

LAND AT PALK ROAD

PALK ROAD, BEDHAMPTON, HAVANT.

FLOOD RISK ASSESSMENT & DRAINAGE STRATEGY

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2108040-01

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DOCUMENT CONTROL SHEET

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1. INTRODUCTION

- 1.1. Ardent Consulting Engineers (hereafter referred to as "Ardent") has been commissioned by Bellway Homes Ltd (Wessex) to undertake a Flood Risk Assessment (FRA) for the proposed residential development at Palk Road, Havant, Hampshire (hereafter referred to as 'the site').
- 1.2. The contents of this FRA assess the implications of flood risk on the proposed development. This FRA has been prepared with specific reference to the requirements of National Planning Policy Framework (NPPF), updated in July 2021 and the Planning Practice Guidance (PPG), which superseded the Technical Guidance to the NPPF, updated in August 2022. The report demonstrates to the Local Planning Authority and Statutory Consultees that the site can be suitably redeveloped whilst complying with the requirements of the NPPF in terms of flood risk.
- 1.3. This FRA has been prepared to support a planning application to be submitted to Havant Borough Council (HBC), as the Local Planning Authority.

Site Location

- 1.4. The Site is located at Palk Road, Havant, to the southwest of West Street, centred on OS Grid Reference Mn470807, Me106483, NGR 470727,106435. The nearest postcode to the Site is PO9 1NL. The application site is approximately 1.3 ha in total and currently comprises commercial uses. **Figure 1-1** below shows the Site location plan.

- 1.5. The Hermitage Stream is located along the southern boundary of the application site, and the remainder of the site surrounded by open green space to the east and commercial premises to the west. The surrounding settings are largely residential and commercial. Bedhampton Station is located to the north of the Site with the railway line running along the northern boundary of the Site.



Figure 1-1: Site Location Plan

Development Proposals

- 1.6. The full planning application is for the redevelopment of the current brownfield site to include the provision of 90 residential dwellings (including 27 affordable units) (C3 use), parking, public open space, landscaping and other associated works, including demolition of existing buildings on site, with access from Palk Road. A ground floor

plan is included in **Figure 1-2** below. Refer to **Appendix A** for the full development proposals.



Figure 1-2: Development Proposals

2. POLICY CONTEXT

National Planning Policy Framework

- 2.1. The National Planning Policy Framework (NPPF) was revised in July 2021; where paragraphs 159 to 169 inclusive establish the Planning Policy relating to flood risk management. The Technical Guide to the NPPF has been superseded by the Planning Practice Guidance (PPG) in March 2014. The Flood risk and coastal change guidance was updated in August 2022.
- 2.2. The PPG states that when planning or decision making in terms of flood risk, the process followed should be to avoid, control, mitigate and manage residual risk.
- 2.3. 'Avoiding' risk relates to the application of the Sequential and Exception tests. The PPG provides the methodology required to undertake the Sequential and Exception Tests and this should be applied to all sources of flooding.
- 2.4. 'Controlling' the risk relates to measures that will control the risk of flooding affecting the site. Early discussions with relevant flood risk management authorities, reference to Strategic Flood Risk Assessments and any programme of flood and coastal erosion risk management schemes will help to identify such opportunities.
- 2.5. 'Mitigating' the risk relates to the use of flood resistance and resilience measures to address any residual risks after the use of avoidance and control measures.
- 2.6. 'Managing' the risk relates to considering further management measures to deal with any residual risk remaining after avoidance, control and mitigation have been utilized such as providing safe access and escape routes and considering whether adequate flood warning would be available to people using the development. Residual risks will need to be safely managed to ensure people are not exposed to hazardous flooding.

Sustainable Drainage Systems - Non-statutory technical standards for sustainable drainage systems March 2015

- 2.7. The Non-statutory technical standards for sustainable drainagesystems were published in March 2015. They should be used in conjunction with the Planning Practice Guidance. In addition, the Best Practice Guidance for the Non-statutory technical standards was published in July 2015 by LASOO.
- 2.8. The Local Planning Authority (LPA) may set local requirements for planning permission that have the effect of more stringent requirements than these non-statutory technical standards.
- 2.9. In addition, SuDS should be designed in accordance with CIRIA 753 SuDS Manual, which represents current best practice.

Havant Borough Council Core Strategy (2011)

- 2.10. The Havant Borough Core Strategy is the principal document setting out the broad detail and direction of development in the borough upto 2026.
- 2.11. Policy CS15 relates to managing flood risk and coastal erosion risk in new development. It states development in areas at risk of flooding now and in the future will only be permitted where:
- a) It meets the sequential and exception test (where required) in relation to PPS25;
 - b) The site is located in a low hazard area as defined in the Strategic Flood Risk Assessment;
 - c) A site-specific flood risk assessment demonstrates that the development will be safe, including the access, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall;
 - d) The scheme incorporates flood protection, flood resilience and resistance measures appropriate to the character and biodiversity of the area and the specific requirements of the site;
 - e) Appropriate flood warning and evacuation plans are in place; and

- f) New site drainage systems are designed taking account of events which exceed the normal design standard.

Partnership for Urban South Hampshire Strategic Flood Risk Assessment (Updated 2016)

- 2.12. The Partnership for Urban South Hampshire Strategic Flood Risk Assessment (PUSH SFRA) was produced by Atkins in 2016 and is an update to the original Strategic Flood Risk Assessment Produced in 2007. PUSH is a partnership of Hampshire County Council, Isle of Wight, Portsmouth and Southampton and the district authorities of Eastleigh, East Hampshire, Fareham, Gosport, Havant, New Forest, Test Valley and Winchester.
- 2.13. The PUSH SFRA includes mapping of flood risk within the area.

Climate Change

- 2.14. The Planning Practice Guidance states that to allow for the predicted impacts of climate change on peak river flow within the East Hampshire Management Catchment, the following increases detailed in **Table 2-1** below should be allowed for. For development with a lifetime beyond 2100, the central allowances should be used.

Table 2-1: East Hampshire Management Catchment Peak River Flow Allowances

	Central	Higher	Upper
2020s	19%	24%	37%
2050s	22%	30%	51%
2080s	37%	51%	88%

- 2.15. Therefore, under the NPPF an allowance of 37% for the effects of climate change would achieve the policy requirements for informing the development proposals.

- 2.16. The Planning Practice Guidance states that to allow for the predicted impacts of climate change on peak rainfall intensity within the East Hampshire Management Catchment, the following increases detailed in **Table 2-2** below should be allowed for peak rainfall intensity. For development with a lifetime beyond 2100, the upper end allowances should be used.

Table 2-2: East Hampshire Management Catchment Peak Rainfall Allowances

	Central	Upper
3.3% annual exceedance rainfall event		
2050s	20%	35%
2070s	25%	40%
1% annual exceedance rainfall event		
2050s	20%	40%
2070s	25%	45%

Sequential Test

- 2.17. The objective of the Sequential Test is to steer new developments toward areas with the lowest probability of flooding. Where there are no reasonably available sites in lower flood risk areas, local planning authorities in their decision making should take into account the flood risk vulnerability of land uses and consider reasonably available sites in higher flood risk areas.
- 2.18. Annex 3 of the NPPF of the Planning Practice Guidance (PPG) classes the proposed residential use as 'more vulnerable'. As discussed in **Section 4** most of the Site is shown to be in Flood Zone 1, however a small area in the southern part of the Site is located within Flood

Zone 3 in the Environment Agency's map for planning (where no development is proposed).

- 2.19. A sequential test has already been addressed through the Local Plan, through the allocation of the northern part of the site under Policy H19 of the adopted Site Allocations DPD. Therefore, as per NPPF paragraph 166, which states: *"Where planning applications come forward on sites allocated in the development plan through the sequential test, applicants need not apply the sequential test again"*, it is not necessary to apply it again. Instead, an exception test has been submitted within this FRA which demonstrates that this site provides sustainable benefits and can be developed safely without increased flood risk elsewhere, reducing the flood risk overall and providing wider sustainability benefits to the community, in accordance with NPPF paragraph 164. This is discussed further within the submitted Planning Statement.

Exception Test

- 2.20. Table 2 of the PPG replicated below in **Figure 2-1** confirms that the Exception Test is required for "More Vulnerable" uses in Flood Zone 3.
- 2.21. To pass the Exception Test it should be demonstrated that:
- *"the development would provide wider sustainability benefits to the community that outweigh the flood risk; and*
 - *the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall."*
- 2.22. The first part of the exception test is addressed within the submitted Planning Statement which sets out the wider benefits to the community socially, environmentally and economically which would outweigh any flood risk to the development.
- 2.23. This FRA demonstrates that the proposed development, and the future residents would be safe from flooding for the lifetime of the development and would not increase flooding elsewhere. This therefore meets the

second part of the Exception Test.

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	X	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	X	X	X	✓ *
Key:					
✓ Exception test is not required					
X Development should not be permitted					

Figure 2-1: Extract from the PPG: Flood Risk Vulnerability

3. BASELINE CONDITIONS

Hydrology

- 3.1. Hermitage Stream, a Main River, is located along the southern boundary of the site, as well as a culvert, classified as a main river is located to the south of the site.

Topography

- 3.2. A topographical survey of the site was carried out in December 2021 by Dorset Land Surveying and is included in **Appendix B**. The site falls from northwest to southeast at a gradient of approximately 1:60 with elevations across the Site in the order of 7.96 m AOD – 5.93 m AOD.

Ground Conditions

- 3.3. A review of British Geological Survey (BGS) mapping indicates that the geology of the site consists of superficial deposits of River Terrace Deposits - Sand, silt and clay and Alluvium – Clay, silt, sand and gravel which are in turn underlain by Lambeth Group - Clay, silt and sand and Lewes Nodular Chalk, Seaford Chalk, Newhaven Chalk, Culver Chalk and Portsdown Chalk Formations. Refer to **Figure 3-2** and **Figure 3-3** below for BGS Bedrock and Superficial Deposits details respectively.

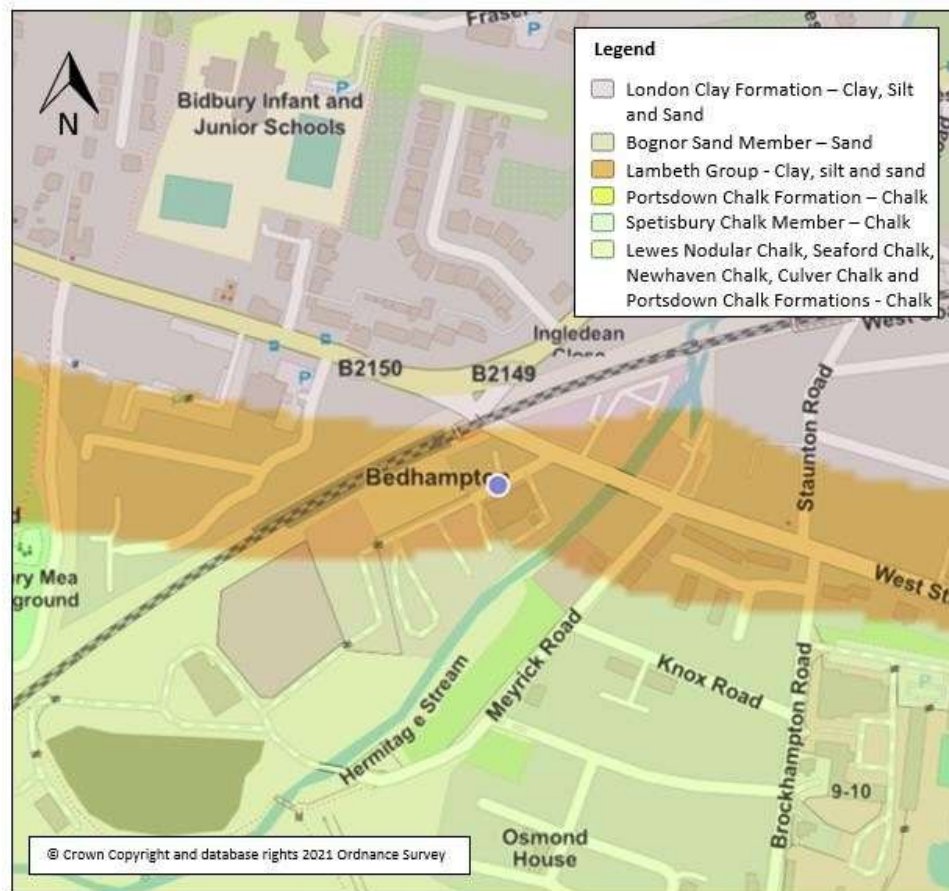


Figure 3-2: BGS Online Geology Mapping - Bedrock

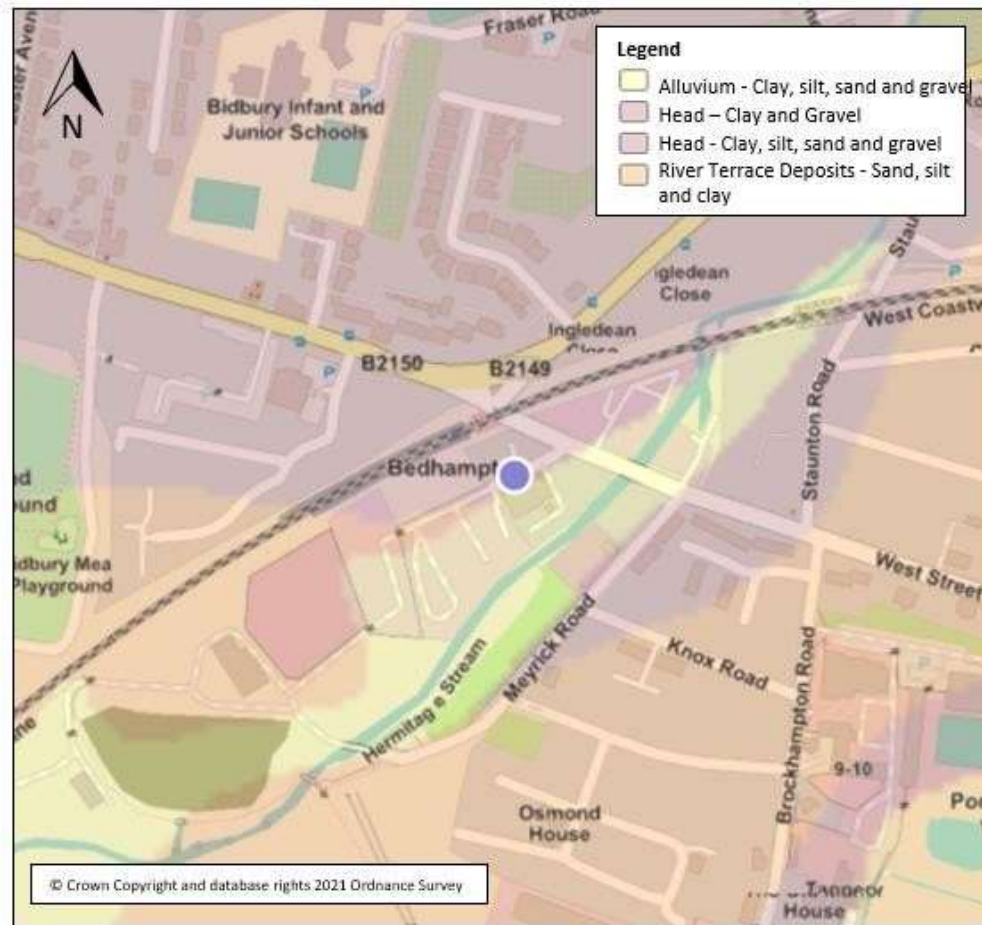


Figure 3-3: BGS Online Geology Mapping – Superficial Deposits

- 3.7. A ground Investigation was completed by Enzygo in December 2021 and site investigations detailed that made ground (pavement construction) was encountered to a thickness of 0.45m, underlain by further made ground (between 0.3m to 1.4m), underlain by drift deposits to depths greater than 2.9m. Groundwater was encountered during the site investigations with the highest groundwater level encountered over a 2 month period between December and January was 1.21m bgl. Refer to **Appendix C** for the Geo-environmental Report.

Existing Sewer Infrastructure

- 3.8. Both a public surface water sewer and a public foul sewer exist within the site boundary.

- 3.9. A surface water sewer exists though the site flowing north to south which eventually outfalls to the hermitage stream.
- 3.10. In addition, a foul sewer exists flowing west to east towards the north of the site. Refer to **Figure 3-4** and **Appendix D** for the Southern Water Asset Plans.

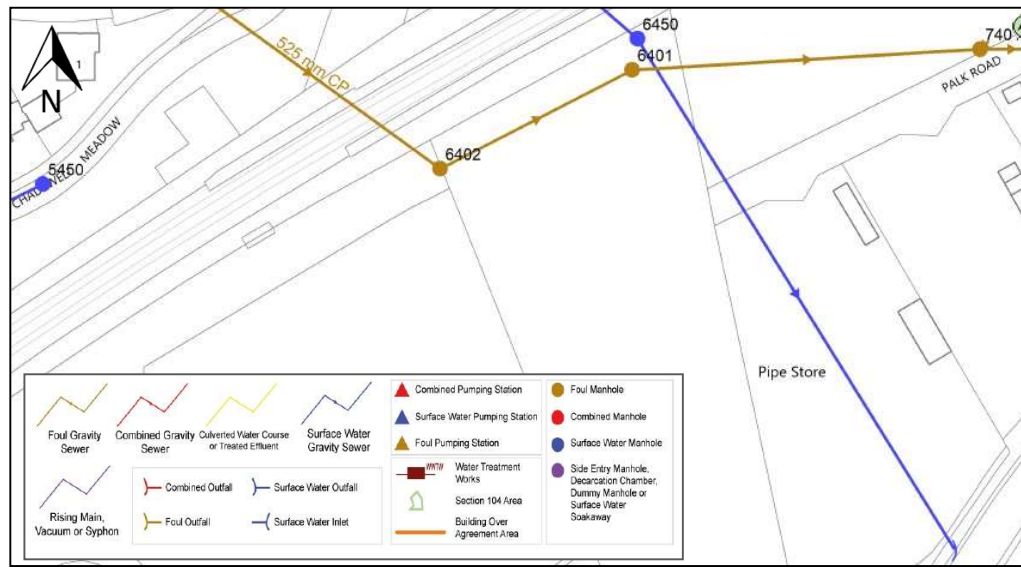


Figure 3-4: Southern Water Asset Plans

- 3.11. A GPR and drainage survey of the site has also been carried out to determine the exact location of the services on site. This has confirmed that a surface water sewer is located through the centre of the site flowing north to south which outfalls to the Hermitage Stream, and also confirms the location of the foul sewer. Refer to **Appendix E** for the GPR Survey.
- 3.12. A 3m offset from either side of the pipe to the proposed buildings has been allowed for within the design of the development.
- 3.13. It is proposed to divert the existing foul sewer within the site and this will require a S185 agreement with Southern Water.

4. SOURCES OF FLOODING

4.1. The NPPF requires flood risk from the following sources to be assessed, each of which are assessed separately below:

- Fluvial sources (river flooding);
- Tidal sources (flooding from the sea);
- Sewer Flooding;
- Groundwater sources;
- Pluvial sources (flooding resulting from overland flows);
- Artificial sources, canals, reservoirs etc.; and,
- It also requires the risk from increases in surface water discharge to be assessed (surface water management).

Flood Zone Designation

4.2. Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences. The NPPF Planning Practice Guidance defines Flood Zones as follows:

- **Flood Zone 1: Low Probability.** Land having a less than 0.1% annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map for Planning – all land outside Zones 2, 3a and 3b)
- **Flood Zone 2: Medium Probability.** Land having between a 1% and 0.1% annual probability of river flooding; or land having between a 0.5% and 0.1% annual probability of seaflooding. (Land shown in light blue on the Flood Map)
- **Flood Zone 3a: High Probability.** Land having a 1% or greater annual probability of river flooding; or Land having a 0.5% or greater annual probability of sea. (Land shown in dark blue on the Flood Map)
- **Flood Zone 3b: The Functional Floodplain.** This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of functional

floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise:

- land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or
- land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding).

Fluvial / Tidal Flooding

- 4.3. According to the Environment Agency's Flood Map for Planning, as illustrated below, indicates that a small area in the southern part of the Site is located within Flood Zone 3, defined as having a high risk of flooding respectively. This flood risk is associated with Hermitage Stream. Refer to **Figure 4-1** below.

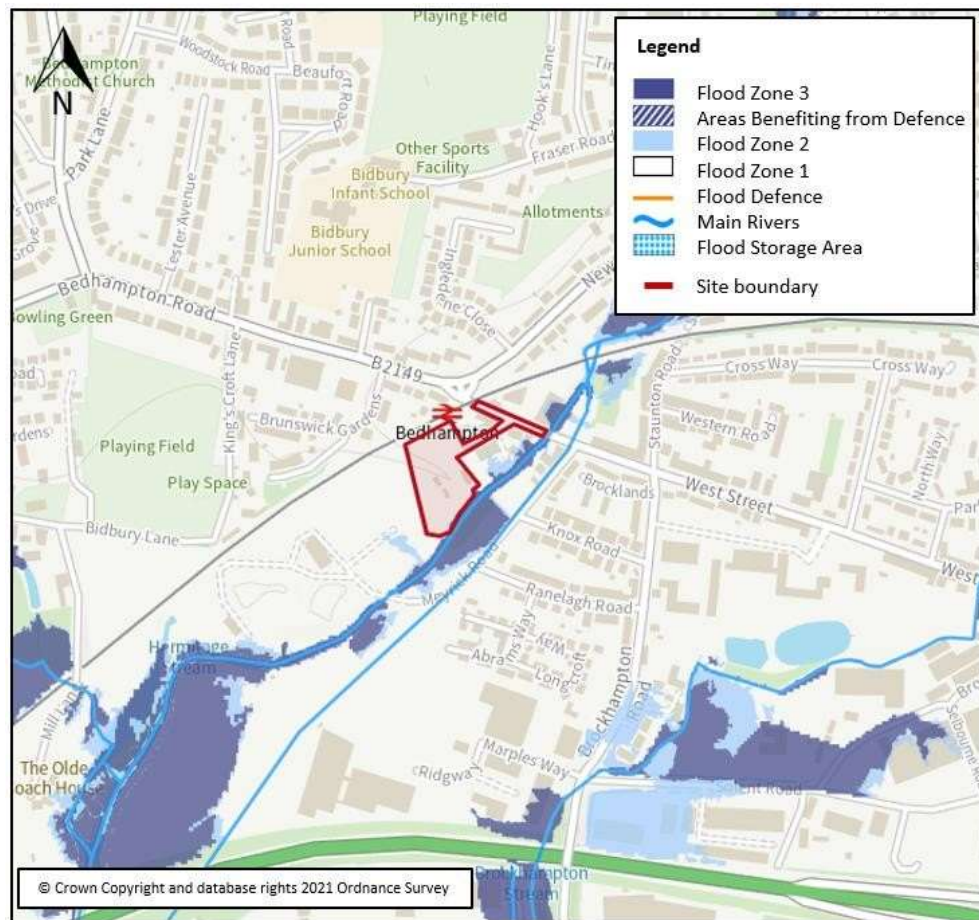


Figure 4-1: Environment Agency Flood Map for Planning

- 4.4. Hydraulic Modelling has also been carried out for this site. The model was developed by Atkins in 2008 as part of The Havant Flood Mapping Study and was updated by Ardent and reviewed and approved by the Environment Agency in March 2020. The model has been run for the 1 in 100 year plus 37% allowance for climate change event, in accordance with the latest requirements in the PPG.
- 4.5. The model results indicated that the maximum in channel predicted flood level for the 100 plus 37% Climate Change is 6.63m AOD within close proximity to the Site. Refer to **Figure 4-2** below and **Table 4-1** below.

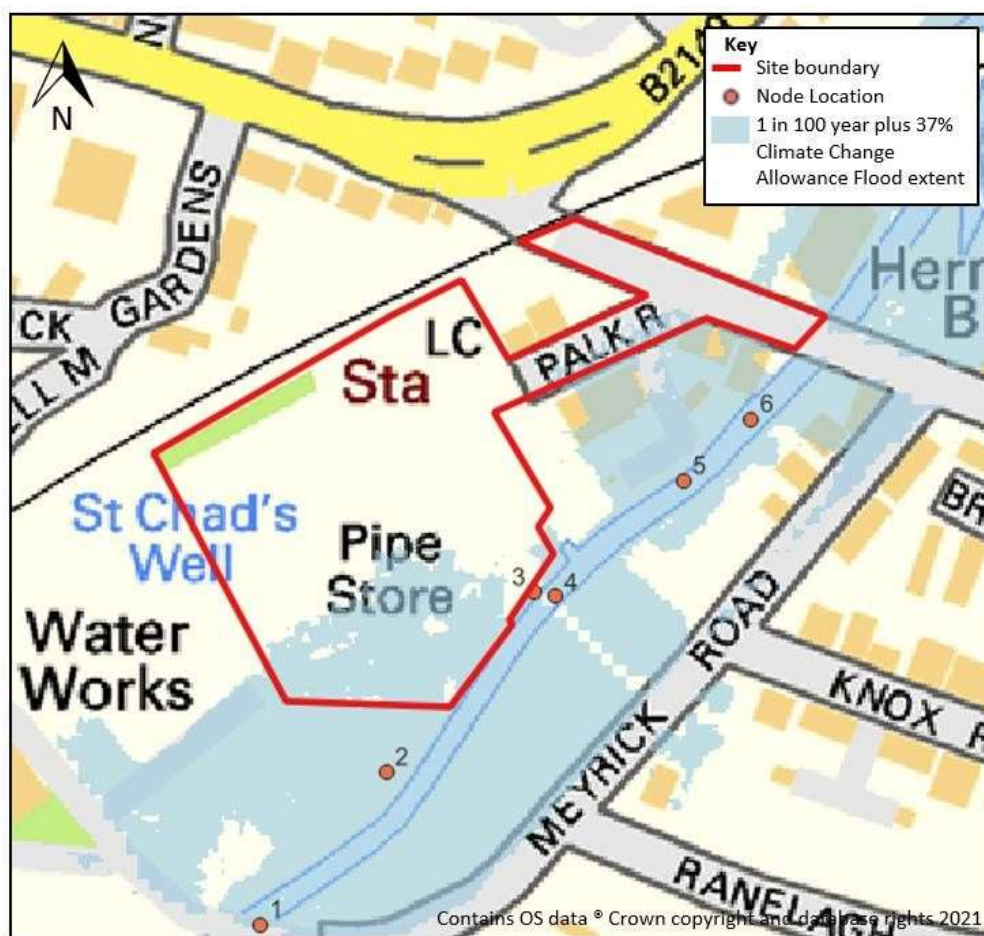


Figure 4-2: Hydraulic Modelling Flood Outlines and Node Locations

Table 4-1: Predicted Flood Levels

Node ID	1 in 100 year + 37%CC event (m AOD)
1	6.41
2	6.49
3	6.63
4	6.63
5	6.67
6	6.72

4.6. The predicted flood outlines are also shown on **Figure 4-2**. An area in the southwest of the Site is located within the considered to be at high risk of fluvial flooding. However, it should be noted that node development is proposed within the 1 in 100 plus 37% climate change allowance flood extents. As such the risk of fluvial flooding to the development is considered to be low.

- 4.7. As assessment of tidal flood risk has also been carried out for the proposed development. Peak tidal levels have been obtained from the East Solent Tidal model built in 2018. The model domain covering the area is the Hayling Island model with the closest model node at the site being BNDRY_5. In this location, the peak 200 year flood level is 3.39 m AOD and the peak 1000 year flood level is 3.56m AOD.
- 4.8. When considering climate change, Environment Agency guidance states that the anticipated rise in sea level for the southeast of England up to the year 2115 is expected to be 1.21 m. Therefore, the peak 200 year flood level plus climate change is 4.60 m AOD and the peak 1000 year flood level is 4.77 m AOD. The topographic survey indicates that ground levels at the site are all above 5.93m AOD therefore well above tidal influences. Refer to **Table 4-2** below.

Table 4-2: Tidal Flood Levels

Tidal Flood Event	Flood level (m AOD)
200	3.39
1000	3.56
200 + CC (2115)	4.60
1000 + CC (2115)	4.77

- 4.9. **Figure 4-3** below contains an extract taken from JBA's final modelling summary report which also demonstrates that the site is located outside of the tidal flood extents.



**Figure 4-3: Defended maximum flood extents at the 0.1% AEP
for climate change epochs**

Pluvial Flooding

- 4.10. The Environment Agency surface water flood maps show that much of the development site is in an area that has a 'very low' risk of surface water flooding, meaning that there is less than a 0.1% chance of flooding from surface water flooding each year.
- 4.11.** However, there are areas of 'low' to 'medium' risk of surface water flooding towards the southwest of the Site and along West Street and Palk Road. Refer to **Figure 4-4** below. It is considered that this is largely associated with Hermitage Stream and therefore the mitigation measures required for fluvial flood risk would also mitigate against this flooding. In addition, the development will include a surface water management scheme, discussed in **Section**

6, which will mitigate against the increase surface water flows as a result of the development.

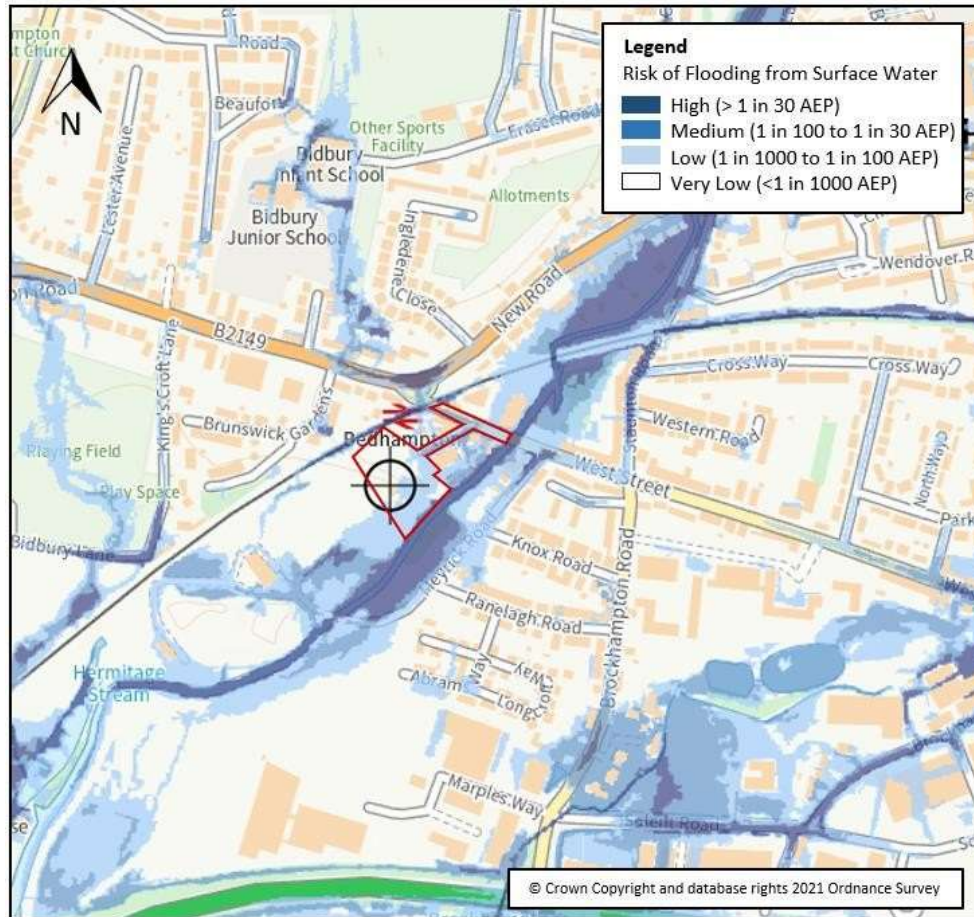


Figure 4-4: Environment Agency Flood Map for Surface Water

Groundwater Flooding

4.12. The PUSH SFRA mapping shows the site has not had any incidents of groundwater flooding, however, it is located in an area with high bedrock permeability as shown in **Figure 4-5** below.

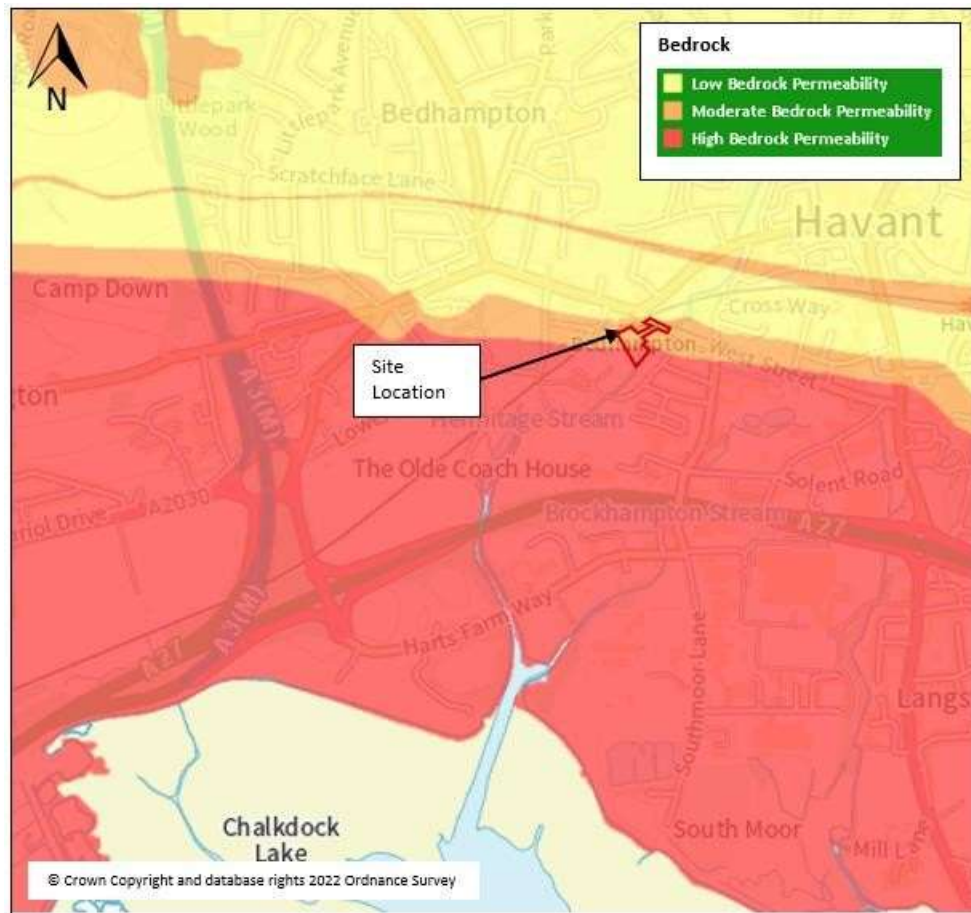


Figure 4-5: SFRA Ground Water Mapping

- 4.13. Monitoring undertaken between 2020 and 2021 demonstrated that groundwater was encountered at a highest level of 1.21m bgl. Groundwater would only pose a risk to sub ground level development. Since the development does not propose any belowground construction, groundwater is not seen as a flood risk to the development.
- 4.14. However, measures to manage the impact of high groundwater on the drainage system will be implemented such as impermeable liners.

Sewer Flooding

- 4.15. According to the PUSH SFRA, there is no record of sewer flooding within the vicinity of the Site.
- 4.16. The risk of sewer flooding is therefore assessed as very low.

Artificial Sources

- 4.17. According to the Environment Agency's Flood risk from reservoir map, the Site is not in an area at risk of flooding from artificial sources.
- 4.18. The site is therefore considered to be at a 'very low' risk of flooding from artificial sources.

5. FLOOD RISK MANAGEMENT

- 5.1. This site-specific flood risk assessment demonstrates that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.
- 5.2. The site is partially at risk of fluvial flooding associated with the Hermitage Stream.

Finished Floor Levels

- 5.3. It should be noted that the proposed scheme has been designed to ensure that all residential development is located outside of the 100 year event plus 37% allowance for climate change flood outlines.
- 5.4. As a conservative approach, Finished Floor Levels for the residential properties would be set above the maximum flood level. It is recommended that a 300mm freeboard be provided above the 100 year + 37% flood level giving a minimum finished floor level of 6.93m AOD for any residential development.

Safe Access and Egress

- 5.5. During the 100 year + 37% climate change extreme flood event the site remains dry, and the occupants of the site would not need to evacuate.
- 5.6. In terms of safe access and egress in the event of a flood, the road network which serves the site remains dry, if occupants wanted to vacate the site a dry route would be available via Palk Road and subsequently heading north on West Street.

6. PROPOSED SURFACE WATER DRAINAGE STRATEGY

- 6.1. DEFRA's Non-statutory technical guidance for Sustainable Drainage Systems and CIRIA Guidance C753 "The SuDS Manual" have been used to determine the appropriate SuDS Strategy, which considers the spatial and environmental constraints of the Site.
- 6.2. Under the NPPF and its Planning Practice Guidance an allowance of 45% for the effects of climate change will achieve the policy requirements for the proposed development.

Proposed Sustainable Drainage Systems (SuDS)

- 6.3. In accordance with the NPPF Planning Practice Guidance, surface water runoff should be disposed of according to the following hierarchy:
1. into the ground (infiltration);
 2. to a surface water body;
 3. to a surface water sewer, highway drain, or another drainage system
 4. to a combined sewer.
- 6.4. As discussed in **Section 3**, BGS data indicates that part of the Site is underlain by Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk Formation and Portsdown Chalk Formation which may be compatible with the use of infiltration systems in these locations.
- 6.5. However, there is high groundwater present which would impede the functionality of infiltrating systems. It has also been found that Made Ground is present within the Site therefore infiltration would pose the risk of mobilising pollutants (present in the Made Ground) into the underlying aquifer.
- 6.6. BGS data also indicates that the remainder of the Site is underlain by the Lambeth Group, consisting of clay which would be incompatible with infiltration.

- 6.7. In addition, based on the topography of the Site, greenfield runoff generated onsite will currently flow overland into the existing Hermitage River running along the southern boundary.
- 6.8. The redline boundary/land ownership only extends to the top of bank of the Hermitage Stream and therefore it is not possible to construct a new connection directly to the watercourse. It is therefore proposed to discharge surface water runoff into the existing public sewer within the site boundary which almost immediately discharges to the Heritage Stream running along the southern boundary of the site. Surface water will be attenuated within SuDS features prior to being discharged to the Hermitage Stream at a controlled rate equivalent to the greenfield runoff rates for the developable area of the Site.
- 6.9. The constraints and opportunities for the use of SuDS techniques are appraised using the Management Train approach outlined in CIRIA C753 'The SuDS Manual' in **Table 5-1** below.

Table 6-1: Existing and Proposed Areas

Type:	Infiltration Devices (Source Control)
Constraints:	Underlying geology and presence of made ground and high groundwater may be compatible with infiltration systems. Variable geology.
Opportunities:	Limited
Type:	Lined Permeable Paving (Source Control)
Constraints:	None
Opportunities:	Use of lined permeable paving implemented in strategy.
Type:	Rainwater Harvesting (Source Control)
Constraints:	The benefits of rainwater harvesting on a specific design storm event cannot be quantified, due to the seasonal availability of storage within the structure.
Opportunities:	Opportunities in amenity areas to provide harvesting features such as rain gardens, raised planters and water butts exist. However, it is difficult to quantify contribution, and therefore not included within calculations as part of this surface water management strategy.
Type:	Swales, etc. (Permeable Conveyance)
Constraints:	In order to provide practicable attenuation benefits 1:3 side-slope swales tend to require a significant land requirement. Additionally, the proposal to discharge to the public sewer network would limit the use of online open drainage systems.
Opportunities:	None due to spatial constraints.
Type:	Tree Pits/Rain gardens
Constraints:	Subject to Landscape Architect's design.
Opportunities:	There may be opportunities to use landscaped space to incorporate tree pits.
Type:	Green Roofs

Constraints:	Subject to Architect's design.
Opportunities:	Green roofs are not proposed as part of the development.
Type:	Attenuation Tanks (end of pipe treatment)
Constraints:	None
Opportunities:	Should additional attenuation be required this could be achieved by use of oversized sewers or geo-cellular storage attenuation.

6.10. After consideration of the CIRIA C753 SuDS Management Train approach, the most viable SuDS options for this site is a solution combining attenuation tanks and permeable paving. Refer to **Drawing No. 2108040-01A** in **Appendix F** for the proposed surface and foul water drainage strategy.

Existing and Proposed Surface Water Discharge Rates

Existing development

6.11. The planning application boundary equates to 1.3 ha of which 0.2 ha is permeable. Existing brownfield runoff rates from the Site have been determined using the Wallingford Procedure Rational Method for an assumed critical 5-minute storm. Equivalent peak Greenfield Runoff rates for the Site were also calculated using the ICP SuDS Mean Annual Flow Method and are presented in **Table 6-2** below. Full calculations can be found in **Appendix G**.

Table 6-2: Greenfield Discharge rates

Return Period Event	Brownfield (l/s)	Greenfield (l/s)
Q₁	155.35	3.1
Q₃₀	345.62	8.2
Q₁₀₀	440.05	11.5
Q_{bar}	-	3.6

Proposed development

6.12. The redevelopment will introduce permeable areas across the Site through the introduction of communal landscapes areas at ground level equating to approximately 3,000m².

6.13. Comparisons between the existing and proposed hardstanding areas excluding green roofs are shown in **Table 6-3** below. The proposals therefore result in a slight reduction in impermeable area (7.6%).

Table 6-3: Existing and proposed hardstanding areas

Site	Area (ha)	Impermeable Area (ha)	Permeable Area (ha)	% Impermeable
Pre-Development	1.3	1.1	0.2	84.6%
Post-Development	1.3	1.0	0.3	77.0% (7.6% reduction)

Proposed surface water runoff rates

- 6.14. The Non-Statutory Technical Standards For Sustainable Drainage states that “*for developments which were previously developed, the peak runoff rate from the development to any drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event should be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment for that event*”.
- 6.15. Due to the location of the existing pipe in the centre of the site, to ensure the pipe is not crossed, it is proposed to allow for two new connections to the existing surface water sewer.

- 6.16. It is proposed to limit the discharge rate from the site to the existing 1 in 100 year greenfield runoff rate which equates to 11.5 l/s. Discharge rates from Catchment A will therefore be limited to 4 l/s, and discharge rates from Catchment B will therefore be limited to 7.5 l/s for all storm events up to the 1 in 100-year plus a 45% allowance for climate change. This results in a minimum 92% betterment from the existing scenario.
- 6.17. **Table 6-4** below highlights the existing and proposed surface water runoff discharge rates for the Site under various storm scenarios.

Table 6-4: Existing and Proposed Surface Water Runoff Rates

	Return Period			
	1 in 1 year Discharge Rate	1 in 30 Year Discharge Rate	1 in 100 year Discharge Rate	1 in 100 year + 45% Discharge Rate
Pre Development (l/s)	155.35	345.62	440.05	-
Calculated Greenfield runoff (l/s)	3.1	8.2	11.5	-
Proposed post Development (l/s)	11.5	11.5	11.5	11.5
% Reduction from pre development	92%	97%	97%	-

- 6.18. As displayed above in **Table 6-4** there will be a significant reduction in surface water runoff in the post development scenario and therefore an improvement in the capacity of the public sewer network.
- 6.19. MicroDrainage Network module modelling results show there is minimal flooding on the Site for the 1 in 100 year including 45% climate change rainfall event. Any minor flooding would be contained within paved areas and would drain back into the system once capacity became available. MicroDrainage modelling results are included in **Appendix H**.

Long Term Storage and Urban Creep

- 6.20. It is proposed to reduce the amount of impermeable area at the site. As such, the volume of runoff generated by the development site will not

exceed the existing greenfield runoff volume during a 1 in 100year 6 hour event.

- 6.21. Urban creep allows for future urban expansion (i.e addition of patios, extensions and driveways) within the development which increases impermeability of developed areas, causing runoff rates and volume to rise. As the proposals are for an apartment scheme urban creep has not been allowed for as it is considered unlikely that the paved areas would increase without further planning approval.

Exceedance Flow Routes

- 6.22. The surface water drainage strategy has been designed to ensure no flooding occurs as a result of the 1 in 100-year rainfall event (including an allowance for climate change).
- 6.23. Site levels will be designed to ensure that exceedance flows are directed towards the proposed drainage network and away from buildings.
- 6.24. Should the capacity of the surface water system be exceeded during an extreme rainfall event, surface water would flow towards roads and to the Hermitage Stream to the south of the site.
- 6.25. Non return valves are proposed on the final discharge to the public sewer network to prevent flows backing up into the on-site drainage network.

Water Quality

- 6.26. Development proposals are for residential use. Based on Ciria753 Simple Index Treatment Method, the development would have an associated pollution hazard level of 'very low'. The recommended stages of treatment will be provided by the permeable paving. Refer to **Appendix I** for the simple Index Treatment Method calculations.

Maintenance and Management of System

- 6.27. The maintenance of all SuDS components will be in accord with the best practices and the CIRIA C753 The SuDS Manual. The recommended Operation and Maintenance requirements for the proposed permeable paving and attenuation tanks are outlined in the Management Plan in **Appendix J**.
- 6.28. A management company will be appointed to maintain any parts of the network which are not to be offered for adoption to Southern Water.

7. PROPOSED FOUL WATER DRAINAGE STRATEGY

- 7.1. It is proposed to develop the site to comprise up to 90 new dwellings.
- 7.2. The peak foul flow rate for the proposed development has therefore been calculated to be 4.17 l/s. Refer to **Appendix K**.
- 7.3. It is proposed that foul flows from the development will discharge into the existing Southern Water foul sewer that exists to the north of the site. Refer to the preliminary drainage strategy drawing no. 2108040-001A provided in **Appendix F**.
- 7.4. A pre-planning enquiry has been submitted Southern Water and a response is awaited.

8. CONCLUSIONS

- 8.1. This FRA has been produced to support a planning application for the proposed residential development at Palk Road.
- 8.2. The proposal comprise full planning application for the redevelopment of a brownfield site to include the provision of 90 residential dwellings (including 27 affordable units) (C3 use), parking, public open space, landscaping and other associated works, including demolition of existing buildings on site, with access from Palk Road.
- 8.3. A small part of the southern edge of the Site is marginally located in Flood Zone 2 and 3 however the residential blocks are wholly located in Flood Zone 1, and outside of the 100 year plus 37% allowance for climate change flood extents.
- 8.4. The Environment Agency's surface water flood maps show that the development site is in an area that has a 'Low' risk of surface water flooding and no other means of flooding identified as posing a risk to the site.
- 8.5. Based on the characteristics of the Site, it is proposed to discharge surface water runoff from the Site into the existing surface water sewer currently running through the centre of the site. Surface water will be attenuated within Sustainable Urban Drainage features prior to being discharged to existing ordinary watercourse at a controlled rate equivalent to the 1 in 100 year greenfield runoff rate for the developable area of the Site. This results in a 92% betterment from the existing scenario.
- 8.6. The drainage strategy is suitable to protect the site and surrounding areas from surface water flooding for all events up to and including the 1 in 100-year storm event including a 45% allowance for climate change.
- 8.7. The peak foul flow rate for the proposed development is calculated to be 4.16 l/s. It is proposed that foul flows from the development will discharge into the existing Southern Water foul sewer within the

site. The foul sewer will also be diverted to accommodate the development.

- 8.8. In conclusion, this FRA demonstrates that the proposals are consistent with the aims of NPPF, PPG and Development Plan. The site would not be at risk of flooding or increase the flood risk to others. As such there are no reasons to withhold the grant of planning permission in relation to flood risk and or drainage related considerations subject to the inclusion of standard planning conditions.

Appendix A



PORTSMOUTH WATER PROPOSED UNDERGROUND SHAF AND ASSOCIATED PIPES (PURSUANT TO OUTLINE PERMISSION APP/20/08991/OUT - HAVANT THICKET RESERVOIR PROJECT)

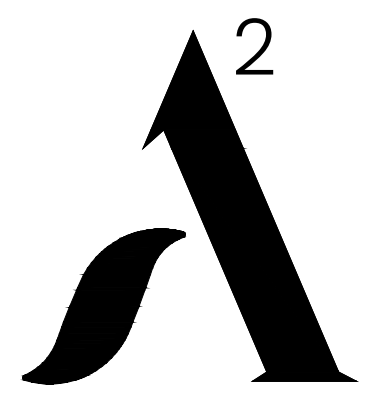
APARTMENT A
3 X 18WC 7 X 182P
1 X 28WC 1 X 283P
1 X 38WC 5 X 284P
1 X 386P

APARTMENT B
7 X 182P 13 X 284P
2 X 283P 1 X 386P

APARTMENT C
10 X 182P 13 X 284P
3 X 283P 5 X 386P

APARTMENT D
5 X 182P 13 X 283P
13 X 284P

SITE PLAN LEGEND	
	Application Boundary Line
	Existing Water Pipe
	Existing Surface Water Sewer
	Existing Trees
	Existing Trees Removed
	Proposed Trees / Planting (See ACD landscape plan for details)
	Apartment Reference
	Plot Number
	Parking Space
	Cycle Hoops
	Main Entrance
	Secondary Entrance
	Refuse Store
	Cycle Store
	Storey Heights
	Pergola



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PROJECT:

Land Off Palk Road,
Bedhampton, Havant
PO9 1NL

DRAWING:

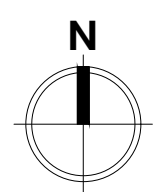
Proposed Site Layout

STATUS:

Planning

Do not scale for any other purpose than stated in title, use annotated dimensions only. All dimensions to be checked on site & any discrepancies/errors to be reported to A2 before work commences. This drawing is to be read in conjunction with all other relevant materials.

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REV: DATE:

SCALE: DATE: DRAWN BY:

1:500@A2 NOV | 2022 SA

REFERENCE: SHEET NO: REVISION:

21085 101 -

Appendix B

Appendix C



Geoenvironmental

Palk Road, Havant PO9 1NL

For Bellway Homes

CRM.1668.023.GE.R.001.B



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Geoenvironmental Report

Project:	Palk Road, Havant PO9 1NL
For:	Bellway Homes
Ref:	CRM.1668.023.GE.R.001.B
Status:	Revision B
Date:	December 2021
Author:	Steve Rhodes BSc (hon) MSc DIC CEng CGeol MIMMM MI EnvSc FGS Director
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Disclaimer:

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We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

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Enzygo Limited Registered in England No. 6525159 Registered Office Stag House Chipping Wotton-Under-Edge Gloucestershire GL12 7AD

Executive Summary

Proposed Development

The proposed development comprises residential use at Palk Road, Havant PO9 1NL.

Investigation

Site works were undertaken by Enzygo Geoenvironmental Ltd. in November and December 2021.

Ground Conditions

Ground conditions comprise Made Ground over soft becoming firm and stiff with depth silty clay varying to medium dense clayey sand. Soft clays were encountered locally to over 3m bgl. Groundwater was encountered at depths of between 1.5m 2.9m bgl.

Contamination

Contamination has been identified and clean cover soils are recommended.

Foundations

Piled foundations re recommended due to deep soft soils. It maybe possible to zone the extent of piling if additional investigation is undertaken once site possession has been taken.

Waste Classification

Two part WAC tests indicate soils should be classified as stable non reactive waste.

Pavement Construction

An equilibrium CBR value of 4% is recommended.

Ground Gas

Radon and ground gas risks have been identified. Gas protection measures are recommended.

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1.0 INTRODUCTION

1.1 Background

1.1.1 Enzygo Geoenvironmental Limited has been commissioned to prepare a Geo-Environmental Report for a proposed development at Palk Road, Havant PO9 1NL.

1.2 Proposed Development

1.2.1 The proposed development comprises residential properties with domestic gardens and associated infrastructure.

1.3 Objectives

1.3.1 The objectives of the study are to:

- Obtain a desk study, a copy of which is included in Appendix 1;
- Undertake a targeted ground investigation;
- Assess the implications of any potential environmental risks, liabilities and development constraints associated with the site in relation to the future use of the site and in relation to off-site receptors;
- Provide a factual and interpretative report relating to the desk study and site investigations. Provide a revised conceptual model and recommendations on any potential development issues and mitigation measures, where appropriate; and.

1.4 Risk Classification

1.4.1 Enzygo Geoenvironmental has utilised the available information, together with our experience to assess the likely risks to development from land quality issues. Definitions of the risk terms used are provided on the following table.

Table 1.4.1 Risk Classification

Risk	Description
Negligible	No contamination risk has been identified which is likely to affect development.
Low	No significant contaminated land risks have been encountered affecting development and a low risk that remediation will be required.
Low-Moderate	There are unlikely to be significant contaminated land issue associated with the site which will adversely affect its re-development. However, minor or localised contamination may be present requiring remediation. Remediation should be possible under a discovery strategy and with a call out service.
Moderate	Some potential contaminated land risks have been encountered or identified which may affect re- development. The risks identified are unlikely to affect the entire site or preclude development. Remediation is considered feasible as part of the development process and no further investigation is considered necessary.
Moderate-High	Some potentially significant contaminated land risks have been identified at the property that requires remediation. It is recommended that a separate remedial methodology is prepared supported by a site-specific risk assessment
High	Significant potential contaminated land risks have been identified and remediation is required supported by further intrusive ground investigation, risk assessment and remedial design.

1.4.2 Where adverse risks from ground instability are identified these are discussed within the report.

2.0 SITE SETTING

Table 2.0 Site Description

Item	Description
Site Address	Palk Road, Havant PO9 1NL
National Grid Reference	1.2 Ha

2.1 Current Site Description

- 2.1.1 The following site description has been compiled from the site inspection undertaken by Enzygo Geoenvironmental Ltd, together with current maps and aerial photographs.
- 2.1.2 The site comprises a rectangular parcel of land used for storage. Palk Road is present extending in to the eastern area of the site.
- 2.1.3 The site is predominantly covered by tarmac hardstanding and is used for storage. The south east the site is used for the storage of pallets. Within the southern area is a builders merchants with the storage of pipes and bagged aggregate. The western area of the site is used by Portsmouth Water for storage of pipes.
- 2.1.4 Small temporary office buildings and containers are present.
- 2.1.5 Within the north east of the site is an area of scrub land with over grown vegetation.
- 2.1.6 No evidence of fuel storage, leakage or spillage was noted.

2.2 Surrounding Area

- 2.2.1 Land uses surrounding the site are summarised as follows:

Table 2.2.1 Land Use Surrounding the Area

Direction	Land Use
North East	Residential use
North West	Railway line with residential use beyond
South West	Field with solar panels
South East	Watercourse with residential use, public open space and a substation beyond

- 2.2.2 No significant contamination sources are identified on or adjacent to the site.

3.0 DESK STUDY

3.1 Historical Maps

3.1.1 A review of historical Ordnance Survey maps and information pertinent to the site and within a 250m radius is summarised below:

. Table 3.1.1 Historical Maps

Potentially Contaminative Historical Land Use		
Map Edition	Site	Surrounding Area
1868	Field. Bedhampton Stream within SE of site. Mill Pond in SW corner.	Railway line 10m NW. Bedhampton Stream 0m SE. Mill Pond 0m SW. Fields 0m NW, 20m SW 0m NE & 20m SE. Fields 20m Spring 100m W feeding mill pond. Pond 30m NW. Residential development 50m N.
1897	Palk Road shown.	Water works 100m SW. Residential development 50m NE & 100m SW.
1909	Bedhampton Stream no longer shown. Palk Road extended along NE boundary	Residential development 70m SE.
1932	Mill Pond no longer shown.	Mill pond 0m SW partly infilled. Station 0m NE.
1940	No significant change.	No significant change.
1951	Earthworks in NW corner of site	Bedhampton Stream re-aligned along SE boundary. Pump house 40m E. Residential development 20m NW. Pond 30m NW no longer shown.
1959	Allotments in NE. Pond in N.	No significant change.
1961	No significant change.	Office 0m NE.
1969	Pond no longer shown.	No significant change.
1973	No significant change.	No significant change.
1987	Building in E on former Palk Road. Allotments no longer shown. Remainder of site is a pipe store.	No significant change.
1993	No significant change.	No significant change.
2001	No significant change.	No significant change.
2003	No significant change.	No significant change.
2010	No significant change.	Residential development 0m E.
2021	No significant change.	No significant change.

3.2 Historical Maps

3.2.1 The Bedhampton Stream appears to have been infilled and culverted between 1909 and 1951 and then re-engineered along the south eastern boundary.

3.2.2 Potential Made Ground is identified on site from infilled Bedhampton Stream, Mill Pond, pond and earthworks. These potential sources will be assessed during the investigation.

3.2.3 There is a very low risk of metals associated with the former allotments.

3.2.4 No other significant risks are identified.

4.0 Environmental Setting

4.1 Ground Conditions

4.1.1 The British Geological Survey (BGS) indicates that the site is underlain by the following geological sequence:

Table 4.3.1 Geological Sequence

Geological	Type	Descriptions	Aquifer Classification
Drift	Alluvium (south)	Clay, Silt, Sand and Gravel	Secondary A
	River Terrace Deposits (centre)	Clay, Silt, Sand and Gravel	Secondary A
	Head (north)	Clay, Silt, Sand and Gravel	Secondary Undifferentiated
Solid	Lambeth Beds (north)	Silty and Sandy Clay,	Secondary A
	Lewes Formation (south)	Chalk	Principal

4.1.2 BGS records indicate no Made Ground on or adjacent to the site.

4.1.3 There are no records of landslips on or near the site.

4.1.4 Published records of background soil chemistry for the site show no exceedances of residential GAC values.

4.1.5 BGS boreholes present close to the site show soft becoming stiff with depth clay.

4.2 Groundwater

4.2.1 The permeability of the drift geology is recorded as high to very low. The permeability of the solid geology is recorded as very high to very low.

4.2.2 The Ground Sure Report shows the site is not located within a Source Protection Zone.

4.2.3 Groundwater abstraction licences for potable water supply are identified 108m west and 230m east. Abstractions are from the Chalk Aquifer.

4.3 Coal Mining

4.3.1 The groundsure report has identified that the site is not within an area of potential coal mining.

4.4 Non Coal Mining and Cavities

4.4.1 No cavities are identified close to the site.

4.4.2 No significant risks have been identified.

4.5 Ground Workings

4.5.1 Ground workings identified within 250m of the site are limited to the infilled ponds and identified in Section 3 and a railway cutting.

4.5.2 No new risks are identified from the ground workings.

4.6 Natural Cavities

4.6.1 No natural cavities are identified within 250m of the site.

4.7 Hydrology

4.7.1 There are no surface water courses on the site but the Bedhampton Stream is present along the south eastern boundary.

4.7.2 The site south east boundary of the site is shown to be within Flood Risk Zone 3.

4.7.3 There is a moderate to high risk of groundwater flooding at the site.

4.8 Radon Risk Potential

4.8.1 The Groundsure GeoInsight Report indicates that the site is situated within an area where basic radon protection measures are required.

4.9 Natural Hazards Finding

4.9.1 BGS information presented within the Groundsure report identified the following ground conditions:

Table 4.9.1 Natural Hazards

Hazard	Risk Designation (Groundsure)
Collapsible Ground	Negligible/Low.
Compressible Ground	Moderate/Negligible.
Ground Dissolution	Moderate/Negligible.
Landslide	Very Low.
Running Sand	Low/Very Low.
Swelling / Shrinking Clay	Moderate/Low.

4.9.2 A moderate risk of clay heave is identified from the Lambeth Beds Formation, a moderate risk of compressible ground from the Alluvium and a moderate risk from the Chalk solution features is identified. These risks will be assessed as part of the site investigation. No other significant geotechnical risks are identified

4.10 Sensitive Land Uses

4.10.1 The site comprises a storage area and so is considered to be of low sensitivity.

4.10.2 No historical features are identified on the site.

4.11 Environmental Sensitivity

4.11.1 Overall the site is currently considered to be of High environmental sensitivity due to the following:

- The underlying stratum are designated as a Secondary A Aquifer over a Principal Aquifer;
- There are surface water features adjacent to the site;
- The site is located within a source protection zone.
- There are potable groundwater abstractions within 250m of the site.

4.11.2 The proposed end use of the site is residential and as such future sensitivity will be high for end users.

4.12 Industrial Land Uses

4.12.1 No significant Industrial uses are identified within 250m of the site. No significant risks are identified.

4.12.2 The Groundsure Report indicates that there is one fuel stations within 250m of the site. This is an obsolete fuel filling station and is identified 120m north west and the risk is dismissed based on distance.

4.12.3 Records indicate no high pressure underground oil or gas pipelines within 250m of the site.

4.12.4 No new risks are identified from the register of industrial land uses.

4.13 Regulatory Database

4.13.1 The following information has been obtained from a commercially available environmental database.

Table 4.13.1 Regulatory Database

Environmental Permits, Incidents and Registers	0-250m	250-500m	Details
Site determined as contaminated land	0	0	Not applicable.
Authorised industrial processes	0	2	Landfill 82m W.
Registered radioactive substances	0	0	Not applicable.
Enforcements, prohibitions or prosecutions	0	0	Not applicable.
Pollution Incidents	2	2	Nearest is Category 2 (Significant) impact to water from soil 21m NW. Not considered a risk to the site.
Consents issued under the Planning (Hazardous Substances) Act 1990	0	0	Not applicable.
Control of Major Accident Hazard (COMAH)/ Notification of Installations Handling Hazardous Substances (NIHHS) sites	0	0	Not applicable.
Records of Licensed Discharge Consents	3	14	Treated sewage discharges. Nearest is 97m W and not considered a risk.

4.13.2 The risk from landfill operations will be assessed later in the report. No other significant risks are identified from the regulatory data base.

4.14 Landfill Sites

4.14.1 A recently closed landfill is identified 2m west of the site associated with the water works. The landfill was licenced to accept Inert Waste.

4.14.2 No other significant waste activities are identified within 250m of the site.

4.14.3 Ground gas monitoring will be undertaken as part of the investigation.

4.15 Planning Information

4.15.1 A review of Havant District Council planning portal shows redevelopment of the training centre to residential apartments in 2002. No other relevant information or ground investigation information is provided pertaining to the site.

5.0 PRELIMINARY ASSESSMENT

5.1 Preliminary Conceptual Model

5.1.1 Based on the information obtained the following Preliminary Conceptual Model has been prepared:

Table 5.1.1 Preliminary Conceptual Model

Source	Location	Exposure Pathway	Potential Receptor	Probability of Exposure	Details
Human Health					
Asbestos, metals and hydrocarbons.	Made Ground	Ingestion dermal and inhalation.	Construction Workers.	Low.	Management practices to be implemented.
			Site users.	Low.	Likely Made Ground and if present remediation can easily be incorporated in to the proposed development.
Asbestos, metals and hydrocarbons.	Unforeseen Contamination.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	Normal construction PPE will address risk under CDM.
			Site users.	Very Low.	No significant source identified.
Hydrocarbon and metals.	Migration from off-site sources.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	No significant sources identified.
			Site users.		
Ground Gas.	Landfill.	Inhalation & Explosive.	Construction Workers.	Dismissed	No confined space access anticipated.
			Site users.	Very Low	Off-site landfill which was licensed for Inert Waste.
	Made Ground	Inhalation & Explosive.	Construction Workers.	Dismissed	No confined space access anticipated.
			Site users.	Very Low	No significant putrescible material likely.
Radon	Natural	Inhalation	Site users.	Very Low	Basic Radon measures required.
Groundwater					
Hydrocarbon and metals.	Unforeseen Contamination.	Vertical Migration.	Groundwater.	Moderate	Low permeability clay soils over Principal Aquifer.
Surface Water					
Hydrocarbon and metals.	Unforeseen Contamination.	Horizontal Migration.	River Network.	Moderate.	Water course adjacent to the site.
Environmental Receptors					
On site contaminants		Ingestion dermal and inhalation.	Ecology.	Dismissed.	No source identified.
		Direct.	Archaeology.	Dismissed.	None present.
		Direct.	Geology.	Dismissed.	None present.
		Phytotoxic.	Woodland.	Dismissed.	None present.
		Phytotoxic.	Crops.	Dismissed.	None present.
		Ingestion dermal and inhalation.	Livestock.	Dismissed.	No receptor.
Building Services					
On site contaminants		Direct.	Historic Buildings.	Dismissed.	No receptors.
		Direct.	Proposed Buildings.	Dismissed.	No receptor.
		Permeate into pipework.	Water Pipes.	Very Low.	Requirements of Water Authority to be followed.

5.1.2 The ground investigation will include a standard suite of contamination tests including hydrocarbons and will include ground gas monitoring.

6.0 SITE INVESTIGATION

6.1 General

- 6.1.1 A site investigation was undertaken by Enzygo Geoenvironmental Limited on 25th and 26th November 2021 and comprised eight window sampler boreholes.
- 6.1.2 Locations of exploratory holes advanced by Enzygo Geoenvironmental Limited are presented on Drawing CRM.1668.023.GE.D.001 and were located to target potential contamination sources identified from the desk study and also to provide coverage.
- 6.1.3 Some of the locations were restricted on site due to storage of pallets and also time constraints imposed on site works by the tenants who provided access.

6.2 Site Works

- 6.2.1 Representative soil samples were collected for chemical and geotechnical testing. Soil samples destined for chemical analysis were collected in appropriate containers provided by the analytical laboratory. Samples were stored in cool boxes prior to dispatch to the laboratory for analysis. All samples were collected using appropriate sampling equipment that was cleaned at each sampling location.
- 6.2.2 Generally samples were collected from Made Ground, which may contain potential inclusions of contaminating materials and also materials displaying evidence of potential contamination.
- 6.2.3 In the absence of any evidence of contamination samples were collected near surface as this material is more likely to be contaminated by surface spillages and also will potentially be in contact with future residents.
- 6.2.4 Selected samples were also collected from underlying natural soils.

6.3 Laboratory Testing

- 6.3.1 Samples for geotechnical testing were sent to the laboratories of I2 Ltd, which is UKAS accredited, for the following analysis:
- Laboratory CBR tests;
 - Moisture Content;
 - Atterberg Limits Determinations; and
 - Soluble sulphate and pH.
- 6.3.2 Soil samples for chemical analysis were sent to I2 Ltd who are UKAS and MCERTS accredited. Samples were tested for the CLEA metal suite, pH, sulphate, cyanide, phenols, speciated Polycyclic Aromatic Hydrocarbons (PAH), organic carbon, Total Petroleum Hydrocarbon (TPH:CWG), and asbestos screen.
- 6.3.3 Two stage Waste Acceptance Criteria (WAC) tests were undertaken to assist with waste classification.

7.0 GROUND AND GROUNDWATER CONDITIONS

7.1 Summary of Ground and Groundwater Conditions

7.1.1 Ground and groundwater conditions have been assessed by Enzygo Geoenvironmental Limited investigation. The investigation undertaken identify the following strata:

Table 7.1.1 Ground and groundwater conditions

Strata	Summary Description	Thickness (m)
Made Ground (Pavement Construction)	Tarmac over sub base.	0.45
Made Ground (General)	Brown sandy gravelly clay with fragments of brick, concrete and flint.	0.3 to 1.4
Drift Deposits	Soft becoming firm and stiff with depth sandy gravelly clay varying to clayey sand and flint gravel.	>2.9
Groundwater.	Seepages WS7 only.	2.25m bgl

7.1.2 Details of the ground and groundwater conditions encountered are given on the exploratory hole records included in Appendix 2 and are summarised in the sections below:

7.2 Made Ground

7.2.1 Within areas of hardstanding Made Ground was encountered comprising tarmac over sub base consistent with pavement construction.

7.2.2 Below the pavement construction and also within the area of soft landscaping Made Ground was noted to comprise brown sandy gravelly clay with fragments of brick, concrete and flint. Deeper Made Ground was encountered in Borehole WS1 associated with the area of earthworks and Borehole WS7 associated with the historic infilled Bedhampton Stream.

7.2.3 Groundwater seepage was also only encountered in Borehole WS7 and is likely to be associated with the infilled Bedhampton Stream.

7.3 Drift Deposits

7.3.1 Natural Soils encountered below the Made Ground were noted to comprise soft becoming firm and stiff with depth sandy gravelly clay varying to clayey sand and flint gravel. Within Borehole WS1 and WS8 the soils were noted to be soft to depths of 3m below ground level (bgl).

7.3.2 It is not feasible to differentiate between the Alluvium, River Terrace Deposits and Head as the material are similar.

7.4 Soil Strength

7.4.1 Undrained shear strength of cohesive soils were calculated using the correlations of Stroud and Butler. These show the undrained shear strength values to generally increase from 30kN/m² at 1m bgl to 75kN/m² at 4m bgl.

7.4.2 Within Borehole WS1 and WS8 the soils were noted to be soft to depths of 3m below ground level (bgl).

7.5 Visual and Olfactory Evidence of Contamination

7.5.1 No visual or olfactory evidence of contamination was encountered during the site works

7.6 Groundwater

7.6.1 Groundwater was encountered as a seepage in Borehole WS7 at 2.25m bgl only during the site works. The depth to groundwater measured during the monitoring visit is summarised on the table below:

Table 7.6.1 Groundwater Depths

Exploratory Hole	Depth m(bgl)					
	3.12.21	10.12.21	17.12.21	21.12.21	6.1.22	13.1.22
WS1	3.1	2.95	2.18	3.01	2.57	2.66
WS3	Dry	Dry	1.79	1.81	1.44	1.21
WS8	1.9	1.55	1.25	1.92	Dry	1.97

7.7 Ground Gas

7.7.1 Ground gas was monitored during the return visit to monitor groundwater levels and the results are summarised on the table below:

Table 7.7.1 Gas Monitoring Results

Exploratory Hole	Atmos pressure (Mb)	Flow (l/hr)	CH4		CO2		O2
			Concentration (%)	GSV (l/hr)	Concentration (%)	GSV (l/hr)	Concentration (%)
3.12.21							
WS1	1013	<0.1	7.6	<0.0076	6.8	<0.0068	4.1
WS3	1009	<0.1	<0.1	<0.0001	1.4	<0.0014	19.7
WS8	1009	<0.1	<0.1	<0.0001	2.2	<0.0022	18.7
10.12.21							
WS1	999	<0.1	9.9	<0.0099	8.4	<0.0006	0.1
WS3	999	<0.1	<0.1	<0.0001	2.0	<0.0020	18.9
WS8	999	<0.1	<0.1	<0.0001	0.9	<0.0009	18.4
17.12.21							
WS1	1027	<0.1	1.0	<0.0010	8.4	<0.0084	4.4
WS3	1027	<0.1	<0.1	<0.0001	2.3	<0.0023	19.3
WS8	1027	<0.1	<0.1	<0.0001	2.1	<0.0021	18.2
21.12.21							
WS1	1024	<0.1	1.1	<0.0011	8.8	<0.0088	4.1
WS3	1024	<0.1	<0.1	<0.0001	1.5	<0.0015	19.4
WS8	1024	<0.1	<0.1	<0.0001	2.4	<0.0024	17.9
6.1.22							
WS1	1015	<0.1	1.0	<0.0010	9.4	<0.0094	3.3
WS3	1015	<0.1	<0.1	<0.0001	1.1	<0.0011	20.4
WS8	1015	<0.1	<0.1	<0.0001	3.2	<0.0032	15.7
13.1.22							
WS1	1010	<0.1	1.0	<0.0010	8.7	<0.0087	3.9
WS3	1010	<0.1	<0.1	<0.0001	1.3	<0.0013	19.8
WS8	1010	<0.1	<0.1	<0.0001	2.7	<0.0027	16.2

8.0 CONTAMINATION ASSESSMENT

8.1 General

8.1.1 A Tier I risk assessment has been undertaken using available and current screening values for a residential end use. The risk assessment is undertaken based on the findings of the ground investigation. Based on the contamination testing and Tier I assessment a Conceptual Model has been prepared, which is presented later in this section.

8.1.2 Where significant risks are identified remedial measures are recommended.

8.2 Human Health

8.2.1 Assessment of the risks to human health has been undertaken by comparing the soil quality data with reference values obtained from the Contaminated Land Exposure Assessment (CLEA), Soil Guideline Values (SGV) and General Acceptance Criteria (GAC) published by LQM/CIEH. The LQM/CIEH S4ULs values are used and summary tables of the reference values are included in Appendix 5.

8.2.2 Where an exceedance is identified the risk is assessed by considering the sensitivity of the proposed development and the potential pathway. The proposed development is for residential comprising including domestic houses and therefore the GAC values for Residential Use with plant uptake are considered suitable.

8.2.3 Results of the chemical testing from the investigation is included in Appendix 3.

8.2.4 The soil quality analysis shows exceedances of the GAC values in the following samples only:

Table 8.2.4 GAC Exceedances

Exploratory Hole	Determinant	Concentration (mg/kg)	
		Soil	GAC
WS10 @ 0.9m	Dibenz(a,h)anthracene	0.81	0.24
	Benzo(a)Pyrene	6.0	2.2
	Benzo(b)Flouranthene	5.7	2.6
	Chrysotile	<0.001%	Absent
	Dibenz(a,h)anthracene	0.43	0.24
WS9 @ 1.0m	Lead	440	200

8.2.5 It is considered that the PAH and Lead is associated with ash material within the Made Ground which is present in a vitrified form.

8.3 Controlled Waters

8.3.1 No significant concentrations of potentially mobile contaminants were identified. The underlying soils are identified as low permeability clay and clayey sand and gravel.

8.3.2 In the absence of a significant mobile source the risks to controlled waters is dismissed.

8.4 Ground Gas

8.4.1 Following the guidance provided in Section 3 of CIRIA C665 an initial assessment is undertaken to determine if there are any significant sources of potential ground gas. Such sources include landfills, organic clays and made ground incorporating putrescible materials such as rags, paper and wood. Where no significant source is identified no further assessment is necessary.

- 8.4.2 This approach is further supported by supplementary guidance given in RB17, published by CL:AIRE which confirms that gas monitoring is not generally required on sites where Made Ground is less than 5m thick and with low organic matter content or on natural soils such as alluvial clays and Chalk as the ground gas sources are not considered significant. The supplementary guidance given in RB17 also takes account of the current requirements for sealing of floor slabs and substructures to meet air tightness requirements under Part L of the Building Regulations which were not considered in CIRIA C665. The advice given in RB17 is consistent with CIRIA C665 and the Local Authority Guide to Ground Gas published by CIEH.
- 8.4.3 Where significant potential risk from ground gas is identified from the Initial Conceptual Model and the intrusive ground investigation works ground gas monitoring is undertaken and the results of the monitoring are compared against the Gas Screening Values given in CIRIA Report 665. From this the Characteristic Situation is identified and remedial measures proposed.
- 8.4.4 When assessing the risk and type of remedial measures appropriate consideration is given to the likely construction of the development, the nature of the gas posing a risk and the nature of the likely source. The use of engineering judgement when determining risk from ground gas is consistent with the recommendations given in CIRIA C665 using a pollutant linkage model.
- 8.4.5 Gas monitoring was undertaken during return visits which has recorded elevated concentrations of Methane which are likely to be arising from the off-site landfill. As Methane is explosive it is recommended that the ground gas regime is increased to Characteristic Situation 2 (CS2).
- 8.4.6 It maybe possible to zone the site and identify areas where no ground gas protection is required if further investigation and monitoring were undertaken once site possession has been taken.
- 8.4.7 Additional ground gas monitoring is being undertaken.

8.5 Conceptual Model

- 8.5.1 A Conceptual Model is presented below based on the findings of the ground investigation.

Table 8.5.1 Conceptual Model

Source	Location	Exposure Pathway	Potential Receptor	Probability of Exposure	Details
Human Health					
PAH, Asbestos and Lead.	Made Ground.	Ingestion dermal and inhalation.	Construction Workers.	Low.	Management practices to be implemented.
			Site users.	Low.	Exceedances of GAC identified and remediation recommended.
Hydrocarbon and metals.	Migration from off-site sources.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	No significant sources identified.
			Site users.		
Ground Gas.	Landfill.	Inhalation & Explosive.	Construction Workers.	Dismissed	No confined space access anticipated.
			Site users	Very Low	Minimum gas protection measures to CS2 recommended.
Radon	Natural	Inhalation	Site users.	Very Low	Basic Radon measures required.
Groundwater					
Hydrocarbon and metals.	Potential spillage on site.	Vertical Migration.	Groundwater.	Dismissed.	No mobile source identified and soils are low permeability soils.
Surface Water					
Hydrocarbon and metals.	Potential spillage on site.	Horizontal Migration.	River Network.	Dismissed.	No mobile source identified and soils are low permeability soils.
Environmental Receptors					
On site contaminants.		Ingestion dermal and inhalation.	Ecology.	Dismissed.	No receptor.
		Direct.	Archaeology.	Dismissed.	No receptor.
		Direct.	Geology.	Dismissed.	No receptor.
		Phytotoxic.	Woodland.	Dismissed.	No receptor.
		Phytotoxic.	Crops.	Dismissed.	No receptor.
		Ingestion dermal and inhalation.	Livestock.	Dismissed.	No receptor.
Building Services					
On site contaminants.		Direct.	Historic Buildings.	Dismissed.	No receptor.
		Direct.	Proposed Buildings.	Dismissed.	No receptor.
		Permeate into pipework.	Water Pipes.	Low.	Requirements of Water Authority to be followed.

8.6 Remediation and Verification Strategy

8.6.1 Made Ground identified across the site is not considered to be suitable to be retained within soft landscape areas as it will not provide a suitable rooting material. It is therefore recommended that the risks to future site users is mitigated through the use of clean cover soils to soft landscape areas.

8.6.2 This should comprise 400mm in communal areas and 600mm in domestic gardens placed over a geotextile no dig barrier. Appropriate verification of the cover soils and presence of the geotextile should be validated with hand pits and appropriate testing to be agreed with the Local Planning Authority.

8.6.3 Gas protection measures are recommended which are discussed in Section 9.

8.6.4 If unforeseen contamination is encountered during construction works such as localised spillage outside the areas investigated an Environmental consultant will be available on a 'call out' basis to undertake an assessment of risk. If 'unforeseen contamination' is encountered the discovery strategy will be to remove the source as it is likely to be very limited in extent and the Local Planning Authority advised.

8.6.5 Asbestos contaminated material has been identified during the ground investigation and it is possible that further material could be encountered during construction works. Measures should to be incorporated in to the Contractors Construction Stage Health and Safety Plan as required under the Construction Design and Management (CDM) Regulations to mitigate risk to construction works. Measures may include

- Designing temporary works to minimise disturbance of the Back fill material;
- Separating material and disposal of soils containing asbestos;
- Wetting down during excavation;
- Sheeting of stockpiles where asbestos is suspected;
- Testing of soils and off-site disposal of any soils found or suspected of containing asbestos;
- Preventing access to the construction site by members of the public;
- Use of good hygiene measures, including washing down of plant; and

8.6.6 Use of appropriate PPE, including face masks

8.7 Waste Classification

8.7.1 Two part WAC tests undertaken from the site identified exceedance of leachable Fluoride concentrations above the Inert threshold. No elevated PAH, TOC or TPH concentrations were recorded above the Inert Waste thresholds. Asbestos speciation has been scheduled and will be reported once the results have been received.

8.7.2 It is considered that the soils will generally be classified as Stable Non Reactive Waste.

8.7.3 The Waste Management paper 3 requires the landfill to make an appropriate assessment of the waste classification. As such final assessment will be undertaken by the receiving landfill based on the requirements of their permit.

9.0 GEOTECHNICAL ASSESSMENT

9.1 Proposed Development

9.1.1 The proposed development comprises residential houses. Structural loads are not known and so typical wall load of 75kN/m has been used for preliminary assessment purposes.

9.1.2 It is considered that the scheme meets the criteria of Geotechnical Category 1 of Eurocode 7.

9.2 Ground Conditions

9.2.1 Ground conditions comprise Made Ground over soft becoming firm and stiff with depth silty clay varying to medium dense clayey sand. Soft clays were encountered locally to over 3m bgl.

9.2.2 Groundwater was encountered at depths of between 1.5m 2.9m bgl.

9.3 Preparation

9.3.1 The site should be cleared and any vegetation below areas of proposed development stripped in accordance with Series 200 of the Specification for Highway Works. This should include:

- Any redundant services should be sealed off and grubbed out and replaced with suitable compacted engineered fill;
- All buried structures and old foundations should be excavated from below the proposed structures with the resulting void backfilled prior to foundation works; and
- Any root balls associated with existing trees should be grubbed out.

9.4 Foundations

9.4.1 Due to the presence of soft and very soft clays to depths of greater than 3m bgl it is considered that piled foundations will be required. As an alternative consideration maybe given to controlled modulus columns. Vibro granular columns are not generally considered suitable due to the soft nature of the Alluvial soils.

9.4.2 It may be possible to zone the site and identify areas where conventional strip foundations may be used if further investigation is undertaken once site possession has been taken.

9.4.3 Final foundation depths should also take account of NHBC requirements for building near trees. An assessment of the soils modified plasticity index confirms that the shallow soils are of high volume change potential in accordance with Chapter 4.2 of NHBC Standards.

9.4.4 The risk of potential Chalk solution features has been re-assessed based on the ground investigation information. Solution features generally form where granular soils overly Chalk adjacent to a clay soil, which allows the concentration of surface water flow into the chalk, thereby creating dissolution of fissures. At this site the Alluvium has been shown to be clay of significant thickness. In addition, shallow groundwater was encountered. This will mitigate the potential for the creation of Chalk solution features and as such the risk is no longer considered significant.

9.5 Floor Slab

9.5.1 Given the depth of Made Ground it is recommended that suspended floor slabs are used.

9.5.2 Gas protection measures are recommended to meet the requirement of Characteristic Situation 2 is incorporated into ground floor slabs. This should also address the risks from Radon. Measures are likely to comprise:

- Use of a vented under slab void; and
- Use of a gas membrane on the ground floor slab and below the screed. The membrane should be jointed, sealed to the cavity tray and sealed around service entry points.

9.5.3 Validation of the ground gas measures should be undertaken.

9.6 Pavement Construction

9.6.1 An assessment of the likely California Bearing Ratio (CBR) has been assessed from the following sources:

- Laboratory CBR tests;
- Description of the materials encountered in the exploratory holes;
- Guidance given in HD25/94 and 73/06; and

9.6.2 Based on this it is recommended that an equilibrium CBR of 4% is used.

9.6.3 If roadways are to be adopted by Hampshire Highways they may require soaked CBR testing to be undertaken.

9.7 Drainage

9.7.1 Soakaway drainage is not considered feasible.

9.7.2 The report should be submitted to the Water Authority.

9.8 Aggressive Soils

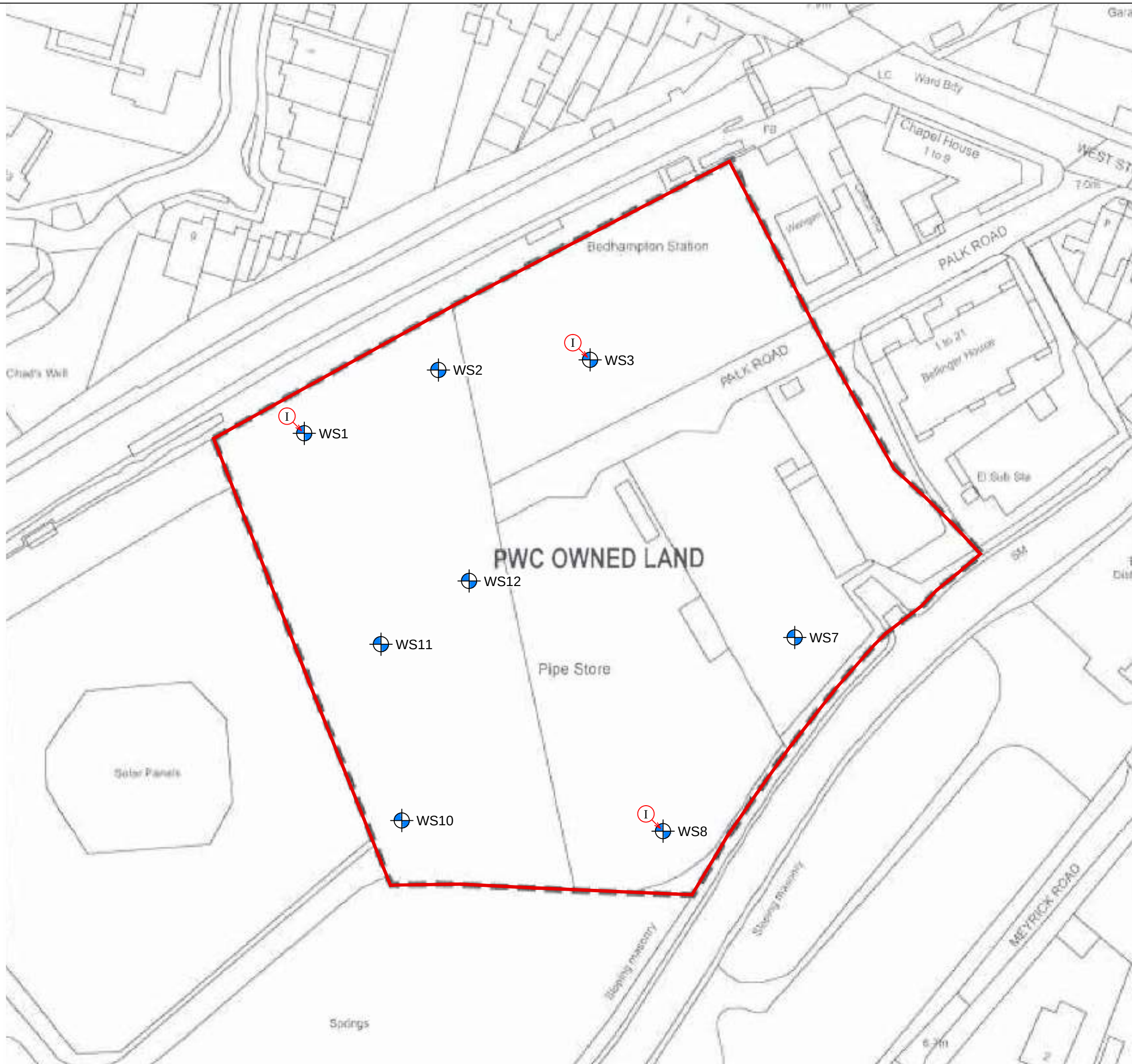
9.8.1 It is considered that buried concrete may be designed in accordance with ACEC Class AC-1s.

9.9 Excavation

9.9.1 Based on the various site observations it is considered that excavations should be feasible with normal plant. Assistance from a breaker will be required for excavation of hardstanding.

9.9.2 Excavations where access is required should be supported in accordance with CIRIA RR97.

9.9.3 Significant dewatering is not anticipated.



Key

Site Boundary

Window Sampler Boreholes (WS)
(WS1 - WS3, WS7, WS8, WS10 - WS12)

Borehole Installation (I)



Samuel House, 5 Fox Valley Way, Stocksbridge, Sheffield, S36 2AA

CLIENT:		Bellway Homes	
SCALE:	NTS / A3	PROJECT REF:	CRM.1668.023
DRAWN:	MG	CHECKED:	SR
		DATE:	Dec 2021
PROJECT:		Park Road, Havant	
TITLE:		Site Plan	
FIGURE NO:		CRM.1668.023.GE.D.001	

Appendix 1 – Desk Study Information

470728 106449

Order Details

Date: 01/11/2021
Your ref: EMS_734687_955964
Our Ref: EMS-734687_955964
Client: emapsite

Site Details

Location: 470728 106449
Area: 1.26 ha
Authority: [Havant Borough Council](#)



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Summary of findings

p. 2

Aerial image

p. 8

OS MasterMap site plan

p.13

groundsure.com/insightuserguide

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
<u>14</u>	<u>1.1</u>	<u>Historical industrial land uses</u>	7	4	17	45	-
<u>17</u>	<u>1.2</u>	<u>Historical tanks</u>	0	0	8	5	-
<u>18</u>	<u>1.3</u>	<u>Historical energy features</u>	0	2	2	14	-
19	1.4	Historical petrol stations	0	0	0	0	-
<u>19</u>	<u>1.5</u>	<u>Historical garages</u>	0	1	9	3	-
20	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
<u>21</u>	<u>2.1</u>	<u>Historical industrial land uses</u>	7	4	19	59	-
<u>25</u>	<u>2.2</u>	<u>Historical tanks</u>	0	0	14	7	-
<u>26</u>	<u>2.3</u>	<u>Historical energy features</u>	0	4	6	26	-
27	2.4	Historical petrol stations	0	0	0	0	-
<u>28</u>	<u>2.5</u>	<u>Historical garages</u>	0	1	12	5	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
<u>29</u>	<u>3.1</u>	<u>Active or recent landfill</u>	0	1	0	0	-
30	3.2	Historical landfill (BGS records)	0	0	0	0	-
30	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
30	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
<u>30</u>	<u>3.5</u>	<u>Historical waste sites</u>	0	0	0	2	-
<u>31</u>	<u>3.6</u>	<u>Licensed waste sites</u>	0	2	4	3	-
<u>34</u>	<u>3.7</u>	<u>Waste exemptions</u>	1	2	2	3	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
<u>35</u>	<u>4.1</u>	<u>Recent industrial land uses</u>	2	3	10	-	-
<u>37</u>	<u>4.2</u>	<u>Current or recent petrol stations</u>	0	0	1	1	-
37	4.3	Electricity cables	0	0	0	0	-
37	4.4	Gas pipelines	0	0	0	0	-
37	4.5	Sites determined as Contaminated Land	0	0	0	0	-



37	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
38	4.7	Regulated explosive sites	0	0	0	0	-
38	4.8	Hazardous substance storage/usage	0	0	0	0	-
38	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
38	4.10	<u>Licensed industrial activities (Part A(1))</u>	0	0	2	0	-
39	4.11	<u>Licensed pollutant release (Part A(2)/B)</u>	0	0	0	1	-
39	4.12	Radioactive Substance Authorisations	0	0	0	0	-
39	4.13	<u>Licensed Discharges to controlled waters</u>	0	0	3	14	-
42	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
42	4.15	Pollutant release to public sewer	0	0	0	0	-
42	4.16	List 1 Dangerous Substances	0	0	0	0	-
43	4.17	List 2 Dangerous Substances	0	0	0	0	-
43	4.18	<u>Pollution Incidents (EA/NRW)</u>	0	1	1	2	-
43	4.19	Pollution inventory substances	0	0	0	0	-
44	4.20	Pollution inventory waste transfers	0	0	0	0	-
44	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
45	5.1	<u>Superficial aquifer</u>	Identified (within 500m)				
47	5.2	<u>Bedrock aquifer</u>	Identified (within 500m)				
49	5.3	<u>Groundwater vulnerability</u>	Identified (within 50m)				
50	5.4	<u>Groundwater vulnerability- soluble rock risk</u>	Identified (within 0m)				
51	5.5	<u>Groundwater vulnerability- local information</u>	Identified (within 0m)				
52	5.6	<u>Groundwater abstractions</u>	0	0	3	0	0
53	5.7	Surface water abstractions	0	0	0	0	0
54	5.8	<u>Potable abstractions</u>	0	0	3	0	0
54	5.9	<u>Source Protection Zones</u>	1	0	0	0	-
55	5.10	<u>Source Protection Zones (confined aquifer)</u>	1	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
56	6.1	<u>Water Network (OS MasterMap)</u>	0	2	11	-	-



58	<u>6.2</u>	<u>Surface water features</u>	1	0	5	-	-
58	<u>6.3</u>	<u>WFD Surface water body catchments</u>	2	-	-	-	-
58	<u>6.4</u>	<u>WFD Surface water bodies</u>	0	1	0	-	-
59	<u>6.5</u>	<u>WFD Groundwater bodies</u>	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
60	<u>7.1</u>	<u>Risk of flooding from rivers and the sea</u>	High (within 50m)				
61	7.2	Historical Flood Events	0	0	0	-	-
61	7.3	Flood Defences	0	0	0	-	-
61	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
61	7.5	Flood Storage Areas	0	0	0	-	-
62	<u>7.6</u>	<u>Flood Zone 2</u>	Identified (within 50m)				
63	<u>7.7</u>	<u>Flood Zone 3</u>	Identified (within 50m)				
Page	Section	Surface water flooding					
64	<u>8.1</u>	<u>Surface water flooding</u>	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding					
66	<u>9.1</u>	<u>Groundwater flooding</u>	High (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
67	<u>10.1</u>	<u>Sites of Special Scientific Interest (SSSI)</u>	0	0	0	0	3
68	<u>10.2</u>	<u>Conserved wetland sites (Ramsar sites)</u>	0	0	0	0	3
69	<u>10.3</u>	<u>Special Areas of Conservation (SAC)</u>	0	0	0	0	1
69	<u>10.4</u>	<u>Special Protection Areas (SPA)</u>	0	0	0	0	6
71	10.5	National Nature Reserves (NNR)	0	0	0	0	0
71	<u>10.6</u>	<u>Local Nature Reserves (LNR)</u>	0	0	0	0	1
71	<u>10.7</u>	<u>Designated Ancient Woodland</u>	0	0	0	0	8
72	10.8	Biosphere Reserves	0	0	0	0	0
72	10.9	Forest Parks	0	0	0	0	0
72	10.10	Marine Conservation Zones	0	0	0	0	0
72	10.11	Green Belt	0	0	0	0	0
73	10.12	Proposed Ramsar sites	0	0	0	0	0



73	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
73	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
73	10.15	Nitrate Sensitive Areas	0	0	0	0	0
74	10.16	<u>Nitrate Vulnerable Zones</u>	1	0	0	1	2
75	10.17	<u>SSSI Impact Risk Zones</u>	1	-	-	-	-
76	10.18	<u>SSSI Units</u>	0	0	0	0	5
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
79	11.1	World Heritage Sites	0	0	0	-	-
80	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
80	11.3	National Parks	0	0	0	-	-
80	11.4	<u>Listed Buildings</u>	0	0	2	-	-
81	11.5	<u>Conservation Areas</u>	0	0	1	-	-
81	11.6	Scheduled Ancient Monuments	0	0	0	-	-
81	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
82	12.1	<u>Agricultural Land Classification</u>	Grade 1 (within 250m)				
83	12.2	Open Access Land	0	0	0	-	-
83	12.3	Tree Felling Licences	0	0	0	-	-
83	12.4	Environmental Stewardship Schemes	0	0	0	-	-
83	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
84	13.1	<u>Priority Habitat Inventory</u>	1	3	15	-	-
85	13.2	Habitat Networks	0	0	0	-	-
85	13.3	Open Mosaic Habitat	0	0	0	-	-
86	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
87	14.1	<u>10k Availability</u>	Identified (within 500m)				
88	14.2	Artificial and made ground (10k)	0	0	0	0	-
89	14.3	<u>Superficial geology (10k)</u>	3	1	1	2	-



90	14.4	Landslip (10k)	0	0	0	0	-
91	14.5	<u>Bedrock geology (10k)</u>	2	1	1	1	-
92	14.6	<u>Bedrock faults and other linear features (10k)</u>	0	0	0	2	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
93	15.1	<u>50k Availability</u>	Identified (within 500m)				
94	15.2	Artificial and made ground (50k)	0	0	0	0	-
94	15.3	Artificial ground permeability (50k)	0	0	-	-	-
95	15.4	<u>Superficial geology (50k)</u>	3	1	1	2	-
96	15.5	<u>Superficial permeability (50k)</u>	Identified (within 50m)				
96	15.6	Landslip (50k)	0	0	0	0	-
96	15.7	Landslip permeability (50k)	None (within 50m)				
98	15.8	<u>Bedrock geology (50k)</u>	2	1	1	1	-
99	15.9	<u>Bedrock permeability (50k)</u>	Identified (within 50m)				
99	15.10	<u>Bedrock faults and other linear features (50k)</u>	0	0	0	2	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
100	16.1	<u>BGS Boreholes</u>	0	2	13	-	-
Page	Section	Natural ground subsidence					
102	17.1	<u>Shrink swell clays</u>	Moderate (within 50m)				
104	17.2	<u>Running sands</u>	Low (within 50m)				
106	17.3	<u>Compressible deposits</u>	Moderate (within 50m)				
108	17.4	<u>Collapsible deposits</u>	Low (within 50m)				
110	17.5	<u>Landslides</u>	Very low (within 50m)				
111	17.6	<u>Ground dissolution of soluble rocks</u>	Moderate (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
113	18.1	Natural cavities	0	0	0	0	-
114	18.2	BritPits	0	0	0	0	-
114	18.3	<u>Surface ground workings</u>	0	6	10	-	-
115	18.4	Underground workings	0	0	0	0	0
115	18.5	Historical Mineral Planning Areas	0	0	0	0	-



115	18.6	<u>Non-coal mining</u>	1	0	0	0	2
116	18.7	Mining cavities	0	0	0	0	0
116	18.8	JPB mining areas	None (within 0m)				
116	18.9	Coal mining	None (within 0m)				
116	18.10	Brine areas	None (within 0m)				
116	18.11	Gypsum areas	None (within 0m)				
117	18.12	Tin mining	None (within 0m)				
117	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
118	19.1	<u>Radon</u>	Between 3% and 5% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
120	20.1	<u>BGS Estimated Background Soil Chemistry</u>	6	3	-	-	-
120	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
121	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
122	21.1	Underground railways (London)	0	0	0	-	-
122	21.2	Underground railways (Non-London)	0	0	0	-	-
123	21.3	Railway tunnels	0	0	0	-	-
123	21.4	<u>Historical railway and tunnel features</u>	0	0	17	-	-
124	21.5	Royal Mail tunnels	0	0	0	-	-
124	21.6	Historical railways	0	0	0	-	-
124	21.7	<u>Railways</u>	0	6	11	-	-
125	21.8	Crossrail 1	0	0	0	0	-
125	21.9	Crossrail 2	0	0	0	0	-
125	21.10	HS2	0	0	0	0	-



Recent aerial photograph



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Capture Date: 05/04/2020

Site Area: 1.26ha



Recent site history - 2017 aerial photograph



Capture Date: 21/06/2017

Site Area: 1.26ha



Recent site history - 2006 aerial photograph



Capture Date: 22/04/2006

Site Area: 1.26ha



Recent site history - 2005 aerial photograph



Capture Date: 15/05/2005

Site Area: 1.26ha



Recent site history - 1999 aerial photograph



Capture Date: 04/09/1999

Site Area: 1.26ha



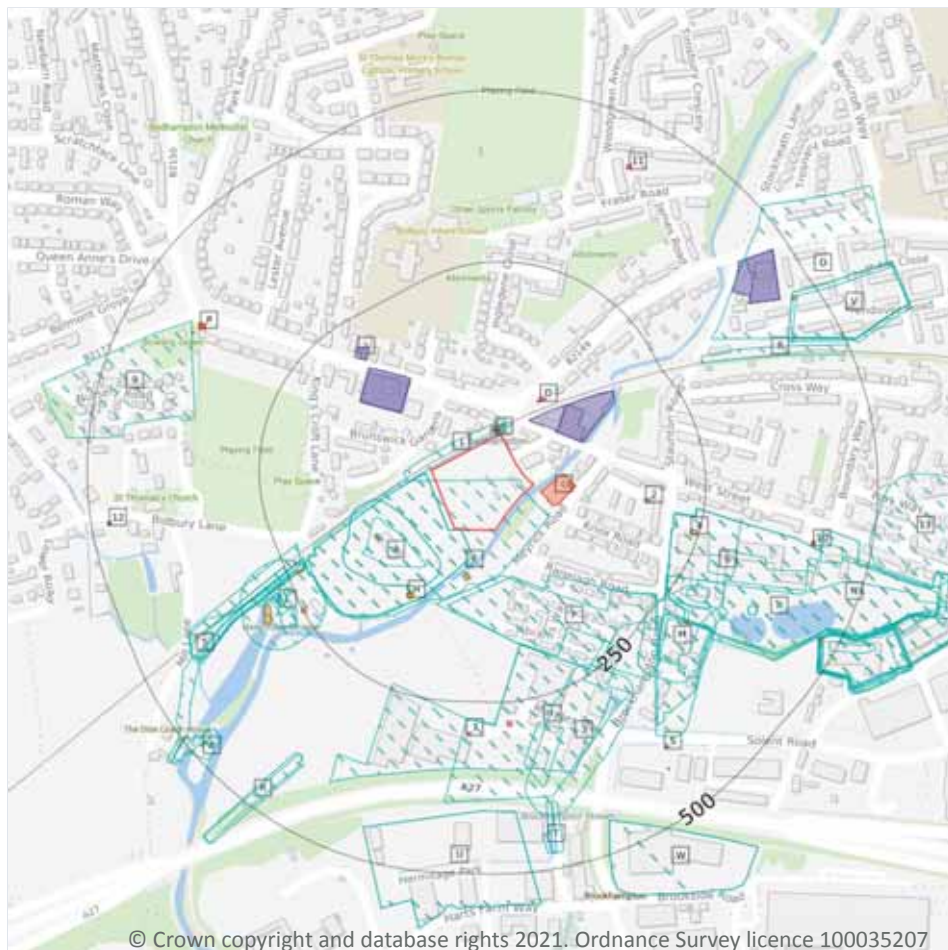
OS MasterMap site plan



Site Area: 1.26ha



1 Past land use



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks
- Historical energy features
- Historical garages

1.1 Historical industrial land uses

Records within 500m

73

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 14**

ID	Location	Land use	Dates present	Group ID
A	On site	Unspecified Works	1963	1860769



ID	Location	Land use	Dates present	Group ID
A	On site	Water Works	1973	1899379
A	On site	Water Works	1938	1958161
A	On site	Water Works	1991	1965237
B	On site	Railway Building	1963	1867023
B	On site	Railway Station	1991	1890002
B	On site	Railway Station	1973	1890365
1	3m NW	Cuttings	1866	1882779
A	44m SW	Water Works	1907	1943157
A	44m SW	Water Works	1931	1947029
E	49m S	Unspecified Hole	1931	1853527
A	65m SW	Water Works	1931	1906752
F	66m S	Nurseries	1898 - 1907	1967564
F	71m S	Nurseries	1895	1963130
I	169m S	Industrial Estate	1991	1866220
I	170m S	Nursery	1907	1935746
K	208m E	Unspecified Works	1963	1903729
K	208m E	Water Works	1973	1920800
K	208m E	Water Works	1991	1946345
L	212m SW	Unspecified Mill	1895	1892526
L	219m W	Railway Sidings	1907 - 1931	1956574
L	221m W	Railway Sidings	1938	1943687
L	221m W	Railway Sidings	1963	1967344
L	221m W	Railway Sidings	1931	1922820
3	232m SE	Nursery	1931 - 1938	1913515
K	234m SE	Water Works	1866	1900842
M	244m SE	Tannery	1866 - 1896	1952668
5	250m W	Railway Sidings	1895 - 1898	1953479
M	257m SE	Water Works	1898	1955833



ID	Location	Land use	Dates present	Group ID
L	258m SW	Unspecified Disused Mill	1907	1872781
L	261m SW	Unspecified Mill	1898	1912941
M	268m SE	Water Works	1931	1897648
L	269m SW	Corn Mill	1866	1861866
M	269m SE	Water Works	1907 - 1942	1935518
L	270m W	Pumping Station	1931	1922417
M	271m SE	Engine House	1866	1859437
L	273m W	Pumping Station	1938	1928523
6	275m E	Unspecified Tank	1942	1859079
M	275m SE	Tannery	1898	1887399
I	287m S	Nursery	1931	1893011
8	301m NE	Cuttings	1866	1882777
N	310m SE	Water Works	1896	1929475
O	335m NE	Brick Works	1907	1967551
9	351m W	Nursery	1991	1867628
K	360m SE	Unspecified Tank	1973	1935713
K	360m SE	Unspecified Tank	1991	1950542
K	360m SE	Unspecified Tank	1963	1951962
R	397m SW	Unspecified Heap	1963	1888786
R	397m SW	Unspecified Heap	1907 - 1938	1963773
T	401m S	Watercress Beds	1931	1930128
T	401m S	Watercress Beds	1898	1891364
U	408m S	Unspecified Depot	1991	1932212
U	408m S	Unspecified Depot	1973	1945641
V	427m NE	Old Brick Works	1914	1863455
V	427m NE	Old Brick Field	1896	1910134
V	428m NE	Old Brick Field	1898	1895602
W	453m S	Unspecified Works	1991	1887145



ID	Location	Land use	Dates present	Group ID
W	453m S	Unspecified Works	1973	1940819
X	454m SW	Unspecified Mill	1895 - 1898	1937656
X	462m SW	Unspecified Disused Mill	1907	1872780
N	467m SE	Leather Works	1896	1895634
N	467m SE	Leather Works	1914	1919205
N	468m SE	Unspecified Works	1963	1943702
N	471m SE	Leather Works	1931	1890729
N	471m SE	Leather Works	1942	1897063
N	471m SE	Leather Works	1907	1936675
N	471m SE	Leather Works	1931	1965004
N	472m SE	Washing Factory	1866	1872043
N	474m SE	Leather Works	1898	1902030
N	475m SE	Leather Works	1932	1902146
N	487m SE	Railway Sidings	1907 - 1914	1926373
X	492m SW	Corn Mill	1866	1861878
13	496m E	Unspecified Workhouse	1896	1933376

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

13

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 14**

ID	Location	Land use	Dates present	Group ID
E	63m S	Unspecified Tank	1939	308212
A	107m W	Unspecified Tank	1939 - 1951	325095



ID	Location	Land use	Dates present	Group ID
H	112m SW	Unspecified Tank	1953 - 1973	322142
H	113m SW	Unspecified Tank	1993	326784
L	226m W	Unspecified Tank	1939	308214
L	232m W	Unspecified Tank	1939	308215
4	237m E	Tanks	1952	311362
L	244m SW	Unspecified Tank	1939 - 1951	326412
L	290m W	Unspecified Tank	1939	308216
M	295m SE	Unspecified Tank	1989 - 1997	316888
N	471m SE	Unspecified Tank	1973 - 1989	317179
N	471m SE	Unspecified Tank	1997	321893
X	495m SW	Unspecified Tank	1909	308222

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	18
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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 14**

ID	Location	Land use	Dates present	Group ID
C	14m SE	Electricity Substation	1987	210639
C	49m E	Electricity Substation	1969 - 1993	211387
D	71m NE	Electricity Substation	1973 - 1991	208688
2	163m E	Electricity Substation	1969 - 1993	210275
I	277m S	Electricity Substation	1987 - 1993	203722
7	294m S	Electricity Substation	1993	191124
P	388m NW	Electricity Substation	1951 - 1953	205295

ID	Location	Land use	Dates present	Group ID
P	388m NW	Electricity Substation	1973 - 1995	209597
P	399m NW	Gas Governor	1995	191961
S	399m SE	Electricity Substation	1969 - 1987	211345
10	412m E	Electricity Substation	1969 - 1997	203397
11	426m NE	Electricity Substation	1973 - 1991	211937
S	427m SE	Electricity Substation	1997	192637
S	427m SE	Electricity Substation	1973	194567
S	427m SE	Electricity Substation	1969	194642
S	427m SE	Electricity Substation	1989	192858
O	461m NE	Electricity Substation	1969 - 1993	196039
12	471m W	Electricity Substation	1973 - 1993	207960

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

13

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 14**



ID	Location	Land use	Dates present	Group ID
D	46m NE	Garage	1991	62480
D	72m NE	Garage	1959	63017
D	72m NE	Garage	1963 - 1973	65249
D	72m NE	Garage	1960	61807
G	94m NW	Garage	1973	62988
G	94m NW	Garage	1959 - 1963	65319
G	95m NW	Garage	1991	61700
G	96m NW	Garage	1960	63094
J	187m NW	Garage	1959 - 1963	64294
J	187m NW	Garage	1960	62455
Q	395m NE	Garage	1960	62055
Q	395m NE	Garage	1960 - 1973	63418
Q	408m NE	Garage	1993	61852

This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

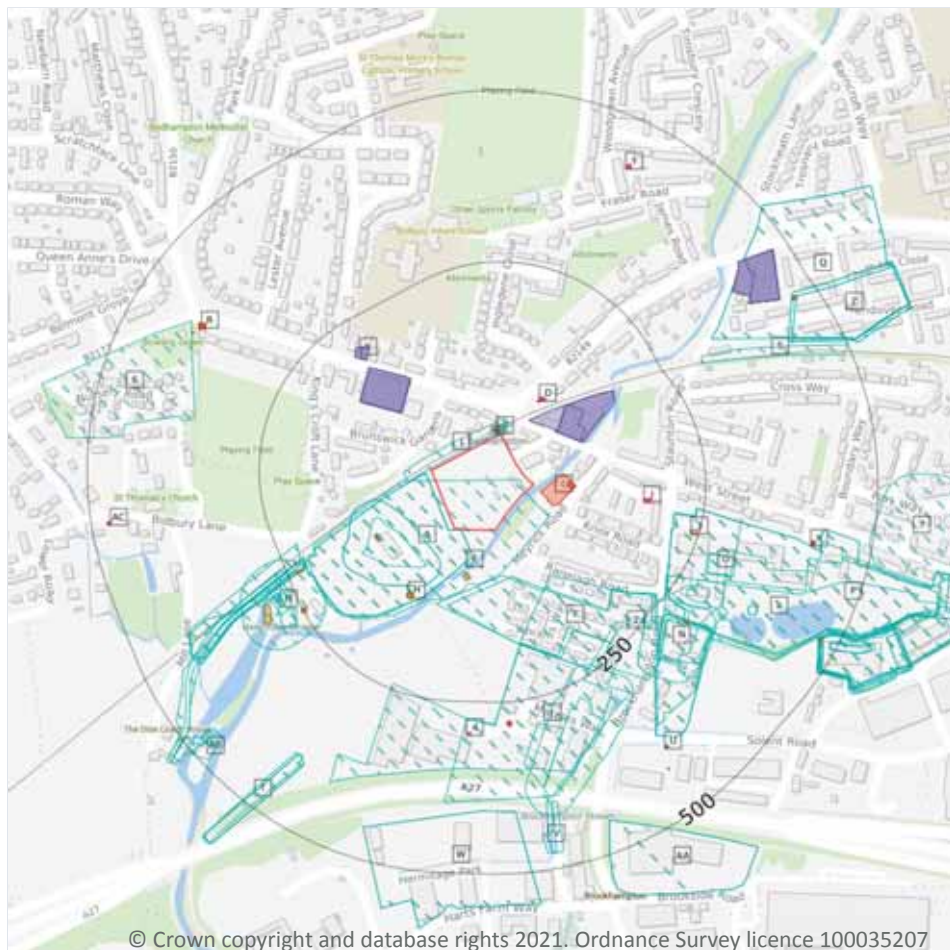
Records within 500m

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



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- 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

89

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 21**

ID	Location	Land Use	Date	Group ID
A	On site	Water Works	1938	1958161
A	On site	Water Works	1991	1965237
A	On site	Water Works	1973	1899379



ID	Location	Land Use	Date	Group ID
A	On site	Unspecified Works	1963	1860769
B	On site	Railway Station	1991	1890002
B	On site	Railway Station	1973	1890365
B	On site	Railway Building	1963	1867023
1	3m NW	Cuttings	1866	1882779
A	44m SW	Water Works	1907	1943157
A	44m SW	Water Works	1931	1947029
E	49m S	Unspecified Hole	1931	1853527
A	65m SW	Water Works	1931	1906752
F	66m S	Nurseries	1907	1967564
F	71m S	Nurseries	1895	1963130
2	110m SE	Nurseries	1898	1967564
J	169m S	Industrial Estate	1991	1866220
J	170m S	Nursery	1907	1935746
L	208m E	Unspecified Works	1963	1903729
L	208m E	Water Works	1991	1946345
L	208m E	Water Works	1973	1920800
M	212m SW	Unspecified Mill	1895	1892526
M	219m W	Railway Sidings	1931	1956574
M	219m W	Railway Sidings	1907	1956574
M	221m W	Railway Sidings	1938	1943687
M	221m W	Railway Sidings	1963	1967344
M	221m W	Railway Sidings	1931	1922820
J	232m SE	Nursery	1938	1913515
L	234m SE	Water Works	1866	1900842
N	244m SE	Tannery	1866	1952668
M	250m W	Railway Sidings	1895	1953479
M	255m W	Railway Sidings	1898	1953479



ID	Location	Land Use	Date	Group ID
N	257m SE	Water Works	1898	1955833
M	258m SW	Unspecified Disused Mill	1907	1872781
M	261m SW	Unspecified Mill	1898	1912941
N	268m SE	Water Works	1931	1897648
M	269m SW	Corn Mill	1866	1861866
N	269m SE	Water Works	1942	1935518
N	269m SE	Water Works	1931	1935518
N	269m SE	Water Works	1907	1935518
M	270m W	Pumping Station	1931	1922417
N	271m SE	Engine House	1866	1859437
M	271m W	Pumping Station	1931	1922417
O	272m E	Unspecified Works	1963	1903729
J	272m SE	Nursery	1931	1913515
M	273m W	Pumping Station	1938	1928523
N	274m SE	Tannery	1896	1952668
N	275m SE	Tannery	1898	1887399
O	275m E	Unspecified Tank	1942	1859079
J	287m S	Nursery	1931	1893011
5	301m NE	Cuttings	1866	1882777
P	310m SE	Water Works	1896	1929475
Q	335m NE	Brick Works	1907	1967551
Q	335m NE	Brick Works	1907	1967551
6	351m W	Nursery	1991	1867628
L	360m SE	Unspecified Tank	1991	1950542
L	360m SE	Unspecified Tank	1973	1935713
L	360m SE	Unspecified Tank	1963	1951962
T	397m SW	Unspecified Heap	1963	1888786
T	397m SW	Unspecified Heap	1938	1963773



ID	Location	Land Use	Date	Group ID
T	397m SW	Unspecified Heap	1931	1963773
T	397m SW	Unspecified Heap	1907	1963773
V	401m S	Watercress Beds	1931	1930128
V	401m S	Watercress Beds	1898	1891364
W	408m S	Unspecified Depot	1991	1932212
W	408m S	Unspecified Depot	1973	1945641
Z	427m NE	Old Brick Works	1914	1863455
Z	427m NE	Old Brick Field	1896	1910134
Z	428m NE	Old Brick Field	1898	1895602
Z	428m NE	Old Brick Field	1898	1895602
AA	453m S	Unspecified Works	1991	1887145
AA	453m S	Unspecified Works	1973	1940819
AB	454m SW	Unspecified Mill	1895	1937656
AB	459m SW	Unspecified Mill	1898	1937656
AB	462m SW	Unspecified Disused Mill	1907	1872780
P	467m SE	Leather Works	1914	1919205
P	467m SE	Leather Works	1896	1895634
P	468m SE	Unspecified Works	1963	1943702
P	471m SE	Leather Works	1942	1897063
P	471m SE	Leather Works	1931	1965004
P	471m SE	Leather Works	1907	1936675
P	471m SE	Leather Works	1931	1890729
P	472m SE	Washing Factory	1866	1872043
P	474m SE	Leather Works	1898	1902030
P	474m SE	Leather Works	1896	1895634
P	475m SE	Leather Works	1932	1902146
P	487m SE	Railway Sidings	1907	1926373
P	490m SE	Railway Sidings	1914	1926373



ID	Location	Land Use	Date	Group ID
AB	492m SW	Corn Mill	1866	1861878
7	496m E	Unspecified Workhouse	1896	1933376

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

21

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 21**

ID	Location	Land Use	Date	Group ID
E	63m S	Unspecified Tank	1939	308212
A	107m W	Unspecified Tank	1951	325095
A	107m W	Unspecified Tank	1939	325095
H	112m SW	Unspecified Tank	1969	322142
H	112m SW	Unspecified Tank	1973	322142
H	112m SW	Unspecified Tank	1959	322142
H	112m SW	Unspecified Tank	1960	322142
H	112m SW	Unspecified Tank	1953	322142
H	113m SW	Unspecified Tank	1993	326784
M	226m W	Unspecified Tank	1939	308214
M	232m W	Unspecified Tank	1939	308215
3	237m E	Tanks	1952	311362
M	244m SW	Unspecified Tank	1951	326412
M	245m SW	Unspecified Tank	1939	326412
M	290m W	Unspecified Tank	1939	308216
N	295m SE	Unspecified Tank	1997	316888
N	296m SE	Unspecified Tank	1989	316888
P	471m SE	Unspecified Tank	1989	317179



ID	Location	Land Use	Date	Group ID
P	471m SE	Unspecified Tank	1997	321893
P	472m SE	Unspecified Tank	1973	317179
AB	495m SW	Unspecified Tank	1909	308222

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m

36

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 21**

ID	Location	Land Use	Date	Group ID
C	14m SE	Electricity Substation	1987	210639
C	49m E	Electricity Substation	1969	211387
C	49m E	Electricity Substation	1993	211387
C	49m E	Electricity Substation	1973	211387
D	71m NE	Electricity Substation	1991	208688
D	71m NE	Electricity Substation	1973	208688
I	163m E	Electricity Substation	1987	210275
I	163m E	Electricity Substation	1973	210275
I	163m E	Electricity Substation	1993	210275
I	163m E	Electricity Substation	1969	210275
J	277m S	Electricity Substation	1987	203722
J	279m S	Electricity Substation	1993	203722
4	294m S	Electricity Substation	1993	191124
R	388m NW	Electricity Substation	1953	205295
R	388m NW	Electricity Substation	1951	205295
R	388m NW	Electricity Substation	1973	209597
R	393m NW	Electricity Substation	1995	209597



ID	Location	Land Use	Date	Group ID
R	399m NW	Gas Governor	1995	191961
U	399m SE	Electricity Substation	1987	211345
U	400m SE	Electricity Substation	1969	211345
U	400m SE	Electricity Substation	1973	211345
X	412m E	Electricity Substation	1989	203397
X	413m E	Electricity Substation	1997	203397
X	414m E	Electricity Substation	1969	203397
X	414m E	Electricity Substation	1973	203397
Y	426m NE	Electricity Substation	1991	211937
Y	427m NE	Electricity Substation	1973	211937
U	427m SE	Electricity Substation	1997	192637
U	427m SE	Electricity Substation	1969	194642
U	427m SE	Electricity Substation	1973	194567
U	427m SE	Electricity Substation	1989	192858
Q	461m NE	Electricity Substation	1993	196039
Q	462m NE	Electricity Substation	1969	196039
Q	462m NE	Electricity Substation	1973	196039
AC	471m W	Electricity Substation	1973	207960
AC	472m W	Electricity Substation	1993	207960

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

18

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'.

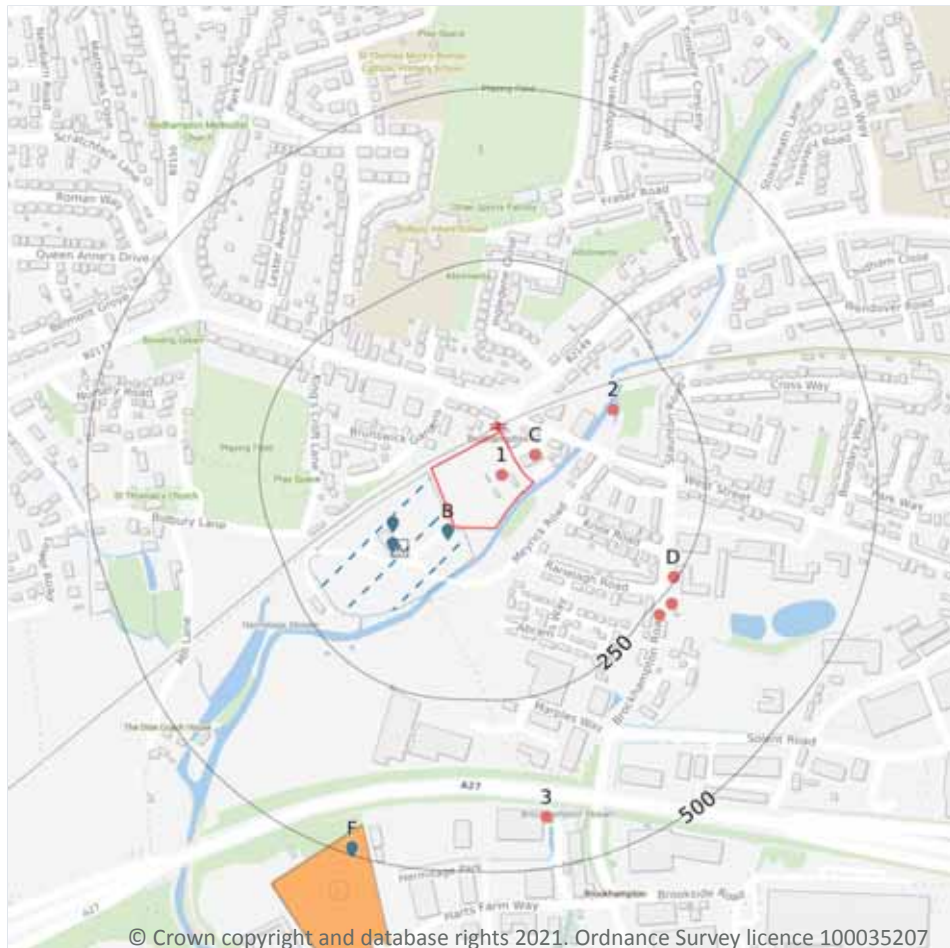
Features are displayed on the Past land use - un-grouped map on **page 21**

ID	Location	Land Use	Date	Group ID
D	46m NE	Garage	1991	62480
D	72m NE	Garage	1973	65249
D	72m NE	Garage	1963	65249
D	72m NE	Garage	1959	63017
D	72m NE	Garage	1960	61807
G	94m NW	Garage	1973	62988
G	94m NW	Garage	1963	65319
G	94m NW	Garage	1959	65319
G	95m NW	Garage	1991	61700
G	96m NW	Garage	1960	63094
K	187m NW	Garage	1963	64294
K	187m NW	Garage	1959	64294
K	187m NW	Garage	1960	62455
S	395m NE	Garage	1960	62055
S	395m NE	Garage	1969	63418
S	395m NE	Garage	1960	63418
S	395m NE	Garage	1973	63418
S	408m NE	Garage	1993	61852

This data is sourced from Ordnance Survey / Groundsure.



3 Waste and landfill



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- Site Outline
- Search buffers in metres (m)
- Active or recent landfill
- Historical waste sites
- Licensed waste sites
- Waste exemptions

3.1 Active or recent landfill

Records within 500m

1

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation. Features are displayed on the Waste and landfill map on **page 29**

ID	Location	Details	
A	2m S	Operator: Portsmouth Water Ltd Site Address: Bedhampton Waterworks, Meyrick Road, Bedhampton, Hampshire, PO9 1NN	WML Number: 210123 EPR Reference: POR044 Landfill type: L05: Inert LF Status: Issued IPPC Reference: - EPR Number: EA/EPR/NP3439PN/A001

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

0

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.

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

3.5 Historical waste sites

Records within 500m

2

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

Features are displayed on the Waste and landfill map on **page 29**

ID	Location	Address	Further Details	Date
E	452m S	Site Address: N/A	Type of Site: Incinerator Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1987
E	453m S	Site Address: N/A	Type of Site: Incinerator Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1993

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

3.6 Licensed waste sites

Records within 500m

9

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

Features are displayed on the Waste and landfill map on **page 29**

ID	Location	Details		
B	12m SW	Site Name: Bedhampton Waste Works Site Address: Bedhampton Waste Works, Meyrick Road, Havant, Hampshire, PO9 1NN Correspondence Address: -	Type of Site: Transfer Station taking Non-Biodegradable Wastes Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: POR022 EPR reference: EA/EPR/BP3998HK/A001 Operator: Portsmouth Water Ltd Waste Management licence No: 10279 Annual Tonnage: 23000	Issue Date: 29/06/2007 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued
B	12m SW	Site Name: Bedhampton Water Works Site Address: Bedhampton Water Works, Meyrick Road, Havant, Hampshire, PO9 1NN Correspondence Address: -	Type of Site: Transfer Station taking Non-Biodegradable Wastes Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: POR022 EPR reference: EA/EPR/BP3998HK/V002 Operator: Portsmouth Water Limited Waste Management licence No: 10279 Annual Tonnage: 23000	Issue Date: 29/06/2007 Effective Date: - Modified: 18/07/2016 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
A	82m W	Site Name: Bedhampton Waterworks Landfill Site Address: Bedhampton Waterworks, Meyrick Road, Havant, Hampshire, PO9 1NN Correspondence Address: P O Box 8, West Street, Havant, Hampshire, PO9 1LG	Type of Site: Inert LF Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: POR008 EPR reference: EA/EPR/NP3439SN/A001 Operator: Portsmouth Water Ltd Waste Management licence No: 19988 Annual Tonnage: 1126	Issue Date: 2/18/1992 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: IPPC



ID	Location	Details		
A	82m W	Site Name: Bedhampton Landfill Site Address: Bedhampton Waterworks, Meyrick Road, Bedhampton, Hampshire, PO9 1NN Correspondence Address: -	Type of Site: Inert LF Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: POR044 EPR reference: EA/EPR/NP3439PN/A001 Operator: Portsmouth Water Ltd Waste Management licence No: 210123 Annual Tonnage: 1126	Issue Date: 21/04/2005 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued
A	82m W	Site Name: Bedhampton Waterworks Landfill Site Address: Bedhampton Waterworks, Meyrick Road, Havant, Hampshire, PO9 1NN Correspondence Address: -	Type of Site: Landfill taking Non-Biodegradable Wastes Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: POR008 EPR reference: EA/EPR/WP3192HB/A001 Operator: Portsmouth Water Ltd Waste Management licence No: 19988 Annual Tonnage: 1126	Issue Date: 18/02/1992 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: To PPC
A	93m W	Site Name: Bedhampton Waterworks Site Address: Bedhampton Waterworks, Meyrick Road, Havant, Hampshire Correspondence Address: P O Box 8, West Street, Havant, Hampshire, PO9 1LG	Type of Site: Landfill taking Non-Biodegradable Wastes Size: >= 25000 tonnes 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: POR008 EPR reference: - Operator: Portsmouth Water Company Ltd Waste Management licence No: 19988 Annual Tonnage: 0	Issue Date: 18/02/1992 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued



ID	Location	Details		
F	491m S	Site Name: Recycling Storage Bays Site Address: Havant Incinerator, Harts Farm Way, Havant, Hampshire Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste T Stn Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ASS002 EPR reference: EA/EPR/WP3792HZ/S002 Operator: Associated Environmental Projects (hampshire) Ltd Waste Management licence No: 19989 Annual Tonnage: 25000	Issue Date: 21/06/1993 Effective Date: - Modified: - Surrendered Date: 26/11/2001 Expiry Date: - Cancelled Date: - Status: Surrendered
F	491m S	Site Name: Recycling Storage Bays Site Address: Havant Incinerator, Harts Farm Way, Havant, Hampshir Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste T Stn Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ASS002 EPR reference: EA/EPR/WP3792HZ/S002 Operator: Associated Environmental Projects (Hampshire) Ltd Waste Management licence No: 19989 Annual Tonnage: 25000	Issue Date: 21/06/1993 Effective Date: - Modified: - Surrendered Date: Nov 26 2001 12:00AM Expiry Date: - Cancelled Date: - Status: Surrendered
F	491m S	Site Name: Recycling Storage Bays Site Address: Havant Incinerator, Harts Farm Way, Havant, Hampshir Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ASS002 EPR reference: EA/EPR/WP3792HZ/S002 Operator: Associated Environmental Projects (Hampshire) Ltd Waste Management licence No: 19989 Annual Tonnage: 25000	Issue Date: 21/06/1993 Effective Date: - Modified: - Surrendered Date: Nov 26 2001 12:00AM Expiry Date: - Cancelled Date: - Status: Surrendered

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



3.7 Waste exemptions

Records within 500m

8

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.

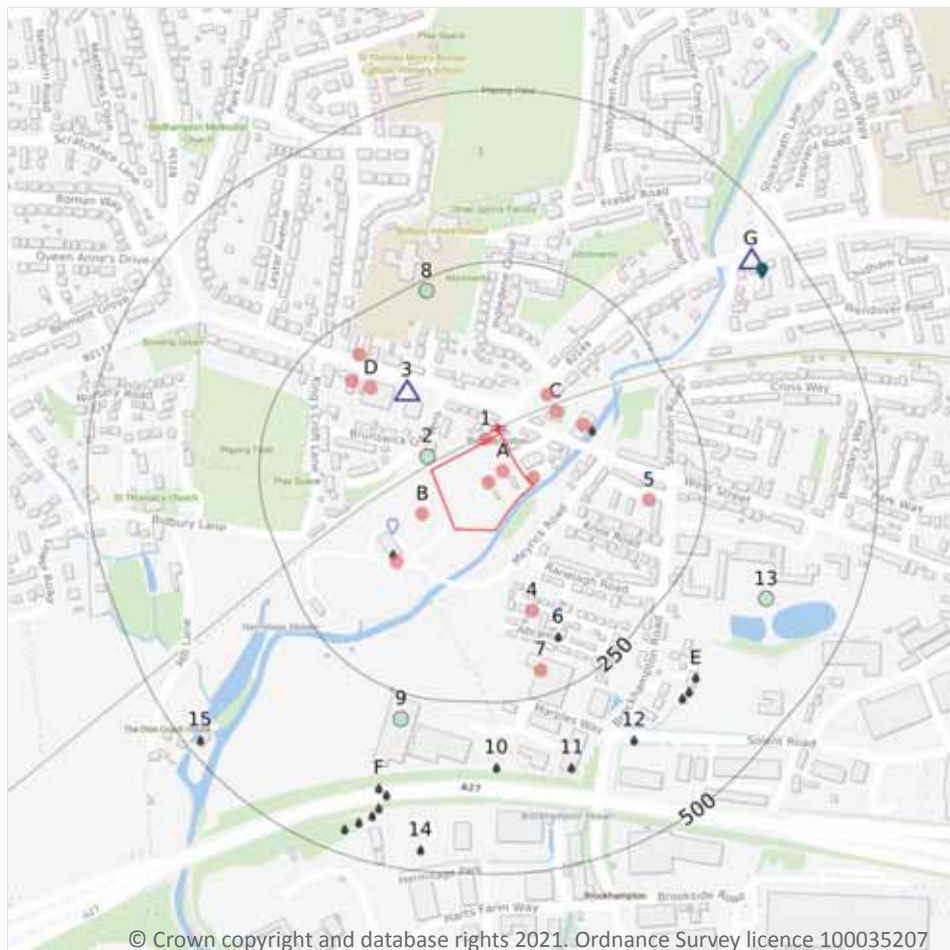
Features are displayed on the Waste and landfill map on **page 29**

ID	Location	Site	Reference	Category	Sub-Category	Description
1	On site	Pallet Yard Palk Road Havant Hampshire PO9 1NL	EPR/AF0536EF /A001	Using waste exemption	Non-Agricultural Waste Only	Use of waste to manufacture finished goods
C	28m NE	Pallet Yard, Palk Road, Havant, PO9 1NL	WEX228020	Using waste exemption	Not on a farm	Use of waste to manufacture finished goods
C	28m NE	Pallet Yard, Palk Road, Havant, PO9 1NL	WEX082843	Using waste exemption	Not on a farm	Use of waste to manufacture finished goods
2	156m NE	-	WEX194723	Storing waste exemption	Not on a farm	Storage of waste in a secure place
D	245m SE	Springplot, Brockhampton Road, Havant, PO9 1NU	WEX200122	Storing waste exemption	Not on a farm	Storage of waste in a secure place
D	266m SE	Spring Plot Brockhampton Road Havant Hampshire PO9 1NU	EPR/KE5181UL /A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of waste in a secure place
D	268m SE	spring plot, Brockhampton road, havant, po9 1nu	WEX047818	Storing waste exemption	Not on a farm	Storage of waste in a secure place
3	427m S	Keltbray Remediation Site Harts Farm Way Hampshire PO9 1HS	EPR/WF0200U M/A001	Treating waste exemption	Non-Agricultural Waste Only	Screening and blending of waste

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
- Part A(1) industrial activities
- Licensed pollutant release (Part A(2)/B)
- Licensed Discharges to controlled waters
- Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m

15

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 35**

ID	Location	Company	Address	Activity	Category
A	On site	Premier Pallet Supplies Ltd	Palk Road, Havant, Hampshire, PO9 1NL	Packaging	Industrial Products
A	On site	J D P	Palk Road, Havant, Hampshire, PO9 1NL	General Construction Supplies	Industrial Products



ID	Location	Company	Address	Activity	Category
1	4m NW	Bedhampton Rail Station	Hampshire, PO9	Railway Stations, Junctions and Halts	Public Transport, Stations and Infrastructure
A	7m NE	Electricity Sub Station	Hampshire, PO9	Electrical Features	Infrastructure and Facilities
B	36m W	Solar Panels	Hampshire, PO9	Energy Production	Industrial Features
C	86m NE	Accident Repair Centre Havant	West Street, Havant, Hampshire, PO9 1LR	Vehicle Repair, Testing and Servicing	Repair and Servicing
C	88m NE	Electricity Sub Station	Hampshire, PO9	Electrical Features	Infrastructure and Facilities
B	97m SW	Works	Hampshire, PO9	Unspecified Works Or Factories	Industrial Features
C	112m NE	Hendy Group	West Street, Havant, Hampshire, PO9 1LT	New Vehicles	Motoring
4	128m SE	Electricity Sub Station	Hampshire, PO9	Electrical Features	Infrastructure and Facilities
D	149m NW	Cambridge Garage Portsmouth	23, Bedhampton Road, Havant, Hampshire, PO9 3ES	New Vehicles	Motoring
5	169m E	Electricity Sub Station	Hampshire, PO9	Electrical Features	Infrastructure and Facilities
D	173m NW	National Tyres and Autocare	27, Bedhampton Road, Havant, Hampshire, PO9 3ES	Vehicle Repair, Testing and Servicing	Repair and Servicing
D	198m NW	Bedhampton Garage	60-62, Bedhampton Road, Havant, Hampshire, PO9 3EY	Vehicle Repair, Testing and Servicing	Repair and Servicing
7	213m S	Wartsila UK Ltd	4, Marples Way, Havant, Hampshire, PO9 1NX	Seals, Tapes, Taps and Valves	Industrial Products

This data is sourced from Ordnance Survey.



4.2 Current or recent petrol stations

Records within 500m**2**

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on **page 35**

ID	Location	Company	Address	LPG	Status
3	120m NW	OBSOLETE	23, Bedhampton Road, Havant, Hampshire, PO9 3ES	Not Applicable	Obsolete
G	443m NE	OBSOLETE	New Road, Havant, Hampshire, PO9 1DE	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**0**

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.

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

0

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.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m

0

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.

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

4.10 Licensed industrial activities (Part A(1))

Records within 500m

2

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 35**

ID	Location	Details	
B	82m W	Operator: PORTSMOUTH WATER LTD Installation Name: BEDHAMPTON LANDFILL Process: WASTE LANDFILLING; ANY OTHER LANDFILL TO WHICH THE 2002 LANDFILL REGULATIONS APPLY Permit Number: BP3635UL Original Permit Number: NP3439PN	EPR Reference: - Issue Date: 06/09/2007 Effective Date: 31/03/2008 Last date noted as effective: 01/04/2009 Status: REVOKED

ID	Location	Details	
B	82m W	Operator: PORTSMOUTH WATER LTD Installation Name: BEDHAMPTON LANDFILL Process: WASTE LANDFILLING; ANY OTHER LANDFILL TO WHICH THE 2002 LANDFILL REGULATIONS APPLY Permit Number: NP3439PN Original Permit Number: NP3439PN	EPR Reference: - Issue Date: 21/04/2005 Effective Date: 21/04/2005 Last date noted as effective: 01/07/2021 Status: SUPERCEDED

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

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

Records within 500m	1
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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 35**

ID	Location	Address	Details	
G	447m NE	Hendy Lennox, KWIK-FIT (formerly Hendy Ford), New Road, Havant, PO9 1DE (Revoked 18/07/2003)	Process: Petrol Vapour Recovery Status: Revoked 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
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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	17
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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 35**

ID	Location	Address	Details	
B	97m W	PARK LANE, PARK LANE, BEDHAMPTON HAMPSHIRE	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: A00316 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 01/04/1991 Effective Date: 01/04/1991 Revocation Date: 14/01/1993
C	115m NE	MILLINGTON FIELDS SITE, MILLINGTON FIELDS SITE, WEST STREET, HAVANT, HAMPSHIRE	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: N01098 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: REVOKED UNDER EPR 2010 Issue date: 18/05/1983 Effective Date: 18/05/1983 Revocation Date: 14/04/2021
6	179m SE	SEVEN SPRINGS LTD, SEVEN SPRINGS LTD, THE BOTTLING PLANT, RANELAGH ROAD, BEDHAMPTON, HAVANT	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: P07982 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: REVOKED (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 02/06/2000 Effective Date: 02/06/2000 Revocation Date: 14/11/2003
10	344m S	KINGSCROFT COURT, MARPLES WAY, KINGSCROFT COURT, MARPLES WAY, HAVANT, HAMPSHIRE, PO9 1LS	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: P00398 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: PRE NRA LEGISLATION WHERE ISSUE DATE 01-SEP-89 (HISTORIC ONLY) Issue date: 20/02/1986 Effective Date: 20/02/1986 Revocation Date: -
E	361m SE	MANOR COURT, MANOR COURT, BROCKHAMPTON ROAD, HAVANT HAMPSHIRE	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: P02242 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 31/07/1989 Effective Date: 31/07/1989 Revocation Date: 31/03/1997
11	362m S	KINGSCROFT COURT, MARPLES WAY, KINGSCROFT COURT, MARPLES WAY, HAVANT, HAMPSHIRE, PO9 1LS	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: P00398 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: PRE NRA LEGISLATION WHERE ISSUE DATE 01-SEP-89 (HISTORIC ONLY) Issue date: 20/02/1986 Effective Date: 20/02/1986 Revocation Date: -
12	365m SE	MANOR COURT, MANOR COURT, BROCKHAMPTON ROAD, HAVANT HAMPSHIRE	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: P02242 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 31/07/1989 Effective Date: 31/07/1989 Revocation Date: 31/03/1997



ID	Location	Address	Details	
E	365m SE	MANOR COURT, MANOR COURT, BROCKHAMPTON ROAD, HAVANT HAMPSHIRE	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: P02242 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 31/07/1989 Effective Date: 31/07/1989 Revocation Date: 31/03/1997
E	366m SE	MANOR COURT, MANOR COURT, BROCKHAMPTON ROAD, HAVANT HAMPSHIRE	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: P02242 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 31/07/1989 Effective Date: 31/07/1989 Revocation Date: 31/03/1997
F	392m S	HIGH TECHNOLOGY CAMPUS, HIGH TECHNOLOGY CAMPUS, LANGSTONE GATE, SOLENT ROAD, HAVANT HAMPSHIRE	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: P00174 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: PRE NRA LEGISLATION WHERE ISSUE DATE 01-SEP-89 (HISTORIC ONLY) Issue date: 07/08/1985 Effective Date: 07/08/1985 Revocation Date: -
F	399m S	HIGH TECHNOLOGY CAMPUS, HIGH TECHNOLOGY CAMPUS, LANGSTONE GATE, SOLENT ROAD, HAVANT HAMPSHIRE	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: P00174 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: PRE NRA LEGISLATION WHERE ISSUE DATE 01-SEP-89 (HISTORIC ONLY) Issue date: 07/08/1985 Effective Date: 07/08/1985 Revocation Date: -
F	421m S	HIGH TECHNOLOGY CAMPUS, HIGH TECHNOLOGY CAMPUS, LANGSTONE GATE, SOLENT ROAD, HAVANT HAMPSHIRE	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: P00174 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: PRE NRA LEGISLATION WHERE ISSUE DATE 01-SEP-89 (HISTORIC ONLY) Issue date: 07/08/1985 Effective Date: 07/08/1985 Revocation Date: -
F	433m S	HIGH TECHNOLOGY CAMPUS, HIGH TECHNOLOGY CAMPUS, LANGSTONE GATE, SOLENT ROAD, HAVANT HAMPSHIRE	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: P00174 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: PRE NRA LEGISLATION WHERE ISSUE DATE 01-SEP-89 (HISTORIC ONLY) Issue date: 07/08/1985 Effective Date: 07/08/1985 Revocation Date: -
F	449m S	HIGH TECHNOLOGY CAMPUS, HIGH TECHNOLOGY CAMPUS, LANGSTONE GATE, SOLENT ROAD, HAVANT HAMPSHIRE	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: P00174 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: PRE NRA LEGISLATION WHERE ISSUE DATE 01-SEP-89 (HISTORIC ONLY) Issue date: 07/08/1985 Effective Date: 07/08/1985 Revocation Date: -



ID	Location	Address	Details	
F	465m S	HIGH TECHNOLOGY CAMPUS, HIGH TECHNOLOGY CAMPUS, LANGSTONE GATE, SOLENT ROAD, HAVANT HAMPSHIRE	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: P00174 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: PRE NRA LEGISLATION WHERE ISSUE DATE 01-SEP-89 (HISTORIC ONLY) Issue date: 07/08/1985 Effective Date: 07/08/1985 Revocation Date: -
14	469m S	BROCKHAMPTON INCINERATOR, BROCKHAMPTON INCINERATOR, HARTS FARM WAY, HAVANT, HAMPSHIRE, PO9 1JN	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: AG8276 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 13/05/1993 Effective Date: 13/05/1993 Revocation Date: 06/03/1998
15	480m SW	THE OLD MILL HOUSE, THE OLD MILL HOUSE, MILL LANE, BEDHAMPTON, HAVANT, HAMPSHIRE, PO9 3JH	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: D01551 Permit Version: 1 Receiving Water: SALINE ESTUARY	Status: PRE NRA LEGISLATION WHERE ISSUE DATE 01-SEP-89 (HISTORIC ONLY) Issue date: 02/07/1987 Effective Date: 02/07/1987 Revocation Date: 18/04/1996

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

0

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.

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

4

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 35**

ID	Location	Details	
2	21m NW	Incident Date: 03/12/2012 Incident Identification: 1064967 Pollutant: Inert Materials and Wastes Pollutant Description: Soils and Clay	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
8	233m NW	Incident Date: 29/08/2003 Incident Identification: 186111 Pollutant: Oils and Fuel Pollutant Description: Diesel	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
9	286m S	Incident Date: 12/09/2003 Incident Identification: 189281 Pollutant: Atmospheric Pollutants and Effects: Contaminated Water Pollutant Description: Smoke: Firefighting Run-Off	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
13	376m SE	Incident Date: 22/11/2001 Incident Identification: 44445 Pollutant: Oils and Fuel Pollutant Description: Diesel	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

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

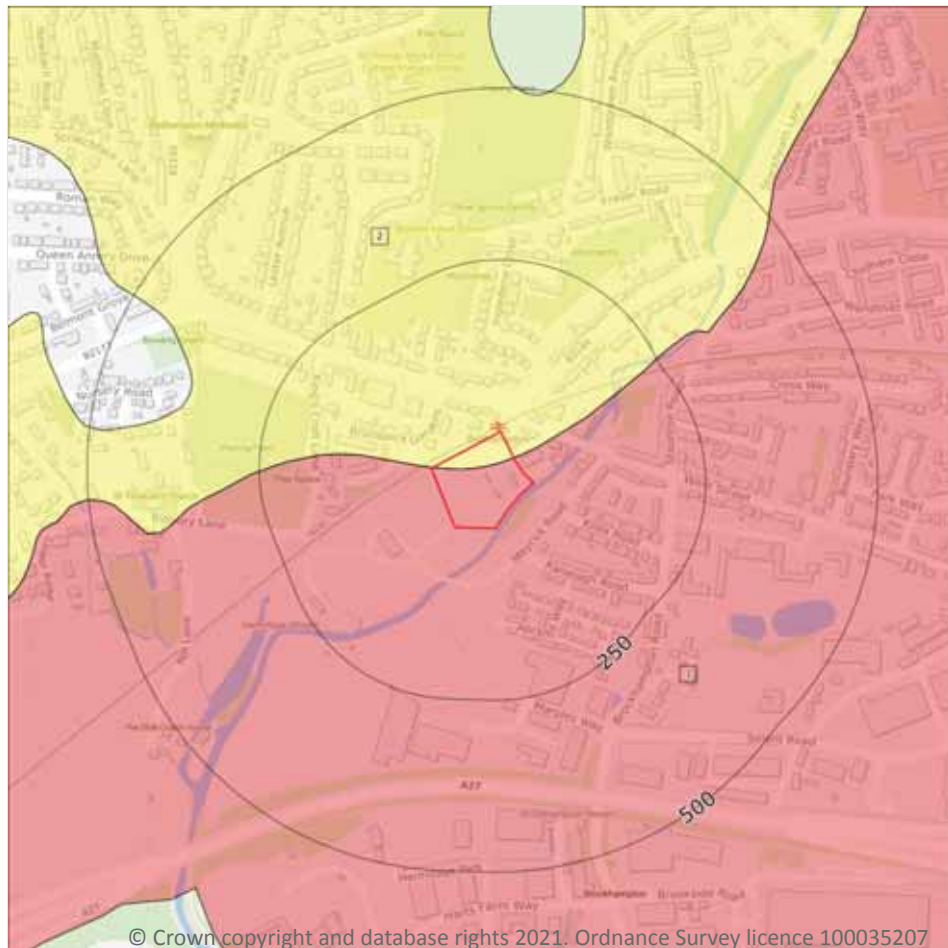
0

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 45**

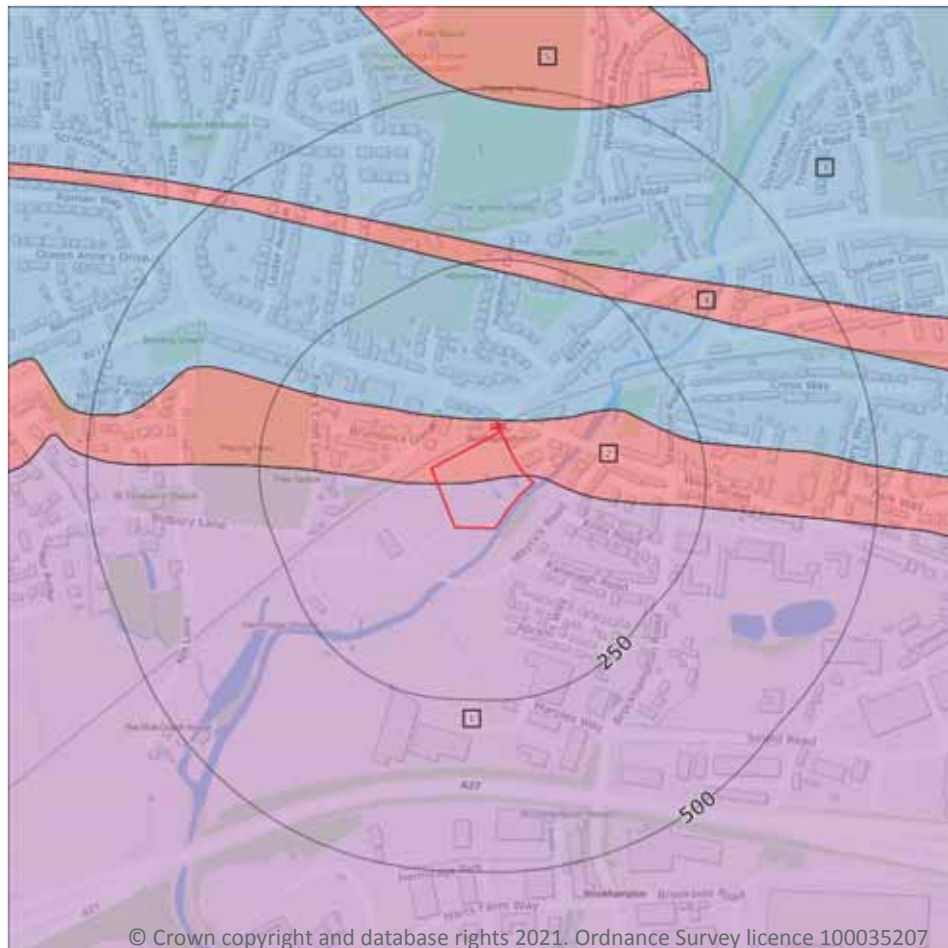
ID	Location	Designation	Description
1	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	On site	Secondary 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

5

Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 47**

ID	Location	Designation	Description
1	On site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
2	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

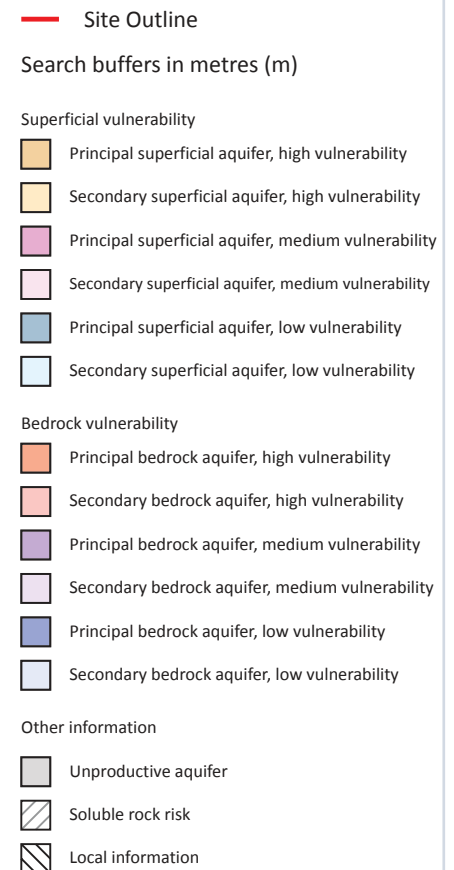
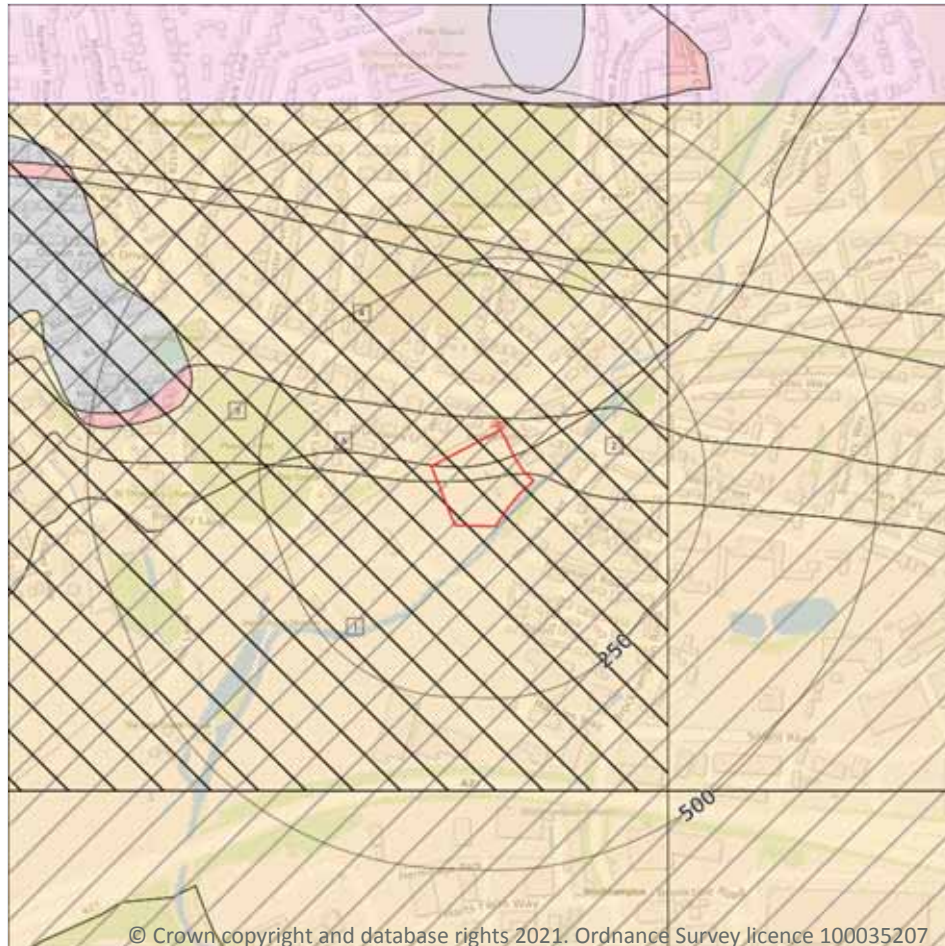


ID	Location	Designation	Description
3	17m N	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
4	227m N	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
5	476m N	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

4

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 49**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
2	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
3	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
4	16m N	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive 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

1

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

ID	Maximum soluble risk category	Percentage of grid square covered by maximum risk
A	Very significant soluble rocks are likely to be present with a high possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, especially in adverse conditions such as concentrated surface or subsurface water flow.	2.0%

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



5.5 Groundwater vulnerability- local information

Records on site

1

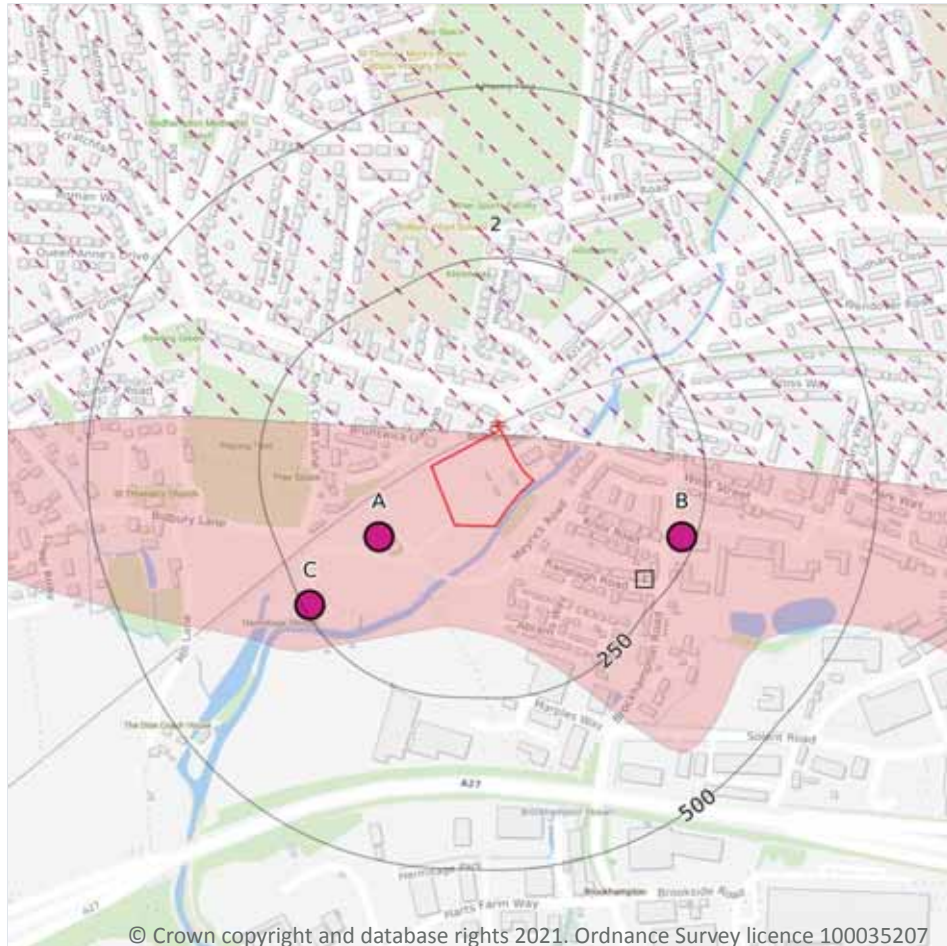
This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506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

ID	Summary	Additional information
A	Increased vulnerability of aquifers due to rapid flow pathways	Local studies confirm presence of swallow holes in the area

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
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

3

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 52**

ID	Location	Details	
A	108m W	Status: Active Licence No: 11/42/36.2/1 Details: Potable Water Supply - Direct Direct Source: Southern Region Groundwater Point: BEDHAMPTON PS SPRING NO 1 Data Type: Point Name: Portsmouth Water Ltd Easting: 470580 Northing: 106370	Annual Volume (m ³): 35,770,000 Max Daily Volume (m ³): 137,000 Original Application No: - Original Start Date: 23/12/1965 Expiry Date: - Issue No: 102 Version Start Date: 09/06/2009 Version End Date: -
B	230m E	Status: Active Licence No: 11/42/36.2/1 Details: Potable Water Supply - Direct Direct Source: Southern Region Groundwater Point: BEDHAMPTON PS SPRING NO 2 Data Type: Point Name: Portsmouth Water Ltd Easting: 471020 Northing: 106370	Annual Volume (m ³): 35,770,000 Max Daily Volume (m ³): 137,000 Original Application No: - Original Start Date: 23/12/1965 Expiry Date: - Issue No: 102 Version Start Date: 09/06/2009 Version End Date: -
C	240m SW	Status: Active Licence No: 11/42/36.2/1 Details: Potable Water Supply - Direct Direct Source: Southern Region Groundwater Point: HAVANT PS Data Type: Point Name: Portsmouth Water Ltd Easting: 470480 Northing: 106270	Annual Volume (m ³): 35,770,000 Max Daily Volume (m ³): 137,000 Original Application No: - Original Start Date: 23/12/1965 Expiry Date: - Issue No: 102 Version Start Date: 09/06/2009 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m

0

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.

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



5.8 Potable abstractions

Records within 2000m

3

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 52**

ID	Location	Details	
A	108m W	Status: Active Licence No: 11/42/36.2/1 Details: Potable Water Supply - Direct Direct Source: Southern Region Groundwater Point: BEDHAMPTON PS SPRING NO 1 Data Type: Point Name: Portsmouth Water Ltd Easting: 470580 Northing: 106370	Annual Volume (m ³): 35,770,000 Max Daily Volume (m ³): 137,000 Original Application No: - Original Start Date: 23/12/1965 Expiry Date: - Issue No: 102 Version Start Date: 09/06/2009 Version End Date: -
B	230m E	Status: Active Licence No: 11/42/36.2/1 Details: Potable Water Supply - Direct Direct Source: Southern Region Groundwater Point: BEDHAMPTON PS SPRING NO 2 Data Type: Point Name: Portsmouth Water Ltd Easting: 471020 Northing: 106370	Annual Volume (m ³): 35,770,000 Max Daily Volume (m ³): 137,000 Original Application No: - Original Start Date: 23/12/1965 Expiry Date: - Issue No: 102 Version Start Date: 09/06/2009 Version End Date: -
C	240m SW	Status: Active Licence No: 11/42/36.2/1 Details: Potable Water Supply - Direct Direct Source: Southern Region Groundwater Point: HAVANT PS Data Type: Point Name: Portsmouth Water Ltd Easting: 470480 Northing: 106270	Annual Volume (m ³): 35,770,000 Max Daily Volume (m ³): 137,000 Original Application No: - Original Start Date: 23/12/1965 Expiry Date: - Issue No: 102 Version Start Date: 09/06/2009 Version End Date: -

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

5.9 Source Protection Zones

Records within 500m

1

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

Features are displayed on the Abstractions and Source Protection Zones map on **page 52**



ID	Location	Type	Description
1	On site	1	Inner catchment

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

5.10 Source Protection Zones (confined aquifer)

Records within 500m	1
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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.

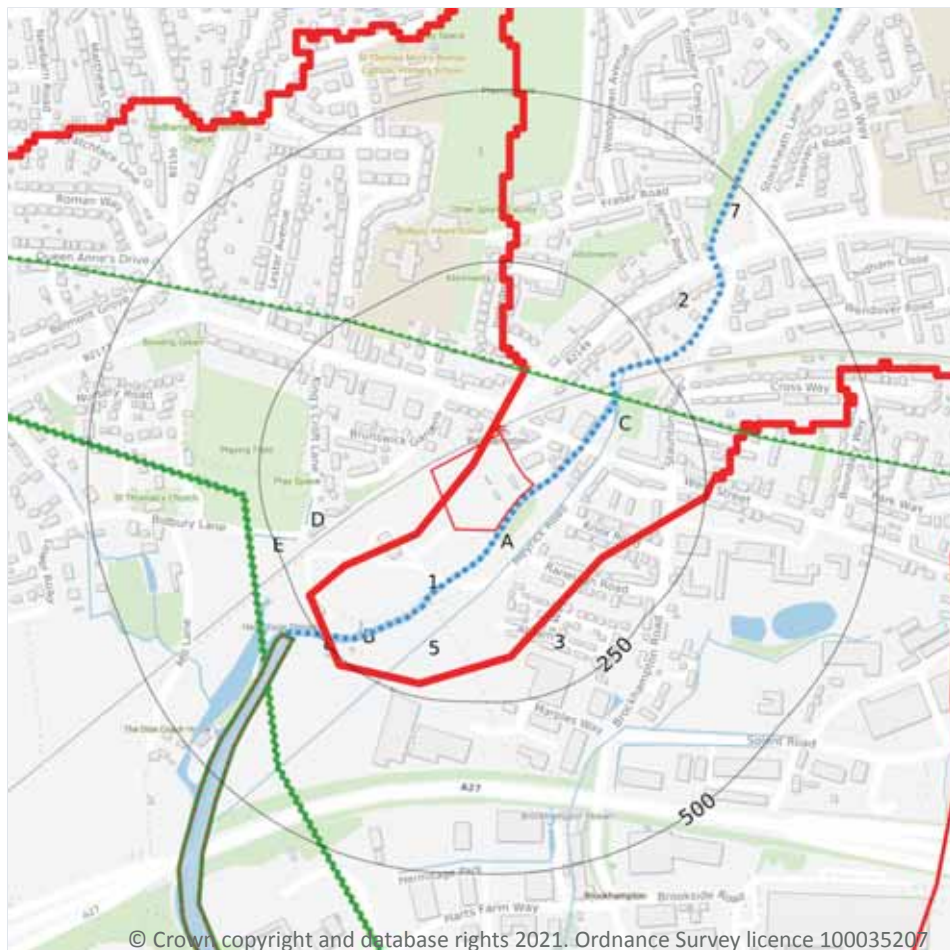
Features are displayed on the Abstractions and Source Protection Zones map on **page 52**

ID	Location	Type	Description
2	On site	1c	Inner catchment within confined aquifer

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

13

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 56**

ID	Location	Type of water feature	Ground level	Permanence	Name
A	6m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Hermitage Stream



ID	Location	Type of water feature	Ground level	Permanence	Name
5	47m SE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
C	144m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	167m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Hermitage Stream
C	174m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Hermitage Stream
C	175m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Hermitage Stream
D	178m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	186m NE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	Hermitage Stream
B	189m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	197m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Hermitage Stream
7	203m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Hermitage Stream
8	206m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Hermitage Stream
E	217m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.



6.2 Surface water features

Records within 250m

6

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 56**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site

2

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 56**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	On site	Coastal Catchment	Not part of a river WB catchment	216	East Hampshire Rivers	East Hampshire
2	On site	River WB catchment	Hermitage Stream	GB107042016370	East Hampshire Rivers	East Hampshire

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

6.4 WFD Surface water bodies

Records identified

1

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. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 56**



ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
4	4m SE	River	Hermitage Stream	GB107042016370	Moderate	Good	Moderate	2016

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

6.5 WFD Groundwater bodies

Records on site	1
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Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

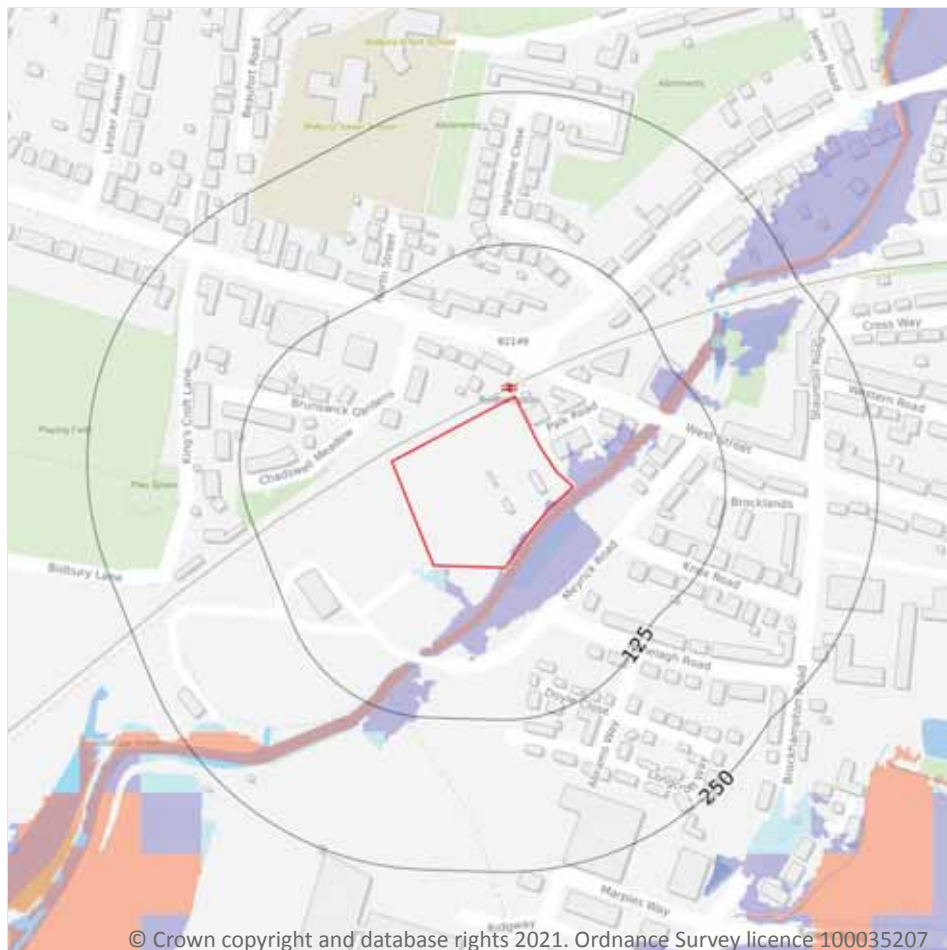
Features are displayed on the Hydrology map on **page 56**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
3	On site	South Hants Lambeth Group	GB40702G503700	Good	Good	Good	2015

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



7 River and coastal flooding



- Site Outline
- Search buffers in metres (m)
- River and coastal flooding:
- High
- Medium
- Low
- Very Low
- Historical Flood Events
- Areas Used for Flood Storage
- Areas Benefiting from Flood Defences
- Flood Defences

7.1 Risk of flooding from rivers and the sea

Records within 50m

7

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).

Features are displayed on the River and coastal flooding map on **page 60**

Distance	Flood risk category
On site	Medium
0 - 50m	High

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

7.2 Historical Flood Events

Records within 250m	0
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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
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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
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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.

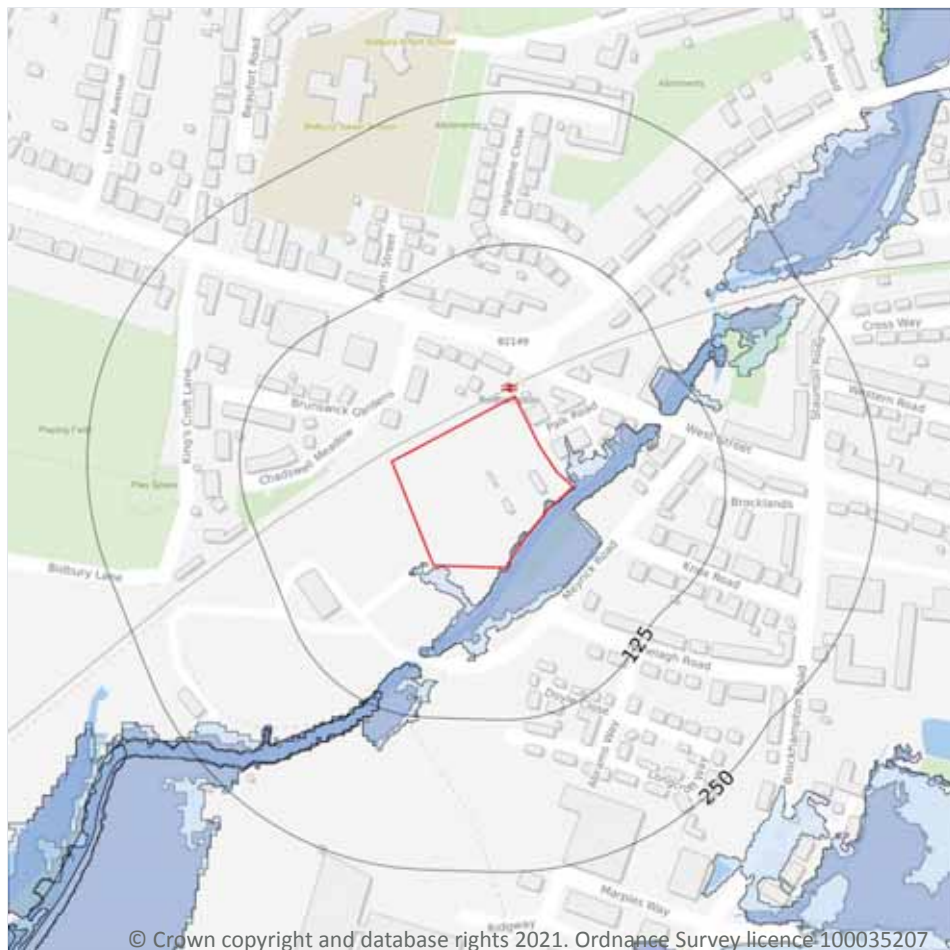
7.5 Flood Storage Areas

Records within 250m	0
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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



- Site Outline
- Search buffers in metres (m)
- Flood zone 2
- Flood zone 3

7.6 Flood Zone 2

Records within 50m

1

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.

Features are displayed on the River and coastal flooding map on **page 60**

Location	Type
On site	Zone 2 - (Fluvial /Tidal Models)

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



7.7 Flood Zone 3

Records within 50m

1

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.

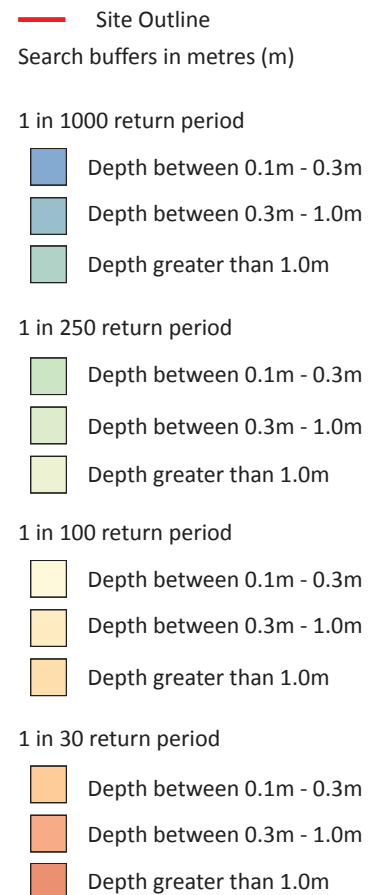
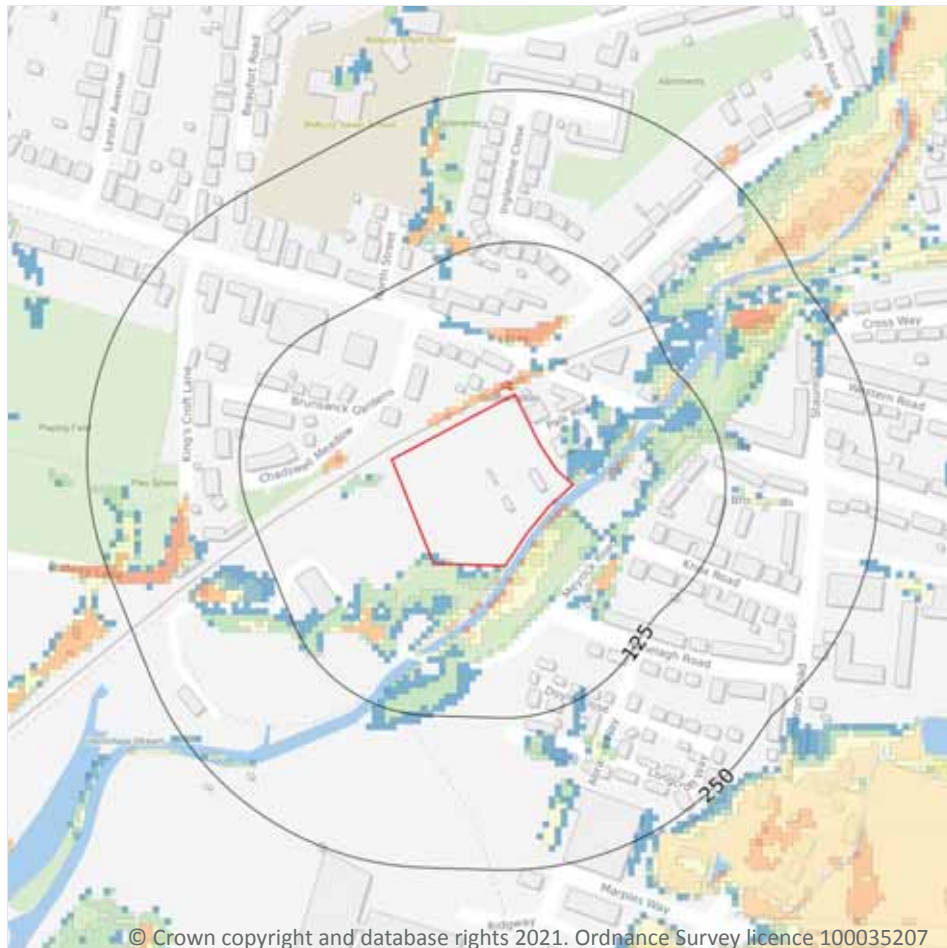
Features are displayed on the River and coastal flooding map on **page 60**

Location	Type
On site	Zone 3 - (Fluvial Models)

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



8 Surface water flooding



8.1 Surface water flooding

Highest risk on site

1 in 250 year, 0.1m - 0.3m

Highest risk within 50m

1 in 30 year, 0.3m - 1.0m

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 64**

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

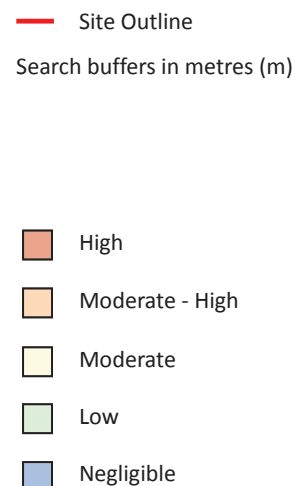
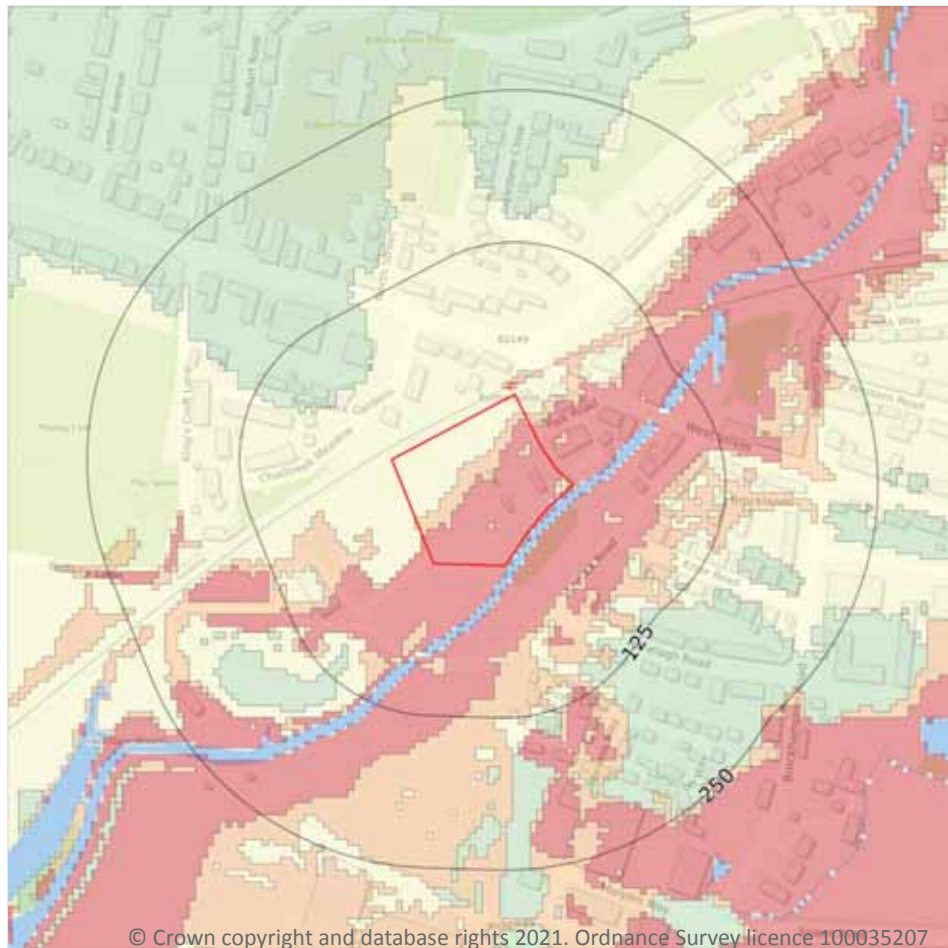
a site. The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Greater than 1.0m
1 in 250 year	Greater than 1.0m
1 in 100 year	Between 0.3m and 1.0m
1 in 30 year	Between 0.1m and 0.3m

This data is sourced from Ambiantal Risk Analytics.



9 Groundwater flooding



9.1 Groundwater flooding

Highest risk on site

High

Highest risk within 50m

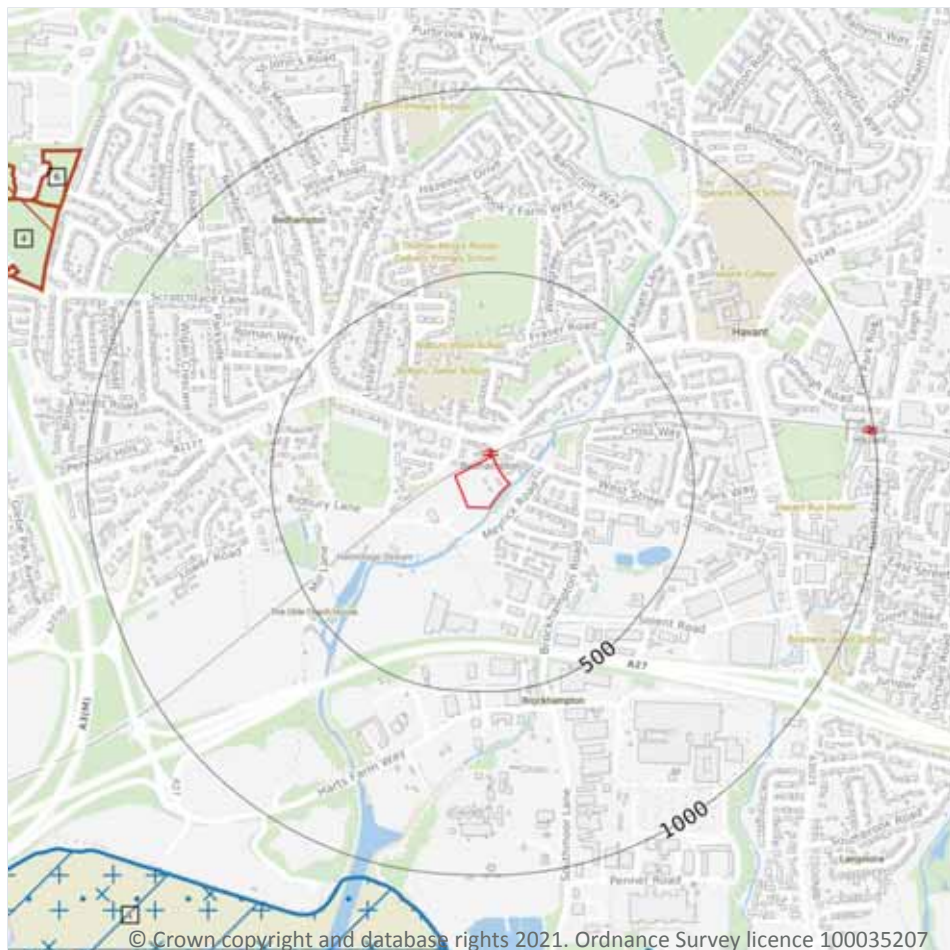
High

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 66**

This data is sourced from Ambiantal Risk Analytics.

10 Environmental designations



- Site Outline
- Search buffers in metres (m)
- Sites of Special Scientific Interest (SSSI)
- X Conserved wetland sites (Ramsar sites)
- + Special Areas of Conservation (SAC)
- Special Protection Areas (SPA)
- + Local Nature Reserves (LNR)
- ▨ Designated Ancient Woodland

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

3

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 67**

ID	Location	Name	Data source
A	1046m S	Langstone Harbour	Natural England



ID	Location	Name	Data source
-	1843m SE	Chichester Harbour	Natural England
-	1945m SW	Langstone Harbour	Natural England

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m

3

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.

Features are displayed on the Environmental designations map on **page 67**

ID	Location	Site	Details
A	1046m S	Name: Chichester and Langstone Harbours Site status: Listed Data source: Natural England	Overview: Chichester and Langstone Harbours are large, sheltered estuarine basins comprising extensive mud and sand flats exposed at low tide. The site is of particular significance for over-wintering wildfowl and waders and also a wide range of coastal and transitional habitats supporting important plant and animal communities. Ramsar criteria: Ramsar criterion 1 Two large estuarine basins linked by the channel which divides Hayling Island from the main Hampshire coastline. The site includes intertidal mudflats, saltmarsh, sand and shingle spits and sand dunes.
-	1843m SE	Name: Chichester and Langstone Harbours Site status: Listed Data source: Natural England	Overview: Chichester and Langstone Harbours are large, sheltered estuarine basins comprising extensive mud and sand flats exposed at low tide. The site is of particular significance for over-wintering wildfowl and waders and also a wide range of coastal and transitional habitats supporting important plant and animal communities. Ramsar criteria: Ramsar criterion 1 Two large estuarine basins linked by the channel which divides Hayling Island from the main Hampshire coastline. The site includes intertidal mudflats, saltmarsh, sand and shingle spits and sand dunes.



ID	Location	Site	Details
-	1944m SW	Name: Chichester and Langstone Harbours Site status: Listed Data source: Natural England	Overview: Chichester and Langstone Harbours are large, sheltered estuarine basins comprising extensive mud and sand flats exposed at low tide. The site is of particular significance for over-wintering wildfowl and waders and also a wide range of coastal and transitional habitats supporting important plant and animal communities. Ramsar criteria: Ramsar criterion 1 Two large estuarine basins linked by the channel which divides Hayling Island from the main Hampshire coastline. The site includes intertidal mudflats, saltmarsh, sand and shingle spits and sand dunes.

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m

1

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 67**

ID	Location	Name	Features of interest	Habitat description	Data source
2	1046m S	Solent Maritime	Subtidal sandbanks; Estuaries; Intertidal mudflats and sandflats; Lagoons; Annual vegetation of drift lines; Coastal shingle vegetation outside the reach of waves; Glasswort and other annuals colonising mud and sand; Cord-grass swards; Atlantic salt meadows; Shifting dunes with marram; Dune grassland; Desmoulin's whorl snail; Otter; Common seal.	Broad-leaved deciduous woodland; Shingle, Sea cliffs, Islets; Coastal sand dunes, Sand beaches, Machair; Salt marshes, Salt pastures, Salt steppes; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Marine areas, Sea inlets	Natural England

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

10.4 Special Protection Areas (SPA)

Records within 2000m

6

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.

Features are displayed on the Environmental designations map on **page 67**



ID	Location	Name	Species of interest	Habitat description	Data source
1	1046m S	Chichester and Langstone Harbours	Common shelduck; Eurasian wigeon; Eurasian teal; Northern pintail; Northern shoveler; Red-breasted merganser; Ringed plover; Grey plover; Sanderling; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Sandwich tern; Common tern; Little	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites); Inland water bodies (Standing water, Running water); Heath, Scrub, Maquis and Garrigue, Phygrana; Humid grassland, Mesophile grassland; Coastal sand dunes, Sand beaches	Natural England
3	1206m S	Chichester and Langstone Harbours	Common shelduck; Eurasian wigeon; Eurasian teal; Northern pintail; Northern shoveler; Red-breasted merganser; Ringed plover; Grey plover; Sanderling; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Sandwich tern; Common tern; Little	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites); Inland water bodies (Standing water, Running water); Heath, Scrub, Maquis and Garrigue, Phygrana; Humid grassland, Mesophile grassland; Coastal sand dunes, Sand beaches	Natural England
5	1277m S	Chichester and Langstone Harbours	Common shelduck; Eurasian wigeon; Eurasian teal; Northern pintail; Northern shoveler; Red-breasted merganser; Ringed plover; Grey plover; Sanderling; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Sandwich tern; Common tern; Little	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites); Inland water bodies (Standing water, Running water); Heath, Scrub, Maquis and Garrigue, Phygrana; Humid grassland, Mesophile grassland; Coastal sand dunes, Sand beaches	Natural England
-	1843m SE	Chichester and Langstone Harbours	Common shelduck; Eurasian wigeon; Eurasian teal; Northern pintail; Northern shoveler; Red-breasted merganser; Ringed plover; Grey plover; Sanderling; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Sandwich tern; Common tern; Little	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites); Inland water bodies (Standing water, Running water); Heath, Scrub, Maquis and Garrigue, Phygrana; Humid grassland, Mesophile grassland; Coastal sand dunes, Sand beaches	Natural England
-	1857m SE	Chichester and Langstone Harbours	Common shelduck; Eurasian wigeon; Eurasian teal; Northern pintail; Northern shoveler; Red-breasted merganser; Ringed plover; Grey plover; Sanderling; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Sandwich tern; Common tern; Little	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites); Inland water bodies (Standing water, Running water); Heath, Scrub, Maquis and Garrigue, Phygrana; Humid grassland, Mesophile grassland; Coastal sand dunes, Sand beaches	Natural England
-	1945m SW	Chichester and Langstone Harbours	Common shelduck; Eurasian wigeon; Eurasian teal; Northern pintail; Northern shoveler; Red-breasted merganser; Ringed plover; Grey plover; Sanderling; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Sandwich tern; Common tern; Little	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites); Inland water bodies (Standing water, Running water); Heath, Scrub, Maquis and Garrigue, Phygrana; Humid grassland, Mesophile grassland; Coastal sand dunes, Sand beaches	Natural England

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

1

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.

Features are displayed on the Environmental designations map on **page 67**

ID	Location	Name	Data source
-	1945m SW	Farlington Marshes	Natural England

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

10.7 Designated Ancient Woodland

Records within 2000m

8

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 67**

ID	Location	Name	Woodland Type
4	1231m NW	Unknown	Ancient Replanted Woodland
6	1298m NW	Unknown	Ancient & Semi-Natural Woodland
7	1415m NW	Unknown	Ancient & Semi-Natural Woodland
-	1575m NW	Unknown	Ancient & Semi-Natural Woodland
-	1831m NW	Unknown	Ancient & Semi-Natural Woodland

ID	Location	Name	Woodland Type
-	1880m NW	Unknown	Ancient Replanted Woodland
-	1907m N	Unknown	Ancient & Semi-Natural Woodland
-	1993m NE	Great Copse	Ancient & Semi-Natural Woodland

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**4**

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.

Location	Name	Type	NVZ ID	Status
On site	Chichester,Langstone and Portsmouth Harbours Eutrophic NVZ (TraC)	Eutrophic Water	ET2	Existing
402m SW	Chichester,Langstone and Portsmouth Harbours Eutrophic NVZ (TraC)	Eutrophic Water	ET2	Existing
1645m E	WARBLINGTON STREAM - NO.2 NVZ	Surface Water	S667	Existing
1857m E	WARBLINGTON STREAM - NO.2 NVZ	Surface Water	S667	Existing

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 75**

ID	Location	Type of developments requiring consultation
1	On site	All applications - All Planning Applications - Except Householder Applications. Notes: For new residential development in this area financial contributions are required to mitigate increased recreational disturbance on coastal SPAs and Ramsar Sites. Check with Local Planning Authority. SOLENT NUTRIENT IMPACT AREA. For new development with overnight accommodation Reg 63 of the Conservation of Habitats and Species Regulations 2017 must be applied. LPA to refer to Natural England's Solent Nutrient Neutrality Advice Note June 2019.

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	5
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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 75**

ID: 14
 Location: 1046m S
 SSSI name: Langstone Harbour
 Unit name: Langstone Hbr East
 Broad habitat: Littoral Sediment
 Condition: Unfavourable - Recovering
 Reportable features:

Feature name	Feature condition	Date of assessment
H1110 Sandbanks which are slightly covered by sea water all the time	Favourable	29/11/2010
H1130 Estuaries	Unfavourable - Recovering	21/09/2018
H1140 Mudflats and sandflats not covered by seawater at low tide	Unfavourable - Recovering	29/11/2010
H1210 Annual vegetation of drift lines	Favourable	29/11/2010
H1220 Perennial vegetation of stony banks	Favourable	29/11/2010
H1310 Salicornia and other annuals colonising mud and sand	Unfavourable - Recovering	29/11/2010
H1320 Spartina swards (Spartinion maritimae)	Unfavourable - Recovering	29/11/2010
H1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	Unfavourable - Recovering	29/11/2010
SM4-28 - Saltmarsh	Unfavourable - Recovering	29/11/2010



ID: 16
 Location: 1215m SW
 SSSI name: Langstone Harbour
 Unit name: North Binness Island
 Broad habitat: Littoral Sediment
 Condition: Unfavourable - Recovering
 Reportable features:

Feature name	Feature condition	Date of assessment
H1110 Sandbanks which are slightly covered by sea water all the time	Unfavourable - Recovering	29/10/2010
H1130 Estuaries	Unfavourable - Recovering	21/09/2018
H1140 Mudflats and sandflats not covered by seawater at low tide	Unfavourable - Recovering	29/10/2010
H1210 Annual vegetation of drift lines	Unfavourable - Recovering	29/10/2010
H1220 Perennial vegetation of stony banks	Unfavourable - Recovering	29/10/2010
H1310 Salicornia and other annuals colonising mud and sand	Unfavourable - Recovering	29/10/2010
H1320 Spartina swards (<i>Spartinion maritimae</i>)	Unfavourable - Recovering	29/10/2010
H1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	Unfavourable - Recovering	29/10/2010
SM4-28 - Saltmarsh	-	-

ID: 17
 Location: 1277m S
 SSSI name: Langstone Harbour
 Unit name: South Moor
 Broad habitat: Neutral Grassland - Lowland
 Condition: Unfavourable - No change
 Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of non-breeding birds - Curlew, <i>Numenius arquata</i>	-	-

ID: -
 Location: 1843m SE
 SSSI name: Chichester Harbour
 Unit name: Warblington / Emsworth Foreshore
 Broad habitat: Littoral Sediment
 Condition: Unfavourable - No change
 Reportable features:

Feature name	Feature condition	Date of assessment
H1130 Estuaries	Unfavourable - No change	26/09/2018
H1140 Mudflats and sandflats not covered by seawater at low tide	Unfavourable - Recovering	29/11/2010
H1210 Annual vegetation of drift lines	Unfavourable - Recovering	29/11/2010
H1220 Perennial vegetation of stony banks	Favourable	29/11/2010
H1310 Salicornia and other annuals colonising mud and sand	Unfavourable - Recovering	29/11/2010
H1320 Spartina swards (Spartinion maritimae)	Unfavourable - Recovering	29/11/2010
H1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	Unfavourable - Recovering	29/11/2010
Littoral sediment	Unfavourable - Recovering	13/08/2014
SM4-28 - Saltmarsh	Unfavourable - Recovering	29/11/2010

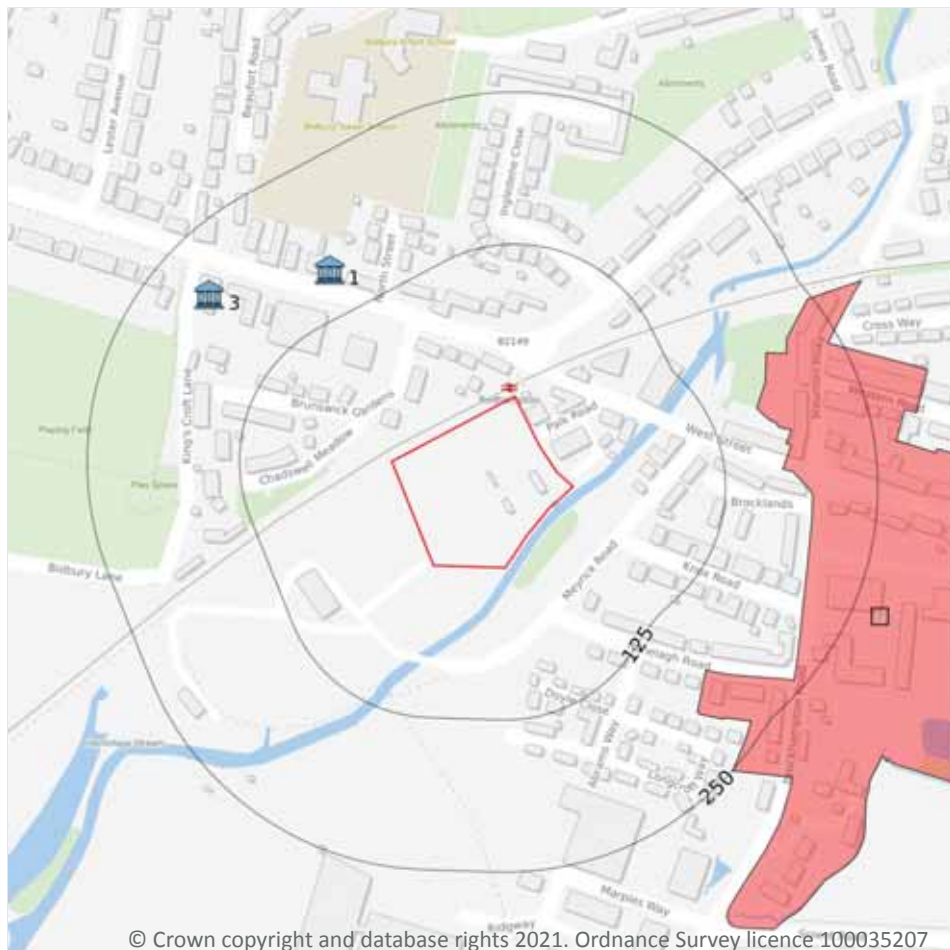
ID: -
 Location: 1945m SW
 SSSI name: Langstone Harbour
 Unit name: Farlington Marshes Lnr (North)
 Broad habitat: Neutral Grassland - Lowland
 Condition: Favourable
 Reportable features:

Feature name	Feature condition	Date of assessment
SM4-28 - Saltmarsh	Favourable	01/10/2010

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

0

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.

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

2

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.

Features are displayed on the Visual and cultural designations map on **page 79**

ID	Location	Name	Grade	Reference Number	Listed date
1	163m NW	The Golden Lion, Bedhampton, Havant, Hampshire, PO9	II	1091646	21/07/1975
3	203m NW	Bedhampton Arts Centre (The Old School), Bedhampton, Havant, Hampshire, PO9	II	1393209	11/03/2009

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



11.5 Conservation Areas

Records within 250m

1

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.

Features are displayed on the Visual and cultural designations map on **page 79**

ID	Location	Name	District	Date of designation
2	164m NE	Brockhampton, Havant	Havant	13/04/2005

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

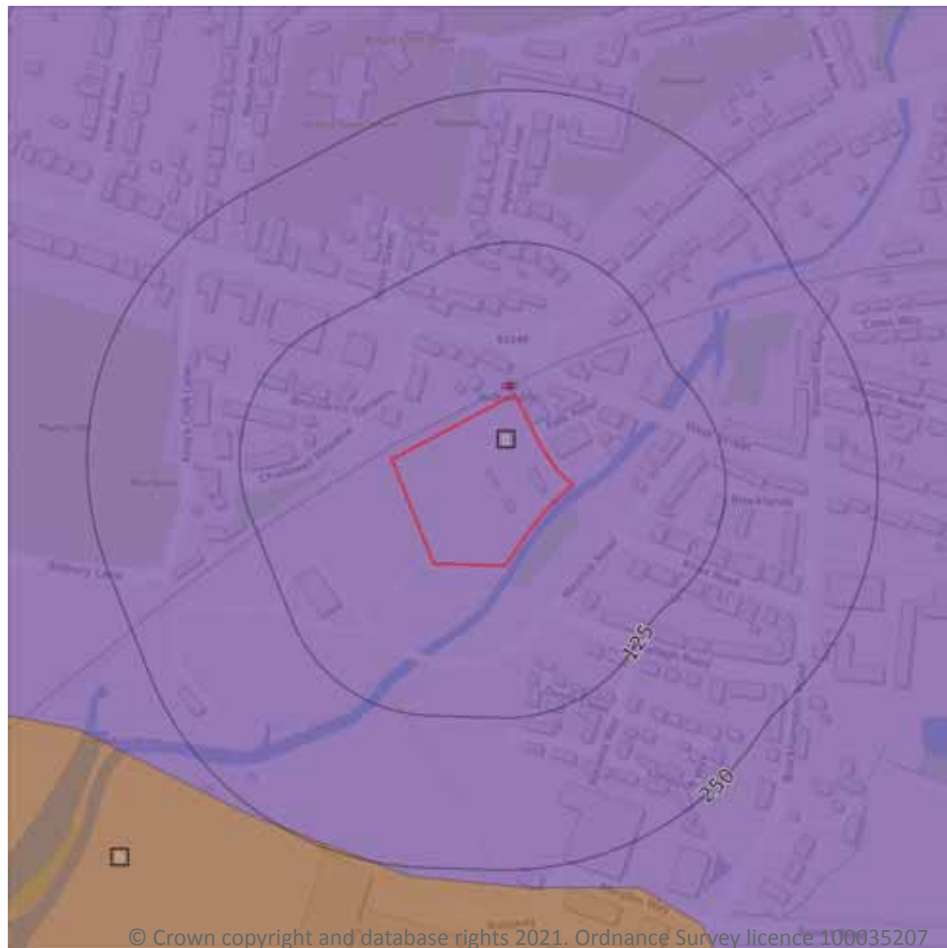
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Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, 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 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree 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 82**

ID	Location	Classification	Description
1	On site	Urban	-
2	247m S	Grade 1	Excellent quality agricultural land. Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.



This data is sourced from Natural England.

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

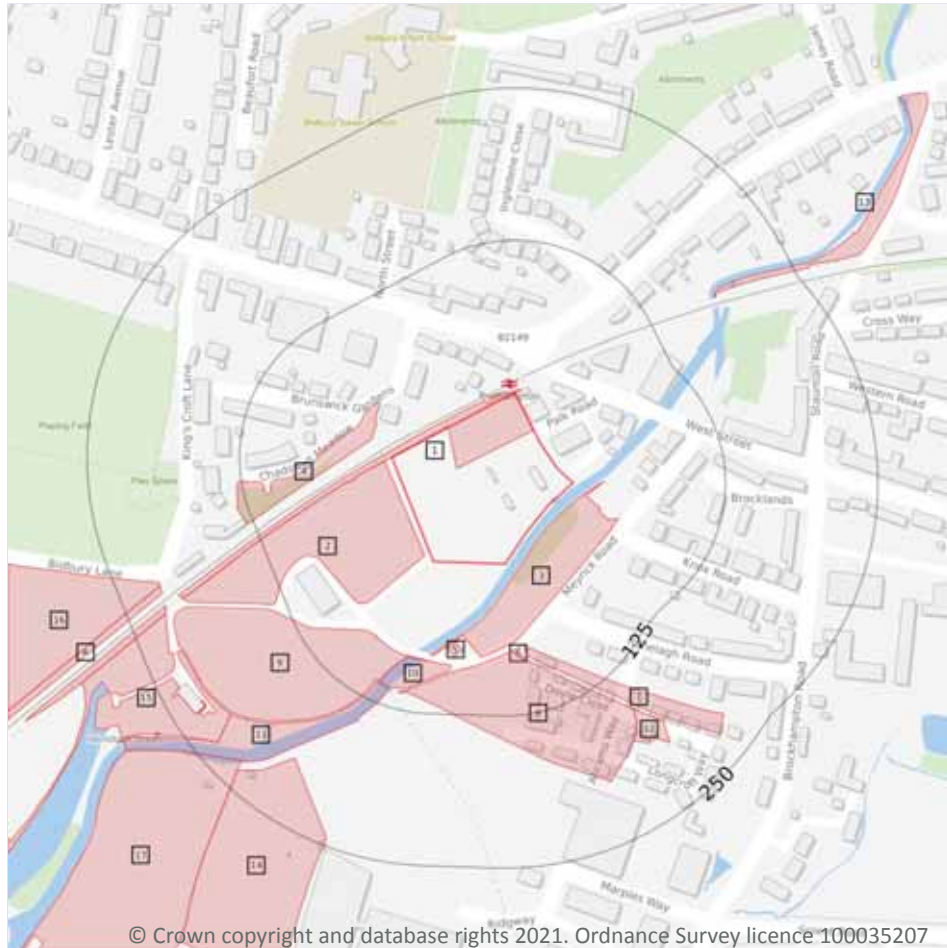
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Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce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

This data is sourced from Natural England.



13 Habitat designations



- Site Outline
- Search buffers in metres (m)
- Priority Habitat Inventory
- Open Mosaic Habitat
- Limestone Pavement Orders
- Habitat Networks
- Primary Habitat
- Restorable Habitat
- Associated Habitats
- Habitat Restoration-Creation
- Network Enhancement Zone 1
- Network Enhancement Zone 2

13.1 Priority Habitat Inventory

Records within 250m

19

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

Features are displayed on the Habitat designations map on **page 84**

ID	Location	Main Habitat	Other habitats
1	On site	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
2	5m W	No main habitat but additional habitats present	Additional: CFPGM (INV 50%)
3	11m SE	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
4	23m NW	Good quality semi-improved grassland	Main habitat: LMEAD (INV > 50%)



ID	Location	Main Habitat	Other habitats
5	66m S	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
6	69m S	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
7	70m S	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
8	72m S	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
9	77m SW	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
10	81m S	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
11	109m SW	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
12	159m SE	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
13	182m NE	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
14	198m SW	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
15	208m SW	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
16	215m W	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
A	216m W	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
A	218m W	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)
17	227m SW	Coastal and floodplain grazing marsh	Main habitat: CFPGM (INV > 50%)

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

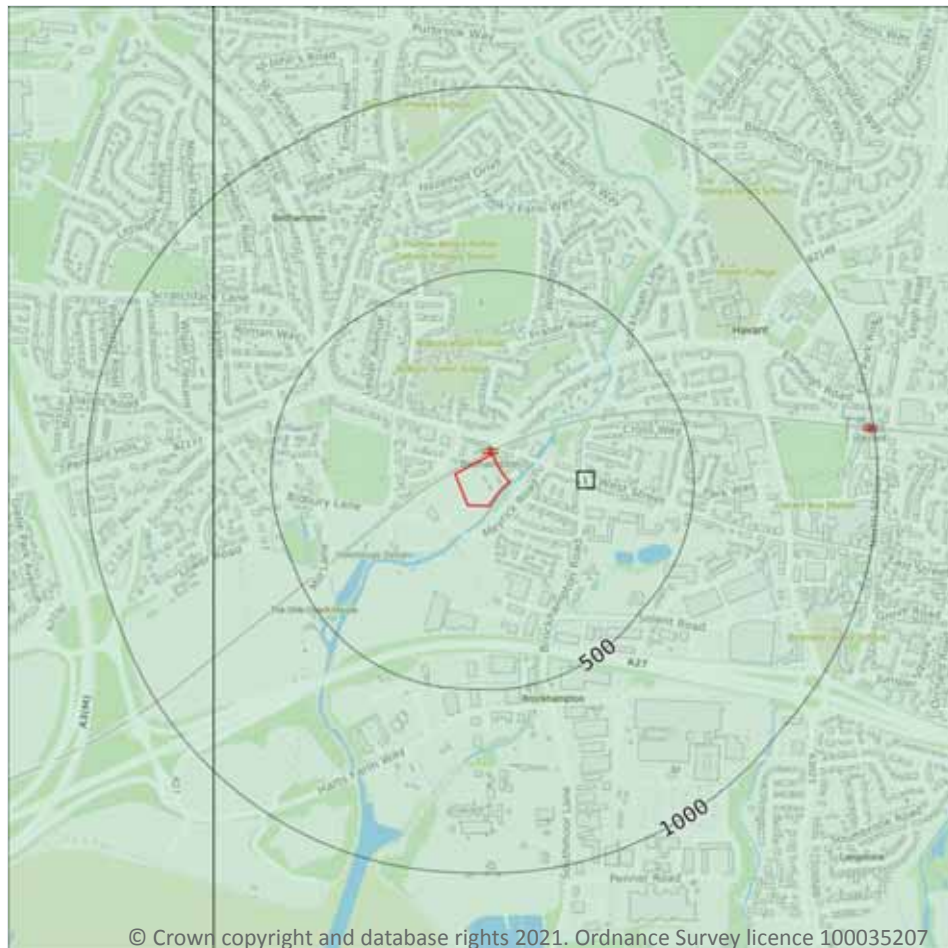
0

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 87**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	No coverage	SU70NW

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

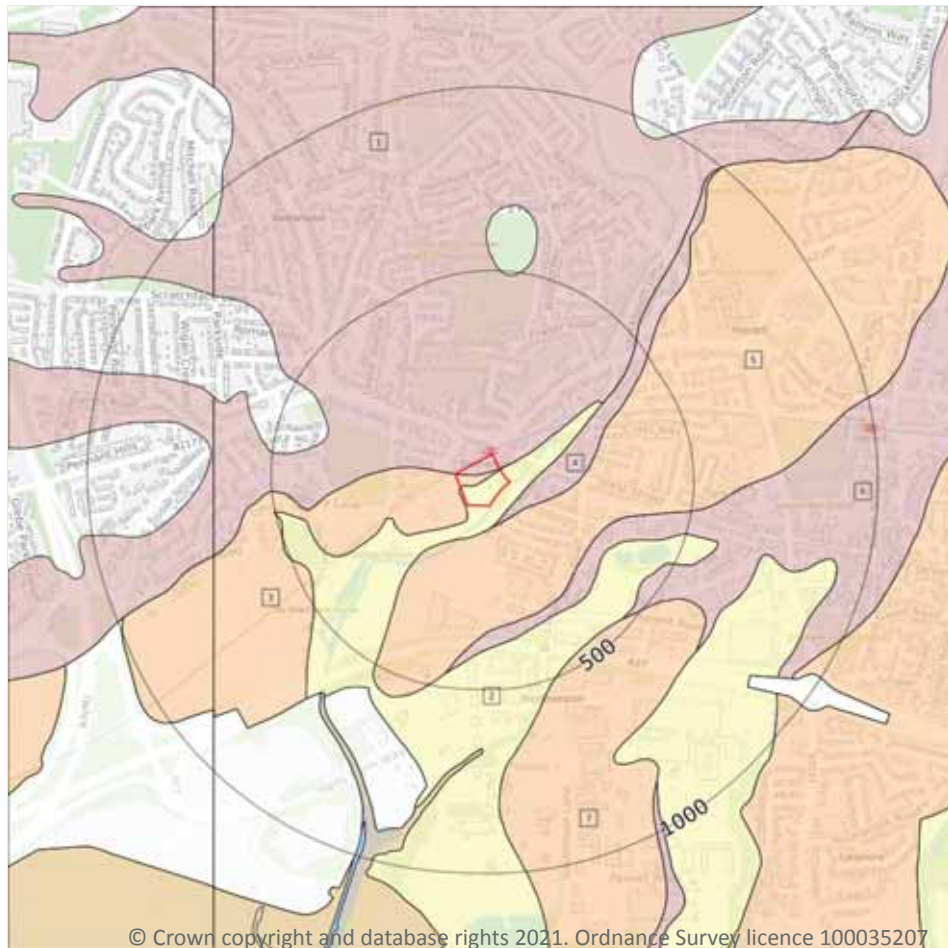
0

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



— Site Outline

Search buffers in metres (m)

▨ Landslip (10k)

Superficial geology (10k)
Please see table for more details.

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14.3 Superficial geology (10k)

Records within 500m

7

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.

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 89**

ID	Location	LEX Code	Description	Rock description
1	On site	HEAD-XCZSV	Head - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
2	On site	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
3	On site	RTDU-XSZC	River Terrace Deposits (undifferentiated) - Sand, Silt And Clay	Sand, Silt And Clay



ID	Location	LEX Code	Description	Rock description
4	45m SE	HEAD-XCZSV	Head - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
5	56m SE	RTDU-XSZC	River Terrace Deposits (undifferentiated) - Sand, Silt And Clay	Sand, Silt And Clay
6	278m SE	HEAD-XCZSV	Head - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
7	457m SE	RTDU-XSZC	River Terrace Deposits (undifferentiated) - Sand, Silt And Clay	Sand, Silt And Clay

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m

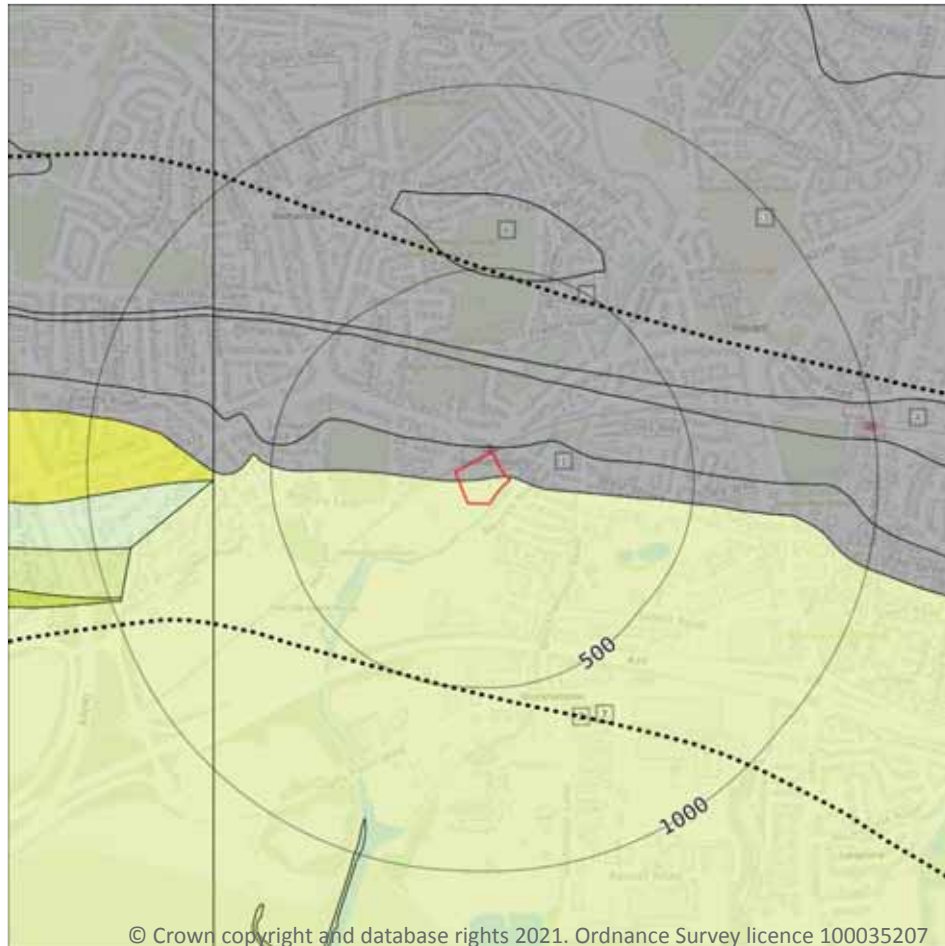
0

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



— Site Outline

Search buffers in metres (m)

.... Bedrock faults and other linear features (10k)

Bedrock geology (10k)
Please see table for more details.

14.5 Bedrock geology (10k)

Records within 500m

5

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.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 91**

ID	Location	LEX Code	Description	Rock age
1	On site	LMBE-CLAY	Lambeth Group - Clay	Paleocene Epoch
2	On site	LPCK-CHLK	Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk Formation And Portsdown Chalk Formation (undifferentiated) - Chalk	Campanian Age - Turonian Age

ID	Location	LEX Code	Description	Rock age
3	13m N	LC-CLSISA	London Clay Formation - Clay, Silt And Sand	Eocene Epoch
4	224m N	BOSA-SANDU	Bognor Sand Member - Sand	Eocene Epoch
6	474m N	LC-SANDU	London Clay Formation - Sand	Eocene Epoch

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m

2

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.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 91**

ID	Location	Category	Description
5	466m N	FOLD_AXIS	Axial plane trace of major syncline
7	495m S	FOLD_AXIS	Axial plane trace of major anticline

This data is sourced from the British Geological Survey.



15 Geology 1:50,000 scale - Availability



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- 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.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 93**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	EW316_fareham_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

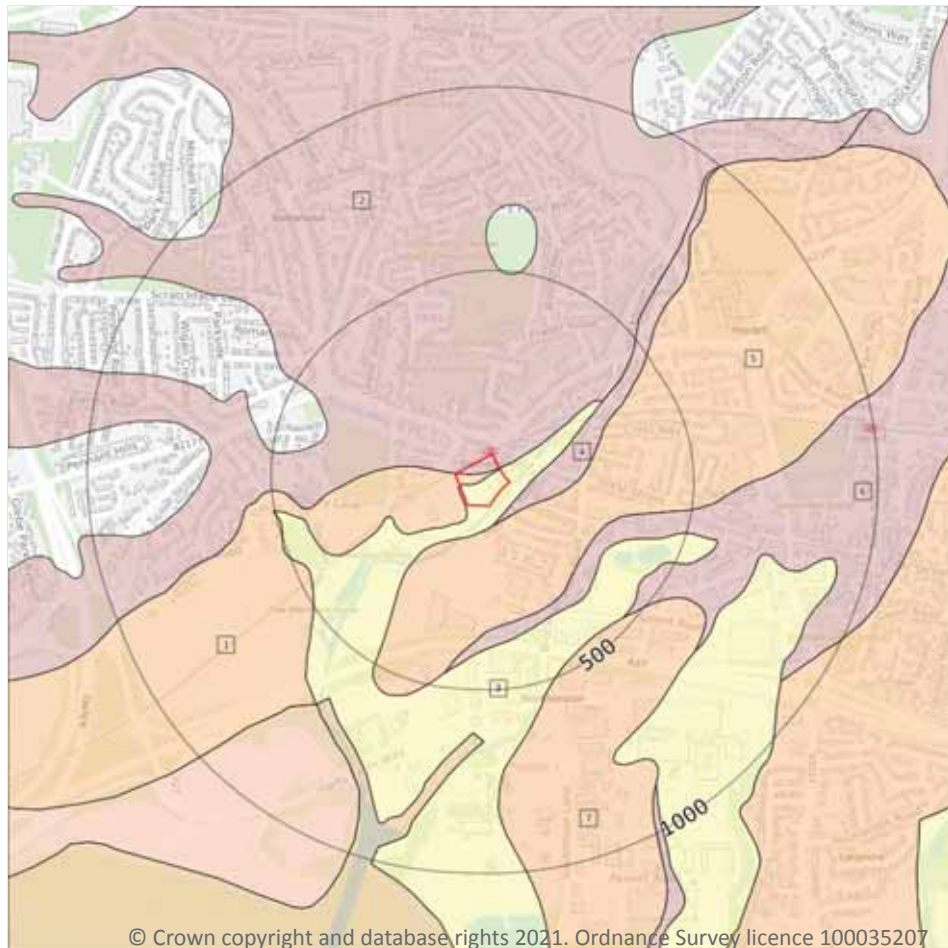
0

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

7

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 95**

ID	Location	LEX Code	Description	Rock description
1	On site	RTDU-XSZC	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	SAND, SILT AND CLAY
2	On site	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
3	On site	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL



ID	Location	LEX Code	Description	Rock description
4	43m SE	HEAD-XCV	HEAD	CLAY AND GRAVEL
5	52m SE	RTDU-XSZC	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	SAND, SILT AND CLAY
6	276m SE	HEAD-XCV	HEAD	CLAY AND GRAVEL
7	455m SE	RTDU-XSZC	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	SAND, SILT AND CLAY

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	4
---------------------------	----------

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	Intergranular	High	Low
On site	Intergranular	High	Very Low
On site	Mixed	High	Very Low
42m NE	Mixed	High	Low

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
---------------------------	----------

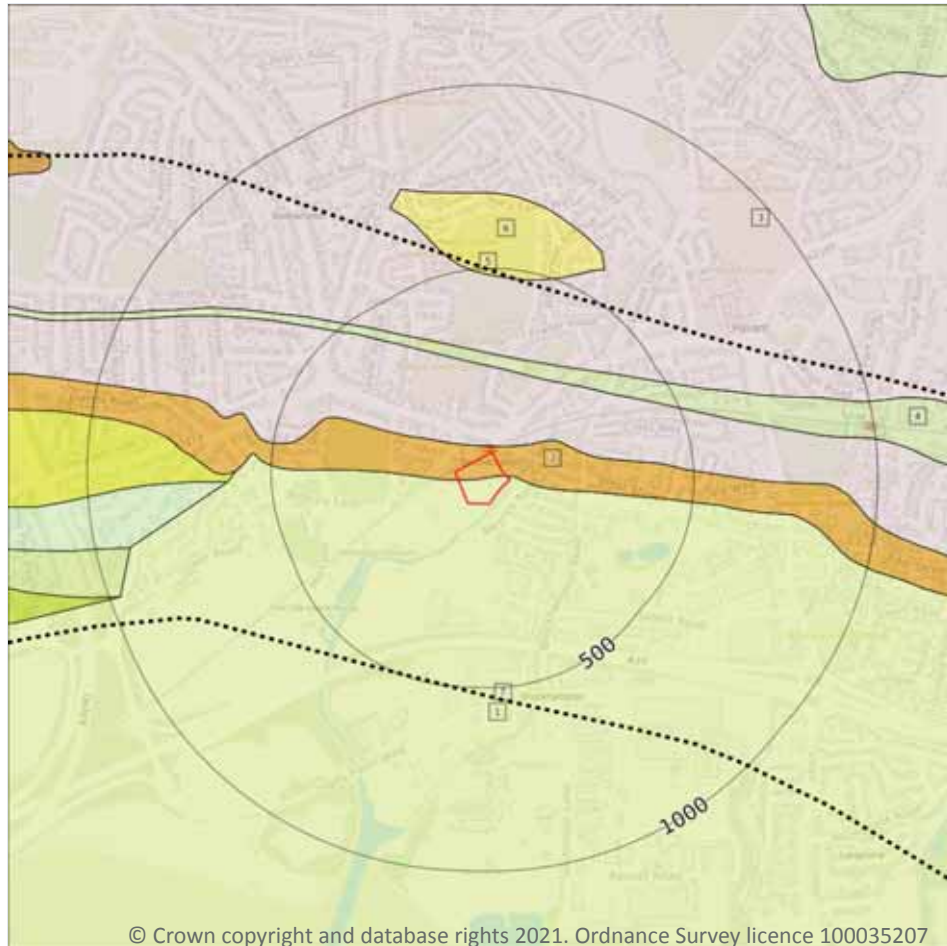
A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).



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

5

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 98**

ID	Location	LEX Code	Description	Rock age
1	On site	LPCK-CHLK	LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION, NEWHAVEN CHALK FORMATION, CULVER CHALK FORMATION AND PORTSDOWN CHALK FORMATION (UNDIFFERENTIATED) - CHALK	TURONIAN
2	On site	LMBE-XCZS	LAMBETH GROUP - CLAY, SILT AND SAND	THANETIAN

ID	Location	LEX Code	Description	Rock age
3	17m N	LC-XCZS	LONDON CLAY FORMATION - CLAY, SILT AND SAND	YPRESIAN
4	227m N	BOSA-S	BOGNOR SAND MEMBER - SAND	-
6	476m N	LC-S	LONDON CLAY FORMATION - SAND	YPRESIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m

3

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	Very High	Very High
On site	Mixed	Moderate	Very Low
17m NE	Mixed	Moderate	Very Low

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m

2

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.

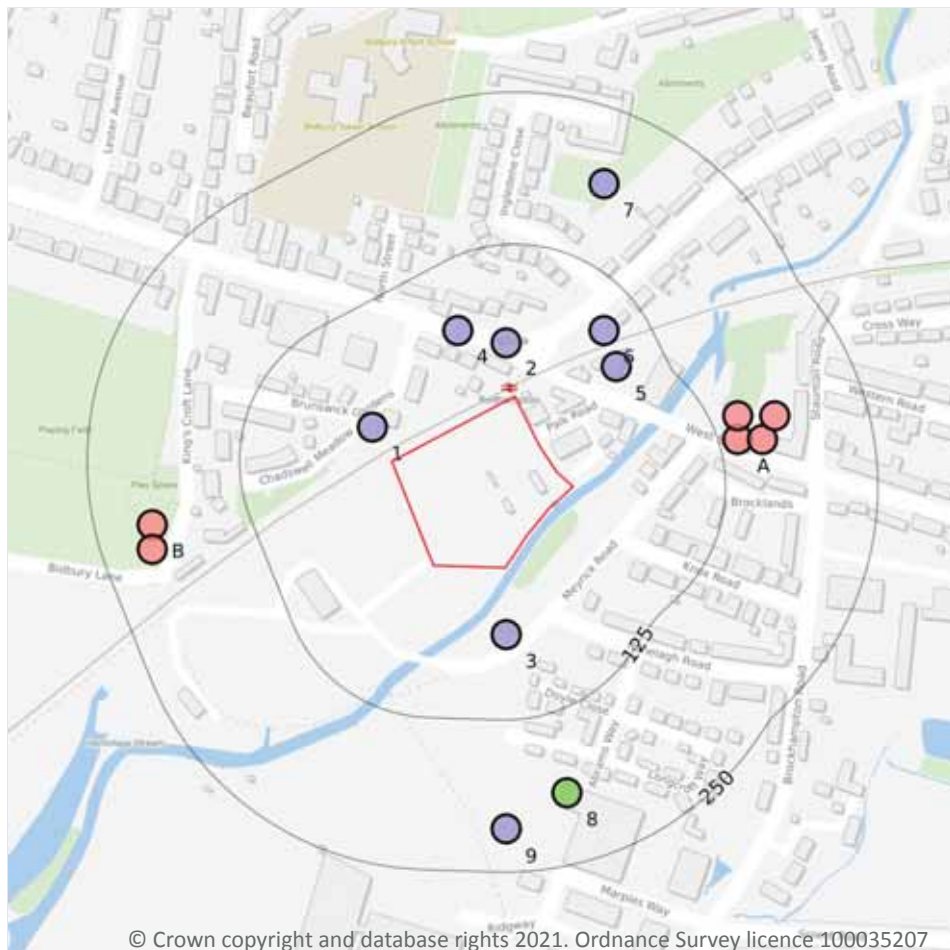
Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 98**

ID	Location	Category	Description
5	468m N	FOLD_AXIS	Axial plane trace of major syncline
7	495m S	FOLD_AXIS	Axial plane trace of major anticline

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

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16.1 BGS Boreholes

Records within 250m

15

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 100**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	32m NW	470640 106500	BARNCROFT WAY-BUDDS FARM SEWER BH108	4.87	N	425458
2	45m N	470750 106570	BARNCROFT WAY-BUDDS FARM SEWER BH105	5.5	N	425456

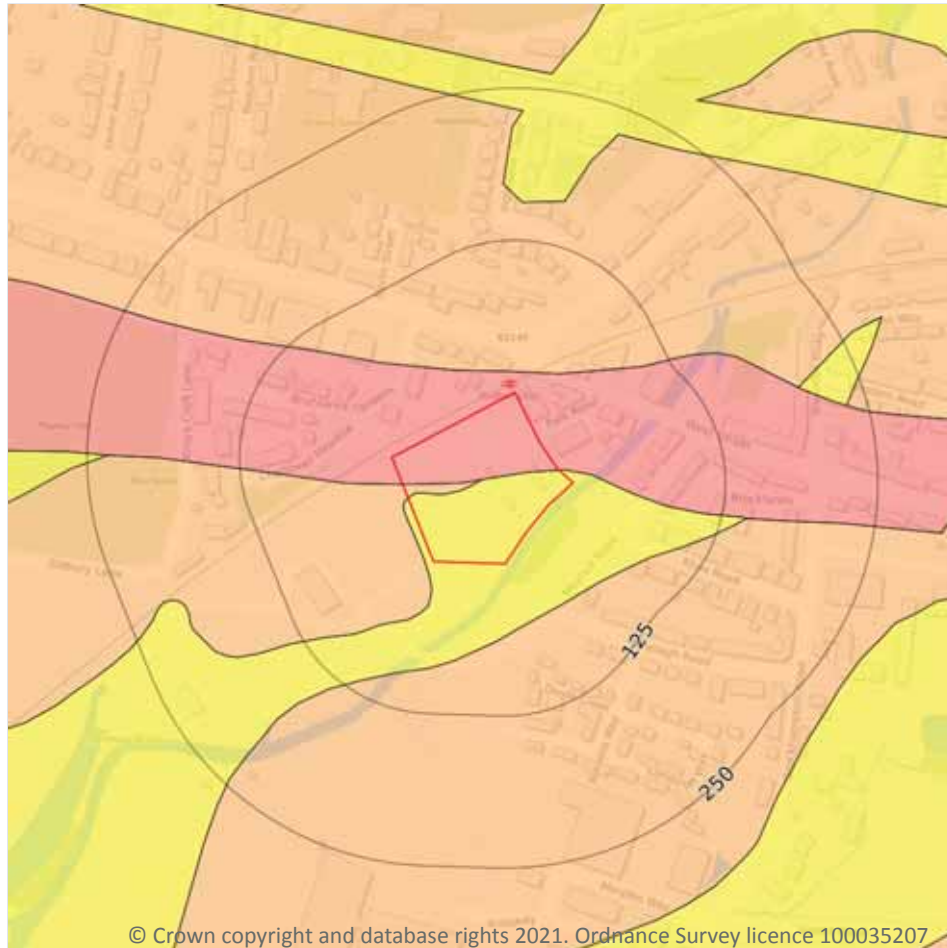


ID	Location	Grid reference	Name	Length	Confidential	Web link
3	55m S	470750 106330	BARNCROFT WAY-BUDDS FARM SEWER BH106	7.3	N	425459
4	70m NW	470710 106580	BARNCROFT WAY-BUDDS FARM SEWER BH107	5.5	N	425457
5	85m NE	470840 106550	BARNCROFT WAY-BUDDS FARM SEWER BH109	6.4	N	425455
6	91m NE	470830 106580	BARNCROFT WAY-BUDDS FARM SEWER BH104	7.0	N	425454
A	141m E	470940 106490	WEST STREET HAVANT	76.2	N	425628
A	147m NE	470940 106510	LAUNDRY 316/63B	76.2	N	425439
A	160m E	470960 106490	WEST STREET HAVANT	45.72	N	425627
A	175m E	470970 106510	BREWERY 316/63A HAVANT BEDHAMPTON	45.72	N	425438
7	189m NE	470830 106700	BARNCROFT WAY-BUDDS FARM SEWER BH103	9.44	N	425453
8	192m S	470800 106200	BROCKHAMPTON ROAD DEVELOPMENT BH7	12.5	N	425532
B	203m W	470460 106420	WATERWORKS 316/120 HAVANT BEDHAMPTON	35.96	N	425437
B	209m W	470460 106400	BEDHAMPTON	35.77	N	425629
9	215m S	470750 106170	BARNCROFT WAY-BUDDS FARM SEWER BH110	6.7	N	425460

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

4

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 102**

Location	Hazard rating	Details
On site	Very low	Ground conditions predominantly low plasticity.
On site	Low	Ground conditions predominantly medium plasticity.
On site	Moderate	Ground conditions predominantly high plasticity.

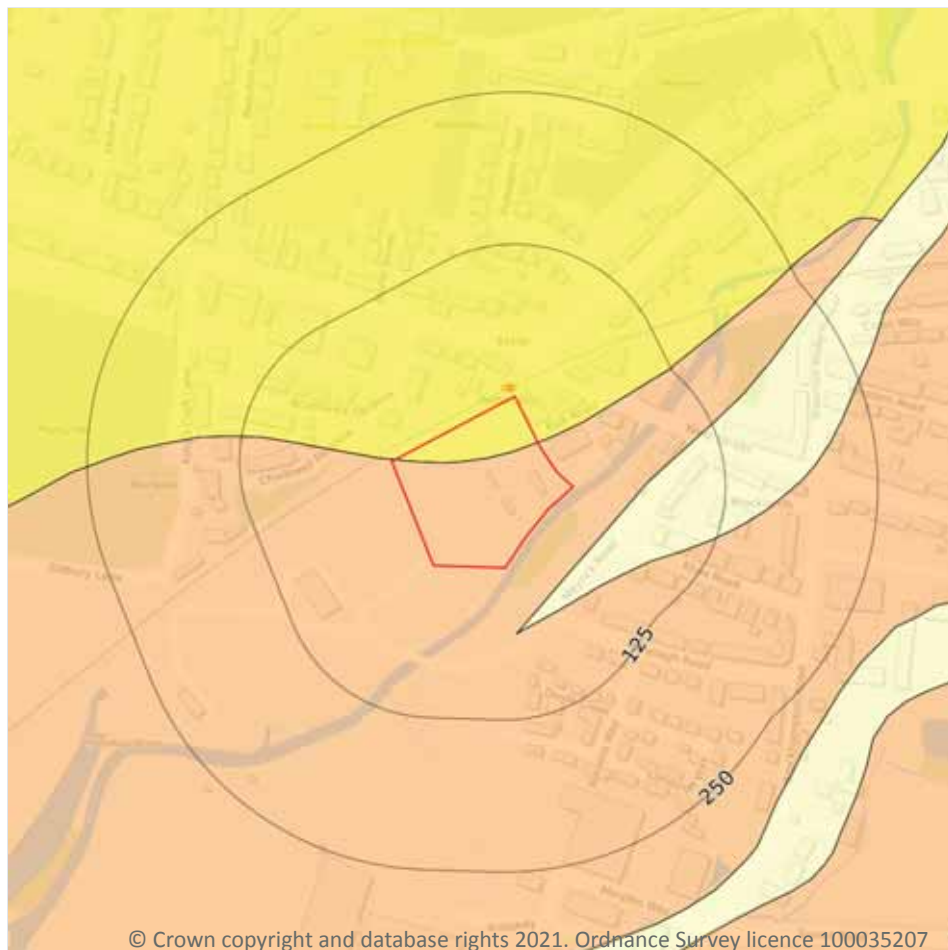


Location	Hazard rating	Details
17m N	Low	Ground conditions predominantly medium plasticity.

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

3

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 104**

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.

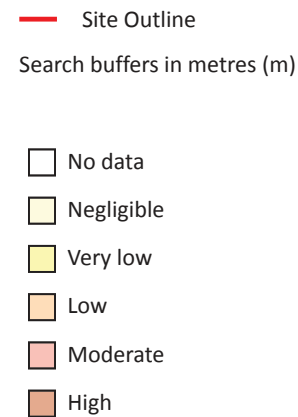
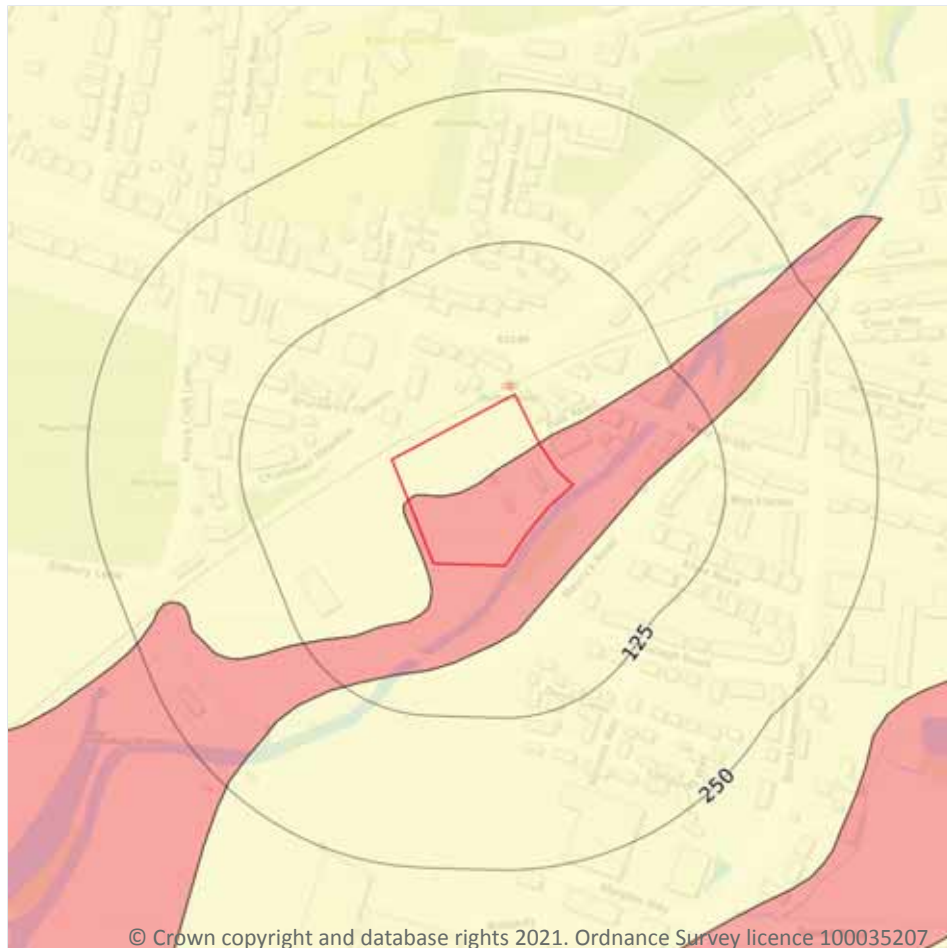


Location	Hazard rating	Details
On site	Low	Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.
43m SE	Negligible	Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Compressible deposits



17.3 Compressible deposits

Records within 50m

2

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 106**

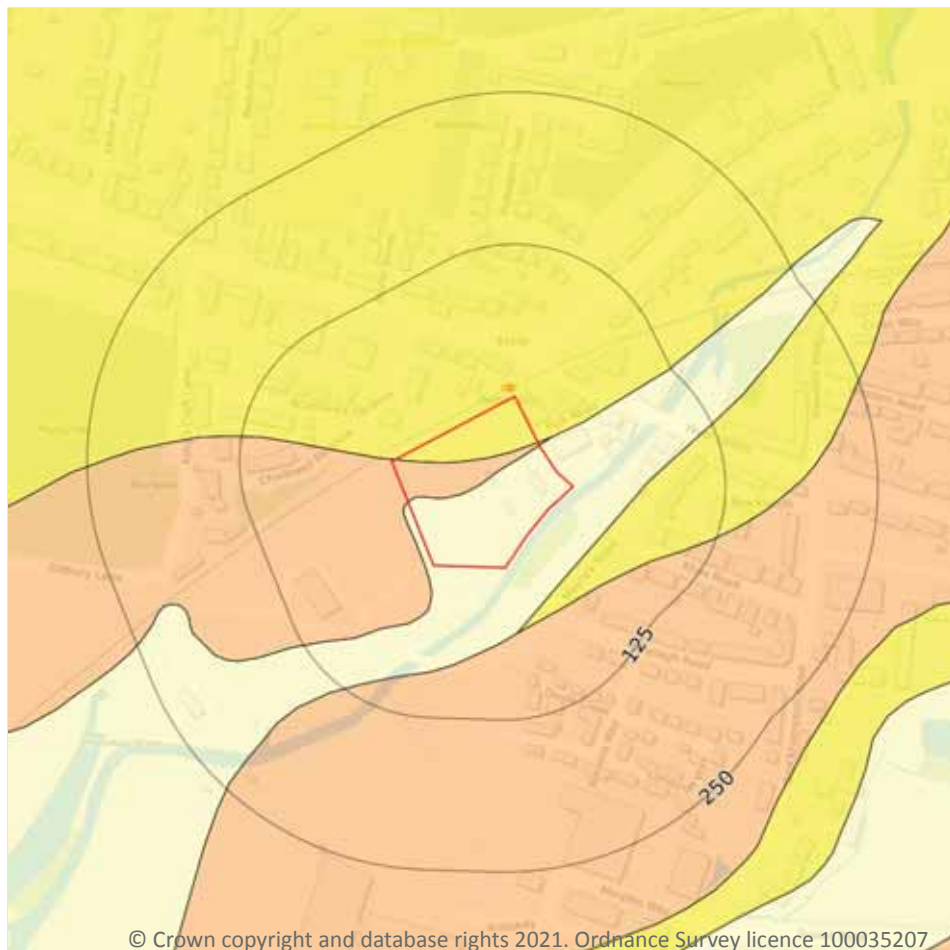
Location	Hazard rating	Details
On site	Negligible	Compressible strata are not thought to occur.
On site	Moderate	Compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.



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

3

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.

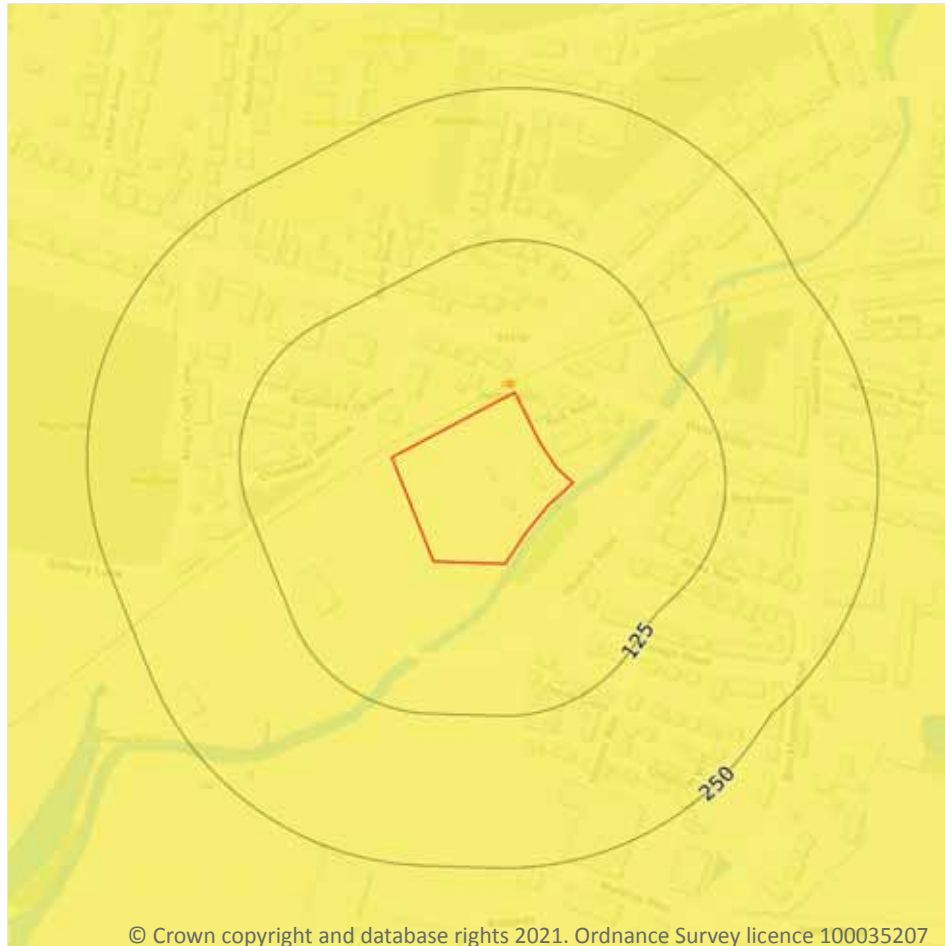
Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 108**

Location	Hazard rating	Details
On site	Negligible	Deposits with potential to collapse when loaded and saturated are believed not to be present.
On site	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.
On site	Low	Deposits with potential to collapse when loaded and saturated are possibly present in places.

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.

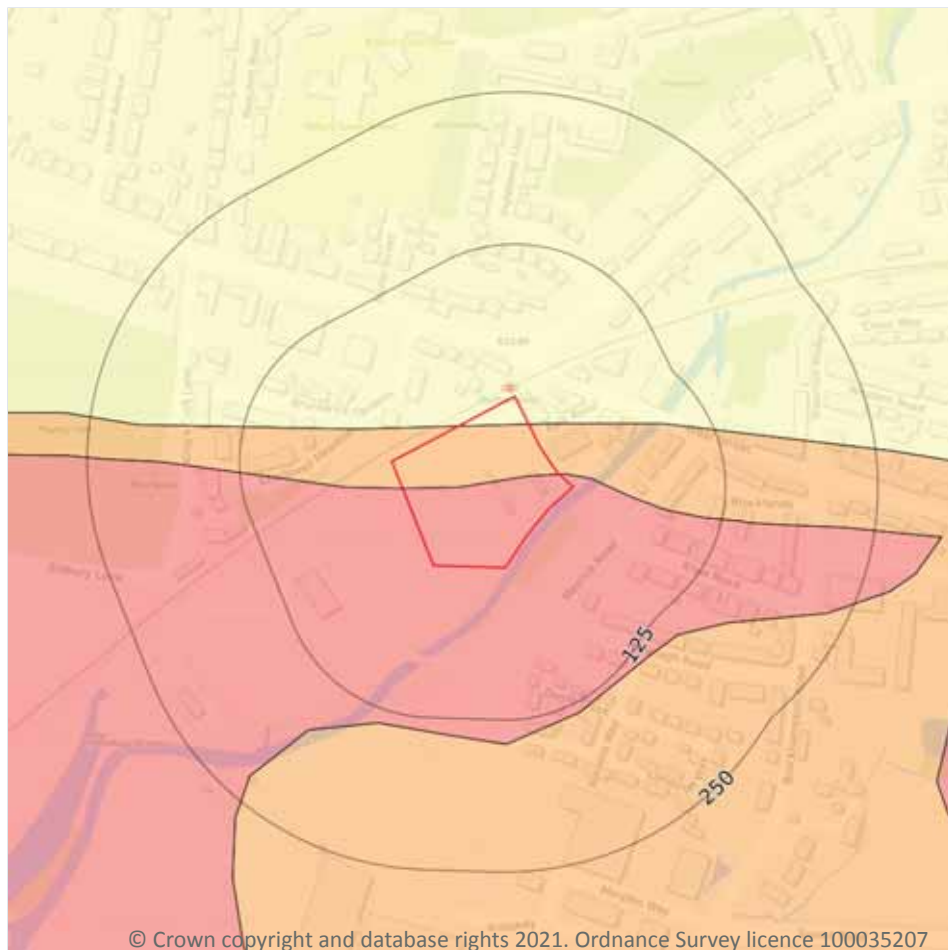
Features are displayed on the Natural ground subsidence - Landslides map on **page 110**

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

3

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 111**

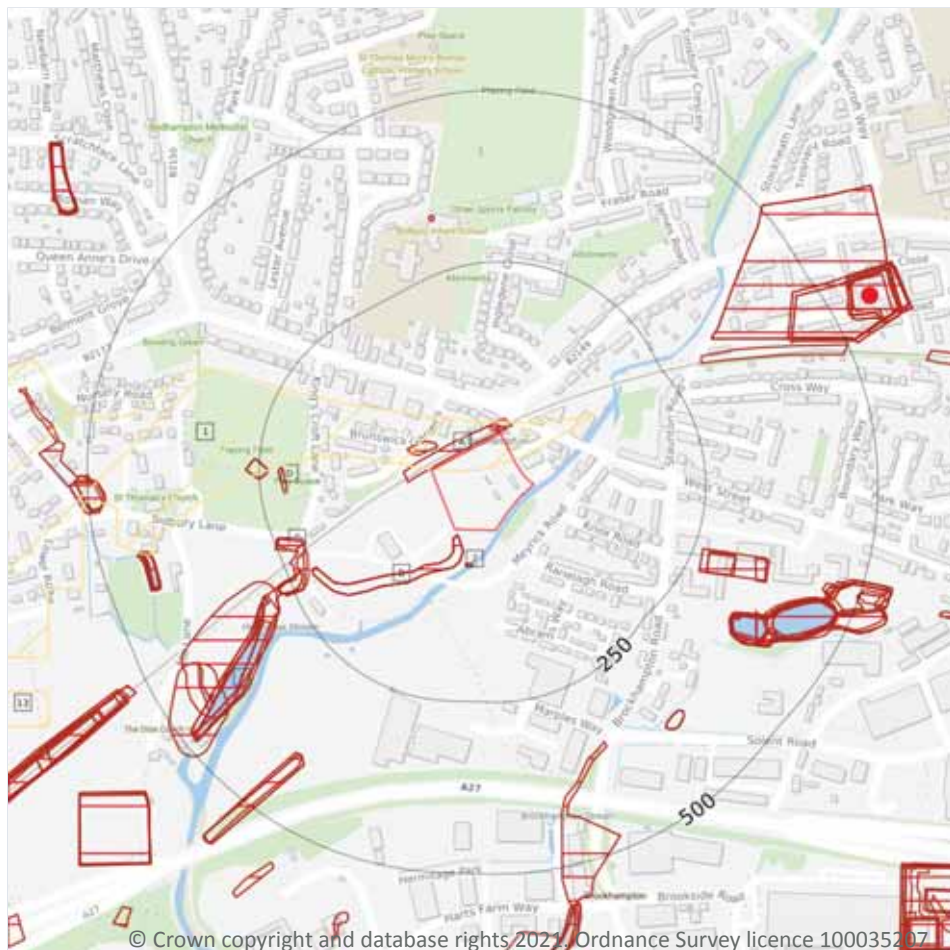
Location	Hazard rating	Details
On site	Negligible	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.

Location	Hazard rating	Details
On site	Low	Soluble rocks are present within the ground. Some dissolution features may be present. Potential for difficult ground conditions are at a level where they may be considered, localised subsidence need not be considered except in exceptional circumstances.
On site	Moderate	Soluble rocks are present within the ground. Many dissolution features may be present. Potential for difficult ground conditions are at a level where they should be considered. Potential for subsidence is at a level where it may need to be considered.

This data is sourced from the British Geological Survey.



18 Mining, ground workings and natural cavities



- Site Outline
- Search buffers in metres (m)
- Natural cavities (Area)
- Natural cavities (Point)
- BritPits
- Surface ground workings
- Underground workings
- Historical Mineral Planning Areas
- Mining Cavities
- 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 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.



18.2 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.

18.3 Surface ground workings

Records within 250m

16

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, ground workings and natural cavities map on **page 113**

ID	Location	Land Use	Year of mapping	Mapping scale
A	3m NW	Cuttings	1866	1:10560
B	9m S	Ponds	1963	1:10560
B	9m S	Reservoirs	1991	1:10000
B	9m S	Reservoirs	1973	1:10000
A	26m NW	Pond	1866	1:10560
2	49m S	Unspecified Hole	1931	1:10560
C	210m W	Pond	1895	1:10560
D	211m W	Pond	1866	1:10560
E	212m W	Water Body	1898	1:10560
C	212m W	Water Body	1866	1:10560
C	230m W	Pond	1963	1:10560
C	230m W	Pond	1991	1:10000
C	230m W	Pond	1973	1:10000
D	238m W	Pond	1938	1:10560
D	238m W	Pond	1930	1:10560
D	238m W	Pond	1907	1:10560

This data is sourced from Ordnance Survey/Groundsure.



18.4 Underground workings

Records within 1000m

0

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

This data is sourced from Ordnance Survey/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, ground workings and natural cavities map on **page 113**

ID	Location	Name	Commodity	Class	Likelihood
1	On site	Not available	Chalk	A	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
13	636m W	Not available	Chalk	A	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
-	656m W	Not available	Chalk	A	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered

This data is sourced from the British Geological Survey.



18.7 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.

18.8 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.

18.9 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.

18.10 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.

18.11 Gypsum areas

Records on site

0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0
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Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

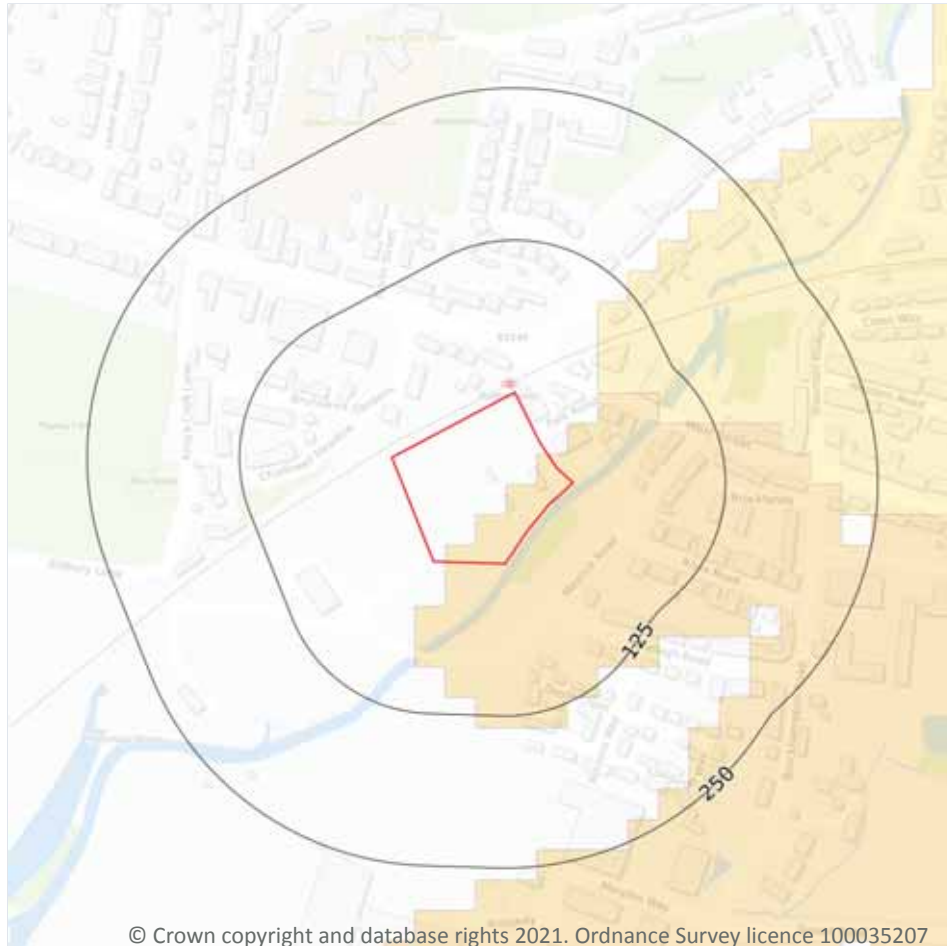
18.13 Clay mining

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 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%

19.1 Radon

Records on site

2

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on **page 118**

Location	Estimated properties affected	Radon Protection Measures required
On site	Between 3% and 5%	Basic
On site	Less than 1%	None**



This data is sourced from the British Geological Survey and Public Health England.



20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m

9

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 km². 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 km²; 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 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
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
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
17m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
30m NE	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
42m E	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.

20.2 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 km²).

This data is sourced from the British Geological Survey.



20.3 BGS Measured Urban Soil Chemistry

Records within 50m

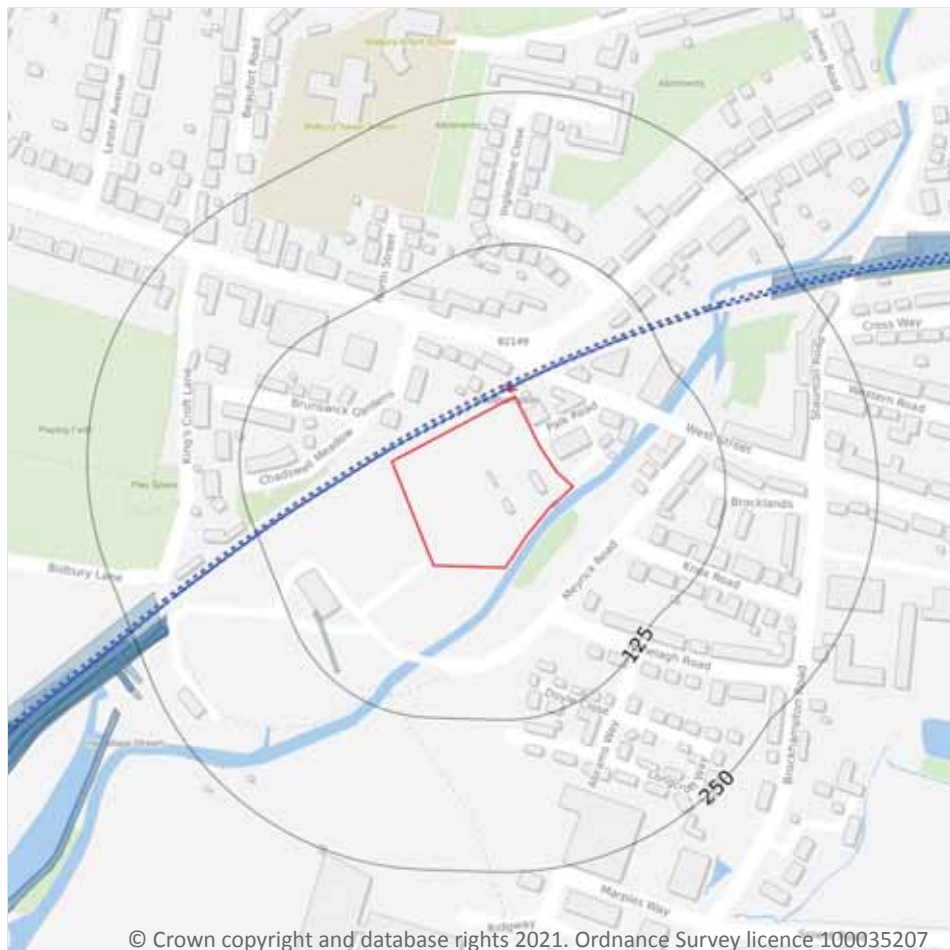
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The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km².

This data is sourced from the British Geological Survey.



21 Railway infrastructure and projects



- Site Outline
- Search buffers in metres (m)
- C1 Crossrail 1 Stations
- Crossrail 1 Route
- Crossrail 1 Worksites
- C2 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

21.1 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.

21.2 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.

21.3 Railway tunnels

Records within 250m

0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m

17

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 122**

Location	Land Use	Year of mapping	Mapping scale
102m SW	Railway Sidings	1932	2500
219m W	Railway Sidings	1931	10560
219m W	Railway Sidings	1907	10560
221m W	Railway Sidings	1938	10560
221m W	Railway Sidings	1963	10560
221m W	Railway Sidings	1931	10560
222m W	Railway Sidings	1909	2500
223m W	Railway Sidings	1973	1250
223m W	Railway Sidings	1959	1250
223m W	Railway Sidings	1960	2500
223m W	Railway Sidings	1953	2500
223m W	Railway Sidings	1951	2500
224m NE	Railway	1942	-
225m W	Railway Sidings	1932	2500
225m W	Railway Sidings	1939	2500
226m NE	Railway	1909	-
250m W	Railway Sidings	1895	10560



This data is sourced from Ordnance Survey/Groundsure.

21.5 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.

21.6 Historical railways

Records within 250m

0

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

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m

17

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 122**

Location	Name	Type
8m NW	West Coastway Line	rail
8m NW	Not given	Multi Track
9m NW	Not given	Multi Track
12m NW	West Coastway Line	rail
14m NE	Not given	Multi Track
50m NE	Not given	Multi Track
100m NE	Not given	Multi Track
174m NE	West Coastway Line	rail
174m NE	West Coastway Line	rail



Location	Name	Type
181m NE	Not given	Multi Track
185m NE	West Coastway Line	rail
186m NE	West Coastway Line	rail
205m W	Not given	Multi Track
217m W	West Coastway Line	rail
217m W	West Coastway Line	rail
240m NE	Not given	Multi Track
250m NE	Not given	Multi Track

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 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.

21.9 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.

21.10 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

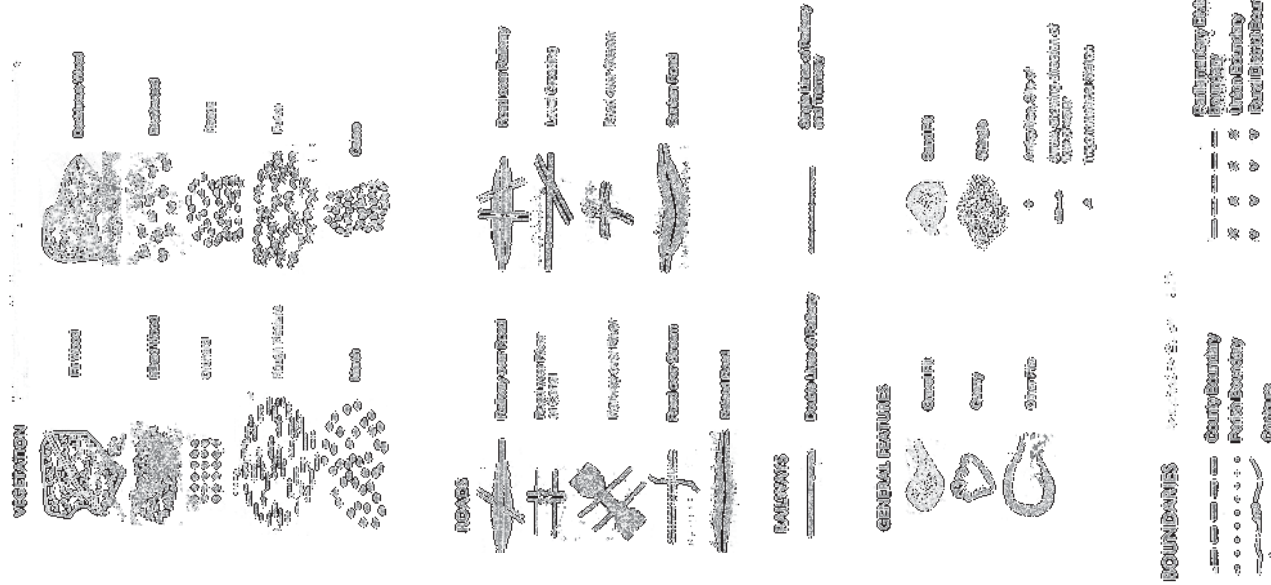
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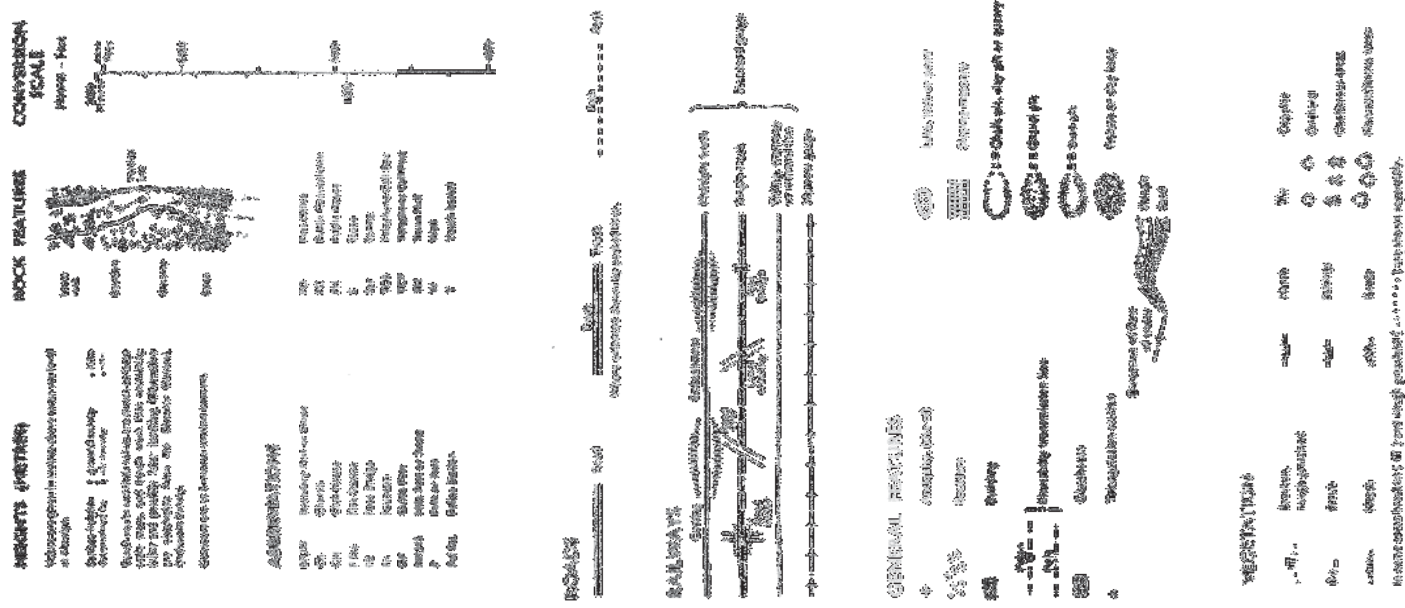
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County Series 1:10,560 scale



National Grid 1:10,000 scale



Historical Map Pack Legend

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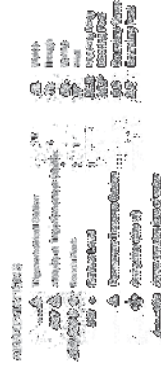
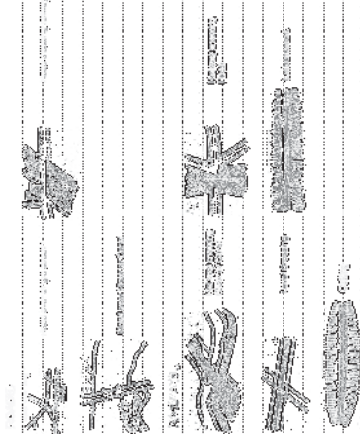
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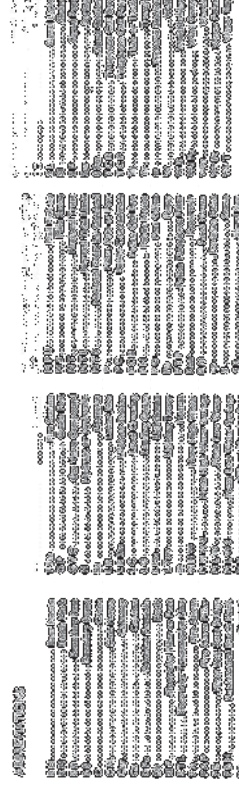
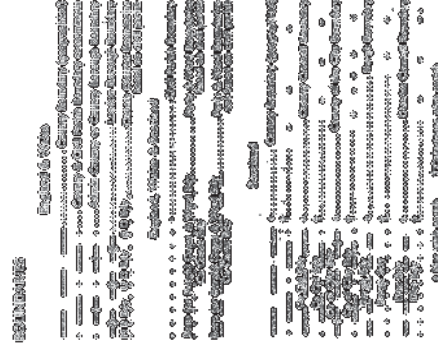
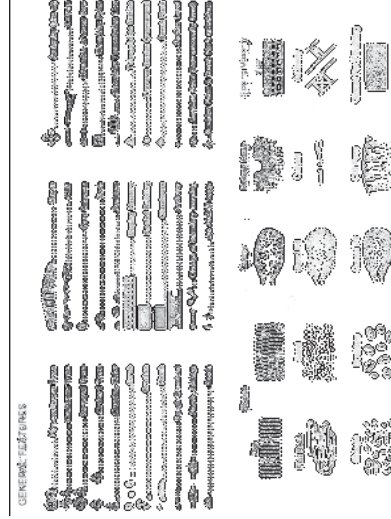
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National Grid 1:2,500 / 1:1,250 scale



Historical Map Pack Legend

County Series

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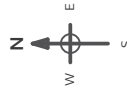
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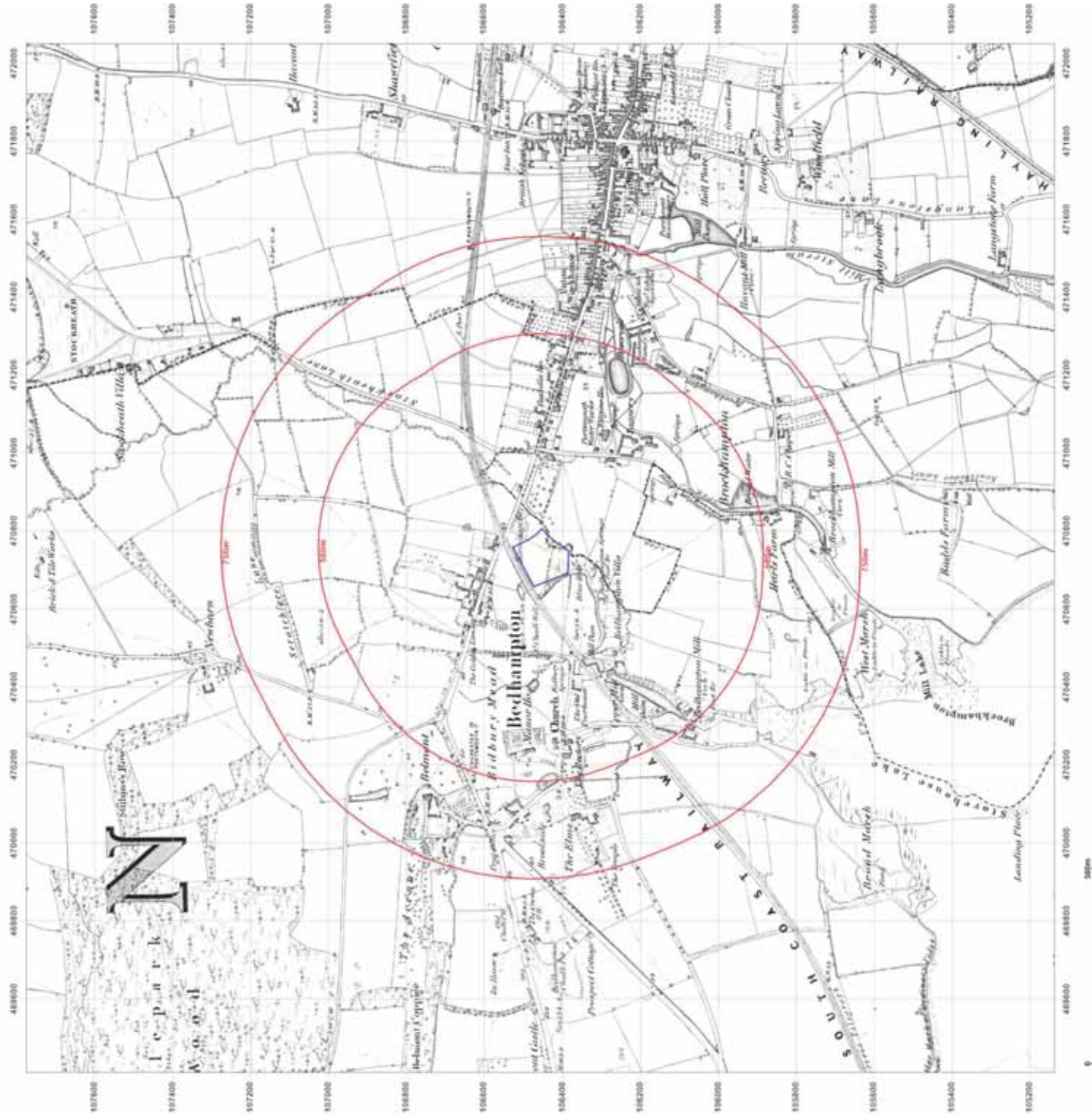


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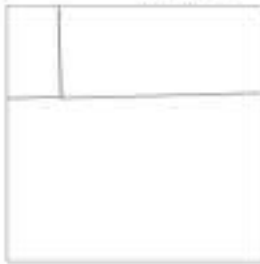
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Map date: 1895-1896
Scale: 1:10,560
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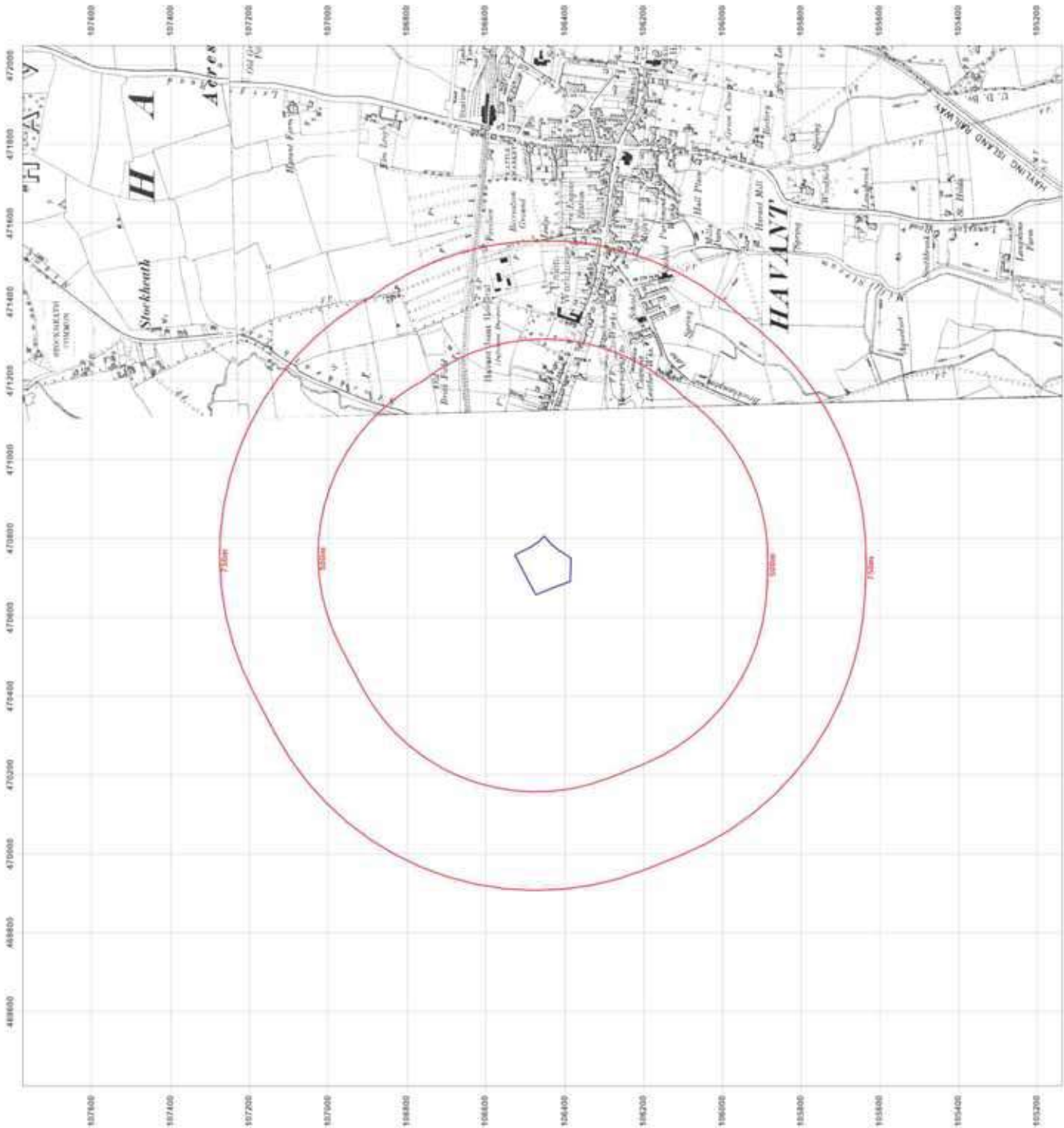


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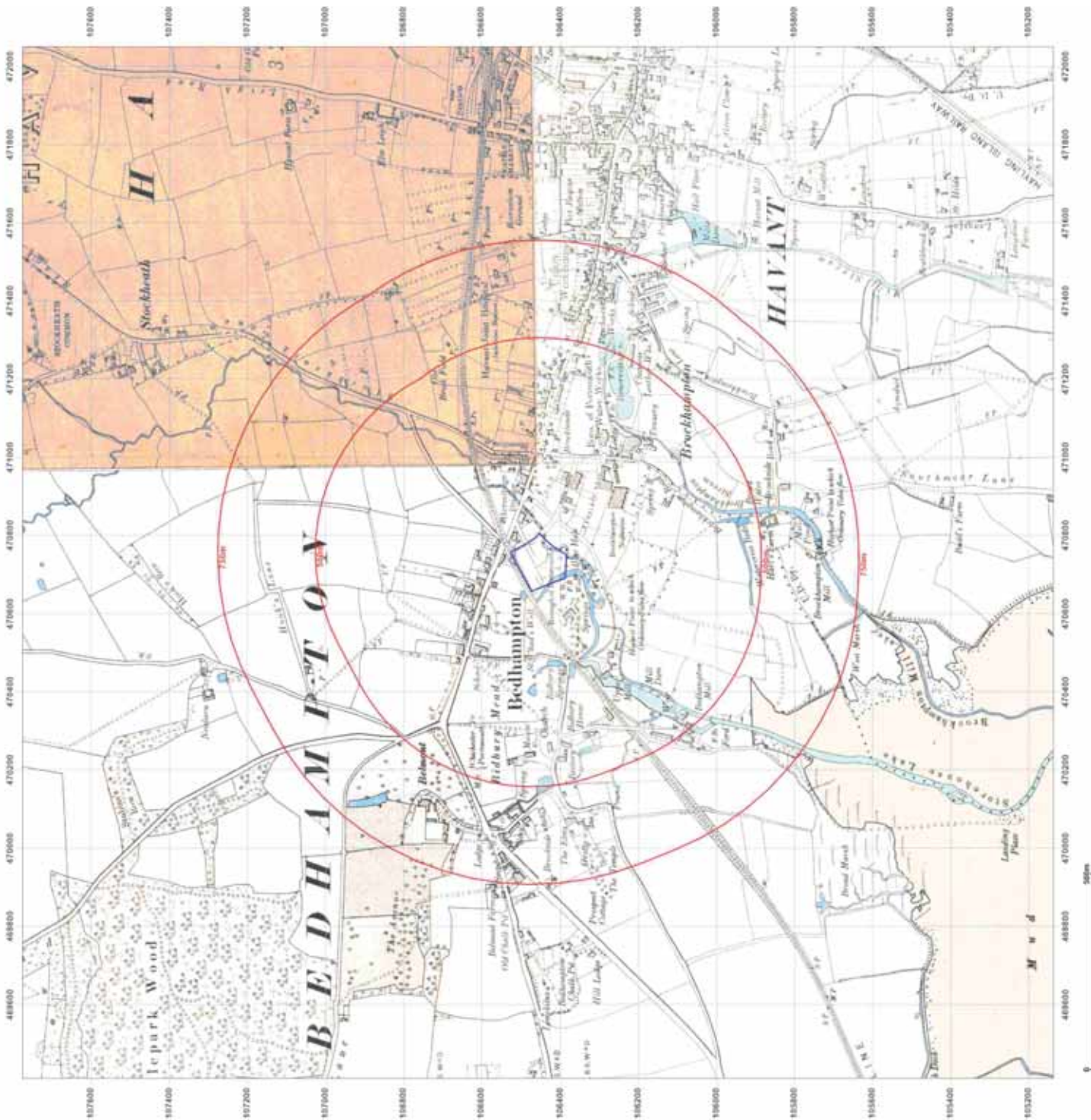


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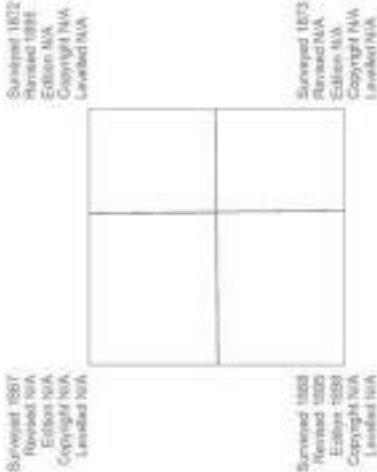
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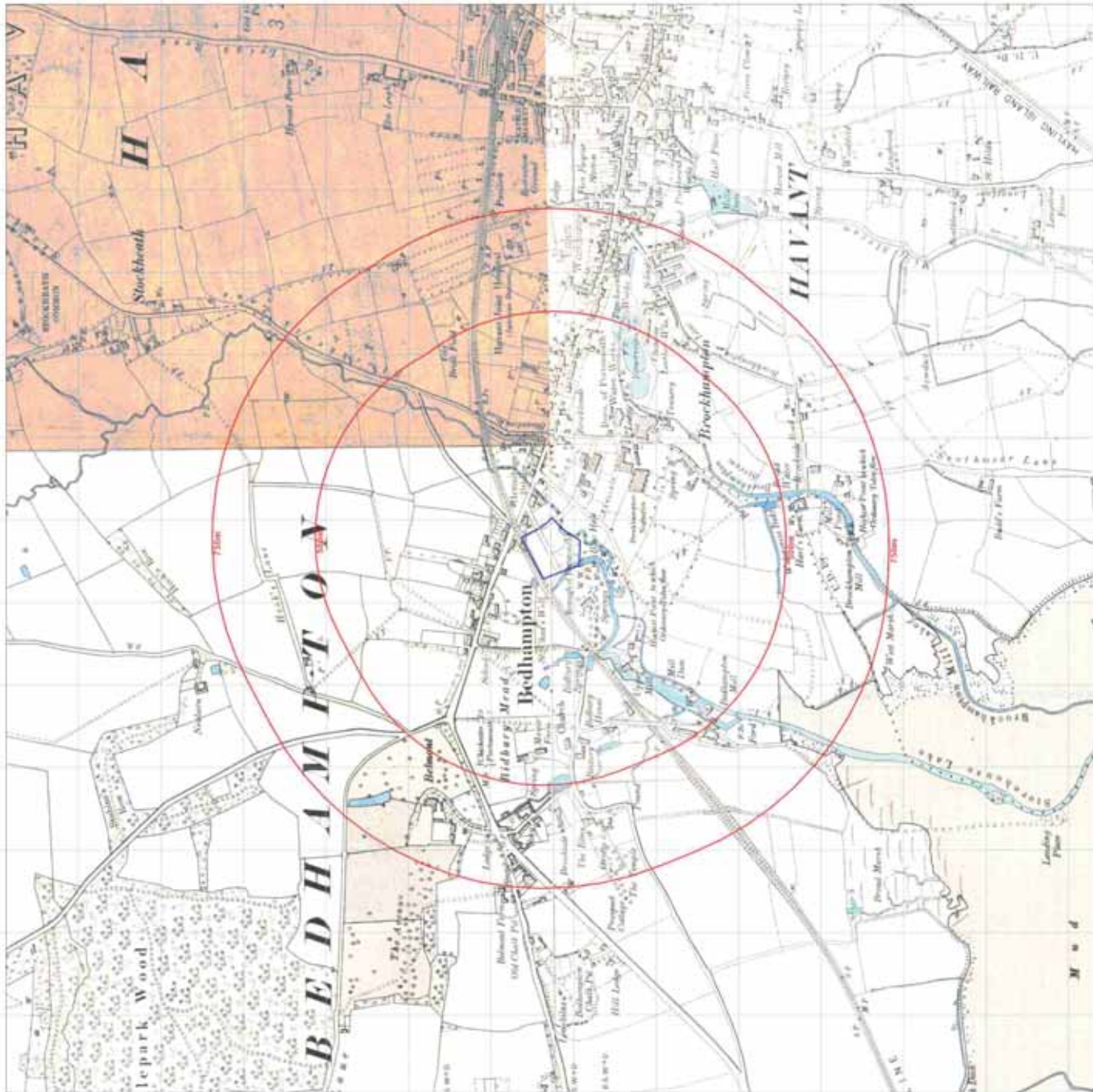


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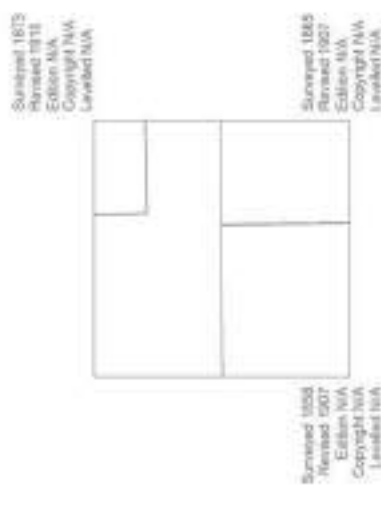
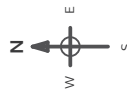
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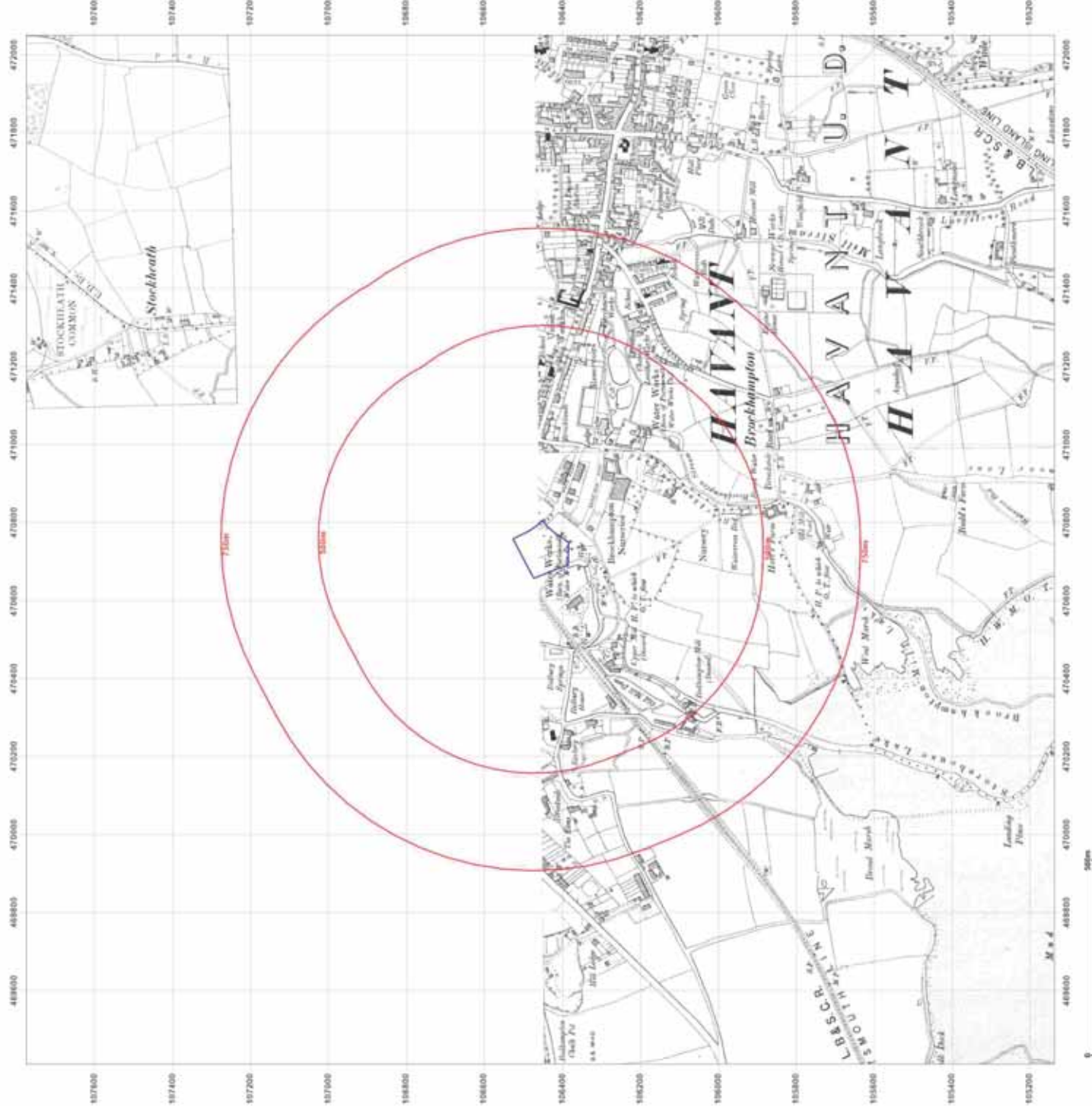


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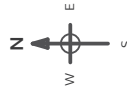
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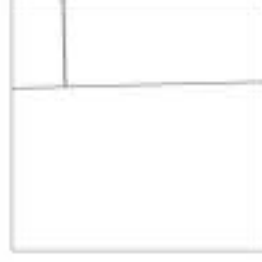
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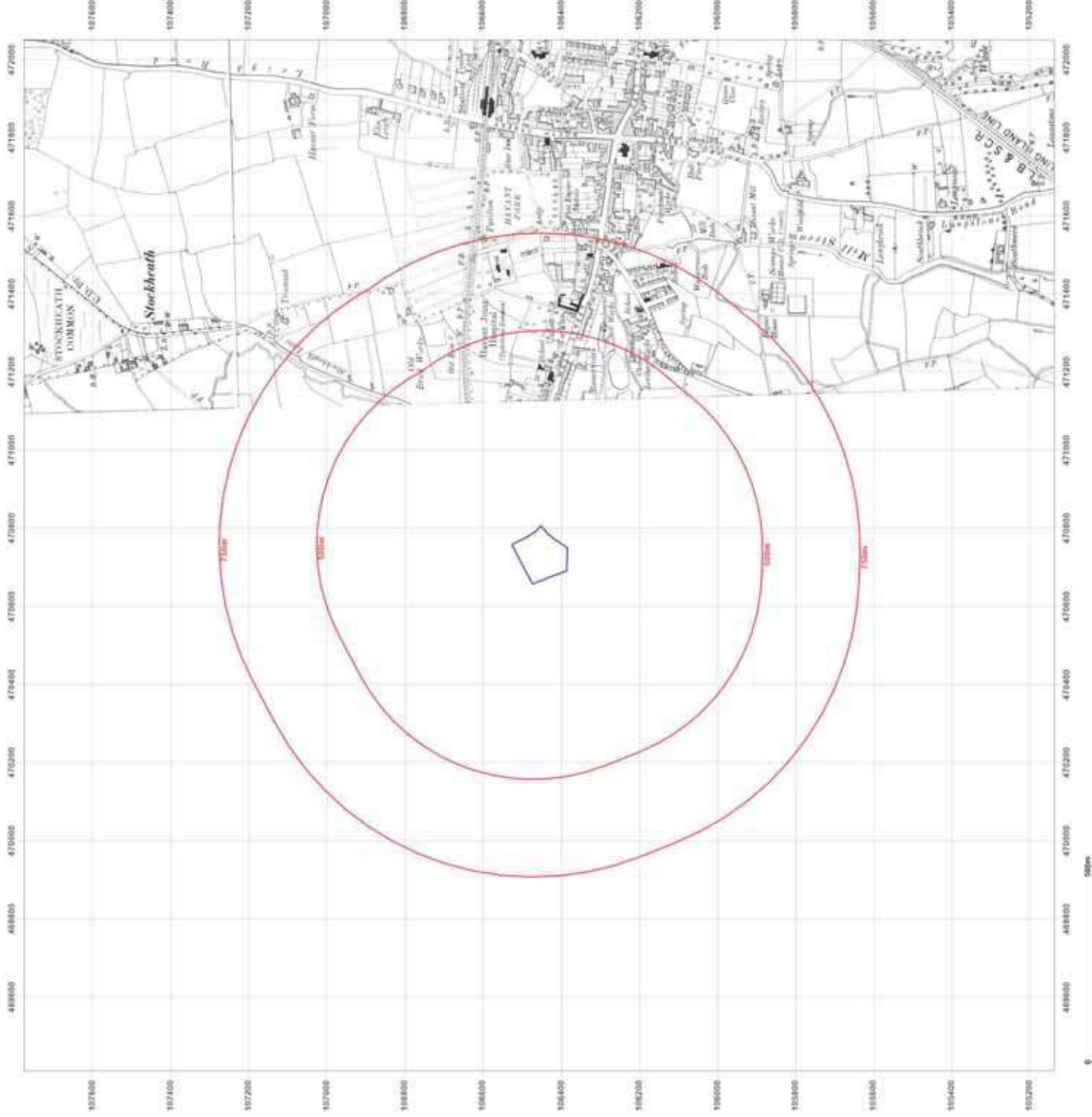


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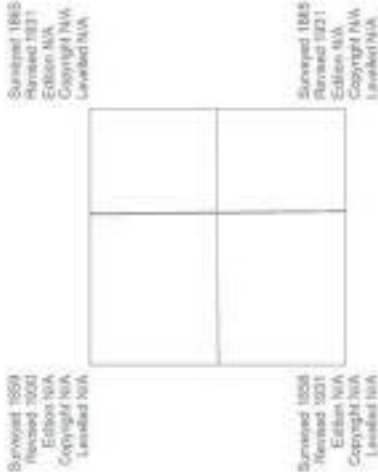
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Map Name: County Series

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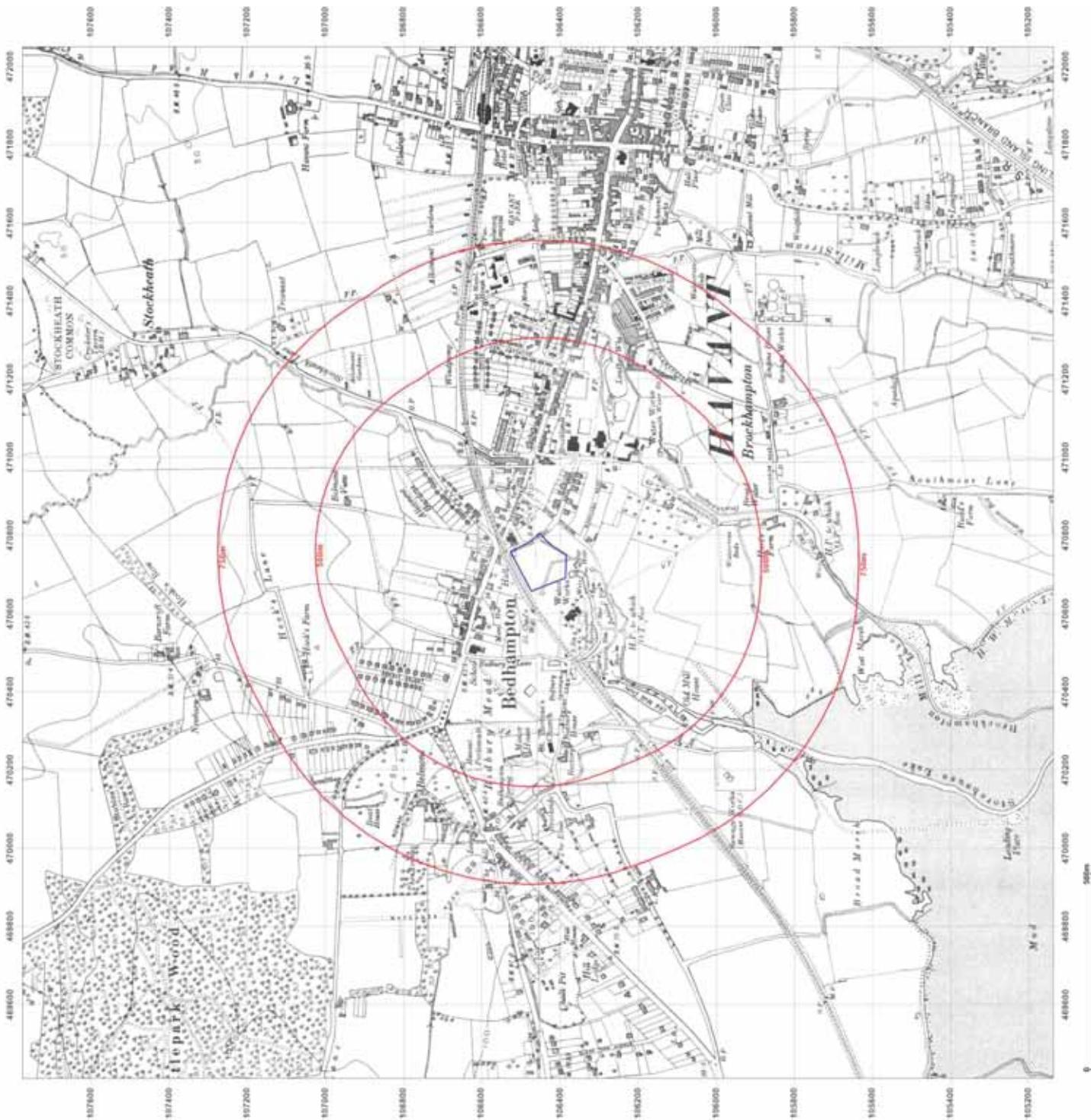


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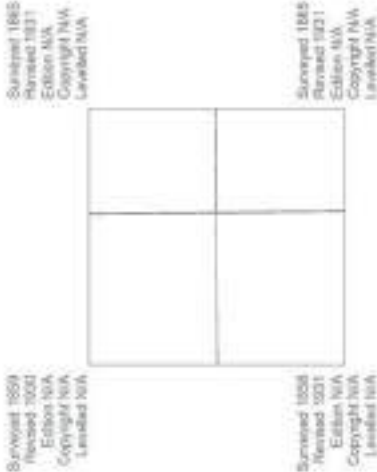
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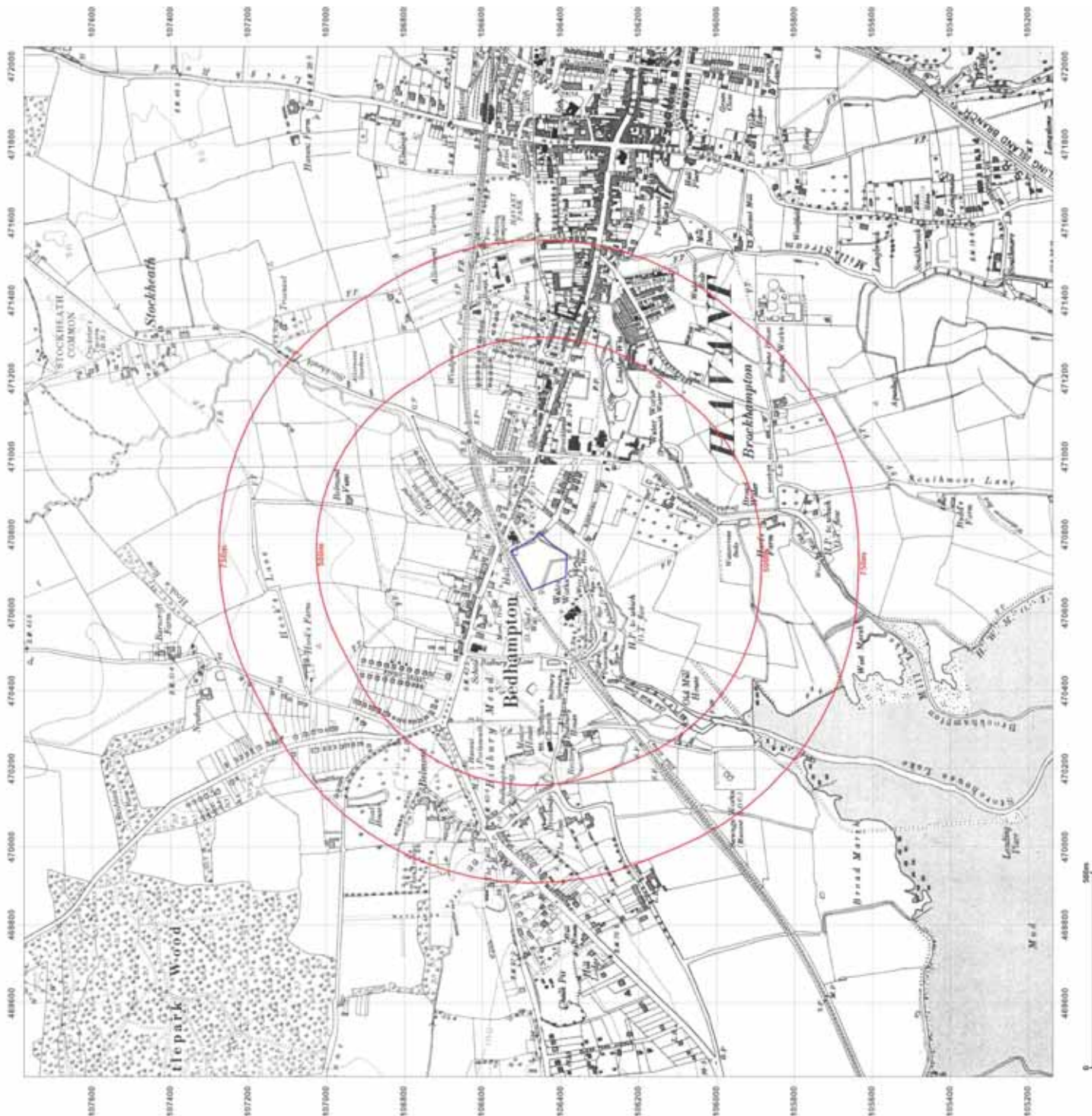


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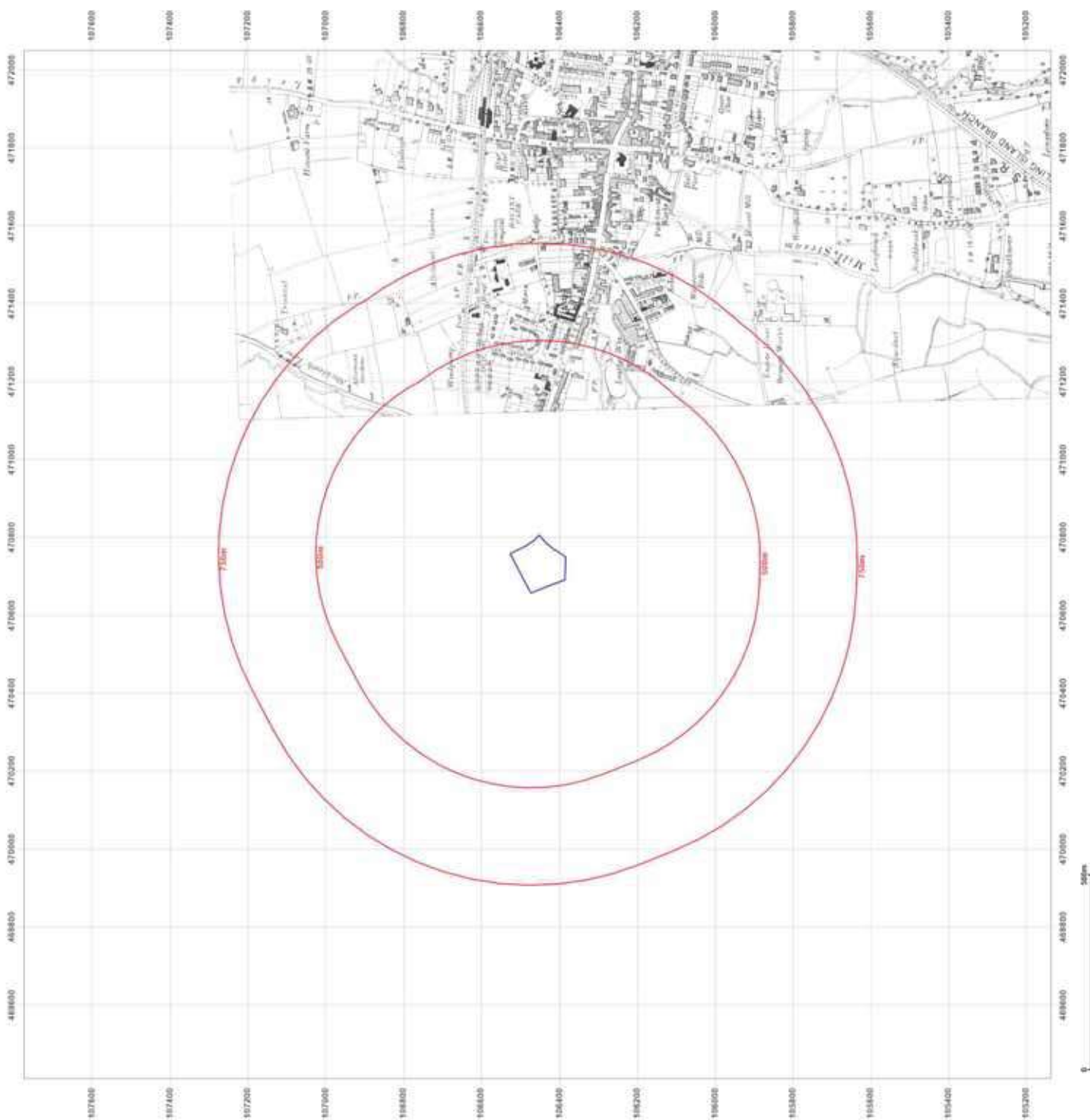


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Site Details:

Client Ref: EMS_734687_955963
Report Ref: EMS-734687_955963
Grid Ref: 470730, 106455

Map Name: County Series

Map date: 1932

Scale: 1:10,560

Printed at: 1:10,560



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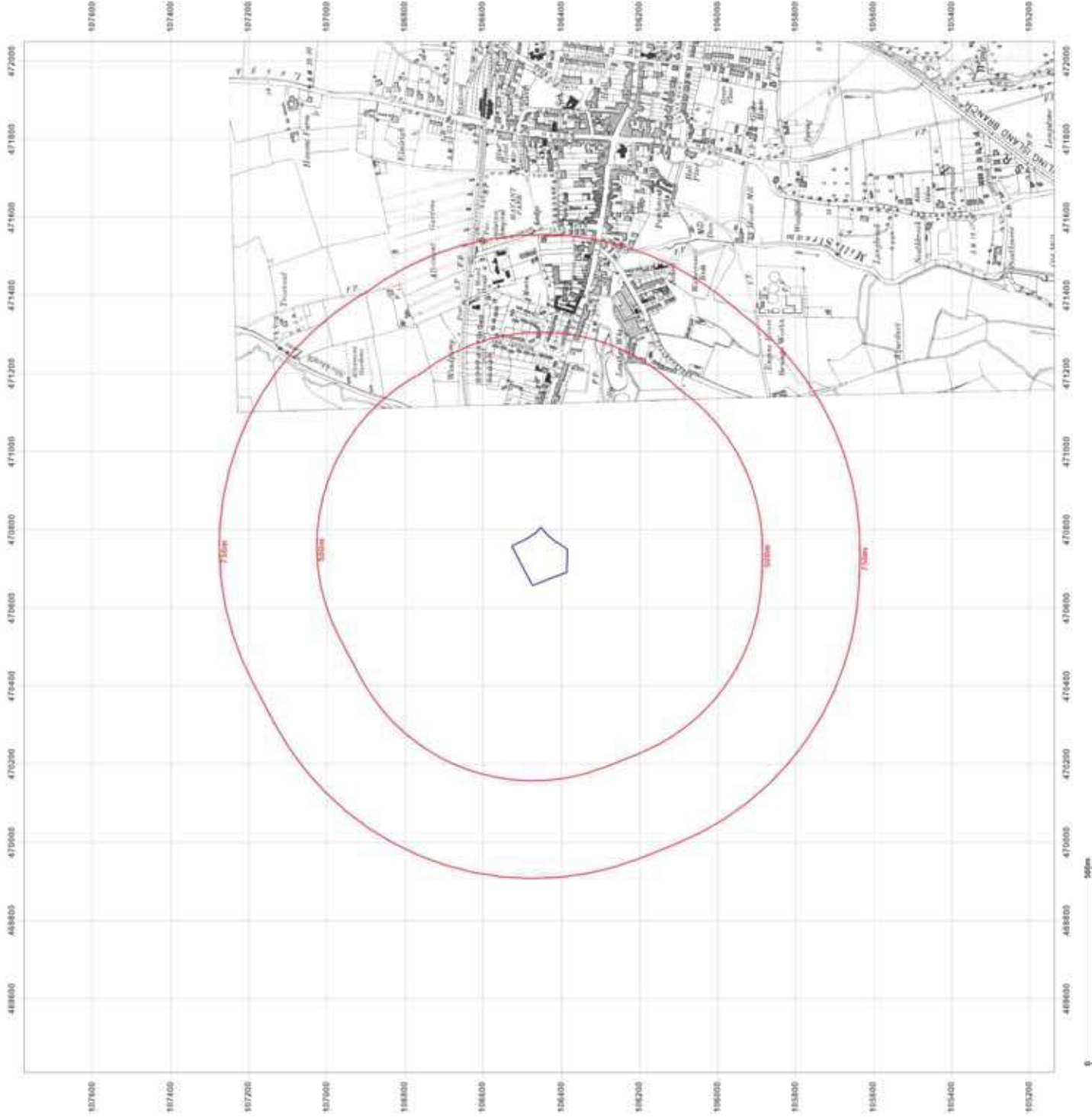
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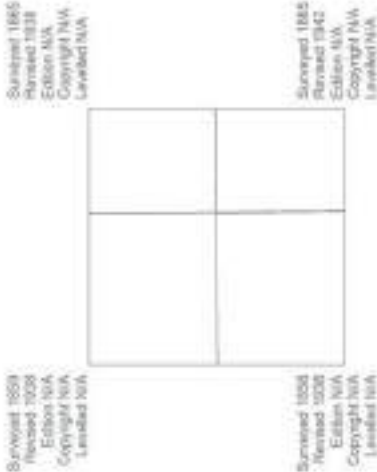
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Report Ref: EMS-734687 955963
Grid Ref: 470730, 106455

Map Name: County Series

Map date: 1938-1942

Scale: 1:10,560

Printed at: 1:10,560



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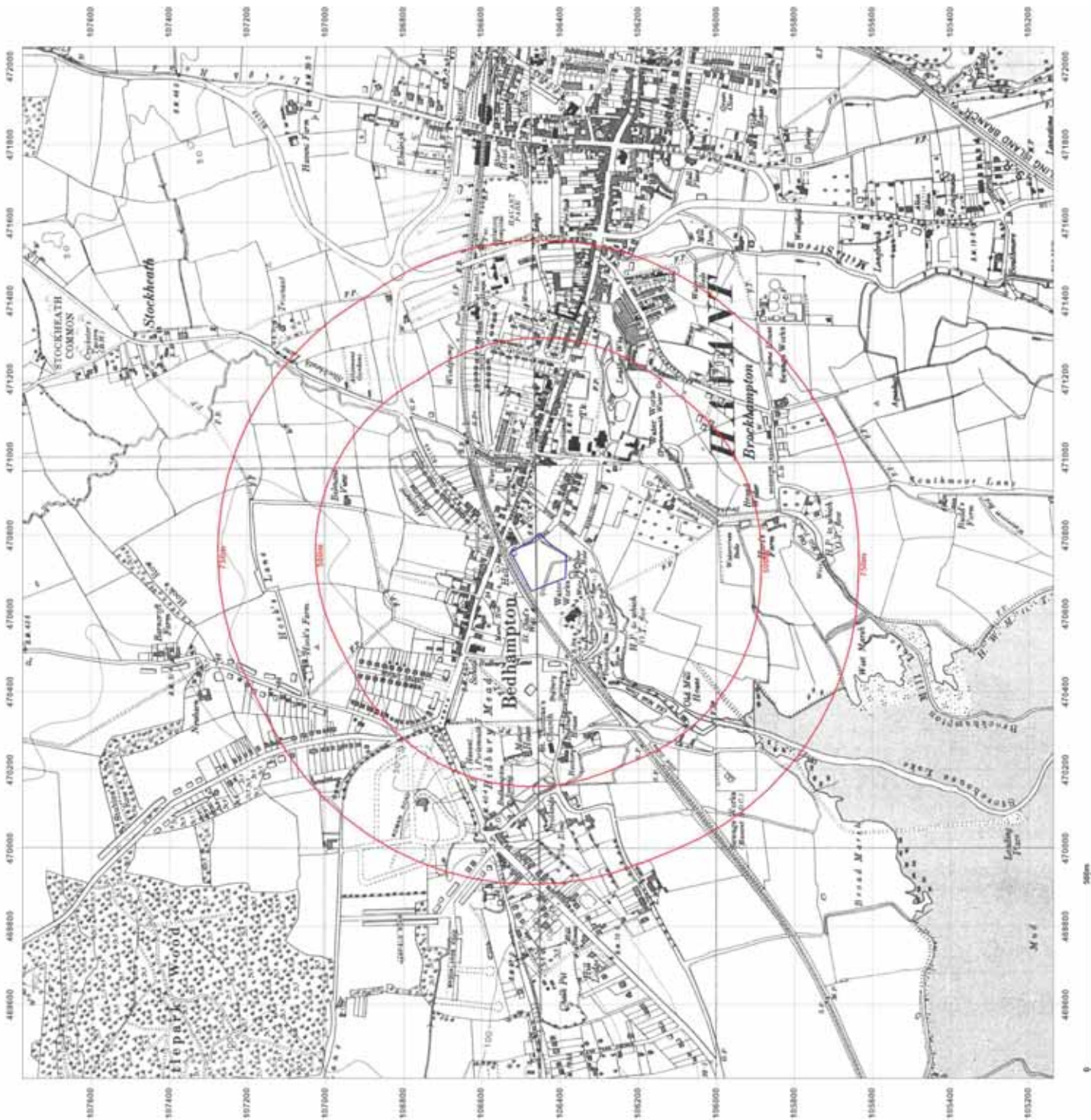


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Site Details:

Client Ref: EMS_734687_955963
Report Ref: EMS-734687_955963
Grid Ref: 470730, 106455

Map Name: Provisional

Map date: 1963

Scale: 1:10,560

Printed at: 1:10,560



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Edition 3/14
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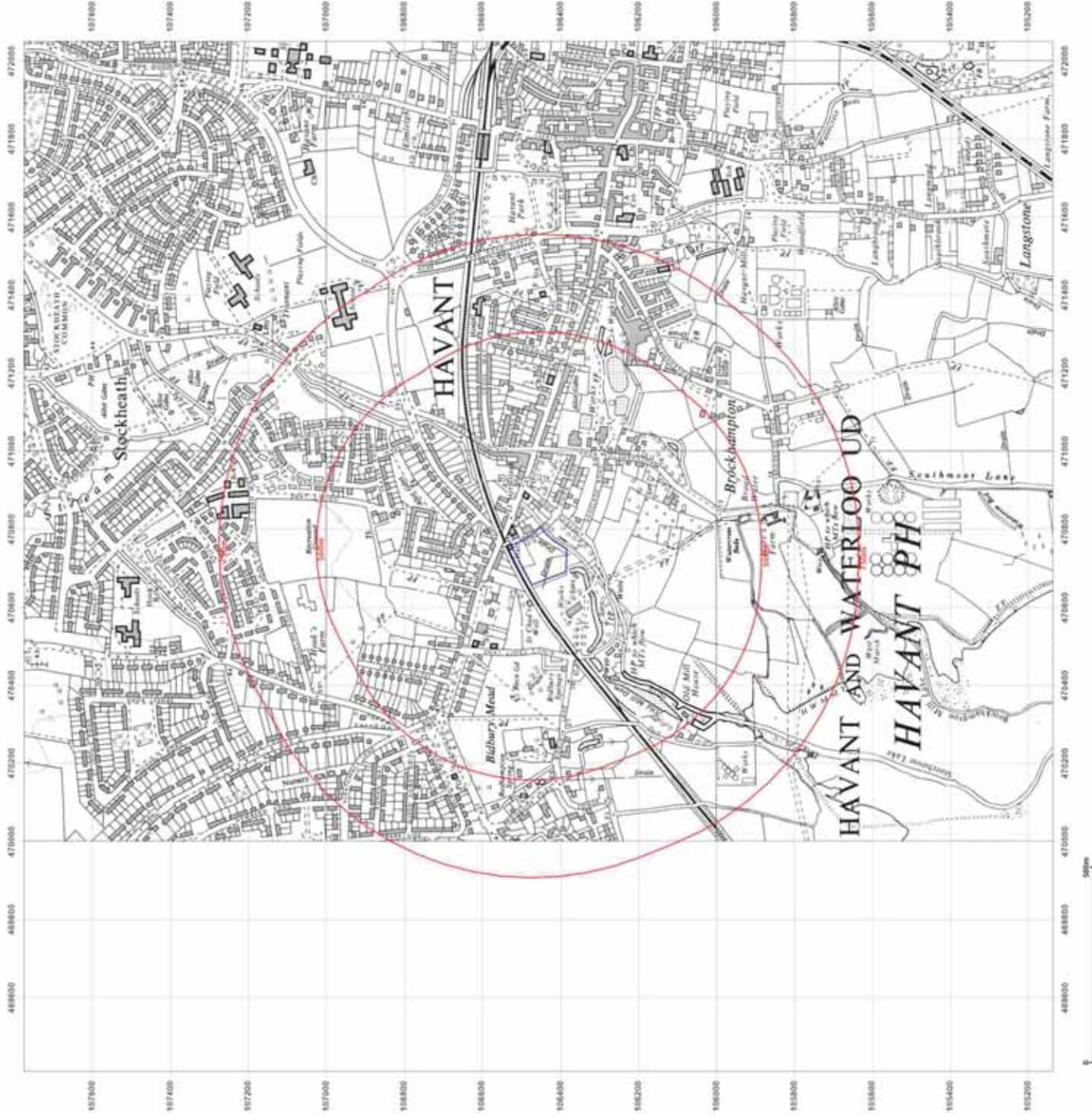


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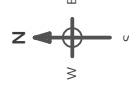
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Report Ref: EMS-734687_955963
Grid Ref: 470730, 106455

Map Name:	Provisional
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Map date: 1963-1966

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1993
Revised 1997
Edition Ninth
Copyright 1993
Printed Ninth

Revised 10/13
Revised 1988
Edition 10/13
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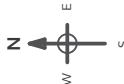
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Site Details:

Client Ref: EMS_734687_955963
Report Ref: EMS-734687_955963
Grid Ref: 470730, 106455

Map Name: National Grid
Map date: 1975-1980
Scale: 1:10,000
Printed at: 1:10,000



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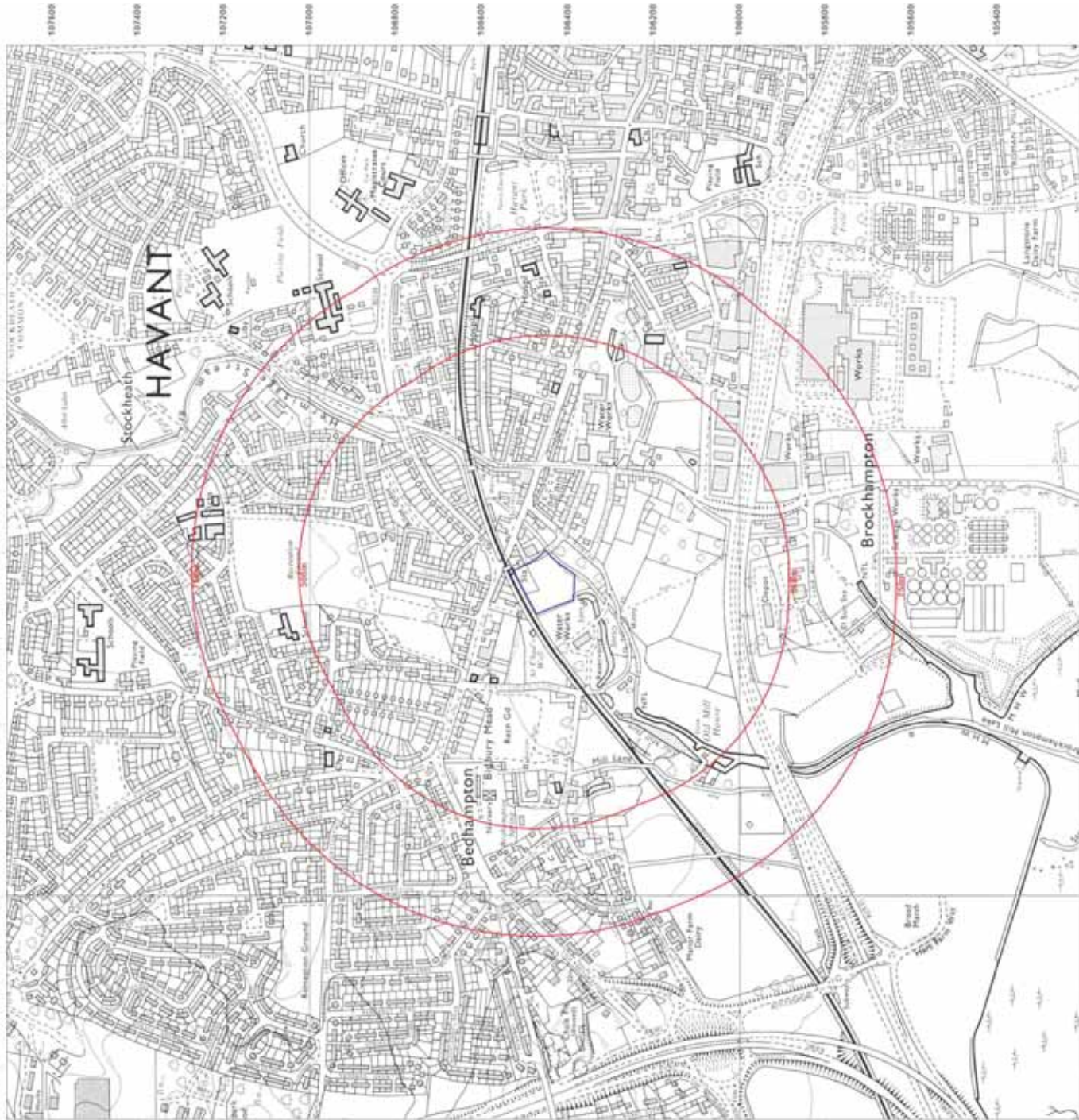


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Site Details:

Client Ref: EMS_734687_955963
Report Ref: EMS-734687_955963
Grid Ref: 470730, 106455

Map Name: National Grid

Map date: 1991

Scale: 1:10,000

Printed at: 1:10,000



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Site Details:

Client Ref: EMS_734687_955963
Report Ref: EMS-734687_955963
Grid Ref: 470730, 106455

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000



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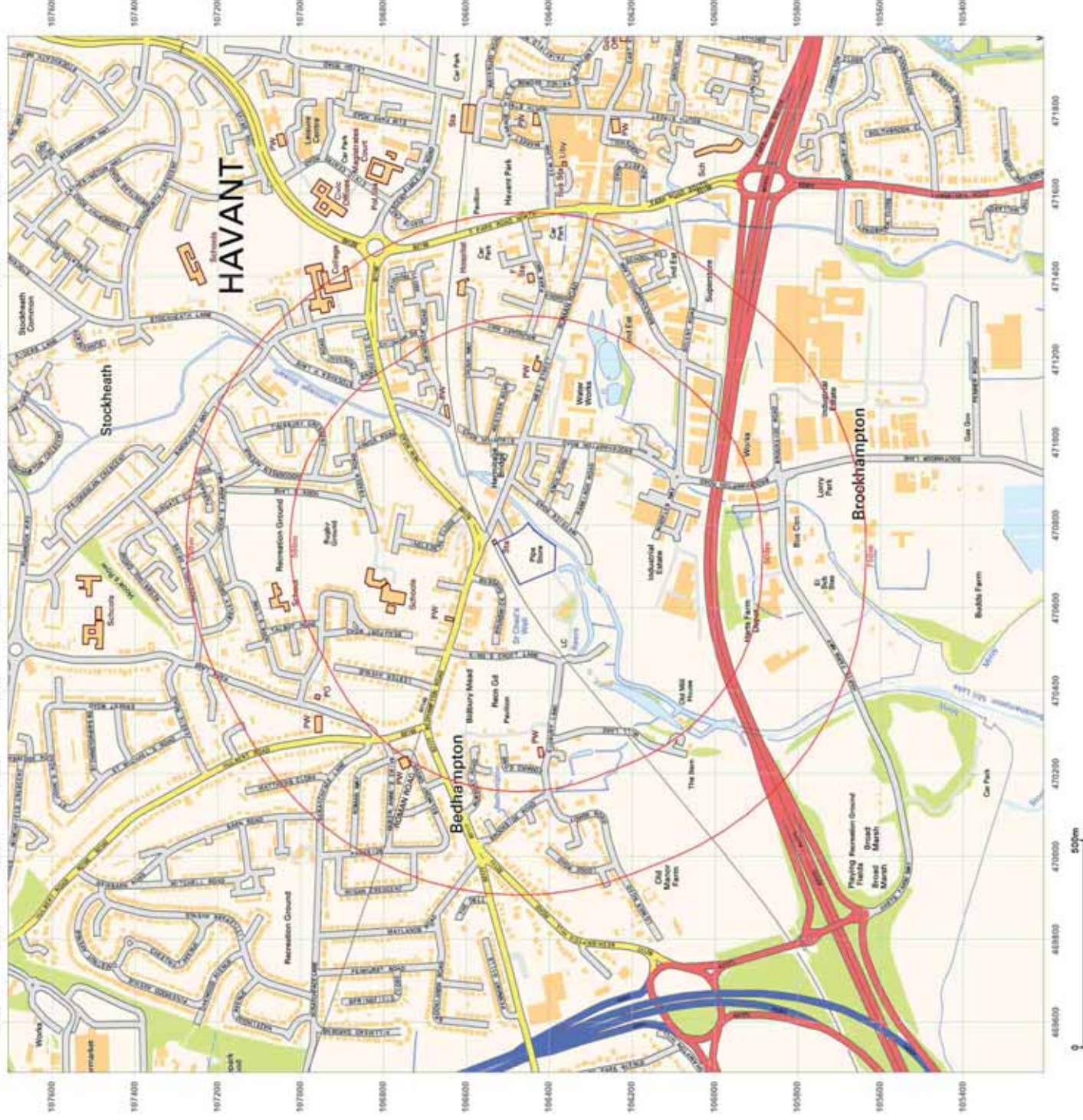


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Site Details:

Client Ref: EMS_734687_955963
Report Ref: EMS-734687_955963
Grid Ref: 470730, 106455

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



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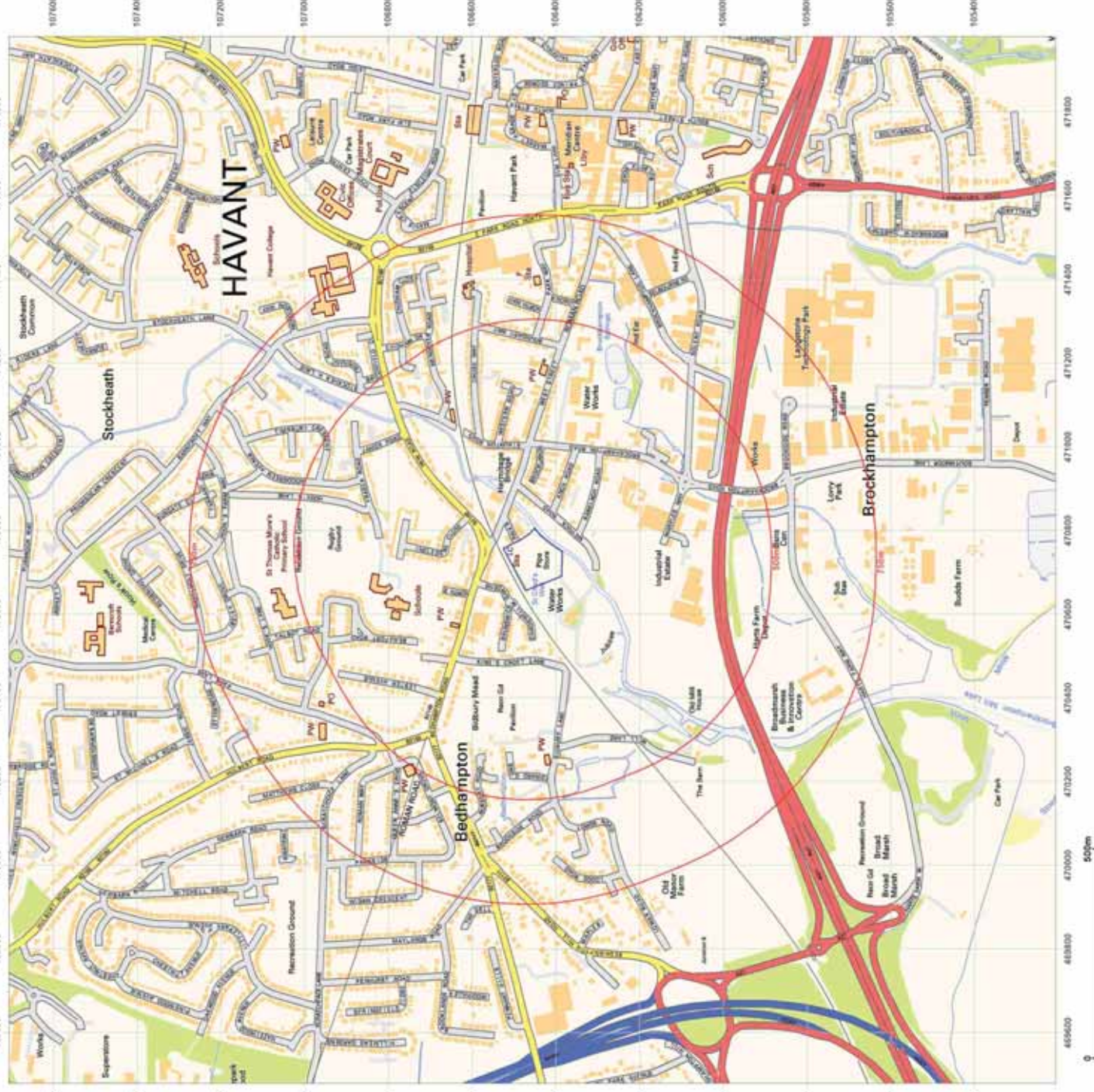


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Site Details:

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Report Ref: EMS-734687_955963
Grid Ref: 470730, 106455

Map Name: National Grid

Map date: 2021

Scale: 1:10,000

Printed at: 1:10,000



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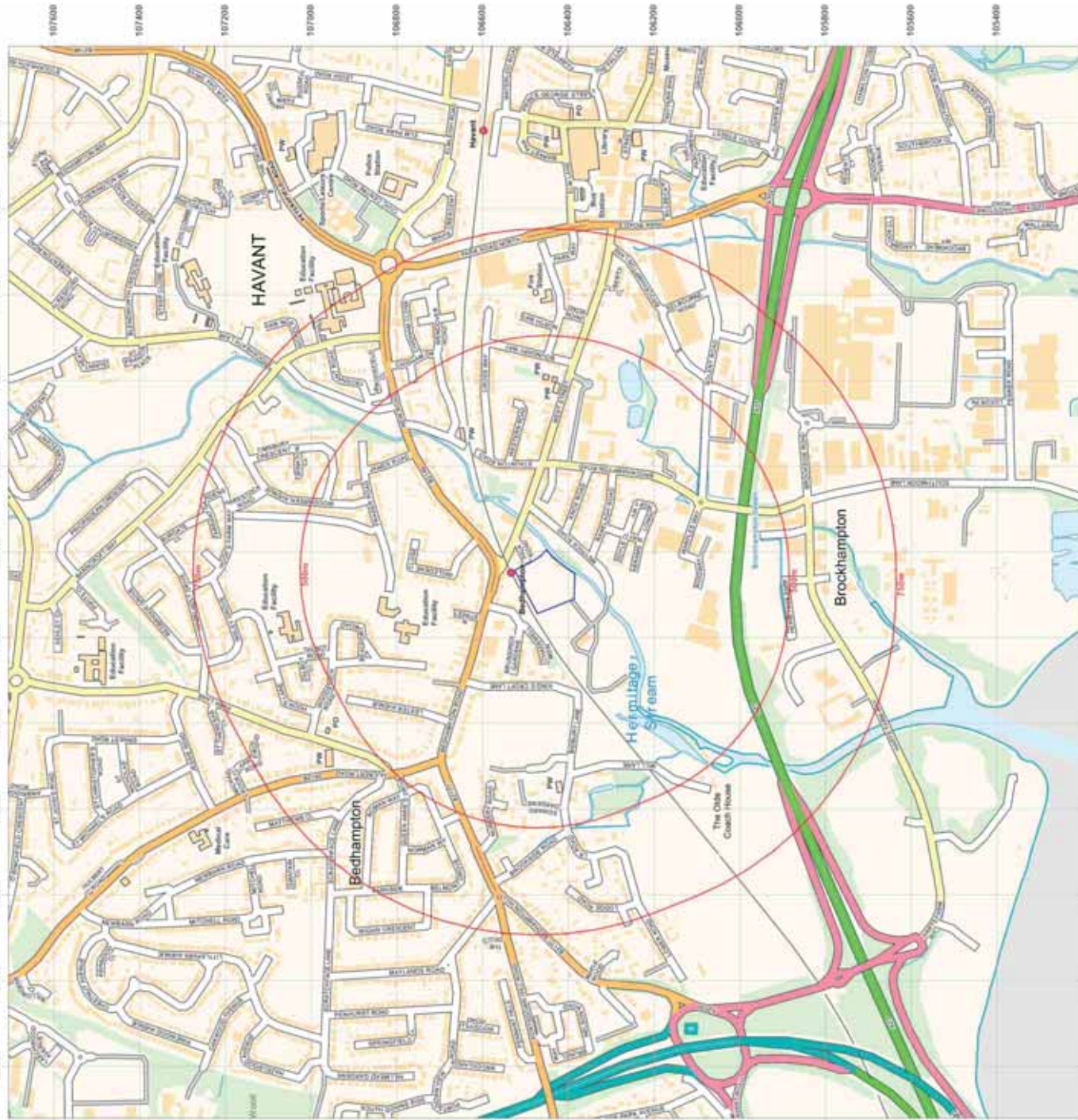


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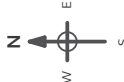
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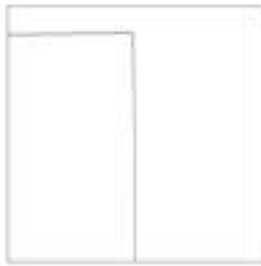
Site Details:

Client Ref: EMS_734687_955963
Report Ref: EMS-734687_955963
Grid Ref: 470730, 106455

Map Name: County Series
Map date: 1868
Scale: 1:2,500
Printed at: 1:2,500



Surveyed 1858
Revised 1858
Edition N/A
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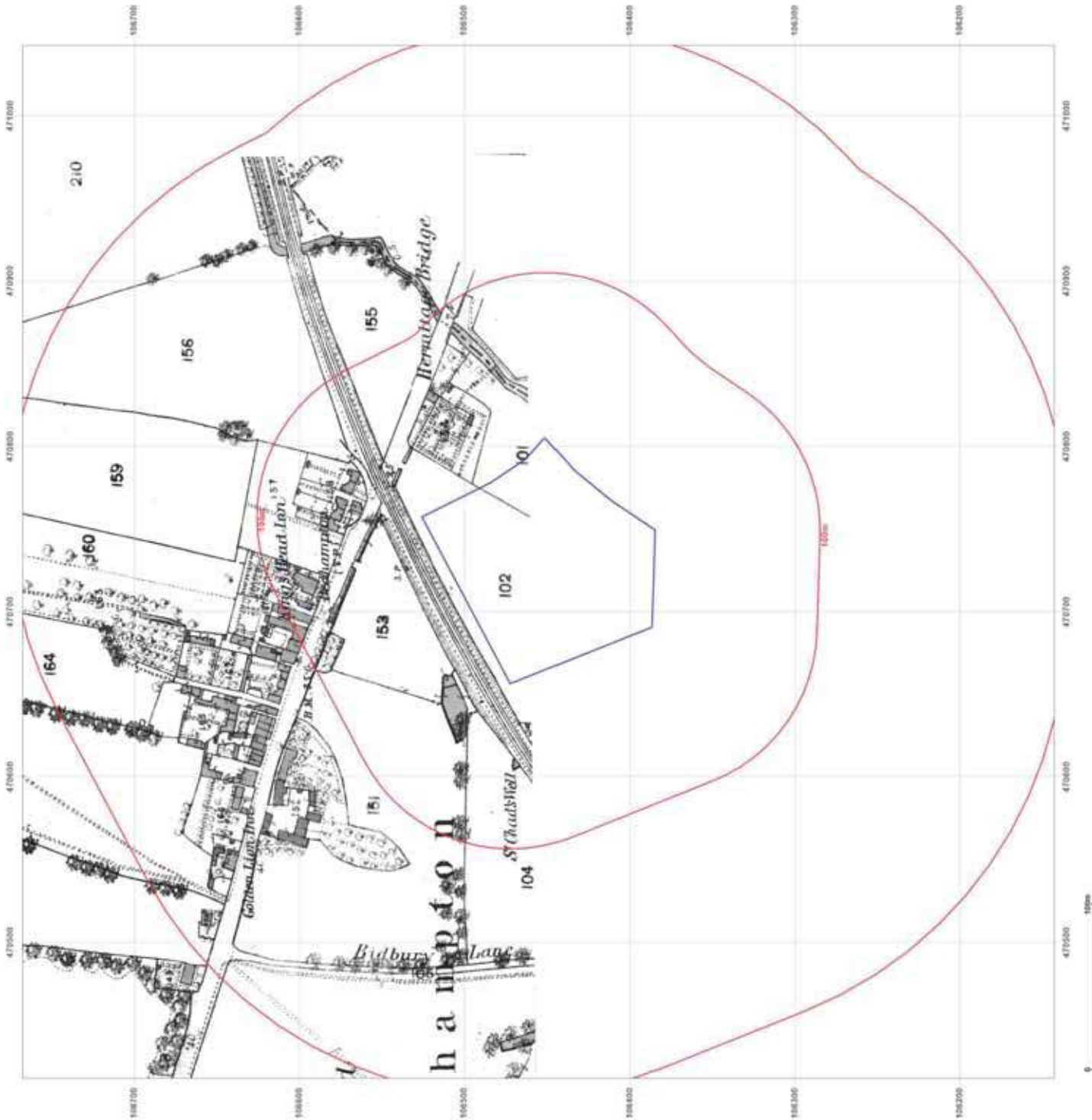


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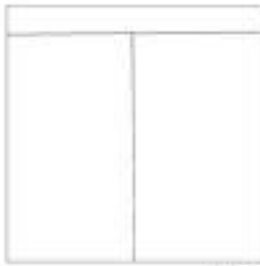
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Report Ref: EMS-734687_955963
Grid Ref: 470730, 106455

Map Name: County Series
Map date: 1867-1868
Scale: 1:2,500
Printed at: 1:2,500



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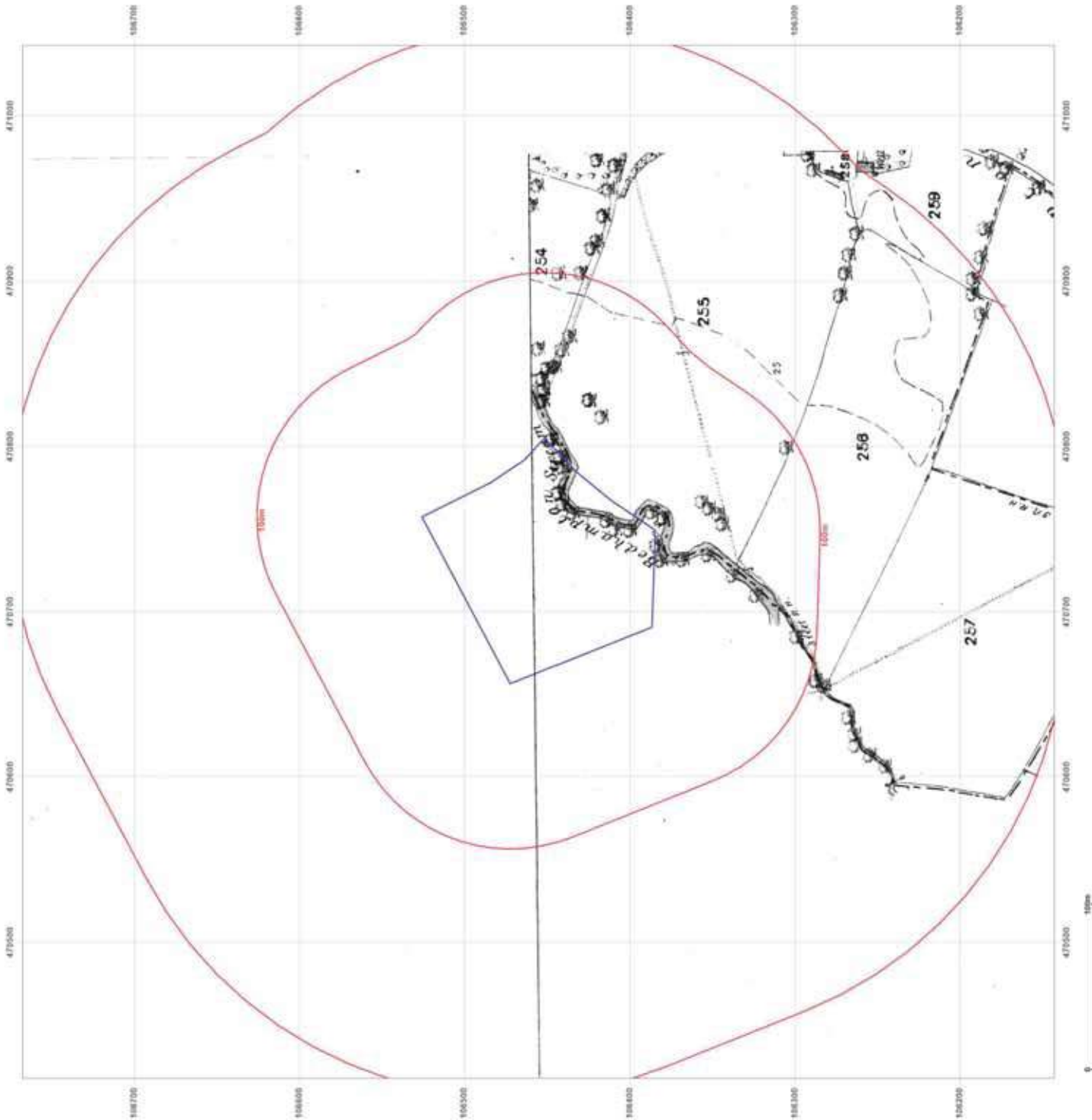


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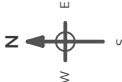
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Site Details:

Client Ref: EMS_734687_955963
Report Ref: EMS-734687_955963
Grid Ref: 470730, 106455

Map Name: County Series
Map date: 1869
Scale: 1:2,500
Printed at: 1:2,500



Surveyed 1869
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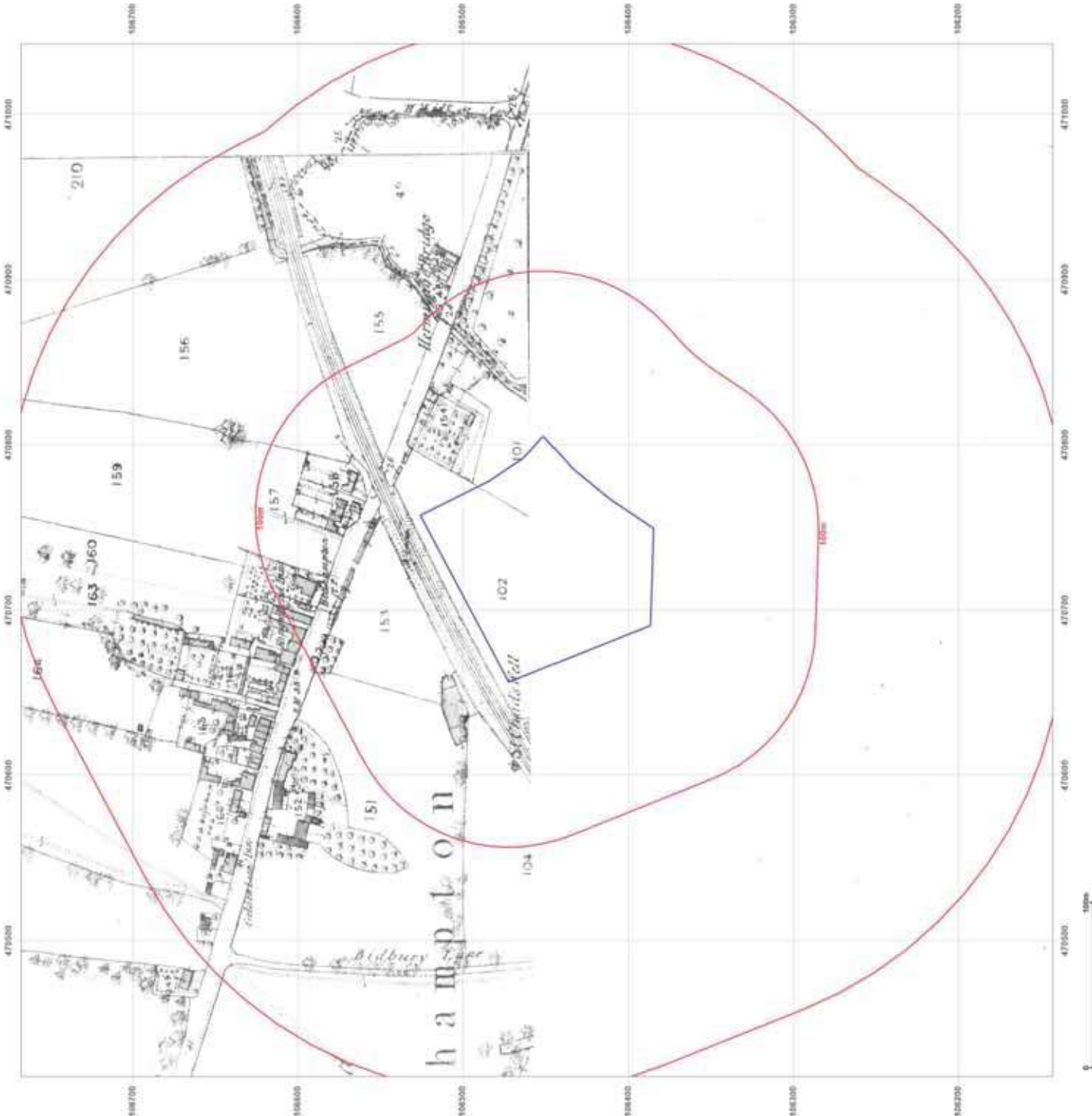


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Site Details:

Client Ref: EMS_734687_955963
Report Ref: EMS-734687_955963
Grid Ref: 470730, 106455

Map Name: County Series

Map date: 1868-1869

Scale: 1:2,500

Printed at: 1:2,500



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