

- NOTES
-  JPG TRIAL PIT LOCATION
 -  JPG ROTARY PROBEHOLE LOCATION
 -  EASTWOODS ROTARY PROBEHOLE LOCATION
 -  APPROXIMATE WIDER SITE BOUNDARY CONSIDERED IN 3RD PARTY REPORTS
 -  APPROXIMATE CURRENT SITE BOUNDARY

REV.	DESCRIPTION	DATE



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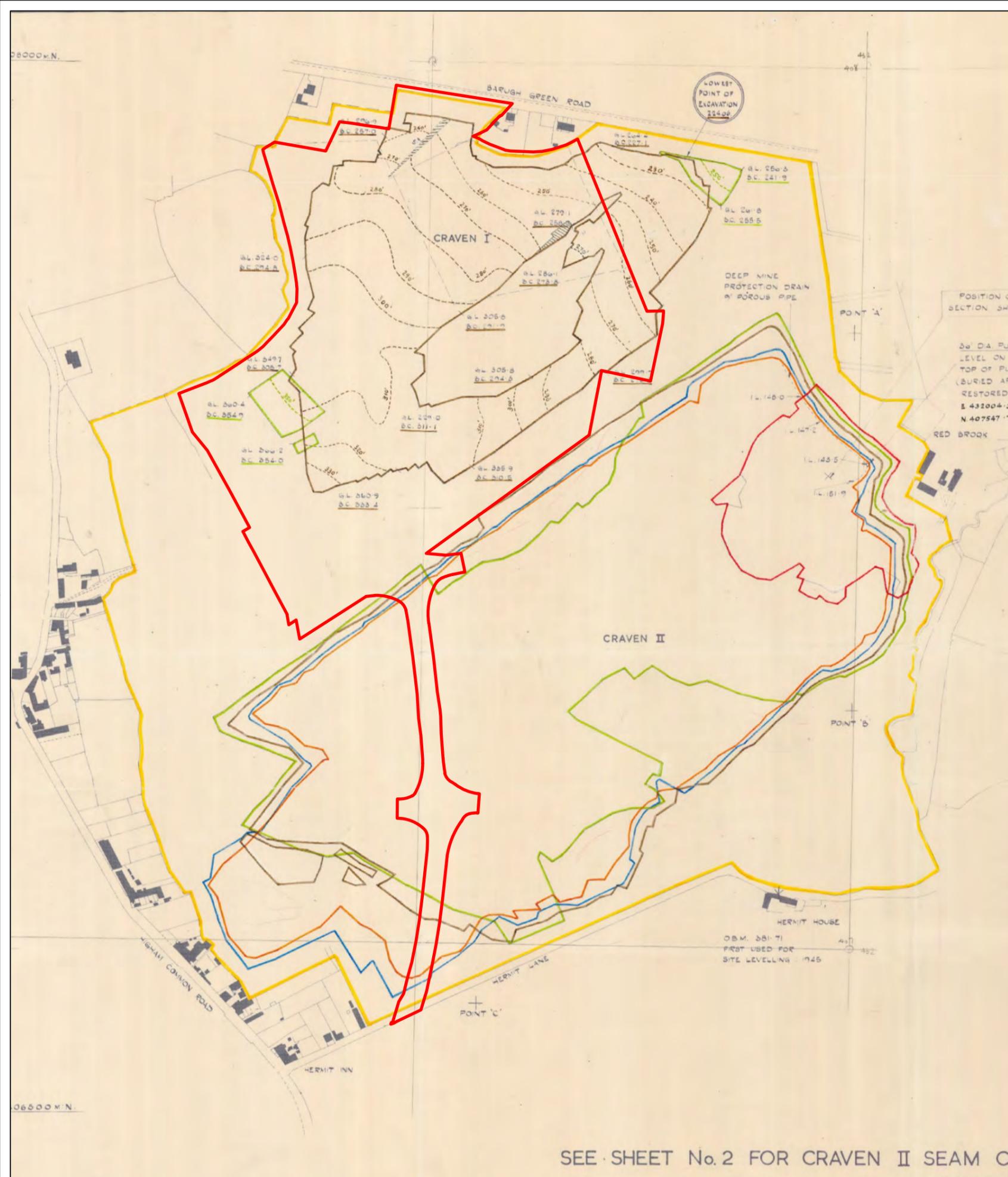
CLIENT
STRATA HOMES

JOB TITLE
**BARNSELY WEST,
LAND TRANSFER
ONE**

DRAWING TITLE
**3RD PARTY EXPLORATORY HOLE
LOCATIONS**

DRAWN GLM	DATE 23/12/2021	STATUS FOR COMMENT <input type="checkbox"/>
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SCALE 1:7,500	SHEET A3	DRAWING NO. 3104/9	REVISION
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NOTES
 REPRODUCED FROM THE COAL AUTHORITIES
 DRAWING REF. NE498 SHEET 1 OF 3 DATED
 1ST MAY 1964

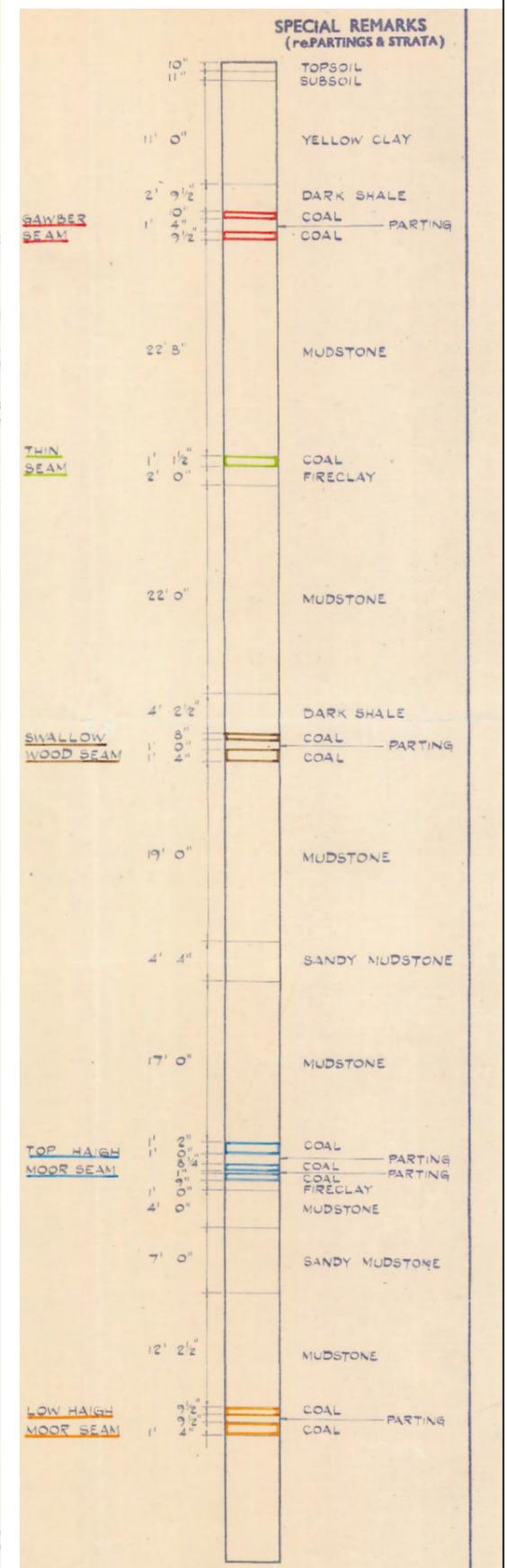
NOTE: VERTICAL SECTION NOT TO SCALE

— APPROXIMATE SITE BOUNDARY

KEY TO COAL SEAMS REPRODUCED BELOW:

GAWBER	THIN	SWALLOW WOOD	TOP HAIGH MOOR	LOW HAIGH MOOR
GL 294.7 BC 271.7	GL 347.6 BC 342.4	GL 277.4 BC 224.9	GL 449.3 BC 404.7	GL 299.2 BC 154.7

REV.	DESCRIPTION	DATE



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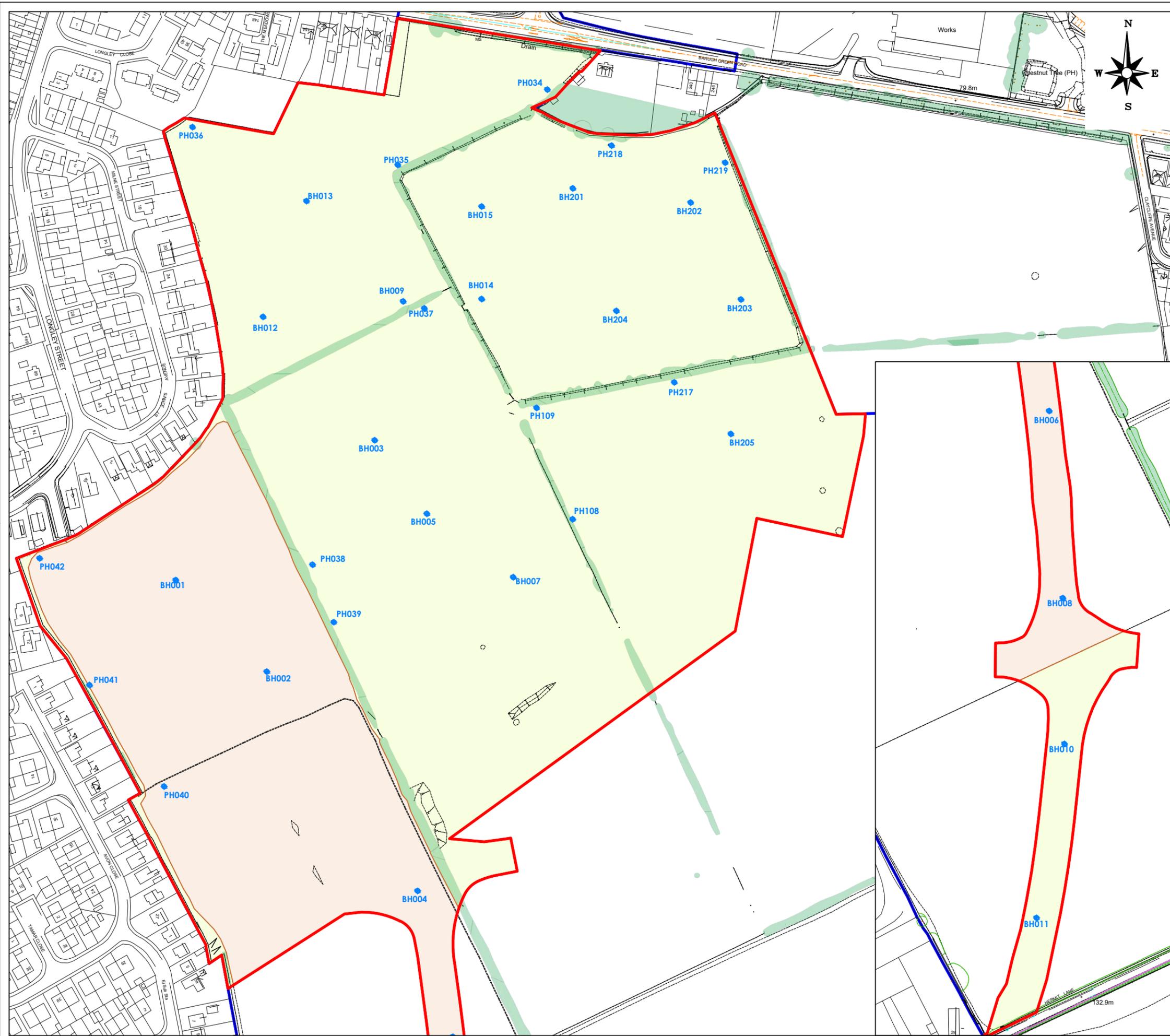
CLIENT
 STRATA HOMES

JOB TITLE
 BARNSELY WEST,
 LAND TRANSFER
 ONE

DRAWING TITLE
 COAL AUTHORITY OPENCAST PLAN
 REF. NE498 SHEET 1 OF 3

DRAWN GLM	DATE 28/10/2021	STATUS FOR COMMENT <input type="checkbox"/>
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SCALE 1:5,000	SHEET A3	DRAWING NO. 3104/10	REVISION
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- NOTES
- GRASS & OVERGROWN AREAS
 - ARABLE FARMLAND (STUBBLE)
 - MONITORING WELL LOCATION
 - APPROXIMATE SITE BOUNDARY

REV.	DESCRIPTION	DATE



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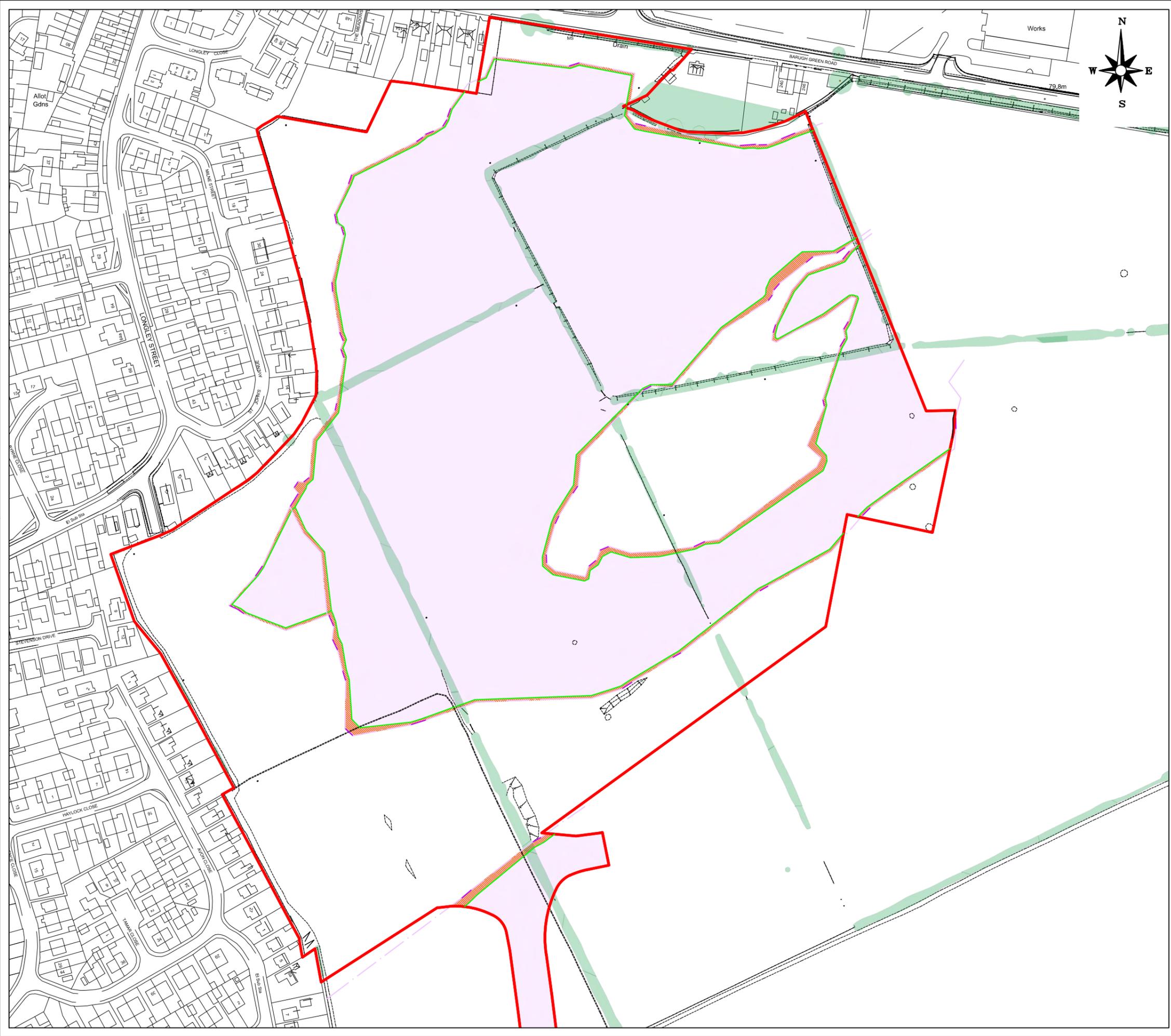
CLIENT
STRATA HOMES

JOB TITLE
**BARNSELY WEST,
LAND TRANSFER
ONE**

DRAWING TITLE
MONITORING WELL LOCATIONS

DRAWN GLM	DATE 20/12/2021	STATUS FOR COMMENT <input type="checkbox"/>
CHECKED AG	DATE 20/12/2021	FOR APPROVAL <input type="checkbox"/>
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SCALE 1:1000	SHEET A3	DRAWING NO. 3104/11	REVISION
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NOTES

- QUARRY HIGHWALL CREST (EXTRAPOLATED BETWEEN HOLES)
- QUARRY HIGH WALL CREST (SURVEYED POSITION)
- QUARRY HIGH WALL TOE
- AREA OVERLAYING LINE OF BURIED HIGHWALL
- APPROXIMATE FOOTPRINT OF FORMER OPENCAST
- APPROXIMATE SITE BOUNDARY

REV.	DESCRIPTION	DATE



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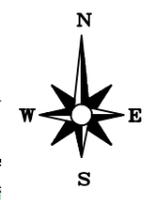
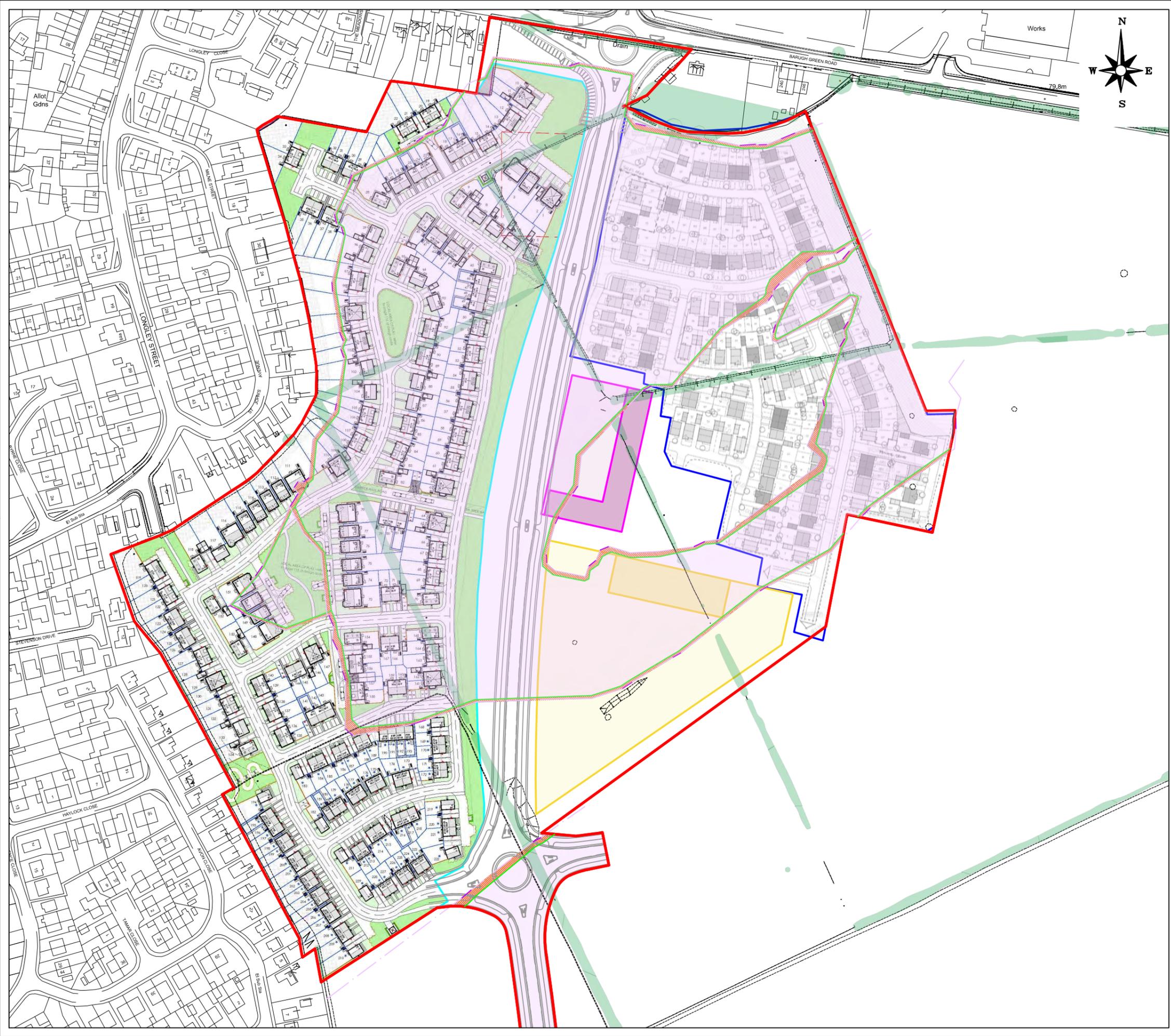
JOB TITLE

BARNSELY WEST,
LAND TRANSFER
ONE

DRAWING TITLE

LINE OF OPENCAST HIGHWALLS

DRAWN	GLM	DATE	24/01/2022	STATUS	
CHECKED	AG	DATE	24/01/2022	FOR COMMENT	<input type="checkbox"/>
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				DRAFT	<input type="checkbox"/>
				FINAL	<input checked="" type="checkbox"/>
SCALE	1:2,500	SHEET	A3	DRAWING NO.	3104/12
				REVISION	



- NOTES
- QUARRY HIGHWALL CREST (EXTRAPOLATED BETWEEN HOLES)
 - QUARRY HIGH WALL CREST (SURVEYED POSITION)
 - QUARRY HIGH WALL TOE
 - AREA OVERLAYING LINE OF BURIED HIGHWALL
 - APPROXIMATE FOOTPRINT OF FORMER OPENCAST
 - DEVELOPMENT AREA 1
- REPRODUCED FROM STRATA HOMES' DRAWING 'BARNSELY WEST PHASE 1, S75 1 - SKETCH LAYOUT' REF. 20-CL4-SEGB-BWP1-02 REV. J, DATED 18/06/2021
- DEVELOPMENT AREA 2
- REPRODUCED FROM MILLER HOMES' DRAWING 'BARNSELY WEST SK04, REF. SK04, ISSUED BY STEN ARCHITECTURE IN MARCH 2021
- DEVELOPMENT AREA 3 (RETAIL)
 - DEVELOPMENT AREA 4 (SCHOOL)
 - APPROXIMATE SITE BOUNDARY
- | REV. | DESCRIPTION | DATE |
|------|-------------|------|
| | | |



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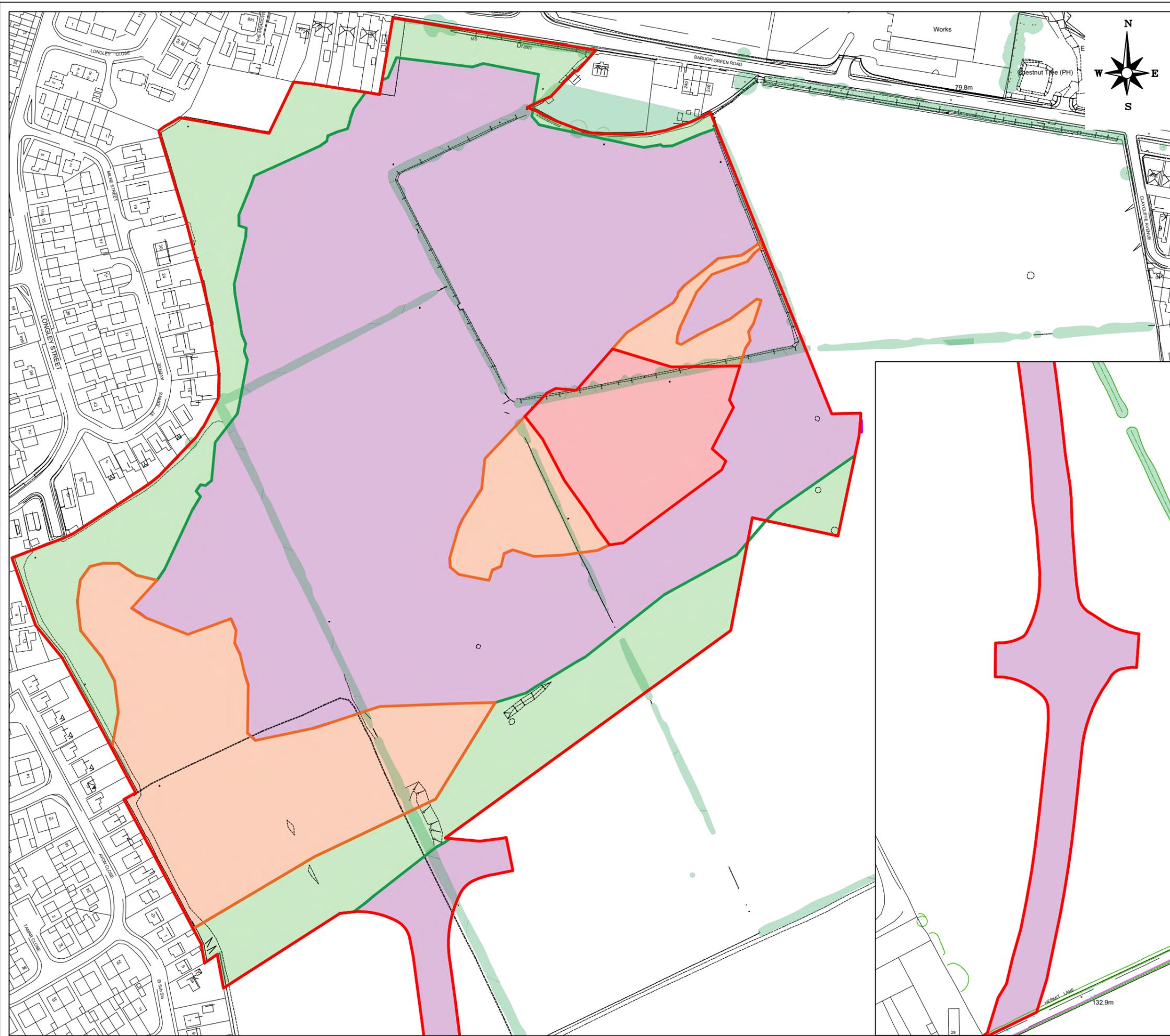
JOB TITLE

BARNSELY WEST,
LAND TRANSFER
ONE

DRAWING TITLE

LINE OF OPENCAST HIGHWALLS
AND PROPOSED LAYOUT

DRAWN	GLM	DATE	24/01/2022	STATUS	FOR COMMENT <input type="checkbox"/>
CHECKED	AG	DATE	24/01/2022	FOR APPROVAL	<input type="checkbox"/>
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				FINAL	<input checked="" type="checkbox"/>
SCALE	1:2,500	SHEET	A3	DRAWING NO.	3104/12A
				REVISION	



- NOTES
- AREA A: <0.9m MADE GROUND & OUTSIDE OF FORMER OPENCAST
 - AREA B: 0.9m TO 2.5m MADE GROUND & OUTSIDE OF FORMER OPENCAST
 - AREA C: >2.5m MADE GROUND & OUTSIDE OF FORMER OPENCAST
 - AREA D: INSIDE FORMER OPENCAST
 - APPROXIMATE SITE BOUNDARY

REV.	DESCRIPTION	DATE



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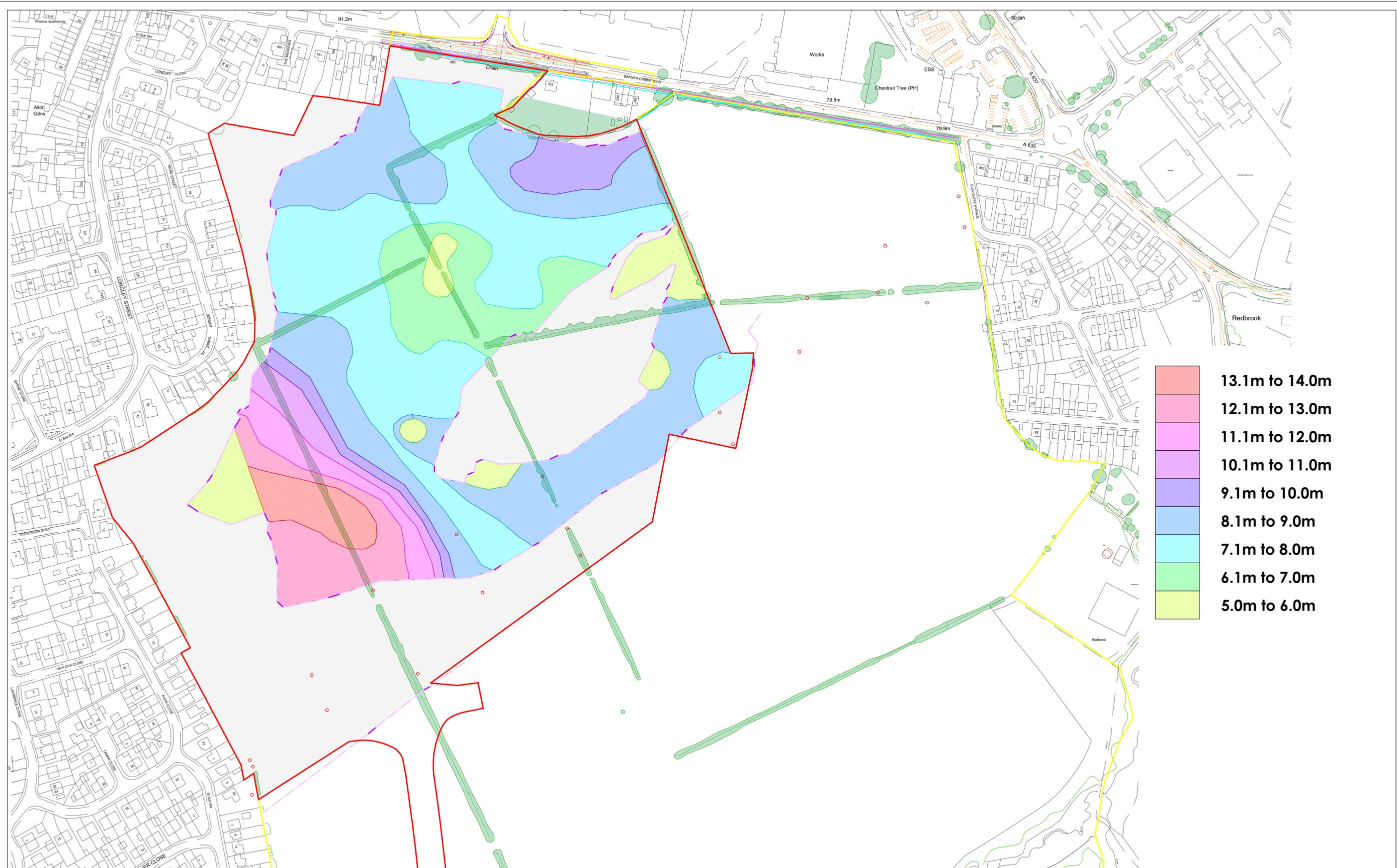
CLIENT
STRATA HOMES

JOB TITLE
**BARNSELY WEST,
LAND TRANSFER
ONE**

DRAWING TITLE
**SITE AREA BASED ON GROUND
CONDITIONS**

DRAWN GLM	DATE 06/01/2021	STATUS FOR COMMENT <input type="checkbox"/>
CHECKED AG	DATE 06/01/2021	FOR APPROVAL <input type="checkbox"/>
		DRAFT <input type="checkbox"/>
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SCALE 1:2,000	SHEET A3	DRAWING NO. 3104/13	REVISION
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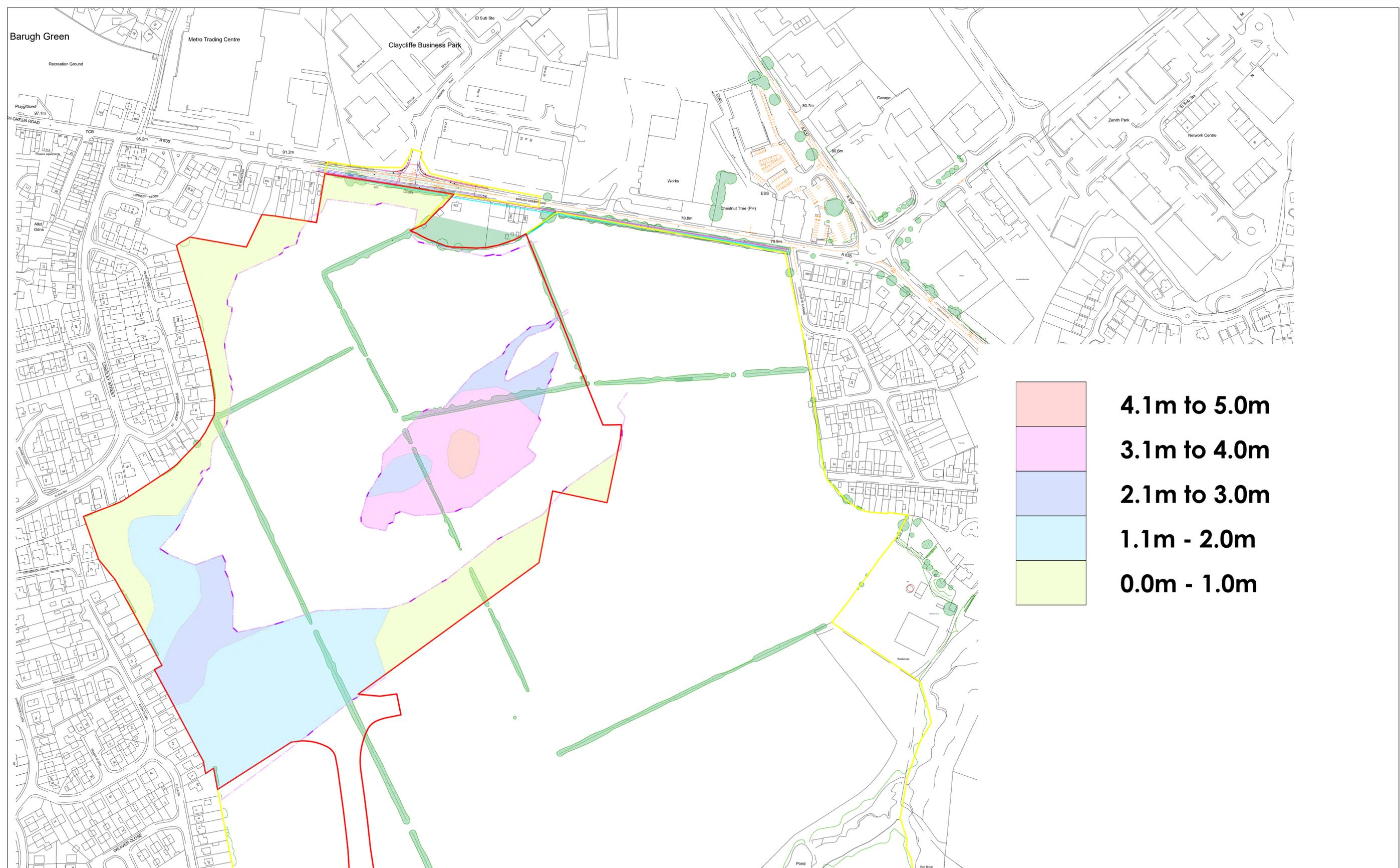
BARNSELY WEST,
LAND TRANSFER ONE

THICKNESS OF MADE GROUND INSIDE
FOOTPRINT OF FORMER OPENCAST
(mBGL)

- QUARRY HIGHWALL (EXTRAPOLATED BETWEEN HOLES)
- QUARRY HIGH WALL (SURVEYED POSITION)
- APPROXIMATE SITE BOUNDARY

DEPTH OF MADE GROUND INTERPRETED FROM AVAILABLE EXPLORATORY HOLES ADVANCED BY LITHOS

STATUS		FOR COMMENT <input type="checkbox"/>		FOR APPROVAL <input type="checkbox"/>		DRAFT <input type="checkbox"/>		FINAL <input checked="" type="checkbox"/>	
DRAWN		GLM		DATE		21/01/2022			
CHECKED		AG		DATE		21/01/2022			
SCALE		1:1,500		SHEET		A1			
DRAWING NO.		3104/14A		REVISION					
REV.	DESCRIPTION	DATE							



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BARNSELY WEST,
LAND TRANSFER ONE

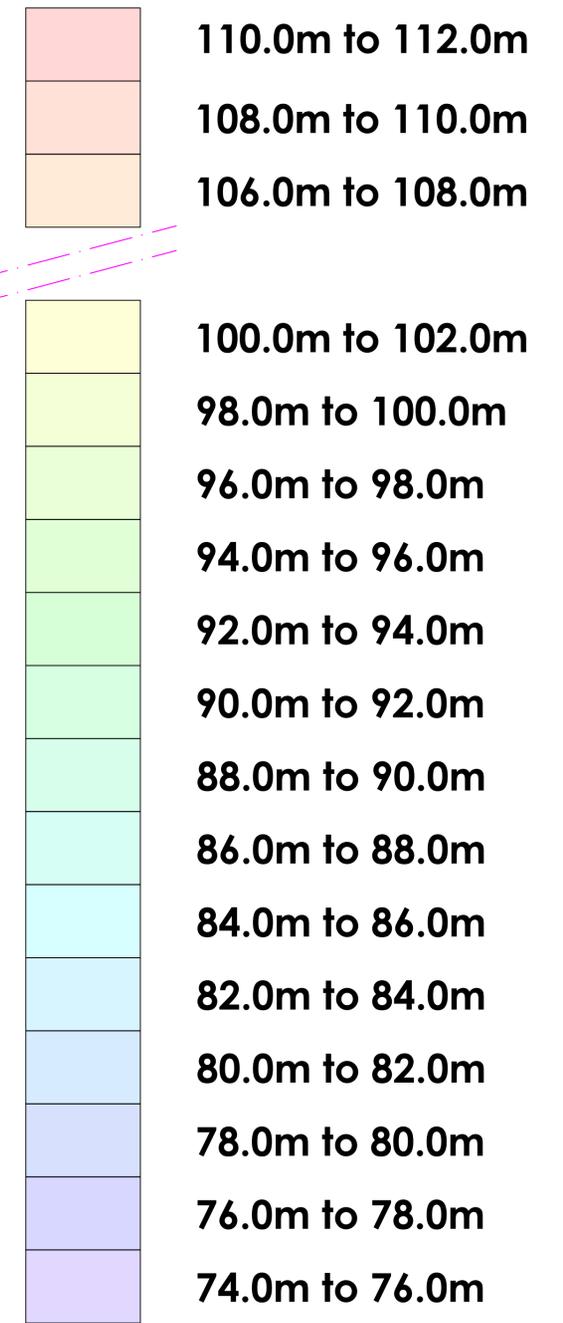
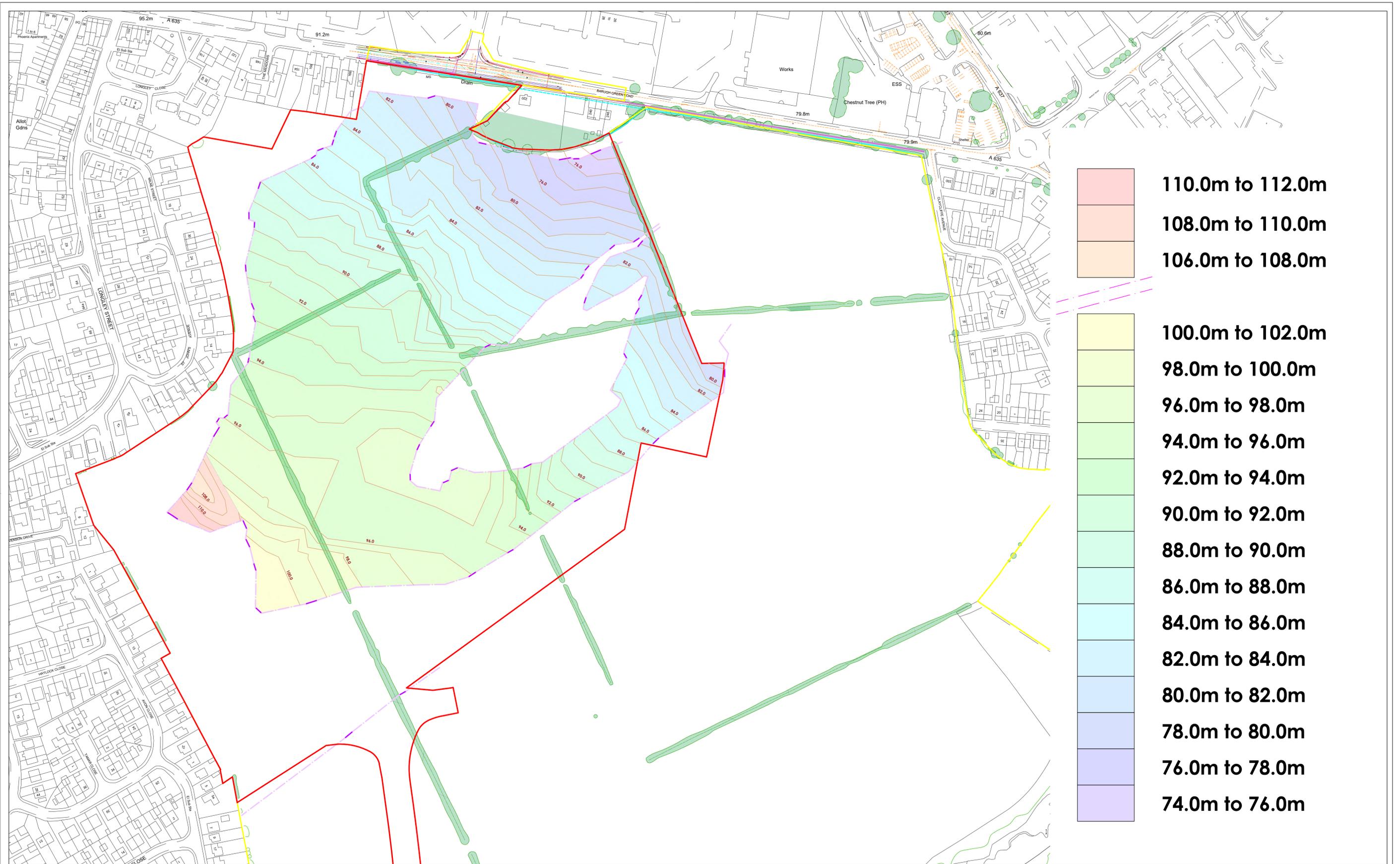
THICKNESS OF MADE GROUND
OUTSIDE FOOTPRINT OF FORMER
OPENCAS (mBGL)

- QUARRY HIGHWALL (EXTRAPOLATED BETWEEN HOLES)
- QUARRY HIGHWALL (SURVEYED POSITION)
- APPROXIMATE SITE BOUNDARY

DEPTH OF MADE GROUND INTERPRETED FROM AVAILABLE EXPLORATORY HOLES ADVANCED BY LITHOS

REV.	DESCRIPTION	DATE

STATUS <input type="checkbox"/> FOR COMMENT <input type="checkbox"/> FOR APPROVAL <input type="checkbox"/> DRAFT <input checked="" type="checkbox"/> FINAL			
DRAWN	GLM	DATE	21/01/2022
CHECKED	AG	DATE	21/01/2022
SCALE	1:1,500	SHEET	A1
DRAWING NO.	3104/148	REVISION	



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JOB TITLE
**BARNLEY WEST,
 LAND TRANSFER ONE**

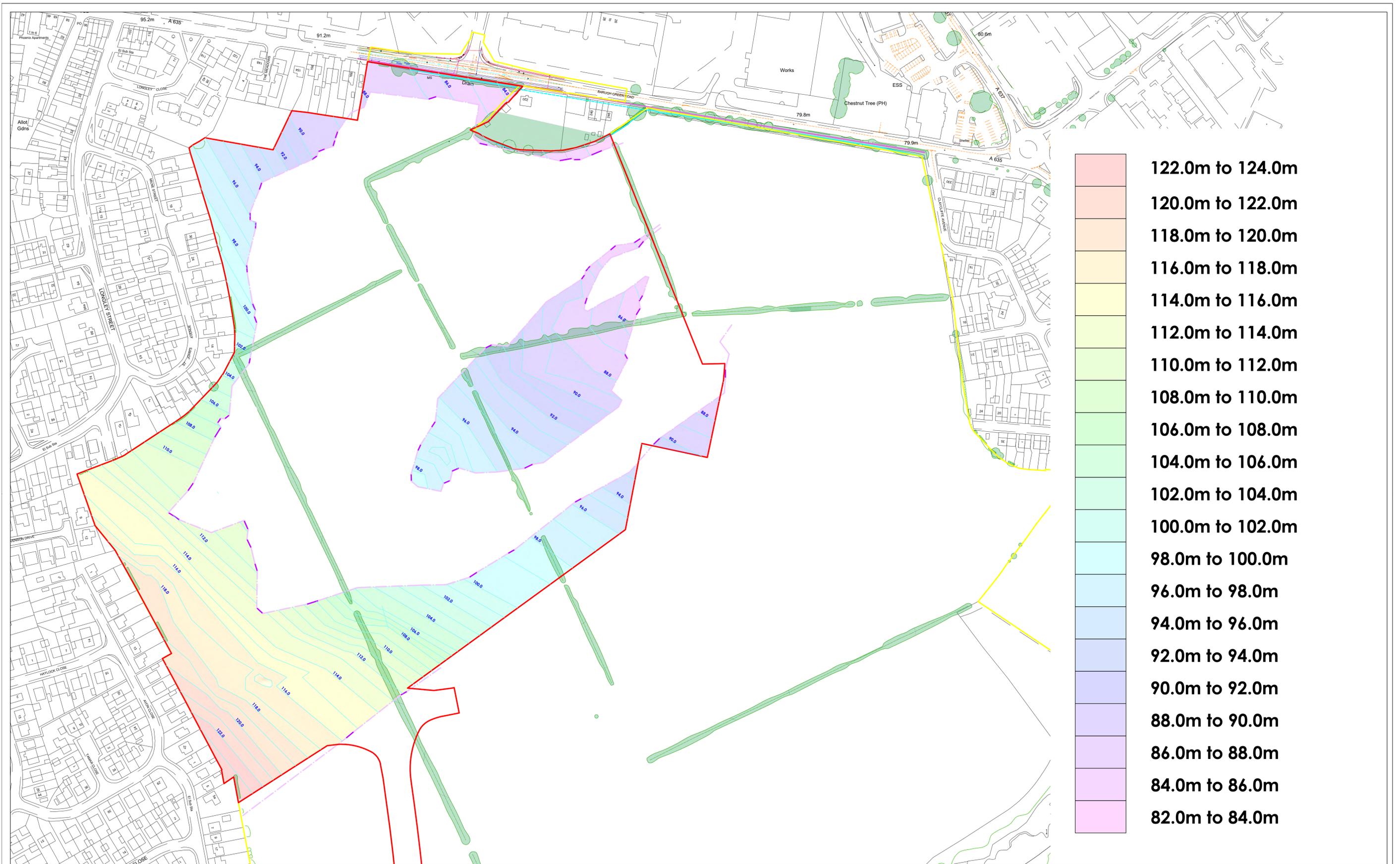
DRAWING TITLE
**BASE OF MADE GROUND INSIDE
 FOOTPRINT OF FORMER OPENCAST
 (mAOD)**

KEY
 100.0 CONTOUR LEVEL OF BASE OF MADE GROUND
 QUARRY HIGHWALL (EXTRAPOLATED BETWEEN HOLES)
 QUARRY HIGHWALL (SURVEYED POSITION)
 APPROXIMATE SITE BOUNDARY

LEVEL OF MADE GROUND INTERPRETED FROM AVAILABLE EXPLORATORY HOLES ADVANCED BY LITHOS

REV.	DESCRIPTION	DATE

STATUS	
FOR COMMENT <input type="checkbox"/>	FOR APPROVAL <input type="checkbox"/>
DRAFT <input type="checkbox"/>	FINAL <input checked="" type="checkbox"/>
DRAWN GLM	DATE 21/01/2022
CHECKED AG	DATE 21/01/2022
SCALE 1:1,500	SHEET A1
DRAWING NO. 3104/15A	REVISION



- 122.0m to 124.0m
- 120.0m to 122.0m
- 118.0m to 120.0m
- 116.0m to 118.0m
- 114.0m to 116.0m
- 112.0m to 114.0m
- 110.0m to 112.0m
- 108.0m to 110.0m
- 106.0m to 108.0m
- 104.0m to 106.0m
- 102.0m to 104.0m
- 100.0m to 102.0m
- 98.0m to 100.0m
- 96.0m to 98.0m
- 94.0m to 96.0m
- 92.0m to 94.0m
- 90.0m to 92.0m
- 88.0m to 90.0m
- 86.0m to 88.0m
- 84.0m to 86.0m
- 82.0m to 84.0m

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JOB TITLE
**BARNSELY WEST,
 LAND TRANSFER ONE**

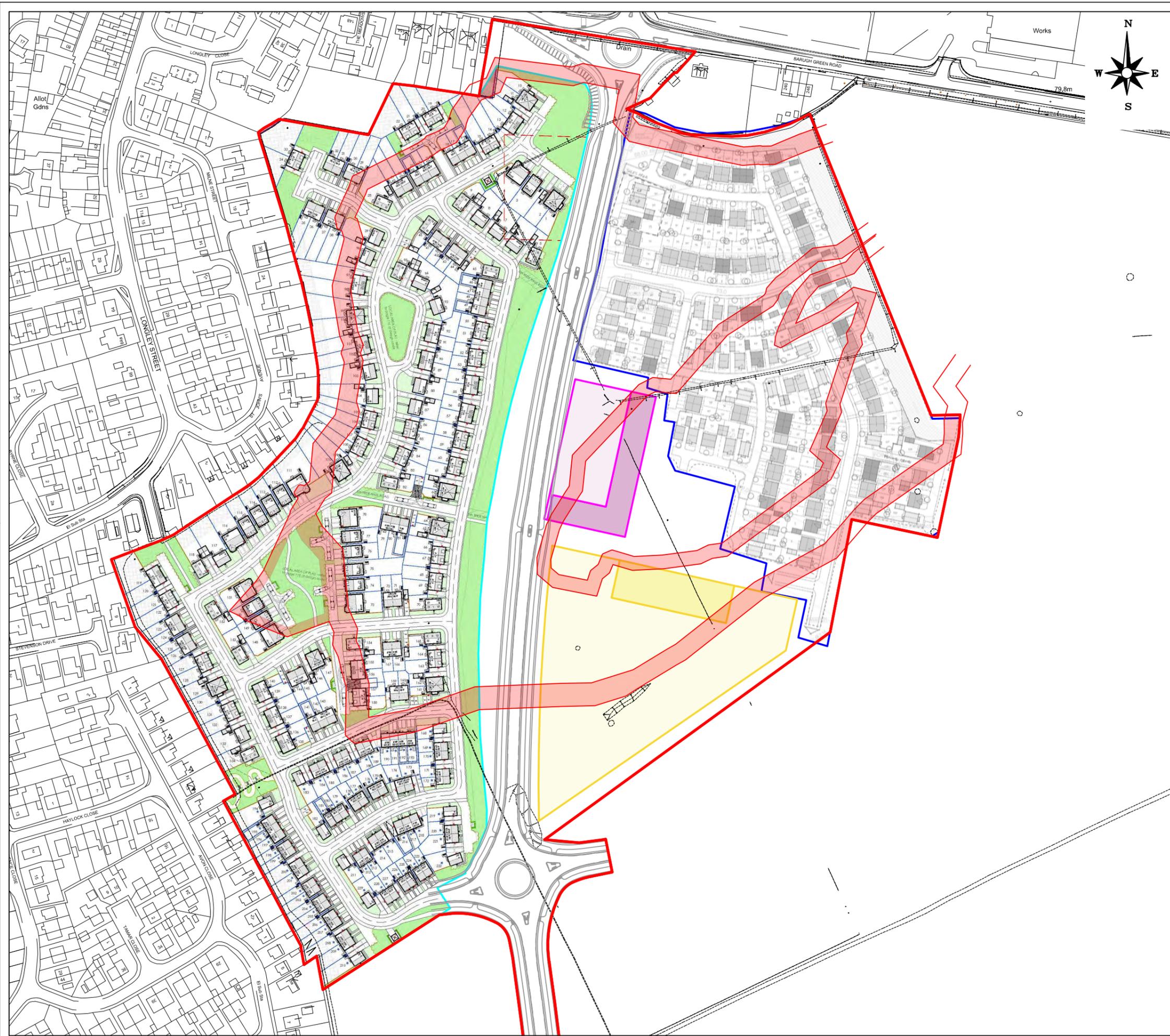
DRAWING TITLE
**BASE OF MADE GROUND OUTSIDE
 FOOTPRINT OF FORMER OPENCAST
 (mAO)**

KEY
 100.0 CONTOUR LEVEL OF BASE OF MADE GROUND
 QUARRY HIGHWALL (EXTRAPOLATED BETWEEN HOLES)
 QUARRY HIGH WALL (SURVEYED POSITION)
 APPROXIMATE SITE BOUNDARY

LEVEL OF MADE GROUND INTERPRETED FROM AVAILABLE EXPLORATORY HOLES ADVANCED BY LITHOS

REV.	DESCRIPTION	DATE

STATUS	
FOR COMMENT <input type="checkbox"/>	FOR APPROVAL <input type="checkbox"/>
DRAFT <input type="checkbox"/>	FINAL <input checked="" type="checkbox"/>
DRAWN GLM	DATE 21/01/2022
CHECKED AG	DATE 21/01/2022
SCALE 1:1,500	SHEET A1
DRAWING NO. 3104/158	REVISION



NOTES

- ZONE OF INFLUENCE OF BURIED HIGHWALLS - MORE ROBUST FOUNDATION SOLUTION REQUIRED
- DEVELOPMENT AREA 1
- DEVELOPMENT AREA 2
- DEVELOPMENT AREA 3 (RETAIL)
- DEVELOPMENT AREA 4 (SCHOOL)
- APPROXIMATE SITE BOUNDARY

REPRODUCED FROM STRATA HOMES' DRAWING 'BARNSELY WEST PHASE 1, S75 1 - SKETCH LAYOUT' REF. 20-CL4-SEGB-BWP1-02 REV. J, DATED 18/06/2021

REPRODUCED FROM MILLER HOMES' DRAWING 'BARNSELY WEST SK04, REF. SK04, ISSUED BY STEN ARCHITECTURE IN MARCH 2021

REV.	DESCRIPTION	DATE



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STRATA HOMES

BARNSELY WEST,
LAND TRANSFER
ONE

OPENCASHT HIGHWALL ZONE OF
INFLUENCE AND PROPOSED
LAYOUT

DRAWN	GLM	DATE	10/03/2022	STATUS	FOR COMMENT <input type="checkbox"/>
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SCALE	1:2,500	SHEET	A3	DRAWING NO.	3104/16	REVISION	
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Appendix C
Commission

George Morton

From: Ben Mansell <BenMansell@strata.co.uk>
Sent: 30 April 2018 14:06
To: Reg
Subject: Barnsley West Development

Good afternoon Reg,

I hope you are well. Please find attached information relating to a site in Barnsley adjacent to junction 37 off the M1. I would be grateful if you could provide a quote for the following:

1. Phase 1 Site Investigation for the entire site
2. Phase 2 Site Investigation for the entire site (red dashed line on Barnsley West Masterplan)
3. Phase 2 Site investigation for housing plots 1 and 2B separate to the entire site.

I know you have carried out some site investigations in Barnsley before so are well aware of the mining history. This development has 4No. former opencast mines on site, one of which is within housing plot 1. I have attached a constraints plan as well as a masterplan for the development and the limited investigation that has been done to date. Obviously the Phase 1 SI will help to inform of the works required, but please allow for the locating of the former high-walls, the suitability/impact of forming the proposed highways and drainage on the existing fill material and any implications of placing highways over the existing high-walls. It is likely that the high-wall on the western edge of the former Farm House Lane quarry within housing plot 1 will be broken out to allow for housing to be situated in the area.

Please give me a call if you wish to discuss or need any further information, I appreciate you may have some questions prior to quoting. I have a topo survey if you want to get an idea of the site levels to assist with quoting – just let me know if you want a copy sending on.

Kind Regards,
Ben



Ben Mansell
Engineer
M: 07866 031689
E: BenMansell@strata.co.uk
web: strata.co.uk

Strata Homes Limited
Quay Point, Lakeside, Doncaster, DN4 5PL

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002/3104/AG/REG

27th September 2021

Mr A Bradley
Strata Homes Ltd
Quay Point
Lakeside Blvd
Doncaster
DN4 5PL



Registered in England 07068066

Parkhill
Wetherby
West Yorkshire
LS22 5DZ

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Dear Andrew,

Barnsley West – Land Transfer 1

Further to your recent invitation, please find attached our proposal for undertaking a site investigation on the above land. We understand that your proposed development on Land Transfer 1 will include 366 traditional 2 storey domestic dwellings with associated gardens, POS, adoptable estate roads and sewers, a school and c. 1.1km of spine road, linking the site with Barugh Green Road in the north and Higham Common Road in the south.

Review of the information supplied suggests that the site consists of a single parcel of land of approximately 26.4 hectares off Barugh Green Road. Review of Google Maps suggests the site is currently used for agricultural purposes.

Brief review of reports supplied (and our own research) suggests:

- The majority of Land Transfer 1 is occupied by the former Craven I opencast, which extracted the Swallow Wood and Thin coal.
- Following a review of the abandonment plan, the depth of backfill within the Craven I opencast is expected to be approximately 10m to 12m deep, extracted between 1950 and 1951.
- The southern half of the spine road is underlain by the former Craven II opencast, which extracted the Low Haigh Moor, Top Haigh Moor, Swallow Wood, Thin and Gawber coal seams between 1957 and 1963.
- Large boulders, up to the size of a family car are often present within opencast backfill, often towards the base, although they can be found at any depth.
- Based on JPGs boreholes BHs 105A & 106, the depth of the Craven II opencast is expected to be approximately 35m to 40m.
- There is the potential for unrecorded shallow mine workings to the north, west and south of Craven I former opencast, in the Thin and Swallow Wood coals and possibly in the Top Haigh Moor and Low Haigh Moor coals.
- There is also the potential for unrecorded shallow mine workings beneath the floor of the Craven I opencast and buried highwalls. Anticipated seams beneath the opencast floor are the Top Haigh Moor and Low Haigh Moor coals, whilst the seams beneath the highwall are the Thin and Swallow Wood coals.
- There is a faulted zone within the Craven I opencast, where coal was not extracted via excavation. Consequently, there remains the potential for unrecorded shallow mine workings in the Top Haigh Moor and Low Haigh Moor coals.
- The site is located within 250m of known historic landfill site.
- The site is not within a groundwater source protection zone.
- The site is in an area where the risk of encountering UXO is considered low.
- The site is located within a Coal Mining Development High Risk Area.



Brief examination of the relevant geological map suggests that beyond the areas of opencast the site is underlain by Pennine Middle Coal Measures, consisting of undifferentiated mudstone, siltstone and sandstone. Faulting is recorded across the site, orientated both north to south and east to west.

The scope of works outlined in this letter should enable us to assess abnormal development issues, associated with ground. However, the nature of site investigation is such that it is not always possible to foresee all the potential issues. Consequently, it is sometimes necessary to recommend additional work, but where this occurs we will inform you immediately, provide costs, and seek your further instruction. We have visited site and reviewed available internet data and our geological maps in order to minimise the likelihood of further work.

Our site investigation will be undertaken in accordance with UK good practice (as outlined in BS5930, BS10175, LCRM etc). Our Report may not be fully compliant with Eurocode 7 (EC7) and will not purport to be a Ground Investigation Report, nor a Geotechnical Design Report as defined by EC7. Our ground appraisal is intended to assist others as they proceed with design of the proposed development.

This proposal allows for the following works:

Desk study: Environmental search data and historical maps (obtained from Landmark or Groundsure), will be reviewed in order to determine whether past land uses have had any effect on the proposed development. In addition, published geological plans of the area will be examined. We will also visit site to undertake a walkover survey.

We will complete a more detailed review of the Eastwood & Partners Geoenvironmental report (2013), along with the JPG Preliminary Ground Investigation (2019) and Coal Mining Risk Assessment (2019). In addition, published geological plans of the area will be examined.

Fieldwork: We have allowed for the following:

- 17 day's trial pitting / trenching to excavated pits on a c. 40m grid across the site, as well as to allow trial trenching to accurately locate the Craven I perimeter highwall, internal fault block highwall and the Craven II highwalls located beneath the spine road.
- The drilling of 20 cable percussion boreholes, 15 of which are positioned within the Craven I opencast, with 5 located along the route of the spine road where it crosses into the Craven II opencast.
- The drilling of about 55 rotary probeholes to depths between c. 25m and 35m bgl, to check for the presence of shallow mine workings across the site.
- 5 day's of rotary openhole stitch drilling to record the geometry of the buried highwall where this cannot be accurately determined using an excavator.
- Rotary coring at 10 locations advanced 6m beyond the base of the Craven I opencast, to prove rockhead and obtain rock core to facilitate pile design.

All trial pits, trenches and boreholes will be supervised and logged by an experienced geoenvironmental engineer.

This proposal has been put together without a recent site visit. If ground conditions are found to be significantly wet/boggy at the time of the investigation, it may be necessary to hire additional resources (bog mats, tractors, stone etc) in order for works to continue. We will discuss the requirement for any such items and associated costs with you prior to ordering.

Trial pitting / trenching will enable us to determine the:

- Nature of any made ground, including:
 - visual/olfactory evidence of potential contamination and the proportion of undesirable elements e.g. biodegradable matter, relict foundations etc
 - the proportion of "oversize", boulder-sized material
 - the location and extent of the opencast, with trenching to locate the opencast high walls
- Nature, distribution and thickness of shallow soils beyond the former opencast
- Suitability of the ground for founding structures and highways

Given nature of the land and the time of year, we have allowed for pits to be dug using a tracked 360° excavator.

Representative soil samples of natural and man-made ground, including any contaminated samples, will be taken during the works. In-situ shear strengths of any cohesive soils encountered will be determined by the use of a hand-held shear vane.

We will make every effort to compact arisings and 'sweep' them over each trial pit. However, you should be aware that on completion of the investigation, "graves" of spoil (each about 3m long by 1m wide) unsuitable for trafficking, will be left up to 400mm proud at each trial pit location. At this stage, no allowance has been made for any further reinstatement such as removal of excess arisings, replacement of turf etc.

Based on anticipated ground conditions and topography, **soakaways** will not provide a satisfactory solution for surface water drainage, as a result, no allowance has been made for soakaway testing.

The **cable percussion boreholes** will be advanced to depths of c. 12m or refusal in bedrock, whichever is the shallower, and are primarily intended to enable the retrieval of geotechnical data from depth to inform pile design and to obtain geotechnical parameters to inform earthworks design and settlement (consolidation & creep) assessment.

The boreholes will also allow the installation of 20 gas and groundwater wells (50mm ID, HDPE pipework with bentonite seals and a gravel filter pack). Well headworks will comprise a 100mm diameter steel security helmet which will extend about 150mm above ground level (if required, the position of each helmet could be "marked" with a 1.5m high fence post to reduce the likelihood of damage by farm machinery). The groundwater **wells** will be developed and purged (twice each) shortly after completion of drilling.

Given the anticipated presence of deep made ground, SPTs will be undertaken at approximate 1m to 1.5m intervals as the boreholes are advanced. SPTs allow assessment of the in-situ density of granular soils, enabling determination of allowable bearing capacity and thereby definitive foundation advice.

Undisturbed, thin wall open-tube samples (UT100) will be obtained from cohesive made ground (where suitable) to enable total stress and consolidation testing to take place to further inform pile design and settlement assessment.

The boreholes will be cased-off during drilling to at least rock head, in order to reduce the possibility of collapse, groundwater ingress, mis-sampling etc.

This investigation should yield sufficient data to enable a foundation zoning plan, and possibly a detailed Foundation Schedule. However, if ground conditions are found to be more variable than anticipated, a 'tighter' grid of pits will be necessary prior to preparation of a detailed Foundation Schedule. This proposal does not allow for the preparation of a detailed Foundation Schedule, but we will provide a quote on completion of the site investigation if requested.

The site is underlain by several shallow coal seams, and therefore we have allowed for the drilling of c. 55 **rotary probeholes** to check whether old mine workings are present and pose a significant risk to surface stability of the site. Rotary openhole **stitch drilling** (5 days) will also be undertaken to record the geometry and orientation of the buried highwall, where this cannot be accurately determined using an excavator.

It will be necessary to submit an application (with the associated fee) to the Coal Authority (CA) for 'Permission to enter CA mining interests'; and we have allowed for this. Given the proximity of surrounding housing, which are within 50m of parts of the site area, and in accordance with CA requirements, we have had to assume that some of the probeholes will need to be advanced using water as the flushing medium (as reinforced by recent CA guidance on managing the risk of hazardous gas). Our drilling sub-contractor will need to locate the wash outs close to the site, and procure a standpipe and licence from Yorkshire Water.

With reference to the control, management and disposal of surplus water and flush arising from the works, (and in order to avoid additional costs associated with the provision of a telehandler to transfer a weir tank between boreholes, and the provision of a pump to transfer surplus water from the weir tank to an approved disposal point), we have made provision for a sand bag bund at the foot of the drilling mast, at each borehole to contain the majority of the drill cuttings. However, we have assumed that potentially discoloured surplus water will be allowed to flow and settle into the field.

We have allowed for the set up of a site compound, including a welfare cabin through the duration of the site works. The site compound will be secured with Heras fencing, however, at this stage, we have assumed that overnight security will not be required, but this will be reviewed following a site visit. If required, security would be an E\O of £200 per night.

Given the potential for boulders to be present within the opencast backfill, **rotary cored** holes will be advanced through the base of the Craven I opencast, to allow recovery of 6m of core to confirm the full depth of backfill has been proven. The coring will also allow the recovery of rock samples to enable compressive strength testing to take place, which will inform pile / rock socket design.

We have allowed for all exploratory holes to be picked-up by a **surveyor** (co-ordinates/ground levels will be included on the logs).

Given the presence of backfilled opencast, the potential presence of shallow mine workings and adjacent areas of landfill within 250m of the site, we have allowed for the installation of gas wells in 20 holes and monitoring for hazardous **gas** (and any shallow groundwater).

The generation potential of this gas source is considered likely to be Low. Therefore, in accordance with CIRIA Report C665, we have initially allowed for 9 visits over a 6-month period. If extensive shallow mine workings are encountered the number of visits may have to be extended to 12 over a 6-month period. A hazardous gas risk assessment will be issued on completion of monitoring.

We strongly recommend that groundwater / gas wells be decommissioned after monitoring has been completed. Decommissioning involves removal of the metal covers, unscrewing the upper 1m to 2 m of pipework and filling the void / remaining well with bentonite.

Decommissioning of monitoring wells removes the potential for groundwater pollution caused by accidental spillages during the construction phase and prevents gas migration into sub-floor voids. Subject to your instruction, we will decommission accessible wells after the last monitoring visit for an E\O price of £ + VAT.

Testing: This will comprise routine **geotechnical** soils analysis, including:

- 150 moisture content;
- 100 Atterberg limits
- 100 pH & water-soluble sulphate
- 50 Gradings by wet sieve and 25 by pipette
- 50 Compaction tests (4.5kg) on samples of made ground to assess suitability for use in earthworks ground improvement
- 50 Particle density
- 25 Unconsolidated undrained triaxial tests (soils)
- 25 Oedometer consolidation tests (soils)
- 20 Uniaxial compressive strength tests (rock)
- 45 Determination of point load strength (axial & diametral)

Appropriate **chemical analyses**, based on our review of existing SI report and knowledge of the site's history, have been allowed for; this will comprise 75 samples for a suite including heavy metals, speciated PAH, and banded TPH (with supplementary speciation as/where appropriate). In the event that ground contamination is more significant or different to that anticipated, it might be necessary to carry out additional chemical testing.

Within in our proposal we have allowed for the screening (ID) of 75 samples for asbestos. In the event that positive IDs are reported, it is likely that we will need to schedule further analysis (asbestos quantification), in order to determine the significance of the results. Asbestos quantification is currently a relatively expensive test and consequently we have not allowed for it at this stage. We will inform you immediately after receipt of results if we consider asbestos quantification is required.

Reporting & timescales: In order to provide you with sufficient information to enable assessment of abnormal costs at the earliest opportunity we will issue a concise overview report within 7 days of fieldwork completion.

On completion of the desk study, fieldwork and laboratory testing a comprehensive, factual and interpretative report will be issued. This will contain exploratory hole logs, laboratory test results, cross sections, copies of all relevant correspondence and drawings of the site. The report will include qualitative risk assessment with respect to both controlled waters and human health. The report will also include consideration of foundation types. At this stage we have assumed that two separate reports will be required, one for each of the two main development parcels.

At the time of writing, fieldwork could be commenced within 4 to 6 weeks of receipt of your written instruction to proceed. Our comprehensive geoenvironmental appraisal report will be issued within 6 to 8 weeks of fieldwork completion. This report will comment on issues associated with hazardous gas, but the gas risk assessment will not be issued until monitoring is completed.

This report will include a **mining risk assessment** in accordance with Coal Authority guidance.

A completed copy of the **YW** Contaminated Land Assessment Form will be included in an Appendix to our Report. However, the proposed route(s), and total length, of water supply pipes are not currently known and no allowance has been made for laboratory testing of soil samples in line with UKWIR guidance.

Given previous usage of this land, it is considered highly likely that a **Remediation Strategy** report will be required by the Local Authority, however in the absence of sufficient ground investigation data, at this stage we have not allowed for this.

It should be noted that a Remediation Strategy outlines the remediation objectives necessary to protect environmental receptors and render a site suitable for the proposed end use. A Remediation

Strategy is not the same as a Method Statement; the latter should be prepared subsequently, usually by a Contractor, in order to detail how the objectives will be achieved.

A copy of the final report will be issued to the relevant regulatory authorities on receipt of written instruction from yourselves.

Invoicing: The attached proposal provides a breakdown of the costs associated with this project. This breakdown is for information only and the proposal can be regarded as a lump sum price of £ plus VAT. Variation will only occur in the event that a given item is not undertaken or that substantial additional works are recommended, in which case we will inform you immediately, provide costs for the required works, and seek your prior consent.

Our proposal allows for submission of the report to the Local Authority and NHBC, submission of a single piece of subsequent formal correspondence with each regulator to address any queries they may have. Our proposal also allows for MS Teams meetings (3 x 1.5hr), phone calls (10 x 0.5hr) and email correspondence with the Local Authority and NHBC.

We will submit our invoice for this project with the final report.

Health, safety & welfare: The works outlined above will be carried out in accordance with Lithos' task- and site- specific Risk Assessments and Method Statements.

Details of welfare will be included within the Method Statements. However, this investigation is expected to last for at least 4 weeks and therefore this proposal includes for provision of a Welfare Unit, with the benefit of full canteen facilities, hot water with full size sink, toilet and drying room.

Immediately prior to commencement of fieldwork, a site compound will be established in a location to be agreed with Strata, comprising a storage container, and a welfare cabin for site staff, secured with Heras fencing; equipment and plant will be stored here overnight.

Utility plans are required in order to protect operatives from the hazards associated with striking buried services and avoid potentially substantial disruption\repair costs. We will make every effort not to damage any services (including review of utility plans and use of a CAT detector). However, Lithos cannot accept liability for damage to any underground services that are not accurately marked on plans made available to us prior to commencement of our field investigation, or have not been accurately marked on the ground by a responsible third party (e.g. utility company, site owner).

Most developers have copies of the necessary utility plans (including electricity, gas, water, drainage & telecom), and it would be appreciated if you could forward these prior to the proposed fieldworks. However, if you do not have the necessary plans, Lithos will obtain them direct from each of the utility companies.

Under the **CDM** Regulations 2015, Lithos must be provided with pre-construction information already in your possession, or information that can reasonably be obtained through sensible enquiry. This information must be relevant to the project, have an appropriate level of detail, and be proportionate to the nature of the risks.

If no other designers or contractors have been appointed, Lithos could perform the role of Principal Contractor but only for the duration of the site investigation outlined in this proposal. If you require us to perform the role of Principal Contractor, please make this clear in your instruction. It should be noted that we are not suitably qualified to perform either role where other designers or contractors are also appointed.

It is anticipated that the site investigation outlined in this proposal will be undertaken several months before any construction is commenced on site. Consequently, our works can be considered in isolation and, given the anticipated number of person days on site, this site investigation is not notifiable to the HSE.

Terms & conditions: This work will be undertaken in accordance with our Standard Terms and Conditions, a copy of which are enclosed.

It is hoped the above is sufficient for your present needs. However, should you require any further information, please contact the undersigned.

Yours sincerely

A handwritten signature in black ink, appearing to be "AG" followed by a flourish.

Adam Gombocz
Associate Director
for and on behalf of
LITHOS CONSULTING LIMITED

1 DEFINITIONS AND INTERPRETATION

1.1 In this Agreement, unless the context otherwise requires, the following words and expressions have the following meanings:

"Agreement" shall mean these Terms (entitled "Terms and Conditions for the Appointment of Lithos Consulting"), the Proposal, any document recording the Client's unequivocal acceptance of the Proposal and any other documents or parts of other documents expressly referred to in any of the foregoing;

"Client" shall mean the party for whom the Services are being provided by Lithos;

"Documents" shall mean all documents of any kind and includes plans, drawings, reports, programmes, specifications, Bills of Quantities, calculations, letters, e-mails, faxes, memoranda, films and photographs (including negatives), or any other form of record prepared or provided or received by, or on behalf of Lithos, and whether in paper form or stored electronically or on disk, or otherwise;

"Lithos" shall mean Lithos Consulting Limited whose registered office is at Parkhill, Walton Road, Wetherby, West Yorkshire, LS22 5DL.

"Intellectual Property" includes all rights to, and any interests in, any patents, designs, trade marks, copyright, know-how, trade secrets and any other proprietary rights or forms of intellectual property (protectable by registration or not) in respect of any technology, concept, idea, data, programme or other software (including source and object codes), specification, plan, drawing, schedule, minutes, correspondence, scheme, programme, design, system, process logo, mark, style, or other matter or thing, existing or conceived, used, developed or produced by any person;

"Parties" shall mean the Client and Lithos

"Project" shall mean the project described in the Proposal and any enquiry from the Client on which Lithos has based its Proposal;

"Proposal" means the offer document prepared by Lithos in response to an enquiry or otherwise, in connection with the proposed provision of the Services;

"Services" means the work and services relating to the Project to be provided by Lithos pursuant to the Agreement and as set out in the Proposal and shall include any additions or amendments thereto made in accordance with these Terms;

"Terms" means these terms entitled "Lithos Consulting Terms of Appointment".

- 1.2 Words importing the singular only shall also include the plural and vice versa, where the context requires.
- 1.3 Words importing persons or parties shall include firms, corporations and any organisation having legal capacity and vice versa, where the context requires; and words importing a particular gender include all genders.
- 1.4 The sub-headings to the clauses of these Terms are for convenience only and shall not affect the construction of the Agreement.
- 1.5 A reference to legislation includes that legislation as from time to time amended, re-enacted or substituted and any Orders in Council, orders, rules, regulations, schemes, warrants, by-laws, directives or codes of practice issued under any such legislation.
- 1.6 In the event of conflict between the documents forming part of the Agreement, the Proposal shall prevail, followed by the Terms.

2 APPOINTMENT

2.1 The Client agrees to engage Lithos and Lithos agrees to provide the Services in accordance with the provisions of the Agreement.

3 OBLIGATIONS OF LITHOS

3.1 Lithos shall perform the Services using the reasonable standard of skill and care normally exercised by similar professional Environmental firms in performing similar services under similar conditions.

3.2 Lithos shall use all reasonable endeavours to perform the Services in accordance with all relevant environmental and safety legislation.

4 OBLIGATIONS OF THE CLIENT

4.1 Throughout the period of this Agreement the Client shall afford to Lithos or procure the affording to Lithos of access to any site where access is required for the performance of the Services.

4.2 The Client accepts responsibility for ensuring that Lithos is notified in writing of all special site and/or plant conditions, including without prejudice to the generality of the foregoing, the existence and precise location of all underground services, cables, pipes, drains or underground buildings, constructions or any hazards known or suspected by the Client, which the Client shall clearly mark on the ground or identify on accurate location plans supplied to Lithos prior to the commencement of the Services. The Client shall also inform Lithos in writing of any relevant operating procedures including any site safe operating procedures and any other regulations relevant to the carrying out of the Services. The Client shall indemnify Lithos against all costs, claims, demands and expenses arising as a result of any non-disclosure in this respect, including but not limited to indemnification against any action brought by the owner of the land or otherwise.

4.3 If the Client discovers any conflict, defect or other fault in the information or designs provided by Lithos pursuant to the Agreement, he will advise Lithos in writing of such defect, conflict or other fault and Lithos shall have the right to rectify the same or where necessary, to design the solution for rectification of any works carried out by others pursuant to the conflicting, defective or in any other way faulty information or designs.

5 INTELLECTUAL PROPERTY

5.1 The copyright in all Intellectual Property prepared by or on behalf of Lithos in connection with the Project for delivery to the Client shall remain vested in Lithos.

5.2 The Client shall have a non-exclusive licence to copy and use such Intellectual Property for purposes directly related to the Project. Such licence shall enable the Client to copy and use the Intellectual Property but solely for its own purposes in connection with the Project and such use shall not include any licence to reproduce any conceptual designs or professional opinions contained therein nor shall it include any licence to amend any drawing, design or other Intellectual Property produced by Lithos.

5.3 Should the Client wish to use such Intellectual Property in connection with any other works or for any other purpose not directly related to the Project or wish to pass any Intellectual Property to any third party, it must obtain the prior written consent of Lithos. The giving of such consent shall be at the discretion of Lithos and shall be upon such terms as may be required by Lithos. Lithos shall not be liable for the use by any person of such Intellectual Property for any purpose other than that for which the same were prepared by or on behalf of Lithos.

5.4 Ownership of any proposals submitted to the Client that are not subsequently confirmed as part of the Services to be provided for the Client remain with Lithos and such proposals must not be used as the basis for any future work undertaken by the Client or a third party and no liability can be accepted howsoever arising from such proposals.

5.5 In the event of the Client being in default of payment of any fees or other amounts due, Lithos may suspend further use of the licence on giving 2 days' notice of the intention to do so. Use of the licence may be resumed on receipt of the outstanding amounts.

6 TITLE

6.1 Lithos shall transfer only such title or rights in respect of the Documents as it has, and if any part is purchased from a third party Lithos shall transfer only such title or rights as that party had and has transferred to Lithos.

6.2 Title in the Documents shall remain with and shall not pass to the Client until the amount due under the invoice(s) (including interest and costs) has been paid in full.

6.3 Until title passes, the Client shall hold the Documents as bailee for Lithos and shall store or mark them so that they can at all times be identified as the property of Lithos.

6.4 At any time before title passes (save and except where payment is not due), but only after prior consultation with the Client, Lithos may without any liability to the Client repossess and use or sell all or any of part of the Documents and by doing so terminate the right of the Client to use, sell or otherwise deal in the Documents.

6.5 Lithos may maintain an action for the price of the Documents notwithstanding that title in them has not passed to the Client.

7 CONFIDENTIALITY AND DATA PROTECTION

7.1 Lithos undertakes not to divulge or disclose to any third party without the written consent of the Client information which is designated confidential by the Client or which can reasonably be considered to be confidential and arises during the performance of the Services unless required to do so by law or necessary in the proper performance of its duties in relation to the Project, or in order to make full frank and proper disclosure to its insurers or intended insurers, or to obtain legal or accounting advice.

7.2 Subject to the above and Lithos' Privacy Policy which can be found on www.lithos.co.uk, Lithos shall be permitted to use information related to the Services it provides in connection with the Project for the purposes of marketing its services and in proposals for work of a similar type.

8 THIRD PARTIES

8.1 The Agreement or any part thereof or any benefit or interest thereunder may not be assigned by the Client without the prior written consent of Lithos. The giving of such consent shall be at the discretion of Lithos and Lithos will only agree to an assignment on its terms and in return for payment of a fee by the Client to Lithos to cover Lithos' legal and other costs associated with any assignment.

8.2 The Agreement shall not confer and shall not purport to confer on any third party any benefit or any right to enforce any term of this Agreement for the purposes of the Contracts (Rights of Third Parties) Act 1999 or otherwise.

8.3 Lithos will consider and may consent to any request from the Client for Lithos to enter a collateral warranty with a third party with regard to the Services provided under the Agreement. The giving of such consent shall be at the discretion of Lithos and Lithos will only enter a collateral warranty on its terms and in return for payment of a fee by the Client to Lithos to cover Lithos' legal and other costs associated with any collateral warranty.

9 INSURANCE

9.1 Lithos warrants to the Client that there is in force a policy of Professional Indemnity insurance covering its liabilities for negligence under this Agreement, with a limit of indemnity of £5,000,000 (FIVE MILLION POUNDS) any one claim, save for pollution and contamination claims and asbestos claims both of which carry £2,000,000 (TWO MILLION) in the aggregate cover. This policy is annually renewable and whilst renewal is not automatic, Lithos agrees to use reasonable endeavours to maintain such insurance at all times until six years from the date of the completion (or termination) of the Services under the Agreement, provided such insurance is available at commercially reasonable rates having regard, inter alia, to premiums required and policy terms obtainable.

9.2 If for any period such insurance is not available at commercially reasonable rates, Lithos shall forthwith inform the Client and shall obtain in respect of such period such reduced level of Professional Indemnity insurance as is available and as would be fair and reasonable in the circumstances for Lithos to obtain.

10 LIMITATIONS ON LIABILITY

10.1 Unless otherwise agreed in writing, Lithos' liability under or in connection with the Agreement whether in contract, tort, negligence, breach of statutory duty or otherwise (other than in respect of personal injury or death) shall be limited to and shall not exceed the lesser of either the level of insurance cover referred to within clause 9.1 above, or 20 times the total value of invoices issued to the Client for consultancy work instructed under the Agreement.

10.2 No action or proceedings under or in respect of the Agreement whether in contract, tort, negligence, under statute or otherwise shall be commenced against Lithos after the expiry of a period of six years from the date of the completion (or termination) of the Services under the Agreement.

10.3 Whilst Lithos will scan all potential exploratory locations with a Cable Avoidance Tool, Lithos shall not be liable for any damage to underground services, cables, pipes, drains or underground buildings, constructions and the like which were either not marked on site or for which accurate plans were not provided.

10.4 Lithos shall not be liable for the cost of rectifying any defect, conflict or other fault in the information or designs provided by Lithos or for the cost of designing a solution for and rectifying any subsequent works carried out by others pursuant to the conflicting, defective or in any other way faulty information or designs, unless Lithos has been advised in writing of the same by the Client and has been given the opportunity to rectify the same or where necessary, to design the solution for rectification of any subsequent works carried out by others pursuant to the same.

11 PAYMENT

11.1 Invoices for services rendered will be submitted for payment in accordance with the Proposal.

11.2 The due date for payment is the date of the invoice and the final date for payment is 28 days from the date of the invoice.

11.3 If the Client disputes the amount included for payment in an invoice a written notice must be served on Lithos by the Client not later than 14 days before the final date for payment. If no notice is given the amount due shall be the amount stated in the invoice.

11.4 In the event of failure on the part of the Client to pay any monies in accordance with the foregoing payment provisions, Lithos will be entitled to charge interest on any monies owed to it by the Client, such interest to be at a rate of 8% above the base rate of a clearing bank from time to time calculated from the final date for payment to the date of actual payment on a compound basis.

12 DELAY

12.1 Lithos will comply with any timescale agreed for completion of the Services unless delayed or prevented by circumstances beyond its reasonable control and in the event of any such circumstances arising Lithos undertakes to complete the Services within a reasonable period, but will not be liable to the Client for any delay as a result.

13 TERMINATION

13.1 The Agreement may be terminated by either party in the event of the other making a composition or arrangement with its creditors, becoming bankrupt, or being a company, making a proposal for a voluntary arrangement for a composition of debts, or has a provisional liquidator appointed, or has a winding-up order made, or passes a resolution for voluntary winding-up (except for the purposes of a bona fide scheme of amalgamation or reconstruction), or has an administrator or an administrative receiver appointed to the whole or any part of its assets. Notice of termination must be given to the party which is insolvent by the other party.

13.2 If for any reason the performance of the Services by Lithos is suspended for a period in excess of three calendar months then Lithos shall be entitled to terminate its appointment in respect of the Services by seven days written notice to the Client.

13.3 If the Client shall fail to pay in full any sum due under the terms of the Agreement by the final date for payment for that sum and no effective notice of intention to withhold payment has been issued, Lithos may serve written notice on the Client demanding payment within 14 days of such notice. If the Client shall fail to comply with such notice, Lithos shall be entitled to terminate its employment under the Agreement forthwith.

13.4 Any termination of the appointment of Lithos howsoever caused shall be without prejudice to the right of Lithos to require payment for all services performed up to the date of such termination including but not limited to payment of a fair and reasonable proportion of any figure identified in the Proposal or otherwise for fees in respect of a particular service which Lithos has started, but not completed.

14 NOTICES

14.1 Any notice provided for in the Agreement shall be in writing and shall be deemed to be properly given if delivered by hand or sent by first class post to the address of the relevant party as may have been notified by each party to the other or, in the absence of notification, to the address of Lithos set out above or to the registered address of the Client.

14.2 Such notice shall be deemed to have been received on the day of delivery if delivered by hand or on the second working day after the day of posting if sent by first class post.

15 ENTIRE AGREEMENT

15.1 The Agreement constitutes the complete and entire agreement between the Client and Lithos with respect to the Services and supersedes any prior oral and/or written warranties, terms, conditions, communications and representations, whether express or implied and any claim against Lithos in respect of the Services can only be made in contract under the provisions of the Agreement and not otherwise under the law or tort or otherwise.

15.2 No amendments, modifications or variation of the Agreement shall be valid unless made in writing and agreed to by both the Client and Lithos; such agreement must be recorded in writing by at least one of the Parties.

15.3 Lithos will not be bound by any standard or printed terms or conditions furnished by the Client in any of its documents unless Lithos specifically states in writing separately from such documents that it intends such terms and conditions to apply.

16 DISPUTES AND GOVERNING LAW

16.1 The Agreement shall be governed by and construed in accordance with English law and the Parties irrevocably and unconditionally submit to the jurisdiction of the English Courts.

16.2 Where the Housing Grants, Construction and Regeneration Act 1996 applies, any dispute between the Parties may be referred to adjudication in accordance with The Scheme for Construction Contracts Regulations 1998 or any amendment or modification thereof being in force at the time of the dispute, as applicable to England, Wales, Scotland and Northern Ireland.

Appendix D
Historical OS Plans