EIA Scoping Direction Clarification Document and Notification of Formal Update to the Proposed Development Design

Prepared for: Kronospan

15 October 2024

3587-01-TN01

1.0 INTRODUCTION

1.1.1 This document is submitted to Planning and Environment Decisions Wales (PEDW) in relation to the Development of National Significance (DNS) project 'Kronospan Low Carbon Combined Heat and Power Facility' (the Proposed Development) (DNS Reference DNS CAS-03463-R2W9C2).

1.1.2 The Applicant (Kronospan) has received the following correspondence:

i) Formal pre-application advice from PEDW (dated 19 June 2024).
ii) *Initial pre-application discussions with Wrexham County Borough Council (WCBC) in advance of formal pre-application advice being issued.
iii) EIA Scoping Direction from PEDW (dated 31 July 2024).

1.1.3 *With respect to bullet point ii) above, initial discussions have been held with the North Wales Minerals and Waste Planning Service (acting on behalf of WCBC); those discussions included the potential for the design of the Proposed Development to be amended to increase the amount of feedstock (for the proposed combined heat and power (CHP) facility) generated on-site by existing on-site processes. As a result, and considering the information provided in PEDW's formal pre-application advice (dated 19 June 2024), the Applicant subsequently committed to investigate this further, at which point, further discussions will be held with WCBC in advance of WCBC issuing their formal pre-application advice.

1.1.4 This document seeks to do the following, further detail of each is provided in the corresponding sections of this document:

i) Section 2.0 - Describes the proposed changes to the design of the Proposed Development which have arisen from the EIA Scoping and Pre-Application process to date.

ii) Section 3.0 – Sets out the broad areas of agreement with the EIA Scoping Direction, focusing on those matters where there is notable scope change.

iii) Section 4.0 – Sets out the broad areas of disagreement/clarification with the EIA Scoping Direction.

1.1.5 The Applicant is seeking a formal response from PEDW on the matters set out in this document to ensure there is clarity on the agreed scope of the EIA going forward.

2.0 PROPOSED DEVELOPMENT – CORE DESIGN CHANGES

2.1 Introduction

2.1.1 Since the submission (and receipt) of the formal request for pre-application advice (from both PEDW and WCBC) and the request for an EIA Scoping Direction, the design of the Proposed Development has continued to evolve. The main changes to the Proposed Development design are summarised below.

2.2 Generation Capacity

2.2.1 Previously, it was stated that the Proposed Development would have the capacity to generate up to 30 megawatts (MW) of electricity. This is proposed to be increased to up to 40 MW of electricity; the proposed thermal energy generation capacity is to remain at 125 MW. This proposed change to the electrical generation capacity has arisen due to further details calculations regarding the likely energy output from the preferred technology option and to seek to maximise efficiency and effectiveness (which in turn would increase the sustainability of the Proposed Development).

2.2.2 As the proposed throughput of the Proposed Development is to remain at 293,000 tonnes per annum (TPA) (see **Section 2.3** below for further details regarding proposed changes to the configuration/sources of the CHP feedstock), the proposed increase to the electrical generation capacity would have no direct impact on the principle of the Proposed Development, the scale, design and operation of the Proposed Development, or the proposed assessment scope set out in the EIA Scoping Report.

2.3 Feedstock

2.3.1 The proposed (maximum) throughput capacity of the Proposed Development remains at 293,000 TPA. However, the following changes are proposed to the configuration/sources of the feedstock required for the proposed CHP facility.

Table 2.1 – Proposed Change to Feedstock Configuration – Base Calculations

Type/Source (as described in the Pre-Application Request/Scoping Report)	Initial Approach (now superseded)	Proposed (Revised) Approach
Source A - Existing On-Site Process Residues Currently Sold Off-Site On-site process residues currently sold off-site (to be diverted to the proposed CHP facility). • Bark from the MDF chipper and sawmill debarking process. • MDF process residues	**65,000 TPA**	2021 – 83,577 TPA 2022 – 77,495 TPA 2023 – 69,990 TPA **2021-2023 Average – 76,991 TPA**
Source B – Operation Status of Existing K7 Biomass Boiler Currently processes approximately 70,000 TPA of waste biomass – all sourced via existing on-site processes.	K7 to remain in full operational **0 TPA**	K7 would remain in situ but be used as a back-up boiler only (for when the Proposed Development and the existing K8 boiler have their annual shutdowns) – K7 fuel to be diverted to the proposed CHP facility. 2021 – 78,500 TPA 2022 – 74,000 TPA 2023 – 71,500 TPA

Type/Source (as described in the Pre-Application Request/Scoping Report)	Initial Approach (now superseded)	Proposed (Revised) Approach
		2021-2023 Average – 74,667 TPA
Source C - Other On-Site Process Residues Extraction of smaller fractions of recycled timber or fines from the existing Particleboard (PB) process. This fraction often contains the most impurities and gives the PB no structural properties. Removing it adds significant quality improvements to the PB, whilst creating additional on-site process residues for use in the proposed CHP facility.	**75,000 TPA**	Quantities below show the quantity of feedstock that would have been available for the proposed CHP facility had this process been undertaken between 2021 and 2023 2021 – 118,184 TPA 2022 – 104,853 TPA 2023 – 102,328 TPA **2021-2023 Average – 108,455 TPA**
Source D - Importing Grade C Waste Wood to Site for Direct Use in Proposed CHP Facility	**153,000 TPA**	**0 TPA** See text below Table 2.1 for further details of proposed approach to import of Grade C waste wood as part of 'off-site' feedstock source.

Type/Source (as described in the Pre-Application Request/Scoping Report)	Initial Approach (now superseded)	Proposed (Revised) Approach
Source E – Importing up to 30,000 TPA of Refuse Derived Fuel (RDF) and/or Forestry Residues for Direct Use in Proposed CHP Facility This would be considered as part of the overall 153,000 TPA associated with Source D. In other words, if 30,000 TPA of RDF and/or forestry residues was imported, 123,000 TPA of Grade C waste wood would be imported.	**30,000 TPA** (considered as part of the 153,000 TPA associated with Source D)	**0 TPA** See text below Table 2.1 for further details of proposed approach to import of forestry residues as part of 'off-site' feedstock source.
TOTAL	293,000 TPA	260,113 TPA (based on 2021-2023 average)
Other Sources	N/A	There would be a 'remainder' of 32,887 TPA of feedstock required for the Proposed Development Further details as to how this would be met is provided below.

2.3.2 As set out in **Table 2.1** above, it is proposed that 260,113 TPA of the 293,000 TPA throughput capacity would be generated by existing on-site process residues. This is a proposed increase from 48% (original design) to 88.7% (proposed design), meaning that the vast majority of the feedstock would now be sourced from on-site processes.

2.3.3 It is acknowledged that **Table 2.1** above shows a gradual decrease in the availability of on-site process residues between 2021 and 2023. This can largely be attributed to the economic impact of COVID-19 and the subsequent cost of living crisis. However, prior to 2021, greater amounts of on-site process residues were available; combined with Kronospan's objective of economic growth (in line with that of the new UK Labour Government (see Paragraph 2.3.6 below for further information), it is considered reasonable and appropriate to use an average of the 2021 – 2023 data to calculate the likely availability of on-site process residues going forward.

How the Remainder' would be Met

2.3.4 Based on the likely availability of feedstock that can be generated on-site (based on an average taken from the calendar years 2021. 2022, and 2023 – see **Table 2.1**), there would be a 'remainder' of 32,887 TPA of feedstock required; this is based on attaining the maximum throughput of the Proposed Development of 293,000 TPA.

2.3.5 Notwithstanding the above, the feedstock 'remainder' would be made up by:

i) 50% (16,444 TPA) - **The import of forestry brash** for direct use in the proposed CHP facility.
ii) 25% (8,222 TPA) - **The import of Grade C waste wood** for direct use in the proposed CHP facility.
iii) 25% (8,222 TPA) - **Increasing on-site production** to generate further on-site process residues for indirect use in the proposed CHP facility.

Increasing On-Site Production

2.3.6 Kronospan, as all other UK businesses, is seeking economic growth whilst keeping up with technological advances that will naturally drive on-site efficiency and effectiveness. The policy aims and objectives of the new UK Labour Government seek to do the same i.e. stimulate economic growth, with particular focus on the development sector. With economic growth comes an increase in housebuilding (including an increase in more energy efficient homes) and growth in other general industrial and development sectors, which are Kronospan's key markets. It is on this basis that Kronospan is expecting manufacturing capacity at the Site to increase residue production set out in point iii) above.

2.3.7 For iii) above, there would be a requirement for an increased import of Grade B and Grade C waste wood to the existing Kronospan Facility. The quantity of Grade B and Grade C waste wood required would be 41,109 TPA (based on the 2021-2023 average); this is based on process residues typically arising at a percentage rate of 20% from the raw material/primary process.

Transport Implications

2.3.8 The proposed changes to the configuration/sources of the feedstock required for the proposed CHP facility would result in a significant reduction in the (net) number of Heavy Goods Vehicles (HGV) associated with the transportation of feedstock/raw material during the operation phase. The original design (as set out in the EIA Scoping Report) would result in 23 HGVs (46 two-way) per operational day (net); the proposed design would result in seven HGVs (14 two-way) per operational day (net). A Transport Assessment will still be provided and will be a supporting document to the DNS application.

2.4 Agreement Sought

2.4.1 Agreement is sought with PEDW that the proposed changes to the Proposed Development (set out at **Section 2.2** and **Section 2.3** above) would:

i) remain consistent with the parameters of the DNS application logged with PEDW (currently at pre-application stage); and

ii) not impact the information provided in its EIA Scoping Direction to the extent that the EIA scoping process (request for and provision of EIA Scoping Direction) would be required to be undertaken again in full.

2.4.2 With respect to i) and ii) above, the function, scale, dimensions and footprint of the Proposed Development would remain the same as previously described (in the EIA Scoping Report) and all electrical output would remain for subsequent use on-site (to power the existing Kronospan Facility). As such, the nature of the impacts described in the EIA Scoping Report would remain unchanged, and subsequently the proposed EIA methodology would remain unchanged. The proposed changes to the configuration/sources of the feedstock required for the proposed CHP facility would result in a substantial increase in the feedstock produced on-site, substantially reduce the import of Grade C waste wood, and remove the previously proposed import of RDF; this would result in a reduced environmental impact, particularly with regards to transport, carbon emissions, and the sourcing, transportation, and processing of materials and waste. Therefore, the proposed changes to the Proposed Development would substantially improve its sustainability and further the aims of delivering on the Welsh Government's Net zero commitments.

2.4.3 With respect to ii) above, this is notwithstanding **Section 4.0** of this document which seeks separate agreement on specific matters set out in the EIA Scoping Direction that are either not agreed by the Applicant or further clarification is provided and/or sought. It is acknowledged that PEDW would likely issue further correspondence to be read in tandem with the EIA Scoping Direction (dated 31 July 2024) once it has considered the information provided in this document and discussed with the relevant consultees.

2.4.4 It is acknowledged that certain aspects of the request (to PEDW) for pre-application advice (notably Items 1-5) would now vary in their relevance due to the proposed principle of generating the vast majority of the feedstock via existing on-site processes. The Applicant is not seeking to formally undertake the request for pre-application advice process again based on the proposed changes set out at **Section 2.2** and **Section 2.3** above, however, should PEDW deem it appropriate to issue an addendum note (or similar) to that pre-application advice previously issued, such an approach would be welcomed.

3.0 BROAD MATTERS OF AGREEMENT WITH EIA SCOPING DIRECTION

3.1 Introduction

3.1.1 The following provides details of where the EIA Scoping Direction requests additional/amended Environmental Statement (ES) scope, and that request is agreed by the Applicant.

3.1.2 Please note that this covers only the more notable additions/amendments and is not designed to form the Applicant's full and formal response to all aspects of the EIA Scoping Direction; the Applicant's full and formal response to the EIA Scoping Direction (including details of where such information can be found in the ES) will be provided as an appendix in the ES.

3.2 Biodiversity

3.2.1 The general consensus appears to be that a standalone Biodiversity ES chapter can be scoped out, but there is some concern regarding the potential for adverse impacts on protected species, particularly those within and adjacent the canal.

3.2.2 It is proposed to produce a Biodiversity Assessment Report (BAR). The BAR is not proposed to be part of the ES and will be a standalone supporting document to the DNS application. The BAR would include details of:

i) Sensitive receptors in vicinity, particularly locally designated sites and species (with cross reference to the Woodland Survey - which was already proposed as an appendix to the Air Quality and Odour ES Chapter).

ii) Biological data centre results (COFNOD for North Wales sites and protected/priority species, and Telford Council/Shropshire records centre for any locally designated sites within 2km Study Area.

iii) Assessment of proximal impacts of noise etc. on birds/bats/other protected species. Note that the Proposed Development does not propose any new/additional permanent lighting as the existing Kronospan Facility already has sufficient lighting on and around the footprint of the Proposed Development.

iv) Stage 1 Habitats Regulations Assessment (HRA) (statement of likely significant effect based on measures to avoid surface water pollution or excess nutrient loading to wastewater treatment system, including cross reference to air quality issues).

v) Consideration of Welsh biodiversity planning policy and assessment of requirements to offset predicted impacts (if there are any) and achieve net gain in particular in relation to ecological networks/green infrastructure targets.

vi) Consideration of biodiversity enhancement measures proposed to meet policy aims.

3.2.3 The Scoping Report states that the data from the Woodland Survey (also referenced above) would be used in the ecological interpretation of the air quality assessment and provided as a technical appendix to the Air Quality and Odour ES Chapter. This approach remains unchanged.

3.2.4 A Green Infrastructure Statement will also be provided in accordance with updated Planning Policy Wales.

3.3 Vibration

3.3.1 The comments provided by WCBC, Glandŵr Cymru, and PEDW with respect to the potential for vibration effects are noted. Vibration will be scoped into the ES (the Noise ES Chapter will become a Noise and Vibration ES Chapter).

3.4 Population and Human Health

3.4.1 The comments provided by PEDW with respect to the potential for significant adverse effects on population and human health and scoping into the ES are noted. Whilst PEDW state that the above could be addressed under the separate topic chapters or within its own specific chapter, the Applicant will produce a standalone ES chapter to cover all relevant aspects of Population and Health.

3.5 Construction Environmental Management Plan

3.5.1 The comments provided by WCBC, NRW, Glandŵr Cymru, and PEDW with respect to concerns about the lack of a Construction Environmental Management Plan (CEMP) and associated environmental protection measures, with particular regard to pollution prevention to protect the environment including watercourses, hydrologically connected protected sites, species and habitats.

3.5.2 The Applicant will produce a draft or overarching CEMP document to be included as part of the ES. The document will act as a 'framework' or 'umbrella' CEMP and will set out the overall approach to the protection and management of the environment during the construction period (Including but not limited to those aspects set out in the EIA Scoping Direction). As a contractor(s) is not yet appointed (and would not be appointed until post-determination), it is likely that more specific management and monitoring proposals would be identified and implemented which would be bespoke to the proposed construction methods/durations associated with the appointed contractor(s); therefore, the Principal Contractor will also prepare its own site-specific CEMP (to discharge an expected planning condition) that will sit below and be consistent with the overarching principles of the framework/umbrella CEMP.

3.5.3 The framework/umbrella CEMP would be considered as committed mitigation; as such, the measures set out in the framework/umbrella CEMP would be assumed to be undertaken and subsequently considered in the initial assessment of effects (to be set out in the ES.

3.6 Agreement Sought

3.6.1 Agreement is sought with PEDW that the proposed approach set out at **Sections 3.1 – 3.5** above is acceptable.

4.0 BROAD MATTERS OF DISAGREEMENT/CLARIFICATION WITH EIA SCOPING DIRECTION

4.1 Introduction

4.1.1 The following provides details of where the EIA Scoping Direction requests additional/amended ES scope, and that request is either not agreed by the Applicant (for the reasons set out below) or further clarification regarding specific requests is provided and/or sought by the Applicant.

4.1.2 In accordance with the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 (hereafter referred to as the EIA Regulations), the ES must be based on the most recent EIA Scoping Direction; therefore, the Applicant wishes to resolve the matters set out below to ensure a proportionate and robust ES is produced.

4.2 Landscape and Visual Impact Assessment

Item 1 – LVIA Cumulative Effects

Natural Resources Wales (NRW) Comment

"The Applicant states that the cumulative effects assessment will include a consideration of the interactions between the Proposed Development and other consented or proposed schemes (para. 8.5.1 vi). This will include the recent application for construction of a new access road, lorry park, weighbridge and building, and car park (LPA Ref: P/2022/1080).

We advise that the cumulative assessment should also consider the overall cumulative impact of the proposed development and the existing Facility on the AONB/NL and visual receptors within the AONB/NL in combination, particularly as the existing Facility will be reflected in the assessment baseline and is likely to be used to justify the individual impacts of the proposed development."

PEDW Comment

4.2.1 PEDW confirmed its acceptance of the NRW comment (see above) in its EIA Scoping Direction (PEDW comment provided below for ease of information).

"The LVIA confirms that the cumulative effects assessment will include a consideration of the interactions between the proposed development and other consented or proposed schemes. NRW advise that the that the cumulative assessment should also consider the overall cumulative impact of the proposed development and the existing facility on the AONB / NL and visual receptors within the AONB / NL in combination. Particularly as the existing facility will be reflected in the assessment baseline and is likely to be used to justify the individual impacts of the proposed development."

Applicant Response

4.2.2 Industry good practice guidance for Landscape and Visual Impact Assessment (LVIA) is set out in *Guidelines for Landscape and Visual Impact Assessment*[1] (the GLVIA). Paragraph 7.13 of the GLVIA is explicit as to what should be included in cumulative assessment as follows:

"…it is considered that existing schemes and those which are under construction should be included in the baseline for both landscape and visual effects (the LVIA baseline). The baseline for assessment cumulative landscape and visual effects should then include those schemes considered in the LVIA and in addition potential schemes that are not yet present in the landscape but that are at various stages in the development and consenting process:

i) Schemes with planning consent;
ii) Schemes that are the subject of a valid planning application that has not yet been determined."

4.2.3 I.e. the cumulative landscape and visual assessment is concerned with a hypothetical future baseline where in addition to existing features, other consented and proposed development would also form part of the context into which the Proposed Development would be introduced. The cumulative section of LVIA will reflect this and will consider cumulative effects upon the Clwydian Range and Dee Valley National Landscape.

[1] Landscape Institute and Institute of Environmental Management and Assessment. 3rd edition, 2013. *Guidelines for Landscape and Visual Impact Assessment*. Abingdon: Routledge

4.2.4 The presence of the existing Kronospan facility is a well-established part of the landscape and visual context into which the Proposed Development would be introduced and thus is part of the assessment baseline (reflecting the requirements of the GLVIA as quoted above). All conclusions made regarding the landscape and visual effects of the Proposed Development will reflect its addition to the existing facility - i.e. the increased influence of the enlarged facility. This is not a 'cumulative' effect, rather it is the effect of the Proposed Development introduced into the existing landscape and visual context.

Item 2 – LVIA Photography

NRW Comment

"The Applicant intends to re-use photographs from 2022, which we understand were taken for a different purpose. This may explain why some of the viewpoint locations are not optimised for this specific application, for example:

- *At VP Q, a tree obscures the view towards the site. Walking a short distance to the north of this viewpoint would have avoided this issue. VP R is the only viewpoint from which no wireframe or photomontage is proposed, but it offers largely unobstructed visibility towards the site and therefore would be a more useful viewpoint for the preparation of a wireframe than VP Q.*
- *There is a similar issue with VP X, where trees in the mid-ground obscure the view of the site. Views of the site and development are expected from locations east along the road from VP X, and this should be considered.*

We therefore advise that all viewpoints should be selected, including through micro-siting on site, for the purposes of assessing the impacts of this specific application."

PEDW Comment

4.2.5 PEDW confirmed its acceptance of the NRW comment (see above) in its EIA Scoping Direction (PEDW comment provided below for ease of information).

"NRW raise concerns with the approach to re-use photographs from 2022 which were taken for a different purpose. NRW highlight concerns with viewpoint Q and X, whereby trees obscure views of the proposed development. The applicant should consider NRW's proposed alternative locations for viewpoints. PEDW concur with NRW's concerns and advise that viewpoint locations should be optimised and relevant to this application and should be selected for the purpose of assessing the impact on this specific application."

Applicant Response

4.2.6 The Applicant is happy to reshoot photography from Viewpoint Q and Viewpoint X from nearby alternate locations. We emphasise that an assessment of visual effects is concerned with effects experienced by people (i.e. the change in view that they would experience) and this influences the location of viewpoints (including alternative locations)

4.2.7 Viewpoint X reflects views from the Offa's Dyke Path National Trail in addition to views from the minor road (as set out in Table 8.1 of the EIA Scoping Report), and photography will be taken from the National Trail (a promoted recreational route of national importance, where the views available form a key part of the user experience), north of the minor road, rather than elsewhere along the road itself.

4.2.8 Viewpoint R is not the only Viewpoint from which neither a wireframe nor a photomontage is proposed. There are six such Viewpoints (including Viewpoint R and Viewpoint Q), which are set out in Table 8.2 of the Scoping Report.

4.2.9 Viewpoint Q reflects the views from the entrance to Chirk Castle and is directly adjacent to the listed lodge (notwithstanding that alternative photograph will be taken from slightly further north in line with NRW's request). Whilst views of the Proposed Development are likely to be well screened (hence no wireframe or photomontage being proposed) it is thus a more sensitive location than Viewpoint R, which is simply located within a field within the Castle grounds where few if any members of the public are likely to be present. Other locations within the Castle grounds include Viewpoints L and W, along the driveway and permissive path respectively, and changes in view are more likely to be experienced by people from these two locations (hence photo matched wireframes are proposed from both of these locations).

Item 3 - Presentation of LVIA Photography

NRW Comment

"We note that all photography and any visualisations will be prepared and presented in accordance with Technical Guidance Note 06/19[2], which is the appropriate guidance. However, we note that some of the baseline photographs are presented at a smaller page size than other viewpoint photographs e.g. VP H. This issue should be corrected in the final application so that all photographs are presented at an appropriate size."

PEDW Comment

4.2.10 PEDW confirmed its acceptance of the NRW comment (see above) in its EIA Scoping Direction (PEDW comment provided below for ease of information).

"NRW highlight that the baseline photographs are presented at a smaller page size than other viewpoint photographs, for example viewpoint H. This should be corrected in the application so that all photographs are presented at an appropriate and consistent size."

Applicant Response

4.2.11 The baseline photographs presented on Figures 8.2a-t of the EIA Scoping Report are all presented as panoramic images at double A3 width, showing a 90-degree field of view that illustrates the context into which the Site of the Proposed Development is seen. The page size is stated on each Figure. Viewpoint H (Figure 8.2h of the Scoping Report) is presented at a smaller page size as the other baseline view figures (Figures 8.2a-8.2t).

4.2.12 Figures 8.3a-e of the EIA Scoping Report which present wireframes views of the Proposed Development from selected Viewpoints are presented as single frame images at A3 size. These show a 39.6-degree field of view, focussed on the view toward the Proposed Development. This again accords with the requirements of Technical Guidance Note 06/19.

[2] Landscape Institute, 2019. *Visual Representation of Development Proposals. Technical Guidance Note 06/19*

4.2.13 If PEDW and/or NRW would prefer that all wireframe and photomontage figures are presented at the same scale as the baseline photography (i.e. at double A3 width), please can this be confirmed?

Item 4 – LVIA Sensitivity of Receptors

Glandŵr Cymru Comment

"The fact that the development is immediately adjacent to the canal corridor means it should be fully considered in any impact assessment. The waterway and its users (boaters and towpath users) should be recognised as visual receptors with high sensitivity within the LVIA."

PEDW Comment

4.2.14 PEDW confirmed its acceptance of the NRW comment (see above) in its EIA Scoping Direction (PEDW comment provided below for ease of information).

"Users of the waterway, both boaters and towpath users, should be included in the LVIA as visual receptors with high sensitivity."

"PEDW concur with The Canal and River Trusts comments that the scope of the LVIA should include an assessment of impact on the canal and its users."

Applicant Response

4.2.15 The Applicant does not agree that users are necessarily of high sensitivity in the vicinity of the Kronospan Site. Both the existing structures at the site, and the railway embankment detract noticeably from the view, and this reduces sensitivity from a relatively short section of the canal where these well-established industrial features detract from existing views.

4.2.16 This does not mean that the effects of the Proposed Development upon some or all canal users would not be significant, nor is it an attempt to justify the introduction of the Proposed Development.

4.2.17 For reference, in planning applications for various developments at the Kronospan Site made to WCBC (recent examples include WCBC Application Reference P/2022/0765 and WCBC Application Reference P/2022/1080), the accompanying LVIAs have identified the sensitivity of viewpoints located along the canal corridor (which reflect the views available to all canal users) as either 'medium' or 'medium to high'. No concerns were raised in respect of this by either WCBC or by consultees including Glandŵr Cymru.

4.2.18 As part of the LVIA for the Proposed Development, the sensitivity of each receptor will be determined in accordance with the methodology included in Appendix 8.1 of the Scoping Report, with reasoned justifications provided for all judgements that are made.

4.3 Geology, Hydrogeology and Contaminated Land

Item 5 – Geology, Hydrogeology and Contaminated Land ES Chapter

PEDW Comment

"The Scoping Report sets out that a Phase 1 Geo-Environmental Assessment is required to establish baseline conditions for soil and groundwater, and, if necessary, phase 2 survey. NRW concur with this approach. However, this has been scoped out of the ES. Given that no information has yet been obtained from surveys, and that protection measures set out in a CEMP will be relied on to prevent pollution, this topic should be scoped into the ES in a proportionate manner. The information as submitted is inadequate to conclude no significant effect on Geology, Hydrogeology, and Contaminated Land. PEDW therefore directs that Geology, Hydrogeology, and Contaminated Land is scoped into the ES in a proportionate manner."

Applicant Response

4.3.1 The Scoping Report states that a Phase 1 Geo-Environmental Assessment Report will be produced to include:

i) Qualitative risk assessment with respect to contamination and ground conditions/land stability.

ii) Recommendations for Phase 2 intrusive investigations and generic quantitative risk assessment, if deemed necessary, to obtain further information on the ground conditions/contamination status to inform potential development constraints/requirements.

4.3.2 The Phase 1 Geo-Environmental Assessment Report is now complete and is provided in full at **Appendix A** of this document. The results of that report demonstrate that significant geology, hydrogeology and contaminated land effects are unlikely to arise – further summary justification is provided below.

4.3.3 Much of the Proposed Development Site has not been previously developed and is external to existing buildings and operational areas and covered in hardstanding. Only the southwestern part of the Proposed Development Site extends into an operational area - the existing gas turbine building which was constructed in the 1990s and which does not store any fuels, chemicals or wastes.

4.3.4 There have been various intrusive investigations within the wider Kronospan facility (of which seven entries have encroached into the Proposed Development area). These site investigations have recorded only shallow deposits of made ground comprising reworked soils and fill material of suitable geotechnical properties to enable development of the Kronospan facility. Groundwater has been recorded at variable depths (0.9m – 13m below ground level) and is reported to flow to the north. No visual or olfactory evidence of contamination has been reported within these previous investigations, other than one isolated incidence of elevated hydrocarbons within one sample at 250m to the north (hence down hydraulic gradient of the Proposed Development Site).

4.3.5 All previous chemical analysis undertaken has been compared to current guidance human health contaminant criteria for commercial end use and no exceedances have been reported.

4.3.6 It is not expected that significant risks from ground gas will exist on the Proposed Development Site as ground gas monitoring (performed in 2017 between the Site and the Bryn Kinnalt Siding landfill at 130m to the north (and which has since been redeveloped) has not identified elevated ground gas concentrations.

4.3.7 The whole Kronospan facility is within an area where basic radon protection measures are required within new dwellings. As this is an industrial facility and the radon action level is higher (it is 300Bq/m^3 as opposed to 200Bq/m^3), however, further assessment could be undertaken by a radon specialist to determine site specific measures in conjunction with detailed design.

4.3.8 It is expected that such contaminant conditions as described above will be similar if not less contaminated on this Site and based on the existing information, the potential for construction activities to result in the mobilisation of shallow groundwater contamination is considered as low and hence the associated risks are insignificant. Given the available information on the contamination status of the soils across the Site and shallow groundwaters, no significant impacts from the Proposed Development on the deeper groundwater are expected regardless of whether piling is undertaken.

4.3.9 Following the completion of the Proposed Development, the presence of extensive concrete hardstanding will continue to restrict the infiltration of rainwater into the ground and mobilisation of any contaminants into the shallow groundwater. The Proposed Development will be connected to existing underground services which serve the Kronospan facility. The Proposed Development will be incorporated into the existing environmental permit under a future variation and managed in accordance with this permit (as agreed with NRW).

4.3.10 Materials management on Site will be required where site-won materials are proposed for reuse or there is the requirement to import soils and other fill materials to the Proposed Development Site. As standard requirements for materials management, sampling and chemical testing will be required in tandem with any ground disturbance that occurs to determine potential for reuse and/or potential routes for off-site treatment/disposal. Such works could be completed concurrently with any geotechnical investigation to inform the structural design/bearing capacity of the soils or alternatively, can be undertaken during groundworks.

4.3.11 In the event any unexpected contamination is encountered during construction works, suitable precautions will be necessary to ensure contamination mobilisation does not occur. This will be implemented into the CEMP (now scoped into the ES – see **Section 3.5** of this document above).

4.3.12 Based on the foregoing it is considered that there is unlikely to be any significant effects associated with Geology, Hydrogeology, and Contaminated Land. As such, it is not considered necessary to provide a separate Geology, Hydrogeology, and Contaminated Land ES chapter.

4.4 Material Assets and Waste

Item 6 – Material Assets and Waste ES Chapter

PEDW Comment

4.4.1 The Scoping Report sets out that material assets and waste should be scoped out of the ES. The justification focuses on the construction phase. However, given the nature of the development is an energy from waste scheme, the impact on waste should be considered as part of the ES. The ES should be supported by an assessment of the onsite waste, forestry waste and refuse derived fuels. It should include details of the volume or weight of waste that will be recovered (both on-site and off-site), details of on-site storage and segregation arrangements, logistical information for waste imported to site, and details of the energy from waste process.

4.4.2 The assessment should also include a cumulative assessment regarding the overall waste at the site, including the recently approved OSB facility. The assessment should consider any significant impact, both positive and negative. Given the nature of the development as an energy from waste project, PEDW direct that Material Assets and Waste should be scoped into the ES. The waste assessment (which may form part of a planning statement) should be included as a technical appendix to the ES, to support a proportionate chapter on waste.

Applicant Response

4.4.3 The proposed changes to the feedstock configuration (see **Section 2.3** of this document) means that there is a notable change in the way that 'material assets and waste' would be transported, managed and processed. The previous design (subject to the initial request for an EIA Scoping Direction) required the use of on-site process residues (140,000 TPA / 48%) with the balance (153,000 TPA / 52%) comprising the import of material for direct use in the proposed CHP facility, Grade C waste wood with the flexibility for up to 30,000 TPA of RDF and/or forestry residues.

4.4.4 Given the feedstock for the proposed CHP facility is now to be produced predominately (88.7%) by existing on-site processes and does not include the use of RDF as a feedstock, it is considered that significant effects would be unlikely to materialise and that a separate Material Assets and Waste ES chapter would not be a proportionate response and is therefore not required. An alternative approach to address PEDW's concerns about material assets and waste is set out in **Table 4.1** below.

Table 4.1 – Material Assets and Waste ES Requirements and Proposed Approach

Information to be Provided in the ES	Applicant's Proposed Approach
Assessment of the onsite waste, forestry waste and refuse derived fuels.	This would be described in **ES Chapter 4.0 (Description of the Proposed Development)** and the Waste Assessment contained within the Planning Statement.
Details of the volume or weight of waste that will be recovered (both on-site and off-site).	
Details of on-site storage and segregation arrangements.	This would be described in **ES Chapter 4.0 (Description of the Proposed Development)**
Logistical information for waste imported to site	There would be no 'waste' imported to site
Details of the energy from waste process.	This would be described in **ES Chapter 4.0 (Description of the Proposed Development)**
Cumulative assessment regarding the overall waste at the site, including the recently approved OSB facility.	

Information to be Provided in the ES	Applicant's Proposed Approach
Consider any significant impact, both positive and negative.	The individual and cumulative effect of managing waste is predominately associated with transport movements – this will be addressed in the Transport Assessment. However, there would also be environmental considerations associated with air quality and odour, climate change (to be addressed in the relevant ES chapters) and the Carbon and Greenhouse Gas Assessment (which will inform the Climate Change ES chapter).
The waste assessment (which may form part of a planning statement) should be included as a technical appendix to the ES, to support a proportionate chapter on waste.	The Waste Assessment will be contained within the Planning Statement.

4.5 Agreement Sought

4.5.1 Agreement is sought with PEDW with respect to the information provided in the 'Applicant Response' sections provided above with respect to Items 1-6.

Appendix A – Phase 1 Geo-Environmental Assessment

Contaminated Land
Air Quality
Environmental Audit

Partnership No: OC 300776

PROPOSED KRONOSPAN LOW CARBON COMBINED HEAT AND POWER FACILITY

PHASE 1 GEO-ENVIRONMENTAL ASSESSMENT

For: Axis & Kronospan Limited

October 2024

R3148-R01-v4

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DOCUMENT CONTROL SHEET

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Client:	Axis & Kronospan Limited
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Signed for Smith Grant LLP

	Name	Position	Signature	Date
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PROPOSED KRONOSPAN LOW CARBON COMBINED HEAT AND POWER FACILITY, CHIRK, NORTH WALES, LL14 5NT

PHASE 1 GEO-ENVIRONMENTAL ASSESSMENT

CONTENTS

DRAWINGS

APPENDICES

EXECUTIVE SUMMARY

Project Reference	R3148-R01-v4
Site Location	Land within the existing Kronospan Facility at Chirk, LL14 5NT
Development Proposals	The proposed development will consist of Combined Heat and Power Facility with conveyor belts.
Previous Site Investigations	There are various investigations within the wider Kronospan Facility. Sampling of soils in the surrounding area have not shown contaminants exceeding the commercial development guideline values for human health.
Ground Conditions / Geology & hydrogeology	The Site was agricultural land until the 1970s when it was incorporated into the neighbouring Kronospan Facility. According to BGS mapping the Site is underlain by bedrock of the Pennine Middle and Lower Coal Measures. Previous investigations into the wider Kronospan Facility have identified made ground of concrete and sub-base overlying shallow reworked gravelly sandy clays overlaying natural soils. The Site lies on a Secondary A in the west and an undifferentiated superficial aquifer in the east and a Secondary A bedrock aquifer.
Radon	5-10% of buildings are at or above the action level for radon for new dwellings and hence radon protection measures are necessary within new buildings unless further Site-specific radon assessment is undertaken by a radon specialist to determine Site specific measures.
UXO	According to publicly available mapping, the risk of unexploded ordnance is classed as Low.
Contamination	Only shallow deposits of made ground or fill are expected to underly the Site, comprising reworked soils and fill material of suitable geotechnical properties to facilitate development of the Kronospan facility. Made ground present on Site is unlikely to contain contaminant concentrations that exceed the commercial development guideline values for human health. A historical landfill has been identified 130m to the north associated with the former railway sidings and another has been identified 368m to the south associated with more railway sidings. Ground gas monitoring undertaken between the Site and both landfills did not show elevated gas concentrations. The ground gas risk on Site is therefore considered to be low.
Recommendations	Materials management may be required where materials are proposed for reuse or there is the requirement to import soils and other fill materials to the Site. Sampling and chemical testing should be undertaken in tandem with any ground disturbance that occurs to determine potential for reuse and / or potential routes for off-site treatment/disposal. Such works could be completed concurrently with any geotechnical investigation to inform the structural design / bearing capacity of the soils or alternatively, can be undertaken during groundworks. A piling risk assessment will also be required where piling is to take place to inform the most appropriate pile design. Radon protection measures are required within new dwellings. However, as this is an industrial facility and the radon action level is higher (it is 300Bq/m^3 as opposed to 200Bq/m^3), further assessment could be undertaken by a radon specialist to determine site specific measures. During the groundworks and construction phases, a Construction Environmental Management Plan (CEMP) should be prepared, approved and implemented to manage the potential risks to the

	environment from the construction phase. This should include a protocol of dealing with Unexpected Contamination. A Piling risk assessment should be undertaken where piling is proposed to assess whether any mitigation is required to prevent the mobilisation of contaminants.

1. Introduction

1.1. General

1.1.1. Axis, on behalf of Kronospan Limited (Kronospan), has instructed Smith Grant LLP (SGP) to undertake a Phase 1 geo-environmental desk study to support a Development of National Significance (DNS) app for a low carbon Combined Heat and Power (CHP) facility (the 'Proposed Development' or 'Proposed Development Site'). This will be located at the MDF and chipboard manufacturer Kronospan in Chirk, LL14 5NT, hereafter referred to as 'Kronospan' or the 'Kronospan facility'.

1.1.2. The assessment has been undertaken to determine any potential constraints with regards to ground conditions and contamination that may impact the proposed future use of the Proposed Development Site.

1.2. Scope of Objectives of the Report

1.2.1. This following report describes the Phase 1 Geo-Environmental Assessment undertaken by SGP in accordance with the brief agreed with Axis. The assessment has been prepared with reference to the Planning Practice Guidance provided in relation to land affected by contamination[1] and land stability[2].

1.2.2. The assessment comprised a review of third-party information on the environmental setting of the Site and the Site's previous and current uses with respect to potential risks to the environment or human health, and a site inspection. This report contains a qualitative risk assessment, and where appropriate makes recommendations for further investigation and remedial actions appropriate to the proposed future use of the Site.

1.2.3. SGP is an environmental consultancy specialising in the risk assessment and remediation of contaminated and derelict land.

[1] Planning Practice Guidance (PPG): Land Affected by Contamination, issued 12 June 2014, last updated 22 July 2019, www.gov.uk
[2] Planning Practice Guidance (PPG): Land Stability, issued 6 March 2014, last updated 22 July 2019, www.gov.uk

2. Planning and Legislative Context

2.1. Planning

2.1.1. The Proposed Development is defined as a 'DNS' under the Planning Act (Wales) 2015 and will be subject to a DNS Application. The Environmental Impact Assessment 'EIA' requirement for DNS developments in Wales is governed by secondary legislation through the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. Under the Regulation the Proposed Development is considered a 'Schedule 1' development under Part 10 as a '*Waste disposal installations for the incineration or chemical treatment (as defined in Annex IIA to Council Directive 75/442/EEC under heading D9) of non-hazardous waste with a capacity exceeding 100 tonnes per day*'.

2.1.2. This assessment has been undertaken in accordance with the **Planning Policy Wales (NPW)**[3] and associated **Planning Practice Guidance regarding Land Affected by Contamination (PPG)**[4] which provides guiding principles on how planning can take account of new development on contaminated land. The guidance sets out when contamination may be present, the role of planning when dealing with land which may be contaminated, what a contamination risk assessment may contain and how to determine unacceptable risk. The guidance states that where there is a reason to believe contamination could be an issue, proportionate but sufficient site investigation information should be prepared by a competent person to determine the existing or otherwise of contamination.

2.2. Local Planning Policy and Guidance

2.2.1. Wrexham County Borough Council 'WCBC' adopted the '**Wrexham Local Development Plan 2013 to 2028**[5]' on 20 December 2023. This sets out the Council's overall vision, strategic objectives, spatial strategy and strategic planning policies from 2013-2028. Policy DM1 (Development Management Considerations) states:

> *Responsibilities for determining the extent and effects of instability, contamination and other risks remain that of the developer, who must ensure that land is suitable for the development proposed'*

2.2.2. Reference to **Planning Policy Wales 2024** (NPW) is made by WCBC in their '**Local Planning Guidance Note No.23[6]', a document** which describes the process of investigation and development of sites with land contamination.

[3] Welsh Government. Planning Policy Wales. Edition 11 (February 2021)
[4] Department for Communities and Local Government, Planning Practice Guidance. Land Affected by Contamination, published 12 June 2014, last updated 22 July 2019
[5] Wrexham Local Development Plan, Wrexham County Borough Council, Adopted 20th December 2023
[6] Local Planning Guidance No. 23, Wrexham County Borough Council, adopted May 2003. Last updated August 2013.

2.3. Legislation

2.3.1. Land contamination can harm human health, groundwaters, surface waters, soils, ecosystems and property. As such it is controlled, either directly or indirectly, through a range of legislation, including, but not limited to:

- Part IIA of the Environmental Protection Act 1990: establishes a system for identifying and remediating statutorily defined 'contaminated land'; and focuses on addressing contaminated land that meets the specific legal definition and cannot be dealt with via other means, including planning;
- Water Environment Regulations 2017: replaces previous legislation and outlines duties of regulators in relation to characterisation and classification of water bodies, environmental permitting, abstraction and impoundment of water;
- Environmental Permitting Regulations 2016: impose provisions to prevent ground and water contamination from operations requiring an Environmental Permit to operate and implement controls for operations relating to the treatment or handling of contaminated soils.

2.3.2. Similarly, when dealing with land that may be unstable, the planning system works alongside several other regimes including Building Regulations and the Coal Authority's responsibility for public safety risks arising from past coal mining activities.

2.4. National Best Practice and Guidance

2.4.1. The Environment Agency (EA) Land Contamination: Risk Management Guidance[7] provides an overarching framework for the assessment and investigation of land contamination across England, Northern Ireland, and Wales. It replaces the previous Contaminated Land Report 11: Model Procedures for the Management of Contaminated Land 2004.

2.4.2. It is designed to be used in a range of regulatory and management contexts such as voluntary remediation, planning, assessing liabilities or under the Part 2A contaminated land regime. The guidance sets out a phased approach to the assessment of land contamination and specifies requirements for reports produced as part of the process, including Preliminary Risk Assessments (PRAs) and Generic and Detailed Quantitative Risk Assessments (GQRAs and DQRAs).

2.4.3. The EA Guidance is supported by, and cross-refers to, an extensive range of additional statutory and non-statutory guidance relating to aspects such as site investigations, protection of groundwater, understanding and managing asbestos, definition of waste and the specific investigation and assessment procedures under Part IIA. Where necessary, such guidance is referred to in the following report.

[7] Land Contamination: Risk Management, issued 8th October 2020, last updated 20th July 2023, www.gov.uk

2.4.4. The Welsh Land Contamination Working Group (WLCWG) and National Resources Wales (NRW) collaborated to produce the '**Development of Land Affected by Contamination: A Guide for Developers**[8]' in May 2017. This document was prepared to guide developers in what information is required by Local Planning Authorities (LPA) for them to determine the planning applications and land contamination conditions.

[8] Development of Land Affected by Contamination: A Guide for Developers, WLCWG and NRW. Version 3, May 2017.

3. Scope of Assessment and Sources of Information

3.1. Scope of Assessment

3.1.1. In undertaking this assessment SGP has carried out the following activities:

- Visit to view the Site and discussions with site operatives;
- review of comprehensive historical mapping and aerial photography information;
- review of comprehensive environmental setting information (geology, hydrology, hydrogeology, industrial land uses, mineral excavation / extraction, landfilling / waste management activities);
- review of information provided by regulatory authorities and former Site occupier;
- review of information relating to potential unexploded ordnance (UXO);
- review of development proposals;
- development of preliminary conceptual site model (CSM) with regards to ground contamination; and,
- provision of recommendations for further investigations and mitigation, where deemed necessary.

3.1.2. The information has been used to determine i) the potential for any ground contamination to be present on or near the Site due to historical and current land uses and ii) the potential for any such contamination to pose a constraint to the proposed use of the Site and / or impact the surrounding environment. The information has been used to inform the risk assessment and determine any further work and/or investigations that may be required to identify any remedial requirements to ensure the Site is suitable for the proposed development with regards to ground contamination.

3.1.3. Information has also been obtained on general expected ground conditions at the Site and stability / physical ground conditions where these may constrain the planned development are included where relevant.

3.1.4. Similarly, structural building, asbestos or ecological surveys have not been carried out, although reference is made to relevant information and SGP observations were deemed relevant and applicable.

3.2. Sources of Information

3.2.1. The baseline data has been obtained through a desk top study and Site visit.

3.2.2. The principal sources of information consulted in the preparation of this report are provided below at Table 3.1.

Table 3.1: Information Sources

Date and reference	Author and source	Purpose and information content
Topography, geology, hydrogeology and hydrology		
http://mapapps.bgs.ac.uk [Accessed April 2024]	British Geological Survey (BGS).	distribution of geological units at surface including drift and artificial deposits, faults and mineral outcrops, borehole logs.
https://www.ordnancesurvey.co.uk/osmaps/ [Accessed April 2024]	Ordnance Survey (OS), Explorer Map, 1: 10,000	general mapping information including structures, boundaries, ground features, water features etc.
Historical data		
Satellite imagery	Various	recent historical features
Groundsure Report Historical Mapping (ref: GS-UV2-NCE-W63-KTN); July 2024 (provided in Appendix C)	Groundsure	historical mapping at 1:2,500, 1: 10,000 and 1: 10,560 scales from 1888 onwards.
Information Review		
Groundsure Report Datasheet (ref: GS-GGL-NEX-U64-GMX); December 2023 (provided in Appendix C)	Groundsure	hydrological, waste, hazardous substances, geological, land uses, and natural stability hazards based on historical data and geological records.
BRE 211	Public Health England	guidance for the installation of radon protection measures.
https://magic.defra.gov.uk/MagicMap [Accessed April 2024]	Defra	web-based interactive map containing information on nature conservation areas, aquifer designations, source protection and nitrate vulnerable zones.
www.zeticauxo.com (provided in Appendix D)	Zetica	unexploded bomb risk mapping & preliminary UXO risk assessment
Environmental Search 1111: Kronospan, Chirk (provided in Appendix F)	Wrexham County Borough Council	Consultation with Contaminated Land Team regarding the Site.
Environmental Permit: EPR/BW9999IG. Operator: Kronospan Limited. For: Chirk Particleboard Factory (latest variation: 04.10.24)	Environment Agency	Permitted industrial operations at the Site since October 2022.
Previous intrusive investigation and assessment on the Kronospan Industrial Facility		
Borehole logs and laboratory results for investigation (ref: 91204)	Alfred McAlpine Construction	Site investigation to the southwest of the Site in 1991.
Proposed Biomass Plant, Kronospan - Stage 1 Geo-Environmental Risk Assessment (Ref: R1572-R01-v5)	Smith Grant LLP	Desk Study assessment for the log yard area to the north in 2012.
Proposed Log Yard Improvements – Interpretive Report (ref: PN071425)	Geotechnics	Site investigation to the southwest of the Site in 2007.

Date and reference	Author and source	Purpose and information content
Ground Investigation for Proposed Warehouse Extension (ref: PN071450)	Geotechnics	Site investigation to the east of the Site in 2007.
Ground Investigation at North Log Yard – Factual Report (ref: PN092178)	Geotechnics	Site investigation to the north of the Site in 2010.
Kronospan – New Press – Factual Report (ref: PN122688)	Geotechnics	Site investigation to the east of the Site in 2012.
New Boiler Plant Civils Work Ground Investigation (ref: W13/41236)	Ian Farmer Associates Ltd	Site investigation to the east of the Site in 2013.
Chipboard Decoupling – Report on Ground Investigation (ref: 41585v1)	Ian Farmer Associates Ltd	Site investigation to the southeast of the Site in 2015.
Log yard Tunnels Kronospan – Report on Ground Investigation (ref:41946)	Ian Farmer Associates Ltd	Site investigation to the north of the Site in 2016.
Log yard Silos Improvement Kronospan – Report on Ground Investigation (ref:41793v2)	Ian Farmer Associates Ltd	Site investigation to the north of the Site in 2016.
Kronospan Storage building – Ground Investigation (ref: PN173691)	Geotechnics	Site investigation to the north of the Site in 2017.
Factual Site Investigation Report (ref: A5487/23/S)	Earth Environmental and Geotechnical Ltd	Site investigation to the north of the Site in 2023.

3.3. Site Inspection

3.3.1. An inspection of the Site and the immediate surrounding area was undertaken by an SGP consultant on 03 July 2024. The Consultant was accompanied by the Operations Manager of Kronospan.

3.3.2. A photographic record of salient features is provided in Appendix B.

4. Site Location and Development Proposals

4.1. Site Details and Location

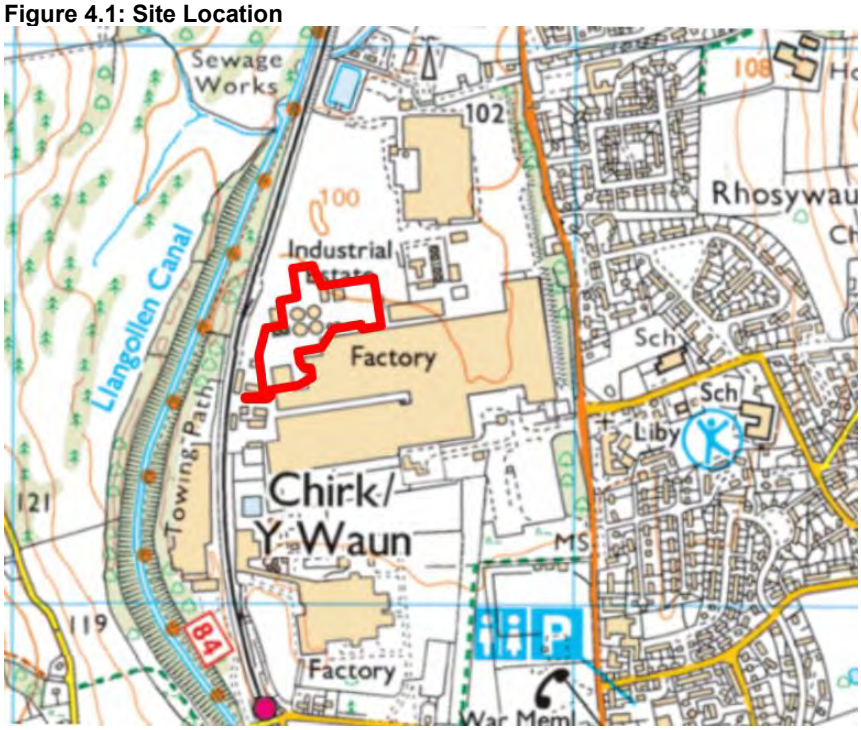
4.1.1. The Site is located in the western area of the existing 'Kronospan' Facility, Maesgwyn Farm, Chirk, Wrexham, LL14 5NT. Kronospan manufacturers wood-based panelling, particularly focused on Particle Board (PB) and Medium Density Fireboard (MDF). The existing Kronospan Facility covers a total area of 40ha with 14ha consisting of industrial buildings and plant such as an existing biomass CHP plant, sawmill, formalin plant, and manufacturing facilities. Kronospan processes wood (round wood, slab wood, peeled chips, sawdust, recycled fibre etc.) into sawdust and peeled chips which is then used in the manufacture of particleboard and MDF processes.

4.1.2. The Site is located to the immediate west of the 'New Press' building and to the south of the 'Log Yard'.

Table 4.1: Site Details

Address	Proposed CHP Facility at Kronospan, Chirk, LL14 5NT
National Grid Reference	328492, 338448
Local Authority	Wrexham County Borough Council
Area of Proposed Development	1.08 ha
Current Use of Site	Gas Turbines 1 and 2 Transfer areas between Kronospan buildings and gas turbine hall in the southwest. Open wood storage
Proposed Use	Proposed combined Heat and Power Facility.

Figure 4.1: Site Location



4.2. Proposed Development

4.2.1. The proposed low carbon combined heat and power (CHP) facility includes a boiler building, stack, turbine building, ash pit, nitrous oxides (NOx) catalyst, effluent pit / ammonia tank, ID fan with noise enclosure, and stair tower, as shown in Appendix A (ref: 7000_783_B-A0). This facility would have the capacity to generate up to 40 megawatts of electricity and will generate thermal energy to use elsewhere on the existing Kronospan Facility. The northeastern extent of the Site would house the proposed feedstock storage, sorting and transportation facilities It is understood that the areas of conveyor belt installation will not require ground excavation.

4.2.2. The proposed layout will include the relocation / removal of some existing structures across the Site. This has been highlighted in Drawing D09 which shows the proposed layout with the existing layout.

4.2.3. While the two silos in the north of the proposed layout were previously approved by WCBC (ref: P/2022/0765), they have been incorporated into this proposal to ensure that any design changes since the previous application are accepted.

4.2.4. Part of the proposed Site will replace the existing gas turbine hall in the southwest. This turbine hall was built in the 1990s and will be decommissioned and dismantled / demolished to facilitate the construction of the Proposed Development. The new development will also be connected to existing underground services. It is understood that the main CHP facility building will require piling, but the piling designs are to be confirmed at post-consent/detailed design stage upon appointment of civils design/contractor.

4.2.5. At the time of the Site visit, Kronospan operatives informed SGP that there are no underground infrastructure or aboveground or belowground tanks within the turbine hall.

4.2.6. The Proposed Development will be incorporated into the existing environmental permit under a future variation.

4.2.7. Access to the Site is currently via the existing Kronospan main site entrance on Holyhead Road and would be used during the construction period. Once constructed, the North Access Road (granted planning permission under planning reference P/2022/1080) to the north of the existing Kronospan Facility would be used as the main access (to the existing Kronospan Facility and the Proposed Development Site); the current access would no longer be used for the access and egress of all HGVs except in exceptional circumstances.

5. Previous Site Investigations

5.1. The wider Kronospan Facility has been subject to multiple site investigations:

- Earth Environmental and Geotechnical Ltd, 2023, *Factual Site Investigation Report* (ref: A5487/23/S)
- Fichtner Consulting Engineers Limited, 2023, *Kronospan Site Condition Report* (ref: S2376-0290-0006RSF)
- Geotechnics, 2017, *Kronospan – Storage building – Factual Report* (ref: PN173691)
- Ian Farmer Associates Ltd, 2016, *Logyard Silos Improvement Kronospan – Report on Ground Investigation* (ref:41793v2)
- Ian Farmer Associates Ltd, 2016, *Logyard Tunnels Kronospan – Report on Ground Investigation* (ref:41946)
- Ian Farmer Associates Ltd, 2015, *Chipboard Decoupling – Report on Ground Investigation* (ref: 41585v1)
- Ian Farmer Associates Ltd, 2013, *New Boiler Plant Civils Work Ground Investigation* (ref: W13/41236)
- Geotechnics, 2012, *Kronospan – New Press – Factual Report* (ref: PN122688)
- Geotechnics, 2010, *Ground Investigation at North Log Yard – Factual Report* (ref: PN092178)
- Geotechnics, 2007, *Ground Investigation for Proposed Warehouse Extension* (ref: PN071450)
- Geotechnics, 2007, *Proposed Log Yard Improvements – Interpretive Report* (ref: PN071425)
- Alfred McAlpine Construction, 1991, *Borehole logs and laboratory results for investigation around Substation E (ref: 91204)*

5.2. SGP also produced a Phase 1 Geo-Environmental Risk Assessment Report in 2012:

- Smith Grant LLP, 2012, *Proposed Biomass Plant, Kronospan - Stage 1 Geo-Environmental Risk Assessment* (Ref: R1572-R01-v5).

5.3. While none of the investigations targeted the Proposed Development Site, a number of intrusive entries have been made on Site. These have been highlighted in blue in the below tables and can be seen in Drawing D08. Those and the entries of the surrounding area provide a good indication of the ground conditions likely to be encountered on Site and are summarised below:

Earth Environmental and Geotechnical 2023, Kronospan – North Access

5.3.1. This site investigation was undertaken 600m to the northeast of the Site within farmland and involved the excavation of eight trial pits to a maximum depth of 2.0m and the drilling of thirty window sampling boreholes and seven cable percussion boreholes to a maximum depth of 20.0m bgl with monitoring standpipes being installed in sixteen of the boreholes (CP01, CP02, CP03, CP10, CP11, CP12, CP13, WS04, WS09, WS10, WS13, ws25, WS26, WS27, WS28, and WS29) (report ref. A5487/23/SI).

5.3.2. Ground conditions were largely consistent, comprising of topsoil overlying Devensian Glaciofluvial superficial deposits of clays and gravels. Made ground was encountered in seven locations and is summarised in Table 5.10 below.

5.3.3. Representative soil samples were collected from 27 locations and 26 groundwater samples were collected. These were submitted for testing of heavy metals, cyanide, phenols, sulphate, sulphide pH, soil organic matter, Extractable Petroleum Hydrocarbons (EPHs), TPHs, and PAHs.

Table 5.11 Summary of Made Ground within Earth Environmental and Geotechnical 2023 North Access investigation.

Entry	Depth (m bgl)	Made Ground Description
WS19	0.0-0.40	Made Ground: Grass and rough vegetation over dark brown organic sandy topsoil. Occasional gravel of angular fine brick.
WS20	0.0-0.40	Made Ground: Grass and rough vegetation over dark brown organic sandy topsoil. Occasional gravel of angular fine brick.
WS21	0.0-1.10	Made Ground: Rough vegetation over dark brown very sandy gravel with frequent cobbles. Gravel is angular limestone, concrete, brick and plastic. Sand is medium to coarse.
WS24	0.0-1.90	Made Ground: Rough vegetation over dark brown slightly gravelly fine to coarse sand. Gravel is angular fine to medium limestone, concrete, brick, ash.
TP05	0.0-1.80	Made Ground: Soft to firm light brown silty gravelly Sand and Clay. Sand is fine to medium. Gravel is fine to coarse subangular of brick, concrete, mudstone, and quartzite.
	1.80-3.0	Made Ground: Dark brown clayey silty gravelly Sand. Sand is fine to medium. Gravel is fine to coarse subangular of brick, concrete, mudstone, and quartzite.
TP06	0.0-2.30	Made Ground: Soft to firm light brown silty gravelly sandy Clay. Sand is fine to medium. Gravel is fine to coarse subangular of brick, concrete, mudstone, and quartzite.
	2.30-3.0	Made Ground: Dark brown clayey silty gravelly Sand. Sand is fine to medium. Gravel is fine to coarse subangular of brick, concrete, mudstone, and quartzite.
TP07	0.0-2.30	Made Ground: Soft to firm light brown silty gravelly sandy Clay. Sand is fine to medium. Gravel is fine to coarse subangular of brick, concrete, mudstone, and quartzite.

5.3.4. Six rounds of gas monitoring were also undertaken. Concentrations of methane were generally recorded between below detection limits (<0.1%vol) and 0.1%vol. Carbon dioxide was reported with concentrations between below detection limits (<0.1%vol) and 4.6%vol. A positive gas flow was recorded on one occasion at 0.1 l/hr in one borehole (WS29). Depleted levels of oxygen were also reported, reaching lows of between of 6.1%vol and 11.5%vol in CP11 across the first three monitoring rounds. By the 4th monitoring round, oxygen levels rose to 15%vol and climbed again in subsequent monitoring rounds.

5.3.5. The chemical results are not provided in report ref. A5487/23/SI.

5.3.6. Groundwater was encountered between 1.9m and 4.5m bgl.

Ian Farmer Associates Limited, 2016, Log Yard Silos Improvement (report ref. 41793v2)

5.3.7. This site investigation was undertaken 126m to the north of the Site within the existing log yard and involved the drilling of five cable percussion boreholes to 25m bgl with monitoring standpipes being installed in three of the boreholes (BH01, BH02A, and BH05).

5.3.8. Ground conditions were largely consistent, comprising of made ground overlying superficial deposits of clays and gravels. A description of the made ground and depths recorded are summarised in the table below in Table 5.9.

5.3.9. Four soil samples were collected and submitted for sulphate, pH, and WAC testing.

Table 5.10 Summary of Made Ground within Ian Farmer Associates 2016 Log Yard Improvement investigation.

Entry	Depth (m bgl)	Made Ground Description
BH01	0.0-0.40	Made Ground: Concrete.
	0.40-0.90	Made Ground: Grey, mottled brown, sandy GRAVEL with low cobble content. Gravel is angular to subangular, fine to coarse including limestone, concrete and sandstone. Cobbles are angular to subangular of concrete and limestone.
BH02	0.0-0.30	Made Ground: Concrete.
	0.30-1.40	Made Ground: Firm, grey mottled brown, clayey, gravelly SAND. Gravel is angular to subangular, fine to coarse including limestone, concrete and mudstone.
BH02A	0.0-0.30	Made Ground: Concrete.
	0.30-1.50	Made Ground: Grey, mottled reddish brown, slightly sand GRAVEL. Gravel is angular to subangular, fine to coarse including limestone, sandstone and concrete, with low cobble content. Cobbles are angular if limestone, mudstone and concrete.
BH03	0.0-0.30	Made Ground: Concrete.

Entry	Depth (m bgl)	Made Ground Description
	0.30-1.30	Made Ground: Brown, sandy GRAVEL with low cobble content. Gravel is angular to subangular, fine to coarse including concrete, sandstone and limestone. Cobbles are angular of concrete.
BH04	0.0-0.40	Made Ground: Concrete.
	0.40-1.00	Made Ground: Brown and grey, gravelly, clayey SAND with low cobble content. Gravel is angular to subangular, fine to coarse including concrete, limestone, sandstone. Cobbles are angular to subrounded including sandstone and concrete.
BH05*	0.0-0.30	Made Ground: Concrete.
	0.30-1.00	Made Ground: Brown, clayey, gravelly SAND with low cobble content. Gravel is angular to subrounded, fine to coarse including concrete, mudstone and sandstone. Cobbles are angular including sandstone and limestone.
BH07*	0.0-0.50	Made Ground: Concrete
	0.50-0.90	Made Ground: Light grey, sandy, sub angular to sub rounded fine to coarse GRAVEL.
BH08*	0.0-0.60	Made Ground: Concrete
	0.60-0.90	Made Ground: Grey, sandy, subangular to subrounded, fine to coarse GRAVEL including limestone
	0.90-1.90	Made Ground: Brown, gravelly SAND
BH09*	0.0-0.35	Made Ground: Concrete
	0.35-0.70	Made Ground: Light grey, sandy GRAVEL.

***Blue highlight indicates the borehole is located with the Proposed Development Area**

5.3.10. Ian Famers Associates recommended a design sulphate class of DS-1 and AC-1 following the BRE Special Digest 1.

5.3.11. Groundwater was encountered in BH07 at 5.2m bgl within clayey sand, BH08 at 4.7m bgl within slightly clayey gravel, and in BH09 at 24m bgl within gravel.

Ian Farmer Associates Limited, 2016, Log Yard Tunnels (report ref. 41946)

5.3.12. This site investigation was undertaken in the northeast of the Site and involved the drilling of twelve cable percussion boreholes to a maximum depth of 15m bgl. Of these, nine entries are located within the Site boundary.

5.3.13. Ground conditions were largely consistent, comprising of made ground overlying superficial deposits of clays and gravels. A description of the made ground and depths recorded are summarised below in Table 5.8.

Table 5.8 Summary of Made Ground within Ian Farmer Associates 2016 Log Yard Improvement investigation.

Entry	Depth (m bgl)	Made Ground Description
BH01-16*	0.0-0.50	Made Ground: Light brown, gravelly, fine to coarse SAND.
BH01A-16*	0.0-1.60	Made Ground: Light brown, gravelly, fine to coarse SAND.
BH01B-16	0.0-1.00	Made Ground: Brown, grey, sandy GRAVEL.
BH02-16*	0.0-1.00	Made Ground: Light brown, gravelly, fine to coarse SAND
BH03-16*	0.0-0.20	Made Ground: Brown- grey, slightly clayey, fine to coarse SAND
	0.20-1.00	Made Ground: Brown sandy CLAY.
BH04-16*	0.0-1.50	Made Ground: Grey, sandy GRAVEL with low cobble content.
BH10-16*	0.0-1.00	Made Ground: Brown, sandy GRAVEL
BH11-16*	0.0-0.60	Made Ground: Brown, gravelly, slightly clayey, fine to coarse SAND
BH11A-16*	0.0-1.00	Made Ground: Brown, slightly clayey, gravelly, medium and coarse SAND
BH12-16*	0.0-0.75	Made Ground: Brown, gravelly, medium and coarse SAND
	0.75-1.40	Made Ground: Grey-brown sandy, slightly clayey GRAVEL
BH13-16*	0.0-1.40	Made Ground: Brown, gravelly, slightly clayey, medium and coarse SAND.

***Blue highlight indicates the borehole is located with the Site Boundary**

5.3.14. No samples were taken for contamination testing.

5.3.15. Groundwater was encountered at the following depths and strata within the intrusive entries located on Site:

Table 5.9 Summary of Groundwater depths within Ian Farmer Associates 2016 Log Yard Improvement investigation.

Entry	Depth of groundwater (m bgl)	Strata
BH01-16*	Not encountered	N/A
BH01A-16*	Not encountered	N/A
BH02-16*	4.0	Slightly gravelly silty clay
BH03-16*	Not encountered	N/A
BH04-16*	4.5	Silty clay
BH10-16*	4.0	Slightly sandy clay
BH11-16*	Not encountered	N/A
BH11A-16*	Not encountered	N/A
BH12-16*	4.2	Gravel
BH13-16*	4.1	Slightly sandy clay

Ian Farmer Associates Limited, 2015, Chipboard

5.3.16. This site investigation was undertaken 285m to the southeast of the Site within the existing factory building and involved the drilling of one cable percussion borehole and four concrete cores (report ref. 41585v1).

5.3.17. Ground conditions were largely consistent, comprising of concrete overlying gravels and clays. A description of the made ground and depths recorded are summarised below in Table 5.7.

5.3.18. Representative soil samples were collected from the entry at two depths and were submitted for sulphate, pH, and WAC testing.

Table 5.7 Summary of Made Ground within Ian Farmer Associates 2015 Chipboard investigation.

Entry	Depth (m bgl)	Made Ground Description
BH01	0.0-0.25	Made Ground: Concrete.
	0.25-1.50	Possible Made Ground: Brown, grey, very gravelly, fine to coarse sand. Gravel is subangular to subrounded, fine to coarse, including mudstone, sandstone and slate, with a high cobble content of mudstone and sandstone.

5.3.19. Ian Famers Associates recommended a design sulphate class for concrete proposed to be either below ground or otherwise in contact with the ground of DS-1 and AC-1 following the BRE Special Digest 1.

5.3.20. Groundwater was encountered at 2.0m bgl.

Ian Farmer Associates Limited, 2013, New Boiler (report ref. W13/41236)

5.3.21. This site investigation was undertaken 130m to the south of the Site within the existing factory building and involved the drilling of four cable percussion boreholes to 25m bgl with groundwater monitoring pipes installed in two locations (BH01 and BH04).

5.3.22. Ground conditions were largely consistent, comprising of concrete overlying gravels and clays. A description of the made ground and depths recorded are summarised below in Table 5.6.

5.3.23. Two of the boreholes were installed with groundwater monitoring standpipes with one round of groundwater monitoring undertaken (29.08.2013). Groundwater depths were recorded between 0.9m and 8.46m.

5.3.24. Six rounds of gas monitoring were also undertaken (29.08.13, 13.09.13, 20.09.13, 27.09.13, 10.10.13, and 16.10.13). Concentrations of methane were generally recorded between below detection limits and 0.5%vol. Carbon dioxide was reported with a maximum concentration of 5.7%vol in BH03. Positive gas flows were recorded across the monitoring period between 0.1 and

5.2 l/hr. Oxygen levels were generally reported between 15-20%vol. However, oxygen levels dropped to 5.5% in BH03 on two occasions (13.09.13 and 20.09.12).

5.3.25. Representative soil samples were collected from each entry at a variety of depths and submitted for environmental testing (solid and leachate) which included heavy metals, sulphate, volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs), phenols, hydrocarbons, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) plus Waste Acceptance Criteria (WAC) tests.

Table 5.6 Summary of Made Ground within Ian Farmer Associates 2013 New Boiler investigation.

Entry	Depth (m bgl)	Made Ground Description
BH04*	0.0-0.30	Made Ground: Concrete.
	0.30-0.70	Made Ground: Brown, slightly sandy, slightly clayey, angular to subangular, fine to coarse GRAVEL including limestone.
BH01	0.0-0.20	Made Ground: Concrete.
	0.20-0.25	Made Ground: Screed concrete
	0.25-0.45	Made Ground: Grey, slightly sandy, subangular, fine to coarse gravel including limestone
BH02	0.0-0.22	Made Ground: Concrete.
	0.22-0.30	Made Ground: Screed concrete
	0.30-0.50	Made Ground: Light grey, slightly clayey, slightly sandy, angular to subangular, fine to coarse gravel including limestone.
BH03	0.0-0.20	Made Ground: Concrete.
	0.20-0.30	Made Ground: Screed concrete
	0.30-0.55	Made Ground: Grey, slightly clayey, slightly sandy, angular to subangular, fine to coarse gravel including limestone.

***Blue highlight indicates the borehole is located with the Proposed Development Area**

5.3.26. The chemical test results are not provided in report ref. W13/41236.

Groundwater was encountered at 5.0m bgl within gravelly clays in BH04.

Geotechnics, 2012, New Press (report ref. PN122668)

5.3.27. This site investigation was undertaken 95m to the east of the Site within the existing building and involved the drilling of two cable percussion boreholes to 25m bgl with groundwater monitoring pipes installed.

5.3.28. Ground conditions were largely consistent, comprising of made ground overlying clay and silt. A description of the made ground and depths recorded are summarised below in Table 5.5.

5.3.29. Boreholes were installed with groundwater monitoring standpipes with two rounds of monitoring undertaken (16.03.2012 and 23.03.2012). It should be noted that a water depth was not taken

from BH1 on the first monitoring round due to the standpipe being inaccessible. Free product was recorded in both boreholes during the second monitoring round.

5.3.30. Representative soil samples were collected from each entry at a variety of depths and were submitted for environmental testing (solid and leachate) which included heavy metals, sulphate, volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs), phenols, hydrocarbons, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) plus Waste Acceptance Criteria (WAC) tests.

Table 5.5 Summary of Made Ground within Geotechnics 2012 New Press investigation.

Entry	Depth (m bgl)	Made Ground Description
BH1	0.0-0.18	Made Ground: Reinforced concrete.
	0.19-1.10	Made Ground: Greyish brown sandy fine to coarse angular to subrounded gravel of sandstone with a low subrounded cobble content of sandstone.
BH2	0.0-0.19	Made Ground: Reinforced concrete.
	0.19-0.30	Made Ground: Brown very sandy fine to coarse angular gravel of sandstone
	0.30-0.95	Made Ground: Brown slightly clayey sandy fine to coarse angular to subrounded gravel of sandstone

The results are not provided in report ref. PN122668.

Geotechnics, 2010, North Log Yard (report ref. PN092178)

5.3.31. This site investigation was undertaken in the existing log yard 239m to the north of the Site and involved the excavating of two trial pits to between 2.6m and 3.5m bgl.

5.3.32. The shallow ground conditions were generally consistent and similar to those reported in the log yard area with made ground overlying silty sands and gravels (see summary provided at Table 5.4).

Table 5.4 Summary of Made Ground with Geotechnics 2010 North Log Yard investigation.

Entry	Depth (m bgl)	Made Ground Description
TP01	0.0-0.05	Made Ground: Dark brown very gravelly wood mulch and bark. Gravel is medium to coarse angular of limestone.
	0.05-0.60	Made Ground: Grey slightly silty sandy fine to coarse angular gravel of limestone.
	0.60-0.90	Made Ground: Very stiff pinkish brown slightly sandy gravelly clay. Gravel is fine to coarse angular of sandstone and limestone.
	0.90-2.40	Made Ground: Stiff grey mottled yellowish brown slightly sandy gravelly clay, locally silt with low cobble content of brick, concrete, and pottery.
	2.40-2.70	Possible Made Ground: Dark brown fine to coarse angular gravel.

	3.40-5.70	Made Ground: Firm to stiff brown slightly sandy slightly gravelly clay/silt. Gravel is fine angular to subrounded of various lithologies including wood.
TP02	0.0-0.05	Made Ground: Dark brown very gravelly wood mulch and bark. Gravel is medium to coarse angular of limestone.
	0.05-0.50	Made Ground: Grey slightly silty sandy fine to coarse angular gravel of limestone.
	0.50-0.80	Made Ground: Very stiff pinkish brown gravelly clay. Gravel is fine to coarse angular of limestone.
	0.80-2.60	Made Ground: Firm to stiff grey mottled yellowish brown slightly silty

5.3.33. This site investigation analysed for a range of metals, soil organic matter, pH, and soluble sulphate, however, the results are not provided.

5.3.34. A slight ingress of groundwater was observed from the surface and the gravels.

Geotechnics, 2007, Proposed Warehouse Extension (report ref. PN071450)

5.3.35. This site investigation was undertaken in the existing log yard 232m to the east of the Site and involved the drilling of seven window sampling boreholes to between 4m and 7m bgl.

5.3.36. The shallow ground conditions were generally consistent and similar to those reported in the log yard area with made ground overlying silty sands and gravels in five of the seven boreholes (see summary provided at Table 5.3). The other two reported topsoil overlying silts and sands.

Table 5.3 Summary of Made Ground with Geotechnics 2007 Warehouse investigation.

Entry	Depth (m bgl)	Made Ground Description
WS1	0.0-0.25	Made Ground: Concrete
WS4	0.0-0.20	Made Ground: Brown slightly gravelly slightly sandy silt
WS5	0.0-1.00	Made Ground: Brown slightly sandy slightly gravelly silt. Gravel is fine to coarse subangular subrounded of various lithologies including brick.
	1.00-5.00	Made Ground: Firm brown mottled red slightly sandy slightly gravelly silt. Gravel is fine to coarse subangular to rounded of various lithologies including coal and brick.
WS6	0.0-3.40	Made Ground: Firm brown slightly sandy slightly gravelly silt. Gravel is fine to coarse subangular to rounded of various lithologies including brick.
	3.40-5.70	Made Ground: Firm to stiff brown slightly sandy slightly gravelly clay/silt. Gravel is fine angular to subrounded of various lithologies including wood.
WS7	0.0-1.00	Made Ground: brown slightly sandy slightly gravelly silt. Gravel is fine to coarse subangular to subrounded of various lithologies and brick.
	1.0-5.50	Made Ground: Firm brown slightly sandy gravelly clay/silt. Gravel is fine to coarse subangular to subrounded of various lithologies and brick.

5.3.37. This site investigation analysed for a range of metals, soil organic matter, pH, and soluble sulphate, however, the results are not provided.

5.3.38. Groundwater was not encountered.

Geotechnics (2007) – Proposed Log Yard Improvements (report ref. PN071425)

5.3.39. This site investigation was undertaken in the existing log yard 65m to the north of the Proposed Development Site and involved the drilling of five cable percussion boreholes to 15m bgl with groundwater monitoring pipes installed.

5.3.40. Ground conditions were largely consistent, comprising of made ground overlying a layer of brown/grey sand onto grey locally mottled brown clay and silt. A description of the made ground and depths recorded are summarised in in Table 5.2 below.

5.3.41. Boreholes were installed with groundwater and gas monitoring standpipes with five rounds of monitoring undertaken (15.02.2007, 19.02.2007, 28.02.2007, 07.03.2007, and 15.03.2007). Monitoring recorded variable groundwater depth results across the investigation area ranging from the shallowest in BH4 (1.90m to 3.30m bgl) to the deepest in BH2 (2.00m to 3.50m bgl).

5.3.42. During the monitoring rounds, five rounds of ground gas monitoring were also undertaken. Concentrations of methane were generally recorded between below detection limits and 7%vol until the 5th monitoring round where a peak of 49% v/v was recorded in BH5 (250m north of Site). Carbon dioxide was reported with a maximum concentration of 13%v/v in BH5 on the same day as the highest peak of methane. However, closer boreholes to the Site did not report elevated ground gas concentrations. Positive gas flows were recorded across the monitoring period between 0.1 and 1.3 l/hr. Depleted levels of oxygen were also reported across the monitoring period reaching a low of 0.8%vol in BH1 on the 3rd monitoring round.

5.3.43. Representative soil samples were collected from each entry at a variety of depths and were submitted for environmental testing (solid and leachate) which included heavy metals, sulphate, phenols, hydrocarbons, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) plus Waste Acceptance Criteria (WAC) tests.

Table 5.2. Summary of Made Ground from Geotechnics 2007 Log Yard Investigation

Entry	Depth (m bgl)	Made Ground Description
BH1	0.0-0.30	Made Ground: Brown ashy slightly silty gravelly fine to coarse sand. Gravel is fine to medium subangular to subrounded of various lithologies.
	0.3-1.00	Made Ground: Grey-black slightly silty gravelly fine to medium sand. Gravel is fine to coarse angular to subrounded and occasionally tabular of slate.
	1.00-3.80	Made Ground: Grey/black slightly gravelly sandy clay. Gravel is fine to medium subangular to subrounded of brick, wood, concrete, and various lithologies.
BH2	0.0-4.90	Made Ground: Brown slightly silty gravelly fine to coarse sand. Gravel is fine to coarse subangular to subrounded of concrete, sandstone, and various lithologies.
BH3	0.0-0.70	Made Ground: Brown slightly silty gravelly fine to coarse sand. Gravel is fine to coarse angular to subrounded of pottery, slate, and various lithologies.
BH4	0.0-0.40	Made Ground: Brown slightly clayey sandy fine to coarse subangular to subrounded gravel with many cobbles.
BH5	0.0-2.30	Made Ground: Brown slightly silty gravelly fine to coarse sand. Gravel is fine to coarse subangular to of various lithologies.
	2.30-3.90	Made Ground: Fine brown mottled grey reworked slightly gravelly clay.

5.3.44. Concentrations of metals and inorganic compounds appear to be significantly below contaminant threshold limits in soil for a proposed commercial land use whilst PAHs were typically below analytical detection limits. Hydrocarbons were reported in a total C10-C40 banding and reported concentrations between 110- 3,500mg/kg.

Alfred McAlpine Construction (1991) – Intrusive Investigation (report ref. 91204)

5.3.45. Details of this investigation are not included in the document provided to SGP Fourteen boreholes have been identified: ‘BHA, BHB, BHC, BHD, BHE, BHF, BHG, BHH, and BHJ’ and ‘BH1, BH2, BH3, BH7, and BH8’. Of these, three are located on the Proposed Development Site as follows: BHB, BHC, and BH7. The document provided only includes logs for BH1, BHB, BHC, BHF, BHG, BHH, BHJ.

5.3.46. Ground conditions were largely consistent, comprising of made ground overlying a layer of sands and gravels onto grey silty clay. A description of the made ground and depths recorded are summarised in in Table 5.1 below.

Table 5.1. Summary of Made Ground from Geotechnics 2007 Log Yard Investigation

Entry	Depth (m bgl)	Made Ground Description
BHB*	0.0-0.20	Made Ground: Concrete
	0.20-0.40	Made Ground: Roadstone
	0.4-2.1	Made Ground: Medium dense grey stone
BHC*	0.0-0.20	Made Ground: Reinforced concrete
	0.2-0.60	Made Ground: Roadstone
	0.6-1.40	Made Ground: Stone
BHF	0.0-2.00	Made Ground: Stone and sawdust (plastic sheet at 0.2m)
	2.0-2.4	Made Ground: Medium dense stone.
BHG	0.0-1.0	Made Ground: Stone (plastic sheet at 1.0m)
	1.0-1.5	Made Ground: Dense stone
	1.5-2.0	Made Ground: Dense grey stony
BHH	0.0-0.2	Made Ground: Concrete
	0.2-2.0	Made Ground: Plastic sheet over dense stone
BHJ	0.0-0.2	Topsoil
	0.2-2.7	Made Ground: Dense stone and shale
BH1	0.0-0.20	Made Ground: Concrete
	0.20-0.45	Made Ground: Stone.
	0.45-2.40	Made Ground: Dense grey stone

***Blue highlight indicates the borehole is located with the Proposed Development Area**

5.3.47. Geotechnical results have been included but contamination results are not included in report ref. 91204.

5.3.48. Groundwater was encountered within BHB at 4.0m bgl, within silty clay and within BHC at 8.5m bgl within sands and gravels (glaciofluvial deposits).

6. Development History and Current Status

6.1. Historical Development

6.1.1. A summary of significant features, developments and land uses shown on historical Ordnance Survey maps is provided below. The full summary table is provided in Appendix E. Copies of selected maps are provided in Drawings D01-07.

6.1.2. Only key features of interest are summarised below; for full details reference should be made to the complete set of historical mapping, as provided in the Groundsure report (contained in Appendix C):

- Historical mapping shows that the Proposed Development Site was part of wider agricultural fields with drainage ditches until 1988 when a railway spur enters the northern section of the Site. In the 1970s, the chipboard manufacturer Kronospan, expands northwards with roadways crossing onto the Proposed Development Site and a small structure extending onto the southwest portion of the Site. By 1995, another large building is constructed in the southwest. This is understood to be the current gas turbine hall. Satellite imagery from 2018 shows four large silos in the north of the Site. These are understood to store wood chips and sawdust for Kronospan's manufacturing processes.

6.2. Adequacy of Historical Information

6.2.1. Whilst there are some gaps in the historical map coverage, it is considered that the available mapping provides adequate coverage of the Site and immediate surroundings to inform the assessment of potential ground conditions and contamination status of the Site.

6.3. Present Land Condition

6.3.1. A summary of existing significant features, recent activities and land uses shown on contemporaneous aerial photography, Site inspections and anecdotal evidence is provided in Table 6.1 below.

Table 6.1: Present Land Condition

Site Description	The Site is part of the wider existing Kronospan Facility. The majority of the Site is used as throughfares and open wood storage areas. Existing conveyor belts cross the Site approximately 25-30m above ground. The existing gas turbines 1 and 2 are on the southern extent of the Site.
Topography of Site & Immediate Site surroundings	The Site lies flat due to the surrounding factory. The immediate surrounding area is dominated by various process buildings associated with Kronospan chipboard manufacturing works.
Access	Current access to the Site from the southeast via the wider Kronospan Site off the B5070. Future access to the Proposed Development (during operation) would be

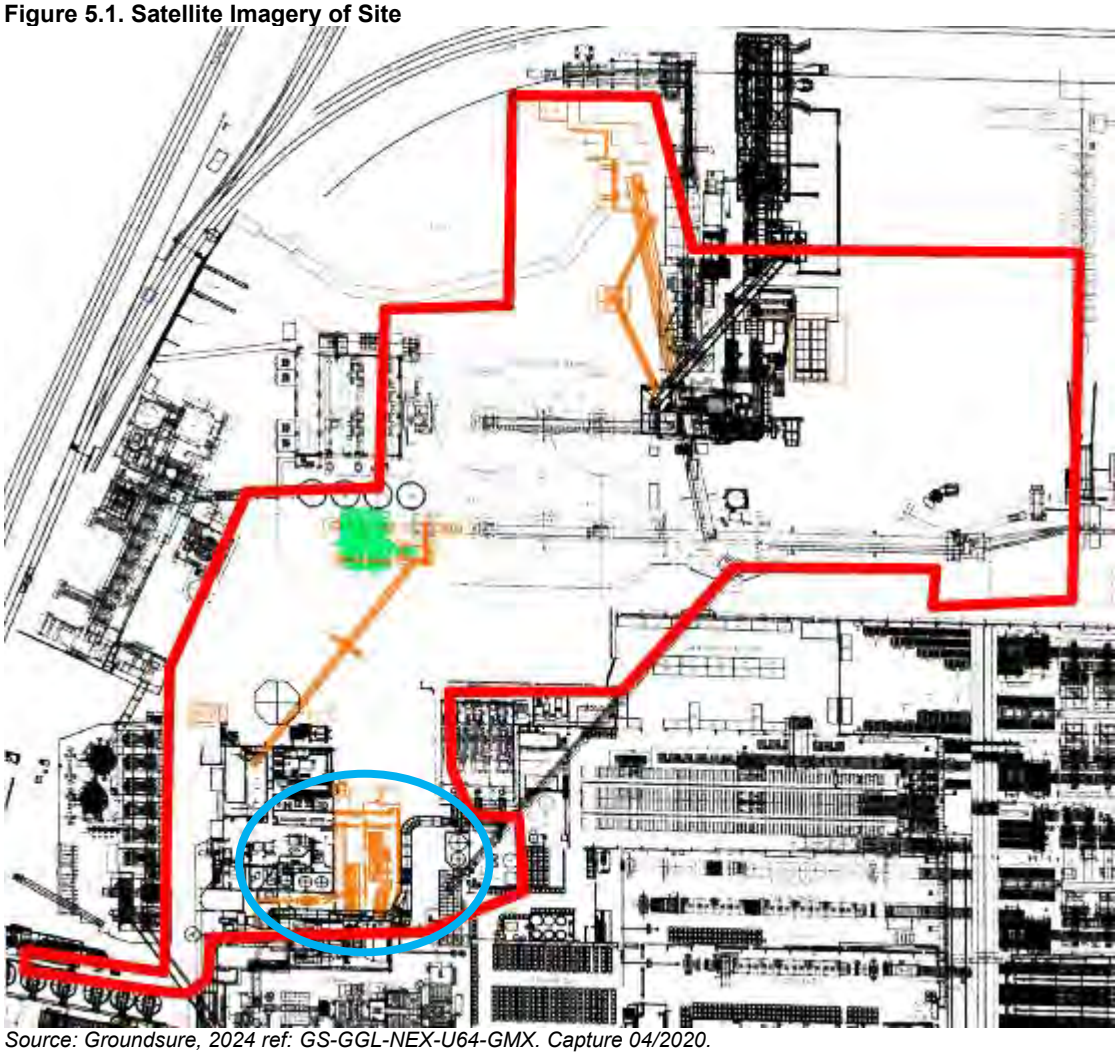
	via the North Access Road recently granted planning permission under planning reference P/2022/1080.
Boundaries	The Site is bounded on all sides by the Kronospan manufacturing plant consisting of silos, gas engines, MDF dryer, MDF refiner, MDF water treatment plant, treated paper storage, and conveyor belts transferring materials across Site.
Services / Wayleaves	Service plans provided by the client show the following services crossing the Site: • 600mm concrete surface water drainage pipe • 11Kv high voltage cables • 24-bar high pressure gas main • Foul sewer (discharges to the mains sewers) • Welsh water foul sewer (discharges to the mains sewers)
Rights of Way	No rights of way cross the Site.
Structures	In the north four large storage silos and a metal screening plant are present, a conveyor belt crosses the Site from northeast to southwest, and in the south, the gas turbine building is present. The storage silos will remain as part of the development, the metal screening plant will be relocated to the east, and the gas turbine hall will be removed. The proposed conveyor belt area will be placed above ground at a similar height to the existing conveyor belts.
Drainage	The Site is covered in hardstanding and the drainage is directed through a below ground surface water drainage system to an interceptor before being discharged into three surface water settling lagoons. Surface water drainage pipes cross the Site in the east, west, and north. No treatment is undertaken on the Site considered in this report, it is carried northwards to the surface water lagoons.
Surfaces / Vegetation	The Site was surfaced with concrete hardstanding with no vegetation present. The concrete was observed in good condition. Patches of it have been renewed.

6.4. Environmental Permit

6.4.1. Operations being undertaken within the wider Kronospan Site has an environmental permit for operating (ref: EPR/BW9999IG). The first version of the permit was submitted in November 2003 and has undergone thirteen variations since then. The most recent variation was in September 2023. Most of the monitoring relates to air pollution but monitoring is undertaken for surface water discharge into the Afon Bradley, a stream located 515m to the north of the proposed CHP Site. The discharge is analysed for pH, total suspended solids, ammonia, formaldehyde, and oil and grease daily when discharging and biological oxygen demand is tested three times a week. The results are reported quarterly to NRW.

6.4.2. Waste ash from the boilers is also tested quarterly for heavy metals, dioxins/furans, PCBs, and loss on ignition.

Figure 5.1. Satellite Imagery of Site



Source: Groundsure, 2024 ref: GS-GGL-NEX-U64-GMX. Capture 04/2020.
Red line indicates Site boundary
Orange lines indicate conveyor belts to be removed
Green indicates the metal screening plant being relocated
Blue circle highlights the existing gas turbine hall to be removed

6.5. Local Authority Consultation

6.5.1. SGP contacted WCBC requesting any information they hold regarding the contamination status of the Site. The response is provided in Appendix F and has been summarised below:

- The Council has records of one historical landfill which is at 130m northeast of the Site and is understood to be a historical railway siding (Bryn Kinnalt Siding).
- The council has no records of any private water abstractions on Site.
- The Site is not listed on the WCBC Part IIA contaminated Land Register.

7. Site Characterisation

7.1. The physical setting of the Site has been derived from the review of information detailed in Section 3. Key details are summarised below; for full details reference should be made to the supporting information provided in Appendix C.

Table 7.1: Environmental Setting

<table>
<tr><td>Setting and Topography</td><td>The Site lies approximately 500m to the northwest of the village of Chirk within the Kronospan chipboard manufacturing factory. The Site is currently located at an elevation of 100m Above Ordnance Datum (AOD) as shown on contemporary OS mapping.</td></tr>
<tr><td>Geology / Ground Conditions</td><td>BGS, historical OS mapping and Site observations indicate the potential ground conditions to be:

Made ground: BGS mapping does not report the presence of made ground (artificial deposit) on Site. However, due to the presence of hardstanding site-wide, made ground is anticipated across the whole Site. Kronospan employees stated that the concrete and subbase on Site is approximately between 600-900mm thick. The makeup of the ground as placed in the 1970s is described as follows; Concrete containing A393 mesh, a visqueen membrane, 150-200mm MOT type 1 aggregate, a layer of terram, and 500mm of 6F2 compacted in layers. The concrete has been patched and repaired in sections since the 1970s.

Superficial Deposits: BGS mapping shows the entire Site to be underlain by Glaciofluvial Deposits of Sands and Gravels in the west and Devensian Till in the east.

Bedrock: BGS mapping shows the Site to be underlain by bedrock of Pennine Lower and Medium Coal Measures Formation – Mudstone, Siltstone, and Sandstone.

Faults: - No faults are mapped crossing the Site. The closest fault is located at around 390m to the west.

Previous Site Investigation Records:
There are multiple previous site investigations which had entries within the footprint of the Proposed Development (Drawing D08). Those with available exploratory hole logs are summarised as follows:

<table>
<tr><th>Strata</th><th>Minimum depth encountered (m bgl)</th><th>Maximum depth encountered (m bgl)</th></tr>
<tr><td>Made ground</td><td>0.0</td><td>2.1</td></tr>
<tr><td>Superficial Deposits (Sands and gravels) (Located in the east of the Site)</td><td>0.7</td><td>25.0</td></tr>
<tr><td>Superficial Deposits (Glacial till) (Located in the east of the Site)</td><td>1.0</td><td>25.0</td></tr>
</table>

The logs have been fully summarised in Appendix G.
BGS Records
There are no BGS records located on Site.</td></tr>
</table>

Natural Ground Stability	The Site is in an area where risks from shrinking and swelling clays, running sands, collapsible deposits, and landslides are considered very low and risks from compressible ground and ground dissolution of rocks are considered negligible.
Hydrology and Flooding	There are no watercourses located on Site. The closest watercourse is an unnamed inland river on the ground surface 77m to the west. The Llangollen canal is also located 120m to the west. The Site is at a moderate risk of groundwater flooding in the west and at low risk in the east. In the east, the Site is at risk of surface water flooding in a 1 in 1000 return period at a depth of 0.1-0.3m.
Hydrogeology / Groundwater	The aquifer designations of the underlying geological units are: <u>Superficial Deposits</u>: Glaciofluvial Deposits: Secondary A aquifer. (intergranular flow type with high to very high vulnerability). Devensian Till: Secondary Undifferentiated aquifer. (Mixed flow type with low to high vulnerability). <u>Bedrock:</u> Pennine Middle and Lower Coal Measures Formation – Secondary A aquifer The permeability on Site is recorded as predominantly via well connected fractures. Groundwater vulnerability is recorded as medium. The Site is not located in any Source Protection Zones. The Groundsure report notes a historical groundwater abstraction around 40m to the northeast (ref: 24/67/5/0080) which was used for process water and evaporative cooling from the 1980s to 2006. One active groundwater abstraction remains (license no: WA/067/0005/015) used for evaporative cooling using an annual volume of 160,000m^3. This has been active since February 2016 and expires in March 2027. These are related to Kronospan. Kronospan has also used surface water extraction from the Llangollen Canal located at around 340m north, but it is understood that the abstraction licenses are no longer active.
Excavation / Mining	No surface ground workings are recorded on Site and the Site is not located in a Coal Mining Risk Area according to the Coal Authority.
Landfill / Waste Disposal	The Groundsure report shows that there are no landfills on Site. One historical landfill is located within 500m of the Site. This includes: • Kronospan Railway Cutting, Chirk – 368m S. No other details are provided. The Contaminated Land Officer also identified the following: • Bryn Kinnalt Siding – 130m north. The application to infill part of the cutting line was submitted to the council in the late 1940s. No details on the type of waste it received

	is available. Natural Resource Wales also refer to a 'Kronospan Railway Cutting' (ref: 6955/0079). However, no further information is available, and the Contaminated Land Team believe this is Bryn Kinnalt Siding. SGP, however, believe this is related to the historical landfill identified by Groundsure. No waste exemptions are reported within 250m of the Site.
Pollution Incidents	The Groundsure reports that there are no recorded pollution incidents on Site. Two incidents have occurred within 250m of the Site as follows: • 17m E: Minor (Category 3) impact to air reported 12/08/2016. Pollution description was 'smoke'. Incident reference: 1604618. There was no impact to land or water reported. No further details are available. • 118m SE: Minor (Category 3) impact to air reported 16/07/2001. Pollution description was 'Other Pollutant'. Incident reference: 16853. No further details are available. These are assumed to be related to the Kronospan facility.
Neighbouring Land use / Nearby Contaminative Activities	The Site itself is located within wider chipboard manufacturing factory (Kronospan). Multiple tanks have been identified to in the surrounding factory area. The closest is located 27m to the southwest and is labelled 'unspecified tanks'. The Kronospan facility has its own formalin plant 70m to the east which converts methanol to formaldehyde for use within the internal resin-making facility and includes a tank farm and storage areas housing methanol, formaldehyde, acids and other chemicals. According to the environmental permit (EPR/BW9999IG) monitoring of surface water discharge to the Afon Bradley (515m N) is undertaken for pH, total suspended solids, ammonia, formaldehyde, and oil and grease daily when discharging and biological oxygen demand is testing 3 times a week. The results are reported quarterly. SGP have not been provided with these results. Testing of the waste ash is also undertaken quarterly for heavy metals, dioxins/furans, PCBs, and loss on ignition. The following materials are used / produced as residue at Kronospan with pollutant potential were identified by Fichtner in 2023: - Recycled wood fibre; - Green dye; - Sodium hypochlorite 14/15%; - Phenolics; - Hydrogen peroxide; - Fuel oil; - By-product: Ash from flue gas treatment on biomass plant - By-product: Incinerator bottom ash However, these are either stored in silos, IBCs, or dedicated storage tanks above the concrete hardstanding with measures to prevent overfilling / spillages in place.
Radon	The Site lies within an area where between 5-10% of property are estimated to be at or above the Radon Action Level and therefore the installation of basic radon protection measures will

	be necessary within new buildings. However, a radon assessment could be undertaken to confirm this.
UXO Risk	The UXO preliminary risk assessment identifies the Site as located within an area of Low Risk and no further UXO investigation is required. A copy of the UXO preliminary risk assessment is provided in Appendix D.
Nature Conservation	Designated Ancient Woodland is (Canal Wood) is located 65m to the west.

8. Preliminary Conceptual Site Model

8.1. Methodology

8.1.1. Information from the desk study has been used to identify the likely source-pathway-target relationships that may exist during the construction and operation of the Proposed Development. Principal factors that may determine potential sources of contaminants at the Site, receptor vulnerability and potential pathways have been identified and each assessed in turn to derive a Conceptual Site Model (CSM).

8.2. On-Site Contamination Sources

8.2.1. No potentially significant sources of on-site contamination have been identified on Site. The following are not considered likely to be sources of potentially significant contamination On-Site:

- The Site has been greenfield until the development of the Kronospan facility in the 1970s where the Site has been covered in either hardstanding or buildings.

- Made ground has been recorded on the Proposed Development Site but is only of limited thickness comprising of concrete overlaying reworked natural soils of a limited depth. Such made ground soils are unlikely to contain contaminant concentrations that exceed commercial guideline values, as has been proven by previous site investigations entries on Site and across other areas of the Kronospan Facility.

- Vehicles move across Site regularly, transferring materials between neighbouring buildings. Hydrocarbon leaks and spills may have occurred associated with these movements. However, no oil or chemical staining was observed during the walkover and the underlying drainage system was last checked in in early 2024 with no leaks or breakages reported.

8.2.2. According to the Groundsure report, there have been no pollution incidents reported on or to have affected the Site.

8.2.3. The asbestos register for the Gas Turbine Hall has been reviewed and no asbestos is recorded within the building fabric.

8.3. Off-Site Sources

8.3.1. Potentially significant sources of off-site contamination have been summarised as follows:

- The immediate surrounding area hosts the Kronospan MDF and chipboard manufacturing facility. It contains the following contamination sources:
    - Formalin Plant 70m to the east
    - Electrical substations 70m southwest and 145m southwest.

- Waste ashes stored 70m northwest

The processes and waste from all of the above facilities are controlled by an Environmental Permit (ref: EPR/BW9999IG) and, therefore, are unlikely to affect the Site.

- Bryn Kinnalt Siding historical landfill identified by the Contaminated Land Officer at WCBC 130m north. No information is available regarding the type of waste it accepted. This area was redeveloped in the 1990s and incorporated into the Kronospan log yard area. Previous ground gas monitoring undertaken to the north of the Site between 2007 and 2023 generally reported methane concentrations between below detection limits (<0.1%vol) and 7%v/v and carbon dioxide concentrations between below detection limits (<0.1%vol) and 4.6%v/v. Positive gas glows were reported 0.1l/hr and 5.2l/hr. One monitoring round in 2007 reported a peak methane concentration of 49%vol and carbon dioxide peak of 13%vol. This borehole was located 250m north of the Site within the log yard area. Gas monitoring boreholes located between the elevated borehole and the Site reported methane concentrations between <0.1%v/v and 0.6%v/v and carbon dioxide concentrations between <0.1%v/v and 5.6%v/v. This indicates that gas ingress to the proposed development Site is likely to be limited and the risk is therefore considered to be low.

- A second historical landfill has been identified 368m to the south named 'Kronospan Railway Cutting'. No information regarding the dates of operation or the type of waste it accepted is available. No evidence of it can be seen on the historical mapping and gas monitoring boreholes between the Site and the landfill did not report elevated gas concentrations. The gas migration risk from the historical landfill is considered to be low.

- Former railway sidings and a railway line were previously located in the north of the Site. Contaminants typical of such facilities include heavy metals, metalloids, PAHs, asbestos, phenols, heavy end hydrocarbons. These were removed in the 1960s and the area has since been redeveloped so is therefore unlikely to impact the development of the Site.

8.4. Potential Receptors

8.4.1. The principal vulnerable receptors with respect to potential exposure to any soil contamination that may be present for the proposed use will be:

- Construction workers who may be exposed to contaminants during preparatory and construction / and maintenance worker who may be involved in future refurbishment works;
- Future Site users and Site visitors;
- Adjacent Site neighbours during construction;
- Proposed buildings / structures;
- Controlled waters: Surface waters including Afon Bradley and Llangollen Canal; groundwater within underlying aquifers (Glaciofluvial deposits supporting a Secondary A

aquifer and the Devensian Till supporting a Secondary Undifferentiated aquifer with the underlying Pennine Middle and Lower Coal Measures Formation supporting a Secondary A aquifer)

8.5. Human Health Risk Assessment

8.5.1. The potential for significant contamination to be present that may pose an acute risk to construction workers during the development is considered low and the long-term risks to future Site users are considered as low based on the likely contaminants present and the nature of the Proposed Development.

8.5.2. Made ground is anticipated to be present but is likely to be of limited depth and typically of inert materials as has been encountered within the wider factory area. In any case, the Proposed Development Site is to be provided with concrete hardstanding and there will be no direct contact between future site users and site soils. Any contamination that may be present within the shallow soils is therefore unlikely to pose a risk to future users.

8.5.3. Gas turbines 1 and 2 are located in the southwest of the Site and will require demolition to facilitate construction of the Proposed Development. Kronospan confirmed during the Site walkover that the building does not contain any asbestos containing materials (ACM). The metal screening plant being relocated is aboveground and constructed of metal, therefore, no ACM is present.

8.6. Controlled Waters Risk Assessment

8.6.1. Surface water run-off from the Site is directed to the main site drainage system, interceptor and lagoons where it is typically re-used on Site or discharged to the Afon Bradley under the terms of the discharge consent. Any contamination of the surface run-off that may occur during the construction activities, or subsequent operations, will be contained and the potential for a contamination risk to the Afon Bradley is therefore low and will not have a negative effect on the current on-going risk to controlled water arising from the Kronospan site.

8.6.2. Significant contamination is not expected to be present on Site that may be mobilised into the shallow groundwater during the construction activities. Kronospan has not advised of any known on-going concerns with regards to contamination of the Afon Bradley arising from diffuse pollution from the site. Based on the existing information, the potential for construction activities to result in the mobilisation of shallow groundwater contamination is considered as low. However, in the event any unexpected contamination is encountered during construction works suitable precautions will be necessary to ensure contamination mobilisation does not occur.

8.6.3. Following the completion of the development, the presence of extensive concrete hardstanding will continue to restrict the infiltration of rainwater into the ground and mobilisation of any contaminants into the shallow groundwater.

8.6.4. The deeper groundwater contained within the superficial deposits underlying the site are abstracted for use within the Kronospan manufacturing process and for cooling water. Given the available information on the contamination status of the soils across the Site and shallow groundwaters, no significant impacts from the Proposed Development on the deeper groundwater are expected.

8.6.5. Kronospan has advised that the Proposed Development will not require additional water abstraction and use the presently licenced.

8.7. Property Risk Assessment

8.7.1. Based on current available information for elsewhere on and around the Site, contaminants are not anticipated to be present that may pose a risk to proposed structures although a Geotechnical investigation will be warranted to support detailed design.

8.8. Preliminary Conceptual Site Model (CSM)

8.8.1. The preliminary CSM has been derived for the Site using the information described above, describing the potential contamination sources, pathways and receptors and is summarised below in Table 8.1.

8.8.2. The approach to the risk assessment summarised below in Table 8.1, follows the methodology presented within Ciria C552 ‘Contaminated Land Risk Assessment A Guide to Good Practice’, further details of which, are provided in Appendix G.

Table 8.1: Preliminary Conceptual Site Model

Receptor	Source / Contaminant	Pathway / Exposure	Severity/ Consequence of Risk	Probability of Risk Occurring	Anticipated Risk (in absence of mitigation)	Further Works Recommended
1. humans – construction workers	Metals / PAHs / petroleum hydrocarbons	dermal contact / ingestion / inhalation – short term exposure	**Mild**	**Low Likelihood** *Low Likelihood* Made ground of limited depth and inert composition anticipated to be present across the site. The chemical nature and matrix of the made ground is unknown but it is not anticipated to exceed commercial guideline values. Localised hydrocarbon contamination may be present associated with vehicle movements but significant contamination that would pose an acute risk not anticipated	**Low risk**	As proven by extensive site investigation undertaken on other areas of the Kronospan facility, it is considered unlikely that contaminants within soils will exceed commercial contaminant thresholds. Where ground is to be excavated or otherwise disturbed, sampling and chemical analysis of soils should be undertaken to determine its potential for reuse and/or options for offsite disposal. Appropriate personal protective equipment (PPE), Site management and good housekeeping should be implemented during construction works. Where confined space entry is required, suitably qualified personnel should enter confined spaces, adhering to an approved confined space protocol. Gas alarms should be used by personnel entering any confined space entries. A protocol for encountering unexpected contamination should be produced and implemented as part of the construction Environmental Management Plan (CEMP).

Receptor	Source / Contaminant	Pathway / Exposure	Severity/ Consequence of Risk	Probability of Risk Occurring	Anticipated Risk (in absence of mitigation)	Further Works Recommended
2. humans – future site users / visitors	Metals / PAHs / heavy hydrocarbons / phenols /solvents / asbestos	dermal contact / ingestion / inhalation	**Mild**	**Low Likelihood** – As discussed in section 1 above.	**Low risk**	As per Receptor 1 recommendations.
	ground gas (methane, carbon dioxide)	accumulation within voids, confined spaces and service runs to asphyxiant and/or otherwise toxic concentrations	**Severe**	**Low Likelihood** / Unlikely**–** A historical landfill (Bryn Kinnalt Siding) of unknown composition is located 130m to the north. Ground gas monitoring undertaken between the Site and the historical landfill did not report elevated methane or carbon dioxide.	**Low Risk**	Gas monitors are to be used by groundworkers as a precaution prior to entering any confined spaces.
	radon gas from bedrock		**Severe**	**Likely –** 5-10% of homes are estimated to be at or above the Action level.	**High Risk**	Radon protection measures are required in new buildings. However, advice from a radon specialist could be sought to determine the Site-specific requirements.
	VOC vapours from soil / groundwater sources		**Moderate**	**Unlikely** – Hydrocarbons associated with any spills or leaks that occurred with vehicle movements across the Site. However, no fuel, oil or chemical staining was observed during the walkover and no VOCs were reported in the previous site investigations.	**Low Risk**	As per Receptor 1 recommendations.
3. humans – adjacent site users	Metals / PAHs / heavy hydrocarbons / asbestos / solvents	windblown / dermal contact / ingestion / inhalation	**Mild**	**Low Likelihood** – Significant concentrations of mobile contaminants which could be remobilised during construction works are unlikely to be present.	**Low Risk**	Dust suppression techniques to be used during demolition (after asbestos removal) and during construction works to limit dust generation as required.

Receptor	Source / Contaminant	Pathway / Exposure	Severity/ Consequence of Risk	Probability of Risk Occurring	Anticipated Risk (in absence of mitigation)	Further Works Recommended
4. property / services	ground gas (methane, carbon dioxide)	accumulation within voids, confined spaces and service runs to flammable concentrations	**Severe**	**Low Likelihood –** As discussed in Receptor 2 (ground gas risk) above.	**Low Risk**	As per Receptor 2 (ground gas risk) recommendations.
	pH, sulphate.	chemical attack of buried concrete	**Mild**	**Unlikely –** Soils containing high pH and sulphates are unlikely to be present based on the available information. Previous investigation designated surrounding area concrete class as DS1-AC1. However, a geotechnical site investigation should be undertaken to confirm this.	**Low Risk**	A geotechnical site investigation should be undertaken to confirm the concrete class required on Site.
4. vegetation / landscaping	leachable metals / metalloids may be present within natural soils	plant uptake	**Negligible**	**Unlikely** – No vegetation present on Site or proposed.	**Negligible Risk**	No further works required.
5. ecosystems / protected habitats & species	leachable metals / metalloids / PAHs / hydrocarbons	Aeolian processes via dust deposition	**Negligible**	**Unlikely –** No protected species/habitats within 500m of the Site.	**Low Risk**	No further works required.

Receptor	Source / Contaminant	Pathway / Exposure	Severity/ Consequence of Risk	Probability of Risk Occurring	Anticipated Risk (in absence of mitigation)	Further Works Recommended
6. surface waters	PAHs / hydrocarbons	migration via shallow groundwater / surface water run-off.	**Mild**	**Unlikely** – A unnamed watercourse is located 77m west with the Llangollen canal lying 100m to the northwest. However, any run-off from the proposed development will be negligible compared to the wider Kronospan Facility.	**Low Risk**	No further works required.
7. groundwater *Glaciofluvial Deposits/Devensian Till – Secondary A Aquifer / Secondary Undifferentiated Aquifer (Superficial Deposits)* *Pennine Middle and Lower Coal Measures – Secondary A Aquifer (Bedrock)*	leachable metals / metalloids / PAHs / hydrocarbons	migration via saturated zone	**Moderate**	**Unlikely** – The presence of concrete hardstanding across the Site will prevent entry of surface water into the underlying ground and mobilisation of any contaminants; significant contamination not expected to be present that would be mobilised during construction activities. Results from the previous investigations show that leachable contaminants are unlikely to be present.	**Low Risk**	Piling is expected to be required on the larger proposed structures. A piling risk assessment should therefore be undertaken.

8.9. Other Considerations

Materials Management

8.9.1. Where material is to be disturbed and reused on Site or sent for offsite treatment or disposal, then representative sampling of and chemical analysis of the material will need to be undertaken by a suitably competent specialist.

8.9.2. Suitable materials management (such as materials management plan using DoWCoP[9] or registration of waste exemptions will need to be implemented to ensure reuse of materials on Site and imported to Site are suitable for use. For material of less than 1,000 tonnes, an exemption to the Waste Management Legislation may be applicable.

Ground Stability – Natural Hazards

8.9.3. The Site is in an area where risks from shrinking and swelling clays, running sands, collapsible deposits, and landslides are considered very low and risks from compressible ground and ground dissolution of rocks are considered negligible.

Overhead Powerlines and Other Site Services.

8.9.4. No dig exclusion zones may be imposed in conjunction with services that cross or are near to the Site, including, the underground services.

UXO

8.9.5. The UXO preliminary risk assessment identifies the Site as being located within an area of low risk for consideration of potential unexploded ordnance and hence no further assessment is warranted. See Appendix D for further details.

Radon

8.9.6. The Proposed Development Site is located in an area where 5-10% of new homes are estimated to be at or above the action level of 200Bq/m^3. Therefore, radon protection measures are required within new dwellings. However, as this is an industrial facility and the radon action level is higher (it is 300Bq/m^3 as opposed to 200Bq/m^3), further assessment could be undertaken by a radon specialist to determine site specific measures.

[9] Definition of Waste Code of Practice

9. Conclusions and Recommendations

9.1. Summary

9.1.1. The Site is part of the wider existing Kronospan MDF and Chipboard Production Facility and was developed in 1980s with the expansion of the original factory buildings. The majority of the Site Development Area comprises areas of hardstanding that are between existing Kronospan buildings. The southern part of the Site extends into the existing gas turbine building which will be demolished as part of the development.

9.2. Findings of Contamination Assessment

9.2.1. Made ground was observed across the Site as hardstanding and is anticipated across the Site underlying slabs. The nature of the made ground is likely to consist of concrete subbase and reworked natural materials but the presence of contaminants above commercial land use thresholds is not anticipated.

9.2.2. A historical landfill has been identified 130m to the north associated with the former railway sidings (Bryn Kinnalt Sidings). The area was redeveloped in the 1990s and gas monitoring undertaken between the Site and the former landfill did not identify elevated gas concentrations. No enclosed spaces are proposed as part of the CHP facility.

9.3. Recommendations

9.3.1. A Site investigation should be undertaken to characterise the ground conditions where ground is to be excavated to determine its potential for reuse and / or options for offsite disposal. Such works could be completed concurrently with any geotechnical investigation to inform the structural design / bearing capacity of the soils. Alternatively, this can be undertaken during groundworks at the point of excavation. This can be completed under a planning condition, post planning approval.

9.3.2. During the groundworks and construction phases, a CEMP should be prepared, approved and implemented in order to manage the potential risks to the environment from the construction phase. The CEMP should include a protocol to detail what to do if unexpected contamination is encountered during the construction phase.

9.3.3. Materials management on Site may be required where materials are proposed for reuse or there is the requirement to import soils and other fill materials to the Site.

9.3.4. A Piling risk assessment may be required where piling is proposed to assess whether any mitigation is required to prevent the mobilisation of contaminants.

9.3.5. Radon protection measures are required within new dwellings. However, as this is an industrial facility and the radon action level is higher (it is 300Bq/m^3 as opposed to 200Bq/m^3), further assessment could be undertaken by a radon specialist to determine site specific measures.

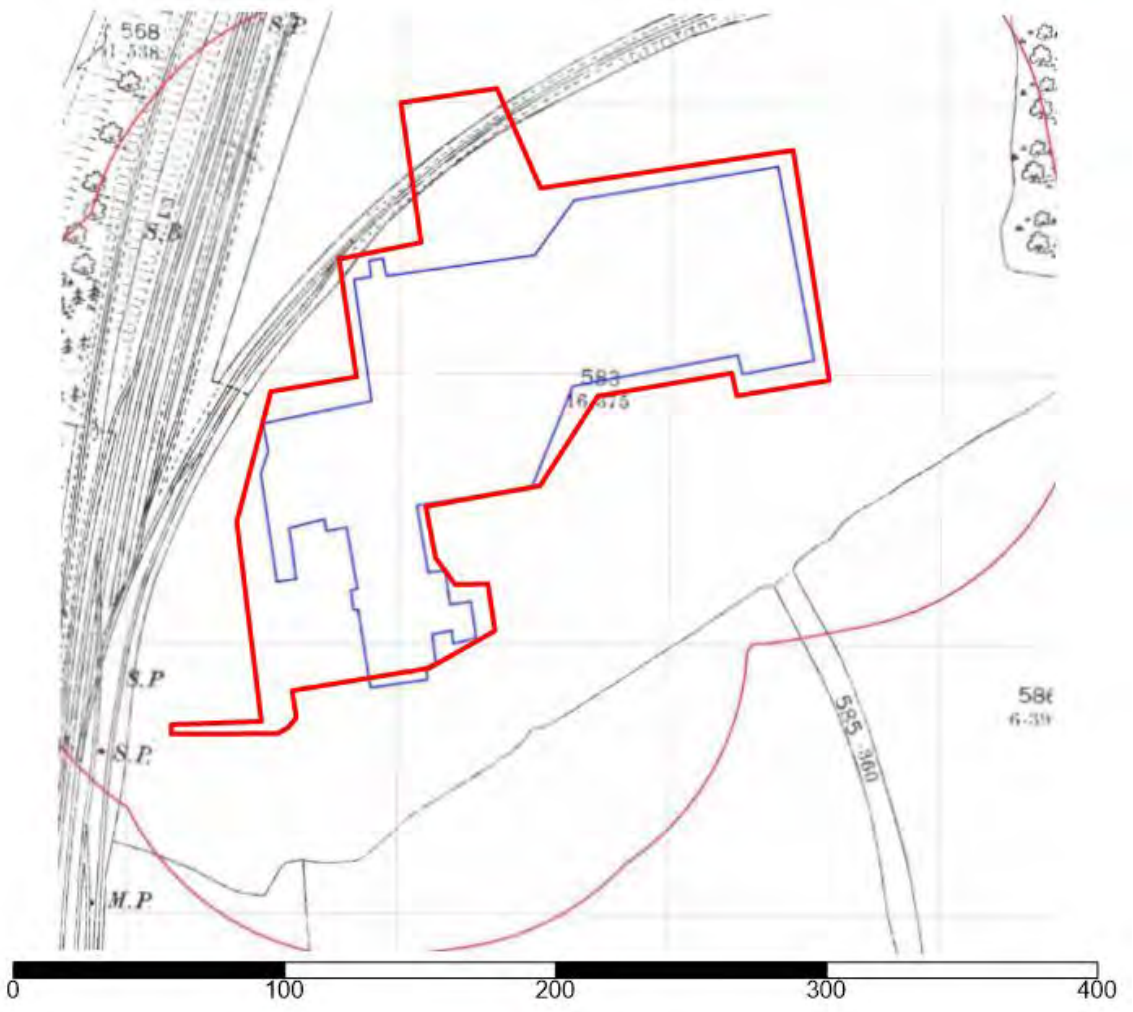
9.4. Limitations

9.4.1. This report has been prepared by SGP for the sole and exclusive use of Axis and Kronospan. Reasonable skill, care and diligence has been exercised within the budget available, and in accordance with the technical requirements of the brief. Notwithstanding the efforts made by the professional team in undertaking the assessment and preparing this report, it is possible that other ground conditions and contamination as yet undetected may exist. Reliance on the findings of this report must therefore be limited accordingly. Such reliance must be based on the whole report and not on extracts which may lead to incomplete or incorrect conclusions when taken out of context.

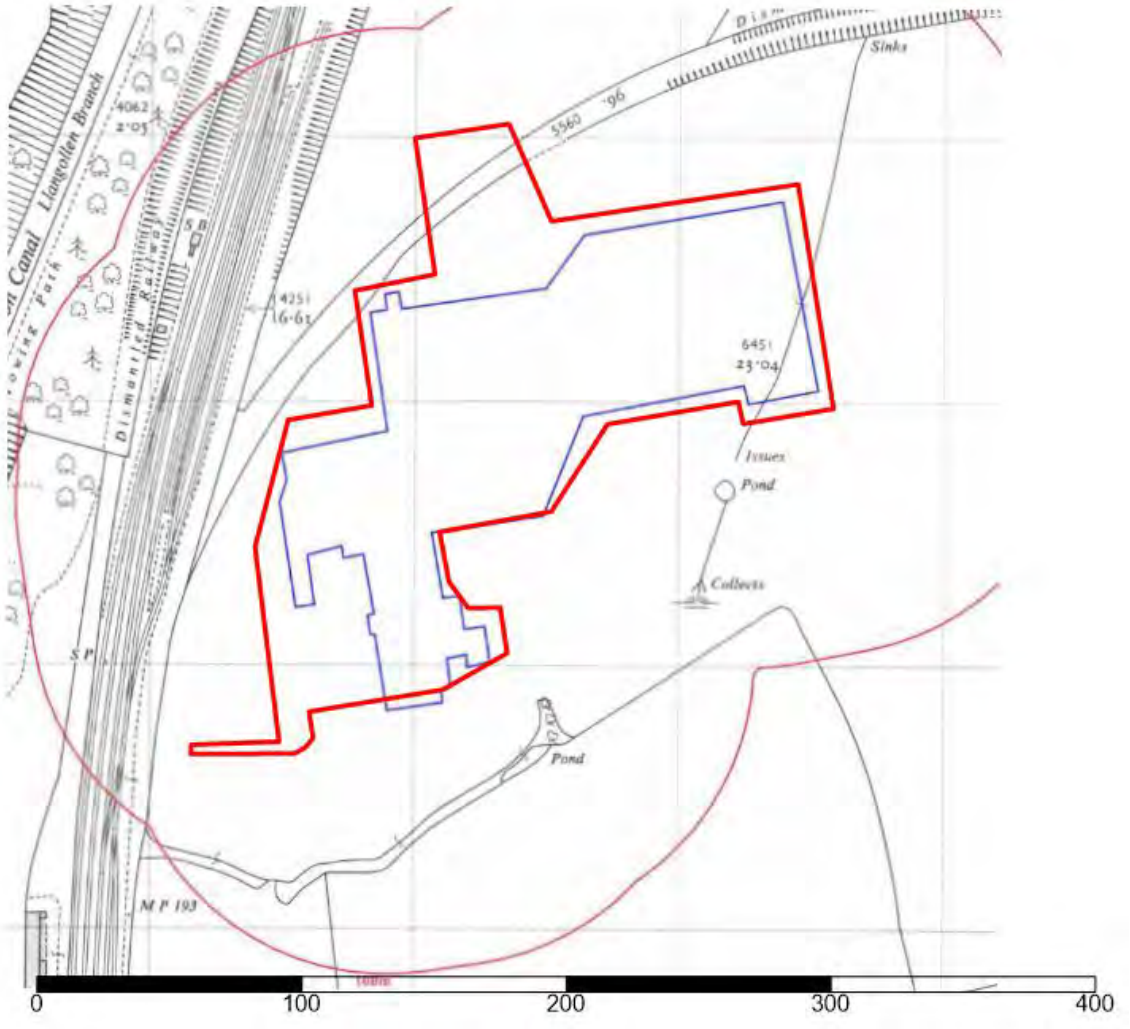
9.4.2. SGP reserves the right to alter any of the foregoing information in the event of new information being disclosed or provided and in the light of changes to legislation, guidelines and responses by the statutory and regulatory authorities.

DRAWINGS

D01: Historical Map – 1873 (1:2,500 scale)

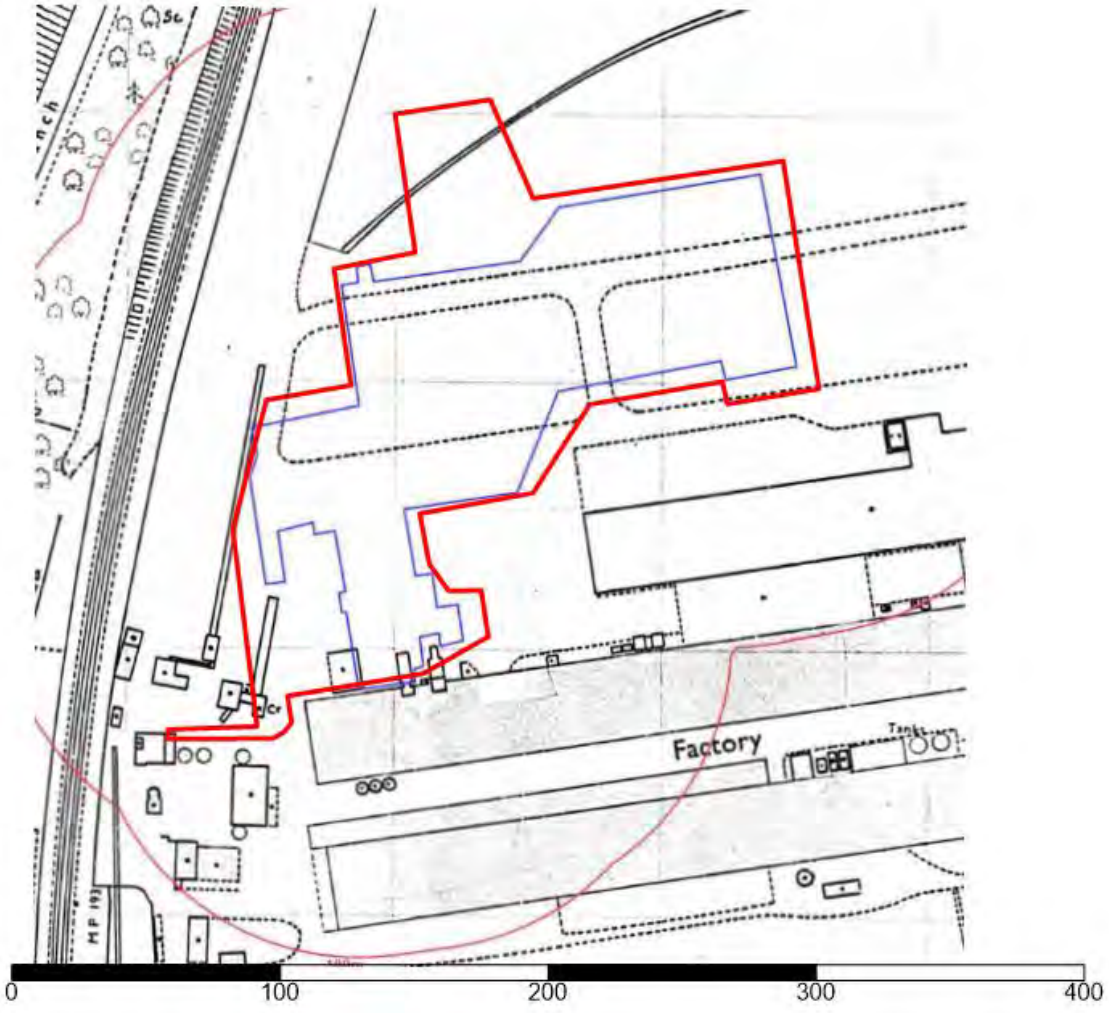


D02: Historical Map – 1899 (1:2,500 scale)

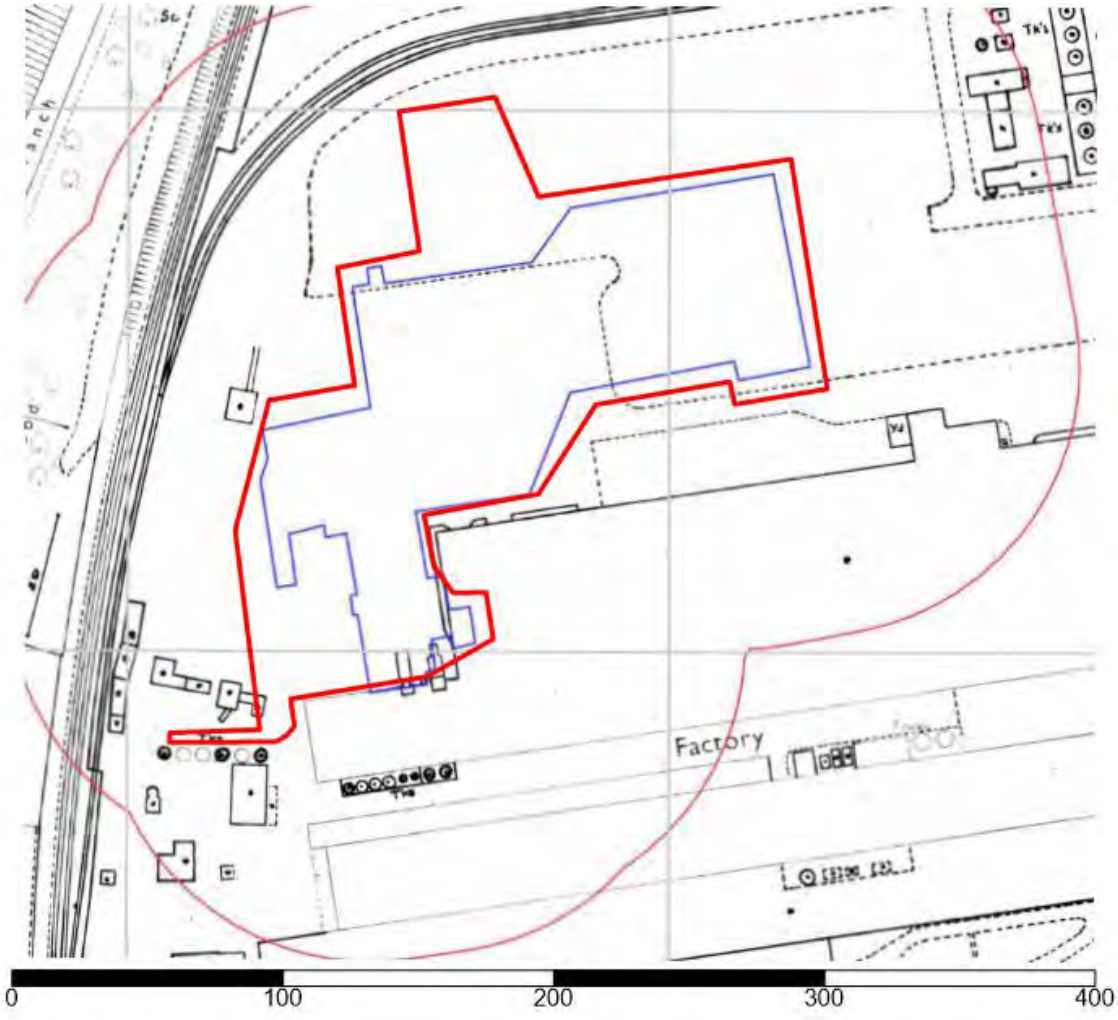


D03: Historical Map – 1960 (1:2,500 scale)

D04: Historical Map – 1973 (1:2,500 scale)



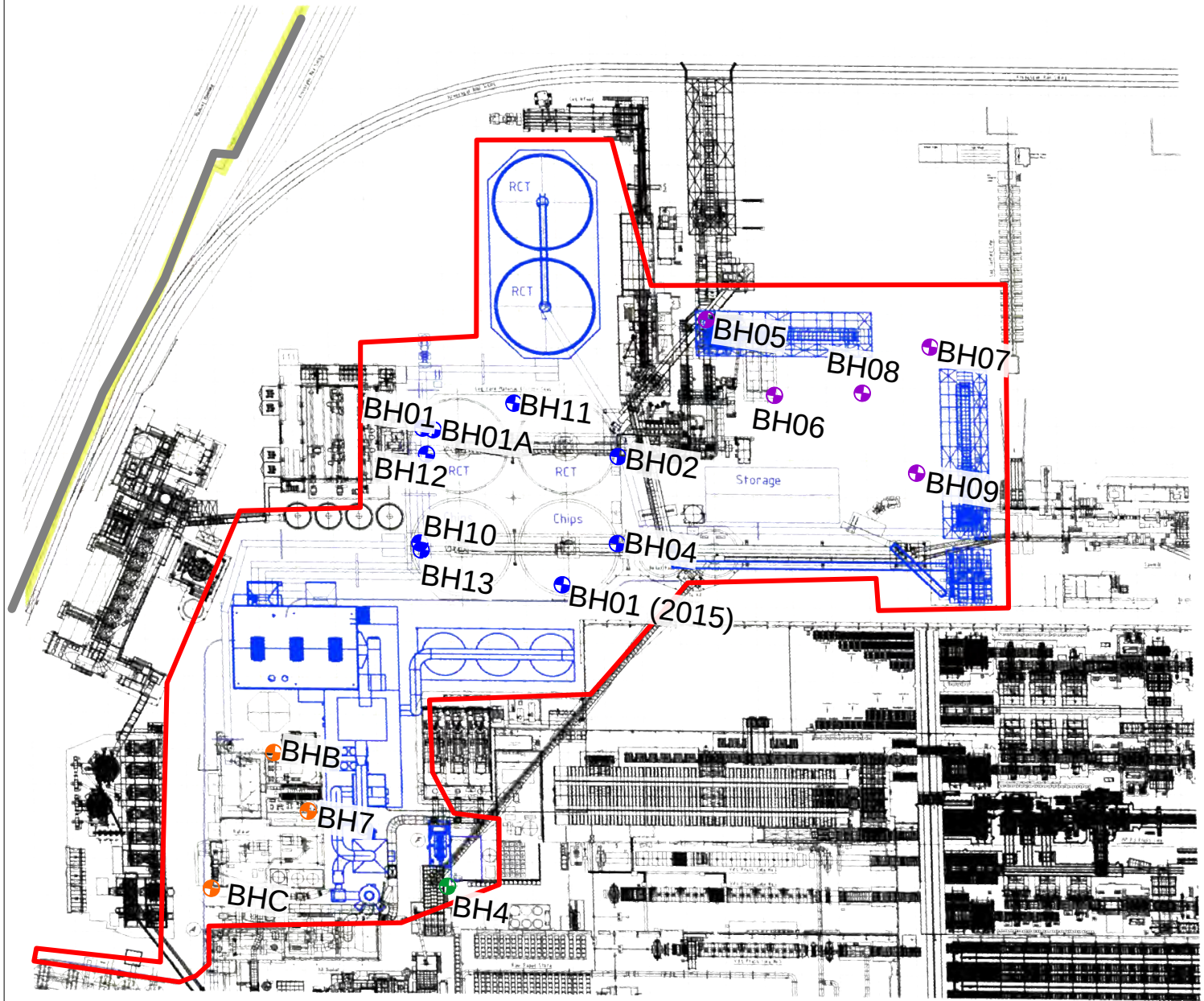
D05: Historical Map – 1984 (1:2,500 scale)



D06: Historical Map – 1990 (1:2,500 scale)

Ordnance Survey: © Crown copyright. All rights reserved. Licence number 100005799

D07: Historical Map – 2003 (1:2,500 scale)



Key

- Site boundary
- Alfred McAlpine Construction, Nov 1991 (ref: 91/204)
- Ian Farmer, 2016 (ref: 41946)
- Ian Farmer, 2016 (ref: 41793)
- Ian Farmer, Sept 2013 (ref: 41236)
- Proposed Site Layout

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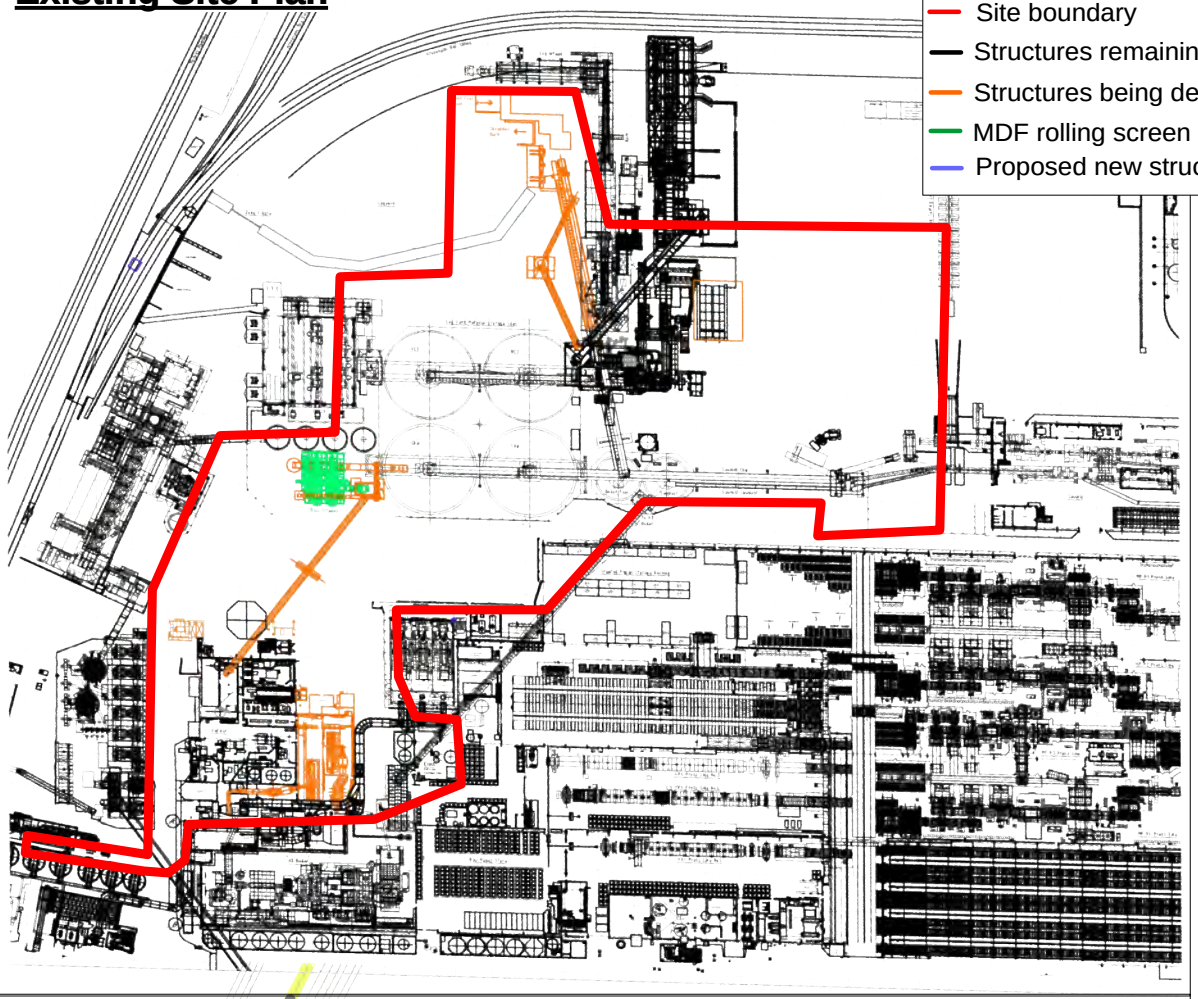
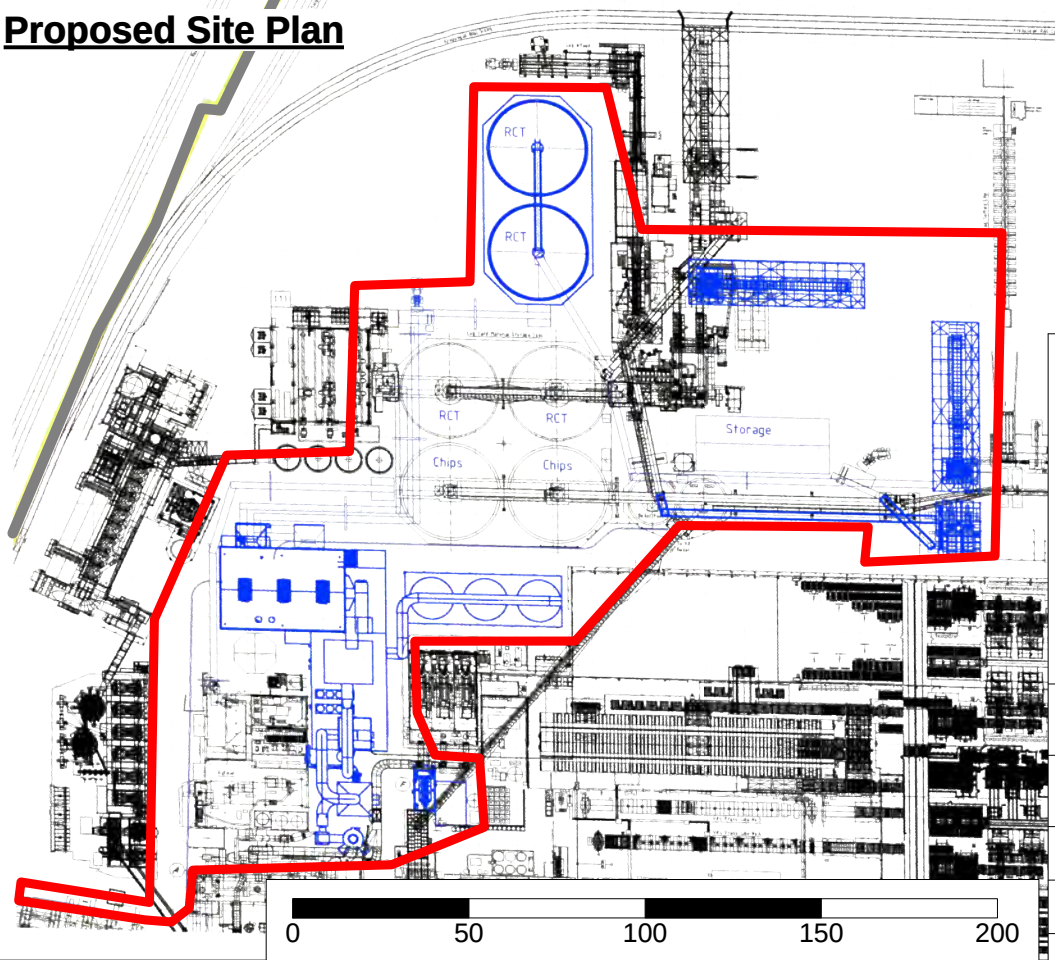
email: consult@smithgrant.co.uk

Project: CHP Kronospan	
Drawing: Previous Site Investigation Locations	
Drawn by: MJ	Checked: LS
Date: 01.10.24	Report No: R01
Job No: R3148	Drg No: D08

Existing Site Plan



Proposed Site Plan



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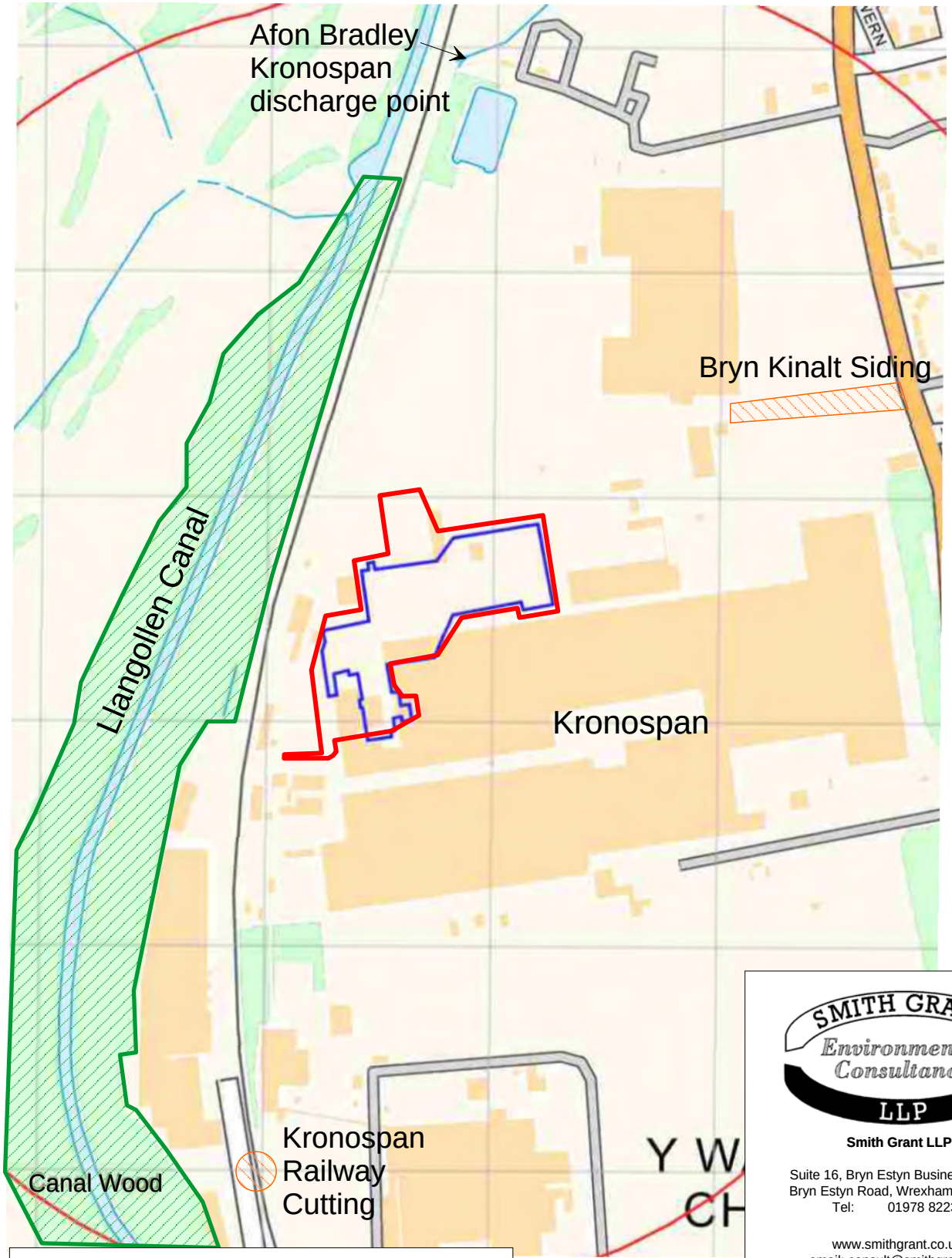
Project: CHP Kronospan	
Drawing: Existing structures vs proposed layout	
Drawn by: MJ	Checked: LS
Date: 01.10.24	Report No: R01
Job No: R3148	Drg No: D09



Key

- Site boundary
- Previous Site boundary
- Historical landfills
- Designated ancient woodland

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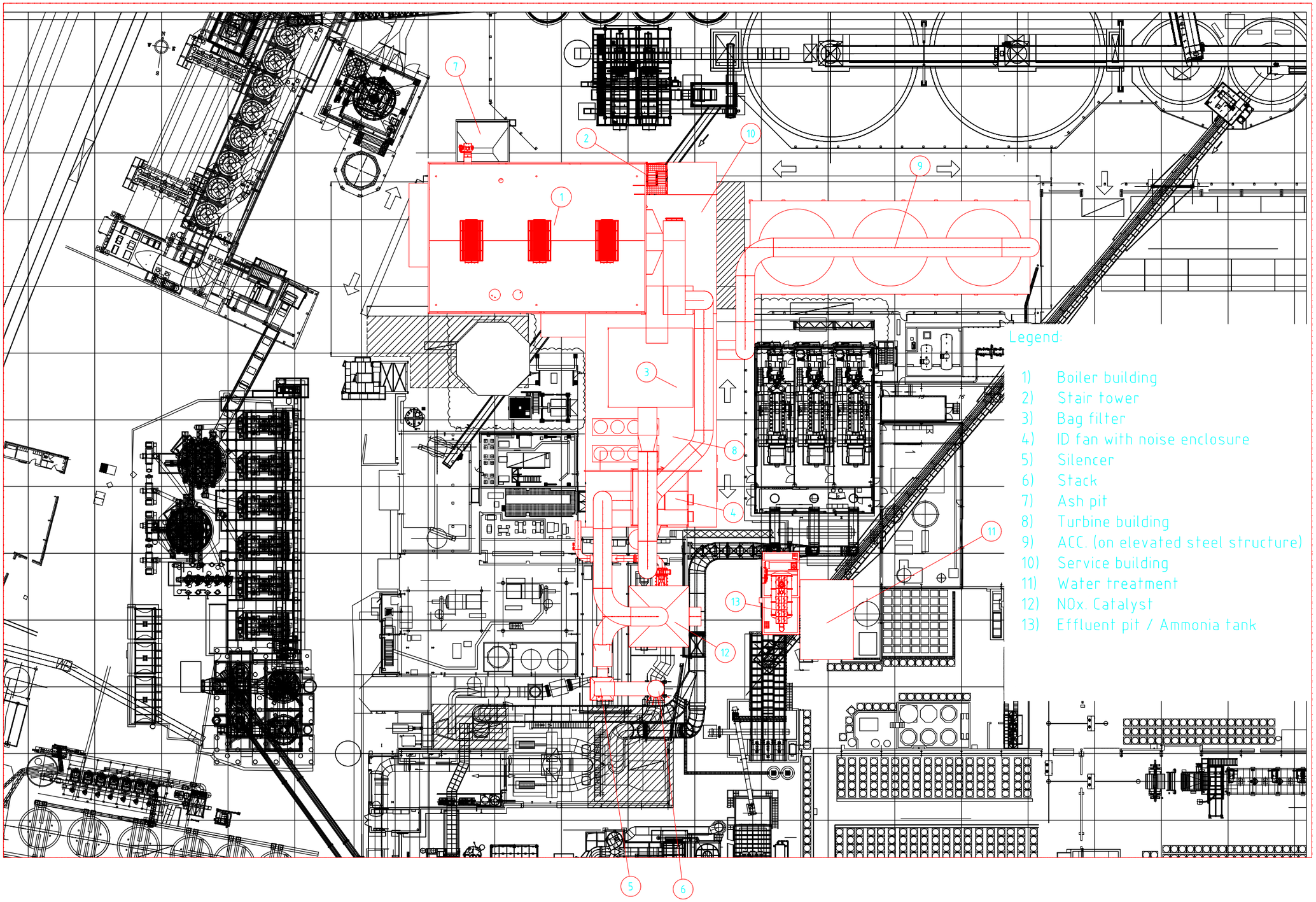
Project: CHP Kronospan	
Drawing: Surrounding features plan	
Drawn by: MJ	Checked: LS
Date: 09.10.24	Report No: R01
Job No: R3148	Drg No: D10

APPENDIX A

Proposed Site Layout

Modification	Rev.	Date	Sign	Appr.



Legend:

1) Boiler building
2) Stair tower
3) Bag filter
4) ID fan with noise enclosure
5) Silencer
6) Stack
7) Ash pit
8) Turbine building
9) ACC. (on elevated steel structure)
10) Service building
11) Water treatment
12) NOx. Catalyst
13) Effluent pit / Ammonia tank

Tolerances unless otherwise specified
Welding: EN ISO 13920-B
Machining: EN 22768-1-C

AET-MODEL:

Weight kg:

Date: 22.03.2023

Scale If A3-Size: 1:600
If A1 1:300

Drawn: MDN

Date:

Apr.:

Project: Kronospan Chirk

Site layout.
Plan view boiler
Site overview

Dwg. no.: 41409 CJA20 010 A

APPENDIX B

Photographic Log

R3148-CHP Kronospan	
1.  03.07.24 – View onto Site from southeast corner where proposed building to go	2.  03.07.24 – View from southeast corner
3.  03.07.24 – View of access road to the south	4.  03.07.24 – View of sawdust stockpile in conveyor belt area
5.  03.07.24 – View east across inaccessible area	6.  03.07.24 – View of sawdust stockpile storage (off-site)

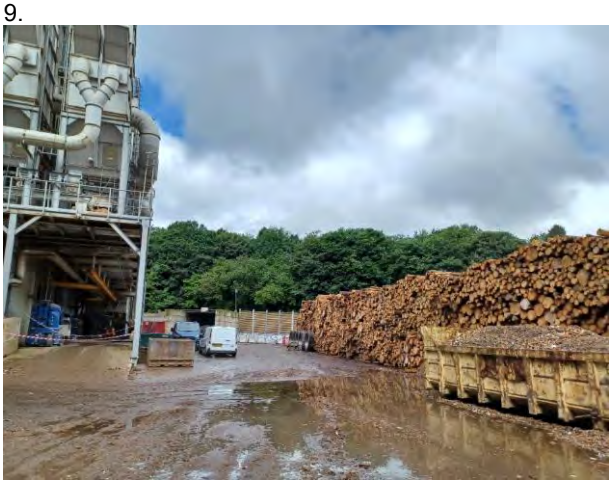
7.

03.07.24 – Existing conveyor belt system

8.

03.07.24 – Silo storing sawdust

9.



03.07.24 – View westwards along conveyor belt path

10.

03.07.24 – Concrete surfacing

11.

03.07.24 – View eastwards along conveyor belt path

12.

03.07.24 – Ash storage to the west (off-site)

13.

14.

03.07.24 – View southeast across main CHP area

03.07.24 – View towards southwest corner

15.

03.07.24 – View of works just off-site to west

16.

03.07.24 – View south across southern section of Site

17.

03.07.24 – Brown stack to be used for CHP plant

18.

03.07.24 – Gas turbine hall on the right to be removed

19.

20.

03.07.24 – View northwards towards main Site area

03.07.24 – Green tank formerly filled with water (no longer in use) and high pressure gas connection in front of worker in hi-vis

21.

03.07.24 – Gas depressurising system to the south of eastern section of SIte

22.

03.07.24 – View east across main CHP area

23.

03.07.24 – View west from east boundary of main CHP area

NO PHOTOGRAPH

APPENDIX C

Groundsure Report
(Including Historical Maps)

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

Kronospan

Order Details

Date: 02/07/2024

Your ref: R3148-Kronospan

Our Ref: GS-GGL-NEX-U64-GMX

Site Details

Location: 328544 338498

Area: 1.58 ha

Authority: Wrecsam - Wrexham County Borough Council ↗

Contact us with any questions at:
info@groundsure.com ↗
01273 257 755

Certified B Corporation

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
15 >	1.1 >	Historical industrial land uses >	2	8	23	55	-
19 >	1.2 >	Historical tanks >	0	8	24	22	-
21 >	1.3 >	Historical energy features >	0	0	4	4	-
22	1.4	Historical petrol stations	0	0	0	0	-
22 >	1.5 >	Historical garages >	0	0	3	2	-
23	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped >	On site	0-50m	50-250m	250-500m	500-2000m
24 >	2.1 >	Historical industrial land uses >	2	8	23	71	-
28 >	2.2 >	Historical tanks >	0	18	67	49	-
33 >	2.3 >	Historical energy features >	0	0	12	13	-
35	2.4	Historical petrol stations	0	0	0	0	-
35 >	2.5 >	Historical garages >	0	0	5	4	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
36	3.1	Active or recent landfill	0	0	0	0	-
36	3.2	Historical landfill (BGS records)	0	0	0	0	-
37	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
37 >	3.4 >	Historical landfill (EA/NRW records) >	0	0	0	1	-
37	3.5	Historical waste sites	0	0	0	0	-
37	3.6	Licensed waste sites	0	0	0	0	-
38 >	3.7 >	Waste exemptions >	0	0	0	2	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
39 >	4.1 >	Recent industrial land uses >	0	8	17	-	-
41 >	4.2 >	Current or recent petrol stations >	0	0	0	1	-
41	4.3	Electricity cables	0	0	0	0	-
41	4.4	Gas pipelines	0	0	0	0	-
41	4.5	Sites determined as Contaminated Land	0	0	0	0	-

41 >	4.6 >	Control of Major Accident Hazards (COMAH) >	2	0	0	0	-
42	4.7	Regulated explosive sites	0	0	0	0	-
42 >	4.8 >	Hazardous substance storage/usage >	0	0	0	1	-
42 >	4.9 >	Historical licensed industrial activities (IPC) >	0	0	0	7	-
43 >	4.10 >	Licensed industrial activities (Part A(1)) >	0	1	0	31	-
48 >	4.11 >	Licensed pollutant release (Part A(2)/B) >	0	0	1	6	-
49	4.12	Radioactive Substance Authorisations	0	0	0	0	-
49 >	4.13 >	Licensed Discharges to controlled waters >	0	0	1	11	-
51	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
51	4.15	Pollutant release to public sewer	0	0	0	0	-
52 >	4.16 >	List 1 Dangerous Substances >	0	0	0	1	-
52	4.17	List 2 Dangerous Substances	0	0	0	0	-
52 >	4.18 >	Pollution Incidents (EA/NRW) >	0	2	1	12	-
54	4.19	Pollution inventory substances	0	0	0	0	-
54	4.20	Pollution inventory waste transfers	0	0	0	0	-
54	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	**Hydrogeology** >	On site	0-50m	50-250m	250-500m	500-2000m
55 >	5.1 >	Superficial aquifer >	Identified (within 500m)				
57 >	5.2 >	Bedrock aquifer >	Identified (within 500m)				
58 >	5.3 >	Groundwater vulnerability >	Identified (within 50m)				
59	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
59	5.5	Groundwater vulnerability- local information	None (within 0m)				
60 >	5.6 >	Groundwater abstractions >	0	4	3	7	0
64 >	5.7 >	Surface water abstractions >	0	0	0	8	14
68 >	5.8 >	Potable abstractions >	0	0	0	0	1
69	5.9	Source Protection Zones	0	0	0	0	-
69	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	**Hydrology** >	On site	0-50m	50-250m	250-500m	500-2000m
70 >	6.1 >	Water Network (OS MasterMap) >	0	0	2	-	-

71 >	6.2 >	Surface water features >	0	0	2	-	-
71 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
71 >	6.4 >	WFD Surface water bodies >	0	0	1	-	-
72 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-

Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
73	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
73	7.2	Historical Flood Events	0	0	0	-	-
73	7.3	Flood Defences	0	0	0	-	-
74	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
74	7.5	Flood Storage Areas	0	0	0	-	-
75	7.6	Flood Zone 2	None (within 50m)				
75	7.7	Flood Zone 3	None (within 50m)				

Page	Section	Surface water flooding >	
76 >	8.1 >	Surface water flooding >	1 in 30 year, 0.1m - 0.3m (within 50m)

Page	Section	Groundwater flooding >	
78 >	9.1 >	Groundwater flooding >	Moderate (within 50m)

Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
79 >	10.1 >	Sites of Special Scientific Interest (SSSI) >	0	0	0	0	11
80	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
80 >	10.3 >	Special Areas of Conservation (SAC) >	0	0	0	0	8
83	10.4	Special Protection Areas (SPA)	0	0	0	0	0
83	10.5	National Nature Reserves (NNR)	0	0	0	0	0
83	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
83 >	10.7 >	Designated Ancient Woodland >	0	0	1	0	83
87	10.8	Biosphere Reserves	0	0	0	0	0
87	10.9	Forest Parks	0	0	0	0	0
87	10.10	Marine Conservation Zones	0	0	0	0	0
87	10.11	Green Belt	0	0	0	0	0
87	10.12	Proposed Ramsar sites	0	0	0	0	0

88	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
88	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
88	10.15	Nitrate Sensitive Areas	0	0	0	0	0
88	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
89 >	10.17 >	SSSI Impact Risk Zones >	1	-	-	-	-
90 >	10.18 >	SSSI Units >	0	0	0	0	1
Page	Section	Visual and cultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
92 >	11.1 >	World Heritage Sites >	2	0	2	-	-
93	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
93	11.3	National Parks	0	0	0	-	-
93	11.4	Listed Buildings	0	0	0	-	-
94	11.5	Conservation Areas	0	0	0	-	-
94	11.6	Scheduled Ancient Monuments	0	0	0	-	-
94	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
95 >	12.1 >	Agricultural Land Classification >	Grade 2 (within 250m)				
96	12.2	Open Access Land	0	0	0	-	-
96	12.3	Tree Felling Licences	0	0	0	-	-
96	12.4	Environmental Stewardship Schemes	0	0	0	-	-
96	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
97	13.1	Priority Habitat Inventory	0	0	0	-	-
97	13.2	Habitat Networks	0	0	0	-	-
97	13.3	Open Mosaic Habitat	0	0	0	-	-
97	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
98 >	14.1 >	10k Availability >	Identified (within 500m)				
99	14.2	Artificial and made ground (10k)	0	0	0	0	-
100	14.3	Superficial geology (10k)	0	0	0	0	-

100	14.4	Landslip (10k)	0	0	0	0	-
101	14.5	Bedrock geology (10k)	0	0	0	0	-
101	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	**Geology 1:50,000 scale >**	On site	0-50m	50-250m	250-500m	500-2000m
102 >	15.1 >	50k Availability >	Identified (within 500m)				
103	15.2	Artificial and made ground (50k)	0	0	0	0	-
103	15.3	Artificial ground permeability (50k)	0	0	-	-	-
104 >	15.4 >	Superficial geology (50k) >	2	0	0	0	-
105 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
105	15.6	Landslip (50k)	0	0	0	0	-
105	15.7	Landslip permeability (50k)	None (within 50m)				
106 >	15.8 >	Bedrock geology (50k) >	1	0	0	1	-
107 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
107 >	15.10 >	Bedrock faults and other linear features (50k) >	0	0	0	1	-
Page	Section	**Boreholes >**	On site	0-50m	50-250m	250-500m	500-2000m
108 >	16.1 >	BGS Boreholes >	0	1	1	-	-
Page	Section	**Natural ground subsidence >**					
109 >	17.1 >	Shrink swell clays >	Very low (within 50m)				
110 >	17.2 >	Running sands >	Very low (within 50m)				
111 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
112 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
113 >	17.5 >	Landslides >	Very low (within 50m)				
114 >	17.6 >	Ground dissolution of soluble rocks >	Negligible (within 50m)				
Page	Section	**Mining and ground workings >**	On site	0-50m	50-250m	250-500m	500-2000m
116	18.1	BritPits	0	0	0	0	-
117 >	18.2 >	Surface ground workings >	0	0	17	-	-
117 >	18.3 >	Underground workings >	0	0	0	0	11
118	18.4	Underground mining extents	0	0	0	0	-
118	18.5	Historical Mineral Planning Areas	0	0	0	0	-

119 >	18.6 >	Non-coal mining >	1	0	0	1	1
119	18.7	JPB mining areas	None (within 0m)				
119	18.8	The Coal Authority non-coal mining	0	0	0	0	-
120	18.9	Researched mining	0	0	0	0	-
120	18.10	Mining record office plans	0	0	0	0	-
120	18.11	BGS mine plans	0	0	0	0	-
120	18.12	Coal mining	None (within 0m)				
121	18.13	Brine areas	None (within 0m)				
121	18.14	Gypsum areas	None (within 0m)				
121	18.15	Tin mining	None (within 0m)				
121	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
122	19.1	Natural cavities	0	0	0	0	-
122	19.2	Mining cavities	0	0	0	0	0
122	19.3	Reported recent incidents	0	0	0	0	-
122	19.4	Historical incidents	0	0	0	0	-
123	19.5	National karst database	0	0	0	0	-
Page	Section	Radon >					
124 >	20.1 >	Radon >	Between 5% and 10% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
126 >	21.1 >	BGS Estimated Background Soil Chemistry >	6	0	-	-	-
126	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
127	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects >	On site	0-50m	50-250m	250-500m	500-2000m
128	22.1	Underground railways (London)	0	0	0	-	-
128	22.2	Underground railways (Non-London)	0	0	0	-	-
129	22.3	Railway tunnels	0	0	0	-	-
129 >	22.4 >	Historical railway and tunnel features >	1	14	11	-	-
130	22.5	Royal Mail tunnels	0	0	0	-	-

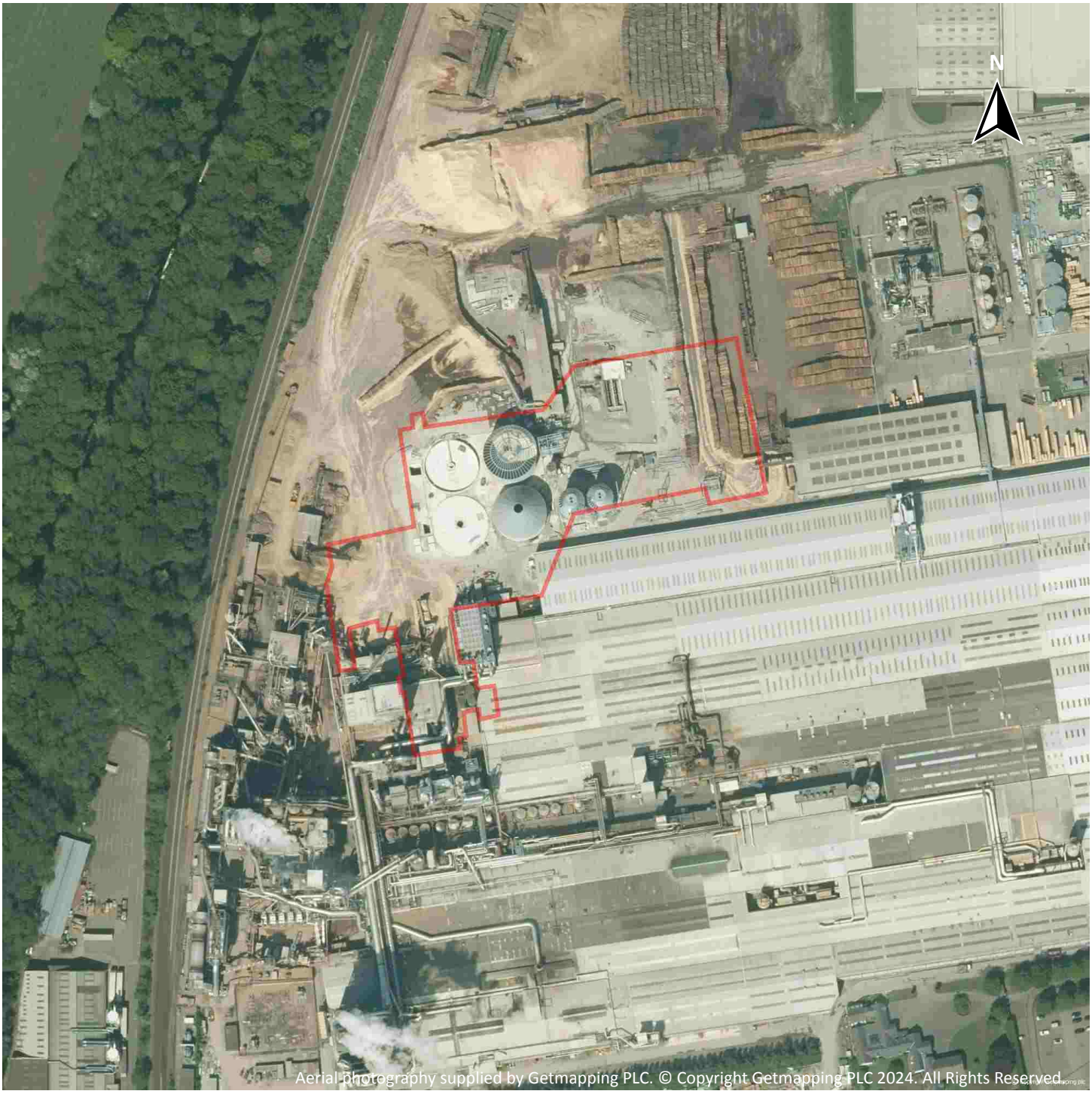
130 >	22.6 >	Historical railways >	0	1	2	-	-
131 >	22.7 >	Railways >	0	2	2	-	-
131	22.8	Crossrail 1	0	0	0	0	-
131	22.9	Crossrail 2	0	0	0	0	-
131	22.10	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 10/04/2020

Site Area: 1.58ha

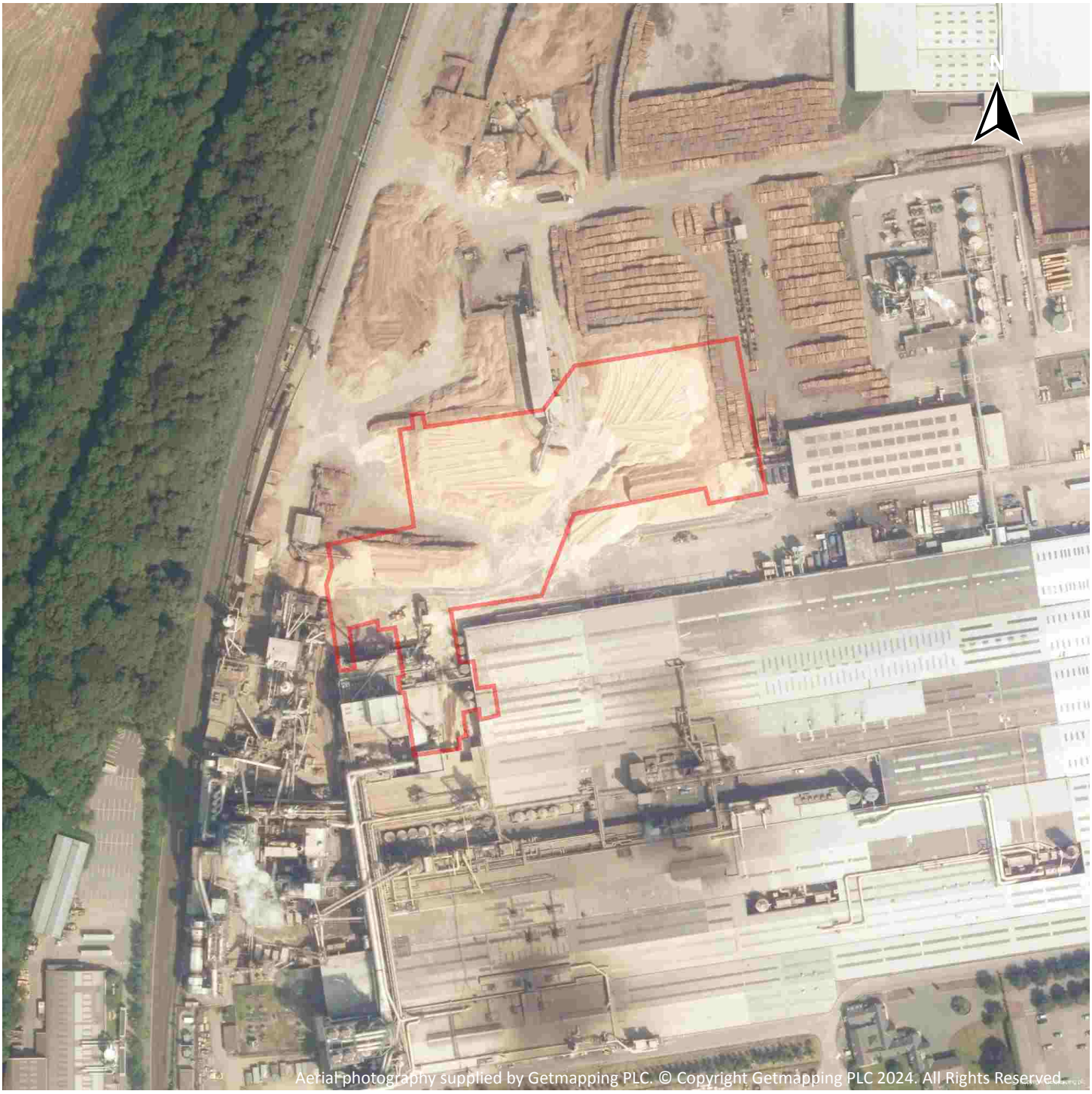
Recent site history - 2017 aerial photograph



Capture Date: 07/05/2017

Site Area: 1.58ha

Recent site history - 2014 aerial photograph



Capture Date: 26/07/2014

Site Area: 1.58ha

Recent site history - 2012 aerial photograph

Capture Date: 27/03/2012

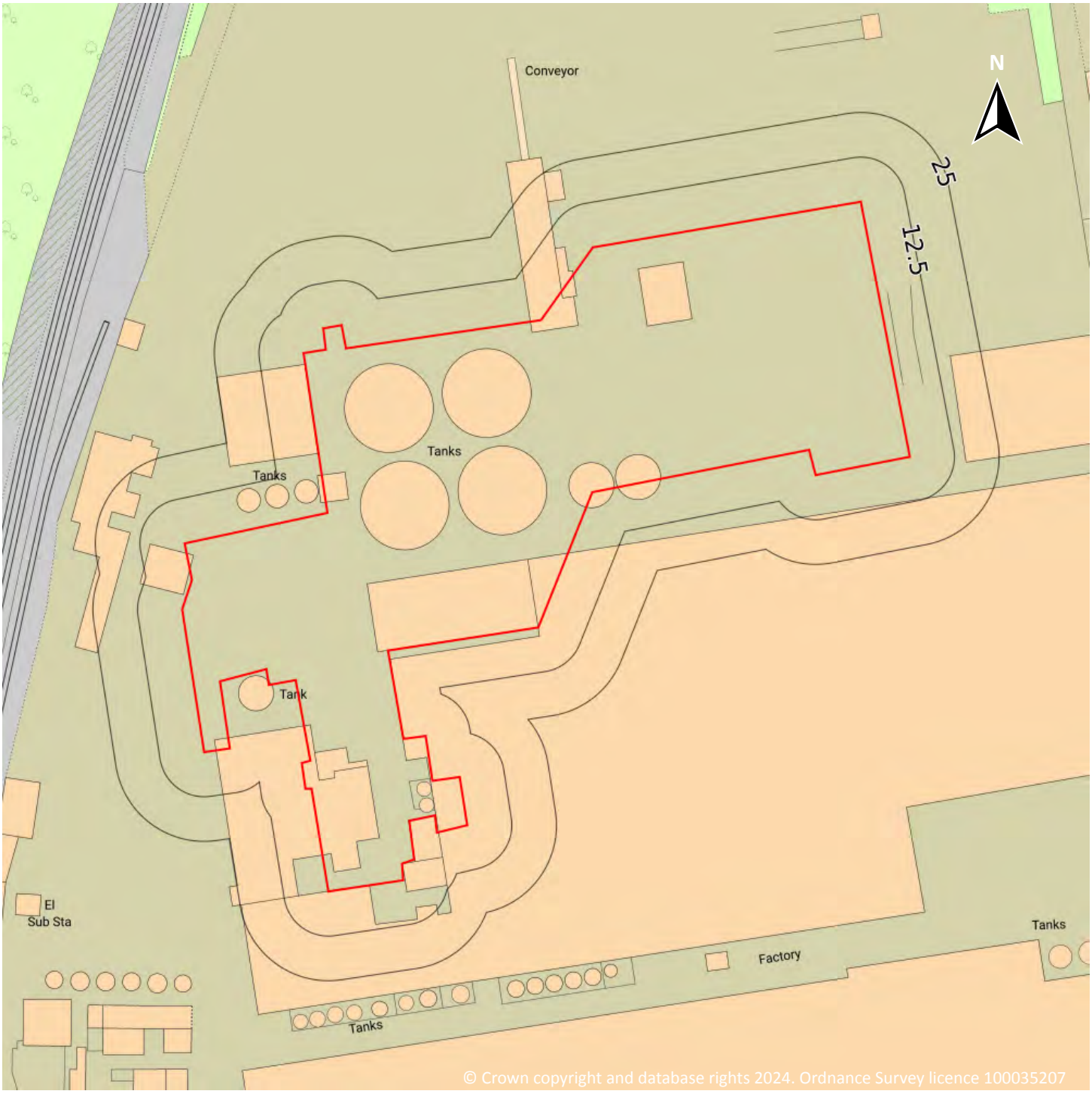
Site Area: 1.58ha

Recent site history - 2001 aerial photograph

Capture Date: 01/05/2001

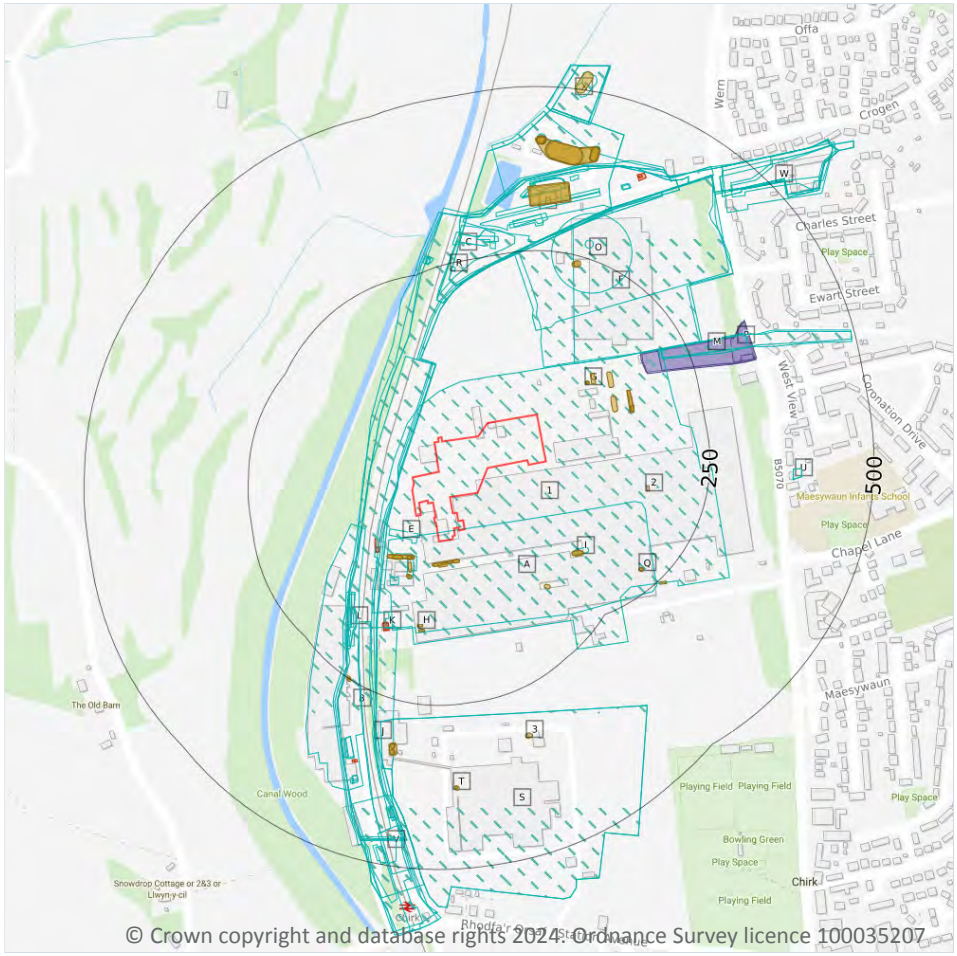
Site Area: 1.58ha

OS MasterMap site plan



Site Area: 1.58ha

1 Past land use



1.1 Historical industrial land uses

Records within 500m	88

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 15 >**

ID	Location	Land use	Dates present	Group ID
1	**On site**	**Industrial Estate**	**1992**	**836661**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Unspecified Factory**	**1979**	**857036**
B	20m W	Railway Sidings	1899	874213
C	20m W	Railway Sidings	1949	906393
C	20m W	Railway Sidings	1898	931983
D	21m W	Railway Sidings	1914	918475
D	23m W	Tramway Sidings	1949	856393
E	27m SW	Unspecified Tanks	1992	818978
E	41m SW	Unspecified Tanks	1992	935170
E	44m SW	Unspecified Tanks	1979	970224
F	73m NE	Unspecified Factory	1979	857035
B	80m SW	Industrial Estate	1992	836660
E	83m SW	Unspecified Tanks	1992	818979
F	96m NE	Unspecified Commercial/Industrial	1992	822053
F	128m NE	Unspecified Wharf	1949	920023
I	142m SE	Unspecified Tanks	1979	818980
J	146m SW	Railway Sidings	1992	974206
L	150m SW	Railway Buildings	1949	882581
L	150m SW	Railway Buildings	1898	952685
L	152m SW	Railway Buildings	1899	921744
L	154m SW	Engine Sheds	1949	831900
L	155m SW	Engine Shed	1914	824022
J	161m SW	Cuttings	1873	807142
L	191m SW	Railway Buildings	1914	885710
N	195m N	Railway Sidings	1899	941335
N	195m N	Unspecified Wharf	1899	942501
O	199m NE	Unspecified Wharf	1949	972246
P	206m NE	Cuttings	1949	957102
P	210m NE	Cuttings	1914 - 1949	923223

ID	Location	Land use	Dates present	Group ID
M	211m NE	Cuttings	1949	1009573
N	215m N	Sewage Works	1979	929292
N	215m N	Sewage Works	1992	1006776
R	236m N	Railway Building	1949	853318
R	258m N	Railway Building	1949	942254
R	258m N	Railway Building	1898 - 1899	987494
R	259m N	Railway Building	1914	955747
R	260m N	Railway Buildings	1949	810474
N	263m N	Unspecified Wharf	1873	894190
O	266m NE	Unspecified Wharf	1914	966394
S	268m S	Unspecified Commercial/Industrial	1992	822054
S	268m S	Unspecified Factory	1979	857037
R	275m N	Railway Buildings	1949	810473
N	284m N	Railway Sidings	1873	882036
N	287m N	Railway Building	1898	872985
N	287m N	Railway Building	1914	964221
N	308m N	Railway Building	1898	853315
J	326m SW	Railway Building	1898 - 1899	876793
J	326m SW	Engine Shed	1914 - 1949	962736
N	330m N	Unspecified Pit	1949	867040
N	331m N	Unspecified Pit	1914	957131
J	332m SW	Engine Shed	1949	921338
N	333m N	Unspecified Pit	1949	998313
N	348m N	Railway Building	1873	853316
N	360m N	Railway Buildings	1949	810472
N	367m NE	Railway Building	1949	992006
N	367m NE	Railway Building	1914 - 1949	915399
U	377m E	Police Station	1979	871236

ID	Location	Land use	Dates present	Group ID
U	377m E	Police Station	1992	1009262
J	378m S	Railway Building	1898 - 1899	915056
J	378m S	Railway Building	1949	961649
J	383m S	Railway Building	1914	894681
N	384m N	Unspecified Tanks	1992	957936
N	384m N	Unspecified Tanks	1979	967395
V	395m S	Railway Sidings	1979	865363
N	396m N	Unspecified Tanks	1979	876784
N	398m N	Unspecified Tanks	1992	1000903
V	408m S	Railway Building	1898 - 1899	944530
V	408m S	Goods Shed	1949	984359
V	411m S	Goods Shed	1949	924943
V	412m S	Goods Shed	1914	952353
N	414m N	Unspecified Tank	1979	916044
N	416m N	Unspecified Tank	1992	865012
W	423m NE	Unspecified Wharf	1873	919033
W	436m NE	Railway Sidings	1899	871427
W	436m NE	Unspecified Wharf	1898 - 1899	886189
V	437m S	Railway Sidings	1873	866872
W	443m NE	Unspecified Wharf	1949	956790
W	446m NE	Railway Sidings	1873	864724
X	449m N	Sewage Works	1949	909942
X	449m N	Unspecified Commercial/Industrial	1949	822055
X	453m N	Unspecified Works	1992	866051
X	453m N	Unspecified Works	1979	979768
W	454m NE	Railway Sidings	1914	941251
V	455m S	Railway Sidings	1914	904992
V	459m S	Railway Sidings	1898	885562

ID	Location	Land use	Dates present	Group ID
V	472m S	Railway Building	1898 - 1949	877116
V	472m S	Railway Building	1914	875205
X	488m N	Unspecified Tanks	1949	954567

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**54**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 15 >**

ID	Location	Land use	Dates present	Group ID
E	31m S	Tanks	1990 - 1992	128681
E	32m S	Tanks	1995 - 1999	152640
E	32m S	Tanks	1995 - 1999	140773
E	34m S	Tanks	1984 - 1988	147896
E	44m SW	Tanks	1995 - 1999	134952
E	44m SW	Tanks	1990 - 1992	155462
E	48m SW	Unspecified Tank	1984 - 1988	152889
E	49m SW	Tanks	1973	139275
E	54m SW	Tanks	1973	108812
E	60m SW	Tanks	1973 - 1988	144586
E	67m SW	Unspecified Tank	1984	115523
E	68m SW	Tanks	1973	108813
G	88m NE	Unspecified Tank	1990 - 1992	134383
G	90m NE	Tanks	1995 - 1999	145527
G	96m NE	Tanks	1995 - 1999	136399

ID	Location	Land use	Dates present	Group ID
G	115m NE	Tanks	1988 - 1999	127289
G	118m NE	Tanks	1988 - 1999	138448
H	129m S	Unspecified Tank	1984	115524
H	136m S	Unspecified Tank	1988	115527
G	140m E	Tanks	1990 - 1992	148668
G	141m E	Tanks	1995 - 1999	131658
G	142m E	Unspecified Tank	1988	115525
I	143m SE	Tanks	1973	129209
I	143m SE	Tanks	1984 - 1999	144181
A	149m SE	Unspecified Tank	1984 - 1999	156251
2	158m E	Unspecified Tank	1988	115526
Q	216m SE	Unspecified Tank	1995	128417
Q	217m SE	Unspecified Tank	1988 - 1992	151876
O	232m NE	Unspecified Tank	1995 - 1999	140316
O	233m NE	Unspecified Tank	1984 - 1992	138997
B	247m SW	Unspecified Tank	1990 - 1992	152154
B	249m SW	Unspecified Tank	1995 - 1999	136000
Q	253m SE	Unspecified Tank	1990 - 1995	140015
J	314m S	Tanks	1984 - 1992	126857
J	315m S	Tanks	1973	138664
3	317m S	Unspecified Tank	1973 - 1999	129605
J	317m S	Tanks	1995 - 1999	129441
N	317m N	Tanks	1984 - 1990	132300
N	319m N	Tanks	1973	153386
J	325m S	Tanks	1973	154671
T	373m S	Unspecified Tank	1973	142872
T	374m S	Unspecified Tank	1984 - 1992	150252
N	384m N	Tanks	1992	155267

ID	Location	Land use	Dates present	Group ID
N	384m N	Tanks	1984 - 1990	132241
N	385m N	Tanks	1973	145736
N	395m N	Tanks	1995 - 1999	141156
N	395m N	Tanks	1973	142637
N	412m N	Unspecified Tank	1984 - 1990	132371
N	412m N	Unspecified Tank	1999	146619
N	412m N	Unspecified Tank	1995	148226
N	413m N	Unspecified Tank	1973	134637
N	423m N	Unspecified Tank	1987	135445
N	424m N	Unspecified Tank	1994	135969
X	494m N	Tanks	1961	108814

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	**8**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 15 >**

ID	Location	Land use	Dates present	Group ID
E	67m SW	Electricity Substation	1992	86560
E	74m SW	Electricity Substation	1995 - 1999	83083
K	146m SW	Electricity Substation	1973 - 1992	80560
K	147m SW	Electricity Substation	1995 - 1999	74193
J	355m S	Electricity Substation	1984 - 1992	69912
J	357m S	Electricity Substation	1995 - 1999	73967
N	389m NE	Gas Governor	1988 - 1992	93034

ID	Location	Land use	Dates present	Group ID
N	393m NE	Gas Governor	1995 - 1999	80218

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	5

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 15 >**

ID	Location	Land use	Dates present	Group ID
M	179m NE	Garage	1973	23517
M	180m NE	Garage	1984 - 1988	26880
M	202m NE	Garage	1990 - 1992	25880
P	310m E	Garage	1995 - 1999	30383
P	319m E	Garage	1961	26639

This data is sourced from Ordnance Survey / Groundsure.

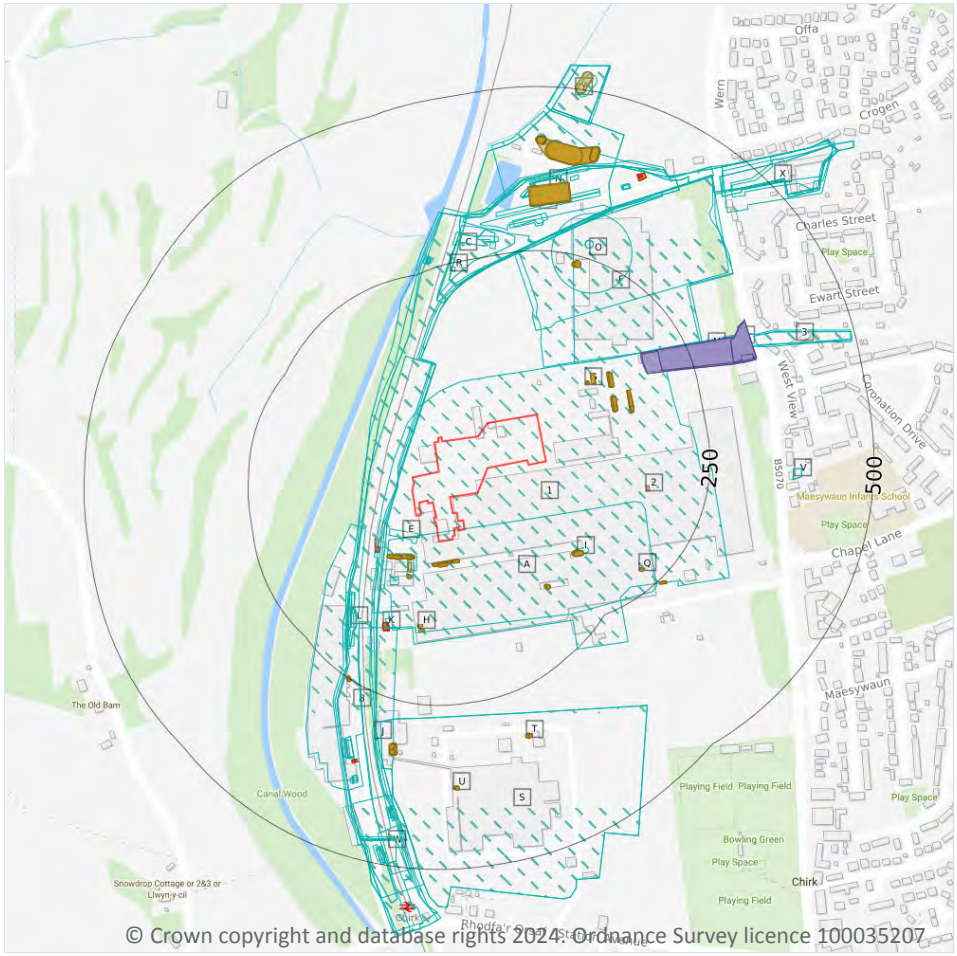
1.6 Historical military land

Records within 500m	0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.

2 Past land use - un-grouped



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical garages

2.1 Historical industrial land uses

Records within 500m	104

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 24 >**

ID	Location	Land Use	Date	Group ID
1	**On site**	**Industrial Estate**	**1992**	**836661**
A	**On site**	**Unspecified Factory**	**1979**	**857036**
B	20m W	Railway Sidings	1899	874213

ID	Location	Land Use	Date	Group ID
C	20m W	Railway Sidings	1949	906393
C	20m W	Railway Sidings	1898	931983
D	21m W	Railway Sidings	1914	918475
D	23m W	Tramway Sidings	1949	856393
E	27m SW	Unspecified Tanks	1992	818978
E	41m SW	Unspecified Tanks	1992	935170
E	44m SW	Unspecified Tanks	1979	970224
F	73m NE	Unspecified Factory	1979	857035
B	80m SW	Industrial Estate	1992	836660
E	83m SW	Unspecified Tanks	1992	818979
F	96m NE	Unspecified Commercial/Industrial	1992	822053
F	128m NE	Unspecified Wharf	1949	920023
I	142m SE	Unspecified Tanks	1979	818980
J	146m SW	Railway Sidings	1992	974206
L	150m SW	Railway Buildings	1949	882581
L	150m SW	Railway Buildings	1898	952685
L	152m SW	Railway Buildings	1899	921744
L	154m SW	Engine Sheds	1949	831900
L	155m SW	Engine Shed	1914	824022
J	161m SW	Cuttings	1873	807142
L	191m SW	Railway Buildings	1914	885710
N	195m N	Unspecified Wharf	1899	942501
N	195m N	Railway Sidings	1899	941335
O	199m NE	Unspecified Wharf	1949	972246
P	206m NE	Cuttings	1949	957102
P	210m NE	Cuttings	1914	923223
M	211m NE	Cuttings	1949	1009573
N	215m N	Sewage Works	1992	1006776

ID	Location	Land Use	Date	Group ID
N	215m N	Sewage Works	1979	929292
R	236m N	Railway Building	1949	853318
R	258m N	Railway Building	1949	942254
R	258m N	Railway Building	1899	987494
R	259m N	Railway Building	1914	955747
R	259m N	Railway Building	1898	987494
R	260m N	Railway Building	1949	942254
R	260m N	Railway Buildings	1949	810474
N	263m N	Unspecified Wharf	1873	894190
O	266m NE	Unspecified Wharf	1914	966394
O	266m NE	Unspecified Wharf	1914	966394
S	268m S	Unspecified Commercial/Industrial	1992	822054
S	268m S	Unspecified Factory	1979	857037
R	275m N	Railway Buildings	1949	810473
N	284m N	Railway Sidings	1873	882036
N	287m N	Railway Building	1898	872985
N	287m N	Railway Building	1914	964221
N	308m N	Railway Building	1898	853315
J	326m SW	Engine Shed	1949	962736
J	326m SW	Railway Building	1898	876793
N	330m N	Unspecified Pit	1949	867040
J	331m SW	Railway Building	1899	876793
N	331m N	Unspecified Pit	1914	957131
N	331m N	Unspecified Pit	1914	957131
J	332m SW	Engine Shed	1949	921338
J	333m SW	Engine Shed	1914	962736
N	333m N	Unspecified Pit	1949	998313
N	348m N	Railway Building	1873	853316

ID	Location	Land Use	Date	Group ID
3	351m NE	Cuttings	1949	923223
N	360m N	Railway Buildings	1949	810472
N	367m NE	Railway Building	1949	992006
N	367m NE	Railway Building	1914	915399
N	367m NE	Railway Building	1949	915399
V	377m E	Police Station	1992	1009262
V	377m E	Police Station	1979	871236
J	378m S	Railway Building	1949	961649
J	378m S	Railway Building	1898	915056
J	381m S	Railway Building	1899	915056
J	383m S	Railway Building	1914	894681
N	384m N	Unspecified Tanks	1992	957936
N	384m N	Unspecified Tanks	1979	967395
W	395m S	Railway Sidings	1979	865363
N	396m N	Unspecified Tanks	1979	876784
N	398m N	Unspecified Tanks	1992	1000903
W	408m S	Goods Shed	1949	984359
W	408m S	Railway Building	1898	944530
W	411m S	Goods Shed	1949	924943
W	412m S	Goods Shed	1914	952353
W	413m S	Railway Building	1899	944530
N	414m N	Unspecified Tank	1979	916044
N	416m N	Unspecified Tank	1992	865012
X	423m NE	Unspecified Wharf	1873	919033
X	436m NE	Unspecified Wharf	1899	886189
X	436m NE	Railway Sidings	1899	871427
W	437m S	Railway Sidings	1873	866872
X	443m NE	Unspecified Wharf	1949	956790

ID	Location	Land Use	Date	Group ID
X	443m NE	Unspecified Wharf	1898	886189
X	446m NE	Railway Sidings	1873	864724
Y	449m N	Sewage Works	1949	909942
Y	449m N	Unspecified Commercial/Industrial	1949	822055
Y	453m N	Unspecified Works	1992	866051
Y	453m N	Unspecified Works	1979	979768
X	454m NE	Railway Sidings	1914	941251
W	455m S	Railway Sidings	1914	904992
W	459m S	Railway Sidings	1914	904992
W	459m S	Railway Sidings	1898	885562
W	472m S	Railway Building	1949	877116
W	472m S	Railway Building	1914	875205
W	474m S	Railway Building	1899	877116
W	475m S	Railway Building	1914	877116
W	475m S	Railway Building	1898	877116
Y	488m N	Unspecified Tanks	1949	954567
Y	493m N	Unspecified Tanks	1949	954567

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	**134**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 24 >**

ID	Location	Land Use	Date	Group ID
E	31m S	Tanks	1992	128681
E	31m S	Tanks	1990	128681
E	32m S	Tanks	1999	152640

ID	Location	Land Use	Date	Group ID
E	32m S	Tanks	1995	152640
E	32m S	Tanks	1995	152640
E	32m S	Tanks	1999	140773
E	32m S	Tanks	1995	140773
E	32m S	Tanks	1995	140773
E	34m S	Tanks	1984	147896
E	34m S	Tanks	1988	147896
E	44m SW	Tanks	1999	134952
E	44m SW	Tanks	1995	134952
E	44m SW	Tanks	1995	134952
E	44m SW	Tanks	1992	155462
E	44m SW	Tanks	1990	155462
E	48m SW	Unspecified Tank	1984	152889
E	48m SW	Unspecified Tank	1988	152889
E	49m SW	Tanks	1973	139275
E	54m SW	Tanks	1973	108812
E	60m SW	Tanks	1984	144586
E	60m SW	Tanks	1988	144586
E	62m SW	Tanks	1973	144586
E	67m SW	Unspecified Tank	1984	115523
E	68m SW	Tanks	1973	108813
G	88m NE	Unspecified Tank	1992	134383
G	88m NE	Unspecified Tank	1990	134383
G	90m NE	Tanks	1999	145527
G	90m NE	Tanks	1995	145527
G	90m NE	Tanks	1995	145527
G	96m NE	Tanks	1999	136399
G	96m NE	Tanks	1995	136399

ID	Location	Land Use	Date	Group ID
G	96m NE	Tanks	1995	136399
G	115m NE	Tanks	1999	127289
G	115m NE	Tanks	1995	127289
G	115m NE	Tanks	1995	127289
G	117m E	Tanks	1988	127289
G	117m E	Tanks	1992	127289
G	117m E	Tanks	1990	127289
G	118m NE	Tanks	1999	138448
G	118m NE	Tanks	1995	138448
G	118m NE	Tanks	1995	138448
G	120m NE	Tanks	1988	138448
G	120m NE	Tanks	1992	138448
G	120m NE	Tanks	1990	138448
H	129m S	Unspecified Tank	1984	115524
H	136m S	Unspecified Tank	1988	115527
G	140m E	Tanks	1992	148668
G	140m E	Tanks	1990	148668
G	141m E	Tanks	1999	131658
G	141m E	Tanks	1995	131658
G	141m E	Tanks	1995	131658
G	142m E	Unspecified Tank	1988	115525
I	143m SE	Tanks	1973	129209
I	143m SE	Tanks	1999	144181
I	143m SE	Tanks	1995	144181
I	143m SE	Tanks	1995	144181
I	145m SE	Tanks	1984	144181
I	145m SE	Tanks	1988	144181
I	145m SE	Tanks	1992	144181

ID	Location	Land Use	Date	Group ID
I	145m SE	Tanks	1990	144181
A	149m SE	Unspecified Tank	1999	156251
A	149m SE	Unspecified Tank	1995	156251
A	149m SE	Unspecified Tank	1995	156251
A	152m SE	Unspecified Tank	1984	156251
A	152m SE	Unspecified Tank	1988	156251
A	152m SE	Unspecified Tank	1992	156251
A	152m SE	Unspecified Tank	1990	156251
2	158m E	Unspecified Tank	1988	115526
Q	216m SE	Unspecified Tank	1995	128417
Q	216m SE	Unspecified Tank	1995	128417
Q	217m SE	Unspecified Tank	1988	151876
Q	217m SE	Unspecified Tank	1992	151876
Q	217m SE	Unspecified Tank	1990	151876
O	232m NE	Unspecified Tank	1999	140316
O	232m NE	Unspecified Tank	1995	140316
O	232m NE	Unspecified Tank	1995	140316
O	233m NE	Unspecified Tank	1984	138997
O	233m NE	Unspecified Tank	1988	138997
O	233m NE	Unspecified Tank	1992	138997
O	233m NE	Unspecified Tank	1990	138997
B	247m SW	Unspecified Tank	1992	152154
B	247m SW	Unspecified Tank	1990	152154
B	249m SW	Unspecified Tank	1999	136000
B	249m SW	Unspecified Tank	1995	136000
B	249m SW	Unspecified Tank	1995	136000
Q	253m SE	Unspecified Tank	1992	140015
Q	253m SE	Unspecified Tank	1990	140015

ID	Location	Land Use	Date	Group ID
Q	253m SE	Unspecified Tank	1995	140015
Q	253m SE	Unspecified Tank	1995	140015
J	314m S	Tanks	1984	126857
J	314m S	Tanks	1988	126857
J	314m S	Tanks	1992	126857
J	314m S	Tanks	1990	126857
J	315m S	Tanks	1973	138664
T	317m S	Unspecified Tank	1973	129605
J	317m S	Tanks	1999	129441
J	317m S	Tanks	1995	129441
J	317m S	Tanks	1995	129441
N	317m N	Tanks	1984	132300
N	317m N	Tanks	1988	132300
N	317m N	Tanks	1990	132300
T	318m S	Unspecified Tank	1999	129605
T	318m S	Unspecified Tank	1995	129605
T	318m S	Unspecified Tank	1995	129605
N	319m N	Tanks	1973	153386
T	319m S	Unspecified Tank	1984	129605
T	319m S	Unspecified Tank	1988	129605
T	319m S	Unspecified Tank	1992	129605
T	319m S	Unspecified Tank	1990	129605
J	325m S	Tanks	1973	154671
U	373m S	Unspecified Tank	1973	142872
U	374m S	Unspecified Tank	1984	150252
U	374m S	Unspecified Tank	1988	150252
U	374m S	Unspecified Tank	1992	150252
U	374m S	Unspecified Tank	1990	150252

ID	Location	Land Use	Date	Group ID
N	384m N	Tanks	1992	155267
N	384m N	Tanks	1984	132241
N	384m N	Tanks	1988	132241
N	384m N	Tanks	1990	132241
N	385m N	Tanks	1973	145736
N	395m N	Tanks	1999	141156
N	395m N	Tanks	1995	141156
N	395m N	Tanks	1995	141156
N	395m N	Tanks	1973	142637
N	412m N	Unspecified Tank	1984	132371
N	412m N	Unspecified Tank	1988	132371
N	412m N	Unspecified Tank	1990	132371
N	412m N	Unspecified Tank	1999	146619
N	412m N	Unspecified Tank	1995	148226
N	412m N	Unspecified Tank	1995	148226
N	413m N	Unspecified Tank	1973	134637
N	423m N	Unspecified Tank	1987	135445
N	424m N	Unspecified Tank	1994	135969
Y	494m N	Tanks	1961	108814

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	**25**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 24 >**

ID	Location	Land Use	Date	Group ID
E	67m SW	Electricity Substation	1992	86560

ID	Location	Land Use	Date	Group ID
E	74m SW	Electricity Substation	1999	83083
E	74m SW	Electricity Substation	1995	83083
E	74m SW	Electricity Substation	1995	83083
K	146m SW	Electricity Substation	1973	80560
K	146m SW	Electricity Substation	1984	80560
K	146m SW	Electricity Substation	1988	80560
K	146m SW	Electricity Substation	1992	80560
K	146m SW	Electricity Substation	1990	80560
K	147m SW	Electricity Substation	1999	74193
K	147m SW	Electricity Substation	1995	74193
K	147m SW	Electricity Substation	1995	74193
J	355m S	Electricity Substation	1984	69912
J	355m S	Electricity Substation	1988	69912
J	355m S	Electricity Substation	1992	69912
J	355m S	Electricity Substation	1990	69912
J	357m S	Electricity Substation	1999	73967
J	357m S	Electricity Substation	1995	73967
J	357m S	Electricity Substation	1995	73967
N	389m NE	Gas Governor	1988	93034
N	389m NE	Gas Governor	1992	93034
N	389m NE	Gas Governor	1990	93034
N	393m NE	Gas Governor	1999	80218
N	393m NE	Gas Governor	1995	80218
N	393m NE	Gas Governor	1995	80218

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m	9

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 24 >**

ID	Location	Land Use	Date	Group ID
M	179m NE	Garage	1973	23517
M	180m NE	Garage	1988	26880
M	180m NE	Garage	1984	26880
M	202m NE	Garage	1992	25880
M	202m NE	Garage	1990	25880
P	310m E	Garage	1999	30383
P	310m E	Garage	1995	30383
P	310m E	Garage	1995	30383
P	319m E	Garage	1961	26639

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill

Site Outline

Search buffers in metres (m)

Historical landfill (EA/NRW)

Waste exemptions

3.1 Active or recent landfill

Records within 500m	0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m	0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m	1

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

Features are displayed on the Waste and landfill map on **page 36 >**

ID	Location	Details		
1	368m S	Site Address: Kronospan Railway Cutting, Chirk Licence Holder Address: -	Waste Licence: - Site Reference: - Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: - Licence Holder: - First Recorded - Last Recorded: -

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m	0

Waste site records derived from Local Authority planning records and high detail historical mapping.

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m	0

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m	2

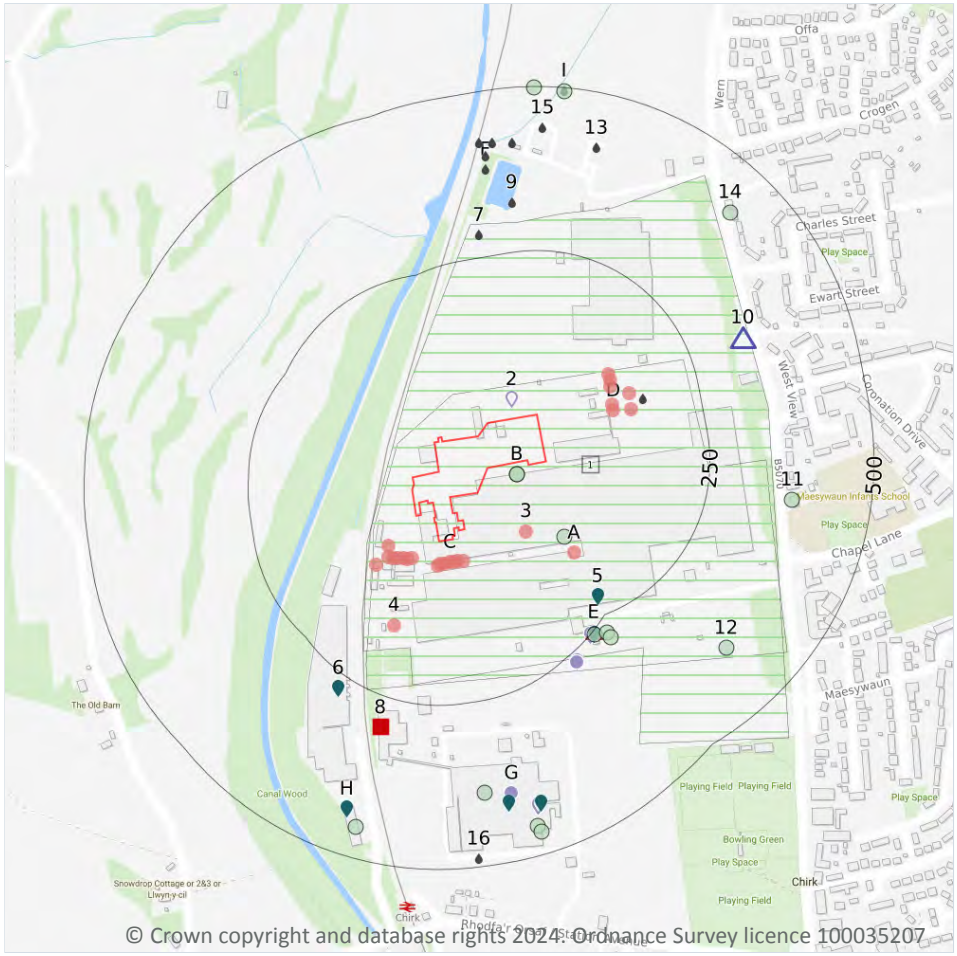
Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

Features are displayed on the Waste and landfill map on **page 36 >**

ID	Location	Site	Reference	Category	Sub-Category	Description
A	255m SE	Chirk, Wrexham, Ll14 5nt	WEX352515	Storing waste exemption	Not on a farm	Storage of waste in secure containers
A	255m SE	Chirk, Wrexham, Ll14 5nt	WEX125153	Storing waste exemption	Not on a farm	Storage of waste in secure containers

This data is sourced from the Environment Agency and Natural Resources Wales.

4 Current industrial land use



Site Outline

Search buffers in metres (m)

- Recent industrial land uses
- Current or recent petrol stations
- Control of Major Accident Hazards
- Hazardous substance storage/usage
- Historical licensed industrial activities
- Part A(1) industrial activities
- Licensed pollutant release (Part A(2)/B)
- Licensed Discharges to controlled waters
- List 1 Dangerous Substances
- Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m	25

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 39 >**

ID	Location	Company	Address	Activity	Category
C	34m S	Tank	Clwyd, LL14	Tanks (Generic)	Industrial Features
C	34m S	Tank	Clwyd, LL14	Tanks (Generic)	Industrial Features
C	34m S	Tank	Clwyd, LL14	Tanks (Generic)	Industrial Features
C	34m S	Tank	Clwyd, LL14	Tanks (Generic)	Industrial Features

ID	Location	Company	Address	Activity	Category
C	35m S	Tank	Clwyd, LL14	Tanks (Generic)	Industrial Features
C	36m S	Tank	Clwyd, LL14	Tanks (Generic)	Industrial Features
C	37m S	Tank	Clwyd, LL14	Tanks (Generic)	Industrial Features
C	48m SW	Tank	Clwyd, LL14	Tanks (Generic)	Industrial Features
C	55m SW	Tank	Clwyd, LL14	Tanks (Generic)	Industrial Features
C	61m SW	Tank	Clwyd, LL14	Tanks (Generic)	Industrial Features
C	63m SW	Electricity Sub Station	Clwyd, LL14	Electrical Features	Infrastructure and Facilities
C	68m SW	Tank	Clwyd, LL14	Tanks (Generic)	Industrial Features
C	73m SW	Tank	Clwyd, LL14	Tanks (Generic)	Industrial Features
C	76m SW	Tank	Clwyd, LL14	Tanks (Generic)	Industrial Features
3	93m SE	Factory	Clwyd, LL14	Unspecified Works Or Factories	Industrial Features
C	96m SW	Chimney	Clwyd, LL14	Chimneys	Industrial Features
D	115m E	Tank	Clwyd, LL14	Tanks (Generic)	Industrial Features
D	116m NE	Tank	Clwyd, LL14	Tanks (Generic)	Industrial Features
D	120m NE	Tank	Clwyd, LL14	Tanks (Generic)	Industrial Features
D	123m NE	Tank	Clwyd, LL14	Tanks (Generic)	Industrial Features
D	124m NE	Tank	Clwyd, LL14	Tanks (Generic)	Industrial Features
D	142m E	Tank	Clwyd, LL14	Tanks (Generic)	Industrial Features
D	145m NE	Tank	Clwyd, LL14	Tanks (Generic)	Industrial Features
4	145m SW	Electricity Sub Station	Clwyd, LL14	Electrical Features	Infrastructure and Facilities
A	146m SE	Tank	Clwyd, LL14	Tanks (Generic)	Industrial Features

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	1

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on **page 39 >**

ID	Location	Company	Address	LPG	Status
10	334m NE	Q8	Holyhead Road, Chirk, Wrexham, Wrexham, LL14 5HP	Not Applicable	Obsolete

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	2

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

Features are displayed on the Current industrial land use map on **page 39 >**

ID	Location	Company	Address	Operational status	Tier
1	**On site**	**Kronospan Limited**	**Kronospan Limited, Chirk, Holyhead Road, Chirk, Clwyd, LL14 5NT**	**Current COMAH Site**	**COMAH Upper Tier Operator**
A	**On site**	**Kronospan Limited**	**Kronospan Limited, Chirk, Holyhead Road, Chirk, Clwyd, LL14 5NT**	**Current COMAH Site**	**COMAH Upper Tier Operator**

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	**0**

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	**1**

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

Features are displayed on the Current industrial land use map on **page 39 >**

ID	Location	Details	
E	251m SE	Application reference number: CB/1999/3633 Application status: Approved Application date: 01/09/1999 Address: Kronospan Ltd, Holyhead Road, Chirk, Wrexham, Clwyd, Wales, LL14 5NT	Details: Deemed Hazardous Substance Consent. Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	**7**

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

Features are displayed on the Current industrial land use map on **page 39 >**

ID	Location	Details	
E	264m SE	Operator: Kronospan Ltd Address: Hollyhead Road, Chirk, Wrexham, Clwyd, LL14 5NT Process: Manufacture And Use Of Organic Chemicals Permit Number: AK4877	Original Permit Number: IPCAIRAPP Date Approved: 22-2-1994 Effective Date: 27-2-1994 Status: Superseded By Variation
E	264m SE	Operator: Kronospan Ltd Address: Hollyhead Road, Chirk, Wrexham, Clwyd, LL14 5NT Process: Manufacture And Use Of Organic Chemicals Permit Number: AZ1710	Original Permit Number: IPCMAJVAR Date Approved: 8-12-1997 Effective Date: 22-12-1997 Status: Superseded By Variation
E	264m SE	Operator: Kronospan Ltd Address: Hollyhead Road, Chirk, Wrexham, Clwyd, LL14 5NT Process: Manufacture And Use Of Organic Chemicals Permit Number: BE0252	Original Permit Number: IPCMINVAR Date Approved: 24-11-1998 Effective Date: 30-11-1998 Status: Revoked - Now Ippc
G	396m S	Operator: Cadbury Schweppes Plc Address: Station Avenue, Chirk, LL14 5LT Process: Treating/processing Of Animal/veg Matter Permit Number: AY8492	Original Permit Number: IPCAPP Date Approved: 20-10-1997 Effective Date: 27-10-1997 Status: Superseded By Variation
G	396m S	Operator: Cadbury Schweppes Plc Address: Station Avenue, Chirk, LL14 5LT Process: Treating/processing Of Animal/veg Matter Permit Number: BD9769	Original Permit Number: IPCMINVAR Date Approved: 24-11-1998 Effective Date: 30-11-1998 Status: Superseded By Variation
G	396m S	Operator: Cadbury Schweppes Plc Address: Station Avenue, Chirk, LL14 5LT Process: Treating/processing Of Animal/veg Matter Permit Number: BH3924	Original Permit Number: IPCMAJVAR Date Approved: 12-4-2000 Effective Date: 17-4-2000 Status: Superseded By Variation
G	396m S	Operator: Cadbury Schweppes Plc Address: Station Avenue, Chirk, LL14 5LT Process: Treating/processing Of Animal/veg Matter Permit Number: BM2012	Original Permit Number: IPCMINVAR Date Approved: 30-1-2003 Effective Date: 5-2-2003 Status: Revoked - Now Ippc

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m	**32**

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 39 >**

ID	Location	Details	
2	29m NE	Operator: KRONOSPAN LTD Installation Name: CHIRK, PARTICLEBOARD Process: ORGANIC CHEMICALS; OXYGEN CONTAINING COMPOUNDS EG ALCOHOLS Permit Number: BW9999IG Original Permit Number: BW9999IG	EPR Reference: - Issue Date: 17/09/2004 Effective Date: 17/09/2004 Last date noted as effective: 17/11/2015 Status: SUPERCEDED
E	250m SE	Operator: KRONOSPAN LTD Installation Name: CHIRK PARTICLEBOARD EPR/BW9999IG Process: ORGANIC CHEMICALS; OXYGEN CONTAINING COMPOUNDS EG ALCOHOLS Permit Number: XP3830HX Original Permit Number: BW9999IG	EPR Reference: - Issue Date: 08/12/2010 Effective Date: 08/12/2010 Last date noted as effective: 17/11/2015 Status: EFFECTIVE
E	250m SE	Operator: KRONOSPAN LTD Installation Name: CHIRK, PARTICLEBOARD Process: ORGANIC CHEMICALS; OXYGEN CONTAINING COMPOUNDS EG ALCOHOLS Permit Number: JP3037XX Original Permit Number: BW9999IG	EPR Reference: - Issue Date: 28/04/2009 Effective Date: 28/04/2009 Last date noted as effective: 17/11/2015 Status: SUPERCEDED
E	250m SE	Operator: KRONOSPAN LTD Installation Name: CHIRK, PARTICLEBOARD Process: ORGANIC CHEMICALS; OXYGEN CONTAINING COMPOUNDS EG ALCOHOLS Permit Number: KP3735SC Original Permit Number: BW9999IG	EPR Reference: - Issue Date: 05/04/2006 Effective Date: 05/04/2006 Last date noted as effective: 17/11/2015 Status: SUPERCEDED
E	250m SE	Operator: KRONOSPAN LTD Installation Name: CHIRK, PARTICLEBOARD Process: ORGANIC CHEMICALS; OXYGEN CONTAINING COMPOUNDS EG ALCOHOLS Permit Number: WP3138TR Original Permit Number: BW9999IG	EPR Reference: - Issue Date: 22/06/2010 Effective Date: 22/06/2010 Last date noted as effective: 17/11/2015 Status: SUPERCEDED
E	250m SE	Operator: Kronospan Ltd Installation Name: Chirk Particleboard Factory Process: - Permit Number: BW9999IG Original Permit Number: -	EPR Reference: - Issue Date: 15/09/2023 Effective Date: 15/09/2023 Last date noted as effective: 02/04/2024 Status: Effective
E	250m SE	Operator: Kronospan Ltd Installation Name: Chirk Particleboard Factory Process: - Permit Number: BW9999IG Original Permit Number: -	EPR Reference: - Issue Date: 15/09/2023 Effective Date: 15/09/2023 Last date noted as effective: 02/04/2024 Status: Effective
E	250m SE	Operator: Kronospan Ltd Installation Name: Chirk Particleboard Factory Process: - Permit Number: BW9999IG Original Permit Number: -	EPR Reference: - Issue Date: 15/09/2023 Effective Date: 15/09/2023 Last date noted as effective: 02/04/2024 Status: Effective

ID	Location	Details	
E	250m SE	Operator: Kronospan Ltd Installation Name: Chirk Particleboard Factory Process: - Permit Number: BW9999IG Original Permit Number: -	EPR Reference: - Issue Date: 15/09/2023 Effective Date: 15/09/2023 Last date noted as effective: 02/04/2024 Status: Effective
E	250m SE	Operator: Kronospan Ltd Installation Name: Chirk Particleboard Factory Process: - Permit Number: BW9999IG Original Permit Number: -	EPR Reference: - Issue Date: 15/09/2023 Effective Date: 15/09/2023 Last date noted as effective: 02/04/2024 Status: Effective
E	250m SE	Operator: KRONOSPAN LTD Installation Name: CHIRK PARTICLEBOARD EPR/BW9999IG Process: PRODUCING ORGANIC CHEMICALS SUCH AS: (II) ORGANIC COMPOUNDS CONTAINING OXYGEN SU... Permit Number: BW9999IG Original Permit Number: XP3830HX	EPR Reference: - Issue Date: 01/02/2016 Effective Date: 01/02/2016 Last date noted as effective: 30/11/2017 Status: EFFECTIVE
E	250m SE	Operator: KRONOSPAN LTD Installation Name: CHIRK PARTICLEBOARD FACTORY Process: PRODUCING ORGANIC CHEMICALS SUCH AS: (II) ORGANIC COMPOUNDS CONTAINING OXYGEN SU... Permit Number: BW9999IG Original Permit Number: XP3830HX	EPR Reference: - Issue Date: 30/11/2017 Effective Date: 30/11/2017 Last date noted as effective: 01/04/2018 Status: EFFECTIVE
E	250m SE	Operator: KRONOSPAN LTD Installation Name: CHIRK PARTICLEBOARD FACTORY Process: PRODUCING ORGANIC CHEMICALS SUCH AS: (II) ORGANIC COMPOUNDS CONTAINING OXYGEN (FOR EXAMPLE ALCOHOLS, ALDEHYDES, KETONES, CARBOXYLIC ACIDS, ESTERS, ETHERS, PEROXIDES, PHENOLS, EPOXY RESINS) Permit Number: BW9999IG Original Permit Number: XP3830HX	EPR Reference: - Issue Date: 30/11/2017 Effective Date: 30/11/2017 Last date noted as effective: 02/11/2022 Status: EFFECTIVE
E	250m SE	Operator: KRONOSPAN LTD Installation Name: CHIRK PARTICLEBOARD EPR/BW9999IG Process: - Permit Number: BW9999IG Original Permit Number: -	EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 01/04/2017 Status: DULY MADE
E	250m SE	Operator: KRONOSPAN LTD Installation Name: CHIRK PARTICLEBOARD EPR/BW9999IG Process: - Permit Number: BW9999IG Original Permit Number: -	EPR Reference: - Issue Date: 01/02/2016 Effective Date: 01/02/2016 Last date noted as effective: 01/04/2017 Status: ISSUED

ID	Location	Details	
E	264m SE	Operator: KRONOSPAN HOLDINGS LTD Installation Name: - Process: ORGANIC CHEMICALS; OXYGEN CONTAINING COMPOUNDS EG ALCOHOLS Permit Number: BR7194 Original Permit Number: BR7194	EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 01/10/2004 Status: SUPERSEDED BY PAS
E	264m SE	Operator: KRONOSPAN LTD Installation Name: - Process: ORGANIC CHEMICALS; OXYGEN CONTAINING COMPOUNDS EG ALCOHOLS Permit Number: BW9999 Original Permit Number: BW9999	EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 01/10/2004 Status: SUPERSEDED BY PAS
G	426m S	Operator: CADBURY LTD Installation Name: CHIRK CONFECTIONERY PLANT Process: DEAD ANIMAL OR VEGETABLE MATTER; PROCESSING, STORING OR DRYING NOT OTHERWISE LISTED Permit Number: SP3933XB Original Permit Number: BN3766IA	EPR Reference: - Issue Date: 26/10/2007 Effective Date: 26/10/2007 Last date noted as effective: 17/11/2015 Status: SUPERCEDED
G	426m S	Operator: CADBURY LTD Installation Name: CHIRK CONFECTIONERY PLANT Process: OTHER WASTE DISPOSAL; NON-HAZARDOUS WASTE >50T/D BY BIOLOGICAL TREATMENT Permit Number: SP3933XB Original Permit Number: BN3766IA	EPR Reference: - Issue Date: 26/10/2007 Effective Date: 26/10/2007 Last date noted as effective: 17/11/2015 Status: SUPERCEDED
G	426m S	Operator: CADBURY UK LTD Installation Name: CHIRK CONFECTIONERY PLANT Process: DEAD ANIMAL OR VEGETABLE MATTER; PROCESSING, STORING OR DRYING NOT OTHERWISE LISTED Permit Number: GP3539XW Original Permit Number: BN3766IA	EPR Reference: - Issue Date: 22/04/2008 Effective Date: 22/04/2008 Last date noted as effective: 17/11/2015 Status: SUPERCEDED
G	426m S	Operator: CADBURY UK LTD Installation Name: CHIRK CONFECTIONERY PLANT Process: DEAD ANIMAL OR VEGETABLE MATTER; PROCESSING, STORING OR DRYING NOT OTHERWISE LISTED Permit Number: GP3539XW Original Permit Number: BN3766IA	EPR Reference: - Issue Date: 22/04/2008 Effective Date: 22/04/2008 Last date noted as effective: 17/11/2015 Status: SUPERCEDED
G	426m S	Operator: CADBURY UK LTD Installation Name: CHIRK CONFECTIONERY PLANT Process: OTHER WASTE DISPOSAL; NON-HAZARDOUS WASTE >50T/D BY BIOLOGICAL TREATMENT Permit Number: GP3539XW Original Permit Number: BN3766IA	EPR Reference: - Issue Date: 22/04/2008 Effective Date: 22/04/2008 Last date noted as effective: 17/11/2015 Status: SUPERCEDED

ID	Location	Details	
G	426m S	Operator: CADBURY LTD Installation Name: CHIRK CONFECTIONERY PLANT Process: OTHER WASTE DISPOSAL; NON-HAZARDOUS WASTE >50T/D BY BIOLOGICAL TREATMENT Permit Number: BN3766IA Original Permit Number: BN3766IA	EPR Reference: - Issue Date: 28/04/2006 Effective Date: 28/04/2006 Last date noted as effective: 17/11/2015 Status: SUPERCEDED
G	426m S	Operator: CADBURY LTD Installation Name: CHIRK CONFECTIONERY PLANT Process: DEAD ANIMAL OR VEGETABLE MATTER; PROCESSING, STORING OR DRYING NOT OTHERWISE LISTED Permit Number: BN3766IA Original Permit Number: BN3766IA	EPR Reference: - Issue Date: 28/04/2006 Effective Date: 28/04/2006 Last date noted as effective: 17/11/2015 Status: SUPERCEDED
G	426m S	Operator: CADBURY LTD Installation Name: CHIRK CONFECTIONERY PLANT Process: DEAD ANIMAL OR VEGETABLE MATTER; PROCESSING, STORING OR DRYING NOT OTHERWISE LISTED Permit Number: BN3766IA Original Permit Number: BN3766IA	EPR Reference: - Issue Date: 28/04/2006 Effective Date: 28/04/2006 Last date noted as effective: 17/11/2015 Status: SUPERCEDED
G	426m S	Operator: CADBURY LTD Installation Name: CHIRK CONFECTIONERY PLANT Process: DEAD ANIMAL OR VEGETABLE MATTER; PROCESSING, STORING OR DRYING NOT OTHERWISE LISTED Permit Number: SP3933XB Original Permit Number: BN3766IA	EPR Reference: - Issue Date: 26/10/2007 Effective Date: 26/10/2007 Last date noted as effective: 17/11/2015 Status: SUPERCEDED
G	426m S	Operator: KRAFT FOODS UK CONFECTIONARY PRODUCTION LIMITED Installation Name: CHIRK CONFECTIONERY PLANT Process: DEAD ANIMAL OR VEGETABLE MATTER; PROCESSING, STORING OR DRYING NOT OTHERWISE LISTED Permit Number: VP3838FA Original Permit Number: BN3766IA	EPR Reference: - Issue Date: 23/09/2011 Effective Date: 23/09/2011 Last date noted as effective: 17/11/2015 Status: SUPERCEDED
G	426m S	Operator: KRAFT FOODS UK CONFECTIONARY PRODUCTION LIMITED Installation Name: CHIRK CONFECTIONERY PLANT Process: DEAD ANIMAL OR VEGETABLE MATTER; PROCESSING, STORING OR DRYING NOT OTHERWISE LISTED Permit Number: VP3838FA Original Permit Number: BN3766IA	EPR Reference: - Issue Date: 23/09/2011 Effective Date: 23/09/2011 Last date noted as effective: 17/11/2015 Status: SUPERCEDED

ID	Location	Details	
G	426m S	Operator: KRAFT FOODS UK CONFECTIONARY PRODUCTION LIMITED Installation Name: CHIRK CONFECTIONERY PLANT Process: OTHER WASTE DISPOSAL; NON-HAZARDOUS WASTE >50T/D BY BIOLOGICAL TREATMENT Permit Number: VP3838FA Original Permit Number: BN3766IA	EPR Reference: - Issue Date: 23/09/2011 Effective Date: 23/09/2011 Last date noted as effective: 17/11/2015 Status: SUPERCEDED
G	426m S	Operator: KRAFT FOODS UK CONFECTIONARY PRODUCTION LIMITED Installation Name: CHIRK CONFECTIONERY PLANT Process: DEAD ANIMAL OR VEGETABLE MATTER; PROCESSING, STORING OR DRYING NOT OTHERWISE LISTED Permit Number: MP3934FL Original Permit Number: MP3934FL	EPR Reference: - Issue Date: 27/09/2011 Effective Date: 27/09/2011 Last date noted as effective: 01/04/2013 Status: TRANSFER EFFECTIVE
G	426m S	Operator: KRAFT FOODS UK CONFECTIONARY PRODUCTION LIMITED Installation Name: CHIRK CONFECTIONERY PLANT Process: OTHER WASTE DISPOSAL; NON-HAZARDOUS WASTE >50T/D BY BIOLOGICAL TREATMENT Permit Number: MP3934FL Original Permit Number: MP3934FL	EPR Reference: - Issue Date: 27/09/2011 Effective Date: 27/09/2011 Last date noted as effective: 01/04/2013 Status: TRANSFER EFFECTIVE
G	426m S	Operator: KRAFT FOODS UK CONFECTIONARY PRODUCTION LIMITED Installation Name: CHIRK CONFECTIONERY PLANT Process: DEAD ANIMAL OR VEGETABLE MATTER; PROCESSING, STORING OR DRYING NOT OTHERWISE LISTED Permit Number: MP3934FL Original Permit Number: MP3934FL	EPR Reference: - Issue Date: 27/09/2011 Effective Date: 27/09/2011 Last date noted as effective: 01/04/2013 Status: TRANSFER EFFECTIVE

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m **7**

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 39 >**

ID	Location	Address	Details	
5	219m SE	Kronospan Ltd, Maesgwyn Farm, Holyhead Road, Chirk, Wrexham, LL14 5NT	Process: Timber Manufacture Status: Historical Permit Permit Type: Part A2	Enforcement: Enforcement Notified Date of enforcement: 30/03/2006 Comment: Wood processing

ID	Location	Address	Details	
E	254m SE	Kronospan Ltd, Chirk Particleboard, Holyhead Road, Chirk, Wrexham, LL14 5NT	Process: Chemical & Acid Processes Status: Historical Permit Permit Type: Part B	Enforcement: Enforcement Notified Date of enforcement: 30/03/2006 Comment: Wood processing
E	254m SE	Rowan Foods, Ash Road South, Wrexham Industrial Estate, Wrexham, LL13 9UG	Process: Process Unkown Status: Historical Permit Permit Type: Part B	Enforcement: Enforcement Notified Date of enforcement: 30/03/2006 Comment: Wood processing
6	271m SW	Archwood Ltd, Canalwood Industrial Estate, Chirk, Wrexham, LL14 5RL	Process: Timber Manufacture Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified. Date of enforcement: No Enforcement Notified. Comment: No Enforcement Notified.
G	410m S	Mondelez UK Confectionery Production Ltd, Station Road, Chirk, Wrexham, LL14 5LT	Process: Vegetable Matter Drying Processes Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified. Date of enforcement: No Enforcement Notified. Comment: No Enforcement Notified.
G	424m S	Cadbury Ltd, Cadbury Trebor Bassett, Station Avenue, Chirk, Wrexham, LL14 5LT	Process: Other waste disposal Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified. Date of enforcement: No Enforcement Notified. Comment: No Enforcement Notified.
H	431m S	Hallbeck Engineering Ltd, Unit 6, Canal Wood Industrial Est, Chirk, Wrexham, LL14 5RL	Process: Waste Oil Burner 0.4 MW Status: New Legislation Applies Permit Type: Part B	Enforcement: No Enforcement Notified. Date of enforcement: No Enforcement Notified. Comment: No Enforcement Notified.

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	0

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m	12

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

Features are displayed on the Current industrial land use map on **page 39 >**

ID	Location	Address	Details	
D	162m E	HOLYHEAD ROAD CHIRK, CHIRK	Effluent Type: TRADE DISCHARGES - UNSPECIFIED Permit Number: CM0098901 Permit Version: 1 Receiving Water: AFON BRADLEY	Status: REVOKED AND REPLACED BY IPC AUTHORISATION Issue date: 01/06/1985 Effective Date: 01/06/1985 Revocation Date: 08/08/1994
7	284m N	CADBURY LTD STATION AVENUE CHIRK WR, CADBURY LTD STATION AVENUE CHIRK, STATION AVENUE CHIRK WREXHAM, CHIRK WREXHAM, WREXHAM	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: CM0043801 Permit Version: 2 Receiving Water: AFON BRADLEY	Status: REVOKED (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV Issue date: 26/04/1993 Effective Date: 26/04/1993 Revocation Date: 28/04/2006
9	325m N	CHIRK STATION IND ESTATE, CHIRK STATION IND ESTATE	Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: CM0091501 Permit Version: 0 Receiving Water: BRADLEY	Status: Effective Issue date: 15/07/1981 Effective Date: 15/07/1981 Revocation Date: -
F	381m N	CHIRK WREXHAM, CHIRK WREXHAM, WREXHAM	Effluent Type: UNSPECIFIED Permit Number: CM0098001 Permit Version: 1 Receiving Water: AFON BRADLEY	Status: REVOKED - UNSPECIFIED Issue date: 16/10/1984 Effective Date: 16/10/1984 Revocation Date: 08/09/1994
F	401m N	CHIRK WREXHAM, CHIRK WREXHAM, WREXHAM	Effluent Type: TRADE DISCHARGES - UNSPECIFIED Permit Number: CM0098001 Permit Version: 2 Receiving Water: AFON BRADLEY	Status: REVOKED (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV Issue date: 09/09/1994 Effective Date: 09/09/1994 Revocation Date: 01/11/2004
F	415m N	CHIRK PUMPING STATION, WREXHAM	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: CG0329703 Permit Version: 0 Receiving Water: AFON BRADLEY	Status: Effective Issue date: 26/03/1993 Effective Date: 26/03/1993 Revocation Date: -
13	416m N	CHIRK PS (SCREENED STORM), Holyhead Rd, Chirk, WREXHAM, LL14 5NA	Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: CG0329701 Permit Version: 0 Receiving Water: AFON BRADLEY	Status: Effective Issue date: 24/02/2020 Effective Date: 24/02/2020 Revocation Date: -
F	419m N	CADBURY LTD STATION AVENUE CHIRK WR, CADBURY LTD STATION AVENUE CHIRK, STATION AVENUE CHIRK WREXHAM, CHIRK WREXHAM, WREXHAM	Effluent Type: UNSPECIFIED Permit Number: CM0043801 Permit Version: 1 Receiving Water: AFON BRADLEY	Status: REVOKED - UNSPECIFIED Issue date: 30/09/1985 Effective Date: 30/09/1985 Revocation Date: 25/04/1993

ID	Location	Address	Details	
F	422m N	CHIRK STATION IND ESTATE	Effluent Type: UNSPECIFIED Permit Number: CM0091601 Permit Version: 1 Receiving Water: BRADLEY BROOK	Status: CONSENT EXPIRED - TIME LIMIT Issue date: 16/09/1981 Effective Date: 16/09/1981 Revocation Date: 28/04/1993
15	437m N	CHIRK PS (SCREENED STROM), Holyhead Rd, Chirk, WREXHAM, LL14 5HP	Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: CG0329702 Permit Version: 0 Receiving Water: AFON BRADLEY	Status: Effective Issue date: 06/02/2020 Effective Date: 06/02/2020 Revocation Date: -
16	487m S	CHIRK SEL-REY FACTORY SITE, SEL-REY FACTORY SITE	Effluent Type: UNSPECIFIED Permit Number: CM0055701 Permit Version: 1 Receiving Water: UN-NAMED TRIB. OF BRADLEY	Status: CONSENT EXPIRED - TIME LIMIT Issue date: 20/03/1969 Effective Date: 20/03/1969 Revocation Date: 22/12/1992
I	495m N	CHIRK PS (SCREENED STROM), Wrexham	Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: CG0329701 Permit Version: 1 Receiving Water: AFON BRADLEY	Status: Effective Issue date: 26/03/1993 Effective Date: 26/03/1993 Revocation Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m	**0**

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m	**0**

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m	1

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

Features are displayed on the Current industrial land use map on **page 39 >**

ID	Location	Name	Status	Receiving Water	Authorised Substances
8	297m S	Cadbury Schweppes Plc	Not Active	-	Pentachlorophenol

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m	15

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

Features are displayed on the Current industrial land use map on **page 39 >**

ID	Location	Details	
B	17m E	Incident Date: 12/08/2016 Incident Identification: 1604618 Pollutant: - Pollutant Description: -	Water Impact: No Details Land Impact: No Details Air Impact: Category 3 (Minor)
B	17m E	Incident Date: 12/08/2016 Incident Identification: 1604618 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke	Water Impact: No Details Land Impact: No Details Air Impact: Category 3 (Minor)
A	118m SE	Incident Date: 16/07/2001 Incident Identification: 16853 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)

ID	Location	Details	
E	255m SE	Incident Date: 11/10/2013 Incident Identification: 1166795 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke	Water Impact: - Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
E	268m SE	Incident Date: 17/04/2014 Incident Identification: 1228317 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke	Water Impact: - Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
E	276m SE	Incident Date: 04/09/2013 Incident Identification: 1156128 Pollutant: Oils and Fuel Pollutant Description: Diesel	Water Impact: - Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
11	379m E	Incident Date: 06/03/2003 Incident Identification: 141334 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Dust	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
G	389m S	Incident Date: 03/05/2002 Incident Identification: 76313 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
12	395m SE	Incident Date: 06/06/2013 Incident Identification: 1119476 Pollutant: Organic Chemicals/Products Pollutant Description: Alcohols/Aldehydes	Water Impact: - Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
14	426m NE	Incident Date: 24/01/2017 Incident Identification: 1700364 Pollutant: Sewage Material Pollutant Description: Crude Sewage	Water Impact: Category 2 (Significant) Land Impact: Category 2 (Significant) Air Impact: No Details
H	453m S	Incident Date: 23/06/2015 Incident Identification: 1347775 Pollutant: General Biodegradable Materials and Wastes Pollutant Description: Animal and Vegetable Oil	Water Impact: - Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
G	455m S	Incident Date: 29/07/2002 Incident Identification: 95428 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
G	465m S	Incident Date: 24/07/2002 Incident Identification: 93978 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)

ID	Location	Details	
I	495m N	Incident Date: 28/04/2003 Incident Identification: 154393 Pollutant: Contaminated Water Pollutant Description: Other Contaminated Water	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
I	498m N	Incident Date: 17/10/2009 Incident Identification: 725795 Pollutant: Sewage Materials Pollutant Description: Process Effluent	Water Impact: Category 2 (Significant) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m	**0**

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m	**0**

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

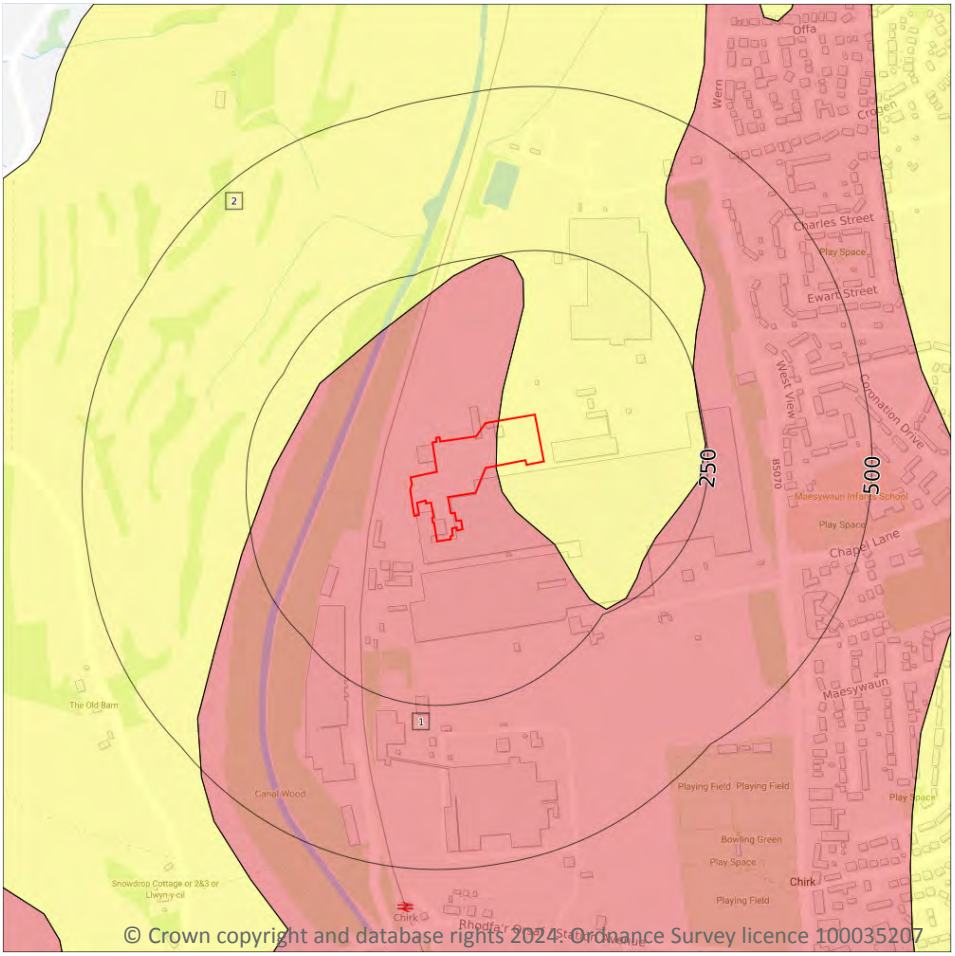
4.21 Pollution inventory radioactive waste

Records within 500m	**0**

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive
- Unknown

5.1 Superficial aquifer

Records within 500m	2

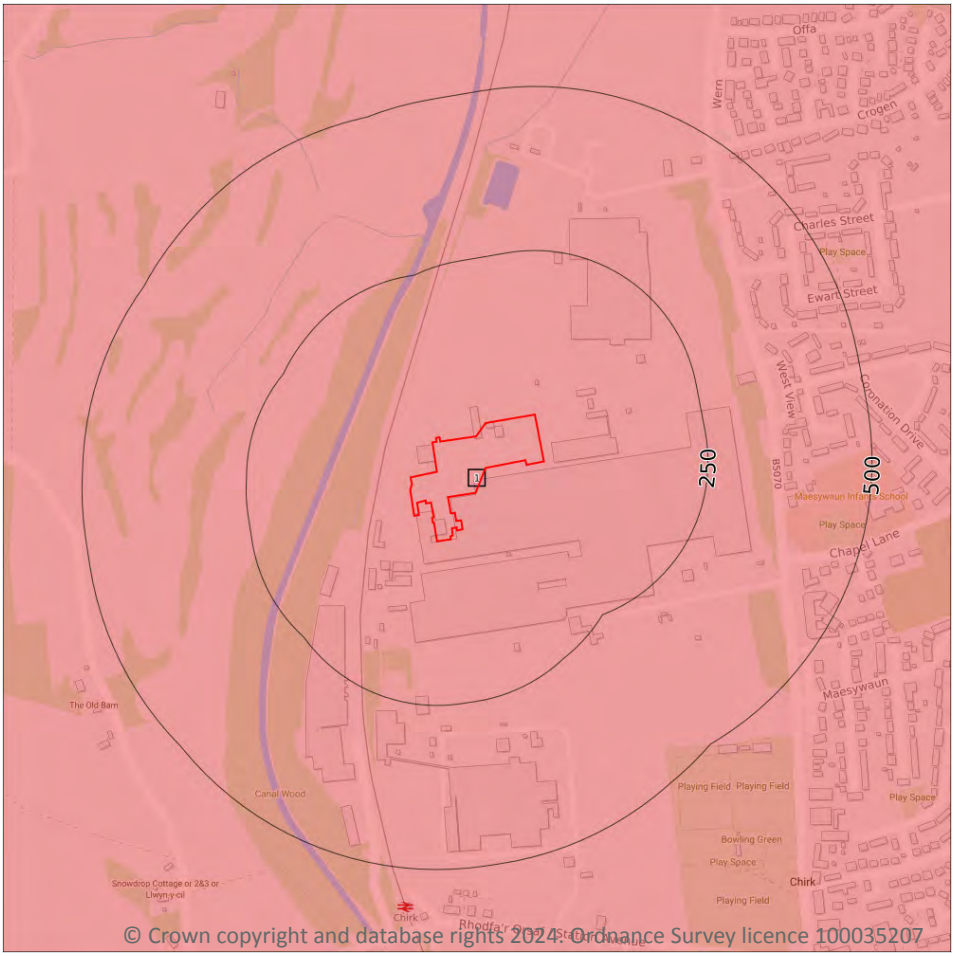
Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 55 >**

ID	Location	Designation	Description
1	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
2	On site	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

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Bedrock aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive

5.2 Bedrock aquifer

Records within 500m	1

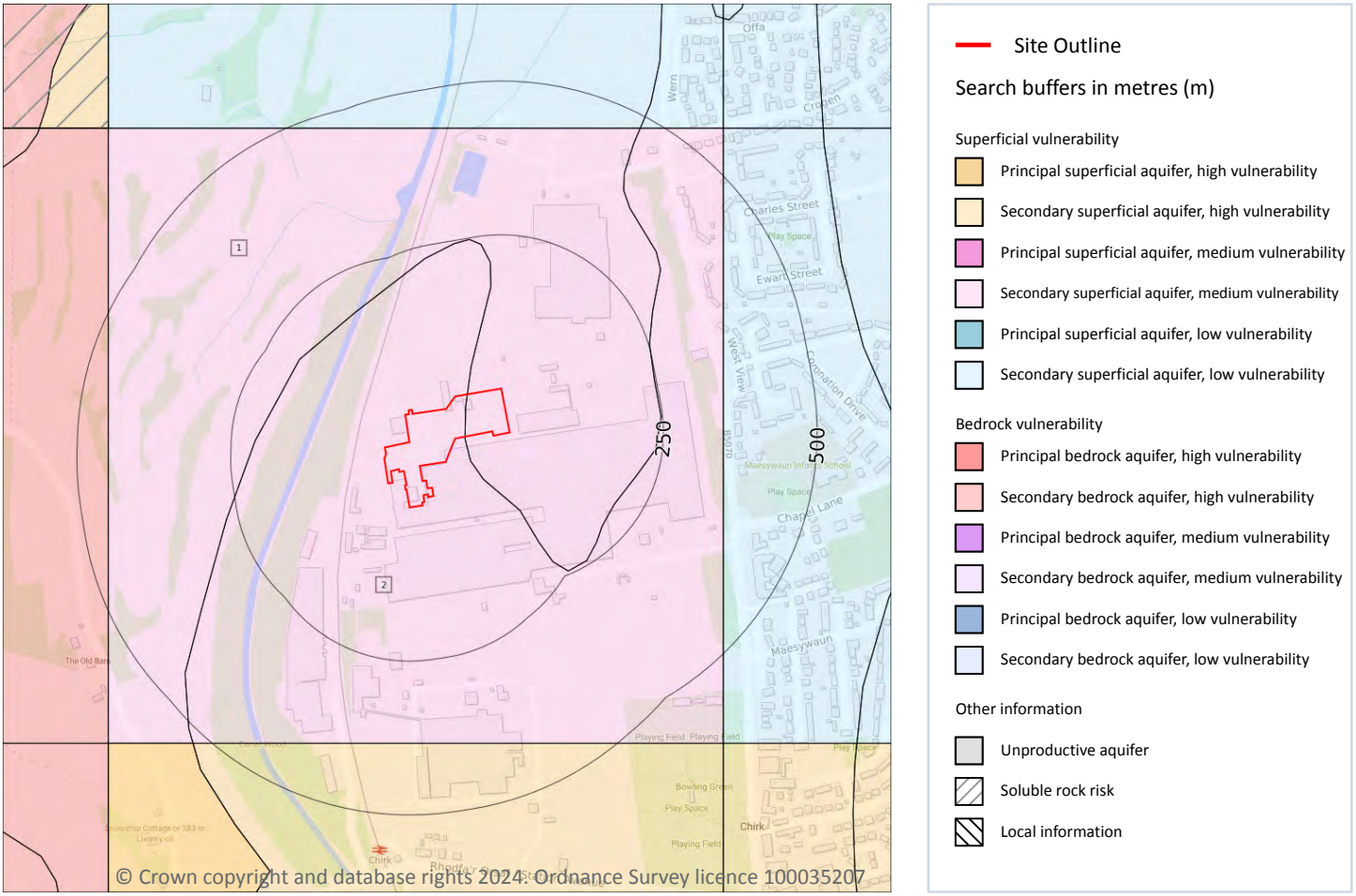
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 57 >**

ID	Location	Designation	Description
1	**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**

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Groundwater vulnerability



5.3 Groundwater vulnerability

Records within 50m	2

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 58 >**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: <40% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: Low	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
2	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: <40% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: Low	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

This data is sourced from the British Geological Survey and the Environment Agency.

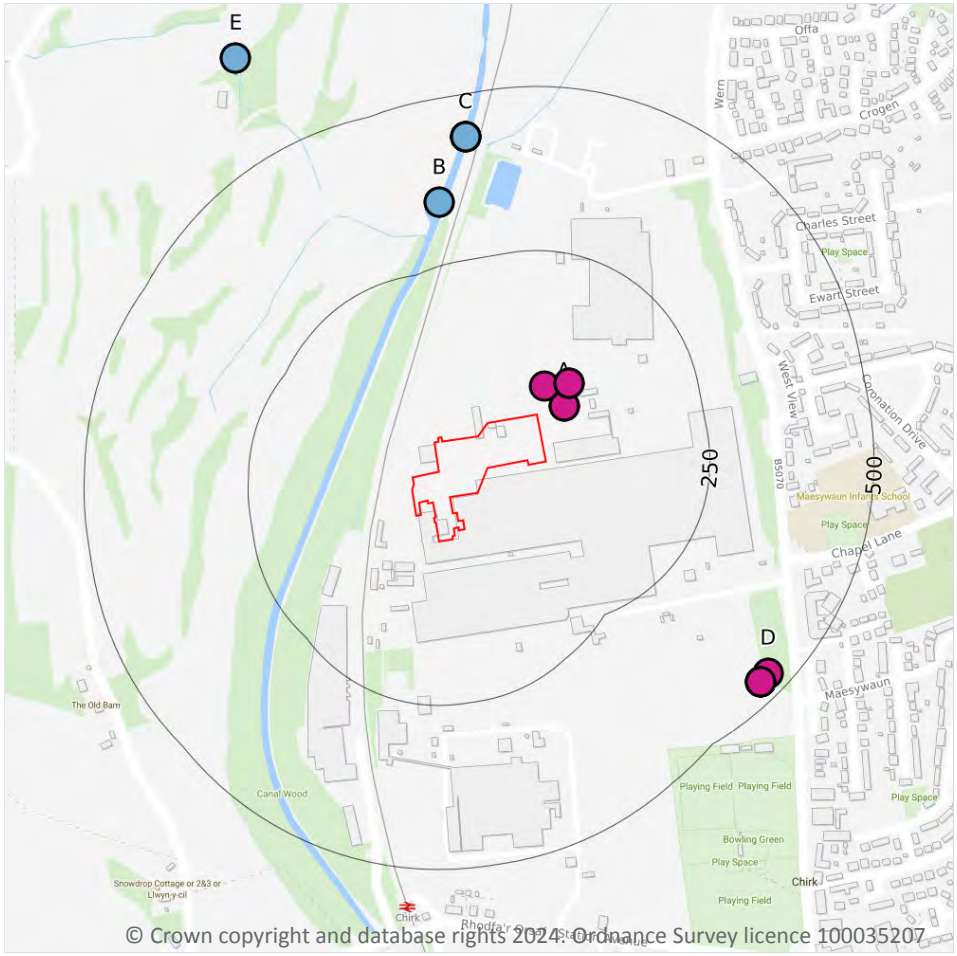
5.5 Groundwater vulnerability- local information

Records on site	0

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk ↗.

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones



Site Outline

Search buffers in metres (m)

- Source Protection Zone 1 — Inner catchment
- Source Protection Zone 2 — Outer catchment
- Source Protection Zone 3 — Total catchment
- Source Protection Zone 4 — Zone of Special Interest
- Source Protection Zone 1c — Inner catchment - confined aquifer
- Source Protection Zone 2c — Outer catchment - confined aquifer
- Source Protection Zone 3c — Total catchment - confined aquifer
- Drinking water abstraction licences
- Drinking water abstraction licences — Polygon features
- Drinking water abstraction licences — Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m	14

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 60 >**

ID	Location	Details	
A	43m NE	Status: Historical Licence No: 24/67/5/0066 Details: Process water Direct Source: EAW Groundwater Point: 33M DEEP, 250MM DIA. ST.STEEL CASING, BOREHOLE Data Type: Point Name: Kronospan Ltd Easting: 328680 Northing: 338590	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 07/08/1989 Expiry Date: - Issue No: 100 Version Start Date: 07/07/1995 Version End Date: -
A	43m NE	Status: Historical Licence No: 24/67/5/0080 Details: Evaporative Cooling Direct Source: EAW Groundwater Point: 33M DEEP, 250MM DIA. ST.STEEL CASING, BOREHOLE Data Type: Point Name: Kronospan Ltd Easting: 328680 Northing: 338590	Annual Volume (m^3): 262800 Max Daily Volume (m^3): 720 Original Application No: - Original Start Date: 21/06/2001 Expiry Date: 31/03/2012 Issue No: 1 Version Start Date: 01/04/2006 Version End Date: -
A	43m NE	Status: Historical Licence No: 24/67/5/0080 Details: Process Water Direct Source: EAW Groundwater Point: 33M DEEP, 250MM DIA. ST.STEEL CASING, BOREHOLE Data Type: Point Name: Kronospan Ltd Easting: 328680 Northing: 338590	Annual Volume (m^3): 262800 Max Daily Volume (m^3): 720 Original Application No: - Original Start Date: 21/06/2001 Expiry Date: 31/03/2012 Issue No: 1 Version Start Date: 01/04/2006 Version End Date: -
A	44m NE	Status: Historical Licence No: 24/67/5/0066 Details: Process water Direct Source: EAW Groundwater Point: BOREHOLE Data Type: Point Name: Kronospan Ltd Easting: 328650 Northing: 338620	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 07/08/1989 Expiry Date: - Issue No: 100 Version Start Date: 07/07/1995 Version End Date: -

ID	Location	Details	
A	68m NE	Status: Active Licence No: WA/067/0005/015 Details: Evaporative Cooling - High Direct Source: nderground strata comprising of superficial deposi Point: - Data Type: Point Name: - Easting: 328688 Northing: 338624	Annual Volume (m^3): 160000 Max Daily Volume (m^3): 600 Original Application No: - Original Start Date: 02/02/2016 Expiry Date: 30/03/2027 Issue No: - Version Start Date: - Version End Date: -
A	68m NE	Status: Historical Licence No: WA/067/0005/015 Details: Process Water Direct Source: EAW Groundwater Point: DEPOSITS OF SAND AND GRAVEL AT CHIRK, WREXHAM Data Type: Point Name: Kronospan Ltd Easting: 328688 Northing: 338624	Annual Volume (m^3): 262800 Max Daily Volume (m^3): 720 Original Application No: - Original Start Date: 01/04/2012 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 01/04/2012 Version End Date: -
A	68m NE	Status: Historical Licence No: WA/067/0005/015 Details: Evaporative Cooling Direct Source: EAW Groundwater Point: DEPOSITS OF SAND AND GRAVEL AT CHIRK, WREXHAM Data Type: Point Name: Kronospan Ltd Easting: 328688 Northing: 338624	Annual Volume (m^3): 160000 Max Daily Volume (m^3): 600 Original Application No: - Original Start Date: 01/04/2012 Expiry Date: 31/03/2027 Issue No: 2 Version Start Date: 29/01/2016 Version End Date: -
D	467m SE	Status: Active Licence No: WA/067/0006/006 Details: Process Water - Medium Direct Source: - Point: - Data Type: Point Name: - Easting: 328991 Northing: 338183	Annual Volume (m^3): 141912 Max Daily Volume (m^3): 388.8 Original Application No: - Original Start Date: 01/04/2015 Expiry Date: 31/03/2027 Issue No: - Version Start Date: - Version End Date: -
D	467m SE	Status: Historical Licence No: WA/067/0006/006 Details: Process Water Direct Source: EAW Groundwater Point: 55M DEEP, 300MM DIA BOREHOLE Data Type: Point Name: Kronospan Ltd Easting: 328991 Northing: 338183	Annual Volume (m^3): 141912 Max Daily Volume (m^3): 388.8 Original Application No: - Original Start Date: 01/04/2015 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 01/04/2015 Version End Date: -

ID	Location	Details	
D	468m SE	Status: Historical Licence No: 24/67/5/0079 Details: Process water Direct Source: EAW Groundwater Point: 55M DEEP, 300MM DIA BOREHOLE Data Type: Point Name: Kronospan Ltd Easting: 328980 Northing: 338170	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 24/05/2001 Expiry Date: 24/05/2004 Issue No: 1 Version Start Date: 01/04/2003 Version End Date: -
D	468m SE	Status: Historical Licence No: 24/67/5/0082 Details: Process Water Direct Source: EAW Groundwater Point: 55M DEEP, 300MM DIA BOREHOLE Data Type: Point Name: Kronospan Ltd Easting: 328980 Northing: 338170	Annual Volume (m^3): 236520 Max Daily Volume (m^3): 648 Original Application No: - Original Start Date: 25/05/2004 Expiry Date: 31/03/2008 Issue No: 1 Version Start Date: 01/04/2006 Version End Date: -
D	468m SE	Status: Historical Licence No: 24/67/5/0082 Details: Evaporative Cooling Direct Source: EAW Groundwater Point: 55M DEEP, 300MM DIA BOREHOLE Data Type: Point Name: Kronospan Ltd Easting: 328980 Northing: 338170	Annual Volume (m^3): 236520 Max Daily Volume (m^3): 648 Original Application No: - Original Start Date: 25/05/2004 Expiry Date: 31/03/2008 Issue No: 1 Version Start Date: 01/04/2006 Version End Date: -
D	468m SE	Status: Historical Licence No: 24/67/5/0083 Details: Evaporative Cooling Direct Source: EAW Groundwater Point: 55M DEEP, 300MM DIA BOREHOLE Data Type: Point Name: Kronospan Ltd Easting: 328980 Northing: 338170	Annual Volume (m^3): 236520 Max Daily Volume (m^3): 648 Original Application No: - Original Start Date: 01/04/2008 Expiry Date: 31/03/2015 Issue No: 1 Version Start Date: 01/04/2008 Version End Date: -
D	468m SE	Status: Historical Licence No: 24/67/5/0083 Details: Process Water Direct Source: EAW Groundwater Point: 55M DEEP, 300MM DIA BOREHOLE Data Type: Point Name: Kronospan Ltd Easting: 328980 Northing: 338170	Annual Volume (m^3): 236520 Max Daily Volume (m^3): 648 Original Application No: - Original Start Date: 01/04/2008 Expiry Date: 31/03/2015 Issue No: 1 Version Start Date: 01/04/2008 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m	22

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 60 >**

ID	Location	Details	
B	344m N	Status: Historical Licence No: 24/67/5/0081 Details: Evaporative Cooling Direct Source: EAW Surface Water Point: POINT "B"ON LLANGOLLEN CANAL Data Type: Point Name: Canal and River Trust Easting: 328490 Northing: 338900	Annual Volume (m^3): 475800 Max Daily Volume (m^3): 1600 Original Application No: - Original Start Date: 12/08/2003 Expiry Date: 31/03/2027 Issue No: 3 Version Start Date: 20/07/2012 Version End Date: -
B	344m N	Status: Historical Licence No: 24/67/5/0081 Details: Process Water Direct Source: EAW Surface Water Point: POINT "B"ON LLANGOLLEN CANAL Data Type: Point Name: Canal and River Trust Easting: 328490 Northing: 338900	Annual Volume (m^3): 475800 Max Daily Volume (m^3): 1600 Original Application No: - Original Start Date: 12/08/2003 Expiry Date: 31/03/2027 Issue No: 3 Version Start Date: 20/07/2012 Version End Date: -
C	435m N	Status: Active Licence No: 24/67/5/0081 Details: Process Water - Medium Direct Source: - Point: - Data Type: Point Name: - Easting: 328530 Northing: 339000	Annual Volume (m^3): 475800 Max Daily Volume (m^3): 1600 Original Application No: - Original Start Date: 20/07/2012 Expiry Date: 31/03/2027 Issue No: - Version Start Date: - Version End Date: -
C	435m N	Status: Active Licence No: 24/67/5/0081 Details: Evaporative Cooling - High Direct Source: - Point: - Data Type: Point Name: - Easting: 328530 Northing: 339000	Annual Volume (m^3): 475800 Max Daily Volume (m^3): 1600 Original Application No: - Original Start Date: 20/07/2012 Expiry Date: 31/03/2027 Issue No: - Version Start Date: - Version End Date: -

ID	Location	Details	
C	435m N	Status: Historical Licence No: 24/67/5/0081 Details: Evaporative Cooling - High Direct Source: - Point: - Data Type: Point Name: - Easting: 328530 Northing: 339000	Annual Volume (m^3): 475800 Max Daily Volume (m^3): 1600.8 Original Application No: - Original Start Date: 20/07/2012 Expiry Date: 31/03/2027 Issue No: - Version Start Date: - Version End Date: -
C	435m N	Status: Historical Licence No: 24/67/5/0081 Details: Process Water - Medium Direct Source: - Point: - Data Type: Point Name: - Easting: 328530 Northing: 339000	Annual Volume (m^3): 475800 Max Daily Volume (m^3): 1600.8 Original Application No: - Original Start Date: 20/07/2012 Expiry Date: 31/03/2027 Issue No: - Version Start Date: - Version End Date: -
C	435m N	Status: Historical Licence No: 24/67/5/0081 Details: Evaporative Cooling Direct Source: EAW Surface Water Point: POINT "A"ON LLANGOLLEN CANAL Data Type: Point Name: Canal and River Trust Easting: 328530 Northing: 339000	Annual Volume (m^3): 475800 Max Daily Volume (m^3): 1600 Original Application No: - Original Start Date: 12/08/2003 Expiry Date: 31/03/2027 Issue No: 3 Version Start Date: 20/07/2012 Version End Date: -
C	435m N	Status: Historical Licence No: 24/67/5/0081 Details: Process Water Direct Source: EAW Surface Water Point: POINT "A"ON LLANGOLLEN CANAL Data Type: Point Name: Canal and River Trust Easting: 328530 Northing: 339000	Annual Volume (m^3): 475800 Max Daily Volume (m^3): 1600 Original Application No: - Original Start Date: 12/08/2003 Expiry Date: 31/03/2027 Issue No: 3 Version Start Date: 20/07/2012 Version End Date: -
E	655m NW	Status: Historical Licence No: 24/67/5/0067 Details: Spray Irrigation - Direct Direct Source: EAW Surface Water Point: CHIRK CASTLE POOL AND OUTLET STREAM Data Type: Point Name: Myddleton Easting: 328180 Northing: 339120	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/06/1989 Expiry Date: - Issue No: 100 Version Start Date: 20/01/1993 Version End Date: -

ID	Location	Details	
E	655m NW	Status: Historical Licence No: 24/67/5/0067 Details: Spray Irrigation - Direct Direct Source: EAW Surface Water Point: CHIRK CASTLE POOL AND OUTLET STREAM Data Type: Point Name: Chirk Golf Club Easting: 328180 Northing: 339120	Annual Volume (m^3): 9000 Max Daily Volume (m^3): 164 Original Application No: - Original Start Date: 01/06/1989 Expiry Date: 01/06/2031 Issue No: 103 Version Start Date: 24/07/2012 Version End Date: -
-	970m NW	Status: Historical Licence No: 24/67/5/0067 Details: Spray Irrigation - Direct Direct Source: EAW Surface Water Point: CHIRK CASTLE POOL AND OUTLET STREAM Data Type: Point Name: Myddleton Easting: 327680 Northing: 339080	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/06/1989 Expiry Date: - Issue No: 100 Version Start Date: 20/01/1993 Version End Date: -
-	1065m W	Status: Historical Licence No: 24/67/5/0024 Details: Potable Water Supply - Direct Direct Source: EAW Surface Water Point: NEWHALLSPRING Data Type: Point Name: Dee Valley Water Plc Easting: 327450 Northing: 338850	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 23/10/1967 Expiry Date: - Issue No: 100 Version Start Date: 19/05/1982 Version End Date: -
-	1331m W	Status: Historical Licence No: 24/67/5/0067 Details: Spray Irrigation - Direct Direct Source: EAW Surface Water Point: CHIRK CASTLE POOL Data Type: Point Name: Myddleton Easting: 327130 Northing: 338660	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/06/1989 Expiry Date: - Issue No: 100 Version Start Date: 20/01/1993 Version End Date: -
-	1478m NW	Status: Historical Licence No: 24/67/5/0035 Details: General Farming & Domestic Direct Source: EAW Surface Water Point: SPRING Data Type: Point Name: Myddleton Easting: 327500 Northing: 339640	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 14/06/1968 Expiry Date: - Issue No: 100 Version Start Date: 14/06/1968 Version End Date: -

ID	Location	Details	
-	1660m W	Status: Historical Licence No: 24/67/5/0067 Details: Spray Irrigation - Direct Direct Source: EAW Surface Water Point: CHIRK CASTLE POOL POINT A Data Type: Point Name: Myddleton Easting: 326820 Northing: 338800	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/06/1989 Expiry Date: - Issue No: 100 Version Start Date: 20/01/1993 Version End Date: -
-	1691m SW	Status: Historical Licence No: 24/67/6/0016 Details: Fish Farm / Cress pond Throughflow - Very Low Direct Source: Groundwater fed spring Point: - Data Type: Point Name: - Easting: 327050 Northing: 337480	Annual Volume (m^3): 249475.56 Max Daily Volume (m^3): - Original Application No: - Original Start Date: Apr 1 2008 12:00AM Expiry Date: - Issue No: - Version Start Date: - Version End Date: -
-	1691m SW	Status: Historical Licence No: 24/67/6/0016 Details: Fish Farm / Cress pond Throughflow - Very Low Direct Source: Un-named spring Point: - Data Type: Point Name: - Easting: 327050 Northing: 337480	Annual Volume (m^3): 249475.56 Max Daily Volume (m^3): - Original Application No: - Original Start Date: 29/12/2022 Expiry Date: - Issue No: - Version Start Date: - Version End Date: -
-	1691m SW	Status: Historical Licence No: 24/67/6/0016 Details: Fish Farm/Cress Pond Throughflow Direct Source: EAW Surface Water Point: N-NAMED SPRING, CHIRK FISHERY,WREXHAM. Data Type: Point Name: Coadey Easting: 327050 Northing: 337480	Annual Volume (m^3): 249476 Max Daily Volume (m^3): 681.63 Original Application No: - Original Start Date: 23/10/1967 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 Version End Date: -
-	1691m SW	Status: Active Licence No: 24/67/6/0016 Details: Fish Farm / Cress pond Throughflow - Very Low Direct Source: Un-named spring Point: - Data Type: Point Name: - Easting: 327050 Northing: 337480	Annual Volume (m^3): 249475.56 Max Daily Volume (m^3): 681.63 Original Application No: - Original Start Date: 29/12/2022 Expiry Date: - Issue No: - Version Start Date: - Version End Date: -

ID	Location	Details	
-	1745m SW	Status: Historical Licence No: 24/67/6/0015 Details: Fish Farm/Cress Pond Throughflow Direct Source: EAW Surface Water Point: RIVER CEIRIOG FOR CHIRK FISHERY Data Type: Point Name: Coadey Easting: 327040 Northing: 337400	Annual Volume (m^3): 8319180 Max Daily Volume (m^3): 22730 Original Application No: - Original Start Date: 23/10/1967 Expiry Date: - Issue No: 101 Version Start Date: 02/02/2010 Version End Date: -
-	1745m SW	Status: Historical Licence No: 24/67/6/0015 Details: Fish Farm / Cress pond Throughflow - Very Low Direct Source: Afon Ceiriog Point: - Data Type: Point Name: - Easting: 327040 Northing: 337400	Annual Volume (m^3): 8319180 Max Daily Volume (m^3): 25008 Original Application No: - Original Start Date: 10/12/2020 Expiry Date: - Issue No: - Version Start Date: - Version End Date: -
-	1745m SW	Status: Active Licence No: 24/67/6/0015 Details: Fish Farm / Cress pond Throughflow - Very Low Direct Source: Afon Ceiriog Point: - Data Type: Point Name: - Easting: 327040 Northing: 337400	Annual Volume (m^3): 8319180 Max Daily Volume (m^3): 22730 Original Application No: - Original Start Date: 10/12/2020 Expiry Date: - Issue No: - Version Start Date: - Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m	**1**

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 60 >**

ID	Location	Details	
-	1065m W	Status: Historical Licence No: 24/67/5/0024 Details: Potable Water Supply - Direct Direct Source: EAW Surface Water Point: NEWHALLSPRING Data Type: Point Name: Dee Valley Water Plc Easting: 327450 Northing: 338850	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 23/10/1967 Expiry Date: - Issue No: 100 Version Start Date: 19/05/1982 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m	0

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

This data is sourced from the Environment Agency and Natural Resources Wales.

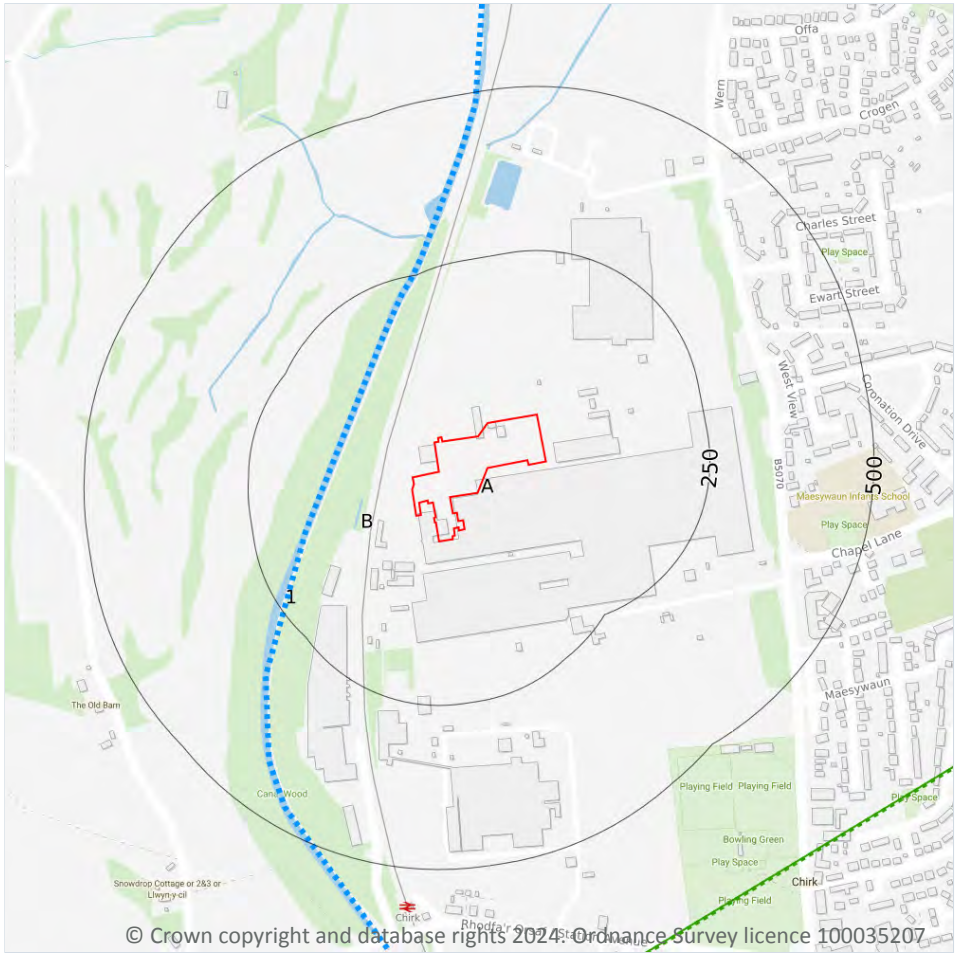
5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.

6 Hydrology



Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	2

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 70 >**

ID	Location	Type of water feature	Ground level	Permanence	Name
B	77m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
1	120m W	Canal. A manmade watercourse for inland navigation.	On ground surface	Watercourse contains water year round (in normal circumstances)	Llangollen Canal

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	**2**

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 70 >**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	**1**

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 70 >**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
A	**On site**	**River WB catchment**	**Dee - Ceiriog to Alwen**	**GB111067052060**	**Dee Middle Ceiriog to Alwen**	**Dee**

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	**2**

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site.

Features are displayed on the Hydrology map on **page 70 >**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
B	121m W	Canal	Llangollen Canal	GB70910082	Moderate	Fail	Good	2019
-	2393m N	River	Dee - Ceiriog to Alwen	GB111067052060	Moderate	Fail	Good	2016

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site	**1**

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place.

Features are displayed on the Hydrology map on **page 70 >**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	**On site**	**Dee Silurian/Ordovician**	**GB41102G200200**	**Good**	**Good**	**Good**	**2017**

This data is sourced from the Environment Agency and Natural Resources Wales.

7 River and coastal flooding

7.1 Risk of flooding from rivers and the sea

Records within 50m	0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m	0

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m	0

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.4 Areas Benefiting from Flood Defences

Records within 250m	0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.5 Flood Storage Areas

Records within 250m	0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.

River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

This data is sourced from the Environment Agency and Natural Resources Wales.

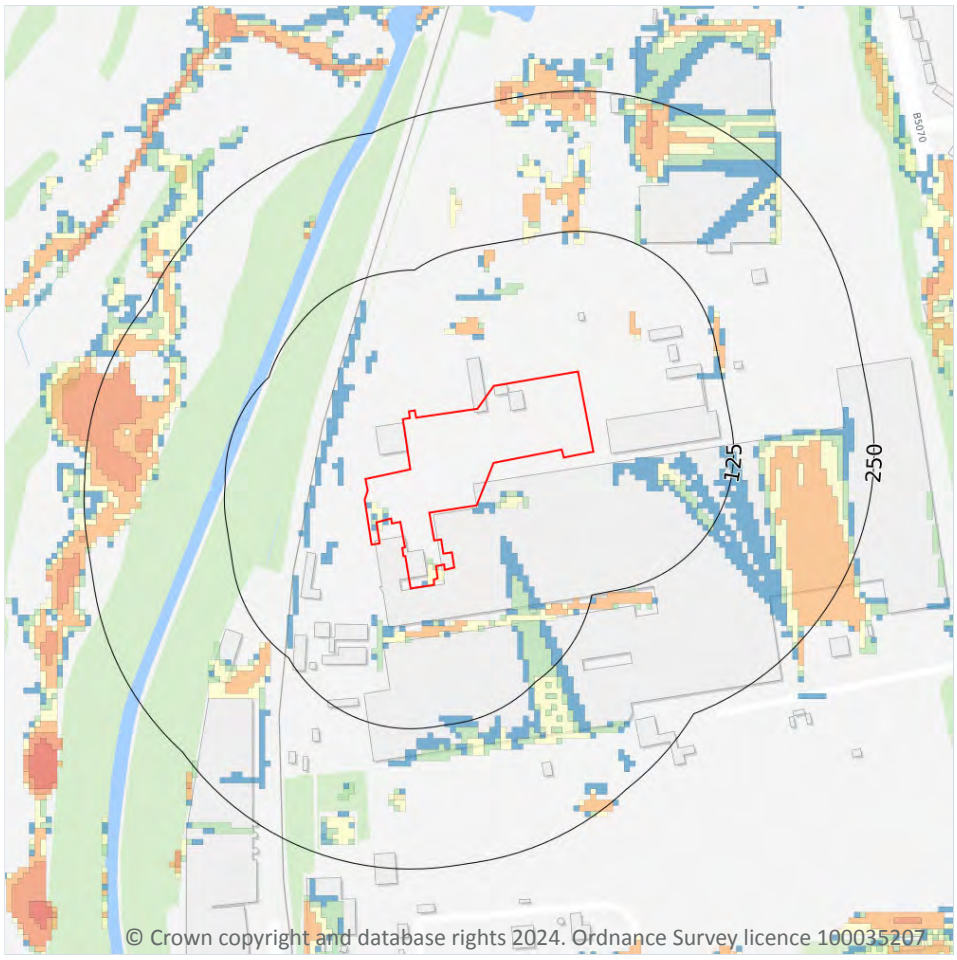
7.7 Flood Zone 3

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

8 Surface water flooding



Site Outline
Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site	**1 in 100 year, 0.1m - 0.3m**
Highest risk within 50m	**1 in 30 year, 0.1m - 0.3m**

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 76 >**

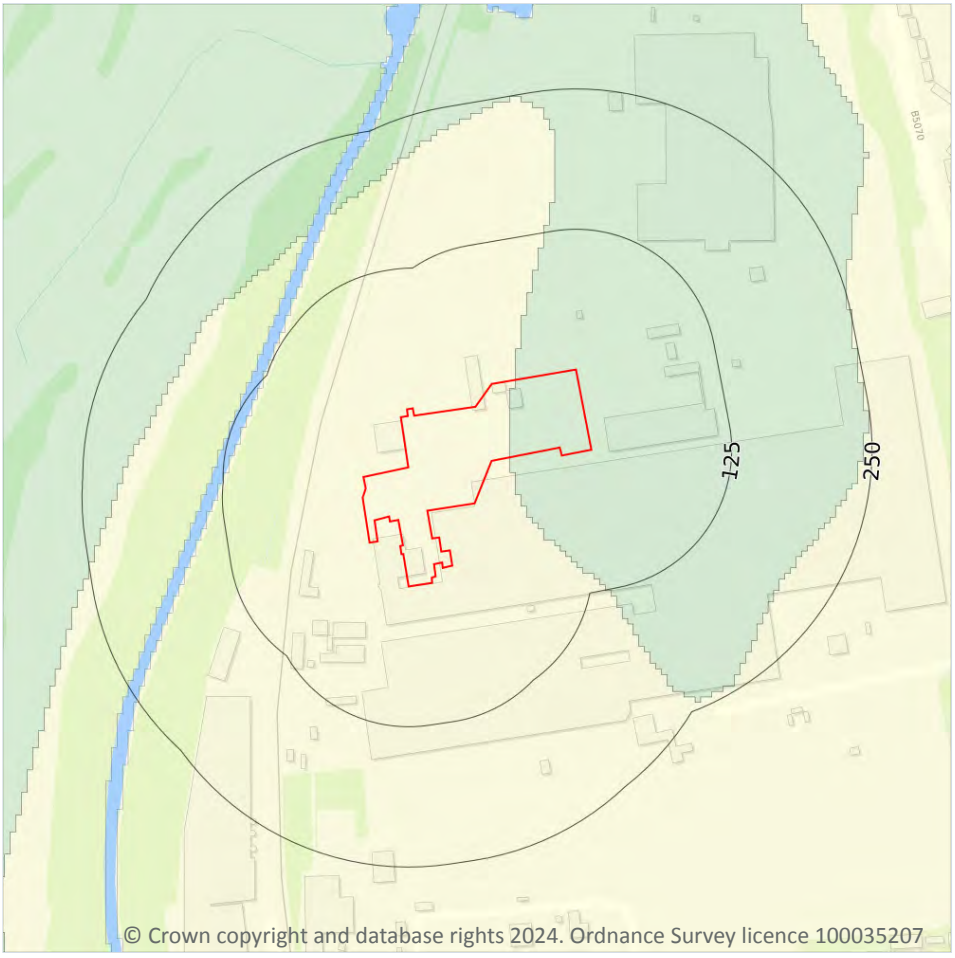
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Between 0.1m and 0.3m
1 in 250 year	Between 0.1m and 0.3m
1 in 100 year	Between 0.1m and 0.3m
1 in 30 year	Negligible

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



Site Outline

Search buffers in metres (m)

High

Moderate - High

Moderate

Low

Negligible

9.1 Groundwater flooding

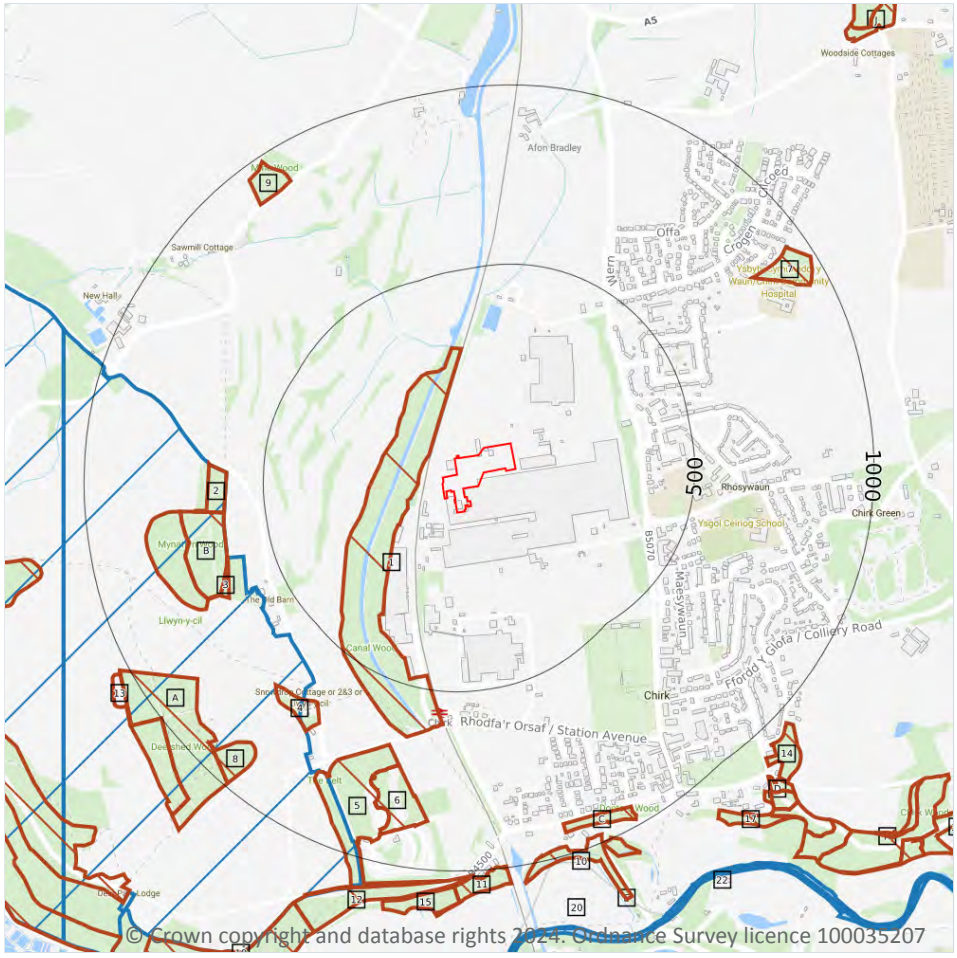
Highest risk on site	**Moderate**
Highest risk within 50m	**Moderate**

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 78 >**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



Site Outline

Search buffers in metres (m)

Sites of Special Scientific Interest (SSSI)

Special Areas of Conservation (SAC)

Designated Ancient Woodland

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	11

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

Features are displayed on the Environmental designations map on **page 79 >**

ID	Location	Name	Data source
A	576m SW	Castell y Waun a'i Barcdir / Chirk Castle and Parkland	Natural Resources Wales

ID	Location	Name	Data source
16	1057m W	Castell y Waun a'i Barcdir / Chirk Castle and Parkland	Natural Resources Wales
E	1188m S	River Dee (England)	Natural England
F	1203m S	Afon Dyfrdwy (River Dee)	Natural Resources Wales
21	1217m SE	Afon Dyfrdwy (River Dee)	Natural Resources Wales
-	1684m SW	Afon Dyfrdwy (River Dee)	Natural Resources Wales
-	1732m SW	Afon Dyfrdwy (River Dee)	Natural Resources Wales
-	1737m W	Castell y Waun a'i Barcdir / Chirk Castle and Parkland	Natural Resources Wales
-	1748m W	Castell y Waun a'i Barcdir / Chirk Castle and Parkland	Natural Resources Wales
-	1749m SW	Afon Dyfrdwy (River Dee)	Natural Resources Wales
-	1805m SW	Afon Dyfrdwy (River Dee)	Natural Resources Wales

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	**0**

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m	**8**

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

Features are displayed on the Environmental designations map on **page 79 >**

ID	Location	Name	Features of interest	Habitat description	Data source
20	1186m S	River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (England)	Rivers with floating vegetation often dominated by water-crowfoot; Mixed woodland on base-rich soils associated with rocky slopes; Western acidic oak woodland; Alder woodland on floodplains; Sea lamprey; Brook lamprey; River lamprey; Twaite shad; Atlantic salmon; Bullhead; Freshwater pearl mussel; Otter; Floating water-plantain.	Broad-leaved deciduous woodland; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Improved grassland; Inland water bodies (Standing water, Running water); Salt marshes, Salt pastures, Salt steppes	Natural Resources Wales
E	1188m S	River Dee and Bala Lake	Rivers with floating vegetation often dominated by water-crowfoot; Mixed woodland on base-rich soils associated with rocky slopes; Western acidic oak woodland; Alder woodland on floodplains; Sea lamprey; Brook lamprey; River lamprey; Twaite shad; Atlantic salmon; Bullhead; Freshwater pearl mussel; Otter; Floating water-plantain.	Broad-leaved deciduous woodland; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Improved grassland; Inland water bodies (Standing water, Running water); Salt marshes, Salt pastures, Salt steppes	Natural England
F	1203m S	River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales)	Rivers with floating vegetation often dominated by water-crowfoot; Mixed woodland on base-rich soils associated with rocky slopes; Western acidic oak woodland; Alder woodland on floodplains; Sea lamprey; Brook lamprey; River lamprey; Twaite shad; Atlantic salmon; Bullhead; Freshwater pearl mussel; Otter; Floating water-plantain.	Broad-leaved deciduous woodland; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Improved grassland; Inland water bodies (Standing water, Running water); Salt marshes, Salt pastures, Salt steppes	Natural Resources Wales
22	1217m SE	River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales)	Rivers with floating vegetation often dominated by water-crowfoot; Mixed woodland on base-rich soils associated with rocky slopes; Western acidic oak woodland; Alder woodland on floodplains; Sea lamprey; Brook lamprey; River lamprey; Twaite shad; Atlantic salmon; Bullhead; Freshwater pearl mussel; Otter; Floating water-plantain.	Broad-leaved deciduous woodland; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Improved grassland; Inland water bodies (Standing water, Running water); Salt marshes, Salt pastures, Salt steppes	Natural Resources Wales

ID	Location	Name	Features of interest	Habitat description	Data source
27	1339m SE	River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales)	Rivers with floating vegetation often dominated by water-crowfoot; Mixed woodland on base-rich soils associated with rocky slopes; Western acidic oak woodland; Alder woodland on floodplains; Sea lamprey; Brook lamprey; River lamprey; Twaite shad; Atlantic salmon; Bullhead; Freshwater pearl mussel; Otter; Floating water-plantain.	Broad-leaved deciduous woodland; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Improved grassland; Inland water bodies (Standing water, Running water); Salt marshes, Salt pastures, Salt steppes	Natural Resources Wales
-	1732m SW	River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales)	Rivers with floating vegetation often dominated by water-crowfoot; Mixed woodland on base-rich soils associated with rocky slopes; Western acidic oak woodland; Alder woodland on floodplains; Sea lamprey; Brook lamprey; River lamprey; Twaite shad; Atlantic salmon; Bullhead; Freshwater pearl mussel; Otter; Floating water-plantain.	Broad-leaved deciduous woodland; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Improved grassland; Inland water bodies (Standing water, Running water); Salt marshes, Salt pastures, Salt steppes	Natural Resources Wales
-	1749m SW	River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales)	Rivers with floating vegetation often dominated by water-crowfoot; Mixed woodland on base-rich soils associated with rocky slopes; Western acidic oak woodland; Alder woodland on floodplains; Sea lamprey; Brook lamprey; River lamprey; Twaite shad; Atlantic salmon; Bullhead; Freshwater pearl mussel; Otter; Floating water-plantain.	Broad-leaved deciduous woodland; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Improved grassland; Inland water bodies (Standing water, Running water); Salt marshes, Salt pastures, Salt steppes	Natural Resources Wales
-	1805m SW	River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales)	Rivers with floating vegetation often dominated by water-crowfoot; Mixed woodland on base-rich soils associated with rocky slopes; Western acidic oak woodland; Alder woodland on floodplains; Sea lamprey; Brook lamprey; River lamprey; Twaite shad; Atlantic salmon; Bullhead; Freshwater pearl mussel; Otter; Floating water-plantain.	Broad-leaved deciduous woodland; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Improved grassland; Inland water bodies (Standing water, Running water); Salt marshes, Salt pastures, Salt steppes	Natural Resources Wales

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m	0

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m	0

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m	0

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m	84

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

Features are displayed on the Environmental designations map on **page 79 >**

ID	Location	Name	Woodland Type
1	65m W	Unknown	Restored Ancient Woodland Site
2	603m W	Unknown	Restored Ancient Woodland Site
B	614m W	Unknown	Restored Ancient Woodland Site
3	627m W	Unknown	Restored Ancient Woodland Site

ID	Location	Name	Woodland Type
4	658m SW	Unknown	Restored Ancient Woodland Site
5	674m S	Unknown	Restored Ancient Woodland Site
B	717m SW	Unknown	Ancient Semi Natural Woodland
6	723m S	Unknown	Plantation on Ancient Woodland Site
7	818m NE	Unknown	Restored Ancient Woodland Site
A	853m SW	Unknown	Plantation on Ancient Woodland Site
8	862m SW	Unknown	Plantation on Ancient Woodland Site
9	888m NW	Unknown	Ancient Woodland Site of Unknown Category
C	914m S	Unknown	Restored Ancient Woodland Site
10	975m S	Unknown	Restored Ancient Woodland Site
11	995m S	Unknown	Restored Ancient Woodland Site
C	997m S	Unknown	Restored Ancient Woodland Site
A	1000m SW	Unknown	Restored Ancient Woodland Site
12	1015m S	Unknown	Restored Ancient Woodland Site
13	1022m SW	Unknown	Plantation on Ancient Woodland Site
14	1035m SE	Unknown	Restored Ancient Woodland Site
15	1044m S	Unknown	Restored Ancient Woodland Site
17	1095m SE	Unknown	Restored Ancient Woodland Site
D	1110m SE	Unknown	Plantation on Ancient Woodland Site
18	1143m W	Unknown	Plantation on Ancient Woodland Site
D	1149m SE	Unknown	Plantation on Ancient Woodland Site
19	1180m SW	Unknown	Restored Ancient Woodland Site
D	1191m SE	Unknown	Restored Ancient Woodland Site
-	1255m W	Unknown	Ancient Semi Natural Woodland
-	1263m W	Unknown	Ancient Semi Natural Woodland
D	1292m SE	Unknown	Plantation on Ancient Woodland Site
-	1297m N	Unknown	Restored Ancient Woodland Site
-	1307m N	Unknown	Restored Ancient Woodland Site

ID	Location	Name	Woodland Type
28	1339m SW	Unknown	Ancient Semi Natural Woodland
-	1343m W	Unknown	Restored Ancient Woodland Site
H	1376m SE	Unknown	Restored Ancient Woodland Site
-	1388m W	Unknown	Restored Ancient Woodland Site
-	1393m W	Unknown	Plantation on Ancient Woodland Site
-	1408m N	Unknown	Restored Ancient Woodland Site
H	1418m SE	Unknown	Ancient Semi Natural Woodland
-	1436m NE	Unknown	Restored Ancient Woodland Site
H	1446m SE	Unknown	Restored Ancient Woodland Site
-	1470m NE	Unknown	Restored Ancient Woodland Site
J	1470m NE	Unknown	Restored Ancient Woodland Site
-	1477m W	Unknown	Plantation on Ancient Woodland Site
-	1502m E	Unknown	Plantation on Ancient Woodland Site
J	1503m NE	Unknown	Plantation on Ancient Woodland Site
33	1511m SW	Unknown	Ancient Semi Natural Woodland
-	1516m N	Unknown	Ancient Semi Natural Woodland
35	1518m SE	Unknown	Plantation on Ancient Woodland Site
H	1532m SE	Unknown	Restored Ancient Woodland Site
-	1552m W	Unknown	Ancient Semi Natural Woodland
-	1582m NE	Unknown	Plantation on Ancient Woodland Site
-	1615m W	Unknown	Ancient Semi Natural Woodland
-	1627m SE	Unknown	Plantation on Ancient Woodland Site
-	1637m W	Unknown	Restored Ancient Woodland Site
-	1637m W	Unknown	Plantation on Ancient Woodland Site
-	1640m SE	Unknown	Restored Ancient Woodland Site
-	1660m W	Unknown	Plantation on Ancient Woodland Site
-	1661m NW	Unknown	Plantation on Ancient Woodland Site
-	1663m NW	Unknown	Restored Ancient Woodland Site

ID	Location	Name	Woodland Type
-	1673m W	Unknown	Restored Ancient Woodland Site
-	1681m W	Unknown	Restored Ancient Woodland Site
-	1682m SW	Unknown	Ancient & Semi-Natural Woodland
-	1683m W	Unknown	Plantation on Ancient Woodland Site
-	1688m W	Unknown	Plantation on Ancient Woodland Site
-	1701m NW	Unknown	Plantation on Ancient Woodland Site
-	1704m SW	Unknown	Ancient Semi Natural Woodland
-	1711m NW	Unknown	Restored Ancient Woodland Site
-	1720m NW	Unknown	Restored Ancient Woodland Site
-	1723m NE	Unknown	Restored Ancient Woodland Site
-	1746m E	Unknown	Restored Ancient Woodland Site
-	1755m W	Unknown	Ancient Semi Natural Woodland
-	1759m W	Unknown	Restored Ancient Woodland Site
-	1769m NE	Unknown	Plantation on Ancient Woodland Site
-	1775m SE	Unknown	Restored Ancient Woodland Site
-	1788m E	Unknown	Restored Ancient Woodland Site
-	1794m W	Unknown	Restored Ancient Woodland Site
-	1808m NE	Unknown	Restored Ancient Woodland Site
-	1832m NE	Unknown	Restored Ancient Woodland Site
-	1879m E	Unknown	Plantation on Ancient Woodland Site
-	1919m W	Unknown	Plantation on Ancient Woodland Site
-	1919m N	Unknown	Ancient Semi Natural Woodland
-	1922m N	Unknown	Ancient Semi Natural Woodland
-	1923m NW	Unknown	Plantation on Ancient Woodland Site

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m	0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m	0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m	0

Areas designated to prevent urban sprawl by keeping land permanently open.

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m	0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

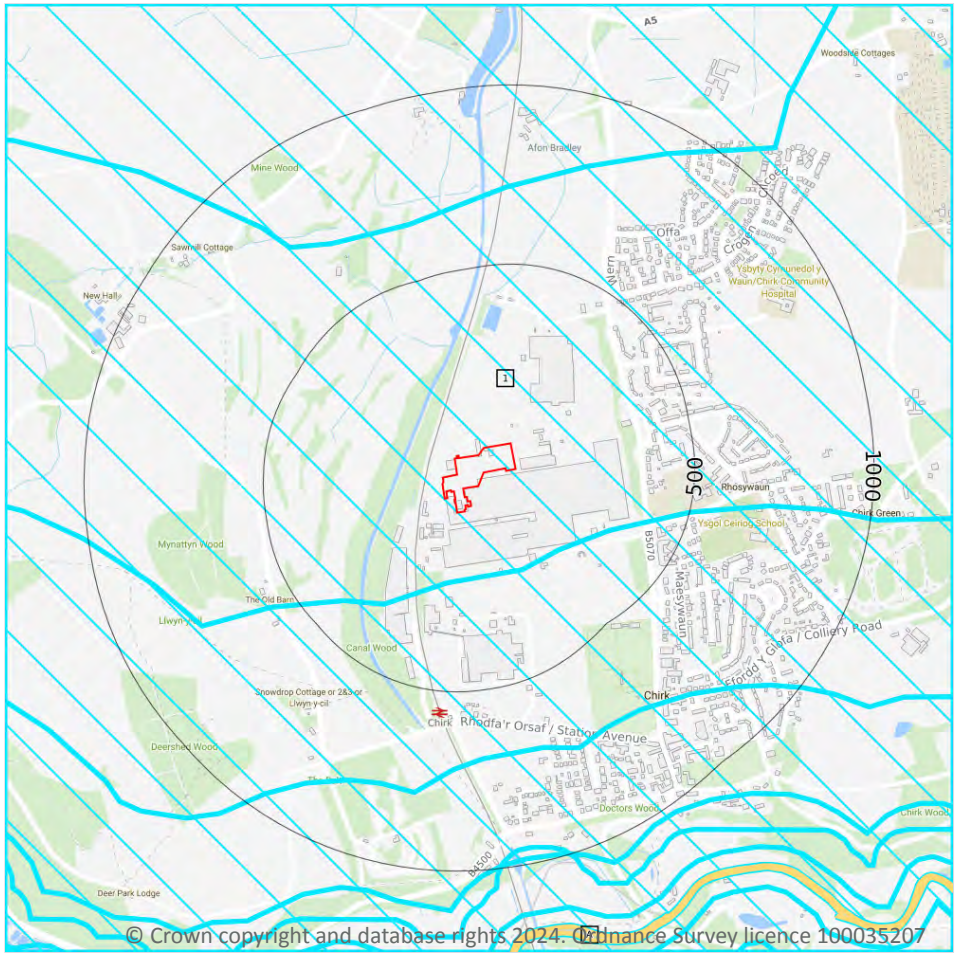
10.16 Nitrate Vulnerable Zones

Records within 2000m	0

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units



Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site	1

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on **page 89 >**

ID	Location	Type of developments requiring consultation
1	**On site**	**Infrastructure - Pipelines and underground cables, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 200m², manure stores > 250t). Combustion - General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill. Composting - Any composting proposal with more than 75000 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Water supply - Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m² or more.**

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	**1**

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

Features are displayed on the SSSI Impact Zones and Units map on **page 89 >**

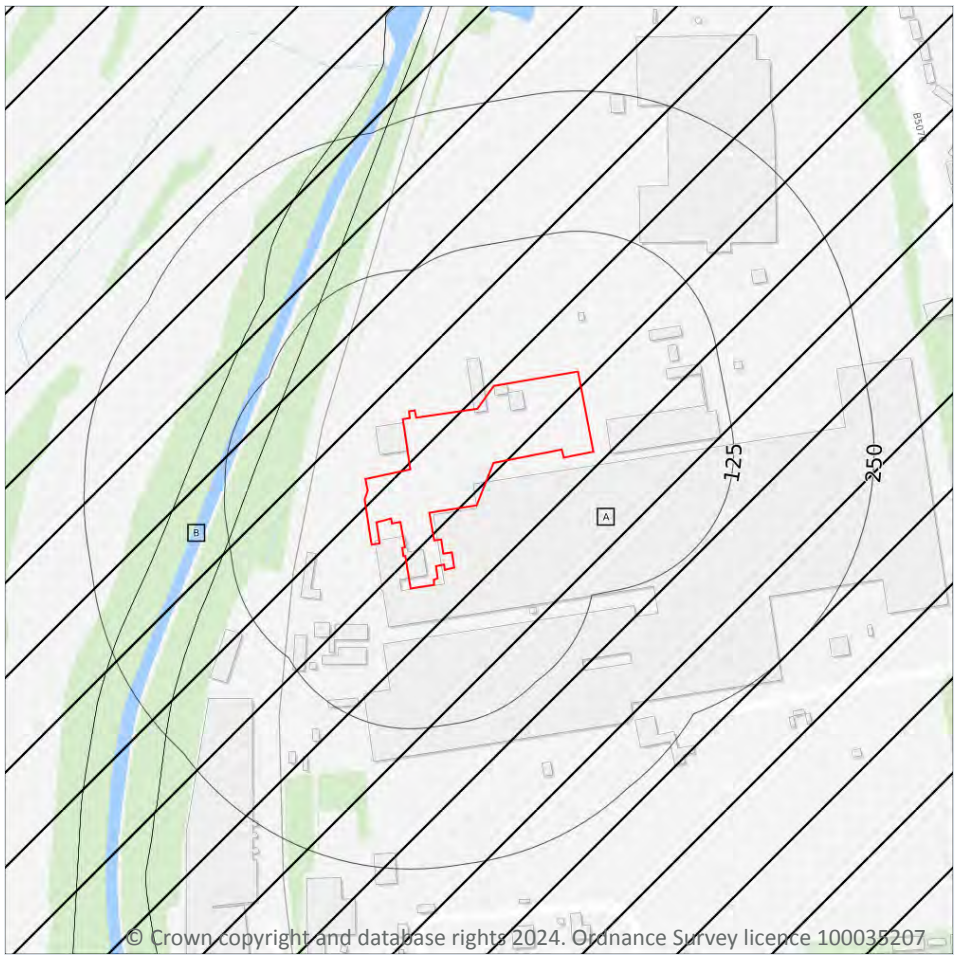
ID: A
Location: 1188m S
SSSI name: River Dee (England)
Unit name: River Ceiriog Tributary
Broad habitat: Rivers And Streams
Condition: Unfavourable - No change
Reportable features:

Feature name	Feature condition	Date of assessment
Atlantic salmon, Salmo salar	Unfavourable - No change	25/08/2010
Nationally rare and scarce dragonfly species - Gomphus vulgatissimus, Club-tailed Dragonfly	Favourable	25/08/2010
Otter, Lutra lutra	Favourable	25/08/2010
River supporting habitat	Unfavourable - No change	25/08/2010

Feature name	Feature condition	Date of assessment
Rivers and Streams	Unfavourable - No change	25/08/2010
S1106 Atlantic salmon, Salmo salar	Unfavourable - No change	25/08/2010

This data is sourced from Natural England and Natural Resources Wales.

11 Visual and cultural designations



Site Outline

Search buffers in metres (m)

Listed buildings

Conservation areas

Conservation areas - no data

National Parks

Areas of Outstanding Natural Beauty

Registered parks and gardens

Scheduled Monuments

World Heritage Sites

11.1 World Heritage Sites

Records within 250m **4**

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

Features are displayed on the Visual and cultural designations map on **page 92 >**

ID	Location	Name	Data Source
A	**On site**	**Pontcysyllte Aqueduct and Canal Buffer Zone**	**Historic England**
A	**On site**	**Pontcysyllte Aqueduct and Canal Essential Setting**	**CADW**
B	95m W	Pontcysyllte Aqueduct and Canal	CADW

ID	Location	Name	Data Source
B	95m W	Pontcysyllte Aqueduct and Canal	Historic England

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m	0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m	0

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m	0

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m	0

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

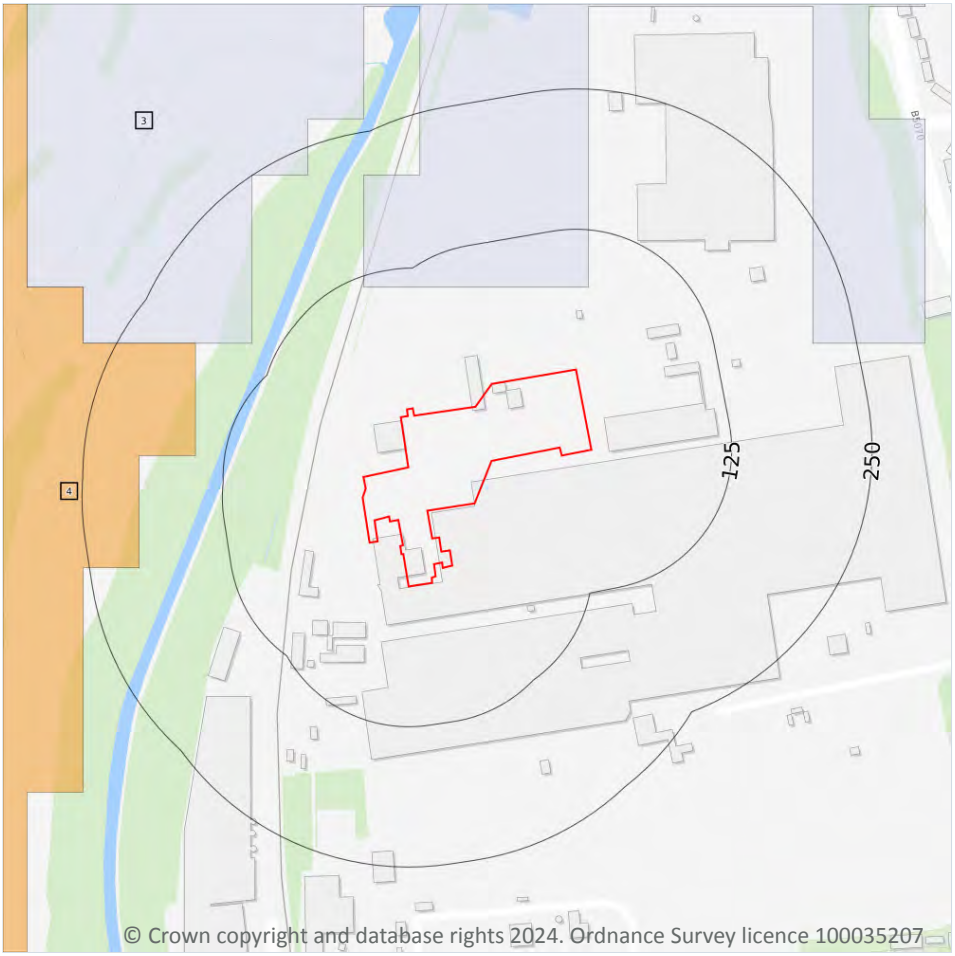
11.7 Registered Parks and Gardens

Records within 250m	0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

12 Agricultural designations



Site Outline

Search buffers in metres (m)

- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Timber felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m	2

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 95 >**

ID	Location	Classification	Description
3	73m NE	Grade 3b	Moderate quality agricultural land
4	151m W	Grade 2	Good quality agricultural land

This data is sourced from Natural Resources Wales.

12.2 Open Access Land

Records within 250m	0

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m	0

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	0

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m	0

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

This data is sourced from Natural England.

13 Habitat designations

13.1 Priority Habitat Inventory

Records within 250m	0

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	0

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	0

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

13.4 Limestone Pavement Orders

Records within 250m	0

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability

Site Outline

Search buffers in metres (m)

Full coverage

Partial coverage

No coverage

14.1 10k Availability

Records within 500m	1

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 98 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	No coverage	No coverage	No coverage	No coverage	NoCov

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Artificial and made ground

14.2 Artificial and made ground (10k)

Records within 500m	0

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial

14.3 Superficial geology (10k)

Records within 500m	0

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock

14.5 Bedrock geology (10k)

Records within 500m	0

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

This data is sourced from the British Geological Survey.

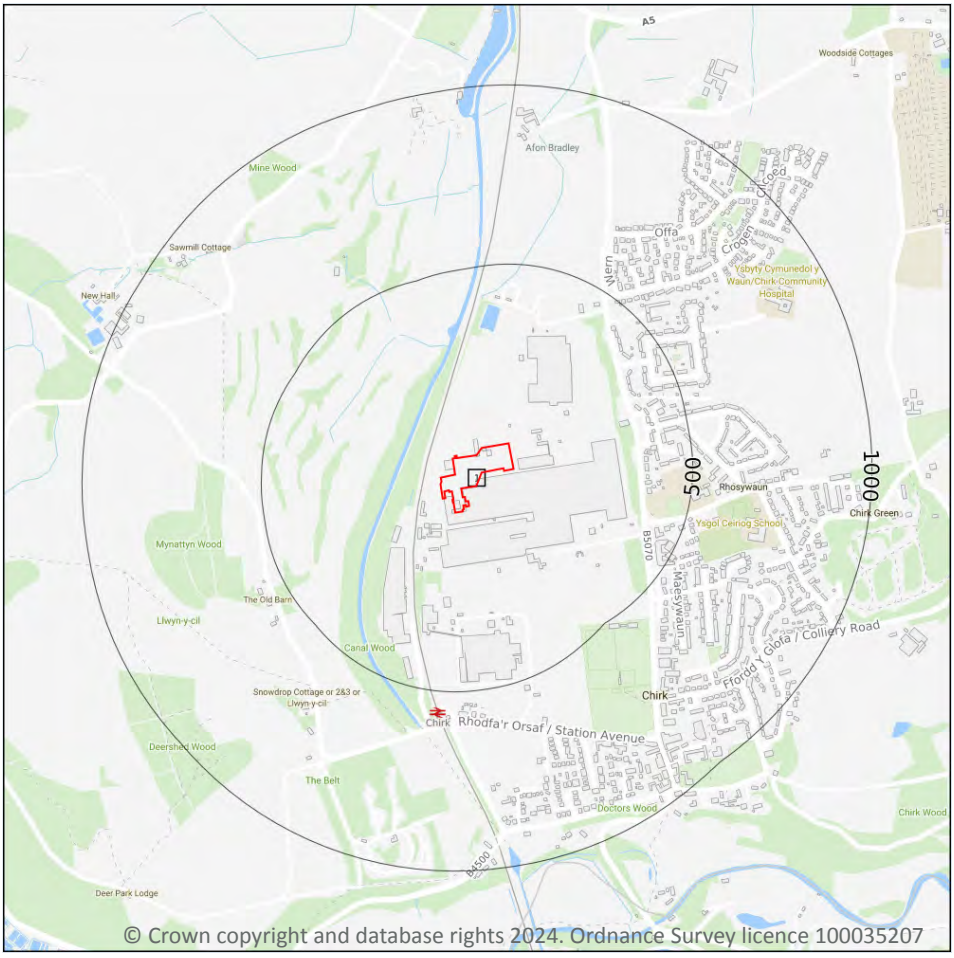
14.6 Bedrock faults and other linear features (10k)

Records within 500m	0

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme. Where 50k data is not available, this area has been filled in with 625k scale data.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 102 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**Full**	**EW121_wrexham_v4**

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Artificial and made ground

15.2 Artificial and made ground (50k)

Records within 500m	0

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

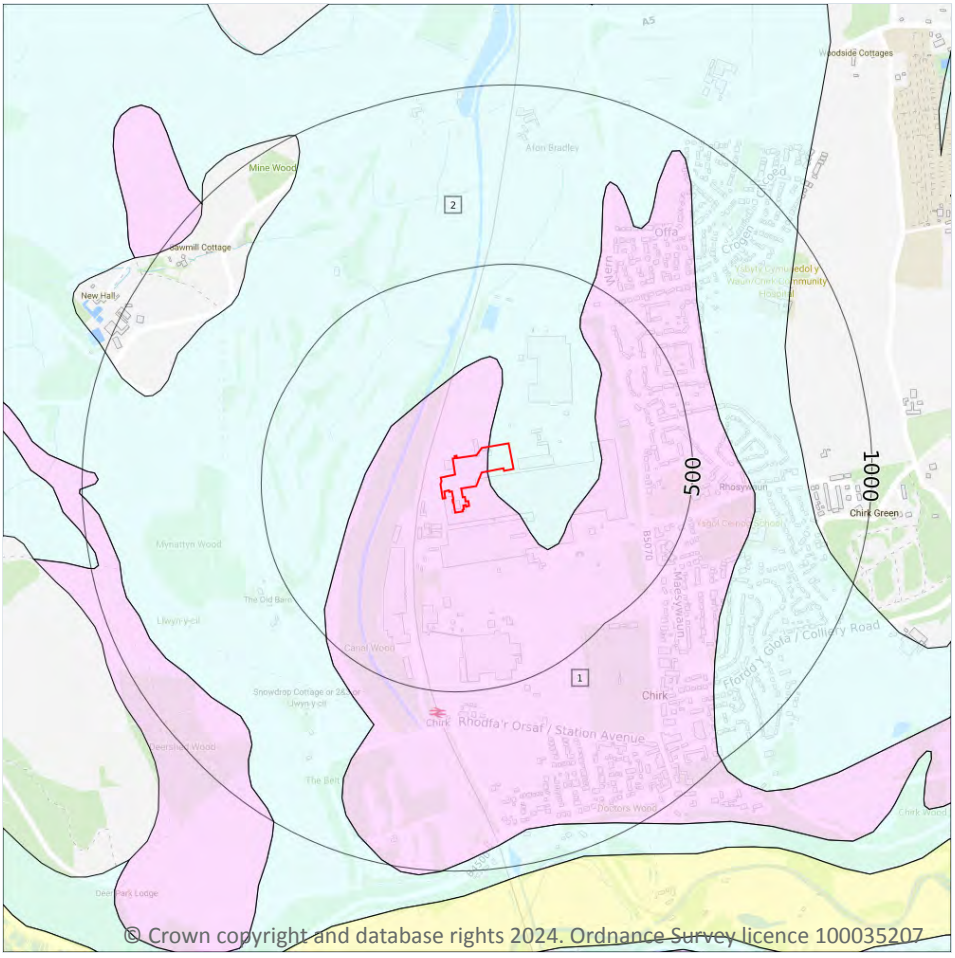
15.3 Artificial ground permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m **2**

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 104 >**

ID	Location	LEX Code	Description	Rock description
1	On site	GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL
2	On site	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	2

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**High**	**Low**
On site	**Intergranular**	**Very High**	**High**

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

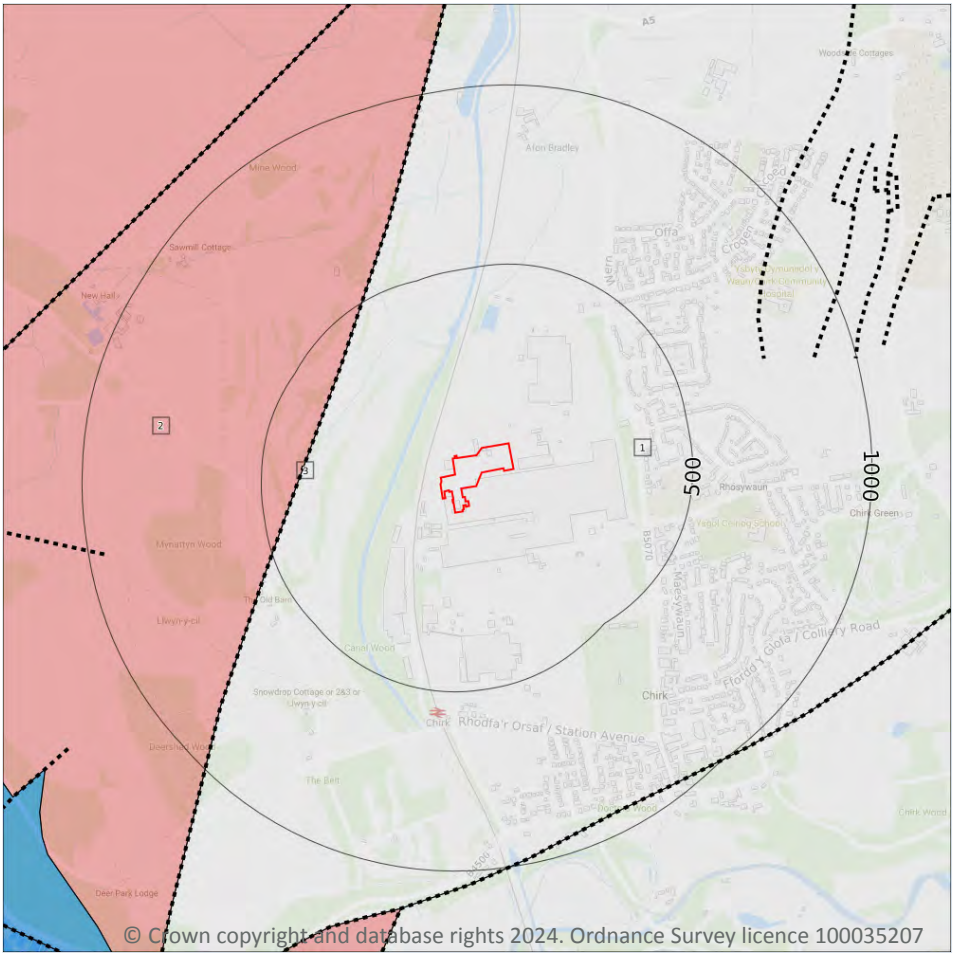
15.7 Landslip permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m	2

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 106 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**PLMC-MDSS**	**PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE**	**WESTPHALIAN**

ID	Location	LEX Code	Description	Rock age
2	369m W	CFS-SDAR	CEFN-Y-FEDW SANDSTONE FORMATION - SANDSTONE AND [SUBEQUAL/SUBORDINATE] ARGILLACEOUS ROCKS, INTERBEDDED	VISEAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	**1**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Fracture**	**Moderate**	**Low**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	**1**

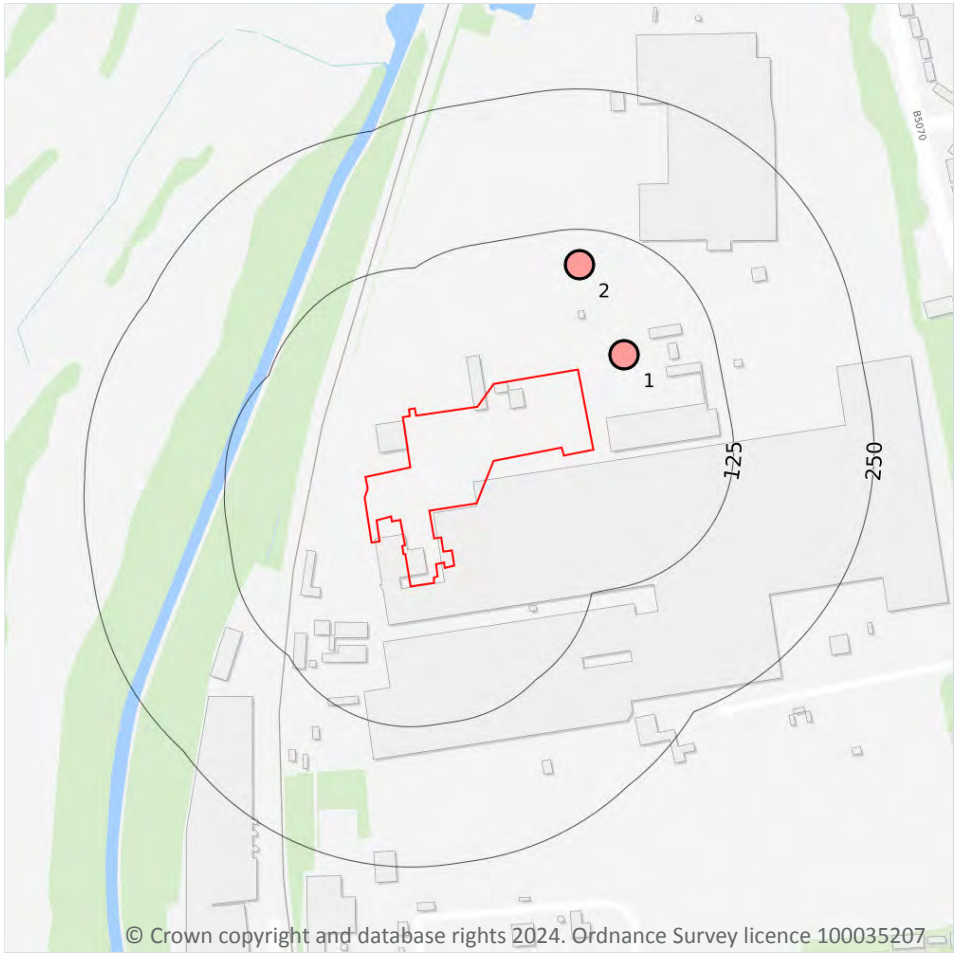
Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 106 >**

ID	Location	Category	Description
3	369m W	FAULT	Fault, inferred, displacement unknown

This data is sourced from the British Geological Survey.

16 Boreholes



Site Outline

Search buffers in metres (m)

Confidential

0 - 10m

10 - 30m

30m+

Unknown

16.1 BGS Boreholes

Records within 250m	2

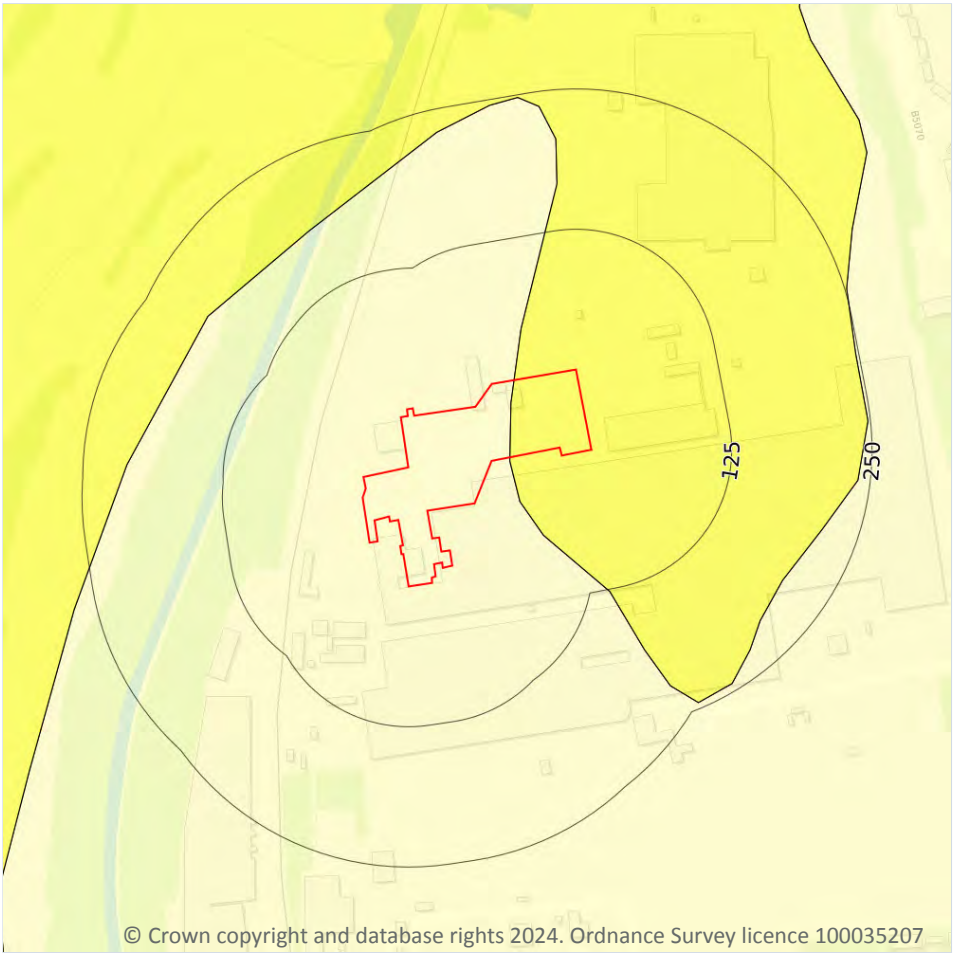
The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

Features are displayed on the Boreholes map on **page 108 >**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	43m NE	328680 338590	KRONOSPAN LIMITED CHIRK	33.0	N	142233 ↗
2	93m NE	328640 338670	KRONOSPAN LIMITED CHIRK	34.0	N	142232 ↗

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.1 Shrink swell clays

Records within 50m	2

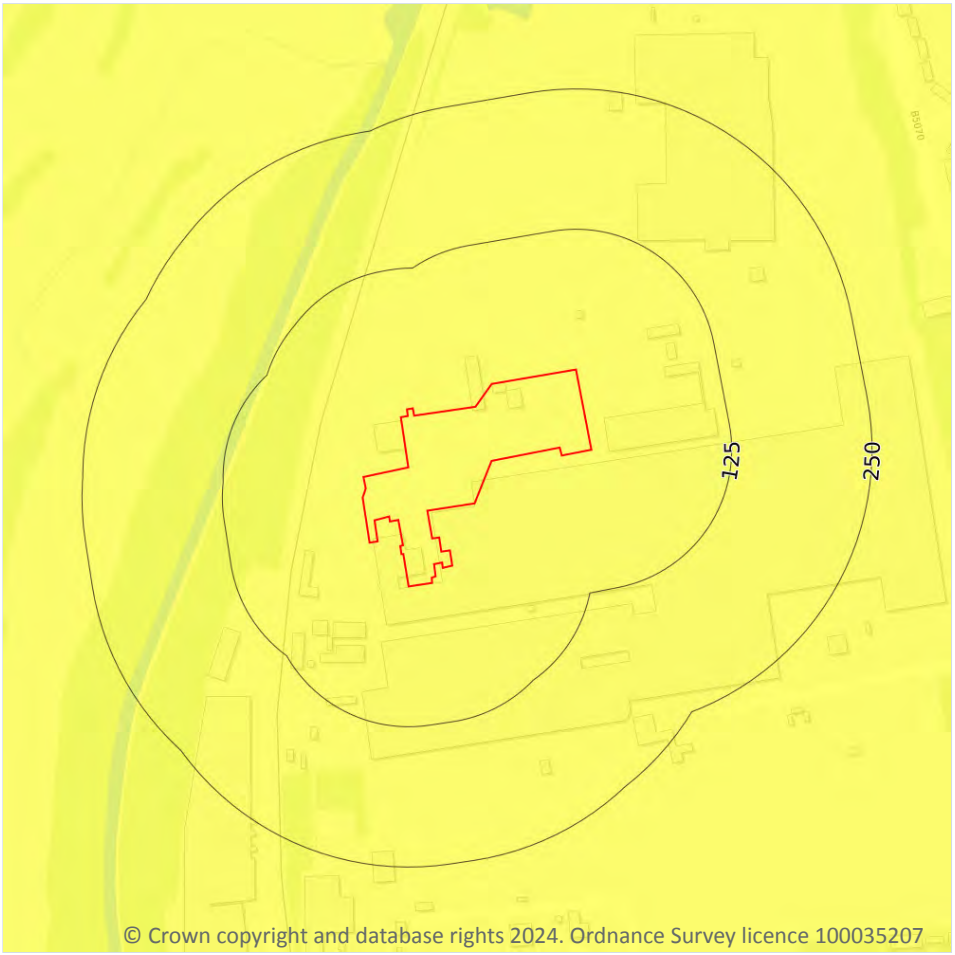
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 109 >**

Location	Hazard rating	Details
On site	**Negligible**	**Ground conditions predominantly non-plastic.**
On site	**Very low**	**Ground conditions predominantly low plasticity.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.2 Running sands

Records within 50m	1

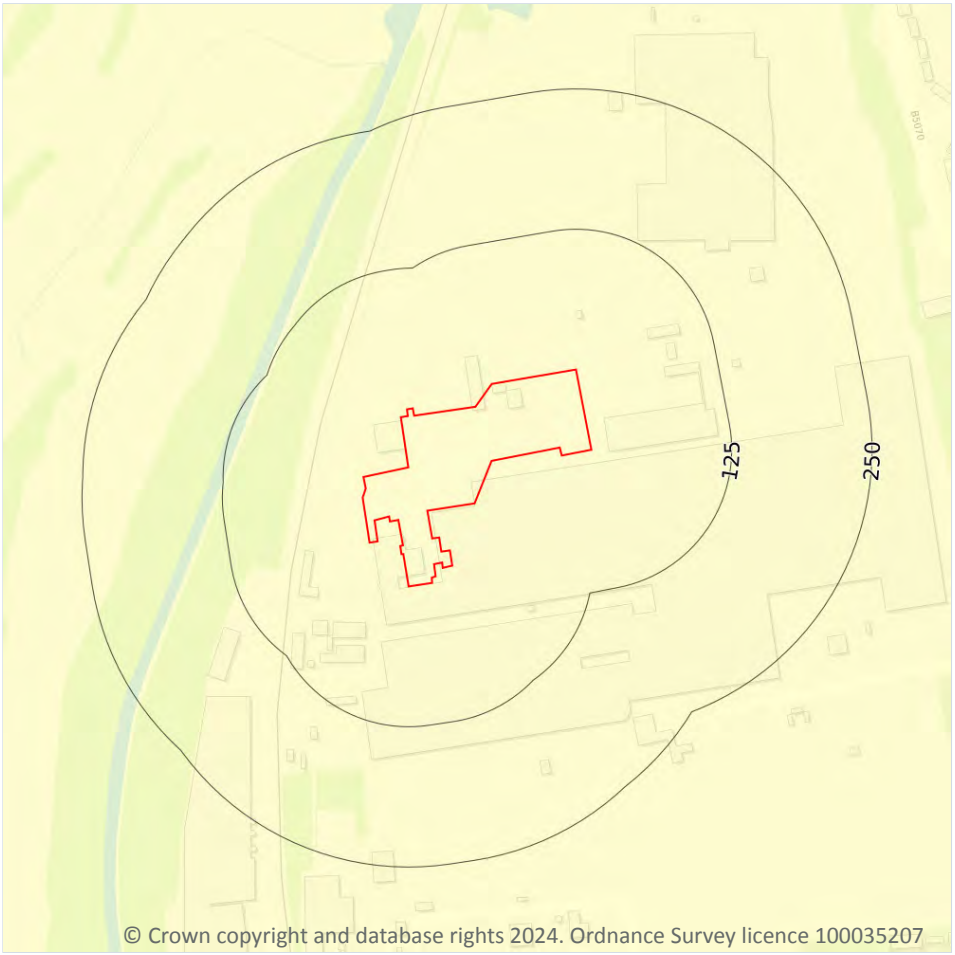
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 110 >**

Location	Hazard rating	Details
On site	**Very low**	**Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.3 Compressible deposits

Records within 50m	1

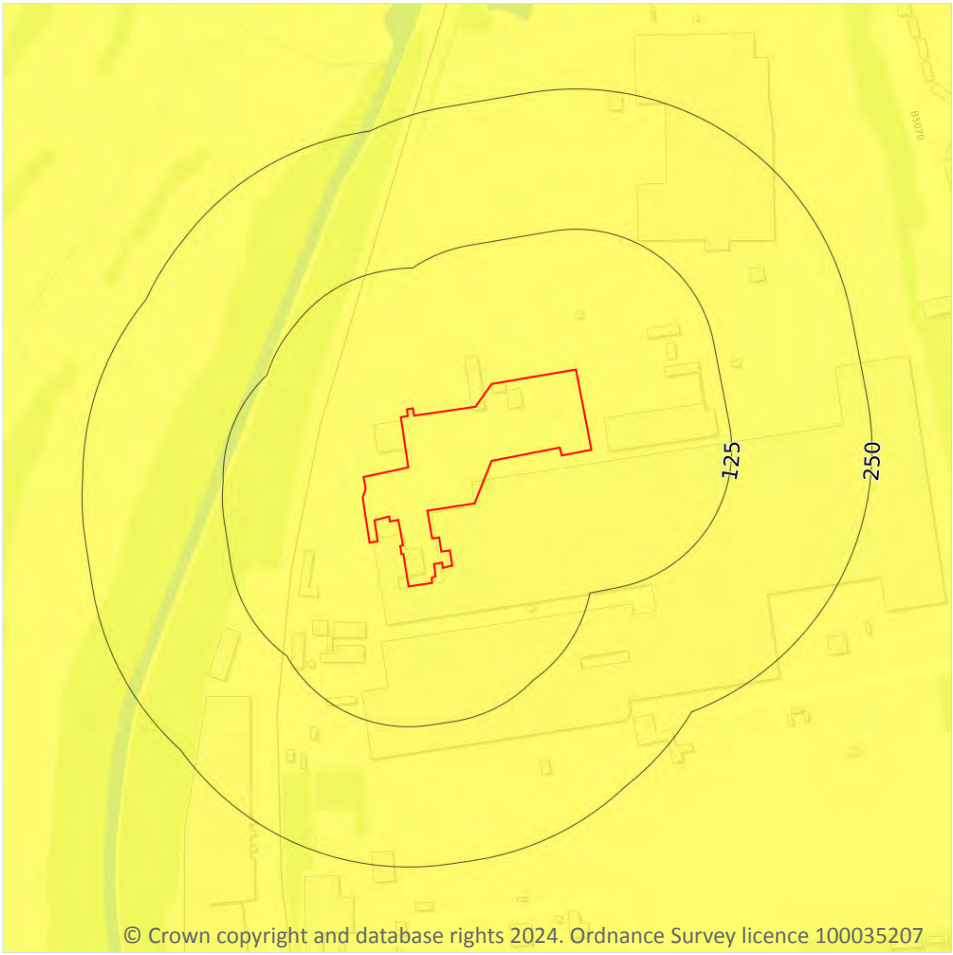
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 111 >**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.4 Collapsible deposits

Records within 50m	1

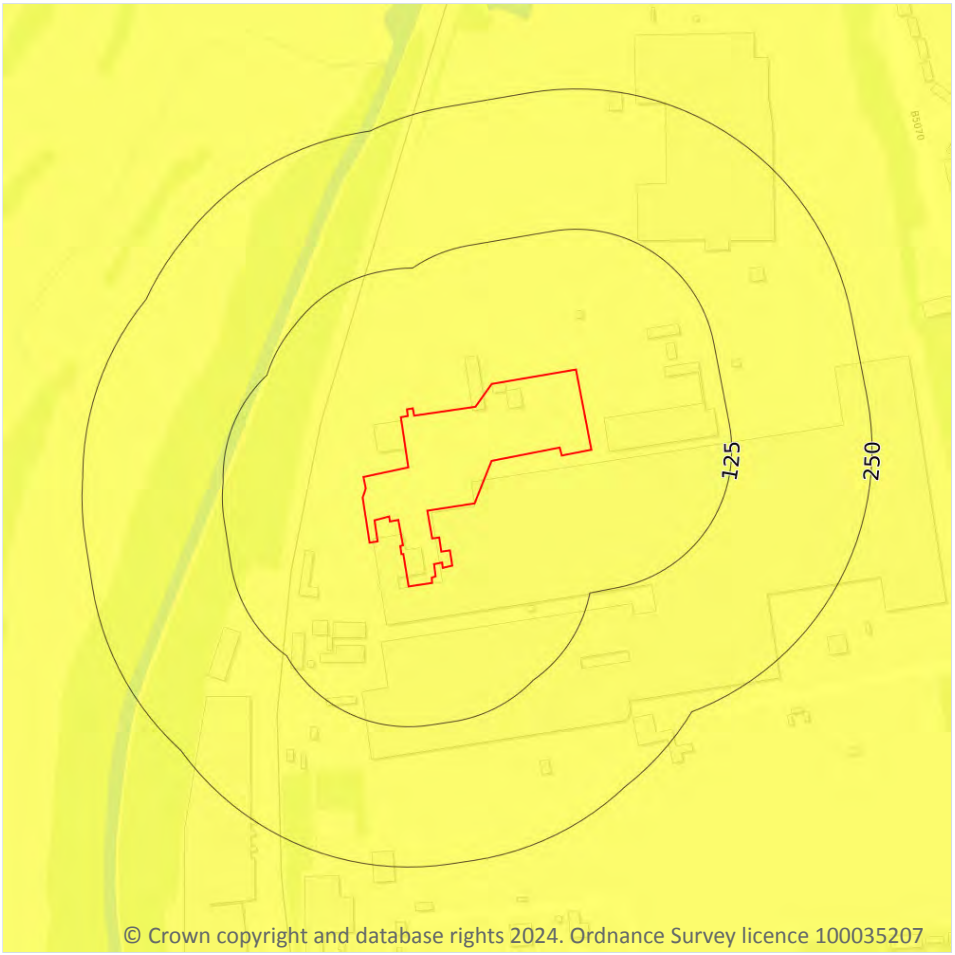
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 112 >**

Location	Hazard rating	Details
On site	**Very low**	**Deposits with potential to collapse when loaded and saturated are unlikely to be present.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.5 Landslides

Records within 50m	1

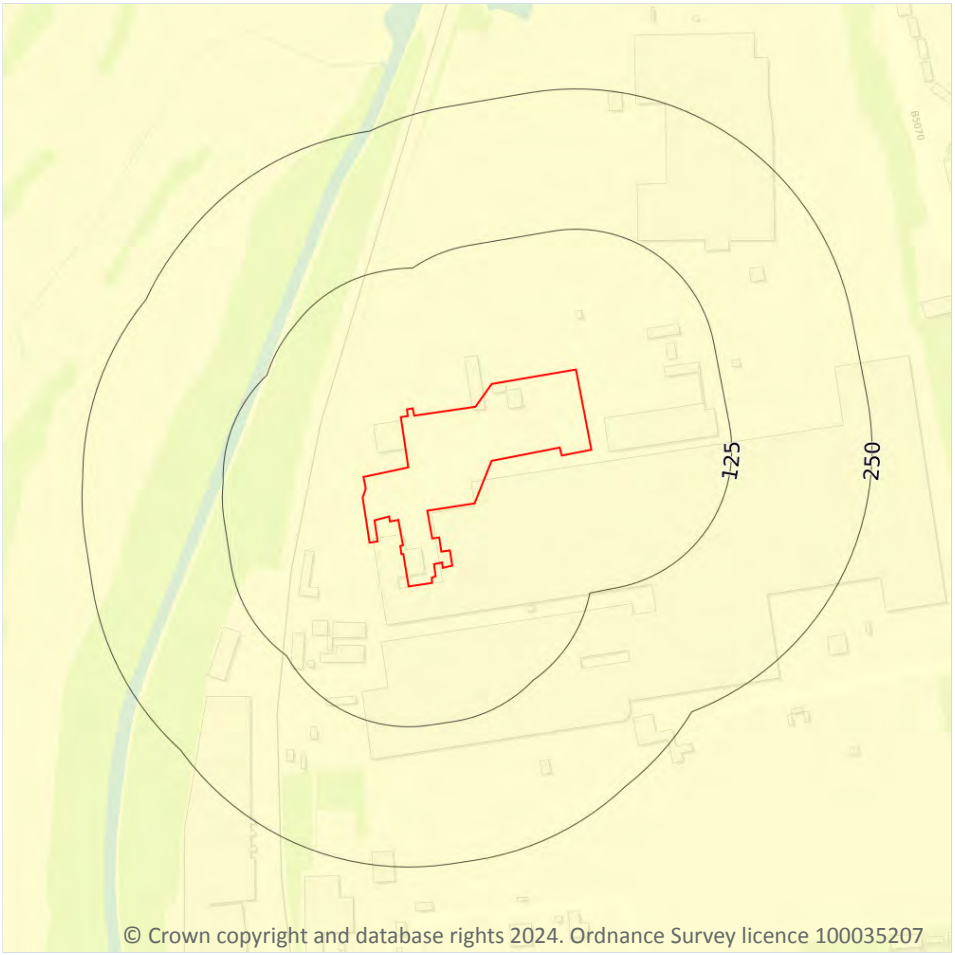
The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 113 >**

Location	Hazard rating	Details
On site	**Very low**	**Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.6 Ground dissolution of soluble rocks

Records within 50m	1

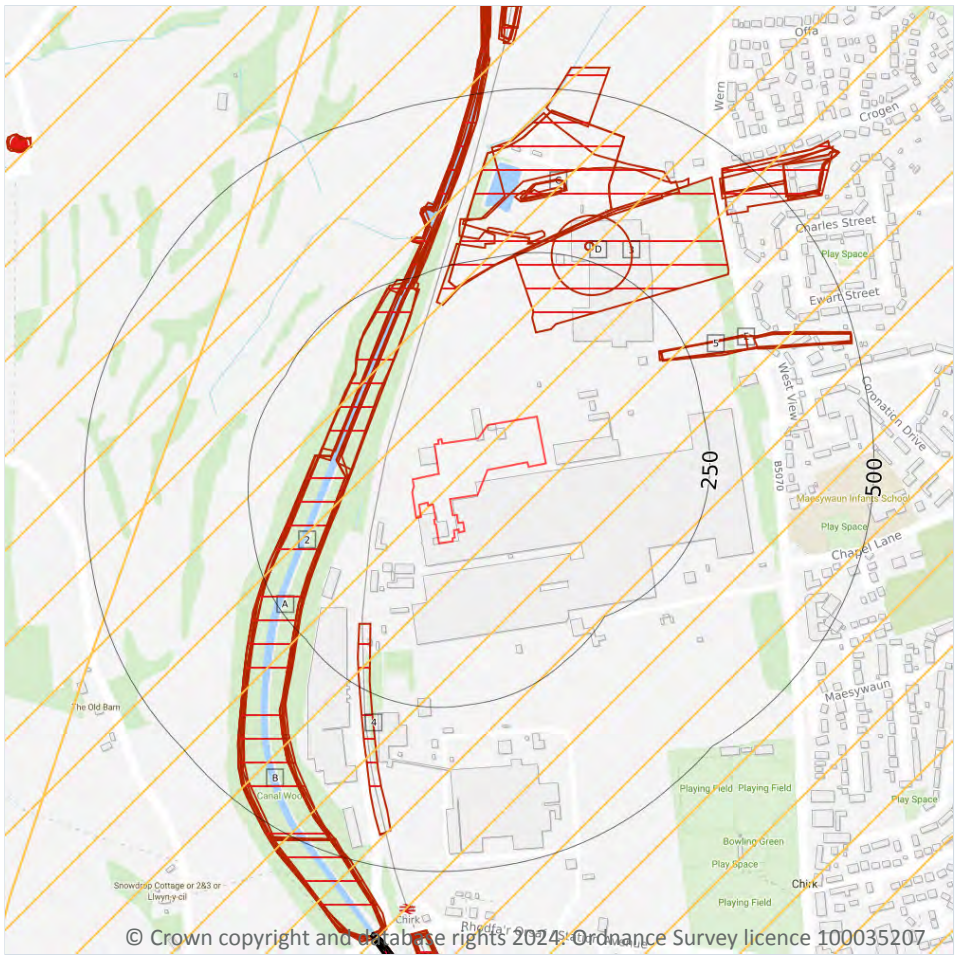
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 114 >**

Location	Hazard rating	Details
On site	**Negligible**	**Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.**

This data is sourced from the British Geological Survey.

18 Mining and ground workings



Site Outline

Search buffers in metres (m)

- BritPits
- Surface ground workings
- Underground workings
- Underground mining extents
- Historical mineral planning areas
- TCA non-coal mining

Non Coal Mining

- Sporadic underground mining of restricted extent possible
- Localised small scale underground mining possible
- Small scale mining possible
- Underground mining known or likely within or in close proximity
- Underground mining known within or in very close proximity

18.1 BritPits

Records within 500m	0

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m	17

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining and ground workings map on **page 116 >**

ID	Location	Land Use	Year of mapping	Mapping scale
A	91m W	Canal	1873	1:10560
2	92m W	Canal	1898	1:10560
A	93m W	Canal	1899	1:10560
A	95m W	Canal	1949	1:10560
A	99m W	Canal	1914	1:10560
B	102m W	Canal	1949	1:10560
B	102m W	Canal	1992	1:10000
B	102m W	Canal	1979	1:10000
3	128m NE	Unspecified Wharf	1949	1:10560
4	161m SW	Cuttings	1873	1:10560
C	195m N	Unspecified Wharf	1899	1:10560
D	199m NE	Unspecified Wharf	1949	1:10560
E	206m NE	Cuttings	1949	1:10560
E	210m NE	Cuttings	1914	1:10560
5	211m NE	Cuttings	1949	1:10560
C	215m N	Sewage Works	1992	1:10000
C	215m N	Sewage Works	1979	1:10000

This is data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m	11

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

Features are displayed on the Mining and ground workings map on **page 116 >**

ID	Location	Land Use	Year of mapping	Mapping scale
J	602m S	Tunnel	1992	1:10000
J	602m S	Tunnel	1979	1:10000
J	602m S	Tunnel	1949	1:10560
K	606m S	Tunnel	1899	1:10560
K	607m S	Tunnel	1914	1:10560
K	607m S	Tunnel	1898	1:10560
K	607m S	Tunnel	1873	1:10560
-	899m E	Disused Colliery	1949	1:10560
-	901m E	Colliery	1898	1:10560
-	902m E	Disused Colliery	1949	1:10560
-	907m S	Tunnel	1992	1:10000

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground mining extents

Records within 500m	**0**

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	**0**

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	3

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

Features are displayed on the Mining and ground workings map on **page 116 >**

ID	Location	Name	Commodity	Class	Likelihood
1	**On site**	**Not available**	**Iron Ore (Bedded)**	**B**	**Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.**
8	369m W	Berwyn Hills	Vein Mineral	B	Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
-	942m S	Not available	Iron Ore (Bedded)	B	Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.

This data is sourced from the British Geological Survey.

18.7 JPB mining areas

Records on site	0

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.8 The Coal Authority non-coal mining

Records within 500m	0

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the

Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m	0

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m	0

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m	0

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.12 Coal mining

Records on site	0

Areas which could be affected by past, current or future coal mining.

This data is sourced from the Coal Authority.

18.13 Brine areas

Records on site	0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.14 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 Clay mining

Records on site	0

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Ground cavities and sinkholes

19.1 Natural cavities

Records within 500m	0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m	0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m	0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m	0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.

This data is sourced from Groundsure.

19.5 National karst database

Records within 500m	0

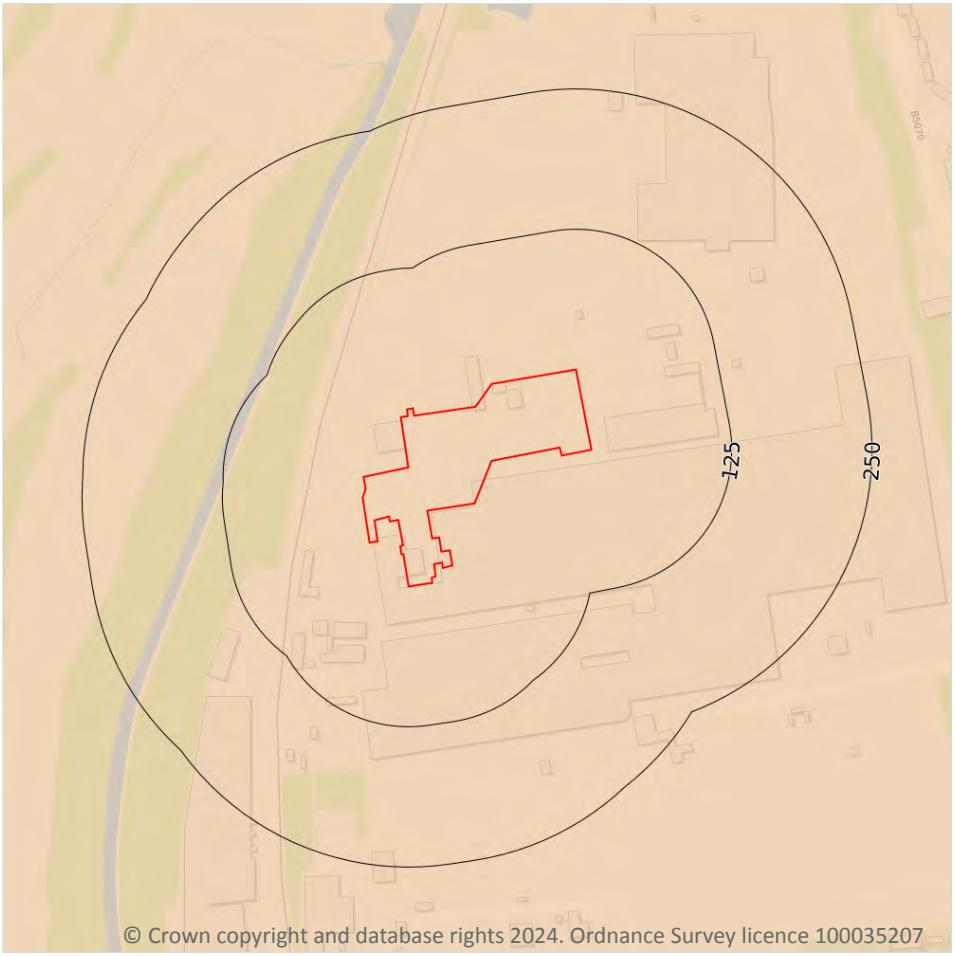
This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

This data is sourced from the British Geological Survey.

20 Radon



Site Outline

Search buffers in metres (m)

- Greater than 30%
- Between 10% and 30%
- Between 5% and 10%
- Between 3% and 5%
- Between 1% and 3%
- Less than 1%

20.1 Radon

Records on site	1

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on **page 124 >**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Between 5% and 10%**	**Basic**

This data is sourced from the British Geological Survey and UK Health Security Agency.

21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m	**6**

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km^2. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km^2; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**

This data is sourced from the British Geological Survey.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m	**0**

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km^2).

This data is sourced from the British Geological Survey.

21.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km^2.

This data is sourced from the British Geological Survey.

22 Railway infrastructure and projects

Site Outline
Search buffers in metres (m)
Crossrail 1 Stations
Crossrail 1 Route
Crossrail 2 Stations
Crossrail 2 Route
Crossrail 2 Worksites
Crossrail 2 Safeguarding
Crossrail 2 Headhouses
Railway stations
Active railways
Active tunnels
Abandoned railways
Historic railways
Historic tunnels
Underground stations
Underground Lines
Royal Mail tunnels
HS2 optimised route
HS2 Stations
HS2 Depots
HS2 Surface Safeguarding
HS2 Subsurface Safeguarding

22.1 Underground railways (London)

Records within 250m	0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

22.2 Underground railways (Non-London)

Records within 250m	0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

22.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m	26

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

Features are displayed on the Railway infrastructure and projects map on **page 128 >**

Location	Land Use	Year of mapping	Mapping scale
On site	**Railway Sidings**	**1984**	**2500**
5m NW	Railway Sidings	1912	2500
6m NW	Railway Sidings	1899	2500
12m W	Railway Sidings	1995	2500
20m W	Railway Sidings	1899	10560
20m W	Railway Sidings	1949	10560
20m W	Railway Sidings	1898	10560
21m W	Railway Sidings	1914	10560
23m W	Tramway Sidings	1949	10560
28m W	Railway Sidings	1961	2500
34m W	Railway Sidings	1990	2500
34m W	Railway Sidings	1992	2500
35m W	Railway Sidings	1999	2500
35m W	Railway Sidings	1995	2500
36m W	Railway Sidings	1873	2500
54m W	Tramway Sidings	1899	2500
61m SW	Railway Sidings	1973	2500

Location	Land Use	Year of mapping	Mapping scale
61m W	Tramway Sidings	1912	2500
79m SW	Railway Sidings	1984	2500
79m SW	Railway Sidings	1988	2500
146m SW	Railway Sidings	1992	10000
152m SW	Railway Sidings	1990	2500
152m SW	Railway Sidings	1992	2500
155m SW	Railway Sidings	1999	2500
155m SW	Railway Sidings	1995	2500
195m N	Railway Sidings	1899	10560

This data is sourced from Ordnance Survey/Groundsure.

22.5 Royal Mail tunnels

Records within 250m	0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

22.6 Historical railways

Records within 250m	3

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

Features are displayed on the Railway infrastructure and projects map on **page 128 >**

Location	Description
40m W	Razed
54m SW	Disused
200m N	Razed

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m	4

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

Features are displayed on the Railway infrastructure and projects map on **page 128 >**

Location	Name	Type
47m W	Shrewsbury to Chester Line	rail
48m W	Not given	Multi Track
51m W	Shrewsbury to Chester Line	rail
180m SW	Not given	Multi Track

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 1

Records within 500m	0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

22.9 Crossrail 2

Records within 500m	0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

22.10 HS2

Records within 500m	0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 ltd.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference ↗.

Terms and conditions

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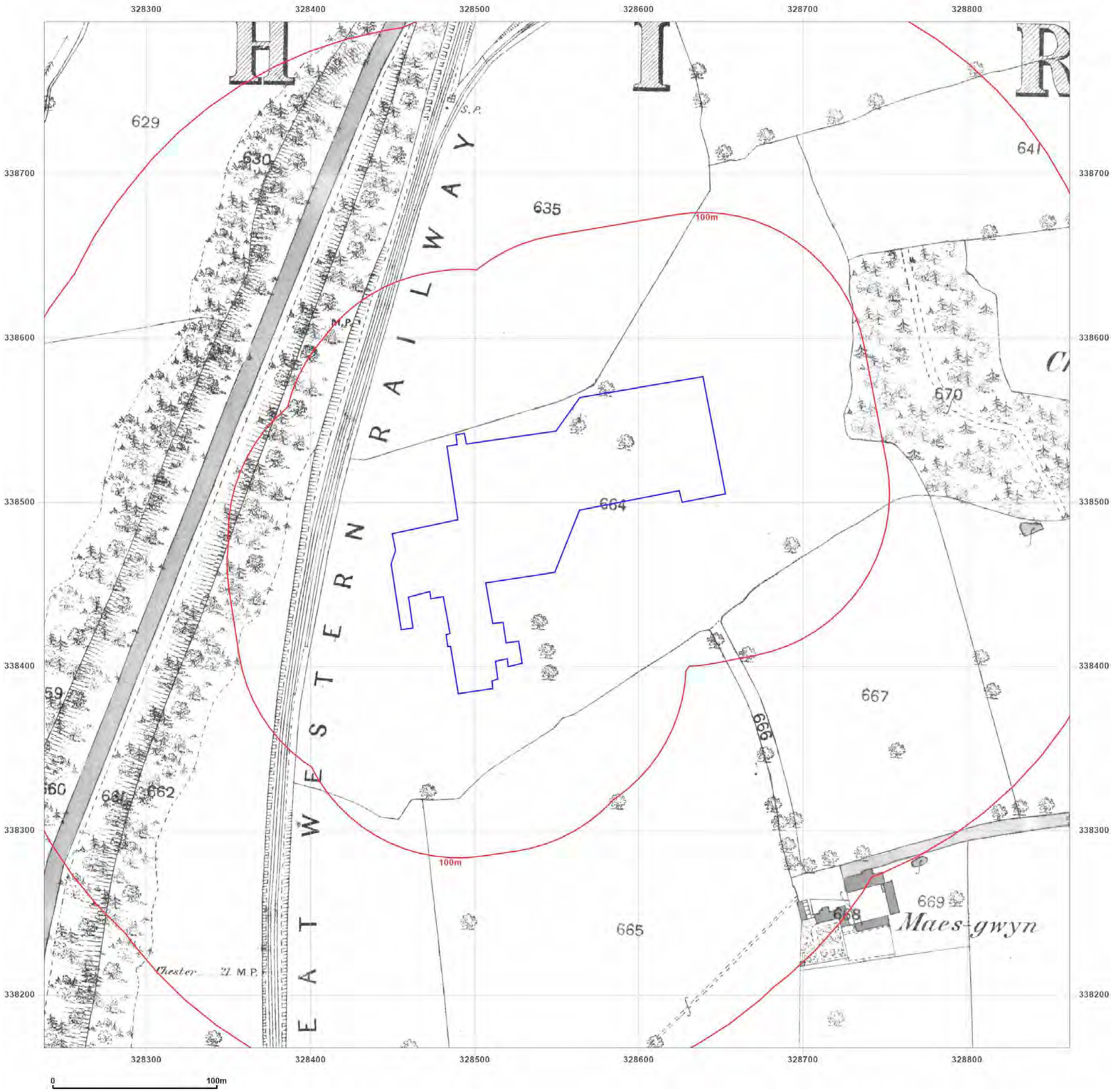

Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: County Series

Map date: **1873**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A

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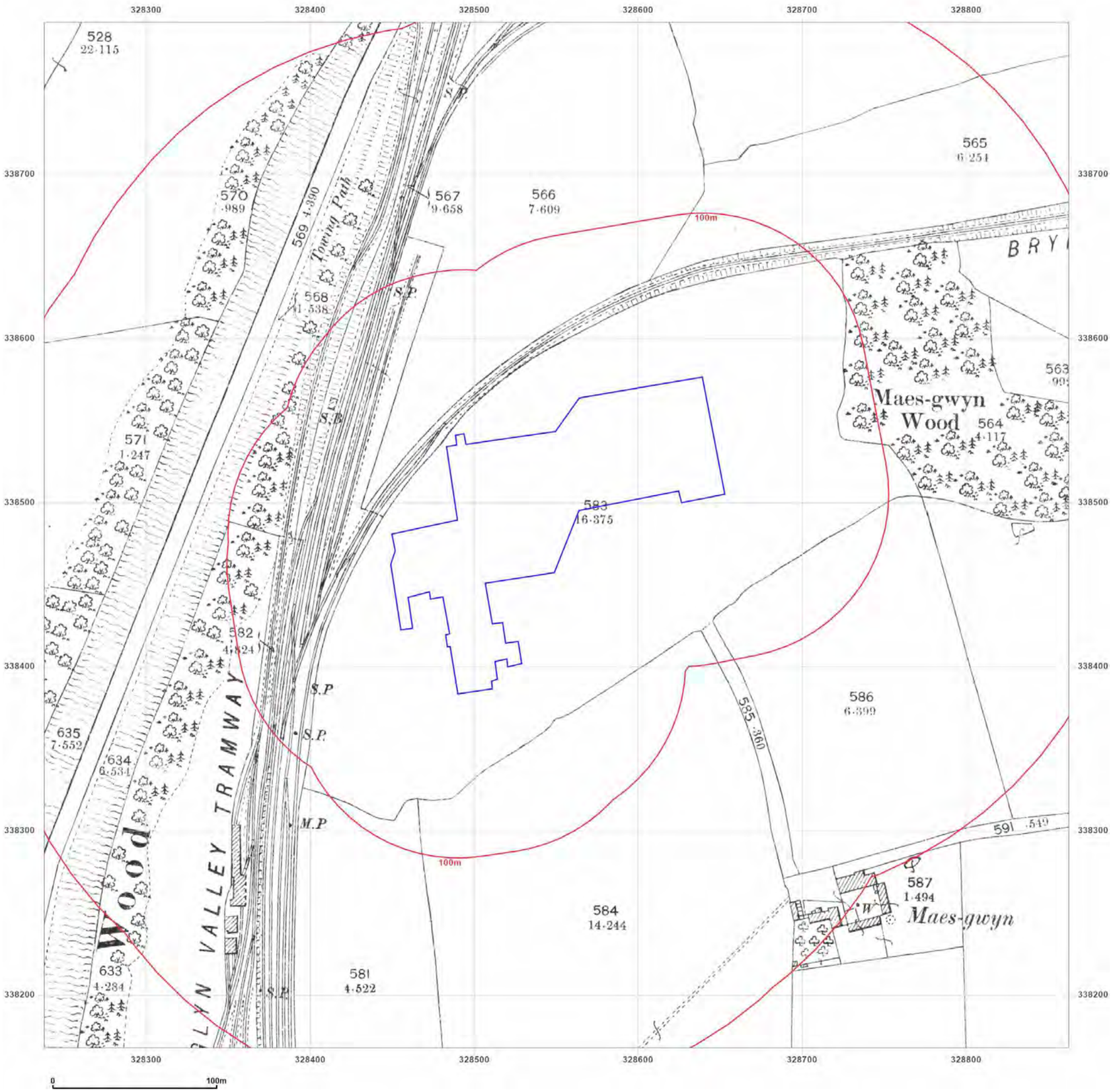
Production date: 02 July 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: County Series

Map date: **1899**

Scale: 1:2,500

Printed at: 1:2,500

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W E
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Revised 1899
Edition N/A
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Map legend available at:
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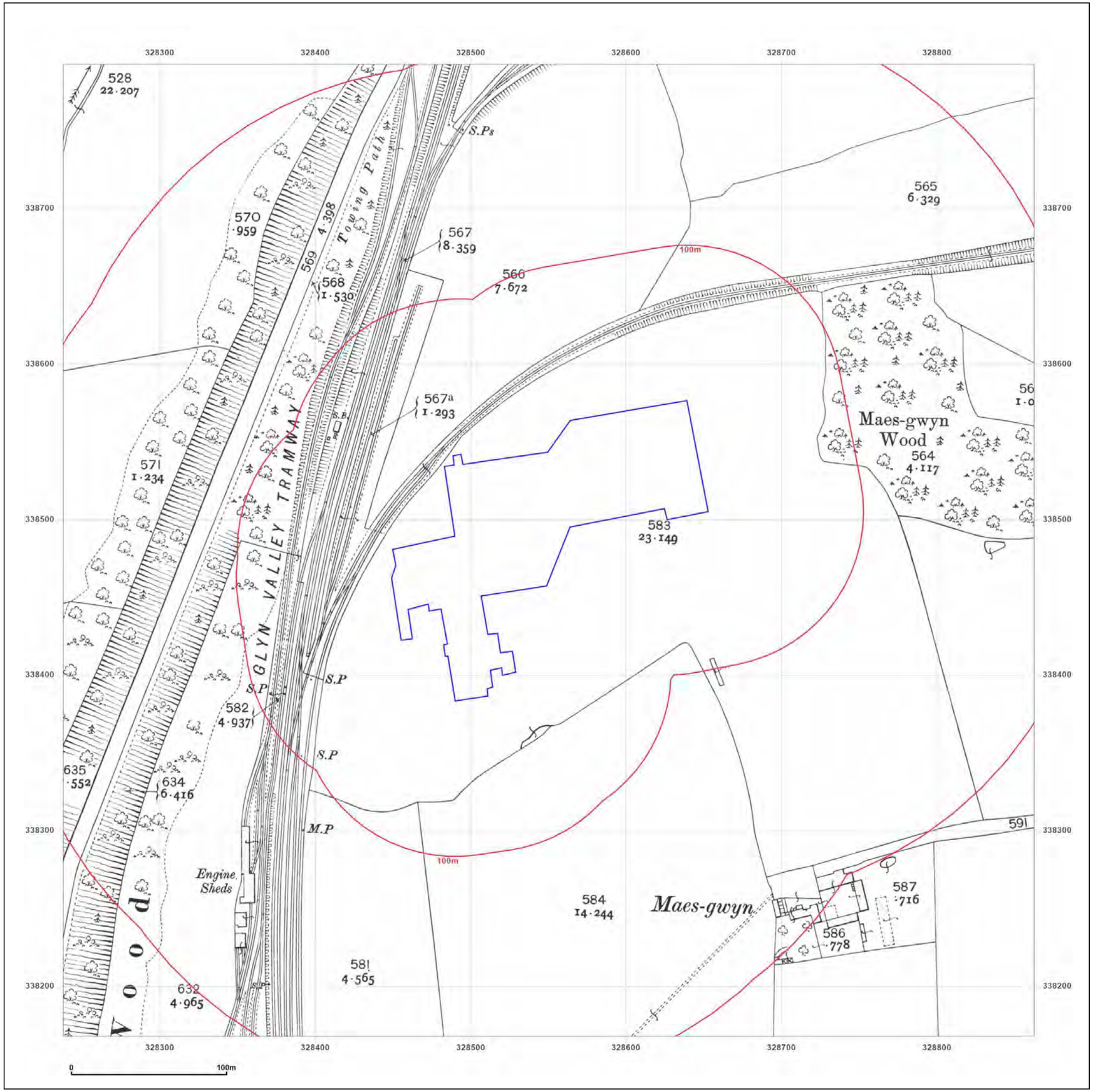

Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: County Series

Map date: **1912**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1912
Revised 1912
Edition N/A
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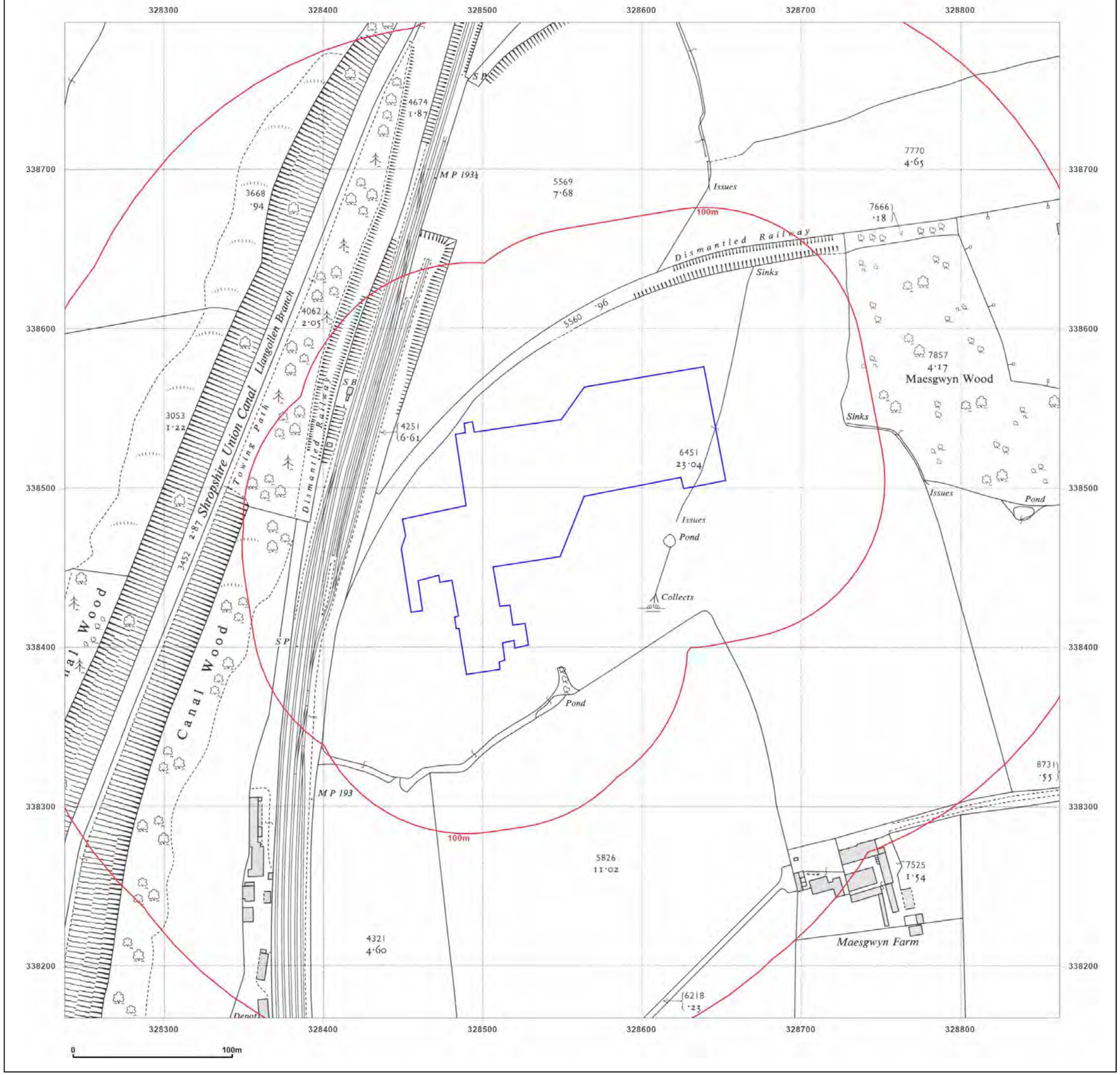

Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: National Grid

Map date: **1960**

Scale: 1:2,500

Printed at: 1:2,500

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S

Surveyed 1960
Revised 1960
Edition N/A
Copyright 1961
Levelled 1954

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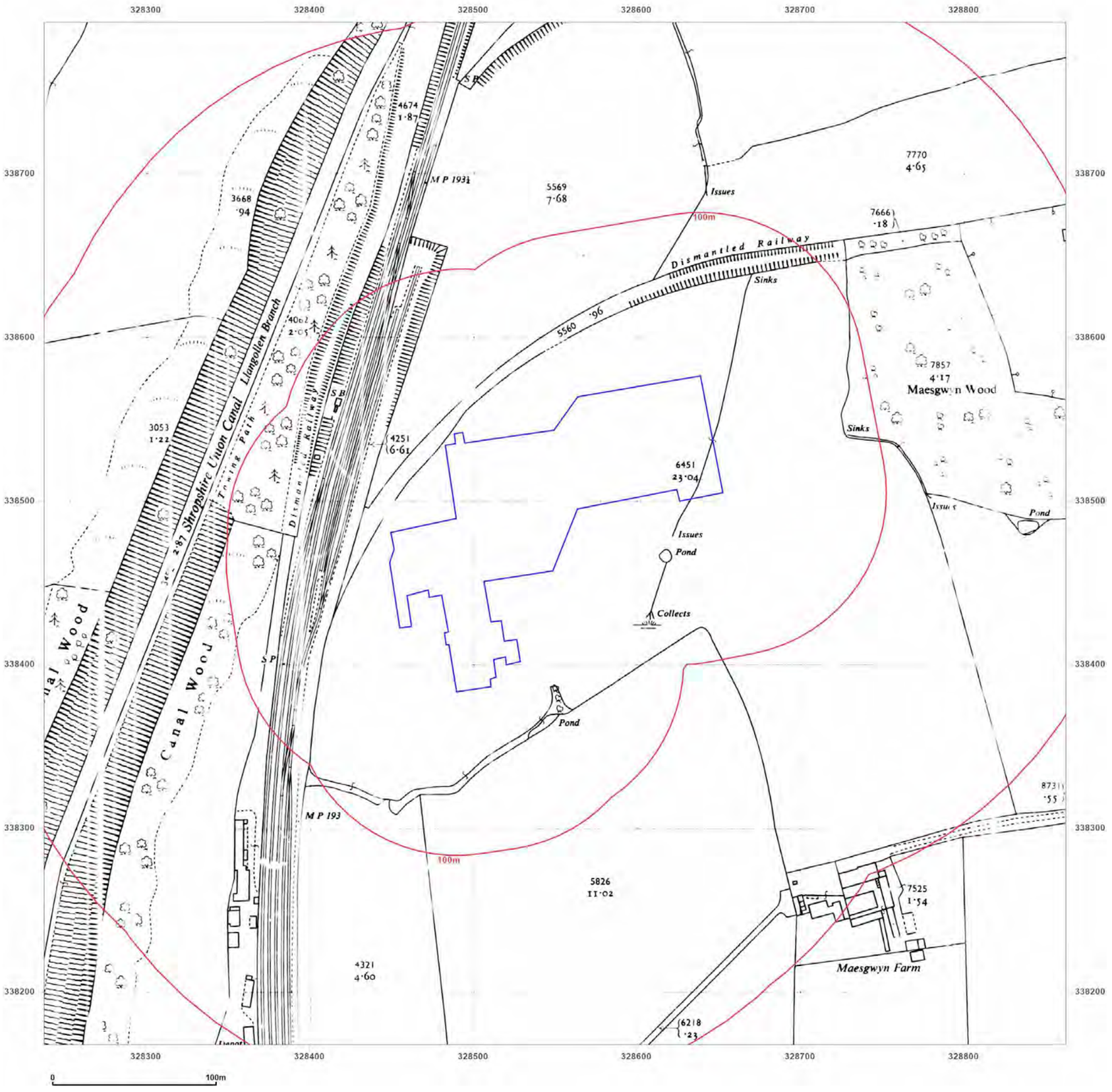

Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: National Grid

Map date: **1961**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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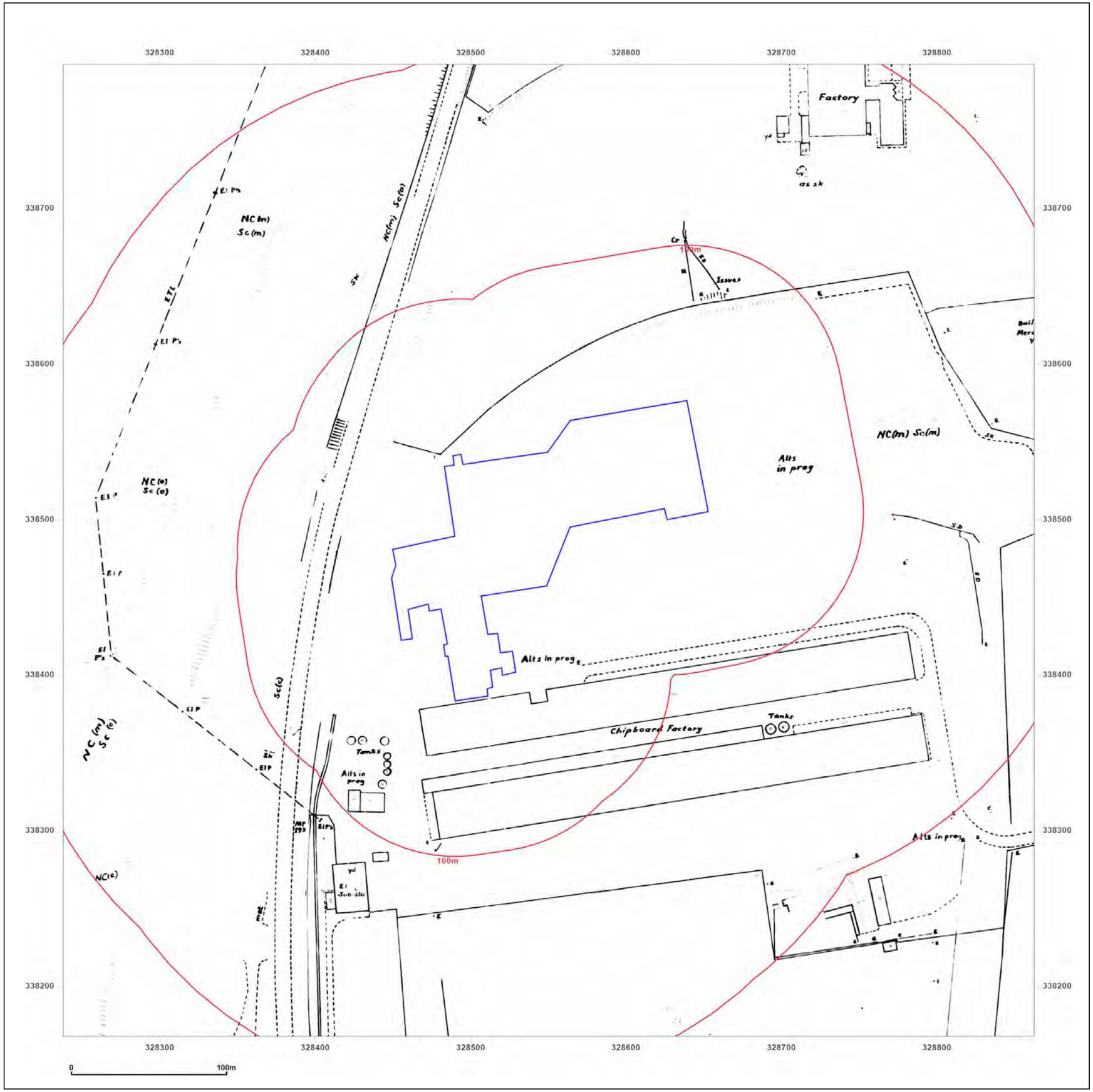
Production date: 02 July 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: National Grid

Map date: **1973**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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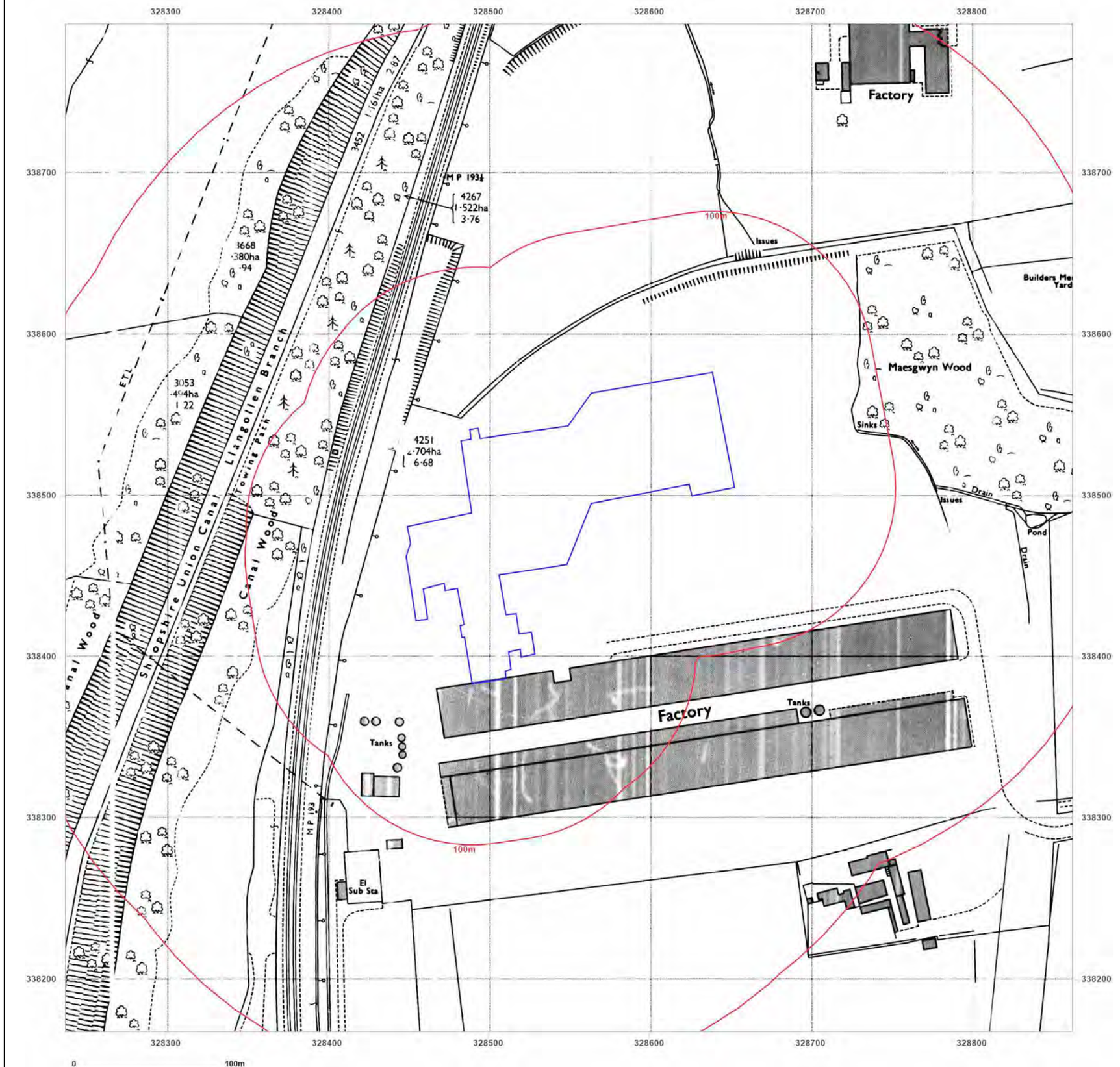
W: www.groundsure.com

Production date: 02 July 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: National Grid

Map date: **1973**

Scale: 1:2,500

Printed at: 1:2,500

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

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Map legend available at:
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Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: National Grid

Map date: **1973**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1973
Revised 1973
Edition N/A
Copyright 1973
Levelled 1959

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Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: National Grid

Map date: **1984**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1959
Revised 1984
Edition N/A
Copyright 1984
Levelled 1959

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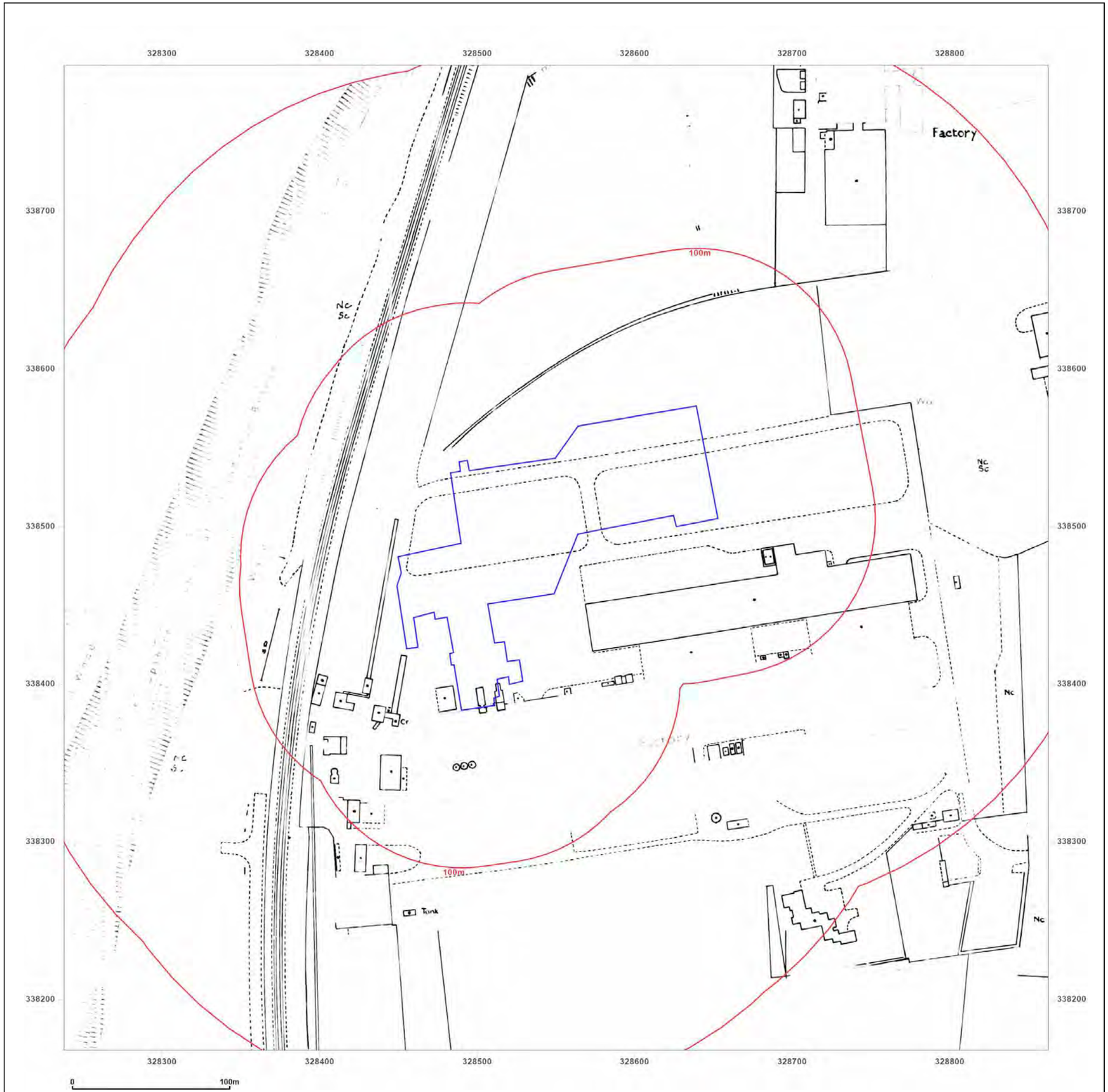

Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: National Grid

Map date: **1985**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
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Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: National Grid

Map date: **1988**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1959
Revised 1988
Edition N/A
Copyright 1988
Levelled 1959

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Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: National Grid

Map date: **1990**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1990
Levelled 1959

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Production date: 02 July 2024

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Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: National Grid

Map date: **1992**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1992
Revised 1992
Edition N/A
Copyright 1992
Levelled N/A

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Production date: 02 July 2024

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Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

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

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Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

N
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Revised N/A
Edition N/A
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Levelled N/A

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Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: National Grid

Map date: **1995**

Scale: 1:2,500

Printed at: 1:2,500

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

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Production date: 02 July 2024

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Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: National Grid

Map date: **1995**

Scale: 1:2,500

Printed at: 1:2,500

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

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Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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Production date: 02 July 2024

Map legend available at:
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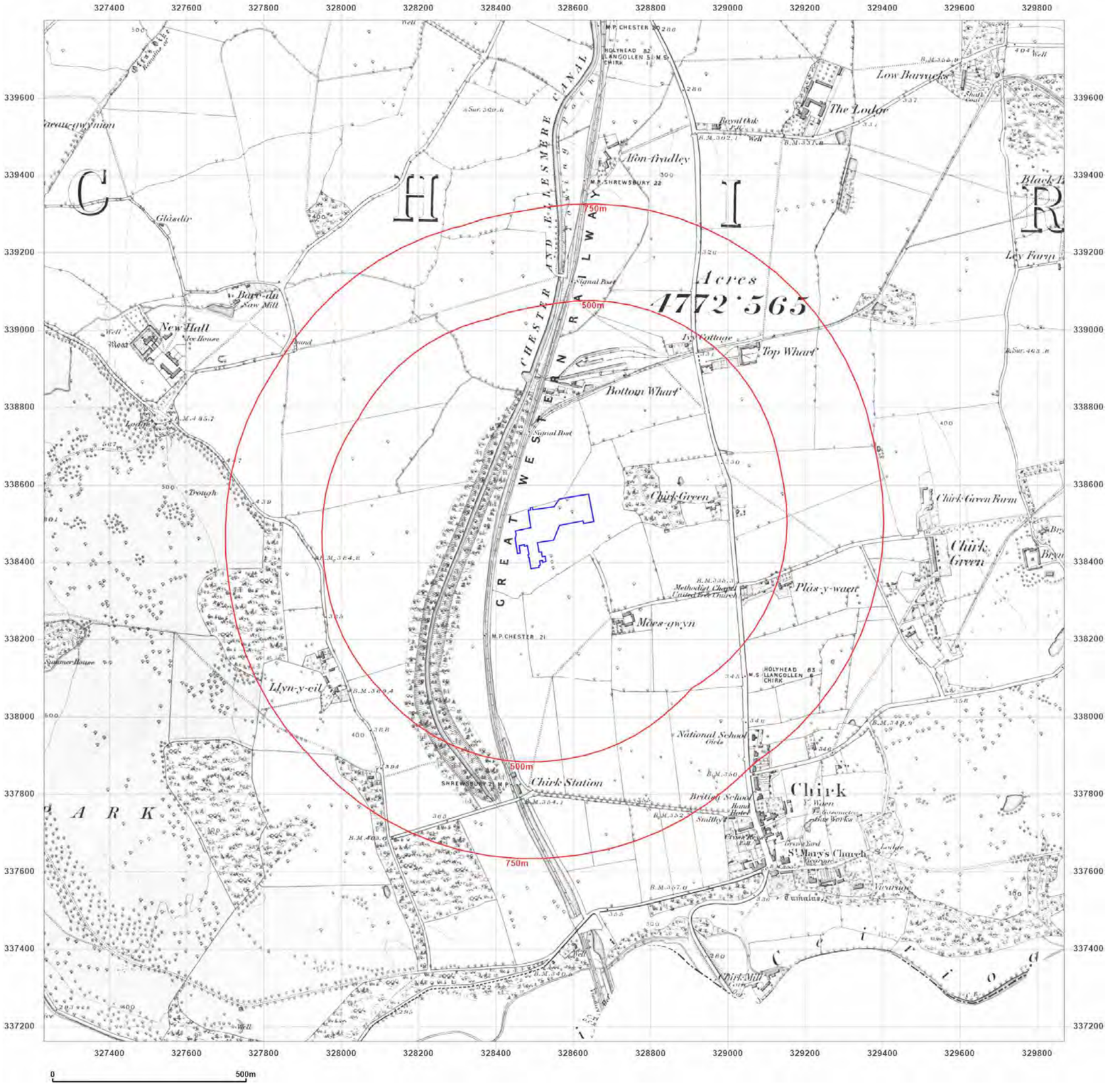

Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: County Series
Map date: **1873**
Scale: 1:10,560
Printed at: 1:10,560

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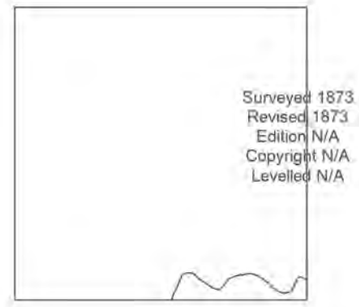

Powered by

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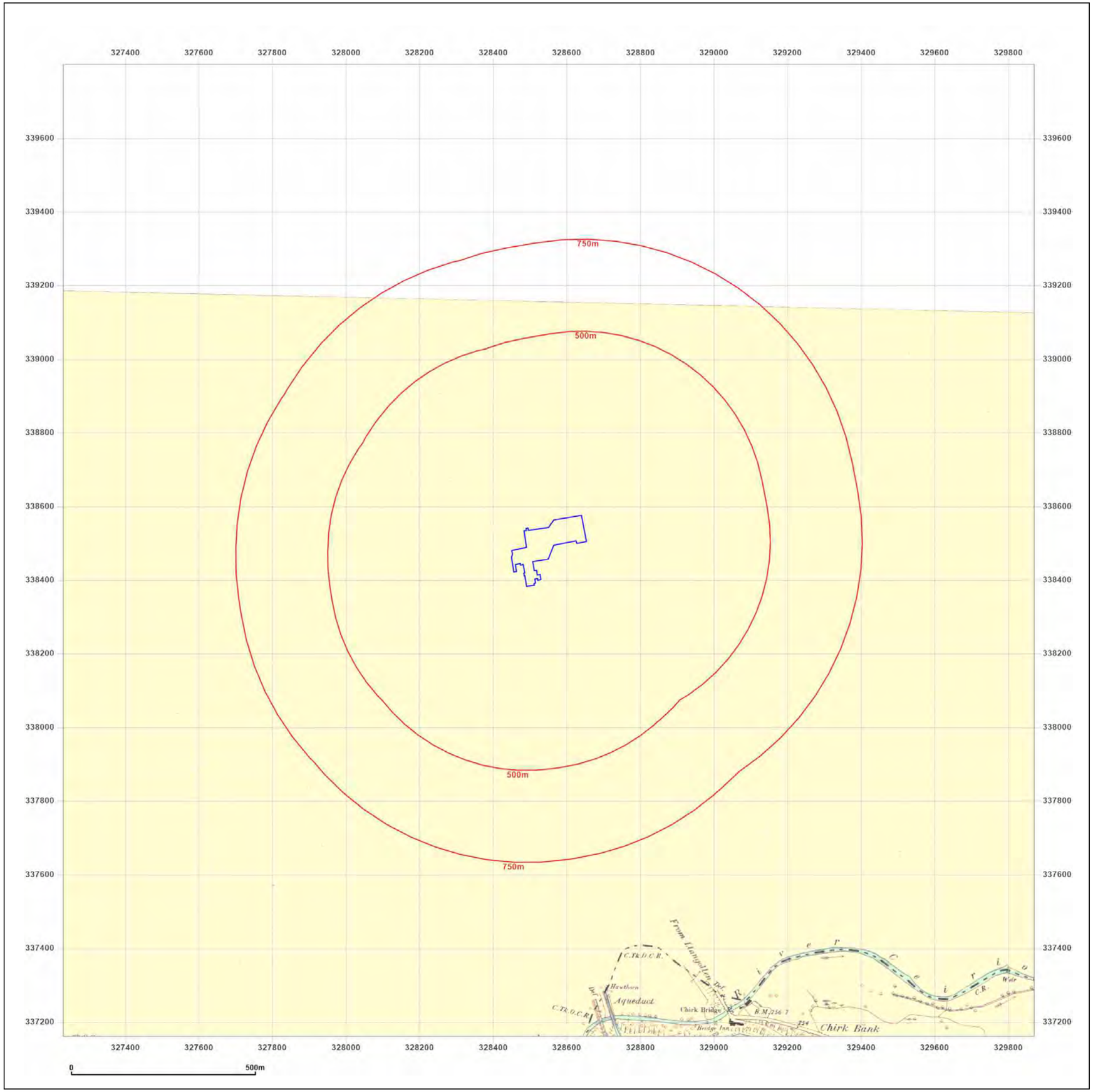
E: info@groundsure.com
W: www.groundsure.com

Production date: 02 July 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: County Series

Map date: **1874**

Scale: 1:10,560

Printed at: 1:10,560

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Powered by OS

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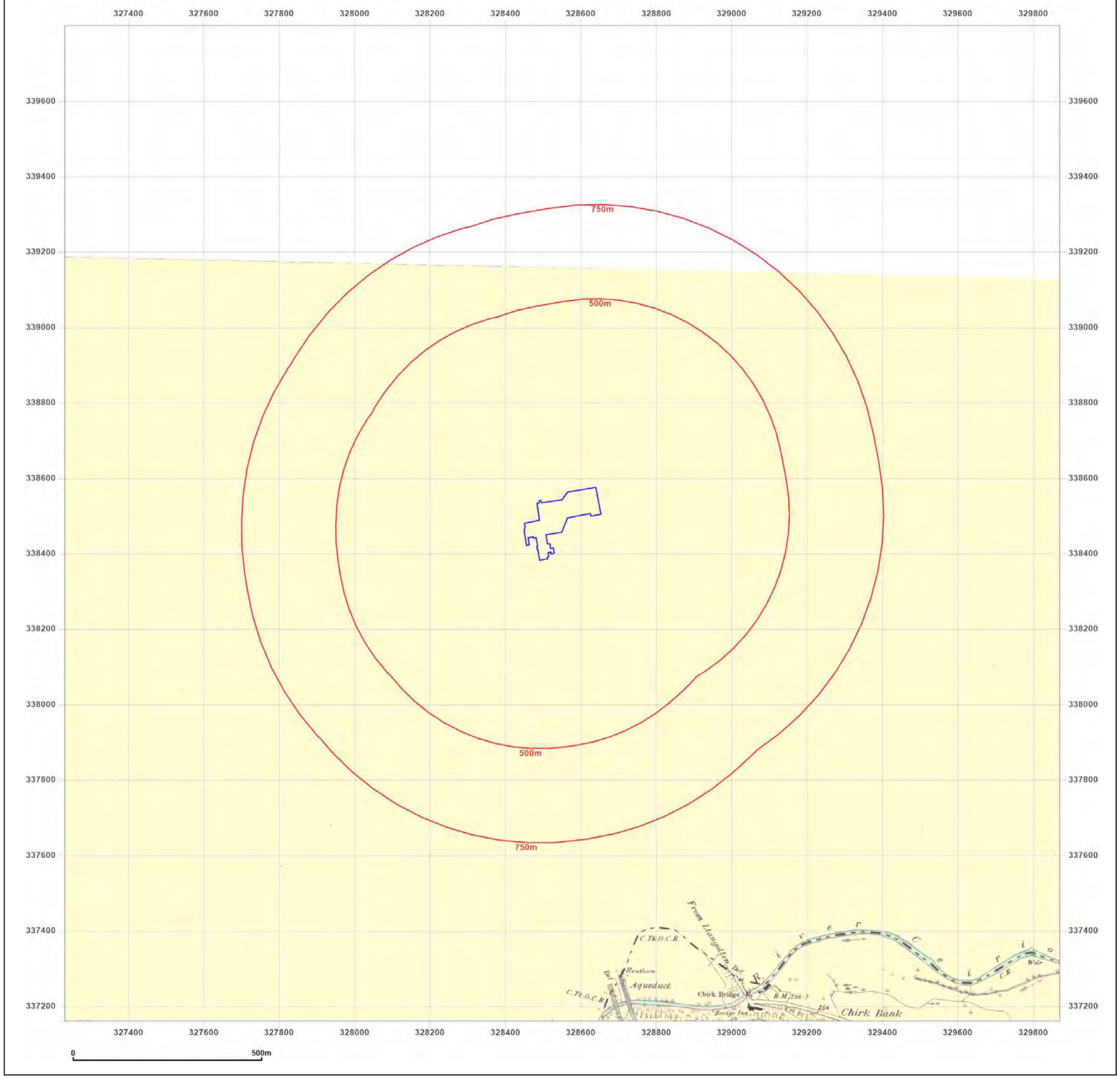
W: www.groundsure.com

Production date: 02 July 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: County Series

Map date: **1884**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1874
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 02 July 2024

Map legend available at:
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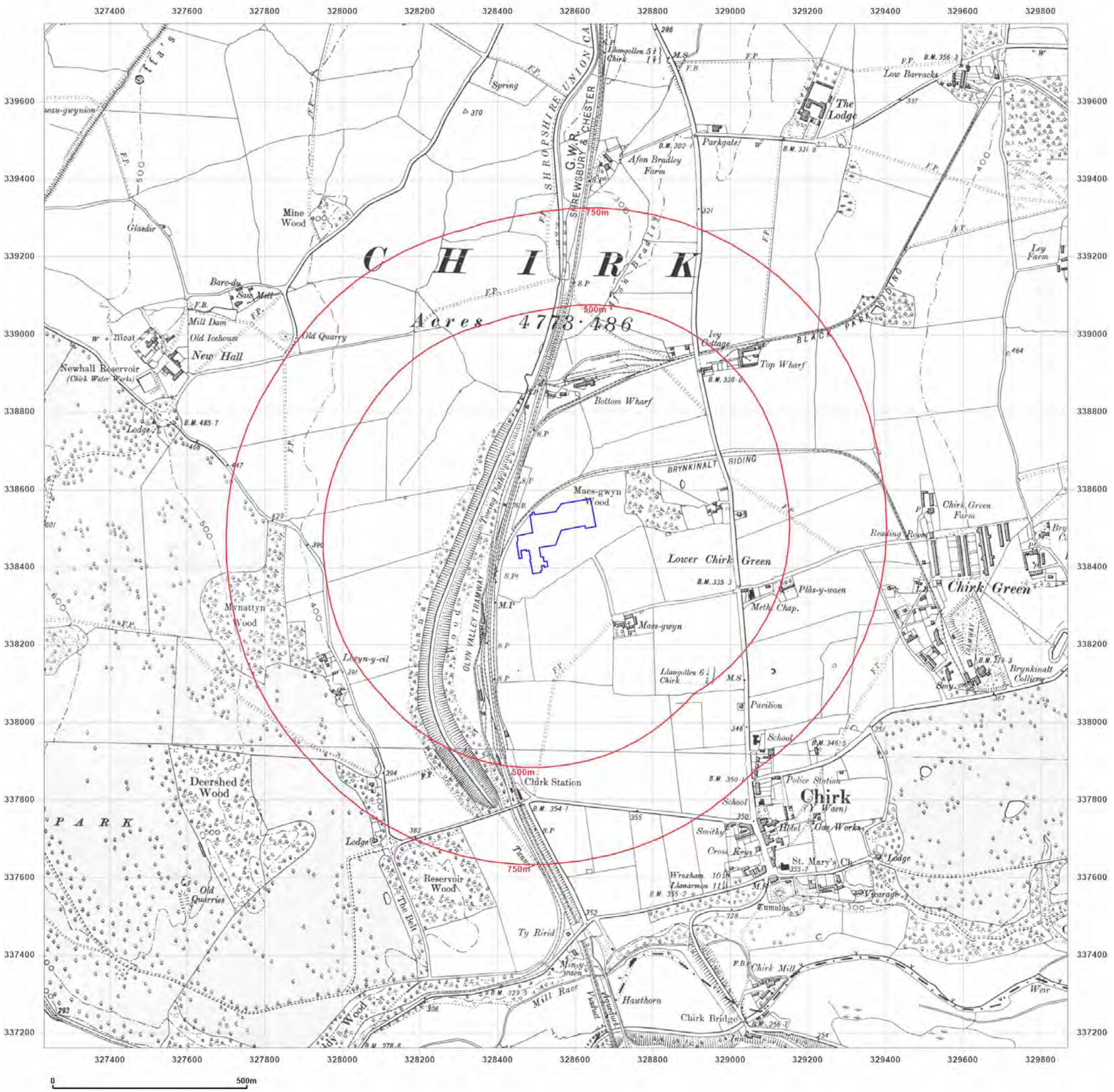

Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

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

N
W E
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Surveyed 1873
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1873
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 02 July 2024

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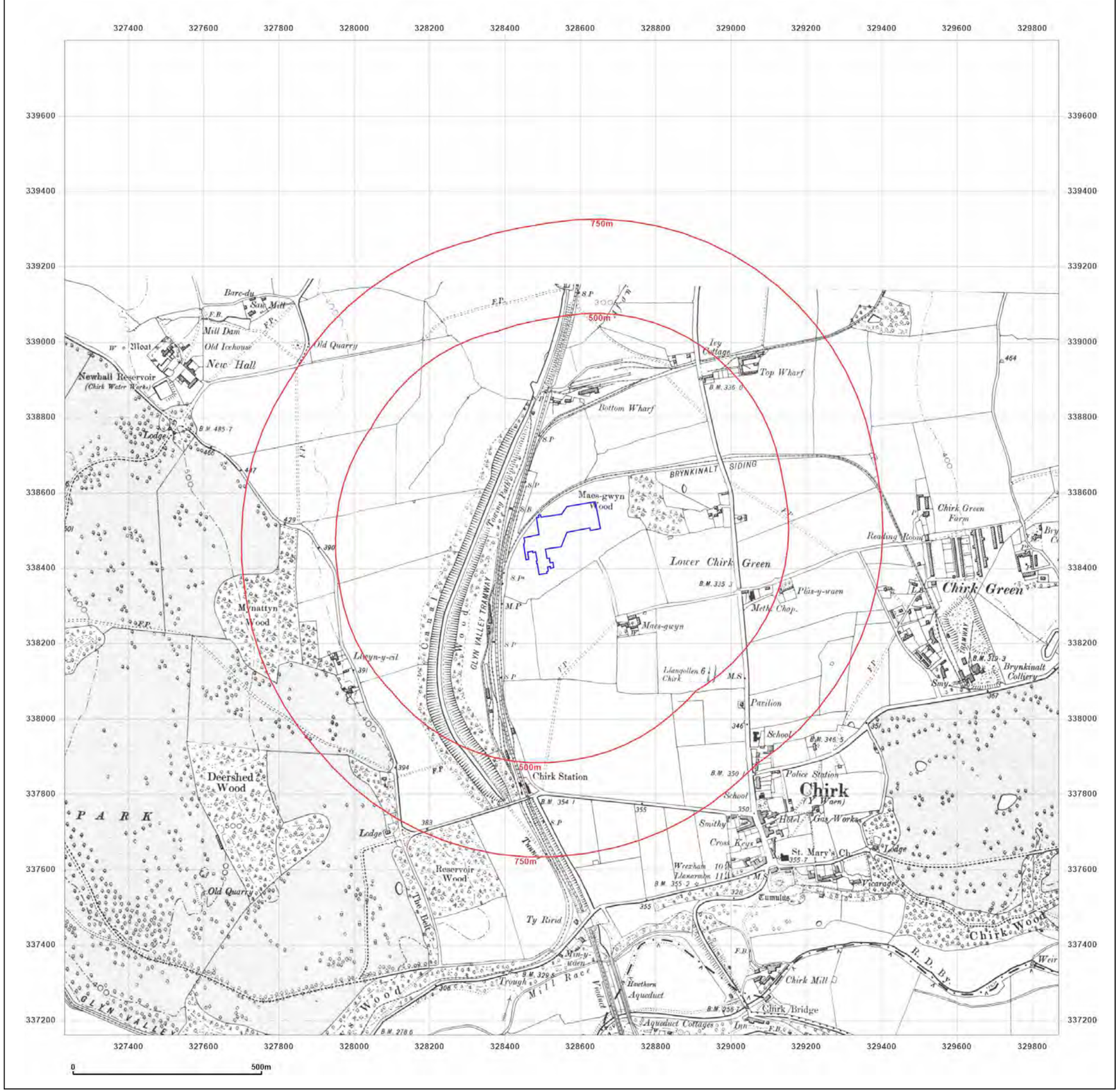

Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: County Series

Map date: **1899**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1874
Revised 1899
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 02 July 2024

Map legend available at:
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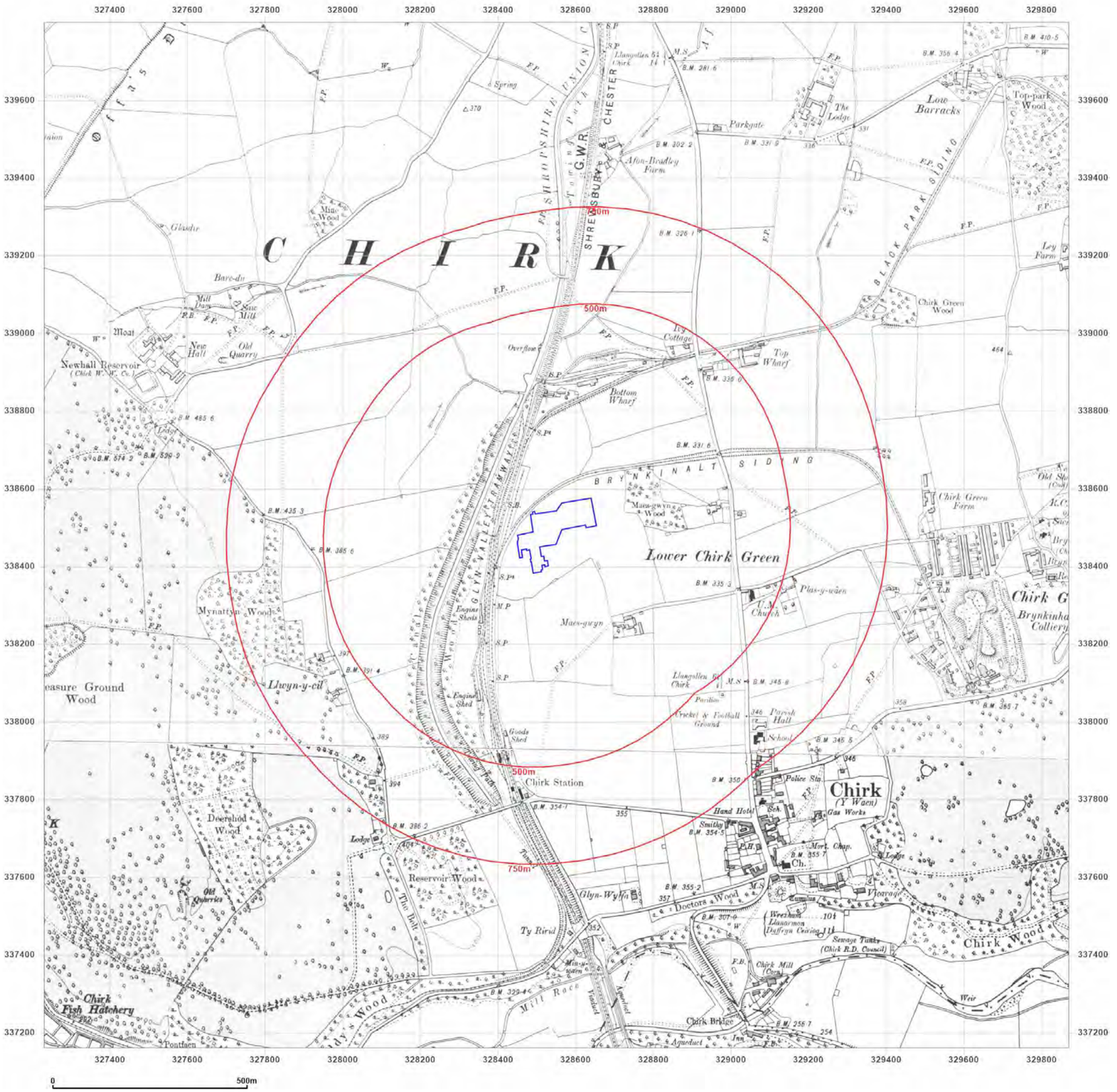

Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: County Series

Map date: **1914**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1872
Revised 1914
~~Edition 1914~~
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1914
Edition 1914
Copyright N/A
Levelled N/A

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Production date: 02 July 2024

Map legend available at:
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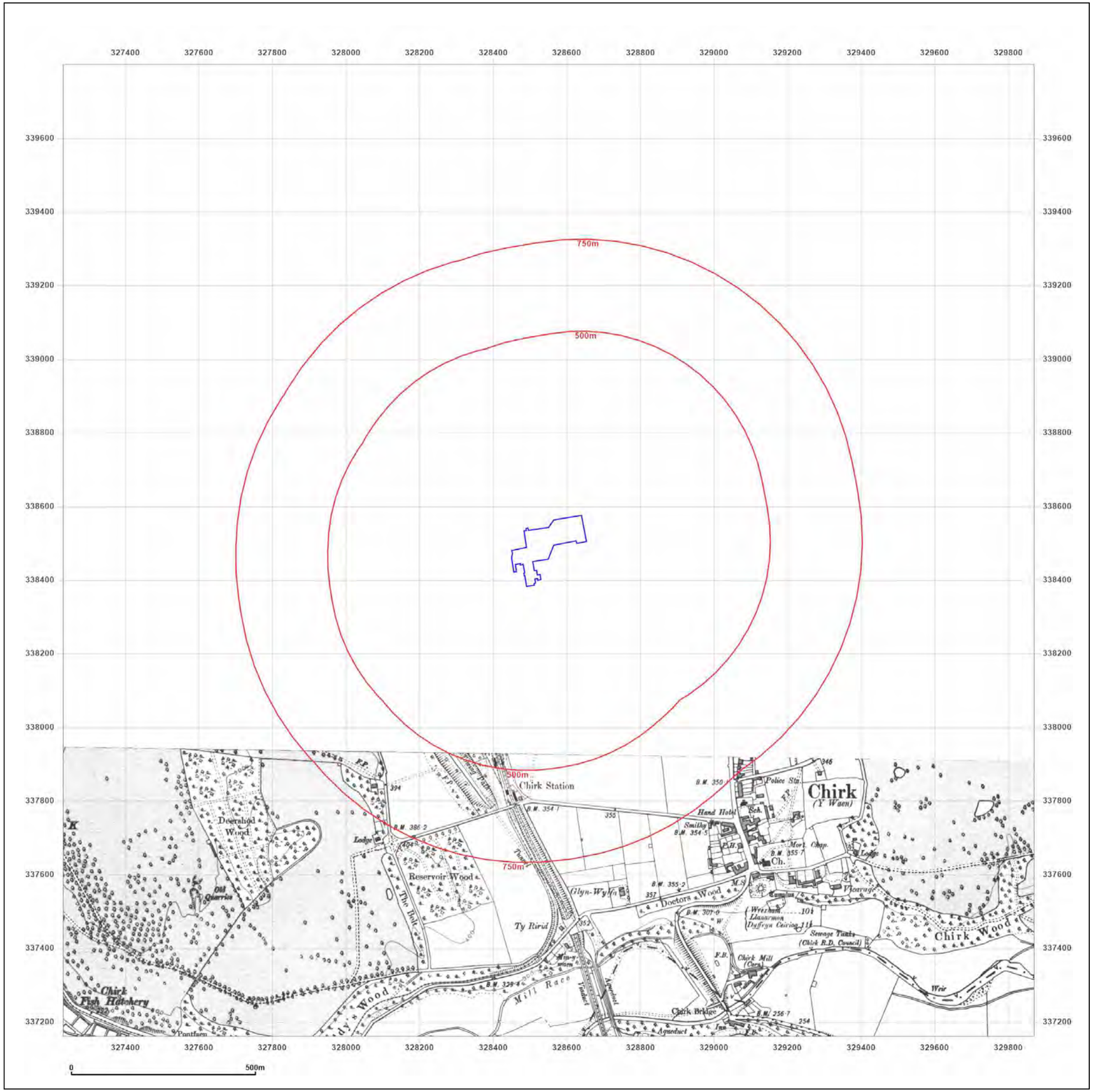

Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: County Series

Map date: **1914**

Scale: 1:10,560

Printed at: 1:10,560

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W: www.groundsure.com

Production date: 02 July 2024

Map legend available at:
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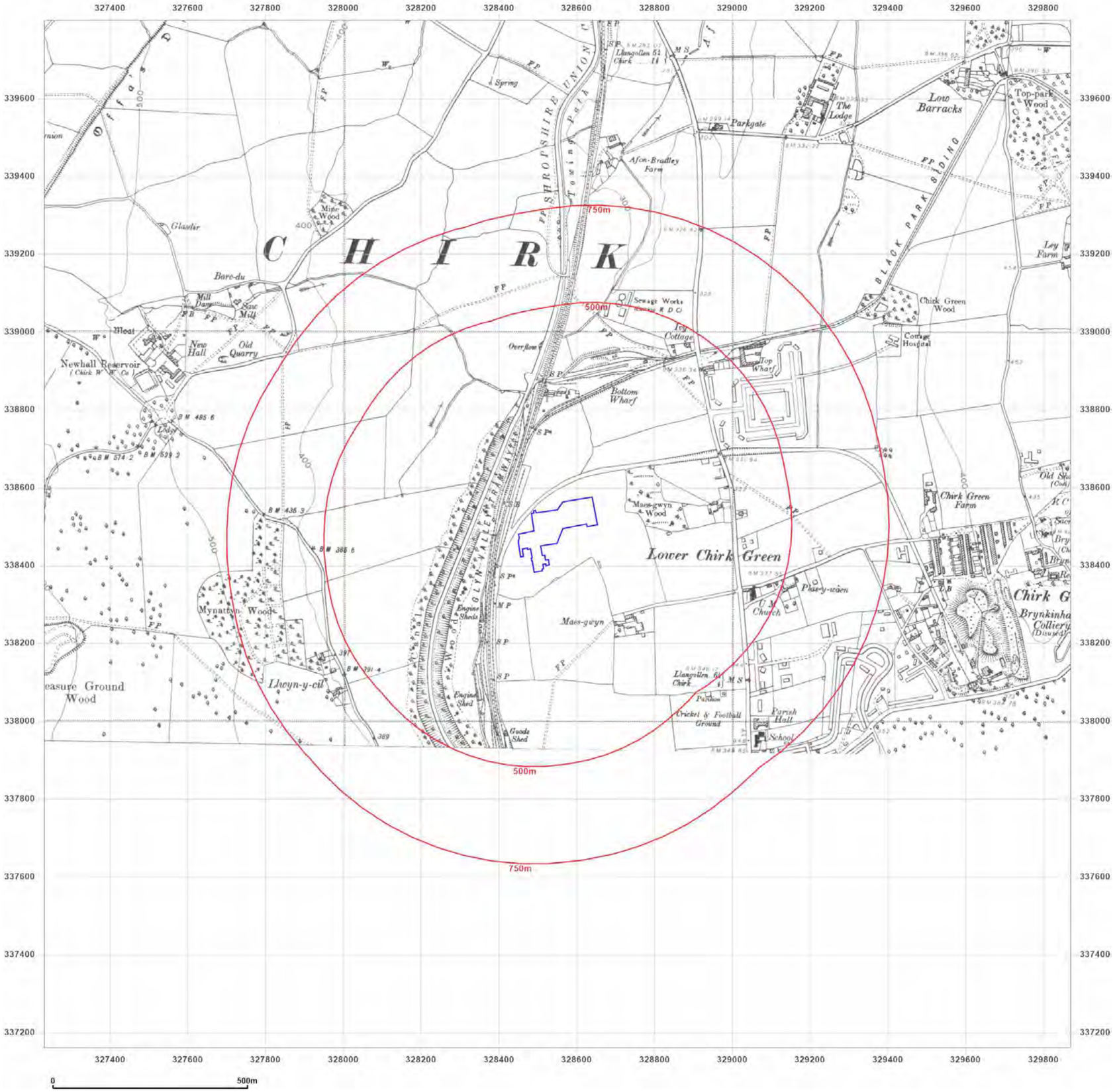

Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: County Series

Map date: **1949**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1872
Revised 1949
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 02 July 2024

Map legend available at:
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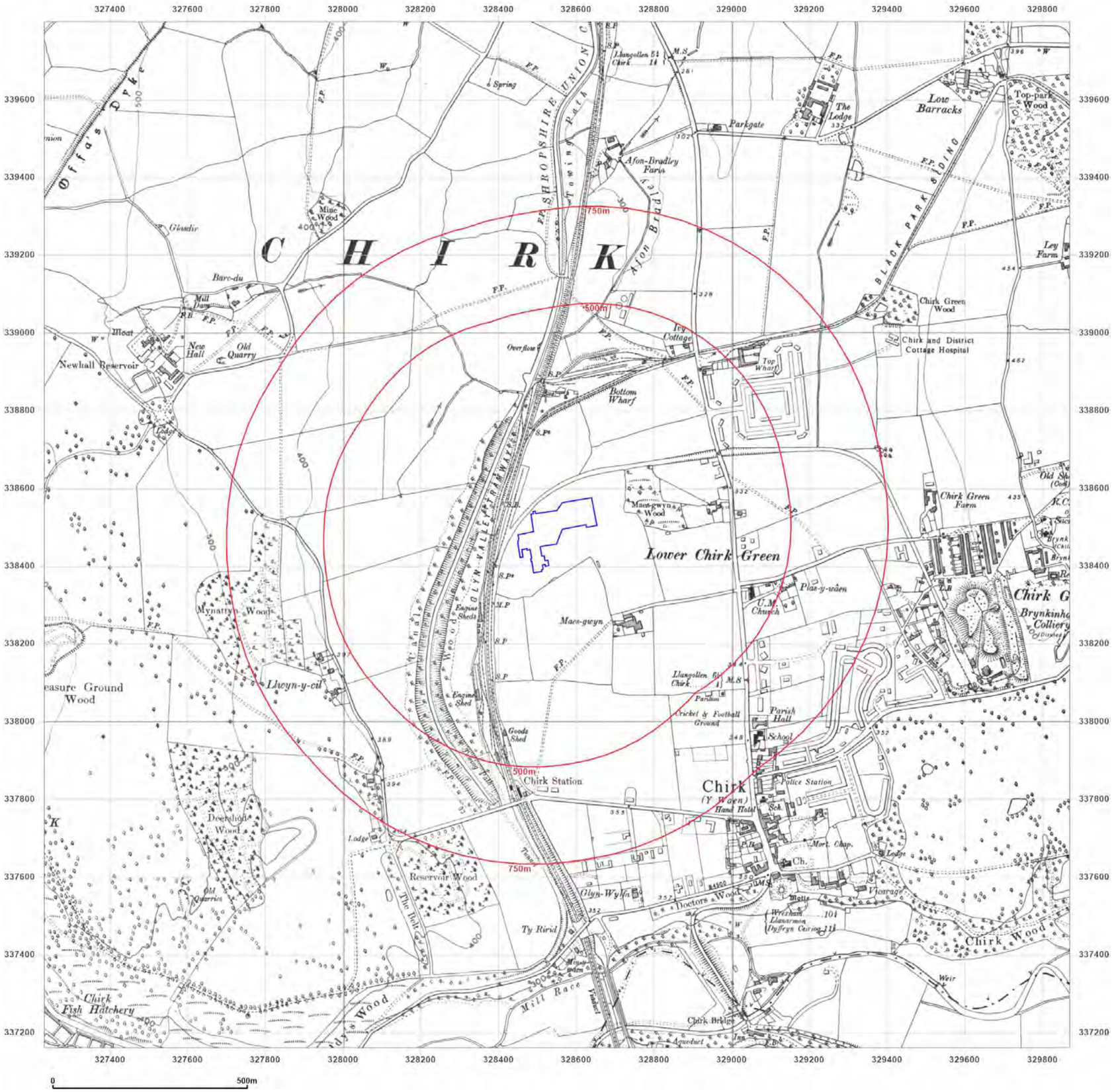

Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: Provisional

Map date: **1954**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1948
Revised 1949
Edition N/A
Copyright N/A
Levelled N/A

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Map legend available at:
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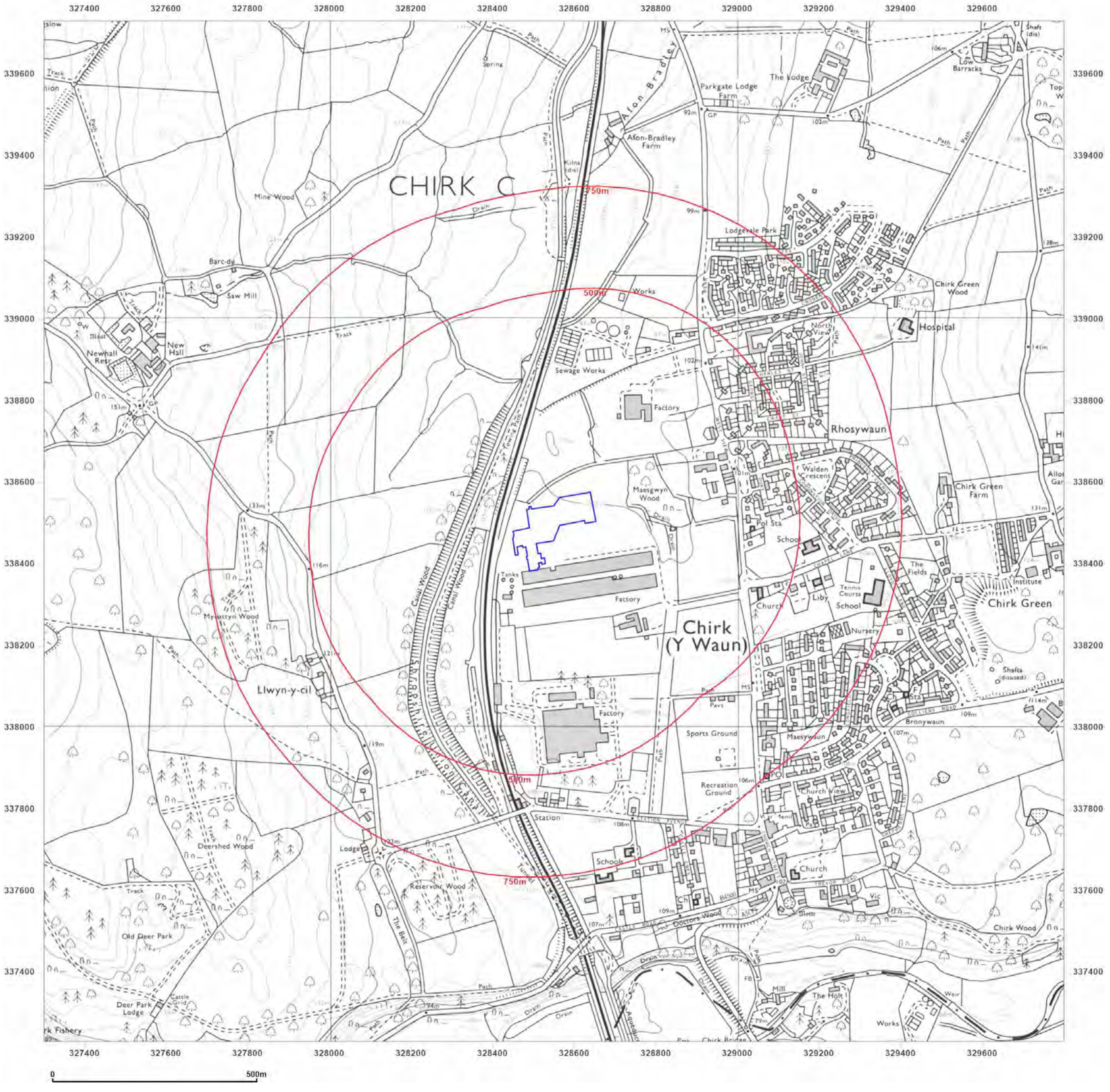

Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: National Grid

Map date: **1979**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1976
Revised 1979
Edition N/A
Copyright 1979
Levelled 1973

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Production date: 02 July 2024

Map legend available at:
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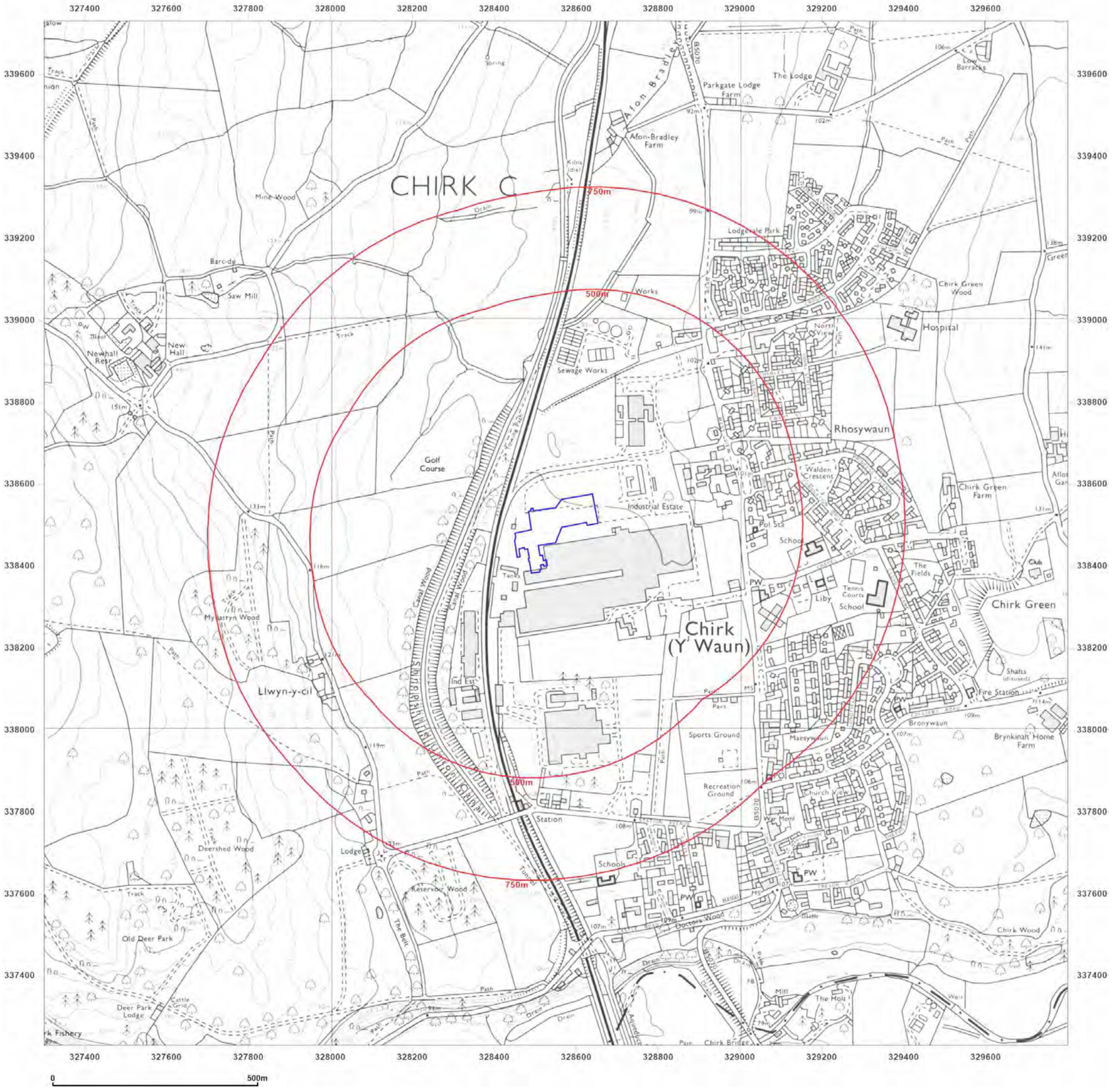

Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: National Grid

Map date: **1992**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1976
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 02 July 2024

Map legend available at:
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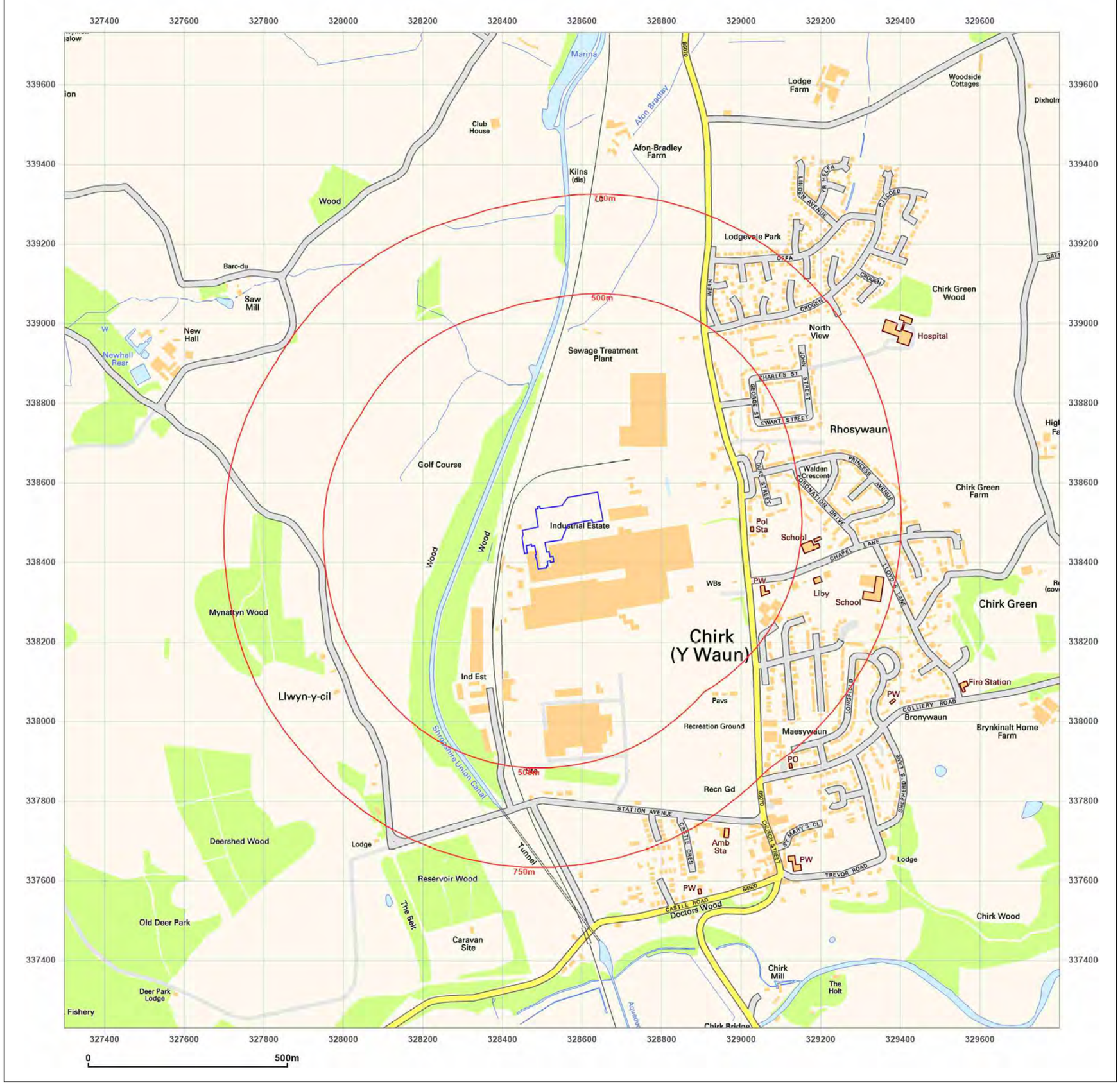

Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

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Map legend available at:
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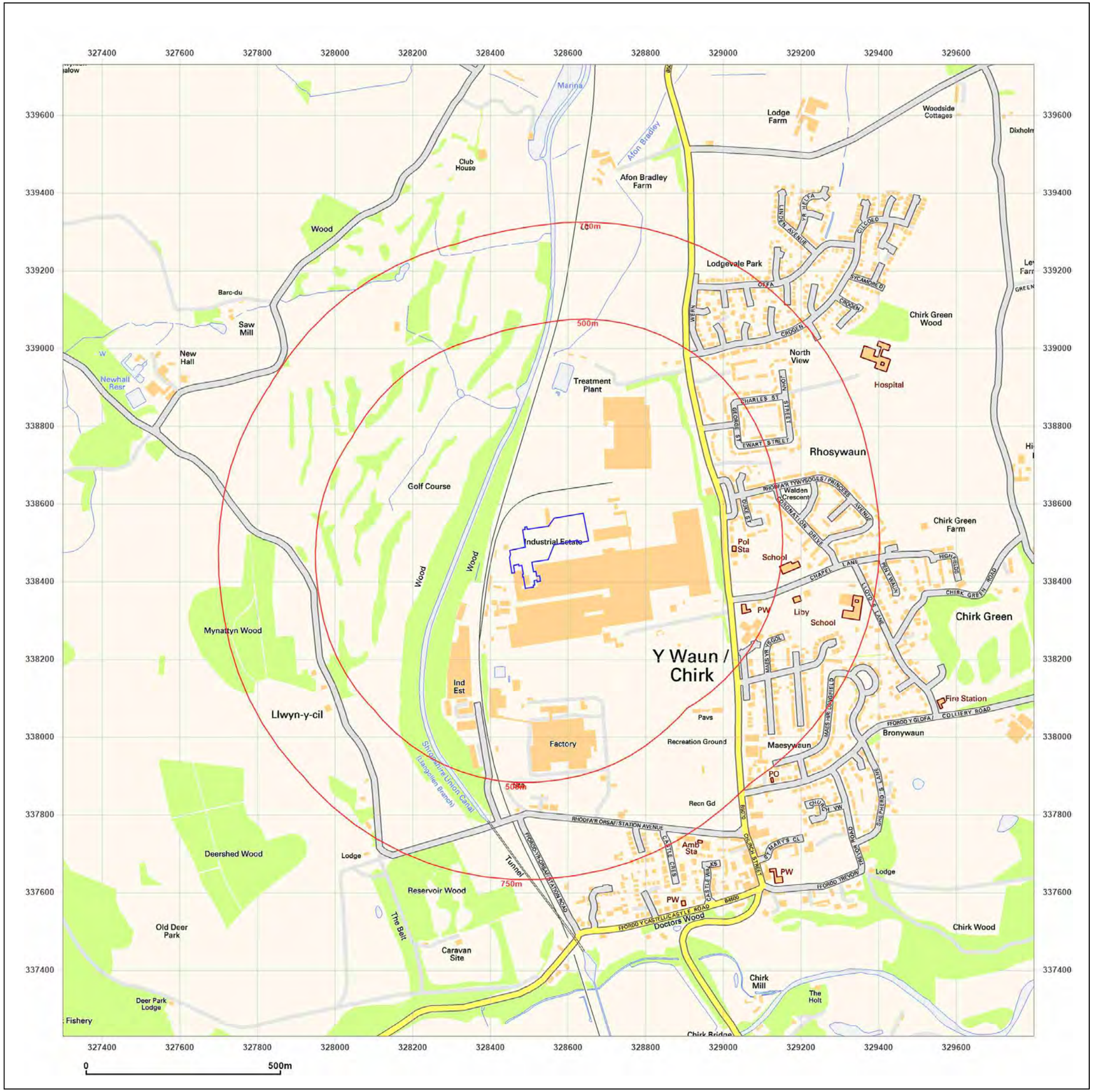

Groundsure INSIGHTS

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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Production date: 02 July 2024

Map legend available at:
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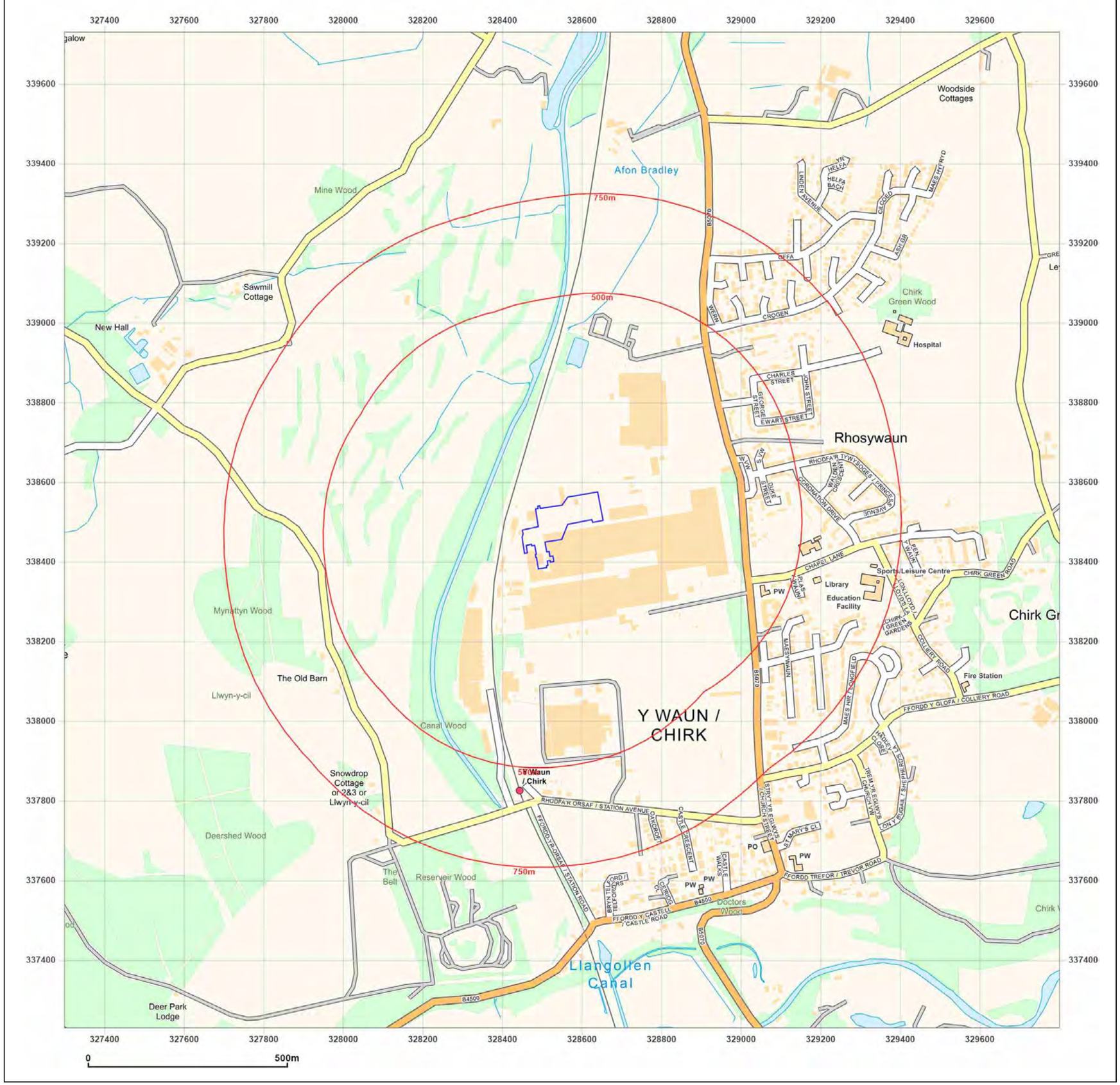

Site Details:

Kronospan

Client Ref: R3148-Kronospan
Report Ref: GS-UV2-NCE-W63-KTN
Grid Ref: 328550, 338480

Map Name: National Grid

Map date: **2024**

Scale: 1:10,000

Printed at: 1:10,000

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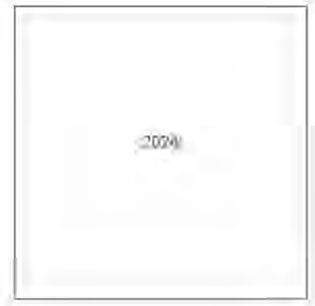

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Production date: 02 July 2024

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APPENDIX D

UXO Screening Report

From: PDSA
To: Megan Jones
Subject: RE: PA019533 PDSA Request Form Submission
Date: 26 July 2024 15:34:14
Attachments: image001.png
image003.png
image006.png

Good afternoon Meg

Please find the PDSA below as requested. If you have any further queries, don't hesitate to contact us.

C

zeticaUXO

Pre-Desk Study Assessment

Site:	Kronospan, Wales
Client:	Smith Grant LLP
Contact:	Meg Jones
Date:	26th July 2024
Pre-WWI Military Activity on or Affecting the Site	None identified.
WWI Military Activity on or Affecting the Site	None identified.
WWI Strategic Targets (within 5km of Site)	The following strategic targets were located in the vicinity of the Site: • Transport infrastructure and public utilities.
WWI Bombing	None identified on the Site.
Interwar Military Activity on or Affecting the Site	None identified.
WWII Military Activity on or Affecting the Site	None identified.
WWII Strategic Targets (within 5km of Site)	The following strategic targets were located in the vicinity of the Site: • Transport infrastructure and public utilities. • Military barracks, camps, depots, and training areas.
WWII Bombing Decoys (within 5km of Site)	None.
WWII Bombing	During WWII the Site was located in the Rural District (RD) of Ceiriog, which officially recorded 33No. High Explosive (HE) bombs with a bombing density of 0.5 bombs per 405 hectares (ha). No readily available records have been found to indicate that the Site was bombed.
Post-WWII Military Activity on or Affecting the Site	None identified.

Recommendation	A detailed desk study, whilst always prudent, is not considered essential in this instance.
Further information	For information about Zetica's detailed UXO desk studies and other UXO services, please visit our website: www.zeticauxo.com. Details and downloadable resources covering the most common sources of UXO hazard affecting sites in the UK can be found **here**. If you have any further queries, please don't hesitate to get in contact with us at uxo@zetica.com or 01993 886 682.

This summary is based on a cursory review of readily available records. Caution is advised if you plan to action work based on this summary.

It should be noted that where a potentially significant source of UXO hazard has been identified on the Site, the requirement for a detailed desk study and risk assessment has been confirmed and no further research will be undertaken at this stage. It is possible that further in-depth research as part of a detailed UXO desk study and risk assessment may identify other potential sources of UXO hazard on the Site.

Many thanks

Harry

Harry Clayton
Risk Assessor
Zetica Limited

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From: Zetica UXO <webform@zeticauxo.com>
Sent: Friday, July 19, 2024 1:06 PM
To: PDSA <pdsa@zetica.com>
Subject: PA019533 PDSA Request Form Submission

Name
Meg Jones
Company
Smith Grant LLP
Email
megan.jones@smithgrant.co.uk
Phone

	07943792644
Site Name	
	Kronospan
Location Method	
	Easting/Northing
Site Boundary *	
	• Kronospan-CHP-Site-Location-Plan.pdf
Location Code	
	328492, 338448

APPENDIX E

Historical Mapping Table

Table 1 – Phase 17 Historical Development Summary			
Feature	**Map**	**Location**	**Description**
			On-site
Agricultural land	1861 to 1984	Across site	Earliest available mapping shows the Site to be part of a wider agricultural field since the earliest available mapping until the expansion of the Kronospan Chipboard Factory to the South.
Sinks	1960 to 1961	Southeast corner	A drainage ditch labelled 'sinks' is mapped crossing the southeast corner linking to a pond and an issue before reaching the label 'collects'. This is removed from mapping by 1974 with the construction of the chipboard factory to the south.
Kronospan	1984 to present day	Across Site	The factory expands with roadways onto the Site from 1984 and a small structure extending onto the southwest section of the Site. Another larger building is added in 1995 on the southwest section of the Site. Satellite imagery shows the Site being used as a sawdust stockpile transfer area from 2006 to 2012. By 2018, four large silos were constructed to the immediate north for the storage of processed wood chips and sawdust with three conveyor belts now crossing the Site.
			Off-site
Railway sidings	1899 to 1990	<5m northwest corner	Spurring from the Glyn Valley Tramway in 1899, this section of track curves around the northwest corner before running parallel to the northern boundary and heading further east, until 1960 when it is mapped as 'dismantled'. The shape remains on mapping until 1990 when a new railway spur is built approximately 80m further north and remains to present day.
Railway spur	1990 to present day	80m north	This new railway spur is first mapped in 1990, presumably used to deliver materials to the Kronospan factory.
Chipboard Factory (Kronospan)	1973 to present day	Surrounding Site.	Kronospan was first constructed in the 1970s to produce chipboard with two large factory buildings to the immediate south of the Site and associated tanks and an electrical substation 110m to the southeast. By 1984, another large factory building had been constructed to the southeast with various other structures and conveyor belts built to the west and, by 1988, a tank compound with six tanks and two buildings is constructed 70m to the east. In 1995, another building is added within 15m of the east boundary. By 2024, the large factory building has expanded closer towards the southern boundary of the Site. Satellite imagery shows by 2018, four large silos were constructed for the storage of processed wood chips and sawdust.
Factory	1973 to present day	150m northeast	This factory is first mapped in 1973 to the northeast with a large building and some smaller buildings surrounding it. This is assumed to relate to Kronospan

Note: Dates refer to dates provided on OS mapping; actual dates may differ

APPENDIX F

Local Authority Consultation

Cyngor Bwrdeistref Sirol Wrecsam/ Wrexham County Borough Council
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Guildhall, Wrexham. LL11 1AY
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wrexham
COUNTY BOROUGH COUNCIL
CYNGOR BWRDEISTREF SIROL
wrecsam

Megan Jones
Smith Grant

Eich Cyf/Your Ref	
Ein Cyf/Our ref	Search 1111
Dyddiad/Date	17 July 2024
Gofynner am/Ask for	Angela Guy
Rhif Cyswllt/Contact No	01978 298771
E-bost/E-mail	contaminatedland@wrexham.gov.uk

BY EMAIL ONLY

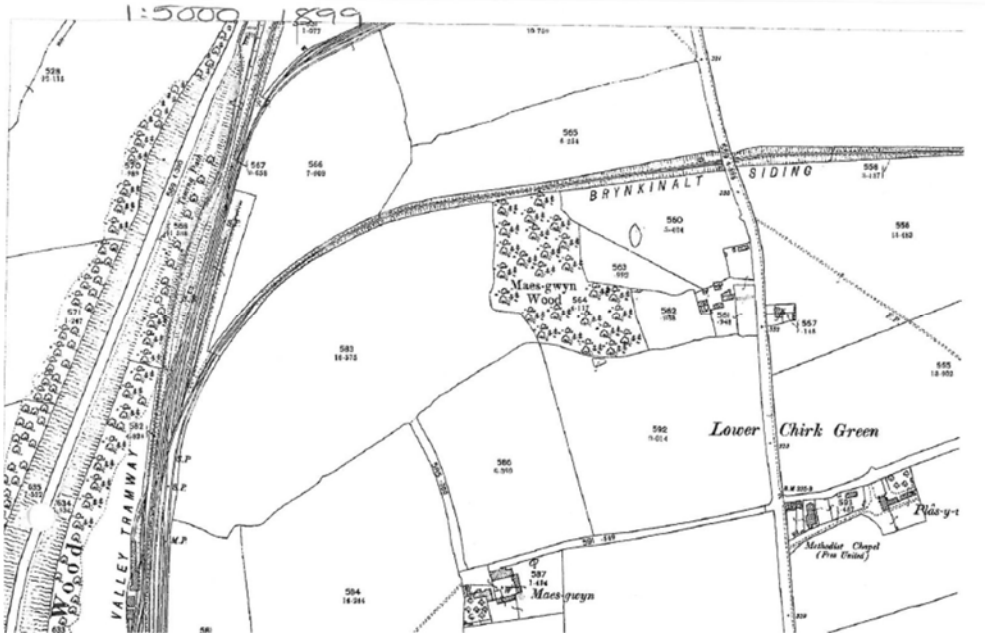
Dear Megan

ENVIRONMENTAL SEARCH: KRONOSPAN, CHIRK

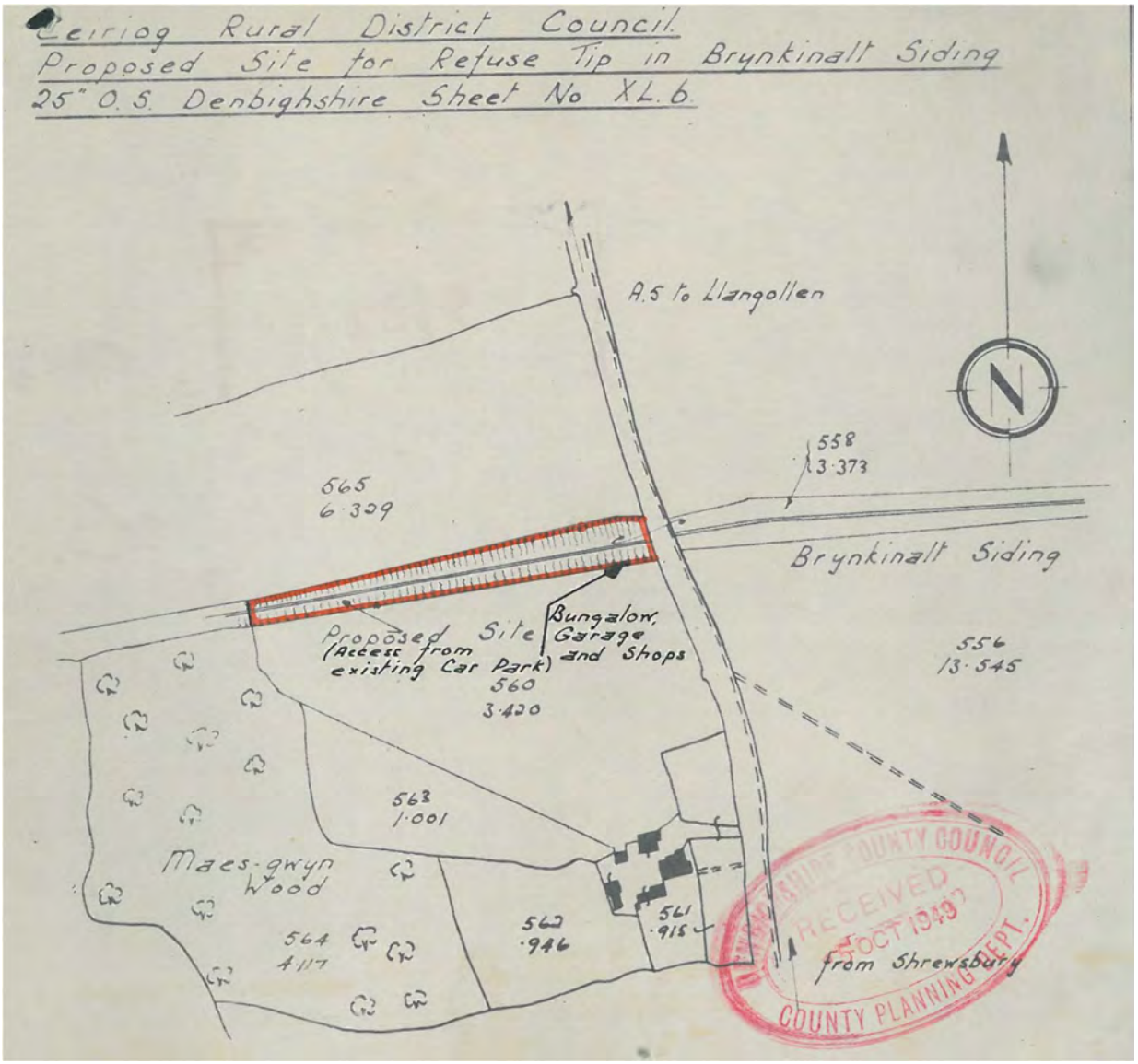
Thank you for your initial email dated 16 July 2024 regarding an environmental search for the above site and the confirmation of payment of the search fee on the same date. I can respond to your enquiry as follows:

1. Information on historical or current landfills in the surrounding area.

   Based on the limited records available to the Contaminated Land Team I can confirm we are aware of one potential landfill site within 250m of the site boundary shown red on the plan you provided. There are few detailed reliable records about it. It is referred to as Bryn Kinnalt Siding. Historical maps show a former mineral railway siding is positioned about 130m to the north east of the site with this name.



An application to infill the cutting part of the line (see plan below) was made by Ceiriog Rural District Council in the late 1940s. There are no details regarding the nature of the waste but it is reasonable to assume that if it was domestic waste then it would not be reminiscent of the type of domestic waste produced today.



In addition limited records provided by Environment Agency Wales (now Natural Resources Wales) refer to a potential landfill called Kronospan Railway Cutting, Chirk, ref: 6955/0079, however there is uncertainty about the location and we have no further details about it. This Team believe it may be the Bryn Kinallt Siding landfill referred to above.

2. Is the site listed on your contaminated land register?

   The Council has not yet determined any sites as ‘contaminated land’ under Part 2A of the Environmental Protection Act 1990 within this area of the County Borough and therefore it is not on our Contaminated Land Register.

3. Has the Site been earmarked for investigation under Part II a of the 1990 Environmental Protection act?

   The Contaminated Land Team does not yet have a comprehensive database regarding historic land use or contamination, however the limited information available indicates that the above site has historical/current land use that has the potential to have caused contamination:

   - Factory/works

   However as an operational factory, it is very unlikely that the site would be currently considered under Part 2A, furthermore we are not aware that the site is unsuitable for its current use.

   Part 2a assessments are subject to financial resources and prioritisation against other potential contaminated sites in the Borough that also require assessment and an operational factory would be low down based on the lower sensitivity of the land use compared to residential use for instance. The Council is not currently undertaking any Part 2a assessments and due to limited resources there are no plans to in the near future.

   Should the site be redeveloped in the future to a new end use then it is likely that any planning permission would be conditioned to ensure potential land contamination concerns are dealt with.

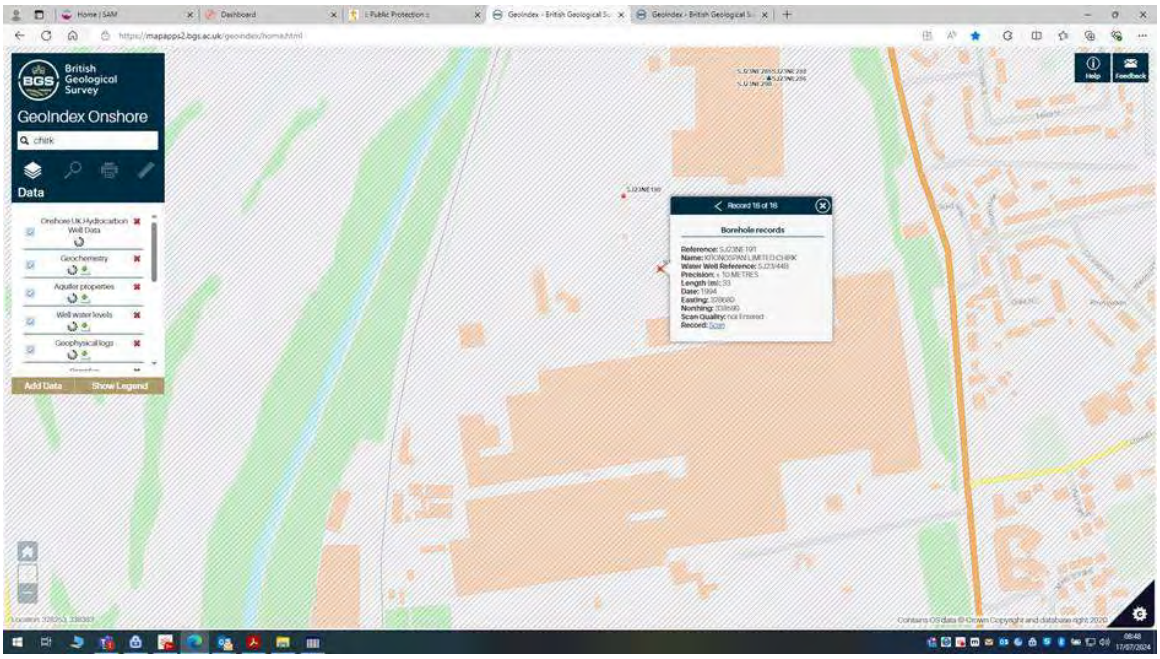
4. Do you have any records of any private water abstractions?

   The Environmental Protection Team at the Council have provided the following information. Should you have any queries about this then please contact Paul Herbert directly on paul.herbert@wrexham.gov.uk.

   - The Team do not have any registered private water supplies in the vicinity.

   - Kronospan Ltd do own three private water supplies under the banner of 'Maesgwyn Estate', but they are all located around Chirk Castle/Pontfadog area.

   - There is BGS data on the GeoIndex; several boreholes on the Kronospan site. https://mapapps2.bgs.ac.uk/geoindex/home.html (the plan below is also attached to my email).



5. Do you have any previous site investigations for the Site?

   The Contaminated Land Team does not hold any records of site investigations for the site.

Should you have any further queries please do not hesitate to contact me on the above number.

Yours sincerely

Ms Angela Guy
Contaminated Land Officer

APPENDIX G

Risk Assessment Methodology

Contaminated Land Risk Assessment Methodology

Conceptual Site Model

Within the contaminated land risk assessment framework, a conceptual Site model (CSM) is developed which identifies the following three components:

- **Source of Contamination:** contaminant: hazardous substance that has the potential to cause adverse impacts;
- **Receptor**: target that may be affected by contamination: e.g. human health of existing or future site users whether they be residents, construction workers etc., occupants/users of site, water resources (rivers or groundwater), or structures;
- **Migratory Pathway**: a viable route whereby a hazardous substance may come into contact with the receptor.

Contaminant Linkage

A contaminant linkage is identified when there is a potential contaminant source, receptor and pathway linkage between the two. The absence of one or more of each component (contaminant, pathway, receptor) would prevent a contaminant linkage being established.

During the contaminated land assessment, the potential 'significance' of this contaminant linkage is established within a risk assessment framework.

The identification of potential contaminant linkages is based on a Conceptual Model of the site, which is subject to continual refinement as additional data becomes available. The Environment Agency's Land Contamination Risk Management (LCRM) guidance (published October 2020, updated July 2023) uses a three staged risk-based approach including: Stage 1 risk assessment, Stage 2: Options Appraisal and Stage 3: Remediation and Verification.

Risk Assessment Framework

A "risk" is defined as:

> *The probability, or frequency, or occurrence of a defined hazard; and*
>
> *The severity or magnitude (including the seriousness) of the consequences.*

The UK's approach to the assessment of environmental risk is set out in by Ciria C552 'Contaminated land risk assessment. A guide to good practice' (Rudland D.J, Lancefield R.M & Mayell P.N, 2001). This has been adapted and is presented within Tables 1 to 3, below.

Table 1: Severity/Consequence of Risk	
Severe	Acute risks to human health. Catastrophic damage to buildings/property (e.g. by explosion). Direct pollution of sensitive water receptors (or serious pollution of other controlled waters (Designated Main Rivers or Principal /Secondary A groundwater aquifers bodies). Acute effects on sensitive ecosystems or species
Moderate	Harm to human health from chronic (long-term) exposure. Pollution of sensitive watercourses (controlled watercourses other than Main Rivers) (Secondary B aquifers) or pollution of other water bodies. Chronic effects on sensitive ecosystems or species. Significant damage to buildings or infrastructure.
Mild	No significant harm to human health in either short or long term. No pollution of sensitive controlled waters, no more than slight pollution of non-sensitive waters. Damage to non-sensitive ecosystems or species. Requirement for protective equipment during site works to mitigate health effects. Minor damage to buildings or infrastructure.
Negligible	No harm to human health, ecosystems, buildings and infrastructure or pollution of water.

The probability of the risk occurring is classified according to criteria given in Table 2 below:

Table 2: Probability of Risk Occurring	
High likelihood	Contaminant linkage may be present, and risk is almost certain to occur in the long term, or there is evidence of harm to the receptor.
Likely	Contaminant linkage may be present, and it is probable that the risk will occur over the long term.
Low Likelihood	Contaminant linkage may be present and there is a possibility of the risk occurring, although there is no certainty that it will do so.
Unlikely	Contaminant linkage may be present but the circumstances under which harm would occur are improbable.

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

Table 3: Comparison of Severity and Probability					
		Severity			
		Severe	**Moderate**	**Mild**	**Negligible**
Probability	**High Likelihood**	Very High Risk	High Risk	Medium/Low Risk	Low Risk
	Likely	High Risk	Medium Risk	Low Risk	Negligible Risk
	Low Likelihood	High/Medium Risk	Medium/Low Risk	Low Risk	Negligible Risk
	Unlikely	Medium/Low Risk	Low Risk	Low Risk	Negligible Risk

The various risk rankings provide guidance for recommended actions, whether this is:

Table 4 – Description of the Classified Risks and Likely Action Required	
Evaluated Risk	**Recommended Actions**
Very High Risk	Severe harm to a receptor may already be occurring, or there is a high likelihood that severe harm could occur from an identified hazard. Urgent investigation and remedial works / mitigation in the short term is likely to be required.
High Risk	Harm is likely to arise to a receptor from an identified hazard. Urgent investigation is required, and remedial works may be necessary in the short term and are likely over the long term.
Medium Risk	It is possible that harm could arise to a receptor from a hazard. However, it is relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Limited investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.
Low Risk	It is possible that harm could arise to a receptor from a hazard, but there is a low likelihood of this hazard occurring and if realised, harm would at worst normally be mild.
Negligible Risk	There is a negligible possibility that harm could arise to a receptor. In the event of such harm being realised, it is likely to be mild or negligible.

APPENDIX H

Previous Investigation Log Summaries

Alfred McAlpine Construction, 1991 (ref: 91204)

BHB – Made ground of concrete to 0.2m, underlain by stone and dense grey stone to 2.1m; medium dense grey Sand and gravel to 2.7m; firm grey/brown silty Clay to 4.2m; soft silty Clay with bands of gravel to 5.6m; medium dense grey silty Sand to 7.2m; and stiff very sandy stony Clay to base at 10.05m bgl.

GW 4.0m bgl

BHC – Made ground of reinforced concrete to 0.2m, underlain by roadstone and stone to 1.4m; firm brown silty Clay 2.4m; grey firm to soft silty Clay to 6.6m; medium dense brown very sandy stony Clay to 8m; dense Sand and gravel to 8.8m; and very stiff brown sandy stony Clay to the base at 10.85m bgl.

GW 8.5m bgl

Ian Farmer Associates, Sep 2013 (ref: 41236)

BH04 – Made ground of concrete to 0.3m; Made ground of Brown, slightly sandy, slightly clayey, angular to subangular, fine to coarse Gravel including limestone to 0.7m; dense, brown grey, slightly clayey, silty, very sandy, subangular to rounded, fine to coarse Gravel to 2.90m; soft, brown grey, silty, slightly sandy, slightly gravelly Clay to 5.30m; grey, slightly silty, slightly sandy, angular to rounded, fine to coarse Gravel including sandstone, limestone and siltstone to 6.0m; soft, grey, silty Clay to 8.50m; and very stiff, brown, slightly sandy, slightly gravelly Clay to the base at 25.0m.

GW 5.0m bgl

Ian Farmer Associates, 2016 (ref: 41793)

BH05- Made ground of concrete to 0.3m; Made ground of brown, clayey, gravelly Sand with low cobble content (Gravel is angular to subrounded, fine to coarse including concrete, mudstone and sandstone (Cobbles are angular including sandstone and limestone) to 1.0m; Firm, dark brown, very sandy Clay to 2.1m; Firm, locally soft, greenish grey, slightly gravelly, sandy, silty Clay to 3.6m; Soft, locally firm, grey, silty, sandy Clay to 12.6m; Very dense, grey sandy, angular to subrounded, fine to coarse Gravel with low cobble content (Gravel includes mudstone and sandstone. Cobbles and boulders are subrounded including mudstone) to 22.4m; and very stiff, reddish brown, slightly gravelly, silty Clay to base at 24.7m bgl.

GW not encountered

BH07- Made ground of concrete to 0.5m; Made ground of light grey, sandy, sub angular to sub rounded fine to coarse Gravel to 0.9m; light brown-grey, gravelly, coarse Sand to 1.2m; medium dense, light grey brown, gravelly, slightly clayey, coarse Sand to 2.1m; soft, brown slightly sandy, slightly gravelly Clay to 3.5m; Soft, brown, slightly sandy Silt with occasional roots to 4.0m; soft, dark brown, sandy Clay to 4.5m; medium dense, grey, gravelly, clayey Sand to 5.6m; medium dense, light, grey, sandy, subangular to subrounded, medium and coarse Gravel including mudstone to 6.7m; very loose, light, grey, slightly sandy, slightly gravelly Silt to 12.5m; loose, light grey, slightly sandy Silt to 17m; soft, light grey, clayey Silt to 20.90m; light grey Gravel with medium cobble content to 2.70m; soft, brown, sandy, clayey Silt to 23.50m; and very stiff, reddish brown, sandy Clay to the base at 25m.

GW 5.2m bgl

BH08- Made ground of concrete to 0.6m; Made ground of Grey, sandy, subangular to subrounded, fine to coarse GRAVEL including limestone to 0.9m; Made ground of brown, gravelly Sand (Gravel is subrounded, fine and medium including mudstone, siltstone and sandstone) to 1.9m; Light grey, gravelly, slightly clayey, fine to coarse Sand to 2.7m; Firm, orange brown and grey mottled, slightly sandy, slightly gravelly Clay to 4.0m; Medium dense, light blue and light grey, sandy, slightly clayey, subangular to subrounded, fine to coarse Gravel including mudstone to 4.9m; Dark grey Sand to 5.1m; Firm, light blue and light grey, slightly sandy, slightly gravelly, clayey Silt to 19.6m; Light grey, light blue, slightly gravelly Silt to 20.4m; Brown, coarse Sand to 20.7m; and Stiff, brown, sandy, slightly gravelly Clay to the base at 23.7m bgl.

GW 4.7m bgl

BH09- Made ground of concrete to 0.35m; Made ground of light grey, sandy Gravel to 0.7m; dense, light grey, sandy, clayey Gravel to 2.25m; brown, slightly sandy, clayey Gravel to 2.7m; firm, brown, grey mottled, slightly sandy, laminated Clay with occasional gravel to 4.6m; light, blue/grey, sandy Gravel to 5.5m; loose, grey, slightly sandy Silt with occasional gravel to 24m; and medium dense, black/grey Gravel to base at 25m.

GW 24.0m bgl

Ian Farmer Associates, Sept 2016 (ref: 41946)

BH01- Made ground of Light brown, gravelly, fine to coarse Sand. Gravel is subangular to subrounded, fine to coarse including mudstone, siltstone and sandstone to base at 0.5m bgl.

GW Not encountered

BH01A- Made ground of Light brown, gravelly, fine to coarse Sand. Gravel is subangular to subrounded, fine to coarse including mudstone, siltstone and sandstone to 1.6m; Soft, light brown, laminated, slightly sandy, silty Clay to 3.8m; Black, slightly gravelly, fine to coarse Sand to 4.8m; Very soft, light grey, laminated, clayey Silt to 6.5m; Grey, clayey, subangular to subrounded, fine to coarse Gravel including sandstone, siltstone and mudstone to 7.0m; and Soft, brown, sandy, slightly gravelly Clay to base at 9.4m bgl.

GW not encountered

BH02- Light brown, gravelly, fine to coarse Sand (Gravel is angular to subrounded, fine to coarse including mudstone, siltstone, sandstone, glass, metal, tile, concrete and brick) to 1.0m; Soft, light grey light blue, brown mottled, slightly sandy, slightly gravelly Clay (Gravel is subangular to subrounded, fine to coarse including mudstone, siltstone and sandstone) to 2.5m; Soft, brown, laminated, slightly sandy, slightly gravelly, silty Clay (Gravel is subangular to subrounded, fine to coarse including mudstone, siltstone and sandstone) to 4.25m; Very soft, light grey, slightly sandy, clayey Silt locally tending to silty clay to 8.7m; Stiff, brown, sandy, slightly gravelly Clay (Gravel is subangular to subrounded, fine and medium including sandstone, siltstone and mudstone) to 9.0m; Medium dense, brown, clayey, gravelly, fine to coarse Sand (Gravel is subangular to subrounded, fine to coarse including sandstone, siltstone and mudstone) to 10.2m; Firm, brown, sandy, slightly gravelly Clay (Gravel is subangular to subrounded, fine and medium including sandstone, siltstone and mudstone) to 13.0m; and Stiff, brown, sandy, slightly gravelly Clay (Gravel is subangular to subrounded, fine including mudstone, siltstone and sandstone) to the base at 15.0m bgl.

GW 4.0m bgl

BH03- Made ground of Brown grey, slightly clayey, fine to coarse Sand to 0.2m; Made ground of brown sandy clay to 1.0m; firm frown clayey silt to 2.0m; Soft, laminated, brown, slightly sandy, silty Clay with occasional gravel to 3.0m; Soft, brown, silty Clay, locally becomes clayey silt to 3.70m; grey silty fine and medium Sand to 4.0m; very soft, light grey, slightly sandy Silt with rare gravel to 6.10m; and firm brown, slightly sandy, gravelly Clay with frequent cobbles to the base at 7.20m.

GW not encountered

BH04- Made ground of Grey, sandy Gravel with low cobble content (Gravel is angular to subrounded, fine to coarse including brick and tile) to 1.50m; Medium dense, light blue, light grey, clayey, sandy Gravel (Gravel is subangular to subrounded, fine to coarse including mudstone and siltstone) to 2.5m; Firm, light brown, clayey Silt to 3.0m; Brown, clayey, gravelly, medium and coarse Sand to 3.5m; Soft to firm, brown, silty Clay to 4.5m; Loose, blue grey, subangular to subrounded, fine and medium Gravel including mudstone and siltstone to 4.8m; Firm, light grey, light blue Silt with occasional gravel (Gravel is subangular to subrounded, fine, including mudstone and siltstone) to 10.5m; Brown, sandy Gravel (Gravel is subangular to subrounded, fine and medium including mudstone, siltstone and sandstone) to 11.5m; Very dense, brown, slightly clayey, slightly gravelly, medium and coarse Sand (Gravel is subangular to subrounded, fine to coarse including sandstone, siltstone and mudstone) to 12.0m; and Grey brown, angular Cobbles including sandstone, siltstone and mudstone to the base at 12.6m bgl.

GW 4.5m bgl

BH10- Made ground of Brown, sandy Gravel (Gravel is subangular to subrounded, fine to coarse including concrete) to 1.0m; Soft, light grey, gravelly, slightly sandy Clay with rare cobbles (Gravel is subangular to subrounded, fine to coarse including mudstone. Cobbles are angular including mudstone) to 1.7m; Light grey, light brown, clayey, gravelly, medium and coarse Sand to 2.5m; Firm, laminated, brown, slightly sandy Clay to 3m; Soft, light brown, slightly sandy, slightly gravelly Clay to 3.5m; Firm to soft, laminated, brown, slightly sandy Clay with occasional gravel to 4.6m; Firm, lightly grey, slightly sandy Silt to 6.25m; Soft, brown, sandy, slightly gravelly Clay to 7.2m; Dense, brown, sandy, slightly clayey Gravel and Cobbles to 9.2m; and Dark grey Gravel (Gravel is subangular to subrounded, fine and medium mudstone and sandstone) to the base at 9.25m bgl.

GW 4.0m bgl

BH11- Made ground of Brown, gravelly, slightly clayey, fine to coarse Sand (Gravel is subangular to subrounded, fine to coarse including mudstone, siltstone, sandstone and concrete) to the base at 0.5m bgl.

BH12- Made ground of Brown, gravelly, medium and coarse Sand (Gravel is subangular to subrounded, fine to coarse including mudstone, siltstone, sandstone, concrete and plastic) to 0.75m; made ground of Grey brown sandy, slightly clayey Gravel (Gravel is subangular to subrounded, fine to coarse including mudstone, siltstone, sandstone and concrete) to 1.4m; Soft, brown light brown and dark brown mottled, slightly sandy, slightly gravelly Clay to 2.5m; Soft, laminated, brown, slightly sandy Clay to 3.8m; Light grey, sandy, subangular to subrounded, fine and medium Gravel including mudstone to 4.2m; Very soft, light grey, slightly sandy, clayey Silt with occasional gravel to 6.1m; Firm, brown, sandy, slightly gravelly Clay to 7.75m; and Grey brown, slightly clayey, slightly sandy, subangular to subrounded, coarse Gravel including sandstone and mudstone to the base at 8.1m bgl.

GW 4.2m bgl

BH13 – Made ground of brown, gravelly, slightly clayey, medium and coarse Sand to 1.40m; firm, brown mottled, slightly sandy, silty Clay with occasional gravel to 2.50m; soft, laminated, dark brown, slightly sandy Clay, locally becoming sandy silt to 4.20m; light grey/blue, sandy Gravel to 4.50m; soft, light grey, slightly sandy, clayey Silt with occasional gravel to 6.10m; and firm, brown, sandy, slightly gravelly Clay with cobbles to the base at 7.00m

GW 4.1m bgl