SLADEN ASSOCIATES

PHASE 1 GEO-ENVIRONMENTAL REPORT
Proposed Residential Development
Land at Old Cresswell Road
Cresswell
Staffordshire

Prepared for

Trades and Labourers Ltd

Date : March 2018 **Job No : 17 1896**

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Prepared for: **Trades and Labourers Ltd**

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REPORT No 17 1896

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1 INTRODUCTION

Trades and Labourers Ltd has instructed Sladen Associates to carry out a Phase 1 Geo-environmental Study of the site of a proposed residential development off Old Cresswell Road in Cresswell. The study was restricted to publicly available documentary sources of information and a site walkover survey and included no intrusive investigative work.

The study included a review of the history of the site based on available old Ordnance Survey Maps, a review of the site geology, hydrogeology, potential mining and a search for records of any licensed landfill sites, pollution incidents etc. within the vicinity of the site. This report presents the factual results of the study and a conceptual model of potential pollution linkages together with comment on the potential constraints that may relate to re-development of the site.

2 THE SITE

2.1 LOCATION

The site, which has an overall area of about 0.6 ha comprises an irregular, elongated, strip of land which includes a driveway, lies to the south of Old Cresswell Road, some 13 km south east of Stoke-on-Trent City centre at National Grid Reference 3977,3392, see Figures 1 and 2. The Crewe to Derby main line railway passes to the south of the site; there are agricultural buildings to the north and to the east is a row of terraced cottages, for which the driveway currently provides access. The River Blithe, flowing roughly south easterly at this point, flows to the south of the railway, before passing under the railway a little way to the south east of the site.

2.2 PROPOSED DEVELOPMENT

It is proposed to develop the site with the construction of eleven new houses: a short terrace of five in the eastern site area and two pairs of semi-detached houses and a detached house in the west. Each of the houses will have small private rear gardens and landscaped areas to the front. There will also be some parking areas and other soft landscaped areas. The driveway that runs through the area will be somewhat re-routed to accommodate the development. Figure 3 shows the proposed development layout.

2.3 HISTORY

Copies of relevant historical Ordnance Survey (OS) maps are included in Appendix A, for reference. Aerial photography dating from 2003 to 2017 was also reviewed.

At the time of the first Ordnance Survey in 1880, the site was without built development, the main part being part of a larger field, with a small enclosed section at the western end. The railway was already present to the south and, at that time, there was a station in Cresswell, located just to the west of the site. Sidings associated with the station formed part of the south western boundary of the site. The route of Old Cresswell Road

was already an established thoroughfare to the north and there were some farm buildings between the site and the road. Various mills had been developed on the Blithe and the valley area was associated with a number of mill races and streams. The mills included a colour mill a little way downstream of the site. A number of ponds are shown in the areas surrounding the site.

By 1901, a new branch line had been constructed to Cheadle and the tracks of the new line abutted the southern boundary of the eastern site area. A low escarpment is shown to pass through the southern site area, parallel to the new railway, suggesting that some cutting had occurred on site, presumably associated with the new line. At some time between 1901 and 1924, the short terrace of cottages ('Railway Cottages') was built to the east of the site. At that time, access to the cottages appears to have been via a footpath to the north, to the road.

Little change is shown on the 1938 map edition except that the various mill streams associated with the Blithe valley had generally been infilled. The colour mill had expanded westwards to the south of the railway to become the Blythe Colour Works, which occupied a large area of the valley between the river and the railway. There are two 1957 map editions. The earlier shows a small glass house in the eastern site area but otherwise the site remained without built development. Further expansion had occurred to the Colour Works to the south of the railway. The later 1957 map edition shows, the glass house removed, the driveway to railway cottages to have been constructed through the site area and what appear to be three parking garages or sheds to have been constructed in the east of the site near the cottages. One of the garages was apparently subsequently removed but otherwise little change is shown to the site area on the available map record. The Colour Works area to the south of the railway has recently become a business park. Recent aerial photography suggests that some heaps of soil or aggregate may have been stored in parts of the western site area.

2.4 GEOLOGY

The site is shown on mapping published by the British Geological Survey to be underlain by solid strata of the Tarporley Siltstone Formation, part of the Mercia Mudstone Group, of Triassic Age.

The Tarporley Siltstone comprises mainly mudstones, siltstones and sandstones.

The bedrock in the study area is shown to be overlain by natural deposits drift deposits comprising recent alluvial soils, overlying older Terrace Deposits, which may outcrop in the northern site area. Both are associated with the River Blithe Valley. The recent alluvial soils could include silts and clays. The Terrace Deposits would be expected to be mainly sands and gravels.

2.5 MINING

The site is not in an area where underground mining has been undertaken in the past. There is evidence of some small scale quarrying in the general area but no reason to consider that any such activity has occurred on the study site.

2.6 HYDROGEOLOGY

The Mercia Mudstone strata are sometimes suitable for small scale water supply purposes and are generically classified as a Secondary 'B' Aquifer by the Environment Agency.

The superficial alluvial and Terrace Deposit strata are classified as a Secondary 'A' Aquifer. There are three licensed groundwater abstractions within 2 km of the site, see Appendix B for details. Two of these are for general farming and domestic purposes and

are both some 1.4 km from the site. However, the Cresswell public water supply borehole, operated by Severn Trent Water, is located just 300 m to the north west of the site. The site lies partly within the Zone 2 (Outer Catchment) and partly within the Zone 3 (Total Catchment) groundwater source protection zones associated with this potable abstraction.

There are no adjacent current natural watercourses, the closest being a 'drain', actually a former mill race, some 94 m to the west of the site. The River Blithe is some 120 m to the south at its closest point.

The site is not shown, on mapping published by the Environment Agency, to be potentially prone to flooding from rivers (Appendix B).

2.7 POLLUTION INCIDENTS

Database searches suggest there are no recorded pollution incidents with any assessed impact to land or water within 100 m of the site, refer Appendix B.

2.8 NEARBY LANDFILL SITES

Database searches have revealed no evidence of current landfills within 250 m of the site but there is record of three small former landfill areas within that search radius. The closest is recorded as being some 24 m to the south west of the site. There are no records of waste type or dates of operation but it was clearly a very small facility and the absence of database information suggests that it has been closed for a considerable period of time. The next closest was some 95 m to the north and also has no database details concerning waste type or dates of operation. The third was operated by Blythe Colours Limited and involved deposition of liquid sludge, presumably derived from the colour works, during the period 1948 to 1992. This area lay to the south of the main channel of the River Blithe from the site, some 185 m from the site at its closest point.

2.9 RADON

The site is not in an area where radon protection measures should be provided for new residential development, Appendix B.

2.10 OBSERVATIONS MADE DURING SITE WALKOVER STUDY

A site walkover survey was undertaken on 13th March 2018. Site photographs are included in Appendix C and photograph locations are shown on Figure 2.

The study site is an irregular, long, narrow, linear shape, with wider areas at either end. The area is relatively flat and level, with small soil, crushed rock and demolition rubble heaps in the western half of the site. The surrounding ground level slopes down to the southwest, which has meant that there are cut banks along the northern site boundary and shallower slopes down along the southern, in order to provide a relatively level area. There are small trees and scrub along the track and in the western site area. A stoned track runs along the length of the site (photographs 2, 7, 9 to 12 & 14) and there are four parking garages in the southeastern corner (photograph 13).

Cresswell Farm occupies most of the adjacent land to the north of the site and has many structures along the boundary (photographs 3, 4, 6 & 9). To the south of the site is a narrow strip of grass and railway tracks, beyond which, is a relatively large mixed usage industrial estate (Blythepark Business Base). A terrace of six properties lies at the eastern end of the track and form the eastern site boundary (photograph 13).

The stoned track joins Old Cresswell Road at the western end of the site, with the road running in cut immediately east of the entrance (photographs 1 & 2). The western area has been excavated into the rising ground to the east and has unsupported soil banks

and spoil heaps of the excavated material (photographs 3 & 4) . There are also separate heaps of clean crushed stone, demolition rubble (brick, concrete & occasional asphalt) and crushed demolition materials (photographs 5 to 8).

There are heaps of clean crushed stone along the narrow central portion of the site and a delivery truck body (photographs 9 & 10).

The eastern site area is currently used for car parking by residents of the properties and there are four garages (photographs 13, 15 & 16). The garages are constructed of either concrete and timber, with a mixture of corrugated or felt roofing. The garages appear relatively modern, but it is possible that asbestos containing roofing materials may have been used.

There is ponded water in the western area of the site (photographs 3 & 4)and in the eastern area (photograph 12).

Allowing for the observations noted above, there were no areas of potentially significant ground contamination seen during this walkover survey.

3 GEO-ENVIRONMENTAL CONSIDERATIONS

3.1 GEOTECHNICAL CONSIDERATIONS

From the information available, it would appear that 'solid' strata, comprising mainly siltstone, mudstone and sandstone underlie the site. These may be weathered to the consistency of a clay soil near surface. Bedrock in the site area is, however, expected to be overlain by natural drift deposits comprising sand and gravel overlain, in at least part of the site by recent alluvial soils. The sand and gravel strata or natural weathered bedrock strata would be expected to provide suitable founding strata for conventional shallow foundations, if present near surface. The recent alluvial soils, however, could include some relatively incompetent silt and clay soils. Depending on the thickness and nature of any recent alluvial soils present, some form of deep foundations, such as mini-piles, may be required to support structural loads in some site areas.

There is no reason to consider that any significant general thickness of made ground would be present on site although some cut and fill would appear to have been undertaken to level the site, with fill placement in the southern site area. Some material may have been imported for base course under the driveway, etc, for site levelling and possible below railway track bed, where these were formerly present along parts of the southern site boundary.

3.2 ENVIRONMENTAL CONSIDERATIONS

3.2.1 OVERVIEW

3.2.1.1 GROUND CONTAMINATION

The site history has revealed no land uses that would be associated with a very high potential for widespread land contamination on the site itself, either on or adjacent to the study area. The site was originally in agricultural use and then appears to have been at least partly railway land, although without significant built development.

The vehicle access areas could be associated with some potential for local limited spillage of fuels and oils to have occurred.

There is no reason to consider that any significant thickness of potentially contaminated made ground would be generally present on site. There may be some hardcore material below vehicle access areas and possibly adjacent to former railway track, which could

potentially include some waste materials such as slag and ash that could be potentially contaminated, particularly with metals.

Although recent aerial photographs appear to show stockpiles of material on parts of the site, these would appear to be excavated soil, demolition rubble and aggregate and were observed to include some asphalt.

There are no nearby off-site land uses that have been identified that could potentially be associated with significant ground contamination on site. There has been a colour works to the south of the railway from the site for an extended period of time. However as that facility was situated on the River Blithe, any associated ground contamination that may have migrated off-site in the shallow groundwater is likely to have moved towards the river, which would be away from the present study site.

Prior to detailed design, ground investigation should be undertaken to assess the potential for significant concentrations of potential contaminants to be present within the site soils and allow design of any necessary remedial precautions.

3.2.1.2 GROUND GAS

Searches have revealed no evidence of any nearby current landfill areas but there have been three historic landfills within 250 m of the site. However, two of these were small operations and have clearly been closed for a considerable period of time. The third was south of the River Blithe and closed in 1992. Being south of the river, there would be no credible pathway for lateral gas migration in the ground to the present site. As such it is unlikely that any of these former facilities would represent a significant risk to the study site. There is no reason to expect that any extensive thicknesses of putrescible made ground are present on site.

The site is not in an area where radon protection measures would be required.

3.2.2 CONCEPTUAL MODEL OF POTENTIAL POLLUTION LINKAGES

3.2.2.1 GENERAL

Current practice with regard to contaminated land is based on development of a conceptual model of potential pollution linkages. This recognises that for any significant risk to be present there must be a ‘source’ of contamination, such as elevated levels of toxic substances in the ground, a ‘receptor’, such as a site user and a ‘pathway’ whereby the receptor could be exposed to the source to a degree that there is a significant risk of potential harm.

3.2.2.2 SOURCES

Based on the above discussion, the risk of significant local sources of ground contamination being present within the site soils is considered to be low. The vehicle access areas could be associated with some local spillages of fuels and oils. It is possible that potentially contaminated made ground, such as ash and slag was introduced as a base course for the track way and possibly in areas adjacent to former railway tracks, although the tracks themselves appear to have been off-site. Some asphalt was noted within the demolition rubble heaps locally present on site. Such materials could exhibit elevated metal and possibly PAH (polyaromatic hydrocarbon) and heavy TPH (Total Petroleum Hydrocarbon) concentrations although, by their nature, leachable concentrations are likely to be low.

There is no reason to consider that significant ground gas emissions would be occurring on site although there have been three known nearby landfill areas.

3.2.2.3 RECEPTORS

Potential receptors with respect to any ground contamination that may be present include site users and the wider environment. The proposed residential usage in the study area would be relatively sensitive to potential land contamination and ground gas issues. Construction workers could be exposed to site soils on a short term basis.

With regard to the wider environment, the bedrock and superficial strata below the site area are designated as secondary aquifers and the site lies within groundwater source protection zones associated with a nearby potable groundwater abstraction. As such groundwater below the site would be considered to be a particularly sensitive receptor. There is a former mill stream some 90 m to the west and the River Blithe is some 120 m to the south.

3.2.2.4 PATHWAYS

For the proposed residential usage, site users could potentially be exposed to ground contamination through direct contact with soil, dust and vapour inhalation and dust ingestion. As new garden areas potentially suitable for vegetable cultivation are envisaged, ingestion of soil attached to vegetables and vegetables that may have taken up some contamination from the site soils are also potentially viable pathways.

With regard to controlled waters, leachable contaminants, if present in the near surface soils, could potentially migrate down to the groundwater within the superficial aquifer and thence discharge, probably to the nearby River Blithe. Although the site lies within groundwater source protection zones, given the proximity to the river, it is unlikely that any near surface groundwater below the site would migrate into the deeper bedrock aquifer.

The presence of some former ponds in the general area suggests a relatively shallow water table may be present, which would lead to saturated ground conditions that would be almost impermeable to lateral gas flow onto site from any distant off-site sources.

3.2.2.5 POTENTIALLY VIABLE POLLUTION LINKAGES AND PRELIMINARY RISK ASSESSMENT

Given the potential for some limited contaminants to be present in the near surface soils, in particular metals, PAH compounds and TPH fractions, there is a potential pollution linkage to future site users via soil ingestion and contact and via inhalation of vapours and dust and via home grown vegetables, if no precautions are taken. However, given the assessed limited potential for significant widespread contamination, associated risks are judged to be low.

In view of the low potential for presence of sources of significant leachable contamination on site, but relatively sensitive site location with regard to controlled waters, there also is considered to be a low risk to controlled waters if no precautions are taken.

Given the likely absence of significant sources of significant volumes of bio-gas generation that could potentially migrate on onto the site, real risks associated with ground gas are also judged to be low.

3.3 REQUIREMENTS FOR INTRUSIVE INVESTIGATION

It is recommended that an intrusive ground investigation should be carried out prior to final design and re-development of the site to provide information concerning potential land contamination, ground gas and foundation conditions. Based on the acquired information, more quantitative risk assessments should be undertaken with respect to potential impacts on site users and controlled waters.

3.4 POTENTIAL MITIGATION MEASURES

Subject to the results of the intrusive investigation, development of the current site may require a number of mitigation measures that could be associated with some abnormal costs, which may include:

- Possible need for deep foundations, such as mini-piles to support structural loads, at least in some areas of the site, depending on the nature and thickness of made ground and recent alluvial soils.
- Removal of stockpiles of rubble that contain asphalt or other deleterious materials.
- Potential need for remedial precautions with respect to land contamination in at least some areas of the site. These would most likely be restricted to provision of clean cover soils in proposed garden and other soft landscaped areas.
- Possible need for provision of basic gas exclusion measures in new residential structures.

4 CONCLUSIONS

Natural ground conditions over most of the site area are likely to comprise recent alluvial soils overlying sand and gravel deposits, which in turn likely overlie siltstone, mudstone and sandstone bedrock. There is no reason to consider that any significant thickness of made ground would generally be present although some fill may have occurred in the southern site area. The natural sand and gravel strata, if present near surface, should be suitable to support conventional shallow spread foundations. However, the recent alluvial soils may be relatively incompetent and, depending on the results of intrusive investigation, deep foundations, such as mini-piles, may be required to support structural loads in some areas of the site.

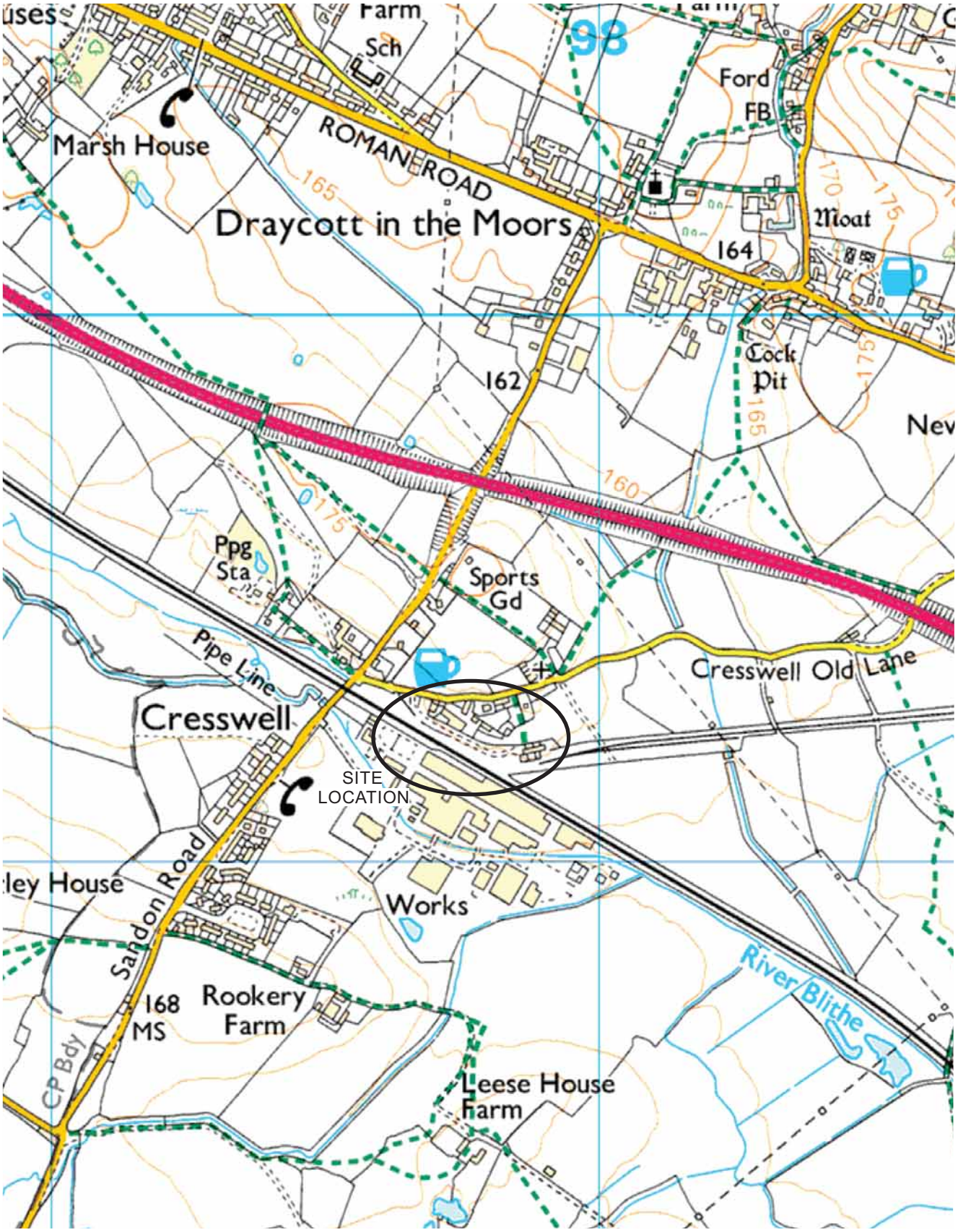
It is recommended that an intrusive ground investigation should be carried out prior to detailed design and re-development of the site to allow final foundation design and more detailed risk assessments to be undertaken with respect to potential ground contamination and ground gas.

There is some potential for local limited ground contamination, but no site-specific data are available. Subject to the results of the intrusive investigations, some remedial precautions may be required for the proposed residential development areas.

Should any local areas of leachable contamination be found, it is likely that the Regulatory Authorities would require that these be addressed as a condition on re-development. For the proposed residential areas, some precautions may be required to protect site users. These would most likely comprise provision of clean cover soils in any proposed garden or soft landscaped areas and possible need for basic gas protection measures in building areas.

Subject to the potential need for the above precautions, the present study has shown no reason why the site could not be safely re-developed for the proposed uses.

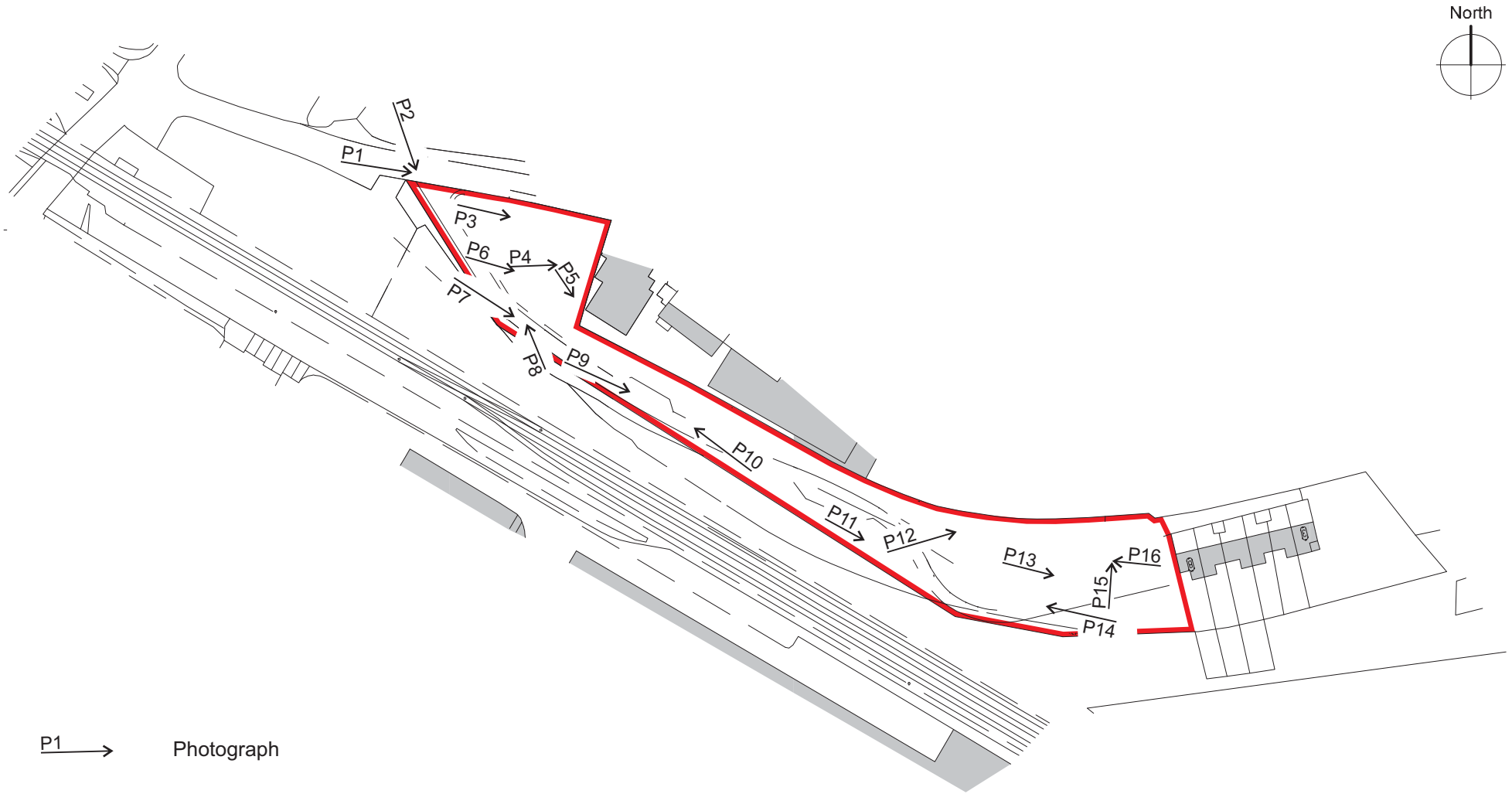
FIGURES



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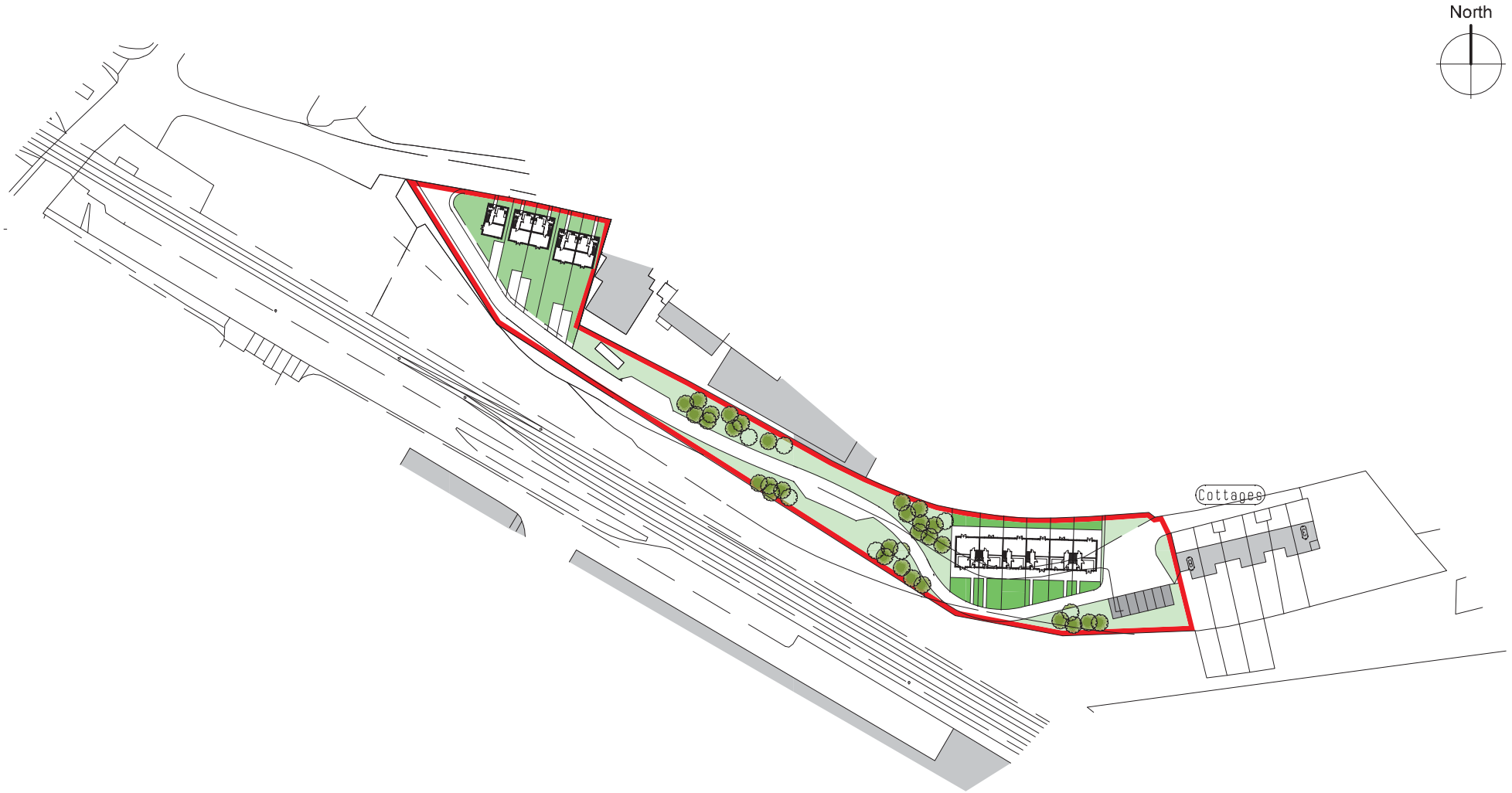
SITE LOCATION PLAN

SLADEN ASSOCIATES	Report No 18-1896	Project Site at Old Cresswell Road Cresswell Staffordshire	Figure **1**



SITE LAYOUT PLAN

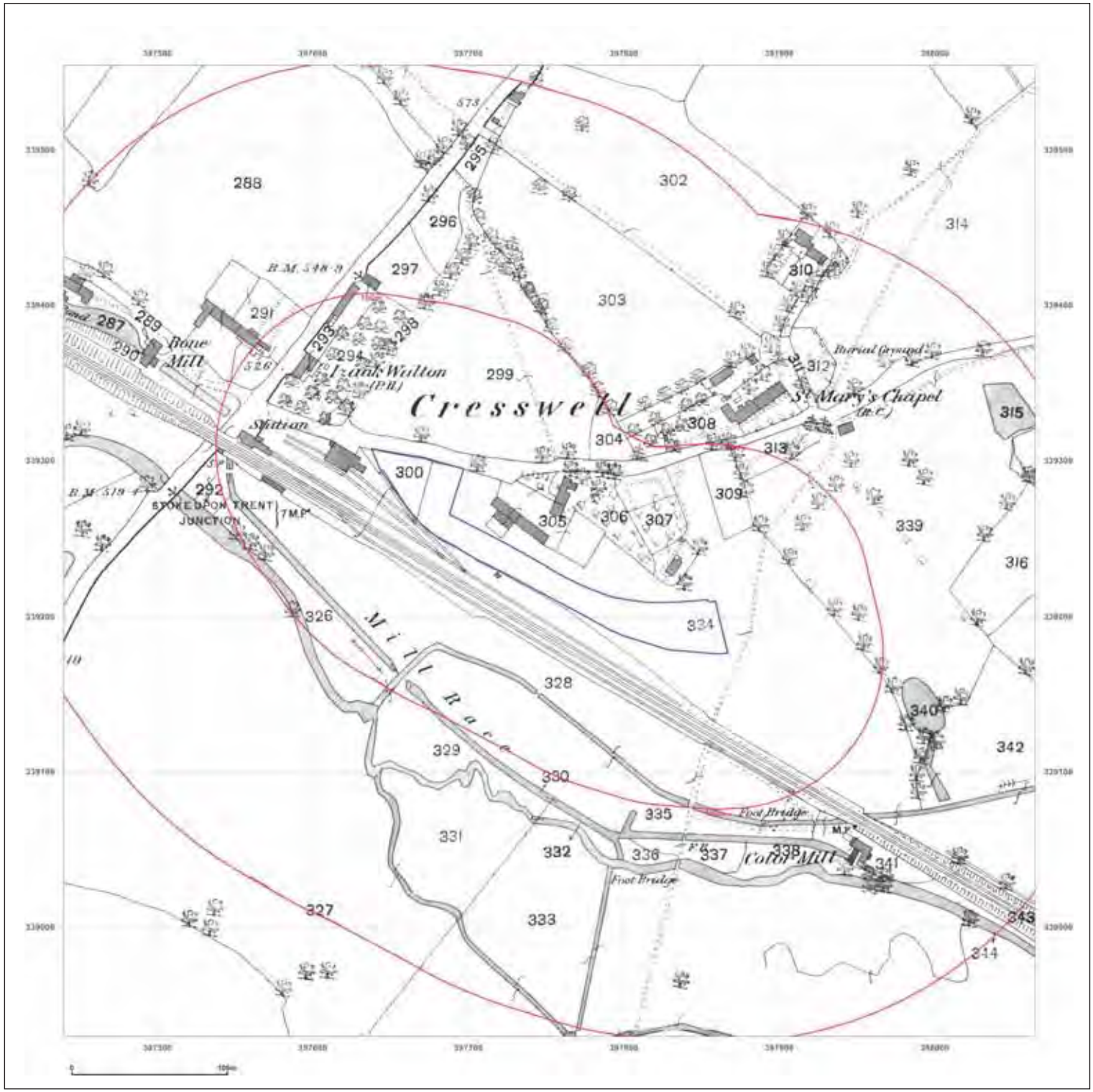
SLADEN ASSOCIATES	Report No 18-1896	Project Site at Old Cresswell Road, Cresswell, Staffordshire	Figure **2**



PROPSED SITE LAYOUT PLAN

SLADEN ASSOCIATES	Report No 18-1896	Project Site at Old Cresswell Road, Cresswell, Staffordshire	Figure **3**

APPENDIX A
HISTORICAL MAPS



Groundsure INSIGHTS

Site Details:

SITE AT CRESSWELL OLD LANE,
CRESSWELL, ST11 9RF

Client Ref: 18-1896
Report Ref: SA1-4772642
Grid Ref: 397752, 339242

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Map date: **1880**
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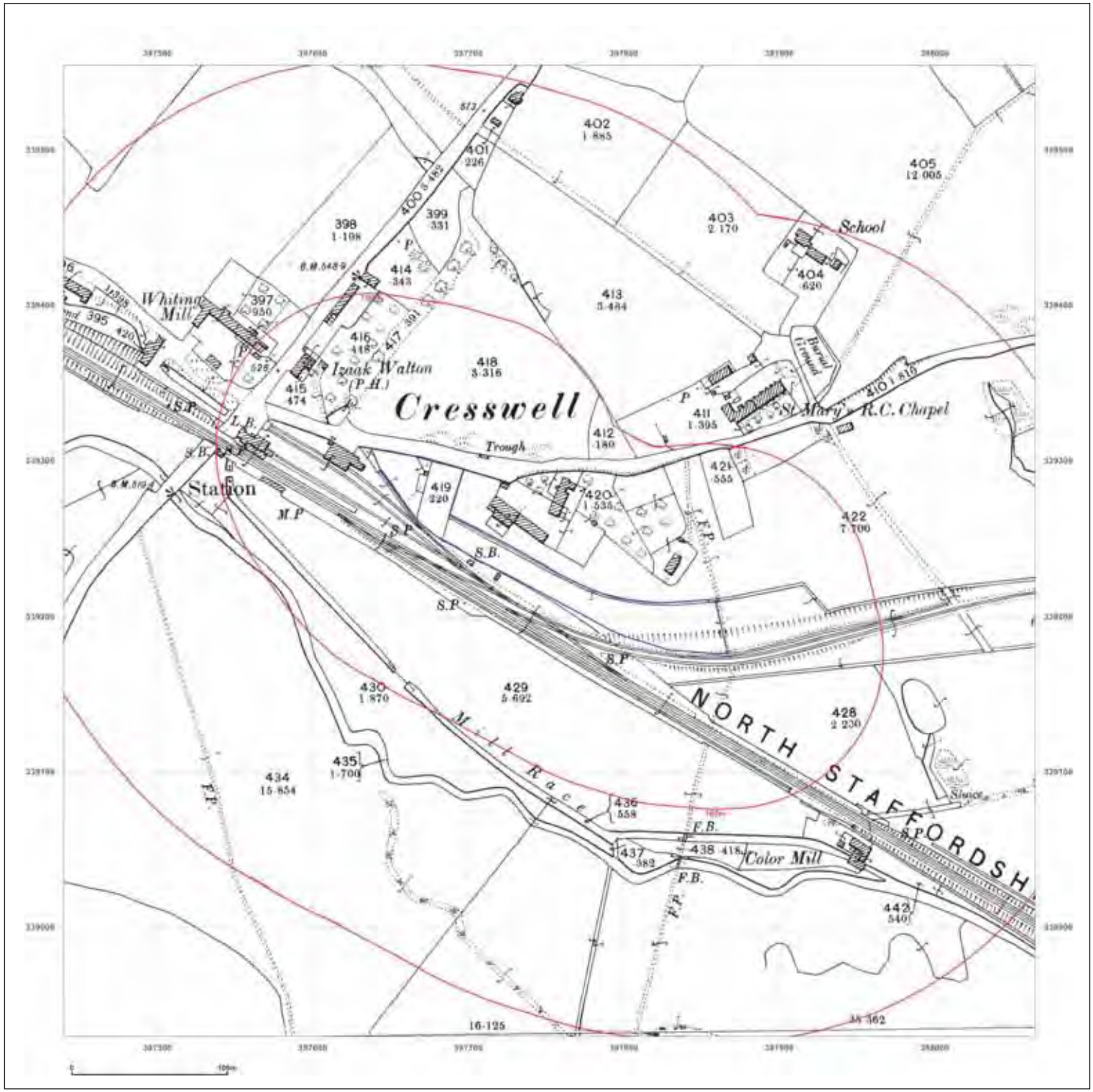
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Groundsure INSIGHTS

Site Details:

SITE AT CRESSWELL OLD LANE,
CRESSWELL, ST11 9RF

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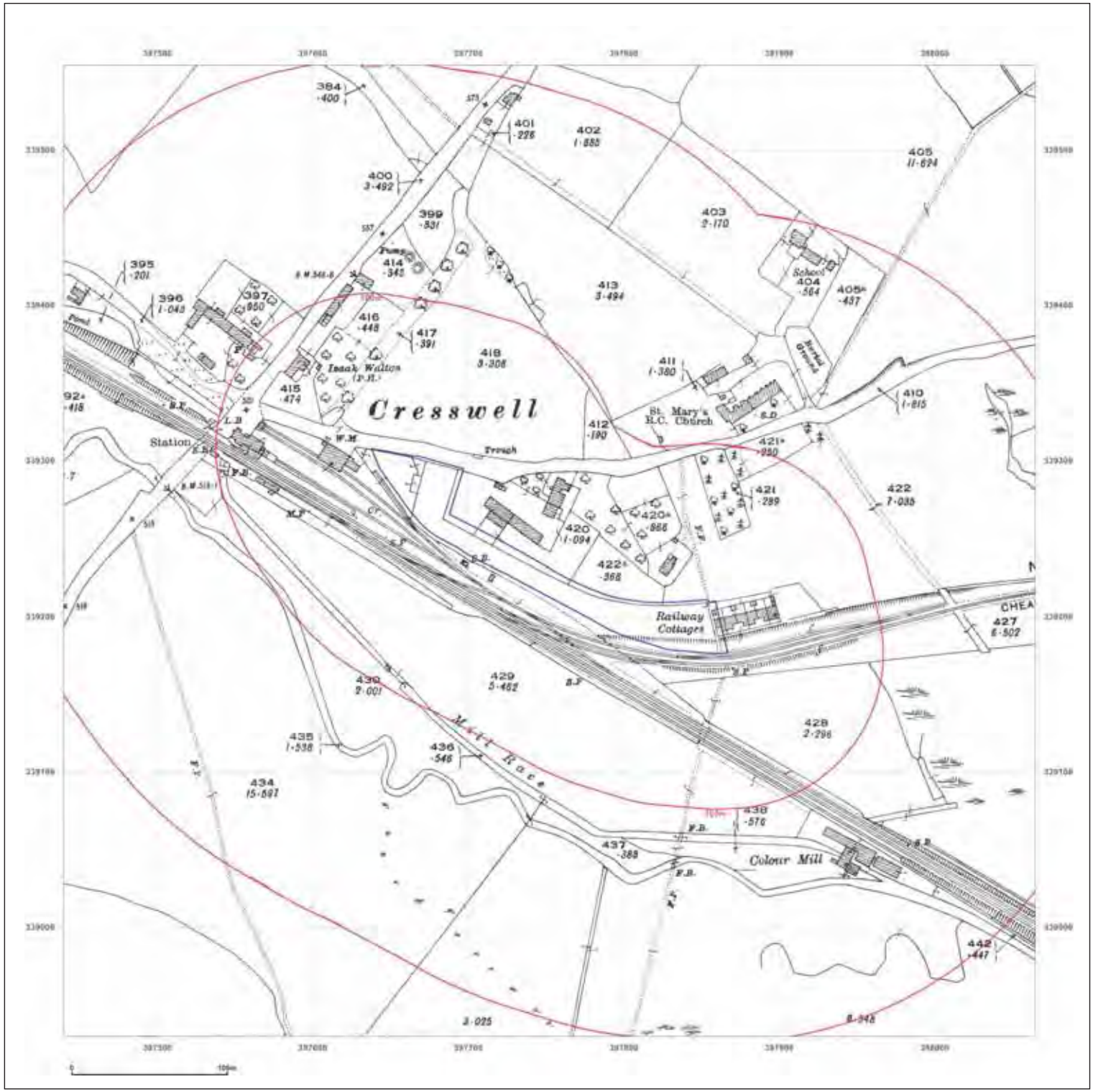
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Client Ref: 18-1896
Report Ref: SA1-4772642
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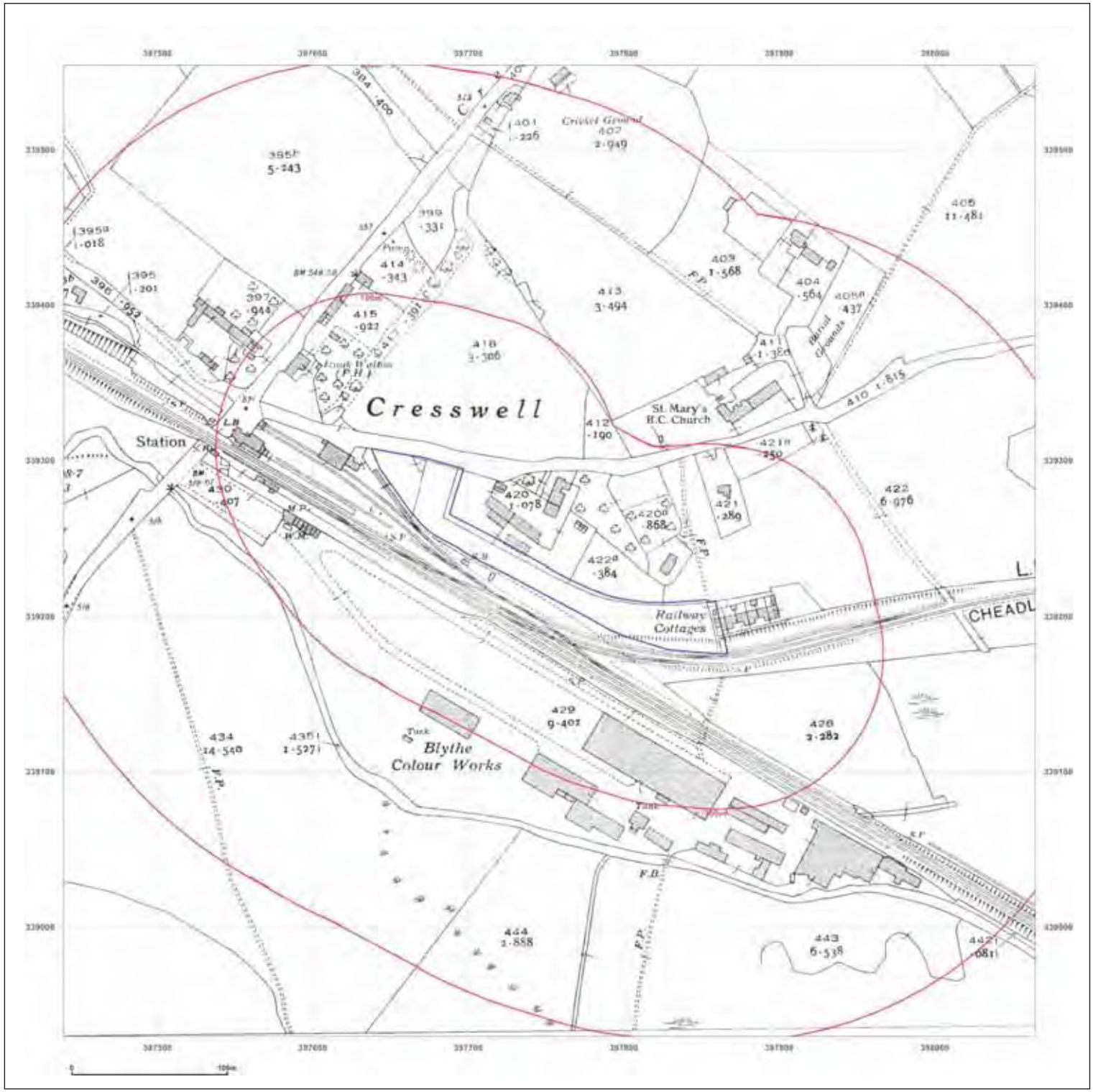
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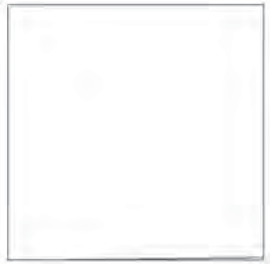
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CRESSWELL, ST11 9RF

Client Ref: 18-1896
Report Ref: SA1-4772642
Grid Ref: 397752, 339242

Map Name: County Series
Map date: **1937**
Scale: 1:2,500
Printed at: 1:2,500

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Revised 1937
Edition N/A
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Levelled N/A



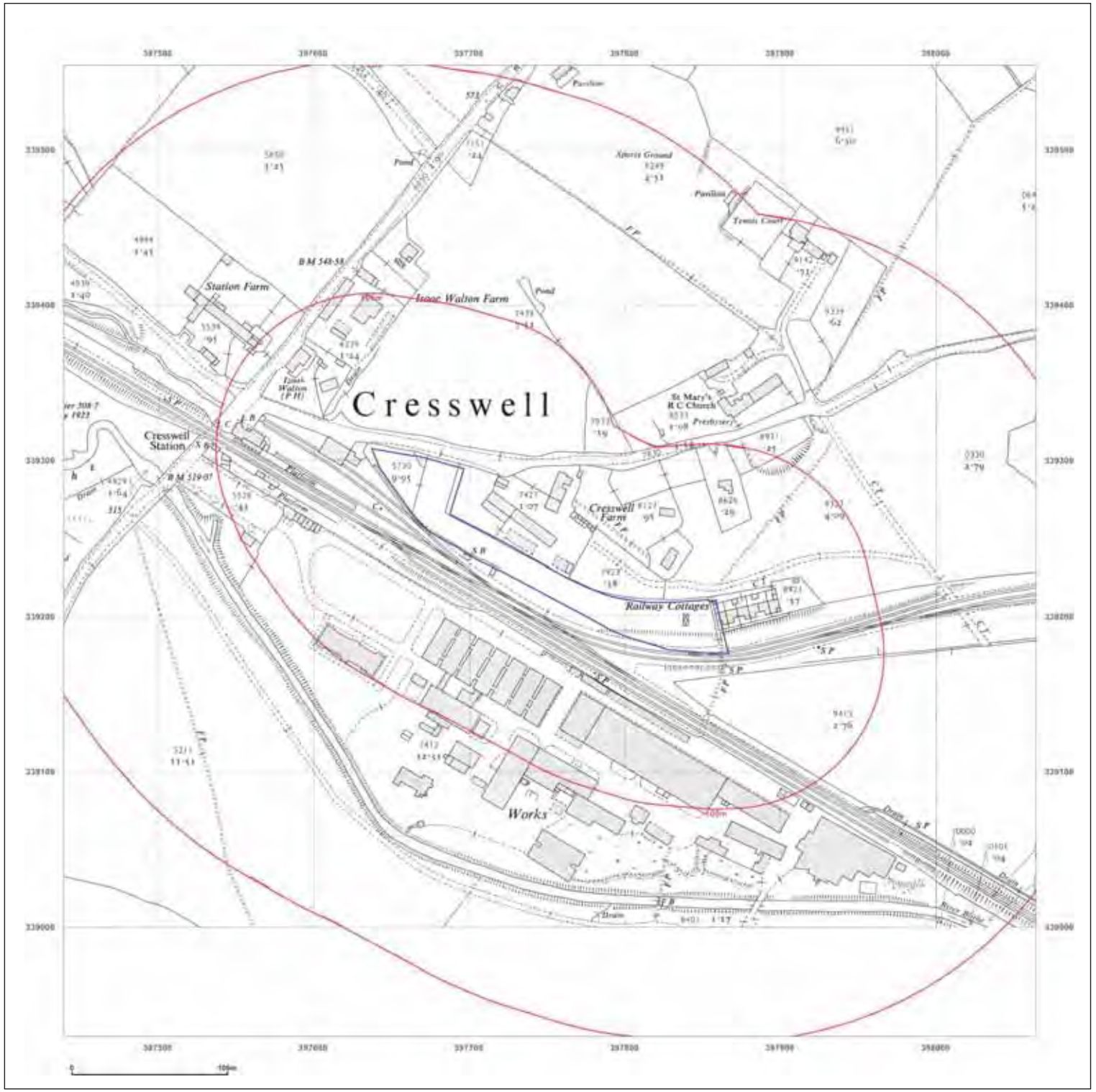
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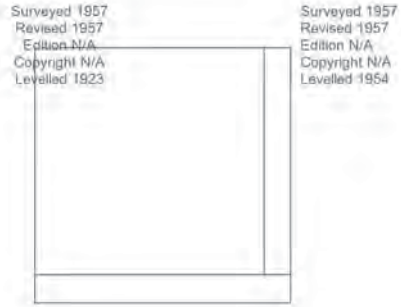
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CRESSWELL, ST11 9RF

Client Ref: 18-1896
Report Ref: SA1-4772642
Grid Ref: 397752, 339242

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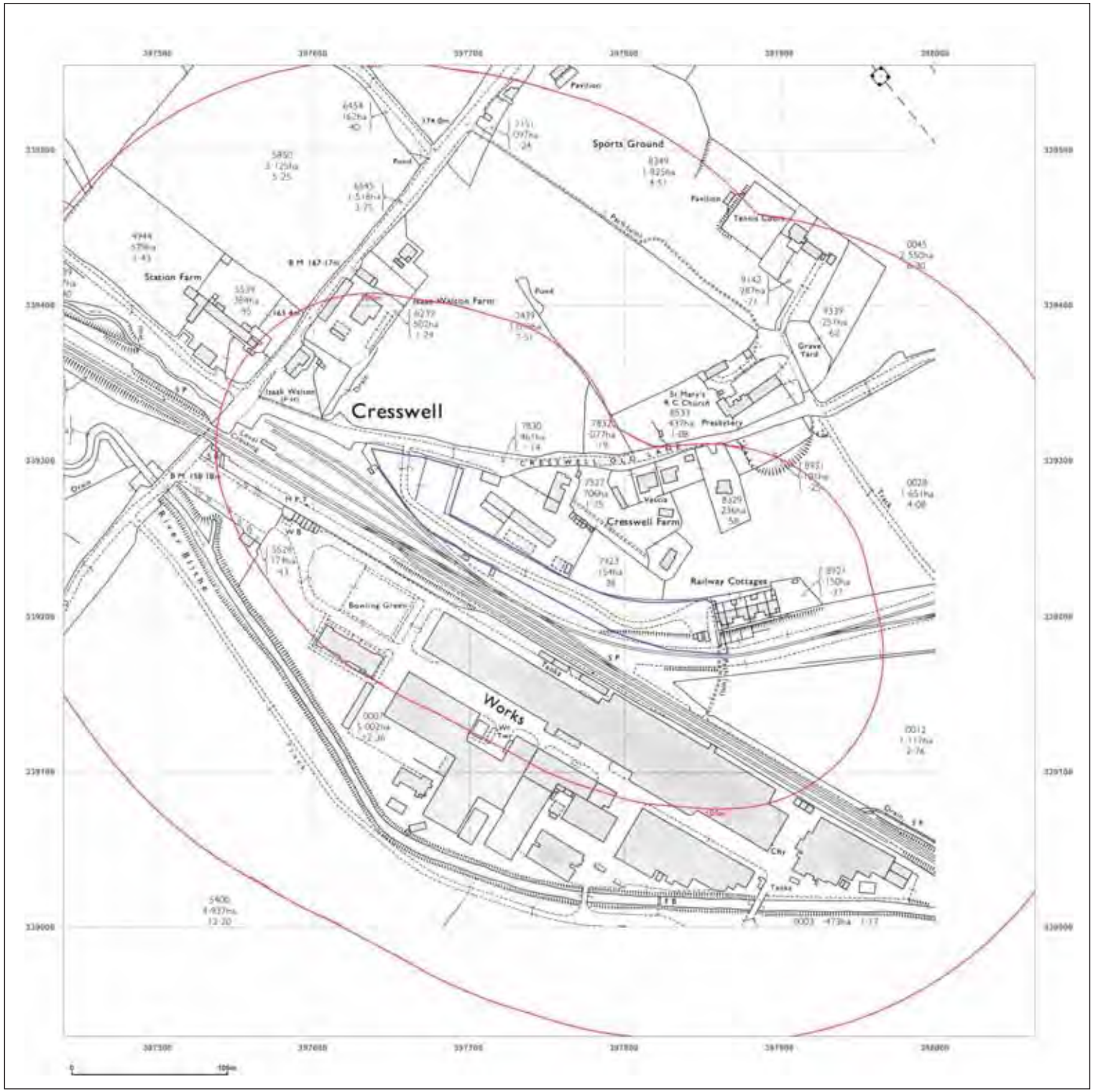
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Report Ref: SA1-4772642
Grid Ref: 397752, 339242

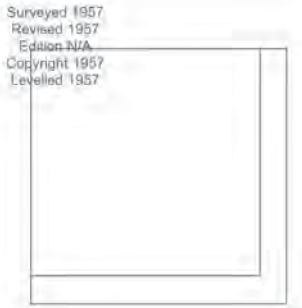
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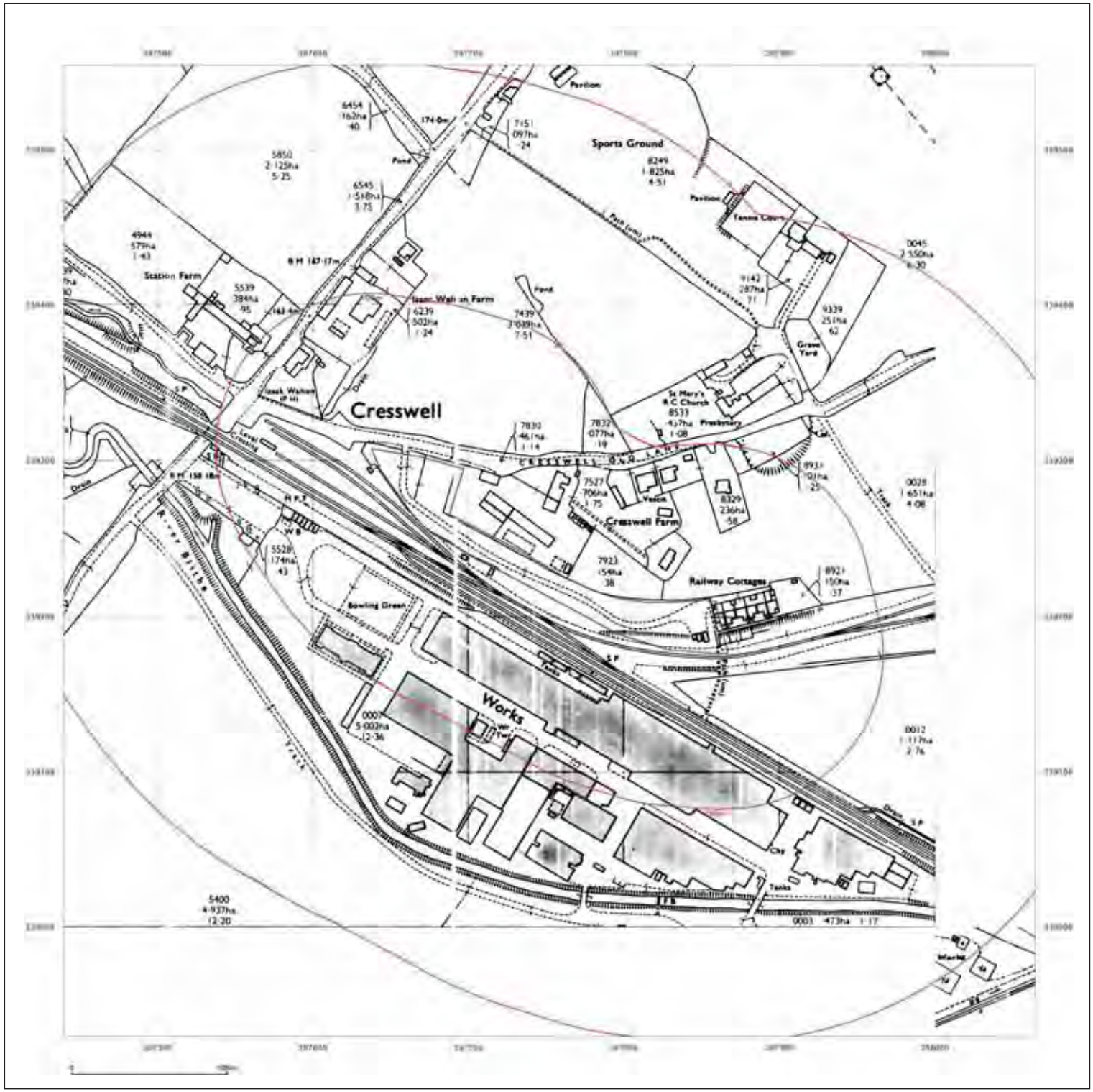
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Client Ref: 18-1896
Report Ref: SA1-4772642
Grid Ref: 397752, 339242

Map Name: National Grid
Map date: **1976-1978**
Scale: 1:2,500
Printed at: 1:2,500

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Report Ref: SA1-4772642
Grid Ref: 397752, 339242

Map Name: National Grid
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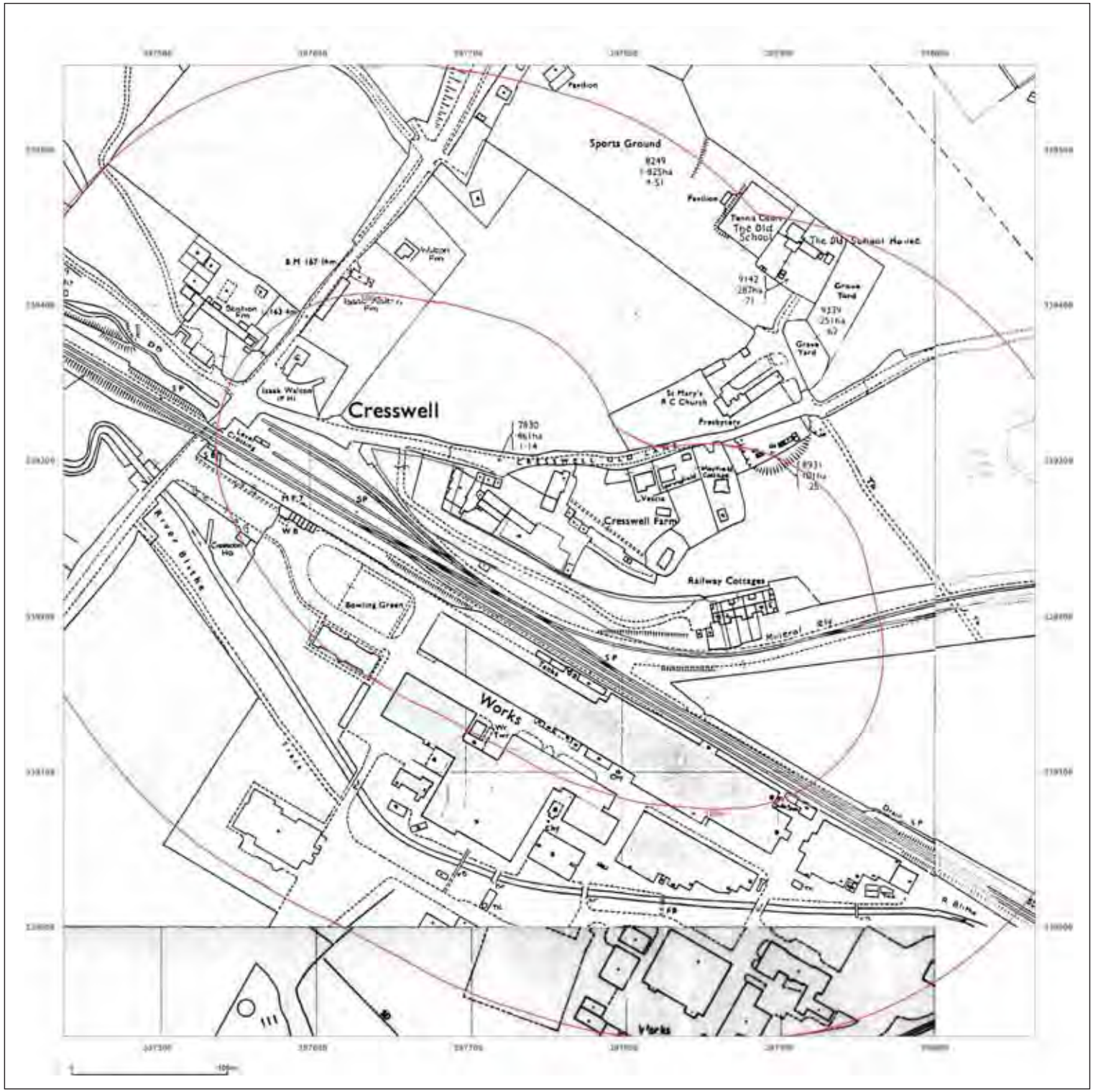
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Client Ref: 18-1896
Report Ref: SA1-4772642
Grid Ref: 397752, 339242

Map Name: National Grid
Map date: **1984-1987**
Scale: 1:2,500
Printed at: 1:2,500

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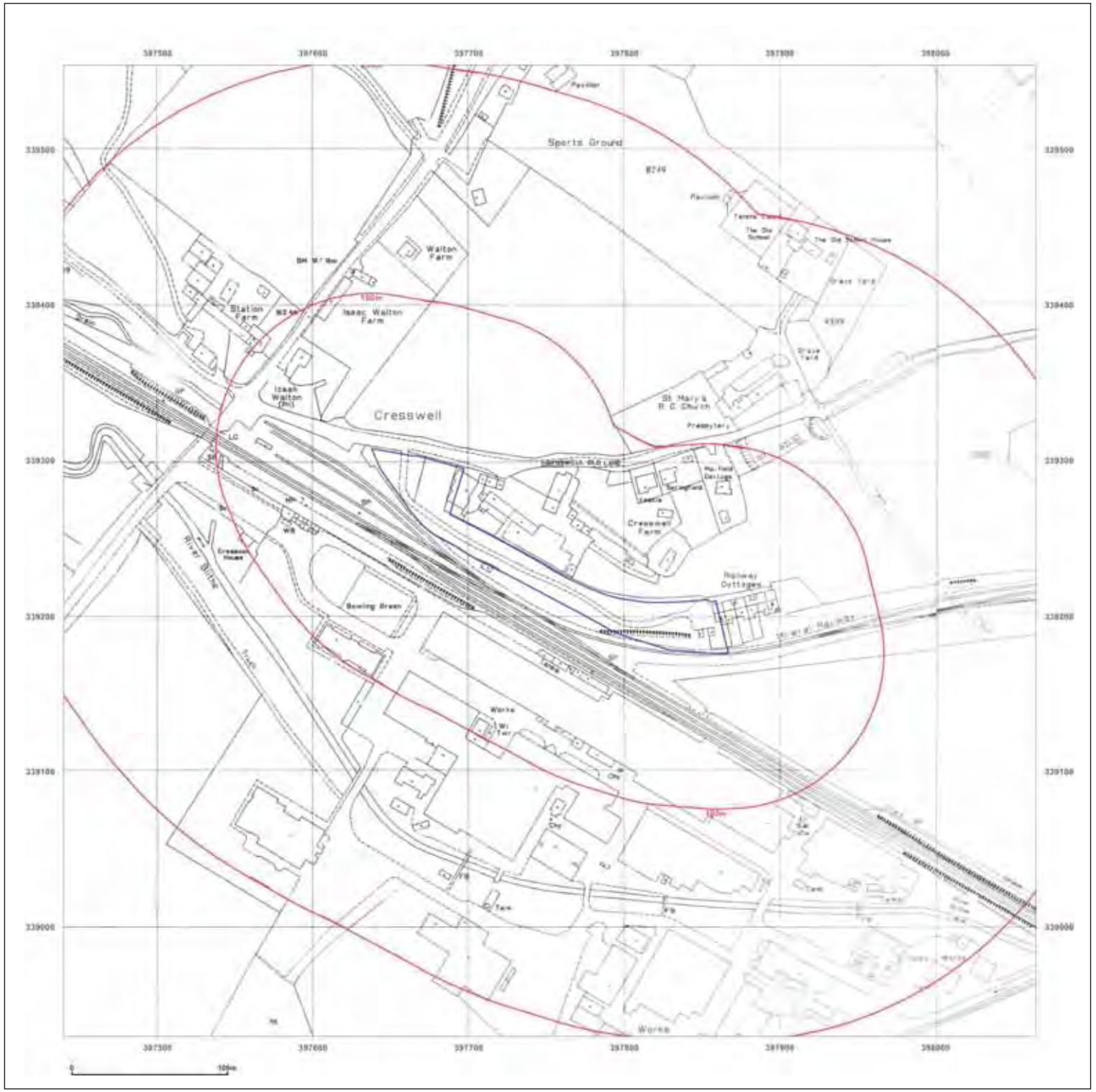
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Client Ref: 18-1896
Report Ref: SA1-4772642
Grid Ref: 397752, 339242

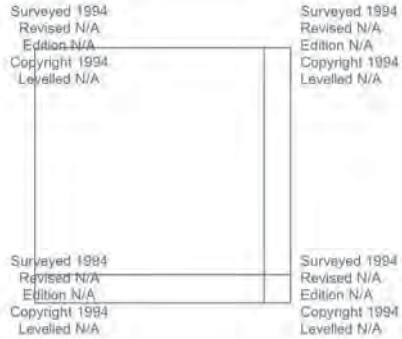
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Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

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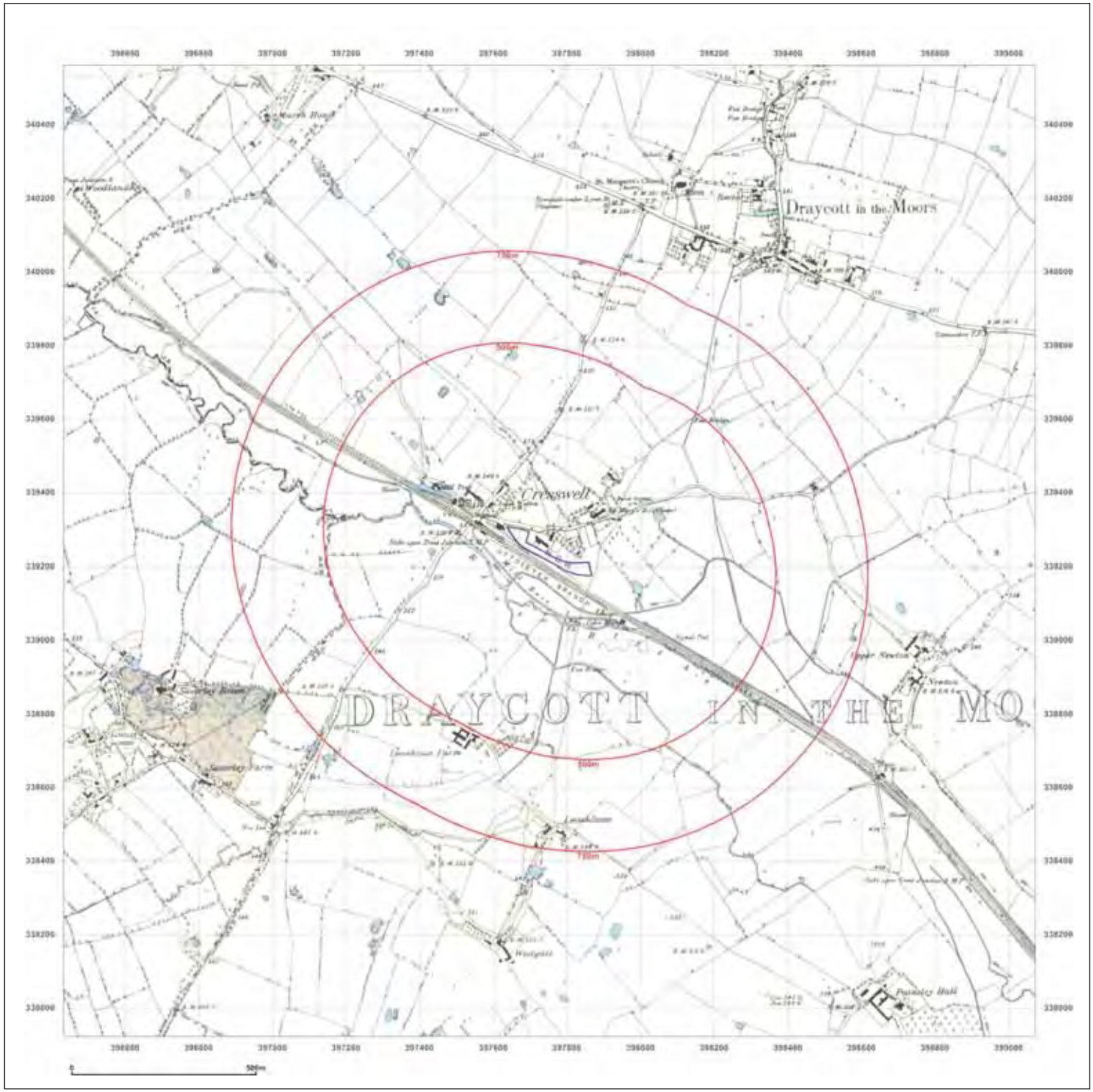
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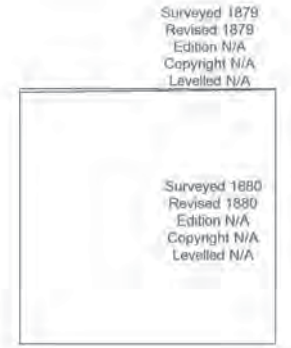
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SITE AT CRESSWELL OLD LANE,
CRESSWELL, ST11 9RF

Client Ref: 18-1896
Report Ref: SA1-4772642
Grid Ref: 397752, 339242

Map Name: County Series
Map date: **1879-1880**
Scale: 1:10,560
Printed at: 1:10,560

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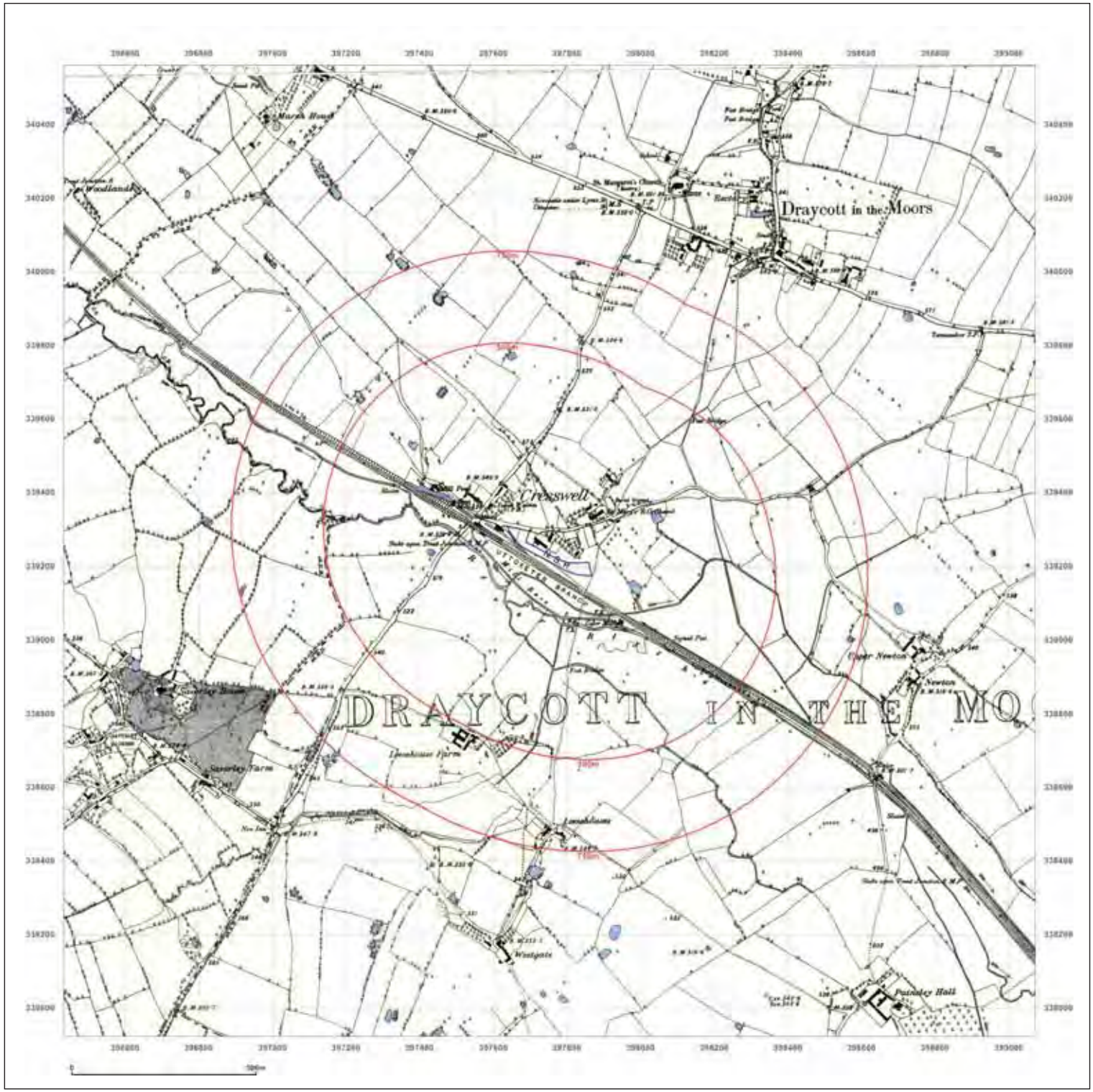
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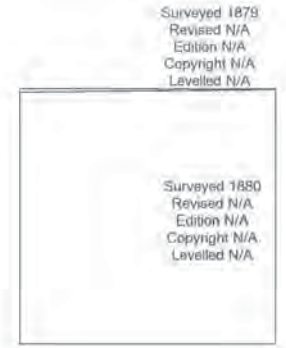
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CRESSWELL, ST11 9RF

Client Ref: 18-1896
Report Ref: SA1-4772642
Grid Ref: 397752, 339242

Map Name: County Series
Map date: **1888**
Scale: 1:10,560
Printed at: 1:10,560

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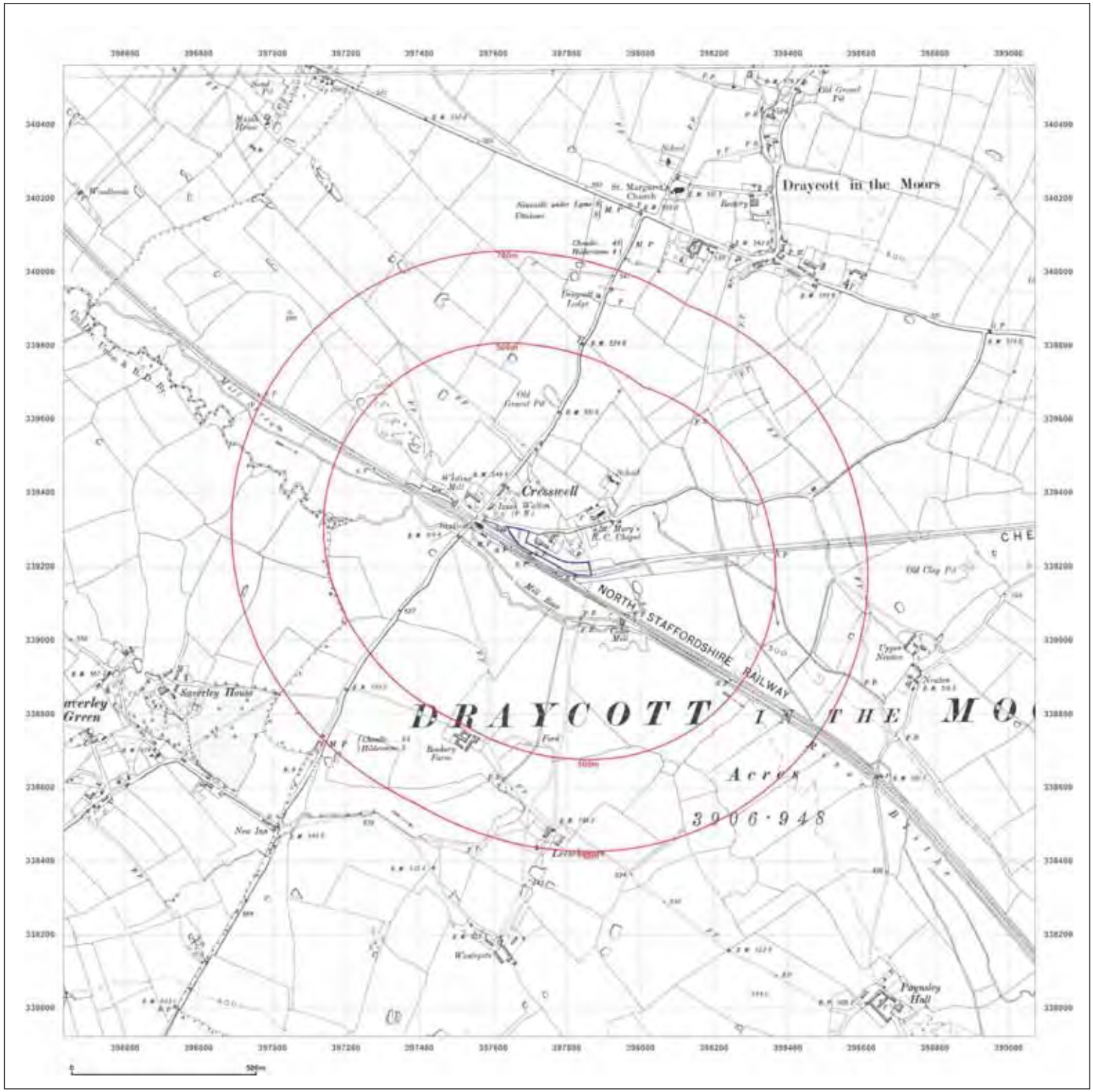
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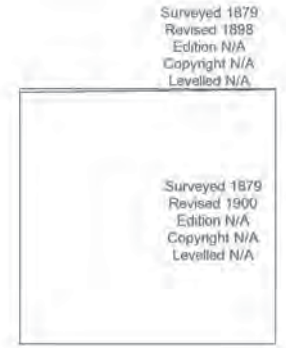
Site Details:

SITE AT CRESSWELL OLD LANE,
CRESSWELL, ST11 9RF

Client Ref: 18-1896
Report Ref: SA1-4772642
Grid Ref: 397752, 339242

Map Name: County Series
Map date: **1898-1900**
Scale: 1:10,560
Printed at: 1:10,560

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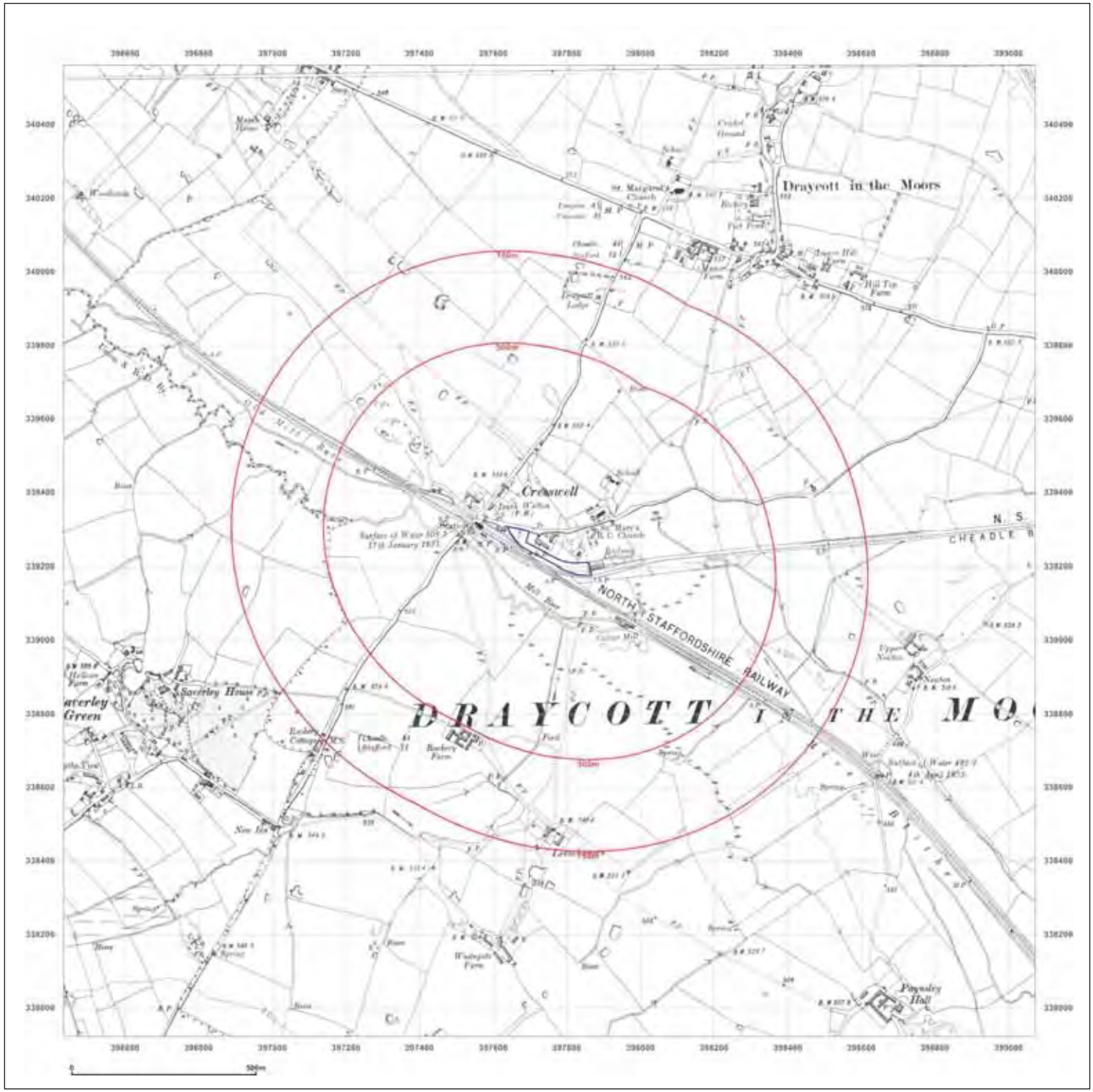
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Site Details:

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CRESSWELL, ST11 9RF

Client Ref: 18-1896
Report Ref: SA1-4772642
Grid Ref: 397752, 339242

Map Name: County Series
Map date: **1922**
Scale: 1:10,560
Printed at: 1:10,560

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Surveyed 1878
Revised 1922
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1879
Revised 1922
Edition N/A
Copyright N/A
Levelled N/A

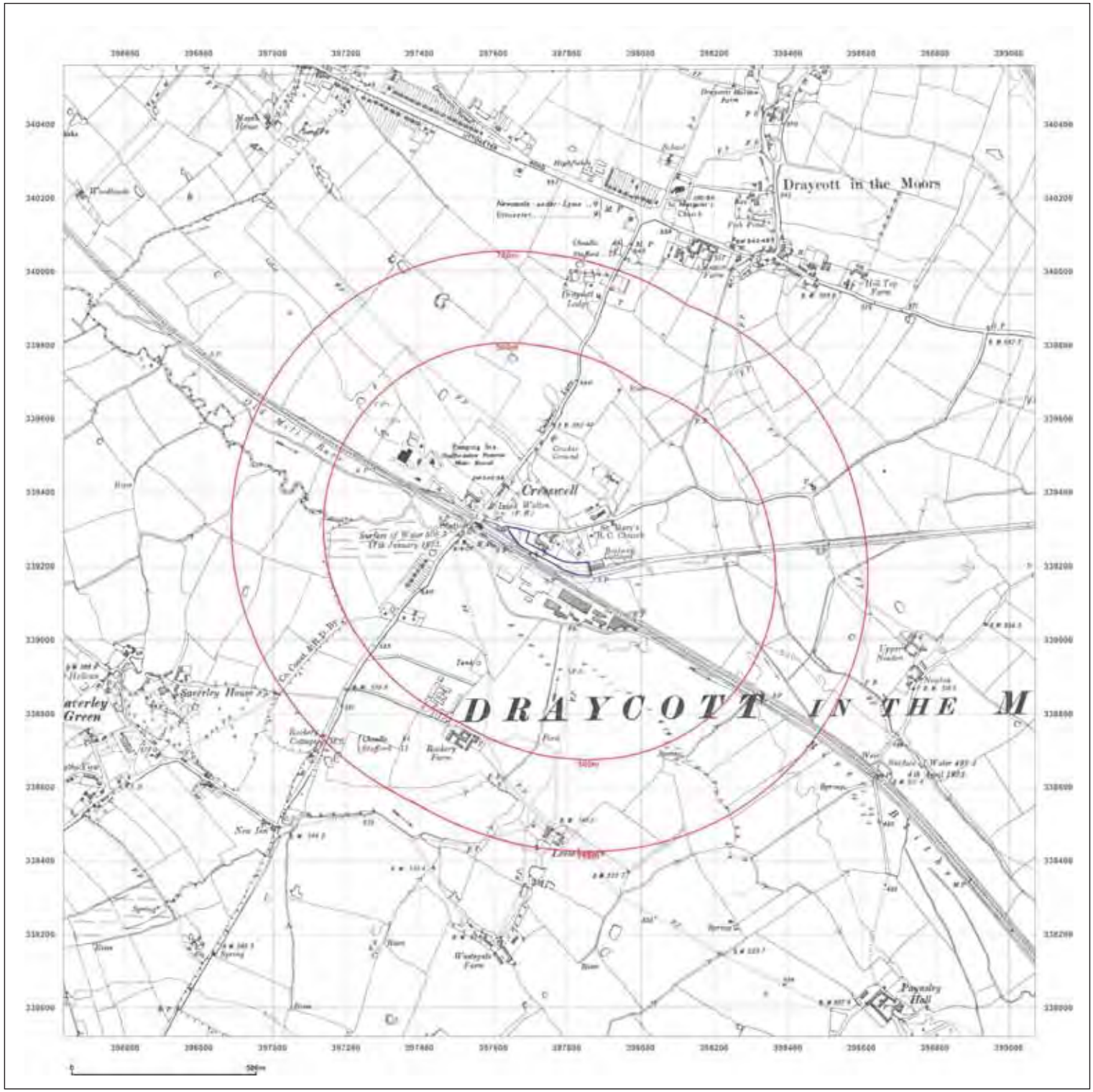
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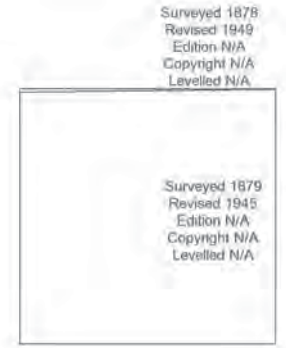
Site Details:

SITE AT CRESSWELL OLD LANE,
CRESSWELL, ST11 9RF

Client Ref: 18-1896
Report Ref: SA1-4772642
Grid Ref: 397752, 339242

Map Name: County Series
Map date: **1945-1949**
Scale: 1:10,560
Printed at: 1:10,560

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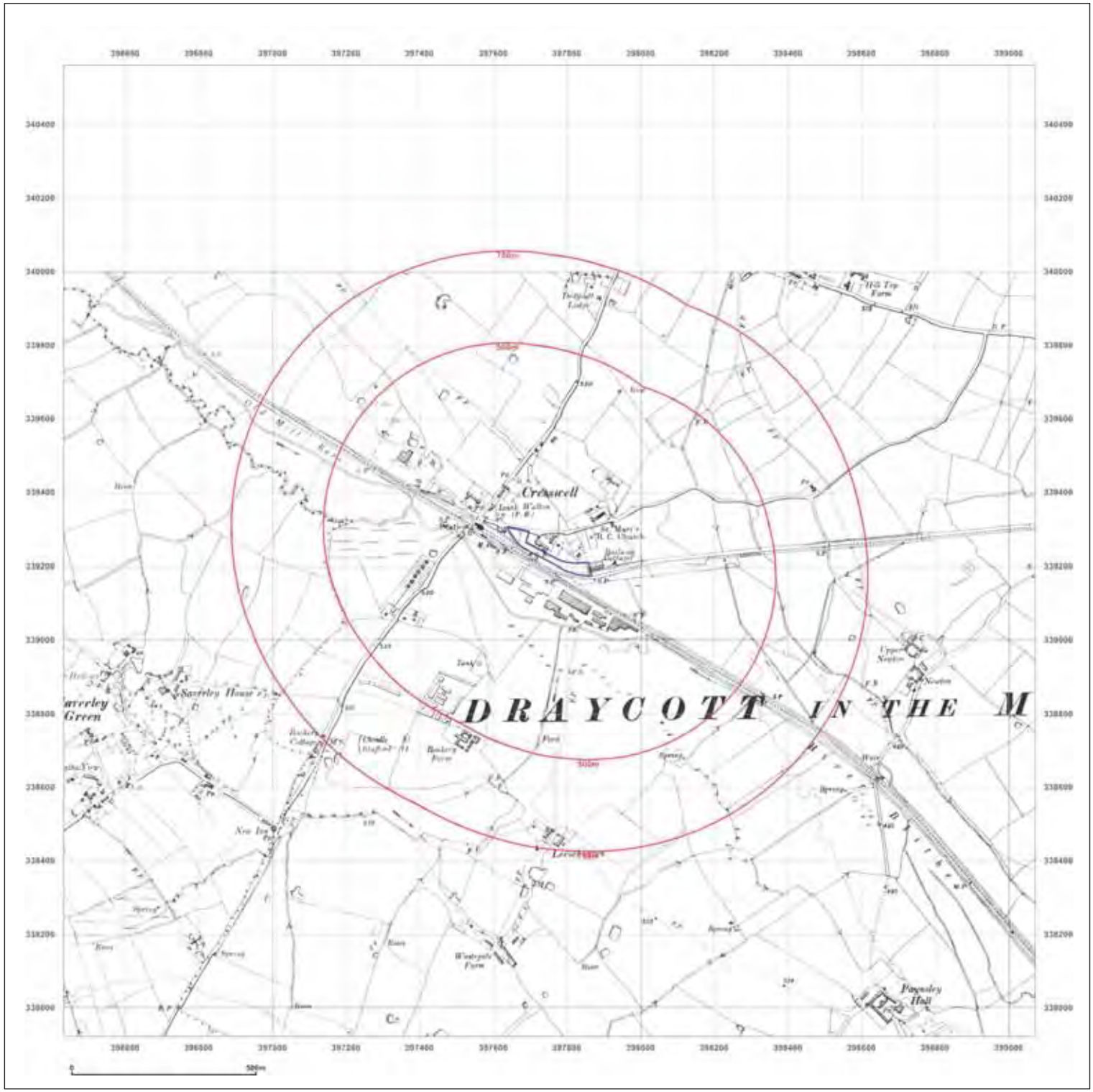
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Site Details:

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CRESSWELL, ST11 9RF

Client Ref: 18-1896
Report Ref: SA1-4772642
Grid Ref: 397752, 339242

Map Name: Provisional
Map date: **1949**
Scale: 1:10,560
Printed at: 1:10,560

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Surveyed 1949
Revised 1949
Edition N/A
Copyright N/A
Levelled N/A

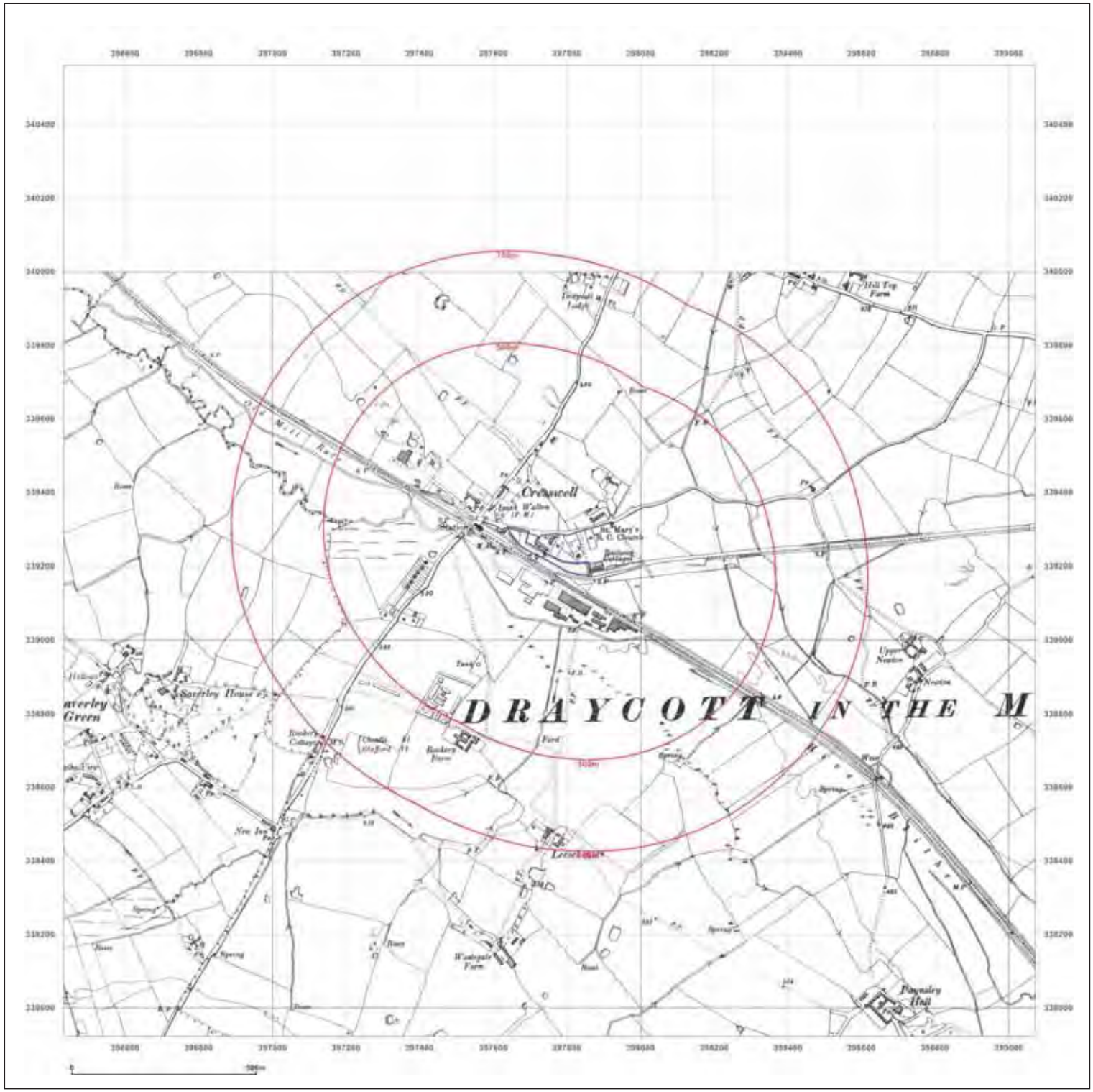
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Site Details:

SITE AT CRESSWELL OLD LANE,
CRESSWELL, ST11 9RF

Client Ref: 18-1896
Report Ref: SA1-4772642
Grid Ref: 397752, 339242

Map Name: Provisional
Map date: **1949**
Scale: 1:10,560
Printed at: 1:10,560

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Site Details:

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CRESSWELL, ST11 9RF

Client Ref: 18-1896
Report Ref: SA1-4772642
Grid Ref: 397752, 339242

Map Name: 1:10,000 Raster
Map date: 2002
Scale: 1:10,000
Printed at: 1:10,000

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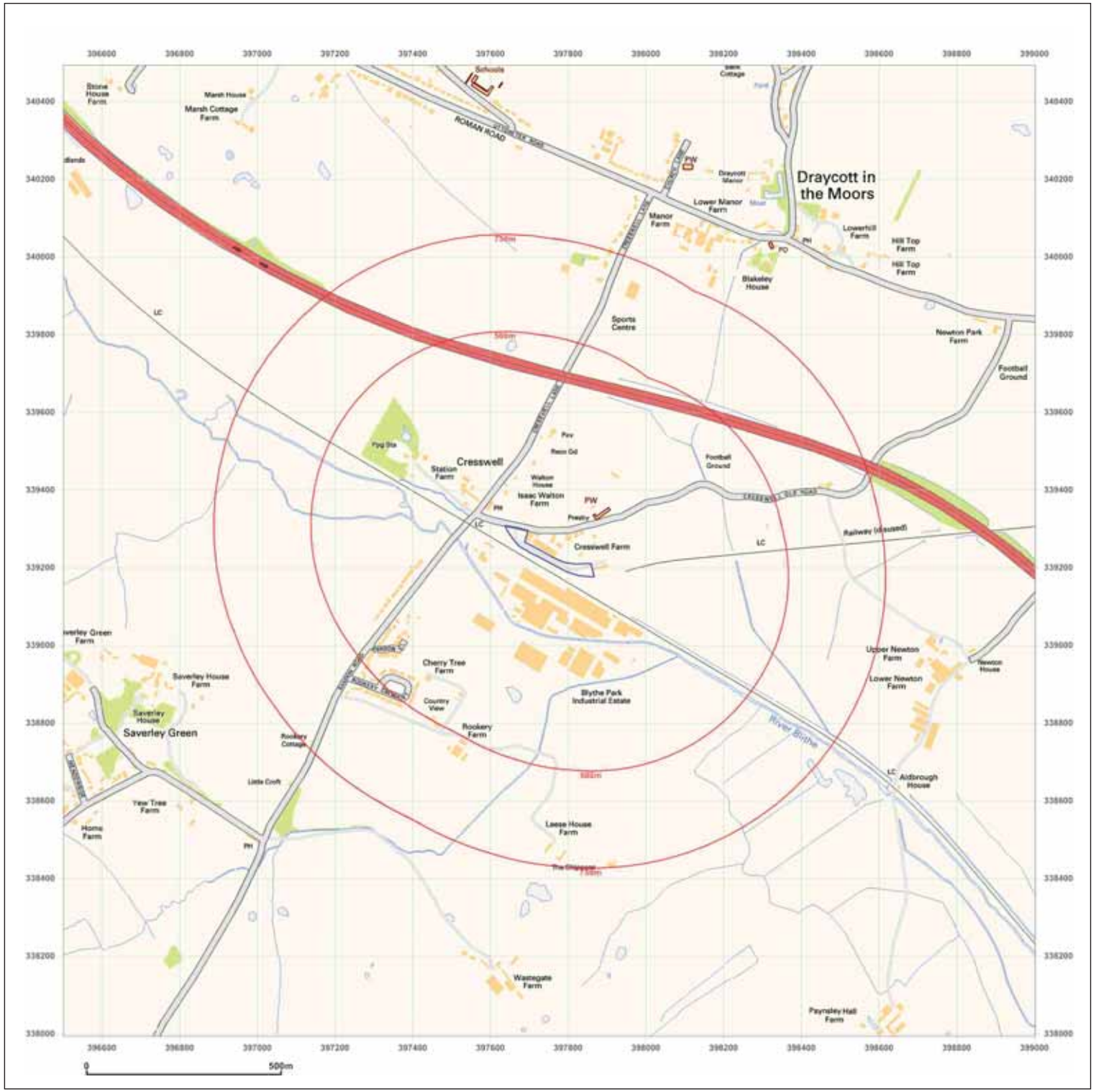
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Site Details:

SITE AT CRESSWELL OLD LANE,
CRESSWELL, ST11 9RF

Client Ref: 18-1896
Report Ref: SA1-4772642
Grid Ref: 397752, 339242

Map Name: National Grid
Map date: 2010
Scale: 1:10,000
Printed at: 1:10,000

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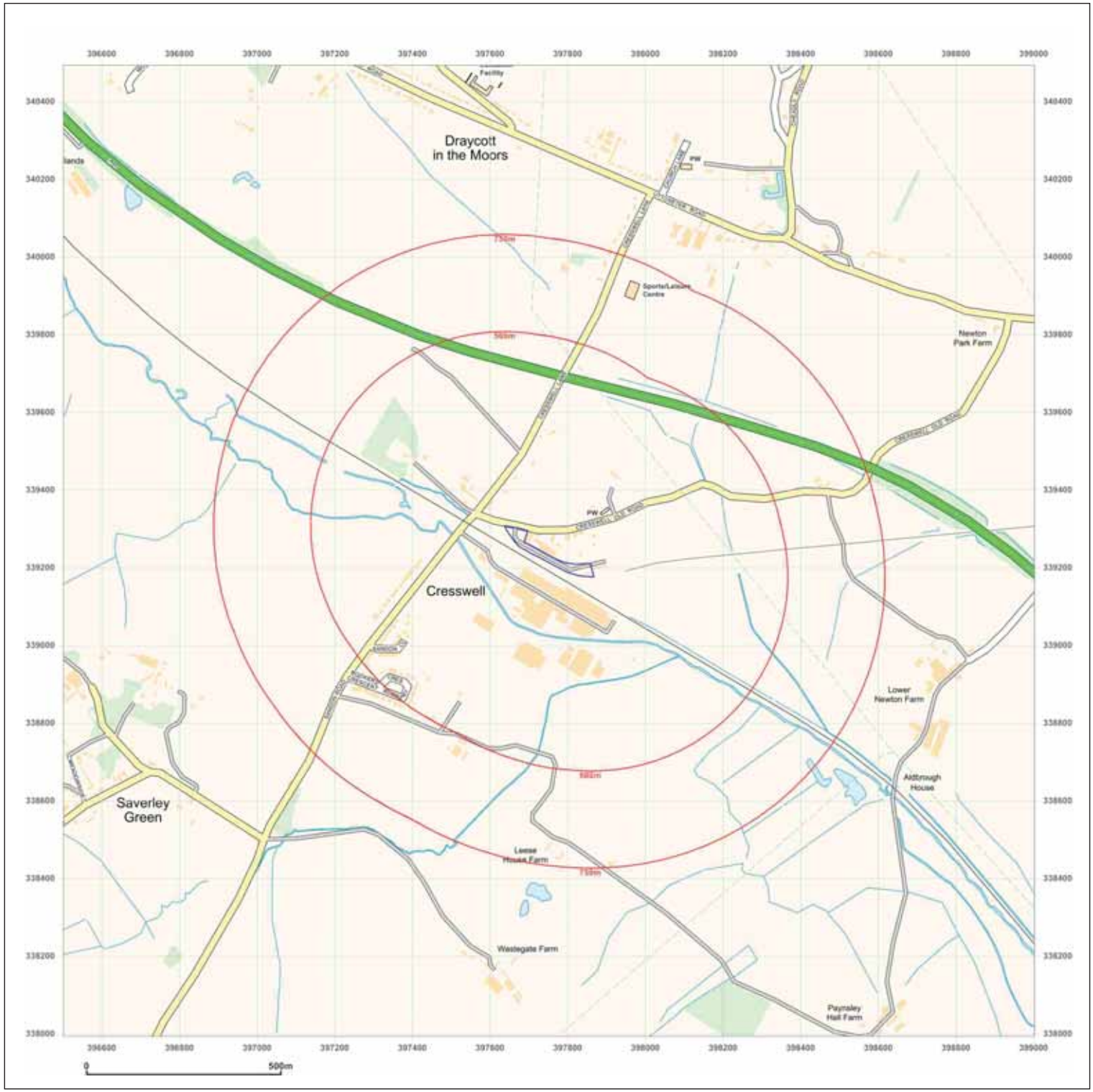
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Site Details:

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CRESSWELL, ST11 9RF

Client Ref: 18-1896
Report Ref: SA1-4772642
Grid Ref: 397752, 339242

Map Name: National Grid
Map date: 2014
Scale: 1:10,000
Printed at: 1:10,000

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APPENDIX B
FACTUAL INFORMATION CONCERNING NEARBY LAND USE

Enviro Insight

Address:	**SITE AT CRESSWELL OLD LANE, CRESSWELL, ST11 9RF**
Date:	**1 Mar 2018**
Reference:	**SA1-4772640**
Client:	**Sladen Associates Ltd**

NW N NE



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Aerial Photograph Capture date:	23-Apr-2015
Grid Reference:	397741,339226
Site Size:	0.59ha

Report Reference: SA1-4772640
Client Reference: 18-1896

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Overview of Findings

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Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	6	6	16	8
1.2 Additional Information – Historical Tank Database	0	4	15	4
1.3 Additional Information – Historical Energy Features Database	0	0	2	4
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	0	0
1.6 Potentially Infilled Land	0	0	8	11

Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	8	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	8	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	1	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	1	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	2	0
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	2	1
2.1.9 Records of Water Industry Referrals	0	0	1	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	1	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	4	0
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	1	2	0	0	0
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	1	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	0	0	0

Section 4: Current Land Use

	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	0	22	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	0
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology

5.1 Are there any records of Artificial Ground and Made Ground present beneath the study site?	No
5.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site?	Yes
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology

	0-500m
6.1 Are there any records of Strata Classification in the Superficial Geology within 500m of the study site?	Yes
6.2 Are there any records of Strata Classification in the Bedrock Geology within 500m of the study site?	Yes

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	1	0	2
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	2	0	0	0
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	1	0	0
6.6 Source Protection Zones (within 500m of the study site)	2	1	0	1	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	0	2	1	1	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

	0-500m					
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site?	No	No	Yes	No	No	No
6.10 Detailed River Network entries within 500m of the site	0	0	7	13	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	Yes	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Are there any Enviroment Agency Zone 2 floodplains within 250m of the study site?	Yes
7.2 Are there any Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	Yes
7.3 What is the Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site?	Very Low
7.4 Are there any Flood Defences within 250m of the study site?	No
7.5 Are there any areas benefiting from Flood Defences within 250m of the study site?	No
7.6 Are there any areas used for Flood Storage within 250m of the study site?	No
7.7 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Not Prone
7.8 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	Not Applicable

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	0	2
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	2	0	0	0	2	0
8.14 Records of Green Belt land	1	0	0	1	1	2

Section 9: Natural Hazards

9.1 What is the maximum risk of natural ground subsidence?	Moderate
9.1.1 What is the maximum Shrink-Swell hazard rating identified on the study site?	Very Low
9.1.2 What is the maximum Landslides hazard rating identified on the study site?	Very Low
9.1.3 What is the maximum Soluble Rocks hazard rating identified on the study site?	Negligible
9.1.4 What is the maximum Compressible Ground hazard rating identified on the study site?	Moderate
9.1.5 What is the maximum Collapsible Rocks hazard rating identified on the study site?	Very Low
9.1.6 What is the maximum Running Sand hazard rating identified on the study site?	Low
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.

Section 10: Mining

10.1 Are there any coal mining areas within 75m of the study site?	No
10.2 Are there any Non-Coal Mining areas within 50m of the study site boundary?	No
10.3 Are there any brine affected areas within 75m of the study site?	No

Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between Groundsure and the Client. The document contains the following sections:

1. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

3. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

4. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure gas pipelines and underground electricity transmission lines.

5. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

6. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licenses, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

7. Flooding

Provides information on river and coastal flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

8. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

9. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence and radon..

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, Groundsure provide a free Technical Helpline (08444 159000) for further information and guidance.

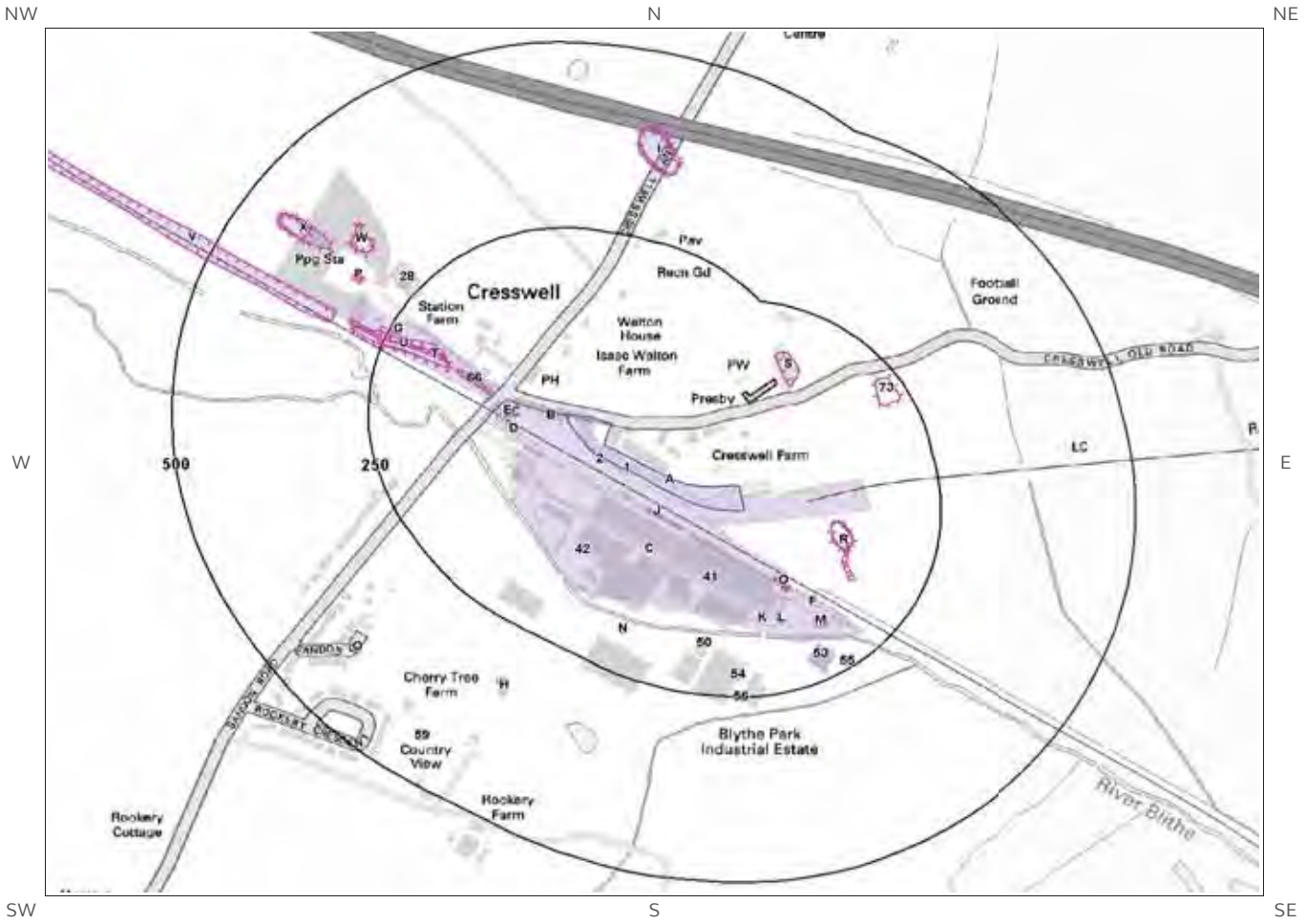
Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier “A” on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as “Not Shown”.

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Historical Land Use



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Site Outline

250
500
Search Buffers (m)

Historical 1:10,000 and 1:10,560 scale mapping

Industrial Land Use

Potentially Infilled Land

Historical 1:2,500, 1:1,250 and 1:500 scale mapping

Energy Features

Petrol Stations

Tanks

Garages

1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 36

ID	Distance [m]	Direction	Use	Date
1	0	On Site	Railway Building	1880
2	0	On Site	Railway Sidings	1880
3A	0	On Site	Railway Sidings	1945
4A	0	On Site	Railway Sidings	1900
5A	0	On Site	Railway Sidings	1922
6	0	On Site	Railway Sidings	1949
7B	7	SW	Railway Building	1945
8B	7	SW	Railway Building	1900
9B	7	SW	Railway Building	1922
10B	7	SW	Railway Building	1880
11C	30	SW	Unspecified Commercial/Industrial	1945
12C	34	SW	Unspecified Commercial/Industrial	1949
13E	60	W	Railway Station	1880
14D	62	SW	Railway Building	1945
15D	62	SW	Railway Building	1900
16D	62	SW	Railway Building	1922
17E	63	W	Railway Station	1900
18E	63	W	Railway Station	1922
19E	63	W	Railway Station	1945
20E	66	W	Railway Station	1949
21T	91	NW	Unspecified Mill	1900
22F	115	SE	Unspecified Mill	1900
23F	115	SE	Colour Mill	1922
24F	120	SE	Colour Mill	1880
25S	147	NE	Burial Ground	1880
26G	151	NW	Unspecified Mill	1880
27G	167	NW	Mill Pond	1880
28	243	NW	Pumping Station	1945
29V	321	NW	Cuttings	1880
30H	327	SW	Unspecified Tank	1945
31H	330	SW	Unspecified Tank	1949
32I	338	N	Unspecified Pit	1949
33I	343	N	Unspecified Pit	1945

34I	343	N	Unspecified Pit	1922
35I	343	N	Old Gravel Pit	1900
36X	372	NW	Unspecified Pit	1900

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary: 23

ID	Distance (m)	Direction	Use	Date
37J	32	SW	Tanks	1994
38J	32	SW	Tanks	1978
39J	33	SW	Tanks	1987
40J	33	SW	Tanks	1957
41	93	S	Unspecified Tank	1937
42	122	SW	Unspecified Tank	1937
43K	145	S	Unspecified Tank	1957
44K	149	S	Unspecified Tank	1957
45L	151	S	Unspecified Tank	1978
46L	151	S	Unspecified Tank	1994
47L	152	S	Unspecified Tank	1987
48M	173	SE	Tanks	1994
49M	174	SE	Tanks	1987
50	183	S	Unspecified Tank	1969
51N	193	SW	Unspecified Tank	1994
52N	193	SW	Unspecified Tank	1987
53	200	SE	Tanks	1994
54	221	S	Tanks	1969
55	237	SE	Unspecified Tank	1994
56	251	S	Unspecified Tank	1994
57H	319	SW	Unspecified Tank	1984
58H	319	SW	Unspecified Tank	1969
59	439	SW	Unspecified Tank	1984

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary: 6

ID	Distance (m)	Direction	Use	Date
60O	97	SE	Electricity Substation	1994
61O	97	SE	Electricity Substation	1987
62P	314	NW	Electricity Substation	1994
63P	314	NW	Electricity Substation	1987
64Q	397	SW	Electricity Substation	1984
65Q	399	SW	Electricity Substation	1994

1.4 Additional Information – Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 0

Database searched and no data found.

1.6 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 19

The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

ID	Distance(m)	Direction	Use	Date
66	97	W	Pond	1880
67R	111	E	Ponds	1880
68R	112	E	Pond	1900
69S	147	NE	Burial Ground	1880
70T	159	NW	Pond	1922
71U	160	W	Pond	1900
72U	167	NW	Mill Pond	1880
73	212	NE	Pond	1880
74V	321	NW	Cuttings	1880
75W	330	NW	Pond	1949
76W	331	NW	Pond	1945

77I	338	N	Unspecified Pit	1949
78I	343	N	Old Gravel Pit	1900
79I	343	N	Unspecified Pit	1922
80I	343	N	Unspecified Pit	1945
81X	372	NW	Unspecified Pit	1900
82X	372	NW	Pond	1922
83X	372	NW	Pond	1945
84X	407	NW	Pond	1949

2. Environmental Permits, Incidents and Registers Map



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- Site Outline
- Search Buffers (m) — 250 — 500
- Recorded Pollution Incident
- Dangerous Substances (List 1)
- Dangerous Substances (List 2)
- Water Industry Referrals
- Licenced Discharge Consents
- Red List Discharge Consents
- RAS 3 & 4 Authorisations
- Part A(1) Authorised Processes and Historic IPC Authorisations
- Part A(2) and Part B Authorised Processes
- COMAH / NIHHS Sites
- Sites Determined as Contaminated Land
- Hazardous Substance Consents and Enforcements

2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency/Natural Resources Wales and Local Authorities reveal the following information:

2.1.1 Records of historic IPC Authorisations within 500m of the study site:

8

The following IPC Authorisations are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
38C	138	W	397500 339300	Operator: Johnson Matthey Plc Address: Cresswell, Blythe Bridge, Stoke-on-trent, Staffordshire, ST11 9RD Process: Inorganic Chemical Processes	Permit Number: AO1608 Original Permit Number: IPCAIRAPP Date Approved: 1-12-1994 Effective Date: 1-1-1995 Status: Superseded By Variation
39C	138	W	397500 339300	Operator: Johnson Matthey Plc Address: Main Building, Cresswell, Stoke-on-trent, ST11 9RD Process: Glass Manufacture And Production	Permit Number: BC5873 Original Permit Number: IPCMINVAR Date Approved: 24-11-1998 Effective Date: 30-11-1998 Status: Superseded By Variation
40C	138	W	397500 339300	Operator: Johnson Matthey Plc Address: Cresswell, Blythe Bridge, Stoke-on-trent, Staffordshire, ST11 9RD Process: Inorganic Chemical Processes	Permit Number: BD0834 Original Permit Number: IPCMINVAR Date Approved: 24-11-1998 Effective Date: 30-11-1998 Status: Superseded By Variation
41C	138	W	397500 339300	Operator: Johnson Matthey Plc Address: Main Building, Cresswell, Stoke-on-trent, ST11 9RD Process: Glass Manufacture And Production	Permit Number: AI1973 Original Permit Number: IPCAIRAPP Date Approved: 5-8-1993 Effective Date: 5-8-1993 Status: Superseded By Variation
42C	138	W	397500 339300	Operator: Johnson Matthey Ceramics and Materials Ltd (dissolved) Address: Cresswell, Blythe Bridge, Stoke-on-trent, Staffordshire, ST11 9RD Process: Acid Processes	Permit Number: AM0155 Original Permit Number: IPCAPP Date Approved: 22-8-1994 Effective Date: 22-8-1994 Status: Revoked
43C	138	W	397500 339300	Operator: Johnson Matthey Plc Address: Cresswell, Blythe Bridge, Stoke-on-trent, Staffordshire, ST11 9RD Process: Inorganic Chemical Processes	Permit Number: AP8390 Original Permit Number: IPCMINVAR Date Approved: 30-1-1995 Effective Date: 1-2-1995 Status: Superseded By Variation

ID	Distance (m)	Direction	NGR	Details	
44C	138	W	397500 339300	Operator: Johnson Matthey Plc Address: Cresswell, Blythe Bridge, Stoke-on-trent, Staffordshire, ST11 9RD Process: Inorganic Chemical Processes	Permit Number: BI1650 Original Permit Number: IPCMINVAR Date Approved: 27-6-2000 Effective Date: 27-6-2000 Status: Revoked - Now Ippc
45C	138	W	397500 339300	Operator: Johnson Matthey Plc Address: Main Building, Cresswell, Stoke-on-trent, ST11 9RD Process: Glass Manufacture And Production	Permit Number: BI1668 Original Permit Number: IPCMINVAR Date Approved: 27-6-2000 Effective Date: 27-6-2000 Status: Revoked - Now Ippc

2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

8

The following Part A(1) and IPPC Authorised Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
30C	138	W	397500 339300	Operator: Johnson Matthey Plc Installation Name: - Process: GLASS & GLASS FIBRE; GLASS/ENAMEL FRIT MANUFACTURE >100T/12 MONTHS	Permit Number: BS9741 Original Permit Number: BS9741 EPR Reference: - Issue Date: 31-3-2003 Effective Date: 31-3-2003 Last date noted as effective: 2004-10-01 Status: Superseded By Pas
31C	138	W	397500 339300	Operator: Johnson Matthey Plc Installation Name: Cresswell Frit Epr/bs9741ij Process: INORGANIC CHEMICALS; USING ETC OF ANTIMONY ETC (UNLESS OTHERRWISE PRESCRINED) (UNLESS GLAZING ETC)	Permit Number: ZP3638LP Original Permit Number: BS9741IJ EPR Reference: - Issue Date: 24/11/2006 Effective Date: 29/6/2009 Last date noted as effective: 2017-11-30 Status: Superceded
32C	138	W	397500 339300	Operator: Johnson Matthey Plc Installation Name: - Process: INORGANIC CHEMICALS; USING ETC OF ANTIMONY ETC (UNLESS OTHERRWISE PRESCRINED) (UNLESS GLAZING ETC)	Permit Number: BS9741 Original Permit Number: BS9741 EPR Reference: - Issue Date: 31-3-2003 Effective Date: 31-3-2003 Last date noted as effective: 2004-10-01 Status: Superseded By Pas
33C	138	W	397500 339300	Operator: Johnson Matthey Plc Installation Name: Cresswell Frit Epr/bs9741ij Process: INORGANIC CHEMICALS; USING ETC OF ANTIMONY ETC (UNLESS OTHERRWISE PRESCRINED) (UNLESS GLAZING ETC)	Permit Number: BS9741IJ Original Permit Number: BS9741IJ EPR Reference: - Issue Date: 31/3/2003 Effective Date: 31/3/2003 Last date noted as effective: 2017-11-30 Status: Superceded

ID	Distance (m)	Direction	NGR	Details	
34C	138	W	397500 339300	Operator: Johnson Matthey Plc Installation Name: Cresswell Frit Epr/bs9741ij Process: GLASS AND GLASS FIBRE; GLASS/ENAMEL FRIT MANUFACTURE >100T/12 MONTHS	Permit Number: ZP3638LP Original Permit Number: BS9741IJ EPR Reference: - Issue Date: 24/11/2006 Effective Date: 29/6/2009 Last date noted as effective: 2017-11-30 Status: Superceded
35C	138	W	397500 339300	Operator: Johnson Matthey Plc Installation Name: Cresswell Frit Epr/bs9741ij Process: INORGANIC CHEMICALS; USING ETC OF ANTIMONY ETC (UNLESS OTHERRWISE PRESCRINED) (UNLESS GLAZING ETC)	Permit Number: CP3837UC Original Permit Number: BS9741IJ EPR Reference: - Issue Date: 21/12/2007 Effective Date: 21/12/2007 Last date noted as effective: 2017-11-30 Status: Superceded
36C	138	W	397500 339300	Operator: Johnson Matthey Plc Installation Name: Cresswell Frit Epr/bs9741ij Process: GLASS AND GLASS FIBRE; GLASS/ENAMEL FRIT MANUFACTURE >100T/12 MONTHS	Permit Number: CP3837UC Original Permit Number: BS9741IJ EPR Reference: - Issue Date: 21/12/2007 Effective Date: 21/12/2007 Last date noted as effective: 2017-11-30 Status: Superceded
37C	138	W	397500 339300	Operator: Johnson Matthey Plc Installation Name: Cresswell Frit Epr/bs9741ij Process: GLASS AND GLASS FIBRE; GLASS/ENAMEL FRIT MANUFACTURE >100T/12 MONTHS	Permit Number: BS9741IJ Original Permit Number: BS9741IJ EPR Reference: - Issue Date: 31/3/2003 Effective Date: 31/3/2003 Last date noted as effective: 2017-11-30 Status: Superceded

2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

0

Database searched and no data found.

2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

1

The following List 1 Dangerous Substance Inventory Site records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
5	109	S	397780 339080	Name: Johnson Matthey,cresswell,stoke-on-trent Status: Active Receiving Water: River Tean, River Hamps	Authorised Substances: Mercury (other), Cadmium

2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

1

The following List 2 Dangerous Substance Inventory Site records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
6C	138	W	397500 339300	Name: John Matthey Pigments & Dispersions, Creswell Status: Not Active Receiving Water: -	Authorised Substances: Chromium

2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

2

The following Part A(2) and Part B Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
26	102	SW	397610 339177	Address: Goonvean Ceramic Products, Unit 6, Blythe Park, Cresswell, ST11 9RD Process: Ceramic Processes Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
27	114	SW	397744 339087	Address: Technico, Unit 14 Blythe Park, Cresswell, Staffs, ST11 9RD Process: Coating Manufacture Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

2.1.8 Records of Licensed Discharge Consents within 500m of the study site:

3

The following Licensed Discharge Consents records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
7B	180	S	397900 339000	Address: JOHNSON MATTHEY PLC, CRESSWELL, STOKE ON TRENT, STAFFORDSHIRE, ST11 9RD Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: T/06/02795/T Permit Version: 1	Receiving Water: RIVER BLITHE Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 26/08/1970 Effective Date: 26-Aug-1970 Revocation Date: 09/11/1999
8B	180	S	397900 339000	Address: JOHNSON MATTHEY PLC, CRESSWELL, STOKE ON TRENT, STAFFORDSHIRE, ST11 9RD Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: T/06/02795/T Permit Version: 1	Receiving Water: RIVER BLITHE Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 26/08/1970 Effective Date: 26-Aug-1970 Revocation Date: 09/11/1999
9	259	SW	397600 339000	Address: JOHNSON MATTHEY PLC, CRESSWELL, STOKE ON TRENT, STAFFORDSHIRE, ST11 9RD Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: T/06/02795/T Permit Version: 2	Receiving Water: RIVER BLYTHE Status: REVOKED (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 26/08/1970 Effective Date: 10-Nov-1999 Revocation Date: 03/12/2001

2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

1

The following Water Industry Referral records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	Address	Permission reference	Local Authority	First Date Received	Last Date Received	Status
46C	138	W	JOHNSON MATTHEY PLC, MAIN BUILDING, CRESSWELL, STOKE-ON-TRENT, NOTTINGHAMSHIRE	AE6248	STOKE-ON-TRENT CITY COUNCIL	01-Jun-2001	01-Oct-2017	DEAD (APPLICATION)

2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site: 1

The following COMAH & NIHHS Authorisation records provided by the Health and Safety Executive are represented as polygons or buffered points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	Company	Address	Operational Status	Tier
28	52	N	Blythe Colours Ltd	Blythe Colours Ltd, Cresswell, Stoke-on-trent, ST11 9RD	Historical NIHHS Site	-

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

4

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
1	74	NW	397592 339366	Incident Date: 05-Apr-2003 Incident Identification: 148829 Pollutant: Contaminated Water Pollutant Description: Firefighting Run-Off	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
2A	134	W	397507 339275	Incident Date: 19-Nov-2001 Incident Identification: 43690 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
3	136	SW	397588 339150	Incident Date: 07-Mar-2003 Incident Identification: 141804 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
4A	142	W	397498 339283	Incident Date: 13-Nov-2001 Incident Identification: 42502 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

Database searched and no data found.

2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

How many records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site? 0

Database searched and no data found.

---

3. Landfill and Other Waste Sites Map



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Site Outline

250
500
Search Buffers (m)

EA/NRW Active Landfill

EA/NRW Historic Landfill

BGS / DoE Survey Landfill

Historic and Planned Waste Sites

EA/NRW Licensed Waste Site

Local Authority/Historical Mapping Landfill Records

3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:

0

Database searched and no data found.

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

3

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
2	24	SW	397600 339200	Site Address: The Paddock, Sandon Road, Cresswell, Staffordshire Waste Licence: - Site Reference: STAFFORDSHIRE MOORLANDS 26, 9999/9411 Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
3	95	NE	397700 339400	Site Address: Land Near Isaac Walton Farm, Cresswell, Staffordshire Waste Licence: - Site Reference: STAFFORDSHIRE MOORLANDS 58, 9999/9378 Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
4	185	S	397600 338900	Site Address: Blythe Colours Limited, Cresswell, Stoke On Trent, Staffordshire Waste Licence: Yes Site Reference: 1/D/77/0061, WD/LB14, 9999/9968 Waste Type: Inert, Industrial, Commercial, Special, Liquid sludge Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 27-Jun-1977 Licence Surrendered: 27-Mar-1992 Licence Holder Address: Cresswell, Stoke On Trent, Staffordshire Operator: - Licence Holder: Blythe Colours Limited First Recorded: 31-Dec-1948 Last Recorded: 27-Mar-1992

3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

1

The following landfill records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
1	280	S	397800.0 338900.0	Address: Blyth Colours Ltd, Cresswell, Stoke-on-T, Staffs BGS Number: 987.0	Risk: Serious risk to major aquifer Waste Type: 120000 tons ipw sludges & toxic solids (100 t) and

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

0

Database searched and no data found.

3.2 Other Waste Sites

3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

0

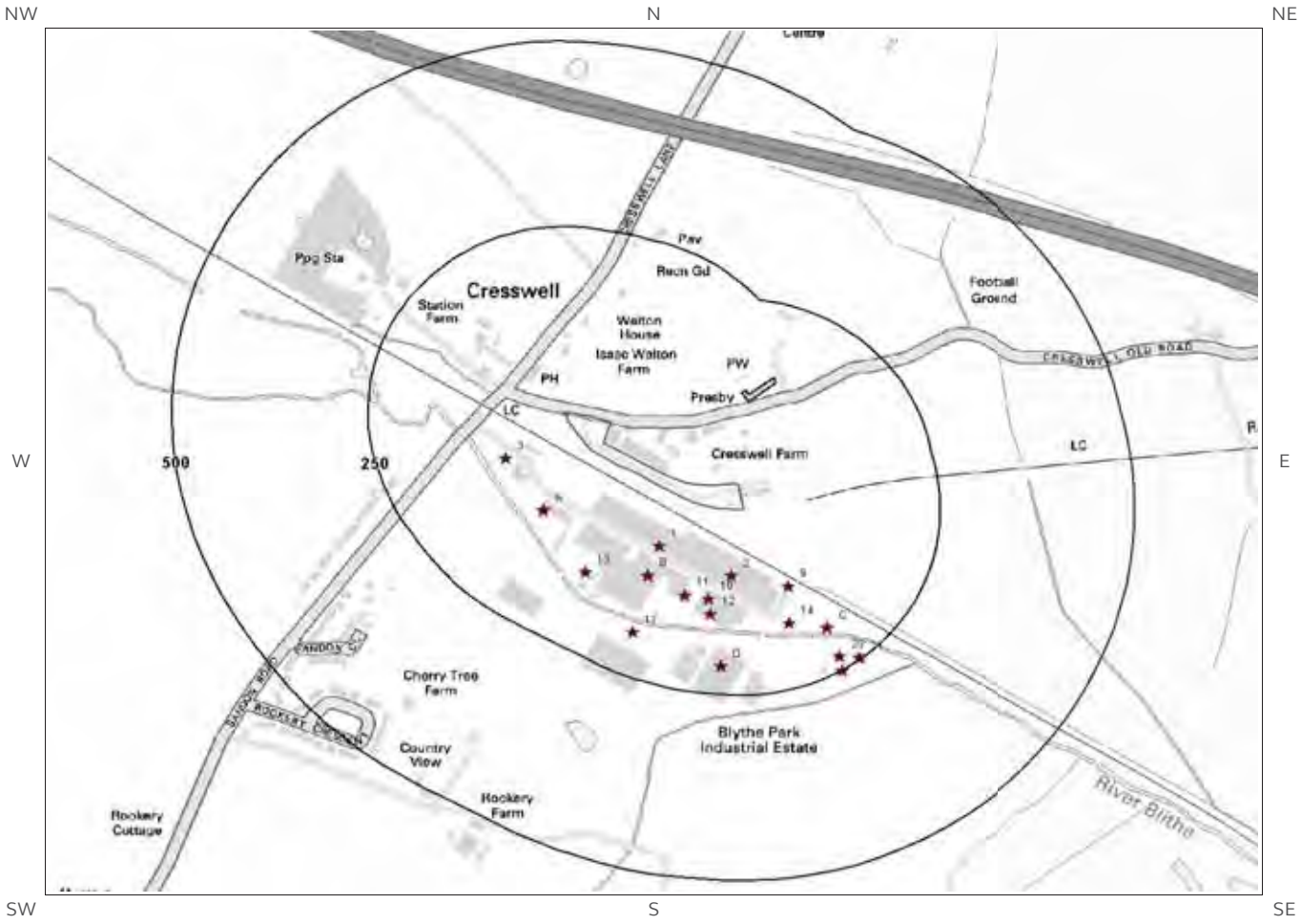
Database searched and no data found.

3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

0

Database searched and no data found.

4. Current Land Use Map



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Site Outline

Search Buffers (m)
250
500

Current Industrial Sites

Petrol & Fuel Sites

Electricity Transmission Cables

Gas Transmission Pipelines

4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 22

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	72	SW	A V T Logistics Ltd	397758 339127	Unit 4 Blythe Park, Cresswell Lane, Cresswell, Stoke-on-Trent, ST11 9RD	Distribution and Haulage	Transport, Storage and Delivery
2	89	S	Rapid Response Deliveries Ltd	397850 339088	Unit 5f Blythe Park, Cresswell Lane, Cresswell, Stoke-on-Trent, ST11 9RD	Distribution and Haulage	Transport, Storage and Delivery
3	95	SW	Duckpaddle	397561 339246	Unit 9 Blythe Park, Cresswell Lane, Cresswell, Stoke-on-Trent, ST11 9RD	Garden Goods	Consumer Products
4A	102	SW	Lambarda Ltd	397610 339176	Unit 29 Blythe Park, Cresswell Lane, Cresswell, Stoke-on-Trent, ST11 9RD	Construction and Tool Hire	Hire Services
5A	102	SW	Advanced Materials Solutions Ltd	397610 339176	Blythe House Blythe Park, Cresswell Lane, Cresswell, Stoke-on-Trent, ST11 9RD	Metals Manufacturers, Fabricators and Stockholders	Industrial Products
6A	102	SW	A C L	397610 339176	Unit 29 Blythe Park, Cresswell Lane, Cresswell, Stoke-on-Trent, ST11 9RD	Construction Completion Services	Construction Services
7B	114	SW	Technico Surface Coating	397743 339088	Unit 14 Blythe Park, Cresswell Lane, Cresswell, Stoke-on-Trent, ST11 9RD	Paints, Varnishes and Lacquers	Industrial Products
8B	114	SW	D & G Solutions Ltd	397743 339088	Unit 11 Blythe Park, Cresswell Lane, Cresswell, Stoke-on-Trent, ST11 9RD	Vehicle Hire and Rental	Hire Services
9	117	SE	Electricity Sub Station	397922 339074	ST11	Electrical Features	Infrastructure and Facilities
10	122	S	Staffordshire Powder Coating Ltd	397821 339057	Unit 9 Blythe Park, Cresswell Lane, Cresswell, Stoke-on-Trent, ST11 9RD	Industrial Coatings and Finishings	Industrial Products
11	123	S	Rotarad	397791 339062	Unit 11a Blythe Park, Cresswell Lane, Cresswell, Stoke-on-Trent, ST11 9RD	Industrial Repairs and Servicing	Repair and Servicing
12	142	S	Mark's Service Centre Ltd	397822 339036	Unit 9a Blythe Park, Cresswell Lane, Cresswell, Stoke-on-Trent, ST11 9RD	Vehicle Repair, Testing and Servicing	Repair and Servicing
13	147	SW	Robinsons Greenhouses	397663 339092	Unit 19 Blythe Park, Cresswell Lane, Cresswell, Stoke-on-Trent, ST11 9RD	Horticultural Equipment	Industrial Products
14	163	S	Tank	397923 339024	ST11	Tanks (Generic)	Industrial Features
15C	191	SE	Tanks	397972 339018	ST11	Tanks (Generic)	Industrial Features

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
16C	191	SE	Tank	397972 339018	ST11	Tanks (Generic)	Industrial Features
17	192	SW	Tank	397724 339012	ST11	Tanks (Generic)	Industrial Features
18D	212	S	T P Engineering Ltd	397836 338965	Unit 23 Blythe Park, Cresswell Lane, Cresswell, Stoke-on-Trent, ST11 9RD	Vehicle Components	Industrial Products
19D	212	S	L & R Site Services	397836 338965	Unit 21g Blythe Park, Cresswell Lane, Cresswell, Stoke-on-Trent, ST11 9RD	Industrial Repairs and Servicing	Repair and Servicing
20	232	SE	Tanks	397988 338979	ST11	Tanks (Generic)	Industrial Features
21	248	SE	Works	398013 338977	ST11	Unspecified Works Or Factories	Industrial Features
22	250	SE	Tank	397991 338960	ST11	Tanks (Generic)	Industrial Features

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 0

Database searched and no data found.

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site: 0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site: 0

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

5.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
RTD1-XSV	RIVER TERRACE DEPOSITS, 1	SAND AND GRAVEL
RTD1-XSV	RIVER TERRACE DEPOSITS, 1	SAND AND GRAVEL

5.3 Bedrock and Solid Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
TPSF-SIMS	TARPORLEY SILTSTONE FORMATION	SILTSTONE, MUDSTONE AND SANDSTONE
TPSF-SIMS	TARPORLEY SILTSTONE FORMATION	SILTSTONE, MUDSTONE AND SANDSTONE
TPSF-SIMS	TARPORLEY SILTSTONE FORMATION	SILTSTONE, MUDSTONE AND SANDSTONE

(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

6a. Aquifer Within Superficial Geology



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Site Outline

250
500
Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

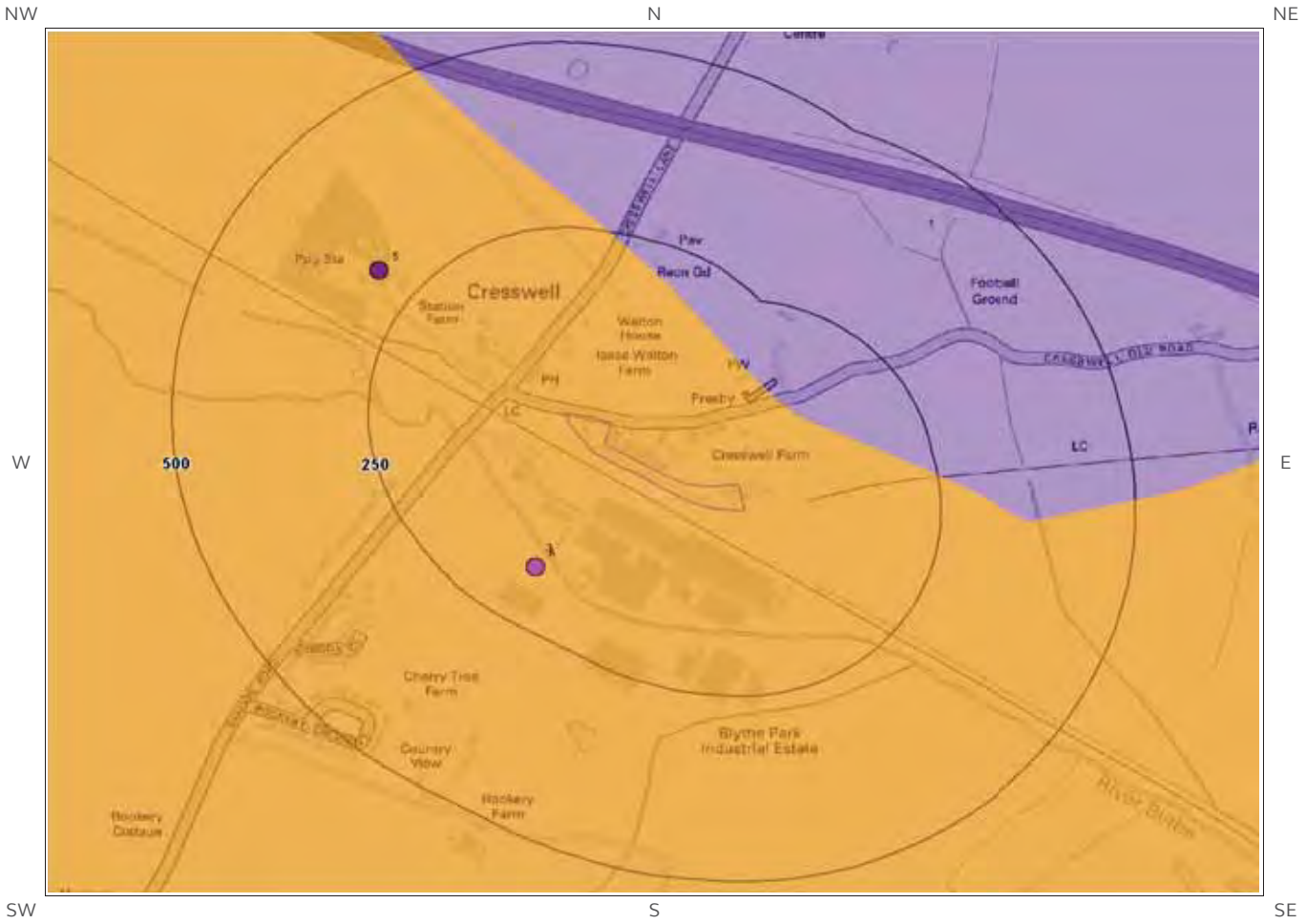
Secondary (B) Aquifer - Lower Permeability Layers

Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

6b. Aquifer Within Bedrock Geology and Abstraction Licenses



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Site Outline

250
500
Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

Secondary (B) Aquifer - Lower Permeability Layers

Groundwater Abstraction Licence

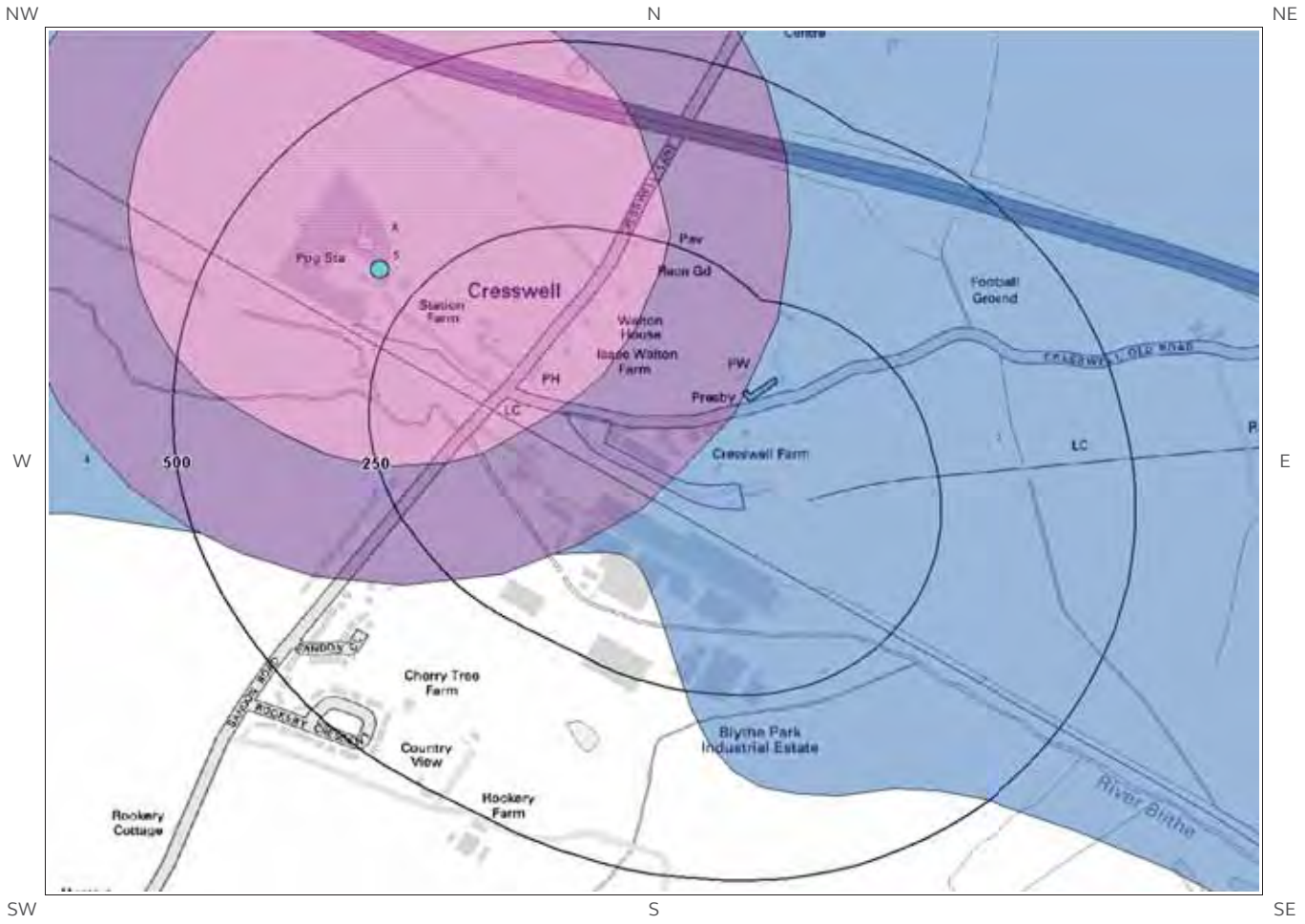
Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

Surface Water Abstraction Licence

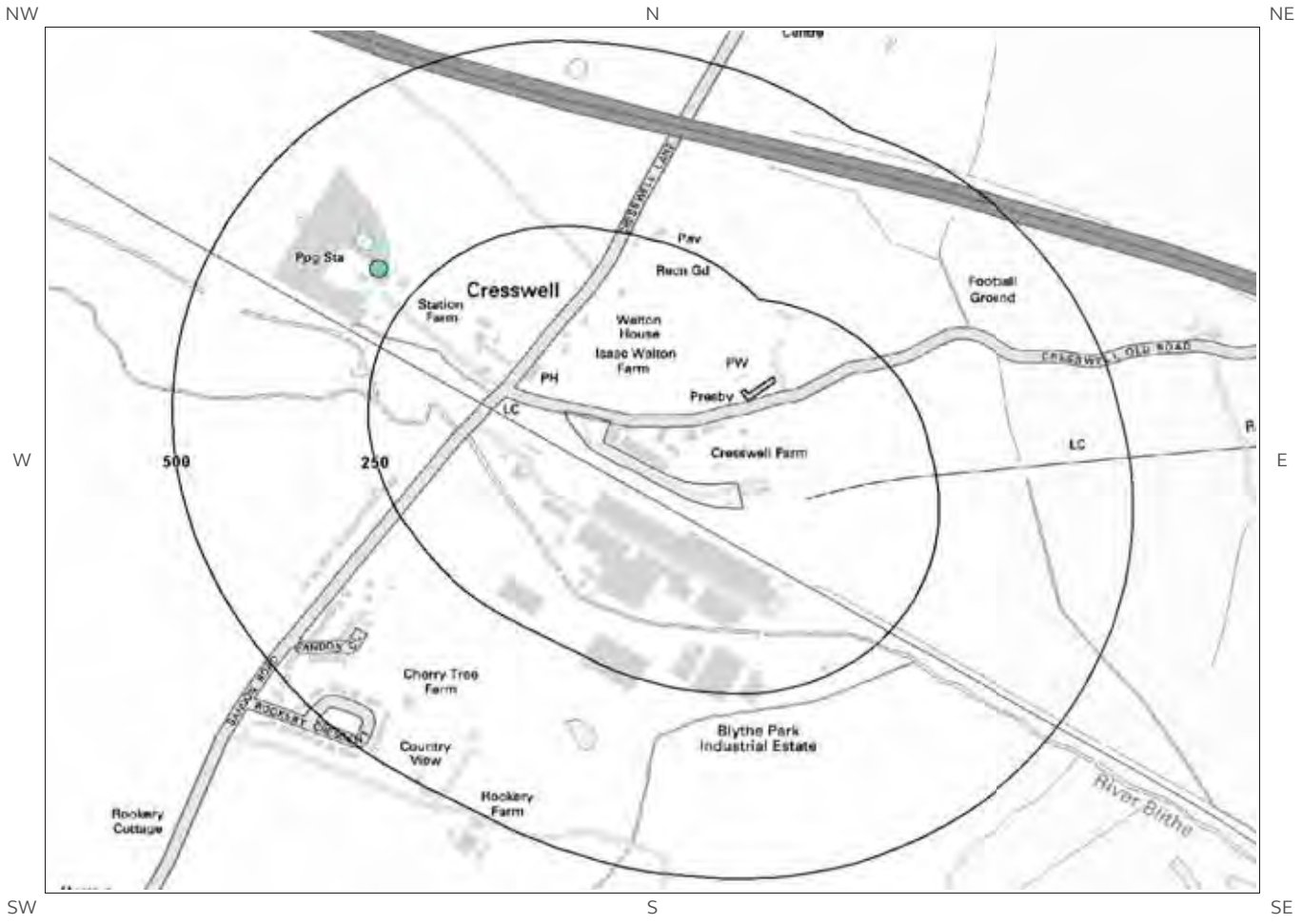
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



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6d. Hydrogeology – Source Protection Zones within confined aquifer



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Source Protection Zone 1 - Inner Catchment

Source Protection Zone 2C - Outer Catchment within Confined Aquifer

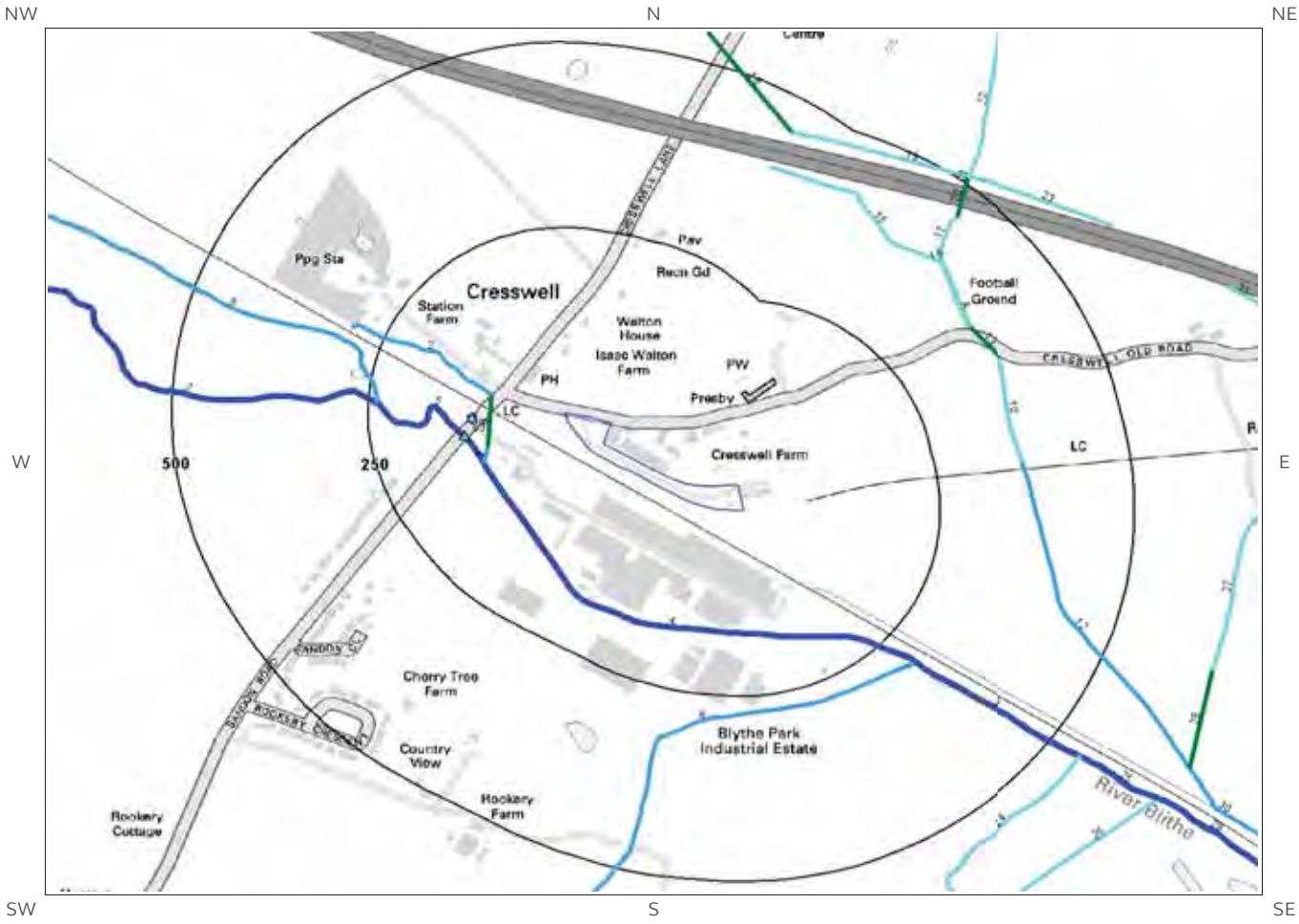
Source Protection Zone 3C - Total Catchment within Confined Aquifer

Potable Water Abstraction Licence

Site Outline

250
500
Search Buffers (m)

6e. Hydrology – Detailed River Network and River Quality



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Site Outline

250 Search Buffers (m)
500

Primary River
Secondary River
Tertiary River
Lake/Reservoir
Underground River (inferred)
General Quality Assessment: Biology
General Quality Assessment: Chemistry

Canal
Canal Tunnel
Culvert
Multiple Channel Culvert
Underground River (Potential Sewer)
Underground River (local knowledge)

6.Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Are there records of strata classification within the superficial geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
5	94	SW	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
6	462	S	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

6.2 Aquifer within Bedrock Deposits

Are there records of strata classification within the bedrock geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
3	0	On Site	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers
1	121	NE	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers

6.3 Groundwater Abstraction Licences

Are there any Groundwater Abstraction Licences within 2000m of the study site? Yes

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
5	305	NW	397400 339500	Status: Active Licence No: 03/28/06/0055 Details: Potable Water Supply - Direct Direct Source: Groundwater Midlands Region Point: Cresswell - Boreholes Data Type: Point Name: SEVERN TRENT WATER LIMITED	Annual Volume (m^3): 4977870 Max Daily Volume (m^3): 13638 Original Application No: NPS/WR/025855 Original Start Date: 31/1/1966 Expiry Date: - Issue No: 104 Version Start Date: 5/4/2017 Version End Date:
Not shown	1442	SE	398700 338000	Status: Historical Licence No: 03/28/06/0020 Details: General Farming & Domestic Direct Source: Groundwater Midlands Region Point: Springhill Farm Data Type: Point Name: BOSTOCK BROTHERS	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 12/10/1965 Expiry Date: - Issue No: 100 Version Start Date: 2/1/1991 Version End Date:
Not shown	1445	NW	396500 340200	Status: Historical Licence No: 03/28/06/0006 Details: General Farming & Domestic Direct Source: Groundwater Midlands Region Point: Manor Farm Data Type: Point Name: PEARCE	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 12/10/1965 Expiry Date: - Issue No: 100 Version Start Date: 12/10/1965 Version End Date:

6.4 Surface Water Abstraction Licences

Are there any Surface Water Abstraction Licences within 2000m of the study site? Yes

The following Surface Water Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
8A	171	SW	397600 339100	Status: Historical Licence No: 03/28/06/0039 Details: Non-Evaporative Cooling Direct Source: Surface Water Midlands Region Point: River Blithe Data Type: Point Name: JOHNSON MATTHEY PLC	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: - Original Start Date: 29/11/1965 Expiry Date: - Issue No: 101 Version Start Date: 4/2/1999 Version End Date:
9A	171	SW	397600 339100	Status: Historical Licence No: 03/28/06/0039 Details: Process water Direct Source: Surface Water Midlands Region Point: River Blithe Data Type: Point Name: JOHNSON MATTHEY PLC	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: - Original Start Date: 29/11/1965 Expiry Date: - Issue No: 101 Version Start Date: 4/2/1999 Version End Date:

6.5 Potable Water Abstraction Licences

Are there any Potable Water Abstraction Licences within 2000m of the study site? Yes

The following Potable Water Abstraction Licences records are represented as points, lines and regions on the SPZ and Potable Water Abstraction Licences Map (6c):

ID	Distance (m)	Direction	NGR	Details	
5	305	NW	397400 339500	Status: Active Licence No: 03/28/06/0055 Details: Potable Water Supply - Direct Direct Source: Groundwater Midlands Region Point: Cresswell - Boreholes Data Type: Point Name: SEVERN TRENT WATER LIMITED	Annual Volume (m^3): 4977870 Max Daily Volume (m^3): 13638 Original Application No: NPS/WR/025855 Original Start Date: 31/1/1966 Expiry Date: - Issue No: 104 Version Start Date: Version End Date:

6.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site? Yes

The following Source Protection Zones records are represented on the SPZ and Potable Water Abstraction Map (6c):

ID	Distance (m)	Direction	Zone	Description
2A	0	On Site	2	Outer catchment
3	0	On Site	3	Total catchment
1A	8	NW	1	Inner catchment
4	491	W	3	Total catchment

6.7 Source Protection Zones within Confined Aquifer

Are there any Source Protection Zones within the Confined Aquifer within 500m of the study site? No

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Is there any Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site? Yes

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
3	SW	Minor Aquifer/High Leaching Potential	H1	Soils which readily transmit liquid discharges because they are shallow or susceptible to rapid flow directly to rock, gravel or groundwater.
20	NE	Major Aquifer/Low Leaching Potential	L	Soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal, or they have the ability to attenuate diffuse pollutants.
174	E	Major Aquifer/High Leaching Potential	H1	Soils which readily transmit liquid discharges because they are shallow or susceptible to rapid flow directly to rock, gravel or groundwater.
480	E	Major Aquifer/High Leaching Potential	H2	Deep, permeable, coarse textured soils which readily transmit a wide range of pollutants because of their rapid drainage and low attenuation potential.

6.9 River Quality

Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site? Yes

6.9.1 Biological Quality:

Biological Quality data describes water quality in terms of 83 groups of macroinvertebrates, some of which are pollution sensitive. The results are graded from A ('Very Good') to F ('Bad').

The following Biological Quality records are shown on the Hydrology Map (6e):

ID	Distance (m)	Direction	NGR	River Quality Grade	Biological Quality Grade				
					2005	2006	2007	2008	2009
59B	118	W	397520 339300	River Name: Blithe Reach: Cresswell Road Br To Blithfield Res. End/Start of Stretch: Start of Stretch NGR	A	A	A	A	A
60B	118	W	397520 339300	River Name: Blithe Reach: Cookshill-w.coyney Br To Cresswell Rd Br End/Start of Stretch: End of Stretch NGR	B	A	A	A	B

6.9.2 Chemical Quality:

Chemical quality data is based on the General Quality Assessment Headline Indicators scheme (GQAHI). In England, each chemical sample is measured for ammonia and dissolved oxygen. In Wales, the samples are measured for biological oxygen demand (BOD), ammonia and dissolved oxygen. The results are graded from A ('Very Good') to F ('Bad').

The following Chemical Quality records are shown on the Hydrology Map (6e):

					Chemical Quality Grade				
ID	Distance (m)	Direction	NGR	River Quality Grade	2005	2006	2007	2008	2009
61B	118	W	397520 339300	River Name: Blithe R Reach: Cookshill Wcoyney Br To Cresswell Rd Br End/Start of Stretch: End of Stretch NGR	B	B	A	A	A
62B	118	W	397520 339300	River Name: Blithe R Reach: Cresswell Road Br To Blithfield Res End/Start of Stretch: Start of Stretch NGR	B	B	A	A	A
63	131	W	397510 339276	River Name: Blithe R Reach: Cookshill Wcoyney Br To Cresswell Rd Br End/Start of Stretch: Sample Point NGR	B	B	A	A	A

6.10 Detailed River Network

Are there any Detailed River Network entries within 500m of the study site? Yes

The following Detailed River Network records are represented on the Hydrology Map (6e):

ID	Distance (m)	Direction	Details	
1B	94	W	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
2	95	W	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
3	108	SW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
4	121	SW	River Name: River Blithe Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
5	121	SW	River Name: River Blithe Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
6	238	W	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
7	238	W	River Name: River Blithe Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined

ID	Distance (m)	Direction	Details	
8	271	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
9	298	SE	River Name: River Blithe Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
10	359	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
11A	363	NE	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
12	363	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
13	365	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
14A	365	NE	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
15	381	NE	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
16	396	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
17	402	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
18	454	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
19	454	NE	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
20	456	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined

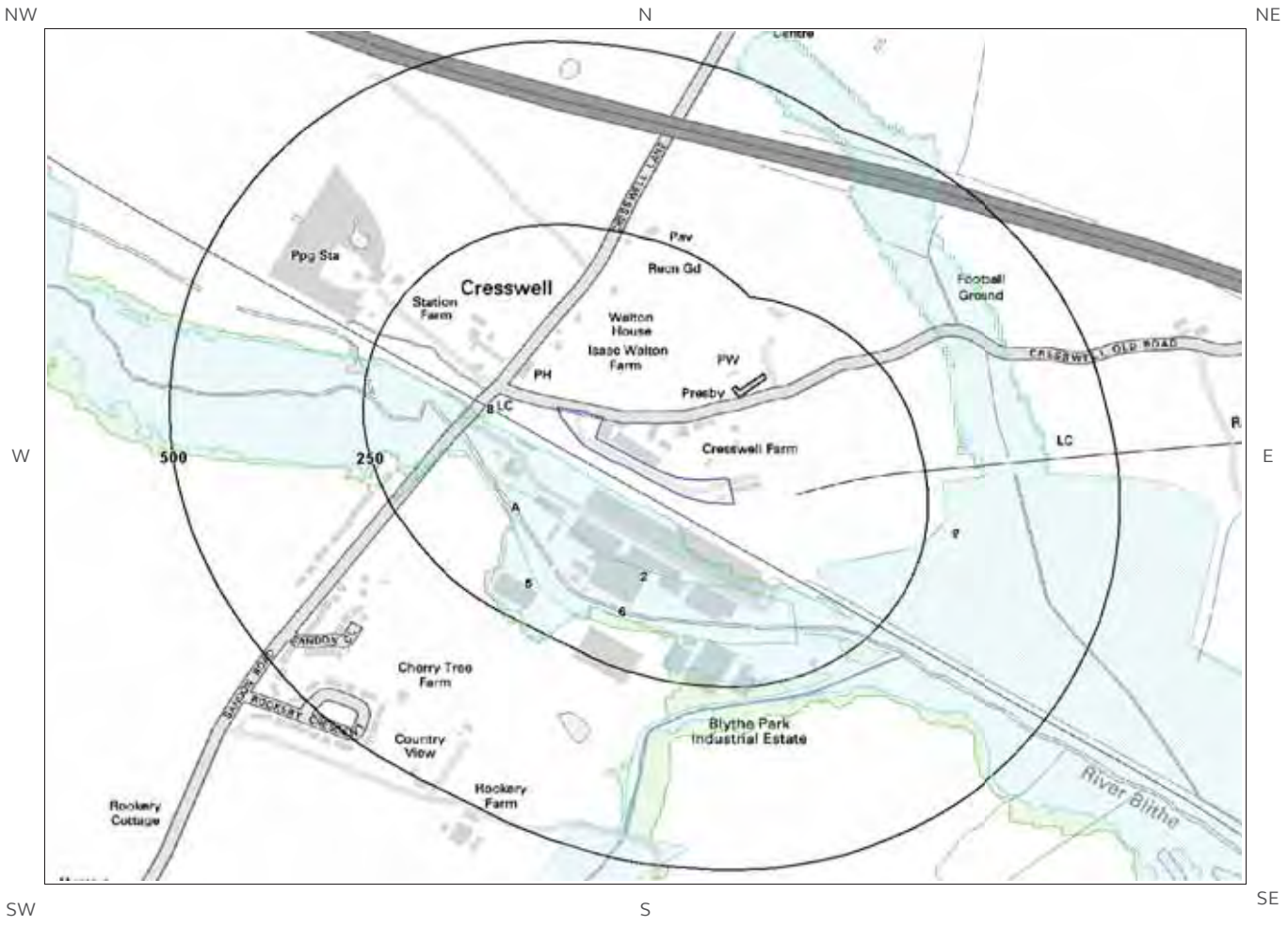
6.11 Surface Water Features

Are there any surface water features within 250m of the study site? Yes

The following surface water records are not represented on mapping:

Distance (m)	Direction
94	W
117	SW
132	W
139	SE
162	S
167	S
246	W

7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



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Site Outline

100
250
Search Buffers (m)

Zone 2 Floodplain

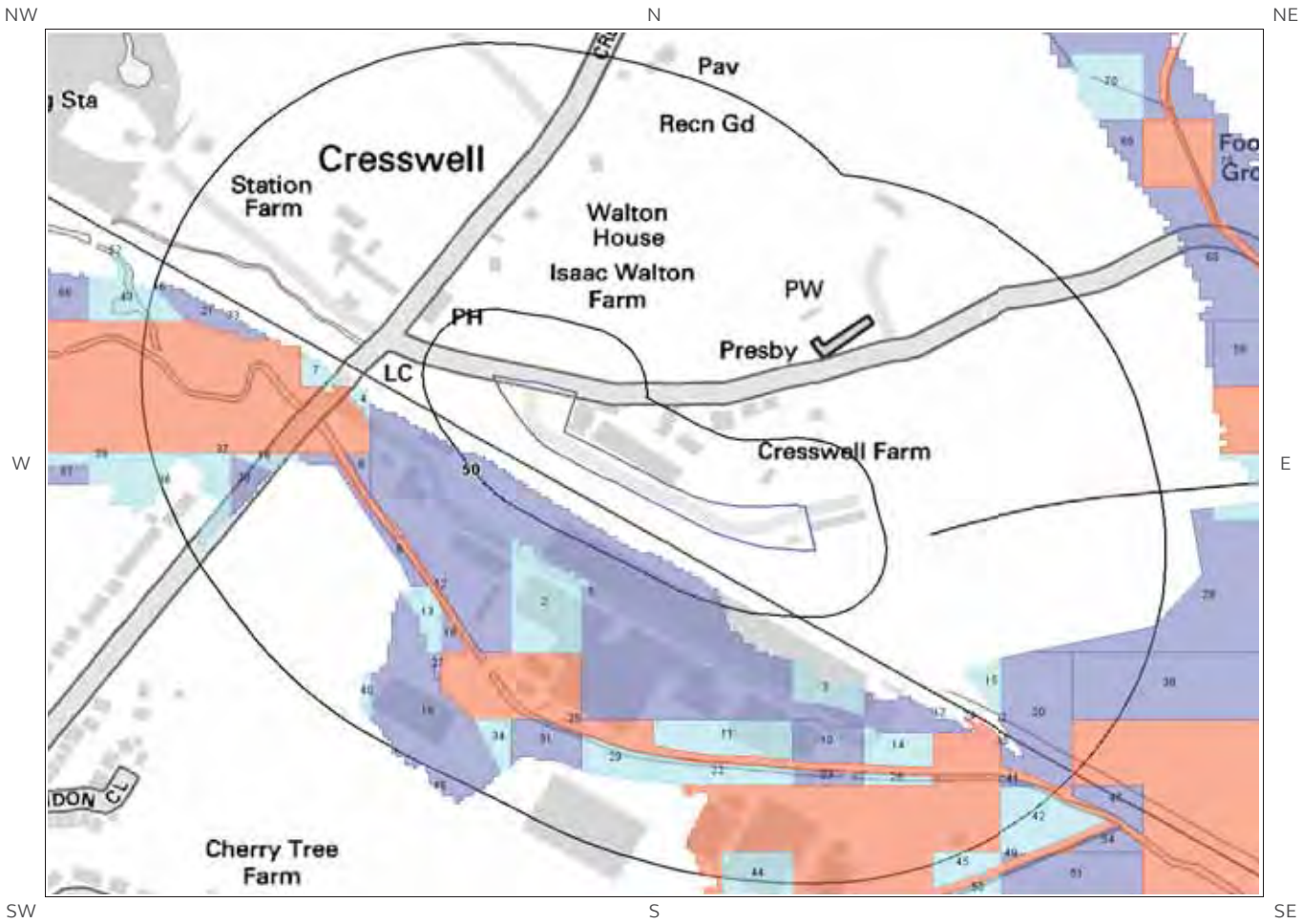
Zone 3 Floodplain

Flood Defences

Area used for Flood Storage

Area Benefiting from Flood Defences

7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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7 Flooding

7.1 River and Coastal Zone 2 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 2 floodplain? Yes

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

ID	Distance (m)	Direction	Update	Type
1	31	SW	24-Nov-2017	Zone 2 - (Fluvial /Tidal Models)
2	97	SW	24-Nov-2017	Zone 2 - (Fluvial /Tidal Models)
3A	131	SW	24-Nov-2017	Zone 2 - (Fluvial /Tidal Models)
4A	132	SW	24-Nov-2017	Zone 2 - (Fluvial /Tidal Models)
5	144	SW	24-Nov-2017	Zone 2 - (Fluvial /Tidal Models)
6	181	S	24-Nov-2017	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 3 floodplain? Yes

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

ID	Distance (m)	Direction	Update	Type
1	31	SW	24-Nov-2017	Zone 3 - (Fluvial Models)
2	91	W	24-Nov-2017	Zone 3 - (Fluvial Models)

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

What is the highest risk of flooding onsite? Very Low

The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a Very Low (less than 1 in 1000) chance of flooding in any given year.

Any relevant data within 250m is represented on the RoFRaS Flood map. Data to 50m is reported in the table below.

ID	Distance (m)	Direction	RoFRas flood Risk
1	31.0	SW	Medium

7.4 Flood Defences

Are there any Flood Defences within 250m of the study site? No

Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Are there any areas benefiting from Flood Defences within 250m of the study site? No

7.6 Areas benefiting from Flood Storage

Are there any areas used for Flood Storage within 250m of the study site? No

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site? No

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

7.7.2 What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions?

Not Prone

The area is not considered to be prone to groundwater flooding based on rock type.

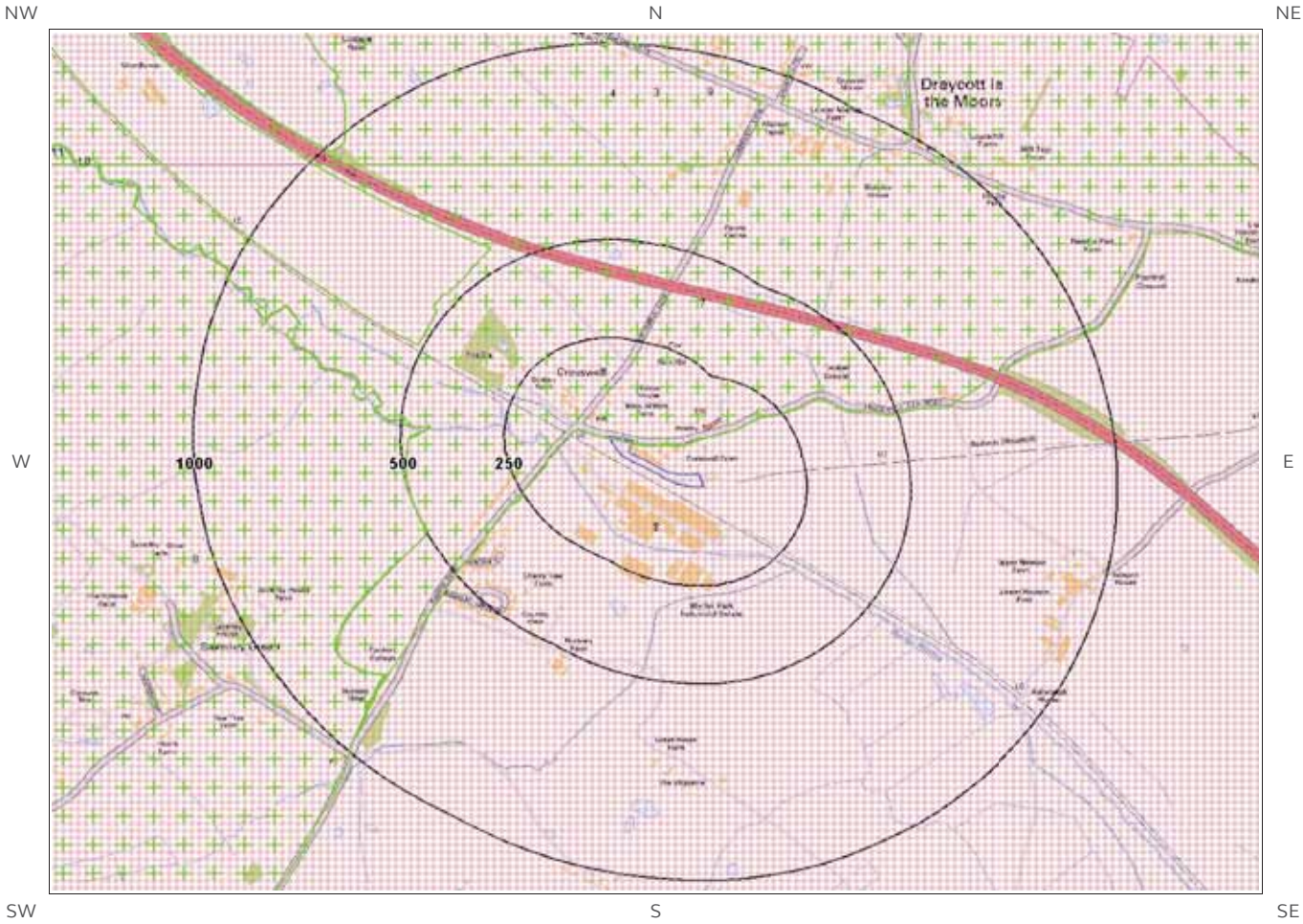
7.8 Groundwater Flooding Confidence Areas

What is the British Geological Survey confidence rating in this result? Not Applicable

Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

8. Designated Environmentally Sensitive Sites Map



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Site Outline

100 / 250 Search Buffers (m)

AONB

National Park

SSSI

Special Protection Areas

Nitrate Vulnerable Zones

Green Belt

Environmentally Sensitive Areas

Special Areas of Conservation

World Heritage Sites

Nitrate Sensitive Areas

Ancient Woodland

National Nature Reserve

Local Nature Reserves

Ramsar Sites

8. Designated Environmentally Sensitive Sites

Presence of Designated Environmentally Sensitive Sites within 2000m of the study site?	Yes

8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

0

Database searched and no data found.

8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

0

Database searched and no data found.

8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

0

Database searched and no data found.

8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

8.6 Records of Ancient Woodland within 2000m of the study site:

2

The following records of Designated Ancient Woodland provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
Not shown	1628	S	UNKNOWN	Ancient Replanted Woodland
Not shown	1936	S	UNKNOWN	Ancient and Semi-Natural Woodland

8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

0

Database searched and no data found.

8.8 Records of World Heritage Sites within 2000m of the study site:

0

Database searched and no data found.

8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

8.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

4

The following Nitrate Vulnerable Zone records produced by DEFRA are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	NVZ Name	Data Source
1	0	On Site	Existing	DEFRA
2	0	On Site	Modified	DEFRA
3	692	N	Modified	DEFRA
4	692	N	Existing	DEFRA

8.14 Records of Green Belt land within 2000m of the study site:

5

Green Belt data contains Ordnance Survey data © Crown copyright and database right [2015].

ID	Distance	Direction	Green Belt Name	Local Authority Name
7	0	On Site	Stoke Greenbelt	Staffordshire Moorlands District
8	432	W	Stoke Greenbelt	Stafford District (B)
9	692	N	Stoke Greenbelt	Staffordshire Moorlands District
10	1431	NW	Stoke Greenbelt	Staffordshire Moorlands District
11	1455	NW	Stoke Greenbelt	Stafford District (B)

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a Groundsure Geo Insight, available from our website. The following information has been found:

9.1.1 Shrink Swell

What is the maximum Shrink-Swell*[*] hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

9.1.2 Landslides

What is the maximum Landslide* hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

9.1.3 Soluble Rocks

What is the maximum Soluble Rocks* hazard rating identified on the study site? Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This indicates an automatically generated 50m buffer and site.

9.1.4 Compressible Ground

What is the maximum Compressible Ground* hazard rating identified on the study site? Moderate

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.

9.1.5 Collapsible Rocks

What is the maximum Collapsible Rocks* hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

9.1.6 Running Sand

What is the maximum Running Sand*[*] hazard rating identified on the study site? Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property no significant increase in insurance risk due to running sand problems is likely.

* This indicates an automatically generated 50m buffer and site.

9.2 Radon

9.2.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

9.2.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing
ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

10. Mining

10.1 Coal Mining

Are there any coal mining areas within 75m of the study site? No

Database searched and no data found.

10.2 Non-Coal Mining

Are there any Non-Coal Mining areas within 50m of the study site boundary? No

Database searched and no data found.

10.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site? No
Guidance: No Guidance Required.

Contact Details

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info@groundsure.com

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Acknowledgements: Site of Special Scientific Interest, National Nature Reserve, Ramsar Site, Special Protection Area, Special Area of Conservation data is provided by, and used with the permission of, Natural England who retain the Copyright and Intellectual Property Rights for the data.
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https://www.groundsure.com/terms-and-conditions-march-2018

APPENDIX C
SITE PHOTOGRAPHS

Photograph 1



Photograph 2



Photograph 3



Photograph 4



Photograph 5



Photograph 6



Photograph 7



Photograph 8



Photograph 9



Photograph 10



Photograph 11



Photograph 12



Photograph 13



Photograph 14



Photograph 15



Photograph 16

