Centrica Power

Singleton Birch Hydrogen Production Facility

Flood Risk Assessment and Drainage Strategy

October 2025

Project Code: 08683

Document Ref: 08683-WR-FRA-001

PJA
Park Point
17 High Street
Longbridge
B31 2UQ
UK
pja.co.uk

Version Control and Approval

Version	Date	Main Contributor	Issued by	Approved by
P0	06 October 2025	Rebecca Miller	Phoebe Ryding	Amy Hensler

Purpose

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CDM

The revised Construction (Design and Management) Regulations 2015 (CDM Regulations) came into force in April 2015 to update certain duties on all parties involved in a construction project, including those promoting the development. One of the designer's responsibilities under clause 9 (1) is to ensure that the client organisation, in this instance Centrica Power, is made aware of their duties under the CDM Regulations.

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1 Executive Summary

1.1.1 PJA has been commissioned by Centrica Power to prepare a Flood Risk Assessment (FRA) and Drainage Strategy to support an outline planning application for a new commercial development for a Hydrogen Production Facility with associated green open space and infrastructure at Singleton Birch.

Table 1-1: Executive Summary Table

Overview	
Site Location	Singleton Birch, Melton Ross, Barnetby, DN38 6AE
Development Proposal	Hydrogen Production Facility
Environment Agency Flood Zone(s)	Flood Zone 1
Vulnerability Classifications(s)	Essential Infrastructure
Fluvial Flood Risk	Very Low
Tidal Flood Risk	Very Low
Surface Water Flood Risk	Low
Groundwater Flood Risk	Low
Sewer Flood Risk	Low
Canal Flood Risk	Very Low
Reservoir Flood Risk	Very Low
Surface Water Drainage	Surface water drainage for the proposed commercial development will be managed via an attenuation swale where it will then discharge at a rate of 1 l/s via a rising surface water sewer and discharge to the existing Anglian Water surface water sewer network at a connection point at Manhole 4052 along the A18.
Foul Water Drainage	The commercial developments foul flows will drain via a proposed foul sewer running from north to south-east. A foul pumping station is proposed within the Site which will pump foul flows out of the Site and discharge into the existing Anglian Water foul sewer network at a connection point at the pumping station within Humberside Airport, near Manhole 2900.

2 Introduction

2.1 Terms of Reference

2.1.1 PJA has been commissioned by Centrica Power. to prepare a Flood Risk Assessment (FRA) and Drainage Strategy for a proposed hydrogen production facility at Singleton Birch (herein referred to as 'the Site').

2.2 Scope of works

Flood Risk Assessment (FRA)

2.2.1 This FRA provides information on the nature of identified potential flood risk at the Site and follows government guidance with regard to development and flood risk in line with the National Planning Policy Framework (NPPF) and supporting Planning Practice Guidance (PPG).

Drainage Strategy

2.2.2 The surface water drainage strategy aims to sustainably manage surface water from the Site and has been developed in accordance with current sustainable development best practices and the specific requirements of North Lincolnshire Council as the Lead Local Flood Authority (LLFA).

2.2.3 A high-level foul water drainage strategy has also been developed for the proposed development Site.

2.3 Information Sources

2.3.1 This report comprises a review of readily available public information and other relevant information obtained from the following sources:

- Environment Agency (EA);
- British Geological Survey (BGS);
- Cranfield Soil and Agrifood Institute Soilscapes;
- DEFRA Magic Mapping;
- North Lincolnshire Council;
- Anglian Water.

3 Site Details

3.1 Site Description

3.1.1 The proposed development Site, which is the focus of this FRA, is brownfield (previously developed) in nature and currently unused.

3.1.2 The Site is located north-west of Humberside Airport. The south of the Site borders the A18 while the east borders agricultural land. In the north of the Site, the proposed pipeline crosses under the Sheffield to Lincoln Railway Line where it enters the existing commercial land of Singleton Birch.

3.1.3 The Site's OS co-ordinates are 508793 , 411305.

3.1.4 A Site location plan is available in Figure 3-1 and Summary of Site in Figure 3-1.

Figure 3-1: Site Location Plan

Table 3-1: Summary of Site

Site Address	Singleton Birch, Melton Ross, DN38 6AE
Existing Land use	Brownfield
Proposed Development Type	Commercial
Site Area	1.5 ha
OS Co-ordinates	508793 , 411305
County	Lincolnshire
Local Planning Authority	North Lincolnshire Council
Lead Local Flood Authority	North Lincolnshire Council
Local Water Authority	Anglian Water

3.2 Site Topography

3.2.1 The Site is brownfield (previously developed) in nature and consists of Made-Ground. From a review of a Site-specific topographic survey alongside publicly available 1m DTM LiDAR data, the Site's topography is irregular with the Site situated within a depression in the land.

3.2.2 The topographical survey identifies the lowest elevation to be 28.2mAOD situated in the east. The north, east and south of the Site being surrounded by a ridge that reaches an elevation of 31.5mAOD (topographical survey) in the south and 33.3mAOD (LiDAR) in the north.

3.2.3 An extract of the Site-specific topographic survey and publicly available 1m DTM LiDAR data is available in Figure 3-2.

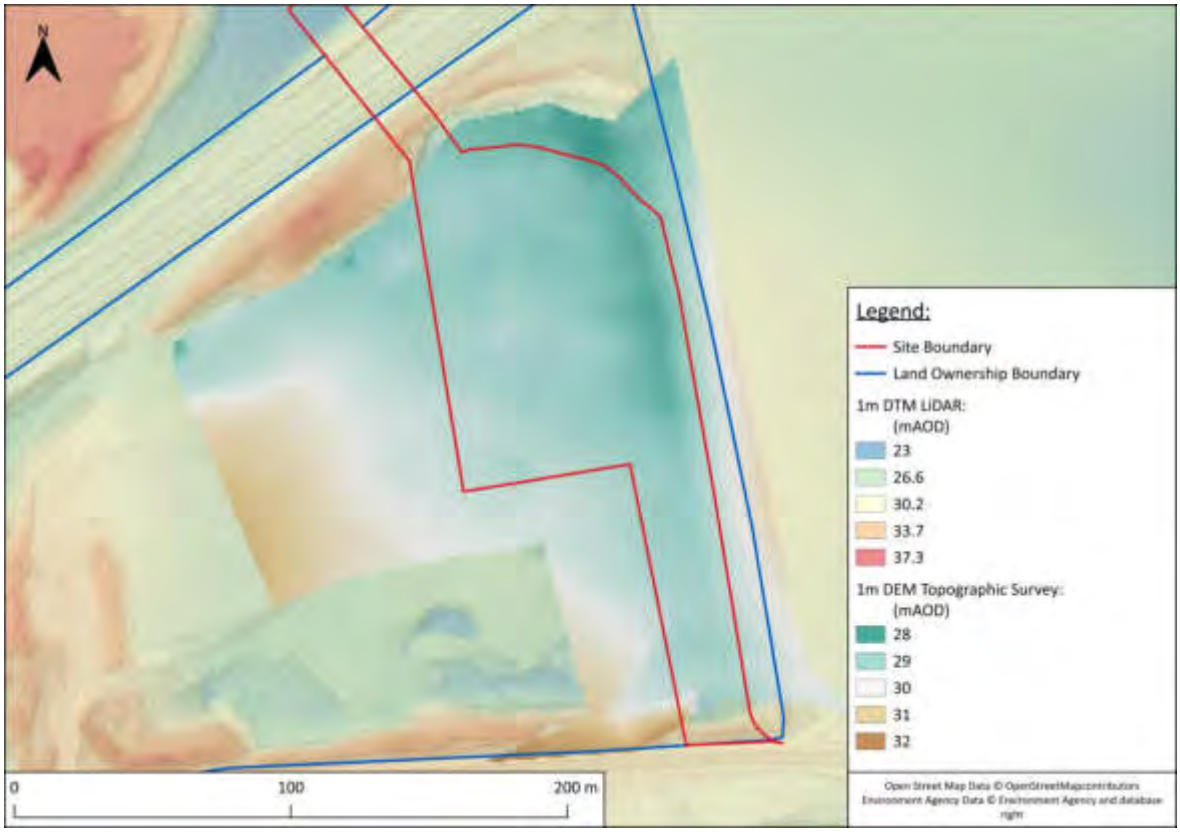


Figure 3-2: 1m DEM Topographical Survey and 1m DTM LiDAR Data

3.3 Ground Conditions

BGS Mapping

3.3.1 The British Geological Survey (BGS) Geology of Britain viewer[1] was consulted to identify the local geological conditions. This identified that the bedrock consists of Welton Chalk Formation – Chalk while no Superficial Deposits are identified to underlie the Site.

3.3.2 The Site is also identified to be underlain by artificial ground classified as Infilled Ground.

Cranfield Soilscape Viewer

3.3.3 The Cranfield University Soilscape viewer[2] describes the soils as predominantly "*Freely draining slightly acid loamy soils*" while the north of the Site contains soils described similarly as "*Freely draining slightly acid but base-rich soils*".

Hydrogeology

[1]British Geological Survey. Geology of Britain Viewer. https://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html
[2]Cranfield Soil and Agrifood Institute. Soilscape Viewer. http://www.landis.org.uk/soilscapes/

3.3.4 From review of the publicly available DEFRA Magic Mapping[3], the Aquifer Designation Map (Bedrock) identifies that the Site is underlain by a Principal aquifer which is described as providing "*significant quantities of drinking water, and water for business needs. They may also support rivers, lakes and wetlands*".

3.3.5 The Aquifer Designation Map identifies that no aquifer is contained within the Superficial Drift deposits.

3.3.6 It is also identified that the majority Site is underlain by Groundwater Source Protection Zone 3, defined as *"the area around an abstraction source within which all groundwater can potentially feed into the abstraction source",* for a groundwater abstraction located approximately 1.7km northeast of the Site.

3.3.7 A Phase 1 Desk Study was completed for the Site in May 2025 by Geosyntec Consultants (reference: GCU0127073), available in Appendix I, which identifies the nearest groundwater abstraction point to be located 72m north within the Singleton Birch Quarry. A second groundwater abstraction is also identified 144m northwest within the quarry. It is understood that the abstractions are used for process water at the quarry.

Borehole Records

3.3.8 From a review of the publicly available BGS GeoIndex Borehole Records, the nearest available borehole to the Site is TA01SE130 approximately 100m northwest of the Site, situated within the Singleton Birch quarry. The borehole TA01SE130's recorded geology is available in Table Table 3-1.

Table 3-1: BGS GeoIndex Borehole Record TA01SE130 Encountered Geology

Depth from (m)	Depth to Base (m)	Formation	Geological Description
0.00	4.26	"Well"	"Well" – log is record of groundwater well installed in 1913.
4.26	11.58	Welton Chalk	Chalk
11.58	12.49	Black Band	"Blue Clay"
12.49	17.06	Ferriby Chalk	Chalk

Site Specific Ground Investigation

3.3.9 The Desk Study by Geosyntec Consultants (reference: GCU0127073) (see 3.3.7), available in Appendix I, provides an overview of further borehole data from the Site by SLR Consulting from June 2015 (*Closure Plan: Hydrological Risk Assessment*, reference: 404.00075.00084). The study identifies two boreholes (IT4/S3A and IT5/S2) located within the landfill material.

[3] DEFRA Magic Map https://magic.defra.gov.uk/MagicMap.aspx

3.3.10 IT5/S2 was located on the eastern side of the landfill and encountered 9.50m thickness of Made Ground comprising concrete, brick, tarmac and slag. IT4/S3A was located on the western side of the landfill and encountered a gravelly clay with “abundant fabric fragments”, concrete, brick, chalk and mudstone gravel. The base of the landfill material was encountered at 3.45m depth.

3.3.11 Groundwater was encountered at 8.0m depth within the landfill material in IT4/S3A. Leachate was also recorded in IT4/S3A and IT5/S2, approximately 4m above nearby groundwater levels. Due to the age of the landfill, the material is uncapped, unlined and not subject to leachate or ground gas control measures.

3.3.12 Wider groundwater within the chalk bedrock was found to flow to the northeast, though localised mounding of groundwater was observed, which may be a function of dewatering from quarrying activities.

3.3.13 Initial geological conditions suggest that surface water drainage via infiltration is not be suitable as a method of surface water disposal due to the risks of water contamination.

3.4 Existing Hydrological Regime

3.4.1 There are no watercourses identified near the Site and given the Site sits within a depression in the land. Given this, and from a review of the borehole records and Desk Study (see 3.3.8), it is assumed that any surface water on-site remains on-site and drains via infiltration and evaporation.

3.5 Existing Drainage Assets

3.5.1 The existing Site is currently brownfield and Anglian Water sewer asset mapping (contained in Appendix C) shows there to be no public surface water sewers currently serving the Site.

3.5.2 There is no formal drainage, and as previously noted in 3.4.1, the Site sits within a depression in the land, surface water at the Site is expected to remain on-site and drain via infiltration and evaporation.

3.6 Site Proposals

3.6.1 Centrica Power is submitting an outlineplanning application for a Hydrogen Production Facility at Singleton Birch, near Melton Ross, North Lincolnshire.

3.6.2 The proposal includes a Hydrogen Production Facility with associated infrastructure.

3.6.3 The Indicative Layout Plan is available in Appendix B and an extract is shown in Figure 3-3.

Figure 3-3: Indicative Layout Plan

4 Planning Context

4.1 National Planning Policy Framework

4.1.1 The revised National Planning Policy Framework (NPPF) was published by the Ministry of Housing, Communities and Local Government, published in December 2024 and most recently updated in February 2025. The NPPF's Planning Practice Guidance (PPG) supports the Framework and is an online resource that is frequently updated.

4.1.2 Paragraph 181 of the NPPF identifies that Local Planning Authorities should ensure that flood risk is not increased elsewhere by development and where appropriate, applications should be supported by a Site-specific Flood Risk Assessment. Development should only be allowed where it can be demonstrated that:

a within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;

b the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;

c it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;

d any residual risk can be safely managed; and

e safe access and escape routes are included where appropriate, as part of an agreed emergency plan.

4.1.3 Further to this, paragraph 182 of the NPPF sets out that applications which could affect drainage on or around the site should incorporate sustainable drainage systems to control flow rates and reduce volumes of runoff, and which are proportionate to the nature and scale of the proposal. These should provide multifunctional benefits wherever possible, through facilitating improvements in water quality and biodiversity, as well as benefits for amenity. Sustainable drainage systems provided as part of proposals for major development should:

a take account of advice from the lead local flood authority;

b have appropriate proposed minimum operational standards;

c have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development.

4.1.4 A sequential approach has been taken to the proposed development in relation to flood risk which is set out in Section 5.11 of this report. Flood risk from all sources is reviewed in Section 5 and the approach to surface water management in Section 6.

4.2 Local Policy & Guidance

North Lincolnshire Council Core Strategy (2011)

4.2.1 The Core Strategy document was produced by North Lincolnshire Council in June 2011 to support the Local Development Framework (LDF) by providing strategic policies and guidance in order to deliver the long-term (2006 to 2026) vision for the area.

4.2.2 Policy CS18 relates to water efficiency, stating that where practical, SUDS should support the necessary improvements to flood defences and water infrastructure required to mitigate effects of climate change.

4.2.3 Policy CS19 states that development proposals which avoid areas of current or future flood risk will be supported by the government. Developments in high flood risk areas only permitted after undertaking the sequential approach and Flood Risk Assessment (FRA) demonstrates development will be safe without increasing flood risk elsewhere via water management methods.

4.2.4 Given this, a Site-specific assessment of flood risk has been carried out in Section 5 of this report which also demonstrates how surface water will be sustainably managed.

Strategic Flood Risk Assessment Level 1 and 2

4.2.5 The North and North East Lincolnshire Strategic Flood Risk Assessments (SFRA), published in June 2022, was undertaken in collaboration by both the North Lincolnshire Council and the North East Lincolnshire Council to assess current and future flood risk within the area, to determine the impact of development may have on flood risk and to inform the Local Plan development.

4.2.6 The SFRA includes an online interactive map featuring flood risk mapping, including reported historic flooding with the nearest historic flood extents being in Barnetby le Wold to the east. The SFRA interactive map shows there to be minimal overall flood risk posed to the Site with only the surface water flood extents, taken from the Environment Agency's Surface Water Flood Risk extents, being a mapped source of flood risk.

4.2.7 No groundwater flood risk mapping was available within the online interactive map, or within the SFRA report itself.

4.2.8 Given this, a Site-specific assessment of flood risk has been carried out in Section 5.

North Lincolnshire Council Local Flood Risk Management Strategy (2016)

4.2.9 The Local Flood Risk Management Strategy (LFRMS) for North Lincolnshire Council as Lead Local Flood Authority (LLFA) was published in August 2016 in order to provide advice around managing local flood risk in the district.

4.2.10 The LFRMS highlights that the historic flood extents layer is largely based off a large-scale historic flood event in 2007 – the district has since worked extensively to understand and record the extent of flooding in order to inform flood alleviation works. The Site lies outside of the 2007 flood event extents.

4.2.11 The LFRMS highlights that areas that have previously experienced groundwater flood events include Barrow-upon-Humber and Kirton Lindsey - the Site is not located close to either.

4.2.12 The report notes that flood risk is not always confined to low lying areas as demonstrated by the groundwater flood event in Barrow-upon-Humber, as mentioned above, where the flooding was associated with the re-emergence of ephemeral winterbourne watercourses in the higher Chalkland area. The Site is also underlain by a bedrock of chalk and so groundwater flooding cannot be ruled out.

4.2.13 The LFRE (Local Flood Risk Extents) has been produced for the whole of North Lincolnshire based on the local sources of flood risk, combining all available information to produce a prediction of the flood extents that could occur as a result of flooding from local sources, including surface water, groundwater and ordinary watercourses. The figures showing the LFRE flood extents were not available within the LFRMS report and could not be found anywhere else at time of writing, if found, the next edition of the FRA will be updated accordingly.

4.2.14 Given this, a Site-specific assessment of flood risk has been carried out in Section 5.

4.3 Consultation

4.3.1 Pre-application consultation has been undertaken with key stakeholders in relation to flood risk and drainage. A summary of their responses has been provided below and full responses included within Appendix H.

North Lincolnshire Council Lead Local Flood Authority

4.3.2 The North Lincolnshire Council have been contacted regarding their flood risk advice and historical flood records within the vicinity of the Site. Given this,at time of writing, no response has been received.

Environment Agency

4.3.3 A request was sent out to the Environment Agency for their Product 4, 5, 6 and 7 and they have confirmed that the Site lies entirely within Flood Zone 1 and therefore they do not hold any detailed flood modelling data that would impact the Site.

Anglian Water

4.3.4 Anglian Water has been consulted to obtain the latest sewer asset mapping alongside a Pre-Development Enquiry. A historic sewer flood enquiry regarding records near to the Site was also requested to Anglian Water, however, at time of writing, no response has been received.

4.3.5 Further details on the Anglian Water Pre-Development Enquiry response is available in Section 7.

5 Assessment of Flood Risk

5.1.1 The flood risk to and from the Site has been assessed based on a review of publicly available information (e.g., Environment Agency flood data). A summary of the flood risk at the Site is provided in Table 5-1 and discussed in more detail in the chapter below.

Table 5-1: Potential Sources of Flood Risk

Source of Flooding	On Site Presence
Fluvial	×
Surface Water	✓ *(section 5.5)*
Tidal	×
Groundwater	×
Sewers	×
Reservoirs	×
Canal	×

5.2 Historic Flooding

5.2.1 The Site lies outside the Environment Agency's Historic Flood Extents mapping and the historic flood mapping provided on the SFRA's interactive mapping.

5.2.2 North Lincolnshire Council have also been consulted with regards to their historic flood records within the vicinity of the Site however, at time of writing, no response has been received.

5.3 Fluvial Sources

5.3.1 The Environment Agency, through the publicly available Flood Map for Planning service, categorises potential fluvial flood risk into Flood Zones, assuming no flood defences.

5.3.2 The proposed development Site is identified in the publicly available Flood Map for Planning as located wholly within Flood Zone 1, demonstrating that the fluvial flood risk is considered to have <0.1% Annual Exceedance Probability (AEP).

5.3.3 An extract of the Flood Map for Planning is contained in Figure 5-1.

Figure 5-1: Publicly Available Flood Map for Planning Extract

5.3.4 Publicly available Long Term Flood Risk Information, Risk of Flooding from Rivers and the Sea (RoFRS) Mapping, released in January 2025, also shows the chance of flooding from rivers and the sea, taking into account the presence and condition of flood defences to indicate the predicted impacts of climate change on future risk.

5.3.5 From a review of the publicly available RoFRS mapping, the Site lies outside of any area of significant flood risk from this source, with an allowance for climate change included.

5.3.6 Given this, flood risk from river/fluvial sources may be considered to be very low.

5.4 Tidal Sources

5.4.1 Given the in-land location of the Site, flood risk from this source is considered very low.

5.5 Surface Water Sources

5.5.1 The Long-Term Flood Risk Information, Flood Risk from Surface Water Map identifies the majority of the Site to be at 'very low' risk from surface water flooding. An area of 'medium' to 'low' risk surface water ponding is identified in the western area of the Site and two smaller areas of 'high' to 'low' risk surface water ponding along the proposed pipeline north of the Site.

5.5.2 An extract of the surface water flood risk mapping is provided in Figure 5-2.

Figure 5-2: Risk of Flooding from Surface Water with Climate Change 1 Mapping Extract

5.5.3 The production of this mapping has been undertaken using national scale modelling and enhanced using compatible locally produced modelling from LLFAs (where available) to provide the generation of surface water flood risk mapping. The previous generations were primarily developed for regulator use as the approach and risk was refined. For example, the first did not include any allowance for sewers, whilst the second incorporated a national loss coefficient.

5.5.4 The current dataset presents the risk which takes account of the climate change allowances based on the latest UK Climate Projections (UKCP18) from the Met Office, using the Representative Concentration Pathway (RCP) 8.5

5.5.5 Although through the production of this mapping, LLFAs were approached for culvert asset datasets to be incorporated within the national scale model, these data sets may not be fully comprehensive. A 2m DTM has also been utilised in the national scale model, whilst this better represents topography in comparison to previous versions of the mapping, there is still opportunity for refinement on a local scale where finer DTM LiDAR data is available couple with site-specific topographic data.

5.5.6 As part of the final Site design, measures will be implemented to ensure there is negligible increase in surface water flood risk on- and off-Site and ensure that exceedance flows will be directed away from properties.

5.5.7 Given this, flood risk from surface water sources may be considered to be low.

5.6 Groundwater Sources

5.6.1 Groundwater flooding is typically caused by high groundwater levels. It occurs where excess water emerges at the ground surface via springs or within manmade structures such as basements. The risk of groundwater flooding depends on the nature of the geological strata underlying the Site, as well as on the local topography.

5.6.2 There is no groundwater flood mapping available within, or outside of, the SFRA. The SFRA's online interactive mapping includes the extents of historic flooding within the area which includes flooding from groundwater. Given there are no historic flood extents near to the Site, this suggests there have been no reported groundwater flood incidents.

5.6.3 The BGS underlying geology data suggests there is potential for groundwater flooding at the Site.

5.6.4 Given this, flood risk from groundwater may be considered to be low.

5.7 Sewer Sources

5.7.1 As set out in Section 3.4, there are no public Anglian Water sewers (surface water or foul water) currently serving the Site.

5.7.2 Anglian Water have been consulted with regard to their historic flood records within the vicinity of the Site, however, at time of writing, a response has not yet been received.

5.7.3 Given this, the Site may be considered to be at low risk of sewer flooding.

5.8 Sources of Reservoir Failure

5.8.1 The publicly available Long-Term Flood Risk, Information, Flood Risk from Reservoirs Mapping identifies that the Site lies outside the maximum extent of flooding from reservoirs.

5.8.2 All large reservoirs must be inspected and supervised by reservoir panel engineers. As the enforcement authority for the Reservoirs Act 1975 in England, the Environment Agency ensure that reservoirs are inspected regularly, and essential safety work is carried out.

5.8.3 Given this, flood risk from reservoirs may be considered to be very low.

5.9 Canal Sources

5.9.1 Flooding from canals is a much less common occurrence than fluvial flooding due to the managed nature of water levels within the artificial waterways. the canal network is designed in such a way so as to direct all additional water beyond the navigation capacity to impounding areas or surrounding watercourses to be conveyed downstream. The risk from canal flooding becomes more of a concern where the structure is elevated on an earth embankment and if there is a rare instance of a catastrophic breach, leading to a sudden drain-down of the pound and resultant overland flow flood risk to development immediately downstream.

5.9.2 There are no canals within the vicinity of the Site.

5.9.3 Given this, flood risk from canals may be considered to be very low.

5.10 Climate Change

5.10.1 In accordance with the NPPF and supporting Planning Practice Guidance an FRA should demonstrate how flood risk will be managed now and over the development's lifetime, taking climate change into account. Climate change will affect peak river flows and, consequently, the extent of fluvial flooding is likely to increase in the future.

5.10.2 On 19th February 2016, the Environment Agency released updated guidance on climate change allowances[4] to support the NPPF, which was later revised for peak river flows in 2021 and for peak rainfall intensity in 2022.

5.10.3 Further to this, when undertaking a surface water drainage design, an allowance for climate change should also be applied to peak rainfall intensities in accordance with Environment Agency guidance (2070s epoch from 2061 to 2125). Further information on the surface water drainage design and how climate change allowances have been applied is included in Section 6..

5.10.4 The proposed development and associated surface water drainage scheme has been designed to sustainably manage the run-off from the critical 1 in 100-year storm event with a 40% allowance for climate change.

5.10.5 Consideration to the potential impact of climate change has been given in the proposed development, in particular with regard to locating built development outside of the maximum flood extents in climate change scenarios and exceedance flow routing, therefore potential flood risk from climate change may be considered to be low.

[4] Flood risk assessments: climate change allowances. Environment Agency 2016. https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

5.11 Sequential and Exception Test Requirements

National Policy and Guidance

5.11.1 Paragraph 174 and 175 of the NPPF states *"The aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk assessment will provide the basis for applying this test. The sequential approach should be used in areas known to be at risk now or in the future from any form of flooding, except in situations where a site-specific flood risk assessment demonstrates that no built development within the site boundary, including access or escape routes, land raising or other potentially vulnerable elements, would be located on an area that would be at risk of flooding from any source, now and in the future (having regard to potential changes in flood risk).".*

5.11.2 The PPG sets out the principles of the Sequential and Exception Tests and what is required to pass them when proposing new development in an area at risk of flooding. The Sequential Test aims to promote development in areas of low flood risk. The Exception Test is triggered when development cannot be located within an area of suitably low risk flood risk.

5.11.3 The Exception Test requires a demonstration that flood risk to people and property can be managed satisfactorily, while allowing necessary development to go ahead in situations where suitable Sites at lower risk of flooding are not available. Essentially, the Exception Test requires the proposed development to show that it will provide wider sustainability benefits to the community that outweigh flood risk, and that it will remain safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall.

Local Policy and Guidance

5.11.4 Paragraph 180 of the NPPF States *"Where planning applications come forward on sites allocated in the development plan through the sequential test, applicants need not apply the sequential test again. However, the exception test may need to be reapplied if relevant aspects of the proposal had not been considered when the test was applied at the planmaking stage, or if more recent information about existing or potential flood risk should be taken into account".*

5.11.5 The Site has not been reviewed as part of a Sequential Test as part the Local Plan Evidence Base and as such, the below provides evidence that a sequential approach has been taken to the development Site itself.

Flood Risk Vulnerability & Flood Zone Incompatibility

5.11.6 Annex 3 of the NPPF, reprinted in Table 5-2, summaries the flood risk vulnerability classification for different types of development. The proposed hydrogen production facility at the Site is classified as Essential Infrastructure.

Table 5-2: Vulnerability Classification (Annex 3 NPPF Extract).

Class	Description
Essential infrastructure	• Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. • **Essential utility infrastructure** which has to be located in a flood risk area for operational reasons, **including infrastructure for electricity supply including generation**, storage and distribution systems: and water treatment works that need to remain operational in times of flood. • Wind turbines. • Solar farms.
Source: NPPF Annex 3: Flood Risk Vulnerability Classification	

5.11.7 An extract of PPG Table 2 is provided in Table 5-3 which identifies that an Exception Test is not required for essential infrastructure located within Flood Zone 1.

Table 5-3: Flood Risk Vulnerability and Flood Zone 'Incompatibility' (Flood Risk & Coastal Change PPG Table 2)

	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a	Exception Test required †	X	Exception Test required	✓	✓
Zone 3b	Exception Test required*	X	X	X	✓*

Key

✓Exception Test is not required

X Development should not permitted

• This table does not show the application of the Sequential Test which should be applied first to guide development to the lowest flood risk areas: nor does it reflect the need to avoid flood risk from sources other than rivers and the sea:

• The Sequential and Exception Tests do not need to be applied to those developments set out in National Planning Policy Framework footnote 56. The Sequential and Exception Tests should be applied to 'major' and 'non major' development;

• Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.

"†" In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

"" In Flood Zone 3b (functional floodplain) essential infrastructure that has passed the Exception Test, and water-compatible uses, should be designed and constructed to:*

- *remain operational and safe for users in times of flood;*
- *result in no net loss of floodplain storage;*
- *not impede water flows and not increase flood risk elsewhere.*

5.12 Site Specific Sequential Assessment of Flood Risk

5.12.1 Table 5-4 provides a breakdown of the percentage of each flood risk type that the Site is identified to be at risk from.

Table 5-4 – Sequential Approach Risk Rating

Flood Risk	% Site at Risk	% Proposed Built Development Area at Risk	Site Specific Assessment
Fluvial	0%	0%	The Site lies wholly within Flood Zone 1.
Tidal	0%	0%	Given the Site's in-land location, the risk of tidal flooding is very low.
Surface Water with Climate Change 1 in 30 year 1 in 100 year 1 in 1000 year	 9.7% 12.8% 14.3%	 0% 0% 3.1%	Surface water flood risk is very low within the proposed developable area with only a small area to the west within the low risk flood extents. Similarly, the west of the Site lies within an area of medium to low surface water flood risk while the north of the Site, where the proposed pipeline will be, lies in an area of hight to low flood risk.
Groundwater	Low	Low	No groundwater flood mapping is available so information around the Site's susceptibility to groundwater flooding is limited. The BGS data suggests that there is the potential for groundwater flooding, however, there are no reports of flooding from any source within the vicinity of the Site, including groundwater flooding. So, the risk of groundwater flooding on-site may be considered low.
Sewer	Low	Low	There are no sewers within the Site, therefore the risk of sewer flooding on Site is unlikely.
Reservoir	0%	0%	The Site lies outside of reservoir flood extents.
Canal	0%	0%	There are no canals within the vicinity of the Site.

5.13 Site-Specific Measures

5.13.1 Whilst areas of the Site may be considered to be at surface water flood risk, these will be mitigated through:

- Steering all proposed development to be located outside corridors and areas shown to be affected by surface water flood flooding;
- Raising finished floor levels by a minimum of 150mm above surrounding ground levels;
- Implementation of a surface water drainage strategy which positively and sustainably manages surface water runoff from the Proposed Development to greenfield conditions up to and including the 1 in 100 year +40% climate change event; and

- Managing existing surface water flow routes through green-blue corridors.

5.14 Conclusion

5.14.1 It is therefore considered that a sequential approach has been taken the proposed development Site and neither a formal Sequential Test, nor Exception Test, is required.

6 Surface Water Drainage Strategy

6.1.1 A Surface Water Drainage Strategy outlining the means of surface water management and disposal from the proposed development Site has been produced largely in line with the latest guidance as follows:

- CIRIA C753 "The SuDS Manual", (CIRIA, 2015);
- CIRIA document C522 Sustainable Drainage Systems – design manual for England and Wales;
- CIRIA document C635 Designing for exceedance in urban drainage;
- Rainfall Runoff Management for Developments – SC030219 (Environment Agency, 2013);
- Anglian Water guidance notes relating to disposals of surface water;
- Environment Agency's pollution prevention guidelines (PPGs);
- Sewerage Sector Guidance – Design & Construction Guidance v2.2 (Water UK, June 2022); and
- National standards for sustainable drainage systems (SuDS) (19th June 2025).

6.1.2 In accordance with the National standards for sustainable drainage systems (SuDS) (published June 2025), the proposed surface water drainage strategy should meet the following seven standards:

1. Run-off destinations
2. Management of Everyday Rainfall (Interception)
3. Management of Extreme Rainfall and Flooding
4. Water Quality
5. Amenity
6. Biodiversity
7. Desing of Drainage for Construction, Operation, Maintenance and Structural Integrity

6.1 Existing Surface Water Drainage Features

6.1.1 The Site is currently brownfield with the Anglian Water sewer asset mapping identifying no sewers serving the Site.

6.1.2 The existing topography shows the Site to sit at a lower elevation than the surrounding area and therefore, it is assumed that the current hydrological regime relies on evaporation / infiltration.

6.2 Proposed Surface Water Drainage Strategy

6.2.1 The proposed Surface Water Drainage Strategy aims to sustainably manage surface water runoff without increasing flood risk to on- or off-Site, nor adversely impacting on water quality through the use of Sustainable Drainage Systems (SuDS).

6.2.2 SuDS aim to mimic the natural processes of surface water drainage by allowing water to flow along natural flow routes ensuring that runoff rates and volumes during storm events are not increased

above the Greenfield values. SuDS also aim to provide water treatment, biodiversity, and amenity benefits within blue and green corridors.

6.2.3 There are typically three design storm events which should be considered when designing the SuDS system and managing flows and volumes:

- 1 in 1 year storm event, on sloping Sites without basements, where surcharging above soffits of any surface water drainage pipework is not permitted.
- 1 in 30 year storm event, where surface water flooding of the site does not occur at this frequency.
- 1 in 100 year storm event with allowances for future climate change, where runoff from the site should be controlled to the greenfield rate using SuDS attenuation features to manage flows and volumes within the extents of the development Site.

6.2.4 Further to this, dedicated overland flow routes should be identified through the development to convey any exceedance flows in events greater than the 1 in 100-year plus climate change event or in the event of system failure.

6.3 Standard 1: Run-off Destination

6.3.1 In accordance with SuDS guidance, surface water should be sustainably managed and designed in accordance with the discharge hierarchy; collect for re-use; infiltrate to ground; discharge to watercourse; discharge to surface water sewer, highway drain or another drainage system; and lastly discharge to a combined sewer.

Table 6-1: Drainage Hierarchy

Discharge Location	Suitability	Comments
Collect for Re-Use	×	Due to the nature of the development, water butts and rainwater harvesting systems have not been incorporated within the drainage strategy as the demand for potable or grey water use on Site would not be significant enough.
Infiltration	×	Based on the Made-Ground underlying the Site, identified within the surrounding BGS Borehole records and Phase 1 Desk Study, an infiltration-led drainage strategy has been deemed unsuitable.
Watercourse	×	No watercourses have been identified within the vicinity of the Site.
Surface Water Sewer	✓	The proposed surface water drainage strategy will discharge to the existing Anglian Water surface water sewers serving Humberside Airport south-east of the Site. The proposed connection point will be to Manhole 4052 off Franklin Way.
Combined Sewer	×	There are no combined sewers within the vicinity of the Site.

6.3.2 In accordance with the above search sequence, it is proposed to discharge surface water runoff to the existing public Anglian Water surface water sewers serving Humberside Airport, situated south-east of the Site, via Manhole 4052.

6.4 Standard 2: Management of Every Day Rainfall Events

6.4.1 Standard two requires a 'SuDS' approach to be applied so that at least the first 5mm of rainfall for the majority of rainfall events does not result in runoff from the site to surface waters or piped drainage systems.

6.4.2 Interception is proposed to be delivered within the development for the first 5mm of rainfall for the majority of rainfall events, for both winter and summer seasons. This is to prevent runoff from the site for the majority of small (frequent) rainfall events and for the initial depth of rainfall for larger events. For compliance to be demonstrated, 80% interception shall be achieved during the summer (May to October) and 50% in winter (November to April).

6.4.3 Given the nature of the proposed development, there is no requirement for potable or grey water use on Site and therefore rainwater harvesting or water butts have not been proposed for use.

6.4.4 The proposed impermeable area for the Site is identified as 4,850m^2 at this stage however, this will be confirmed at the next design stage.

Filter Trench

6.4.5 The proposed surface water drainage strategy will utilise a filter trench with an area of 78m^2 to manage surface water flows from the proposed hardstanding of the highway. As per the National SuDS Standards, filter drains can manage the interception of the highways that they are serving. It is identified that the filter drain is managing 910m^2 of highway catchment.

Swales

6.4.6 The proposed drainage strategy utilises a swale with a length of 70m which will is proposed to have a fall of less than 1:100. The base width of the proposed attenuation swale is 3.5m. It therefore provides interception of 1137.5m^2 of impermeable area.

6.4.7 Given the constraints of the underlying ground contamination, interception has been achieved as far as reasonably practicable on this Site at this stage. This will be reviewed once the final development quantum is known and additional SuDS may be provided at this stage to help further achieve Standard 2.

6.5 Standard 3: Management of Extreme Rainfall Events

6.5.1 Standard 3 requires A 'SuDS approach' shall be adopted to address the management of development runoff during extreme rainfall, including allowances for climate change and urban creep to:

- protect people and property on the development from flooding of the surface water drainage system
- mitigate any increased flood risk to people and property adjacent to or downstream of the development
- protect the receiving water body from morphological damage or minimise the impact on sewer capacity

Pre-Development Surface Water Run-Off Rates

6.5.2 Greenfield run-off rates for the Site have been calculated utilising HR Wallingford FEH runoff calculator, the results which are contained in Appendix E and available in Table 6-2.

Table 6-2: Greenfield Runoff Rates

Event	1l/s
1 in 1 Year	0.4
QBar	0.5
1 in 30 Year	1.2
1 in 100 Year	1.8

6.5.3 Based on Site topography and size, the Site has been treated as one catchment. The greenfield runoff estimate from the catchment has been provided in Table 6-3. In accordance with North Lincolnshire County Council local guidance, the Site should limit discharge to no greater than the QBar discharge rate. Given this, given the Site size, 1 l/s has been utilised as a practicable minimum discharge rate to minimise the risk of blockage.

Table 6-3: Proposed Discharge Rates

Catchment	Proposed Developable Area [ha]	Greenfield Discharge Rate (QBar) [l/s]	Proposed Discharge Rate [l/s]
A	0.58	0.29	1.00

Climate Change Impact

6.5.4 In line with the climate change allowances recommended by the Environment Agency in their February 2016 guidance, updated May 2022, the impact of climate change on the peak rainfall intensities in urban drainage designs should be assessed by Management Catchment and increased accordingly.

6.5.5 The peak rainfall intensity allowances for the Louth Grimsby and Ancholme Management Catchment has therefore been reviewed, as detailed for the 3.3% annual exceedance rainfall event in Table 6-4 and 1% in Table 6-5.

Table 6-4: 3.3% Peak Rainfall Allowances for the Louth Grimsby and Ancholme Management Catchment

	Central Allowances	Upper End Allowances
2050s	20%	35%
2070s	25%	35%

Table 6-5: 1% Peak Rainfall Allowances for the Louth Grimsby and Ancholme Management Catchment

	Central Allowances	Upper End Allowances
2050s	20%	40%
2070s	25%	40%

6.5.6 The proposed development and associated surface water drainage scheme has been designed to sustainably manage the run-off from the critical 1 in 100-year storm event (1%AEP) with a 40% allowance for climate change.

6.5.7 Consideration to the potential impact of climate change has been given in the proposed development, in particular regarding locating built development outside of the maximum flood extents in climate change scenarios and exceedance flow routing.

Proposed Surface Water Drainage Strategy

6.5.8 The proposed Surface Water Drainage Strategy is shown on the Indicative Drainage Strategy drawings (Ref. 08683-WR-0500-SWDS), included in Appendix D.

6.5.9 The proposed discharge location is to the Anglian Water surface water sewer networkwith a connection proposed at Manhole 4052 along the A18, situated approximately 550m south-east of the Site.

6.5.10 Through the Anglian Water pre-development enquiry, it was confirmed that there is capacity within the existing network to accommodate the proposed additional flow of 1 l/s to the sewer network.

6.5.11 The majority of the Site is surrounded by a ridge, including the south of the Site where the proposed surface water sewer will cross. Given the topography of the Site, the Surface Water Drainage Strategy proposes the utilisation of a pumped surface water sewer which will discharge surface water from the proposed basin south of the Site to the Anglian Water sewer network in the south-east.

6.5.12 The proposed Surface Water Drainage Strategy implements SuDS in the form of a swale and filter drain. A summary of the selection of SuDS features has been provided in Table 6-6.

Table 6-6: Summary of SuDS Feature Selection

Feature	Description	Selection
Green Roofs	Green roofs are systems which cover a building's roof with vegetation. They are laid over a drainage layer, with other layers providing protection, waterproofing and insulation.	× Due to the type of development being proposed, green roofs have not been proposed for use on this Site.
Filter Strips	These are wide, gently sloping areas of grass or other dense vegetation that treat runoff from adjacent impermeable areas.	✓ / × Given the size and scale of the Site, filter strips have not been proposed for use on Site at this stage, but may be considered at a later design stage
Pervious Surfaces	Pervious surfaces allow rainwater to infiltrate through the surface into an underlying storage layer, where water is stored before infiltration to the ground, reuse, or release to surface water.	× Given the type of vehicles that are expected to use the access road, pervious surfaces have not been proposed for use on Site.
Swales	Swales are broad, shallow channels covered by grass or other suitable vegetation. They are designed to convey and/or store runoff, and can infiltrate the water into the ground (if ground conditions allow).	✓ / × A swale has been incorporated within the drainage strategy to attenuate and convey surface water away from the development.
Infiltration Basins	Infiltration basins are depressions in the surface that are designed to store runoff and infiltrate the water to the ground. They may also be landscaped to provide aesthetic and amenity value.	× Given the Made-ground and potential to mobilise contamination, infiltration basins have not been incorporated within the proposed drainage strategy.
Basins / Ponds	Wet ponds are basins that have a permanent pool of water for water quality treatment whereas basins are usually dry for a larger period of time outside storm events. They provide temporary storage for storm runoff. These features may provide amenity and wildlife benefits.	✓ / × An attenuation basin is not proposed at this stage, but may be incorporated at the next design stage.
Underground Attenuation	Underground attenuation structures are below-ground attenuation features. These are typically formed using crates which provide a high void space for attenuation and water quantity control.	× Underground attenuation has not been incorporated within the proposed surface water drainage strategy.
Bioretention / raingardens	Bioretention systems or rain gardens are areas of vegetation into which rainwater and runoff can be directed. These are particularly affected at providing water quality improvements.	✓ / × Rain gardens and bioretention systems are not currently incorporated within the drainage strategy but may be considered at a later design stage.
Filter Drains	Filter drains are gravel filled trenches that collect and move water. They also treat pollution. The trench is filled with free draining gravel and	✓ Filter drains have been incorporated within the proposed surface water drainage strategy to manage everyday rainfall events and as well as convey

Feature	Description	Selection
	often has a perforated pipe in the bottom to collect the water	surface water away from the development.
Water Butts	Water butts are water tanks which are used to collect and store rainwater runoff, typically from roof tops via pipes. Overflows will still enter the site surface water drainage system.	× As there is a limited requirement for greywater on this Site, water butts and rainwater harvesting have not been proposed.

6.5.13 To ensure maximum peak discharge is maintained at 1l/s, on-Site attenuation will be required. The required storage volume for the attenuation of the 1 in 100 year event plus 40% climate change event has been calculated for the proposed impermeable area based on the current masterplan; the estimated contributing areas, proposed attenuation features are shown together with their required capacity on the Indicative Surface Water Drainage Strategy drawing in Appendix D. A summary table for the proposed attenuation is provided in Table 6-7.

Table 6-7: SuDS Summary

Assumed Catchment	Proposed Discharge Rate (l/s)	Proposed Impermeable Area [ha]	Proposed Attenuation Volume Required [m^3]
Site	1.0	0.59	687

6.5.14 Surface water run-off from roofs and hard surfaces across the development will drain to a new surface water drainage network incorporating SuDS components to control discharge to the receiving watercourses, provide attenuation storage on-Site and provide treatment to run-off. The surface water drainage system will be designed to convey the run-off from the critical 1 in 100-year (+40% climate change allowance) storm event without flooding.

6.5.15 A vortex flow control, such as a Hydrobrake, will restrict the rate of discharge downstream to the proposed 1 l/s runoff rate at the discharge point.

6.5.16 The proposed SuDS features have been sized in Causeway Flow to ensure that the proposed system will be capable of conveying run-off from the design storm event without flooding. Refer to Appendix F for the Causeway Flow model output.

6.5.17 The design calculations confirm that the proposed surface water drainage system is capable of attenuating, and discharging in a controlled manner, the run-off from the design 1 in 100-year storm with a 40% allowance for climate change without flooding of the development.

6.5.18 The surface water drainage strategy is based upon the site masterplanning details at the time of production. Changes to the site development profile, impermeable areas across the site or other such aspects of the scheme will result in the need to revise the calculations.

Designing for Exceedance

6.5.19 During a rainfall event with a return period well in excess of that for which the surface water drainage system was designed (in this case a 1 in 100 year plus 40% climate change allowance), or in the event of a blockage, the capacity of the surface water drainage system may be exceeded, resulting in localised flooding in the areas affected. This is considered to be a residual risk.

6.5.20 However, the layout and landscaping of the proposed development should be designed and will be developed to ensure that exceedance flood flow paths are routed away from vulnerable development and toward landscaped areas, areas of open attenuation or surrounding green infrastructure.

6.5.21 In line with Building Regulations the finished floor levels will be set at least 150mm above the surrounding ground levels to prevent surface water ingress through doorways. Location of the proposed building in a depressions will be avoided to prevent water ponding around the proposed building.

6.5.22 Minor modifications to topography, the profile of the access road, footpath or kerb and strategically placed green infrastructure will be developed to ensure that exceedance flood flows are managed and there is little or no risk of property flooding or unacceptable ponding within the highway.

6.6 Standard 4: Water Quality

Standard 4 requires the application of a 'SuDS approach' that protects surface waters, groundwater and coastal waters by managing the quality of the surface water runoff to adequately address water quality risks from the development.

Principles of Water Quality Assessment

6.6.1 The general principles are to mitigate against adverse impacts on water quality in the receiving water environment is described in the CIRIA C753 "The SuDS Manual" (2015). This document recommends the following steps to determine the required water quality management for discharges to surface waters and groundwaters based on the risk posed:

1 Interception: Prevent runoff and associated pollutants from the Site to receiving surface waters for the majority of small rainfall events;

2 Determine the pollution hazard level associated with the given type of development;

3 Select a risk assessment approach based on receiving water environment and the pollution hazard level; and

4 Undertake a detailed risk assessment for each outfall or discharge point taking into account the pollution hazard level, the status of the receiving water environment and effectiveness of the proposed SuDS techniques.

6.6.2 The extent of the treatment required will depend on the water quality status of receiving watercourses, land use, the level of pollution prevention in the catchment and for groundwater, the natural protection afforded by underlying soil layers. The pollution hazard level of the development type should be identified.

6.6.3 Roofs are noted as having 'very low' pollution hazard level and require removal of gross solids and sediments only. Residential car parks, access roads, driveways and non-residential car parking with infrequent change are shown to present 'low' pollution hazard level.

6.6.4 Low pollution hazard levels require application of a 'simple index approach' for water quality risk assessment for discharges to surface and ground waters.

Contamination and Water Quality

6.6.5 The proposed development will utilise SuDS Management Trains across each network to ensure treatment of run-off and removal of pollutants prior to discharge.

6.6.6 This is likely to include a mixture of components across the Site, specified according to the opportunities/constraints presented by:

- the likely pollution hazard of the run-off;
- the available surface space; and
- the proposed ground levels/falls across areas of hardstanding.

6.6.7 Treatment components within each SuDS Management Train may include:

- permeable pavement (for car parking areas);
- channel drains;
- catchpits;
- trapped gullies;
- attenuation basins incorporating pre-treatment (such as a sediment forebay) and low flow channels;
- bioretention areas in greenspace around the Site;
- swales and linear wetlands;
- filter drains bordering paved areas such as roads and yards; and
- proprietary treatment systems (such as downstream defenders).

6.6.8 The arrangement and composition of each management train will be confirmed at the detailed design stage.

6.6.9 The proposed uses at the Site will comprise a site with a low traffic road and non-residential car park with infrequent change. This proposed use is classed as a ‘low’ pollution risk level in Table 26.2 of CIRIA C753 The SuDS Manual.

6.6.10 'Low' hazard pollution levels may require the application of a 'simple index approach' for water quality risk assessment for discharge to surface and groundwaters. The "pollution hazard indices" for a high pollution hazard Site are given in Table 6-8 below.

Table 6-8: Pollution Hazard Indices for a Low Pollution Hazard Site

Total Suspended Solids (TSS)	Metals	Hydrocarbons
0.5	0.4	0.4

6.6.11 The surface water drainage system should provide a sufficient level of water quality treatment to prevent pollution of the receiving waterbodies. Additional measures e.g., penstock valves to contain any spills on Site could be implanted to provide further resilience to the surface water drainage strategy, should this be identified as a requirement at the detailed design stage.

6.6.12 Table 6-9 provides the indicative SuDS mitigation indices for the proposed SuDS features for the Site. It demonstrates that the mitigation index for the low flow channel and basin are greater than the "*pollution hazard index*" for each pollutant type. Therefore, the strategy is deemed to comply with the water quality requirements of the SuDS standards.

Table 6-9: Indicative SuDS Mitigation Indices

SuDS component	Mitigation Indices		
	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Swale	0.5	0.6	0.6
Filter Drain	0.4	0.4	0.4

6.7 Standard 5: Amenity

6.7.1 This standard requires that the design of the surface water management system should maximise amenity benefits.

6.7.2 The primary amenity focus of the SuDS scheme should be to improve the health and well-being of the residents. The scheme will need to be based on natural forms that mimic natural landscapes found within the region and the vegetated swales and detention pond areas are designed with natural slope forms, safe and accessible paths and locally contextual species that will encourage natural colonisation. Other key amenity benefits should include improving air quality around the development, increasing carbon sequestration and improving water quality through removal of pollutants via vegetated swales and attenuation basins.

6.7.3 The proposed attenuation features are limited by the space available at the existing Site and are therefore limited in the amount of amenity benefits they can provide. The proposed basin, filter trench and swales will help to improve surface water runoff through the removal of pollutants while also improving the visual aesthetic of the Site.

6.8 Standard 6: Biodiversity

6.8.1 This standard requires that the surface water management system should maximise biodiversity benefits.

6.8.2 The SuDS scheme biodiversity strategy should centre around the creation of significant and varied habitats to increase the overall biodiversity of the site and ecological value. The inclusion of plant species that will enhance the general eco system and simultaneously act as a water filtration system to clean pollutants and contaminants should be used and where possible provide meandering swales and a large attenuation basin to maximise the variety of habitats available.

6.8.3 As mentioned in 6.7.3, the proposed attenuation features are limited by the space available at the existing Site and are therefore limited in the amount of biodiversity benefits they can provide, however, the proposed swale provides an opportunity to create habitats for wildlife. The addition of a rain garden within the Site could be considered in a later design stage in order to further improve the Site's biodiversity benefits.

6.9 Standard 7: Design of Drainage for Construction, Operation, Maintenance, Decommissioning and Structural Integrity

6.9.1 A 'SuDS approach' has been proposed to be adopted to ensure that surface water drainage systems are designed so they can be easily and safely constructed, operated and maintained taking account of the need to minimise negative impacts on natural resources and the environment.

Surface Water Drainage System

6.9.2 Responsibility for the maintenance of the main surface water drainage networks and SuDS features may be offered to Anglian Water for adoption under S104 of the Water Industry Act 1991. To meet the requirements for adoption, the proposed infrastructure must be designed and constructed according to Sewerage Sector Guidance – Design & Construction Guidance v2.2 (Water UK, June 2022).

6.9.3 DEFRA recommended implementation of Schedule 3 of the Flood and Water Management Act in 2023. This legislation, when enacted, will require SuDS Approval Bodies (SABs) to be formed in England who will review the design of SuDS and will likely be responsible for the future operation and maintenance. As the layout of the development evolves it is recommended that the surface water drainage design seeks to comply with this legislation when it comes forward ensuring that the SuDS proposed are designed and built in accordance with the SAB's requirements and may be offered for adoption to the SAB, if required.

6.9.4 A typical maintenance schedule of the attenuation basin (attenuation swale), swales and flow control devices proposed on Site are shown in Table 6-10, Table 6-11 and Table 6-12.

Table 6-10: Flow Control (e.g. Hydrobrake) Indicative Maintenance Schedule

FRQUENCY	ACTION
Monthly	• Inspect and identify any areas that are not operating correctly. If required, take remedial action (for three months following installation).
Six Monthly	• Inspect and identified ant area that are not operating correctly. If required, take remedial actions. • Remove sediment from any pre-treatment structures.
Annually	• N/A
Following All Significant Storm Events	• Inspect and carry out essential recovery works to return the feature to full working order.

Table 6-11: Swale Indicative Maintenance Schedule

FRQUENCY	ACTION
Monthly	• Litter and debris removal • Mow grasses (where required to promote lateral runoff inflow) and remove resultant clippings (during growing season only) • Remove nuisance and invasive vegetation (as listed in section 29.6.2 of the CIRIA SuDS Manual (2015)) (for 12 months following installation) • Inspect / check all inlets, outlets, surface and overflows (where required) to ensure that they are in good condition, free from blockages and operating as designed. Take action where required.
Six Monthly	• Remove nuisance and invasive vegetation (as listed in section 29.6.2 of the CIRIA SuDS Manual (2015))
Annually	• Check for poor vegetation growth due to lack of sunlight or dropping of leaf litter, and cut back adjacent vegetation where required • Re-seed areas of poor vegetation growth. Alter plant types to better suit conditions, where required • Inspect and document the presence of wildlife
As Required	• Repair erosion or other damage by re-turfing, reseeding or replacing filter materials. • Re-level uneven surfaces and re-instate design levels (typically once every 60 month period) • Remove and replace top 300 – 500mm of gravel, clean and replace where required (typically every 60 month period) • Remove and dispose of oils or petrol residues using safe standard practices
Following All Significant Storm Events	• Inspect and carry out essential recovery works to return feature to full working order

Table 6-12: Filter Drain Indicative Maintenance Schedule

FRQUENCY	ACTION
Monthly	• Litter and debris removal • Mow grasses (where required to promote lateral runoff inflow) and remove resultant clippings (during growing season only) • Remove nuisance and invasive vegetation (as listed in section 29.6.2 of the CIRIA SuDS Manual (2015)) (for 12 months following installation) • Inspect / check all inlets, outlets, surface and overflows (where required) to ensure that they are in good condition, free from blockages and operating as designed. Take action where required.
Six Monthly	• N/A
Annually	• Remove nuisance and invasive vegetation (as listed in section 29.6.2 of the CIRIA SuDS Manual (2015)) • Inspect and document the presence of wildlife
As Required	• Repair erosion or other damage by re-turfing, reseeding or replacing filter materials. • Re-level uneven surfaces and re-instate design levels (typically once every 60 month period) • Remove and replace top 300 – 500mm of gravel, clean and replace where required (typically every 60 month period) • Remove and dispose of oils or petrol residues using safe standard practices
Following All Significant Storm Events	• Inspect and carry out essential recovery works to return feature to full working order

6.9.5 The proposed maintenance regimes for the devices should be largely in accordance with The SuDS Manual (CIRIA C753) and other best practice guidelines and in accordance with manufacturer's recommendations. This will ensure the design performance, structural integrity and where applicable- appearance of each feature is maintained throughout its lifetime.

6.9.6 Further details will be provided on the maintenance requirements of the proposed SuDS components across the development as the detailed design is developed. The details of the party responsible for maintenance of each feature should be confirmed prior to occupation of the proposed development.

7 Foul Water Drainage Strategy

7.1 Existing Foul Drainage

7.1.1 Anglian Water are the statutory water authority in the area; their Asset Mapping identifies the Pumping Station, 410 m south-east of the Site on Franklin Way, as the most viable connection point for the Site's foul flows.

7.2 Proposed Foul Drainage Strategy

7.2.1 Anglian Water have been consulted through a pre-development enquiry to provide comments on the development proposals and opportunities for foul water drainage however, at the time of writing, no response has been received.

7.2.2 A foul water drainage strategy has therefore been proposed which suggests that foul flows discharge from the north of the Site to a proposed pumping station within the west of the Site which will then pump foul flows south following the access road and south-east out of the Site where it will discharge into the existing Anglian Water foul sewer network at the existing pumping station on Franklin Way.

7.2.3 The foul water drainage strategy is found within the Indicative Drainage Strategy (Ref. 08683-WR-0500-SWDS P1) which is available in Appendix D.

7.3 Adoption & Future Maintenance

7.3.1 It is anticipated that the proposed foul sewer network may be offered to Anglian Water for adoption under Section 104 of the Water Industry Act 1991. To meet the requirements for adoption, the proposed infrastructure must be designed and constructed according to Sewerage Sector Guidance – Design & Construction Guidance v2.2 (Water UK, June 2022).

8 Conclusion & Recommendations

8.1 Conclusion

8.1.1 PJA has been commissioned by Centrica Power to prepare a Flood Risk Assessment and Drainage Strategy for the proposed commercial development at the allocated Site '*Singleton Birch, North Lincolnshire'*.

8.1.2 This Flood Risk Assessment has been undertaken in accordance with current national and local flood risk policy requirements. This report assesses the existing and future flood risk at the Site, including an assessment of the potential effects of the proposed development on flood risk on- and off-Site.

8.1.3 The assessment concludes that the Site is considered at either very low or low risk of flooding from the sources assessed (fluvial, tidal, reservoirs, canals, surface water, groundwater and sewers).

8.1.4 In addition to the NPPF, the proposed surface water drainage strategy complies with local policy and Site-specific requirements.

8.1.5 A Surface Water Drainage Strategy has been prepared to demonstrate that a sustainable drainage solution can be provided for the proposed development. The Surface Water Drainage Strategy has been designed largely in accordance with current sustainable development best practice and meets the requirements of North Lincolnshire County Council (as the LLFA).

8.1.6 The proposed surface water drainage systems aim to mimic the hydrological regime of the existing Site by discharging run-off to the existing Anglian Water surface water sewer network approximately 550 m south-east of the Site via a proposed connection to Manhole 4052. Discharge from the proposed catchment will be controlled to a proposed discharge rate of 1 l/s by vortex flow control device and will be pumped. Attenuation storage will be provided in the form of open SuDS features including an attenuation swale and filter trench.

8.1.7 A Surface Water Pre-Planning Report has been received from Anglian Water which confirms that the existing surface water network can accommodate the proposed additional flow on 1 l/s for surface water. At the time of writing, no Pre-Planning Report for the foul water connection has been made available.

8.1.8 SuDS Management Trains will provide suitable treatment of run-off by removing pollutants prior to discharge.

8.1.9 Foul flows from the proposed development will discharge via a new connection to an existing pumping station on Franklin Way, within the existing public foul sewer network 410 m south-east of the Site, utilising a proposed pumping station on-site.

8.1.10 Safe access and egress will be available to and from the Site for events up to and including the 1 in 100 year plus climate change flood events

8.1.11 The responsibility for the operation and maintenance of each SuDS feature will be confirmed prior to the commencement of construction. The SuDS used on Site should be maintained in accordance with manufacturer's recommendations and current best practice and guidelines to ensure routine operation.

8.1.12 This report demonstrates that the proposed development may be undertaken in a sustainable manner without increasing the flood risk either at the Site or to any third-party land in line with NPPF requirements.

Appendix A Topographic Survey

O.S. Bench Mark Location :
OS Active Network Solution
PGM RD1
Level : 30.860

LEGEND

BH	Bore Hole
BOB	Bottom of Bank
GL	Ground Level
MKR	Marker Post
P/R	Post & Rail
P/W	Post & Wire
PGM	Permanent Ground Marker
RS	Road Sign
SP	Sign Post
T/H	Top of Hedge
TOB	Top of Bank
TP	Telegraph Post

Dense Vegetation
No Access

Trees

Dense Vegetation
No Access

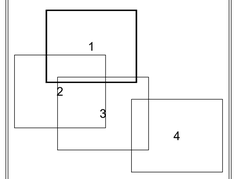
Earth

Trees

Trees

Trees

Sheet Index



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1:500 15 10 5 0 10 20 30 1:1250
Scale Bar

Rev	Description	Date

Mason DIGITAL MAPPING

Topographic & Building Surveys
3D Scanning & Imaging
Utility Detection & Mapping
Transport & Infrastructure Surveys

Mason Surveys Ltd.
Head Office
1C Dickson Court
Dickson Street
Dunfermline, Fife
KY12 7SG
Tel: 01383 623112
Email:info@masonsurveys.co.uk www.masonsurveys.co.uk

Job Title
Melton Ross
Singleton Birch

Drawing Title
Topographical Survey
Sheet 1 of 4

ALL DIMENSIONS IN METRES LEVELS A.O.D.

Scale 1: 200@A0 Date 21/11/24

Drawn by MD Checked by WJ

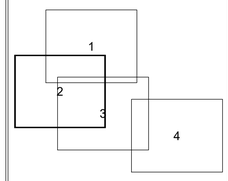
Drg No 51214/200/1 Rev.

O.S. Bench Mark Location :
OS Active Network Solution
PCM RD1
Level : 30.860

LEGEND

BH	Bore Hole
BOB	Bottom of Bank
GL	Ground Level
MKR	Marker Post
P/R	Post & Rail
P/W	Post & Wire
PGM	Permanent Ground Marker
RS	Road Sign
SP	Sign Post
T/H	Top of Hedge
TOB	Top of Bank
TP	Telegraph Post

Sheet Index



1:100 3 2 1 0 1 2 3 4 5 6 1:200
1:500 15 10 5 0 10 20 30 1:1250
Scale Bar

Rev	Description	Date

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Email:info@masonsurveys.co.uk www.masonsurveys.co.uk

Job Title
Melton Ross
Singleton Birch

Drawing Title
Topographical Survey
Sheet 2 of 4

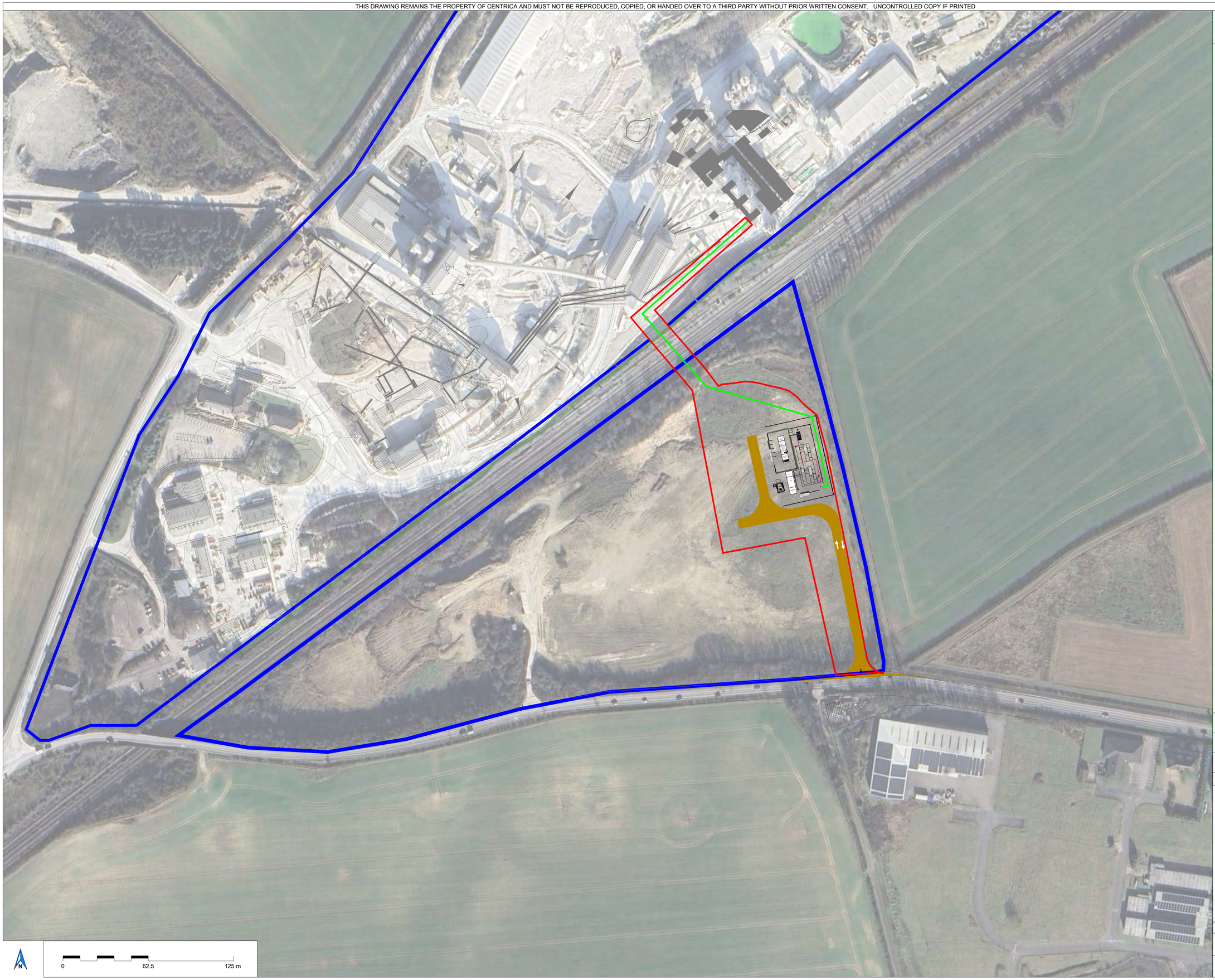
ALL DIMENSIONS IN METRES LEVELS A.O.D.

Scale 1: 200@A0
Date 21/11/24

Drawn by MD
Checked by WJ

Drg No 51214/200/2
Rev.

Appendix B Proposed Masterplan



Notes:

1. All dimensions to be confirmed on site prior to installation.
2. All dimensions are indicative only and in m unless otherwise specified.

Legend:

- Site boundary
- Additional land ownership
- Maintenance track
- Pipeline

REV	DATE	DESCRIPTION	DRN	CAD QA	CHK	APP
2	8/25/2025	Layout redesigned	GS			
1	12/8/2025	Layout redesigned	GS			
0	11/8/2025	First issue	GS			

centrica
Business Solutions

Millstream
Maidenhead Rd, Windsor
SL4 5GD
Tel: +44 (0) 175 349 4000
CentricaBusinessSolutions.com

PROJECT: Singelton Birch

TITLE: Hydrogen production plant

ADRESS:

DATE	11/08/25	SCALE	1:1250	SHEET	A1	CBS-W
				STATUS: S0		REV: 2

DRG-NUMBER:

Appendix C Anglian Water Asset Mapping

Date: 31/07/25

Scale: 1:1250

Map Centre: 508531,411157

Data updated: 01/07/25

Our Ref: 1839556 - 1

Wastewater Plan A0
Powered by digdat

Foul Sewer	Outfall*	Sewage Treatment Works
Surface Sewer	Inlet*	Public Pumping Station
Combined Sewer	Manhole*	Decommissioned Pumping Station
Final Effluent		
Rising Main*		
Private Sewer*		
Decommissioned Sewer*		

*(Colour denotes effluent type)

rebecca.miller@pja.co.uk

08683 Singleton Birc

love every drop
anglianwater

Manhole Reference	Easting	Northing	Liquid Type	Cover Level	Invert Level	Depth to Invert
0000	509035	411034	F	25.47	23.764	1.706
0001	509058	411030	F	25.24	23.607	1.633
0900	509043	410918	F	23.36	19.673	3.687
0901	509051	410973	F	23.95	22.414	1.536
0902	509092	410907	F	23.1	18.971	4.129
1900	509144	410902	F	22.54	18.696	3.844
1901	509195	410903	F	22.41	18.421	3.989
2900	509232	410937	F	22.36	18.075	4.285
2901	509204	410935	F	22.49	18.24	4.25
0051	509082	411024	S	24.95	23.72	1.23
0052	509030	411031	S	25.53	23.444	2.086
0053	509054	411026	S	25.26	23.094	2.166
0951	509041	410920	S	23.42	21.714	1.706
0952	509048	410979	S	24.12	22.664	1.456
0953	509098	410914	S	23.42	21.338	2.082
0954	509050	410997	S	-	-	-
1951	509181	410908	S	22.79	20.901	1.889
1952	509185	410912	S	-	-	-
2951	509226	410955	S	22.47	20.695	1.775
2952	509202	410941	S	22.41	20.789	1.621

Manhole Reference	Easting	Northing	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Easting	Northing	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Easting	Northing	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Easting	Northing	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Easting	Northing	Liquid Type	Cover Level	Invert Level	Depth to Invert

Date: 26/09/25

Scale: 1:1250

Map Centre: 509664,411096

Data updated: 31/08/25

Our Ref: 1891085 - 1

Wastewater Plan A0
Powered by digdat

Foul Sewer
Surface Sewer
Combined Sewer
Final Effluent
Rising Main*
Private Sewer*
Decommissioned Sewer*

Outfall*
Inlet*
Manhole*

Sewage Treatment Works
Public Pumping Station
Decommissioned Pumping Station

*(Colour denotes effluent type)

rebecca.miller@pja.co.uk

Singleton Birch 2.0

love every drop
anglianwater

Manhole Reference	Easting	Northing	Liquid Type	Cover Level	Invert Level	Depth to Invert
0000	509035	411034	F	25.47	23.764	1.706
0001	509058	411030	F	25.24	23.607	1.633
0101	510067	411173	F	-	-	-
0900	509043	410918	F	23.36	19.673	3.687
0901	509051	410973	F	23.95	22.414	1.536
0902	509092	410907	F	23.1	18.971	4.129
1101	510143	411186	F	-	-	-
1201	510135	411234	F	-	-	-
1900	509144	410902	F	22.54	18.696	3.844
1901	509195	410903	F	22.41	18.421	3.989
2001	510292	411086	F	-	-	-
2101	510299	411117	F	-	-	-
2201	510228	411274	F	-	-	-
2301	510285	411359	F	-	-	-
2401	510288	411424	F	-	-	-
2900	509232	410937	F	22.36	18.075	4.285
2901	509204	410935	F	22.49	18.24	4.25
3101	510354	411143	F	-	-	-
3102	510354	411165	F	-	-	-
3201	510375	411261	F	-	-	-
3202	510301	411269	F	-	-	-
3203	510355	411204	F	-	-	-
3301	510392	411375	F	-	-	-
3302	510374	411365	F	-	-	-
3401	510338	411422	F	-	-	-
3501	510375	411550	F	-	-	-
4807	509445	410900	F	-	-	-
9101	509994	411162	F	-	-	-
0051	509082	411024	S	24.95	23.72	1.23
0052	509030	411031	S	25.53	23.444	2.086
0053	509054	411026	S	25.26	23.094	2.166
0951	509041	410920	S	23.42	21.714	1.706
0952	509048	410979	S	24.12	22.664	1.456
0953	509098	410914	S	23.42	21.338	2.082
0954	509050	410997	S	-	-	-
1951	509181	410908	S	22.79	20.901	1.889
1952	509185	410912	S	-	-	-
2951	509226	410955	S	22.47	20.695	1.775
2952	509202	410941	S	22.41	20.789	1.621
3051	509379	411012	S	-	-	-
3951	509321	410990	S	21.88	20.513	1.367
3957	509383	410907	S	-	-	-
4051	509495	411009	S	-	-	-
4052	509409	411023	S	-	-	-
5951	509594	410993	S	-	-	-
5952	509524	410956	S	-	-	-
7951	509763	410960	S	-	-	-
8051	509859	411042	S	-	-	-
8151	509864	411125	S	-	-	-
8951	509852	410946	S	-	-	-

Appendix D Drainage Strategy Drawings

A1 1:1000 20 30 40 50 60 70

Proposed Type 3 pumping station in-line with the Design Construction Guidance

Attenuation Swale
Indicative CL: 31.0 mAOD
Indicative IL: 29.5 mAOD
Indicative Storage Area: 1000 m^2
Indicative Storage Volume: 687 m^3
Maximum Peak Discharge Rate: 1.0 l/s

Proposed pumped surface water sewer.

Indicative rising foul sewer pipe length of 670m

Indicative rising surface water sewer pipe length of 590m

FW Manhole 0000

SW Manhole 0052

Proposed foul water connection point to existing Pumping Station

FW Manhole 2900
CL: 22.36
IL: 18.075

Proposed surface water connection point to existing Manhole 4052 (750 mm pipe)

SW Manhole 3051

750mm CO

FRANKLIN WAY

HUMBERSIDE AIRPORT

Lodge

A 18

CATCHMENT	PROPOSED DEVELOPMENT AREA (ha)	PROPOSED ATTENUATION VOLUME (M^3)	PROPOSED ATTENUATION AREA (M^2)	PROPOSED DISCHARGE RATE (l/s)
Catchment A	0.59	687	1,000	1.0

CDM Note

These drawings have been produced with reference to the CDM Regulations 2015.
Please note that these are pre-construction phase drawings and should be subject to further design risk management as required in accordance with Regulation 9.

1. This Drawing is not to be reproduced in any part or form without the consent of PJA Environment Ltd. all copyright reserved.
2. No consideration of utilities, arboriculture or ecology has been undertaken at this stage.
3. Drawing should be read in conjunction with all other relevant scheme drawings.
4. Drawing Includes:
   - 4.1. Masterplan provided by Centrica on August 2025. Drawing ref: [Singelton Birch] Hydrogen plant (2025-08-25).dwg.
   - 4.2. Topographic Survey provided by Mason Surveys Ltd in November 2024. Drawing no. 51214/200.
   - 4.3. Anglian Water Sewer Asset Mapping received in July 2025.
   - 4.4. Surface Water Flood Extents downloaded in August 2025.
5. Drainage Strategy proposes the use of a pumped solution for both surface and foul water drainage given the Site sits within a depression in the land with a height difference of around 2m compared to the A18 road.
6. Surface Water Drainage Strategy based on:
   - 6.1. Attenuation Swale is 1.5m deep, including freeboard, with maximum side slopes of 1:3.
   - 6.2. Freeboard of 300mm over maximum peak water depth in the design event.
   - 6.3. Volume within conveyance features has not been included within attenuation calculations at this stage.
   - 6.4. Assumed 100% impermeable area for the entire proposed developable area.
   - 6.5. Discharge Rate of 1.0 l/s/ha has been utilised for all events up to and including the 1 in 100 year plus 40% climate change event for the Site.
   - 6.6. FEH 22 Rainfall Data has been utilised.
   - 6.7. Assumed cover level invert levels taken from the Topographical Survey data.
7. A surface water Pre-Development Enquiry response has been received from Anglian Water and confirms the existing sewer network has capacity for the proposed additional 1 l/s flows.
8. Surface Water Drainage Strategy is indicative and subject to further design and approval from the Lead Local Flood Authority.

Key:

- Indicative Location of Proposed Surface Water Rising Sewer
- Indicative Location of Type 3 Foul Pumping Station with 15m Cordon Sanitaire
- Indicative Location of Proposed Foul Sewer
- Indicative Location of Proposed Foul Rising Sewer
- Indicative Location of Surface Water Flow Routes
- Surface Water Flood Risk Extents with CC - 1 in 30 year
- Surface Water Flood Risk Extents with CC - 1 in 100 year
- Surface Water Flood Risk Extents with CC - 1 in 1000 year
- Site Boundary
- Land Ownership Boundary
- Catchment A
- Existing Anglian Water Surface Water Sewers
- Existing Anglian Water Foul Water Sewers
- Indicative Location of Proposed Conveyance Features
- Indicative Location of Proposed Attenuation Basin (with Headwalls and 3m Maintenance Strip)
- Proposed Flow Control Pump
- Proposed Filter Trench
- Indicative Location of Proposed Surface Water Sewer

Rev	Date	Revision Note	Drw	Chk	App
P1.2	02/10/25	Updated Sewer Connections	RM	AH	AH
P1	01/10/2025	Finalised Pumped Drainage Strategy	RM	PR	GD
P0.2	29/09/2025	Option 1 & Option 2 for discussion	RM	PR	GD
P0	04/09/2025	DRAFT FOR DISCUSSION	RM	PR	GD

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Melbourne | Perth
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Client
Centrica Power

Project
Singleton Birch, Melton Ross

Title
Indicative Drainage Strategy

Drawing Issue Status
Draft

PJA Ref
08683

Scale @ A1
1:750

Date
Oct 2025

Drawing No.
08683-WR-0500-SWDS

Revision
P1.2

Primary Contact
phoebe.ryding@pja.co.uk

Appendix E Greenfield Run Off Calculations

Greenfield runoff rate estimation tool

www.uksuds.com | Greenfield runoff rate estimation tool (https://www.uksuds.com/)

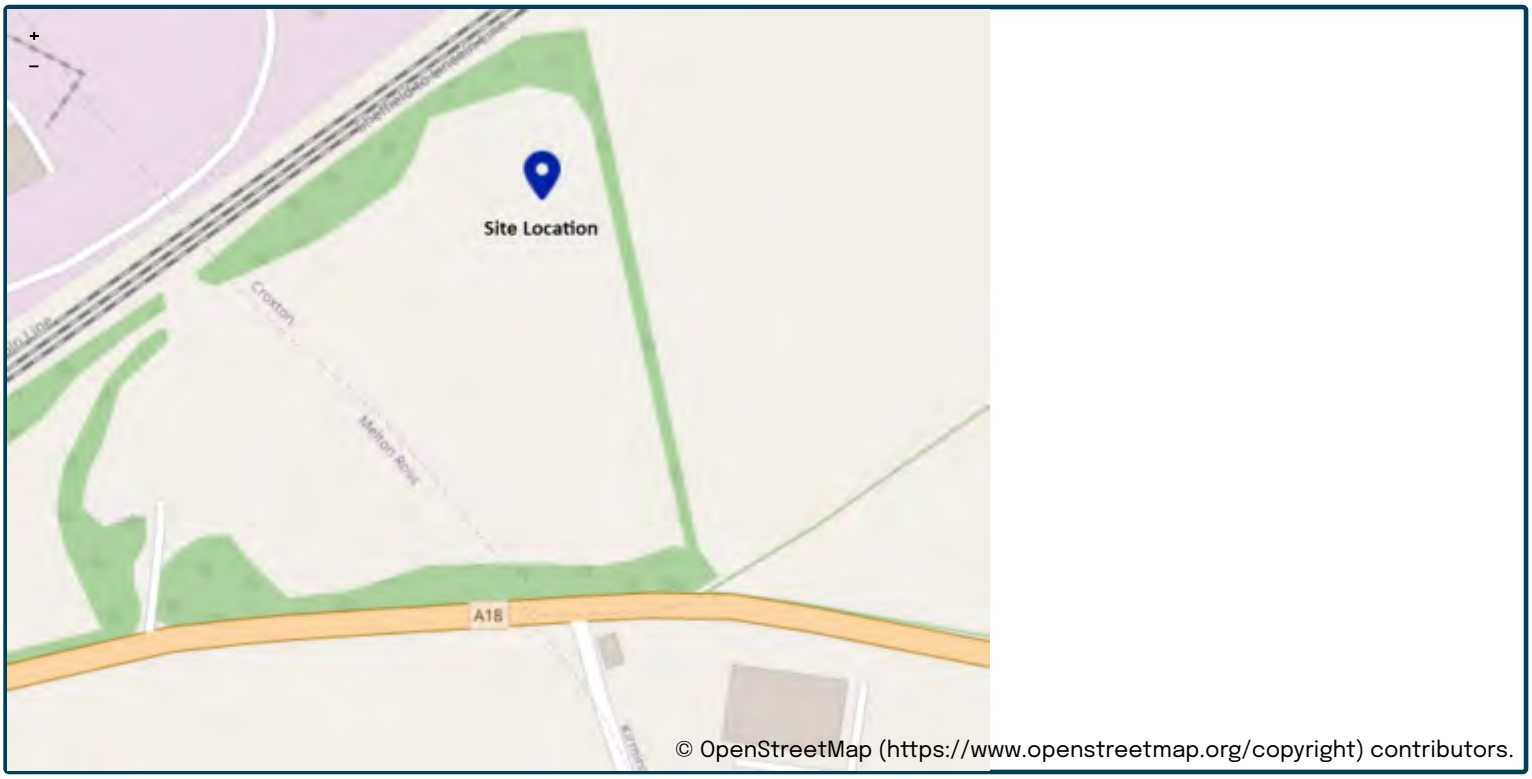
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	19/08/2025
Calculated by	Rebecca Miller
Reference	08683
Model version	2.1.2

Location

Site name	Singleton Birch
Site location	Singleton Birch, Melton Ross



Site easting (British National Grid)	508799
Site northing (British National Grid)	411295

Site details

Total site area (ha)	1 ha

Greenfield runoff

Method

Method	FEH statistical

FEH statistical

	My value		Map value
SAAR (mm)	644 mm		644
BFIHOST	0.889		
QMed-QBar conversion	1.124		1.124
QMed (l/s)	0.44 l/s		
QBar (FEH statistical) (l/s)	0.5 l/s		

Growth curve factors

	My value		Map value
Hydrological region	5		5
1 year growth factor	0.87		
2 year growth factor	0.89		
10 year growth factor	1.65		
30 year growth factor	2.45		
100 year growth factor	3.56		
200 year growth factor	4.21		

Results

Method	FEH statistical
Flow rate 1 year (l/s)	0.4 l/s
Flow rate 2 year (l/s)	0.4 l/s
Flow rate 10 years (l/s)	0.8 l/s
Flow rate 30 years (l/s)	1.2 l/s
Flow rate 100 years (l/s)	1.8 l/s
Flow rate 200 years (l/s)	2.1 l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

Appendix F Surface Water Drainage Calculations

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)
1	0.590	5.00	29.000	34.290	61.264	1.500

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	0.0		

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
30	0	0	0
100	0	0	0
100	40	0	0

Node 1 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	27.500	Product Number	CTL-SHE-0045-1000-1200-1000
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.0	Min Node Diameter (mm)	1200

Node 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	27.500
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	281.3	0.0	1.500	1000.7	0.0

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
2880 minute winter	1	2760	28.259	0.759	6.8	351.7537	0.0000	OK

Link Event (Outflow)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
2880 minute winter	1	Hydro-Brake®	0.8	126.5

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
2880 minute winter	1	2820	28.416	0.916	8.4	459.1508	0.0000	OK

Link Event (Outflow)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
2880 minute winter	1	Hydro-Brake®	0.9	135.5

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
4320 minute winter	1	4200	28.705	1.205	8.7	687.1025	0.0000	OK

Link Event (Outflow)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
4320 minute winter	1	Hydro-Brake®	1.0	219.3

Appendix G Anglian Water Developer Enquiry

Tier 2 Pre-Planning Assessment Report

Surface Water

Anglian Water Reference Number:	**STR-0231895**
Report Engineer:	**Doug Mlambo**
Publication Date:	**05/09/2025**
Expiration Date:	**04/09/2026**
Site Name:	**Singleton Birch, Melton Ross**
Development Details:	**Commercial/industrial use, with business units, car parks and pavements**
Site National Grid Reference:	**SK 90797 59363**
Development Type:	**Greenfield**
Planning Application Status:	**N/A**

This report has been produced for **PJA Environment Limited** and is to be submitted as part of a developed drainage strategy should planning permission be sought.

Anglian Water will use this report as the basis for any forthcoming planning application response relevant to this application.

Anglian Water cannot reserve capacity and therefore you are recommended to formally apply for a connection at your earliest convenience. Please note that the available capacity in both the receiving network and water recycling centre (WRC) can be reduced at any time due to increased requirements from existing businesses and houses as well as from new housing and new commercial developments.

Summary

Easements
We have assessed above and below ground operational assets in relation to your proposed development site
Surface Water Drainage
We have completed a Drainage Impact Assessment (DIA) for your development site following your submission of requested evidence. The DIA takes account of the flows within the network for the upstream catchment to your sustainable point of connection and the impact of these additional flows on the downstream network.

Section 1 - Anglian Water Assets and Easements

The comments contained within this report relate to the public water mains and sewers indicated on our records. Your attention is drawn to the disclaimer in the useful information section of this report.

Pipes - We have not identified pipework infrastructure within the boundaries of your site

Operational Assets – We do not have operational assets within 20 m of your site

Source Protection Zone (SPZ) – Your site does not sit within an identified SPZ

Water Recycling Centre (WRC) – Your site is not within a significant distance of a WRC

The proposed development site boundary is highlighted on Anglian Water's asset record in Figure 1. Additionally, it is highly recommended that you carry out a thorough investigation of your proposed working area to establish whether any unmapped public or private sewers and lateral drains are in existence.

Any potential instances of asset encroachment are to be identified and addressed at planning. Anglian Water are unable to permit development either over or within the easement strip without prior consent. The extent of asset easements are available in table 1. Please be aware that the existing water mains/public sewers should be located in highway or open space and not in private gardens. This is to ensure available access for any future maintenance and repair and this should be taken into consideration when planning your site layout.

Used Water Easements – Measured either side of the centre line (m)						
	Depth to Invert (m)					
Sewer Diameter(mm)	< 3	3 - 4	4 - 5	5 - 6	6 - 7.5	> 7.5
< 150	3.0	3.0	4.0	5.0	6.0	4.0
150 - 299	3.0	3.0	4.0	5.0	6.0	4.0
300 - 449	3.0	3.0	4.0	5.0	6.0	4.0
450 - 600	3.5	4.0	5.0	6.0	6.0	4.0
601 - 749	3.5	4.0	5.0	6.0	6.0	4.0
750 - 924	4.0	5.0	5.0	6.5	6.5	5.0
925 - 1000	5.0	5.0	6.0	6.5	6.5	5.0

Table 1: Anglian Water used water asset easements

If it is not possible to avoid our assets then these may need to be diverted in accordance with Section 185 of the Water Industry Act (1991). You will need to make a formal application if you would like a diversion to be considered; please note that in some instances assets cannot be diverted; it is therefore vital to engage with our Drainage team prior to finalising site layout.

Due to the private sewer transfer in October 2011 many newly adopted public used water assets and their history are not indicated on our records. You also need to be aware that your development site may contain private water mains, drains or other assets not shown on our records. These are private assets and not the responsibility of Anglian Water but that of the landowner.

For your information, please be aware:

- Anglian Water does not permit existing assets to be located within the curtilage of the proposed development buildings, and we do not permit permeable paving or suds features over our assets. These assets should be in areas of public open space and/or adoptable highways to ensure on-going maintenance and access is possible. We strongly recommend that the applicant reviews the site layout plan and take the above in consideration to reflect the easement required for the sewers. Development is not permissible either over or within the established easement strip of any public asset without Anglian Water's granted prior consent.
- A new developments site layout must adhere to the required easements. You may also discuss potential diversions with us.
- Please be aware that existing water mains/public sewers should be located in highway or open space and not in private gardens or curtilages.
- Rising mains may not be located under play equipment or SUDS features. This is to ensure available access for any future maintenance and repair, and this should be taken into consideration when planning your site layout.
- No significant planting can be located in the designated easement strip, to ensure that root intrusion does not pose a risk to our assets. Where necessary and to maintain the aesthetics of the proposed landscaping, ornamental/low lying hedges or similar are considered acceptable but should be limited.
- In any case where site levels are to be altered within an easement strip, Anglian Water will request a CCTV survey is undertaken to understand the existing condition of the affected sewer and potential impact of this proposal. The footage and accompanying report should be provided to Anglian Water alongside any observations or recommendations (should these be identified) by your designer. In addition, the manholes in this area would also need to be raised to finished level. Anglian Water would expect photographs confirming the existing construction of these chambers and a design drawing which illustrates how this outcome will be achieved whilst maintaining compliance with Design and Construction Guidance (DCG) standards.
- Anglian Water will expect confirmation of the established measures that will allow 24-hour unencumbered access for assets within the vicinity of the development. It is beneficial to understand how awareness of Anglian Water's need for access to provide this in perpetuity will be established going forward. It can be assumed that plot transfers (if appropriate) will contain covenants/rights relating to these assets; we would appreciate clarification on this point.
- It is the developer's responsibility to ensure the correct sight surveys are completed i.e. trial holes, to ascertain the exact location of Anglian Water assets. You should then present your findings to Anglian Water – we may need to complete formal risk assessments (at the developers cost) for certain asset types.

Figure 1: The site boundary for the proposed development as shown on Anglian Water asset records.

Section 2 – Used Water Assessment

Surface water – Drainage Impact Assessment (DIA)
Our assessment has been undertaken in accordance with the surface water strategy outlined on the planning application and the following supporting documents:

- **Flood Risk Assessment, Project No. 62 008, LSCo Geo-Consulting Limited, Issued 31/05/2016**
- **Hydrogen Production Plant Layout, Centrica Business solutions**
- **Topographical Survey, Sheet and 1, Mason Digital Mapping Issued 21/01/24**

We have completed a DIA which considers the evidence you provided for your identified development scenario, in reference to our Surface Water Risk Management Guide. In accordance with our guidance, we have categorised the proposed surface water drainage strategy as:

Scenario 6: Additional surface area draining to a SW sewer via an existing Point of Connection (POC)

The DIA takes account of the flows within the network for the upstream catchment to your sustainable point of connection and the impact of these additional flows on the downstream network.

Network impact

The surface water network has been designed for the existing catchment; therefore, it is assumed to have minimal residual capacity for additional flow.

The DIA takes account of the flows within the network for the upstream catchment to your sustainable point of connection and the impact of these additional flows on the downstream network.

We have assessed network performance with reference to the proposed point of connection (POC), which is to the 225mm sewer at MH0052, NGR. TA 09029 11030. The point of connection to the public surface water network is highlighted in **Figure 2**.

Our desktop analysis has shown that the proposed additional flow of **1l/s** can be accommodated within the existing network, without adversely impacting the network or causing flooding. There will be no network reinforcement required as a result of the additional flows.

It is our understanding that the evidence to confirm compliance with the surface water hierarchy is yet to be submitted and approved by the LLFA for this development. Once the evidence has been confirmed, or planning approval has been granted, then the following connection may be made:

Connection Point *– to the 225mm Surface Water sewer located to the south of the site* at MH0052, and NGR. TA 09029 11030*, at a requested maximum discharge rate of* ***1 litre per second (l/s) for all design events, including the 1:100 year plus climate change.***

CONDITION: *LLFA approval for the surface water drainage strategy. All onsite surface water drainage infrastructure including the conveyance network up to the last manhole before the connection point, will remain private. A S106 submission will be made and should reflect the maximum discharge rate is 1l/s.*

REASON: *The approved discharge rate does not meet DCG adoptable standards and will therefore remain private.*

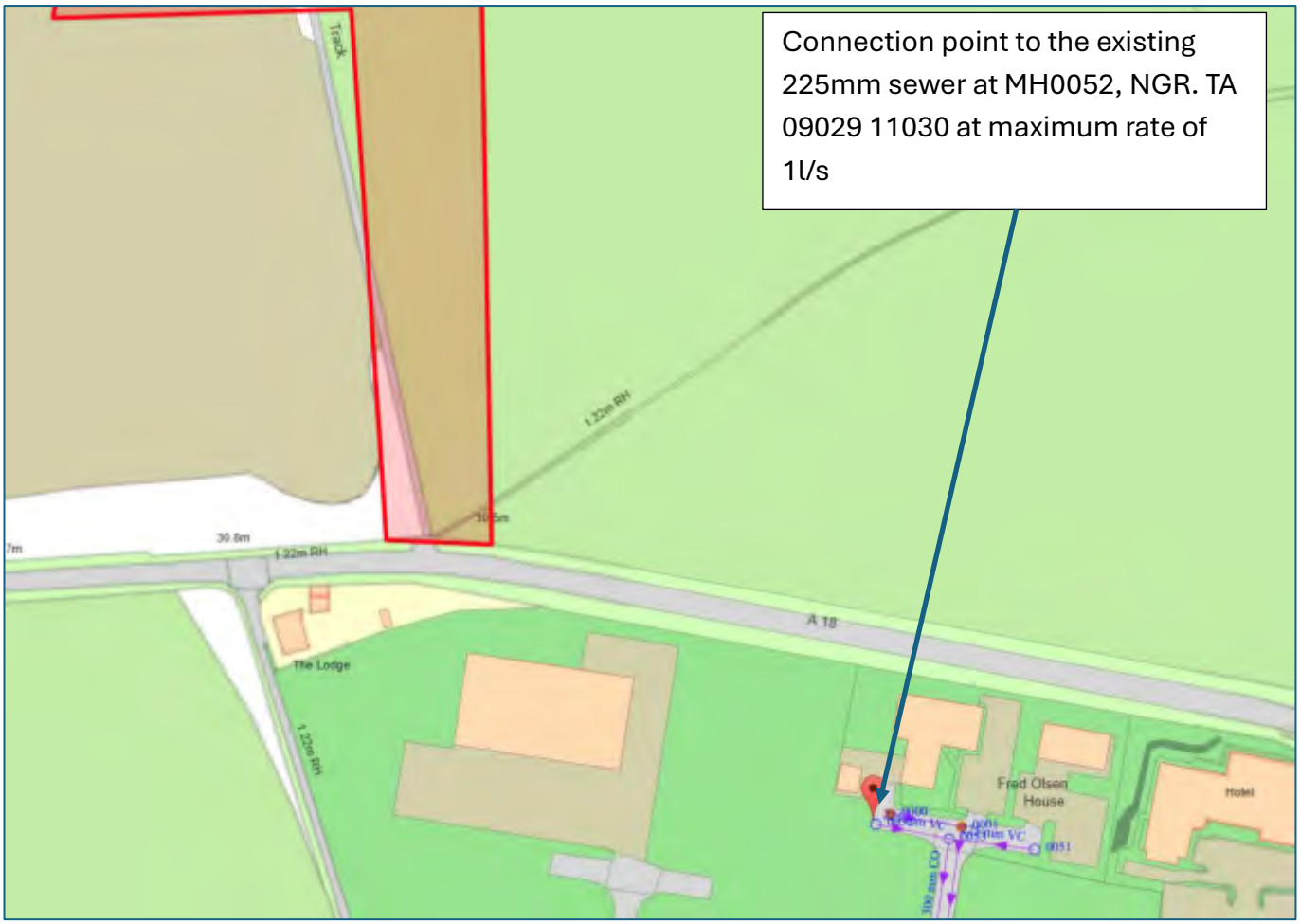


Figure 2: Connection point to the 225mm Surface Water at MH0052

Our assessment has been based on development flows connecting to the nearest surface water sewer of adequate size to drain the proposed development. It is your responsibility to provide the evidence to confirm that all alternative methods of surface water disposal have been explored and these will be required before your connection can be agreed. This is subject to satisfactory evidence which shows the surface water management hierarchy as outlined in Building Regulations Part H has been explored. This would encompass the results from the site-specific infiltration testing and/or confirmation that the flows cannot be discharged to a watercourse.

Anglian Water's surface water policy follows the Surface Water hierarchy, outlined in Part H of the Building Regulations. Should your assumptions or evidence change then an alternative solution, connection point or flow rate may be required. You are therefore advised to update Anglian Water with the key supporting evidence at your earliest convenience.

Section 3 – Useful Information

Water Industry Act – Key used water sections

Section 98:

This provides you with the right to requisition a new public sewer. The new public sewer can be constructed by Anglian Water on your behalf. Alternatively, you can construct the sewer yourself under section 30 of the Anglian Water Authority Act 1977.

Section 102:

This provides you with the right to have an existing sewerage asset vested by us. It is your responsibility to bring the infrastructure to an adoptable condition ahead of the asset being vested.

Section 104:

This provides you with the right to have a design technically vetted and an agreement reached that will see us adopt your assets following their satisfactory construction and connection to the public sewer.

Section 106:

This provides you with the right to have your constructed sewer connected to the public sewer.

Section 185:

This provides you with the right to have a public sewerage asset diverted. Details on how to make a formal application for a new sewer, new connection or diversion are available on our website or via our Development Services team on 0345 60 66 087.

Surface Water Drainage

All surface water must be managed in line with Building Regs / Sewer Sector Guidance (SSG). Our guidance document and Surface Water policy detail our requirements and expectations. You must explore all on-site options per the SUDS hierarchy before speaking to us about a possible connection to our SW drainage network. We recommend that you contact the Local Authority and Lead Local Flood Authority (LLFA) for your site to discuss your application.

Sustainable drainage systems

Some existing urban drainage systems have additional risks of flooding, pollution or damage to the environment and are not resilient to climate change in the long term. Our preferred method of surface water disposal is through the use of Sustainable Drainage Systems or SuDS. SuDS are a range of techniques that aim to mimic the way surface water drains in natural systems within urban areas. For more information on SuDS, please visit our website.

Private sewer transfers

Sewers and lateral drains connected to the public sewer on the 1 July 2011 transferred into Water Company ownership on the 1 October 2011. This follows the implementation of the Floods and Water Management Act (FWMA). This included sewers and lateral drains that were subject to an existing Section 104 Adoption Agreement and those that were not. There were exemptions and the main non-transferable assets were as follows:

Surface water sewers and lateral drains that do not discharge to the public sewer, e.g. those that discharged to a watercourse.

Foul sewers and lateral drains that discharged to a privately owned sewage treatment/collection facility.

Pumping stations and rising mains will transfer between 1 October 2011 and 1 October 2016.

The implementation of Section 42 of the FWMA will ensure that future private sewers will not be created. It is anticipated that all new sewer applications will need to have an approved section 104 application ahead of a section 106 connection.

It is anticipated that all new sewer applications will need to have an approved Section104 application ahead of a Section 106 connection.

Encroachment

Anglian Water operates a risk based approach to development encroachment on our above and below ground infrastructure and assets.

Locating our assets
Maps detailing the location of our water and used water infrastructure including both underground assets and above ground assets such as pumping stations and recycling centres are available from digdat.
All requests from members of the public or non-statutory bodies for maps showing the location of our assets will be subject to an appropriate administrative charge.
We have more information on our website

Charging arrangements
Our charging arrangements and summary for this year's water and used water connection and infrastructure charges can be found on our website link added here

Section 4 - Disclaimer
The information provided in this report is based on data currently held by Anglian Water Services Limited ('Anglian Water') or provided by a third party. Accordingly, the information in this report is provided with no guarantee of accuracy, timeliness, completeness and is without indemnity or warranty of any kind (express or implied).

This report should not be considered in isolation and does not nullify the need for the enquirer to make additional appropriate searches, inspections and enquiries. Anglian Water supports the plan led approach to sustainable development that is set out in the National Planning Policy Framework ('NPPF') and any infrastructure needs identified in this report must be considered in the context of current, adopted and/or emerging local plans. Where local plans are absent, silent or have expired these needs should be considered against the definition of sustainability holistically as set out in the NPPF.

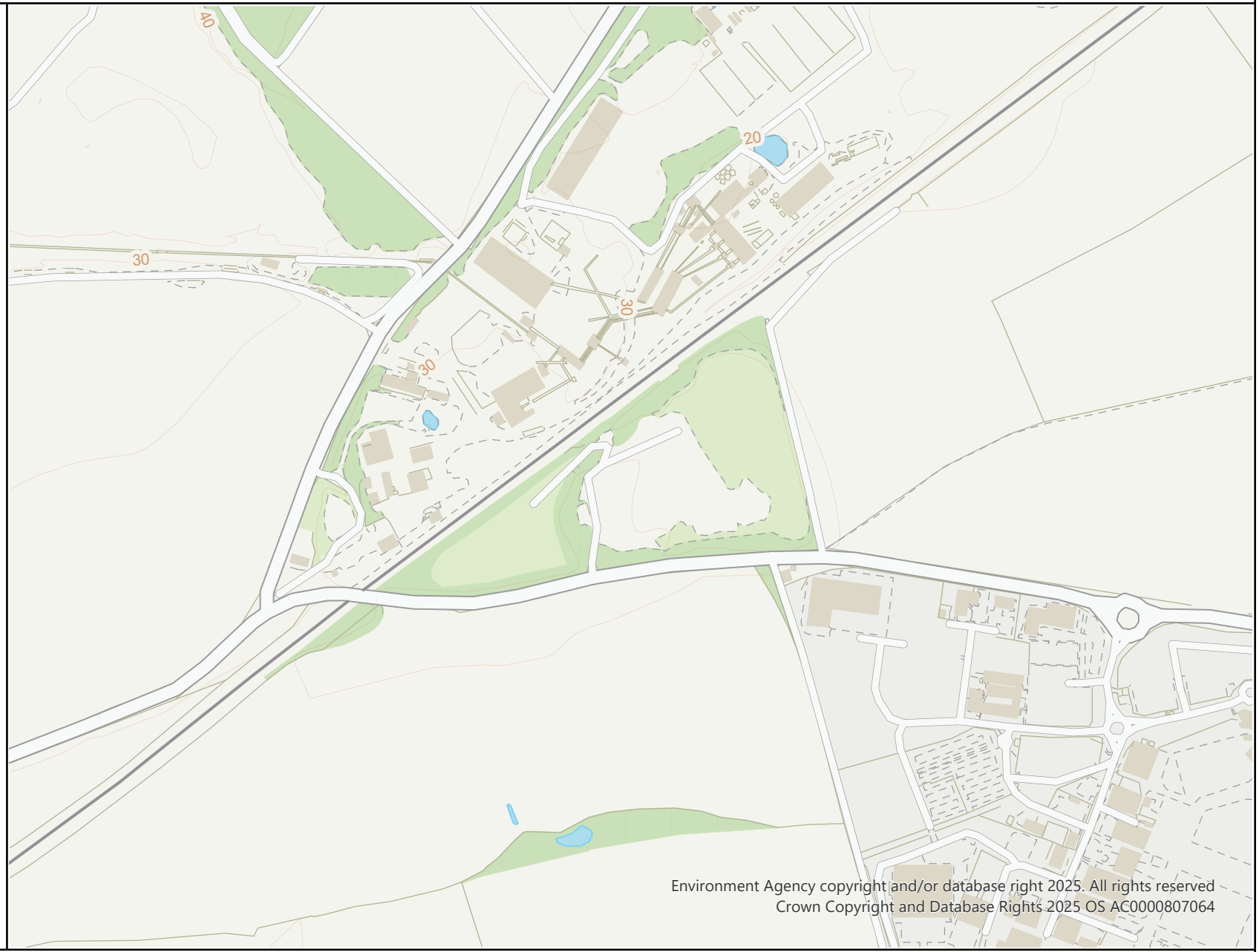
Whilst the information in this report is based on the presumption that proposed development obtains planning permission, nothing in this report confirms that planning permission will be granted or that Anglian Water will be bound to carry out the works/proposals contained within this report.
No liability whatsoever, including liability for negligence, is accepted by Anglian Water or its partners, employees or agents, for any error or omission, or for the results obtained from the use of this report and/or its content.

Furthermore, in no event will any of those parties be liable to the applicant or any third party for any decision made or action taken as a result of reliance on this report.

This report is valid from the date issued and the enquirer is advised to resubmit their request for an up to date report should there be a delay in submitting any subsequent application for water supply/sewer connection(s). Our pre-planning reports are valid for 12 months. Please note Anglian Water cannot reserve capacity and available capacity in our network can be reduced at any time due to increased requirements from existing businesses and houses as well as from new housing and new commercial developments.

Appendix H Pre-Application Correspondence

Flood Map for Planning (Rivers & Sea) centred on 508785 , 411294 created September 2025 EIR2025/27501



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Appendix IPhase I Desk Study

Geosyntec consultants

engineers | scientists | innovators

Phase 1 Desk Study

Singleton Birch, Lincolnshire

Prepared for

Centrica Energy Assets
Woodland House
Woodland Park
Hessle
HU13 0FA

Prepared by

Geosyntec Consultants Ltd
1st Floor Gatehead Business Park
Delph New Road
Delph
Oldham
OL3 5DE

Project Number: GCU0127073

30th May 2025

[DRAFT]

Geosyntec consultants

Project Title:	Singleton Birch Phase 1 Desk Study
Project No:	GCU0127073
Report Ref:	GCU0127073/P1
Status:	Draft
Client:	Centrica Energy Assets
Client Address:	Woodland House Woodland Park Hessle HU13 0FA
Issued By:	Geosyntec Consultants Ltd1st Floor Gatehead Business Park Delph New Road Delph Oldham OL3 5DE

Document Production / Approval Record (final documents only)

	Name	Signature	Date	Position
Prepared by	Rhian Lynes			Professional Environmental Consultant
Reviewed by	Dan Maher			Project Environmental Scientist
Approved by	Tim Strowbridge			Principal Consultant

EXECUTIVE SUMMARY

Geosyntec Consultants Limited (Geosyntec) were instructed by Centrica Energy Storage Ltd (Centrica, the "Client") to perform a Phase 1 Desk Study for the property located at Melton Ross Quarries, Melton Ross, DN38 6AE (the "Site") to support a future planning application for a hydrogen production facility.

The Site forms part of the Singleton Birch quarry, comprising a triangular parcel of land south of the main quarry and lime works located between the A18 road and railway line. It is understood this segment of land formed the original quarry at the Site (formerly known as Melton Ross Quarries) and was later used as a landfill. Recent restorative backfilling has taken place, ahead of a proposed redevelopment of the land into a business park. Outline planning permission for the industrial park has been granted by North Lincolnshire Council under reference number PA/2017/463.

A review of available historical mapping showed the Site as part of the *Chalk Hill* quarry and lime works in the earliest available map from 1886. Over time, the quarry expanded within the triangular plot of land, resulting in two excavations in the east and west of the Site. The main quarry, later renamed Melton Ross Quarry and then Singleton Birch, has generally expanded towards the north and northwest, away from the Site. A former RAF base to the southeast of Site was also present (though not shown on historical mapping) and later was redeveloped into Humberside Airport, which is still operational today. Limited development of the surrounding area has been undertaken beyond the quarry and airport.

The Site held an environmental permit for a landfill from 1981, and is understood to have been operating as a landfill prior to then. The Site was shown as a *Refuse Tip* on the 1994 historical map. It is understood landfilling operations ceased in 2006, and ongoing monitoring of groundwater and ground gas has been conducted by SLR Consultants. Reports available on the North Lincolnshire planning portal and Environment Agency (EA) inspection reports of the Site (supplied by the Client) showed the Site has exceeded compliance monitoring requirements of the permit for mecoprop and ammoniacal nitrogen. The 2024 permit compliance assessment report by the Environment Agency stated that if exceedances of ammoniacal nitrogen continued then further action would be required. The report did not give the level recorded.

Elevated methane and carbon dioxide have also been detected in landfill gas monitoring wells. The highest recorded methane was 10.9 % and carbon dioxide was 6.6 % in a dedicated landfill gas risk assessment report, both taken from monitoring location "2". Flow rates at the Site were found to be low, ranging from -0.1 to -0.3 l/h in a 2017 monitoring round.

The Site has recently undergone a land raising exercise, ahead of the proposed development. Engineering specifications for the land raising have not been supplied, but a copy of the environmental permit for a waste recovery operation at the Site was supplied.

The Geosyntec Conceptual Site Model has shown that there is a risk to future site users from five Potentially Complete Pollutant Linkages (PCLP) including:

1. **PCPL 1:** Contamination from Made Ground within the landfill migrating through groundwater and impacting upon the Principal Aquifer and SPZ III drinking water source.
2. **PCPL 2:** Landfill gas generation at the Site migrating into building spaces and impacting upon future site users.
3. **PCPL 3:** Future site users coming into direct contact with Made Ground at the Site.
4. **PCPL 4:** Future site users inhaling asbestos fibres within Made Ground at the Site.
5. **PCPL 5:** Potential PFAS and hydrocarbon contamination migrating through groundwater from Humberside Airport.

Further investigation is recommended at the Site, including;

- Additional ground gas monitoring which would be representative of post-land raising ground conditions. Proposed new monitoring wells should target building footprints of the proposed development;
- Groundwater monitoring, focussing on a broader spectrum of analytical testing in relation to human health and risk to controlled waters. Proposed new monitoring wells should target the development area, and if appropriate monitoring location down-gradient of the waste body;
- Soil sample analysis, focussing on a broader spectrum of analytical testing in relation to human health, including asbestos screening samples to further characterise potential asbestos contamination of the waste;
- Waste classification testing for waste soil arisings during construction;
- Geotechnical testing to confirm suitability of the backfilled materials for the end development.

LIMITATION

Geosyntec Consultants Ltd (Geosyntec) has prepared this report for the sole use of Centrica in accordance with the Agreement under which our services were performed. No other warranty, express or implied, is made as to the professional advice included in this report or any other services provided by us. This report may not be relied upon by any other party without the prior and express written agreement of Geosyntec, which will not be unreasonably withheld.

Unless otherwise stated in this report, the assessments made assume that the site and facilities will continue to be used for their current purpose without significant change. The conclusions and recommendations contained in this report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested. Information obtained from third parties has not been independently verified by Geosyntec, unless otherwise stated in the report.

Where assessments of works or costs required to reduce or mitigate any environmental liability identified in this report are made, such assessments are based upon the information available at the time and may be subject to further investigations or information which may become available. It is therefore possible that cost estimates, where provided, may vary outside stated ranges. Where assessments of works or costs necessary to achieve compliance have been made these are based upon measures which, in Geosyntec's experience could normally be negotiated with the relevant authorities under present legislation and enforcement practice, assuming a pro-active and reasonable approach by site management.

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Figure 1 Site Location Plan

Figure 2 Site Layout Plan

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Appendix A Photographic Log

Appendix B Envirocheck Report

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1 INTRODUCTION

Geosyntec Consultants Limited (Geosyntec) were instructed by Centrica Energy Storage Ltd (Centrica, the "Client") to perform a Phase 1 Desk Study for the property located at Melton Ross Quarries, Melton Ross, DN38 6AE (the "Site").

The Site forms part of the Singleton Birch quarry, comprising a triangular parcel of land south of the main quarry and lime works located between the A18 road and railway line. It is understood this segment of land formed the original quarry at the Site (formerly known as Melton Ross Quarries) and was later used as a landfill. Recent restorative land raising has taken place, ahead of a proposed redevelopment of the land into a business park. Outline planning permission for the industrial park has been granted by North Lincolnshire Council under reference number PA/2017/463.

This Phase 1 is to support the planning application for a proposed hydrogen plant. The land ownership and development boundaries are shown in **Figure 1**.

1.1 Scope of Works

The aim of the Phase 1 Desk Study review has been to provide the Client with an understanding of potential environmental risks and liabilities associated with the subject Site, in particular:

- Environmental issues such as potential presence of contamination of soil, groundwater and buildings caused by historic or current activities or any off-site exposure. Structural, planning issues, cultural history or heritage issues were not considered;
- Areas relating to compliance with applicable environmental regulations;
- The need for further investigation of potential contamination and discharges;
- Immediate surrounding land use.

The work has included a review of publicly available maps, environmental databases, historical aerial photos, environmental documentation provided by the Site and a Site inspection conducted on the 9th January 2025. It was agreed that the purpose of the Site visit conducted as part of this project was visual inspection only, therefore no sampling or testing was carried out.

Geosyntec has produced a Conceptual Site Model (CSM) and conducted a preliminary risk assessment which are collated in this report.

The scope of this report did not include assessments relating to Occupational Health and Safety, Environmental Health and Safety, Noise or Nuisance.

2 SITE DESCRIPTION

2.1 General Characteristics

The Site comprises an approximately 7.7 hectare property located near Melton Ross, Lincolnshire. The Site location is shown in **Figure 1.** The Site is currently a disused piece of land, south of the main Singleton Birch quarry and lime works. It is understood restorative land raising was recently completed at the Site in preparation for the upcoming redevelopment.

The property is owned by Singleton Birch.

The general Site layout is shown in **Figure 2**. The Site is currently vacant, but a weighbridge and welfare cabin were present from the recent land raising exercise. The Site is bounded by a railway line to the north and a road to the south, with mature trees around the boundary. The Site is divided into two former excavation halves in the east and west, with different ground levels in each half. The topography lowers in the north, southwest and west where filling has not yet been completed. There are several soil embankments along the north of the Site where previous quarrying was completed.

Photographs from the Site visit on 9th January 2025 are provided in **Appendix A**.

2.2 Surrounding Area

The area surrounding the Site is currently a mix of residential, commercial and agricultural properties.

Current adjoining land uses are summarised below:

Direction	Adjacent Land Use	Beyond Neighbouring Properties
North	Railway line immediately north. Singleton Birch quarry and lime works beyond.	Agricultural fields. A180 road (dual carriageway, 1.2 km)
East	Agricultural field.	Further agricultural fields. Village of Kirmington (1.5 km)
South	A18 road (single carriageway) immediately south, with 1 no. residential property beyond, agricultural fields to the south and southwest, and Humberside Airport to the southeast.	Agricultural fields.
West	Railway line immediately north. Singleton Birch quarry and lime works beyond.	Agricultural fields. Melton Ross village (1.2 km)

2.3 Physical Setting

2.3.1 Geology

The Site is depicted on the Ordnance Survey (OS) 1:10,000 scale map at National Grid Reference TA086111. The Site was observed to be generally flat, with some steep embankments and depressions along the northern and southern edges and at the western end.

The British Geological Survey 1:50,000 geological map series, Sheet 89 (Brigg), was consulted for the geology underlying the Site.

The Site is shown as comprising Made Ground and Infilled Ground. There are no Superficial deposits mapped within 1 km of the Site.

Bedrock geology was identified as the Welton Chalk Formation comprising thickly bedded chalk with flint nodules. It is understood the quarry was progressed to the "Black Band" at the base of the Welton Chalk Formation, described as a marl horizon approximately 1.00 m thick, beyond which is the underlying Ferriby Chalk.

2.3.2 Borehole Records

There are 5 no. borehole records within 200 m of the Site, some of which are publicly available through the British Geological Survey GeoIndex[1] viewer. These dated to the early 20th Century.

The nearest available borehole to the Site (ref. TA01SE130) is located approximately 100 m northwest of the Site, within the Singleton Birch quarry . The encountered geology in this borehole comprises:

Depth From (m)	Depth To Base (m)	Formation	Geological Description
0.00	4.26 (14ft)	"Well"	"Well" – log is record of groundwater well installed in 1913.
4.26	11.58 (38ft)	Welton Chalk	Chalk
11.58	12.49 (41ft)	Black Band	"Blue Clay"
12.49	17.06 (56ft)	Ferriby Chalk	Chalk

In addition to the publicly available borehole records, logs from the Site were included in the Client supplied *Closure Plan: Hydrological Risk Assessment* (SLR Consulting, June 2015, reference: 404.00075.00084). This included two locations (referenced IT4 and IT5 in the report text, but numbered S3A and S2 respectively in the borehole logs) located within the landfill material.

IT5/S2 was located on the eastern side of the landfill and encountered 9.50 m thickness of Made Ground comprising concrete, brick, tarmac and slag. IT4/S3A was located on the western side of the landfill and encountered a gravelly clay with "abundant fabric fragments", concrete, brick, chalk and mudstone gravel. The base of the landfill material was encountered at 3.45 m depth.

[1] GeoIndex, British Geological Survey. Accessed on 07 January 2025; https://mapapps2.bgs.ac.uk/geoindex/home.html

2.3.3 Hydrology and Groundwater

The nearest surface water feature is a pond located approximately 550 m west of Site.

According to the previous SLR ground investigation, groundwater was encountered at 8.0 m depth within the landfill material in IT4/S3A. Leachate was also recorded in IT4/S3A and IT5/S2, approximately 4.00 m above nearby groundwater levels. Due to the age of the landfill, the material is uncapped, unlined and not subject to leachate or ground gas control measures.

Wider groundwater within the chalk bedrock was found to flow to the northeast, though localised mounding of groundwater was observed, which may be a function of dewatering from quarrying activities.

The Welton Chalk bedrock is classified as a Principal Aquifer. Principal aquifers are classified by the Environment Agency as strategically important rock units with high permeability and water storage capacity. It is understood the Ferriby Chalk, underlying the Welton Chalk, is also classified as a Principal Aquifer.

The nearest groundwater abstraction point is located 72 m north within the Singleton Birch Quarry. A second groundwater abstraction is also present 144 m northwest within the quarry. It is understood that the abstractions are used for process water at the quarry.

The Site does fall within a Source Protection Zone (SPZ) Zone III area for a groundwater abstraction located approximately 1.7 km northeast of the Site.

There are no surface water abstraction points within 1.5 km of the Site.

2.3.4 Flooding

According to the Envirocheck report, the Site is not at risk of extreme flooding from rivers or the sea.

The Environment Agency data suggests the Site would be susceptible to a 1 in 30-year flood event. The flooding contours centre around three topographically low areas in the east and west of the Site, and may be based on previous topographic information.

The British Geological Survey data suggests there is potential for groundwater flooding at the Site.

2.4 Geological Hazards

2.4.1 Mining and Extraction

According to the Envirocheck report, there are 17 individual recorded mineral sites within 500 m the Site. Of these, 4 are recorded at the Site itself. All the entries relate to different areas of the wider Singleton Birch and Melton Ross quarries.

The Site is not in a Coal Mining Affected area.

2.4.2 *Radon*

The Site does not fall within a Radon Affected area. Less than 1 % of homes are above the action level. Radon protection measures are not required.

2.4.3 *Other Geological Hazards*

Feature	On Site	Within 250 m
Potential for Collapsible Ground Stability Hazards	Very Low	Very Low
Potential for Compressible Ground Stability Hazards	Moderate	Very Low
Potential for Ground Dissolution Stability Hazards	No Hazard	No Hazard
Potential for Landslide Ground Stability Hazards	No Hazard	No Hazard
Potential for Running Sand Ground Stability Hazards	No Hazard	Very Low
Potential for Shrinking or Swelling Clay Ground Stability Hazards	Very Low	Very Low

3 SITE HISTORY

3.1 Historical Mapping

Geosyntec review the historical maps and aerial photographs as part of the Envirocheck report. The full maps are provided in **Appendix B** and are summarised below:

Date	Source	On Site	Off Site
1886 - 1887	OS 1:2,500 & 1:10,560	The main triangle of land comprises a cutting in the southwestern corner, with a railway siding coming off the main railway line into the cutting. The eastern side appears to be undisturbed, with the parish boundary marked across a field boundary intersecting the Site. The area of the current kilns to the north is shown as part of a field north of the railway line.	*Manchester, Sheffield & Lincolnshire Railway* [0 m N] runs southeast to northwest along the Site boundary. *Chalk Hill* quarry [0 m NW] is present immediately north of the railway line, showing some buildings, railway sidings and *Limekilns*. Quarry excavation is approximately 330 m in length. *Camp Covert* woodland and *Yarborough Camp* Roman camp [500 – 900 km N]. Residential property [20m SE]. *Quarry* [75 m S] Melton Ross village [1.15 km W] and Croxton village [1 km NE]. Largely farmland with occasional farm houses.
1907-1908	OS 1:2,500 & 1:10,560	No recorded changes.	*Chalk Hill* quarry expanded with additional buildings, railway sidings, *Limekilns* and expansion of excavation. Additionally marked as *Whiting and Lime Works*.
1950 – 1951	OS 1:10,560	Railway siding showing a shorter route. Addition of a track in the centre of the Site, with excavations shown on the western and eastern sections.	Expansion of the main quarry towards the north. No changes marked for the wider area.
1956	OS 1:10,000	Site is shown with a water body in the western section, a ridge in the southern central section, the railway siding, and excavation with water body in the eastern section. The area of the current lime kilns to the north is shown as part of the main quarry excavation.	Further expansion of the main quarry towards the north. *Airfield* [1 km SE] marked in the field to the southeast – no structures or runways marked.
1969 – 1970	OS 1:2,500	The railway siding is no longer marked. *Water* is labelled in two areas in the western and eastern excavations. Two buildings are present along a track in the central ridge of the Site. Buildings added in the area of the current lime kilns to the north, but not matching the current building layout.	Some changes to the buildings layout in the southwest of the main quarry. Further expansion of the quarry to the north and northeast. Addition of buildings around the area of the current limekilns, but not to the current building layout. *Lime kilns* and *Tank* labelled. *Limestone Quarry* and *Spoil Heap* labelled north of the A160 road, immediately north of the main quarry. Road bordering the Site to the south labelled as *A18*. *Airfield (Disused)* [500 m SE] showing "X" shaped runways and taxiways – expands outside of the map boundaries. *Filling Station* [2 no., 800 m E] on the *A18* road.

Date	Source	On Site	Off Site
1972	OS 1:10,000	No marked changes at this scale.	Continued expansion of the quarry to the northeast. *Limestone Quarry* and *Active Workings* marked on excavations northwest of the *A160* road.
1991	OS 1:10,000	Possible backfilling of the eastern side of Site – water body shown in the southwestern corner of Site with rough ground marked surrounding it and in the eastern excavation.	Quarry workings to the northeast of the main quarry marked as *Quarry (Disused)* [135 m N]. *Chalk Pit* [675 m E] with conveyor extending the workings northeast. Former marked *Limestone Pit* marked as *Disused Workings* [250 m E]. *Humberside International Airport* [630 m SE] with car park, buildings and runways matching the previous airfield layout. *Filling Stations* [800 m E] no longer marked. *A180* dual carriageway [1 km N] bordering the Camp Covert woodland.
1994	OS 1:2,500 (partial)	Site marked as *Refuse Tip* with *Pond* in the southwestern corner. Current *Limekilns* and other structures shown in the northern section of the development area.	Additional building, structures, tanks and conveyors within the main quarry site, mostly matching the current site layout. Partial map only extends 200 m beyond Site and other areas not shown.
2000	OS 1:10,000	Site no longer marked as *Refuse Tip* but shown as rough ground.	Continued expansion of *Quarry (Limestone)*, extending up to 1.25 km north of Site with *Conveyor* crossing the disused workings. *Workings (Disused)* [400 m W]. *Quarry (Disused)* [400 m N]. Expansion of Humberside International Airport [55 m SE].
2006	OS 1:10,000	*Pond* no longer marked in the southwest. Site covered by rough ground surrounded by cuttings. Structure shown in the centre of Site.	*Quarry* extended into *Camp Covert* woodland [1 km N]. Minor expansion of *Humberside International Airport* [220 m SE].
2009	OS 1:10,000	No changes at this scale.	No changes at this scale.
2013	OS 1:10,000	No changes at this scale.	Additional buildings within the main quarry [300 m N and 700 m NW].
2016	OS 1:10,000	No changes at this scale.	Minor changes to main quarry processing area north of the railway. Possible expansion of the quarry further west outside of the mapped area.
2024	OS 1:10,000	Site marked as scrub ground in the western section. Small buildings present in the centre of Site off the track. Rough ground or spoil heap marked in the eastern excavation.	Addition of tanks, buildings and *Flare Stack* north of the limekilns. Marked as *Workings* [380 m N]. *Reservoir (covered)* [500 m N] within the quarry. Continued expansion of quarrying area to the northeast, outside of mapping area. Expansion of *Humberside International Airport* with the addition of hotels, car parks and other buildings.

It is understood the quarry first opened in the 1840's and appears on the earliest available map from 1887 as *Chalk Hill* quarry. The main quarry and buildings are located north of the railway line, outside of the Site and development area boundary. Over time, the quarry expands within the development Site and is shown as two excavation areas in the west and east. These excavations are shown to contain water in the 1969-1970 mapping, before being marked as a *Refuse Tip* in the 1994 map. The Site is shown as backfilled by the 2006 map and remains unchanged up until the latest 2024 map.

Whilst a railway siding was marked on the earlier available maps, the area it stood on was later shown as part of the quarry excavation, and so any related potential contamination will have been removed during excavation.

The historical maps show how the wider quarry north of the railway line has expanded over time, generally expanding towards the north and northwest. The only other notable change in the surrounding area is the development of Humberside Airport to the southeast. There are limited changes and development to the wider area around the quarry, which maintains a rural and agricultural use.

3.2 Local Authority Records

Geosyntec searched the North Lincolnshire planning portal on 14th January 2025 and found 1 no. planning applications linked to the Site. The applications have been reviewed and applications which provide information on the Site history or environmentally pertinent information are discussed below.

3.2.1 On Site

Record Reference	Date and Status	Description
PA/2017/463	28 February 2018 Split Decision	*Hybrid application for full planning permission for land raising; and outline planning permission with all matters reserved for an industrial park.* Application for outline planning permission for an industrial park at the Site, including a full granted application for land raising at the Site. The application included a number of geo-environmental reports including a site investigation, hydrogeological risk assessment and landfill gas risk assessment. These are discussed in more detail in Section 3.3 below. The outline permission for an industrial park included 25 no. planning conditions in total, of which Condition 15 related to contaminated land. Condition 15 states that a Phase 1 desk study and remediation scheme should be submitted to the local authority, the remediation scheme should be implemented as approved and any unexpected contamination should be reported.

3.2.2 Off Site

A total of 23 no. planning applications were listed on the North Lincolnshire planning portal for the DN38 6AE postcode, all of which relate to operations at the main quarry dating back to 2000. Key applications in relation to contaminated land and environmental issues are discussed below.

Record Reference	Date and Status	Description
PA/2024/1350	9 January 2025 Approved	*Prior approval under Schedule 2, Part 17, Class B of the Town & Country Planning (General permitted Development) (England) Order 2015 for an extension to Hydrate Plant at Melton Ross Lime Works, Single Birch Ltd, Melton Ross Quarries, Barnetby, DN38 6AE* This application related to Prior Approval for an extension at the hydrate plant at the main quarry. The decision was that Prior Approval was not required.

Record Reference	Date and Status	Description
PA/2023/1045	26 April 2024 Approved with conditions	*Planning permission to construct and operate an anaerobic digestion facility and associated ancillary infrastructure for the production of biomethane and carbon dioxide.* This application is for a second anaerobic digestion facility within the main quarry to the north. The application conditions included Condition 3 which stated: "*If, during development, any odorous, discoloured or otherwise visually contaminated material is found to be present at the site then no further development shall be carried out until a written method statement detailing how this contamination shall be dealt with has been submitted to and approved in writing by the local planning authority.*"
PA/2022/1865	25 May 2023 Approved with conditions	*Planning permission to vary condition 5 of PA/2021/1665 to operate the approved calciner plant 24 hours a day, 7 days a week*
PA/2021/1665	28 February 2022 Approved with conditions	*Planning permission to erect a feed and storage silo, flash calciner plant, oxygen plant, motor control centre and tanker parking area.* This application included a desk study and Preliminary Risk Assessment in relation to contaminated land (Swan Environmental, no report reference, dated July 2021). The desk study concluded that a site investigation would be of greater risk to the Principal Aquifer, by potentially creating a pathway for potential contamination to enter the groundwater. The final approved conditions included a similar condition to application PA/2023/1045 that any contamination encountered during construction must be reported to the local authority.
PA/2019/159	22 March 2019 Approved with conditions.	*Planning permission to erect new changing room / welfare facility including the demolition of existing garages.* Application to erect new welfare facility in the main quarry. No contamination reports supplied. Condition to report any contamination encountered during construction.
PA/2018/2471	3 May 2019 Approved with conditions.	*Planning permission to construct a new anaerobic digestion facility and associated ancillary infrastructure.* Application for an anaerobic digestion facility in the main quarry site. Included a condition to report any contamination encountered during construction, and a condition to make information on the site geology available to geologists and the public. Application did not include a desk study or investigation in relation to contaminated land.
MIN/2000/0242	3 November 2000 Approved with conditions	*Planning permission to extend existing quarry and for its subsequent restoration by landfilling* No documentation available on the online portal. Unclear if this location relates to the Campwood Landfill to the north or the Site.

3.3 Previous Reports and Supplied Documentation

The following reports and documentation were provided to Geosyntec for review:

- Closure Plan: Hydrogeological Risk Assessment, SLR Consulting, ref. 404.00075.00084, dated June 2015
- Environmental Permit EPR/GB3405CL for waste recovery operation, dated 1st August 2018, Permit Holder: Singleton Birch Ltd.
- Environmental Permit EPR/DP3195NA/V009 for the landfill, dated 10th May 2019, Permit holder: Singleton Birch Ltd, plus 4 no. EPR compliance assessment reports from 2020, 2023 and 2024.

In addition, the following documentation was identified on the planning portal:

- Melton Ross Closed Landfill, Updated Landfill Gas Risk Assessment (July 2008 – July 2010), SLR Consulting, ref. 406-00075-00049, dated July 2010.
- Site Investigation, Melton Ross Landfill, DJM Waste Management Consultancy and Training Ltd, 2016, no report reference.
- Proposed Business Park Development, Melton Ross, Geo-Environmental Report, SLR Consulting, ref. 403.00075.00092, dated March 2017.

3.3.1 Updated Landfill Gas Risk Assessment, SLR Consulting, July 2010

This report was commissioned by Singleton Birch Ltd, in response to Environment Agency concerns that the previously submitted Landfill Closure Plan and Landfill Gas Risk Assessment reports did not fully address the issue of landfill gas risk at the Site. The report covers 2 years of monthly gas monitoring. The previously submitted reports have not been made available for Geosyntec's review.

The report references that records of landfilling were not kept at the time, but an estimated 135,000 m^3 of material has been deposited at the Site. The landfill was licenced to receive inert waste, but the report references that photographic evidence of fishing waste from Grimsby (not inert) was deposited at the Site. These photographs were not available for review.

The report states that waste was not placed in operating phases (i.e. in a sequence or cells), with no groundwater management system, no basal lining, no leachate management, no landfill gas management and no engineered capping layer.

At the time of this report, there were 3 no. boreholes present at the Site, drilled in 2006 into the eastern excavation. The report references 9 no. gas monitoring wells that were used for this monitoring period, and the locations are concentrated in the east of the Site.

The gas monitoring did identify exceedances of the Environment Agency trigger levels (>1 % methane and >1.5 % carbon dioxide) over the 2 year period, however gas flows recorded were low, suggesting small levels of gas generation. The highest recorded methane was 10.9 % and carbon dioxide was 6.6%, both recorded in location "2".

The report concludes that there is a low risk from landfill gas at the Site.

3.3.2 Hydrogeological Risk Assessment, SLR Consulting, June 2015

This report was produced by SLR for Singleton Birch Ltd, in order to comply with Environment Agency requirements in relation to the closure of the landfill.

The report states inert waste was deposited at the Site, and estimates the base of the landfill to be at 15 - 17 m AOD (above Ordnance Datum), with a typical waste thickness of 18 m. It also states no engineered capping system, leachate management system or gas management system is present at the Site, as this was not required at the time the landfill was opened.

The report utilises monitoring wells installed in 2006 and additional new wells installed in 2015. Two of the older wells (IT4 and IT5) were located within the waste mass. The other monitoring wells were positioned down-gradient to the east and northeast, outside of the waste body, and the locations agreed with the EA. Subsequent monitoring of the new boreholes (IT6 – IT9) found that only IT6 was positioned down-gradient of the landfill. The report suggests local groundwater level are impacted by the quarrying activities.

Leachate was encountered in both IT4 and IT5, at approximately 4 m above the local groundwater levels.

Groundwater samples taken over the monitoring period were screened for "priority pollutants" ammoniacal nitrogen, mecoprop (a pesticide), nickel, sulphate and TPH. Concentrations of ammoniacal nitrogen, mecoprop, nickel and sulphate were found to exceed the Drinking Water Standards (DWS) during the monitoring period. Evidence was presented that mecoprop and ammoniacal nitrogen are declining over time.

In conclusion, the risk assessment found the landfill continued to pose a potential hazard to groundwater and therefore still fell under the requirements of the permitting regime. It recommended further monitoring of groundwater and leachate in order to comply with the Site environmental permit.

The report did not consider landfill gas.

3.3.3 Site Investigation, DJM Waste Management Consultancy and Training, 2016

This report was commissioned by Sandstop Quarries Ltd to assess the shallow waste content within the landfill. DJM completed 6 no. trial pits at the Site and took a composite sample from each location for laboratory analysis. The trial pit locations were exclusively within the western side of the landfill.

Materials encountered included asphalt, concrete, clay, wood, glass, plastic, rubber, bricks, chain link fencing, copper pipe, ash and fragment of cement-bound asbestos (in TP4, no depth given).

The soil samples results were not screened against any criteria, but elevated levels of polycyclic aromatic hydrocarbons (PAHs) and Total Petroleum Hydrocarbons (TPH) were noted. The samples were classified as non-hazardous under the waste classification regime at the time.

3.3.4 Geo-Environmental Report, SLR Consulting, March 2017

This report was commissioned by Singleton Birch Ltd to review existing site investigation data in the context of a proposed business park redevelopment of the Site. The report summarises the findings of the Landfill Closure report and DJM Site Investigation.

The findings of the previous report was supported with some further ground gas monitoring up to January 2017, which found similar levels of gases to the previous reports. Positive flow rates were not recorded during the additional monitoring. A CS2 scenario is concluded for gas risk.

Additional sampling of groundwater and leachate is not directly referenced, and the report uses previous laboratory results.

The report Conceptual Model concludes there are potentially complete linkages between leachate impacting on controlled waters and ground gases impacting on proposed buildings.

The report recommends gas protection measures for proposed buildings, and suggests three possible design scenarios. The report states that Monitored Natural Attenuation may be suitable for the Site and recommends ongoing monitoring of the landfill leachate. The new development should decrease infiltration into the landfill body

3.3.5 Environmental Permit EPR/DP3195NA/V009, dated 10th May 2019

This environmental permit covers the original landfilling operations at the Site and originally dates to 1981. The supplied copy is the 9th variation to the permit, which includes requirements of the permit in order to close the landfill. This states no waste is to be accepted at the Site. A condition is included that a landfill gas risk assessment, groundwater and ground gas monitoring plan and infrastructure inspection plan are submitted to the Environment Agency within 6 months of the date of the permit.

Annual monitoring values are outlined for ammoniacal nitrogen, Mecoprop and sulphate in monitoring points IT2, IT3 and IT6. Requirements for monthly landfill gas monitoring are given but marked as "TBC". Quarterly monitoring of leachate in IT4 and IT5 are specified also.

A search of the Environment Agency Public Register lists the status of the permit as "Closure". It is understood that ongoing quarterly monitoring is still required as part of this permit. Clarification should be sought to confirm whether any of the responsibilities of the permit will fall upon the Client post-construction of the proposed development, if the permit is not surrendered.

3.3.6 Environmental Permit EPR/GB4305CL dated 1st August 2019

This environmental permit relates to the acceptance of waste and waste recovery operations during the recent land raising exercise. The permit includes groundwater, leachate, and landfill gas monitoring requirements, a list of waste categories that can be accepted at the Site and the requirement to report waste accepted quarterly.

Acceptable waste include waste from mineral excavation, waste gravel and crushed rocks, construction and demolition waste, and soil and stones.

Also supplied were 4 no. EPR Compliance Assessment Reports completed by the Environment Agency in association with this permit:

- Report ID 404973/0373729, Dated 05/10/2020: Virtual inspection report. No permit breaches recorded.
- Report ID: 70811/0451925, Dated 24/02/2023: Elevated ammoniacal nitrogen in IT6 groundwater is reported, but stated thought to be related to nearby agricultural activity. No other permit breaches recorded.
- Report ID: 70811/0490815, Dated 01/02/2024: Elevated sulphate is reported in location IT3 at 506 mg/l, exceeding the permit limit of 360 mg/l. Highest methane result is reported at 12.6

% but does not state the location. No further action is required as the Environment Agency officer deems this is caused by a period of rain predating the testing.

- Report ID: 70811/0503152, Dated 12/06/2024: Elevated ammoniacal nitrogen was reported to the EA by the operator. It was deemed nearby use of fertiliser had caused this elevated level as other monitoring parameters associated with the landfill were decreasing. The EA conclude no further action is required.

The exact monitoring results that these reports reference have not been supplied to Geosyntec for review.

A search of the Environment Agency Public Register lists the status of the permit as "Issued".

4 ENVIRONMENTAL DATABASE REVIEW

Geosyntec procured an Envirocheck report (ref. 366363277) which provides a database of environmental information held by various statutory bodies including, but not limited to, the Environment Agency, Local Authority, British Geological Survey, Coal Authority, Natural England and Health & Safety Executive.

A copy of the Envirocheck Report is provided in **Appendix B**. A summary of the findings are given below.

4.1 Permitting and Licencing

Feature	On Site	Within 250 m
Contaminated Land Register Entries	None recorded.	None recorded.
Discharge Consents	None recorded.	Mr Michael Bird (162 m N) dated 19 August 1971 (Soakaway)
Integrated Pollution Controls	None recorded.	Singleton Birch Ltd (31 m W), 13th November 2017, Cement/Lime Manufacture and Camp Wood Waste Acid Treatment Plant and Campwood Landfill. (Multiple entries and historic entries relating to processes at the quarry. Total 27 entries.)
Local Authority Pollution Prevention and Controls	None recorded.	Singleton Birch Ltd (41 m W), No date supplied, Quarry processes including roadstone plants and the size reduction of bricks, tiles and concrete.
Registered Radioactive Substances	None recorded.	None recorded.
Pollution Incidents to Controlled Waters	None recorded.	None recorded.
Prosecutions Relating to Authorised Processes	None recorded.	None recorded.
Substantiated Pollution Incident Register	None recorded.	None recorded.

The majority of permitting entries relate to processes at the main Singleton Birch quarry site.

The nearest discharge consent relates to a soakaway on a farm, and is unlikely to impact upon the Site.

4.2 Waste

Feature	On Site	Within 500 m
Historical Landfill Sites	None recorded (under this category within the Envirocheck report).	Melton Ross Quarry (West) [546 m W] - dates and waste types not supplied.
Potentially Infilled Land	Yes – covering infilled pit/ground.	Unknown filled ground [97 m SE]
Registered Landfill Sites	Yes –Melton Ross Quarry, Singleton Birch Limited, Category: landfills taking non-biodegradable waste (not construction), Licence issued 2nd September 1981, Licence status: Closure. No permit number supplied.	Campwood Landfill [240 m N], Singleton Birch Limited, Category: Waste landfilling with capacity >25,000 T excluding inert waste, Licence issued 1st March 2018, Licence status: Effective. Permit number: EPR/BS9989IJ.

Feature	On Site	Within 500 m
		Includes two other entries from 1999 and 2003 for previous versions of the permit for the same landfill.
Licenced Waste Management Facilities	Yes – 4 entries. 2 no. entries from 1981 and 2004 cover landfill activities and are listed as closed and expired respectively. Both are registered to Singleton Birch Limited. 1 no. entry form 2015 covers "Inert & Excavation Waste TS + Treatment" and is listed as Surrendered and registered to Sandstop Quarries Ltd. 1 no. entry from 2019 is given for "Use of waste in a deposit for recovery op(eration)". The status is given as issued and is registered to Singleton Birch Ltd.	1 no. entry within 500 m, registered to Singleton Birch Ltd for Mining Watse Operations, issued 22nd March 2022. 2 no. entries over 500 m registered to Singleton Birch Ltd for landfilling in the north of the main quarry.

The Envirocheck report includes information on the known landfill within the Site. The available permitting data shows the earliest permit for the landfill dates to 1981, with a permit in 2019 covering the backfilling operations.

Permits are also shown for the Campwood Landfill within the main quarry, with the earliest permit record given dating to 1999. The Singleton Birch website[2] lists that the landfill can accept non-hazardous wastes including industrial wastes containing sulphur, calcium-based wastes from titanium dioxide production, sludges and wastes from on-site effluent treatment, sludges and solid wastes from gas treatment, waste concrete and concrete sludge, and gypsum-based construction materials.

4.3 Hazardous Substances

Feature	On Site	Within 250 m
Control of Major Accident Hazard Sites (COMAH)	None recorded.	Singleton Birch Ltd [41 m W], Lower Tier, recorded as "Record ceased to be supplied under COMAH Regulations".
Explosive Sites	None recorded.	None recorded.
Notification of installations Handling Hazardous Substances (NIHHS)	None recorded.	Singleton Birch Ltd [115 m N], listed as not active.
Planning Hazardous Substance Consents	None recorded.	Singleton Birch Ltd [112 n N], dated 4th November 1992, Part C – Flammable substance – Liquified petroleum gas held at >1.4 bar where amount held is greater than or equal to 25 tonnes. Consent granted.
Planning Hazardous Substance Enforcements	None recorded.	None recorded.

[2] Singleton Birch Waste Management, https://www.singletonbirch.co.uk/waste-management/ Accessed 16th January 2025

There are no hazardous substance related consents registered at the Site. Older records are listed for the main Singleton Birch quarry to the north and west.

4.4 Industrial Land Use

Feature	On Site	Within 250 m
Contemporary Trade Directory Entries	None recorded.	3 no. entries within 250 m, including Singleton Birch Ltd (Quarry – 41 m W), Agrimin Ltd (Pet foods and animal feeds – 71 m SE) and Birch Chemicals (Chemical manufacturers – 127 m W).
Fuel Station Entries	None recorded.	None recorded.
Gas Pipelines	None recorded.	None recorded.
Underground Electrical Cables	None recorded.	None recorded.

The environmental database includes trade directory entries for the Singleton Birch quarry and some businesses within the Humberside Airport to the southeast. There are no fuel stations, pipelines or cables within 250 m of the Site.

4.5 Sensitive Land Use

Feature	On Site	Within 500 m
Ancient Woodland	None recorded.	None recorded.
Areas of Outstanding Natural Beauty or National Parks	None recorded.	None recorded.
Nature Reserves	None recorded.	None recorded.
Ramsar Sites	None recorded.	None recorded.
Sites of Special Scientific Interest (SSSI)	None recorded.	None recorded.
Listed Buildings	None recorded.	None recorded.
Scheduled Monuments	None recorded.	None recorded within 500 m, but scheduled monuments for a Roman settlement [550 m E] and Iron Age/Roman fort [880 m N].

There are no sensitive land uses within 500 m of the Site.

There are two scheduled monuments relating to a Roman settlement and iron Age/Roman fort, which the Site is located between the two locations. Any potential archaeological evidence at the Site will have been removed during quarrying activities, so is not a consideration for the Site.

4.6 Unexploded Ordnance

The Zetica Unexploded Ordnance (UXO) risk maps[3] were consulted for the local area.

Humberside Airport is located to the southeast of the Site. Whilst it does not appear on the historical maps, an internet search suggests it opened as an RAF base in 1941, and therefore is a potential historical target. The historical maps indicate the quarry was being excavated during this period.

The risk maps shows five other former RAF sites within 10 km of the Site, including airfields and decoy sites.

The wider area is assigned a low-risk rating. Further advice on UXO risk for the Site should be sought as required, particularly in relation to piled foundations.

[3] Zetica Risk Maps https://zeticauxo.com/guidance/risk-maps/ Accessed 16th January 2025

5 SITE WALKOVER

5.1 Methodology

A site walkover was completed by Geosyntec representative Dan Maher on the 9th of January, escorted. A photographic log of the site walkover is provided in **Appendix A**.

As part of the site walkover, Geosyntec looked for evidence of hazardous substances used, stored or discarded, and inspected the Site for areas of disturbed or discoloured soil, equipment and/or building materials which may contain hazardous substances, areas of distressed vegetation, wastewater discharge areas, storage tanks, waste management areas, lagoons, pits, sumps, surface water management areas, and stained surfaces.

5.2 Overview of Site Operations

The site is currently largely vacant, featuring broken, unpaved ground across the entire extent. This is due to recent backfill operations on the former quarry. This activity was not ongoing at the time of operation, but evidence of this activity was present in the presence of a site cabin (Plate 2) and a weigh bridge (Plate 3). There are areas of lower topography to the north (Plate 4), southwest (Plate 5) and west (Plate 6) of the site where filling operations have not yet been completed. There is also a slight change drop in site level between the eastern and western halves of the site. There are several steep, soil embankments along the norther edge of the site, leading to a railway line. These appear to have been the product of excavations rather than depositions, given the evidence of excavator marks on the face of the embankment (Plate 7). The boundaries of the site are vegetated, with mature trees along the southern boundary of the site, which is adjacent to a road.

5.3 Materials Storage and Handling

It is not apparent from the site visit what is the source of the material deposited on site. There are no stockpiles of material present. There is evidence of anthropogenic wastes such as plastic in the material deposited on site (Plate 8). There is evidence of leachate collection on the site, with 2no leachate wells (Plate 9 & Plate 10) observed. There were also 10no monitoring wells present across the western portion of the site (Plate 11), though it was unclear whether these were for monitoring gas or groundwater. A groundwater monitoring installation was encountered on the southern boundary of the site (Plate 12). There was some ponding of water noted around the base of a number of the monitoring wells (Plate 13), though this was frozen at the time of the village so it was not possible to determine whether a sheen or any discolouration was present in the water.

5.4 Olfactory Contamination

There was no indication of olfactory contamination observed during the site visit.

5.5 Hazardous Substances

5.5.1 Asbestos

There are no permanent buildings present on Site. No evidence of asbestos containing materials was observed during the walkover.

5.5.2 Poly-Chlorinated Biphenols (PCBs)

There were no substations observed to be present on or near to the Site.

6 CONCEPTUAL SITE MODEL

The Conceptual Site Model (CSM) has been assessed using the Source-Pathway-Receptor model and considers potential exposure pathways to sensitive receptors under the proposed end use as a hydrogen power plant.

Details on the Site construction have not been supplied. Based on the presence of the waste body at the Site, a worst-case assumption that piled foundations would be used have been considered as part of this CSM.

6.1 Potential Sources

Following the review of available information, the following potential sources of contamination have been identified for the Site:

Potential Source	Location	Potential Contamination
Melton Ross Landfill	On-Site	Made Ground: heavy metals, hydrocarbons, PAHs, asbestos, sulphur, nitrogen and pesticides (mecoprop).
		Landfill gas: CH_4, CO_2, H_2S and CO.
Campwood Landfill	240 m N	Made Ground: heavy metals, hydrocarbons, PAHs, sulphur, titanium oxide.
Humberside Airport	80 m SE	Petroleum hydrocarbons, PFAS.

The landfill on Site is the primary potential source of contamination. Monitoring records and available reports have shown that the waste buried at the Site may not have conformed to the inert classification, and thus general made ground contamination could be present. A single fragment of asbestos was identified during previous investigation, which whilst low-level and sporadic, cannot be ruled out as being more widely distributed in other parts of the landfill body. Monitoring results have shown exceedances of permit monitoring criteria, such as mecoprop and ammoniacal nitrogen.

The landfill is also unlined, uncapped and does not have a landfill gas control system. Landfill gas monitoring has shown elevated levels of methane and carbon dioxide. Monitoring has typically been targeted towards permit closure and not risk to human health in proposed redevelopment of the Site.

The Campwood Landfill is located cross-gradient of the Site. It is understood this landfill is newer, but information on landfill lining and other control measures are not available. The landfill may impact upon the Site, in addition to the existing landfill at the Site. If information on the engineering design of the Campwood Landfill can be supplied, it may be possible to eliminate this as a potential source.

Humberside Airport is located to the southeast of Site, and previously operated as an RAF base. Airports are known to be potential sources of Per-and-polyfluoroalkyl substances (PFAS) from firefighting foams.

No assessment in regards to PFAS contamination has been made in the available information at the Site. As the airport is cross-gradient hydraulically, potential PFAS contamination, in addition to potential hydrocarbon contamination, may migrate in the direction of the Site.

6.2 Potential Pathways

The following potential pathways have been identified for the Site:

- Groundwater migration: From the SLR reports, groundwater at the Site is estimated to travel towards the northeast.
- Landfill gas migration: From the SLR reports, elevated methane and carbon dioxide have been detected at the Site. Flow rates were recorded as low (-0.1 to -0.3 l/h). The landfill has not been subjected to any capping or landfill gas, so landfill gas is expected to be able to migrate at the Site.
- Direct contact: Currently there is no cap at the landfill, and full details of the recent land raising exercise are not available to Geosyntec. Therefore, it must be assumed that Site users could come into direct contact with contaminated soils.
- Inhalation of asbestos fibres: Currently there is no cap at the landfill, and full details of the recent land raising exercise are not available to Geosyntec. Therefore, it must be assumed that Site users could be exposed to respirable asbestos fibres if disturbing soil at the Site.

6.3 Potential Receptors

The following potential receptors have been identified for the Site:

- Future Site Users.
- Groundwater in the Principal Aquifers below the Site (Welton Chalk and Ferriby Chalk).
- Drinking water source (Source Protection Zone III)

The above considers the end use of the proposed development and impact on surrounding land uses and underlying controlled waters.

6.4 Potentially Complete Pollutant Linkages

Of the above identified potential Sources, Pathways and Receptors, the following Potentially Complete Pollutant Linkages (PCPL) have been identified:

1. **PCPL 1:** Contamination from Made Ground within the landfill migrating through groundwater and impacting upon the Principal Aquifer and SPZ III drinking water source.
2. **PCPL 2:** Landfill gas generation at the Site migrating into building spaces and impacting upon future site users.
3. **PCPL 3:** Future site users coming into direct contact with Made Ground at the Site.
4. **PCPL 4:** Future site users inhaling asbestos fibres within Made Ground at the Site.
5. **PCPL 5:** Potential PFAS and hydrocarbon contamination migrating through groundwater from Humberside Airport.

7 QUALITATIVE RISK ASSESSMENT

A qualitative risk assessment or risk evaluation has been undertaken in line with UK Land Contamination Risk Guidance (LCRM) guidance. In this assessment, a consequence of the risk being realised and the probability of the risk occurring are assigned. These are then combined together to provide a risk classification for each potential pollutant linkage. This qualitative risk assessment process is detailed in **Appendix C** and the qualitative risk assessment for the Site is presented in the tables below. Risks from off-site sources to off-site receptors have not been assessed.

Pollutant Linkage Reference	Source	Pathway	Receptor	Consequence	Probability	Risk
PCPL 1	Made Ground	Groundwater	Principal Aquifer and SPZ III	Medium – The contaminants have potential to impact upon a nearby drinking water source, and caused damage to the Principal Aquifer.	Likely – The available monitoring information showed a decrease in levels over time, but exceedances of permit monitoring parameters.	Moderate
PCPL 2	Landfill Gas	Ground gas migration	Future Site Users	Medium - This could result in suffocation or explosion once buildings are constructed at the Site.	Likely - Elevated levels of landfill gases have already been detected at the Site.	Moderate
PCPL 3	Made Ground – general contamination	Direct Contact	Future Site Users	Medium – Potential exposure to contaminants within the landfill could cause "Significant harm" to human health.	Low – The final development is unlikely to include areas of soil exposing the landfill waste body.	Moderate / Low
PCPL 4	Made Ground - Asbestos	Inhalation	Future Site Users	Medium – Potential exposure to asbestos within the Made Ground could cause "Significant harm" to human health.	Low – The final development is unlikely to include areas of soil exposing the landfill waste body, but future disturbance of soil e.g. during future redevelopment, may result in exposure in future.	Moderate / Low
PCPL 5	Humberside Airport – PFAS and Hydrocarbons	Groundwater migration	Future Site Users and groundwater.	Medium – Exposure to PFAS or hydrocarbons could cause significant harm to human health or impact upon the water quality beneath the Site.	Low – The airport is located cross-gradient of Site so may result in migration of contaminants onto the Site, and has not been completely eliminated as a pathway.	Moderate / Low

8 CONCLUSIONS AND RECOMMENDATIONS

Geosyntec on behalf of Centrica Energy Storage conducted a Phase 1 Desk Study of the Site at Melton Ross Quarries, Lincolnshire. From the observations made during the Site inspection and document review, there are some potential issues relating to land contamination at the Site which would require further investigation.

8.1 Quarrying and Landfill

The Site operated as a chalk quarry as part of the neighbouring Chalk Hill (later Singleton Birch) quarry and lime works. Later the quarry was used as a landfill. The exact date of operation commencing is unknown, but the Site was shown in the 1994 map as *Refuse Tip* and supplied environmental permits for a landfill date to 1981. It is understood that the landfill operated prior to permitting and engineering requirements, and as a result has not been lined, does not contain leachate or landfill gas management systems and was not capped.

There are a number of data gaps identified based upon the review of available information about the Site. These include:

1. Data Gap 1: In the previous investigation completed by DJM, only one soil sample was collected per location in shallow material at the waste body. This gives limited information of the waste body and restricts detailed characterisation of the material.
2. Data Gap 2: Details of the land raising exercise completed have not been provided, other than a copy of the permit for the works. It is unknown whether contaminated materials were removed as part of this exercise or whether re-engineering of the existing waste body was completed. A copy of the specification for the works and any validation reports following completion would be requested for review, to ensure the works completed are suitable for the proposed end use and protection of human health and the environment.
3. Data Gap 3: Ongoing monitoring of groundwater and ground gas are required as part of the former landfill environmental permit. Partial records of the monitoring data up to 2017 are available within reports found on the planning portal and the supplied EA site audit reports. Confirmation of the ongoing monitoring requirements of the permit is required, including confirmation of responsible parties after redevelopment. Copies of recent monitoring data are also requested for independent review to further characterise groundwater conditions beneath the Site and confirm if natural attenuation is underway in the landfill.
4. Data Gap 4: Previous monitoring of landfill gas has been conducted at the Site. Of the reports reviewed by Geosyntec, the majority of these were targeted towards closure of the landfill permit and not risk assessing the impact of landfill gas on the proposed development. No monitoring data has been made available of the ground gas regime at the Site following the completion of the land raising exercise. The installation of new ground gas monitoring wells post-land raising is recommended to further assess the risk of landfill gas on the proposed development under the new ground conditions.

The Conceptual Site Model has shown that there is a risk to future site users from five potentially complete pollutant linkages including:

6. **PCPL 1:** Contamination from Made Ground within the landfill migrating through groundwater and impacting upon the Principal Aquifer and SPZ III drinking water source.
7. **PCPL 2:** Landfill gas generation at the Site migrating into building spaces and impacting upon future site users.
8. **PCPL 3:** Future site users coming into direct contact with Made Ground at the Site.
9. **PCPL 4:** Future site users inhaling asbestos fibres within Made Ground at the Site.
10. **PCPL 5:** Potential PFAS and hydrocarbon contamination migrating through groundwater from Humberside Airport.

Further investigation is recommended at the Site, including;

- Additional ground gas monitoring which would be representative of post-land raising ground conditions. Proposed new monitoring wells should target building footprints of the proposed development;
- Groundwater monitoring, focussing on a broader spectrum of analytical testing in relation to human health and risk to controlled waters. Proposed new monitoring wells should target the development area, and if appropriate monitoring location down-gradient of the waste body;
- Soil sample analysis, focussing on a broader spectrum of analytical testing in relation to human health, including asbestos screening samples to further characterise potential asbestos contamination of the waste;
- Waste classification testing for waste soil arisings during construction.

8.2 Other Considerations

The desk study has identified the following other considerations, which fall outside of the scope of contaminated land:

8.2.1 Geotechnical Suitability

Information on the engineering of the recent land raising exercise has not been supplied. It is assumed the original landfill waste body has not been compacted to an engineering standard at the time of backfill. Geotechnical information has not been supplied as part of this desk study review.

Due to the nature of the Site, it is assumed that piled foundations may be required as part of the proposed development.

As further site investigation is recommended, the investigation can also be utilised to collect information on the geotechnical properties of the material beneath the Site, such as Standard Penetration Tests (SPT) and the collection of samples for geotechnical laboratory testing. This information can then be used to aid civil engineering design of the proposed development.

8.2.2 Flooding

The Envirocheck report marks three areas within the Site (to the east, west and centre) as being susceptible to a 1 in 30-year flooding event. The flooding risk area appears to focus on a topographic low, and may be based on older topographic information for the Site. Further advice on flooding risk assessment should be sought as required.

8.2.3 UXO

The neighbouring Humberside Airport operated as a military base during World War II and may have been a target of historical bombing. Public records indicate the Site is classified as low risk, but further advice on UXO risk assessment should be sought as required, particularly for piled foundations.

8.2.4 Sulphate Attack on Concrete

Elevated sulphur has been detected in groundwater at the Site. No information has been provided as to whether an assessment on sulphate attack on concrete has been completed. If further ground investigation is completed at the Site, soil samples can be collected to aid the design of sulphate resistant concrete as required.

o0o

Geosyntec Consultants trust the information and discussion contained in this report meets all your immediate requirements. Please do not hesitate to contact the undersigned if you have any further comments or questions about any aspect of the work.

Respectfully submitted

On behalf of Geosyntec Consultants

_____

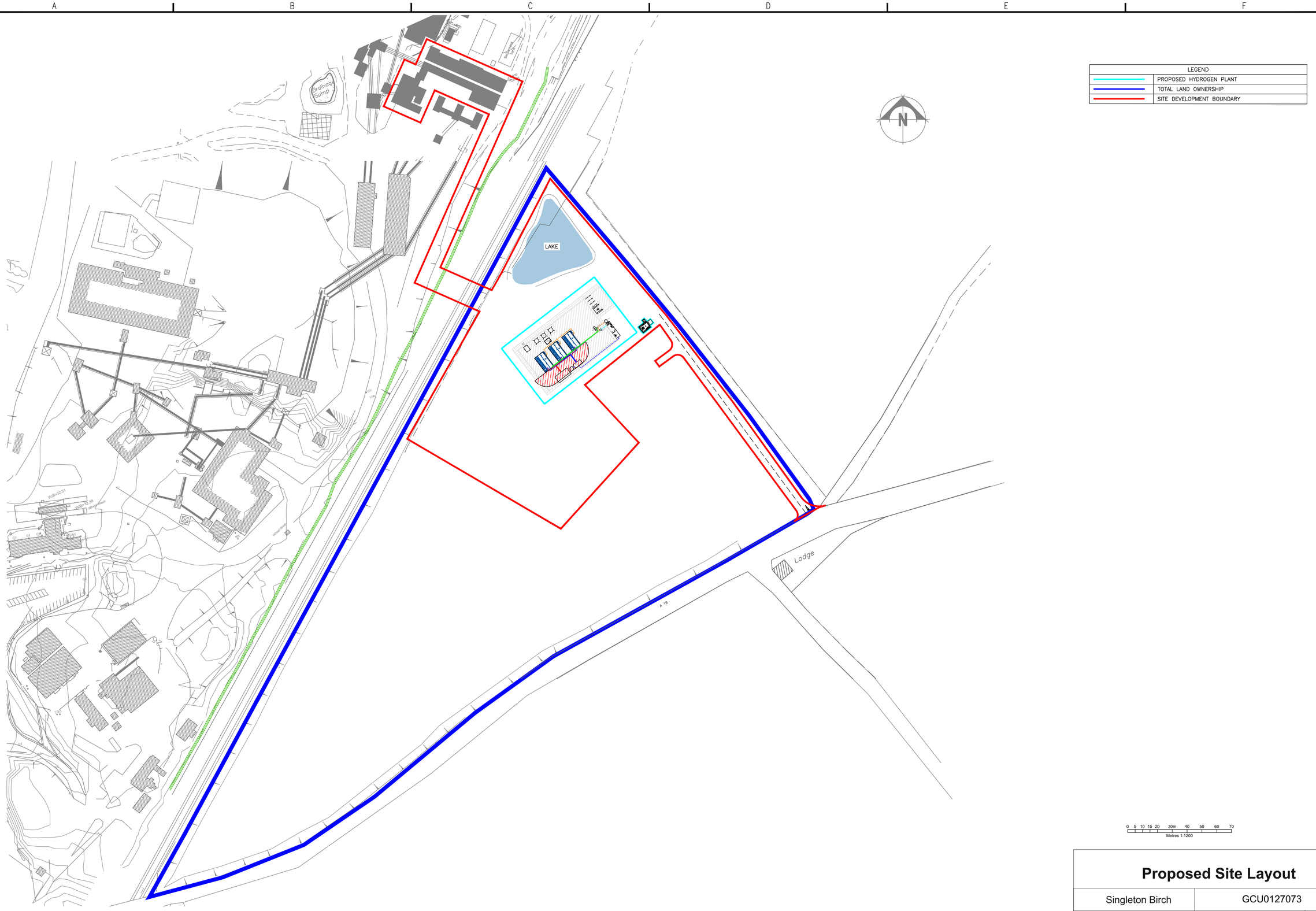
Rhian Lynes

Professional Environmental Consultant

F I G U R E S

Site Location

Singleton Birch	GCU0127073	
Geosyntec consultants	centrica energy storage+	Figure 1
Delph, UK	January 2025	



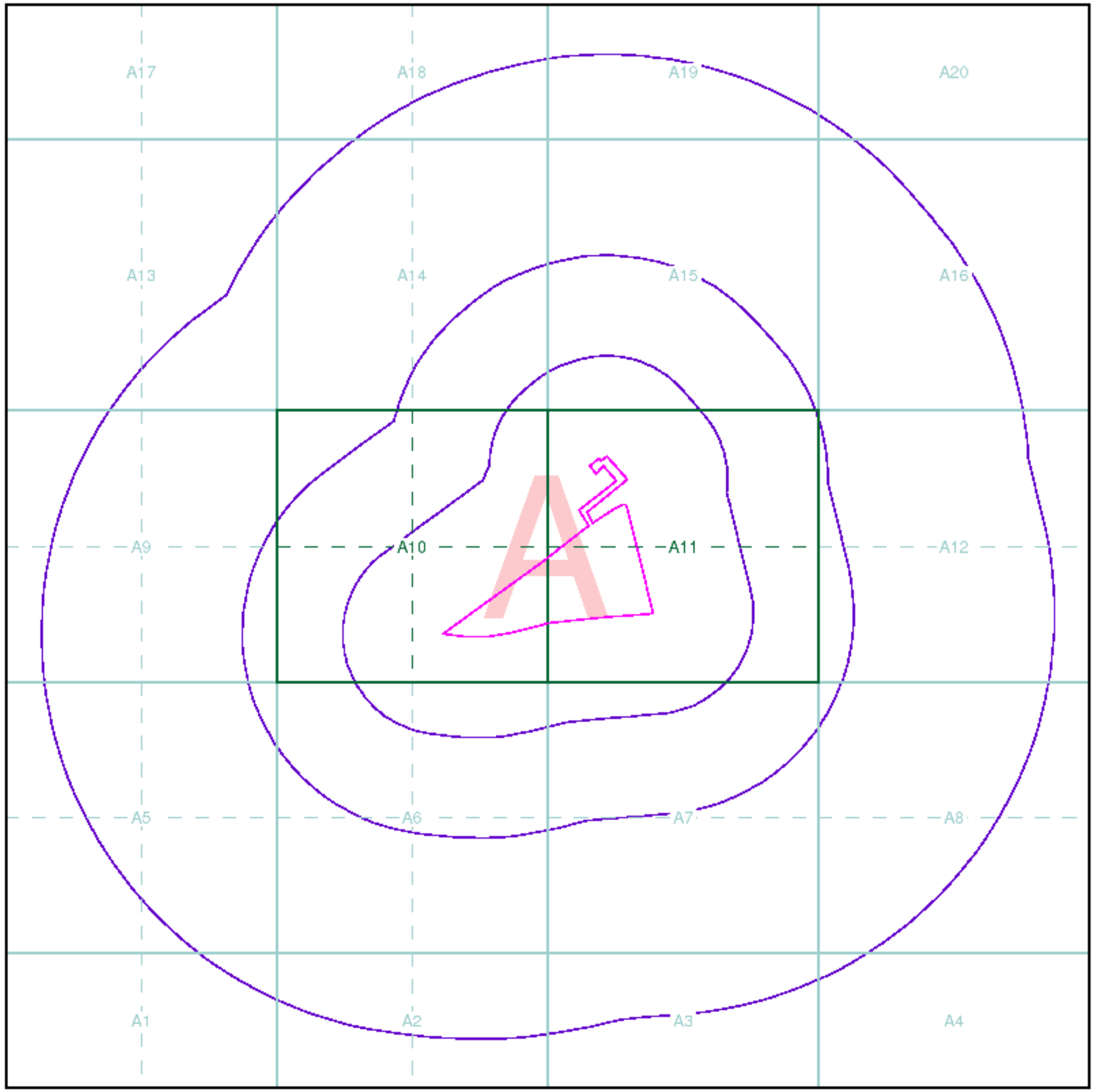
Proposed Site Layout

Singleton Birch	GCU0127073
Geosyntec consultants	centrica energy storage+
Delph, UK	January 2025

Figure **2**

APPENDIX A

APPENDIX B



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Index Map

For ease of identification, your site and buffer have been split into Slices, Segments and Quadrants. These are illustrated on the Index Map opposite and explained further below.

Slice
Each slice represents a 1:10,000 plot area (2.7km x 2.7km) for your site and buffer. A large site and buffer may be made up of several slices (represented by a red outline), that are referenced by letters of the alphabet, starting from the bottom left corner of the slice "grid". This grid does not relate to National Grid lines but is designed to give best fit over the site and buffer.

Segment
A segment represents a 1:2,500 plot area. Segments that have plot files associated with them are shown in dark green, others in light blue. These are numbered from the bottom left hand corner within each slice.

Quadrant
A quadrant is a quarter of a segment. These are labelled as NW, NE, SW, SE and are referenced in the datasheet to allow features to be quickly located on plots. Therefore a feature that has a quadrant reference of A7NW will be in Slice A, Segment 7 and the NW Quadrant.

A selection of organisations who provide data within this report:

Map data | British Geological Survey | Environment Agency | NATURAL ENGLAND

Envirocheck reports are compiled from 136 different sources of data.

Prepared For
Centrica

Client Details
Mr N Roe, Geosyntec Consultants, 1st Floor, Gatehead Business Park, Delph, Oldham, Lancashire, OL3 5DE

Order Details

Order Number:	366363277_1_1
Customer Ref:	GCU0127073
National Grid Reference:	508680, 411210
Site Area (Ha):	8.23
Search Buffer (m):	1000

Site Details
Singleton Birch Ltd, Melton Ross Quarries, BARNETBY, DN38 6AE

Full Terms and Conditions can be found on the following link:
http://www.landmarkinfo.co.uk/Terms/Show/515

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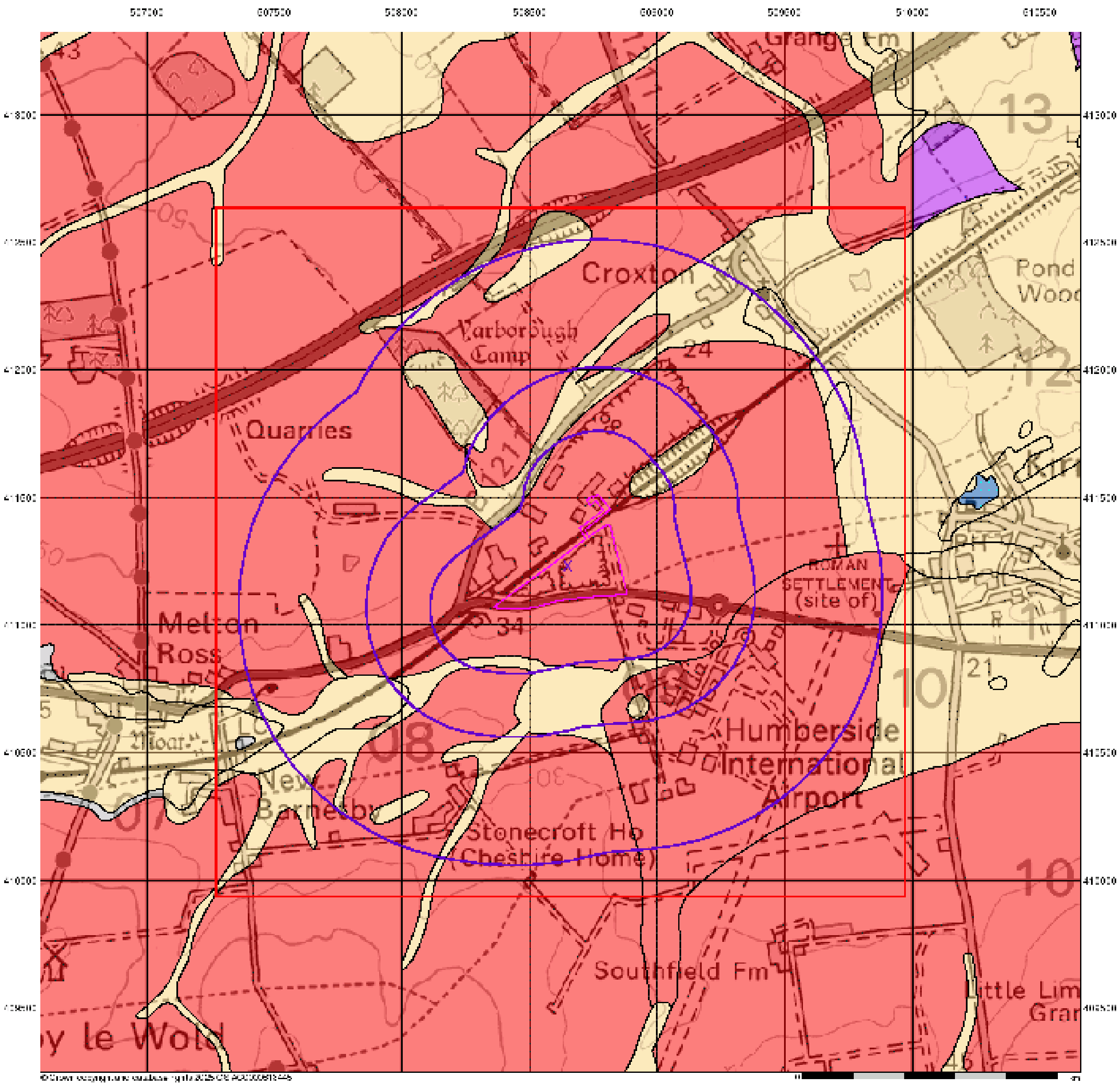

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Groundwater Vulnerability

General

Slice

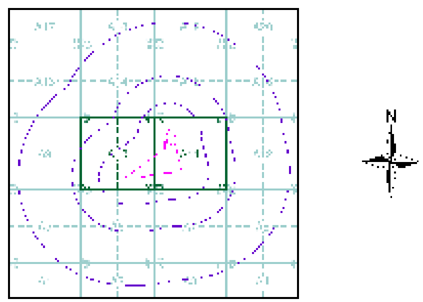
Agency and Hydrological

Bedrock Aquifers	Superficial Aquifers
High Vulnerability, Principal Aquifer	High Vulnerability, Principal Aquifer
High Vulnerability, Secondary Aquifer	High Vulnerability, Secondary Aquifer
Medium Vulnerability, Principal Aquifer	Medium Vulnerability, Principal Aquifer
Medium Vulnerability, Secondary Aquifer	Medium Vulnerability, Secondary Aquifer
Low Vulnerability, Principal Aquifer	Low Vulnerability, Principal Aquifer
Low Vulnerability, Secondary Aquifer	Low Vulnerability, Secondary Aquifer

Unproductive Aquifer

Soluble Rock

Site Sensitivity Context Map - Slice A



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National Grid Reference: 508650, 411230
Slice: A
Site Area (Ha): 8.23
Search Buffer (m): 1000

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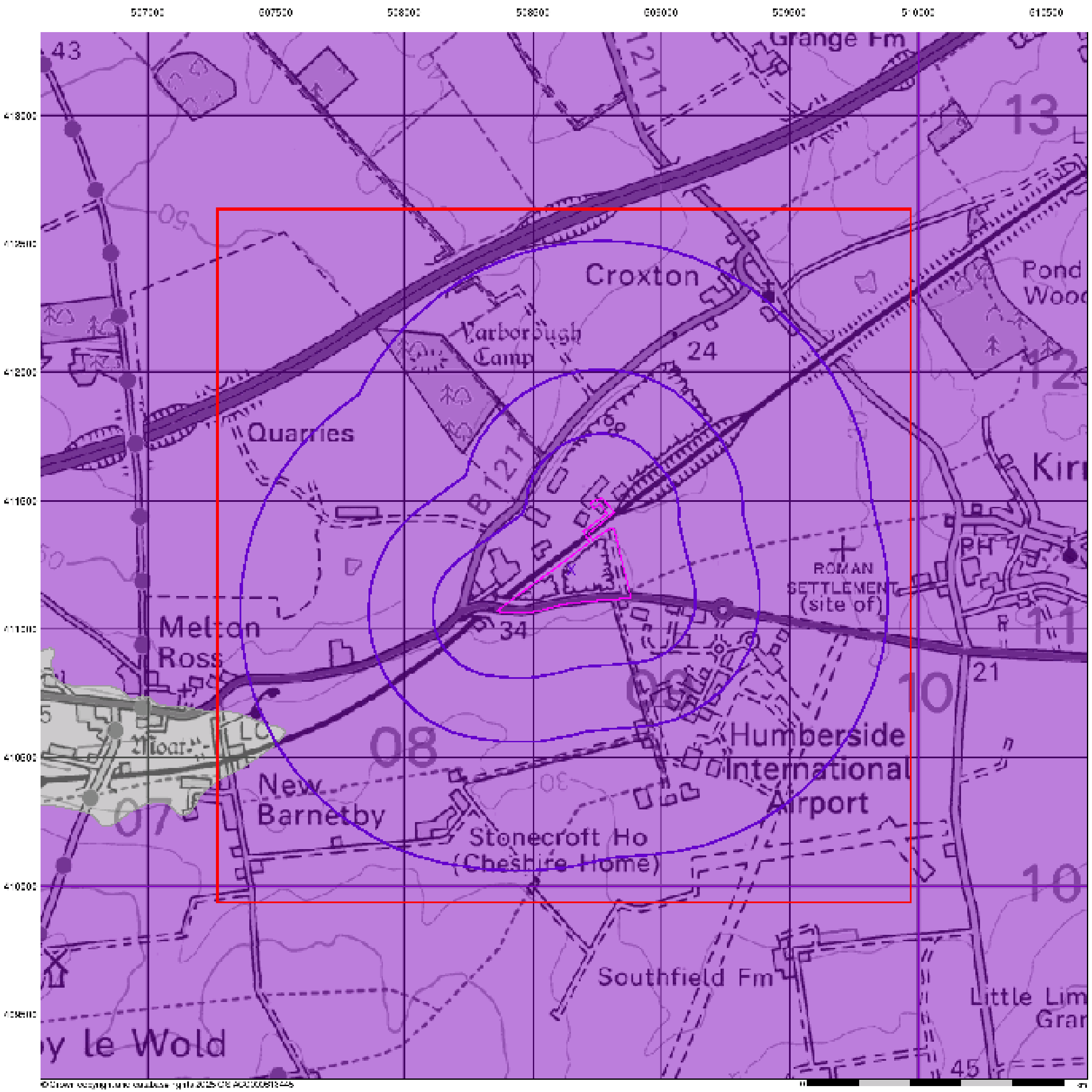

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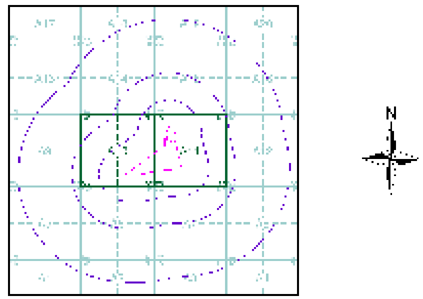
Bedrock Aquifer Designation

General

Agency and Hydrological

Geological Classes

Site Sensitivity Context Map - Slice A



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Site Details

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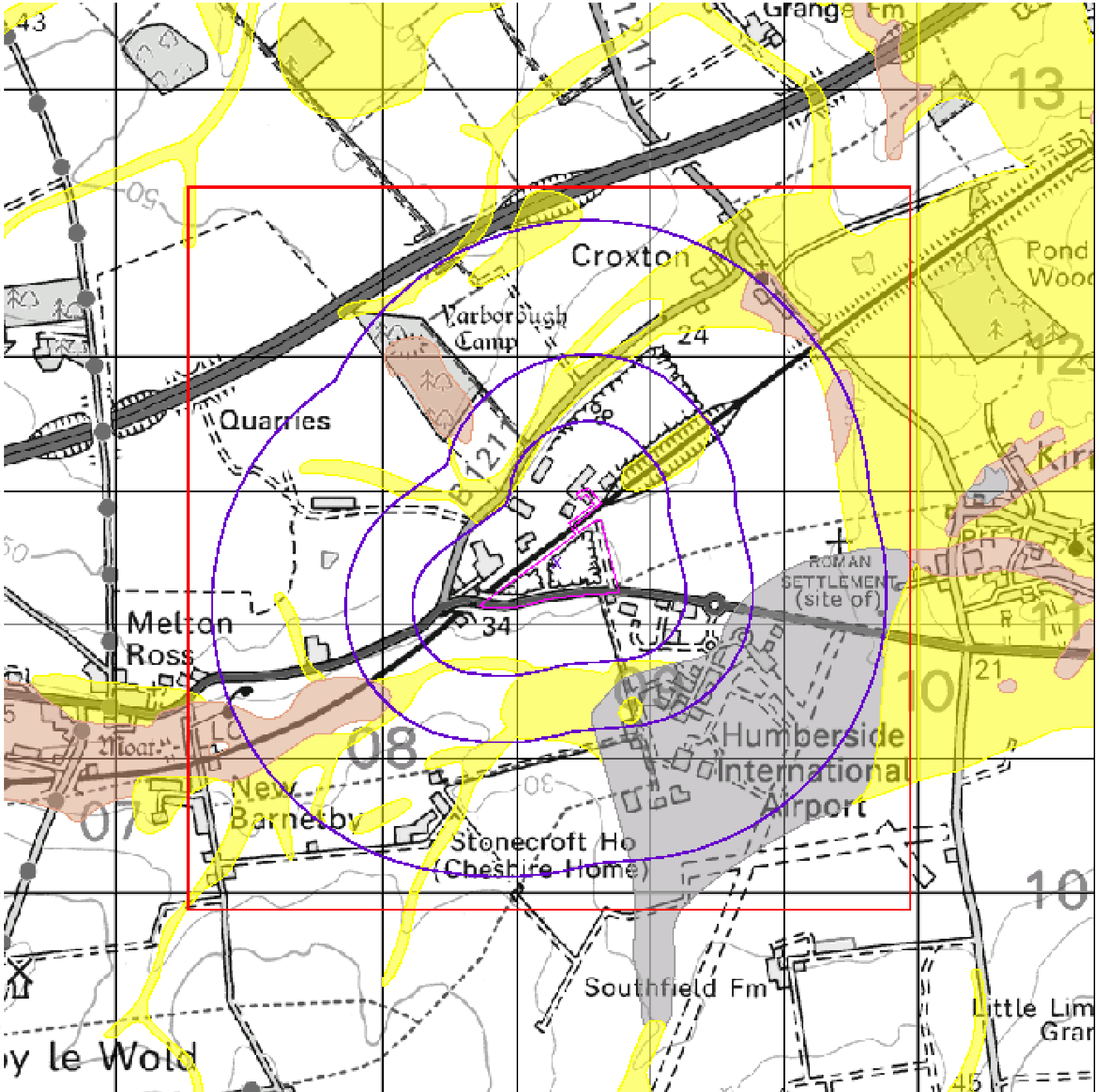

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Superficial Aquifer Designation

General

Specified Site | Specified Buffer(s) | Bearing Reference Point

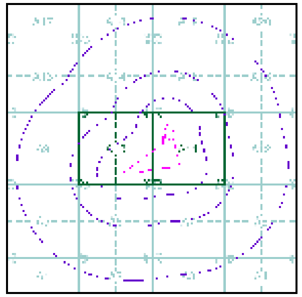
Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice A



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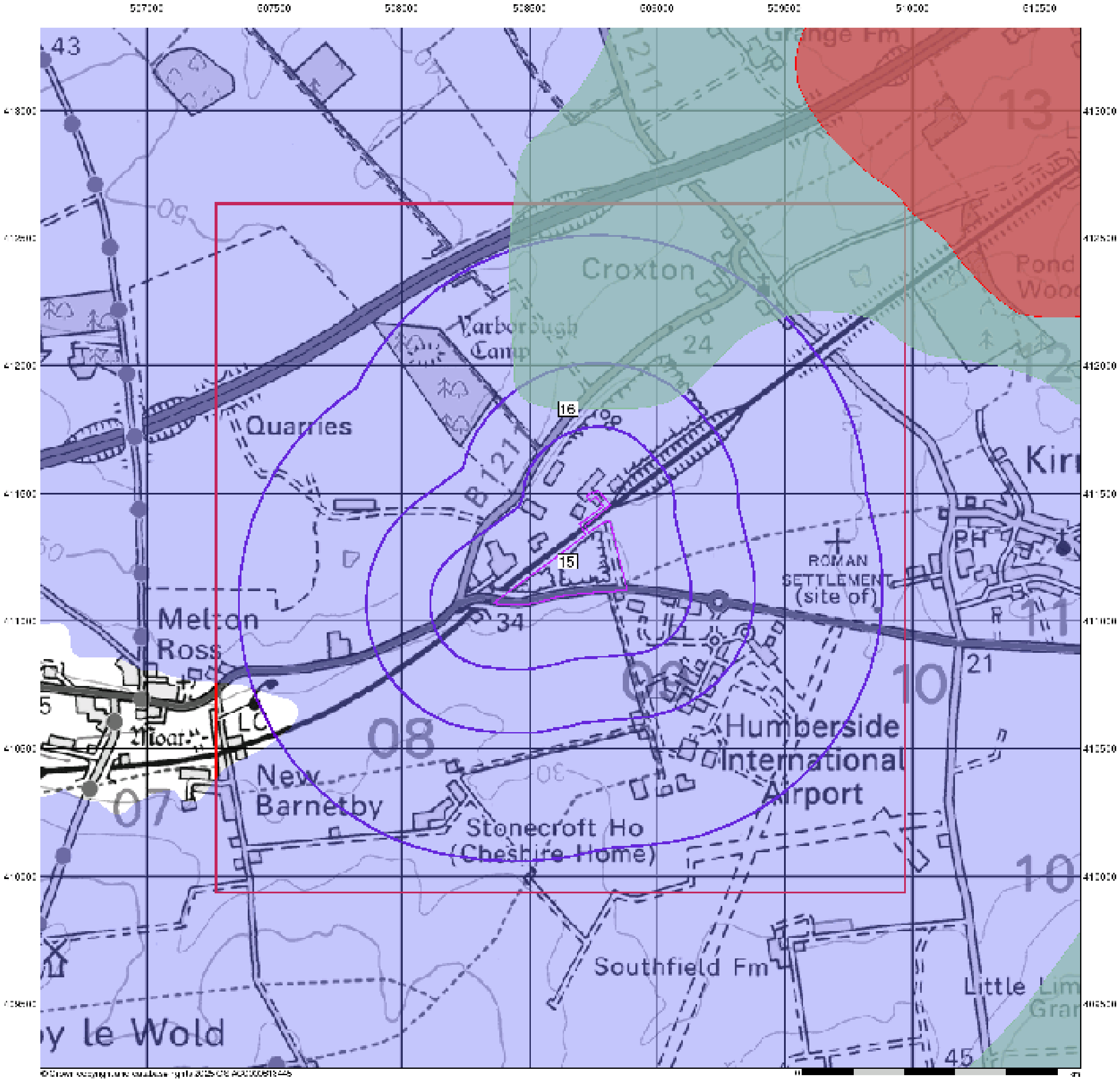

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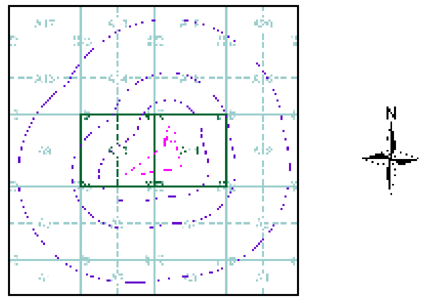
Source Protection Zones

General

Agency and Hydrological

Site Sensitivity Context Map - Slice A



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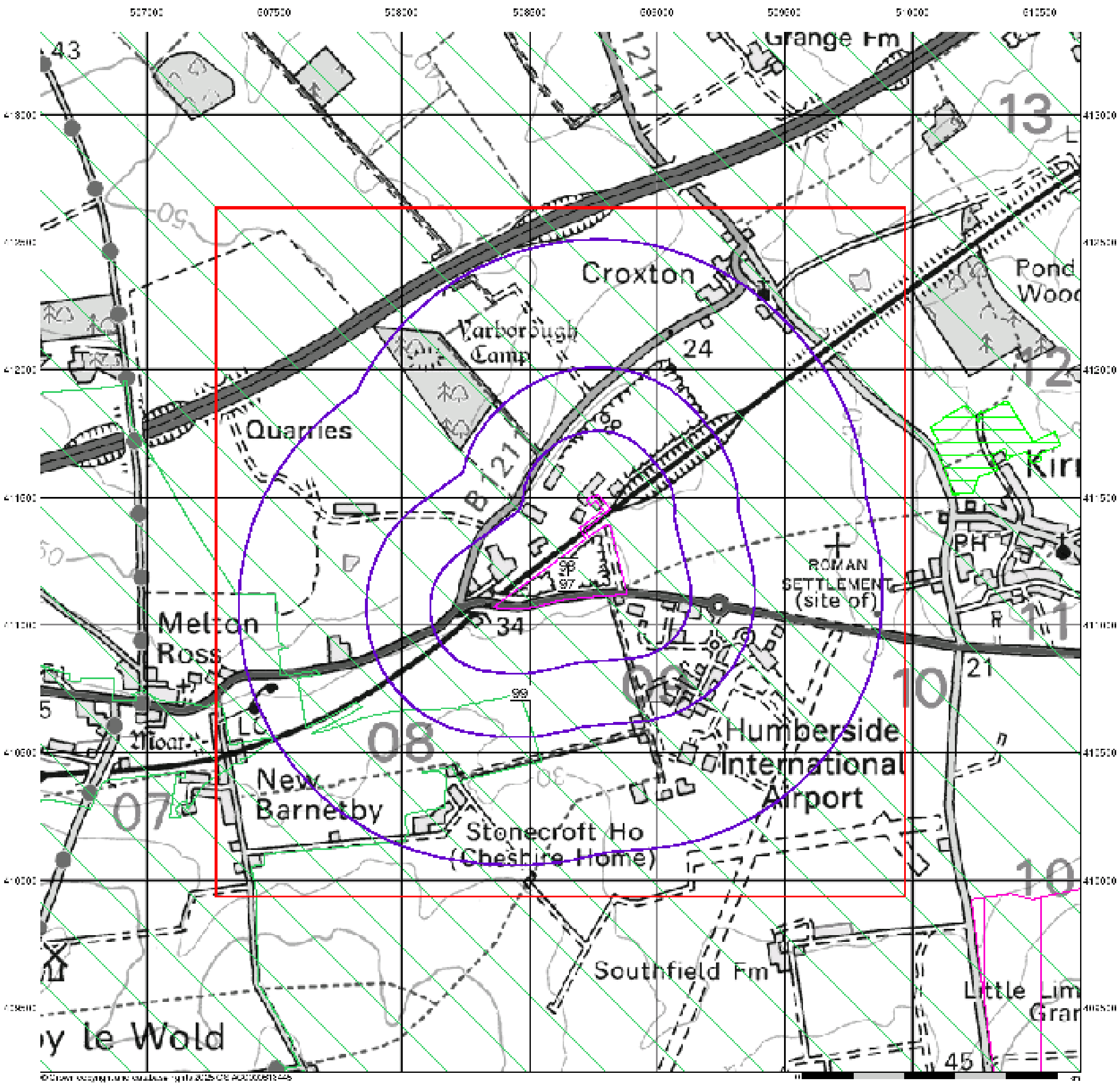

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Sensitive Land Uses

General

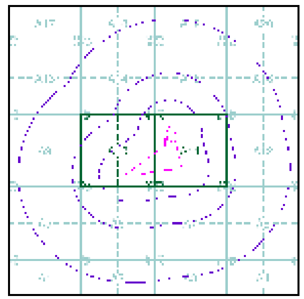
Slice

Sensitive Land Uses

Ancient Woodland

World Heritage Sites

Site Sensitivity Context Map - Slice A



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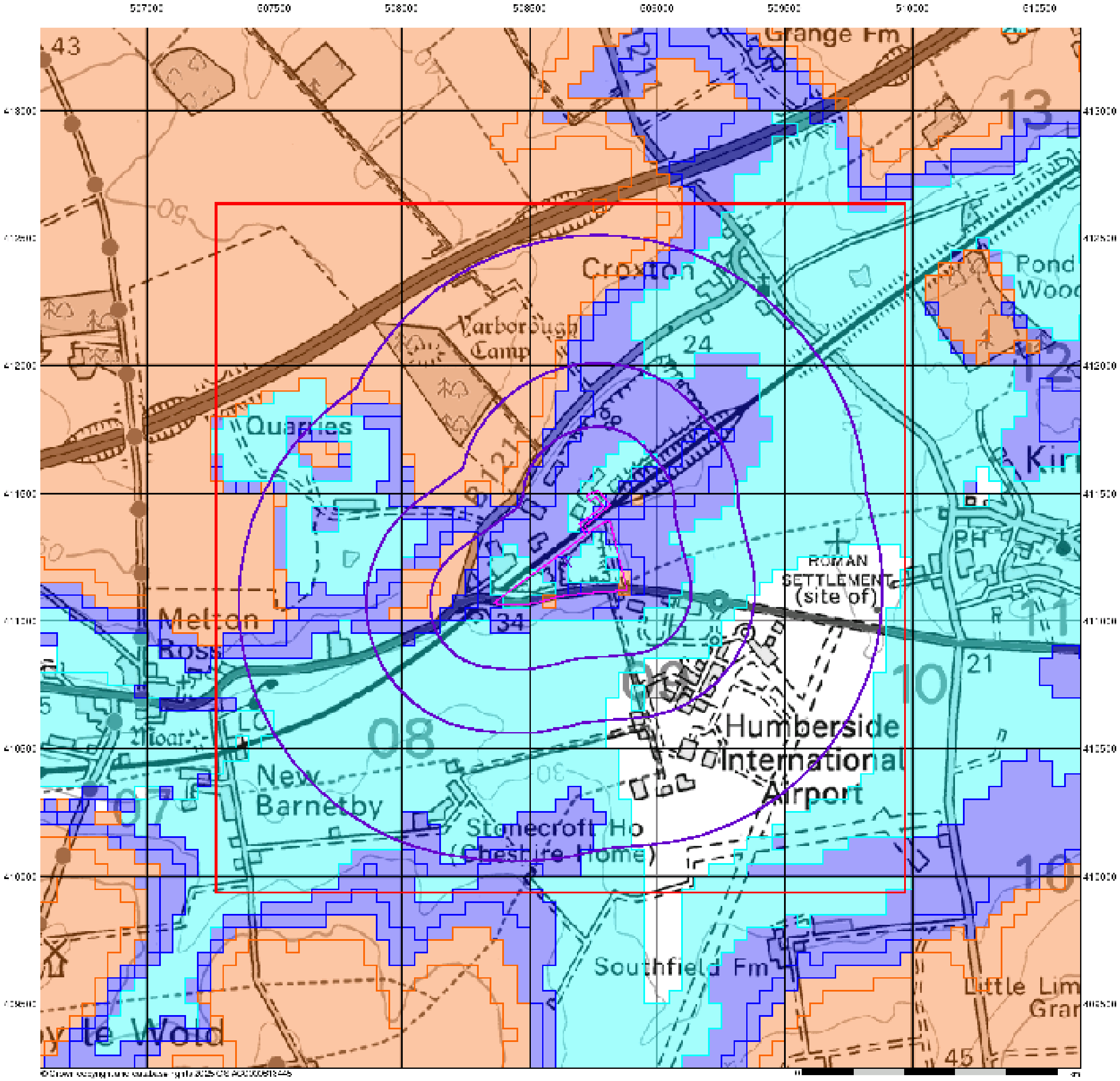

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BGS Flood GFS Data

General

Specified Site | Specified Buffer(s) | Bearing Reference Point

Slice

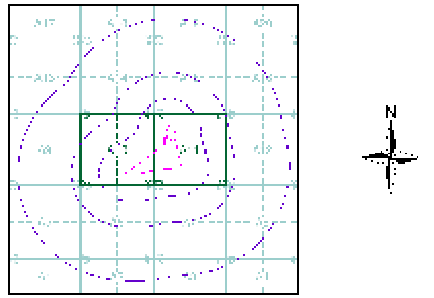
Agency and Hydrological (Flood)

Limited Potential for Groundwater Flooding to Occur

Potential for Groundwater Flooding of Property Situated Below Ground Level

Potential for Groundwater Flooding to Occur at Surface

Site Sensitivity Context Map - Slice A



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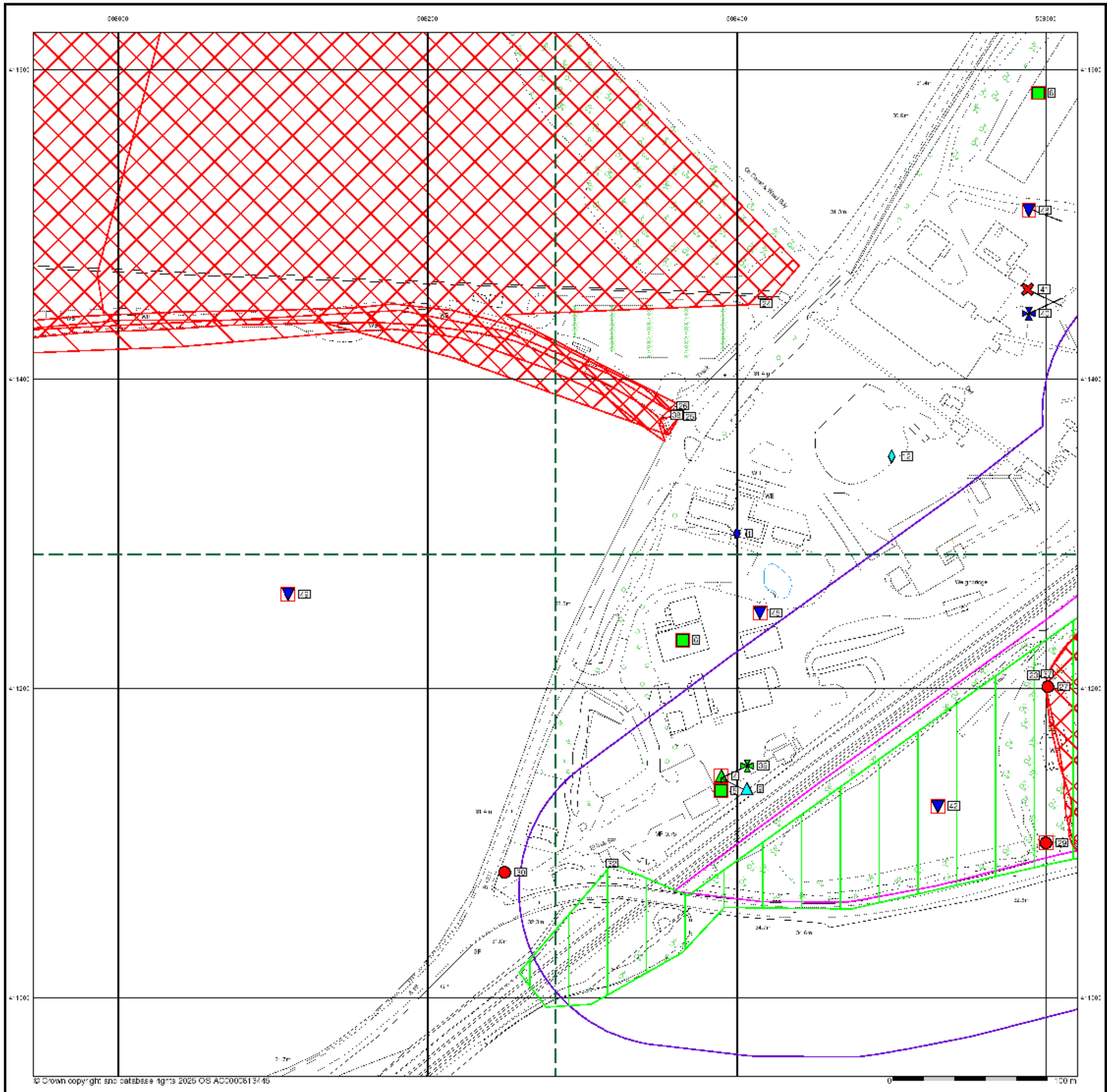

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General

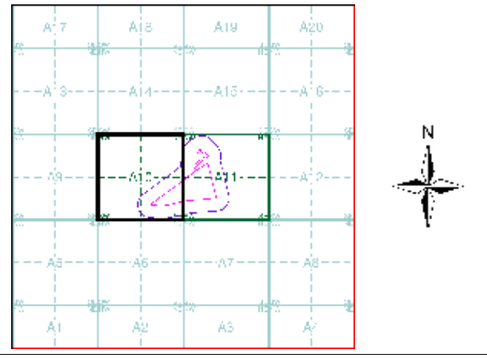
Agency and Hydrological

Waste

Hazardous Substances

Geological

Site Sensitivity Map - Segment A10



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National Grid Reference:	508650, 411230
Slice:	A
Site Area (Ha):	8.23
Plot Buffer (m):	100

Site Details

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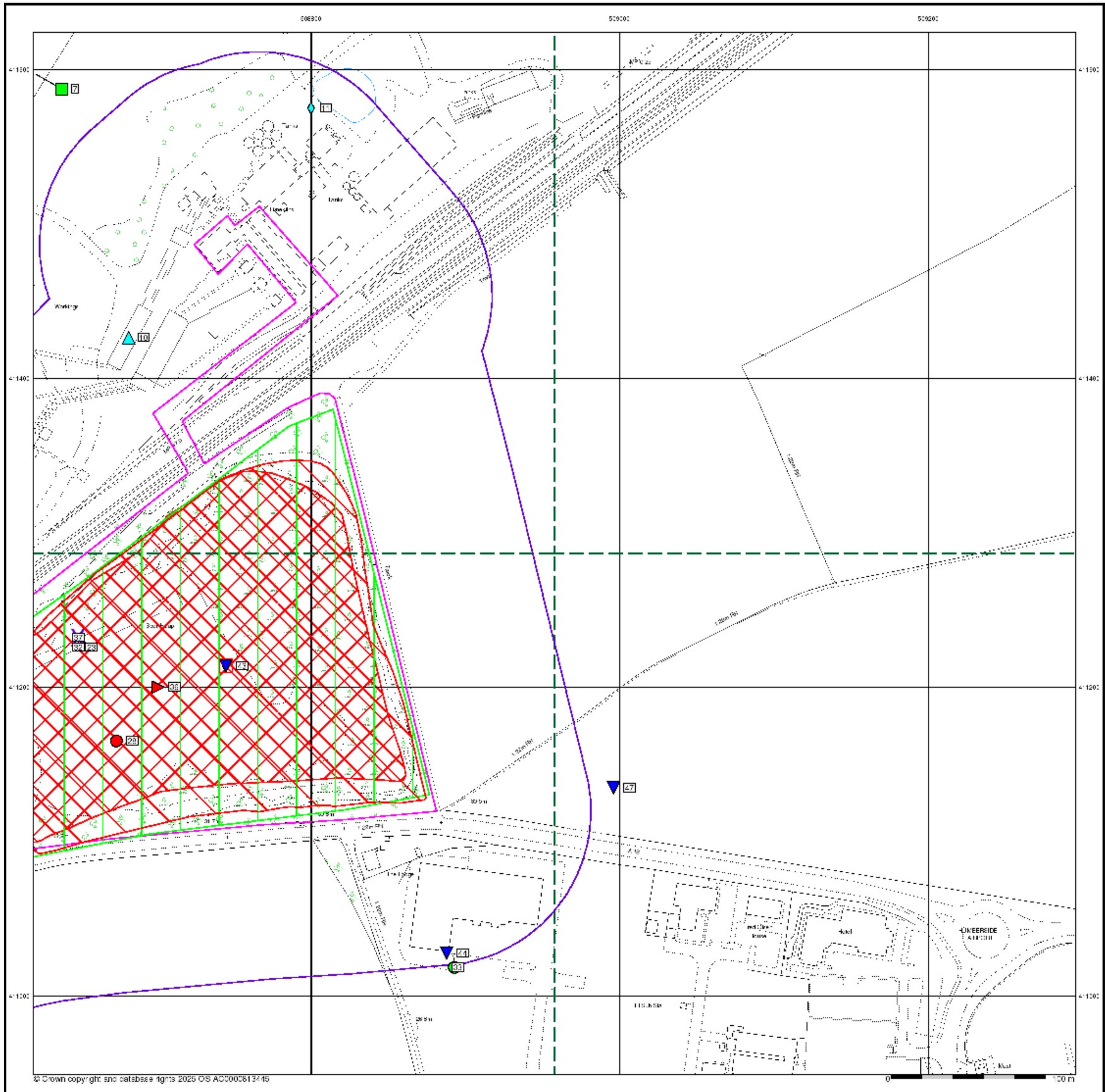

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General

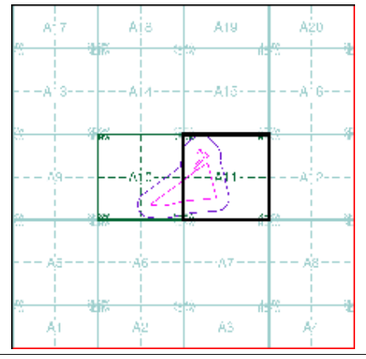
Agency and Hydrological

Waste

Hazardous Substances

Geological

Site Sensitivity Map - Segment A11



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Site Area (Ha):	8.23
Plot Buffer (m):	100

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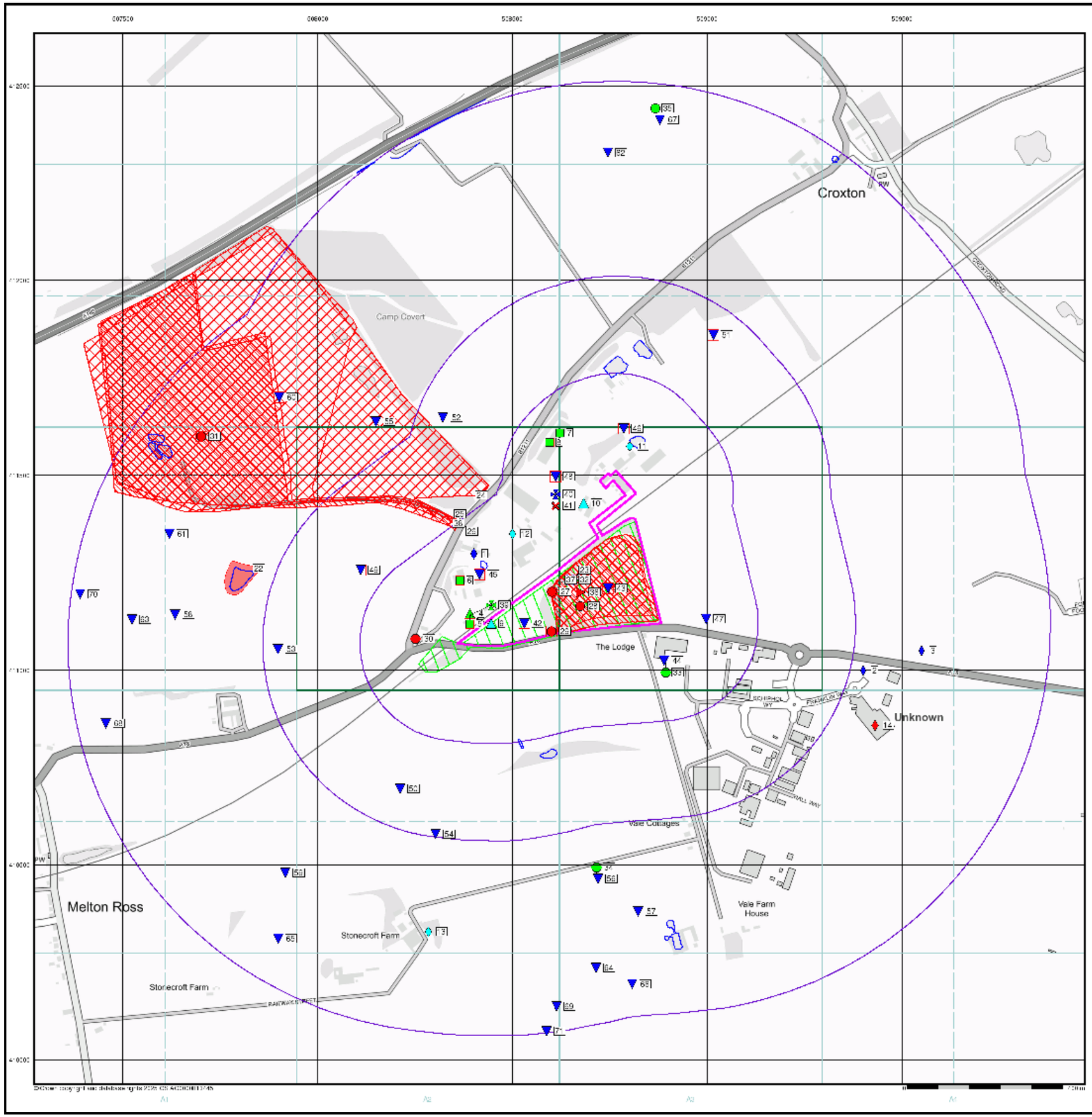

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General

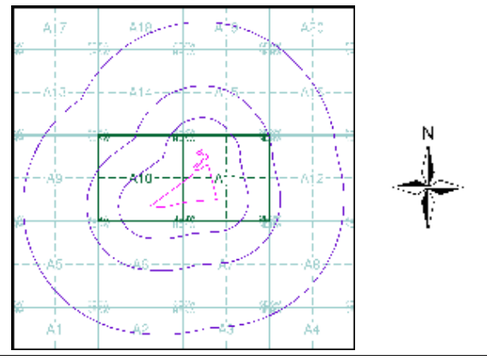
Agency and Hydrological

Waste

Hazardous Substances

Geological

Site Sensitivity Map - Slice A



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Industrial Land Use Map

General

Site Boundary | Specified Buffer(s) | Boundary Reference Point

Site | Map ID

Industrial Land Use

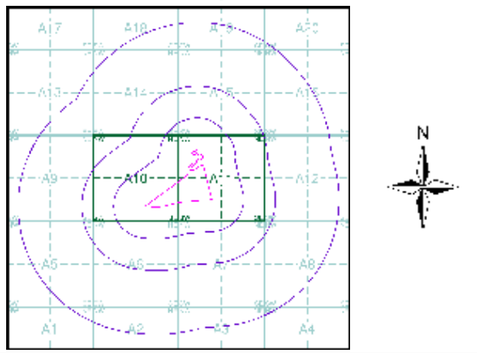
Point of Interest - Commercial Services

Point of Interest - Public Infrastructure

Point of Interest - Recreational and Environmental

Underground Electrical Cables

Industrial Land Use Map - Slice A



Order Details

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Site Details

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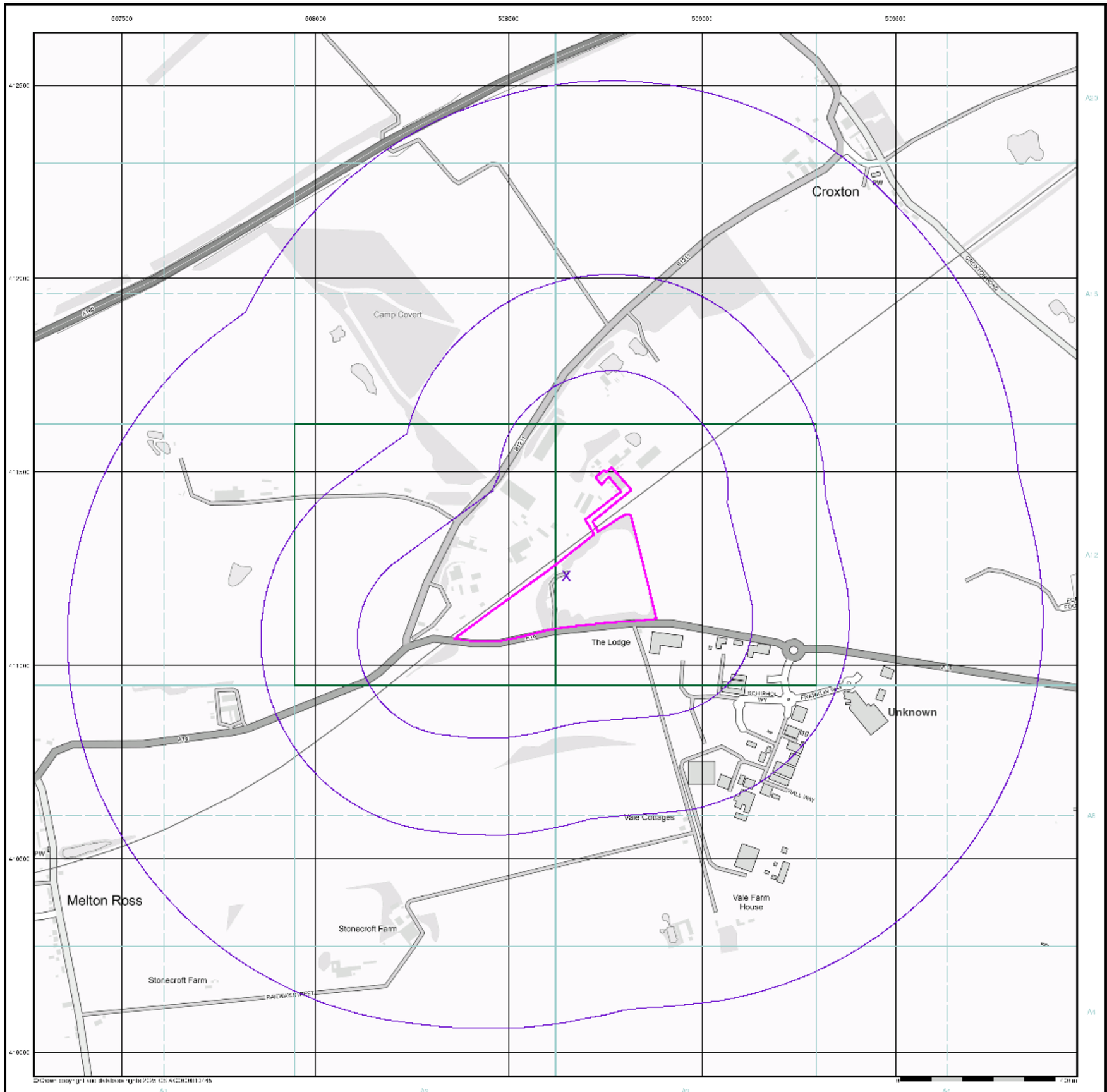

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General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

Agency and Hydrological (Flood)

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- ▨ Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Flood Map - Slice A

N

Order Details

Order Number:	366363277_1_1
Customer Ref:	GCU0127073
National Grid Reference:	508650, 411230
Slice:	A
Site Area (Ha):	8.23
Search Buffer (m):	1000

Site Details

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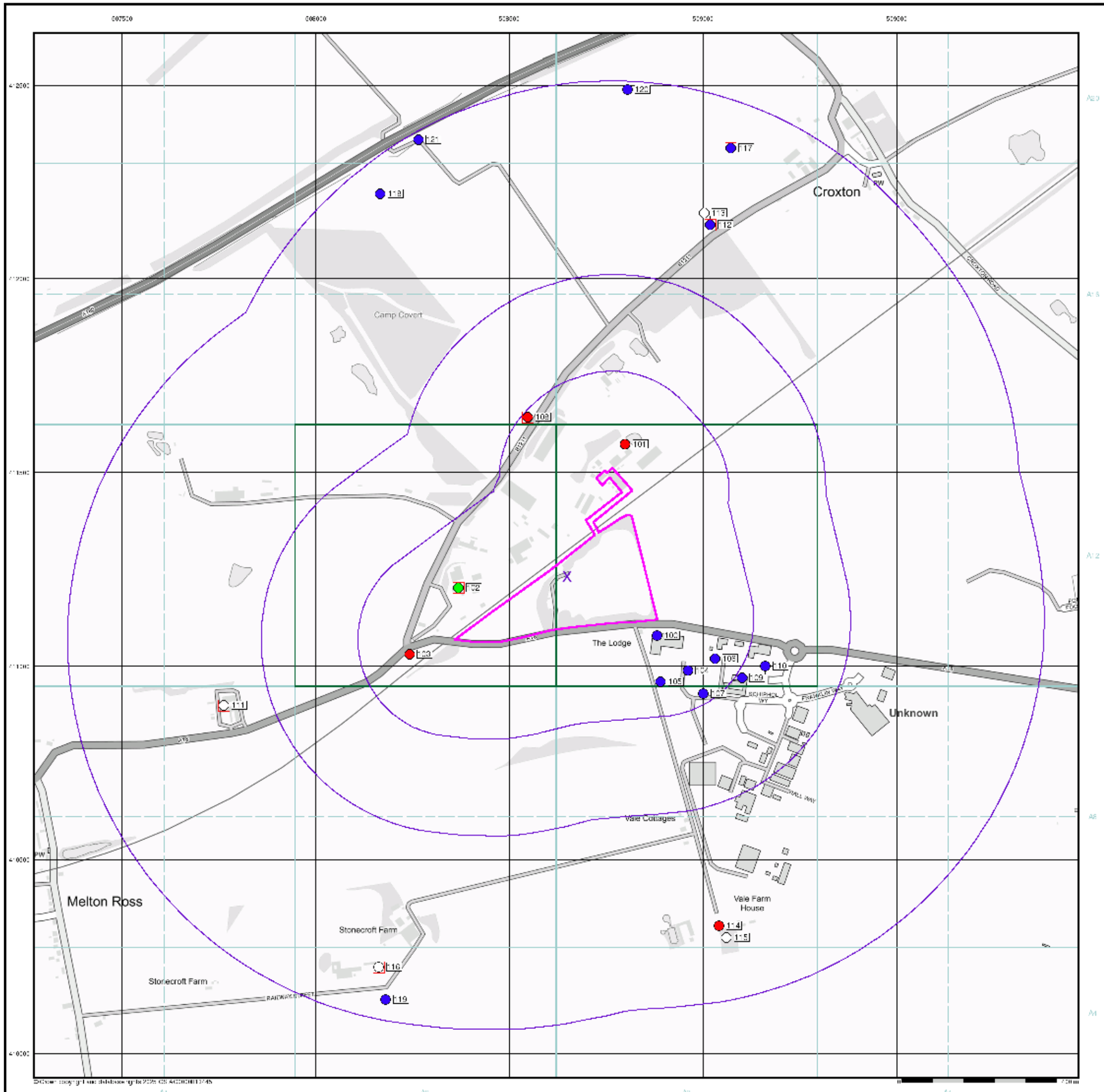

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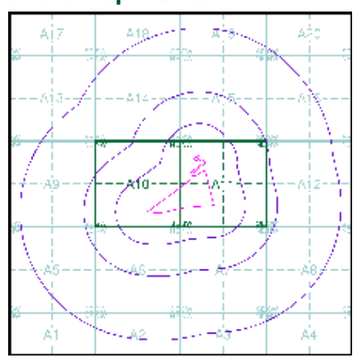
General

Agency and Hydrological (Boreholes)

For Borehole information please refer to the Borehole .csv file which accompanied this slice.

A copy of the BGS Borehole Ordering Form is available to download from the Support section of www.envirocheck.co.uk.

Borehole Map - Slice A



Order Details

Order Number:	366363277_1_1
Customer Ref:	GCU0127073
National Grid Reference:	508650, 411230
Slice:	A
Site Area (Ha):	8.23
Search Buffer (m):	1000

Site Details

Singleton Birch Ltd, Melton Ross Quarries, BARNETBY, DN38 6AE

Landmark INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

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General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

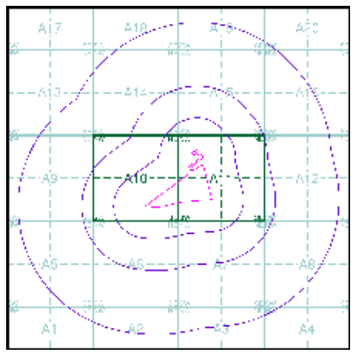
OS Water Network Data

- Canal
- Reservoir
- Foreshore
- Marsh
- Tidal River
- Inland River
- Drain
- Other
- Lake
- Transfer
- Lock Or Flight Of Locks
- Sea

Contours (height in meters)

- Standard Contour
- Master Contour
- Spot Height 167.3
- MLW Mean Low Water
- MHW Mean High Water

OS Water Network Map - Slice A



Order Details

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Site Details

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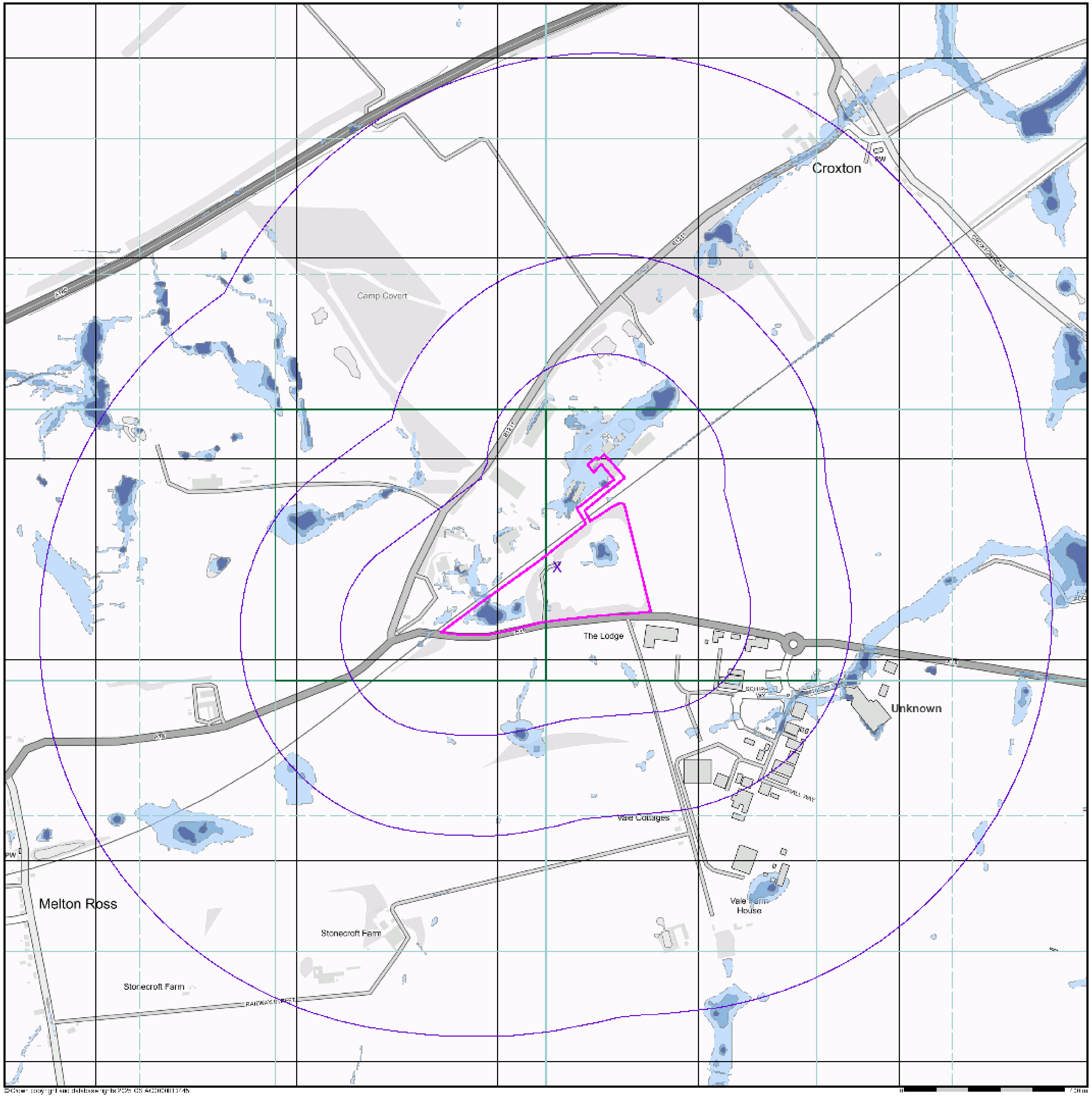

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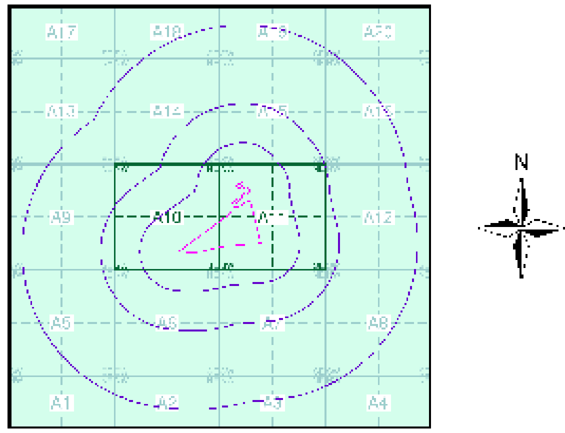
General

Risk of Flooding from Surface Water

Suitability

EA/NRW Suitability Map - Slice A



Order Details

Order Number: 366363277_1_1
Customer Ref: GCU0127073
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Site Area (Ha): 8.23
Search Buffer (m): 1000

Site Details

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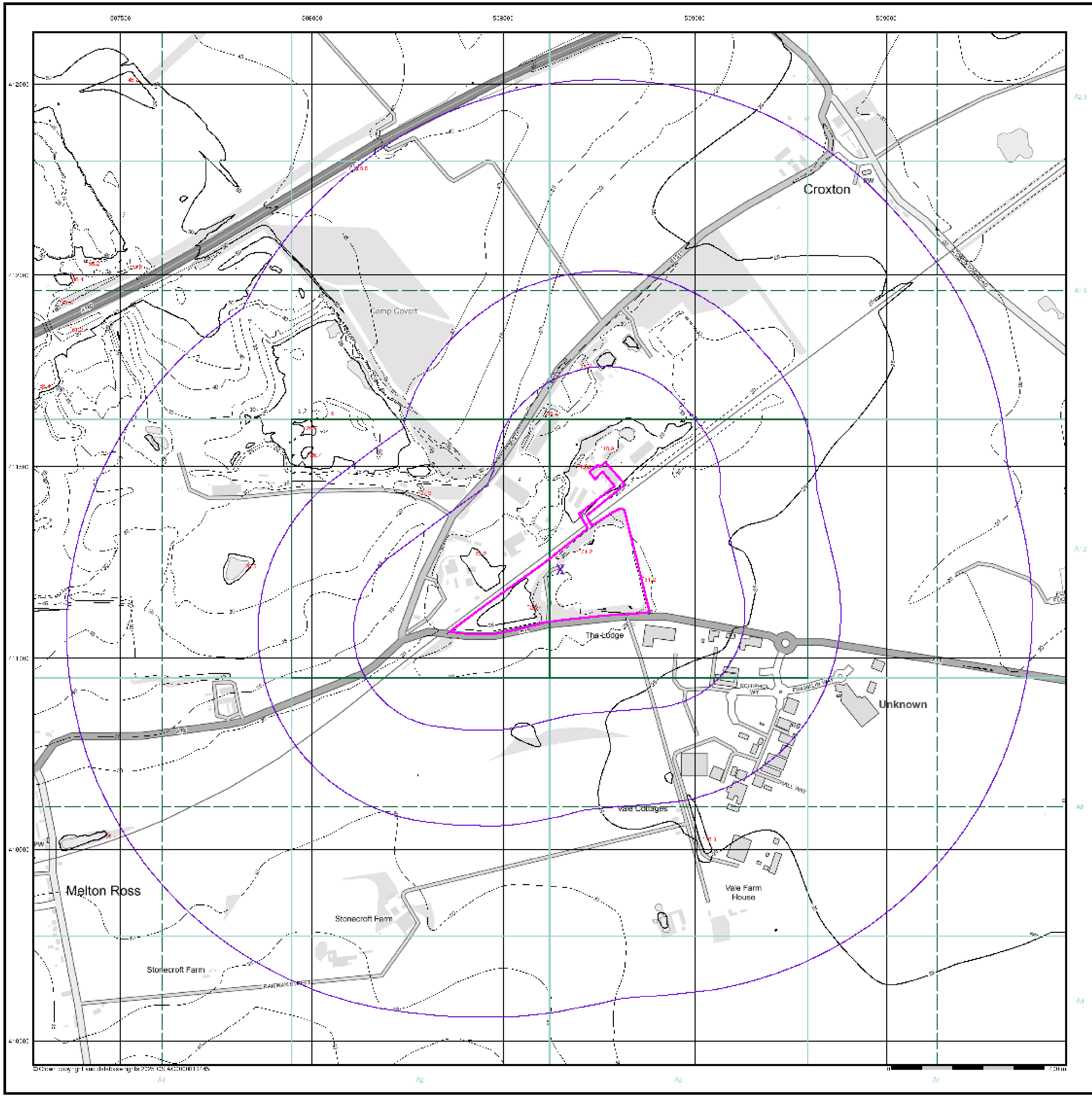
WFD Surface Waters Map



General

- Site Outline
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

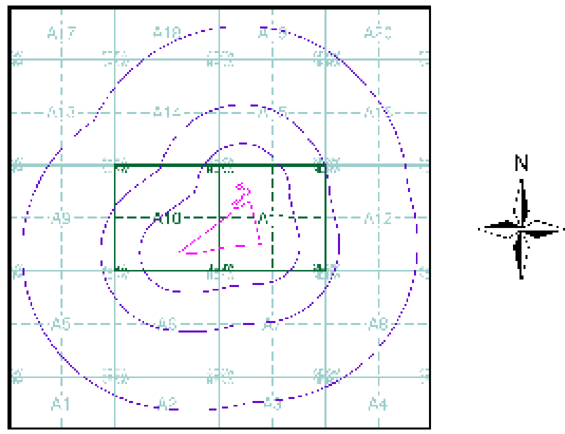
Water Framework Directive - Surface Water Quality

- High
- Good
- Moderate
- Poor
- Bad

Contours (height in meters)

- Standard Contour
- Master Contour
- Spot Height
- Mean Low Water
- Mean High Water

WFD Surface Waters Map - Slice A



Order Details

Order Number:	366363277_1_1
Customer Ref:	GCU0127073
National Grid Reference:	508650, 411230
Slice:	A
Site Area (Ha):	8.23
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Site Details

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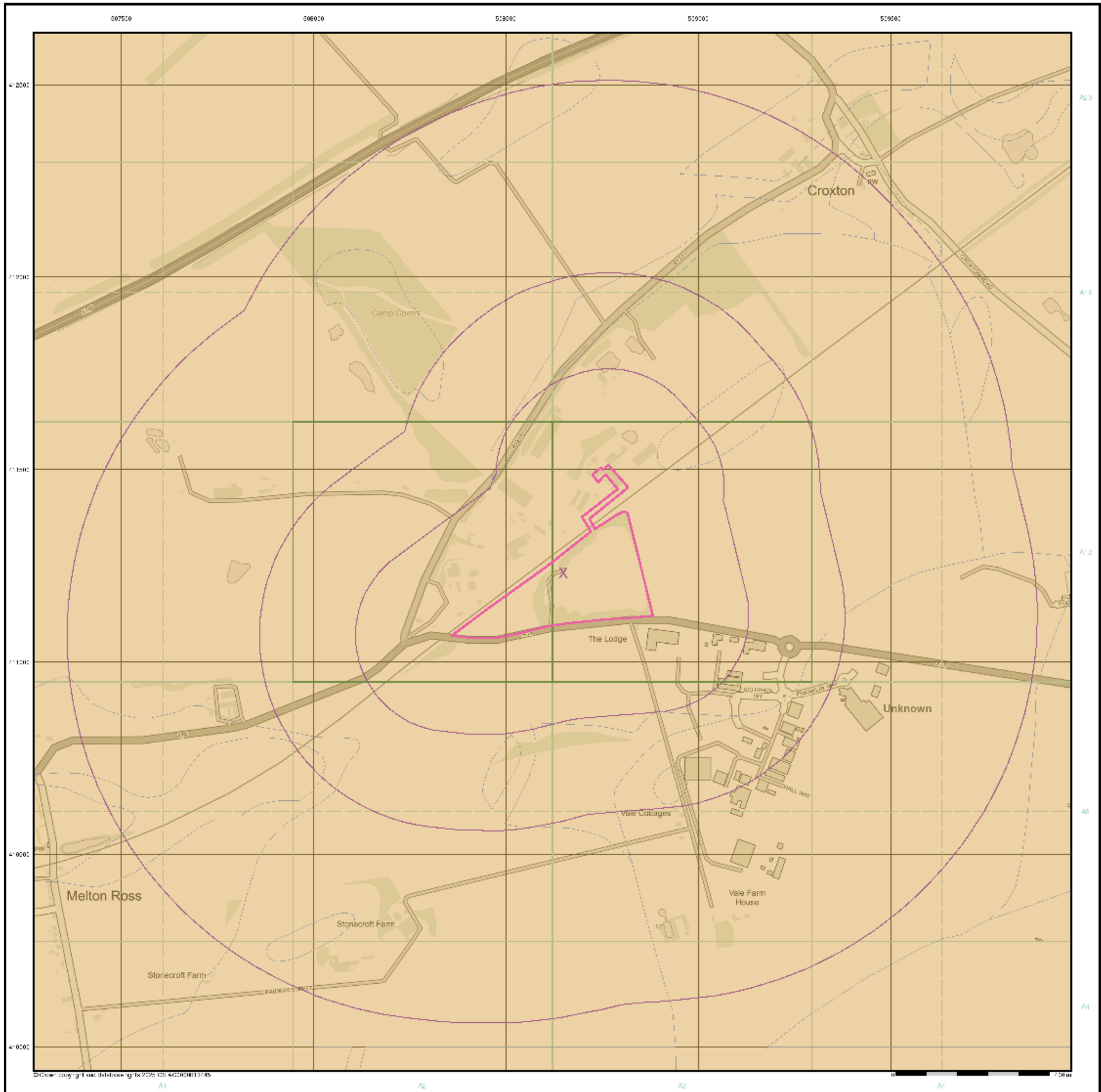

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General

Estimated Soil Chemistry Arsenic

Arsenic Concentrations mg/kg

- < 15
- 15 - 25
- 25 - 35
- 35 - 45
- 45 - 60
- 60 - 120
- > 120

Estimated Soil Chemistry Arsenic - Slice A

Order Details

Order Details:	366363277_1_1
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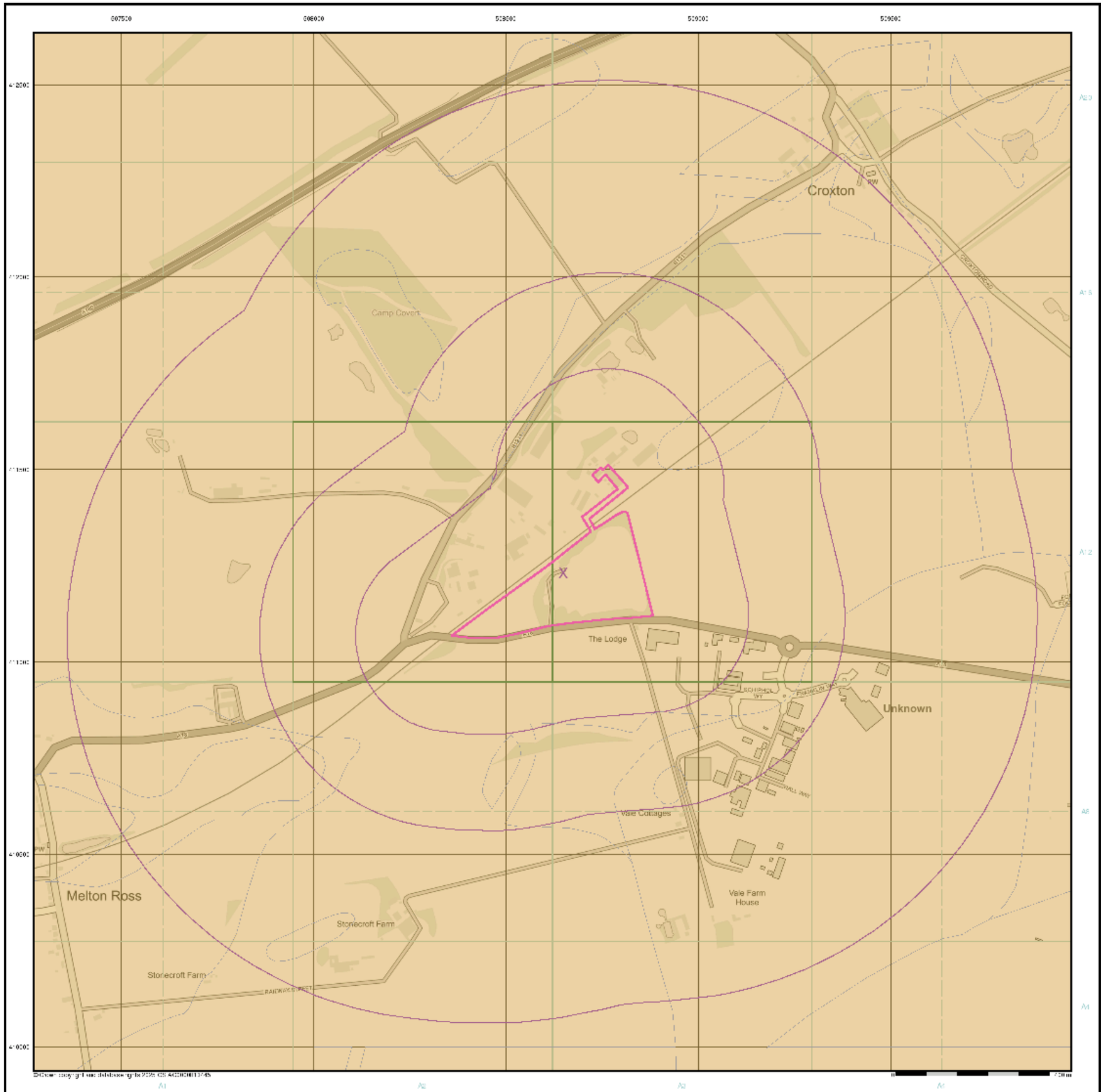

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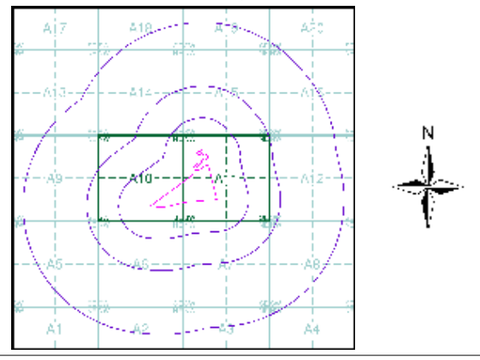
General

Estimated Soil Chemistry Cadmium

Cadmium Concentrations mg/kg

- < 1.8
- 1.8 2.2
- 2.2 3.0
- > 3.0

Estimated Soil Chemistry Cadmium - Slice A



Order Details

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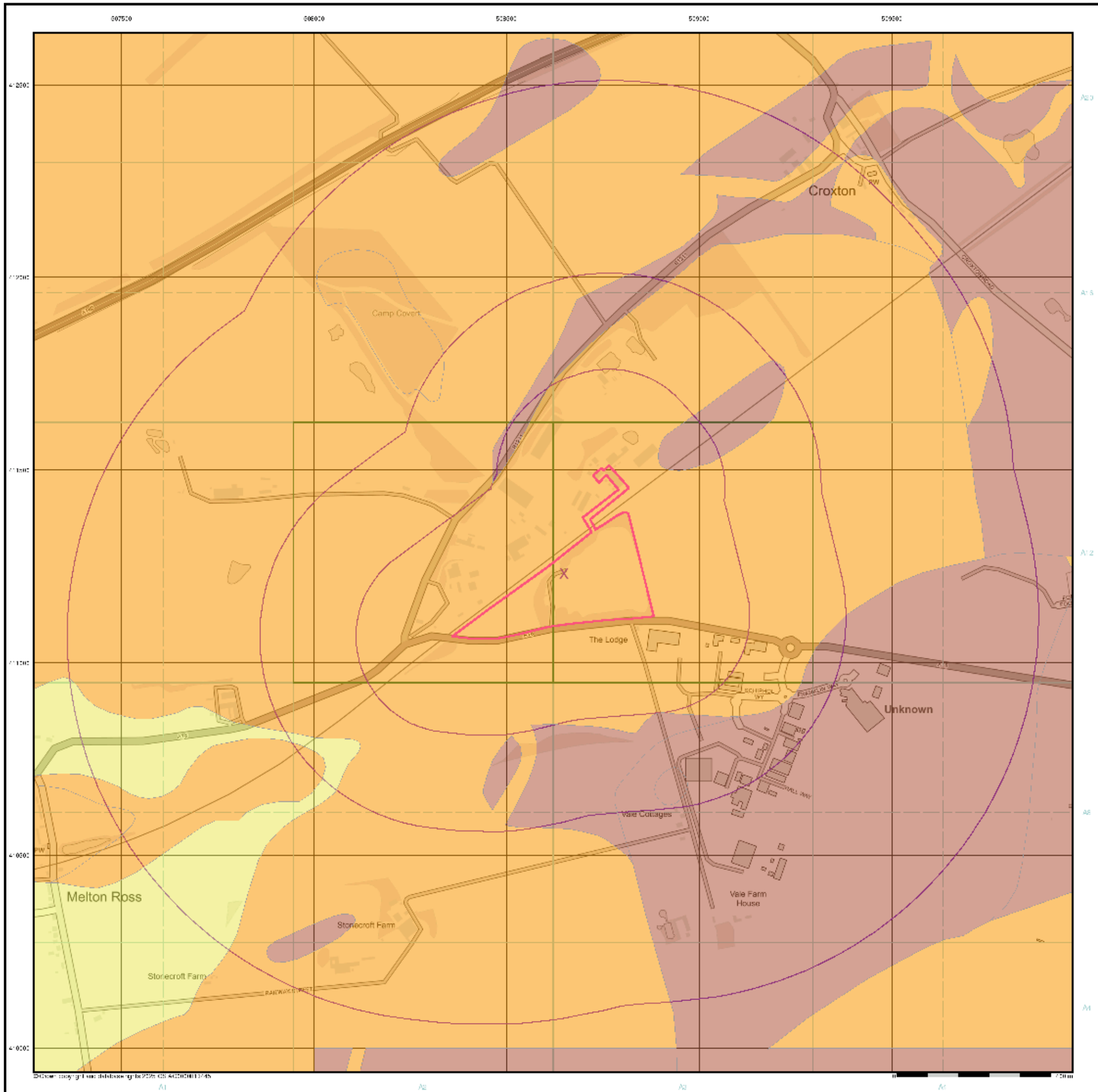

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General

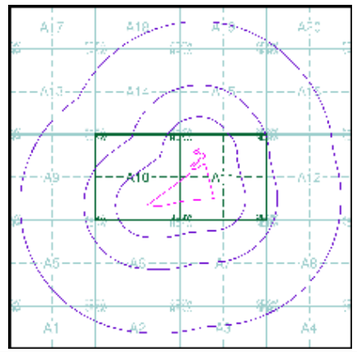
X

Estimated Soil Chemistry Chromium

Chromium Concentrations mg/kg

- < 20
- 20 - 40
- 40 - 60
- 60 - 90
- 90 - 120
- 120 - 160
- > 160

Estimated Soil Chemistry Chromium - Slice A



Order Details

Order Details:	366363277_1_1
Customer Ref:	GCU0127073
National Grid Reference:	508650, 411230
Slice:	A
Site Area (Ha):	8.23
Search Buffer (m):	1000

Site Details

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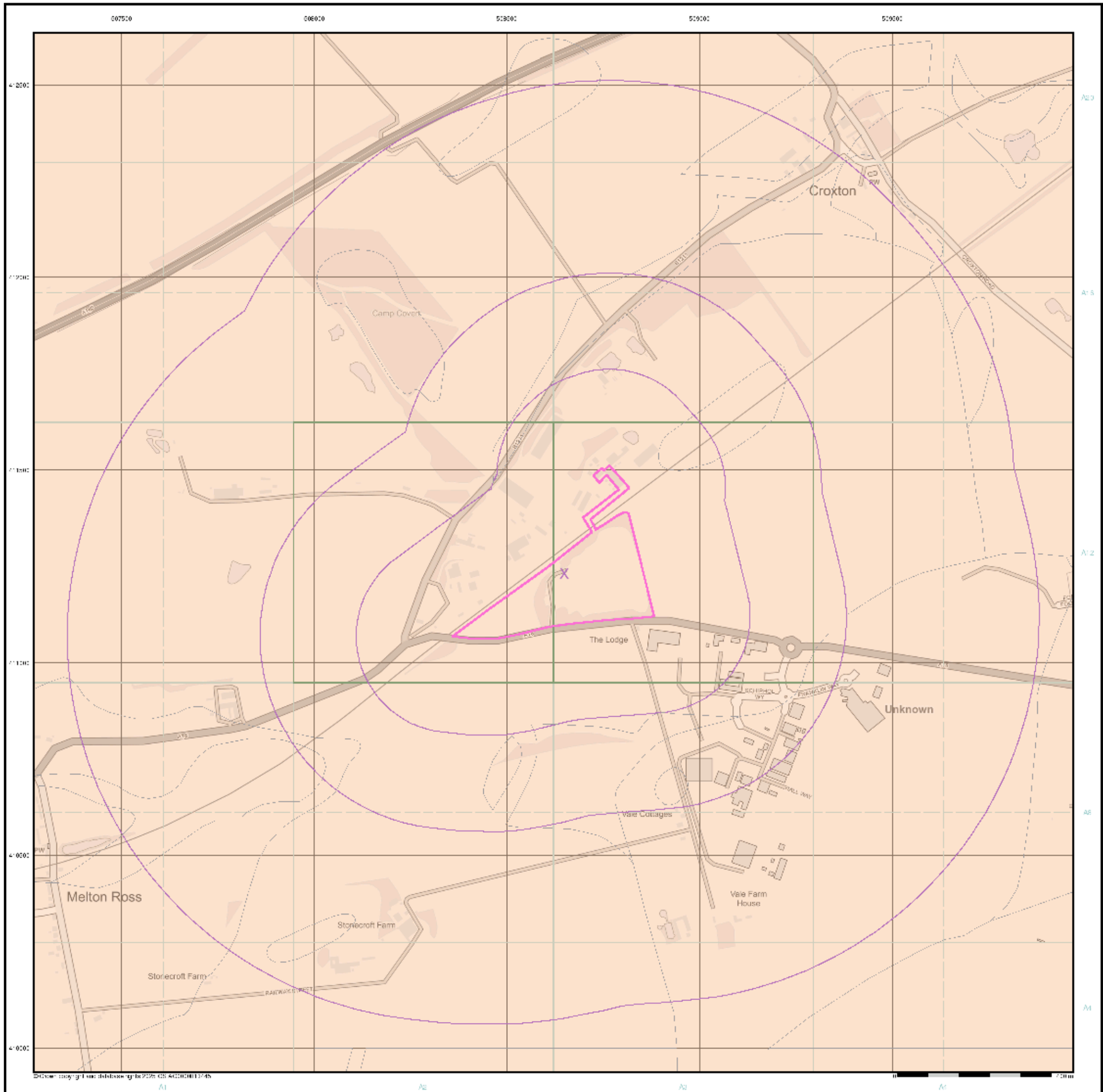

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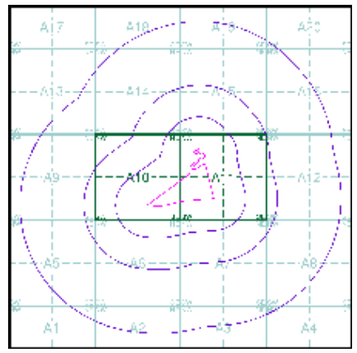
General

Estimated Soil Chemistry Lead

Lead Concentrations mg/kg

- <100 mg/kg
- 100 - 200
- 200 - 300
- 300 - 600
- 600 - 1200
- >1200

Estimated Soil Chemistry Lead - Slice A



Order Details

Order Details:	366363277_1_1
Customer Ref:	GCU0127073
National Grid Reference:	508650, 411230
Slice:	A
Site Area (Ha):	8.23
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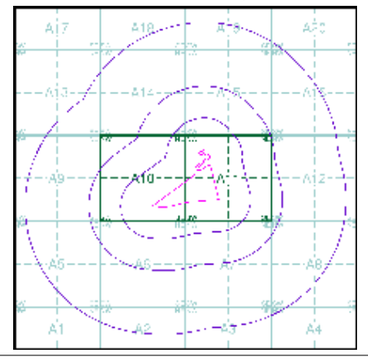
General

Estimated Soil Chemistry Nickel

Nickel Concentrations mg/kg

- < 15
- 15 - 30
- 30 - 45
- 45 - 60
- 60 - 80
- 80 - 100
- > 100

Estimated Soil Chemistry Nickel - Slice A



Order Details

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Envirocheck® Report:

Datasheet

Order Details:

Order Number:
366363277_1_1

Customer Reference:
GCU0127073

National Grid Reference:
508650, 411230

Slice:
A

Site Area (Ha):
8.23

Search Buffer (m):
1000

Site Details:

Singleton Birch Ltd, Melton Ross Quarries
BARNETBY
DN38 6AE

Client Details:

Mr N Roe
Geosyntec Consultants
1st Floor, Gatehead Business Park
Delph
Oldham
Lancashire
OL3 5DE

Prepared For:

Centrica

Landmark
INFORMATION GROUP

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Contents

Report Section	Page Number
Summary	-
Agency & Hydrological	1
Waste	21
Hazardous Substances	25
Geological	26
Industrial Land Use	37
Sensitive Land Use	42
Data Currency	43
Data Suppliers	48
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Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination.
For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency/Natural Resources Wales and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.
In this datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

Report Version v53.0

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
BGS Groundwater Flooding Susceptibility	pg 1	Yes	Yes	Yes	n/a
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 3		1		2
Prosecutions					
Enforcement and Prohibition Notices					
Integrated Pollution Controls	pg 3		4		
Integrated Pollution Prevention And Control	pg 4		23		
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 10		2		
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 10		Yes		
Pollution Incidents to Controlled Waters					
Historical Prosecutions					
Registered Radioactive Substances					
Substantiated Pollution Incident Register					
Water Abstractions	pg 11		2		1 (*29)
Water Industry Act Referrals	pg 18				1
Groundwater Vulnerability Map	pg 19	Yes	n/a	n/a	n/a
Groundwater Vulnerability - Soluble Rock Risk	pg 19	1	n/a	n/a	n/a
Groundwater Vulnerability - Local Information			n/a	n/a	n/a
Bedrock Aquifer Designations	pg 19	Yes	n/a	n/a	n/a
Superficial Aquifer Designations			n/a	n/a	n/a
Source Protection Zones	pg 19	1		1	
Extreme Flooding from Rivers or Sea without Defences				n/a	n/a
Flooding from Rivers or Sea without Defences				n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
OS Water Network Lines	pg 19				5
Water Framework Directive - Catchment	pg 20	Yes			Yes
Water Framework Directive - Groundwater	pg 20	Yes			
Water Framework Directive - Surface Waters					

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites	pg 21				1
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)	pg 21	1	3		
Licensed Waste Management Facilities (Locations)	pg 22	4	1		2
Local Authority Landfill Coverage	pg 23	1	n/a	n/a	n/a
Local Authority Recorded Landfill Sites					
Potentially Infilled Land (Non-Water)	pg 23	1	1		2
Potentially Infilled Land (Water)					
Registered Landfill Sites	pg 24	2	1		
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites					
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)	pg 25		1		
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)	pg 25		1		
Planning Hazardous Substance Consents	pg 25		1		
Planning Hazardous Substance Enforcements					

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Geological					
BGS 1:625,000 Solid Geology	pg 26	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 26	Yes	Yes	Yes	Yes
BGS Recorded Mineral Sites	pg 28	4	8	8	18
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
CBSCB Compensation District			n/a	n/a	n/a
Coal Mining Affected Areas			n/a	n/a	n/a
Mining Instability			n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 35	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 35	Yes	Yes	n/a	n/a
Potential for Ground Dissolution Stability Hazards	pg 35	Yes		n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 35	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 36	Yes	Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 36		Yes	n/a	n/a
Radon Potential - Radon Affected Areas			n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries	pg 37		3	3	2
Fuel Station Entries					
Points of Interest - Commercial Services	pg 37			1	3
Points of Interest - Education and Health					
Points of Interest - Manufacturing and Production	pg 38		22	2	8
Points of Interest - Public Infrastructure	pg 40	2			3
Points of Interest - Recreational and Environmental					
Underground Electrical Cables					

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Ancient Woodland					
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones	pg 42	2		1	
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					
World Heritage Sites					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11SW (E)	0	1	508800 411232
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A11NW (N)	0	1	508650 411350
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11SW (S)	0	1	508650 411150
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A11SW (E)	0	1	508850 411200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11SW (E)	0	1	508850 411232
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11NW (NE)	0	1	508750 411400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A10SE (SW)	0	1	508600 411150
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A10SE (S)	0	1	508600 411100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A11SW (E)	0	1	508650 411232
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11NW (NE)	0	1	508700 411350
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10SE (SW)	0	1	508400 411100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11SW (SW)	0	1	508649 411232
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11SW (N)	0	1	508649 411250
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11NW (NE)	34	1	508850 411400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10SE (W)	60	1	508300 411200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10SE (SW)	62	1	508500 411000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A11SW (S)	66	1	508649 411000
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A11NW (NE)	83	1	508900 411450
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11NW (NE)	95	1	508900 411500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A10SE (W)	114	1	508300 411232
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10NE (N)	122	1	508600 411450
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11NW (NE)	126	1	508900 411550

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A10NE (NW)	208	1	508450 411450
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A10SW (W)	212	1	508150 411150
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10SW (SW)	221	1	508150 411000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10SW (W)	247	1	508150 411232
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10NW (W)	277	1	508200 411350
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10NW (W)	281	1	508200 411300
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A10NE (NW)	297	1	508400 411500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10NW (NW)	331	1	508250 411400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10SW (W)	336	1	508050 411232
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A10NE (NW)	342	1	508350 411500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A10NW (W)	348	1	508100 411300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10SW (W)	360	1	508000 411150
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10NW (W)	361	1	508200 411400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10SW (W)	369	1	508000 411200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A7NW (SE)	370	1	508900 410750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10NW (W)	421	1	508100 411400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10NW (W)	491	1	508050 411450
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A15SE (NE)	498	1	509250 411700

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: Mr Michael Bird Property Type: Not Supplied Location: Quarries Office Block Melton Ross, Barnetby, Lincs Authority: Environment Agency, Anglian Region Catchment Area: Not Supplied Reference: Pr3lfu532 Permit Version: 1 Effective Date: 19th August 1971 Issued Date: 19th August 1971 Revocation Date: 9th June 1997 Discharge Type: Unknown Discharge Environment: Land/Soakaway Receiving Water: Land **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A10NE (W)	162	2	508400 411300
2	**Discharge Consents** Operator: Lincolnshire C.C. Property Type: Not Supplied Location: Airport Buildings Kirmington, Ulceby, S Humberside Authority: Environment Agency, Anglian Region Catchment Area: Not Supplied Reference: Pr3lfu628 Permit Version: 1 Effective Date: 25th September 1973 Issued Date: 25th September 1973 Revocation Date: 11th June 1997 Discharge Type: Unknown Discharge Environment: Land/Soakaway Receiving Water: Land **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A12SW (E)	533	2	509400 411000
3	**Discharge Consents** Operator: Humberside International Airport Ltd Property Type: WWTW (NOT WATER CO) (NOT STP AT A PRIVATE PREMISES) Location: Humberside Airport, Kirmington, South Humberside. Authority: Environment Agency, Anglian Region Catchment Area: Not Supplied Reference: Pr3nff1311 Permit Version: 1 Effective Date: 26th October 1984 Issued Date: 26th October 1984 Revocation Date: 19th February 1992 Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Trib. East Halton Beck **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 10m	A12SW (E)	673	2	509550 411050
4	**Integrated Pollution Controls** Name: Singleton Birch Ltd Location: Melton Ross Quarries, BARNETBY, South Humberside, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: BI0294 Dated: 11th May 2001 Process Type: IPC minor (non-substantial) variation to previous variation Description: 3.1 A (D) Cement/Lime manufacture and associated processes within the Mineral Industry **Status: Revoked - Now IPPC** Positional Accuracy: Manually positioned to the address or location	A10SE (W)	41	2	508390 411142
4	**Integrated Pollution Controls** Name: Singleton Birch Ltd Location: Melton Ross Quarries, BARNETBY, Humberside, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: BD1857 Dated: 24th November 1998 Process Type: IPC minor (non-substantial) variation to previous variation Description: 3.1 A (D) Cement/Lime manufacture and associated processes within the Mineral Industry **Status: Authorisation superseded by a substantial or non substantial variation** Positional Accuracy: Manually positioned to the address or location	A10SE (W)	41	2	508390 411142

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
4	**Integrated Pollution Controls** Name: Singleton Birch Ltd Location: Melton Ross Quarries, BARNETBY, South Humberside, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: AS2416 Dated: 31st October 1995 Process Type: IPC major (substantial) variation Description: 3.1 A (D) Cement/Lime manufacture and associated processes within the Mineral Industry **Status:** **Authorisation superseded by a substantial or non substantial variation** Positional Accuracy: Manually positioned to the address or location	A10SE (W)	41	2	508390 411142
4	**Integrated Pollution Controls** Name: Singleton Birch Ltd Location: Melton Ross Quarries, BARNETBY, South Humberside, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: AI0683 Dated: 1st October 1993 Process Type: IPC application for process that was regulated by HMIP for air releases under previous legislation Description: 3.1 A (D) Cement/Lime manufacture and associated processes within the Mineral Industry **Status:** **Authorisation superseded by a substantial or non substantial variation** Positional Accuracy: Manually positioned to the address or location	A10SE (W)	41	2	508390 411142
5	**Integrated Pollution Prevention And Control** Name: Singleton Birch Limited Location: Melton Ross Lime Works Epr/Bl8805iz, Melton Ross Quarries, Barnetby, North Lincs, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: LP3039WF Original Permit Ref: Bl8805iz Effective Date: 31st October 2014 **Status:** **Superseded By Variation** Application Type: Variation App. Sub Type: Standard Positional Accuracy: Manually corrected supplier location Activity Code: 3.1 B (C) Activity Description: Cement And Lime; Slaking Lime To Make Calcium Or Calcium Magnesium Hydroxide Primary Activity: N Activity Code: 3.1 A(1) (B) (I) Activity Description: Cement And Lime; Producing Lime Greater Than 50T/D Primary Activity: Y	A10SE (SW)	15	2	508390 411110
5	**Integrated Pollution Prevention And Control** Name: Singleton Birch Limited Location: Camp Wood Waste Acid Treatment Plant - Epr/Jp3738yq, Camp Wood Waste Acidtreatment Plant,Camp Wood Waste Acid Treatment Plant - Epr/Jp3738yq, Melton Ross Quarries,Barnetby,, Brigg,North, North Lincolnshire, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: JP3738YQ Original Permit Ref: Jp3738yq Effective Date: 13th November 2017 **Status:** **Effective** Application Type: New App. Sub Type: Not Supplied Positional Accuracy: Manually positioned to the address or location Activity Code: 5.6 A(1) a) Activity Description: TEMPORARY STORAGE OF HAZ WASTE NOT UNDER S 5.2 PENDING ACTIVITIES LISTED IN S 5.1, 5.2, 5.3 AND PARAGRAPH (B) OF THIS SECTION WITH A TOTAL CAPACITY > 50 TONNES, EXCL TEMP STORAGE WHERE GENERATED Primary Activity: N Activity Code: 5.3 A(1) a) (ii) Activity Description: DISPOSAL OR RECOVERY OF HAZARDOUS WASTE WITH A CAPACITY EXCEEDING 10 TONNES PER DAY INVOLVING PHYSICO-CHEMICAL TREATMENT Primary Activity: Y	A10SE (W)	31	2	508380 411122

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	**Integrated Pollution Prevention And Control** Name: Singleton Birch Limited Location: Campwood Landfill Epr/Bs9989ij, Campwood Landfill Site, Melton Ross Quarries,,, BARNETBY, North Lincs, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: CP3434WP Original Permit Ref: Bs9989ij Effective Date: 10th February 2016 **Status:** **Superseded By Variation** Application Type: Variation App. Sub Type: Substantial Positional Accuracy: Automatically positioned to the address Activity Code: 5.2 A(1) (A) Activity Description: Waste Landfilling; Greater Than 10 T/D With Capacity Greater Than 25,000T Excluding Inert Waste Primary Activity: Y Activity Code: 5.4 A(1) (a) (ii) Activity Description: DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING PHYSICO-CHEMICAL TREATMENT Primary Activity: N	A10SE (W)	31	2	508380 411122
5	**Integrated Pollution Prevention And Control** Name: Singleton Birch Limited Location: Campwood Landfill Epr/Bs9989ij, Campwood Landfill Site, Melton Ross Quarries,,, BARNETBY, North Lincs, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: KP3635RT Original Permit Ref: Bs9989ij Effective Date: 12th January 2016 **Status:** **Superseded By Variation** Application Type: Variation App. Sub Type: Minor Positional Accuracy: Automatically positioned to the address Activity Code: 5.2 A(1) (A) Activity Description: Waste Landfilling; Greater Than 10 T/D With Capacity Greater Than 25,000T Excluding Inert Waste Primary Activity: Y	A10SE (W)	31	2	508380 411122
5	**Integrated Pollution Prevention And Control** Name: Singleton Birch Limited Location: Melton Ross Lime Works Epr/Bl8805iz, Melton Ross Quarries, Barnetby, North Lincs, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: EP3932AH Original Permit Ref: Bl8805iz Effective Date: 23rd July 2015 **Status:** **Superseded By Variation** Application Type: Variation App. Sub Type: Standard Positional Accuracy: Automatically positioned to the address Activity Code: 3.1 A(1) (B) (I) Activity Description: Cement And Lime; Producing Lime Greater Than 50T/D Primary Activity: Y Activity Code: 3.1 B (C) Activity Description: Cement And Lime; Slaking Lime To Make Calcium Or Calcium Magnesium Hydroxide Primary Activity: N	A10SE (W)	31	2	508380 411122
5	**Integrated Pollution Prevention And Control** Name: Singleton Birch Limited Location: Melton Ross Lime Works Epr/Bl8805iz, Melton Ross Quarries,Melton Ross Lime Works Epr/Bl8805iz, Barnetby, North Lincolnshire, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: Bl8805iz Original Permit Ref: Bl8805iz Effective Date: 18th August 2022 **Status:** **Effective** Application Type: Variation (Normal) App. Sub Type: Not Supplied Positional Accuracy: Automatically positioned to the address Activity Code: 3.1 A(1) (B) (I) Activity Description: Cement And Lime; Producing Lime Greater Than 50T/D Primary Activity: Y Activity Code: 5.4 A(1) b) (i) Activity Description: RECOVERY OR A MIX OF RECOVERY AND DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT Primary Activity: N Activity Code: 3.1 B (C) Activity Description: Slaking Lime For The Purpose Of Making Calcium Hydroxide Or Calcium Magnesium Hydroxide - 3.1 B C) Primary Activity: N	A10SE (W)	41	2	508390 411142

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	**Integrated Pollution Prevention And Control** Name: Singleton Birch Limited Location: Campwood Landfill Epr/Bs9989ij, Campwood Landfill Site,Campwood Landfill Epr/Bs9989ij, Melton Ross Quarries,,, BARNETBY, North Lincolnshire, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: Bs9989ij Original Permit Ref: Bs9989ij Effective Date: 1st March 2018 **Status:** **Effective** Application Type: Variation (Substantial) App. Sub Type: Not Supplied Positional Accuracy: Automatically positioned to the address Activity Code: 5.4 A(1) (a) (ii) Activity Description: DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING PHYSICO-CHEMICAL TREATMENT Primary Activity: N Activity Code: 5.2 A(1) (A) Activity Description: Waste Landfilling; Greater Than 10 T/D With Capacity Greater Than 25,000T Excluding Inert Waste Primary Activity: Y	A10SE (W)	41	2	508390 411142
5	**Integrated Pollution Prevention And Control** Name: Singleton Birch Limited Location: Melton Ross Lime Works Epr/Bl8805iz, Campwood Landfill Site, Melton Ross Quarries,,, BARNETBY, North Lincs, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: YP3636EC Original Permit Ref: Bl8805iz Effective Date: 12th May 2014 **Status:** **Superseded By Variation** Application Type: Variation App. Sub Type: Standard Positional Accuracy: Automatically positioned to the address Activity Code: 3.1 A(1) (B) (l) Activity Description: Cement And Lime; Producing Lime Greater Than 50T/D Primary Activity: Y Activity Code: 3.1 B (C) Activity Description: Cement And Lime; Slaking Lime To Make Calcium Or Calcium Magnesium Hydroxide Primary Activity: N	A10SE (W)	41	2	508390 411142
5	**Integrated Pollution Prevention And Control** Name: Singleton Birch Limited Location: Melton Ross Lime Works Epr/Bl8805iz, Campwood Landfill Site, Melton Ross Quarries,,, BARNETBY, North Lincs, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: MP3733FY Original Permit Ref: Bl8805iz Effective Date: 31st October 2011 **Status:** **Superseded By Variation** Application Type: Variation App. Sub Type: Simple Standard Variation Positional Accuracy: Automatically positioned to the address Activity Code: 3.1 A(1) (B) (l) Activity Description: Cement And Lime; Producing Lime Greater Than 50T/D Primary Activity: Y Activity Code: 3.1 B (C) Activity Description: Cement And Lime; Slaking Lime To Make Calcium Or Calcium Magnesium Hydroxide Primary Activity: N	A10SE (W)	41	2	508390 411142
5	**Integrated Pollution Prevention And Control** Name: Singleton Birch Limited Location: Melton Ross Lime Works Epr/Bl8805iz, Campwood Landfill Site, Melton Ross Quarries,,, BARNETBY, North Lincs, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: PP3632TH Original Permit Ref: Bl8805iz Effective Date: 18th August 2010 **Status:** **Superseded By Variation** Application Type: Variation App. Sub Type: Simple Standard Variation Positional Accuracy: Automatically positioned to the address Activity Code: 3.1 A(1) (B) (l) Activity Description: Cement And Lime; Producing Lime Greater Than 50T/D Primary Activity: Y Activity Code: 3.1 B (C) Activity Description: Cement And Lime; Slaking Lime To Make Calcium Or Calcium Magnesium Hydroxide Primary Activity: N	A10SE (W)	41	2	508390 411142

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	**Integrated Pollution Prevention And Control** Name: Singleton Birch Limited Location: Melton Ross Lime Works Epr/Bl8805iz, Campwood Landfill Site, Melton Ross Quarries,,, BARNETBY, North Lincs, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: SP3831KX Original Permit Ref: Bl8805iz Effective Date: 21st January 2010 **Status: Superseded By Variation** Application Type: Variation App. Sub Type: Minor Positional Accuracy: Automatically positioned to the address Activity Code: 3.1 B (C) Activity Description: Cement And Lime; Slaking Lime To Make Calcium Or Calcium Magnesium Hydroxide Primary Activity: N Activity Code: 3.1 A(1) (B) (I) Activity Description: Cement And Lime; Producing Lime Greater Than 50T/D Primary Activity: Y	A10SE (W)	41	2	508390 411142
5	**Integrated Pollution Prevention And Control** Name: Singleton Birch Limited Location: Campwood Landfill Epr/Bs9989ij, Campwood Landfill Site, Melton Ross Quarries,,, BARNETBY, North Lincs, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: Mp3939lr Original Permit Ref: Bs9989ij Effective Date: 28th March 2006 **Status: Superseded By Variation** Application Type: Variation App. Sub Type: Standard Positional Accuracy: Automatically positioned to the address Activity Code: 5.2 A(1) (A) Activity Description: Waste Landfilling; Greater Than 10 T/D With Capacity Greater Than 25,000T Excluding Inert Waste Primary Activity: Y	A10SE (W)	41	2	508390 411142
5	**Integrated Pollution Prevention And Control** Name: Singleton Birch Limited Location: Campwood Landfill Epr/Bs9989ij, Campwood Landfill Site, Melton Ross Quarries,,, BARNETBY, North Lincs, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: Rp3239sw Original Permit Ref: Bs9989ij Effective Date: 23rd August 2005 **Status: Superseded By Variation** Application Type: Variation App. Sub Type: Standard Positional Accuracy: Automatically positioned to the address Activity Code: 5.2 A(1) (A) Activity Description: Waste Landfilling; Greater Than 10 T/D With Capacity Greater Than 25,000T Excluding Inert Waste Primary Activity: Y	A10SE (W)	41	2	508390 411142
5	**Integrated Pollution Prevention And Control** Name: Singleton Birch Limited Location: Melton Ross Lime Works Epr/Bl8805iz, Campwood Landfill Site, Melton Ross Quarries,,, BARNETBY, North Lincs, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: Bv0015ih Original Permit Ref: Bl8805iz Effective Date: 5th August 2003 **Status: Superseded By Variation** Application Type: Variation App. Sub Type: Standard Positional Accuracy: Automatically positioned to the address Activity Code: 3.1 B (C) Activity Description: Cement And Lime; Slaking Lime To Make Calcium Or Calcium Magnesium Hydroxide Primary Activity: N Activity Code: 3.1 A(1) (B) (I) Activity Description: Cement And Lime; Producing Lime Greater Than 50T/D Primary Activity: Y	A10SE (W)	41	2	508390 411142

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	**Integrated Pollution Prevention And Control** Name: Singleton Birch Ltd Location: CAMPWOOD LANDFILL SITE,MELTON, BARNETBY, BARNETBY, South Humberside, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: BI8805 Original Permit Ref: BI8805 Effective Date: 22nd August 2002 **Status:** **Superseded By Variation** Application Type: PPC APPLICATION App. Sub Type: Not Supplied Positional Accuracy: Automatically positioned to the address Activity Code: 3.1 A(1) (B) (I) Activity Description: Cement And Lime; Producing Lime Greater Than 50T/D Primary Activity: Not Supplied Activity Code: 3.1 B (C) Activity Description: Cement And Lime; Slaking Lime To Make Calcium Or Calcium Magnesium Hydroxide Primary Activity: Not Supplied	A10SE (W)	41	2	508390 411142
5	**Integrated Pollution Prevention And Control** Name: Singleton Birch Ltd Location: Melton Ross Quarry, Melton Ross Quarries, Barnetby, North Lincs, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: Yp3430bw Original Permit Ref: Yp3430bw Effective Date: Not Supplied **Status:** **Valid** Application Type: Application App. Sub Type: New Positional Accuracy: Automatically positioned to the address Activity Code: 5.2 A(1) (A) Activity Description: Waste Landfilling; Greater Than 10 T/D With Capacity Greater Than 25,000T Excluding Inert Waste Primary Activity: Y	A10SE (W)	41	2	508390 411142
6	**Integrated Pollution Prevention And Control** Name: Singleton Birch Limited Location: Campwood Landfill Epr/Bs9989ij, Campwood Landfill Site, Melton Ross Quarries,,, BARNETBY, North Lincs, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: UP3638DF Original Permit Ref: Bs9989ij Effective Date: 1st March 2018 **Status:** **Effective** Application Type: Variation App. Sub Type: Substantial Positional Accuracy: Automatically positioned to the address Activity Code: 5.4 A(1) (a) (ii) Activity Description: DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING PHYSICO-CHEMICAL TREATMENT Primary Activity: N Activity Code: 5.2 A(1) (A) Activity Description: Waste Landfilling; Greater Than 10 T/D With Capacity Greater Than 25,000T Excluding Inert Waste Primary Activity: Y	A10SE (W)	127	2	508365 411231
6	**Integrated Pollution Prevention And Control** Name: Singleton Birch Limited Location: Melton Ross Lime Works Epr/Bl8805iz, Melton Ross Quarries, Barnetby, North Lincs, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: GP3539DY Original Permit Ref: Bl8805iz Effective Date: 4th April 2017 **Status:** **Superseded By Variation** Application Type: Variation App. Sub Type: Substantial Positional Accuracy: Automatically positioned to the address Activity Code: 5.4 A(1) b) (i) Activity Description: RECOVERY OR A MIX OF RECOVERY AND DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT Primary Activity: N Activity Code: 3.1 A(1) (B) (I) Activity Description: Cement And Lime; Producing Lime Greater Than 50T/D Primary Activity: Y Activity Code: 3.1 B (C) Activity Description: Cement And Lime; Slaking Lime To Make Calcium Or Calcium Magnesium Hydroxide Primary Activity: N	A10SE (W)	127	2	508365 411231

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
6	**Integrated Pollution Prevention And Control** Name: Singleton Birch Limited Location: Campwood Landfill Epr/Bs9989ij, Campwood Landfill Site, Melton Ross Quarries,,, BARNETBY, North Lincs, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: GP3836DY Original Permit Ref: Bs9989ij Effective Date: 8th December 2016 **Status:** **Superseded By Variation** Application Type: Variation App. Sub Type: Simple Standard Variation Positional Accuracy: Automatically positioned to the address Activity Code: 5.4 A(1) (a) (ii) Activity Description: DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING PHYSICO-CHEMICAL TREATMENT Primary Activity: N Activity Code: 5.2 A(1) (A) Activity Description: Waste Landfilling; Greater Than 10 T/D With Capacity Greater Than 25,000T Excluding Inert Waste Primary Activity: Y	A10SE (W)	127	2	508365 411231
6	**Integrated Pollution Prevention And Control** Name: Singleton Birch Limited Location: Melton Ross Lime Works Epr/Bl8805iz, Melton Ross Quarries, Barnetby, North Lincs, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: MP3631RL Original Permit Ref: Bl8805iz Effective Date: 13th April 2016 **Status:** **Superseded By Variation** Application Type: Variation App. Sub Type: Substantial Positional Accuracy: Automatically positioned to the address Activity Code: 3.1 B (C) Activity Description: Cement And Lime; Slaking Lime To Make Calcium Or Calcium Magnesium Hydroxide Primary Activity: N Activity Code: 3.1 A(1) (B) (I) Activity Description: Cement And Lime; Producing Lime Greater Than 50T/D Primary Activity: Y	A10SE (W)	127	2	508365 411231
7	**Integrated Pollution Prevention And Control** Name: Singleton Birch Limited Location: Melton Ross Lime Works Epr/Bl8805iz, Melton Ross Quarries, BARNETBY, South Humberside, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: WP3800LX Original Permit Ref: Bl8805iz Effective Date: 22nd January 2021 **Status:** **Superseded By Variation** Application Type: Variation App. Sub Type: Standard Positional Accuracy: Manually positioned within the geographical locality Activity Code: 3.1 A(1) (B) (I) Activity Description: Cement And Lime; Producing Lime Greater Than 50T/D Primary Activity: Y Activity Code: 3.1 B (C) Activity Description: Cement And Lime; Slaking Lime To Make Calcium Or Calcium Magnesium Hydroxide Primary Activity: N Activity Code: 5.4 A(1) b) (i) Activity Description: RECOVERY OR A MIX OF RECOVERY AND DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT Primary Activity: N	A11NW (N)	151	2	508622 411597

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
8	**Integrated Pollution Prevention And Control** Name: Singleton Birch Limited Location: Melton Ross Lime Works Epr/BI8805iz, Melton Ross Quarries, BARNETBY, South Humberside, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: BP3305MH Original Permit Ref: BI8805iz Effective Date: 26th June 2022 **Status:** **Superseded By Variation** Application Type: Variation App. Sub Type: Standard Positional Accuracy: Manually positioned within the geographical locality Activity Code: 3.1 B (C) Activity Description: Cement And Lime; Slaking Lime To Make Calcium Or Calcium Magnesium Hydroxide Primary Activity: N Activity Code: 3.1 A(1) (B) (I) Activity Description: Cement And Lime; Producing Lime Greater Than 50T/D Primary Activity: Y Activity Code: 5.4 A(1) b) (i) Activity Description: RECOVERY OR A MIX OF RECOVERY AND DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT Primary Activity: N	A10NE (N)	152	2	508589 411555
8	**Integrated Pollution Prevention And Control** Name: Singleton Birch Limited Location: Melton Ross Lime Works Epr/BI8805iz, Melton Ross Quarries, BARNETBY, South Humberside, DN38 6AE Authority: Environment Agency, Anglian Region Permit Reference: HP3042QC Original Permit Ref: BI8805iz Effective Date: 18th August 2022 **Status:** **Effective** Application Type: Variation App. Sub Type: Standard Positional Accuracy: Manually positioned within the geographical locality Activity Code: 3.1 B (C) Activity Description: Cement And Lime; Slaking Lime To Make Calcium Or Calcium Magnesium Hydroxide Primary Activity: N Activity Code: 5.4 A(1) b) (i) Activity Description: RECOVERY OR A MIX OF RECOVERY AND DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT Primary Activity: N Activity Code: 3.1 A(1) (B) (I) Activity Description: Cement And Lime; Producing Lime Greater Than 50T/D Primary Activity: Y	A10NE (N)	163	2	508595 411585
9	**Local Authority Pollution Prevention and Controls** Name: Singleton Birch Ltd Location: Melton Ross Quarries, BARNETBY, South Humberside, DN38 6AE Authority: North Lincolnshire Council, Environmental Protection Team Permit Reference: Not Supplied Dated: Not Supplied Process Type: Local Authority Air Pollution Control Description: PG3/8 Quarry processes including roadstone plants and the size reduction of bricks, tiles and concrete **Status:** **Authorised** Positional Accuracy: Automatically positioned to the address	A10SE (W)	41	3	508390 411142
10	**Local Authority Pollution Prevention and Controls** Name: Singleton Birch Ltd Location: Melton Ross Quarries, BARNETBY, South Humberside, DN38 6AE Authority: North Lincolnshire Council, Environmental Protection Team Permit Reference: 9 Dated: 11th January 1995 Process Type: Local Authority Air Pollution Control Description: PG3/16 Mobile screening and crushing processes **Status:** **Authorisation revoked** Positional Accuracy: Manually positioned to the address or location	A11NW (N)	48	3	508682 411425
	Nearest Surface Water Feature	A11NW (NE)	78	-	508825 411567

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
11	**Water Abstractions** Operator: Singleton Birch Limited Licence Number: An/029/0009/031 Permit Version: 1 Location: Lower (Ferriby) Chalk At Melton Ross Quarries In Barnetby Authority: Environment Agency, Anglian Region Abstraction: Mineral Products: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 19th June 2023 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11NW (NE)	72	2	508800 411575
12	**Water Abstractions** Operator: W Singleton Birch & Son Ltd Licence Number: 4/29/09/*G/0046 Permit Version: 100 Location: W.S. Birch Well Melton Ross Authority: Environment Agency, Anglian Region Abstraction: Extractive: Process water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: L Chalk 2; Status: Perpetuity Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st August 1966 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A10NE (NW)	144	2	508500 411350
13	**Water Abstractions** Operator: J F D Hargreaves Ltd Licence Number: An/029/0009/034 Permit Version: 1 Location: Borehole At Stonecroft Farm Melton Ross Authority: Environment Agency, Anglian Region Abstraction: Trickle Irrigation Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 June Authorised End: 31 October Permit Start Date: 28th March 2022 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A6SE (S)	744	2	508284 410329
	Water Abstractions Operator: Fisk Partners Licence Number: 4/29/09/*g/006 Permit Version: Not Supplied Location: Sidney Fisk Bore, KIRMINGTON Authority: Environment Agency, Anglian Region Abstraction: Agriculture (General) Abstraction Type: Not Supplied Source: Well And Borehole Daily Rate (m3): 5 Yearly Rate (m3): 27280 Details: L Chalk 3; Status: Perpetuity Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(E)	1419	2	510300 411100

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: W Sowerby & Co Licence Number: 4/29/09/*G/0126 Permit Version: 100 Location: Sowerby Borehole Kirmington Authority: Environment Agency, Anglian Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: L Chalk 3; Status: Perpetuity Authorised Start: 01 May Authorised End: 30 September Permit Start Date: 1st January 1989 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1503	2	509600 409800
	Water Abstractions Operator: W Sowerby & Co Licence Number: 4/29/09/*G/0126 Permit Version: 100 Location: Sowerby Borehole Kirmington Authority: Environment Agency, Anglian Region Abstraction: General Agriculture: Spray Irrigation - Storage Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: L Chalk 3; Status: Perpetuity Authorised Start: 01 October Authorised End: 30 April Permit Start Date: 1st January 1989 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1508	2	509600 409795
	Water Abstractions Operator: W Sowerby & Co Licence Number: 4/29/09/*G/0138 Permit Version: 100 Location: Borehole At Kirmington Authority: Environment Agency, Anglian Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: L Chalk 3; Status: Perpetuity Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st July 1994 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1512	2	509400 409700
	Water Abstractions Operator: Messrs. D. B. & F. D. Sowerby Licence Number: 4/29/09/*g/039 Permit Version: Not Supplied Location: Sowerby Borehole, KIRMINGTON Authority: Environment Agency, Anglian Region Abstraction: Domestic & Agriculture Abstraction Type: Not Supplied Source: Well And Borehole Daily Rate (m3): 1 Yearly Rate (m3): 6820 Details: L Chalk 3; Status: Revoked Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1517	2	509400 409695

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: W Sowerby & Co Licence Number: 4/29/09/*G/0126 Permit Version: 104 Location: Chalk In Kirmington, North Lincolnshire Authority: Environment Agency, Anglian Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 10th April 2013 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1523	2	509610 409783
	Water Abstractions Operator: W Sowerby & Co Licence Number: 4/29/09/*G/0126 Permit Version: 104 Location: Chalk In Kirmington, North Lincolnshire Authority: Environment Agency, Anglian Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 10th April 2013 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1523	2	509610 409783
	Water Abstractions Operator: W Sowerby & Co Licence Number: 4/29/09/*G/0126 Permit Version: 104 Location: Chalk In Kirmington, North Lincolnshire Authority: Environment Agency, Anglian Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 November Authorised End: 31 March Permit Start Date: 10th April 2013 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1523	2	509610 409783
	Water Abstractions Operator: W Sowerby & Co Licence Number: 4/29/09/*G/0126 Permit Version: 104 Location: Chalk In Kirmington, North Lincolnshire Authority: Environment Agency, Anglian Region Abstraction: General Agriculture: Spray Irrigation - Storage Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 10th April 2013 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1523	2	509610 409783

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: W Sowerby & Co Licence Number: 4/29/09/*G/0126 Permit Version: 104 Location: Chalk In Kirmington, North Lincolnshire Authority: Environment Agency, Anglian Region Abstraction: General Agriculture: Spray Irrigation - Storage Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 November Authorised End: 31 March Permit Start Date: 10th April 2013 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1523	2	509610 409783
	Water Abstractions Operator: W Sowerby & Co Licence Number: 4/29/09/*G/0126 Permit Version: 103 Location: Borehole At Kirmington Authority: Environment Agency, Anglian Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 3rd March 2009 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1526	2	509610 409780
	Water Abstractions Operator: W Sowerby & Co Licence Number: 4/29/09/*G/0126 Permit Version: 103 Location: Borehole At Kirmington Authority: Environment Agency, Anglian Region Abstraction: General Agriculture: Spray Irrigation - Storage Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 November Authorised End: 31 March Permit Start Date: 3rd March 2009 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1526	2	509610 409780
	Water Abstractions Operator: W Sowerby & Co Licence Number: 4/29/09/*G/0126 Permit Version: 103 Location: Borehole At Kirmington Authority: Environment Agency, Anglian Region Abstraction: General Agriculture: Spray Irrigation - Storage Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 3rd March 2009 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1526	2	509610 409780

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: W Sowerby & Co Licence Number: 4/29/09/*G/0126 Permit Version: 103 Location: Borehole At Kirmington Authority: Environment Agency, Anglian Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 November Authorised End: 31 March Permit Start Date: 3rd March 2009 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1526	2	509610 409780
	Water Abstractions Operator: W Sowerby & Co Licence Number: 4/29/09/*G/0126 Permit Version: 103 Location: Borehole At Kirmington Authority: Environment Agency, Anglian Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 3rd March 2009 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1526	2	509610 409780
	Water Abstractions Operator: W Sowerby & Co Licence Number: 4/29/09/*G/0126 Permit Version: 102 Location: Borehole At Kirmington Authority: Environment Agency, Anglian Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: L Chalk 3; Status: Perpetuity Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 28th January 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1526	2	509610 409780
	Water Abstractions Operator: W Sowerby & Co Licence Number: 4/29/09/*G/0126 Permit Version: 102 Location: Borehole At Kirmington Authority: Environment Agency, Anglian Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: L Chalk 3; Status: Perpetuity Authorised Start: 01 November Authorised End: 31 March Permit Start Date: 28th January 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1526	2	509610 409780

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: W Sowerby & Co Licence Number: 4/29/09/*G/0126 Permit Version: 102 Location: Borehole At Kirmington Authority: Environment Agency, Anglian Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: L Chalk 3; Status: Perpetuity Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 28th January 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1526	2	509610 409780
	Water Abstractions Operator: W Sowerby & Co Licence Number: 4/29/09/*G/0126 Permit Version: 102 Location: Borehole At Kirmington Authority: Environment Agency, Anglian Region Abstraction: General Agriculture: Spray Irrigation - Storage Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 November Authorised End: 31 March Permit Start Date: 28th January 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1526	2	509610 409780
	Water Abstractions Operator: W Sowerby & Co Licence Number: 4/29/09/*G/0126 Permit Version: 102 Location: Borehole At Kirmington Authority: Environment Agency, Anglian Region Abstraction: General Agriculture: Spray Irrigation - Storage Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 28th January 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1526	2	509610 409780
	Water Abstractions Operator: W Sowerby & Co Licence Number: 4/29/09/*G/0126 Permit Version: 101 Location: Borehole At Kirmington Authority: Environment Agency, Anglian Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 November Authorised End: 31 March Permit Start Date: 21st June 2004 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1526	2	509610 409780

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: W Sowerby & Co Licence Number: 4/29/09/*G/0126 Permit Version: 101 Location: Borehole At Kirmington Authority: Environment Agency, Anglian Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 21st June 2004 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1526	2	509610 409780
	Water Abstractions Operator: W Sowerby & Co Licence Number: 4/29/09/*G/0126 Permit Version: 101 Location: Borehole At Kirmington Authority: Environment Agency, Anglian Region Abstraction: General Agriculture: Spray Irrigation - Storage Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 November Authorised End: 31 March Permit Start Date: 21st June 2004 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1526	2	509610 409780
	Water Abstractions Operator: W Sowerby & Co Licence Number: 4/29/09/*G/0126 Permit Version: 101 Location: Borehole At Kirmington Authority: Environment Agency, Anglian Region Abstraction: General Agriculture: Spray Irrigation - Storage Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 21st June 2004 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	1526	2	509610 409780
	Water Abstractions Operator: Fisk Partners Licence Number: 4/29/09/*g/006 Permit Version: Not Supplied Location: Sidney Fisk Bore 3 , KIRMINGTON Authority: Environment Agency, Anglian Region Abstraction: Agriculture (General) Abstraction Type: Not Supplied Source: Well And Borehole Daily Rate (m3): 5 Yearly Rate (m3): 27280 Details: L Chalk 3; Status: Perpetuity Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(SE)	1797	2	510200 409900

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: E Dee & Sons Ltd Licence Number: 4/29/09/*G/0072 Permit Version: 100 Location: Grange Farm Bore/Well Croxton Authority: Environment Agency, Anglian Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: L Chalk 2; Status: Perpetuity Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st September 1990 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(N)	1799	2	509400 413195
	Water Abstractions Operator: E. Dee & Sons Limited Licence Number: 4/29/09/*g/072 Permit Version: Not Supplied Location: Grange Farm Bore/Well , CROXTON Authority: Environment Agency, Anglian Region Abstraction: Unspecified Abstraction Type: Not Supplied Source: Well And Borehole Daily Rate (m3): 1 Yearly Rate (m3): 18000 Details: L Chalk 2; Status: Perpetuity Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(N)	1801	2	509405 413195
	Water Abstractions Operator: E. Dee & Sons Limited Licence Number: 4/29/09/*g/072 Permit Version: Not Supplied Location: Grange Farm Bore/Well, CROXTON Authority: Environment Agency, Anglian Region Abstraction: Domestic & Agriculture Abstraction Type: Not Supplied Source: Well And Borehole Daily Rate (m3): 0 Yearly Rate (m3): 4550 Details: L Chalk 2; Status: Perpetuity Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(N)	1804	2	509400 413200
	Water Abstractions Operator: Earl Of Yarborough Licence Number: 4/29/09/*G/0064 Permit Version: 100 Location: Yarborough Borehole Croxton Authority: Environment Agency, Anglian Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: L Chalk 2; Status: Perpetuity Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st July 1977 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(NW)	1825	2	507700 413000
14	**Water Industry Act Referrals** Name: Humberside International Airport Location: Kirmington, Kirmington, NE LINCOLNSHIRE, Lincolnshire, DN39 6YH Authority: Environment Agency, Anglian Region Permit Reference: SCE0095C2 Dated: 12th December 2012 Process Type: Permissions or amendments to discharge under the Water Industry Act 1991 Description: Processes which result in the discharge of Special Category effluents under The Trade Effluents (Prescribed Processes and Substances) Regulations **Status: Application has been authorised and any conditions apply to the operator** Positional Accuracy: Manually positioned to the address or location	A8NW (SE)	609	2	509431 410859

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Groundwater Vulnerability Map Combined Classification: Principle Bedrock Aquifer - High Vulnerability Combined Vulnerability: High Combined Aquifer: Productive Bedrock Aquifer, No Superficial Aquifer Pollutant Speed: Intermediate Bedrock Flow: Well Connected Fractures Dilution: <300 mm/year Baseflow Index: >70% Superficial Patchiness: <90% Superficial Thickness: <3m Superficial Recharge: No Data	A11SW (SW)	0	4	508649 411232
	Groundwater Vulnerability - Soluble Rock Risk Classification: Significant Risk - Problems Unlikely	A11SW (SW)	0	4	508649 411232
	Bedrock Aquifer Designations Aquifer Designation: Principal Aquifer	A11SW (SW)	0	4	508649 411232
	Superficial Aquifer Designations No Data Available				
15	**Source Protection Zones** Name: Not Supplied Source: Environment Agency, Head Office Reference: Not Supplied Type: Zone III (Total Catchment): The total area needed to support the discharge from the protected groundwater source.	A11SW (SW)	0	2	508649 411232
16	**Source Protection Zones** Name: Not Supplied Source: Environment Agency, Head Office Reference: Not Supplied Type: Zone II (Outer Protection Zone): Either 25% of the source area or a 400 day travel time whichever is greater.	A15SW (N)	321	2	508654 411830
	Extreme Flooding from Rivers or Sea without Defences None				
	Flooding from Rivers or Sea without Defences None				
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				
17	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 86.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Louth Grimsby and Ancholme Primacy: 1	A18SW (N)	971	5	508208 412314
18	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 24.9 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Louth Grimsby and Ancholme Primacy: 1	A18SW (N)	977	5	508261 412353
19	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 41.9 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Louth Grimsby and Ancholme Primacy: 1	A18SW (NW)	984	5	508188 412315

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
20	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 346.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Louth Grimsby and Ancholme Primacy: 1	A18SW (N)	998	5	508240 412366
21	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 53.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Louth Grimsby and Ancholme Primacy: 1	A14NW (NW)	999	5	508101 412277
	Water Framework Directive - Catchment Class Code: River Catchment WaterBody Name: Skitter Beck / East Halton Beck WaterBody ID: GB104029067655 Operational Catchment: Becks Northern Management Catchment: Louth Grimsby and Ancholme Catchment Name: Lincolnshire Chalk Streams	A11SW (SW)	0	2	508649 411232
	Water Framework Directive - Catchment Class Code: River Catchment WaterBody Name: Kettleby Beck WaterBody ID: GB104029067510 Operational Catchment: Ancholme Management Catchment: Louth Grimsby and Ancholme Catchment Name: Ancholme	A5NE (SW)	640	2	507869 410658
	Water Framework Directive - Groundwater Waterbody Name: North Lincolnshire Chalk Unit Waterbody ID: GB40401G401500 URL Address: https://environment.data.gov.uk/catchment-planning/WaterBody/GB40401G401500 Overall Rating: Poor Chemical Rating: Poor Quantitative Measure: Poor Year: 2019	A11SW (SW)	0	2	508649 411232

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
22	**Historical Landfill Sites** Licence Holder: Not Supplied Location: Barnetby, North Lincolnshire Name: Melton Ross Quarry (West) Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD34420 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste Type: Not Supplied EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 2000/0448 BGS Ref: Not Supplied Other Ref: A451, 55/16/0451	A9SE (W)	546	2	507848 411262
23	**Licensed Waste Management Facilities (Landfill Boundaries)** Name: Melton Ross Quarry Licence Number: 70811 Location: SINGLETON BIRCH LIMITED, Melton Ross Quarry, Barnetby, Lincolnshire, DN38 6AE Licence Holder: Singleton Birch Limited Authority: Environment Agency - Anglian Region, Northern Area Site Category: Landfills Taking Non-biodegradeable Wastes (Not Construction) Max Input Rate: Not Supplied **Licence Status: Closure** Issued: 2nd September 1981 Positional Accuracy: Positioned by the supplier Boundary Accuracy: As Supplied	A11SW (SW)	0	2	508649 411232
24	**Licensed Waste Management Facilities (Landfill Boundaries)** Name: Campwood Landfill Epr/Bs9989ij Licence Number: 0 Location: CAMPWOOD LANDFILL SITE, Campwood Landfill EPR/BS9989IJ, MELTON ROSS QUARRIES, BARNETBY, North Lincolnshire, DN38 6AE Licence Holder: Singleton Birch Limited Authority: Environment Agency - Anglian Region, Northern Area Site Category: Waste Landfilling; >10 T/D with Capacity >25,000T Excluding Inert Waste Max Input Rate: Not Supplied **Licence Status: Effective** Issued: 1st March 2018 Positional Accuracy: Positioned by the supplier Boundary Accuracy: As Supplied	A10NE (NW)	240	2	508419 411449
25	**Licensed Waste Management Facilities (Landfill Boundaries)** Name: Camp Wood Landfill (Bs9989ij) Licence Number: 73212 Location: Barnetby, Lincolnshire, DN38 6AE Licence Holder: Singleton Birch Ltd Authority: Environment Agency - Anglian Region, Northern Area Site Category: Household, Commercial And Industrial Waste Landfills Max Input Rate: Not Supplied **Licence Status: PPC** Issued: 29th May 2003 Positional Accuracy: Positioned by the supplier Boundary Accuracy: As Supplied	A10NE (NW)	242	2	508365 411379
26	**Licensed Waste Management Facilities (Landfill Boundaries)** Name: Camp Wood Landfill (Superseded By 73212) Licence Number: 73005 Location: Melton Ross Quarries, Barnetby, Lincolnshire, DN38 6AE Licence Holder: Singleton Birch Ltd Authority: Environment Agency - Anglian Region, Northern Area Site Category: Household, Commercial And Industrial Waste Landfills Max Input Rate: Not Supplied **Licence Status: PPC** Issued: 10th May 1999 Positional Accuracy: Positioned by the supplier Boundary Accuracy: As Supplied	A10NE (NW)	242	2	508365 411379

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
27	**Licensed Waste Management Facilities (Locations)** Licence Number: 404973 Location: Brigg Road, Melton Ross, Croxton, N Lincolnshire, DN38 6AE Operator Name: SINGLETON BIRCH LIMITED Operator Location: Not Supplied Authority: Environment Agency - Anglian Region, Northern Area Site Category: Use of waste in a deposit for recovery op **Licence Status: Issued** Issued: 1st August 2019 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A10SE (SW)	0	2	508601 411201
28	**Licensed Waste Management Facilities (Locations)** Licence Number: 402773 Location: Sandstop Quarries Ltd, Melton Ross Quarry, Barnetby, Barnetby, North Lincolnsh, DN38 6AE Operator Name: SANDSTOP QUARRIES LTD Operator Location: Not Supplied Authority: Environment Agency - Anglian Region, Northern Area Site Category: Inert & excavation Waste TS + treatment **Licence Status: Surrendered** Issued: 4th September 2015 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: 4th September 2015 IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11SW (S)	0	2	508674 411165
29	**Licensed Waste Management Facilities (Locations)** Licence Number: 73215 Location: Melton Ross Quarries, Barnetby, North Lincolnsh, DN38 6AE Operator Name: SINGLETON BIRCH LIMITED Operator Location: Not Supplied Authority: Environment Agency - Anglian Region, Northern Area Site Category: Household, Commercial And Industrial Waste Landfills **Licence Status: Expired** Issued: 1st November 2004 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 100m	A10SE (S)	0	2	508600 411100
29	**Licensed Waste Management Facilities (Locations)** Licence Number: 70811 Location: Melton Ross Quarry, Barnetby, Lincolnshire, DN38 6AE Operator Name: SINGLETON BIRCH LIMITED Operator Location: Not Supplied Authority: Environment Agency - Anglian Region, Northern Area Site Category: Landfills Taking Non-biodegradeable Wastes (Not Construction) **Licence Status: Closed** Issued: 2nd September 1981 Last Modified: 2nd September 1981 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 100m	A10SE (S)	0	2	508600 411100

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
30	**Licensed Waste Management Facilities (Locations)** Licence Number: 102548 Location: Melton Ross Quarries, Barnetby, South Humbersid, DN38 6AE Operator Name: SINGLETON BIRCH LIMITED Operator Location: Not Supplied Authority: Environment Agency - Anglian Region, Northern Area Site Category: Mining Waste Operations **Licence Status: Issued** Issued: 27th March 2022 Last Modified: 27th June 2022 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Manually positioned to the address or location	A10SW (W)	110	2	508250 411081
31	**Licensed Waste Management Facilities (Locations)** Licence Number: 73212 Location: Melton Ross Quarries, Barnetby, North Lincolnsh, DN38 6AE Operator Name: SINGLETON BIRCH LIMITED Operator Location: Not Supplied Authority: Environment Agency - Anglian Region, Northern Area Site Category: Household, Commercial And Industrial Waste Landfills **Licence Status: Expired** Issued: 29th May 2003 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 100m	A9NE (W)	847	2	507700 411600
31	**Licensed Waste Management Facilities (Locations)** Licence Number: 73005 Location: Melton Ross Quarries, Melton Ross Quarries, Barnetby, North Lincolnsh, DN38 6AE Operator Name: SINGLETON BIRCH LIMITED Operator Location: Not Supplied Authority: Environment Agency - Anglian Region, Northern Area Site Category: Household, Commercial And Industrial Waste Landfills **Licence Status: Expired** Issued: 10th May 1999 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 100m	A9NE (W)	847	2	507700 411600
	Local Authority Landfill Coverage Name: North Lincolnshire Unitary Council - Has no landfill data to supply		0	3	508649 411232
32	**Potentially Infilled Land (Non-Water)** Bearing Ref: SW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1996	A11SW (SW)	0	-	508649 411232
33	**Potentially Infilled Land (Non-Water)** Bearing Ref: SE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1996	A11SW (SE)	97	-	508893 411025
34	**Potentially Infilled Land (Non-Water)** Bearing Ref: S Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1996	A7SW (S)	621	-	508716 410480
35	**Potentially Infilled Land (Non-Water)** Bearing Ref: N Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1996	A19SW (N)	918	-	508867 412423

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
36	**Registered Landfill Sites** Licence Holder: Singleton Birch Ltd Licence Reference: A 117 MAR97 Site Location: Melton Ross Quarries, BARNETBY LE WOLD, Lincolnshire, DN38 6AE Licence Easting: 508700 Licence Northing: 411200 Operator Location: Melton Ross Quarries, BARNETBY LE WOLD, Lincolnshire, DN38 6AE Authority: Environment Agency - Anglian Region, Northern Area Site Category: Landfill Max Input Rate: Small (Equal to or greater than 10,000 and less than 25,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Status: Operational as far as is knownOperational Dated: 12th March 1992 Preceded By Licence: 55/19/117 Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Accuracy: Not Applicable Authorised Waste: Lincs Cat.A Inert Waste Liquid/Sludge Wastes Max.Waste Permitted By Licence Prohibited Waste: Poisonous, Noxious, Polluting Wastes Special Wastes (As In '96 Regs) Waste N.O.S.	A11SW (SE)	0	2	508700 411200
37	**Registered Landfill Sites** Licence Holder: Singleton Birch Ltd Licence Reference: 55/19/117 Site Location: Melton Ross Quarries, BARNETBY LE WOLD, Lincolnshire, DN38 6AE Licence Easting: Not Supplied Licence Northing: Not Supplied Operator Location: As Site Address Authority: Environment Agency - Anglian Region, Northern Area Site Category: Landfill Max Input Rate: Small (Equal to or greater than 10,000 and less than 25,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Status: Record supersededSuperseded Dated: 12th March 1992 Preceded By Licence: Not Given Superseded By Licence: A 117 MAR97 Positional Accuracy: Positioned by the supplier Boundary Accuracy: Moderate Authorised Waste: Excavated Natural Materials $ Hardcore And Rubble Mine And Quarry Wastes Plastic/Polythene (Including Sacks) Scrap Rubber (Including Tyres) Prohibited Waste: Special Wastes	A11SW (SW)	0	2	508649 411232
38	**Registered Landfill Sites** Licence Holder: Singleton Birch Ltd Licence Reference: EAWML73005 Site Location: Camp Wood Landfill, Melton Ross Quarry, Barnetby Le Wold, Lincolnshire Licence Easting: Not Supplied Licence Northing: Not Supplied Operator Location: Melton Ross Quarries, BARNETBY LE WOLD, Lincolnshire, DN38 6AE Authority: Environment Agency - Anglian Region, Northern Area Site Category: Landfill Max Input Rate: Large (Equal to or greater than 75,000 and less than 250,000 tonnes per year) Waste Source Restrictions: Some restriction on source of waste Status: Operational as far as is knownOperational Dated: 10th May 1999 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Positioned by the supplier Boundary Accuracy: Good Authorised Waste: Gypsum Waste Max.Waste Permitted By Licence Neutralisation Plant Filter Cake Plastic Sheeting (Negligible Admix. At < 5% Per Load) Prohibited Waste: Any Waste With Haz.Code In H1 To H14 Spec.Waste (Epa'90:S62/1996 Regs) Waste N.O.S.	A10NE (NW)	238	2	508361 411377

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
39	**Control of Major Accident Hazards Sites (COMAH)** Name: Singleton Birch Ltd Location: Melton Ross Quarries, Barnetby, South Humberside, DN38 6AE Reference: Not Supplied Type: Lower Tier **Status: Record Ceased To Be Supplied Under COMAH Regulations** Positional Accuracy: Automatically positioned to the address	A10SE (W)	41	6	508390 411142
40	**Notification of Installations Handling Hazardous Substances (NIHHS)** Name: Singleton Birch Limited Location: Melton Ross Quarry, BARNETBY, South Humberside, DN38 6AE **Status: Not Active** Positional Accuracy: Automatically positioned in the proximity of the address	A10NE (N)	115	6	508610 411452
41	**Planning Hazardous Substance Consents** Name: Singleton Birch Ltd Location: Melton Ross Quarries, Barnetby, South Humberside, Dn38 6ae Authority: North Lincolnshire Council, Planning Department Application Ref: Hs(D)1 Hazardous Substance: Part C, Flammable Substance (Not in Parts A&B), Liquefied petroleum gas held at >1.4 bar where amount held is greater than or equal to 25 tonnes Maximum Quantity: 400 Application date: 3rd November 1992 **Decision: Deemed Consent GrantedGranted** Positional Accuracy: Manually positioned to the address or location	A10NE (N)	112	7	508610 411447

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: White Chalk Subgroup	A11SW (SW)	0	1	508649 411232
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11SW (SW)	0	1	508649 411232
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11NW (NE)	101	1	508900 411511
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10NE (NW)	211	1	508464 411468
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NW (S)	236	1	508625 410841
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NE (S)	254	1	508512 410811
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A7NW (SE)	310	1	508891 410791

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NW (SW)	367	1	508118 410792
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NW (SE)	395	1	508922 410725
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: <15 mg/kg	A14SE (NW)	447	1	508323 411683
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NW (SW)	462	1	508024 410752
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6SW (SW)	770	1	508099 410345
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15NW (N)	780	1	508951 412269

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NE (N)	847	1	508361 412263
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NE (E)	874	1	509719 411426
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: <15 mg/kg	A16NW (NE)	887	1	509340 412187
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: <15 mg/kg	A12NE (E)	892	1	509695 411608
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: <15 mg/kg	A5SW (SW)	949	1	507533 410603
42	**BGS Recorded Mineral Sites** Site Name: Melton Ross Quarries Location: Melton Ross, Barnetby, Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 12631 Type: Opencast **Status: Ceased** Operator: Singleton Birch Ltd. Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A10SE (SW)	0	1	508530 411125

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
42	**BGS Recorded Mineral Sites** Site Name: Melton Ross Quarries Location: Melton Ross, Barnetby, Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 12631 Type: Opencast **Status: Ceased** Operator: Singleton Birch Ltd. Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Flint Positional Accuracy: Located by supplier to within 10m	A10SE (SW)	0	1	508530 411125
43	**BGS Recorded Mineral Sites** Site Name: Melton Ross Quarries Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 146570 Type: Opencast **Status: Ceased** Operator: Singleton Birch Ltd. Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A11SW (E)	0	1	508745 411215
43	**BGS Recorded Mineral Sites** Site Name: Melton Ross Quarries Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 146570 Type: Opencast **Status: Ceased** Operator: Singleton Birch Ltd. Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Flint Positional Accuracy: Located by supplier to within 10m	A11SW (E)	0	1	508745 411215
44	**BGS Recorded Mineral Sites** Site Name: Chalk Hill Quarry Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 121677 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A11SW (SE)	92	1	508888 411029
45	**BGS Recorded Mineral Sites** Site Name: Chalk Hill Quarry Location: Melton Ross, Barnetby, Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 12632 Type: Opencast **Status: Ceased** Operator: Singleton Birch Ltd. Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A10SE (W)	113	1	508415 411250
45	**BGS Recorded Mineral Sites** Site Name: Chalk Hill Quarry Location: Melton Ross, Barnetby, Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 12632 Type: Opencast **Status: Ceased** Operator: Singleton Birch Ltd. Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Flint Positional Accuracy: Located by supplier to within 10m	A10SE (W)	113	1	508415 411250

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
46	**BGS Recorded Mineral Sites** Site Name: Melton Ross Quarries Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 146571 Type: Opencast **Status: Ceased** Operator: Singleton Birch Ltd. Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A15SW (N)	115	1	508785 411625
46	**BGS Recorded Mineral Sites** Site Name: Melton Ross Quarries Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 146571 Type: Opencast **Status: Ceased** Operator: Singleton Birch Ltd. Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Flint Positional Accuracy: Located by supplier to within 10m	A15SW (N)	115	1	508785 411625
47	**BGS Recorded Mineral Sites** Site Name: Melton Ross Chalk Pit Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 245510 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A11SE (E)	116	1	508996 411136
48	**BGS Recorded Mineral Sites** Site Name: Chalk Hill Quarry Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 132979 Type: Opencast **Status: Ceased** Operator: Singleton Birch Ltd. Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A10NE (N)	116	1	508610 411502
48	**BGS Recorded Mineral Sites** Site Name: Chalk Hill Quarry Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 132979 Type: Opencast **Status: Ceased** Operator: Singleton Birch Ltd. Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Flint Positional Accuracy: Located by supplier to within 10m	A10NE (N)	116	1	508610 411502
49	**BGS Recorded Mineral Sites** Site Name: Melton Ross Quarry Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 3207 Type: Opencast **Status: Ceased** Operator: Singleton Birch Ltd. Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A10SW (W)	316	1	508110 411262

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
49	**BGS Recorded Mineral Sites** Site Name: Melton Ross Quarry Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 3207 Type: Opencast **Status: Ceased** Operator: Singleton Birch Ltd. Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Flint Positional Accuracy: Located by supplier to within 10m	A10SW (W)	316	1	508110 411262
50	**BGS Recorded Mineral Sites** Site Name: Melton Ross Chalk Pit Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 245499 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A6NW (SW)	398	1	508211 410700
51	**BGS Recorded Mineral Sites** Site Name: Melton Ross Quarries Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 146572 Type: Opencast **Status: Ceased** Operator: Singleton Birch Ltd. Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A15SE (NE)	432	1	509015 411865
51	**BGS Recorded Mineral Sites** Site Name: Melton Ross Quarries Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 146572 Type: Opencast **Status: Ceased** Operator: Singleton Birch Ltd. Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Flint Positional Accuracy: Located by supplier to within 10m	A15SE (NE)	432	1	509015 411865
52	**BGS Recorded Mineral Sites** Site Name: Melton Ross Chalk Pit Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 245496 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A14SE (NW)	437	1	508321 411653
53	**BGS Recorded Mineral Sites** Site Name: Melton Ross Chalk Pit Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 245497 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A9SE (W)	463	1	507897 411059

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
54	**BGS Recorded Mineral Sites** Site Name: Melton Ross Chalk Pit Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 245500 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A6SE (SW)	489	1	508302 410584
55	**BGS Recorded Mineral Sites** Site Name: Melton Ross Chalk Pit Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 245495 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A14SW (NW)	587	1	508149 411643
56	**BGS Recorded Mineral Sites** Site Name: Melton Ross Chalk Pit Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 245504 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A7SW (S)	632	1	508719 410469
57	**BGS Recorded Mineral Sites** Site Name: Melton Ross Chalk Pit Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 245505 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A7SW (S)	728	1	508822 410385
58	**BGS Recorded Mineral Sites** Site Name: Melton Ross Chalk Pit Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 245488 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A9SE (W)	731	1	507633 411147
59	**BGS Recorded Mineral Sites** Site Name: Melton Ross Chalk Pit Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 245498 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A5SE (SW)	734	1	507916 410484

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
60	**BGS Recorded Mineral Sites** Site Name: Melton Ross Quarry Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 147958 Type: Opencast **Status: Ceased** Operator: Singleton Birch Ltd. Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A13SE (NW)	785	1	507900 411705
60	**BGS Recorded Mineral Sites** Site Name: Melton Ross Quarry Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 147958 Type: Opencast **Status: Ceased** Operator: Singleton Birch Ltd. Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Flint Positional Accuracy: Located by supplier to within 10m	A13SE (NW)	785	1	507900 411705
61	**BGS Recorded Mineral Sites** Site Name: Melton Ross Chalk Pit Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 245494 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A9NE (W)	795	1	507618 411354
62	**BGS Recorded Mineral Sites** Site Name: Croxton House Location: Croxton, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 121676 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A19SW (N)	822	1	508744 412333
63	**BGS Recorded Mineral Sites** Site Name: Melton Ross Chalk Pit Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 245487 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A9SW (W)	839	1	507523 411135
64	**BGS Recorded Mineral Sites** Site Name: Melton Ross Chalk Pit Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 245506 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A3NW (S)	852	1	508714 410241

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
65	**BGS Recorded Mineral Sites** Site Name: Melton Ross Chalk Pit Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 245501 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A5SE (SW)	885	1	507897 410315
66	**BGS Recorded Mineral Sites** Site Name: Melton Ross Chalk Pit Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 245509 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A3NW (S)	912	1	508807 410199
67	**BGS Recorded Mineral Sites** Site Name: Croxton House Location: Croxton, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 121675 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A19SW (N)	913	1	508878 412417
68	**BGS Recorded Mineral Sites** Site Name: Melton Ross Chalk Pit Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 245513 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Ferriby Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A5NW (W)	927	1	507455 410868
69	**BGS Recorded Mineral Sites** Site Name: Melton Ross Chalk Pit Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 245507 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A2NE (S)	932	1	508613 410141
70	**BGS Recorded Mineral Sites** Site Name: Melton Ross Quarry Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 16439 Type: Opencast **Status: Active** Operator: Singleton Birch Ltd. Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A9SW (W)	978	1	507390 411200

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
71	**BGS Recorded Mineral Sites** Site Name: Melton Ross Chalk Pit Location: Melton Ross, Barnetby, North Lincolnshire Source: British Geological Survey, National Geoscience Information Service Reference: 245508 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Cretaceous Geology: Welton Chalk Formation Commodity: Chalk Positional Accuracy: Located by supplier to within 10m	A2NE (S)	991	1	508587 410078
	BGS Measured Urban Soil Chemistry No data available				
	BGS Urban Soil Chemistry Averages No data available				
	Coal Mining Affected Areas In an area that might not be affected by coal mining				
	Non Coal Mining Areas of Great Britain No Hazard				
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A11SW (SW)	0	1	508649 411232
	Potential for Compressible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A11SW (NW)	0	1	508638 411257
	Potential for Compressible Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A10NE (NW)	0	1	508593 411295
	Potential for Compressible Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A11SW (SW)	0	1	508649 411232
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A11SW (SE)	0	1	508672 411204
	Potential for Compressible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A10NE (W)	163	1	508289 411338
	Potential for Compressible Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A10NE (NW)	204	1	508285 411386
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A10SE (SW)	0	1	508590 411175
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A11SW (E)	0	1	508831 411222
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A11NW (NE)	0	1	508808 411298
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A11SW (SW)	0	1	508649 411232
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A11SW (SE)	0	1	508707 411141
	Potential for Landslide Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A11SW (SE)	0	1	508672 411204
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A11SW (SW)	0	1	508649 411232

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A10NE (W)	163	1	508289 411338
	Potential for Landslide Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A6NE (S)	226	1	508495 410822
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A11SW (SW)	0	1	508649 411232
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A11SW (SE)	0	1	508672 411204
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A10NE (W)	163	1	508289 411338
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A6NE (S)	186	1	508533 410863
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A6NE (S)	226	1	508495 410822
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A11SW (SW)	0	1	508649 411232
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A11NW (NE)	101	1	508900 411511
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A6NE (S)	186	1	508533 410863
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A10NE (NW)	211	1	508442 411447
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A6NE (S)	226	1	508495 410822
	Radon Potential - Radon Affected Areas Affected Area: The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A11SW (SW)	0	1	508649 411232
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A11SW (SW)	0	1	508649 411232

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
72	**Contemporary Trade Directory Entries** Name: Singleton Birch Location: Melton Ross Quarries, BARNETBY, South Humberside, DN38 6AE Classification: Quarries **Status: Active** Positional Accuracy: Automatically positioned to the address	A10SE (W)	41	-	508390 411142
73	**Contemporary Trade Directory Entries** Name: Agrimin Ltd Location: Grimsby Road, Kirmington, ULCEBY, South Humberside, DN39 6YH Classification: Pet Foods & Animal Feeds **Status: Active** Positional Accuracy: Automatically positioned to the address	A11SW (SE)	71	-	508919 411061
74	**Contemporary Trade Directory Entries** Name: Birch Chemicals Location: Melton Ross Quarries, Barnetby, DN38 6AE Classification: Chemical Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A10SE (W)	127	-	508365 411231
75	**Contemporary Trade Directory Entries** Name: In Flight Cleaning Services Ltd Location: Grimsby Rd, Humberside International Airpo, Ulceby, South Humberside, DN39 6YH Classification: Commercial Cleaning Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A11SE (E)	266	-	509142 411072
76	**Contemporary Trade Directory Entries** Name: N H V Location: Grimsby Road, Kirmington, Ulceby, DN39 6YH Classification: Airfreight Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SE)	456	-	509231 410828
77	**Contemporary Trade Directory Entries** Name: Anglia Cargo International Ltd Location: Grimsby Road, Kirmington, Ulceby, South Humberside, DN39 6YH Classification: Road Haulage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A7NE (SE)	458	-	509058 410697
78	**Contemporary Trade Directory Entries** Name: Humberside International Airport Location: Grimsby Road, Kirmington, Ulceby, South Humberside, DN39 6YH Classification: Airports **Status: Active** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	602	-	509431 410876
79	**Contemporary Trade Directory Entries** Name: Barnautos Location: Hall Farm, Melton Ross, Barnetby, South Humberside, DN38 6AB Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A5NE (W)	659	-	507733 410864
80	**Points of Interest - Commercial Services** Name: Anglia Cargo International Ltd Location: Perishables Hub Anglia Cargo, Franklin Way, Humberside Airport, Kirmington, DN39 6YH Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A7NE (SE)	458	8	509057 410697
81	**Points of Interest - Commercial Services** Name: Barnautos Location: Hall Farm, Main Street, Melton Ross, DN38 6AB Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A5NE (W)	603	8	507777 410914
81	**Points of Interest - Commercial Services** Name: Autovan Vehicle Services Location: Hall Farm, Melton Ross, Barnetby, DN38 6AB Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A5NE (W)	659	8	507733 410864

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
81	**Points of Interest - Commercial Services** Name: Auto Barn Vehicle Services Location: Hall Farm, Melton Ross, Barnetby, DN38 6AB Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A5NE (W)	660	8	507732 410864
82	**Points of Interest - Manufacturing and Production** Name: Limekilns Location: DN38 Category: Industrial Features Class Code: Lime Kilns Positional Accuracy: Positioned to an adjacent address or location	A11NW (NE)	2	8	508773 411507
82	**Points of Interest - Manufacturing and Production** Name: Tank Location: DN38 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A11NW (NE)	11	8	508801 411488
82	**Points of Interest - Manufacturing and Production** Name: Tank Location: DN38 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A11NW (NE)	12	8	508805 411486
82	**Points of Interest - Manufacturing and Production** Name: Lime Kilns Location: DN38 Category: Industrial Features Class Code: Lime Kilns Positional Accuracy: Positioned to an adjacent address or location	A11NW (NE)	13	8	508787 411507
82	**Points of Interest - Manufacturing and Production** Name: Tank Location: DN38 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A11NW (NE)	14	8	508799 411495
82	**Points of Interest - Manufacturing and Production** Name: Tank Location: DN38 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A11NW (NE)	16	8	508797 411500
82	**Points of Interest - Manufacturing and Production** Name: Tanks Location: DN39 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A11NW (NE)	30	8	508821 411494
82	**Points of Interest - Manufacturing and Production** Name: Tank Location: DN38 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A11NW (NE)	52	8	508830 411517
82	**Points of Interest - Manufacturing and Production** Name: Tank Location: DN38 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A11NW (NE)	52	8	508827 411521
82	**Points of Interest - Manufacturing and Production** Name: Tank Location: DN38 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A11NW (NE)	52	8	508823 411525
82	**Points of Interest - Manufacturing and Production** Name: Tank Location: DN38 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A11NW (NE)	59	8	508828 411531

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
83	**Points of Interest - Manufacturing and Production** Name: Singleton Birch Location: Melton Ross Quarries, Barnetby, DN38 6AE Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to address or location	A10SE (W)	41	8	508390 411142
84	**Points of Interest - Manufacturing and Production** Name: Melton Ross Quarries Location: DN38 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to an adjacent address or location	A11NW (N)	103	8	508625 411460
84	**Points of Interest - Manufacturing and Production** Name: Melton Ross Quarries Location: DN38 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to an adjacent address or location	A11NW (N)	105	8	508622 411464
85	**Points of Interest - Manufacturing and Production** Name: Singleton Birch Location: Brigg Road, Melton Ross, DN38 6AE Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to address or location	A10SE (W)	127	8	508365 411231
85	**Points of Interest - Manufacturing and Production** Name: Tank Location: DN38 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A10SE (W)	140	8	508355 411240
85	**Points of Interest - Manufacturing and Production** Name: Tank Location: DN38 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A10SE (W)	142	8	508354 411242
85	**Points of Interest - Manufacturing and Production** Name: Tanks Location: DN38 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A10SE (W)	149	8	508338 411238
86	**Points of Interest - Manufacturing and Production** Name: Tanks Location: DN39 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A11NW (NE)	168	8	508933 411576
86	**Points of Interest - Manufacturing and Production** Name: Tank Location: DN38 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A11NW (NE)	177	8	508935 411588
86	**Points of Interest - Manufacturing and Production** Name: Tank Location: DN38 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A11NW (NE)	179	8	508933 411593
87	**Points of Interest - Manufacturing and Production** Name: Singleton Birch (Farm AD) - Anaerobic Digestion (BEIS) Location: Brigg Road, Melton Ross, Croxton, Humberside, DN38 6AE Category: Industrial Features Class Code: Energy Production Positional Accuracy: Positioned to an adjacent address or location	A15SW (N)	234	8	508839 411734
88	**Points of Interest - Manufacturing and Production** Name: Quarry (Disused) Location: DN39 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to an adjacent address or location	A15SW (NE)	390	8	508930 411865

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
89	**Points of Interest - Manufacturing and Production** Name: Quarry (Disused) Location: DN39 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to an adjacent address or location	A15SE (NE)	453	8	509087 411831
90	**Points of Interest - Manufacturing and Production** Name: Quarry (Disused) Location: DN39 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to an adjacent address or location	A15NE (NE)	543	8	508991 412006
90	**Points of Interest - Manufacturing and Production** Name: Quarry (Disused) Location: DN39 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to an adjacent address or location	A15NE (NE)	589	8	509048 412028
91	**Points of Interest - Manufacturing and Production** Name: Quarry (Disused) Location: DN38 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to address or location	A9SE (W)	609	8	507773 411232
92	**Points of Interest - Manufacturing and Production** Name: Quarry (Limestone) Location: DN38 Category: Extractive Industries Class Code: Stone Quarrying and Preparation Positional Accuracy: Positioned to an adjacent address or location	A9SE (W)	722	8	507643 410984
93	**Points of Interest - Manufacturing and Production** Name: Quarry (Limestone) Location: DN38 Category: Extractive Industries Class Code: Stone Quarrying and Preparation Positional Accuracy: Positioned to an adjacent address or location	A9NE (W)	838	8	507672 411548
93	**Points of Interest - Manufacturing and Production** Name: Quarry (Limestone) Location: DN38 Category: Extractive Industries Class Code: Stone Quarrying and Preparation Positional Accuracy: Positioned to an adjacent address or location	A9NE (W)	853	8	507689 411596
93	**Points of Interest - Manufacturing and Production** Name: Quarry Location: DN38 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to an adjacent address or location	A9NE (W)	866	8	507684 411611
94	**Points of Interest - Manufacturing and Production** Name: Workings Location: DN38 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to an adjacent address or location	A13SE (NW)	918	8	507745 411751
95	**Points of Interest - Public Infrastructure** Name: Spoil Heap Location: DN39 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location	A11SW (E)	0	8	508687 411241
95	**Points of Interest - Public Infrastructure** Name: Refuse Tip Location: DN39 Category: Infrastructure and Facilities Class Code: Refuse Disposal Facilities Positional Accuracy: Positioned to an adjacent address or location	A11SW (SE)	0	8	508669 411207
96	**Points of Interest - Public Infrastructure** Name: Humberside International Airport Location: DN39 Category: Air Class Code: Airports and Landing Strips Positional Accuracy: Positioned to address or location	A8NW (SE)	602	8	509431 410876

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
96	**Points of Interest - Public Infrastructure** Name: Humberside International Ltd Location: Grimsby Road, Kirmington, Ulceby, DN39 6YH Category: Air Class Code: Airports and Landing Strips Positional Accuracy: Positioned to address or location	A8NW (SE)	602	8	509431 410876
96	**Points of Interest - Public Infrastructure** Name: Humberside International Airport Location: Grimsby Road, Kirmington, Ulceby, DN39 6YH Category: Air Class Code: Airports and Landing Strips Positional Accuracy: Positioned to address or location	A8NW (SE)	602	8	509431 410876

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
97	**Nitrate Vulnerable Zones** Name: Lincolnshire Chalk Description: Groundwater Source: Environment Agency, Head Office	A11SW (SW)	0	4	508649 411232
98	**Nitrate Vulnerable Zones** Name: Skitter Beck / East Halton Beck Nvz Description: Surface Water Source: Environment Agency, Head Office	A11SW (SW)	0	4	508649 411232
99	**Nitrate Vulnerable Zones** Name: Ancholme From Bishopbridge To The Humber Nvz Description: Surface Water Source: Environment Agency, Head Office	A6NE (S)	329	4	508463 410733

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
Environment Agency - Head Office	November 2023	Annually
North East Lincolnshire Council - Environmental Services	October 2017	Annual Rolling Update
North Lincolnshire Council - Environmental Protection Team	September 2017	Annual Rolling Update
West Lindsey District Council - Environmental Health Department	September 2017	Annual Rolling Update
Discharge Consents		
Environment Agency - Anglian Region	October 2024	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - Anglian Region	March 2013	
Integrated Pollution Controls		
Environment Agency - Anglian Region	January 2009	
Integrated Pollution Prevention And Control		
Environment Agency - Anglian Region	October 2024	Quarterly
Local Authority Integrated Pollution Prevention And Control		
North Lincolnshire Council - Environmental Protection Team	December 2020	Variable
North East Lincolnshire Council - Environmental Services	January 2015	Variable
West Lindsey District Council - Environmental Health Department	November 2014	Variable
Local Authority Pollution Prevention and Controls		
North Lincolnshire Council - Environmental Protection Team	December 2020	Annual Rolling Update
West Lindsey District Council - Environmental Health Department	December 2020	Annual Rolling Update
North East Lincolnshire Council - Environmental Services	January 2015	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements		
North East Lincolnshire Council - Environmental Services	January 2015	Variable
North Lincolnshire Council - Environmental Protection Team	March 2015	Variable
West Lindsey District Council - Environmental Health Department	November 2014	Variable
Nearest Surface Water Feature		
Ordnance Survey	October 2024	
Pollution Incidents to Controlled Waters		
Environment Agency - Anglian Region	September 1999	
Historical Prosecutions		
Environment Agency, Anglian Region	March 2013	Not Applicable
Registered Radioactive Substances		
Environment Agency - Anglian Region	May 2023	
Environment Agency - Head Office	May 2023	
Substantiated Pollution Incident Register		
Environment Agency - Anglian Region - Northern Area	October 2024	Quarterly
Water Abstractions		
Environment Agency - Anglian Region	October 2024	Quarterly
Water Industry Act Referrals		
Environment Agency - Anglian Region	October 2017	
Groundwater Vulnerability Map		
Environment Agency - Head Office	June 2018	As notified
Groundwater Vulnerability - Soluble Rock Risk		
Environment Agency - Head Office	June 2018	As notified
Bedrock Aquifer Designations		
Environment Agency - Head Office	January 2018	As notified
Superficial Aquifer Designations		
Environment Agency - Head Office	January 2018	As notified
Source Protection Zones		
Environment Agency - Head Office	September 2022	Bi-Annually
Extreme Flooding from Rivers or Sea without Defences		
Environment Agency - Head Office	December 2023	As notified

Data Currency

Agency & Hydrological	Version	Update Cycle
Flooding from Rivers or Sea without Defences Environment Agency - Head Office	December 2023	As notified
Areas Benefiting from Flood Defences Environment Agency - Head Office	February 2023	
Flood Water Storage Areas Environment Agency - Head Office	January 2024	Quarterly
Flood Defences Environment Agency - Head Office	August 2022	
OS Water Network Lines Ordnance Survey	October 2024	Quarterly
Surface Water 1 in 30 year Flood Extent Environment Agency - Head Office	May 2018	Annually
Surface Water 1 in 100 year Flood Extent Environment Agency - Head Office	May 2018	Annually
Surface Water 1 in 1000 year Flood Extent Environment Agency - Head Office	May 2018	Annually
Surface Water Suitability Environment Agency - Head Office	February 2016	Annually
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	May 2013	As notified
Water Framework Directive - Catchment Environment Agency - Head Office	July 2024	Annually
Water Framework Directive - Groundwater Environment Agency - Head Office	July 2024	Annually

Waste	Version	Update Cycle
BGS Recorded Landfill Sites		
British Geological Survey - National Geoscience Information Service	November 2002	As notified
Historical Landfill Sites		
Environment Agency - Head Office	August 2024	Quarterly
Integrated Pollution Control Registered Waste Sites		
Environment Agency - Anglian Region	January 2009	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries)		
Environment Agency - Anglian Region - Northern Area	November 2024	Quarterly
Licensed Waste Management Facilities (Locations)		
Environment Agency - Anglian Region - Northern Area	October 2024	Quarterly
Local Authority Landfill Coverage		
Lincolnshire County Council	February 2003	Not Applicable
North East Lincolnshire Council - Environmental Services	February 2003	Not Applicable
North Lincolnshire Council - Environmental Protection Team	February 2003	Not Applicable
West Lindsey District Council - Environmental Health Department	February 2003	Not Applicable
Local Authority Recorded Landfill Sites		
Lincolnshire County Council	October 2018	
North East Lincolnshire Council - Environmental Services	October 2018	
North Lincolnshire Council - Environmental Protection Team	October 2018	
West Lindsey District Council - Environmental Health Department	October 2018	
Potentially Infilled Land (Non-Water)		
Landmark Information Group Limited	December 1999	
Potentially Infilled Land (Water)		
Landmark Information Group Limited	December 1999	
Registered Landfill Sites		
Environment Agency - Anglian Region - Northern Area	March 2006	Not Applicable
Registered Waste Transfer Sites		
Environment Agency - Anglian Region - Northern Area	April 2018	
Registered Waste Treatment or Disposal Sites		
Environment Agency - Anglian Region - Northern Area	June 2015	
Hazardous Substances	**Version**	**Update Cycle**
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	September 2024	Bi-Annually
Explosive Sites		
Health and Safety Executive	March 2017	
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	August 2001	
Planning Hazardous Substance Enforcements		
North East Lincolnshire Council - Planning Department	August 2023	Variable
West Lindsey District Council	February 2023	Variable
Lincolnshire County Council - Highways and Planning Department	January 2023	Variable
North Lincolnshire Council - Planning Department	July 2023	Variable
Planning Hazardous Substance Consents		
Lincolnshire County Council - Highways and Planning Department	August 2007	Variable
North East Lincolnshire Council - Planning Department	February 2016	Variable
West Lindsey District Council	February 2016	Variable
North Lincolnshire Council - Planning Department	October 2015	Variable

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	January 2009	As notified
BGS Estimated Soil Chemistry British Geological Survey - National Geoscience Information Service	December 2015	As notified
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	March 2024	Bi-Annually
CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB) Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011 November 2020	As notified
Coal Mining Affected Areas The Coal Authority - Property Searches	February 2023	Annual Rolling Update
Mining Instability Ove Arup & Partners	June 1998	Not Applicable
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	April 2020	As notified
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	November 2024	Annually
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	November 2024	Annually
Industrial Land Use	**Version**	**Update Cycle**
Contemporary Trade Directory Entries Thomson Directories	September 2024	Quarterly
Fuel Station Entries Catalist Ltd - Experian	February 2024	Quarterly
Points of Interest - Commercial Services PointX	December 2024	Quarterly
Points of Interest - Education and Health PointX	December 2024	Quarterly
Points of Interest - Manufacturing and Production PointX	December 2024	Quarterly
Points of Interest - Public Infrastructure PointX	December 2024	Quarterly
Points of Interest - Recreational and Environmental PointX	December 2024	Quarterly
Underground Electrical Cables National Grid	January 2024	

Sensitive Land Use	Version	Update Cycle
Ancient Woodland		
Natural England	November 2024	Bi-Annually
Areas of Adopted Green Belt		
North East Lincolnshire Council - Planning Department	July 2024	Quarterly
North Lincolnshire Council	July 2024	Quarterly
West Lindsey District Council	July 2024	Quarterly
Areas of Unadopted Green Belt		
North East Lincolnshire Council - Planning Department	July 2024	Quarterly
North Lincolnshire Council	July 2024	Quarterly
West Lindsey District Council	July 2024	Quarterly
Areas of Outstanding Natural Beauty		
Natural England	November 2024	Bi-Annually
Environmentally Sensitive Areas		
Natural England	August 2023	
Forest Parks		
Forestry Commission	May 2023	Not Applicable
Local Nature Reserves		
Natural England	August 2024	Bi-Annually
Marine Nature Reserves		
Natural England	August 2024	Bi-Annually
National Nature Reserves		
Natural England	August 2024	Bi-Annually
National Parks		
Natural England	September 2024	Bi-Annually
Nitrate Sensitive Areas		
Natural England	April 2023	Not Applicable
Nitrate Vulnerable Zones		
Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	April 2016	
Environment Agency - Head Office	November 2024	Bi-Annually
Ramsar Sites		
Natural England	August 2024	Bi-Annually
Sites of Special Scientific Interest		
Natural England	April 2024	Bi-Annually
Special Areas of Conservation		
Natural England	October 2024	Bi-Annually
Special Protection Areas		
Natural England	November 2024	Bi-Annually

Data Suppliers

A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Scottish Environment Protection Agency	
The Coal Authority	
British Geological Survey	
Centre for Ecology and Hydrology	
Natural Resources Wales	
Scottish Natural Heritage	
Natural England	
Public Health England	
Ove Arup	
Stantec UK Ltd	

Useful Contacts

Contact	Name and Address	Contact Details
1	**British Geological Survey - Enquiry Service** British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
2	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
3	**North Lincolnshire Council - Environmental Protection Team** Church Square House, PO Box 42, Scunthorpe, Lincolnshire, DN15 6XQ	Telephone: 01724 296296 Fax: 01724 280271 Website: www.northlincs.gov.uk
4	**Environment Agency - Head Office** Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol, Avon, BS32 4UD	Telephone: 01454 624400 Fax: 01454 624409
5	**Ordnance Survey** Adanac Drive, Southampton, Hampshire, SO16 0AS	Telephone: 03456 05 05 05 Email: customerservices@ordnancesurvey.co.uk Website: www.ordnancesurvey.co.uk
6	**Health and Safety Executive** 5S.2 Redgrave Court, Merton Road, Bootle, L20 7HS	Website: www.hse.gov.uk
7	**North Lincolnshire Council - Planning Department** Church Square House, PO Box 42, Scunthorpe, DN15 6XQ	Telephone: 01724 296296 Fax: 01724 280271 Website: www.northlincs.gov.uk
8	**PointX** 5-6 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY	Website: www.pointx.co.uk
9	**Natural England** County Hall, Spetchley Road, Worcester, WR5 2NP	Telephone: 0300 060 3900 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
-	**Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	**Landmark Information Group Limited** Landmark Information Group, Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0330 036 6618 Fax: 0844 844 9951 Email: helpdesk@landmark.co.uk Website: www.landmark.co.uk

Please note that the Environment Agency / Natural Resources Wales / SEPA have a charging policy in place for enquiries.

Geology 1:50,000 Maps Legends

Artificial Ground and Landslip

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	WMGR	Infilled Ground	Artificial Deposit	Not Supplied - Holocene
	MGR	Made Ground (Undivided)	Artificial Deposit	Not Supplied - Holocene

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	ALV	Alluvium	Clay, Silt, Sand and Gravel	Not Supplied - Holocene
	TILLD	Till, Devensian	Diamicton	Not Supplied - Devensian
	SUTN	Sutton Sand Formation	Sand	Not Supplied - Devensian
	GFSDD	Glaciofluvial Sheet Deposits, Devensian	Sand and Gravel	Not Supplied - Devensian
	TILMP	Till, Mid Pleistocene	Diamicton	Not Supplied - Cromerian
	GFDMP	Glaciofluvial Deposits, Mid Pleistocene	Sand and Gravel	Not Supplied - Cromerian
	IGLD	Interglacial Lacustrine Deposits	Clay and Silt	Not Supplied - Pleistocene
	GLLD	Glaciolacustrine Deposits	Sand and Gravel	Not Supplied - Pleistocene
	HEAD	Head	Clay, Silt, Sand and Gravel	Not Supplied - Quaternary
	GLLD1	Glaciolacustrine Deposits, 1	Clay and Silt	Not Supplied - Quaternary
	IGBD	Interglacial Beach Deposits	Sand and Gravel	Not Supplied - Quaternary

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	BCK	Burnham Chalk Formation	Chalk	Not Supplied - Turonian
	WCK	Welton Chalk Formation	Chalk	Not Supplied - Cenomanian
	FYCK	Ferriby Chalk Formation	Chalk	Not Supplied - Cenomanian
	CA	Carstone Formation	Sandstone	Not Supplied - Albian
	KC	Kimmeridge Clay Formation	Mudstone	Not Supplied - Kimmeridgian

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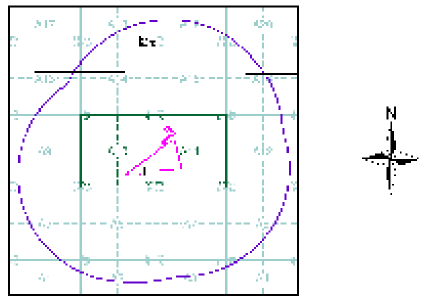
Geology 1:50,000 Maps

This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:50,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around the site. This mapping may be more up to date than previously published paper maps.
The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page. Not all layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:50,000 Maps Coverage

Map ID:	2	Map ID:	1
Map Sheet No:	080	Map Sheet No:	089
Map Name:	Kingston upon H	Map Name:	Brigg
Map Date:	1983	Map Date:	1982
Bedrock Geology:	Available	Bedrock Geology:	Available
Superficial Geology:	Available	Superficial Geology:	Available
Artificial Geology:	Available	Artificial Geology:	Available
Faults:	Not Supplied	Faults:	Not Supplied
Landslip:	Available	Landslip:	Available
Rock Segments:	Not Supplied	Rock Segments:	Not Supplied

Geology 1:50,000 Maps - Slice A



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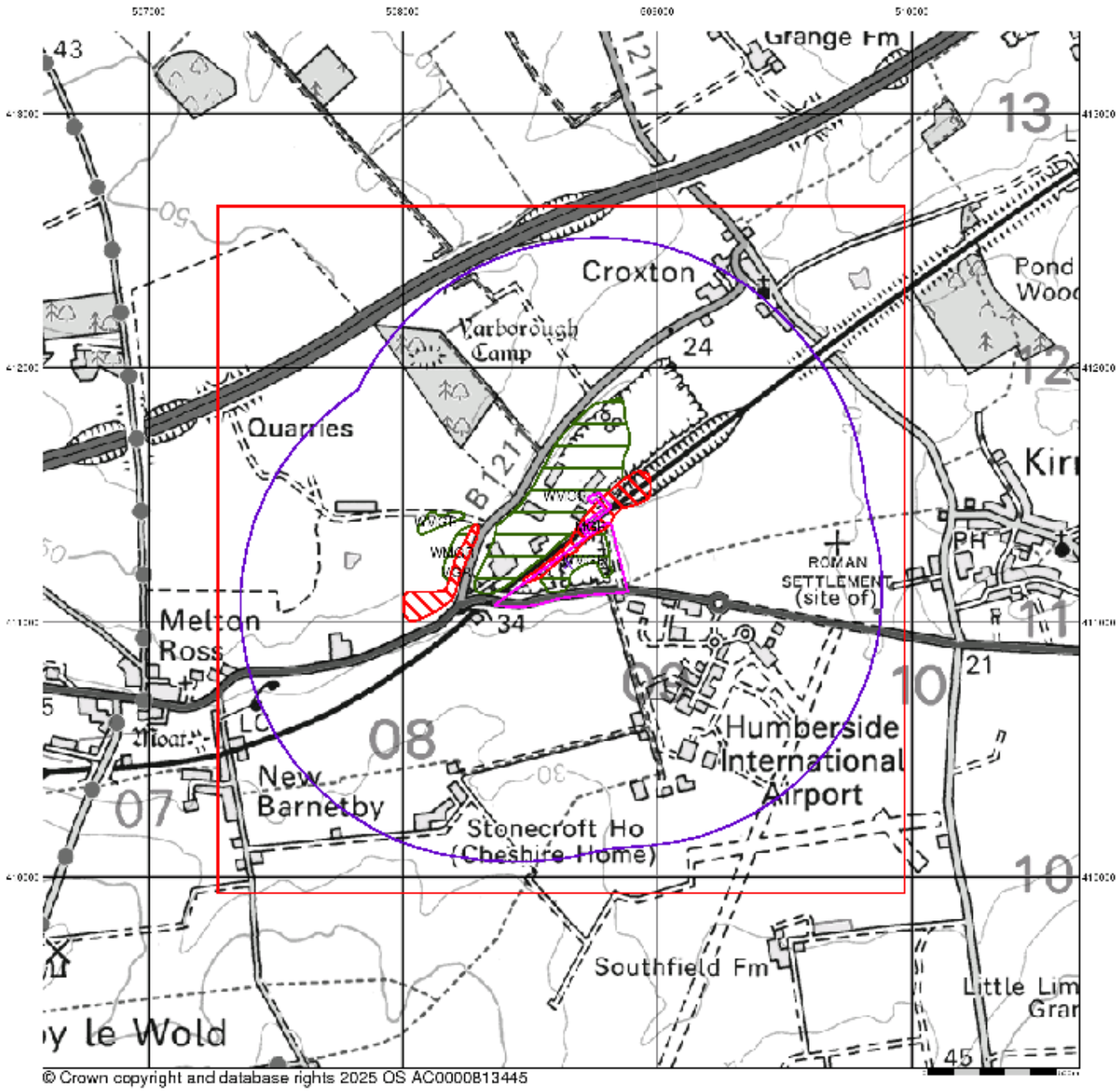
Order Number: 366363277_1_1
Customer Reference: GCU0127073
National Grid Reference: 508650, 411230
Slice: A
Site Area (Ha): 8.23
Search Buffer (m): 1000

Site Details:

Singleton Birch Ltd, Melton Ross Quarries, BARNETBY, DN38 6AE



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Artificial Ground and Landslip

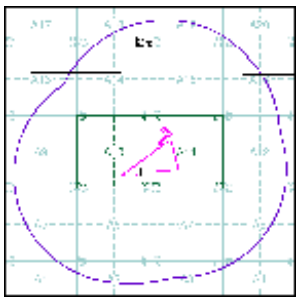
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions and unstable ground.

Artificial ground includes:

- Made ground - man-made deposits such as embankments and spoil heaps on the natural ground surface.
- Worked ground - areas where the ground has been cut away such as quarries and road cuttings.
- Infilled ground - areas where the ground has been cut away then wholly or partially backfilled.
- Landscaped ground - areas where the surface has been reshaped.
- Disturbed ground - areas of ill-defined shallow or near surface mineral workings where it is impracticable to map made and worked ground separately.

Mass movement (landslip) deposits on BGS geological maps are primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground. The dataset also includes foundered strata, where the ground has collapsed due to subsidence.

Artificial Ground and Landslip Map - Slice A



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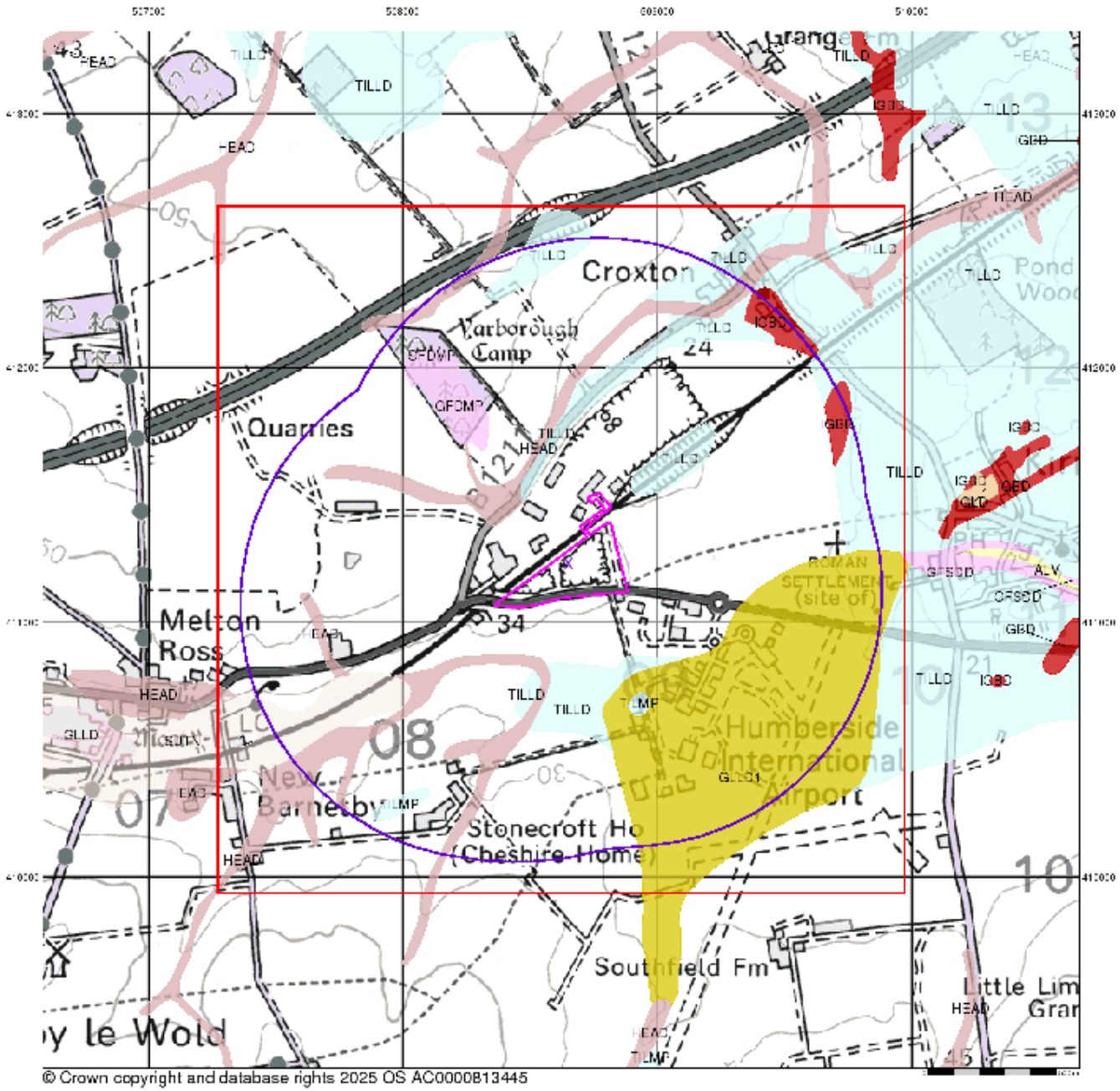

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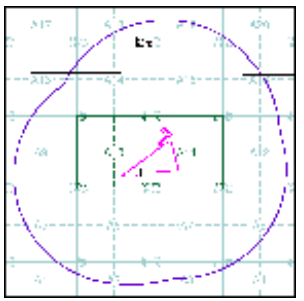
Superficial Geology

Superficial Deposits are the youngest geological deposits formed during the most recent period of geological time, the Quaternary, which extends back about 1.8 million years from the present.

They rest on older deposits or rocks referred to as Bedrock. This dataset contains Superficial deposits that are of natural origin and 'in place'. Other superficial strata may be held in the Mass Movement dataset where they have been moved, or in the Artificial Ground dataset where they are of man-made origin.

Most of these Superficial deposits are unconsolidated sediments such as gravel, sand, silt and clay, and onshore they form relatively thin, often discontinuous patches or larger spreads.

Superficial Geology Map - Slice A



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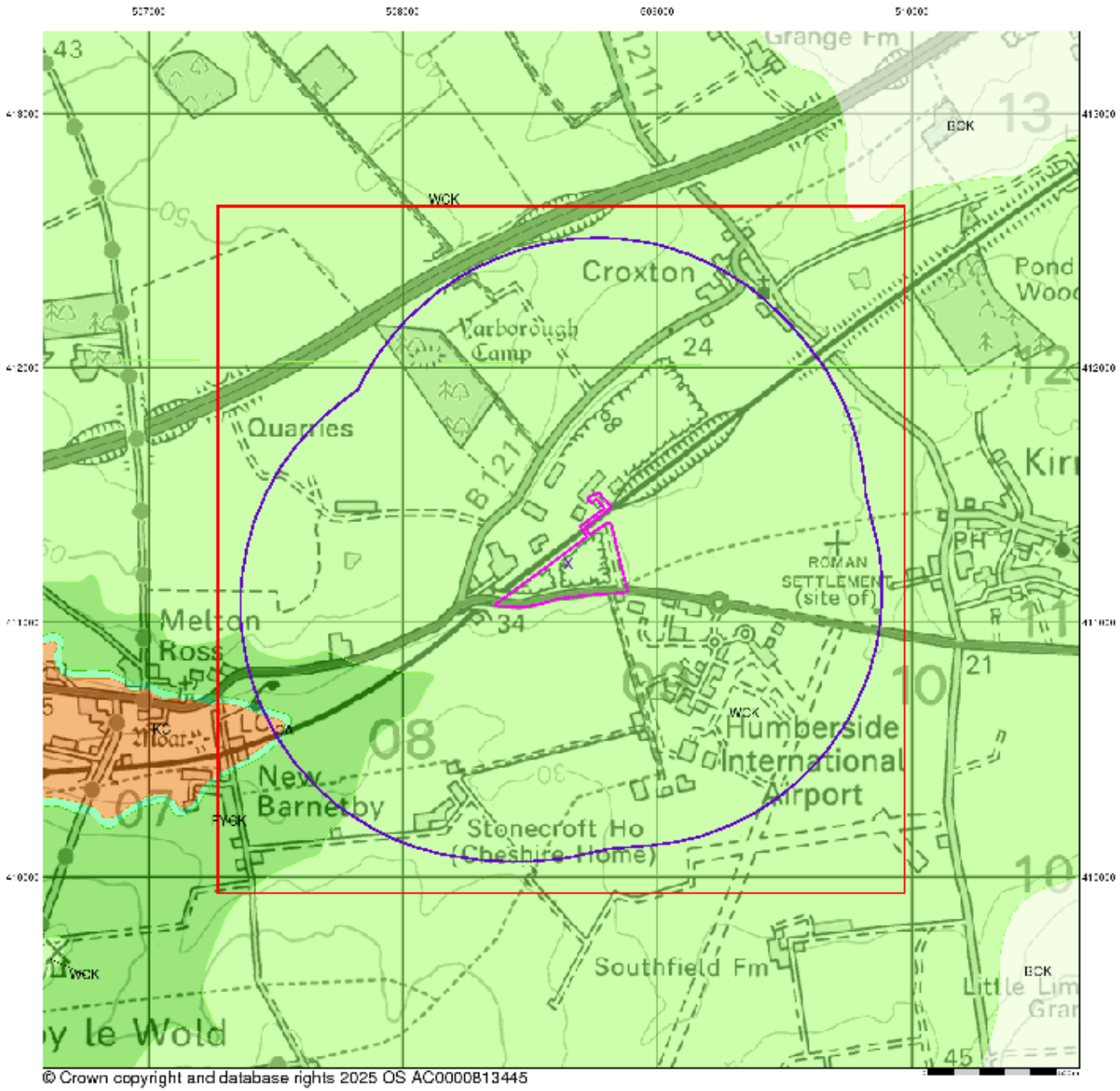
Site Details:

Singleton Birch Ltd, Melton Ross Quarries, BARNETBY, DN38 6AE

Landmark Information Group

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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Bedrock and Faults

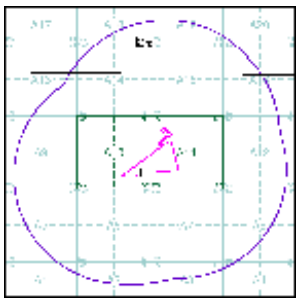
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

The bedrock has formed over vast lengths of geological time ranging from ancient and highly altered rocks of the Proterozoic, some 2500 million years ago, or older, up to the relatively young Pliocene, 1.8 million years ago.

The bedrock geology includes many lithologies, often classified into three types based on origin: igneous, metamorphic and sedimentary.

The BGS Faults and Rock Segments dataset includes geological faults (e.g. normal, thrust), and thin beds mapped as lines (e.g. coal seam, gypsum bed). Some of these are linked to other particular 1:50,000 Geology datasets, for example, coal seams are part of the bedrock sequence, most faults and mineral veins primarily affect the bedrock but cut across the strata and post date its deposition.

Bedrock and Faults Map - Slice A



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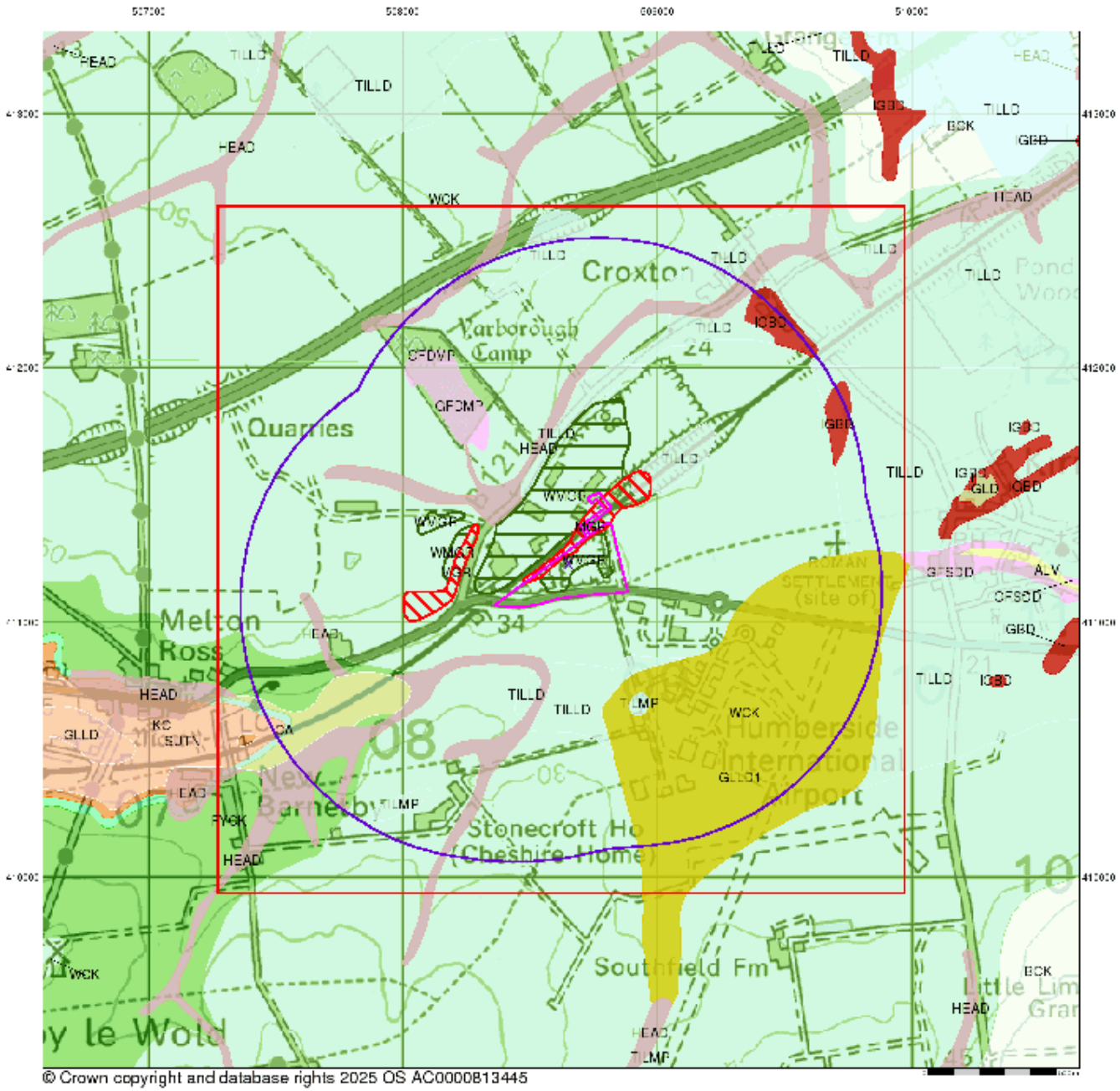

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Combined Surface Geology

The Combined Surface Geology map combines all the previous maps into one combined geological overview of your site.

Please consult the legends to the previous maps to interpret the Combined "Surface Geology" map.

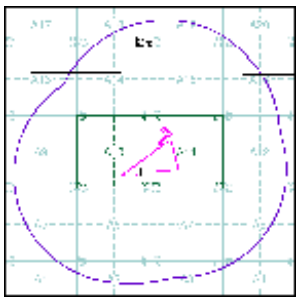
Additional Information

More information on 1:50,000 Geological mapping and explanations of rock classifications can be found on the BGS website. Using the LEX Codes in this report, further descriptions of rock types can be obtained by interrogating the 'BGS Lexicon of Named Rock Units'. This database can be accessed by following the 'Information and Data' link on the BGS website.

Contact

British Geological Survey
Kingsley Dunham Centre
Keyworth
Nottingham
NG12 5GG
Telephone: 0115 936 3143
Fax: 0115 936 3276
email: enquiries@bgs.ac.uk
website: www.bgs.ac.uk

Combined Geology Map - Slice A



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Historical Mapping Legends

Ordnance Survey County Series 1:10,560

Gravel Pit
Sand Pit
Other Pits
Quarry
Shingle
Orchard
Osiers
Reeds
Marsh
Mixed Wood
Deciduous
Brushwood
Fir
Furze
Rough Pasture
Arrow denotes flow of water
Trigonometrical Station
Site of Antiquities
Bench Mark
Pump, Guide Post, Signal Post
Well, Spring, Boundary Post
285 Surface Level
Sketched Contour
Instrumental Contour
Main Roads
Fenced
Un-Fenced
Minor Roads
Fenced
Un-Fenced
Sunken Road
Raised Road
Road over Railway
Railway over River
Railway over Road
Level Crossing
Road over River or Canal
Road over Stream
Road over Stream
County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy County Burgh Boundary (Scotland)
R.D. Bdy. Rural District Boundary
Civil Parish Boundary

Ordnance Survey Plan 1:10,000

Chalk Pit, Clay Pit or Quarry
Gravel Pit
Sand Pit
Disused Pit or Quarry
Refuse or Slag Heap
Lake, Loch or Pond
Dunes
Boulders
Coniferous Trees
Non-Coniferous Trees
Orchard
Scrub
Coppice
Bracken
Heath
Rough Grassland
Marsh
Reeds
Saltings
Building
Glasshouse
Direction of Flow of Water
Shingle
Sand
Sloping Masonry
Pylon
Electricity Transmission Line
Pole
Cutting
Embankment
Standard Gauge Multiple Track
Road Under
Road Over
Level Crossing
Foot Bridge
Standard Gauge Single Track
Siding, Tramway or Mineral Line
Narrow Gauge
Geographical County
Administrative County, County Borough or County of City
Municipal Borough, Urban or Rural District, Burgh or District Council
Borough, Burgh or County Constituency
Shown only when not coincident with other boundaries
Civil Parish
Shown alternately when coincidence of boundaries occurs

BP, BS	Boundary Post or Stone	Pol Sta	Police Station
Ch	Church	PO	Post Office
CH	Club House	PC	Public Convenience
F E Sta	Fire Engine Station	PH	Public House
FB	Foot Bridge	SB	Signal Box
Fn	Fountain	Spr	Spring
GP	Guide Post	TCB	Telephone Call Box
MP	Mile Post	TCP	Telephone Call Post
MS	Mile Stone	W	Well

1:10,000 Raster Mapping

Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community boundary
District, Unitary, Metropolitan, London Borough boundary
Constituency boundary
Area of wooded vegetation
Non-coniferous trees
Non-coniferous trees (scattered)
Coniferous trees
Coniferous trees (scattered)
Positioned tree
Orchard
Coppice or Osiers
Rough Grassland
Heath
Scrub
Marsh, Salt Marsh or Reeds
Water feature
Flow arrows
MHW(S) Mean high water (springs)
MLW(S) Mean low water (springs)
Telephone line (where shown)
Electricity transmission line (with poles)
BM 123.45 m Bench mark (where shown)
Triangulation station
Point feature (e.g. Guide Post or Mile Stone)
Pylon, flare stack or lighting tower
Site of (antiquity)
Glasshouse
General Building
Important Building

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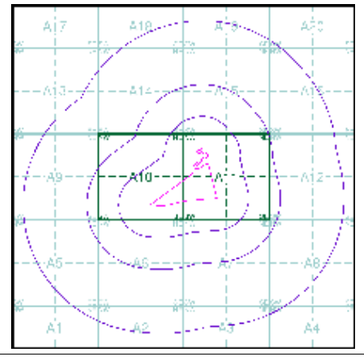
Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Lincolnshire	1:10,560	1886	2
Lincolnshire	1:10,560	1908	3
Lincolnshire	1:10,560	1950 - 1951	4
Ordnance Survey Plan	1:10,000	1956	5
Ordnance Survey Plan	1:10,000	1972 - 1973	6
Ordnance Survey Plan	1:10,000	1972	7
Ordnance Survey Plan	1:10,000	1991	8
10K Raster Mapping	1:10,000	2000	9
10K Raster Mapping	1:10,000	2006	10
VectorMap Local	1:10,000	2024	11

Historical Map - Slice A



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Site Details

Singleton Birch Ltd, Melton Ross Quarries, BARNETBY, DN38 6AE

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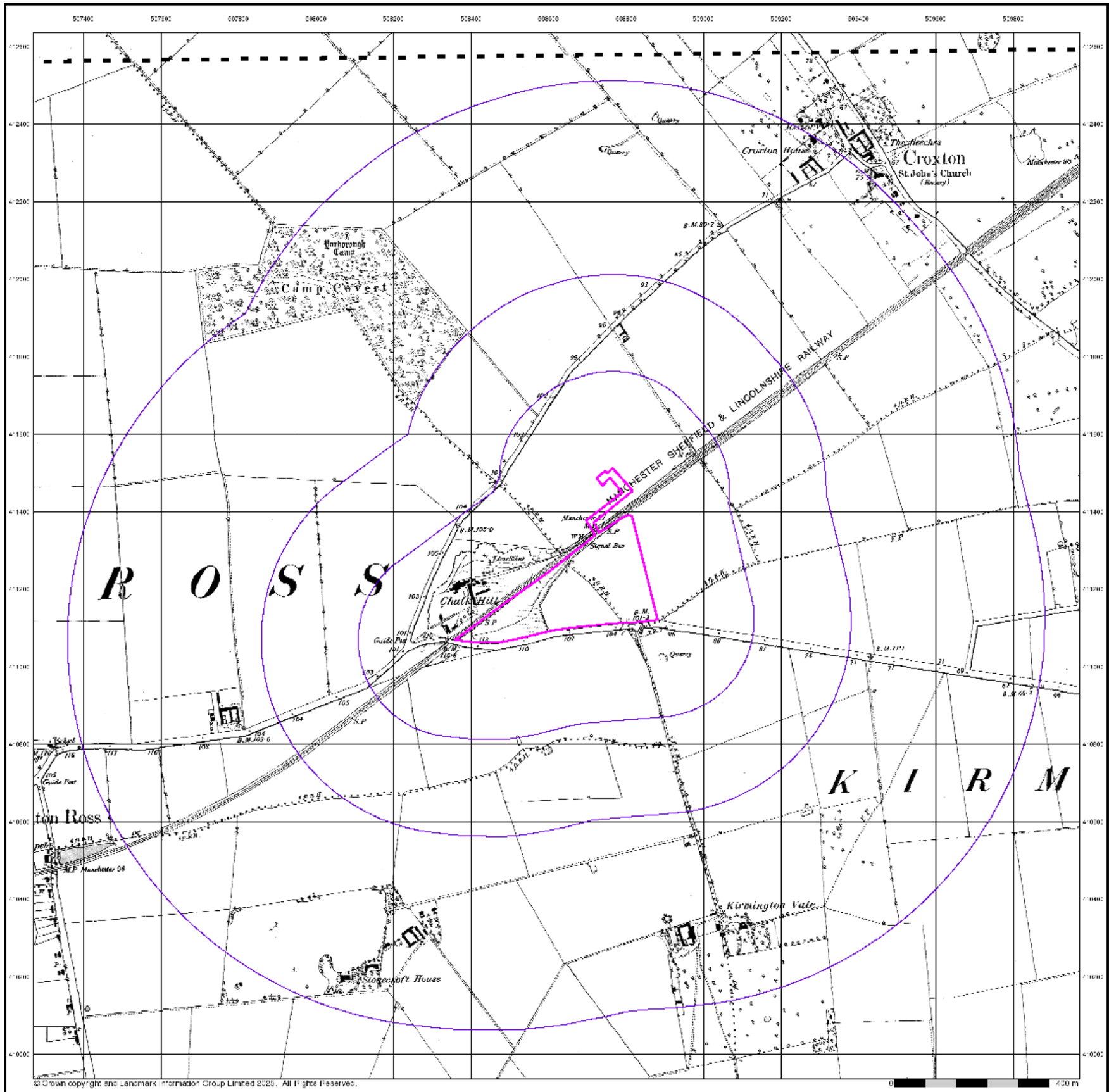

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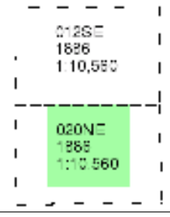
Lincolnshire

Published 1886

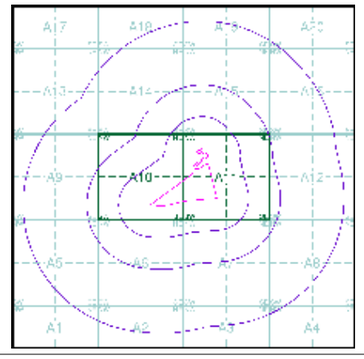
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



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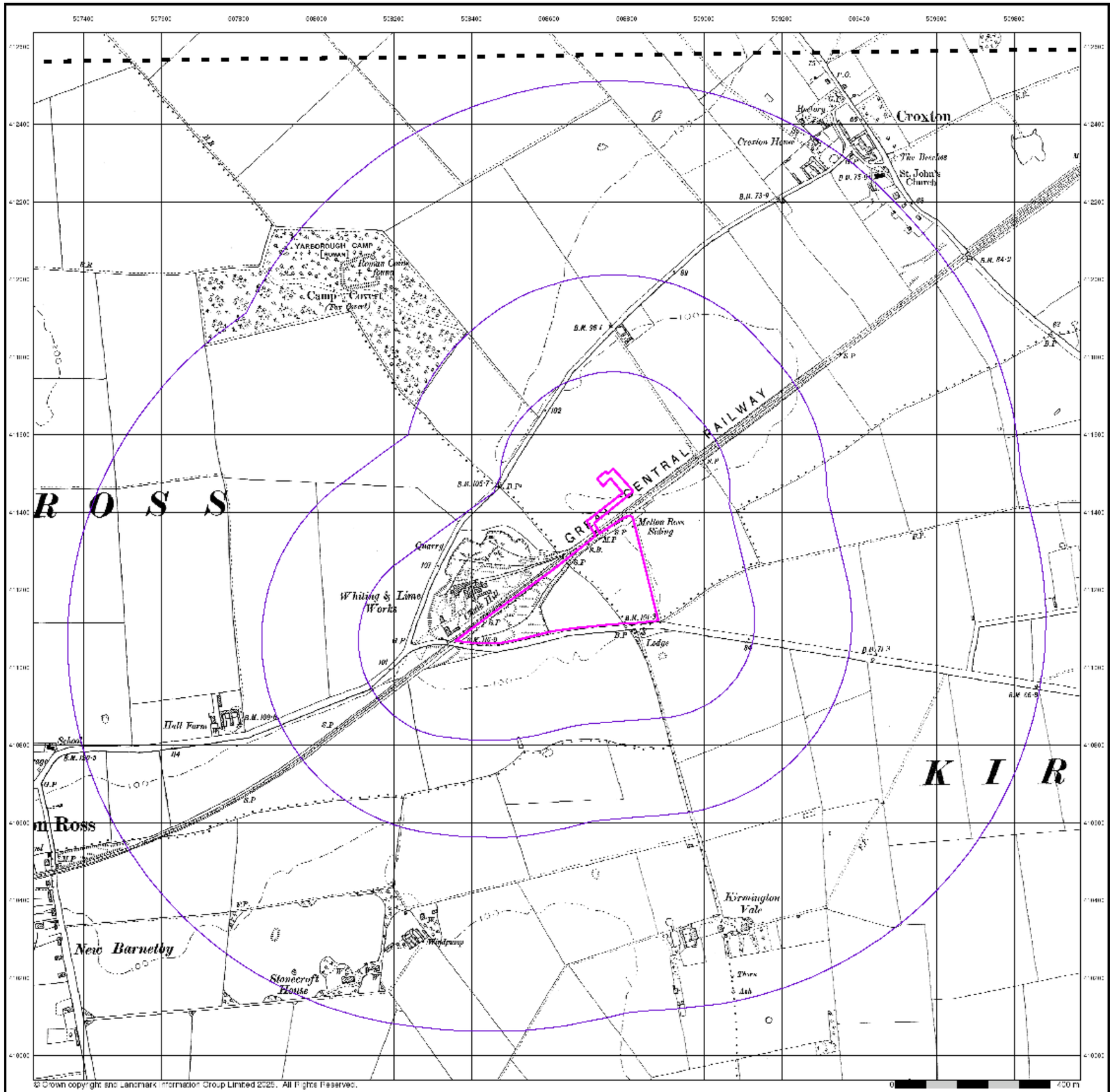

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Lincolnshire

Published 1908

Source map scale - 1:10,560

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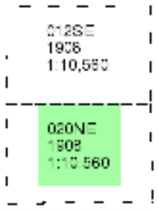
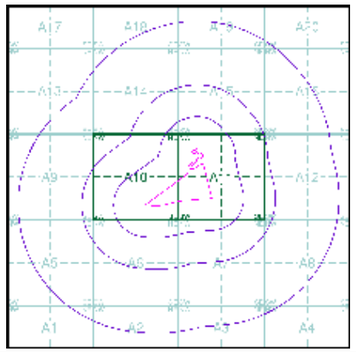


Historical Map - Slice A



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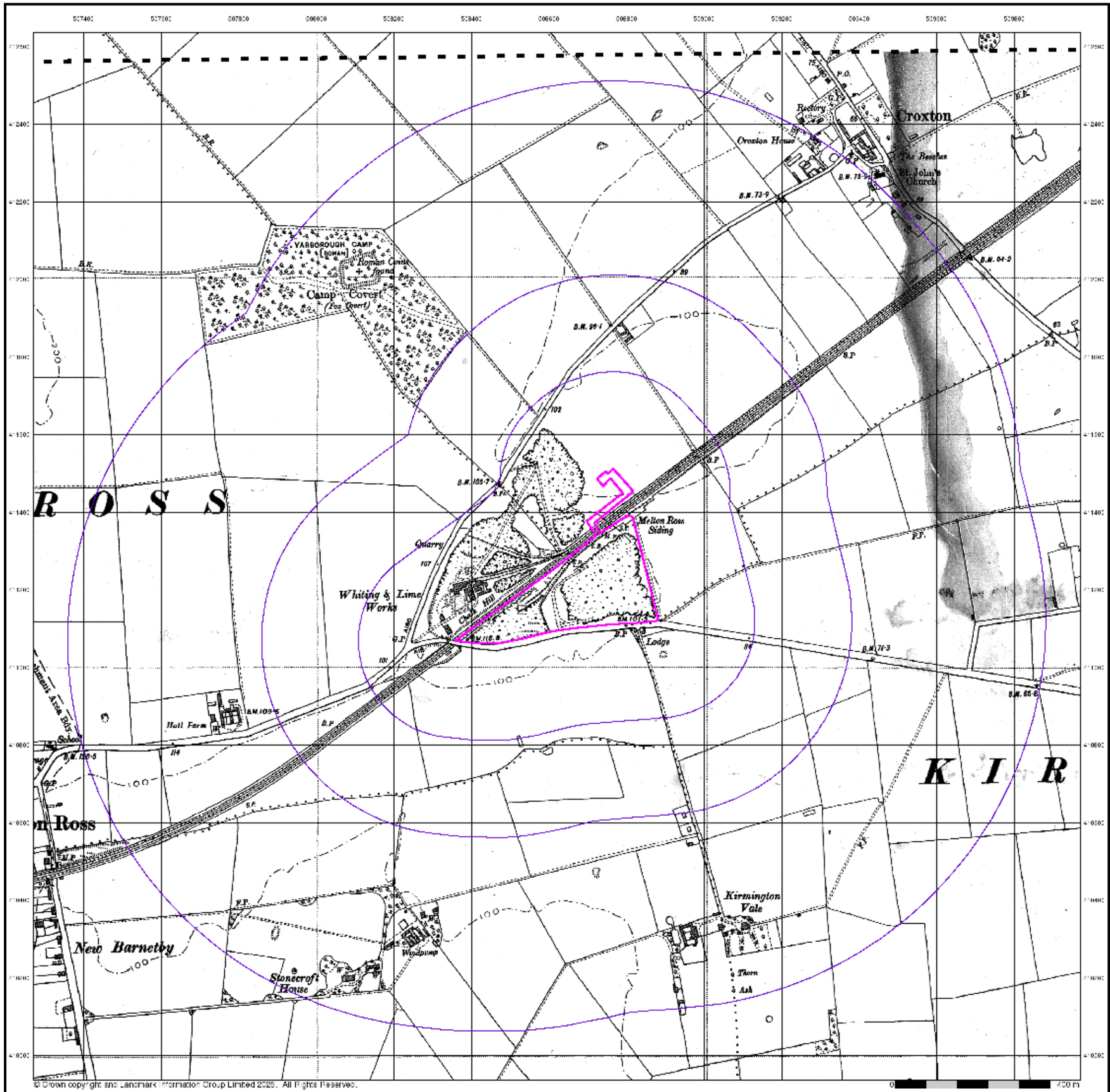
Customer Ref:	GCU0127073
National Grid Reference:	508650, 411230
Slice:	A
Site Area (Ha):	8.23
Search Buffer (m):	1000

Site Details

Singleton Birch Ltd, Melton Ross Quarries, BARNETBY, DN38 6AE

Landmark INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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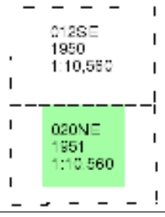
Lincolnshire

Published 1950 - 1951

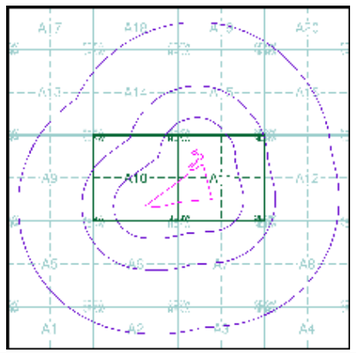
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A

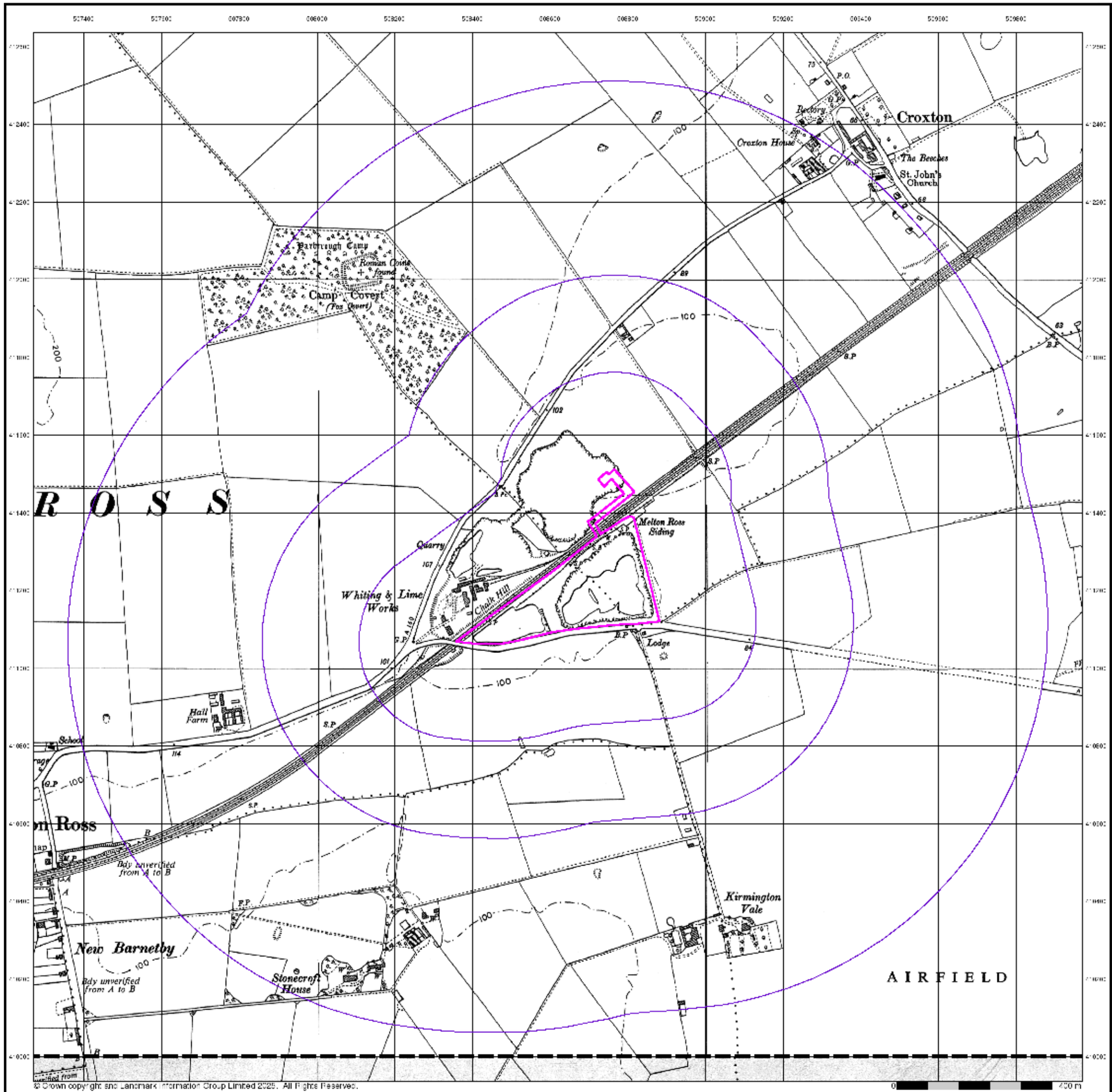


Order Details

Order Number:	366363277_1_1
Customer Ref:	GCU0127073
National Grid Reference:	508650, 411230
Slice:	A
Site Area (Ha):	8.23
Search Buffer (m):	1000

Site Details

Singleton Birch Ltd, Melton Ross Quarries, BARNETBY, DN38 6AE



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Ordnance Survey Plan

Published 1956

Source map scale - 1:10,000

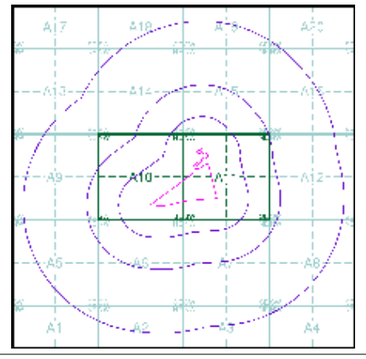
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

TA01SE
1956
1:10,560

TA00NE
1956
1:10,560

Historical Map - Slice A



Order Details

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National Grid Reference:	508650, 411230
Slice:	A
Site Area (Ha):	8.23
Search Buffer (m):	1000

Site Details

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Landmark INFORMATION GROUP

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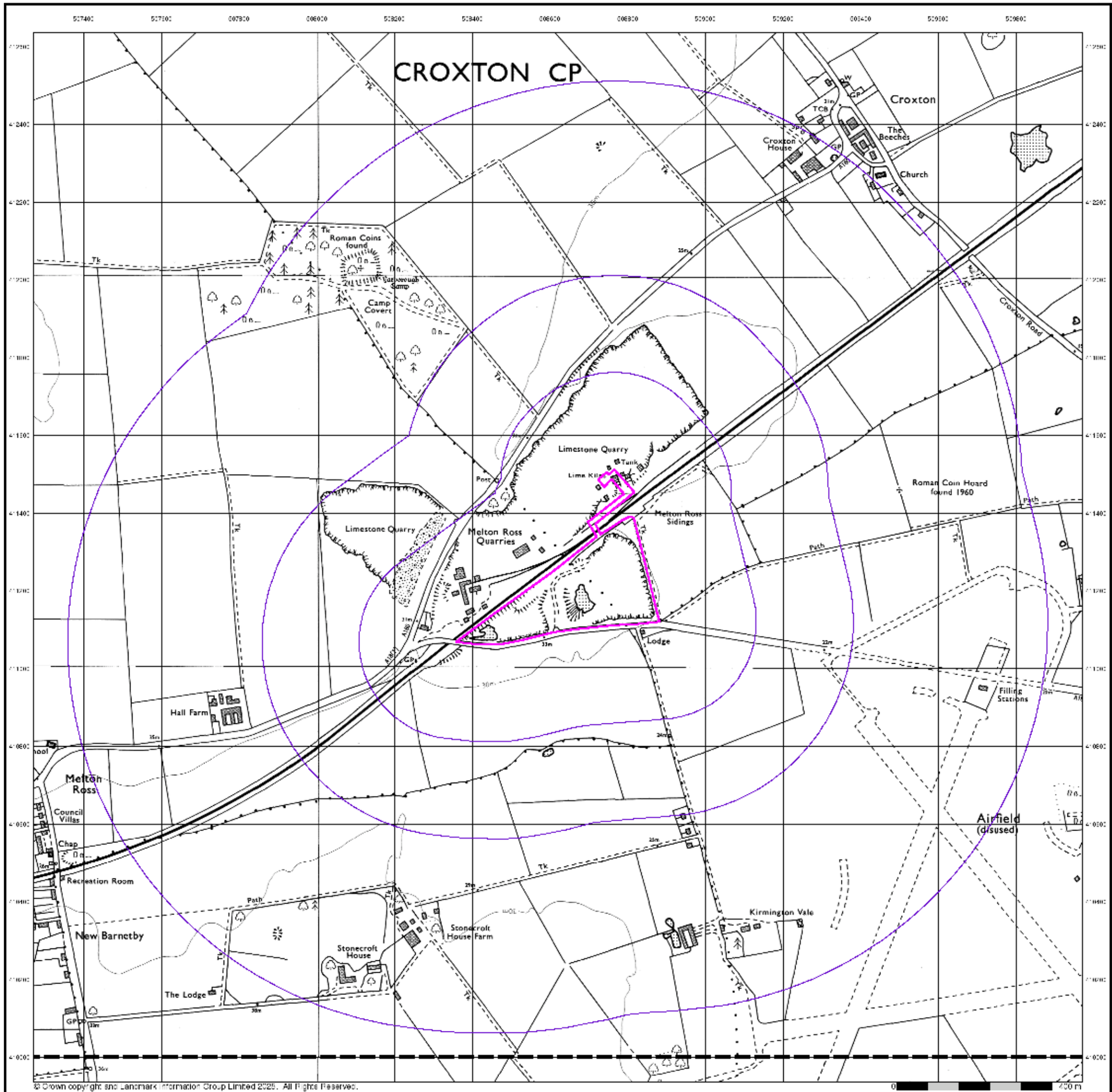

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Ordnance Survey Plan

Published 1972 - 1973

Source map scale - 1:10,000

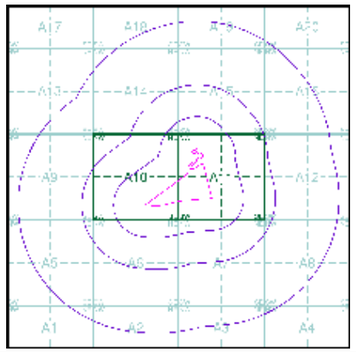
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

TA01SE
1972
1:10,000

TA00NE
1973
1:10,000

Historical Map - Slice A

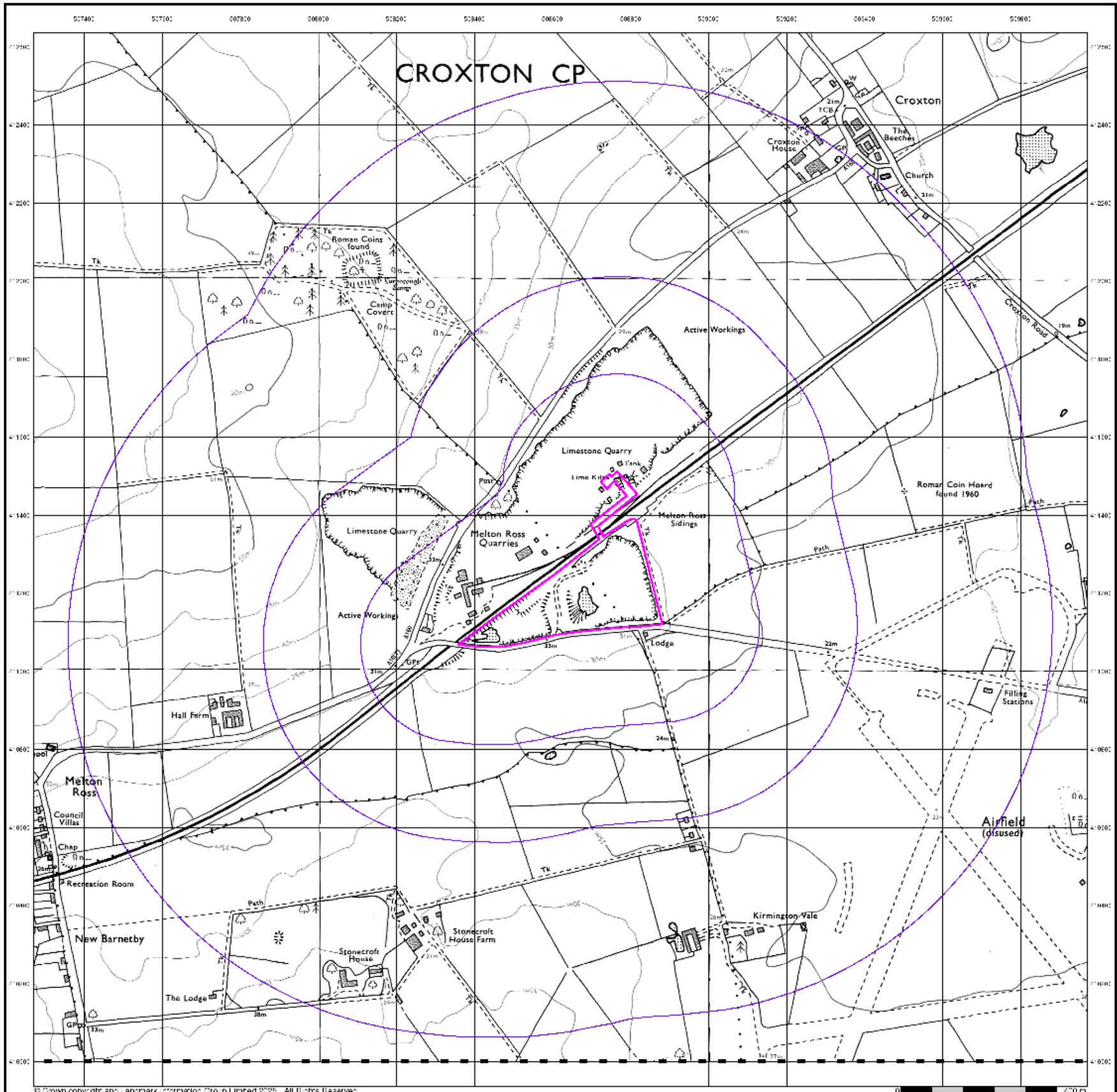


Order Details

Order Number:	366363277_1_1
Customer Ref:	GCU0127073
National Grid Reference:	508650, 411230
Slice:	A
Site Area (Ha):	8.23
Search Buffer (m):	1000

Site Details

Singleton Birch Ltd, Melton Ross Quarries, BARNETBY, DN38 6AE



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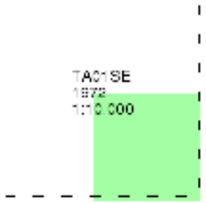
Ordnance Survey Plan

Published 1972

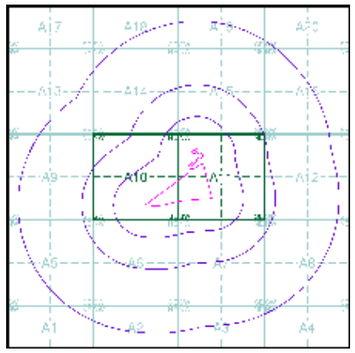
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



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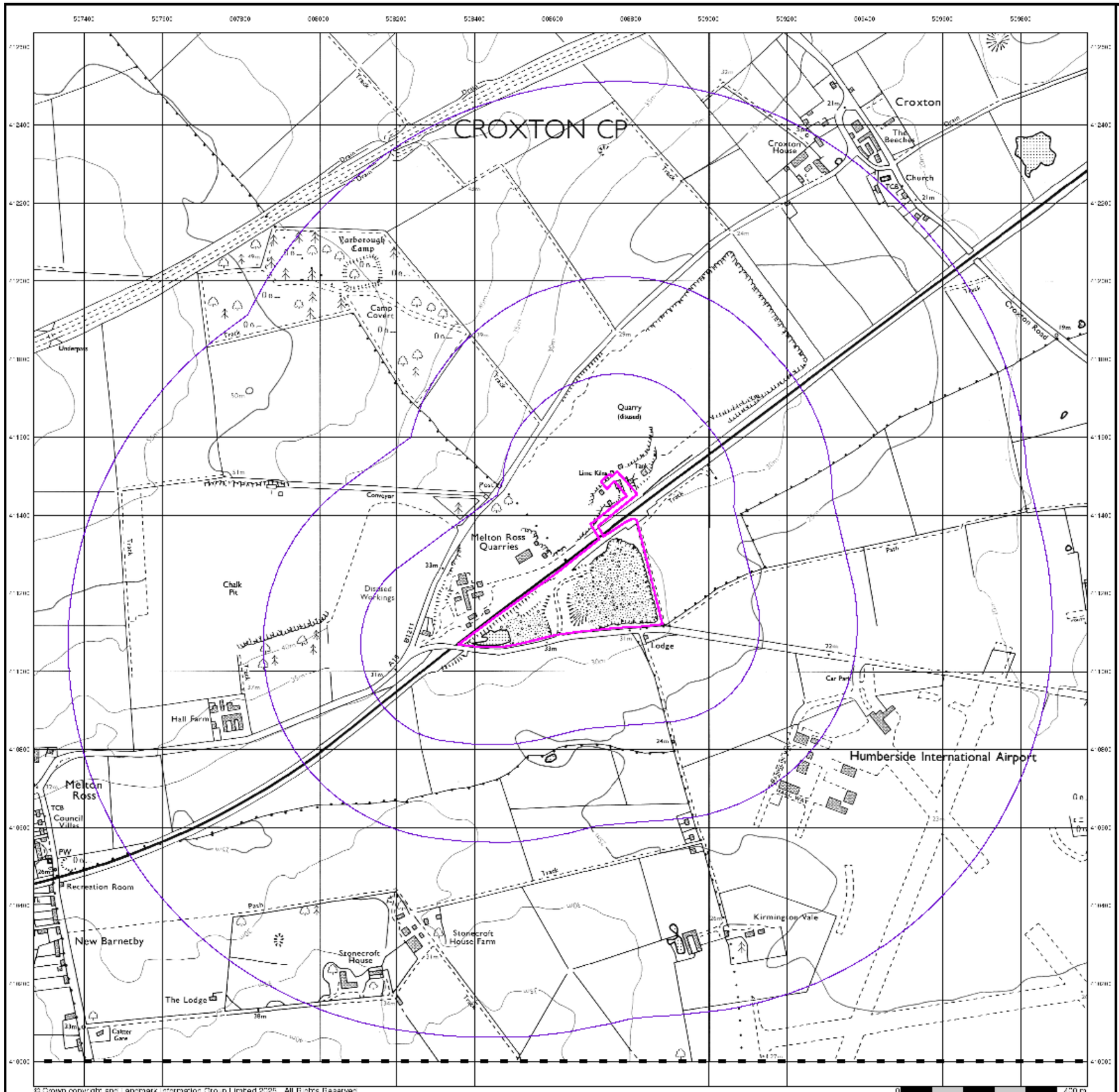
National Grid Reference:	508650, 411230
Slice:	A
Site Area (Ha):	8.23
Search Buffer (m):	1000

Site Details

Singleton Birch Ltd, Melton Ross Quarries, BARNETBY, DN38 6AE



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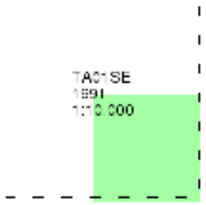
Ordnance Survey Plan

Published 1991

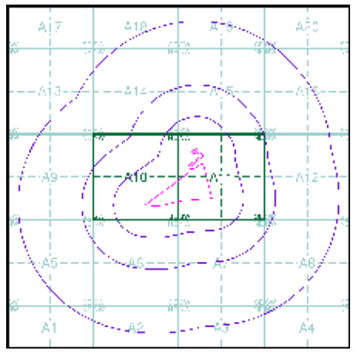
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

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Slice:	A
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Site Details

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Landmark INFORMATION GROUP

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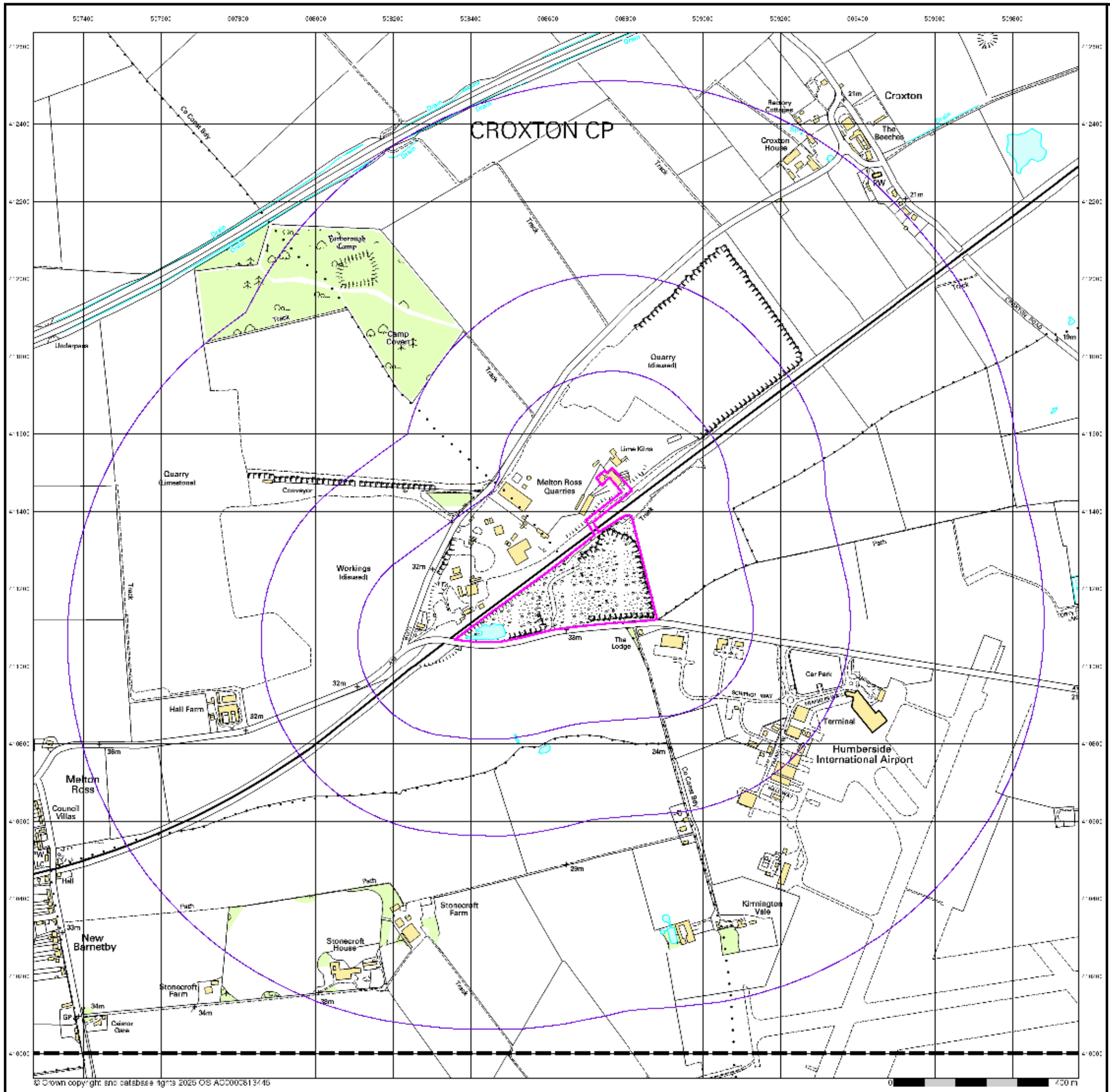

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10k Raster Mapping

Published 2000

Source map scale - 1:10,000

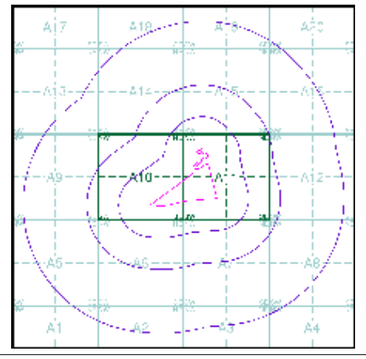
The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

TA01SE
2000
1:10,000

TA00NE
2000
1:10,000

Historical Map - Slice A



Order Details

Order Number:	366363277_1_1
Customer Ref:	GCU0127073
National Grid Reference:	508650, 411230
Slice:	A
Site Area (Ha):	8.23
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Site Details

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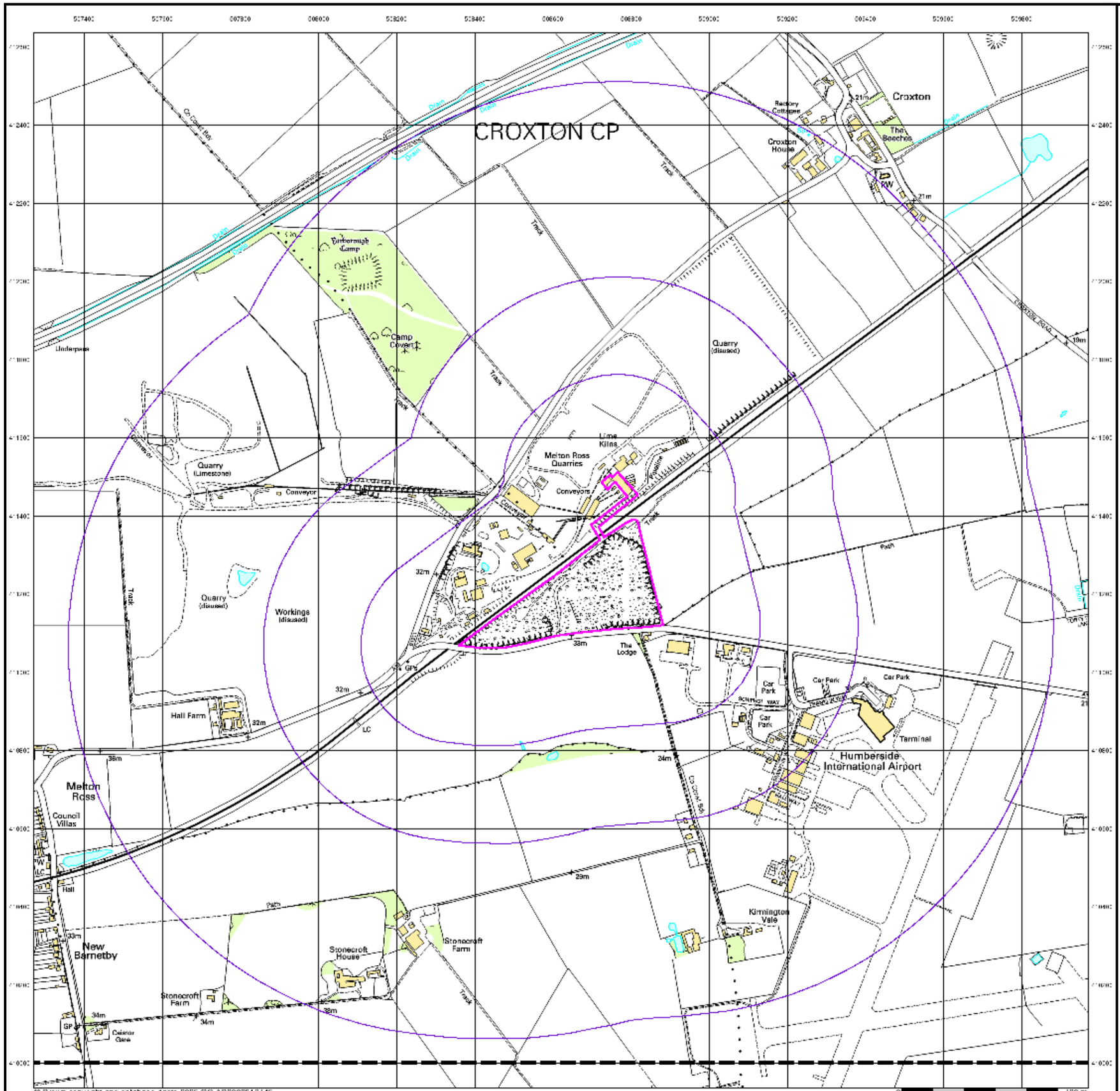

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10k Raster Mapping

Published 2006

Source map scale - 1:10,000

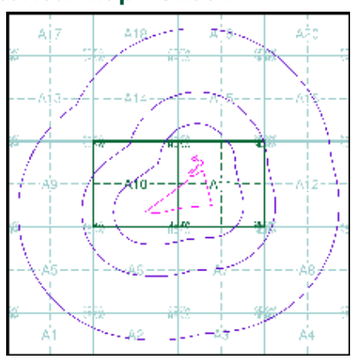
The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

TA01SE
2006
1:10,000

TA00NE
2006
1:10,000

Historical Map - Slice A



Order Details

Order Number:	366363277_1_1
Customer Ref:	GCU0127073
National Grid Reference:	508650, 411230
Slice:	A
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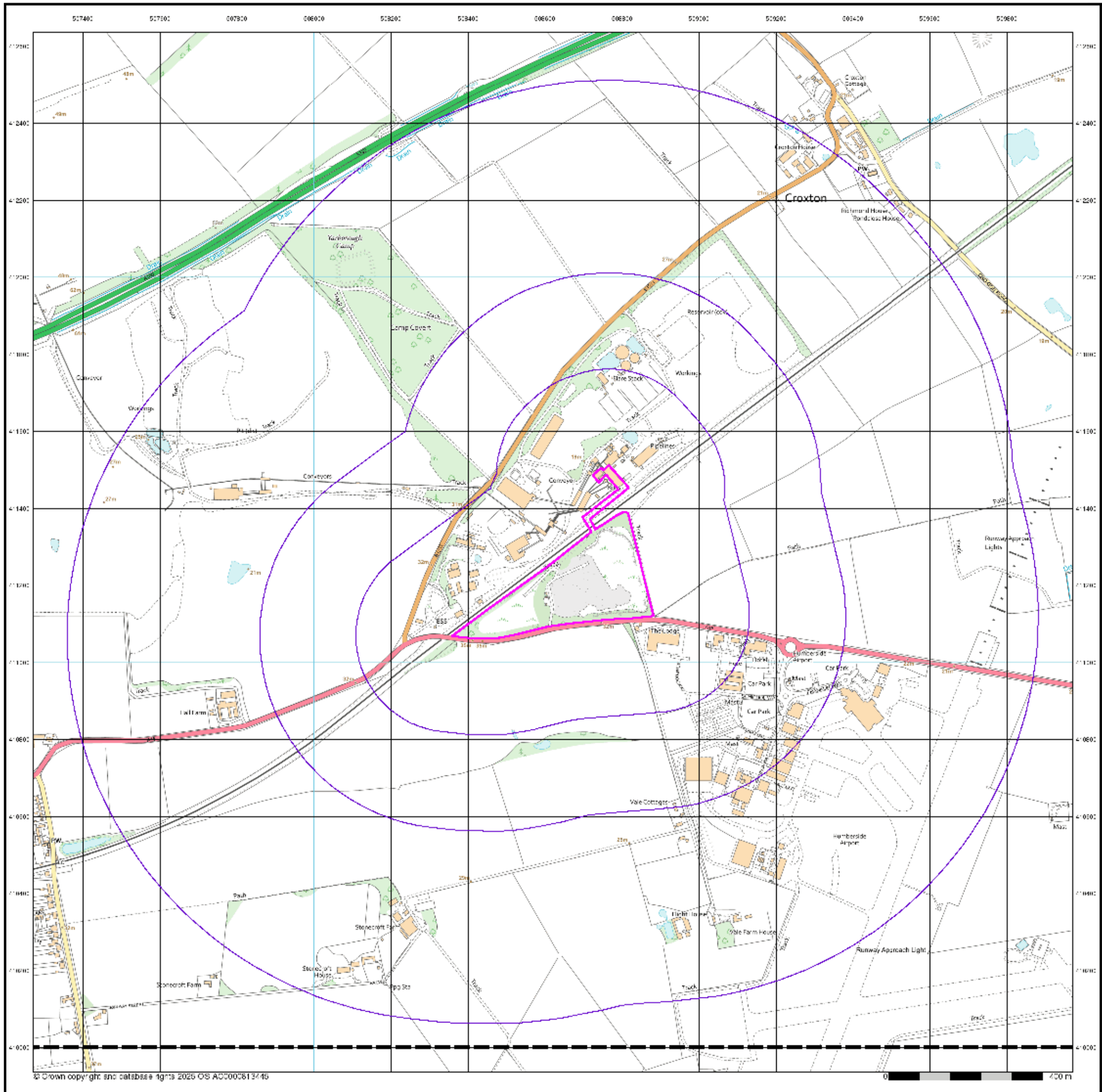
Search Buffer (m):	1000

Site Details

Singleton Birch Ltd, Melton Ross Quarries, BARNETBY, DN38 6AE



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VectorMap Local

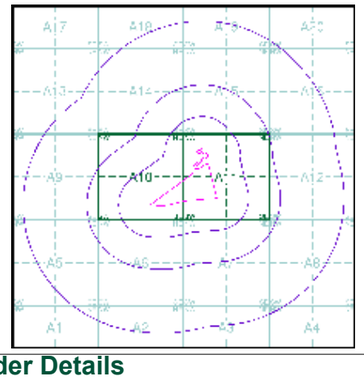
Published 2024

Source map scale - 1:10,000

VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities),1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)

Historical Map - Slice A



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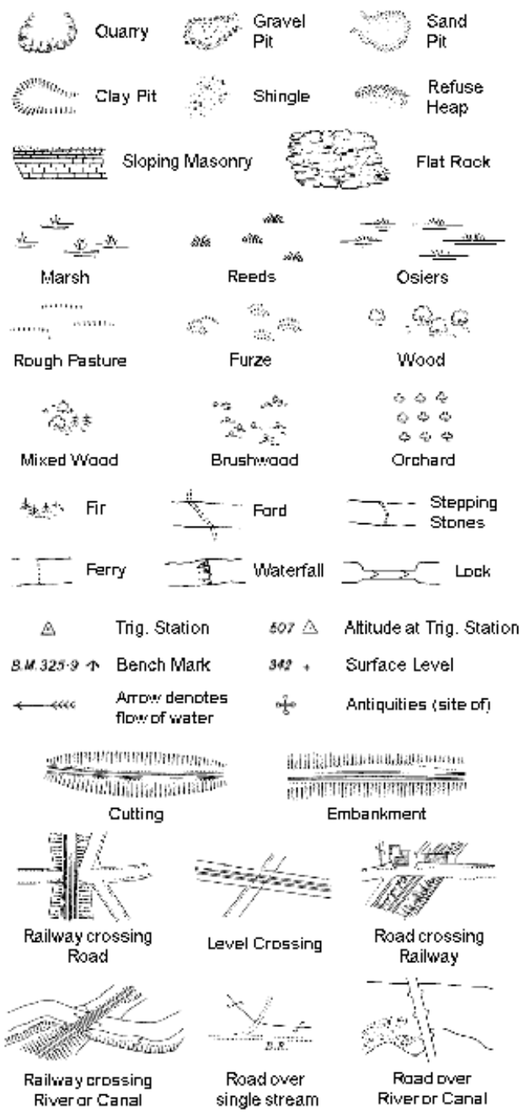
Site Details

Singleton Birch Ltd, Melton Ross Quarries, BARNETBY, DN38 6AE

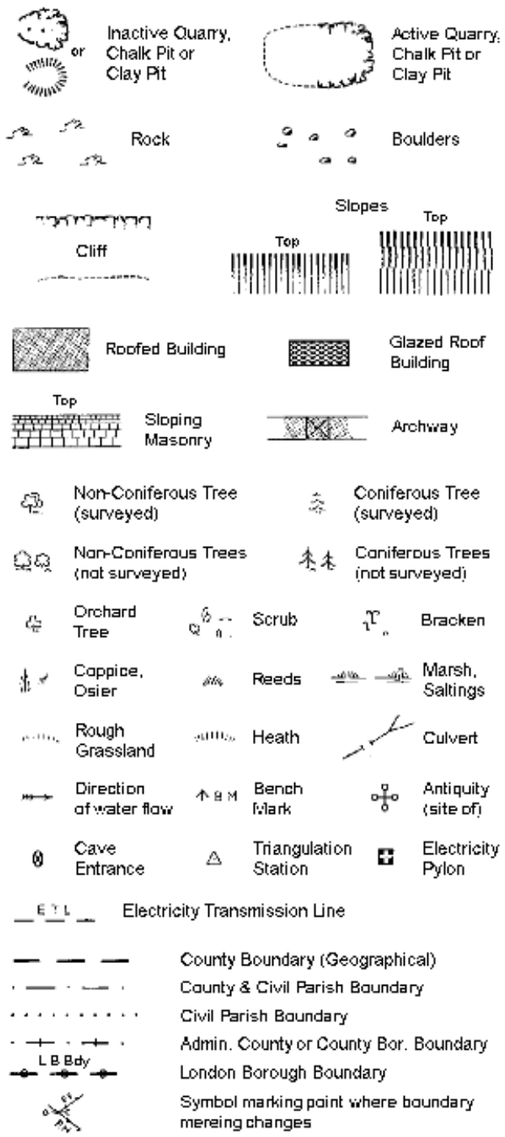
Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



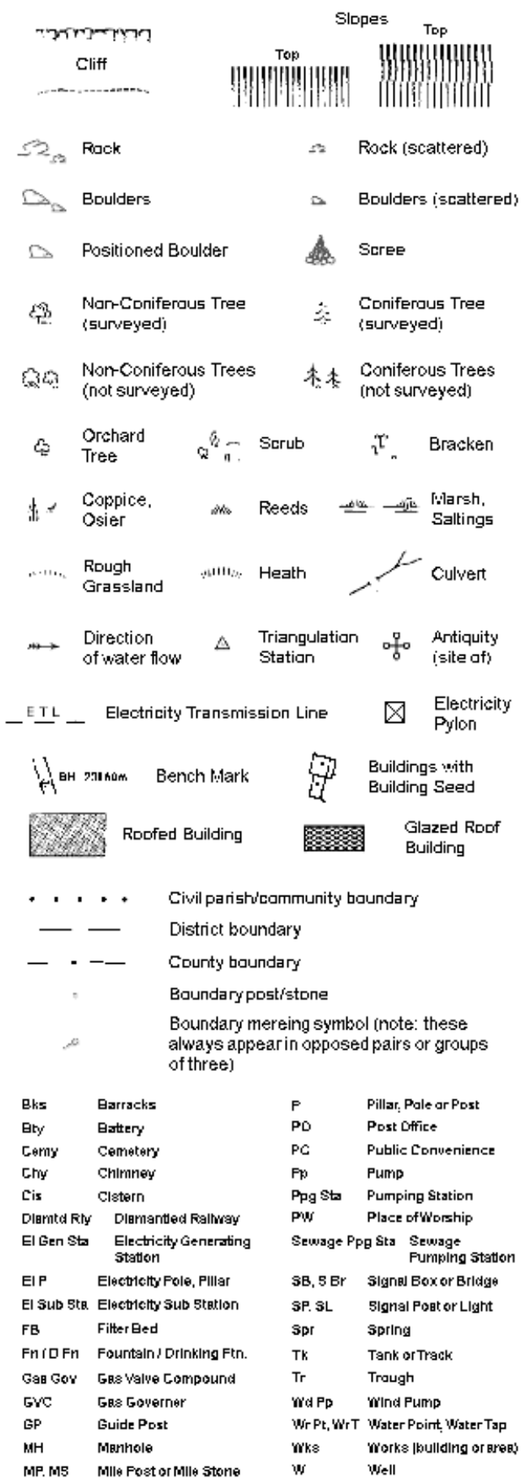
B.S B.S	Boundary Post or Stone	*P.C.B*	Police Call Box
B.R.	Bridle Road	*P*	Pump
E.P	Electricity Pylon	*S.P*	Signal Post
F.B.	Foot Bridge	*Sl.*	Sluice
F.P.	Foot Path	*Sp.*	Spring
G.P	Guide Post or Board	*T.C.B*	Telephone Call Box
M.S	Mile Stone	*Tr.*	Trough
M.P M.R	Mooring Post or Ring	*W*	Well

Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, WrT	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, WrT	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

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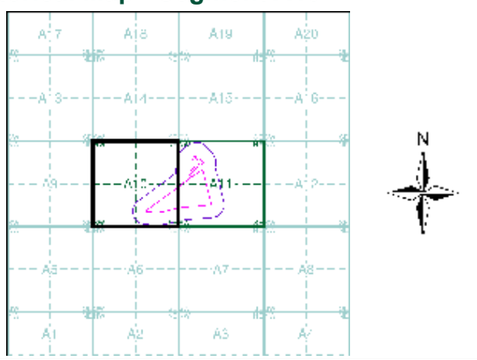
Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Lincolnshire	1:2,500	1887	2
Lincolnshire	1:2,500	1907	3
Ordnance Survey Plan	1:2,500	1969 - 1970	4
Additional SIMs	1:2,500	1969 - 1970	5
Additional SIMs	1:2,500	1985	6
Ordnance Survey Plan	1:2,500	1987	7
Large-Scale National Grid Data	1:2,500	1994	8
Historical Aerial Photography	1:2,500	1999	9

Historical Map - Segment A10



Order Details

Order Number:	366363277_1_1
Customer Ref:	GCU0127073
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Slice:	A
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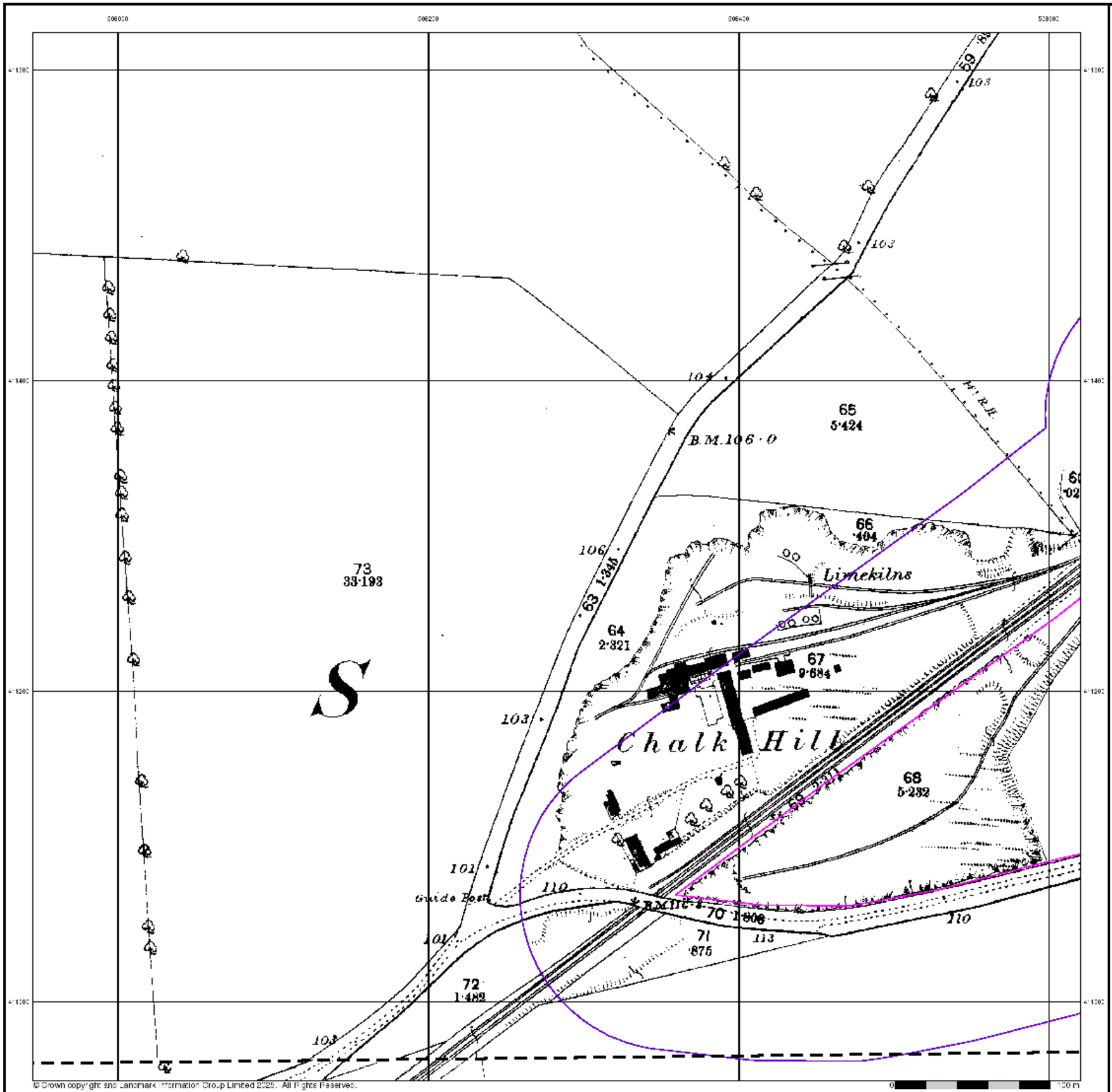
Search Buffer (m):	100

Site Details

Singleton Birch Ltd, Melton Ross Quarries, BARNETBY, DN38 6AE



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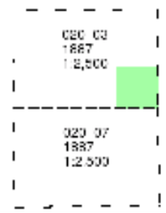
Lincolnshire

Published 1887

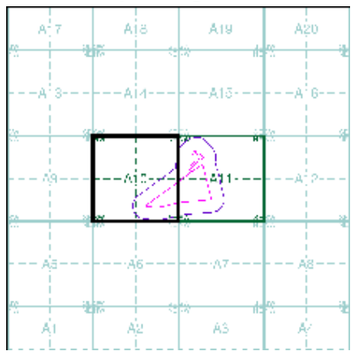
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A10



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Slice:	A
Site Area (Ha):	8.23
Search Buffer (m):	100

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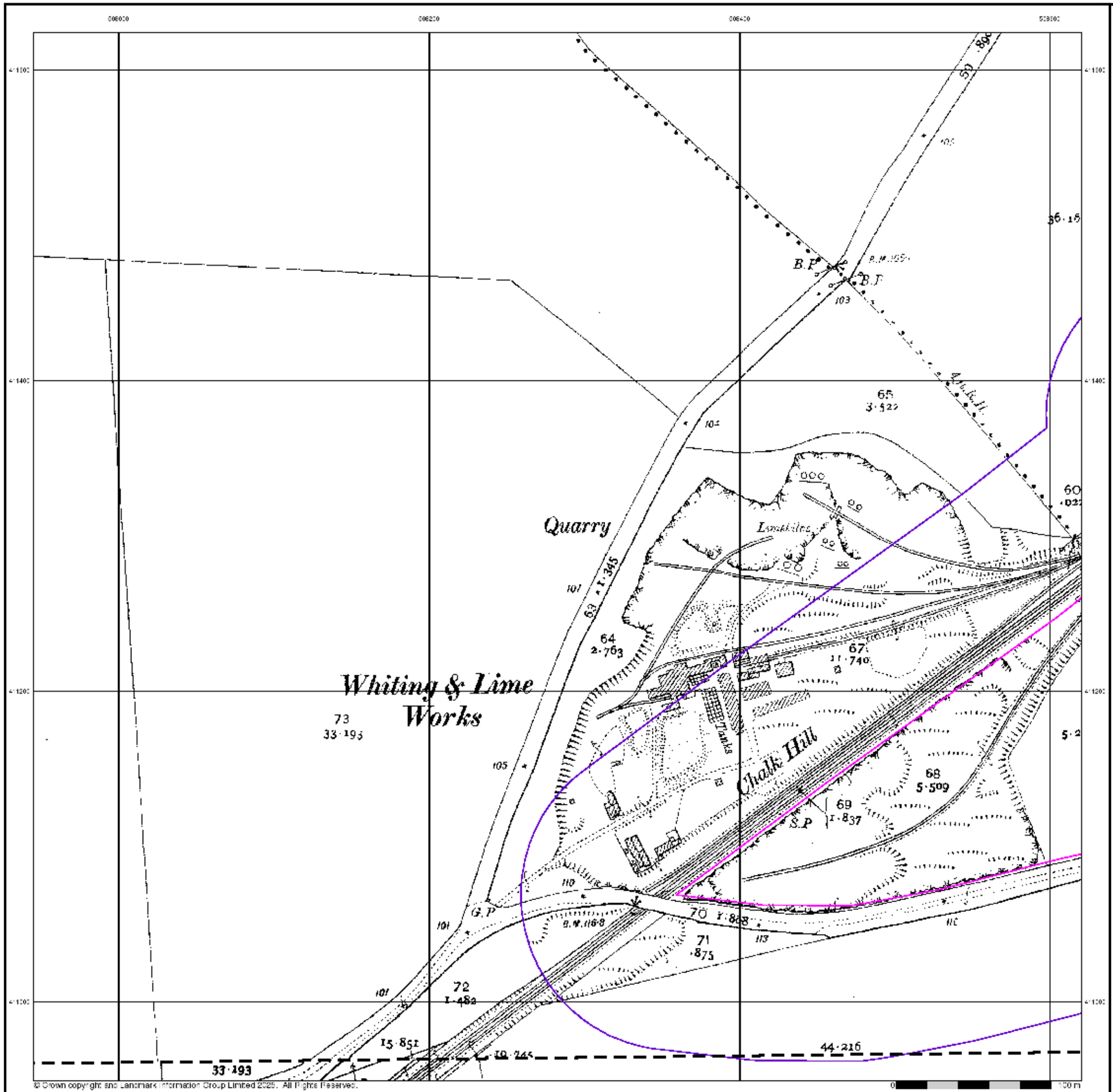

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Lincolnshire

Published 1907

Source map scale - 1:2,500

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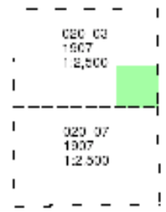
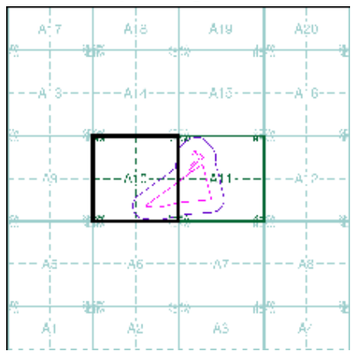
Map Name(s) and Date(s)



Historical Map - Segment A10



Order Details

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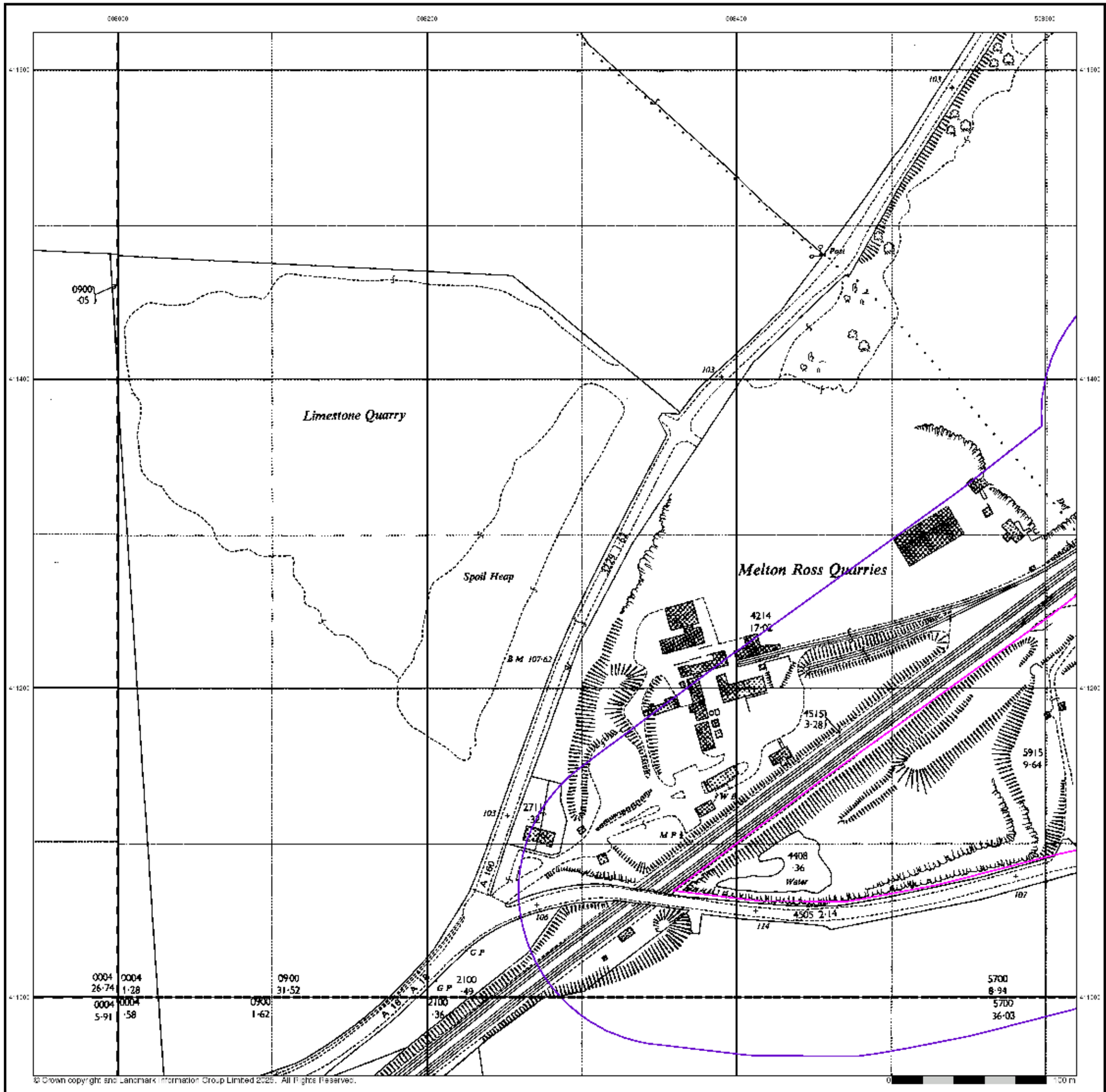
Customer Ref:	GCU0127073
National Grid Reference:	508650, 411230
Slice:	A
Site Area (Ha):	8.23
Search Buffer (m):	100

Site Details

Singleton Birch Ltd, Melton Ross Quarries, BARNETBY, DN38 6AE



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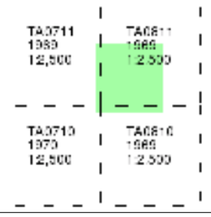
Ordnance Survey Plan

Published 1969 - 1970

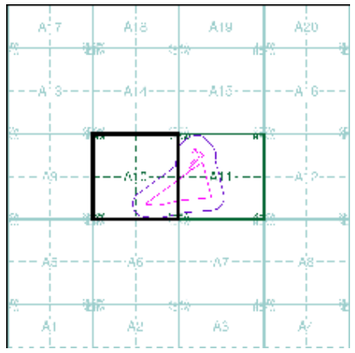
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A10



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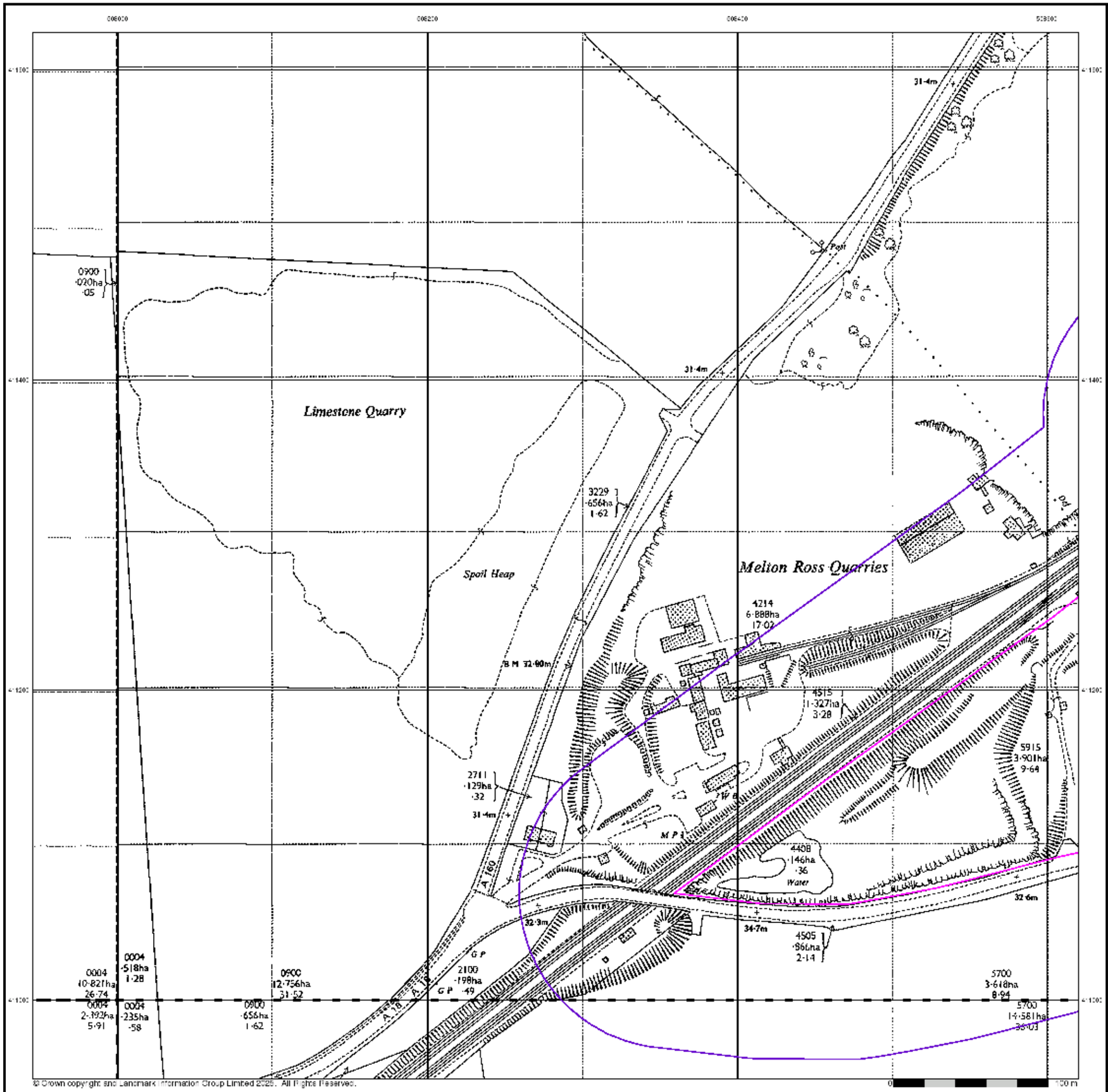

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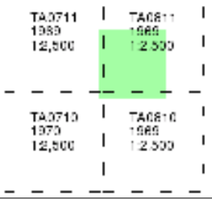
Additional SIMs

Published 1969 - 1970

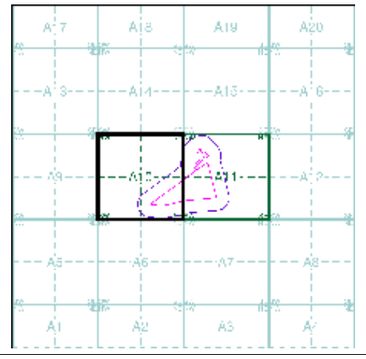
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A10



Order Details

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Site Details

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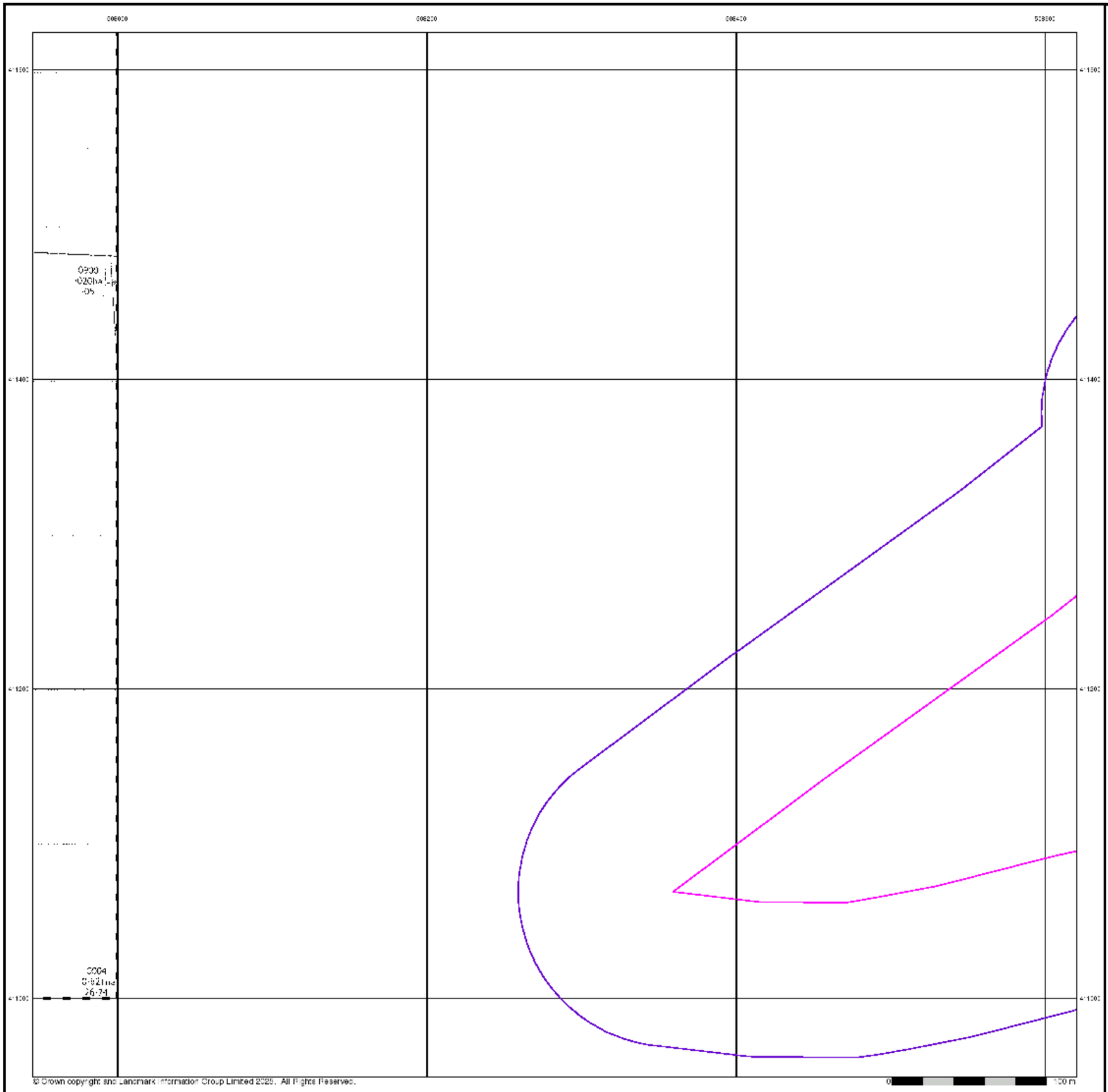

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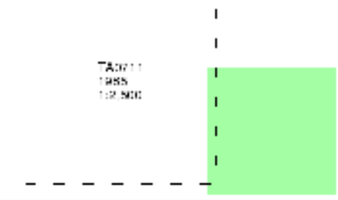
Additional SIMs

Published 1985

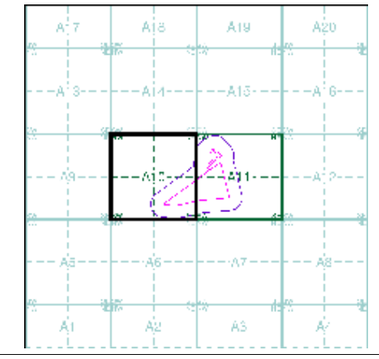
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A10



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Slice:	A
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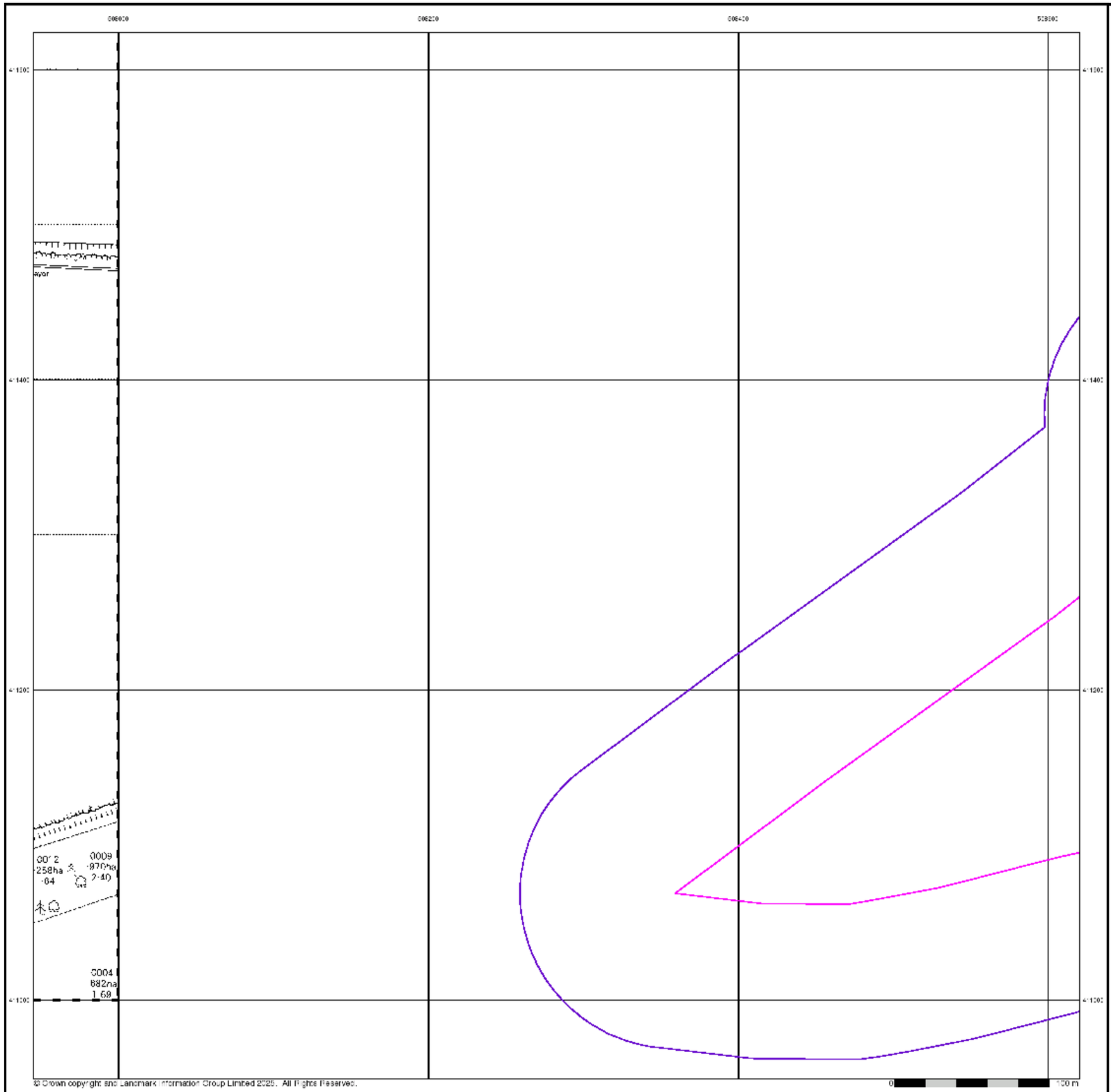

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Ordnance Survey Plan

Published 1987

Source map scale - 1:2,500

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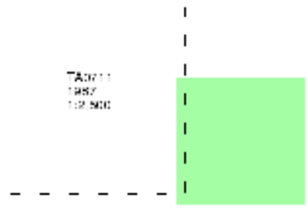
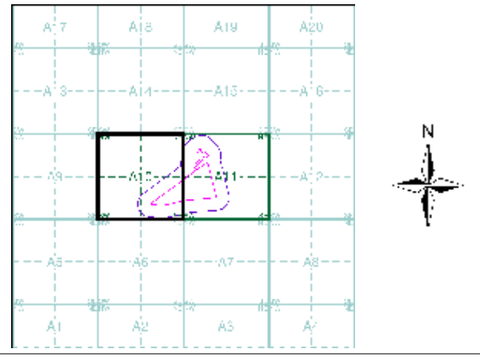


Historical Map - Segment A10



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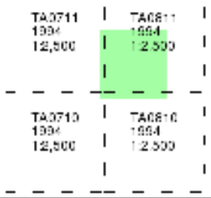
Large-Scale National Grid Data

Published 1994

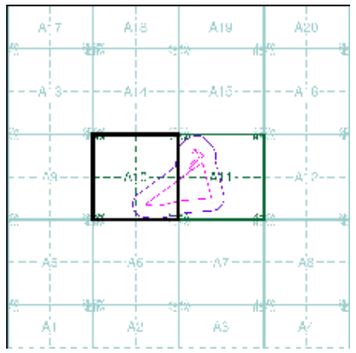
Source map scale - 1:2,500

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A10



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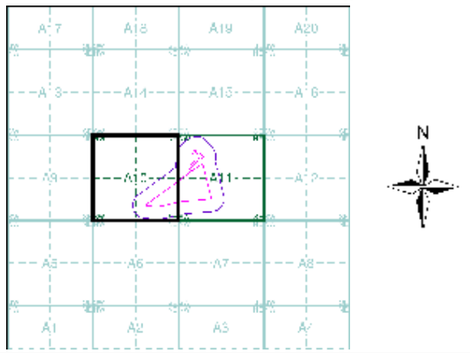
Historical Aerial Photography

Published 1999

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment A10



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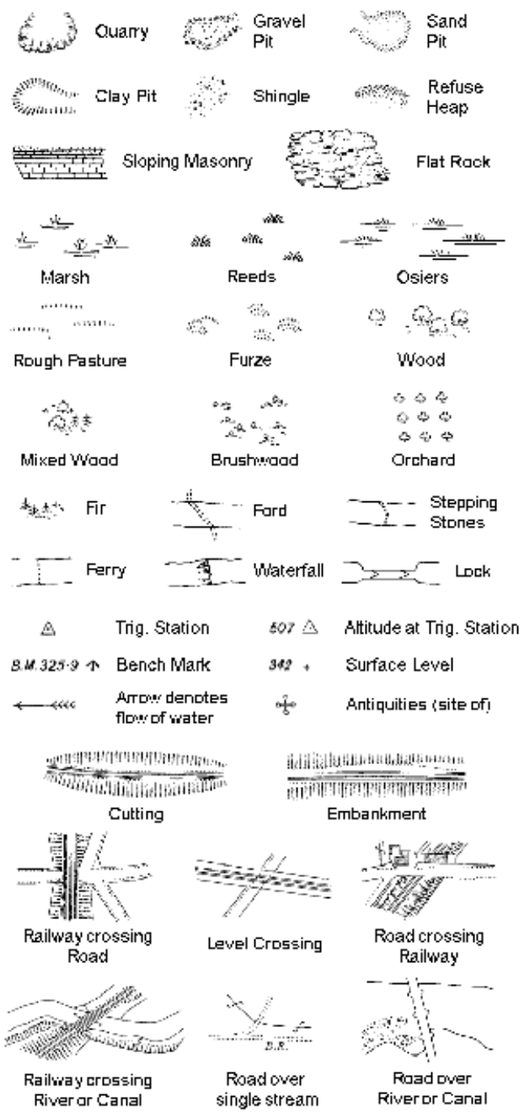
Historical Mapping Legends

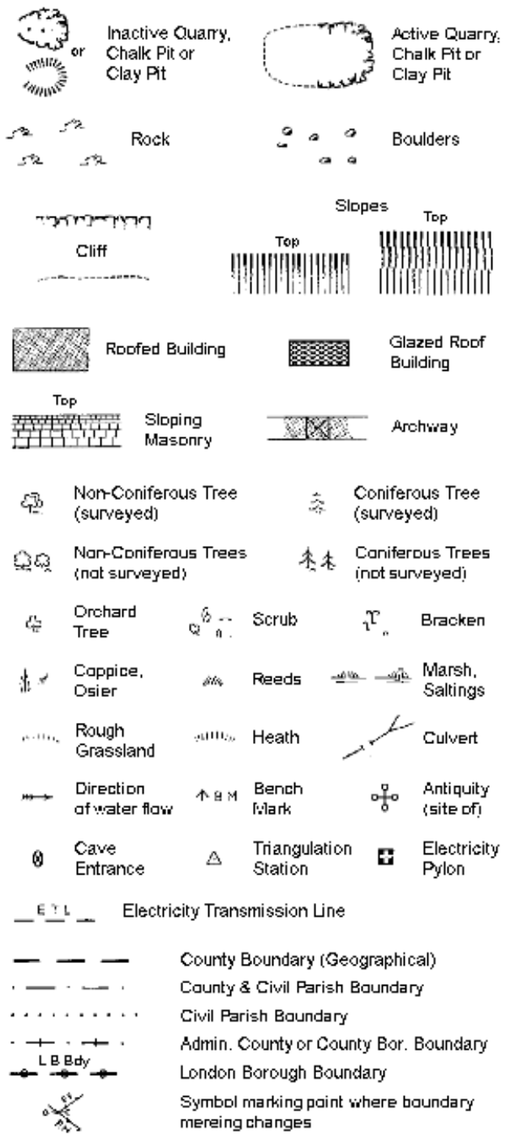
Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)

B.S B.S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	Sl.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

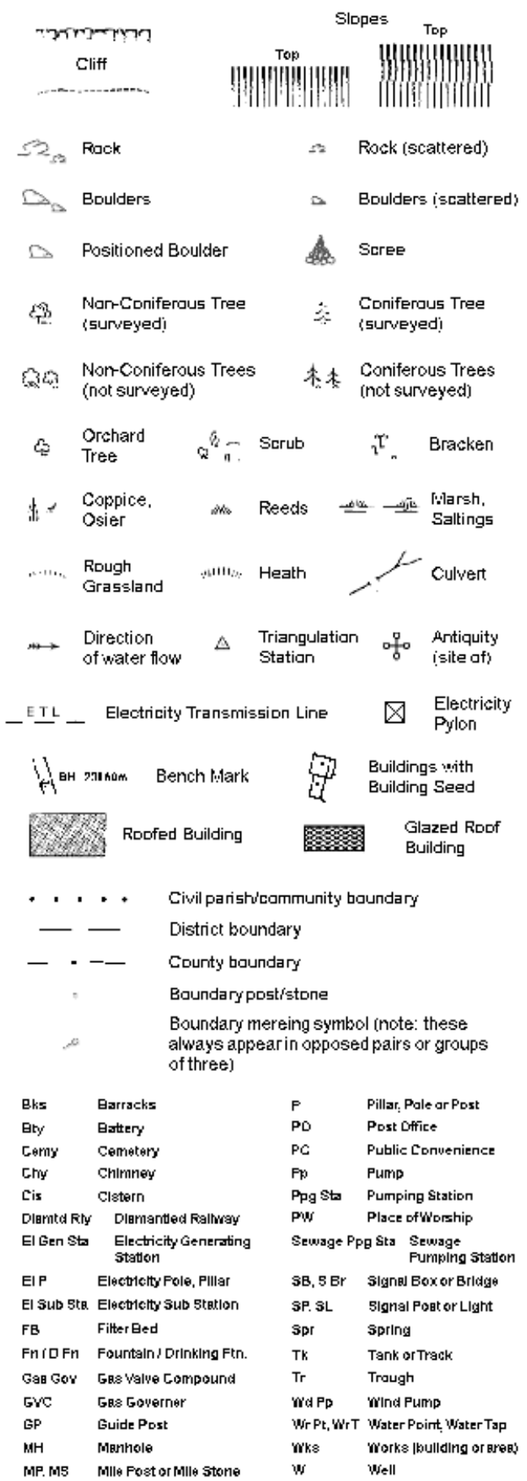
Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



County Boundary (Geographical)
County & Civil Parish Boundary
Civil Parish Boundary
Admin. County or County Bor. Boundary

BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, WrT	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



Civil parish/community boundary
District boundary
County boundary
Boundary post/stone
Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)

Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governor	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, WrT	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

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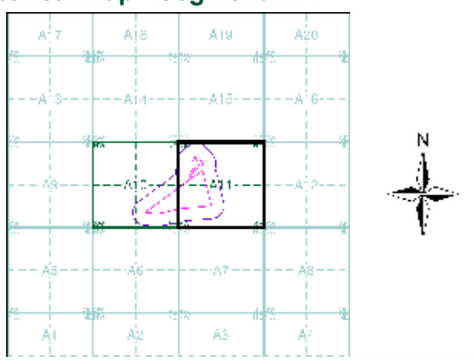
Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Lincolnshire	1:2,500	1887	2
Lincolnshire	1:2,500	1907	3
Ordnance Survey Plan	1:2,500	1969	4
Additional SIMs	1:2,500	1969	5
Additional SIMs	1:2,500	1985	6
Large-Scale National Grid Data	1:2,500	1994	7
Historical Aerial Photography	1:2,500	1999	8

Historical Map - Segment A11



Order Details

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Customer Ref:	GCU0127073
National Grid Reference:	508650, 411230
Slice:	A
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Site Details

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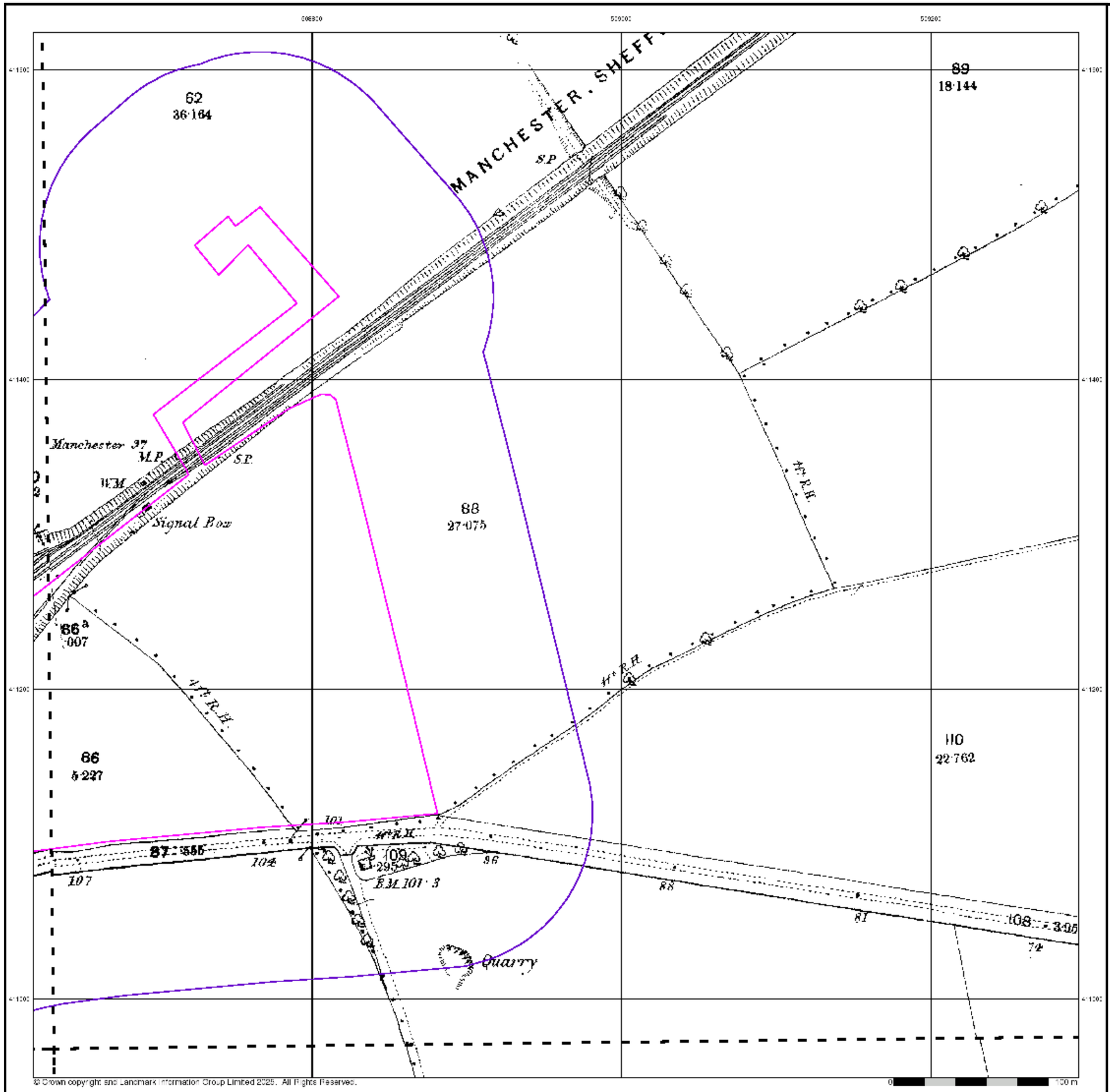

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Lincolnshire

Published 1887

Source map scale - 1:2,500

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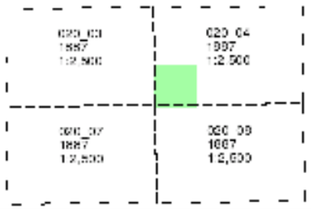
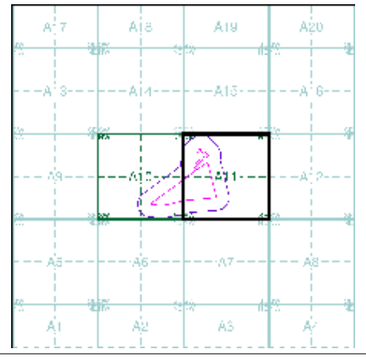


Historical Map - Segment A11



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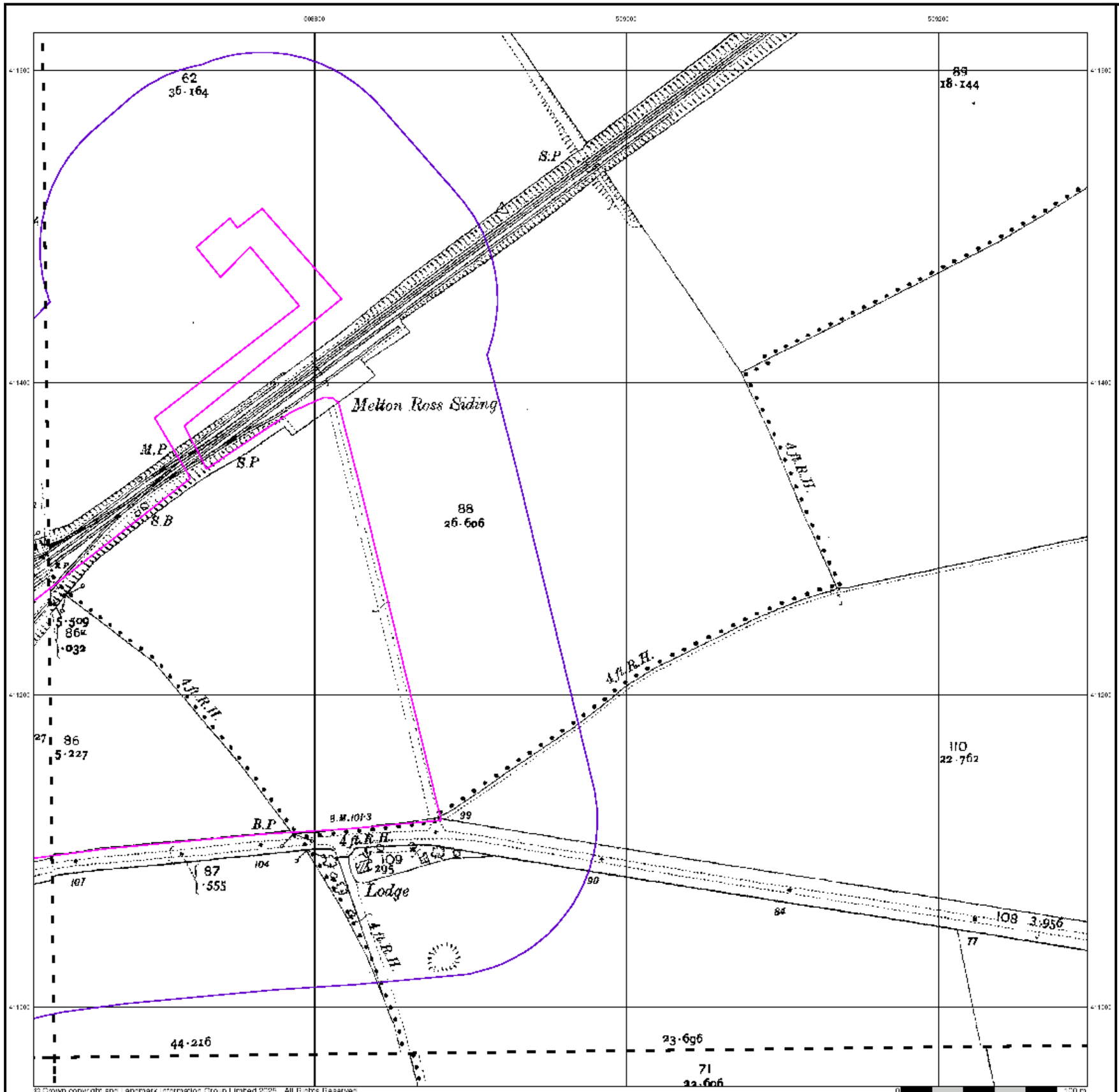

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Lincolnshire

Published 1907

Source map scale - 1:2,500

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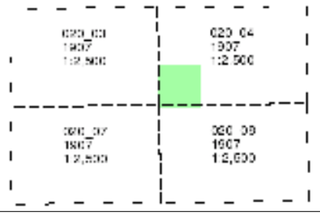
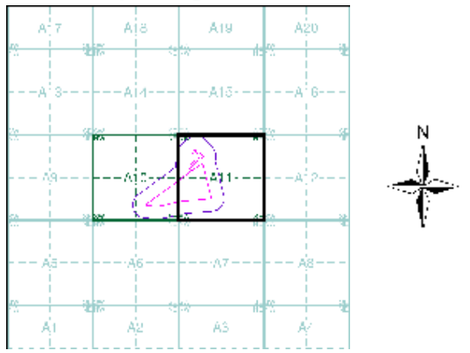


Historical Map - Segment A11



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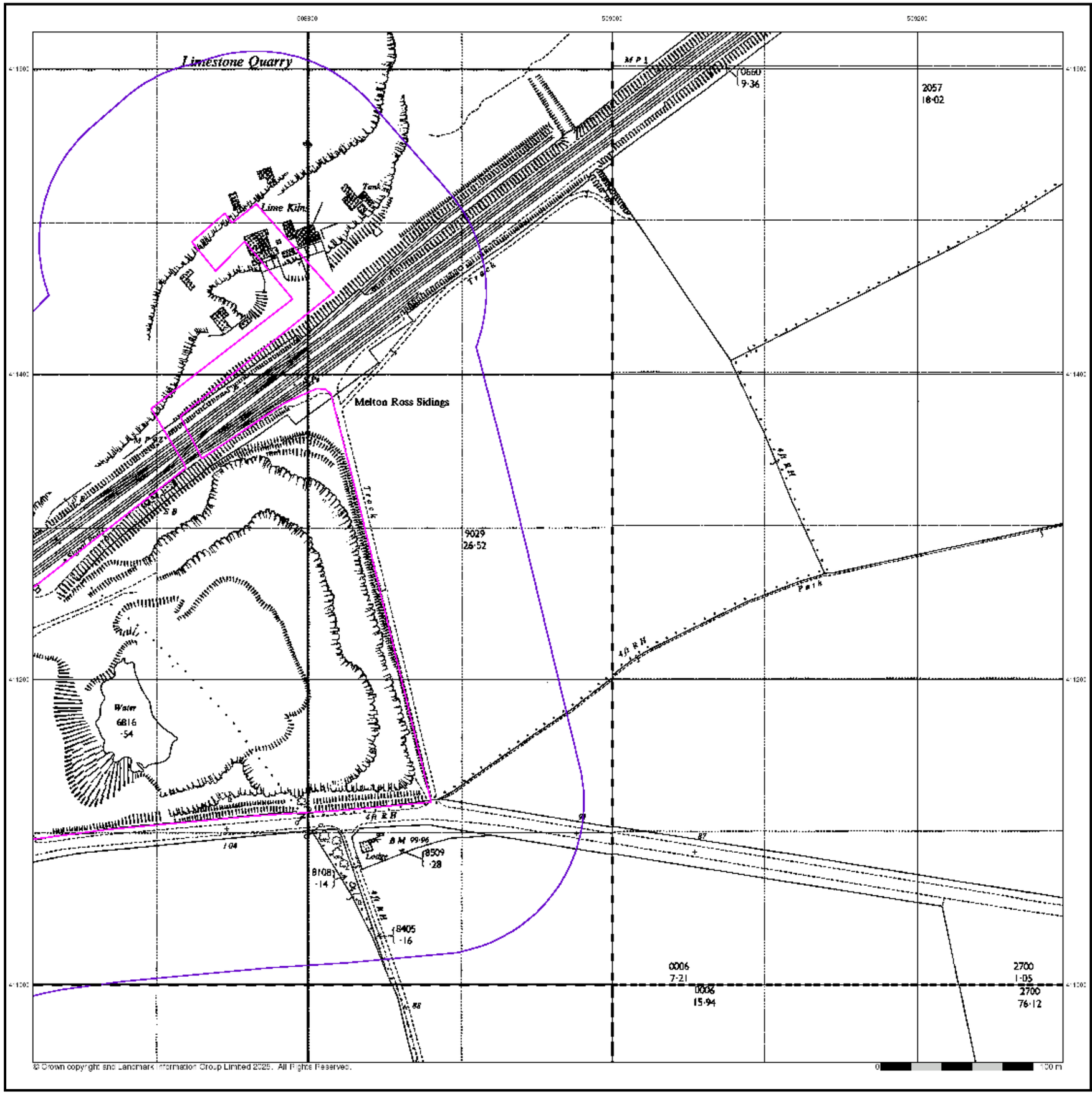

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Ordnance Survey Plan

Published 1969

Source map scale - 1:2,500

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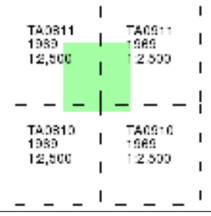
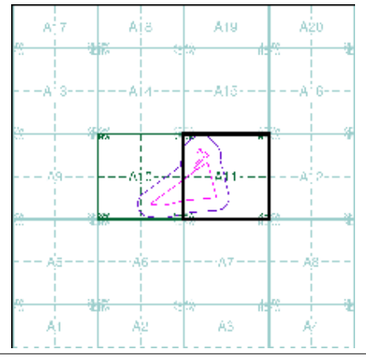


Historical Map - Segment A11



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Additional SIMs

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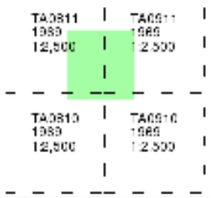
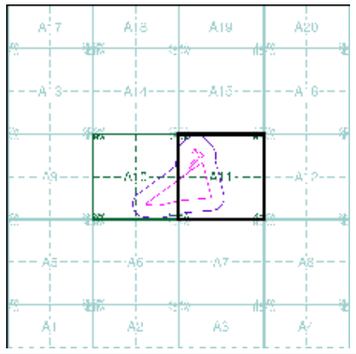


Historical Map - Segment A11



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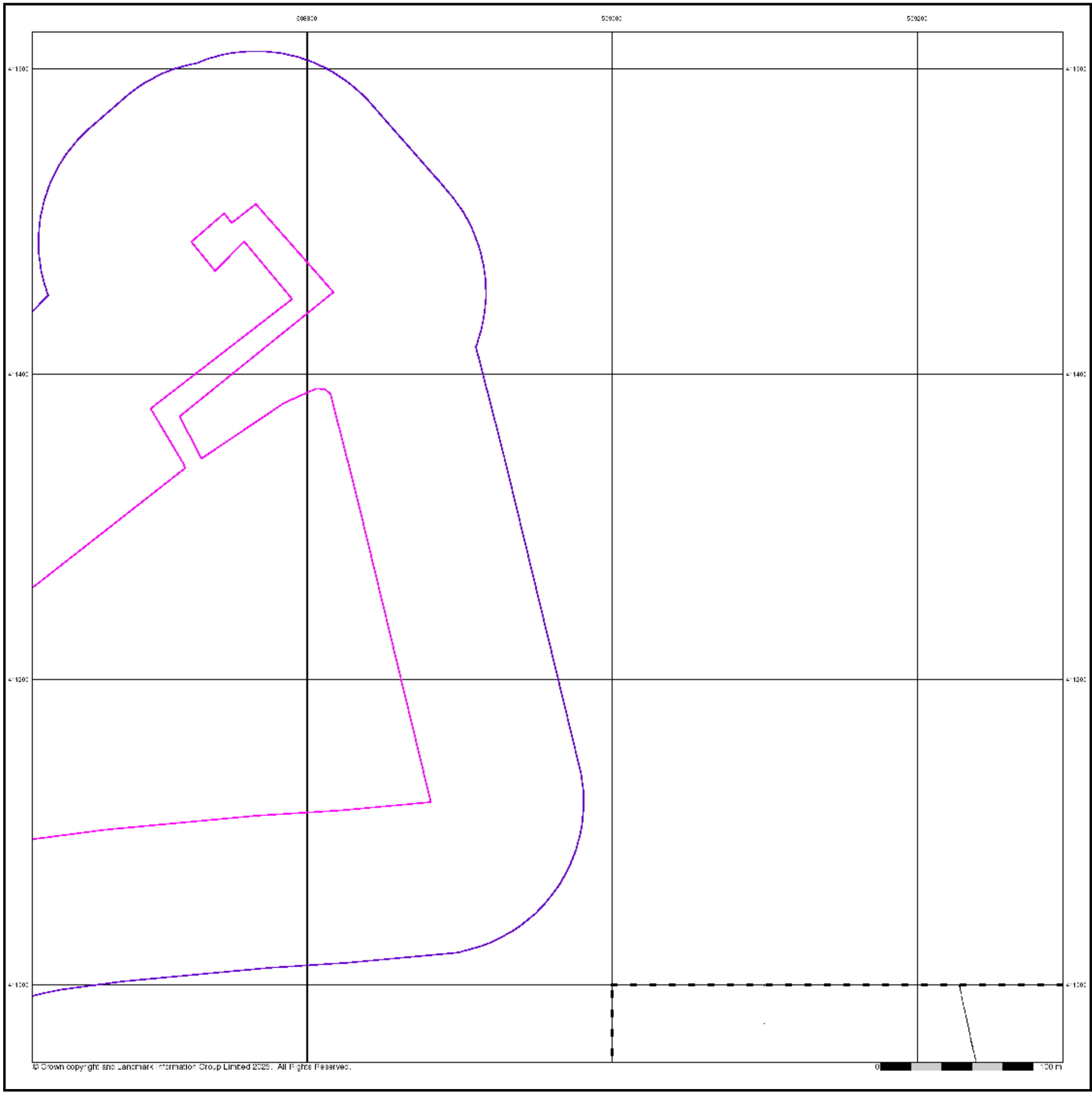
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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Additional SIMs

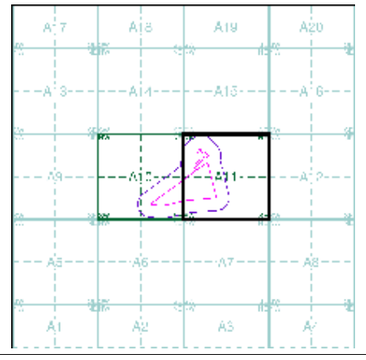
Published 1985

Source map scale - 1:2,500

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

Historical Map - Segment A11



Order Details

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Customer Ref:	GCU0127073
National Grid Reference:	508650, 411230
Slice:	A
Site Area (Ha):	8.23
Search Buffer (m):	100

Site Details

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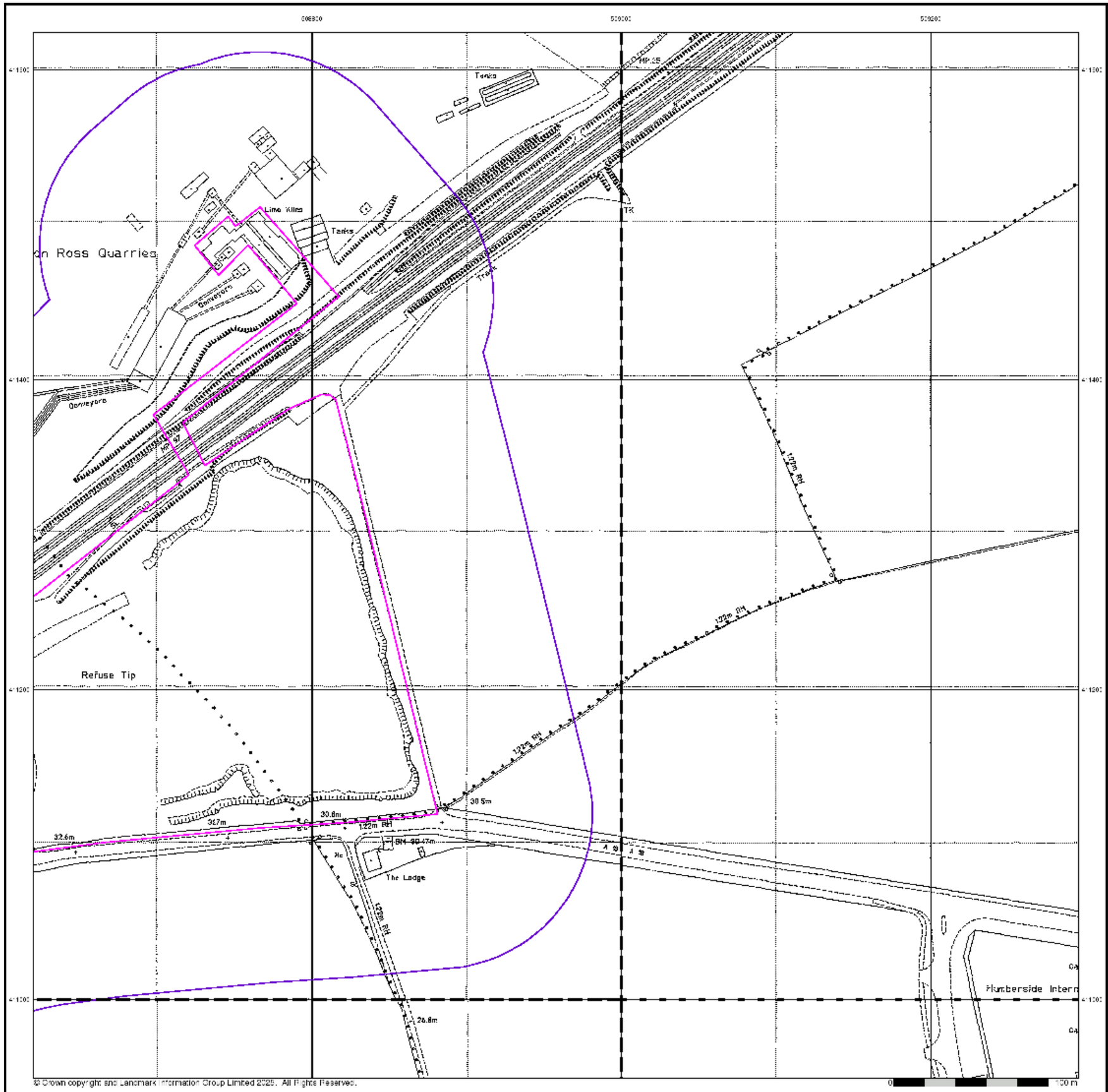

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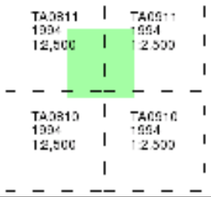
Large-Scale National Grid Data

Published 1994

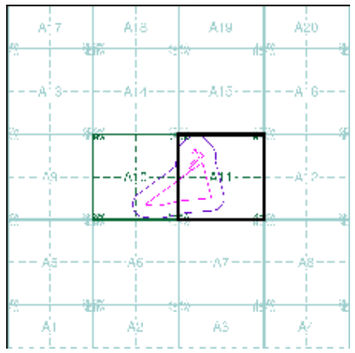
Source map scale - 1:2,500

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A11



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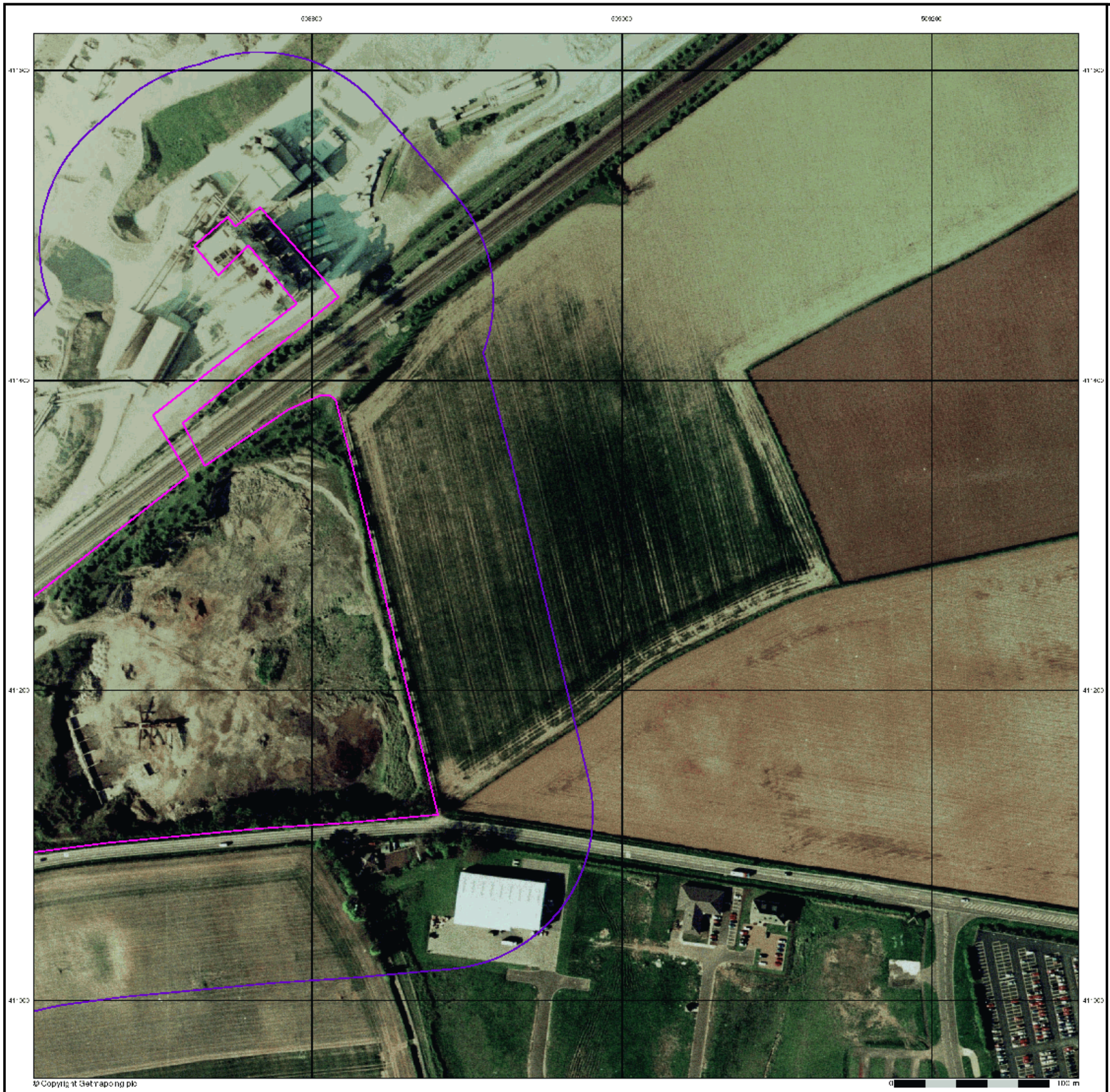

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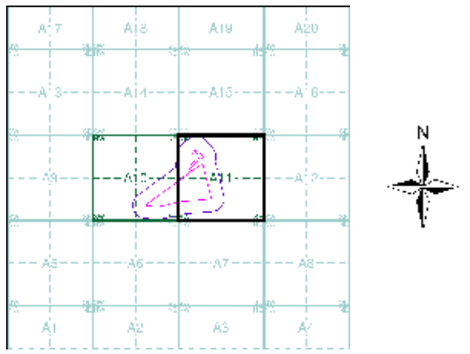
Historical Aerial Photography

Published 1999

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment A11



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APPENDIX C

Risk Assessment Principles

Environment Agency guidance on Land Contamination: Risk Management (LCRM) first published in 2020 is considered best practice and recommends tiered risk assessment approach. This guidance applies when assessing sites with historical contamination to determine whether risks are acceptable and where considered unacceptable where action is required to mitigate risks to sensitive receptors including human health, the environment, crops or property.

For a risk to be present, there must be a viable contaminant linkage, i.e. a mechanism whereby a contamination source impacts on a sensitive receptor via a pathway. Sources, pathways and receptors (S-P-R) are identified in the bespoke Conceptual Site Model for the site.

There are three tiers of risks assessment that may be undertaken:

Tier 1: Preliminary Risk Assessment (PRA), commonly known as a Phase 1 Desk Study.

Tier 2: Generic Quantitative Assessment (GQRA) which includes assessment of intrusive site investigation information.

Tier 3: Detailed Quantitative Risk Assessment (DQRA) which uses site specific information to refine and assess risks.

Following review and an assessment of risks at each tier, a Qualitative Risk Assessment (QRA) may be undertaken if required (noting that a qualitative risk assessment is allowed under the guidance if applicable). This summarises potential risks at a site in context of the Conceptual Site Model (CSM) and recommendations going forward. LCRM recommends the Qualitative Risk Assessment approach as presented in the National House Building Council and Chartered Institute of Environmental Health publication *R&D 66: Guidance for the Safe Development of Housing on Land Affected by Contamination* (NHBC/EA/CIEH, 2008), as an example of an appropriate method for assessing risks. Other risk classification approaches, such as that presented in *Contaminated Land Risk Assessment: A Guide to Good Practice* (CIRIA C552, 2001) can also be used, but Geosyntec has adopted R&D 66 as it builds upon the principles outlined in the older CIRIA framework and is directly referenced in the LCRM as good practice.

Risk Assessment Framework

The magnitude of the risk associated with potential contamination at the Site has been assessed. To do this an estimate is made of:

- The magnitude of the potential consequence (i.e. severity) of contamination at a given source;
- The magnitude of probability (i.e. likelihood) of a pathway between a given source and receptor being present.

The severity of the risk is classified according to the criteria in Table 1.

Table 1 Description of Severity of Risk

Term	*Description*
Severe	– Highly elevated concentrations likely to result in "significant harm" to human health as defined by the EPA 1990, Part 2A, if exposure occurs. – Equivalent to EA Category 1 pollution incident including persistent and/or extensive effects on water quality; leading to closure of a potable abstraction point; major impact on amenity value or major damage to agriculture or commerce. – Major damage to aquatic or other ecosystems, which is likely to result in a substantial adverse change in its functioning or harm to a species of special interest that endangers the long-term maintenance of the population. – Catastrophic damage to crops, buildings or property.
Medium	– Elevated concentrations which could result in "significant harm" to human health as defined by the EPA 1990, Part 2A if exposure occurs. – Equivalent to EA Category 2 pollution incident including significant effect on water quality; notification required to abstractors; reduction in amenity value or significant damage to agriculture or commerce. – Significant damage to aquatic or other ecosystems, which may result in a substantial adverse change in its functioning or harm to a species of special interest that may endanger the long-term maintenance of the population. – Significant damage to crops, buildings or property.
Mild	– Exposure to human health unlikely to lead to "significant harm". – Equivalent to EA Category 3 pollution incident including minimal or short-lived effect on water quality; marginal effect on amenity value, agriculture or commerce. – Minor or short-lived damage to aquatic or other ecosystems, which is unlikely to result in a substantial adverse change in its functioning or harm to a species of special interest that would endanger the long-term maintenance of the population. – Minor damage to crops, buildings or property
Minor	– No measurable effect on humans. – Equivalent to insubstantial pollution incident with no observed effect on water quality or ecosystems. – Repairable effects of damage to buildings, structures and services.

Taken from NHBC/EA/CIEH Section A4.3 of NHBC/EA/CIEH document Guidance for the Safe Development of Housing on Land Affected by Contamination R&D66: 2008 Volume 2 Appendices and Annexes (2008)

The probability of the risk occurring is classified according to the criteria in Table 2.

Table 2 Likelihood of Risk Occurrence

Likelihood	*Explanation*	
High	–	There is pollutant linkage and an event would appear very likely in the short-term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution
Likely	–	There is pollutant linkage and all the elements are present and in the right place which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short-term and likely over the long-term.
Low	–	There is pollutant linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a long period such an event would take place, and is less likely in the shorter term.
Unlikely	–	There is pollutant linkage but circumstances are such that it is improbable that an event would occur even in the very long-term.

An overall evaluation of the level of risk is gained from a comparison of the severity and probability, as shown in Table 3.

Table 3 Risk based on Comparison of Likelihood and Severity

		Severity			
		SEVERE	**MEDIUM**	**MILD**	**MINOR**
Likelihood	**HIGH**	Very High	High	Moderate	Low
	LIKELY	High	Moderate	Moderate/Low	Low
	LOW	Moderate	Moderate/Low	Low	Very Low
	UNLIKELY	Moderate/Low	Low	Very Low	Very Low

LCRM Assessment of Risk

The central test from LCRM at the Qualitative Risk Assessment stage is whether or not a risk identified in your Conceptual Site Model (CSM) is regarded as "unacceptable". An unacceptable risk would equate with a High or Very High risk in Table 3. LCRM also describes a scenario where "further assessment" is required. This might typically align with a Moderate/Low or Moderate risk, but data gaps or uncertainties can exist at any level of risk and the requirement for additional information should be informed by the CSM, the site use or future site use and the specific receptors identified. Finally, a Low or Very Low risk would typically be regarded as having "no further assessment required" within the LCRM framework. This might be a pollutant linkage which is not relevant for a current or proposed land use or a linkage which is obviously broken by site conditions, without the need for further investigation. Such risks may still be worthy of further investigation, but they are unlikely to be risk drivers in the assessment and possible remediation of a site. Risk levels may change following ground investigation or additional information being added to the assessment.

To align the risk rankings in Table 3 with the language used in LCRM and with the Part 2A definitions, the following matrix has been utilised and is presented in **Table 4**.

Table 4 Conversion to LCRM Risk Categories

Risk Category	No Further Investigation Recommended	Further Investigation Recommended	Unacceptable Risk
Very Low			
Low			
Moderate/Low			
Moderate			
High			
Very High			