Hywel Dda University Health Board

URGENT & PLANNED CARE HOSPITAL

Spring Gardens, Whitland (Formerly Known as Site 12) - Site Appraisal

2424-WSP-12-RP-CO-0001
DECEMBER 2022

PUBLIC

Hywel Dda University Health Board

URGENT & PLANNED CARE HOSPITAL

Spring Gardens, Whitland (Formerly Known as Site 12) - Site Appraisal

TYPE OF DOCUMENT (VERSION) PUBLIC

PROJECT NO. 70092424

OUR REF. NO. 2424-WSP-12-RP-CO-0001

DATE: DECEMBER 2022

Hywel Dda University Health Board

URGENT & PLANNED CARE HOSPITAL

Spring Gardens, Whitland (Formerly Known as Site 12) - Site Appraisal

WSP

1 Capital Quarter
Tyndall Street
Cardiff
CF10 4BZ

Phone: +44 2920 769 200

WSP.com

QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	Draft Issue	Minor updates		
Date	June 2022	December 2022		
Prepared by	Various	Various		
Signature				
Checked by	Various	Various		
Signature				
Authorised by	Andrew Wilkinson	Andrew Wilkinson		
Signature				
Project number	70092424	70092424		
Report number	2424-WSP-12-RP-CO-0001 P01	2424-WSP-12-RP-CO-0001 P02		
File reference	70092424	70092424		

CONTENTS

1	INTRODUCTION	1
2	DRAINAGE	4
3	FLOOD RISK	14
4	TRANSPORT	24
5	ECOLOGY	58
6	UTILITIES	68
7	ENVIRONMENTAL APPRAISAL	76
8	GROUND CONDITIONS	95
9	TOWN PLANNING	98

TABLES

Table 2-1 - Greenfield Run-off Rates	8
Table 2-2 - Estimated Attenuation Storage Requirements	8
Table 2-3 - Estimated Foul Flows	12
Table 4-1 – Site 12 – Bus Services	40
Table 4-2 – Site 12 – Rail Services	42
Table 4-3 – Personal Injury Collisions (PICs) – Site 12	52
Table 5-1 - Key ecological constraints and further survey requirements	60
Table 7-1 - Listed Buildings and Structures within 2km of the Site	77
Table 7-2 - Scheduled Monuments within 2km of the Site	78
Table 7-3 - Sensitive receptors within 2km of the Site	80

Table 7-4 - Public Rights of Way within 2km of the Site 81

Table 7-5 - Watercourses and waterbodies within 2km of the Site 82

Table 7-6 – Schedule 2 of the EIA Regulations 84

Table 7-7 – Review of Proposed Development against Environmental Sensitivities of Site 12 as identified within Schedule 3 of the EIA Regulations 85

Table 9-1 - Commited Develpoments 118

FIGURES

Figure 1-1 - Site Location 2

Figure 2-1 - Existing Surface Water Catchments 6

Figure 2-2 - Typical SuDS Management Train 9

Figure 3-1 - Development Advice Map 15

Figure 3-2 - Flood Risk from Rivers 16

Figure 3-3 - Flood Risk from Surface Water and Minor Watercourses 18

Figure 3-4 - Flood Map for Planning (Site) 22

Figure 3-5 - Flood Map for Planning (A477 at St Clears) 22

Figure 4-1 - Transport User Hierarchy 25

Figure 4-2 - Site 12 - Site Boundary 26

Figure 4-3 – Access from B4328 Spring Gardens 26

Figure 4-4 – On-Street Parking B4328 Market Street 27

Figure 4-5 – Traffic Calming Measures and 20mph Speed Limit B4328 Market Street 28

Figure 4-6 – Level Crossing St Johns Road / Station Road 28

Figure 4-7 – Site 12 Walking Isochrone 30

Figure 4-8 – Google Map ‘Journey Planner’ Site Walking Distance 31

Figure 4-9 – Maes Abaty PRoW on Western periphery of site 33

Figure 4-10 – Maes Abaty PRoW Alignment 33

Figure 4-11 – Cut through from Maes Abaty to B4328 Spring Gardens 34

Figure 4-12 – Clos Llwyn Ty Gwyn Footways 35

Figure 4-13 – Site 12 Cycling Isochrone 37

Figure 4-14 – National Cycle Network 38

Figure 4-15 – Active Travel Network Map Routes – Whitland 39
Figure 4-16 - Site 12 - Location of Bus Stops 40
Figure 4-17 – Bus Route Plan - Whitland 41
Figure 4-18 – Network Map Surrounding Whitland 41
Figure 4-19 – Location of Rail Station 42
Figure 4-20 – B4328, West Street and North Road Traffic Flows ATC Locations 43
Figure 4-21 – ATC 605 – B4328 Spring Gardens 44
Figure 4-22 – ATC 604 – West Street 44
Figure 4-23 – ATC 165 – North Road 45
Figure 4-24 – A40 ATC Locations 46
Figure 4-25 – ATC 260 – A40 East of Whitland 46
Figure 4-26 – ATC 1292 – A40 West of Whitland 47
Figure 4-27 – Seasonality Variatrion in flows along the A40 48
Figure 4-28 - Typical Weekday AM Peak Average Speed Profile (0800) 49
Figure 4-29 - Typical Weekday Interpeak Average Speed Profile (1200) 49
Figure 4-30 - Typical Weekday PM Peak Average Speed Profile (1700) 50
Figure 4-31– PIC Study Area 51
Figure 4-32 - Personal Injury Collisions within Study Area 51
Figure 4-33 – Key Physical Improvements 54
Figure 6-1 - Site Power Overview 68
Figure 6-2 - Power Upgrade Works 72
Figure 6-3 - Site Water Overview 72
Figure 6-4 - Site Gas Overview 73
Figure 6-5 - Openreach Overview 75
Figure 9-1 - Extract of Policies map showing housing allocations T2/6/h3 and T2/6/h4 104
Figure 9-2 - LDP Appendix 1 Role and function of settlements - Whitland 106
Figure 9-3 - Revised LDP Deposit Plan (2020) - Extract of Policies map 114
Figure 9-4 - Revised LDP Deposit Plan (2020) - Draft policy SP16 Spatial Framework 117

APPENDICES

APPENDIX A

LAND PLANS

APPENDIX B

DRAINAGE

APPENDIX C

SITE ACCESS

APPENDIX D

ECOLOGY

APPENDIX E

UTILITIES

APPENDIX F

ENVIRONMENTAL

APPENDIX G

GROUND

1 INTRODUCTION

1.1 BACKGROUND

Hywel Dda University Health Board (HDdUHB) are proposing to construct a new Urgent and Planned Care Hospital as part of their estate strategy designed to support a future model of care based around a network of integrated health & wellbeing centres and community hospitals.

The new Urgent and Planned Care Centre in the south of the region would centralise all specialist children and adult services. It will be the main site for the network of hospitals providing urgent and planned care services across the Health Board catchment area, offer a more centralised model for all acute services and will also include specialist mental health facilities.

To facilitate the construction of the Urgent and Planned Care Hospital, HDdUHB are carrying out due diligence on a shortlist of 3no. sites across South-west Wales to allow the selection of the most appropriate site.

This particular report provides a Technical Appraisal assessing the constraints and opportunities associated with the delivery of a new development (the proposed development) on 'Site 12' which is located at Land off Spring Gardens, Whitland, herein referenced as the 'Site'.

1.2 DESCRIPTION OF DEVELOPMENT

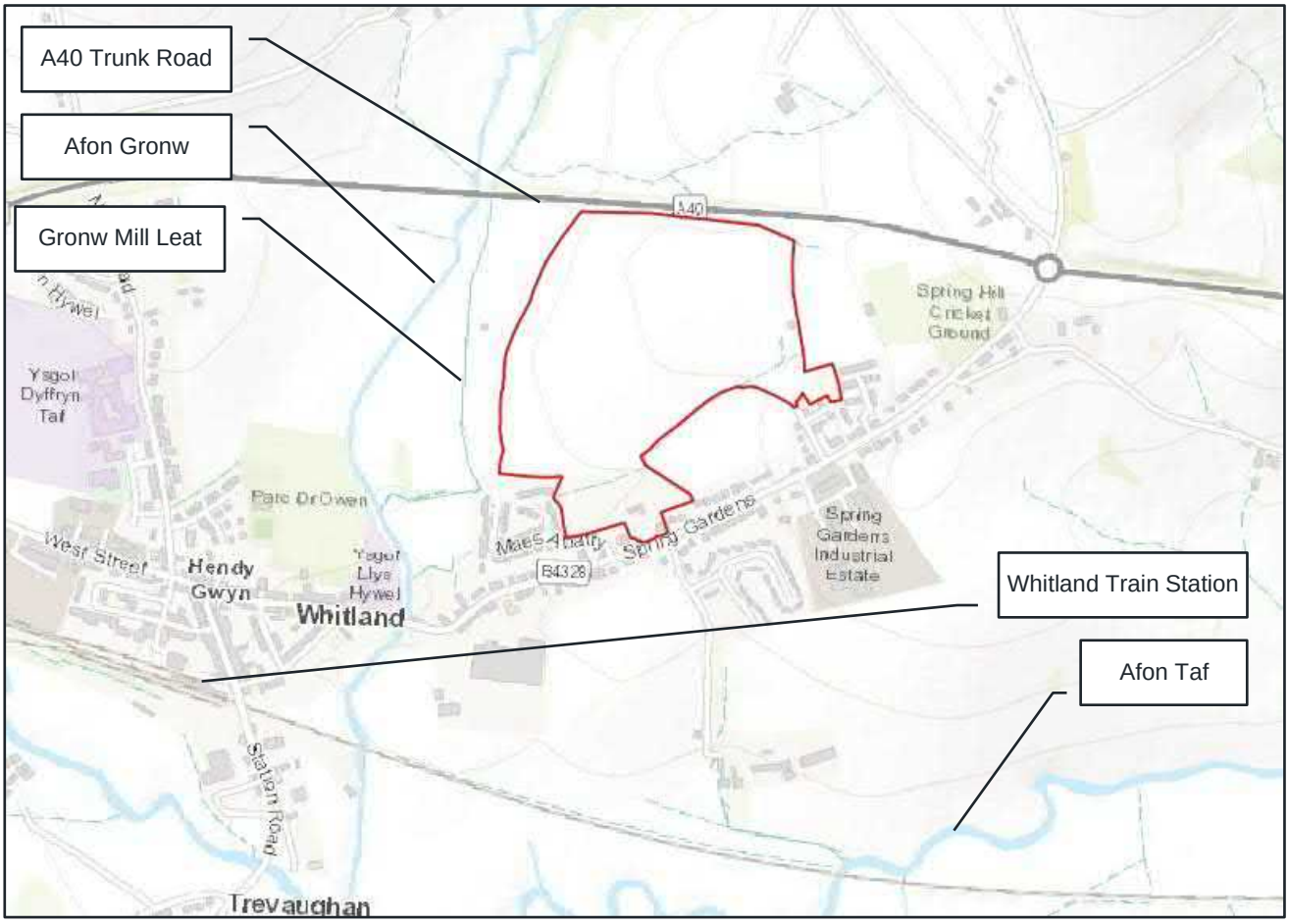
The proposed development is a 'C2 hospital' use class (as defined in the Town and Country Planning Act) with all the other uses being ancillary to the wider healthcare delivery such as mental health accommodation, , research and development and office facilities, clinical support facilities, education and training facilities, staff and visitor welfare facilities, facilities management services, external and ancillary residential accommodation, shops, food and drink facilities, helipad with associated public realm and landscaping, earthworks, highways and access infrastructure, car parking and surface water drainage infrastructure and an energy centre to service the buildings.

1.3 SITE LOCATION

The site is located directly to the north-east of central Whitland and has a British National Grid Reference of 220650, 217000. The site location is illustrated in Figure 1-1.

The A40 forms the northern boundary of the site; the southern boundary of the site is formed of Spring Gardens, with residential developments also located at the south-west and south-east of the site. Situated adjacent to the south-western corner of the site is the Maes Abaty Foul Pumping Station; the Whitland Rugby club pitch lies to the east of the site.

The Afon Marlais passes approximately 150-300m to the east of the site. Also, a mill leat off the Gronw lies approximately 40-150m to the east of the site.



Site Boundary

Figure 1-1 - Site Location

1.4 SITE DESCRIPTION

The site is considered to be greenfield, is approximately 19.0 ha in size and has historically been used for agricultural purposes, with The Beeches residential property located towards the south of the site, off Spring Gardens. The site slopes from east to west with a high point of approximately 46mAOD and a low point of 24mAOD. The Site is located approximately 650m to the north-east of Whitland Station.

The Site is located in Development Advice Map Zone A, which is considered to be at little or no risk of fluvial or coastal/tidal flooding.

There are no Listed Buildings in the nearby vicinity of the Site.

The Site is not located in any statutory designated sites (Ramsar, Sites of Special Scientific Interest (SSSI), Special Areas of Conservation (SAC), Special Protection Areas (SAC)).

A number of residential properties are located immediately to the south of the Site boundary on Spring Gardens, Maes Abaty and Clos Llwyn Ty Gwyn.

1.4.1 DESCRIPTION OF THE LOCAL AREA

The Site covers approximately 47 acres of land and is situated north-east of Whitland in Carmarthenshire. Spring Gardens runs along the southern boundary of the site, with other clusters of properties adjacent to the south-western and south-eastern extents of the site. Immediately to the south of the site lies further residential properties and Whitland Train Station is located 650m to the south-west. The northern boundary of the site is boundary by the A40 trunk road. The western boundary of the site is adjacent to a rough track routing from Maes Abaty. Furthermore, to the east of the site lies the Whitland Rugby Club.

The town of Whitland, which is located to the west, comprises a large cluster of residential properties, community assets and businesses which interrupts the otherwise largely rural landscape.

Directly north of the Site is the A40 road which provides a key transport link between Carmarthen and Haverfordwest and various towns and villages in between.

2 DRAINAGE

2.1 INTRODUCTION

This section reviews the existing drainage infrastructure within and adjacent to the site. It also considers the options for management and discharge of both surface and foul water from the site.

The objectives of this section are to:

- Undertake a desktop investigation of the site's existing foul and surface water drainage,
- Comment on the feasibility of using SuDS disposal methods
- Assess the options of surface and foul water disposal from the development,
- Comment on opportunities presented by SuDS to provide green infrastructure,
- Identify whether attenuation to greenfield discharge rates is required,
- Produce a conceptual drainage strategy for the site.

2.2 EXISTING DRAINAGE

The site lies adjacent to the catchment of the Whitland Wastewater Treatment Works.

Adjacent to the site a number of foul pumping stations (FPS) have been identified. The first of these serves the Maes Abaty residential development to the south-west of the site, and discharges via a 100mm rising main into the combined sewer in Spring Gardens. The second of these serves a residential development off Clos Llwyn Ty Gwyn to the south-east of the site, and discharges via a 100mm rising main into foul sewers within Clos Llwyn Ty Gwyn.

A surface water sewer is also present serving Clos Llwyn Ty Gwyn residential development. This routes though the site along the southern boundary before discharging into the minor watercourse located near the south of the site.

No records of drainage for The Beeches, off Spring Gardens, are available to confirm if the property is served by a private system or if it discharges into the public sewer.

Existing watercourses and land drainage features within and in close proximity to the site, which serve to drain surface water runoff from the site, are discussed in detail in Section 3.2.

2.3 DRAINAGE STRATEGY

2.3.1 SURFACE WATER DRAINAGE

The aim of the surface water drainage strategy is to mimic the natural catchment processes as closely as possible and adopt the principles of water management scheme as stated in section 2 of the statutory "Sustainable Drainage Systems Standards for Wales" (SDSSW)[1].

From the 7th January 2019, Schedule 3 of the Flood and Water Management Act has been implement by the Welsh Government which requires any development of more than one unit or where the construction area is greater than 100m² to comply with the SuDS Approving Bodies (SAB) / Welsh Ministers' design guidance. The standards are listed below;

- S1 – Surface Water Runoff Destination

[1] Welsh Government, 2018. *Statutory standard for sustainable drainage systems – designing, constructing, operating and maintaining surface water drainage systems*. Cardiff: Welsh Government.

- S2 – Surface Water Runoff Hydraulic Control
- S3 – Water Quality
- S4 – Amenity
- S5 – Biodiversity
- S6 – Design of Drainage for Construction, Operation and Maintenance

The Standards listed will need to be met by the design in order to comply with the SDSSW. S1 is a hierarchy standard, with standards S2-S6 being fixed.

2.3.1.1 S1 – Surface Water Runoff Destination

To determine the best method for disposal of surface water flows, the options outlined under Standard S1 of the SDSSW 2018 have been considered. This states that disposal should be made through the hierarchical approach, each of these options are considered in order of preference.

Collected for Use

The suitability of this option will depend on the proposed water usage of the development, if the development has low grey water demand, the collection of water for reuse may not be economical or feasible, however, if the demand for grey water is deemed to be high then rainwater harvesting could be an appropriate solution for parts of the scheme.

The use of rainwater harvesting would need to be used in conjunction with one of the below methods of discharge to cater for exceedance flows in extreme rainfall events where the rainfall volume exceeds the volume of surface water storage provided by the rainwater harvesting tanks.

Infiltration Methods

Two sources have been considered to get a preliminary understanding of the feasibility of infiltration at the site, British Geological Survey (BGS) information[2], and Cranfield University Soilscapes information[3].

BGS information shows that the majority of the Site sits within the Llandeilo Flags formation, comprised of limestone, whilst a smaller portion sits on mudstone.

Cranfield University Soilscapes mapping shows the majority of the soil at the site to be comprised of freely draining Loamy soils.

Based on the above information, it is anticipated that infiltration may be feasible at the Site, but at the time of writing, no infiltration testing has been carried out at the Site. It should be noted, testing will be required to be undertaken as part of a future ground investigation to confirm the viability of this option of surface water disposal which may either act as the full solution or to supplement an alternate disposal strategy, such as attenuated discharge to a watercourse. It might be that SuDS features benefit from being unlined in order to allow a limited degree of infiltration.

Notwithstanding this, infiltration should not be relied upon as the sole means of surface water disposal at this stage.

[2] British Geological Society, 2022. *Geology of Britain Viewer*. Available at: http://mapapps.bgs.ac.uk/geologyofbritain/home.html. [Accessed 26th April 2022].
[3] Cranfield University, 2022. *Soilscapes.* Available at: http://www.landis.org.uk/soilscapes/. [Accessed 26th April 2022].

Discharge to Surface Water Body

Sequentially, the next consideration in the hierarchical approach is discharge to a surface water body. There are existing minor watercourses within the Site, and other larger watercourses to the west of the Site, the existing catchments of which are shown in Figure 2-1, illustrating which areas of the Site are understood to drain into each of the watercourses adjacent to, or within, the Site.

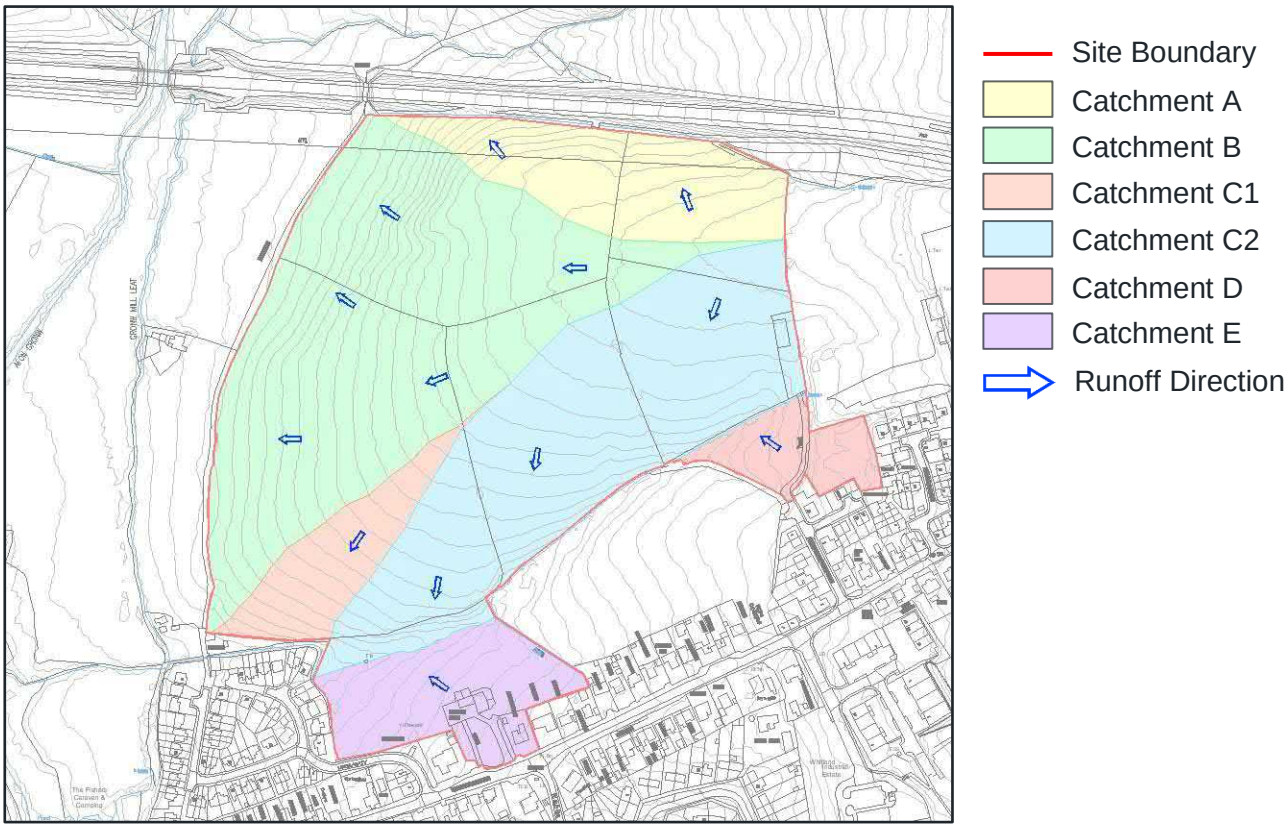


Figure 2-1 - Existing Surface Water Catchments

Catchment A is understood to discharge into a drain to the south of the A40. Catchment B is understood to runoff overland into the Gronw Mill Leat. Catchment C1 is understood to runoff overland through adjacent property into the minor watercourse which runs through the site. Catchments C2, D and E are understood to runoff into the minor watercourse that runs through the site. All of these catchments are understood to be sub-catchments of the Gronw Mill Leat, and subsequently also the Afon Gronw.

Should infiltration not be feasible then the drainage strategy should seek to mimic the site's existing drainage regime. As the minor watercourse is bounded by the Whitland Allotments at the south-west corner of the site, it is envisaged that the majority of the site will discharge into the Gronw Mill Leat to the south-west of the site boundary. As such, the ability to achieve a formalised outfall at this location would require off-site works on third-party land.

It is anticipated that runoff from catchments D and E will likely be discharged directly into the minor watercourse within the site.

Discharge to Surface Water Sewer

There is a surface water sewer within catchment D which discharges into the minor watercourse within the site however, based on the sites ability to discharge to a watercourse, and potentially via infiltration, there is no requirement to consider this option further.

Discharge to Combined Sewer

Based on the above there would be no requirement for the site to discharge to the public combined sewer network.

2.3.1.2 S2 – Surface Water Runoff Hydraulic Control

Surface water is to be managed to prevent as far as possible any discharge from the development for rainfall events of less than 5mm, and that the surface water runoff rate and volume for up to a 1 in 100-year return period should be managed to protect people, properties and the receiving water body. Consideration is also required to the risk associated with runoff from events greater than 1 in 100-year return period with mitigating proposals developed for the scheme.

Interception of Runoff

Interception aims to mimic greenfield runoff conditions by preventing runoff from the majority of all small rainfall events. This can contribute to reducing pollution load to receiving surface water bodies by mitigating the “first flush” of sediment and pollutants by rainfall events. Meeting the Interception criterion is not expected during particularly wet periods, when permeable surfaces and subsoils are saturated, so a suggested target is that 80% compliance should be achieved during the summer and 50% in winter. With reference to SNSSuDS, the site should meet interception demands through the use of above ground SuDS features such as raingarden, swales, rills and basins. The location and details of these features are to be defined at a later stage.

Hydraulic Control and Attenuation Storage

For the purposes of this report, it has been assumed that infiltration will not be the primary method of discharging surface water runoff, however, this will need to be investigated further and may offer a more suitable alternative at a later stage.

The total site area is circa 19.00ha, the majority of which is greenfield. As such, greenfield run-off rates have been calculated using FEH2013 statistical method.

The FEH methodology requires that, for catchments of less than 50ha, the assessment is completed for a 50ha area, with the results linearly interpolated to determine the flow rate per hectare.

The scale of development within the overall site is estimated to be approximately 14.164ha (35 acres), with a proportion of 60% of that area assumed to be impermeable, drained area, equivalent to 8.498ha.

This strategy has adopted the approach restricting, and attenuating, runoff from the development site for all return periods up to and including the 1 in 100-year event plus 40% climate change, utilising a discharge rate of QBAR, equivalent to 74.0L/s for the assumed development area, as given in Table 2-1.

Table 2-1 - Greenfield Run-off Rates

Storm Return Period	Greenfield Runoff Rate for 50ha (L/s)	Greenfield Runoff Rate for 1ha (L/s/ha)	Whole Site Greenfield Runoff Rate (L/s)	Development Runoff Rate (L/s)
1 Year	383.3	7.7	145.7	65.2
QBAR	435.6	**8.7**	165.6	**74.0**
30 Year	775.4	15.5	294.7	131.8
100 Year	949.6	19.0	360.9	161.4
200 Year	1071.6	21.4	407.3	182.1

It is proposed to discharge surface water runoff from the development at runoff rates equivalent to the current greenfield runoff QBAR rate, subject to approval from the SAB. Surface water flows from the proposed development will therefore be restricted via a flow control, and on-site attenuation storage provided for surface water runoff for all rainfall events up to and including a 1 in 100 year event with 40% allowance for climate change.

The drainage strategy should promote the use of source control and conveyance features, such as raingardens and swales, leading to open attenuation features; strategic attenuation features will be sited at the low points of the site.

Table 2-2 states the estimated storage volume and design maximum discharge rate for the site. It should be noted that the estimated attenuation storage volumes set out below are subject to detailed catchment analysis and detailed design, as well as the assumption that infiltration is not viable. There is potential to split the below volumes across a number of storage/SuDS features between future sub-catchments, however, the most appropriate strategy for delivery will determined at a later stage.

Table 2-2 - Estimated Attenuation Storage Requirements

Contributing Area (ha)	Allowable Discharge Rate QBAR (L/s)	Estimated Attenuation Volume (m^3)	Attenuation Feature Type	Assumptions
14.164	74.0	7055	Attenuation Basin(s)	1m Storage Depth 300mm Freeboard Allowance 1:3 Side Slopes Single Attenuation Feature Modelled For Site

**The size and depth of the storage will be dependent on the form of storage used and the depth of the proposed outfall location which will need to be establish following further on-site investigation works.*

Exceedance Flows and Flood Pathways

"*It is inevitable that as a result of extreme rainfall the capacities of sewers, covered watercourses and other drainage systems will be exceeded on occasion. Periods of exceedance occur when the rate of surface runoff exceeds the drainage system inlet capacity, when the pipe system becomes overloaded, or when the outfall becomes restricted due to flood levels in the receiving water*.

Underground conveyance cannot economically or sustainably be built large enough for the most extreme events and, as a result, there will be occasions when surface water runoff will exceed the design capacity of drains. When drainage exceedance capacity is exceeded the excess water (exceedance flow) is conveyed above ground, and will travel along streets and paths, between and through buildings and across open space. Indiscriminate flooding of property can occur when this flow of water is not controlled." (CIRIA C753).

Exceedance flow pathways should be designed to convey the overland flows from rainfall events above a 1 in 100-year return period to suitable areas of open space, such as landscaped areas, car parking areas and other hard surfaced areas in order to protect properties against flooding. Consideration should also be given to exceedance pathways from attenuation storage areas in the event of extreme rainfall or failure with allowance made to convey flows away from more vulnerable areas both on and off the site. These should be considered as part of the detailed drainage and levels design of the development.

Flood Risks to People

"People are at risk of suffering death or serious injury when flooding occurs. People are unable to stand in deep or fast flowing floodwater. Once they are unable to stand, there is a high risk of death or serious injury. Adults are unable to stand in still floodwater with a depth of about 1.5m or greater, although this is obviously affected by the height of a person. The depth of flowing floodwater where people are unable to stand is much less. For example, some people will be at risk when the water depth is only 0.5m, if the velocity is 1m/s (about 2 mph). If the velocity increases to 2m/s (about 4 mph) some people will be unable to stand in a depth of water of only 0.3m. Most people will be unable to stand when the velocity is 2m/s and the depth is 0.6m." (Defra/ Environment Agency, FD2321/TR2)

During the detailed design, a hydraulic model should be built to assist the design of the proposed surface water drainage networks. When an extreme storm event is simulated within the model, areas vulnerable to exceedance can be noted and the exceedance flow pathways can be designed/defined based on the proposed layout and levels of the hard areas and landscaping. If the effects and routing of exceedance flows are considered unacceptable, then the design would require reassessment.

2.3.1.3 S3 – Water Quality

This standard requires treatment of surface water runoff to prevent negative impacts relating to water quality on the receiving water body or downstream drainage systems, including sewers.

The surface water drainage strategy should seek to utilise simple, natural processes that promote biodiversity and long-term sustainability. As such, a SuDS management train approach, providing drainage components in series should be utilised. Figure 2-2 provides a typical example of a management train.

Figure 2-2 - Typical SuDS Management Train

SuDS management trains can be assessed using the Simple Index Assessment (SIA) approach, which is built around the principles for simple assessment outlined in CIRIA C753 to assess the levels of water quality treatment provided by the proposals.

Consideration should be made of suitable maintenance and access arrangements for the purpose of removal and management of sediment trapped on site within SuDS components.

The impact of accidental contaminant spills should be addressed, and the suitability of SuDS or bespoke interception components to manage such spills, such as a cut-off feature upstream of the surface water discharge location to allow the isolation of contaminants within the site boundary, which can then be addressed before the surface water system is then allowed to discharge freely again.

Planting within the SuDS features should form part the water quality strategy, SuDS components like swales can provide significant water quality improvements by reducing sediment and contaminants from runoff; planting should be comprised of species which are tolerant to both inundation and drought conditions; once the planting regime is established the system should function effectively to treat and mange pollutants before runoff enters downstream waterbodies.

2.3.1.4 S4 – Amenity

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

The primary amenity focus of the SuDS scheme should be to improve the well-being of the patients and staff. The scheme should be based on natural forms that mimic natural landscapes found within the region and open SuDS features should be designed with natural slope forms, safe and accessible paths and locally contextual species that will encourage natural colonisation. Other key amenity benefits should include improving air quality around the development, increasing carbon sequestration and improving water quality through removal of pollutants via vegetated SuDS features.

2.3.1.5 S5 – Biodiversity

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

The SuDS scheme biodiversity strategy should revolve around the creation of significant and varied habitat to increase the overall biodiversity of the site and ecological value. The inclusion of plant species that will enhance the general eco-system and simultaneously act as a water filtration system to clean pollutants and contaminants should be used, and where a variety of SuDS features should be used to maximise the variety of habitats available.

The plant species selected should be both locally contextual and appropriate for the varied habitat zones including primary characteristics that shall ensure: good soil binding and filtration species; minimised erosion; improved filtration via dense root and stem species; tolerance to seasonal variations including droughts and inundations; good suspended solids retention; pollutant tolerant; emergent and pioneering species for natural ecological colonisation; the creation of diverse, self-sustaining and resilient ecosystems for high species biodiversity; support for local and regional habitat strategies

Open SuDS features will allow the creation of focal habitats for the development and should consists of a planting regime suited to a range of water depths. The pond should not be over planted to allow for natural colonisation and to ensure high visibility of people particularly children in and around the

pond. Sight lines should be left open to attract certain species, whilst shaded areas under adjacent tree canopies may provide opportunities to further enhance the potential for a strong and biodiverse ecosystem to develop.

SuDS features should be constructed in a manner that avoids compacted sub-bases and use of healthy organic matter to ensure ideal growing conditions. The use of varying, or permanent, water depths should be considered in order to provide refuge for overwintering species, species diversity and resilience to seasonal changes, drought periods and inundation.

2.3.1.6 S6 – Design of Drainage for Construction and Maintenance and Structural Integrity

The surface water drainage system should be designed with the overriding ethos of simplicity in construction, use and maintenance.

It is envisaged that the proposed surface water system will be maintained by the client, who will be responsible for the maintenance of the system to ensure it continues to comply with SuDS standards and to function as designed.

Information regarding the construction methodology and requirements of the proposed system will be developed as part of the detailed design stage of the project. Likewise, the maintenance requirements and regime of the proposed system will be developed during the next phase of design development. This will be developed in conjunction with the Health Board's maintenance team and the SAB, as it is not considered appropriate for these details to be developed by the design team in isolation from the end users. This will then need to be confirmed and submitted for approval to the SAB prior to construction commencing on site.

2.3.2 FOUL DRAINAGE

This section considers the available options for managing foul flows originating from the site.

2.3.2.1 Foul Water Discharge Options

Three potential discharge options have been identified for foul drainage at the site.

- Gravity Discharge to Public Sewerage System

This option seeks to utilise the existing public foul pumping station (FPS) located at Maes Abaty. This pumping station receives flows from the Maes Abaty residential development and pumps them via a rising main into the public combined sewer in Spring Gardens. It is anticipated that this option would require use of an area of third-party land to lay a new foul sewer between the site and the existing FPS. Due to the scale of the development, it is likely that the existing sewerage infrastructure would also require reinforcement or upgrade works.

- New Private FPS Discharging to Public Sewerage System

This option would involve construction of a new FPS and rising main, which would discharge into the public combined sewer in Spring Gardens. Due to the scale of the development, it is likely that the downstream existing sewerage infrastructure would require reinforcement or upgrade works.

- New Package Treatment Works

This option would involve construction of a private package treatment works to treating foul flows from site. This option would require a discharge into an existing watercourse, it is anticipated that

this would either be the minor watercourse near the south of the site, or the Gronw Mill Leat at the west of the site. The exact routing of the existing minor watercourse within the site is not fully known, however, discharge would likely be within the known area at the south of the site, however, this could constrain the extent of the site available for development. Alternatively, discharge could be into the Gronw Mill Leat, however, this would require use of third-party land to lay an outfall pipe for the treated foul effluent.

2.3.2.2 Foul Flows

Foul flows originating from the hospital development have been estimated using the values stated in C177[4] of 150-250m^3/year/hospital bed. Taking the upper bound of this range, and estimating flows based on 507 beds proposed, the site is estimated to have a dry weather flow (DWF) of approximately 4.0L/s, and a peak flow (6xDWF) of 24.1L/s, and a corresponding total daily foul flow of approximately 347m^3.

A number of other proposed units are to be incorporated into the wider site's development, including a mental health unit, staff residences, a research unit, and an administration and education facility. The estimated flows from these facilities are reproduced in Table 2-3, and have been derived using estimated building areas and personnel numbers.

Table 2-3 - Estimated Foul Flows

Development	Peak Flow (L/s)	DWF (L/s)	Daily Flow (m^3)
Mental Health Unit	2.8	0.5	40
Residences	27.1	4.5	390
Research	0.5	0.1	7
Administration and Education	2.1	0.4	31

A pre-planning enquiry, including a foul/combined sewer capacity check, was submitted to Dŵr Cymru Welsh Water (DCWW) to assess whether available capacity exists in the public sewer network to receive foul flows from the proposed hospital development only. This can be extended to cover the ancillary development at a later date.

DCWW's response notes that the downstream foul network is unlikely to have capacity to take additional flows arising from the development. As such, they recommend commissioning of a hydraulic modelling assessment to consider the impact of the development on the network, and identify any off-site works required to accommodate the development, as well as identifying suitable point(s) of connection from the site.

[4] Ainger, et al, 1998. *Dry weather flow in sewers: Report 177*. London: CIRIA.

It may be possible to undertake a surface water removal scheme within the nearby combined sewers to compensate for additional flows from the development.

DCWW have noted that the Whitland WwTW itself does not have capacity to accept and treat the development's foul discharge. As such, they recommend commissioning of a Developer Impact Assessment to consider the impact of the development on the WwTW, and identify any works required to accommodate the development.

WSP have engaged with DCWW with the intention of commissioning the aforementioned hydraulic modelling assessments on behalf of the Health Board.

The pre-planning enquiry submitted to DCWW only included details of the proposed hospital and did not incorporate the additional proposed developments. As such, details of these should be provided for incorporation within DCWW's future assessments.

2.3.2.3 Water Quality/Phosphates

In January 2021 NRW published revised targets for phosphate levels within rivers in Special Areas of Conservation (SAC)[5]. A significant number of rivers within these areas have been found to fail these new targets, and as such, any new development within these areas which is likely to increase phosphate levels may be forestalled as to such time as guidance on appropriate mitigation measures is available.

The site does not lie within a Special Area of Conservation, or have any discharge into a watercourse within the catchment of a riverine SAC, and as such is not subject to any additional requirements or constraints around prevention of phosphate pollution associated with new developments.

2.3.3 SUMMARY

Surface water will be attenuated and storage provision provided within the site for all storm events up to and including the 100-year return period +40% climate change. Infiltration is the preferred method of disposal but if this is not feasible due to local ground conditions then runoff would be discharged at the agreed QBAR rate into the existing land drainage features. Outfalls should seek to replicate the existing surface water catchments of the Gronw Mill Leat and on-site minor watercourses where possible, whilst noting that the use of third-party land may be required.

A number of disposal options are available for foul water, including utilising the existing public sewerage system and pumping station, potentially the re-location/construction of a new private foul pumping station, or construction of a private foul package treatment works.

[5] Natural resource Wales, 2021. *Compliance Assessment of Welsh River SACs Against Phosphorous Targets.* Available at: https://naturalresources.wales/evidence-and-data/research-and-reports/water-reports/compliance-assessment-of-welsh-river-sacs-against-phosphorus-targets/?lang=en. [Accessed 27th May 2022].

3 FLOOD RISK

This section of this report contains a review of data from relevant sources relating to flood risk and provides the context of the Technical Advice Note 15 (TAN15) and other relevant guidance.

3.1 EXISTING REPORTS / INFORMATION REFERRED TO

- Natural Resources Wales Flood Mapping
  - National Flood Risk Assessment Wales
  - Development Advice Map (relevant until June 2023)
  - Flood Map for Planning (to which the new TAN15 refers)
- Strategic Flood Consequences Assessment
- Local Flood Risk Management Plan
- Online News Outlets
- Chronology of British Hydrological Events

3.2 HYDROGRAPHIC ENVIRONMENT

Candidate Site 12 is located to the south of the A40, to the north of properties on Maes Abaty, Spring Gardens and Clos Llwyn Ty Gwyn, and to the east of a historic mill leat off the Afon Gronw.

The site lies near to the Afon Gronw, which routes from north to south, at distances of approximately 150-200m from the site's western boundary. Adjacent to the site there is also a historic mill leat drawn from the Gronw, which routes parallel to the western boundary of the site, coming within 30m of the site at the south-western corner of the site. It is understood this served a mill historically located on The Fishers caravan and camping site. This watercourse re-converges with the Gronw directly west of the south-western corner of the site.

The site contains two minor watercourses of note, both of which are understood to discharge into the Gronw Mill Leat.

The first minor watercourse within the site is understood to serve the southern embankment of thee A40. It is assumed to enter a culvert structure at the north-western corner of the site, before discharging into the Gronw Mill Leat.

The second minor watercourse within the site originates within fields west of the Whitland Rugby Club, and routes westwards through the site until Maes Abaty, where it then routes along the northern boundary of Maes Abaty; it is then assumed to subsequently converge with the Gronw Mill Leat to the west of the site.

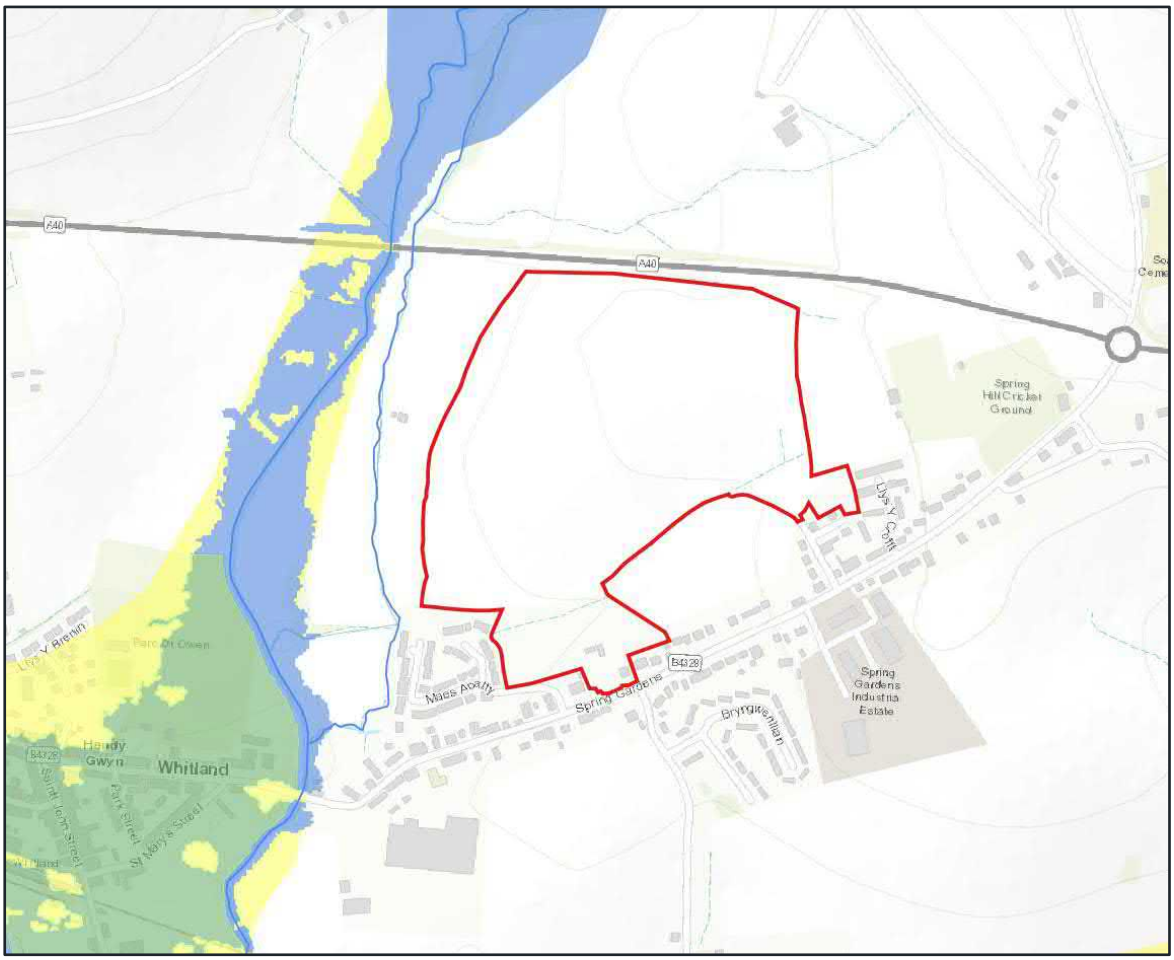
3.3 SOURCES OF FLOOD RISK

This section reviews the current understanding of flood risk from the key sources, utilising the online flood risk mapping[6] available from Natural Resources Wales (NRW).

[6] NRW, 2022. *Long term flood risk*. Available at: https://naturalresources.wales/evidence-and-data/maps/long-term-flood-risk1/?lang=en. [Accessed 7th April 2022].

3.3.1 DEVELOPMENT ADVICE MAP

NRW's Development Advice Map (DAM), reproduced in Figure 3-1, shows that the site lies within Flood Zone A. As such, the site is not considered to be at risk of flooding from fluvial (main rivers) or tidal sources. However, it is noted that a significant proportion of Whitland to the south-west of the site is known to have flooded in the past, but is served by flood defences (defences shown in Figure 3-2).



Zone C1: Served by significant infrastructure, including flood defences
Zone C2: Without significant flood defence infrastructure
Zone B: Areas known to have been flooded in the past
Zone A: Considered to be at little or no risk of fluvial or coastal/tidal flooding
Study Area Boundary

Figure 3-1 - Development Advice Map

3.3.2 RISK OF FLOODING FROM RIVERS

The nearest main rivers to the site, the Afon Gronw and the Gronw's Mill Leat, lie 150m and 30m away from the site, and the NRW mappings shows that they are not understood to contribute any degree of fluvial flood risk to the site, as illustrated in Figure 3-2. However, it appears that the structure conveying flows from the Mill Leat under the A40 has not been modelled, and as such, any

risk posed from the Mill Leat downstream of this structure is not modelled. However, this appears to have been included in alternative mapping which is discussed in Section 3.4.3.2.

Areas of flood risk are defined by the probability of a flood event. The annual exceedance probability (AEP) is the percentage chance that a flood of a specified magnitude or greater may occur in any given year.

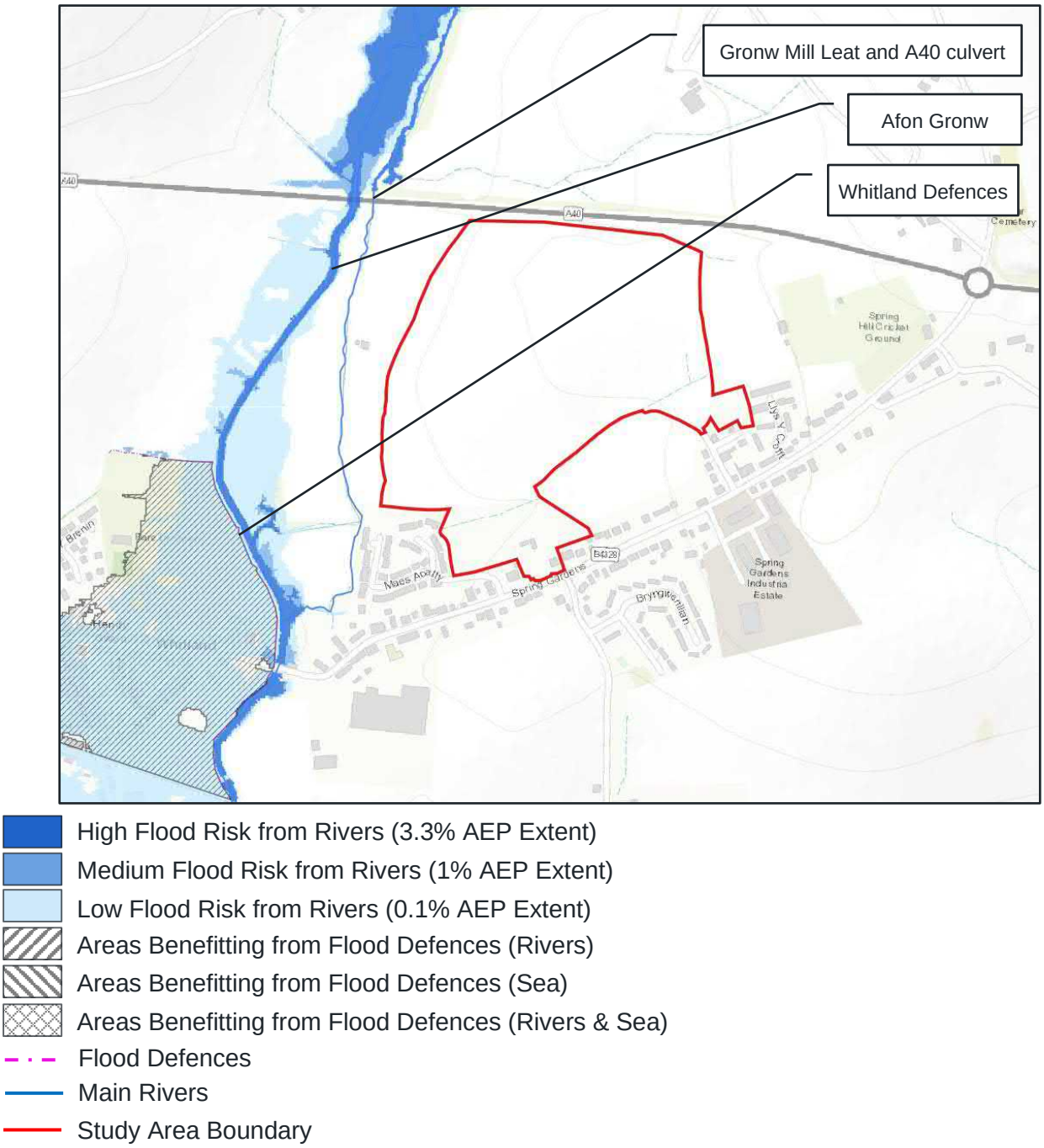


Figure 3-2 - Flood Risk from Rivers

3.3.3 RISK OF FLOODING FROM THE SEA

The site lies approximately 5km from the nearest tidal water body, known to be the Afon Taf at Llanddowror.

This distance of the site from the sea, the site's elevation varying from between 24mAOD and 45mAOD, and review of NRW's Risk of Flooding from the Sea mapping, confirm that the site is not considered to be at any risk of flooding from the sea.

3.3.4 RISK OF FLOODING FROM SURFACE WATER AND MINOR WATERCOURSES

The NRW modelled flood risk extents, reproduced in Figure 3-3, highlight a number of areas of high and medium flood risk from surface water and minor watercourses. The primary areas of flood risk within the site are coincident with the existing minor watercourses.

The first of these, the ditch serving the southern embankment of the A40, approximately follows the northern site boundary; examination of LiDAR data shows that the flood risk extents associated with this watercourse are constrained to the watercourse channel. It is assumed that this feature is culverted and subsequently discharges into the mill leat, and as such, this culvert feature may be at risk of blockage, which could increase flood risk posed by this watercourse.

Flood risk associated with the second minor watercourse in the south of the site is also primarily constrained to the watercourse channel, notably at the northern boundary of Maes Abaty before discharging into the Mill Leat.

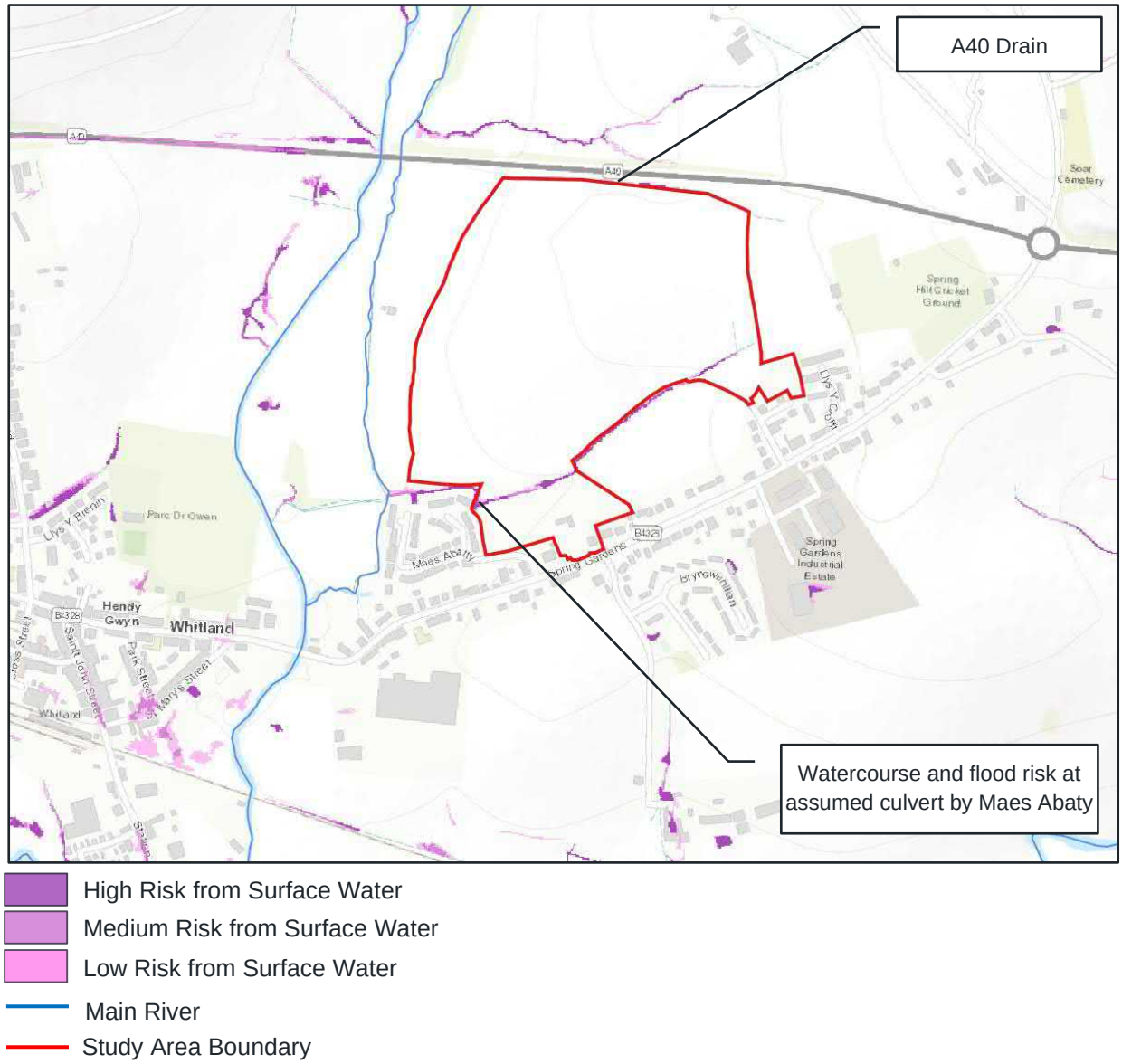


Figure 3-3 - Flood Risk from Surface Water and Minor Watercourses

3.3.5 GROUNDWATER FLOOD RISK

Review of the Strategic Flood Consequence Assessment[7] (SFCA) notes that groundwater risk information was not available when it was written, and this still being the case, there is no formal assessment available for risk of flooding from groundwater for the site.

This considered, flood risk posed by the site by groundwater is likely to be dominated by the minor watercourses running through the site, and the main rivers to the west. As groundwater tends to emerge slowly, it is thought that the flood risk posed by the minor watercourses is more significant than that of groundwater.

[7] Atkins, 2019. Carmarthenshire & Pembrokeshire Stage 1 Strategic Flood Consequences Assessment (SFCA). Carmarthen: Carmarthenshire County Council.

3.3.6 RESERVOIR AND INFRASTRUCTURE FLOOD RISK

NRW's flood risk mapping does not show any risk of flooding at the site from any modelled reservoir breach scenarios.

A Dŵr Cymru Welsh Water (DCWW) foul pumping station, Spring Gardens, Whitland SPS, is located off Maes Abaty, adjacent to the site. Were this pumping station to flood it is likely that runoff would run off into the depression along the north of Maes Abaty identified as a surface water flow route in Section 3.3.4, rather than pose any direct risk to the site.

Considering flood risk from elements of infrastructure such as combined sewers or a burst water main, were flooding associated with one of these to occur, flood waters would follow flow paths typical of surface water, which has been considered in Section 3.3.4, and to which the site is not considered to be particularly vulnerable.

3.3.7 HISTORIC FLOOD INFORMATION

NRW's historic flood outline mapping has been reviewed, and it does not include any historic flood events at the site, but illustrates several flood events within Whitland itself, and in proximity to the Afon Taf in 1977, 1979, 1981 and 1993.

Review of online new sources did not reveal any flood history associated with the site. Property flooding events in the Whitland area were noted in 2012[8] and 2020[9].

A search of the Chronology of British Hydrological Events[10] for, "Gronw", "Whitland" and "Hendy-Gwyn" did not yield any relevant results.

3.3.8 OTHER SOURCES OF FLOOD RISK

- The site lies within an area classed by the British Geological Survey as a "Low productivity aquifer", through which "almost all flow is through discontinuities and fractures"[11].

3.4 STRATEGIC PLANNING DOCUMENTS AND POLICY

3.4.1 STRATEGIC FLOOD CONSEQUENCES ASSESSMENT

Parts of the site are named as an allocated or candidate site within the Strategic Flood Consequence Assessment[12] developed in support of the Local Development Plan.

The development sites with LDP references T2/6/h3 and T2/6/h4, which lie at the south of the site off to Spring Gardens. These are noted to have a moderate degrees of surface water flood risk, with 9% and 10% of candidate site area considered at risk.

[8] Western Telegraph, 2012. *County Hit by Flash Flooding*. https://www.westerntelegraph.co.uk/news/10027185.county-hit-by-flash-flooding/. [Accessed 12th April 2022].
[9] Sky News, 2020. *Storm Francis: Homes flooded, rail lines blocked and campers rescued in wet and windy conditions*. https://news.sky.com/story/storm-francis-homes-flooded-rail-lines-blocked-and-campers-rescued-in-wet-and-windy-conditions-12056303. [Accessed 12th April 2022].
[10] British Hydrological Society. *Chronology of British Hydrological Events*. Available at: https://www.cbhe.hydrology.org.uk/. [Accessed 12th April 2022].
[11] British Geological Survey. *GeoIndex Onshore*. Available at: https://mapapps2.bgs.ac.uk/geoindex/home.html. [Accessed 12th April 2022].
[12] Atkins, 2019. *Carmarthenshire & Pembrokeshire Stage 1 Strategic Flood Consequence Assessment (SFCA).* Carmarthen: Carmarthenshire County Council.

3.4.2 LOCAL FLOOD RISK MANAGEMENT PLAN

3.4.2.1 Whitland

The Local Flood Risk Management Plan's ward assessment for Whitland[13] identifies the town as generally at flood risk from the Afon Taf, Afon Gronw and the Afon Cwm Waun Gron but notes that significant flood defence works serving the town were completed in 1985.

Areas of Whitland noted as at particular risk of surface water flooding include Velfry Road, North Road and Llangan Road.

The site lies within the St Clears ward, the assessment of which notes the area of Bush House, east of the site and downstream from the watercourse at the southern boundary of the site, to be at risk of surface water flooding, and the property assessment highlights a series of properties along Tenby Road and at Bush House as at risk of flooding.

The assessment notes that Dwr Cymru Welsh Water identified flood risk associated with sewers at a number of areas, including Market Street, Llangan Street, Velfrey Road and the Trevaughan area.

Two properties are shown to be at risk of flooding from the minor watercourse that passes through the south of the site, discussed in Sections 3.2 and 3.3.4.

3.4.3 REQUIREMENTS OF TECHNICAL ADVICE NOTE 15

The proposed use classes at the site include a hospital, which is classed as "emergency services" by Technical Advice Note 15 (TAN15). Development of emergency service facilities is typically acceptable within DAM Zone A.

3.4.3.1 Access and Egress

Primary access to the site is likely to be achieved via the B4328 (Spring Gardens) and the A40.

Considering access routes to the site from the west via the B4328, reveals that the B4328 contains significant areas of flood risk from both fluvial and surface water sources according to the NRW mapping. It should however be noted that these flood extents are indicated within the area considered to be protected by fluvial flood defences, and as such would only occur if the fluvial defences failed.

NRW mapping shows that access routes to the site from the east are largely flood free, with only a limited extent of surface water flooding along Spring Gardens (B4328). This route offers an alternative route onto the A40 should the western route experience flooding.

Access routes to the south are likely to be more affected by flooding, with significant extents of fluvial flood risk present in and around the Trevaughan and Station Road areas, particularly at the Trevaughan Brdige over the Afon Taf. Possible alternative routes to the south include via the A40 and A477, however, an extent of low fluvial flood risk is shown on the Flood Map for Planning, at the A477's river crossing over the Afon Taf at Pont Newydd, south-west of St Clears, as illustrated in Figure 3-5.

[13] Carmarthenshire County Council, 2019. *Flood Risk Management Plan: Whitland*. Carmarthen: Carmarthenshire County Council.

It is noted that pluvial modelling, which informs the surface water flood maps, typically does not include local drainage systems, and so the risk to the southern access route via Trevaughan, and the route to the east, may be overestimated.

As such, it is possible that access and egress at the site may be impeded in some higher return period storm events, but that access to the site should remain feasible via alternative routes.

It is recommended that further review of the modelled flood depths and velocities be undertaken in order to assess the likelihood that access and egress could be impeded on the primary access routes.

3.4.3.2 TAN15 Update (June 2023) and the Flood Map for Planning

In September 2021, NRW released the Flood Map for Planning[14] in support of the updated (TAN15, which is now due to be enacted in June 2023.

Review of NRW's Flood Map for Planning illustrates the extents of modelled flood risk from surface water and minor watercourses, fluvial sources, and tidal sources. This mapping shows the future level of risk, with the effects of climate change accounted for.

It is noteworthy that the flood risk present on the various access routes, discussed in Section 3.4.3.1, is increased in the Flood Map for Planning, as illustrated in Figure 3-4 and Figure 3-5.

It is also noted that flood risk associated with the Gronw Mill Leat is increased compared to that discussed in Section 3.3.2; this is understood to be due to the inclusion of the culvert serving the leat under the A40. Flow paths appear to show waters overtopping the leat and routing westwards into the Gronw. However, no additional risk to the site is evident from this mapping.

Within the Flood Map for Planning, Flood Zones 2 and 3 are equivalent to flood risk in the 0.1%CC and 1%CC fluvial/surface water events, and the 0.1%CC and 0.5%CC tidal events respectively.

[14] NRW, 2022. *Flood Map for Planning*. Available at: https://flood-map-for-planning.naturalresources.wales/. [Accessed 12th April 2022].

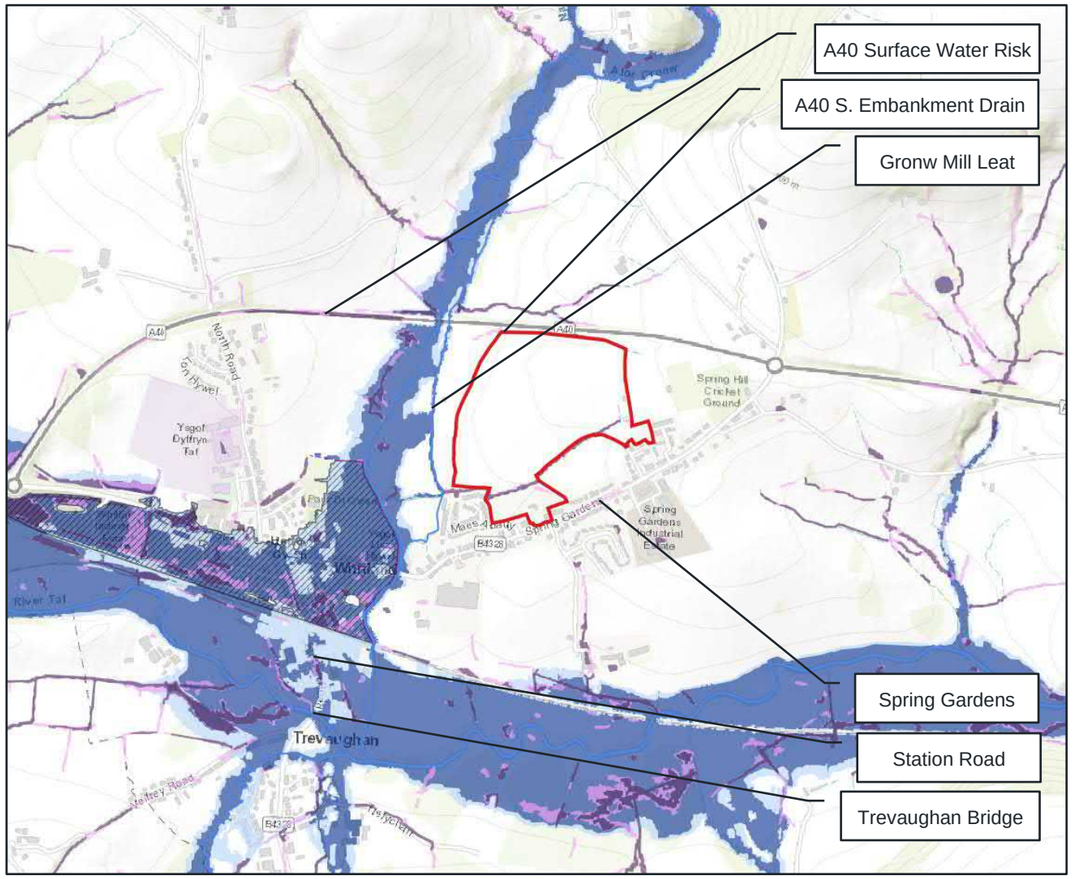


Figure 3-4 - Flood Map for Planning (Site)

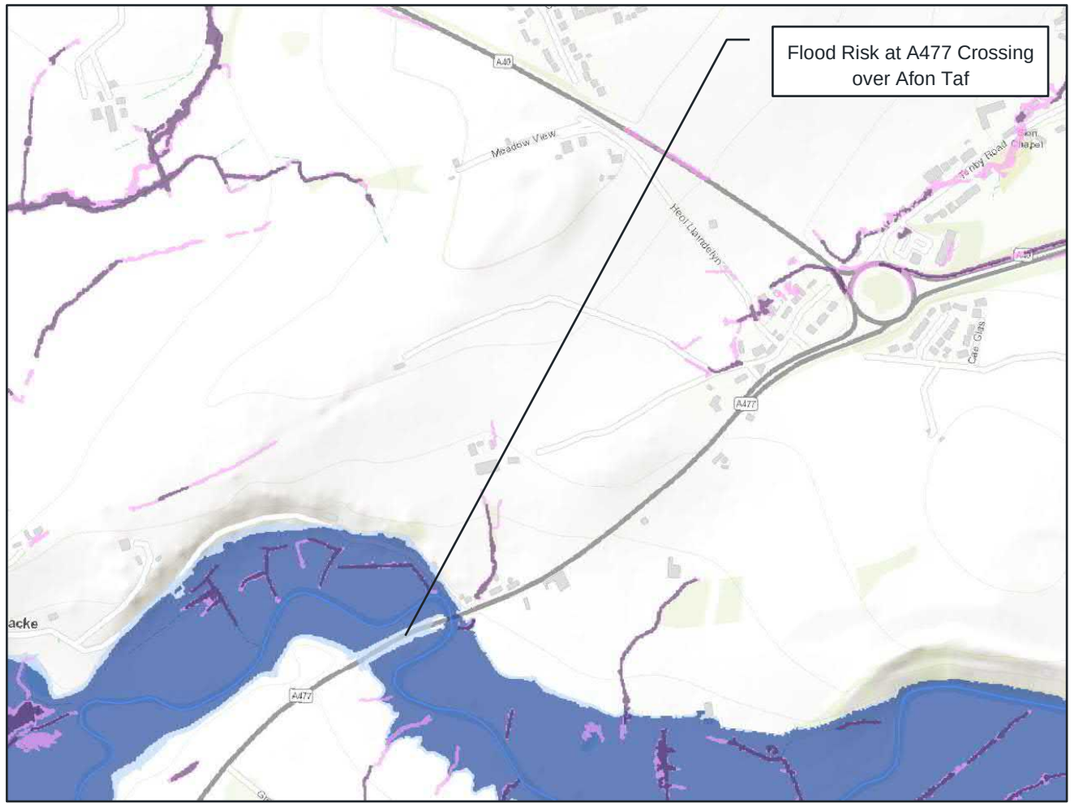


Figure 3-5 - Flood Map for Planning (A477 at St Clears)

- Flood Zone 3 (>1% chance of flooding from surface water or minor watercourses, including climate change)
- Flood Zone 2 (>0.1% chance of flooding from surface water or minor watercourses, including climate change)
- Flood Zone 3 (>1% chance of flooding from rivers, or >0.5% from the sea, including climate change)
- Flood Zone 2 (>0.1% chance of flooding from rivers or the sea, including climate change)
- Flood Zone 1 (<0.1% chance of flooding including climate change)
- Main River
- Study Area Boundary
- Areas Benefitting from Flood Defences (Rivers)
- Areas Benefitting from Flood Defences (Sea)
- Areas Benefitting from Flood Defences (Rivers and Sea)
- Flood Defences

3.5 RECOMMENDATIONS

- Multiple access/egress routes should be considered as part of the site master-planning and development to provide resilience
- An appropriate offset is given to minor watercourses to allow for access, maintenance, and ecological corridors
- Development is located outside areas that are considered to be at risk of flooding

3.6 SUMMARY

From a review of the available information, the site is largely at low risk of flooding, with isolated areas of higher risk coincident with the minor watercourses within the site.

It is anticipated that through careful master-planning and design, development can be directed to avoid areas of risk, and that suitably designed site levels and drainage should be able to effectively manage runoff originating from within the site.

4 TRANSPORT

4.1 INTRODUCTION

4.1.1 OVERVIEW

This chapter of the report evaluates the accessibility of the Site by different modes of transport such as walking, cycling, public transport and then lastly using the private car, to help to inform the site selection process.

4.1.2 SITE VISIT

To inform the preparation of the Transport Appraisal for the Site, a weekday site visit was undertaken on 13th April 2022 to observe the operation of the highway and transport network surrounding the site. Site observations were mainly undertaken along immediate key routes surrounding the proposed hospital site, with focus on the existing provision for all modes including walking and cycling and Public Transport (Bus and Rail).

With this being a new development, it is essential that the provision for all non-motorised users meet best practice standards of accessibility for all.

4.1.3 POLICY REVIEW

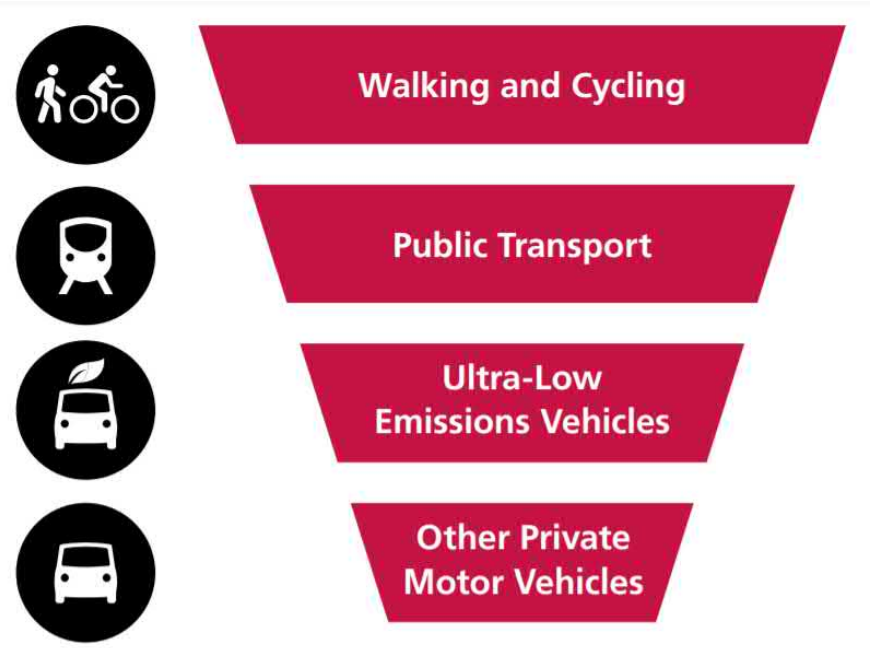
The Welsh Government is promoting active travel and has passed the Active Travel (Wales) Act 2013. This act defines new duties for local authorities in Wales and puts onus on Welsh ministers to ask questions with regard to the sustainability and suitability of development and the promotion of active travel moving forwards. This is supported by design guidance (Welsh Government, 2021).

This report has been prepared with consideration to several relevant transport related policies at a national, regional, and local level, to ensure that the Site meets the requirement of these policy documents as far as accessibility by all modes of transport are concerned.

Planning Policy Wales (Edition 11) states that all planning authorities must support active travel by ensuring new development is fully accessible by walking and cycling. The aim should be to create walkable neighbourhoods, where a range of facilities are within walking distance of most residents, and the streets are safe, comfortable, and enjoyable to walk and cycle.

The Wales Transport Strategy 2021 also supports developments which prioritise active travel modes, with the car assigned the lowest prioritisation. Stating that developments should follow the sustainable transport hierarchy as shown in Figure 4-1 when considering transport options to their site.

Figure 4-1 - Transport User Hierarchy



Accordingly, this Transport Appraisal (TAR) for the Site has been prepared using the Active Travel Act Guidance (July 2021) and with careful consideration to the above-mentioned policy documents.

4.1.4 STRUCTURE

Following this introduction, this TA is structured as follow:

- **Section 4.2**: provides a description of the site location and details of the immediate areas surrounding the site
- **Section 4.3**: Sets out the accessibility of the site by various modes of transport and assesses the surrounding local highway network in terms of traffic volume and safety.
- **Section 4.4**: Details all committed and planned developments that may likely impact on the volume of traffic on the surrounding road network to the site.
- **Section 4.5**: Set out identified Opportunities and Constraints for all Transport Modes.
- **Section 4.6:** Summarises and concludes the Transport Appraisal Report.

4.2 SITE LOCATION

4.2.1 SITE DESCRIPTION

The Site, which is shown in Figure 4-2, comprises several parcels of farmland covering approximately 46 acres of land and is located on the north-eastern periphery of the town of Whitland.

The site is bounded by the A40 to the north, Whitland RFC sports pitches to the east, residential properties along the B4328 and its adjacent cul-de-sacs to the south and a Public Right of Way (PRoW) bridleway continuing from Maes Abaty and adjacent open fields to the west.

The site benefits from a frontage of around 600 metres along the A40 on the northern extent and an extent of 50 metres along the B4328. Minor accesses are also possible from the residential cul-de-sacs of Clos Llwyn Ty Gwyn and Llys Y Crofft, however, access in these locations maybe subject to third party land agreements.

Figure 4-2 - Site 12 - Site Boundary

Source: googlemaps

4.2.2 SURROUNDING HIGHWAY NETWORK

This section reviews the key highway network routes surrounding the Site.

B4328 Spring Gardens / Market Street / St Johns Street / Station Rd

On the site frontage the B4328 Spring Gardens is a single carriageway road around 7 metres wide and is primarily fronted by residential properties that benefit from off-road parking. It provides the primary access to Whitland from the A40 to the east via a 55 Inscribed Circle Diameter (ICD) roundabout.

The B4328 Spring Gardens borders the southern periphery of the site and provides access to the site directly adjacent to No. 12 Spring Gardens. This 50-metre-wide strip of land is currently used to provide access to a residential property offset from the carriageway as shown in Figure 4-3.

Figure 4-3 – Access from B4328 Spring Gardens

Given the urban environment there is generally footway provision available on both sides of the carriageway. The footway on the southern side of the carriageway however terminates around 80 metres to the east of the Spring Gardens industrial estate access.

In some locations it is noted that vehicular parking occurs solely on the extent of the footway.

On entry to Whitland, where residential provision is denser, some on-street parking is observed with the other side generally being controlled by the introduction of double yellow line 'no parking or waiting at any time' traffic regulation orders. The on-street parking on the B4328 within Whitland is shown in Figure 4-4.

Figure 4-4 – On-Street Parking B4328 Market Street

On the site frontage the B4328 is subject to a 30mph speed limit however this reduces to 20mph within the vicinity of Ysgol Llys Hywel, this is enforced by traffic calming measures in the form of speed bumps. These are shown in Figure 4-4.

Figure 4-5 – Traffic Calming Measures and 20mph Speed Limit B4328 Market Street

Following Whitland the B4328 continues southbound as St John Street leading to Station Road. These roads are offset from the site itself with no direct access available. St Johns Street acts as the Whitland commercial high street and crosses the railway line via a level crossing directly adjacent to the station as shown in Figure 4-6. Following the level crossing the road changes to Station Road which provides primary access into Whitland from the south and has more industrial frontage.

Figure 4-6 – Level Crossing St Johns Road / Station Road

West Street

West Street is a continuation of the B4328 Market Street and provides access to the A40 to the west of Whitland. Within the urban area of Whitland, West Street consists of a 6-metre-wide carriageway with footways on either side and is subject to a 30mph speed limit. It provides the primary access route into Whitland from the A40 to the West.

Around 250 metres to the west of its junction with the B4328 the road changes in nature to an industrial / rural frontage. In this location the footway on the northern side of the carriageway terminates with only a footway on the southern side remaining. Shortly (200 metres) after this the speed limit on the road changes to the national speed limit (60mph) joining the A40 via a 50 metre ICD roundabout.

North Road

North Road provides the primary access route into Whitland from conurbations located to the north. Within Whitland the road is residential in nature with footways on either side of the 6-metre-wide carriageway. Some on-street parking occurs on either side of the carriageway associated with the residential properties fronting the road.

It is regularly used by bus movements accessing Whitland with bus service 224 accessing Lon Hywel to the north of Dyffryn Taf School.

A40

The A40 is a trunk road which runs between London and Goodwick (Fishguard), Wales). As such, the A40 provides east to west connections providing direct connections to the surrounding area including principal towns within the local area such as Carmarthen and Haverfordwest.

The A40 acts as a Whitland Bypass to the north of the town preventing excessive vehicular movements from passing through Whitland itself. In this location the A40 consists of a single carriageway.

The A40 borders the northern periphery of the site and therefore access to the site directly from the A40 could be achieved. It is however considered that should this be the case the speed limit along this section of the A40 would need to be reduced from the national speed limit (60mph) to 40mph to allow for safe access / egress.

From the site the A40 could also be accessed from the B4328 Spring Gardens via a 55 metre ICD roundabout around 850 metres to the west of the site frontage. To the east the A40 can also be accessed by movements passing through Whitland via the B4328. However, despite this being a more direct route (1,350 metres less) there are no significant journey time savings as a result of the route passing through the urban area with traffic calming measures and on-street parking.

A40: Llanddewi Velfrey to Redstone Cross improvements

Anew bypass has been granted approval by the Welsh Assembly Government at Llanddewi Velfrey in Pembrokeshire. The scheme would improve the A40 between Llanddewi Velfrey and Penblewin, to the west of Whitland.

There are also ongoing works to upgrade the A40 between St Clears and Haverfordwest to improve safety and to incorporate new cycling and walking routes. Construction works commenced in Autumn 2021 and are scheduled to end in Autumn 2023.

The scheme will:

- provide new 6km of road, away from the existing road
- provide a new roundabout to the east of Llanddewi Velfrey to access the village
- provide a new junction west of Llanddewi Velfrey

- improve the Penblewin roundabout
- put in a new junction at Redstone Cross
- provide two overbridges for the existing roads
- install drainage and mammal underpasses
- put in cycle and footpaths along the old road network

The improvement scheme aims to:

- improve the road and make it easier to access key employment, community, and tourism destinations.
- make it easier to access the county town of Haverfordwest, the Haven Enterprise Zone and ports at Fishguard, Milford Haven and Pembroke Dock.
- make it easier for the community to access other parts of the village and local area
- reduce the effect of pollution and traffic on the community to improve its health and well-being
- lower the number and severity of collisions
- make the Redstone Cross junction safer
- make it easier to travel by bike, horseback and on foot
- make it easier for the local community to use the local transport network to travel to key transport hubs

4.3 ACCESSIBILITY

4.3.1 INTRODUCTION

This section of the report reviews the accessibility of the Site by the following modes of transport:

- Walking;
- Cycling;
- Bus;
- Rail; and
- Private car.

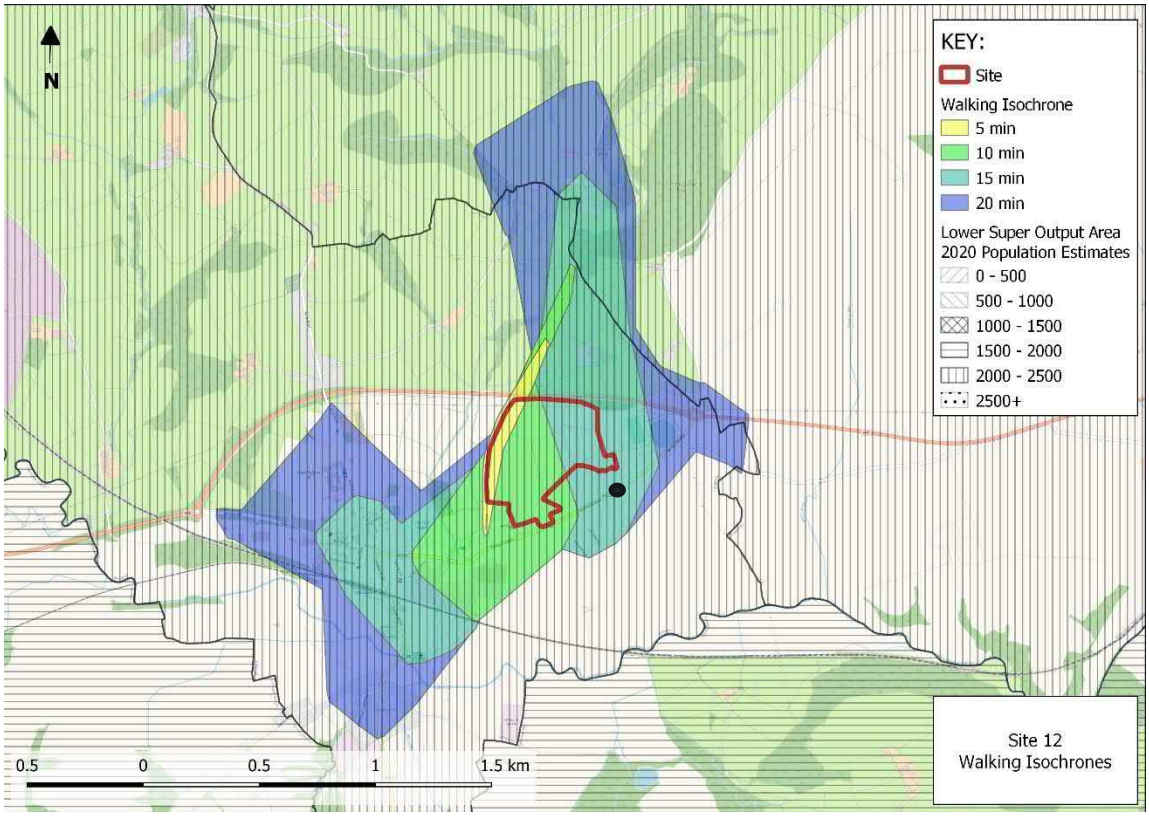
In addition to the above, it reviews the personal injury collision (PIC) data for key corridors surrounding the site and provides a few physical improvements that can be provided to accommodate active travellers at the hospital.

4.3.2 ACCESSIBILITY BY TRANSPORT MODES

Walking

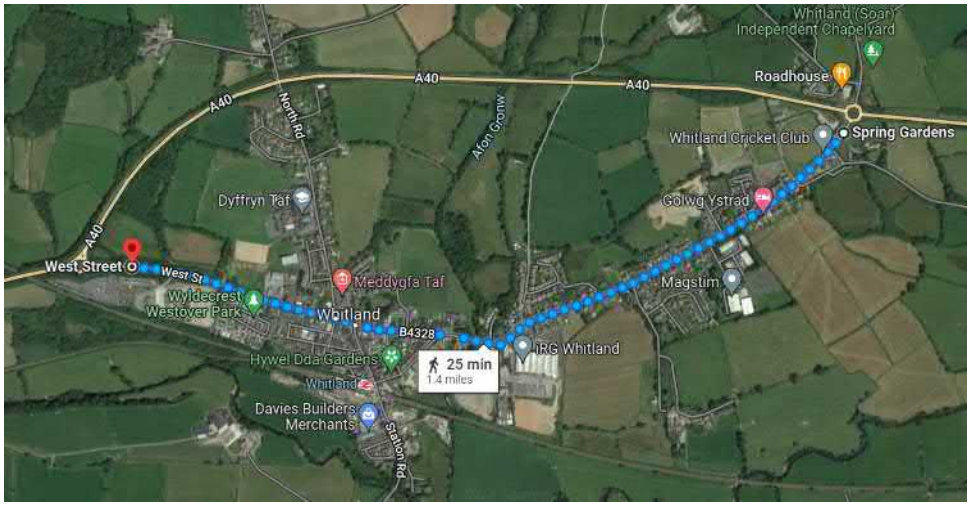
Walking as a mode of travel has the potential to replace short distance vehicle journeys and can also form part of a combined mode journey from places not within a reasonable walking distance. The Active Travel Act Guidance recommends that facilities should be within 20 minutes' walking distance and therefore, walking isochrones at a typical walking speed of 4.8kph have been prepared for Site 12 (from Maes Abaty pedestrian access) and these are shown in Figure 4-7.

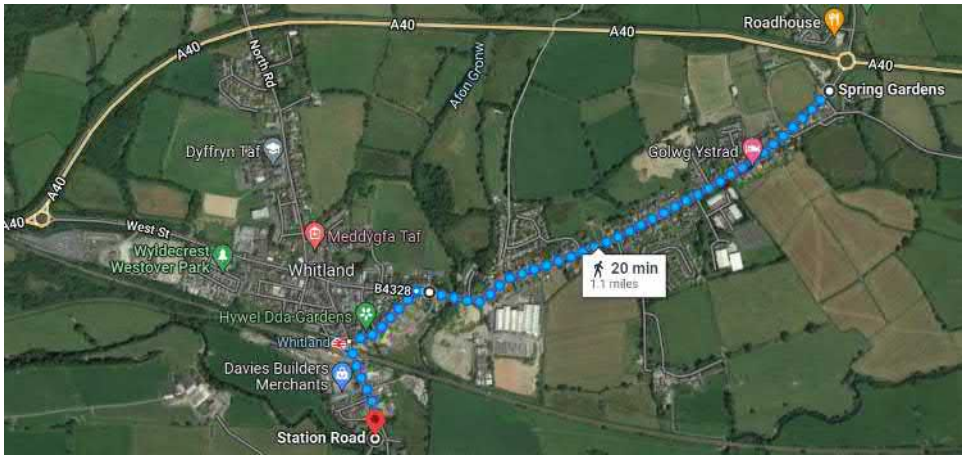
Figure 4-7 – Walking Isochrone

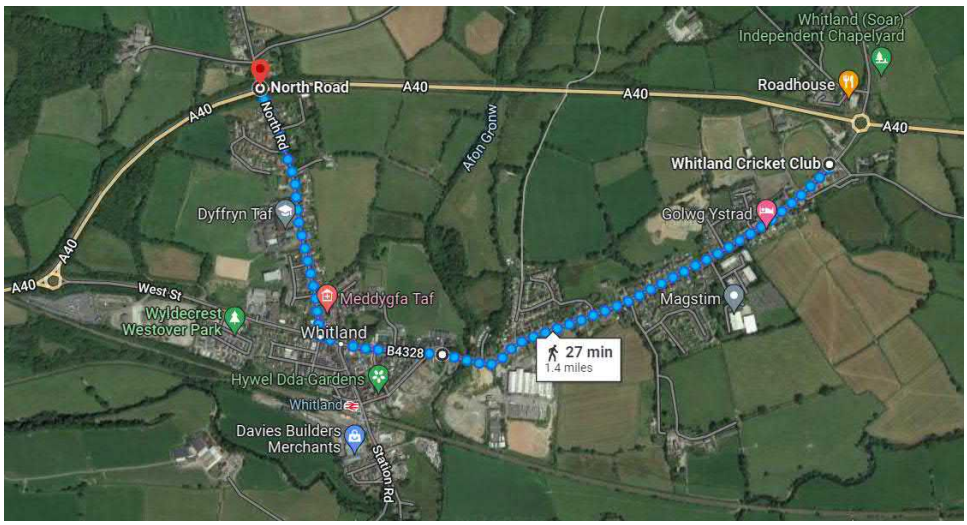


The walking isochrone illustrates that the majority of Whitland population (2,370) can reach the proposed hospital site within a 20 minute walking distance. This is confirmed below in Figure 4-8 using Google Map's 'Journey Planner Feature' with only the northern most extremity of Whitland where North Road crosses the A40 being outside of this walking distance.

Figure 4-8 – Google Map 'Journey Planner' Site Walking Distance







The above implies that with the right infrastructure walking could be a possible mode of transport for most local staff and visitors to the hospital. The following text provides details of the existing provision for walking along the key routes surrounding the site.

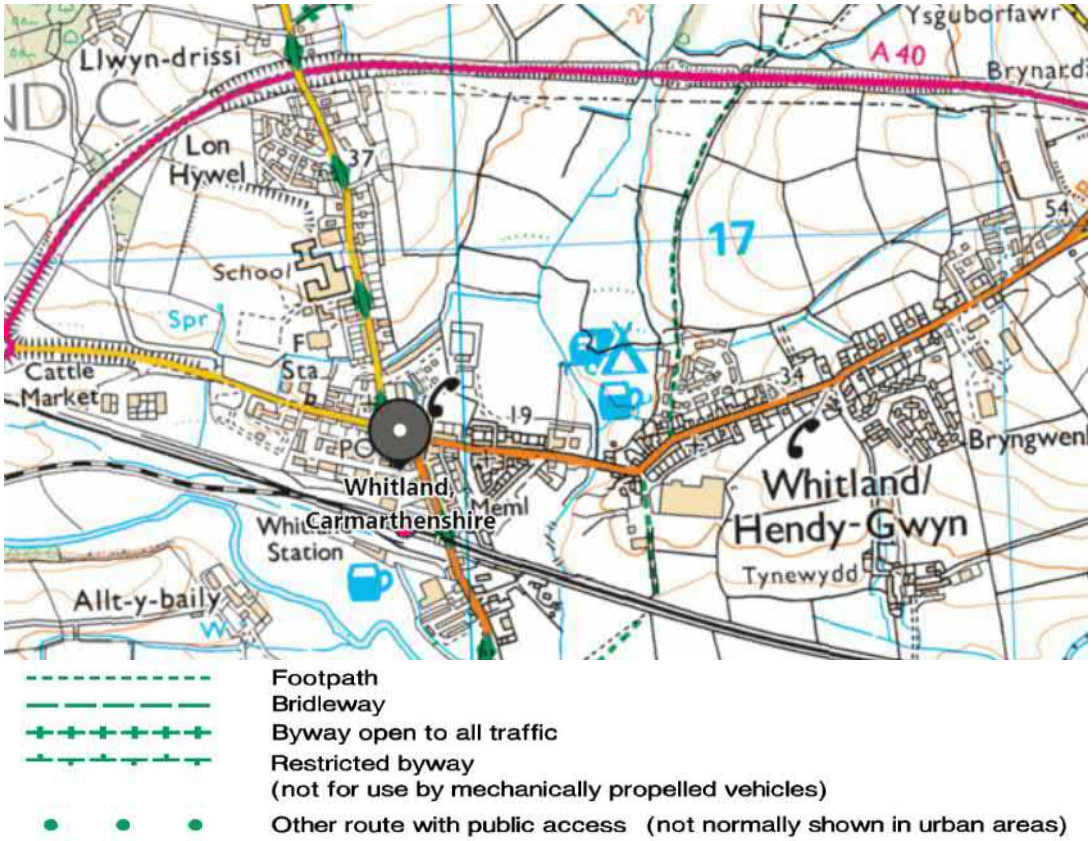
Maes Abaty

Footways 1.8 – 2 metres wide are provided on both sides of the Maes Abaty carriageway. As a new development these have been provided in line with guidance set out in the Active Travel Act.

On the south-western periphery of the site a PRoW runs in a north – south alignment along the western periphery of the site from a cul-de-sac within the Maes Abaty residential estate. This is shown in Figure 4-9 with the alignment of the PRoW shown in Figure 4-10.

Figure 4-9 – Maes Abaty PRoW on Western periphery of site

Figure 4-10 – Maes Abaty PRoW Alignment



This path therefore provides an opportunity for good pedestrian access to be achieved on the south-western periphery of the site linking into pedestrian infrastructure along Maes Abaty and Spring Gardens via another pedestrian cut through as shown in Figure 4-11.

Figure 4-11 – Cut through from Maes Abaty to B4328 Spring Gardens

Clos Llwyn Ty Gwyn / Llys Y Crofft

Footways around 1.8 metres wide are provided on both sides of the Clos Llwyn Ty Gwyn and Llys Y Crofft carriageways. A new housing development has recently been constructed at the end of Clos Llwyn Ty Gwyn. The footways within this development are therefore provided in line with best practice guidance as set out in the Active Travel Act.

Subject to a review of local ownership boundaries it may be possible to provide additional pedestrian cut throughs from both these cul-de-sacs into the proposed development.

The Clos Llwyn Ty Gwyn footways are shown in Figure 4-12.

Figure 4-12 – Clos Llwyn Ty Gwyn Footways

B4328 (Spring Gardens / Market Street)

Given the urban environment there is generally footway provision available on both sides of the B4328 carriageway. The footway on the southern side of the carriageway however terminates around 80 metres to the east of the Spring Gardens industrial estate access with no crossing facilities provided at the footway crossover.

The footways are generally a minimum of 1.5 metres wide which is the absolute minimum requirement as set out in the Active Travel Act allowing for a pushchair or wheelchair and a pedestrian side by side. In some locations the footway however extends to 2.5 metres.

From the site Whitland Station can be accessed via either St Mary Street or via the continuation of the route along the B4328 Market Street / St John Street.

Using St Mary Street there are 1.8-metre-wide footways on either side of the carriageway with a dropped kerb and tactile paving crossing provided at its bellmouth. The speed limit on St Mary Street is restricted to 20mph with on-street parking occurring. The footway narrows to around one metre due to restrictions in the built environment shortly before its junction with the B4328 St Johns Street / Station Road. In this location the carriageway is however block paved indicating a shared space environment and is restricted to one-way movements.

Using the B4328 1.8 – 2-metre-wide footways continue along both sides of Market Street up to a zebra crossing located directly to the west of its junction with St Johns Street. This provides access to 2.5-metre-wide footways located on either side of the St Johns Street carriageway providing direct access to the Station.

It should be noted that there is a general lack of pedestrian crossings within Whitland with the zebra crossing being the only crossing facility within the town.

At the station itself there is a footbridge which allows for crossing of the railway track when the level crossing is in operation. For those with mobility restrictions pseudo footways continue over the railway tracks at the level crossing providing level access to both station platforms and along the continuation of Station Road.

North Road

Footways of 1.8 metres wide are provided on both sides of the North Road carriageway up to 220 metres to the south of the A40 overbridge where the footway on the eastern side of the road terminates. The footway on the western side of the carriageway continues along the residential frontage.

West Street

Within Whitland there is generally footway provision on both sides of the West Street carriageway. Around 250 metres to the west of its junction with the B4328 the footway on the northern side of the carriageway however terminates with only a footway on the southern side remaining. This continues providing access to the Preseli Storage Ltd industrial unit however terminates thereafter.

A40

No pedestrian provision is currently located along the A40.

Cycling

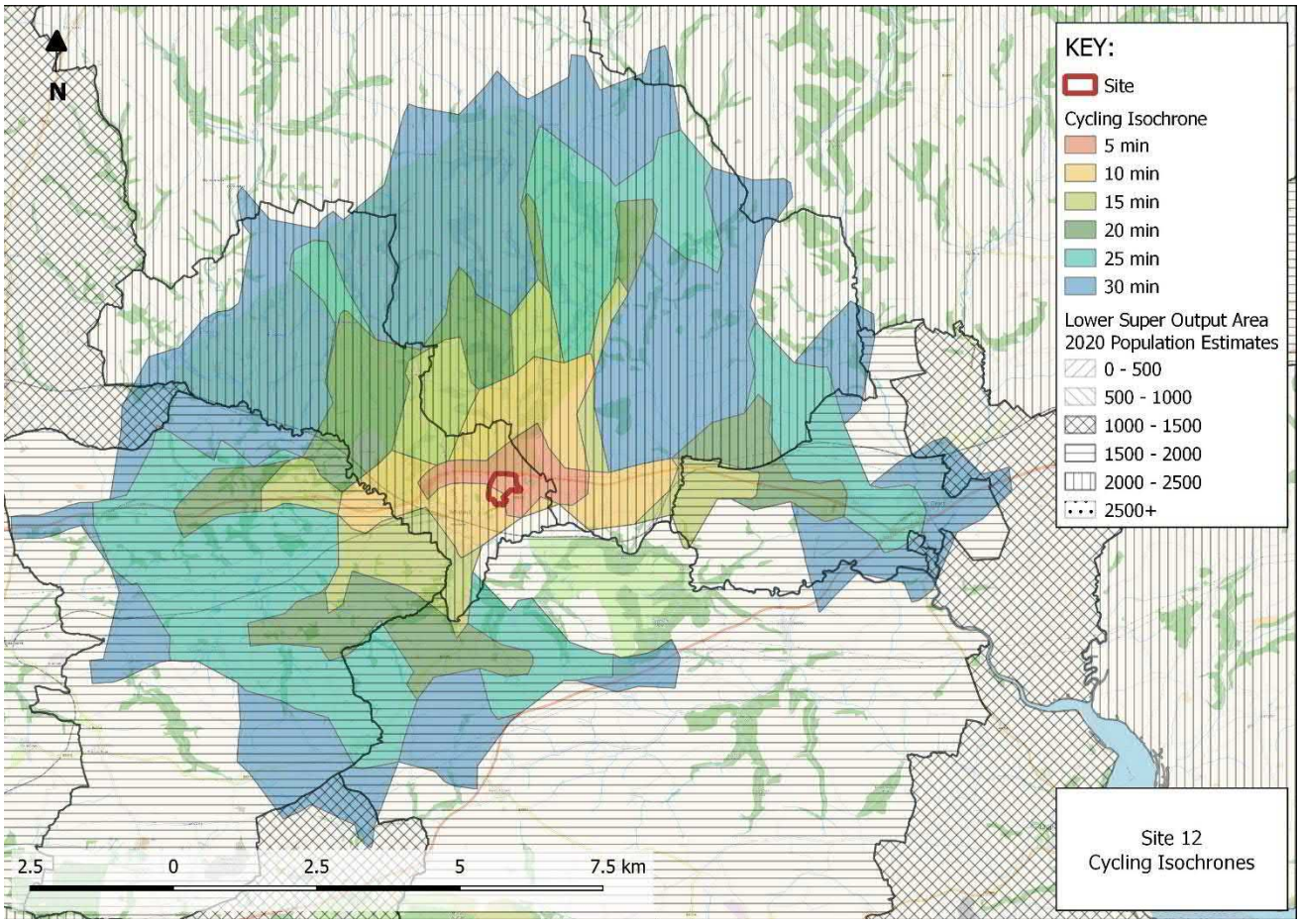
Cycling as a mode of travel has the potential to replace short and medium distance vehicle journeys. Cycling can be undertaken with normal bicycles and also with electric bike (e-bike) which will be a great option to travel long distances.

Assuming an average cycling speed of 16kph using a normal bicycle, Figure 4-13, shows cycling isochrones for Site 12 centred at the Maes Abaty active travel access to the site.

The cycling isochrones illustrate that the majority of Whitland is accessible within a 5 minute cycling distance from the proposed hospital site.

Also, several neighbouring towns, villages and settlements to Whitland can be accessed via a 30-minute cycle including St Clears, making cycling a viable transport option to the potential hospital site for staff and visitors with the right infrastructure provision.

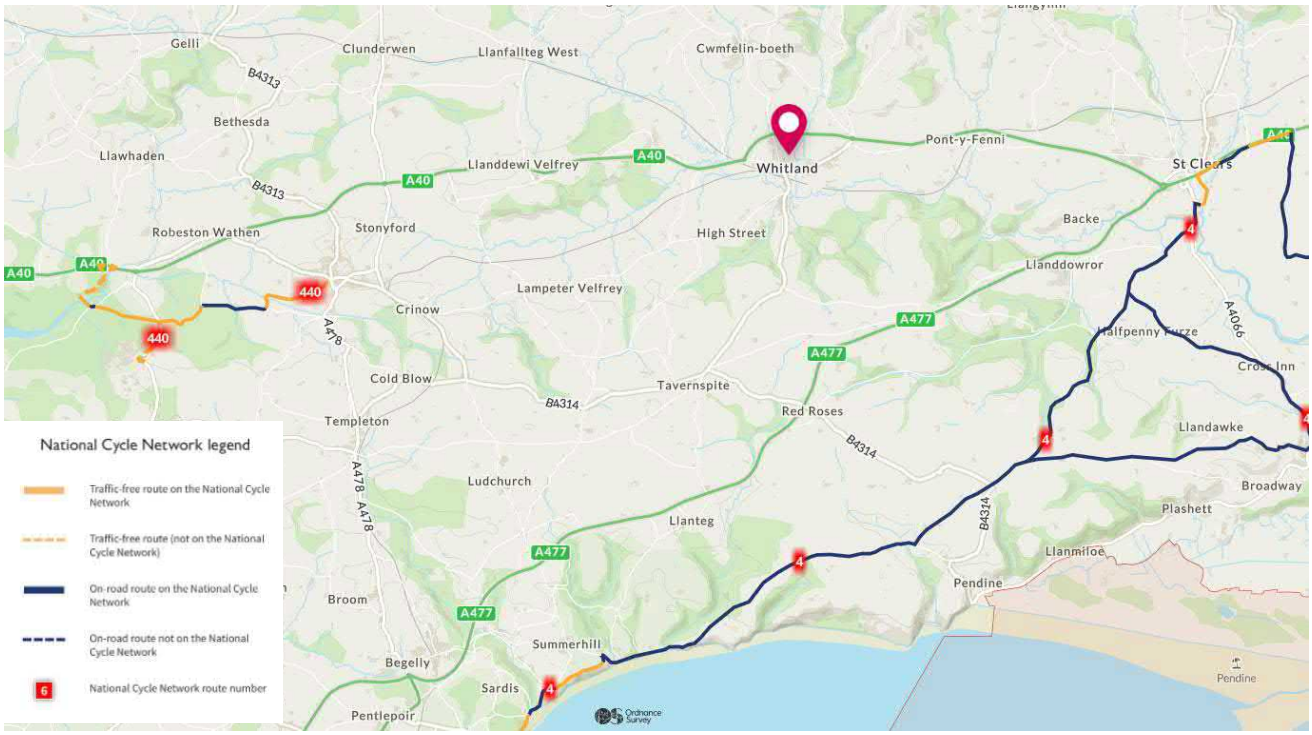
Figure 4-13 – Cycling Isochrone



There is currently no cycling infrastructure within the vicinity of Whitland and the Site. The closest National Cycle Network Route is located around 7km to the east of the site providing a connection between St Clears and Saundersfoot.

National Cycle Network Route 440 also provides a short but isolated route between Narberth and Toch Wood / Bluestone. These two routes in relation to the location of the Site are shown in Figure 4-14.

Figure 4-14 – National Cycle Network



Integrated Network Maps

As part of the Active Travel Act all Welsh Councils are required to produce Integrated Network Maps (INMs) setting out the Local Authority's plans to develop a network of active travel routes and facilities over the next 15 years.

The INM proposals were developed through an extensive consultation process with the following aims in mind:

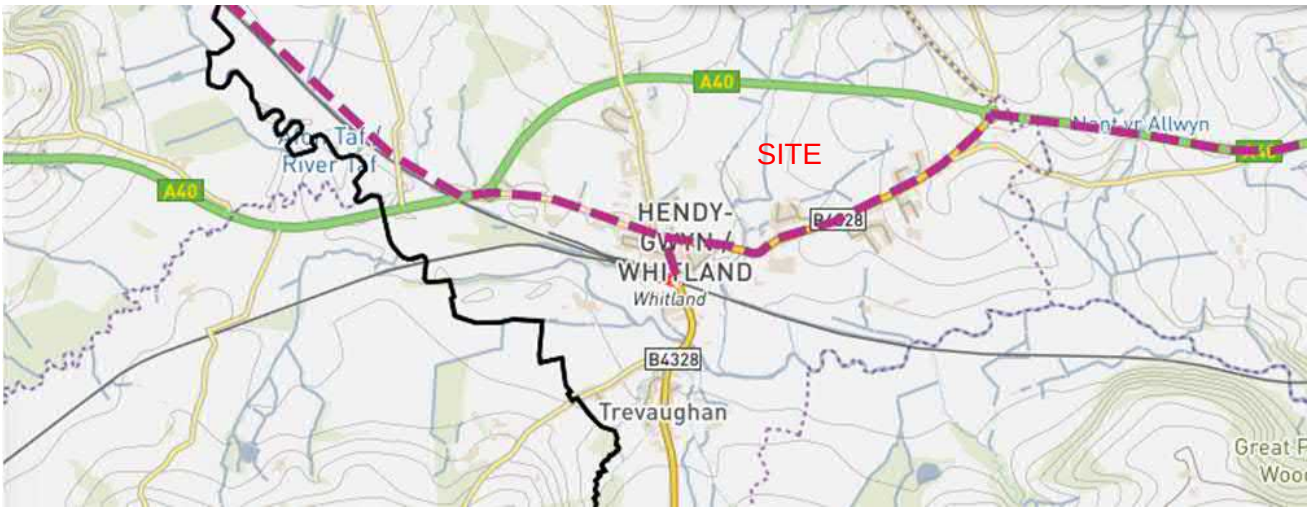
- Improved access to key services and facilities including town centres, employment and retail areas, transport hubs
- Improved access to education facilities such as schools and colleges;
- Improvements to, and expansion of, the existing strategic network in the 10 designated 'active travel' settlements in the County.

The latest Carmarthenshire Integrated Network Maps published do not cover the area of Whitland as a result of it not being classed as a Built-Up Area (BUA) within Carmarthenshire's Active Travel strategy. However, during the recent submission of the Active Travel Network Map Carmarthenshire have included the following routes:

- WN2: link to the west following the old Cardi Bach railway alignment
- WN3: links the station and route to the east with a focus on potential highway improvements and footway widening to help tie in with the overarching travel network in the county

These routes are shown n Figure 4-15.

Figure 4-15 – Active Travel Network Map Routes – Whitland



Public Transport

This section provides details of the bus and rail services operating from within the vicinity of the Site.

Bus

The nearest bus stops to the site are located along the B4328 directly adjacent to the B4328 Spring Gardens site frontage. The westbound bus stop benefits from a bus shelter, timetable information, seating and a layby which has been built into the bellmouth of the junction with Bryngwenllian opposite the site. The eastbound bus stop is a hail and ride stop without infrastructure provision with the exception of a layby which is not marketed and therefore can be used by other vehicles.

As a result of the routes which buses follow within Whitland it is noted that not all services serving Whitland currently stop at the Bryngwenllian bus stops. These do however stop at the Rail Station bus stops which are located 750 metres (9 – 10-minute walk) to the west of the site frontage along the B4328 Spring Gardens.

The northbound bus stop at the railway station benefits from a shelter with seating, timetable information and on-road bus cage. The southbound bus stop is a hail and ride bus stop without any infrastructure. It is considered that this is as a result of the proximity of the bus stop to the level crossing.

Figure 4-16 shows the location of the bus stops in relation to the site.

Figure 4-16 - Location of Bus Stops

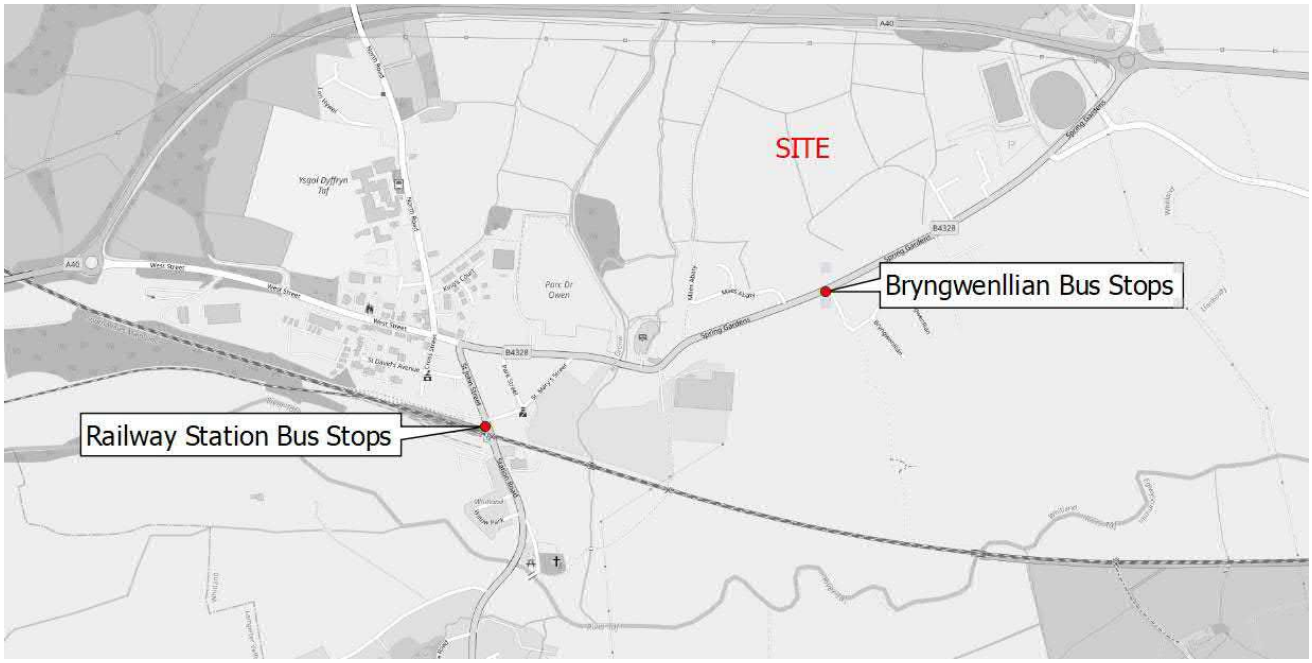
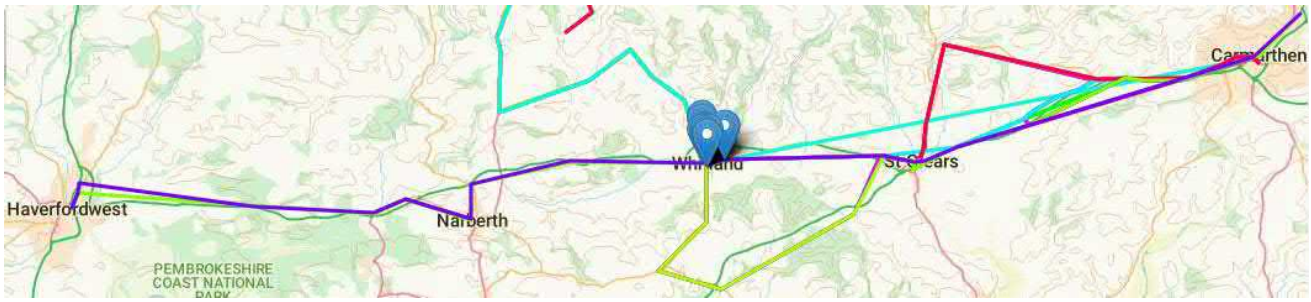


Table 4-1 provides more details of the bus services operated from within the vicinity of the site with a bus route plan included in Figure 4-17.

Table 4-1 – Bus Services

	Route	Bus Stop	First / Last		Frequency
			WDay	Sat	Day
223*	Carmarthen – Glandwr	Bryngwenllian	1407	-	Daily
	Glandwr – Carmarthen		0947	-	Daily
224	Carmarthen – Whitland	Railway Station**	0959 - 1432	0959 - 1432	2 – 3 hours
	Whitland – Carmarthen	Bryngwenllian***	0720 – 1242	0720 – 1242	2 – 3 hours
322	Carmarthen – Haverfordwest	Bryngwenllian	1059 - 1659	-	3 hours
	Haverfordwest – Carmarthen		0949 – 1549	-	3 hours

Figure 4-17 – Bus Route Plan - Whitland



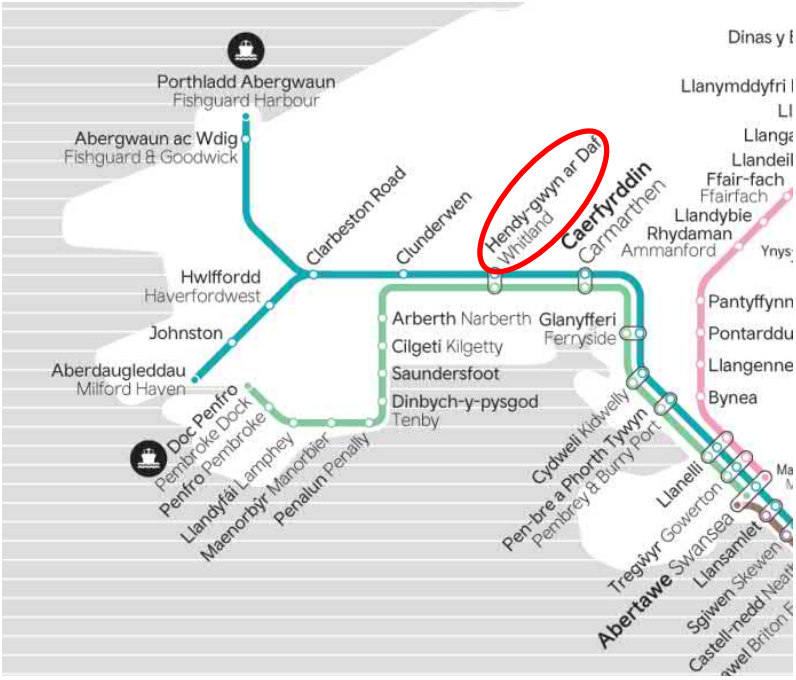
The principal towns of Carmarthen and Haverfordwest are serviced every 2 – 3 hours. Whitland is however not served by bus during the evening and on Sundays with limited bus service provision throughout the day.

Service 322 calls at or near Withybush Hospital providing opportunities to connect the existing and proposed site. However, the services are infrequent and do not provide a good spread of access throughout the weekday and during weekends which would be required to allow for patient travel and staff working shift patterns at the hospital.

Rail

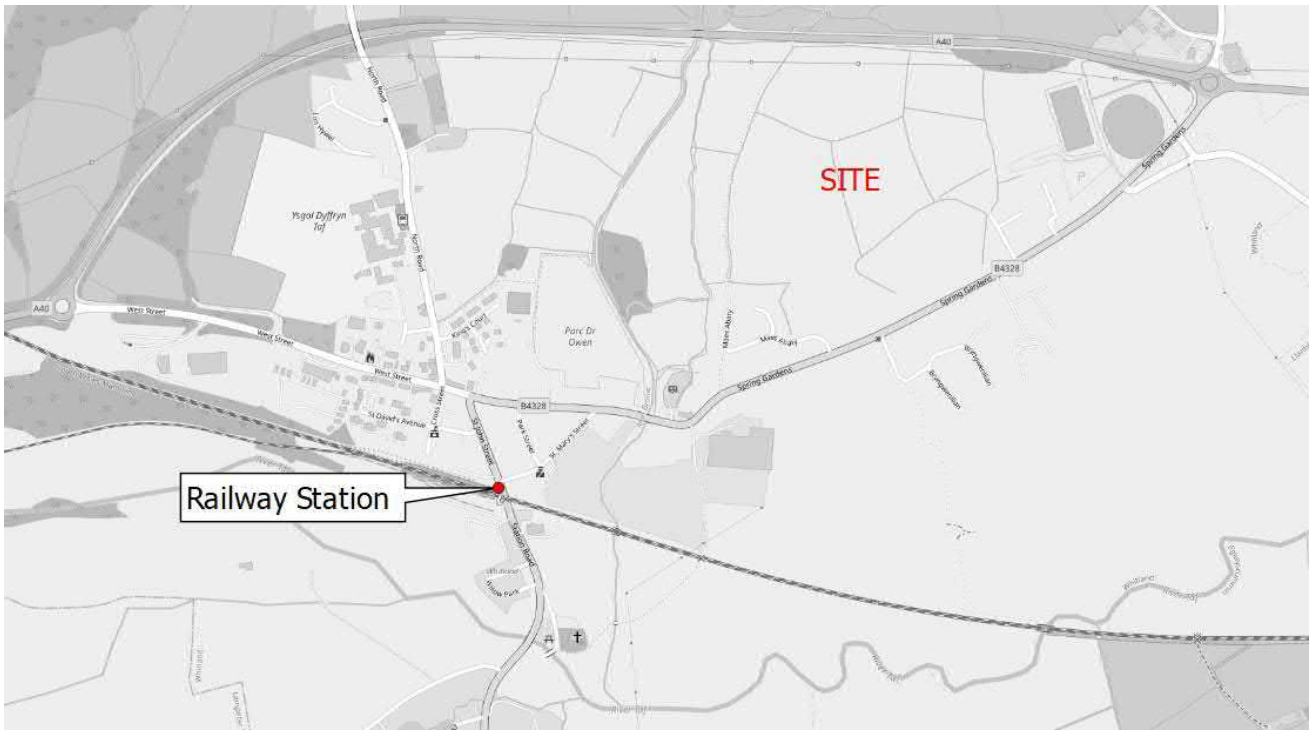
Whitland railway station is located on the West Wales Line. To the west of the station, a branch line diverges towards Pembroke with the main line continuing to Milford Haven and Fishguard Harbour. To the east the line continues to Carmarthen, the Heart of Wales Line and Swansea. The network map for the area is shown in Figure 4-18.

Figure 4-18 – Network Map Surrounding Whitland



The location of the rail station with regard to the site is shown in Figure 4-19.

Figure 4-19 – Location of Rail Station



The services operated from the station are summarised in Table 4-2.

Table 4-2 – Rail Services

To		First / Last	Number of Services	Av. Frequency
Carmarthen / Swansea	Mon – Sat	0632 / 0003	18	1hr
	Sunday	1202 / 2213	11	1hr
Milford Haven	Mon – Sat	0506 / 2158	10	1hr 45 mins
	Sunday	1012 / 2229	7	1hr 45 mins
Tenby / Pembroke	Mon – Sat	0547 / 2126	9	1hr 45 mins
	Sunday	1036 / 2037	4	2hrs 30 mins
Fishguard	Mon – Sat	0606 / 2119	5	3hrs
	Sunday	1146 / 2211	3	3hrs 30mins

Facilities at Whitland Station are basic with a shelter and seating area, 5 car parking spaces and 20 cycle storage spaces. The station is unstaffed and has no ticketing buying facilities with tickets purchased in advance or onboard the train. Train running information is provided via digital display screens with departure and arrival updates. There is step-free access however this is achieved via the footway and pseudo footway provision along Station Road.

4.3.3 EXISTING TRAFFIC

Existing 7-day Automated Traffic Counts (ATC) have been obtained along the B4328 on the site frontage, West Street and North Street. to identify the volume of traffic on the local roads within close proximity of the site. Figure 4-20 provides the location of the ATCs and Figure 4-21, Figure 4-22 and Figure 4-23 summarise the traffic flows collected by the ATC surveys.

Figure 4-20 – B4328, West Street and North Road Traffic Flows ATC Locations

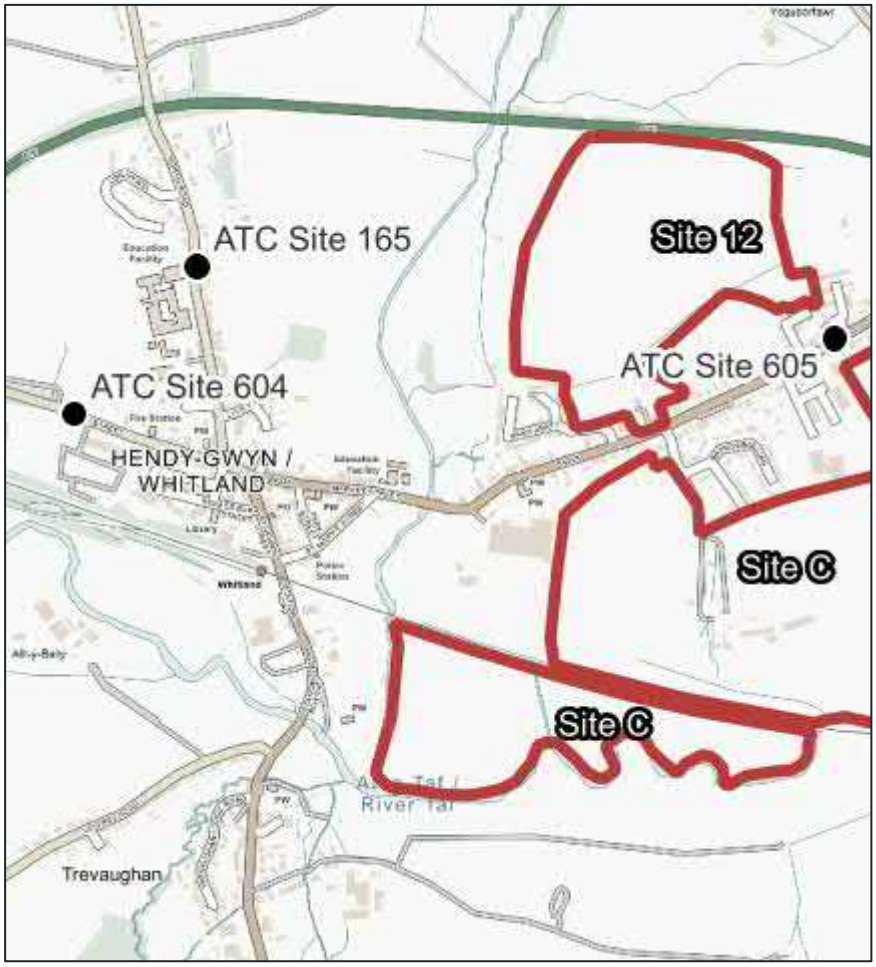


Figure 4-21 – ATC 605 – B4328 Spring Gardens

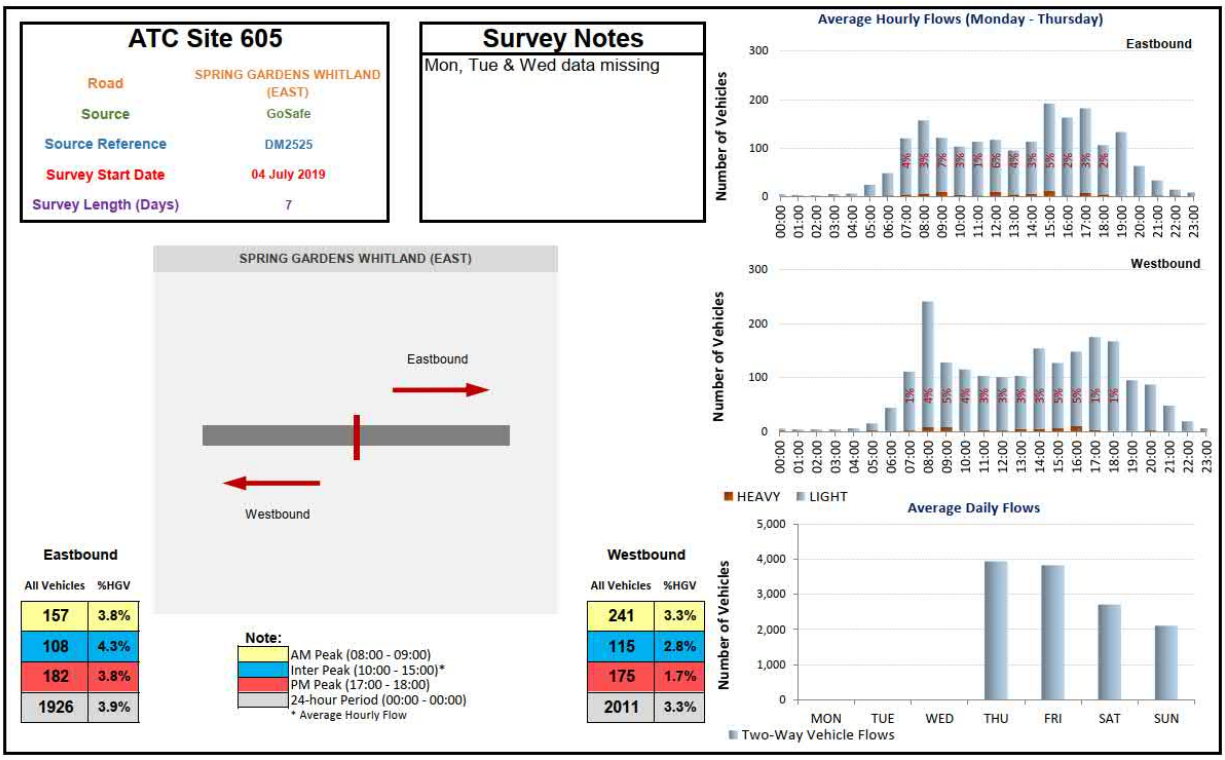


Figure 4-22 – ATC 604 – West Street

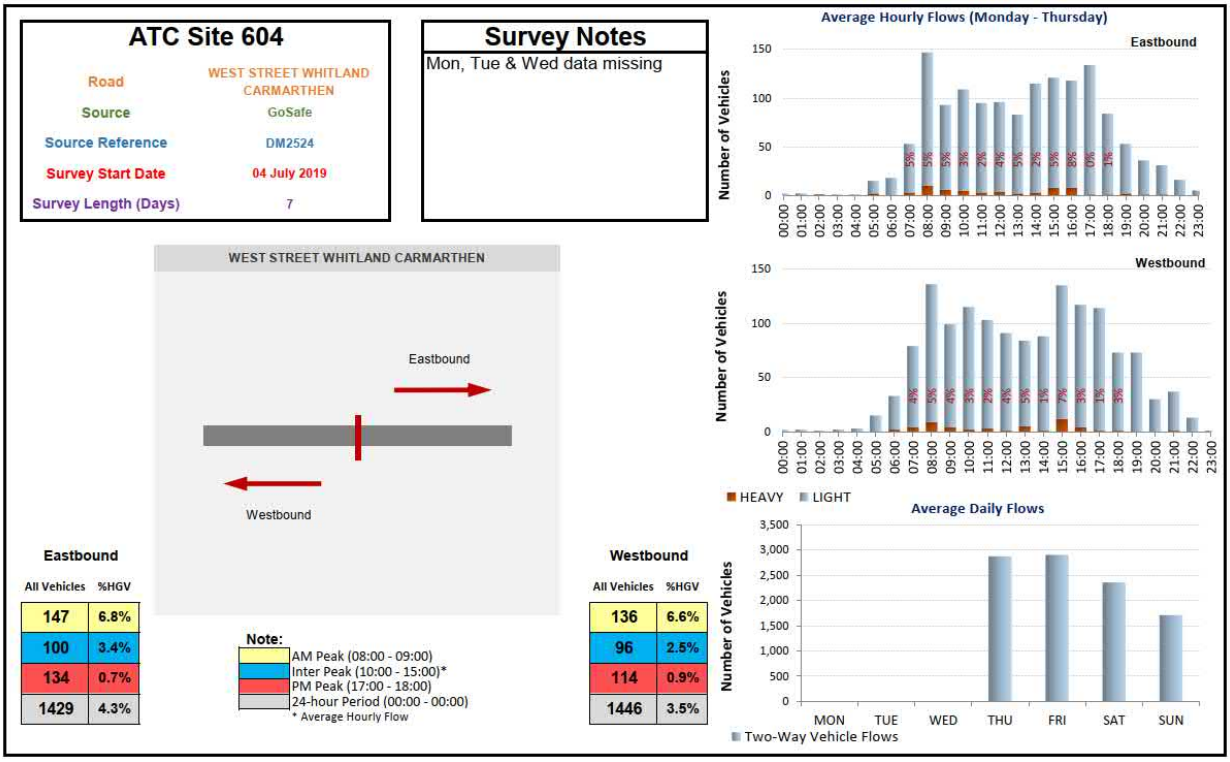
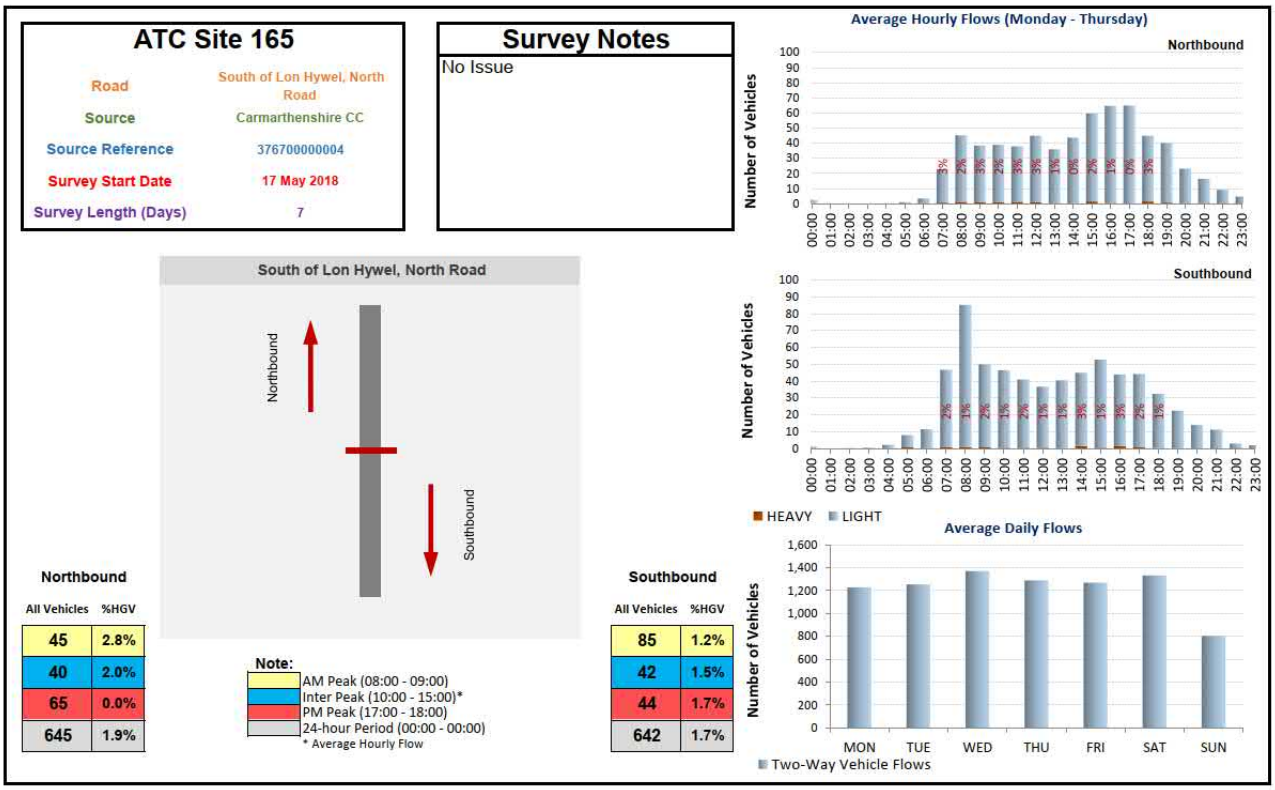


Figure 4-23 – ATC 165 – North Road



The ATC's identified that along the B4328 Spring Gardens the 24-hour two-way traffic flows range from 3,800 to 4,000 vehicles, with a two-way peak hour flow of around 400 vehicles per hour (vph) in the AM peak (0800 – 0900) and 350vph during the PM peak (1700 – 1800). HGV proportions on the B4328 Spring Gardens are low at around 3 – 4% of all movements.

On West Street traffic flows are slightly reduced at between 2,500 and 3,000 two-way vehicular movements over a 24 hour period with a two-way peak hour flow of around 280 vph during the AM peak period and 250vph during the PM peak period. The HGV proportions along West Street are between 3.5 – 4.5%.

Along North Road there are significantly fewer movements occurring with between 1,200 and 1,500 two-way movements over a 24 hour period. During the AM and PM peak periods there are around 130 and 110 two-way vehicular movements per hour respectively. The HGV proportions are minimal with around 2% occurring along the road.

It is therefore clear that the primary movements through Whitland occur in an east – west alignment with the A40 allowing for travel by car further afield.

Two ATC surveys were also obtained along the A40 within the vicinity of Whitland. The location of these counts is shown in Figure 4-24 with the traffic flows summarised in Figure 4-25 and .Figure 4-26

Figure 4-24 – A40 ATC Locations

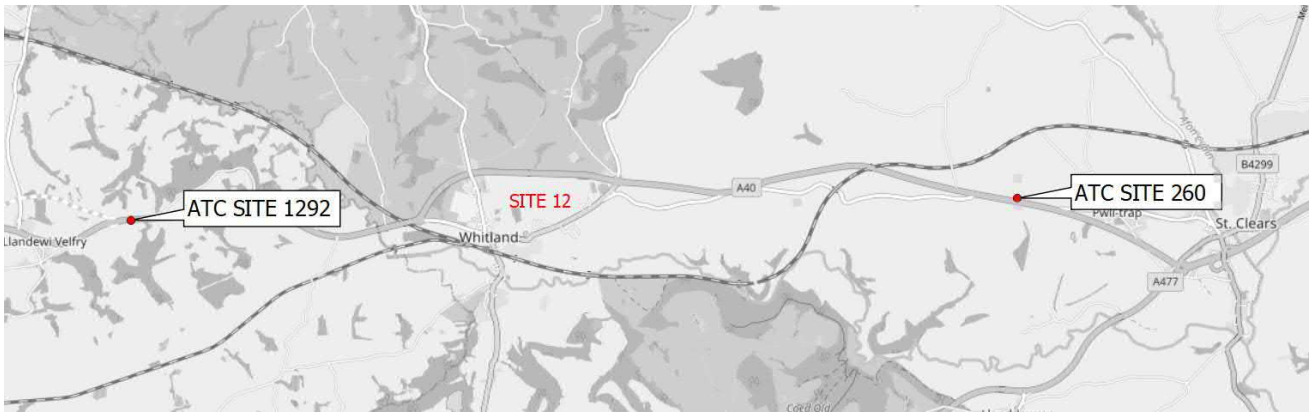


Figure 4-25 – ATC 260 – A40 East of Whitland

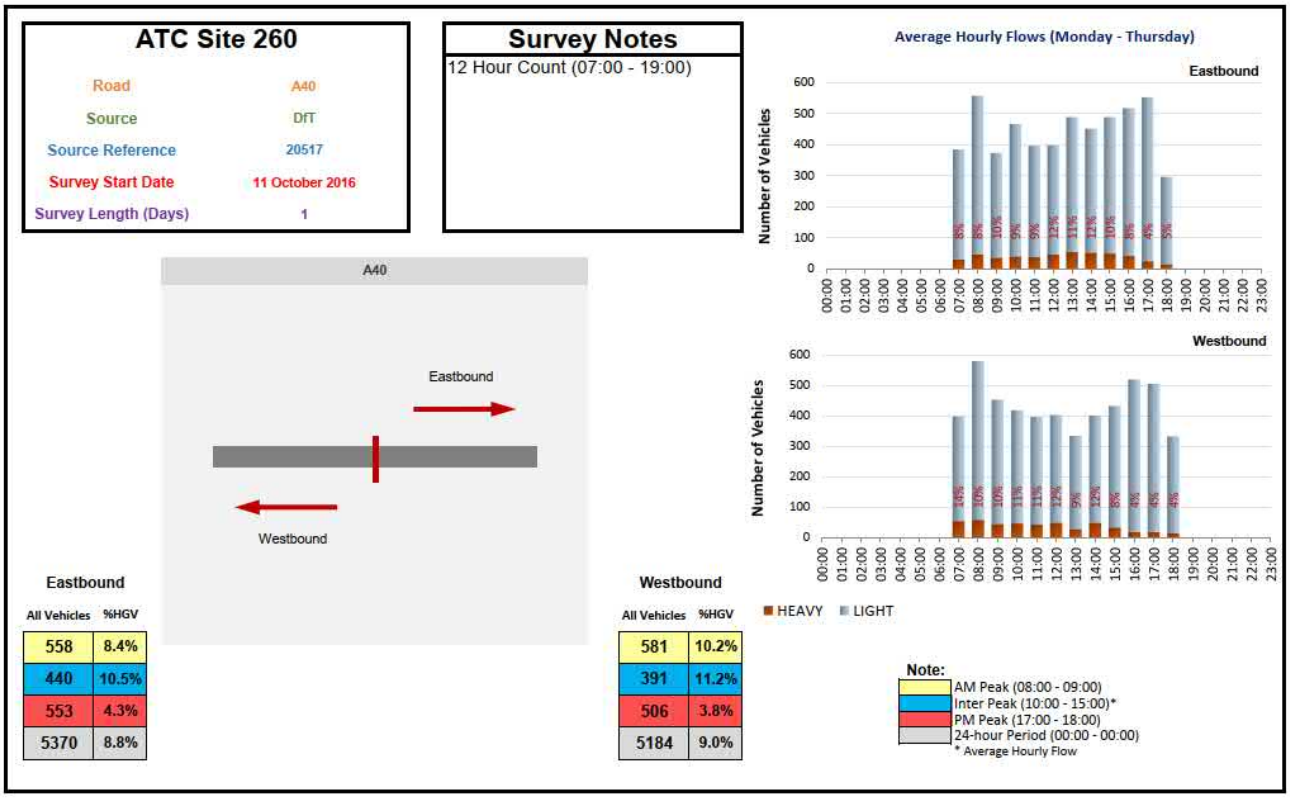
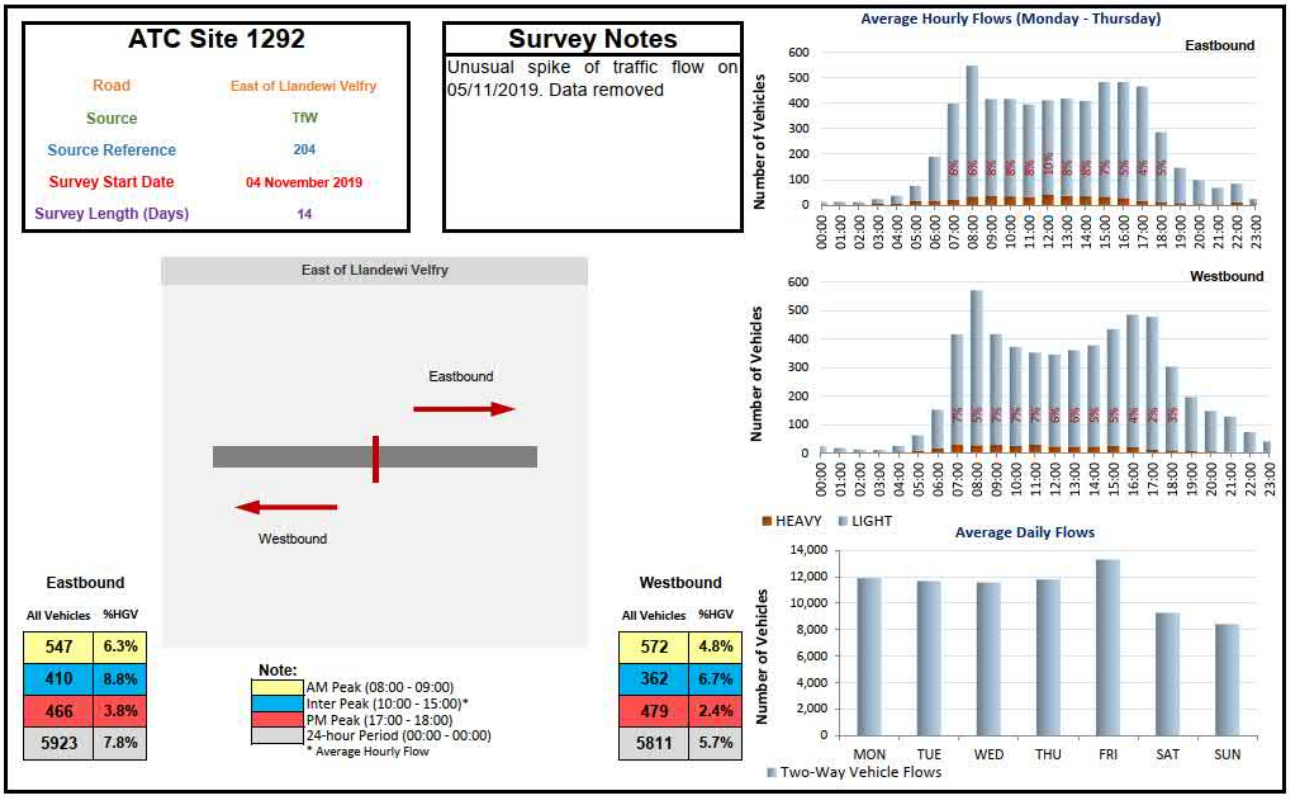


Figure 4-26 – ATC 1292 – A40 West of Whitland



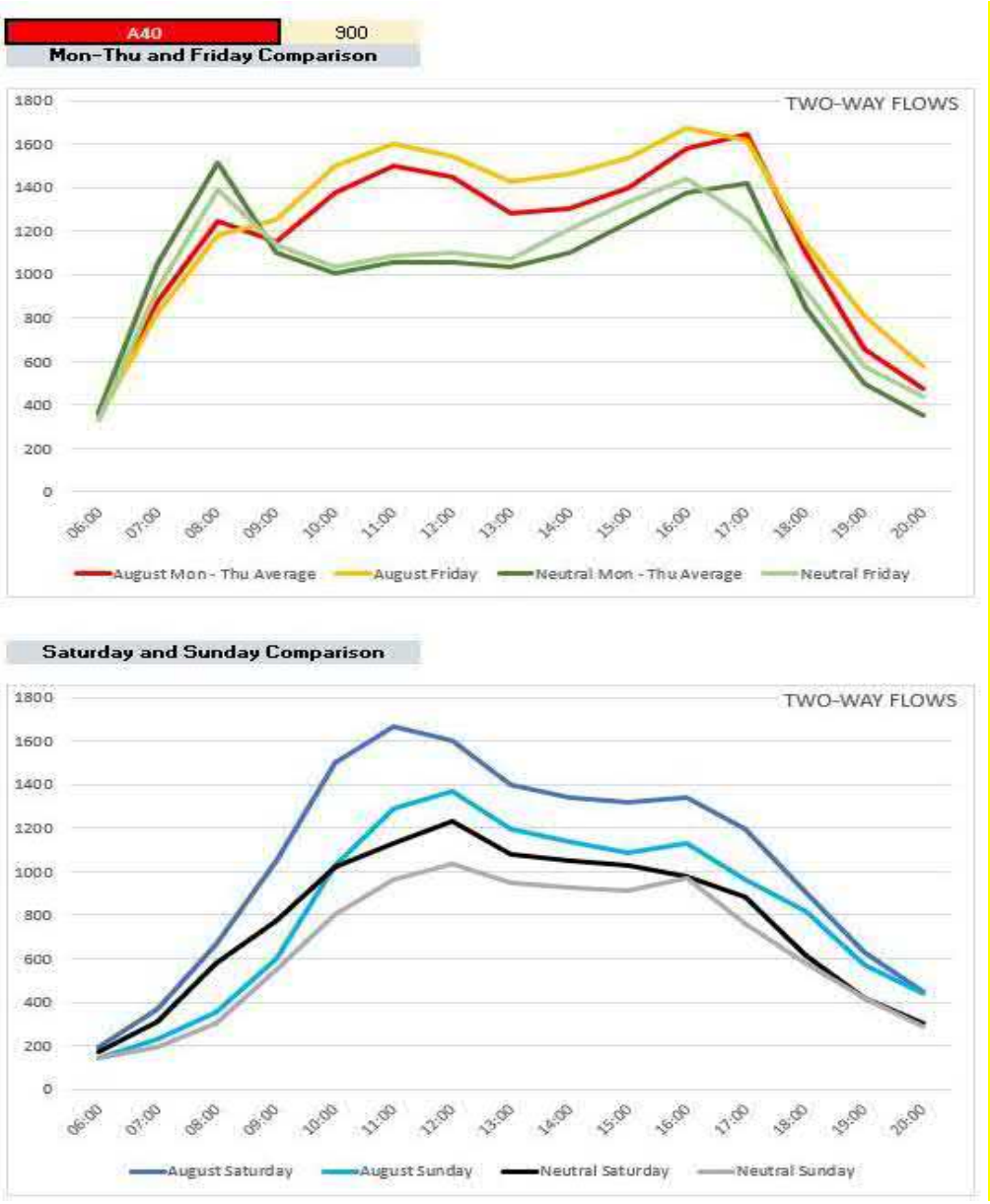
The morning peak on the A40 is heightened at 0800 (1,100 – 1,200vph) whereas in the evening it is more spread between 1500 and 1800 (c. 900 – 1,100vph) in both the east and westbound directions. Over a 24-hour period the A40 can experience a flow of between 11,000 and 13,000 vehicles.

The A40 is a key holiday route and flows during these periods usually increase significantly in line with seasonal variations.

Figure 4-27 provides graphs showing the seasonal variation in flows along the A40 by comparing flows undertaken in August during the summer school holidays and comparing it with a neutral month. This shows a jump in traffic of about 30% during the summer periods.

Accordingly, any transport assessment undertaken for the Site would have to consider the traffic implications during the summer holidays in addition to any other period assessed.

Figure 4-27 – Seasonality Variatrion in flows along the A40



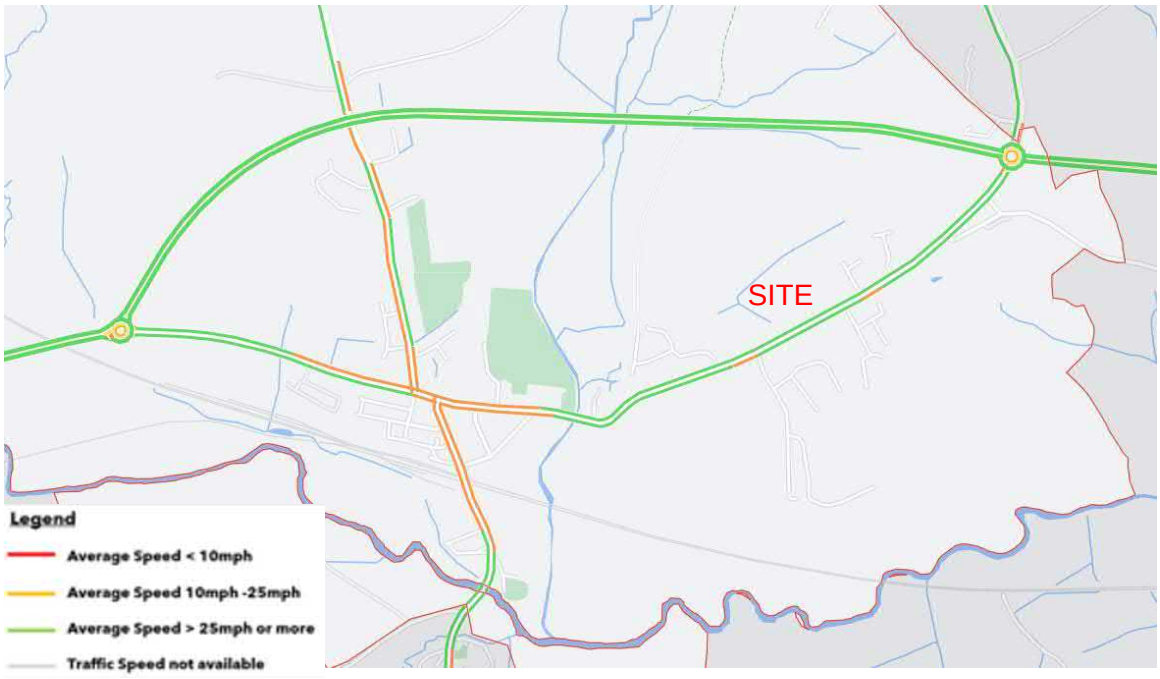
4.3.4 HIGHWAY NETWORK PERFORMANCE

To understand the operation of highway network within and surrounding the study area in terms or traffic movements, the Spatial traffic data has been obtained from Google API, for a typical Weekday AM Peak, PM Peak and Interpeak periods, these are provided in Figure 4-28, Figure 4-29 and Figure 4-30 respectively.

Figure 4-28 - Typical Weekday AM Peak Average Speed Profile (0800)

Figure 4-29 - Typical Weekday Interpeak Average Speed Profile (1200)

Figure 4-30 - Typical Weekday PM Peak Average Speed Profile (1700)



In the figures above, red routes indicate slow-moving traffic (<10mph) while green indicates typically uncongested conditions. They reveal the extent of any congestion issues in terms of traffic speeds within the study area.

As can be seen from the speed profile figures provided above, most of the network in the vicinity of Site 12 is uncongested, however there are sections of road within Whitland Town at the staggered crossroads between the B4328, West Street and North Road that experiences pockets of slow-moving traffic for most of the day. It is expected that this is as a result of slower vehicular movements occurring due to the occurrence of various vehicular interactions (i.e. parking, give-way movements, pick up and drop off etc.).

It is also clear that there is limited congestion where the local roads meet the A40 and as such it is considered that these roundabout junctions currently operate efficiently throughout the course of the average day.

4.3.5 HIGHWAY SAFETY

In order to assess whether there are any safety concerns on the current highway network within the study area, STATS19 Personal Injury Collision (PIC) data has been obtained from the Welsh Government for the period from 1st January 2016 to 31st December 2021. It should be noted that this only covers collisions which have been reported to the police resulting in the population of the STATS19 form.

The study area considers the B4328 on the site frontage and the local and strategic highway network within the vicinity of Whitland. This is shown in Figure 4-31.

Figure 4-31– PIC Study Area

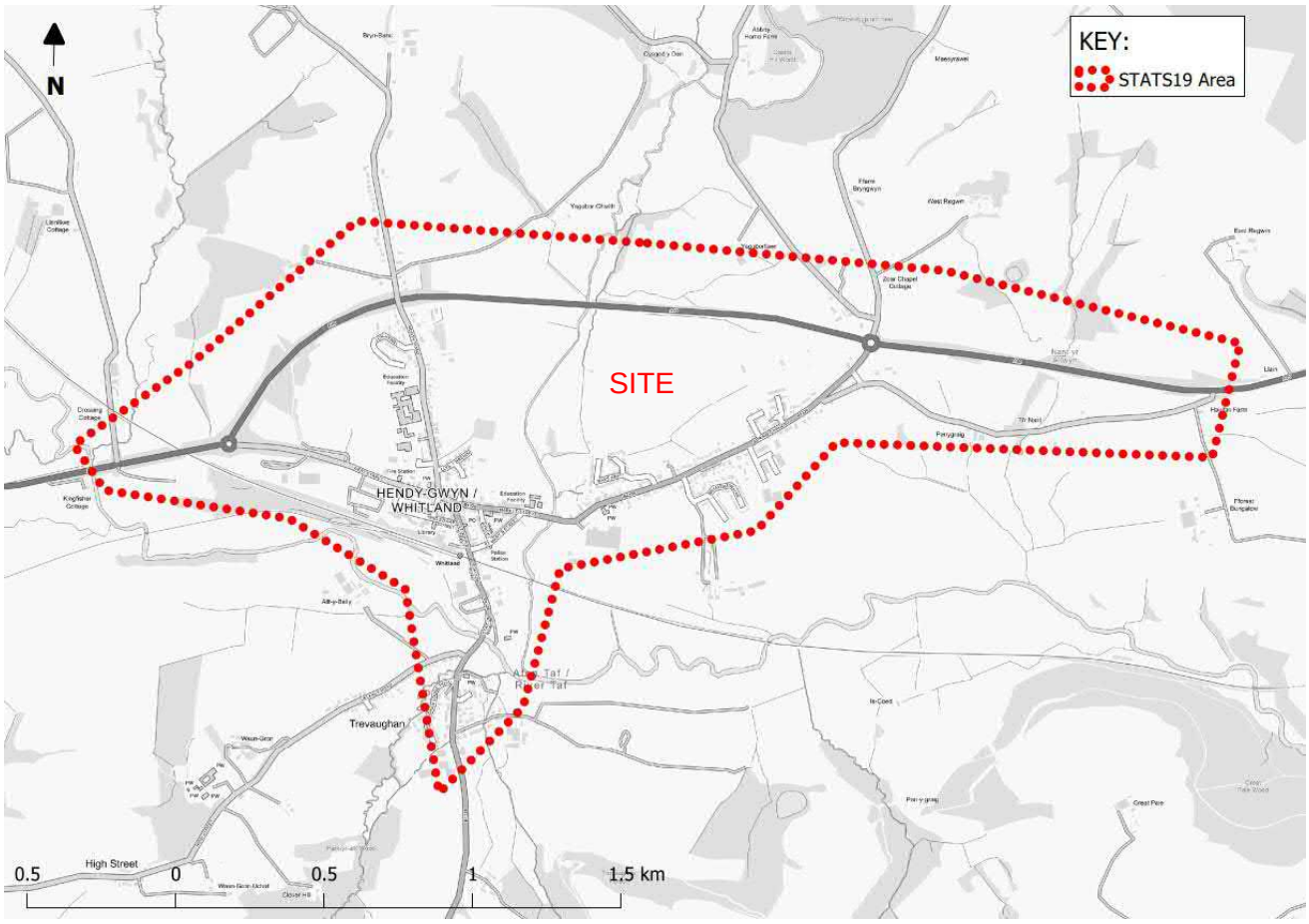


Figure 4-32 shows the location of the PICs observed within the study area.

Figure 4-32 - Personal Injury Collisions within Study Area

Table 4-3 provides a breakdown of the PICs in the vicinity of the Site within the study area.

Table 4-3 – Personal Injury Collisions (PICs)

Level of Severity	2016	2017	2018	2019	2020	2021	Total
Slight	0	1	3	2	0	2	**8**
Serious	1	1	1	2	0	1	**6**
Fatal	0	0	0	0	0	0	**0**
Total	**1**	**2**	**4**	**4**	**0**	**3**	**14**

As can be seen in Figure 4-32 the majority of collisions within the study area have occurred on the A40 around Whitland with a total of 3 PICs (2 slight and 1 serious) recorded within the study period.

A summary of the collisions which have occurred within Whitland is set out as follows:

- Sharp braking of vehicle in front caused motorbike to lose control and fall from their motorbike resulting in serious injuries. (Market Street)
- Driver fell asleep at wheel and collided with another vehicle causing it to roll onto its side resulting in slight injuries. (Spring Garden)
- Vehicle reversed into pedestrian standing in road resulting in slight injuries. (West Street)

As such, no cluster of collisions has been identified on the local highway network resulting in the need for mitigation.

A summary of the serious collisions which have occurred on the A40 within the immediate vicinity of Whitland is also set out as follows:

- Vehicle veered into opposing side of carriageway causing head on collision and rear end shunt.
- Cyclist collided with the rear of broken down vehicle.
- Vehicle veered onto opposing side of the carriageway causing head on collision (x2)
- Vehicle lost control in heavy rainfall resulting in collision with an off-carriageway fence.

As such, it is considered that there are no clusters of accidents having occurred. On three occasions however vehicles were noted to cross the centre line causing head on collisions. These occurred at different locations on the A40 and would be mitigated by the dualling of the A40 between St Clears and Haverfordwest.

4.3.6 POTENTIAL PHYSICAL IMPROVEMENTS

NEW A40 ROUNDABOUT

Geometric Standards and Visibility Splays

A new roundabout on the A40 Trunk Road along the site frontage would be situated on a straight section of the existing highway (Figure 2424-WSP-XX-12-DR-HW-0001). The highway has a 1:67 gradient and has at least 215m Stopping Sight Distance (SSD) to the give way lines. The desirable

minimum SSD compliant with Design Manual for Roads and Bridges (DMRB) Standards is 215m (60mph limit on A40 approach). The speed limit would likely be reduced to 40mph on approach thus requiring a lower SSD of 120m.

The proposed roundabout has an Inscribed Circle Diameter (ICD) between of 40m and would be geometrically compliant with DMRB Standards. It would be subject to a Section 278 Agreement between the developer and the Welsh Ministers / Trunk Road Agent.

Scheme Safety

The scheme would be subject to technical approval from the local highway authority. It would also require an independent road safety audit and non-motorised user audit.

The proposed roundabout would be geometrically compliant with DMRB Standards including visibility. It is likely that the roundabout approaches would be subject to a revised 40mph speed limit.

Scheme Sustainability

The scheme would require the removal and translocation of significant lengths of existing hedgerows.

On Site Highways Works & S38 Agreements

Whichever solution is implemented the works required to achieve the on-site access road are straightforward and deliverable. The site level is flush with the highway frontage and gradients are flat on side-long ground on entry into the site.

Emergency / Blue Light Access

It is assumed that the primary and blue light access would be via the proposed A40 roundabout. A secondary emergency only inbound only vehicular access could be provided via the 30m long frontage access off the B4328.

This would need to be tightly controlled and subject to agreement with the local highway authority.

Wider Network Effects / Off Site Network Reinforcement.

The increased traffic generated by the proposed development may require offsite reinforcement of the Trunk Rd Network. This will need to be agreed with Welsh Ministers and Trunk Road Agent.

Active Travel / Public Transport Access

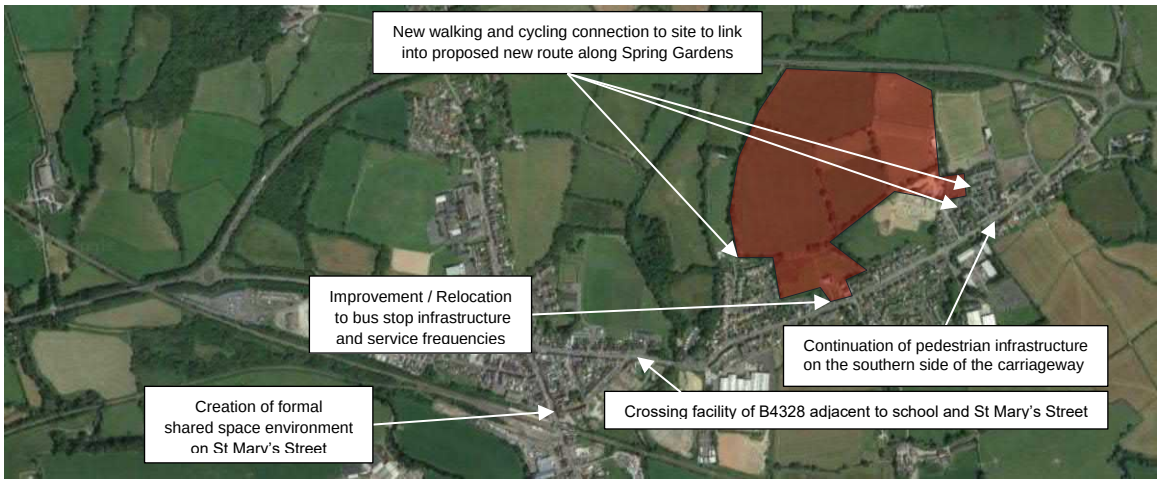
It is proposed to access the site for non-motorised users via the site frontages off the B4328, and Clôs Llwyn Tŷ Gwyn. This assumed that the road currently being offered for highway adoption will communicate directly with the site.

Suitable upgrades to existing active travel infrastructure could include in ascending order of cost and complexity: -

- **Two new crossing points of the B4328 to link to the existing southern Footway.**
  - This would be a straightforward and low-cost intervention and could also be augmented with a road narrowing. Further improvements such as a zebra, parallel zebra or toucan crossing could be investigated. This would link to existing bus stops and the railway station
- **Conversion of existing footway and verges, where space allows to a shared use path (south side of B4328).**
  - This would be a straightforward and low-cost intervention but would be limited by available land. Standards of shared use path width would be below what is normally required and would require approval from the Local Highway Authority.

As part of this transport appraisal exercise a number of physical improvements have been identified to improve conditions for public transport and active travellers and these are shown in Figure 4-33.

Figure 4-33 – Key Physical Improvements



4.4 COMMITTED AND PLANNED DEVELOPMENTS

The Carmarthenshire planning portal has been reviewed to understand the committed developments in the vicinity of the Site. There are no major developments in the vicinity of the site.

The Carmarthenshire County Council Deposit Local Development Plan 2018 - 2033 document suggest the following allocations in Whitland area:

- The following sites are allocated for residential development.

- Land at Park View, Trevaughan (SeC19/h1) – 8 units
- Land a Whitland Creamery (SeC19/h2) – 48 units.

- The following sites are allocated for employment development
  - Whitland Industrial Estate (SeC19/E1) – 0.49 hectares
  - Land South of Former Creamery (SeC19/E2) – 1.48 hectares
  - Rushacre Enterprise Park extension for 1.321 hectare for B1 and B8 use classes.
- Active travel schemes as previously set out in section 3.2.19 – 3.2.20.

4.5 OPPORTUNITIES AND CONSTRAINTS

4.5.1 OPPORTUNITIES

The following section details the opportunities offered by the works identified in Figure 4-33, alongside other opportunities at the site that could be provided to improve conditions for Active Travel Users.

Walking and Cycling

- Improvements to walking and cycling Infrastructure along B4328 and beyond to tie into the Site.
- Creation of formal shared space environment on St Mary's Street as a cut through for walking / cycling.
- Implementation of Cycle Hire Scheme at the hospital.
- Provide wayfinding signs from the built-up areas to the site.
- Provide sufficient cycle parking at the site and at key local facilities and amenities.
- The relatively steep (1:10) gradients on the B4328 present challenges to the provision of safe routes for non-motorised users.

Bus

- Improve infrastructure and waiting facilities at existing bus stops adjacent to Bryngwenllian.
- Rerouting bus services into the hospital site.
- Implement Fflecsi Bus service (these are on-demand bus services which picks and drops off on request in a service area and not just at a bus stop).
- There is an existing bus service providing a connection between Whitland and Withybush Hospital in Haverfordwest, this could be beneficial for cross working staff if the frequency of the service was enhanced.
- Provide more frequent and longer bus services to suit shift working pattern at the hospital.

Train

- Possibility of connecting the southern part of the site directly to Whitland Rail Station. This would require a third-party land purchase.
- Improved cycle storage and cycle hire provision at rail station to assist accessibility.
- Provision of ticketing facilities at the Station.
- Increase the frequency of services calling at the train station. There is already a commitment to increase the frequency of services at the train station.
- Provide a local stopper service at the train station to improve capacity.

Highway /General

- Potential for direct access of the A40 to the Site.
- The A40 can be directly accessed from the B4328 allowing good access to the surrounding communities including St Clears and Haverfordwest.
- Blue light access resilience (ambulance) - the site is well located to the A40 with two connections from the east and west (via Whitland).
- Review speed limit of highway surrounding Site 12.

4.5.2 CONSTRAINTS

Walking and Cycling

- Limitations in providing footway to the Active Travel Guidance standards along the northern side of the B4328 due to lack of available highway and third-party land.

Bus

- Limitation on providing bus shelter on both sides of the carriageway along the B4328 due to access requirements / highway extent.
- The demand for more frequent and longer bus services may currently be limited and therefore it may be difficult to justify increasing provision.

Train

- No direct connection of the site to the rail station.

Highway /General

- The available carriageway within the built-up area of Whitland is narrowed as a result of on-street parking.
- There are electric poles located within the existing footway along the B4328 Spring Gardens.

4.6 SUMMARY AND CONCLUSIONS

This chapter evaluates the accessibility of the Site and considers the current provision surrounding the site for different mode of transport, importantly for walking, cycling and public transport in line with the Active Travel aspirations of the Welsh Government, whilst identifying opportunities for improving the provision for all transport modes to the site. The following sections summarise the findings of the transport appraisal exercise pertaining to each transport mode.

Walking and Cycling

A number of locations along the B4328 Spring Gardens have been identified for providing Active Travel access to the site. The introduction of active travel accesses in these locations would result in the site being permeable and integrating with the surrounding environment.

There is currently footway provision along the B4328 fronting the site at a width of 1.5 – 2.5 metres. There is however a gap in this provision on the site frontage on the southern extent of the carriageway. There is however a lack of crossing facilities within Whitland with the potential for a further crossing facility to be introduced as part of the scheme to ensure safe crossing of the B4328.

In places this footway provision is also narrowed by the built environment and by vehicles using the footway for parking.

Active travel to the rail station in Whitland is considered key to the feasibility of this development due to this being the main form of public transport within the immediate vicinity of site.

Bus Services

The site has a number of bus services that run nearby, however these services are infrequent and short. This is not favourable for the shift working patterns associated with hospitals, and therefore the possibility of providing more frequent and longer services on the existing bus routes need to be explored. Also, the existing 322 bus service already calls at the Withybush Hospital in Haverfordwest providing opportunities for cross working staff to connect between hospitals by bus.

Rail

The Whitland Rail Station is located approximately 750m walking distance from the closest existing access to the site (off B4328 Spring Gardens), which is outside the CIHT recommended walking distance of 400m. It is therefore important that the possibility for improving connections between the site and the rail station be further investigated. This could be achieved through the operation of cycle hire schemes and the introduction of additional cycling infrastructure between the site and the station.

Highway/General

The site is well located along the A40 on the Pembrokeshire / Carmarthenshire border and therefore has a wider catchment as far as blue light access is concerned.

There is direct access from the A40 to the site and therefore traffic does not need to utilise local roads. There is however also a potential secondary / emergency access from the B4328 which could be utilised. It would however be recommended that use of this access be minimised.

The local roads do not appear to suffer from significant congestion during the typical weekday however the impact of the hospital on the local roads would need to be investigated as part of any Transport Assessment moving forwards.

There are improvements works underway along the A40 as part of the Llanddewi Velfrey to Redstone Cross improvements and therefore the impact of the scheme on the proposed hospital at Site 12 would have to be further investigated. Moreover, the traffic along the A40 is known to be very seasonal, with high volumes during the summer school holiday period and therefore any transport assessment undertaken for the Site would have to investigate the implication of the seasonal variation in flows.

5 ECOLOGY

5.1 INTRODUCTION

In order to inform the Client of the ecological constraints and opportunities, we have undertaken a Preliminary Ecological Appraisal (PEA).

The PEA covered the entire area of the Site and included a preliminary ground level roost assessment of trees and buildings for bats.

The PEA described in this summary report covers the subject 'Site'. The Site lies to the north-east of the town of Whitland, which is west of St Clears. It is bordered by the A40 to the north and the B4328, also known as Spring Gardens, to the south (centroid grid reference SN 20679 17066, refer to Figure 1 in the PEA report[15]).

The brief for the PEA was:

- To provide baseline ecological information about the Site and a surrounding study area with particular reference to whether legally protected and/or notable sites, species or habitats are present or likely to be present;
- To provide recommendations to enable compliance with relevant nature conservation legislation and planning policy; and
- If necessary, to identify the need for avoidance, mitigation, compensation or enhancement measures and/or further ecological surveys.

Legislation and policy relevant to this appraisal can be found in the complete PEA report[1]. The summary here details only the key findings and recommendations that have arisen as a result of the PEA survey, and further detail can be found in the PEA itself.

5.2 METHODS

The PEA was prepared with reference to current good practice guidance[16, 17]. For detailed methodology and limitations, please refer to the PEA report[1].

This PEA was based on the following data sources:

- An ecological desk study, including: records of legally protected and notable species within 2 km of the Site; bat records within 5 km of the Site; records of non-statutory sites designated for nature conservation within 2 km of the Site; information regarding Priority Habitats[18] within 2 km of the Site; and woodland listed on the Ancient Woodland Inventory[19] within 2 km of the Site;
- A habitat survey; and

[15] WSP, 2022. Urgent and Planned Care Hospital Site Appraisal. Site 12 - Preliminary Ecological Appraisal.
[16] Chartered Institute of Ecology and Environmental Management (CIEEM) (2017). Guidelines for Preliminary Ecological Appraisal. CIEEM, Winchester.
[17] CIEEM (2017). Guidelines for Ecological Report Writing. CIEEM, Winchester.
[18] Mapped locations of HPI are usually not available, but HPI aligns in the most part with UKBAP habitats. Inventories of UKBAP habitat have been prepared by a variety of organisations and at a national (Natural England priority habitat inventory) and local scale (e.g. by local records centres). In some instances these are primarily based on aerial photograph analysis rather than field survey.
[19] The ancient woodland inventory in Wales lists areas over two hectares in size which have been continuously wooded for 400 years or more.

- A protected/notable species assessment.

5.3 RESULTS, DISCUSSION AND RECOMMENDATIONS

The results of the desk study and habitat survey, as well as recommendations regarding further surveys and the potential effects of the Proposed Development on designated sites, Priority Habitats and protected species, are detailed in Table 5. For all Figures and Target Notes referenced below, please refer to the PEA report[1].

Table 5-1 - Key ecological constraints and further survey requirements

Ecological consideration	Desk study results summary	Protected species assessment summary	Discussion and recommendations
Statutory Designated Sites	Limestone Coast of South West Wales/Arfordir Calchfaen de Orllewin Cymru Special Area of Conservation (SAC) within 20 km of the Site (designated for bats) Pembrokeshire Bat Sites and Bosherston Lakes/Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherston SAC identified within 21 km of the Site (designated for bats) Refer to Figure 2[1]	N/A	As the distance between the Site and the SAC is larger than the recognised Core Sustenance Zone (CSZ) for bats, individual bats that roost within these SACs are unlikely to be impacted by the Proposed Development, and further recommendations are not required. There is potential for the Proposed Development to affect the watercourses considered to have hydrological connectivity to the Site. Therefore, the Proposed Development must be screened by the competent authority (Local Planning Authority) to determine whether significant effects are likely to result. If the local authority is unable to conclude that significant effects are not likely, the Proposed Development must be subject to additional assessment in accordance with the Habitats Regulations.
Non-Statutory Designated Sites	B-Lines incorporates the Site (a locally important insect pollinator pathway)	N/A	As it is considered likely that invertebrates present are common and widespread, and the B-Lines are potential pathways between established wild-flower rich habitats, further surveys are not considered to be necessary for terrestrial invertebrates at this Site. Grassland and hedgerows should be replaced with a higher ecological value (i.e., species-rich instead of species-poor) with

Ecological consideration	Desk study results summary	Protected species assessment summary	Discussion and recommendations
			replacement habitat within the Site to support the Proposed Development achieving a net benefit for biodiversity.
Priority Habitats	The closest site of ancient woodland was 1.07 km north of the Site. Semi-improved neutral grassland within the Site was returned from the desk study.	Three habitats identified within the Site listed as Priority Habitats: neutral grassland meadows (neutral grassland); hedgerows (boundary and linear features); and rivers and streams (rivers). Refer to Figure 3[1].	It is recommended that currently available BNG resources (the Biodiversity Metric 3.0 (Panks et al., 2021) and current guidance (CIEEM, CIRIA, IEMA, 2016)) are utilised in order to ensure that a measurable net benefit for biodiversity is achieved and to comply with PPW (2021) and Environment (Wales) Act 2016. Retain and protect habitats where possible. Reinstate / replace habitats after completion of works to a higher ecological value. A Construction Environmental Management Plan (CEMP) would include specifying details on any sensitive habitats on Site and how they would be protected. Incorporation of hedgerow creation into the Proposed Development with native species of local provenance. BNG assessment (if undertaken) should be factored into the replacement planting. Priority Habitats loss to be replaced on a 2:1 ratio where possible, with a minimum ratio of 1:1.
Bats	The desk study for the Site identified seven records of at least six different bat species within 2 km of the desk study centroid, all of	One building (B1) and eight trees (T1 to T8) were identified as providing suitable roosting habitat	Presence/Absence Surveys: Emergence/re-entry surveys on buildings with suitability to support roosting bats. In accordance with best practice guidelines, three emergence/re-entry surveys required on the

Ecological consideration	Desk study results summary	Protected species assessment summary	Discussion and recommendations
	which were recorded 870 m west of the Site.	for bats (Photos 56 to 63, Figure 5[1]). The treelines and hedgerows within the Site provide suitable foraging and commuting habitats.	buildings with high bat roost potential, two on the buildings with moderate bat roost, and one on the buildings which had low bat roost potential. Detailed close inspection via aerial tree climbing for the trees identified with suitability to support roosting bats. Trees with low suitability to support roosting bats should be subject to a precautionary pre-felling check by a bat licenced ecologist only. If confirmed roosts are likely to be damaged/destroyed during the Proposed Development, further surveys may be required and a licence from Natural Resources Wales (NRW) would need to be obtained to allow the work to proceed lawfully. Bat activity surveys to enable identification of species using the Site and an index of bat activity should be undertaken at the Site. This would be achieved by using static bat detectors positioned within the habitat and serviced monthly between April and October.
Badger *Meles meles*	Five records of badger were returned from the desk study for the Site, the closest of which was 785 m north-west of the desk study centroid.	A well-used mammal path was identified adjacent to a concrete pipe along the northern boundary of the Site, although no badger field signs were noted and it could not be determined which species	A pre-works check for badger is recommended (a minimum of two weeks in advance of works). Avoidance of potential and identified setts by setting up exclusion zones. If disturbance to/destruction of setts cannot be avoided, then they must be excluded and closed under licence. In this instance

Ecological consideration	Desk study results summary	Protected species assessment summary	Discussion and recommendations
		created and used the mammal paths (TN2, Photo 5). The woodland habitats within the Site provide suitable foraging and commuting habitat for badger, with the scrub and treelines providing suitable habitat for badger sett building.	further surveys would be required to characterise the setts on Site and where access is possible, in the wider area.
Hedgehog *Erinaceus europaeus*	Five records of hedgehog within 2 km of the Site were returned from the desk study, the closest of which was 285 m south-west of the centroid.	The Site provides suitable habitat for foraging and commuting hedgehog, in addition to suitable habitat for resting locations and nesting sites.	Clearance of suitable terrestrial habitat should be checked in advance by a suitably qualified ecologist to minimise the risk of disturbance and injury/killing. Avoidance of vegetation clearance during the hibernation season, if possible. Specific mitigation measures would require safeguarding by the implementation of an Ecological Management Plan (EcMP) throughout the construction of the Proposed Development
Water vole *Arvicola amphibius*	No records	No suitable habitat for water vole within the Site; the vegetation alongside the ditches present does not provide suitable resting or feeding areas, and there were no suitable burrowing places within the banks of any waterbodies present.	N/A

Ecological consideration	Desk study results summary	Protected species assessment summary	Discussion and recommendations
Otter *Lutra lutra*	Three records of otter were returned from the desk study, the closest of which was 1.6 km north-west of the desk study centroid.	Potential habitat for otter was not present within the Site. No evidence of otter was found during the habitat surveys. The Site has very limited potential to host commuting otter along the water bodies within the Site.	Lighting used for construction must be switched-off when not in use and positioned so as not to spill on to adjacent land or retained vegetation within the Site.
Hazel dormouse *Muscardinus avellanarius*	No records	Sub-optimal habitat for dormouse was present within the Site, owing to multiple hedgerows, some of which contain hazel which is a good food source for dormouse. However, there was limited connectivity to suitable habitat for dormouse.	Scrub habitat and hedgerow removal is likely to result to enable the Proposed Development. However, limited scrub and hedgerow which is suitable for dormouse will be required at this Site. Therefore, it is considered that works can proceed under a PMoW and with an ECoW present to undertake a pre-works check prior to vegetation clearance.
Birds	The desk study returned 36 records of birds across 18 species from within 2 km of the Site. Of these, four species were listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) (WCA).	Much of the Site was suitable for nesting birds, including the hedges, trees, buildings and woodland. No sites with nesting suitability for Schedule 1 birds were identified.	Avoidance of vegetation clearance during the breeding bird season. If works must occur within the breeding bird season, then all vegetation must be hand-searched by a suitably qualified ecologist immediately prior to removal.

Ecological consideration	Desk study results summary	Protected species assessment summary	Discussion and recommendations
			If an active nest is discovered, an appropriate exclusion zone of a minimum 5 m must be set up and no works are to occur within it until nestlings have fledged.
Reptiles	No records	The majority of the Site comprised suboptimal habitat for supporting reptiles as modified grassland, although scrub, hedgerows and woodland provided optimal habitat. Three potential hibernacula were identified on Site: TN1, Photo 4; TN4, Photo 7; and TN5.	Due to the small area of good quality habitat that is understood to be cleared, work can proceed under a PMoW and ECoW. Maintain vegetation within the construction footprint at a low height during the active reptile season. No hibernacula are to be removed during the hibernation season.
Amphibians	The desk study returned records of common frog and common toad within 2 km of the desk study centroid, the closest of which was 1.2 km north-east of the Site. A search for waterbodies within 500 m which may provide breeding habitat identified that, although a network of ditches exists, these have flowing water	The waterbodies identified as potentially being suitable for great crested newt (GCN) *Triturus cristatus* are located within Zone C of the GCN HSI and are therefore considered unsuitable for GCN (French *et al.*, 2014).. Suitable terrestrial habitat for common amphibians was present within the Site, in particular within the scrub and treelines on field boundaries and to the south-west of the Site. The watercourses	Due to the small area of good quality habitat that is to be cleared, work can proceed under a PMoW and ECoW. No hibernacula are to be removed during the hibernation season.

Ecological consideration	Desk study results summary	Protected species assessment summary	Discussion and recommendations
	and so are unsuitable for breeding GCN. Two waterbodies were identified which hold standing water and therefore may be suitable breeding habitat for GCN.	provide suitable habitat for common and widespread amphibians, and the previously identified hibernacula (TN1, TN4 and TN5) would be suitable for amphibians.	
Invertebrates	One record of an invertebrate was returned from the desk study 2.1 km to the south-west of the desk study centroid.	Areas of hedgerow, scrub, trees and modified grassland present were considered suitable to support mainly common invertebrate species due to the common and widespread nature of the habitats present.	As it is considered likely that invertebrates present are common and widespread, further surveys are not considered to be necessary for terrestrial invertebrates at this Site. Grassland and hedgerows should be replaced with a higher ecological value with replacement habitat within the Site.
Invasive non-native plant species	Eight species of INNS were returned from the desk study for the Site.	No species of INNS were identified during the habitat survey.	N/A

5.3.16 PRELIMINARY AVOIDANCE, MITIGATION AND COMPENSATION MEASURES

To enable compliance with relevant legislation and planning policy, further advice, mitigation and compensation measures should be designed into the Proposed Development. These would be refined following completion of further survey recommended above. They are detailed further in the PEA report[1].

5.4 SUMMARY AND CONCLUSIONS

5.4.1 The Site comprised mainly fields (majority modified grassland) bordered by wire fences and hedges, some on earth banks, with a network of ditches. The Site also had areas that were built-up, comprising buildings, sealed surfaces, or other developed land. Site 12 contained lines of trees and dense scrub. There were no areas of standing open water, although the Site did have an area where rushes dominate in fen.

Two statutory designated sites for which bats are a qualifying feature were identified within 35 km of the Site. The distances between the designated sites and the Site are larger than the CSZ for the bat species for which the sites are designated. Therefore, it can be assumed that the Proposed Development would not have a negative impact on the bat populations roosting within these SACs.

No statutory nature conservation sites of international or national importance within 2 km of the centroid used for the desk study were identified.

Further surveys are required to determine the presence/likely absence of bats at the Site, involving up to three emergence/re-entry surveys on buildings with suitability to support roosting bats from May to September, and up to three close inspections of the trees with suitability to support roosting bats. Bat activity surveys should be undertaken using static bat detectors to enable identification of species using the Site and an index of bat activity should be undertaken at the Site.

Avoidance and/or precautionary methods of working to minimise negative impacts has also been recommended for: badger, hedgehog, dormouse, breeding birds, reptiles, amphibians, and INNS. These measures would require safeguarding by the implementation of an EcMP comprising PMoWs and MSs during the construction phase, and a CEMP from the construction phase through to the operational phase of the Proposed Development.

A BNG assessment using currently available BNG resources should be utilised in order to ensure that a measurable net benefit for biodiversity is achieved. This is in line with current guidance and would ensure the Proposed Development demonstrates a measurable net gain for biodiversity and aligns with Planning Policy Wales (PPW) (Edition 11) 2021.

Ecological enhancements are recommended, such as retention/creation of habitats e.g. species-diverse grassland to increase the value of the Site for biodiversity.

6 UTILITIES

6.1 INTRODUCTION

This chapter examine the existing utilities infrastructure and consider the risks and opportunities for provision of the new site connections.

This report has been based on the available record information for the various services. There is a possibility of private network services or incomplete or inaccurate record information. As such, before any work is carried out on site, suitable surveys should be carried out to establish the accurate location of services and identify any additional services not recorded.

6.2 POWER

6.2.1 EXISTING INFRASTRUCTURE

There is an existing 132kV overhead supply running adjacent to A40 at the north of the site. These cables require a 6m wayleave either side of the lines. This supply crosses the proposed primary access to the site and would therefore need to be diverted.

There are additional 11kV & LV overhead lines running along the B4328 at the south of the site, which supplies the local properties.

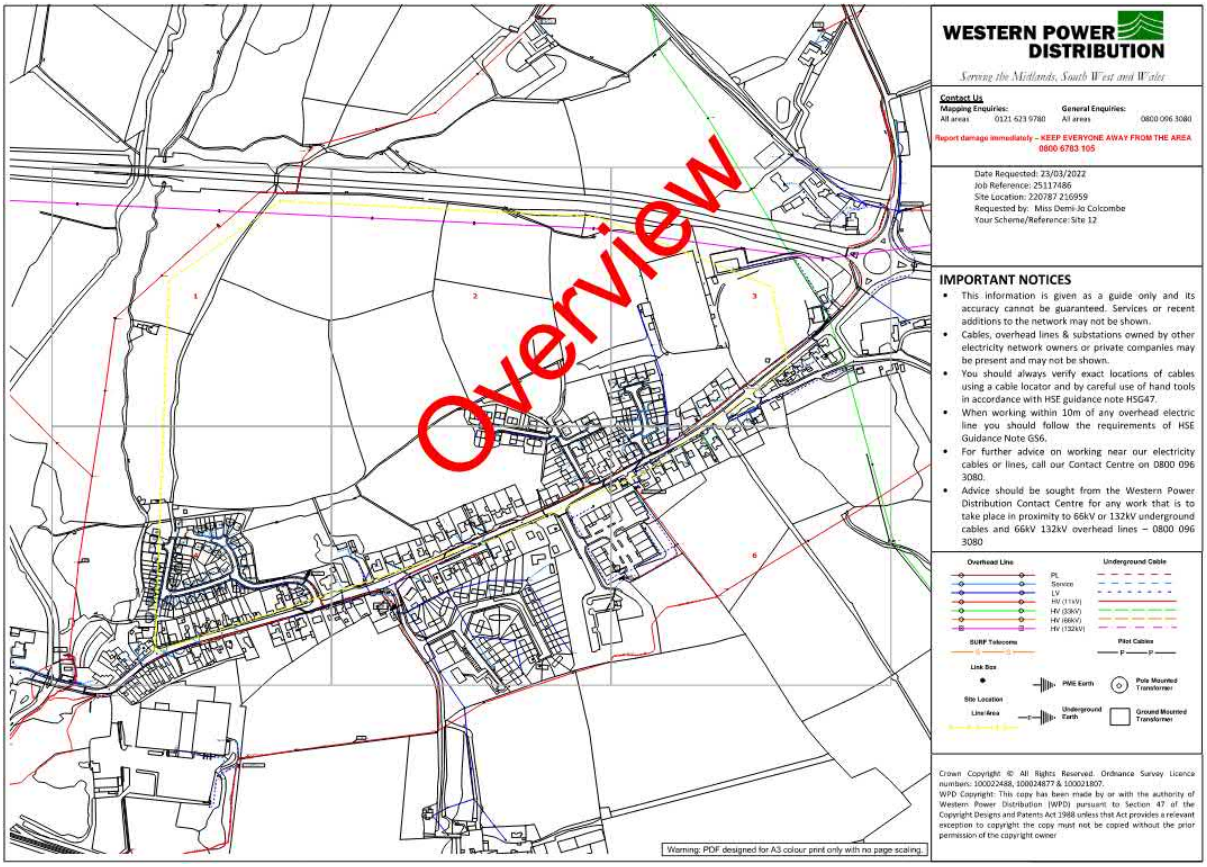
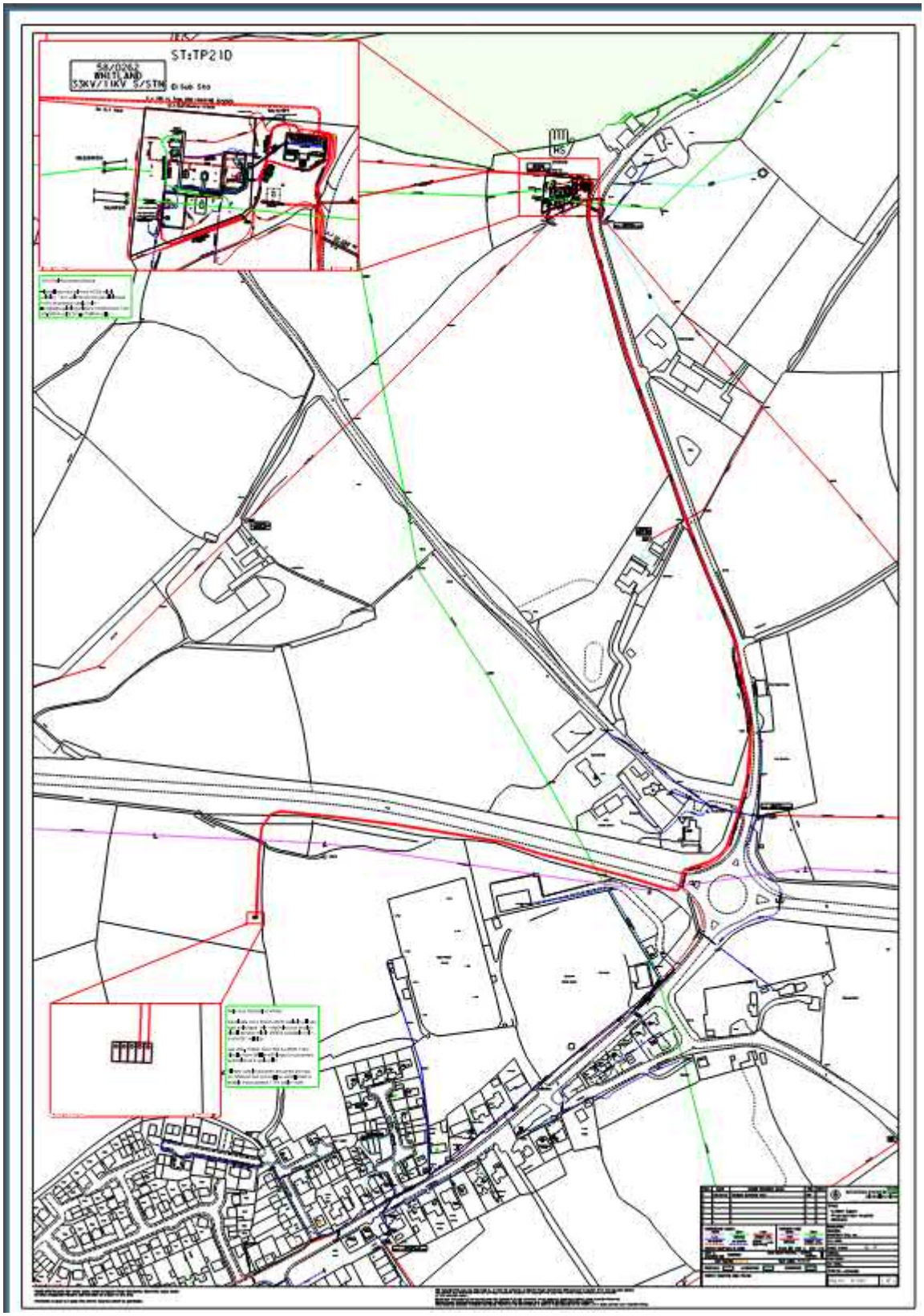


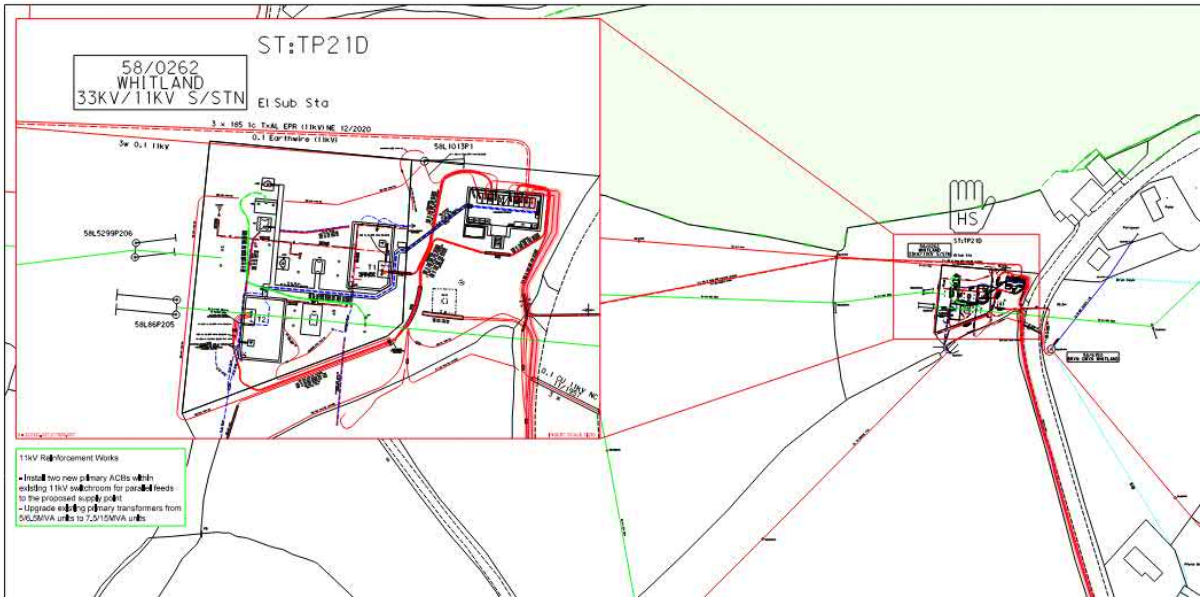
Figure 6-1 - Site Power Overview

6.2.2 NEW SUPPLY

Based on the requirements of an all electrical site, upgrade works would be required to the 11kV switchgear/infrastructure. Upgrades would also be required to primary transformer from 5/6.5MVA to 7.5/15MVA. The cost of these works would be in the region of £2M. This would also provide the site with a 6.5MW supply with a dedicated Substation. This also allows for a diverse route for the cabling to site in accordance with the HTM requirements. Albeit from the same substation. Different substations as mentioned in the HTM is not feasible due to DNO constraints. The primary sub-station within the immediate area is located approximately 1.1km from the site.



Overview



Primary Works

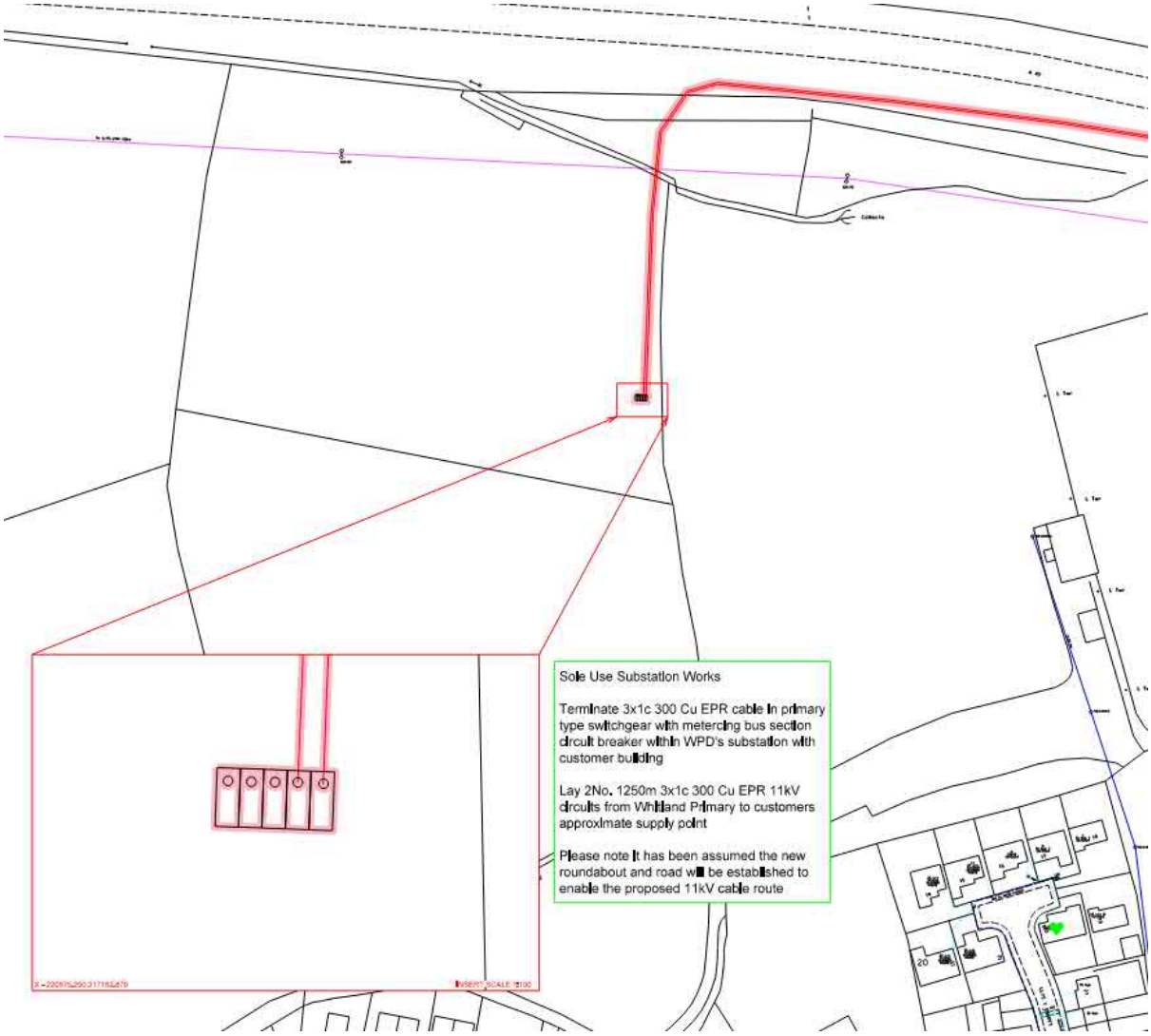


Figure 6-2 - Power Upgrade Works

6.3 WATER

6.3.1 EXISTING INFRASTRUCTURE

There is an existing 4inch diameter water main running along the B4328. This supplies the existing buildings located along this road. Where these supplies feed buildings on the proposed site, if they are to be demolished as part of this development. The supplies can be grubbed up and removed.

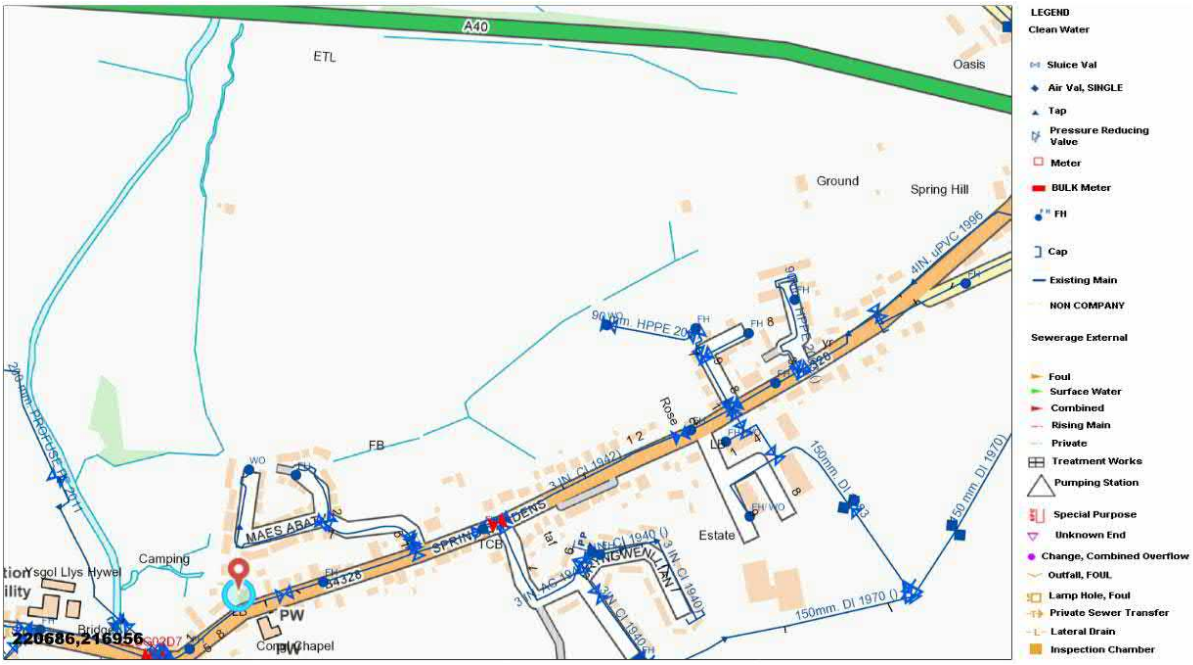


Figure 6-3 - Site Water Overview

6.3.2 NEW SUPPLY

This system will need to be assessed for capacity by DCWW however, we would expect to provide on site storage for both domestic use and fire fighting to reduce the impact on the existing DCWW infrastructure.

6.4 GAS

6.4.1 EXISTING INFRASTRUCTURE

There are existing low pressure gas mains running along the B4328, which supply the existing properties.

To the south of the site, south of the B4328, there is an existing high pressure main, however this land is unlikely to be considered for any future expansion of the hospital.

Figure 6-4 - Site Gas Overview

6.4.2 NEW SUPPLY

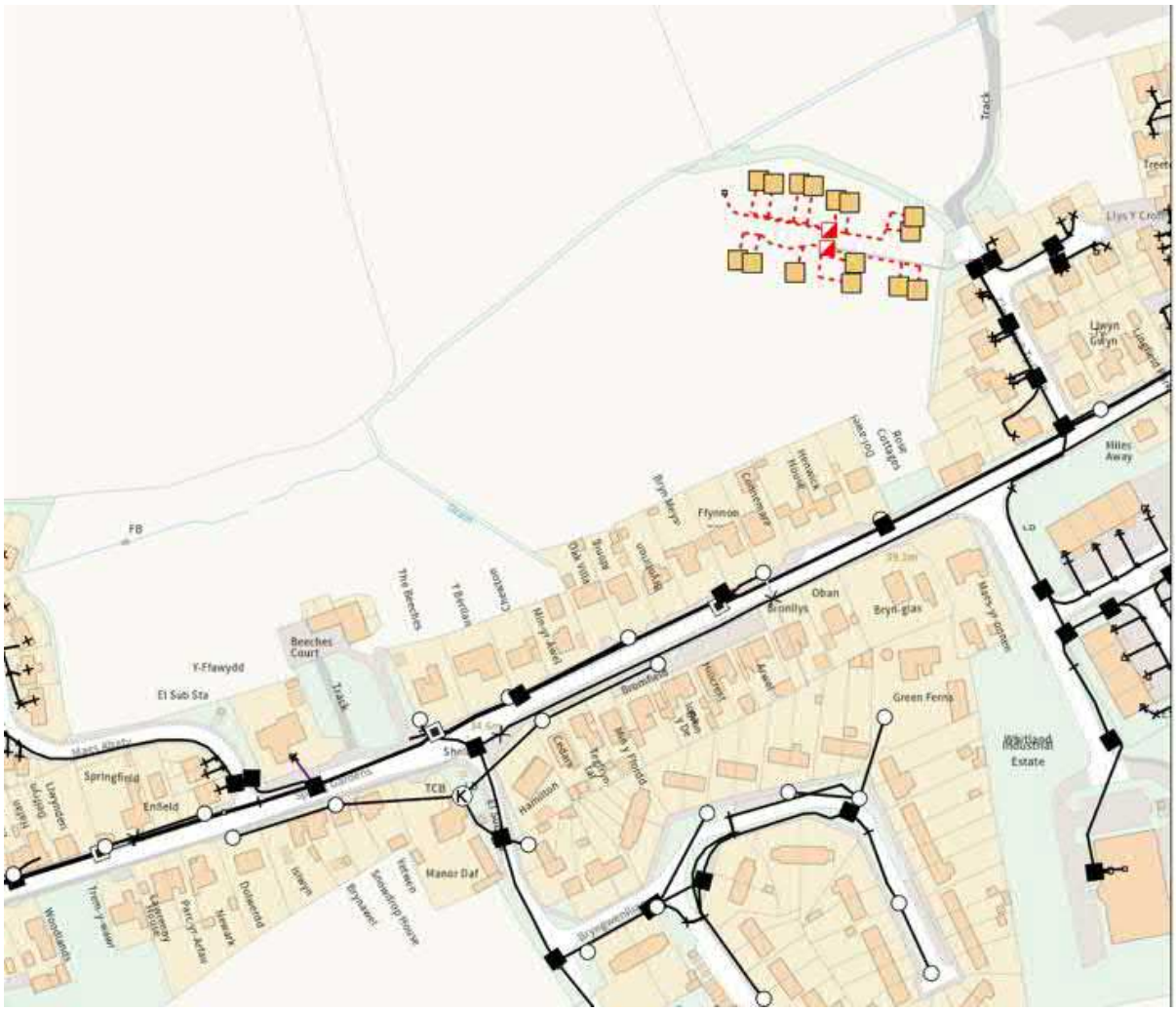
In line with the current decarbonisation aspirations, there is no intention for large scale gas use on site.

There are existing local low pressure mains in the area to supply any small scale requirements.

6.5 TELECOMMUNICATIONS

6.5.1 EXISTING INFRASTRUCTURE

There is currently Openreach infrastructure running along the B4328, to serve the local properties, but there are no known services crossing the site that will require diversion.




L Twr
Rugby Football Ground
Caerdar
Track
Llwyn Celyn
Cylch yr Hau
Llygad yr Haul
Woodland View
Ty Coch
Golwg Ystrad
Cadogan House
Miles Away
Rose Cottages
Henwica House
Bryn Meyr
Oban
Bryn-glas
Green Ferns
Bromfield


L Twr
Rugby Football Ground
Spring Hill Cricket Ground

Figure 6-5 - Openreach Overview

6.5.2 NEW SUPPLY

It is likely that a new high speed connection will be required to serve the proposed scheme. Openreach are in the process of upgrading their networks and this would need to be assessed closer to the construction stage.

6.6 RENEWABLES

There is limited space on site for renewables such as PVs. However, there is the possibility of locating a solar farm or wind turbine in the surrounding area with a dedicated feeder to the site. PVs would require approx. 10 acres of suitable land to meet the demand of the proposed Critical Care Hospital scheme.

6.7 SUMMARY & CONCLUSIONS

The site is feasible for development, however, there are works required to the distribution network including diversions and upgrades to the infrastructure.

7 ENVIRONMENTAL APPRAISAL

7.1 INTRODUCTION

This Chapter is divided into four parts:

- Section 7.1: Introduction;
- Section 7.2: Environmental Constraints – divided into sub-topics which identify key environmental and social constraints within a 2km buffer zone, herein referred to as 'the Study Area';
- Section 7.3: Consideration of EIA Regulations – identifies the legislative requirements associated with the proposed development on this Site in relation to current EIA regulations and provides an initial assessment of the potential for significant environmental effects;
- Section 7.4: Summary – summarises the key constraints identified in Section 7.2 and outlines likely next steps and potential opportunities should the Site be selected for acquisition and development.

This Chapter summarises a desk-based study using publicly available information. It is complemented by the other environmental chapters of this report which should be read in conjunction with this Chapter to fully capture the potential environmental and social constraints at each site.

7.2 ENVIRONMENTAL CONSTRAINTS

7.2.1 INTRODUCTION

The following environmental constraints plans have been produced and are located in Appendix F. These should be viewed alongside the text in this Section:

- Drawing No. 2424-WSP-XX-12-DR-EN-0003-P01_Env Constraints Plan
- Drawing No. 2424-WSP-XX-12-DR-EN-0012-P01_ALC (Agricultural Land Classification) Map
- Drawing No. 2424-WSP-XX-12-DR-EN-0022-P01_ Env Noise Map

The following constraints were searched for as part of the Environmental Constraints Plan (Drawing No. 2424-WSP-XX-12-DR-EN-0003-P01):

- Cultural heritage assets (Listed Buildings, Schedule monuments, Conservation Areas)
- Public Rights of Way (PRoWs)
- Noise Action Planning Priority Areas (NAPPAs) and Noise Action Proximity Areas
- Air Quality Management Areas (AQMAs)

7.2.2 LAND USE AND SOILS

The Site comprises Grade 3b (moderate quality) agricultural land primarily set aside for cattle grazing (see Drawing No. 2424-WSP-XX-12-DR-EN-0012 Appendix F). It comprises fields and field boundaries consisting of hedges and mature trees. It contains two buildings located in the southern extent of the Site boundary, one which is a residential property and the other which is used as a barn.

A Preliminary Ground Conditions Assessment (WSP, 2022, 70092424-02) was produced alongside this report in May 2022. The main findings were:

- The Site is in an area of moderate to low environmental sensitivity. Environmental sensitivity here refers to sensitivity of human health receptors (site users), controlled waters receptors (groundwater and surface water features) and structural receptors (e.g., foundations and potable water supply networks) to potential sources of contamination.
- The Site is reported to be underlain by bedrock deposits of the Arenig Tetragraptus Beds (Mudstone) which are classified as a Secondary B Aquifer.
- Groundwater vulnerability across the Site is reported to be high, associated with a well-connected fracture flow network within the underlying bedrock, and local small-scale domestic abstraction has been noted to have historically occurred within the area.
- Minor unnamed surface water features cross the northern boundary and southern area of the Site. Both features flow from east to west and feed into Mill Race which is located 50m to the east of the Site and which is a tributary of the Afon Gronw, which is located 150m to the east of the Site. A number of other minor stream/tributaries, ponds and a spring are also present within 500m of the Site.
- The online Flood Risk Development Advice Map provided by NRW indicates that the Site is located within Zone A, which is classified as “at little or no risk of fluvial or coastal/tidal flooding.”
- The online Flood Risk Assessment Wales Map provided by NRW indicates that the majority of the Site is not at risk of flooding from surface water and small watercourses. However, localised areas around the immediate vicinity of the surface water features that are located adjacent to the northern Site boundary and which cross the southern area of the Site are within Flood Zones 2 and 3 (for surface water and small watercourses). This is defined as Areas with 0.1% to 1% (1 in 1000 to 1 in 100) chance of flooding in a given year (Zone 2) and with a 1% (1 in 100) chance or greater of happening in any given year (Zone 3).
- The majority of the Site is located within areas where between 3% and 5% of the properties would be estimated to exceed the Radon Action Level. As such, basic radon protection measures would likely be required within future structures.
- No significant ground condition constraints have been identified at the Site in relation to future structures and infrastructure. However, the Site slopes downwards from the north-west to the south-east and earthworks may be required to provide an appropriate development platform.
- It is considered that the majority of the Site is unlikely to be impacted by contamination. However, the potential exists for current and historical land use activities to have led to localised contamination at the Site. The most noticeable sources of potential contamination comprise the presence of a former brick yard that was historically located in the south-eastern area of the Site.
- Within the context of the Proposed Development of the Site as a health care facility/hospital the undertaking of a preliminary land quality assessment has indicated that the risks presented to potential receptors (health of future Site users, controlled waters and infrastructure) from localised potential sources of contamination are considered to be typically low.

7.2.3 CULTURAL HERITAGE AND ARCHAEOLOGY

There are three Listed Buildings and Structures located within the Study Area, which are listed in Table 7-1 below.

Table 7-1 - Listed Buildings and Structures within 2km of the Site

Listed Building/Structure	Grade	Distance & Direction from Site

Trevaughan Bridge	II	0.77km south-west
Remains of Whitland Abbey including garden walls to S	II	0.87km north
Llwynybrain Cottage	II	1.9km south-west

There are two Scheduled Monuments within the Study Area which are listed in Table 7-2 below.

Table 7-2 - Scheduled Monuments within 2km of the Site

Scheduled Monument	Distance & Direction from Site
Roman Road 250m NE of Pwll-y-Hwyaid	0.17km west
Whitland Abbey	0.87km north

There is one Historic Battlefield, Whitland Abbey 1257 battlefield, located 0.87km north of the Site.

There are no further cultural heritage assets (Conservation Areas, Historic Landscapes, World Heritage Sites, Historic Parks and Gardens).

7.2.4 ECOLOGY AND NATURE CONSERVATION

A Preliminary Ecological Appraisal (PEA) (Preliminary Ecological Appraisal REV1) was conducted in February and March 2022. As part of the PEA, a site survey was conducted to assess the potential of the Site to support protected and/or notable species, and the implication this may have on the Proposed Development. The PEA also comprised a desk study to identify on site and nearby statutory and non-statutory habitats, and previous species records. The main findings were:

- Two statutory designated sites of international importance for which bats were a qualifying feature within 35km of the Site (and the other sites): Limestone Coast of South West Wales/Arfor dir Calchfaen de Orllewin Cymru Special Area of Conservation (SAC) located 20km south-west and Pembrokeshire Bat Sites and Bosherston Lakes/Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherston SAC located 20.3km south-west of the Site;
- One non-statutory designated site that lies within the Site, a B-Line, which indicates an area which could provide a key insect pollinator dispersal pathway between existing areas of wildflower-rich habitat;
- Forty-one areas of ancient woodland sites – a mixture of semi-natural, restored and plantation – within 2km of the Site;
- Protected and/or notable species within 2km of the site were previously recorded: brown long-eared bat Plecotus auritus, badger Meles meles, grass snake Natrix helvetica, several bird species (including some that are listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended)), invertebrates (one record) and invasive non-native species (INNS) (eight species a species of cotoneaster, curly waterweed Lagarosiphon major, Indian balsam Impatiens glandulifera, Japanese knotweed Fallopia japonica, montbretia Crocosmia x crocosmiiflora; rhododendron Rhododendron ponticum, three-cornered leek, and variegated yellow archangel Lamiastrum galeobdolon subsp. argentatum);

- Three Priority Habitats were identified across the Site: neutral grassland (lowland meadows); boundary and linear features (hedgerows); and rivers (rivers and streams).

7.2.5 LANDSCAPE CHARACTER AND VISUAL IMPACT

The Study Area can largely be characterised by agricultural land and pastureland set within a predominantly rural landscape. This rural landscape is interrupted by a cluster of residential properties, community assets and private businesses which are situated within the town of Whitland.

The Site is located within the Taf and Claeddau Vales National Landscape Character Area. Natural Resources Wales[20] describes the area as a:

"large predominantly rural area straddling the modern counties of Pembrokes[h]ire and Carmarthenshire [which] forms the framework for a series of major river valleys associated with the Taff and Eastern and Western Cleddau.

[…]

Small blocks of broadleaved woodland, coniferous and mixed plantations occupy many of the slopes and valley sides across the area. The main river valleys are fringed in swathes of semi-natural woodland that bestow an intimate, enclosed character to the valleys, which is compounded by the secluded nature of the rivers that preclude long distance views.

[…]

Within the wider landscape, land use is mixed, with a patchwork of medium sized fields given over to pasture, hay meadow and arable crops."

Table 7-3 in Section 7.2.7 summarises sensitive human / visual receptors (e.g. residential properties, hotels etc), commercial facilities, and industrial facilities located within the Study Area. Table 7-4 in Section 7.2.7 summaries Public Rights of Way (PRoWs) including footpaths and bridleways within 2km of the Site and are illustrated on Drawing No. 2424-WSP-XX-17-DR-EN-0003 – Environmental Constraints Plan.

7.2.6 TRAFFIC AND TRANSPORT

A full Transport Assessment will need to be carried out for Site to support a planning application, which will include further traffic and transport baseline information, while detailing opportunities and constraints associated with the Site. An initial desk-based study indicates there are the following transport provisions:

- Whitland Train Station is located 0.65km south-west;
- There are several bus services going to and from Whitland including a bus service which runs between Carmarthen and Whitland, one which runs between Carmarthen and Glandwr, and another which provides a route between Carmarthen and Haverfordwest stopping at Whitland, Narbeth and St Clears. These bus services all stop at a bus stop situated on the B4328, adjacent south to the Site;
- There is a footpath which runs along both sides of the B4328 providing access to the Site by foot;
- There are no nearby cycle paths nor cycles lanes on any of the nearby roads, however cyclists could use these roads;

[20] Natural Resources Wales. Taf and Claeddau Vales National Landscape Character. Available online at: NLCA44 Taf and Cleddau Vales (cyfoethnaturiol.cymru) [Accessed: 8 March 2022]

- The A40 lies adjacent north of the Site and the B4328 runs adjacent south to the Site, both of which provide a key route for private vehicles to access the Site.

7.2.7 POPULATION AND HUMAN HEALTH

Table 7-3 summarises sensitive receptors (e.g. residential properties, hotels etc), community resources (e.g. public rights of way), commercial facilities, and industrial facilities located within the Study Area.

Table 7-3 - Sensitive receptors within 2km of the Site

Receptor/ Resource	Distance & Direction from Site
Residential property within site boundary	Within site boundary
Residential properties on Maes Abaty	Adjacent south
Residential properties on Spring Gardens (the B4328)	Adjacent south
Residential properties on Clos Llywn Ty Gwyn	Adjacent south
Residential properties on Llys Y Crofft	Adjacent east
Residential properties on Bryngwenllian	0.1km south
Spring Gardens Industrial Estate	0.14km south
Dairy Park	0.15km south
Parc Llwyn Ty Gwyn	0.2km east
Residential properties on Market Street (the B4328)	0.3km south-west
Businesses on Market Street (the B4328)	0.3km south-west
Residential properties adjacent to The Roadhouse	0.34km north-east
Whitland Cricket Club	0.35km east
The Roadhouse restaurant on the A40	0.37km north-east
Residential properties on Whitland Abbey By-way	0.4km north-west
Residential properties on St Mary's Street	0.4km south-west
Whitland Independent Chapelyard	0.46km north-east
Residential properties on Park Street	0.54km south-west
Residential properties on Station Road (the B4328)	0.54km south-west
Businesses on Station Road (the B4328)	0.54km south-west

Residential properties on St John's Street (the B4328)	0.55km south-west
Residential properties on St John's Street (the B4328)	0.55km south-west
Residential properties on North Road	0.55km west
Residential properties on West Street	0.57km south-west
Residential properties on King Edward Street	0.6km south-west
Dyffryn Taf Secondary School on North Road	0.62km west
Residential properties on Cross Street	0.63km south-west
Whitland Train Station	0.65km south-west
Residential properties on St David's Avenue	0.66km south-west
Residential properties on Lon Hywel	0.7km west
Whitland Fire and Rescue Station	0.7km south-west
St Mary's Church	0.75km south-west
Farm/residential property on unnamed road	0.78km south-east
Businesses on West Street	0.8km south-west
Sewerage treatment works	0.9km south
Residential properties on Velfrey Road	0.96km south-west
Residential properties on Trevaughan Gardens	0.98km south-west
Residential properties on Trevaughan Lodge Road	0.99km south-west
Farm/residential property on unnamed road	1.1km south-east
Lewis J G & I A Dairy Farm	1.2km north-west
WL & A Windsor & Son Farm	1.5km south-east
Holy Cross Abbey	1.7km south-west
Cilpost Farmhouse Holiday Home	1.8km north-west
Residential properties in Llwyn-Y-Brain	1.9km south-west

Table 7-4 summaries Public Rights of Way (PRoWs) within 2km of the Site.

Table 7-4 - Public Rights of Way within 2km of the Site

PRoW	Distance & Direction from Site
Footpath 66/3	Adjacent west
Footpath 66/2	0.3km south-west
Byway 66/4	0.5km north-west
Footpath 18/2	0.52km north-east
Footpath 66/5	0.87km south-west
Footpath 9/1	0.92km south-west
Footpath 9/2	0.93km south
Footpath 9/6	0.98km south-west
Footpath 18/4	0.99km north
Footpath 18/3	1km north
Footpath 18/1	1.4km north-east
Footpath 66/1	1.7km south-west
Footpath 9/5	1.9km south-east

7.2.8 AIR AND CLIMATE

There are no Air Quality Management Areas (AQMAs) within 2km of the Site.

7.2.9 WATER RESOURCES

It is recommended that this sub-section is read in conjunction with Chapters 2 & 3, which cover Drainage and Flood Risk. The main findings of the Drainage and Flood Risk Appraisal were:

- the site is largely at low risk of flooding, with isolated areas of higher risk coincident with the minor watercourses within the site.
- It is anticipated that through careful master-planning and design, development can be directed to avoid areas of risk, and that suitably designed site levels and drainage should be able to effectively manage runoff originating from within the site.

Table 7-5 identifies watercourses and permanent water bodies located within 2km of the Site boundary.

Table 7-5 - Watercourses and waterbodies within 2km of the Site

Watercourse/ Waterbody	Distance & Direction from Site
Main Rivers	
River Gronw Mill Leat	0.05km west

River Gronw	0.24km west
River Taf	0.6km south
River Cwm Waun Gron	0.85km south-west
River Marlais	1.9km west
Ordinary Watercourse/ Waterbody	
Unnamed watercourses (possibly field drains)	Within Site boundary
River Taf tributaries	0.4km south-east
Nant Colomendy	0.8km north
Nant yr Allwyn	0.91km east
River Coile	0.95km south-west
Nant Cwmfelin-boeth	1.6km west

The site and study area are not within a Nitrate Vulnerable Zone (NVZ) nor a Source Protection Zone (SPZ).

7.2.10 NOISE

There are no Noise Action Planning Priority Areas (NAPPAs) or Noise Proximity Areas within 2km of the Site.

Please refer to Drawing No. 2424-WSP-XX-12-DR-EN-0022-P01_Environmental Noise Mapping which indicates the average sound level for road traffic noise on major roads for the 8-hour period from 2300 to 0700. It is similar to the LAeq,8h indicator used in TAN11 assessments, but here it is calculated at a height of 4 metres rather than 1.2-1.5 metres.

Sound levels within the Site from road traffic noise associated with the A40 range from 65 to 69.9 dB on the northern boundary to 55 to 59.9 dB halfway through the Site.

7.2.11 MATERIAL ASSETS AND WASTE

As outlined in Section 7.2.2, the Site comprises predominantly agricultural land with field boundaries bordered by hedgerows and mature trees. There is also one residential property and one barn located on the Site.

Based on the current high level scheme description, it is assumed that the Site will be entirely cleared and therefore, the Proposed Development has the potential to produce waste and require a large volume of materials to construct the Proposed Development.

7.2.12 MAJOR ACCIDENTS AND DISASTERS

The Site is located on agricultural land.

As outlined in 7.2.9, the Site is largely at a low risk of flooding, although there are some areas of the Site which have a higher risk owing to the presence of minor watercourses.

7.3 CONSIDERATIONS OF EIA

7.3.1 LEGISLATIVE REQUIREMENTS

The purpose of this Chapter is, in part, to determine whether a potential hospital development ("the Proposed Development") on the Site would require statutory EIA.

The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 ("the 2017 EIA Regulations") defines the threshold for a development qualifying for EIA. The 2017 Regulations state ""EIA development" means development which is either—

- (a)Schedule 1 development; or
- (b)Schedule 2 development likely to have significant effects on the environment by virtue of factors such as its nature, size or location."

The thresholds for Schedule 1 development generally relate to major projects which, by virtue of their scale location, appearance or type of activity, have the potential to impact on the environment. These types of projects are specifically defined in the 2017 Regulations and automatically require EIA.

The Proposed Development does not fall under Schedule 1 development. Consequently, the site must be considered under Schedule 2.

It is considered that the Proposed Development does not fall directly within a category of development in Schedule 2. The nearest equivalent category for the purposes of the 2017 Regulations is Schedule 2, Category 10 (b) Urban development projects, as shown in Table 7-6.

Table 7-6 – Schedule 2 of the EIA Regulations

Column 1 Description of Development	Column 2 Applicable threshold and criteria
The carrying out of development to provide any of the following – 10. Infrastructure projects	
(a) Urban development projects	(iii) the overall area of the development exceeds 5 hectares.

The Proposed Development exceeds 5 ha (area of works is approximately 19.2ha, or 47 acres) and therefore meets the threshold for Schedule 2 development. The following high level screening exercise considers the Proposed Development against the selection criteria identified within Schedule 3 of the 2017 EIA Regulations and will outline any likely level of impact as a result of the development so to allow a decision to be made as to whether the proposed comprises EIA development and would require an Environmental Statement to be submitted as part of the planning application.

7.3.2 POTENTIAL FOR SIGNIFICANT EFFECTS

Using the baseline information of the Site compiled in Section 7.2, Table 7-7 reviews the Proposed Development against the environmental categories to determine the likelihood of significant environmental effects.

Table 7-7 – Review of Proposed Development against Environmental Sensitivities of the Site as identified within Schedule 3 of the EIA Regulations

Environmental Factor	Potential for Significant Effects
Land Use and Soils	Construction It is expected that there will be a requirement for a large proportion of the existing agricultural land (Grade 3b) to be cleared and potential for the demolition of existing buildings for construction purposes. Construction practices would be managed through the use of a Construction Environmental Management Plan (CEMP). The Preliminary Risk Assessment has indicated that the risks presented to potential receptors (health of future Site users, controlled waters and infrastructure) from localised potential sources of contamination are considered to be typically low. An intrusive ground investigation to establish the ground conditions at the Site would be required. Operation The Proposed Development would result in permanent land take and therefore the permanent loss of agricultural land. However, as the Site is considered moderate quality agricultural land, the Proposed Development would not result in a loss of the 'best and most versatile' agricultural land in Wales. Summary The Proposed Development would result in the loss of moderate quality agricultural land which is not best and most versatile. A Preliminary Risk Assessment has indicated that the risks presented to potential receptors from localised potential sources of contamination are considered to be typically low. Therefore, at this stage, based on existing information, it is considered unlikely that there will be significant effects due to the Proposed Development during the construction and operational phases.
Cultural Heritage and Archaeology	Construction The potential for archaeology on the site is currently unknown. With a schedule monument in close proximity to the site the potential to contain archaeology could be high. There will be no direct impacts on listed buildings. Given the nature of the likely construction activities and the proximity of certain cultural heritage assets to the Site (one Scheduled Monument is 0.17km west), there is the potential for temporary indirect impacts on the setting of these heritage assets. The increase in construction vehicles in and around the Site may cause a temporary impact on the setting of cultural assets, however, with the implementation of mitigation measures, such as Construction Traffic Management Plans, impacts could be reduced. Consultation with the local heritage officer is recommend to consider potential impacts arising from construction activities. Operation

	The scale of the Proposed Development and associated traffic generation may have impacts on the setting of above ground heritage assets (listed buildings and Scheduled Monuments). The design of the Proposed Development will need to be considerate to the setting of the above ground built heritage in the area. <u>Summary</u> Further studies and surveys are required to determine the archaeological potential of the site and further design required to determine the potential impact of the Proposed Development on the setting of above ground heritage assets. Potential significant environmental effects on cultural heritage and archaeological assets cannot be ruled out at this stage. Therefore, on a precautionary basis, it is considered likely that there could be significant effects from the Proposed Development and on unknown archaeology and the setting of above ground heritage assets.
Ecology and Nature Conservation	<u>Construction</u> Baseline findings identified several key constraints, including; the presence of Priority Habitats on site, the suitability of the Site to support protected species and the presence of a B-Line on site, which is designed to provide a key pathway for insects to promote biodiversity. Due to the removal of onsite Priority Habitats and the potential for disruption to nearby ecological sites, it is likely construction activities will cause direct and indirect impacts on ecological receptors. Through the implementation of a CEMP and the application of the ecological recommendations outlined in 7.4.3, any potential direct and indirect impacts would be reduced. <u>Operation</u> Given the nature of the Proposed Development, operational impacts on ecological receptors have the potential to be significant due to permanent habitat loss. However, this impact maybe reduced through the implementation of biodiversity enhancement measures. This would need to be outlined in further surveys, including a Biodiversity Net Gain (BNG) assessment. <u>Summary</u> The site supports sensitive habitats (Priority Habitats) and the potential for protected species. Further ecology surveys are required to determine the presence or not of protect species on site as outlined in 7.4.3. In addition, further design is required to confirm if sensitive habitats (Priority Habitats) and protected species will not be adversely affected by the Proposed Development. Potential significant environmental effects on ecology and nature conservation cannot be ruled out at this stage. Therefore, on a precautionary basis, it is considered likely that there could be significant effects from the Proposed Development on ecology and nature Conservation.
Landscape Character and Visual Impact	<u>Construction</u> Construction activities, comprising site construction works, regular large deliveries of materials and equipment and construction workers journeying

	to and from the Site, are likely to have temporary direct and indirect visual impacts on nearby residential receptors and community assets. Construction activities would be phased and potentially screened to mitigate any effects on landscape or visual amenity and this would be managed through the CEMP. <u>Operation</u> The Proposed Development would permanently alter the landscape character of the Site and its surrounding area. There is the potential for adverse visual impacts on nearby receptors (residents and users of PRoWs) of the Proposed Development and also by the possible increase in traffic to the area caused by employees and visitors to the Proposed Development travelling to and from the Site, and the use of the helipad. However, certain effects can be reduced through the implementation of mitigation measures including screening and sympathetic design which may make it possible to enhance the visual amenity of some receptors. <u>Summary</u> Further studies and surveys are required including a Landscape and Visual Impact Assessment (LVIA) to determine the landscape and visual impacts arising from the Proposed Development. In addition, the Proposed Development should be sympathetically designed to avoid adverse impacts on landscape character and adjacent residential and PRoW receptors. Potential significant environmental effects on landscape character and visual amenity cannot be ruled out at this stage. Therefore, on a precautionary basis, it is considered likely that there could be significant effects from the Proposed Development on landscape character and visual impacts.
Traffic and Transport	<u>Construction</u> Currently there is no traffic information for either the construction or operational phases, however it is considered likely that there would be an increase in traffic caused by construction activities, including staff movements and deliveries. It is possible that some workers may use public transport such as the nearby Whitland Train Station or local bus services. A Construction Traffic Management Plan (CTMP) is recommended, this would contain measures to mitigate against the temporary increase in construction vehicles, including information on traffic routing, traffic volumes, a construction programme and the potential for any impacts on the surrounding road network. <u>Operation</u> It is considered likely that there would be an increase in traffic to the area during the operational phase on local roads including the adjacent B4328, in addition to an increase in traffic through the town of Whitland. There is the potential for significant impacts arising from the frequency, unsociable hours, and nature of some of the vehicles (ambulances) going to and from the Site. There may be the potential for hospital staff to use public transport to reduce the amount of operational traffic but this will be subject to changes in the current provision of local public transport.

	An Operational Management Plan including a TMP component is likely to be required to outline the steps which would be undertaken to avoid disturbance to human and ecological receptors. <u>Summary</u> At this stage, it is considered likely that traffic and transport factors have the potential to cause significant environmental effects during both the construction and operation phase.
Population and Human Health	<u>Construction</u> It is anticipated that the local population, in particular the residents situated within and adjacent to the Site, the adjacent and nearby footpaths, and the nearby local businesses, will be subjected to construction impacts. Such impacts are likely to comprise an increase in traffic on local roads, localised changes to air quality, noise associated with construction work and traffic, and visual impacts arising from construction works and traffic. Measures to reduce these impacts would be set out within a CEMP. Construction may have a temporary positive effect on employment provision in the local area through the creation of construction jobs. <u>Operation</u> In the absence of a detailed designs for the Proposed Development, some impacts on nearby receptors are unclear. Baseline data indicates there is the potential for permanent impacts on local receptors including localised changes to air quality arising from the potential increase in operational traffic, noise associated with operational traffic such as emergency vehicles and helicopters, and landscape and visual impacts arising from changes to the land use. The provision of a nearby healthcare facility may make healthcare more accessible to local residents and thus improving overall health provision in the areas. There is potential for a slight change in the size of the local population due to the provision of on-site accommodation facilities. Operation may have a permanent effect on employment provision in the local area through the creation of hospital jobs. <u>Summary</u> In consideration of the potential combined effects of the Proposed Development, there is the potential for significant effects on the local population and human health. Further surveys including traffic and transport assessments, air quality and noise surveys and an LVIA would be required to fully capture the effects of the Proposed Development on human receptors.
Air and Climate	<u>Construction</u> Emissions to air from construction vehicles and dust generation may impact air quality during the construction phase, however these impacts can be managed through a CEMP and CTMP. <u>Operation</u> Operational traffic is likely to cause localised air quality impacts. Air quality impacts in relation to the Site are unclear at this stage and would be

	determined based on the design of the hospital building. However, there is the potential for air quality impacts arising from the energy centre on site. In the absence of a detailed design plan, the impacts of the operation phase on climate cannot be determined. There is the potential for significant environmental effects on the climate resulting from the proposed energy centre, the requirement for long term energy supply, waste generation and the types of materials used to construct the building. However, with the implementation of mitigation measures and the findings of a BNG assessment, any impacts on the climate can be reduced. As a healthcare development, the Proposed Development will be sensitive to local air quality. There are potential air quality impacts arising from the adjacent A40 which may affect the Proposed Development and its users. <u>Summary</u> In the absence of a detailed design plan and air quality and climate data, it is considered possible that the Proposed Development will cause significant environmental effects on air quality and Climate. Air quality surveys would be required to determine the impacts of the construction and operational phase.
Water Resources	<u>Construction</u> The Site is considered to be at low risk of flooding. It is assumed that any flood risks would be managed through the implementation of a CEMP. An assessment of the impact on soil hydrology, including consideration of groundwater protection and sustainable drainage systems (SuDS) is recommended to inform the site design and would be submitted as part of any future Planning Application. The SuDS will be subject to approval from the local SuDS Approving Body (SAB) with pre-application consultation undertaken with the SAB to establish the principles of the SuDS strategy. Pollution incidents on nearby watercourse are possible, however provided appropriate mitigation measures are implemented, these pollution events can be avoided. <u>Operation</u> Although the Proposed Development does not currently have a detailed design plan, the early scheme description includes the implementation of surface water drainage infrastructure and therefore, it may be possible to avoid increasing surface water flood risk at the Site. The Drainage and Flood Risk Appraisal also concludes that through careful master planning and design, development can be directed to avoid areas of risk, and that suitably designed site levels and drainage should be able to effectively manage runoff originating from within the site. <u>Summary</u> It is considered unlikely that there would be significant environmental effects on water resources.
Noise	<u>Construction</u> Temporary noise impacts on human and ecological receptors are likely to arise from the movement of construction vehicles and the operation of machinery. These impacts can be managed through a CEMP and CTMP. <u>Operation</u>

	Operational noise impacts are considered likely, arising from the frequency, unsociable hours, and nature of some of the vehicles (ambulances) and helicopters going to and from the Site. It may be possible to reduce some of the onsite noise levels through mitigation measures including screening, although it is likely that the Proposed Development will generate higher noise levels than the existing land use. As a healthcare development, the Proposed Development will be sensitive to local noise levels. There are potential noise impacts arising from the adjacent A40 which may affect the Proposed Development and its users. <u>Summary</u> At this stage, it is considered likely that noise has the potential to cause significant environmental effects during both the construction and operation phase. Noise surveys would be required to determine the impacts of the construction and operational phase.
Material Assets and Waste	<u>Construction</u> The use and management of materials and resources during the construction phase would be managed through the use of a CEMP. It is anticipated that large volumes of materials would be required for earthworks, road surfacing, and building materials. It is recommended that materials for construction are locally sourced and from recycled sources where possible. All materials should be stored in adequate storage facilities to minimise any potential for pollution to air, ground or water. It is also anticipated that a high volume of waste would be generated during the construction phase to clear the current greenfield site. The CEMP would include a Site Waste Management Plan (SWMP) and potentially a Materials Management Plan (MMP), which would monitor the levels of waste produced, set goals to limit waste generation and provide details on how generated waste would be disposed. All environmental legislation will be complied with during construction, operation, and decommissioning, with any waste disposed of appropriately off-site. <u>Operation</u> It is unclear at this stage what materials would be used and their environmental impacts during the operation phase, although through careful design planning, these impacts can be minimised to avoid significant effects. Due to the nature of the proposed land use, it is likely that significant levels of chemical and healthcare waste would be produced during the operation phase. An Operational Management Plan (OMP) should include measures for the safe disposal of potentially harmful waste to avoid environmental impacts. <u>Summary</u> There is the potential for significant environmental effects caused by waste disposal during the operation phase.
Major Accidents and Disasters	<u>Construction</u> Regulations and practices to manage construction on-site, including implementation of a CEMP and response plans to potential accidents would be applied during the construction phase. All Health and Safety Executive

	(HSE) and Construction Design Management (CDM) legislation will be adhered to. Operation The majority of the Site lies in an area at low risk of flooding and through careful design and mitigation, any increase in flood risk and impacts on local hydrology caused by the Proposed Development should be avoided. There is likely to be an increased risk of traffic and transport accidents arising from increased operational traffic in the surrounding area and the operation of the helipad. Such occurrences have the potential to impact on nearby human and ecological receptors and nearby heritage assets. Summary The Proposed Development is not of a type that would result in a major accident or disaster, therefore no significant environmental effects are predicted.

7.4 SUMMARY

7.4.1 KEY CONSTRAINTS

Taking into consideration the environmental and social constraints identified for the Site in Section 7.2 and the summary of potential for significant effects in Table 7-7, the main constraints are:

- Ecological receptors comprising a B-Line (an insect pollinator dispersal pathway) which lies within the Site and nearby ancient woodland inventory (AWI) sites;
- Potential for the Site to be a suitable habitat for protected and/or notable species;
- Nearby above ground heritage assets and potential archaeological assets on site;
- Various residential receptors, in particular, properties which are adjacent to the Site;
- Businesses and community assets in the Study Area, in particular businesses located off the B4328.
- Air quality emissions and noise from the A40 which forms the northern boundary of the site.

There is also the potential for impacts on the remaining environmental constraints outlined in Section 7.2, however the closest and most significant receptors have been given more weighting in this summary.

7.4.2 EIA

The Proposed Development is considered to be Category 10 (b) Urban development project under Schedule 2 of the EIA Regulations and exceeds the 5 ha threshold for Schedule 2 development. Therefore, the Proposed Development requires screening under the EIA Regulations.

Table 7-7 reviewed the Proposed Development against the environmental categories and undertook a high-level assessment to determine the likelihood of significant environmental effects. Table 7-7 concluded that potential significant environmental effects cannot be ruled out at this stage and there could be significant adverse for the following topics:

- Cultural Heritage and Archaeology
- Ecology and Nature Conservation
- Landscape Character and Visual Impact
- Traffic and Transport

- Population and Human Health
- Air and Climate
- Noise
- Material Assets and Waste

Therefore, a statutory EIA will be required for the Proposed Development at the Site.

7.4.3 RECOMMENDATIONS AND OPPORTUNITIES

The following recommendations and opportunities to reduce significant environmental impacts and the inform the design of the Proposed Development have been identified:

General environmental

In addition to the conclusions of the other reports referenced above, this Chapter has identified constraints in relation to Cultural Heritage and Archaeology, Landscape Character and Visual Impact, Population and Human Health, Air and Climate, Noise, Material Assets and Waste, Major Accidents and Disasters. This section makes the following recommendations, giving particular weighting to the most significant constraints identified above:

- Further surveys and assessments (some of which are outlined in the Preliminary Ecological Appraisal) to support a planning application and EIA requirements including:
    - Arboriculture survey to identify trees which may present a constraint to the structural integrity of the Proposed Development or to check for trees which may be subject to a Tree Preservation Order (TPO) and therefore cannot be cut down, uprooted or destroyed without written consent from the Local Planning Authority (LPA). Whilst ancient woodland sites are not subject to statutory protection, it is likely that consultation with the LPA and Natural Resources Wales (NRW) will be required to formulate a plan which avoids significant impacts on these sites;
    - Archaeological and heritage assessments and surveys to determine whether there is potential for buried archaeological assets on site and the likely impact to the setting of above ground heritage assets;
    - Air quality surveys and assessment to calculate the impact of emissions arising from the Proposed Development and impact of emissions from the adjacent A40 on the Proposed Development;
    - Noise surveys and assessments to calculate the impact of noise caused by the Proposed Development and impacts of noise from the adjacent A40 on the Proposed Development;
    - Landscape and Visual Impact Assessment (LVIA), which is likely to be required based on the proximity of local receptors and PRoWs;
    - Climate impact assessment; and
    - Traffic and transport assessment.
- Community and local business consultation
- Consultation with relevant LPA, Pembrokeshire County Council, to inform and/or obtain permission for any PRoW disruption;
- SuDS Approving Body (SAB) consent; and
- Producing construction related assessments such as a Construction Environmental Management Plan (CEMP), Construction Traffic Management Plan (CTMP) and Site Waste Management Plan

(SWMP) to mitigate against any construction related disruption including potential pollution incidents, air quality changes and noise disruption.

Land Use and soils

Based upon its findings, the Preliminary Ground Conditions Assessment makes the following recommendations:

- Completion of an intrusive ground investigation to establish the ground conditions at the Site and to:
  - Enable refinement of the Conceptual Site Model and the preliminary land quality risk assessment;
  - Support foundation design of structures and potential earthworks that may be required;
  - Provide an understanding of the hydrogeological and ground gas regime at the Site;
  - Characterise the nature and suitability for retention of any Made Ground encountered, particularly within the vicinity of the former brick yard historically located in the south-eastern area; and
  - Assess the suitability for soakaway drainage

Ecology and nature conservation

Based upon its findings, the PEA makes the following recommendations:

- Habitats Regulations Assessment (HRA), Stage 1: Screening;
- Further surveys for bats including a preliminary roost assessment, bat activity surveys involving static monitoring, aerial tree climbing surveys/endoscope inspections of potential roost features in trees, emergence/re-entry survey of buildings with bat roosting suitability;
- To ensure a measurable net benefit for biodiversity is achieved and to comply with policies detailed in Planning Policy Wales (2021) and legislation in the Environment (Wales) Act 2016, a Biodiversity Net Gain (BNG) assessment should be undertaken;
- Protection and retention of Priority Habitats where practicable. Where retention is not practicable, reinstatement should be designed into the Proposed Development and replaced at a ratio of 2:1 where possible, and no less than 1:1, following any recommendations outlined in a BNG assessment;
- Vegetation clearance should be undertaken following a pre-works check by an Ecological Clerk of Works (ECoW) and under a Precautionary Method of Working (PMoW);
- Production of an appropriate Method Statement (MS), to be presented within an Ecological Management Plan (EcMP) and a Construction Environment Management Plan (CEMP). This will include specifying details of any sensitive habitats on Site and how they will be protected; and
- Enhancement recommendations are detailed at the end of the PEA and include the planting of a variety of native species to encourage invertebrates within the Proposed Development.

Traffic and Transport

A detailed Transport Appraisal for the Site is due to be completed in the future which may recommend further traffic and transportation studies to be undertaken.

Water resources

Based upon its findings, the Drainage and Flood Risk Appraisal makes the following recommendations:

- Multiple access/egress routes should be considered as part of the site master-planning and development to provide resilience
- An appropriate offset is given to minor watercourses to allow for access, maintenance, and ecological corridors
- Development is located outside areas that are considered to be at risk of flooding

8 GROUND CONDITIONS

8.1 INTRODUCTION

To provide an understanding of the potential development constraints and opportunities relating to ground conditions, the following scope of works have been included within our appraisal:

- The procurement and review of an environmental data report (Groundsure Report) to establish the environmental (geological, hydrological and hydrogeological) setting of the Site;
- A walkover of the Site to identify relevant features;
- A review of historical mapping for the Site;
- The preparation of a Conceptual Site Model (CSM);
- The identification of potential sources of contamination, potential exposure pathways and receptors and the undertaking of a preliminary land quality risk assessment; and,
- The identification of potential ground condition constraints and opportunities.

8.2 SUMMARY OF GROUND CONDITIONS ASSESSMENT

A copy of the full Preliminary Ground Conditions Assessment is included in Appendix G, with a summary provided below.

8.2.1 SITE DETAILS

The Site comprises an irregularly shaped land parcel of approximately 19 hectares which is located to the north of Spring Gardens (B4328) and to the south of the A40, in the north-eastern outskirts of Whitland, Carmarthenshire. The majority of the Site is currently occupied by agricultural land (grassed fields) with a farmhouse located in the southern area and a barn located in the eastern area A field within the southern area of the Site is temporarily being used as a storage area/car park for an adjacent residential development. The land-use surrounding the Site is predominantly residential and agricultural, however an industrial estate is present 200m to the south-east of the Site.

8.2.2 SITE HISTORY

The majority of the Site has remained undeveloped, and of a similar layout and land-use from the late nineteenth century to the present day. A brick yard was historically present in the south-eastern corner of the Site between 1887 and 1963.

8.2.3 GEOLOGY, HYDROGEOLOGY AND HYDROLOGY

The Site is underlain by bedrock deposits of the Arenig Tetragraptus Beds (Mudstone) which are classified as a Secondary B Aquifer.

Groundwater vulnerability across the Site is reported to be high, associated with a well-connected fracture flow network within the underlying bedrock and local small-scale domestic abstraction has been noted to have historically occurred within the area.

Minor unnamed surface water features cross the northern boundary and southern area of the Site. Both features flow from east to west and feed into Mill Race which is located 50m to the east of the Site and which is a tributary of the Afon Gronw, located 150m to the east of the Site. A number of other minor stream/tributaries, ponds and a spring are also present within 500m of the Site.

8.2.4 RADON

The majority of the Site is located within areas where between 3% and 5% of the properties would be estimated to exceed the Radon Action Level. As such, basic radon protection measures would likely be required within future structures.

8.2.5 UNEXPLODED ORDNANCE (UXO)

The Site is in an area of low UXO risk and a Preliminary Desk Study Assessment for the Site has indicated that there are no readily available records to indicate that the Site may have been impacted by historical bombing events.

8.2.6 CONCLUSIONS

The Site is in an area of moderate to low environmental sensitivity.

The Site is reported to be underlain by bedrock deposits of the Arenig Tetragraptus Beds (Mudstone) which are classified as a Secondary B Aquifer.

Groundwater vulnerability across the Site is reported to be high, associated with a well-connected fracture flow network within the underlying bedrock, and local small-scale domestic abstraction has been noted to have historically occurred within the area.

Minor unnamed surface water features cross the northern boundary and southern area of the Site. Both features flow from east to west and feed into Mill Race which is located 50m to the east of the Site and which is a tributary of the Afon Gronw, which is located 150m to the east of the Site. A number of other minor stream/tributaries, ponds and a spring are also present within 500m of the Site.

The online Flood Risk Development Advice Map provided by NRW indicates that the Site is located within Zone A, which is classified as *"at little or no risk of fluvial or coastal/tidal flooding."*

The online Flood Risk Assessment Wales Map provided by NRW indicates that the majority of the Site is not at risk of flooding from surface water and small watercourses. However, localised areas around the immediate vicinity of the surface water features that are located adjacent to the northern Site boundary and which cross the southern area of the Site are within Flood Zones 2 and 3 (for surface water and small watercourses). This is defined as Areas with 0.1% to 1% (1 in 1000 to 1 in 100) chance of flooding in a given year (Zone 2) and with a 1% (1 in 100) chance or greater of happening in any given year (Zone 3).

The majority of the Site is located within areas where between 3% and 5% of the properties would be estimated to exceed the Radon Action Level. As such, basic radon protection measures would likely be required within future structures.

No significant ground condition constraints have been identified at the Site in relation to future structures and infrastructure. However, the Site slopes downwards from the north-west to the south-east and earthworks may be required to provide an appropriate development platform.

It is considered that the majority of the Site is unlikely to be impacted by contamination. However, the potential exists for current and historical land use activities to have led to localised contamination at the Site. The most noticeable sources of potential contamination comprise the presence of a former brick yard that was historically located in the south-eastern area of the Site.

Within the context of the proposed development of the Site as a health care facility/hospital the undertaking of a preliminary land quality assessment has indicated that the risks presented to potential receptors (health of future Site users, controlled waters and infrastructure) from localised potential sources of contamination are considered to be typically low.

8.2.7 RECOMMENDATIONS

Based on the findings of this report WSP recommends the following:

Completion of an intrusive ground investigation to establish the ground conditions at the Site and to:

- Enable refinement of the Conceptual Site Model and the preliminary land quality risk assessment;
- Support foundation design of structures and potential earthworks that may be required;
- Provide an understanding of the hydrogeological and ground gas regime at the Site;
- Characterise the nature and suitability for retention of any Made Ground encountered, particularly within the vicinity of the former brick yard historically located in the south-eastern area; and
- Assess the suitability for soakaway drainage.

9 TOWN PLANNING

9.1 PLANNING POLICY REVIEW

9.1.1 NATIONAL

9.1.1.1 FUTURE WALES: THE NATIONAL PLAN 2040

Future Wales is the National Development Framework for Wales, setting the direction for development in Wales to 2040. Future Wales is a spatial plan with a strategy for addressing key national priorities through the planning system, including sustaining and developing a vibrant economy, achieving decarbonisation and climate-resilience, developing strong ecosystems and improving the health and well-being of communities.

The following policies are of specific relevance to the Proposed Development:

Policy 1 – Where Wales will grow

The policy states that *"The Welsh Government supports sustainable growth in all parts of Wales. In three National Growth Areas there will be growth in employment and housing opportunities and investment in infrastructure. The National Growth Areas are:*

- *Cardiff, Newport and the Valleys*
- *Swansea Bay and Llanelli*
- *Wrexham and Deeside*

The National Growth Areas are complemented by Regional Growth Areas which will grow, develop and offer a variety of public and commercial services at regional scale. There are Regional Growth Areas in three regions:

- *The South West*
- *Mid Wales*
- *The North*

Development and growth in towns and villages in rural areas should be of appropriate scale and support local aspirations and need."

The supporting text to the policy identifies Carmarthen and the Pembrokeshire Haven Towns including Haverfordwest, Milford Haven, Pembroke and Pembroke Dock within the South West Regional Growth Area. The supporting text further states that *"Beyond the National and Regional Growth Areas are a mix of smaller towns and villages and large areas of countryside"*…"D*evelopment in towns and villages in rural areas will support local aspirations and need, complementing rather than competing with efforts to grow our cities and towns."*

Policy 2 – Shaping Urban Growth and Regeneration – Strategic Placemaking

The policy states that *"The growth and regeneration of towns and cities should positively contribute towards building sustainable places that support active and healthy lives, with urban neighbourhoods that are compact and walkable, organised around mixed-use centres and public transport, and integrated with green infrastructure. Urban growth and regeneration should be based on the following strategic placemaking principles:*

• *creating a rich mix of uses;*

• *providing a variety of housing types and tenures;*

• *building places at a walkable scale, with homes, local facilities and public transport within walking distance of each other;*

• *increasing population density, with development built at urban densities that can support public transport and local facilities;*

• *establishing a permeable network of streets, with a hierarchy that informs the nature of development;*

• *promoting a plot-based approach to development, which provides opportunities for the development of small plots, including for custom and self-builders; and*

• *integrating green infrastructure, informed by the planning authority's Green Infrastructure Assessment.*

Planning authorities should use development plans to establish a vision for each town and city. This should be supported by a spatial framework that guides growth and regeneration, and establishes a structure within which towns and cities can grow, evolve, diversify and flourish over time."

Policy 3 – Supporting Urban Growth and Regeneration – Public Sector Leadership

The policy states that *"The Welsh Government will play an active, enabling role to support the delivery of urban growth and regeneration. The Welsh Government will assemble land, invest in infrastructure and prepare sites for development. We will work with local authorities and other public sector bodies to unlock the potential of their land and support them to take an increased development role.*

The public sector must show leadership and apply placemaking principles to support growth and regeneration for the benefit of communities across Wales. The public sector's use of land, developments, investments and actions must build sustainable places that improve health and well-being. Planning authorities must take a proactive role and work in collaboration with the Welsh Government and other public sector bodies to identify the best locations for growth and regeneration, and provide certainty about how they should be developed."

Policy 5 – Supporting the rural economy

The policy states that *"The Welsh Government supports sustainable, appropriate and proportionate economic growth in rural towns that is planned and managed through Strategic and Local Development Plans.*

Strategic and Local Development Plans must plan positively to meet the employment needs of rural areas including employment arising from the foundational economy; the agricultural and forestry sector, including proposals for diversification; start-ups and micro businesses.

The Welsh Government also strongly supports development of innovative and emerging technology businesses and sectors to help rural areas unlock their full potential, broadening the economic base, and creating higher paid jobs."

Policy 6 – Town Centre First

The policy states that *"Significant new commercial, retail, education, health, leisure and public service facilities must be located within town and city centres. They should have good access by public transport to and from the whole town or city and, where appropriate, the wider region. A sequential*

approach must be used to inform the identification of the best location for these developments and they should be identified in Strategic and Local Development Plans."

The supporting text to the policy states that the policy *"puts the health and vibrancy of town centres as the starting point of locational decision-making. It also directs facilities and services to where intended users can easily walk, cycle and/or use public transport to access them."*

Further, the supporting text states that *"A plan-led approach is the best way to identify the location for these facilities. However, in the absence of a development plan allocation, a sequential approach must be used to determine planning applications. The Welsh Government can intervene in the planning application process where a town centre first approach is not being followed."*

Policy 12 – Regional Connectivity

The policy states that *"Active travel must be an essential and integral component of all new developments, large and small. Planning authorities must integrate site allocations, new development and infrastructure with active travel networks and, where appropriate, ensure new development contributes towards their expansion and improvement.*

Planning authorities must act to reduce levels of car parking in urban areas, including supporting car-free developments in accessible locations and developments with car parking spaces that allow them to be converted to other uses over time. Where car parking is provided for new non-residential development, planning authorities should seek a minimum of 10% of car parking spaces to have electric vehicle charging points."

Policy 29 – Regional Growth Areas – Carmarthen and the Haven Towns

The policy states that *"The Welsh Government supports sustainable growth and regeneration in Carmarthen and the Pembrokeshire Haven Towns (Haverfordwest, Milford Haven, Pembroke and Pembroke Dock). These areas will be a focus for managed growth, reflecting their important sub-regional functions and strong links to the National Growth Area of Swansea Bay and Llanelli.*

Strategic and Local Development Plans should recognise the roles of these places as a focus for housing, employment, tourism, public transport and key services within their wider areas and support their continued function as focal points for sub-regional growth."

9.1.1.2 PLANNING POLICY WALES

Planning Policy Wales (PPW) Edition 11 (February 2021) outlines Welsh Government's land use planning policies. The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales.

The following paragraphs are of specific relevance to the Proposed Development:

<u>Placemaking</u>

Paragraph 2.1 states that *"Everyone engaged with or operating within the planning system in Wales must embrace the concept of placemaking in both plan making and development management decisions in order to achieve the creation of sustainable places and improve the well-being of communities."*

Paragraph 2.17 states that *"In responding to the key principles for the planning system, the creation of sustainable places and in recognition of the need to contribute to the well-being of future*

generations in Wales through placemaking, development plans and development proposals must seek to deliver developments that address the national sustainable placemaking outcomes."

Five National Sustainable Placemaking Outcomes are identified in PPW11:

- Maximising Environmental Protection and Limiting Environmental Impact
- Facilitating Accessible and Healthy Environments
- Making Best Use of Resources
- Growing Our Economy in a Sustainable Manner
- Creating and Sustaining Communities

Placemaking in Rural Areas

In terms of rural placemaking, paragraph 3.40 states that *"Local service centres, or clusters of smaller settlements where a sustainable functional linkage can be demonstrated, should be designated by local authorities as the preferred locations for most new development including housing and employment provision. The approach should be supported by the service delivery plans of local service providers."*

Previously Developed Land

Paragraph 3.55 states that *"Previously developed (also referred to as brownfield) land (see definition overleaf) should, wherever possible, be used in preference to greenfield sites where it is suitable for development. In settlements, such land should generally be considered suitable for appropriate development where its re-use will promote sustainability principles and any constraints can be overcome. It is recognised, however, that not all previously developed land is suitable for development. This may be, for example, because of its unsustainable location, the presence of protected species or valuable habitats or industrial heritage, or because it is highly contaminated."*

The Best and Most Versatile Agricultural Land

Paragraph 3.58 states that *"Agricultural land of grades 1, 2 and 3a of the Agricultural Land Classification system (ALC)16 is the best and most versatile, and should be conserved as a finite resource for the future. 3.59 When considering the search sequence and in development plan policies and development management decisions considerable weight should be given to protecting such land from development, because of its special importance."*

Paragraph 3.59 stats that *"Land in grades 1, 2 and 3a should only be developed if there is an overriding need for the development, and either previously developed land or land in lower agricultural grades is unavailable, or available lower grade land has an environmental value recognised by a landscape, wildlife, historic or archaeological designation which outweighs the agricultural considerations. If land in grades 1, 2 or 3a does need to be developed, and there is a choice between sites of different grades, development should be directed to land of the lowest grade."*

Development in the Countryside

Paragraph 3.60 states that *"Development in the countryside should be located within and adjoining those settlements where it can best be accommodated in terms of infrastructure, access, habitat and landscape conservation. Infilling or minor extensions to existing settlements may be acceptable, in particular where they meet a local need for affordable housing or it can be demonstrated that the proposal will increase local economic activity. However, new building in the open countryside away from existing settlements or areas allocated for development in development plans must continue to*

be strictly controlled. All new development should be of a scale and design that respects the character of the surrounding area."

Sustainable Transport

Paragraph 4.1.10 states that *"The planning system has a key role to play in reducing the need to travel, particularly by private car, and supporting sustainable transport, by facilitating developments which:*

• are sited in the right locations, where they can be easily accessed by sustainable modes of travel and without the need for a car;

• are designed in a way which integrates them with existing land uses and neighbourhoods; and

• make it possible for all short journeys within and beyond the development to be easily made by walking and cycling."

Car Parking

Paragraph 4.1.50 states that *"A design-led approach to the provision of car parking should be taken, which ensures an appropriate level of car parking is integrated in a way which does not dominate the development. Parking provision should be informed by the local context, including public transport accessibility, urban design principles and the objective of reducing reliance on the private car and supporting a modal shift to walking, cycling and public transport. Planning authorities must support schemes which keep parking levels down, especially off-street parking, when well designed. The needs of disabled people must be recognised and adequate parking provided for them."*

Community Facilities

Paragraph 4.4.2 states that *"Planning authorities should develop a strategic and long-term approach to the provision of community facilities when preparing development plans based on evidence. When considering development proposals planning authorities should consider the needs of the communities and ensure that community facilities continue to address the requirements of residents in the area."*

9.1.1.3 TECHNICAL ADVICE NOTES (TAN)

Technical Advice Notes (TANs) produced by Welsh Government provide detailed planning advice to accompany Future Wales and PPW.

TAN 12 Design (2016)

TAN12 'Design' sets out design guidance for developers to adhere to, ensuring that sustainability through good design is promoted within the planning system. Guidance within this note would need to be considered at the design stage, including the production of a Design and Access Statement to accompany the planning application which is a requirement for any 'major' development in Wales, this is any development over 1ha.

Paragraph 5.10.1 of TAN 12 states that "In the design of schools, hospitals and other buildings and infrastructure intended for use by the local community the aim should be to achieve fitness for purpose, value for money over the whole life of the building, and a positive impact on the lives of those who use it and on its surroundings."

TAN 15 Development and Flood Risk (2004)

TAN 15 'Development and Flood Risk' advises on development and flood risk as this relates to sustainability principles and provides a framework within which risks arising from both river and coastal flooding, and from additional run-off from development in any location, can be assessed.

A new version of TAN 15 is not due to come into force until June 2023 following an 18 month suspension introduced by Welsh Government in November 2021. A letter from Welsh Government dated 15th December 2021 stated that "During the 18 month pause period, the existing policy framework of Planning Policy Wales, TAN 15 and the Development Advice Map (DAM), along with TAN 14 will remain in place.

Potential sites would need to be appraised to consider the proposed land use of the sites, and adjacent land, the proximity of any environmental designations which may influence the development of the sites, and any other development proposals or ambitions which should be considered.

9.1.2 LOCAL

Section 38(6) of the Planning and Compulsory Purchase Act (2004)[21] requires that proposals are determined in accordance with the development plan, unless material considerations indicate otherwise. The development plan comprises of local planning documents which have been the subject of examination in public or testing through public inquiry, and are adopted having been through due process.

The Site falls within the Local Planning Authority boundary of Carmarthenshire County Council (CCC). The statutory development plan is made up of the following:

- Carmarthenshire Local Development Plan (December 2014)
- Supplementary Planning Guidance

The Revised (Replacement) Carmarthenshire Local Development Plan 2018 – 2033 is currently being prepared by CCC. CCC's revised Delivery Agreement dated November 2020 states that the Revised Local Development Plan is due to be adopted during from July-August 2022.

9.1.2.1 Carmarthenshire Local Development Plan

The adopted local plan is the Carmarthenshire Local Development Plan (LDP), which was adopted in December 2014.

In terms of LDP allocations, Whitland is shown on the Policies map. The south of the Site is located in residential allocations T2/6/h3 'Land adjacent to Maes Abaty' and T2/6/h4 'Adj. Spring Gardens' allocated under policy H1 'Housing Allocations' (see Figure 9-1). The remainder of the Site is located outside the development limits for Whitland as prescribed by policy GP2 'Development Limits'. Policy GP2 states that *"Development Limits are defined for those settlements identified as Growth Areas, Service Centres, Local Service Centres and identified Sustainable Communities within the settlement framework. Proposals within defined Development Limits will be permitted, subject to policies and proposals of this Plan, national policies and other material planning considerations."* The supporting text to the policy states that *"development limits have been defined across all settlements identified within the hierarchy as defined within the settlement framework in order to:*

- *Prevent inappropriate development in the countryside and provide certainty and clarity as to where exceptions proposals (adjacent to limits) may be considered appropriate;*

[21] https://www.legislation.gov.uk/ukpga/2004/5/section/38

- *Prevent coalescence of settlements (or separate parts of the same settlement), ribbon development or a fragmented development pattern (PPW Edition 7: Para 9.3.1);*
- *Identify those areas within which development proposals would be permitted (see above); and,*
- *Promote effective and appropriate use of land concentrating growth within defined settlements."*

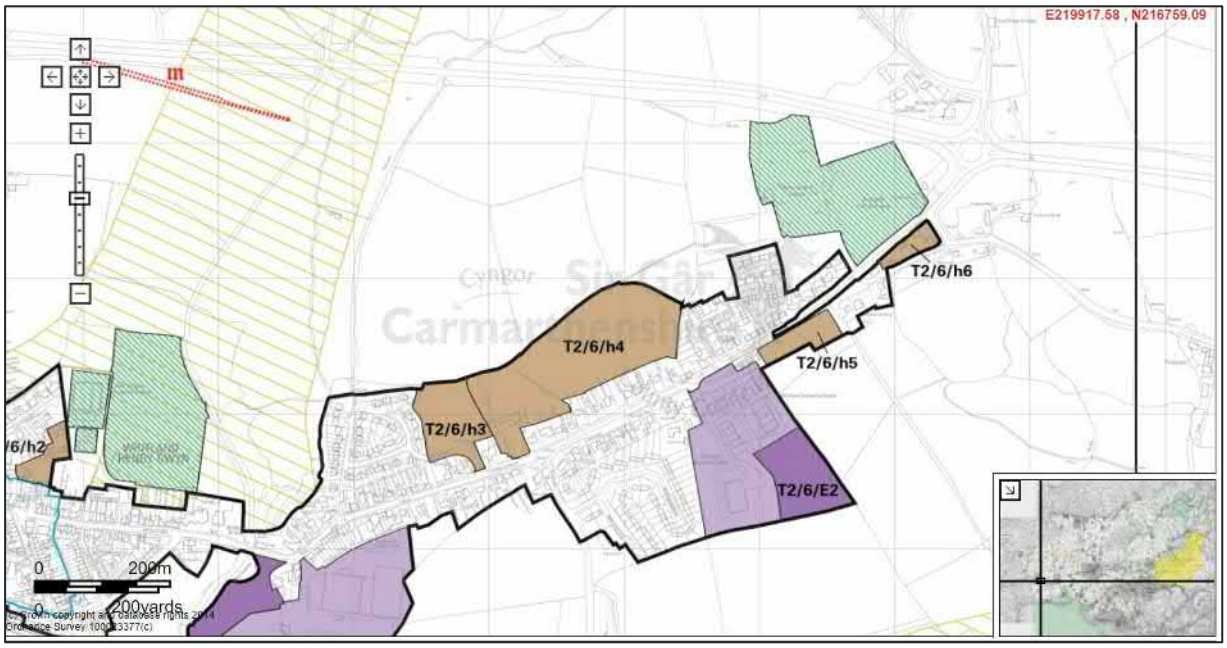


Figure 9-1 - Extract of Policies map showing housing allocations T2/6/h3 and T2/6/h4

In terms of other policies, the following policies are of specific relevance to the Proposed Development:

SP1 Sustainable Places and Spaces

Policy SP1 states that *"Proposals for development will be supported where they reflect sustainable development and design principles by:*

a) Distributing development to sustainable locations in accordance with the settlement framework, supporting the roles and functions of the identified settlements;

b) Promoting, where appropriate, the efficient use of land including previously developed sites;

c) Integrating with the local community, taking account of character and amenity as well as cultural and linguistic considerations;

d) Respecting, reflecting and, wherever possible, enhancing local character and distinctiveness;

e) Creating safe, attractive and accessible environments which contribute to people's health and wellbeing and adhere to urban design best practice;

f) Promoting active transport infrastructure and safe and convenient sustainable access particularly through walking and cycling;

g) Utilising sustainable construction methods where feasible;

h) Improving social and economic wellbeing;

i) *Protect and enhance the area's biodiversity value and where appropriate, seek to integrate nature conservation into new development."*

SP2 Climate Change

Policy SP2 states that *"Development proposals which respond to, are resilient to, adapt to and minimise for the causes and impacts of climate change will be supported. In particular proposals will be supported where they:*

a) *Adhere to the waste hierarchy and in particular the minimisation of waste;*

b) *Promote the efficient consumption of resources (including water);*

c) *Reflect sustainable transport principles and minimise the need to travel, particularly by private motor car;*

d) *Avoid, or where appropriate, minimise the risk of flooding including the incorporation of measures such as SUDS and flood resilient design;*

e) *Promote the energy hierarchy by reducing energy demand, promoting energy efficiency and increasing the supply of renewable energy;*

f) *Incorporate appropriate climate responsive design solutions including orientation, layout, density and low carbon solutions (including design and construction methods) and utilise sustainable construction methods where feasible.*

Proposals for development which are located within areas at risk from flooding will be resisted unless they accord with the provisions of TAN 15."

SP3 Sustainable Distribution – Settlement Framework

Policy SP3 states that *"Provision for growth and development will be at sustainable locations in accordance with the following Settlement Framework:*

Growth Areas:

Carmarthen (Includes Abergwili, Llangunnor, Johnstown and Trevaughan)

Llanelli (Includes Llangennech)

Ammanford/Cross Hands (Includes Tumble, Llandybie, Penygroes, Tycroes, Betws, Blaenau/Caerbryn, Drefach, Capel Hendre, Cefneithin, Gorslas, Saron and Castell y Rhingyll)

Service Centres:

Burry Port/Pembrey

Llandeilo (Includes Ffairfach, Rhosmaen and Nanyrhibo)

Llandovery

Newcastle Emlyn

St Clears (Includes Pwll Trap)

Whitland"

Whitland is identified as a 'Key Service Settlement' in policy SP3. Appendix 1 to the LDP describes Whitland, its role, considerations, levels of growth and related settlements (see Figure 9-2).

Settlement: **Whitland**	Hierarchy: **Service Centre**	Settlement Ref: **T2/6**
Description: The settlement is located on sustainable transport corridor between Pembrokeshire and Carmarthenshire. Whitland is located close to the County's boundary with Pembrokeshire and performs an important role in service terms across a wider hinterland. It is recognised as a key settlement within the WSP Pembrokeshire – The Haven Area as fulfilling a local service centre, employment and tourism role. Offers scope for future development and regeneration, particularly the former creamery site.		
Role: Local employment provision; Strategically Located on Strategic highway and rail networks with accessibility benefits; Residential provision; Town centre and local retail service offer - defined as a Town Centres (Service Centres); Community service provision; Gypsy and Traveller site.	**Considerations:** Flood Risk; Built Conservation and Heritage.	
Levels of Growth: Residential – 205 dwellings Employment Allocation – 3.04 hectares	**Related Settlements:** **SC5:** Llanfallteg and Cwmfelin Boeth.	

Figure 9-2 - LDP Appendix 1 Role and function of settlements - Whitland

SP5 Housing

Policy SP5 states that *"In order to ensure the overall housing land requirement of 15,197 for the plan period 2006-2021 is met, provision is made for 15,778 new dwellings. Sufficient land is allocated (on sites of 5 or more dwellings) to accommodate 13,352 dwellings in accordance with the Settlement Framework.*

	Number of Dwellings
Growth Areas	*8,333*
Service Centres	*1,360*
Local Service Centres	*1,666*
Sustainable Communities	*1,993"*

SP7 Employment - Land Allocations

Policy SP7 states that *"Sufficient land is allocated for the provision of 111.13 hectares of employment land for the plan period 2006 – 2021 in accordance with the Settlement Framework."*

Allocations T2/6/E1 'West Street', T2/6/E2 'Whitland Industrial Estate' and T2/6/E3 'Whitland Creamery' are located in Whitland and allocated for Use classes B1 and B8 across 3.04ha of land cumulatively.

The policy further states that *"Proposals for small scale employment undertakings (not on allocated sites) will be permitted where they are in accordance with Policy EMP2."*

SP8 Retail

Policy SP8 states that *"Proposals will be permitted where they maintain and enhance the existing retail provision within the County, and protect and promote the viability and vitality of the defined retail centres. Proposals for small local convenience shopping facilities in rural and urban areas where they accord with the settlement framework will be supported."*

SP9 Transportation

Policy SP9 states that *"Provision is made to contribute to the delivery of an efficient, effective, safe and sustainable integrated transport system through:*

a) Reducing the need to travel, particularly by private motor car;

b) *Addressing social inclusion through increased accessibility to employment, services and facilities;*

c) *Supporting and where applicable enhancing alternatives to the motor car, such as public transport (including park and ride facilities and encourage the adoption of travel plans), and active transport through cycling and walking;*

d) *Re-enforcing the function and role of settlements in accordance with the settlement framework;*

e) *Promoting the efficient use of the transport network;*

f) *The use of locational considerations for significant trip generating proposals, with design and access solutions within developments to promote accessibility by non car modes of transport.*

Transport routes, improvements and associated infrastructural facilities which deliver the objectives and priorities of the Regional Transport Plan for South West Wales will be supported. Furthermore, maintaining and enhancing good traffic flows and the attractiveness and viability of more sustainable transport modes which support the strategy and its sustainable objectives will also be supported. Development proposals which do not prejudice the efficient implementation of any identified improvement or scheme will be permitted."

SP11 Renewable Energy & Energy Efficiency

Policy SP11 states that *"Development proposals which incorporate energy efficiency measures and renewable energy production technologies will be supported in areas where the environmental and cumulative impacts can be addressed satisfactorily. Such developments will not cause demonstrable harm to residential amenity and will be acceptable within the landscape. Each proposal will be assessed on a case by case basis.*

Large scale wind farms will only be permitted within Strategic Search Areas."

SP12 Waste Management

Policy SP12 states that "Provision will be made to ensure an integrated approach to waste management caters for:

a) *The allocation of adequate appropriate land to provide for an integrated network of waste management facilities;*

b) *The adoption of a hierarchy of options for managing waste in the following order: prevention, preparing for re-use, recycling, other recovery (e.g energy recovery); and disposal;*

c) *The management and disposal of waste close to where it has been generated, in accordance with the proximity principle; proposals for development should have regard to the location of waste management facilities (and their capacity) in formulating proposals."*

SP13 Protection and Enhancement of the Built and Historic Environment

Policy SP13 states that "*Development proposals should preserve or enhance the built and historic environment of the County, its cultural, townscape and landscape assets (outlined below), and, where appropriate, their setting. Proposals relating to the following will be considered in accordance with national guidance and legislation.*

a) *Sites and features of recognised Historical and Cultural Importance;*

b) *Listed buildings and their setting;*

c) *Conservation Areas and their setting;*

d) *Scheduled Ancient Monuments and other sites of recognised archaeological importance.*

Proposals will be expected to promote high quality design that reinforces local character and respects and enhances the local setting and the cultural and historic qualities of the plan area."

SP14 Protection and Enhancement of the Natural Environment

Policy SP14 states that *"Development should reflect the need to protect, and wherever possible enhance the County's natural environment.*

All development proposals should be considered in accordance with national guidance/legislation and the policies and proposals of this Plan, with due consideration given to areas of nature conservation value, the countryside, landscapes and coastal areas, including those outlined below:

a) *Statutory designated sites including Ramsar sites, SPAs, SACs, SSSIs and National Nature Reserves;*

b) *Biodiversity and Nature Conservation Value, including protected species and habitats of acknowledged importance as well as key connectivity corridors and pathways; (Policy EQ4 and EQ5)*

c) *Regional and Locally important sites (and their features) including Local Nature Reserves and RIGS; (see Policy EQ3)*

d) *Areas of identified Landscape and Seascape quality; (including SLAs)*

e) *Features which contribute to local distinctiveness, nature conservation value or the landscape; (see Policy EQ5)*

f) *The Open Countryside; (see Policy GP2)*

g) *The best and most versatile agricultural land; (Grade 2 and 3a)*

h) *Natural assets: including air, soil (including high carbon soils) controlled waters and water resources. (See Policies EP1 and EP2)"*

SP16 Community Facilities

Policy SP16 states that "*The LDP will support the provision of new facilities, along with the protection and enhancement of existing facilities, in accordance with the settlement framework and based upon evidence of need. Proposals for new education and training related developments will be supported where it supports the settlement framework and accords with the policies of this Plan.*

Any proposals that will result in the loss of an existing facility will be permitted where it can be clearly demonstrated that the facility is no longer viable and that a suitable alternative is accessible within the settlement or sustainable community (where applicable).

In order to mitigate the impacts of particular developments, and to facilitate the delivery of the Plan's strategic objectives, community contributions may be sought through planning obligations as and where appropriate."

Policy GP1 Sustainability and High Quality Design

Policy GP1 states that "*Development proposals will be permitted where they accord with the following:*

a) *It conforms with and enhances the character and appearance of the site, building or area in terms of siting, appearance, scale, height, massing, elevation treatment, and detailing;*

b) *It incorporates existing landscape or other features, takes account of site contours and changes in levels and prominent skylines or ridges;*

c) *Utilises materials appropriate to the area within which it is located;*

d) *It would not have a significant impact on the amenity of adjacent land uses, properties, residents or the community;*

e) *Includes an integrated mixture of uses appropriate to the scale of the development;*

f) *It retains, and where appropriate incorporates important local features (including buildings, amenity areas, spaces, trees, woodlands and hedgerows) and ensures the use of good quality hard and soft landscaping and embraces opportunities to enhance biodiversity and ecological connectivity;*

g) *It achieves and creates attractive, safe places and public spaces, which ensures security through the 'designing-out-crime' principles of Secured by Design (including providing natural surveillance, visibility, well lit environments and areas of public movement);*

h) *An appropriate access exists or can be provided which does not give rise to any parking or highway safety concerns on the site or within the locality;*

i) *It protects and enhances the landscape, townscape, historic and cultural heritage of the County and there are no adverse effects on the setting or integrity of the historic environment;*

j) *It ensures or provides for, the satisfactory generation, treatment and disposal of both surface and foul water;*

k) *It has regard to the generation, treatment and disposal of waste.*

l) *It has regard for the safe, effective and efficient use of the transportation network;*

m) *It provides an integrated network which promotes the interests of pedestrians, cyclists and public transport which ensures ease of access for all;*

n) *It includes, where applicable, provision for the appropriate management and eradication of invasive species.*

Proposals will also be considered in light of the policies and provisions of this Plan and National Policy (PPW: Edition 7 and TAN12: Design (2014))."

Policy GP4 Infrastructure and New Development

Policy GP4 states that *"Proposals for development will be permitted where the infrastructure is adequate to meet the needs of the development.*

Proposals where new or improved infrastructure is required but does not form part of an infrastructure provider's improvement programme may be permitted where it can be satisfactorily demonstrated that this infrastructure will exist, or where the required work is funded by (or an appropriate contribution is provided by) the developer.

Planning obligations and conditions will be used (where appropriate) to ensure that new or improved facilities are provided to serve the new development."

Policy H1 Housing Allocations

Policy H1 states that "*Land has been allocated for residential development for the plan period 2006 – 2021 at those locations as set out below, and as depicted on the Proposals Map.*

Proposals for the residential development of allocated housing sites submitted in the form of a Full Planning application or as a Reserved Matters application should be accompanied by a layout of the proposal in its entirety to ensure the site is developed to its full potential."

205 houses are allocated in Whitland across 6 sites under allocation reference T2/6 Whitland.

Policy H2 Housing within Development Limits

Policy H2 states that "*A. Proposals for housing developments on unallocated sites within the development limits of a defined settlement (Policy SP3) will, where they are not subject to the provisions of Part B below, be permitted, provided they are in accordance with the principles of the Plan's strategy and its policies and proposals."*

Policy H6 Residential Care Facilities

Policy H6 states that "*Proposals for the development of residential care facilities and extensions to existing facilities within the Development Limits of a defined settlement (Policy SP3) will be permitted where it has safe and convenient access to community facilities and services.*

Proposals for new purpose built accommodation outside defined Development Limits will be permitted where it is ancillary to an existing institution, and is integrated with the existing complex is not disproportionate in scale and subject to their being no adverse effects on the landscape/townscape or the setting and integrity of the historic environment."

Policy AH2 Affordable Housing – Exceptions Sites

Policy AH2 states that *"Proposals for 100% affordable housing development on sites immediately adjacent to the Development Limits of defined settlements (Policy SP3), will in exceptional circumstances be permitted where it is to meet a genuine identified local need (as defined within the Glossary of Terms) and where:*

a) The site represents a logical extension to the Development Limits and is of a scale appropriate and in keeping with the character of the settlement;

b) The benefits of the initial affordability will be retained for all subsequent occupants;

c) It is of a size, scale and design compatible with an affordable dwelling and available to low or moderate income groups;

d) There are no market housing schemes within the settlement being, or projected to be developed which include a requirement for affordable housing."

Policy EMP2 New Employment Proposals

Policy EMP2 states that "*Proposals for employment developments which are within, adjacent or directly related to the Development Limits of all defined settlements (Policy SP3) will be permitted provided that:*

a) *A sequential search has been undertaken identifying that there is no allocation or existing employment site available that can reasonably accommodate the use, followed by there being no suitable land or building (for conversion or re-use) available within the Development Limits, then adjacent to limits, and finally on a site directly related to a recognised settlement;*

b) *The development proposals are of an appropriate scale and form, and are not detrimental to the respective character and appearance of the townscape/ landscape;*

c) *The development proposals are of an appropriate scale and form compatible with its location and with neighbouring uses."*

Policy RT1 Retail Hierarchy

Policy RT1 states that "*Proposals will be considered in accordance with the following retail hierarchy. Regard will be had to a settlement's position within the hierarchy when considering retail proposals (including new, change of use, or redevelopment). Regard will also be had to the policies and proposals of this Plan:*

Principal Centres (Growth Areas):

Carmarthen Llanelli Ammanford

Town Centres (Service Centres):

Burry Port Llandeilo Llandovery

Newcastle Emlyn St Clears Whitland"

The supporting text to the policy states that *"Proposals will be expected to reflect the settlements' position with larger centres generally more likely to be able to support retail growth."*

Policy TR1 Primary and Core Road Networks

Policy TR1 states that *"Proposals which do not restrict traffic movement and/or compromise the safety of the primary road network and core network will, where appropriate be supported. The primary road network and core network is defined in Appendix 7."*

Policy TR2 Location of Development – Transport Considerations

Policy TR2 states that *"Proposals which have a potential for significant trip generation will be permitted where:*

a) *It is located in a manner consistent with the plans strategic objectives, its settlement framework and its policies and proposals;*

b) *It is accessible to non car modes of transport including public transport, cycling and walking;*

c) *Provision is made for the non-car modes of transport and for those with mobility difficulties in the design of the proposal and the provision of on site facilities;*

d) *Travel Plans have been considered and where appropriate incorporated."*

Policy TR3 Highways in Developments - Design Considerations

Policy TR3 states that "*The design and layout of all development proposals will, where appropriate, be required to include:*

a) *An integrated network of convenient and safe pedestrian and cycle routes (within and from the site) which promotes the interests of pedestrians, cyclists and public transport;*

b) *Suitable provision for access by public transport;*

c) *Appropriate parking and where applicable, servicing space in accordance with required standards;*

d) *Infrastructure and spaces allowing safe and easy access for those with mobility difficulties;*

e) *Required access standards reflective of the relevant Class of road and speed restrictions including visibility splays and design features and calming measures necessary to ensure highway safety and the ease of movement is maintained, and where required enhanced;*

f) *Provision for Sustainable Urban Drainage Systems to allow for the disposal of surface water run off from the highway.*

Proposals which do not generate unacceptable levels of traffic on the surrounding road network and would not be detrimental to highway safety or cause significant harm to the amenity of residents will be permitted.

Proposals which will not result in offsite congestion in terms of parking or service provision or where the capacity of the network is sufficient to serve the development will be permitted. Developers may be required to facilitate appropriate works as part of the granting of any permission."

Policy TR4 Cycling and Walking

Policy TR4 states that *"Land required to facilitate the following improvements to the cycle network will be safeguarded. Proposed routes where known are shown on the proposals map. The potential opportunity for horse riding should where appropriate be considered.*

a) *Towy Valley (between Llandeilo and Carmarthen);*

b) *Whitland to Llanglydwen;*

c) *Ammanford to the Amman Valley.*

Developments should, where appropriate seek to incorporate, or where acceptable, facilitate links to the cycle, rights of way and bridleway network to ensure an integrated sustainable approach in respect of any site."

Policy EQ1 Protection of Buildings, Landscapes and Features of Historic Importance

Policy EQ1 states that *"Proposals for development affecting landscapes, townscapes buildings and sites or features of historic or archaeological interest which by virtue of their historic importance, character or significance within a group of features make an important contribution to the local character and the interests of the area will only be permitted where it preserves or enhances the built and historic environment."*

Policy EQ4 Biodiversity

Policy EQ4 states that "*Proposals for development which have an adverse impact on priority species, habitats and features of recognised principal importance to the conservation of biodiversity and nature conservation, (namely those protected by Section 42 of the Natural Environment and Rural Communities (NERC) Act 2006 and UK and Local BAP habitats and species and other than sites and*

species protected under European or UK legislation) will not be permitted, except where it can be demonstrated that:

a) The impacts can be satisfactorily mitigated, acceptably minimised or appropriately managed to include net enhancements;

b) There are exceptional circumstances where the reasons for the development or land use change clearly outweighs the need to safeguard the biodiversity and nature conservation interests of the site and where alternative habitat provision can be made in order to maintain and enhance local biodiversity."

Policy EP1 Water Quality and Resources

Policy EP1 states that "*Proposals for development will be permitted where they do not lead to a deterioration of either the water environment and/or the quality of controlled waters. Proposals will, where appropriate, be expected to contribute towards improvements to water quality.*

Watercourses will be safeguarded through biodiversity/ecological buffer zones/corridors to protect aspects such as riparian habitats and species; water quality and provide for flood plain capacity. Proposals will be permitted where they do not have an adverse impact on the nature conservation, fisheries, public access or water related recreation use of the rivers in the County.

Proposals will wherever possible be required to make efficient use of water resources."

Policy EP3 Sustainable Drainage

Policy EP3 states that "*Proposals for development will be required to demonstrate that the impact of surface water drainage, including the effectiveness of incorporating Sustainable Drainage Systems (SUDS), has been fully investigated.*

The details and options resulting from the investigation must show that there are justifiable reasons for not incorporating SUDS into the scheme in accordance with section 8 of TAN 15."

Policy REC2 Open Space Provision and New Developments

Policy REC2 states that "*All new residential developments of five or more units will be required to provide on site open space in accordance with the Council's adopted standards of 2.4ha per 1000 population.*

In the event that the above standards cannot be met on site, or where there is sufficient existing provision already available to service the development, then off site financial contributions will be sought as and where appropriate."

9.1.2.2 Revised (Replacement) Carmarthenshire Local Development Plan 2018 – 2033

The revised LDP is currently being prepared by CCC and is not adopted. Accordingly, the draft policies set out in the 2020 Deposit Plan can only be accorded limited weight.

In terms of revised LDP draft allocations, Whitland is shown on the Policies map (see Figure 9-3). The Development Limits are changed slightly compared to the LDP and the housing allocations at the south of the Site have been removed.

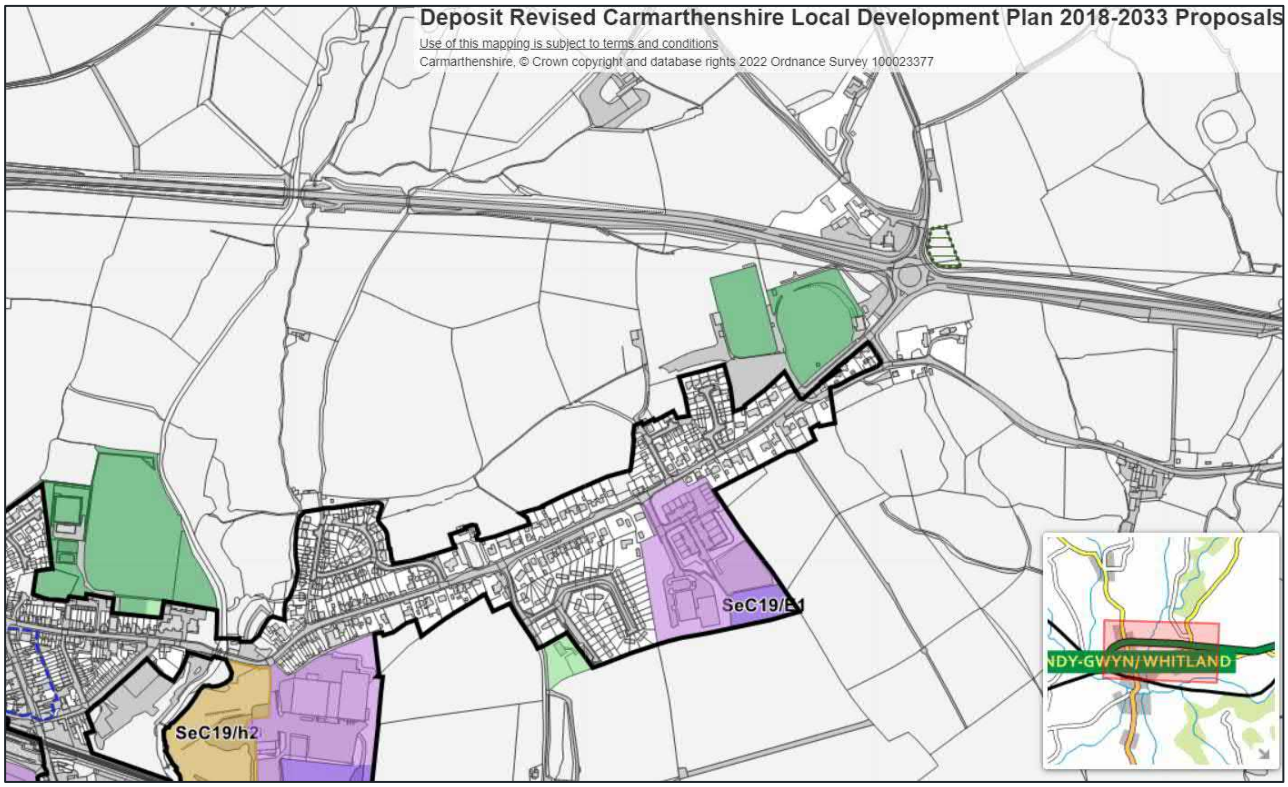


Figure 9-3 - Revised LDP Deposit Plan (2020) - Extract of Policies map

The following LDP 2 draft policies are particularly relevant to the Proposed Development:

Strategic Policy – SP 1: Strategic Growth

Draft policy SP 1 states that *"The LDP will provide for the future growth of a sustainable economy and housing requirement through the provision of:*

a) 10,160 new homes to meet the identified housing requirement of 8,835.

b) A minimum of 77.93ha of allocated employment land.

The focus on regeneration and growth reflects the Council's core strategic ambitions with development distributed in a sustainable manner consistent with the spatial strategy and settlement framework."

Strategic Policy – SP 8: Infrastructure

Draft policy SP 8 states that *"Development will be directed to sustainable locations where the infrastructure, services and facilities considered necessary to deliver and support the development proposal are available, or can be provided.*

Development proposals will need to demonstrate that there is sufficient capacity in the existing infrastructure to deliver and support the proposed development. Where this cannot be achieved, proposals will need to demonstrate that suitable arrangements are in place to provide the infrastructure capacity considered necessary to deliver and support the development.

Where new or improved infrastructure is required which does not form part of an infrastructure provider's improvement programme it may be permitted. In such instances it will be required to

satisfactorily demonstrate that adequate arrangements and funding are made available to deliver the required infrastructure.

The delivery of new or improved infrastructure, or other facilities or services to support the requirements of the site, must be undertaken in a timely manner to meet the needs of communities prior to, or from the commencement of, the relevant phases."

Strategic Policy – SP 14: Protection and Enhancement of the Built and Historic Environment

Draft policy SP 14 stats that "*Development proposals should preserve or enhance the built and historic environment of the County, its cultural, townscape and landscape assets, and, where appropriate, their setting.*

Proposals will be expected to promote high quality design that reinforces local character and respects and enhances the cultural and historic qualities of the plan area."

INF2: Healthy Communities

Draft policy INF2 states that *"Proposals for development which provide for active travel, accessible useable green spaces and infrastructure, and which seek to reduce health inequalities through encouraging healthy lifestyles, addressing the social determinants of health and providing accessible health care facilities will be supported.*

Proposals for development specified within the supporting text below will be required to submit a Health Impact Assessment in accordance with the sequential approach."

The supporting text to the draft policy indicates that a Health Impact Assessment (HIA) would be required for the following development types:

- Residential developments of 10 or more dwellings or 0.5 hectares or more;
- The provision of a building or buildings where the floor space to be created by the development is 1,000 square metres or more; or
- Development carried out on a site having an area of 1 hectare or more

PSD2: Masterplanning Principles – Creating Sustainable Neighbourhoods

Draft policy PSD2 states that *"For proposals where the development is for 50 homes or more, there will be a requirement to submit a comprehensive and integrated 'masterplan' for the entire site demonstrating a coherent and coordinated approach to creating neighbourhoods in accordance with placemaking and good design principles. Consideration should be given to the following guiding principles (where appropriate):*

a) A breakdown of densities across the site reflecting the physical characteristics of the site and the character and appearance of the surrounding community. Higher density developments will be expected to relate directly to public transport corridors and reflect the settlement's position within the settlement framework (Strategic Policy SP16);

b) How they will contribute to the delivery of sustainable transport choices including active travel and accessibility to public transport;

c) How the proposal integrates and links effectively into the surrounding community including links within and through the site for sustainable transport choices. Proposals should seek to establish good legibility and connectivity both within the site and linking to the wider area;

d) *The provision of facilities to meet the social and community needs of the development and where appropriate the wider community;*

e) *Include responsive solutions reflecting the local context and the opportunities for sustainable construction techniques;*

f) *Integration of the network of green infrastructure and connected open spaces in providing a cohesive and integrated environment for people, wildlife and open spaces for sports, recreation and play;*

g) *Sympathetic integration of landscape form, biodiversity and built and historic features within and surrounding the site into the development. Proposals will be expected to look outwards beyond the site boundary (and not just within the site) in delivering high quality sustainable neighbourhoods;*

h) *A phasing plan for the delivery of the development along with timely provision of supporting infrastructure;*

i) *Reflect the linguistic and cultural identity of the County and contribute towards safeguarding and promoting the Welsh language;*

j) *Include innovative and creative solutions in relation to resource efficiency, low carbon development and renewable energy generation;*

k) *Integrate site features arising from SUD's as part of the development and consider the additional value or functions which these may provide."*

PSD6: Community Facilities

Draft policy PSD6 states that "*Proposals for new and improved community facilities, including health and education facilities will be supported where it accords with the following:*

a) *It would be readily accessible to the local community it is intended to serve by public transport, walking and cycling;*

b) *It is within, or is directly related to a settlement identified in Policy SP16: Sustainable Distribution;*

c) *It would not unduly harm the amenities nearby residential properties;*

d) *It would not detract from the character and appearance of the area;*

e) *It will not lead to unacceptable parking or traffic problems;*

f) *It is designed with appropriate flexibility and adaptability to accommodate additional community uses without compromising its primary intended use."*

Strategic Policy – SP16: Sustainable Distribution – Settlement Framework

Draft policy SP16 states that "*The provision of growth and development will be directed to sustainable locations in accordance with the following spatial framework."*

The spatial framework is shown in Figure 9-4.

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6
Tier 1 – Principal Centre	Carmarthen	• Llanelli	• Ammanford/ Crosshands			
Tier 2 – Service Centre	• Pontyates / Meinciau / Ponthenri • Ferryside	• Kidwelly • Burry Port • Pembrey • Hendy / Fforest • Llangennech • Trimsaran/ • Carway	• Brynamman • Glanamman / Garnant • Pontyberem / Bancffosfelen	• Newcastle Emlyn • Llanybydder • Pencader	• Llandovery • Llandeilo / Rhosmaen / Ffairfach • Llangadog	• St Clears/ Pwll Trap • Whitland • Laugharne

Figure 9-4 - Revised LDP Deposit Plan (2020) - Draft policy SP16 Spatial Framework

With reference to the draft policy wording and Spatial Framework, the supporting text to the draft policy states that "*Whilst the above refers specifically to residential growth, the settlement framework will, in conjunction with specific policies, also guide the consideration of appropriate sustainable locations - with access to services and facilities - and scale of other developments (including employment).*"

The supporting text also indicates that service centres would likely be suitable for the following development types:

- Small Scale Employment Areas
- Housing Allocations
- Affordable Housing Provision on sites of 5 or more units
- Small housing sites (under 5 homes);
- Windfall housing opportunities

9.1.2.3 SUPPLEMENTARY PLANNING GUIDANCE

CCC have produced several Supplementary Planning Guidance (SPG) which are relevant to the proposal, these are listed below:

- Archaeology and Development (August 2018)
- Leisure and Open Space – Requirement for New Developments (September 2016)
- Nature Conservation and Biodiversity
- Placemaking and Design (September 2016)
- Rural Development (September 2016)

These notes provide detailed guidance which will need to be considered within the design of the proposal.

9.2 COMMITTED DEVELOPMENTS

The Proposed Development would be located on land to the north east of Whitland. It is important to assess whether reasonably foreseeable development in the vicinity could affect its delivery. CCC's Map of planning applications[22] has been checked.

The applications in Table 9-1 are located in the vicinity of the Site and are considered to be relevant to the Proposed Development.

Table 9-1 - Commited Develpoments

PLANNING REFERENCE	DESCRIPTION	LOCATION	STATUS
PL/02934	Outline (major) application for residential development (including affordable element) together with new vehicular access and associated parking and landscaping (all matters reserved except highways)	Land adjacent to Spring Gardens, Whitland, SA34 0HP	Outline Planning Permission granted 30th September 2022
PL/00668	Construction of 15 Dwellinghouses, together with Formation of Estate Road and Associated Infrastructure (Revision of Layout and Access Arrangements to Affordable Housing proportion of Planning Permission W/30269)	Land off Clos Llwyn Ty Gwyn, Whitland, SA34 0HW	Full Planning Permission granted 23rd February 2022
W/35037	Variation of Condition 3 of Planning Permission W/17567 to allow an extension to the time period within which applications for Reserved Matters can be submitted and the development can be implemented (S.73 to vary Condition 3 of Outline Permission Ref. W/17567 for "Residential Development").	Land adjacent to Spring Gardens, Whitland, Carms	Reserved Matters granted 15th May 2017
W/17567	Residential Development	Land adjacent to Spring Gardens, Whitland, Carms	Outline Planning Permission granted 26th March 2012

WSP consider that further pre-application with CCC is required to complete a thorough due diligence on committed developments at the Site.

9.3 CONCLUSIONS

The key findings are as follows:

- Policy 1 of Future Wales identifies that development and growth in towns in rural areas should be of appropriate scale and support local aspirations and need. In addition, Policy 6 of Future Wales indicates that significant new commercial, retail, education, health, leisure and public service facilities must be located within town and city centres. In the absence of a development plan allocation, a sequential approach must be used to determine planning applications. The Welsh Government can intervene in the planning application process where a town centre first approach is not being followed.

[22] https://www.carmarthenshire.gov.wales/home/council-services/planning/search-for-a-planning-application/map-of-planning-applications/#.YozvQKjMKCg – Accessed May 2022

- Policy 29 of Future Wales identifies Carmarthen and the Pembrokeshire Haven Towns as the focus for housing, employment, tourism, public transport and key services within their wider areas and function as focal points for sub-regional growth.

- Planning Policy Wales provides detailed guidance on placemaking and key material considerations covering previously developed land, agricultural land, development in the countryside, sustainable transport, car parking and community facilities.

- The south of the Site is allocated for residential development under the Carmarthenshire LDP. Planning permission has been granted for residential development at one of these sites (Land off Clos Llwyn Ty Gwyn, Whitland, SA34 0HW) and an application for residential development is in review at the other site (Land adjacent to Spring Gardens, Whitland, SA34 0HP).

- The majority of the Site is located on unallocated land outside the Development Limits for Whitland. In the LDP, Development Limits are set to prevent inappropriate development in the countryside and provide certainty and clarity as to where exceptions proposals (adjacent to limits) may be considered appropriate.

- Whitland is identified as a Service Centre in the LDP Settlement framework with a role for Local employment provision, residential provision, town centre and local retail service offer, community service provision and gypsy and traveller site.

- The LDP supports the provision of new community facilities in accordance with the settlement framework and based upon evidence of need.

- The Revised (Replacement) Carmarthenshire Local Development Plan 2018 – 2033 is currently being prepared by CCC. CCC's revised Delivery Agreement dated November 2020 states that the Revised Local Development Plan is due to be adopted during from July-August 2022. The Site is located outside the Development Limits for Whitland.

Appendix A

LAND PLANS

Public

Highway Search - P041948/P11/22/May18/T&E/JKD

Adran Yr Amgylchedd/The Environment Department
Bloc/Block 2, Parc Myrddin, Caerfyrddin/Carmarthen, SA31 1HQ

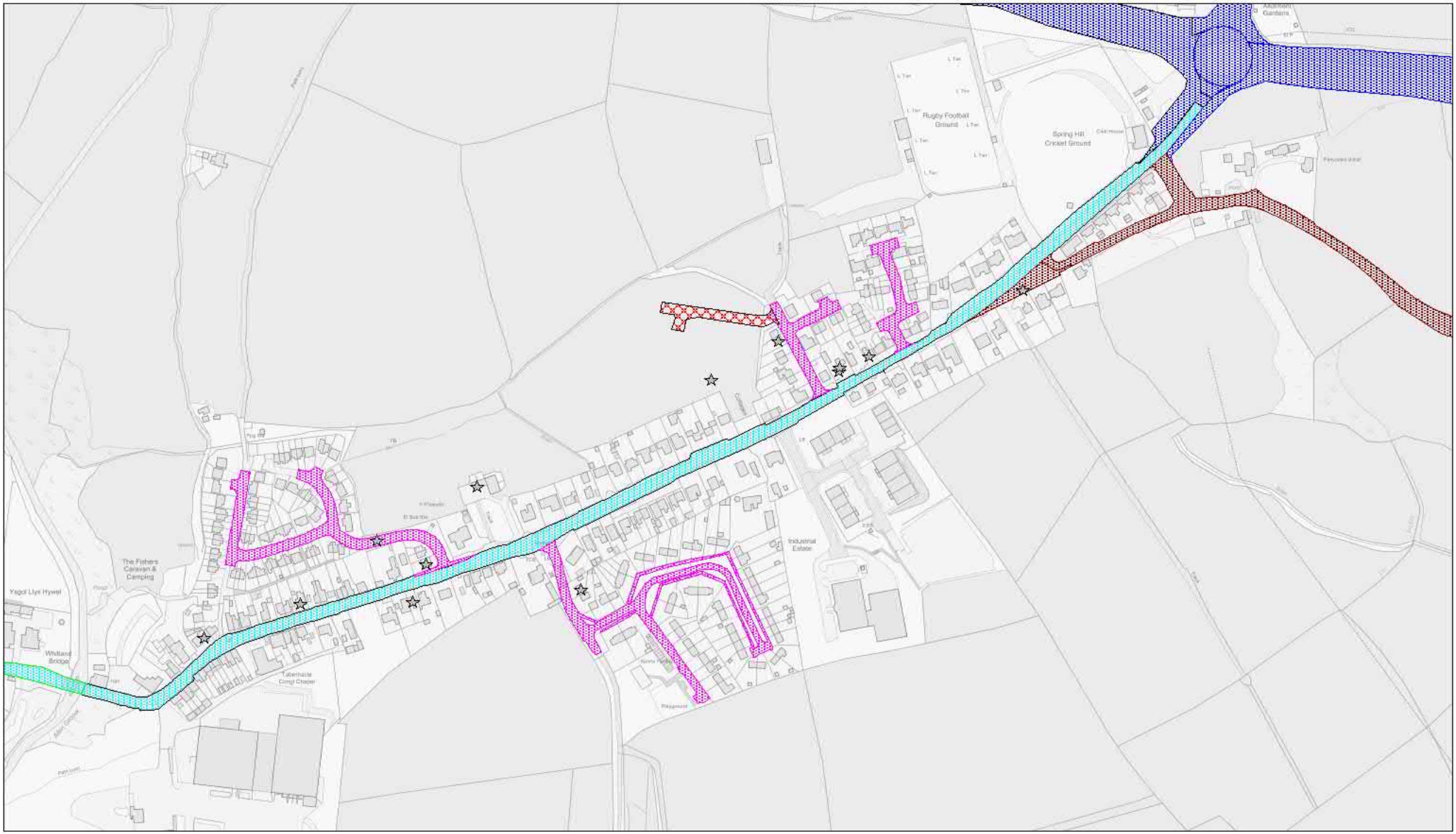
Plan 1 - Public Highways at Whitland - Plan sent with search reply

This plan shows the approximate widths of public highways

Scale 1:5000

N
W E
S

Cyngor Sir Gâr
Carmarthenshire
County Council



Compiled on 18 May 2022

Key

Red Line Boundary

wsp

Client:

Hywel Dda University Health Board

Project:

Site 12 - Technical Due Dilligence Appraisal

Title

Site 12
Site Location Plan

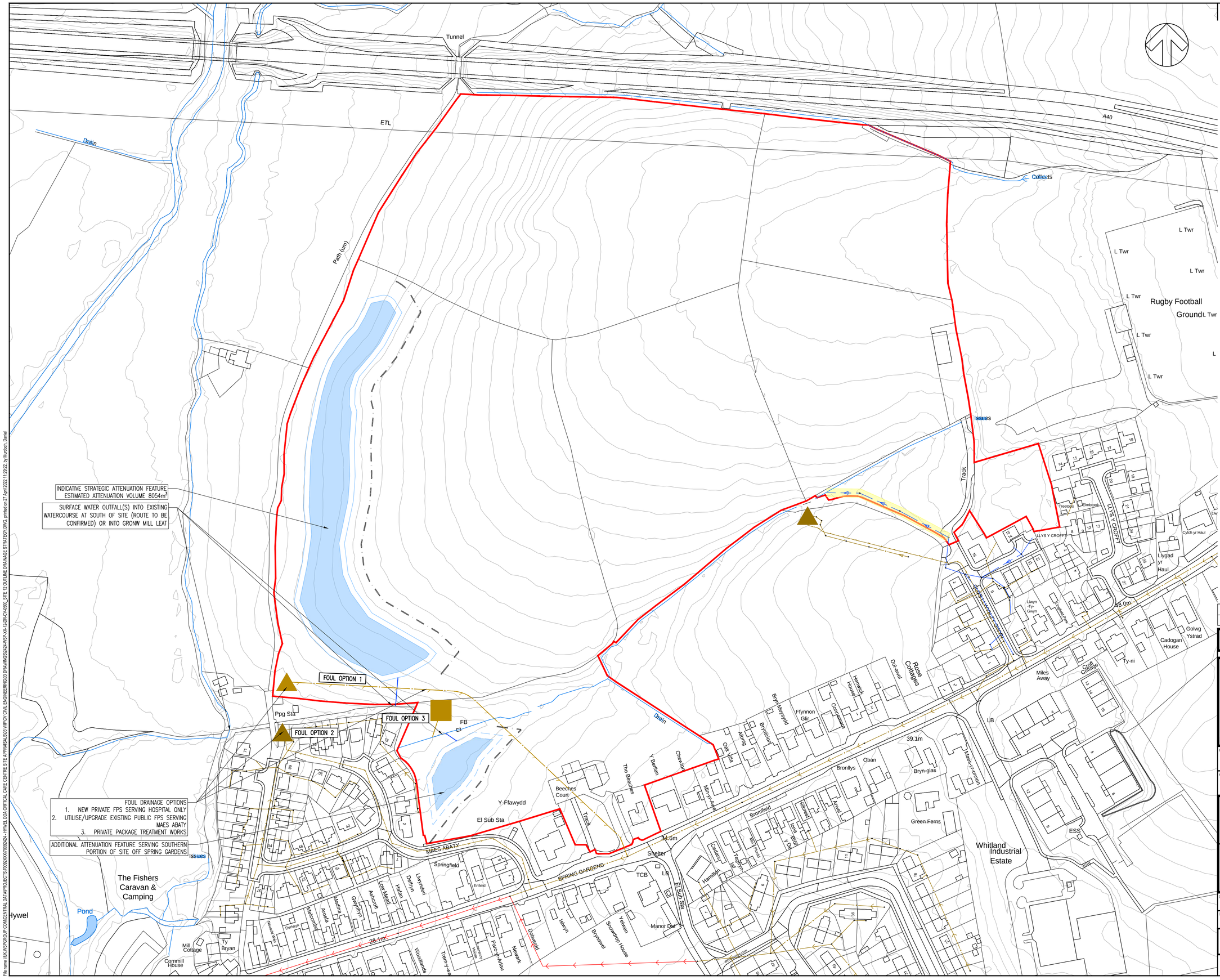
Date:	08/06/2022			Scale:	3,000 @ A3
Drawn:	PB	Checked	CLH	Approved	WB

Drawing No: 2424-WSP-XX-12-DR-EN-0028-P01_ Site Location

Appendix B

DRAINAGE

Public



DO NOT SCALE

LEGEND

- SITE BOUNDARY
- EXISTING FOUL SEWER
- EXISTING FOUL RISING MAIN
- EXISTING FOUL PUMPING STATION
- EXISTING COMBINED SEWER
- EXISTING STORM SEWER
- ASSUMED EASEMENT
- EXISTING WATERCOURSE
- EXISTING WATER BODY
- PROPOSED STRATEGIC ATTENUATION BASIN
- INDICATIVE EARTHWORKS EXTENT
- PROPOSED FOUL SEWER
- PROPOSED FOUL RISING MAIN
- PROPOSED FOUL PUMPING STATION
- PROPOSED FOUL PACKAGE TREATMENT WORKS
- PROPOSED SURFACE WATER OUTFALL

NOTES

1. SURFACE WATER ATTENUATION FEATURES HAVE BEEN SIZED USING MICRODRAINAGE'S QUICK STORAGE ESTIMATE METHOD, ASSUMING A SINGLE INFLOW AREA AND POINT OF DISCHARGE
2. ATTENUATION REQUIREMENTS ARE SUBJECT TO MASTERPLANNING AND REFINEMENT INTO DRAINAGE CATCHMENTS
3. REQUIRED ATTENUATION VOLUME HAS BEEN SIZED BASED ON A DEVELOPED AREA OF 35 ACRES, WITH A PERCENTAGE OF 60% OF THE DEVELOPED AREA BEING IMPERVIOUS AND FORMALLY DRAINED
4. ATTENUATION FEATURES ARE ASSUMED TO HAVE THE FOLLOWING DESIGN CRITERIA
   - 4.1. 1m ATTENUATION WATER STORAGE DEPTH
   - 4.2. 300mm FREEBOARD
   - 4.3. 1:3 SIDE SLOPES

REV	DATE	BY	DESCRIPTION	CHK	APP
P01	27/04/2022	DJM	FIRST ISSUE	ARW	ARW

DRAWING STATUS: S0 - WORK IN PROGRESS

wsp
1 Capital Quarter, Tyndall St, Cardiff, CF10 4BZ, UK
T+ 44 (0) 292 076 9200
wsp.com

CLIENT: HYWEL DDA UNIVERSITY HEALTH BOARD

ARCHITECT: BDP

SITE/PROJECT: HYWEL DDA CRITICAL CARE CENTRE SITE APPRAISAL

TITLE: SITE 12 INDICATIVE DRAINAGE STRATEGY

SCALE @ A1:	CHECKED:	APPROVED:
1:1250	ARW	ARW

PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70092424	DJM	DJM	April 22

DRAWING No:	REV:
2424-WSP-XX-12-DR-CV-0500	P01

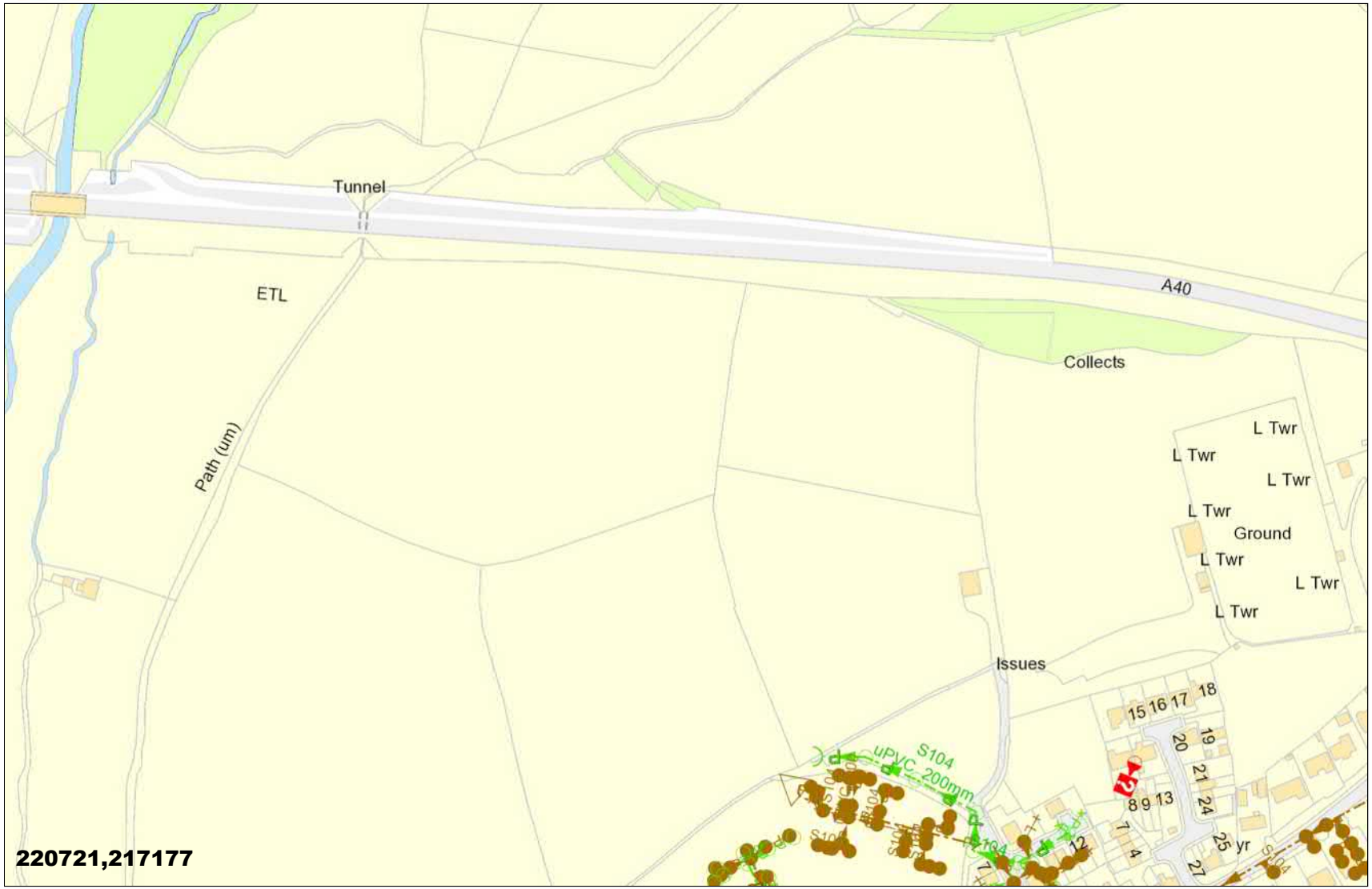
Dŵr Cymru
Welsh Water

Site 12 North

06/06/2022

N
W E
S

Scale: 1: 3500



LEGEND

Clean Water

- Sluice Val
- Air Val, SINGLE
- Tap
- Pressure Reducing Valve
- Meter
- BULK Meter
- FH
- Cap
- Existing Main
- NON COMPANY

Sewerage External

- Foul
- Surface Water
- Combined
- Rising Main
- Private
- Treatment Works
- Pumping Station
- Special Purpose
- Unknown End
- Change, Combined Overflow
- Outfall, FOUL
- Lamp Hole, Foul
- Private Sewer Transfer
- Lateral Drain
- Inspection Chamber

EXACT LOCATION OF ALL APPARATUS TO BE DETERMINED ON SITE

Whilst every reasonable effort has been taken to correctly record the pipe material of DCWW assets, there is a possibility that in some cases pipe material (other than Asbestos Cement or Pitch Fibre) may be found to be Asbestos Cement (AC) or Pitch Fibre (PF). It is therefore advisable that the possible presence of AC or PF pipes be anticipated and considered as part of any risk assessment prior to excavation

Dŵr Cymru
Welsh Water

Site 12 South

06/06/2022

N
W E
S

Scale: 1: 3500

LEGEND

Clean Water

- Sluice Val
- Air Val, SINGLE
- Tap
- Pressure Reducing Valve
- Meter
- BULK Meter
- FH
- Cap
- Existing Main
- NON COMPANY

Sewerage External

- Foul
- Surface Water
- Combined
- Rising Main
- Private
- Treatment Works
- Pumping Station
- Special Purpose
- Unknown End
- Change, Combined Overflow
- Outfall, FOUL
- Lamp Hole, Foul
- Private Sewer Transfer
- Lateral Drain
- Inspection Chamber

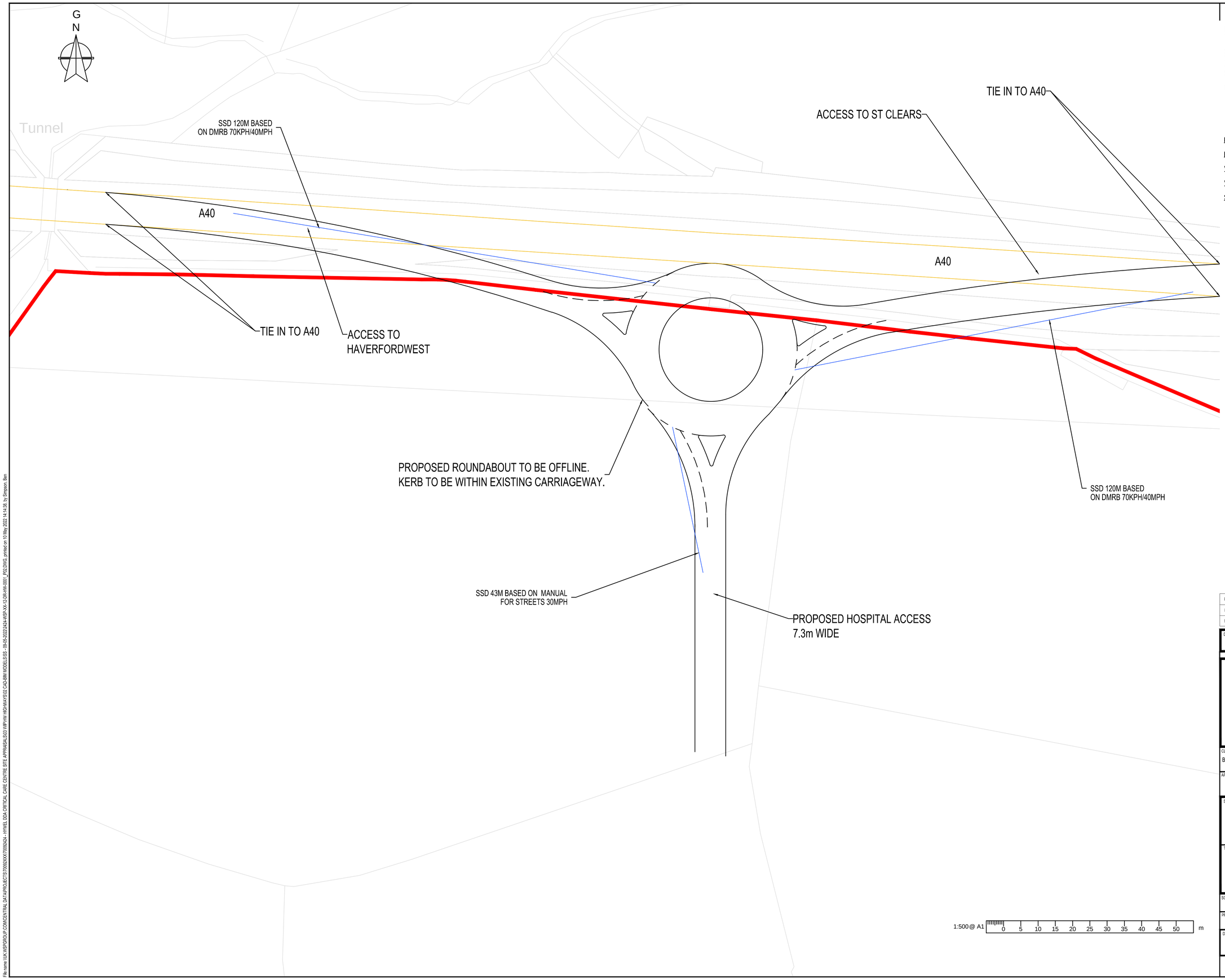
EXACT LOCATION OF ALL APPARATUS TO BE DETERMINED ON SITE

Whilst every reasonable effort has been taken to correctly record the pipe material of DCWW assets, there is a possibility that in some cases pipe material (other than Asbestos Cement or Pitch Fibre) may be found to be Asbestos Cement (AC) or Pitch Fibre (PF). It is therefore advisable that the possible presence of AC or PF pipes be anticipated and considered as part of any risk assessment prior to excavation

Appendix C

SITE ACCESS

Public



DO NOT SCALE

Proposed roundabout solution on A40.

1. Assume minimum ICD of 50m. This is based upon existing roundabout dims on A40.
2. Design speed to be 70kph (40mph)
3. Design based upon DMRB CD116
4. Assume no MNU provision on proposed roundabout.
5. Existing carriageway profile 7.3m carriageway with 1m hardstrips, 3.5m veges.
6. Assume batters slope to be 1:3

KEY

EXISTING CARRIAGEWAY
VERGE
VISIBILITY SPLAY
SITE BOUNDARY

THIS PROVISIONAL PRELIMINARY DESIGN IS FOR GUIDANCE PURPOSES ONLY. WSP ACCEPTS NO LIABILITY FOR ANY DAMAGE, LOSS, EXPENSES OR COST INCURRED AS A RESULT OF RELYING ON THE INFORMATION PROVIDED IN THE DESIGN APPRAISAL ESTIMATE. THE APPRAISAL ESTIMATE WAS DERIVED FROM A MIXTURE OF THIRD PARTY INFORMATION AND THE APPLICATION OF WSP'S REASONABLE SKILL AND CARE, BUT MAY BE SUBJECT TO OTHER SUCH INFORMATION AND VARIATIONS OF WHICH WSP IS UNAWARE. THE DESIGN APPRAISAL ESTIMATE SHOULD NOT BE RELIED UPON FOR TENDER OR PROCUREMENT PURPOSES. FOR ACCURATE ADVICE A DETAILED DESIGN SHOULD BE CARRIED OUT AT THE APPROPRIATE DESIGN STAGE. THEREFORE, USE OF THE INFORMATION IS ENTIRELY AT YOUR OWN RISK.

REV	DATE	BY	DESCRIPTION	CHK	APP
P02	09/05/2022	BS	AMMENDED RADII OF ENTRANCES TO RBT	SWE	AW
P01	05/04/2022	BS	FIRST ISSUE	SWE	AW

DRAWING STATUS:
S0 - WORK IN PROGRESS

1 Capital Quarter, Tyndall St, Cardiff, CF10 4BZ, UK
T+ 44 (0) 292 076 9200
wsp.com

CLIENT:
BWRDD IECHYD PRIFYSGOL HYWEL DDA/ HYWEL DDA UNIVERSITY HEALTH BOARD

ARCHITECT:
BDP

SITE/PROJECT:
HYWEL DDA CRITICAL CARE CENTRE SITE APPRAISALS

TITLE:
SITE 12 - LAND AT SPRING GARDENS RD
WHITLAND - OPTION 1 - A40 ROUNDABOUT

SCALE @ A1:	CHECKED:		APPROVED:
1:500	MT		AW
PROJECT NO: HYWEL DDA	DESIGNED: MCT	DRAWN: BS	DATE: May 22

DRAWING No: 2424-WSP-XX-12-DR-HW-0001
REV: P02

File name \\UK.WSPGROUP.COM\CENTRAL DATA\PROJECTS\70092XXX\70092424 - HYWEL DDA CRITICAL CARE CENTRE SITE APPRAISALS\03 \\WP\HW HIGHWAYS\02 CAD-BIM MODELS\SS_09-05-2022\2424-WSP-XX-12-DR-HW-0001_P02.DWG, printed on 10 May 2022 14:14:38, by Simpson, Ben

Appendix D

ECOLOGY

Public

Hywel Dda University Health Board

URGENT AND PLANNED CARE HOSPITAL

SITE 12 – PRELIMINARY ECOLOGICAL APPRAISAL

REV1
JUNE 2022

CONFIDENTIAL

Hywel Dda University Health Board

URGENT AND PLANNED CARE HOSPITAL

SITE 12 – PRELIMINARY ECOLOGICAL APPRAISAL

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

PROJECT NO. 70092424

OUR REF. NO. REV1

DATE: JUNE 2022

Hywel Dda University Health Board

URGENT AND PLANNED CARE HOSPITAL

SITE 12 – PRELIMINARY ECOLOGICAL APPRAISAL

WSP

1 Capital Quarter
Tyndall Street
Cardiff
CF10 4BZ

Phone: +44 2920 769 200

WSP.com

QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	Issue			
Date	June 2022			
Prepared by	Megan Brenchley			
Signature	Brenchley, Megan (UKRMB007) Digitally signed by Brenchley, Megan (UKRMB007) DN: cn=Brenchley, Megan (UKRMB007), ou=Active, email=Rhiannon.Brenchley@wsp.com Date: 2022.06.09 14:41:07 +01'00'			
Checked by	Aaron Davies			
Signature	Digitally signed by Davies, Aaron (UKAXD055) DN: cn=Davies, Aaron (UKAXD055), ou=Active, email=Aaron.Davies@wsp.com Reason: I have reviewed this document Date: 2022.06.09 15:40:29 +01'00'			
Authorised by	Gabrielle Horup			
Signature	Digitally signed by Horup, Gabrielle (UKGKH001) DN: cn=Horup, Gabrielle (UKGKH001), ou=Active, email=Gabrielle.Horup@wsp.com Reason: I am approving this document Date: 2022.06.09 16:02:18 +01'00'			
Project number	70092424			
Report number	V1			
File reference	\\uk.wspgroup.com\central data\Projects\70092xxx\70092424 - Hywel Dda Critical Care Centre Site Appraisals\03 WIP\EC Ecology\05 Reports\Site 12			

CONTENTS

1. INTRODUCTION 11

1.1. PROJECT BACKGROUND 11
1.2. SITE BACKGROUND 11
1.3. SCOPE OF REPORT 11
1.4. RELEVANT LEGISLATION AND POLICY 11

2. METHODS 13

2.1. OVERVIEW 13
2.2. DESK STUDY 13
2.3. HABITAT SURVEY 14
2.4. PRELIMINARY GROUND LEVEL ROOST ASSESSMENT OF TREES AND BUILDINGS FOR BATS 15
2.5. PROTECTED SPECIES ASSESSMENT 16
2.6. NOTES AND LIMITATIONS 16

3. RESULTS 17

3.1. DESIGNATED SITES 17
3.2. HABITAT SURVEY 19
3.3. PRELIMINARY GROUND LEVEL ROOST ASSESSMENT OF TREES AND BUILDINGS FOR BATS 21
3.4. PROTECTED AND NOTABLE SPECIES ASSESSMENT 22

4. DISCUSSION AND RECOMMENDATIONS 25

4.2. STATUTORY DESIGNATED SITES 25
4.3. NON-STATUTORY DESIGNATED SITES 25
4.4. HABITATS 26
4.5. PROTECTED AND NOTABLE SPECIES 26
4.6. FURTHER SURVEY REQUIREMENTS 30

4.7. PRELIMINARY AVOIDANCE, MITIGATION AND COMPENSATION MEASURES 35
4.8. ECOLOGICAL ENHANCEMENT OPPORTUNITIES 36
5. CONCLUSIONS 37
6. REFERENCES 38
FIGURES 40

TABLES

Table 1 – Bat Roosting Suitability Categorisation 15
Table 2 - Statutory designated sites of international importance 17
Table 3 - Non-statutory designated sites 18
Table 4 - UKHab habitat Areas of Site 12 19
Table 5 – The number of trees and buildings considered to have bat roost suitability within each Site 21
Table 6 – Priority Habitats within the Site 26
Table 7 - Key Ecological Constraints and Further Survey Requirements 31

FIGURES

Figure 1 - Site 12 Location Plan 40
Figure 2 - Statutory Designated Sites with 10 km of Site 12, or 30 km if bats is a qualifying feature 40
Figure 3 - Non-Statutory Designated Sites and Ancient Woodland Inventory Woodlands within 2 km of Site 12 40
Figure 4 – Site 12 UKHab Survey Map 40
Figure 5 – Site 12 Target Notes and Bat Ground Roost Assessment Results 40

APPENDICES

APPENDIX A

RELEVANT LEGISLATION AND PLANNING POLICY

APPENDIX B

SUMMARY OF ECOLOGICAL DESK STUDY DATA

APPENDIX C

PLANT SPECIES RECORDED

APPENDIX D

TARGET NOTES

APPENDIX E

PHOTOGRAPHS

APPENDIX F

BAT GROUND ASSESSMENT SURVEY RESULTS

EXECUTIVE SUMMARY

Hywel Dda are proposing the construction of a new medical hospital at one of five sites (hereafter referred to as 'Sites 17, J, 7, 12 and C') near St Clears in Carmarthenshire. Each Site covered an area between 189,000 m^2 and 513,700 m^2, and was primarily used as farmland, either for growing crops or for grazing. This report will focus on Site 12 (centroid grid reference SN 20679 17066). The construction of the medical hospital is hereafter referred to as the 'Proposed Development.'

WSP were commissioned by Hywel Dda to undertake a Preliminary Ecological Appraisal (PEA) of each of the Sites. The aim of the PEA was to identify habitats within the Sites and to assess the potential of the Sites to support protected and/or notable species, and the implication of these for the Proposed Development. The PEA, conducted in February and March 2022, comprised a desk study element and an extended UKHab habitat survey of the Sites.

There were two statutory designated sites of international importance for which bats were a qualifying feature within 35 km of Site 12: Limestone Coast of South West Wales/Arfor dir Calchfaen de Orllewin Cymru Special Area of Conservation (SAC); and Pembrokeshire Bat Sites and Bosherston Lakes/Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherston SAC. Due to the distance between the designated sites and the Site under consideration for the Proposed Development, it was considered that the qualifying features of these SACs are unlikely to be impacted by the Proposed Development. No statutory nature conservation sites of international importance (for which bats were not a qualifying feature) were identified within 2 km of Site 12.

The desk study identified no statutory sites of national importance within 2 km of the Site. One non-statutory designated site was identified within 2 km of the Site: A B-Line, which indicates an area which could provide a key insect pollinator dispersal pathway between existing areas of wildflower-rich habitat, lies directly within Site 12.

The desk study returned records of protected and/or notable species within 2 km of the Site including brown long-eared bat *Plecotus auratus,* badger *Meles meles*, several bird species (including eight listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended)), invertebrates and invasive non-native species (INNS).

Three Priority Habitats were identified across the Site: neutral grassland (lowland meadows); boundary and linear features (hedgerows); and rivers (rivers and streams.

The visit to the Site identified habitats that are suitable for bats, badger, hedgehog *Erinaceus europaeus,* birds, otter, hazel dormouse *Muscardinus avellanarius,* reptiles, amphibians, common and widespread invertebrates, and INNS.

For the Proposed Development to comply with relevant legislation and planning policy, the following further surveys, assessments, avoidance and mitigation measures are proposed:

- Habitats Regulations Assessment (HRA), Stage 1: Screening;

- Further surveys for bats including bat activity surveys involving static monitoring, aerial tree climbing surveys/endoscope inspections of potential roost features in trees, emergence/re-entry survey of buildings with bat roosting suitability;
- To ensure a measurable net benefit for biodiversity is achieved and to comply with policies detailed in Planning Policy Wales (2021) and legislation in the Environment (Wales) Act 2016, a Biodiversity Net Gain (BNG) assessment should be undertaken;
- Protection and retention of Priority Habitats where practicable. Where retention is not practicable, reinstatement should be designed into the Proposed Development and replaced at a ratio of 2:1 where possible, and no less than 1:1, following any recommendations outlined in a BNG assessment;
- Vegetation clearance should be undertaken following a pre-works check by an Ecological Clerk of Works (ECoW) and under a Precautionary Method of Working (PMoW);
- Production of an appropriate Method Statement (MS), to be presented within an Ecological Management Plan (EcMP) and a Construction Environment Management Plan (CEMP). This will include specifying details of any sensitive habitats on Site and how they will be protected; and
- Enhancement recommendations are detailed at the end of this report and include the planting of a variety of native species to encourage invertebrates within the Proposed Development.

1. INTRODUCTION

1.1. PROJECT BACKGROUND

1.1.1. WSP UK Ltd (WSP) was commissioned by Building Design Partnership Ltd (BDP), on behalf of Hywel Dda University Health Board (HDUHB), to undertake a Preliminary Ecological Appraisal (PEA) of five sites located near St Clears in the historic county of Carmarthenshire, Wales. These areas are Site 17, Site J, Site 7, Site 12 and Site C, and this report will focus on Site 12. Site 12 is hereafter referred to as the 'Site.'

1.1.2. The PEA covered the entire area of the Site and included a preliminary ground level roost assessment of trees and buildings for bats.

1.1.3. It is understood that HDUHB is proposing the construction of a new medical hospital on one of the Sites listed above. The PEAs carried out are in support of a scope of work being undertaken by WSP that will highlight the key environmental and engineering risks associated with each Site. As such, high level risks and potential development opportunities/constraints can be highlighted; in this report, these will be in reference to ecology.

1.2. SITE BACKGROUND

1.2.1. Site 12 lies to the north-east of the town of Whitland, which is west of St Clears. Site 12 is bordered by the A40 to the north and the B4328, also known as Spring Gardens, to the south (centroid grid reference SN 20679 17066, RLB in Figure 4). It covers an area of approximately 192,480 m^2 and is primarily used for cattle grazing with one building, a barn, located within Site 12.

1.3. SCOPE OF REPORT

1.3.1. BDP commissioned WSP to complete a PEA of the Site in February 2022. The brief was:

- To provide baseline ecological information about the Site and a surrounding study area with particular reference to whether legally protected and/or notable sites, species or habitats are present or likely to be present;
- To provide recommendations to enable compliance with relevant nature conservation legislation and planning policy; and
- If necessary, to identify the need for avoidance, mitigation, compensation or enhancement measures and/or further ecological surveys.

1.4. RELEVANT LEGISLATION AND POLICY

1.4.1. The appraisal has been compiled with reference to the following relevant nature conservation legislation, planning policy and the UK Biodiversity Framework from which the protection of sites, habitats and species is derived in Wales. The context and applicability of each item is explained as appropriate in the relevant sections of the report and additional details are presented in Appendix A.

Legislation

- The Conservation of Habitats and Species Regulations (Amendment) (EU Exit) Regulations 2019;
- The Wildlife and Countryside Act 1981 (as amended) (WCA);
- Countryside Rights of Way Act 2000;
- The Town and Countryside (Environmental Impact Assessment) (Wales) Regulations 2017;

- The Protection of Badgers Act 1992;
- The Wild Mammals (Protection) Act 1996;
- The Hedgerow Regulations 1997;
- Environment (Wales) Act 2016;
- The National Parks and Access to the Countryside Act 1949;
- The Weeds Act 1959;
- The Wellbeing of Future Generations (Wales) Act 2015

Policy

- The UK Post-2010 Biodiversity Framework (2011-2020) (JNCC and DEFRA, 2012);
- UK Biodiversity Action Plan (UKBAP)[1];
- Planning Policy Wales (PPW) (Edition 11) 2021;
- Technical Advice Note 5; Nature Conservation and Planning 2009;
- The Nature Recovery Plan for Wales: Setting the course for 2020 and beyond;
- Environment Act 1995;
- State of Natural Resources Report (SoNaRR) for Wales 2020;
- Carmarthenshire Local Development Plan 2018-2033; and
- Future Wales: The National Plan 2040.

[1] The UK BAP has now been replaced by the UK Post-2010 Biodiversity Framework, however, it contains useful information on how to characterise important species assemblages and habitats which is still relevant.

2. METHODS

2.1. OVERVIEW

2.1.1. This appraisal has been prepared with reference to current good practice guidance published by the Chartered Institute for Ecology and Environmental Management (CIEEM, 2017a, 2017b and 2018), and Joint Nature Conservation Committee (JNCC, 2010); and guidance contained in the British Standard - Code of Practice for Biodiversity and Development BS42020:2013 (British Standards Institute (2013).

2.1.2. This PEA is based on the following data sources:

- An ecological desk study;
- A habitat survey; and
- A protected/notable species assessment.

2.2. DESK STUDY

2.2.1. The desk study was undertaken in March 2022 to review existing ecological baseline information available in the public domain and to obtain information held by relevant third parties. For the purpose of the desk study exercise, records were collated within a radius around the Site. The desk study for Site 12 was conducted around grid reference SN 20821 16855. This approach is consistent with current good practice guidance published by the CIEEM, 2017a and 2017b. To provide the baseline data for the ecological desk study, the following information was requested from West Wales Biodiversity Information Centre (WWBIC):

- Records of legally protected and notable species within 2 km of the Site;
- Bat records within a 5 km radius of the Site;
- Records of non-statutory sites designated for nature conservation value within 2 km of the Site;
- Information regarding Priority Habitats[2] within 2 km of the Site; and
- Woodland listed on the Ancient Woodland Inventory[3] within 2 km of the Site.

2.2.2. Freely downloadable datasets (available from Natural Resources Wales (NRW)) were consulted for information regarding the presence of statutory designated habitats[4] within 2 km of the Site. This search was also carried out for statutory designated sites of international importance (Special Areas of Conservation (SAC) and Special Protection Areas (SPA)) and internationally designated Ramsar

[2] Mapped locations of HPI are usually not available, but HPI aligns in the most part with UKBAP habitats. Inventories of UKBAP habitat have been prepared by a variety of organisations and at a national (Natural England priority habitat inventory) and local scale (e.g. by local records centres). In some instances these are primarily based on aerial photograph analysis rather than field survey.

[3] The ancient woodland inventory in Wales lists areas over two hectares in size which have been continuously wooded for 400 years or more.

[4] Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR) and Local Nature Reserves (LNR).

sites within 2 km of the Site, and extended to 30 km for SACs and SPAs for which bats were a qualifying feature.

2.2.3. In addition, open source 1:25,000 Ordnance Survey mapping was used to identify any mapped water bodies and watercourses within 500 m of the Site. The waterbodies were subject to a great crested newt (GCN) *Triturus cristatus* Habitat Suitability Index (HSI), which assesses the potential of a waterbody to support GCN according to quantitative data assigned to the features of the waterbody (Oldham *et al*., 2000).

2.2.4. The findings of the desk study have been incorporated within Section 3 and Appendix B of this report and are shown on Figures 2 and 3.

2.2.5. The ecological desk study was carried out by an ecologist who is an associate member of CIEEM and has completed numerous ecological desk studies.

2.3. HABITAT SURVEY

2.3.1. A habitat survey of the Site was carried out in February and March 2022. The surveys covered the entirety of the Site including boundary features. Where accessible an overview of habitats surrounding the Site was gathered. The habitat survey was carried out by competent ecologists with CIEEM memberships and experience undertaking PEAs of similar habitats.

2.3.2. Habitats were described and mapped following the UKHab Classification (Butcher et al, 2020). UKHab is a unified and comprehensive method for classifying habitats, designed to provide a simple and robust approach to survey and monitoring. UKHab records habitat features in areas, lines and points. Each habitat feature is then assigned to a Primary Habitat and may be further described by Secondary Codes. The characteristics of each habitat, distribution, condition, and indication of current status or threats are also recorded. Where appropriate consideration was given to whether habitats qualify, or could qualify, as Priority Habitats under the provision of the Environment Wales Act (2016).

2.3.3. A list of plant species was compiled (Appendix C), with relative plant species abundance estimated using the DAFOR scale[5]. The scientific names for plant species follow those in the New Flora of the British Isles (Stace, 2019) and are also listed in Appendix C.

2.3.4. Habitats were marked on a mobile mapping computer and were subsequently digitised using a Geographical Information System (GIS). The smallest area to be mapped was 0.04 ha, which was selected as a suitable scale to sample the range of different vegetation types present.

2.3.5. Target notes were made to provide information on specific features of ecological interest (e.g., a badger *Meles meles* sett) or habitat features too small to be mapped. These are included in Appendix D.

[5] The DAFOR scale has been used to estimate the frequency and cover of the different plant species as follows: Dominant (D) - >75% cover, Abundant (A) – 51-75% cover, Frequent (F) – 26-50% cover, Occasional (O) – 11-25% cover, Rare (R) – 1-10% cover., The term 'Locally' (L) is also used where the frequency and distribution of a species are patchy and 'Edge' (E) is also used where a species only occurs on the edge of a habitat type.

2.3.6. Any invasive non-native plant species (INNS) listed on Schedule 9 of the WCA 1981 (as amended) which were evident during the habitat surveys were also target noted. Detailed mapping of such species; or a full survey of the Site for all INNS is beyond the scope of this commission.

2.3.7. Data collected as part of this habitat survey is suitable for use in retrospective biodiversity unit calculations, if required.

2.4. PRELIMINARY GROUND LEVEL ROOST ASSESSMENT OF TREES AND BUILDINGS FOR BATS

2.4.1. All trees and buildings within the Site were inspected from the ground to enable an assessment of their suitability for supporting bat roosts.

2.4.2. A visual inspection of trees/buildings was completed to search for features which may provide potential roosting opportunities for bats. Where suitable features were noted, their location and a brief description of the character was recorded. Additionally, where possible, features were visually inspected for evidence indicating use by roosting bats such as droppings, urine staining, noises and odours from bats and staining around a hole that may be caused by the natural oils in bat fur.

2.4.3. Buildings were categorised in line with the descriptions in Table 1 (adapted from Collins, 2016). Trees were only categorised as having potential for supporting roosting bats until a closer inspection could be undertaken which would enable further categorisation. Further surveys were recommended if it was determined that the trees and buildings which may support roosting bats may be impacted upon by the Proposed Development. Trees and buildings were considered as requiring further surveys if they were considered to have suitability to support roosting bats, within the construction footprint or a distance where they may be likely to suffer disturbance from lighting, vibration or noise, or likely to support a roost of high conservation status that may be impacted by the severing of commuting routes from the roost, and lighting, noise, vibration impacts.

Table 1 – Bat Roosting Suitability Categorisation

Category	Description
High	A structure or tree with one or more potential roost sites that are suitable for supporting large roosts on a regular basis/for longer periods of time because of their size, shelter, protection, conditions and suitable surrounding habitat.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable habitat to be used on a regular basis or by larger numbers of bats. A tree of sufficient size and age to contain potential roosting features but with none seen from the ground or features that only offer limited roosting opportunities.
Negligible	Building/tree with no potential opportunities for roosting bats, or very few or minor features in an isolated/unsuitable location such that the presence of a roost is

	considered highly improbable. e.g., isolated from suitable foraging or commuting habitats.

2.5. PROTECTED SPECIES ASSESSMENT

2.5.1. The potential for the Site to support legally protected and notable species was assessed using the desk study results combined with field observations during the habitat survey. The assessment of habitat suitability for protected and notable species was based on professional experience and judgement. This was supplemented by standard sources of guidance on habitat suitability assessment for key faunal groups including: birds (Gilbert et al, 1998 and Bibby et al, 2000); GCN (Gent and Gibson, 2003 and English Nature, 2001); reptiles (Froglife, 1999 and Gent and Gibson, 2003); bats (Collins, 2016 and Mitchell-Jones, 2004); badger (Harris et al, 1991 and Roper, 2010); hazel dormouse *Muscardinus avellanarius* (English Nature, 2006); otter *Lutra lutra* (Chanin, 2003); water vole *Arvicola amphibus* (Dean et al, 2016) and invertebrates (Drake et al, 2007 and Kirby, P, 2001).

2.6. NOTES AND LIMITATIONS

2.6.1. Every effort has been made to provide a comprehensive description of the Site; however, the following specific limitations apply to this assessment:

- Ecological survey data is typically valid for two years unless otherwise specified, for example if conditions are likely to change more quickly due to ecological processes or anticipated changes in management.
- Records held by local biological record centres and local recording groups are generally collected on a voluntary basis; therefore, the absence of records does not demonstrate the absence of species, it may simply indicate a gap in recording coverage.
- The surveys were not completed during the optimal survey season for habitat survey, generally accepted to be from April-September (inclusive). Botanical surveys are seasonally limited, and throughout the spring and summer period certain species will be more or less evident at different times (i.e., depending on the flowering season). However, it is considered that sufficient information was gathered to enable an assessment of the habitat types present, in line with standard UKHab habitat categories and the potential for these to support protected or notable species.
- It should be noted that many species of INNS are difficult to detect during February and March, and an exhaustive survey was beyond the scope of this assessment. INNS may therefore be present, but undetected.
- The habitat survey was carried out over the period of a single day at the Site; as such only a selection of all species that occur within the Site will have been recorded. However, through use of desk study information to supplement site survey data, it is considered that an accurate assessment of the potential for the Site to support protected species or those of conservation concern was possible.
- The UKHab habitat map (Figure 4) has been reproduced from field notes and plans. Whilst this provides a sufficient level of detail to fulfil the requirements of a PEA, the maps are not intended to provide exact locations of key habitats.

3. RESULTS

3.1. DESIGNATED SITES

STATUTORY SITES

3.1.1. The desk study identified two statutory designated sites of international importance within 2 km of the centroid used for the desk study, or designated SACs for which bats are a reason for designation within 30 km of the centroid used for the desk study. No statutory designated sites of national importance within 2 km of the centroid used for the desk study were identified. A description of the sites is detailed in Table 2 below and shown in Figure 2.

Table 2 - Statutory designated sites of international importance

Site Name	Designation	Size (ha)	Approximate distance and orientation from Site 12	Description
Limestone Coast of South West Wales/Arfordir Calchfaen de Orllewin Cymru	SAC	1583.86	20.0 km south-west	Hard calcareous cliffs with a sequence of important species-rich plant communities. Sand dunes with extensive stands of short, species-rich fixed dune grassland. Primarily selected as an SAC due to the presence of greater horseshoe bat *Rhinilophus ferrumequinum* and early gentian *Gentianella anglica.*
Pembrokeshire Bat Sites and Bosherston Lakes/Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherston	SAC	121.26	20.3 km south-west	A shallow marl lake system created by the damming of a limestone river valley. The lakes are isolated from the sea by a small sand dune ridge. Selected primarily due to the presence of greater horseshoe bat, with lesser horseshoe bat *Rhinolophus hipposideros* and otter *Lutra lutra* as qualifying features.

NON-STATUTORY SITES

3.1.2. The desk study identified one non-statutory nature conservation site within 2 km of the centroid used for the desk study. A description of this site is detailed in Table 3 below and shown in Figure 3.

Table 3 - Non-statutory designated sites

Site Name	Designation	Size (m^2)	Approximate distance and orientation from Site 12	Description
B-Lines	B-Lines	7,082,941	0 m in all directions	B-Lines are locally important insect pollinator dispersal pathways between areas of existing wildflower-rich habitat.

OTHER HABITATS OF CONSERVATION IMPORTANCE

3.1.3. Site 12 returned records of 41 areas of ancient woodland, including semi-natural, restored, and Plantation on Ancient Woodland (PAWS) sites, shown in Figure 3. It is worth noting that PAWS are also NRW Priority Areas. The closest area of ancient woodland is 1.07 km north of the desk study centroid, and is a restored ancient woodland site.

3.1.4. The desk study also returned areas within the RLBs of the Site which may contain Priority Habitats under the provisions of Section 7 of the Environment (Wales) Act 2016. Two distinct areas of semi-improved neutral grassland were returned from the desk study within Site 12's RLB, which may be considered a Priority Habitat.

3.2. HABITAT SURVEY

OVERVIEW

3.2.1. The following account summarises the findings of the habitat surveys. The habitat types are mapped on Figure 4 and listed in Table 4 along with areas in ha (or length for linear features). A description of the dominant and notable species, the composition and management of each habitat is provided below and an indicative species list for the Site is provided in Appendix C. Target notes are provided in Appendix D and photographs in Appendix E. The order of the habitat descriptions below reflects their ordering in the UKHab habitat survey manual and does not reflect habitat importance.

3.2.2. Ten habitat types were identified in Site 12.

3.2.3. The majority of Site 12 comprised modified grassland, grazed by sheep and cattle. The fields present were separated by hedgerows and fences. There were small areas of fen, marsh and swamp and dense scrub present within the fields. To the south of the extent was a built-up area: a residential property and garden were bordered by a brick wall. In the south-eastern extent of the field an artificial unvegetated unsealed surface was present, caused by the ongoing construction of a residential estate here. A ditch was present to the east of this, which was also present running along the southern boundary of the Site before re-entering a field within Site 12 to the west.

Table 4 - UKHab habitat Areas of Site 12

UKHab Classification Types	Area (ha)	Length (m)	% of Site Area
F2 – Fen marsh and swamp	0.24	N/A	1.26
G4 – Modified grassland	18.03	N/A	93.67
H3 – Dense scrub	0.07	N/A	0.37
U1 – Built-up areas and gardens	0.34	N/A	1.76
U1b5 – Buildings	0.04	N/A	0.20
U1c – Artificial unvegetated unsealed surface	0.53	N/A	2.74

H2a – Hedgerow (priority habitat)	N/A	2650.64	N/A
R1e – Canals or ditch	N/A	605.66	N/A
U1e – Built linear features	N/A	3082.42	N/A
W1g6 – Line of trees	N/A	264.56	N/A
TOTAL	19.25	6603.27	100

F2 – Fen marsh and swamp

3.2.4. A single small area of fen marsh and swamp was present in the south-western extent of Site 12, adjacent to the field boundary and with a ditch running through it. Soft rush *Juncus effusus* was dominant, with occasional bramble *Rubus fructicosus agg.* and perennial rye-grass *Lolium perenne*. Other species were rare, including broad-leaved dock *Rumex obtusifolius*, dogwood *Cornus sp.*, marsh thistle, and hard rush *Juncus inflexus.*

G4 – Modified grassland

3.2.5. The majority of Site 12 comprised modified grassland, which covered over 93% of the Site (Photo 1). Perennial rye-grass dominated the species composition, with occasional broad-leaved dock, cleavers *Galium aparine*, clover *Trifolium sp.*, creeping bent *Agrostis stolonifera*, creeping buttercup *Ranunculus repens*, daisy *Bellis perennis* and dandelion *Taraxacum officinale agg.* All other species present were of rare abundance.

H3 – Dense scrub

3.2.6. A single strip of dense scrub was present along the western field boundary of the southern-most field in Site 12. Here, bramble dominated, with occasional stands of hawthorn *Cretaegus monogyna* and rare hazel *Corylus avellana* and ivy *Hedera helix*.

U1 – Built-up areas and gardens

3.2.7. The area in the southern extent of Site 12 was a residential garden. It was surrounded by a brick wall, and therefore it was not possible to determine the species composition.

U1b5 - Buildings

3.2.8. Three buildings were present within the residential area bordered by a brick wall. These appeared to comprise one residential building with two outbuildings. One of these buildings were assessed as having the potential for roosting bats.

U1c – Artificial unvegetated sealed surface

3.2.9. Towards the eastern extent of Site 12 existed an area currently undergoing construction works. A residential estate was under construction at the time of survey, and no plant species were observed to be present.

H2a – Hedgerow (priority habitat)

3.2.10. The majority of the Site 12 boundaries comprised hedgerow. These were a mix of hedgerows with trees and flailed hedgerows (Photo 2). Throughout all hedgerows, hawthorn was dominant. Beech

Fagus sylvatica, bramble, hazel, holly and oak *Quercus sp.* also made up the woody composition of the hedge, all with occasional or rare abundance. Ground flora comprised occasional ground ivy *Glechoma hederacea*, with rare dog's mercury *Mercurialis perennis*, although this was locally abundant in the field boundary at the north-western extent of the Site.

R1e – Canals or ditch

3.2.11. A ditch was present running east to west in the eastern extent of Site 12 at the field boundary, and in the south-western extent. Here, the ditch appeared to be heavily polluted, with run-off from the local construction works present (Photo 3). The ditches were in places heavily vegetated by abundant hemlock water-dropwort *Oenanthe crocata*, with occasional soft rush and rare stands of broad-leaved dock.

3.2.12. The ditch within the eastern extent of the Site had very shallow banks and a mud substrate, and had slow flowing water (TN3, Photo 6).

U1e – Built linear features

3.2.13. The southern extent of Site 12, as well as some fields in the eastern end of the Site, were bordered by wire fences with metal posts.

W1g6 – Line of trees

3.2.14. A line of trees existed along the northern field boundary of the southern-most field in Site 12. All trees within this line of trees were oak species.

3.3. PRELIMINARY GROUND LEVEL ROOST ASSESSMENT OF TREES AND BUILDINGS FOR BATS

3.3.1. Trees within the Site were only categorised as having potential for supporting roosting bats until a closer inspection could be undertaken which would enable further categorisation.

3.3.2. Buildings within the Site that were assessed as having bat roost suitability were considered to be of low, moderate, or high bat roost potential, in line with the descriptions in Table 5.

3.3.3. The numbers of trees and buildings that were considered to have bat roost suitability within the Site are shown in Table 5, with detailed descriptions of each of the trees and buildings which have bat roost potential in Appendix F.

Table 5 – The number of trees and buildings considered to have bat roost suitability within each Site

Number of trees with bat roost suitability	Number of buildings with bat roost suitability			Relevant Figure
8	1	Low	1	5
		Moderate	0	
		High	0	

3.3.4. All other trees and buildings within the Site were assessed as having negligible suitability for supporting roosting bats and are therefore excluded from Figures and are not considered further within this report.

3.4. PROTECTED AND NOTABLE SPECIES ASSESSMENT

3.4.1. The potential for the Site to support legally protected species and notable species has been assessed using the results of the desk study and observations made during the site survey of habitats within and immediately surrounding the Site. A summary of desk study information is included within Appendix B. Desk study records have only been considered below if they are recent (from the last 10 years) and/or if they relate to species that may be supported by habitats at the Site. Habitats present within the Site are suitable for the following species; further consideration is given below to the likelihood for these species to be present within the Site:

- Bats;
- Badger;
- Hedgehog *Erinaceus europaeus*;
- Water vole;
- Otter;
- Hazel dormouse;
- Birds;
- Reptiles;
- Amphibians;
- Invertebrates; and
- INNS.

3.4.2. The Site does not provide suitable habitat for other protected or notable species and other species, beyond those listed above, will not be considered further in this PEA.

BATS

3.4.3. The desk study for Site 12 identified seven records of at least six different bat species within 2 km of the desk study centroid: brown long-eared bat; common pipistrelle; greater horseshoe; noctule; and soprano pipistrelle. The closest of these were for brown long-eared, common pipistrelle, noctule and soprano pipistrelle, all of which were recorded 870 m west of the Site.

3.4.4. One building (B1) and eight trees (T1 to T8) were identified as providing suitable roosting habitat for bats (Appendix F, Photos 56 to 63).

3.4.5. The treelines, hedgerows and woodland within the Site all provide suitable foraging and commuting habitats.

BADGER

3.4.6. Five records of badger were returned from the desk study for Site 12, the closest of which was 785 m north-west of the desk study centroid.

3.4.7. A well-used mammal path was identified adjacent to a concrete pipe along the northern boundary of the Site, although no badger field signs were noted and it could not be determined which species created and used the mammal paths (TN2, Photo 5). Suitable badger sett building habitat was present within the woodland in the Site.

HEDGEHOG

3.4.8. Five records of hedgehog within 2 km of the Site were returned from the desk study, the closest of which was 285 m south-west of the centroid.

3.4.9. The Site provides suitable habitat for foraging and commuting hedgehog, in addition to suitable habitat for resting locations and nesting sites.

WATER VOLE

3.4.10. No records of water vole were returned during the desk study.

3.4.11. There was no suitable potential habitat for water vole within the Site, owing to the fact that the vegetation alongside the ditches present does not provide suitable resting or feeding areas. Similarly, there were no suitable burrowing places within the banks of any waterbodies present within the Site. Therefore, water vole are not considered further in this report.

OTTER

3.4.12. Three records of otter were returned from the desk study, the closest of which was 1.6 km north-west of the desk study centroid.

3.4.13. Potential habitat for otter was not present within the Site, owing to the fact that there is no suitable holt or natal den habitat recorded within the Site.

3.4.14. No evidence of otter was found during the habitat surveys. However, the Site has the potential to host commuting otter along the water bodies within the Site. This potential was considered to be very limited, with very low water levels in the ditches and low connectivity to larger rivers.

HAZEL DORMOUSE

3.4.15. No records of hazel dormouse were identified within 2 km of the desk study centroid.

3.4.16. Sub-optimal habitat for dormouse was present within the Site, owing to multiple hedgerows, some of which contain hazel which is a good food source for dormouse. However, there was limited connectivity to suitable habitat for dormouse; Although the soft estate of the A40 to the north of Site 12 would offer connectivity, the surrounding habitat south of the A40 is of limited suitability for dormouse, and the suitable patches of woodland to the north are isolated from Site 12 as the A40 creates a dispersal barrier.

BIRDS

3.4.17. The desk study returned 36 records of birds across 18 species from within 2 km of Site 12. Of these, four species were listed as Schedule 1 birds under the WCA: Eurasian hoopoe *Upupa epops*, fieldfare, kingfisher and red kite.

3.4.18. Although no nests were noted during the habitat survey, snipe, jackdaw *Corvus monedula*, magpie, lesser black-backed gull, reed bunting *Emberiza schoeniclus*, robin, long-tailed tit *Aegithalos caudatus*, blackbird *Turdus merula*, wren, blue tit, great tit, goldcrest *Regulus regulus*, wood pigeon and pied wagtail *Motacilla alba* were observed. Rooks exhibiting nest building behaviour were also observed within Site. There was not considered to be nesting suitability for Schedule 1 birds within the Site.

REPTILES

3.4.19. The desk study returned no records of reptiles within 2 km of Site 12.

3.4.20. The majority of the Site comprised suboptimal habitat for supporting reptiles as modified grassland, although scrub, hedgerows and woodland provided optimal habitat. Three potential hibernacula were identified on Site: a pile of brash and cut planks was present in the south-west extent of the Site adjacent to a field boundary (TN1, Photo 4); a pile of large logs and broken rubble was within an area of modified grassland that degrades into scattered scrub in a fenced area to the east of the westernmost field within the Site (TN4, Photo 7); and a relatively new log pile was observed in the southern extent of the Site adjacent to residential gardens (TN5).

AMPHIBIANS

3.4.21. The desk study returned records of common frog and common toad within 2 km of the desk study centroid, the closest of which was 1.2 km north-east of Site 12.

3.4.22. A search for waterbodies within 500 m which may provide breeding habitat identified that, although a network of ditches exists, these have flowing water and so are unsuitable for breeding GCN. Two waterbodies were identified which hold standing water and therefore may be suitable breeding habitat for GCN. However, both of these waterbodies are located within Zone C of the GCN HSI and are therefore considered unsuitable for GCN (French *et al.*, 2014).

3.4.23. Suitable terrestrial habitat for common amphibians was present within the Site, in particular within the scrub and treelines on field boundaries and to the south-west of the Site. The watercourses provide suitable habitat for common and widespread amphibians, and the previously identified hibernacula (TN1, TN4 and TN5) would be suitable for amphibians.

INVERTEBRATES

3.4.24. One record of an invertebrate was returned from the desk study: a common carder bee *Bombus pascuorum* 2.1 km to the south-west of the desk study centroid.

3.4.25. Areas of hedgerow, scrub, trees and modified grassland present across the Site were considered suitable to support mainly common invertebrate species due to the common and widespread nature of the habitats present.

INVASIVE NON-NATIVE PLANT SPECIES

3.4.26. Eight species of INNS were returned from the desk study for Site 12: a species of cotoneaster *Cotoneaster sp.*; curly waterweed *Lagarosiphon major*; Indian balsam *Impatiens glandulifera*; Japanese knotweed *Fallopia japonica*; montbretia *Crocosmia x crocosmiiflora*; rhododendron *Rhododendron ponticum*; three-cornered leek *Allium triquetrum*; and variegated yellow archangel *Lamiastrum galeobdolon subsp. argentatum*.

3.4.27. No INNS were identified during the habitat survey.

4. DISCUSSION AND RECOMMENDATIONS

4.1.1. This section considers the potential for effects on designated sites, legally protected species, notable species and notable habitats as a consequence of the Proposed Development. Where further surveys or detailed assessment of potential effects are required in order to design suitable mitigation this is identified.

4.2. STATUTORY DESIGNATED SITES

4.2.1. The Habitats Regulations provide strict protection to sites of international importance. This includes requiring projects or plans to be screened for Likely Significant Effects (LSE) upon SPA, SAC and candidate SACs (cSACs). Guidance also requires potential SPAs (pSPAs) and Ramsars are subject to the same assessment.

4.2.2. The sites of international importance identified in Table 2 are designated for various qualifying features.

4.2.3. The site of international importance designated for bats that is closest to Site 12 is The Limestone Coast of South West Wales/Arfor dir Calchfaen de Orllewin Cymru SAC, 2.0 km south-west of the desk study centroid. Bats are a mobile species, and have Core Sustenance Zones (CSZs), within which a bat roost is significantly influenced by habitat availability and quality. The CSZ is considered to be 3 km for greater horseshoe bats, although Billington and Rawlinson (2006) found that individuals forage up to 10.2 km from the roost. Bontadina *et al.*, (2006) found that lesser horseshoe bats normally forage within 2.5 km of their roosts. Therefore, as the distance between the Site and SACs is further than the CSZ for these species, individual bats that roost within this SAC are unlikely to be impacted by the Proposed Development, and further recommendations relating to these are not required.

4.2.4. Therefore, the Proposed Development is not required to be screened by the competent authority (Local Planning Authority) to determine whether significant effects are likely to result if Site 12 is selected for the Proposed Development, in relation to the relevant sites of international importance.

4.2.5. SSSIs are subject to strict protection under the WCA. This requires landowners to maintain these sites in favourable condition and works within these sites are managed by the appropriate national statutory body via the consent process. Certain operations within SSSIs require consent; these are specific to each SSSI.

4.2.6. There were no SSSIs identified within 2 km of Site 12, and no pathways of likely impacts identified.

4.3. NON-STATUTORY DESIGNATED SITES

4.3.1. There was one non-statutory designated site within 2 km of the Site Boundary for Site 12: a B-Line which incorporates the Site. Mitigation measures to protect against negative impacts on the B-Line and associated species is discussed within Sections 5.6 and 5.7.

4.3.2. Given the presence of this Site within B-Lines, the Proposed Development should aim to deliver features which would contribute to the aims of B-Lines, incorporating potential design features as described by Buglife (Buglife, 2019).

4.4. HABITATS

4.4.1. Within Site 12 there were three habitats that are listed as Priority Habitats under the provision of the Environment Wales Act (2016). These Priority Habitats are shown in Table 6.

Table 6 – Priority Habitats within the Site

Priority Habitats	Habitats
Lowland meadows	Neutral grassland
Hedgerows	Boundary and linear features
Rivers and streams	Rivers

4.4.2. Although areas of fen, marsh and swamp were identified in Site 12, these were not considered to be listed as Priority Habitats under lowland fens as they were considered to be species poor; the areas were dominated by soft rush which is indicative of improvement.

4.4.3. Mitigation measures for loss of these habitats are proposed in Section 5.6. Written consent will be required from the Local Planning Authority to remove or destroy Priority Habitats within the Site.

4.4.4. All other habitats identified during the habitat survey are considered to be of low ecological value but when considered together could offer greater value for biodiversity. Impacts upon these habitats arising from the Proposed Development are therefore unlikely to lead to significant detrimental effects on biodiversity.

4.4.5. At present, there are no biodiversity metrics specific to Wales for delivering a measurable net benefit for biodiversity in line with Section 6 (Biodiversity and Resilience of Ecosystems) Duty of the Environment (Wales) Act 2016. Therefore, it is recommended that currently available Biodiversity Net Gain (BNG) resources, specifically the Biodiversity Metric 3.0 as released by Natural England (Panks et al., 2021), are utilised in order to ensure that a measurable net benefit for biodiversity is achieved in line with current guidance (CIEEM, CIRIA, IEMA, 2016; see Section 5.6).

4.5. PROTECTED AND NOTABLE SPECIES

4.5.1. The results of the desk study, habitat survey and protected species assessment highlighted the potential presence of several protected species or species of conservation concern within the Site, or within the immediate surroundings of the Site. These include bats, badger, hedgehog, otter, hazel dormouse, birds, reptiles, and amphibians. The legal protection afforded to these species is outlined below and, where appropriate, the requirement for further survey and/or mitigation measures is identified.

BATS

4.5.2. All species of bats recorded within the UK are protected from killing, injury and disturbance[6] and their roosts protected from damage or destruction under the Habitats Regulations. Protection is also afforded under the WCA with respect to disturbance of individuals occupying places of rest or shelter and obstruction of access to these. Activities that would otherwise constitute an offence under this legislation may be licensed by NRW for certain purposes.

4.5.3. Certain species of bats, including the Bechstein's bat *Myotis bechsteinii*, greater horseshoe, lesser horseshoe *Rhinolophus hipposideros*, noctule bat, brown long eared bat and soprano pipistrelle bat are also listed as Priority Species in accordance with Section 7 of the Environment (Wales) Act 2016. Public bodies have an obligation to have regard for these species when carrying out their functions.

4.5.4. Where possible trees will be retained and protected during works. However, the Proposed Development could result in the disturbance or destruction of bat roosts if affecting trees or buildings with suitable roosting features and commuting/foraging habitats such as tree lines and hedgerows.

4.5.5. Therefore, further surveys are recommended to assess presence or likely absence of bats within the trees and buildings within the Site. Activity surveys are also recommended to enable the identification of bat species using the Site and determine levels of activity. Details of survey requirements are provided in Section 4.6.

BADGER

4.5.6. The Protection of Badgers Act 1992 makes it illegal to wilfully kill, injure or take any badger, or attempt to do so. It also makes it an offence to intentionally or recklessly damage, destroy or obstruct access to any part of a badger sett. Activities that would otherwise constitute an offence under this legislation may be licensed by NRW for certain purposes.

4.5.7. It is recommended that a pre-works check at the Site no more than two weeks prior to any works should be carried out with an ecologist present to identify any newly excavated badger setts. If appropriate, the construction works should avoid any potential badger setts through the use of exclusion zones. If disturbance to/destruction of setts cannot be avoided, then they must be excluded and closed under licence and subject to seasonal constraints. In this instance further surveys, namely the installation of camera traps, would be required to characterise the setts on Site and, where access is possible, in the wider area. The requirement for the pre-construction check would be detailed in a Construction Environment Management Plan (CEMP).

4.5.8. Mitigation measures to avoid effects on badgers are described in Section 4.6.

HEDGEHOG

4.5.9. The hedgehog is listed on Schedule 6 of the WCA which makes it illegal to kill or capture wild hedgehogs and is listed under the Wild Mammals Protection Act (1996), which prohibits cruel

[6] Disturbance is defined within the Habitats Regulations as that which is likely to impair a species ability to survive, breed or reproduce, hibernate or migrate or to significantly affect the local distribution or abundance of the species.

treatment of hedgehogs. The species is also listed as a Priority Species in accordance with Section 7 of the Environment (Wales) Act 2016. Public bodies have an obligation under Section 7 to have regard for these species when carrying out their functions.

4.5.10. It is likely that hedgehogs are present and use the Site to forage and commute. Therefore, there may be a negative impact on hedgehog as a result of the Proposed Development, particularly during Site clearance works and through loss of foraging habitat/resting places. Mitigation measures to avoid effects on hedgehogs are described in Section 4.6.

4.5.11. It is recommended that an Ecological Clerk of Works (ECoW) conducts a check of suitable terrestrial habitat at the Site prior to the commencement of vegetation clearance, which should be conducted outside of the hibernation season if possible. An Ecological Management Plan (EcMP) should be implemented throughout the construction to safeguard specific mitigation measures.

HAZEL DORMOUSE

4.5.12. Hazel dormouse is protected from killing, injury and disturbance[7] and their places of rest or shelter (occupied habitat) protected from damage or destruction under the Habitats Regulations. Protection is also afforded under the WCA with respect to disturbance of individuals occupying places of rest or shelter and obstruction of access to these. Activities that would otherwise constitute an offence under this legislation may be licensed by NRW for certain purposes.

4.5.13. Hazel dormice are also listed as a Priority Species in accordance with Section 7 of the Environment (Wales) Act 2016. Public bodies have an obligation to have regard for these species when carrying out their functions.

4.5.14. At Site 12, given the absence of hazel, small amount of scrub to be removed, regular management of the hedgerows on Site, and limited connectivity to suitable habitat, it is recommended that a pre-works check for dormouse should be carried out with an ecologist present to identify any dormouse nests. In the event that hazel dormouse nests or individuals are identified, a licence will be required by NRW for works to proceed lawfully and works may need to be delayed. If appropriate, the construction works should avoid any nests through the use of exclusion zones. The requirement for the pre-construction check would be detailed in a CEMP.

OTTER

4.5.15. The otter is protected from killing, injury and disturbance[8] and its place of rest or shelter (holt) is protected from damage or destruction under the Habitats Regulations. Protection is also afforded under the WCA with respect to disturbance of individuals occupying places of rest or shelter and obstruction of access to these. Activities that would otherwise constitute an offence under this legislation may be licensed by NRW for certain purposes.

[7] Disturbance is defined within the Habitats Regulations as that which is likely to impair a species ability to survive, breed or reproduce, hibernate or migrate or to significantly affect the local distribution or abundance of the species.

[8] Disturbance is defined within the Habitats Regulations as that which is likely to impair a species ability to survive, breed or reproduce, hibernate or migrate or to significantly affect the local distribution or abundance of the species.

4.5.16. Otters are also listed as a Priority Species in accordance with Section 7 of the Environment (Wales) Act 2016. Public bodies have an obligation to have regard for these species when carrying out their functions.

4.5.17. There is no suitable habitat for sheltering or resting otters or for otter holts within Site 12 and therefore further surveys are not recommended, although practical methods put in place during both construction and post-construction as detailed in Sections 4.6 and 4.7 will minimise disturbance.

BIRDS

4.5.18. The Habitat Regulations 2017 Part 1 Regulation 10(2) & (3) state that local authorities '*must take such steps in the exercise of their functions as they consider appropriate to contribute to…the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the UK including by means of the upkeep, management and creation of such habitat…*'. The legislation continues to state that economic and recreation requirements must be taken into consideration in considering which measures are appropriate.

4.5.19. Under the WCA all wild birds are protected from killing and injury, and their nests and eggs protected from taking, damage and destruction whilst in use. Additional protection is extended to species listed under Schedule 1 of the Act, meaning it is also an offence to disturb these species at or near the nest, or whilst they have dependent young.

4.5.20. the Site contained a range of habitats with suitability to support common and widespread breeding birds. Mitigation measures to avoid effects on birds are described in Section 4.6 below.

4.5.21. Vegetation clearance should be avoided during the breeding bird season, considered to be March to September inclusive. If works must occur within the breeding bird season, then all vegetation must be hand-searched by a suitably qualified ecologist immediately prior to removal.

REPTILES

4.5.22. Native widespread reptile species (common or viviparous lizard *Zootica vivipara*, adder *Vipera berus*, grass snake *Natrix natrix* and slow worm *Anguis fragilis*) are partially protected under Schedule 5 of the WCA. This includes protection from killing and injury.

4.5.23. All reptile species are also listed as a Priority Species in accordance with Section 7 of the Environment (Wales) Act 2016. Public bodies have an obligation to have regard for these species when carrying out their functions.

4.5.24. Although the habitat of widespread reptile species is not directly protected by law, habitat removal or alteration has potential to cause death or injury to individual reptiles. This should be avoided to ensure legal compliance. A limited amount of optimal habitat for supporting reptiles is located within the Site, with modified grassland and non-cereal crops forming suboptimal habitat. Mitigation measures to avoid impacts on reptiles are included in Section 4.6 below.

4.5.25. Due to the small area of good quality habitat that is to be cleared, work can proceed under a Precautionary Method of Works (PMoW) and ECoW. Hibernacula present at Site 12 are not to be removed during the hibernation season (generally considered to be October to March).

AMPHIBIANS

4.5.26. Common toad is listed as a Priority Species in accordance with Section 7 of the Environment (Wales) Act 2016. Public bodies have an obligation to have regard for this species when carrying out their functions.

4.5.27. Therefore, due to the suitable terrestrial habitat for common amphibians within the Site, work should proceed under a PMoW and ECoW.

INVERTEBRATES

4.5.28. Common and widespread habitats within the Site (grassland, hedgerows and scrub) were considered suitable to support mainly common invertebrate species. The presence of B-Lines incorporating the Site also highlights its suitability to support invertebrate species. Targeted presence/likely absence surveys are not considered necessary, however enhancement measures to ensure the Site remains suitable for invertebrates are included in Section 4.6.

4.5.29. Habitat creation should be managed accordingly for invertebrate activity, with pollen and nectar flower mixes favoured and rotational cutting of grasslands. Specific mitigation measures will require safeguarding by the implementation of an EcMP throughout the construction of the Proposed Development.

INVASIVE NON-NATIVE PLANT SPECIES

4.5.30. Certain plants are listed on Schedule 9 of the WCA. It is an offence to plant or otherwise cause these species to grow in the wild. No species of INNS were identified within Site 12 during the habitat survey, and therefore INNS are not considered further in this report.

4.6. FURTHER SURVEY REQUIREMENTS

4.6.1. Potential ecological constraints for which further surveys are required to ensure legal and planning policy compliance are listed in Section 4.6.

Table 7 - Key Ecological Constraints and Further Survey Requirements

Ecological Receptor	Potential Constraints	Further Survey Requirements	Seasonal Constraints
Non-Statutory Designated Sites	The B-Line non-statutory designated site in which Site 12 lies may be impacted by direct loss of habitat.	As it is considered likely that invertebrates present are common and widespread, and the B-Lines are potential pathways between established wild-flower rich habitats, further surveys are not considered to be necessary for terrestrial invertebrates at this Site. Grassland and hedgerows should be replaced with a higher ecological value (i.e., species-rich instead of species-poor) with replacement habitat within the Site to support the Proposed Development achieving a net benefit for biodiversity.	N/A
Priority Habitats	Loss of Priority Habitats habitat – Lowland meadows, hedgerows, and rivers and streams	It is recommended that currently available BNG resources (the Biodiversity Metric 3.0 (Panks et al., 2021) and current guidance (CIEEM, CIRIA, IEMA, 2016)) are utilised in order to ensure that a measurable net benefit for biodiversity is achieved and to comply with PPW (2021) and Environment (Wales) Act 2016. Retain and protect habitats where possible. Reinstate/replace habitats after completion of works to a higher ecological value. A CEMP will include specifying details on any sensitive habitats on Site and how they will be protected. Incorporation of hedgerow creation into the Proposed Development with native species of local provenance. BNG assessment (if undertaken) should be factored into the replacement planting. Priority Habitats loss to be replaced on a 2:1 ratio where possible, with a minimum ratio of 1:1.	N/A
Light sensitive species including bats and otter	Potential lighting of habitats of high value to nocturnal species	Bat emergence/re-entry and activity surveys as detailed below. These would inform the design of sensitive/UV lighting during construction and operation of the Proposed Development. The lighting design will be detailed in a CEMP.	Seasonal constraints on bat emergence/re-entry and activity surveys as detailed below.

Ecological Receptor	Potential Constraints	Further Survey Requirements	Seasonal Constraints
		Lighting used for construction must be switched-off when not in use and positioned so as not to spill on to adjacent land or retained vegetation within the Site.	
Bats	Demolition of buildings and clearance of trees, resulting in the loss of roosts. Loss of potential commuting and foraging habitat	Presence/Absence Surveys: Emergence/re-entry surveys on buildings with suitability to support roosting bats. In accordance with best practice guidelines, one emergence/re-entry survey required on the building which had low bat roost potential. Detailed close inspection via aerial tree climbing where necessary for the trees identified with suitability to support roosting bats (x1 survey for low suitability, x2 surveys for moderate suitability and x3 surveys for high suitability/confirmed roosts in accordance with good practice guidelines). If detailed close inspections of trees are not possible, the equivalent number of emergence/re-entry surveys will be completed. Note that trees with low suitability to support roosting bats should be subject to a precautionary pre-felling check by a bat licenced ecologist only. If confirmed roosts are to be damaged/destroyed during the Proposed Development, further surveys may be required and a licence from NRW will need to be obtained to allow the work to proceed lawfully. Bat activity surveys to enable identification of species using the Site and an index of bat activity should be undertaken at the Site. These will be achieved by using static bat detectors positioned within the habitat and serviced monthly between April and October.	Presence/Absence Surveys: May – September inclusive, with at least one survey to be completed May – August. Survey visits to be spread equally across the season where possible, or a minimum of two weeks apart. Bat Activity Surveys: Bat activity and static detector surveys are required to be undertaken once a month during the period April to October.
Badger	Disturbance and/or destruction of badger setts through habitat	A pre-works check for badger is recommended due to the ability of badger to create new setts in a short space of time (a minimum of two weeks in advance of works).	Further badger surveys can be undertaken at any time of year.

Ecological Receptor	Potential Constraints	Further Survey Requirements	Seasonal Constraints
	clearance and construction works	Avoidance of potential and identified setts by setting up exclusion zones. If disturbance to/destruction of setts cannot be avoided, then they must be excluded and closed under licence. In this instance further surveys would be required to characterise the setts on Site and where access is possible, in the wider area.	Licences to exclude and close setts are only issued between 1 July and 30 November.
Hedgehog	Killing/injury of hedgehog through vegetation clearance/construction works.	Clearance of suitable terrestrial habitat should be checked in advance by a suitably qualified ecologist to minimise the risk of disturbance and injury/killing. Avoidance of vegetation clearance during the hibernation season, if possible. Specific mitigation measures will require safeguarding by the implementation of an EcMP throughout the construction of the Proposed Development	N/A
Hazel dormouse	Potential destruction of nests and habitat through vegetation clearance	Scrub habitat and hedgerow removal is likely to result to enable the Proposed Development. However, limited scrub and hedgerow which is suitable for dormouse will be required at this Site. Therefore, it is considered that works can proceed under a PMoW and with an ECoW present to undertake a pre-works check prior to vegetation clearance. Clearance of suitable terrestrial habitat should be checked in advance by a suitably qualified ecologist to minimise the risk of disturbance and injury/killing. Avoidance of vegetation clearance during the hibernation season, if possible. Specific mitigation measures will require safeguarding by the implementation of an EcMP throughout the construction of the Proposed Development. In the event that dormouse nests or individuals are identified, a licence will be required by NRW for works to proceed lawfully and works may need to be delayed.	The PMoW will detail any seasonal constraints with regards to removal of scrub habitat and scrubbing out of tree stumps.

Ecological Receptor	Potential Constraints	Further Survey Requirements	Seasonal Constraints
Birds	Loss or disturbance of potential breeding, commuting and foraging bird habitat. Destruction of nests through vegetation clearance.	Avoidance of vegetation clearance during the breeding bird season. If works must occur within the breeding bird season, then all vegetation must be hand-searched by a suitably qualified ecologist immediately prior to removal. If an active nest is discovered, an appropriate exclusion zone of a minimum 5 m must be set up and no works are to occur within it until nestlings have fledged.	The breeding bird season is considered to be March to September inclusive.
Reptiles/Amphibians	Killing/injury of reptiles/amphibians through vegetation clearance/construction works	Due to the small area of good quality habitat that is to be cleared, work can proceed under a PMoW and ECoW. Maintain vegetation within the construction footprint at a low height during the active reptile season. No hibernacula are to be removed during the hibernation season.	The reptile active season is considered to be from late March to September inclusive.

4.7. PRELIMINARY AVOIDANCE, MITIGATION AND COMPENSATION MEASURES

4.7.1. To enable compliance with relevant legislation and planning policy, as described above within Sections 4.2 to 4.5 the following avoidance, mitigation and compensation measures should be designed into the Proposed Development. These will be refined following completion of further survey recommended in Table 7 above.

- Prior to any vegetation clearance and construction work being undertaken, a detailed check for INNS should be conducted. This should be completed at a suitable time of the year when the plants are actively growing (i.e., April – September). Measures to control the spread of INNS should be detailed in a Method Statement (MS), as required.
- It is recommended that the smallest construction footprint possible is achieved through sensitive scheme design, with important habitats retained as far as possible. Any loss of Priority Habitats should be replaced at a ratio of 2:1 where possible, and no less than 1:1.
- Vegetation clearance should be carried out under a PMoW with an ECoW present. Information to prevent impacts on the protected species discussed in this report should be documented in a PMoW document.
- Vegetation clearance should be carried out outside of the breeding bird season (March-September). Should this not be possible, it will be necessary for an ecological check for the presence of breeding birds. If an active nest is found, clearance will need to stop and a suitably sized buffer of retained vegetation, as determined by the onsite ecologist, will be required until the young have fledged.
- Should badger setts be recorded in proximity to the Site, exclusion zones should be set up to avoid damaging setts and ensure disturbance is minimised. If impacts on a badger sett cannot be avoided and it must unavoidably be lost, the badger sett would need to be closed under licence from NRW. Depending on the type of sett present; an artificial sett may need to be created to compensate for the loss of the sett.
- Grassland and hedgerows should be replaced with a higher ecological value (i.e., species-rich instead of species-poor) replacement habitat within the Site to support the Proposed Development achieving a net benefit for biodiversity. If reinstatement or habitat creation cannot be achieved within the Site, compensatory habitat creation should be sought off-Site.
- An assessment of habitats within and surrounding the Site will inform the identification of habitats of value to nocturnal species, thereby allowing for the implementation of sensitive lighting during construction and operation of the Proposed Development.

ENVIRONMENTAL BEST PRACTICE

4.7.2. In addition, general environmental protection measures must be implemented during the construction phase of the Proposed Development. Such measures include best environmental practice guidance outlined in the NRW Guidance for Pollution Prevention (Natural Resources Wales, 2020) and those outlined by the Construction Industry Research and Information Association guidance (CIRIA, 2015). The following minimum standards must be adhered to prevent ecological impacts beyond the Site's RLB:

- Measures must be taken to prevent dust and other emissions from construction affecting land beyond the Site.

- Chemicals and fuels must be stored in secure containers located away from watercourses or water bodies. Spill kits must be available.
- Excavations must be covered or securely fenced (with no potential access points beneath fencing) when the Site is closed (e.g., overnight) to prevent entrapment of animals.
- Retained trees must be protected in accordance with BS5837;
- Noise and vibration must be controlled and kept to the minimum necessary.
- Lighting used for construction must be switched-off when not in use and positioned so as not to spill on to adjacent land or retained vegetation within the Site.

4.8. ECOLOGICAL ENHANCEMENT OPPORTUNITIES

4.8.1. The PPW (Edition 11, 2021) states '*By protecting and enhancing biodiversity, and our natural environment more generally, it will be possible to future proof economic assets in response to the challenges presented by climate change, to promote low carbon and appropriate resource choices which address the causes of climate change and to provide cost effective ecosystems services such as clean air and water.*'

4.8.2. At a local level, the Carmarthenshire Local Development Plan 2018-2033 states that '*the protection and enhancement of those natural and man-made elements that interact and contribute to the quality of Carmarthenshire's landscape, natural environment and biodiversity is a key issue for the Plan. Accordingly the potential impact of the plan and its policies and proposals upon the amenity value, nature conservation interest, water/soil/air quality, hydrology, geology and geomorphological regimes have informed the plan-making process... Development proposals which have an adverse and significant effect will be resisted.'*

4.8.3. To encourage compliance with planning policy the following measures are recommended for inclusion within the Proposed Development; where possible:

- Sensitive/low UV lighting during construction and operation so as to keep visual disturbance of bats and otters to a minimum. This will be informed following the results of the bat activity surveys and an assessment of habitats within and surrounding the Site;
- Planting of a variety of native species as part of landscaping to encourage invertebrates;
- Creation of additional hedgerows using native species of local provenance;
- Installation of bird and bat boxes in trees and integral within new buildings to provide additional refuge sites for these species' groups;
- The incorporation of wildflower areas to provide additional habitat (using plants/seeds of local provenance where possible);
- Invertebrate hotels and habitat piles to provide refuge for reptiles, amphibians and hedgehogs;
- Sustainable drainage systems (SuDS) must be incorporated into the design of the Proposed Development to reduce the effects of water runoff and provide ecological benefits. To facilitate this, ecological and landscape design input would be required in the design of SuDS features to ensure that the relevant standards are met and to ensure benefits for biodiversity are achieved;
- Good horticultural practice should be utilised, including the use of peat-free composts, mulches and soil conditioners and favouring native plants of local provenance in landscaping; and
- Avoidance of the use of INNS listed on Schedule 9 of the WCA in the planting.

5. CONCLUSIONS

5.1.1. Site 12 comprised mainly fields (majority modified grassland) bordered by wire fences and hedges, some on earth banks, with a network of ditches. The Site also had areas that were built-up, comprising buildings, sealed surfaces, or other developed land. Site 12 contained lines of trees and dense scrub. There were no areas of standing open water, although the Site did have an area where rushes dominate in fen.

5.1.2. Two statutory designated sites for which bats are a qualifying feature were identified within 35 km of the Site: Limestone Coast of South West Wales/Arfor dir Calchfaen de Orllewin Cymru SAC, and Pembrokeshire Bat Sites and Bosherston Lakes/Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherston SAC. The distance between the designated sites and Site 12 are larger than the CSZ for the bat species for which the sites are designated. Therefore, it can be assumed that the Proposed Development will not have a negative impact on the bat populations roosting within these SACs. No statutory nature conservation sites of international importance within 2 km of the centroids used for the desk studies were identified.

5.1.3. No statutory designated sites of national importance were identified within 2 km of Site 12.

5.1.4. One non-statutory designated site was identified within 2 km Site 12: B-Lines falls within the Site. The Proposed Development should aim to deliver features which would contribute to the aims of B-Lines, incorporating potential design features.

5.1.5. Further surveys are required to determine the presence/likely absence of bats at the Site, involving one emergence/re-entry surveys on buildings with low suitability to support roosting bats from May to September, and up to three close inspections of the trees with suitability to support roosting bats. Bat activity surveys should be undertaken using static bat detectors to enable identification of species using the Site and an index of bat activity should be undertaken at the Site. These will be achieved by using static bat detectors positioned within the habitat and serviced monthly between April and October.

5.1.6. Avoidance and/or precautionary methods of working to minimise negative impacts has also been recommended for: badger, hedgehog, hazel dormouse, breeding birds, reptiles, amphibians, and INNS. These measures will require safeguarding by the implementation of an EcMP comprising PMoWs and MSs during the construction phase, and a CEMP from the construction phase through to the operational phase of the Proposed Development.

5.1.7. A BNG assessment using currently available BNG resources, specifically the Biodiversity Metric 3.0 as released by Natural England (Panks et al., 2021), should be utilised in order to ensure that a measurable net benefit for biodiversity is achieved. This is in line with current guidance (CIEEM, CIRIA, IEMA, 2016) and will ensure the Proposed Development demonstrates a measurable net gain for biodiversity and aligns with PPW (2021).

5.1.8. Ecological enhancements are recommended, such as retention/creation of habitats e.g. species-diverse grassland to increase the value of the Site for biodiversity.

6. REFERENCES

- Amphibian and Reptile Groups of the United Kingdom (2010) ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index. ARG UK, UK
- BCT (2014b) Artificial Lighting and Wildlife – Interim Guidance: Recommendations to help minimise the impact of artificial lighting. BCT, London.
- Billington, G. and Rawlinson, M. D. 2006. A review of horseshoe bats flight lines and feeding areas. CCW Science Report No: 755, 23pp, CCW, Bangor.
- Bontadina, F., Schofield, H., and Naef-Daenzer, B. 2001. Radio-tracking reveals that lesser horseshoe bats (Rhinolophus hipposideros) forage in woodland. J. Zool, L., 250, 281-290.
- Buglife (2019). Potential design features which will contribute towards the development of the B-Lines. Available online: https://cdn.buglife.org.uk/2019/07/No2-Annex-1-local-authorities.pdf. [Accessed March 2022]
- Butcher, B., Carey, P., Edmonds, R., Norton, L. and Treewek, J. (2020). The UK Habitats Classification User Manual Version 1.1. Available: https://ukhab.org/
- Chanin P (2003). Monitoring the Otter Lutra lutra. Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough
- Chartered Institute of Ecology and Environmental Management (CIEEM) (2017a). Guidelines for Preliminary Ecological Appraisal. CIEEM, Winchester.
- CIEEM (2017b). Guidelines for Ecological Report Writing. CIEEM, Winchester.
- CIRIA (2015) Environmental good practice on site (fourth edition) (C741) Charles, P., Edwards, P (eds). CIRIA, London.
- Collins J. (ed.) (2016) Bat Surveys for Professional Ecologists, Good Practice Guidelines (3rd Edition). The Bat Conservation Trust, London.
- English Nature (2001). Great Crested Newt Mitigation Guidelines. English Nature, Peterborough.
- English Nature (2006). The Dormouse Conservation Handbook. 2nd Edition. Natural England. Peterborough
- Environment Agency (2014) Pollution Prevention Guidance. Available online: https://www.gov.uk/government/collections/pollution-prevention-guidance-ppg [accessed July 2014].
- French GCA, Wilkinson JW, Fletcher DH & Arnell AP. 2014. Quantifying the Status of Great Crested Newts in Wales. Report No. 31. 24 pp. Cyfoeth Naturiol Cymru Natural Resources Wales, Bangor.
- Gent, A. and Gibson, S. (2003). Herpetofauna Workers Manual. JNCC. Peterborough
- Highways Agency (1997) Design Manual for Roads and Bridges, Volume 10, Part 5, Mitigating against effects on badgers.
- HMSO (Her Majesty's Stationary Office) (1981). Wildlife and Countryside Act (as amended by the Countryside and Rights of Way Act 2000). HMSO, Norwich.
- HMSO (1992) The Badgers Act.
- HMSO (1996) The Wild Mammals (Protection) Act. HMSO, London.
- HMSO (2010). The Conservation of Habitats and Species Regulations 2017 (the Habitat Regulations)
- JNCC Biodiversity Reporting and Information Group (2008). UK Biodiversity Action Plan
- JNCC and DEFRA (2012) UK Post 2010 Biodiversity Framework. Available online: http://jncc.defar.gov.uk/page-6189. [Accessed July 2014].

- Natural Resources Wales (2020). Guidance to help you comply with your Environmental Permit. Retrieved 13 April 2022, from https://naturalresources.wales/permits-and-permissions/environmental-permits/guidance-to-help-you-comply-with-your-environmental-permit/?lang=en
- Oldham R.S., Keeble J., Swan M.J.S., and Jeffcote M. (2000) Evaluating the suitability of habitat for the great crested newt. Herpetological Journal 10: 143-155

FIGURES

Figure 1 - Site 12 Location Plan

Figure 2 - Statutory Designated Sites with 10 km of Site 12, or 30 km if bats is a qualifying feature

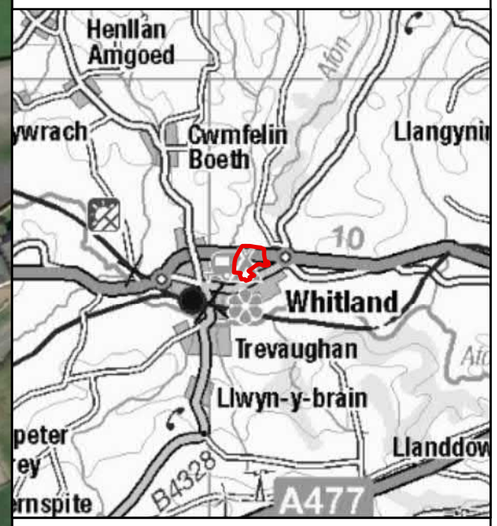
Figure 3 - Non-Statutory Designated Sites and Ancient Woodland Inventory Woodlands within 2 km of Site 12

Figure 4 – Site 12 UKHab Survey Map

Figure 5 – Site 12 Target Notes and Bat Ground Roost Assessment Results

Key

Red Line Boundary



wsp

Client:

HYWEL DDA UNIVERSITY HEALTH BOARD

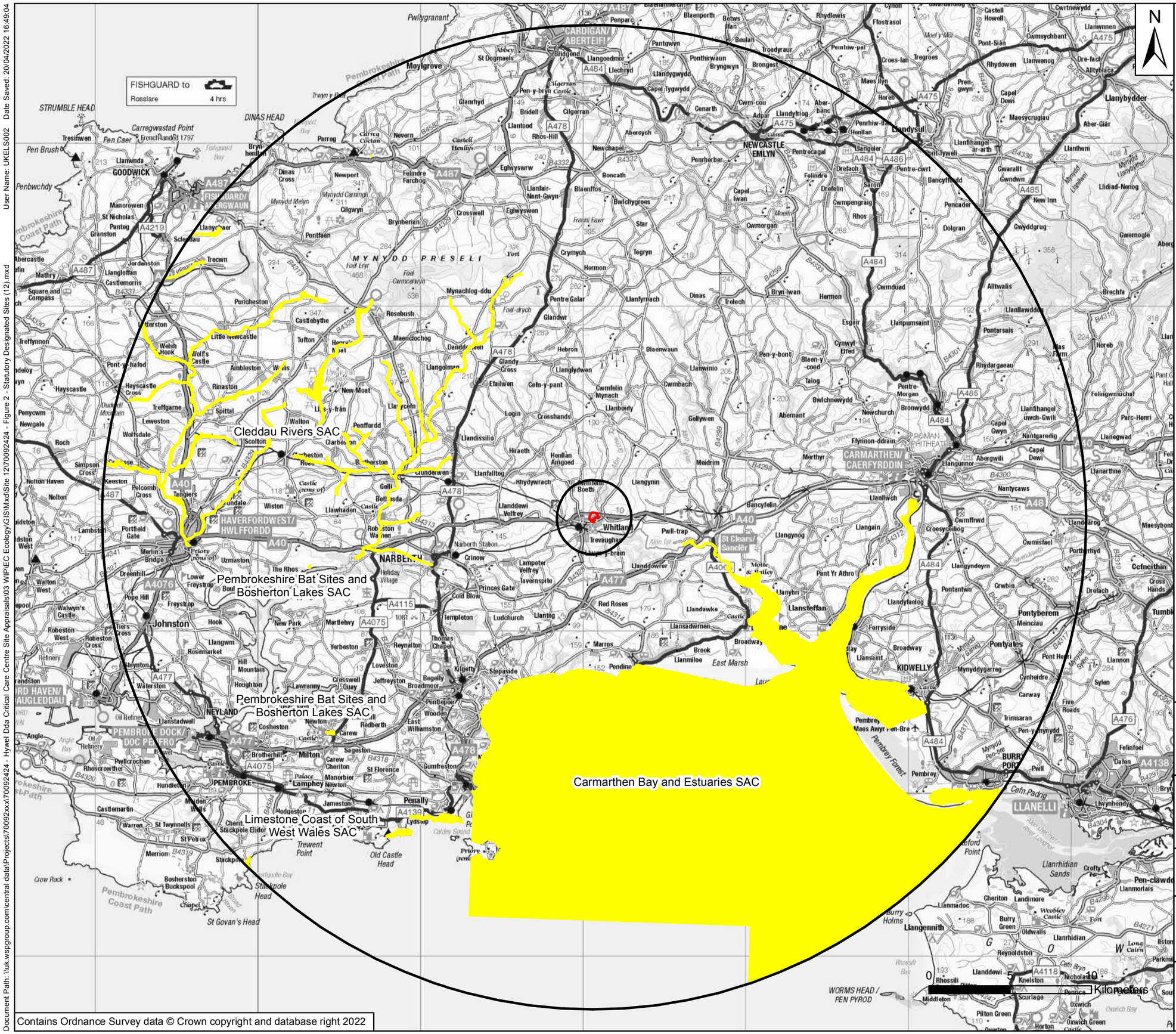
Project:

URGENT AND PLANNED CARE HOSPITAL - SITE 12
PRELIMINARY ECOLOGICAL APPRAISAL

Title

LOCATION PLAN

Drawing No:	FIGURE 1	Drawn:	ES
Date:	07/06/2022	Checked:	AD
Scale:	2,500 @ A3	Approved:	NB



Contains Ordnance Survey data © Crown copyright and database right 2022

Key

- Red Line Boundary
- 2km Buffer
- 30km Buffer
- Special Area of Conservation (SAC)

wsp

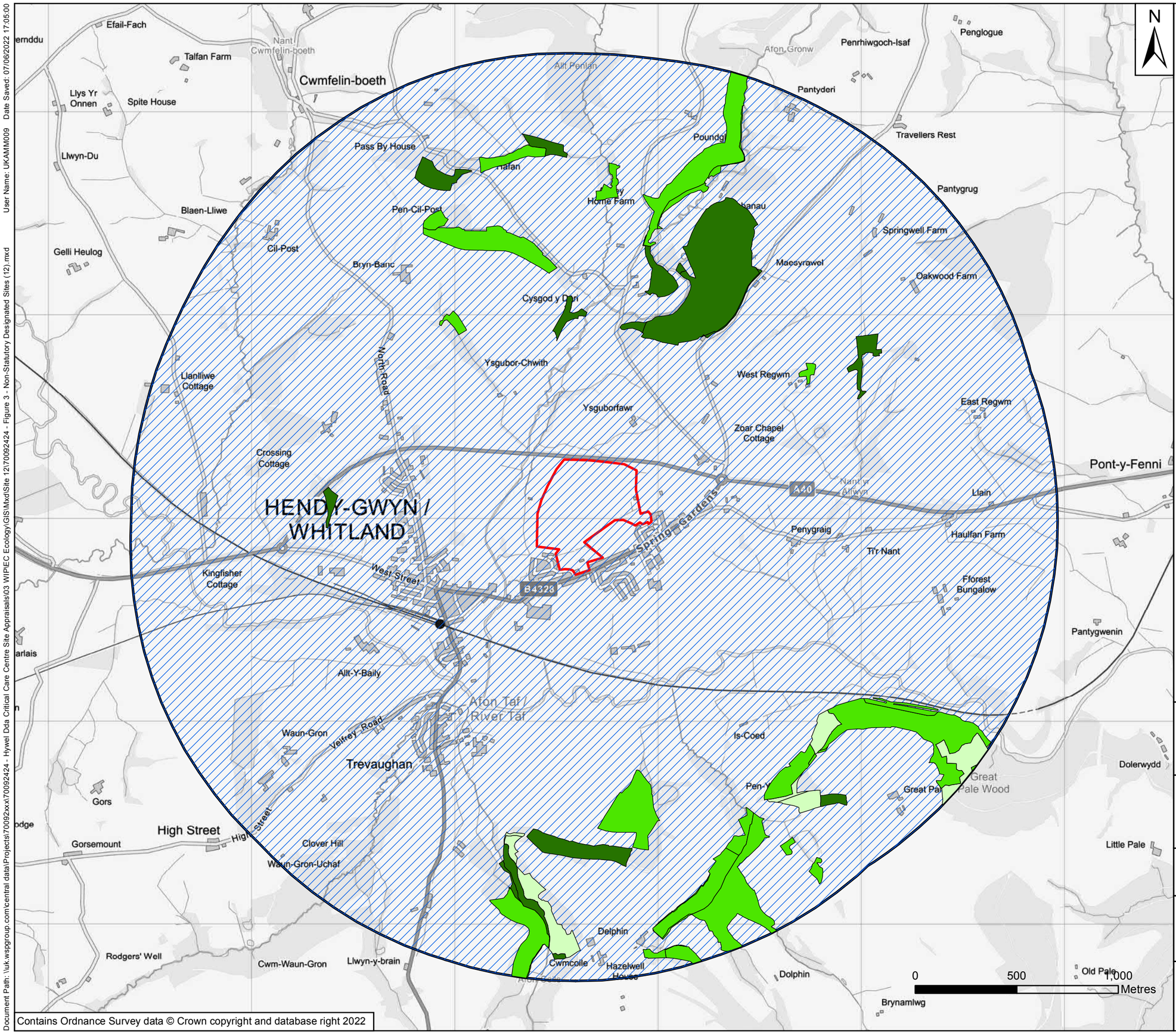
Client:
HYWEL DDA UNIVERSITY HEALTH BOARD

Project:
URGENT AND PLANNED CARE HOSPITAL - SITE 12
PRELIMINARY ECOLOGICAL APPRAISAL

Title
STATUTORY DESIGNATED SITES DESIGNATED FOR BATS WITHIN 10KM AND STATUTORY DESIGNATED SITES WITHIN 2KM

Drawing No: FIGURE 2
Date: 20/04/2022
Scale: 225,000 @ A3
Drawn: ES
Checked: AD
Approved: NB

Document Path: \\uk.wspgroup.com\central data\Projects\70092xxx\70092424 - Hywel Dda Critical Care Centre Site Appraisals\03 WIP\EC Ecology\GIS\Mxd\Site 12\70092424 - Figure 2 - Statutory Designated Sites (12).mxd User Name: UKELS002 Date Saved: 20/04/2022 16:49:04



Contains Ordnance Survey data © Crown copyright and database right 2022

Client:
HYWEL DDA UNIVERSITY HEALTH BOARD

Project:
URGENT AND PLANNED CARE HOSPITAL - SITE 12
PRELIMINARY ECOLOGICAL APPRAISAL

Title
NON-STATUTORY DESIGNATED SITES AND ANCIENT WOODLAND INVENTORY WOODLANDS WITHIN 2 KM

Drawing No:	FIGURE 3	Drawn:	ES
Date:	07/06/2022	Checked:	AD
Scale:	18,000 @ A3	Approved:	NB

Document Path: \\uk.wspgroup.com\central data\Projects\70092xxx\70092424 - Hywel Dda Critical Care Centre Site Appraisals\03 WIPEC Ecology\GIS\Mxd\Site 12\70092424 - Figure 3 - Non-Statutory Designated Sites (12).mxd User Name: UKAMM009 Date Saved: 07/06/2022 17:05:00

Key

UKHab

- f2 - fen,marsh and swamp
- g4 - modified grassland
- h3 - dense scrub
- u1 - built-up areas and gardens
- u1b5 - buildings
- u1c - artificial unvegetated unsealed surface
- u1e - built linear features
- w1g6 - line of trees
- h2a - hedgerow (priority habitat)
- r1e - canals or ditch

wsp

Client:
HYWEL DDA UNIVERSITY HEALTH BOARD

Project:
URGENT AND PLANNED CARE HOSPITAL - SITE 12
PRELIMINARY ECOLOGICAL APPRAISAL

Title
UK HAB SURVEY MAP

Drawing No:	FIGURE 4	Drawn:	ES
Date:	07/06/2022	Checked:	AD
Scale:	2,250 @ A3	Approved:	NB

Key

Red Line Boundary

Target Notes

Preliminary Bat Roost Assessment - Trees

Potential

Preliminary Bat Rosst Assessment - Buildings

Low

Client:

HYWEL DDA UNIVERSITY HEALTH BOARD

Project:

URGENT AND PLANNED CARE HOSPITAL - SITE 12
PRELIMINARY ECOLOGICAL APPRAISAL

Title

TARGET NOTES AND BAT GROUND ROOST ASSESSMENT RESULTS

Drawing No:	FIGURE 5	Drawn:	ES
Date:	07/06/2022	Checked:	AD
Scale:	2,250 @ A3	Approved:	NB

Appendix A

RELEVANT LEGISLATION AND PLANNING POLICY

ENGLAND & WALES LEGISLATION AND POLICY CONTEXT

This report has been compiled with reference to relevant wildlife legislation, planning policy and the UK Biodiversity Framework. An overview and context of relevant legislation is provided, with the relevant protection each species groups or species receives summarised in Table 1.

The Wildlife and Countryside Act 1981, (as amended) (WCA)

Protected birds, animals and plants are listed under Schedules 1, 5, 8 respectively of the WCA, while Schedule 9 lists non-native and/or invasive species the spread of which in the wild is prohibited by the WCA. A description of these Schedules and their meaning is provided below.

Under the WCA (England and Wales) all birds, their nests and eggs (with exception of species listed under Schedule 2) are protected by the WCA. It is an offence to:

- Intentionally kill, injure, or take any wild bird,
- Take or destroy an egg of any wild bird.
- Damage or destroy the nest of any wild bird (whilst being built, or in use). Under the WCA the clearance of vegetation within the survey area boundary, or immediately adjacent to the survey area during the bird nesting season could result in an offence occurring by the disruption or destruction of nest sites. The bird breeding season can be taken to occur between March - August inclusive, although is subject to variations based on species, geographical and seasonal factors.

Schedule 1

Birds listed under Schedule 1 of the WCA[9] are afforded additional protection with regard to intentional or reckless disturbance whilst nest-building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.

Schedule 5

Species listed in Schedule 5 can either be fully protected or be partially protected under Section 9, which makes it unlawful to intentionally:

- Part 1: kill, injure or take;
- Part 2: possess or control (live or dead animal, part or derivative);
- Part 4 (a): damage or destruct any structure used for shelter or protection;
- Part 4 (b): disturb them in a place of shelter or protection;
- Part 4 (c): obstruct access to place of shelter or protection;
- Part 5 (a): sell, offer for sale, possess or transport for the purpose of sale (live or dead animal, part or derivative);
- Part 5 (b): advertise for buying or selling.

Schedule 8

The Act makes it an offence (subject to exceptions) to pick, uproot, trade in, or possess (for the purposes of trade) any wild plant listed in Schedule 8, and prohibits the unauthorised intentional uprooting of such plants.

Schedule 9

Invasive species listed under Schedule 9 are prohibited from release into the wild and the Act prohibits planting or “causing to grow” in the wild of any plant species listed in Schedule 9. It should be noted that certain bird species listed on Schedule 1 of the WCA are also listed on Schedule 9 to prevent release of non-native and captive individuals, this includes barn owl, red kite, goshawk and corncrake.

Countryside Rights of Way Act 2000 (CRoW Act)

The CRoW Act has amended the WCA in England and Wales strengthening the protection afforded to Sites of Special Scientific Interest (SSSI) and the legal protection for threatened species. It adds the word ‘reckless’ to the wording of the offences listed under Section 9(4) of the WCA. This alteration makes it an offence to recklessly commit an offence, where previously an offence had to be intentional to result in a breach of legislation.

[9] To view the current list of Schedule 1 listed birds visit: http://www.legislation.gov.uk/ukpga/1981/69/schedule/1 [Accessed 03.22].

Natural Environment and Rural Communities (NERC) Act 2006

Species and Habitats of Principal Importance in England and Wales are listed under Section 41 and Section 42 respectively of the NERC Act. The Section 41 and 42 lists detail species that are of principal importance for the conservation of biodiversity in England and Wales, and should be used to guide decision-makers such as local and regional authorities when implementing their duty to have regard for the conservation of biodiversity in the exercise of their normal functions – as required under Section 40 of the NERC Act 2006.

The Environment (Wales) Act 2016

The Environment (Wales) Act 2016 (http://www.legislation.gov.uk/anaw/2016/3/contents/enacted) puts in place the legislation needed to plan and manage Wales' natural resources in a more proactive, sustainable and cohesive way. Section 7 replaces the duty in Section 42 of the NERC Act 2006 and it places a duty on the Welsh Ministers to publish, review and revise lists of living organisms and types of habitats which they consider are of key significance to sustain and improve biodiversity in Wales. The species and habitat lists are identical to those in Section 42 but it should be noted it is currently under review (23.03.2017).

The Protection of Badgers Act (1992)

It is an offence to wilfully take, kill, injure, possess or ill-treat a badger. Under the Act their setts are protected against intentional or reckless interference. Sett interference includes damaging or destroying a sett, obstructing access to any part of the sett, or disturbance of a badger whilst it is occupying a sett. The Act defines a badger sett as 'any structure or place, which displays signs indicating the current use by a badger' and Natural England (NE) takes this definition to include seasonally used setts that are not occupied but that show sign of recent use by badgers (Natural England, 2009[10]).

If impacts to badgers or their setts are unavoidable then authorised sett disturbance requires a licence.

The UK Post-2010 Biodiversity Framework (2011-2020) (JNCC and DEFRA, 2012)

This Framework lists the UK's most threatened species and habitats and sets out targets and objectives for their management and recovery. The UK Biodiversity Action Plan (BAP) process is delivered nationally, regionally and locally and should be used as a guide for decision-makers to have regards for the targets set by the framework and the goals they aim to achieve. The UK BAP has now been replaced by the UK Post-2010 Biodiversity Framework, however, it contains useful information on how to characterise important species assemblages and habitats which is still relevant (UK Post-2010 Biodiversity Framework, 2012[11]).

The Conservation of Habitats and Species Regulations 2017 (as amended)

The Conservation of Habitats and Species Regulations 2017 (as amended) consolidate the Conservation of Habitats and Species Regulations 2010 with subsequent amendments. The Regulations transpose Council Directive 92/43/EEC, on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive), into national law. They also transpose elements of the EU Wild Birds Directive in England and Wales. The Regulations came into force on 30th November 2017, and extend to England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters). In Scotland, the Habitats Directive is transposed through a combination of the Habitats Regulations 2010 (in relation to reserved matters) and the Conservation (Natural Habitats &c.) Regulations 1994. The Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) transpose the Habitats Directive in relation to Northern Ireland.

All species listed under Annex IV of the Habitats Directive require strict protection and are known as European Protected Species (EPS). Under Regulation 42 of the Habitats Regulations it is unlawful to:

- Deliberately kill, capture or disturb;
- Deliberately take or destroy the eggs of; and
- Damage or destroy the breeding site/resting place of any species protected under this legislation.

If the Ecologist determines that impacts to an EPS are unavoidable then the works may need to be carried out under a site specific mitigation licence from Natural England (NE) or Natural Resources Wales (NRW). Low Impact Class licences are also available in both England and Wales for bats and great crested newts. This enables Registered Low Impact Consultants to undertake certain low impact activities reducing the EPS application paperwork and process length.

[10] Natural England, June 2009, Protection of Badgers Act 1992 (as amended), Guidance on 'Current Use' in the definition of a Badger Sett WMLG17, Natural England, Peterborough.

[11] JNCC and Defra (on behalf of the Four Countries' Biodiversity Group), July 2012, UK Post-2010 Biodiversity Framework, Available from: http://jncc.defra.gov.uk/pdf/UK_Post2010_Bio-Fwork.pdf [Accessed 03.22].

Certain EPS are also listed under Annex II of the Habitats Directive and are afforded protection by the establishment of core areas of habitat known as Special Areas of Conservation. This means these species are a relevant consideration in a Habitats Regulations Assessment (HRA).

The Birds Directive seeks to maintain populations of all wild bird species across their natural range (Article 2). All bird species listed under Annex I[12] of the Birds Directive are rare or vulnerable and afforded protection by the classification of Special Protection Areas (SPAs), these are also designated under all regularly occurring migratory species, with regard to the protection of wetlands of international importance (Article 4). This means these bird species and communities are a relevant consideration in HRA.

[12] To view birds listed under Annex I visit: http://ec.europa.eu/environment/nature/conservation/wildbirds/threatened/index_en.htm [accessed 03.22]

Table A-1 - Key Species and National Wildlife Legislation, Policy and Biodiversity Framework Applicable in England & Wales

Table A:1: Key Species and National Wildlife Legislation, Policy and Biodiversity Framework Applicable in England & Wales

Species	Legislation, Planning Policy and UK Biodiversity Framework							
	Wildlife and Countryside Act 1981 (as amended), (WCA)				The Conservation of /Habitats and Species Regulations 2010 (as amended) (Habitats Regulations) - Regulation 41	Natural Environment and Rural Communities (NERC) Act 2006 / The Environment(Wales) Act (2016)	The Protection of Badgers Act 1992	The UK Post-2010 Biodiversity Framework 2011-2020 (JNCC and DEFRA, 2012)
	Schedule1	Schedule 5	Schedule 8	Schedule 9	European Protected Species (Annex IV of the EC Habitats Directive),			
Badger							✓	
Bats		✓ [13](part)			✓[14]	✓[15]		✓[16]
Hazel Dormouse		✓ 5(part)			✓	✓		✓
Otter		✓ 5(part)			✓	✓		✓
Water vole		✓[17](full)				✓		✓

[13] These species are partially protected under section 9(4)(b), (4)(c) and (5).

[14] Only Barbastelle (*Barbastella barbastellus*), Bechstein's bat (*Myotis bechsteinii*), greater horseshoe bat (*Rhinolophus ferrumequinum*) and lesser horseshoe bat (*Rhinolophus hipposideros*) are listed on Annex II of the Habitats Directive.

[15] Greater horseshoe bat, lesser horseshoe bat, Bechstein's bat, noctule (*Nyctalus noctula*), soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared bat (*Plecotus auritus*) and barbastelle are listed as Species of Principal Importance in England with the addition of common pipistrelle (*Pipistrellus pipistrellus*) in Wales listed under

Section 7 of the Environment (Wales) Act (2016) http://www.legislation.gov.uk/ukpga/2006/16/contents.

[16] Barbastelle bat, Bechstein's bat, noctule, soprano pipistrelle, brown long-eared bat, greater horseshoe bat, lesser horseshoe bat are listed as UK BAP species of bat.

[17] Class Licences are available to Registered Consultants to intentionally disturb, damage or destroy water vole burrows or to displace water voles from their burrows in relation to a development proposal where the licensed action provides a conservation benefit for water voles. Certain displacement operations may be carried out under a Class licence by a registered person in England, however in Wales all displacement operations must be carried out under a site specific licence.

Birds	✓			✓[18]		✓[19]		✓[20]
Reptiles		✓[21](part)		✓[9]	✓[22]	✓[23]		✓[24]
Amphibians		✓[25](part)		✓[26]	✓[27, 28]	✓[29]		
White-clawed Crayfish		✓[30](partial)			✓[31]	✓		✓

[18] To view plants and animals listed on Schedule 9 Part 1 visit http://www.legislation.gov.uk/ukpga/1981/69/schedule/9 [accessed 6 April 2017]

[19] There are 49 species of birds listed as Species of Principal Importance in England in Section 41 of the NERC Act 2006 and 51 species in Wales under Section 7 of the Environment (Wales) Act (2016) http://www.legislation.gov.uk/ukpga/2006/16/contents.

[20] To view the current list of UK BAP priority birds visit: http://jncc.defra.gov.uk/page-5163 [Accessed 03.22].

[21] The four common reptile species, Adder (*Vipera berus*), Grass snake (*Natrix natrix*), Common lizard (*Zootoca vivipara*) and Slow worm (*Anguis fragilis*) are offered partial protection under section 9(5). The rarer UK reptile species (Smooth snake (*Coronella austriaca*) and Sand lizard (*Lacerta agilis*)) are partially protected under section 9(4)(b) and (c) and (5).

[22] Smooth snake (*Coronella austriaca*) and Sand lizard (*Lacerta agilis*) are the only reptiles to be designated as European Protected Species.

[23] All 6 reptile species are listed as Species of Principal Importance in England listed under Section 41 of the NERC Act 2006 and 5 species, excluding smooth snake, listed under Section 7 of the Environment (Wales) Act (2016) http://www.legislation.gov.uk/ukpga/2006/16/contents.

[24] To view the current list of UK BAP priority herptile species visit: http://jncc.defra.gov.uk/page-5166 [Accessed 03.22].

[25] The four common reptile species, Adder (*Vipera berus*), Grass snake (*Natrix natrix*), Common lizard (*Zootoca vivipara*) and Slow worm (*Anguis fragilis*) are offered partial protection under section 9(5). The rarer UK reptile species (Smooth snake (*Coronella austriaca*) and Sand lizard (*Lacerta agilis*)) are partially protected under section 9(4)(b) and (c) and (5).

[26] Common frog (*Rana temporaria*), Common toad (*Bufo bufo*), Smooth newt (*Lissotriton vulgaris*) and Palmate newt (*Lissotriton helveticus*) are offered partial protection under section 9(5). Great crested newt (*Triturus cristatus*) and Natterjack toad (*Epidalea calamita*) are offered partial protection under section 9(4)(b) and (c) and (5). Pool frog (*Pelophylax lessonae*) is offered partial protection under section 9(4)(b) and (c)(1) only and with respect to England only.

[27] Great crested newt, Natterjack toad and Pool frog are the only amphibians to be designated European Protected Species.

[28] Great crested newt is the only amphibian listed on Annex II of the Habitats Directive.

[29] Great crested newt, Natterjack toad and Common toad are listed as Species of Principal Importance in England in Section 41 of the NERC Act 2006 and under Section 7 of the Environment (Wales) Act (2016) http://www.legislation.gov.uk/ukpga/2006/16/contents.

[30] Under the Wildlife and Countryside Act it is illegal to take or sell white clawed crayfish under the WCA. A licence is required to survey (hand net or trap) for the species. To undertake work within WCC inhabited rivers a Class Licence maybe issued by the relevant authority to move WCC away from harm prior to works. Although WCC are not protected from killing or injury Natural England state in their Class licence that due to declining numbers all efforts should be made to conserve the species.

31 White clawed crayfish are listed under Annex II and V of the Habitats Directive.

Invertebrates		✓[32](full/part)		✓	✓[33, 34]	✓[35]		✓[36]
Fish		✓[37](full/part)		✓[9]	✓[38, 39]	✓[40]		✓[41]
Plants			✓[42]	✓[9]	✓[43, 44]	✓[45]		✓[46]

[32] To view the current list of invertebrates that are protected under this Act either in part or full visit: http://www.legislation.gov.uk/ukpga/1981/69/schedule/5 [Accessed 03.22].

[33] The Large blue butterfly (*Maculinea arion*), Fisher's estuarine moth (*Gortyna borelii lunata*) and Lesser whirlpool ram's-horn snail (*Anisus vorticulus*) are the only invertebrates to be designated European Protected Species.

[34] There are currently twelve invertebrates listed in Annex II of the Habitats Directive; White-clawed crayfish (*Austropotamobius pallipes*), Southern damselfly (*Coenagrion mercuriale***)**, Marsh fritillary butterfly (*Eurodryas aurinia***)**, Violet click beetle (*Limoniscus violaceus***)**, Stag beetle (*Lucanus cervus***)**, Freshwater pearl mussel (*Margaritifera margaritifera***)**, Narrow-mouthed whorl snail (*Vertigo angustior***)**, Round-mouthed whorl snail (*Vertigo genesii***)**, Geyer's whorl snail (*Vertigo geyeri***)**, Desmoulin's whorl snail (*Vertigo moulinsiana***)**, Lesser whirlpool ram's-horn snail (*Anisus vorticulus*) and Fisher's estuarine moth (*Gortyna borelii lunata*).

[35] There are currently 379 invertebrate species (not including marine species) listed as Species of Principal Importance in England http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&ved=0ahUKEwivvu7J9trSAhXiCsAKHX4TBGcQFggvMAM&url=http%3A%2F%2Fpublications.naturalengland.org.uk%2Ffile%2F6518755878240256&usg=AFQjCNEpiUWYuOqhVcfSDvi_3iK2TJytfQ and 188 species in Wales http://www.eryri-npa.gov.uk/__data/assets/pdf_file/0003/486156/SpeciesList.pdf listed under Section 41 of the NERC Act 2006 and listed under Section 7 of the of the Environment (Wales) Act 2016. [Accessed 03.22]

[36] To view the current list of UK BAP priority invertebrates visit: http://jncc.defra.gov.uk/page-5169 [Accessed 03.22].

[37] To view the current list of fish either part or fully protected under the Act visit: http://www.legislation.gov.uk/ukpga/1981/69/schedule/5 [Accessed 03.22].

[38] Sturgeon (*Acipenser sturio*) is the only fish to be designated a European Protected Species.

[39] There are eight fish species listed on Annex II of the Habitats Directive. To view the current list visit: http://jncc.defra.gov.uk/page-1523 [Accessed 03.22].

[40] There are 35 species of fish listed as Species of Principal Importance in England listed under Section 41 of the NERC Act 2006 and 10 species in Wales listed under Section 7 of the Environment (Wales) Act 2016.

[41] To view the current list of UK BAP priority fish visit: http://jncc.defra.gov.uk/page-5164 [Accessed 03.22].

[42] To view the current list of Schedule 8 listed plants visit: http://www.legislation.gov.uk/ukpga/1981/69/schedule/8 [Accessed 03.22].

[43] There are nine plant species designated as European Protected Species. To view the current list visit: http://www.legislation.gov.uk/uksi/2010/490/schedule/5/made [Accessed 03.22].

[44] To view the current list of plant species on Annex II of the Habitats Directive visit: http://jncc.defra.gov.uk/page-1523 [Accessed 03.22].

[45] There are currently 152 vascular plants listed as Species of Principal Importance in England listed under Section 41 of the NERC Act 2006 and 77 species in Wales listed under Section 7 of the Environment (Wales) Act 2016.[31] To view the current list of UK BAP priority plants visit: http://jncc.defra.gov.uk/page-5171 and http://jncc.defra.gov.uk/page-5168 [Accessed 03.22].

[46] To view the current list of UK BAP priority plants visit: http://jncc.defra.gov.uk/page-5171 and http://jncc.defra.gov.uk/page-5168 [Accessed 03.22].

Appendix B

SUMMARY OF ECOLOGICAL DESK STUDY DATA

Table B-1 - Protected and notable bat species for which records have been identified within 2km of Site 12

Species common name	Species Latin name	No. of records	Distance and orientation of closest record from desk study centroid
Bat species	*Chiroptera*	1	1205 m south-west
Brown long-eared bat	*Plecotus auritus*	1	870 m west
Common pipistrelle	*Pipistrellus pipistrellus*	1	870 m west
Greater horseshoe bat	*Rhinolophus ferrumequinum*	1	1390 m south*
Noctule bat	*Nyctalus noctula*	1	870 m west
Soprano pipistrelle	*Pipistrellus pygmaeus*	2	870 m west

*Exact location unknown

Table B-23 - Protected and notable mammals (excluding bats) for which records have been identified within 2km of Site 12

Species common name	Species Latin name	No. of records	Distance and orientation of closest record from desk study centroid
Eurasian badger	*Meles meles*	5	785 m north-west
Weasel	*Mustela nivalis*	1	2050 m south-west
West European hedgehog	*Erinaceus europaeus*	5	285 m south-west

Table B-4 - Protected and notable invertebrates for which records have been identified within 2km of Site 12

Species common name	Species Latin name	No. of records	Distance and orientation of closest record from desk study centroid
Common carder bee	*Bombus pascuorum*	1	2050 m south-west

Table B-5 - Protected and notable birds for which records have been identified within 2km of Site 12

Species common name	Species Latin name	No. of records	Distance and orientation of closest record from desk study centroid
Canada goose	*Branta canadensis*	1	1190 m west
Dipper	*Cinclus cinclus*	1	1185 m south-west
Dunnock	*Prunella modularis*	1	665 m east
Eurasian bullfinch	*Pyrrhula pyrrhula*	1	895 m west
Eurasian hoopoe	*Upupa epops*	1	1560 m east
European herring gull	*Larus argentatus*	1	1365 m west*
Fieldfare	*Turdus pilaris*	1	1365 m west*
Grey wagtail	*Motacilla cinerea*	1	895 m west
House sparrow	*Passer domesticus*	3	895 m west
Kingfisher	*Alcedo atthis*	3	895 m west
Linnet	*Linaria cannabina*	1	895 m west
Mallard	*Anas platyrhynchos*	1	895 m west
Red kite	*Milvus milvus*	8	935m north-east*
Song thrush	*Turdus philomelos*	1	1190 m west
Spotted flycatcher	*Muscicapa striata*	1	1365 m west*
Swallow	*Hirundo rustica*	1	895 m west
Swift	*Apus apus*	3	1120 m west
Willow warbler	*Phylloscopus trochilus*	6	1190 m west

*Exact location unknown

Table B-6 - Protected and notable reptiles and amphibians for which records have been identified within 2km of Site 12

Species common name	Species Latin name	No. of records	Distance and orientation of closest record from desk study centroid
Common frog	*Rana temporaria*	1	1970 m south-west

Common toad	*Bufo bufo*	1	1215 m north-east

Table B-7 - Protected and notable plants for which records have been identified within 2km of Site 12

Species common name	Species Latin name	No. of records	Distance and orientation of closest record from desk study centroid
Bluebell	*Hyacinthoides non-scripta*	6	1060 m north
Brazilian giant-rhubarb	*Gunnera manicata*	1	895 m west
Butterfly-bush	*Buddleja davidii*	11	625 m west
Cherry laurel	*Prunus laurocerasus*	1	680 m north
Cotoneaster	*Cotoneaster spp.*	1	895 m west
Curly waterweed	*Lagarosiphon major*	1	2000 m north
Grape-hyacinth	*Muscari neglectum*	1	980 m west
Greater periwinkle	*Vinca major*	1	1780 m north*
Indian balsam	*Impatiens glandulifera*	12	640 m west
Japanese knotweed	*Fallopia japonica*	3	895 m west
Montbretia	*Crocosmia pottsii x aurea = C. x crocosmiiflora*	1	1780 m north*
Northern yellow-cress	*Rorippa islandica*	1	1780 m north*
Rhododendron	*Rhododendron ponticum*	2	1530 m north-east
Snowberry	*Symphoricarpos albus*	1	1065 m west
Stream water-crowfoot	*Ranunculus penicillatus subsp. penicillatus*	3	910 m south-west
Three-cornered garlic	*Allium triquetrum*	1	1105 m west
White stonecrop	*Sedum album*	1	795 m west

Wilson's honeysuckle	*Lonicera nitida*	3	1065 m west
Yellow archangel	*Lamiastrum galeobdolon subsp. argentatum*	1	1000 m south-west

*Exact location unknown

Appendix C

PLANT SPECIES RECORDED

Table C-1 - Plant and fungi species recorded at Site 12

Common name	Latin name	Frequency (DAFOR)
F2 – Fen marsh and swamp		
Bramble	*Rubus fructicosus agg.*	O
Broad-leaved dock	*Rumex obtusifolius*	R
Creeping buttercup	*Ranunculus repens*	R
Creeping cinquefoil	*Potentilla reptans*	R
Dogwood species	*Cornus sp.*	R
Hard rush	*Juncus inflexus*	R
Lesser celandine	*Fiacaria verna*	R
Marsh thistle	*Campus pelestre*	R
Perennial rye-grass	*Lolium perenne*	O
Rosebay willowherb	*Chamaeneriun angustifolium*	R
Soft rush	*Juncus effusus*	D
Willow sapling	*Salix sp.*	R
G4 – Modified grassland		
Bedstraw species	*Galium sp.*	R
Broad-leaved dock	*Rumex obtusifolius*	O
Chickweed	*Stella media agg.*	R
Cleavers	*Galium aparine*	O
Clover	*Trifolium sp.*	O
Common mouse-ear	*Cerastium fontanum*	R
Common sorrel	*Rumex acetosa*	R
Creeping bent	*Agrostis stolonifera*	O
Creeping buttercup	*Ranunculus repens*	O
Creeping cinquefoil	*Potentilla reptans*	R

Daisy	*Bellis perennis*	O
Dandelion	*Taraxacum officinale agg.*	O
Dove's-foot crane's-bill	*Geranium molle*	R
Meadow foxtail	*Alopecurus pratensis*	R
Lesser celandine	*Fiacara verna*	R
Meadow buttercup	*Ranunculus acris*	R
Nettle	*Urtica dioica*	R
Perennial rye-grass	*Lolium perenne*	D
Ribwort plantain	*Plantago lanceolata*	R
Rosebay willowherb	*Chamaeneriun angustifolium*	R
Soft rush	*Juncus effusus*	R
Wavy bittercress		R
H3 – Dense scrub		
Bramble	*Rubus fructicosus agg.*	D
Greater stitchwort	*Stellaria neglecta*	R
Hawthorn	*Cretaegus monogyna*	O
Hazel	*Coryllus*	R
Ivy	*Hedera helix*	R
H2a – Hedgerow (priority habitat)		
Beech	*Fagus sylvatica*	O
Bracken	*Pteridium aquilinum*	O
Bramble	*Rubus fructicosus agg.*	O
Dog's mercury	*Mercurialis perennis*	R
Ground ivy	*Glechoma hederacea*	O
Hawthorn	*Cretaegus monogyna*	D
Hazel	*Corylus avellana*	R

Holly	*Ilex aquifolium*	R
Oak	*Quercus sp.*	O
R1e – Canals or ditch		
Broad-leaved dock	*Rumex obtusifolium*	R
Hemlock water-dropwort	*Oenanthe crocata*	A
Soft rush	*Juncus effusus*	O
W1g6 – Line of trees		
Oak species	*Quercus sp.*	F

Appendix D

TARGET NOTES

Table D-1 – Site 12 Target Notes

Target Note	Description
TN1	A large pile of brash, logs and cut wood near to the field boundary forming a hibernacula.
TN2	A concrete pipe adjacent to a well-defined mammal path.
TN3	A stream with very shallow banks and a mud substrate to the north of the Site. Slow flowing water within the stream, adjacent to a woodland comprising oak, gorse, ash and holly which borders the road.
TN4	A pile of logs and rubble forming a hibernacula in an area fenced off from the field.
TN5	A log pile on the filed boundary formed by the piling of newly cut logs.
TN6	A pipe which the stream enters to be culverted.

Appendix E

PHOTOGRAPHS

Table E-1 – Photographs at Site 12

	
Photo 1 – Site 12 modified grassland	Photo 2 – Site 12 flailed hedgerow
	
Photo 3 – Site 12 polluted ditch with west flowing water in western extent of the Site	Photo 4 – Site 12 TN1 – hibernacula formed by large pile of brash, logs and cut wood

Photo 5 – Site 12 TN2 - concrete pipe adjacent to mammal path

Photo 6 – Site 12 TN3 - stream at eastern extent of Site

Photo 7 – Site 12 TN4 – hibernacula formed by pile of large logs and rubble

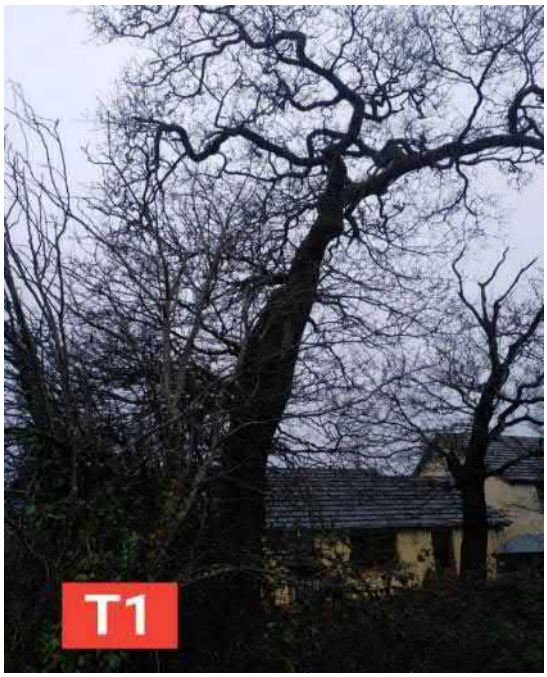


Photo 8 – Site 12 T1 - oak with tear out

Photo 9 – Site 12 T2 – oak with partially excavated knothole

Photo 10 – Site 12 T3 – hazel with wound

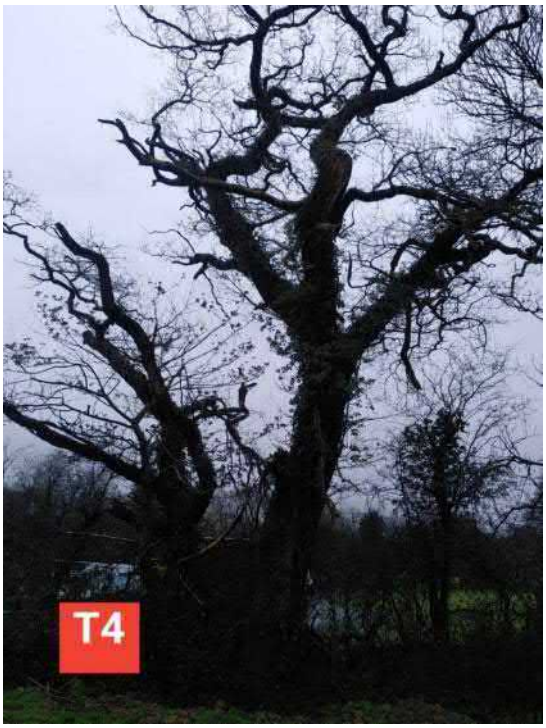


Photo 11 – Site 12 T4 – oak with tear out

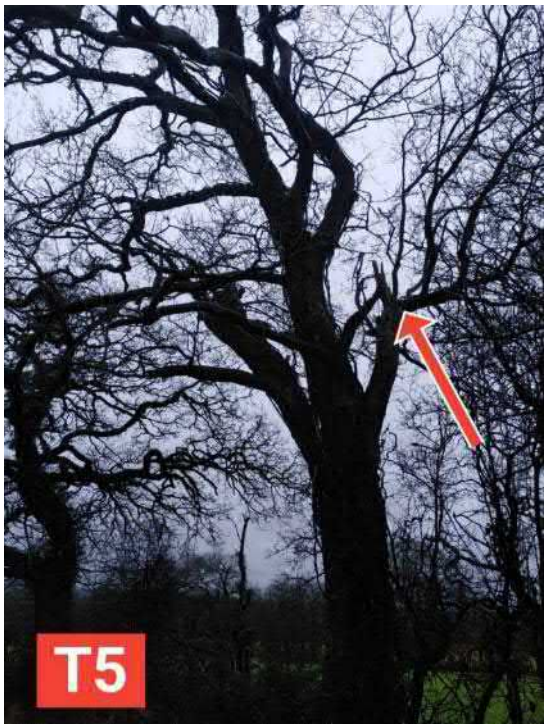


Photo 12 – Site 12 T5 – Oak with wound

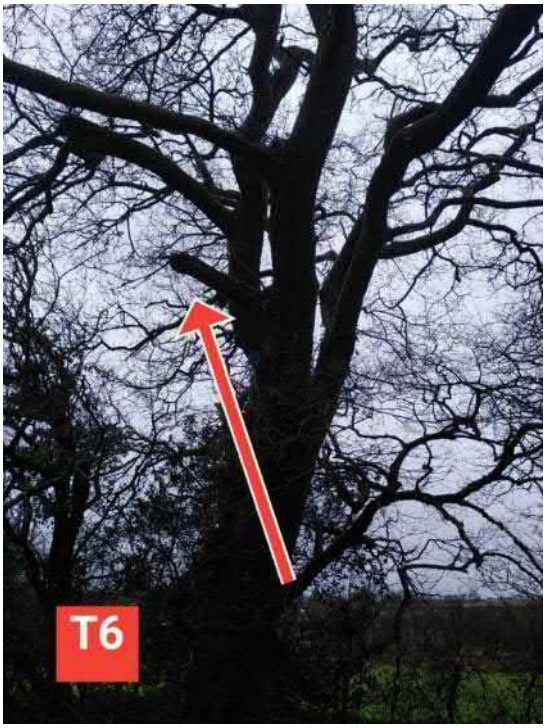


Photo 13 – Site 12 T6 – oak with impact shatter

Photo 14 – Site 12 T7 – oak with tear out

Photo 15 – Site 12 T8 – oak with knothole

Appendix F

BAT GROUND ASSESSMENT SURVEY RESULTS

Table F-1 – Trees with bat roost suitability at Site 12

Tree Number	Photo Reference	Description
1	Photo 8	A mature oak with a tear out 3 m from the ground.
2	Photo 9	A mature oak with a partially excavated knothole approximately 1.5 m high.
3	Photo 10	A hazel with a wound approximately 1.5 m high.
4	Photo 11	An oak with a tear out approximately 6 m high.
5	Photo 12	An oak with a wound on a limb approximately 6 m high.
6	Photo 13	An oak with an impact shatter approximately 6 m high on a limb.
7	Photo 14	An oak with a tear out approximately 3 m high facing downwards on a limb. Bird droppings present at the entrance to the tear out.
8	Photo 15	The central oak in a line of five trees, with a knot hole present approximately 4 m high.

Table F-2 – Buildings with bat roost suitability at Site 12

Building Number	Photo Reference	Bat Suitability	Description
1	No photo available	Low	A barn with corrugated metal construction and a single pitched roof. The front of the barn appeared to remain open, and was used for stabling cows. Bats may opportunistically use the gaps beneath the flashing at the edges of the roof where it is not tight to the corrugated metal walls.

1 Capital Quarter
Tyndall Street
Cardiff
CF10 4BZ

wsp.com

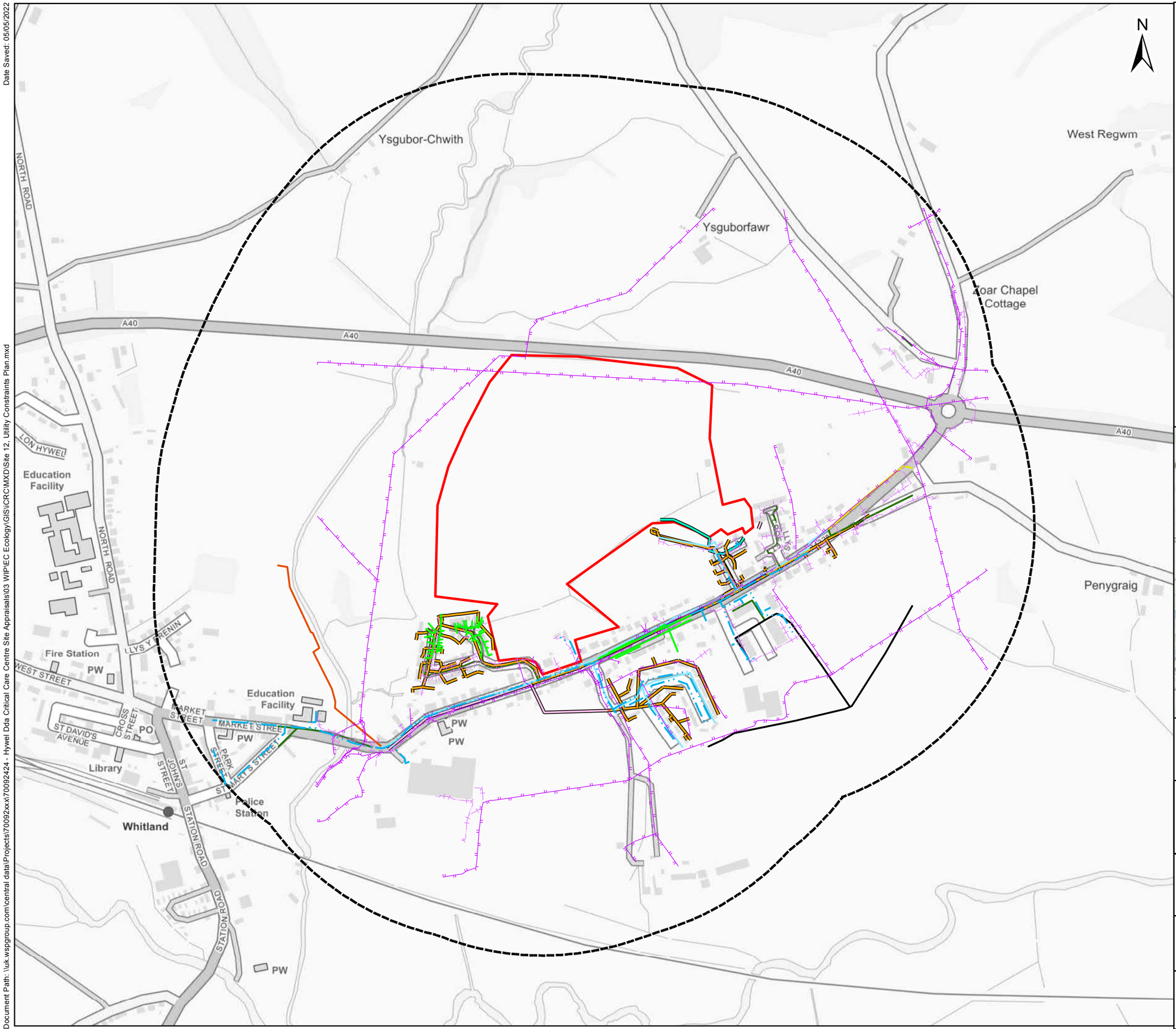
Appendix E

UTILITIES

Public

Date Saved: 05/05/2022

Document Path: \\uk.wspgroup.com\central data\Projects\70092xxx\70092424 - Hywel Dda Critical Care Centre Site Appraisals\03 WIP\EC Ecology\GIS\ICRC\MXD\Site 12, Utility Constraints Plan.mxd



Legend

- Site 12 Site Boundary
- 500m Study Area

Telecoms (BT maps)

- Telecoms (BT maps)

Gas (Wales and West Utilities)

- Low Pressure

Power (Western Power)

- Overhead
- Underground

Mains Water (Welsh Water)

- Unidentified
- 3 inch
- 4 inch
- 6 inch
- 8 inch

Storm and Foul Sewerage system (Welsh Water)

- Combined
- Foul
- Surface Water

0 0.225 0.45 km

Client:

Hywel Dda University Health Board

Project:

Site 12 – Technical Due Diligence Appraisal

Title:

Site 12
Utilities Constraints Plan

Date: 05 May 2022 Scale: 6,500 @ A3

Drawn: PB Checked: CLH Approved: WB

Drawing Number: 2424-WSP-XX-12-DR-EN-0017-P01_Utility Constraints Plan

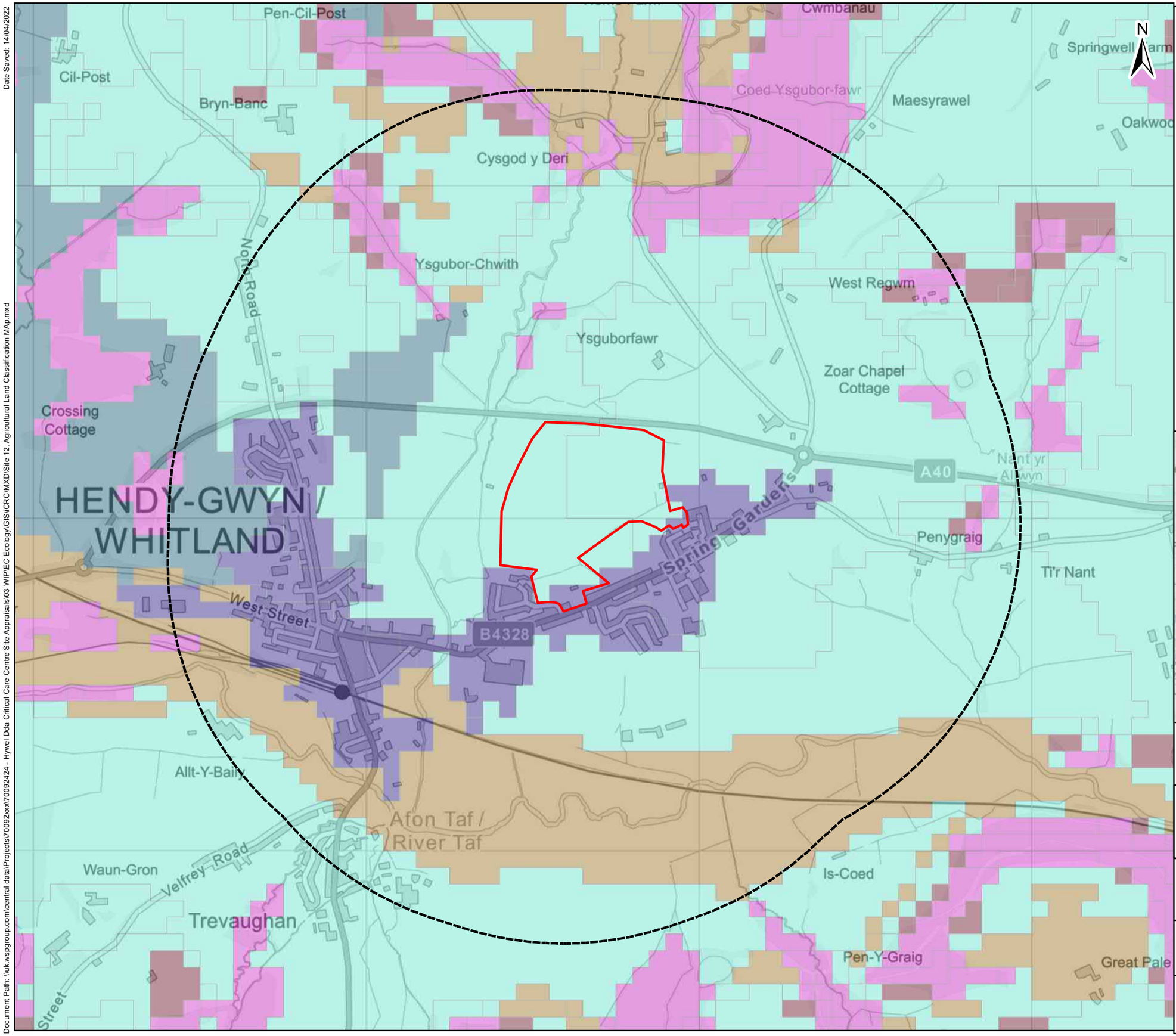
Appendix F

ENVIRONMENTAL

Public

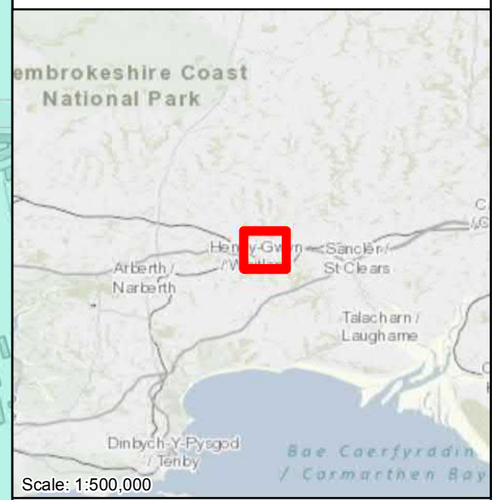
Date Saved: 14/04/2022

Document Path: \\uk.wspgroup.com\central data\Projects\70092xxx\70092424 - Hywel Dda Critical Care Centre Site Appraisals\03 WIP\EC Ecology\GIS\ICRC\MXD\Site 12, Agricultural Land Classification MAp.mxd



Legend

- Site 12 Site Boundary
- 1Km Study Area
- 3a
- 3b
- 4
- 5
- NA
- U



Scale: 1:500,000

0 0.125 0.25 0.5 km

Client:

Hywel Dda University Health Board

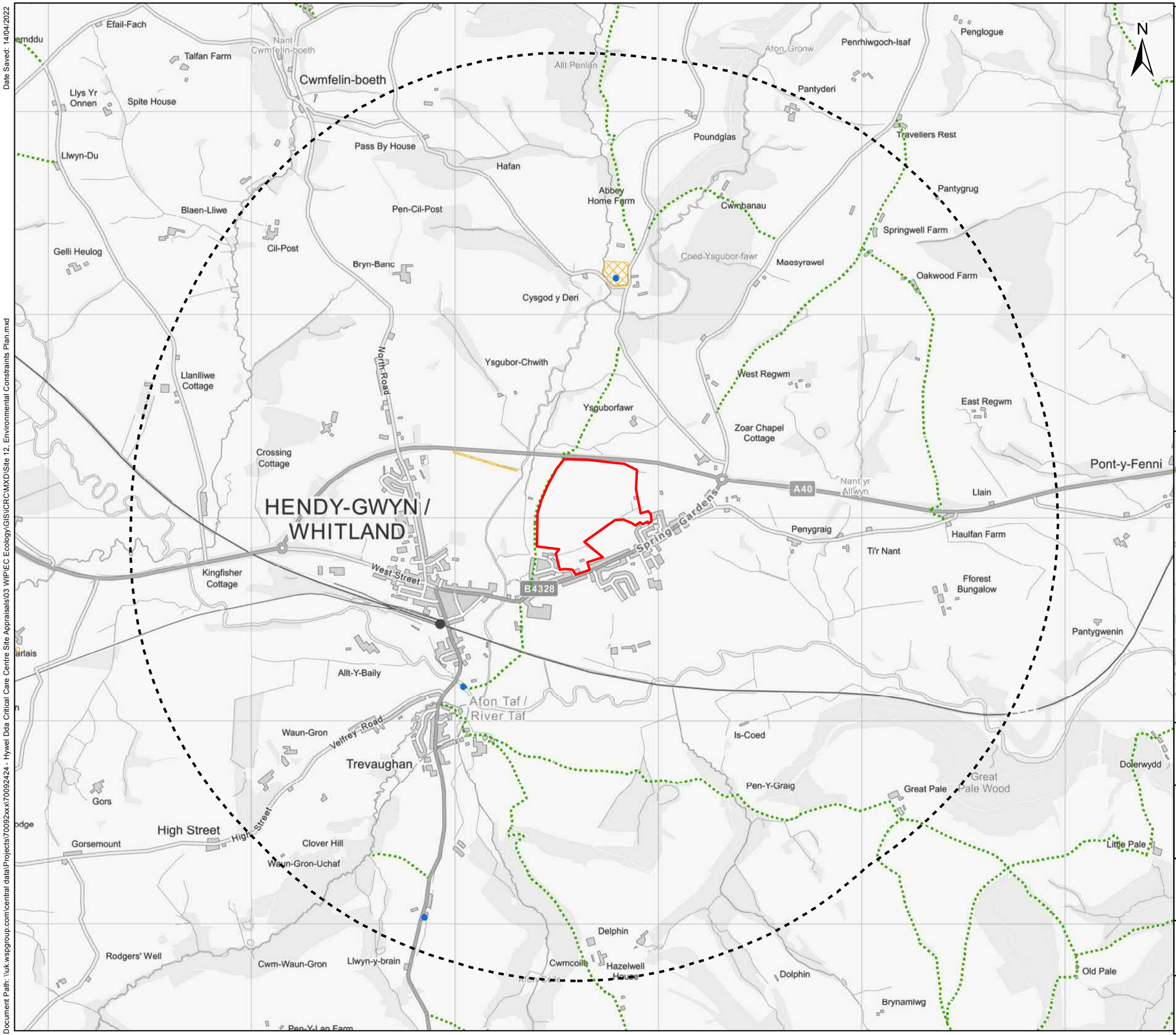
Project:

Site 12 – Technical Due Diligence Appraisal

Title:

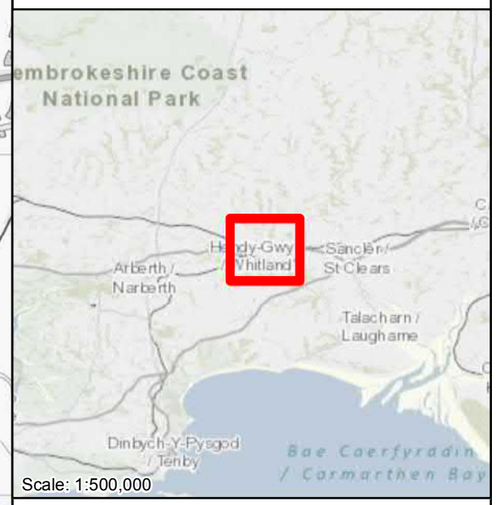
Agricultural Land Classification Map

Date:	14 April 2022			Scale:	11,000 @ A3
Drawn:	PB	Checked:	CLH	Approved:	WB
Drawing Number:	2424-WSP-XX-12-DR-EN-0012-P01_ALC Map				



Legend

- Site 12 Site Boundary
- 2km Study Area
- Grade II Listed Building
- Footpath
- Scheduled Monuments



Scale: 1:500,000

0 0.225 0.45 0.9 km

Client: Hywel Dda University Health Board

Project: Site 12 – Technical Due Diligence Appraisal

Title: Environmental Constraints Plan

Date: 14 April 2022 Scale: 18,000 @ A3

Drawn: PB Checked: CLH Approved: WB

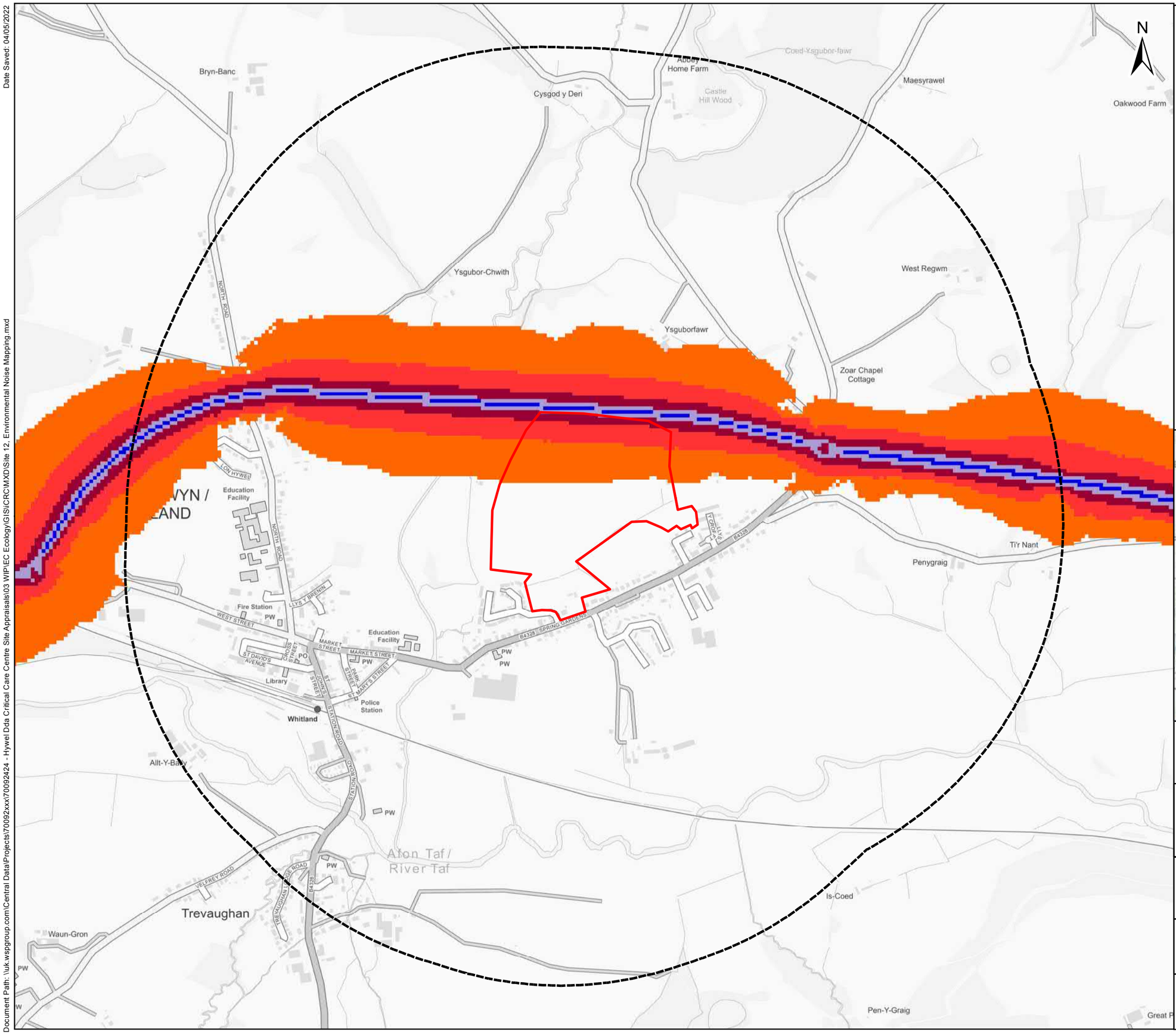
Drawing Number: 2424-WSP-XX-12-DR-EN-0003-P01_Env Constraints Plan

Date Saved: 14/04/2022

Document Path: \\uk.wspgroup.com\central data\Projects\70092xxx\70092424 - Hywel Dda Critical Care Centre Site Appraisals\03 WIP\EC Ecology\GIS\CRC\MXD\Site 12, Environmental Constraints Plan.mxd

Date Saved: 04/05/2022

Document Path: \\uk.wspgroup.com\Central Data\Projects\70092xxx\70092424 - Hywel Dda Critical Care Centre Site Appraisals\03 WIP\EC Ecology\GIS\CRC\MXD\Site 12. Environmental Noise Mapping.mxd



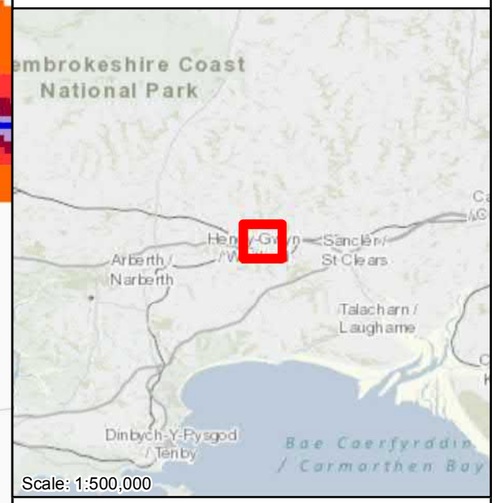
Legend

- Site 12 Site Boundary
- 1Km Study Area

Road traffic noise (dB) - major roads (Lden) 2017

- 55.0 to 59.9
- 60.0 to 64.9
- 65.0 to 69.9
- 70.0 to 74.9
- 75.0 and over

Lden : indicates the average sound level around the clock with extra weighting given to the evening and night periods.



Scale: 1:500,000

0 0.25 0.5 km

Client:

Hywel Dda University Health Board

Project:

Site 12 – Technical Due Diligence Appraisal

Title:

Site 12
Environmental Noise Mapping

Date: 04 May 2022 Scale: 10,000 @ A3

Drawn: PB Checked: CLH Approved: WB

Drawing Number: 2424-WSP-XX-12-DR-EN-0022-P01_ Env Noise Map

Appendix G

GROUND

Public

Hywel Dda University Health Board

URGENT & PLANNED CARE CENTRE SITE APPRAISALS

Site 12 - Preliminary Ground Conditions Assessment

70092424-02
MAY 2022

CONFIDENTIAL

Hywel Dda University Health Board

URGENT & PLANNED CARE CENTRE SITE APPRAISALS

Site 12 - Preliminary Ground Conditions Assessment

TYPE OF DOCUMENT (DRAFT) CONFIDENTIAL

PROJECT NO. 70092424

OUR REF. NO. 70092424-02

DATE: MAY 2022

WSP

1 Capital Quarter
Tyndall Street
Cardiff
CF10 4BZ

Phone: +44 2920 769 200

WSP.com

QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2
Remarks	Draft for comment		
Date	May 2022		
Prepared by	Joanna Lavery-Hoffe		
Signature			
Checked by	Chloe Thompson		
Signature			
Authorised by	Mathew Rouge		
Signature			
Project number	70092424		
Report number	70092424-02		
File reference	\\uk.wspgroup.com\central data\Projects\70092xxx\70092424 - Hywel Dda Critical Care Centre Site Appraisals\03 WIP\EN Environmental\05 Reports\PRA\2-Site 12 Land at Spring Gardens		

CONTENTS

EXECUTIVE SUMMARY

1 INTRODUCTION 1

1.1 AUTHORISATION AND PURPOSE OF ASSESSMENT 1
1.2 OBJECTIVES 1
1.3 LIMITATIONS 1
1.4 INFORMATION SOURCES 1

2 SITE SETTING 3

2.1 SITE LOCATION AND DESCRIPTION 3
2.2 SITE HISTORY 4
2.3 REGULATORY INFORMATION 5
2.4 SITE WALKOVER 7
2.5 CONTAMINATED LAND REGISTER 8

3 GEO-ENVIRONMENTAL SETTING 9

3.1 PUBLISHED GEOLOGY 9
MADE GROUND 9
SUPERFICIAL GEOLOGY 9
BEDROCK GEOLOGY 9
STRUCTURAL GEOLOGY 9
BGS EXPLORATORY HOLE RECORDS 9
3.2 COAL MINING ACTIVITIES 9
3.3 NON-COAL MINING ACTIVITIES 9
3.4 UNEXPLODED ORDNANCE (UXO) 10
3.5 GEOTECHNICAL HAZARDS 10
3.6 RADON 10

3.7 HYDROGEOLOGY 10
3.8 HYDROLOGY 11
3.9 FLOOD RISK 11
3.10 DESIGNATED SITES AND SENSITIVE LAND USES 12

4 PRELIMINARY CONCEPTUAL SITE MODEL AND LAND QUALITY RISK ASSESSMENT 13

4.1 INTRODUCTION 13
4.2 POTENTIAL SOURCES OF CONTAMINATION 13
4.3 POTENTIAL PATHWAYS 14
4.4 POTENTIAL RECEPTORS 14
4.5 PRELIMINARY LAND QUALITY RISK ASSESSMENT 15

5 GROUND CONDITION CONSTRAINTS AND OPPORTUNITIES 18

5.1 ANTICIPATED GROUND CONDITIONS 18

6 CONCLUSIONS AND RECOMMENDATIONS 20

6.1 SUMMARY 20
6.2 CONCLUSIONS 20
6.3 RECOMMENDATIONS 21

TABLES

Table 1-1 – Information Sources 2
Table 2-1 - Summary of Site Details 3
Table 2-2 - Summary of Site History 4
Table 2-3 – Summary of Relevant Regulatory Information 6
Table 3-1 - Summary of Ground Stability Hazards 10
Table 4-1 - Potential Sources of Contamination 13
Table 4-2 – Initial Conceptual Site Model and Preliminary Land Quality Risk Assessment 16
Table 5-1 – Potential Ground Condition Constraints and Opportunities 18

APPENDICES

APPENDIX A

FIGURES

APPENDIX B

LIMITATIONS

APPENDIX C

GROUNDSURE REPORT

APPENDIX D

PHOTOLOG

APPENDIX E

BOREHOLE RECORDS

APPENDIX F

UXO PRE-DESK STUDY ASSESSMENT

APPENDIX G

RISK ASSESSMENT METHODOLOGY

EXECUTIVE SUMMARY

Site Details	The Site comprises an irregularly shaped land parcel of approximately 19 hectares which is located to the north of Spring Gardens (B4328) and to the south of the A40, in the north-eastern outskirts of Whitland, Carmarthenshire. The majority of the Site is currently occupied by agricultural land (grassed fields) with a farmhouse located in the southern area and a barn located in the eastern area A field within the southern area of the Site is temporarily being used as a storage area/car park for an adjacent residential development. The land-use surrounding the Site is predominantly residential and agricultural, however an industrial estate is present 200m to the south-east of the Site.
Site History	The majority of the Site has remained undeveloped, and of a similar layout and land-use from the late nineteenth century to the present day. A brick yard was historically present in the south-eastern corner of the Site between 1887 and 1963.
Geology, Hydrogeology and Hydrology	The Site is underlain by bedrock deposits of the Arenig Tetragraptus Beds (Mudstone) which are classified as a Secondary B Aquifer. Groundwater vulnerability across the Site is reported to be high, associated with a well-connected fracture flow network within the underlying bedrock and local small-scale domestic abstraction has been noted to have historically occurred within the area. Minor unnamed surface water features cross the northern boundary and southern area of the Site. Both features flow from east to west and feed into Mill Race which is located 50m to the east of the Site and which is a tributary of the Afon Gronw, located 150m to the east of the Site. A number of other minor stream/tributaries, ponds and a spring are also present within 500m of the Site.
Flood Risk	The online Flood Risk Development Advice Map provided by NRW indicates that the Site is located within Zone A, which is classified as *"at little or no risk of fluvial or coastal/tidal flooding."* The online Flood Risk Assessment Wales Map provided by NRW indicates that the majority of the Site is not at risk of flooding from surface water and small watercourses. However, localised areas around the immediate vicinity of the surface water features that are located adjacent to the northern Site boundary and which cross the southern area of the Site are within Flood Zones 2 and 3 (for surface water and small watercourses). This is defined as Areas with 0.1% to 1% (1 in 1000 to 1 in 100) chance of flooding in a given year (Zone 2) and with a 1% (1 in 100) chance or greater of happening in any given year (Zone 3).
Radon	The majority of the Site is located within areas where between 3% and 5% of the properties would be estimated to exceed the Radon Action Level. As such, basic radon protection measures would likely be required within future structures.
Unexploded Ordnance (UXO)	The Site is in an area of low UXO risk and a Preliminary Desk Study Assessment for the Site has indicated that there are no readily available records to indicate that the Site may have been impacted by historical bombing events.
Conclusions	No significant ground condition constraints have been identified at the Site in relation to future structures and infrastructure. However, the Site slopes downwards from the north-west to the south-east and earthworks may be required to provide an appropriate development platform. It is considered that the majority of the Site is unlikely to be impacted by contamination. However, the potential exists for current and historical land use to have led to localised contamination at the Site. The most noticeable sources of potential contamination comprise

	the presence of a former brick yard that was historically located in the south-eastern area of the Site. Within the context of the proposed development of the Site as a health care facility/hospital the undertaking of a preliminary land quality assessment has indicated that the risks presented to potential receptors (health of future Site users, controlled waters and infrastructure) from localised potential sources of contamination are considered to be typically low.
Recommendations	Based on the findings of this report WSP recommends the following: Completion of an intrusive ground investigation to establish the ground conditions at the Site and to: ▪ Enable refinement of the Conceptual Site Model and the preliminary land quality risk assessment; ▪ Support foundation design of structures and potential earthworks that may be required; ▪ Provide an understanding of the hydrogeological and ground gas regime at the Site; ▪ Characterise the nature and suitability for retention of any Made Ground encountered, particularly within the vicinity of the former brick yard historically located in the south-eastern area; and, ▪ Assess the suitability for soakaway drainage

1 INTRODUCTION

1.1 AUTHORISATION AND PURPOSE OF ASSESSMENT

WSP UK Ltd (WSP) was appointed by Hywel Dda University Health Board (the Client) via BDP to prepare a preliminary assessment of the likely ground conditions together with the identification of potential development opportunities and constraints to support the potential construction of a health care facility/hospital at a site referred to as 'Site 12' (herein referred to as the 'Site') which is located to the north of Spring Gardens (B4328), Whitland, Carmarthenshire.

It is understood that this report would support a future planning application for the proposed development. No indicative development plans have been made available to WSP.

A Site Location Plan (Figure 1) and a Site Layout Plan (Figure 2) are presented within **Appendix A.**

This report has been prepared in-line with WSP's proposal (ref: 70092424-P01 TDDv2) issued on 28th January 2022.

1.2 OBJECTIVES

To provide an understanding of the potential development constraints and opportunities relating to ground conditions, the following scope of works have been included:

- The procurement and review of an environmental data report (Groundsure Report) to establish the environmental (geological, hydrological and hydrogeological) setting of the Site;
- A walkover of the Site to identify relevant features;
- A review of historical mapping for the Site;
- The preparation of a Conceptual Site Model (CSM);
- The identification of potential sources of contamination, potential exposure pathways and receptors and the undertaking of a preliminary land quality risk assessment; and,
- The identification of potential ground condition constraints and opportunities.

1.3 LIMITATIONS

This report is addressed to and may be relied upon by the Client. It may not be relied upon or transferred to any other parties without the express written agreement of WSP. The report should be read and used in full. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party. WSP cannot be held liable for third party information. Full details of the limitations are provided as **Appendix B.**

1.4 INFORMATION SOURCES

The following information sources listed in Table 1-1 have been used by WSP to inform the assessment. Relevant data has been referenced throughout the report.

Table 1-1 – Information Sources

Information Source		Comments
Third Party Data	Groundsure Insights, Historical Maps, 2022. Report Number WSP-8608995 (**Appendix C**)	Historic and recent maps of the area, dating from 1880 to 2022.
	Groundsure Insights, Enviro+Geo Insight, 2022. Reference WSP-8608995 (**Appendix C**)	Environmental database search encompassing permits, licences and environmental designations.
Publicly Available Data	Data.gov.uk	The Environment Agency's environmental datasets
	BGS GeoIndex	Contains Geology records, hydrology, hydrogeology, groundwater vulnerability and more.
	DEFRA Magic Maps	DEFRA's environmental and statutory datasets.
	Google Maps	Google satellite data and nearby locations and placenames.
	The Coal Authority Interactive Map Viewer	The Coal Authorities Datasets.
	Explore OS Maps	Topography, ground cover etc.
	LLE Online Maps	Welsh Government Datasets
	Geological Survey Online Map Viewer	Sheet 229 Carmarthen
	BGS Lexicon	Geological details
	Flood Risk Assessment and Development Wales Map	Natural Resource Wales flooding map.
	Land Contamination Risk Management (LCRM)	Guidance issued by the Environment Agency 2021.

2 SITE SETTING

2.1 SITE LOCATION AND DESCRIPTION

Table 2-1 below provides details of the Site obtained from a review of Ordnance Survey (OS) mapping, online aerial photography, information obtained from the Groundsure Report (provided in **Appendix C**) and key observations made during a Site walkover undertaken by a WSP Engineer on the 21st of April 2022 (further details of which are presented in Section 2.4 below). A selection of Site photographs taken during the Site walkover are presented in **Appendix D**.

Table 2-1 - Summary of Site Details

Details	Description
Location	The Site is situated to the north of Spring Gardens (B4328) and south of the A40, on the north-eastern outskirts of Whitland, Carmarthenshire.
Coordinates (E, N)	220660E, 217030N
Site Area	The Site occupies approximately 19 hectares and comprises an irregularly shaped parcel of land.
Site Description / Current Use	The majority of the Site comprises agricultural land (grassed fields). A farmhouse is located in the southern area of the Site with a barn present on the eastern Site boundary. A small triangular parcel of land within the south-eastern area of the Site (off Clos Llwyn Ty Gwyn) is temporarily in use as a storage yard and car park for the neighbouring residential development, located to the immediate south/south-west.
General Environment / Surrounding Land Use	**North:** The A40 runs parallel to the northern Site boundary beyond which the land use is predominantly agricultural. **East:** Springhill cricket ground and residential properties present off Spring Gardens (B4328) are present to the immediate east of the Site beyond which lies agricultural land intersected by main roads and access tracks. **South:** A mixture of residential properties, commercial and light industrial units are present along Spring Gardens (B4328) to the south of the Site. **West:** Agricultural land is present to the west of the Site with the western boundary running parallel to watercourses named Mill Race and the Afon Gronw, which are located approximately 50m and 150m, respectively, to the west of the Site.
Site Access	The Site is accessible from Spring Gardens (B4328).
Site Topography/Elevation	The topography at the Site slopes downwards towards the south-west. Elevation across the Site varies between 45m Above Ordnance Datum (m AOD) in the north-eastern corner to approximately 25m AOD in the south-western corner.
Ground Cover	The majority of the Site comprises grassed fields with the field boundaries comprising hedgerows and semi-mature/mature trees. Access tracks and areas surrounding the existing farm structures are either surfaced in asphalt or have a loose gravel cover.

Details	Description
	Exposed soils with a loose gravel cover were noted within the small triangular field that is temporarily in use as a storage yard and car park for the adjacent residential development.
Above and Below Ground Utilities	Based on the developed nature of some areas of the Site (farmhouse) it is assumed that common services including water supply, drainage, electricity, gas and communications may be present on-Site. Overhead cables were noted towards the north-western extents of the Site where a raised engineered mound supporting an electricity pylon was identified. The overhead cables cross the northern extents of the Site in an east to west direction.

2.2 SITE HISTORY

A review of historical mapping (included within the Groundsure Report) was undertaken to establish the land-use history of the Site and the surrounding area. The findings of the historical review are summarised in Table 2-2 below.

Table 2-2 - Summary of Site History

Date	On-Site	Off-Site*
1887	The Site comprises agricultural fields with the field boundaries of similar layout to those of the present day. A brickyard is present in the south-eastern corner of the Site. Footpaths cross the south-western and south-eastern areas of the Site.	The surrounding area comprises predominantly undeveloped agricultural land. A number of small cottages/farm buildings are present within the area surrounding the Site. Oak Villa is present off the main road (the present-day Spring Gardens) and lies adjacent to the southern boundary. The town of Whitland is located approximately 400m to the south-west of the Site. Whitland train station is located approximately 600m to the south-west of the Site, with the railway line running in an east/west direction. A Corn Mill is shown within Whitland town centre located approximately 250m the south-west of the Site. Two watercourses, the Mill Race and the Afon Gronw, are located approximately 50m and 150m, respectively, to the west of the Site (both are indicated to flow in a southerly direction). Several ponds are located within 500m of the Site, including one located approximately 200m to the north. A spring and chapel are identified approximately 450m to the east of the Site.
1906 - 1908	A small structure is noted off the footpath in the south-western corner of the Site.	A well is shown within Oak Villa. The town of Whitland to the south-west has expanded in size.
1948	A small number of small structures appear to have been constructed in the	Further expansion of Whitland has occurred with a Dairy and a Gas works shown approximately 400m and 500m, respectively, to the southwest of the Site.

Date	On-Site	Off-Site*
	southern area of the Site, adjacent to Oak Villa.	
1963-1971	A property has been constructed in the southern area of the Site that is of a similar size and configuration as the present-day farmhouse. The brick yard and small structure in the south-western corner of the Site are no longer shown on historical mapping of 1970 – 1971.	Several residential properties have been constructed along Spring Gardens to the south of the Site. The Dairy within Whitland has increased in size. The Corn Mill to the south-west is now labelled as disused.
1973	No significant changes in land use noted. Field drains (possibly streams) are shown along the southern Site boundary flowing in a westerly direction and to the north of the Site flowing in a north-westerly direction.	A cricket ground and rugby pitch have been constructed approximately 130m to the east of the Site. The gasworks located approximately 500m to the south-west is now labelled as a gasholder station. A further well is noted approximately 330m to the north-east associated with a nearby farm/residential property (Ysguborfawr).
1989 -1992	No significant changes in land use noted.	Whitland Industrial Estate has been constructed approximately 200m to the south-east of the Site.
2001	A small structure is shown within the location of the former brickyard within the south-eastern corner of the Site.	The A40 has been constructed and runs parallel with the northern Site boundary.
2010	The small structure in the south-eastern corner is no longer shown.	Further residential development around Whitland.
2022	No significant change in land-use	At present, a residential development is currently undergoing construction to the immediate south of the Site.
*All quoted distances have been measured from the closest point from the Site boundary.		

It is considered that the potentially contaminative historical land uses within Whitland such as the historical Gas works and Corn Mill are too far from the Site to present a plausible contaminant source that could adversely impact upon on the Site. These sources are therefore not considered within Section 4.

2.3 REGULATORY INFORMATION

A review of relevant regulatory information obtained from the Groundsure Report is summarised in Table 2-3. Distances, unless specified, are from the nearest Site Boundary.

Table 2-3 – Summary of Relevant Regulatory Information

Information	On-Site Location	Off-site Location (Within 250m/500m as specified) *	Details
Licensed Discharges to Controlled Waters	0	5* (within 500m)	Five records have been identified between 296m south-west and 446m east of the Site. These include sewage and trade discharges, three of which are associated with the Dairy within Whitland into Afon Gronw, to land and via open ditch/tributary to the Nant yr Arl. The nearest record is located 296m south-west of the Site and is noted to have an effective status.
Pollution Incidents (EA)	0	2* (within 250m) & 4* (within 500m)	Six incidents were reported between 224m south-west and 343m north-east of Site (and between 2001 and 2015). Incidents involved pollutants derived from construction/demolition wastes as well as, soils, suspended solids and fuels/oils. Two incidents in 2011 were classified as having had a significant impact on water quality.
Landfill Sites	0	0 (within 500m)	
Surface Ground Workings	1*	2* (within 250m)	On-site records relate to the former brick yard that was historically present in the south-eastern corner of the Site (as identified within Table 2-2 above). Off-site features relate to: ▪ Unspecified workings located 81m east between 1973 and 1992 which likely relate to the construction of the sports pitches noted within Table 2-2 above; and a ▪ Pond located 174m north (as shown on mapping between 1887- 1948).
Waste Exemptions	6	17 (within 500m)	The on-site waste exemption records refer to normal agricultural practices such as the spreading of wastes, use of wastes in construction and for treatment/disposal via burning. The majority of off-site records also relate to similar agricultural practices undertaken to the south of the Site.
Historical Industrial Land Uses	1*	8* (within 500m)	Industrial land use on-site relate to the former brick yard (that was shown on historical mapping between 1887 and 1963). Off-site industrial land uses within 500m relate to the land uses identified within Table 2-2 above as well as a plant nursery (196m east), unspecified workings (81m east) and railway cuttings and sidings (430m south-west at closest point).

Information	On-Site Location	Off-site Location (Within 250m/500m as specified) *	Details
Historical Tanks	0	5* (within 500m)	The nearest is located approximately 126m to the east of the Site however, the use of which is unspecified.
Historical Garages/Filling Stations	0	2* (within 500m)	Two garages were identified approximately 360m - 380m and 480m south-west, respectively.
Current Garages/Filling Stations	0	1* (within 500m)	An obsolete recent filling station has been identified approximately 366m to the south-west.
Historical Energy Features	0	2* (within 500m)	Two substations/transformers have been identified between 43m south-east and 249m south-west, respectively. Both appear to date back to the early 1970's.
Recent Industrial Land Uses	0	7* (within 250m)	Off-Site current industrial land uses include a number of trades within the Industrial Estate (210m east), two electrical substations (nearest is 4m south), a pumping station (15m south), and a second hand car dealership (163m south-west).
*Where obvious duplication of records has been noted within the Groundsure Report the number of features has been grouped and adjusted within the table above.			

WSP submitted a request to Carmarthenshire County Council for information relating to the contaminated land status of the Site. However, to date (May 2020) no response has been received.

2.4 SITE WALKOVER

A Site walkover was carried out on the 21st April 2022 by an experienced WSP Engineer. All areas of the Site were accessible, however, in-line with WSP's health and safety procedures, only an external inspection of existing structures was conducted.

The following key observations were made during the Site walkover:

- Localised stockpiling/fly-tipping of agricultural wastes noted to the south of the barn (which is located on the eastern boundary of the Site) and towards the south-western corner of the Site;
- The barn was being used to house livestock (cattle);
- Residential properties are being constructed to the immediate south of the Site;
- A slightly raised engineered mound supporting an electricity pylon was noted in the north-western area of the Site;
- A field in the south-east of the Site was in use as a storage yard and car park for the neighbouring residential development; and,
- A number of small streams were identified on-site, the layout of which were roughly consistent with available mapping. A small locality of wet/boggy ground was noted in the south-western area of the Site.

2.5 CONTAMINATED LAND REGISTER

There are no records that indicate that the Site, or land within 1km, has been designated as ‘contaminated’ under Part 2A of the Environmental Protection Act 1990 within the Groundsure Report (March 2022).

3 GEO-ENVIRONMENTAL SETTING

3.1 PUBLISHED GEOLOGY

The following published geological information was obtained from a review of Geological Survey Online Map Viewer and Geological Survey of England and Wales, Sheet 229 Carmarthen, 1:63,000,1967.

MADE GROUND

No artificial deposits are recorded to be present on-site, however, a limited thickness of localised Made Ground may be present within the developed areas of the Site and in the area of the former brick yard historically located in the eastern area of the Site.

SUPERFICIAL GEOLOGY

No superficial deposits are recorded to be present on-Site.

BEDROCK GEOLOGY

The bedrock beneath the Site is recorded to comprise the Arenig Tetragraptus Beds (Mudstone) reported by the BGS Lexicon to comprise *"fossiliferous shale beds."*

STRUCTURAL GEOLOGY

Bedding planes beneath the Site are indicated to dip 45° to the north-west. The Groundsure Report does not identify any other linear features (e.g., faults/folds) within 500m of the Site boundary.

BGS EXPLORATORY HOLE RECORDS

There is one relevant BGS borehole record (SN21NW10) covering the same bedrock geology as recorded on-Site is available and is presented within **Appendix E.**

This borehole was located approximately 3km to the east of the Site, and was progressed to 10m below ground level (bgl). The ground conditions encountered comprised a highly weathered, laminated, dark grey and iron-stained weak shale to approximately 7.00m bgl which was underlain by a moderately weathered, thinly bedded, dark grey and moderately strong shale.

3.2 COAL MINING ACTIVITIES

The Coal Authority interactive map viewer indicates that the Site is not located within a coal mining reporting area.

3.3 NON-COAL MINING ACTIVITIES

The Groundsure Report has identified historical on-site surface ground workings in the eastern area of the Site which relate to the former brick yard in the east of the Site.

There are also two more records of surface ground workings, comprising of unspecified ground workings 81m to the east and a pond 174m to the north. As detailed within Table 2-3, the workings to the east are likely associated with the construction of the sports pitches and it's possible that the pond was historically infilled.

In addition, records of potential small scale underground mining of a vein/mineral on-Site and within 500m to the west have been noted within the Groundsure Report. The vein/mineral on Site refers to

the area of the brick yard. However, for these features the Groundsure Report also states that the *"potential for encountering difficult ground conditions is unlikely or localised and is at a level where it need not be considered".*

3.4 UNEXPLODED ORDNANCE (UXO)

A review of the Zetica Risk Map available online indicates that the Site is in an area of low unexploded ordnance (UXO) risk defined as *"areas indicated as having 15 bombs per 1000 acre or less"* during WWII. A Pre-Desk Study Assessment for the Site has been obtained from Zetica which has indicated that there are no readily available records that indicate that the Site may have been impacted by historical bombing events. A copy of the Pre-Desk Study Assessment is presented in **Appendix F.**

3.5 GEOTECHNICAL HAZARDS

Information on potential ground stability hazards assessed by the BGS are included in the Groundsure Report and are summarised in Table 3-1. Ground stability hazards at the Site range from negligible to low.

Table 3-1 - Summary of Ground Stability Hazards

Feature	Hazard Rating
Shrink swell properties of clay	Very low
Running sands	Negligible
Compressible deposits	Negligible
Collapsible deposits	Very low
Landslides	Low
Ground dissolution of soluble rocks	Negligible

3.6 RADON

Within the Groundsure Report it is estimated that across the majority of the Site between 3% and 5% of properties would exceed the Radon Action Level. A small area towards the Site's southern boundary has between 1% and 3% of properties estimated above the Action Level.

The report states that basic radon protection measures are required across most of the Site for future structures. Design of appropriate protection measures would be subject to agreement with the Local Authority.

3.7 HYDROGEOLOGY

The Arenig Tetragraptus bedrock underlying the Site is classified as a Secondary B Aquifer which is defined as *"an aquifer with lower permeability layers which may store/yield limited amounts of ground water and is generally a water bearing part of a former non-aquifer."*

The Groundsure Report indicates that groundwater beneath the Site is of high vulnerability associated with productive bedrock aquifer with well-connected fractures and overlying soils of an

intermediate leaching class. Groundwater beneath the Site has been identified as part of the Tywi, Taf and Gwendraeths groundwater body which has historically been assessed with a “poor” chemical rating (2017).

The Site is not located within a Source Protection Zone (SPZ). There are four groundwater abstraction licences within 500m to the south of the Site. Each of these are wells for farming and domestic use. Abstraction from these wells commenced in 1965 to 1966 and are all now classified as ‘historical’. The presence of two off-site wells identified following a review of historical mapping (see Table 2-2) indicates that some small-scale domestic, potable abstractions historically occurred in the local area.

3.8 HYDROLOGY

According to the Lle Geoportal, the Site lies within the Afon Gronw catchment area.

Two unnamed surface water features/land drains have been identified on-Site, one of which runs immediately adjacent to the northern Site boundary and the other which crosses the southern area of the Site. The Groundsure Report indicates that they both contain water all year round and are narrower than 5m in width.

Both features are indicated to flow east to west across the Site and discharge into Mill Race which is located approximately 50m to the west of the Site. Mill Race is a tributary of the Afon Gronw which is located approximately 150m to the west of the Site, and which flows towards the Afon Taf, located approximately 1km further south.

The Afon Gronw and Mill Race are classified as a Main River by NRW. The Afon Gronw has historically had both chemical and ecological quality parameters classified as “good (2016) by the NRW. This is the most recent assessment of water quality that has been performed.

A further unnamed tributary to Mill Race is located approximately 50m to the north of the Site.

Two unnamed tributaries to the Afon Taf are identified approximately 245m to the south and 300m to the south-east of the Site. Two ponds and a spring were also identified within 500m of the Site boundary following a review of historical ordnance survey mapping (see Table 2-2).

3.9 FLOOD RISK

The online Flood Risk Development Advice Map provided by NRW indicates that the Site is located within Zone A, which is classified as *“at little or no risk of fluvial or coastal/tidal flooding.”*

The online Flood Risk Assessment Wales Map provided by NRW indicates that the majority of the Site is not at risk of flooding from surface water and small watercourses. However, localised areas around the immediate vicinity of the surface water features that are located adjacent to the northern Site boundary and which cross the southern area of the Site are within Flood Zones 2 and 3 (for surface water and small watercourses). This is defined as Areas with 0.1% to 1% (1 in 1000 to 1 in 100) chance of flooding in a given year (Zone 2) and with a 1% (1 in 100) chance or greater of happening in any given year (Zone 3).

The Groundsure Report indicates that the Site is not indicated to be currently benefitting from any flood defence systems.

The Groundsure Report lists no historic or recent flooding events at the Site caused by rivers, groundwater or surface water).

The Groundsure Report provides a similar data set to the Flood Risk Assessment Wales Map, with the very low, low, medium and high risk of surface water flooding reported as a 1 in 1000-year, 1 in 250-year, 1 in 100-year and 1 in 30-year return period. The area immediately adjacent to the surface water feature that crosses the southern area of the Site are indicated, at worst, to be at 1 in 30-year return period with a flood depth greater than 1.0m

The Groundsure Report indicates that the Site is at negligible risk from groundwater flooding.

3.10 DESIGNATED SITES AND SENSITIVE LAND USES

A review of the Groundsure Report has not identified any ecologically sensitive land uses within 500m of the Site. One scheduled ancient monument has been identified approximately 165m to the north-west of the Site. This feature is described as *"the Roman road 250m northwest of Pwll-y-Hwyaid*".

4 PRELIMINARY CONCEPTUAL SITE MODEL AND LAND QUALITY RISK ASSESSMENT

4.1 INTRODUCTION

The formulation and development of the Conceptual Site Model (CSM) is fundamental to the overall process of understanding potential risks associated with potential sources of contamination that may be present at a Site. Within the CSM potential sources of contamination, potential receptors (both on and off-site) and potential exposure pathways that may be present are identified, together with the possible relationships between them which are known as 'contaminant linkages'.

Based on the findings of the previous sections of this report and the Site walkover it is considered that the majority of the Site is unlikely to be impacted by contamination. However, the potential exists for current and historical land use activities to have led to localised contamination at the Site. As part of the Site redevelopment it will be necessary to establish the degree and extent of any contamination present and the risks that this may present.

To this end, a Conceptual Site Model (CSM) and preliminary land quality risk assessment have been prepared in accordance with Land Contamination Risk Management (LCRM) guidance issued by the Environment Agency. The preliminary risk assessment provides a qualitative assessment of the risks that may occur following the Site redevelopment.

4.2 POTENTIAL SOURCES OF CONTAMINATION

Table 4-1 provides a summary of the potential sources of contamination and the likely nature of such sources, both on site and in the immediate surroundings.

Table 4-1 - Potential Sources of Contamination

Location	Source	Potential Contaminants of Concern
On-Site	Stockpiling of waste materials and the presence of localised Made Ground associated with the development of the Site, and the former brick yard located in the south-eastern corner of the Site.	Asbestos, Total Petroleum Hydrocarbons (TPH), Polyaromatic hydrocarbons (PAHs), heavy metals, organics.
	Application of soil additives (fertilisers, pesticides and herbicides) associated with historical/ongoing agricultural Site use.	Phosphates, nitrates, ammonia, potassium, pesticides and herbicides (e.g., aldrin and dieldrin).
	Naturally occurring elevated levels of Radon	Radon gas
Off-Site	Potentially contaminative off-site features/trades within 500m including: ▪ One historical electrical substation/transformer identified 43m to the south-east (pre-1970s); ▪ A potentially infilled pond (174m north)	A wide range of potential contaminants including inorganic compounds (sulphate, sulphide and metals), hydrocarbons, polycyclic aromatic hydrocarbons (PAH), semi/volatile organic compounds (SVOC/VOCS's), hazardous gasses and vapours, PCBs, anti-freeze (ethylene glycols), metals, etc.

Location	Source	Potential Contaminants of Concern
	▪ Industrial estate located 200m to the south-east; and, ▪ Historical tanks of unspecified use (nearest is 126m to the east)	

4.3 POTENTIAL PATHWAYS

In the context of the proposed redevelopment of the Site, the following potential exposure or migration pathways associated with the identified potential source(s) have been identified:

- Pathways to Human Health receptors:
  - Dermal contact with soils;
  - Ingestion of dusts/soil particles;
  - Inhalation of dusts and fibres (on and off-Site receptors); and
  - Inhalation of hazardous ground gases/vapours (on and off-site receptors);
- Pathways to Controlled Waters receptors:
  - Soil erosion and/or overland flow to on-site surface water features;
  - Leaching of contaminants through the unsaturated zone and subsequent impact on groundwater;
  - Impact to groundwater via poor quality drainage;
  - Vertical migration to underlying bedrock aquifers;
  - Lateral migration of contaminants within groundwater to surface water features (i.e., contribution via baseflow); and
  - Lateral migration of contaminants within groundwater to Site (off-Site sources only).
- Pathways applicable to on-Site infrastructure
  - Direct contact with corrosive substances (e.g., sulphates and hydrocarbons) in the soil and shallow groundwater;
  - Accumulation of hazardous gases/ vapours within structures (explosive risk).

4.4 POTENTIAL RECEPTORS

HUMAN HEALTH

- Future Site users (visitors/ employees at the hospital); and
- Off-Site human health receptors (neighbouring site users and residents).

Construction and maintenance workers are not included as potential human health receptors within this assessment as potential risks will be covered with appropriate work control procedures. These are legal requirements under the Construction, Design and Management (CDM) Regulation 2015 to ensure suitable health and safety controls are in place during construction works.

CONTROLLED WATERS

- Groundwater within the Arenig Tetragraptus Beds (Secondary B Aquifer);
- On-site surface water features/land drains, which are tributaries of the Afon Gronw; and

- Off-site surface water features identified within 500m of the Site including:
  - Mill Race (50m to the west);
  - The Afon Gronw approximately (150m to the west);
  - Unnamed tributary to Mill Race (50m north);
  - Two unnamed streams/tributaries to the Afon Taf (245m to the south and 300m to the south-east); and
  - Two ponds (located approximately 150m north and 300m to the south).

INFRASTRUCTURE

- Buildings/structures and infrastructure (inclusive of any water supply pipes etc.) that may be constructed as part of the future Site development.

4.5 PRELIMINARY LAND QUALITY RISK ASSESSMENT

It is important to recognise that any risks identified during a preliminary assessment, such as that presented below, are perceived risks based on the recorded information reviewed. A more detailed assessment would require Site specific data from intrusive investigation. The preliminary assessments presented herein are qualitative based on professional judgements following review of the available data and within the context of the existing/proposed use. Those risk categories presented (Very Low, Low, Low to Moderate, Moderate, High, Very High) follow guidance outlined in CIRIA Publication C552, Contaminated Land Risk Assessment – A Guide to Good Practice. CIRIA states that risk levels should be based on an understanding of both the probability (likelihood) of a risk occurring and the magnitude of the potential consequence (severity) of a risk. CIRIA defines four levels of probability and four levels of severity with relation to contaminated land, as presented in **Appendix G.**

Table 4-2 – Initial Conceptual Site Model and Preliminary Land Quality Risk Assessment

Potential Contaminant Linkage (PCL)	Source	Pathway	Receptor	Consequence of Risk	Likelihood of Risk	Risk	Comments
On-site sources of potential contamination							
1	Stockpiling of waste materials and the presence of localised Made Ground associated with the development of the Site, and the former brick yard located in the south-eastern corner of the Site.	Dermal contact with soils; Ingestion of dusts/soil particles; Inhalation of dusts and fibres; and Inhalation of hazardous ground gasses/vapours	Future Site users	Medium	Unlikely	Low	The proposed development of the Site as a hospital/health care facility will result in the majority of the Site being covered with hardsurfacing or structures which will prevent the direct contact of soils with future Site users. The stockpiled materials will be removed as part of Site redevelopment. It is recommended that intrusive investigation is undertaken to establish the nature of any Made Ground associated with the former brick yard to assess whether this material shall need removing as part of Site redevelopment.
2		Inhalation of dusts and fibres	Neighbouring Site users	Medium	Unlikely	Low	The generation of dusts would most likely occur upon disturbance of on-site soils during demolition and/or earthworks undertaken as part of the construction phase. During the construction phase, potential risks posed to off-site receptors should be appropriately managed by the Principal Contractor.
3		Soil erosion and/or overland flow to on-Site surface water features; Leaching of contaminants through the unsaturated zone and subsequent impact on groundwater; Impact to groundwater via poor quality drainage; Vertical migration to underlying superficial and/or bedrock aquifers; and Lateral migration of contaminants within groundwater to surface water features (i.e., contribution via baseflow).	Underlying groundwater and on-site/nearby surface water features	Medium	Low	Moderate/Low	Whilst the risk presented to controlled water receptors is considered to be moderate/low, further assessment of potential contaminant impacts on surface water and groundwater receptors located within close proximity of the Site is recommended in order to better understand the risks presented.
4		Direct contact with corrosive substances (e.g., sulphates and hydrocarbons) in the soil and shallow groundwater.	Future buildings and structures	Mild	Low	Low	The presence of potentially contaminated Made Ground deposits can impact on the durability of buried services / utilities and foundations due to aggressive ground conditions. An assessment of the aggressivity of the ground conditions should be undertaken to determine the need for mitigation.
5		Accumulation of hazardous ground gases within structures (explosive risk).		Severe	Unlikely	Moderate/Low	Whilst the risk presented from ground gases is considered to be moderate/low, further assessment of the ground gas generation potential of Made Ground deposits beneath the Site is recommended via an intrusive investigation and subsequent gas monitoring.
6	Application of soil additives (fertilisers, pesticides and herbicides) associated with historical/ongoing agricultural Site use	Dermal contact with vegetation/soils; Ingestion of dusts/soil particles; and Inhalation of dusts	Future Site users	Medium	Unlikely	Low	The use of herbicides and pesticides may have historically taken place across the undeveloped fields, although these are likely to have now degraded and not accumulated in significant concentrations. The proposed development of the Site as a hospital/health care facility will result in the majority of the Site being covered with hard surfacing or structures which will prevent the direct contact of soils with future Site users.

Potential Contaminant Linkage (PCL)	Source	Pathway	Receptor	Consequence of Risk	Likelihood of Risk	Risk	Comments
7		Inhalation of dusts.	Neighbouring site users	Medium	Unlikely	Low	During the construction phase, potential risks posed to off-site receptors should be appropriately managed by the Principal Contractor.
8		Soil erosion and/or overland flow to on-Site surface water features	On-site/nearby surface water features	Medium	Low	Moderate/Low	Whilst the risk presented to controlled water receptors is considered to be moderate/low, further assessment of potential contaminant impacts on surface water and groundwater receptors located within close proximity of the Site is recommended in order to better understand the risks presented.
13	Naturally occurring elevated levels of Radon	Inhalation of hazardous radon gas	Future Site users	Medium	Low	Moderate/Low	Given the potential for the bedrock to emit radon gas further assessment should be undertaken to establish the degree of the protective measures that need to be incorporated within building structures.
Off-site sources of potential contamination							
14	Potentially contaminative off-site features/trades identified in a potentially up-stream location within 500m including: ▪ A substation/transformer identified 43m south-east (pre-1970s); ▪ A potentially infilled pond (174m north) ▪ Industrial estate located 200m to the south-east; and, ▪ Historical tanks of unspecified use (nearest is 126m to the east)	Inhalation of hazardous ground gases/vapours	Future Site users	Medium	Unlikely	Low	It is considered unlikely that off-site sources of potential contamination could potentially generate sufficient quantities of ground gases to present an unacceptable risk to future Site users or proposed buildings/structures. However, further assessment of the ground gas regime at the Site is recommended as part of an intrusive investigation with subsequent gas monitoring.
15		Accumulation of hazardous gases within structures (explosive risk)	Future buildings and structures	Severe	Unlikely	Moderate/Low	
16		Lateral migration of contaminants within groundwater to Site.	Underlying groundwater and on-site surface water features	Medium	Unlikely	Low	It is considered unlikely that significant off-site sources of groundwater contamination are present and have the potential to present an unacceptable risk to groundwater and surface water receptors at the Site. However, further assessment of the groundwater quality at the Site is recommended as part of an intrusive investigation.
17		Direct contact with corrosive substances in shallow groundwater	Future buildings and structures	Mild	Unlikely	Very low	It is considered unlikely that contaminated groundwater originating off site would adversely impact on the durability of buried infrastructure. Nevertheless, an assessment of the potentially aggressivity of ground conditions at the Site should be undertaken as part of an intrusive investigation.

5 GROUND CONDITION CONSTRAINTS AND OPPORTUNITIES

5.1 ANTICIPATED GROUND CONDITIONS

The topography at the Site slopes downwards towards the south-west, with the elevation varying between approximately 45m AOD in the north-east to approximately 25m AOD in the south-western corner.

During the Site walkover a slightly raised engineered mound supporting an electricity pylon was noted in the north-western corner of the Site.

The published geological maps indicate that superficial deposits are absent from the Site with weathered bedrock likely to be present at the near surface.

The presence of localised boggy ground conditions indicates that soils may be poorly drained in areas of the Site.

Based on an understanding of the anticipated ground conditions, Table 5-1 summarises the possible ground condition constraints and opportunities that have been identified.

Table 5-1 – Potential Ground Condition Constraints and Opportunities

Potential Hazard/Feature	Details	Method of Risk Reduction
Shallow groundwater	Groundwater is potentially shallow at the Site given the presence of springs noted within the vicinity of the Site and boggy conditions noted underfoot during a walkover. This may require consideration during construction design should underground structures be proposed.	An intrusive investigation should be undertaken across the Site to better understand the hydrogeological regime. Dewatering of excavations and tanking of below ground structures may be required during redevelopment.
Poor Site drainage conditions	Areas of ground on-site indicate the presence of shallow groundwater and/or poor drainage (e.g., boggy ground conditions noted in the north-west of the Site).	If ground conditions beneath the Site do not favour soakaway drainage, alternative surface water management systems may be required.
Suitability of ground conditions for foundations.	The published geological maps indicate that superficial deposits are absent at the Site. The near surface ground conditions would be expected to provide a suitable founding stratum for lightly loaded structures with heavier structures potentially requiring deeper foundations.	An intrusive investigation should be undertaken across the Site to establish the ground conditions and enable foundation design of proposed structures
Below ground obstructions	The foundations of existing on-site structures provide possible below ground obstructions.	Existing foundations and other obstructions will need removing during Site redevelopment.

Potential earthworks requirements	Given the sloping nature of the Site earthworks may be required to provide an appropriate development platform.	Development of the proposed masterplan will inform the need for the extent of any earthworks.
Potential for soakaway drainage	It is considered likely that the weathered bedrock will provide a fine-grained deposit (rather than a coarse-grained deposit) which is unlikely to be suitable for soakaway drainage	Infiltration testing should be undertaken as part of an intrusive investigation to assess the suitability for the use of soakaway drainage.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 SUMMARY

WSP UK Ltd (WSP) was appointed by Hywel Dda University Health Board (the Client) via BDP to prepare a preliminary assessment of the likely ground conditions together with the identification of potential development opportunities and constraints to support the potential construction of a health care facility/hospital at the Site.

Based on the findings of the assessment the following conclusions and recommendations have been made:

6.2 CONCLUSIONS

The Site is in an area of moderate to low environmental sensitivity.

The Site is reported to be underlain by bedrock deposits of the Arenig Tetragraptus Beds (Mudstone) which are classified as a Secondary B Aquifer.

Groundwater vulnerability across the Site is reported to be high, associated with a well-connected fracture flow network within the underlying bedrock, and local small-scale domestic abstraction has been noted to have historically occurred within the area.

Minor unnamed surface water features cross the northern boundary and southern area of the Site. Both features flow from east to west and feed into Mill Race which is located 50m to the east of the Site and which is a tributary of the Afon Gronw, which is located 150m to the east of the Site. A number of other minor stream/tributaries, ponds and a spring are also present within 500m of the Site.

The online Flood Risk Development Advice Map provided by NRW indicates that the Site is located within Zone A, which is classified as *"at little or no risk of fluvial or coastal/tidal flooding."*

The online Flood Risk Assessment Wales Map provided by NRW indicates that the majority of the Site is not at risk of flooding from surface water and small watercourses. However, localised areas around the immediate vicinity of the surface water features that are located adjacent to the northern Site boundary and which cross the southern area of the Site are within Flood Zones 2 and 3 (for surface water and small watercourses). This is defined as Areas with 0.1% to 1% (1 in 1000 to 1 in 100) chance of flooding in a given year (Zone 2) and with a 1% (1 in 100) chance or greater of happening in any given year (Zone 3).

The majority of the Site is located within areas where between 3% and 5% of the properties would be estimated to exceed the Radon Action Level. As such, basic radon protection measures would likely be required within future structures.

No significant ground condition constraints have been identified at the Site in relation to future structures and infrastructure. However, the Site slopes downwards from the north-west to the south-east and earthworks may be required to provide an appropriate development platform.

It is considered that the majority of the Site is unlikely to be impacted by contamination. However, the potential exists for current and historical land use activities to have led to localised contamination at the Site. The most noticeable sources of potential contamination comprise the presence of a former brick yard that was historically located in the south-eastern area of the Site.

Within the context of the proposed development of the Site as a health care facility/hospital the undertaking of a preliminary land quality assessment has indicated that the risks presented to potential receptors (health of future Site users, controlled waters and infrastructure) from localised potential sources of contamination are considered to be typically low.

6.3 RECOMMENDATIONS

Based on the findings of this report WSP recommends the following:

Completion of an intrusive ground investigation to establish the ground conditions at the Site and to:

- Enable refinement of the Conceptual Site Model and the preliminary land quality risk assessment;
- Support foundation design of structures and potential earthworks that may be required;
- Provide an understanding of the hydrogeological and ground gas regime at the Site;
- Characterise the nature and suitability for retention of any Made Ground encountered, particularly within the vicinity of the former brick yard historically located in the south-eastern area; and

Assess the suitability for soakaway drainage.

Appendix A

FIGURES

DO NOT SCALE

Information Classification:

INTERNAL

Information that is only intended for internal distribution among WSP employees, independent consultants, contractors, sub-contractors, clients and authorised third parties.

Legend :

Approximate Site Boundary

Title : Site Layout 1
Author : ArcGIS Web AppBuilder
Scale : 1:10,000
Layout : WSP A4 Landscape
Current Time : 25/03/2022 10:41

DO NOT SCALE

Information Classification:

INTERNAL

Information that is only intended for internal distribution among WSP employees, independent consultants, contractors, sub-contractors, clients and authorised third parties.

Legend :

Approximate Site Boundary

Title : Site Layout 2
Author : ArcGIS Web AppBuilder
Scale : 1:10,000
Layout : WSP A4 Landscape
Current Time : 25/03/2022 10:41

Appendix B

LIMITATIONS

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

GENERAL

1. WSP UK Limited has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.

2. Unless explicitly agreed otherwise, in writing, this report has been prepared under WSP UK Limited standard Terms and Conditions as included within our proposal to the Client.

3. Project specific appointment documents may be agreed at our discretion and a charge may be levied for both the time to review and finalise appointments documents and also for associated changes to the appointment terms. WSP UK Limited reserves the right to amend the fee should any changes to the appointment terms create an increase risk to WSP UK Limited.

4. The report needs to be considered in the light of the WSP UK Limited proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

PHASE 1 GEO ENVIRONMENTAL AND PRELIMINARY RISK ASSESSMENTS

Coverage: *This section covers reports with the following titles or combination of titles: phase 1; desk top study; geo environmental assessment; development appraisal; preliminary environmental risk assessment; constraints report; due diligence report; geotechnical development review; environmental statement; environmental chapter; project scope summary report (PSSR), program environmental impact report (PEIR), geotechnical development risk register; and, baseline environmental assessment.*

5. The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects responses may not have been received from all parties. WSP UK Limited cannot be held responsible for any disclosures that are provided post production of our report and will not automatically update our report.

6. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, WSP UK Limited reserves the right to review such information and, if warranted, to modify the opinions accordingly.

7. It should be noted that any risks identified in this report are perceived risks based on the information reviewed. Actual risks can only be assessed following intrusive investigations of the site.

8. WSP UK Limited does not warrant work / data undertaken / provided by others.

INTRUSIVE INVESTIGATION REPORTS

Coverage: *The following report titles (or combination) may cover this category of work: geo environmental site investigation; geotechnical assessment; GIR (Ground Investigation reports); preliminary environmental and geotechnical risk assessment; and, geotechnical risk register.*

9. The investigation has been undertaken to provide information concerning either:

    i. The type and degree of contamination present at the site in order to allow a generic quantitative risk assessment to be undertaken; or

    ii. Information on the soil properties present at the site to allow for geotechnical development constraints to be considered.

10. The scope of the investigation was selected on the basis of the specific development and land use scenario proposed by the Client and may be inappropriate to another form of development or scheme. If the development layout was not known at the time of the investigation the report findings may need revisiting once the development layout is confirmed.

11. For contamination purposes, the objectives of the investigation are limited to establishing the risks associated with potential contamination sources with the potential to cause harm to human health, building materials, the environment (including adjacent land), or controlled waters.

12. For geotechnical investigations the purpose is to broadly consider potential development constraints associated with the physical property of the soils underlying the site within the context of the proposed future or continued use of the site, as stated within the report.

13. The amount of exploratory work, soil property testing and chemical testing undertaken has necessarily been restricted by various factors which may include accessibility, the presence of services; existing buildings; current site usage or short timescales. The exploratory holes completed assess only a small percentage of the area in relation to the overall size of the Site, and as such can only provide a general indication of conditions.

14. The number of sampling points and the methods of sampling and testing do not preclude the possible existence of contamination where concentrations may be significantly higher than those actually encountered or ground conditions that vary from those identified. In addition, there may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.

15. The inspection, testing and monitoring records relate specifically to the investigation points and the timeframe that the works were undertaken. They will also be limited by the techniques employed. As part of this assessment, WSP UK Limited has used reasonable skill and care to extrapolate conditions between these points based upon assumptions to develop our interpretation and conclusions. The assumption made in forming our conclusions is that the ground and groundwater conditions (both chemically and physically) are the same as have been encountered during the works undertaken at the specific points of investigation. Conditions can change between investigation points and these interpretations should be considered indicative.

16. The risk assessment and opinions provided are based on currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values. Specific assumptions associated

with the WSP UK Limited risk assessment process have been outlined within the body or associated appendix of the report.

17. Additional investigations may be required in order to satisfy relevant planning conditions or to resolve any engineering and environmental issues.

18. Where soil contamination concentrations recorded as part of this investigation are used for commentary on potential waste classification of soils for disposal purposes, these should be classed as indicative only. Due consideration should be given to the variability of contaminant concentrations taken from targeted samples versus bulk excavated soils and the potential variability of contaminant concentrations between sampling locations. Where major waste disposal operations are considered, targeted waste classification investigations should be designed.

19. The results of the asbestos testing are factually reported and interpretation given as to how this relates to the previous use of the site, the types of ground encountered and site conceptualisation. This does not however constitute a formal asbestos assessment. These results should be treated cautiously and should not be relied upon to provide detailed and representative information on the delineation, type and extent of bulk ACMs and / or trace loose asbestos fibres within the soil matrix at the site.

20. If costs have been included in relation to additional site works, and / or site remediation works these must be considered as indicative only and must be confirmed by a qualified quantity surveyor.

EUROCODE 7: GEOTECHNICAL DESIGN

21. On 1st April 2010, BS EN 1997-1:2004 (Eurocode 7: Geotechnical Design – Part 1) became the mandatory baseline standard for geotechnical ground investigations.

22. In terms of geotechnical design for foundations, slopes, retaining walls and earthworks, EC7 sets guidance on design procedures including specific guidance on the numbers and spacings of boreholes for geotechnical design, there are limits to methods of ground investigation and the quality of data obtained and there are also prescriptive methods of assessing soil strengths and methods of design. Unless otherwise explicitly stated, the work has not been undertaken in accordance with EC7. A standard geotechnical interpretative report will not meet the requirements of the Geotechnical Design Report (GDR) under Eurocode 7. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. The report is likely to represent a Ground Investigation Report (GIR) under the Eurocode 7 guidance.

DETAILED QUANTITATIVE RISK ASSESSMENTS AND REMEDIAL STRATEGY REPORTS

23. These reports build upon previous report versions and associated notes. The scope of the investigation, further testing and monitoring and associated risk assessments were selected on the basis of the specific development and land use scenario proposed by the Client and may not be appropriate to another form of development or scheme layout. The risk assessment and opinions provided are based on currently available approaches in the generation of Site Specific Assessment Criteria relating to contamination concentrations and are not considered to represent a risk in a specific land use scenario to a specific receptor. No liability can be accepted for the retrospective effects of any future changes or amendments to these values, associated models or associated guidance.

24. The outputs of the Detailed Quantitative Risk Assessments are based upon WSP UK Limited manipulation of standard risk assessment models. These are our interpretation of the risk assessment criteria.

25. Prior to adoption on site they will need discussing and agreeing with the Regulatory Authorities prior to adoption on site. The regulatory discussion and engagement process may result in an alternative interpretation being determined and agreed. The process and timescales associated with the Regulatory Authority engagement are not within the control of WSP UK Limited. All costs and programmes presented as a result of this process should be validated by a quantity surveyor and should be presumed to be indicative.

GEOTECHNICAL DESIGN REPORT (GDR)

26. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. All the relevant information needs to be provided to allow for a GDR to be produced.

MONITORING (INCLUDING REMEDIATION MONITORING REPORTS)

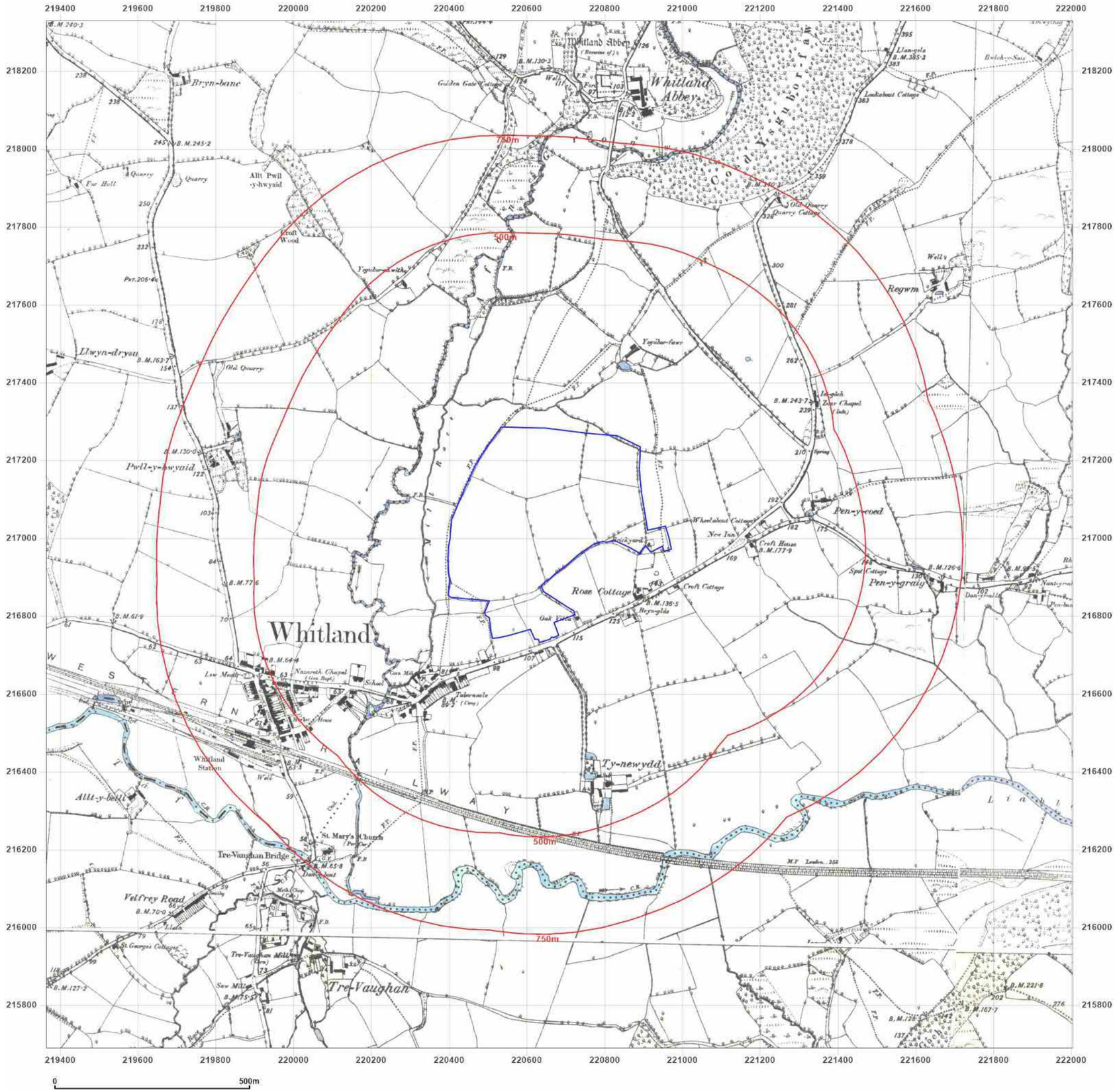
27. These reports are factual in nature and comprise monitoring, normally groundwater and ground gas and data provided by contractors as part of an earthworks or remedial works.

28. The data is presented and will be compared with assessment criteria.

Appendix C

GROUNDSURE REPORT

Confidential



Site Details:

Land at Spring Gardens,
Whitland, SA34 0LG

Client Ref: Site_12
Report Ref: WSP-8608994
Grid Ref: 220683, 217009

Map Name: County Series

Map date: **1887**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

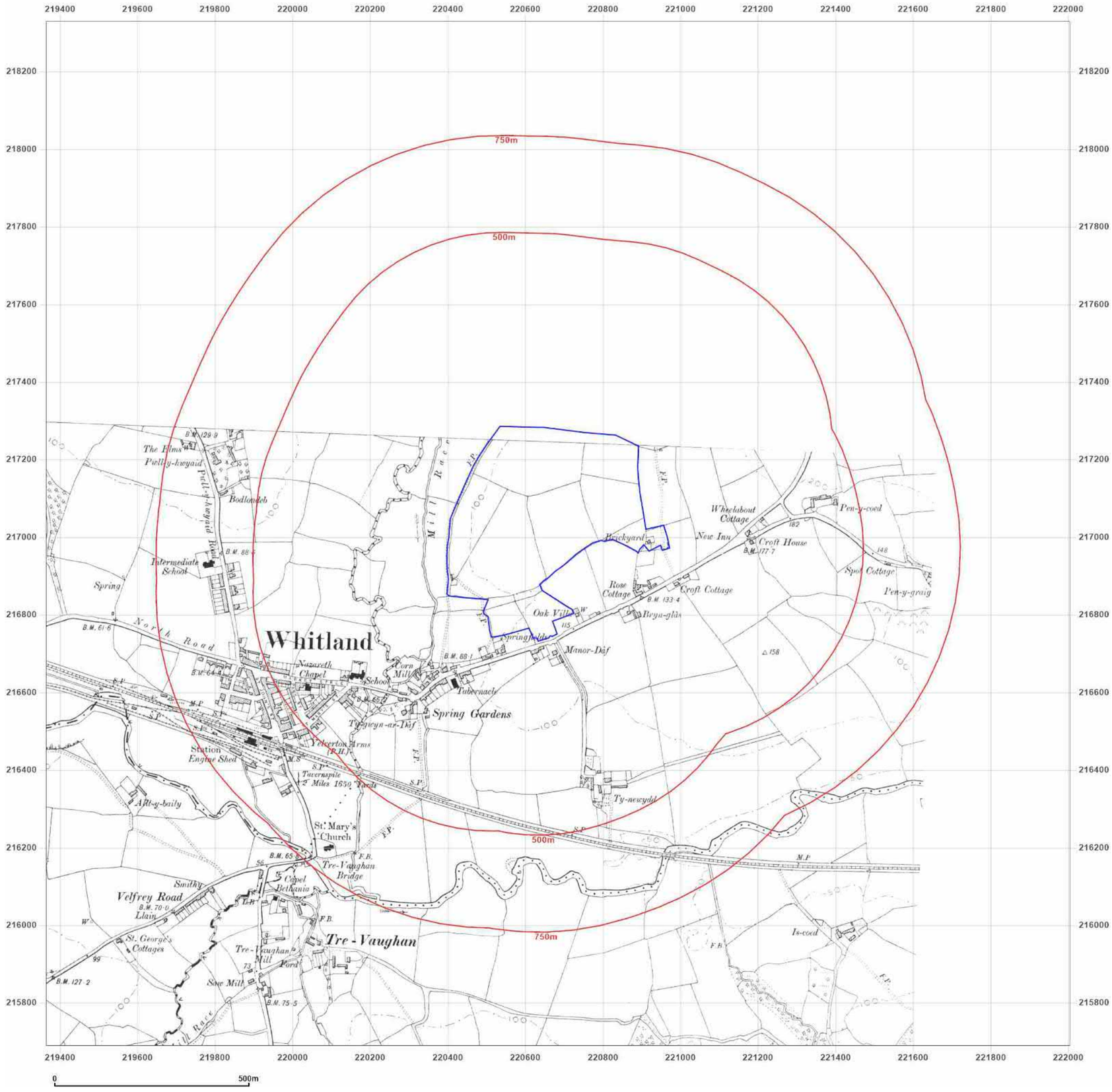
Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 21 March 2022

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



Site Details:

Land at Spring Gardens,
Whitland, SA34 0LG

Client Ref: Site_12
Report Ref: WSP-8608994
Grid Ref: 220683, 217009

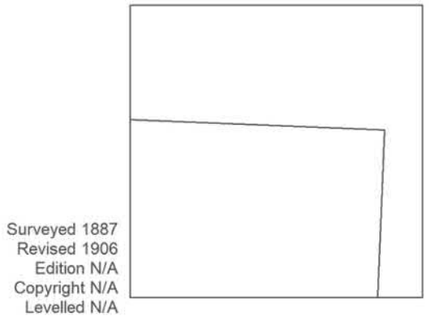
Map Name: County Series

Map date: **1906**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S



Surveyed 1887
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

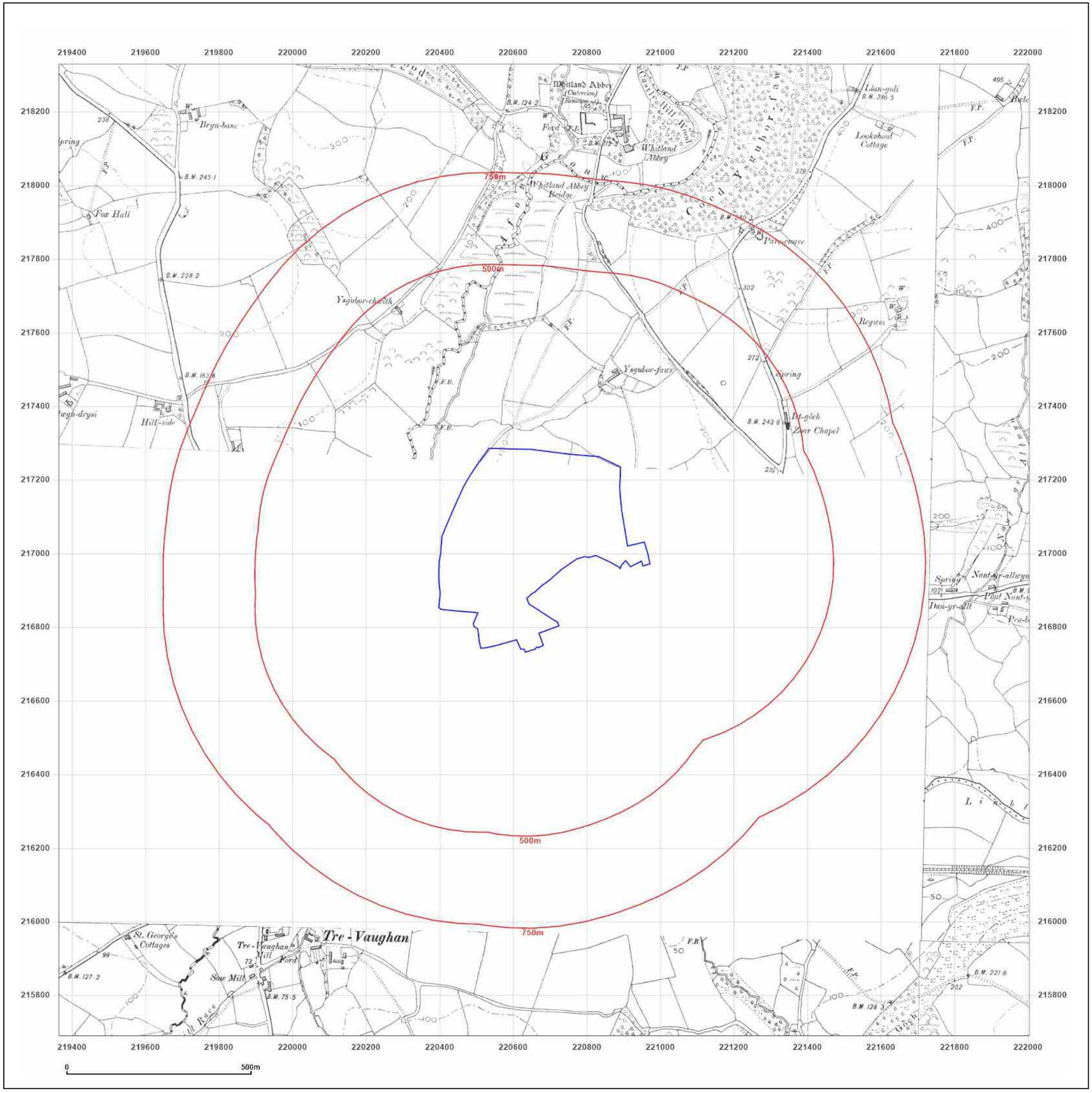
Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 21 March 2022

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



Site Details:

Land at Spring Gardens,
Whitland, SA34 0LG

Client Ref: Site_12
Report Ref: WSP-8608994
Grid Ref: 220683, 217009

Map Name: County Series

Map date: **1905-1907**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1887
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1907
Edition 1907
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1905
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1907
Edition 1907
Copyright N/A
Levelled N/A

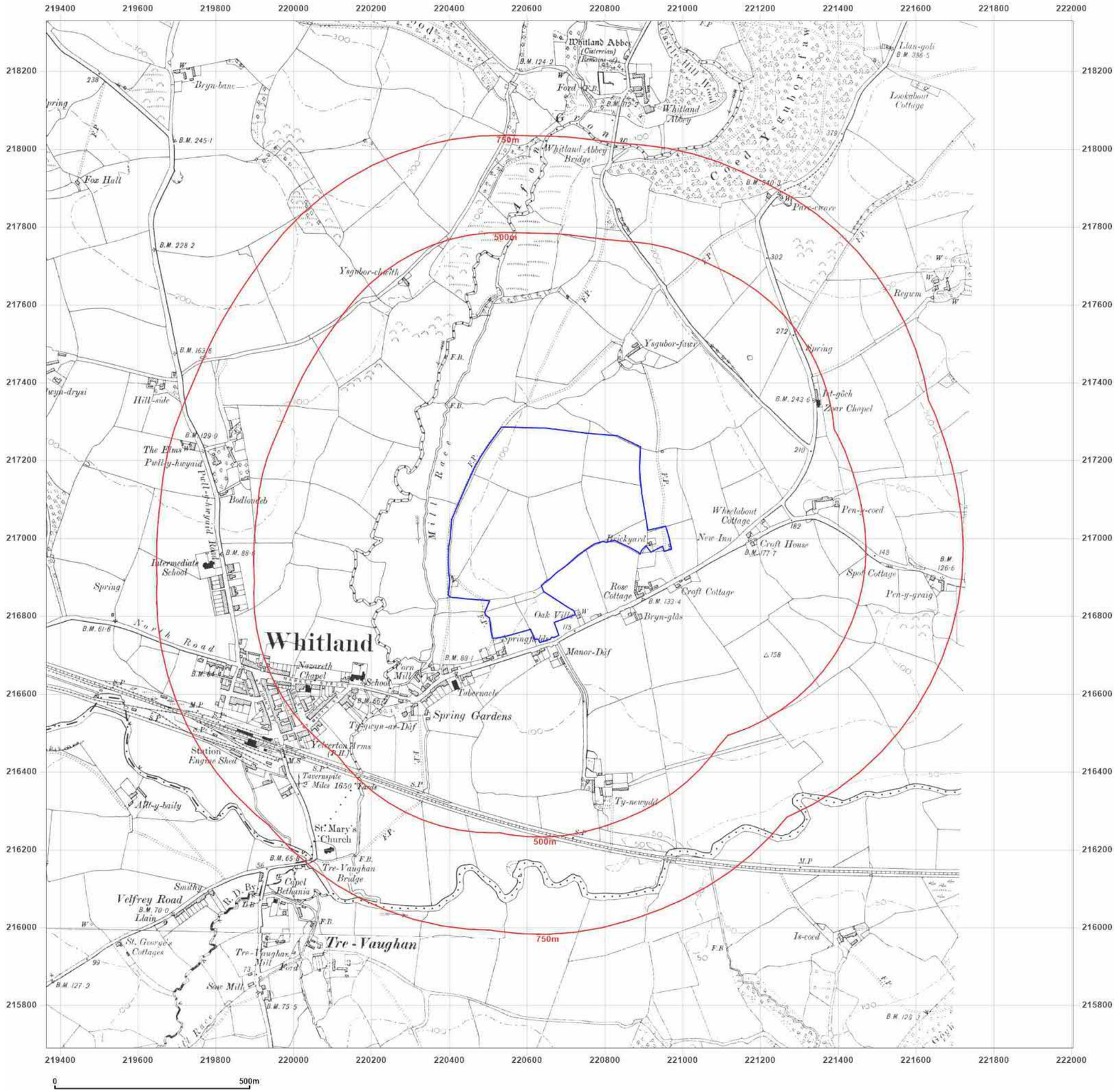
Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 21 March 2022

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



Site Details:

Land at Spring Gardens,
Whitland, SA34 0LG

Client Ref: Site_12
Report Ref: WSP-8608994
Grid Ref: 220683, 217009

Map Name: County Series

Map date: **1908**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1887
Revised 1908
Edition 1908
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1908
Edition 1908
Copyright N/A
Levelled N/A

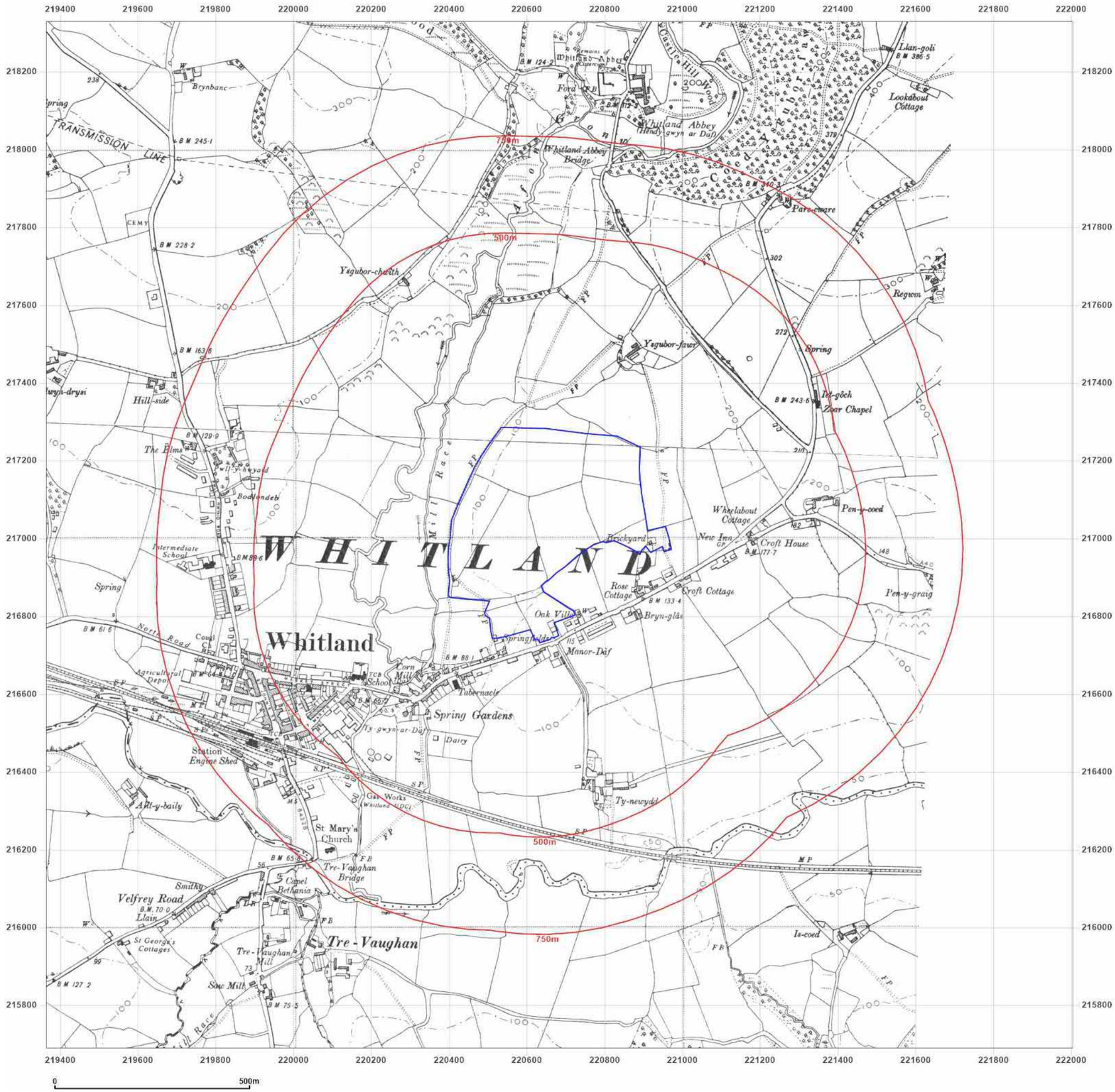
Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 21 March 2022

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



Site Details:

Land at Spring Gardens,
Whitland, SA34 0LG

Client Ref: Site_12
Report Ref: WSP-8608994
Grid Ref: 220683, 217009

Map Name: County Series

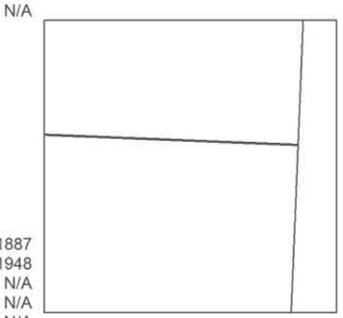
Map date: **1948**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1887
Revised 1948
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1887
Revised 1948
Edition N/A
Copyright N/A
Levelled N/A

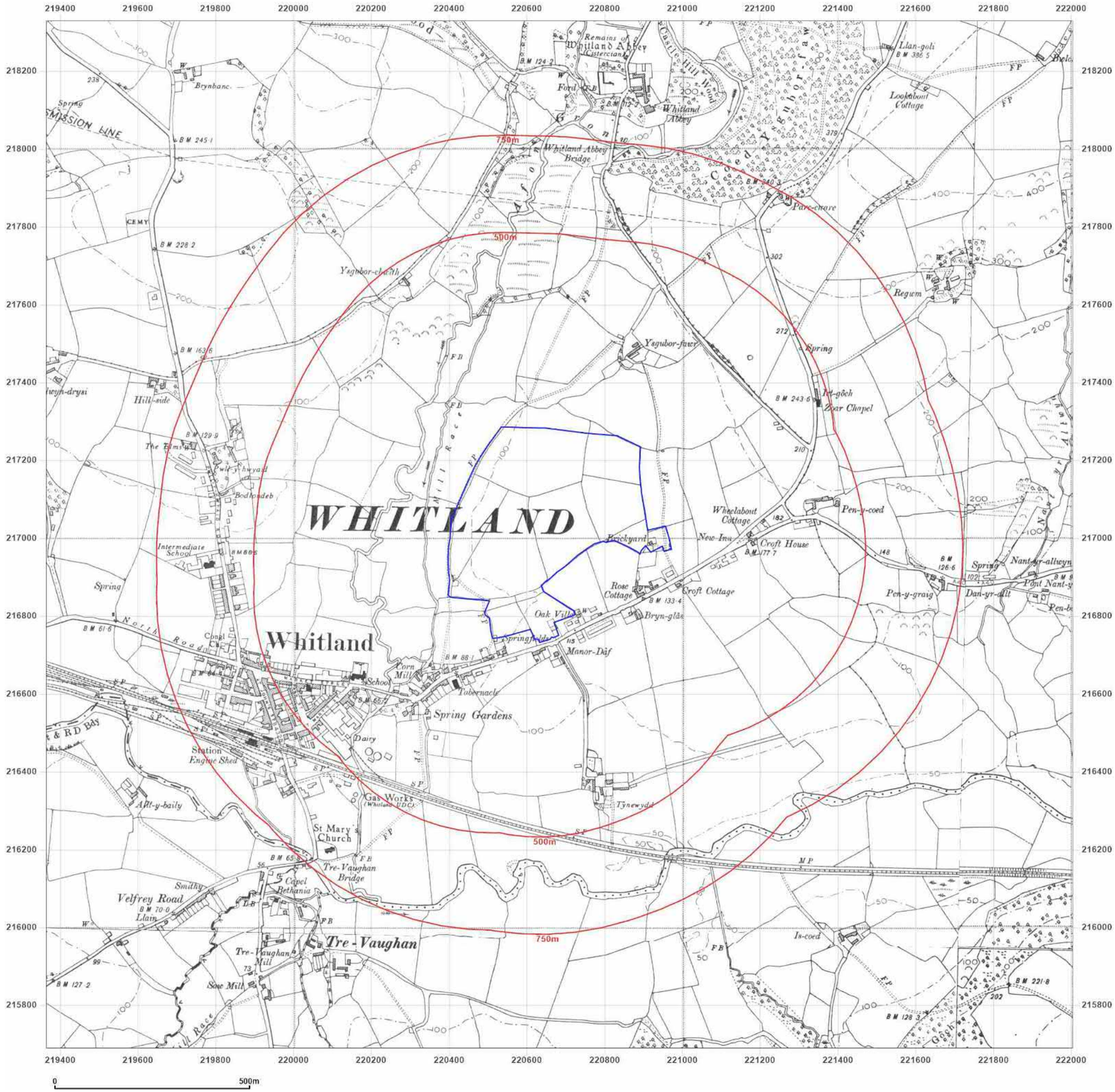
Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 21 March 2022

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



Site Details:

Land at Spring Gardens,
Whitland, SA34 0LG

Client Ref: Site_12
Report Ref: WSP-8608994
Grid Ref: 220683, 217009

Map Name: County Series

Map date: **1948-1949**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1887
Revised 1948
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1948
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1949
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1948
Edition N/A
Copyright N/A
Levelled N/A

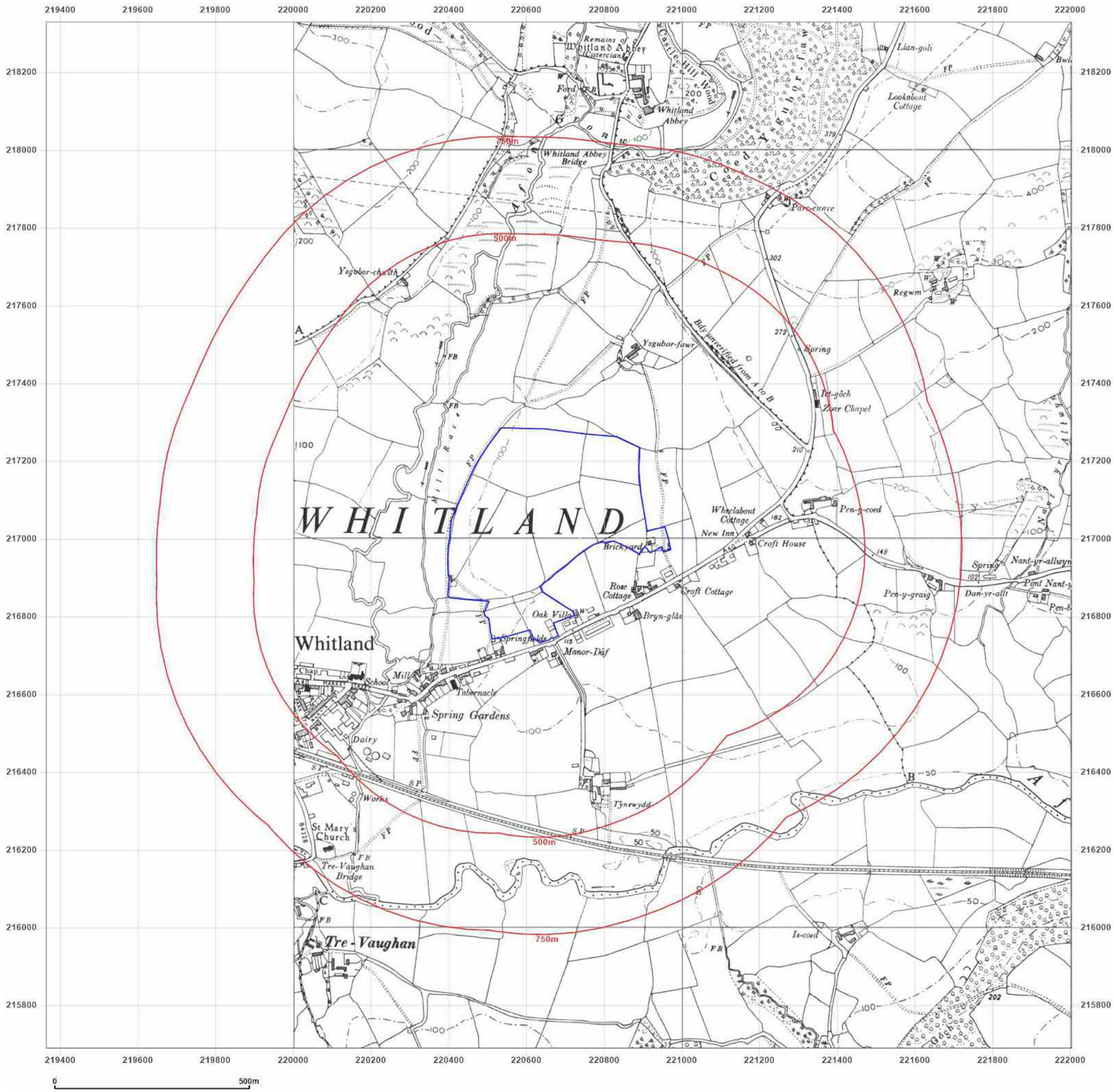
Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 21 March 2022

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



Site Details:

Land at Spring Gardens,
Whitland, SA34 0LG

Client Ref: Site_12
Report Ref: WSP-8608994
Grid Ref: 220683, 217009

Map Name: Provisional

Map date: **1963**

Scale: 1:10,560

Printed at: 1:10,560

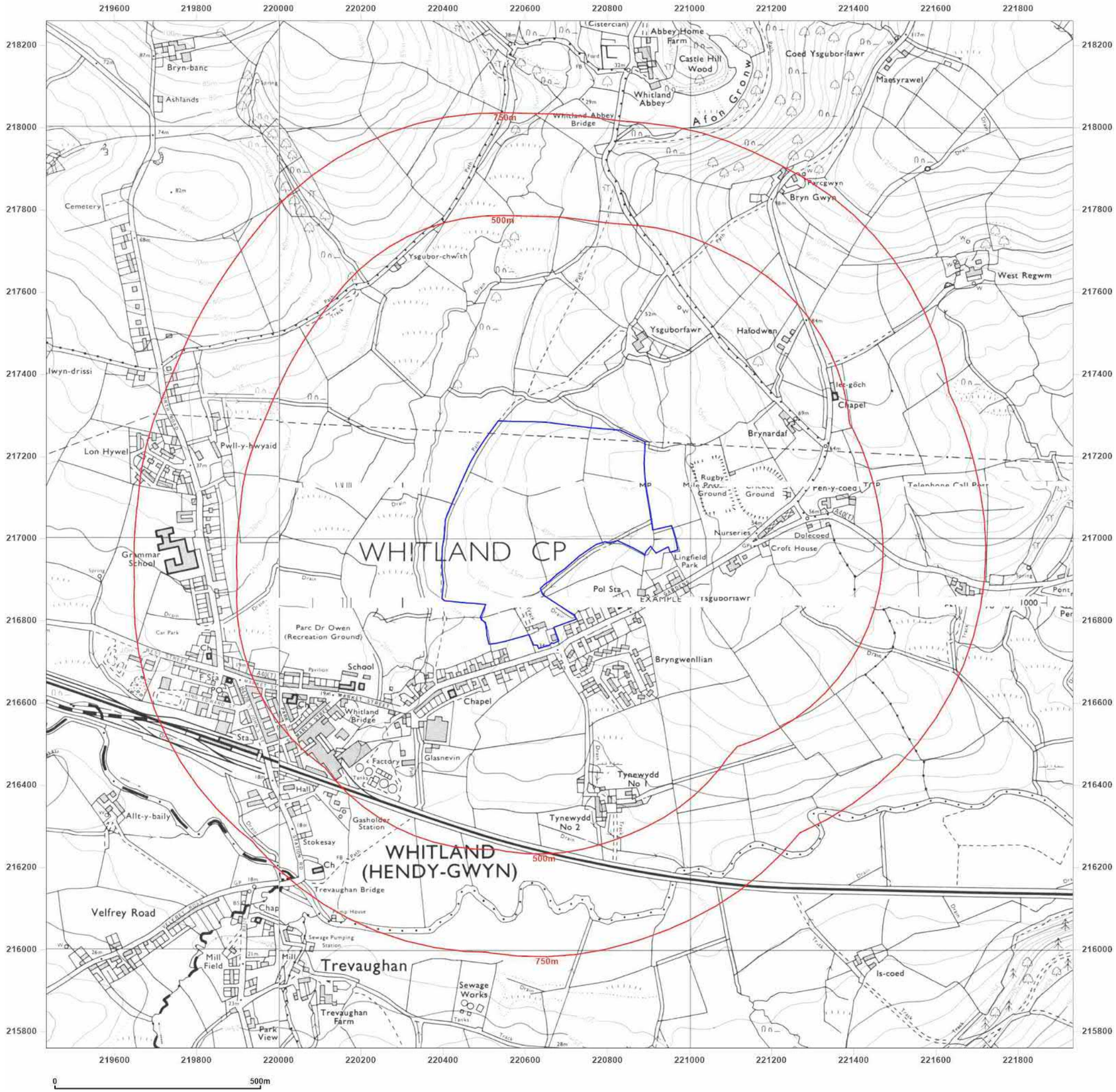
N
W E
S

Surveyed N/A
Revised 1963
Edition N/A
Copyright N/A
Levelled N/A

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 21 March 2022

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



Site Details:

Land at Spring Gardens,
Whitland, SA34 0LG

Client Ref: Site_12
Report Ref: WSP-8608994
Grid Ref: 220683, 217009

Map Name: National Grid

Map date: **1973**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1973
Revised 1973
Edition N/A
Copyright 1973
Levelled 1972

Surveyed 1971
Revised 1973
Edition N/A
Copyright 1973
Levelled 1972

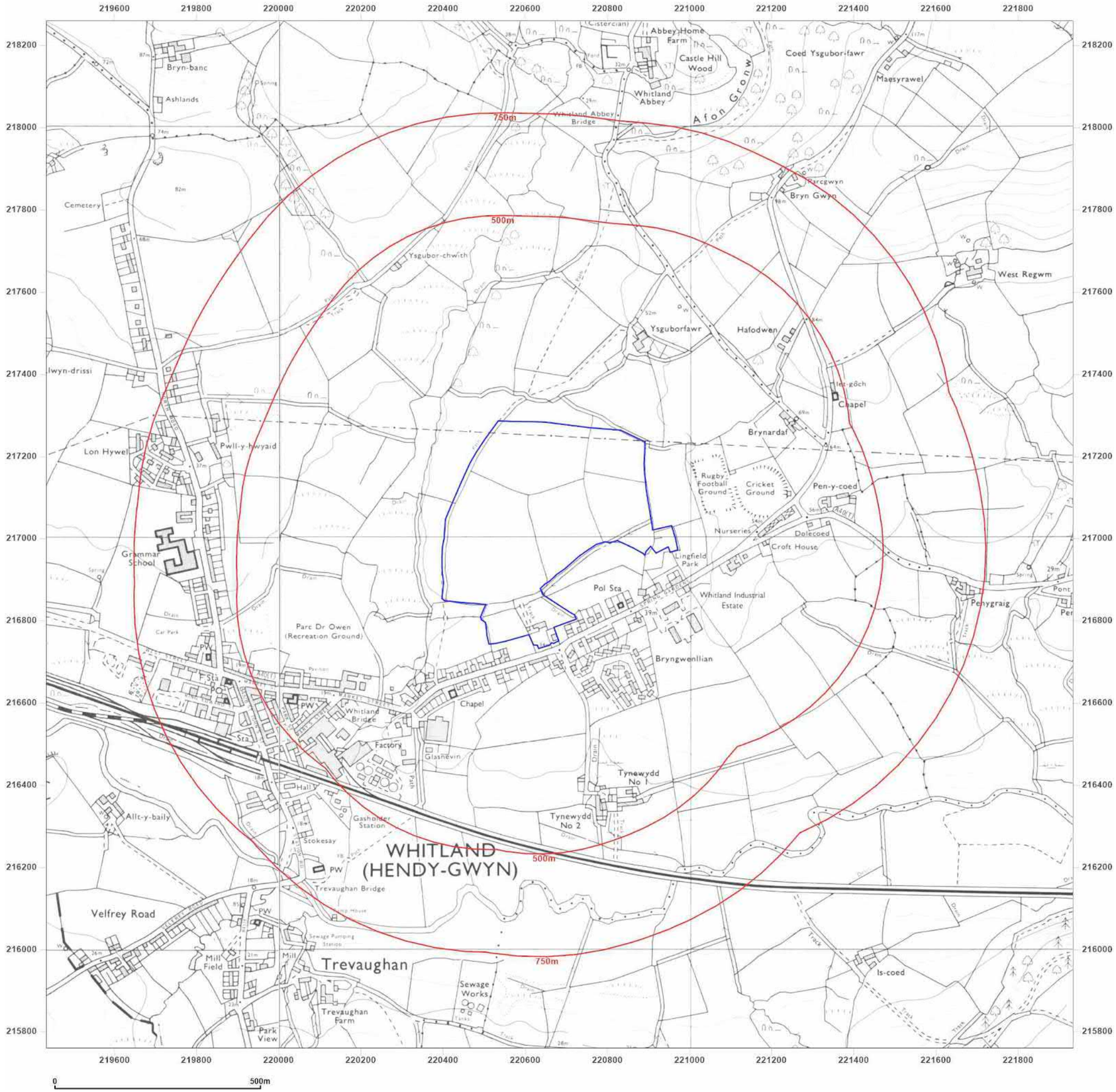
Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 21 March 2022

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



Site Details:

Land at Spring Gardens,
Whitland, SA34 0LG

Client Ref: Site_12
Report Ref: WSP-8608994
Grid Ref: 220683, 217009

Map Name: National Grid

Map date: **1992**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1970
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1971
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

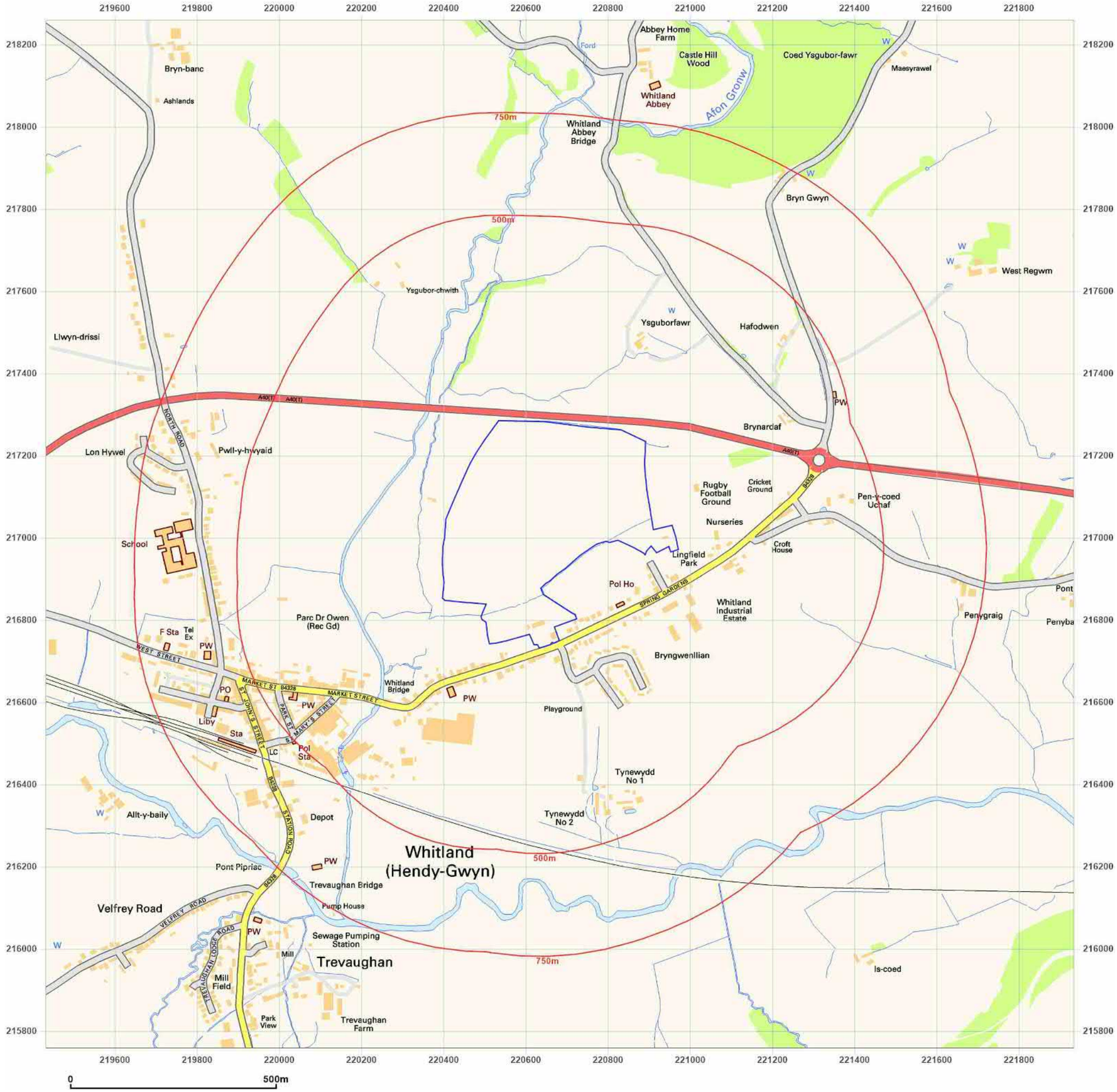
Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 21 March 2022

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



Site Details:

Land at Spring Gardens,
Whitland, SA34 0LG

Client Ref: Site_12
Report Ref: WSP-8608994
Grid Ref: 220683, 217009

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2001

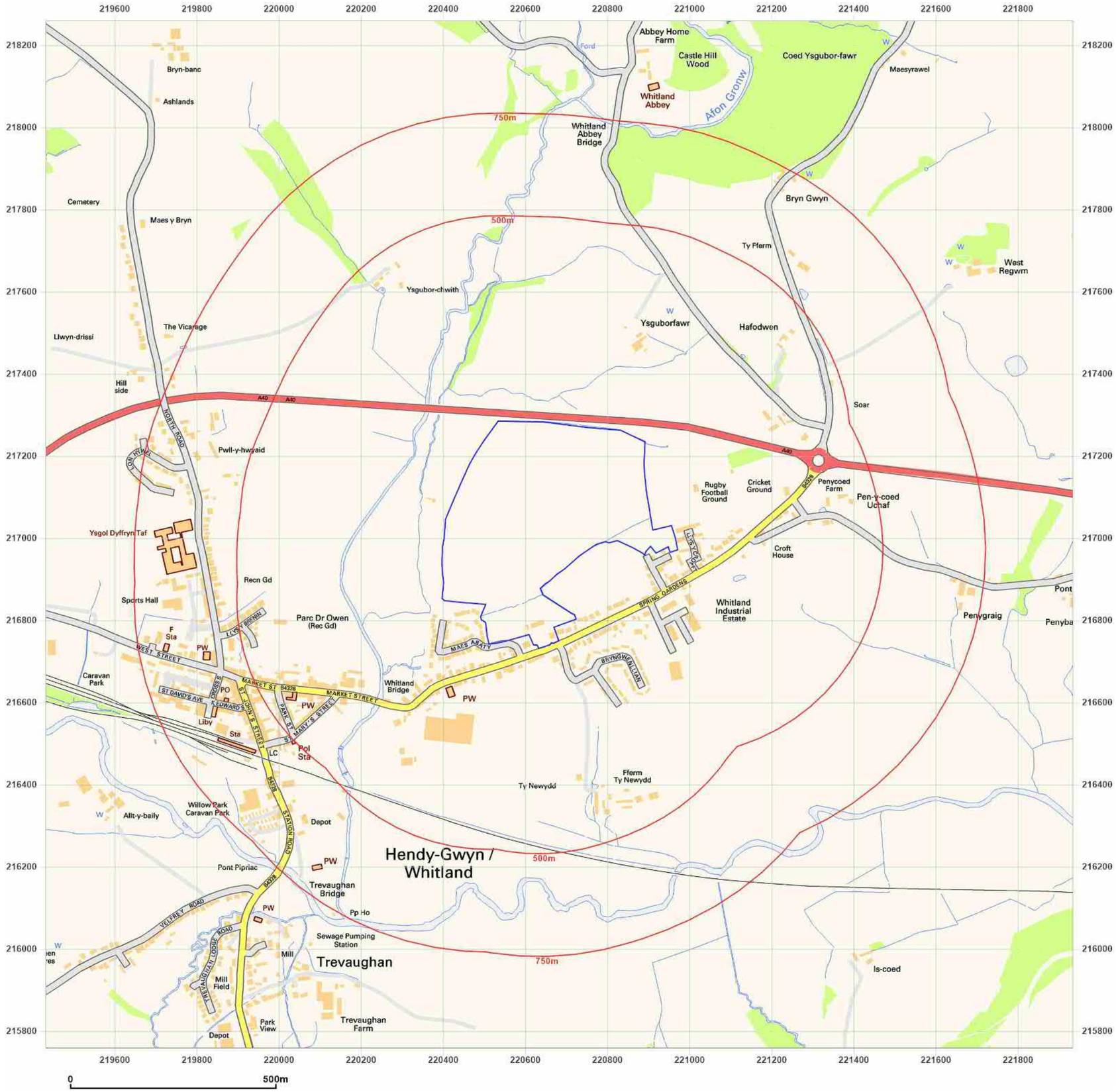
Groundsure INSIGHTS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Powered by OS

Production date: 21 March 2022

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



Site Details:

Land at Spring Gardens,
Whitland, SA34 0LG

Client Ref: Site_12
Report Ref: WSP-8608994
Grid Ref: 220683, 217009

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2010

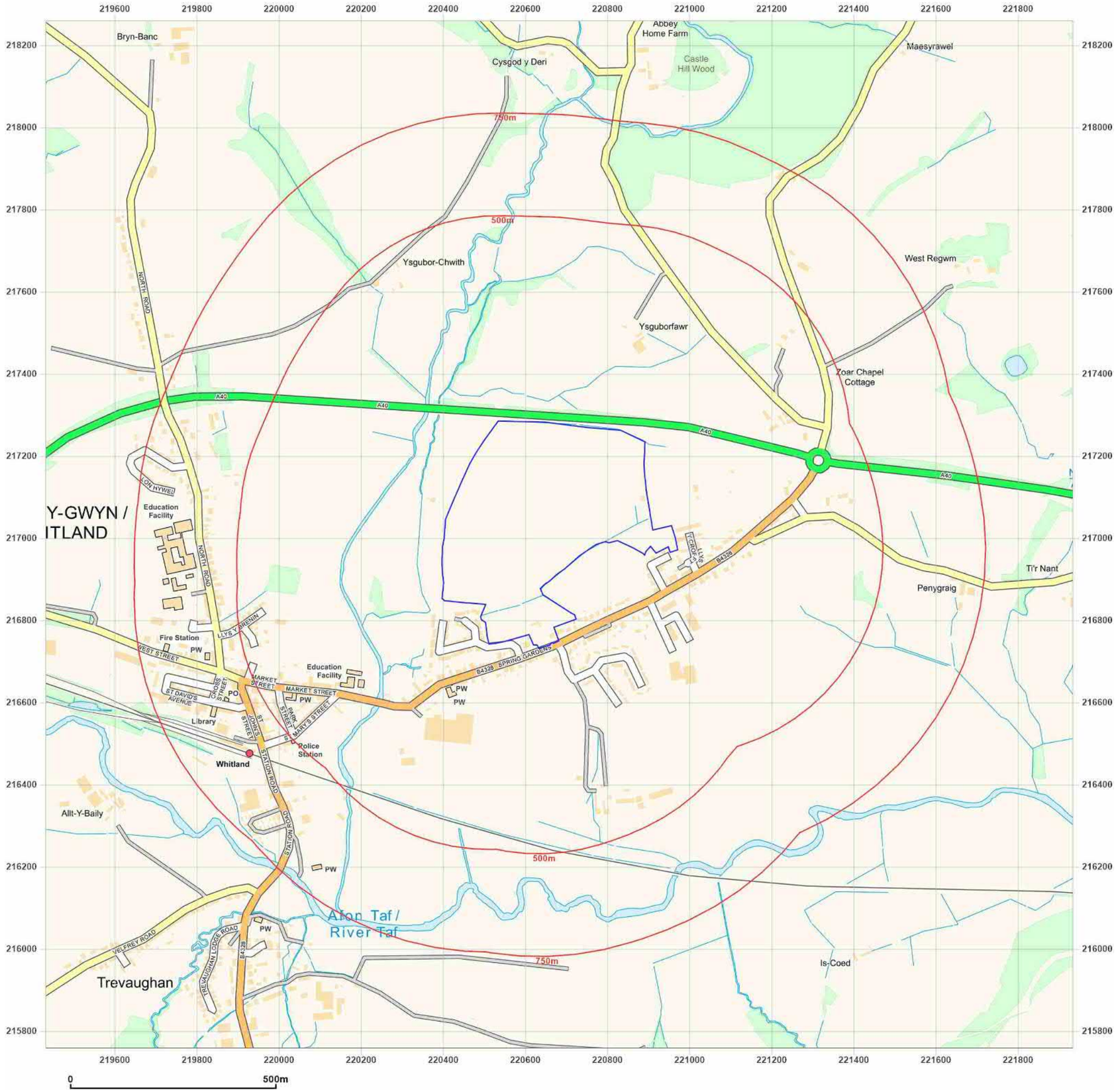
Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 21 March 2022

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



Site Details:

Land at Spring Gardens,
Whitland, SA34 0LG

Client Ref: Site_12
Report Ref: WSP-8608994
Grid Ref: 220683, 217009

Map Name: National Grid

Map date: **2022**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2022

Groundsure INSIGHTS

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 21 March 2022

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

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

Land at Spring Gardens, Whitland, SA34 0LG

Order Details

Date: 21/03/2022

Your ref: Site_12

Our Ref: WSP-8608995

Client: Rebecca Hoyle

Site Details

Location: 220660 217030

Area: 19.22 ha

Authority: Sir Gaerfyrddin - Carmarthenshire County Council

Summary of findings p. 2

OS MasterMap site plan N/A: >10ha

Aerial image p. 8

groundsure.com/insightuserguide

Contact us with any questions at:
info@groundsure.com
08444 159 000

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
13	1.1	Historical industrial land uses	4	0	9	13	-
15	1.2	Historical tanks	0	0	3	33	-
16	1.3	Historical energy features	0	3	2	0	-
17	1.4	Historical petrol stations	0	0	0	0	-
17	1.5	Historical garages	0	0	0	5	-
18	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**
19	2.1	Historical industrial land uses	7	0	13	19	-
21	2.2	Historical tanks	0	0	3	36	-
23	2.3	Historical energy features	0	3	3	0	-
23	2.4	Historical petrol stations	0	0	0	0	-
23	2.5	Historical garages	0	0	0	12	-
Page	**Section**	**Waste and landfill**	**On site**	**0-50m**	**50-250m**	**250-500m**	**500-2000m**
25	3.1	Active or recent landfill	0	0	0	0	-
25	3.2	Historical landfill (BGS records)	0	0	0	0	-
26	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
26	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
26	3.5	Historical waste sites	0	0	0	0	-
26	3.6	Licensed waste sites	0	0	0	0	-
26	3.7	Waste exemptions	6	0	9	8	-
Page	**Section**	**Current industrial land use**	**On site**	**0-50m**	**50-250m**	**250-500m**	**500-2000m**
29	4.1	Recent industrial land uses	0	3	10	-	-
30	4.2	Current or recent petrol stations	0	0	0	1	-
31	4.3	Electricity cables	0	0	0	0	-
31	4.4	Gas pipelines	0	0	0	0	-
31	4.5	Sites determined as Contaminated Land	0	0	0	0	-

31	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
31	4.7	Regulated explosive sites	0	0	0	0	-
32	4.8	Hazardous substance storage/usage	0	0	0	0	-
32	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
32	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
32	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
32	4.12	Radioactive Substance Authorisations	0	0	0	0	-
33	**4.13**	**Licensed Discharges to controlled waters**	0	0	0	6	-
34	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
34	4.15	Pollutant release to public sewer	0	0	0	0	-
34	4.16	List 1 Dangerous Substances	0	0	0	0	-
34	4.17	List 2 Dangerous Substances	0	0	0	0	-
34	**4.18**	**Pollution Incidents (EA/NRW)**	0	0	2	5	-
35	4.19	Pollution inventory substances	0	0	0	0	-
36	4.20	Pollution inventory waste transfers	0	0	0	0	-
36	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
37	**5.1**	**Superficial aquifer**	Identified (within 500m)				
39	**5.2**	**Bedrock aquifer**	Identified (within 500m)				
41	**5.3**	**Groundwater vulnerability**	Identified (within 50m)				
42	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
42	5.5	Groundwater vulnerability- local information	None (within 0m)				
43	**5.6**	**Groundwater abstractions**	0	0	1	3	11
47	**5.7**	**Surface water abstractions**	0	0	0	0	6
48	5.8	Potable abstractions	0	0	0	0	0
49	5.9	Source Protection Zones	0	0	0	0	-
49	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
50	**6.1**	**Water Network (OS MasterMap)**	4	6	24	-	-

53	**6.2**	**Surface water features**	1	2	15	-	-
53	**6.3**	**WFD Surface water body catchments**	1	-	-	-	-
54	**6.4**	**WFD Surface water bodies**	0	0	1	-	-
54	**6.5**	**WFD Groundwater bodies**	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
55	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
56	7.2	Historical Flood Events	0	0	0	-	-
56	**7.3**	**Flood Defences**	0	0	1	-	-
56	**7.4**	**Areas Benefiting from Flood Defences**	0	0	1	-	-
57	7.5	Flood Storage Areas	0	0	0	-	-
58	7.6	Flood Zone 2	None (within 50m)				
58	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
59	**8.1**	**Surface water flooding**	1 in 30 year, Greater than 1.0m (within 50m)				
Page	Section	Groundwater flooding					
61	**9.1**	**Groundwater flooding**	Negligible (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
62	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
63	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
63	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
63	10.4	Special Protection Areas (SPA)	0	0	0	0	0
63	10.5	National Nature Reserves (NNR)	0	0	0	0	0
64	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
64	**10.7**	**Designated Ancient Woodland**	0	0	0	0	65
66	10.8	Biosphere Reserves	0	0	0	0	0
67	10.9	Forest Parks	0	0	0	0	0
67	10.10	Marine Conservation Zones	0	0	0	0	0
67	10.11	Green Belt	0	0	0	0	0
67	10.12	Proposed Ramsar sites	0	0	0	0	0

67	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
68	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
68	10.15	Nitrate Sensitive Areas	0	0	0	0	0
68	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
69	10.17	SSSI Impact Risk Zones	0	-	-	-	-
69	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
70	11.1	World Heritage Sites	0	0	0	-	-
71	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
71	11.3	National Parks	0	0	0	-	-
71	11.4	Listed Buildings	0	0	0	-	-
71	11.5	Conservation Areas	0	0	0	-	-
72	**11.6**	**Scheduled Ancient Monuments**	0	0	1	-	-
72	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
73	**12.1**	**Agricultural Land Classification**	Grade 3b (within 250m)				
74	12.2	Open Access Land	0	0	0	-	-
74	12.3	Tree Felling Licences	0	0	0	-	-
74	12.4	Environmental Stewardship Schemes	0	0	0	-	-
74	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
75	13.1	Priority Habitat Inventory	0	0	0	-	-
75	13.2	Habitat Networks	0	0	0	-	-
75	13.3	Open Mosaic Habitat	0	0	0	-	-
75	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
76	**14.1**	**10k Availability**	Identified (within 500m)				
77	14.2	Artificial and made ground (10k)	0	0	0	0	-
78	14.3	Superficial geology (10k)	0	0	0	0	-

78	14.4	Landslip (10k)	0	0	0	0	-
79	14.5	Bedrock geology (10k)	0	0	0	0	-
79	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
80	**15.1**	**50k Availability**	Identified (within 500m)				
81	15.2	Artificial and made ground (50k)	0	0	0	0	-
81	15.3	Artificial ground permeability (50k)	0	0	-	-	-
82	**15.4**	**Superficial geology (50k)**	0	0	1	0	-
83	15.5	Superficial permeability (50k)	None (within 50m)				
83	15.6	Landslip (50k)	0	0	0	0	-
83	15.7	Landslip permeability (50k)	None (within 50m)				
84	**15.8**	**Bedrock geology (50k)**	1	1	0	1	-
85	**15.9**	**Bedrock permeability (50k)**	Identified (within 50m)				
85	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
86	16.1	BGS Boreholes	0	0	0	-	-
Page	Section	Natural ground subsidence					
87	**17.1**	**Shrink swell clays**	Very low (within 50m)				
88	**17.2**	**Running sands**	Negligible (within 50m)				
89	**17.3**	**Compressible deposits**	Negligible (within 50m)				
90	**17.4**	**Collapsible deposits**	Very low (within 50m)				
91	**17.5**	**Landslides**	Low (within 50m)				
92	**17.6**	**Ground dissolution of soluble rocks**	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
93	18.1	Natural cavities	0	0	0	0	-
94	18.2	BritPits	0	0	0	0	-
94	**18.3**	**Surface ground workings**	7	0	7	-	-
95	18.4	Underground workings	0	0	0	0	0
95	18.5	Historical Mineral Planning Areas	0	0	0	0	-

95	**18.6**	**Non-coal mining**	1	0	0	1	0
96	18.7	Mining cavities	0	0	0	0	0
96	18.8	JPB mining areas	None (within 0m)				
96	18.9	Coal mining	None (within 0m)				
96	18.10	Brine areas	None (within 0m)				
96	18.11	Gypsum areas	None (within 0m)				
97	18.12	Tin mining	None (within 0m)				
97	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
98	**19.1**	**Radon**	Between 3% and 5% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
100	**20.1**	**BGS Estimated Background Soil Chemistry**	6	7	-	-	-
101	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
101	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
102	21.1	Underground railways (London)	0	0	0	-	-
102	21.2	Underground railways (Non-London)	0	0	0	-	-
102	21.3	Railway tunnels	0	0	0	-	-
102	21.4	Historical railway and tunnel features	0	0	0	-	-
102	21.5	Royal Mail tunnels	0	0	0	-	-
103	21.6	Historical railways	0	0	0	-	-
103	21.7	Railways	0	0	0	-	-
103	21.8	Crossrail 1	0	0	0	0	-
103	21.9	Crossrail 2	0	0	0	0	-
103	21.10	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 14/05/2020

Site Area: 19.22ha

Recent site history - 2017 aerial photograph

Capture Date: 25/05/2017

Site Area: 19.22ha

Recent site history - 2013 aerial photograph

Capture Date: 04/06/2013

Site Area: 19.22ha

Recent site history - 2009 aerial photograph

Capture Date: 19/04/2009

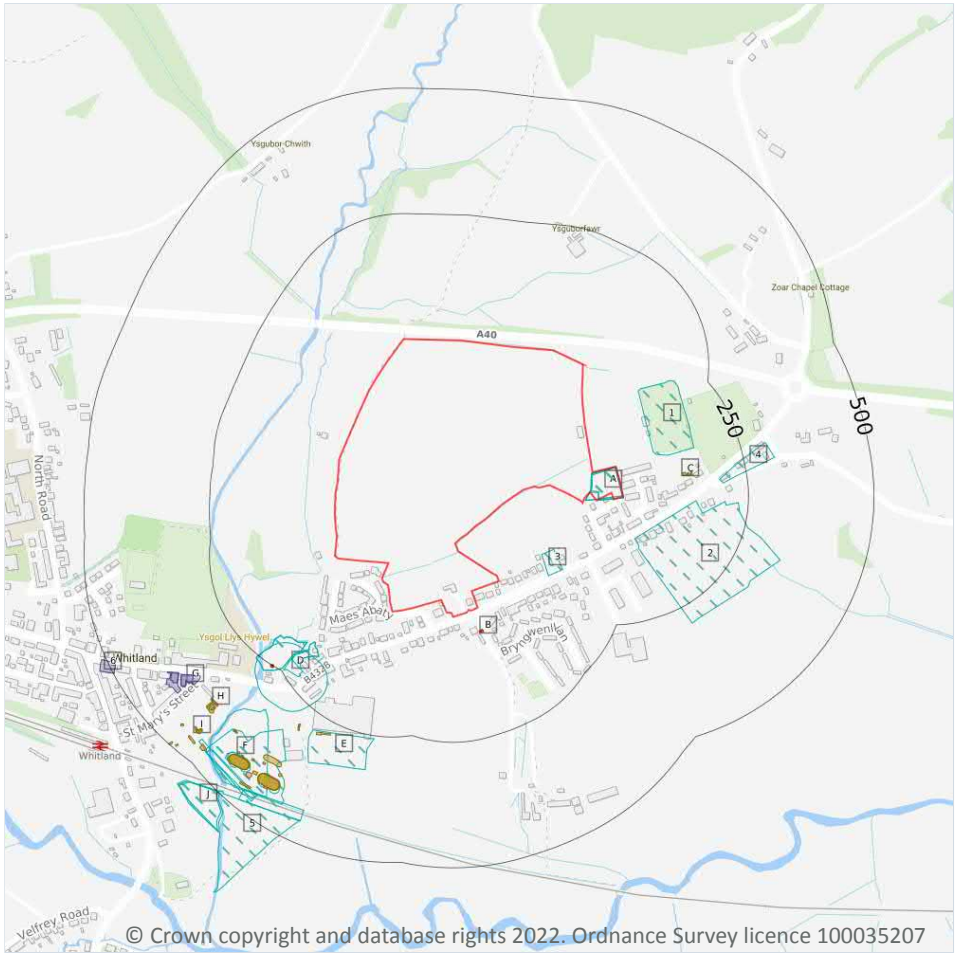
Site Area: 19.22ha

Recent site history - 2000 aerial photograph

Capture Date: 21/07/2000

Site Area: 19.22ha

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	26

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 13**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Brick Yard**	**1908**	**292325**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Brick Yard**	**1948**	**297058**
A	**On site**	**Brick Yard**	**1887 - 1906**	**297089**
A	**On site**	**Brick Yard**	**1963**	**316532**
1	81m E	Unspecified Ground Workings	1973 - 1992	273500
2	84m SE	Industrial Estate	1992	256217
3	97m E	Police Station	1973 - 1992	298399
D	166m W	Corn Mill	1908 - 1948	293793
D	166m W	Corn Mill	1887	294319
D	176m SW	Unspecified Mill	1963	261795
D	178m S	Disused Corn Mill	1948	253987
D	178m S	Corn Mill	1906	273949
4	196m E	Nurseries	1973 - 1992	316146
E	256m S	Dairy	1948	271339
F	319m SW	Dairy	1948 - 1963	280037
F	321m SW	Unspecified Factory	1973 - 1992	300836
F	412m SW	Unspecified Tanks	1973 - 1992	308145
F	413m SW	Unspecified Tanks	1948	300497
F	415m SW	Unspecified Tanks	1963	282310
F	416m SW	Unspecified Tanks	1973 - 1992	272272
F	434m SW	Cuttings	1887	268752
F	449m SW	Railway Sidings	1948 - 1963	290321
F	452m SW	Railway Sidings	1948	271672
5	455m SW	Gas Works	1948	314642
J	499m SW	Unspecified Works	1963	253345
J	499m SW	Gas Works	1948	315174

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	36

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 13**

ID	Location	Land use	Dates present	Group ID
C	126m E	Tanks	1997	34662
C	134m E	Tanks	1997	34661
C	141m E	Tanks	1997	34664
E	273m SW	Tanks	1995	34659
E	289m SW	Tanks	1969	34660
E	295m SW	Unspecified Tank	1989	33260
F	374m SW	Tanks	1989 - 1995	35683
H	376m SW	Tanks	1989	35124
H	376m SW	Tanks	1995	36638
H	382m SW	Tanks	1989	36610
H	383m SW	Tanks	1989	35059
F	391m SW	Unspecified Tank	1995	35168
F	391m SW	Unspecified Tank	1969	35814
F	392m SW	Unspecified Tank	1995	33265
F	392m SW	Unspecified Tank	1989	35274
F	393m SW	Tanks	1969	34658
F	403m SW	Tanks	1969	34657
F	406m SW	Tanks	1995	35834
F	407m SW	Tanks	1969	35175
F	407m SW	Tanks	1989	35912
F	413m SW	Tanks	1995	35313

ID	Location	Land use	Dates present	Group ID
F	414m SW	Unspecified Tank	1995	33262
F	414m SW	Tanks	1969	35331
F	415m SW	Tanks	1969	35595
F	415m SW	Tanks	1989	35128
F	418m SW	Unspecified Tank	1995	33261
F	428m SW	Unspecified Tank	1989 - 1995	36585
I	434m SW	Tanks	1969	36226
I	436m SW	Tanks	1989	35201
I	436m SW	Tanks	1995	35939
F	449m SW	Tanks	1995	34627
I	451m SW	Unspecified Tank	1989	33263
I	458m SW	Tanks	1995	34656
I	460m SW	Tanks	1989 - 1995	36286
I	488m SW	Tanks	1969	34655
I	492m SW	Tanks	1969	34652

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	**5**

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 13**

ID	Location	Land use	Dates present	Group ID
B	43m SE	Electricity Transformer	1969	18176
B	44m SE	Electricity Substation	1995	17404
B	44m SE	Electricity Transformer	1989	18807

ID	Location	Land use	Dates present	Group ID
D	248m SW	Electricity Transformer	1969 - 1989	18607
D	249m SW	Electricity Substation	1995	17403

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	5

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

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
G	360m SW	Garage	1995	6012
G	369m SW	Garage	1969 - 1989	6276
G	389m SW	Garage	1995	5847
G	391m SW	Garage	1969 - 1989	6390
6	488m SW	Garage	1969 - 1997	6241

This data is sourced from Ordnance Survey / Groundsure.

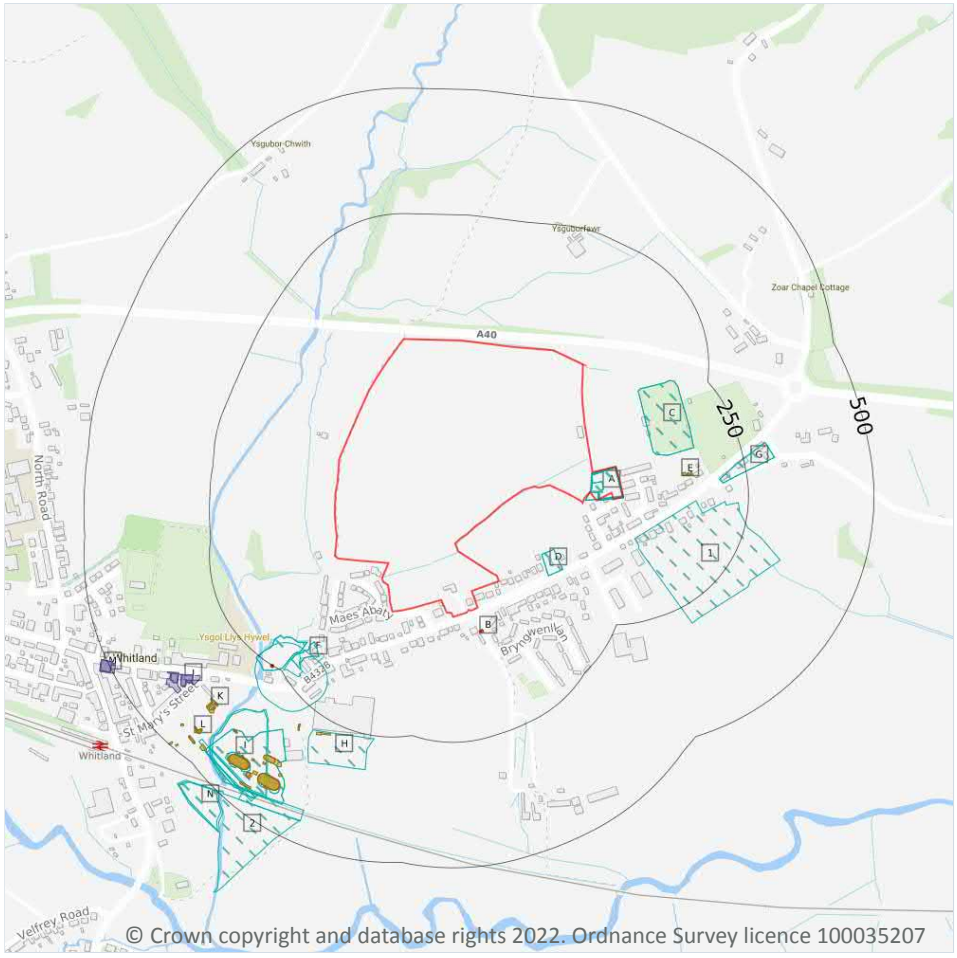
1.6 Historical military land

Records within 500m	0

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

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

2 Past land use - un-grouped



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical garages

2.1 Historical industrial land uses

Records within 500m	39

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 19**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Brick Yard**	**1948**	**297058**
A	**On site**	**Brick Yard**	**1906**	**297089**
A	**On site**	**Brick Yard**	**1963**	**316532**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Brick Yard**	**1908**	**292325**
A	**On site**	**Brick Yard**	**1948**	**297058**
A	**On site**	**Brick Yard**	**1887**	**297089**
A	**On site**	**Brick Yard**	**1908**	**292325**
C	81m E	Unspecified Ground Workings	1973	273500
C	81m E	Unspecified Ground Workings	1992	273500
1	84m SE	Industrial Estate	1992	256217
D	97m E	Police Station	1973	298399
D	97m E	Police Station	1992	298399
F	166m W	Corn Mill	1948	293793
F	166m W	Corn Mill	1887	294319
F	176m SW	Unspecified Mill	1963	261795
F	178m S	Disused Corn Mill	1948	253987
F	178m S	Corn Mill	1906	273949
G	196m E	Nurseries	1973	316146
G	196m E	Nurseries	1992	316146
F	202m S	Corn Mill	1908	293793
H	256m S	Dairy	1948	271339
I	319m SW	Dairy	1948	280037
I	321m SW	Unspecified Factory	1973	300836
I	321m SW	Unspecified Factory	1992	300836
I	322m SW	Dairy	1963	280037
I	412m SW	Unspecified Tanks	1973	308145
I	412m SW	Unspecified Tanks	1992	308145
I	413m SW	Unspecified Tanks	1948	300497
I	415m SW	Unspecified Tanks	1963	282310
I	416m SW	Unspecified Tanks	1948	300497
I	416m SW	Unspecified Tanks	1973	272272

ID	Location	Land Use	Date	Group ID
I	416m SW	Unspecified Tanks	1992	272272
I	434m SW	Cuttings	1887	268752
I	449m SW	Railway Sidings	1963	290321
I	450m SW	Railway Sidings	1948	290321
I	452m SW	Railway Sidings	1948	271672
2	455m SW	Gas Works	1948	314642
N	499m SW	Unspecified Works	1963	253345
N	499m SW	Gas Works	1948	315174

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	**39**

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 19**

ID	Location	Land Use	Date	Group ID
E	126m E	Tanks	1997	34662
E	134m E	Tanks	1997	34661
E	141m E	Tanks	1997	34664
H	273m SW	Tanks	1995	34659
H	289m SW	Tanks	1969	34660
H	295m SW	Unspecified Tank	1989	33260
I	374m SW	Tanks	1995	35683
K	376m SW	Tanks	1989	35124
I	376m SW	Tanks	1989	35683
K	376m SW	Tanks	1995	36638
K	382m SW	Tanks	1989	36610
K	383m SW	Tanks	1989	35059

ID	Location	Land Use	Date	Group ID
I	391m SW	Unspecified Tank	1995	35168
I	391m SW	Unspecified Tank	1969	35814
I	392m SW	Unspecified Tank	1995	33265
I	392m SW	Unspecified Tank	1989	35274
I	393m SW	Tanks	1969	34658
I	403m SW	Tanks	1969	34657
I	406m SW	Tanks	1995	35834
I	407m SW	Tanks	1969	35175
I	407m SW	Tanks	1989	35912
I	413m SW	Tanks	1995	35313
I	414m SW	Unspecified Tank	1995	33262
I	414m SW	Tanks	1969	35331
I	415m SW	Tanks	1969	35595
I	415m SW	Tanks	1989	35128
I	418m SW	Unspecified Tank	1995	33261
I	428m SW	Unspecified Tank	1995	36585
I	429m SW	Unspecified Tank	1989	36585
L	434m SW	Tanks	1969	36226
L	436m SW	Tanks	1989	35201
L	436m SW	Tanks	1995	35939
I	449m SW	Tanks	1995	34627
L	451m SW	Unspecified Tank	1989	33263
L	458m SW	Tanks	1995	34656
L	460m SW	Tanks	1995	36286
L	460m SW	Tanks	1989	36286
L	488m SW	Tanks	1969	34655
L	492m SW	Tanks	1969	34652

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	6

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 19**

ID	Location	Land Use	Date	Group ID
B	43m SE	Electricity Transformer	1969	18176
B	44m SE	Electricity Substation	1995	17404
B	44m SE	Electricity Transformer	1989	18807
F	248m SW	Electricity Transformer	1969	18607
F	249m SW	Electricity Substation	1995	17403
F	249m SW	Electricity Transformer	1989	18607

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	12

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'.

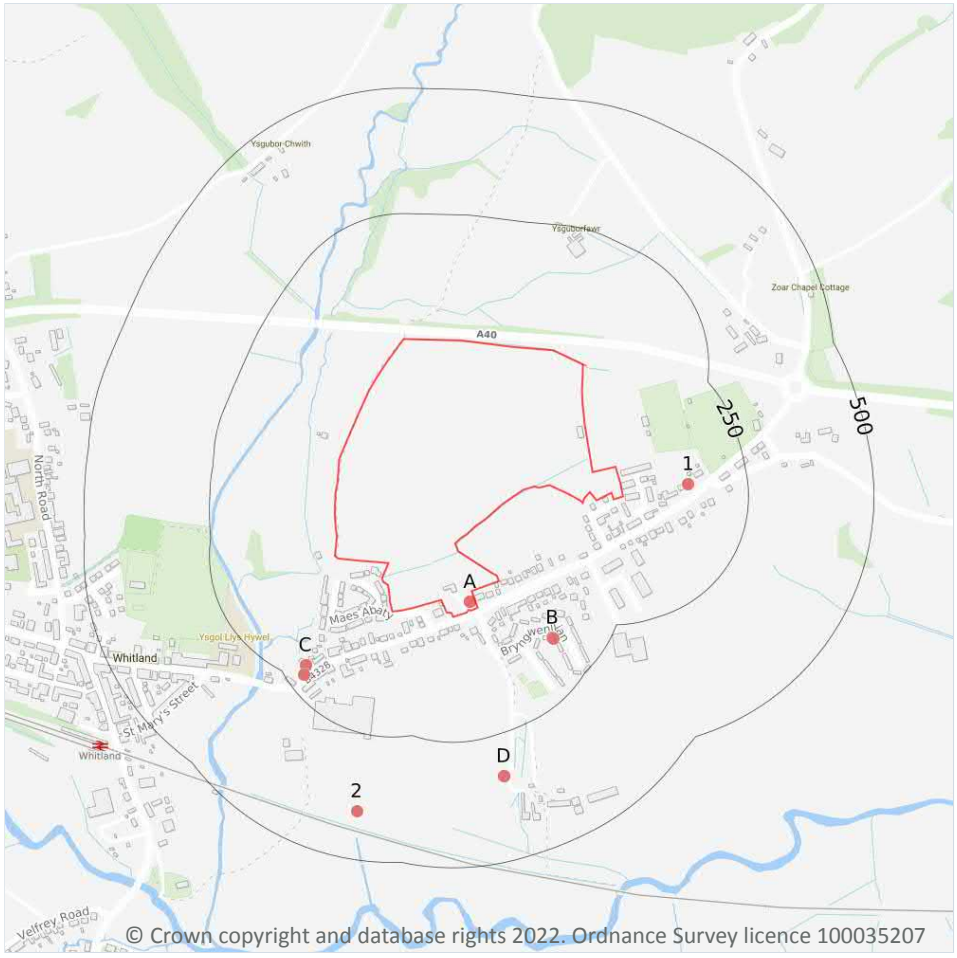
Features are displayed on the Past land use - un-grouped map on **page 19**

ID	Location	Land Use	Date	Group ID
J	360m SW	Garage	1995	6012
J	369m SW	Garage	1969	6276

ID	Location	Land Use	Date	Group ID
J	370m SW	Garage	1989	6276
J	389m SW	Garage	1995	5847
J	391m SW	Garage	1969	6390
J	391m SW	Garage	1989	6390
M	488m SW	Garage	1981	6241
M	488m SW	Garage	1991	6241
M	489m SW	Garage	1969	6241
M	493m SW	Garage	1995	6241
M	493m SW	Garage	1997	6241
M	493m SW	Garage	1995	6241

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



Site Outline

Search buffers in metres (m)

Waste exemptions

3.1 Active or recent landfill

Records within 500m	0

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

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

3.2 Historical landfill (BGS records)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

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

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

3.4 Historical landfill (EA/NRW records)

Records within 500m	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	0

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

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

3.6 Licensed waste sites

Records within 500m	0

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

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

3.7 Waste exemptions

Records within 500m	23

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 25**

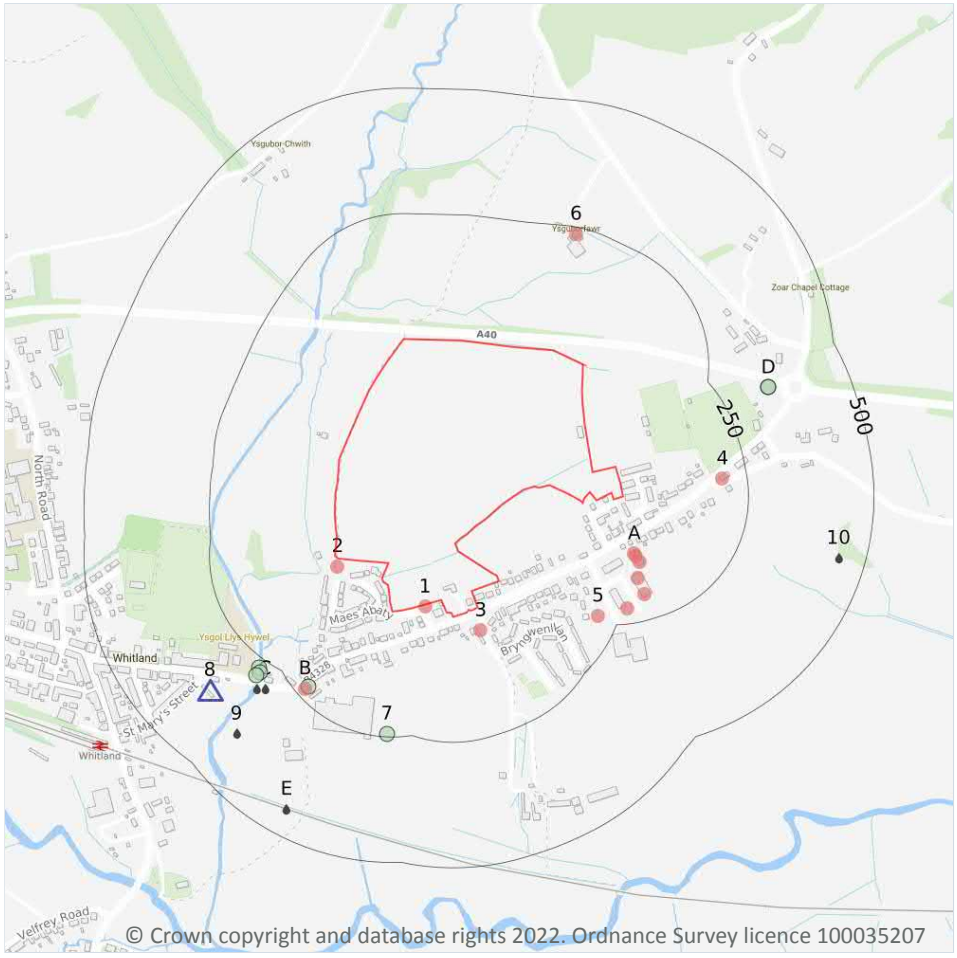
ID	Location	Site	Reference	Category	Sub-Category	Description
A	**On site**	**FFYNNON GLIR, SPRING GARDENS, WHITLAND, SA34 0HP**	**WEX099410**	**Disposing of waste exemption**	**On a farm**	**Deposit of waste from dredging of inland waters**

ID	Location	Site	Reference	Category	Sub-Category	Description
A	**On site**	**FFYNNON GLIR, SPRING GARDENS, WHITLAND, SA34 0HP**	**WEX099410**	**Using waste exemption**	**On a farm**	**Spreading waste on agricultural land to confer benefit**
A	**On site**	**FFYNNON GLIR, SPRING GARDENS, WHITLAND, SA34 0HP**	**WEX099410**	**Disposing of waste exemption**	**On a farm**	**Burning waste in the open**
A	**On site**	**Land adj Cls Llwyn Ty Gwyn Spring Gardens Whitland Carmarthenshire Sa340hp**	**NRW-WME024441**	**Disposing of waste exemption**	**On a farm**	**Deposit of waste from dredging of inland waters**
A	**On site**	**Land adj Cls Llwyn Ty Gwyn Spring Gardens Whitland Carmarthenshire Sa340hp**	**NRW-WME024441**	**Disposing of waste exemption**	**On a farm**	**Burning waste in the open**
A	**On site**	**Land adj Cls Llwyn Ty Gwyn Spring Gardens Whitland Carmarthenshire Sa340hp**	**NRW-WME024441**	**Using waste exemption**	**On a farm**	**Spreading waste on agricultural land to confer benefit**
1	132m E	G D Harries & Sons Ltd, Whitland RFC, Whitland, Sir Gaerfyrddin, SA340HR	NRW-WME029563	Using waste exemption	Not on a farm	Use of waste in construction
B	155m SE	11 Bryngwenllian, Whitland, Sir Gaerfyrddin, sa34 0da	NRW-WME001270	Disposing of waste exemption	Waste Exemption - Agricultural	Deposit of waste from dredging of inland waters
B	155m SE	11 Bryngwenllian, Whitland, Sir Gaerfyrddin, sa34 0da	NRW-WME001270	Disposing of waste exemption	Waste Exemption - Agricultural	Burning waste in the open
B	155m SE	11 Bryngwenllian, Whitland, Sir Gaerfyrddin, sa34 0da	NRW-WME001270	Storing waste exemption	Waste Exemption - Agricultural	Storage of waste in a secure place
B	155m SE	11 Bryngwenllian, Whitland, Sir Gaerfyrddin, sa34 0da	NRW-WME001270	Using waste exemption	Waste Exemption - Agricultural	Spreading waste on agricultural land to confer benefit
B	157m SE	11 Bryngwenllian, Whitland, Sir Gaerfyrddin, SA34 0DA	NRW-WME041690	Disposing of waste exemption	On a farm	Burning waste in the open
C	204m SW	Natural Resources Wales, The Old Creamery, Spring Gardens, Hendy-Gwyn, Carmarthenshire, sa340hh	NRW-WME010219	Using waste exemption	Not on a farm	Use of waste in construction
C	204m SW	Plot, Spring Gardens, Dyfed, SA34 0HH	NRW-WME001631	Using waste exemption	Waste Exemption - Non-Agricultural	Use of waste in construction

ID	Location	Site	Reference	Category	Sub-Category	Description
C	217m SW	Plot - Old Creamery Site, Spring Gardens, Whitland, Sir Gaerfyrddin, SA34 0HH	NRW-WME041030	Using waste exemption	Not on a farm	Use of waste in construction
D	333m S	Fferm Ty Newydd Bryngwenllian Whitland Sir Gaerfyrddin SA340DB	NRW-WME025702	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
D	333m S	Fferm Ty Newydd Bryngwenllian Whitland Sir Gaerfyrddin SA340DB	NRW-WME025702	Treating waste exemption	On a farm	Screening and blending of waste
D	333m S	Fferm Ty Newydd Bryngwenllian Whitland Sir Gaerfyrddin SA340DB	NRW-WME025702	Using waste exemption	On a farm	Incorporation of ash into soil
D	333m S	Fferm Ty Newydd Bryngwenllian Whitland Sir Gaerfyrddin SA340DB	NRW-WME025702	Using waste exemption	On a farm	Use of waste for a specified purpose
D	333m S	Fferm Ty Newydd Bryngwenllian Whitland Sir Gaerfyrddin SA340DB	NRW-WME025702	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
D	333m S	Fferm Ty Newydd Bryngwenllian Whitland Sir Gaerfyrddin SA340DB	NRW-WME025702	Using waste exemption	On a farm	Use of waste in construction
D	333m S	Fferm Ty Newydd Bryngwenllian Whitland Sir Gaerfyrddin SA340DB	NRW-WME025702	Disposing of waste exemption	On a farm	Burning waste in the open
2	405m S	TP & CT Evans, DAIRY PARK, WHITLAND, WHITLAND, Carmarthenshire, SA34 0HN	NRW-WME044513	Using waste exemption	Not on a farm	Use of waste in construction

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

Licensed Discharges to controlled waters

Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m	13

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 29**

ID	Location	Company	Address	Activity	Category
1	4m S	Electricity Sub Station	Dyfed, SA34	Electrical Features	Infrastructure and Facilities
2	15m S	Pumping Station	Dyfed, SA34	Water Pumping Stations	Industrial Features
3	44m SE	Electricity Sub Station	Dyfed, SA34	Electrical Features	Infrastructure and Facilities

ID	Location	Company	Address	Activity	Category
A	115m S	West Wales Hydroponics	Unit 13, Spring Gardens Industrial Estate, Whitland, Dyfed, SA34 0HZ	Horticultural Equipment	Industrial Products
A	122m S	Peter Lewis Flooring	Unit 14, Spring Gardens Industrial Estate, Whitland, Dyfed, SA34 0HZ	Construction Completion Services	Construction Services
A	135m S	Connaught Shutters & Blinds	Whitland Delivery Office Unit 16-17, Spring Gardens Industrial Estate, Whitland, Dyfed, SA34 0HZ	Curtains and Blinds	Consumer Products
A	163m S	Angel Motors	Unit 5, Spring Gardens Industrial Estate, Whitland, Dyfed, SA34 0HZ	Secondhand Vehicles	Motoring
A	199m S	Whitland Ambulance Station	Ambulance Station Unit 8, Spring Gardens Industrial Estate, Whitland, Dyfed, SA34 0HZ	Ambulance and Medical Transportation Services	Health Support Services
4	201m E	Magstim	Spring Gardens, Whitland, Dyfed, SA34 0HR	Medical Equipment, Supplies and Pharmaceuticals	Industrial Products
5	209m E	Whitland Industrial Estate	Dyfed, SA34	Business Parks and Industrial Estates	Industrial Features
A	218m S	Electricity Sub Station	Dyfed, SA34	Electrical Features	Infrastructure and Facilities
B	232m SW	Alchimica Building Chemicals	2, Spring Gardens, Whitland, Dyfed, SA34 0HN	Colours, Chemicals and Water Softeners and Supplies	Industrial Products
6	237m N	Rhys Davies	Ysgubor Fawr, Whitland, Dyfed, SA34 0LG	Animal Feeds, Pet Foods, Hay and Straw	Foodstuffs

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	**1**

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on **page 29**

ID	Location	Company	Address	LPG	Status
8	366m SW	MURCO	Market Street, Whitland, Carmarthenshire, SA34 0PY	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	0

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

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

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

Records within 500m	0

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.

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	0

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

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

4.13 Licensed Discharges to controlled waters

Records within 500m	6

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 29**

ID	Location	Address	Details	
C	296m SW	15 Meters D/S Whitland Bridge CSO, Nr Fishers Arms, Market St, Whitland, SA34 9HH	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: BP0246101 Permit Version: 3 Receiving Water: RIVER GRONW	Status: Effective Issue date: 07/10/2019 Effective Date: 07/10/2019 Revocation Date: -
C	305m SW	15 METRES D/S WHITLAND BRIDGE	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: BP0246101 Permit Version: 1 Receiving Water: RIVER GRONW	Status: Effective Issue date: 21/07/1994 Effective Date: 21/07/1994 Revocation Date: -
9	394m SW	WHITLAND CREAMERY ST MARY'S STREET, WHITLAND CREAMERY ST MARY'S STRE, ST MARY'S STREET WHITLAND, WHITLAND	Effluent Type: TRADE DISCHARGES - UNSPECIFIED Permit Number: BJ0097601 Permit Version: 1 Receiving Water: PIPE NR. RIVER GRONW	Status: REVOKED (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV Issue date: 31/07/1985 Effective Date: 31/07/1985 Revocation Date: 15/03/2001
E	446m SW	SOUTH DAIRY WISTON HAVERFORDWEST, SOUTH DAIRY WISTON HAVERFORDWES, WISTON HAVERFORDWEST, HAVERFORDWEST, HAVERFORDW	Effluent Type: UNSPECIFIED Permit Number: BN0238201 Permit Version: 1 Receiving Water: TO LAND	Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 12/12/1980 Effective Date: 12/12/1980 Revocation Date: -
E	446m SW	SOUTH DAIRY WISTON HAVERFORDWEST, SOUTH DAIRY WISTON HAVERFORDWES, WISTON HAVERFORDWEST, HAVERFORDWEST, HAVERFORDW	Effluent Type: UNSPECIFIED Permit Number: BN0238201 Permit Version: 1 Receiving Water: TO LAND	Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 12/12/1980 Effective Date: 12/12/1980 Revocation Date: -
10	446m E	AEL-Y-BRYN WHITLAND, WHITLAND	Effluent Type: UNSPECIFIED Permit Number: BL0138401 Permit Version: 1 Receiving Water: OPEN DITCH TRIB.OF NANT YR ARL	Status: CONSENT EXPIRED - TIME LIMIT Issue date: 05/01/1983 Effective Date: 05/01/1983 Revocation Date: 16/09/1994

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	7

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 29**

ID	Location	Details	
B	224m SW	Incident Date: 25/09/2002 Incident Identification: 110404 Pollutant: Inert Materials and Wastes Pollutant Description: Construction and Demolition Materials and Wastes	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
7	243m S	Incident Date: 22/08/2001 Incident Identification: 26037 Pollutant: Inert Materials and Wastes Pollutant Description: Soils and Clay	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
C	267m SW	Incident Date: 02/04/2011 Incident Identification: 872028 Pollutant: Contaminated Water Pollutant Description: Suspended Solids	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
C	275m SW	Incident Date: 19/01/2015 Incident Identification: 1307517 Pollutant: - Pollutant Description: -	Water Impact: - Land Impact: - Air Impact: -
C	283m SW	Incident Date: 25/03/2011 Incident Identification: 869507 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)
D	343m NE	Incident Date: 25/04/2001 Incident Identification: 3382 Pollutant: Oils and Fuel Pollutant Description: Other Oil or Fuel	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
D	343m NE	Incident Date: 25/04/2001 Incident Identification: 3382 Pollutant: Oils and Fuel Pollutant Description: Other Oil or Fuel	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.

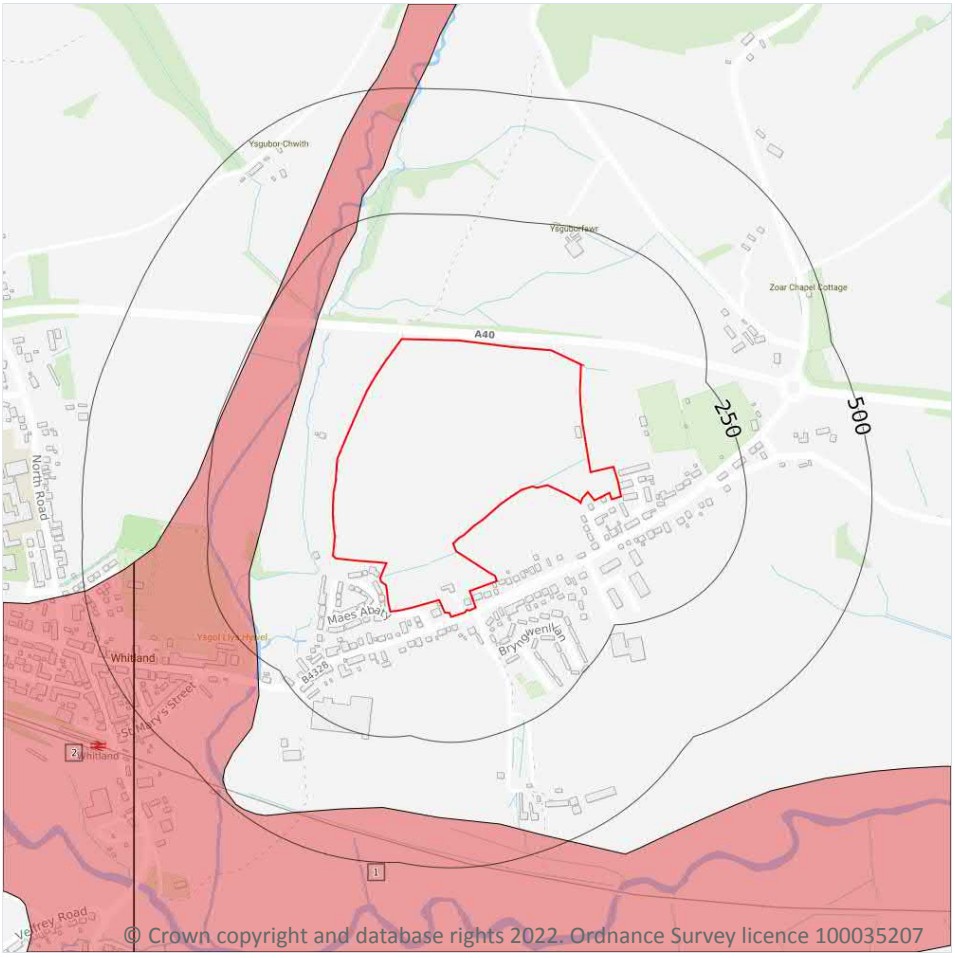
4.21 Pollution inventory radioactive waste

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

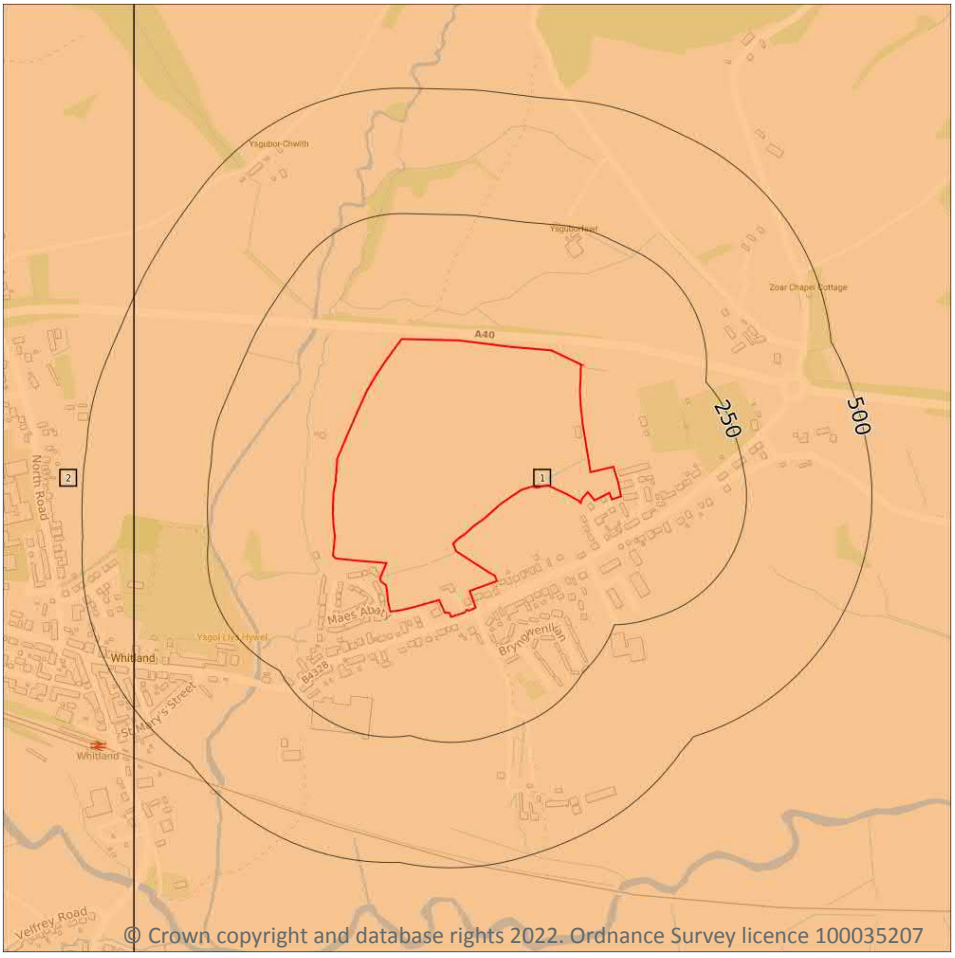
Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 37**

ID	Location	Designation	Description
1	114m W	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	397m W	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.

Bedrock aquifer



Site Outline

Search buffers in metres (m)

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

5.2 Bedrock aquifer

Records within 500m	2

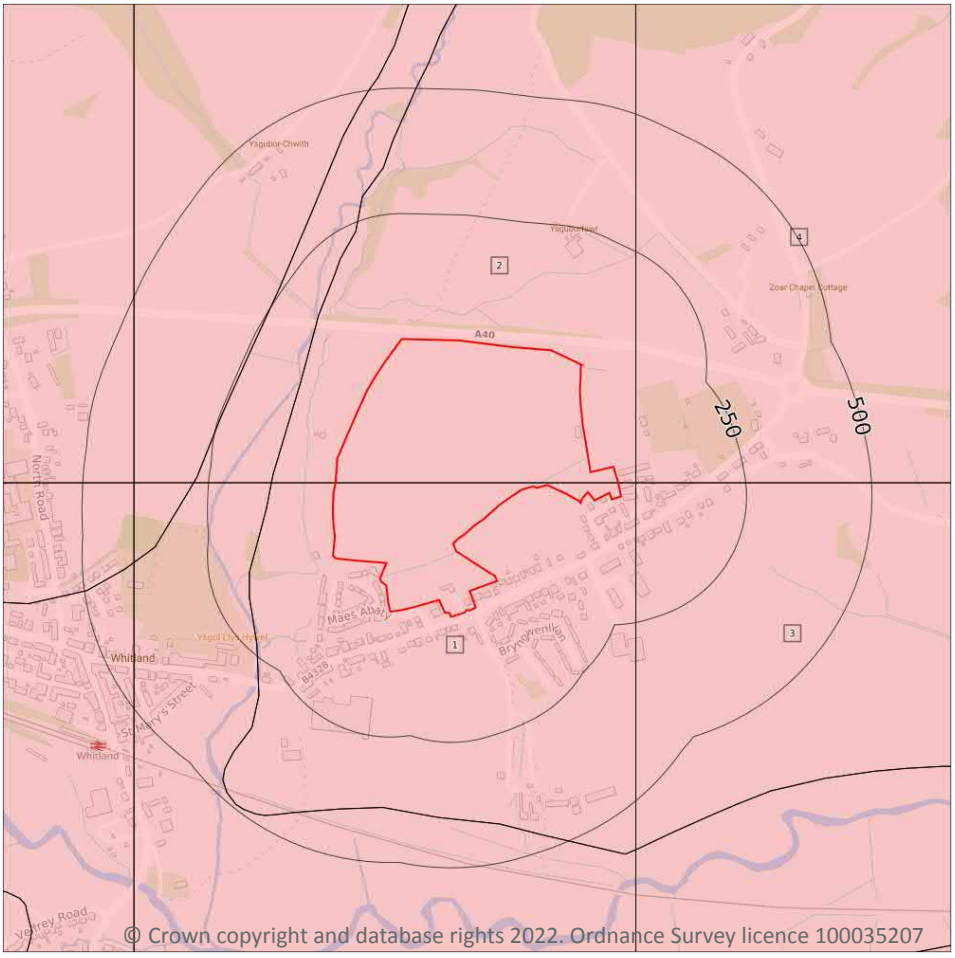
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 39**

ID	Location	Designation	Description
1	**On site**	**Secondary B**	**Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers**
2	397m W	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers

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

Groundwater vulnerability



Site Outline

Search buffers in metres (m)

Superficial vulnerability
- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability
- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information
- Unproductive aquifer
- Soluble rock risk
- Local information

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 41**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	**On site**	**Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: Intermediate Infiltration value: 40-70% Dilution value: >550mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: High**	**Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures**
2	**On site**	**Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: Intermediate Infiltration value: 40-70% Dilution value: >550mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures**
3	29m E	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: >550mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
4	34m E	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Intermediate Infiltration value: 40-70% Dilution value: >550mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures

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

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0

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

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

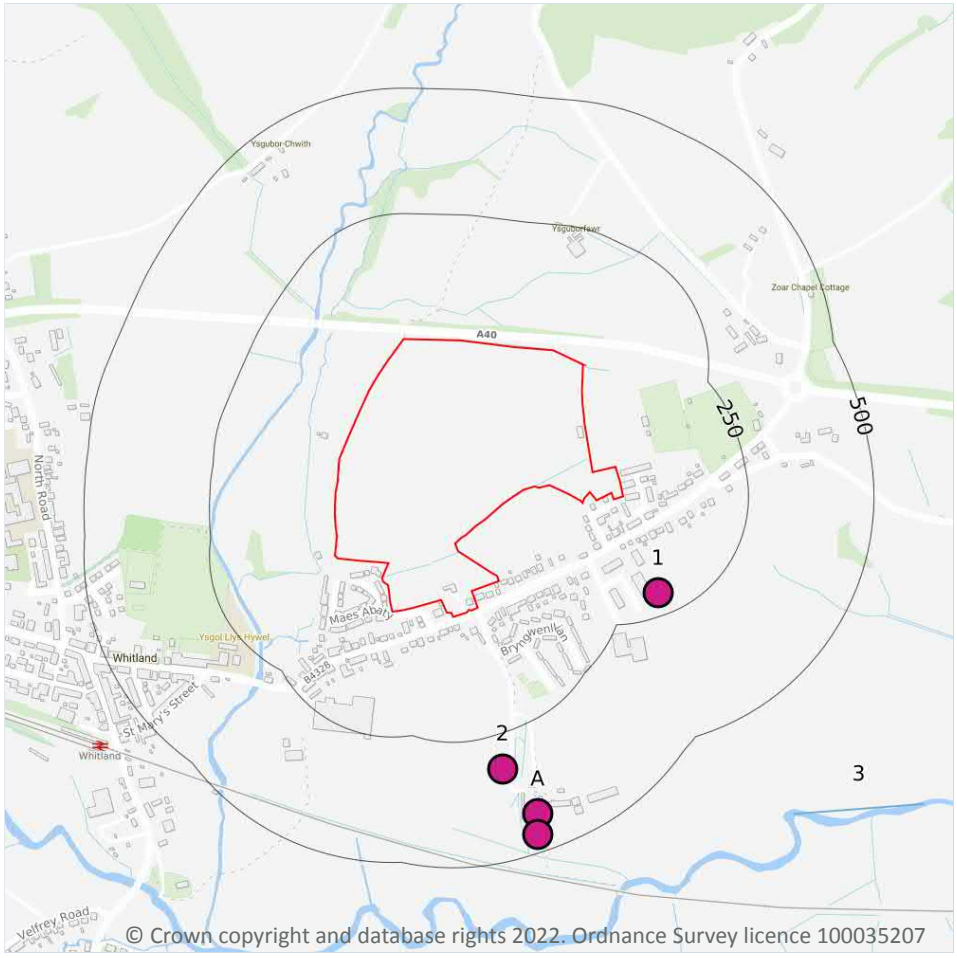
5.5 Groundwater vulnerability- local information

Records on site	0

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

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

Abstractions and Source Protection Zones



Site Outline

Search buffers in metres (m)

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

5.6 Groundwater abstractions

Records within 2000m	15

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 43**

ID	Location	Details	
1	204m S	Status: Historical Licence No: 22/60/4/0064 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL IN ENCLOSURE 829 NEAR BRYNGLAS Data Type: Point Name: Thomas Easting: 221040 Northing: 216780	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 28/02/1966 Version End Date: -
2	318m S	Status: Historical Licence No: 22/60/4/0008 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL IN ENCLOSURE 856 AT TYNEWYDD Data Type: Point Name: Thomas Easting: 220730 Northing: 216430	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 30/12/1965 Version End Date: -
A	425m S	Status: Historical Licence No: 22/60/4/0008 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL IN ENCLOSURE NO. 854 AT TYNEWYDD Data Type: Point Name: Thomas Easting: 220800 Northing: 216340	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 30/12/1965 Version End Date: -
A	463m S	Status: Historical Licence No: 22/60/4/0076 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL AT TYNEWYDD Data Type: Point Name: George Easting: 220800 Northing: 216300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 30/03/1966 Version End Date: -
-	945m E	Status: Historical Licence No: 22/60/4/0051 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL AT PENYBANC, WHITLAND Data Type: Point Name: Richards Easting: 221900 Northing: 216800	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 22/06/1992 Version End Date: -

ID	Location	Details	
-	982m W	Status: Historical Licence No: 22/60/4/0100 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: EAW Groundwater Point: U/G STRATA SHALE MUDSTONE & GRIT Data Type: Point Name: Whitland Mart Ltd Easting: 219420 Northing: 216750	Annual Volume (m^3): 25550 Max Daily Volume (m^3): 70 Original Application No: - Original Start Date: 30/09/1996 Expiry Date: - Issue No: 101 Version Start Date: 23/07/2013 Version End Date: -
-	982m W	Status: Historical Licence No: 22/60/4/0100 Details: Animal Watering & General Use In Non Farming Situations Direct Source: EAW Groundwater Point: U/G STRATA SHALE MUDSTONE & GRIT Data Type: Point Name: Whitland Mart Ltd Easting: 219420 Northing: 216750	Annual Volume (m^3): 25550 Max Daily Volume (m^3): 70 Original Application No: - Original Start Date: 30/09/1996 Expiry Date: - Issue No: 101 Version Start Date: 23/07/2013 Version End Date: -
-	982m W	Status: Active Licence No: 22/60/4/0100 Details: Animal Watering & General use in non-farming situations - Medium Direct Source: Shale, mudstone and grit Point: - Data Type: Point Name: - Easting: 219420 Northing: 216750	Annual Volume (m^3): 22,190 Max Daily Volume (m^3): 90 Original Application No: - Original Start Date: Apr 28 2017 12:00AM Expiry Date: - Issue No: - Version Start Date: - Version End Date: -
-	982m W	Status: Active Licence No: 22/60/4/0100 Details: Animal Watering & General use in non-farming situations - Medium Direct Source: Shale, mudstone and grit Point: - Data Type: Point Name: - Easting: 219420 Northing: 216750	Annual Volume (m^3): 3,360 Max Daily Volume (m^3): 120 Original Application No: - Original Start Date: Apr 28 2017 12:00AM Expiry Date: - Issue No: - Version Start Date: - Version End Date: -

ID	Location	Details	
-	984m SW	Status: Historical Licence No: 22/60/4/0066 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL IN ENCLOSURE NO. 1494 AT ALLT-Y-BAILEY Data Type: Point Name: Haycocks Easting: 219570 Northing: 216320	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 30/03/1966 Version End Date: -
-	1172m S	Status: Active Licence No: 22/60/4/0099 Details: Unknown (Impounding) - Direct Source: - Point: - Data Type: Point Name: - Easting: 221060 Northing: 215640	Annual Volume (m^3): 0 Max Daily Volume (m^3): - Original Application No: - Original Start Date: Dec 13 1995 12:00AM Expiry Date: - Issue No: - Version Start Date: - Version End Date: -
-	1543m E	Status: Historical Licence No: 22/60/4/0078 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL IN FIELD NO. OS 737 AT FFOREST FARM Data Type: Point Name: Windsor Easting: 222440 Northing: 216500	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 16/07/1985 Version End Date: -
-	1663m W	Status: Historical Licence No: 22/60/4/0038 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL IN FIELD NO. 562 AT HENGLOS, WHITLAND Data Type: Point Name: Evans Easting: 218750 Northing: 217210	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 08/06/1992 Version End Date: -
-	1676m NW	Status: Historical Licence No: 22/60/4/0002 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL IN ENCLOSURE 233 AT CILPOST Data Type: Point Name: Lewis Easting: 219420 Northing: 218540	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 30/12/1965 Version End Date: -

ID	Location	Details	
-	1912m W	Status: Historical Licence No: 22/60/4/0029 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: BORED WELL IN ENCLOSURE NO. 24 AT PANT FARM,WHITLAND Data Type: Point Name: Dyer Easting: 218630 Northing: 217760	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 31/01/1966 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m	6

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

Features are displayed on the Abstractions and Source Protection Zones map on **page 43**

ID	Location	Details	
3	718m SE	Status: Historical Licence No: 22/60/4/0079 Details: Spray Irrigation - Direct Direct Source: EAW Surface Water Point: RIVER TAF Data Type: Line Name: Garnon Easting: 221310 Northing: 216340	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 01/04/2001 Version End Date: -
-	777m N	Status: Active Licence No: 22/60/4/0094 Details: Unknown (Impounding) - Direct Source: - Point: - Data Type: Point Name: - Easting: 220680 Northing: 218060	Annual Volume (m^3): 0 Max Daily Volume (m^3): - Original Application No: - Original Start Date: Mar 4 1991 12:00AM Expiry Date: - Issue No: - Version Start Date: - Version End Date: -

ID	Location	Details	
-	987m N	Status: Historical Licence No: 22/60/4/0091 Details: Lake & Pond Throughflow Direct Source: EAW Surface Water Point: AFON GRONW TO SUPPLY AMENITY POND Data Type: Point Name: Hill Easting: 221080 Northing: 218220	Annual Volume (m^3): 165929 Max Daily Volume (m^3): 454.6 Original Application No: - Original Start Date: 03/03/1989 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2007 Version End Date: -
-	987m N	Status: Active Licence No: 22/60/4/0091 Details: Lake & Pond Throughflow - Very Low Direct Source: - Point: - Data Type: Point Name: - Easting: 221080 Northing: 218220	Annual Volume (m^3): 165,929 Max Daily Volume (m^3): - Original Application No: - Original Start Date: Apr 1 2007 12:00AM Expiry Date: - Issue No: - Version Start Date: - Version End Date: -
-	1007m N	Status: Historical Licence No: 22/60/4/0091 Details: Lake & Pond Throughflow Direct Source: EAW Surface Water Point: AFON GRONW TO SUPPLY AMENITY POND Data Type: Point Name: Hill Easting: 221040 Northing: 218250	Annual Volume (m^3): 165929 Max Daily Volume (m^3): 454.6 Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 03/03/1989 Version End Date: -
-	1986m NW	Status: Historical Licence No: 22/60/4/0084 Details: Lake & Pond Throughflow Direct Source: EAW Surface Water Point: NANT CWMFELIN BOETH AT PANTYGOLLEN Data Type: Point Name: Williams Easting: 219190 Northing: 218750	Annual Volume (m^3): 50006 Max Daily Volume (m^3): 196.387 Original Application No: - Original Start Date: 01/09/1983 Expiry Date: - Issue No: 100 Version Start Date: 01/09/1983 Version End Date: -

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

5.8 Potable abstractions

Records within 2000m	0

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.

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

5.9 Source Protection Zones

Records within 500m	**0**

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

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

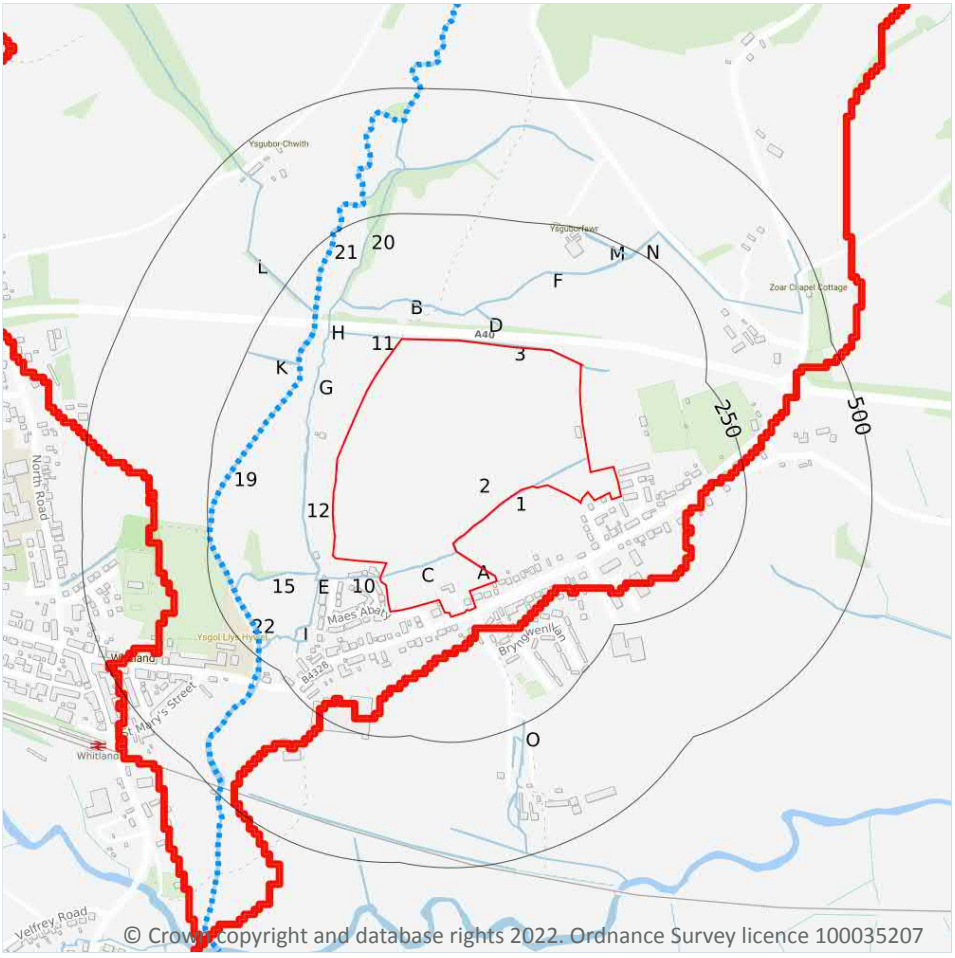
5.10 Source Protection Zones (confined aquifer)

Records within 500m	**0**

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

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

6 Hydrology



6.1 Water Network (OS MasterMap)

Records within 250m	34

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 50**

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

ID	Location	Type of water feature	Ground level	Permanence	Name
3	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
C	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
10	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
11	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
12	34m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	40m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
15	47m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	47m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	50m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	53m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	68m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	75m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
H	126m NW	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
I	127m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
19	130m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Gronw
H	140m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	146m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Gronw
K	146m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
20	146m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
21	170m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Gronw
L	170m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	174m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	181m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	181m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	182m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
I	190m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
22	206m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Gronw
I	208m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	235m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Gronw
M	235m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
N	235m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
O	243m SE	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	18

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 50**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	1

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

Features are displayed on the Hydrology map on **page 50**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
B	**On site**	**River WB catchment**	**Gronw - headwaters to confluence with Taf**	**GB110060029360**	**Taf**	**Carmarthen Bay and the Gower**

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.

Features are displayed on the Hydrology map on **page 50**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
18	131m NW	River	Gronw - headwaters to confluence with Taf	GB110060029360	Good	Good	Good	2016

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

6.5 WFD Groundwater bodies

Records on site	**1**

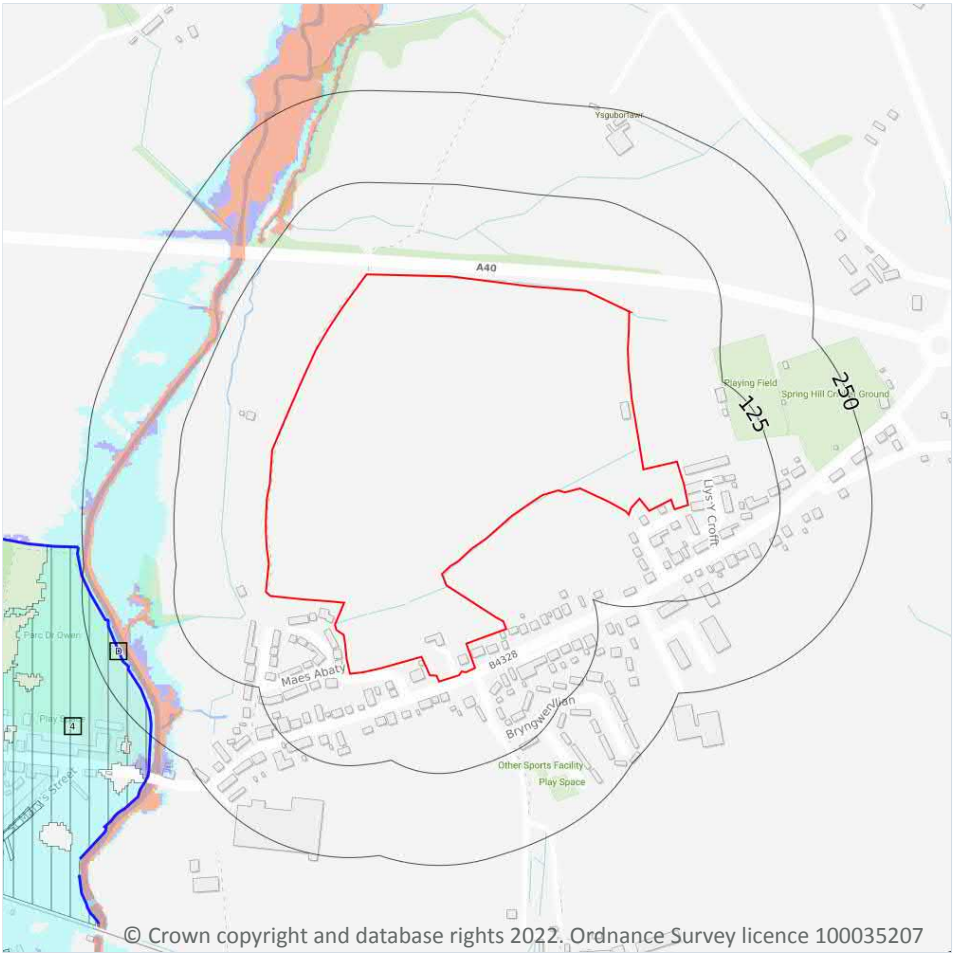
Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place.

Features are displayed on the Hydrology map on **page 50**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
2	**On site**	**Tywi, Taf and Gwendraeths**	**GB41002G200500**	**Poor**	**Poor**	**Good**	**2017**

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	0

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

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

7.2 Historical Flood Events

Records within 250m	0

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

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

7.3 Flood Defences

Records within 250m	1

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.

Features are displayed on the River and coastal flooding map on **page 55**

ID	Location	Update
D	212m SW	29/11/2021

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

7.4 Areas Benefiting from Flood Defences

Records within 250m	1

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.

Features are displayed on the River and coastal flooding map on **page 55**

ID	Location	
4	212m SW	Area benefiting from flood defences

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

7.5 Flood Storage Areas

Records within 250m	0

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

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

River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m	0

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

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

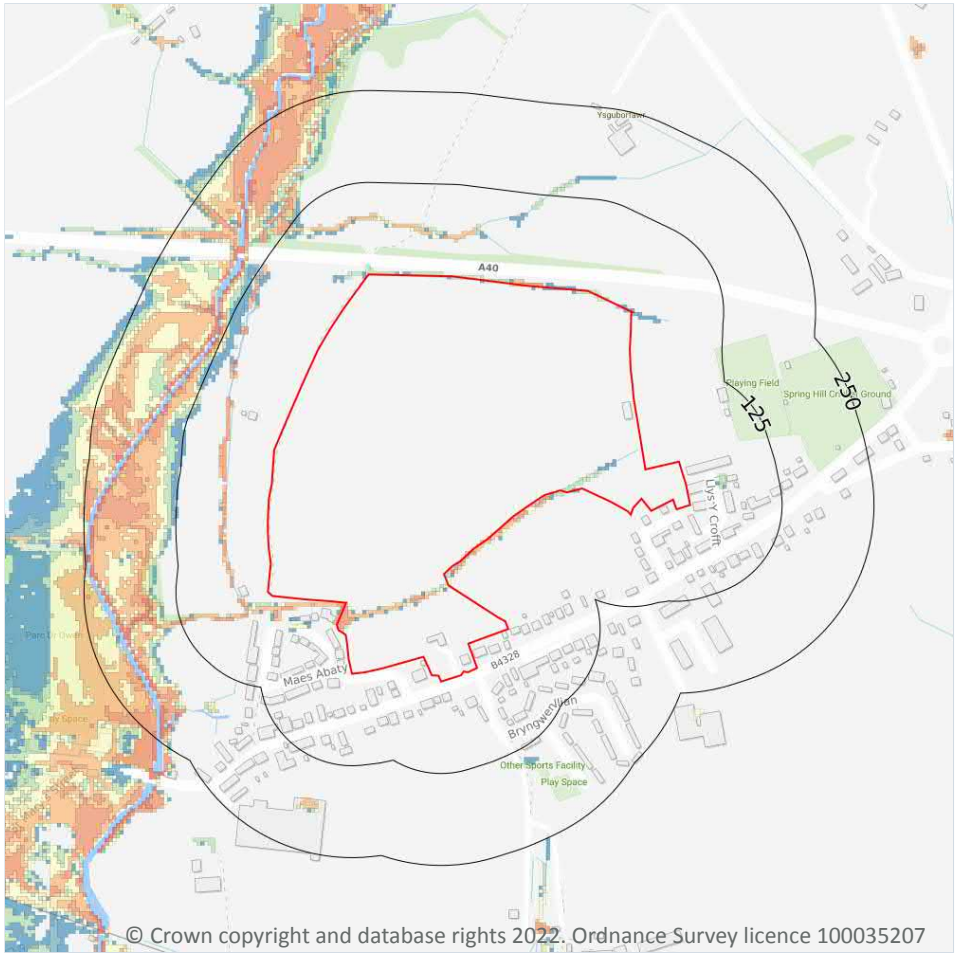
7.7 Flood Zone 3

Records within 50m	0

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

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

8 Surface water flooding



Site Outline
Search buffers in metres (m)

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

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

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

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

8.1 Surface water flooding

Highest risk on site	**1 in 30 year, Greater than 1.0m**
Highest risk within 50m	**1 in 30 year, Greater than 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 59**

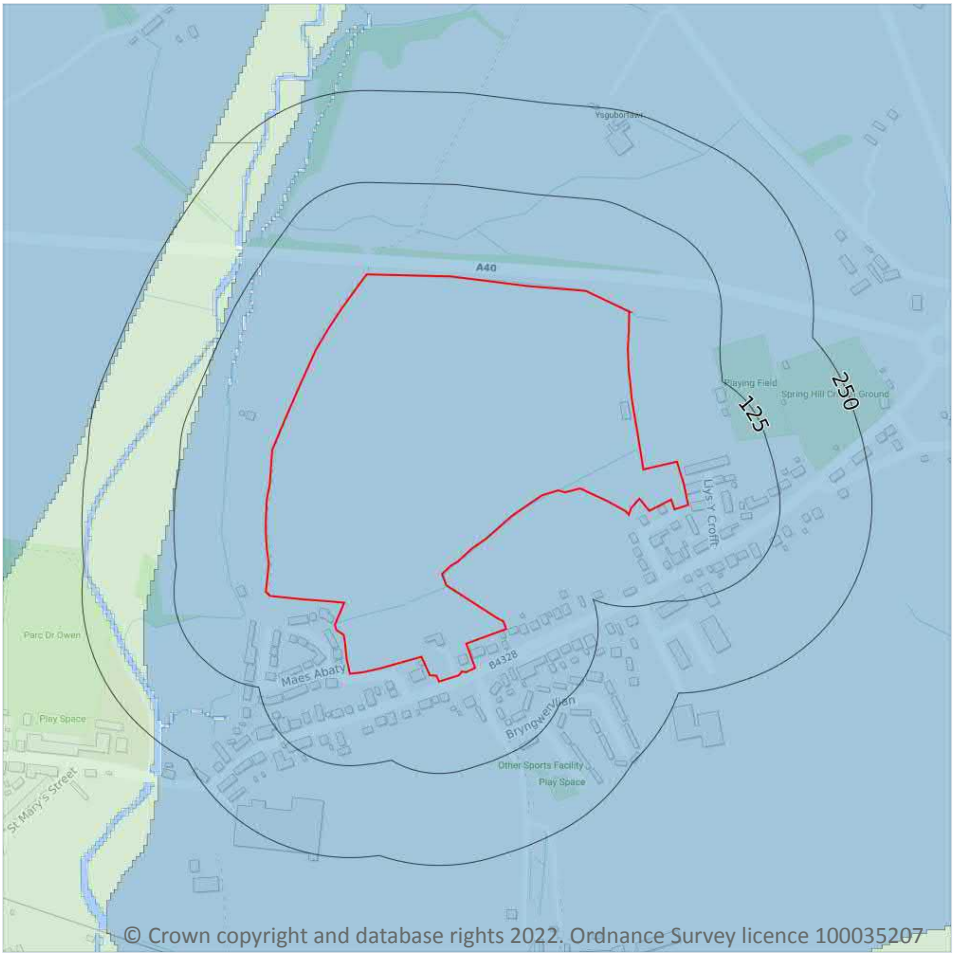
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

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	Greater than 1.0m
1 in 30 year	Greater than 1.0m

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



Site Outline

Search buffers in metres (m)

- High
- Moderate - High
- Moderate
- Low
- Negligible

9.1 Groundwater flooding

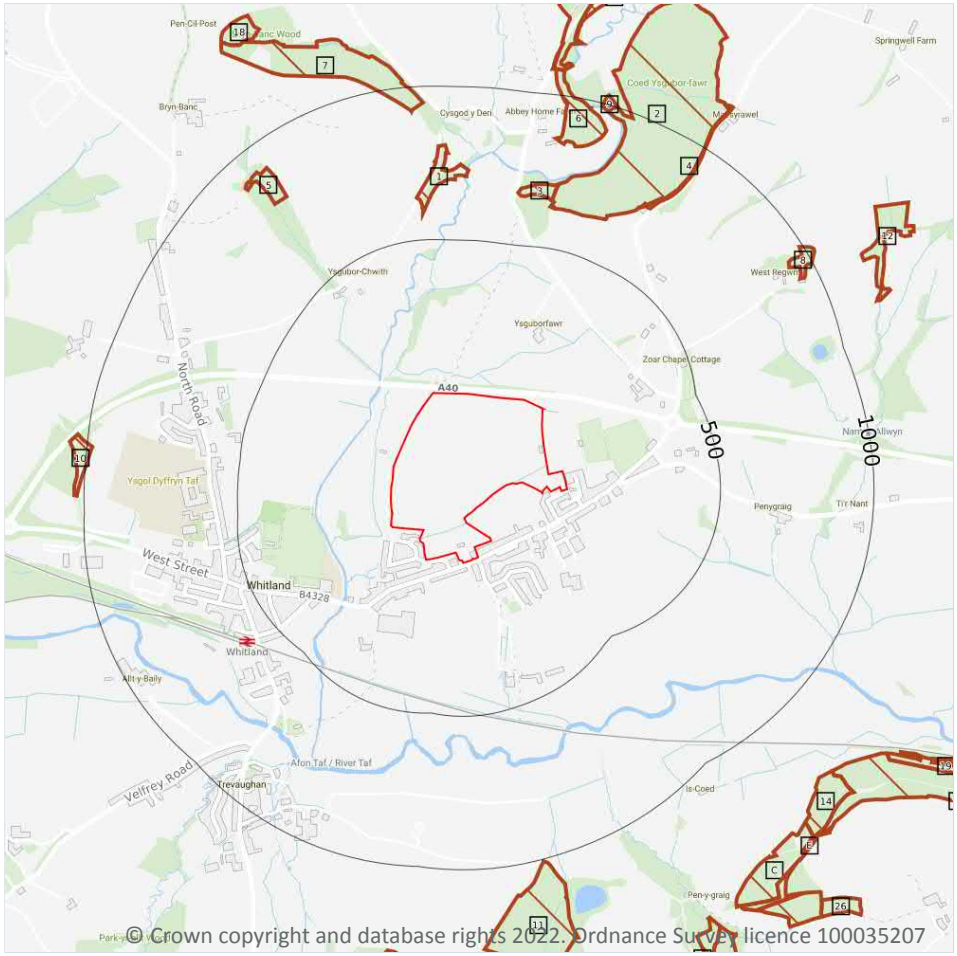
Highest risk on site	**Negligible**
Highest risk within 50m	**Negligible**

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 61**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



Site Outline

Search buffers in metres (m)

Designated Ancient Woodland

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	0

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.

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

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

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

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.

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

10.4 Special Protection Areas (SPA)

Records within 2000m	0

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

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

10.5 National Nature Reserves (NNR)

Records within 2000m	0

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

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

10.6 Local Nature Reserves (LNR)

Records within 2000m	0

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

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

10.7 Designated Ancient Woodland

Records within 2000m	65

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 62**

ID	Location	Name	Woodland Type
1	586m N	Unknown	Restored Ancient Woodland Site
2	630m N	Unknown	Restored Ancient Woodland Site
3	655m N	Unknown	Restored Ancient Woodland Site
4	731m NE	Unknown	Restored Ancient Woodland Site
5	798m NW	Unknown	Ancient Semi Natural Woodland
6	842m N	Unknown	Restored Ancient Woodland Site
7	920m N	Unknown	Ancient Semi Natural Woodland
8	926m NE	Unknown	Ancient Semi Natural Woodland
9	978m N	Unknown	Restored Ancient Woodland Site
10	982m W	Unknown	Restored Ancient Woodland Site
11	1007m S	Unknown	Ancient Semi Natural Woodland
A	1082m N	Unknown	Ancient Semi Natural Woodland
12	1145m E	Unknown	Restored Ancient Woodland Site
13	1172m N	Unknown	Ancient Semi Natural Woodland
14	1248m SE	Unknown	Plantation on Ancient Woodland Site
15	1260m SE	Unknown	Ancient Semi Natural Woodland

ID	Location	Name	Woodland Type
16	1279m S	Unknown	Restored Ancient Woodland Site
-	1281m N	Unknown	Ancient Semi Natural Woodland
18	1295m NW	Unknown	Ancient Semi Natural Woodland
-	1307m S	Unknown	Plantation on Ancient Woodland Site
-	1322m S	Unknown	Plantation on Ancient Woodland Site
C	1334m SE	Unknown	Ancient Semi Natural Woodland
19	1352m SE	Unknown	Ancient Semi Natural Woodland
-	1373m S	Unknown	Restored Ancient Woodland Site
E	1386m SE	Unknown	Ancient Semi Natural Woodland
E	1388m SE	Unknown	Ancient Semi Natural Woodland
20	1395m SE	Unknown	Ancient Semi Natural Woodland
C	1421m SE	Unknown	Plantation on Ancient Woodland Site
21	1438m SE	Unknown	Ancient Semi Natural Woodland
-	1438m NW	Unknown	Restored Ancient Woodland Site
-	1454m S	Unknown	Restored Ancient Woodland Site
C	1465m SE	Unknown	Plantation on Ancient Woodland Site
-	1469m N	Unknown	Ancient Semi Natural Woodland
-	1470m N	Unknown	Ancient Semi Natural Woodland
-	1471m S	Unknown	Plantation on Ancient Woodland Site
-	1489m N	Unknown	Restored Ancient Woodland Site
-	1521m SE	Unknown	Ancient Semi Natural Woodland
-	1550m N	Unknown	Restored Ancient Woodland Site
26	1574m SE	Unknown	Restored Ancient Woodland Site
-	1583m S	Unknown	Ancient Semi Natural Woodland
-	1605m S	Unknown	Ancient Semi Natural Woodland
-	1610m N	Unknown	Plantation on Ancient Woodland Site
-	1644m N	Unknown	Restored Ancient Woodland Site
-	1645m SE	Unknown	Ancient Semi Natural Woodland

ID	Location	Name	Woodland Type
-	1672m N	Unknown	Restored Ancient Woodland Site
-	1700m N	Unknown	Restored Ancient Woodland Site
-	1702m N	Unknown	Restored Ancient Woodland Site
-	1770m SE	Unknown	Plantation on Ancient Woodland Site
-	1781m SW	Unknown	Ancient Semi Natural Woodland
-	1782m SW	Unknown	Ancient Woodland Site of Unknown Category
-	1797m SE	Unknown	Ancient Semi Natural Woodland
-	1841m S	Unknown	Ancient Semi Natural Woodland
-	1863m N	Unknown	Ancient Semi Natural Woodland
-	1878m S	Unknown	Ancient Semi Natural Woodland
-	1879m SW	Unknown	Ancient Semi Natural Woodland
-	1879m S	Unknown	Restored Ancient Woodland Site
-	1890m SW	Unknown	Ancient Semi Natural Woodland
-	1892m S	Unknown	Ancient Semi Natural Woodland
-	1902m SW	Unknown	Ancient Semi Natural Woodland
-	1910m S	Unknown	Ancient Semi Natural Woodland
-	1916m NW	Unknown	Ancient Semi Natural Woodland
-	1958m W	Unknown	Restored Ancient Woodland Site
-	1978m SE	Unknown	Ancient Semi Natural Woodland
-	1980m SE	Unknown	Ancient Semi Natural Woodland
-	2000m SE	Unknown	Plantation on Ancient Woodland Site

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

10.8 Biosphere Reserves

Records within 2000m	0

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

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

10.9 Forest Parks

Records within 2000m	0

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

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

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

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

10.11 Green Belt

Records within 2000m	0

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

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

10.12 Proposed Ramsar sites

Records within 2000m	0

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

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

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

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

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

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

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

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

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m	0

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

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

SSSI Impact Zones and Units

10.17 SSSI Impact Risk Zones

Records on site	0

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.

This data is sourced from Natural England.

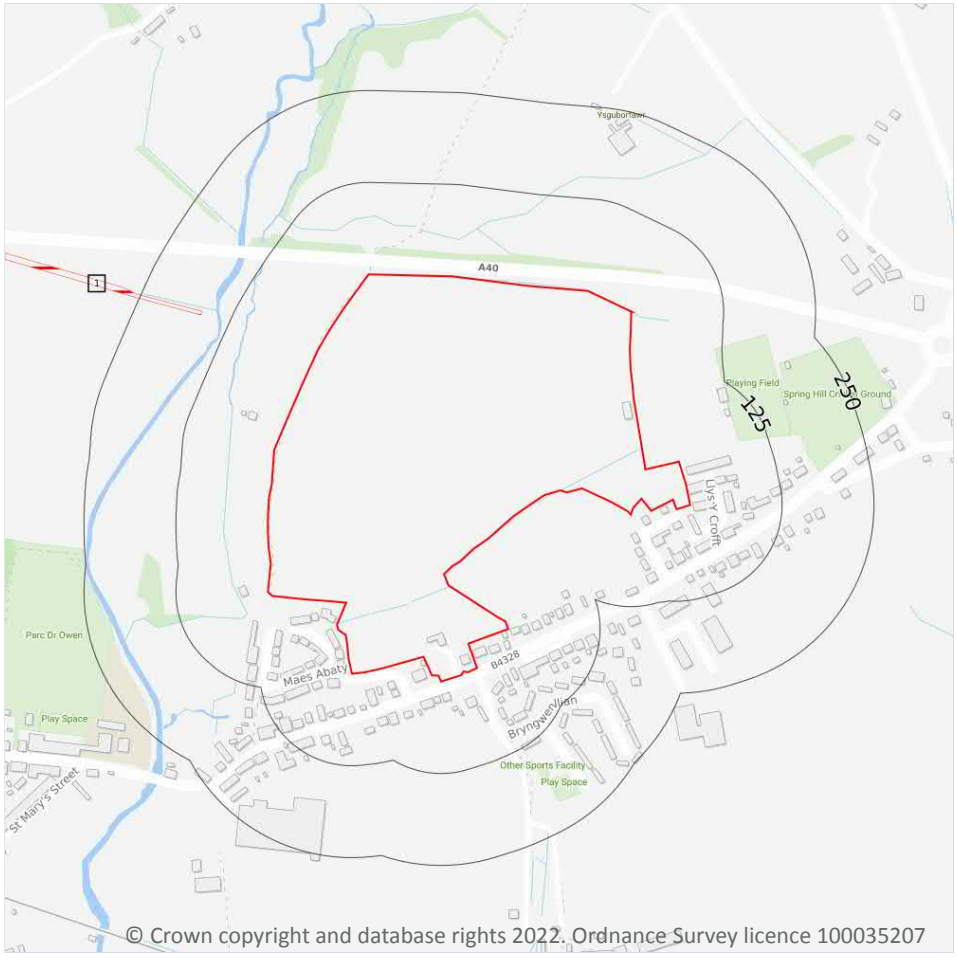
10.18 SSSI Units

Records within 2000m	0

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.

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	0

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

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

11.5 Conservation Areas

Records within 250m	0

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

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

11.6 Scheduled Ancient Monuments

Records within 250m	1

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.

Features are displayed on the Visual and cultural designations map on **page 70**

ID	Location	Ancient monument name	Reference number
1	165m NW	Roman Road 250m NE of Pwll-y-Hwyaid	914

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

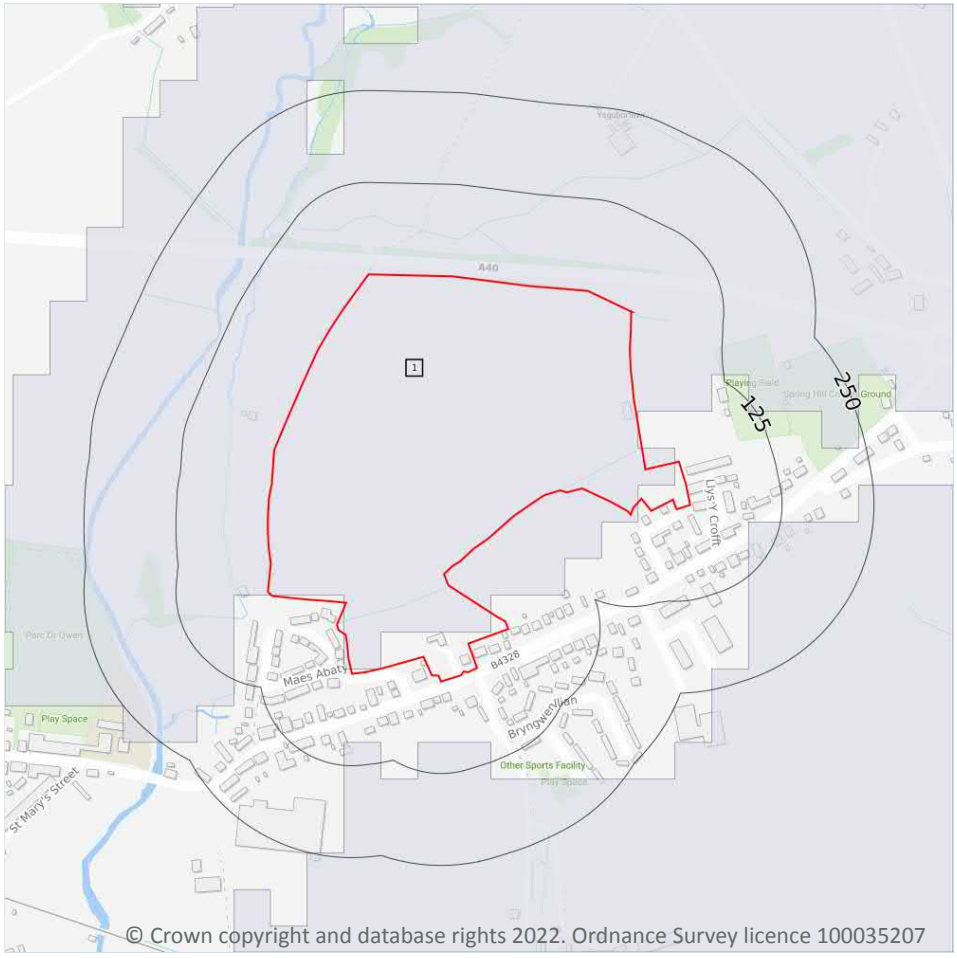
11.7 Registered Parks and Gardens

Records within 250m	0

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

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

12 Agricultural designations



Site Outline

Search buffers in metres (m)

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

12.1 Agricultural Land Classification

Records within 250m	1

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 73**

ID	Location	Classification	Description
1	**On site**	**Grade 3b**	**Moderate quality agricultural land**

This data is sourced from Natural Resources Wales.

12.2 Open Access Land

Records within 250m	0

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

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

12.3 Tree Felling Licences

Records within 250m	0

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

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	0

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

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m	0

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

This data is sourced from Natural England.

13 Habitat designations

13.1 Priority Habitat Inventory

Records within 250m	0

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

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	0

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

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	0

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

This data is sourced from Natural England.

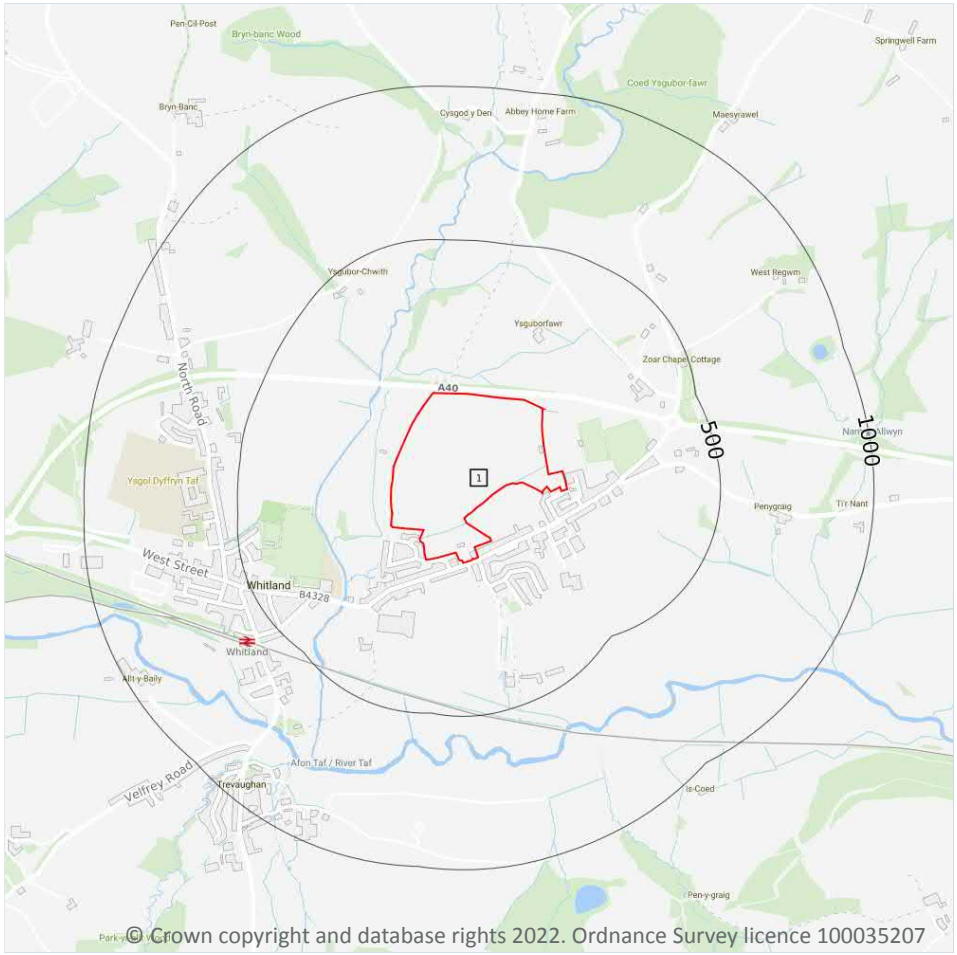
13.4 Limestone Pavement Orders

Records within 250m	0

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

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



Site Outline

Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

14.1 10k Availability

Records within 500m	1

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

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 76**

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

This data is sourced from the British Geological Survey.

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

14.2 Artificial and made ground (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial

14.3 Superficial geology (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock

14.5 Bedrock geology (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

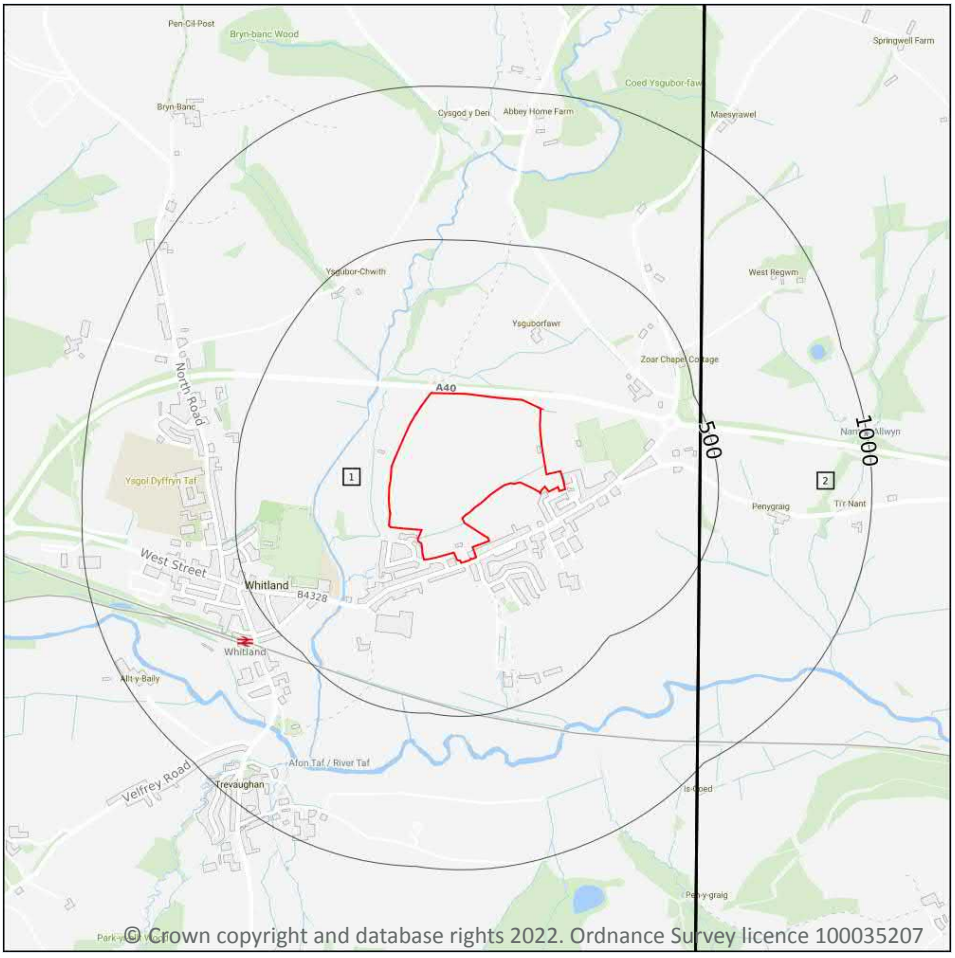
14.6 Bedrock faults and other linear features (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	2

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

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 80**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**Full**	**Full**	**No coverage**	**EW228_haverfordwest_v4**
2	439m E	Full	Full	Full	Full	EW229_carmarthen_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.

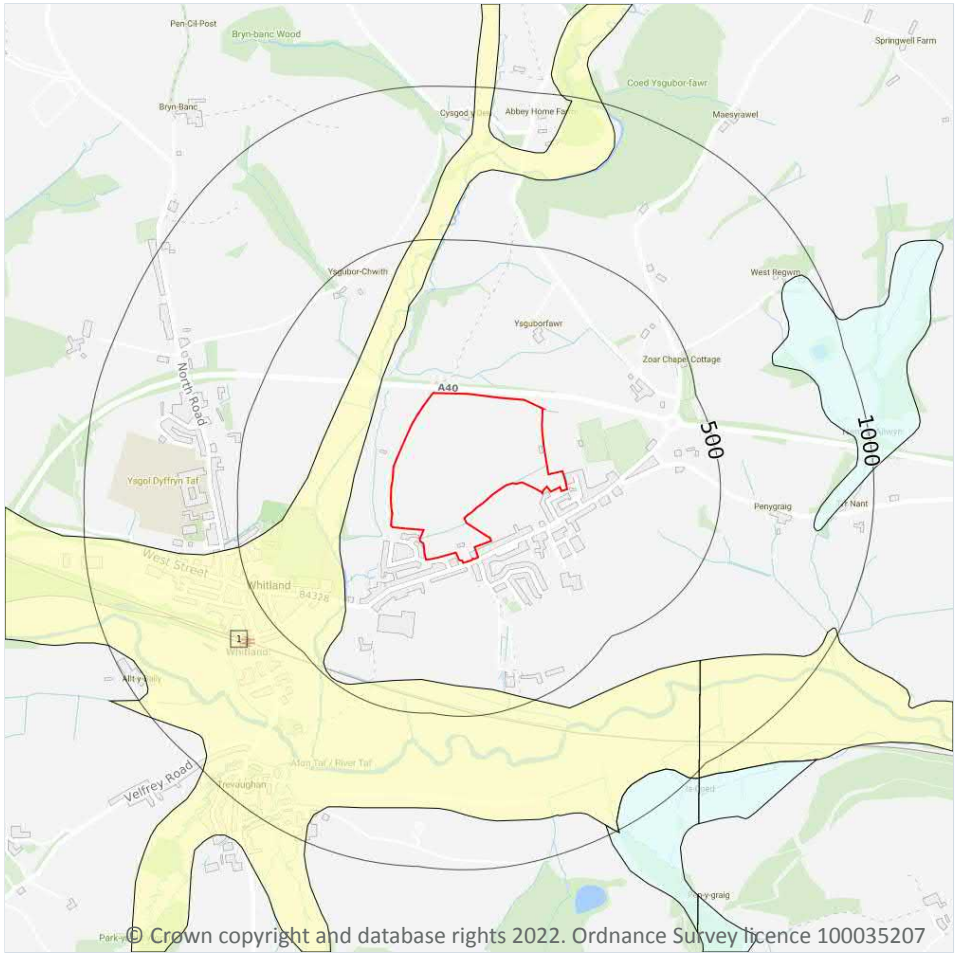
15.3 Artificial ground permeability (50k)

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	1

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 82**

ID	Location	LEX Code	Description	Rock description
1	114m W	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

This data is sourced from the British Geological Survey.

15.5 Superficial 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 superficial deposits (the zone between the land surface and the water table).

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.

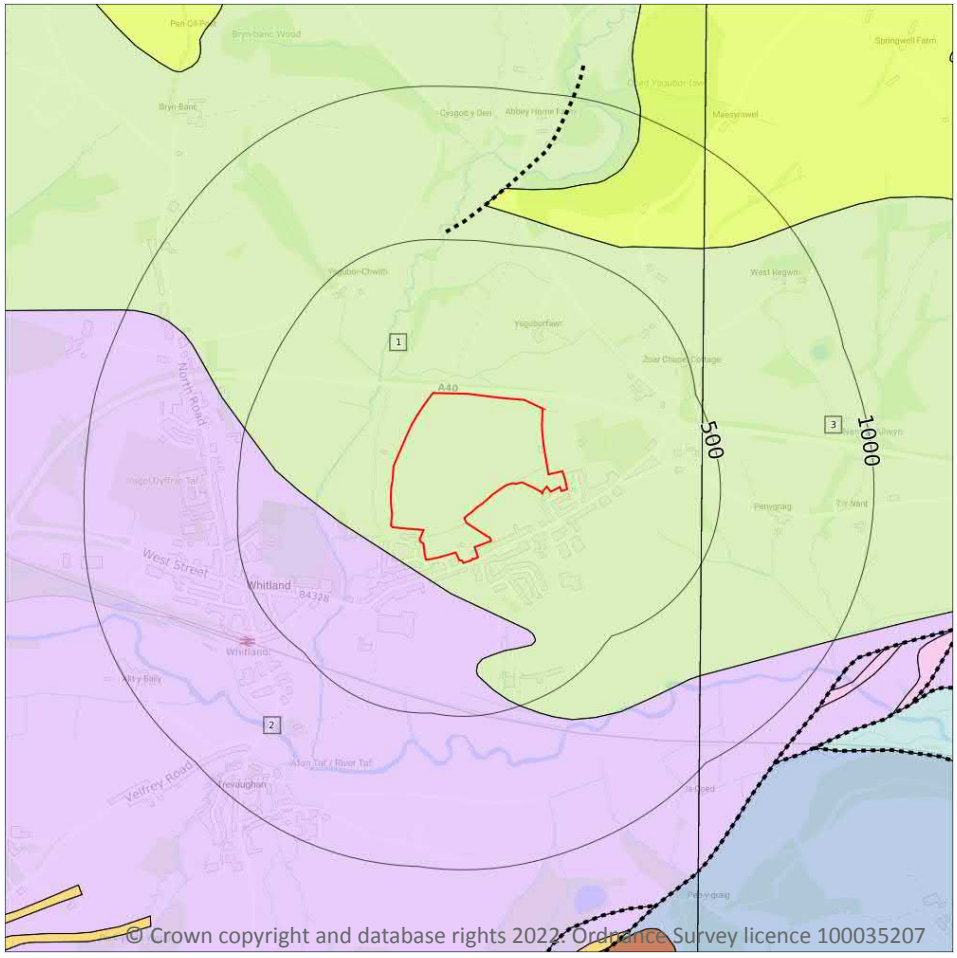
15.7 Landslip permeability (50k)

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	3

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 84**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**TTRA-MDST**	**TETRAGRAPTUS BEDS - MUDSTONE**	**-**
2	49m SW	DBB-MDST	DIDYMOGRAPTUS BIFIDUS BEDS - MUDSTONE	ABEREIDDIAN
3	439m E	TTRA-MDST	TETRAGRAPTUS BEDS - MUDSTONE	-

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	2

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Fracture**	**Low**	**Low**
49m SE	Fracture	Low	Low

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	0

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.

This data is sourced from the British Geological Survey.

16 Boreholes

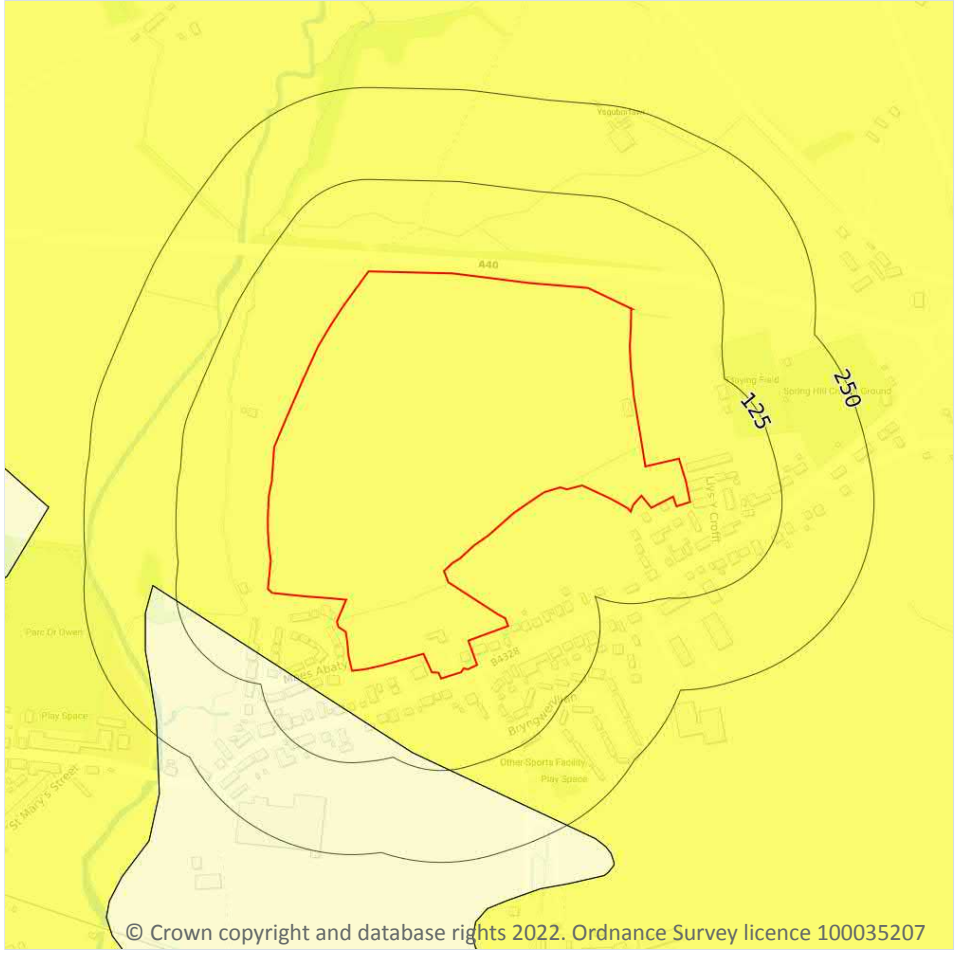
16.1 BGS Boreholes

Records within 250m	0

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.

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

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

17.1 Shrink swell clays

Records within 50m	2

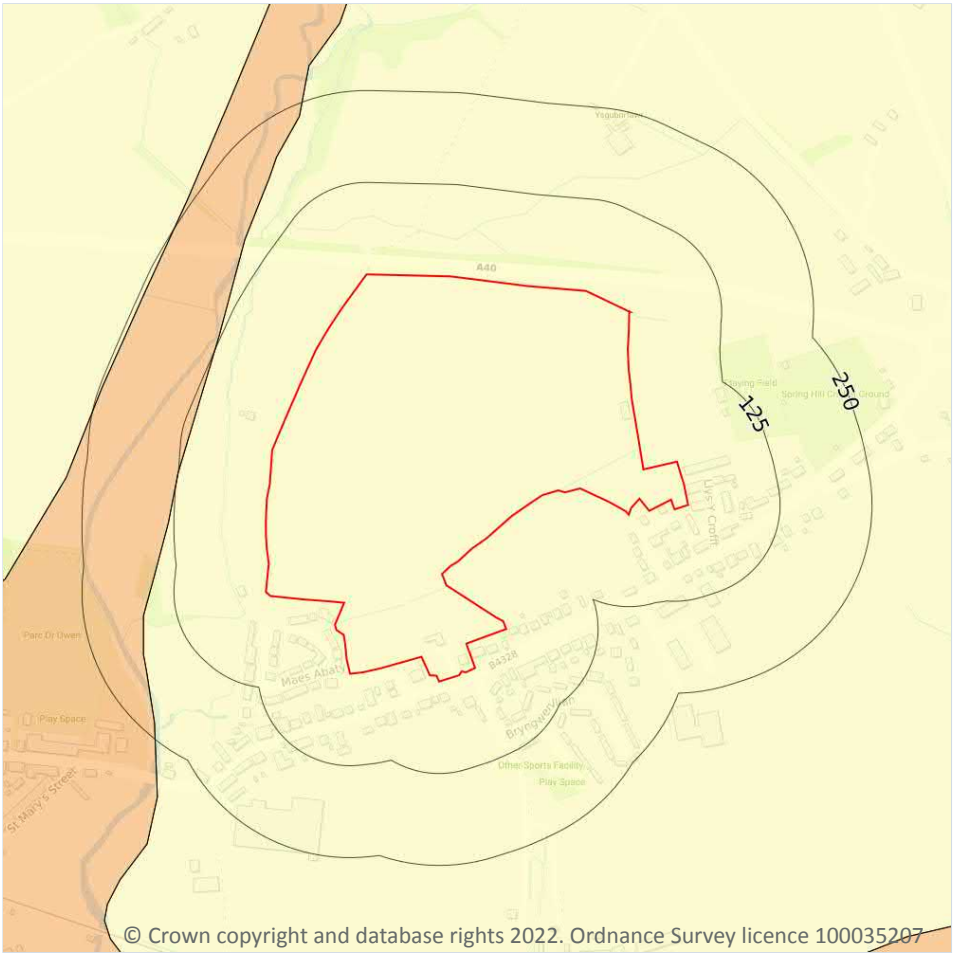
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 87**

Location	Hazard rating	Details
On site	**Very low**	**Ground conditions predominantly low plasticity.**
49m SW	Negligible	Ground conditions predominantly non-plastic.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

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

17.2 Running sands

Records within 50m	1

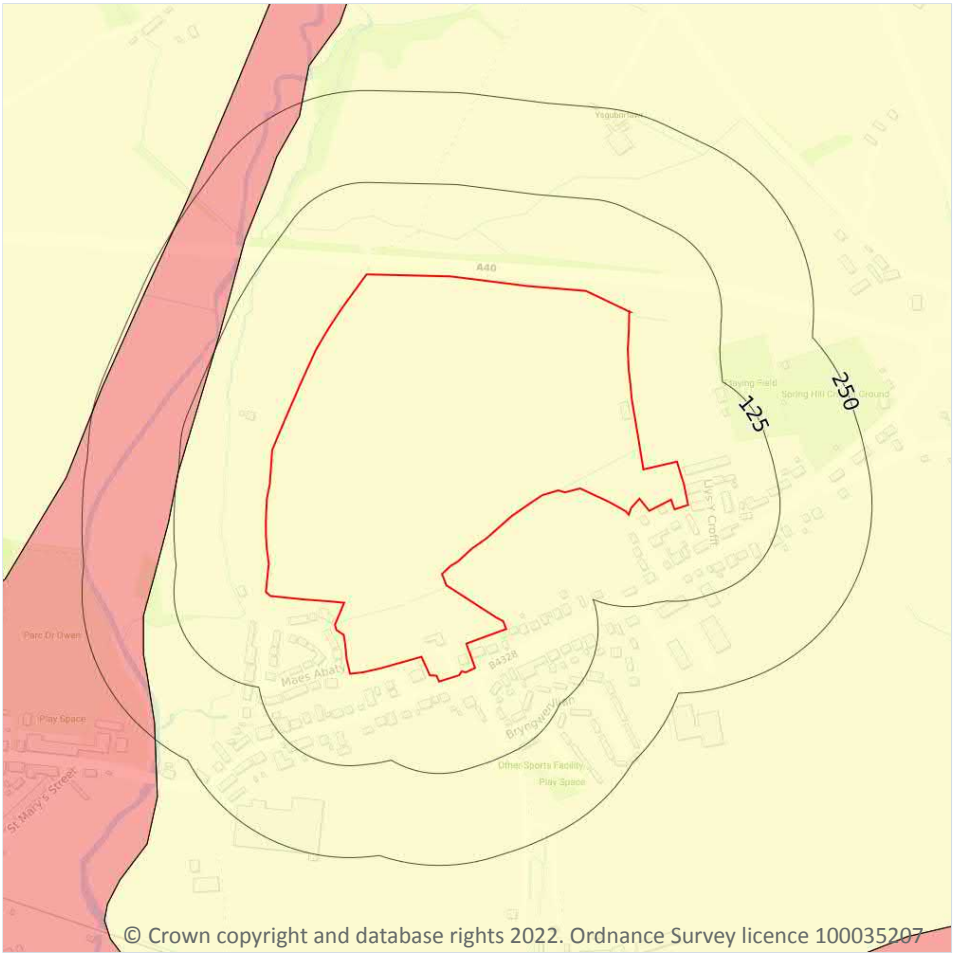
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 88**

Location	Hazard rating	Details
On site	**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



Site Outline

Search buffers in metres (m)

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

17.3 Compressible deposits

Records within 50m	1

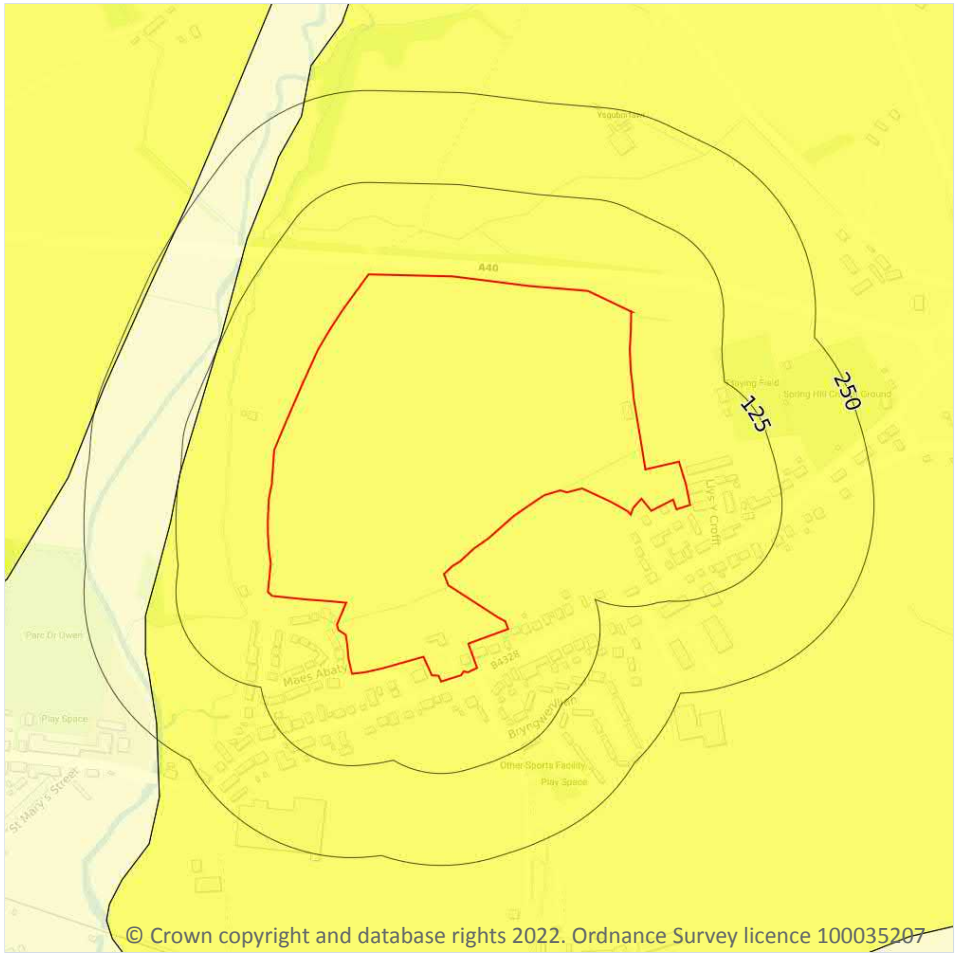
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 89**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

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

17.4 Collapsible deposits

Records within 50m	1

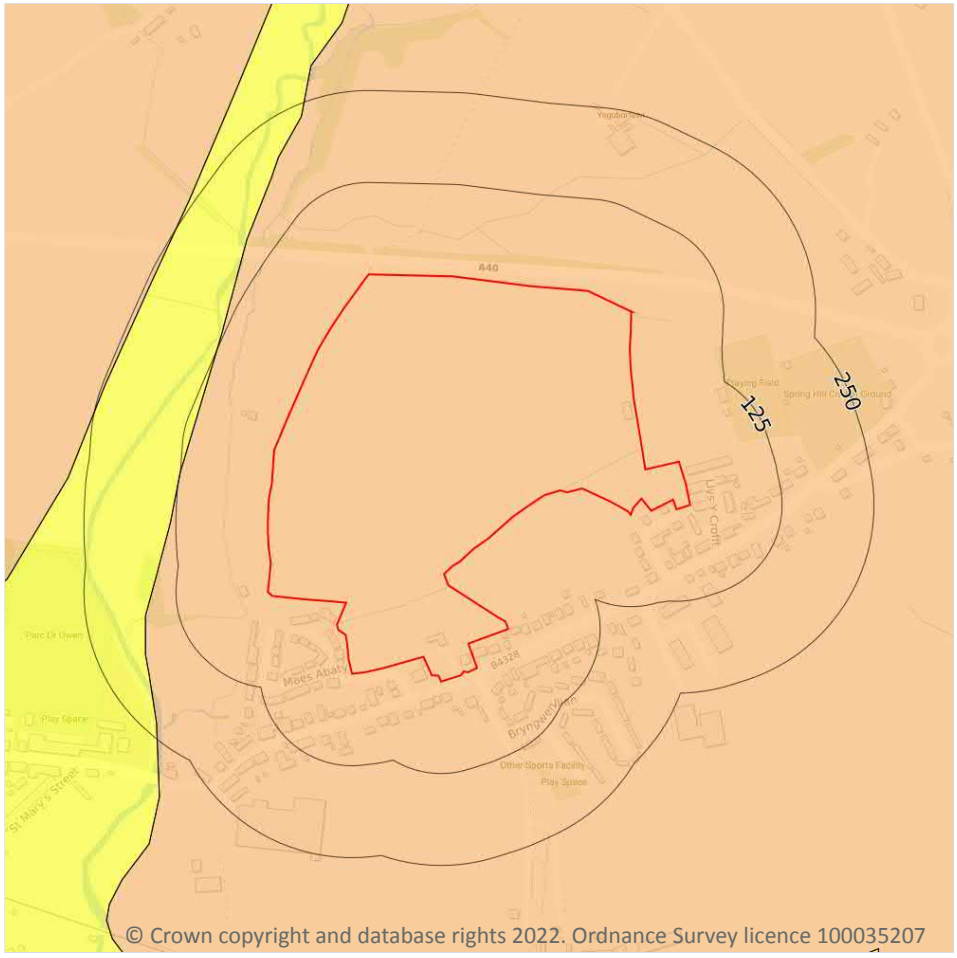
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 90**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

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

17.5 Landslides

Records within 50m	1

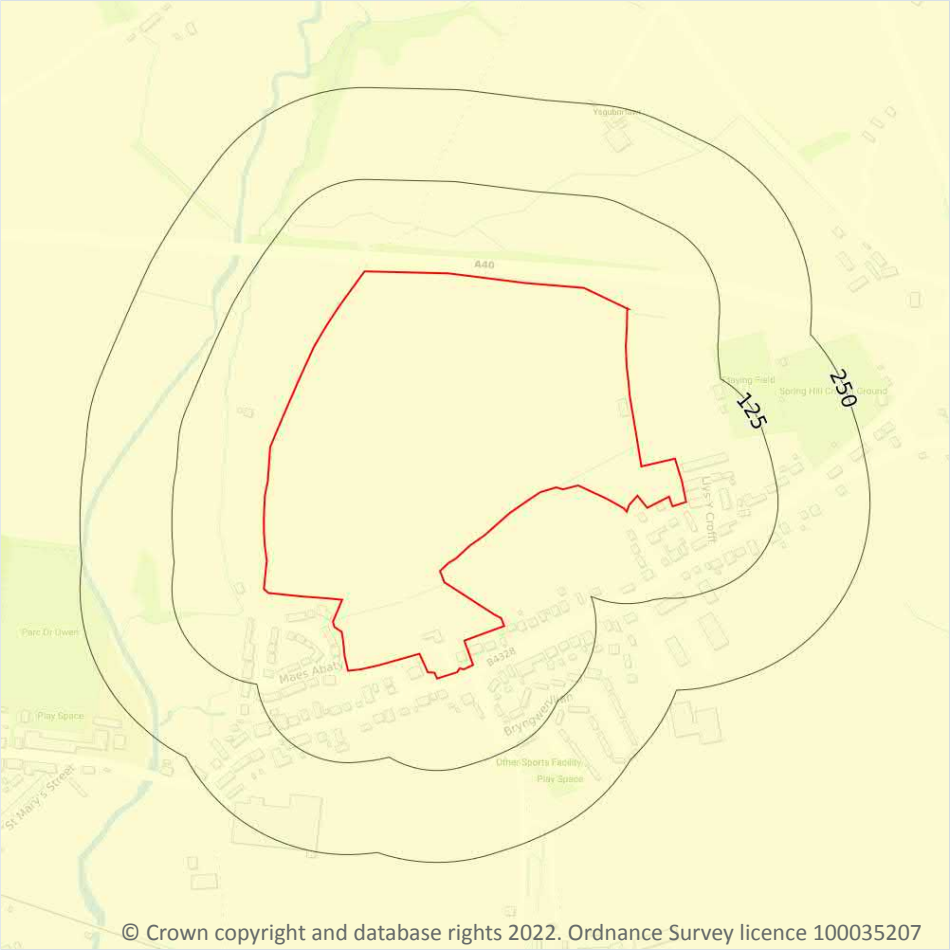
The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 91**

Location	Hazard rating	Details
On site	**Low**	**Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



Site Outline

Search buffers in metres (m)

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

17.6 Ground dissolution of soluble rocks

Records within 50m	1

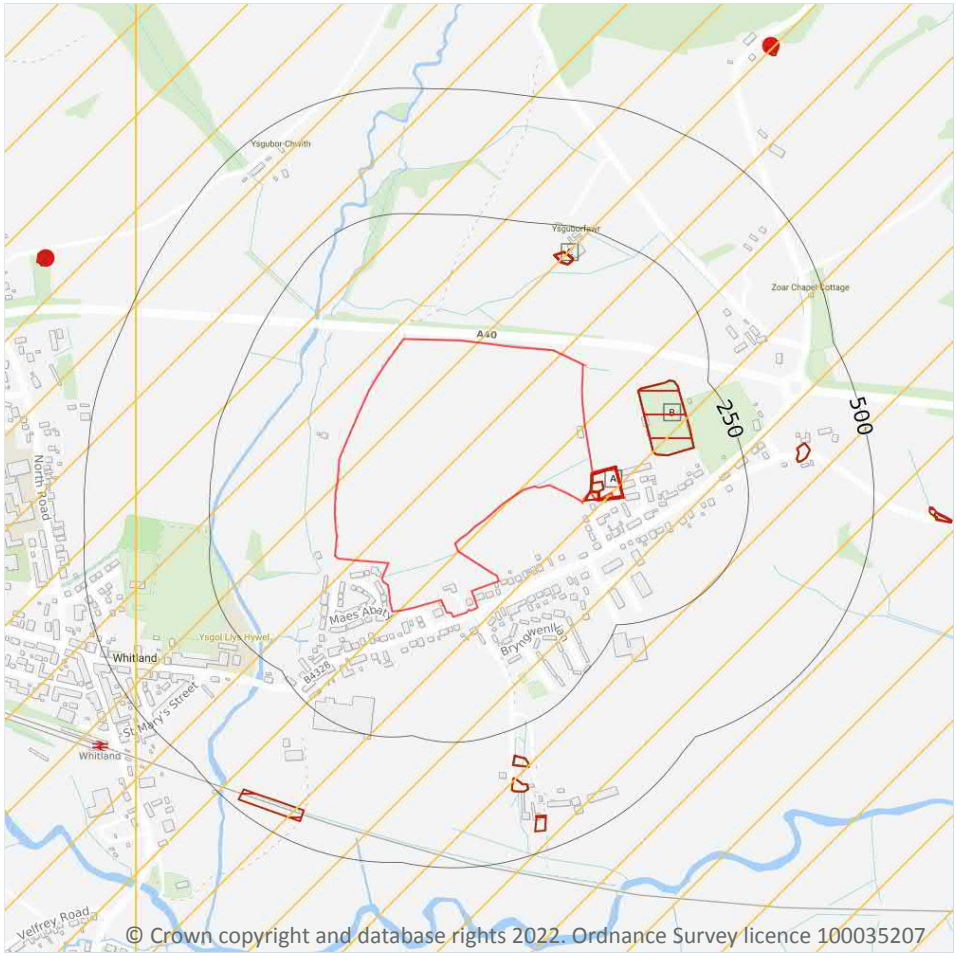
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 92**

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

This data is sourced from the British Geological Survey.

18 Mining, 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	14

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 93**

ID	Location	Land Use	Year of mapping	Mapping scale
A	**On site**	**Brick Yard**	**1908**	**1:10560**
A	**On site**	**Brick Yard**	**1908**	**1:10560**
A	**On site**	**Brick Yard**	**1948**	**1:10560**
A	**On site**	**Brick Yard**	**1906**	**1:10560**
A	**On site**	**Brick Yard**	**1963**	**1:10560**
A	**On site**	**Brick Yard**	**1948**	**1:10560**
A	**On site**	**Brick Yard**	**1887**	**1:10560**
B	81m E	Unspecified Ground Workings	1973	1:10000
B	81m E	Unspecified Ground Workings	1992	1:10000
C	174m N	Pond	1948	1:10560
C	174m N	Pond	1906	1:10560
C	174m N	Pond	1908	1:10560
C	174m N	Pond	1948	1:10560
C	174m N	Pond	1887	1:10560

This is 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 is 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	2

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 93**

ID	Location	Name	Commodity	Class	Likelihood
B	**On site**	**Not available**	**Vein Mineral**	**B**	**Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered**
1	397m W	Not available	Vein Mineral	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or 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

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

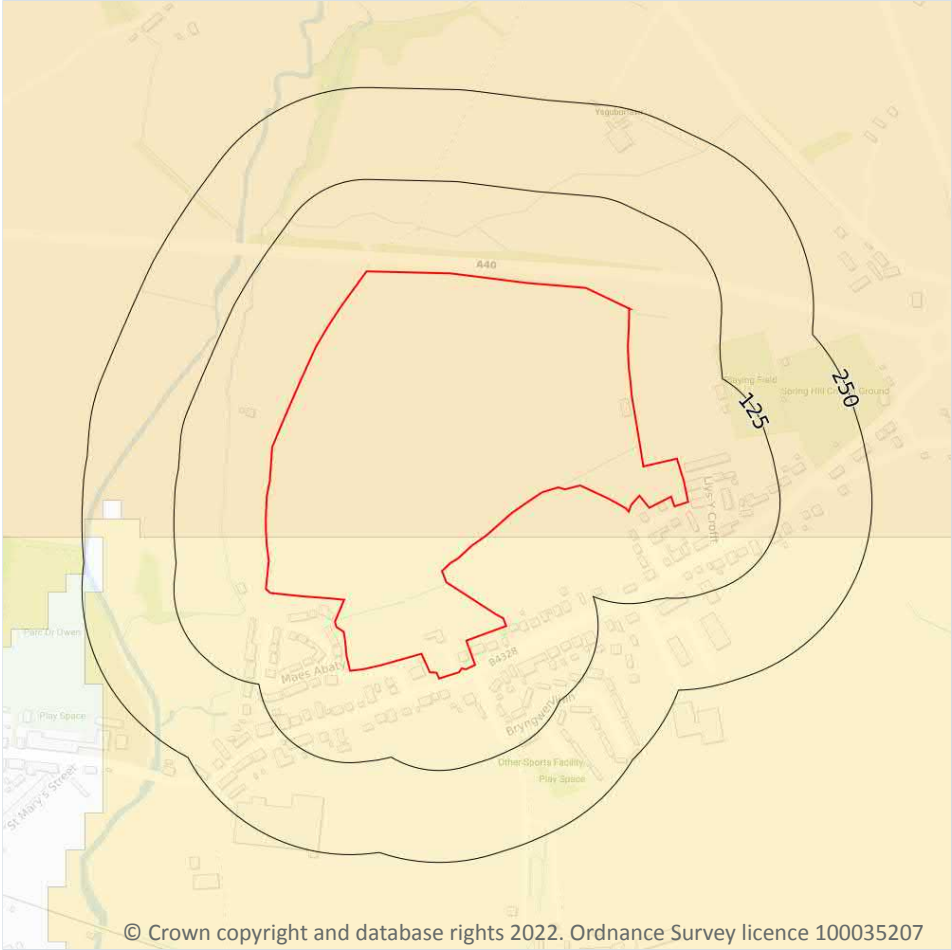
18.13 Clay mining

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 98**

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

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	13

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

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 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 - 200 mg/kg**	**60 - 120 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 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
29m SE	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
29m SE	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
34m E	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
34m NE	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
34m E	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
34m E	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
49m SW	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 km^2).

This data is sourced from the British Geological Survey.

20.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

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

This data is sourced from the British Geological Survey.

21 Railway infrastructure and projects

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	0

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.

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	0

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

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

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

Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: https://www.groundsure.com/terms-and-conditions-jan-2020/.

Appendix D

PHOTOLOG

SITE 12 LAND AT SPRING GARDENS PHOTOGRAPHS

Figure 1. House under construction at the southern edge of the Site on land parcel A. Accessed via turn north off Spring Gardens Road.

Figure 2. Field west of the house under construction (Figure 1).

Figure 3. Track leading north to centre of Site from the south of the site in field behind house under construction (figure 1). A Drain is located in the ditch running left (west).

Figure 4. Drain in ditch seen in figure 3.

Figure 5. Marsh area in the south-east area of the Site where the drain leads to.

Figure 6. View of fields looking north from the track across the drain.

Figure 7. Pile of wood in the west of the Site possibly in preparation of a bonfire.

Figure 8. Calving barn in the north-east of the Site on land parcel B.

Figure 9. Muck heap, farm waste and hay bales located to the south of the calving barn in the north east of the site.

Figure 10. Cows and bull present in the top field of the north-east. Water trough also present.

Figure 11. Inside of the calving barn looking north. Farm machinery, tractors , hay and cows present.

Figure 12. End of drain pipe that runs under the track to the calving barn, the drain runs west and joins with the drain observed in figure 4.

Figure 13. ~7ft high pile of soil aggregate on the parcel of land leased to the construction company.

Figure 14. Construction site currently let to Sterling construction – will be returned in the future. Currently used as parking for tractors, diggers, vans and a couple of container units which are also present.

Figure 15. View of the small field in the central eastern area of the Site, currently used for a bull.

Appendix E

BOREHOLE RECORDS

BOREHOLE LOG

SN 31 NW 6/6
23HG.1721

Client: Welsh Office
B.H. No. 204
Date(s) 18 and 21/8/72
Ground Level 28.46m
Scale 1:50

Location: Pont-y-Fenni.
Type of boring: Rotary (Air flush) only.
Dia. of boring: 75mm
Casing depth: Not used.

Description of Strata	Reduced Level	Legend	Thickness	Depth	SAMPLES Type	SAMPLES Depth	NOTES
							Open Hole.
				1.30		1.30	
Highly weathered laminated dark grey iron stained moderately weak SHALE							71% Recovery 10% S/R
						2.70	
			2.70				100% Recovery 10% S/R
				4.00			
	24.46					4.00	
Highly weathered laminated dark grey moderately weak SHALE with white weathered coating to partings.							100% Recovery 5% S/R
						5.50	
			3.00				100% Recovery 5% S/R
				7.00			
	21.46					7.00	
Moderately weathered thinly bedded dark grey moderately strong SHALE							100% Recovery
						8.00	
			3.00				100% Recovery
						9.50	
Borehole complete.				10.00		10.00	100% Recovery

PROJECT:- Soil survey Pont-y-Fenni Diversion.

S.P.T. Standard Penetration Test
U Undisturbed Sample
B Bulk Sample
D Disturbed Sample
W.S. Water Sample

Tarmac Construction Ltd., Geotechnical Division.

4/6/72/012

Appendix F

UXO PRE-DESK STUDY ASSESSMENT

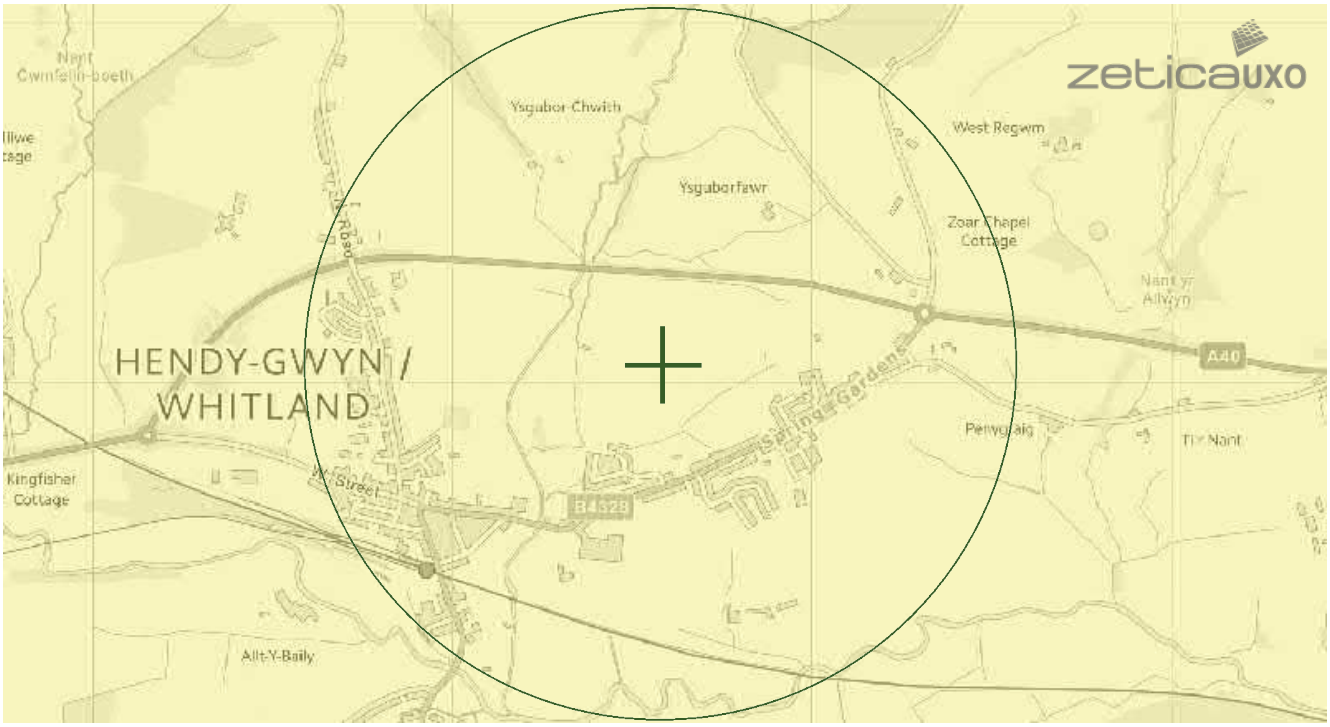
Confidential

UNEXPLODED BOMB RISK MAP

zeticauxo

SITE LOCATION

Map Centre: 220591,217052



LEGEND

- **High:** Areas indicated as having a bombing density of 50 bombs per 1000acre or higher.
- **Moderate:** Areas indicated as having a bombing density of 15 to 49 bombs per 1000acre.
- **Low:** Areas indicated as having 15 bombs per 1000acre or less.

miltary	**industry**	**UXO find**
transport	**dock**	**Luftwaffe targets**
utilities	**Bombing decoy**	**other**

How to use your Unexploded Bomb (UXB) risk map?

The map indicates the potential for Unexploded Bombs (UXB) to be present as a result of World War Two (WWII) bombing.

You can incorporate the map into your preliminary risk assessment* for potential Unexploded Ordnance (UXO) for a site. Using this map, you can make an informed decision as to whether more in-depth detailed risk assessment* is necessary.

What do I do if my site is in a moderate or high risk area?

Generally, we recommend that a detailed UXO desk study and risk assessment is undertaken for sites in a moderate or high UXB risk area.

Similarly, if your site is near to a designated Luftwaffe target or bombing decoy then additional detailed research is recommended.

More often than not, this further detailed research will conclude that the potential for a significant UXO hazard to be present on your site is actually low.

Never plan site work or undertake a risk assessment using these maps alone. More detail is required, particularly where there may be a source of UXO from other military operations which are not reflected on these maps.

If my site is in a low risk area, do I need to do anything?

If both the map and other research confirms that there is a low potential for UXO to be present on your site then, subject to your own comfort and risk tolerance, works can proceed with no special precautions.

A low risk really means that there is no greater probability of encountering UXO than anywhere else in the UK.

If you are unsure whether other sources of UXO may be present, you can ask for one of our **pre-desk study assessments (PDSA)**

If I have any questions, who do I contact?

tel: **+44 (0) 1993 886682**

email: **uxo@zetica.com**

web: **www.zeticauxo.com**

The information in this UXB risk map is derived from a number of sources and should be used in conjunction with the accompanying notes on our website: **(https://zeticauxo.com/downloads-and-resources/risk-maps/)**

It is important to note that this map is not a UXO risk assessment and should not be reported as such when reproduced.

*Preliminary and detailed UXO risk assessments are advocated as good practice by industry guidance such as CIRIA C681 'Unexploded Ordnance (UXO), a guide for the construction industry'.

Pre-Desk Study Assessment

Site:	Land at Spring Gardens, Whitland, Wales
Client:	WSP
Contact:	Rebecca Hoyle
Date:	3rd May 2022
Pre-WWI Military Activity on or Affecting the Site	None identified.
WWI Military Activity on or Affecting the Site	None identified.
WWI Strategic Targets (within 5km of Site)	The following strategic targets were located in the vicinity of the Site: ■ Transport infrastructure and public utilities.
WWI Bombing	None identified on the Site.
Interwar Military Activity on or Affecting the Site	None identified.
WWII Military Activity on or Affecting the Site	None identified.
WWII Strategic Targets (within 5km of Site)	The following strategic targets were located in the vicinity of the Site: ■ Transport infrastructure and public utilities.
WWII Bombing Decoys (within 5km of Site)	None.
WWII Bombing	During WWII the Site was located in the Rural District (RD) of Carmarthen, which officially recorded 67No. High Explosive (HE) bombs with a bombing density of 0.3 bombs per 405 hectares (ha). No readily available records have been found to indicate that the Site was bombed.
Post-WWII Military Activity on or Affecting the Site	None identified.
Recommendation	A detailed desk study, whilst always prudent, is not considered essential in this instance.
Further information	For information about Zetica's detailed UXO desk studies and other UXO services, please visit our website: www.zeticauxo.com. Details and downloadable resources covering the most common sources of UXO hazard affecting sites in the UK can be found **here**. If you have any further queries, please don't hesitate to get in contact with us at uxo@zetica.com or 01993 886 682.

This summary is based on a cursory review of readily available records. Caution is advised if you plan to action work based on this summary.

It should be noted that where a potentially significant source of UXO hazard has been identified on the Site, the requirement for a detailed desk study and risk assessment has been confirmed and no further research will be undertaken at this stage. It is possible that further in-depth research as part of a detailed UXO desk study and risk assessment may identify other potential sources of UXO hazard on the Site.

Appendix G

RISK ASSESSMENT METHODOLOGY

Confidential

CIRIA C552 RISK ASSESSMENT

The identification of potential pollutant linkages is a key aspect of the evaluation of potentially contaminated land. An approach based on the UK CIRIA 552 report C552 (Contaminated Land Risk Assessment: A Guide to Good Practice, 2001) has been adopted within this report. The assessment considers which source – pathway – receptor pollutant linkages are likely to be plausible and potentially complete, and the potential risk they represent. For each of the pollutant linkages, an estimate of:

- the potential severity (consequence) of the risk, and
- the probability (likelihood) of the risk occurring

has been undertaken to assess the potential risk associated with a complete pollutant linkage.

Table 1 – Classification of consequence (CIRIA C552, 2001)

Classification	Category	Definition	Examples
Severe Short term (acute) risks only	Humans	Short term (acute) risk to human health likely to result in "significant harm" as defined by the Environmental Protection Act 1990, Part 2a	High concentrations of cyanide on the surface of an informal recreation area
	Controlled Waters	Short term risk of pollution of sensitive water resource	Major spillage of contaminants from site into controlled waters
	Property	Catastrophic damage to buildings / property	Explosion causing building collapse
	Ecological Systems	Short term risk to a particular ecosystem or organism forming part of such ecosystem	
Medium Chronic (long term) risks; 'significant harm'	Humans	Chronic damage to human health ("significant harm" as defined in DEFRA, 2006)	Concentrations of a contaminant from a site exceed the generic or site-specific assessment criteria
	Controlled Waters	Pollution of sensitive water resources	Leaching of contaminants from a site into a Principal or Secondary A aquifer
	Ecological Systems	Significant change in a particular ecosystem or organism forming part of such ecosystem	Death of a species within a designated nature reserve
Mild Chronic (long term) risks; less sensitive receptors	Controlled Waters	Pollution of non-sensitive water resources	Pollution of non-classified surface watercourse
	Property	Significant damage to buildings, structures, crops and services ("significant harm" as defined in DEFRA, 2006) and damage to sensitive buildings / structures and services	Foundation damage to a building rendering it unsafe to occupy due to instability
	Ecological Systems	Damage to the environment	
Minor Chronic (long term) risk; mild	Humans	Non-permanent health effects to human health that are easily prevented by the use of PPE	Presence of contaminants at such concentrations that protective equipment is required during site works
	Property	Easily repairable effects of damage to buildings, structures and services	Discoloration of concrete
	Financial / Project	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve	

Table 2 – Classification of probability (CIRIA C552, 2001)

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

Table 3 – Comparison of consequence against probability (CIRIA C552, 2001)

	Severe	Medium	Mild	Minor
High Likelihood	Very High Risk	High Risk	Moderate Risk	Low / Moderate Risk
Likely	High Risk	Moderate Risk	Low to Moderate Risk	Low Risk
Low Likelihood	Moderate Risk	Low / Moderate Risk	Low Risk	Very Low Risk
Unlikely	Low / Moderate Risk	Low Risk	Very Low Risk	Very Low Risk

Table 4 - Risk classification descriptions (CIRIA C552, 2001)

Risk Classification	Definition
Very high risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.
High risk	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the longer term.
Moderate risk	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not undertaken already) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.
Low risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very low risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.

Table 1: Classification of the Severity of Risk

Severe	Acute risks to human health; Major pollution of controlled waters (watercourses or groundwater).
Medium	Chronic (long-term) risk to human health; Pollution of sensitive controlled waters (surface waters or aquifers).
Mild	Exposure to human health unlikely to lead to "significant harm"; Exposure could lead to slight short-term effects (e.g. mild skin rash); Requirement for protective equipment during site works to migrate health effects; Damage to non-sensitive ecosystems or species.
Minor	No measurable effects on humans, water quality or ecosystems.

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

Table 2: Probability of Risk Occurring

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

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

Table 3: Comparison of Severity and Probability

		Severity			
		Severe	**Medium**	**Mild**	**Minor**
Probability	**High Likelihood**	Very high risk	High Risk	Moderate risk	Low risk
	Likely	High risk	Moderate risk	Moderate / low risk	Low risk
	Low Likelihood	Moderate risk	Moderate/ low risk	Low risk	Very low risk
	Unlikely	Moderate / low risk	Low risk	Very low risk	Very low risk

The definitions of classified risk terms, as stated in Table 3, are defined below in Table 4.

Table 4: Qualitative Risk Assessment – Classification of Consequence

Classification	Definition
Very High Risk	Severe harm to a receptor may already be occurring, or a high likelihood severe harm will arise to a receptor, unless immediate remedial works / mitigation measures are undertaken.
High Risk	Harm is likely to arise to a receptor, and is likely to be severe, unless appropriate remedial actions / mitigation measures are undertaken. Remedial works may be required in the short-term, but likely to be required over the long-term.
Moderate Risk	Possible that harm could arise to a receptor, but low likelihood that such harm would be severe. Harm is likely to be mild. Some remedial works may be required in the long-term.
Moderate / Low Risk	Possible that harm could arise to a receptor, but where a combination of likelihood and consequence results in a risk that is above low, but is not of sufficient concern to be classified as mild. Limited further investigation may be required to clarify the risk. If necessary, remediation works are likely to be limited in extent.
Low Risk	Possible that harm could arise to a receptor. Such harm, at worst, would normally be mild.
Very Low Risk	Low likelihood that harm could arise to a receptor. Such harm is unlikely to be any worse than mild.

1 Capital Quarter
Tyndall Street
Cardiff
CF10 4BZ

wsp.com

PUBLIC