental desk study for the overall Barnsley West development site and a geoenvironmental ground investigation report, a coal mining risk assessment and coal recovery report and a preliminary land slope stability assessment for the employment land only. Furthermore, a geoenvironmental desk study and a ground investigation report was also completed for a parcel of land adjacent to the western boundary of the site where a roundabout is to be constructed.

These reports are referenced below and should be read in conjunction with this report.

- JPG (Leeds) Limited. Geoenvironmental Desk Study Report. Barnsley West. Report Ref: 4848-JPG-XX-XX-RP-G-0604-S2-P04. Dated July 2019 for Strata Sterling Barnsley West Limited.
- JPG (Leeds) Limited. Coal Mining Risk Assessment and Coal Recovery Report. Employment Land, Barnsley West. Report Ref: 4848-JPG-ZZ-XX-RP-G-1102-S2-P03. Dated August 2019, for Strata Sterling Barnsley West Limited.
- JPG (Leeds) Limited. Geoenvironmental Desk Study Report. Higham Common Road Roundabout, Barnsley West. Report Ref: 4848-JPG-ZZ-XX-RP-G-0602-S2-P01. Dated 2019, for Strata Sterling Barnsley West Limited.
- JPG (Leeds) Limited. Geoenvironmental Ground Investigation. Higham Common Road Roundabout, Barnsley West. Report Ref: 4848-JPG-HC-XX-RP-G-0603-S2-P02. Dated October 2020 for Strata Sterling Barnsley West Limited.
- JPG (Leeds) Limited. Preliminary Geoenvironmental Ground Investigation. Barnsley West. Report Ref: 4848-JPG-SW-XX-RP-G-0603-S2-P02. Dated July 2019 for Strata Sterling Barnsley West Limited.
- JPG (Leeds) Limited. Preliminary Geoenvironmental Ground Investigation. Employment Land, Barnsley West. Report Ref: 4848-JPG-SW-XX-RP-G-0609-S2-P01. Dated March 2023, for Strata Sterling Barnsley West Limited.
- JPG (Leeds) Limited. Preliminary Slope Stability Assessment. Employment Land, Barnsley West. Report Ref: 4848-JPG-SW-XX-RP-G-0610-S2-P01. Dated June 2023 for Strata Sterling Barnsley West Limited.



2.0 SUMMARY OF EXISTING GROUND CONDITIONS

Topsoil, generally comprising soft to stiff dark brown, slightly sandy, slightly gravelly clay with rootlets was encountered in TP108 to TP110, TP112, BH108, BH109, BH109A, BH121, BH122 and BH125 to depths of between 0.10m bgl in TP108 and 0.50m bgl in BH122, with an average thickness of 0.25m.

The made ground within and immediately surrounding the Hunters Cottage OCCS typically comprised colliery spoil, which was described as compact or stiff in the rotary boreholes and as soft to firm, dark greyish brown, sandy, gravelly clay and/or dark brownish grey, clayey, sandy gravel in the trail pits. The colliery spoil made ground was encountered in TP109, TP110, TP112, BH108, BH109 and BH109A to depths of between 1.50m bgl in TP109 and 13.00m bgl in BH108.

The made ground outside the Hunters Cottage OCCS, typically comprised brown clay fill in the rotary boreholes and soft to stiff, greyish brown and orangish brown sandy, gravelly clay. The cohesive made ground was encountered in TP108 and BH121 to depths of 2.80m bgl and 0.50m bgl, respectively. The made ground encountered in TP108 could potentially be arisings associated with the construction of the M1 motorway to the south.

Residual soils, typically comprising firm to stiff, medium strength, orangish brown and grey, sandy, gravelly clay was encountered in TP108, TP109, TP110 and BH122 to depths of 3.40m bgl, 2.90m bgl, 2.90m bgl and 1.10m bgl, respectively.

The underlying bedrock geology comprised the Pennine Middle Coal Measures. The bedrock geology was recorded as thinly laminated, light grey, occasionally brown, de-structured mudstone to a depth of 3.30m bgl in TP109 and as grey and brown, interbedded mudstone, sandstone and coal seams to a maximum proven depth of 40.00m bgl in BH121.

BH108, and BH109A were carried out within Hunters Cottage OCCS, in which the Top Haigh Moor coal seam was the deepest coal seam extracted by opencast techniques; these boreholes were extended below the base of the opencast to establish the rock cover over the underlying Low Haigh Moor coal seam. BH108 proved the base of the OCCS at 13.00m bgl and the base of the Low Haigh Moor coal seam at 23.40m bgl (0.80m thick). BH109A proved the base of the opencast at 11.20m bgl and the base of the Low Haigh Moor coal seam at 18.70m bgl (0.40m thick). Neither borehole encountered any underground coal workings. In both boreholes there is sufficient rock cover over the Low Haigh Moor coal seam so that if coal workings were present, they would not affect the surface stability of the site.

BH121, BH122 and BH125 were drilled outside the Hunters Cottage OCCS. None of the boreholes encountered underground coal workings.



BH121, drilled close to the western boundary of the proposed employment land, encountered coal seams between 6.30m and 8.00m (1.70m thick), between 14.60m and 15.00m bgl (0.40m thick), between 16.00m and 16.50m bgl, and between 29.20m and 29.50m bgl (0.30m thick). These coal seams have been interpreted as the Top Haigh Moor, the Low Haigh Moor (two leaves) and a thin coal seam. Based on the depths and thicknesses of the coal seams, if underground coal workings were present in the Top Haigh Moor, remedial action would be required. In addition, if both leaves of the Low Haigh Moor coal seam have been worked, remedial action will be required.

Based on the findings of the Higham Common Road Roundabout investigation located immediately to the west of the commercial area, five rotary boreholes were drilled with the Top Haigh Moor proven in all five boreholes and the Low Haigh Moor proven in four boreholes. In each borehole, the coal seams were proven to be intact. This provides further confidence that the shallow coal seams on the western flank have not been worked by underground means.

BH122 was drilled close to the northern boundary of the employment land. A very thin coal seam (0.10m thick) was encountered at 8.10m bgl. A thick bed of coal (2.30m thick) was encountered between 15.40m and 17.70m bgl and may represent either the Gawber or Top Haigh Moor coal seam, the uncertainty due to the nearby fault.

BH125 was drilled close to the eastern boundary of the employment land. Coal seams were encountered between 3.30m and 4.30m bgl (1.00m thick), between 15.50m and 15.80m bgl (0.30m thick), between 23.90m and 24.00m bgl (0.10m thick), between 25.10m and 25.50m bgl (0.40m thick) and between 36.60m and 36.90m bgl (0.30m thick). The coal seams are considered to represent the Gawber, a thin seam, the Swallow Wood (two leaves) and the Top Haigh Moor. Only the Gawber coal seam poses a potential risk to the surface stability of the site, based on coal seam thickness and depth at this location.

3.0 RECOMMENDATIONS FOR ADDITIONAL INVESTIGATIVE WORKS

It is recommended that a comprehensive ground investigation be carried prior to any earthworks as well as post-earthworks ground gas monitoring. The recommended additional investigative works should include the works outlined in Section 3.1 to 3.4.

3.1 Additional Coal Mining Investigation

There remains a residual risk from unrecorded underground workings in the Dunsil, Gawber, Thin, Swallow Wood, Top Haigh Moor and Low Haigh Moor coal seams. Where the seams are present at shallow depths, less than 30m, (including below opencast and opencast highwalls) there may be insufficient rock cover (less than 10 times seam thickness).

It is recommended that rotary boreholes should be advanced across the site targeting the shallow coal seams, in and outside, both the Hunters Cottage Opencast Coal Site (OCCS) and the Hunters Cottage Extensions OCCS (adjacent to the northern boundary). The boreholes should also be installed with groundwater monitoring wells in order to access whether the natural groundwater table has rebounded.



It is recommended that trial trenching should be undertaken, targeting the highwalls along the western side of Hunters Cottage OCCS and along the southern side Hunters Cottage Extensions OCCS.

Should any coal workings be recorded with insufficient rock cover, then it is recommended that a detailed grouting specification be produced, and coal mining remediation carried out.

3.2 Material Suitability for Re-Use in Earthworks

A limited assessment of the suitability of the colliery spoil materials and also natural soils for re-use in earthworks was carried out as part of the 2019 JPG Preliminary Geoenvironmental Ground Investigation. The laboratory results confirmed the granular colliery spoil, cohesive made ground and residual soil are considered suitable for re-use in earthworks, but the cohesive colliery spoil material may be too wet to achieve suitable compaction.

It is recommended that additional samples be retrieved from the 'cut' areas as part of a comprehensive geoenvironmental and geotechnical ground investigation in order to thoroughly review the suitability for re-use in earthworks.

Furthermore, samples of the cohesive colliery spoil material should be tested for initial lime consumption in order to understand whether this material can be modified/stabilised and what quantity of lime would be required to achieve suitable compaction of this material.

3.3 Geotechnical Properties of Site-Won Material

Limited geotechnical information was retrieved as part of 2019 JPG Preliminary Geoenvironmental Ground Investigation.

It is recommended that additional samples should be retrieved from the various material types onsite in order to comprehensively assess the predicted settlement of the proposed development and the stability of the earthwork batters.

It is recommended that a series of cable percussive boreholes are advanced in and outside the Hunters Cottage OCCS in order to access the geotechnical properties of all onsite materials.

The groundwater installations (mentioned in Section 3.1) should be monitored to assist with assessing the inundation settlement of the Hunters Cottage OCCS.

The extensometer in BH109, which was installed as part of 2019 JPG Preliminary Geoenvironmental Ground Investigation, should be continued to be monitored quarterly in order to assist with calculating a more realistic alpha for creep settlement analysis.



3.4 Post-Earthwork Ground Gas Monitoring

As part of the 2019 JPG Preliminary Geoenvironmental Ground Investigation, one ground gas monitoring well was installed in BH109A. The report concluded that no gas protection measures are required as the site was classified as Characteristic Situation 1 based on the one monitoring well.

Due to the limited ground gas assessment, it is recommended that a series of ground gas monitoring wells be installed beneath the proposed developments after the earthworks have been completed in order to fully assess the ground gas regime and the requirement for gas protection measures.



4.0 SITE PREPARATORY WORKS

4.1 Proposed Enabling Works

In order to redevelop the site, it will be necessary to carry out a large scale cut and fill earthworks operation to create the proposed development platforms.

An earthworks cut/fill and proposed levels drawings have been produced for the site. These drawings are referenced below, and copies are provided in Appendix A.

- JPG (Leeds) Limited. Barnsley West. Proposed Earthwork Cut/Fill Analysis. Drawing No: 4848-JPG-ZZ-ZZ-DR-C-1201-S2-P03, dated March 2023.
- JPG (Leeds) Limited. Barnsley West. Proposed Earthworks Levels. Drawing No: 4848-JPG-ZZ-ZZ-DR-C-1200-S2-P03, dated March 2023.

As part of the enabling works, it is proposed to construct four development plateaus along with three attenuation ponds. The attenuation ponds are proposed to be located in the northeastern corner of the site and adjacent to the eastern boundary.

It is proposed to excavate materials from the northeastern, southeastern and western parts of the site and re-engineer this material across the northern and central parts of the site.

The enabling works will result in four earthworks batters. The earthwork batters are proposed to be adjacent most of the northern boundary of the site, in the north east, along the eastern and southern boundaries and in the centre of the site, splitting two of the proposed development plateaus.

A slope stability assessment has been carried out for four slope sections across the site; this is referenced below.

- JPG (Leeds) Limited. Preliminary Slope Stability Assessment. Employment Land, Barnsley West. Report Ref: 4848-JPG-SW-XX-RP-G-0610-S2-P01. Dated June 2023 for Strata Sterling Barnsley West Limited

The report provides an assessment of the stability of the slopes based on empirical data only. It also provides recommendations for additional ground investigative works which are also mentioned in Section 3.0 of this report.

On completion of the additional works, the stability of the proposed slopes can be further assessed.

4.2 Materials for use in Earthworks

Based on the known ground conditions to date, it is likely that the materials used in the earthworks, will include opencast backfill (granular and cohesive), made ground (most likely associated to the M1 construction adjacent to the southern boundary), residual bedrock and bedrock.



A summary of the materials expected to be used in the earthworks are summarised in Table 4.2.1 below.

Table 4.2.1 – Summary of Anticipated Material Types

Material Type	Principle Constituents	Material Classification	Processing/Engineering Notes
Colliery Spoil - Made Ground	Predominantly cohesive with portions of gravel, cobbles and boulders.	Generally Class 2A and 2C with some oversize.	Oversized materials will require segregation for crushing. Cohesive and granular materials to be split and stockpiled separately.
Made Ground	Predominantly cohesive with portions of gravel, cobbles and boulders with a small percentage of brick.	Generally Class 2A and 2C with some oversize.	Oversized materials will require segregation for crushing.
Residual Bedrock	Slightly sandy slightly gravelly silty clay.	Generally Class 2A to 2C.	-
Bedrock	Extremely weak rock (mudstone).	Expected to break down to Class 2C.	Compaction trials required to develop a method which satisfactorily breaks down weak rock materials. Further compaction testing will confirm whether the weak rock, once broken down, will have a suitable moisture content.
	Hard mudstone, siltstone, sandstone.	Anticipated to be used as Class 6N once processed.	Hard rock encountered will require segregation and crushing.
	Coal.	Unacceptable – Class U2.	Coal to be segregated for disposal off site. No coal is to remain within 1.00m of the finished development plateau level. Coal to be removed to below 1.00m of finished levels in landscaping/gardens.

Classification of site won materials shall be confirmed prior to commencing the earthworks in order to inform the detailed design, in accordance with Figure 6/1 of Series 600 of the Specification for Highway Works. Frequency of testing is to be confirmed by the Engineer.

4.3 Earthworks Methodology and Ground Treatment Options

Prior to commencement of any earthworks, it is prudent that a proposed development layout is provided in order to confirm the most appropriate ground treatment option for each area.

It is recommended that the topsoil is stripped and stockpiled onsite, in an area of minimal disturbance, i.e. southwestern corner of the site. A sufficient quantity of topsoil should remain onsite for the proposed soft landscaping areas and any excess should be exported offsite.

For the purpose of this report, the site has been split into two areas, within and outside of the Hunters Cottage and Extensions OCCS as the ground treatment will differ.



Outside the Hunters Cottage and Extensions OCCS.

It is recommended that as part of the large scale cut and fill earthworks operation, the full thickness of any made ground should be excavated and re-compacted in accordance with a detailed earthworks specification. Based on the preliminary geotechnical information obtained to date it is understood that the granular colliery spoil, cohesive made ground and residual soil are considered suitable for re-use in earthworks, but the cohesive colliery spoil material may be too wet to achieve suitable compaction.

On completion of the earthworks, it is considered that traditional shallow foundations can be utilised for any proposed developments outside the opencast.

Within the Hunters Cottage and Extensions OCCS.

It is recommended that as part of the large scale cut and fill earthwork operation, the top 6m of backfill inside the OCCSs should be excavated and stockpiled onsite, outside the footprint of the OCCS, i.e. northwestern corner of the site.

In areas where there is less than 2m of backfill remaining inside the OCCS, predominately, i.e. along the western part of The Hunters Cottage OCCS and the southern part of The Hunters Cottage Extensions OCCS, it is recommended that this should also be excavated and compacted in accordance with a detailed earthworks specification.

In areas where there is more than 2m of backfill remaining, i.e. the central and eastern parts of The Hunters Cottage OCCS, it is recommended that up to 8.0m of the backfill should be treated by Dynamic Compaction (DC). This compaction method would leave up to 5m of untreated backfill at the base of the opencast, adjacent the eastern boundary and in the south east of The Hunters Cottage OCCS. However, since The Hunters Cottage OCCS was backfilled between 70 to 75 years ago, it is assumed that majority of the self-weight settlement should have occurred within the bottom 5m of the Hunters Cottage OCCS. This should be confirmed with the additional works outlined Section 3.3. Furthermore, it is recommended that settlement analysis should be undertaken in order to confirm whether predicted total settlement does not affect the design of the proposed development.

On completion of the 2m turnover and DC treatment, it is recommended that the excavation should be backfilled with engineered fill to the proposed formation levels in accordance with a detailed earthworks specification.

It is recommended that 5m of highwall beneath any proposed development is removed and up to 3m beneath any proposed highways to avoid any hard spots and minimise the risk of any potential differential settlement. It is recommended that two layers of geogrid with stone surround be installed as part of all proposed highway construction where the highway straddles a highwall.



A schematic drawing outlining the recommended treatment options have been produced for the site. This drawing is referenced below, and a copy is provided in Appendix A.

- JPG (Leeds) Limited. Barnsley West. Typical Treatment Section. Drawing No: 4848-JPG-ZZ-ZZ-DR-C-1200-S2-P01, dated April 2023.



5.0 RECOMMENDATIONS

It is recommended that a comprehensive earthworks specification is produced outlining the necessary earthworks and validation requirements needed to create the development plateaus and earthwork embankments.

It is recommended that a series of static cone penetration tests (CPTs) should be carried out following the earthworks operations to confirm the geotechnical parameters of the placed/treated soils.

It is recommended that settlement analysis should be undertaken in order to ensure that total and differential settlement below the proposed development are within tolerable limits.



Appendix A Figures

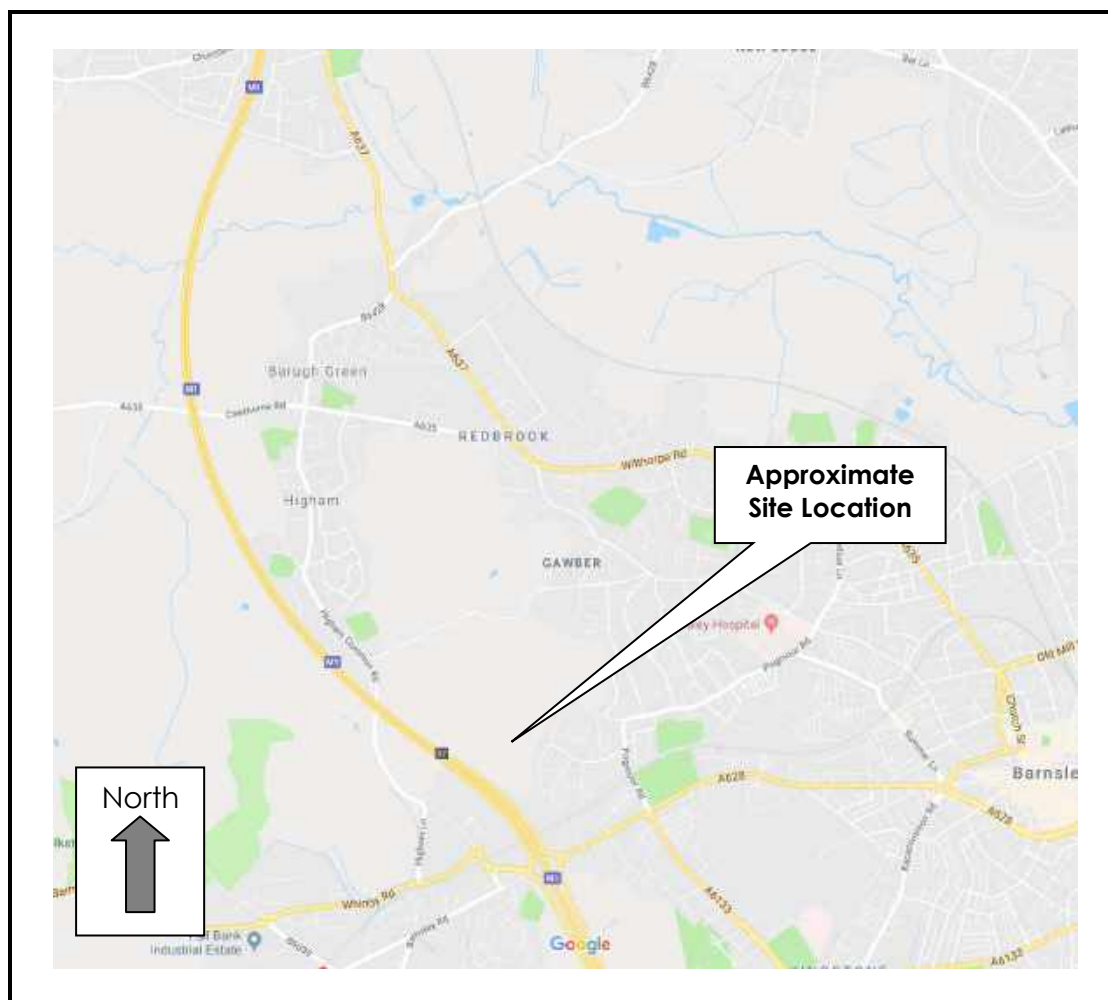


Figure 1 – Site Location Plan

Site	Employment Lane, Barnsley West
Client	Strata Sterling Barnsley West Limited
Job Number	4848
Scale	NTS

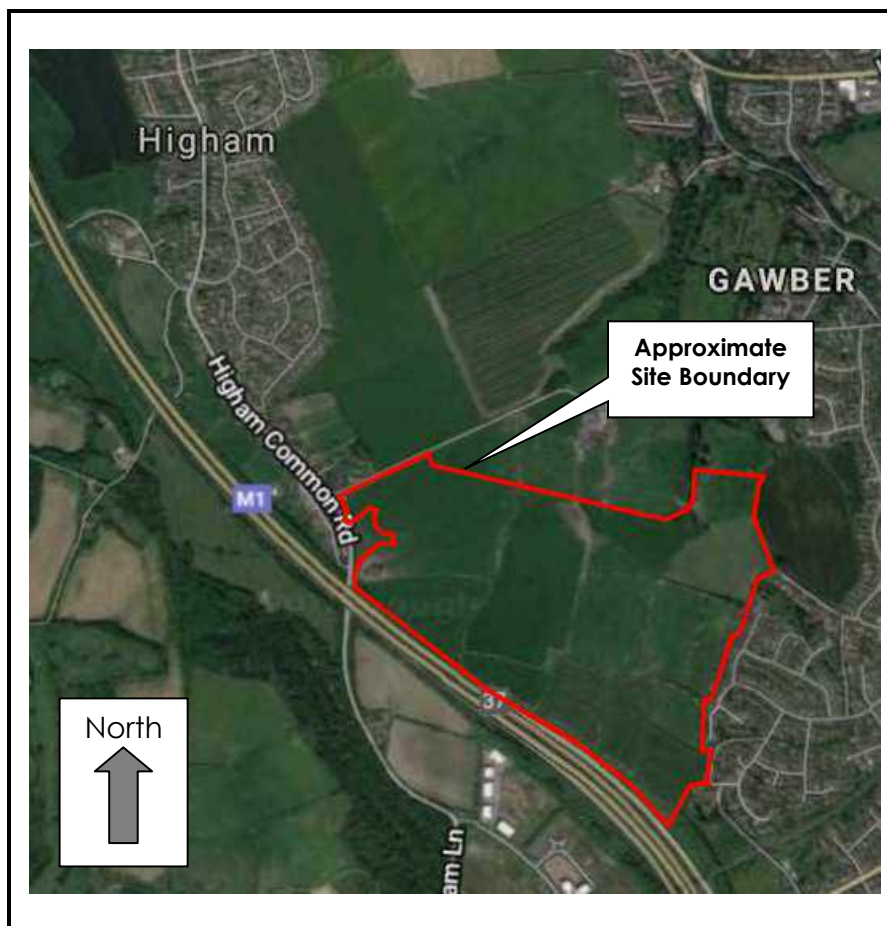
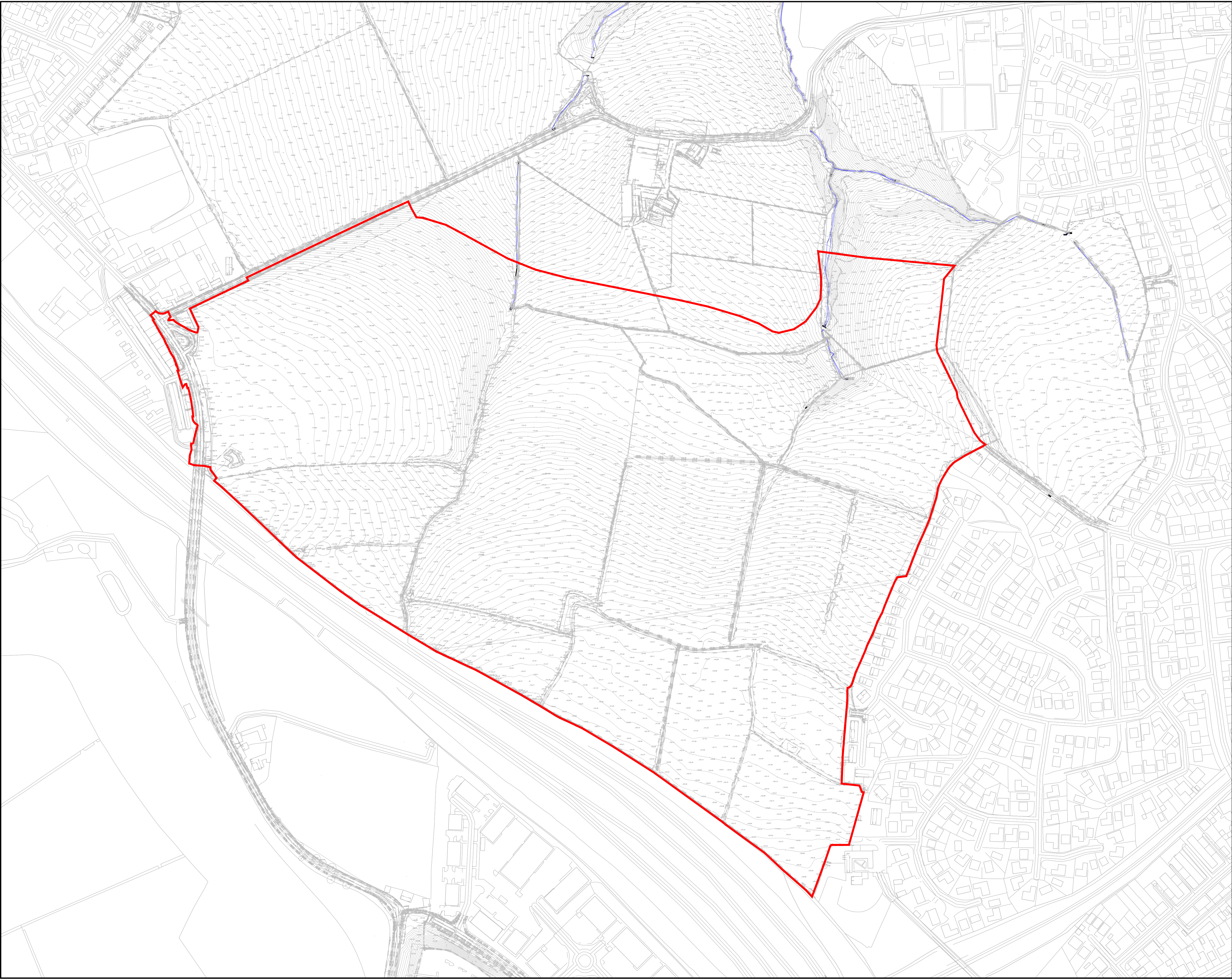


Figure 2 – Aerial Photograph	
Site	Employment Lane, Barnsley West
Client	Strata Sterling Barnsley West Limited
Job Number	4848
Scale	NTS



DO NOT SCALE (A1)

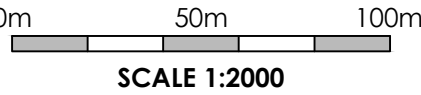
NOTES

GENERAL NOTES

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3. ANY DISCREPANCIES SHOULD BE REPORTED TO THE ENGINEER IMMEDIATELY SO THAT CLARIFICATION CAN BE SOUGHT PRIOR TO COMMENCEMENT OF WORKS.

LEGEND

COMMERCIAL BOUNDARY



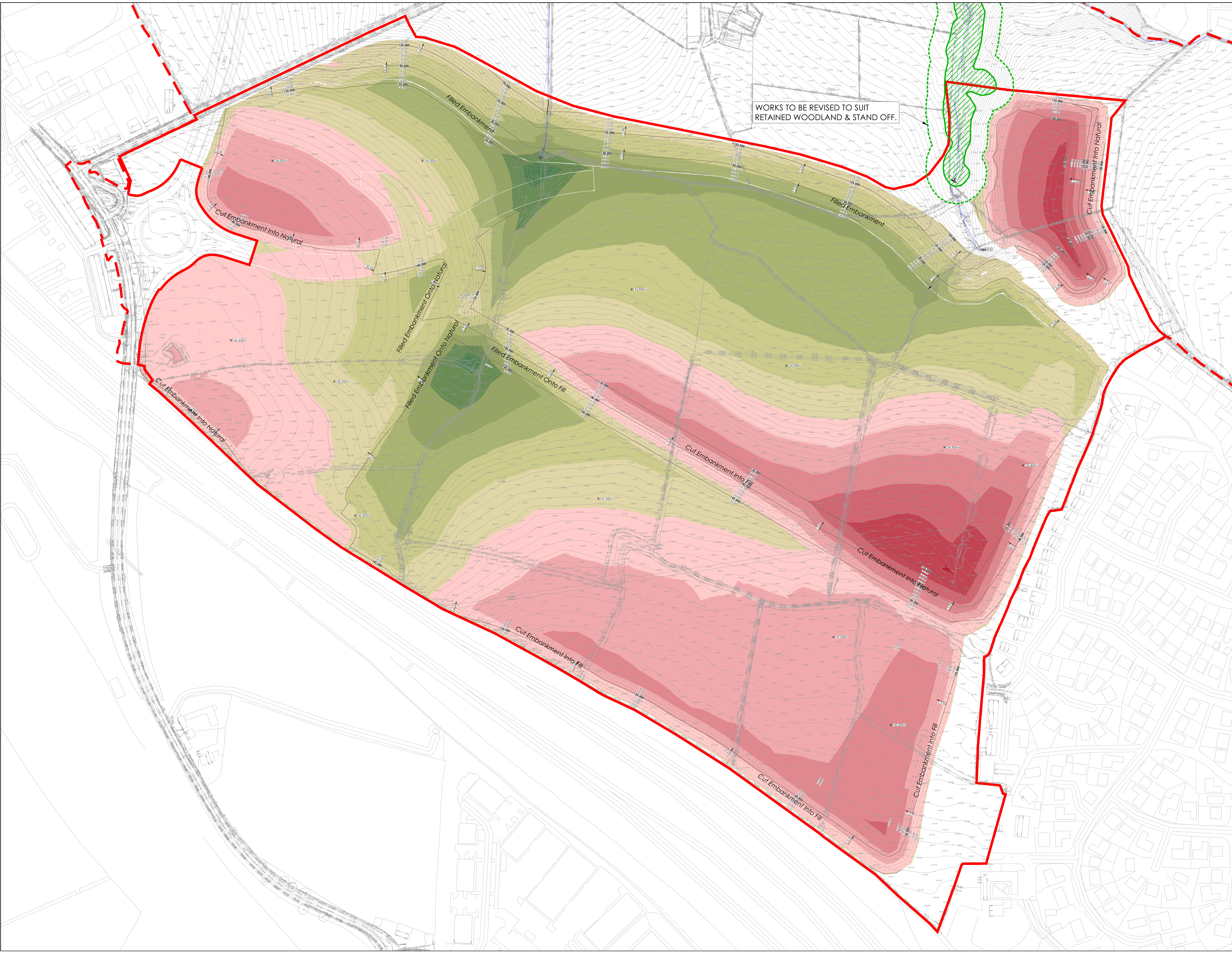
P01	FIRST ISSUE	20.03.23	JDM	EBH
REV	DESCRIPTION	DATE	CHK	BY

Project
BARNSELEY WEST

Drawing Title
COMMERCIAL BOUNDARY PLAN

INFORMATION





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NOTES

EARTHWORKS NOTES

1. JPG PROPOSED EARTHWORKS ANALYSIS IS INDICATIVE ONLY. IT IS BASED ON THIRD PARTY INFORMATION AND THEREFORE JPG DO NOT ACCEPT RESPONSIBILITY FOR VARIATION IN THE ACTUAL DEPTH OF SITE STRIP OR ANY OTHER CRITICAL EARTHWORKS PARAMETERS THAT MAY AFFECT FINAL CUT AND FILL VOLUMES.

2. ISOPACHYTE COLOUR BANDINGS DENOTE APPROXIMATE CUT AND FILL VOLUMES BETWEEN THE EXISTING SITE STRIP AND PROPOSED FORMATION LEVELS. REFER TO EARTHWORKS ANALYSIS TABLE.

3. AREAS NOT SHADED WITH ISOPACHYTE COLOUR BANDINGS HAVE NOT BEEN INCLUDED IN THE CUT/FILL ANALYSIS.

4. ALL RETAINING WALL LOCATIONS SHOWN ARE INDICATIVE ONLY AND ARE SUBJECT TO DETAILED DESIGN.

5. APPROXIMATE EARTHWORK VOLUMES HAVE BEEN DETERMINED BASED ON THE FOLLOWING CAVEATS:

- NO BUILDING FACTORS HAVE BEEN ACCOUNTED FOR.
- ARRIVES FROM DRAINAGE AND FOUNDATION EXCAVATIONS HAVE NOT BEEN ACCOUNTED FOR.
- DISBURSED MATERIAL FROM EXISTING BUILDINGS/STRUCTURES HAVE NOT BEEN ACCOUNTED FOR.

EARTHWORKS ANALYSIS

PROPOSED SITE STRIP

ALLOW FOR A 200mm DEEP SITE STRIP.

TOTAL AREA = 367097m²

TOTAL VOLUME = 73419m³

SITE STRIP MATERIAL DEEMED TO BE UNSUITABLE FOR RE-USE AS ENGINEERING FILL

TOPOGRAPHICAL SURVEY INFORMATION USED IN THE EARTHWORKS ANALYSIS TAKEN FROM: HAYCOCK & TODD LAND SURVEYS, DRAWING NO. 58315.

ANALYSIS BETWEEN PROPOSED SITE STRIP & PROPOSED PLATEAU LEVELS

2D AREA	367097m ²
CUT	685422m ³
FILL	735041m ³
NET (SHORTFALL)	49619m ³
MAXIMUM CUT DEPTH	-12.780m
MAXIMUM FILL DEPTH	14.140m

SURFACE LEVEL DATA

MIN. LEVEL	MAX. LEVEL	COLOUR
-15.000m	-12.500m	
-12.500m	-10.000m	
-10.000m	-7.500m	
-7.500m	-5.000m	
-5.000m	-2.500m	
-2.500m	0.000m	
0.000m	2.500m	
2.500m	5.000m	
5.000m	7.500m	
7.500m	10.000m	
10.000m	12.500m	
12.500m	15.000m	

LEGEND

-5.000

DENOTES PROPOSED MAJOR CONTOURS

-1.000

DENOTES PROPOSED MINOR CONTOURS

1:40

DENOTES PROPOSED GRADIENTS

DENOTES DEVELOPABLE PLATEAU

0m25m50m

SCALE 1:1000

P03	REVISED TO LATEST LEVELS	17.04.23	CPH	LSG
P02	REVISED TO LATEST LEVELS	11.04.23	CPH	LSG
P01	FIRST ISSUE	10.03.23	CPH	LSG
REV	DESCRIPTION	DATE	CHK	BY

Project

BARNSELEY WEST

Drawing Title

PROPOSED EARTHWORKS
CUT & FILL ANALYSIS

INFORMATION

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S2

P03

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NOTES

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LEGEND

- 5.000 DENOTES PROPOSED MAJOR CONTOURS
- 1.000 DENOTES PROPOSED MINOR CONTOURS
- 1:40 DENOTES PROPOSED GRADIENTS
- DENOTES DEVELOPABLE PLATEAU
- DENOTES ATTENUATION BASINS
- DENOTES LANDSCAPING AREA
- DENOTES FILLED EMBANKMENT
- DENOTES CUT EMBANKMENT

0m 25m 50m
SCALE 1:1000

WORKS TO BE REVISED TO SUIT
RETAINED WOODLAND & STAND OFF.

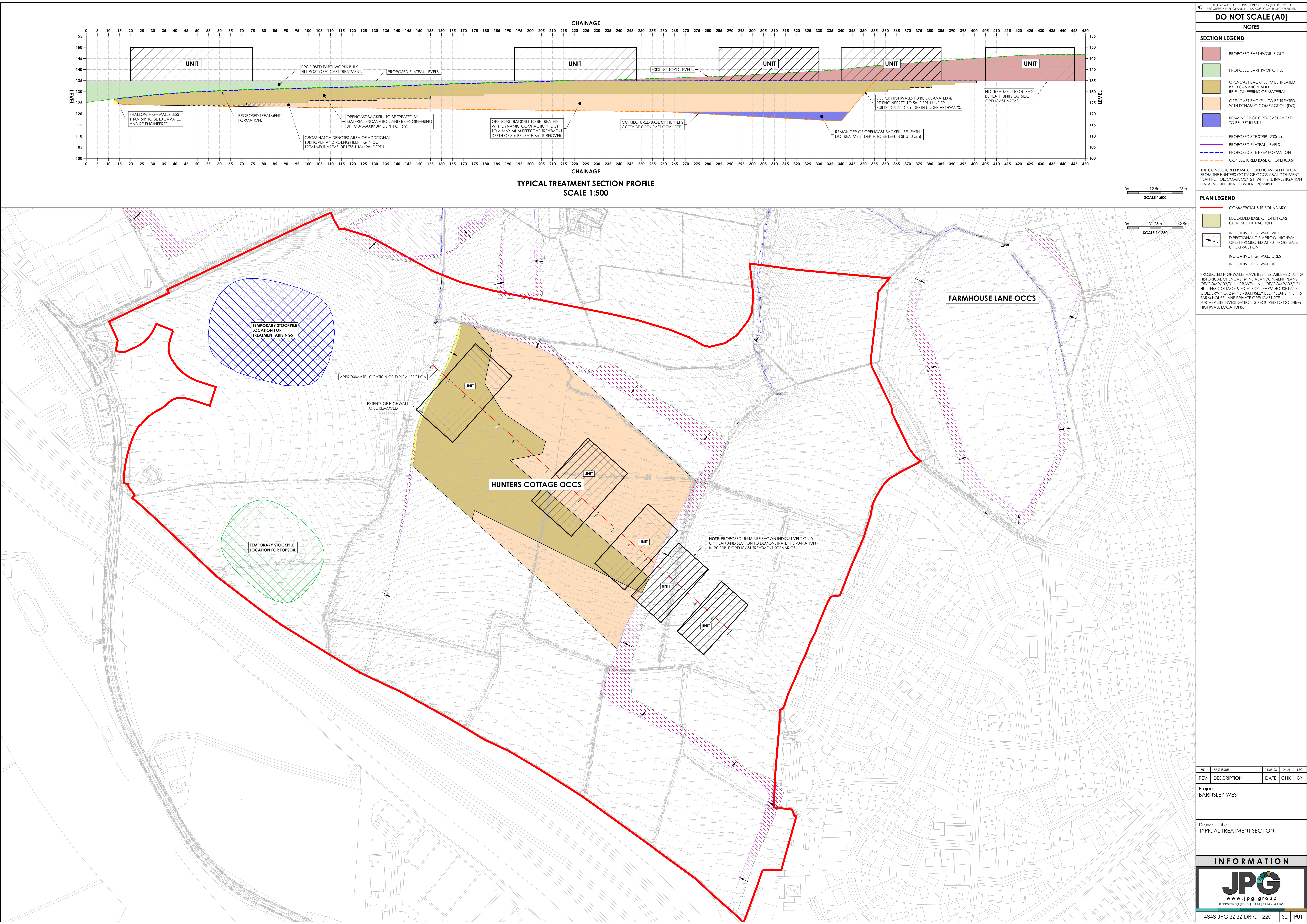
P03	REVISED HIGHWAY ALIGNMENT	17.04.23	CPH	LSG
P02	REVISED ATTENUATION LAYOUT	11.04.23	CPH	LSG
P01	FIRST ISSUE	10.03.23	CPH	LSG
REV	DESCRIPTION	DATE	CHK	BY

Project
BARNSLEY WEST

Drawing Title
PROPOSED EARTHWORKS LEVELS

INFORMATION





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DO NOT SCALE (A0)

NOTES

SECTION LEGEND

PROPOSED EARTHWORKS CUT

PROPOSED EARTHWORKS FILL

OPENCAST BACKFILL TO BE TREATED BY EXCAVATION AND RE-ENGINEERING OF MATERIAL

OPENCAST BACKFILL TO BE TREATED WITH DYNAMIC COMPACTION (DC)

REMAINDER OF OPENCAST BACKFILL TO BE LEFT IN SITU

PROPOSED SITE STRIP (200mm)

PROPOSED PLATEAU LEVELS

PROPOSED SITE PREP FORMATION

CONJECTURED BASE OF OPENCAST

THE CONJECTURED BASE OF OPENCAST BEEN TAKEN FROM THE HUNTERS COTTAGE OCCS ABANDONMENT PLAN REF. OE/COMP/03/11/21, WITH SITE INVESTIGATION DATA INCORPORATED WHERE POSSIBLE.

PLAN LEGEND

COMMERCIAL SITE BOUNDARY

RECORDED BASE OF OPEN CAST COAL SITE EXTRACTION

INDICATIVE HIGHWALL WITH DIRECTIONAL DIP ARROW. HIGHWALL CREST PROJECTED AT 70° FROM BASE OF EXTRACTION.

INDICATIVE HIGHWALL CREST

INDICATIVE HIGHWALL TOE

PROJECTED HIGHWALLS HAVE BEEN ESTABLISHED USING HISTORICAL OPENCAST MINE ABANDONMENT PLANS: OE/COMP/03/11 - CRAVEN & S. OE/COMP/03/12 - HUNTERS COTTAGE & EXTENSION, FARM HOUSE LANE COLLIERY- NO. 2 MINE - BARNLEY BED PILLARS, N.E.41 S FARM HOUSE LANE PRIVATE OPENCAST SITE. FURTHER SITE INVESTIGATION IS REQUIRED TO CONFIRM HIGHWALL LOCATIONS.

P01	FIRST ISSUE	11.05.23	DMH	LSG
REV	DESCRIPTION	DATE	CHK	BY
Project BARNLEY WEST				
Drawing Title TYPICAL TREATMENT SECTION				
INFORMATION				
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4848-JPG-ZZ-ZZ-DR-C-1220			S2	P01

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