Appendix C **Copy of Phase I Geo-Environmental Desk Study (WYG – 2012)**

WYG Environment
part of the WYG group

Peel Environmental Management (UK) Limited and North Selby Mine Waste Limited

Former North Selby Mine Site, New Road, Escrick, York

Proposed Anaerobic Digestion and Horticultural Glasshouse Facility

Geo-Environmental Desk Study

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0.0 EXECUTIVE SUMMARY

Brief

WYG Environment (WYG) has been commissioned by Peel Environmental Management (UK) Limited and North Selby Mine Waste Limited to carry out a Phase 1 Geo-environmental assessment of the site of the former North Selby Mine Site, New Road, near Escrick, York, North Yorkshire. The aims are to identify any potentially significant contamination associated with past usage and to assess any significant ground engineering constraints to redevelopment.

Proposed Development

It is proposed to develop the site as an Anaerobic Digestion (AD) and Horticultural Glasshouse Facility. The AD facility will employ combined heat and power (CHP) units to generate heat and electricity from up to 60,000 tonnes of organic waste (source separated food waste, commercial and industrial waste and agricultural waste) per year. The proposed development is in Areas B and C (described below).

Site Description

The North Selby Mine site covers an area of around 42.5 hectares and can be divided into four main areas as follows:

A. Woodland to the west (11.3 ha)

B. Amenity main building and parking (5.2 ha)

C. Main site including shafts (6.2 ha)

D. Landscape bund to the north, east and south. (19.8 ha)

There are a number of large buildings present on site associated with the former colliery in Areas B and C. Two shafts were present on site. Some of the buildings around the two shafts have since been demolished. A large area of site (Area D) has been landscaped with surplus arisings from the mining activities and this has been classed as a Site of Importance for Nature Conservation (SINC). The remainder of the site is woodland (Area A). The proposed development application site covers only parts of the former mine site, namely the majority of Areas B and C, and small parts of Areas A and D. The majority of the SINC lies outside the application site boundary.

The majority of the proposed development area is at a topographic level of between 9 and 10m AOD with the exception of some areas of landscaping mounds (which are up to 18m AOD).

Environmental Setting

The general site setting is in a relatively flat, low lying (6-10m AOD) agricultural area, part of the Yale of York. The fields in the immediate vicinity were observed to be used for Equine pasture.

Bridge Dike is located off the western boundary of the site, and Halfpenny Dike is located to the south. Both surface water bodies have a risk of flooding.

There are two groundwater abstractions currently licensed for the site.

Parts of the larger mine site are classed as a Site of Importance for Nature Conservation (SINC). The majority of the SINC is not within the proposed development area.

History

The site was mainly agricultural fields and woodland since mapping records started in 1892 up until the late 1920s. There was land drainage in the area. There have been a number of clay pits / sand pits / gravel pits in the area which have either been infilled, or are now ponds. The majority of the area surrounding the site has remained relatively unchanged throughout the 20th Century, with the same farms present today as was the case in 1892.

The North Selby Coal mine was built from 1979. The Shafts were sunk from July 1979. Production at the mine started in 1991

and ceased in 2000. Only one coal seam was extracted by longwall mining methods (the Barnsley seam) and no workings were carried out within a 1500m radius of the mine complex. Large landscape mounds were constructed around the mine complex using surplus arisings from the mine shaft sinking and roadway development works.

Buildings in the immediate proximity of the shafts were demolished in 2000 with demolition arisings used to infill the two 1,000m deep shafts in October 2000. The vast majority of structures on the site are still present as per the site layout shown in the UK Coal Mining drawing of 2004. Some excavations were carried out in the landscape mounds in 2000 in order to obtain materials for backfilling the mineshafts.

Geology, Hydrogeology and Hydrology

Made Ground

There is likely to be some minimal thicknesses of Made Ground across Areas B and C relating to previous construction activities. There are large volumes of Made Ground present in the landscape mounds (up to 12m thick in Area D) and these are likely to comprise sandstone, siltstone and mudstone fragments with some minor fraction of coal.

Superficial Geology

The site is underlain by superficial deposits of Quaternary Devensian laminated clays of the Elvington Glacio-lacustrine formation. There may also be some alluvial deposits associated with Bridge Dike and Halfpenny Dike to the east and south of the site. Previous exploratory holes indicate these deposits to be around 25m thick beneath the site.

Solid Geology

The solid geology beneath the site is shown to comprise Sherwood Sandstone, over Permian Marls over Magnesian Limestone over Coal Measures. The Sherwood Sandstone is present at depths of around 25m bgl and is recorded as being around 220m thick. The Coal measures are encountered around 480m depth. The Barnsley seam was recorded at depths of around 1,010m bgl.

Preliminary Contamination Risk Assessment

No significant sources of potential ground contamination have been identified on site that would pose a significant risk to the proposed development. Methane could pose a risk to the proposed development. However as it is understood that methane is currently being extracted from the North Selby Mine via the Stillingfleet mine, the likelihood of any residual methane reaching the surface at the site is considered to be very low. Some small hotspots of contamination are expected within the site related to historic land use and buildings including hydrocarbon stores and oil from transformers.

Preliminary Geotechnical Constraints Assessment

Site Clearance. The former mine buildings are likely to have significant foundations and these will need to be fully cleared in areas of new build. All former service runs and underground structures will also need to be dealt with appropriately.

Mine Shafts. There are two large infilled and capped mineshafts present in the centre of the site. Based upon our current knowledge of the ground conditions and current guidance, significant structural loadings should be avoided over these features. Provided the proposed Glass House building is relatively lightly loaded and any structural (roof) loads are not founded over the shafts, there should be no significant issues relating to the shafts.

Mining Settlement. Due to the depth, age and location of the former longwall mining carried out at the site, the risks of mining induced settlements affecting the surface of the site are considered to be negligible.

Earthworks. Large scale cut and fill earthworks may be required to reconfigure the existing landscape mounds to accommodate the proposed development. The materials in the landscape mounds are understood to comprise, essentially inert arisings from previous mining activities typically a mixture of coarse grained sandstone, mudstone and siltstone and these should be suitable for reuse as landscape fill.

This sheet is intended to provide a summary only of this report and should be read in conjunction with the main body of the report.

1.0 INTRODUCTION

1.1 Instruction

WYG Environment (WYG) has been commissioned by Peel Environmental Management (UK) Limited and North Selby Mine Waste Limited to provide a preliminary assessment regarding the nature of any contamination, or geotechnical ground hazards, their associated risks and potential development constraints with regards to the former North Selby Coal Mine site, near Escrick, North Yorkshire.

1.2 Aims and Objectives of this Document

The principal aim of this document is to identify any potential significant issues relating to the geo-environmental site conditions that need further assessment or characterisation prior to the proposed redevelopment of the site.

1.3 Scope of Services

In order to achieve the above aims and objectives, the following work has been undertaken in order to compile this document:

- Preliminary assessment of the expected ground conditions via review of the British Geological Survey (BGS) maps, sheets and borehole logs for the site;
- Obtain and review an Groundsure GeoInsight and EnviroInsight report search of environmental records (included as Appendix D) for the site;
- Review of the historical Ordnance Survey (OS) maps for the site and plans of the site provided UK Coal Mining Ltd (included as Appendix C);
- Review of Coal Authority / UK Coal mining records including specific details of the site abandonment including infilling of the two shafts, a gas report, and the mine plans for the site area.
- Site walkover with a representative of UK Coal Ltd with knowledge of site history, development and closure.
- Review of the information in light of UK legislation and guidance in order to produce a preliminary risk assessment for the site with regards to geo-environmental issues.

1.4 Proposed Development

Peel Environmental Management (UK) Limited and North Selby Mine Waste Limited are proposing to create a Horticultural Glasshouse Facility and Anaerobic Digestion Facility for the North Selby Mine site.

The AD facility will employ combined heat and power (CHP) units to generate heat and electricity from up to 60,000 tonnes of organic waste (source separated food waste, commercial and industrial waste and agricultural waste) per year. The facility will generate low carbon energy including around 1.5MW of heat and up to 2.75MW of electricity, some of which will be used to supply the adjacent horticultural glasshouse.

The proposed development plan is enclosed within Appendix B3, and this includes:

- An Anaerobic Digestion Plant including Tank Farm, CHP Building and AD Process Building
- Glasshouse Building including Access Roads, Service Yards and Car Parking Areas

It should be noted that this desk study covers the whole of the former mine site. The proposed development application site covers only parts of the former mine site, namely the majority of Areas B and C, and small parts of Areas A and D (See WYG Drawing A068649-002 Site Areas, and the proposed development layout on Barton Willmore Site Layout Plan Drawing No. PP-008 Rev F). To accommodate the proposed development cut and fill earthworks may be needed, particularly beneath the glasshouse building.

1.5 Terms and Conditions

Attention is drawn to the report conditions, included in Appendix A, and to the terms and conditions of the engagement.

2.0 SITE DESCRIPTION AND ENVIRONMENTAL SETTING

2.1 Site Location

The site is located in the 8.75km south-east of York City Centre, between the villages of Escrick (2.25km to the east) and Wheldrake (3.75km to the west). The site is accessed via the A19 Main road between York and Selby, just north of Escrick. A site location plan is enclosed in Appendix B1 as Drawing A068649-001.

2.2 Site Description

The former North Selby Mine site covered an area of around 42.5 hectares. A copy of the UK Coal Mining Ltd 'Surface Plan' for the site is enclosed in Appendix B2, showing the site layout / building use as of August 2004. The buildings around the two shafts have since been demolished. See Figure 1 below – Aerial Photo.

A site layout plan is enclosed in Appendix B1 as Drawing A068649-002. The site can be divided into four main areas as summarised in Table 2.1 below:

Table 2.1: Four main site areas

Site Area	Description	Approximate Area (ha)
A	Woodland to the west	11.3
B	Amenity main building and parking	5.2
C	Main site including shafts	6.2
D	Bund / Made Ground to the south and east	19.8

Areas A to C are generally at topographic levels around 9 to 10m AOD with some raised areas relating to landscape mounds. Area D varies between 10m and 22m AOD.

Area A

Access to the site is eastwards, from the A19 main road north of the village of Escrick, via 'New Road'. The first section of the site encountered is the woodland that forms the western part of the site. There is an access road off New Road into the site where a barrier used to operate. The road crosses an open drainage channel called Bridge Dike. There is a 'Process Water Borehole' (Borehole B in the EnviroInsight report p17-19) located just to the south of the access road on the edge of the wood (No24 on the UK Coal Drawing). There was also a vehicle Wheel wash located just west of the UK Coal Drawing boundary.

Area B

From the access road, there are two side roads, the first northwards to the main car park, bike shed and bus park, and the second also northwards to the visitors' car park immediately west of the Amenity Block. The boiler house with three chimneys is attached onto the Amenity Block. Between the visitors' car park and the access road is a lay-by that was used for contractors' portacabins. The boiler house was for heating the

buildings and was believed to have been fuelled by propane gas. There were a few empty small plastic lubricating oil drums left in the bike shed but no indications of oil spillages to the ground.

Area C

The majority of buildings remaining on site are oriented around an area of open ground where two mineshafts and a number of buildings were formerly located but demolished in 2000. The UK Coal Ltd drawing shows Shaft No1 (Air Down shaft) located under Building 3, and Shaft No2 (Air Up Shaft) under Building 6, with the associated Air Drift Building No4, and the Fan House Building No7. Buildings 3, 4, 6 and 7 have since been demolished along with the three former Emergency Winder Buildings (19), the Compressors (30), and the Shaft Winder building (5).

The remaining buildings around the two former shafts, in clockwise order, are summarised below in Table 2.2:

Table 2.2: Buildings summary

Code	Building
5	No1 Shaft Winder
10	Sub-station
11	Shaftsmen Cabin
12	Process Water Tanks and Pump House
14	Soluble Oil Pump House
13	Methane Plant
15	Cement Store and Aggregate Bunkers
9	Workshops

To the north of these main buildings is an area of ground (labelled as No26 on the UK Coal Drawing) used for Machinery Storage. The soluble oil pump house processed specialist low toxicity lubricating oils with surfactants suitable for use within the mine. There is a second borehole in this area (Borehole A in the EnviroInsight report p17-19). There are a number of fire hydrants on site supplied by the dedicated water supply from the boreholes.

To the south of the main buildings is the stockyard (20) with a large travelling gantry / crane, with the Waste Materials Storage (29), Waste Oil Storage (27) on the northern side of the stockyard, Explosive Store (16) to the south, and the Stores (8), Fuel Store (28), Oil Store (31) at the western end of the stockyard. There are ten 205 litre oil drums left on site within a 'clean' bund (27) that contained 'Aquacent' and 'Renolin' lubricating oils.

To the west of the stockyard, south of the access road and Amenity block is an area of infrastructure which is summarised below in Table 2.3:

Table 2.3: Infrastructure summary

Code	Building
17	Oil and Grit Interceptor (with Oil Skimming Mop)
18	Sewage Treatment Plant
32	Gas Store (Propane cylindrical above ground storage tank – AST)
33	Contractors Offices
34	Settlement Lagoon
37	Water Tank

The plan shows two water tanks, although the current site layout comprises only one large 'Brathwaite' water header tank. This tank received water from the sewage treatment plant, with the process water from this tank being discharged to Halfpenny Dike to the south of the site, and later to the River Ouse via a pipeline. Immediately south of the Contractors offices there are two IBCs (Integrated Bunded Containers – approximately 1,000 litres each capacity) that formerly contained Sulphuric Acid. The settlement lagoon was used to process water from Barrel washing that took place on site.

Area D

The fourth main area of site is the bund around the north-east, eastern, and southern parts of the site, with large areas of mounds to the south of the stockyard. WYG were advised that material from the excavation of the two shafts (approximately 112,000 m^3) was used to build the bunds around the site (mainly to the north and east), in compliance with the Planning Consent. A preliminary estimate of the volume of material to the south of the stockyard in the landscaped area (based upon the topographic contours) is 625,000m^3. The majority of this area is classified as a SINC - Site of Importance for Nature Conservation and is outside the application site boundary.

Miscellaneous

Two radioactive sources were formerly used underground as part of smoke detectors, although WYG were advised that all have been accounted for and removed from site.

The likelihood of asbestos being present on site is considered to be low due to the recent age of the former mine and the fact that the majority of the site has been cleared of associated equipment / machinery / electrical switch gear that may have contained asbestos.

Coal was washed on site for a within a bunded area south-east of the stockyard, using barrel washing until the connection to Stillingfleet was made, and the coal could be extracted via Gascoigne Wood. The majority of coal was washed at the Gascoigne Wood site.

There are a number of 33kV transformers with auxiliaries on site located next to the Sub-station (10), methane plant (13), and by the stores (8). There is also a building housing electrical Capacitors north of Building 11. No oil staining relating to transformer oil was observed.

2.3 Surrounding Land Uses

The general site setting is in a relative flat, low lying agricultural area, part of the Yale of York. The general topographic elevation of the area is 6 to 10m AOD. The fields in the immediate vicinity were observed to be used for Equine pasture.

Figure 1: Aerial Photo of the site and surrounding area.

3.0 SITE HISTORY

3.1 Introduction

Extracts of available historical Ordnance Survey (OS) maps dating from 1892 to 2010 were used to research the history of the site and the surrounding area. Historical OS maps are included in Appendix B. Plans of the site layout as of 2004 were obtained from UK Coal Mining Ltd, and were reviewed as part of the site walkover in December 2010.

3.2 Summary of Historical Maps

Table 3.1: Description of Historical Maps

Map Date	On-site description	Off-site description
1892 (1:10,560) (1:2,500)	The site is predominately agricultural fields with the annotation "*Liable to Floods*". Spring Wood is present in the south-western section of the site and Bridge Dike runs through it along with a number of footpaths. Halfpenny Dike is also present along the southern boundary. There are two benchmarks on the site at 37.1 feet (11.3m) and 21.7 feet (6.6m). There are three footpaths through the open field section of the site going to the farms. There is a rectangular structure on site, on the eastern boundary next to the brick yard indicated to be a pond. There is a small water feature with the annotation "Gold Nooking".	The site is located in an agricultural area of relatively fairly low lying fields. Sheepwalk farm is located adjacent to the northern boundary. A Brick Yard and Clay pit / Sand pit is off the eastern boundary, with Warren Farm and a pond to the immediate north-east. Spring Hope Farm is to the south-west and Chequer Hall with a pond to the south beyond which is Gravel Pit Hill, with former workings. There are two areas of woodland, Whin Covert to the north-west, and Lacey Bottom off the south-eastern boundary with a small pond to the south-east of the site. There is a small sand pit off the north-western site boundary.
1908-1910 (1:10,560) 1910 (1:2,500)	A triangular section of the site between the centre and the southern boundary is now shown to have an area of vegetation planting called "Partridge Remise". The road to the north-western corner of the site is now labelled as New Road.	There is another small structure (possible pond) in the brickworks area located off the eastern boundary, adjacent to the small pond on site.
Two maps from 1950 (1:10,560)	The small building on the eastern boundary is possibly obscured on only one of the two maps from 1950. There is a small building on the northern boundary of the site associated with Sheepwalk farm.	Drainage channels are shown to the north of Sheepwalk farm.
1977 (1:10,000) 1973 (1:2,500)	Benchmarks are now labelled in metres, 9m on the northern boundary, 10m towards the eastern side of the site, and 6m on the south-western boundary. Three land drains are indicated in Spring Wood on site. Gold Nooking is still shown but without the water feature.	Whin Covert woods is now called Long Wood. The gravel pit appears to be infilled / landscaped with trees. The clay pit of the eastern boundary is shown to be a pond. There is a small structure off the south-western corner of the site between Bridge Dike and Halfpenny Dike.
1988 (1:10,000) 1985 (1:2,500) 1991 (1:2,500) 1995 (1:2,500)	The site now shows the development of the surface buildings of the North Selby mine. The Amenity building and parking is shown in addition to the buildings to the north of the two shafts, and the Fan house east of the shafts. The Stockyard / travelling Crane is shown along with the Stores building. The Sewage treatment area is also shown. The two small buildings that were on site	There are now drainage channels to the west of Chequer Hall to the south of the site.

	are now gone.	
2002 (1:10,000)	The site is shown in its active state with all the buildings as per the UK Coal Mining site plans. There is an extensive area on site to the south of stockyard that is Made Ground (slag heaps).	No changes
2010 (1:10,000) (1:2,500)	The map is more simplistic than previous maps, but does show that the buildings around the two shafts are missing.	No changes.

3.3 Summary

The site has been mainly agricultural fields and woodland since mapping records started in 1892. The site is in an agricultural area of low lying fields around 10m AOD, with land drainage in the area. There have been a number of clay pits / sand pits / gravel pits in the area which have either been infilled, or are now ponds. The majority of the area surrounding the site has remained relatively unchanged throughout the 20th Century, with the same farms present today as was the case in 1892.

3.4 Operational Phase

The North Selby Coal mine was built from 1979. The Shafts were sunk from July 1979. Arisings from the sinking of the mineshafts (estimated to be around 112,000 cubic metres) were utilised to create landscaped screening mounds around the perimeter of Area D. Mine development work was then carried out underground around the mineshafts (between 1986 and 1990) and the arisings resulting from this were passed through a barrel washer to remove the coal before placing as coarse discard in the landscape bunds. Coal extraction was carried out between 1991 and 2000.

The buildings on site during the operational phase of the site are shown on the UK Coal Mining plan from 2004 (See Appendix B2). These buildings all supported the operation of the site and comprised:

Mine Access:

- Amenities Block (1)
- Shaft No1 (Air Down shaft) located under Building 3,
- Shaft No2 (Air Up Shaft) under Building 6,
- Air Drift Building No4,
- Fan House Building No7.
- Three former Emergency Winder Buildings (19),
- Compressors (30),
- Shaft Winder building (5).

There is also a feature shown on the plans which connects the two mineshafts and this is believed to be an underground air/service tunnel. This is shown as being approximately 8m wide and is believed to be no more than 2m deep.

Main Support Buildings

- Shaftsmen Cabin (11)
- Process Water Tanks and Pump house (12)
- Soluble Oil Pump House (14)
- Methane Plant (13)
- Cement Store and Aggregate Bunkers (15)
- Workshops (9)
- Machinery Storage (26).

Storage facilities

- Stockyard (20) large travelling gantry / crane,
- Waste Materials Storage (29),
- Waste Oil Storage (27)
- Explosive Store (16) to the south,
- Stores (8),
- Fuel Store (28),
- Oil Store (31)

Infrastructure:

- Oil and Grit Interceptor (with Oil Skimming mop) (17)
- Sewage Treatment Plant (18)
- Gas Store (Propane cylindrical Above ground storage tank - AST) (32)
- Contractors Offices (33)
- Settlement Lagoon (34)
- Water Tank (37)
- Sub-station (10)

3.5 Closure / Demolition

Production at the mine ceased in 2000. The buildings in the immediate proximity of the mineshafts were demolished in June to July 2000. The two 1,000m deep mineshafts were infilled in October 2000 using a mixture of demolition arisings and coarse discard from the landscape mounds (see Table 3.2 below).

The Winding House was demolished in 2004. The demolition arisings from 2004 were crushed, screened, with the fines remaining on site. Coarse hardcore material was taken off site for use on other UK Coal sites.

The locations of the demolished structures are shown on Drawing No. A68649-003.

Table 3.2: Material used to infill mineshafts in 2000

Material	Volume (m^3)	Description
Hardcore Type A*	3,235	Carboniferous limestone, strength >20 N/mm2. Aggregate Impact Value 30% (max). 10% fines value 100KN (min). Magnesium Sulphate Soundness (max loss) 18%. Grading:- All less than 200mm. Not less than 80% between 200mm and 20mm, less than 15% between 20mm & 2mm, less than 5% minus 2mm. No tramp material permitted.
Hardcore Type B	6,224	Demolition rubble, stone, strength >20 N/mm2 All less than 200mm. Not less than 80% between 200mm and 20mm, less than 15% between 20mm & 2mm, less than 5% minus 2mm. Less than 1% total tramp material by weight (timber, glass, ceramic, plastic etc. No ferrous or light metals.)
Colliery Coarse Discard	77,048	From landscape mounds on North Selby Mine
Cementitious Grout*	1,023	Strength 7N/mm^2 @ 28 days
Carboniferous limestone gravel*	168	5-20mm
Puddle Clay	1,682	
TOTAL	89,380	

** Cements and limestone were imported.*

4.0 ENVIRONMENTAL SETTING

4.1 Geology

Details of the geology underlying the site have been obtained from the following sources:

- BGS Sheet No. 71 (Selby) Solid and Drift Edition, 1:50,000 scale;
- BGS Borehole logs;
- UK Coal Mining site plan from 2004 ;
- UK Coal Mining / Coal Authority information – (Appendix G);
    - Shaft logs 1+2,
    - Abandonment plans,
    - Gas Report with 'Pumping and Waterlogged Workings Plan',
    - Shaft infilling records and diagrams
- Environmental database search.

4.1.1 Made Ground

Based upon geological maps and the WYG site walkover, significant parts of the site are covered with substantial thicknesses of Made Ground associated with landscape screening mounds. We understand that the materials in these mounds comprised arisings from the excavation of the two mineshafts and generally inert materials derived from the construction of mine roadways to other mines in the complex. The mounds are believed to comprise a mixture of coarse graded (typically between 2mm and 100mm), fragments of mudstone, siltstone and sandstone with some minor quantities of coal. The height of these landscape mounds ranges between 4m and 12m above the general site level (of around 10m AOD). (See WYG Drawing A068649-002 in Appendix B1).

Other areas of the site such as the Amenity Block and car park are thought to have a minimal thickness of Made Ground including tarmacadam surfaces and sub-base.

4.1.2 Superficial Geology

The BGS geological map indicates that the site is underlain by superficial deposits of Quaternary Devensian laminated clays of the Elvington Glacio-lacustrine formation. There may also be some alluvial deposits

associated with Bridge Dike and Halfpenny Dike to the east and south of the site.

The shaft borehole logs indicate that a thickness of 25m of clay and sand is present beneath the site. Shaft 1 records below the 0.2m soil cover, around 3m of soft clay, underlain by 0.20m of soft loose sand, then 18.86m of firm brown clay, and finally 2.70m of loose sand. Shaft 2 records a very similar sequence.

4.1.3 Solid Geology

From shaft records, the solid geology beneath the site is believed to comprise the following:

Table 4.1: Geology Summary

Strata	Approximate Thickness (m)	Approximate Depth (bgl)
Superficial Deposits	*25*	*0m to 25m*
Sherwood Sandstone (Bunter)	219	25 to 244
Upper Permian Marl	52	244 - 296
Upper Magnesian Limestone	34	296 - 330
Middle Magnesian Marl	50	330 – 380
Lower Magnesian Limestone	100	380 - 480
Coal Measures Incl Barnsley Seam	551	480 - 1031m

The abandoned mine plan indicates that the solid strata dip to the east by around 1 vertical to 14 horizontal (i.e. around 3 degrees).

There are no significant geological faults on site or in immediate proximity (500m). The BGS geological map shows there are many major faults in the area, all generally trending north-east / south-west with the downthrown side of the fault often alternating, indicating a sequence of parallel faulted blocks.

4.1.4 BGS Borehole logs

Borehole logs as supplied by the British Geological Survey (BGS) are contained in Appendix E. A plan showing the locations of the boreholes is enclosed in Appendix E.

Borehole SE64SW10 was emplaced in 1899 at Sheepwalk farm, immediately north of the site. The log records 75 ft (22.86m) of Clay over 15 ft (4.57m) of sand comprising 27.43m of Superficial deposits, then 60 ft (18.29m) of Sandstone. The Water level was recorded as being 19 ft (5.79m) from the surface.

Borehole SE64SW20 was located off New Road west of the entrance of the site. The borehole was emplaced in 1976-77 as an exploratory hole to 1,212.81m bgl. Superficial (Drift) deposits comprising brown clay with pebbles and boulders was encountered to 15m bgl, with a 1m thick layer of gravel below. The interface between the Superficial geology and the Bunter Sandstone bedrock was at 16.0m bgl.

Borehole SE64SW24 was located at the position of Shaft No1. The log does not record the geology until 450m bgl and stops at 1035m bgl, with the Barnsley seam at 1,004m bgl.

Borehole SE64SW25 was located at the position of Shaft No2. The log does not record the geology until 250m bgl and stops at 649m bgl, before the Barnsley seam.

BGS logs SE64SW30, SE64SW31, SE64SW34 and SE64SW38 record details of the coal at depths of 925m, 957m, 973m, and 932m bgl respectively.

Borehole SE64SW42 is located south of the site, south of Chequers Hall at Gravel Pit Hill. The log from 1993 recorded 2m of sand, sand and clay to 4.5, then clay to 17m comprising the Superficial Deposits. The borehole then encountered sandstone to 65m bgl. The borehole was installed with plain steel casing for use as spray irrigation and test pumped.

Borehole SE64SW40 is located within Spring Wood, on site. The logs details 85m of strata in 1988, starting at a depth of 976m bgl.

4.2 Ground Stability

There are no records of landslips within 500m of the site.

Table 4.2 indicates the potential ground stability hazards (excluding those associated with mining), as obtained from the environmental database search.

Table 4.2: Ground Stability Hazards

Ground Stability Hazard	Risk
Collapsible Ground	No Hazard
Compressible Ground	Negligible to Moderate
Ground Dissolution	No Hazard
Landslide	Very Low to Low
Running Sand	Very Low to Low
Shrinking or Swelling Clay	Negligible to Very Low

4.3 Hydrogeology

Details of the hydrogeology underlying the site have been obtained from the following:

- Environment Agency (EA) Groundwater Vulnerability Map, Sheet No. 12 Vale of York 1:100,000 scale;
- Environmental database search; and,
- Environment Agency website.

4.3.1 Groundwater Classification

The overlying superficial deposits are classified as a Secondary (Minor) aquifer by the EA. The underlying Sherwood Sandstone is classified as a Principal aquifer.

The soils across the entire site are classified as being of a high leaching potential, (Category 2).

4.3.2 Groundwater Quality, Abstractions and Discharge Consents

The site is not located within an Environment Agency Groundwater Source Protection Zone (SPZ).

The environmental database search indicates that there are two groundwater abstraction licences relating to the site. One borehole (B) is indicated to be located by the site entrance by Bridge Dike. There other borehole (A) is located to the north of the shafts around the machine storage area. The abstractions were from the Sherwood Sandstone for potable / raw water supply. The current licences run from 2003 and expire in 2015.

4.4 Hydrology

Details of the hydrology of the area have been obtained from the following sources:

- Environmental database search; and,
- Site Walkover.

4.4.1 Watercourses and Water bodies

There are two water courses in proximity to the site. Halfpenny Dike is located to the south of the development site. There is also a larger channel running north / south crossing the access road by the barrier called Bridge Dike.

There is a large pond present on the southern boundary of the development site (originally a settlement lagoon for the mine).

4.4.2 Surface Water Quality, Abstractions and Discharge Consents

The environmental database search indicates that there are no licensed surface water abstractions within 1km of the site boundary. There are seven discharge consents relating to the site for site drainage or sewage discharges. The receiving waters are listed as being either Bridge Dike or the River Ouse.

4.5 Pollution Incidents

There are no recorded pollution incidents to controlled waters within 250m of the site.

4.6 Flood Risk Potential

Parts of the site are in an Environment Agency Zone 2 (0.1% to 1% / 1 in 100 to 1 in 1000) and Zone 3 (>1%) Flood Risk in the vicinity of Bridge Dike and Halfpenny Dike. WYG have produced a Flood Risk Assessment for the site.

4.7 Radon

The environmental database search indicates that the site is not within a radon affected area and does not recommend that radon protection measures are required in new constructions.

4.8 Miscellaneous

There are two records of radioactive substances having been kept on site, on behalf of UK Coal Mining and RJ Budge Mining. There are ten listings of industrial use of the site with three entries referring to "spoil heaps" on site, four tanks, the mine itself, an electricity sub-station and a travelling crane. The site is in a Nitrate Vulnerable Zone.

4.9 Ecological Sites

The majority of Area D within the larger former mine site are classed as a Site of Importance for Nature Conservation (SINC), located to the east and south of the development site. Great Crested Newts have previously been indentified within the SINC area and the southern former settlement pond.

5.0 MINING HISTORY

5.1 Introduction

Specific information has been obtained from the Coal Authority, UK Coal Mining and the British Geological Survey (BGS). These were reviewed to aid and inform this mining hazard assessment. Copies are enclosed in Appendix G.

5.2 Coal Mining

North Selby was the most northern part of the Selby complex of mines including:

- Whitemoor
- Stillingfleet
- Ricall
- Wistow
- Gascoigne Wood

Plans for the mine complex were approved in 1976. The mine complex was the worlds largest covering 110 square miles. Production at North Selby started in 1991 and ceased in 2000 and the site was closed in 2000 after only 9 years of production. The only coal seam worked from the Selby complex was the Barnsley seam. The borehole records from the two shafts record the depth (and thickness) of the Barnsley seam as 1,003m bgl (1.80m thick), and 1,010m bgl (1.59m thick) respectively.

The abandonment mine plans for the site area are enclosed in Appendix B2. These show that mining was not carried out within an area of approximately 1500m diameter centred on the mineshafts. Several areas of longwall workings were shown surrounding this exclusion zone and these were worked between 1992 and 1994.

5.3 Shaft Treatment

There were two 7.315m internal diameter shafts on site which had a reinforced concrete shaft wall typically 1.0m thick. The two shafts were infilled in 2000 with various materials and capped with 900mm thick reinforced concrete founded at 3.2m bgl and 3.5m bgl respectively. The caps were constructed at a sub-basement level and tied into the 1m thick reinforced concrete shaft lining. The shaft caps were not vented. UK Coal mining has provided two diagrams (Figures 5 and 6) of the infilling / capping (see Appendix G).

There were two air channels, one an air intake and one a fan evasse, running from each shaft at depths of around 18m deep to the surface. Both of these air channels (Shaft No1 - Air intake and Shaft No2 Fan Drift) have been infilled with cement/pfa grout to 7 N/mm^2 (See Figures 5 and 6 in Appendix G).

The shafts have been backfilled with clay seals to prevent minewater entering the Permian Magnesian Limestone aquifer, and the Sherwood Sandstone aquifer. The shafts were lined with concrete placed in-situ which formed a seal with the strata and prevented groundwater entering the shafts.

5.4 Minewaters

The Coal Authority provided a copy of the UK Coal Mining report on 'Colliery Minewater and Gas Report' (combined report for Stillingfleet Mine and North Selby Mine). This was accompanied by a UK Coal Mining Plan Ref ST/1905/QTR 'Pumping and Waterlogged Workings Plan) dated 26th August 2004. (See Appendix G).

During operation of the mines, minewater was pumped out from the twin 12km long tunnels from Gascoigne Wood. Stillingfleet minewater was pumped to North Selby where it was pumped to the surface and discharged to the River Ouse via a pipeline. The volume of water being produced was estimated to be 60 cu.m/day at North Selby.

In October 1999 UK Coal Mining provided the Environment Agency with a report on the investigation into the effects of the cessation of pumping from the North Selby shafts. The report concluded that the cessation of pumping will not give rise to future environmental and pollution problems.

Pumping of minewater ceased after closure of the mines and this has allowed the mineworkings to become flooded. The mine was estimated to be 75% full of water by 2004. The final groundwater level is expected to be around 8m AOD at the North Selby mine site.

5.5 Mine Gas

Annual production of methane gas while North Selby mine was working was approximately 38 Million cubic metres. 60% was vented to the atmosphere through the main fan evasse and the remainder was extracted through the Methane Plant. Methane was extracted by the Methane Plant through dedicated methane drainage ranges down the shaft and into the workings. Methane drainage was practiced in the tailgate of each production face in all parts of the North Selby mine.

The original plans were to extract methane from North Selby for electricity generation, however these did not materialise as methane was extracted from Stillingfleet. Pipes were left open between North Selby and

Stillingfleet in each of the three explosion proof stoppings. After North Selby was sealed, Stillingfleet continued to extract methane by means of pipes through the underground stoppings. A vent has been incorporated into each shaft cap design at Stillingfleet to allow for methane extraction. We understand that extraction is still being undertaken at Stillingfleet, although we do not have any specific details of this. In the 2004 report, it was expected that gas extraction could continue for at least ten years after the abandonment of the Selby complex potentially on a commercial basis. Once commercial extraction becomes unviable at Stillingfleet, remnant mine gas will still need to be vented to the atmosphere through the shaft cap at Stillingfleet, and this may require to be ignited in a concealed flare arrangement to reduce greenhouse gas effects.

6.0 PRELIMINARY CONTAMINATION RISK ASSESSMENT

6.1 Potential Contamination Sources

6.1.1 Potential On Site Sources

Based on this desk top assessment and the site walkover, it is considered that there are a number of potential contamination sources that may impact the proposed development area as detailed below:

- Elevated metals (e.g. arsenic) within the Made Ground soils of the landscaped mounds;
- Elevated hydrocarbons (TPH) associated with Transformer Oils;
- Elevated hydrocarbons associated with drum storage in the Waste Oil Storage (No27), Fuel Store (No28), and Oil Store (No31).
- Methane from the underlying Coal Measures / coal workings;

Asbestos may still be present in the fabric of buildings. However it is assumed that appropriate management of such risks will be undertaken and any relevant actions carried out prior to demolition if deemed necessary.

6.1.2 Potential Off-Site Sources

No significant potential off-site sources of contamination have been identified.

6.2 Contamination Pathways

Potential contamination pathways are listed below, based upon the available information, the current status and likely future proposed end-use of the site as a commercial/industrial facility:

Human Health

- Direct human dermal contact;
- Inhalation of gases (asphyxiation), vapours or dusts;
- Ingestion of dusts;
- Explosion risk from methane;

Environmental

- Leaching of substances to groundwater / surface water;
- Lateral and vertical migration of impacted groundwater to surface water;
- Pollutant migratory pathway via building foundations / along service conduits;

Ground Gas

- Lateral and vertical migration of ground gas through mine workings and mineshafts.

6.3 Contamination Receptors

The potential receptors are listed below:

Human Health

- Current site users and trespassers;
- Future site users;
- Construction workers;
- Adjacent properties and users.

Environmental

- Underlying groundwater (Sherwood Sandstone / Permian Magnesian Limestone);
- Surface watercourses (Bridge Dike / Halfpenny Dike);
- Future buildings and installations.
- Flora and fauna

6.4 Preliminary Risk Assessment

By considering the sources, pathways and receptors, a preliminary assessment of the environmental risk is made with reference to the significance and degree of the risk. This assessment is based on consideration of

whether the source contamination can reach a receptor and hence whether it is of major or minor significance.

The risk assessment has been carried out by assessing the severity of the potential consequence, the sensitivity of the target and the likelihood of occurrence, based on the categories given below (Tables 6.1 to 6.3). A summary of the preliminary risk assessment for both on-site and off-site sources is given in Table 6.4.

Table 6.1: Potential Hazard Severity Definition

Category	Definition
Severe	Acute risks to human health, catastrophic damage to buildings/property, major pollution of controlled waters
Medium	Chronic risk to human health, pollution of sensitive controlled waters, significant effects on sensitive ecosystems or species.
Mild	Pollution of non sensitive waters, significant damage to buildings or structures
Minor	Requirement for protective equipment during site works to mitigate health effects, damage to non sensitive ecosystems or species, minor damage to buildings or structures

The likelihood of an event (probability) takes into account both the presence of the hazard and target and the integrity of the pathway and has been assessed based on the categories given below.

Table 6.2: Probability of Risk Definition

Category	Definition
High likelihood	Pollutant linkage may be present, and risk is almost certain to occur in long term, or there is evidence of harm to the receptor
Likely	Pollutant linkage may be present, and it is probable that the risk will occur over the long term
Low likelihood	Pollutant linkage may be present, and there is a possibility of the risk occurring, although there is no certainty that it will do so
Unlikely	Pollutant linkage may be present, but the circumstances under which harm would occur are improbable

The potential severity of the risk and the probability of the risk occurring have been combined in accordance with the following matrix in order to give a level of risk for each potential hazard.

Table 6.3: Level of Risk for Potential Hazard Definition

		Potential Severity			
		Severe	Medium	Mild	Minor
Probability of Risk	High Likelihood	Very High	High	Moderate	Low/ Moderate
	Likely	High	Moderate	Low/Moderate	Low
	Low Likelihood	Moderate	Low/Moderate	Low	Very Low
	Unlikely	Low/Moderate	Low	Very Low	Very Low

The CIRIA C522 guidance provides further description regarding the significance or risk as summarised below.

Very High Risk – There is a high probability that severe harm could arise or there is evidence that severe harm is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not already undertaken) is required and remediation is likely to be required.

High Risk – Harm is likely to arise and realisation of the risk is likely to present a substantial liability. Urgent investigation (if not already undertaken) is required and remediation may be necessary in the short term and is likely to be required over the longer term.

Moderate Risk – It is possible that harm could arise. However, it is either relatively unlikely that harm would be severe or if harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.

Low Risk – It is possible that harm could arise but it is likely that this harm would at worst normally be mild.

Very Low Risk – There is a low probability that harm could arise. In the event of such harm it is not likely to be severe.

It is considered that any moderate or higher risks are considered to be potentially significant as these are likely to require further investigation, remediation or other mitigation in order to reduce risks to acceptable levels.

Table 6.4: Potential Hazard Severity Definition

Source	Pathway	Receptor	Severity	Probability	Risk
Elevated metals (e.g. arsenic) within the Made Ground soils of the landscaped Area D;	Dermal contact, ingestion and/or inhalation of dusts	Human Health – Current site users (trespassers)	Minor	Unlikely	Very low
		Human Health – Future site users	Minor	Unlikely	Very low
		Human Health – Construction Workers	Minor	Low	Very Low
	Leaching of metals	Groundwater	Minor	Unlikely	Very Low
		Surface Water	Mild	Unlikely	Very Low
Elevated hydrocarbons (TPH) associated with Transformer Oils;	Dermal contact, ingestion and/or inhalation of vapours	Human Health – Current site users (trespassers)	Minor	Unlikely	Very low
		Human Health – Future site users	Minor	Unlikely	Very low
		Human Health – Construction Workers	Minor	Low	Very Low
	Leaching of hydrocarbons	Groundwater	Minor	Low	Very Low
		Surface Water	Mild	Low	Low
Elevated hydrocarbons associated with drum storage in the Waste Oil Storage (No27), Fuel Store (No28), and Oil Store (No31).	Dermal contact, ingestion and/or inhalation of vapours	Human Health – Current site users (trespassers)	Minor	Unlikely	Very low
		Human Health – Future site users	Minor	Unlikely	Very low
		Human Health – Construction Workers	Minor	Low	Very Low
	Leaching of hydrocarbons	Groundwater	Minor	Low	Very Low
		Surface Water	Mild	Low	Low
Methane from the underlying Coal Measures / coal workings;	Explosion / Asphyxiation	Human Health	Severe	Unlikely	Low / Moderate
	Explosion	Future Buildings and Concrete Installations	Severe	Unlikely	Low / Moderate

6.5 Summary

No significant sources of potential ground contamination have been identified on site that would pose a significant risk to the proposed development. There may be some localised hotspots of contamination resulting from previous usage on site including small sources of contamination associated with historic structures e.g. former fuel store and transformer. if the hotspots are present, localised excavation and removal off site would likely to be required.

Methane gas from the abandoned mineworkings could pose a risk to future buildings/site users however due to a variety of factors (such as depth to the workings, waterlogged nature of workings, abstraction from Stillingfleet) the likelihood of this is considered to be very low. If elevated levels of methane were present beneath the site, the risks could be dealt with by means of appropriate ground gas protection measures in all new structures.

Some of the material in the landscaped mounds could potentially leach metals into the environment however in view of the nature of the materials, their age and the underlying ground conditions, the risks from this are considered to be low.

7.0 GROUND ENGINEERING ISSUES

The historic industrial use of the site present a number of potential ground engineering constraints, which will need to be addressed as part of any future scheme of re-development.

7.1 Demolition / Site Clearance

The proposed development would require the demolition of remaining buildings. Relict foundations would need to be removed, and services altered / removed as required. The air drift/service tunnel would also require excavation and removal. Demolition of certain structures and services may be more complex such as the boiler house and three chimneys. It is understood that electrical infrastructure such as the 33kV / 6.6 kV electrical transformers are to remain on site.

7.2 Settlement due to underground mining

As the mine complex was protected with a no-take pillar with a radius of approximately 750m where mining was not carried out, the risks to the site due to settlement due to deep mineworkings is considered to be negligible.

7.3 Infilled Mineshafts

The presence of the two infilled coal mine shafts could pose a constraint to the redevelopment of the site with regards to the foundations of proposed buildings. Even though the mineshafts have been infilled and capped, there is still a potential, albeit very low, risk for future ground movements to take place over and around these positions.

CIRIA Special Publication 32 "Construction over abandoned mineworkings", 2002 recommends that buildings should not be sited over shafts even when properly capped and treated. It also states that where the cap cannot be founded on rockhead, additional measures may be taken to ensure stability such as plugging and grouting.

We consider that the risk of collapse of the treated mineshaft to be very low, however if it were to collapse it could affect an area around the shaft with a radius dependent upon depth to Rockhead and the strength of the overlying superficial deposits. Assuming a rock head depth of 25.0m and superficial deposits with a friction angle of 45º, for a shaft of around 8m diameter, this would equate to a radius of approximately 30 metres.

In order to confirm this zone of potential instability, a detailed assessment of the ground conditions in the proximity of the shafts is required together with consideration of the proposed foundation design for the new structures. It should be possible to construct lightly loaded buildings (such as the Green House) within this radius, however detailed consideration will need to be given to the design of the structure and foundations to ensure that potential risks from the mine shafts are minimised. The proposed site development indicates a greenhouse to be located over the 2No. mineshafts. Provided the floor loadings from this structure are not significant and any structural loadings can be founded outside the zone of potential instability, there should be no significant risks from the infilled mineshafts.

7.4 Foundation Design

For heavily loaded structures, it is likely that some form of ground improvement works or piled foundations may be required. Depending upon the strength of the underlying superficial deposits and the column loads of the new structures, it may be necessary to pile foundations down to the underlying rock at depths of around 25m bgl. For lightly loaded structures, it may be possible to found in the underlying superficial deposits.

7.5 Earthworks

Cut and fill earthworks are required to provide level areas for the proposed structures. Excavations will be required into the surrounding landscape bunds and into the former mine complex. Based upon the proposed layout, some excavations will be required in the southern area of the site, and retaining structures may be required to keep the excavations within the site boundary.

The excavation arisings are likely to comprise of Made Ground and should be suitable for reuse as landscape fill.

Fill will be required to extend the landscape mounds in the north of the site and these are to be constructed to heights of at least 17m AOD.

Based upon current information, the materials in the landscape mounds are not considered to pose a significant risk to the environment. For preliminary design purposes, side slopes of 1 vertical to 3 horizontal should be assumed for the new landscape mounds.

8.0 CONCLUSIONS

No significant ground contamination issues have been identified in the proposed development area of the site. Some localised hotspots of contamination may be present in areas of former hydrocarbon storage and these may require excavation and removal off site.

The proposed site development indicates the glasshouse to be located over the 2No. mineshafts. Provided the floor loadings from this structure are not significant and any structural loadings can be founded outside the zone of potential instability, there should be no significant risks.

Methane could pose a risk to the proposed development, however taking into account the depth to the abandoned mineworkings and the ongoing abstraction of methane from Stillingfleet, the likelihood of methane reaching the surface of the site is considered to be very low. However until this is confirmed, at this stage, allowance should be made for the installation of basic ground gas protection measures in all new structures.

There are likely to be some significant relict foundations and services present beneath the site, and these will require demolition and clearance.

Appendices

Appendix A – Report Conditions

REPORT CONDITIONS

This report is produced solely for the benefit of Peel Environmental Management (UK) Limited and North Selby Mine Waste Limited and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise.

This report is prepared for the proposed uses stated in the report and should not be used in a different context without reference to WYG. In time improved practices, fresh information or amended legislation may necessitate a re-assessment. Opinions and information provided in this report are on the basis of WYG using due skill and care in the preparation of the report.

This report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections. Environmental conditions can vary and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times.

This report is limited to those aspects reported on, within the scope and limits agreed with the client under our appointment. It is necessarily restricted and no liability is accepted for any other aspect. It is based on the information sources indicated in the report. Some of the opinions are based on unconfirmed data and information and are presented as the best obtained within the scope for this report.

Reliance has been placed on the documents and information supplied to WYG by others but no independent verification of these has been made and no warranty is given on them. No liability is accepted or warranty given in relation to the performance, reliability, standing etc of any products, services, organisations or companies referred to in this report.

Whilst skill and care have been used, no investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information. Any monitoring or survey work undertaken as part of the commission will have been subject to limitations, including for example timescale, seasonal and weather related conditions.

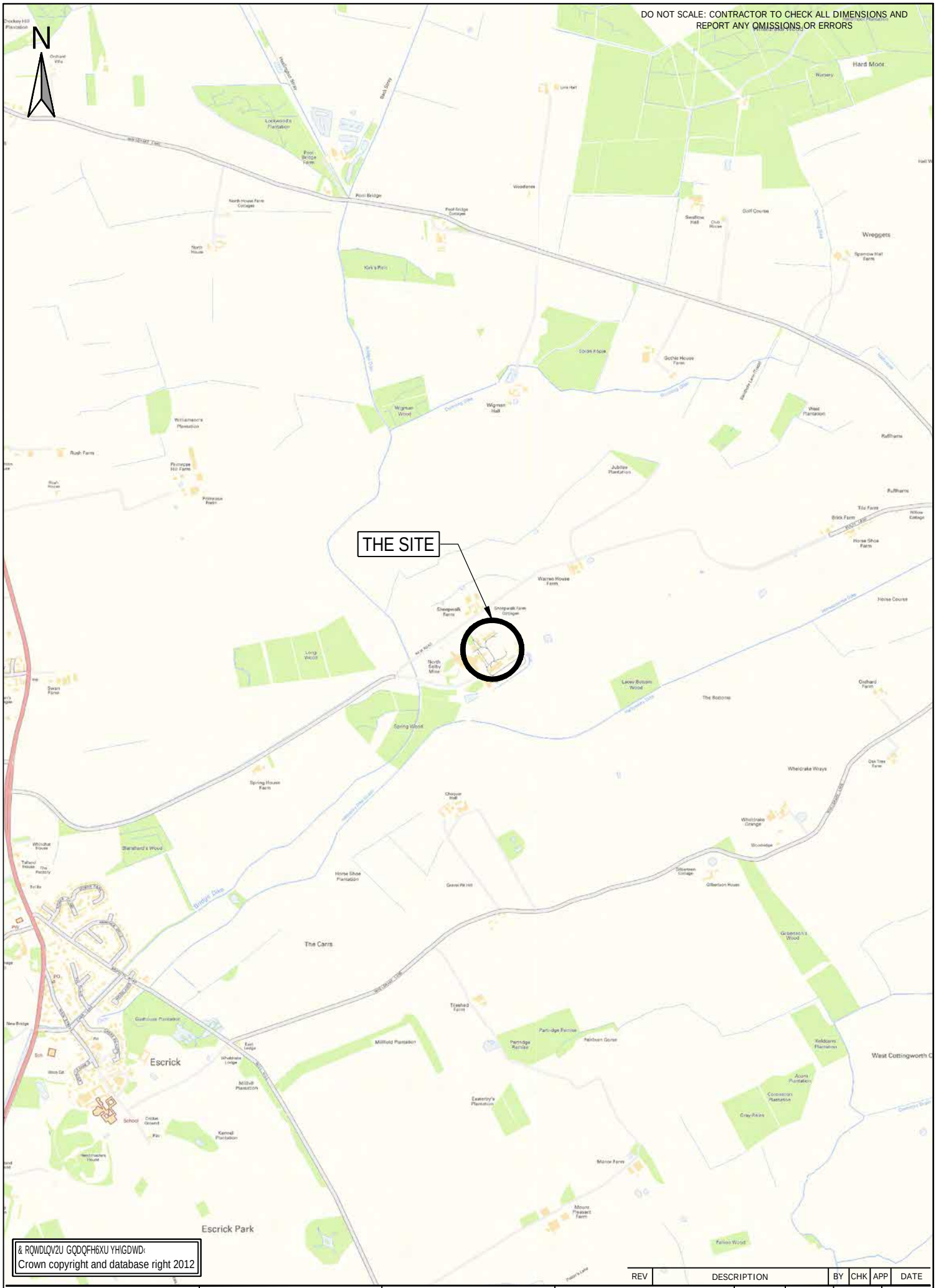
Although care is taken to select monitoring and survey periods that are typical of the environmental conditions being measured, within the overall reporting programme constraints, measured conditions may not be fully representative of the actual conditions. Any predictive or modelling work, undertaken as part of the commission will be subject to limitations including the representativeness of data used by the model and the assumptions inherent within the approach used. Actual environmental conditions are typically more complex and variable than the investigative, predictive and modelling approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions.

The potential influence of our assessment and report on other aspects of any development or future planning requires evaluation by other involved parties.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. WYG accept no liability for issues with performance arising from such factors.

Appendix B1 – WYG Drawings

DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS



REV	DESCRIPTION	BY	CHK	APP	DATE

ARNDALE COURT
HEADINGLEY
LEEDS
LS6 2UJ

TEL: +44 (0)113 278 7111
FAX: +44 (0)113 275 0623
e-mail: enviro@wyg.com

Client:
PEEL ENVIRONMENTAL MANAGEMENT (UK) LIMITED AND NORTH SELBY WASTE LIMITED

Project: A068649
PROPOSED AD FACILITY
NORTH SELBY MINE SITE

Drawing Title:
SITE LOCATION PLAN

Scale @ A4	Drawn	Date	Checked	Date	Approved	Date
1:20,000	CM	31.07.12	SAE	31.07.12	PRB	31.07.12

Project No.	Office	Type	Drawing No.	Revision
A068649	41	16	01	

DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS

N

KEY

- MINING SITE BOUNDARY
- INTERNAL BOUNDARY
- A WOODLAND TO THE WEST
- B AMENITY MAIN BUILDING & PARKING
- C MAIN SITE INCLUDING SHAFTS
- D BUND / MADE GROUND TO THE SOUTH & EAST

0 50 100 150 200 250 m

SCALE 1:5000

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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Project: A068649

PROPOSED AD FACILITY
NORTH SELBY MINE SITE

Drawing Title:

SITE AREAS (2004 LAYOUT)

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
1:5000	CM	31.07.12	SAE	31.07.12	PRB	31.07.12

Project No.	Office	Type	Drawing No.	Revision
A068649	41	16	02	

DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS

KEY

- APPLICATION BOUNDARY
- EXISTING BUILDINGS
- DEMOLISHED BUILDINGS
- BOREHOLE
- SHAFT

POTENTIAL SOURCES OF CONTAMINATION

- ELECTRICAL (TRANSFORMER OIL)
- HYDROCARBONS

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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Project: A068649

PROPOSED AD FACILITY
NORTH SELBY MINE SITE

Drawing Title:

CURRENT SITE LAYOUT PLAN

Scale @ A1	Drawn	Date	Checked	Date	Approved	Date
1:2,500	CM	31.07.12	SAE	31.07.12	PRB	31.07.12

Project No.	Office	Type	Drawing No.	Revision
A068649	41	16	03	

Appendix B2 – Third Party Drawings

UK COAL MINING LTD

NORTH SELBY MINE

SURFACE PLAN

SCALE 1/500

Date: Aug 2004 Ref: NS_Base

REFERENCE TO BUILDINGS

1 AMENITY BLOCK
2 BOILER HOUSE
3 No.1 SHAFT
4 AIR DRIFT
5 No.1 SHAFT WINDER
6 No.2 SHAFT
7 FAN HOUSE
8 STORES
9 WORKSHOPS
10 SUB STATION
11 SHAFTMENS CABIN
12 PROCESS WATER TANKS & PUMPHOUSE
13 METHANE PLANT
14 SOLUBLE OIL PUMP HOUSE
15 CEMENT STORE & AGGREGATE BUNKERS
16 EXPLOSIVE STORE
17 OIL & GRIT INTERCEPTOR
18 SEWAGE TREATMENT PLANT
19 EMERGENCY WINDER SITES
20 STOCKYARD
21 MAIN CAR PARK
22 BUS PARK
23 VISITORS CAR PARK
24 PROCESS WATER BOREHOLE
25 BICYCLE SHED
26 MACHINERY STORAGE
27 WASTE OIL STORAGE
28 FUEL STORE
29 WASTE MATERIALS STORAGE
30 COMPRESSORS
31 OIL STORE
32 GAS STORE
33 CONTRACTORS OFFICES
34 LAGOON
35 WHEELWASH
36 BARRIER
37 WATER TANK

UK COAL MINING LTD

NORTH SELBY MINE

SURFACE PLAN

SCALE 1/500

Date: Aug 2004 Ref: NS_Base

REFERENCE TO BUILDINGS

1 AMENITY BLOCK
2 BOILER HOUSE
3 No.1 SHAFT
4 AIR DRIFT
5 No.1 SHAFT WINDER
6 No.2 SHAFT
7 FAN HOUSE
8 STORES
9 WORKSHOPS
10 SUB STATION
11 SHAFTMENS CABIN
12 PROCESS WATER TANKS & PUMPHOUSE
13 METHANE PLANT
14 SOLUBLE OIL PUMP HOUSE
15 CEMENT STORE & AGGREGATE BUNKERS
16 EXPLOSIVE STORE
17 OIL & GRIT INTERCEPTOR
18 SEWAGE TREATMENT PLANT
19 EMERGENCY WINDER SITES
20 STOCKYARD
21 MAIN CAR PARK
22 BUS PARK
23 VISITORS CAR PARK
24 PROCESS WATER BOREHOLE
25 BICYCLE SHED
26 MACHINERY STORAGE
27 WASTE OIL STORAGE
28 FUEL STORE
29 WASTE MATERIALS STORAGE
30 COMPRESSORS
31 OIL STORE
32 GAS STORE
33 CONTRACTORS OFFICES
34 LAGOON
36 WHEELWASH
37 BARRIER
37 WATER TANK

FOULWATER
METHANE DRAINAGE
MINEWATER DRAINAGE
SURFACE WATER
FIREFIGHTING
PROCESS WATER
TOWN WATER
CABLE IN GROUND
CABLE IN DUCT

464500 mE

444000 mN

Appendix B3 – Proposed Development Drawings

The scaling of this drawing cannot be assured

Revision		Date	Drn	Ckd
A	Information Issue	03.08.12	RP	NC
B	Information Issue	09.08.12	RP	NC
C	Context Amended	11.09.12	RP	NC
D	Landscaping Updated Lighting Info. added.	14.09.12	RP	NC
E	AD Facility Updated. Glass House parking amended.	04.10.12	RP	NC
F	Pond repositioned.	16.10.12	RP	NC

Site Boundary

Planting/Vegetation

Proposed Extended Bund & Landscaping

Key:

1 - Anaerobic Digestion Facility
2 - CHP Building
3 - AD Tank Farm
4 - Weighbridge

Bunding height to be increased to 18m AOD so as to 'anchor' the Proposed Development within the immediate landscape and help assimilate it within the wider area

Drainage ditch and maintenance access

Sheepwalk Farm Cottages

Sheepwalk Farm

Bunding to be increased in height to 17m AOD

PROPOSED EXTENDED BUND

Hedgerow along New Road to be retained and reinforced

Existing western boundary vegetation to be retained to provide a visual barrier

EXISTING SUB STATION

GLASSHOUSE BUILDING
(Height: 7m above FFL
FFL: 9.850 m AOD)

Gross External Area
(GIA) 51210 sqm

130m
270m
45m
60m
165m
210m

PROPOSED POND

EXISTING POND

HATCHED AREA IDENTIFIED FOR ECOLOGY/HABITAT.

AD PROCESS SERVICE YARD
8.5 m AOD

PROPOSED AD FACILITY

GLASS HOUSE SERVICE YARD
(9.5 m AOD)

55 NO. PARKING SPACES

DIGESTER 1 (18M)
DIGESTER 2 (18M)
STORAGE 1 (15M)
STORAGE 2 (15M)
STORAGE 3 (15M)

PROPOSED CHP BUILDING

Rough Grassland

Spring Wood

EXISTING WASTE WATER TREATMENT PLANT

PROPOSED BUND/SCREEN.

ACCESS TO TREATMENT PLAN

EXISTING POND RETAINED

Spoil Heaps

NORTH

INFORMATION

Project
North Selby
AD and Glasshouse Facility

Drawing Title
Site Layout Plan
Masterplan Layout

Date	Scale	Drawn by	Check by
June 2012	1:1250@A1	RP	NC/NN

Project No	Drawing No	Revision
20197	PP_008	F

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Appendix C – Groundsure Historical Maps

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_A1-LD
Grid Ref: 464775, 444135

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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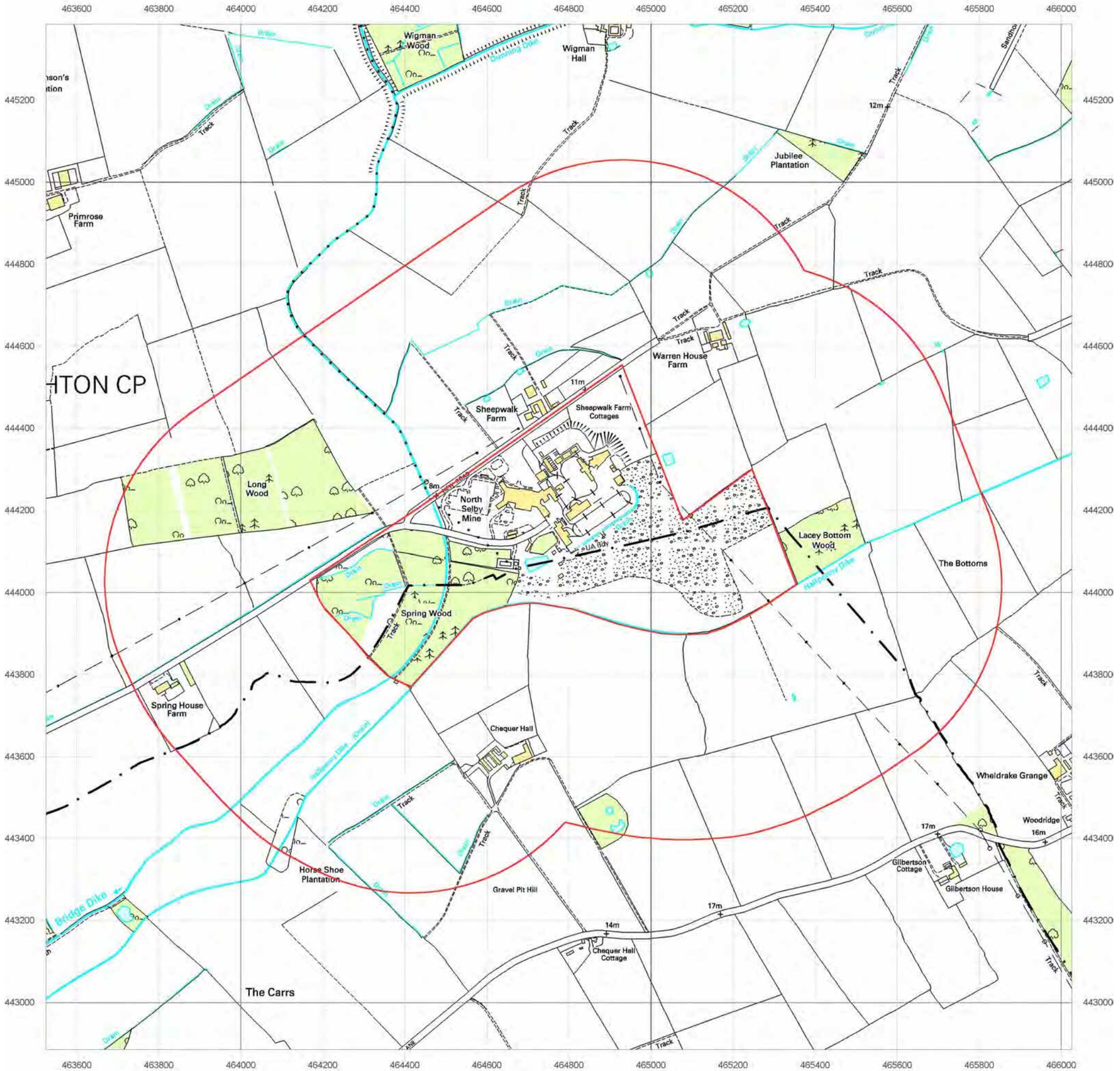
Production date: 16 December 2010

To view map legend click here *Legend*



emapsite™

Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_A1-LD
Grid Ref: 464775, 444135

Map Name: 1:10,000 Raster

Map date: **2002**

Scale: 1:10,000

Printed at: 1:10,000

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Production date: 16 December 2010

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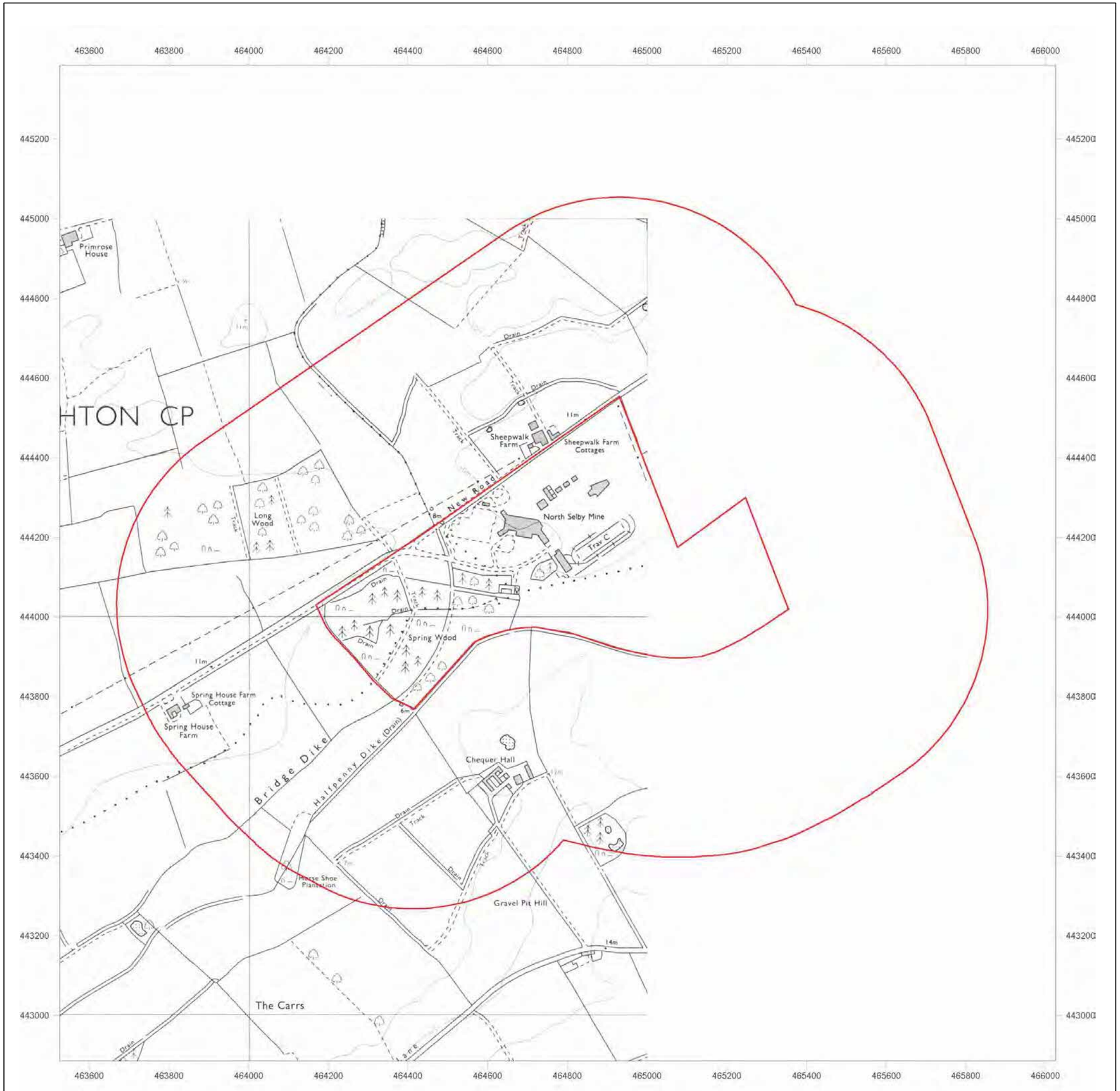

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_A1-LD
Grid Ref: 464775, 444135

Map Name: National Grid

Map date: **1988**

Scale: 1:10,000

Printed at: 1:10,000

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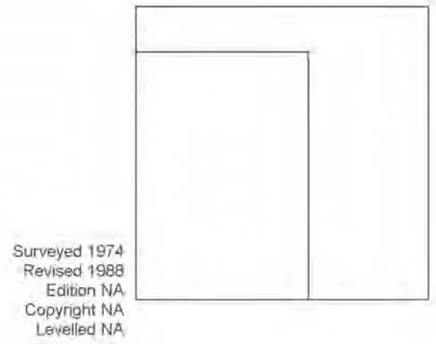

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Production date: 16 December 2010

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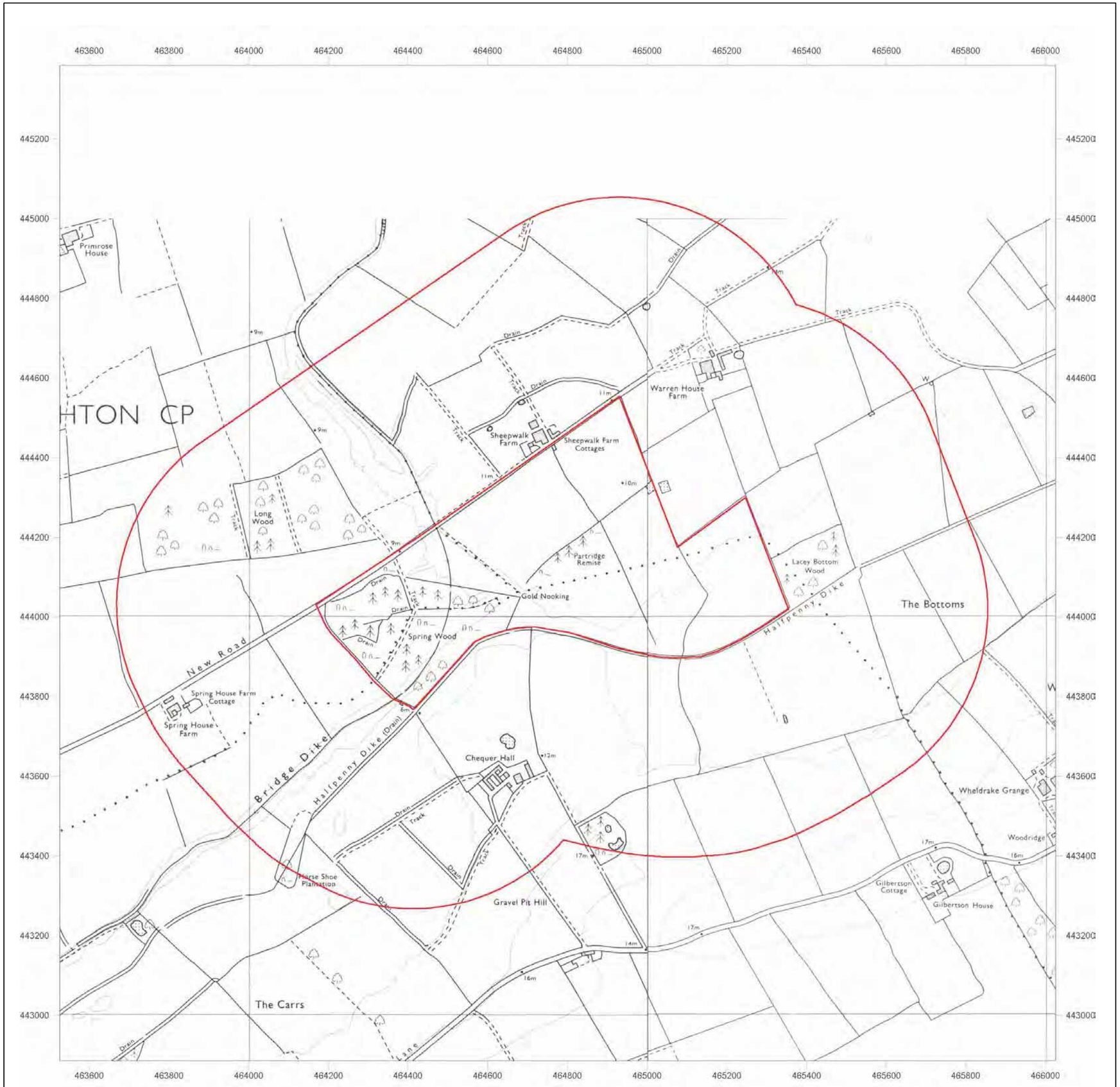

emapsite™

Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_A1-LD
Grid Ref: 464775, 444135

Map Name: National Grid

Map date: **1977**

Scale: 1:10,000

Printed at: 1:10,000

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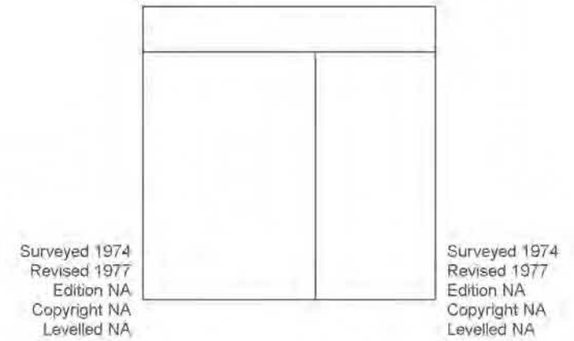

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Production date: 16 December 2010

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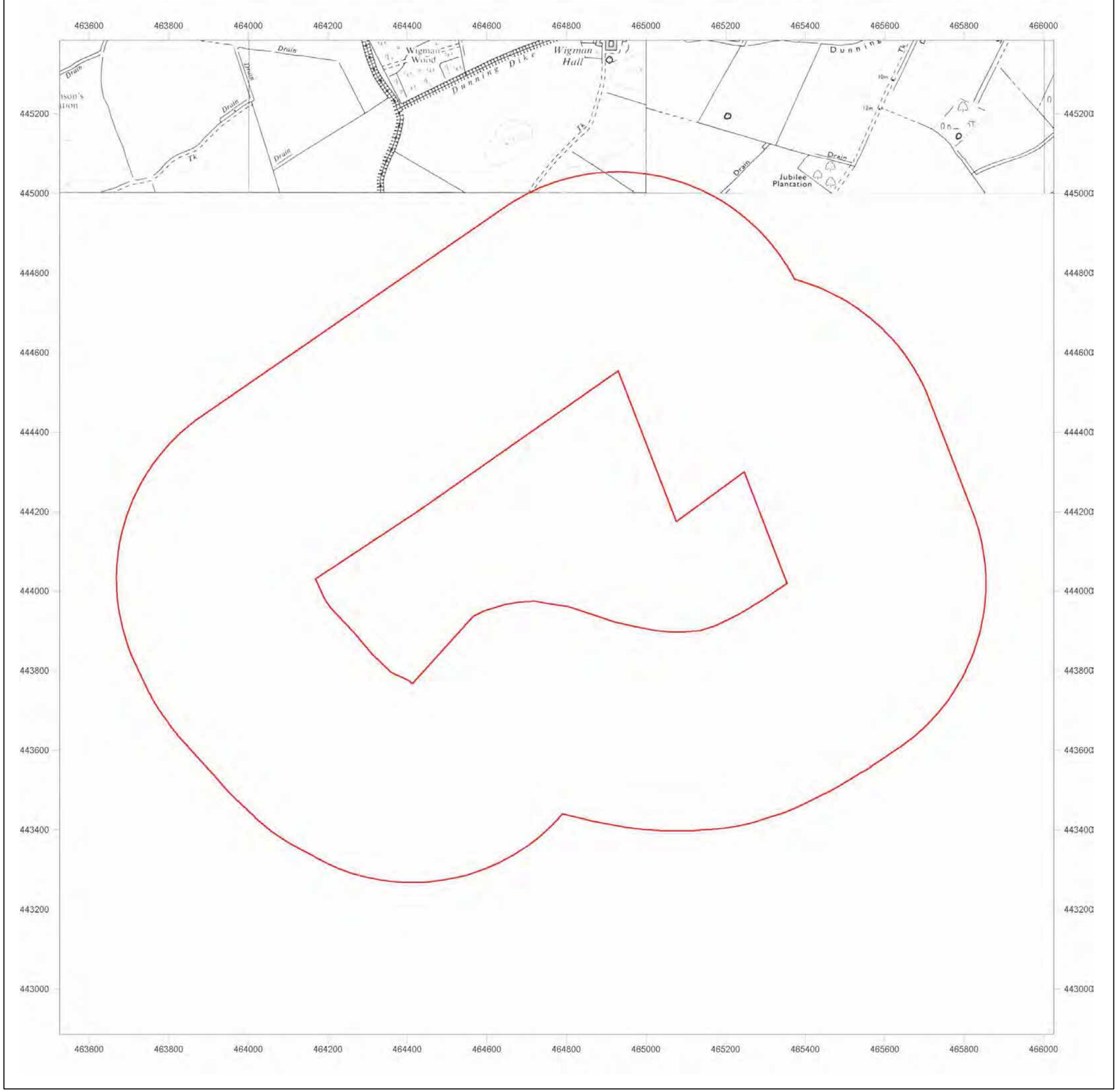

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_A1-LD
Grid Ref: 464775, 444135

Map Name: National Grid

Map date: **1968-1970**

Scale: 1:10,000

Printed at: 1:10,000

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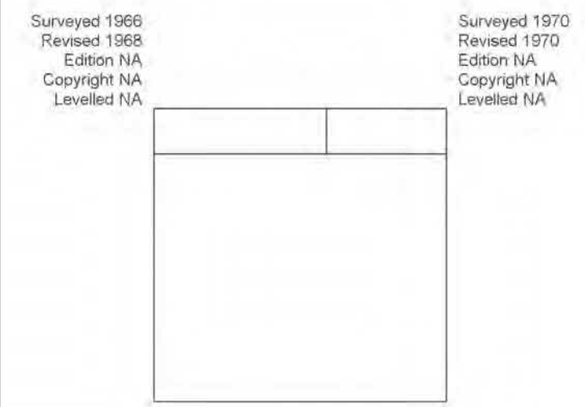

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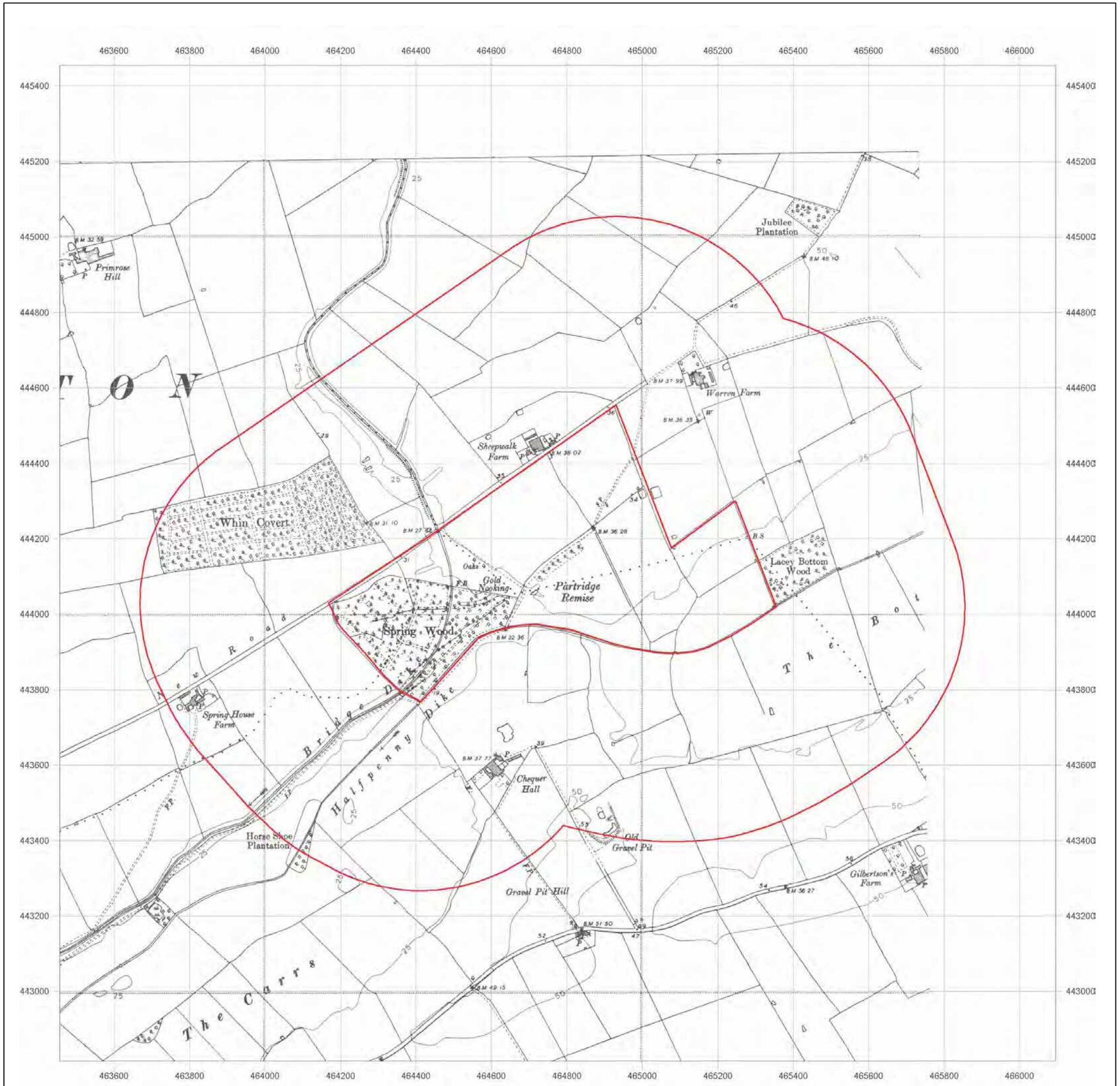

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_A1-LD
Grid Ref: 464775, 444135

Map Name: County Series

Map date: **1950**

Scale: 1:10,560

Printed at: 1:10,560

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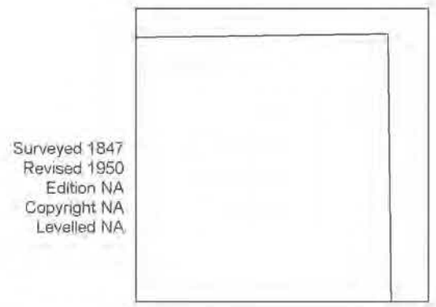

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Production date: 16 December 2010

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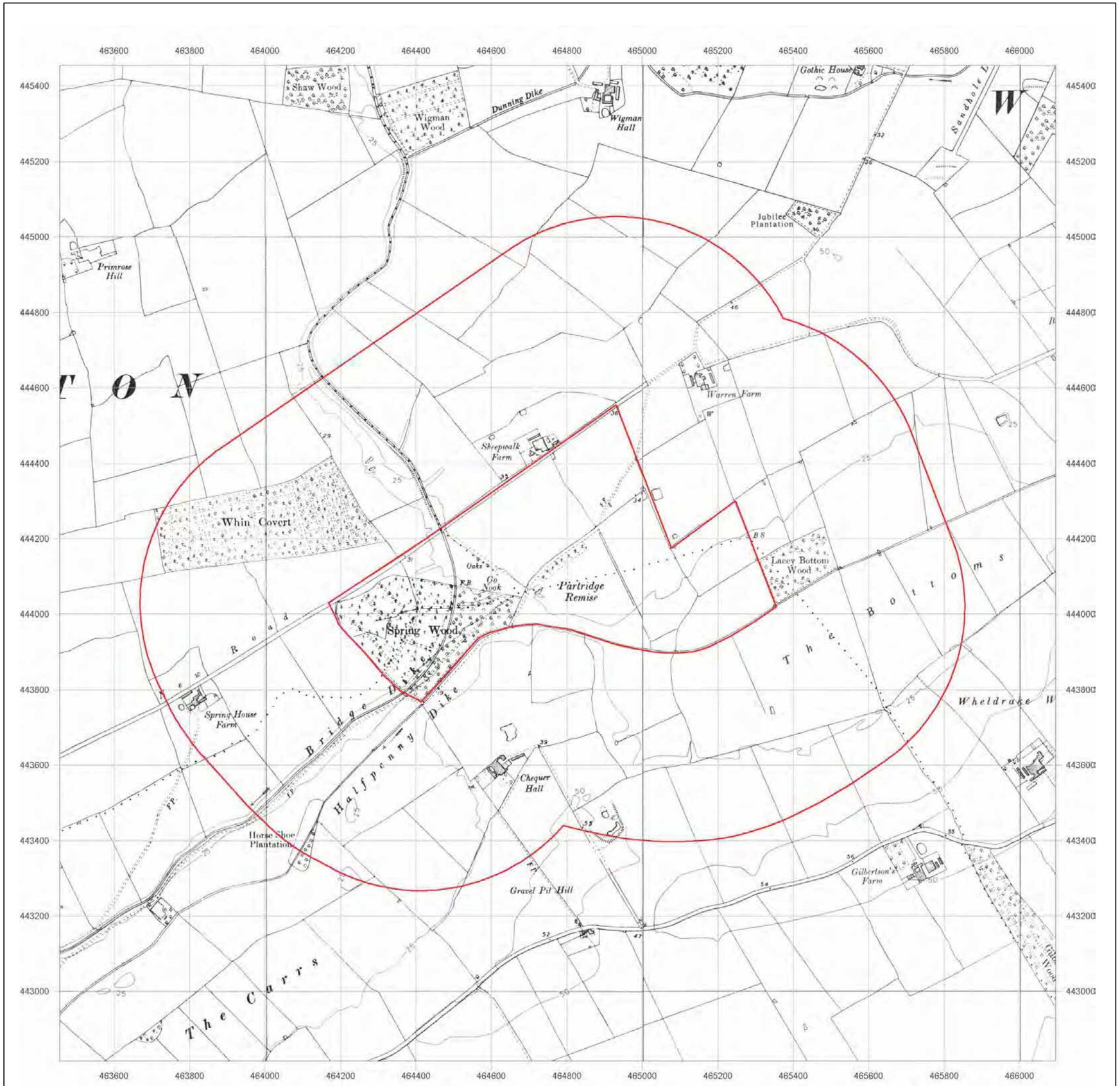

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_A1-LD
Grid Ref: 464775, 444135

Map Name: Provisional

Map date: **1950**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1950
Revised 1950
Edition NA
Copyright NA
Levelled NA

Surveyed 1950
Revised 1950
Edition NA
Copyright NA
Levelled NA

Surveyed 1950
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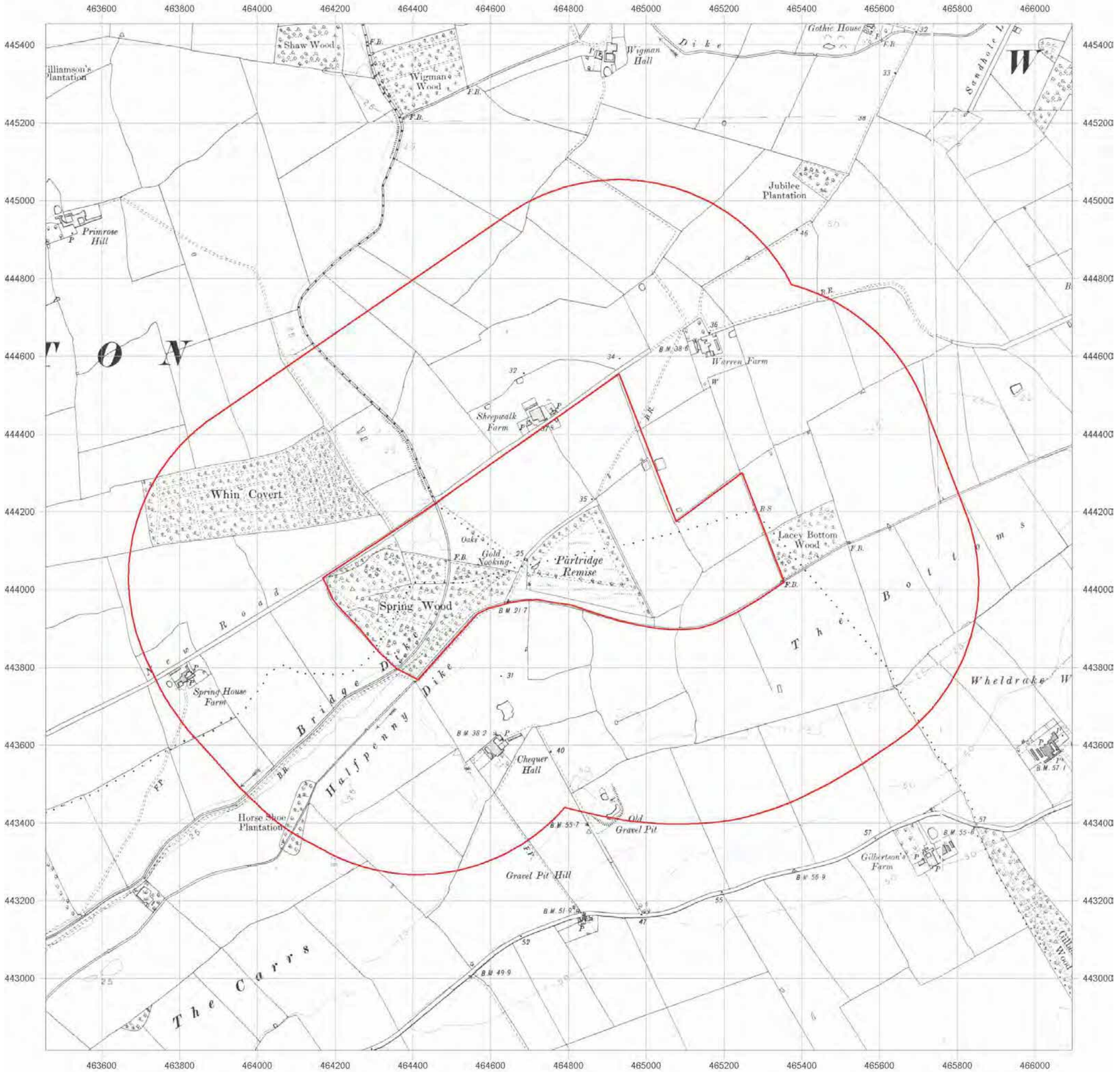

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_A1-LD
Grid Ref: 464775, 444135

Map Name: County Series

Map date: **1908-1910**

Scale: 1:10,560

Printed at: 1:10,560

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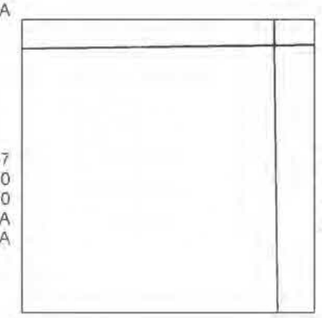
Surveyed 1848
Revised 1908
Edition NA
Copyright NA
Levelled NA

Surveyed 1851
Revised 1908
Edition NA
Copyright NA
Levelled NA



Surveyed 1847
Revised 1910
Edition 1910
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Surveyed 1851
Revised 1908
Edition NA
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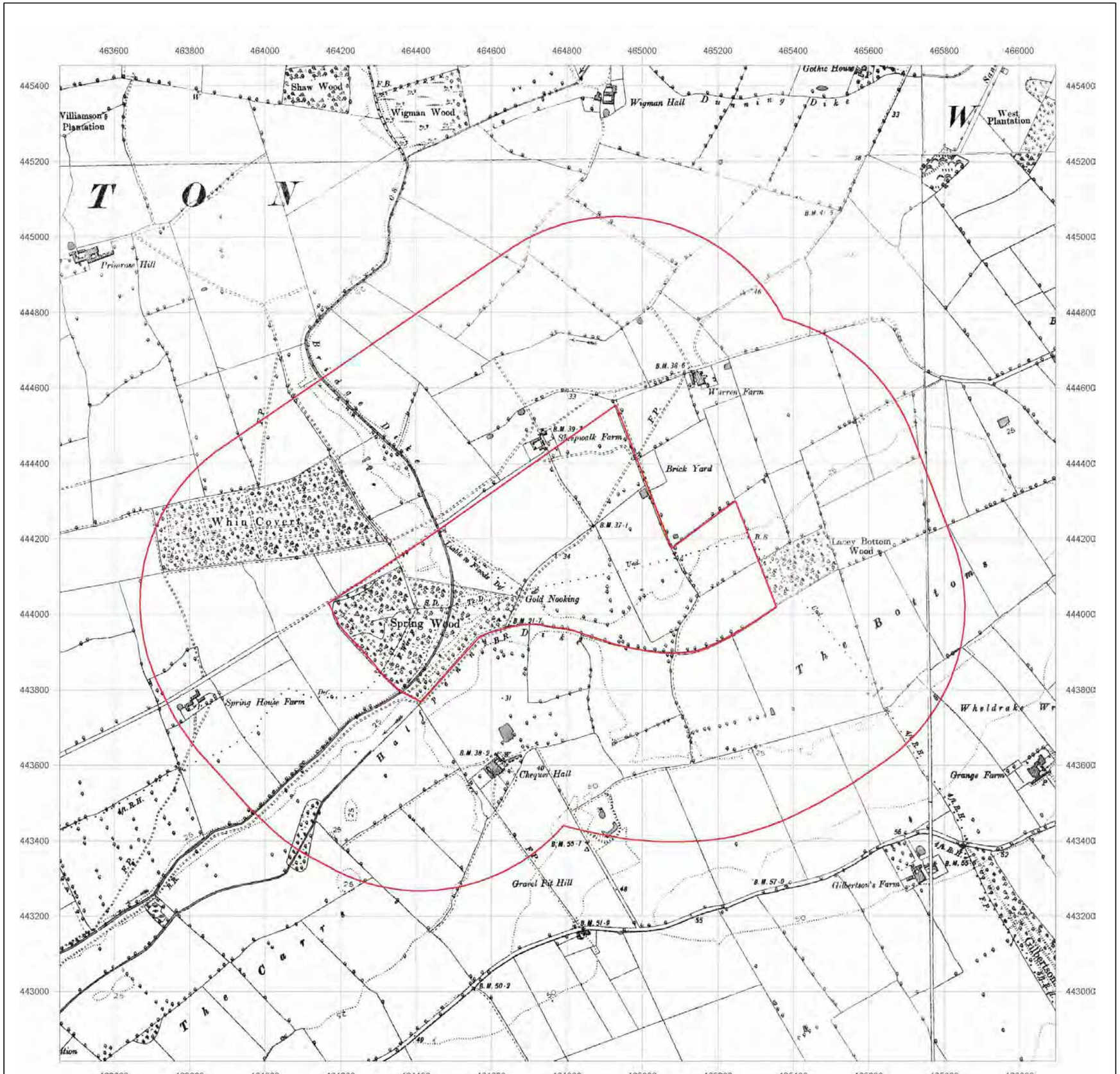

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_A1-LD
Grid Ref: 464775, 444135

Map Name: County Series

Map date: **1892**

Scale: 1:10,560

Printed at: 1:10,560

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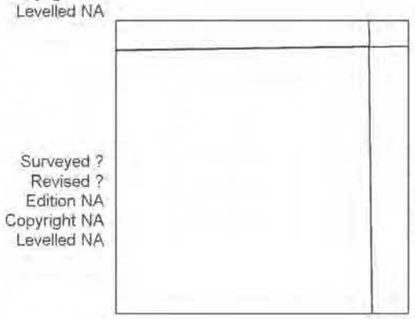
Revised ?
Edition NA
Copyright NA
Levelled NA

Surveyed ?
Revised ?
Edition NA
Copyright NA
Levelled NA



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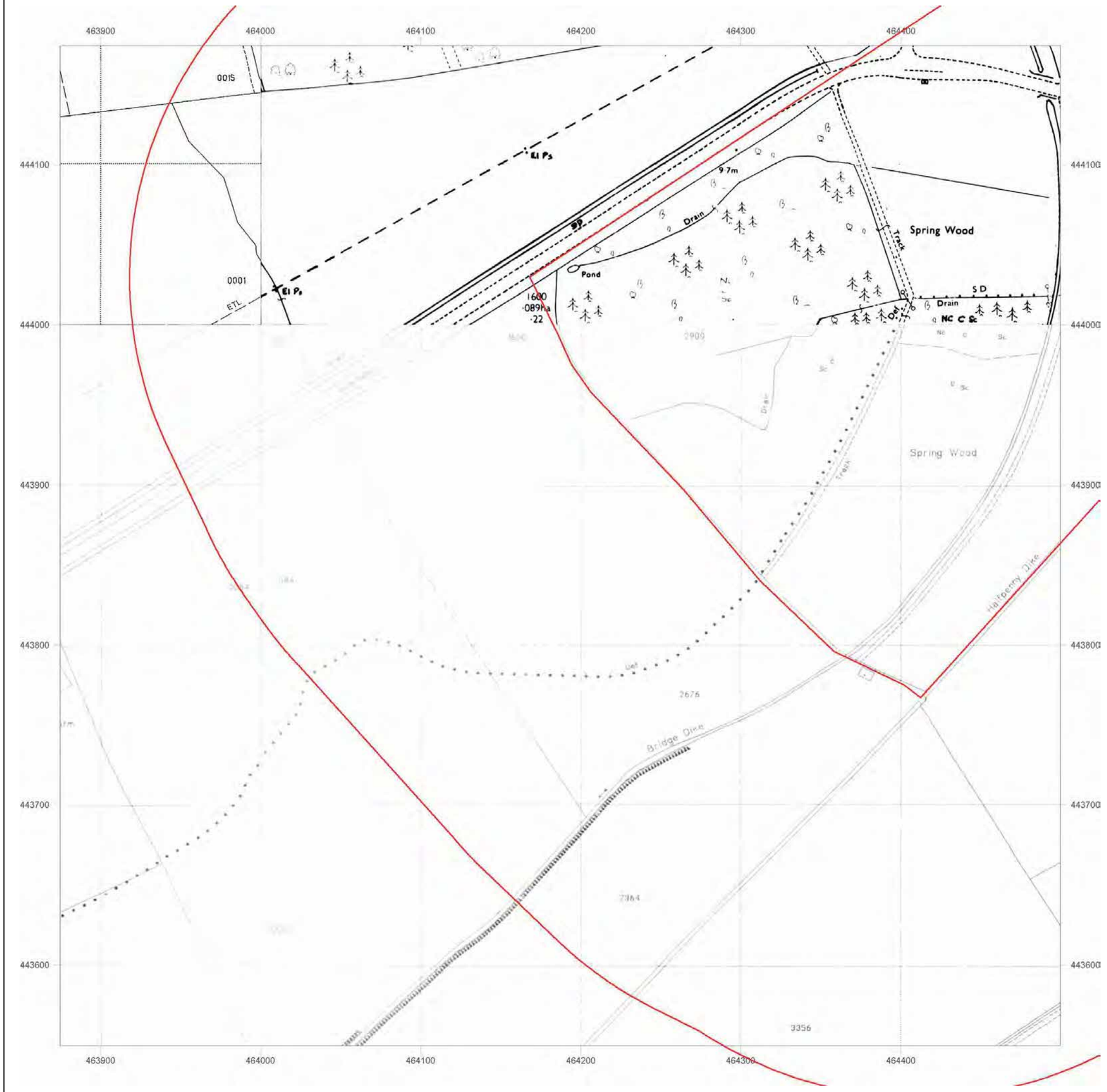

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_A2-MM
Grid Ref: 464187, 443862

Map Name: National Grid

Map date: **1991-1995**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1995
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1968
Revised 1991
Edition N/A
Copyright 1991
Levelled 1968

Surveyed N/A
Revised N/A
Edition N/A
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Production date: 16 December 2010

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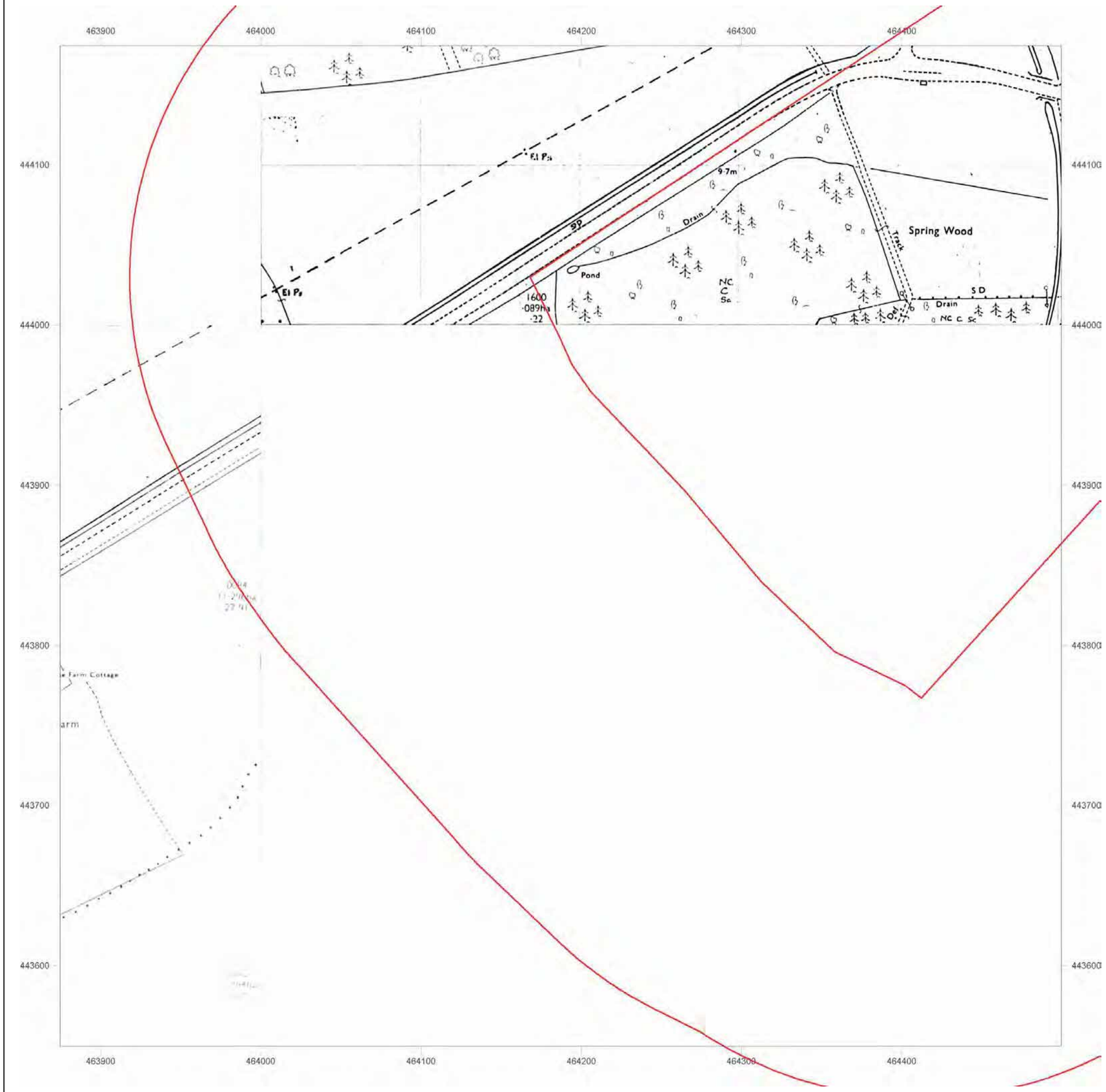

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_A2-MM
Grid Ref: 464187, 443862

Map Name: National Grid

Map date: **1985**

Scale: 1:2,500

Printed at: 1:2,500

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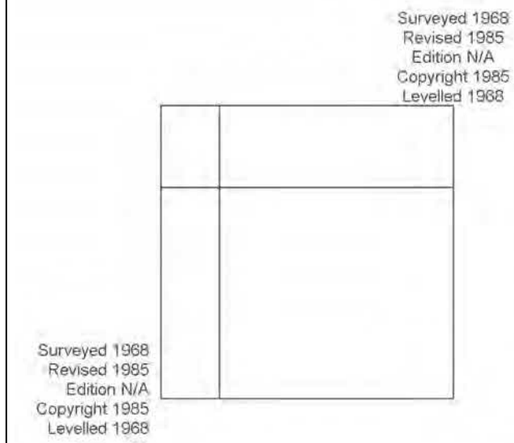

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Production date: 16 December 2010

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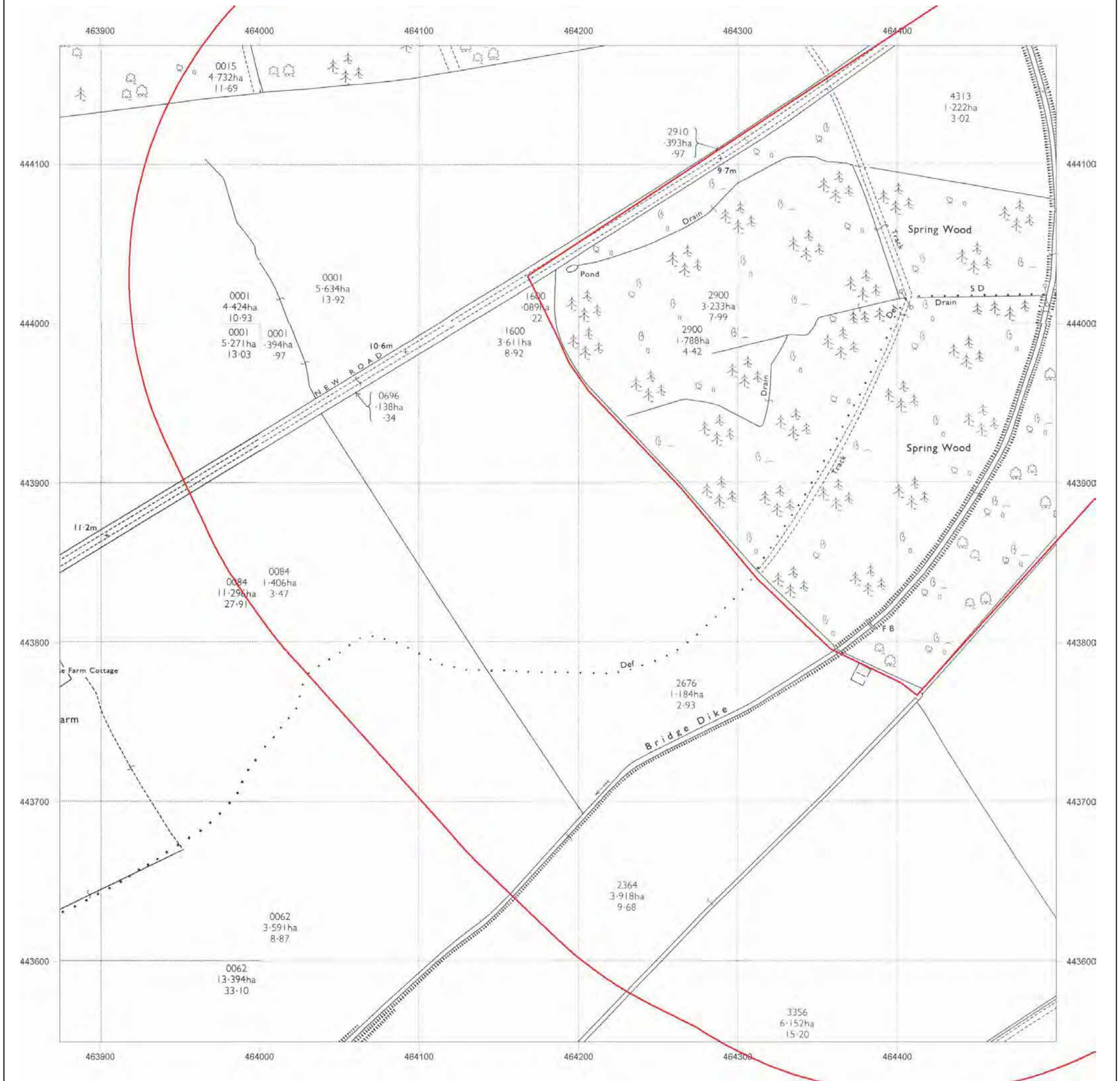

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_A2-MM
Grid Ref: 464187, 443862

Map Name: National Grid

Map date: **1973-1974**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1973
Revised 1973
Edition N/A
Copyright 1974
Levelled 1968

Surveyed 1973
Revised 1973
Edition N/A
Copyright 1975
Levelled 1968

Surveyed 1974
Revised 1974
Edition N/A
Copyright 1975
Levelled 1968

Surveyed 1973
Revised 1973
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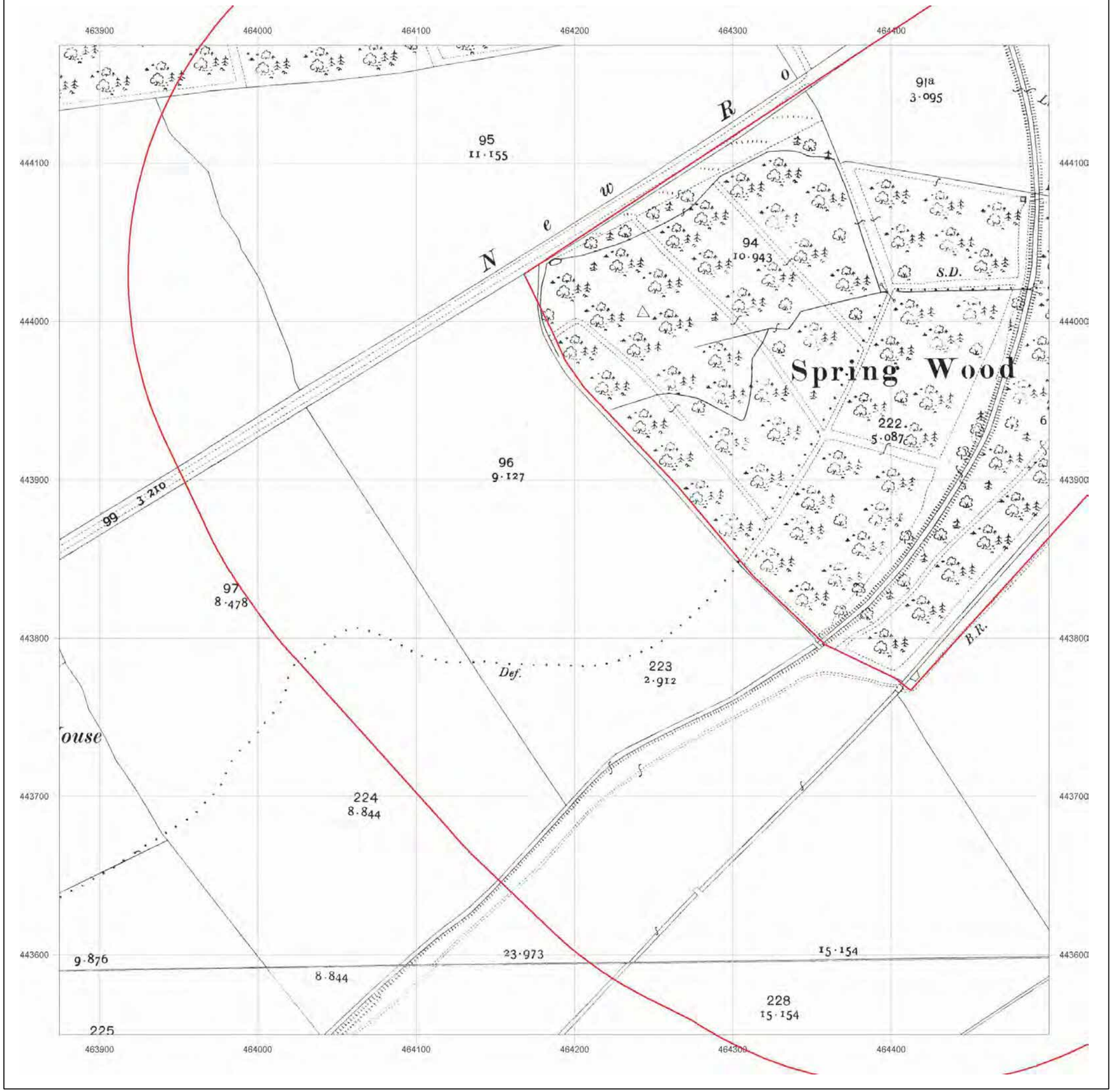

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_A2-MM
Grid Ref: 464187, 443862

Map Name: County Series

Map date: **1910**

Scale: 1:2,500

Printed at: 1:2,500

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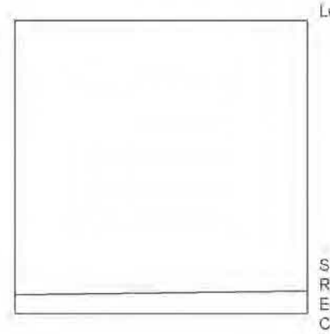

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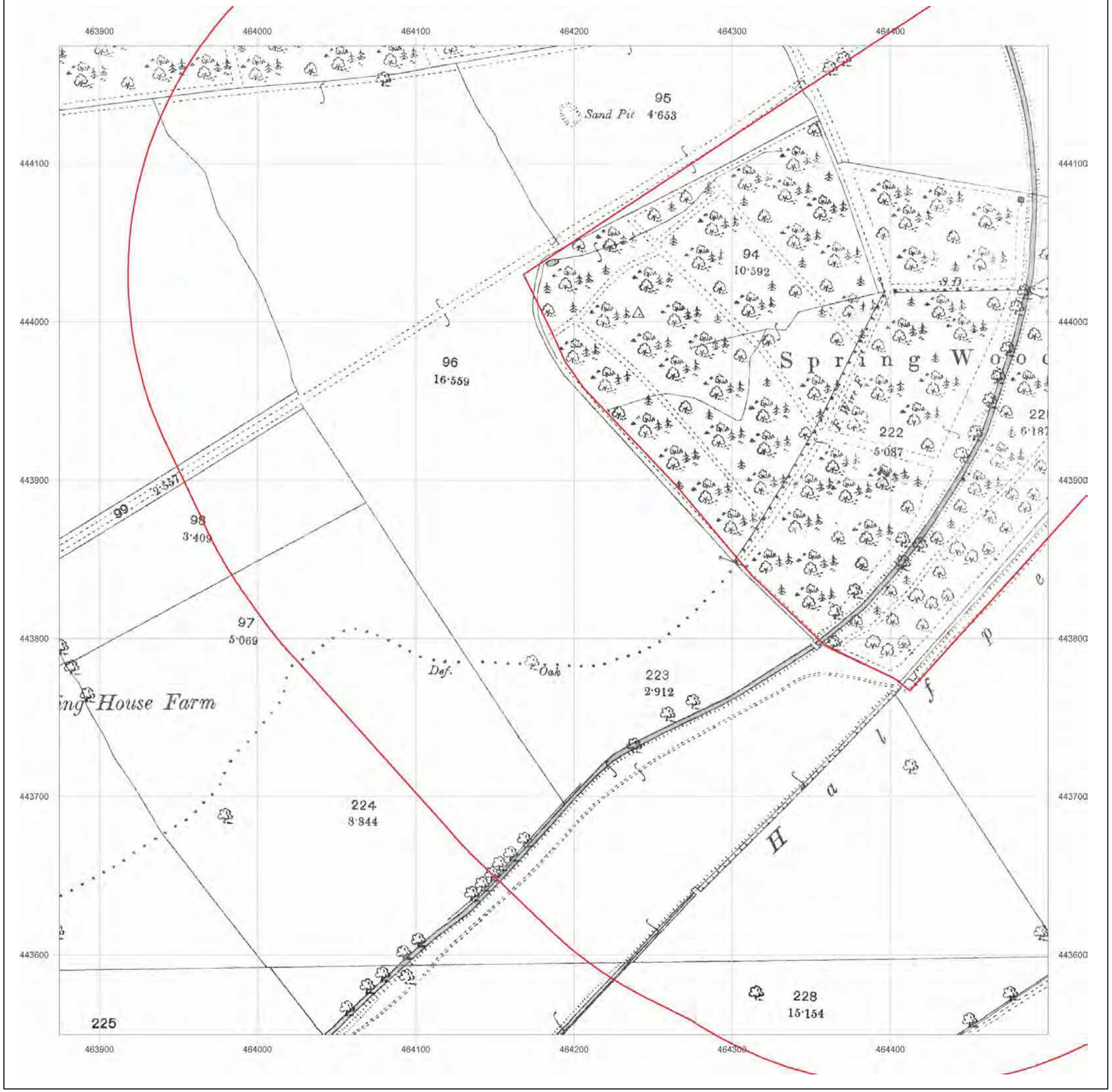
Production date: 16 December 2010

To view map legend click here *Legend*



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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_A2-MM
Grid Ref: 464187, 443862

Map Name: County Series

Map date: **1892**

Scale: 1:2,500

Printed at: 1:2,500

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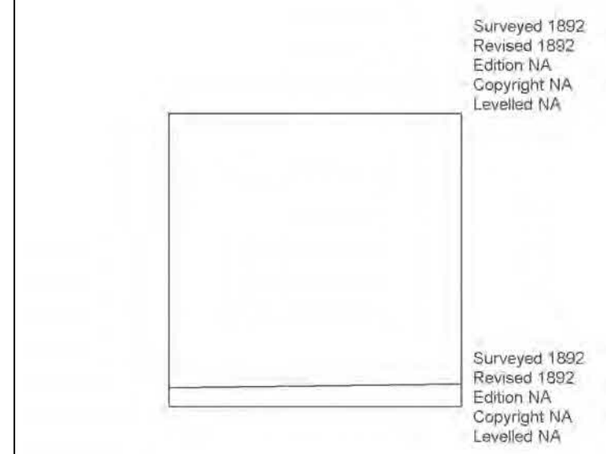

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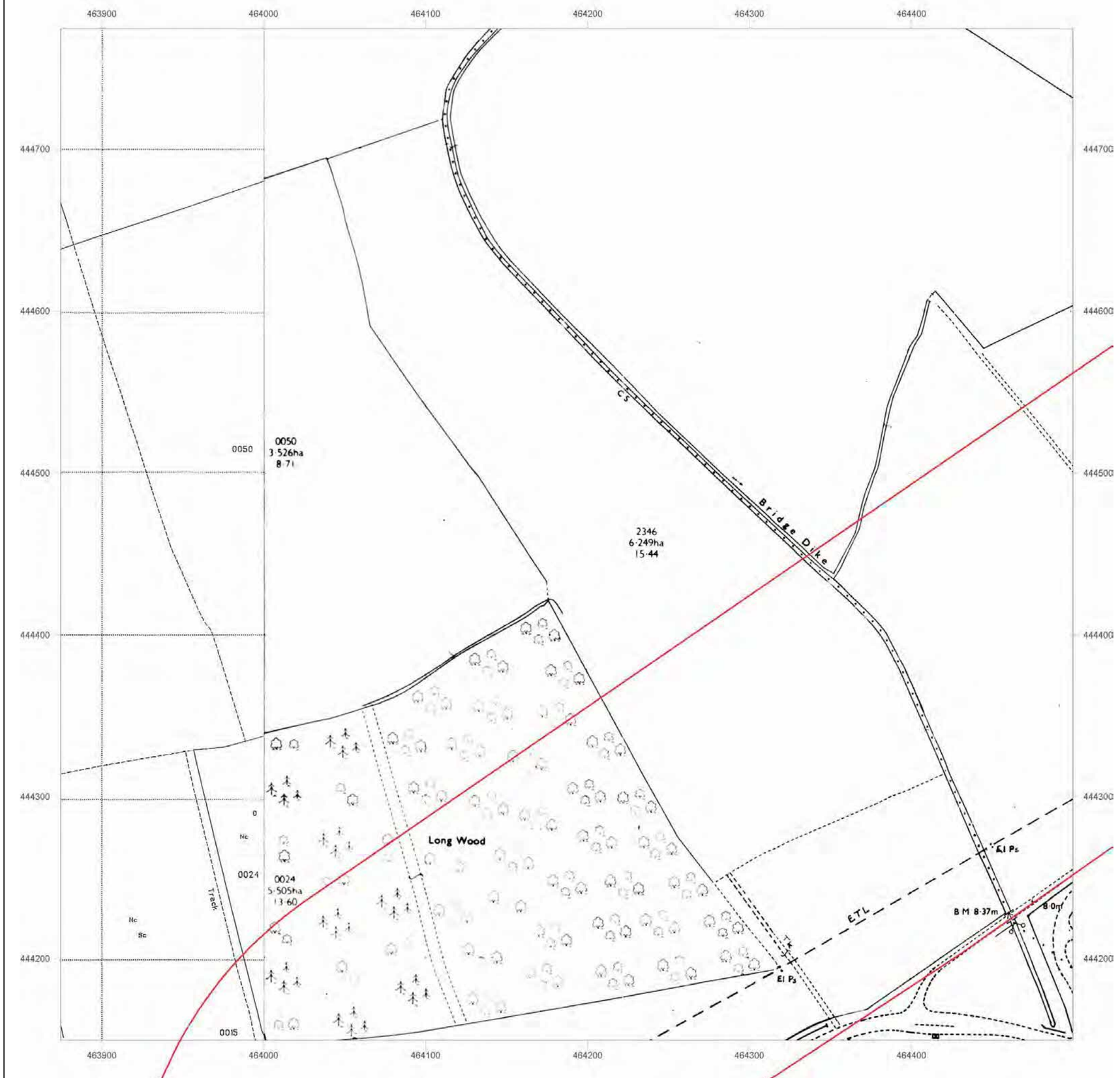
Production date: 16 December 2010

To view map legend click here *Legend*



emapsite™

Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_A1-MM
Grid Ref: 464187, 444462

Map Name: National Grid

Map date: **1991-1995**

Scale: 1:2,500

Printed at: 1:2,500

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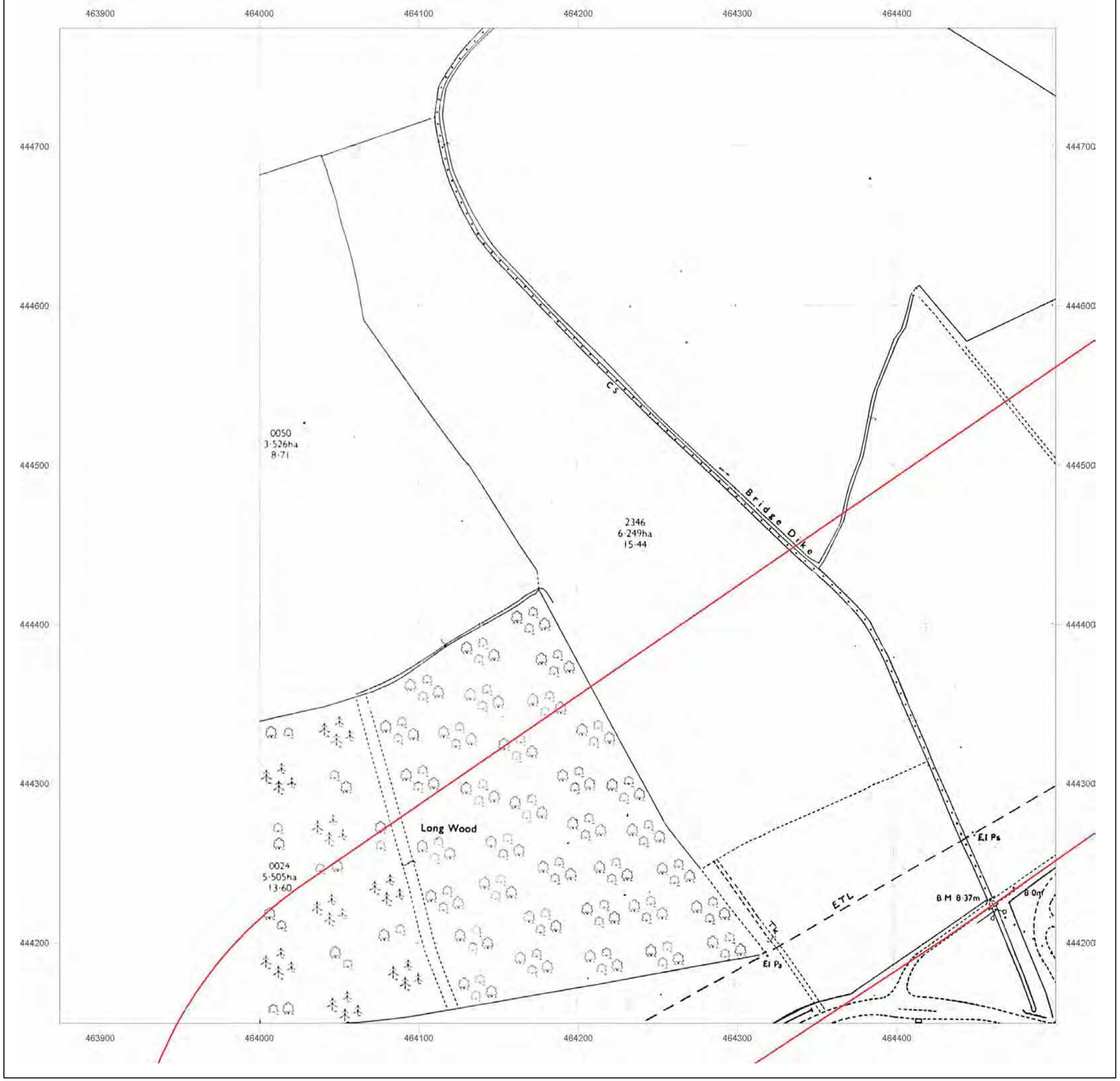
Production date: 16 December 2010

To view map legend click here *Legend*



emapsite™

Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_A1-MM
Grid Ref: 464187, 444462

Map Name: National Grid

Map date: **1985**

Scale: 1:2,500

Printed at: 1:2,500

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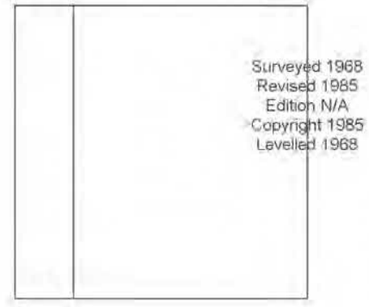

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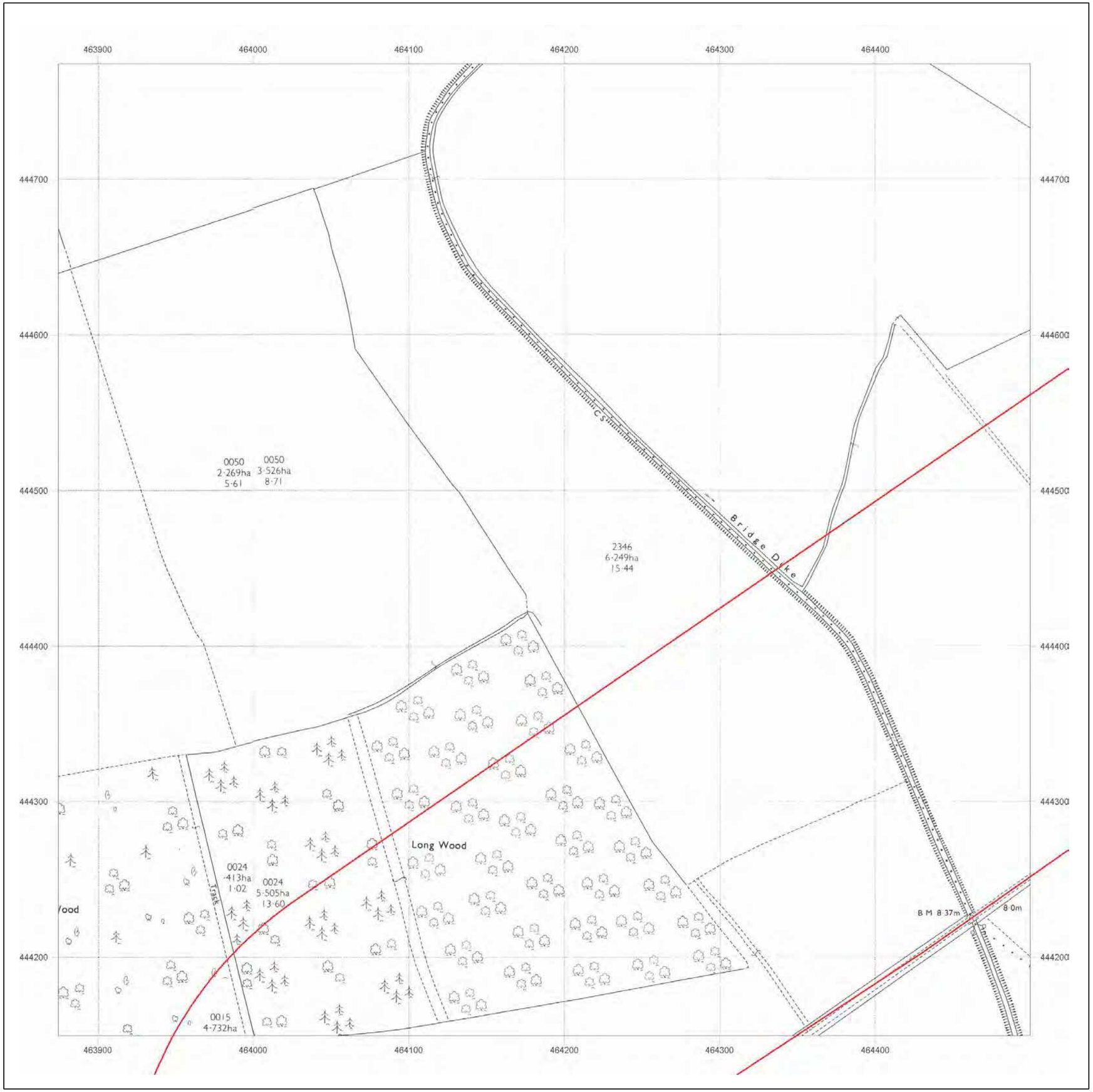
Production date: 16 December 2010

To view map legend click here *Legend*



emapsite™

Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_A1-MM
Grid Ref: 464187, 444462

Map Name: National Grid

Map date: **1973**

Scale: 1:2,500

Printed at: 1:2,500

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Revised 1973
Edition N/A
Copyright 1974
Levelled 1968

Surveyed 1973
Revised 1973
Edition N/A
Copyright 1975
Levelled 1968

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Production date: 16 December 2010

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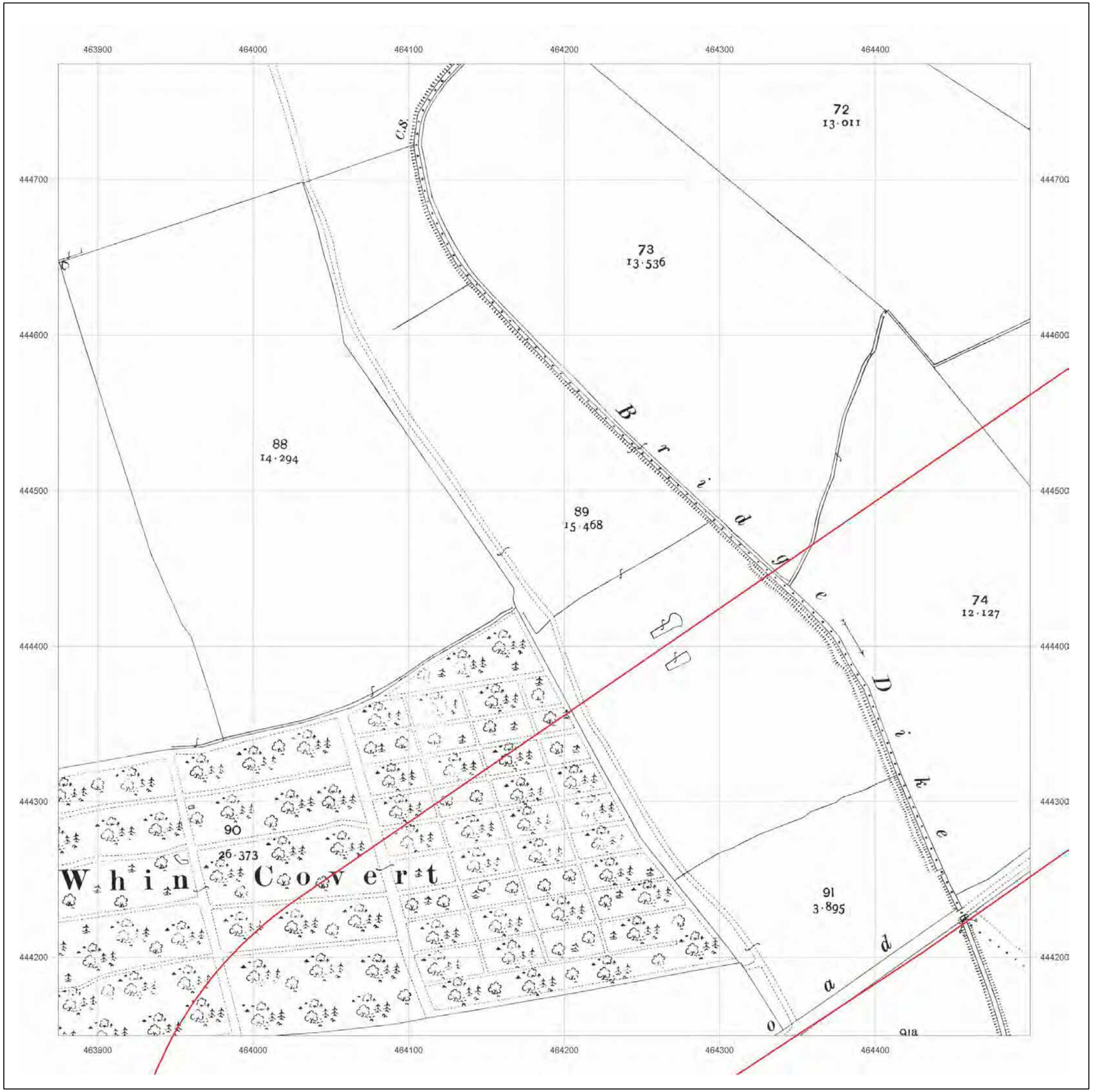

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_A1-MM
Grid Ref: 464187, 444462

Map Name: County Series

Map date: **1910**

Scale: 1:2,500

Printed at: 1:2,500

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Edition NA
Copyright NA
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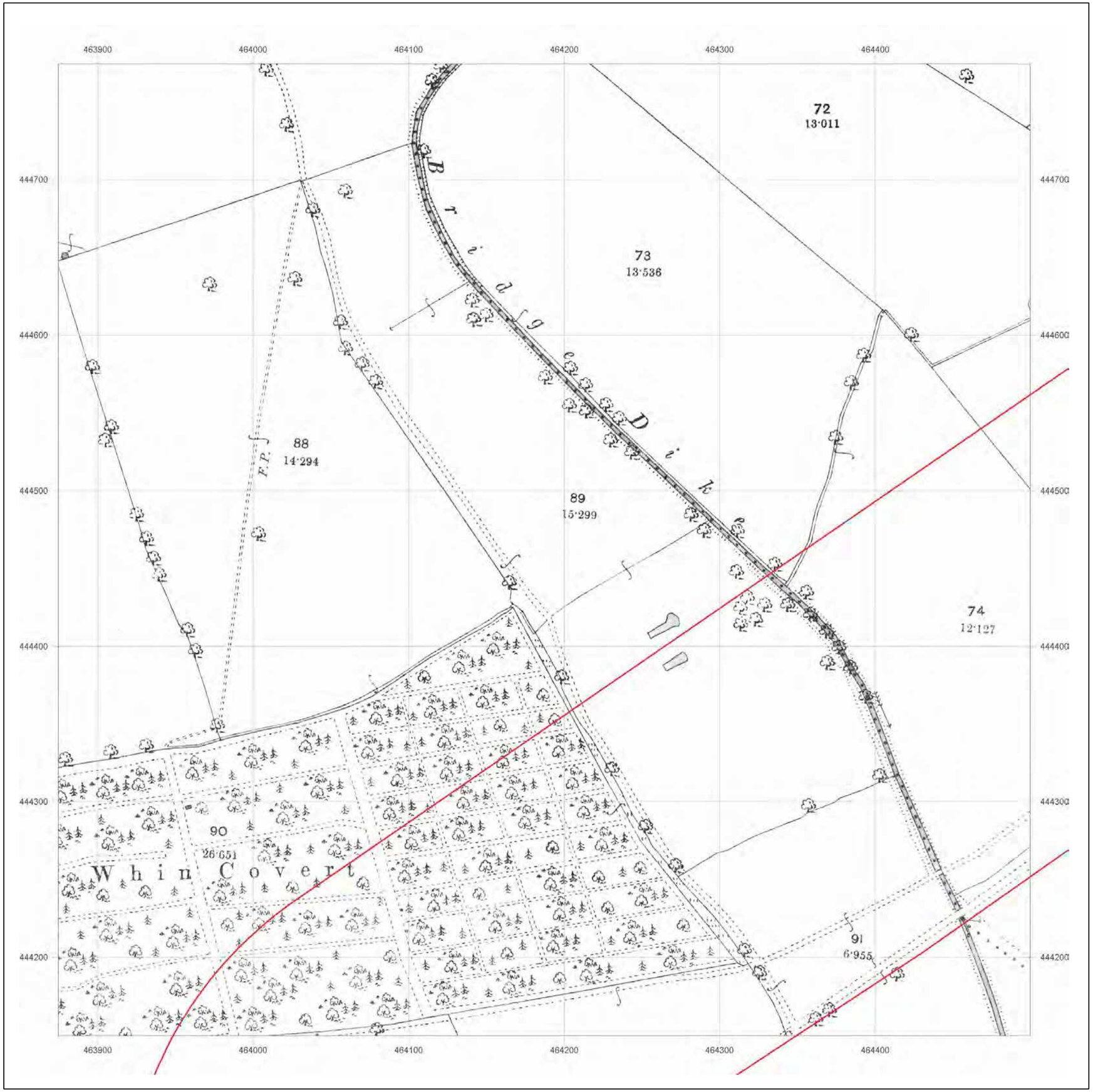
Production date: 16 December 2010

To view map legend click here *Legend*



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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_A1-MM
Grid Ref: 464187, 444462

Map Name: County Series

Map date: **1892**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1892
Revised 1892
Edition NA
Copyright NA
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Production date: 16 December 2010

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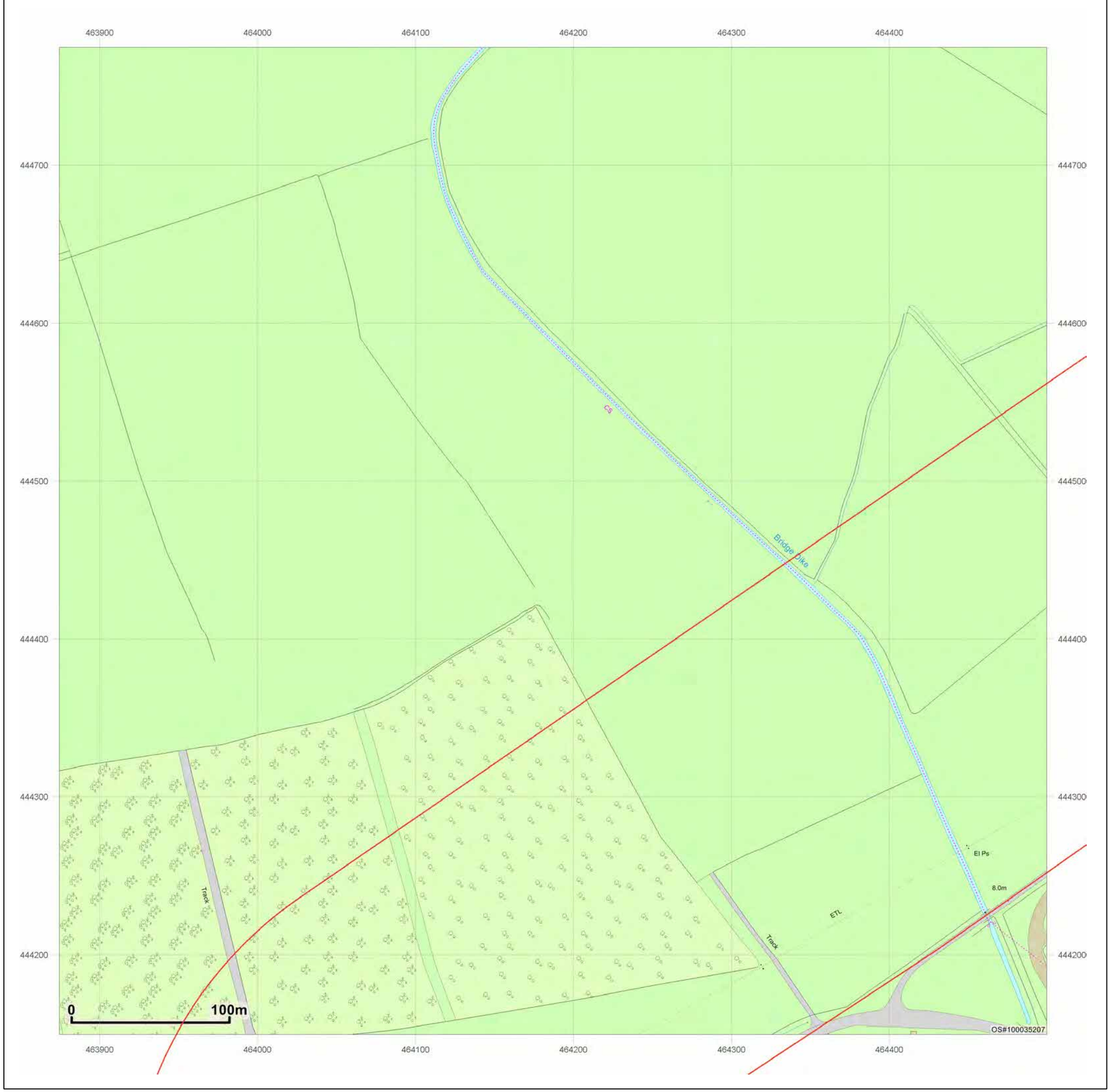

emapsite™

Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_A1-MM
Grid Ref: 464187, 444462

Map Name: MasterMap

Map date: **2010**

Scale: 1:2,500

Printed at: 1:2,500

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_A2-MM
Grid Ref: 464187, 443862

Map Name: MasterMap

Map date: **2010**

Scale: 1:2,500

Printed at: 1:2,500

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Production date: 16 December 2010

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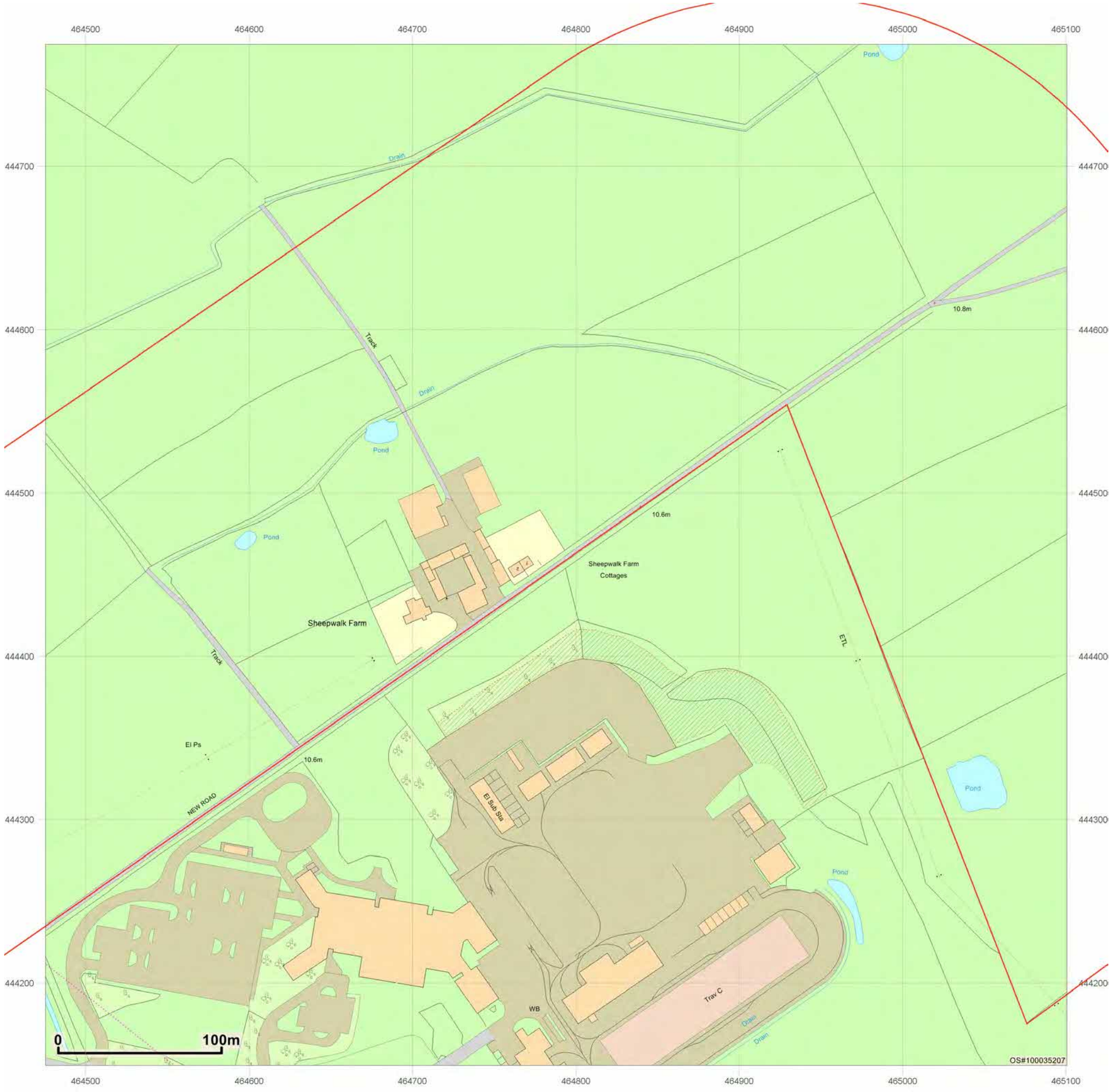

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_B1-MM
Grid Ref: 464788, 444462

Map Name: MasterMap

Map date: **2010**

Scale: 1:2,500

Printed at: 1:2,500

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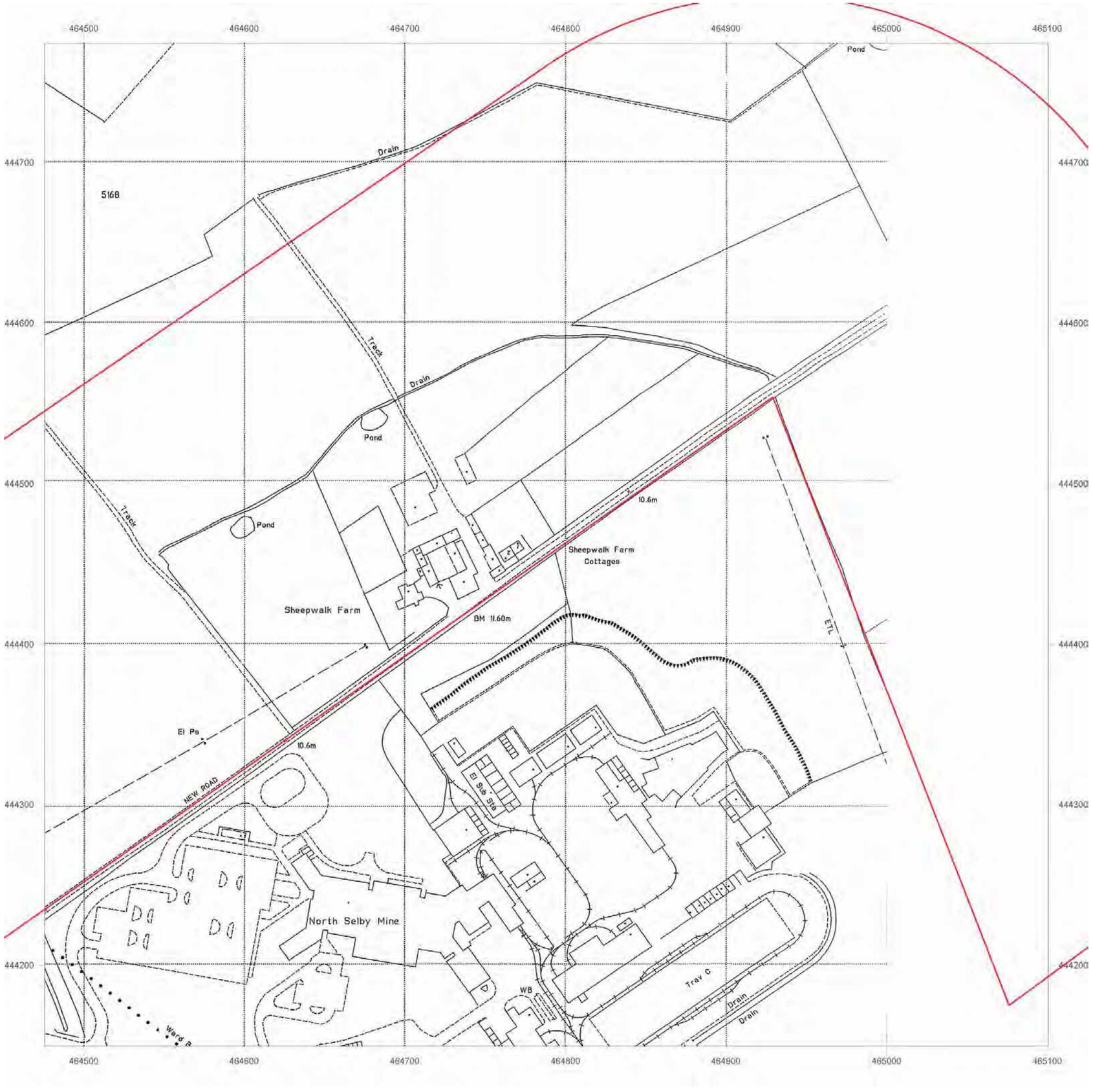

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_B1-MM
Grid Ref: 464788, 444462

Map Name: National Grid

Map date: **1995**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 16 December 2010

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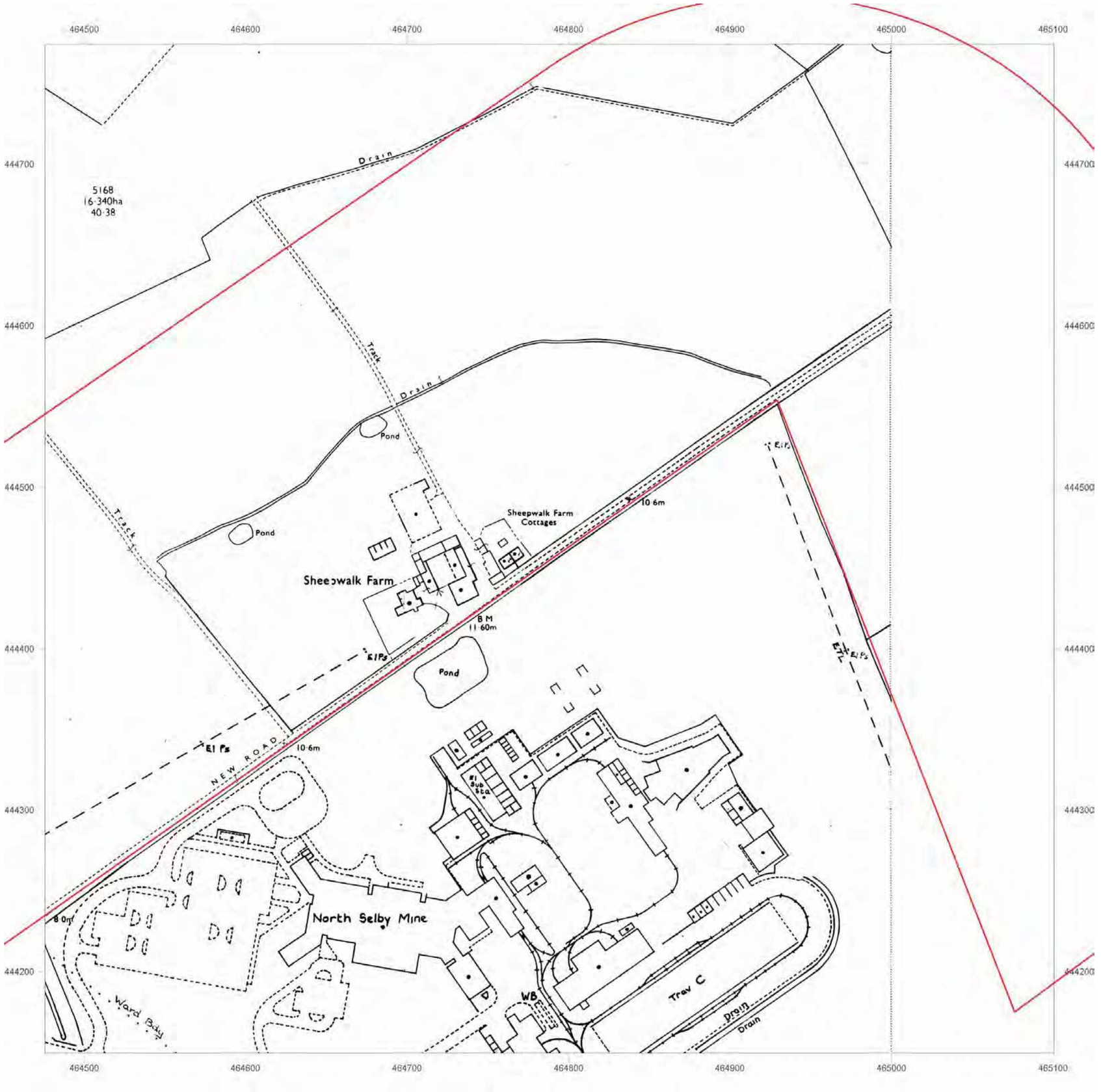

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_B1-MM
Grid Ref: 464788, 444462

Map Name: National Grid

Map date: **1991**

Scale: 1:2,500

Printed at: 1:2,500

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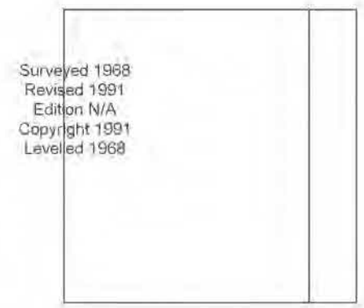

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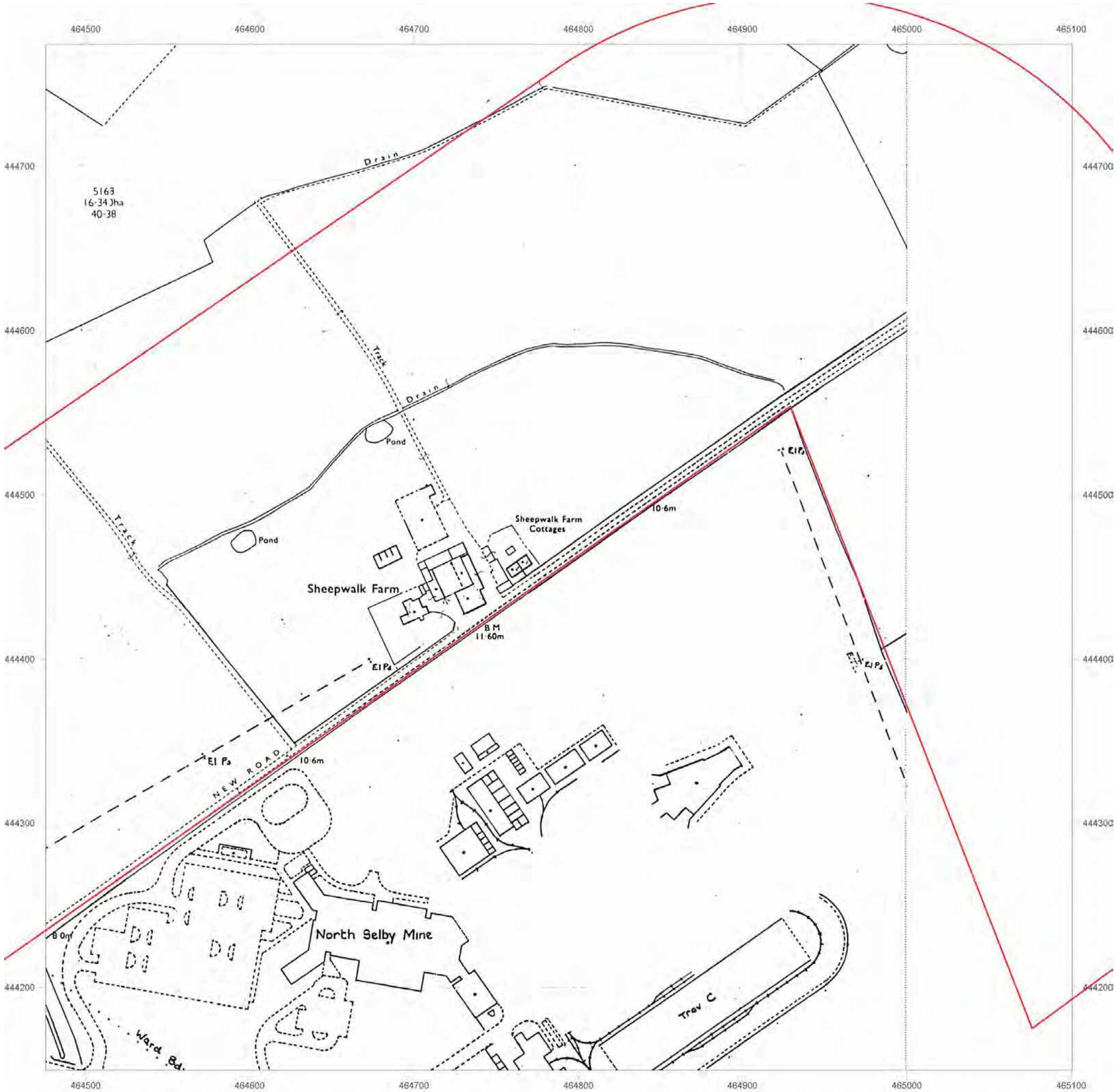

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_B1-MM
Grid Ref: 464788, 444462

Map Name: National Grid

Map date: **1985**

Scale: 1:2,500

Printed at: 1:2,500

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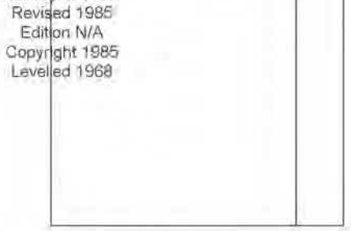

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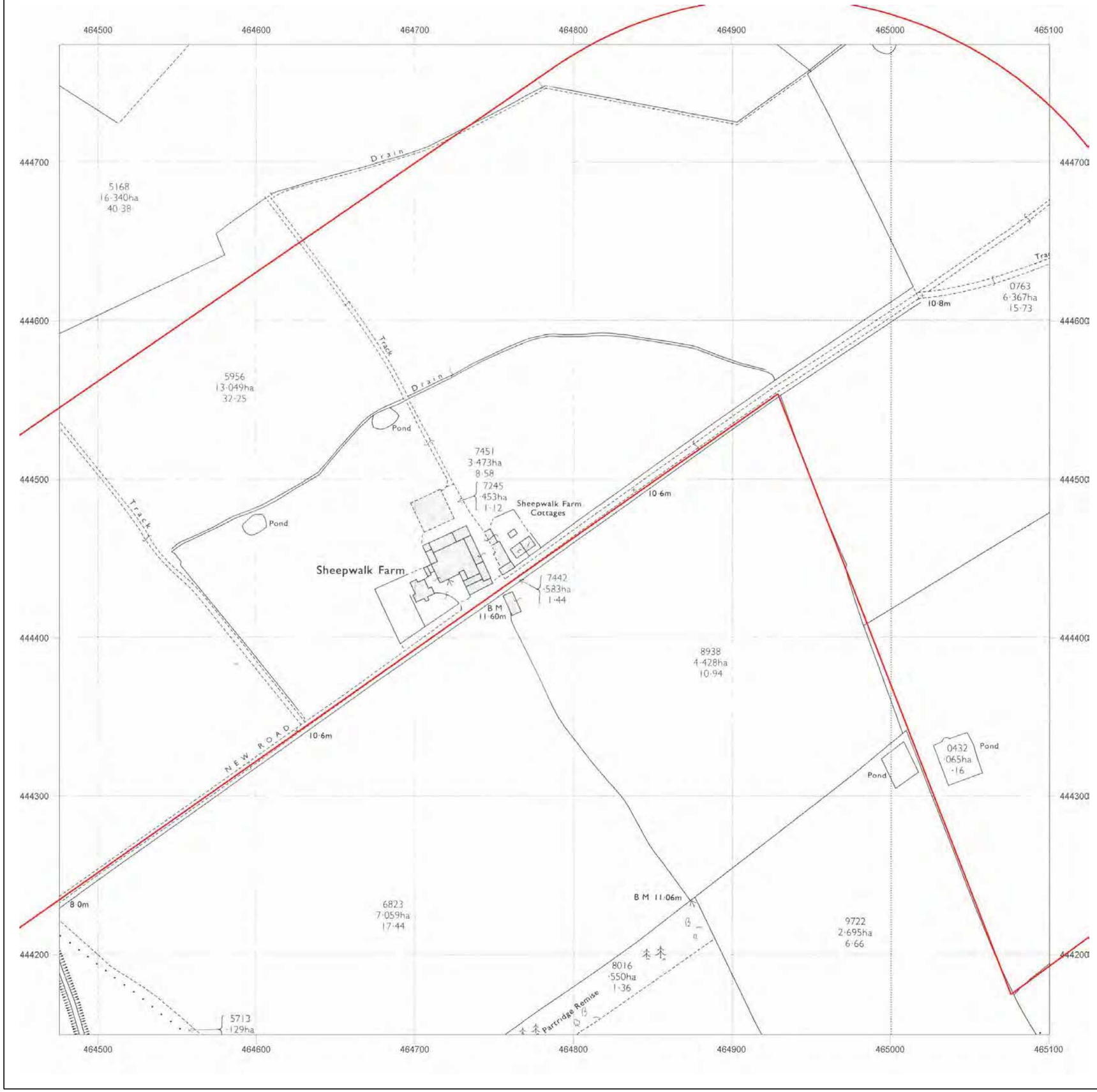

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_B1-MM
Grid Ref: 464788, 444462

Map Name: National Grid

Map date: **1973**

Scale: 1:2,500

Printed at: 1:2,500

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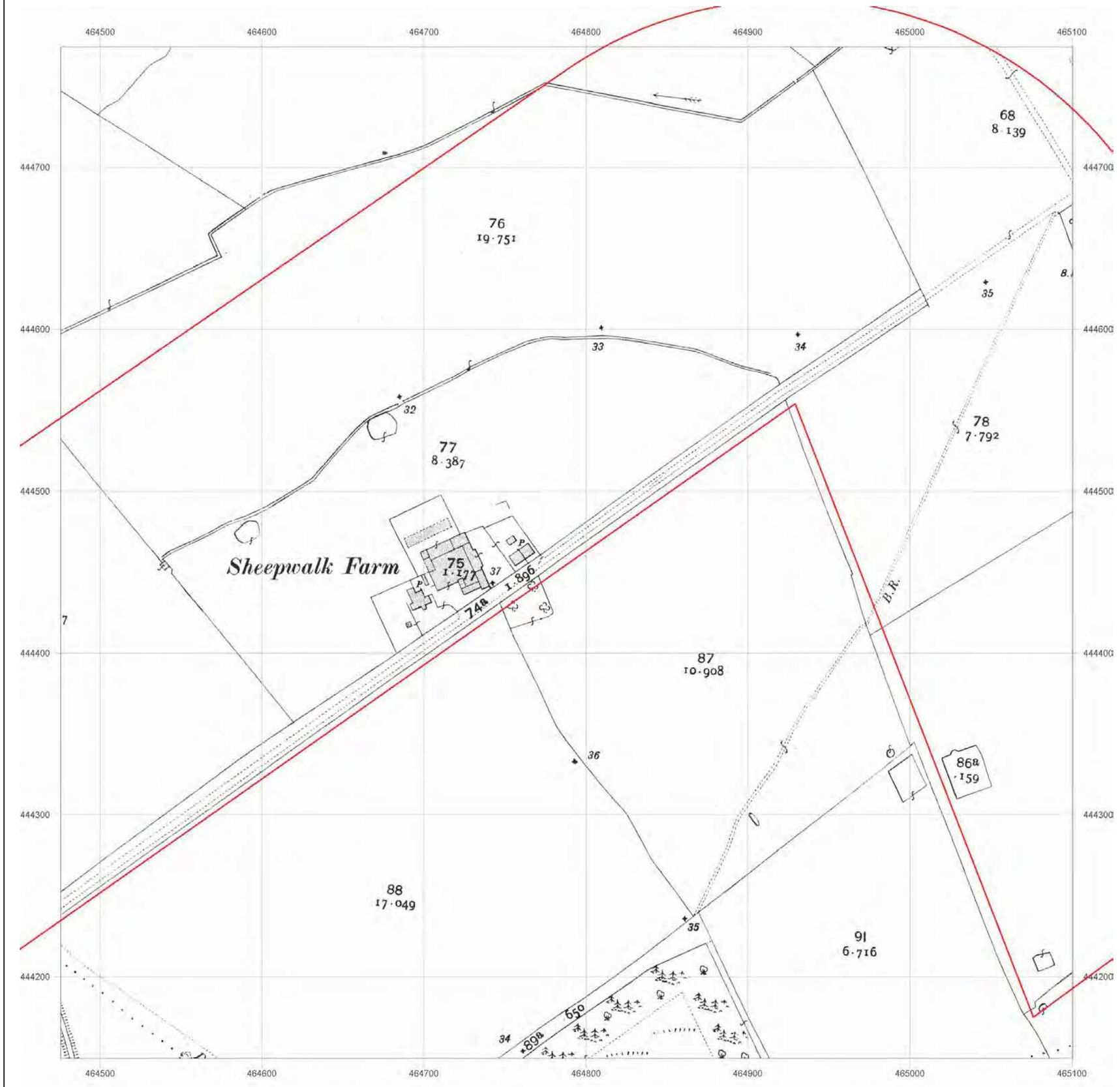

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_B1-MM
Grid Ref: 464788, 444462

Map Name: County Series

Map date: **1910**

Scale: 1:2,500

Printed at: 1:2,500

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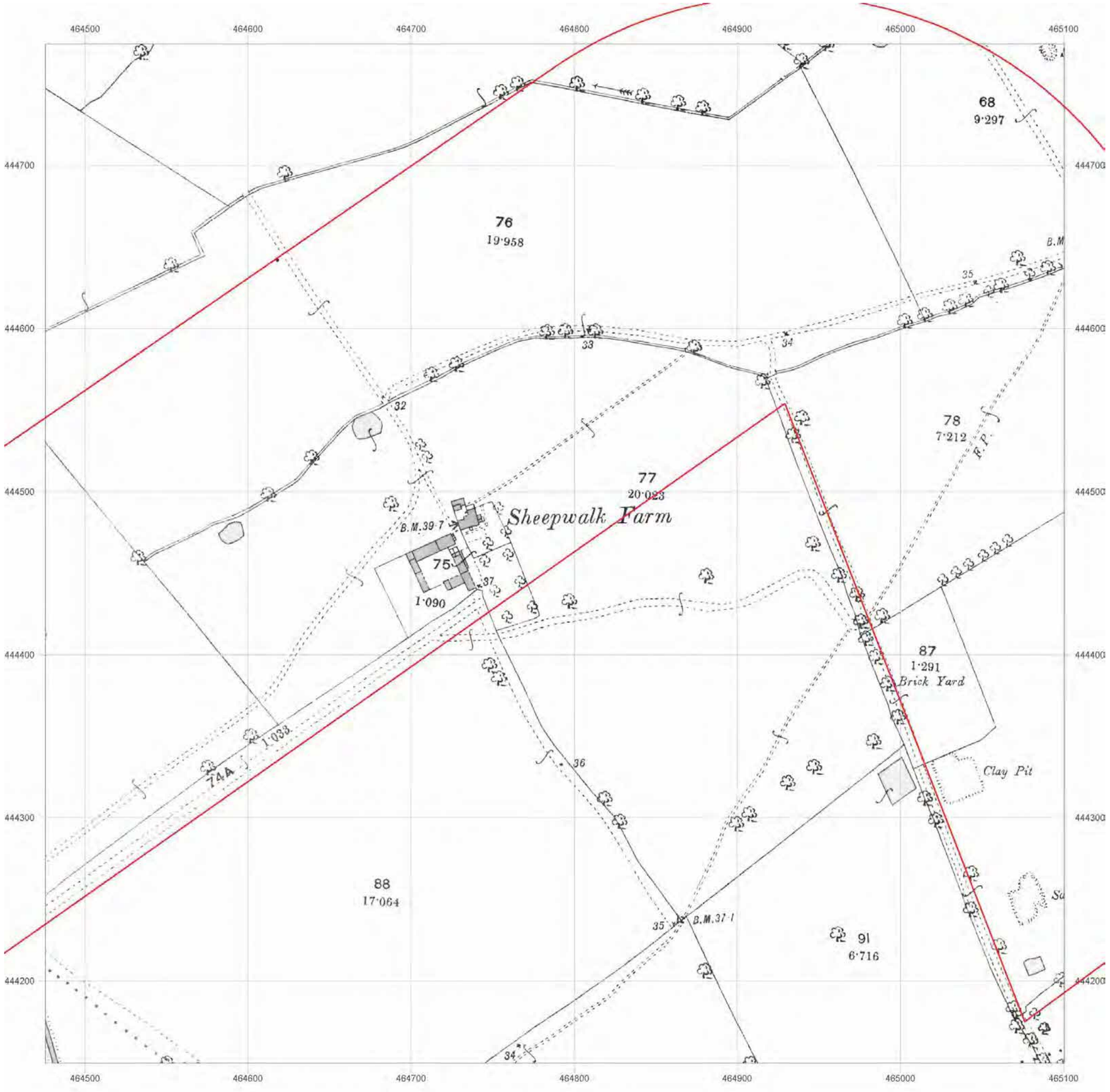

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_B1-MM
Grid Ref: 464788, 444462

Map Name: County Series

Map date: **1892**

Scale: 1:2,500

Printed at: 1:2,500

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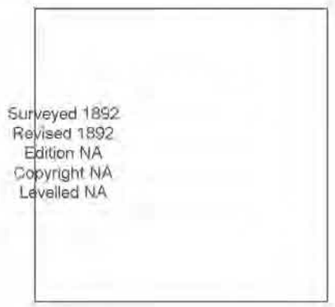

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Production date: 16 December 2010

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_B2-MM
Grid Ref: 464788, 443862

Map Name: MasterMap

Map date: **2010**

Scale: 1:2,500

Printed at: 1:2,500

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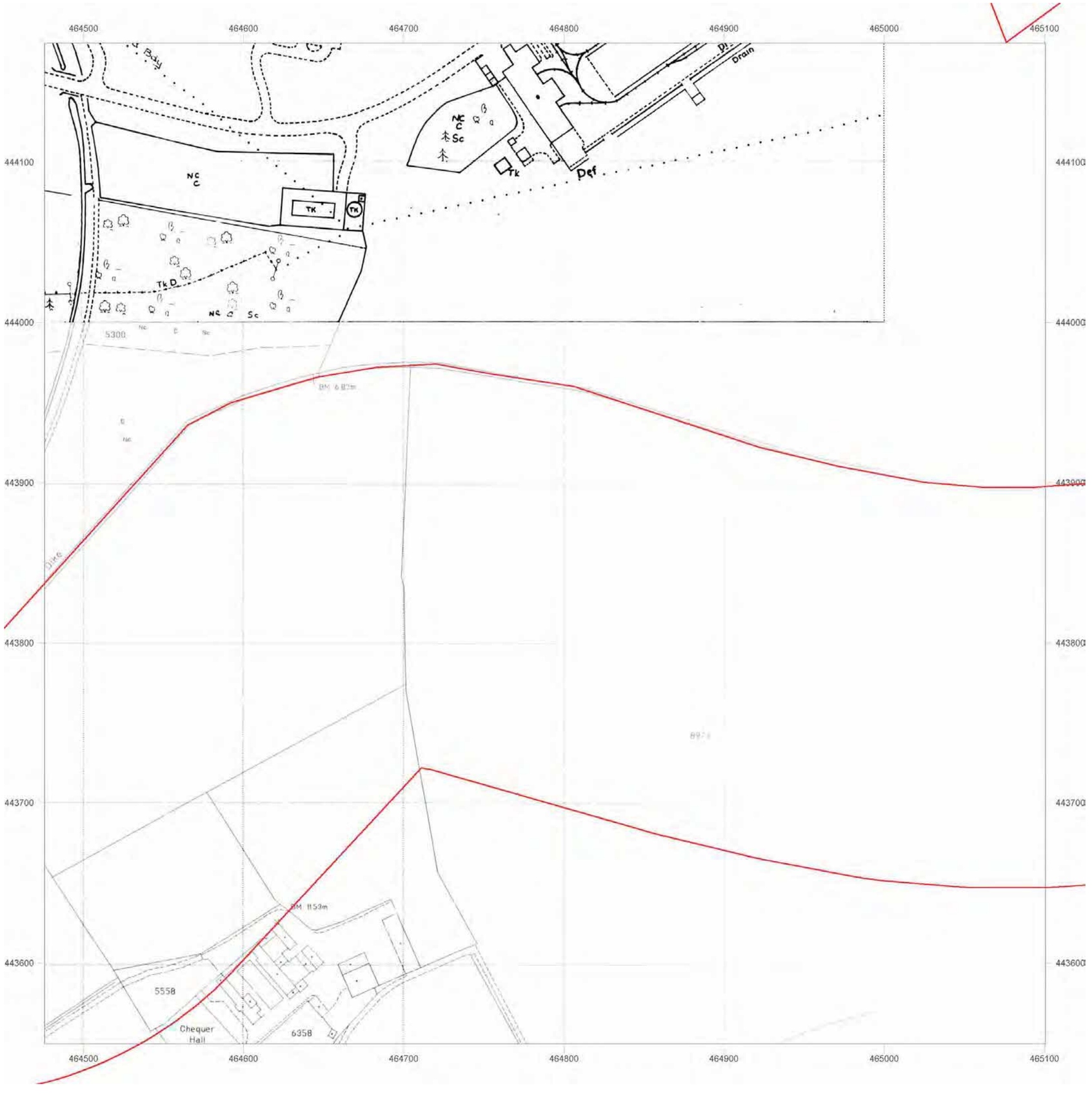

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_B2-MM
Grid Ref: 464788, 443862

Map Name: National Grid

Map date: **1991-1995**

Scale: 1:2,500

Printed at: 1:2,500

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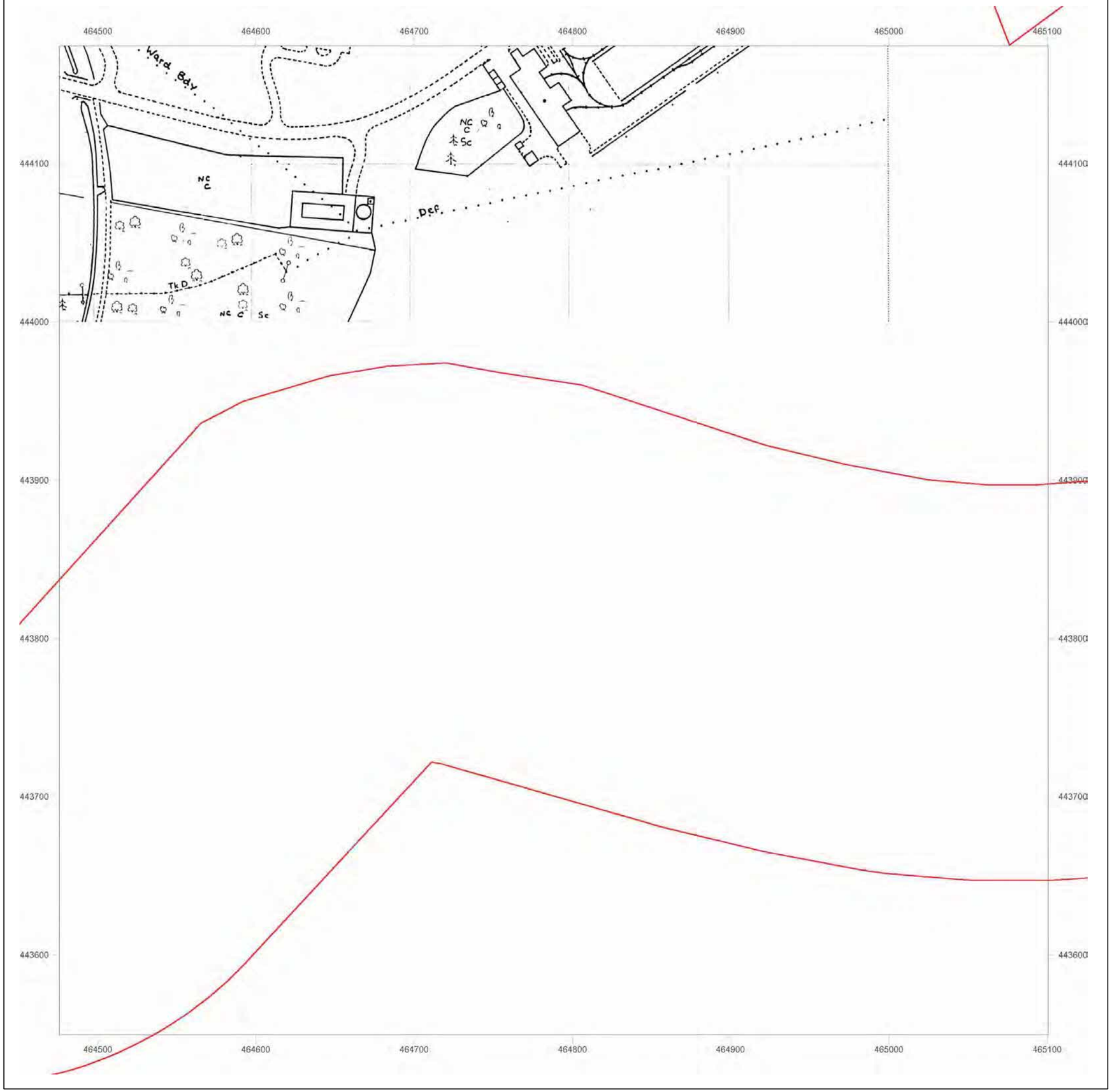

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_B2-MM
Grid Ref: 464788, 443862

Map Name: National Grid

Map date: **1985**

Scale: 1:2,500

Printed at: 1:2,500

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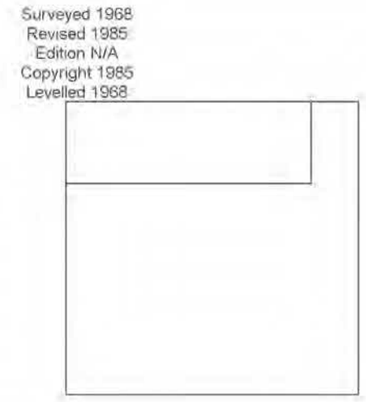

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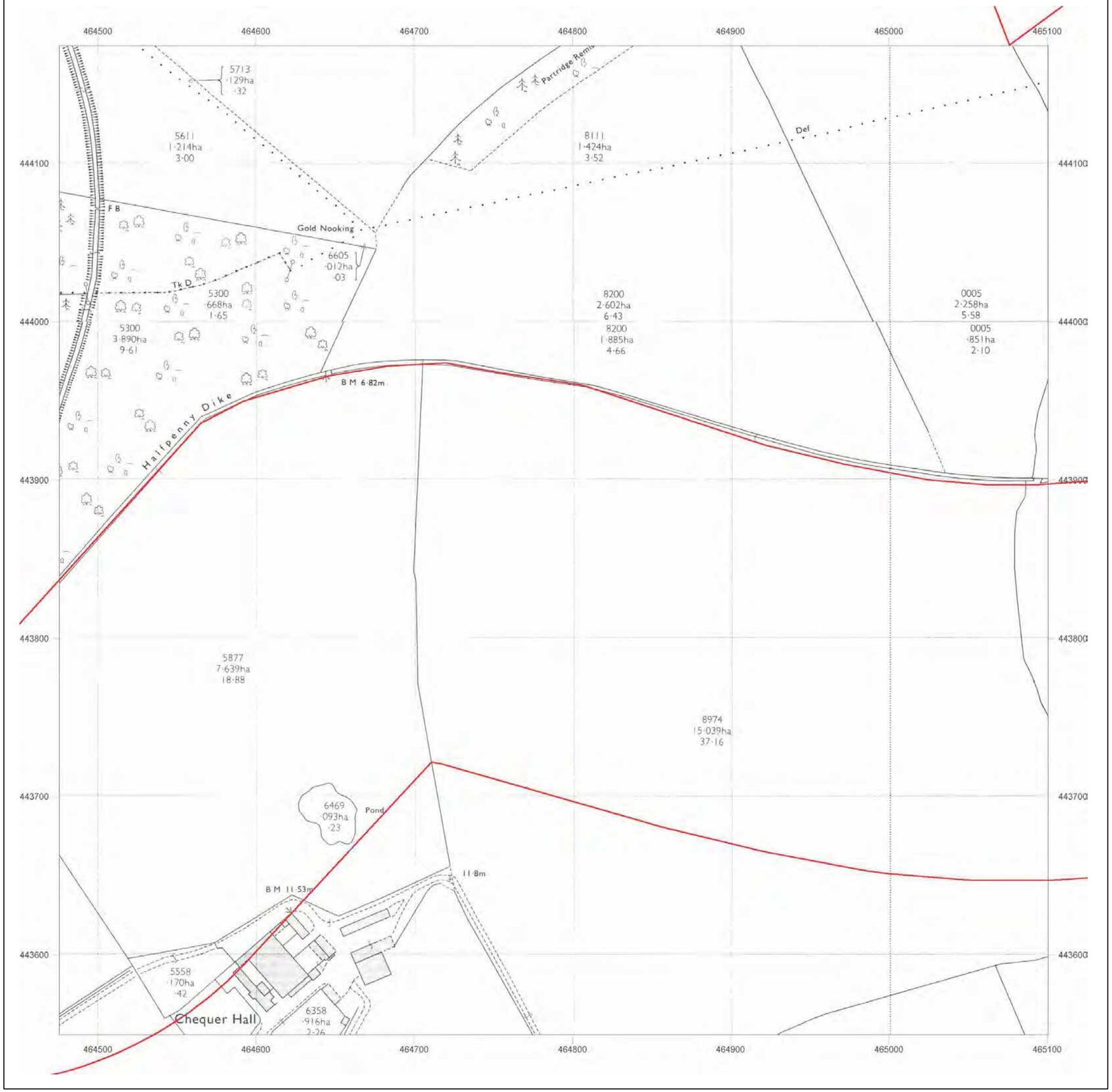

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_B2-MM
Grid Ref: 464788, 443862

Map Name: National Grid

Map date: **1973**

Scale: 1:2,500

Printed at: 1:2,500

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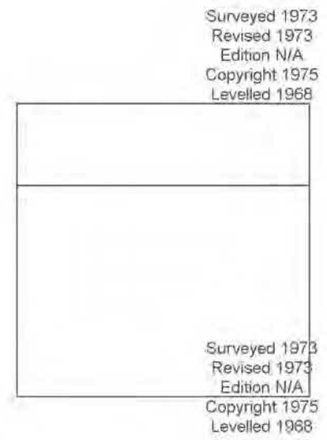

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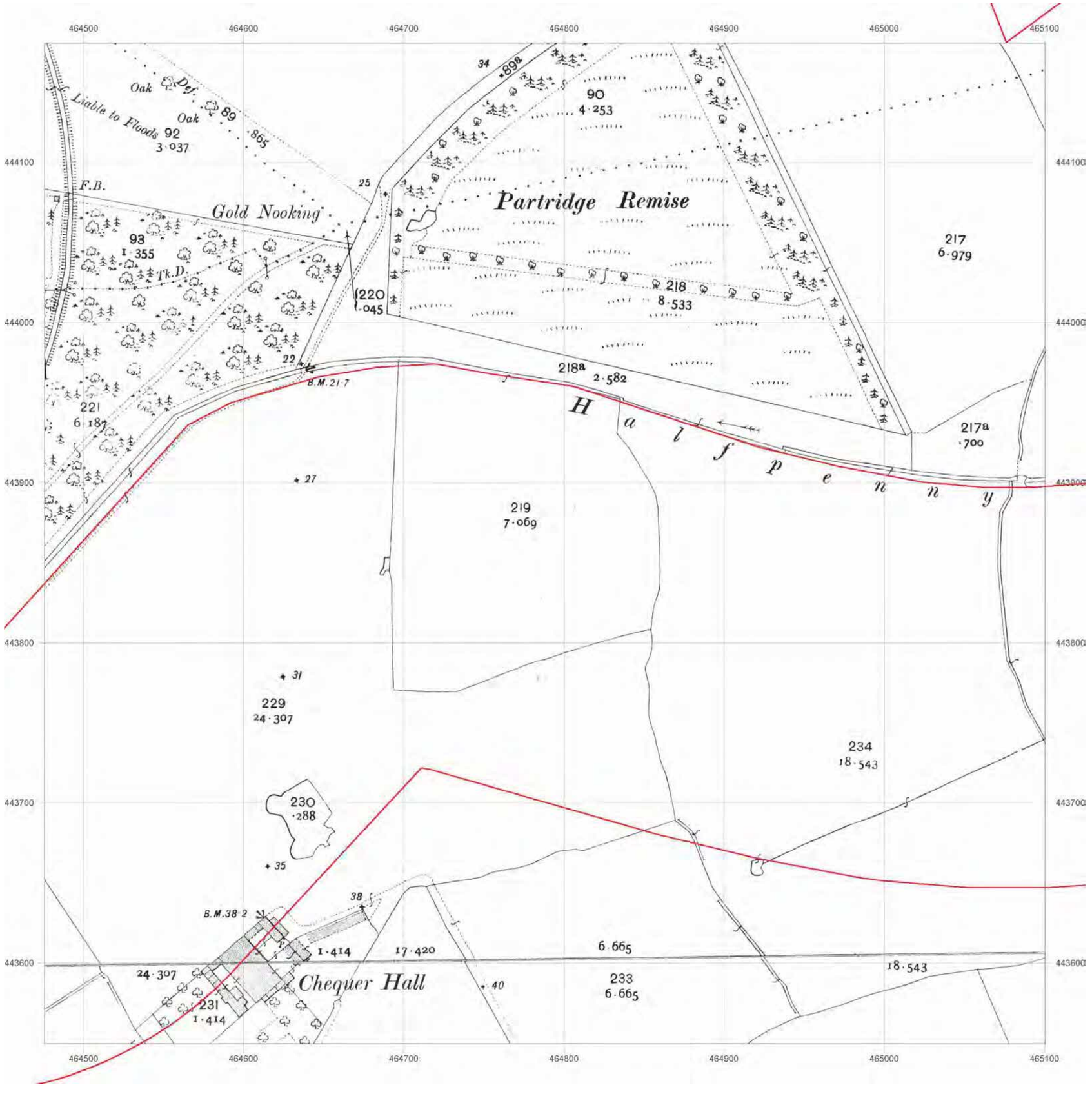

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_B2-MM
Grid Ref: 464788, 443862

Map Name: County Series

Map date: **1910**

Scale: 1:2,500

Printed at: 1:2,500

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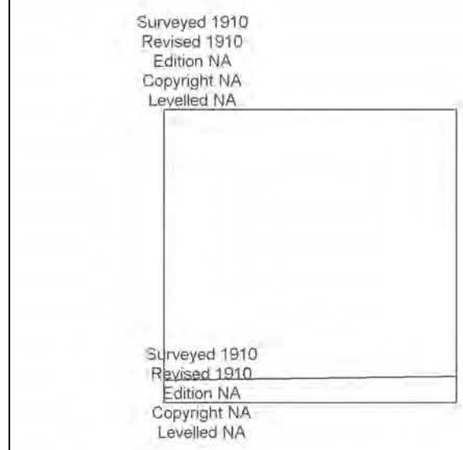

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Production date: 16 December 2010

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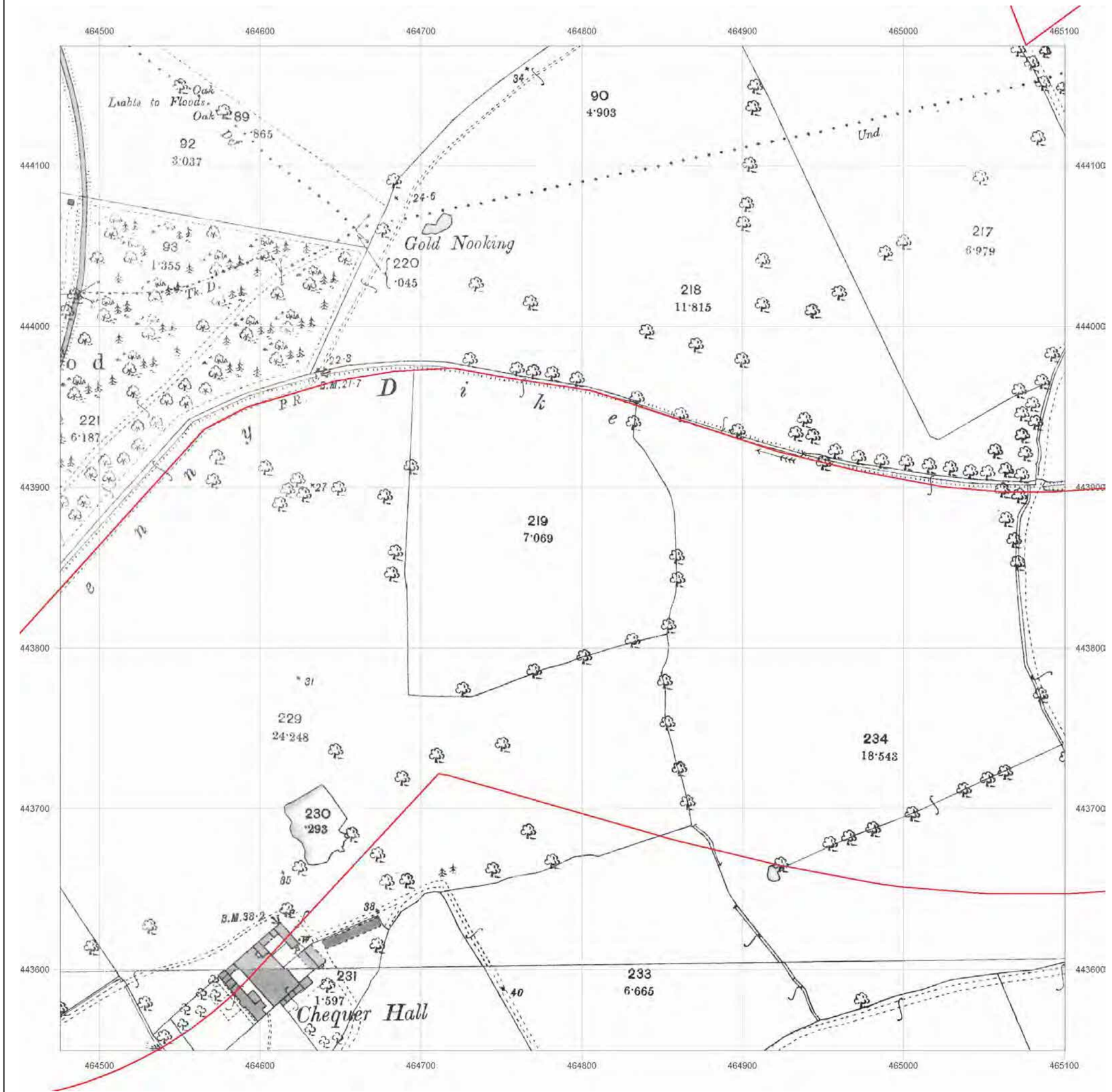

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_B2-MM
Grid Ref: 464788, 443862

Map Name: County Series

Map date: **1892**

Scale: 1:2,500

Printed at: 1:2,500

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Edition NA
Copyright NA
Levelled NA

Surveyed 1892
Revised 1892
Edition NA
Copyright NA
Levelled NA

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Production date: 16 December 2010

To view map legend click here *Legend*

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_C1-MM
Grid Ref: 465388, 444462

Map Name: MasterMap

Map date: **2010**

Scale: 1:2,500

Printed at: 1:2,500

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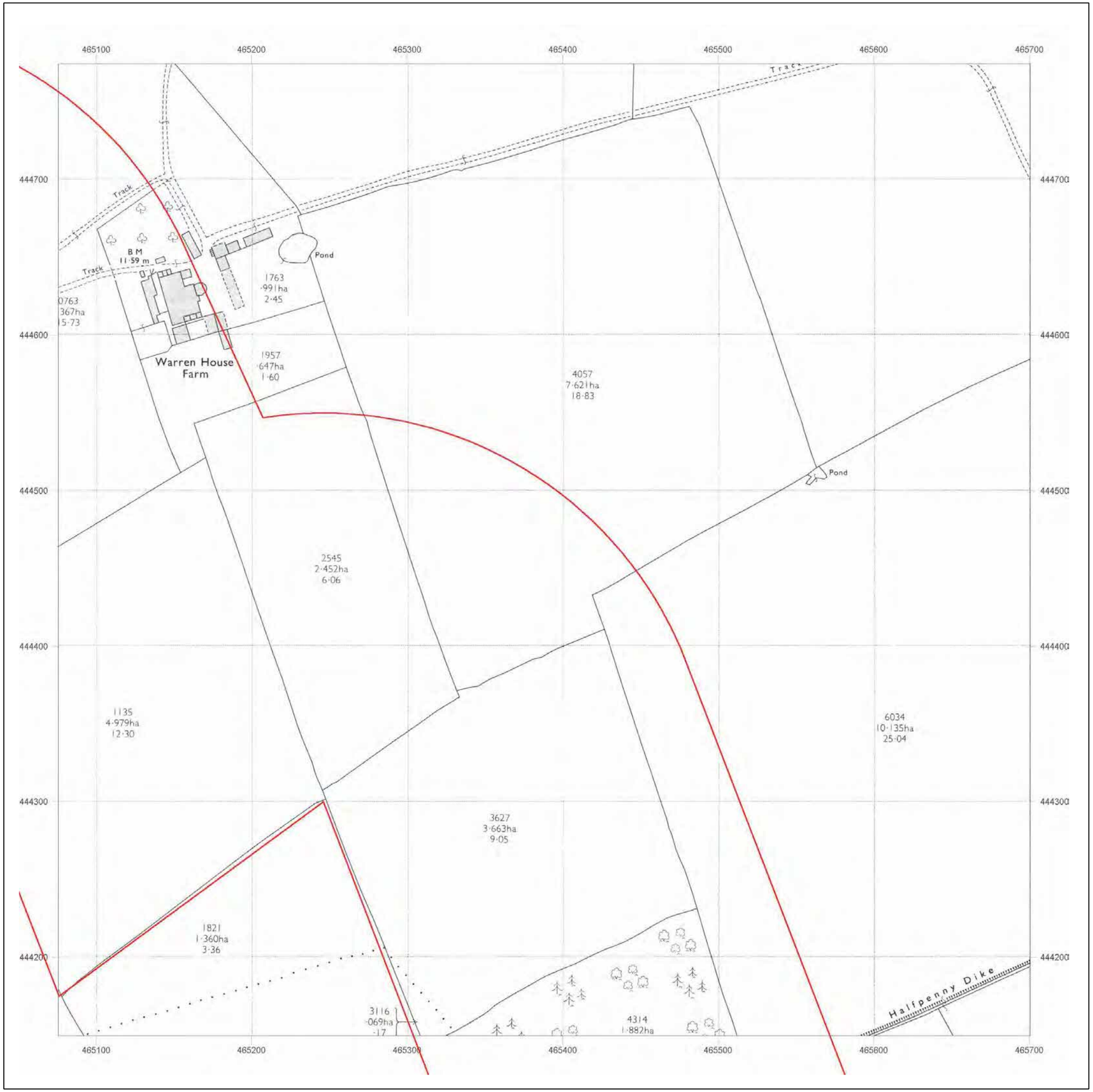

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_C1-MM
Grid Ref: 465388, 444462

Map Name: National Grid

Map date: **1973**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1973
Revised 1973
Edition N/A
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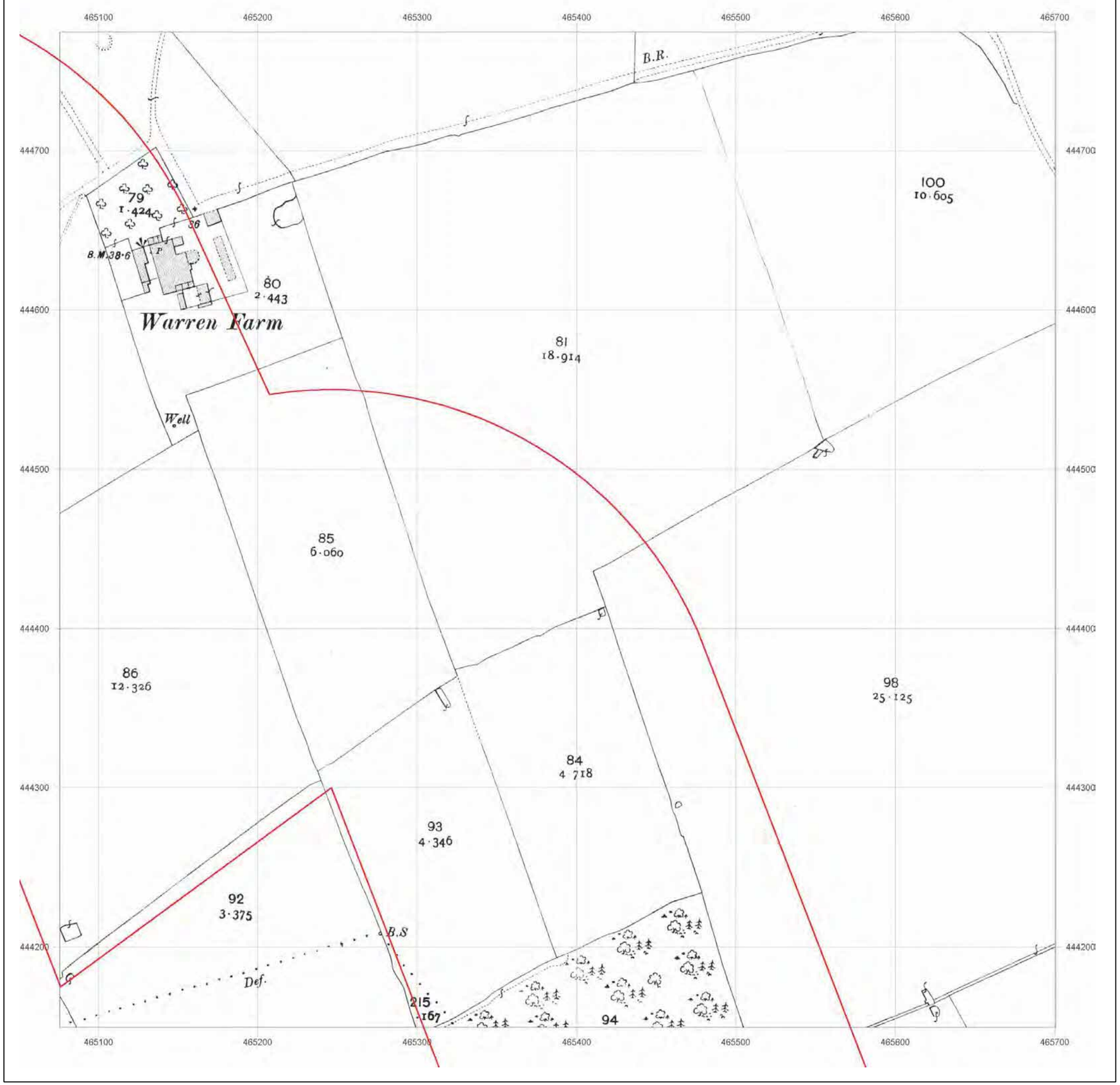

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_C1-MM
Grid Ref: 465388, 444462

Map Name: County Series

Map date: **1910**

Scale: 1:2,500

Printed at: 1:2,500

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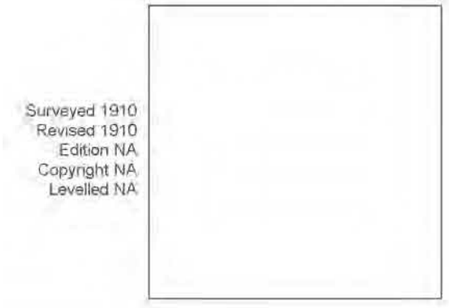

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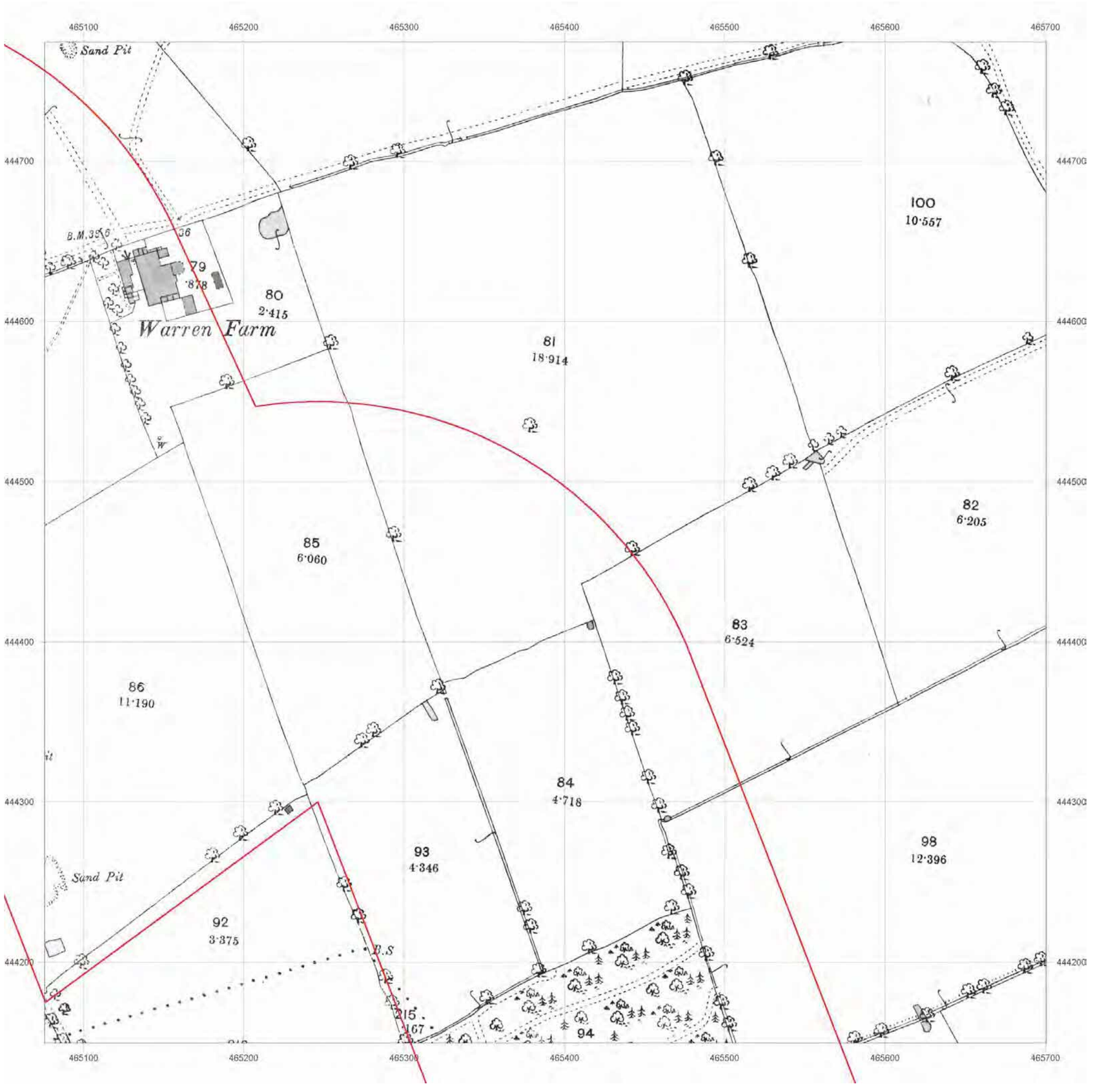
To view map legend click here *Legend*



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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_C1-MM
Grid Ref: 465388, 444462

Map Name: County Series

Map date: **1892**

Scale: 1:2,500

Printed at: 1:2,500

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Revised 1892
Edition NA
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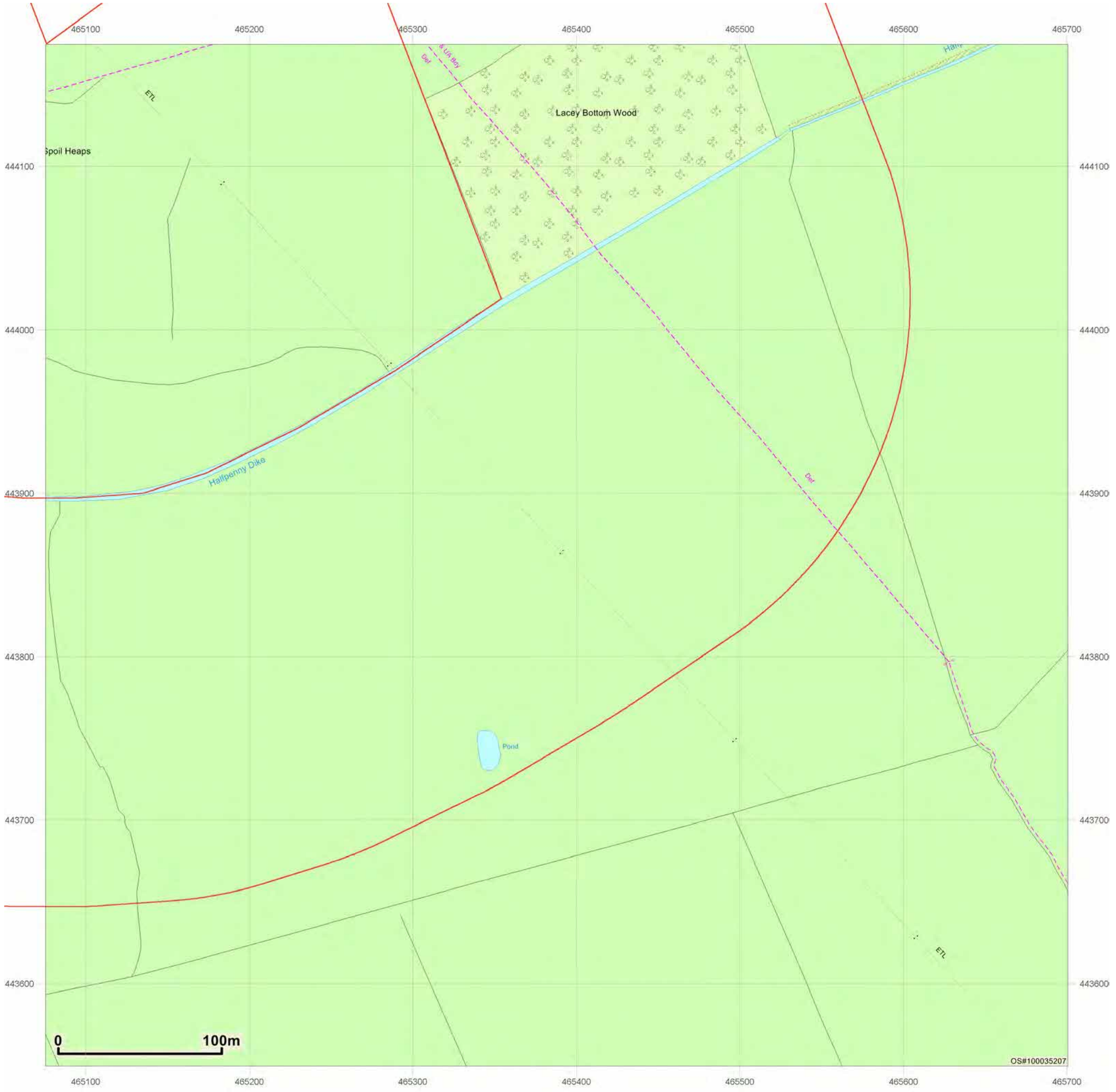

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_C2-MM
Grid Ref: 465388, 443862

Map Name: MasterMap

Map date: **2010**

Scale: 1:2,500

Printed at: 1:2,500

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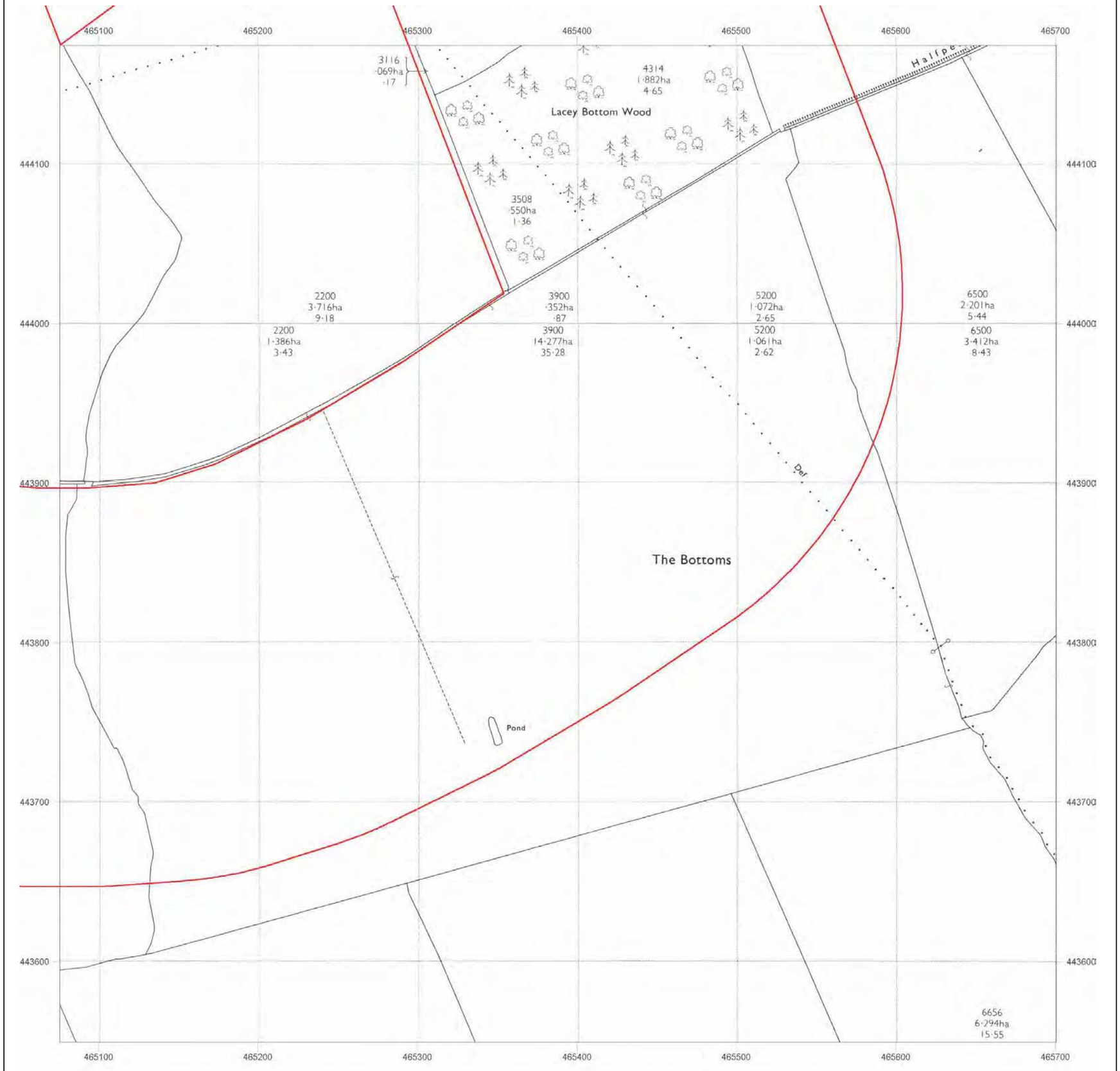

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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_C2-MM
Grid Ref: 465388, 443862

Map Name: National Grid

Map date: **1973**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1973
Revised 1973
Edition N/A
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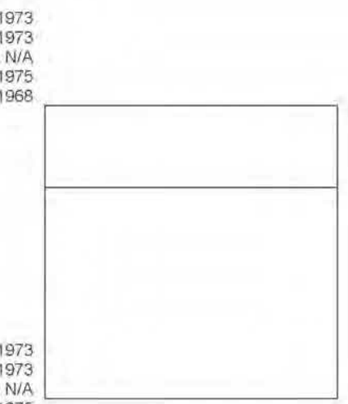

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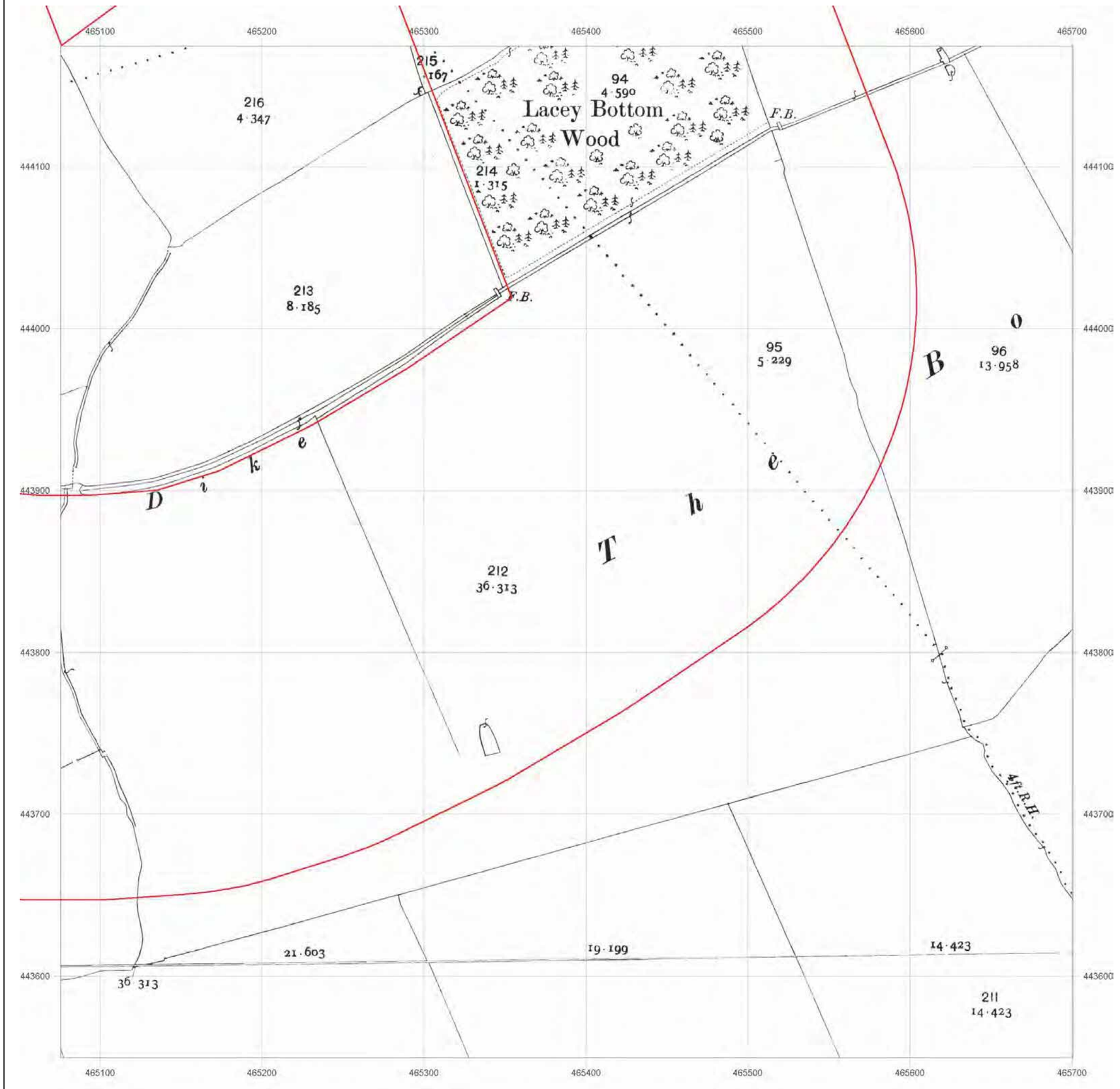
Production date: 16 December 2010

To view map legend click here *Legend*



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Site Details:

North Selby Mine,Escrick,Selby

Client Ref: EMS_117382_154267
Report Ref: EMS-117382_154267_C2-MM
Grid Ref: 465388, 443862

Map Name: County Series

Map date: **1910**

Scale: 1:2,500

Printed at: 1:2,500

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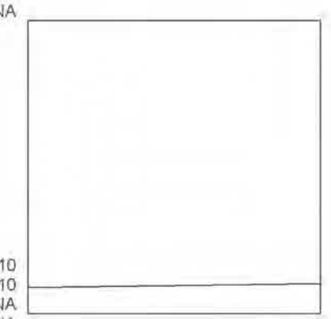
Surveyed 1910
Revised 1910
Edition NA
Copyright NA
Levelled NA



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Edition NA
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