Hywel Dda University Health Board

URGENT & PLANNED CARE HOSPITAL

Tenby Road, St Clears (Formerly known as Site 17) – Site Appraisal

2424-WSP-17-RP-CO-0001
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Hywel Dda University Health Board

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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 Hospital 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 17' which is located at Land off Tenby Road, St Clears, herein referenced as the 'Site'.

1.2 DESCRIPTION OF DEVELOPMENT

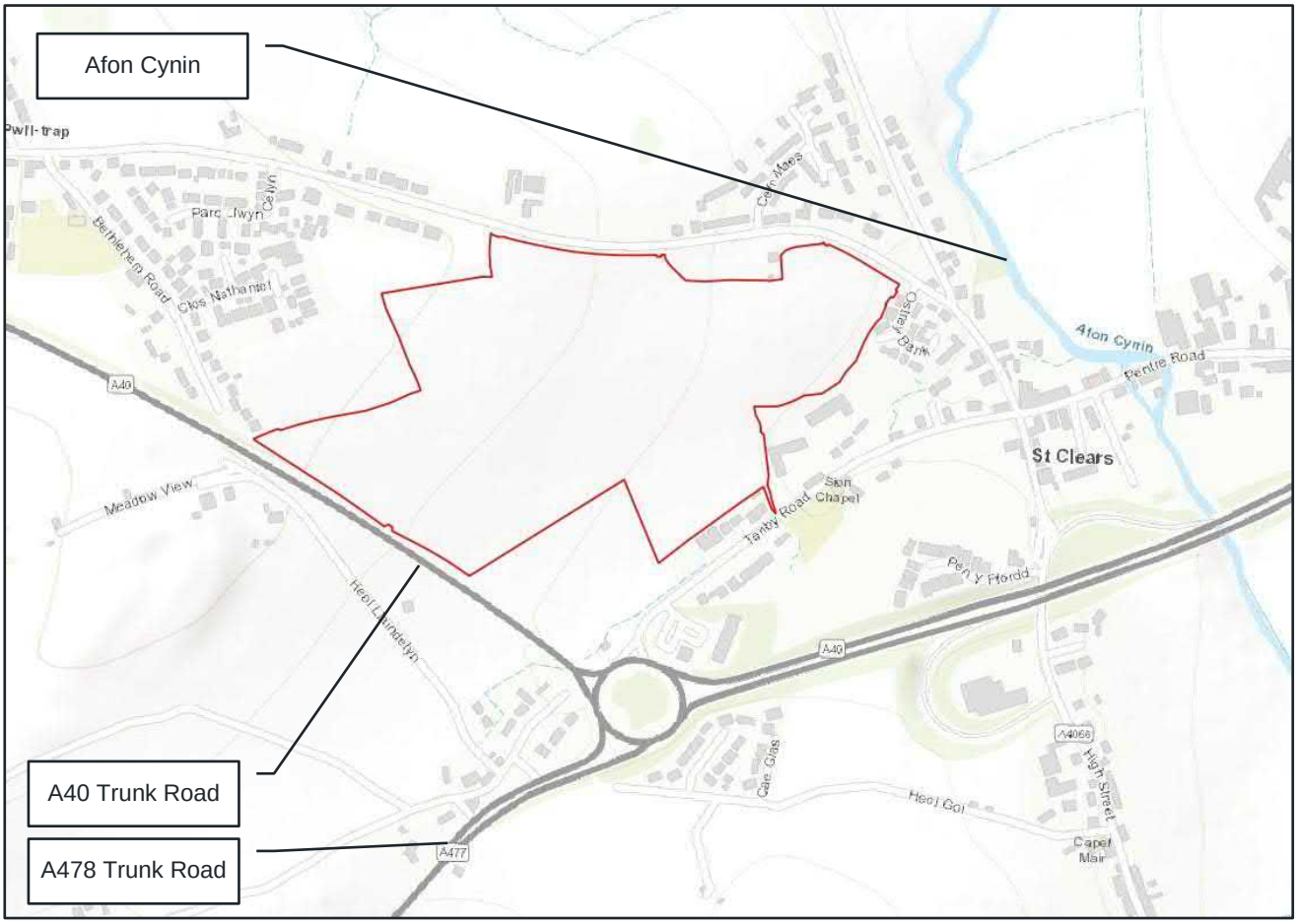
The proposed development is a C2 hospital use class with all the other uses being ancillary to the wider healthcare delivery such as mental health accommodation, , research and development and office facilities, clinical support facilities, education and training facilities, staff and visitor welfare 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-west of central St Clears and has a British National Grid Reference of 220650, 217000. The site location is illustrated in Figure 1-1.

The A40 forms the eastern boundary of the site; the southern boundary of the site is formed of Tenby Road, with commercial developments located at the south-west of the site, and a residential development at the south-east of the site. Pwll-Trap lies adjacent to the north-western boundary of the site.

The Afon Cynin passes approximately 130m 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 16.2 ha in size and has historically been used for agricultural purposes. The site slopes from north-west to north-east with a high point of approximately 52mAOD and a low point of 17mAOD.

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 two Listed Buildings in the nearby vicinity of the Site, Island House approximately 160m east of the site, and Capel Bethlehem approximately 320m north-west 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 Tenby Road and Ostrey Terrace, and commercial development off the A40-A478 roundabout.

1.4.1 DESCRIPTION OF THE LOCAL AREA

The Site covers approximately 40 acres of land and is situated between St Clears and Pwll-trap in Carmarthenshire. Tenby Road runs along the southern boundary of the site, with other clusters of properties adjacent to the south-eastern extents of the site. Immediately to the north-west of the site lies further residential properties and commercial development is located to the south-west. The eastern boundary of the site is boundary by the A40 trunk road.

The town of St Clears comprises a large cluster of residential properties, community assets and businesses which interrupts the otherwise largely rural landscape.

Directly west 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 St Clears Wastewater Treatment Works.

A number of foul sewers are noted within the site. The first of these is a 6-inch public foul gravity sewer from the south of Pwll-Trap which routes through the site along the south-western boundary adjacent to the A40, before routing under the A40 adjacent to an existing field access into the site.

The second of these is a 150mm public foul gravity sewer from the east of Pwll-Trap which routes through the site along the north-eastern boundary, before passing into the Ostrey Bank residential development at the east of the site.

The third of these is a 150mm private foul sewer at the south-west of the site, understood to have been constructed as enabling works for development. This sewer discharges into the private foul sewer serving the existing McDonalds and Costa development, before discharging into the public foul sewer within Tenby Road.

Existing watercourses within and in proximity to 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].

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

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
- 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 site sits within the Didymograptus Bifidus Beds, comprised of mudstone.

Cranfield University Soilscapes mapping shows 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

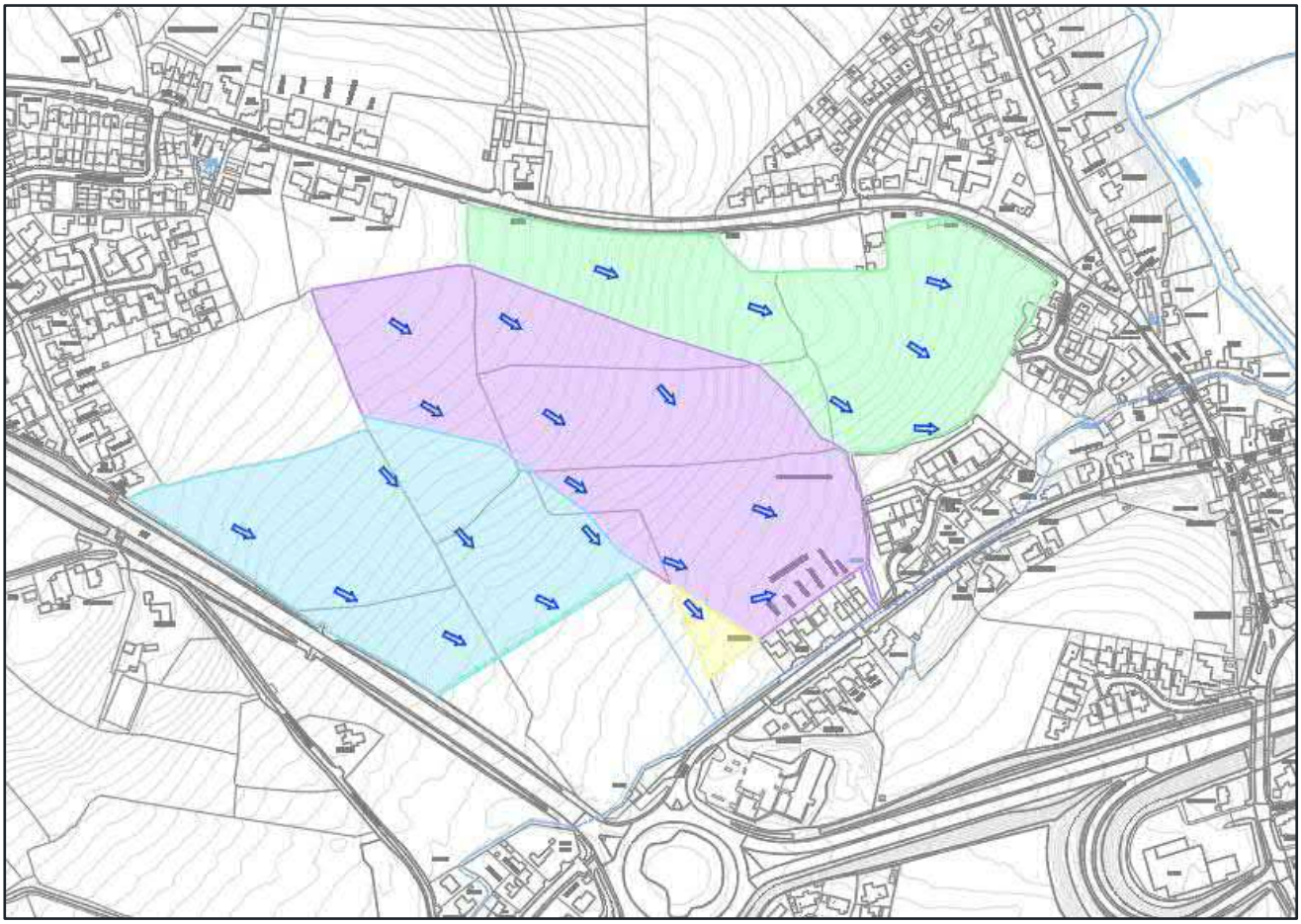
[2] British Geological Society, 2022. *Geology of Britain Viewer*. Available at: http://mapapps.bgs.ac.uk/geologyofbritain/home.html. [Accessed 26th April 2022].
[3] Cranfield University, 2022. *Soilscapes.* Available at: http://www.landis.org.uk/soilscapes/. [Accessed 26th April 2022].

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.

Discharge to Surface Water Body

Sequentially, the next consideration in the hierarchical approach is discharge to a surface water body. There are existing watercourses at the eastern extremes 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.



Site Boundary
Catchment A1
Catchment A2
Catchment B
Catchment C
Existing Land Drain
Existing Culvert
Runoff Direction

Figure 2-1 - Existing Surface Water Catchments

Catchment A1 is understood to be served by a land drain on the southern boundary of the catchment, where it is then conveyed into the minor watercourse to the south-east via a culvert. Catchment A2 will subsequently discharge into the aforementioned minor watercourse, at a point that is slightly further downstream from the point to which catchment A1 drains. Catchment B is understood to run off into a land drainage ditch adjacent to Tenby Road. Catchment C is understood to drain via a land drainage ditch on the southern boundary of the catchment into two land drainage outfalls adjacent to St Clears business park and Ostrey Bank. These outfalls are assumed to communicate with the minor watercourse to the south-east of the site. The minor watercourse used for draining the surface water

runoff from Site 17 is understood to run into the Afon Cynin, located within the Carmarthen Bay and the Gower catchment.

Should infiltration not be feasible then the drainage strategy should seek to mimic the site existing drainage regime and continue to discharge surface water to each of the watercourses. It is envisaged that the entirety of the surface water runoff from the site will be drained into the minor watercourse located on the southern boundary of the site (as it does currently) that subsequently drains into the Afon Cynin.

Discharge to Surface Water Sewer

There are no surface water sewers directly adjacent to the development 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 16.17ha, 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 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 71.5L/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	370.0	7.4	119.7	62.9
QBAR	420.5	**8.4**	136.0	**71.5**
30 Year	748.4	15.0	242.0	127.2
100 Year	916.6	18.3	296.4	155.8
200 Year	1034.3	20.7	334.5	175.8

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	71.5	6768	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

2.3.2.1 Foul Water Discharge Options

- Discharge to Public Sewerage System

There are two public foul sewers within the site, and to which the development could feasibly discharge to, in full or in part.

- At the western of the site, a foul sewer serving properties in Pwll-Trap routes through the site before routing under the A40 into Heol Llaindelyn. Dwr Cymru Welsh Water information states that the most downstream manhole chamber within the site has an invert of approximately 40.314mAOD, as such, a reasonable proportion of the site at the north-west could feasibly discharge into this system via a gravity connection if that were preferable
- At the south-east of the site, a foul sewer serving properties in Pwll-Trap routes through the site, before routing into the Ostrey Bank residential development; it is anticipated that the entire site could be drained via gravity into this system, as the manhole chamber within the site

is understood have an invert of 19.813mAOD, and the downstream chamber within Ostrey Bank an invert level of 14.695mAOD

- Discharge to Private Sewerage System
  - At the south-west of the site foul sewers serving the existing and future commercial developments is present, as such, it may be feasible to drain the majority of the site into this system, which is understood to have an invert level of 24.108mAOD at the head of the run
  - This option would require agreement to discharge into this foul system from the owner of the sewer, and the sewerage undertaker responsibility for downstream assets
  - This option would require use of third-party land to lay a new connection to the sewer
- 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 be the minor watercourse at the south of the site

Due to the scale of the development, it is likely that the downstream existing sewerage infrastructure would require reinforcement or upgrade works in the case of the options where foul flows would be communicated with a public sewer.

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

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

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 site includes a number of assets, which are subject to easements, within which development is restricted.

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. It is noted that 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 St Clears 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 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.

[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].

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 where possible.

A number of disposal options are available for foul water, including utilising the existing public sewerage system, utilising the existing private sewerage system, or construction of a private foul package treatment works.

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 The Site is located to the northeast of the A40, to the northwest of properties on Tenby Road (Britannia Terrace) and Ostrey Bank, to the east of the Clos Nathaniel residential development, and to the south of an unnamed road between Pwll-Trap and St Clears.

The site lies near to the Afon Cynin, which routes from north to south, approximately 125m from the site's eastern corner. The Afon Cynin is understood to be tidally influenced within St Clears.

The site contains a minor watercourse, which is understood to be a tributary of the Afon Cynin.

The minor watercourse is understood to originate in an area of land between Heol Llaindelyn and the roundabout serving the A40 and A477. The watercourse is understood to be culverted under the A40, before routing parallel to Tenby Road (A4066) within the site towards Britannia Terrace. The watercourse is understood to be culverted within land adjacent to Crug-y-Deri (Britannia Terrace), and subsequently daylight in land between the properties of Pandy Grove and Gerwyn to the east. It appears to be culverted again adjacent to Glas Pant, and daylight adjacent to properties off Avon Bank before converging with the Afon Cynin.

Examination of ground levels from LiDAR also indicate that there are a number of informal field drains/ditches along the majority of the existing field boundaries. These appear to runoff into the minor watercourse previously discussed at various locations. Review of Dwr Cymru Welsh Water records indicates that runoff from the Clos Nathaniel residential development at the north-west of the site discharges surface water into one of these ditches.

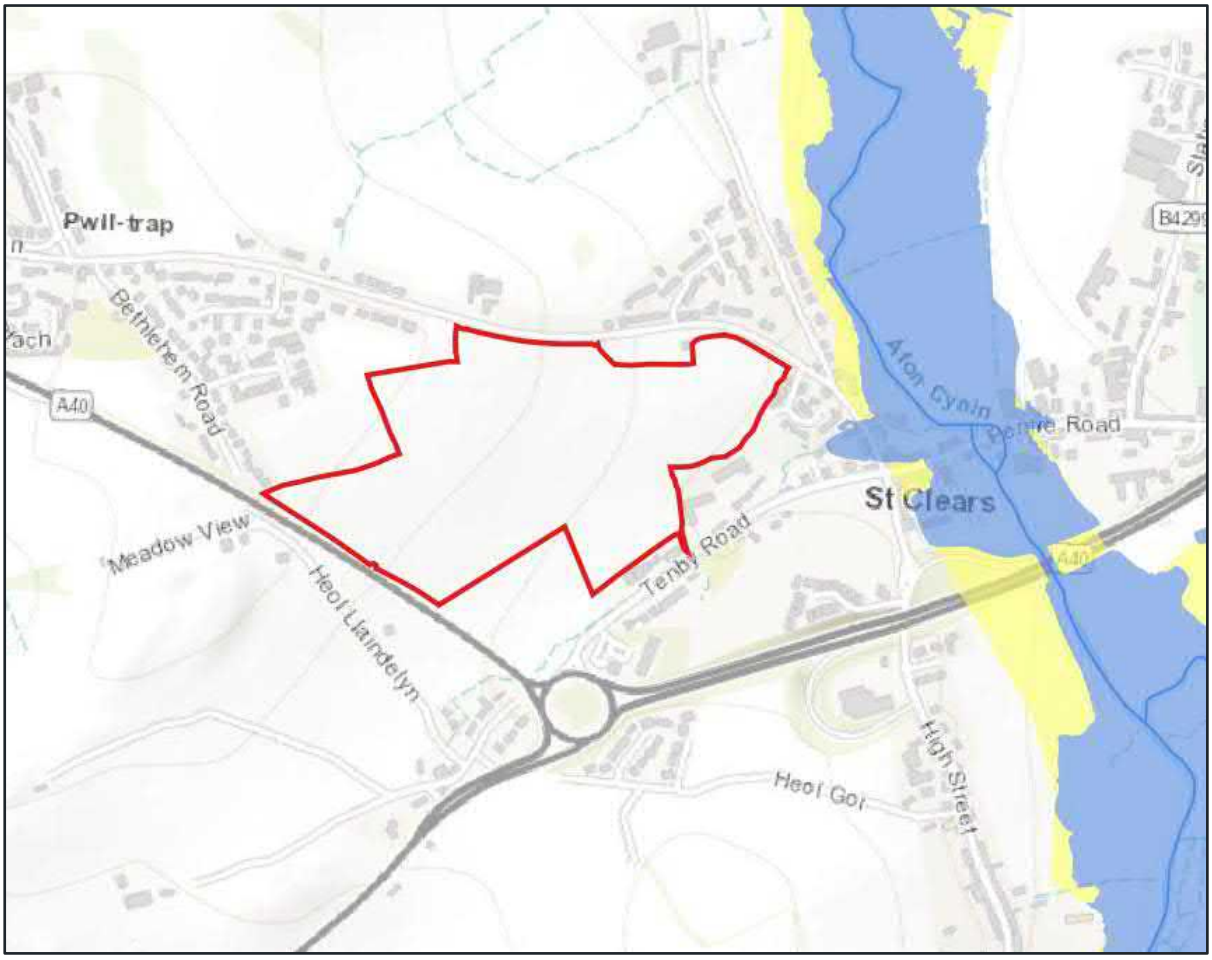
3.3 SOURCES OF FLOOD RISK

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).

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. It is noted that a significant proportion of St Clears to the east of the site is known to have flooded in the past, but is served by flood defences (defences shown in Figure 3-2).

[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].



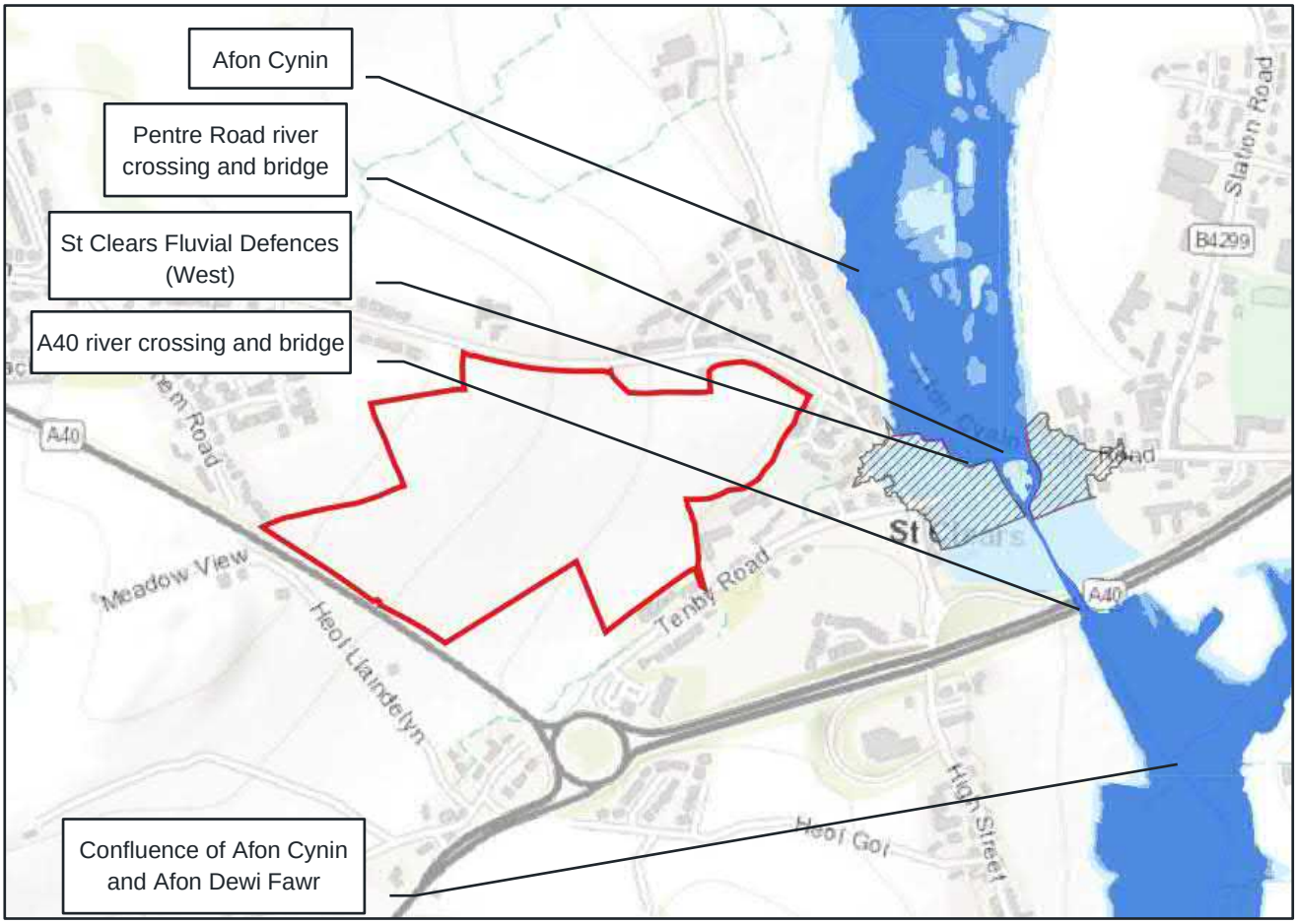
Zone C1: Served by significant infrastructure, including flood defences
Zone C2: Without significant flood defence infrastructure
Zone B: Areas known to have been flooded in the past
Zone A: Considered to be at little or no risk of fluvial or coastal/tidal flooding
Study Area Boundary

Figure 3-1 - Development Advice Map

3.3.2 RISK OF FLOODING FROM RIVERS

The nearest main river to the site, the Afon Cynin, lies 125m away from the site, and the NRW mapping shows that it is not understood to contribute fluvial flood risk to the site, as illustrated in Figure 3-2. Notwithstanding this, the Afon Cynin is shown to contribute significant flood risk within St Clears, with large areas of flood plain upstream of, and between, the river crossings of Pentre Road and the A40m and at the confluence of the Afon Cynin and the Afon Dewi Fawr. Examination of the defences and defended areas appear to show that residential areas within the town are served by the defences.

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.



High Flood Risk from Rivers (3.3% AEP Extent)
Medium Flood Risk from Rivers (1% AEP Extent)
Low Flood Risk from Rivers (0.1% AEP Extent)
Areas Benefitting from Flood Defences (Rivers)
Areas Benefitting from Flood Defences (Sea)
Areas Benefitting from Flood Defences (Rivers & Sea)
Flood Defences
Main Rivers
Study Area Boundary

Figure 3-2 - Flood Risk from Rivers

3.3.3 RISK OF FLOODING FROM THE SEA

The nearest tidal water body to the site is the Afon Cynin, which is understood to be tidally influenced until a point approximately 300m upstream of the Pentre Road bridge.

Risk to the site from sea level rise has been assessed utilising the Environment Agency's Extreme Sea Levels dataset[7], and Welsh Government guidance[8] on assessing increases in sea level. Data from marker with chainage 552 was utilised, which was considered most appropriate to allow assessment in relation to the Taf-Tywi estuary, downstream of St Clears and the Afon Cynin, as no specific estuary data was available.

Figure 3-3 shows that sea level rise at the 95% confidence interval does not rise to the minimum site level of approximately 16mAOD.

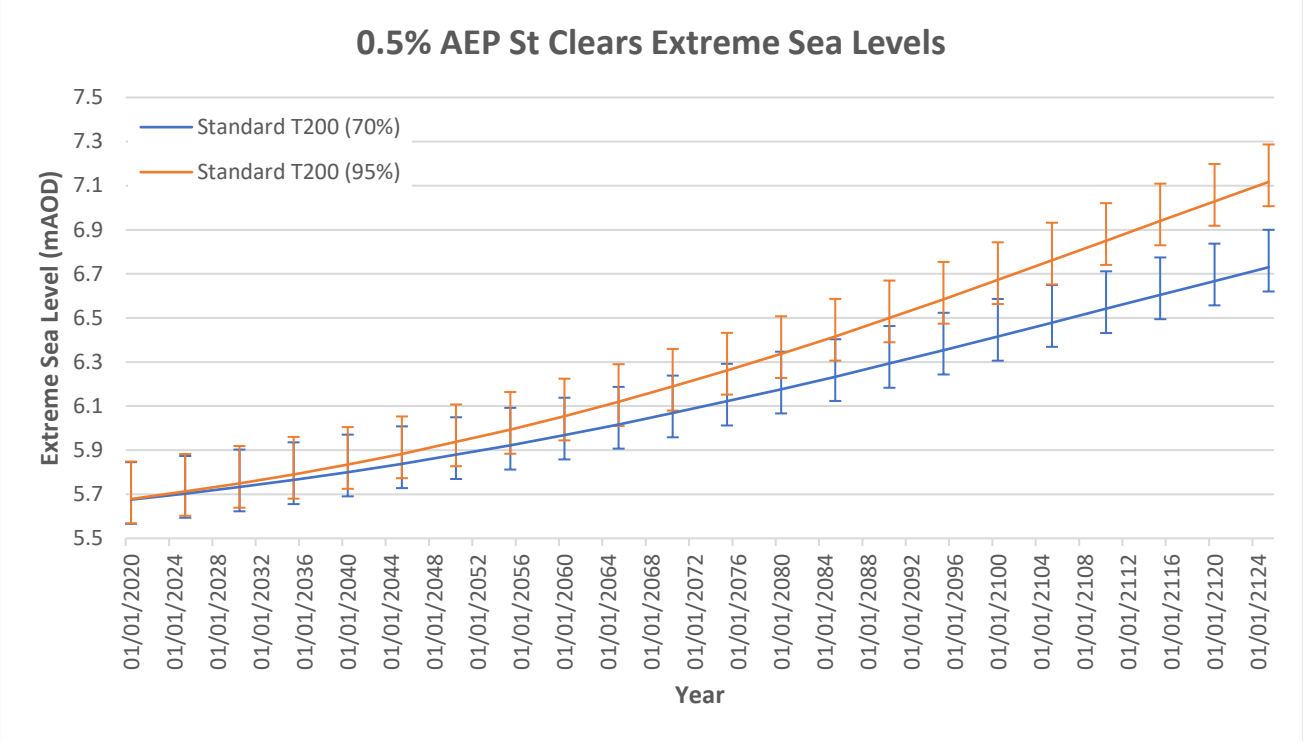


Figure 3-3 - Extreme Sea Levels

This distance of the site from the sea, the site's elevation varying from between 16mAOD and 52mAOD, 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 3-4, highlight a number of areas of high and medium flood risk from surface water and minor watercourses in close proximity to the site.

The first of these areas is located to the south-west of the site, following the routing of the minor watercourse at this location. It appears that flood risk arises on the western side of the assumed

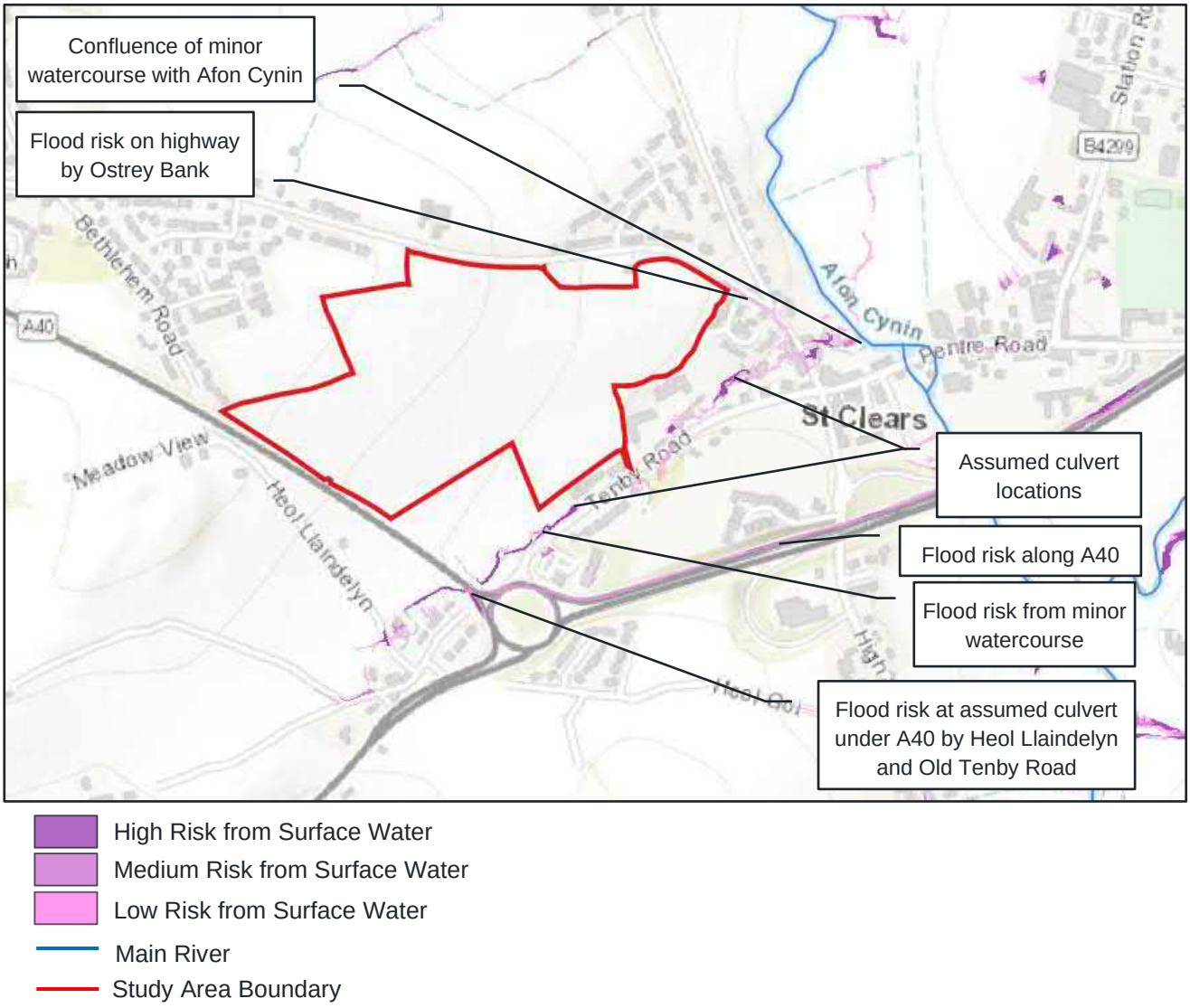
[7] Environment Agency, 2021. *Coastal Design Sea Levels - Coastal Flood Boundary Extreme Sea Levels*. Available at: https://data.gov.uk/dataset/73834283-7dc4-488a-9583-a920072d9a9d/coastal-design-sea-levels-coastal-flood-boundary-extreme-sea-levels-2018. [Accessed 18th April 2022].
[8] Welsh Government, 2021. *Flood Consequence Assessments: Climate change allowances.* Cardiff: Welsh Government.

culvert under the A40 serving this watercourse as it routes behind, and within, Heol Llaindelyn and the Old Tenby Road. Furthermore, flood risk is also illustrated on the eastern side of the A40, to the south of the McDonalds development.

Further flood risk appears to be present along the assumed course of the watercourse, including where it is thought to be within a culvert. Areas of higher flood risk appear to be coincident with locations where the watercourse is thought to enter a culvert.

The mapping suggests that these culverts have either not been included within the modelling undertaken or are under-capacity. In either circumstance, the mapping shows the likely flood risk from surface water were the assumed culverts blocked.

Other notable areas of surface water flood risk in close proximity to the site include on the highway adjacent to Ostrey Bank, east of the site's eastern corner, and along the northern carriageway (eastbound) of the A40 off the Tenby Road-A40-A477 roundabout.



High Risk from Surface Water
Medium Risk from Surface Water
Low Risk from Surface Water
Main River
Study Area Boundary

Figure 3-4 - Flood Risk from Surface Water and Minor Watercourses

3.3.5 GROUNDWATER FLOOD RISK

Review of the Strategic Flood Consequence Assessment[9] (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 east. 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.

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 number of Dŵr Cymru Welsh Water (DCWW) sewers and water mains pass through the site, including along the western and northern boundaries. Additional foul sewers are known to be present towards the south of the site, understood to have been constructed to serve development within the south-western part of the site, part of which is understood to have been constructed.

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 St Clears and Pwll-Trap. Flooding events in St Clears are recorded in proximity to the Afon Cynin and Afon Dewi Fawr in 1979, 1981, 1986 and 1987. It is noted that the event in 1986 is recorded as flooding associated with ordinary watercourses, and the estimated flood extent includes the watercourse passing through the study site, up to a point 150m upstream of its confluence with the Afon Cynin, which is approximately 100m south-east of the site area.

A recorded flood event from 1979 is also noted within Pwll Trap, by Gorsfach, to the north-east of the site.

Review of online new sources did not reveal any flood history associated with the site. Flooding events in the St Clears area were noted in 2016[10] and 2020[11, 12].

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[9] Atkins, 2019. Carmarthenshire & Pembrokeshire Stage 1 Strategic Flood Consequences Assessment (SFCA). Carmarthen: Carmarthenshire County Council.
[10] Wales Online, 2016. *Driver rescued from van moments before floods wash it away*. Available at: https://www.walesonline.co.uk/news/wales-news/driver-rescued-van-moments-before-12209353 [Accessed 18th April 2022].
[11] BBC, 2020. *Weather: Storm Francis lashes UK with gusts reaching almost 80mph*. Available at: https://www.bbc.co.uk/news/uk-53901520 [Accessed 18th April 2022].
[12] Kitching, 2020. *Storm Francis chaos as 75mph winds strike with cars stranded on flooded roads*. Available at: https://www.mirror.co.uk/news/uk-news/storm-francis-chaos-cars-stranded-22573791 [Accessed 18th April 2022].

A search of the Chronology of British Hydrological Events[13] for, “Cynin”, “St Clears”, “Sancler”, “Sanclêr” and “Pwll-trap” 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”[14].

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 Consequences Assessment[15], developed in support of the Local Development Plan.

The development site with LDP references SR/150/035 and T2/5/h4, which is formed of a parcel at the south of the site adjacent to Britannia Terrace, is noted to have a very limited degree of surface water flood risk (1.65% of candidate site area).

The development site with LDP reference SR/150/036, which is formed of a parcel in the east of the site, is noted as at no risk of flooding by the LDP.

An LDP allocation adjacent to the site with reference SR/150/027, is located to the south-west of the site, and is understood to have been constructed. This is noted as having a limited degree of surface water flood risk (4.84% of candidate site).

Other sites in proximity to the site include those with references SR/150/012, SR/150/017, SR/150/018 and SR/150/037, which are all noted as having very limited degrees of surface water flood risk, or no risk at all.

3.4.2 LOCAL FLOOD RISK MANAGEMENT PLAN

3.4.2.1 St Clears

The Local Flood Risk Management Plan’s ward assessment for St Clears[16] identifies the town as generally at flood risk from the Afon Cynin and the Afon Dewi Fawr, but notes that significant flood defence works serving the town were completed in 2005.

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.

[13] British Hydrological Society. *Chronology of British Hydrological Events*. Available at: https://www.cbhe.hydrology.org.uk/. [Accessed 18th April 2022].
[14] British Geological Survey. *GeoIndex Onshore*. Available at: https://mapapps2.bgs.ac.uk/geoindex/home.html. [Accessed 18th April 2022].
[15] Atkins, 2019. *Carmarthenshire & Pembrokeshire Stage 1 Strategic Flood Consequence Assessment (SFCA).* Carmarthen: Carmarthenshire County Council.
[16] Carmarthenshire County Council, 2019. *Flood Risk Management Plan: St Clears*. Carmarthen: Carmarthenshire County Council.

The assessment notes that Dwr Cymru Welsh Water identified flood risk associated with sewers at a number of areas, including Heol Llaindelyn and Cae Glas, located near to the site.

A number of properties are shown to be at risk of flooding from the minor watercourse that passes through 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 Tenby Road and/or the A40.

Considering access routes to the site from the A40 reveals that the A40 to the south and east contains significant areas of flood risk from surface water sources according to the NRW mapping. However, it is noted that the pluvial model undertaken supporting the surface water flood risk maps does not typically include local drainage systems and so may overestimate the risk posed in this location.

NRW mapping shows that access routes to the site from the north are largely flood free.

Access routes to the south via the A40 and A477 include an extent of low fluvial flood risk as shown on the Flood Map for Planning, at the A477's river crossing over the Afon Taf at Pont Newydd, as illustrated in **Error! Reference source not found.**.

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[17] 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 3-5.

[17] NRW, 2022. *Flood Map for Planning*. Available at: https://flood-map-for-planning.naturalresources.wales/. [Accessed 20th April 2022].

It is also noted that flood risk associated with the minor watercourse to the south of the site is increased compared to that discussed in Section 3.3.2. An additional surface water flow path appears to show waters overtopping the watercourse onto Tenby Road towards Seion Chapel, and then towards properties on the northern side of Tenby Road in the region of the watercourse. However, no notable additional risk to the site itself 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.

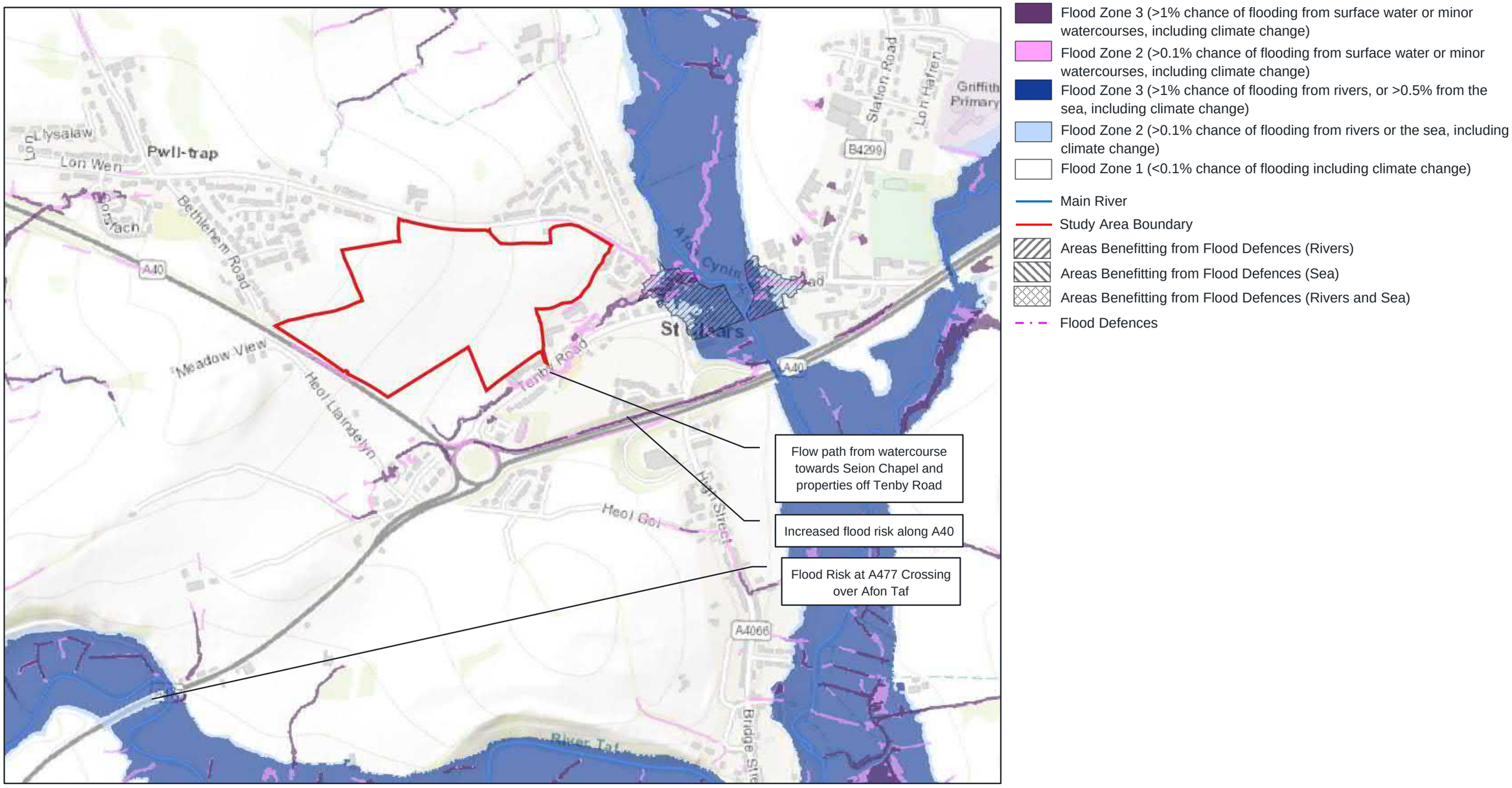


Figure 3-5 - Flood Map for Planning

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 watercourse 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 section 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 in form the site selection process.

4.1.2 SITE VISIT

To inform the preparation of the Transport Appraisal (TA) 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

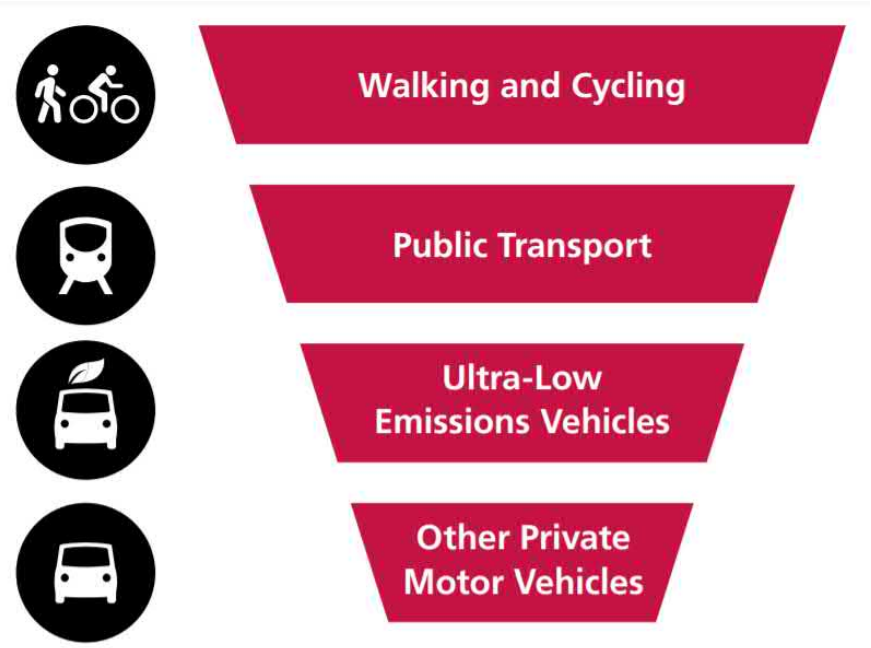
The Welsh Government is promoting active travel and has passed the Active Travel (Wales) Act 2013. This act defines new duties for local authorities in Wales and puts onus on Welsh ministers to ask questions with regard to the sustainability and suitability of development and the promotion of active 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 when considering transport options to their site.

Figure 4-1 - Transport User. Hierarchy



Accordingly, this TA 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 OF REPORT

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 49 acres of land located immediately west of the town of St Clears. The site is bounded to the west by the A40 trunk road, to the south by A4066 Tenby Road (and a few residential properties that line Tenby Road), to the east by the town of St Clears and to the north by Ostrey Hill and the adjoining unnamed road termed the Northern Link Road through this report.

The site has significant frontage to the A40 (c. 400 metres) and is located adjacent to the roundabout junction where the A40 converges with the A477.

Figure 4-2 - Site Boundary

4.2.2 SURROUNDING HIGHWAY NETWORK

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

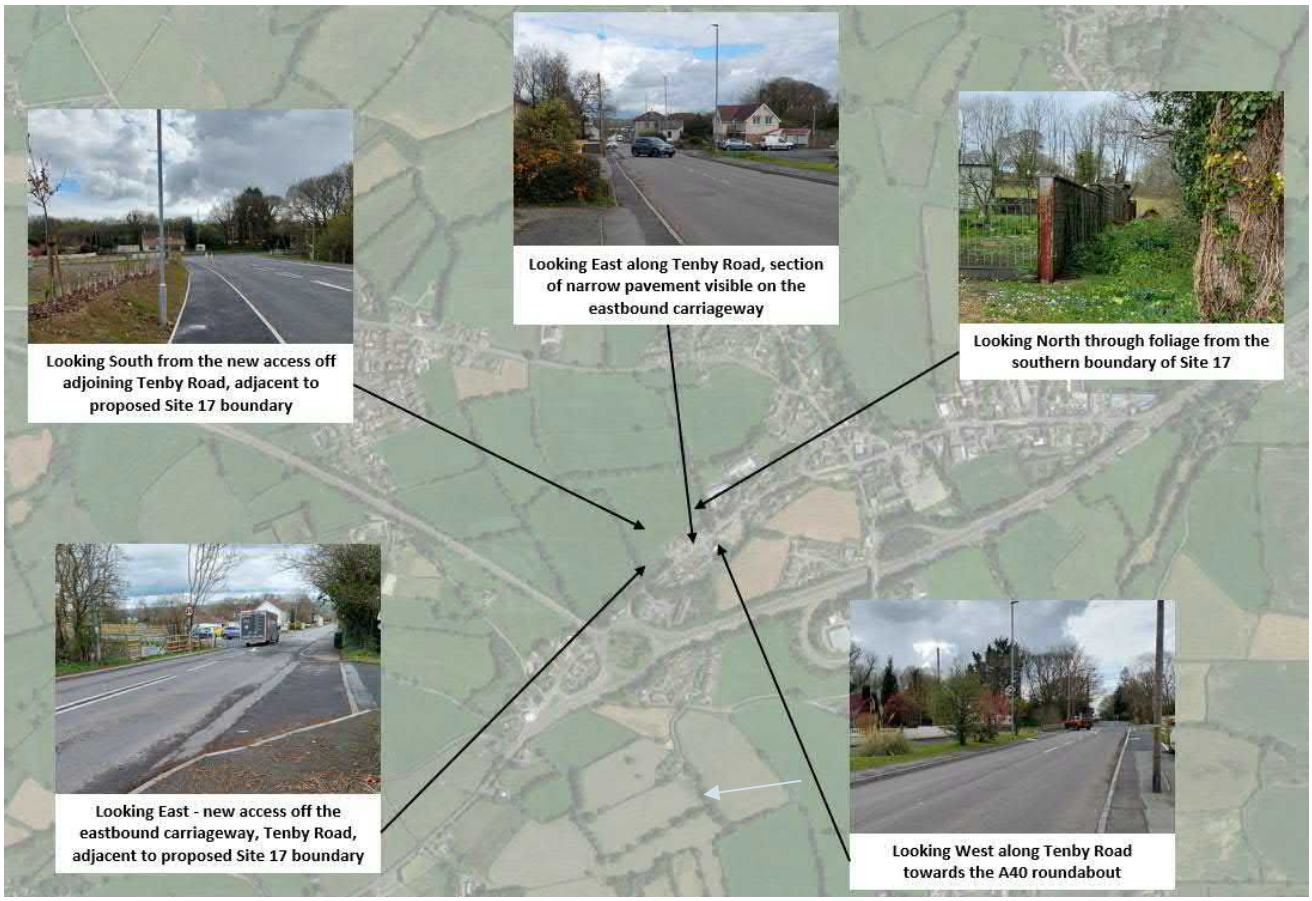
A477

The A477 is a major road in South Pembrokeshire and Carmarthenshire connecting St Clears and Prembroke Dock / Johnston. The A477 is 28 miles in length east to west passing through several towns and settlements including St Clears, Kilgetty, Llanteg, Carew, Pembroke Dock, Neyland and Johnston. On the western extent it connects to the A4076 which allows for further onward connections to Carmarthen, Whitland, Narberth, Haverfordwest and Fishguard. On the eastern extent it connects to the A40 via the 110 metre Inscribed Circle Diameter (ICD) roundabout on the southern periphery of the site which in turn provides onward connections to Carmarthen.

There is generally straight horizontal alignment along all three arms of the roundabout, and the access points are considered to have good visibility. The A477 is subject to a 40mph speed limit.

Figure 4-3 provides photographs taken of the A477 during the site visit, screenshots from google maps.

Figure 4-3 - A4066 Tenby Road Site Visit Photogarphs



A4066 Tenby Road

The A4066 Tenby Road connects St Clears to the junction with the A40 / A477. There is an intermittent footway eastbound from the A40 roundabout along Tenby Road which becomes more formalised further east as more residential and commercial properties affront the road.

A new junction with formalised crossing facilities has also been implemented in early 2022, adjoining the eastbound carriageway of Tenby Road the location of which could be within immediate proximity and connectivity to the south of the proposed wider site boundary, dependent on where the site access to the proposed hospital is being provided. Tenby Road is currently subject to a 30mph speed limit.

Figure 4-4 - St Clears Site Visit Photogarphs

Ostrey Hill / Northern Link Road

Ostrey Hill and the unnamed road which this report has termed the Northern Link Road connect east – west between the A40 and St Clears provides a direct route between the A40 and the town centre.

This section of the road is also subject to national speed limit (60mph) restrictions until 30mph signage implemented on the approach to the residential dwellings within St Clears. Electronic speed cameras and warning signs are also present on the eastbound approach to the town from the A40.

B4299 - Pentre Road

East of the crossroads from Tenby Road, the B4299 Pentre Road connects St Clears to the junction of the A40. Pentre Road, which is discussed in further detail in the next chapter is also subject to a 30mph speed limit.

B4299 – Station Road

The B4299 Station Road connects north of the B4299 Pentre Road and is a direct road between St Clears with Meidrim to the north and further afield. Station Road is largely flanked by residential properties for the majority of its length (circa 900 to 1000m), and pedestrian infrastructure is subsequently largely constrained along the road due to the distance between properties east and west of the carriageway.

Station Road is discussed in further detail in the next chapter.

A40

The A40 is a trunk road which runs between London and Goodwick (Fishguard), Wales, and officially called The London to Fishguard Trunk Road (A40). The A40 runs immediately adjacent to the Site to the south and west. The A4066 Tenby Road connects St Clears to the junction of the A4066 with the A40 / A477. There is an intermittent footway eastbound from the A40 roundabout along Tenby Road which becomes more formalised further east as more residential and commercial properties affront the road.

The A40 operates varying speed limits along its length with some of its sections operating at a speed limit of 30mph due to safety concerns, with the Northern Link Road / Ostrey Hill adjoining A40 north of the proposed the Site having a 30mph zone with speed cameras recently implemented, having previously had 40mph restrictions until around 2017.

The section of the A40 in the vicinity of the A478 is currently a single carriageway and there are planned improvement works (Llanddewi Velfrey to Redstone Cross improvements) already underway along the A40 between Penblewin and Llanddewi Velfrey to improve the route along that section of the A40 for all users. More details with regard to the scheme is provided in the following section.

A40: Llanddewi Velfrey to Redstone Cross improvements

A new bypass has been granted approval by the Welsh Government at Llanddewi Velfrey in Pembrokeshire. The scheme would improve the A40 between Llanddewi Velfrey and Penblewin, to the west of St Clears. There is ongoing works on upgrading the A40 between St Clears and Haverfordwest to improve safety and to incorporate new cycling and walking routes. Construction works are scheduled to commence in Autumn 2021 and end in Autumn 2023.

The scheme will:

- provide new 6km of road, away from the existing road
- provide 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

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

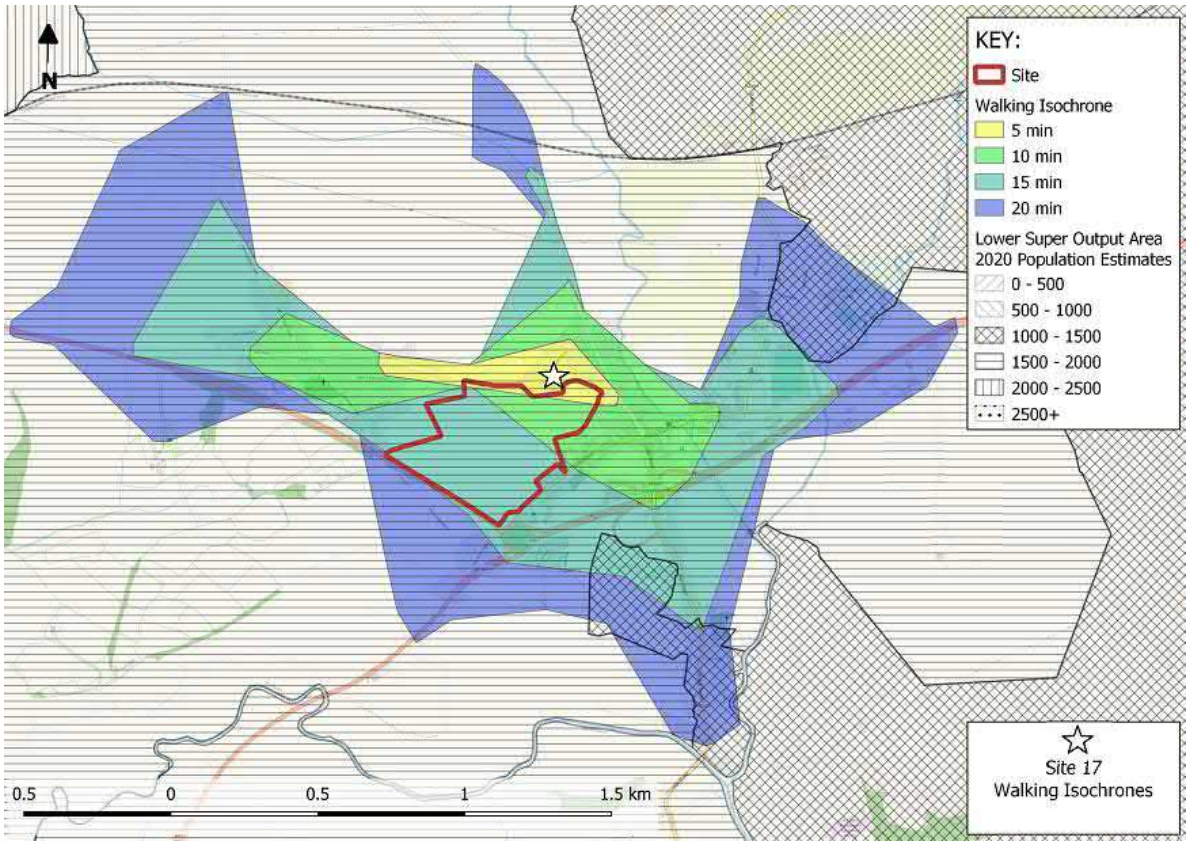
- Walking;
- Cycling;
- Bus;
- Rail; and
- Private car.

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

4.3.1 WALKING

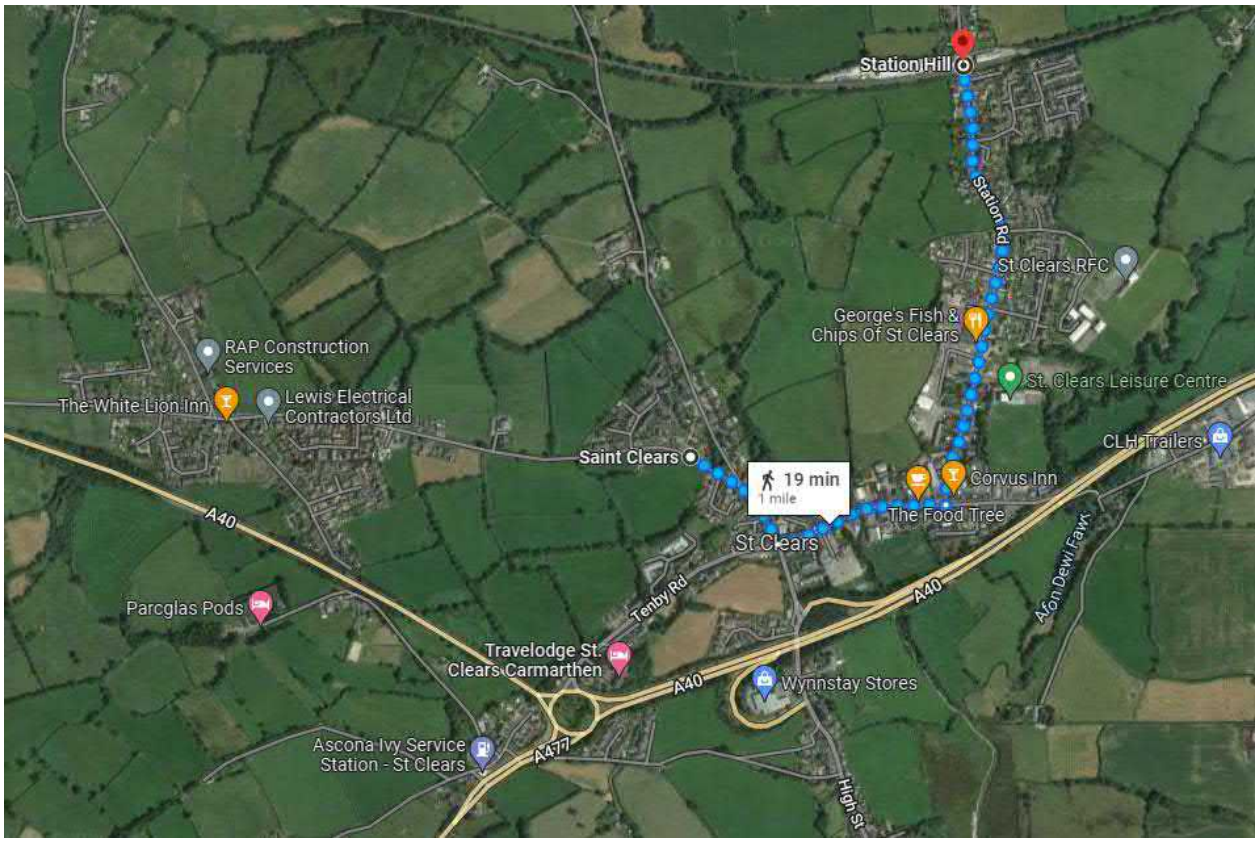
Walking as a mode of travel has the potential to replace short distance vehicle journeys and can also form part of a combined mode journey from places not within a reasonable walking distance. The Active Travel Act Guidance recommends that facilities should be within 20 minutes' walking distance and therefore, walking isochrones at a typical walking speed of 4.8kph has been prepared for the Site (taken from the northwestern boundary of the site) and shown in **Figure 4-5** below.

Figure 4-5 – Walking Isochrone



The walking isochrone illustrates that the majority of St Clears and the surrounding area can be reached within a 20 minutes' walking distance from the proposed hospital site. This is confirmed in **Figure 4-6** using Google Map's 'Journey Planner Feature'.

Figure 4-6 – Google Map 'Journey Planner' 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 Tenby Road, Pentre Road, Station Road and the un-named link road connecting the A40 to St Clears north of the site (referred to as Northern Link Road).

A4066 - Tenby Road

The A4066 Tenby Road connects St Clears to the junction with the A40 / A477. There is an intermittent footway eastbound from the A40 roundabout along Tenby Road which becomes more formalised further east as more residential and commercial properties front the road. A new junction with formalised crossing facilities has also been implemented in early 2022, adjoining the eastbound carriageway of Tenby Road the location of which could be within immediate proximity and connectivity to the south of the proposed wider site boundary, dependent on where the site access to the proposed hospital is being provided. Tenby Road is currently subject to a 30mph speed limit.

The section of the Tenby Road east of the newly built junction is inconsistent in parts, particularly on the footway flanking the eastbound carriageway with areas of absent pavement, a lack of pedestrian crossing and facilities and some areas of dropped kerb in need of repair. Further considerations could be given here with regards to improved and widened pavement infrastructure (whilst ensuring two-way vehicle movement could be maintained), footways and reduced speed limits to ensure vehicle and pedestrian safety, especially with respect to prospective increases in footfall were a new hospital to be built.

B4299 - Pentre Road

The B4299 Pentre Road connects St Clears to the junction of the A40. With regards the existing street infrastructure, similarly to Tenby Road the pedestrian infrastructure is inconsistent in parts, particularly on the footway flanking the eastbound carriageway with areas of absent pavement, a lack of pedestrian crossing and facilities and some areas of dropped kerb in need of repair. Pentre Road is currently subject to a 30mph speed limit.

As with Tenby Road adjoining Pentre Road immediately west of the crossroads, further considerations could be given here with regards to improved and widened pavement / footway infrastructure (whilst ensuring two-way vehicle movement could be maintained), footways and reduced speed limits to ensure vehicle and pedestrian safety

B4299 – Station Road

The B4299 Station Road connects north of the B4299 Pentre Road and is a direct road between St Clears with Meidrim to the north and further afield. Whilst not within immediate proximity of the site or potential access points, the road would be a key walking route for local staff, patients and visitors from St Clears and should therefore be recognised in an assessment of the local walking catchment.

Station Road is largely flanked by residential properties for the majority of its length (circa 900 to 1000m). Pedestrian infrastructure is largely constrained along the road due to the distance between properties east and west of the carriageway. Consideration could be given to enhanced crossing facilities to improve and encourage pedestrian travel between Station Hill (north of Station Road) and the town centre.

Improved pedestrian infrastructure and connectivity is particularly pertinent for Station Hill given the approved plans to reopen the former St Clears Railway Station along the crossroads on Station Hill by 2024 which would clearly be a key mode of public transport for staff, visitors and patients travelling outside of the immediate catchment.

Ostrey Hill / Northern Link Road

The Northern Link Road connecting east – west between the A40 and St Clears provides a direct route between the A40 and the town centre. The pedestrian infrastructure along the route is largely wide and in a good state of repair along the sections flanking residential dwellings, although it should be noted there is currently no pedestrian footway for around 400m from the junction with the A40, which is currently flanked by several parcels of farmland. This section of the road is also subject to the national speed limit (60mph) restrictions until 30mph signage implemented on the approach to the residential dwellings. Electronic speed cameras and warning signs are also present on the eastbound approach to the town from the A40.

There is also a significant gradient along the Northern Link Road, which should be recognised when considering prospective pedestrian crossing facilities and implementing appropriate street furniture in the future were a hospital development to be brought forward onto the adjacent land at the Site.

Figure 4-7 provides photographs of Pentre Road, Tenby Road, Station Road and the Northern Link Road highlighting a few of the key issues.

Figure 4-7 – Local Pedestrian Network Photos

4.3.2 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 4-8**, shows cycling isochrones for the Site.

The cycling isochrone illustrates that the majority of St Clears can be reached within a 5 minute cycling distance from the proposed hospital site. This is confirmed below in **Figure 4-9** using Google maps' 'Journey Planner Feature'.

Also, several neighbouring towns, villages and settlements to St Clears can accessed via a 30 minutes' cycle, these include Whitland, Llanddowror, Bancyfelin and Meidram, making cycling a viable transport option to the hospital for staff and visitors with the right infrastructure provision.

Figure 4-8 – Cycling Isochrone

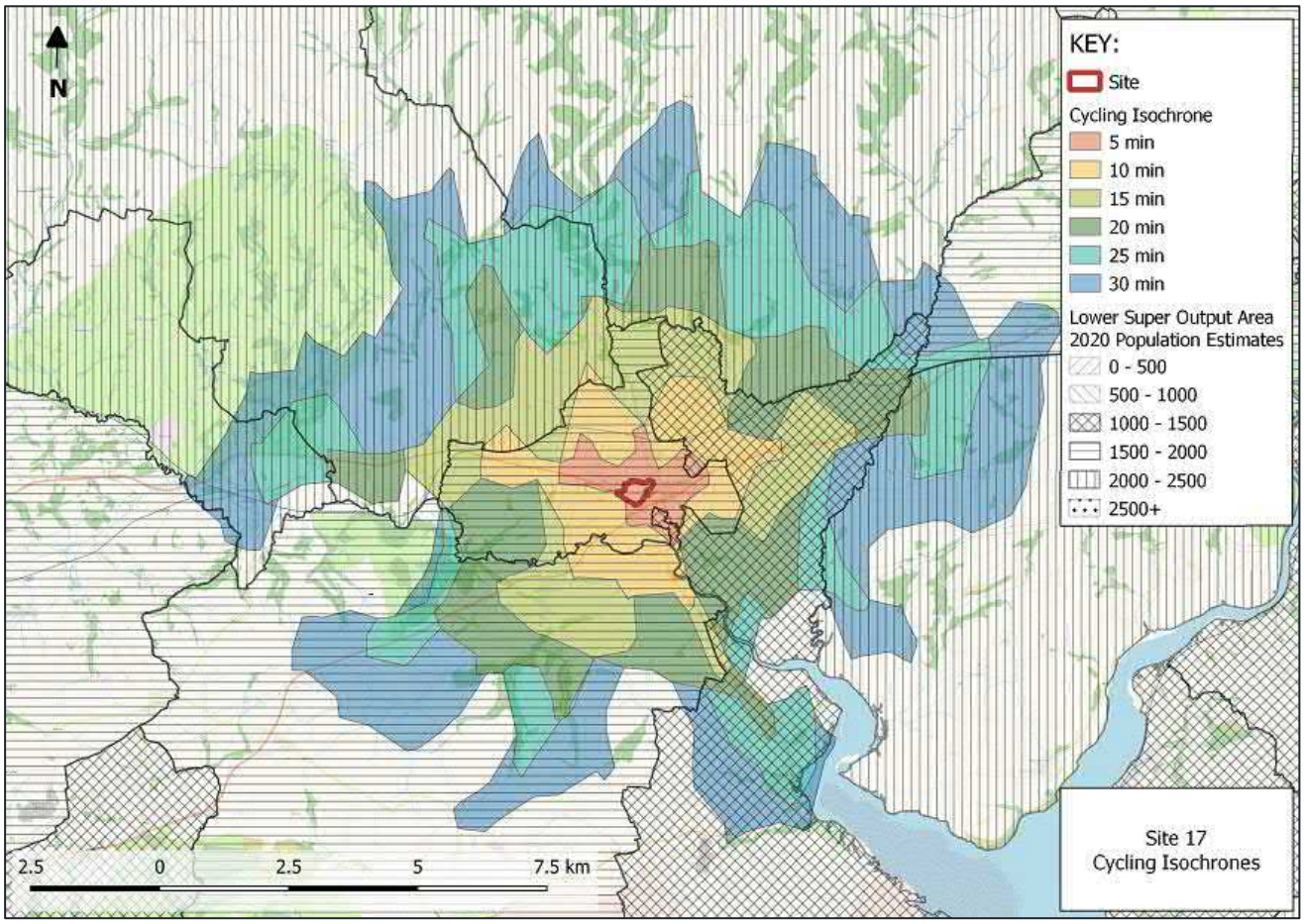
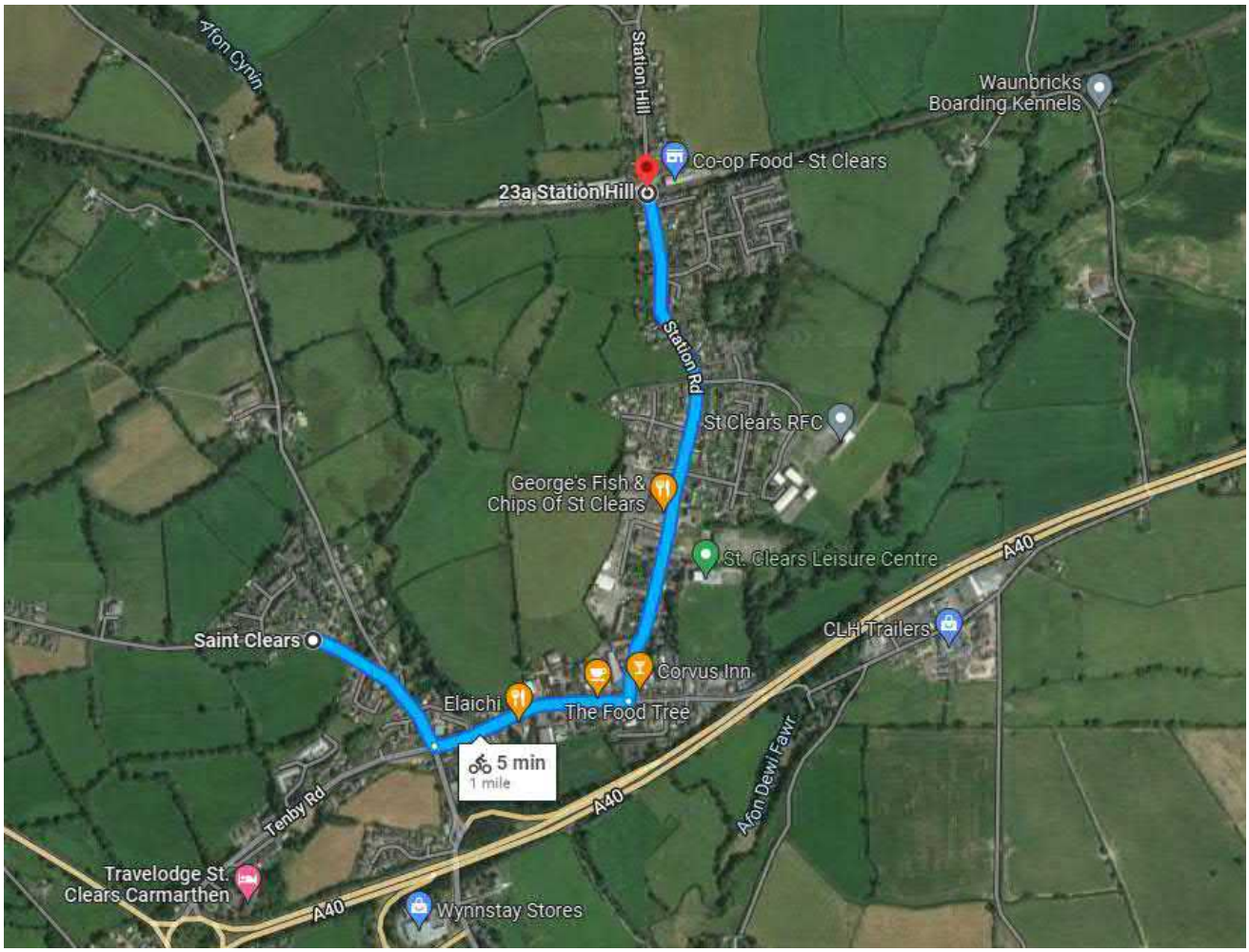
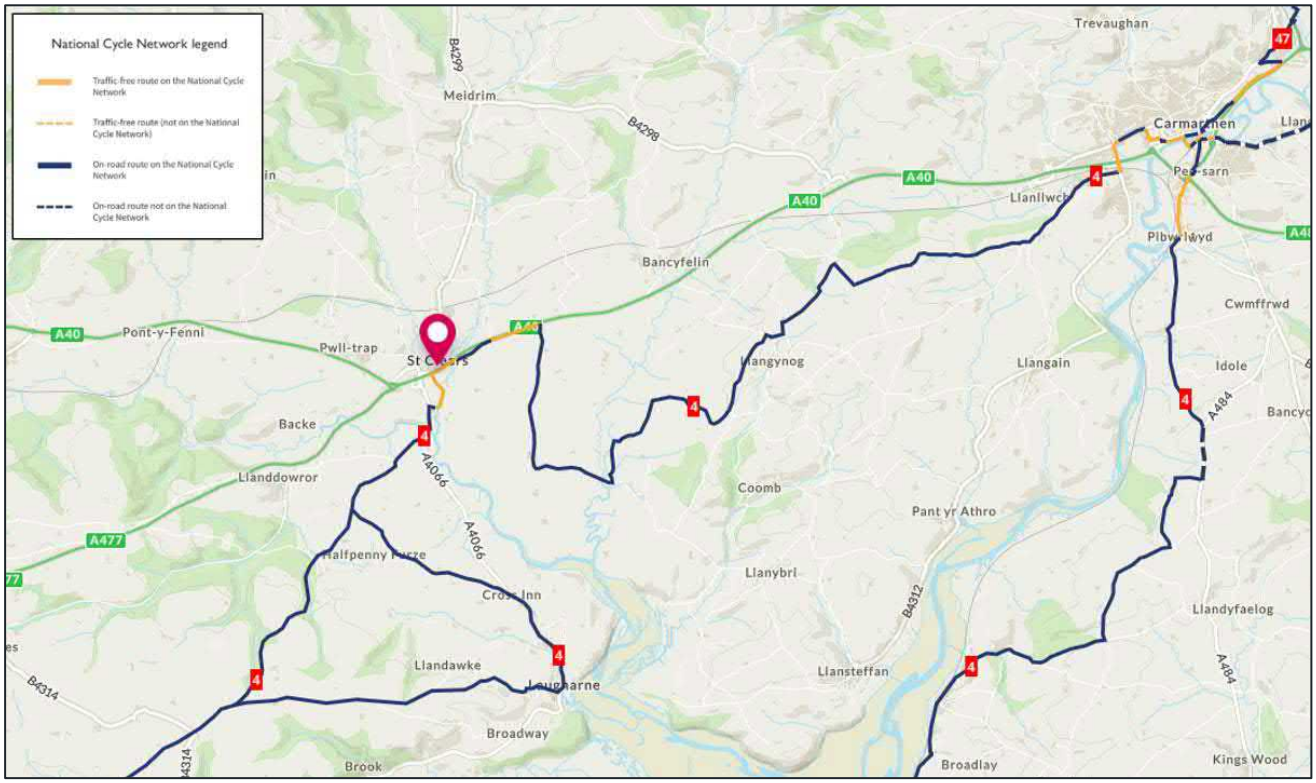


Figure 4-9 – Google 'Journey Planner' Cycling Distance



National Cycle Network (NCN) route 4 runs west of the Site, providing a series of traffic-free and on road connections to the immediate area to the south of St Clears as shown in **Figure 4-10**. This provides opportunities for visitors and staff to the hospital from the south, west and east of St Clears to travel by bicycle to the hospital.

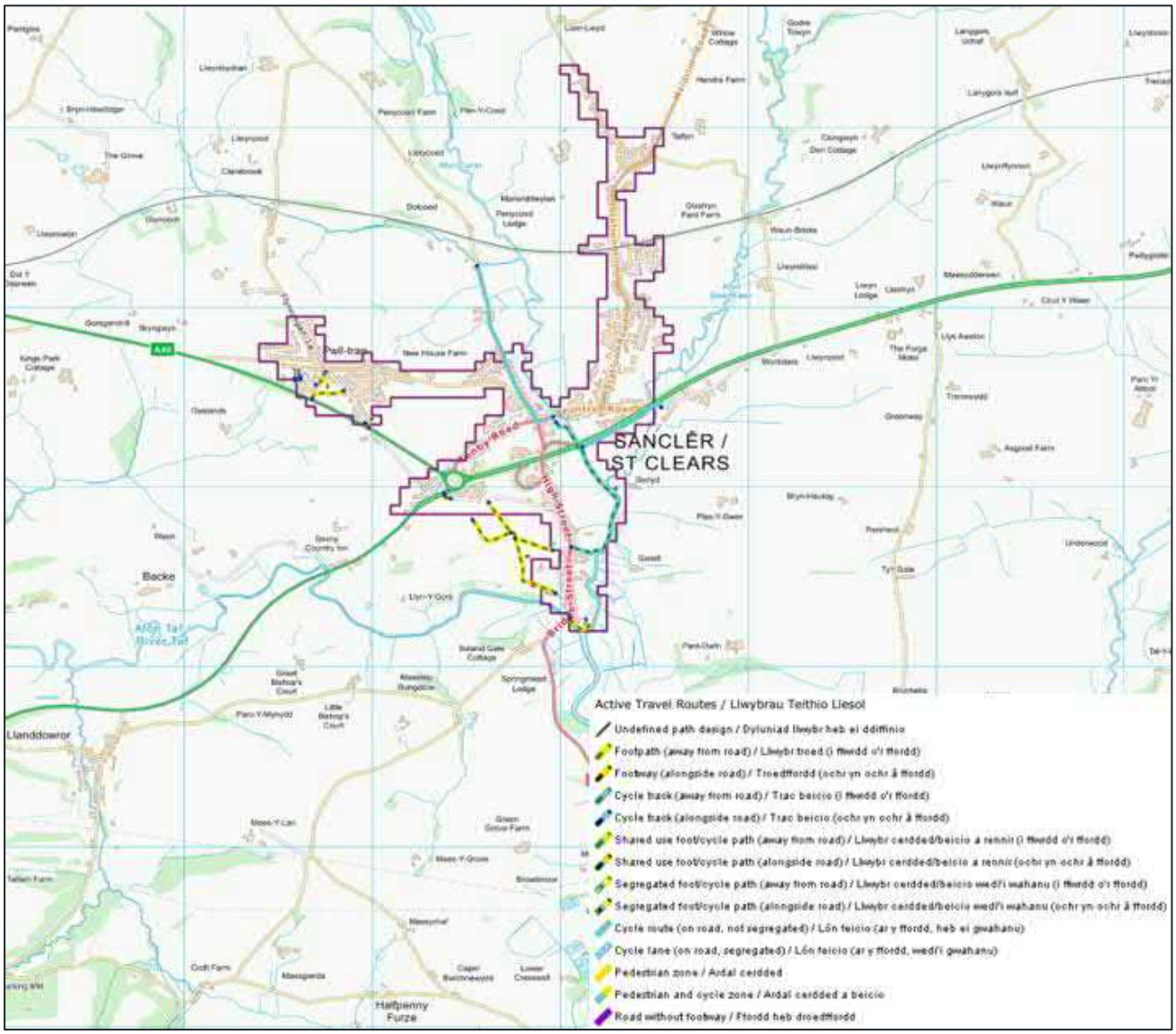
Figure 4-10 – National Cycle Network Route – St Clears



Active Travel Route Maps

Figure 4-11 provides the Active Travel Route Map for St Clears.

Figure 4-11 – St Clears – Active Travel Route Map



Intergrated Network Maps

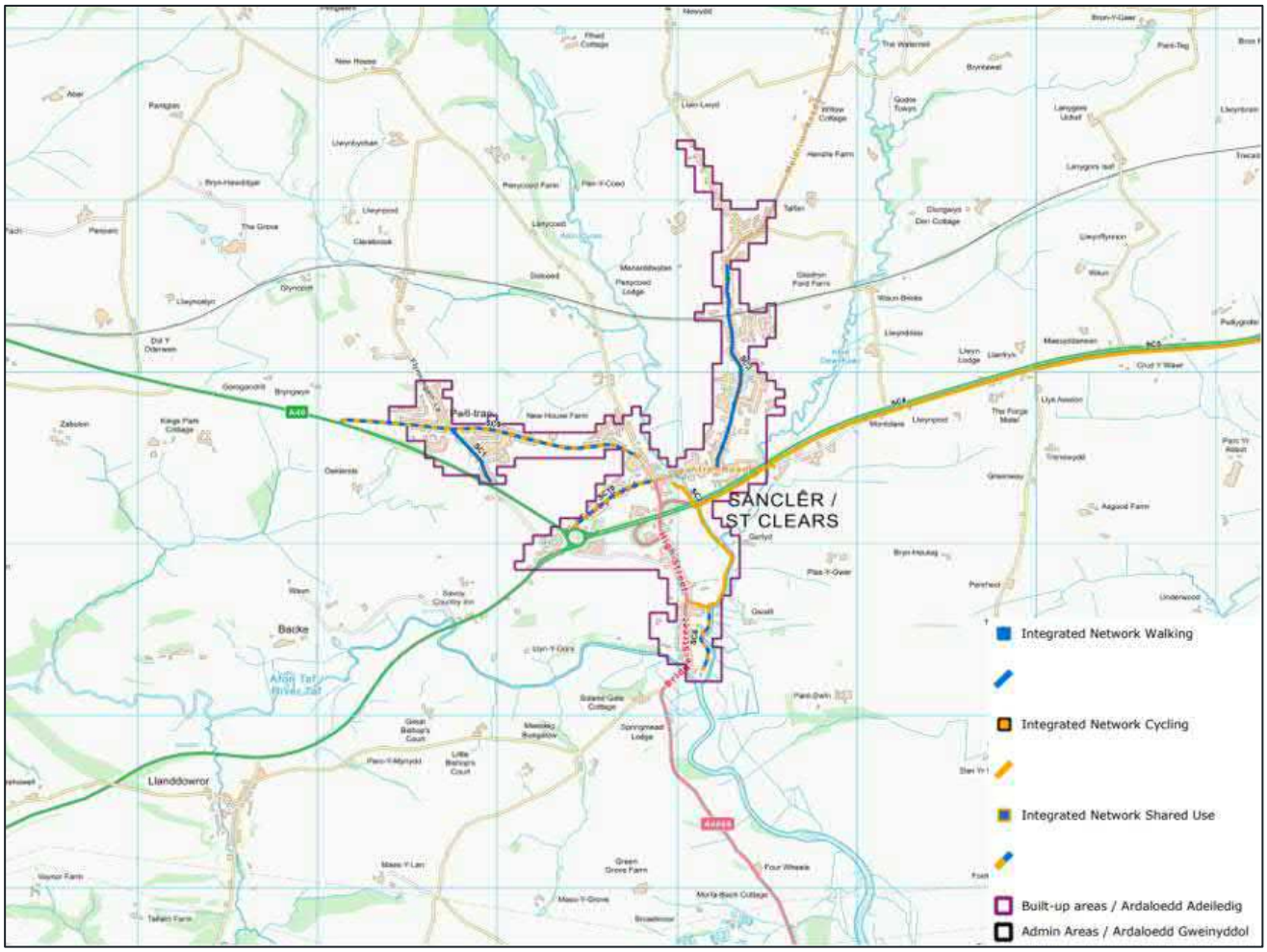
As part of the Active Travel Act all Welsh Councils are required to produce Integrated Network Maps (INMs) setting out the Local Authority's plans to develop a network of active travel routes and facilities over the next 15 years.

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 Pembrokeshire's Integrated Network Maps covering St Clears and encompassing the Site are shown in **Figure** 4-12.

Figure 4-12 – St Clears – Integrated Network Maps



There are a number of improvements planned for Tenby Road and the Northern Link Road flanking the Site and transcending through St Clears Town Centre. Discussions are to be had with Carmarthenshire County Council on what the improvements are and how they can be tied into the proposals for the hospital.

4.3.3 PUBLIC TRANSPORT

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

Bus

The nearest bus stops to the site are located along Pentre Road around 300 - 350m east of the site boundary, with a bus shelter and timetable provided on the westbound carriageway. There is also an eastbound bus stop at the site frontage to the Business Park, serviced by route 222.

No shelter appears to be provided on the eastbound carriageway bus stop, which is understood to operate in a “hail and ride” capacity.

These bus stops are served by Bus Routes’ 222, 224 and 322, operated by Taf Valley Coaches with a range of services connecting St Clears with Carmarthen, Pendine, Whitland, Narbeth and Haverfordwest.

Table 4-1 provides more details of the primary weekly bus services serving St Clears. Figure 3-9 provides a map for all the bus stops in the context of the site, the services for which are detailed in **Table 4-1**.

Table 4-1 – Bus Services

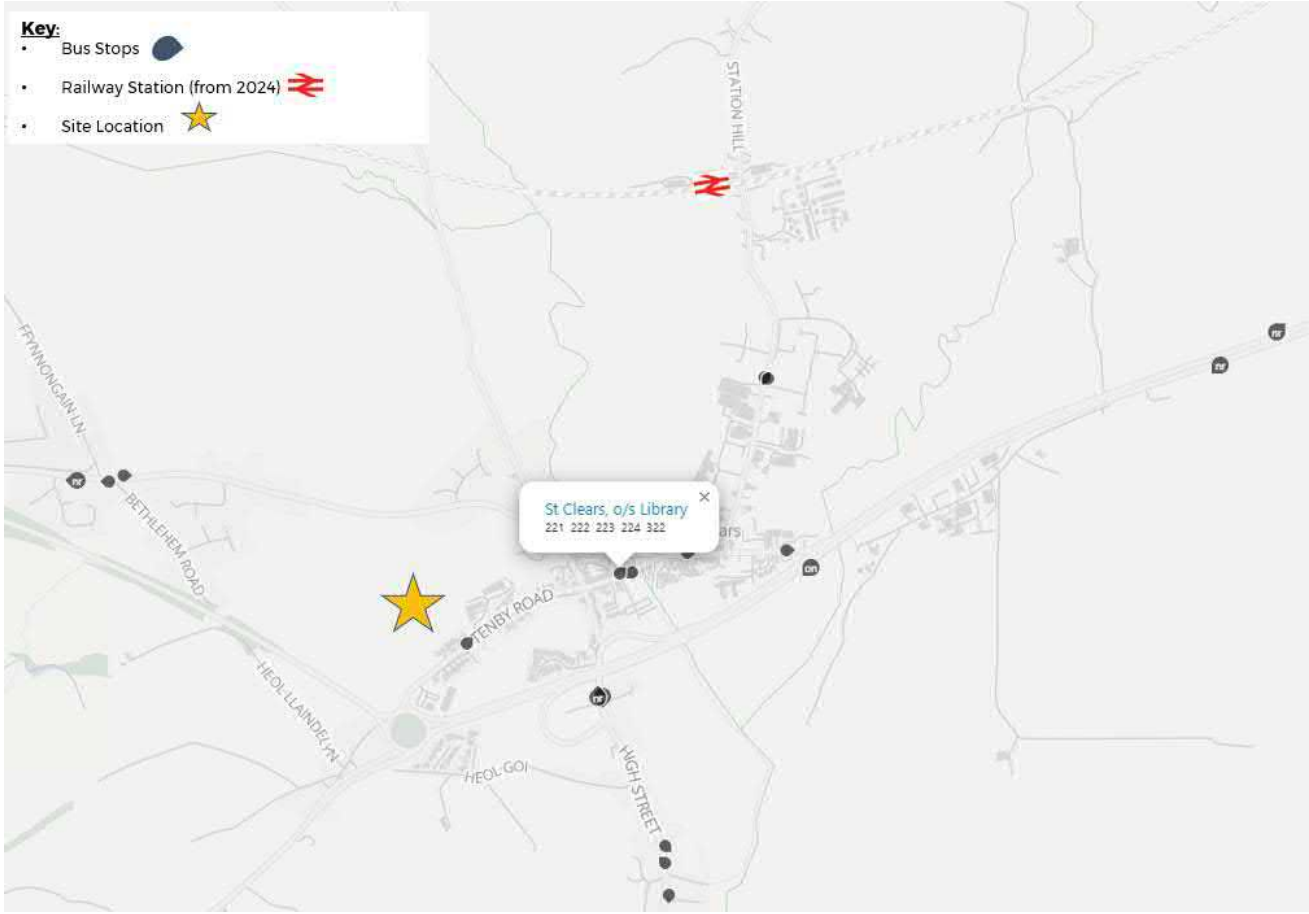
Direction	Service	Route	Frequency		
			Mon - Fri	Sat	Sun
Inbound	322	H'West - Canaston Bridge - Narberth - Llanddewi Velfrey - Whitland - Pwll Trap - **St Clears** - Carmarthen - Glangwili Hospital	3 hourly 09:58 - 15:58	3 hourly 09:10 - 15:10	n/a
	224	Whitland - Pwll Trap - **St Clears** - Carmarthen	Every 2.5 Hours 07:53 - 15:08	Every 2.5 Hours 07:53 - 15:08	n/a
	222	Carmarthen - **St Clears** - Pendine	Every 2.5 Hours 08:51 - 18:06	Every 2.5 Hours 08:51 - 18:06	n/a
Outbound	322	Glangwili Hospital - Carmarthen - **St Clears** - Pwll Trap - Whitland - Llanddewi Velfrey - Narberth - Canaston Bridge - H'West	3 hourly 10:50 - 16:50	3 hourly 10:50 - 16:50	n/a
	224	Carmarthen - **St Clears** - Pwll Trap - Whitland	Every 2.5 Hours 09:29 - 18:14	Every 2.5 Hours 09:29 - 18:14	n/a
	222	Pendine - **St Clears** - Carmarthen	Every 2.5 Hours 07:36 - 17:11	Every 2.5 Hours 07:36 - 17:11	n/a

Further bus and coach services operated by Jones Login and National Express are available along Pentre Road on a more sporadic or weekly basis. Two such services are operational once a week on a Tuesday between Carmerthen – Login (Service 221) and Carmarthen to Glandwr (Service 223).

As can be seen from the bus service destinations, the current bus services running through St Clears provide connections to several key locations including Carmarthen, Pendine, Whitland, Narbeth and Haverfordwest. However, the services are infrequent and short with the latest service finishing around 6pm which may not be favourable for the shift working patterns associated with hospitals.

Figure 4-13 shows the location of the bus stops and train station.

Figure 4-13 - Location of Bus Stops and New Railway Station (from 2024)



RAIL

Whitland to the west and Carmarthen to the east are the closest railway stations to St Clears, located on the West Wales Line and are serviced by Transport for Wales. Trains from Narberth operate on a standard two-hourly frequency, departing westbound for Pembroke Dock and eastbound to Carmarthen and Swansea with four services in each direction on Sunday. In summer, on Saturdays a Great Western Railway service calls en-route to Pembroke Dock, and again on its way back to London Paddington.

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.

It should be noted that by 2024, there are plans to have a fully operational Railway Station in St Clears again for the first time since 1964 when the station was last operational to passenger traffic. This will clearly be a key mode of public transport for staff, visitors and patients travelling outside of the immediate catchment to and from a prospective hospital redevelopment.

Existing facilities at Carmarthen Station are relatively good. The current station is fully staffed, inclusive of a staffed ticket office throughout the week. A self-service ticket machine is provided for

use and for collecting pre-paid tickets. A buffet and newsagents' is available along with toilets and a waiting room on platform 1; platform 2 has a shelter and bench seating. Train running information is provided by digital CIS displays, timetable posters and automated announcements. Step-free access is available to both platforms, though platform 2 requires the use of a foot crossing - wheelchair users are advised not to use this without assistance.

Despite being a once-major junction, the facilities at Whitland station are limited. There are neither toilet nor waiting room facilities available. The main building located on the eastbound platform once contained a waiting room and ticket office, but is now closed and boarded up (tickets must therefore be purchased on board the train or prior to travel). Across the footbridge, waiting shelters are provided on the westbound platform. There is in fact a serviceable bay platform behind this, accessed from the Pembroke Dock branch, but this is seldom used for passenger trains as services from the branch do not normally terminate at Whitland. Railway service information is provided by timetable posters, digital display screens and a customer help point on each side. Step-free access is available to both operational platforms, though the eastbound one is via a steep ramp.

Improving accessibility around local railway stations for neighbouring towns and villages to the proposed hospital development would further increase the use of railways as a viable public transport alternative to the private car.

4.3.4 EXISTING TRAFFIC

Existing Automated Traffic Counts (ATC) have been obtained along the sections of the B4299 Pentre Road and Northern Link Road close to the Site to shed light on the volume of traffic on the key roads surrounding the site. **Figure 4-14** provides the location of the ATCs and **Figure 4-15**, **Figure 4-16** and **Figure 4-17** summarise the respective traffic flows.

Figure 4-14 – Traffic Flows ATC Locations

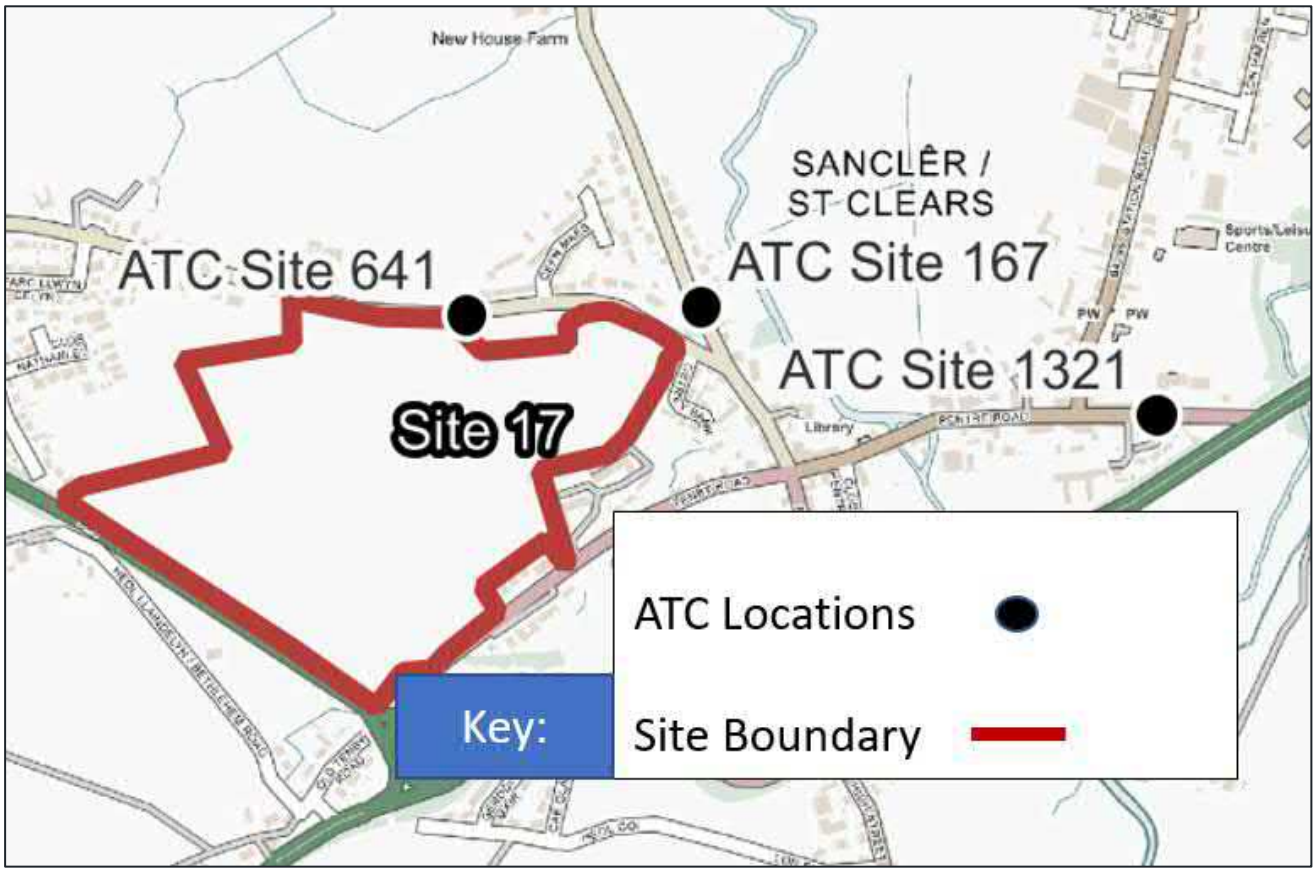


Figure 4-15 – ATC 167 – St Clears in the Vicinity of the Site

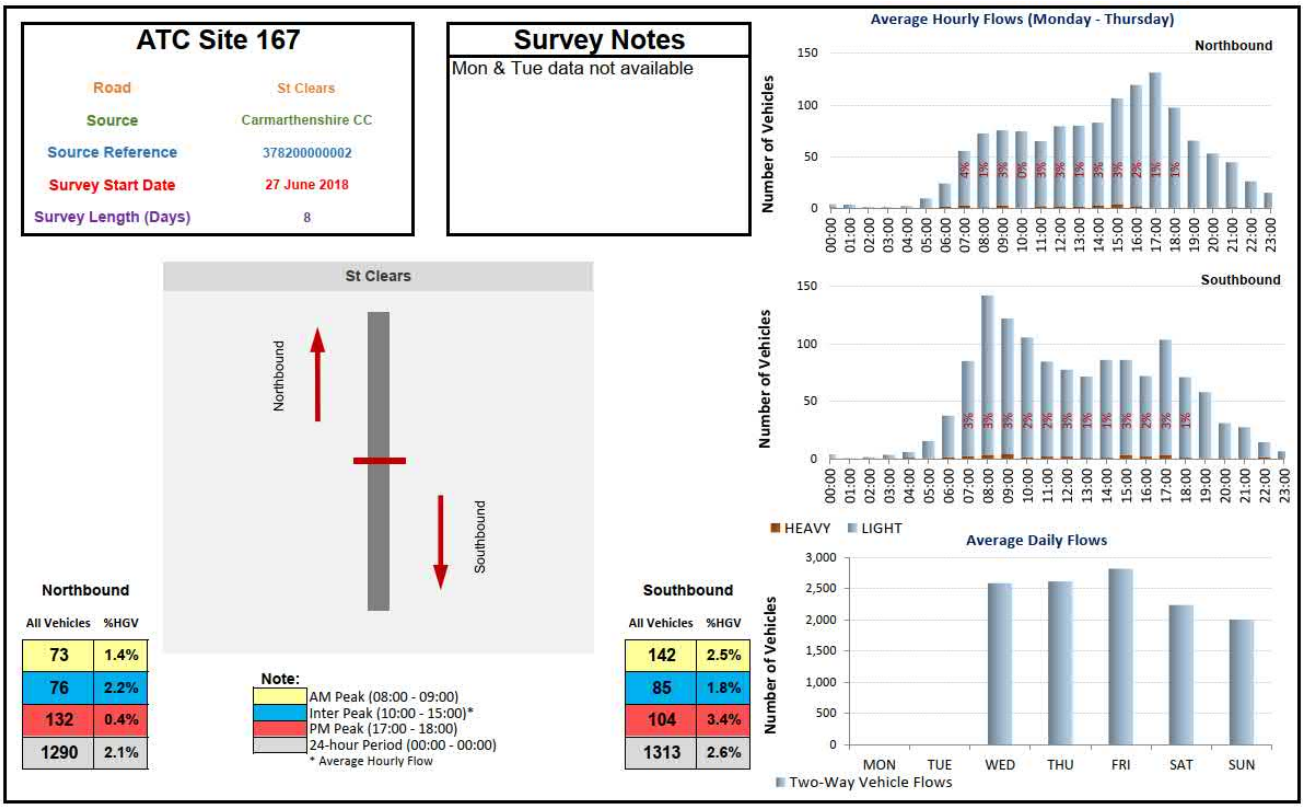


Figure 4-16 – ATC 641 - St Clears along the Northern Link Road / Ostrey Hill north of the Site

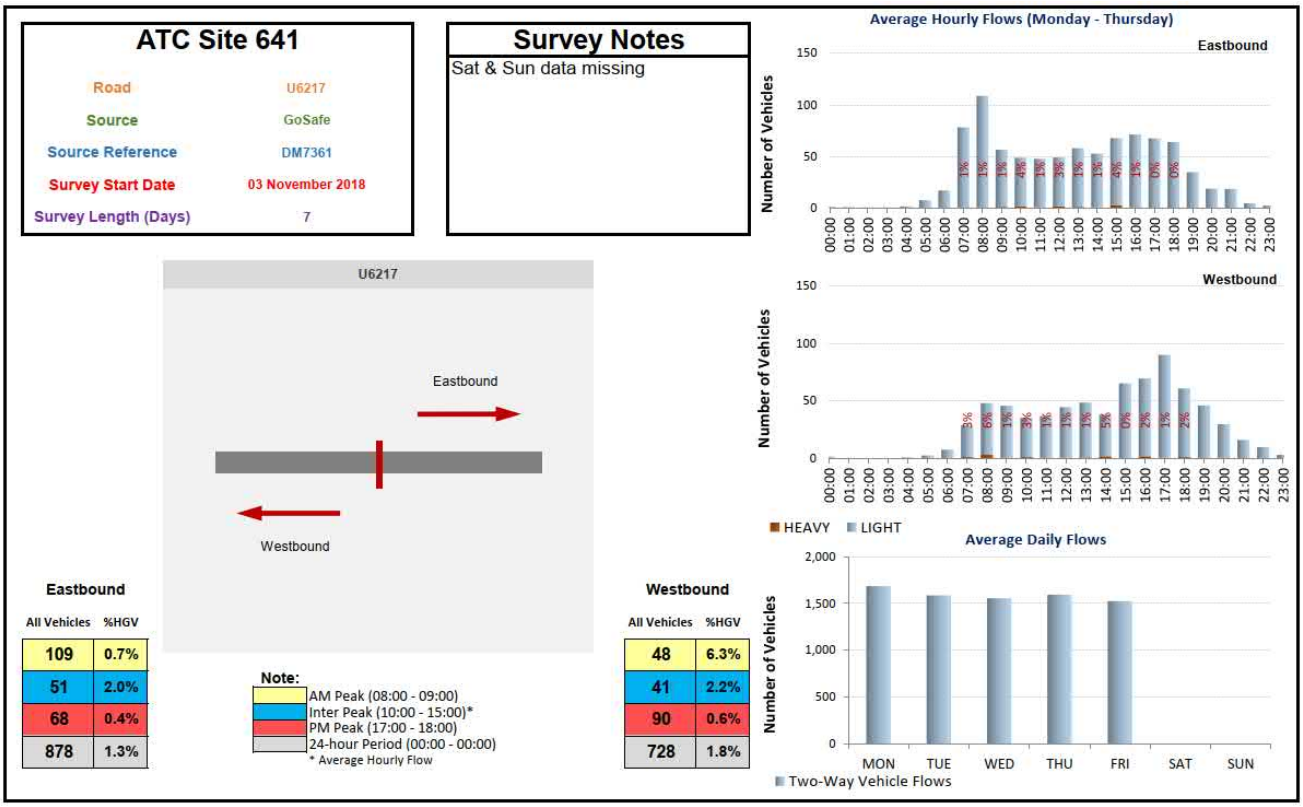
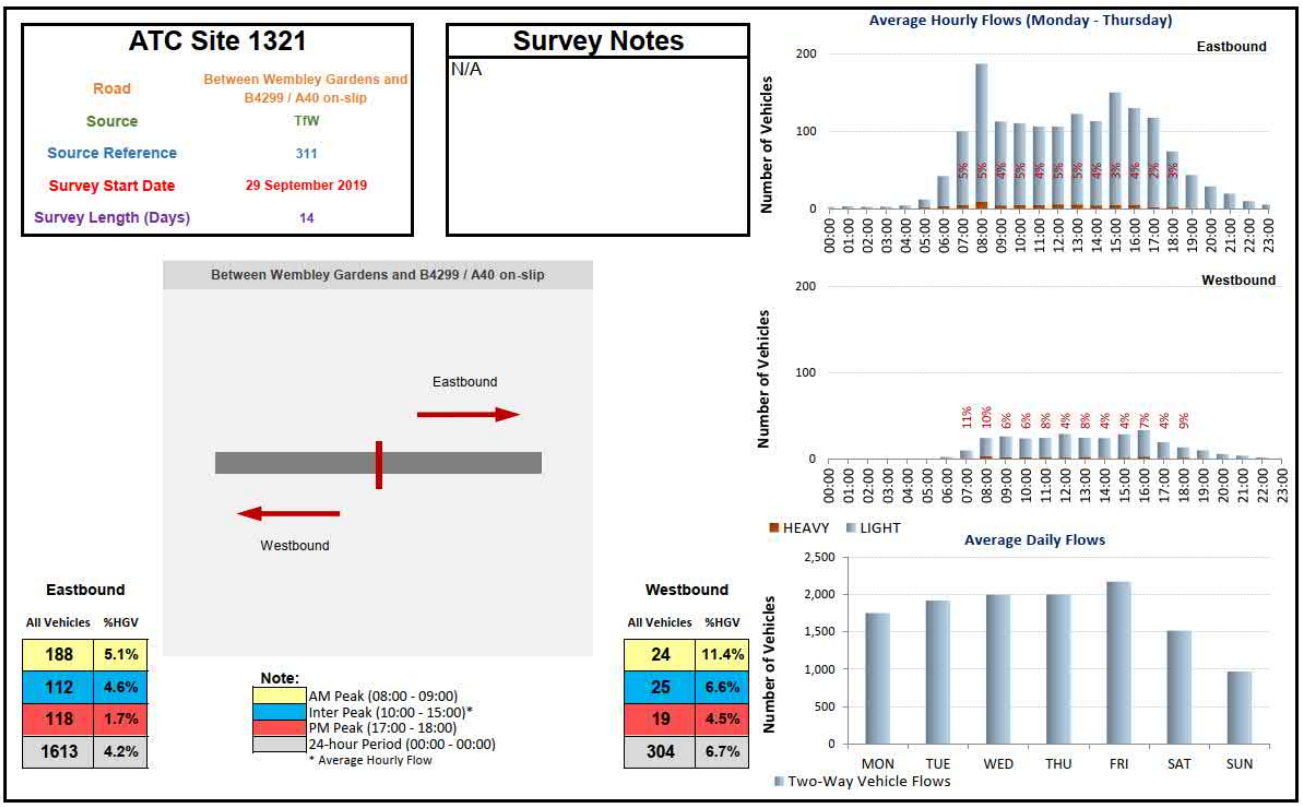


Figure 4-17 – ATC 1321 – B4299 Pentre Road, east of the Site

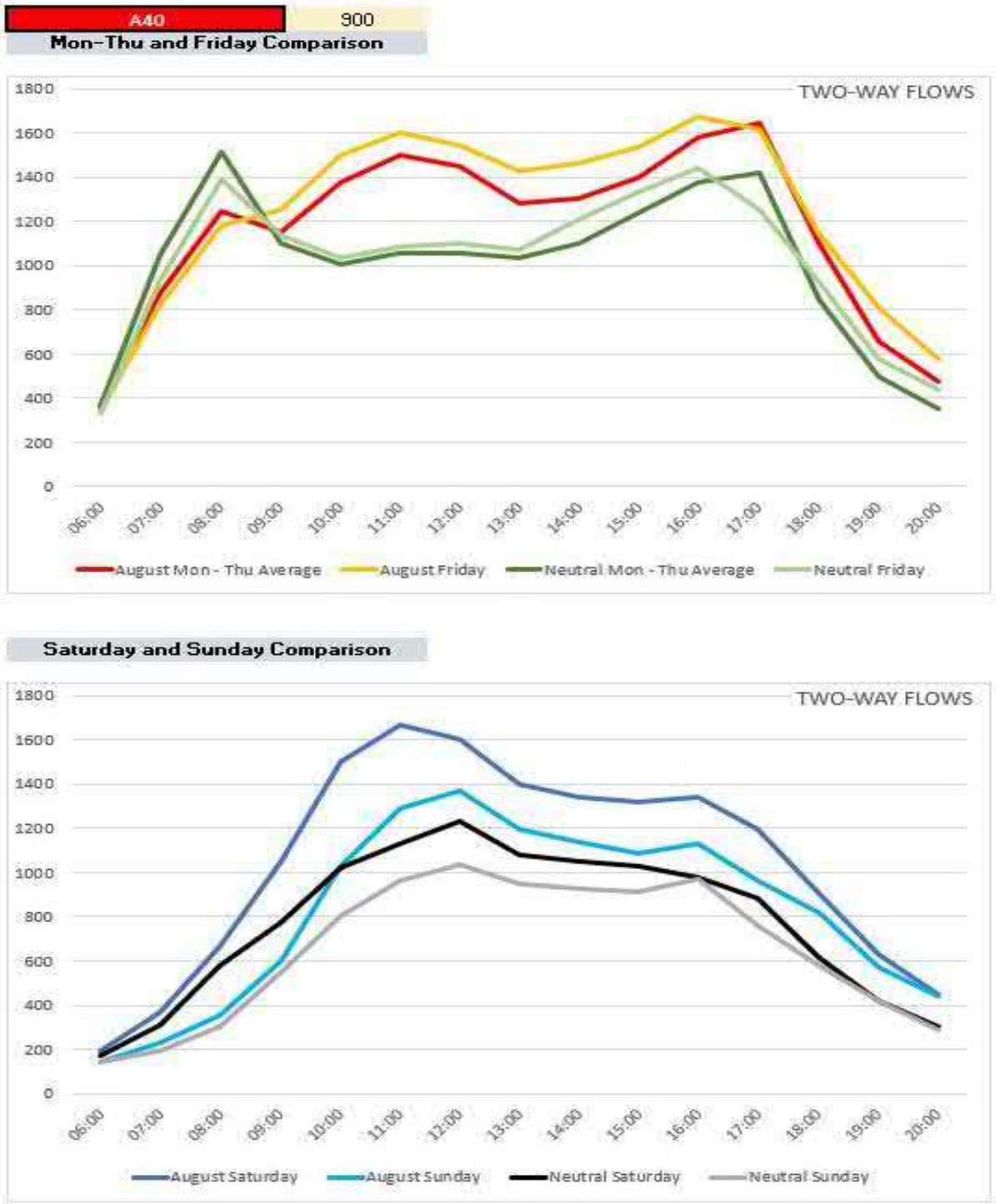


The 24-hour traffic flows along A477 range from around 1,000 to 2,800 vehicles on the ATC's surveyed, with the highest peak hour flow of around 180vph in the AM peak between 0800-0900 recorded on the Eastbound ATC on the B4299 Pentre Road. The PM peak hour is not clearly defined, it mainly occurs between 3pm and 6pm with a flow of around 140vph.

The morning peak on the A40 is heightened at 8am whereas in the evening it is more spread between 3pm to 6pm in both the east and westbound directions. The A40 is a key holiday route and flow during those periods usually increases by a significant amount. **Figure 4-18** provide 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 4-18 – Seasonality Variatrion in flows along the A40



4.3.5 HIGHWAY NETWORK PERFORMANCE

To understand the operation of the highway network within and surrounding the study area in terms or traffic movements, 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 4-19**, **Figure 4-20** and **Figure 4-21** respectively.

Figure 4-19 - Typical Weekday AM Peak Average Speed Profile

Figure 4-20 - Typical Weekday Interpeak Average Speed Profile

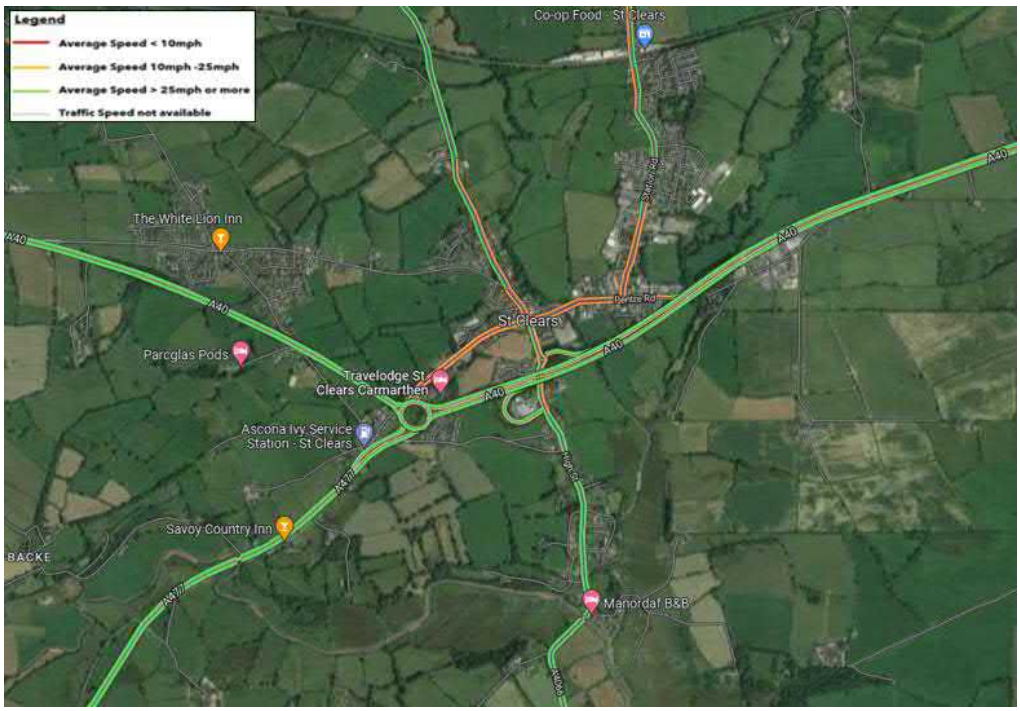


Figure 4-21 - Typical Weekday PM Peak Average Speed Profile

In **Figure 4-19**, **Figure 4-20** and **Figure 4-21**, 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 the Site is uncongested, however there are sections of road within the town centre, particularly along the A4299 that experiences pockets of slower moving traffic during the afternoon and through the PM peak. It should however be noted that whilst the speed limit here is 30mph, the road does lend itself to slower speeds given the narrow roads, bus and HGV routes which share the same access roads and lanes as regular car traffic within St Clears.

4.3.6 HIGHWAY SAFETY

In order to assess whether there are any safety concerns on the current highway network within the study area, Personal Injury Collision (PIC) data has been obtained for the five-year period from 1st January 2017 to 31st December 2021. It should be noted that 'Damage only' collisions have not been included as they are not consistently reported to the police and therefore could be misleading.

Figure 4-22 shows the location of the PICs observed within the study area.

Figure 4-22 - Personal Injury Collisions within Study Area

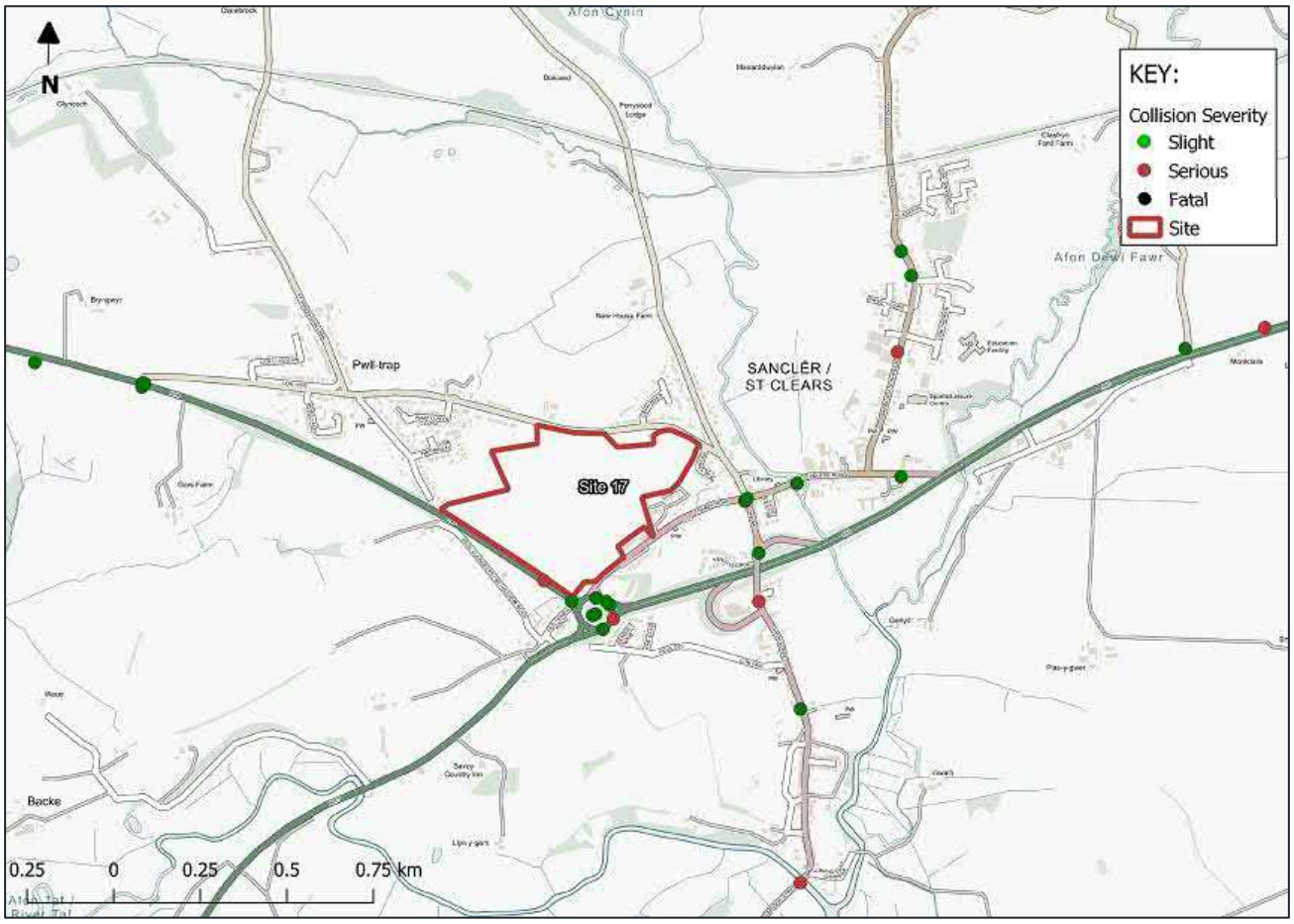


Table 4-2 provides a breakdown of the PICs in the vicinity of the Site along the A40 and Tenby Road.

Table 4-2 – Personal Injury Collisions (PICs)

Level of Severity	2017	2018	2019	2020	2021	Total
Slight	5	6	3	6	4	**24**
Serious	1	1	2	1	0	**5**
Fatal	0	0	0	0	0	**0**
Total	**6**	**7**	**5**	**7**	**4**	**29**

As can be seen in **Figure 4-22** and **Table 4-2** there are minimal number of PICs occurring in the vicinity of the study area, with a total of 29 PIC's across 5 years, 24 slight and 5 serious incidents) recorded in the five-year period, with two of the five serious incidents occurring on the roundabout

where the A40 and A477 meet. The other three serious accidents did not appear within close proximity of the proposed Site as the map illustrated.

Based on a review of the reasons for accidents, there are no issues noted in relation to the highway network that are likely to be exacerbated as a result of additional traffic generated by the proposed new hospital.

4.3.7 POTENTIAL ACCESS/PHYSICAL IMPROVEMENTS

NEW A40 JUNCTION AND MODIFIED FOOD RETAIL ACCESS ROAD

Geometric Standards and Visibility Splays

A proposed left in / out the A40 could be constructed through highways and developer land to access the site (see Drawing 2424-WSP-XX-17-DR-HW-0001, which is included in the Appendix), and this would serve in and outbound traffic from/to the west (with outbound traffic initially heading east on the A40 and turning westwards again at the roundabout). This arrangement would also serve outbound traffic to the east.

The proposed junction would be geometrically compliant with Design Manual for Roads and Bridges (DMRB) Standards. It would be subject to a Section 278 Agreement between the developer and the Welsh Govt / Trunk Road Agent.

Inbound traffic from the east would enter the site via a modified Food Retail access road off Tenby Rd. This road is yet to be adopted by the Local Highway Authority but appears to have been built to adoptable standard, and it is understood that the developer is pursuing its adoption. It does not however, according to the Council's records, appear to currently have a Section 38 Agreement, pursuant to its adoption in place. Further investigation, survey and geometric design detail will be required however a potential access arrangement can be seen in Drawing 2424-WSP-XX-17-DR-HW-0002, which is included in the Appendix herewith.

Signalisation of the access road could assist in preventing queuing back on onto the A40 and the site access road.

Another option would be to direct westbound exiting traffic via a new junction on Rhiw Ostrey, and this is outlined below.

Consideration was given to extending the exit lane of the proposed A40 junction to the A40 roundabout to increase capacity and separate flows. This option is precluded by the presence of the recently constructed McDonald's ® Restaurant.

A roundabout option was also explored onto the A40, however the proposed junction would be situated on a 1:20 gradient of the existing A40. The approach link works to the roundabout would therefore be extensive to achieve a 1:50 entry gradient, especially in the eastbound (downhill) direction. The current 3-lane section would also be absorbed into the proposed junction.

Other options including an all-movements grade separated junction were also considered but rejected due to excessive costs and third-party land take.

Scheme Safety

The scheme would be subject to technical approval from the Welsh Govt. / Trunk Road Agent. It would also require an independent road safety audit and non-motorised user audit.

The proposed junction would be geometrically compliant with DMRB Standards including visibility. It is likely that the A40 junction approaches would be subject to a revised 40mph or 30 mph 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 elevated 2m from the highway frontage and gradients are flat on side long ground.

The proposed junction would be geometrically compliant with DMRB Standards including visibility. It is likely that the on / off slip lanes would be subject to a revised 40mph or 30 mph speed

Emergency / Blue Light Access

It is assumed that the primary and blue light access would be via the A40 / Food Retail Access rd. A secondary emergency only vehicular access could be provided via Rhiw Ostrey.

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

Wider Network Effects / Off Site Network Reinforcement.

It is surmised that the proposed off-site works associated with the junction option on the A40 and Rhiw Ostrey / Tenby Road would be required. For example, upgrading of the A40 / Langynin Junction to the west or capacity improvement works at the existing A40 roundabout.

Active Travel / Public Transport Access

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

Revised step free crossing point for pedestrians and cyclists on the A40.

This proposal would align with the proposed junction works to improve the current linkages.

This would be a straightforward but medium -cost intervention, due to extensive earthworks.

Improved footways on Tenby Rd.

This would link the town to the A40 and the site. It would also allow linkages to the proposed Rail Station, as well as providing for safer bus stop provision.

Active travel access off Tenby Rd.

This scheme would access via the existing link adjacent to St. Clears Business Park. This could also incorporate a crossing point on Tenby Rd.

POTENTIAL NEW ROUNDABOUT JUNCTION ON OSTREY HILL

Geometric Standards and Visibility Splays

If the capacity of the A40 roundabout were an issue then a proposed offline roundabout on Ostrey Hill could be constructed through highways and developer land to access the site.

The proposed roundabout could have a maximum Inscribed Circle Diameter (ICD) of 40 m and would be geometrically compliant with DMRB Standards. It would be subject to a Section 278 Agreement between the developer and the Local Highway Authority.

The proposed junction would be situated on a 1:25 gradient of the existing road. The approach link works to the roundabout would therefore be extensive to achieve a 1:50 entry gradient, especially in the eastbound (downhill) direction.

Depending on predicted design year traffic flows, an alternative to the roundabout could be a ghost island right turn T junction. This would have considerably less land take.

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 junction would be geometrically compliant with DMRB Standards including visibility.

Scheme Sustainability

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

On Site Highways Works & S38 Agreements

The works required to achieve the on-site access road are straightforward and deliverable. The site level is elevated 2m from the highway frontage and gradients are flat on side long ground.

Emergency / Blue Light Access

It is assumed that the primary and blue light access would be via the junction. A secondary emergency access vehicular access would be provided via the Food Retail Access off Tenby Rd.

Its use would need to be tightly controlled and subject to agreement with the local highway authority / Trunk Rd Agent. This road is yet to be adopted by the Local Highway Authority but appears to have been built to adoptable standard. It does not, according to the Council's records appear to have a Section 38 Agreement, pursuant to adoption in place.

Wider Network Effects / Off Site Network Reinforcement.

It is surmised that the proposed off-site works associated with the access option off Tenby Rd and Rhiw Ostrey would require upgrade works to the A40 Roundabout.

Active Travel Access

Suitable upgrades to existing active travel infrastructure could include: -

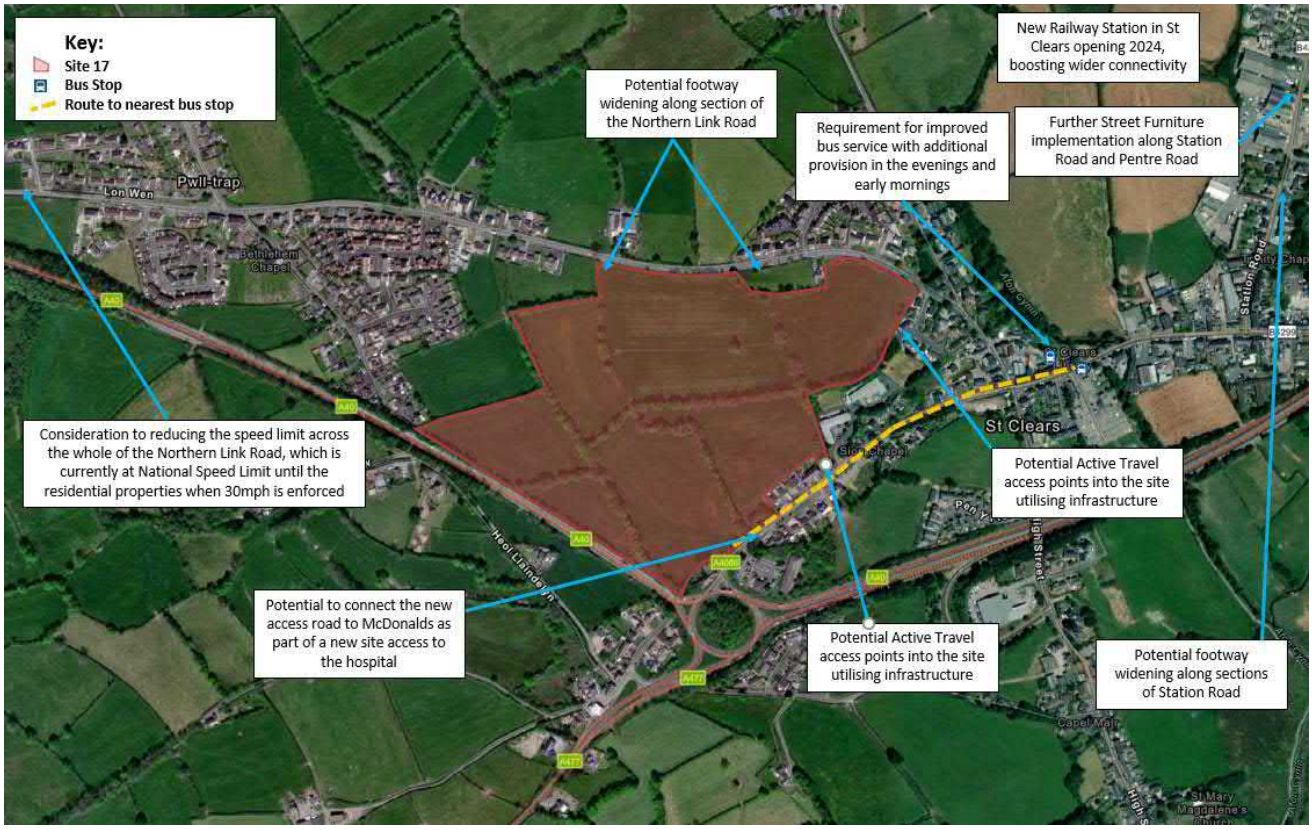
Link existing footways from access road to Pwll Trap in the west and St Clears in the east.

Potentially widen existing footways to 3.0 – 3.5 m shared use standards along available sitefrontages.

This would be a medium cost intervention due to extents and would need to consider land ownership.

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 4-23.

Figure 4-23 – Key Physical Improvements



4.4 COMMITTED AND PLANNED DEVELOPMENTS

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.

A review of the prospective committed infrastructure schemes for the Site rendered two key schemes currently being progressed, which are identified in Table 4-1 herein:

Table 4-3 – Committed & Planned Infrastructure

Scheme Name	Scheme Type	Comment	Level of Certainty	Construction Ends	Link	Other comments
A40: Penblewin to Redstone Cross	Highways	The proposal is to update this 1.8km length of the A40 from the junction with Jacobs Park to the west of Redstone Cross to Penblewin Roundabout to a modern standard three lane carriageway, with two lanes in one direction and one in the opposite direction, separated by a 1m wide hatched strip that is coloured red. • The A477 Red Roses to St Clears and the A40 Penblewin to Slebech Park are recently completed examples of this layout. • The scheme will bypass Redstone Cross with the new carriageway built off-line passing to the south of the existing A40 before connecting to Penblewin Roundabout. The existing road will remain for access to properties, local roads and businesses and will be accessible from Penblewin Roundabout.	More than likely	End of 2022	https://gov.wales/a40-penblewin-redstone-cross	WelTAG Stage 3 is in progress, and the scheme is in planning stage, with a high likelihood of progressing to the construction stage
A40 St Clears to Haverfordwest study	Highways	The 6 options are: 1. current A40 committed schemes including Llanddewi Velfrey and Redstone Cross 2. 2+1 improvements providing maximum overtaking opportunity St.Clears to Haverfordwest 3. upgrade A40 to full dual carriageway standard from St.Clears to Haverfordwest 4. Haverfordwest junction improvement 5. Haverfordwest south eastern bypass 6. shortened version of Option 5 terminating on the A4076 near Pope Hil	Reasonably foreseeable	Unknown	https://gov.wales/sites/default/files/publications/2017-09/a40-st-clears-to-haverfordwest-study-executive-report-june-2015.pdf	This scheme can be treated as an extension to identified schemes 1 and 2. It envisages additional 2+1 overtaking opportunities along the route, but is in an earlier stage in terms of planning process than the schemes 1 and 2

Potential Active Travel Schemes and further future improvements are suggested to be confirmed following meeting with Carmarthenshire County Council.

4.5 OPPORTUNITIES AND CONSTRIANTS

4.5.1 OPPORTUNITIES

The following section details the improvements identified in **Figure 4-23** alongside other opportunities that could be provided to improve conditions for Active Travel Users within close proximity of the Site.

Walking and Cycling

- Improved footway and cycling Infrastructure from the built-up areas in St Clears to tie into the Site, particularly on the approach to and from Station Hill along Station Road given the new reopened Railway Station being brought forward by 2024.
- Implement a Cycle Hire Scheme at the hospital
- Provide wayfinding signs from the built-up areas to the site.
- Ensuring appropriate shelter, street furniture for people to rest and wait for buses on the approach to and from the site lend itself to providing safe routes for non-motorised users.

Bus

- Improve infrastructure and waiting facilities at existing bus stops along the Northern Link Road / Ostrey Hill and B4299 Pentre Road.
- Rerouting bus services into the hospital would be key for the Site, particularly in light of the existing pedestrian infrastructure and gradient constraints in proximity of the 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).
- Explore the potential for additional bus services, particularly considering the new railway station north of the site, ensuring access between the station and the hospital site given the 1.5km distance by road and pavement.
- There are a number of existing bus services providing connection between hospitals including the Glangwili Hospital in Carmarthen, and Haverfordwest where the Withybush Hospital is located. This could be beneficial for cross working staff and should be considered for any route and service extensions were a hospital site to be brought forward at the Site.
- Provide more frequent and longer bus services to suit shift working pattern at the hospital.

Train

- St Clears Station has received New Station Funding and considered as a committed scheme. St Clears Station closes the geographical gap in West Wales in relation to access to the rail network. Type of services proposed to call at Station will be South Wales to Manchester services.
- The reopening of the St Clears Railway Station by 2024 will be a major boost for both staff, visitors, patients and local residents, and will provide a viable alternative to car travel to the site.
- Increase the frequency of services calling at Whitland and Carmarthen Train Station's to the west and east respectively, which in time will form the stations either side of St Clears Railway Station. It is understood that there is already a commitment to increase the frequency of services at some stations along the West of Wales Line (such as Narberth) from 2 hourly to hourly.
- Provide a local stopper service at the train station to improve capacity.

Highway / General

- Review speed limit of highway surrounding the Site, particularly along the Northern Link Road / Ostrey Hill from the A40 where national speed limit applies from the junction (albeit this is reduced to 30mph prior to the residential settlement).
- The A477 which runs south of the site can be directly accessed off the A40, providing better opportunities for areas located to the south (e.g., Pembroke, Red Roses, Kilgetty, Carew etc) to connect to site.
- Blue light access resilience (ambulance) - the site is well located to both the A40 and A477.
- Improve wayfinding to the new St Clears Train Station in areas surrounding the hospital site.

4.5.2 CONSTRAINTS

Walking and Cycling

- Limitations in providing footway to the Active Travel Guidance standards along Tenby Road and Pentre Road due to lack of available highway as a result of constraints posed by the properties that line the routes and the limited available footway on both sides of the carriageway in parts. The available carriageway on both Tenby Road and Pentre Road is narrow and the available combined footway and carriageway width is constrained in parts by the buildings flanking either side, limiting any footway widening that can be done at that location. Where widening cannot be done, this poses limitations for the mobility impaired to use that route.
- The steep gradients along the road connecting St Clears to the A40 and the steep gradients along Station Road are a potential deterrent to active travel, particularly for patients or visitors struggling with mobility.
- Use of tactile paving and surface treatment, and where possible widening of the footway along Station Road is constrained by the existing carriageway width, the presence of on-street parking and limitation posed by the boundary of the properties flanking the road. This, along with the steep gradient pose limitations for the mobility impaired to use that route.

Bus

- The demand for more frequent and longer bus services may currently be limited and therefore it may be difficult to justify increasing provision.

Train

- The closest feasible direct walking connection from the new St Clears Station to the boundary of the Site (not considering any current or future bus connections) is approximately 1.5km to 1.7km away from the train station.

Highway /General

- Potential direct access to the A40 is constrained by the gradient of the A40 at this location.
- The available carriageway within the built-up area of St Clears is narrowed as a result of on-street parking.
- There are electric poles located within the existing footway along the Tenby Road, Pentre Road and Northern Link Road / Ostrey Hill.

4.6 SUMMARY AND CONCLUSIONS

This chapter evaluates the accessibility of the Site in St Clears and considers the current provision surrounding the site for different modes 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.

4.6.1 WALKING AND CYCLING

As the review of opportunities and constraints has outlined, improved footway and cycling Infrastructure from the built-up areas in St Clears on the approach to and from the Site, particularly on the approach to and from Station Hill along Station Road given the new reopened Railway Station being brought forward by 2024, would greatly improve connectivity for the site and for St Clears.

It is understood that the town of St Clears and the Site itself are characterised by changing levels, with steep gradients across the Northern Link Road / Ostrey Hill, Station Road and Station Hill in particular. It should therefore be recognised that there are limitations as to what can be done along these routes with the highway boundaries in the town centre largely constrained by properties. It is imperative that options to improve connectivity to the new train station be explored since access to the train station will be the main trip generator for patients, staff and visitors travelling from further afield.

4.6.2 BUS SERVICES

The site has a number of bus services that run nearby, however these services are infrequent and short with the latest service finishing around 6pm. 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 needs to be explored. Also, some of the existing bus services on the network already call at the Glangwili Hospital in Carmarthen, and Withybush Hospital in Haverfordwest providing opportunities for cross working staff to connect between hospitals by bus.

4.6.3 TRAIN

The reopening of the St Clears Railway Station by 2024 will be a major boost for both staff, visitors, patients and local residents, and will provide a viable alternative to car travel to the site.

Increases in the frequency of services calling at Whitland and Carmarthen Train Station's to the west and east of the Site respectively, would provide an improved public transport offering for St Clears. In time, these two stations will form the destinations either side of St Clears Railway Station. It is understood that there is already a commitment to increase the frequency of services at some stations along the West of Wales Line (such as Narberth) from 2 hourly to hourly.

The possibility of increasing the frequency of services and or providing a local stopper service at the train station will need to be further explored.

4.6.4 HIGHWAY/GENERAL

The Site is well located on the crossroad between the A40 and A477 and therefore has a wider catchment as far as blue light access is concerned. Within the town centre itself, vehicle access is however more constrained.

The town of St Clears and the Site itself are characterised by their topography, with steep gradients along the Northern Link Road / Ostrey Hill connecting St Clears to the A40 and the steep gradients along Station Road are a potential deterrent to active travel, particularly for patients or visitors with less mobility. Ensuring appropriate shelter, street furniture for people to rest and wait for buses on the approach to and from the site lend itself to providing safe routes for non-motorised users.

With respect to mitigation and active travel facilitation, use of tactile paving and surface treatment throughout the town, and where possible widening of the footway along Station Road leading to Station Hill, which is constrained by the existing carriageway width, would allow and encourage active travel through the heart of the town centre. This, coupled with extended railway and bus services would be key measures to reducing car dominance and encouraging a new hospital masterplan which facilitates active travel.

Vehicular access would likely be provided via a new left in-left out junction on the length of the A40 that abuts the site, and via an extension of the existing food retail access road off Tenby Road.

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, hereafter referred to as the 'Site.' The Site is located is located to the north of the A40 and to the east of Tenby Road in St Clears (centroid grid reference SN 27373 16378), refer to Figure 1 in the PEA report[18]).

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[19, 20]. 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

[18] WSP, 2022. Urgent and Planned Care Hospital Site Appraisal. Site 17 - Preliminary Ecological Appraisal.
[19] Chartered Institute of Ecology and Environmental Management (CIEEM) (2017). Guidelines for Preliminary Ecological Appraisal. CIEEM, Winchester.
[20] CIEEM (2017). Guidelines for Ecological Report Writing. CIEEM, Winchester.

nature conservation within 2 km of the Site; information regarding Priority Habitats[21] within 2 km of the Site; and woodland listed on the Ancient Woodland Inventory[22] within 2 km of the Site;

- A habitat survey; and
- 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].

[21] 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.

[22] The ancient woodland inventory in Wales lists areas over two hectares in size which have been continuously wooded for 400 years or more.

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 35 km of the Site (designated for bats) Pembrokeshire Bat Sites and Bosherston Lakes/Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherston SAC identified within 22 km of the Site (designated for bats) Afonydd Cleddau/Cleddau Rivers SAC identified within 2 km of the Site (designated for faunal species within watercourses) 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.

Ecological consideration	Desk study results summary	Protected species assessment summary	Discussion and recommendations
	Aber Taf/Taf Estuary SSSI identified 1.3 km south of the Site. Refer to Figure 2[1].	N/A	The Proposed Development would be screened by the competent authority as described above. The effects on the SSSI would be considered concurrently.
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 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 1.1 km north-east of the Site. No potential Priority Habitats were returned from the desk study within the Site.	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.

Ecological consideration	Desk study results summary	Protected species assessment summary	Discussion and recommendations
			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	41 records of at least six different bat species within 2 km of the desk study centroid. The closest of these records was for common pipistrelle 405 m south-west of the Site.	Three trees (T1 to T3) and no buildings were identified as providing suitable roosting habitat for bats (Photos 11 to 13, Figure 5[1]). The treelines and hedgerows within the Site provide suitable foraging and commuting habitats. A hole in the ground with an opening of approximately 50 cm by 150 cm was noted in a field boundary towards the western end of the Site, which was at least 350 cm deep (TN6, Photo 10). It appeared that the hole extended to either side, and therefore may	Presence/Absence Surveys: 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.

Ecological consideration	Desk study results summary	Protected species assessment summary	Discussion and recommendations
		provide a suitable hibernation roost for bats.	The hole in the ground present at the Site should undergo a Preliminary Roost Assessment (PRA) to inspect the interior of the underground structure to look for PRFs and signs of bats.
Badger *Meles meles*	Four records of badger within 2 km of the Site were identified during the desk study, the closest of which was 620 m south-east of the desk study centroid.	There were no signs of badger identified within the Site during the habitat survey. A mammal path (TN3) was identified during the habitat survey, although it was not clear which species this path was utilised by. The grassland and scrub habitats within the Site provide suitable foraging and commuting habitat for badger, with the scrub and treelines providing suitable habitat for badger sett building.	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 further surveys would be required to characterise the setts on Site and where access is possible, in the wider area.
Hedgehog *Erinaceus europaeus*	The desk study returned two records of hedgehog within 2 km of the desk study centroid, the closest of which was 445 m 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

Ecological consideration	Desk study results summary	Protected species assessment summary	Discussion and recommendations
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
Otter *Lutra lutra*	Four records of otter within 2 km of the desk study centroid were identified during the desk study, the closest of which was 1.3 km south of the 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	A line of trees comprising hazel was present along the eastern boundary of the Site. This provides suitable habitat for feeding dormouse, as well as potential nesting habitat within the bramble. There was some connectivity along hedgerows to the north of the Site,	Presence/absence surveys for dormouse are recommended through the use of nest tubes. Retain and protect hedgerow habitat, where possible. 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.

Ecological consideration	Desk study results summary	Protected species assessment summary	Discussion and recommendations
		although the Site is isolated from areas of habitat of high suitability for dormouse due to the roads and residential areas bordering the Site. Overall, the Site was considered to provide limited suitability for supporting dormice.	
Birds	There were 32 records of birds within 2 km of The Site identified during the desk study. Six species of those returned are 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. 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	There were four records of reptiles returned from the desk study, three of which were of slow worm *Anguis fragilis* and one of which was of grass snake *Natrix helvetica.* The closest record to the desk study	Although the majority of the Site comprised modified grassland which provides suboptimal habitat for supporting reptiles, the areas of scrub and trees present provided optimal habitat for supporting reptiles such as slow worm and common lizard *Zootoca vivipara*.	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.

Ecological consideration	Desk study results summary	Protected species assessment summary	Discussion and recommendations
	centroid was of grass snake, 1.6 km south-east of the centroid.	There were no potential hibernacula for reptiles identified on the Site.	
Amphibians	The desk study returned one record of an amphibian within 2 km of the desk study centroid – a common toad *Bufo bufo* 1.7 km south-east of the desk study centroid. A search for waterbodies within 500 m which may provide breeding habitat was carried out through inspection of OS mapping and aerial imagery. No standing waterbodies were identified, and therefore	Suitable terrestrial habitat for 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.	The waterbodies are not considered to be suitable for great crested newt *Triturus cristatus* (GCN); the waterbodies are located within Zone C of the GCN Habitat Suitability Index (HSI) and are therefore unsuitable for GCN[23]. 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.

[23] 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.

Ecological consideration	Desk study results summary	Protected species assessment summary	Discussion and recommendations
	there are no waterbodies considered suitable for breeding newts.		
Invertebrates	Forty-six records of invertebrates within 2 km of the desk study centroid were identified during the desk study, the closest of which was located 915 m east of the 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	Four species of INNS were returned from the desk study: giant rhubarb *Gunnera tinctoria;* Indian balsam *Impatiens glandulifera*; Japanese knotweed *Fallopia japonica*; and Virginia creeper *Meconopsis cambrica*. The closest of these records to The Site was Japanese knotweed 1.3 km south of the Site.	A cotoneaster species, likely to be wall cotoneaster *Cotoneaster horizontalis sens.str.,* (TN1) was identified during the habitat survey within the Site.	Avoidance of area where INNS are present. If unable to avoid area where INNS present, then INNS should be treated and removed by suitably certified contractors. A management plan should be written and implemented on Site, including biosecurity measures to control the spread of INNS. Specific mitigation measures would require safeguarding by the implementation of an EcMP throughout the Proposed Development.

5.3.14 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 modified grassland fields bordered by wire fences and hedges, with a network of ditches. It also had a built-up area comprising buildings, sealed surfaces and other developed land. The Site contained lines of trees and an area of dense scrub. The Site had areas 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. One further statutory designated site of international importance within 2 km of the Site was also identified: Afonydd Cleddau/ Cleddau Rivers SAC. Due to the designations of these SACs for faunal species present within the watercourse, and the potential of the Proposed Development to impact on watercourses, a Habitats Regulations Assessment, Stage 1: Screening to assess for LSE is recommended. 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.

Further surveys are required to determine the presence/likely absence of bats at the Site, involving 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.

Further surveys are also required to determine the presence/likely absence of hazel dormouse at The Site. Dormouse tubes should be deployed and checked in order to reach a search effort score of at least 20 according to the Dormouse Conservation Handbook.

Avoidance and/or precautionary methods of working to minimise negative impacts has also been recommended for: badger, hedgehog, 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 examines 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 11kV supply crossing the site from North to South, which was installed in Feb 2022. This supply crosses the proposed location of the hospital and would therefore need to be diverted. This supply feeds a new substation as part of the McDonalds and Greggs service area.

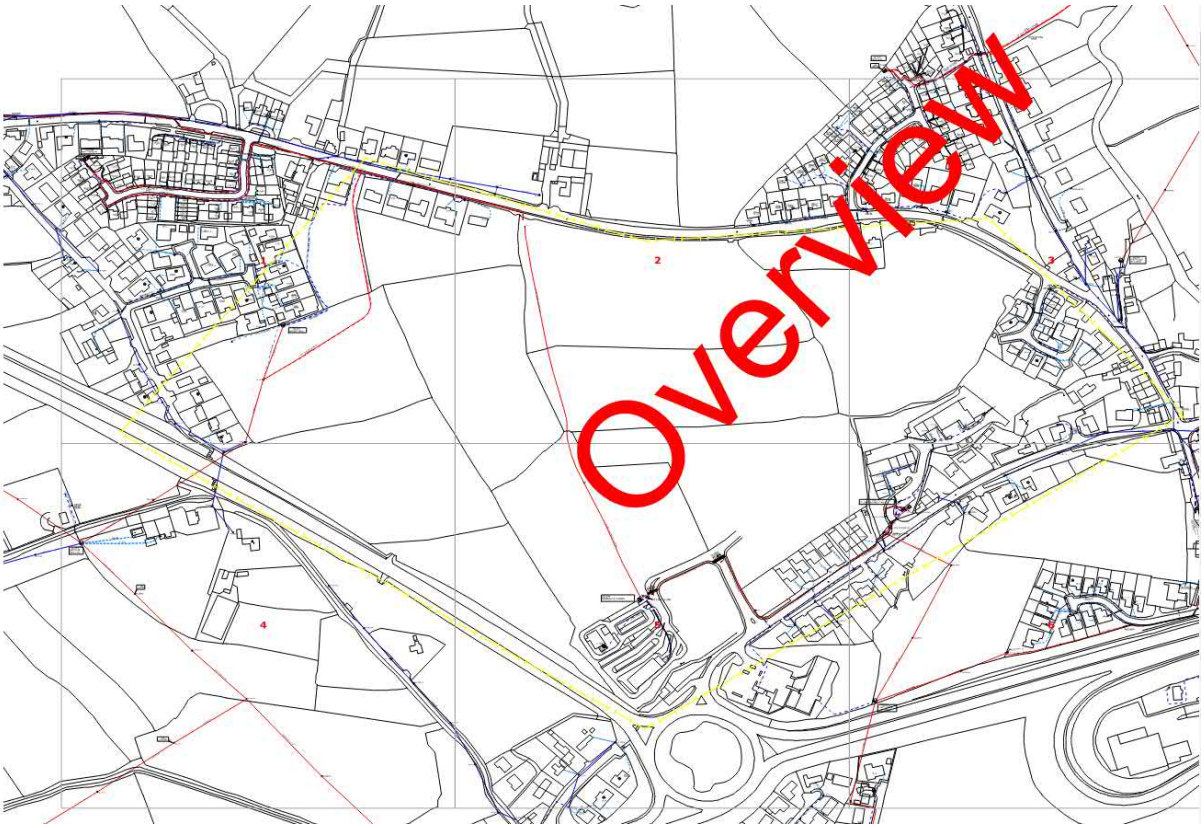
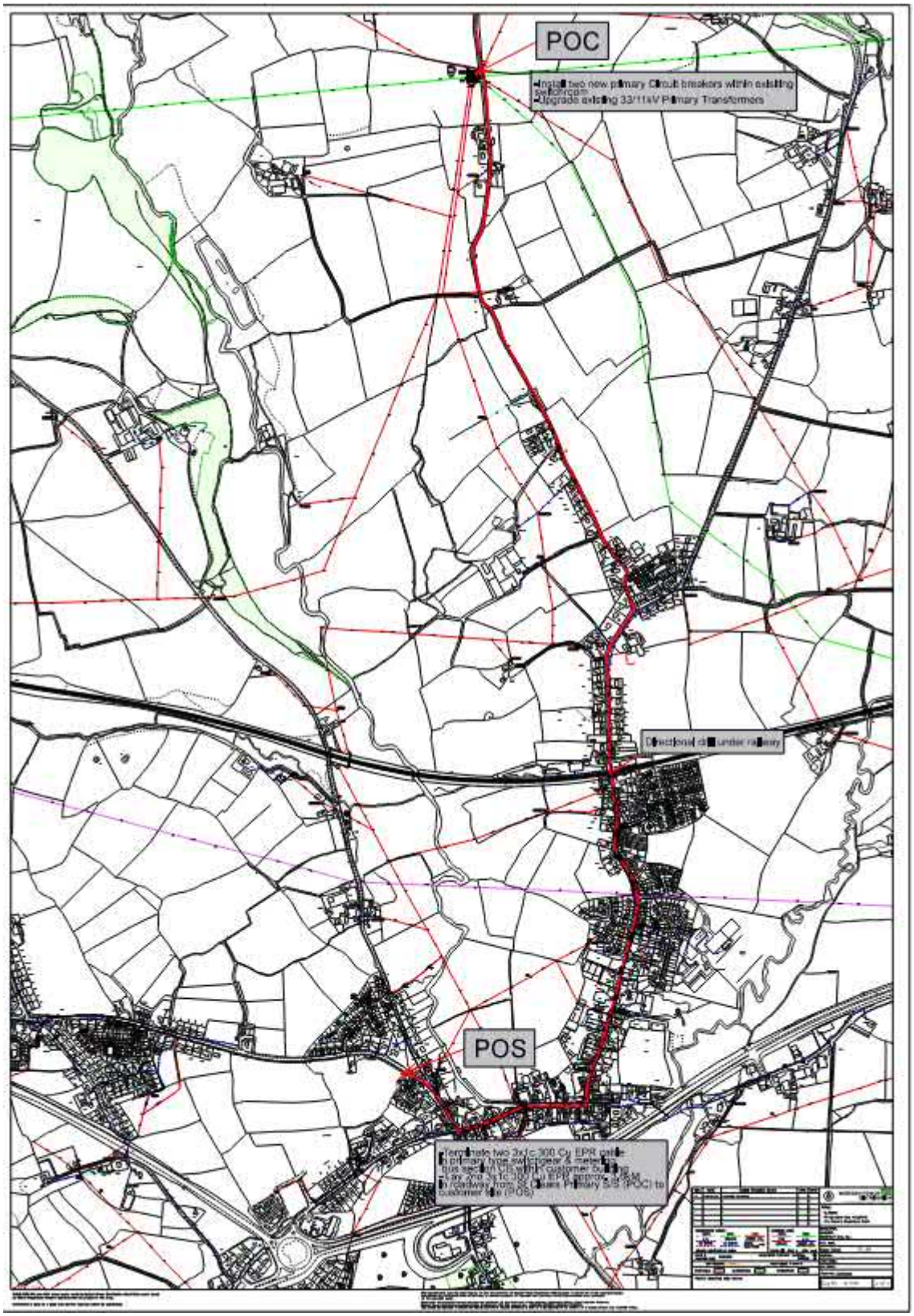


Figure 6-1 - Site Power Overview

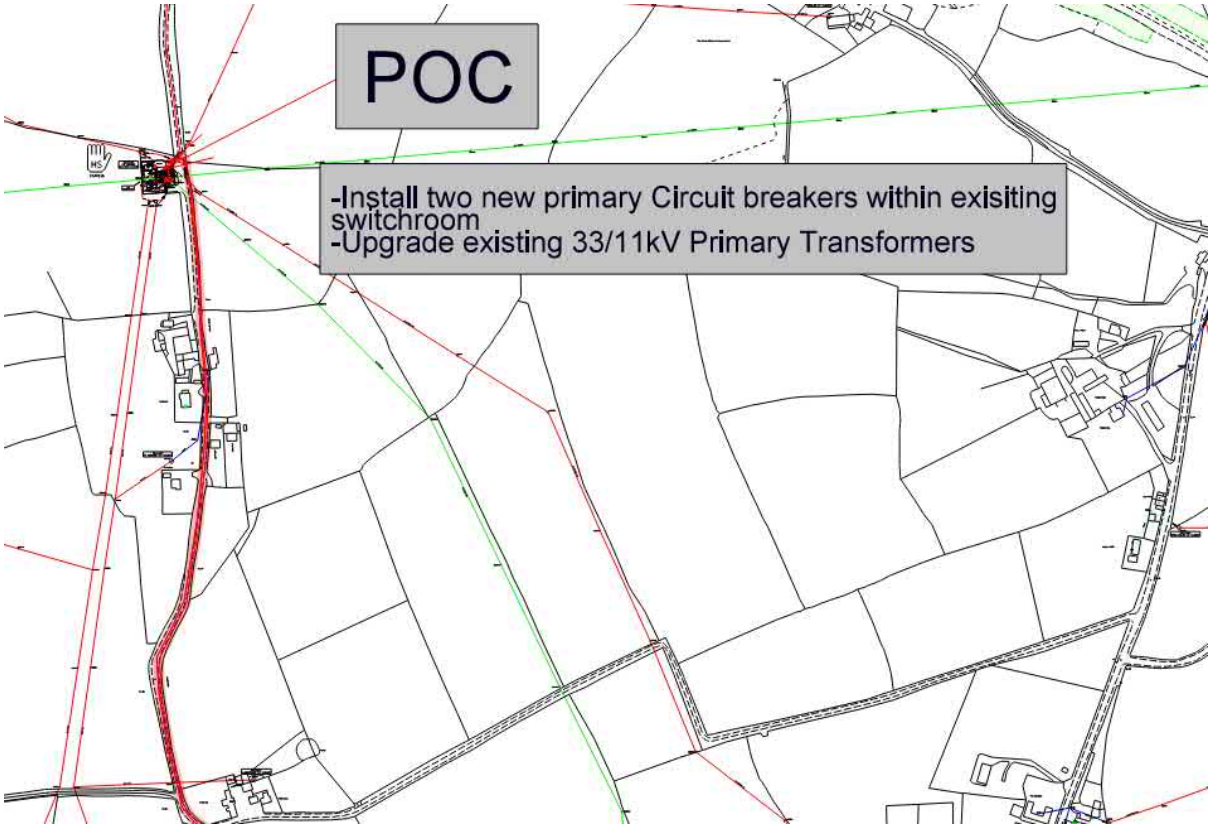
6.2.2 NEW SUPPLY

Based on the requirements of an all electrical site, upgrade works would be required to the primary transformers and circuit breakers at St Clears. New cables will be required from the primary to the

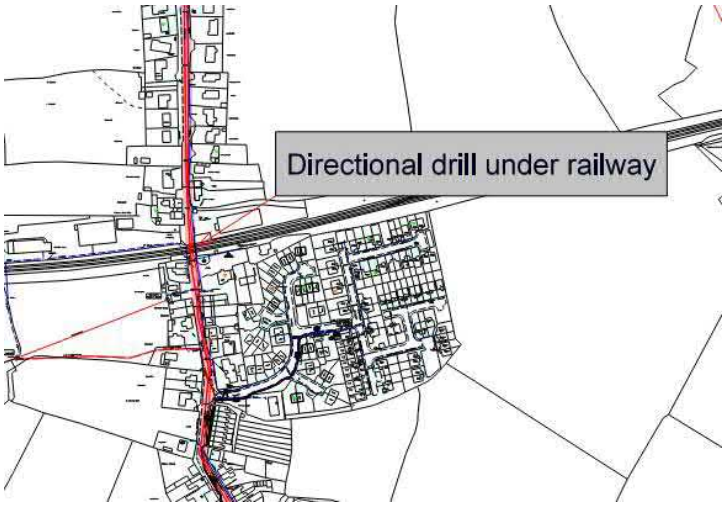
site at a distance of approx 3.6km, including drilling beneath the railway to install ducting. The cost of these works would be in the region of £4-5M. This would provide the site with a 6.5MW supply with a dedicated Substation. This also allows for a diverse route for the cabling to site in accordance with the HTM requirements albeit not from separate substations due to DNO constraints.


POC
Install two new primary Circuit breakers within existing Switchgear
Upgrade existing 33/11kV Primary Transformers
Directional drill under railway
POS

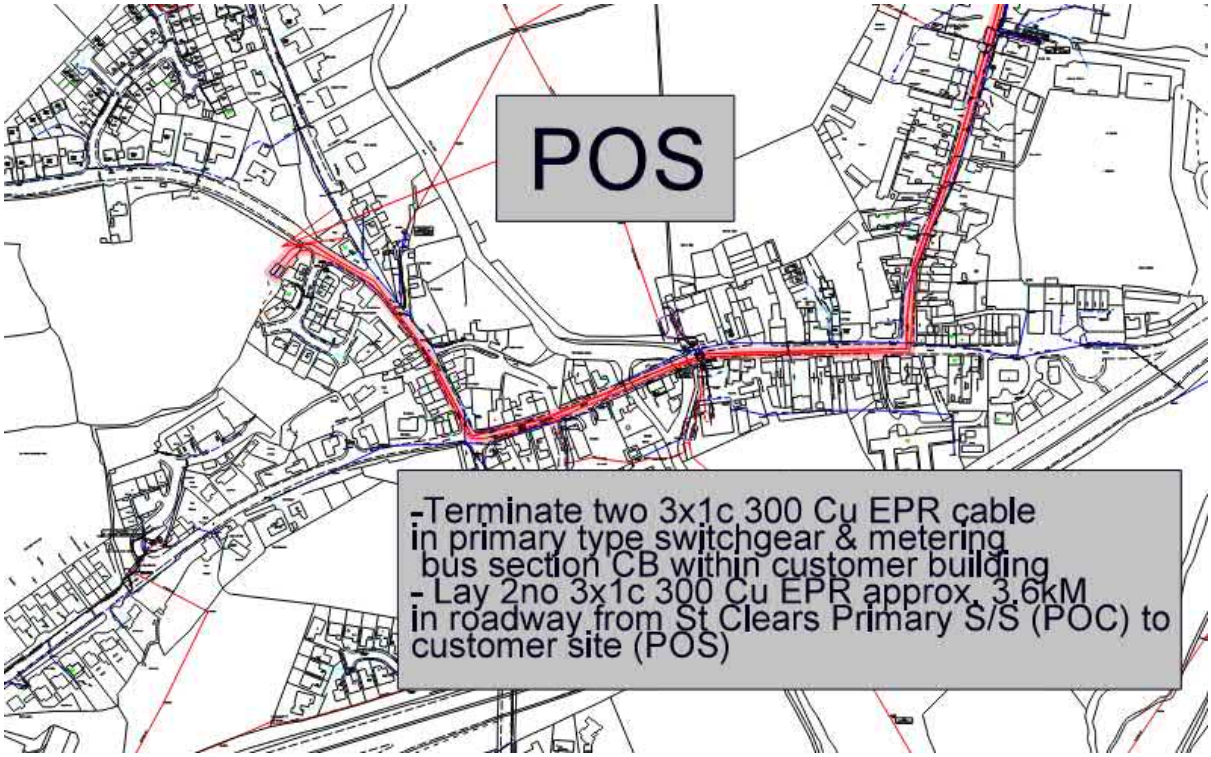
Overview



Primary Works



Mid way



Site 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 road to the north of the site, 150mm supply running to the south east of the site along Tenby Road and 3 inch main running to the south west of the site along the side of the A40. These supply the existing buildings located along the roads. There are no known supplies running across the site which would require diversion.

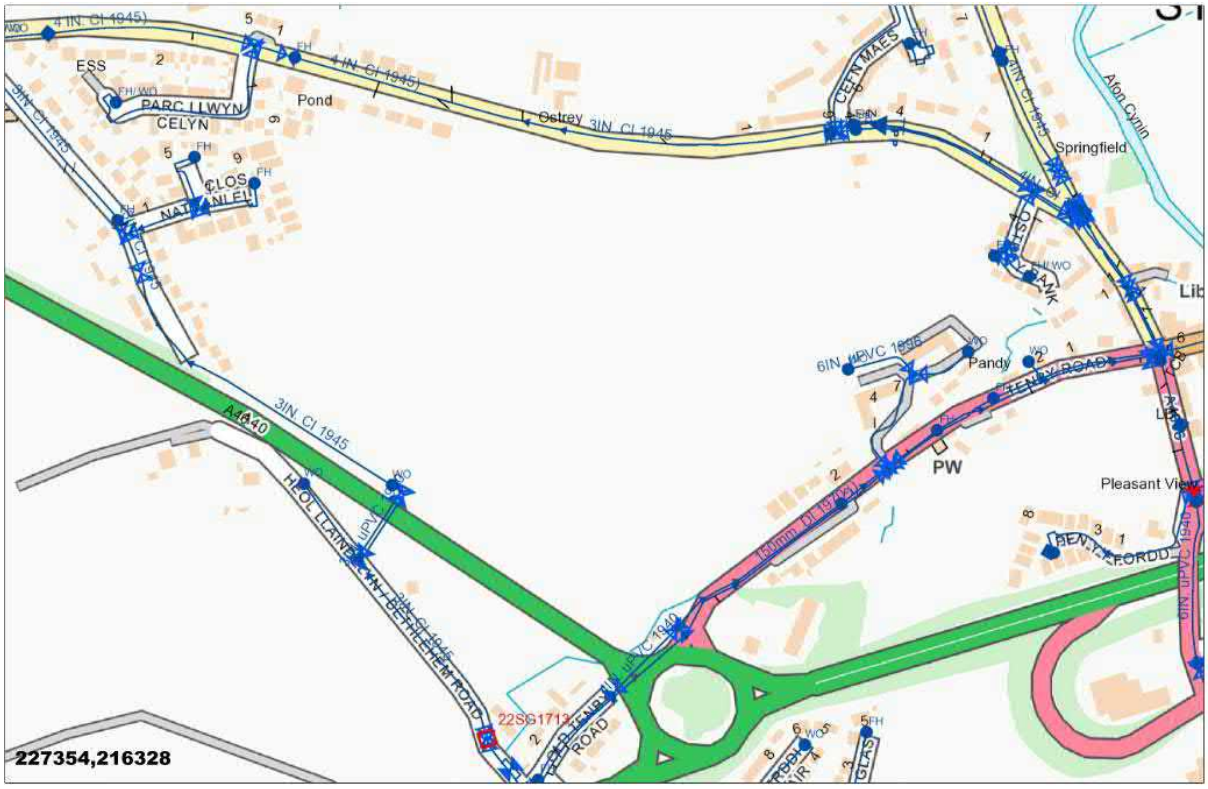


Figure 6-3 - Site Water Overview

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 A4066 Tenby Road, which supply the existing properties.

It is also believed that there are private gas networks supply the domestic properties in Pwll-Trap.

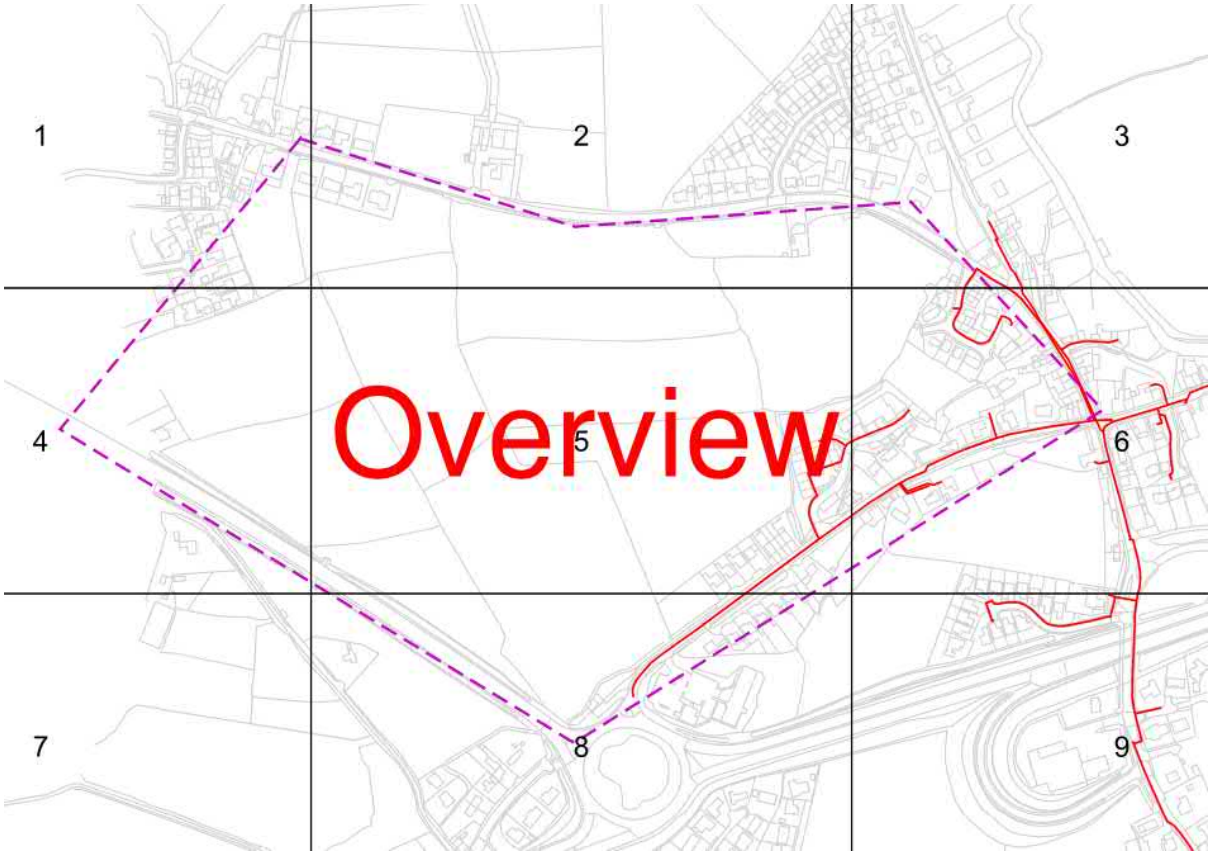


Figure 6-4 - Site Gas Overview

6.4.2 NEW SUPPLY

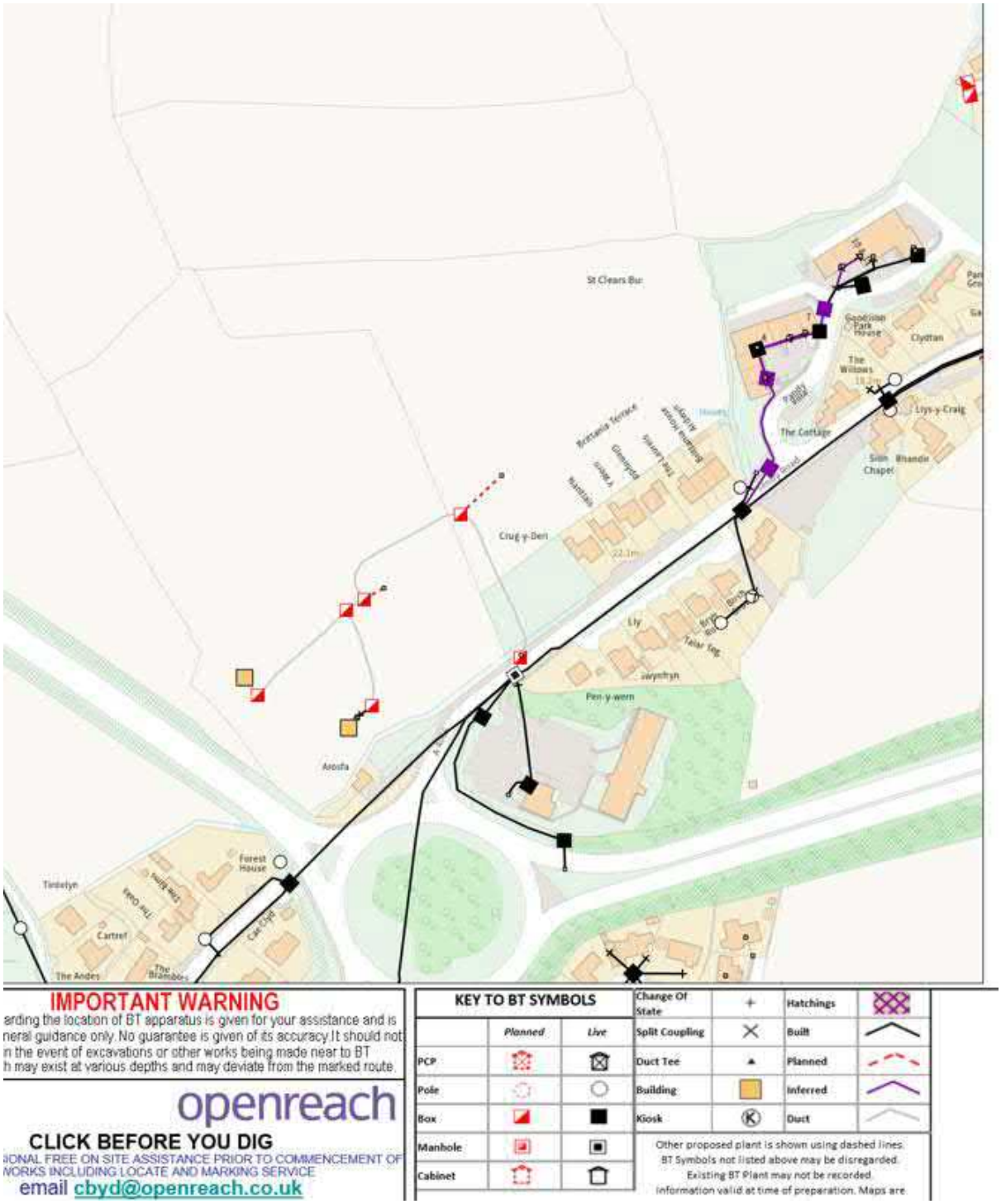
In line with the current decarbonisation aspirations, there is no intention for large scale gas use on site.

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

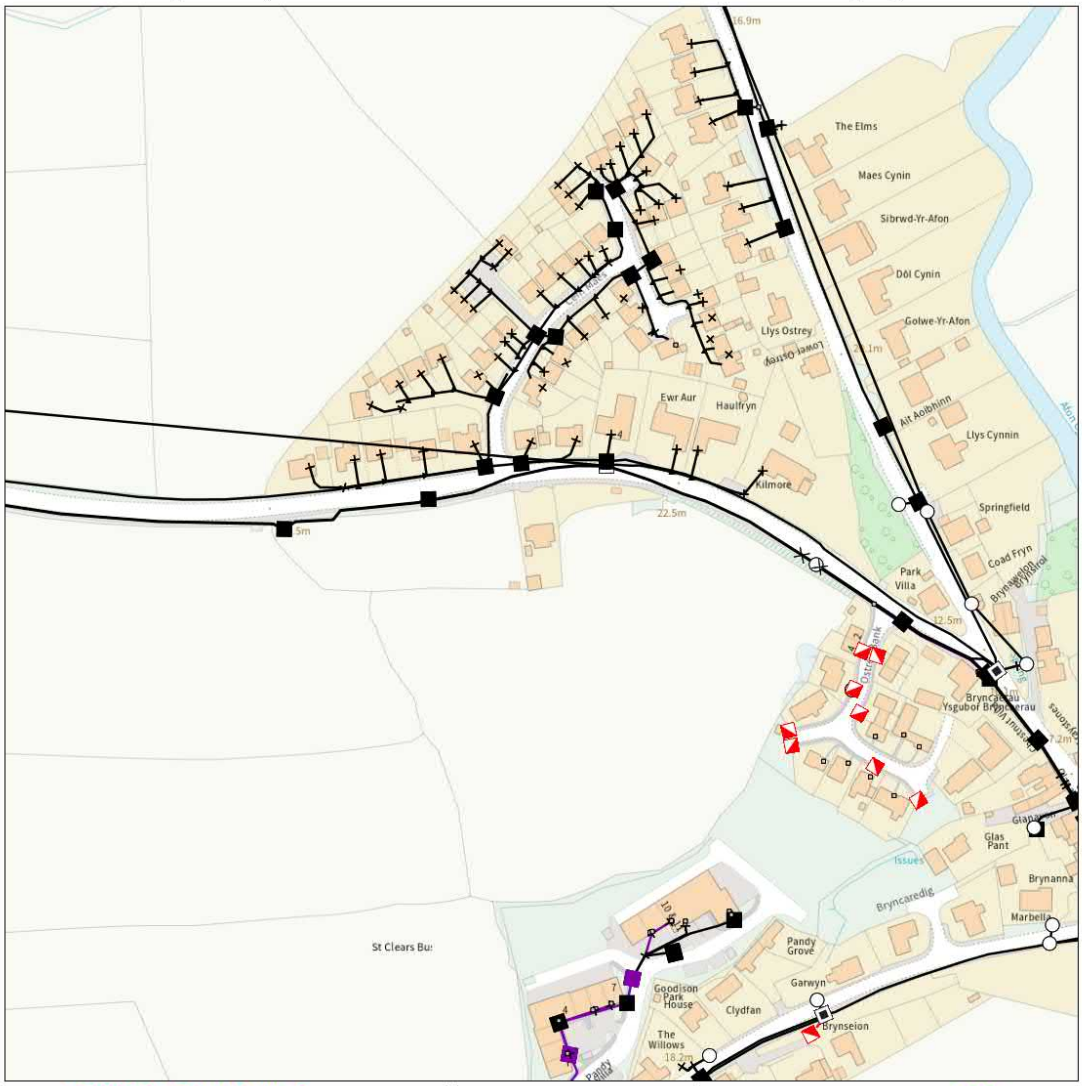
6.5 TELECOMMUNICATIONS

6.5.1 EXISTING INFRASTRUCTURE

There is currently Openreach infrastructure running along the A40, A4066 and into Pwll Trap, serving the properties in the area, but there are no known services crossing the site that will require diversion.


St Clears Bus
Crug-y-Deri
Aroofa
Forest House
Tinbelyn
Cartref
The Andes
The Brambles
Pen-y-wern
Lly
Clydfan
The Willows
Llys-y-Craig
The Cottage
Chapel
IMPORTANT WARNING
ardingthe location of BT apparatus is given for your assistance and is
neral guidance only. No guarantee is given of its accuracy. It should not
n the event of excavations or other works being made near to BT
h may exist at various depths and may deviate from the marked route.
openreach
CLICK BEFORE YOU DIG
IONAL FREE ON SITE ASSISTANCE PRIOR TO COMMENCEMENT OF
VORKS INCLUDING LOCATE AND MARKING SERVICE
email cbyd@openreach.co.uk
KEY TO BT SYMBOLS
Planned
Live
PCP
Pole
Box
Manhole
Cabinet
Change Of State
Split Coupling
Duct Tee
Building
Kiosk
Hatchings
Built
Planned
Inferred
Duct
Other proposed plant is shown using dashed lines.
BT Symbols not listed above may be disregarded.
Existing BT Plant may not be recorded.
Information valid at time of preparation. Maps are

Maps by email Plant Information Reply



IMPORTANT WARNING

Information regarding the location of BT apparatus is given for your assistance and is intended for general guidance only. No guarantee is given of its accuracy. It should not be relied upon in the event of excavations or other works being made near to BT apparatus which may exist at various depths and may deviate from the marked route.

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CLICK BEFORE YOU DIG

FOR PROFESSIONAL FREE ON SITE ASSISTANCE PRIOR TO COMMENCEMENT OF EXCAVATION WORKS INCLUDING LOCATE AND MARKING SERVICE

email cbyd@openreach.co.uk

ADVANCE NOTICE REQUIRED
(Office hours: Monday - Friday 08.00 to 17.00)
www.openreach.co.uk/cbyd

Accidents happen

If you do damage any Openreach equipment please let us know by calling 0800 023 2023 (opt 1 + opt 1) and we can get it fixed ASAP

KEY TO BT SYMBOLS

	Planned	Live
PCP		
Pole		
Box		
Manhole		
Cabinet		

Change Of State	+	Hatchings	
Split Coupling	×	Built	
Duct Tee	▲	Planned	
Building		Inferred	
Kiosk	Ⓚ	Duct	

Other proposed plant is shown using dashed lines.
BT Symbols not listed above may be disregarded.
Existing BT Plant may not be recorded.
Information valid at time of preparation. Maps are only valid for 90 days after the date of publication.

	Pending Add	In Place	Pending Remove	Not In Use
Power Cable				
Power Duct				N/A

BT Ref : VQA03593P
Map Reference : (centre) SN2759516543
Easting/Northing : (centre) 227595,216543
Issued : 09/06/2022 16:00:10

WARNING: IF PLANNED WORKS FALL INSIDE HATCHED AREA IT IS ESSENTIAL BEFORE PROCEEDING THAT YOU CONTACT THE NATIONAL NOTICE HANDLING CENTRE. PLEASE SEND E-MAIL TO: nnhc@openreach.co.uk

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 Urgent & Planned Care Hospital scheme.

6.7 SUMMARY & CONCLUSIONS

The site is feasible for development, however, there are diversions required to the 11kV distribution network on site and upgrades required to the 11 and 33kV 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 Site 7 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 located in Appendix A. These should be viewed alongside the text in this Section:

- Drawing No. 2424-WSP-XX-17-DR-EN-0005-P01_Environmental Constraints Plan
- Drawing No. 2424-WSP-XX-17-DR-EN-0013-P01_Agricultural Land Classification Map
- Drawing No. 2424-WSP-XX-17-DR-EN-0023-P01_Environmental Noise Mapping

The following constraints were searched for as part of the Environmental Constraints Plan (Drawing No. 2424-WSP-XX-17-DR-EN-0005-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 is currently grade 3b (moderate quality) agricultural land primarily used for grazing (see Drawing No. 2424-WSP-XX-17-DR-EN-0013). It comprises fields and field boundaries which consist of hedgerows and semi-mature/ mature trees.

A Preliminary Ground Conditions Assessment (WSP, 2022, 70092424-03) was produced alongside this report in May 2022. The main findings were:

- The Site is considered to be in an area of 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 partially underlain by superficial deposits of Glacial Till (Secondary (Undifferentiated) Aquifer) which are underlain by bedrock of the Lower Llanvirn Didymograptus Bifidus Beds (Mudstone) and the Arenig Tetragraptus Beds (Mudstone), which are classified as Secondary B Aquifers.
- Groundwater vulnerability across the Site is reported to be medium 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.
- The nearest surface water feature to the Site is located approximately 20m to the south-east of the Site which is indicated to flow in an easterly direction on historical mapping and is an unnamed tributary of the Afon Cynin (which is located approximately 110m to the east 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 Site is not at risk of flooding from surface water and small watercourses.
- The Site is located within areas where between 3% and 10% 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 west to 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, depending on the nature of the material used to infill the pond located in the north-eastern corner of the Site the potential exists for very localised contamination. The most noticeable sources of potential off-Site contamination comprise the active filling stations (nearest approximately 140m to the south of the Site) and the two cemeteries / burial grounds identified within the Sites surroundings (50m south-east and 300m north-west).
- 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 20 Listed Buildings and Structures located within the Study Area, the majority of which are located along St Clear’s High Street (the A4066). Listed Buildings and Structures within 2km of the Site are listed in Table 7-1 and shown on Drawing No. 2424-WSP-XX-17-DR-EN-0005_Environmental Constraints Plan.

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

Listed Building/Structure	Grade	Distance & Direction from Site
Island House	II	0.18km east
Capel Bethlehem	II	0.3km west

Water Pump (south of Wesley Villa)	II	0.48km south-east
Gothic Villa	II	0.48km south-east
Capel Mair, including forecourt railings	II	0.54km south-east
Newton Villa	II	0.62km south-east
Kieffe House	II	0.65km south-east
Water Pump (south of entrance to the Kieffe)	II	0.65km south-east
The Butcher's Arms Inn	II	0.65km south-east
Cross House	II	0.7km south-east
Cross House Stores	II	0.7km south-east
The Town Hall	II	0.7km south-east
Lychgate to the Parish Church, including wall to N	II	0.7km south-east
Parish Church of St Mary Magdalene	II*	0.75km south-east
Telephone Call-box	II	0.78km south-east
Green Park House, with wall and railings	II	0.78km south-east
Water Pump (north of Maengwyn)	II	0.88km south-east
Pont Newydd (St Clears parish)	II	0.88km south-west
Pont Newydd (Llanddowror parish)	II	0.88km south-west
Saint Clears Bridge/ Pont Sancler (partly in Llanddowror community	II	1km south

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

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

Scheduled Monument	Distance & Direction from Site
Eithin Bach round barrow	0.25km south
Claustral Buildings, St Clears Priory	0.78km south-east
St Clears Mound and Bailey Castle	0.94km south-east
Dolgarn Moated Site	0.97km south-west

St Clears Conservation Area is located 0.4km south-east of the Site.

The Historic Landscape, Taf and Tywi Estuary, is located 0.4km south-east of the Site.

The former St Clears Castle located 0.94km south-east of the Site is the location of three Battlefields: St Clears Castle (1195), St Clears Castle (1189) and St Clears (1403).

There are no Historic Park and Gardens or World Heritage Sites located within the Study Area.

7.2.4 ECOLOGY AND NATURE CONSERVATION

A Preliminary Ecological Appraisal (PEA) 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:

- There are ten areas of ancient woodland sites – a mixture of semi-natural and restored – within 2km of the Site;
- 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 35km south-west and Pembrokeshire Bat Sites and Bosherston Lakes/Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherston SAC located 22km south-west of the Site;
- A statutory nature conservation site of international importance for which bats were not a qualifying feature within 2km of the Site: Carmarthen Bay and Estuaries/Bae Caerfyrddin ac Aberoedd SAC located 1.3km south. This SAC was designated due to estuarine fauna;
- A statutory nature conservation site of national importance within 2km of the Site: Aber Taf/Taf Estuary SSSI located 1.3km south;
- 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;
- Protected and/or notable species within 2km of the site were previously recorded: brown long-eared bat Plecotus auritus, badger Meles meles, otter Lutra lutra, slow worm Anguis fragilis, 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 (46 records) and invasive non-native species (INNS) (four species: giant rhubarb Gunnera tinctoria, Indian balsam Impatiens glandulifera, Japanese knotweed Fallopia japonica, Virginia creeper Meconopsis cambrica);
- The habitat survey identified a cotoneaster species, likely to be wall cotoneaster Cotoneaster horizontalis sens.str. (TN1) at the Site; and
- 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 set within a predominantly rural landscape. This rural landscape is interrupted by clusters of residential properties, community assets and private businesses which are situated within the town of St Clears.

The Site is located within the Taf and Claeddau Vales National Landscape Character Area. Natural Resources Wales[24] 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 2-3 in Section 2.7 summarises sensitive human / visual receptors (e.g. residential properties, hotels etc), commercial facilities, and industrial facilities located within the Study Area. Table 2-4 in Section 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-0005_Environmental Constraints Plan.

7.2.6 TRAFFIC AND TRANSPORT

A full Transport Assessment will need to be carried out for the 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:

- The nearest train station is Whitland Train Station which is located approximately 6.8km west of the Site;
- There are several bus services going to and from St Clears including bus services which run between Carmarthen and Login, Carmarthen and Pendine, Carmarthen and Haverfordwest stopping at Whitland, Narbeth and St Clears, and Carmarthen and Glandwr. The closest bus stops to the Site are a bus stop located on Tenby Road, south of the Site, two on Pentre Road 0.3km south-east of the Site and several bus stops on the High Street with the closest located 0.4km to the south-east;
- There is a footpath running alongside the road between St Clears and Pwll Trap to the north of the Site and another footpath situated along Tenby Road to the south-east of the Site. There are no footpaths running alongside the A40;
- There are no nearby cycle paths nor cycles lanes on any of the nearby roads, however cyclists could use these roads;

[24] 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 to the south of the Site, Tenby Road is to the south-east and east of the Site, and to the north lies the unnamed road between St Clears and Pwll Trap, all 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), 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 dwellings on Tenby Road	Adjacent east
Residential dwellings on Bethlehem Road	Adjacent west
Residential dwellings in Pwll Trap (road north of site)	Adjacent north
Residential dwellings on Ostrey Bank	Adjacent north-east
St Clears Business Park (off Tenby Road)	Adjacent east
McDonald's St Clears	Adjacent South
Residential dwellings on Cefn Maes	0.02km north
Residential dwellings on Parc Llwyn Celyn	0.05km west
Residential dwellings on Clos Nathaniel	0.06km west
Residential properties on Llangynin Road	0.08km east
Businesses on Tenby Road	Closest business: 0.12km south
Residential dwellings on Pen Y Ffordd	0.18km south-east
Businesses on A477	0.2km south-east
Businesses on the High Street (A4066)	0.24km south-east
Residential dwellings on the High Street (A4066)	0.24km south-east
Parcglas Pods on Heol Llaindelyn	0.25km west
Residential dwellings on Pentre Road (B4299)	0.27km east
Businesses on Pentre Road (B4299)	0.27km east
Bethlehem Cemetery	0.3km west
Businesses in Pwll Tap	Closest business: 0.42km west
Residential dwellings on Station Road	0.5km east

Businesses on Station Road	0.62km east
Businesses on the A40	0.95km east

Table 7-4 summarises Public Rights of Way (PRoWs) including footpaths and bridleways within 2km of the Site[25] and are illustrated on Drawing No. 2424-WSP-XX-17-DR-EN-0005.

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

PRoW	Distance & Direction from Site
Footpath 63/30	0.05km south
Footpath 63/7	0.22km south
Footpath 63/19	0.2km north-west
Footpath 63/31 (N) & (S)	0.2km south
Footpath 63/8	0.28km south
Footpath 63/6	0.3km west
Footpath 63/9	0.34km south
Footpath 63/5	0.5km west
Footpath 63/10	0.63km south-east
Footpath 63/11	0.72km south
Byway 63/12A	0.76km south-east
Footpath 63/21	0.9km north
Footpath 21/6	1km south-west
Footpath 63/12	1km south-east
Footpath 63/26	1km north-east
Byway 63/M13	1.1km south-east
Footpath 63/01	1.2km south-east
Footpath 63/16	1.2km south-east

[25] Carmarthenshire County Council. PRoW Map (not definitive). Available online at: My nearest - Public rights of way (gov.wales) [Accessed: 28 April 2022]

Footpath 21/44	1.2km south
Footpath 63/20	1.2km north-west
Footpath 63/22	1.3km north-east
Footpath 63/3	1.4km south-west
Footpath 21/9	1.5km south
Footpath 21/8	1.7km south
Bridleway 63/4	1.7km south-west
Footpath 21/7	1.8km 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

This sub-section should be read in conjunction with Sections 2 and 3 of this report, which cover Drainage and Flood Risk. The main findings of the Drainage and Flood Risk Appraisal were:

- 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 watercourse 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 - Watercourses and waterbodies within 2km of the Site

Watercourse / Waterbody	Distance & Direction from Site
Main Rivers	
River Cynin	0.15km east
River Dewi Fawr	0.75km east
River Taf	0.8km south
Ordinary Watercourse/ Waterbody	
Small unnamed watercourse (field drain)	Adjacent south
River Taf tributaries	0.4km south-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 two Noise Action Planning Priority Areas (NAPPAs) within 2km of the Site:

- NAPPA 376 located on the A40(T); 0.5km east
- NAPPA 380 located on the A40(T); 1.6km north-east

Please also refer to Drawing No. 2424-WSP-XX-17-DR-EN-0023-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. Similar to the LAeq,8h indicator used in TAN11 assessments, but here 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 southwestern boundary to 55 to 59.9 dB halfway through the Site.

7.2.11 MATERIAL ASSETS AND WASTE

As outlined in 7.2.2, the Site comprises predominantly agricultural land bordered by semi-mature / mature trees and hedgerows.

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 Section7.2.9, 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 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 2017 EIA Regulations

Column 1 Description of Development	Column 2 Applicable thresholds 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 17ha, or 42 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 Ground Conditions 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 (Grade 3b) 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 Ground Conditions 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. 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 Listed Building is 0.18km east and one Schedule Monument is 0.25km south), 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, scheduled monument and St Clears Conservation Area). The design of the Proposed Development will need to be considerate to the setting of the above ground built heritage in the area. Summary 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	Construction Baseline findings identified several key constraints, including; the presence of Priority Habitats on site, the suitability of the Site to support protected species and a B-Line. 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 Section 4.3, any potential direct and indirect impacts would be reduced. Operation 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 mitigation including avoidance and enhancement measures. This would need to be outlined in further surveys, including a Biodiversity Net Gain (BNG) assessment. Summary 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 Section 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	Construction Construction activities, comprising site construction works, regular large deliveries of materials and equipment and construction workers travelling 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. Operation 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. Summary 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	Construction 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 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. Operation It is considered likely that there would be an increase in traffic to the area during the operational phase on the A40 and on local roads such as Tenby Road and the road between St Clears and Pwll Trap. 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. Summary 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	Construction It is anticipated that the local population, in particular the residents situated adjacent to the Site, adjacent and nearby local businesses and nearby footpaths, 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. Operation 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. Summary 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	Construction 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. Operation 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. Summary In the absence of a detailed design, air quality emissions and climate data, it is considered likely that there could be significant effects on air quality and Climate. Air quality surveys would be required to determine the impacts of the construction and operational phase.
Water Resources	Construction 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. Operation Although the Proposed Development does not currently have a detailed design plan, the early scheme description outlined in Section 1 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. Summary It is considered unlikely that there would be significant environmental effects on water resources.
Noise	Construction 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. Operation 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. Summary 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	Construction 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) 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. Operation 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. Summary There is the potential for significant environmental effects caused by unsafe waste disposal during the operation phase.
Major Accidents and Disasters	Construction 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 2 of this report and the summary of potential significant effects in table 3-2, the main constraints:

- 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, residential properties which are situated adjacent north, east, south and west;
- Businesses and community assets in the Study Area, particularly the McDonald's restaurant and the Greggs food outlet located immediately south of the Site.
- Air quality emissions and noise from the A40 which forms the southwestern 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 to 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 it is likely that there will 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 to inform the design of the Proposed Development have been identified:

General Environmental

In addition to the conclusions of the other reports referenced above, this report 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 appraisal 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 assessments 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 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; 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 area of the infilled pond formerly located in the north-eastern area of the Site; 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 this report 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; and
- SuDS Approving Body (SAB) consent will need to be secured

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 18 hectares which is located off Tenby Road and the A40, St Clears, Carmarthenshire. The Site is occupied by agricultural land (grassed fields) and the surrounding area is in use for residential, commercial and agricultural purposes.

8.2.2 SITE HISTORY

The Site has remained in use as agricultural land and has not undergone any historical development. A number of developments have been constructed in close proximity to the Site including the A40 and associated road-side trades/service stations.

8.2.3 GEOLOGY, HYDROGEOLOGY AND HYDROLOGY

The Site is reported to be partially underlain by superficial deposits of Glacial Till (Secondary (Undifferentiated) Aquifer) which is underlain by bedrock deposits of the Lower Llanvirn Didymograptus Bifidus Beds (Mudstone) and the Arenig Tetragraptus Beds (Mudstone), which are classified as Secondary B Aquifers.

Localised Made Ground may be present within the vicinity of a potentially infilled pond that was formerly located in the north-eastern area of the Site

Groundwater vulnerability across the Site is reported to be medium and local small-scale domestic abstraction has been noted to have historically occurred within the local area.

No surface water features are present on Site and the nearest is located approximately 20m to the south-east of the Site which is indicated to flow in an easterly direction on historical mapping and is an unnamed tributary of the Afon Cynin (which is located approximately 110m to the east of the Site).

8.2.4 RADON

The Site is located within areas where between 3% and 10% of the properties would be estimated to exceed the Radon Action Level. As such, basic radon protection measures are likely to 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 considered to be in an area of low environmental sensitivity.

The Site is reported to be partially underlain by superficial deposits of Glacial Till (Secondary (Undifferentiated) Aquifer) which are underlain by bedrock of the Lower Llanvirn Didymograptus Bifidus Beds (Mudstone) and the Arenig Tetragraptus Beds (Mudstone), which are classified as Secondary B Aquifers.

Groundwater vulnerability across the Site is reported to be medium 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.

The nearest surface water feature to the Site is located approximately 20m to the south-east of the Site which is indicated to flow in an easterly direction on historical mapping and is an unnamed tributary of the Afon Cynin (which is located approximately 110m to the east 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 Site is not at risk of flooding from surface water and small watercourses.

The Site is located within areas where between 3% and 10% 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 west to 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, depending on the nature of the material used to infill the pond located in the north-eastern corner of the Site the potential exists for very localised contamination. The most noticeable sources of potential off-Site contamination comprise the active filling stations (nearest approximately 140mto the south of the Site) and the two cemeteries/burial grounds identified within the Sites surroundings (50m south-east and 300m north-west).

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.

8.3 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 area of the infilled pond formerly located in the north-eastern area of the Site; 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"*…"*Development 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)[26] 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, St. Clears is shown on the Policies map. A central portion of the Site is located in residential allocation T2/5/h4 'Adjacent to Brittania Terrace' allocated under policy H1 'Housing Allocations' (see Figure 9-1). A small area of the south west of the Site is located within an area of sand and gravel which is safeguarded under policy MPP3 'Mineral Safeguarding'. Policy MPP3 states that *"Planning permission will not be granted for development proposals where they would permanently sterilise resources of aggregates and coal identified within the mineral safeguarding areas (areas of search) identified on the proposals map unless:*

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

a) *The applicant can demonstrate that the extraction of the mineral is impracticable, uneconomic or environmentally unacceptable (including compromising amenity and social considerations); or*

b) *The mineral resource has already been extracted; or*

c) *The mineral can be extracted satisfactorily prior to the development taking place; or*

d) *The development is of a temporary nature and can be completed and the site restored within the timescale that the mineral is likely to be needed; or,*

e) *The nature and location of the development would have no significant impact on the potential working of the resource."*

The remainder of the Site is located outside the development limits for St. Clears 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;*
- *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."*

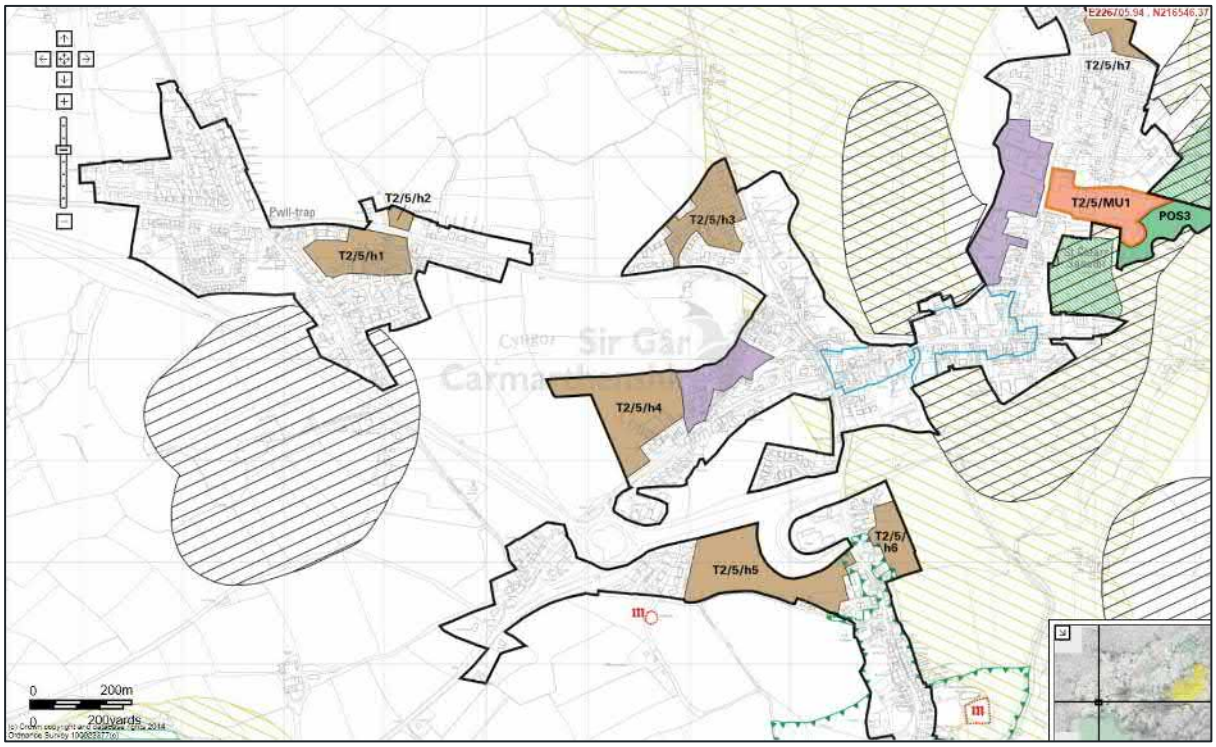


Figure 9-1 - LDP - Extract of Policies map showing housing allocation T2/5/h4

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"

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

Settlement: **St. Clears (incl. Pwll Trap)**	Hierarchy: **Service Centre**	Settlement Ref: **T2/5**
Description: Town located on sustainable transport corridor between Pembrokeshire and Carmarthenshire. St. Clears performs an important role in service terms across a wider hinterland. It is recognised as a key settlement within the WSP, fulfilling a local service centre, employment and tourism role.		
Role: Employment provision; Strategically Located on Strategic highway network with accessibility benefits; Residential provision; Town centre and local retail service offer - defined as a Town Centres (Service Centres); Community service provision.	**Considerations:** Localised Flooding; European and / or International sites; Built Conservation and Heritage.	
Levels of Growth: Residential – 279 dwellings Employment Allocation – 1.92 hectares	**Related Settlements:** **SC11:** Meidrim, **Llanddowror and Llangynin**	
Settlement: **Whitland**	Hierarchy: **Service Centre**	Settlement Ref: **T2/6**

Figure 9-2 - LDP Appendix 1 Role and function of settlements – St. Clears

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 T2/5/E1 'Land adjacent Station Yard', T2/5/E2 'Land adjacent A40' and T2/5/MU1 'Old Butter Factory' are located in St. Clears and allocated for Use classes B1 and B8 across 1.92ha 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."

279 houses are allocated in St. Clears across 8 sites under allocation reference T2/5 St. Clears.

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 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, St. Clears is shown on the Policies map (see Figure 9-3). There are very minor changes to the Development Limits in the vicinity of the Site compared to the LDP. Details of sand and gravel deposits are not shown on the Deposit Plan Policies map.

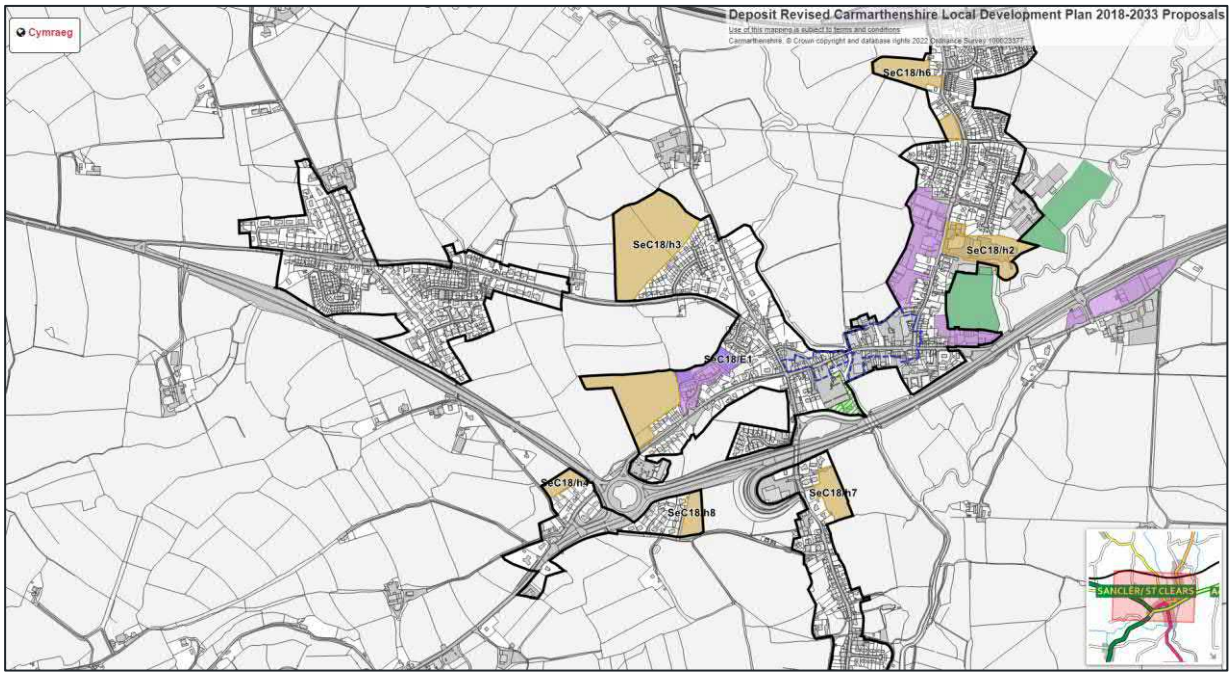


Figure 9-3 - Revised LDP Deposit Plan (2020) - Extract of Policies map

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 within St. Clears. It is important to assess whether reasonably foreseeable development in the vicinity could affect its delivery. CCC's Map of planning applications[27] 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 Developments

PLANNING REFERENCE	DESCRIPTION	LOCATION	STATUS
PL/00978	An application for full planning permission for the provision of a new access road from Tenby Road; erection of a new petrol filling station with sales building; forecourt including fuelling provision for domestic and HGVs and underground fuel tanks; three jet washes and car care facilities; electric vehicle charging hub and supporting infrastructure; car parking and cycle parking; landscaping including small outside seating area and other associated works	Land at St Clears Roundabout, St Clears, Carmarthen, SA33 4JW	Full Planning Permission granted on 14th October 2021
W/37120	Development Of Site With The Erection Of Both A Freestanding Restaurant And A Freestanding Coffee Shop, Both With Associated Drive Through Facility. Installation Of Access Road, Associated Car Park, Patio Areas, Extraction Equipment And Wider Associated Works To The Site	Land At St Clears Roundabout, Old Tenby Road, St Clears, Carmarthen, SA33 4JW	Planning Permission refused on 27th September 2019 and granted on Appeal on 18th February 2020 (Appeal Ref: APP/M6825/A/19/3240281)
W/31167	Variation Of Condition 3 On W/21675 (To Extend The Outline Planning Permission For A Further 9 Months)	Land Rear Of Brittania Terrace, Tenby Road, St Clears, Carmarthen, Carms, SA33 4JW	Removal / Variation of Condition granted 18th December 2014
W/28769	Variation Of Condition No 3 Of Planning Permission W/21675 - (Extension Of Time Period)	Land Rear Of Brittania Terrace, Tenby Road, St Clears, Carmarthen, Carms, SA33 4JW	Removal / Variation of Condition granted 9th October 2013

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

W/21675	Residential Development Including Affordable Units	Land Rear Of Brittania Terrace, Tenby Road, St Clears, Carmarthen, Carms, SA33 4JW	Outline Planning Permission granted 15th November 2010

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.

- 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.

- A central portion of the Site is allocated for residential development under the Carmarthenshire LDP. Planning permission has been granted for residential development the site (Adjacent to Brittania Terrace). There is evidence that the south of the Site is under construction for roadside fast food outlets and associated parking likely under planning permissions APP/M6825/A/19/3240281 and/or PL/00978.

- The majority of the Site is located on unallocated land outside the Development Limits for St. Clears. 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.

- St. Clears is identified as a Service Centre in the LDP Settlement framework with a role for Employment provision, Strategically located on Strategic highway network with accessibility benefits, residential provision, town centre and local retail service offer and community service provision.

- 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 St. Clears.

Appendix A

LAND PLANS

Public

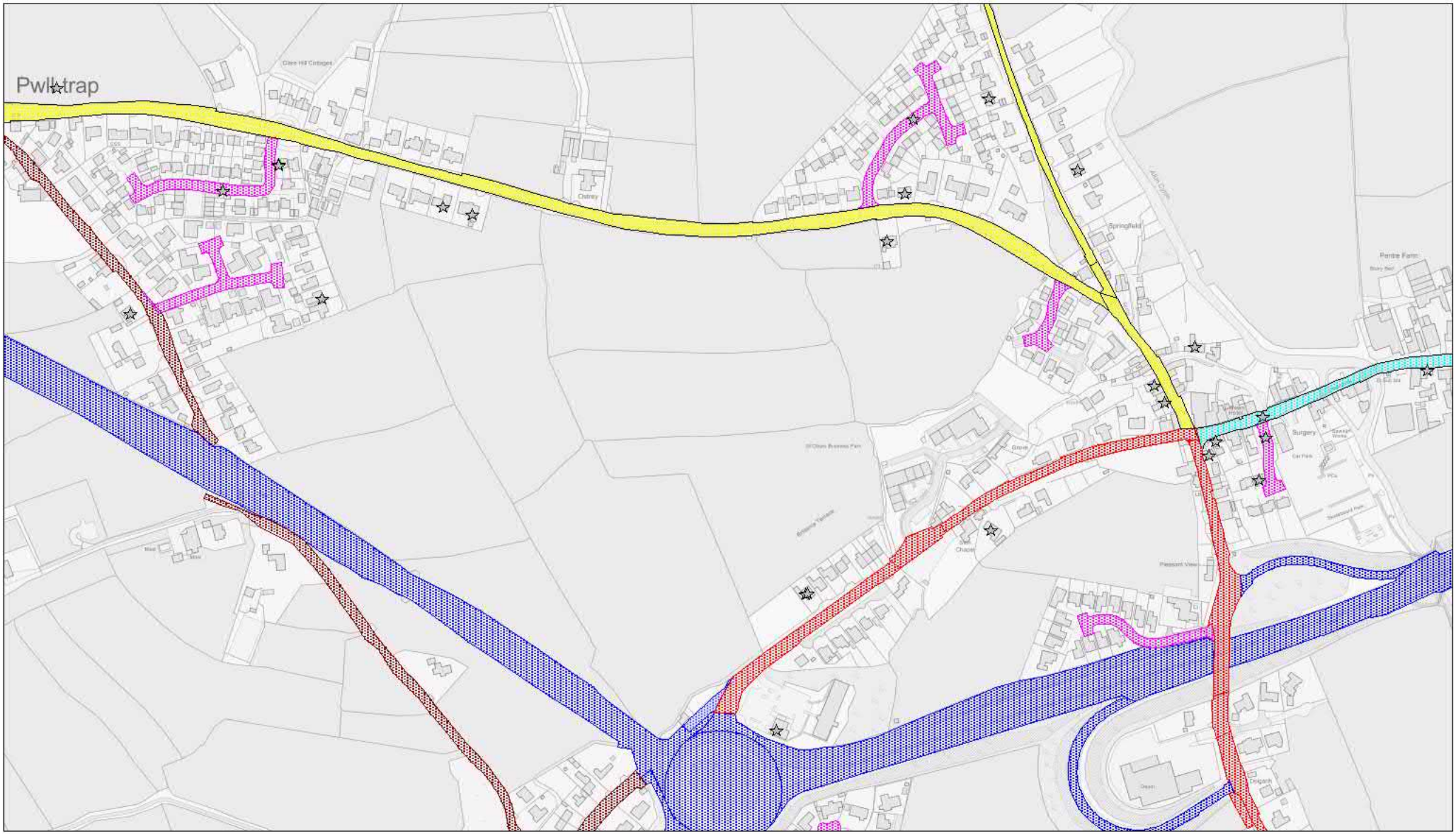
Highway Search - P041948/P11/22/May18/T&E/JKD

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

Plan 2 - Public Highways at St.Clears - Plan sent with search reply

This plan shows the approximate widths of public highways

Scale 1:5000



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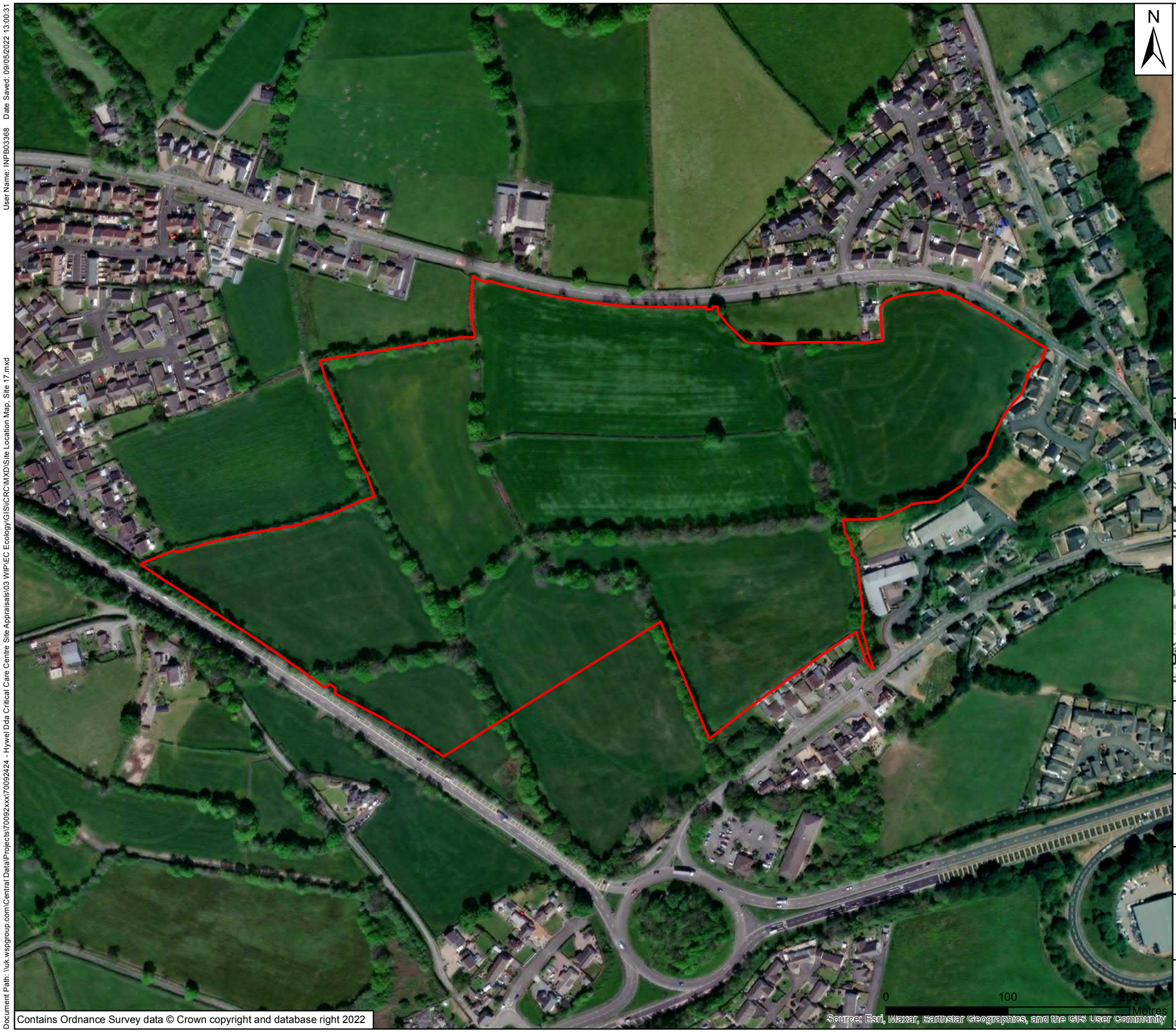


Key

Red Line Boundary

wsp

Client:

Hywel Dda University Health Board

Project:

Site 17 - Technical Due Dilligence Appraisal

Title

Site 17
Site Location Plan

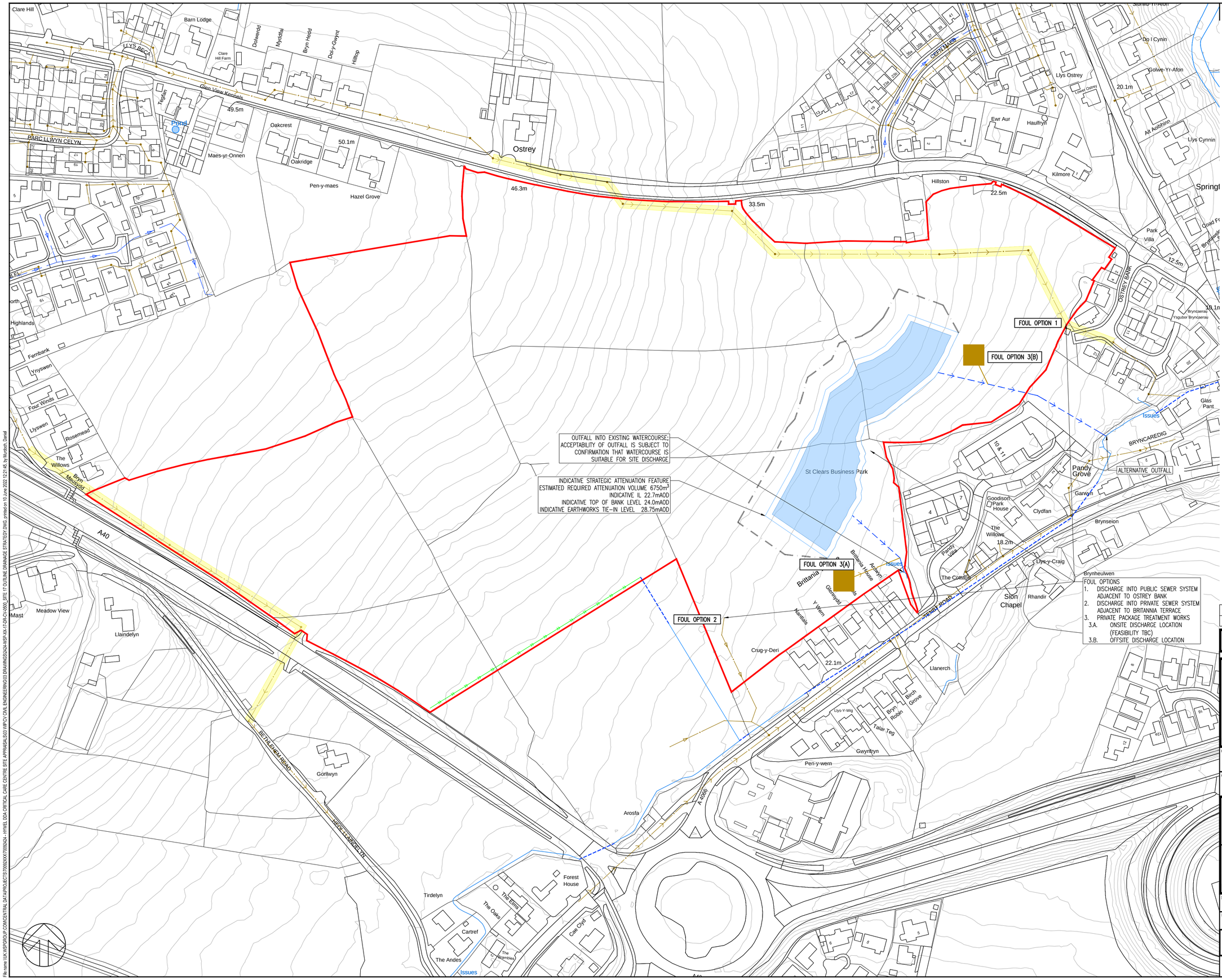
Date:	09/05/2022			Scale:	3,000 @ A3
Drawn:	PB	Checked	CLH	Approved	WB

Drawing No: 2424-WSP-XX-17-DR-EN-0026-P01_ Site Location

Appendix B

DRAINAGE

Public



REV	DATE	BY	DESCRIPTION	CHK	APP
P00.3	09/05/2022	DJM	FIRST ISSUE	xxx	xxx

DRAWING STATUS:
S0 - WORK IN PROGRESS

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CLIENT:
HYWEL DDA UNIVERSITY HEALTH BOARD

ARCHITECT:
BDP

SITE/PROJECT:
HYWEL DDA CRITICAL CARE CENTRE SITE APPRAISAL

TITLE:
SITE 17
INDICATIVE DRAINAGE STRATEGY

SCALE @ A1:	CHECKED:		APPROVED:
1:1250	ARW		ARW
PROJECT NO: 70092424	DESIGNED: DJM	DRAWN: DJM	DATE: June 22

DRAWING No: 2424-WSP-XX-17-DR-CV-0500
REV: P01

File name \\UK.WSPGROUP.COM\CENTRAL DATA\PROJECTS\70092XXX\70092424 - HYWEL DDA CRITICAL CARE CENTRE SITE APPRAISAL\03 WIP\CV CIVIL ENGINEERING\03 DRAWINGS\2424-WSP-XX-17-DR-CV-0500_SITE 17 OUTLINE DRAINAGE STRATEGY.DWG, printed on 10 June 2022 12:21:45, by Murdoch, Daniel

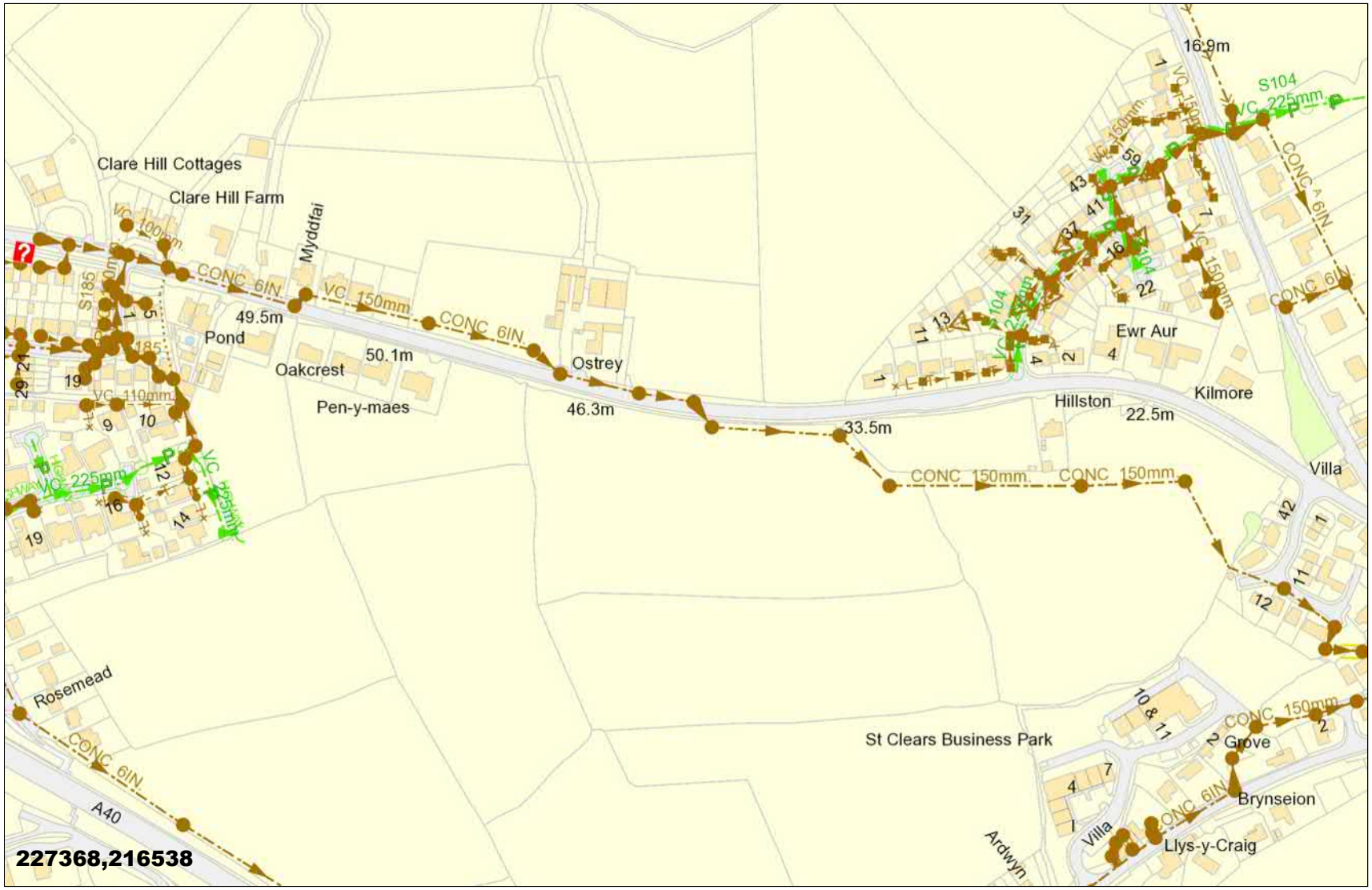
Dŵr Cymru
Welsh Water

Site 17 North

06/06/2022

N
W E
S

Scale: 1: 3750



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

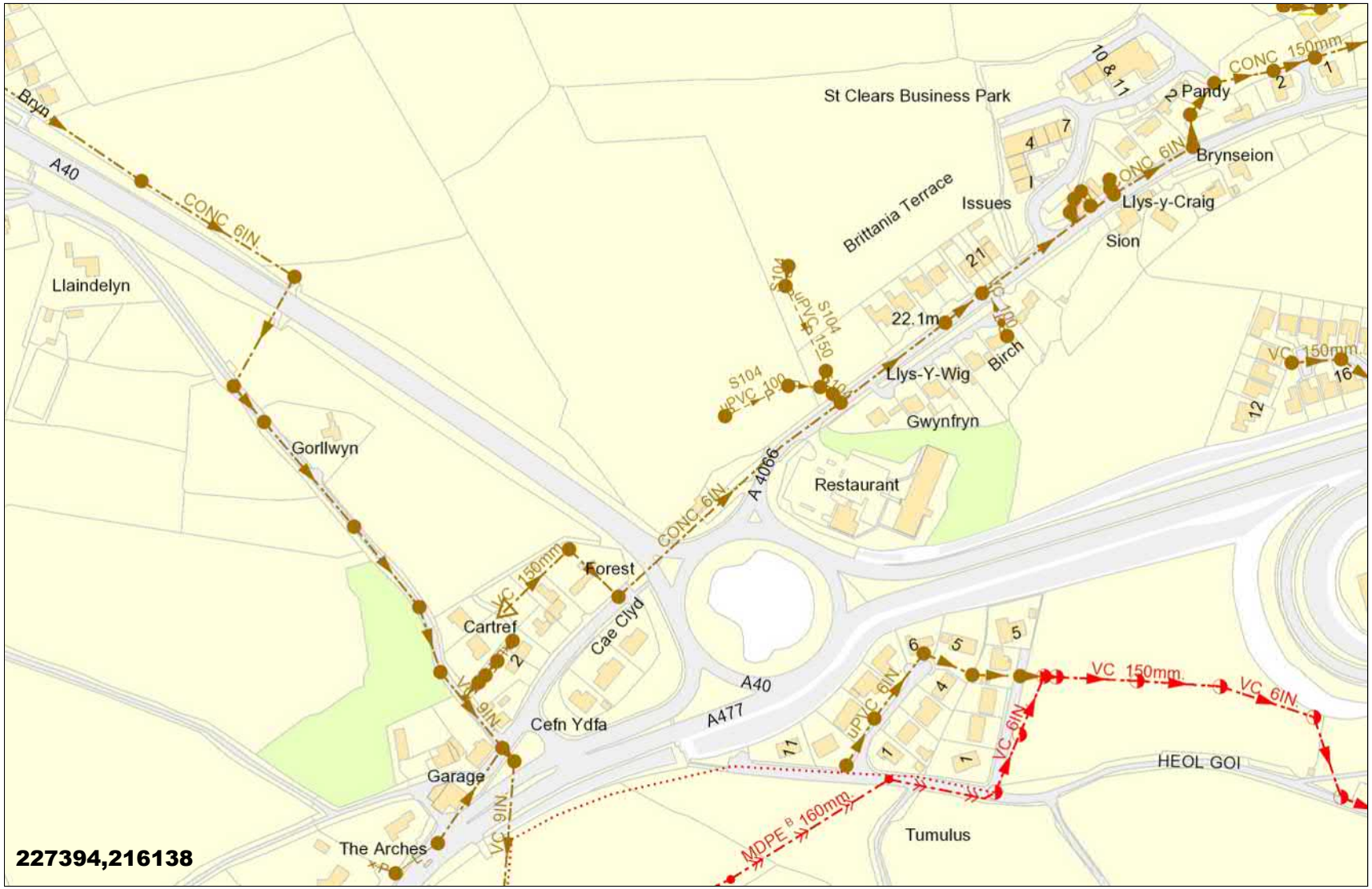
Whilst every reasonable effort has been taken to correctly record the pipe material of DCWW assets, there is a possibility that in some cases pipe material (other than Asbestos Cement or Pitch Fibre) may be found to be Asbestos Cement (AC) or Pitch Fibre (PF). It is therefore advisable that the possible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

Dŵr Cymru
Welsh Water

Site 17 South

06/06/2022

Scale: 1: 3750



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
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- Lamp Hole, Foul
- Private Sewer Transfer
- Lateral Drain
- Inspection Chamber

EXACT LOCATION OF ALL APPARATUS TO BE DETERMINED ON SITE

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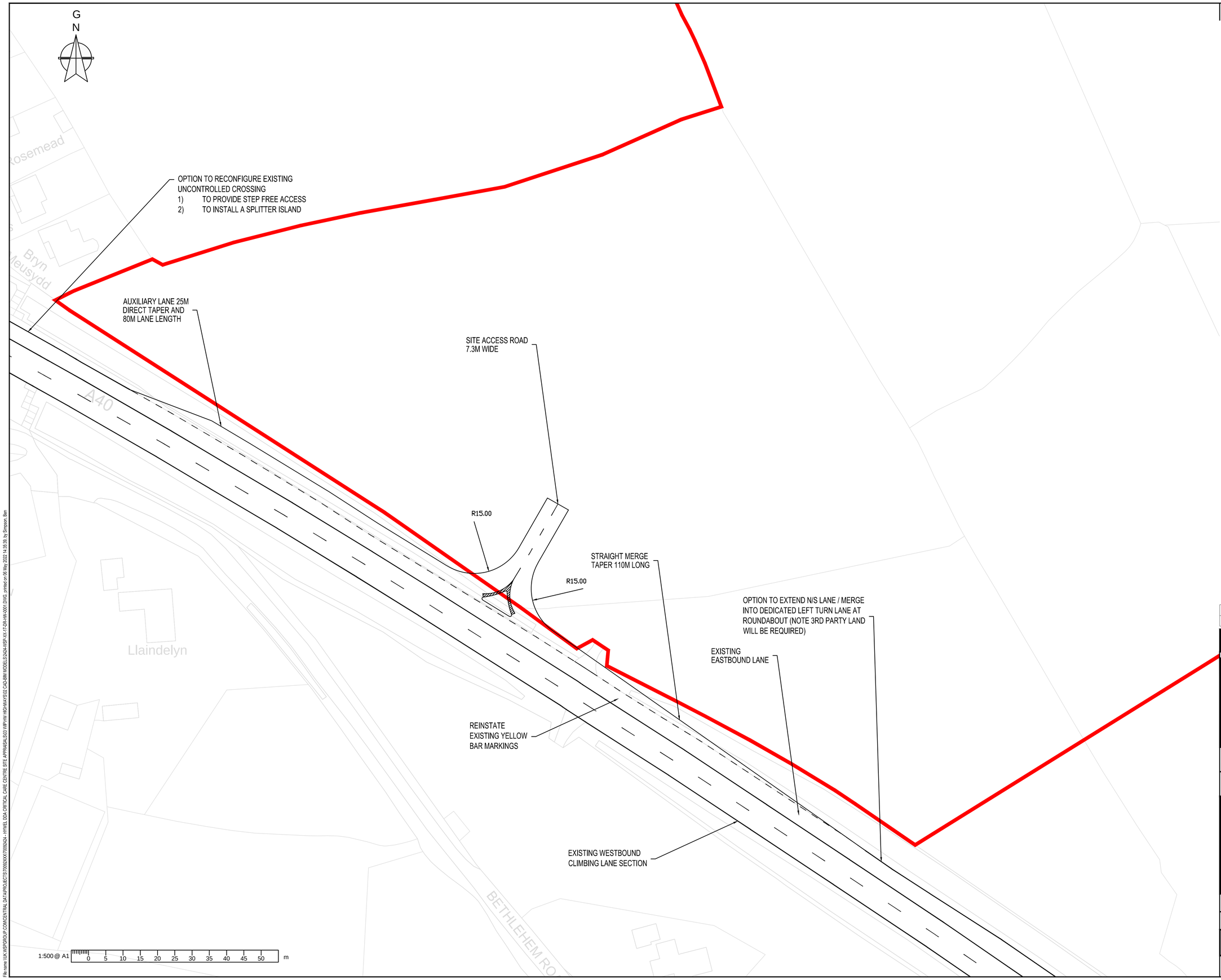
Appendix C

SITE ACCESS

Public



DO NOT SCALE

Proposed roundabout solution on A40.

1. Design speed to be 100kph (60mph)
2. Design based upon DMRB CD123

KEY

EXISTING CARRIAGEWAY	
VERGE	
VISIBILITY SPLAY	
SITE BOUNDARY	
THIRD PARTY LAND HOLDING	(CX)

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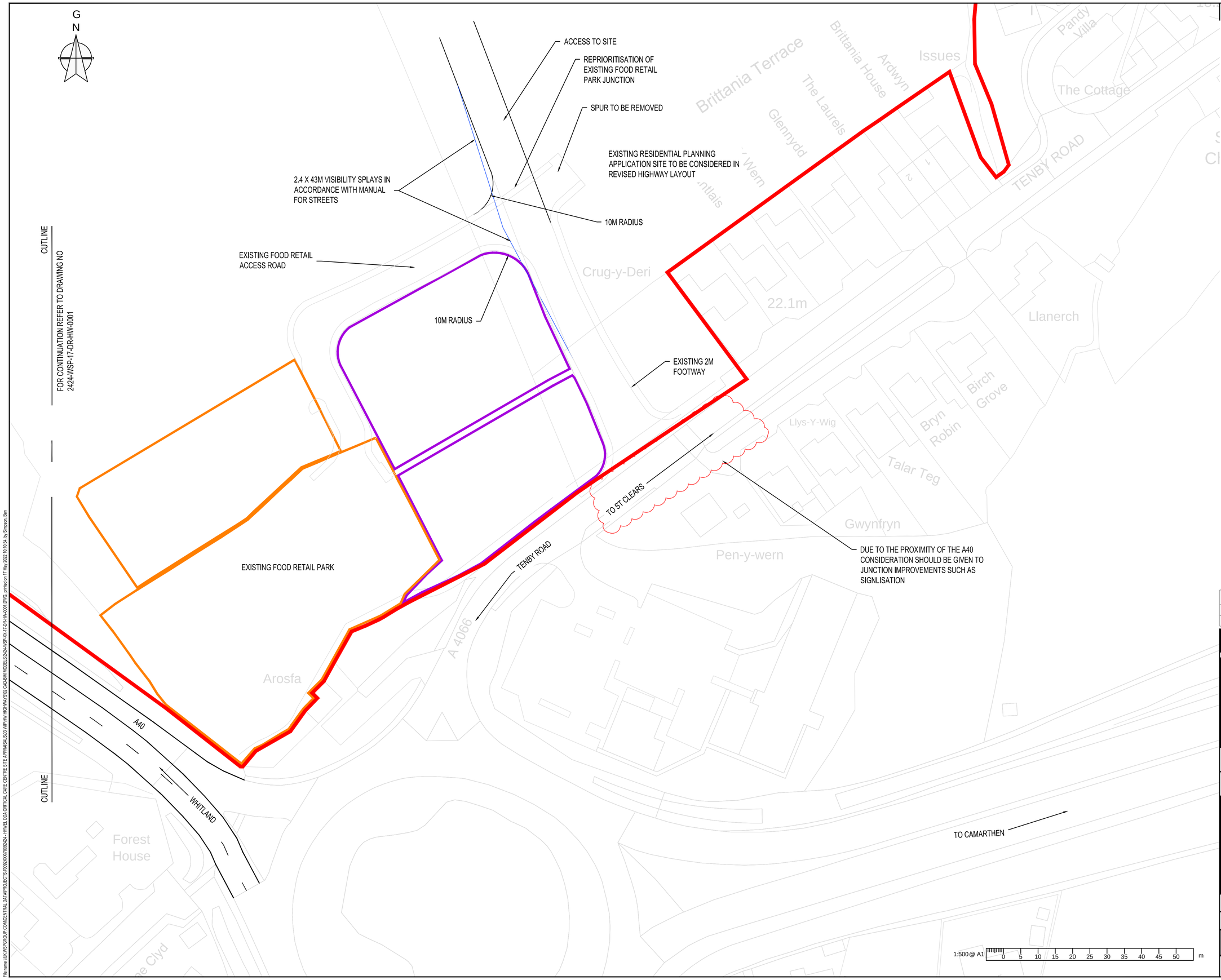
ARCHITECT: BDP

SITE/PROJECT: HYWEL DDA CRITICAL CARE CENTRE SITE APPRAISALS

TITLE: SITE 17 - LEFT IN / OUT ON A40

SCALE @ A1:	CHECKED:		APPROVED:
1:500	MT		AW
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70092424	MCT	BS	May 22

DRAWING No: 2424-WSP-XX-17-DR-HW-0001 REV: P01



DO NOT SCALE

Proposed roundabout solution on A40.

1. Design speed to be 50kph (30mph)
2. Design based upon DMRB CD123
3. Based on Haire lanscape consultants drawing number 597/02 (–)

KEY

- EXISTING HIGHWAY
- PROPOSED HIGHWAY
- VISIBILITY SPLAY
- SITE BOUNDARY
- FUTURE DEVELOPMENT PLOTS
- EXISTING DEVELOPMENT PLOTS

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REV	DATE	BY	DESCRIPTION	CHK	APP
P02	12/05/2022	BS	FOOD RETAIL ACCESS TO REFLECT PLANNING LAYOUT	SWE	AW
P01	05/04/2022	BS	FIRST ISSUE	SWE	AW

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

ARCHITECT: BDP

SITE/PROJECT: HYWEL DDA CRITICAL CARE CENTRE SITE APPRAISALS

TITLE: SITE 17 - TENBY RD INBOUND ONLY ACCESS

SCALE @ A1:	CHECKED:		APPROVED:
1:500	MT		AW
PROJECT NO: 70092424	DESIGNED: MCT	DRAWN: BS	DATE: May 22

DRAWING No: 2424-WSP-XX-17-DR-HW-0002 REV: P02

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Appendix D

ECOLOGY

Public

Hywel Dda University Health Board

URGENT AND PLANNED CARE HOSPITAL SITE APPRAISAL

SITE 17 – PRELIMINARY ECOLOGICAL APPRAISAL

REV1
JUNE 2022

CONFIDENTIAL

Hywel Dda University Health Board

URGENT AND PLANNED CARE HOSPITAL SITE APPRAISAL

SITE 17 – 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 APPRAISAL

SITE 17 – PRELIMINARY ECOLOGICAL APPRAISAL

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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 15:37:51 +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 15:45:03 +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 16:03:53 +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 17			

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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 17 (centroid grid reference SN 27373 16378). 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 17: 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 Site 17, it was considered that the qualifying features of these SACs are unlikely to be impacted by the Proposed Development. One statutory nature conservation site of international importance (for which bats were not a qualifying feature) was identified within 2 km of Site 17: Carmarthen Bay and Estuaries/Bae Caerfyrddin ac Aberoedd SAC. This SAC was designated due to riverine and estuarine fauna.

The desk study identified one statutory site of national importance within 2 km of Site 17 (Aber Taf/Taf Estuary SSSI). One non-statutory designated site was identified within 2 km of the Site 17: 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 17.

The desk study returned records of protected and/or notable species within 2 km of the Site including brown long-eared bat *Plecotus auritus*, badger *Meles meles*, otter *Lutra lutra*, slow worm *Anguis fragilis*, grass snake *Natrix helvetica*, 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 a preliminary roost assessment, bat activity surveys involving static monitoring, aerial tree climbing surveys/endoscope inspections of potential roost features in trees;
- Dormouse surveys to determine the presence/likely absence of dormouse;
- 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 17. Site 17 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 PEA is in support of a scope of work being undertaken by WSP that will highlight the key environmental and engineering risks associated with each of the Sites listed above. 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 17 is located to the north of the A40 and to the east of Tenby Road in St Clears (centroid grid reference SN 27373 16378), shown as a red line boundary (RLB) in Figure 1. It covers an area of approximately 189,000 m^2. Site 17 currently holds two buildings and is primarily used for grazing.

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 17 was conducted around grid reference SN 26685 16865. 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 Figure 2.

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 0.2 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; 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 map is not intended to provide exact locations of key habitats.
- A number of ornamental plant species were present within Site 17. These have been identified to species level where possible; however, owing to the large number of horticultural varieties some plants could not be identified. Ornamental plants may be of value to wildlife; however, none are

characterised as rare or notable from a native biodiversity conservation perspective. Thus, this limitation does not affect the overall conclusions of this appraisal.

3. RESULTS

3.1. DESIGNATED SITES

STATUTORY SITES

3.1.1. The desk study identified three statutory designated sites of international importance within 2 km of the centroids used for the desk study, or designated SACs for which bats are a reason for designation within 30 km of the centroids used for the desk study. One statutory designated site of national importance within 2 km of the centroid used for the desk study was also identified. A description of the sites is detailed in Tables 2 and 3 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 17	Description
Limestone Coast of South West Wales/Arfordir Calchfaen de Orllewin Cymru	SAC	1583.86	35.0 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	22.0 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.
Carmarthen Bay and Estuaries/Bae Caerfyrddin ac Aberoedd	SAC	66092.05	1.3 km south	This SAC comprises linear subtidal sandbanks exposed to wave and tidal action, a large estuarine site, mudflats and sandflats exposed at low tide, shallow inlets and bays and Atlantic salt meadows. The site is designated due to the presence of Annex

Site Name	Designation	Size (ha)	Approximate distance and orientation from Site 17	Description
				II species Twaite shad *Alosa fallax,* and has qualifying features sea lamprey *Petromyson marinus*, river lamprey *Lampetra fluviatilis,* allis shad *Alosa alosa*, and otter.

Table 3 - Statutory designated sites of national importance

Site Name	Designation	Size (ha)	Approximate distance and orientation from Site 17	Description
Aber Taf/Taf Estuary	SSSI	1494.3	1.3 km south	Saltmarsh vegetation associated with intertidal mud, sand and the river channel.

NON-STATUTORY SITES

3.1.2. The desk study identified one non-statutory nature conservation site within 2 km of the centroids used for the desk study. A description of this site is detailed in Table 4 below and shown in Figure 3.

Table 4 - Non-statutory designated sites

Site Name	Designation	Size (m^2)	Approximate distance and orientation from Site 17	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. For Site 17, the desk study returned results for ten areas of ancient woodland sites (semi-natural and restored). The closest of these was a restored ancient woodland site, which was 1.1 km north-east of the desk study centroid. The Site does not border an area of ancient woodland, which is shown in Figure 3.

3.1.4. The desk study returned no areas within the RLB of the Site which may contain Priority Habitats under the provisions of Section 7 of the Environment (Wales) Act 2016.

3.2. HABITAT SURVEY

OVERVIEW

The following account summarises the findings of the habitat surveys. The habitat types are mapped on Figure 4 and listed in Table 5 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 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.

3.2.1. Ten habitat types were identified in Site 17.

3.2.2. Site 17 comprised predominantly modified grassland and was used for sheep grazing. Fields were bordered by hedgerows, fences, and lines of trees, and a network of ditches was present within the Site within field boundaries. The south of the Site comprised an area of developed land and a built up area, with two buildings used as fast food restaurants of relatively new construction. There were small areas of scrub and of fen, marsh and swamp within Site 17.

Table 5 - UKHab habitat Areas of Site 17

UKHab Classification Types	Area (ha)	Length (m)	% of Site Area
F2 – Fen marsh and swamp	0.20	N/A	1.06
G4 – Modified grassland	15.51	N/A	82.22
H3 – Dense scrub	0.26	N/A	1.38
U1 – Built-up areas and gardens	1.34	N/A	7.09
U1b – Developed land, sealed surface	1.56	N/A	8.25
G6b – Earth bank	N/A	147.15	N/A
H2a – Hedgerow (priority habitat)	N/A	1990.72	N/A
R1e – Canals or ditch	N/A	1274.74	N/A

U1e – Built linear features	N/A	2237.81	N/A
W1g6 – Line of trees	N/A	1062.59	N/A
TOTAL	18.86	6713.00	100

F2 – Fen marsh and swamp

3.2.3. There was one parcel of habitat within Site 17 in which rushes were dominant. Here, soft rush *Juncus effusus* dominated. Towards the south of this parcel of land, which was in the south-western extent of the Site and was bordered by field boundaries to the west and north-east, the rushes graduated into bramble *Rubus fructicosus agg.* scrub habitat.

G4 – Modified grassland

3.2.4. The majority of Site 17 comprised modified grassland (Photo 1). There were eight distinct fields which were considered to have been modified grassland, dominated by perennial rye-grass *Lolium perenne.* Soft rush was occasional, but locally common in southern areas of fields within the southern extent of the Site. Contrariwise, vetch species *Vicia sp*. were locally common in the northern extent of the Site. Although lesser celandine *Ficaria verna* and ribwort plantain *Plantago lanceolata* were occasional, with nettle *Urtica dioica* being rare, all three species were increasingly frequent within the field boundaries.

H3 – Dense scrub

3.2.5. One area of dense scrub existed at the eastern extent of Site 17 within a field boundary (Photo 2). This area was dominated by bramble, with ash *Fraxinus excelsior* frequent.

3.2.6. An area of scattered scrub dominated by bramble was present towards the centre of the Site, at the western extent of a field boundary. It extended for approximately 1100 m^2. This scattered scrub overlayed the modified grassland of the field.

U1 – Built-up areas and gardens

3.2.7. One parcel of built-up land was recorded within Site 17. The parcel was within the southern extent of the Site adjacent to the A40 and Tenby Road, and comprised a carpark for customers of the on-site fast-food restaurants (Photo 3).

U1b – Developed land, sealed surface

3.2.8. There were two areas of bare ground within Site 17, with both areas comprising bare mud that appeared to have been recently scraped (Photo 4). The two areas were within the southern sections of two separate fields within the southern extent of the Site.

G6b – Earth bank

3.2.9. To the north of the car park existed a recently built linear earth bank, with whips along the top of the earth bank. Other than the whips, the earth bank was unvegetated. The species composition of the whips was hawthorn *Crataegus monogyna*, holly *Ilex aquifolium* and ash, in seemingly equal abundance.

H2a – Hedgerow (priority habitats)

3.2.10. The central field within Site 17 had a northern field boundary comprising a recently flailed intact hedgerow (Photo 5). Here, the dominant species was hawthorn, with ivy *Hedera helix*, bramble, willow *Salix sp.* and bracken *Pteridium aquifolium* also present.

3.2.11. Those fields that were not bordered by flailed hedgerows were bordered by hedgerows with trees. These hedgerows had the same species compositions as the flailed hedgerows, being dominated by hawthorn.

R1e – Canals or ditch

3.2.12. There were three ditches running through Site 17, most likely man-made to aid with irrigation. The first ditch ran north to south along a field boundary towards the western end of the Site. The flowing water within this ditch was up to 10 cm deep. The ditch itself had banks up to 1 m deep, was of clay substrate, and was unvegetated.

3.2.13. The second ditch ran north to south through the centre of the Site along field boundaries. The ditch here was wet at the time of survey, but considered likely to be dry except in extreme wet weather conditions, and the ditch was heavily vegetated, with willow species on the banks and abundant ivy and hart's-tongue *Asplenium scolopendrium*.

3.2.14. The third ditch ran along the western field boundary of the eastern-most field within the Site. This ditch again ran from north to south, entering a culvert at the southern end of the Site (Photo 7, Target Note (TN2)). The water within the ditch had a maximum depth of 10 cm, with very shallow banks up to 20 cm deep and 50 cm wide. The substrate was predominantly silt.

U1e – Built linear features

3.2.15. The westernmost field of Site 17, the central field, and the easternmost field, all along the central latitude of the Site, were bordered by wire fences with wooden posts.

W1g6 – Line of trees

3.2.16. Along the eastern field boundary of Site 17 was a line of trees (Photo 6), with a similar composition to the broadleaved mixed and yew *Taxus baccata* woodland, and a similarly sparse understorey. Here, ash was dominant, with abundant bramble and occasional oak *Quercus sp.*, holly and willow. Hazel *Corylus avellana* and gorse *Ulex sp.* were rare.

3.2.17. In the boundary to the west of the car park, a strip of broadleaved mixed and yew woodland comprised abundant oak species, with frequent hawthorn, holly and ash. There was sparse understorey.

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 1.

3.3.3. The numbers of trees and buildings that were considered to have bat roost suitability within the Site are shown in Table 6, with detailed descriptions of each of the trees and buildings which have bat roost potential in Appendix F.

Table 6 – The number of trees and buildings considered to have bat roost suitability within the Site

Number of trees with bat roost suitability	Number of buildings with bat roost suitability			Relevant Figure
3	0	Low	0	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 identified 41 records of at least six different bat species within 2 km of the desk study centroid: brown long-eared bat *Plecotus auritus;* common pipistrelle *Pipistrellus pipistrellus*;

Natterer's bat *Myotis nattereri*; noctule bat *Nyctalus noctula*; soprano pipistrelle *Pipistrellus pygmaeus*; and whiskered/Brandt's bat *Myotis mystacinus/brandtii*. The closest of these records was for common pipistrelle 405 m south-west of the Site.

3.4.4. Three trees (T1 to T3) were assessed as providing suitable roosting habitat for bats. Full descriptions of their PRFs are described in Appendix F, with photos shown in Appendix E (Photos 11 to 13).

3.4.5. A hole in the ground with an opening of approximately 50 cm by 150 cm was noted in a field boundary towards the western end of Site 17, which was at least 350 cm deep (TN6, Photo 10). It appeared that the hole extended to either side, and therefore may provide a suitable hibernation roost for bats.

3.4.6. The Site also provides suitable habitat for foraging and commuting habitats in the form of scrub, treelines and hedgerows, and there is good connectivity along hedgerows and treelines to the north of the Site.

BADGER

3.4.7. Four records of badger within 2 km of the Site were identified during the desk study, the closest of which was 620 m south-east of the desk study centroid.

3.4.8. There were no signs of badger identified within the Site during the habitat survey. A mammal path (TN3) was identified during the habitat survey, although it was not clear which species this path was utilised by. Similarly, a rabbit warren was identified, with holes potentially being used by other mammals, although no signs of badger were identified (TN7, Photo 9). The grassland and scrub habitats provide suitable foraging and commuting habitat for badger, with the scrub and treelines providing suitable habitat for badger sett building.

HEDGEHOG

3.4.9. The desk study returned two records of hedgehog within 2 km of the desk study centroid, the closest of which was 445 m west of the centroid.

3.4.10. The Site provides suitable habitat for foraging and commuting hedgehog, in addition to suitable habitat for resting locations and nesting sites.

WATER VOLE

3.4.11. No records of water vole were returned during the desk study.

3.4.12. 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

3.4.13. Four records of otter within 2 km of the desk study centroid were identified during the desk study, the closest of which was 1.3 km south of the centroid. A mammal slide adjacent to a ditch was identified at Site 17, although it could not be confirmed that this was used by otter (TN5, Photo 8).

3.4.14. 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.

3.4.15. 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

3.4.16. No records of hazel dormouse were identified within 2 km of the desk study centroid.

3.4.17. A line of trees comprising hazel was present along the eastern boundary of Site 17. This provides suitable habitat for feeding dormouse, as well as potential nesting habitat within the bramble. There was some connectivity along hedgerows to the north of the Site, although the Site is isolated from areas of habitat of high suitability for dormouse due to the roads and residential areas bordering Site 17. Overall, the Site was considered to provide limited suitability for supporting dormice.

BIRDS

3.4.18. There were 32 records of birds within 2 km of Site 17 identified during the desk study. Six species of those returned are listed under Schedule 1 of the WCA: Cetti's warbler *Cettia cetti;* fieldfare *Turdus pilaris;* hobby *Falco subbuteo*, kingfisher *Alcedo atthis*, red kite *Milvus milvus*; and redwing *Turdus iliacus.*

3.4.19. Much of the Site was suitable for nesting birds, including the scrub, hedges and individual trees. Four disused swallow *Hirundo rustica* nests were identified within B1, and one was identified within B4. It was considered that the Site does not have any nesting suitability for Schedule 1 birds. During the habitat survey, birds identified included snipe *Gallinago gallinago*, carrion crow *Corvus corone*, dunnock *Prunella modularis*, magpie *Pica pica*, jay *Garrulus glandarius*, house sparrow *Passer domesticus*, and chaffinch *Fringilla coelebs*.

REPTILES

3.4.20. There were four records of reptiles returned from the desk study, three of which were of slow worm *Anguis fragilis* and one of which was of grass snake *Natrix helvetica.* The closest record to the desk study centroid was of grass snake, 1.6 km south-east of the centroid.

3.4.21. Although the majority of the Site comprised modified grassland which provides suboptimal habitat for supporting reptiles, the areas of scrub and trees present provided optimal habitat for supporting reptiles such as slow worm and common lizard *Zootoca vivipara*. There were no potential hibernacula for reptiles identified on the Site.

AMPHIBIANS

3.4.22. The desk study returned one record of an amphibian within 2 km of the desk study centroid – a common toad *Bufo bufo* 1.7 km south-east of the desk study centroid.

3.4.23. A search for waterbodies within 500 m which may provide breeding habitat was carried out through inspection of OS mapping and aerial imagery. No standing waterbodies were identified, and therefore there are no waterbodies considered suitable for breeding newts.

3.4.24. Suitable terrestrial habitat for amphibians was present within Site 17, 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.

INVERTEBRATES

3.4.25. Forty-six records of invertebrates within 2 km of the desk study centroid were identified during the desk study, the closest of which was located 915 m east of the centroid.

3.4.26. 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.

INVASIVE NON-NATIVE PLANT SPECIES

3.4.27. Four species of INNS were returned from the desk study: giant rhubarb *Gunnera tinctoria;* Indian balsam *Impatiens glandulifera*; Japanese knotweed *Fallopia japonica*; and Virginia creeper *Meconopsis cambrica*. The closest of these records to Site 17 was Japanese knotweed 1.3 km south of the Site.

3.4.28. A cotoneaster species, likely to be wall cotoneaster *Cotoneaster horizontalis sens.str.,* (TN1) was identified during the habitat survey within the Site.

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 and 3 are designated for various qualifying features.

4.2.3. The site of international importance designated for bats that is closest to Site 17 is Pembrokeshire Bat Sites and Bosherston Lakes/Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherston SAC, 22.0 km to the 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 these SACs are unlikely to be impacted by the Proposed Development, and further recommendations relating to these are not required.

4.2.4. Carmarthen Bay and Estuaries/Bae Caerfyrddin ac Aberoedd SAC (within 2 km of Site 17) is designated due to faunal species within watercourses and the estuary. There is potential for the Proposed Development to have both short-term and long-term effects on the watercourses through the network of ditches which are considered to have hydrological connectivity to the Site.

4.2.5. Therefore, the Proposed Development must be screened by the competent authority (Local Planning Authority) to determine whether significant effects are likely to result, in relation to the relevant sites of international importance.

4.2.6. 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. Recommendations have been made within Section 5.6.

4.2.7. 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.

4.2.8. The Proposed Development will be screened by the competent authority to determine whether significant effects are likely to result in relation to the relevant sites of international importance. The effects on the SSSI through the network of ditches considered to have hydrological connectivity to

the Sites will be considered concurrently. This SSSI is the Aber Taf/Taf Estuary SSSI identified 1.3 km south of Site 17.

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 17: 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 the Site there were habitats that are listed as Priority Habitats under the provision of the Environment Wales Act (2016). These Priority Habitats are shown in Table 7.

Table 7 – 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 17, 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 identified as having PRFs 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.

4.5.6. The hole in the ground present at Site 17 has the potential to host hibernating bats (TN6). It is recommended that a preliminary roost assessment (PRA) is conducted here to inspect the interior of the underground structure to identify PRFs and signs of bats.

BADGER

4.5.7. 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.

4.5.8. It is recommended that a pre-works check 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

[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.

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).

4.5.9. Mitigation measures to avoid effects on badgers are described in Section 4.6.

HEDGEHOG

4.5.10. 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 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.

4.5.11. 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.

4.5.12. 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

4.5.13. 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.

4.5.14. 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.

4.5.15. At Site 17, the Proposed Development could result in the disturbance or destruction of nesting dormouse if affecting hedgerows and scrub habitats. Therefore, further surveys are recommended to assess presence or likely absence of dormouse within the hedgerows and scrub habitat on Site. Details of survey requirements are provided in Section 4.6.

[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.

OTTER

4.5.16. 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.

4.5.17. 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.

4.5.18. There is no suitable habitat for sheltering or resting otters or for otter holts within the Site 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

4.5.19. 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.

4.5.20. 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.

4.5.21. 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.

4.5.22. 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

4.5.23. Native widespread reptile species (common or viviparous lizard, adder, grass snake and slow worm) are partially protected under Schedule 5 of the WCA. This includes protection from killing and injury.

4.5.24. 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.

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[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.

4.5.25. 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.

4.5.26. 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.

AMPHIBIANS

4.5.27. 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.

4.5.28. No evidence of amphibians was recorded at Site 17, although records of common toad were returned during the desk study.

4.5.29. Therefore, due to the suitable terrestrial habitat for common amphibians within the Site, work should proceed under a PMoW and ECoW.

INVERTEBRATES

4.5.30. 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 also highlights the suitability of this Site 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.

4.5.31. 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

4.5.32. 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.

4.5.33. A stand of ornamental shrubs including a cotoneaster species was identified at Site 17. Mitigation measures to prevent the spread of INNS are proposed in Section 4.6.

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 8 - Key Ecological Constraints and Further Survey Requirements

Ecological Receptor	Potential Constraints	Further Survey Requirements	Seasonal Constraints
Designated Sites	Due to the proximity of the Site to Carmarthen Bay and Estuaries/Bae Caerfyrddin ac Abewroedd SAC, a Stage 1 Habitat Regulations Assessment (HRA) Screening exercise is required to be undertaken. This would assess the potential for LSE on this international statutory designated site.	Development proposals for the Site would require a Stage 1 HRA with respect to the Carmarthen Bay and Estuaries/Bae Caerfyrddin ac Abewroedd SAC. This assessment should be produced and reviewed in agreement with the Local Planning Authority and NRW. Should LSE be identified this would trigger an Appropriate Assessment (Stage 2).	N/A
Non-Statutory Designated Sites	The B-Line non-statutory designated site in which Site 17 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	N/A

Ecological Receptor	Potential Constraints	Further Survey Requirements	Seasonal Constraints
		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.	
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. 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.	Seasonal constraints on bat emergence/re-entry and activity surveys as detailed below.

Ecological Receptor	Potential Constraints	Further Survey Requirements	Seasonal Constraints
Bats	Demolition of buildings and clearance of trees, resulting in the loss of roosts. Loss of potential commuting and foraging habitat	Presence/Absence Surveys: 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. The hole in the ground present at Site 17 should undergo a PRA to inspect the interior of the underground structure to look for PRFs and signs of bats.	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.

Ecological Receptor	Potential Constraints	Further Survey Requirements	Seasonal Constraints
Badger	Disturbance and/or destruction of badger setts through habitat clearance and construction works	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). 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.	Further badger surveys can be undertaken at any time of year. 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	As scrub habitat and hedgerow removal is likely to result to enable the Proposed Development, presence/absence surveys for dormouse are recommended. The scrub is small and isolated.	Dormouse tubes should be places at approximately 20 m intervals in suitable dormouse habitat, and deployed from March to November, with regular checks to achieve a

Ecological Receptor	Potential Constraints	Further Survey Requirements	Seasonal Constraints
		Presence/absence surveys for dormouse are recommended through the use of nest tubes. Retain and protect hedgerow habitat, where possible. 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.	search effort score of at least 20 according to the Dormouse Conservation Handbook (English Nature, 2006).
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, if identified, are to be removed during the hibernation season.	The reptile active season is considered to be from late March to September inclusive.

Ecological Receptor	Potential Constraints	Further Survey Requirements	Seasonal Constraints
INNS	Spread of INNS	Avoidance of area where INNS are present. If unable to avoid area where INNS present, then INNS should be treated and removed by suitably certified contractors. A management plan should be written and implemented on Site, including biosecurity measures to control the spread of INNS. Specific mitigation measures will require safeguarding by the implementation of an EcMP throughout the Proposed Development.	N/A

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 8 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 17 comprised fields (majority modified grassland) bordered by wire fences and hedges, some on earth banks, with a network of ditches. The Site had areas that were built-up, comprising buildings, sealed surfaces and other developed land. The Site contained lines of trees and an area of dense scrub. Site 17 had areas 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 17 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. One further statutory nature conservation sites of international importance within 2 km of the centroid used for the desk study was also identified: Carmarthen Bay and Estuaries/Bae Caerfyrddin ac Aberoedd SAC. Due to the designations of these SACs for faunal species present within the watercourse, and the potential of the Proposed Development to impact on watercourses, a Habitats Regulations Assessment, Stage 1: Screening to assess for LSE is recommended.

5.1.3. One statutory designated sites of national importance was identified within 2 km of the Site which may be impacted by the Proposed Development: Aber Taf/Taf Estuary SSSI (1295 m south of Site 17). The effects of the Proposed Development on the SSSI will be considered concurrently as part of the screening of statutory designated sites as described above.

5.1.4. One non-statutory designated site was identified within 2 km of the Site: 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 up to three close inspections of the trees with suitability to support roosting bats from May to September. 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. This will be achieved by using static bat detectors positioned within the habitat and serviced monthly between April and October. It is recommended the hole in the ground present at Site 17 undergo a PRA to inspect the interior for PRFs and signs of bats.

5.1.6. Further surveys are also required to determine the presence/likely absence of hazel dormouse at Site 17. Dormouse tubes should be deployed and checked in order to reach a search effort score of at least 20 according to the Dormouse Conservation Handbook.

5.1.7. 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.

5.1.8. 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).

5.1.9. 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

Key

Red Line Boundary

wsp

Client:

HYWEL DDA UNIVERSITY HEALTH BOARD

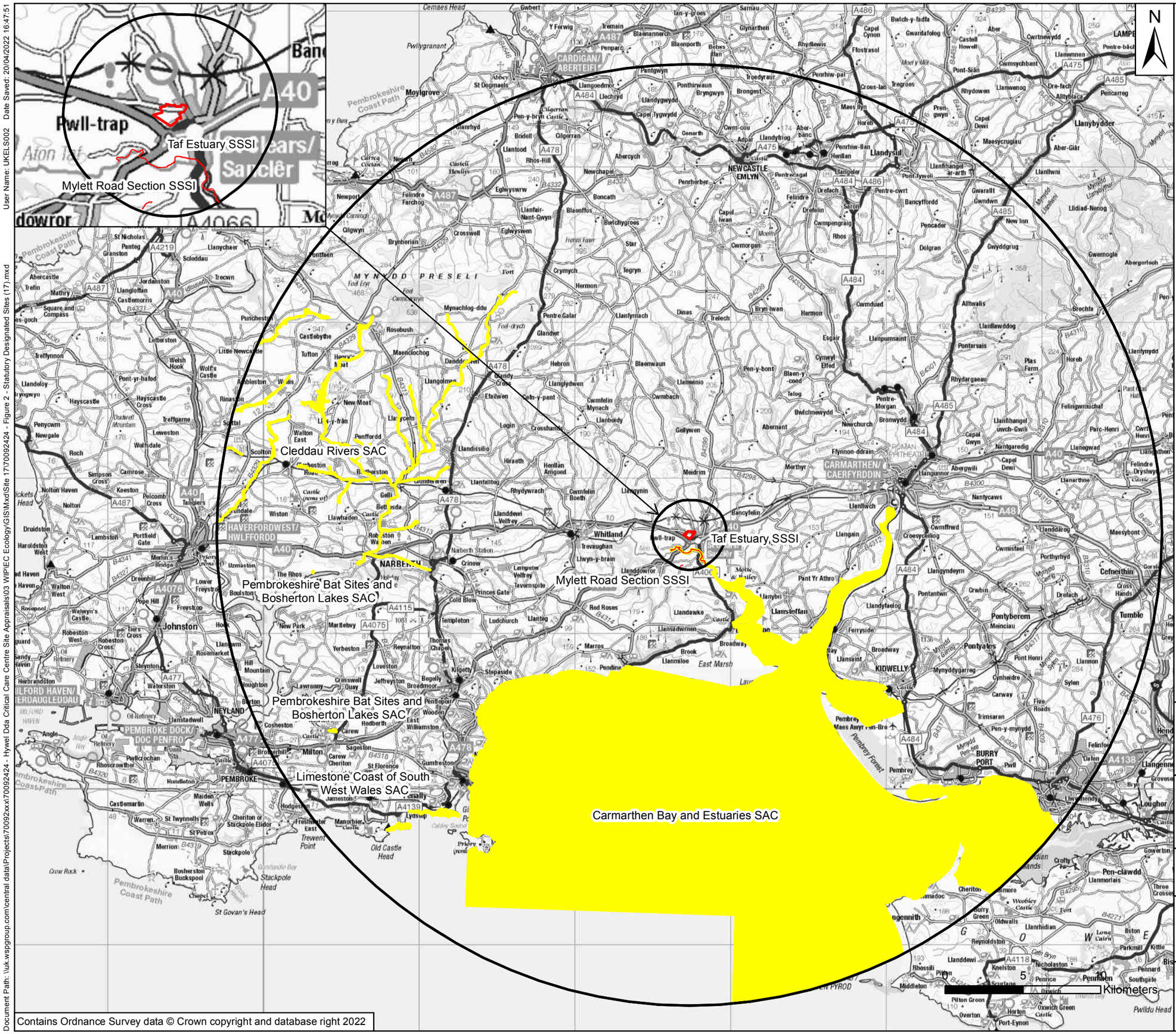
Project:

URGENT AND PLANNED CARE HOSPITAL - SITE 17
PRELIMINARY ECOLOGICAL APPRAISAL

Title

LOCATION PLAN

Drawing No:	FIGURE 1	Drawn:	AM
Date:	08/06/2022	Checked:	AD
Scale:	2,500 @ A3	Approved:	NB



Key

- Red Line Boundary
- 2km Buffer
- 30km Buffer
- Site of Special Scientific Interest (SSSI)
- Special Area of Conservation (SAC)

wsp

Client:
HYWEL DDA UNIVERSITY HEALTH BOARD

Project:
URGENT AND PLANNED CARE HOSPITAL - SITE 17
PRELIMINARY ECOLOGICAL APPRAISAL

Title
STATUTORY DESIGNATED SITES DESIGNATED FOR BATS WITHIN 10KM AND STATUTORY DESIGNATED SITES WITHIN 2KM

Drawing No:	FIGURE 2	Drawn:	ES
Date:	20/04/2022	Checked:	AD
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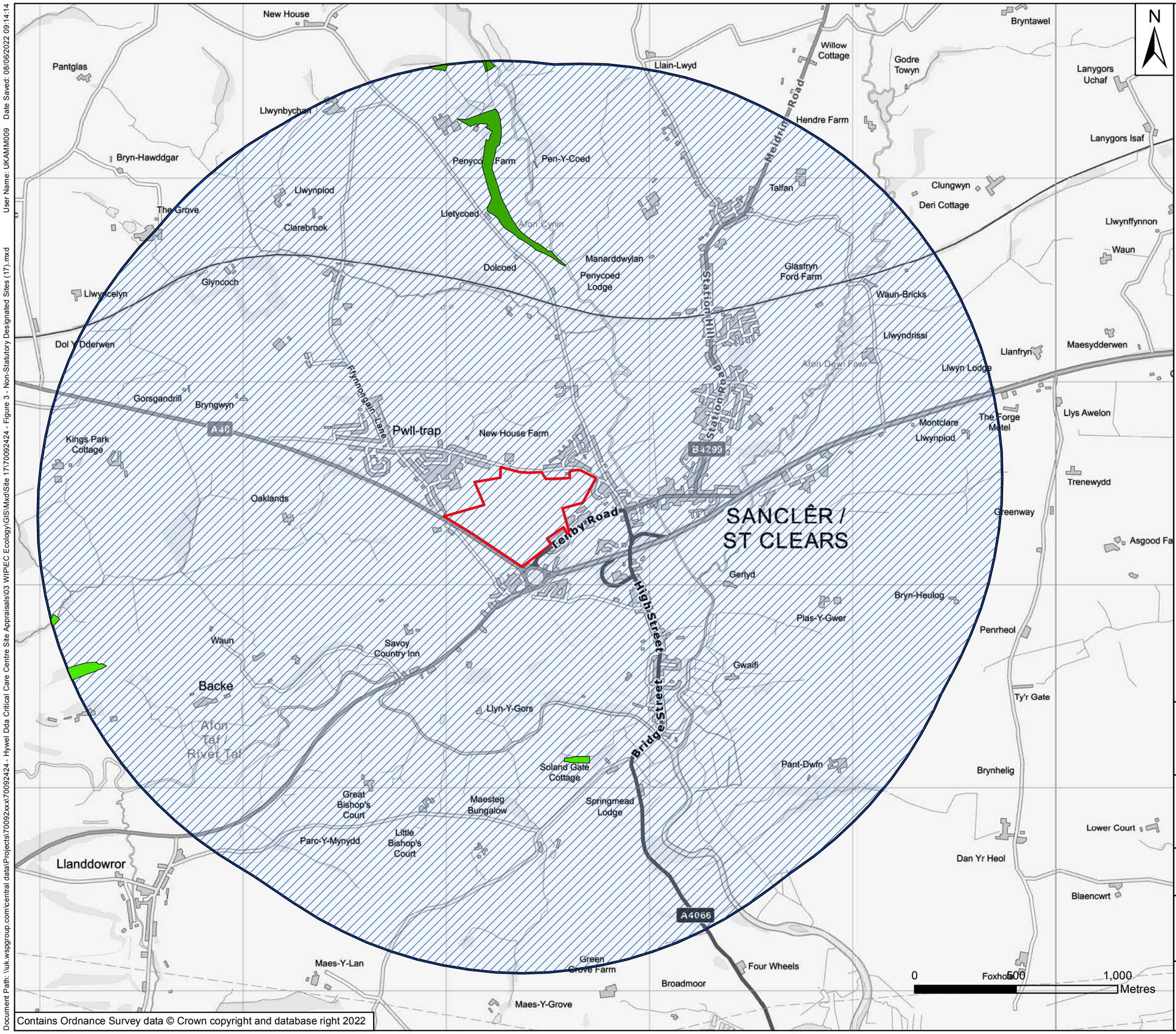

Key

- Red Line Boundary
- 2km buffer
- B-Lines
- Ancient Semi Natural Woodland
- Restored Ancient Woodland

wsp

Client:
HYWEL DDA UNIVERSITY HEALTH BOARD

Project:
URGENT AND PLANNED CARE HOSPITAL - SITE 17
PRELIMINARY ECOLOGICAL APPRAISAL

Title
NON-STATUTORY DESIGNATED SITES AND ANCIENT WOODLAND INVENTORY WOODLANDS WITHIN 2 KM

Drawing No:	FIGURE 3	Drawn:	ES
Date:	08/06/2022	Checked:	AD
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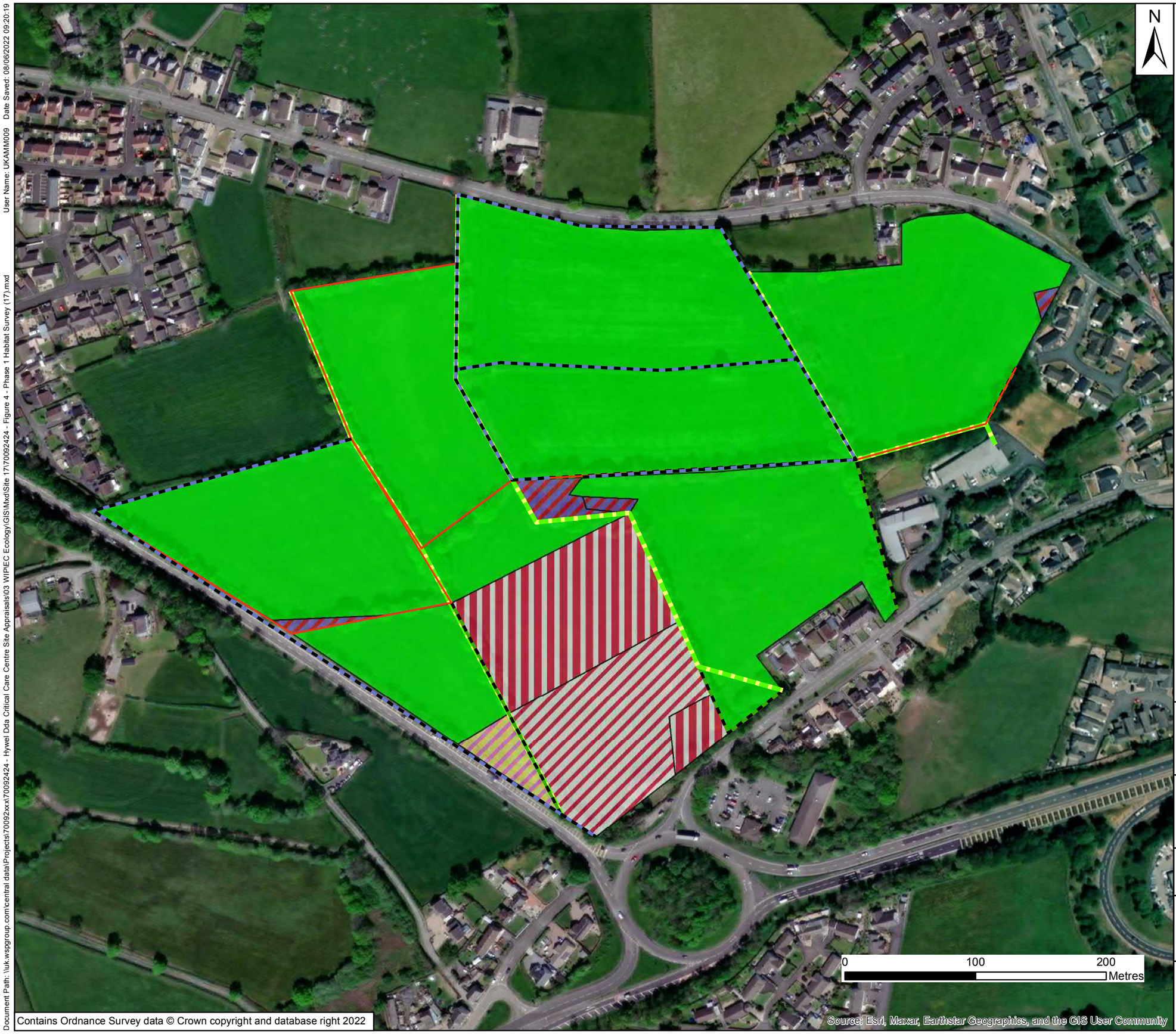

Key

UKHab

- f2 - fen,marsh and swamp
- g4 - modified grassland
- h3 - dense scrub
- u1 - built-up areas and gardens
- u1b - developed land, sealed surface
- w1g6 - line of trees
- h2a - hedgerow (priority habitat)
- u1e - built linear features
- r1e - canals or ditch

wsp

Client:

HYWEL DDA UNIVERSITY HEALTH BOARD

Project:

URGENT AND PLANNED CARE HOSPITAL - SITE 17
PRELIMINARY ECOLOGICAL APPRAISAL

Title

UK HAB
SURVEY MAP

Drawing No:	FIGURE 4	Drawn:	ES
Date:	08/06/2022	Checked:	AD
Scale:	2,800 @ A3	Approved:	NB

Key

- Red Line Boundary
- Target Notes

Preliminary Bat Roost Assessment - Tree

- Potential

Preliminary Bat Roost Assessment - Building

- Negligible

Client:
HYWEL DDA UNIVERSITY HEALTH BOARD

Project:
URGENT AND PLANNED CARE HOSPITAL - SITE 17
PRELIMINARY ECOLOGICAL APPRAISAL

Title
TARGET NOTES AND BAT GROUND ROOST ASSESSMENT RESULTS

Drawing No:	FIGURE 5	Drawn:	ES
Date:	08/06/2022	Checked:	AD
Scale:	3,000 @ 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 the desk study centroid

Species common name	Species Latin name	No. of records	Distance and orientation of closest record from desk study centroid
Bat species	*Chiroptera*	4	1080 m south-east
Brown long-eared Bat	*Plecotus auritus*	4	670 m south-west
Common pipistrelle	*Pipistrellus pipistrellus*	9	405 m south-west
Myotis species	*Myotis sp.*	6	650 m north*
Natterer's bat	*Myotis nattereri*	2	720 m south-west
Noctule bat	*Nyctalus noctula*	4	720 m south-west
Pipistrelle bat	*Pipistrellus sp.*	4	720 m south-west
Soprano pipistrelle	*Pipistrellus pygmaeus*	6	630 m north-west
Whiskered/Brandt's bat	*Myotis mystacinus/brandtii*	2	720 m south-west

*Exact location unknown

Table B-2 - Protected and notable mammals (excluding bats) for which records have been identified within 2km of the desk study centroid

Species common name	Species Latin name	No. of records	Distance and orientation of closest record from desk study centroid
Eurasian badger	*Meles meles*	4	620 m south-east
European otter	*Lutra lutra*	4	1310 m south
Polecat	*Mustela putorius*	1	1220 m south-east
West European hedgehog	*Erinaceus europaeus*	2	445 m west

Table B-3 - Protected and notable invertebrates for which records have been identified within 2km of the desk study centroid

Species common name	Species Latin name	No. of records	Distance and orientation of closest record from desk study centroid
August thorn	*Ennomos quercinaria*	1	1060 m north-west
Autumnal rustic	*Eugnorisma glareosa*	1	1060 m north-west
Beaded chestnut	*Agrochola lychnidis*	1	1060 m north-west
Blood-vein	*Timandra comae*	1	1060 m north-west
Brindled beauty	*Lycia hirtaria*	1	1060 m north-west
Buff ermine	*Spilosoma lutea*	2	1060 m north-west
Centre-barred sallow	*Atethmia centrago*	1	1060 m north-west
Cinnabar	*Tyria jacobaeae*	2	915 m east
Coronet	*Craniophora ligustri*	1	1060 m north-west
Crescent	*Helotropha leucostigma*	1	1060 m north-west
Dark-barred twin-spot carpet	*Xanthorhoe ferrugata*	1	1060 m north-west
Dot moth	*Melanchra persicariae*	2	1060 m north-west
Double dart	*Graphiphora augur*	1	1060 m north-west
Dusky thorn	*Ennomos fuscantaria*	1	1060 m north-west
Ear moth	*Amphipoea oculea*	1	1060 m north-west
Fern	*Horisme tersata*	1	1060 m north-west
Flounced chestnut	*Agrochola helvola*	1	1060 m north-west
Garden tiger	*Arctia caja*	2	1060 m north-west
Ghost moth	*Hepialus humuli*	1	1060 m north-west
Grass rivulet	*Perizoma albulata*	1	1060 m north-west
Green-brindled crescent	*Allophyes oxyacanthae*	1	1060 m north-west

Knot grass	*Acronicta rumicis*	1	1060 m north-west
Lackey	*Malacosoma neustria*	1	1060 m north-west
Oak hook-tip	*Watsonalla binaria*	1	1060 m north-west
Oblique carpet	*Orthonama vittata*	1	1060 m north-west
Ochreous pug	*Eupithecia indigata*	1	1060 m north-west
Powdered quaker	*Orthosia gracilis*	1	1060 m north-west
Pretty chalk carpet	*Melanthia procellata*	1	1060 m north-west
Rosy minor	*Litoligia literosa*	1	1060 m north-west
Rosy rustic	*Hydraecia micacea*	1	1060 m north-west
Round-winged muslin	*Thumatha senex*	1	1060 m north-west
Rustic	*Hoplodrina blanda*	1	1060 m north-west
Sallow	*Cirrhia icteritia*	1	1060 m north-west
September thorn	*Ennomos erosaria*	1	1060 m north-west
Shaded broad-bar	*Scotopteryx chenopodiata*	1	1060 m north-west
Shoulder-striped wainscot	*Leucania comma*	1	1060 m north-west
Small phoenix	*Ecliptopera silaceata*	1	1060 m north-west
Small square-spot	*Diarsia rubi*	1	1060 m north-west
Small waved umber	*Horisme vitalbata*	1	1060 m north-west
Square-spotted clay	*Xestia stigmatica*	1	1060 m north-west
Waved carpet	*Hydrelia sylvata*	1	1060 m north-west
White ermine	*Spilosoma lubricipeda*	1	1060 m north-west

Table B-4 - Protected and notable birds for which records have been identified within 2km of the desk study centroid

Species common name	Species Latin name	No. of records	Distance and orientation of closest record from desk study centroid
Black-headed gull	*Chroicocephalus ridibundus*	3	131 m south*
Cetti's warbler	*Cettia cetti*	1	1850 m east*
Cormorant	*Phalacrocorax carbo*	1	1440 m south
Dunnock	*Prunella modularis*	1	1850 m east*
European green woodpecker	*Picus viridis*	1	970 m south-east
European herring gull	*Larus argentatus*	1	1850 m east*
Fieldfare	*Turdus pilaris*	2	970 m south-east
Greenfinch	*Chloris chloris*	1	1850 m east*
Grey wagtail	*Motacilla cinerea*	1	1850 m east*
Hobby	*Falco subbuteo*	1	885 m south-east
House sparrow	*Passer domesticus*	2	970 m south-east
Kingfisher	*Alcedo atthis*	2	1290 m south
Mallard	*Anas platyrhynchos*	3	1320 m south
Meadow pipit	*Anthus pratensis*	1	1850 m east*
Mistle thrush	*Turdus viscivorus*	1	1850 m east*
Red kite	*Milvus milvus*	2	1590 m south-east*
Redwing	*Turdus iliacus*	1	970 m south-east
Song thrush	*Turdus philomelos*	1	1850 m east*
Starling	*Sturnus vulgaris*	3	970 m south-east
Swallow	*Hirundo rustica*	2	1250 m south-east
Swift	*Apus apus*	1	900 m south-east

*Exact location unknown

Table B-5 - Protected and notable reptiles and amphibians for which records have been identified within 2km of the desk study centroid

Species common name	Species Latin name	No. of records	Distance and orientation of closest record from desk study centroid
Common toad	*Bufo bufo*	1	1730 m south-east
Grass snake	*Natrix helvetica*	1	1610 m south-east
Slow worm	*Anguis fragilis*	3	1470 m east

Table B-6 - Protected and notable plants for which records have been identified within 2km of the desk study centroid

Species common name	Species Latin name	No. of records	Distance and orientation of closest record from desk study centroid
Bluebell	*Hyacinthoides non-scripta x hispanica = H. x massartiana*	8	1250 m south-east
Butcher's-broom	*Ruscus aculeatus*	1	1580 m north
Cherry laurel	*Prunus laurocerasus*	1	1440 m north
Giant-rhubarb	*Gunnera tinctoria*	1	1490 m north
Greater periwinkle	*Vinca major*	1	1480 m north
Heath wood-rush	*Luzula multiflora subsp. multiflora*	1	1810 m north
Indian balsam	*Impatiens glandulifera*	12	1330 m south
Japanese knotweed	*Fallopia japonica*	3	1300 m south
Northern yellow-cress	*Rorippa islandica*	2	1470 m north
Snowberry	*Symphoricarpos albus*	5	1270 m south-east
Tubular water-dropwort	*Oenanthe fistulosa*	1	1740 m south-east
Virginia-creeper	*Parthenocissus quinquefolia*	1	1370 m east
Welsh poppy	*Meconopsis cambrica*	1	1460 m north

Appendix C

PLANT SPECIES RECORDED

Table C-1 - Plant and fungi species recorded at Site 17

Common name	Latin name	Frequency (DAFOR)
F2 – Fen marsh and swamp		
Bramble	*Rubus fructicosus agg.*	F
Soft rush	*Juncus effusus*	D
G4 – Modified grassland		
Broad-leaved dock	*Rumex obtusifolius*	R
Clover species	*Trifolium sp.*	R
Common sorrel	*Rumex acetosa*	R
Cow parsley	*Anthriscus sylvestris*	O
Creeping buttercup	*Ranunculus repens*	R
Creeping cinquefoil	*Pontentilla reptans*	R
Daisy	*Bellis perennis*	R
Dandelion	*Taraxacum officinale agg.*	R
Ivy	*Hedera helix*	R
Lesser celandine	*Fiacaria verna*	O
Meadow buttercup	*Ranunculus acris*	O
Meadowsweet	*Filipendula ulmaria*	R
Nettle	*Urtica dioica*	R
Perennial rye-grass	*Lolium perenne*	D
Ribwort plantain	*Plantago lanceolata*	O
Soft rush	*Juncus effusus*	O
Vetch species	*Vicia sp.*	O
Wavy bitter-cress	*Cardamine flexuosa*	R
H3 – Dense scrub		
Ash	*Fraxinus excelsior*	F
Bramble	*Rubus fructicosus agg.*	D

R1e – Canals or ditch		
Hart's-tongue	*Asplenium scolopendrium*	A
Ivy	*Hedera helix*	A
Polypody	*Polypodium vulgare agg.*	O
Willow species	*Salix sp.*	D
W1 – Broadleaved mixed and yew woodland		
Ash	*Fraxinus excelsior*	F
Hawthorn	*Cretaegus monogyna*	F
Holly	*Ilex aquifolium*	F
Oak species	*Quercus sp.*	A
W1g6 – Line of trees		
Ash	*Fraxinus excelsior*	D
Bramble	*Rubus fructicosus agg.*	A
Gorse	*Ulex europaeus*	R
Hazel	*Corylus avellana*	R
Holly	*Ilex aquifolium*	O
Oak	*Quercus sp.*	O
Willow	*Salix sp.*	O
H2a – Hedgerow (priority habitat)		
Bracken	*Pteridium aquilinum*	O
Bramble	*Rubus fructicosus agg.*	O
Hawthorn	*Cretaegus monogyna*	D
Ivy	*Hedera helix*	F
Willow	*Salix sp.*	R
G6b – Earth bank		
Ash	*Fraxinus excelsior*	O
Hawthorn	*Cretaegus monogyna*	O

Holly	*Ilex aquifolium*	O

Appendix D

TARGET NOTES

Table D-1 – Site 17 Target Notes

Target Note	Description
TN1	A stand of ornamental shrubs including cotoneaster.
TN2	Culvert as part of wet ditch.
TN3	Mammal path through fence.
TN4	A 6 m break in the hedgerow.
TN5	A mammal slide adjacent to the ditch.
TN6	A hole in the ground with an opening approximately 50 cm by 150 cm, with a depth of 350 cm. The hole appears to extend to either side, and potentially provides a hibernation roost for bats.
TN7	A rabbit warren amidst multiple mammal holes, potentially belonging to species other than rabbit.

Appendix E

PHOTOGRAPHS

Table E-1 – Photographs at Site 17

	
Photo 1 – Modified grassland at Site 17	Photo 2 – Dense scrub at Site 17
	
Photo 3 – Built-up areas and gardens with one of two fast-food restaurants present at Site 17, both assessed as having negligible potential for supporting roosting bats.	Photo 4 – Bare ground at Site 17

Photo 5 – A flailed hedgerow at Site 17 adjacent to a ditch

Photo 6 – A line of trees adjacent to a ditch at Site 17

Photo 7 – Site 17 TN2 – A ditch flowing into a culvert.

Photo 8 – Site 17 TN5 – A mammal slide adjacent to a ditch

Photo 9 – Site 17 TN7 – A rabbit warren within a bank.

Photo 10 – Site 17 TN 6 – Hole in the ground providing a potential bat hibernacula.

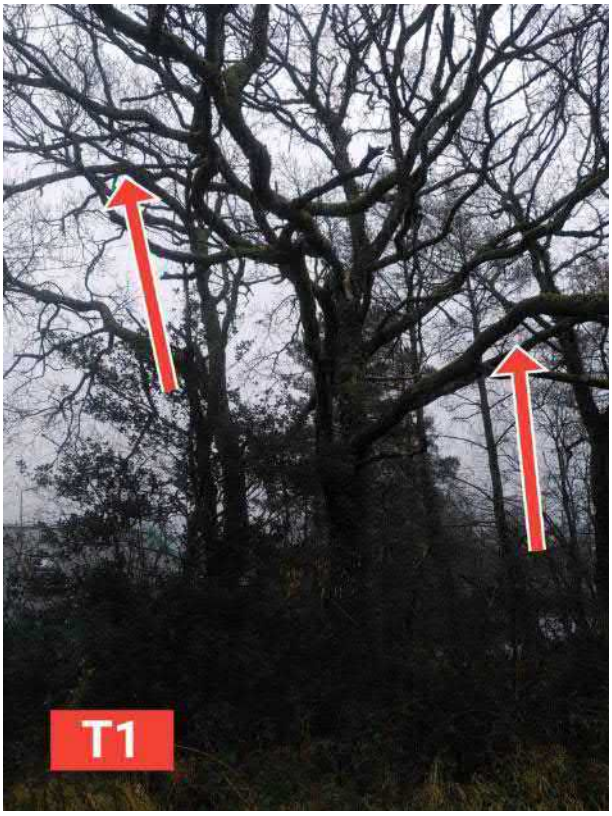

Photo 11 – Site 17 T1 – Mature trees with transverse snaps.

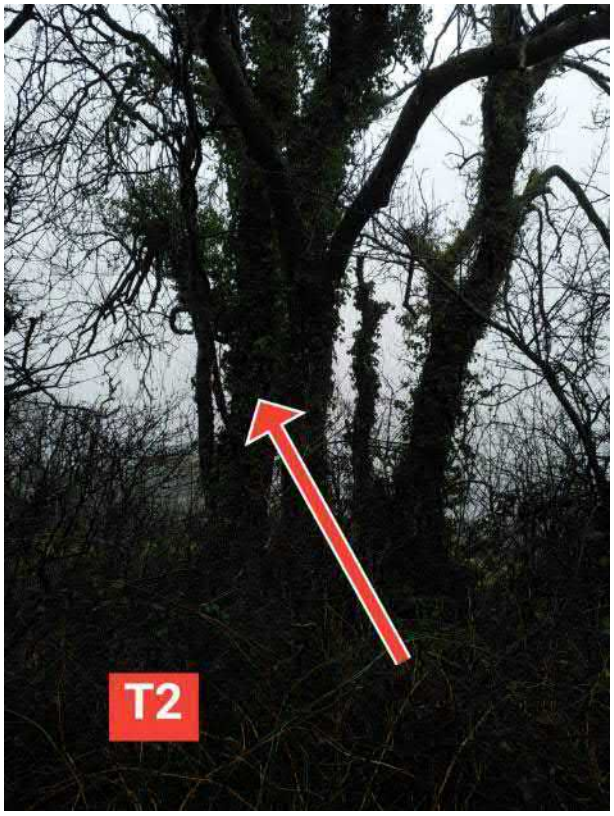

Photo 12 – Site 17 T2 – Ash with knotholes.

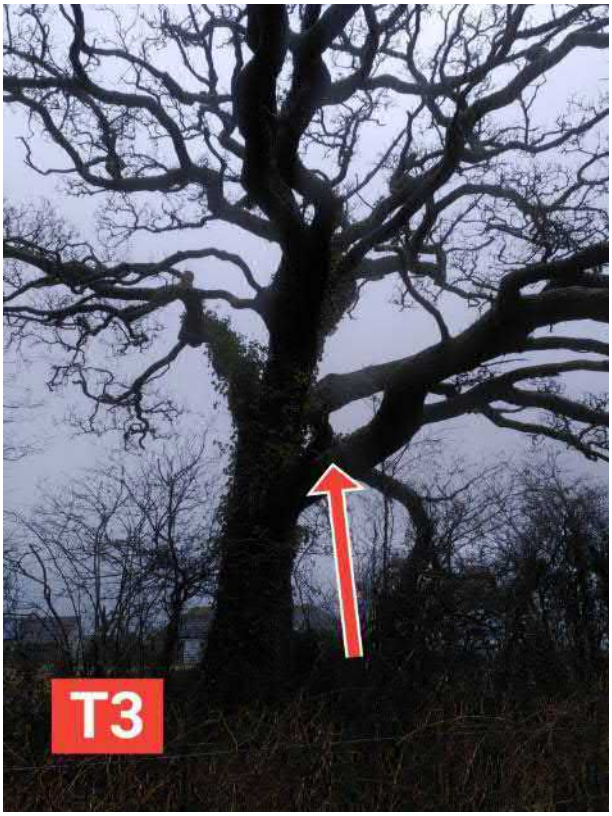

Photo 13 – Site 17 T3 – Oak with impact shatter.

Appendix F

BAT GROUND ASSESSMENT SURVEY RESULTS

Table F-1 – Trees with bat roost suitability at Site 17

Tree Number	Photo Reference	Description
1	Photo 11	Two mature trees adjacent to each other, both with transverse snaps. One transverse snap 6 m high, and the other 4 m high.
2	Photo 12	An ash 4 m tall, with a knothole on the main stem.
3	Photo 13	An oak with an impact shatter in a branch 3 m from the ground.

1 Capital Quarter
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Cardiff
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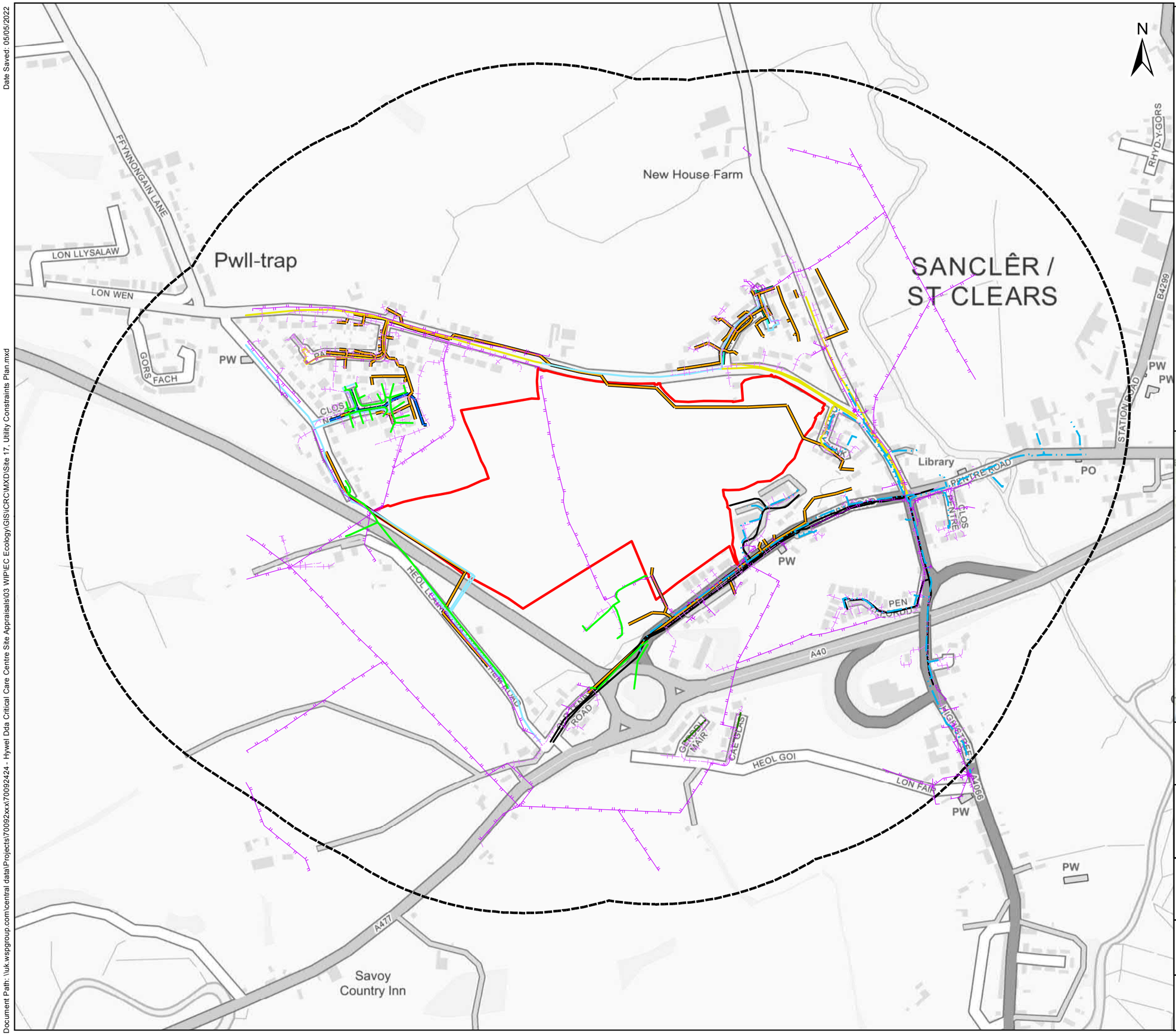
Appendix E

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\CRC\MXD\Site 17. Utility Constraints Plan.mxd



Legend

- Site 17 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

Storm and Foul Sewerage system (Welsh Water)

- Foul
- Highway Drain
- Surface Water

0 0.2 0.4 km

Client:

Hywel Dda University Health Board

Project:

Site 17 – Technical Due Diligence Appraisal

Title:

Site 17
Utilities Constraints Plan

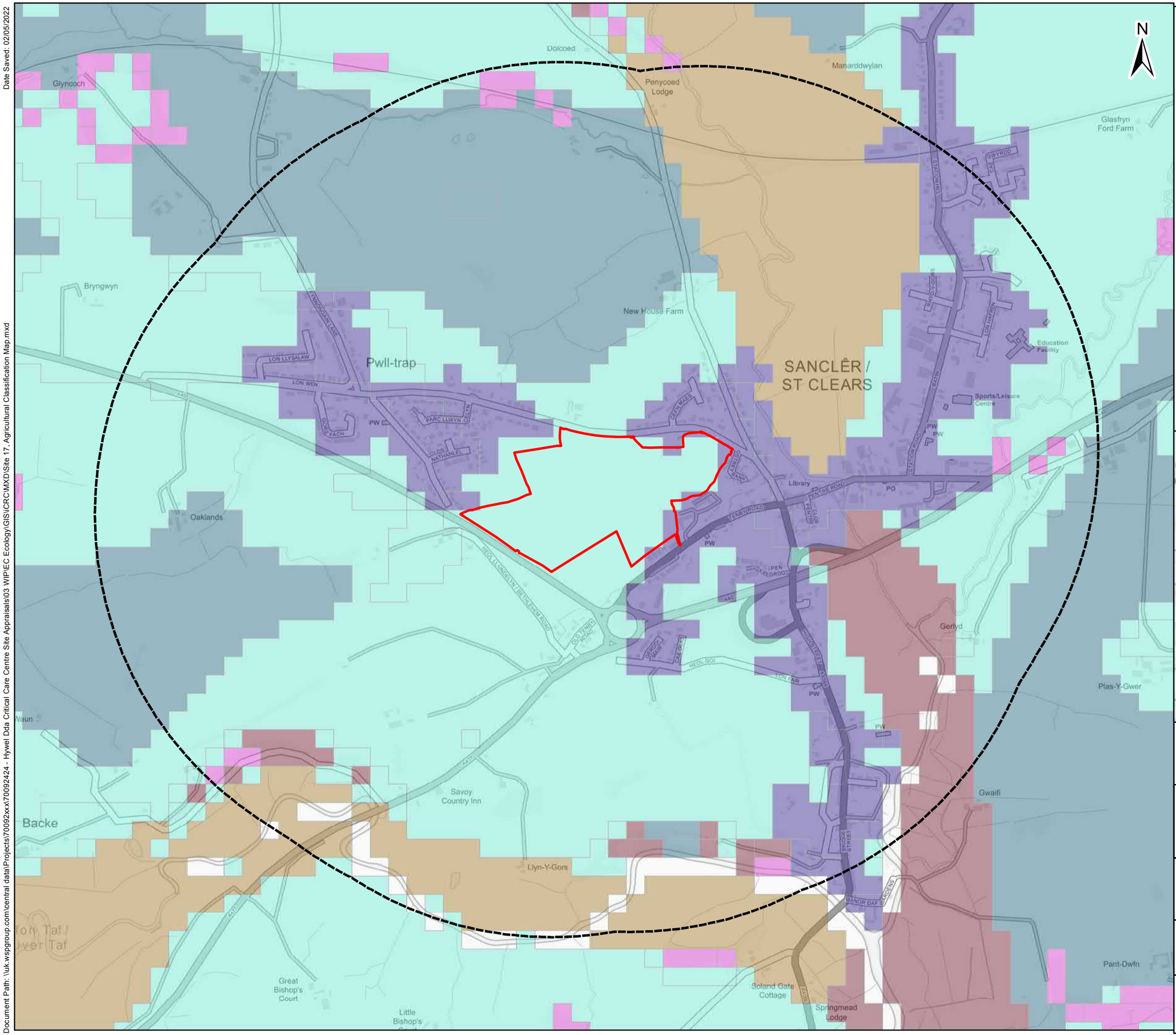
Date:	05 May 2022			Scale:	6,000 @ A3
Drawn:	PB	Checked:	CLH	Approved:	WB

Drawing Number: 2424-WSP-XX-17-DR-EN-0018-P01_Utility Constraints Plan

Appendix F

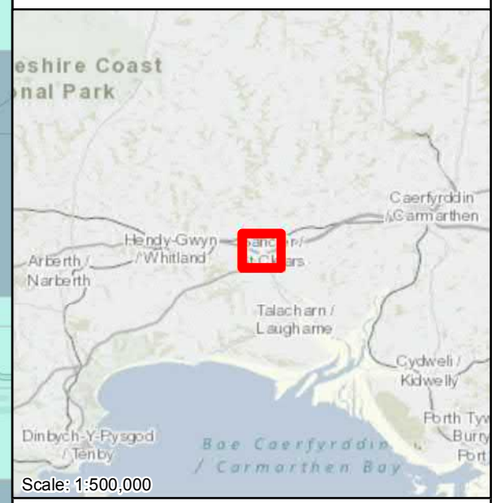
ENVIRONMENTAL

Public



Legend

- Site 17 Site Boundary
- 1Km Study Area
- 3a
- 3b
- 4
- 5
- NA
- U



0 0.125 0.25 0.5 km

Client:

Hywel Dda University Health Board

Project:

Site 17 – Technical Due Diligence Appraisal

Title:

Agricultural Land Classification Map

Date:	02 May 2022			Scale:	10,000 @ A3
Drawn:	PB	Checked:	CLH	Approved:	WB
Drawing Number:	2424-WSP-XX-17-DR-EN-0013-P01_ALC Map				

Date Saved: 02/05/2022

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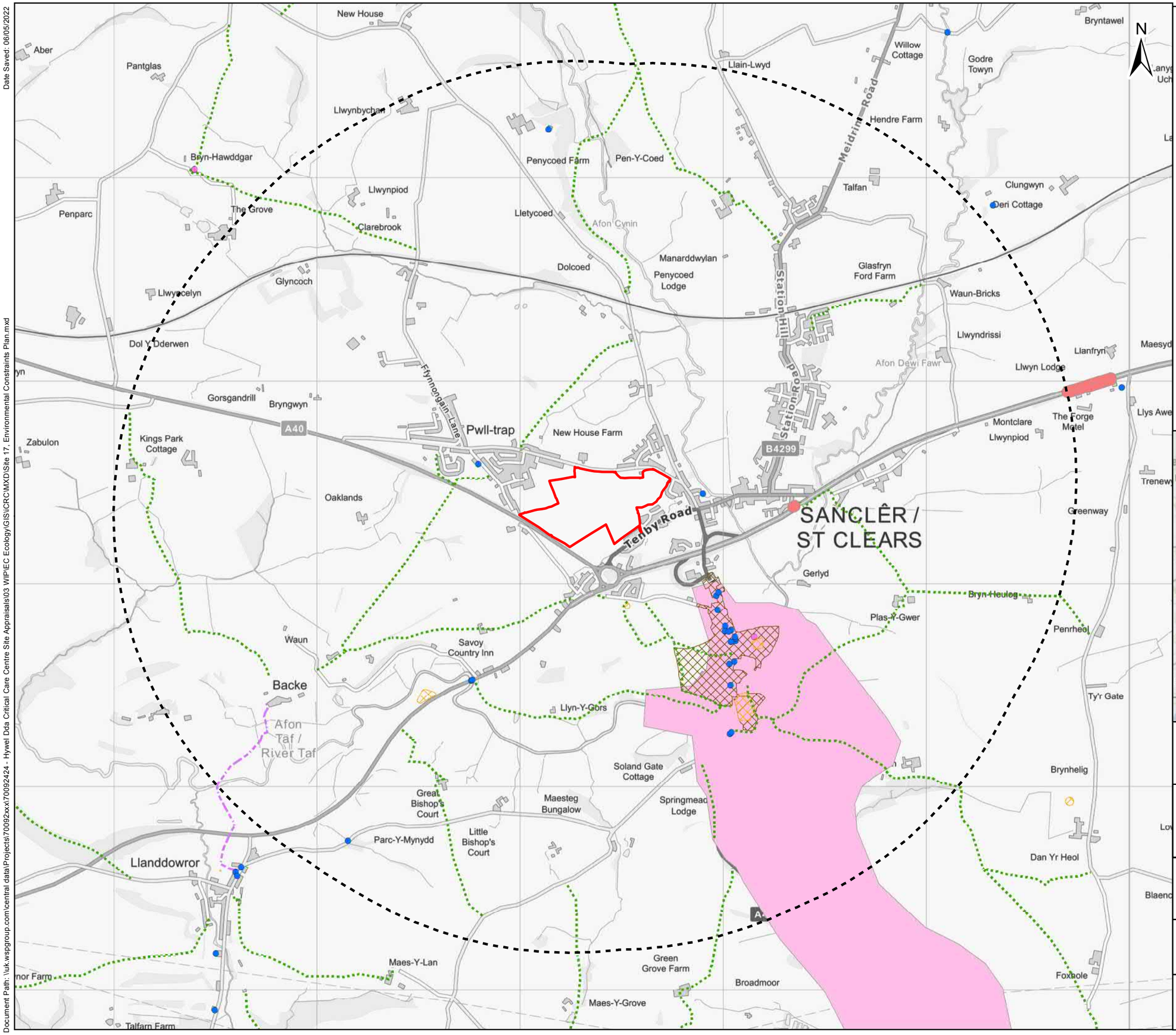

Client:

Hywel Dda University Health Board

Project:

Site 17 – Technical Due Diligence Appraisal

Title:

Environmental Constraints Plan

Date: 06 May 2022 Scale: 18,000 @ A3

Drawn: PB Checked: CLH Approved: WB

Drawing Number: 2424-WSP-XX-17-DR-EN-0005-P01_Env Constraints Plan

Date Saved: 06/05/2022

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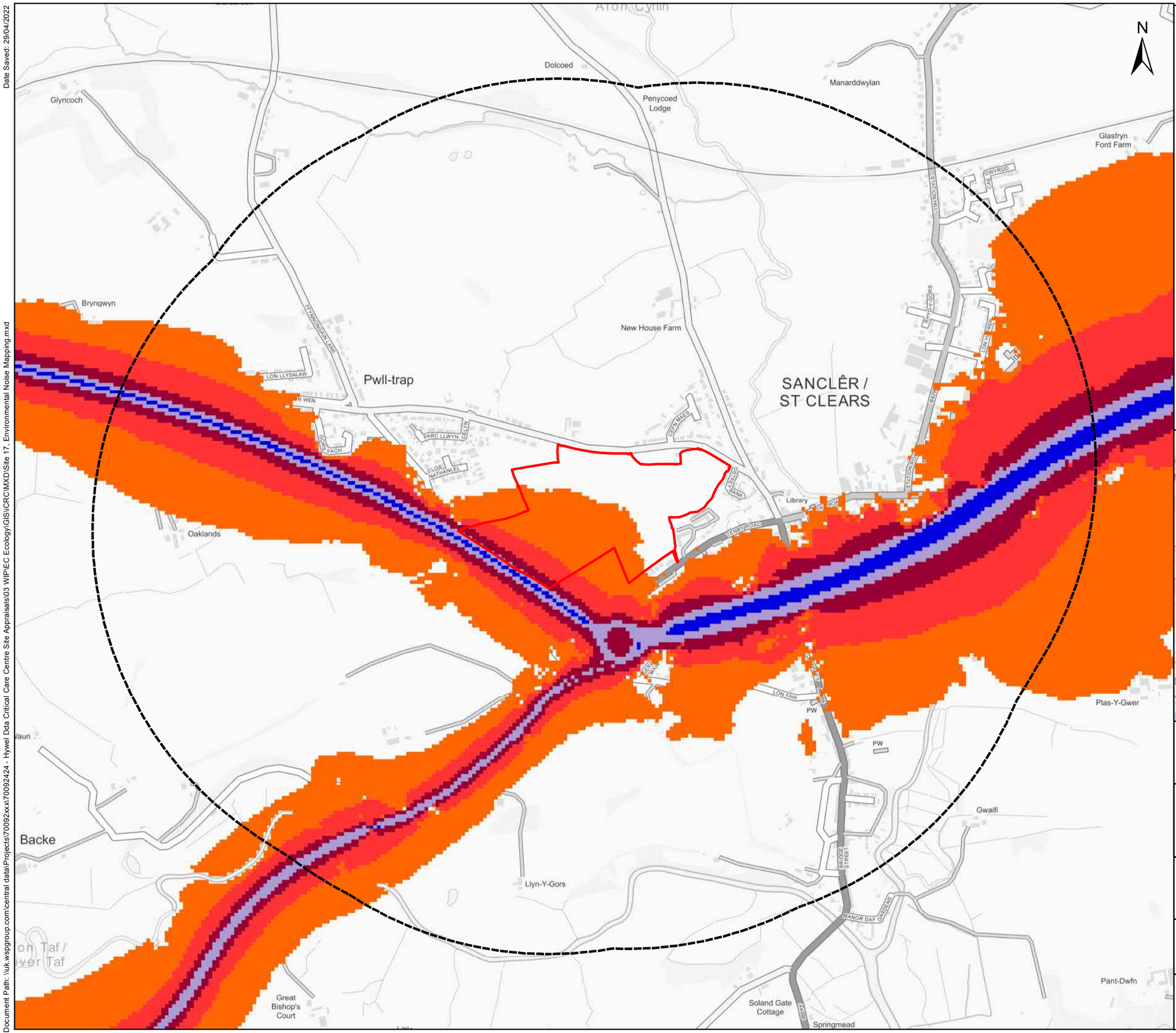

Legend

- Site 17 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.

0 0.25 0.5 km

Client:

Hywel Dda University Health Board

Project:

Site 17 – Technical Due Diligence Appraisal

Title:

Site 17
Environmental Noise Mapping

Date:	29 April 2022			Scale:	500,000 @ A3
Drawn:	PB	Checked:	CLH	Approved:	WB
Drawing Number:	2424-WSP-XX-17-DR-EN-0023-P01_ Env Noise Map				

Date Saved: 29/04/2022

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Appendix G

GROUND

Public

Hywel Dda University Health Board

URGENT & PLANNED CARE CENTRE SITE APPRAISALS

Site 17 - Preliminary Ground Conditions Assessment

70092424-03
MAY 2022

CONFIDENTIAL

Hywel Dda University Health Board

URGENT & PLANNED CARE CENTRE SITE APPRAISALS

Site 17 - Preliminary Ground Conditions Assessment

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

PROJECT NO. 70092424

OUR REF. NO. 70092424-03

DATE: MAY 2022

WSP

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QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2
Remarks	Draft for comment		
Date	May 2022		
Prepared by	Rebecca Hoyle		
Signature			
Checked by	Chloe Thompson		
Signature			
Authorised by	Matthew Rouge		
Signature			
Project number	70092424		
Report number	70092424-03		
File reference	\\uk.wspgroup.com\central data\Projects\70092xxx\70092424 - Hywel Dda Critical Care Centre Site Appraisals\03 WIP\EN Environmental\05 Reports\PRA\3-Site 17 Land at Tenby Road		

CONTENTS

TABLES

APPENDICES

EXECUTIVE SUMMARY

Site Details	The Site comprises an irregularly shaped land parcel of approximately 18 hectares which is located off Tenby Road and the A40, St Clears, Carmarthenshire. The Site is occupied by agricultural land (grassed fields) and the surrounding area is in use for residential, commercial and agricultural purposes.
Site History	The Site has remained in use as agricultural land and has not undergone any historical development. A number of developments have been constructed in close proximity to the Site including the A40 and associated road-side trades/service stations.
Geology, Hydrogeology and Hydrology	The Site is reported to be partially underlain by superficial deposits of Glacial Till (Secondary (Undifferentiated) Aquifer) which is underlain by bedrock deposits of the Lower Llanvirn Didymograptus Bifidus Beds (Mudstone) and the Arenig Tetragraptus Beds (Mudstone), which are classified as Secondary B Aquifers. Localised Made Ground may be present within the vicinity of a potentially infilled pond that was formerly located in the north-eastern area of the Site Groundwater vulnerability across the Site is reported to be medium and local small-scale domestic abstraction has been noted to have historically occurred within the local area. No surface water features are present on Site and the nearest is located approximately 20m to the south-east of the Site which is indicated to flow in an easterly direction on historical mapping and is an unnamed tributary of the Afon Cynin (which is located approximately 110m to the east 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 Site is not at risk of flooding from surface water and small watercourses.
Radon	The Site is located within areas where between 3% and 10% of the properties would be estimated to exceed the Radon Action Level. As such, basic radon protection measures are likely to 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, depending on the nature of the material used to infill the pond located in the north-eastern corner of the Site the potential exists for localised contamination. The most noticeable sources of potential off-Site contamination comprise the active filling stations (nearest approximately 140mto the south of the Site) and the two cemeteries/burial grounds identified within the Sites surroundings (50m south-east and 300m north-west). 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 area of the infilled pond formerly located in the north-eastern area of the Site; 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 to inform 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 17' (herein referred to as the 'Site') which is located off Tenby Road, St Clears, 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 used by WSP to inform the the ground conditions assessment. Relevant data has been referenced throughout the report.

Table 1-1 – Information Sources

Information Source	Comments
Groundsure Insights, Historical Maps, 2022. Report number WSP-8604618 (**Appendix C**)	Historic and recent maps of the area, dating from 1880 to 2022.
Groundsure Insights, Enviro+Geo Insight, 2022. Reference WSP-8604619 (**Appendix C**)	Environmental database search encompassing permits, licences and environmental designations.
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 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 provides details of the Site obtained from a review of Ordnance Survey (OS) mapping, online aerial photography, key regulatory information obtained from the Groundsure report (provided in **Appendix C**) and key observations made during ta 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 off Tenby Road, to the north/north-east of the A40, on the western outskirts of St Clears, Carmarthenshire.
Coordinates (E, N)	227406E, 216377N
Site Area	The Site occupies approximately 18 hectares and comprises an irregularly shaped parcel of land.
Site Description / Current Use	The Site comprises agricultural land (grassed fields) that are lined with semi-mature/mature trees and hedgerows. A McDonald's restaurant and a Greggs food outlet with associated car parking and access roads have recently been constructed to the immediate south of the Site.
General Environment / Surrounding Land Use	**North:** Land use to the north comprises a mixture of residential housing interspersed with agricultural land and farm buildings. Residential developments are present to the north-east and north-west of the Site. A cemetery is present off Bethlehem Road located approximately 300m to the north-west of the Site. **East:** Land use to the east comprises a mixture of residential housing and small scale industrial/ commercial trades, mostly located off Pentre Road and Station Road within the town centre of St Clears. **South & West**: Beyond the roundabout to the south of the Site and the A40 to the west, land use predominantly comprises agricultural land with the exception of small clusters of housing/commercial trades straddling the A40. An Esso service station is noted approximately 200m to the south-west of the Site.
Site Access	The Site is currently accessed from gated access points along the road named as Lon Las which forms the northern Site boundary. During a Site walkover access gates were also noted to the west off the A40 but were observed to be obstructed by overgrown vegetation. Access is also possible from the McDonald's restaurant with a new access road and gate in place.
Site Topography / Elevation	Upon review of available Ordnance Survey mapping, the Site slopes gently downwards from west to east. The elevation is approximately 50m above ordnance datum (m AOD) in the north- western corner and 20m AOD in the north-eastern corner.
Ground Cover	Ground cover during a Site walkover comprised grassed fields with some localised marshy areas with reeds. The ground surface is disturbed at the field access points

Details	Description
	reflecting vehicle movements. Field boundaries are lined with hedgerow and semi-mature/mature trees. Exposed soil and/or a loose gravel cover was noted within the southern area of the Site adjacent to the commercial development where a McDonald's restaurant and Greggs food outlet have recently been constructed.
Above and Below Ground Utilities	WSP has not been provided with statutory utility plans for the Site to review. As such, it is uncertain whether utilities are present at the Site. Two newly installed electrical substations, in good condition and located on hardstanding were identified to the south of the Site associated with the neighbouring commercial units located off Tenby Road.

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*
1886-1887	The Site comprises agricultural fields, with the field boundaries of similar layout to those of the present day. Several of the fields are indicated to comprise rough pasture according to the historical mapping symbols.	Two small residential structures border the Site to the south (labelled as Brittania Terrace by 1907), a small structure is present to the north labelled as Heol-fawr and a number of small structures are present to the east within St Clears town centre. Land use to the north and south predominantly comprises agricultural fields. Developed areas are present within the settlements of St Clears to the east and Pwll-trap to the west. Bethlehem Chapel and associated burial ground are labelled within Pwll-trap (approximately 300m north-west). Two blacksmiths (approximately 75m and 300m east), a sawmill (approximately 250m south-east) and a chapel (approximately 50m south-east) are labelled within St Clears to the east. A watercourse, the Afon Cynin, is present approximately 140m to the east of the Site which flows north to south through St Clears. An unnamed stream is present approximately 25m to the south of the Site which is indicated to flow to the east.
1907	No significant changes noted. A small pond is present in the north-eastern corner of the Site.	A total of three wells are noted between approximately 90m and approximately 100m south-east of the Site and a spring is labelled adjacent to the aforementioned sawmill.
1907 - 1974	No significant changes noted.	No significant changes noted.
1974		A County Council Depot is now located on the south-eastern Site boundary. A new small development (labelled as *Bryncaerau* has been constructed adjacent to the north-eastern Site boundary

Date	On-Site	Off-Site*
		The sawmill and blacksmiths, together with the wells formerly located within St Clears are no longer shown. A Smithy is indicated approximately 370m to the south of the Site. A cattle market is noted within St Clears, approximately 445m to the east as well as a police station (approximately 230m to the east).
1989	No significant changes noted.	The A40 has been constructed along the south-western boundary of the Site and the roundabout for the A40 and A477 has been constructed towards the south.
2001	The pond formerly located in the north-eastern corner of the Site is no longer shown. No other significant changes noted.	St Clears Business Park has been constructed adjacent to the south-eastern Site boundary. Further properties have been constructed along Brittania Terrace adjacent to the southern Site boundary. A new housing development off Ostey Bank to the east has been constructed.
2022	No significant changes noted.	Upon review of aerial imagery within the Groundsure Report it's evident that a cemetery is also present within Sion Chapel approximately 50m to the south-east of the Site. A commercial unit (with a McDonalds restaurant and Greggs) has been constructed to the south of the Site, off the A40 roundabout.

*All quoted distances have been measured from the closest point along the Site boundary.

2.3 REGULATORY INFORMATION

A review of relevant regulatory information obtained from the Groundsure report is summarised in Table 2-3 below**.** Distances, unless specified, are from the nearest Site boundary.

Table 2-3 – Summary of Relevant Regulatory Information

Information	On-Site Location	Off-Site Within 250m/500m as Specified)	Details
Licensed Discharges to Controlled Waters	0	1 (within 500m)	One record of a licenced discharge to controlled waters present at 308m east of the Site, referring to an unspecified effluent entering the Afon Cynin. This consent has expired.
Pollution Incidents (EA)	0	5*** (within 500m)	Five records of pollution incidents recorded between 98m south-east and 443m south-west of the Site relating to release of crude sewage, suspended solids, containers, solvents and soils and clay. These incidents had between minor and no impact on water, between significant (98m south-east, 2009) and no impact on land and no impact on air.

Information	On-Site Location	Off-Site Within 250m/500m as Specified)	Details
Landfill Sites	0	0 (within 500m)	
Surface Ground Workings	1	3 (within 250m)	The on-Site record refers to the pond that was formerly located in the north-eastern corner of the Site. The off-site records refer to cuttings (associated with the construction of the A40) from 1989 that are located between 154m south and 233m south-east.
Waste Exemptions	0	25 (within 500m)	The records of waste exemptions were recorded between 22m west and 358m east of the Site including exemptions for: treating waste (denaturing of drugs, treatment of tyres and pulverising waste), using waste in construction, disposing of waste (via burning) and storing of waste.
Historical Industrial Land Uses	0*	17 (within 500m)	Historical land uses within the surrounding area are reported to comprise of blacksmiths, a sawmill, burial grounds (associated with a cemetery) and a police station..
Historical Tanks	0	2*** (within 500m)	Two records of historical tanks were identified at 431m south-east and 479m east of the Site.
Historical Garages/Filling Stations	0	5**** (within 500m)	The nearest historical garage was located approximately 188m south-west and the only historical filling station was recorded approximately 297m east of the Site.
Current Garages/ Filling Stations	0	2 (within 500m)	A Texaco filling station has been identified approximately 138m south by the Groundsure Report. Upon review of current aerial imagery an Esso filling station has also been identified approximately 200m to the west.
Historical Energy Features	0	1*** (within 500m)	One electrical substation has been identified approximately 326m to the east of the Site which dates back to 1970. Although not reported by the Groundsure Report, two newly constructed small

Information	On-Site Location	Off-Site Within 250m/500m as Specified)	Details
			substations within the commercial unit to the south of the Site were observed during a Site walkover
Recent Industrial Land Uses	0**	6 (within 250m)	Land uses off Site are between 20m south and 216m south-west and comprise electrical repair and servicing, leather products, telecommunications mast, vehicle cleaning services and a petrol station.

*The land use recorded on Site is the council depot which has been mislocated as it was located off-Site.
** The land use on Site is recorded as St Clears Business Park which is not located on Site and has likely been mislocated.
***Records have been duplicated for the same feature in the Groundsure Report but manually adjusted for this table.

WSP submitted a request to Carmarthenshire County Council for information relating to the contaminated land status of the Status of the Site. However, to date (May 2020) no response has been received.

2.4 SITE WALKOVER

A Site walkover was undertaken on the 22nd April 2022 by an experienced WSP Site engineer. All areas of the Site were accessible. The following key observations were made during the Site walkover:

- Field drains on Site were dry;
- Soft/boggy ground conditions were noted underfoot in the south-eastern and south-western areas of the Site;
- Historical sheep holds were observed adjacent to the access gates in the north and west of the Site;
- An old wall was noted to the east of the existing stream towards the south of Site; and
- Disturbance of the ground surface (caused by vehicles movements) was noted in the areas adjacent to the commercial unit that had recently been constructed to the south 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 Environmental Database Report (Groundsure, 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, 1:63,630, 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 southern areas of the Site where there has been recent disturbance of the ground at the surface and within the vicinity of the potentially infilled pond historically present within the north-eastern area of the Site.

SUPERFICIAL DEPOSITS

Two areas of superficial deposits are recorded as being present on the Site, both are comprised of Devensian Glacial Till (Diamicton). These deposits are shown to be present in the north-eastern and southern areas of the Site. Glacial Till is characterised by the BGS Lexicon as *"heterogenous mixture of clay, sand, gravel, and boulders varying widely in size and shape (diamicton)."*

BEDROCK

The bedrock beneath the northern area of the Site is comprised of the Arenig Tetragraptus Beds (Mudstone) reported by the BGS Lexicon to comprise *"fossiliferous shale beds."*

The Lower Llanvirn Didymograptus bifidus Beds (Mudstone) are present beneath the central and southern areas of the Site. These deposits are reported by the BGS Lexicon to comprise "*Grey silty graptolitic mudstones with thin tuffaceous horizons."*

STRUCTURAL GEOLOGY

The bedrock beneath the Site is shown to dip at approximately 70° to the north. One fault is present on the Site, striking east-west across the centre of the Site with an unknown displacement.

3.2 BGS EXPLORATORY HOLE RECORDS

There are nine BGS borehole records within 250m of the Site which are presented within **Appendix E.**

Generally, the borehole logs reported a surface cover of topsoil to approximately 0.30m bgl which was underlain by compositionally variable superficial deposits (varying quantities of silt, sand and clay). The depth to shale bedrock remained unproven but was noted to exceed 14.90m bgl (SN21NE7).

Groundwater data was available from three boreholes (SN21NE5, SN21NE6 and SN21NE40) which are located between 209m to the north-west, and 240m to the west of Site. Groundwater strikes during drilling were encountered at these locations between 25.33m and 49.2m above ordnance datum (AOD) (2.05m bgl and 7m bgl respectively).

3.3 COAL MINING ACTIVITIES

The Coal Authority interactive map viewer indicates that the Site is not located within a coal mining reporting area.

3.4 NON-COAL MINING ACTIVITIES

The Groundsure Report indicates that no natural cavities have been reported on-site.

The Groundsure Report indicates that the Site and the surrounding area have potentially received small scale underground mining. However, the Groundsure Report states that the *"potential for encountering difficult ground conditions is unlikely or localised and is at a level where it need not be considered".*

Three areas of cuttings have been identified by the Groundsure Report that are located between 154m and 233m to the south of the Site. These features relate to the development of highways (A40) infrastructure.

3.5 UNEXPLODED ORDNANCE (UXO)

A review of the Zetica Risk Map available online indicates that the Site is located 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 provided by Zetica states that there are no 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.**

3.6 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 clays	Negligible - Very Low
Running Sands	Negligible - Very Low
Compressible deposits	Negligible
Collapsible deposits	Very Low
Landslides	Very Low - Low
Ground dissolution of soluble rocks	Negligible

3.7 RADON

Within the Groundsure Report it is estimated that between 5% and 10% of the properties at the Site would exceed the Radon Action Level. A small part of the Site in the north-west is classified as an area where between 3% and 5% of properties would exceed the Radon Action Level.

The report states that basic radon protection measures would likely be required for future structures. Design of appropriate mitigation measures would be subject to agreement with the Local Authority.

3.8 HYDROGEOLOGY

The Glacial Till deposits beneath the Site are classified by Natural Resources Wales (NRW) as a Secondary (Undifferentiated) Aquifer. This aquifer designation is *"assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type."*

Both the Lower Llanvirn Didymograptus Bifidus and Arenig Tetragraptus bedrock units beneath the Site are classified by NRW as Secondary B Aquifers defined as *"predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers."*

The Groundsure Report indicates that the groundwater beneath the Site is of medium to high vulnerability associated with a low recharge potential of superficial deposits and a well-connected fracture network within the underlying bedrock. 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).

3.8.1. The Site is not located within a Source Protection Zone (SPZ). There are nine licenced groundwater abstraction sites within 2km of the Site, all of which are classed as historical. The nearest record was located 147m to the north-west of the Site where abstracted groundwater was utilised for farming and domestic uses.

3.9 HYDROLOGY

According to the Lle Geoportal the Site lies within the Afon Cynin catchment area.

The nearest surface water feature to the Site is located approximately 20m to the south-east which runs parallel to Tenby Road, and is indicated to flow in an easterly direction on historical mapping. A further small stream is identified approximately 180m to the north-west of the Site which flows towards the east, and is a tributary of the Afon Cynin, which is located approximately 110m to the east of the Site (at the closest point).

The Afon Cynin is classified as a Main River by National Resources Wales (NRW). The overall water quality of the Afon Cynin is classified as good, with a chemical rating of Good and an ecological rating of good (Cycle 2, 2018).

The Groundsure Report has not identified any surface water abstraction licences within 2km of the Site.

3.10 FLOOD RISK

The Groundsure Report lists three historic or recent flood events within 500m of the Site. These floods occurred between 91m to the north-east and 124m to the east of the Site (1981 – 1987). The flood events were caused by the channel capacities of both the Afon Cynin (Main River) and its associated tributaries (ordinary watercourses) being exceeded.

The Groundsure Report indicates that the Site is not indicated to be currently benefitting from any flood defence systems.

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 Site is not at risk of flooding from surface water and small watercourses.

The Groundsure Report indicates that the Site is at negligible to low risk from groundwater flooding.

3.11 DESIGNATED SITES AND SENSITIVE LAND USES

No SSSIs are recorded on Site. The closest SSSI is associated with the Aber Taf Estuary which is located 703m to the south of the Site, and is also a special area of conservation.

The Groundsure Report highlights the presence of a Grade II listed building (Island House) located 175m to the south-east of the Site.

No other ecologically or archaeologically sensitive land uses have been identified within 500m of the Site.

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	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
	The possible presence of very localised Made Ground that may have been used to infill the pond that was formerly located within the north-eastern corner of the Site.	Inorganic compounds (sulphate, sulphides & metals), petroleum hydrocarbons, polycyclic aromatic hydrocarbons (PAH), Semi/Volatile Organic Compounds (SVOC/VOCS's), hazardous gasses and vapours.

Location	Source	Potential Contaminants of Concern
Off-site	Potentially contaminative historical industrial/commercial trades identified within the surrounding area including: ▪ Council depot located adjacent to the south-eastern site boundary ▪ Blacksmiths (nearest located 75m east); ▪ Sawmill (approximately 250m south-east); and ▪ Historical garages (nearest approximately 190m south-west).	Inorganic compounds (sulphate, sulphides & metals), hydrocarbons, polycyclic aromatic hydrocarbons (PAH), Semi/Volatile Organic Compounds (SVOC/VOCS's), hazardous gasses and vapours.
	Potentially contaminative current land uses/features within the surrounding area including: ▪ Bethlehem Chapel cemetery (300m north-west); ▪ Sion Chapel and burial ground (approximately 50m south-east); and ▪ Current filling stations (nearest approximately 138m, south).	Burial grounds: Inorganic compounds (sulphate, sulphides & metals), ammoniacal nitrogen, ground gases (Carbon Dioxide, Methane) and biological pathogens. Filling stations: Petroleum hydrocarbons, polycyclic aromatic hydrocarbons (PAH) and hazardous vapours.

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 soil;
  - Ingestion of dusts/soil particles;
  - Inhalation of dusts and fibres (on and off-Site receptors); and
  - Inhalation of hazardous ground gasses/vapours (on and off-Site receptors)
- Pathways to Controlled Water receptors:
  - Soil erosion and/or overland flow to nearby 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 bedrock aquifers;

- Lateral migration of contaminants within groundwater to nearby 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 within structures (explosive risk).

4.3 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

- Underlying groundwater encountered within:
  - Secondary (Undifferentiated) Aquifer (Glacial Till deposits); and
  - Secondary B bedrock Aquifers (Lower Llanvirn Didymograptus and Arenig Tetragraptus Beds)
- Surface water features off-Site including:
  - The Afon Cynin (approximately 110m to the east);
  - Smaller unnamed streams/tributaries to the Afon Cynin located to the south-east and north-west of the Site.

INFRASTRUCTURE

- Buildings and Structures (inclusive of any water supply pipes etc.) that may be constructed as part of the future Site development.

4.4 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	The possible presence of very localised Made Ground that may have been used to infill the pond that was formerly located within the north-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. It is recommended that the nature of the material used to infill the former pond is investigated to assess its suitability for retention within the development.
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 by during demolition and/or earthworks required 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 nearby 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; and Lateral migration of contaminants within groundwater to nearby surface water features (i.e., contribution via baseflow).	Underlying groundwater and nearby surface water features	Medium	Unlikely	Low	Although the risk to controlled waters is considered to be low it is recommended that the groundwater quality at the Site is established as part of an intrusive investigation.
4		Direct contact with corrosive substances (e.g., sulphates and hydrocarbons) in the soil and shallow groundwater.	Future buildings and structures	Mild	Unlikely	Very Low	Although the risk to the durability of buried services / utilities and foundations due to aggressive ground conditions is considered to be very low it is recommended that this is confirmed as part of an intrusive investigation.
5		Accumulation of hazardous gases within structures (explosive risk).		Severe	Unlikely	Moderate/Low	Although the risk from ground gas is considered to be low It is recommended that the ground gas regime at the Site is established as part of an intrusive investigation with follow-up monitoring.
6	Application of soil additives (fertilisers, pesticides and herbicides) associated with historical/ongoing agricultural Site use	Dermal contact with 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.
7		Inhalation of dusts.	Neighbouring site users	Mild	Unlikely	Very Low	During the construction phase, potential risks posed to off-site receptors should be managed by the Principal Contractor.
8		Soil erosion and/or overland flow to off-Site surface water features;	Nearby surface water features	Medium	Unlikely	Low	The risk presented to the nearby minor surface water features is considered to be low.

Potential Contaminant Linkage (PCL)	Source	Pathway	Receptor	Consequence of Risk	Likelihood of Risk	Risk	Comments
9	Naturally occurring elevated levels of Radon	Inhalation of hazardous ground gasses	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							
10	Potentially contaminative features, land uses and historical/current trades identified within 500m of the Site as detailed within Table 4-2.	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.
11		Accumulation of hazardous gases within structures (explosive risk)	Future buildings and structures	Severe	Unlikely	Moderate/Low	
12		Lateral migration of contaminants within groundwater to Site.	Underlying groundwater	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.
13		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 from west to east, with the elevation varying between approximately 50m AOD in the north-western corner to approximately 20m AOD in the north-eastern corner.

The presence of localised boggy ground conditions in the southern area of the Site indicates that soils may be poorly drained in this area of the Site.

The published geological maps record the presence of Glacial Till in the north-eastern and southern areas of the Site. Elsewhere, weathered bedrock is likely to be present at the near surface.

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

Hazard	Details	Method of Risk Reduction
Poor Site drainage conditions	Areas of ground on-site indicate the presence of shallow groundwater and/or poor Site drainage (e.g., boggy ground conditions noted in the southern half of the Site).	An intrusive investigation should be undertaken across the Site to better understand the hydrogeological regime. 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 Glacial Till deposits are present across areas of the Site. Depending on the composition of these materials they may provide a suitable founding medium. Elsewhere, 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
Ground Improvement	A potentially infilled pond has been identified in the north-eastern corner of the Site. Depending on the nature of the material used to infill this could create a soft spot and cause potential instability for the future development.	It is recommended that the nature of the material used to infill the former pond is investigated to assess its suitability for retention within the development.
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.

Hazard	Details	Method of Risk Reduction
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 considered to be in an area of low environmental sensitivity.

The Site is reported to be partially underlain by superficial deposits of Glacial Till (Secondary (Undifferentiated) Aquifer) which are underlain by bedrock of the Lower Llanvirn Didymograptus Bifidus Beds (Mudstone) and the Arenig Tetragraptus Beds (Mudstone), which are classified as Secondary B Aquifers.

Groundwater vulnerability across the Site is reported to be medium 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.

The nearest surface water feature to the Site is located approximately 20m to the south-east of the Site which is indicated to flow in an easterly direction on historical mapping and is an unnamed tributary of the Afon Cynin (which is located approximately 110m to the east 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 Site is not at risk of flooding from surface water and small watercourses.

The Site is located within areas where between 3% and 10% 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 west to 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, depending on the nature of the material used to infill the pond located in the north-eastern corner of the Site the potential exists for very localised contamination. The most noticeable sources of potential off-Site contamination comprise the active filling stations (nearest approximately 140mto the south of the Site) and the two cemeteries/burial grounds identified within the Sites surroundings (50m south-east and 300m north-west).

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 area of the infilled pond formerly located in the north-eastern area of the Site; 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

Third-party Owned Land

Title : Site Layout
Author : ArcGIS Web AppBuilder
Scale : 1:10,498
Layout : WSP A4 Landscape
Current Time : 24/03/2022 12:33

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

Third-party Owned Land

Title : Site Layout
Author : ArcGIS Web AppBuilder
Scale : 1:10,498
Layout : WSP A4 Landscape
Current Time : 24/03/2022 12:32

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)

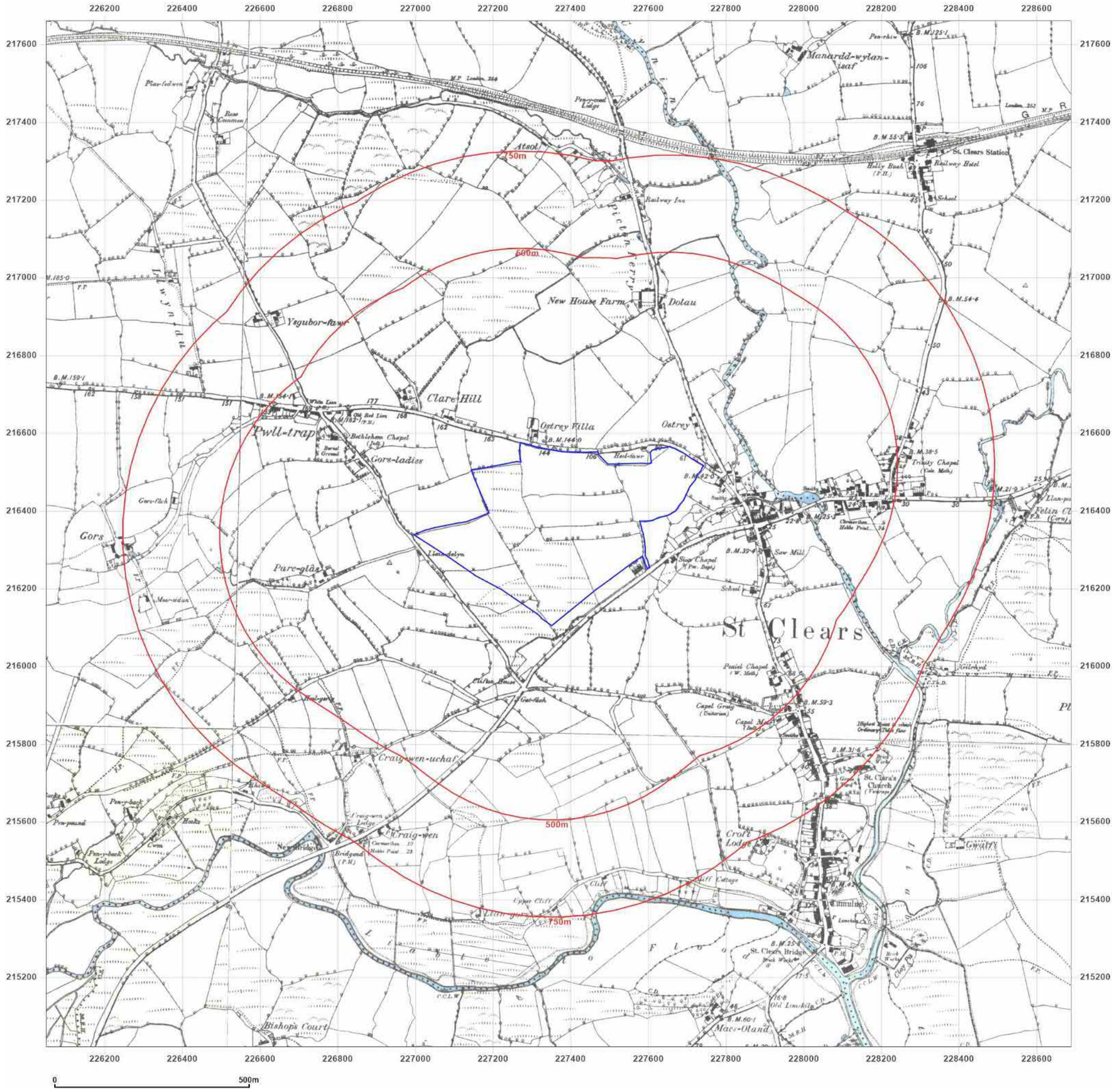
27. These reports are factual in nature and comprise monitoring, normally groundwater and ground gas and data provided by contractors as part of an earthworks or remedial works.

28. The data is presented and will be compared with assessment criteria.

Appendix C

GROUNDSURE REPORT

Confidential



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Report Ref: WSP-8614551
Grid Ref: 227368, 216340

Map Name: County Series

Map date: **1886-1887**

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Printed at: 1:10,560

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Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1887
Edition N/A
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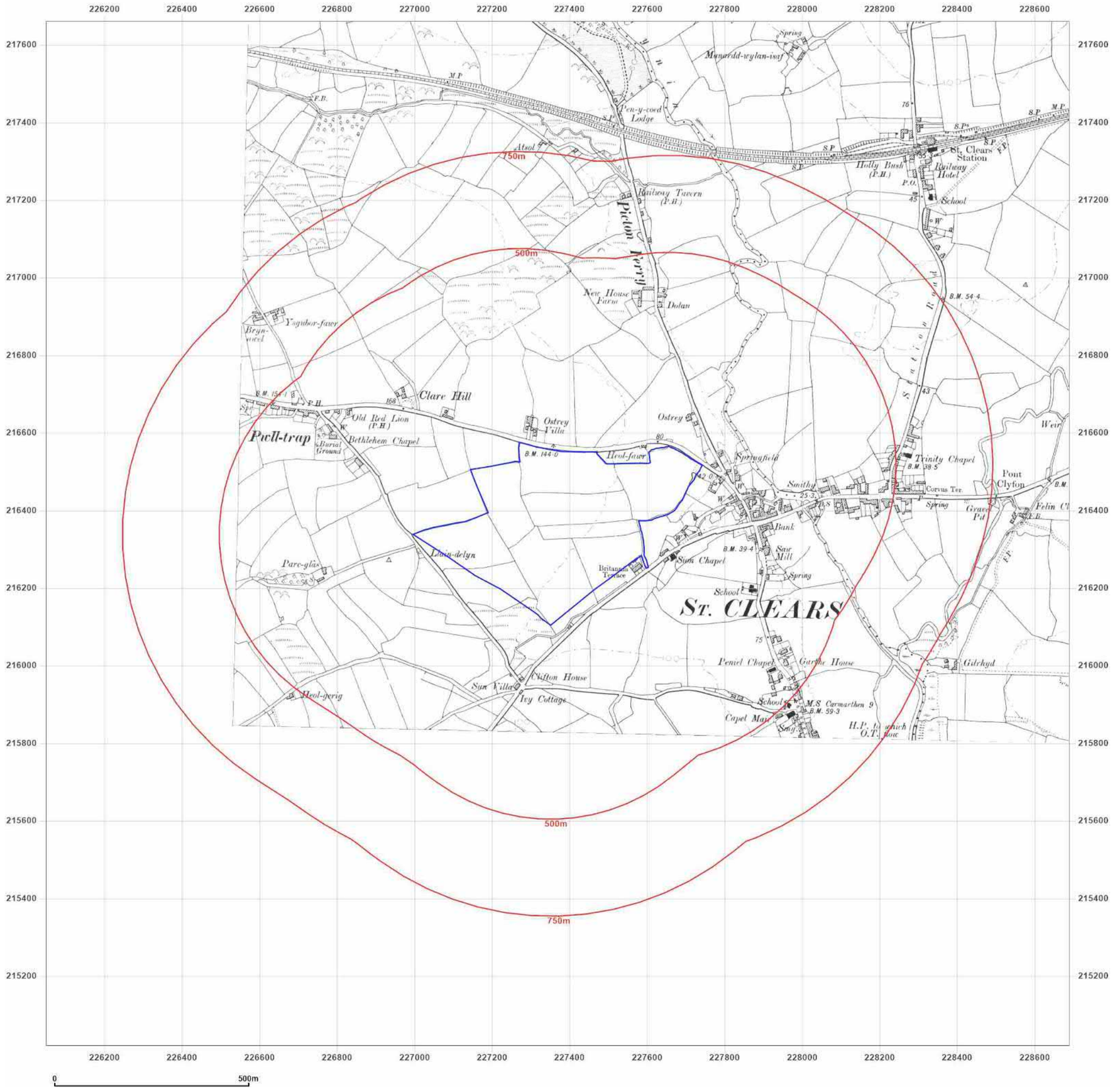

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Grid Ref: 227368, 216340

Map Name: County Series

Map date: **1907**

Scale: 1:10,560

Printed at: 1:10,560

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Revised 1907
Edition 1907
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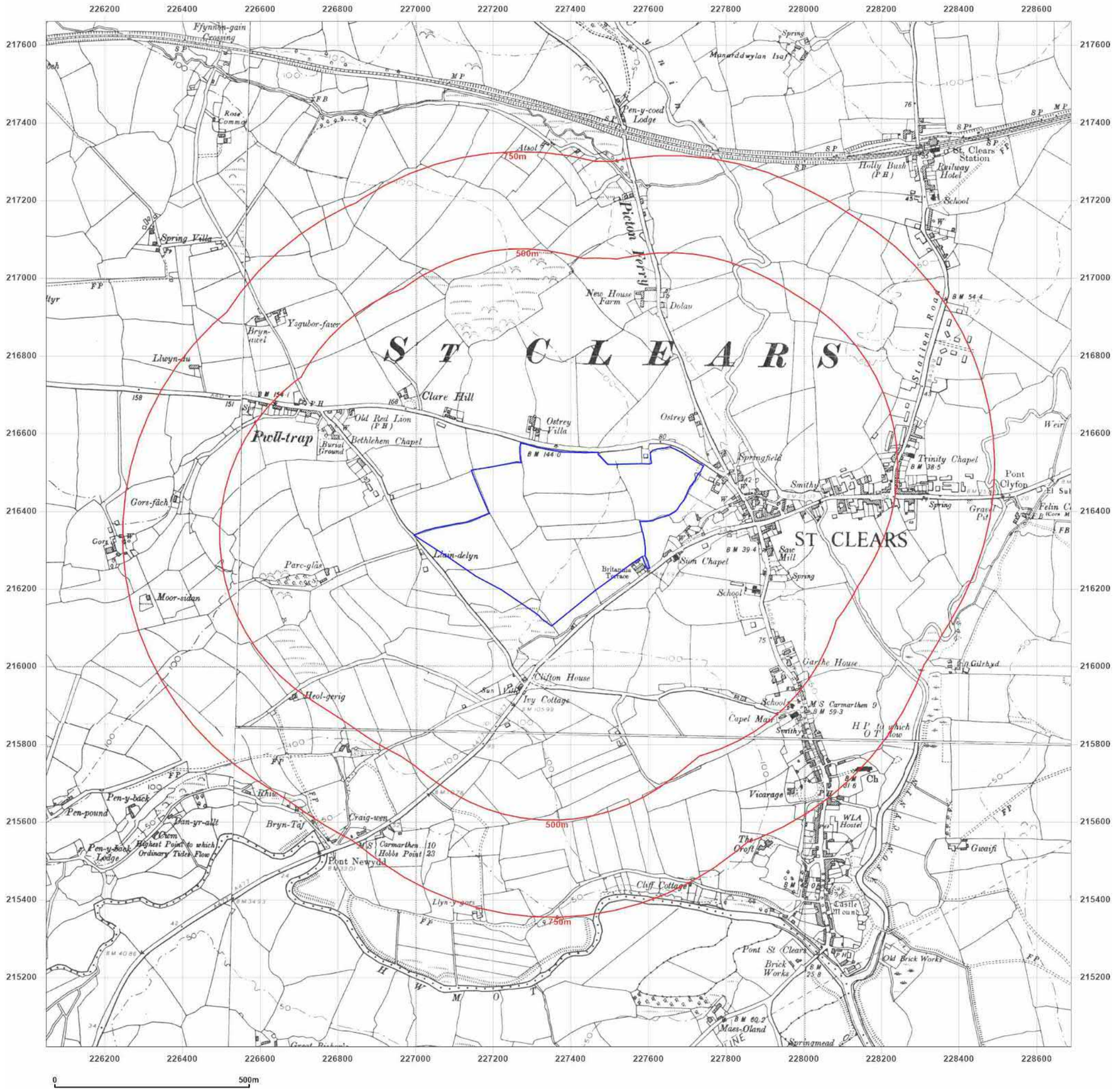

wsp

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Client Ref: Site_17
Report Ref: WSP-8614551
Grid Ref: 227368, 216340

Map Name: County Series

Map date: **1948**

Scale: 1:10,560

Printed at: 1:10,560

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Revised 1948
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Surveyed 1887
Revised 1948
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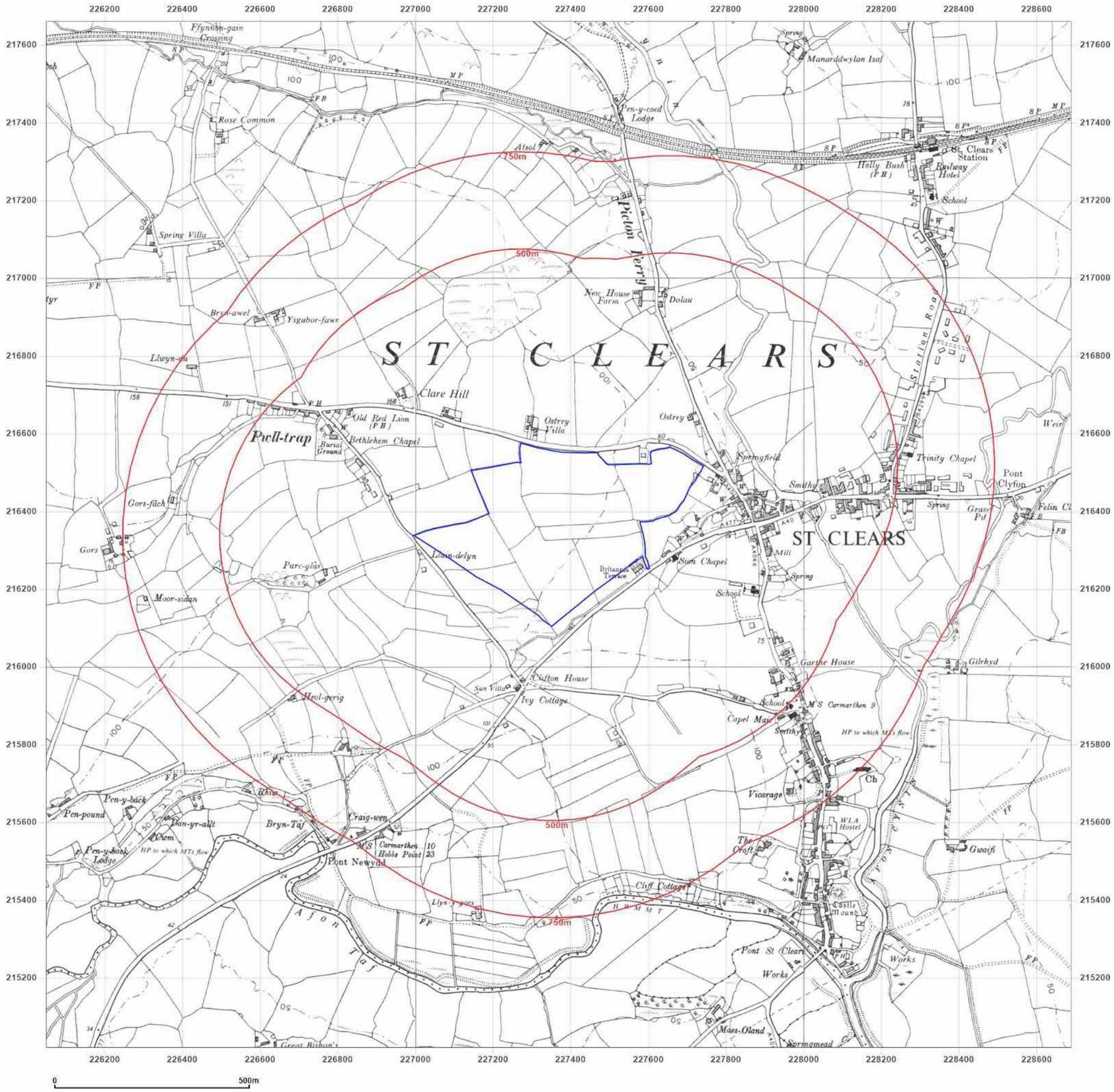

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Map date: **1963**

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Printed at: 1:10,560

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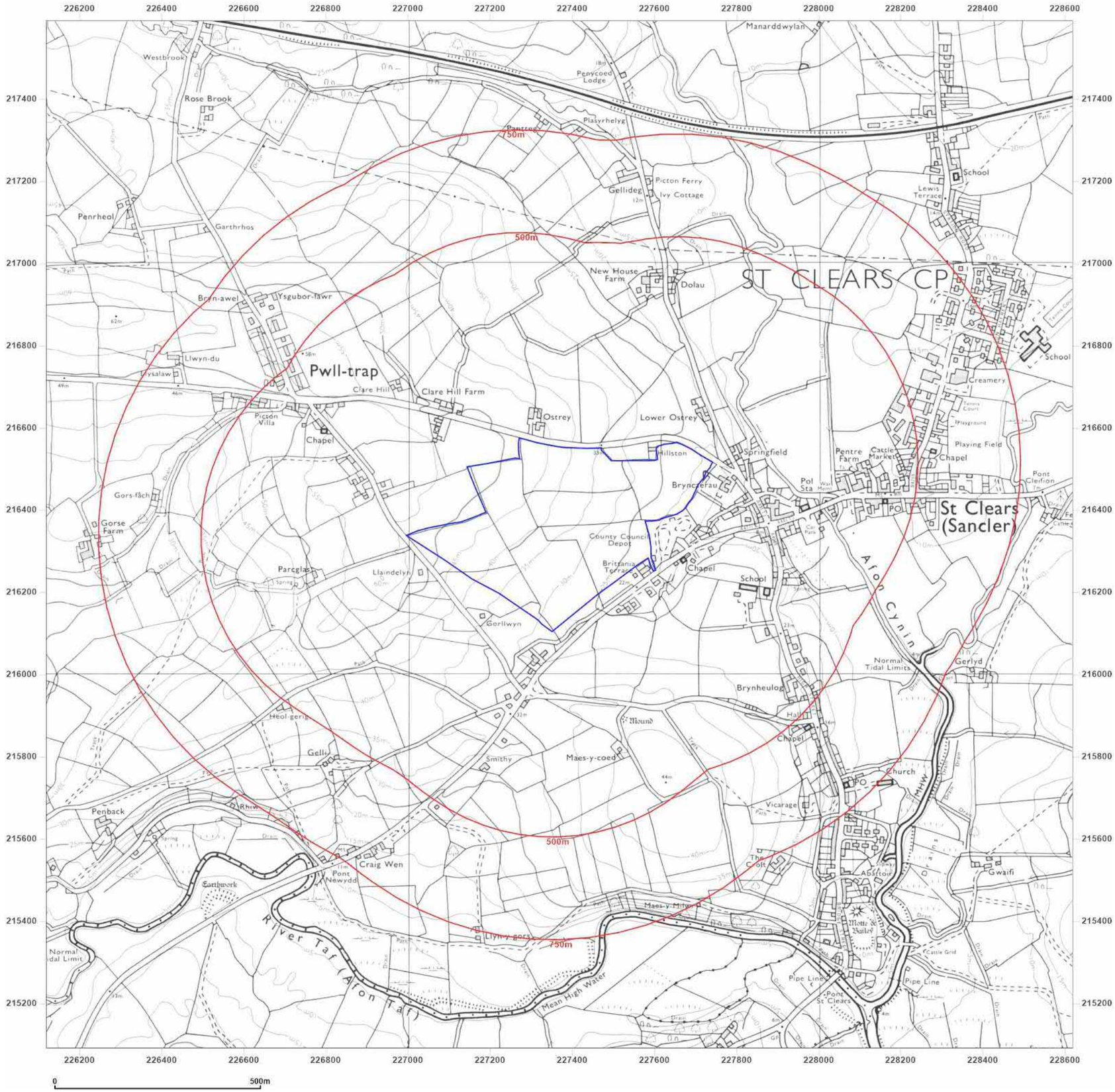

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Report Ref: WSP-8614551
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Map Name: National Grid

Map date: **1974**

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Printed at: 1:10,000

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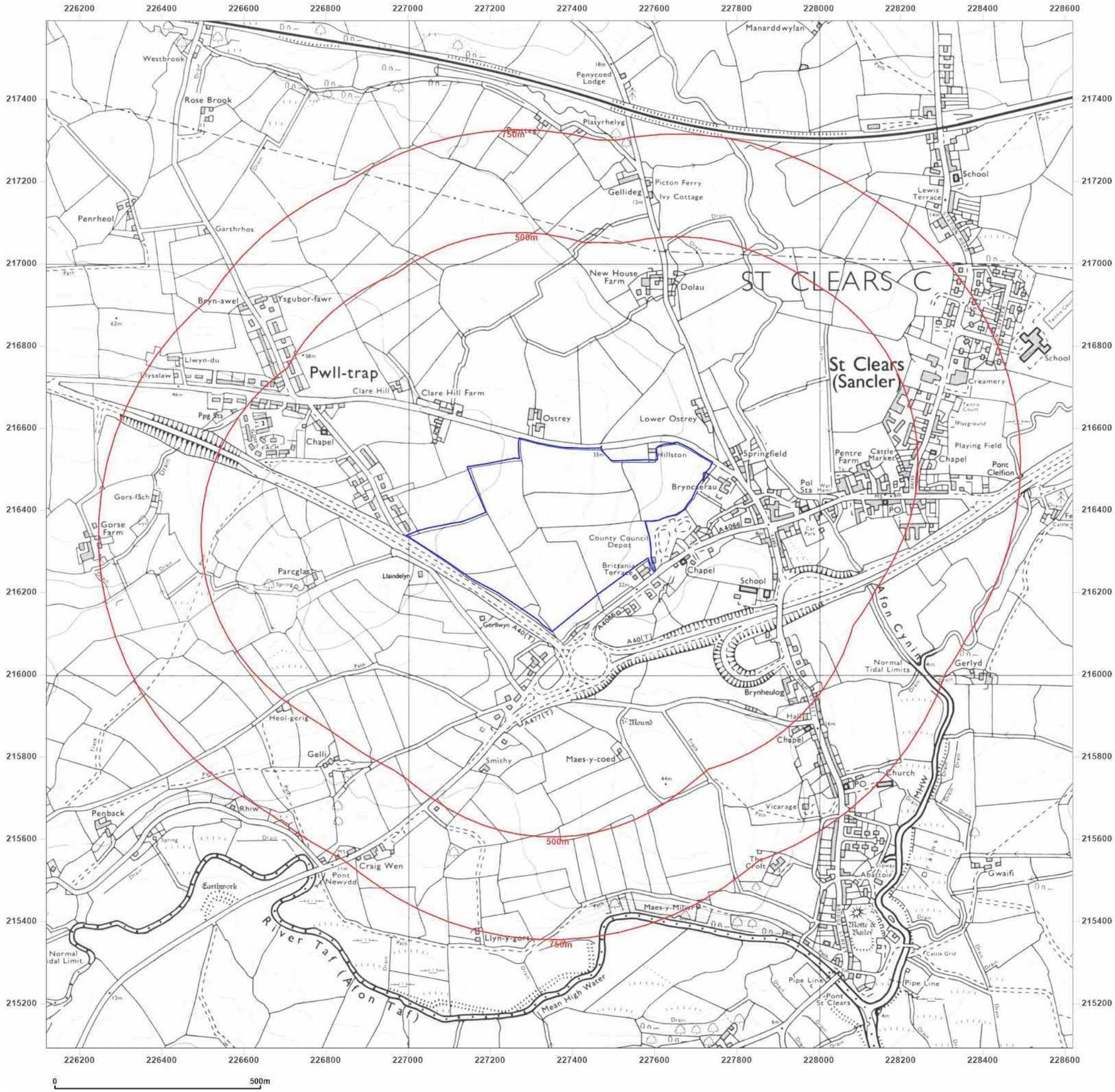

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Client Ref: Site_17
Report Ref: WSP-8614551
Grid Ref: 227368, 216340

Map Name: National Grid

Map date: **1989**

Scale: 1:10,000

Printed at: 1:10,000

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Revised 1989
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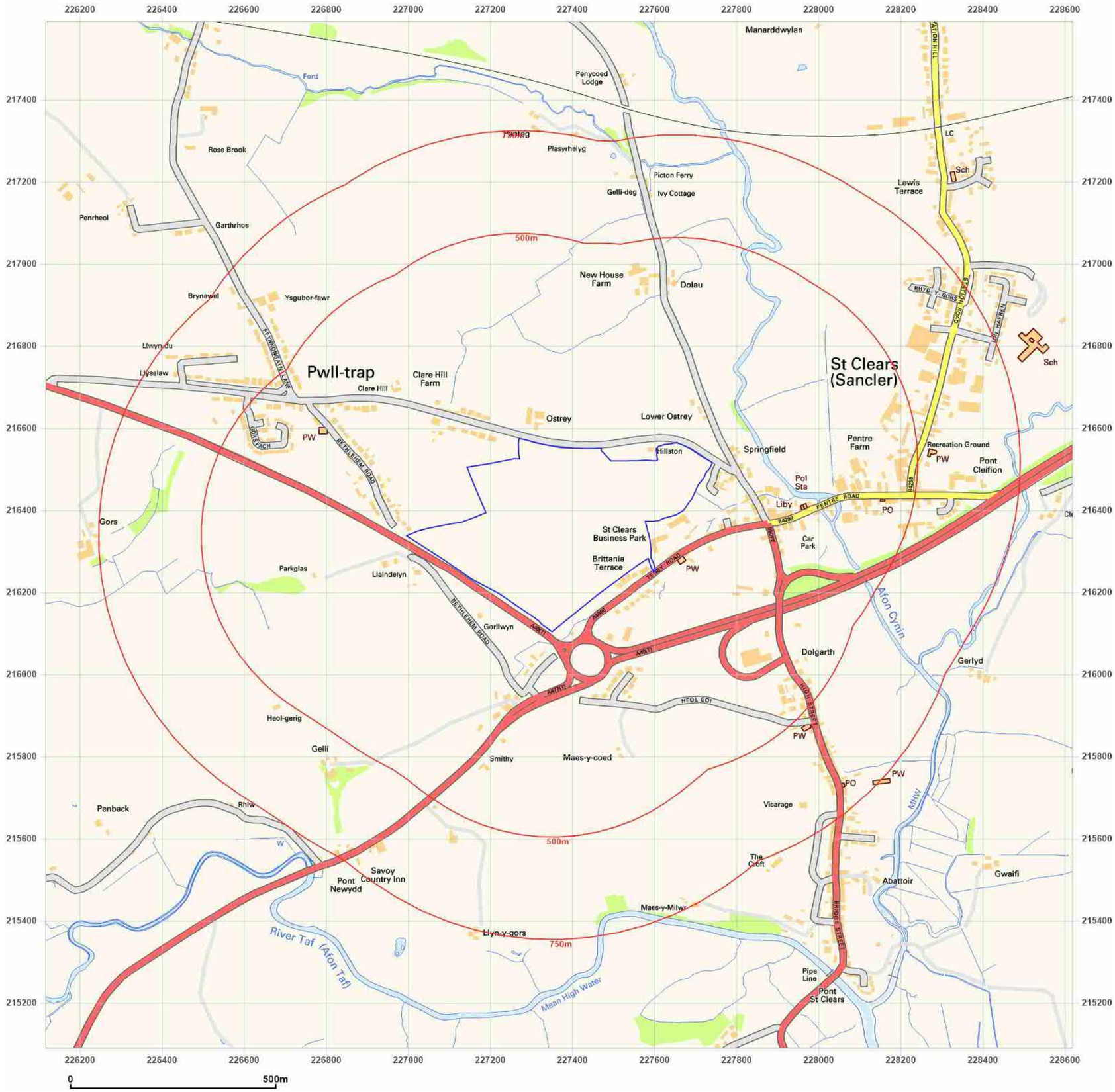

Site Details:

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Client Ref: Site_17
Report Ref: WSP-8614551
Grid Ref: 227368, 216340

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

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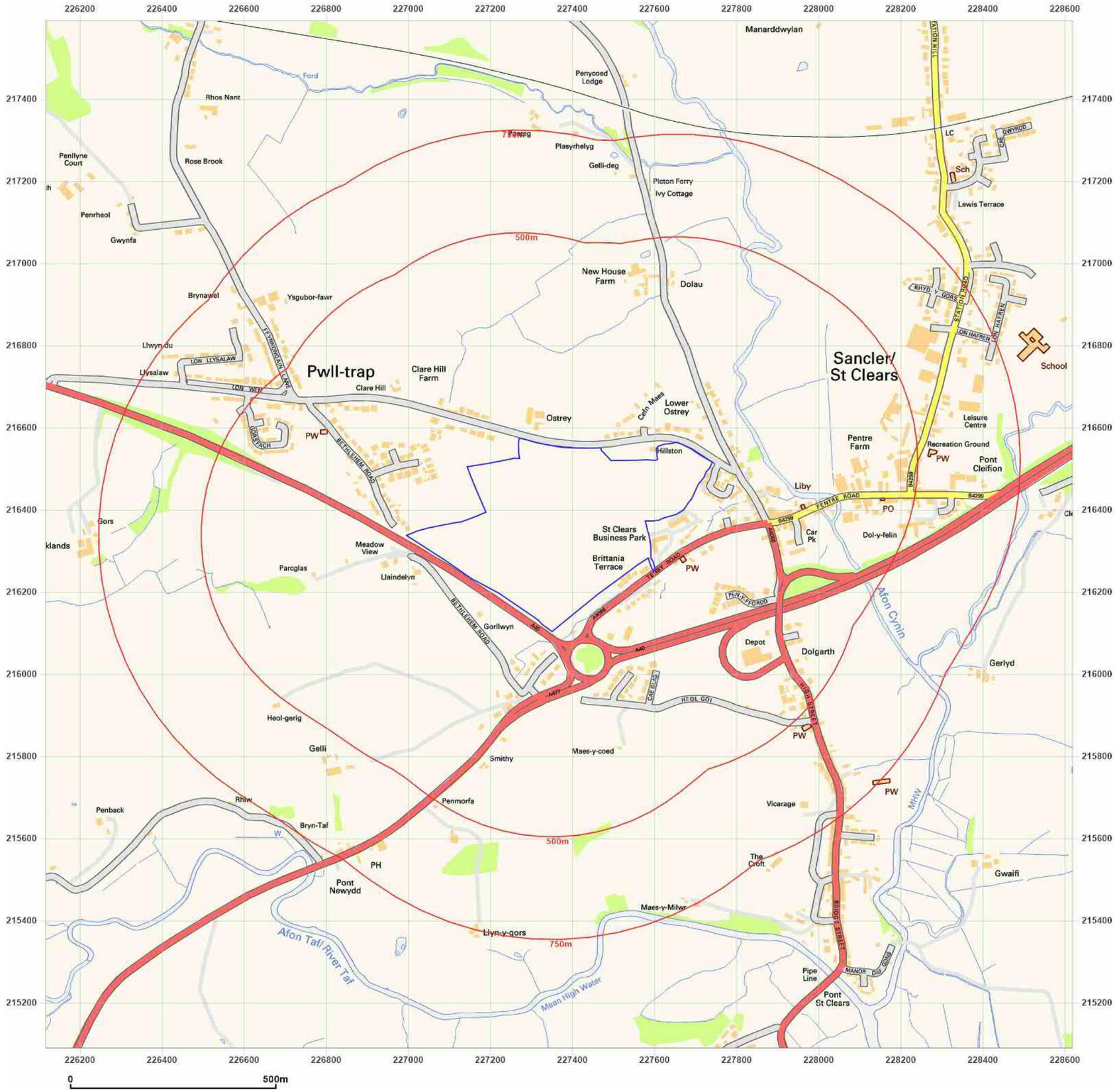

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Land at Tenby Road, TENBY ROAD, ST CLEARS, CARMARTHEN, SA33 4JW

Client Ref: Site_17
Report Ref: WSP-8614551
Grid Ref: 227368, 216340

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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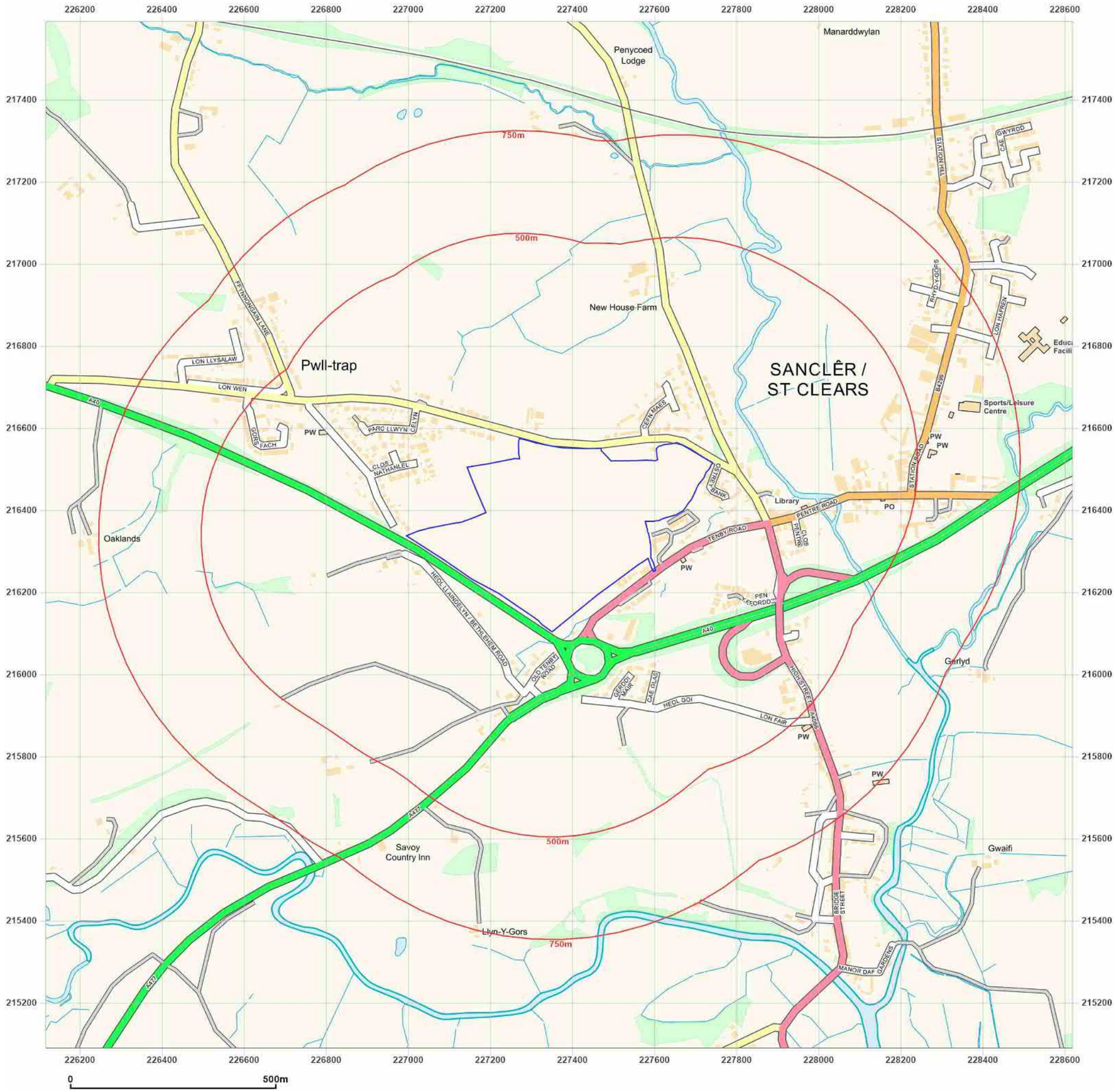

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Grid Ref: 227368, 216340

Map Name: National Grid

Map date: **2022**

Scale: 1:10,000

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LOCATION INTELLIGENCE

Enviro+Geo Insight

Land at Tenby Road, TENBY ROAD, ST CLEARS, CARMARTHEN, SA33 4JW

Order Details

Date: 22/03/2022

Your ref: Site_17

Our Ref: WSP-8614552

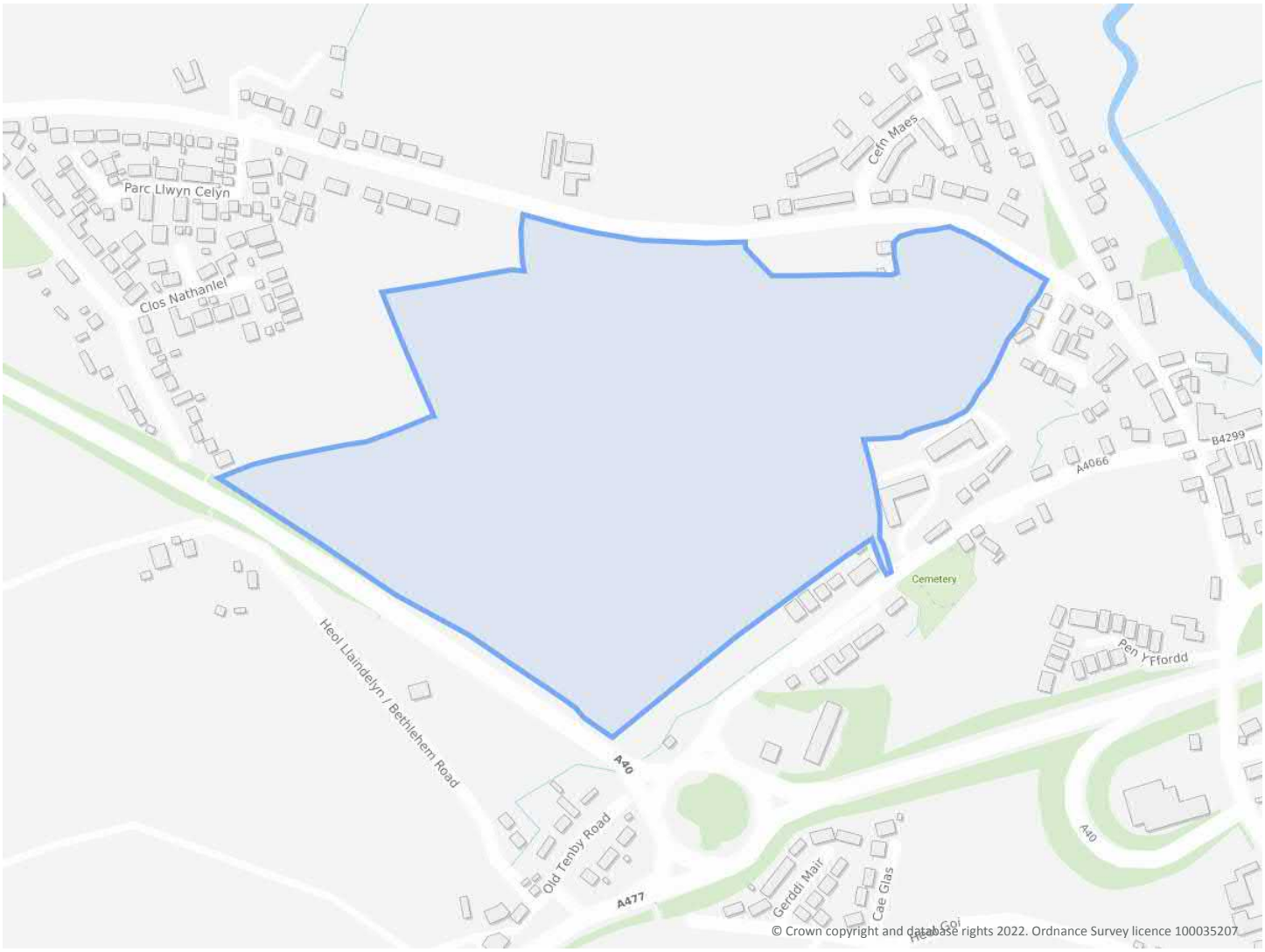
Client: Rebecca Hoyle

Site Details

Location: 227406 216377

Area: 18.19 ha

Authority: Sir Gaerfyrddin - Carmarthenshire County Council



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	1	0	10	6	-
14	1.2	Historical tanks	0	0	0	3	-
15	1.3	Historical energy features	0	0	0	2	-
15	1.4	Historical petrol stations	0	0	0	1	-
16	1.5	Historical garages	0	0	3	2	-
16	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**
17	2.1	Historical industrial land uses	2	0	11	9	-
18	2.2	Historical tanks	0	0	0	5	-
19	2.3	Historical energy features	0	0	0	2	-
19	2.4	Historical petrol stations	0	0	0	2	-
20	2.5	Historical garages	0	0	6	4	-
Page	**Section**	**Waste and landfill**	**On site**	**0-50m**	**50-250m**	**250-500m**	**500-2000m**
21	3.1	Active or recent landfill	0	0	0	0	-
21	3.2	Historical landfill (BGS records)	0	0	0	0	-
22	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
22	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
22	3.5	Historical waste sites	0	0	0	0	-
22	3.6	Licensed waste sites	0	0	0	0	-
22	3.7	Waste exemptions	0	2	2	21	-
Page	**Section**	**Current industrial land use**	**On site**	**0-50m**	**50-250m**	**250-500m**	**500-2000m**
26	4.1	Recent industrial land uses	1	2	3	-	-
27	4.2	Current or recent petrol stations	0	0	1	0	-
27	4.3	Electricity cables	0	0	0	0	-
27	4.4	Gas pipelines	0	0	0	0	-
28	4.5	Sites determined as Contaminated Land	0	0	0	0	-

28	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
28	4.7	Regulated explosive sites	0	0	0	0	-
28	4.8	Hazardous substance storage/usage	0	0	0	0	-
28	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
29	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
29	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
29	4.12	Radioactive Substance Authorisations	0	0	0	0	-
29	**4.13**	**Licensed Discharges to controlled waters**	0	0	0	1	-
30	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
30	4.15	Pollutant release to public sewer	0	0	0	0	-
30	4.16	List 1 Dangerous Substances	0	0	0	0	-
30	4.17	List 2 Dangerous Substances	0	0	0	0	-
30	**4.18**	**Pollution Incidents (EA/NRW)**	0	0	2	4	-
31	4.19	Pollution inventory substances	0	0	0	0	-
32	4.20	Pollution inventory waste transfers	0	0	0	0	-
32	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
33	**5.1**	**Superficial aquifer**	Identified (within 500m)				
35	**5.2**	**Bedrock aquifer**	Identified (within 500m)				
36	**5.3**	**Groundwater vulnerability**	Identified (within 50m)				
37	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
38	5.5	Groundwater vulnerability- local information	None (within 0m)				
39	**5.6**	**Groundwater abstractions**	0	0	1	0	8
41	5.7	Surface water abstractions	0	0	0	0	0
42	5.8	Potable abstractions	0	0	0	0	0
42	5.9	Source Protection Zones	0	0	0	0	-
42	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
43	**6.1**	**Water Network (OS MasterMap)**	4	2	15	-	-

45	6.2	Surface water features	0	4	11	-	-
45	6.3	WFD Surface water body catchments	1	-	-	-	-
46	6.4	WFD Surface water bodies	0	0	1	-	-
46	6.5	WFD Groundwater bodies	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
47	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
48	7.2	Historical Flood Events	0	0	3	-	-
48	7.3	Flood Defences	0	0	6	-	-
49	7.4	Areas Benefiting from Flood Defences	0	0	3	-	-
49	7.5	Flood Storage Areas	0	0	0	-	-
50	7.6	Flood Zone 2	None (within 50m)				
50	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
51	8.1	Surface water flooding	1 in 30 year, Greater than 1.0m (within 50m)				
Page	Section	Groundwater flooding					
53	9.1	Groundwater flooding	Low (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
54	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	3
55	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
55	10.3	Special Areas of Conservation (SAC)	0	0	0	0	1
56	10.4	Special Protection Areas (SPA)	0	0	0	0	0
56	10.5	National Nature Reserves (NNR)	0	0	0	0	0
56	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
56	10.7	Designated Ancient Woodland	0	0	0	0	10
57	10.8	Biosphere Reserves	0	0	0	0	0
57	10.9	Forest Parks	0	0	0	0	0
57	10.10	Marine Conservation Zones	0	0	0	0	0
58	10.11	Green Belt	0	0	0	0	0
58	10.12	Proposed Ramsar sites	0	0	0	0	0

58	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
58	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
58	10.15	Nitrate Sensitive Areas	0	0	0	0	0
59	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
60	10.17	SSSI Impact Risk Zones	0	-	-	-	-
60	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
61	11.1	World Heritage Sites	0	0	0	-	-
62	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
62	11.3	National Parks	0	0	0	-	-
62	**11.4**	**Listed Buildings**	0	0	1	-	-
63	11.5	Conservation Areas	0	0	0	-	-
63	11.6	Scheduled Ancient Monuments	0	0	0	-	-
63	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
64	**12.1**	**Agricultural Land Classification**	Grade 3b (within 250m)				
65	12.2	Open Access Land	0	0	0	-	-
65	12.3	Tree Felling Licences	0	0	0	-	-
65	12.4	Environmental Stewardship Schemes	0	0	0	-	-
65	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
66	13.1	Priority Habitat Inventory	0	0	0	-	-
66	13.2	Habitat Networks	0	0	0	-	-
66	13.3	Open Mosaic Habitat	0	0	0	-	-
66	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
67	**14.1**	**10k Availability**	Identified (within 500m)				
68	14.2	Artificial and made ground (10k)	0	0	0	0	-
69	14.3	Superficial geology (10k)	0	0	0	0	-

69	14.4	Landslip (10k)	0	0	0	0	-
70	14.5	Bedrock geology (10k)	0	0	0	0	-
70	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
71	**15.1**	**50k Availability**	Identified (within 500m)				
72	15.2	Artificial and made ground (50k)	0	0	0	0	-
72	15.3	Artificial ground permeability (50k)	0	0	-	-	-
73	**15.4**	**Superficial geology (50k)**	2	1	2	3	-
74	**15.5**	**Superficial permeability (50k)**	Identified (within 50m)				
74	15.6	Landslip (50k)	0	0	0	0	-
74	15.7	Landslip permeability (50k)	None (within 50m)				
75	**15.8**	**Bedrock geology (50k)**	2	0	0	0	-
76	**15.9**	**Bedrock permeability (50k)**	Identified (within 50m)				
76	**15.10**	**Bedrock faults and other linear features (50k)**	1	0	0	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
77	**16.1**	**BGS Boreholes**	0	2	7	-	-
Page	Section	Natural ground subsidence					
79	**17.1**	**Shrink swell clays**	Very low (within 50m)				
80	**17.2**	**Running sands**	Very low (within 50m)				
82	**17.3**	**Compressible deposits**	Negligible (within 50m)				
83	**17.4**	**Collapsible deposits**	Very low (within 50m)				
84	**17.5**	**Landslides**	Low (within 50m)				
86	**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
87	18.1	Natural cavities	0	0	0	0	-
88	18.2	BritPits	0	0	0	0	-
88	**18.3**	**Surface ground workings**	1	0	3	-	-
88	18.4	Underground workings	0	0	0	0	0
88	18.5	Historical Mineral Planning Areas	0	0	0	0	-

89	**18.6**	**Non-coal mining**	1	0	0	0	0
89	18.7	Mining cavities	0	0	0	0	0
89	18.8	JPB mining areas	None (within 0m)				
89	18.9	Coal mining	None (within 0m)				
90	18.10	Brine areas	None (within 0m)				
90	18.11	Gypsum areas	None (within 0m)				
90	18.12	Tin mining	None (within 0m)				
90	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
91	**19.1**	**Radon**	Between 3% and 5% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
93	**20.1**	**BGS Estimated Background Soil Chemistry**	14	2	-	-	-
94	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
94	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
95	21.1	Underground railways (London)	0	0	0	-	-
95	21.2	Underground railways (Non-London)	0	0	0	-	-
95	21.3	Railway tunnels	0	0	0	-	-
95	21.4	Historical railway and tunnel features	0	0	0	-	-
95	21.5	Royal Mail tunnels	0	0	0	-	-
96	21.6	Historical railways	0	0	0	-	-
96	21.7	Railways	0	0	0	-	-
96	21.8	Crossrail 1	0	0	0	0	-
96	21.9	Crossrail 2	0	0	0	0	-
96	21.10	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 14/05/2020

Site Area: 18.19ha

Recent site history - 2017 aerial photograph

Capture Date: 25/05/2017

Site Area: 18.19ha

Recent site history - 2013 aerial photograph

Capture Date: 04/06/2013

Site Area: 18.19ha

Recent site history - 2009 aerial photograph

Capture Date: 19/04/2009

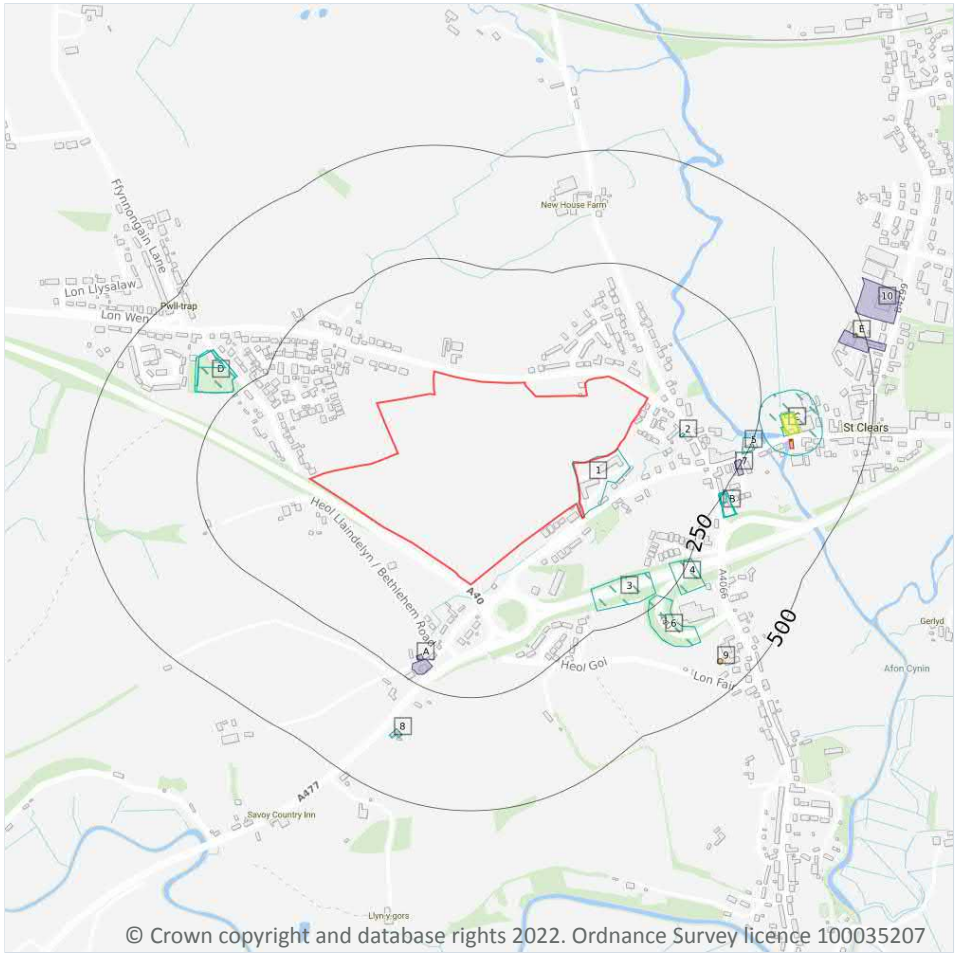
Site Area: 18.19ha

Recent site history - 2000 aerial photograph

Capture Date: 21/07/2000

Site Area: 18.19ha

1 Past land use



Site Outline

Search buffers in metres (m)

- Historical industrial land uses
- Historical tanks
- Historical energy features
- Historical petrol stations
- Historical garages

1.1 Historical industrial land uses

Records within 500m	17

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
1	**On site**	**Council Depot**	**1974 - 1989**	**315805**

ID	Location	Land use	Dates present	Group ID
2	102m SE	Smithy	1887	265703
3	154m S	Cuttings	1989	268754
4	213m SE	Cuttings	1989	268753
5	229m E	Police Station	1974 - 1989	291667
6	233m SE	Cuttings	1989	268755
B	242m SE	Unspecified Mill	1963	261794
B	243m SE	Sawmill	1887	275012
B	243m SE	Sawmill	1948	277502
B	243m SE	Sawmill	1907	304668
C	248m E	Smithy	1948	303601
D	257m NW	Burial Ground	1948 - 1963	279759
D	257m NW	Burial Ground	1887	313544
C	294m E	Smithy	1963	306163
C	304m E	Smithy	1887 - 1907	295887
D	308m NW	Burial Ground	1907	317103
8	358m SW	Smithy	1974 - 1989	309872

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**3**

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
9	431m SE	Unspecified Tank	1954 - 1994	35197
E	479m E	Unspecified Tank	1970	34963

ID	Location	Land use	Dates present	Group ID
E	479m E	Unspecified Tank	1981	36353

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	2

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
C	326m E	Electricity Substation	1981	18641
C	327m E	Electricity Substation	1970	18358

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	1

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'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
C	297m E	Filling Station	1970 - 1981	694

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
A	188m SW	Garage	1969	6053
A	192m SW	Garage	1954 - 1994	6281
7	236m SE	Garage	1970 - 1976	6289
E	440m E	Garage	1970 - 1981	6376
10	497m NE	Garage	1970 - 1981	6430

This data is sourced from Ordnance Survey / Groundsure.

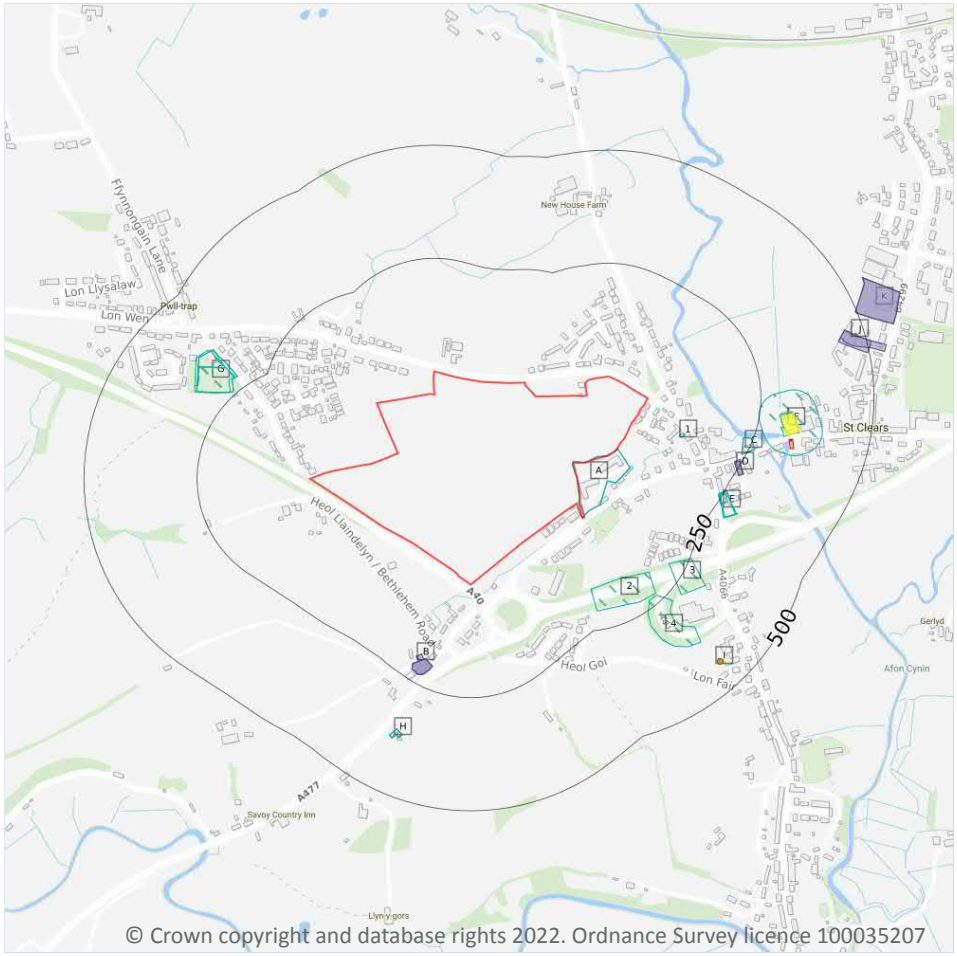
1.6 Historical military land

Records within 500m	0

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

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

2 Past land use - un-grouped



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Site Outline

Search buffers in metres (m)

- Historical industrial land uses
- Historical tanks
- Historical energy features
- Historical petrol stations
- Historical garages

2.1 Historical industrial land uses

Records within 500m	22

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 17**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Council Depot**	**1974**	**315805**
A	**On site**	**Council Depot**	**1989**	**315805**
1	102m SE	Smithy	1887	265703

ID	Location	Land Use	Date	Group ID
2	154m S	Cuttings	1989	268754
3	213m SE	Cuttings	1989	268753
C	229m E	Police Station	1974	291667
C	229m E	Police Station	1989	291667
4	233m SE	Cuttings	1989	268755
E	242m SE	Unspecified Mill	1963	261794
E	243m SE	Sawmill	1948	277502
E	243m SE	Sawmill	1887	275012
E	243m SE	Sawmill	1907	304668
F	248m E	Smithy	1948	303601
G	257m NW	Burial Ground	1948	279759
G	257m NW	Burial Ground	1887	313544
G	261m NW	Burial Ground	1963	279759
F	294m E	Smithy	1963	306163
F	304m E	Smithy	1887	295887
G	308m NW	Burial Ground	1907	317103
F	311m E	Smithy	1907	295887
H	358m SW	Smithy	1974	309872
H	358m SW	Smithy	1989	309872

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	**5**

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 17**

ID	Location	Land Use	Date	Group ID
I	431m SE	Unspecified Tank	1954	35197

ID	Location	Land Use	Date	Group ID
I	431m SE	Unspecified Tank	1994	35197
I	431m SE	Unspecified Tank	1993	35197
J	479m E	Unspecified Tank	1970	34963
J	479m E	Unspecified Tank	1981	36353

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	2

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 17**

ID	Location	Land Use	Date	Group ID
F	326m E	Electricity Substation	1981	18641
F	327m E	Electricity Substation	1970	18358

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	2

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'.

Features are displayed on the Past land use - un-grouped map on **page 17**

ID	Location	Land Use	Date	Group ID
F	297m E	Filling Station	1970	694
F	298m E	Filling Station	1981	694

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m	10

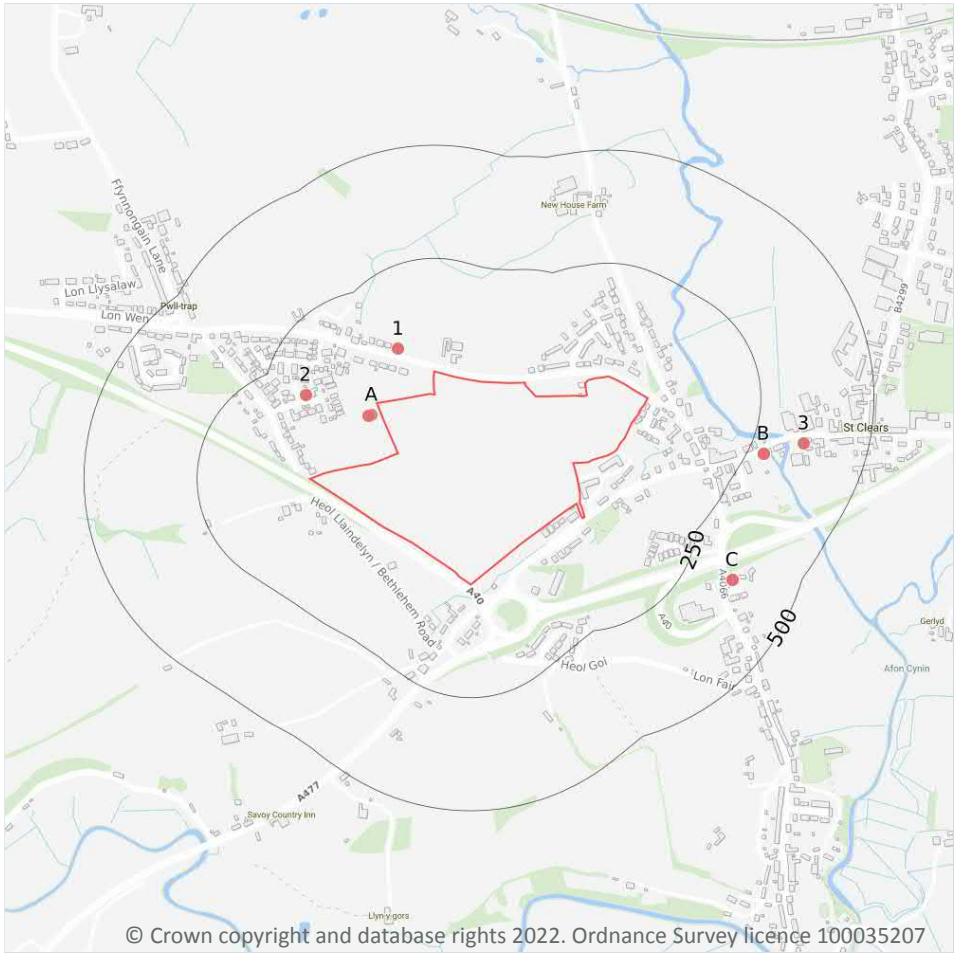
Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 17**

ID	Location	Land Use	Date	Group ID
B	188m SW	Garage	1969	6053
B	192m SW	Garage	1954	6281
B	192m SW	Garage	1994	6281
B	192m SW	Garage	1993	6281
D	236m SE	Garage	1970	6289
D	238m SE	Garage	1976	6289
J	440m E	Garage	1970	6376
J	446m E	Garage	1981	6376
K	497m NE	Garage	1970	6430
K	497m NE	Garage	1981	6430

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	25

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 21**

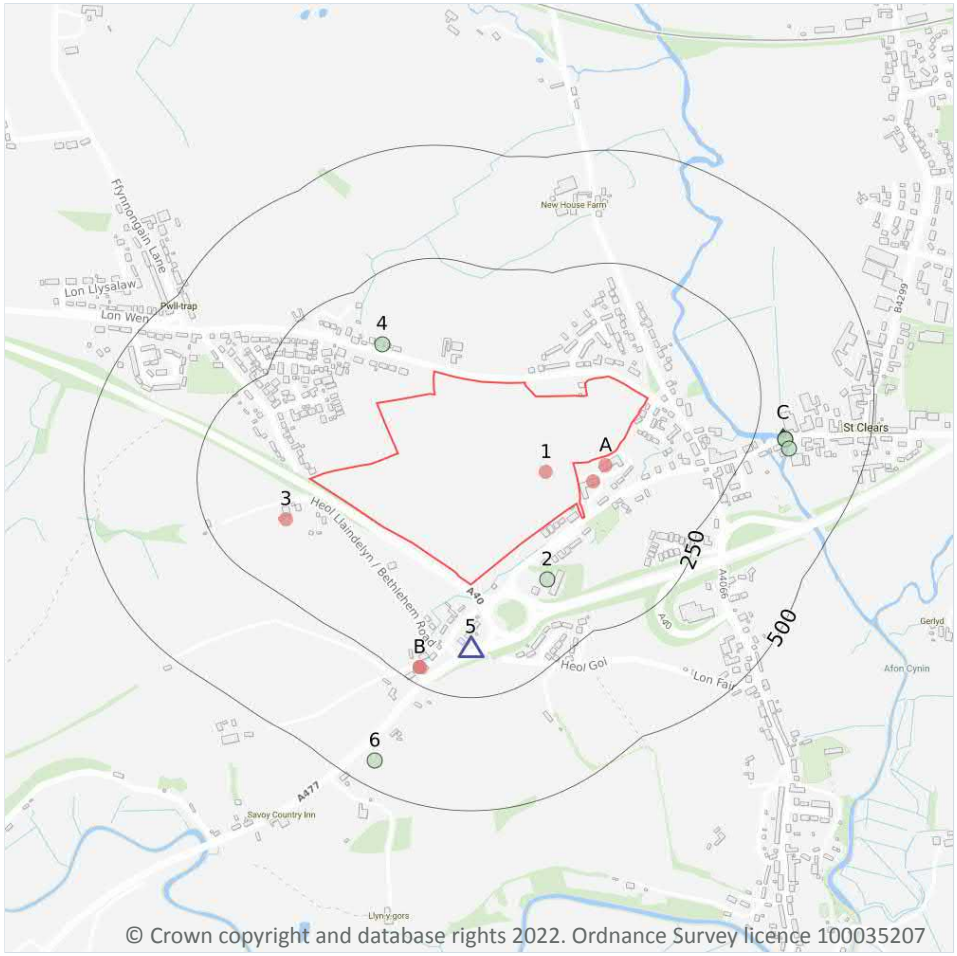
ID	Location	Site	Reference	Category	Sub-Category	Description
A	22m W	DCWW, Ashbrook, Ffynnongain Lane, Pwlltrap, St. Clears, Carmarthen, Sir Gaerfyrddin, SA33 4AR	NRW-WME051724	Storing waste exemption	Not on a farm	Storage of sludge
A	29m W	DCWW, Ashbrook, Ffynnongain Lane, Pwlltrap, St. Clears, Carmarthen, Sir Gaerfyrddin, SA33 4AR	NRW-WME067358	Storing waste exemption	Not on a farm	Storage of sludge
1	95m NW	Ostrey Farm Sancler Caerfyrddin SA334AJ	NRW-WME022739	Disposing of waste exemption	On a farm	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
2	160m W	ACR Wales Environmental Ltd, 5 Clos Nathaniel, St. Clears, Carmarthen, Sir Gaerfyrddin, SA334AW	NRW-WME029070	Using waste exemption	Waste Exemption - Agricultural and Non-Agricultural	Use of waste in construction
B	283m SE	E Morgan, Pentre Farm, Heol Y Pentre, Sancler, Caerfyrddin, SA334AA	NRW-WME014088	Treating waste exemption	On a farm	Mechanical treatment of end-of-life tyres
B	283m SE	E Morgan, Pentre Farm, Heol Y Pentre, Sancler, Caerfyrddin, SA334AA	NRW-WME014088	Disposing of waste exemption	On a farm	Burning waste in the open
B	283m SE	E Morgan, Pentre Farm, Heol Y Pentre, Sancler, Caerfyrddin, SA334AA	NRW-WME014088	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
B	283m SE	E Morgan, Pentre Farm, Heol Y Pentre, Sancler, Caerfyrddin, SA334AA	NRW-WME014088	Storing waste exemption	On a farm	Storage of waste in a secure place
B	283m SE	E Morgan, Pentre Farm, Heol Y Pentre, Sancler, Caerfyrddin, SA334AA	NRW-WME014088	Using waste exemption	On a farm	Spreading of plant matter to confer benefit
B	283m SE	E Morgan, Pentre Farm, Heol Y Pentre, Sancler, Caerfyrddin, SA334AA	NRW-WME014088	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
B	283m SE	E Morgan, Pentre Farm, Heol Y Pentre, Sancler, Caerfyrddin, SA334AA	NRW-WME014088	Disposing of waste exemption	On a farm	Disposal by incineration

ID	Location	Site	Reference	Category	Sub-Category	Description
B	283m SE	E Morgan, Pentre Farm, Heol Y Pentre, Sancler, Caerfyrddin, SA334AA	NRW-WME014088	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
C	354m SE	Brynheulog High Street Sancler Caerfyrddin SA334DY	NRW-WME017248	Storing waste exemption	On a farm	Storage of waste in a secure place
C	354m SE	Brynheulog High Street Sancler Caerfyrddin SA334DY	NRW-WME017248	Using waste exemption	On a farm	Spreading of plant matter to confer benefit
C	354m SE	Brynheulog High Street Sancler Caerfyrddin SA334DY	NRW-WME017248	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
C	354m SE	Brynheulog High Street Sancler Caerfyrddin SA334DY	NRW-WME017248	Using waste exemption	On a farm	Use of waste in construction
C	354m SE	Brynheulog High Street Sancler Caerfyrddin SA334DY	NRW-WME017248	Disposing of waste exemption	On a farm	Disposal by incineration
C	354m SE	Brynheulog High Street Sancler Caerfyrddin SA334DY	NRW-WME017248	Disposing of waste exemption	On a farm	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
C	354m SE	Brynheulog High Street Sancler Caerfyrddin SA334DY	NRW-WME017248	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
C	354m SE	Brynheulog High Street Sancler Caerfyrddin SA334DY	NRW-WME017248	Using waste exemption	On a farm	Use of waste for a specified purpose
C	354m SE	Brynheulog High Street Sancler Caerfyrddin SA334DY	NRW-WME017248	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
C	354m SE	Brynheulog High Street Sancler Caerfyrddin SA334DY	NRW-WME017248	Disposing of waste exemption	On a farm	Burning waste in the open
C	355m SE	CVS Group PLC, Dyfed Farm Vets, 2 Pleasant View, St. Clears, Carmarthen, Sir Gaerfyrddin, SA33 4DY	NRW-WME068058	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal

ID	Location	Site	Reference	Category	Sub-Category	Description
C	355m SE	CVS (UK) Ltd, Market Hall Vets, St Clears, Carmarthenshire, SA33 4DY	NRW-WME061797	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
3	358m E	E Morgan, Pentre Farm, Heol Y Pentre, Sancler, Caerfyrddin, SA33 4AA	NRW-WME039300	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	6

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 26**

ID	Location	Company	Address	Activity	Category
1	**On site**	**St Clears Business Park**	**Dyfed, SA33**	**Business Parks and Industrial Estates**	**Industrial Features**
A	20m S	West Wales	Unit 8-9 St. Clears Business Park, Tenby Road, St. Clears, Carmarthen, Dyfed, SA33 4JW	Electrical Equipment Repair and Servicing	Repair and Servicing

ID	Location	Company	Address	Activity	Category
A	33m E	Tideydavies Ltd	Unit 6 St. Clears Business Park, Tenby Road, St. Clears, Carmarthen, Dyfed, SA33 4JW	Leather Products	Consumer Products
3	104m SW	Mast	Dyfed, SA33	Telecommunications Features	Infrastructure and Facilities
B	215m SW	Esso	St. Clears, Carmarthen, Dyfed, SA33 4JP	Petrol and Fuel Stations	Road and Rail
B	216m SW	Ivy Service Station	St. Clears, Carmarthen, Dyfed, SA33 4JP	Vehicle Cleaning Services	Personal, Consumer and Other Services

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 26**

ID	Location	Company	Address	LPG	Status
5	138m S	TEXACO	A477, St Clears, Carmarthen, Carmarthenshire, SA33 4JP	No	Open

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	1

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 26**

ID	Location	Address	Details	
C	308m E	O J WILLIAMS NR PENTRE FARM ST CLE, O J WILLIAMS NR PENTRE FARM ST, NR PENTRE FARM ST CLEARS, ST CLEARS	Effluent Type: UNSPECIFIED Permit Number: BP0144101 Permit Version: 1 Receiving Water: AFON CYNIN	Status: CONSENT EXPIRED - TIME LIMIT Issue date: 21/05/1990 Effective Date: 21/05/1990 Revocation Date: 16/02/1996

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

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0

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

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

4.15 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

Records within 500m	0

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

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

4.17 List 2 Dangerous Substances

Records within 500m	0

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

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m	6

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 26**

ID	Location	Details	
2	98m SE	Incident Date: 23/04/2009 Incident Identification: 673208 Pollutant: Specific Waste Materials Pollutant Description: Containers	Water Impact: Category 4 (No Impact) Land Impact: Category 2 (Significant) Air Impact: Category 4 (No Impact)
4	127m N	Incident Date: 03/10/2013 Incident Identification: 1164759 Pollutant: Organic Chemicals/Products Pollutant Description: Solvents	Water Impact: - Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
C	316m E	Incident Date: 29/06/2017 Incident Identification: 1703469 Pollutant: Inert Materials and Waste Pollutant Description: Soils and Clay	Water Impact: Category 3 (Minor) Land Impact: No Details Air Impact: No Details
C	316m E	Incident Date: 29/06/2017 Incident Identification: 1703469 Pollutant: - Pollutant Description: -	Water Impact: Category 3 (Minor) Land Impact: No Details Air Impact: No Details
C	331m E	Incident Date: 13/03/2014 Incident Identification: 1217600 Pollutant: Contaminated Water Pollutant Description: Suspended Solids	Water Impact: - Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
6	443m SW	Incident Date: 30/05/2014 Incident Identification: 1240442 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: - 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.

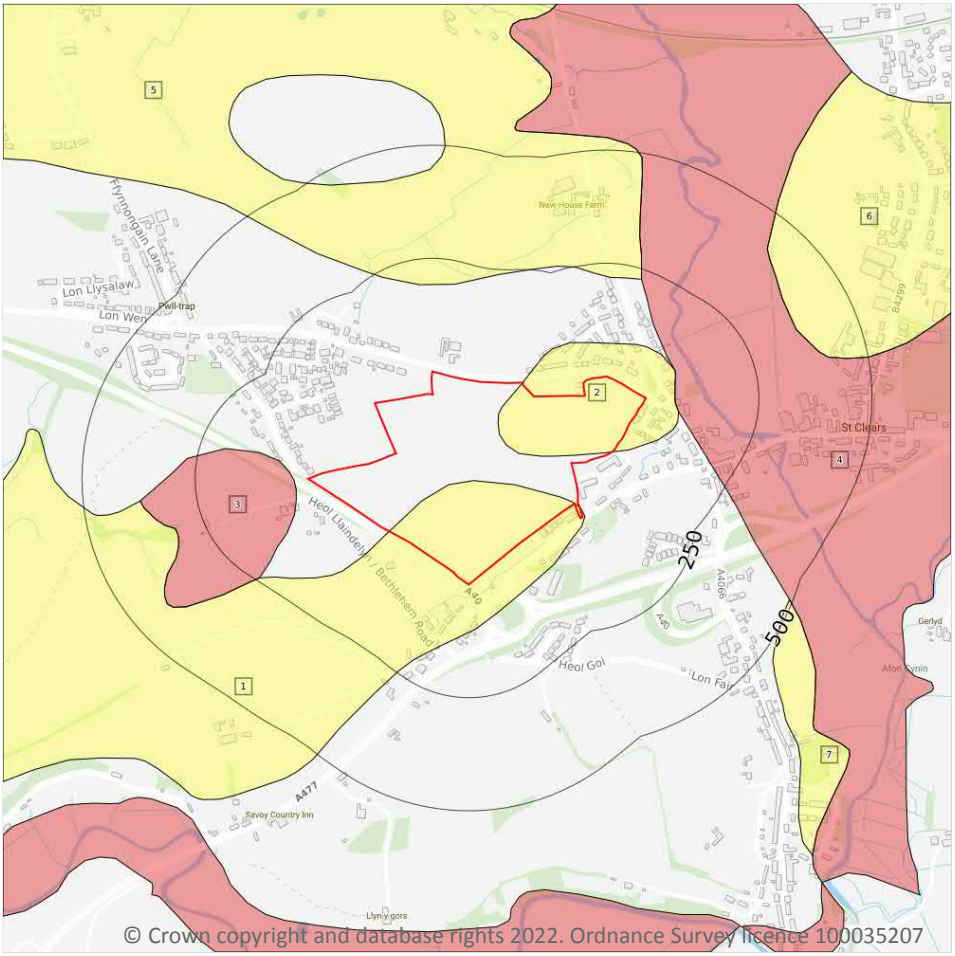
4.21 Pollution inventory radioactive waste

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	7

Aquifer status of groundwater held within superficial geology.

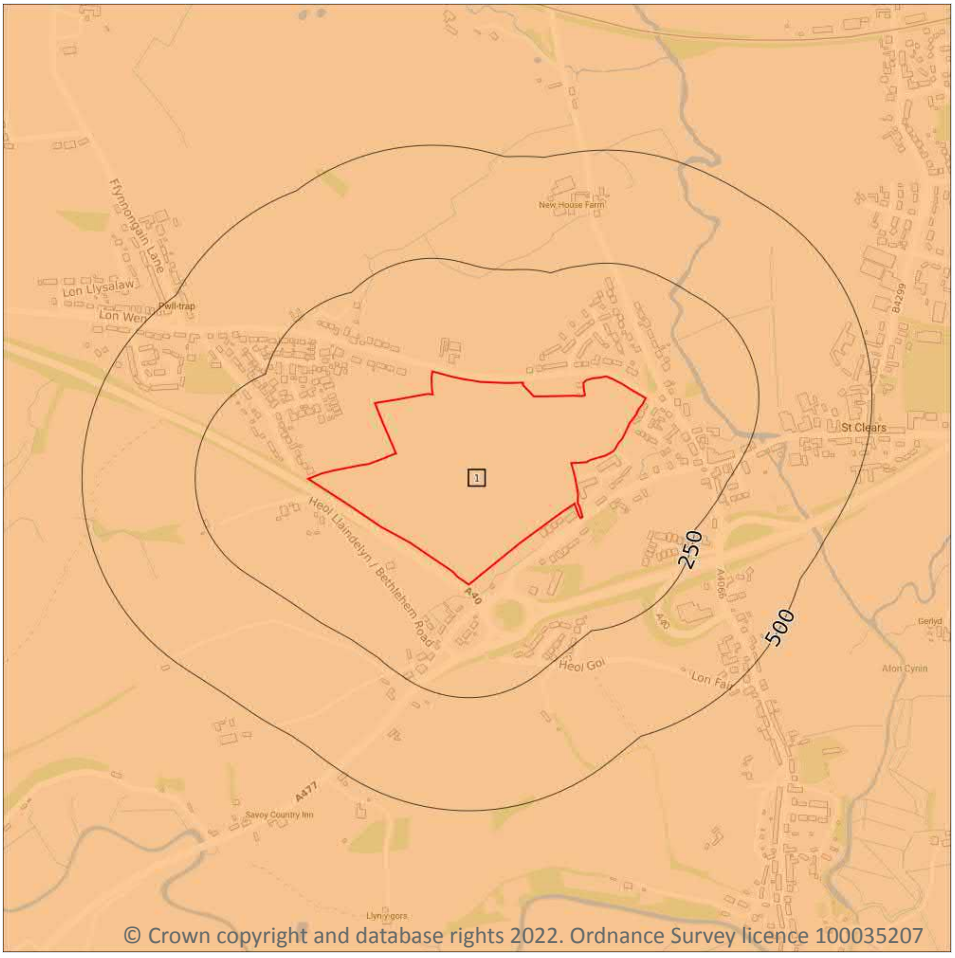
Features are displayed on the Hydrogeology map on **page 33**

ID	Location	Designation	Description
1	On site	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
2	On site	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

ID	Location	Designation	Description
3	31m 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
4	65m E	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
5	192m N	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
6	365m NE	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
7	492m SE	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

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

Bedrock aquifer



Site Outline

Search buffers in metres (m)

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

5.2 Bedrock aquifer

Records within 500m	1

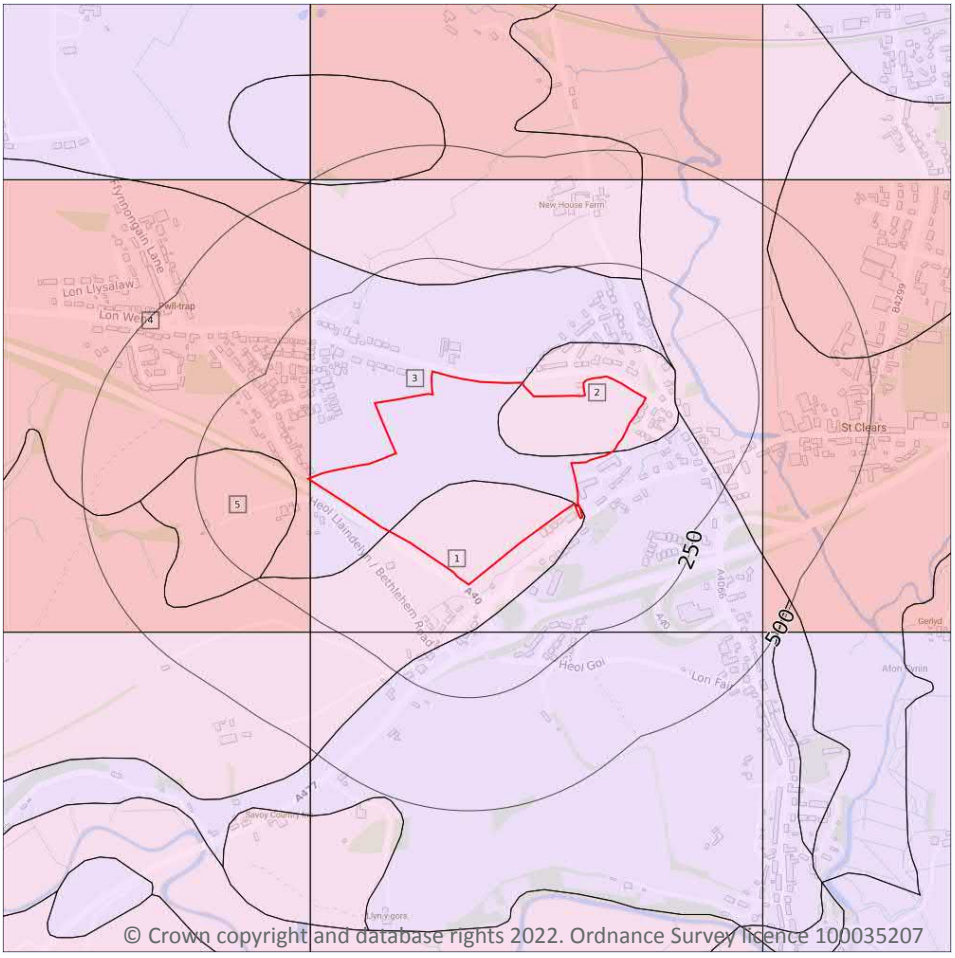
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 35**

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

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

Groundwater vulnerability



5.3 Groundwater vulnerability

Records within 50m	5

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 36**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	**On site**	**Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: Intermediate Infiltration value: 40-70% Dilution value: >550mm/year**	**Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: Low**	**Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures**
2	**On site**	**Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: Intermediate Infiltration value: 40-70% Dilution value: >550mm/year**	**Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: Low**	**Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures**
3	**On site**	**Summary Classification: Secondary bedrock aquifer - Medium 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: Low**	**Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures**
4	**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**
5	31m W	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: 40-70% Dilution value: >550mm/year	Vulnerability: Medium Aquifer type: Secondary 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.

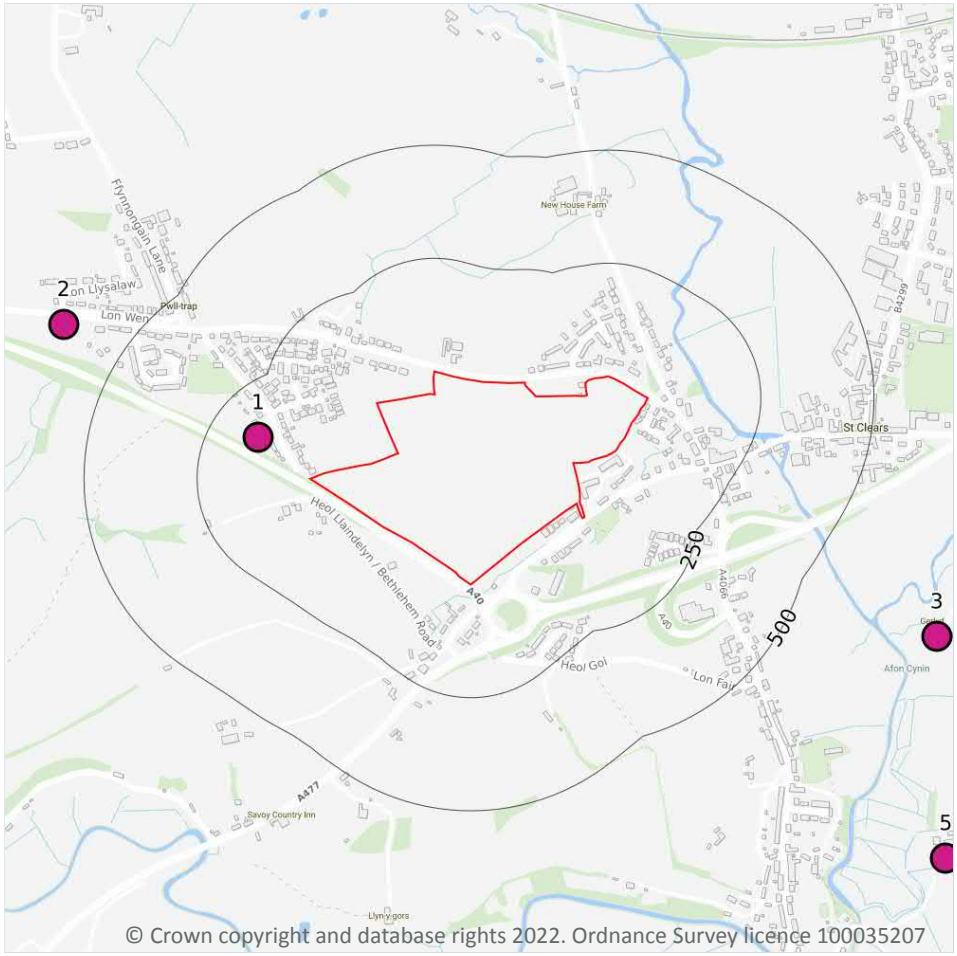
5.5 Groundwater vulnerability- local information

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	9

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 39**

ID	Location	Details	
1	147m NW	Status: Historical Licence No: 22/60/4/0049 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL IN FIELD NO. 572 AT LLYSMEURIG, PWLL TRAP Data Type: Point Name: & T Lewis & W Williams Easting: 226880 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: 31/01/1966 Version End Date: -
2	643m NW	Status: Historical Licence No: 22/60/4/0016 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: SPRING 'A'IIN ENCLOSURE 116 AT GORSE Data Type: Point Name: Jones Easting: 226450 Northing: 216680	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 01/02/1993 Version End Date: -
3	817m SE	Status: Historical Licence No: 22/60/6/0015 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL B AT GERYLD Data Type: Point Name: Evans Easting: 228380 Northing: 215990	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: -
-	986m SE	Status: Historical Licence No: 22/60/6/0015 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL A AT GERLYD Data Type: Point Name: Evans Easting: 228600 Northing: 216030	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: -
5	1098m SE	Status: Historical Licence No: 22/60/6/0007 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: SPRING AT GWAEFI Data Type: Point Name: Lodwig Easting: 228400 Northing: 215500	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	
-	1163m W	Status: Historical Licence No: 22/60/4/0016 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: SPRING 'B' AT GORSE FARM Data Type: Point Name: Jones Easting: 225900 Northing: 216730	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 01/02/1993 Version End Date: -
-	1360m S	Status: Historical Licence No: 22/60/6/0031 Details: Fish Farm/Cress Pond Throughflow Direct Source: EAW Groundwater Point: SPRINGS AND DRAINAGE DITCH IN FIELD OS 5071 Data Type: Point Name: Fletcher Easting: 227470 Northing: 214750	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 10/10/1997 Version End Date: -
-	1807m W	Status: Historical Licence No: 22/60/4/0037 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL NO.2 AT BWLCH Y DOMEN Data Type: Point Name: Thomas Easting: 225210 Northing: 216620	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: -
-	1817m W	Status: Historical Licence No: 22/60/4/0037 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL NO. 1 AT BWLCH-Y-DOMEN Data Type: Point Name: Thomas Easting: 225200 Northing: 216620	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	0

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

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

5.8 Potable abstractions

Records within 2000m	**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.

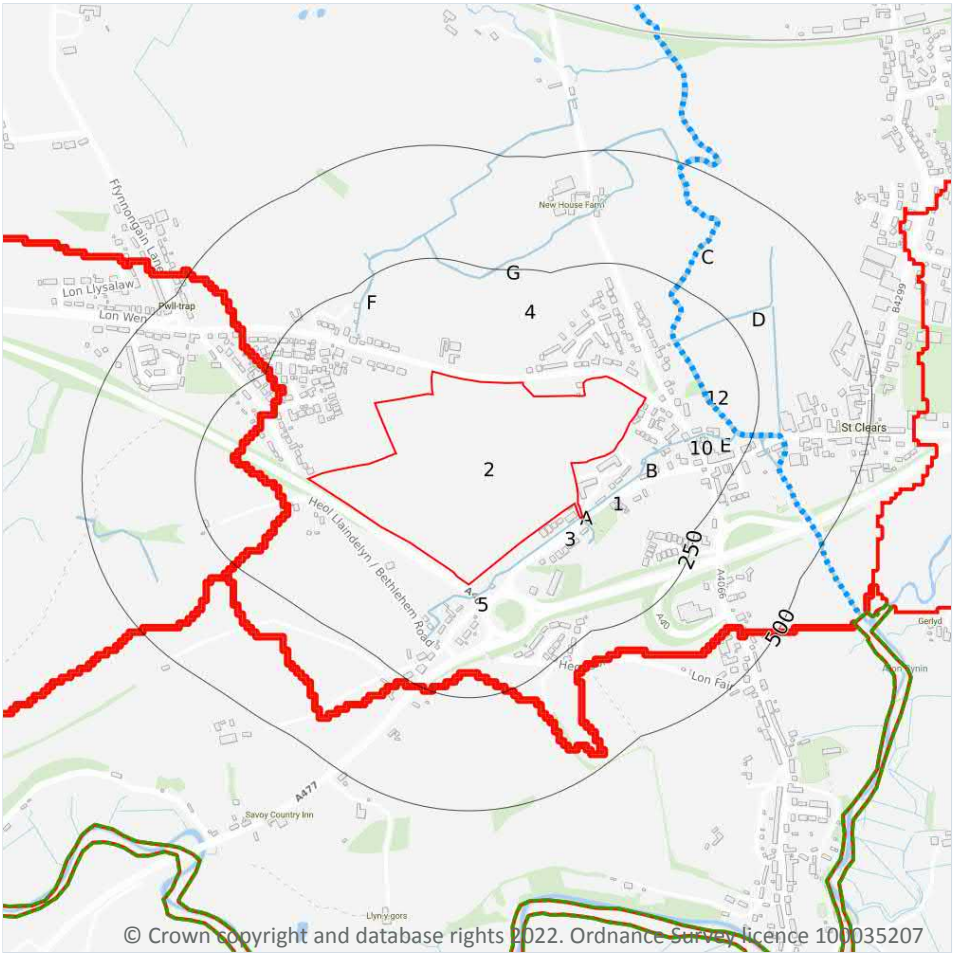
5.10 Source Protection Zones (confined aquifer)

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



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Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	21

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 43**

ID	Location	Type of water feature	Ground level	Permanence	Name
1	**On site**	**Inland river not influenced by normal tidal action.**	**Not provided**	**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.**	**Not provided**	**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)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
5	22m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	40m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	64m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	67m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	69m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	73m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
10	83m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	83m SE	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
B	84m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
12	121m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Cynin

ID	Location	Type of water feature	Ground level	Permanence	Name
C	140m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Cynin
D	140m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	161m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	179m SE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
E	183m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	218m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Cynin
G	224m N	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	15

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 43**

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 43**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
4	**On site**	**River WB catchment**	**Cynin - headwaters to tidal limit**	**GB110060036170**	**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 43**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
11	122m NE	River	Cynin - headwaters to tidal limit	GB110060036170	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**

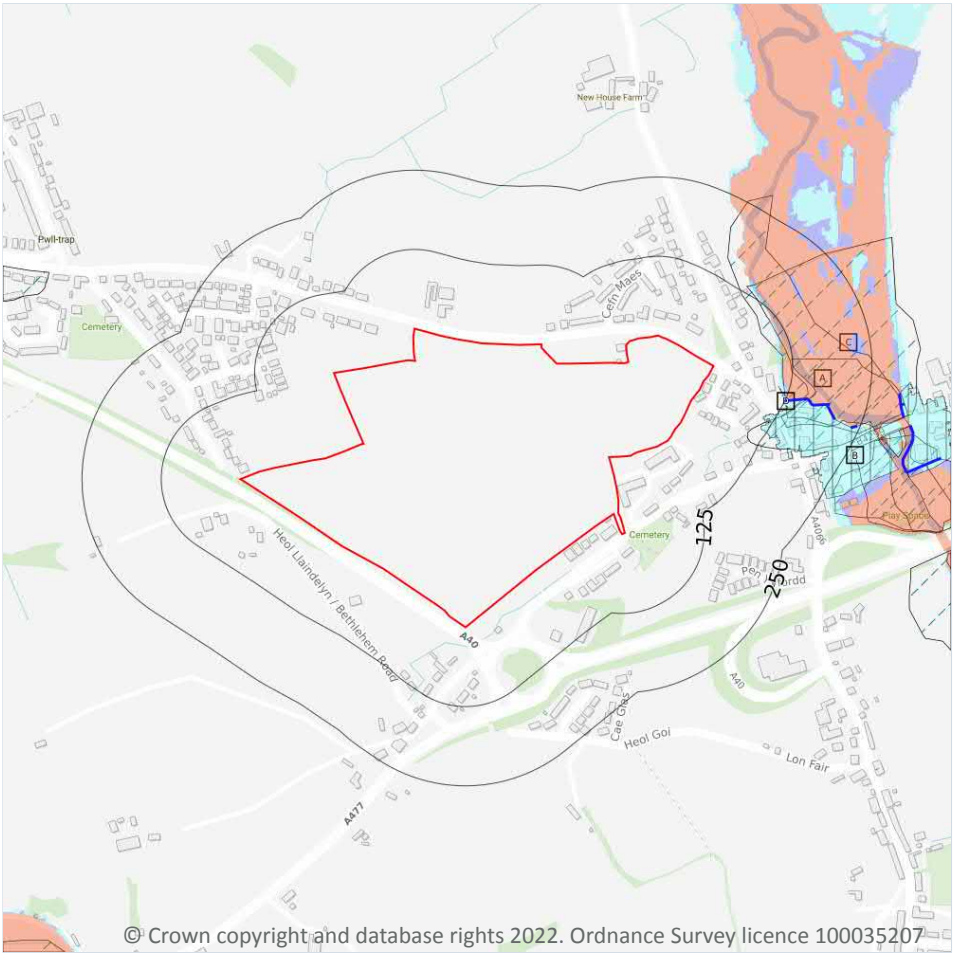
Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place.

Features are displayed on the Hydrology map on **page 43**

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	3

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.

Features are displayed on the River and coastal flooding map on **page 47**

ID	Location	Event name	Date of flood	Flood source	Flood cause	Type of flood
A	91m NE	St Clears March 1981 01	1981-03-11 1981-03-22	Main river	Channel capacity exceeded (no raised defences)	Fluvial
C	101m SE	St Clears 1986	1986-08-25 1986-08-26	Ordinary watercourse	Channel capacity exceeded (no raised defences)	Fluvial
A	124m E	St Clears October 1987 01	1987-10-18 1987-10-18	Main river	Channel capacity exceeded (no raised defences)	Fluvial

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

7.3 Flood Defences

Records within 250m	6

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 47**

ID	Location	Update
D	124m SE	29/11/2021
D	130m SE	29/11/2021
A	164m E	29/11/2021
A	189m E	29/11/2021
A	192m E	29/11/2021
A	237m SE	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	3

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 47**

ID	Location	
D	108m E	Area benefiting from flood defences
B	108m SE	Area benefiting from flood defences
D	110m E	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.

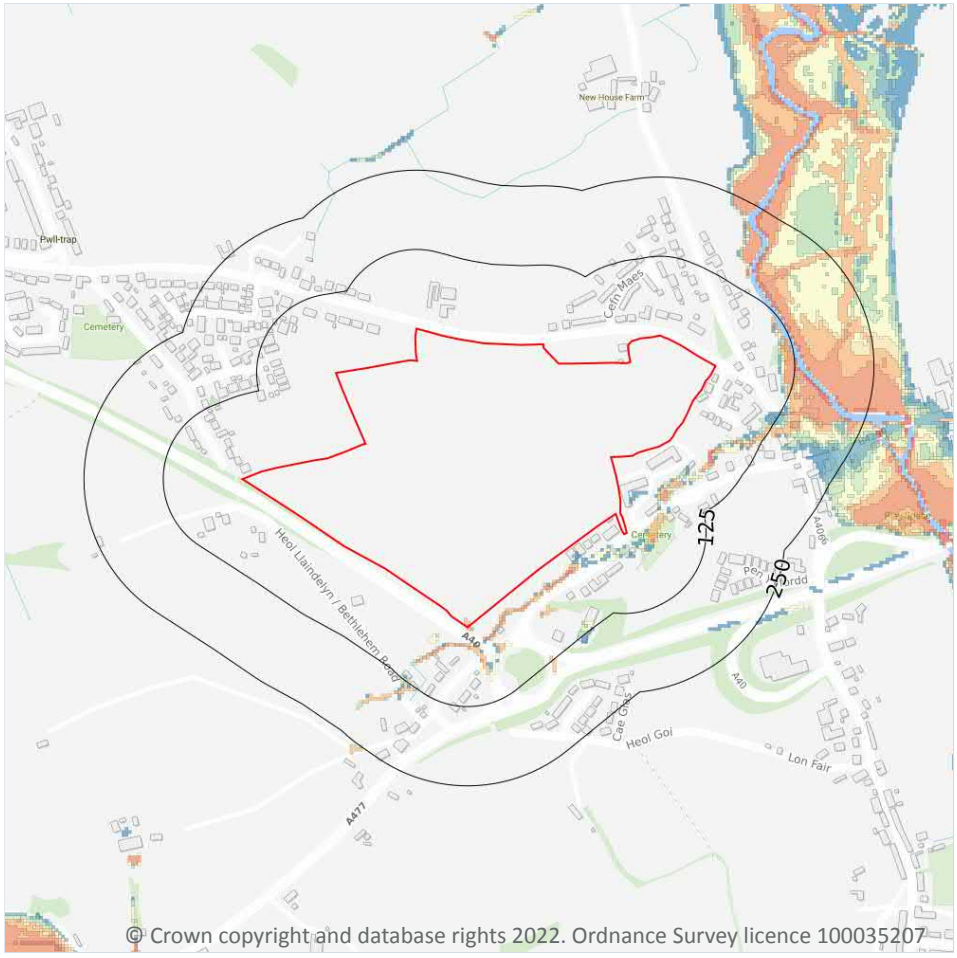
7.7 Flood Zone 3

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, 0.3m - 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 51**

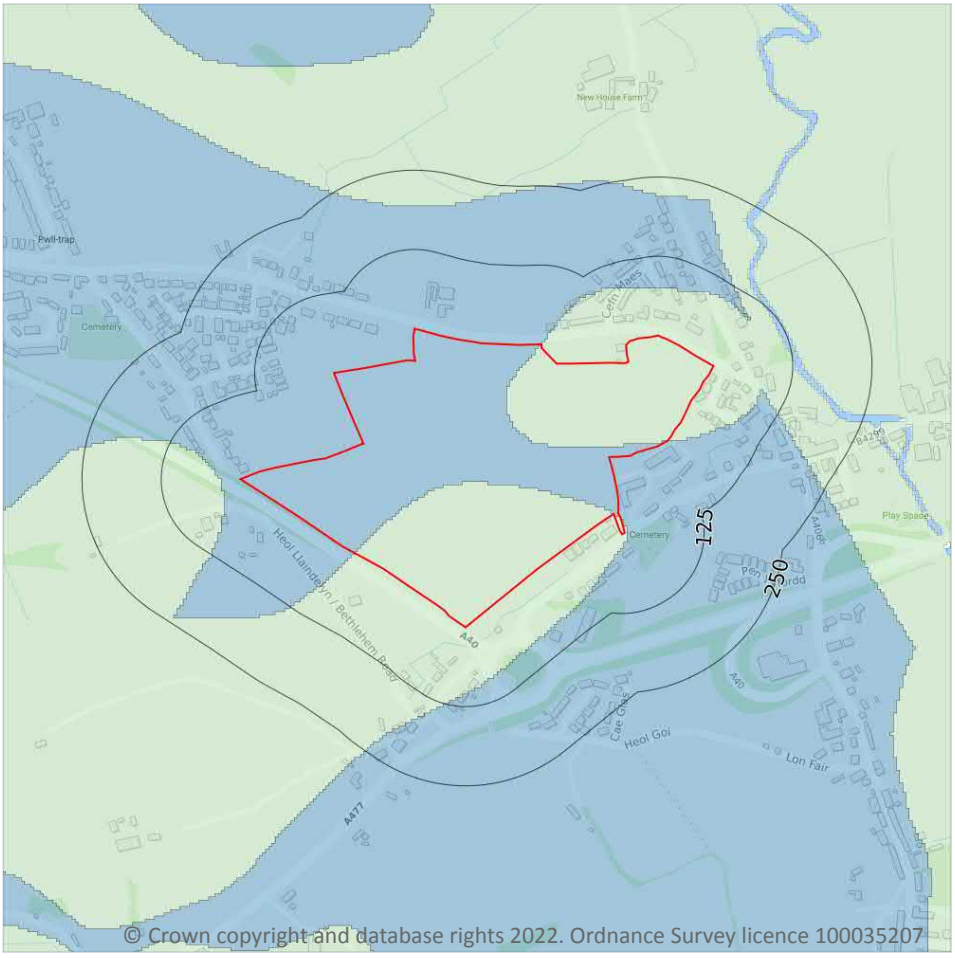
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

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

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

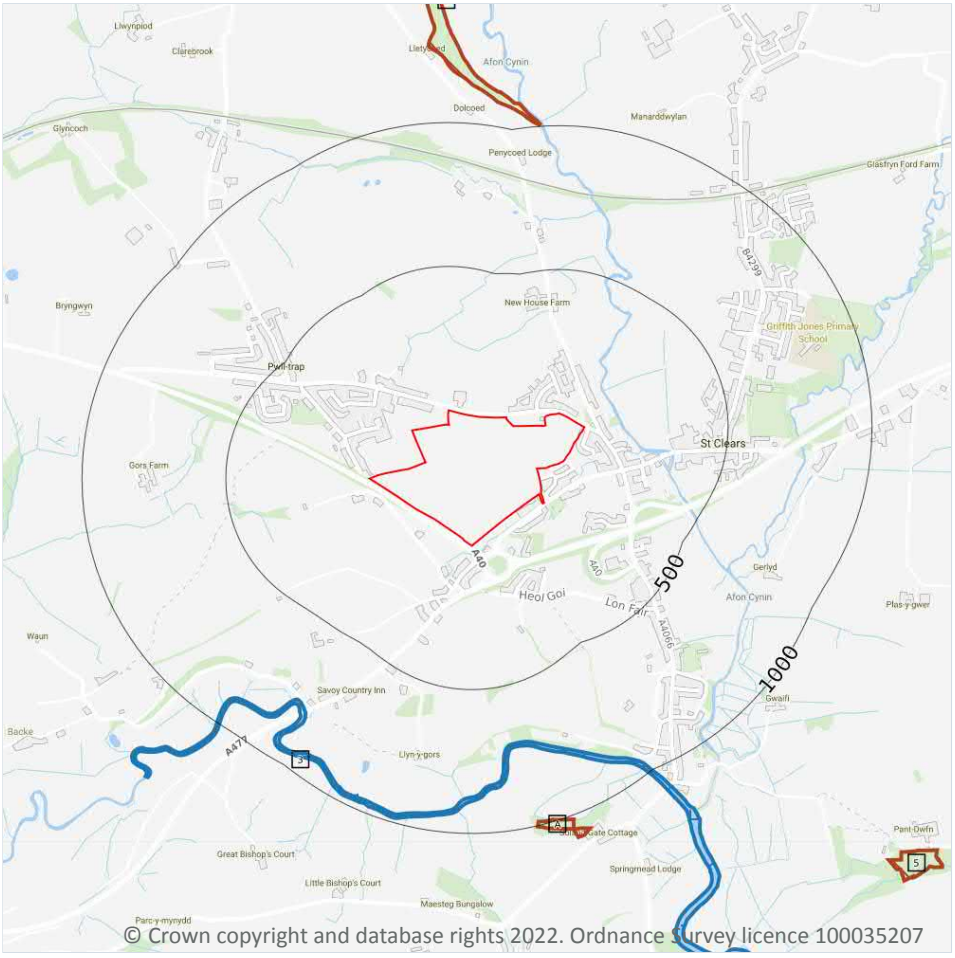
Highest risk on site	**Low**
Highest risk within 50m	**Low**

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 53**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



Site Outline

Search buffers in metres (m)

Sites of Special Scientific Interest (SSSI)

Special Areas of Conservation (SAC)

Designated Ancient Woodland

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	3

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

Features are displayed on the Environmental designations map on **page 54**

ID	Location	Name	Data source
1	703m S	ABER TAF / TAF ESTUARY	Natural Resources Wales

ID	Location	Name	Data source
3	779m SW	ABER TAF / TAF ESTUARY	Natural Resources Wales
-	1741m S	MYLETT ROAD SECTION	Natural Resources Wales

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

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

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m	1

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

Features are displayed on the Environmental designations map on **page 54**

ID	Location	Name	Features of interest	Habitat description	Data source
2	703m S	Carmarthen Bay and Estuaries / Bae Caerfyrddin ac Aberoedd	Subtidal sandbanks; Estuaries; Intertidal mudflats and sandflats; Lagoons; Shallow inlets and bays; Glasswort and other annuals colonising mud and sand; Cord-grass swards; Atlantic salt meadows; Dunes with sea-buckthorn; Sea caves; Sea lamprey; River lamprey; Allis shad; Twaite shad; Lesser horseshoe bat; Greater horseshoe bat; Otter; Grey seal.	Shingle, Sea cliffs, Islets; Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes	Natural Resources Wales

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

10.4 Special Protection Areas (SPA)

Records within 2000m	0

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

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

10.5 National Nature Reserves (NNR)

Records within 2000m	0

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

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

10.6 Local Nature Reserves (LNR)

Records within 2000m	0

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

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

10.7 Designated Ancient Woodland

Records within 2000m	10

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 54**

ID	Location	Name	Woodland Type
A	986m S	Unknown	Ancient Semi Natural Woodland
4	1006m N	Unknown	Restored Ancient Woodland Site
A	1047m S	Unknown	Ancient Semi Natural Woodland
5	1726m SE	Unknown	Ancient Semi Natural Woodland

ID	Location	Name	Woodland Type
-	1825m SW	Unknown	Ancient Semi Natural Woodland
-	1935m SW	Unknown	Ancient Semi Natural Woodland
-	1951m N	Unknown	Restored Ancient Woodland Site
-	1954m N	Unknown	Restored Ancient Woodland Site
-	1966m W	Unknown	Ancient Semi Natural Woodland
-	1971m N	Unknown	Restored 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.

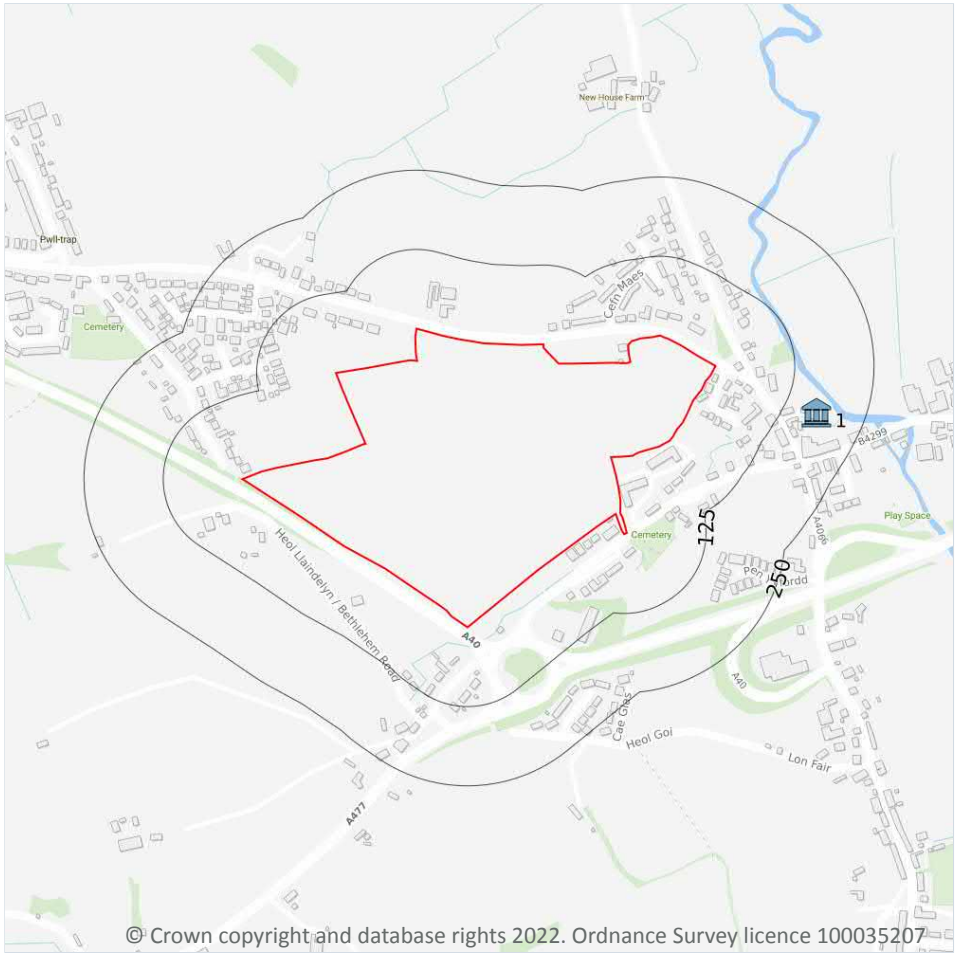
10.18 SSSI Units

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	1

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

Features are displayed on the Visual and cultural designations map on **page 61**

ID	Location	Name	Grade	Reference Number	Listed date
1	175m SE	Island House, Situated On The W Bank Of Afon Cynin To N Of The Swan Hotel, Just Off The Main Street, Facing Open Garden	II	9740	24/09/1991

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

11.5 Conservation Areas

Records within 250m	0

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

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

11.6 Scheduled Ancient Monuments

Records within 250m	0

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

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

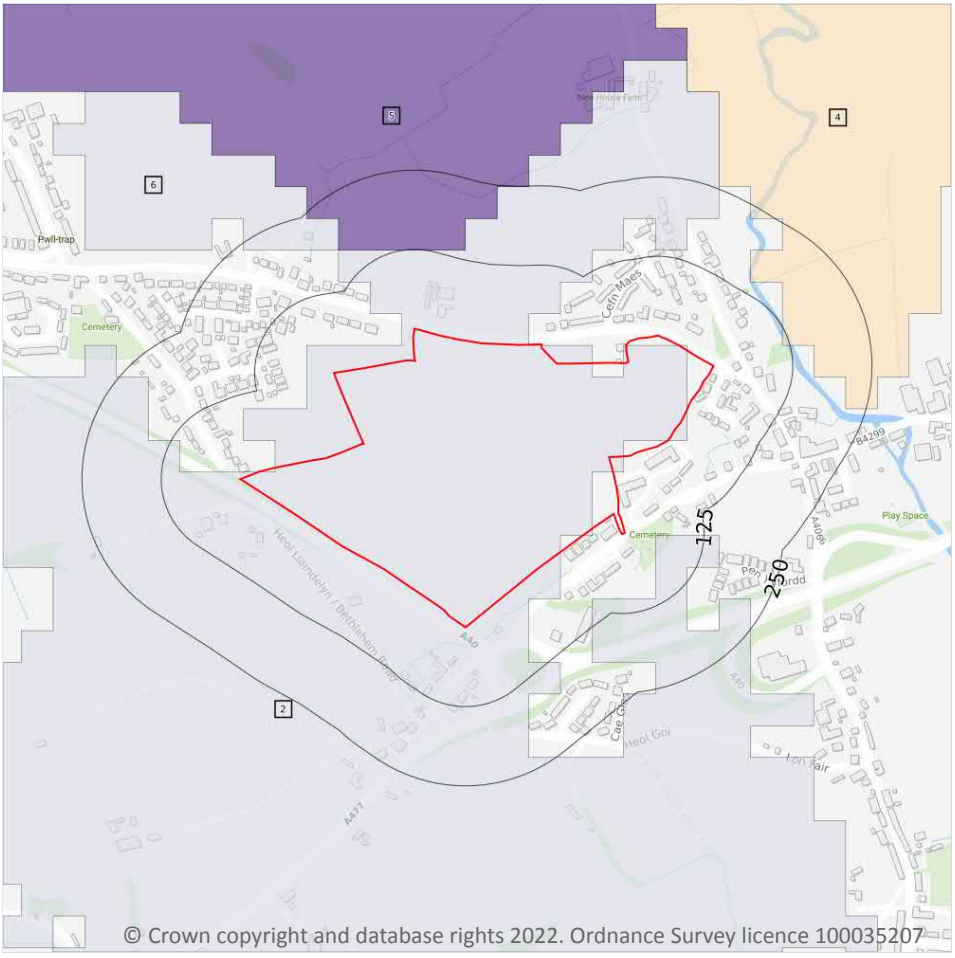
11.7 Registered Parks and Gardens

Records within 250m	0

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

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

12 Agricultural designations



Site Outline

Search buffers in metres (m)

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

12.1 Agricultural Land Classification

Records within 250m	4

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 64**

ID	Location	Classification	Description
2	**On site**	**Grade 3b**	**Moderate quality agricultural land**
4	113m E	Grade 3a	Good to moderate quality agricultural land
5	124m N	Grade 5	Very poor quality agricultural land

ID	Location	Classification	Description
6	172m NW	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.

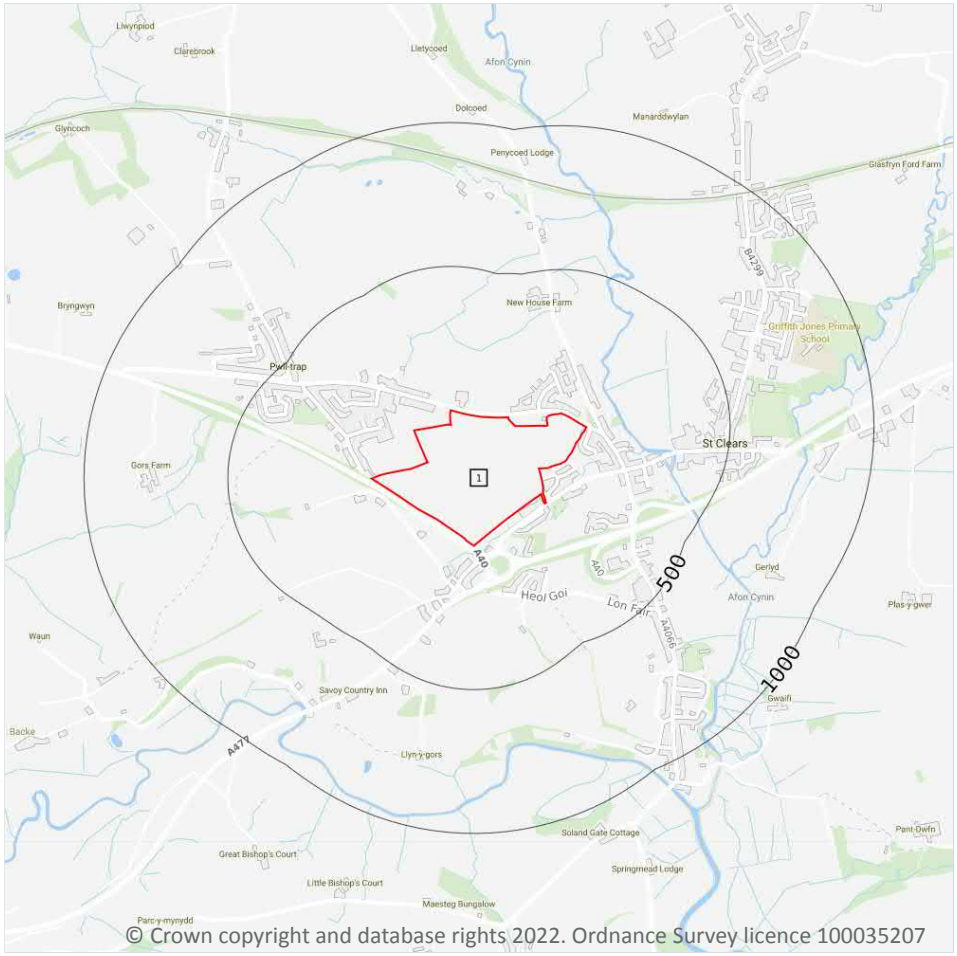
13.4 Limestone Pavement Orders

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 67**

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

This data is sourced from the British Geological Survey.

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

14.2 Artificial and made ground (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial

14.3 Superficial geology (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock

14.5 Bedrock geology (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

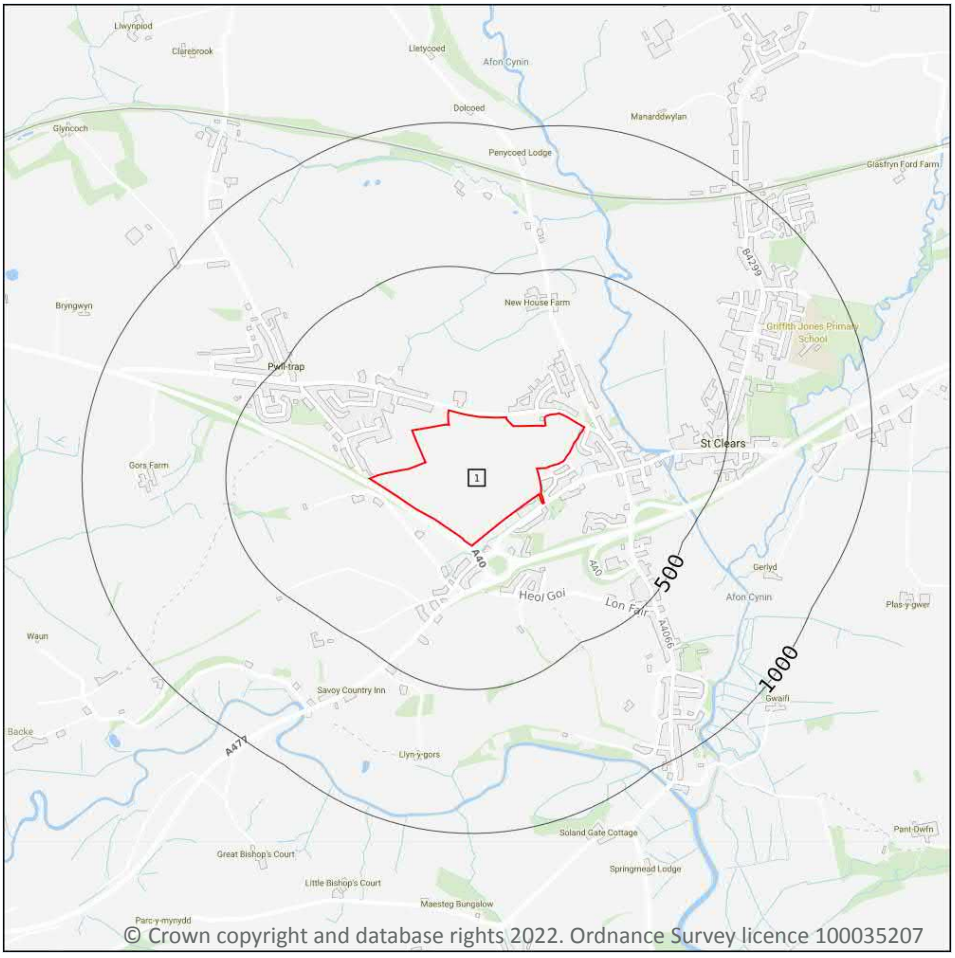
14.6 Bedrock faults and other linear features (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

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

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 71**

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

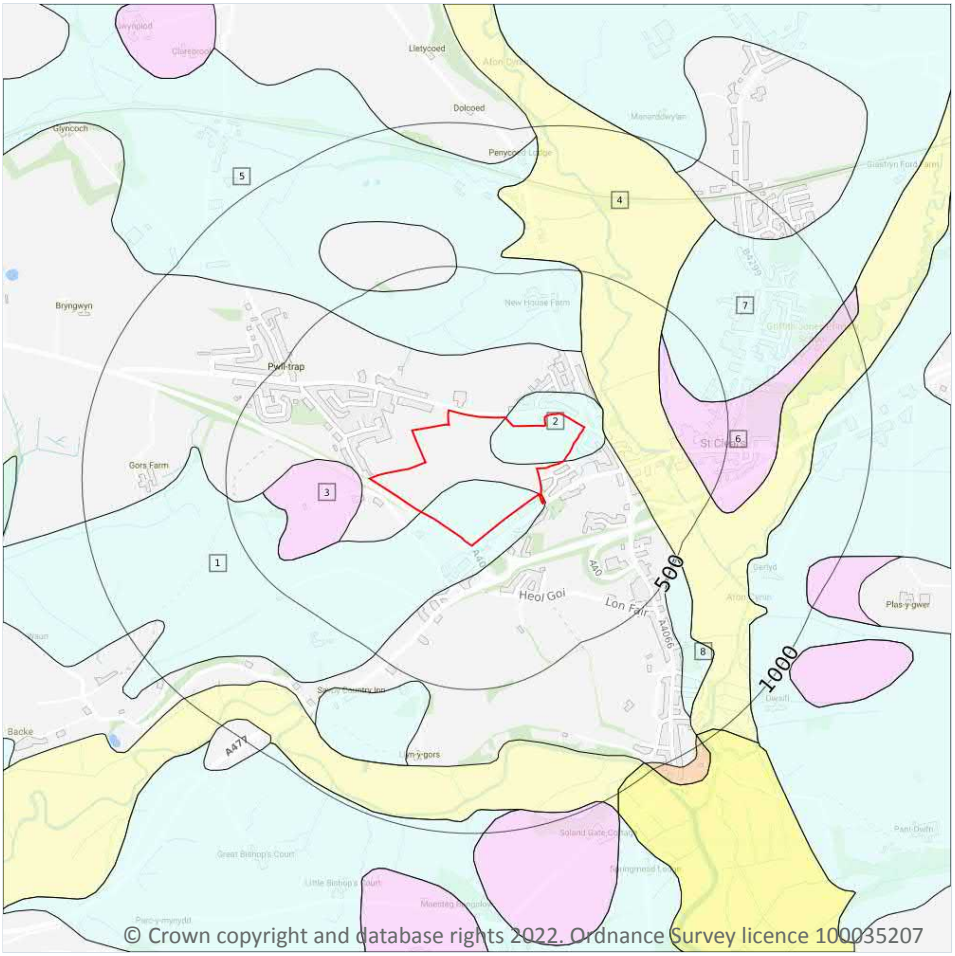
15.3 Artificial ground permeability (50k)

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	8

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 73**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TILLD-DMTN**	**TILL, DEVENSIAN**	**DIAMICTON**
2	**On site**	**TILLD-DMTN**	**TILL, DEVENSIAN**	**DIAMICTON**
3	31m W	GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL

ID	Location	LEX Code	Description	Rock description
4	65m E	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
5	192m N	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
6	280m E	GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL
7	365m NE	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
8	492m SE	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	3

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**High**	**Low**
On site	**Mixed**	**High**	**Low**
31m W	Intergranular	Very High	High

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

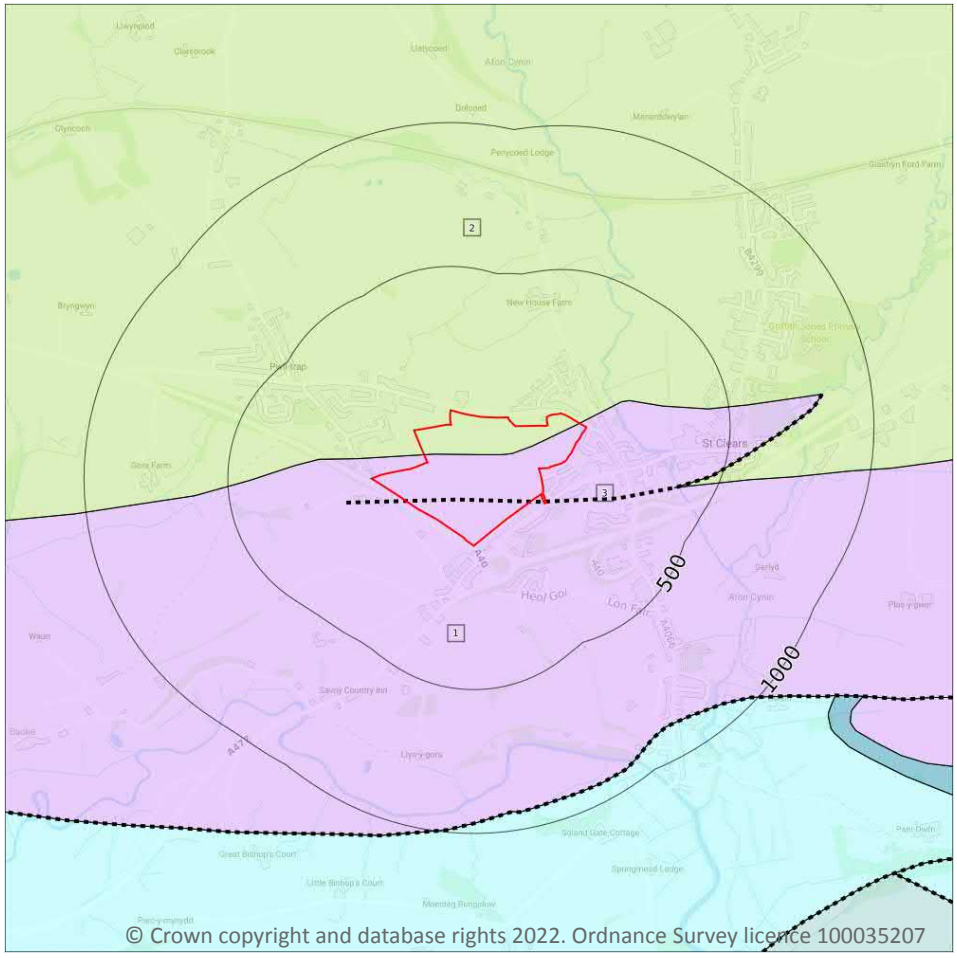
15.7 Landslip permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

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

15.8 Bedrock geology (50k)

Records within 500m	2

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 75**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**DBB-MDST**	**DIDYMOGRAPTUS BIFIDUS BEDS - MUDSTONE**	**ABEREIDDIAN**
2	**On site**	**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**
On site	**Fracture**	**Low**	**Low**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	1

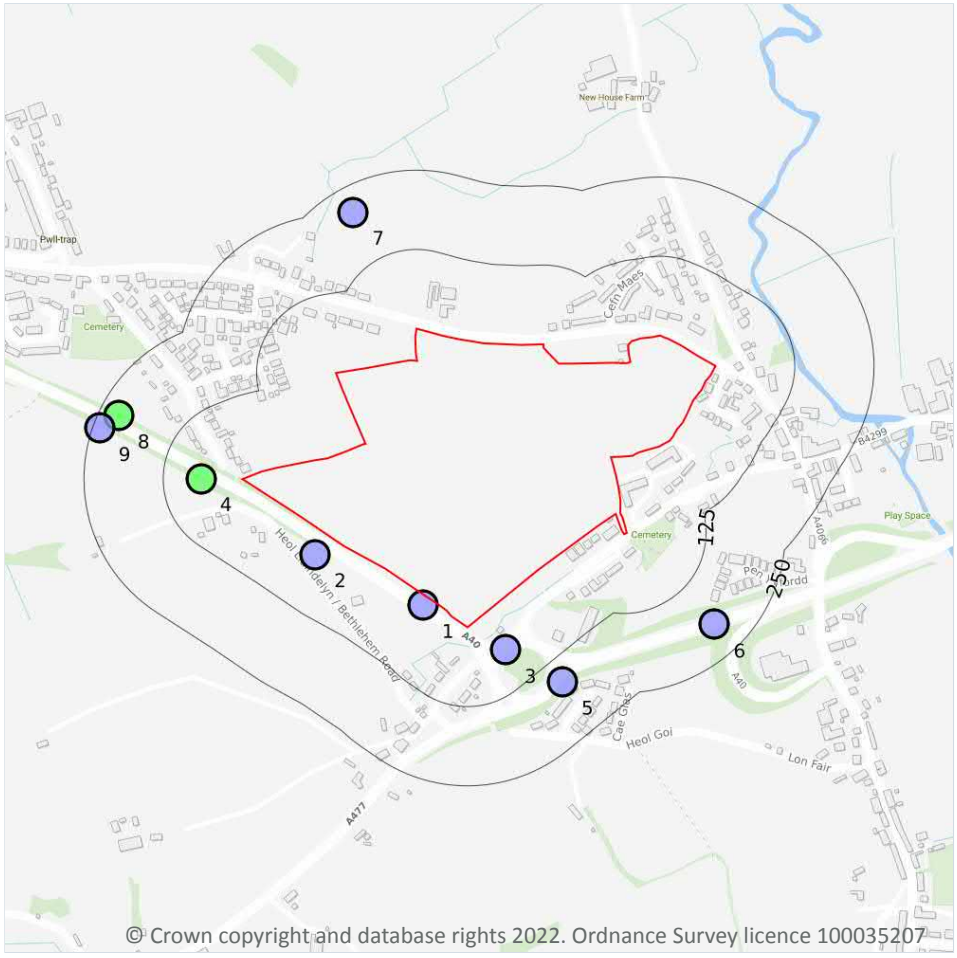
Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 75**

ID	Location	Category	Description
3	**On site**	**FAULT**	**Fault, inferred, displacement unknown**

This data is sourced from the British Geological Survey.

16 Boreholes



Site Outline

Search buffers in metres (m)

- Confidential
- 0 - 10m
- 10 - 30m
- 30m+
- Unknown

16.1 BGS Boreholes

Records within 250m	9

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

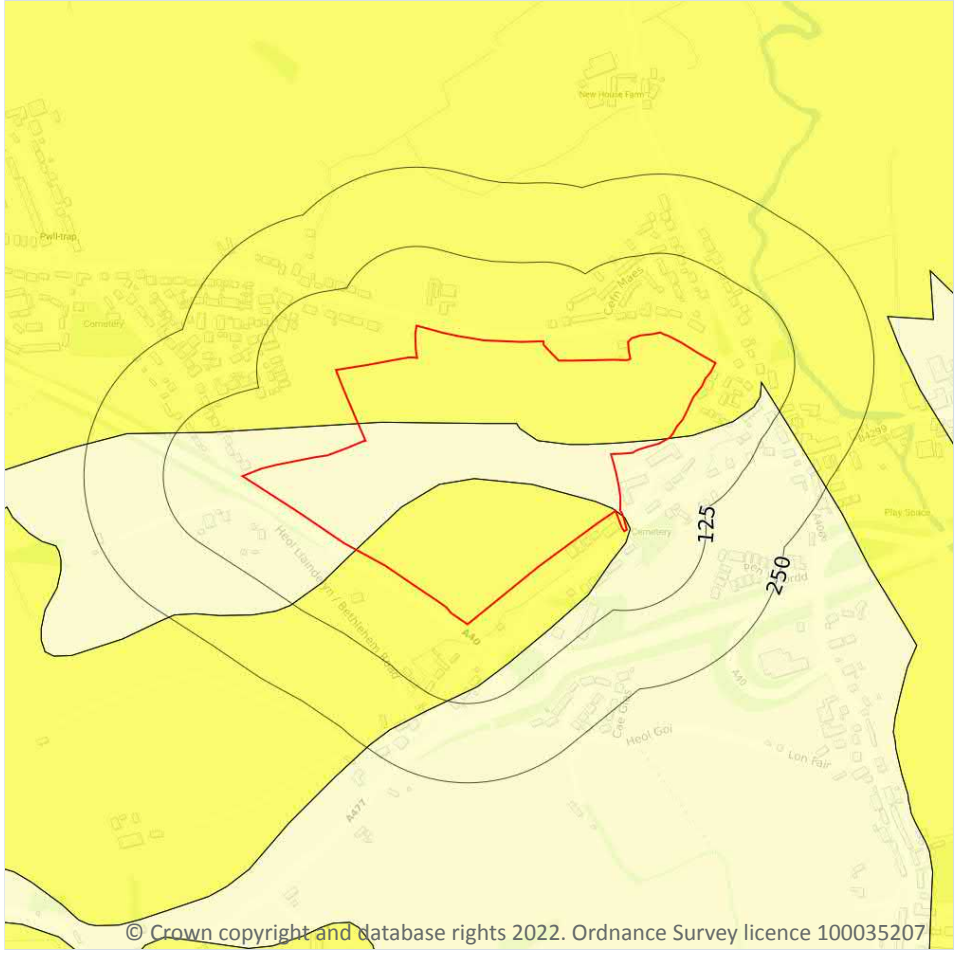
Features are displayed on the Boreholes map on **page 77**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	15m SW	227280 216140	ST. CLEARS, BY-PASS. 11	6.45	N	253524
2	37m SW	227110 216220	ST. CLEARS, BY-PASS. 10	7.0	N	253523
3	65m SE	227410 216070	ST. CLEARS, BY-PASS. 12	6.45	N	253525

ID	Location	Grid reference	Name	Length	Confidential	Web link
4	65m W	226930 216340	ST. CLEARS, BY-PASS. 6	14.9	N	253519
5	161m SE	227500 216020	ST. CLEARS, BY-PASS. 9	6.45	N	253522
6	200m SE	227740 216110	ST. CLEARS, BY-PASS. 13	9.1	N	253526
7	209m NW	227170 216760	ST. CLEARS, CARMARTHEN IMPROVEMENT. TP.109	2.5	N	253552
8	220m NW	226800 216440	ST. CLEARS, BY-PASS. 5	11.95	N	253518
9	240m W	226770 216420	ST. CLEARS, BY-PASS. 4	10.0	N	253517

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

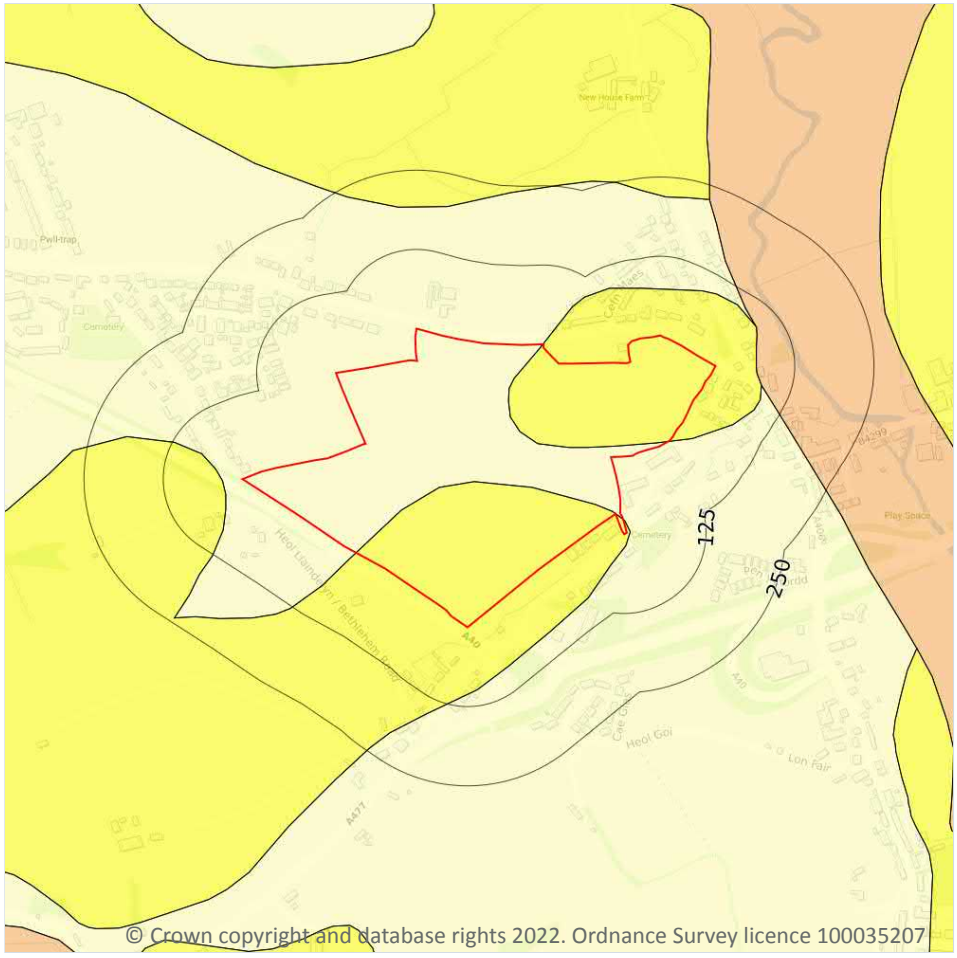
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 79**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

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

17.2 Running sands

Records within 50m	2

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.

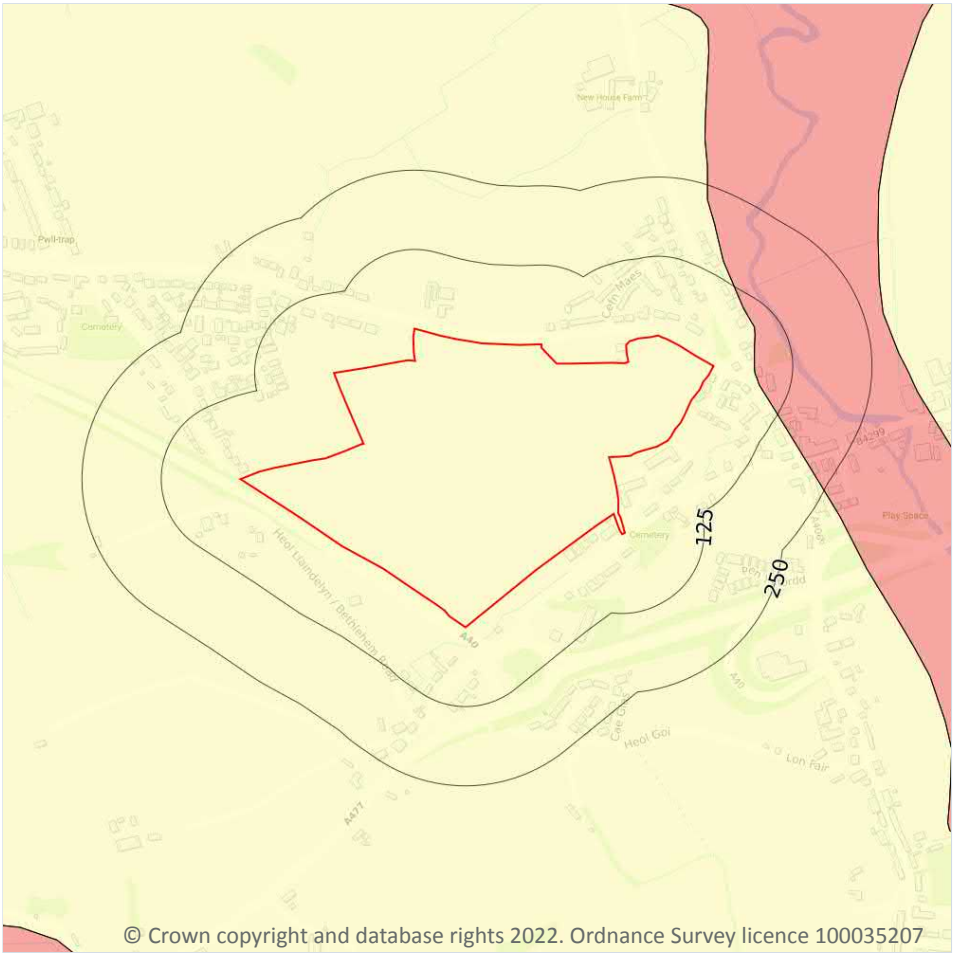
Features are displayed on the Natural ground subsidence - Running sands map on **page 80**

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.**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



Site Outline

Search buffers in metres (m)

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

17.3 Compressible deposits

Records within 50m	1

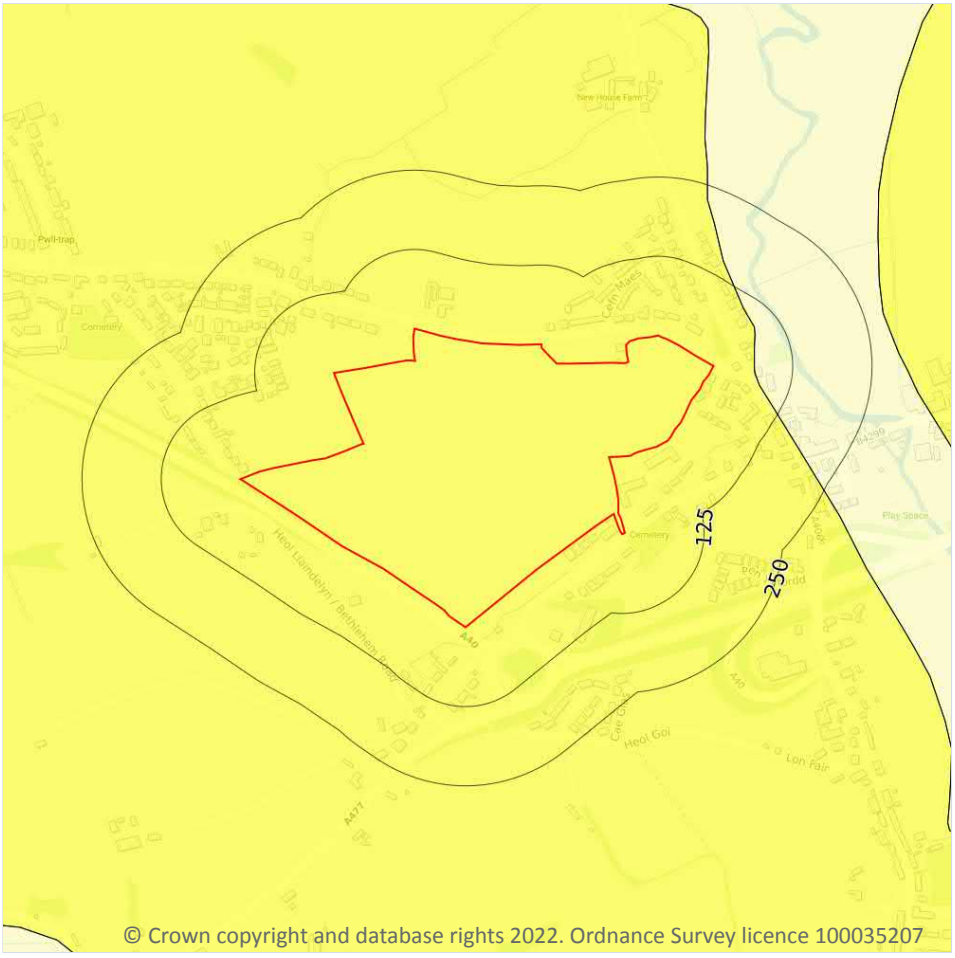
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 82**

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

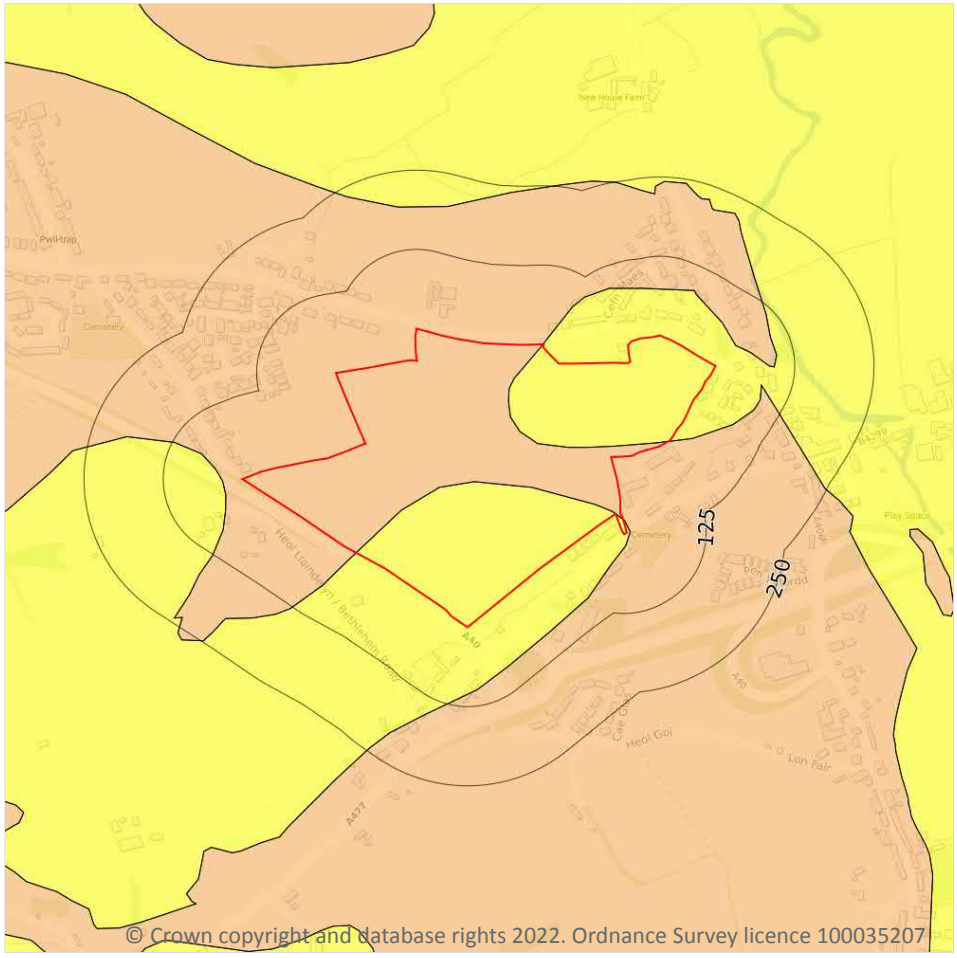
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 83**

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	2

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 84**

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

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

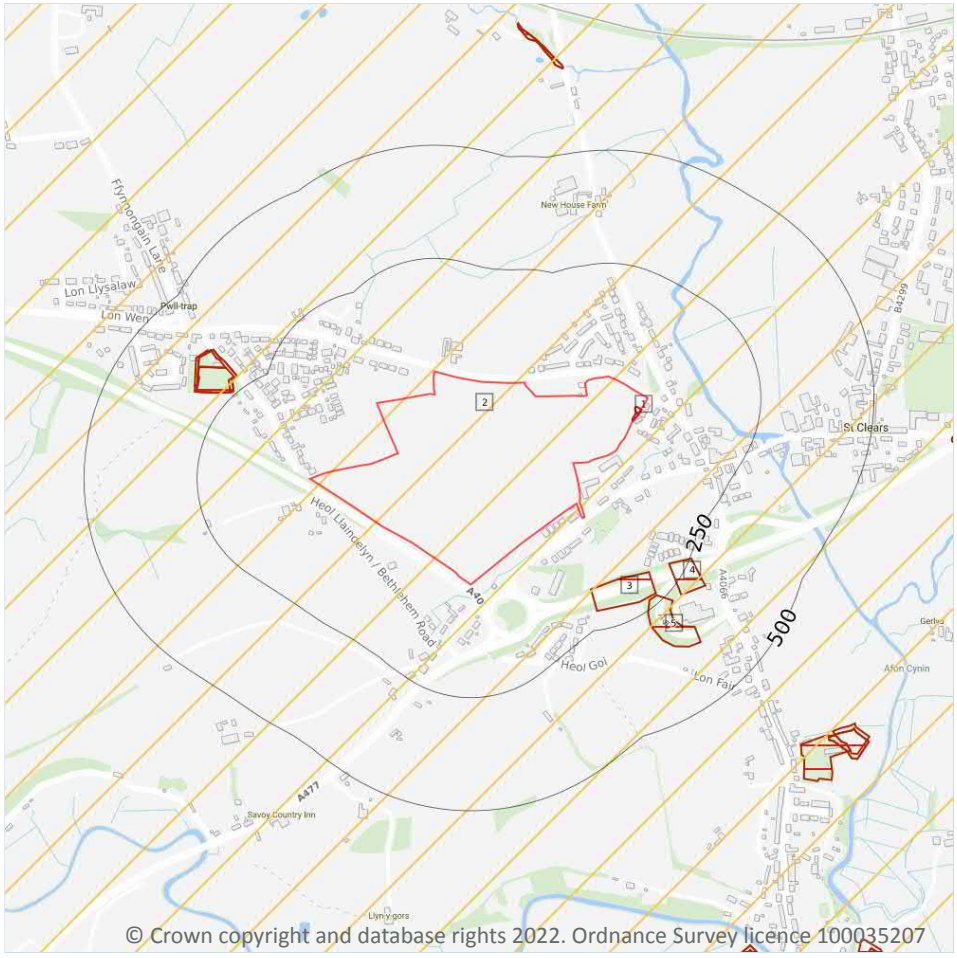
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 86**

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	4

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 87**

ID	Location	Land Use	Year of mapping	Mapping scale
1	**On site**	**Pond**	**1907**	**1:10560**
3	154m S	Cuttings	1989	1:10000
4	213m SE	Cuttings	1989	1:10000
5	233m SE	Cuttings	1989	1:10000

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	1

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 87**

ID	Location	Name	Commodity	Class	Likelihood
2	**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**

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.

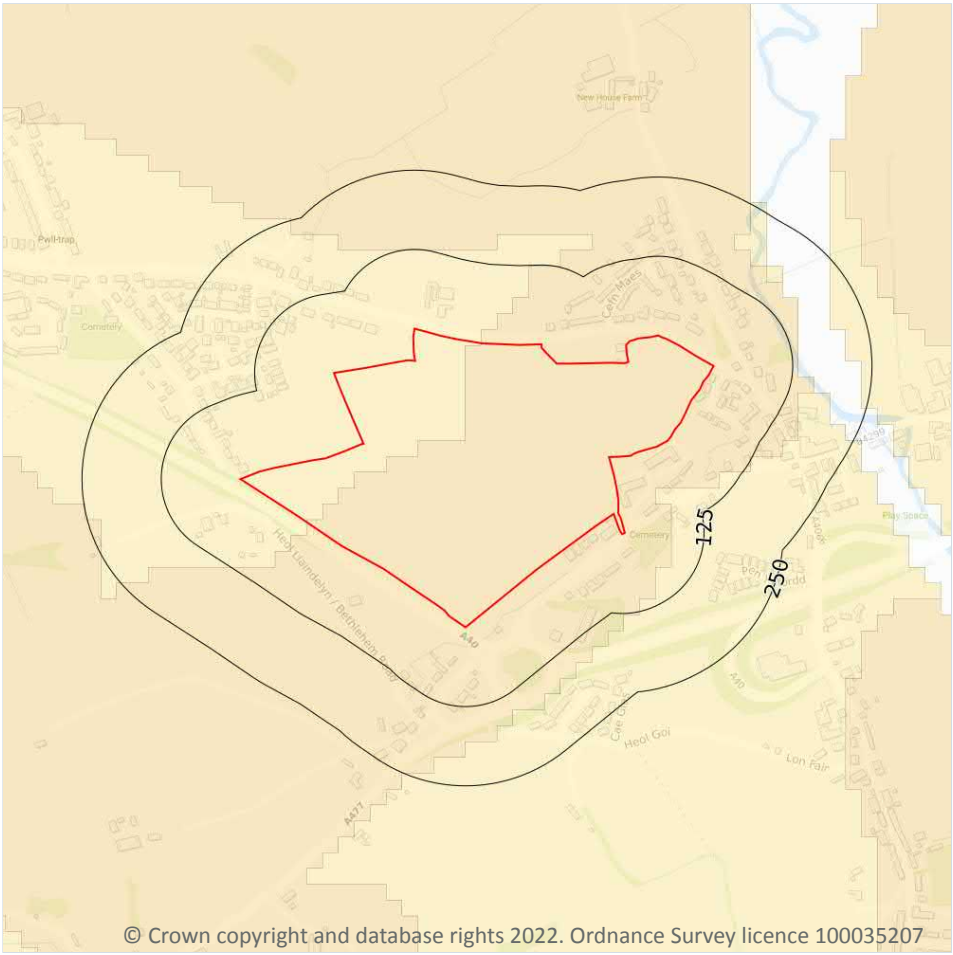
18.13 Clay mining

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 91**

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	16

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

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

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**
31m W	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
49m NE	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

SITE PHOTOGRAPHS

SITE 17 LAND AT TENBY ROAD PHOTOGRAPHS

Figure 1. View of the newly constructed commercial unit at the southern edge of the Site. Surrounding fields appear to still have not recovered from construction traffic.

Figure 2. Fields worked by nearby construction traffic. Tree planting has been implemented and laying of wood chip borders.

Figure 3. Crossing between two northern fields, has been used for construction access, hedgerow is present and grassy fields.

Figure 4. Dry streambed on site, to the north-west of the new commercial unit to the south.

Figure 5. Marshy area to the north-west of the new commercial unit to the south.

Figure 6. View of the northern field (looking south) from the northern access route.

Figure 7. Water trough and small stream bed in northern field by northern access gate.

Figure 8. Main access from the north leading towards Pwll Trap.

Appendix E

BOREHOLE RECORDS

SN 21 NE 5

Cementation Ground Engineering	soil mechanics department	BOREHOLE No. 4 1:229

CONTRACT St. Clears By-Pass	REPORT No. 8000/1.T 2677.1642.
Client The Welsh Office - Consulting Engineers:- Howard Humphreys and Sons	Ground Level 56.20 m
Site Address St. Clears Carmarthenshire, South Wales	Boring Commenced 4.8.70. Boring Completed 7.8.70.

Type and Dia. of Boring Shell and Auger 0.20m dia. 0 - 2.75m Rotary HX (Air) 2.75-10.00m

Water Strikes	Water Levels Recorded During Boring									
1. 7.00	Hole Depth	10.0								
2.	Casing Depth	None								
3.	Water Level	7.00								

Remarks

Description	Scale 20mm = 1m Depth	Legend	Samples Ref. No.	Type	Depth	S.P.T. N blows/ft
Topsoil.	0.30		1122	J	0.15	
Brown/grey mottled clayey silt with shale fragments grading in to weathered shale. CL			1123	J	0.35	
			1124	U	1.00-1.45	
			1126	J	1.80	
			1127	D	2.10	
	2.50		1128	D	2.60	250+
Grey shale with iron staining on fissures and joints. Core fractured. less so from 0.35 to 8.05m joints at 60° - 80° to horizontal, white deposits 8.05 - 8.5m.			Core Recovery			
			2.75-4.25: 1.50 = 100%			
			4.25-5.75: 1.50 = 100%			
			5.75-6.45: 0.70 = 100%			
			6.45-8.05: 1.60 = 100%			
			8.05-10.00: 1.95 = 100%			

Code: U—Undisturbed Sample D—Large Disturbed Sample J—Jar Sample W—Water Sample

SMD 631

SN 21 NE 6

Cementation Ground Engineering	soil mechanics department	BOREHOLE No. 5 / 15229

CONTRACT St. Clears By-Pass	REPORT No. 8000/LT 2630.1044
Client The Welsh Office - Consulting Engineers:- Howard Humphreys and Sons	Ground Level 55.50m
Site Address St. Clears, Carmarthenshire, South Wales	Boring Commenced 4.8.70. Boring Completed 6.8.70.

Type and Dia. of Boring Shell and Auger 0.20m dia. 0-2.95m Rotary HX (Air) 2.95-11.95

Water Strikes	Water Levels Recorded During Boring									
1. 7.00	Hole Depth	11.95								
2.	Casing Depth	None								
3.	Water Level	7.6								

Remarks

Description	Scale 20mm = 1m Depth	Legend	Samples Ref. No.	Type	Depth	S.P.T. N blows/ft
Topsoil.	0.30		1115	J	0.15	
Brown/grey mottled clayey silt with shale fragments. CL			1116	J	0.35	
			1117	U	1.0-1.45	
	1.45					
Dark brown/grey mottled clayey silt with shale fragments.			1118	J	1.80	
			1119	D	2.10	
			1120	U	2.50-2.95	
	2.95		1121	J	2.95	260+
Grey shale, fissured and jointed with iron staining on surfaces to 10.5m approximately joints between 40° and 90° to horizontal. Core shattered to 3.5m. Generally below this level average length 100mm lengths up to 200 mm, white deposit at 11.4m			Core Recovery			
			2.95-5.95: 3.00 = 100%			
			5.95-8.95: 3.00 = 100%			

Code: U—Undisturbed Sample D—Large Disturbed Sample J—Jar Sample W—Water Sample

SHEET No

SMD 671

Cementation Ground Engineering	soil mechanics department	BOREHOLE No. 6 1:229

CONTRACT St. Clears By-Pass	REPORT No. 8000/1T 2693.1638
Client The Welsh Office - Consulting Engineers:- Howard Humphreys and Sons	Ground Level 55.80 m
Site Address St. Clears, Carmarthenshire, South Wales	Boring Commenced 31.7.70. Boring Completed 4.8.70.

Type and Dia. of Boring Shell and Auger .20m dia. 0-7.70m Rotary HX (Air) 7.70-12.20m

Water Strikes	Water Levels Recorded During Boring									
1. None	Hole Depth									
2.	Casing Depth									
3.	Water Level									

Remarks

Description	Scale 20mm = 1m Depth	Legend	Samples Ref. No.	Type	Depth	S.P.T. N blows/ft
Topsoil.	0.30		4583	J	0.25	
Stiff brown/grey mottled silty clay with shale fragments and stones.			4584	U	1.00-1.45	
	1.45		4585	J	1.5	
Dark brown slightly mottled sandy silt with shale fragments and stones. CL			4586	D	1.75	
			4587	U	2.00-2.45	
			4588	J	2.45	
			4589	D	2.75	
			4590	U	3.00-3.45	
			4591	J	3.45	
			4592	D	3.75	
	4.0					
Stiff brown very silty sandy clay with stones cobbles shale fragments and bands of sand.			4593	U	4.00-4.45	
			4594	J	4.5	
			4595	D	4.75	
			4596	U	5.00-5.45	
			4597	J	5.50	
			4598	D	5.75	
	6.0					
Grey/brown mottled silt with shale fragments.			4599	U	6.00-6.45	
			4600	J	6.45	
			1101	D	6.75	
			1102	U	7.00-7.45	
	7.45		1103	J	7.5	
Grey shale.	7.70		1104	D	7.60	370+
Grey shale with iron staining on joints and fissures, becoming darker with less iron staining with depth. Joints near vertical. Core lengths of up to 130mm above 9.6 m - otherwise fragmented.			Core Recovery 7.70-10.70: 3.0 = 100%			

SHEET No

Code: U—Undisturbed Sample D—Large Disturbed Sample J—Jar Sample W—Water Sample

Cementation Ground Engineering

soil mechanics department

BOREHOLE No. 6

Continuation Sheet No. 1

CONTRACT St. Clears By-Pass

REPORT No. 8000/LT

Description	Scale 20mm = 1m Depth	Legend	Samples Ref. No.	Type	Depth	S.P.T. N blows/ft
Grey shale with iron staining on joints and fissures, becoming darker with less iron staining with depth. Joints near vertical. Core lengths of up to 130mm above 9.6m - otherwise fragmented. (continued)					Core Recovery	
					10.70-12.20: 1.5 = 100%	
					12.20-14.90: 2.70 = 100%	
	14.90					

Code: U—Undisturbed Sample D—Large Disturbed Sample J—Jar Sample W—Water Sample

SN 21 NE 10

Cementation Ground Engineering

soil mechanics department

BOREHOLE No. 9 1:229

CONTRACT St. Clears By-Pass

REPORT No. 8000/1T 2730/602

Client: The Welsh Office - Consulting Engineers:- Howard Humphreys and Sons

Ground Level 30.85m

Site Address: St. Clears, Carmarthenshire, South Wales

Boring Commenced 23.7.70.
Boring Completed 25.7.70.

Type and Dia. of Boring: Shell and Auger 0.20m

Water Strikes	Water Levels Recorded During Boring									
1. None	Hole Depth									
2.	Casing Depth									
3.	Water Level									

Remarks

Description	Depth	Legend	Ref. No.	Type	Depth	S.P.T. N blows/ft
Topsoil.	0.30		4501	J	0.15	
Firm grey/brown mottled silty clay with shale fragments. CI			4502	J	0.35	
			4503	U	1.00-1.50	
			4504	J	1.50	
			4505	D	1.70	
			4506	U	2.00-2.45	
Stiff grey silty clay with shale fragments and stones. CI	2.45		4507	D	2.70	
			4508	U	3.00-3.45	
Stiff grey laminated silty clay.	3.45		4509	J	3.50	
			4510	D	3.70	
			4511	U	4.00-4.45	
			4512	J	4.45	
			4513	D	4.75	
			4514	U	5.00-5.45	
	5.45		4515	J	5.45	
Stiff grey silty clay with shale fragments and some brown staining.			4516	D	5.75	
	6.45		4517	U	6.00-6.45	

Scale 20mm = 1m

Code: U Undisturbed Sample D Disturbed Sample J In Jar Sample W Water Sample

SMO 621

SHEET No.

Cementation Ground Engineering	soil mechanics department	BOREHOLE No. 10 1229

CONTRACT	St. Clears By-Pass	REPORT No.	8000/LT 2711.1622
Client	The Welsh Office - Consulting Engineers:- Howard Humphreys and Sons	Ground Level	41.90m
Site Address	St. Clears, Carmarthenshire, South Wales	Boring Commenced / Boring Completed	29.7.70. / 30.7.70.
Type and Dia. of Boring	Shell and Auger 0.20m		

Water Strikes	Water Levels Recorded During Boring									
1. None	Hole Depth									
2.	Casing Depth									
3.	Water Level									

Remarks

Description	Scale 20mm = 1m Depth	Legend	Samples Ref. No.	Type	Depth	S.P.T. N blows/ft
Topsoil.	0.30					
Stiff brown/grey mottled silty clay with shale fragments, cobbles and stones. CL			4562	J	0.15	
			4563	J	0.35	
			4564	U	1.00-1.45	
			4565	J	1.45	
			4566	D	1.75	
			4567	U	2.00-2.45	
			4568	J	2.45	
			4569	D	2.75	
	3.00					
Stiff grey silty clay with shale fragments and stones.			4570	U	3.00-3.45	
			4571	J	3.45	
			4572	D	3.75	
			4573	U	4.00-4.45	
	4.45		4574	J	4.45	
Stiff grey/brown mottled silty clay with shale fragments.			4575	D	4.75	
			4576	U	5.00-5.45	
			4577	J	5.45	
			4578	D	5.75	
			4579	U	6.00-6.45	
	6.45		4580	J	6.45	
Grey weathered shale with brown staining on joints and fissures.			4581	D	6.75	
	7.00		4582	J	7.00	170+

Code: U—Undisturbed Sample D—Large Disturbed Sample J—Jar Sample W—Water Sample

SN 21 NE 12

Cementation Ground Engineering	soil mechanics department	BOREHOLE No. 11 1:229

CONTRACT	St. Clears By-Pass	REPORT No.	8000/LT 2728.1614
Client	The Welsh Office - Consulting Engineers:- Howard Humphreys and Sons	Ground Level	31.10m
Site Address	St. Clears. Carmarthenshire, South Wales	Boring Commenced / Boring Completed	28.7.70. / 29.7.70.
Type and Dia. of Boring	Shell and Auger 0.20m		

Water Strikes	Water Levels Recorded During Boring									
1. None	Hole Depth									
2.	Casing Depth									
3.	Water Level									

Remarks

Description	Scale 20mm = 1m Depth	Legend	Samples Ref. No.	Type	Depth	S.P.T. N blows/ft
Topsoil.	0.30		4549	J	0.15	
Soft to firm light brown/grey mottled silty clay with shale fragments.			4550	J	0.30	
			4551	U	1.00-1.45	
	1.45					
Stiff brown/grey mottled silty clay with shale fragments.			4552	J	1.80	
	2.00					
Stiff dark grey silty clay with stones.			4553	U	2.00-2.45	
			4554	J	2.80	
			4555	U	3.00-3.45	
			4556	J	3.80	
			4557	U	4.00-4.45	
			4558	J	4.80	
			4559	U	5.00-5.45	
			4560	J	5.80	
			4561	U	6.00-6.45	
	6.45					

Code U—Undisturbed Sample L—Large Disturbed Sample J—Jar Sample W—Water Sample

SH 21 NE 13

Cementation Ground Engineering	soil mechanics department	BOREHOLE No. 12 1:229

CONTRACT St. Clears By-Pass	REPORT No. 8000/LT 2741607
Client The Welsh Office - Consulting Engineers:- Howard Humphreys and Sons	Ground Level 29.40m
Site Address St. Clears, Carmarthenshire, South Wales	Boring Commenced 27.7.70. Boring Completed 28.7.70.
Type and Dia. of Boring Shell and Auger 0.20m	

Water Strikes	Water Levels Recorded During Boring									
1. None	Hole Depth									
2.	Casing Depth									
3.	Water Level									

Remarks

Description	Scale 20mm = 1m Depth	Legend	Samples Ref. No.	Type	Depth	S.P.T. N blows/ft
Topsoil.	0.30		4536	J	0.15	
Firm light brown/grey mottled silty clay with shale fragments. CI			4537	J	0.35	
			4538	U	1.00-1.45	
			4539	J	1.80	
			4540	U	2.00-2.45	
Stiff dark grey/brown mottled silty clay with stones. CH	2.45		4541	J	2.80	
			4542	U	3.00-3.45	
Stiff grey silty clay with a little brown mottling and stones.	3.45		4543	J	3.80	
			4544	U	4.00-4.45	
Stiff grey fissured silty clay.	4.45		4545	J	4.80	
			4546	U	5.00-5.45	
			4547	J	5.80	
			4548	U	6.00-6.45	
	6.45					

Codes: U—Undisturbed Sample D—Large Disturbed Sample J—Jar Sample W—Water Sample

SHEET No.

Cementation Ground Engineering	soil mechanics department	BOREHOLE No. 13 1:229

CONTRACT St. Clears By-Pass	REPORT No. 8000/LT 2724.1611
Client The Welsh Office - Consulting Engineers:- Howard Humphreys and Sons	Ground Level 29.15m
Site Address St. Clears Carmarthenshire, South Wales	Boring Commenced 24.7.70 Boring Completed 31.7.70.

Type and Dia of Boring Shell and Auger 0.20m dia. 0-4.60 Rotary HX (Air) 4.60-9.10

Water Strikes	Water Levels Recorded During Boring								
1. None	Hole Depth								
2.	Casing Depth								
3.	Water Level								

Remarks

Description	Scale 20mm = 1m Depth	Legend	Samples Ref. No.	Type	Depth	S.P.T. N blows/ft
Topsoil.	0.30		4676	J	0.15	
Stiff brown/grey mottled silty clay with shale fragments. CI			4677	J	0.35	
			4678	U	1.00-1.50	
			4679	J	1.5	
			4680	D	1.70	
			4681	U	2.00-2.45	
	2.45		4682	J	2.50	
Stiff grey/brown mottled silty clay with stones and shale fragments. (SF/SC)			4683	D	2.70	
			4684	U	3.00-3.45	
	3.45		4685	J	3.50	
Grey weathered shale with softer bands.			4686	D	3.75	140
			4687	D	4.30	350+
	4.60				Core Recovery	
Grey shale with iron staining on joints and fissures. Core fragmented particularly at upper levels. fracture planes at approximately 45°.			4.6-6.10: 1.5 = 100%			
			6.10-7.60: 1.5 = 100%			
			7.60-9.10: 1.5 = 100%			
	9.10					

Code: U—Undisturbed Sample D—Large Disturbed Sample J—Jar Sample W—Water Sample

SMD 621

SHEET No

TRIAL PIT LOG

SN 21 NE/46
SN 17 16 70

Client: Welsh Office
T.P. No. 109
Date: 13/7/72
Ground Level: 27.38m
Scale: 1:50

Location: Carmarthen - St. Clears(Ffrwd Wen)
Type of boring: Excavated.
Dia. of boring:
Water Level: 2.05m

Description of Strata	Reduced Level	Legend	Thickness	Depth	SAMPLES Type	SAMPLES Depth	NOTES
TOP SOIL	27.18		0.20	0.20			
Firm brown mottled grey shaly CLAY with boulders and cobbles (Boulder clay)	25.88		1.30	1.50	B	0.40	
Very weak highly weathered clayey SHALE Dip 54°/350°	24.88		1.00	2.50	B	2.00	
Weak black SHALE							
Trial Pit Complete							

PROJECT:- Soil survey
Carmarthen - St.Clears Improvement

S ( ) Standard Penetration Test
U Undisturbed Sample
B Bulk Sample
D Disturbed Sample
W.S. Water Sample

Tarmac Construction Ltd., Geotechnical Division.

Appendix F

UXO PRE-DESK STUDY ASSESSMENT

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UNEXPLODED BOMB RISK MAP

zeticauxo

SITE LOCATION

Location: St Clears/SanclÛr, Carmarthenshire
Map Centre: 227500,216500

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 Tenby Road, St Clears, 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

RISH ASSESSMENT METHODOLOGY

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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.

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