



Hywel Dda University Health Board

URGENT & PLANNED CARE HOSPITAL

Ty Newydd, Whitland (Formerly known as Site C)
Site Appraisal





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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 C' which is located at Fferm Ty Newydd, Whitland, herein referenced as the 'Site'.

1.2 DESCRIPTION OF DEVELOPMENT

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

1.3 SITE LOCATION

The site is located directly to the east of central Whitland and has a British National Grid Reference of 221000, 216400. The site location is illustrated in Figure 1-1.

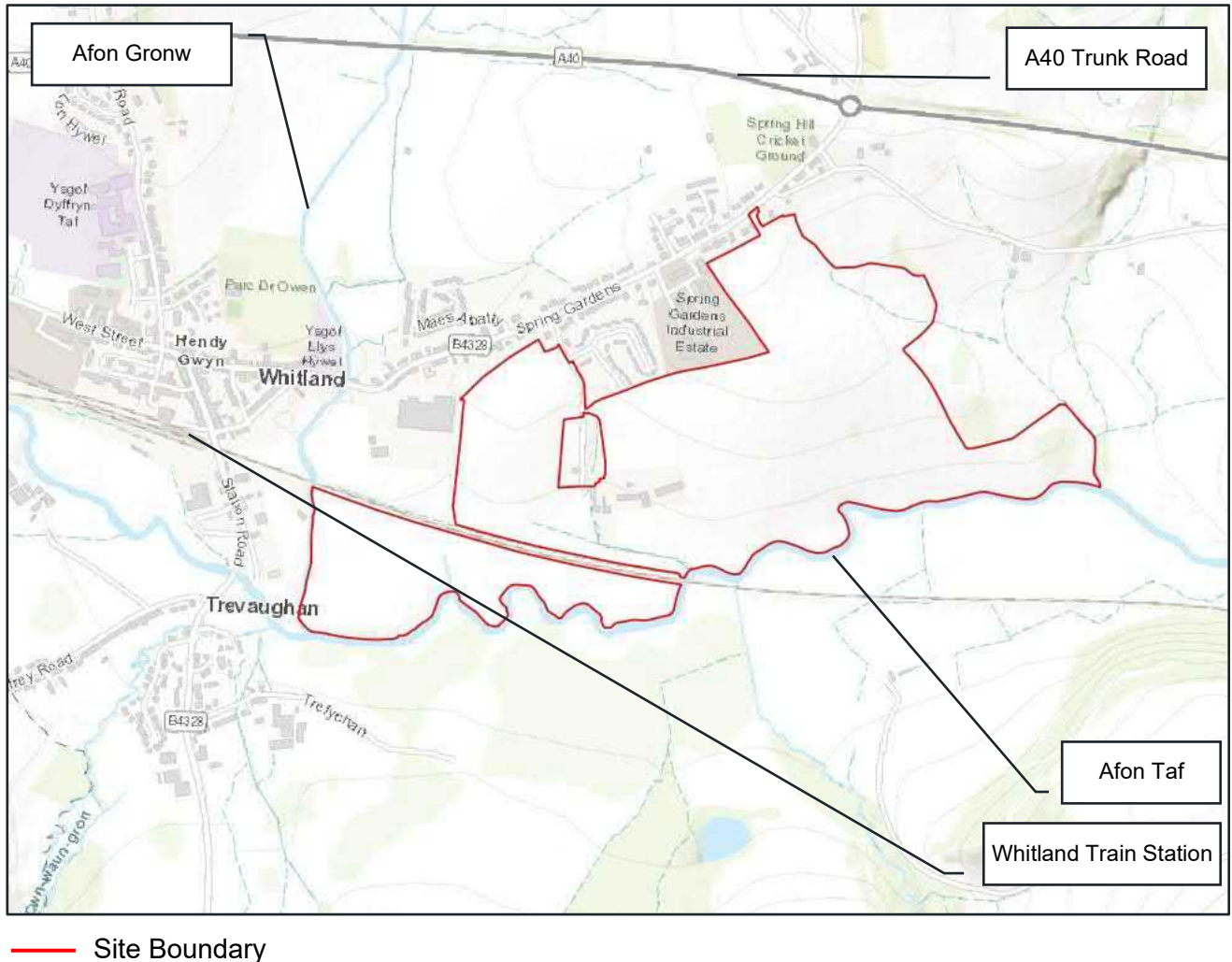


Figure 1-1 - Site Location

1.4 SITE DESCRIPTION

The site is largely greenfield and is approximately 63.4 ha in size. A residential property called 'Ty Newydd' is located near the centre of the site, and whilst its access road is within the site it is outside the redline boundary. The existing Fferm Ty Newydd Farm which is adjacent to the aforementioned residential property is however within the site boundary. The remainder of the site is used for agricultural purposes.

The site slopes from north to south with a high point of approximately 52mAOD and a low point adjacent to the river of 14mAOD. It is bisected by the mainline railway which runs between Whitland and Carmarthen. There is also Public Right of Way footpath crossing the site in a north-south alignment, which connects Bryngwenllian to Station Road around 300 metres to the south of the train station.

The land to the south of the railway is mostly within an area predicted to be at risk of flooding and is currently accessed by passing beneath a railway bridge from the land to the north.

The land to the north of the railway has two existing access points – both ultimately onto Spring Gardens (B4329) and is only identified as being at risk of flooding around the river that forms its southern boundary. There are however minor watercourses and land drainage ditches within this parcel of land.

A number of residential properties are located immediately to the north of the Site boundary on Spring Gardens and Bryngwenllian, together with the Spring Gardens Industrial Estate which also abuts the northern boundary of the site. The southern boundary of the site is formed by the Afon Taf, which is classed as a main river.

The western boundary of the site is formed by an adjacent commercial development beyond which lies the Afon Gronw. The eastern boundary of the site is abutted by more agricultural fields.

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 (SPA)).

1.4.1 DESCRIPTION OF THE LOCAL AREA

The Site is situated east of Whitland in Carmarthenshire.

The northern boundary of the site is formed by residential/commercial properties which form the eastern extents of Whitland. Whitland Train Station, which is within the town centre of Whitland, is located some 300m to the west..

There is a Listed Building/Structure in the nearby vicinity of the Site, i.e. the Trevaughan Bridge, which approximately 125m to the west of the site. The town of Whitland comprises a large cluster of residential properties, community assets and businesses which interrupts the otherwise largely rural landscape.

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

2 DRAINAGE

2.1 INTRODUCTION

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

The objectives of this section are to:

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

2.2 EXISTING DRAINAGE

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

A 150mm public combined gravity sewer serving the Bryngwenllian residential development routes through the site from the west of Bryngwenllian, before routing northwards towards Spring Gardens through Dolwerdd.

No records of drainage are available for Ty Newydd (enclaved within the site) or Fferm Ty Newydd to confirm if their drainage arrangements. It is assumed however that they are served by private drainage systems.

Existing watercourses within and in close 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.

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

- S1 – Surface Water Runoff Destination

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

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

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

2.3.1.1 S1 – Surface Water Runoff Destination

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

Collected for Use

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

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

Infiltration Methods

Two sources have been considered to get a preliminary understanding of the feasibility of infiltration at the site, British Geological Survey (BGS) information², and Cranfield University Soilscales information³.

BGS information shows that the majority of the site sits within the Didymograptus Bifidus Beds, comprised of mudstone.

Cranfield University Soilscales mapping shows that the Site is comprised of loamy, freely draining soils with the majority being classified as slightly acid and a minor portion being floodplain soils.

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

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. *Soilscales*. Available at: <http://www.landis.org.uk/soilscales/>. [Accessed 26th April 2022].

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.

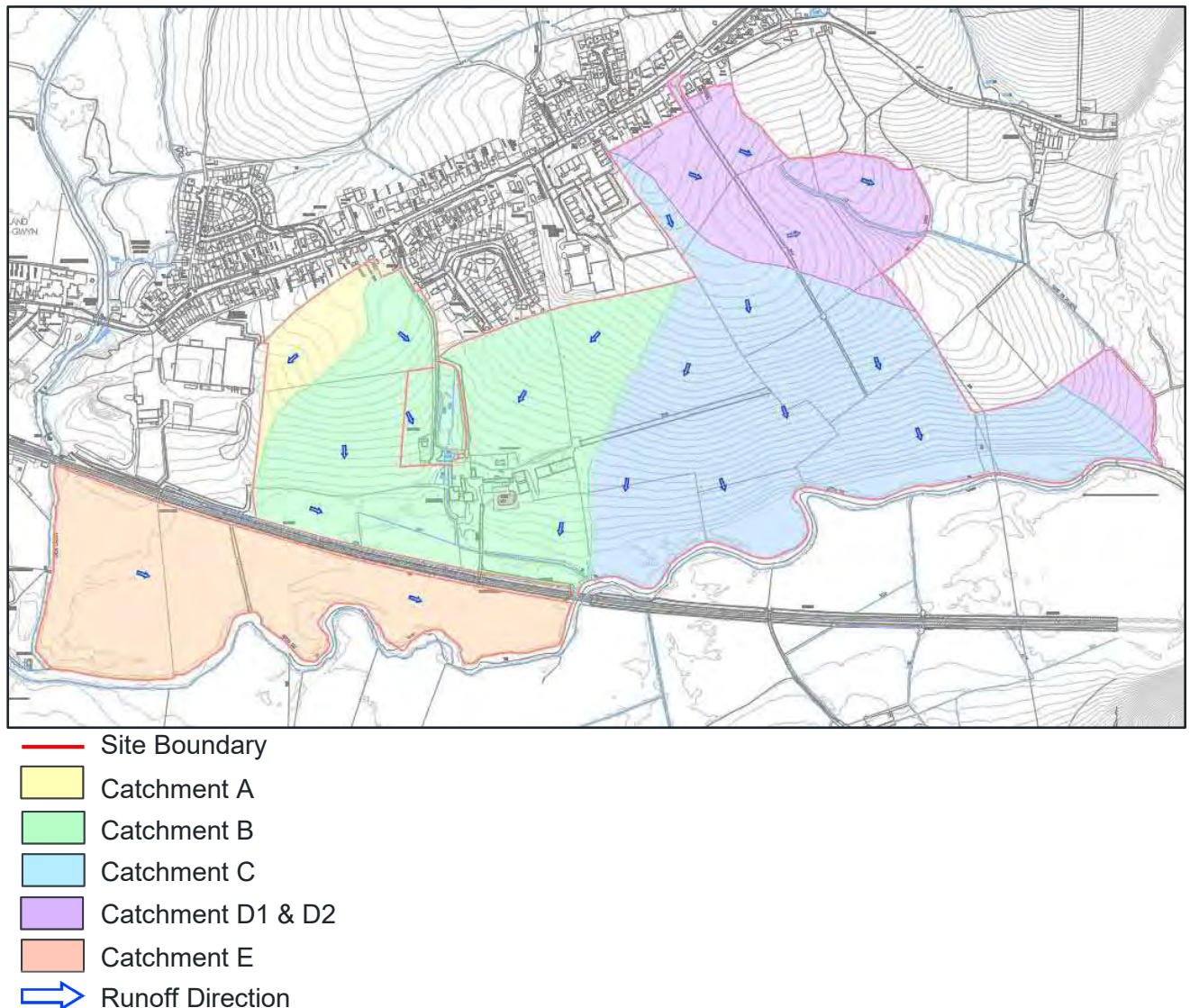


Figure 2-1 - Existing Surface Water Catchments

Within Catchment A there is a field drain that is not illustrated by the LiDAR information which appears to have been removed or realigned. It is understood to discharge in a manner similar to the one that the historic contours indicate – along the Western boundary. The runoff from Catchment B drains into minor watercourses which are to the North of and within Fferm Ty Newydd, and then converge with the Afon Taf to the East. Catchment C runs off directly into the Afon Taf. Catchments D1 and D2 are understood to run off into the Nant Yr Allwyn, a tributary of the Afon Taf. Catchment E forms part of the functional floodplain and has limited falls going from West to East towards the Afon Taf.

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. As such, it is envisaged that the middle portion of development site (i.e. Catchments B, C and E) will discharge into the Afon Taf, whether that is directly as in Catchments C and E or through the use of connecting minor watercourses as in Catchment B.

The Eastern portion of the development area (i.e. Catchment A) is expected to make use of the existing land contours and drain off the site. If however, should this not be feasible then other options for outfalls may be explored. As for the Western portion of the site (i.e. Catchments D1 and D2) may well make use of the Nant Yr Allwyn tributary.

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 64.76ha, the majority of which is greenfield. Notwithstanding this, since the required area for the development is understood to be approximately 35 acres, then this figure will be the one taken forward (for the purpose of attenuation provision) and not that of the full area of the site. 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 92.8L/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	404.2	8.1	404.2	68.7
QBAR	459.3	9.2	459.3	78.1
30 Year	817.6	16.4	817.6	139.0
100 Year	1001.4	20.0	1001.4	170.2
200 Year	1130.0	22.6	1130.0	192.1

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

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

Table 2-2 states the estimated storage volume and design maximum discharge rate for the site. It should be noted that the estimated attenuation storage volumes set out below are subject to detailed catchment analysis and detailed design, as well as the assumption that infiltration is not viable. There is potential to split the below volumes across a number of storage/SuDS features between future sub-catchments, however, the most appropriate strategy for delivery will be 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	78.1	6833	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 established 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 manage pollutants before runoff enters downstream waterbodies.

2.3.1.4 S4 – Amenity

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

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

2.3.1.5 S5 – Biodiversity

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

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

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

Open SuDS features will allow the creation of focal habitats for the development and should consists of a planting regime suited to a range of water depths. The pond should not be over planted to allow for natural colonisation and to ensure high visibility of people particularly children in and around the pond. Sight lines should be left open to attract certain species, whilst shaded areas under adjacent tree canopies may provide opportunities to further enhance the potential for a strong and biodiverse ecosystem to develop.

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

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

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

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

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

2.3.2 FOUL DRAINAGE

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

2.3.2.1 Foul Water Discharge Options

■ Discharge to Public Sewerage System via Foul Pumping Station

There are two public foul sewers accessible to the site, and to which the site could feasibly discharge to via a foul pumping station. A new pumping station serving the site would be required, located at the low point of the site, likely towards the south-east of the site (outside the floodplain).

- At the north-east of the site a public foul sewer serving properties in the east of Whitland routes down Spring Gardens; Dwr Cymru Welsh Water information states that the manhole chamber that could potentially form a point of connection has an invert of approximately 48.689mAOD, as such, the site could discharge into this system via a rising main, rising in the order of 30m.
- At the north-west of the site a public combined sewer serving properties in the Bryngwenllian residential development routes through the site; ground levels in this area are in the order of 33mAOD, as such, the site could discharge into this system via a rising main, rising in the order of 10m.

■ 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 River Taf at the south of the site, or the minor watercourse at the east 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 C177⁴ of 150-250m³/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 347m³.

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.

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

Table 2-3 - Estimated Foul Flows

Development	Peak Flow (L/s)	DWF (L/s)	Daily Flow (m³)
Mental Health Unit	2.8	0.5	40
Residences	27.1	4.5	390
Research	0.5	0.1	7
Administration and Education	2.1	0.4	31

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

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

WSP have engaged with DCWW with the intention of commissioning the aforementioned hydraulic modelling and developer impact 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.

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 and on-site minor watercourses where possible, whilst noting that the use of third-party land may be required.

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

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

3 FLOOD RISK

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

3.1 EXISTING REPORTS / INFORMATION REFERRED TO

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

3.2 HYDROGRAPHIC ENVIRONMENT

Candidate Site 12 is located to the south of properties on Spring Gardens (B4328), and to the north of the Afon Taf. The site is formed of two areas, lying each side of the Carmarthen-Pembroke Dock railway line. The northern portion is bounded to the west by the former Whitland creamery site, whilst the southern portion is bounded to the west by the Afon Gronw.

The site lies adjacent to the Afon Taf, which forms the southern boundary of the site. To the east of the site lies the Nant Yr Allwyn, a minor watercourse which discharges into the Afon Taf at the south-eastern boundary.

The Afon Gronw converges with the Afon Taf at the south-western corner of the site.

Within the site itself are four minor watercourses of note, all of which ultimately discharge into the Afon Taf.

The first minor watercourse within the site is located adjacent to the northern embankment of the railway. It discharges into the Afon Taf adjacent to the railway bridge over the river. It is also thought that there may be a culvert structure off this watercourse that passes through the railway embankment and into the third minor watercourse recorded at the site.

The second minor watercourse routes southwards along the access track to Fferm Ty Newydd, into a pond within the farm, to the south where it converges with a secondary reach, and then routes eastwards towards the Afon Taf.

The third minor watercourse is an open channel bisecting the southern portion of the site, routing from the railway embankment down to the Afon Taf. It is thought that the first minor watercourse may communicate with this watercourse via a culvert structure under the embankment.

It is possible that the second of these watercourses historically received flows from the adjacent creamery site and land within the north-western portion of the site. Historic mapping shows that between 2012 and 2018 that field boundaries changed in this area, and it is understood that a minor watercourse was present at this boundary, which is understood to have formed part of the upper reaches of this second watercourse.

The fourth minor watercourse lies at the north-east of the site, and is a reach of the Nant yr Allwyn. This routes through the site, discharging into the Nant yr Allwyn.

Mapping indicates the presence of two slurry beds in the vicinity of Fferm Ty Newydd. It is not known if these have any connectivity with the watercourses within the site, or discharge elsewhere.

The site is not considered to benefit from flood defences, the nearest of which are located on the western bank of the Afon Gronw, which are understood to serve the central areas of Whitland.

3.3 SOURCES OF FLOOD RISK

This section reviews the current understanding of flood risk from the key sources, utilising the online flood risk mapping⁶ 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 contains areas of Flood Zones A, B and C2.

Flood risk areas shown by the DAM within the site is primarily located towards the south of the site, with almost all of the area south of the railway lying within Zone C2, and the southern portion of the northern segment lying in areas classed as DAM Zone C2 and Zone B.

⁶ NRW, 2022. *Long term flood risk*. Available at: <https://naturalresources.wales/evidence-and-data/maps/long-term-flood-risk1/?lang=en>. [Accessed 13th April 2022].

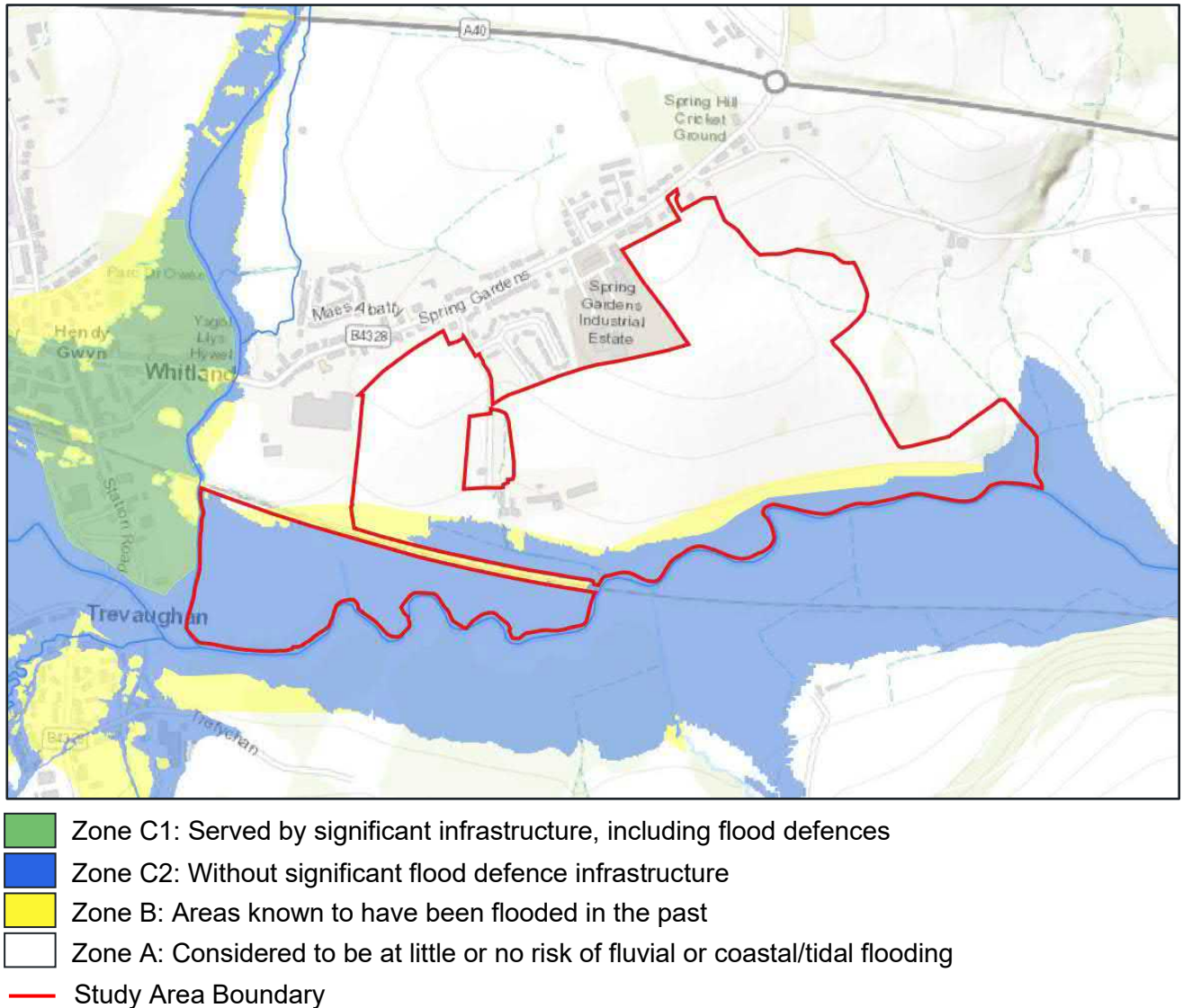


Figure 3-1 - Development Advice Map

3.3.2 RISK OF FLOODING FROM RIVERS

The site lies adjacent to the Afon Taf and the Afon Gronw.

Within the southern portion of the site, all but the north-western corner is shown to lie in an area considered to be a high risk of fluvial flooding, with areas of medium and low risk approaching the north-western corner.

Within the northern portion of the site, the southern area of this portion lying adjacent to the Afon Taf is all considered to be at high risk of flooding. Furthermore, flood waters appear to back up into the minor watercourse that routes through Fferm Ty Newydd, with areas of low, medium and high-risk present along its course south of the farm buildings.

Such areas of flood risk are defined by the probability of a flood event, with a 3.3% Annual Exceedance Probability (AEP) defining a high risk area. The AEP is the percentage chance that a flood of a specified magnitude or greater may occur in any given year.

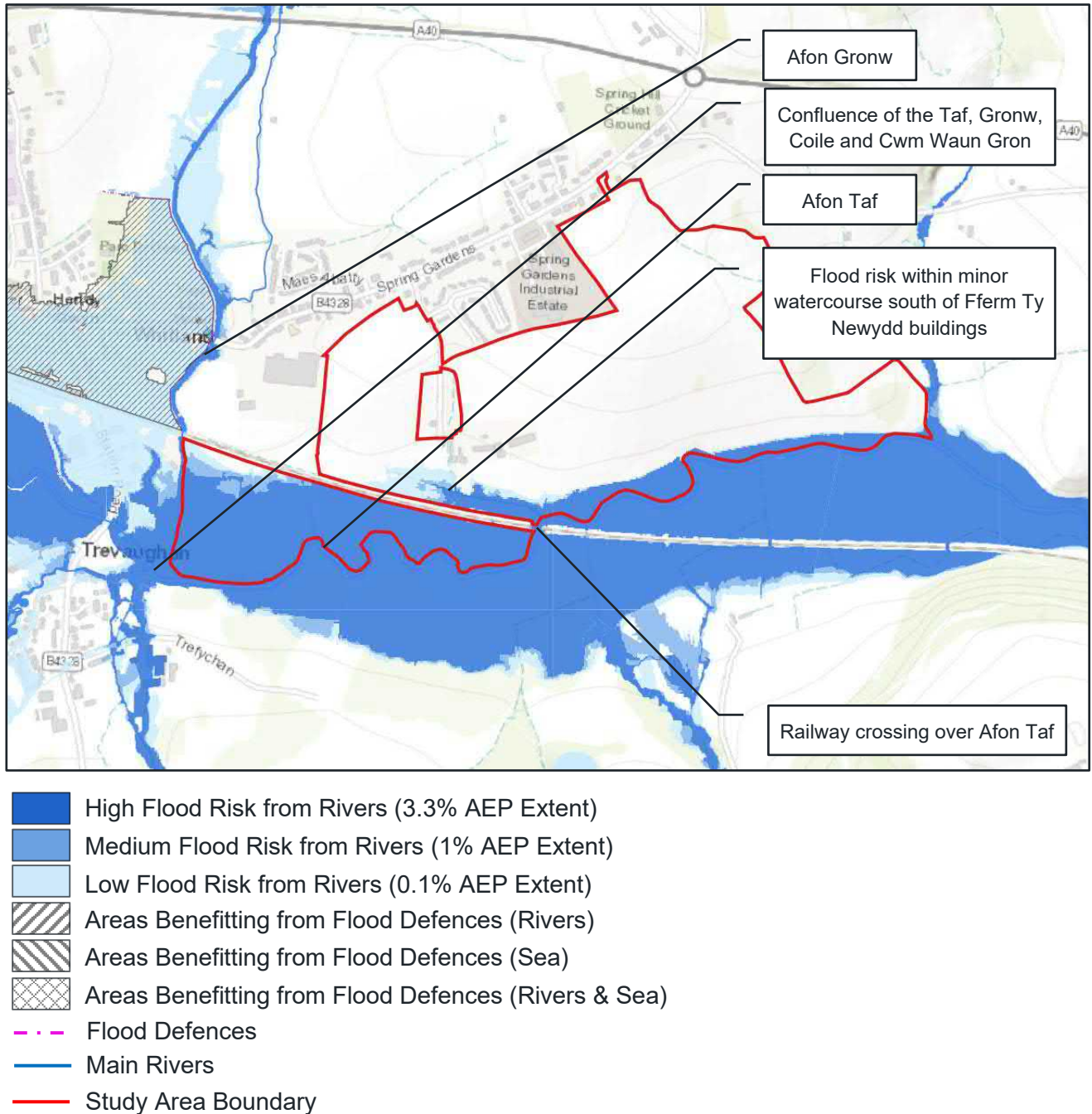


Figure 3-2 - Flood Risk from Rivers

3.3.3 RISK OF FLOODING FROM THE SEA

The site lies approximately 4km from the nearest tidally influenced water body, known to be the Afon Taf at Llanddowror.

The distance of the site from the sea, the site's elevation varying from between 12mAOD 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 3-3, highlight a number of areas of high and medium flood risk from surface water and minor watercourses.

The primary areas of flood risk within the site are coincident with the existing minor watercourses and low ground levels.

The first of these, the watercourse by Fferm Ty Newydd, shows areas of high and medium risk within the watercourse channel, as well as in proximity to the pond located between the farm's two access tracks. Flood risk associated with this minor watercourse continues within the channel until its confluence with the Afon Taf. Additional areas of low and medium flood risk are present within the fields directly south and south-east of the farm buildings.

The area also thought to be a slurry bed at the south-east of the farmyard area is also highlighted as at high risk of flooding.

The second minor watercourse, thought to serve the railway embankment, also has areas considered to be at risk of flooding. The most notably of these lies outside the site boundary, on the northern side of the railway, where a significant depression in the ground appears to be present. It is thought that there may be a culvert at this location which conveys flows to the channel on the southern side of the railway embankment. It is assumed that this culvert, if present, is not included in the pluvial model used to model surface water flood risk.

The site area to the south of the railway embankment contains limited areas considered at risk of flooding from surface water. The first of these areas is associated with the open channel routing southwards from the railway embankment and discharging into the Afon Taf. The flood risk associated with this feature appears to be concentrated upstream of the location where the farm track crosses the watercourse. It is assumed that there is a culvert feature at this location, and it is assumed that this culvert, if present, is not included in the pluvial model used to model surface water flood risk. The second area within the site's southern portion appears to be associated with an isolated depression in ground levels within the field.

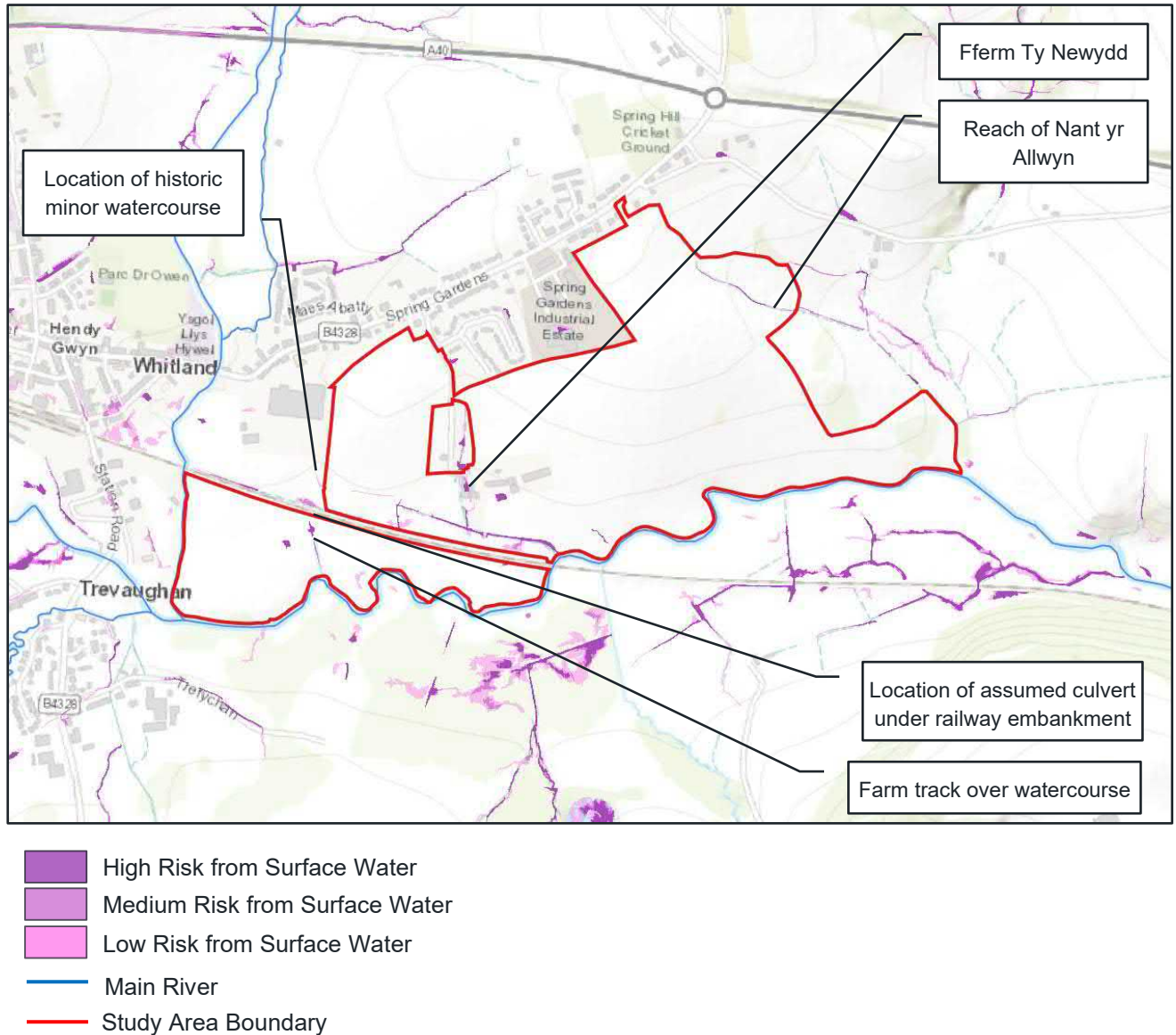


Figure 3-3 - Flood Risk from Surface Water and Minor Watercourses

3.3.5 GROUNDWATER FLOOD RISK

Review of the Strategic Flood Consequence Assessment⁷ (SFCA) notes that groundwater risk information was not available when it was written, and this still being the case, there is no formal assessment available for risk of flooding from groundwater for the site.

This considered, flood risk posed by the site by groundwater is likely to be dominated by the minor watercourses running through the site, and the main rivers to the west. As groundwater tends to

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

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.

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 includes recorded flood outlines at the site from 1979 and 1981. Within the northern portion of the site, these appear to generally follow the extent considered at high risk of fluvial flooding, and within the southern portion of the site, they approximately follow the courses of the Afon Gronw and the Afon Taf, extending distances of between 15m and 80m from the main river channels.

Other flood event outlines are noted within the wider area of Whitland in 1977 and 1993.

Review of online new sources did not reveal any additional flood history associated with the site. Property flooding events in the Whitland area were noted in 2012⁸ and 2020⁹.

A search of the Chronology of British Hydrological Events¹⁰ for, "Gronw", "Whitland" and "Hendy-Gwyn" did not yield any relevant results.

3.3.8 OTHER SOURCES OF FLOOD RISK

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

3.4 STRATEGIC PLANNING DOCUMENTS AND POLICY

3.4.1 STRATEGIC FLOOD CONSEQUENCES ASSESSMENT

Parts of the site are named as an allocated or candidate site within the Strategic Flood Consequences Assessment¹², developed in support of the Local Development Plan.

⁸ Western Telegraph, 2012. *County Hit by Flash Flooding*. <https://www.westerntelegraph.co.uk/news/10027185.county-hit-by-flash-flooding/>. [Accessed 12th April 2022].

⁹ Sky News, 2020. *Storm Francis: Homes flooded, rail lines blocked and campers rescued in wet and windy conditions*. <https://news.sky.com/story/storm-francis-homes-flooded-rail-lines-blocked-and-campers-rescued-in-wet-and-windy-conditions-12056303>. [Accessed 12th April 2022].

¹⁰ British Hydrological Society. *Chronology of British Hydrological Events*. Available at: <https://www.cbhe.hydrology.org.uk/>. [Accessed 12th April 2022].

¹¹ British Geological Survey. *GeoIndex Onshore*. Available at: <https://mapapps2.bgs.ac.uk/geoindex/home.html>. [Accessed 12th April 2022].

¹² Atkins, 2019. *Carmarthenshire & Pembrokeshire Stage 1 Strategic Flood Consequence Assessment (SFCA)*. Carmarthen: Carmarthenshire County Council.

The development site with LDP reference SR/163/005, which is formed of a parcel at the north-east of the site adjacent to Spring Gardens, is noted as not at risk of flooding by the SFCA.

An LDP allocation adjacent to the site with reference SR/163/009, is located to the south-west of the site. This is noted as having a moderate degree of surface water flood risk (6.17% of the candidate site).

An LDP allocation adjacent to the site with reference T2/6/E2, is located to the north of the site adjacent to Whitland Industrial Estate. This is noted as not at risk of flooding by the SFCA.

An LDP allocation adjacent to the site with reference T2/6/h5, is located to the north-east of the site adjacent to Spring Gardens. This is noted as not at risk of flooding by the SFCA.

3.4.2 LOCAL FLOOD RISK MANAGEMENT PLAN

3.4.2.1 Whitland

The Local Flood Risk Management Plan's ward assessment for Whitland¹³ identifies the town as generally at flood risk from the Afon Taf, Afon Gronw and the Afon Cwm Waun Gron, but notes that significant flood defence works serving the town were completed in 1985.

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

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

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

Fferm Ty Newydd and Ty Newydd appear to be shown as at risk of flooding from the minor watercourse that passes through the centre of the site, discussed in Sections 3.2 and 3.3.4.

3.4.3 REQUIREMENTS OF TECHNICAL ADVICE NOTE 15

The proposed use classes at the site include a hospital, which is classed as "emergency services" by Technical Advice Note 15 (TAN15). Development of emergency service facilities is typically acceptable within DAM Zone A, but not within DAM Zone C2. Any development within DAM Zone B should be verified against the 0.1% flood level (extreme event).

3.4.3.1 Access and Egress

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

Considering access routes to the site from the west via the B4328, reveals that the B4328 contains significant areas of flood risk from both fluvial and surface water sources according to the NRW

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

mapping. These flood extents fall within the extent considered to be protected by fluvial flood defences, and as such would only occur if the fluvial defences failed.

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

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

Access to the southern portion of the site is currently via a track under the railway bridge over the Afon Taf at the south-east of the site, and is supplemented by a level railway crossing (foot traffic only) from the northern portion of the site. As such, access to the southern portion of the site in flood conditions is unlikely to be feasible without an alternative access arrangement being in place. A possible access route to the southern portion of the site may be available via the highway network and land to its west.

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

As such, it is possible that access and egress at the site may be impeded in some higher return period storm events, but that access to the northern portion of the site should remain feasible via alternative routes. Access and egress to and from the southern portion of the site currently appears to be impeded in flood conditions.

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 Planning¹⁴ in support of the updated TAN15, which is now due to be enacted in June 2023.

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

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

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

It is also noted that flood risk associated with the minor watercourses south of Fferm Ty Newydd is increased compared to that discussed in Section 3.3.4.

This is expected as 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.

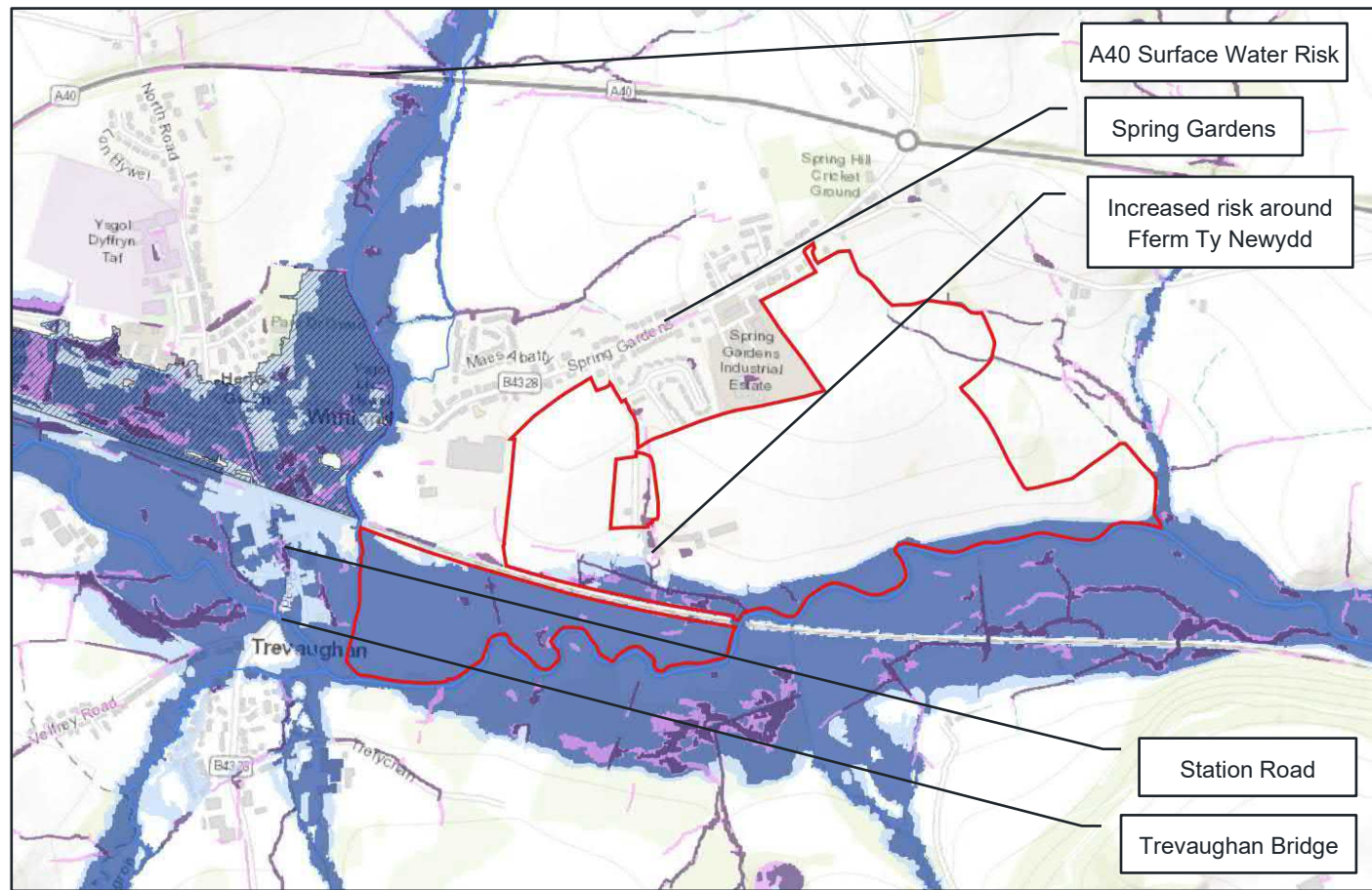


Figure 3-4 - Flood Map for Planning (Site)

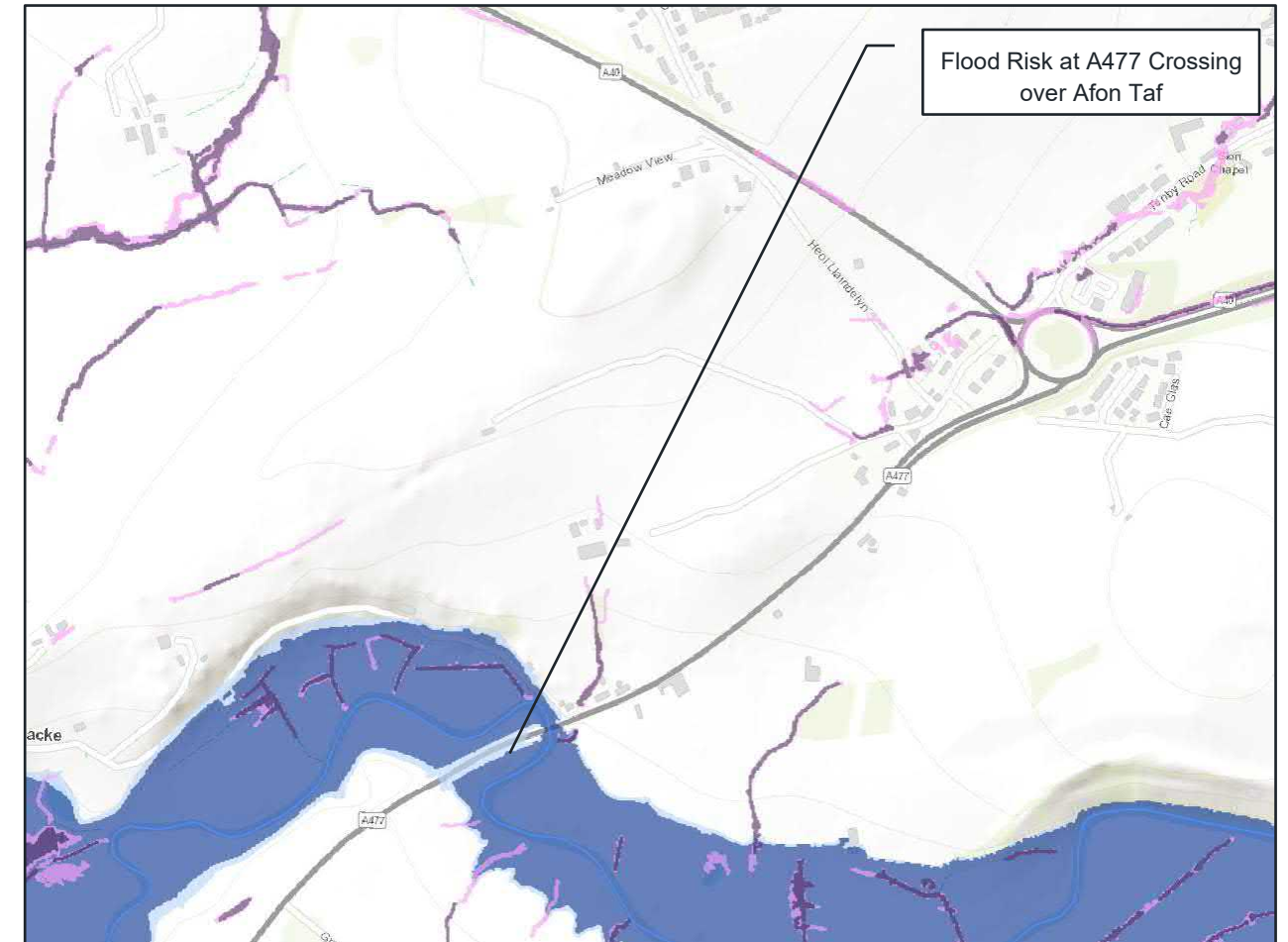


Figure 3-5 - Flood Map for Planning (A477 at St Clears)

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

3.5 RECOMMENDATIONS

- Multiple access/egress routes should be considered as part of the site master-planning and development to provide resilience
- Further consideration should be given as to access requirements to the southernmost portion of the site, and if additional access arrangements are required to facilitate this
- An appropriate offset is given to minor watercourses to allow for access, maintenance, and ecological corridors
- An appropriate offset is given to main rivers to allow for access, maintenance, and ecological corridors
- Site master-planning should ensure that development is located within areas where the level of flood risk is commensurate with the nature of the development

3.6 SUMMARY

From a review of the available information, the site contains areas at significant risk of flooding from main rivers, minor watercourses and surface water. Notwithstanding this, large areas of the site remain at low risk of flooding.

It is anticipated that through careful master-planning and design, development can be directed to avoid areas of risk, with any development that is proposed in areas considered at risk of flooding to be of a nature considered appropriate for the level of flood risk present.

It is also considered that suitably designed site levels and drainage should be able to effectively manage runoff originating from within the site.

4 TRANSPORT

4.1 INTRODUCTION

4.1.1 OVERVIEW

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

4.1.2 SITE VISIT

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

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

4.1.3 POLICY REVIEW

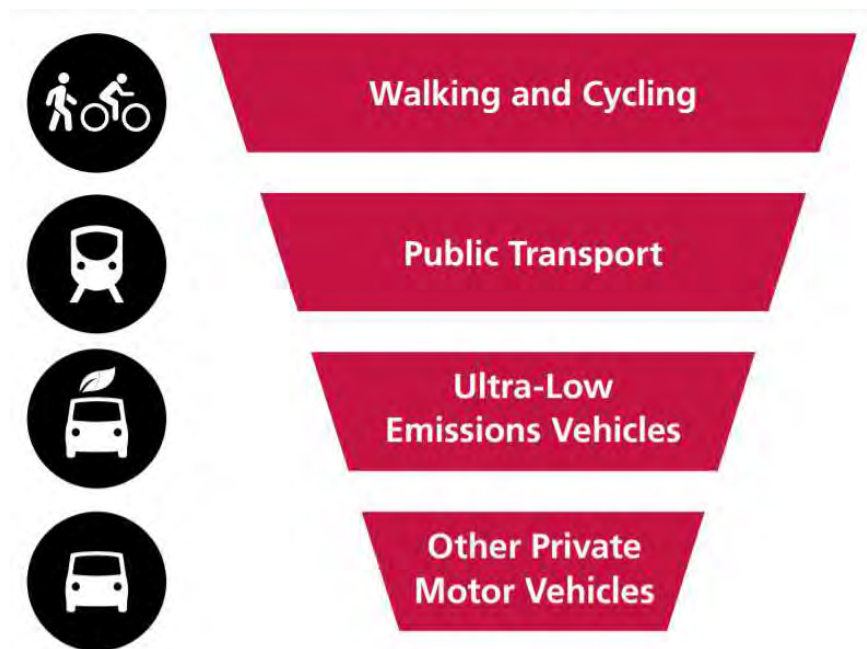
The Welsh Government is promoting active travel and has passed the Active Travel (Wales) Act 2013. This act defines new duties for local authorities in Wales and puts onus on Welsh ministers to ask questions with regard to the sustainability and suitability of development and the promotion of active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

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

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

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

Figure 4-1 - Transport User Hierarchy



Accordingly, this Transport Appraisal (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

Following this introduction, this TA is structured as follows:

- **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

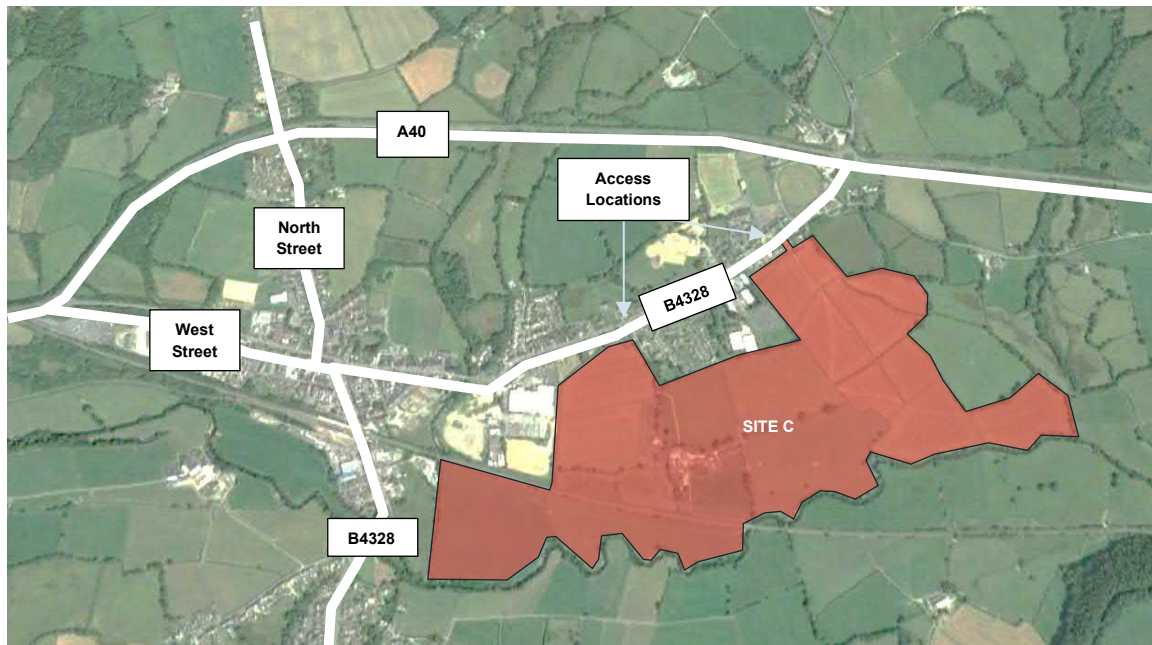
4.2.1 SITE DESCRIPTION

The Site, which is shown in **Figure 4-2** comprises several parcels of farmland covering approximately 158 acres of land and is located on the south-eastern periphery of the town of Whitland.

The site is bounded by residential and industrial units along the B4328 to the north, industrial units along the B4328 and Station Road to the west and open fields to the south and east.

The site has limited (c. 14 metres) frontage with the B4328 with the West Wales rail line segregating the site into two parcels of land. As such, the southern parcel is currently only accessible via the northern parcel which requires a crossing of the rail line.

Figure 4-2 - Site Boundary



Source: <https://pinpointgis.wsp.com/portal/>

4.2.2 SURROUNDING HIGHWAY NETWORK

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

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

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

The B4328 Spring Gardens borders the northern periphery of the site and provides access to the site directly adjacent to No.26 Spring Gardens. This 14-metre-wide strip of land has formerly been used as an agricultural access and is shown in Figure 4-3.

Figure 4-3 – Agricultural Access from B4328 Spring Gardens



A further access to the site is also available from The B4328 Spring Gardens via the Bryngwenllian Access Road which provides access to the site's existing agricultural compound. This is shown in Figure 4-4.

Figure 4-4 – Bryngwenllian Access to the Site



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

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

On entry to Whitland, where residential provision is denser, some on-street parking is observed with the other side generally being controlled by the introduction of double yellow line 'no parking or waiting at any time' traffic regulation orders. The on-street parking on the B4328 within Whitland is shown in Figure 4-5.

Figure 4-5 – On-Street Parking B4328 Market Street



On the site frontage the B4328 is subject to a 30mph speed limit, however this reduces to 20mph within the vicinity of Ysgol Llys Hywel. This is enforced by traffic calming measures in the form of speed bumps. These are shown in Figure 4-5.

Figure 4-6 - Traffic Calming Measures and 20mph Speed Limit B4328 Market Street



Following Whitland the B4328 continues southbound as St John Street leading to Station Road. These roads are offset from the site itself with no direct access available. St Johns Street acts as the Whitland commercial high street and crosses the railway line via a level crossing directly adjacent to the station as shown in Figure 4-7. Following the level crossing the road continues as Station Road which provides primary access into Whitland from the south and has more industrial frontage.

Figure 4-7 - Level Crossing St Johns Road / Station Road



West Street

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

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

North Road

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

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

A40

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

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

From the site the A40 can be accessed from the B4328 Spring Gardens via a 55 metre ICD roundabout around 700 metres to the west of the existing Bryngwenllian access road. To the east the A40 can also be accessed by movements passing through Whitland via the B4328. However, despite this being a more direct route (1,600 metres less) there are no significant journey time savings as a result of the route passing through the urban area with traffic calming measures and on-street parking.

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. Around Whitland the A40 operates to the national speed limit for single carriageway roads (60 mph).

A40: Llanddewi Velfrey to Redstone Cross improvements

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

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

The scheme will:

- provide new 6km of road, away from the existing road
- provide a new roundabout to the east of Llanddewi Velfrey to access the village
- provide a new junction west of Llanddewi Velfrey
- improve the Penblewin roundabout
- put in a new junction at Redstone Cross
- provide two overbridges for the existing roads
- install drainage and mammal underpasses
- put in cycle and footpaths along the old road network

The improvement scheme aims to:

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

4.3 ACCESSIBILITY

4.3.1 INTRODUCTION

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

- Walking;

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

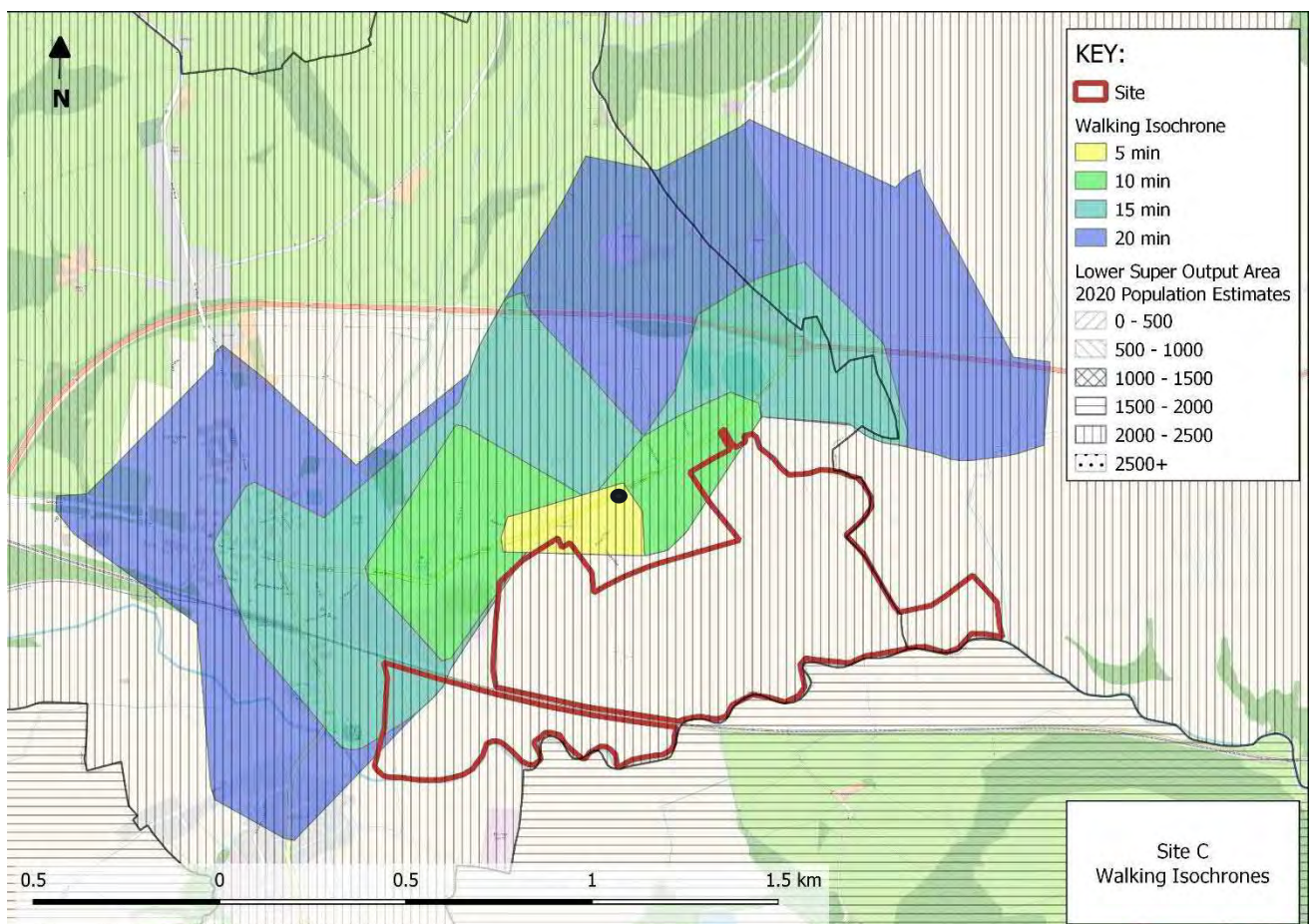
In addition to the above, it reviews the personal injury collision data for key corridors surrounding the site and provides a few physical improvements that can be provided to accommodate active travellers at the hospital.

4.3.2 ACCESSIBILITY BY TRANSPORT MODES

Walking

Walking as a mode of travel has the potential to replace short distance vehicle journeys and can also form part of a combined mode journey from places not within a reasonable walking distance. The Active Travel Act Guidance recommends that facilities should be within 20 minutes' walking distance and therefore, walking isochrones at a typical walking speed of 4.8kph have been prepared for Site C (from the existing Bryngwenllian Access). These are shown in Figure 4-8.

Figure 4-8 – Walking Isochrone



The walking isochrone illustrates that the majority of Whitland population (2,370) can reach the proposed hospital site within a 20 minute walking distance. This is confirmed in Figure 4-9 using

Google Map's 'Journey Planner Feature' with only the northern most extremity of Whitland where North Road crosses the A40 being outside of this walking distance.

Figure 4-9 – Google Map 'Journey Planner' Site Walking Distance

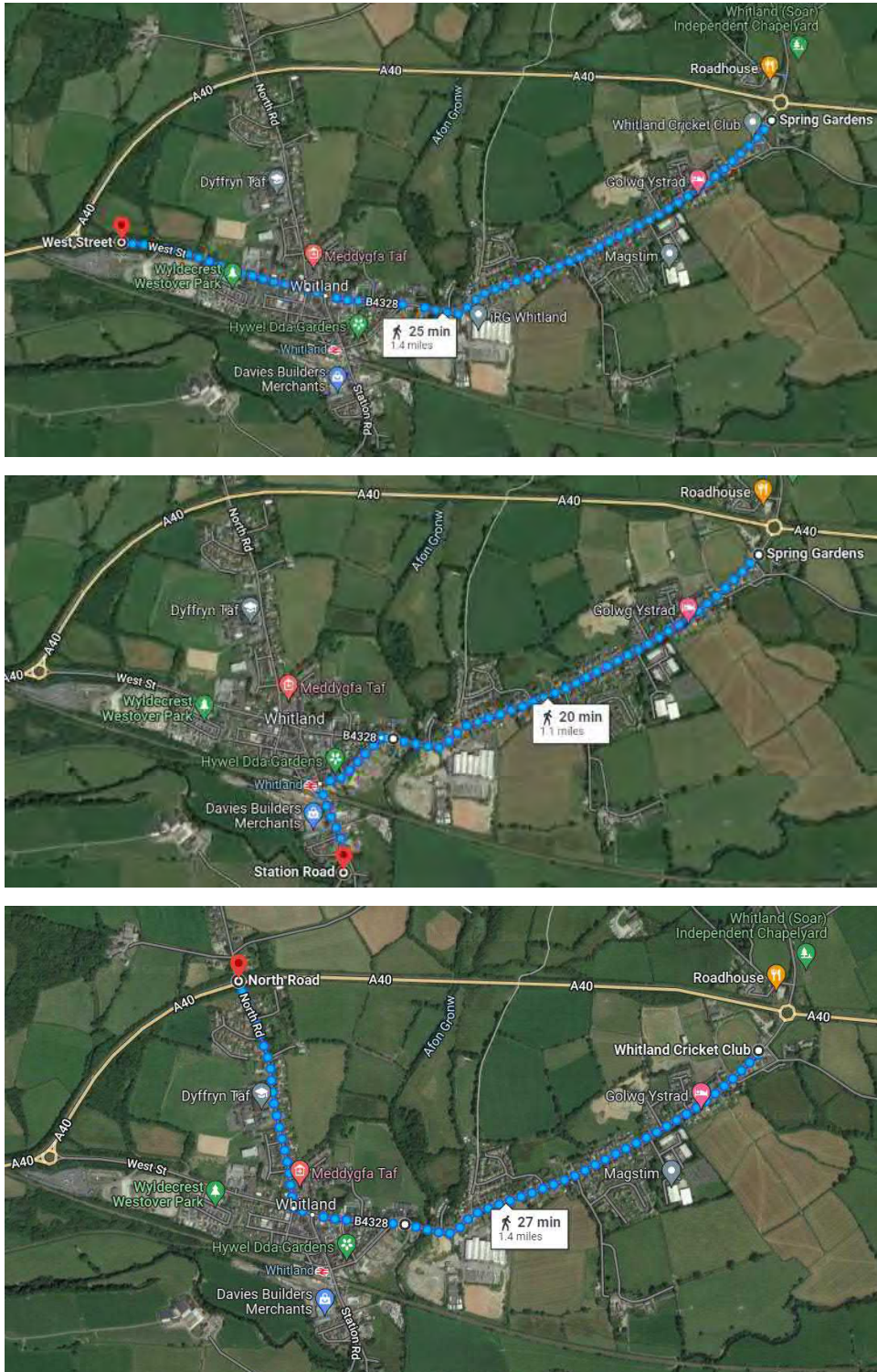


Figure 4-9 implies that with the right infrastructure walking could be a possible mode of transport for most local staff and visitors to the hospital. The following text provides details of the existing provision for walking along the key routes surrounding the site.

Bryngwenllian

Footways between 1.5 and 1.8 metres wide are provided on both sides of the Bryngwenllian access road. The footway on the western side of the road is generally poorly maintained and appears infrequently used.

The footways stop following the residential frontage where Bryngwenllian changes in nature to an agricultural access road and no longer forms part of the adopted local highway network.

B4328 (Spring Gardens)

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

The footways are generally a minimum of 1.5 metres wide which is the absolute minimum requirement as set out in the Active Travel Act allowing for two pushchairs and / or wheelchairs to pass each other on its extent. In some locations the footway extends to 2.5 metres.

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

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

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

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

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

North Road

Footways 1.8 metres in width are provided on both sides of the North Road carriageway up until 220 metres to the south of the A40 overbridge. In this location the footway on the eastern side of the

road terminates. The footway on the western side of the carriageway continues along the residential frontage.

West Street

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

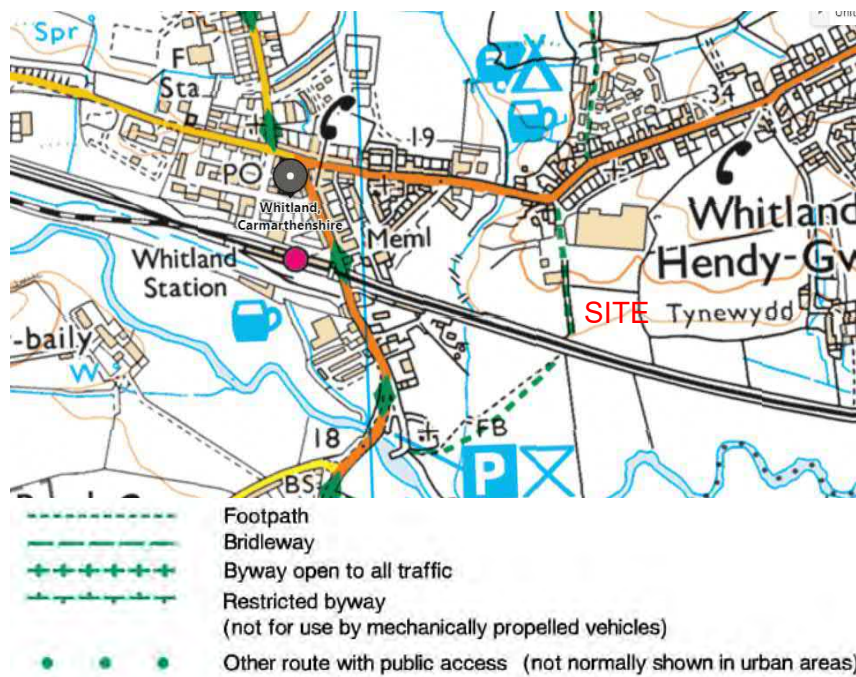
A40

No pedestrian provision is currently located along the A40.

PROW

There is a PROW footpath crossing the site in a north – south alignment. This is shown in Figure 4-10 and connects Bryngwenllian to Station Road around 300 metres to the south of the station.

Figure 4-10 – PROW through the Site



Cycling

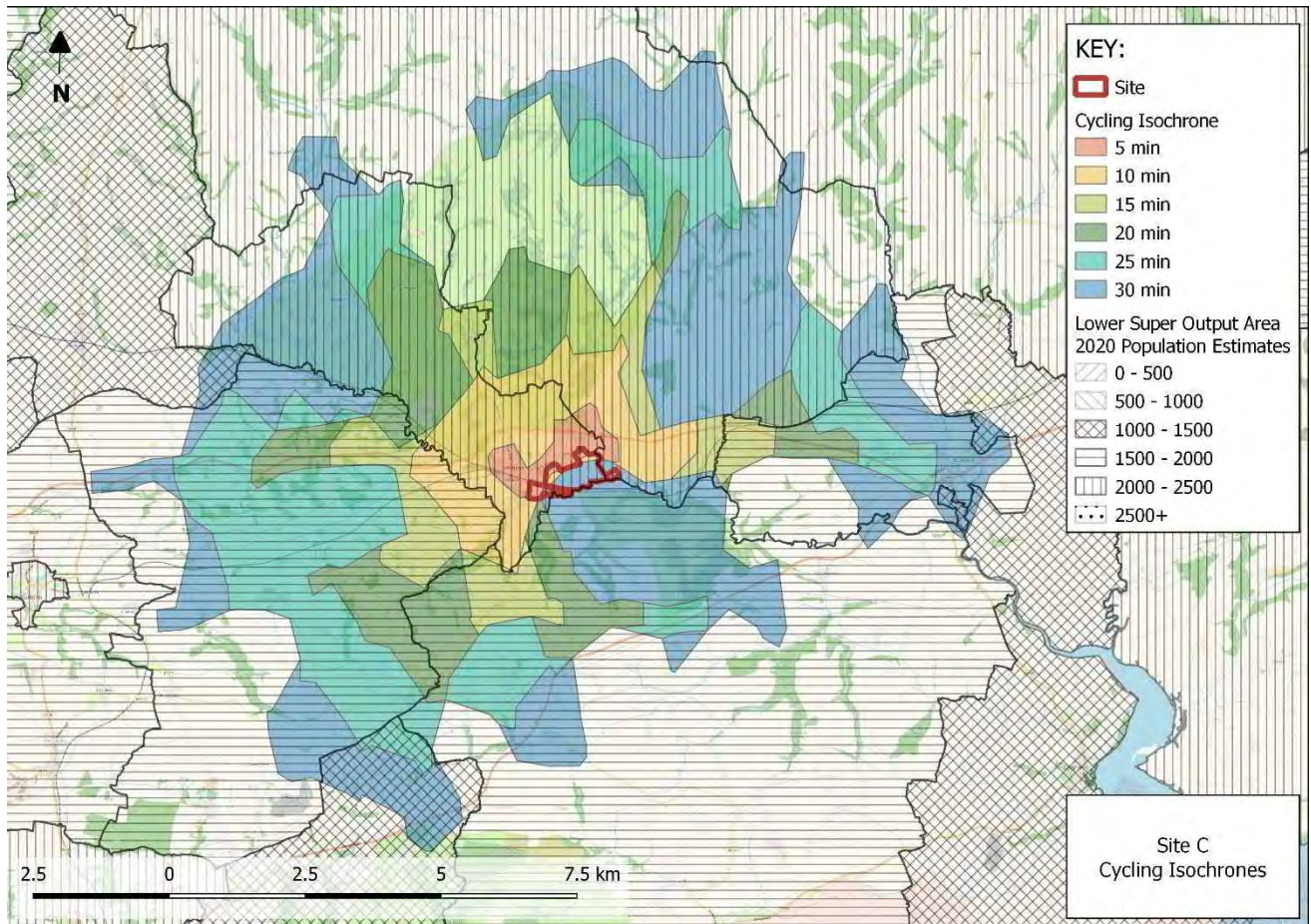
Cycling as a mode of travel has the potential to replace short and medium distance vehicle journeys. Cycling can be undertaken with normal bicycles and also with electric bikes (e-bike) which will be a great option to travel long distances.

Assuming an average cycling speed of 16kph using a normal bicycle, Figure 4-11, shows cycling isochrones for the Site centred at the Bryngwenllian access to the proposed hospital site.

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

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

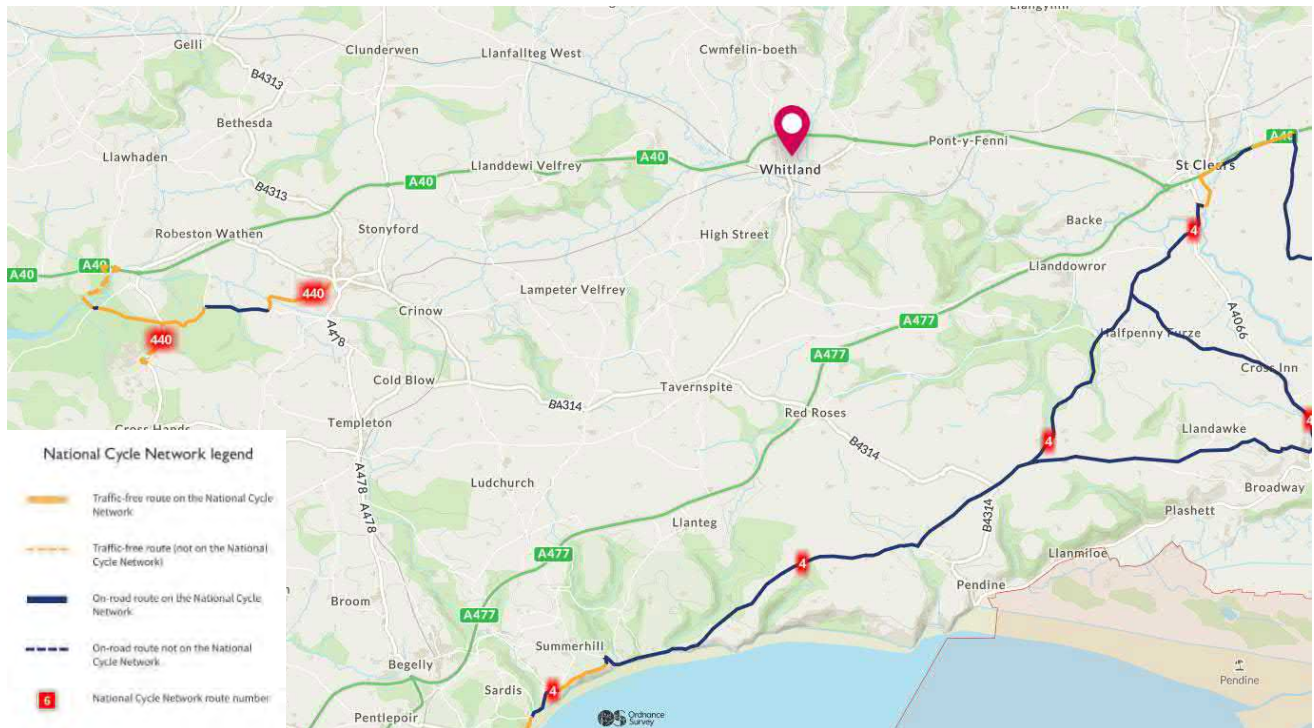
Figure 4-11 – Cycling Isochrone



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

National Cycle Network Route 440 also provides a short but isolated route between Narberth and Toch Wood / Bluestone. These two routes in relation to the location of The Site are shown in Figure 4-12.

Figure 4-12 – National Cycle Network



Integrated Network Maps

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

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

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

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

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

These routes are shown in Figure 4-13.

Figure 4-13 – Active Travel Network Map Routes – Whitland



Public Transport

This section provides details of the bus and train services operating in the vicinity of the Site.

Bus

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

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

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

Figure 4-14 shows the location of the closest bus stop (Bryngwenllian) and the Railway Station bus stop, at which all services serving Whitland stop, in relation to the site.

Figure 4-14 - Location of Bus Stops

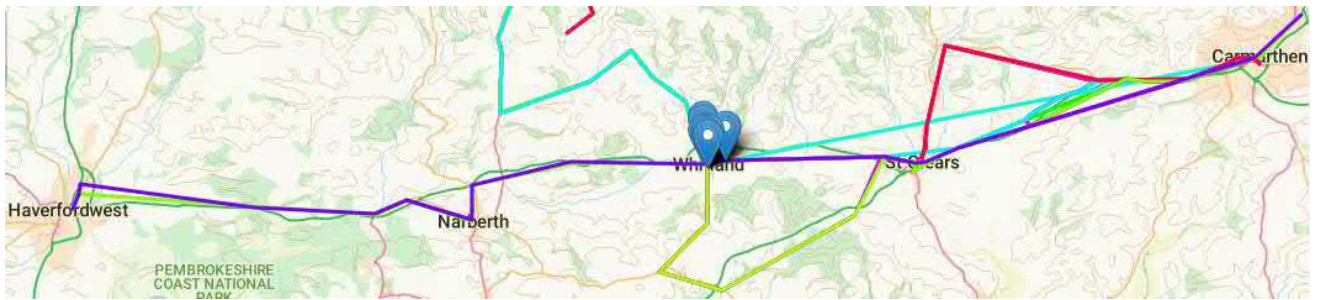


Table 4-1 provides more details of the bus services operated from within the vicinity of the site with a bus route plan included in Figure 4-15.

Table 4-1 – Bus Services

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

Figure 4-15 – Bus Route Plan - Whitland



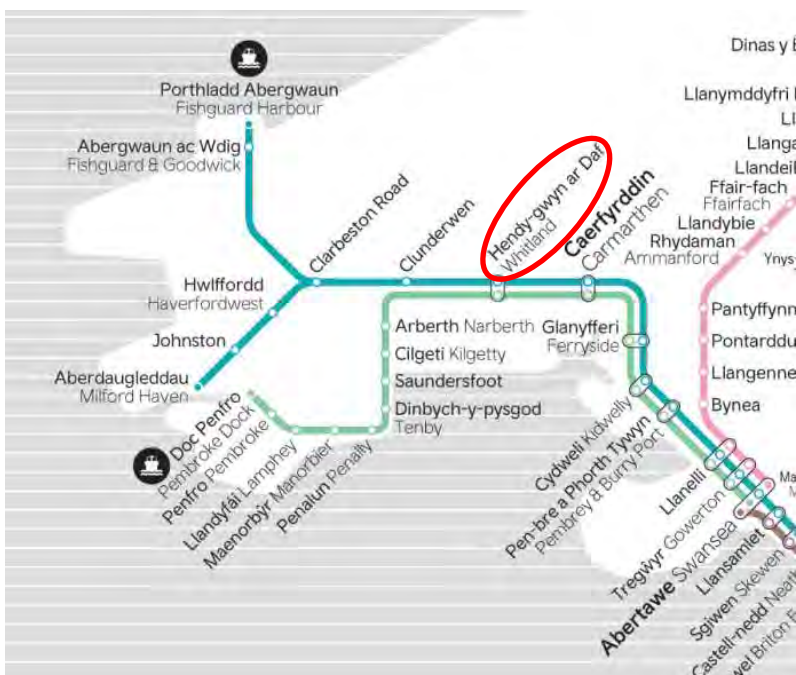
The principal towns of Carmarthen and Haverfordwest are serviced every 2 – 3 hours. Whitland however is not served by bus during the evening and on Sundays with limited bus service provision throughout average weekdays.

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

Rail

Whitland railway station is located on the West Wales Line. To the west of the station, a branch line diverges towards Pembroke with the main line continuing to Milford Haven and Fishguard Harbour. To the east the line continues to Carmarthen, the Heart of Wales Line and Swansea. The network map for the area is shown in Figure 4-16.

Figure 4-16 – Network Map Surrounding Whitland



The location of the rail station with regard to the site is shown in Figure 4-17.

Figure 4-17 – Location of Rail Station



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

Table 4-2 – Rail Services

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

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

4.3.3 EXISTING TRAFFIC

Existing 7-day Automated Traffic Counts (ATC) have been obtained along the B4328 on the site frontage, West Street and North Street. to identify the volume of traffic on the local roads within close proximity of the site. Figure 4-18 provides the location of the ATCs and Figure 4-19, Figure 4-20 and Figure 4-21 summarise the traffic flows collected by the ATC surveys.

Figure 4-18 – B4328, West Street and North Road Traffic Flows ATC Locations

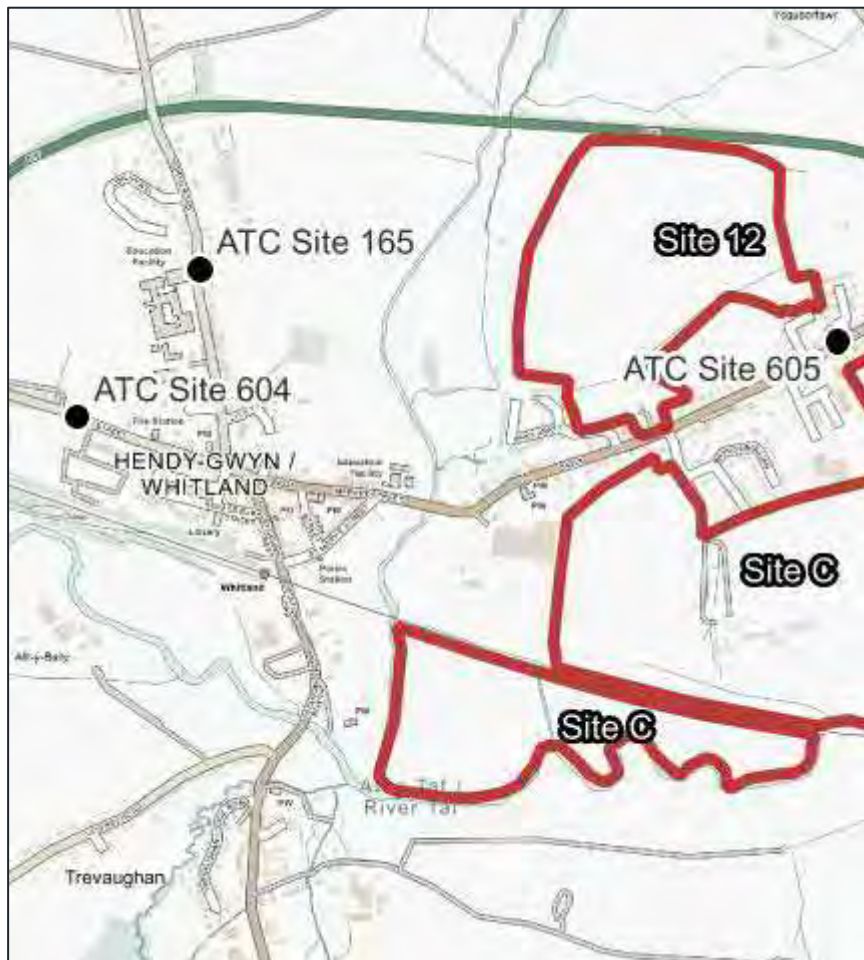


Figure 4-19 – ATC 605 – B4328 Spring Gardens

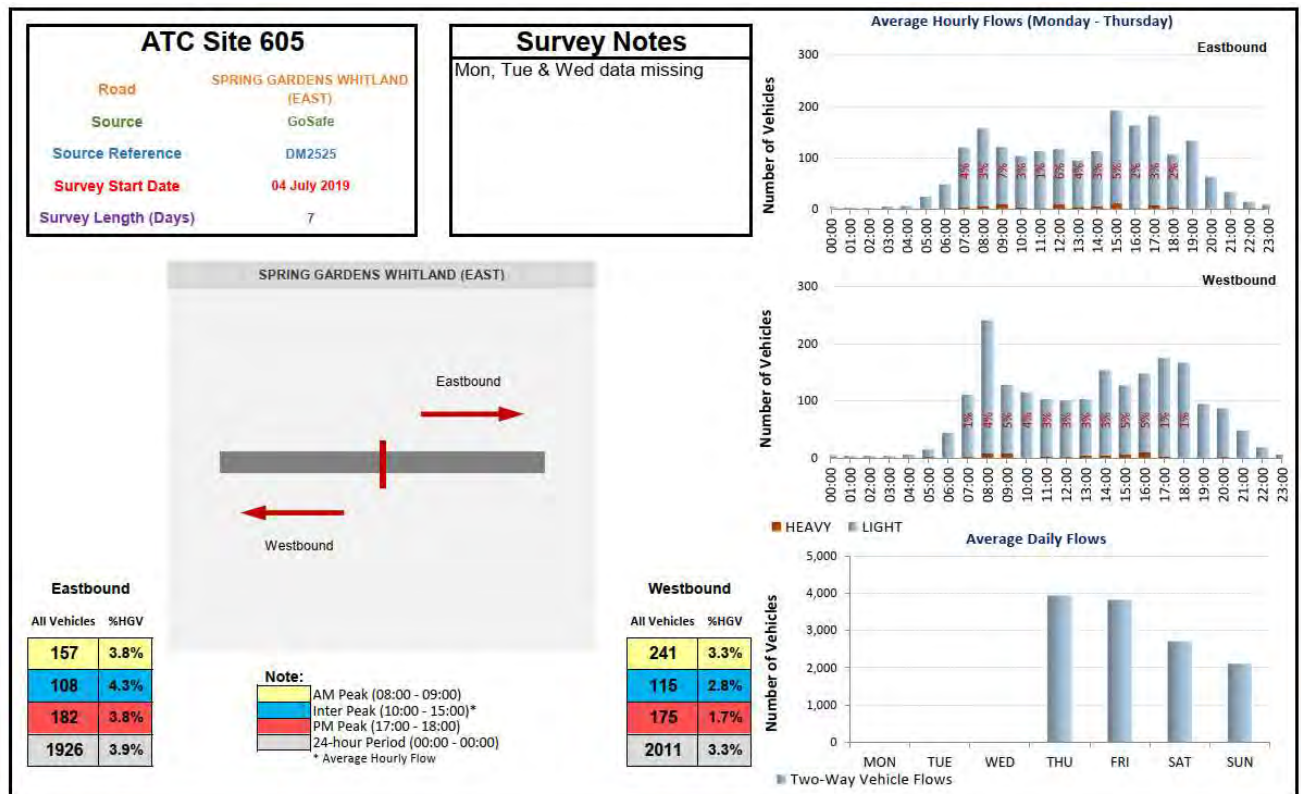


Figure 4-20 – ATC 604 – West Street

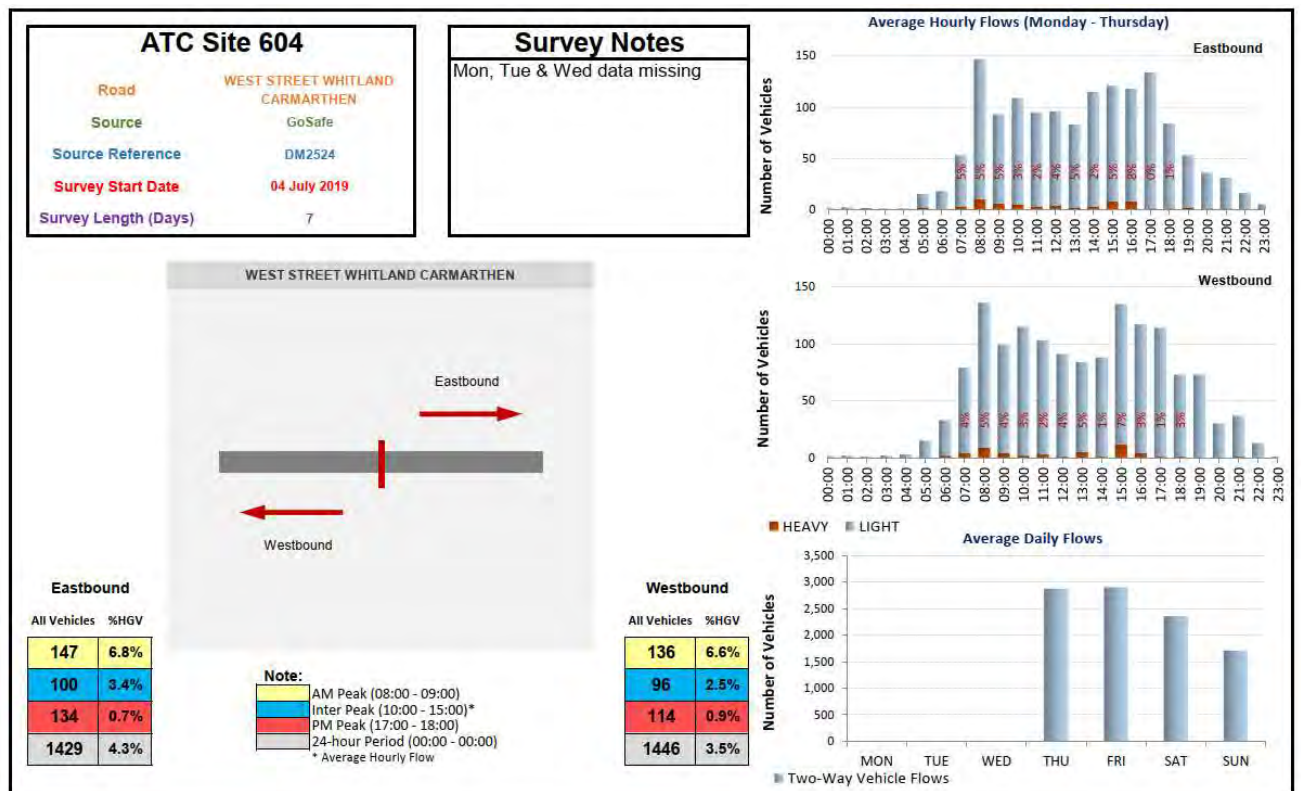
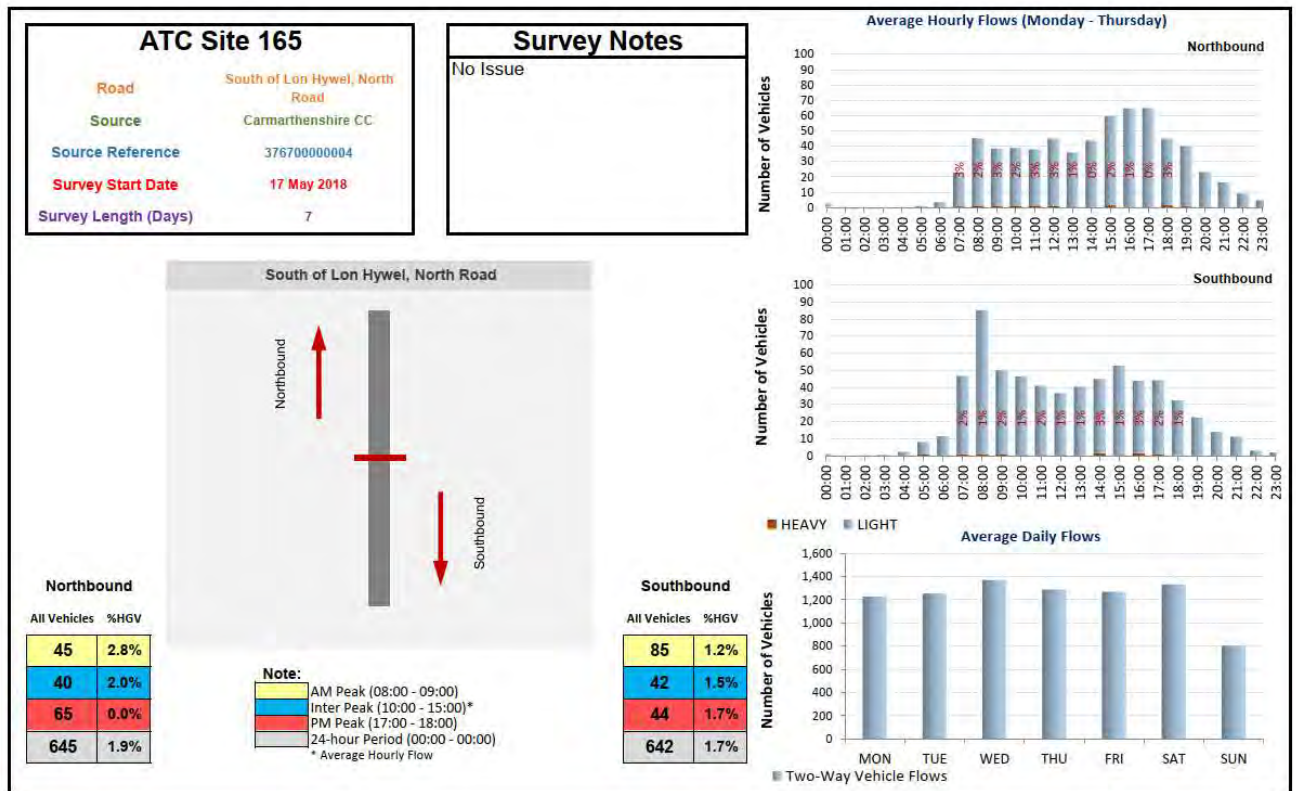


Figure 4-21 – ATC 165 – North Road



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

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

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

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

Two ATC surveys were also obtained along the A40 within the vicinity of Whitland. The location of these counts is shown in Figure 4-22 with the traffic flows summarised in Figure 4-23 and Figure 4-24.

Figure 4-22 – A40 ATC Locations



Figure 4-23 – ATC 260 – A40 East of Whitland

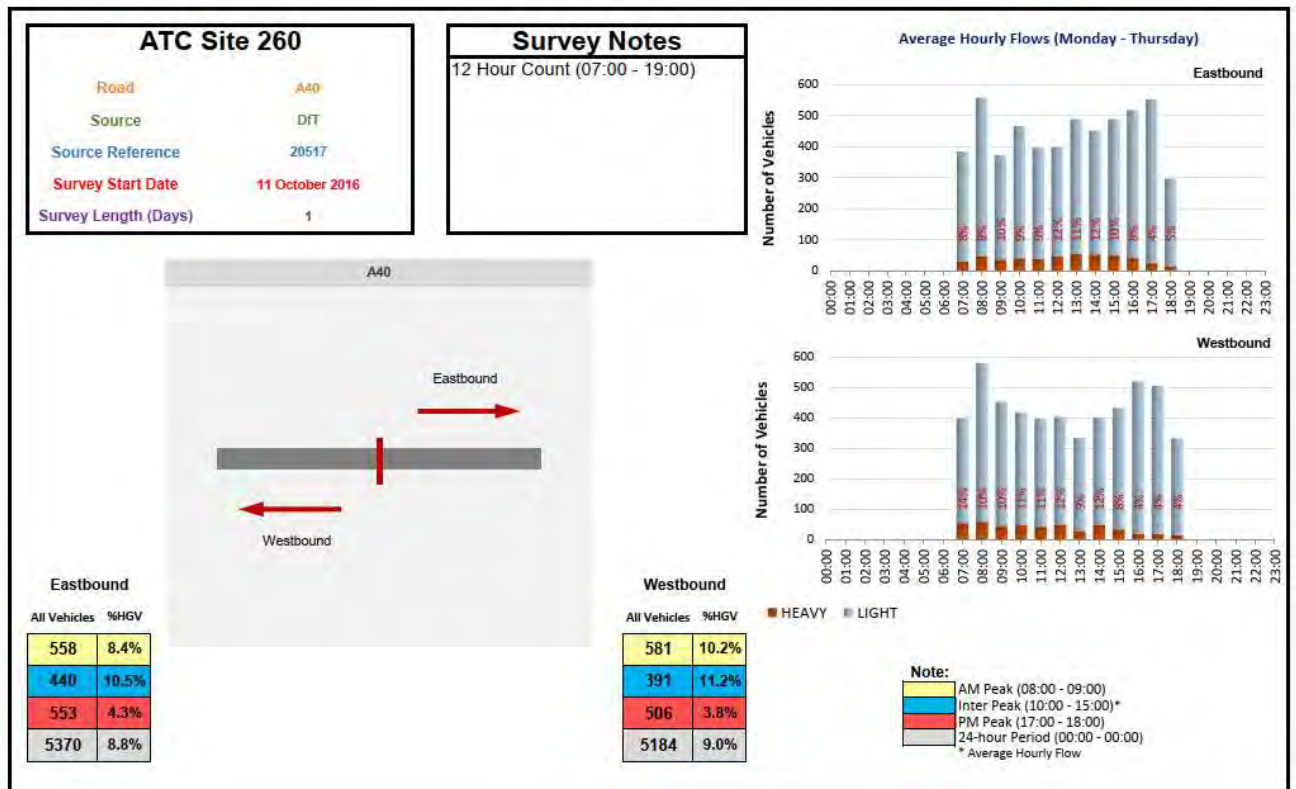
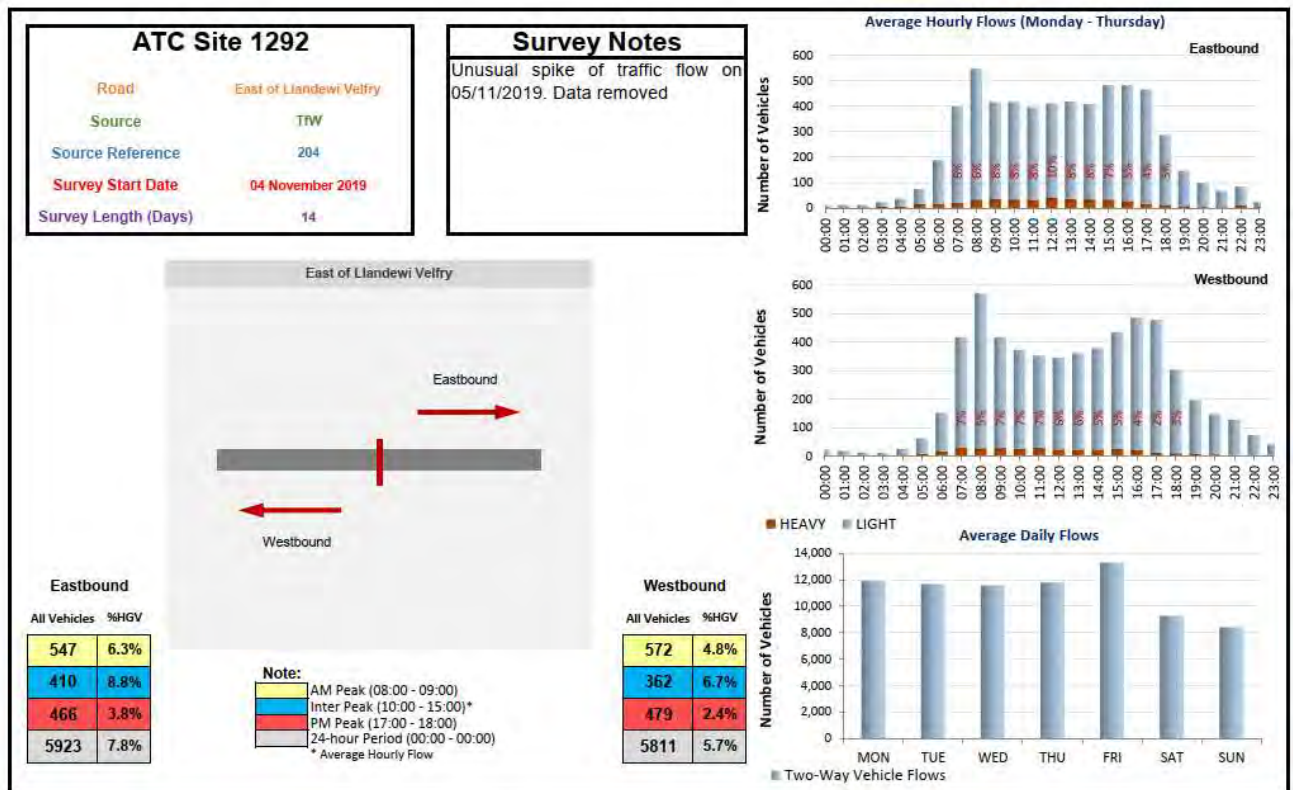


Figure 4-24 – ATC 1292 – A40 West of Whitland



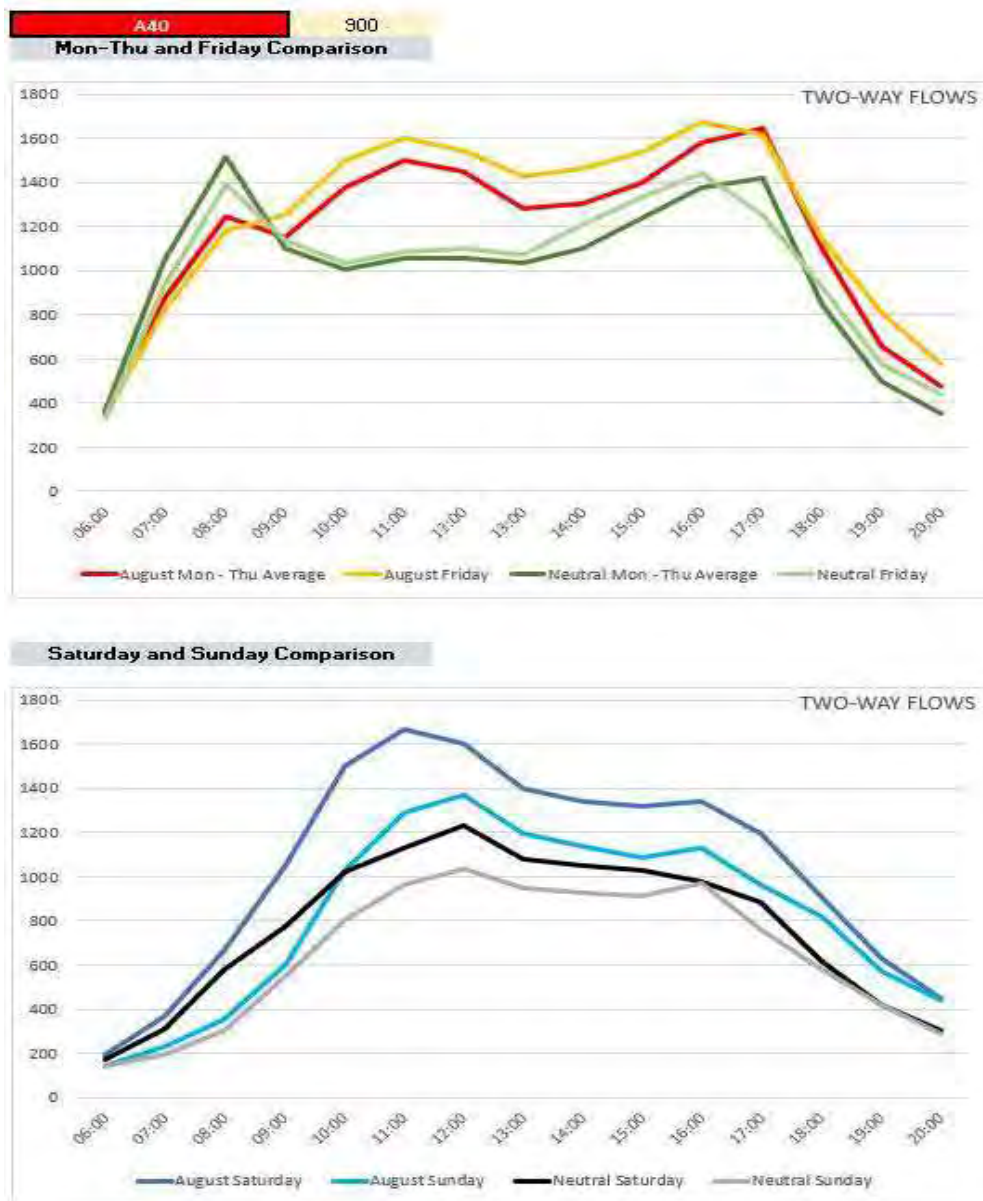
The morning peak on the A40 is heightened at 0800 (1,100 – 1,200vph) whereas in the evening it is more spread between 1500 and 1800 (c. 900 – 1,100vph) in both the east and westbound directions. Over a 24-hour period the A40 can experience a flow of between 11,000 and 13,000 vehicles.

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

Figure 4-25 provides graphs showing the seasonal variation in flows along the A40 by comparing flows undertaken in August during the summer school holidays and comparing it with a neutral month. This shows a jump in traffic of about 30% during the summer periods.

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

Figure 4-25 – Seasonality Variatrion in flows along the A40



4.3.4 HIGHWAY NETWORK PERFORMANCE

To understand the operation of the highway network within and surrounding the study area in terms of 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 4-26, Figure 4-27 and Figure 4-28 respectively.

Figure 4-26 - Typical Weekday AM Peak Average Speed Profile (0800)



Figure 4-27 - Typical Weekday Interpeak Average Speed Profile (1200)

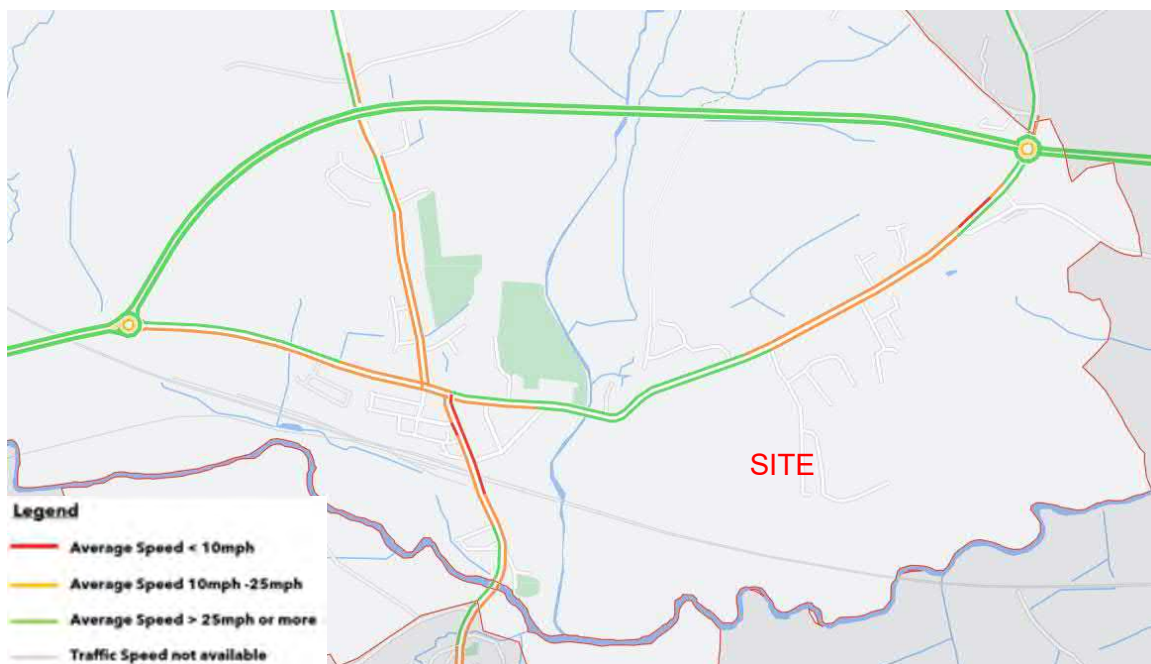
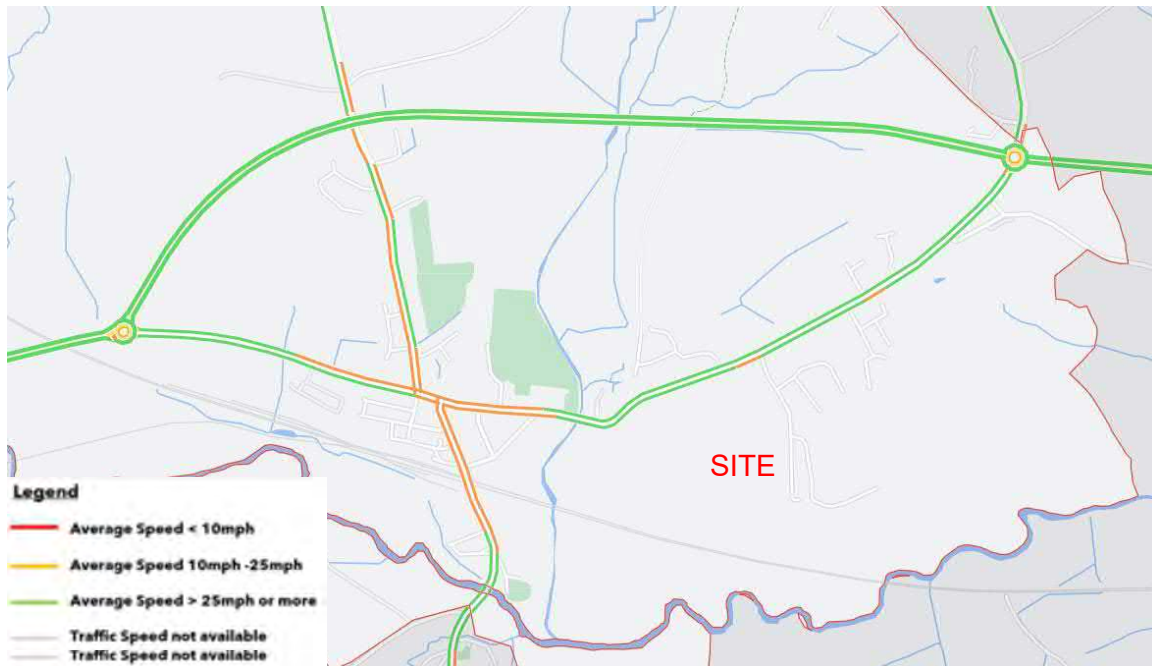


Figure 4-28 - Typical Weekday PM Peak Average Speed Profile (1700)



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

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

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

4.3.5 HIGHWAY SAFETY

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

The study area considers the B4328 on the site frontage and the local and strategic highway network within the vicinity of Whitland. This is shown in Figure 4-29.

Figure 4-29– PIC Study Area

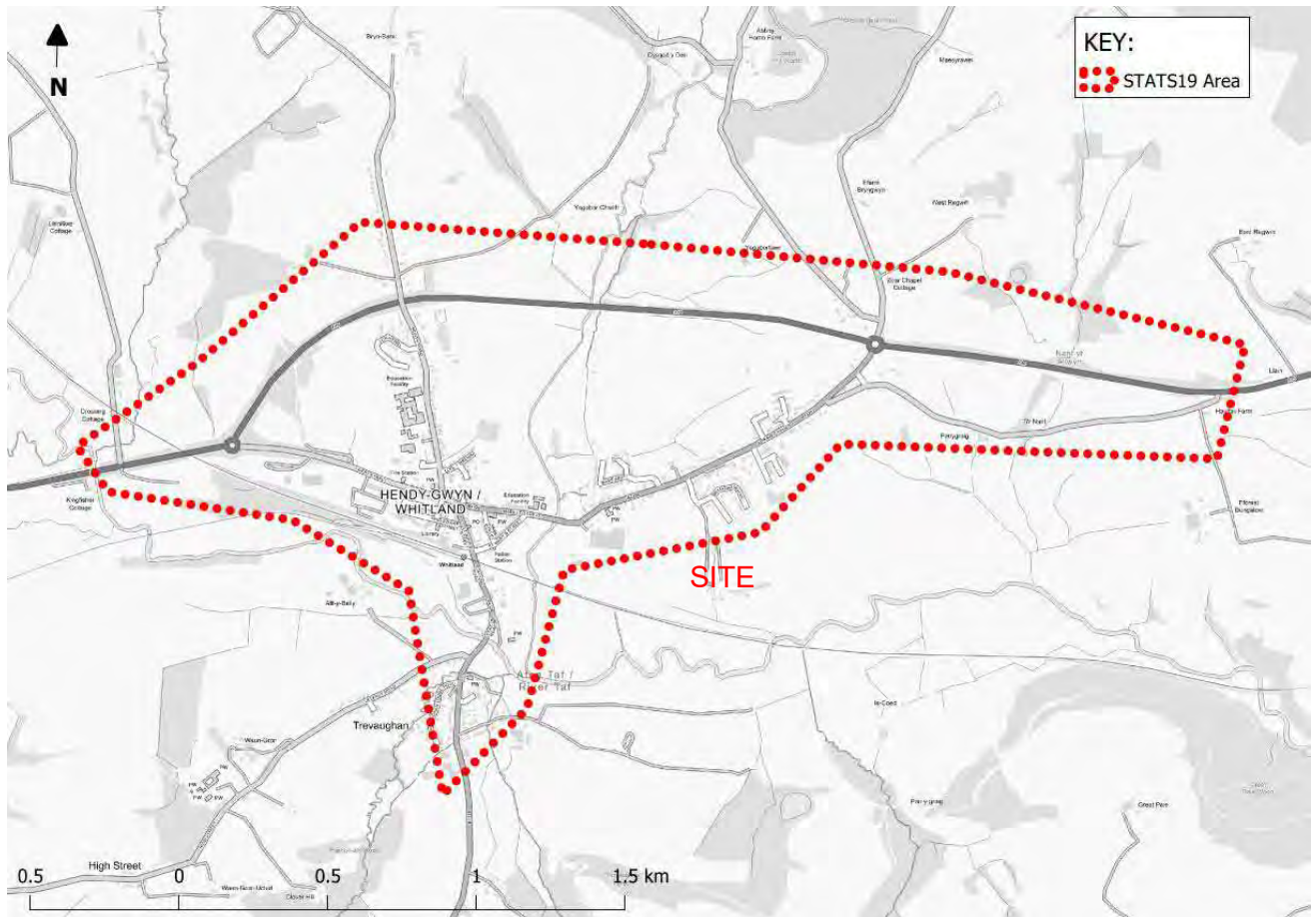


Figure 4-30 shows the location of the PICs observed within the study area.

Figure 4-30 - Personal Injury Collisions within Study Area



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

Table 4-3 – Personal Injury Collisions (PICs)

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

As can be seen in Figure 4-30 the majority of collisions within the study area have occurred on the A40 around Whitland with a total of 3 PICs (2 slight and 1 serious) recorded within the study period.

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

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

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

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

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

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

4.3.6 POTENTIAL ACCESS/ PHYSICAL IMPROVEMENTS

A40 ROUNDABOUT AND ACCESS LINK

Geometric Standards and Visibility Splays

A major scheme to improve direct access off the A40 (Figure 2422-WSP-XX-C-DR-HW-0001) would include:

- a) Diverge taper / auxiliary lane off the A40 west bound.
- b) A protected left turn lane onto an offline slip road directly into the site.
- c) A signalised junction at the B4328 / Old line of A40.
- d) Truncation with turning head of the rear lane to a small number of properties.
- e) Simple T junction with site access road of old line of the A40. This is anticipated to have infrequent usage.

The scheme would aim to comply with Design Manual for Roads and Bridges (DMRB) standards. It would be subject to a Section 278 Agreement between the developer and the local highway authority.

Scheme Safety

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

The proposed roundabout works would be geometrically compliant with DMRB Standards including visibility. It is likely that the roundabout approaches would be subject to a revised 40mph or 30 mph speed limit.

This limit should be integrated with the scheme access route, subject to a 30mph/ 20mph limit to act as a “gateway” into Whitland.

The old Line of the A40 and rear lane would be protected to negate any journey time loss for residents. It will also keep the road live to act as a resilience measure should the A40 be blocked or closed.

Scheme Sustainability

The scheme would require the removal and translocation of small lengths of existing hedgerows within the third-party land and a longer section along the A40. The scheme would remove a portion of the field behind Pen Y Coed Farm but preserve the buildings. The buildings associated with Dolecoed Farm however would require removal. Traffic flows would increase at the junction of the A40 / Old A40, but that junction has a right run ghost island turning lane already, so is expected to cater for these flows.

On Site Highways Works & S38 Agreements

The works required to achieve the on-site access road are relatively straightforward and deliverable. The site level is flush with the highway frontage, but gradients fall into the site at 1:10 from the B4328 and increase to 1:7 as you proceed south into the site. These can be revised to a suggested 1:20 maximum gradient with significant earthworks which would form part of the site wide earthworks strategy.

Emergency / Blue Light Access

It is assumed that the primary and blue light access would be via the roundabout. A secondary emergency only inbound only vehicular access could be provided via the frontage access adjacent to "Woodland View".

This would need to be tightly controlled and subject to agreement with the local highway authority. Due to its width (min 3.4m) it is suggested that it be single way and bollarded off during normal use to safeguard pedestrians and cyclists.

Wider Network Effects / Off Site Network Reinforcement.

It is surmised that the proposed off-site works including the diverge taper / auxiliary lane are required to accommodate the anticipated left turn movement from the A40 into the site. Similarly, the proposed signalised junction would offer full control of exit movements and with the addition of queue loops prevent blocking back onto the A40

Active Travel / Public Transport Access

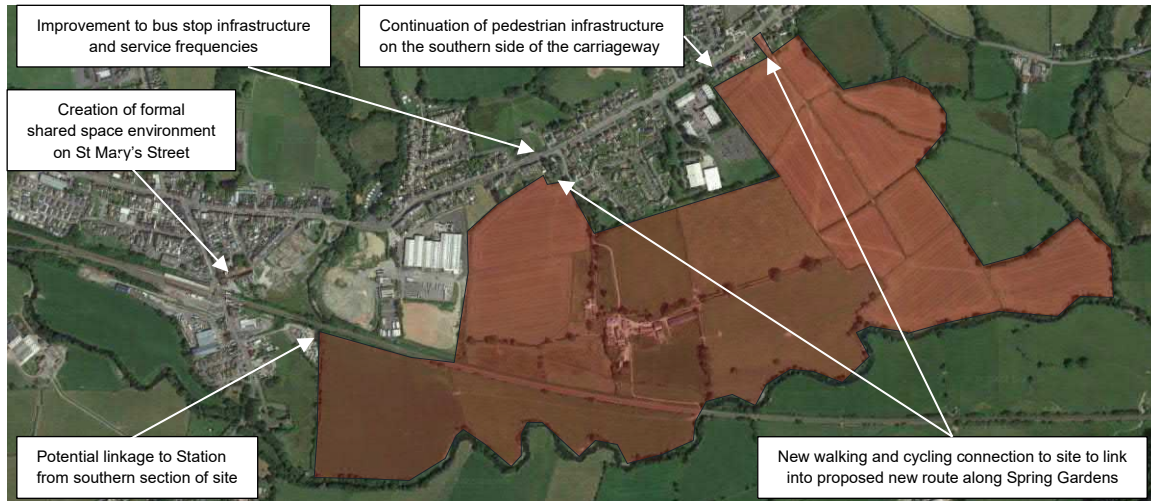
It is concluded that the proposed active travel works associated with this scheme could include:

- Controlled toucan crossings on the proposed signalised junction
- Conversion of existing footways / verges on the B4328 to shared use paths (space permitting)

Note the widths of these paths would be 2.5m max and substandard, so would require the agreement of the Local Highway Authority. The paths would link west to the existing footway network offering a direct link via an advisory route (via St. Mary's St.) to the rail station.

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 4-31.

Figure 4-31 – Key Physical Improvements



4.4 COMMITTED AND PLANNED DEVELOPMENTS

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

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

- The following sites are allocated for residential development.
 - Land at Park View, Trevaughan (SeC19/h1) – 8 units
 - Land a Whitland Creamery (SeC19/h2) – 48 units.
- The following sites are allocated for employment development
 - Whitland Industrial Estate (SeC19/E1) – 0.49 hectares
 - Land South of Former Creamery (SeC19/E2) – 1.48 hectares
 - Rushacre Enterprise Park extension for 1.321 hectare for B1 and B8 use classes.
- Active travel schemes as previously set out in section 3.2.19 – 3.2.20.

4.5 OPPORTUNITIES AND CONSTRAINTS

4.5.1 OPPORTUNITIES

The following section details the improvement identified in Figure 4-31 alongside other opportunities at the Site that could be provided to improve conditions for Active Travel Users.

Walking and Cycling

- Improvements to walking and cycling Infrastructure along B4328 and beyond to tie into the Site.
- Create a footway on the southern side of the B4328 and east of Spring Gardens junction.
- Creation of formal shared space environment on St Mary's Street as a cut through for walking / cycling.

- Implementation of Cycle Hire Scheme at the hospital.
- Provide wayfinding signs from the built-up areas to the site.
- Provide sufficient cycle parking at the site and at key local facilities and amenities.
- The relatively steep (1:10) gradients on the B4328 present challenges to the provision of safe routes for non-motorised users.

Bus

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

Train

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

Highway /General

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

4.5.2 CONSTRAINTS

Walking and Cycling

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

Bus

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

Train

- No direct connection of the site to the rail station (which requires the purchase of third-party land).

Highway / General

- The railway line cuts through the Site and the southern part of the Site would require new infrastructure over the railway line for access. This would result in significant costs, stakeholder engagements and approvals from various authorities.
- The available carriageway within the built-up area of Whitland is narrowed as a result of on-street parking.
- There are electric poles located within the existing footway along the B4328.
- Third Party land would have to be purchased to provide direct active travel access to the site from the rail station.
- There is no direct access from the A40 to the site without the requirement for third party land and therefore traffic would have to use local roads.

4.6 SUMMARY AND CONCLUSIONS

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

4.6.1 WALKING AND CYCLING

A number of locations along the B4328 Spring Gardens have been identified for providing Active Travel access to the site and also there is an opportunity to connect active travel directly to the Whitland Train Station, this would however require the purchase of third-party land.

There is currently footway provision along the B4328 fronting the site at a width of 1.5 – 2.5 metres. There is however a gap in this provision on the site frontage on the southern extent of the carriageway.

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

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

4.6.2 BUS SERVICES

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

4.6.3 TRAIN

The Whitland Rail Station is located within a 250m of the western edge of the Site and approximately 750m walking distance from the closest existing access to the site (off B4328 Spring Gardens), which is outside the CIHT recommended walking distance of 400m. It is therefore important that the possibility of connecting the site directly to the rail station be further investigated.

This will require the purchase of third-party land however the use of the train and a short walk or cycle could be a viable option for a large number of staff and visitors to the hospital.

4.6.4 HIGHWAY/GENERAL

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

There is no direct access from the A40 to the site and therefore traffic would have to go on local roads. The local roads do not appear to suffer from significant congestion during the typical weekday however the impact of the hospital on the local roads would need to be investigated as part of any Transport Assessment moving forwards.

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

5 ECOLOGY

5.1 INTRODUCTION

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

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

The PEA described in this summary report covers the subject 'Site.' The Site is to the east of Whitland, to the south of the B4328 road (centroid grid reference SN 21126 16525, refer to Figure 1 in the PEA report¹⁵). It is bordered to the south by the River Taf, and a railway line which runs through the southern extent of the Site. It is primarily used for sheep grazing, and covers an area of approximately 513,700 m².

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 report¹. The summary here details only the key findings and recommendations that have arisen as a result of the PEA survey, and further detail can be found in the PEA itself.

5.2 METHODS

The PEA was prepared with reference to current good practice guidance^{16, 17}. For detailed methodology and limitations, please refer to the PEA report¹.

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

¹⁵ WSP, 2022. Urgent and Planned Care Hospital Site Appraisal. Site C - Preliminary Ecological Appraisal.

¹⁶ Chartered Institute of Ecology and Environmental Management (CIEEM) (2017). Guidelines for Preliminary Ecological Appraisal. CIEEM, Winchester.

¹⁷ CIEEM (2017). Guidelines for Ecological Report Writing. CIEEM, Winchester.

nature conservation within 2 km of the Site; information regarding Priority Habitats¹⁸ within 2 km of the Site; and woodland listed on the Ancient Woodland Inventory¹⁹ 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 report¹.

¹⁸ Mapped locations of HPI are usually not available, but HPI aligns in the most part with UKBAP habitats. Inventories of UKBAP habitat have been prepared by a variety of organisations and at a national (Natural England priority habitat inventory) and local scale (e.g. by local records centres). In some instances these are primarily based on aerial photograph analysis rather than field survey.

¹⁹ The ancient woodland inventory in Wales lists areas over two hectares in size which have been continuously wooded for 400 years or more.

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	<p>Limestone Coast of South West Wales/Arfordir Calchfaen de Orllewin Cymru Special Area of Conservation (SAC) within 20 km of the Site (designated for bats)</p> <p>Pembrokeshire Bat Sites and Bosherton Lakes/Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherton SAC identified within 21 km of the Site (designated for bats)</p> <p>Refer to Figure 2¹</p>	N/A	<p>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.</p> <p>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.</p>
Non-Statutory Designated Sites	B-Lines incorporates the Site (a locally important insect pollinator pathway)	N/A	<p>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.</p>

Ecological consideration	Desk study results summary	Protected species assessment summary	Discussion and recommendations
Priority Habitats	<p>The closest site of ancient woodland was 1.07 km north of the Site.</p> <p>No Priority Habitats within the Site returned from the desk study.</p>	<p>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).</p> <p>Refer to Figure 3¹.</p>	<p>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.</p> <p>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.</p> <p>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.</p> <p>Priority Habitats loss to be replaced on a 2:1 ratio where possible, with a minimum ratio of 1:1.</p>
Bats	<p>The desk study for the Site identified seven records of at least six different bat species within 2 km of the desk study centroid, all of which were recorded 870 m west of the Site.</p>	<p>Eight buildings (B1 to B8) and nine trees (T1 to T9) were identified as providing suitable roosting habitat for bats (Photos 74 to 84, Figure 5¹).</p> <p>The treelines and hedgerows within the Site provide suitable foraging and commuting habitats.</p>	<p>Presence/Absence Surveys:</p> <p>Emergence/re-entry surveys on buildings with suitability to support roosting bats. In accordance with best practice guidelines, three emergence/re-entry surveys required on the buildings with high bat roost potential, two on the buildings with moderate bat roost, and one on the buildings which had low bat roost potential.</p> <p>Detailed close inspection via aerial tree climbing for the trees identified with suitability to support roosting bats.</p>

Ecological consideration	Desk study results summary	Protected species assessment summary	Discussion and recommendations
			<p>Trees with low suitability to support roosting bats should be subject to a precautionary pre-felling check by a bat licenced ecologist only.</p> <p>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.</p> <p>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.</p> <p>The trees in the south-east field of the Site should undergo a ground level tree roost assessment for bats.</p>
Badger <i>Meles meles</i>	Five records of badger were returned from the desk study for the Site, the closest of which was 785 m north-west of the desk study centroid.	During the habitat survey badger prints were identified in mud near to the field boundary on the southern extent of the Site, adjacent to the railway line (TN6, Photo 10). No badger setts were identified within the Site, although suitable badger sett building habitat was identified within the scrub to the east of the Site paths (TN2, Photo 5).	<p>A pre-works check for badger is recommended (a minimum of two weeks in advance of works).</p> <p>Avoidance of potential and identified setts by setting up exclusion zones.</p> <p>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.</p>

Ecological consideration	Desk study results summary	Protected species assessment summary	Discussion and recommendations
		The woodland habitats within the Site provide suitable foraging and commuting habitat for badger, with the scrub and treelines providing suitable habitat for badger sett building.	
Hedgehog <i>Erinaceus europaeus</i>	Five records of hedgehog within 2 km of the Site were returned from the desk study, the closest of which was 285 m south-west of the centroid.	The Site provides suitable habitat for foraging and commuting hedgehog, in addition to suitable habitat for resting locations and nesting sites.	Clearance of suitable terrestrial habitat should be checked in advance by a suitably qualified ecologist to minimise the risk of disturbance and injury/killing. Avoidance of vegetation clearance during the hibernation season, if possible. Specific mitigation measures would require safeguarding by the implementation of an Ecological Management Plan (EcMP) throughout the construction of the Proposed Development
Water vole <i>Arvicola amphibius</i>	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 <i>Lutra lutra</i>	Three records of otter were returned from the desk study, the closest of which	Potential habitat for otter was not present 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.

Ecological consideration	Desk study results summary	Protected species assessment summary	Discussion and recommendations
	was 1.6 km north-west of the desk study centroid.	No evidence of otter was found during the habitat surveys. The Site has moderate potential to host commuting otter along the water bodies within the Site.	
Hazel dormouse <i>Muscardinus avellanarius</i>	No records	Sub-optimal habitat for dormouse was present within the Site, owing to multiple hedgerows, some of which contain hazel which is a good food source for dormouse. However, there was limited connectivity to suitable habitat for dormouse.	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. 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.
Birds	The desk study returned 36 records of birds across 18 species from within 2 km of the Site. Of these, four species were listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) (WCA).	Much of the Site was suitable for nesting birds, including the hedges, trees, buildings and woodland. No sites with nesting suitability for Schedule 1 birds were identified.	Avoidance of vegetation clearance during the breeding bird season. If works must occur within the breeding bird season, then all vegetation must be hand-searched by a suitably qualified ecologist immediately prior to removal. 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.

Ecological consideration	Desk study results summary	Protected species assessment summary	Discussion and recommendations
Reptiles	No records	The majority of the Site comprised modified grassland, considered to provide suboptimal habitat for supporting reptiles, although the scrub and hedgerows present all provided optimal habitat. Potential hibernacula identified on Site included a large brash pile on the western side of the most south-westerly field within the Site (TN3, Photo 7), and two smaller brash and log piles to the west of the buildings in the centre of the Site (TN5, Photo 9).	Due to the small area of good quality habitat that is understood to be cleared, work can proceed under a PMoW and ECoW. Maintain vegetation within the construction footprint at a low height during the active reptile season. No hibernacula are to be removed during the hibernation season.
Amphibians	<p>The desk study returned records of common frog and common toad within 2 km of the desk study centroid, the closest of which was 1.2 km north-east of the Site.</p> <p>A search for waterbodies within 500 m which may provide suitable breeding habitat for GCN identified</p>	<p>The waterbody identified as potentially being suitable for great crested newt (GCN) <i>Triturus cristatus</i> are located within Zone C of the GCN HSI and are therefore considered unsuitable for GCN (French <i>et al.</i>, 2014)..</p> <p>Suitable terrestrial habitat for common amphibians was present within the Site, in particular within the scrub and treelines on field boundaries and to the south-west of the Site. The watercourses</p>	Due to the small area of good quality habitat that is to be cleared, work can proceed under a PMoW and ECoW. No hibernacula are to be removed during the hibernation season.

Ecological consideration	Desk study results summary	Protected species assessment summary	Discussion and recommendations
	one pond 140 m north-west of the Site.	provide suitable habitat for common and widespread amphibians, and the previously identified hibernacula would be suitable for amphibians.	
Invertebrates	One record of an invertebrate was returned from the desk study 2.1 km to the south-west of the desk study centroid.	Areas of hedgerow, scrub, trees and modified grassland present were considered suitable to support mainly common invertebrate species due to the common and widespread nature of the habitats present.	As it is considered likely that invertebrates present are common and widespread, further surveys are not considered to be necessary for terrestrial invertebrates at this Site. Grassland and hedgerows should be replaced with a higher ecological value with replacement habitat within the Site.
Invasive non-native plant species	Eight species of INNS were returned from the desk study for the Site.	Five stands of Indian balsam were identified during the habitat survey – a stand immediately to the south-west of the buildings in an area of disturbed ground (TN2, Photo 6); an area within the south-eastern extent of the Site (TN7); two stands south of the railway (TN10 and TN11); and an extensive stand which extended along the bank of the River Taf south of the railway (TN15, Photo 26). A further stand was identified outside the Site in	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.

Ecological consideration	Desk study results summary	Protected species assessment summary	Discussion and recommendations
		the field to the west of the Site (TN8, Photo 22).	

5.3.17 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 report¹.

5.4 SUMMARY AND CONCLUSIONS

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

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

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

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

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

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

6.2 POWER

6.2.1 EXISTING INFRASTRUCTURE

There are existing 11kV power supplies crossing the site from east to west (in red below) and 33kV (in green below) crossing the site from North to South. These require a 6m wayleave either side of the cables.

The 33kV supply crosses the proposed location of the hospital and would therefore need to be diverted. The 11kV supply crosses the site of the hospital and would therefore require diversion or allowance made within the master planning layout. Both are pole mounted cables and therefore diversions would not be cost prohibitive.

The properties either side of the B4328 above the site to the north are fed by supplies along this road.

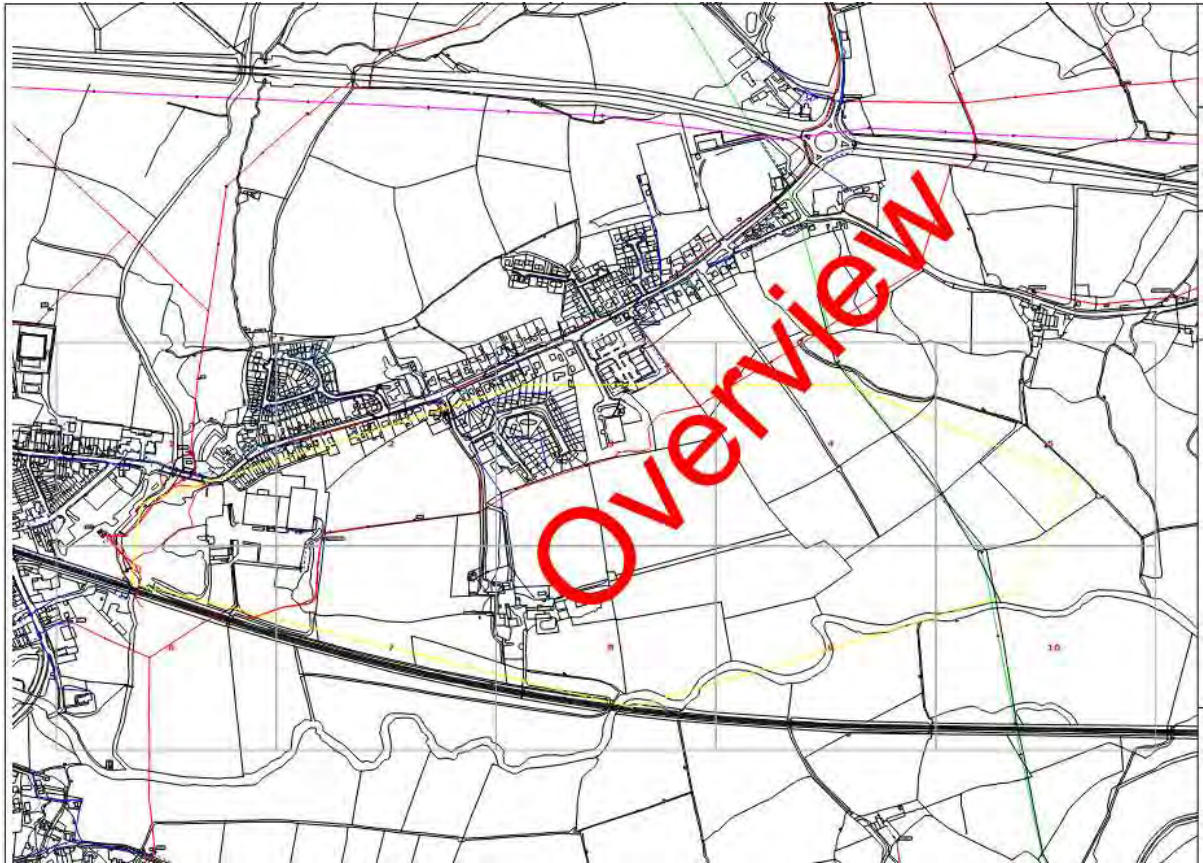
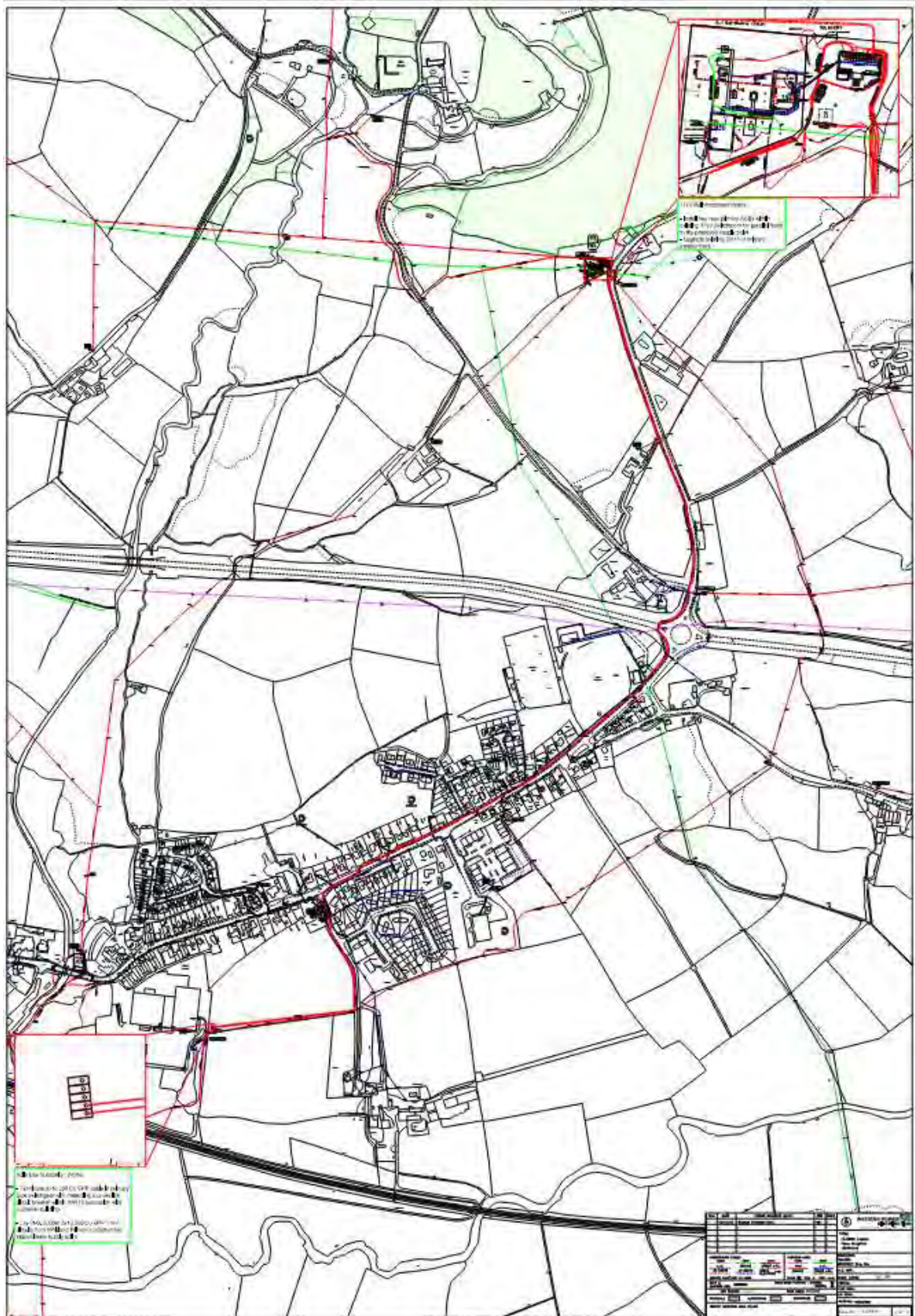


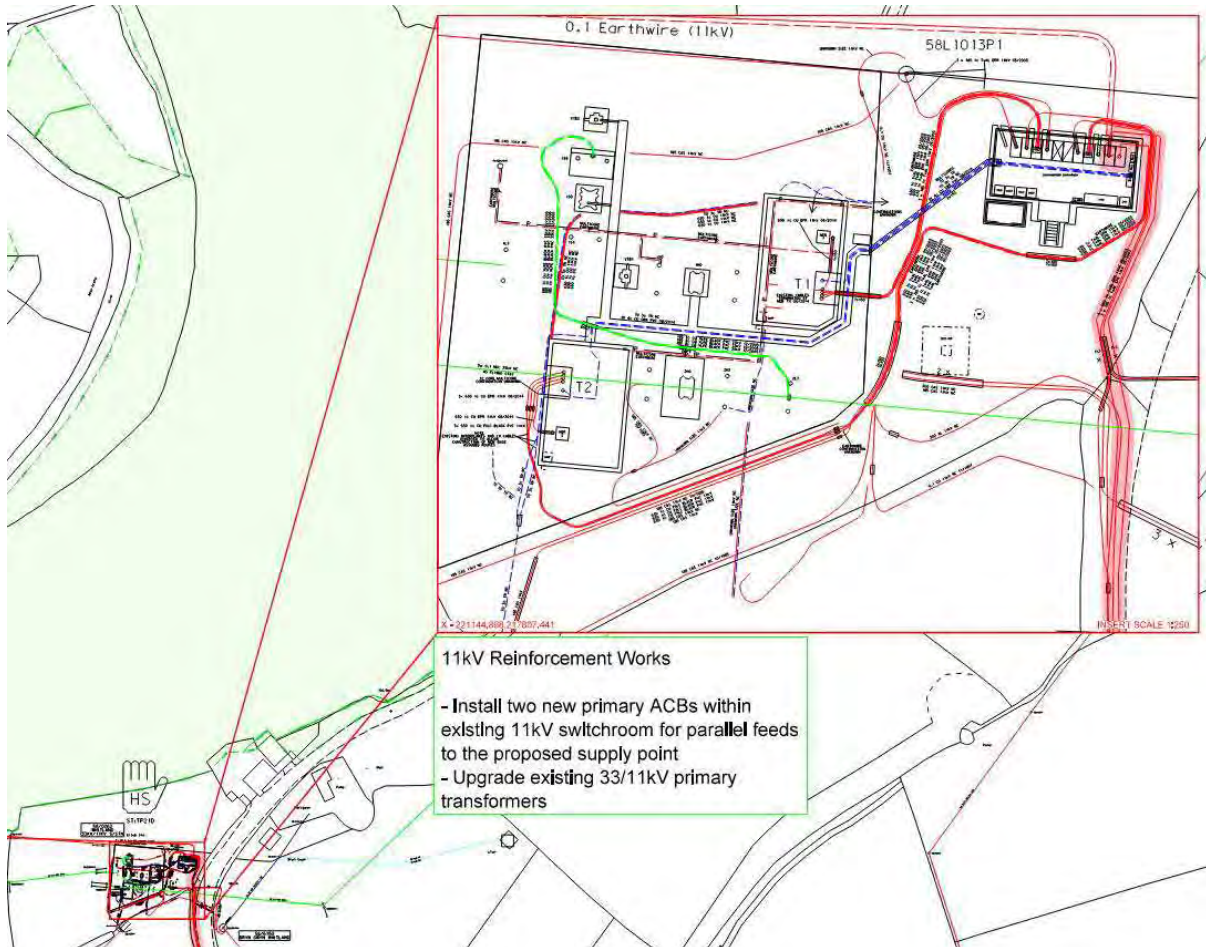
Figure 6-1 - Site Power Overview

6.2.2 NEW SUPPLY

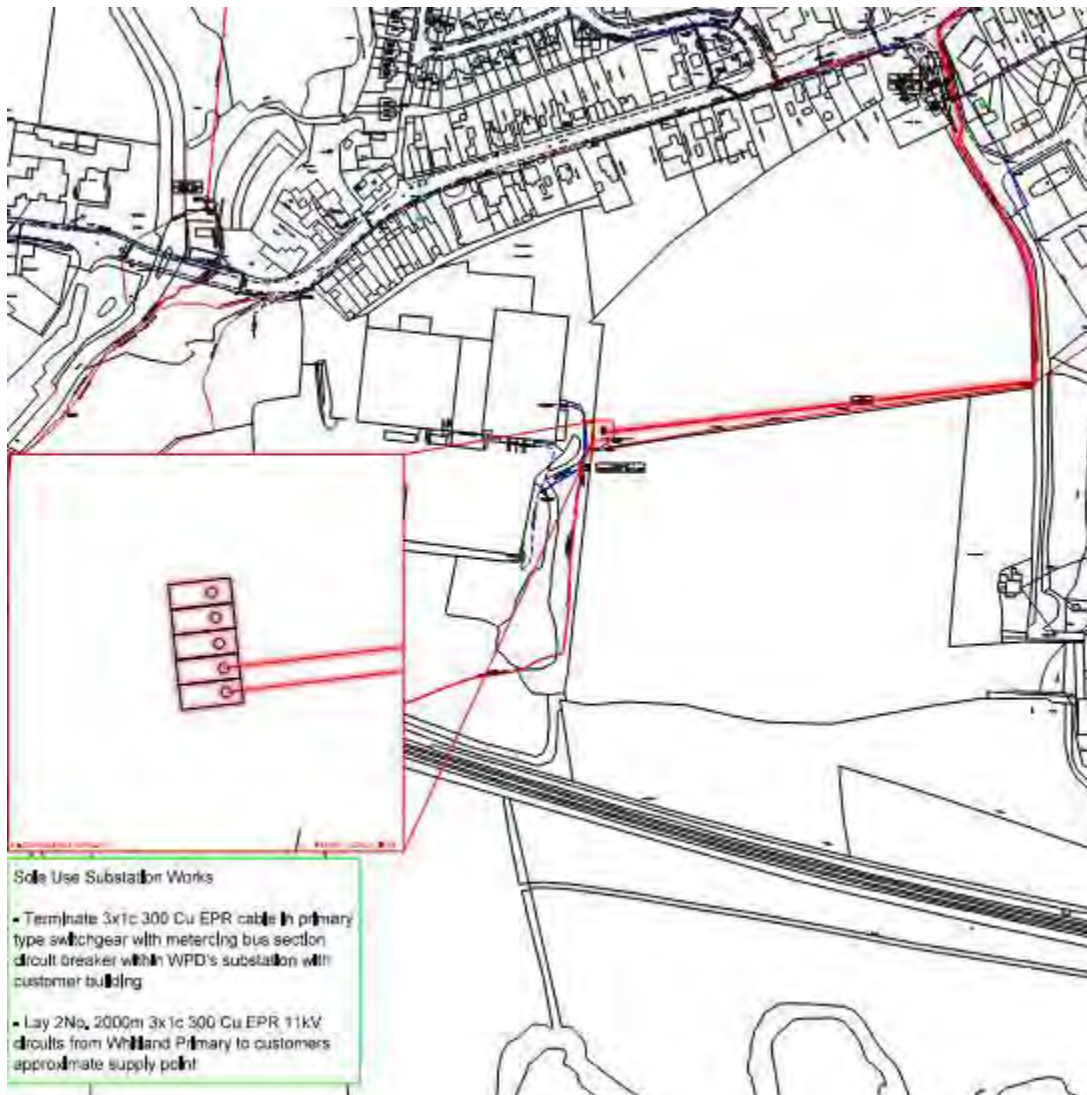
Based on the requirements of an all electrical site, upgrade works would be required to the primary 11kV Switchgear and new cables will be required from the primary to the site, over a distance of around 1.1km. The cost of these works would be in the region of £2-3M. This would provide the site with 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.



Overview



Primary Works



Site Works

Figure 6-2 - Power Upgrade Works

6.3 WATER

6.3.1 EXISTING INFRASTRUCTURE

The existing properties off the B4328 are fed off a 3inch supply running down the road. There is an existing 150mm supply running south to north on the east of the site leading to the former creamery site. This doesn't not affect the current proposed indicative site layout, but may affect future developments. There is also a 150mm main running east to west across the north of the site. This crossing the area of the proposed hospital site and would therefore need to be diverted or the site layout coordinated with the supply. This supply appears to supply the properties in Spring Gardens and Bryngwenlliam in addition to the supply from the B4328.

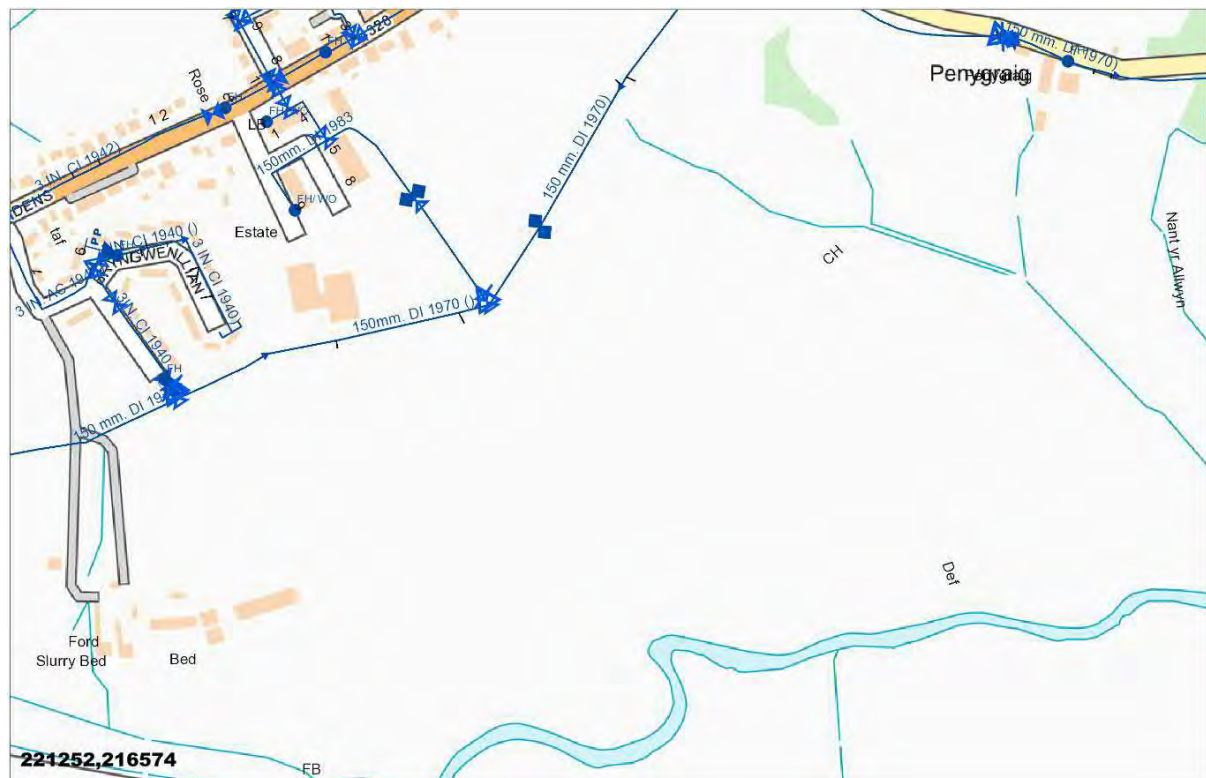


Figure 6-3 - Site Water Overview

6.3.2 NEW SUPPLY

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

6.4 GAS

6.4.1 EXISTING INFRASTRUCTURE

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

Through the center of the site, there are two high pressure gas mains crossing the site. These have significant wayleave requirements and will need to be considered with planning of the site layout. This is currently 15m – 26m dependent on the pressure and pipe material. As part of any diversion, the pipe can be replaced by a heavier walled pipe, which will reduce the building proximity distance to circa 3m either side of the pipe. If required, the diversion of these gas mains are likely to cost in the region of £5-7M.

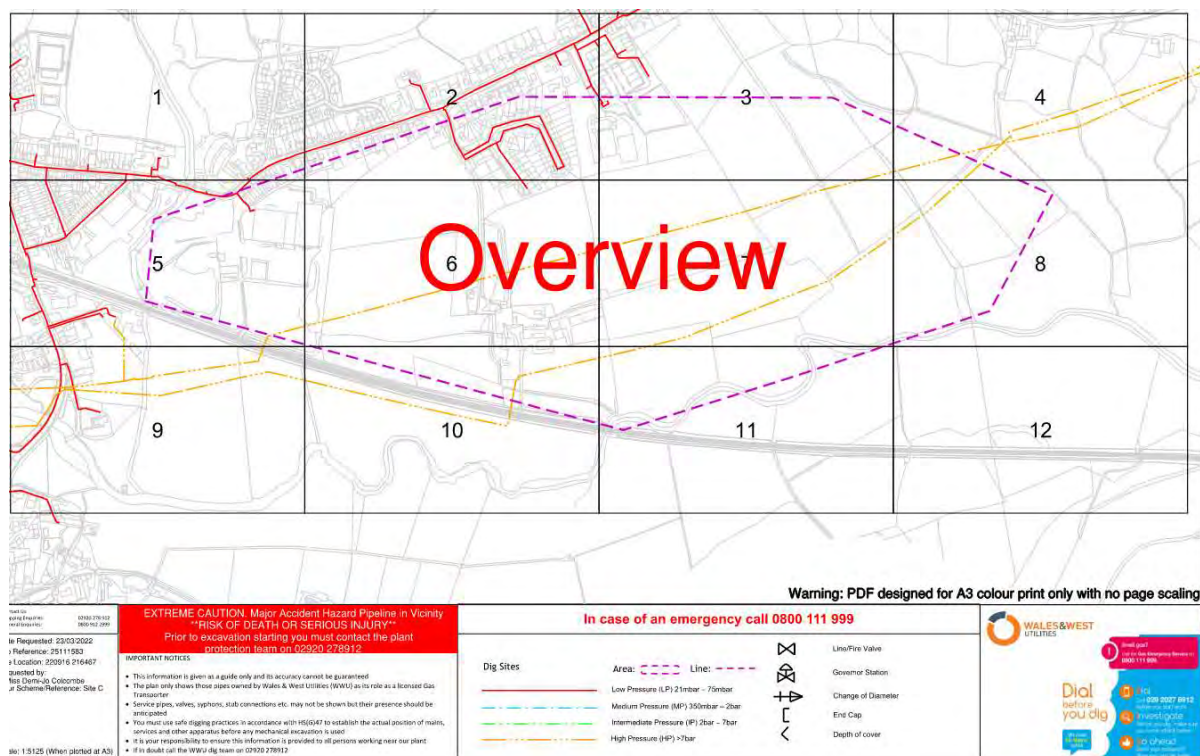


Figure 6-4 - Site Gas Overview

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.



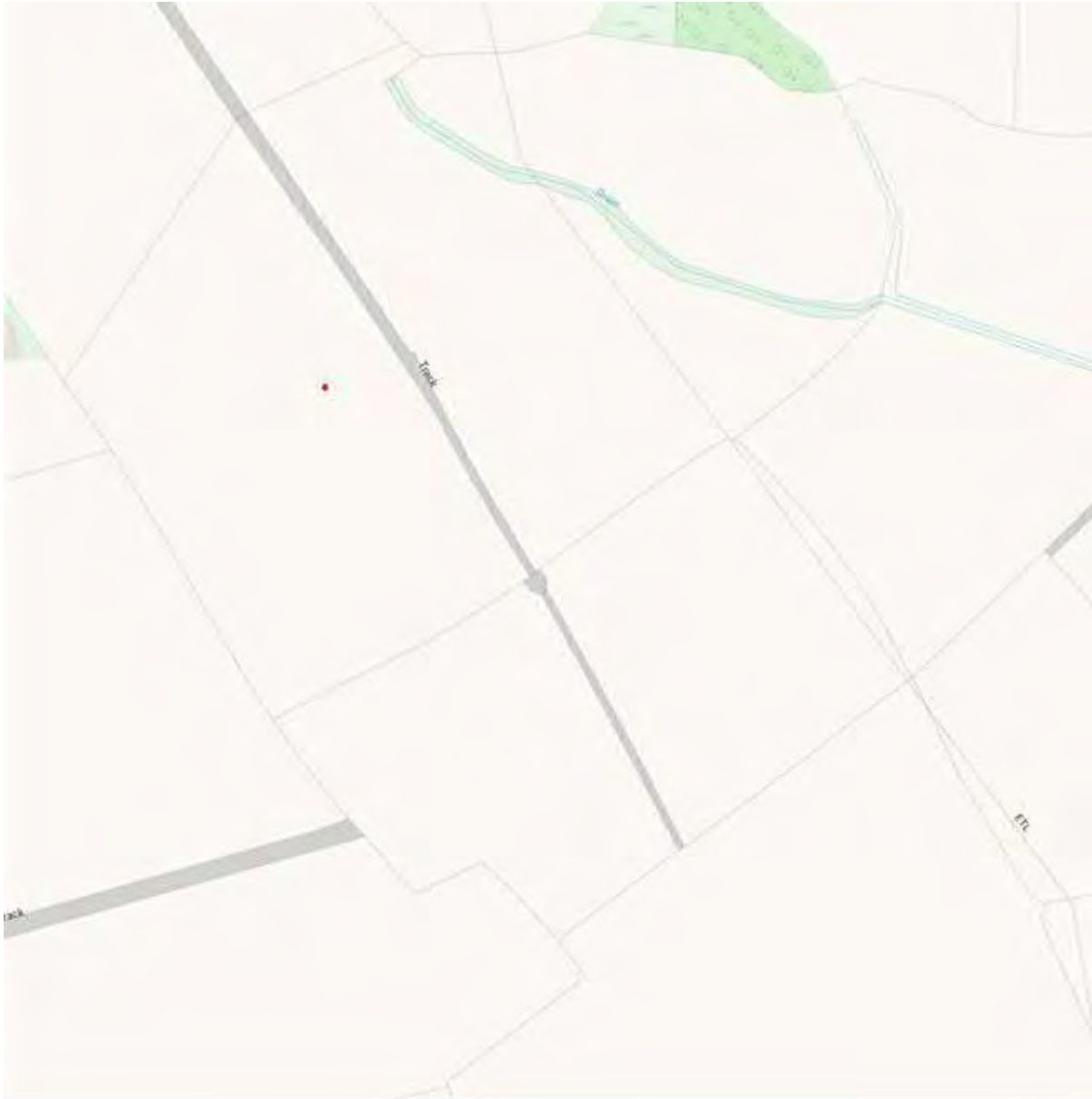


Figure 6-5 - Openreach Overview

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

Due to the size of the site, there is the potential to locate PV's towards the south of the site the other side of the railway, or west of the site. PVs would require approx. 10 acres of suitable land to meet the demand of the proposed Urgent & Planned Care Hospital scheme and a dedicated supply cable to the site substation from the PV array.

6.7 SUMMARY & CONCLUSIONS

The site is feasible for development, however, there are considerable diversions likely required to the high pressure gas mains. Works to the 11kV and 33kV distribution networks include diversions and upgrades to the existing infrastructure.

During the next stage, more accurate costs can be obtained for the diversions based on the proposed site layout.

7 ENVIRONMENTAL APPRAISAL

7.1 INTRODUCTION

This Chapter is divided into four parts:

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

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

7.2 ENVIRONMENTAL CONSTRAINTS

INTRODUCTION

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

- Drawing No. 2424-WSP-XX-SC-DR-EN-0007-P01_Env Constraints Plan
- Drawing No. 2424-WSP-XX-SC-DR-EN-0014-P01_ALC (Agricultural Land Classification) Map
- Drawing No. 2424-WSP-XX-SC-DR-EN-0024-P01_Env Noise Map

The following constraints were searched for as part of the Environmental Constraints Plan (Drawing No. 2424-WSP-XX-SC-DR-EN-0007-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)

7.2.1 LAND USE AND SOILS

The Site is divided into two sections by a railway track, with a larger section lying to the north of the track and a smaller section lying to the south-west (see Figure 1-1). The majority of the Site comprises Grade 3b (moderate quality) agricultural land. An area of Grade 3a (good to moderate quality) agricultural land is located either side of the railway track, covering much of the smaller section of the Site (see Drawing No. 2424-WSP-XX-SC-DR-EN-0014_Agricultural Land Classification Map).

The Site comprises a centrally positioned farm compound consisting of several different buildings set aside for residential, commercial and farming purposes and a number of fields connected by

various access tracks. The fields are divided by hedgerows, semi-mature/ mature trees and fencing. Access to the south-east of the Site is restricted owing to the presence of the railway line.

A Preliminary Ground Conditions Assessment (WSP, 2022, 70092424-04) was produced in May 2022. The assessment included a desk based study and site walkover. The main findings were:

- The Site is considered to be in an area of moderate 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 southern area of the Site, adjacent to the Afon Taf, is reported to be underlain by Alluvium (Secondary A Aquifer) with the bedrock comprising the Arenig Tetragraptus Beds (Mudstone) in the north-eastern and the Lower Llanvirn Didymograptus Bifidus Beds (Mudstone) in the central and south-western areas of the Site. Both bedrock units are classified as Secondary B Aquifers.
- Groundwater vulnerability across the Site is reported to be high, associated with a well-connected fracture flow network within the underlying bedrock, and local small-scale domestic abstraction has been noted to have historically occurred within the area. A former well(s) are understood to be located within the farm compound although the status of these is unknown.
- Several minor surface water features have been identified on-Site which are considered to comprise tributaries to the Afon Taf and Afon Gronw which are located on the southern and south-western Site boundaries, respectively.
- The online Flood Risk Development Advice Map provided by NRW indicates that the northern area of the Site is located within Zone A, which is classified as “at little or no risk of fluvial or coastal/tidal flooding.” However, the southern half of the Site ranges from Zone B and Zone C2 which are defined as areas “known to have flooded in the past” and “without significant flood defence infrastructure”.
- The online Flood Risk Assessment Wales Map provided by NRW indicates that the southern half of the Site (the area to the south of the railway line) is located within Flood Zone 3 (which is defined as the extent of a flood from rivers with a 1% (1 in 100) chance or greater of happening in any given year). Flood Zone 3 is also present to the north of the railway line in the central and eastern areas of the Site.
- The southern area of the Site is at an increased risk of flooding from the Afon Taf and is not currently benefiting from any form of flood defence systems. Two historical surface water flooding events have been recorded at the Site associated with the Afon Taf to the south.
- The majority of the Site is located within an area where either less than 1% or between 1% and 3% of properties would be estimated to exceed the Radon Action Level. In these areas basic radon protection measures are not considered necessary. However, a very small area at the northernmost extent of the Site has been identified where between 5% and 10% of properties exceed the Radon Action Level. Should properties be constructed in this area then basic radon protection measures would likely be required within future structures.
- No significant ground condition constraints have been identified in the northern area of the Site in relation to future structures and infrastructure. However, the Site slopes downwards from the north to the south and earthworks may be required to provide an appropriate development platform.
- A number of possible development constraints have been identified in the southern area of the Site which will require consideration, including:
 - The presence of Alluvium which is unlikely to provide a suitable founding medium;

- The elevated flood risk; and
 - Access constraints associated with the presence of the railway line.
- 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 on and off-site to have led to localised contamination at the Site. The most noticeable sources of potential contamination comprise the poorly contained on-Site fuel oil above ground storage tanks (ASTs). Off-site sources of potential contamination include a former gas works, an industrial estate and a cemetery.
 - 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.

7.2.2 CULTURAL HERITAGE AND ARCHAEOLOGY

There are three 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 below.

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

Listed Building/Structure	Grade	Distance & Direction from Site
Trevaughan Bridge	II	0.15km west
Remains of Whitland Abbey including garden walls to S	II	1.4km north
Llwynybrain Cottage	II	1km south-west

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

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

Scheduled Monument	Distance & Direction from Site
Roman Road 250m NE of Pwll-y-Hwyaid	0.8km north-west
Whitland Abbey	1.4km north

There is one battlefield site within the Study Area, Whitland Abbey (1257) located 1.4km north of the Site.

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

7.2.3 ECOLOGY AND NATURE CONSERVATION

A Preliminary Ecological Appraisal (PEA) (Preliminary Ecological Appraisal REV1) was conducted in February and March 2022. As part of the PEA, a site survey was conducted to assess the potential

of the Site to support protected and/or notable species, and the implication this may have on the proposed development. The PEA also comprised a desk study to identify on site and nearby statutory and non-statutory habitats, and previous species records. The main findings were:

- Two statutory designated sites of international importance for which bats were a qualifying feature within 35km of the Site (and the other sites): Limestone Coast of South West Wales/Arfor dir Calchfaen de Orllewin Cymru Special Area of Conservation (SAC) located 20km south-west and Pembrokeshire Bat Sites and Bosherton Lakes/Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherton SAC located 20.3km south-west of the Site;
- One non-statutory designated site that lies within the Site, a B-Line, which indicates an area which could provide a key insect pollinator dispersal pathway between existing areas of wildflower-rich habitat;
- Forty-one areas of ancient woodland sites – a mixture of semi-natural, restored and plantation – within 2km of the Site;
- Protected and/or notable species within 2km of the site were previously recorded: brown long-eared bat *Plecotus auritus*, badger *Meles meles*, several bird species (including some that are listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended)), invertebrates (one record) and invasive non-native species (INNS) (eight species a species of cotoneaster, curly waterweed *Lagarosiphon major*, Indian balsam *Impatiens glandulifera*, Japanese knotweed *Fallopia japonica*, montbretia *Crocasmia x crocosmiiflora*; rhododendron *Rhododendron ponticum*, three-cornered leek, and variegated yellow archangel *Lamium galeobdolon* subsp. *argentatum*);
- The habitat survey identified two stands of Indian balsam at the Site;
- There is one tree within the Site considered to have high bat roost suitability and one considered to have moderate bat roost suitability; and
- Three Priority Habitats were identified across the Site: neutral grassland (lowland meadows); boundary and linear features (hedgerows); and rivers (rivers and streams).

7.2.4 LANDSCAPE CHARACTER AND VISUAL IMPACT

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

The Site is located within the Taf and Claeddau Vales National Landscape Character Area. Natural Resources Wales²⁰ describes the area as a:

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

[...]

²⁰ Natural Resources Wales. Taf and Claeddau Vales National Landscape Character. Available online at: [NLCA44 Taf and Cleddau Vales \(cyfoethnaturiol.cymru\)](https://nrc.wales.gov.uk/nlca44-taf-and-cleddau-vales-cyfoethnaturiol.cymru) [Accessed: 8 March 2022]

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

[...]

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

Table 7-3 in Section 7.7 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 7.7 summaries Public Rights of Way (PRoWs) including footpaths and bridleways within 2km of the Site and are illustrated on Drawing No. 2424-WSP-XX-SC-DR-EN-0007_Environmental Constraints Plan.

7.2.5 TRAFFIC AND TRANSPORT

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

- Whitland Train Station is located 0.3km west;
- There are several bus services going to and from Whitland including a bus service which runs between Carmarthen and Whitland, one which runs between Carmarthen and Glandwr, and another which provides a route between Carmarthen and Haverfordwest stopping at Whitland, Narbeth and St Clears. The closest bus stops are located on the B4328 (Spring Gardens), north of the Site;
- There is a footpath which runs along both sides of the B4328 providing access to the Site by foot;
- There are no nearby cycle paths nor cycles lanes on any of the nearby roads, however cyclists could use these roads;
- The A40 is approximately 0.3km north of the Site. The Site can only be access by local roads, either on the B4328 (Spring Gardens or Station Road).

7.2.6 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 properties on Bryngwenllian	Adjacent north
Spring Gardens Industrial Estate	Adjacent north
Residential properties on Spring Gardens (B4328)	Adjacent north
Dairy Park	Adjacent west
Businesses on Station Road (B4328)	Adjacent west

Residential properties on Llys Y Crofft	0.05km north
St Mary's Church	0.06km west
Residential properties on Clos Llwyn Ty Gwyn	0.09km north
Whitland Cricket Club	0.12km north
Residential properties on Maes Abaty	0.12km north
Residential properties on Trevaughan Gardens	0.12km west
Parc Llwyn Ty Gwyn	0.16km north
Residential properties on Station Road (the B4328)	0.16km west
Residential properties on Velfrey Road	0.2km west
Sewerage treatment works	0.2km south
Farm/residential property on unnamed road	0.21km east
Residential properties on St Mary's Street	0.21km north-west
Residential properties on St John Street (the B4328)	0.24km north-west
Businesses on St John Street (the B4328)	0.24km north-west
Residential properties on Trevaughan Lodge Road	0.25km
Residential properties on Park Street	0.25km north-west
Residential properties on Market Street (the B4328)	0.25km north
Whitland Train Station	0.26km west
Businesses on Market Street (the B4328)	0.3km north-west
Residential properties adjacent to The Roadhouse	0.34km north
The Roadhouse restaurant on the A40	0.35km north-east
Residential properties on King Edward Street	0.35km north-west
Farm/residential property on unnamed road	0.35km south
Whitland Independent Chapelyard	0.37km north-east
Residential properties on Cross Street	0.4km north-west
Residential properties on St David's Avenue	0.42km north-west
Residential properties on West Street	0.45km north-west
Residential properties on North Road	0.5km west

W L & A Windsor & Son farm	0.58km east
Businesses on West Street	0.6km north-west
Whitland Fire and Rescue Station	0.6km north-west
Dyffryn Taf Secondary School on North Road	0.8km north-west
Residential properties on Lon Hywel	0.9km north-west
Holy Cross Abbey	1.1km south-west
Residential properties on Whitland Abbey By-way	1.1km north
Residential properties in Llwyn-Y-Brain	1.1km south-west
Hazelwell Farms	1.2km south
Lewis J G & I A Dairy Farm	1.7km north-west

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

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

PRoW	Distance & Direction from Site
Footpath 66/2	Within site boundary
Footpath 66/3	0.13km north-west
Footpath 66/5	0.15km south-west
Footpath 9/1	0.15km south-west
Footpath 9/2	0.15km south
Footpath 9/6	0.2km south
Footpath 18/1	0.6km north
Footpath 66/1	0.85km south-west
Footpath 18/2	1km north-east
Footpath 9/5	1km south-east
Byway 66/4	1.2km north
Footpath 9/3	1.4km south-east
Footpath 9/7	1.5km south
Footpath 18/4	1.5km north

Footpath 18/3	1.6km north
Footpath 9/4	1.9km south-east
Footpath 63/1	1.9km east
Footpath 18/1A	2km east

7.2.7 AIR AND CLIMATE

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

7.2.8 WATER RESOURCES

This sub-section should be read in conjunction with Chapters 2 & 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 contains areas at significant risk of flooding from main rivers, minor watercourses and surface water. However, large areas of the site remain at low risk of flooding.
- It is anticipated that through careful master-planning and design, development can be directed to avoid areas of risk, with any development that is proposed in areas considered at risk of flooding to be of a nature considered appropriate for the level of flood risk present.
- It is also considered that suitably designed site levels and drainage should be able to effectively manage runoff originating from within the site.

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

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

Watercourse/ Waterbody	Distance & Direction from Site
Main Rivers	
River Taf	Adjacent south
River Gronw	Adjacent west
River Cwm Waun Gron	0.1km west
River Gronw Mill Leat	0.2km north-west
River Marlais	1.7km north-west
Ordinary Watercourse/ Waterbody	
Various River Taf tributaries	Closest: intersects Site boundary
River Coile	0.11km south-west
Nant yr Allwyn	0.46km north-east

Nant Colomendy	1.2km north
Nant Cwmfelin-boeth	1.5km north-west

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

7.2.9 NOISE

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

Please refer to Drawing No. 2424-WSP-XX-SC-DR-EN-0024-P01_Environmental Noise Mapping which indicates the average sound level for road traffic noise on major roads for the 8-hour period from 2300 to 0700. It is similar to the LAeq,8h indicator used in TAN11 assessments, but here it is calculated at a height of 4 metres rather than 1.2-1.5 metres.

The site is located outside of the area modelled for major roads and therefore not likely affected by noise from the A40.

7.2.10 MATERIALS ASSETS AND WASTE

As outlined in 7.2.2, the Site comprises a farm compound and several fields bounded by hedgerows and trees.

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.

7.2.11 MAJOR ACCIDENTS AND DISASTERS

The Site is located on agricultural land.

As outlined in 7.2.9, the Site contains area at significant risk of flooding from main rivers (River Taf and River Gronw), minor watercourses and surface water. However, large areas of the Site remain at low risk of flooding and it is anticipated that through careful master-planning and design, development can avoid areas of high flood risk.

7.3 CONSIDERATIONS OF EIA REGULATIONS

7.3.1 LEGISLATIVE REQUIREMENTS

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

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

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

The thresholds for Schedule 1 development generally relate to major projects which, by virtue of their scale location, appearance or type of activity, have the potential to impact on the environment.

These types of projects are specifically defined in the 2017 Regulations and automatically require EIA.

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

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

Table 7-6 – Schedule 2 of the EIA Regulations

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

The proposed development exceeds 5 ha (area of works is approximately 64ha, or 158 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 ENVIRONMENTAL EFFECTS

Using the baseline information of the Site compiled in Section 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	<p><u>Construction</u></p> <p>It is expected that there will be a requirement for a large proportion of the existing agricultural land (majority Grade 3b with a smaller area of Grade 3a) to be cleared and potential for the demolition of existing buildings for construction purposes.</p> <p>Construction practices would be managed through the use of a Construction Environmental Management Plan (CEMP).</p> <p>The Preliminary Risk Assessment has indicated that the risks presented to potential receptors (health of future Site users, controlled waters and infrastructure) from localised potential sources of contamination are</p>

	<p>considered to be typically low. An intrusive ground investigation to establish the ground conditions at the Site would be required.</p> <p><u>Operation</u></p> <p>The Proposed Development would result in permanent land take and therefore the permanent loss of agricultural land. As there is the potential for loss of good to moderate quality agricultural land which is deemed by planning policy as some of the 'best and most versatile' agricultural land, survey evidence would be required during the planning application stages.</p> <p><u>Summary</u></p> <p>The Proposed Development would result in the loss of moderate quality agricultural land and the potential loss of good to moderate quality land, which falls under the 'best and most versatile' agricultural land classification.</p> <p>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.</p> <p>Potential significant environmental effects on land use and soils 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 land use and soils.</p>
Cultural Heritage and Archaeology	<p><u>Construction</u></p> <p>The potential for archaeology on the site is currently unknown.</p> <p>There will be no direct impacts on listed buildings.</p> <p>Given the nature of the likely construction activities and the proximity of certain cultural heritage assets to the Site (one Listed Structure is 0.15km west), there is the potential for temporary indirect impacts on the setting of these heritage assets.</p> <p>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.</p> <p>Consultation with the local heritage officer is recommend to consider potential impacts arising from construction activities.</p> <p><u>Operation</u></p> <p>The scale of the proposed development and associated traffic generation may have impacts on the setting of above ground heritage assets (listed buildings and Scheduled Monuments).</p> <p>The design of the proposed development will need to be considerate to the setting of the above ground built heritage in the area.</p> <p><u>Summary</u></p> <p>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.</p> <p>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</p>

	<p>significant effects from the Proposed Development and on unknown archaeology and the setting of above ground heritage assets.</p>
Ecology and Nature Conservation	<p><u>Construction</u></p> <p>Baseline findings identified several key constraints, including; the presence of Priority Habitats on site, the suitability of the Site to support protected species and the presence of a B-Line on site, which is designed to provide a key pathway for insects to promote biodiversity. Due to the removal of onsite Priority Habitats and the potential for disruption to nearby ecological sites, it is likely construction activities will cause direct and indirect impacts on ecological receptors.</p> <p>Through the implementation of a CEMP and the application of the ecological recommendations outlined in Section 7.2.3, any potential direct and indirect impacts would be reduced.</p> <p><u>Operation</u></p> <p>Given the nature of the Proposed Development, operational impacts on ecological receptors have the potential to be significant due to permanent habitat loss.</p> <p>However, this impact maybe reduced through avoidance of sensitive habitats and the implementation of biodiversity enhancement measures. This would need to be outlined in further surveys, including a Biodiversity Net Gain (BNG) assessment.</p> <p><u>Summary</u></p> <p>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 7.2.3. 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.</p> <p>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.</p>
Landscape Character and Visual Impact	<p><u>Construction</u></p> <p>Construction activities, comprising site construction works, regular large deliveries of materials and equipment and construction workers journeying to and from the Site, are likely to have temporary direct and indirect visual impacts on nearby residential receptors and community assets.</p> <p>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.</p> <p><u>Operation</u></p> <p>The Proposed Development would permanently alter the landscape character of the Site and its surrounding area.</p> <p>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</p>

	<p>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.</p> <p><u>Summary</u></p> <p>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.</p> <p>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.</p>
Traffic and Transport	<p><u>Construction</u></p> <p>Currently there is no traffic information for either the construction or operational phases, however it is considered likely that there would be an increase in traffic caused by construction activities, including staff movements and deliveries. It is possible that some workers may use public transport such as the nearby Whitland Train Station or local bus services.</p> <p>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.</p> <p><u>Operation</u></p> <p>It is considered likely that there would be an increase in traffic to the area during the operational phase on local roads including the adjacent B4328, in addition to an increase in traffic through the town of Whitland. There is the potential for significant impacts arising from the frequency, unsociable hours, and nature of some of the vehicles (ambulances) going to and from the Site.</p> <p>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.</p> <p>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.</p> <p><u>Summary</u></p> <p>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.</p>
Population and Human Health	<p><u>Construction</u></p> <p>It is anticipated that the local population, in particular the residents situated adjacent to the Site, the adjacent and nearby footpaths, and the nearby local businesses, will be subjected to construction impacts. Such impacts are likely to comprise an increase in traffic on local roads, localised changes to air quality, noise associated with construction work and traffic,</p>

	<p>and visual impacts arising from construction works and traffic. Measures to reduce these impacts would be set out within a CEMP.</p> <p>During the construction phase, it is likely that the PRoW which intersects the Site will need to be diverted.</p> <p>Construction may have a temporary positive effect on employment provision in the local area through the creation of construction jobs.</p> <p><u>Operation</u></p> <p>In the absence of a detailed designs for the Proposed Development, some impacts on nearby receptors are unclear.</p> <p>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.</p> <p>During the operation phase, it is likely that the PRoW which intersects the Site will need to be diverted either off site or a new pathway created on site.</p> <p>The provision of a nearby healthcare facility may make healthcare more accessible to local residents and thus improving overall health provision in the areas.</p> <p>There is potential for a slight change in the size of the local population due to the provision of on-site accommodation facilities.</p> <p>Operation may have a permanent effect on employment provision in the local area through the creation of hospital jobs.</p> <p><u>Summary</u></p> <p>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.</p>
Air and Climate	<p><u>Construction</u></p> <p>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.</p> <p><u>Operation</u></p> <p>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.</p> <p>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.</p> <p><u>Summary</u></p>

	<p>In the absence of a detailed design plan and air quality and climate data, it is considered possible that the Proposed Development will cause significant environmental effects on air quality and Climate. Air quality surveys would be required to determine the impacts of the construction and operational phase.</p>
Water Resources	<p><u>Construction</u></p> <p>The Site contains areas at significant risk of flooding. It is assumed that any flood risks would be managed through the implementation of a CEMP.</p> <p>An assessment of the impact on soil hydrology, including consideration of groundwater protection, Flood Consequences Assessment 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.</p> <p>Pollution incidents on nearby watercourse are possible, however provided appropriate mitigation measures are implemented, these pollution events can be avoided.</p> <p><u>Operation</u></p> <p>Although the Proposed Development does not currently have a detailed design plan, the early scheme description outlined in the Introduction includes the implementation of surface water drainage infrastructure and therefore, it may be possible to avoid increasing surface water flood risk at the Site.</p> <p>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.</p> <p><u>Summary</u></p> <p>The Site contains areas at significant risk of flooding where development should be avoided. Potential significant environmental effects on water resources, specifically flood risk, 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 water resources.</p>
Noise	<p><u>Construction</u></p> <p>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.</p> <p><u>Operation</u></p> <p>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.</p> <p><u>Summary</u></p>

	<p>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.</p>
Material Assets and Waste	<p><u>Construction</u></p> <p>The use and management of materials and resources during the construction phase would be managed through the use of a CEMP.</p> <p>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.</p> <p>It is also anticipated that a high volume of waste would be generated during the construction phase to clear the current greenfield site. The CEMP would include a Site Waste Management Plan (SWMP) and potentially a Materials Management Plan (MMP), which would monitor the levels of waste produced, set goals to limit waste generation and provide details on how generated waste would be disposed. All environmental legislation will be complied with during construction, operation, and decommissioning, with any waste disposed of appropriately off-site.</p> <p><u>Operation</u></p> <p>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.</p> <p>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.</p> <p><u>Summary</u></p> <p>There is the potential for significant environmental effects caused by unsafe waste disposal during the operation phase.</p>
Major Accidents and Disasters	<p><u>Construction</u></p> <p>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.</p> <p>There is a potential risk caused by construction works taking place near a railway line. Provided appropriate mitigation measures are in place (as outlined above), it should be possible to minimise the risk.</p> <p><u>Operation</u></p> <p>The Site contains areas at significant risk of flooding. It is therefore proposed that a Flood Consequences Assessment would be undertaken to ensure that the Proposed Development does not impact local hydrology or increase flood risk.</p>

	<p>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.</p> <p><u>Summary</u></p> <p>The proposed development is not of a type that would result in a major accident or disaster, therefore no significant environmental effects are predicted.</p>
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7.4 SUMMARY

7.4.1 KEY CONSTRAINTS

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

- Ecological receptors comprising a B-Line (an insect pollinator dispersal pathway) which lies within the Site and nearby ancient woodland inventory (AWI) sites;
- Potential for the Site to be a suitable habitat for protected and/or notable species, in particular bats and INNS;
- Nearby above ground heritage assets and potential archaeological assets on site;
- River Taf and River Gronw adjacent to the Site and minor watercourses which intersect the Site;
- Site contains areas at significant risk of flooding from main rivers, minor watercourses and surface water;
- Various residential receptors, in particular, properties which are adjacent to the Site;
- A PRoW which intersects the Site;
- Businesses and community assets in the Study Area, in particular businesses located off the B4328.

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 could be significant adverse for the following topics:

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

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

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

7.4.3 RECOMMENDATIONS AND OPPORTUNITIES

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

General environmental

In addition to the conclusions of the other reports referenced above, this 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;
 - Noise surveys and assessments to calculate the impact of noise caused by the Proposed Development
 - Landscape and Visual Impact Assessment (LVIA), which is likely to be required based on the proximity of local receptors and PRoWs;
 - Flood Consequences Assessment;
 - Climate impact assessment; and
 - Traffic and transport assessment.
- Community and local business consultation;
- Notice given to the relevant LPA, Pembrokeshire County Council, to inform and/or obtain permission for any PRoW disruption;
- SuDS Approving Body (SAB) consent; and
- Producing construction related assessments such as a Construction Environmental Management Plan (CEMP), Construction Traffic Management Plan (CTMP) and Site Waste Management Plan

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

Land Use and soils

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

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

Ecology and nature conservation

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

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

Traffic and Transport

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

Water resources

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

- Multiple access/egress routes should be considered as part of the site master-planning and development to provide resilience;
- Further consideration should be given as to access requirements to the south of the site, and if additional access arrangements are required to facilitate this;
- An appropriate offset is given to minor watercourses to allow for access, maintenance, and ecological corridors;
- An appropriate offset is given to main rivers to allow for access, maintenance, and ecological corridors; and
- Site master-planning should ensure that development is located within areas where the level of flood risk is commensurate with the nature of the development.

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 occupies approximately 64 ha of predominantly undeveloped agricultural land located to the east of Whitland and to the south of Spring Gardens (B4328). The Site comprises a centrally positioned farm compound of several structures (i.e., a farmhouse and outbuildings) which is connected to the surrounding grassed fields by access tracks.

The Site is bisected by a railway line that is orientated east to west. The Afon Taf and the Afon Gronw form the southern and south-western Site boundaries, respectively. Access to the southern area of the Site is restricted owing to the presence of the railway line.

Land use to the south and east comprises undeveloped woodland and/or agricultural land use. A combination of residential, commercial and industrial surrounding land uses are noted within Whitland and the village of Trevaughan. Whitland Industrial Estate borders the Site to the north.

8.2.2 SITE HISTORY

The majority of the Site has remained in use as agricultural land and, with the exception of modifications and additions to the farm buildings, has not undergone any historical development.

8.2.3 GEOLOGY, HYDROGEOLOGY AND HYDROLOGY

The southern area of the Site, adjacent to the Afon Taf, is reported to be underlain by Alluvium (Secondary A Aquifer). The bedrock across the Site comprises the Arenig Tetraraptus Beds (Mudstone) in the north-east and the Lower Llanvirn Didymograptus Bifidus Beds (Mudstone) in the central and south-western areas. Both bedrock units are classified as Secondary B Aquifers.

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

Several minor surface water features have been identified on-site which comprise tributaries to the Afon Taf and Afon Gronw.

8.2.4 RADON

The majority of the Site is located within an area where either less than 1% or between 1% and 3% of properties would be estimated to exceed the Radon Action Level. In these areas basic radon protection measures are not considered necessary. However, a very small area at the northernmost extent of the Site has been identified where between 5% and 10% of properties would be estimated to exceed the Radon Action Level. Should properties be constructed in this area then basic radon protection measures would likely be required within future structures.

8.2.5 UNEXPLODED ORDNANCE (UXO)

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

8.2.6 CONCLUSIONS

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

The southern area of the Site, adjacent to the Afon Taf, is reported to be underlain by Alluvium (Secondary A Aquifer) with the bedrock comprising the Arenig Tetragraptus Beds (Mudstone) in the north-eastern and the Lower Llanvirn Didymograptus Bifidus Beds (Mudstone) in the central and south-western areas of the Site. Both bedrock units are classified as Secondary B Aquifers.

Groundwater vulnerability across the Site is reported to be high, associated with a well-connected fracture flow network within the underlying bedrock, and local small-scale domestic abstraction has been noted to have historically occurred within the area. A former well(s) are understood to be located within the farm compound although the status of these is unknown.

Several minor surface water features have been identified on-Site which are considered to comprise tributaries to the Afon Taf and Afon Gronw which are located on the southern and south-western Site boundaries, respectively.

The online Flood Risk Development Advice Map provided by NRW indicates that the northern area of the Site is located within Zone A, which is classified as “*at little or no risk of fluvial or coastal/tidal flooding.*” However, the southern half of the Site ranges from Zone B and Zone C2 which are defined as areas “*known to have flooded in the past*” and “*without significant flood defence infrastructure*”.

The online Flood Risk Assessment Wales Map provided by NRW indicates that the southern half of the Site (the area to the south of the railway line) is located within Flood Zone 3 (which is defined as the extent of a flood from rivers with a 1% (1 in 100) chance or greater of happening in any given year). Flood Zone 3 is also present to the north of the railway line in the central and eastern areas of the Site.

The southern area of the Site is at an increased risk of flooding from the Afon Taf and is not currently benefiting from any form of flood defence systems. Two historical surface water flooding events have been recorded at the Site associated with the Afon Taf to the south.

The majority of the Site is located within an area where either less than 1% or between 1% and 3% of properties would be estimated to exceed the Radon Action Level. In these areas basic radon

protection measures are not considered necessary. However, a very small area at the northernmost extent of the Site has been identified where between 5% and 10% of properties exceed the Radon Action Level. Should properties be constructed in this area then basic radon protection measures would likely be required within future structures.

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

A number of possible development constraints have been identified in the southern area of the Site which will require consideration, including:

- The presence of Alluvium which is unlikely to provide a suitable founding medium;
- The elevated flood risk; and
- Access constraints associated with the presence of the railway line.

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 on and off-site to have led to localised contamination at the Site. The most noticeable sources of potential contamination comprise the poorly contained on-Site fuel oil above ground storage tanks (ASTs). Off-site sources of potential contamination include a former gas works, an industrial estate and a cemetery.

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

8.2.7 RECOMMENDATIONS

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

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

- Enable refinement of the Conceptual Site Model and the preliminary land quality risk assessment;
- Support foundation design of structures and potential earthworks that may be required;
- Provide an understanding of the hydrogeological and ground gas regime at the Site;
- Characterise the nature and suitability for retention of any Made Ground encountered; 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:

Placemaking

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

Development in the Countryside

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

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

Sustainable Transport

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

- are sited in the right locations, where they can be easily accessed by sustainable modes of travel and without the need for a car;*
- are designed in a way which integrates them with existing land uses and neighbourhoods; and*
- make it possible for all short journeys within and beyond the development to be easily made by walking and cycling.”*

Car Parking

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

Community Facilities

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

9.1.1.3 TECHNICAL ADVICE NOTES (TAN)

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

TAN 12 Design (2016)

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

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

TAN 15 Development and Flood Risk (2004)

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

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

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

9.1.2 LOCAL

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

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

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

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

9.1.2.1 Carmarthenshire Local Development Plan

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

In terms of LDP allocations, Whitland is shown on the Policies map (see Figure 9-1). A large area 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:*

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

²¹ <https://www.legislation.gov.uk/ukpga/2004/5/section/38>

- 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,*

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 Whitland as prescribed by policy GP2 ‘Development Limits’. Policy GP2 states that *“Development Limits are defined for those settlements identified as Growth Areas, Service Centres, Local Service Centres and identified Sustainable Communities within the settlement framework. Proposals within defined Development Limits will be permitted, subject to policies and proposals of this Plan, national policies and other material planning considerations.”* The supporting text to the policy states that *“development limits have been defined across all settlements identified within the hierarchy as defined within the settlement framework in order to:*

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

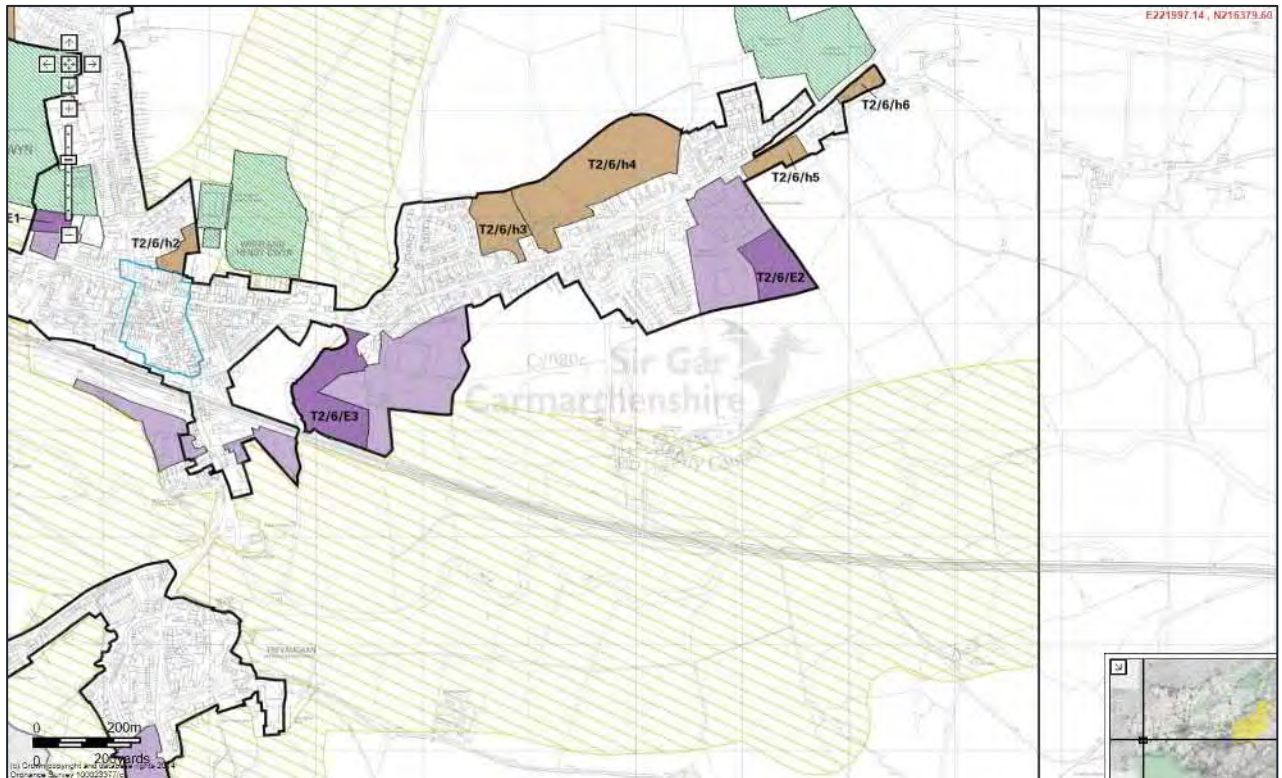


Figure 9-1 - LDP - Extract of Policies map showing sand and gravel deposit (dashed yellow lines)

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 Nanyrhobo)

Llandovery

Newcastle Emlyn

St Clears (Includes Pwll Trap)

Whitland"

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

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

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

SP5 Housing

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

	<i>Number of Dwellings</i>
<i>Growth Areas</i>	<i>8,333</i>
<i>Service Centres</i>	<i>1,360</i>
<i>Local Service Centres</i>	<i>1,666</i>
<i>Sustainable Communities</i>	<i>1,993”</i>

SP7 Employment - Land Allocations

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

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

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

SP8 Retail

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

SP9 Transportation

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

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

- b) Addressing social inclusion through increased accessibility to employment, services and facilities;*
- c) Supporting and where applicable enhancing alternatives to the motor car, such as public transport (including park and ride facilities and encourage the adoption of travel plans), and active transport through cycling and walking;*
- d) Re-enforcing the function and role of settlements in accordance with the settlement framework;*
- e) Promoting the efficient use of the transport network;*
- f) The use of locational considerations for significant trip generating proposals, with design and access solutions within developments to promote accessibility by non car modes of transport.*

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

SP11 Renewable Energy & Energy Efficiency

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

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

SP12 Waste Management

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

- a) The allocation of adequate appropriate land to provide for an integrated network of waste management facilities;*
- b) The adoption of a hierarchy of options for managing waste in the following order: prevention, preparing for re-use, recycling, other recovery (e.g energy recovery); and disposal;*
- c) The management and disposal of waste close to where it has been generated, in accordance with the proximity principle; proposals for development should have regard to the location of waste management facilities (and their capacity) in formulating proposals.”*

SP13 Protection and Enhancement of the Built and Historic Environment

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

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

- b) *Listed buildings and their setting;*
- c) *Conservation Areas and their setting;*
- d) *Scheduled Ancient Monuments and other sites of recognised archaeological importance.*

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

SP14 Protection and Enhancement of the Natural Environment

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

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

- a) *Statutory designated sites including Ramsar sites, SPAs, SACs, SSSIs and National Nature Reserves;*
- b) *Biodiversity and Nature Conservation Value, including protected species and habitats of acknowledged importance as well as key connectivity corridors and pathways; (Policy EQ4 and EQ5)*
- c) *Regional and Locally important sites (and their features) including Local Nature Reserves and RIGS; (see Policy EQ3)*
- d) *Areas of identified Landscape and Seascape quality; (including SLAs)*
- e) *Features which contribute to local distinctiveness, nature conservation value or the landscape; (see Policy EQ5)*
- f) *The Open Countryside; (see Policy GP2)*
- g) *The best and most versatile agricultural land; (Grade 2 and 3a)*
- h) *Natural assets: including air, soil (including high carbon soils) controlled waters and water resources. (See Policies EP1 and EP2)”*

SP16 Community Facilities

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

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

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

Policy GP1 Sustainability and High Quality Design

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

- a) *It conforms with and enhances the character and appearance of the site, building or area in terms of siting, appearance, scale, height, massing, elevation treatment, and detailing;*
- b) *It incorporates existing landscape or other features, takes account of site contours and changes in levels and prominent skylines or ridges;*
- c) *Utilises materials appropriate to the area within which it is located;*
- d) *It would not have a significant impact on the amenity of adjacent land uses, properties, residents or the community;*
- e) *Includes an integrated mixture of uses appropriate to the scale of the development;*
- f) *It retains, and where appropriate incorporates important local features (including buildings, amenity areas, spaces, trees, woodlands and hedgerows) and ensures the use of good quality hard and soft landscaping and embraces opportunities to enhance biodiversity and ecological connectivity;*
- g) *It achieves and creates attractive, safe places and public spaces, which ensures security through the ‘designing-out-crime’ principles of Secured by Design (including providing natural surveillance, visibility, well lit environments and areas of public movement);*
- h) *An appropriate access exists or can be provided which does not give rise to any parking or highway safety concerns on the site or within the locality;*
- i) *It protects and enhances the landscape, townscape, historic and cultural heritage of the County and there are no adverse effects on the setting or integrity of the historic environment;*
- j) *It ensures or provides for, the satisfactory generation, treatment and disposal of both surface and foul water;*
- k) *It has regard to the generation, treatment and disposal of waste.*
- l) *It has regard for the safe, effective and efficient use of the transportation network;*
- m) *It provides an integrated network which promotes the interests of pedestrians, cyclists and public transport which ensures ease of access for all;*
- n) *It includes, where applicable, provision for the appropriate management and eradication of invasive species.*

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

Policy GP4 Infrastructure and New Development

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

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

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

Policy H1 Housing Allocations

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

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

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

Policy H2 Housing within Development Limits

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

Policy H6 Residential Care Facilities

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

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

Policy AH2 Affordable Housing – Exceptions Sites

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

- a) The site represents a logical extension to the Development Limits and is of a scale appropriate and in keeping with the character of the settlement;*
- b) The benefits of the initial affordability will be retained for all subsequent occupants;*
- c) It is of a size, scale and design compatible with an affordable dwelling and available to low or moderate income groups;*
- d) There are no market housing schemes within the settlement being, or projected to be developed which include a requirement for affordable housing.”*

Policy EMP2 New Employment Proposals

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

- a) *A sequential search has been undertaken identifying that there is no allocation or existing employment site available that can reasonably accommodate the use, followed by there being no suitable land or building (for conversion or re-use) available within the Development Limits, then adjacent to limits, and finally on a site directly related to a recognised settlement;*
- b) *The development proposals are of an appropriate scale and form, and are not detrimental to the respective character and appearance of the townscape/ landscape;*
- c) *The development proposals are of an appropriate scale and form compatible with its location and with neighbouring uses.”*

Policy RT1 Retail Hierarchy

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

Principal Centres (Growth Areas):

Carmarthen Llanelli Ammanford

Town Centres (Service Centres):

Burry Port Llandeilo Llandovery

Newcastle Emlyn St Clears Whitland”

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

Policy TR1 Primary and Core Road Networks

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

Policy TR2 Location of Development – Transport Considerations

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

- a) *It is located in a manner consistent with the plans strategic objectives, its settlement framework and its policies and proposals;*
- b) *It is accessible to non car modes of transport including public transport, cycling and walking;*
- c) *Provision is made for the non-car modes of transport and for those with mobility difficulties in the design of the proposal and the provision of on site facilities;*
- d) *Travel Plans have been considered and where appropriate incorporated.”*

Policy TR3 Highways in Developments - Design Considerations

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

- a) *An integrated network of convenient and safe pedestrian and cycle routes (within and from the site) which promotes the interests of pedestrians, cyclists and public transport;*
- b) *Suitable provision for access by public transport;*
- c) *Appropriate parking and where applicable, servicing space in accordance with required standards;*
- d) *Infrastructure and spaces allowing safe and easy access for those with mobility difficulties;*
- e) *Required access standards reflective of the relevant Class of road and speed restrictions including visibility splays and design features and calming measures necessary to ensure highway safety and the ease of movement is maintained, and where required enhanced;*
- f) *Provision for Sustainable Urban Drainage Systems to allow for the disposal of surface water run off from the highway.*

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

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

Policy TR4 Cycling and Walking

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

- a) *Towy Valley (between Llandeilo and Carmarthen);*
- b) *Whitland to Llanglydwen;*
- c) *Ammanford to the Amman Valley.*

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

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

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

Policy EQ4 Biodiversity

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

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

- a) The impacts can be satisfactorily mitigated, acceptably minimised or appropriately managed to include net enhancements;*
- b) There are exceptional circumstances where the reasons for the development or land use change clearly outweighs the need to safeguard the biodiversity and nature conservation interests of the site and where alternative habitat provision can be made in order to maintain and enhance local biodiversity.”*

Policy EP1 Water Quality and Resources

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

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

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

Policy EP3 Sustainable Drainage

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

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

Policy REC2 Open Space Provision and New Developments

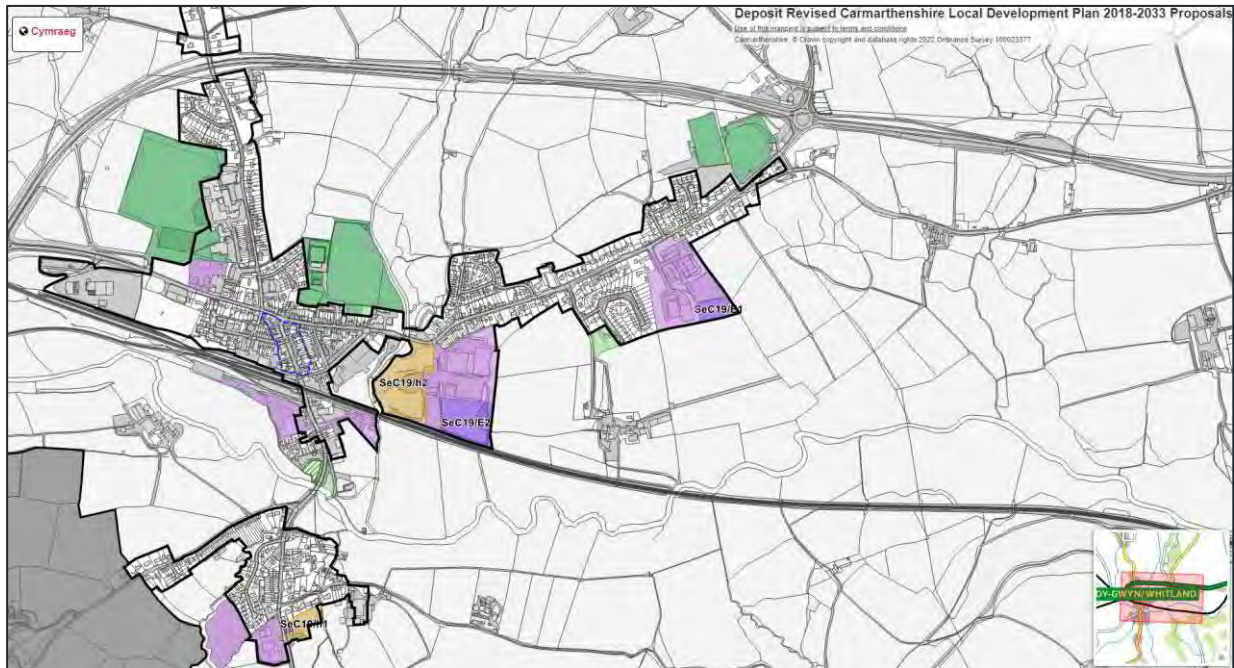
Policy REC2 states that “All new residential developments of five or more units will be required to provide on site open space in accordance with the Council’s adopted standards of 2.4ha per 1000 population.

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

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

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

In terms of revised LDP draft allocations, Whitland is shown on the Policies map (see Figure 9-3). The Development Limits are changed very slightly compared to the LDP.



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 states 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	<ul style="list-style-type: none"> Llanelli 	<ul style="list-style-type: none"> Ammanford/ Crosshands 			
Tier 2 – Service Centre	<ul style="list-style-type: none"> Pontyates / Meinciau / Ponthenri Ferryside 	<ul style="list-style-type: none"> Kidwelly Burry Port Pembrey Hendy / Fforest Llangennech Trimsaran/ Carway 	<ul style="list-style-type: none"> Brynamman Glanamman / Garnant Pontyberem / Bancffosfelen 	<ul style="list-style-type: none"> Newcastle Emlyn Llanybydder Pencader 	<ul style="list-style-type: none"> Llandoverly Llandeilo / Rhosmaen / Ffairfach Llangadog 	<ul style="list-style-type: none"> St Clears/ Pwll Trap Whitland Laugharne

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

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

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

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

9.1.2.3 SUPPLEMENTARY PLANNING GUIDANCE

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

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

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

9.2 COMMITTED DEVELOPMENTS

The Proposed Development would be located on land to the south east of Whitland. It is important to assess whether reasonably foreseeable development in the vicinity could affect its delivery. CCC’s

Map of planning applications²² has been checked. WSP consider that there are no Schemes with planning permission found within these searches that could affect the delivery of the Proposed Development.

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:

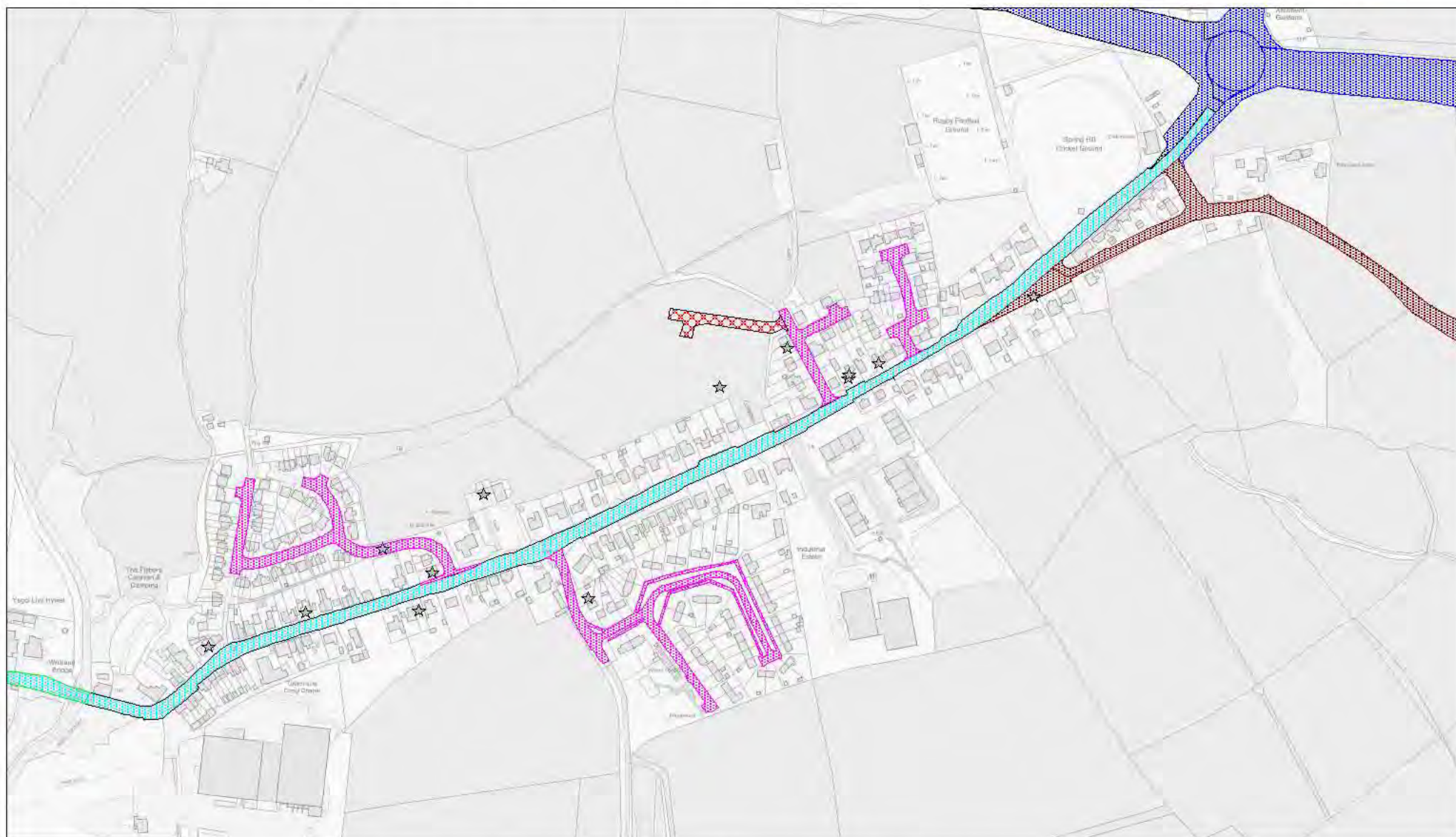
- Policy 1 of Future Wales identifies that development and growth in towns in rural areas should be of appropriate scale and support local aspirations and need. In addition, Policy 6 of Future Wales indicates that significant new commercial, retail, education, health, leisure and public service facilities 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 large area of the Site is located within an area of sand and gravel which is safeguarded under policy MPP3.
- The majority of the Site is located on unallocated land outside the Development Limits for Whitland. In the LDP, Development Limits are set to prevent inappropriate development in the countryside and provide certainty and clarity as to where exceptions proposals (adjacent to limits) may be considered appropriate.
- Whitland is identified as a Service Centre in the LDP Settlement framework with a role for Local employment provision, residential provision, town centre and local retail service offer, community service provision and gypsy and traveller site.
- The LDP supports the provision of new community facilities in accordance with the settlement framework and based upon evidence of need.
- The Revised (Replacement) Carmarthenshire Local Development Plan 2018 – 2033 is currently being prepared by CCC. CCC's revised Delivery Agreement dated November 2020 states that the Revised Local Development Plan is due to be adopted during from July-August 2022. The Site is located outside the Development Limits for Whitland.

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

Appendix A

LAND PLANS





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Mae'r copi swyddogol electronig o'r cynllun teitl yn dilyn y neges hon.

Sylwch mai hwn yw'r unig gopi swyddogol a ddarparwn. Ni fyddwn yn darparu copi swyddogol papur.

Anfonwyd y copi swyddogol hwn yn electronig a phan gaiff ei argraffu ni fydd wrth raddfa. Gallwch gael copi swyddogol papur trwy archebu un o Gofrestrfa Tir EM.

Mae'r copi swyddogol hwn a gyhoeddir ar 24 Mawrth 2022 yn dangos sefyllfa'r cynllun teitl hwn ar 24 Mawrth 2022 am 16:57:30. Mae'n dderbyniol fel tystiolaeth i'r un graddau â'r gwreiddiol (adran 67 Deddf Cofrestru Tir 2002). Mae'r cynllun teitl hwn yn dangos safle cyffredinol, nid union linell, y terfynau. Gall fod gwyriadau yn y raddfa. Mae'n bosibl na fydd mesuriadau wedi eu graddio o'r cynllun hwn yn cyfateb â mesuriadau rhwng yr un pwyntiau ar y llawr. Gweinyddir y teitl hwn gan Gofrestrfa Tir EM Swyddfa Cymru.

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Land Registry.

(Land Transfer Acts 1875 & 1897)

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COUNTY OF CARMARTHEN

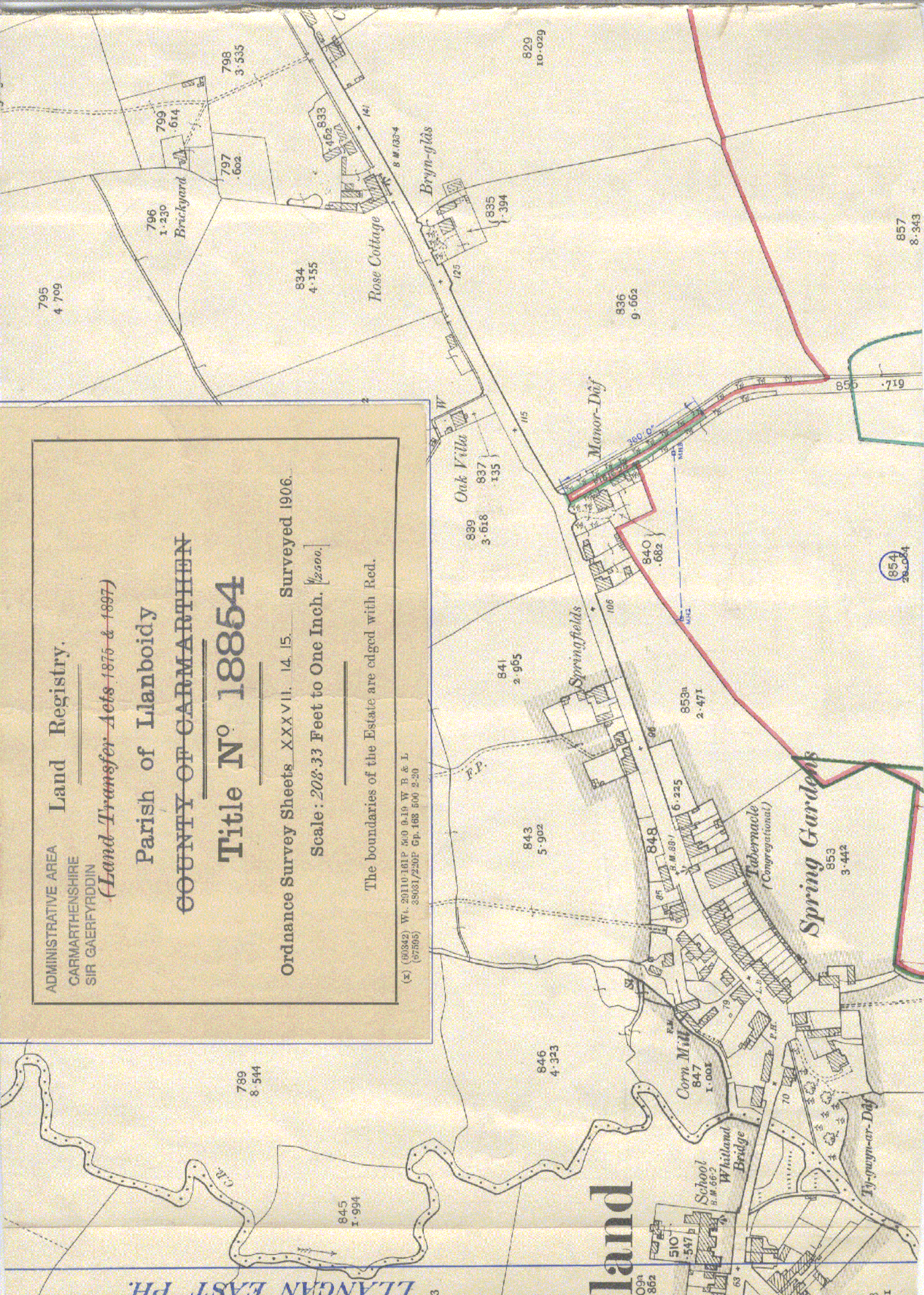
Title N^o 18854

Ordnance Survey Sheets XXXV (1), 14, 15. Surveyed 1906.

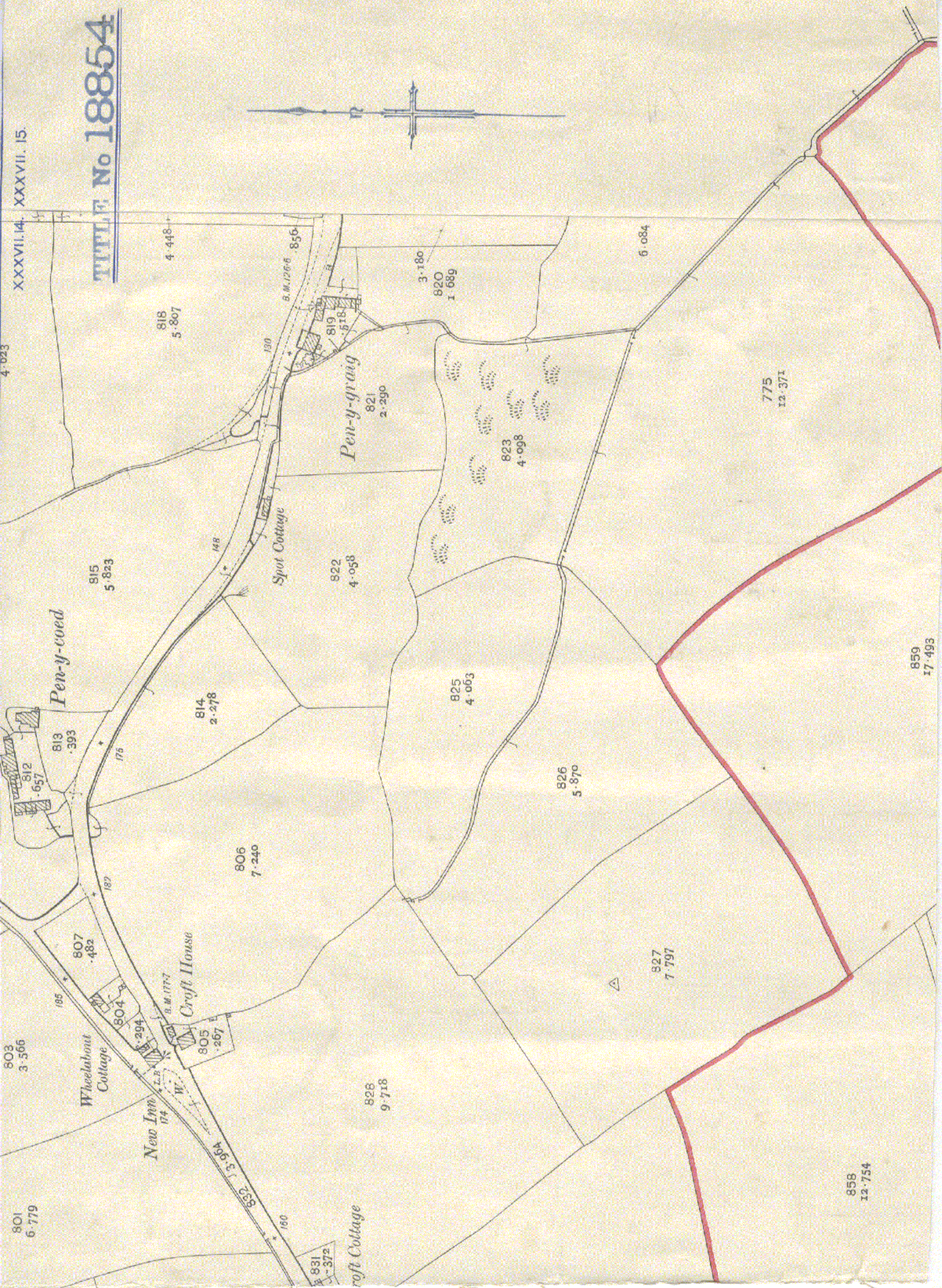
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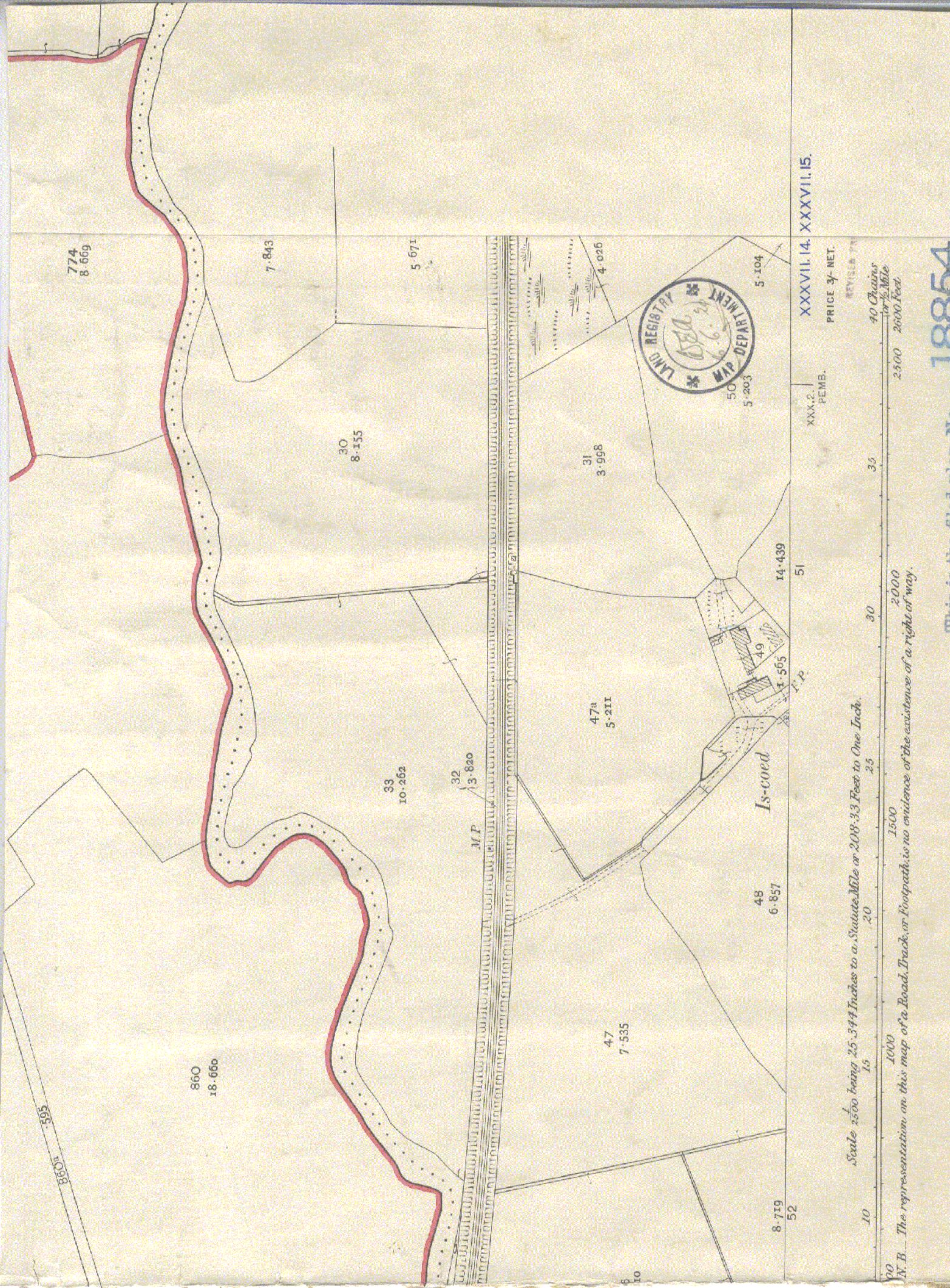
The boundaries of the Estate are edged with Red.

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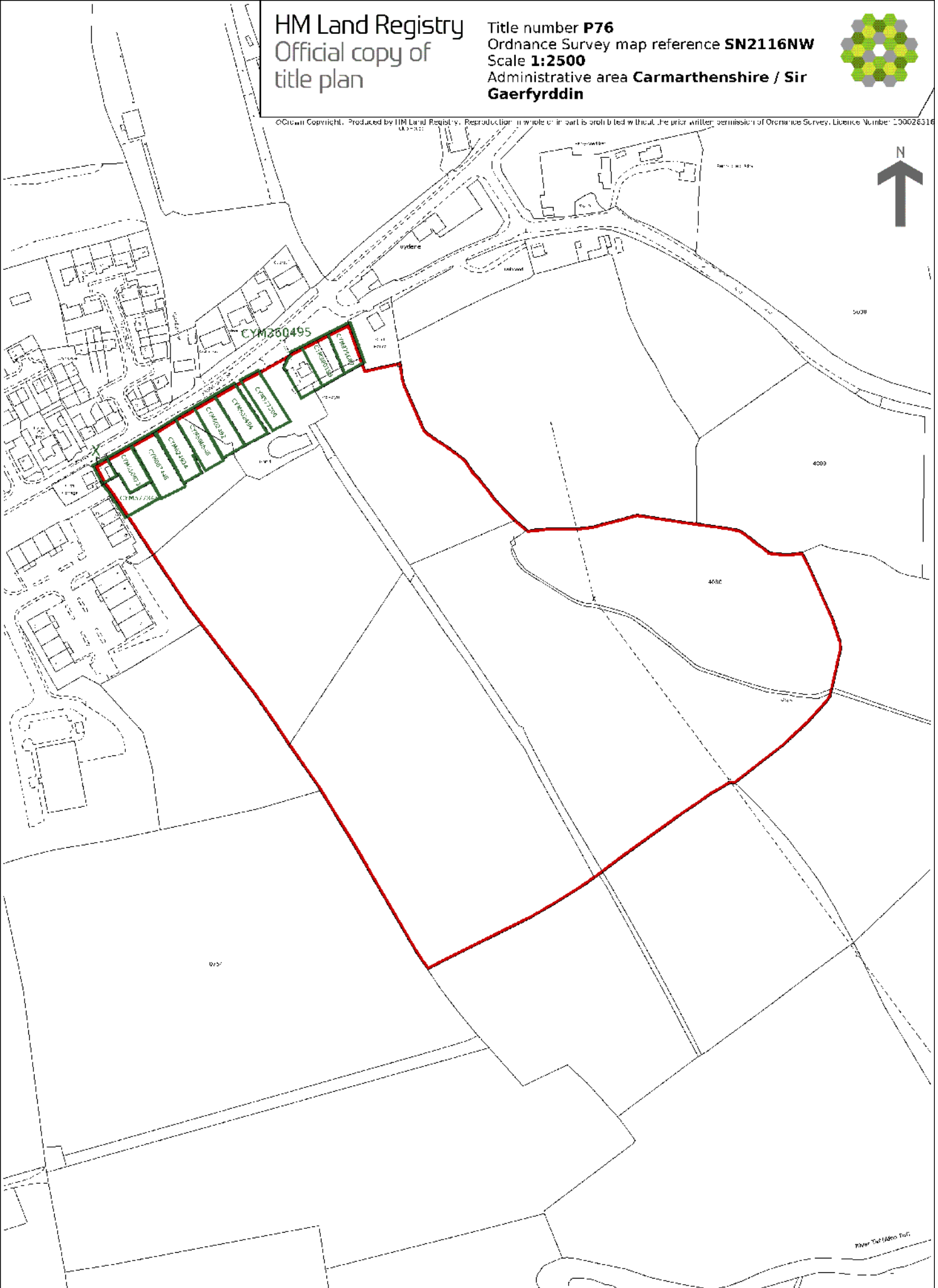
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Gweinyddir y teitl hwn gan Gofrestrfa Tir EM Swyddfa Cymru.

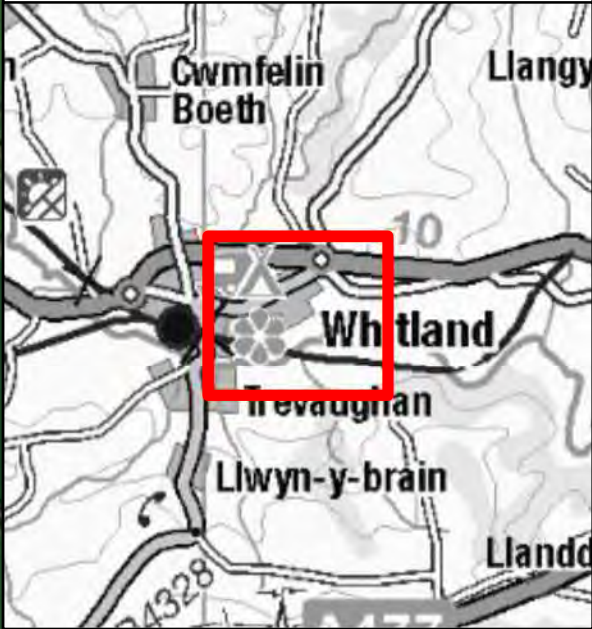
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Title number **P76**
Ordnance Survey map reference **SN2116NW**
Scale **1:2500**
Administrative area **Carmarthenshire / Sir
Gaerfyrddin**





Key
 Red Line Boundary

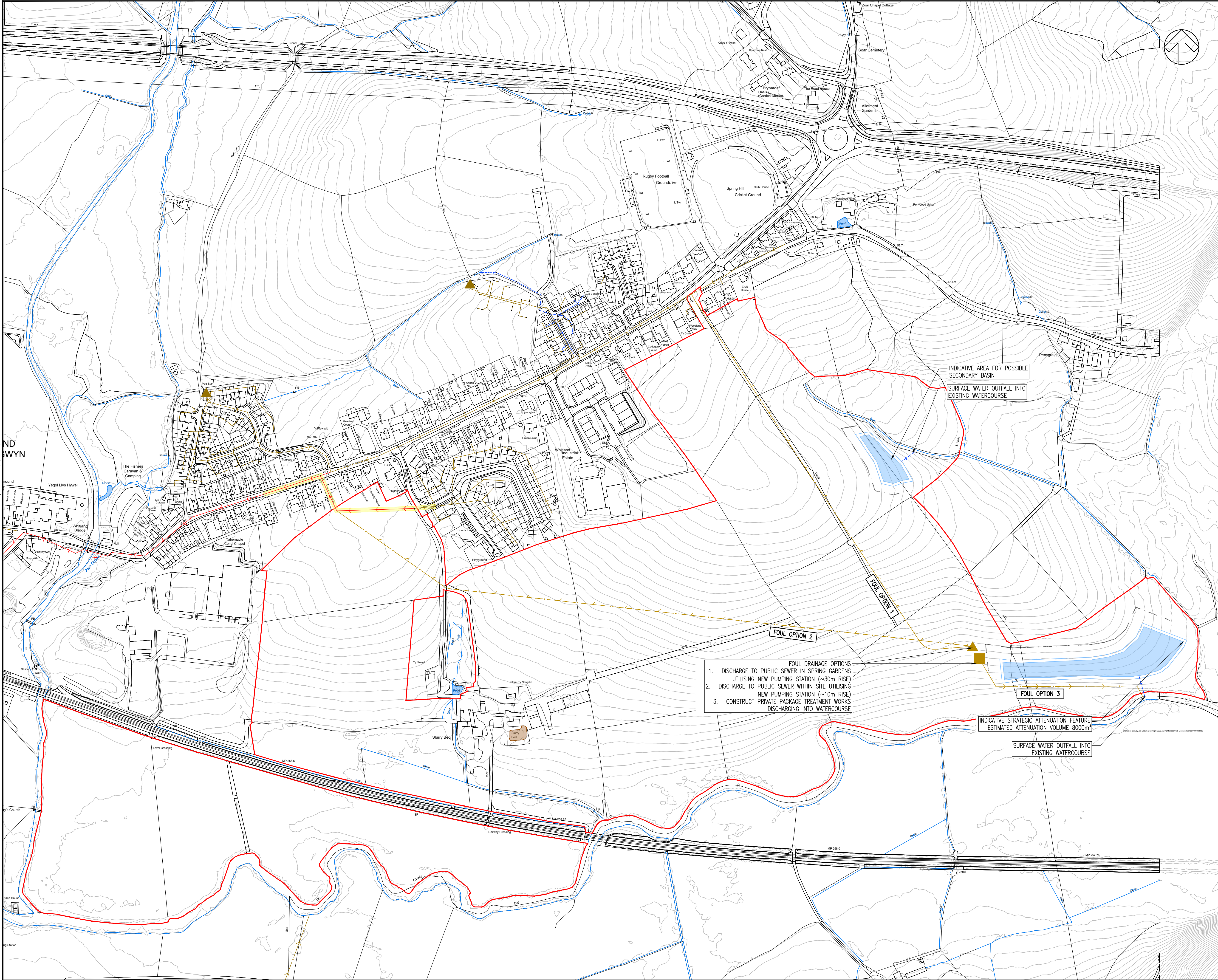


Client: Hywel Dda University Health Board			
Project: Site C - Technical Due Dilligence Appraisal			
Title: Site C Site Location Plan			
Date:	09/05/2022	Scale:	6,000 @ A3
Drawn:	PB	Checked	CLH
		Approved	WB
Drawing No: 2424-WSP-XX-SC-DR-EN-0027-P01_ Site Location			

Appendix B

DRAINAGE





DO NOT SCALE

LEGEND

SITE BOUNDARY

EXISTING FOUL SEWER

EXISTING FOUL RISING MAIN

EXISTING FOUL PUMPING STATION

EXISTING COMBINED SEWER

EXISTING STORM SEWER

ASSUMED EASEMENT

EXISTING WATERCOURSE

EXISTING WATER BODY

PROPOSED STRATEGIC ATTENUATION BASIN

INDICATIVE EARTHWORKS EXTENT

PROPOSED FOUL SEWER

PROPOSED FOUL RISING MAIN

PROPOSED FOUL PUMPING STATION

PROPOSED FOUL PACKAGE TREATMENT WORKS

PROPOSED SURFACE WATER OUTFALL

NOTES

1. SURFACE WATER ATTENUATION FEATURES HAVE BEEN SIZED USING MICRODRAINAGE'S QUICK STORAGE ESTIMATE METHOD, ASSUMING A SINGLE INFLOW AREA AND POINT OF DISCHARGE

2. ATTENUATION REQUIREMENTS ARE SUBJECT TO MASTERPLANNING AND REFINEMENT INTO DRAINAGE CATCHMENTS

3. REQUIRED ATTENUATION VOLUME HAS BEEN SIZED BASED ON A DEVELOPED AREA OF 35 ACRES, WITH A PERCENTAGE OF 60% OF THE DEVELOPED AREA BEING IMPERVIOUS AND FORMALLY DRAINED

4. ATTENUATION FEATURES ARE ASSUMED TO HAVE THE FOLLOWING DESIGN CRITERIA

4.1. 1m ATTENUATION WATER STORAGE DEPTH

4.2. 300mm FREEBOARD

4.3. 1:3 SIDE SLOPES

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

DRAWING STATUS: S0 - WORK IN PROGRESS

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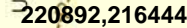
SITE/PROJECT: HYWEL DDA CRITICAL CARE CENTRE SITE APPRAISAL

TITLE: SITE C
INDICATIVE DRAINAGE STRATEGY

SCALE @ A1: 1:2500	CHECKED: ARW	APPROVED: ARW
PROJECT NO: 70092424	DESIGNED: DJM	DRAWN: DJM DATE: April 22
DRAWING NO: 2424-WSP-XX-SC-DR-CV-0500		REV: P01

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File name: \\UK-WSP-GROUP\COM\CENTRAL DATA\PROJECTS\70092424-HYWEL DDA CRITICAL CARE CENTRE SITE APPRAISAL\S03-WP-CV\01-ENGINEERING\01-DRAWINGS\2424-WSP-XX-SC-DR-CV-0500 - SITE C OUTFALL DRAINAGE STRATEGY.DWG, printed on 27 April 2022 11:30:44, by: Murchio, Daniel



Scale: 1:3750


















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

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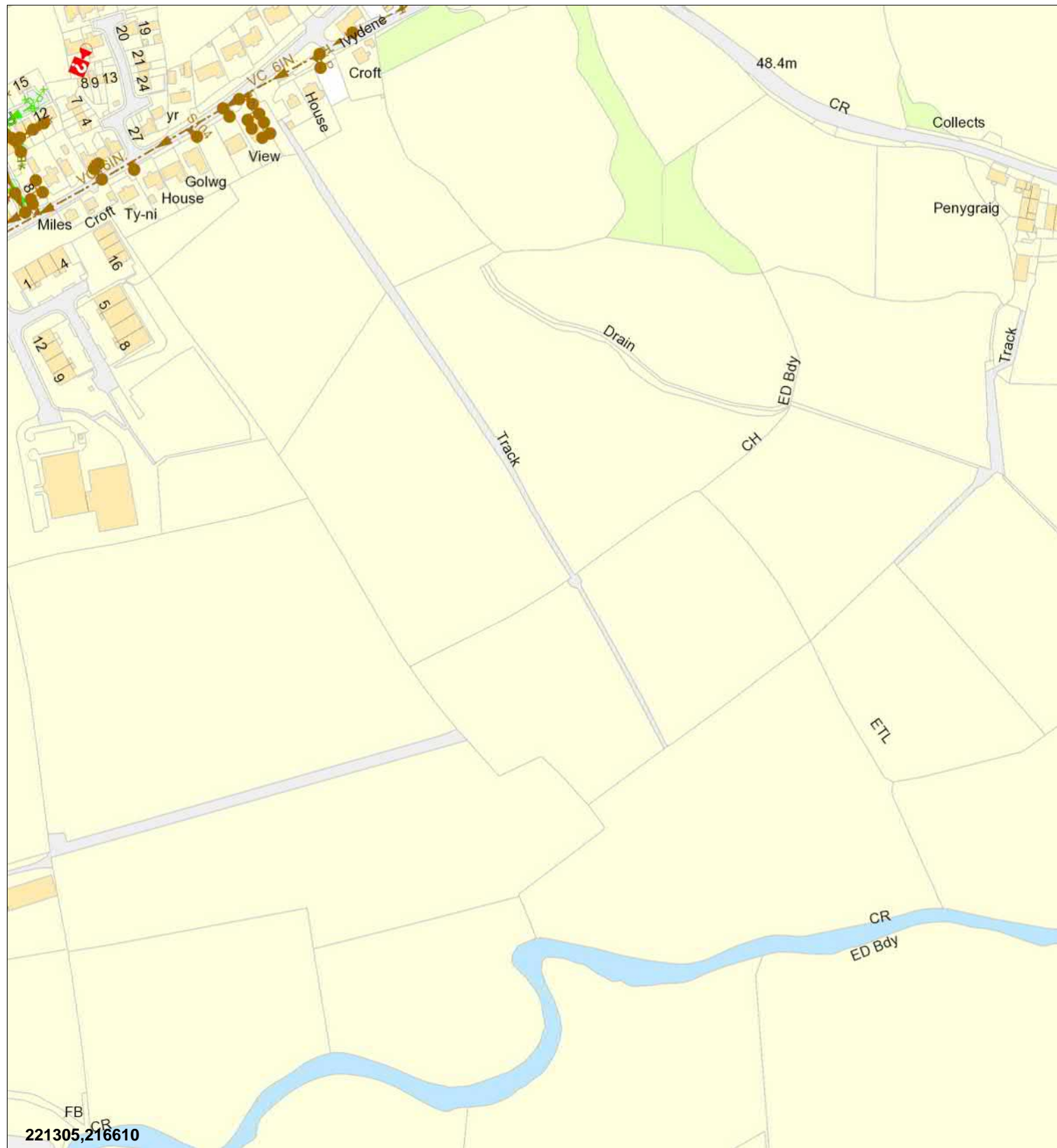
EXACT LOCATION OF
ALL APPARATUS TO
BE DETERMINED ON
SITE

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 Gravity Sewer

- | | | | |
|---|----------------------------|---|-------------------------|
|  | Sluice Valve |  | Rising Main |
|  | Air Valve SINGLE |  | Outfall |
|  | Tap |  | Pumping Station |
|  | Pressure Reducing Valve |  | Lamp pole |
|  | Meter |  | Combined Sewer Overflow |
|  | Bulk Meter |  | Special Purpose Chamber |
|  | Fire Hydrant |  | Treatment Works |
|  | Cap |  | Private Sewer Transfer |
|  | Non Dwr Cymru |  | Lateral Drain |
|  | Existing Distribution Main | | |
|  | Inspection Chamber | | |
- NB: Sewer symbol colour indicates the sewer type
 RED - Combined
 GREEN - Surface Water
 BROWN - Foul





221305,216610

Site C East

Scale: 1:3750

06/06/2022



LEGEND

	Sluice Valve		Gravity Sewer
	Air Valve SINGLE		Rising Main
	Tap		Outfall
	Pressure Reducing Valve		Pumping Station
	Meter		Lamphole
	Bulk Meter		Combined Sewer Overflow
	Fire Hydrant		Special Purpose Chamber
	Cap		Treatment Works
	Non Dwr Cymru		Private Sewer Transfer
	Existing Distribution Main		Lateral Drain
	Inspection Chamber		

RED - Combined
GREEN - Surface Water
BROWN - Foul

EXACT LOCATION OF ALL APPARATUS TO BE DETERMINED ON SITE

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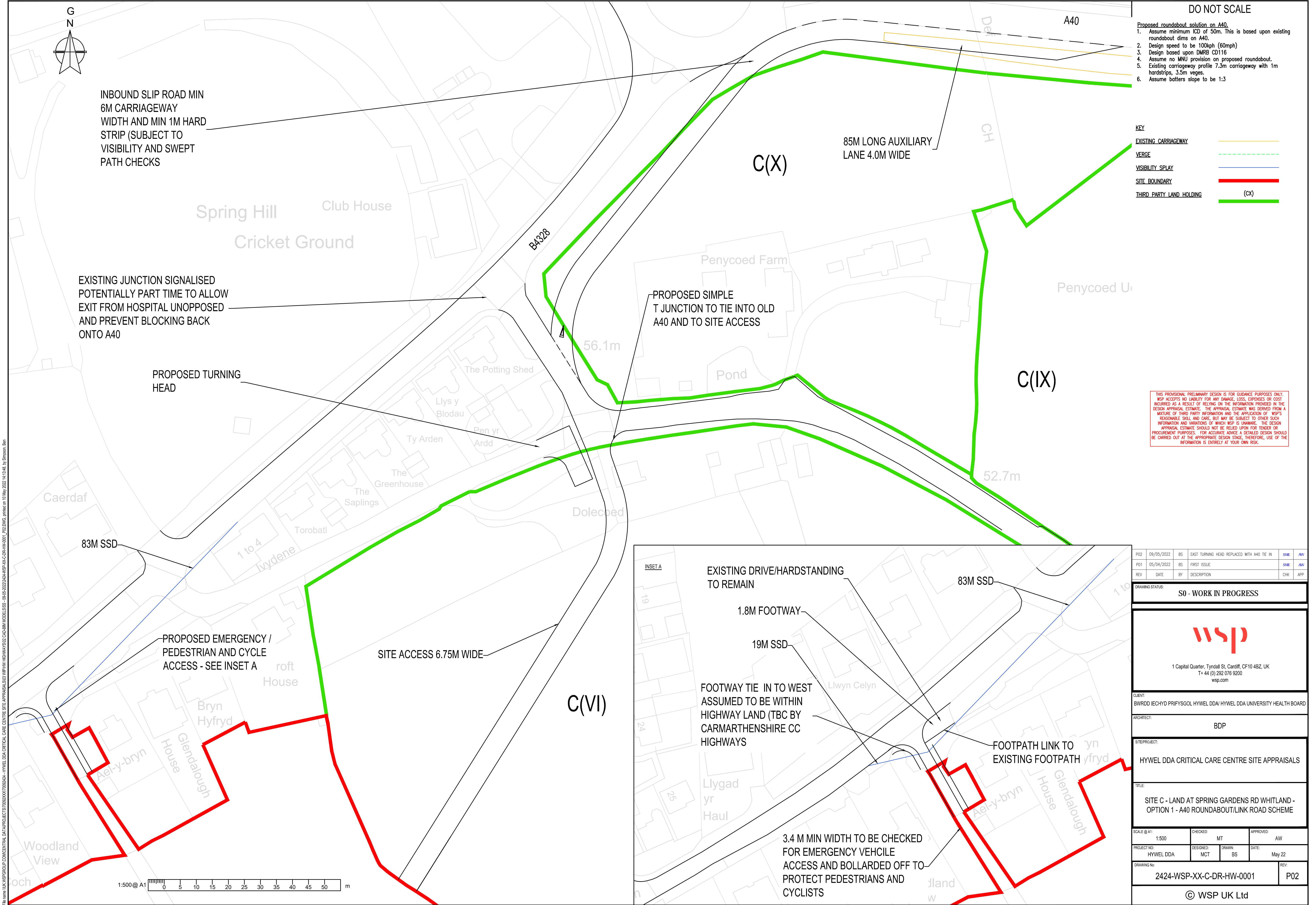
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Appendix C

SITE ACCESS





DO NOT SCALE

Proposed roundabout solution on A40.

1. Assume minimum ICD of 50m. This is based upon existing roundabout dims on A40.
2. Design speed to be 100kph (60mph)
3. Design based upon DMRB CD116
4. Assume no MNU provision on proposed roundabout.
5. Existing carriageway profile 7.3m carriageway with 1m hardstrips, 3.5m verges.
6. Assume batters slope to be 1:3

KEY	
EXISTING CARRIAGEWAY	<div></div>
VERGE	<div></div>
VISIBILITY SPLAY	<div></div>
SITE BOUNDARY	<div></div>
THIRD PARTY LAND HOLDING	(CX)

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P01	05/04/2022	BS	FIRST ISSUE	SWE	AW
REV	DATE	BY	DESCRIPTION	CHK	APP

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ARCHITECT: BDP

SITE/PROJECT: HYWEL DDA CRITICAL CARE CENTRE SITE APPRAISALS

TITLE: SITE C - LAND AT SPRING GARDENS RD WHITLAND - OPTION 1 - A40 ROUNDABOUT/LINK ROAD SCHEME

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

DRAWING NO:	2424-WSP-XX-C-DR-HW-0001	REV:	P02
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Appendix D

ECOLOGY





Hywel Dda University Health Board

URGENT AND PLANNED CARE HOSPITAL SITE APPRAISAL

**SITE C – PRELIMINARY ECOLOGICAL
APPRAISAL**





Hywel Dda University Health Board

URGENT AND PLANNED CARE HOSPITAL SITE APPRAISAL

SITE C – 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 C – PRELIMINARY ECOLOGICAL APPRAISAL

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Remarks	Issue			
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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\2424-WSP- ZZ-RP-EC-0001-P01_PEA Report.docx"			

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PLANT SPECIES RECORDED

APPENDIX D

TARGET NOTES

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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 m² and 513,700 m², and was primarily used as farmland, either for growing crops or for grazing. This report will focus on Site C (centroid grid reference (SN 21126 16525). 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, March and May 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 C: Limestone Coast of South West Wales/Arfor dir Calchfaen de Orllewin Cymru Special Area of Conservation (SAC); and Pembrokeshire Bat Sites and Bosherton Lakes/Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherton SAC. Due to the distance between the designated sites and the Site under consideration for the Proposed Development, it was considered that the qualifying features of these SACs are unlikely to be impacted by the Proposed Development. No statutory nature conservation sites of international importance (for which bats were not a qualifying feature) were identified within 2 km of Site C.

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

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

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

The visit to the Site identified habitats that are suitable for bats, badger, hedgehog *Erinaceus europaeus*, birds, water vole *Arvicola amphibius*, 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, emergence/re-entry survey of buildings with bat roosting suitability;
- Dormouse surveys to determine the presence/likely absence of dormouse within Site C;
- 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.

2. INTRODUCTION

2.1. PROJECT BACKGROUND

- 2.1.1. 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 C. Site C is hereafter referred to as the 'Site.'
- 2.1.2. The PEA covered the entire area of the Site and included a preliminary ground level roost assessment of trees and buildings for bats.
- 2.1.3. It is understood that HDUHB is proposing the construction of a new medical hospital on one of the Sites listed above. The PEAs carried out are in support of a scope of work being undertaken by WSP that will highlight the key environmental and engineering risks associated with each Site. As such, high level risks and potential development opportunities/constraints can be highlighted; in this report, these will be in reference to ecology.

2.2. SITE BACKGROUND

- 2.2.1. Site C lies to the east of Whitland, to the south of the B4328 road, shown as a RLB in Figure 1 (centroid grid reference SN 21126 16525). It is bordered to the south by the River Taf, and a railway line which runs through the southern extent of Site C. It is primarily used for sheep grazing, and covers an area of approximately 513,700 m². There are eight buildings within Site C.

2.3. SCOPE OF REPORT

- 2.3.1. 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.

2.4. RELEVANT LEGISLATION AND POLICY

- 2.4.1. 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.

3. METHODS

3.1. OVERVIEW

- 3.1.1. 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).
- 3.1.2. This PEA is based on the following data sources:
- An ecological desk study;
 - A habitat survey; and
 - A protected/notable species assessment.

3.2. DESK STUDY

- 3.2.1. 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 C was conducted around grid reference SN 20821 16855. This approach is consistent with current good practice guidance published by the CIEEM, 2017a and 2017b. To provide the baseline data for the ecological desk study, the following information was requested from West Wales Biodiversity Information Centre (WWBIC):
- Records of legally protected and notable species within 2 km of the Site;
 - Bat records within a 5 km radius of the Site;
 - Records of non-statutory sites designated for nature conservation value within 2 km of the Site;
 - Information regarding Priority Habitats² within 2 km of the Site; and
 - Woodland listed on the Ancient Woodland Inventory³ within 2 km of the Site.
- 3.2.2. Freely downloadable datasets (available from Natural Resources Wales (NRW)) were consulted for information regarding the presence of statutory designated habitats⁴ 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.

- 3.2.3. 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).
- 3.2.4. The findings of the desk study have been incorporated within Section 3 and Appendix B of this report and are shown on Figures 6 to 15.
- 3.2.5. The ecological desk study was carried out by an ecologist who is an associate member of CIEEM and has completed numerous ecological desk studies.

3.3. HABITAT SURVEY

- 3.3.1. A habitat survey of the Site was carried out in March and May 2022. The survey 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.
- 3.3.2. 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).
- 3.3.3. A list of plant species was compiled (Appendix C), with relative plant species abundance estimated using the DAFOR scale⁵. 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.
- 3.3.4. 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 0.01 ha, which was selected as a suitable scale to sample the range of different vegetation types present.
- 3.3.5. 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.

- 3.3.6. 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.
- 3.3.7. Data collected as part of this habitat survey is suitable for use in retrospective biodiversity unit calculations, if required.

3.4. PRELIMINARY GROUND LEVEL ROOST ASSESSMENT OF TREES AND BUILDINGS FOR BATS

- 3.4.1. All trees and buildings within the Site were inspected from the ground to enable an assessment of their suitability for supporting bat roosts.
- 3.4.2. 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.
- 3.4.3. 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	<p>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.</p> <p>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.</p>
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.
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3.5. PROTECTED SPECIES ASSESSMENT

- 3.5.1. 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).

3.6. NOTES AND LIMITATIONS

- 3.6.1. 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 eastern field to the south of the railway was not accessed during the habitat survey due to the presence of cattle with calves. Aerial imagery was used to identify which habitats were present in these areas. It is, therefore, considered that the habitat types were accurately identified. However, the trees along the River Taf to the south of Site C could not be fully inspected for potential roost features (PRFs) for bats.
 - The habitat survey was carried out over the period of a single day at the Site; as such only a selection of all species that occur within the Site will have been recorded. However, through use of desk study information to supplement site survey data, it is considered that an accurate assessment of the potential for the Site to support protected species or those of conservation concern was possible.

- The UKHab habitat map (Figure 4) has been reproduced from field notes and plans. Whilst this provides a sufficient level of detail to fulfil the requirements of a PEA, the maps are not intended to provide exact locations of key habitats.

4. RESULTS

4.1. DESIGNATED SITES

STATUTORY SITES

- 4.1.1. The desk study identified four statutory designated sites of international importance within 2 km of the centroid used for the desk study, or designated SACs for which bats are a reason for designation within 30 km of the centroid used for the desk study. . No statutory designated sites of national importance within 2 km of the centroid used for the desk study were identified. A description of the sites is detailed in Table 2 below and shown in Figure 2.

Table 2 - Statutory designated sites of international importance

Site Name	Designation	Size (ha)	Approximate distance and orientation from Site C	Description
Limestone Coast of South West Wales/Arfordir Calchfaen de Orllewin Cymru	SAC	1583.86	20.0 km south-west	Hard calcareous cliffs with a sequence of important species-rich plant communities. Sand dunes with extensive stands of short, species-rich fixed dune grassland. Primarily selected as an SAC due to the presence of greater horseshoe bat <i>Rhinolophus ferrumequinum</i> and early gentian <i>Gentianella anglica</i> .
Pembrokeshire Bat Sites and Bosherton Lakes/Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherton	SAC	121.26	20.3 km south-west	A shallow marl lake system created by the damming of a limestone river valley. The lakes are isolated from the sea by a small sand dune ridge. Selected primarily due to the presence of greater horseshoe bat, with lesser horseshoe bat <i>Rhinolophus hipposideros</i> and otter <i>Lutra lutra</i> as qualifying features.

NON-STATUTORY SITES

- 4.1.2. The desk study identified one non-statutory nature conservation site within 2 km of the centroid used for the desk study. A description of these sites is detailed in Table 3 below and shown in Figure 3.

Table 3 - Non-statutory designated sites

Site Name	Designation	Size (m ²)	Approximate distance and orientation from Site C	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

- 4.1.3. Site C returned records of 41 areas of ancient woodland, including semi-natural, restored, and Plantation on Ancient Woodland (PAWS) sites, shown in Figure 3. It is worth noting that PAWS are also NRW Priority Areas. The closest area of ancient woodland is 1.07 km north of the desk study centroid, and is a restored ancient woodland site.
- 4.1.4. 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.

4.2. HABITAT SURVEY

OVERVIEW

- 4.2.1. The following account summarises the findings of the habitat surveys. The habitat types are mapped on Figure 4 and listed in Table 4 along with areas in ha (or length for linear features). A description of the dominant and notable species, the composition and management of each habitat is provided below and an indicative species list for the Site is provided in Appendix C. Target notes are provided in Appendix D and photographs in Appendix E. The order of the habitat descriptions below reflects their ordering in the UKHab habitat survey manual and does not reflect habitat importance.
- 4.2.2. Eleven habitat types were identified in Site C. The predominant habitat type was modified grassland; the majority of Site C comprised sheep grazed fields. Internal field boundaries were mainly fences, with hedgerows and lines of trees forming boundaries to the south, north and east of the Site. In the west of Site C was an area of *Holcus-Juncus* neutral grassland. Within the centre of the Site was a built-up area, with multiple buildings used as residential properties and farm outbuildings. To the west of this a stream flowed from north to south through a pond, while another stream was present on the eastern boundary of Site C within dense scrub. To the south of the Site, the River Taf flowed west, with a line of trees on the bank. Site C is divided into a north section and a south section by a railway line.

Table 4 - UKHab habitat Areas of Site C

UKHab Classification Types	Area (ha)	Length (m)	% of Site Area
G3c8 – <i>Holcus-Juncus</i> neutral grassland	2.17	N/A	3.34
G4 – Modified grassland	59.59	N/A	91.65
H3 – Dense scrub	1.41	N/A	2.16
R1 – Standing open water and canals	0.01	N/A	0.01
U1 – Built-up areas and gardens	0.23	N/A	0.36
U1b – Developed land, sealed surface	1.30	N/A	1.99
U1b5 – Buildings	0.31	N/A	0.48

H2a – Hedgerow (priority habitat)	N/A	2391.27	N/A
R1e – Canals or ditch	N/A	3860.53	N/A
U1e – Built linear features	N/A	10998.19	N/A
W1g6 – Line of trees	N/A	2501.49	N/A
TOTAL	65.01	19751.47	100

G3c8 – *Holcus-Juncus* neutral grassland

- 4.2.3. The two fields in the western extent of Site C, separated from the modified grassland field to the north and from each other by a line of trees, both comprised majority *Holcus-Juncus* neutral grassland (Photo 1). Here, the ground appeared to be wet throughout most of the year, with soft rush *Juncus effusus* dominant, and abundant perennial rye-grass *Lolium perenne*. Broad-leaved dock *Rumex obtusifolius*, creeping buttercup *Ranunculus repens* and lesser celandine *Ficaria verna* were all occasional, with rare clover species *Trifolium sp.*, marsh thistle *Cirsium palustre* and meadow buttercup *Ranunculus acris*.

G4 – Modified grassland

- 4.2.4. The majority of Site C comprised modified grassland, with fields which were sheep-grazed (Photo 2). The eastern-most field south of the railway was grazed by cattle at the time of the habitat survey. The modified grassland fields were bordered by a combination of wire fences, hedgerows, lines of trees, and, to the south, the River Taf.
- 4.2.5. The species composition was dominated by perennial rye-grass, with frequent clover species. Chickweed *Stella media* agg., creeping buttercup and Yorkshire-fog *Holcus lanatus* were all occasionally present, with all other species identified being of rare frequency.

H3 – Dense scrub

- 4.2.6. Immediately to the north and south of the ditch which was present towards the south of Site C and flowed directly into the River Taf was an area of dense scrub, dominated by bramble *Rubus fruticosus* agg. (Photo 3). This covered the banks of the ditch, along with frequent soft rush and occasional hawthorn *Crataegus monogyna*, navelwort *Umbilicus rupestris* and nettle *Urtica dioica*. Hard fern *Blechnum spicant*, hemlock water-dropwort *Oenanthe crocata* and ivy *Hedera helix* were rarely present. A second area of dense scrub was present to the south of the railway, extending into the corner of the field east of the ditch.

R1 – Standing open water and canals

- 4.2.7. A small pond was identified immediately to the west of the buildings in the centre of Site C (TN1, Photo 5). This pond had no vegetation cover and was contained by steep brick walls.
- 4.2.8. A second small pond was identified within fields to the west of the buildings. This pond had limited vegetation cover with a willow *Salix sp.* tree present within the pond, and was shaded by trees adjacent to the residential property. A stream provided an inflow and outflow.

U1 – Built-up areas and gardens

- 4.2.9. To the north of the area of buildings was an area of gardens belonging to the residential properties. There were no plant species identified within these areas due to access limitations.

U1b – Developed land, sealed surface

- 4.2.10. The wider area around the built-up area within the centre of Site C, as well as tracks leading to the north, south and east of the built-up area, were identified as developed land areas with a sealed surface. Concrete roads bordered by hedgerows and lines of trees on banks were included here.

U1b5 – Buildings

- 4.2.11. Eight buildings were identified on Site C, all of which were within the centre of the Site and have a track leading north to the B4328 road. These buildings comprise a mix of residential properties, storage sheds and farm buildings. At the time of the survey, goats and cows were present in several of the farm buildings.

W1g6 – Line of trees

- 4.2.12. Lines of trees formed field boundaries at multiple fields across Site C: to the north of and between the two most south-westerly fields; to the north of the central northern field; to the south of the track leading eastwards away from the buildings, where the trees were on a raised earth bank; to the west of the western-most field present within Site C; and to the south of the Site to form a border with the River Taf (Photo 4).
- 4.2.13. Ash *Fraxinus excelsior* and oak *Quercus spp.* were frequent, with blackthorn *Prunus spinosa*, ivy, willow, alder *Alnus glutinosa* and hawthorn being rare. Alder was, however, locally common along the bank of the River Taf.

H2a – Hedgerow (priority habitat)

- 4.2.14. A number of modified grassland fields, particularly in the eastern end of Site C, were bordered by hedgerows. The majority of these were flailed hedgerows, and some also had trees within them. In the northern extent of the Site, the hedgerows were on raised earth banks.
- 4.2.15. Hawthorn dominated the species composition of the hedgerows, with other woody species including occasional bramble, hazel *Corylus avellana*, ivy and oak, and rare beech *Fagus sylvatica*, holly *Ilex aquifolium*, pine species *Pinus spp.*, sycamore *Acer pseudoplatanus* and yew *Taxus baccata*. The understorey comprised occasional cleavers *Galium aparine*, hart's-tongue *Asplenium scolopendrium*, herb-robert *Geranium robertianum*, lesser celandine and nettle, and rare honeysuckle *Lonicera periclymenum*, meadowsweet *Filipendula ulmaria*, opposite-leaved golden-saxifrage *Chrysosplenium oppositifolium*, polypody *Polypodium vulgare agg.*, primrose *Primula vulgaris* and wood avens *Geum urbanum*.

U1e – Built linear features

- 4.2.16. The majority of the perimeter of Site C, as well as the distinct modified grassland fields within the Site, were bordered by wire fences with wooden posts.

R1e – Canals or ditch

- 4.2.17. A ditch with flowing water was present flowing within Site C from the north to the south of the Site into the River Taf. The ditch had very limited vegetation throughout most of the flow, and varied from having relatively steep banks with an earth substrate to having barely distinguishable banks and

flowing directly over the field. Throughout, the ditch had a very slow flow of water, which was never more than 15 cm deep.

- 4.2.18. A second ditch was present south of the railway flowing south into the River Taf. The ditch was almost dry with no flow at the time of survey, and less than 1 cm deep. The banks were steep and heavily vegetated, with decreasing vegetation towards the River Taf.

W1gb – Scattered trees

- 4.2.19. To the west of the buildings present within the Site in an area surrounding the ditch was a cluster of scattered semi-mature and mature trees, comprising ash, holly and oak in equal abundance. Scattered trees were also present in the field to the south of the Site bordering the River Taf.

4.3. PRELIMINARY GROUND LEVEL ROOST ASSESSMENT OF TREES AND BUILDINGS FOR BATS

- 4.3.1. 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.
- 4.3.2. Buildings within the Site that were assessed as having bat roost suitability were considered to be of low, moderate, or high bat roost potential, in line with the descriptions in Table 5.
- 4.3.3. The numbers of trees and buildings that were considered to have bat roost suitability within the Site are shown in Table 5, with detailed descriptions of each of the trees and buildings which have bat roost potential in Appendix F.

Table 5 – The number of trees and buildings considered to have bat roost suitability within the Site

Number of trees with bat roost suitability	Number of buildings with bat roost suitability			Relevant Figure
9	8	Low	6	5
		Moderate	1	
		High	1	

- 4.3.4. 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.

4.4. PROTECTED AND NOTABLE SPECIES ASSESSMENT

- 4.4.1. 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.

- 4.4.2. 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

- 4.4.3. The desk study for Site C identified seven records of at least six different bat species within 2 km of the desk study centroid: brown long-eared bat; common pipistrelle; greater horseshoe; noctule; and soprano pipistrelle. The closest of these were for brown long-eared, common pipistrelle, noctule and soprano pipistrelle, all of which were recorded 870 m west of the Site.
- 4.4.4. Nine trees (T1 to T9) and eight buildings (B1 to B8) were identified as providing suitable roosting habitat for bats (Appendix F, Photos 74 to 84).
- 4.4.5. The treelines and hedgerows within the Site, and the River Taf adjacent to the Site, provide suitable foraging and commuting habitats for bats.

BADGER

- 4.4.6. Five records of badger were returned from the desk study for Site C, the closest of which was 785 m north-west of the desk study centroid.
- 4.4.7. During the habitat survey badger prints were identified in mud near to the field boundary on the southern extent of the Site, adjacent to the railway line (TN6, Photo 10). No badger setts were identified within the Site, although suitable badger sett building habitat was identified within the scrub to the east of the Site and within the line of trees to the north of the *Holcus-Juncus* neutral grassland. A rabbit warren was identified adjacent to an area of rabbit droppings; the holes were likely excavated by badger, but no signs of badger were identified (TN9, Photo 23).

HEDGEHOG

- 4.4.8. Five records of hedgehog within 2 km of the Site were returned from the desk study, the closest of which was 285 m south-west of the centroid.
- 4.4.9. The Site provides suitable habitat for foraging and commuting hedgehog, in addition to suitable habitat for resting locations and nesting sites.

WATER VOLE

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

- 4.4.11. There was no suitable potential habitat for water vole within the Site, owing to the fact that the vegetation alongside the ditches present does not provide suitable resting or feeding areas. Similarly, there were no suitable burrowing places within the banks of any waterbodies present within the Site. Therefore, water vole are not considered further in this report.

OTTER

- 4.4.12. Three records of otter were returned from the desk study, the closest of which was 1.6 km north-west of the desk study centroid.
- 4.4.13. Potential habitat for otter was not present within the Site, owing to the fact that there is no suitable holt or natal den habitat recorded within the Site.
- 4.4.14. No evidence of otter was found during the habitat surveys. However, the Site has the potential to host commuting otter along the water bodies within the Site, with moderate suitability for supporting commuting otter within the Site, due to the connectivity of the ditches to the River Taf bordering the southern extent of the Site.

HAZEL DORMOUSE

- 4.4.15. No records of hazel dormouse were identified within 2 km of the desk study centroid.
- 4.4.16. Sub-optimal habitat for dormouse was present within the Site, owing to multiple hedgerows, some of which contain hazel which is a good food source for dormouse. However, there was limited connectivity to suitable habitat for dormouse owing to the presence of the River Taf to the south of the Site creating a dispersal barrier between the Site and suitable patches of woodland to the south, particularly due to the lack of extensive woodland and scrub bordering the railway.

BIRDS

- 4.4.17. The desk study returned 36 records of birds across 18 species from within 2 km of Site C. Of these, four species were listed as Schedule 1 birds under the WCA: Eurasian hoopoe *Upupa epops*, fieldfare *Turdus pilaris*, kingfisher *Alcedo atthis* and red kite *Milvus milvus*.
- 4.4.18. During the habitat survey, 49 individual snipe were observed in the south-western field flying west. Other species observed or heard comprised robin *Erithacus rubecula*, chaffinch *Fringilla coelebs*, rook *Corvus frugilegus*, starling *Sturnus vulgaris*, wren *Troglodytes troglodytes*, pied wagtail *Motacilla alba*, dunnoek *Prunella modularis*, jackdaw *Corvus monedula*, grey wagtail *Motacilla cinerea*, mallard *Anas platyrhynchos*, feral pigeon *Columba livia domestica*, swallow *Hirundo rustica*, willow warbler *Phylloscopus trochilus*, Canada goose *Branta leucopsis*, and wood pigeon *Columba palumbus*. A pellet, most likely from a tawny owl *Strix aluco*, was identified within Site C (TN12, Photo 24). One bird nest was identified (TN14) in an ash on the southern boundary of Site C, and multiple holes along the south bank of the River Taf indicated potential sand martin *Riparia riparia* nests; there was no nesting suitability for Schedule 1 birds identified on Site.

REPTILES

- 4.4.19. There were no records of reptiles within 2 km of Site C.
- 4.4.20. The majority of the Site comprised modified grassland, considered to provide suboptimal habitat for supporting reptiles, although the scrub and hedgerows present all provided optimal habitat. Potential hibernacula identified on Site included a large brash pile on the western side of the most south-

westerly field within the Site (TN3, Photo 7), and two smaller brash and log piles to the west of the buildings in the centre of the Site (TN5, Photo 9).

AMPHIBIANS

- 4.4.21. The desk study returned records of common frog and common toad within 2 km of the desk study centroid, the closest of which was 1.2 km north-east of Site C.
- 4.4.22. A search for waterbodies within 500 m which may provide suitable breeding habitat for GCN identified one pond 140 m north-west of Site C. This Site and the nearby waterbodies are located within Zone C of the GCN HSI and are therefore unsuitable for GCN (French *et al.*, 2014). Therefore, GCN are not considered further in this report.
- 4.4.23. Suitable terrestrial habitat for common amphibians was present within Site C, in particular within the scrub and treelines on field boundaries and in the south-west of the Site. The watercourses were considered to provide suitable habitat for common and widespread amphibians, and the previously identified hibernacula are suitable for amphibians.

INVERTEBRATES

- 4.4.24. One record of an invertebrate was returned from the desk study: a common carder bee *Bombus pascuorum* 2.1 km to the south-west of the desk study centroid.
- 4.4.25. Areas of hedgerow, scrub, trees and modified grassland present across the Site were considered suitable to support mainly common invertebrate species due to the common and widespread nature of the habitats present.

INVASIVE NON-NATIVE PLANT SPECIES

- 4.4.26. Eight species of INNS were returned from the desk study for Site C: a species of cotoneaster *Cotoneaster sp.*; curly waterweed *Lagarosiphon major*; Indian balsam *Impatiens glandulifera*; Japanese knotweed *Reynoutria japonica*; montbretia *Crocasmia x crocosmiiflora*; rhododendron *Rhododendron ponticum*; three-cornered leek *Allium triquetrum*; and variegated yellow archangel *Lamium galeobdolon subsp. argentatum*.
- 4.4.27. Five stands of Indian balsam were identified during the habitat survey – a stand immediately to the south-west of the buildings in an area of disturbed ground (TN2, Photo 6); an area within the south-eastern extent of the Site (TN7); two stands south of the railway (TN10 and TN11); and an extensive stand which extended along the bank of the River Taf south of the railway (TN15, Photo 26). A further stand was identified outside Site C in the field to the west of the Site (TN8, Photo 22).

5. DISCUSSION AND RECOMMENDATIONS

- 5.1.1. 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.

5.2. STATUTORY DESIGNATED SITES

- 5.2.1. 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.
- 5.2.2. The sites of international importance identified in Table 2 are designated for various qualifying features.
- 5.2.3. The site of international importance designated for bats that is closest to Site C is The Limestone Coast of South West Wales/Arfor dir Calchfaen de Orllewin Cymru SAC, 2.0 km south-west of the desk study centroid. Bats are a mobile species, and have Core Sustainance Zones (CSZs), within which a bat roost is significantly influenced by habitat availability and quality. The CSZ is considered to be 3 km for greater horseshoe bats, although Billington and Rawlinson (2006) found that individuals forage up to 10.2 km from the roost. Bontadina *et al.*, (2006) found that lesser horseshoe bats normally forage within 2.5 km of their roosts. Therefore, as the distance between the Site and SACs is further than the CSZ for these species, individual bats that roost within this SAC are unlikely to be impacted by the Proposed Development, and further recommendations relating to these are not required.
- 5.2.4. Therefore, the Proposed Development is not required to be screened by the competent authority (Local Planning Authority) to determine whether significant effects are likely to result if Site C is selected for the Proposed Development, in relation to the relevant sites of international importance.
- 5.2.5. SSSIs are subject to strict protection under the WCA. This requires landowners to maintain these sites in favourable condition and works within these sites are managed by the appropriate national statutory body via the consent process. Certain operations within SSSIs require consent; these are specific to each SSSI.
- 5.2.6. There were no SSSIs identified within 2 km of Site C, and no pathways of likely impacts identified.

5.3. NON-STATUTORY DESIGNATED SITES

- 5.3.1. There was one non-statutory designated site within 2 km of the Site Boundary for Site C: 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.
- 5.3.2. 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).

5.4. HABITATS

- 5.4.1. Within Site C there were three habitats that are listed as Priority Habitats under the provision of the Environment Wales Act (2016). These Priority Habitats are shown in Table 6.

Table 6 – Priority Habitats within the Site

Priority Habitats	Habitats
Lowland meadows	Neutral grassland
Hedgerows	Boundary and linear features
Rivers and streams	Rivers

- 5.4.2. 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.
- 5.4.3. 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.
- 5.4.4. 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).

5.5. PROTECTED AND NOTABLE SPECIES

- 5.5.1. 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

- 5.5.2. All species of bats recorded within the UK are protected from killing, injury and disturbance⁶ 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.
- 5.5.3. 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.
- 5.5.4. 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.
- 5.5.5. Therefore, further surveys are recommended to assess presence or likely absence of bats within the trees and buildings within the Site. Activity surveys are also recommended to enable the identification of bat species using the Site and determine levels of activity. Details of survey requirements are provided in Section 4.6.
- 5.5.6. It was not possible to access the south-eastern field within Site C due to the presence of cattle with calves. Therefore, a preliminary ground level tree roost assessment for bats (GLTA) is recommended within this area in order to determine the presence of PRFs within the trees lining the north bank of the River Taf.

BADGER

- 5.5.7. 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.
- 5.5.8. It is recommended that a pre-works check at the Site no more than two weeks prior to any works should be carried out with an ecologist present to identify any newly excavated badger setts. If appropriate, the construction works should avoid any potential badger setts through the use of exclusion zones. If disturbance to/destruction of setts cannot be avoided, then they must be excluded and closed under licence and subject to seasonal constraints. In this instance further surveys, namely the installation of camera traps, would be required to characterise the setts on Site and, where access is possible, in the wider area. The requirement for the pre-construction check would be detailed in a Construction Environment Management Plan (CEMP).

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.

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

HEDGEHOG

- 5.5.10. 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.
- 5.5.11. 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.
- 5.5.12. 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

- 5.5.13. Hazel dormouse is protected from killing, injury and disturbance⁷ 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.
- 5.5.14. 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.
- 5.5.15. At Site C, 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.

OTTER

- 5.5.16. The otter is protected from killing, injury and disturbance⁸ 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

⁷ Disturbance is defined within the Habitats Regulations as that which is likely to impair a species ability to survive, breed or reproduce, hibernate or migrate or to significantly affect the local distribution or abundance of the species.

⁸ Disturbance is defined within the Habitats Regulations as that which is likely to impair a species ability to survive, breed or reproduce, hibernate or migrate or to significantly affect the local distribution or abundance of the species.

obstruction of access to these. Activities that would otherwise constitute an offence under this legislation may be licensed by NRW for certain purposes.

- 5.5.17. 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.
- 5.5.18. There is no suitable habitat for sheltering or resting otters or for otter holts within Site C 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

- 5.5.19. 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.
- 5.5.20. 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.
- 5.5.21. 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.
- 5.5.22. 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

- 5.5.23. 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.
- 5.5.24. 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.
- 5.5.25. 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.
- 5.5.26. 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. Hibernacula present at Site C are not to be removed during the hibernation season (generally considered to be October to March).

AMPHIBIANS

- 5.5.27. 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.
- 5.5.28. Therefore, due to the suitable terrestrial habitat for common amphibians within the Site, work should proceed under a PMoW and ECoW.

INVERTEBRATES

- 5.5.29. Common and widespread habitats within the Site (grassland, hedgerows and scrub) were considered suitable to support mainly common invertebrate species. The presence of B-Lines incorporating the Site also highlights 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.
- 5.5.30. 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

- 5.5.31. 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.
- 5.5.32. Five stands of Indian balsam were identified within Site C. Mitigation measures to prevent the spread of INNS are proposed in Section 4.6.

5.6. FURTHER SURVEY REQUIREMENTS

- 5.6.1. Potential ecological constraints for which further surveys are required to ensure legal and planning policy compliance are listed in Section 4.6.

Table 7 - Key Ecological Constraints and Further Survey Requirements

Ecological Receptor	Potential Constraints	Further Survey Requirements	Seasonal Constraints
Non-Statutory Designated Sites	The B-Line non-statutory designated site in which Site C 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	<p>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.</p> <p>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.</p> <p>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.</p> <p>Priority Habitats loss to be replaced on a 2:1 ratio where possible, with a minimum ratio of 1:1.</p>	N/A
Light sensitive species including bats and otter	Potential lighting of habitats of high value to nocturnal species	<p>Bat emergence/re-entry and activity surveys as detailed below.</p> <p>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.</p>	Seasonal constraints on bat emergence/re-entry and activity surveys as detailed below.

Ecological Receptor	Potential Constraints	Further Survey Requirements	Seasonal Constraints
		Lighting used for construction must be switched-off when not in use and positioned so as not to spill on to adjacent land or retained vegetation within the Site.	
Bats	<p>Demolition of buildings and clearance of trees, resulting in the loss of roosts.</p> <p>Loss of potential commuting and foraging habitat</p>	<p>Presence/Absence Surveys:</p> <p>Emergence/re-entry surveys on buildings with suitability to support roosting bats. In accordance with best practice guidelines, three emergence/re-entry surveys required on the buildings with high bat roost potential, two on the buildings with moderate bat roost, and one on the buildings which had low bat roost potential.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>The trees in the south-east field of Site C should undergo a GLTA to determine the presence of PRFs and/or signs of bats.</p>	<p>Presence/Absence Surveys:</p> <p>May – September inclusive, with at least one survey to be completed May – August.</p> <p>Survey visits to be spread equally across the season where possible, or a minimum of two weeks apart.</p> <p>Bat Activity Surveys:</p> <p>Bat activity and static detector surveys are required to be undertaken once a month during the period April to October.</p>

Ecological Receptor	Potential Constraints	Further Survey Requirements	Seasonal Constraints
Badger	Disturbance and/or destruction of badger setts through habitat clearance and construction works	<p>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).</p> <p>Avoidance of potential and identified setts by setting up exclusion zones.</p> <p>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.</p>	<p>Further badger surveys can be undertaken at any time of year.</p> <p>Licences to exclude and close setts are only issued between 1 July and 30 November.</p>
Hedgehog	Killing/injury of hedgehog through vegetation clearance/construction works.	<p>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.</p> <p>Specific mitigation measures will require safeguarding by the implementation of an EcMP throughout the construction of the Proposed Development</p>	N/A
Hazel dormouse	Potential destruction of nests and habitat through vegetation clearance	<p>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. Presence/absence surveys for dormouse are recommended through the use of nest tubes.</p> <p>Retain and protect hedgerow habitat, where possible.</p> <p>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.</p>	<p>Dormouse tubes should be placed at approximately 20 m intervals in suitable dormouse habitat, and deployed from March to November, with regular checks to achieve a search effort score of at least 20 according</p>

Ecological Receptor	Potential Constraints	Further Survey Requirements	Seasonal Constraints
			to the Dormouse Conservation Handbook (English Nature, 2006).
Birds	<p>Loss or disturbance of potential breeding, commuting and foraging bird habitat.</p> <p>Destruction of nests through vegetation clearance.</p>	<p>Avoidance of vegetation clearance during the breeding bird season.</p> <p>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.</p> <p>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.</p>	The breeding bird season is considered to be March to September inclusive.
Reptiles/Amphibians	Killing/injury of reptiles/amphibians through vegetation clearance/construction works	Due to the small area of good quality habitat that is to be cleared, work can proceed under a PMoW and ECoW. Maintain vegetation within the construction footprint at a low height during the active reptile season. No hibernacula are to be removed during the hibernation season.	The reptile active season is considered to be from late March to September inclusive.
INNS	Spread of INNS	<p>Avoidance of area where INNS are present.</p> <p>If unable to avoid area where INNS present, then INNS should be treated and removed by suitably certified contractors.</p> <p>A management plan should be written and implemented on Site, including biosecurity measures to control the spread of INNS.</p> <p>Specific mitigation measures will require safeguarding by the implementation of an EcMP throughout the Proposed Development.</p>	N/A

5.7. PRELIMINARY AVOIDANCE, MITIGATION AND COMPENSATION MEASURES

- 5.7.1. To enable compliance with relevant legislation and planning policy, as described above within Sections 4.2 to 4.5 the following avoidance, mitigation and compensation measures should be designed into the Proposed Development. These will be refined following completion of further survey recommended in Table 7 above.
- Prior to any vegetation clearance and construction work being undertaken, a detailed check for INNS should be conducted. This should be completed at a suitable time of the year when the plants are actively growing (i.e., April – September). Measures to control the spread of INNS should be detailed in a Method Statement (MS), as required.
 - It is recommended that the smallest construction footprint possible is achieved through sensitive scheme design, with important habitats retained as far as possible. Any loss of Priority Habitats should be replaced at a ratio of 2:1 where possible, and no less than 1:1.
 - Vegetation clearance should be carried out under a PMoW with an ECoW present. Information to prevent impacts on the protected species discussed in this report should be documented in a PMoW document.
 - Vegetation clearance should be carried out outside of the breeding bird season (March-September). Should this not be possible, it will be necessary for an ecological check for the presence of breeding birds. If an active nest is found, clearance will need to stop and a suitably sized buffer of retained vegetation, as determined by the onsite ecologist, will be required until the young have fledged.
 - Should badger setts be recorded in proximity to the Site, exclusion zones should be set up to avoid damaging setts and ensure disturbance is minimised. If impacts on a badger sett cannot be avoided and it must unavoidably be lost, the badger sett would need to be closed under licence from NRW. Depending on the type of sett present; an artificial sett may need to be created to compensate for the loss of the sett.
 - Grassland and hedgerows should be replaced with a higher ecological value (i.e., species-rich instead of species-poor) replacement habitat within the Site to support the Proposed Development achieving a net benefit for biodiversity. If reinstatement or habitat creation cannot be achieved within the Site, compensatory habitat creation should be sought off-Site.
 - An assessment of habitats within and surrounding the Site will inform the identification of habitats of value to nocturnal species, thereby allowing for the implementation of sensitive lighting during construction and operation of the Proposed Development.

ENVIRONMENTAL BEST PRACTICE

- 5.7.2. 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.

5.8. ECOLOGICAL ENHANCEMENT OPPORTUNITIES

- 5.8.1. 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.'*
- 5.8.2. 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.'*
- 5.8.3. 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.

6. CONCLUSIONS

- 6.1.1. Site C comprised fields (majority modified grassland) bordered by wire fences and hedges, some on earth banks, with a network of ditches. It comprised areas that were built-up, comprising buildings, sealed surfaces, and other developed land, as well as lines of trees, scattered trees and dense scrub.
- 6.1.2. Site C also comprised an area of standing open water, with two discreet ponds amongst and directly west of the buildings in the centre of the Site. It had an area where rushes dominate in *Holcus-Juncus* neutral grassland.
- 6.1.3. 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 Bosherton Lakes/Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherton SAC. The distances between the designated sites and Site C are larger than the CSZ for the bat species for which the sites are designated. Therefore, it can be assumed that the Proposed Development will not have a negative impact on the bat populations roosting within these SACs. No statutory nature conservation sites of international importance within 2 km of the centroids used for the desk study were identified.
- 6.1.4. No statutory designated sites of national importance were identified within 2 km of the Site which may be impacted by the Proposed Development.
- 6.1.5. 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.
- 6.1.6. Further surveys are required to determine the presence/likely absence of bats at the Site, involving up to three emergence/re-entry surveys on buildings with suitability to support roosting bats from May to September, and up to three close inspections of the trees with suitability to support roosting bats. Bat activity surveys should be undertaken using static bat detectors to enable identification of species using the Site and an index of bat activity should be undertaken at the Site. These will be achieved by using static bat detectors positioned within the habitat and serviced monthly between April and October.
- 6.1.7. Further surveys are also required to determine the presence/likely absence of hazel dormouse at Site C. 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.
- 6.1.8. 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 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.
- 6.1.9. 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).

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

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FIGURES

Figure 1 - Site C Location Plan

Figure 2 - Statutory Designated Sites with 10 km of Site C, or 30 km if bats is a qualifying feature

Figure 3 - Non-Statutory Designated Sites and Ancient Woodland Inventory Woodlands within 2 km of Site C

Figure 4 – Site C UKHab Survey Map

Figure 5 – Site C Target Notes and Bat Ground Roost Assessment Results



N

Key

Red Line Boundary

Not Accessed

Crymych

Cynwyl Elfed

Carmarth

St Clears

Pendine

Carmarthen Bay

Burn

A478

A40

A471

A4066

139

739

WSP

Client:

HYWEL DDA UNIVERSITY HEALTH BOARD

Project:

URGENT AND PLANNED CARE HOSPITAL - SITE C PRELIMINARY ECOLOGICAL APPRAISAL

Title:

LOCATION PLAN

Drawing No:

FIGURE 1

Date:

08/06/2022

Scale:

400,000 @ A3

Drawn:

ES

Checked:

AD

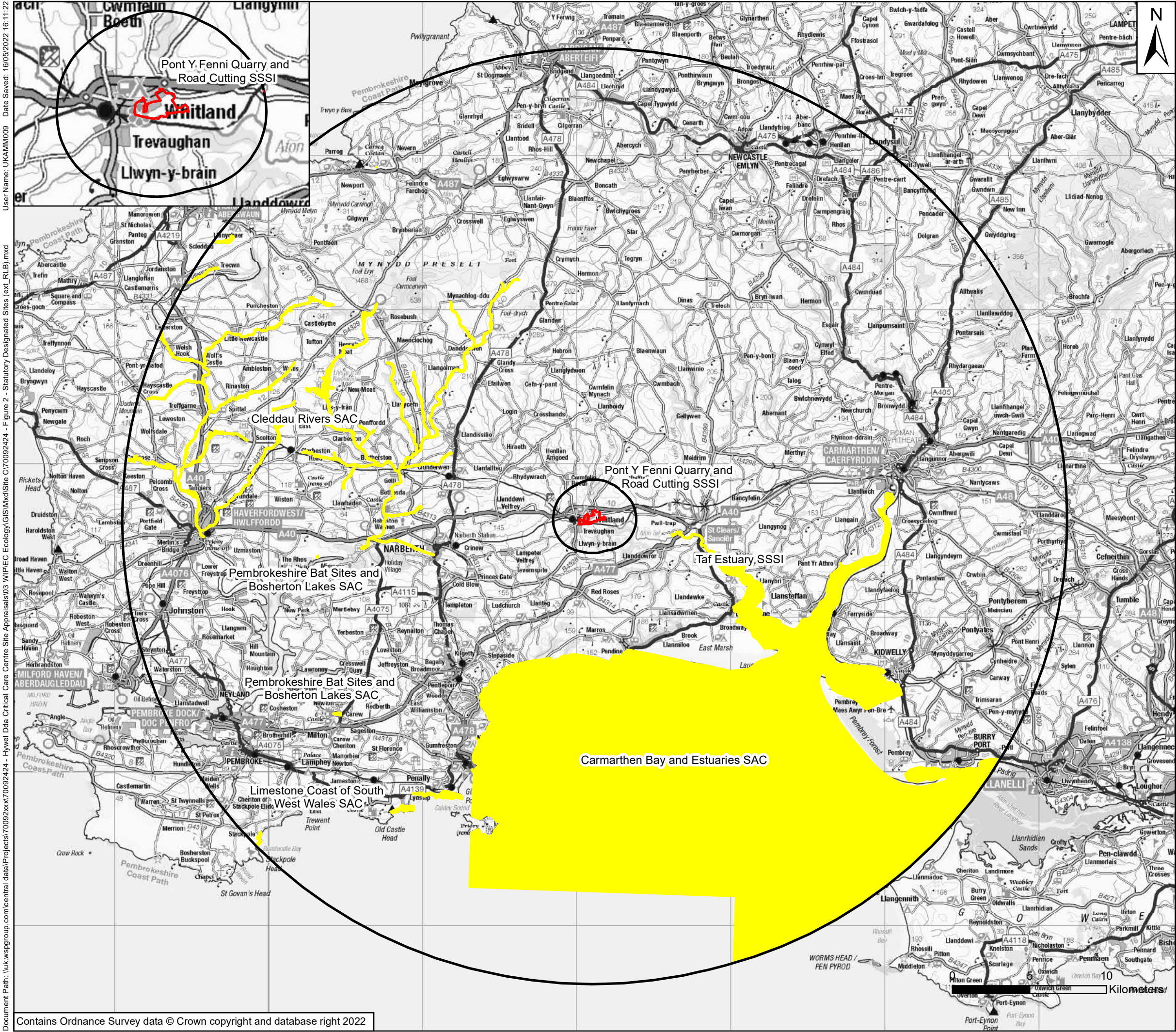
Approved:

NB

0100200

Metres

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



Key

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

Client:

HYWEL DDA UNIVERSITY
HEALTH BOARD

Project:

URGENT AND PLANNED CARE HOSPITAL - SITE C
PRELIMINARY ECOLOGICAL APPRAISAL

Title:

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

Drawing No: FIGURE 2

Date: 16/05/2022

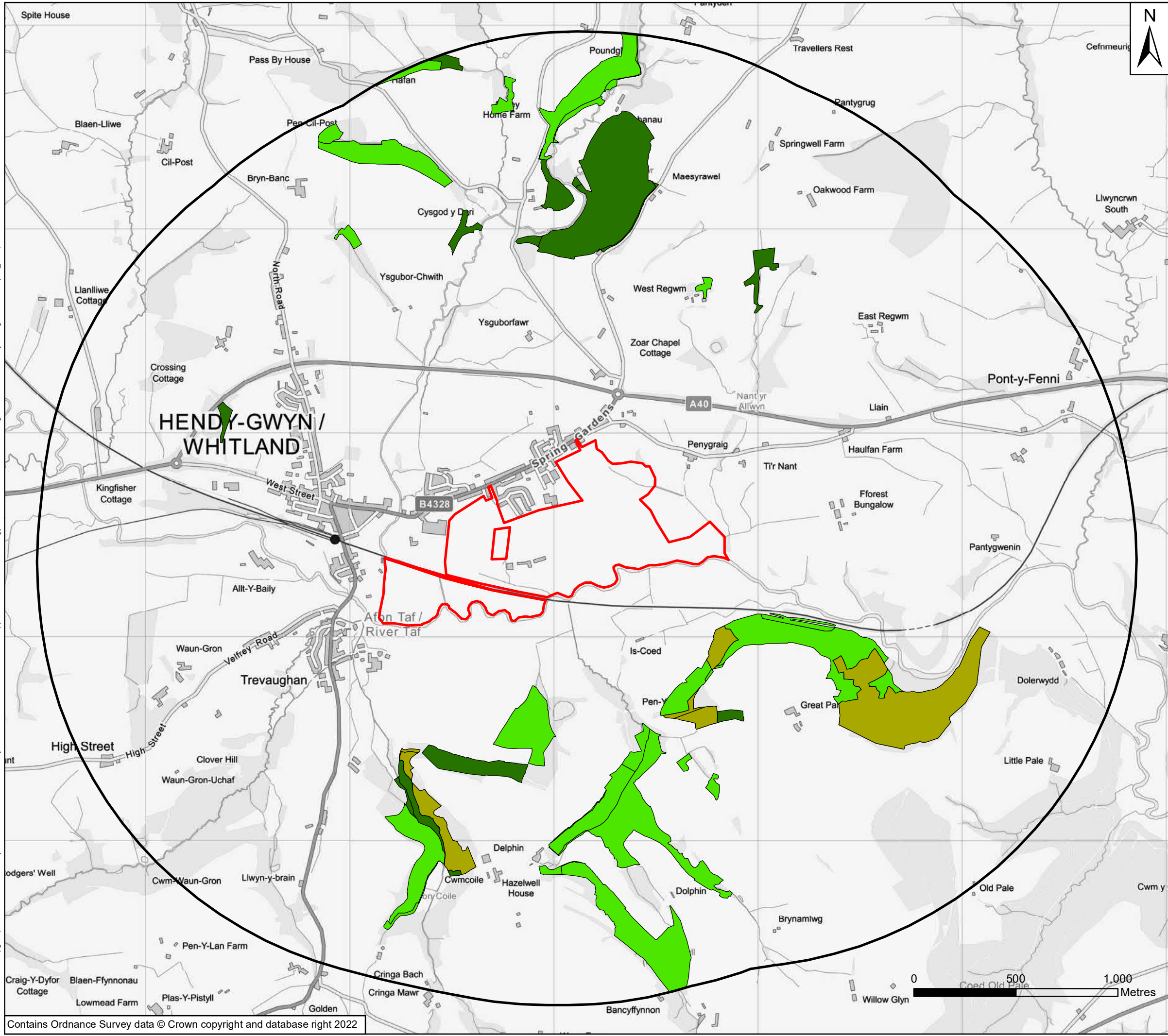
Scale: 94,145 @ A3

Drawn: ES

Checked: AD

Approved: NB

Document Path: \\uk.wspgroup.com\central_data\Projects\70092xxx\70092424 - Hywel Dda Critical Care Centre Site Appraisals\03 WIP\EC Ecology\GIS\Mxd\Site C\70092424 - Figure 3 - Non-Statutory Designated Sites (ext_RLB).mxd User Name: UKAMM009 Date Saved: 08/06/2022 09:40:04



Key

- Red Line Boundary
- 2km Buffer
- Ancient Semi Natural Woodland
- Restored Ancient Woodland Site
- Plantation on Ancient Woodland Site
- NRW Priority Area (Woodland Plantation on Ancient Woodland)

wsp

Client:

HYWEL DDA UNIVERSITY
HEALTH BOARD

Project:

URGENT AND PLANNED CARE HOSPITAL - SITE C
PRELIMINARY ECOLOGICAL APPRAISAL

Title:

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

Drawing No: FIGURE 3

Date: 08/06/2022

Scale: 18,000 @ A3

Drawn: ES

Checked: AD

Approved: NB

Document Path: \\uk.wspgroup.com\central data\Projects\70092xxx\70092424 - Hywel Dda Critical Care Centre Site Appraisals\03 WPIEC Ecology\GIS\Mxd\Site C\70092424 - Figure 4 - Phase 1 Habitat Survey (ext. RLB).mxd User Name: UKAMM009 Date Saved: 08/06/2022 09:44:19



Red Line Boundary

Not Accessed

UKHab

g3c8 - Holcus-Juncus neutral grassland

g4 - modified grassland

h3 - dense scrub

r1 - standing open water and canals

u1 - built-up areas and gardens

u1b - developed land, sealed surface

u1b5 - buildings


u1e - built linear features

w1g6 - line of trees

h2a - hedgerow (priority habitat)

r1e - canals or ditch

w1gb - scattered trees



Client:

HYWEL DDA UNIVERSITY
HEALTH BOARD

Project:

URGENT AND PLANNED CARE HOSPITAL - SITE C
PRELIMINARY ECOLOGICAL APPRAISAL

Title:

UK HAB SURVEY MAP

Drawing No:

FIGURE 4

Date:

08/06/2022

Scale:

6,500 @ A3

Drawn:

ES

Checked:

AD

Approved:

NB

Contains Ordnance Survey data © Crown copyright and database right 2022

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



Key

- Red Line Boundary
- Not

Preliminary Bat Roost Assessment - Buildings

- High
- Moderate
- Low

Preliminary Bat Roost Assessment - Tree

- Potential
- Target Notes



Client:	HYWEL DDA UNIVERSITY HEALTH BOARD		
Project:	URGENT AND PLANNED CARE HOSPITAL - SITE C 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:	6,500 @ 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 WCA⁹ 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, 2009¹⁰).

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, 2012¹¹).

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 I¹² 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)
	Schedule 1	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=AFQjCNEpiUWYuOghVcfSDvi_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/ukxi/2010/490/schedule/5/made> [Accessed 03.22].

⁴⁴ To view the current list of plant species on Annex II of the Habitats Directive visit: <http://jncc.defra.gov.uk/page-1523> [Accessed 03.22].

⁴⁵ There are currently 152 vascular plants listed as Species of Principal Importance in England listed under Section 41 of the NERC Act 2006 and 77 species in Wales listed under Section 7 of the Environment (Wales) Act 2016.³¹ To view the current list of UK BAP priority plants visit: <http://jncc.defra.gov.uk/page-5171> and <http://jncc.defra.gov.uk/page-5168> [Accessed 03.22].

⁴⁶ To view the current list of UK BAP priority plants visit: <http://jncc.defra.gov.uk/page-5171> and <http://jncc.defra.gov.uk/page-5168> [Accessed 03.22].

Appendix B



SUMMARY OF ECOLOGICAL DESK
STUDY DATA

Table B-1 - Protected and notable bat species for which records have been identified within 2km of Site C

Species common name	Species Latin name	No. of records	Distance and orientation of closest record from desk study centroid
Bat species	<i>Chiroptera</i>	1	1205 m south-west
Brown long-eared bat	<i>Plecotus auritus</i>	1	870 m west
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	1	870 m west
Greater horseshoe bat	<i>Rhinolophus ferrumequinum</i>	1	1390 m south*
Noctule bat	<i>Nyctalus noctula</i>	1	870 m west
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	2	870 m west

*Exact location unknown

Table B-23 - Protected and notable mammals (excluding bats) for which records have been identified within 2km of Site C

Species common name	Species Latin name	No. of records	Distance and orientation of closest record from desk study centroid
Eurasian badger	<i>Meles meles</i>	5	785 m north-west
Weasel	<i>Mustela nivalis</i>	1	2050 m south-west
West European hedgehog	<i>Erinaceus europaeus</i>	5	285 m south-west

Table B-4 - Protected and notable invertebrates for which records have been identified within 2km of Site C

Species common name	Species Latin name	No. of records	Distance and orientation of closest record from desk study centroid
Common carder bee	<i>Bombus pascuorum</i>	1	2050 m south-west

Table B-5 - Protected and notable birds for which records have been identified within 2km of Site C

Species common name	Species Latin name	No. of records	Distance and orientation of closest record from desk study centroid
Canada goose	<i>Branta canadensis</i>	1	1190 m west
Dipper	<i>Cinclus cinclus</i>	1	1185 m south-west
Dunnock	<i>Prunella modularis</i>	1	665 m east
Eurasian bullfinch	<i>Pyrrhula pyrrhula</i>	1	895 m west
Eurasian hoopoe	<i>Upupa epops</i>	1	1560 m east
European herring gull	<i>Larus argentatus</i>	1	1365 m west*
Fieldfare	<i>Turdus pilaris</i>	1	1365 m west*
Grey wagtail	<i>Motacilla cinerea</i>	1	895 m west
House sparrow	<i>Passer domesticus</i>	3	895 m west
Kingfisher	<i>Alcedo atthis</i>	3	895 m west
Linnet	<i>Linaria cannabina</i>	1	895 m west
Mallard	<i>Anas platyrhynchos</i>	1	895 m west
Red kite	<i>Milvus milvus</i>	8	935m north-east*
Song thrush	<i>Turdus philomelos</i>	1	1190 m west
Spotted flycatcher	<i>Muscicapa striata</i>	1	1365 m west*
Swallow	<i>Hirundo rustica</i>	1	895 m west
Swift	<i>Apus apus</i>	3	1120 m west
Willow warbler	<i>Phylloscopus trochilus</i>	6	1190 m west

*Exact location unknown

Table B-6 - Protected and notable reptiles and amphibians for which records have been identified within 2km of Site C

Species common name	Species Latin name	No. of records	Distance and orientation of closest record from desk study centroid
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Common frog	<i>Rana temporaria</i>	1	1970 m south-west
Common toad	<i>Bufo bufo</i>	1	1215 m north-east

Table B-7 - Protected and notable plants for which records have been identified within 2km of Site C

Species common name	Species Latin name	No. of records	Distance and orientation of closest record from desk study centroid
Bluebell	<i>Hyacinthoides non-scripta</i>	6	1060 m north
Brazilian giant-rhubarb	<i>Gunnera manicata</i>	1	895 m west
Butterfly-bush	<i>Buddleja davidii</i>	11	625 m west
Cherry laurel	<i>Prunus laurocerasus</i>	1	680 m north
Cotoneaster	<i>Cotoneaster spp.</i>	1	895 m west
Curly waterweed	<i>Lagarosiphon major</i>	1	2000 m north
Grape-hyacinth	<i>Muscari neglectum</i>	1	980 m west
Greater periwinkle	<i>Vinca major</i>	1	1780 m north*
Indian balsam	<i>Impatiens glandulifera</i>	12	640 m west
Japanese knotweed	<i>Fallopia japonica</i>	3	895 m west
Montbretia	<i>Crocasmia pottsii x aurea = C. x crocosmiiflora</i>	1	1780 m north*
Northern yellow-cress	<i>Rorippa islandica</i>	1	1780 m north*
Rhododendron	<i>Rhododendron ponticum</i>	2	1530 m north-east
Snowberry	<i>Symphoricarpos albus</i>	1	1065 m west
Stream water-crowfoot	<i>Ranunculus penicillatus subsp. penicillatus</i>	3	910 m south-west
Three-cornered garlic	<i>Allium triquetrum</i>	1	1105 m west

White stonecrop	<i>Sedum album</i>	1	795 m west
Wilson's honeysuckle	<i>Lonicera nitida</i>	3	1065 m west
Yellow archangel	<i>Lamiasstrum galeobdolon subsp. argentatum</i>	1	1000 m south-west

*Exact location unknown

Appendix C

PLANT SPECIES RECORDED

wsp

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

Common name	Latin name	Frequency (DAFOR)
G3c8 – Holcus-Juncus neutral grassland		
Broad-leaved dock	<i>Rumex obtusifolius</i>	O
Clover species	<i>Trifolium sp.</i>	R
Creeping buttercup	<i>Ranunculus repens</i>	O
Lesser celandine	<i>Ficaria verna</i>	O
Marsh thistle	<i>Cirsium palustre</i>	R
Meadow buttercup	<i>Ranunculus acris</i>	R
Perennial rye-grass	<i>Lolium perenne</i>	A
Soft rush	<i>Juncus effusus</i>	D
G4 – Modified grassland		
Bittersweet	<i>Solanum dulcamara</i>	R
Wild Angelica	<i>Angelica sylvestris</i>	R
Common bird's-foot-trefoil	<i>Lotus corniculatus</i>	R
Bittercress species	<i>Cardamine spp.</i>	R
Broad-leaved dock	<i>Rumex obtusifolius</i>	R
Chickweed	<i>Stella media agg.</i>	O
Cleavers	<i>Galium aparine</i>	R
Clover species	<i>Trifolium sp.</i>	F
Hogweed	<i>Heracleum sphondylium</i>	R
Common vetch	<i>Vicia sativa</i>	R
Compact rush	<i>Juncus conglomeratus</i>	R
Cow parsley	<i>Anthriscus sylvestris</i>	R
Creeping buttercup	<i>Ranunculus repens</i>	O
Creeping thistle	<i>Cirsium arvense</i>	R
Cuckoo flower	<i>Cardamine pratensis</i>	R

Dandelion	<i>Taraxacum officinale agg.</i>	R
Garlic mustard	<i>Alliaria petiolata</i>	R
Germander speedwell	<i>Veronica chamaedrys</i>	R
Great willowherb	<i>Epilobium hirsutum</i>	R
Greater plantain	<i>Plantago major</i>	R
Ground-ivy	<i>Glechoma hederacea</i>	R
Hemlock water dropwort	<i>Oenanthe crocata</i>	R
Field horsetail	<i>Equisetum arvense</i>	R
Indian balsam	<i>Impatiens glandulifera</i>	R
Lady's bedstraw	<i>Galium verum</i>	R
Lesser celandine	<i>Ficaria verna</i>	R
Marsh thistle	<i>Cirsium palustre</i>	R
Meadow buttercup	<i>Ranunculus repens</i>	R
Meadow foxtail	<i>Alopecurus pratensis</i>	R
Meadowsweet	<i>Filipendula ulmaria</i>	R
Common mouse-ear	<i>Cerastium fontanum</i>	R
Mugwort	<i>Artemisia vulgaris</i>	R
Nettle	<i>Urtica dioica</i>	R
Perennial rye-grass	<i>Lolium perenne</i>	D
Red campion	<i>Silene dioica</i>	R
Red clover	<i>Trifolium pratense</i>	R
Silverweed	<i>Potentilla anserina</i>	R
Smooth meadow-grass	<i>Poa pratensis</i>	R
Soft rush	<i>Juncus effusus</i>	R
Common sorrel	<i>Rumex acetosa</i>	R
Spear thistle	<i>Cirsium vulgare</i>	R
Timothy	<i>Phleum pratense</i>	R

White clover	<i>Trifolium repense</i>	R
White dead-nettle	<i>Lamium album</i>	R
Yorkshire-fog	<i>Holcus lanatus</i>	O
H3 – Dense scrub		
Bindweed	<i>Calystegia spp.</i>	R
Blackthorn	<i>Prunus spinosa</i>	R
Bramble	<i>Rubus fruticosus agg.</i>	D
Hard fern	<i>Blechnum spicant</i>	R
Hawthorn	<i>Crataegus monogyna</i>	O
Hazel	<i>Corylus avellana</i>	R
Hemlock water-dropwort	<i>Oenanthe crocata</i>	R
Ivy	<i>Hedera helix</i>	R
Navelwort	<i>Umbilicus rupestris</i>	O
Nettle	<i>Urtica dioica</i>	O
Snowdrop	<i>Galanthus nivalis</i>	R
Soft rush	<i>Juncus effusus</i>	F
Sycamore	<i>Acer pseudoplatanus</i>	R
Willow	<i>Salix sp.</i>	R
W1g6 – Line of trees		
Alder	<i>Alnus glutinosa</i>	O
Ash	<i>Fraxinus excelsior</i>	F
Blackthorn	<i>Prunus spinosa</i>	R
Hawthorn	<i>Crataegus monogyna</i>	O
Ivy	<i>Hedera helix</i>	R
Oak	<i>Quercus sp.</i>	F
Willow	<i>Salix sp.</i>	R
H2 – Hedgerow		

Beech	<i>Fagus sylvatica</i>	R
Bracken	<i>Pteridium aquilinum</i>	R
Bramble	<i>Rubus fruticosus</i> agg.	O
Cleavers	<i>Galium aparine</i>	O
Hart's-tongue	<i>Asplenium scolopendrium</i>	O
Hawthorn	<i>Crataegus monogyna</i>	D
Hazel	<i>Corylus avellana</i>	O
Herb-robert	<i>Geranium robertianum</i>	O
Holly	<i>Ilex aquifolium</i>	R
Honeysuckle	<i>Lonicera periclymenum</i>	R
Ivy	<i>Hedera helix</i>	O
Lesser celandine	<i>Ficaria verna</i>	O
Meadowsweet	<i>Filipendula ulmaria</i>	R
Nettle	<i>Urtica dioica</i>	O
Oak	<i>Quercus</i> sp.	O
Opposite-leaved golden-saxifrage	<i>Chrysosplenium oppositifolium</i>	R
Pine species	<i>Pinus</i> sp.	R
Polypody	<i>Polypodium vulgare</i> agg.	R
Primrose	<i>Primula vulgaris</i>	R
Sycamore	<i>Acer pseudoplatanus</i>	R
Wood avens	<i>Geum urbanum</i>	R
Yew	<i>Taxus baccata</i>	R
R1e – Canals or ditch		
Bullrush	<i>Typha latifolia</i>	R
Water mint	<i>Mentha aquatica</i>	R
Willow	<i>Salix</i> sp.	R

W1gb – Scattered trees		
Ash	<i>Fraxinus excelsior</i>	O
Holly	<i>Ilex aquifolium</i>	O
Oak	<i>Quercus sp.</i>	O

Appendix D

TARGET NOTES

wsp

Table D-1 – Site C Target Notes

Target Note	Description
TN1	A small pond with no vegetation cover and shaded by trees adjacent to the buildings in the centre of the Site. It is bordered by scrub and a wooden fence. Fish presence is likely.
TN2	A stand of Indian balsam, displaying both young saplings and previous years' growth.
TN3	A large brash pile near to the field margin forming a potential hibernacula.
TN4	Multiple rabbit burrows.
TN5	Two hibernacula formed by individual small log and brash piles.
TN6	Badger prints in the mud in the field boundary.
TN7	A stand of young Indian balsam, with no evidence of previous years' growth.
TN8	A stand of young Indian balsam mixed with other vegetation.
TN9	Two mammal holes 5 m apart. Appears to be excavated by badgers, but now used by rabbits. Large spoil mound, but no field signs of badgers, and nearby rabbit droppings.
TN10	A stand of Indian balsam mixed with other vegetation.
TN11	A stand of Indian balsam mixed with other vegetation.
TN12	A bird pellet, likely tawny owl. Pellet is brown and rounded at one end, approximately 5 cm long. Comprises mainly fur, with some bones and vegetative matter.
TN13	A mammal path and push through at the base of a fence.

TN14	A bird's nest, likely crow, in fork of ash tree. Unable to determine if in use.
TN15	A stand of Indian balsam mixed with other vegetation extending along the length of the river bank.

Appendix E

PHOTOGRAPHS **wsp**

Table E-1 – Photographs at Site C

	
<p>Photo 1 – Site C Holcus-juncus neutral grassland with a line of trees</p>	<p>Photo 2 – Site C modified grassland bordered by a hedgerow and fence-line</p>
	
<p>Photo 3 – Site C dense scrub adjacent to ditch of flowing water</p>	<p>Photo 4 – Site C ditch entering the River Taf, which is bordered by a line of trees</p>



Photo 5 – Site C TN1 – small pond of standing immediately to the west of the buildings in the centre of the Site



Photo 6 – Site C TN2 – stand of Indian balsam including last year's growth and new shoots



Photo 7 – Site C TN3 – brush pile near to the field boundary in the south-western extent of the Site forming a potential hibernacula



Photo 8 – Site C TN4 – rabbit warren present in the field boundary to the north of the Holcus-juncus neutral grassland fields



Photo 9 – Site C TN5 – one of two hibernacula to the west of the buildings on Site formed by log and brash piles



Photo 10 – Site C TN6 – Badger prints in mud at southern field boundary



Photo 11 – Site C T1 – oak with impact shatter



Photo 12 – Site C T2 – oak with impact shatter

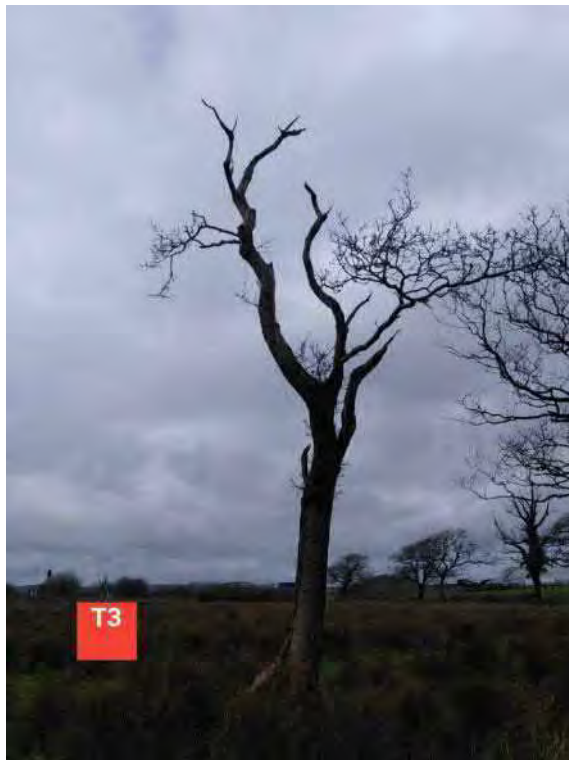


Photo 13 – Site C T3 – over-mature oak



Photo 14 – Site C T4 – oak with knothole



Photo 15 – Site C T5 – ash with knot hole



Photo 16 – Site C T6 – ash with woodpecker hole



Photo 17 – Site C T7 – oak with multiple dead limbs



Photo 18 – Site C T8 – oak with knot hole



Photo 19 – Site C B1 – barn of breezeblock construction and B2 – extension to existing barn



Photo 20 – Site C B4 – stone building with some raised tiles adjoined to B5 - single storey barn with corrugated pitched roof



Photo 21 – Site C B8 – open barn of corrugated metal



Photo 22 – TN8 – An individual from a stand of young Indian balsam



Photo 23 – TN9 – One of two mammal holes appearing to be currently used by rabbits



Photo 24 – TN12 – An owl pellet, likely to be tawny owl



Photo 25 – TN13 – A mammal path and push through at the base of a fence



Photo 26 – TN15 – A stand of Indian balsam extending along the length of the north bank of the River Taf.

Appendix F

BAT GROUND ASSESSMENT SURVEY RESULTS

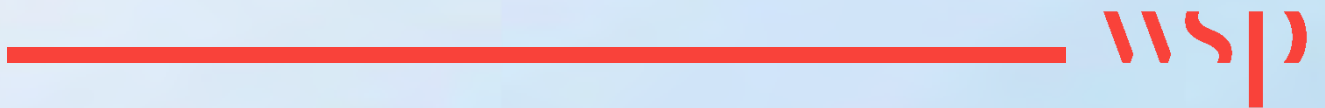


Table F-1 – Trees with bat roost suitability at Site C

Tree Number	Photo Reference	Description
1	Photo 11	An oak with an impact shatter approximately 5 m high.
2	Photo 12	An Oak with an impact shatter on a limb approximately 5 m high.
3	Photo 13	An over-mature oak with a tear out limb 7 m high on the main stem.
4	Photo 14	An oak with a knothole 5 m high on a limb.
5	Photo 15	An ash with a knot hole 2 m high.
6	Photo 16	An ash with a woodpecker hole approximately 5 m high.
7	Photo 17	An oak with multiple dead limbs which may provide PRFs.
8	Photo 18	An oak with a knot hole 3 m high on a limb.
9	No photo available	A possible alder with a split in the centre stem of the tree on the western aspect approximately 3 m high.

Table F-2 – Buildings with bat roost suitability at Site C

Building Number	Photo Reference	Bat Suitability	Description
1	Photo 19	Low	A barn of breezeblock construction with a corrugated roof. The door appeared to remain open. Bats would be able to access through the door, but PRFs were limited to between the beams and corrugated roofs, and may be used opportunistically by bats.
2	Photo 19	Low	An extension to the existing barn with similar construction. As for B1, bats would be able to access through the door, but PRFs were limited to between the beams and corrugated roofs, and may be used opportunistically by bats.
3	No photo available	Low	An open barn with brick construction and a corrugated metal roof. Cows were present within the barn. As for B1 and B2, bats would be able to access through the door, but PRFs were limited to between the beams and corrugated roofs, and may be used opportunistically by bats.
4	Photo 20	High	A stone building with some raised tiles providing potential access points for bats. There was dense ivy coverage which may be concealing further PRFs.

5	Photo 20	Moderate	A single storey barn with a pitched roof which remained open at the front. PRFs included between the beams and roofs, and access points included beneath raised tiles on the roof.
6	No photo available	Low	A whitewashed barn with a corrugated roof. There were some openings to the building, with some areas blocked up by breezeblock. A breezeblock extension with a flat roof was adjoined to the barn. PRFs were limited to between the beams and corrugated roofs, and may be used opportunistically by bats.
7	No photo available	Low	A house of stone construction with a single pitched roof. The house was two storey, with some moss present on the roof tiles and no evidence of a loft conversion. Potential access points for bats were beneath the roof tiles which were raised due to the presence of moss, and a potential roof void could offer PRFs for bats.
8	Photo 21	Low	An open barn with cows and goats present at the time of survey. The barn is of corrugated metal construction, and the entire front of the barn is open. Bats would be able to access through the door, but PRFs were limited to between the beams and corrugated roofs, and may be used opportunistically by bats.



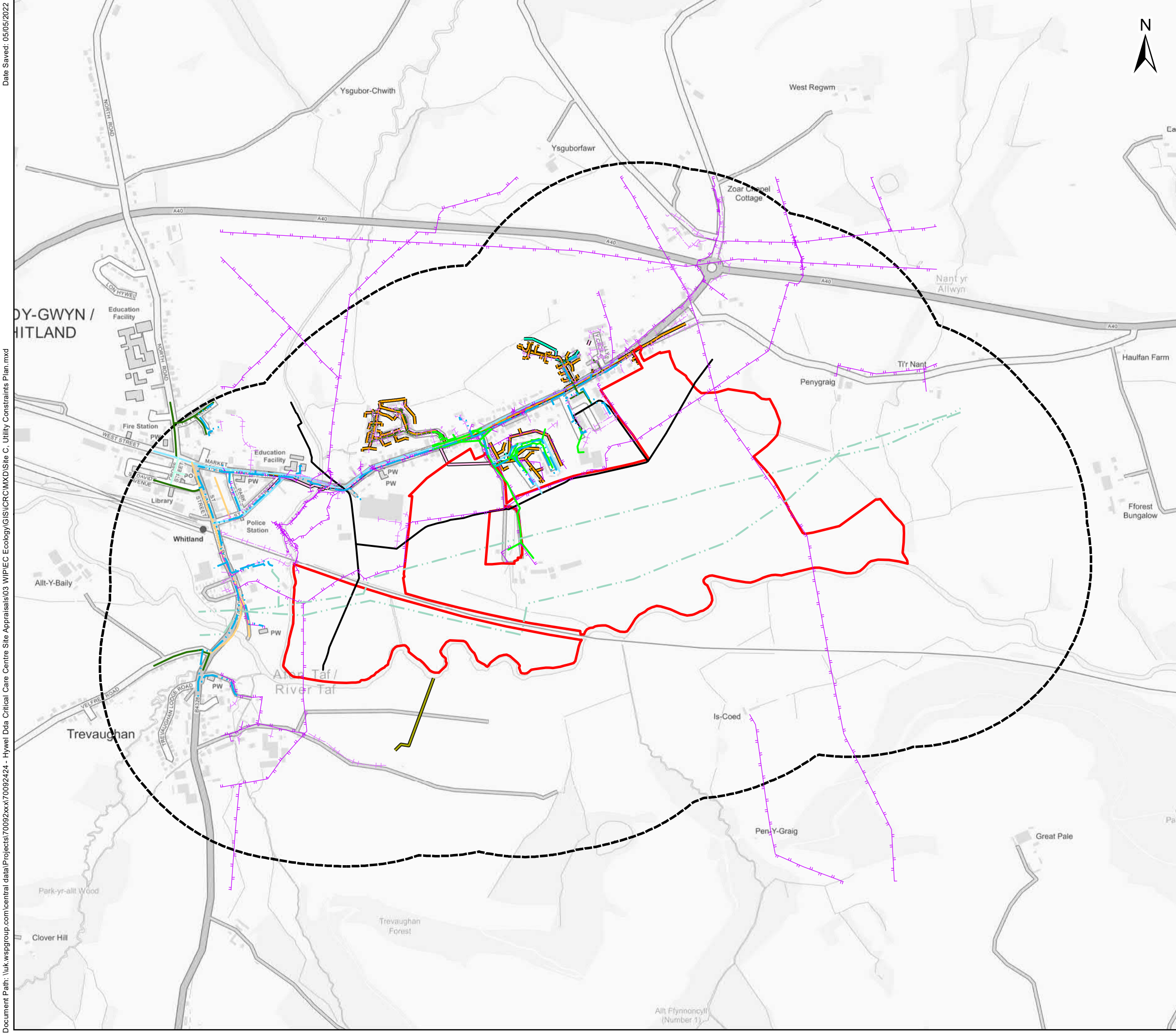
1 Capital Quarter
Tyndall Street
Cardiff
CF10 4BZ

wsp.com

Appendix E

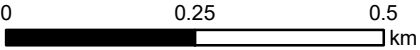
UTILITIES





Legend

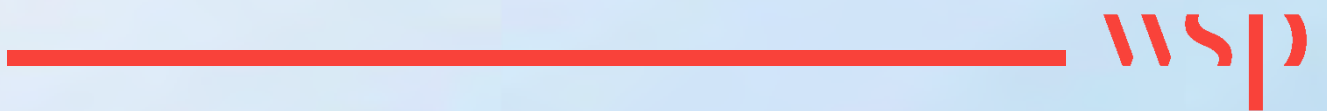
- Site C Site Boundary
- 500m Study Area
- Telecoms (BT maps)**
 - Telecoms (BT maps)
- Gas (Wales and West Utilities)**
 - High Pressure
 - Low Pressure
- Power (Western Power)**
 - Overhead
 - Underground
- Mains Water (Welsh Water)**
 - Unidentified
 - 2 inch
 - 3 inch
 - 5 inch
 - 6 inch
- Storm and Foul Sewerage system (Welsh Water)**
 - Combined
 - Foul
 - Storm Overflow
 - Surface Water
 - Treated Effluent

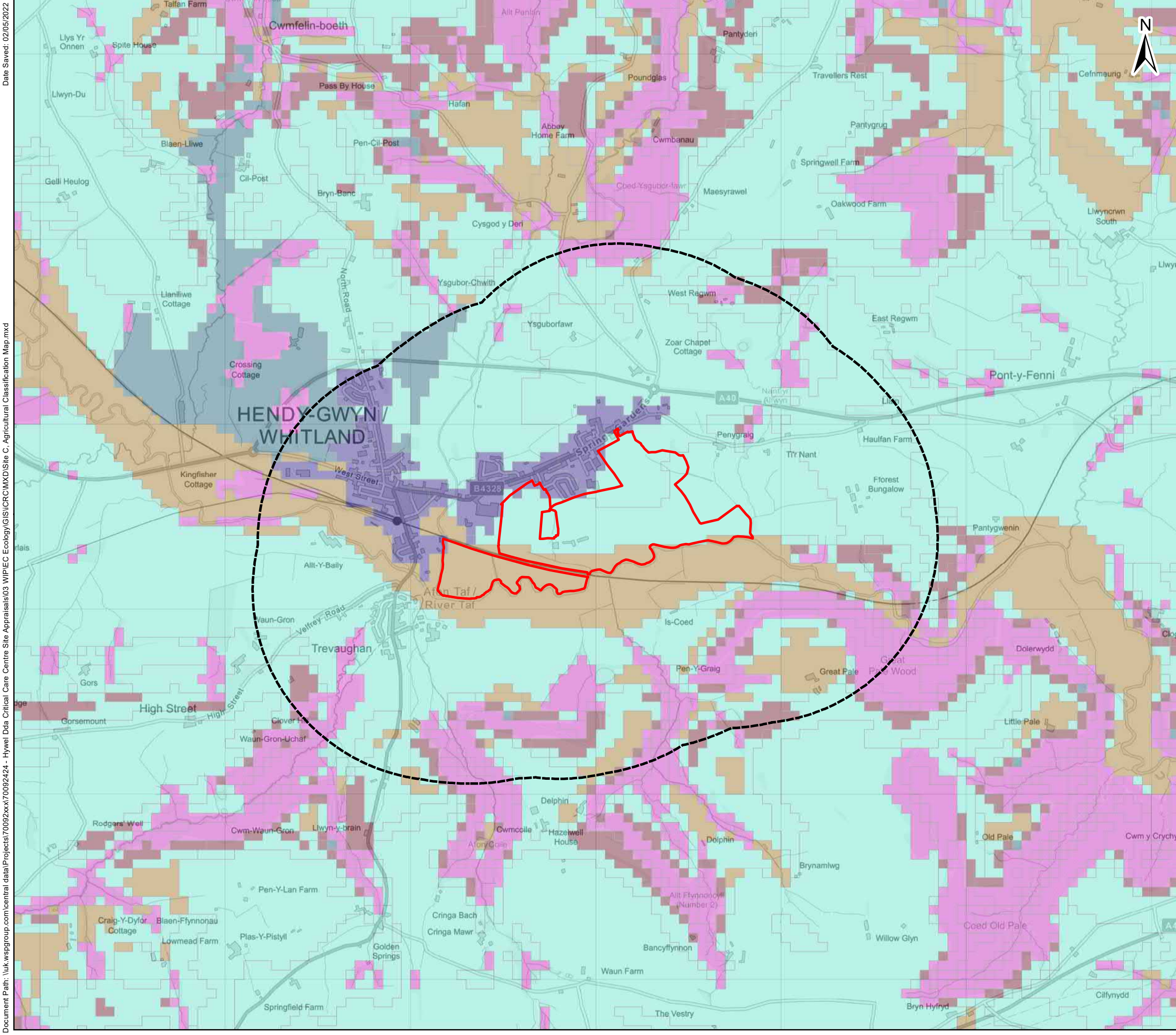


Client:	Hywel Dda University Health Board		
Project:	Site C – Technical Due Diligence Appraisal		
Title:	Site C Utilities Constraints Plan		
Date:	05 May 2022	Scale:	10,000 @ A3
Drawn:	PB	Checked:	CLH
		Approved:	WB
Drawing Number:2424-WSP-XX-SC-DR-EN-0019-P01_Utility Constraints Plan			

Appendix F

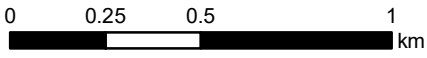
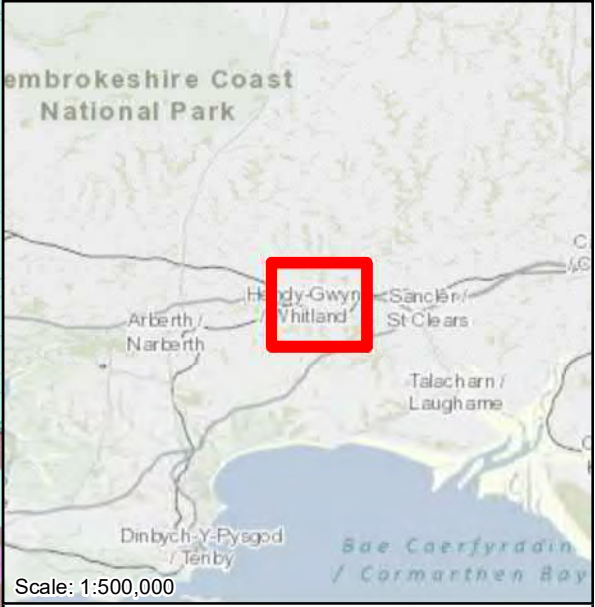
ENVIRONMENTAL



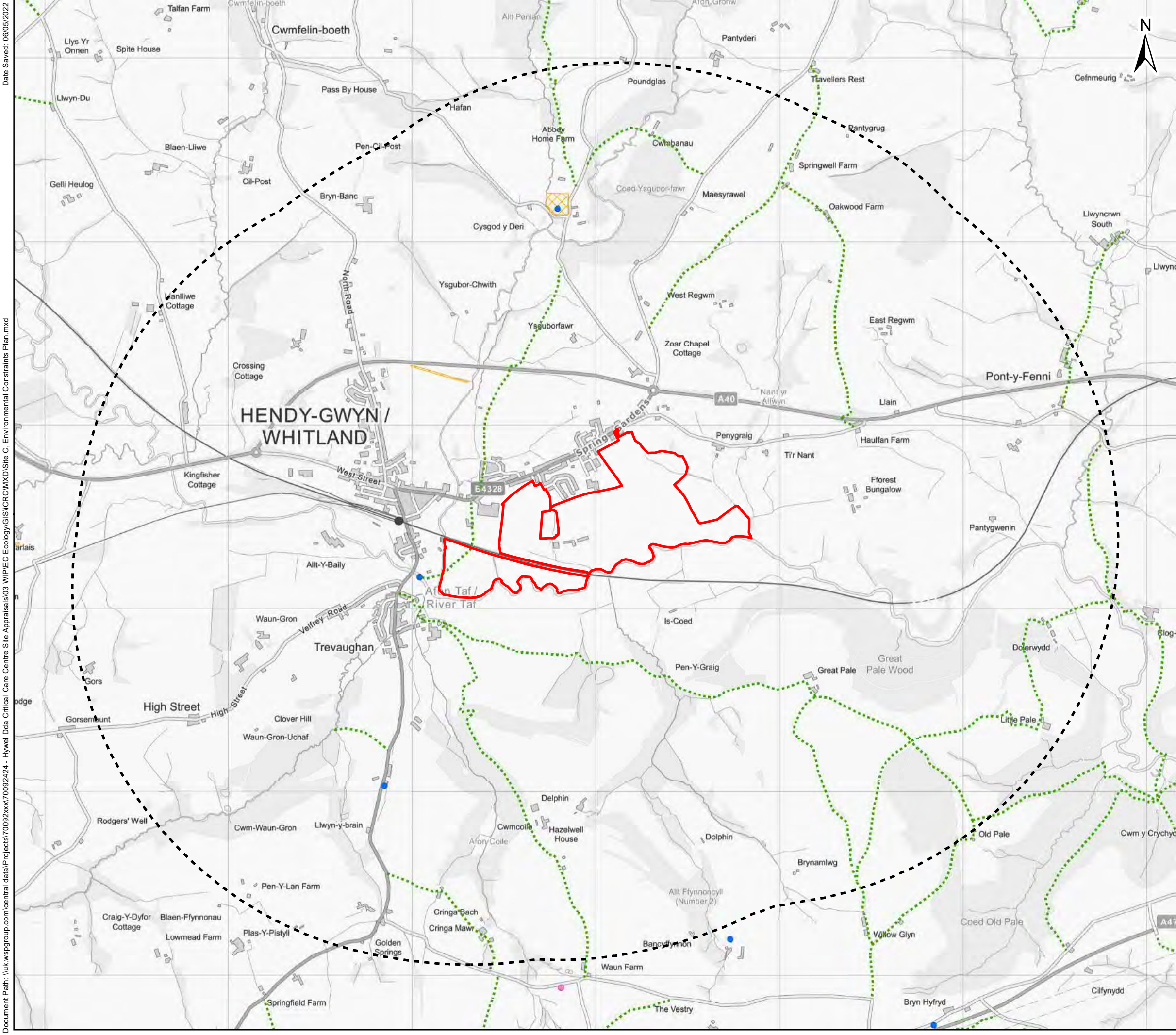


Legend

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



Client:	Hywel Dda University Health Board		
Project:	Site C – Technical Due Diligence Appraisal		
Title:	Agricultural Land Classification Map		
Date:	02 May 2022	Scale:	19,824 @ A3
Drawn:	PB	Checked:	CLH
		Approved:	WB
Drawing Number:	2424-WSP-XX-SC-DR-EN-0014-P01_ALC Map		



Legend

- Site C Site Boundary
- 2km Study Area
- Grade II* Listed Building
- Grade II Listed Building
- Footpath
- Scheduled Monuments

Scale: 1:500,000

Client:

Hywel Dda University Health Board

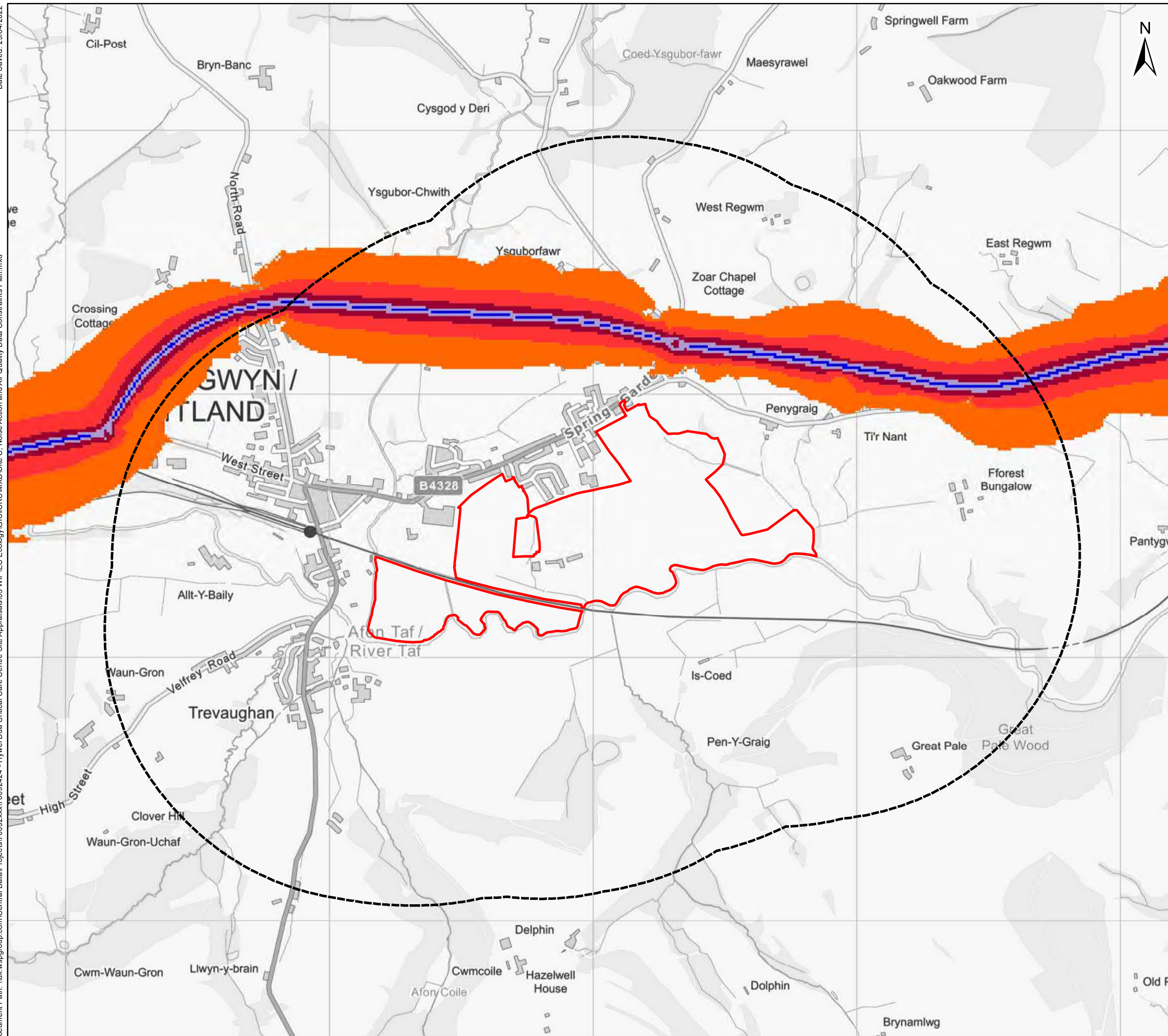
Project:

Site C – Technical Due Diligence Appraisal

Title:

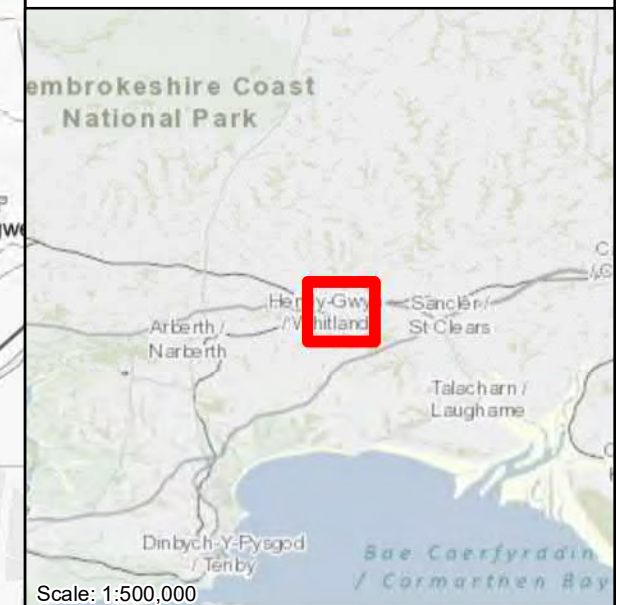
Environmental Constraints Plan

Date:	06 May 2022	Scale:	20,000 @ A3
Drawn:	PB	Checked:	CLH
		Approved:	WB
Drawing Number: 2424-WSP-XX-SC-DR-EN-0007-P01_Env Constraints Plan			



■ 75.0 and over

Lden : indicates the average sound level around the clock with extra weighting given to the evening and night periods.



A horizontal scale bar with a black outline. It is divided into two segments: the left segment is solid black and represents 0.25 km, while the right segment is white with a black outline and represents 0.25 km. Above the bar, the numbers 0, 0.25, and 0.5 are positioned at the start, the division point, and the end, respectively. The unit 'km' is placed at the far right end of the bar.

Hywel Dda University Health Board

Site C – Technical Due Diligence Appraisal

Site C

Environmental Noise Mapping

Date: 29 April 2022 Scale: 14,000 @ A3
 Drawn: PB Checked: CLH Approved: WB
 Drawing Number: 2424-WSP-XX-SC-DR-EN-0024-P01_ Env Noise Map

Appendix G

GROUND





Hywel Dda University Health Board

URGENT & PLANNED CARE CENTRE SITE APPRAISALS

Site C - Preliminary Ground Conditions
Assessment





Hywel Dda University Health Board

URGENT & PLANNED CARE CENTRE SITE APPRAISALS

Site C - Preliminary Ground Conditions Assessment

TYPE OF DOCUMENT (DRAFT) CONFIDENTIAL

PROJECT NO. 70092424

OUR REF. NO. 70092424-04

DATE: MAY 2022

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RISK ASSESSMENT METHODOLOGY

EXECUTIVE SUMMARY

Site Details	<p>The Site occupies approximately 64 ha of predominantly undeveloped agricultural land located to the east of Whitland and to the south of Spring Gardens (B4328). The Site comprises a centrally positioned farm compound of several structures (i.e., a farmhouse and outbuildings) which is connected to the surrounding grassed fields by access tracks.</p> <p>The Site is bisected by a railway line that is orientated east to west. The Afon Taf and the Afon Gronw form the southern and south-western Site boundaries, respectively. Access to the southern area of the Site is restricted owing to the presence of the railway line.</p> <p>Land use to the south and east comprises undeveloped woodland and/or agricultural land use. A combination of residential, commercial and industrial surrounding land uses are noted within Whitland and the village of Trevaughan. Whitland Industrial Estate borders the Site to the north..</p>
Site History	<p>The majority of the Site has remained in use as agricultural land and, with the exception of modifications and additions to the farm buildings, has not undergone any historical development.</p>
Geology, Hydrogeology and Hydrology	<p>The southern area of the Site, adjacent to the Afon Taf, is reported to be underlain by Alluvium (Secondary A Aquifer). The bedrock across the Site comprises the Arenig Tetragraptus Beds (Mudstone) in the north-east and the Lower Llanvirn Didymograptus Bifidus Beds (Mudstone) in the central and south-western areas. Both bedrock units are classified as Secondary B Aquifers.</p> <p>Groundwater vulnerability across the Site is reported to be high, associated with a well-connected fracture flow network within the underlying bedrock, and local small-scale domestic abstraction has been noted to have historically occurred within the surrounding area.</p> <p>Several minor surface water features have been identified on-site which comprise tributaries to the Afon Taf and Afon Gronw.</p>
Flood Risk	<p>The online Flood Risk Development Advice Map provided by NRW indicates that the northern area of the Site is located within Zone A, which is classified as “<i>at little or no risk of fluvial or coastal/tidal flooding.</i>” However, the southern half of the Site ranges from Zone B and Zone C2 which are defined as areas “<i>known to have flooded in the past</i>” and “<i>without significant flood defence infrastructure</i>”.</p> <p>The southern area of the Site is at an increased risk of flooding from the Afon Taf and is not currently benefiting from any form of flood defence systems. Two historical surface water flooding events have been recorded at the Site associated with the Afon Taf to the south.</p>
Radon	<p>The majority of the Site is located within an area where either less than 1% or between 1% and 3% of properties would be estimated to exceed the Radon Action Level. In these areas basic radon protection measures are not considered necessary. However, a very small area at the northernmost extent of the Site has been identified where between 5% and 10% of properties would be estimated to exceed the Radon Action Level. Should properties be constructed in this area then basic radon protection measures would likely be required within future structures.</p>
Unexploded Ordnance (UXO)	<p>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.</p>

<p>Conclusions</p>	<p>No significant ground condition constraints have been identified in the northern area of the Site in relation to future structures and infrastructure. However, the Site slopes downwards from the north to the south and earthworks may be required to provide an appropriate development platform.</p> <p>A number of possible development constraints have been identified in the southern area of the Site which will require consideration, including:</p> <ul style="list-style-type: none"> ■ The presence of Alluvium which may not to provide a suitable founding medium; ■ The elevated flood risk at the Site; and ■ Access constraints associated with the presence of the railway line. <p>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 on and off-site to have led to localised contamination at the Site. The most noticeable sources of potential contamination comprise the poorly contained on-Site fuel oil above ground storage tanks (ASTs). Off-site sources of potential contamination include a former gas works, an industrial estate and a cemetery.</p> <p>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 low.</p>
<p>Recommendations</p>	<p>Based on the findings of this report WSP recommends the following:</p> <p>Completion of an intrusive ground investigation to establish the ground conditions at the Site and to:</p> <ul style="list-style-type: none"> ■ 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; and, ■ Assess the suitability for soakaway drainage.

1 INTRODUCTION

1.1 AUTHORISATION AND PURPOSE OF ASSESSMENT

WSP UK Ltd (WSP) was appointed by Hywel Dda University Health Board (the Client) via BDP to prepare a preliminary assessment of the likely ground conditions together with the identification of potential development opportunities and constraints to support the potential construction of a health care facility/hospital at a site referred to as 'Site C' (herein referred to as the 'Site') which is located to the south of Spring Gardens (B4328), Whitland, Carmarthenshire.

It is understood that this report would support a future planning application for the proposed development. No indicative development plans have been made available to WSP.

A Site Location Plan (Figure 1) and a Site Layout Plan (Figure 2) are presented within **Appendix A**.

This report has been prepared in-line with WSP's proposal (ref: 70092424-P01 TDDv2) issued on 28th January 2022.

1.2 OBJECTIVES

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

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

1.3 LIMITATIONS

This report is addressed to and may be relied upon by the Client. It may not be relied upon or transferred to any other parties without the express written agreement of WSP. The report should be read and used in full. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party. WSP cannot be held liable for third party information. Full details of the limitations are provided as **Appendix B**.

1.4 INFORMATION SOURCES

The following information sources listed in **Error! Reference source not found.** have used by WSP to inform the assessment. Relevant data has been referenced throughout the report.

Table 1-1 – Information Sources

Information Source		Comments
Third Party Data	Groundsure Insights, Historical Maps, 2022. Report number WSP-8623850_SS_1_1 (Appendix C)	Historic and recent maps of the area, dating from 1880 to 2022.
	Groundsure Insights, Enviro+Geo Insight, 2022. Reference WSP-8623851 (Appendix C)	Environmental database search encompassing permits, licences and environmental designations.
Publicly Available Sources	Data.gov.uk	The Environment Agency's (EA) environmental datasets
	BGS GeoIndex	Geological information and borehole records provided by the British Geological Society (BGS)
	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 below provides details of the Site obtained from a review of Ordnance Survey (OS) mapping, online aerial photography, information obtained from the Groundsure Report (presented in **Appendix C**) and key observations made during a Site walkover undertaken by a WSP Engineer on the 21st of April 2022 (further details of which are presented in Section 2.4 below). A selection of Site photographs taken during the Site walkover are presented in **Appendix D**.

Table 2-1 – Summary of Site Details

Details	Description
Location	The Site is located to the south of Spring Gardens (B4328) and to the east of Whitland Town Centre. The Site extends to the south of a railway line that connects Whitland with the adjacent towns.
Coordinates (E,N)	221456E, 216601N
Site Area	The Site occupies approximately 64 hectares and comprises an irregularly shaped parcel of land.
Site Description/ Current Use	The majority of the Site comprises agricultural land (grassed fields) that are intersected by access tracks. A farm compound is located in the central area of the Site which comprises a farmhouse(s), outbuildings and areas of materials/plant storage. The railway line separates the Site into northern and southern sections. Several minor surface water features are present on-site (e.g., a tributary of the Afon Taff located towards the north-east and a pond within the vicinity of the farm compound).
General Environment / Surrounding Area	<p>North: Residential developments (Bryngwenllian) and Whitland Industrial Estate border the Site to the north beyond which are a number of commercial and residential properties off Spring Gardens (B4328). Undeveloped agricultural land, bisected by the A40, is present further afield.</p> <p>East and south: Land to the east and south comprises predominantly undeveloped agricultural fields with associated farm buildings and small access roads/tracks. The southern Site boundary is demarcated by the meandering river channel of the Afon Taf. A small sewage treatment plant is located approximately 130m to the south of the Site/Afon Taf.</p> <p>West: The town centre of Whitland is present to the west which hosts a range of commercial and industrial trades as well as residential properties. Whitland Train Station is located approximately 220m to the west of the Site.</p> <p>The Afon Gronw demarcates the western boundary of the southern section of the Site. Beyond this river St Mary's church and associated cemetery are located 50m to the west. A number of commercial and industrial units positioned off Station Road (B4328) are also present to the west of the southern section of the Site. The village of Trevaughan is present approximately 280m to the south-west of the Site.</p>
Site Access	The Site is accessible via the Bryngwenllian access road off Spring Gardens (B4328) which leads directly into the farm compound. Direct access to fields towards the north-eastern area of the Site is also available from Spring Gardens (B4328).

	<p>Access to the southern section of the Site is available via a narrow and height restricted track from the farm compound leading towards the south-east which passes under a railway bridge and over the Afon Taf.</p> <p>A gated pedestrian crossing over the railway line also provides access to the southern section of the Site.</p>
Site Topography / Elevation	<p>Upon review of available Ordnance Survey mapping, the Site is noted to slope gently downwards from north to south towards the Afon Taf, from approximately 50m above ordnance datum (m AOD) to 15m AOD. More localised steeper banks are present adjacent to the boundary surface water features of the Afon Taf and the Afon Gronw.</p>
Ground Cover	<p>A Site walkover identified that the majority of the Site comprises grassed fields with some more localised marshy areas. Field boundaries are lined with hedgerow and semi-mature/mature trees.</p> <p>Exposed compacted soil and/or a loose gravel cover was noted along the majority of the internal access tracks within the Site. Access roads into the Site were surfaced with either asphalt or loose gravel cover.</p> <p>Areas within the farm compound comprise either concrete or tarmac at surface.</p>
Asbestos Containing material (ACM)	<p>An asbestos report for the Site was not made available to WSP to review. However, given the age of some of the farm buildings that the potential exists for ACMs to be present within on-Site structures.</p>
Above and Below Ground Utilities	<p>Based on the developed nature of some areas of the Site (farmhouse and outbuildings) it is assumed that common services including water supply, drainage, electricity, and communications may be present on-Site.</p> <p>During a Site walkover a Wales and West gas main headstone was identified off the farm compound access track indicating the presence of a gas main within the adjacent field to the east.</p> <p>Two above ground storage tanks (ASTs) for fuel oil were identified within the farming compound during a walkover, neither were located within a bund and appeared to be sited directly on soft standing. Overhead electric cables were noted to be present along several of the Site's access tracks and cross the Site from east to west.</p>

2.2 SITE HISTORY

A review of historical mapping (included within the Groundsure Report) was undertaken to establish the land-use history of the Site and the surrounding area. The findings of the historical review are summarised in Table 2-2 below.

Table 2-2 - Summary of Site History

Date	On-Site	Off-Site*
1887	<p>The majority of the Site comprises agricultural fields intersected by access tracks. The Great Western Railway line runs from east to west and crosses the southern area of the Site.</p> <p>A number of rectangular shaped farm structures are present in the centre of the Site (within the area of the present-day</p>	<p>Agricultural land surrounding the meandering channel of the Afon Taf is labelled as <i>"liable to floods."</i></p> <p>St. Mary's Church is located approximately 100m to the west of the southern section of the Site.</p> <p>Land to the east of the Site comprises predominantly agricultural fields and woodland (e.g., Great Pale Woodland is identified approximately 320m to the south-east of the Site).</p>

Date	On-Site	Off-Site*
	farm compound) which are collectively labelled as “Ty Newydd.” Three ponds are present within the vicinity of Ty-Newydd.	<p>To the west, the town of Whitland and the village of Tre-Vaughan (south-west) have been established.</p> <p>A blacksmith and two mills are identified within Tre-Vaughan located between 300m and 350m to the south-west of the Site.</p> <p>Whitland Train Station and associated sidings/depot are present approximately 200m to the west. A well is also labelled within the vicinity of the station. A Corn Mill is present within Whitland approximately 200m to the north-west of the Site. A brick yard is also present approximately 200m to the north.</p>
1906	No significant changes noted.	A Station Engine Shed is identified to the south of Whitland Train Station. A well is noted adjacent to Oak Villa located approximately 80m to the north of the Site. A spring is identified approximately 350m to the north-east of the Site adjacent to Nant-yr-allwyn.
1948	No significant changes noted.	<p>The town of Whitland is noted to have expanded in size.</p> <p>A Gas works has been constructed adjacent to the western boundary of the southern section of the Site, and a Dairy has been constructed approximately 100m west of the Site. The Whitland Corn Mill is labelled as disused.</p>
1973	<p>Ty-Newydd Farm has been split into two farms (No.1 and No.2). Tracks and drains are identified within the centrally located farm compound which flow to the south towards the Afon Taf.</p> <p>A drain is also identified to cross the eastern area of the Site, which flows in a southerly direction towards the Afon Taf.</p>	<p>The residential development of Bryngwenllian appears to the immediate north of the Site. A police station is noted approximately 230m to the north of the Site, off Spring Gardens (B4328). A plant nursery is also present approximately 10m to the north-east of the Site.</p> <p>A sewage works has been constructed approximately 200m to the south of the Site and a pump house and sewage pumping station are located 10m and 50m, respectively, to the south-west of the Site.</p> <p>The gas works to the immediate west is now labelled as a gasholder station and the Dairy is now labelled as a Factory with circular tanks.</p>
1992	No significant changes noted.	Whitland Industrial Estate has been constructed to the immediate north of the Site.
2001	Two ponds appear to remain on-site.	<p>The gasholder station to the west is now labelled as a depot.</p> <p>To the west of the Factory/Dairy a Police and Fire Station are identified 180m and 580m, respectively, to the north-west of the Site.</p>
2010	Ty-Newydd Farm is now one farm again “Fferm Ty Newydd.”	Willow Park Caravan Park is present approximately 180m to the west of the Site, to the south of Whitland Station. The factory/dairy to the north of the Site is no longer present.

Date	On-Site	Off-Site*
	A small pond is identified along the northern boundary in the north-eastern corner of the Site.	
2022	An unnamed stream/drain is shown to cross the southern extents of the Site north to south.	Continued development of Whitland town centre and the village of Trevaughan is noted
*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 Location (Within 250m/500m as Specified) *	Details
Licensed Discharges to Controlled Waters	1* (possible)	18* (within 500m)	<p>One record presented by the Groundsure Report may be relevant to the Site which is registered to Ael-y-Bryn, Whitland. This record details the discharge of unspecified effluent to an open ditch listed as a tributary to the Nant-yr-Al.</p> <p>A discharge consent for the release of unspecified effluent from the former gas works to the River Gronw is incorrectly reported on-Site due to the proximity of the incident to the Site.</p> <p>The remainder of the discharge consents recorded within 500m typically relate to the release of sewage or trade discharges to either land, the Afon Gronw or the Afon Taf.</p>
Pollution Incidents (EA)	1	10 (within 500m)	<p>The pollution incident on-site occurred on 22/08/2001 and involved the release of inert materials/wastes (soils and clay) as pollutants. No impact to land, water or air was noted.</p> <p>The most recent off-site incidents were noted to take place between 2014 and 2015 where minor and no impact to land and air, respectively, was noted.</p>
Landfill Sites	0	0 (within 500m)	
Surface Ground Workings	2	7* (within 500m)	On-site records of surface workings relate to the presence of a pond and unspecified cuttings, likely associated with the railway.

Information	On-site Location	Off-site Location (Within 250m/500m as Specified) *	Details
			Off-site features include ponds, brick yards, sewage works and unspecified ground workings located 80m north-west, likely associated with the railway/ Whitland Station.
Waste Exemptions	0	38 (within 250m)	38No. records of waste exemptions were recorded between 33m north-west and 219m south-west of the Site. Exemptions detailed account for normal agricultural practices such as: treating waste via screening and blending, using waste (in construction, for farm uses, for specified purposes), disposing of waste (via burning) and storing of waste.
Historical Industrial Land Uses	0*	99 (within 500m)	<p>A large number of historical industrial land use records have been identified within 500m. The majority of these are distributed within the industrial estate to the north, and within the developed areas surrounding the centres of Whitland to the west and Trevaughan to the south-west as detailed within Table 2-2.</p> <p>The nearest industrial land use relates to the former gas works which was indicated to lie as close as 2m to the west of the Site.</p>
Historical Tanks	0	45 (within 250m)	A total of 45No. tanks located between 3m west and 223m south-east have been identified. These include tanks associated with the nearby gas and sewage works as well as a number of other unspecified tanks.
Historical Garages/Filling Stations	0	5* (within 500m)	The nearest historical garage was located 156m to the west of the Site.
Recent Garages/Filling Stations	0	1 (within 500m)	One “active” petrol station is identified 204m north of the Site but is noted to have an obsolete status.
Historical Energy Features	1	3* (within 500m)	<p>One on-site historical electrical substation and/or transformer dating back to 1969 has been identified on the northern Site boundary.</p> <p>Off-site energy features relate to the former gas holder/s located approximately 15m to the west and two electrical substations located 223m west and 400m to the north-west of the Site. Both seem to date back to 1969.</p>
Recent Industrial Land Uses	3*	24 (within 250m)	Two on-site records both relate to slurry beds assumed to be present within Ty Newydd Farm. One electrical substation is thought to be present on-site, along the northern boundary.

Information	On-site Location	Off-site Location (Within 250m/500m as Specified) *	Details
			<p>The majority of off-site industrial trades are located at Whitland Industrial Estate located to the immediate north of the Site or developed areas surrounding the centres of Whitland to the west and Trevaughan to the south-west.</p> <p>The Groundsure Report highlights the presence of four unspecified tanks, two current electrical substations, the sewage works, a chemical works and a number of vehicle repair shops within 250m of the Site.</p>
<p>*Where obvious duplication of records has been noted within the Groundsure Report the number of features has been grouped and adjusted within the table above.</p>			

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 2022) no response has been received.

2.4 SITE WALKOVER

A Site walkover was carried out on the 21st April, 2022 by an experienced WSP Engineer. All areas of the Site were accessible, however, in-line with WSP's health and safety procedures, only an external inspection of existing structures was conducted.

The following key observations were made during the Site walkover:

- Access restrictions to the southern area of the Site were noted as detailed within Table 2-1 above due to the presence of the railway line;
- Overhead electrical cables were generally noted to cross the Site from east to west across agricultural fields and were also noted along some of the Site's access tracks;
- Two fuel oil ASTs were noted within the farm compound;
- The bulk storage of fertilisers was noted within the farm compound;
- Stockpiling and combustion of various wastes was noted at several localities across the Site. Some discolouration of standing water was noted in areas adjacent to waste stockpiles;
- Boggy ground conditions were noted within fields to the south of the farm compound in close proximity to a drain positioned just north of the railway line.

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 anticipated along the access tracks/roads and within the vicinity of farm buildings/compound.

SUPERFICIAL DEPOSITS

Alluvium consisting of “*clay, silt, sand and gravel*” and associated with the Afon Taf is indicated to be present across the southern area of the Site.

BEDROCK

The bedrock beneath the north-eastern area of the Site is indicated to comprise the Arenig Tetragraptus Beds (Mudstone) which are reported to comprise “*fossiliferous shale beds*.”

The Lower Llanvirn Didymograptus bifidus Beds (Mudstone) are indicated to underly the central and southern areas of the Site. These deposits are described by the BGS as “*grey silty graptolitic mudstones with thin tuffaceous horizons*.”

STRUCTURAL GEOLOGY

Underlying bedding planes are understood to dip 45° to the north/north-west and are indicated to have been subject to historic folding on available geological mapping.

3.2 BGS EXPLORATORY HOLE RECORDS

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

Available records indicate the presence of topsoil over typically fine-grained soils of weathered mudstone bedrock. Where detailed on the available logs, groundwater strikes were noted to range between 2.50m and 6.00m bgl.

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.

Two on-site records of surface workings relate the presence of a pond and unspecified cuttings, likely associated with the railway.

Off-site features include ponds, brick yards, sewage works and unspecified ground workings located 80m to the north-west, likely associated with the railway/ Whitland Station.

The Groundsure Report indicates that the Site and the surrounding area have potentially received small scale underground mining for vein/mineral. 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”*.

3.5 UNEXPLODED ORDNANCE

A review of the Zetica Risk Map available online indicated that the Site is in an area of low unexploded ordnance (UXO) risk defined as *“areas indicated as having 15 bombs per 1000 acre or less”* during WWII. A Pre-Desk Study Assessment for the Site provided by Zetica states that there are no readily available records that indicate that the Site may have been impacted by historical bombing events. A copy of the Pre-Desk Study Assessment is presented in **Appendix F**.

3.6 GEOTECHNICAL HAZARDS

Information on potential ground stability hazards assessed by the BGS and included in the Groundsure Report and are summarised in Table 3-1. Ground stability hazards at the Site range from negligible to very low.

Table 3-1 - Summary of Ground Stability Hazards

Feature	Hazard Rating
Shrink swell properties of clays	Negligible - Very Low
Running Sands	Negligible - Low
Compressible deposits	Negligible - Moderate
Collapseable deposits	Negligible - Very Low
Landslides	Very Low - Low
Ground dissolution of soluble rocks	Negligible

3.7 RADON

The Groundsure Report indicates that the majority of the Site is located within an area where either less than 1% or between 1% and 3% of properties would exceed the Radon Action Level. These areas would not require radon protection measures. However, a very small area at the northernmost extent of the Site has been identified where between 5% and 10% of properties would exceed the Action Level. The report states that basic radon protection measures would likely be required for structures within this area. The design of appropriate mitigation measures would be subject to agreement with the Local Authority.

3.8 HYDROGEOLOGY

- 3.8.1. The Alluvium beneath the Site is classified as a Secondary A Aquifer, defined as *“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.”

- 3.8.2. Both the Lower Llanvirn Didymograptus Bifidus and Arenig Tetragraptus bedrock units beneath the Site are classified as Secondary B Aquifers, defined as “*an aquifer with lower permeability layers which may store/yield limited amounts of ground water and is generally a water bearing part of a former non-aquifer.*”

The Groundsure Report indicates that groundwater beneath the Site is of high vulnerability, associated with the intermediate leaching properties of on-site soils and the well-connected fracture network of the underlying productive bedrock aquifer. 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).

- 3.8.3. The Site is not located within a Source Protection Zone. There are two historical groundwater abstraction records associated with two wells anticipated to be present on-Site at Ty Newydd Farm. The Groundsure Report indicates that the groundwater abstractions were utilised for general farming and domestic purposes (i.e., possible small-scale potable supply). The nearest active abstraction record detailed within the Groundsure Report is located 486m to the south of the Site. There are no details of the nature of the use of this abstraction.

3.9 HYDROLOGY

According to the Lle Geoportal, the Site lies within the Afon Gronw (headwaters to confluence with Taf) and the Afon Taf (Gronw to estuary) water body catchments.

A number of small unnamed streams/land drains have been identified on-Site, all of which are thought to comprise tributaries to the Afon Taf which lies adjacent to the southern Site boundary.

The following surface water features have been identified on-Site:

- An unnamed stream/land drain runs parallel to the farm compound access road;
- An unnamed stream/land drain crosses the Site east to west approximately 50m north of the railway. Sections of this feature which intersect existing access tracks may be culverted as the Groundsure Report states it lies “underground;”
- An unnamed stream/land drain also crosses the Site east to west, running parallel and to the immediate north of the railway line;
- An unnamed stream/land drain crosses a field present in the eastern area of the Site from north to south;
- An unnamed stream/land drain crosses the south-eastern area of the Site from north to south; and
- Ponds are present on-Site within the centrally positioned farm compound as well as in the north-eastern corner of the Site.

- 3.9.1. The Afon Gronw forms the western boundary of the southern section of the Site and discharges into the Afon Taf at the south-western corner of the Site.

- 3.9.2. Within 500m of the Site several other streams (e.g., Afon Coile located approximately 100m to the west) have been identified within the surroundings, all of which are considered to comprise tributaries to the Afon Taf. A large pond is also present approximately 500m to the south of the Site.

The Afon Taf and Afon Gronw are classified as Main Rivers by National Resources Wales (NRW). The Afon Taf has been historically assessed as “moderate” in quality with a “good” ecological and a “failing” chemical rating (2016). The Afon Gronw has historically been assessed as having a “good” chemical, ecological and overall water quality rating (2016).

There is one on-site surface water abstraction record which relates to the use of water from the Afon Taf for spray irrigation. No other surface water abstraction records were identified within 500m of the Site.

3.10 FLOOD RISK

The online Flood Risk Development Advice Map provided by NRW indicates that the northern area of the Site is located within Zone A, which is classified as “*at little or no risk of fluvial or coastal/tidal flooding.*” However, the southern half of the Site ranges from Zone B and Zone C2 which are defined as areas “*known to have flooded in the past*” and “*without significant flood defence infrastructure*”.

The online Flood Risk Assessment Wales Map provided by NRW indicates that the southern half of the Site (the area to the south of the railway line) is located within Flood Zone 3 (which is defined as the extent of a flood from rivers with a 1% (1 in 100) chance or greater of happening in any given year). Flood Zone 3 is also present to the north of the railway line in the central and eastern areas of the Site.

The Ambient Risk Analytics surface water (pluvial) flood map (included within the Groundsure Report), which identifies areas likely to flood as a result of extreme rainfall events (i.e., land naturally vulnerable to surface water ponding or flooding) indicates a worst-case scenario greater than 1.00m of flooding with a 1 in 30-year return period for the Site.

The Groundsure Report lists two historic flood (March 1981 and December 1979) where the capacity of the channel of the Afon Taf was exceeded and impacted the Site and surrounding area within 500m. The Groundsure Report indicates that the Site is not currently benefitting from any flood defence systems whereas localities located further afield (16m north and 18m to 241m west) are benefitting from flood defences.

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

3.11 DESIGNATED SITES AND SENSITIVE LAND USES

Six areas of designated ancient woodland have been identified within 500m to the south of the Site and one Grade II listed building, Trevaughan Bridge, has been identified 116m 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	Stockpiling and combustion of wastes	Asbestos, Total Petroleum Hydrocarbons (TPH), Polyaromatic hydrocarbons (PAHs), heavy metals, organics.
	Made Ground associated with development of Ty Newydd Farm and the railway infrastructure which intersects the 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).
	Asbestos Containing materials (ACM's) within remaining on-site structures.	Asbestos fragments, dust, free fibres, and/or fibre bundles.
	Leaks/spills from existing fuel oil storage ASTs.	Total Petroleum Hydrocarbons (TPH), Polyaromatic hydrocarbons (PAHs) and hazardous vapours.
	Naturally occurring elevated levels of Radon	Radon gas.

Location	Source	Potential Contaminants of Concern
	On-site small electrical substation located towards the northern boundary on Bryngwenllian.	PCBs, anti-freeze (ethylene glycols), metals, etc.
Off-site	Former gasworks historically located to the immediate west (<5m) of the Site.	Ammonia, spent oxide, complex and free cyanides, foul lime, other inorganic compounds (sulphate, sulphide) metals, asbestos, hydrocarbons, polycyclic aromatic hydrocarbons (PAH), ash/clinker (heavy metals), tar, fuels, BTEX, Semi/Volatile Organic Compounds (SVOC/VOCS's), Light Non-Aqueous Phase Liquids (LNAPL), Dense Non-Aqueous Phase Liquid (DNAPL), hazardous gasses and vapours.
	Cemetery located approximately 50m to the east of the Site.	Inorganic compounds (sulphate, sulphides & metals), ammoniacal nitrogen, ground gases (Carbon Dioxide, Methane) and biological pathogens.
	Sewage works located approximately 200m to the south of the Site.	Pathogens, faecal bacteria, phosphorus, nitrogen, organic matter, suspended solids, pharmaceutical compounds and household detergents and chemicals.
	Various commercial and light industrial land uses identified within 500m of the Site: <ul style="list-style-type: none"> Whitland Industrial Estate located to the immediate north of the Site; Historical blacksmiths and mills (300m – 350m south-west); Whitland Railway sidings/depot/engine shed (200m east); Dairy/factory (200m north-west); Active/historical garages (nearest located approximately 150m west); Chemical works located 152m west 	A wide range of potential contaminants potentially including inorganic compounds (sulphate, sulphide, metals), hydrocarbons, polycyclic aromatic hydrocarbons (PAH), Semi/Volatile Organic Compounds (SVOC/VOCS's), hazardous gasses and vapours
	Two current electrical substations identified within 250m of the Site (88m to the south-west and north-west of the Site) of unknown age. One historical electrical substation located 223m west which pre-dates 1987.	PCBs, anti-freeze (ethylene glycols), metals, etc.

4.3 POTENTIAL PATHWAYS

In the context of the site as it currently exists, the following potential exposure or migration pathways associated with the identified potential source(s) have been identified:

- Pathways to Human Health receptors:
 - Dermal contact with soils;

- Ingestion of dusts/soil particles;
- Inhalation of dusts and fibres (on and off-Site receptors); and
- Inhalation of hazardous ground gasses/vapours (on and off-Site receptors)
- Pathways to Controlled Water receptors:
 - Soil erosion and/or overland flow to on-site/nearby surface water features;
 - Leaching of contaminants through the unsaturated zone and subsequent impact on groundwater;
 - Impact to groundwater via poor quality drainage and/or preferential pathways (e.g., possible on-site wells as noted within Section 3.8);
 - Vertical migration to underlying superficial and/or bedrock aquifers;
 - Lateral migration of contaminants within groundwater to surface water features (i.e., contribution via baseflow); and
 - Lateral migration of contaminants within groundwater to Site (off-site sources only).
- Pathways applicable to on-site infrastructure:
 - Direct contact with corrosive substances (e.g., sulphates and hydrocarbons) in the soil and shallow groundwater;
 - Accumulation of hazardous gases within structures (explosive risk).

4.4 POTENTIAL RECEPTORS

HUMAN HEALTH

- Future Site users (visitors/ employees at the hospital); and
- Off-site human health receptors (neighbouring site users and residents)

Construction and maintenance workers are not included as potential human health receptors within this assessment as potential risks will be covered with appropriate work control procedures. These are legal requirements under the Construction, Design and Management (CDM) Regulation 2015 to ensure suitable health and safety controls are in place during construction works.

CONTROLLED WATERS

- Underlying groundwater encountered within:
 - Secondary A Aquifer (Alluvium);
 - Secondary B bedrock Aquifers (Arenig Tetragraptus beds and Llanvirn Didymograptus bifidus beds)
- Surface water features on-site including:
 - An unnamed stream/land drain that runs parallel to the farm compound access road;
 - An unnamed stream/land drain that crosses the Site from east to west approximately 50m north of the railway line. Sections of this feature which intersect existing access tracks may be culverted as the Groundsure Report states it lies “underground;”
 - An unnamed stream/land drain that crosses the Site from east to west, running parallel and to the immediate north of the railway line;

- An unnamed stream/ land drain that crosses the eastern area of the Site in a north to south direction;
 - An unnamed stream/land drain that crosses the south-eastern area of the Site in a north to south direction; and
 - Ponds present on-site within the centrally positioned farm compound as well as in the north-eastern corner of the Site.
- Surface water features identified within 500m of the Site including:
 - The Afon Gronw (located along the south-western Site boundary) and associated tributaries;
 - The Afon Taff (located along the southern Site boundary) and associated tributaries; and
 - A large pond located approximately 500m to the south 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.

4.5 PRELIMINARY LAND QUALITY RISK ASSESSMENT

It is important to recognise that any risks identified during a preliminary assessment, such as that presented below, are perceived risks based on the recorded information reviewed. A more detailed assessment would require Site specific data from intrusive investigation. The preliminary assessments presented herein are qualitative based on professional judgements following review of the available data and within the context of the existing/proposed use. Those risk categories presented (Very Low, Low, Low to Moderate, Moderate, High, Very High) follow guidance outlined in CIRIA Publication C552, Contaminated Land Risk Assessment – A Guide to Good Practice. CIRIA states that risk levels should be based on an understanding of both the probability (likelihood) of a risk occurring and the magnitude of the potential consequence (severity) of a risk. CIRIA defines four levels of probability and four levels of severity with relation to contaminated land, as presented in **Appendix G**.

Table 4-2 - Initial Conceptual Site Model and Preliminary Land Quality Risk Assessment

Potential Contaminant Linkage (PCL)	Source	Pathway	Receptor	Consequence of Risk	Likelihood of Risk	Risk	Comments
<i>On-site sources of potential contamination</i>							
1	Stockpiling and combustion of wastes and Made Ground associated with development of Ty Newydd Farm and the railway infrastructure which intersects 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 hard surfacing or structures which will prevent the direct contact of soils with future Site users. The stockpiled materials will be removed as part of Site redevelopment. It is recommended that intrusive investigation is undertaken to establish the nature of any Made ground encountered to assess whether it shall require removal as part of Site redevelopment.
2		Inhalation of dusts and fibres	Neighbouring Site users	Medium	Unlikely	Low	The generation of dusts would most likely occur upon disturbance of on-site soils during demolition and/or earthworks undertaken as part of the construction phase. During the construction phase, potential risks posed to off-site receptors should be appropriately managed by the Principal Contractor.
3		Soil erosion and/or overland flow to on-Site surface water features; Leaching of contaminants through the unsaturated zone and subsequent impact on groundwater; Impact to groundwater via poor quality drainage and/or preferential pathways (e.g., possible on-site wells); Vertical migration to underlying superficial/ bedrock aquifers; and Lateral migration of contaminants within groundwater to surface water features (i.e., contribution via baseflow).	Underlying groundwater and on-site/nearby surface water features	Medium	Unlikely	Low	Whilst the risk presented to controlled water receptors is considered to be low, further assessment of potential contaminant impacts on surface water and groundwater receptors located within close proximity of the Site is recommended in order to better understand the risks presented.
4		Direct contact with corrosive substances (e.g., sulphates and hydrocarbons) in the soil and shallow groundwater.	Future buildings and structures	Mild	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 ground 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	Future Site users	Medium	Unlikely	Low	During the Site walkover the bulk storage of a large volume of soil additives was noted as such, application of these potential contaminants is continued to be on-going at the Site. However, the proposed development of the Site as a hospital/health care facility will result in the majority of the Site being covered with

		Inhalation of dusts					hard surfacing or structures which will prevent the direct contact of soils with future Site users.
7		Inhalation of dusts.	Neighbouring site users	Medium	Unlikely	Low	During the construction phase, potential risks posed to off-site receptors should be appropriately managed by the Principal Contractor.
8		Soil erosion and/or overland flow to on-Site surface water features;	On-site/nearby surface water features	Medium	Low	Moderate/Low	Whilst the risk presented to controlled water receptors is considered to be moderate/low, further assessment of potential contaminant impacts on surface water and groundwater receptors located within close proximity of the Site is recommended in order to better understand the risks presented.
9	Asbestos Containing materials (ACMs) within on-Site buildings	Ingestion of dusts/soil particles; and Inhalation of dusts and fibres.	Future Site users	Medium	Unlikely	Low	Where the existing buildings are demolished, there is potential for structurally bound asbestos to enter on-Site soils. Prior to redevelopment an asbestos inspection/management survey should be completed to better inform any associated risks to demolition contractors as the current condition of any in-situ ACMs is unknown.
10		Inhalation of dusts and fibres.	Neighbouring Site users	Medium	Unlikely	Low	Neighbouring Site users may be exposed to potential airborne contaminants via windblown dusts/fibres during demolition works. This should be managed by the Principal Contractor by applying appropriate health and safety control measures.
11	Leaks/spills from existing fuel oil storage above ground storage tanks (ASTs).	Dermal contact with impacted vegetation/soils; Ingestion of impacted 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 hard surfacing or structures which will prevent the direct contact of soils with future Site users. It is assumed that existing oil tanks would be removed during Site redevelopment so would not pose an on-going risk of contamination or vapour generation.
12		Soil erosion and/or overland flow to on-Site surface water features; Leaching of contaminants through the unsaturated zone and subsequent impact on groundwater; Impact to groundwater via poor quality drainage and/or preferential pathways (e.g., possible on-site wells); Vertical migration to underlying superficial/ bedrock aquifers; and Lateral migration of contaminants within groundwater to surface water features (i.e., contribution via baseflow).	Underlying groundwater and on-site/nearby surface water features	Medium	Low	Moderate/Low	Given the lack of any spill/leak prevention measures at the Site (e.g., secondary containment/bunds) and the proximity of on-site ASTs to surface water features/drains which are likely to discharge directly into a Main River (Afon Taff) a moderate/low risk rating is considered appropriate for this PCL. Whilst the risk presented to controlled water receptors is considered to be moderate/low, further assessment of potential contaminant impacts on surface water and groundwater receptors is recommended in order to better understand the risks presented.
13		Direct contact with corrosive substances (e.g., sulphates and hydrocarbons) in the soil and shallow groundwater.	Future buildings and structures	Mild	Unlikely	Very Low	The presence of certain contaminants (e.g., hydrocarbons) can impact on the durability of buried services / utilities and foundations due to aggressive ground conditions. 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.

14		Accumulation of hazardous ground gases/vapours 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.
15	Naturally occurring elevated levels of Radon	Inhalation of hazardous radon gas	Future Site users	Medium	Low	Moderate/Low	Given the potential for the bedrock to emit radon gas further assessment should be undertaken to establish the degree of the protective measures that need to be incorporated within building structures.
16	On-site electrical substation located towards the northern boundary.	Dermal contact with impacted vegetation/soils; Ingestion of impacted dusts/soil particles; and Inhalation of dusts and fibres.	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 hard surfacing or structures which will prevent the direct contact of soils with future Site users. During the Site walkover the electrical substation was identified to be in good condition and was sited on hardstanding.
17		Soil erosion and/or overland flow to on-Site surface water features; Leaching of contaminants through the unsaturated zone and subsequent impact on groundwater; Impact to groundwater via poor quality drainage and/or preferential pathways (e.g., possible on-site wells); Vertical migration to underlying superficial/ bedrock aquifers; and Lateral migration of contaminants within groundwater to surface water features (i.e., contribution via baseflow).	Underlying groundwater and on-site/nearby surface water features	Mild	Unlikely	Very Low	
18		Direct contact with corrosive substances (e.g., sulphates and hydrocarbons) in the soil and shallow groundwater.	Future buildings and structures	Mild	Unlikely	Very Low	
Off-site sources of potential contamination							
19	Potentially contaminative land uses including: ■ Former Gasworks (<5m west); ■ Cemetery (50m east); ■ Sewage works (200m south) ■ Whitland Industrial Estate (<5m north); ■ Historical smithy's and mills (300m – 350m south-west); ■ Whitland Railway sidings/depot/engine shed(200m east); ■ Dairy/factory (200m north-west);	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.
20		Accumulation of hazardous gases within structures (explosive risk)	Future buildings and structures	Severe	Unlikely	Moderate/Low	
21			Lateral migration of contaminants within groundwater to Site.	Underlying groundwater and on-site surface water features	Medium	Unlikely	Low

22	<ul style="list-style-type: none"> Active/historical garages (nearest located approximately 150m west); and Chemical works located 152m west. 	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.
23	Two current electrical substations identified within 250m of the Site (88m to the south-west and north-west of the Site) of unknown age. One historical electrical substation located 223m west which pre-dates 1987.	Lateral migration of contaminants within groundwater to Site.	Underlying groundwater and on-site surface water features	Medium	Unlikely	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.
24		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 gently downwards towards the south in the direction of the Afon Taf, with the elevation varying between approximately 50m AOD to 15m AOD. More localised steeper banks are present adjacent to the Afon Taf in the south and the Afon Gronw in the west.

The published geological maps indicate the presence of Alluvium in the southern area of the Site. Weathered bedrock is likely to be present at the near surface in the remaining areas of the Site.

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

Nearby BGS borehole records indicate the topsoil over typically fine-grained soils of weathered mudstone bedrock. Where detailed on the available logs, groundwater strikes were noted to range between 2.50m and 6.00m bgl.

Based on an understanding of the anticipated ground conditions, **Error! Reference source not found.** summarises the possible ground condition constraints and opportunities that have been identified.

Table 5-1 – Potential Ground Condition Constraints and Opportunities

Potential Hazard/Feature	Details	Method of Risk Reduction
Shallow Groundwater	Groundwater is potentially shallow in areas of the Site, particularly in the areas adjacent to the Afon Taf and Afon Gronw. This may require consideration during construction design should underground structures be proposed.	An intrusive investigation should be undertaken across the Site to better understand the hydrogeological regime. Dewatering of excavations and tanking of below ground structures may be required during redevelopment.
Poor Site drainage conditions	Areas of ground on-site indicate the presence of shallow groundwater and/or poor Site drainage (e.g., boggy ground conditions noted towards the railway line, to the south of the farm compound).	If ground conditions beneath the Site do not favour soakaway drainage alternative surface water management systems may be required. .
Flood Risk	The southern area of the Site is at an increased risk of flooding from the Afon Taf.	Further consideration of the risk from flooding should be considered (e.g., via a flood consequence assessment).
Suitability of ground conditions for foundations.	The published geological maps indicate that Alluvium is present in the southern area of the Site adjacent to the Afon Taf. Due to the potential for low strength and	An intrusive investigation should be undertaken across the Site to establish the ground conditions and enable foundation design of proposed structures.

Potential Hazard/Feature	Details	Method of Risk Reduction
	compressible material, the alluvium is unlikely to provide a suitable founding medium. In the areas where alluvium is absent, 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.	
Below ground obstructions	The existing foundations of the structures and the infilled well(s) within the farm compound provide below ground obstructions. The presence of a below ground gas main on-site was identified during the walkover, which would need to be considered during Site redevelopment.	Existing foundations and other obstructions will need removing or stabilising during Site redevelopment. The existing gas main would either require incorporation into the design or would require diversion/replacement
Potential earthworks requirements	Given the sloping nature of the Site earthworks may be required to provide an appropriate development platform.	Development of the proposed masterplan will inform the need for the extent of any earthworks.
Potential for soakaway drainage	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.

5.2 OTHER POSSIBLE DEVELOPMENT CONSTRAINTS Access to the southern area of the Site is restricted by the presence of railway line. At present, direct access to this area only appears to be available via a gated pedestrian crossing over the railway bridge over the Afon Taf or along a narrow height restricted track passing beneath the railway bridge, adjacent to the Afon Taf. Should access to the southern area of the Site be required during and following development, then an alternative route would be required.

Overhead cables have been identified to cross the Site from east to west towards the northernmost area of the Site. These may restrict plant movements during development or the height of possible future structures unless they are diverted.

The presence of an active railway line bisecting the Site, east to west would need to be considered as part of the master planning.

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 moderate environmental sensitivity.

The southern area of the Site, adjacent to the Afon Taf, is reported to be underlain by Alluvium (Secondary A Aquifer) with the bedrock comprising the Arenig Tetragraptus Beds (Mudstone) in the north-eastern and the Lower Llanvirn Didymograptus Bifidus Beds (Mudstone) in the central and south-western areas of the Site. Both bedrock units are classified as Secondary B Aquifers.

Groundwater vulnerability across the Site is reported to be high, associated with a well-connected fracture flow network within the underlying bedrock, and local small-scale domestic abstraction has been noted to have historically occurred within the area. A former well(s) are understood to be located within the farm compound although the status of these is unknown.

Several minor surface water features have been identified on-Site which are considered to comprise tributaries to the Afon Taf and Afon Gronw which are located on the southern and south-western Site boundaries, respectively.

The online Flood Risk Development Advice Map provided by NRW indicates that the northern area of the Site is located within Zone A, which is classified as *“at little or no risk of fluvial or coastal/tidal flooding.”* However, the southern half of the Site ranges from Zone B and Zone C2 which are defined as areas *“known to have flooded in the past”* and *“without significant flood defence infrastructure”*.

The online Flood Risk Assessment Wales Map provided by NRW indicates that the southern half of the Site (the area to the south of the railway line) is located within Flood Zone 3 (which is defined as the extent of a flood from rivers with a 1% (1 in 100) chance or greater of happening in any given year). Flood Zone 3 is also present to the north of the railway line in the central and eastern areas of the Site.

The southern area of the Site is at an increased risk of flooding from the Afon Taf and is not currently benefiting from any form of flood defence systems. Two historical surface water flooding events have been recorded at the Site associated with the Afon Taf to the south.

The majority of the Site is located within an area where either less than 1% or between 1% and 3% of properties would be estimated to exceed the Radon Action Level. In these areas basic radon protection measures are not considered necessary. However, a very small area at the northernmost extent of the Site has been identified where between 5% and 10% of properties exceed the Radon Action Level. Should properties be constructed in this area then basic radon protection measures would likely be required within future structures.

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

A number of possible development constraints have been identified in the southern area of the Site which will require consideration, including:

- The presence of Alluvium which is unlikely to provide a suitable founding medium;
- The elevated flood risk; and
- Access constraints associated with the presence of the railway line.

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 on and off-site to have led to localised contamination at the Site. The most noticeable sources of potential contamination comprise the poorly contained on-Site fuel oil above ground storage tanks (ASTs). Off-site sources of potential contamination include a former gas works, an industrial estate and a cemetery.

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; and,
- Assess the suitability for soakaway drainage.