making the right connections

# Llanberis Road

## Utility Study

## Level 2

| Document Status | | | | |
|---|---|---|---|---|
| Issue/Revision | Comments | Date | Prepared By | Checked By |
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| 3 | | | | |

UCML Utility Study – Level 2

Llanberis Road,

Caernarfon

Produced for: Datrys

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# Contents

## 1.0 Introduction

UCML has been instructed by Datrys (hereafter referred to as 'the Client') to provide a desktop utility study to identify the outline constraints derived from the statutory utility infrastructure on a proposed residential development of up to 36 no. dwellings. The site is located off Llanberis Road as indicated within the red line boundary plan shown in Figure 1.1 below.

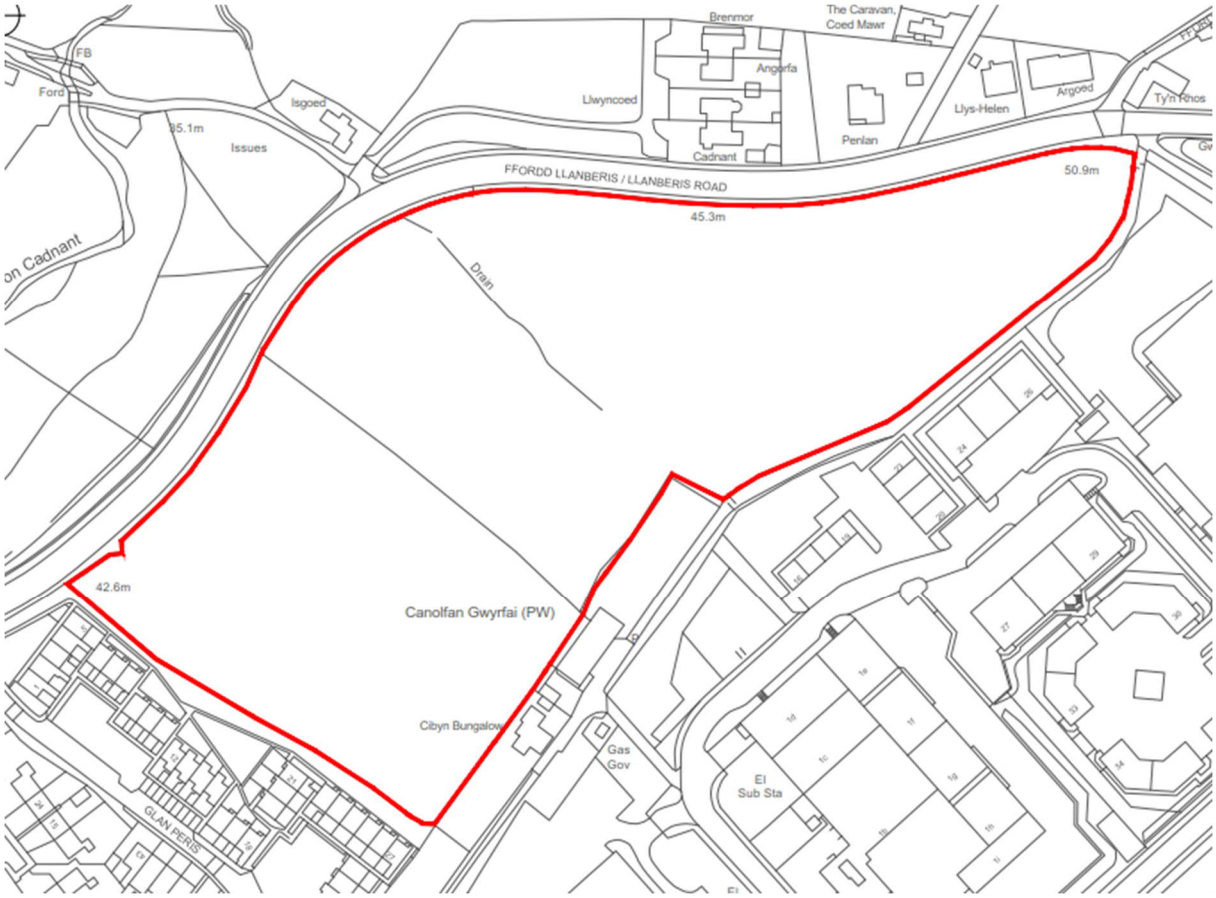



Figure 1.1 – Red Line Boundary Plan

UCML has been commissioned to provide a desktop utility study defining potential cost and timescale risks that could impact on the overall delivery of the project. The principal aim of this utility study is to identify the key constraints derived from statutory utility infrastructure on the proposed development. The information provided within this desktop study is based on review of the current site layout plan (drawing no. C1139.010A_Proposed Site Layout – Phase 1 Option D rev. C) provided to UCML by the Client, as indicated in Figure 1.2 overleaf.


Figure 1.2 – Site Layout Plan

This study focuses on the 36 no. dwellings to be constructed on Phase 1 of the development within the section of the site plan shown in Figure 1.2 above. UCML has been advised that the future second phase of the development is yet to be agreed; therefore, all information provided within this study is based on review of Phase 1 only.

The information provided within this desktop study is based on the development consisting of up to 36 no. residential dwellings. All utility load requirements have been estimated by UCML based on all dwellings being electrically heated. UCML has also included an allowance for 1 no. 7.4 kW rated Electric Vehicle (EV) charging point per dwelling.

Table 1.1 overleaf summarises the estimated loads used for the study. Please note, these estimated loads are intended for use as a guide only to produce this study, and it is recommended that a Mechanical and Electrical Consultant is employed to calculate the actual

load required based on the final layout design and proposed heating method. Please note, the load estimations for the residential development does not include a figure for individual clean water load requirements as residential clean water connections are standardised; therefore, no individual load assessment is required.

| Utility | Total load |
|---|---|
| Electricity | 121 kVA |

Table 1.1 – Load summary

This desktop study has been produced using the statutory records received from each relevant body. The host statutory network operators which operate in the vicinity of the development site and covered within this study are listed in Table 1.2 below.

| Utility | Statutory Operator |
|---|---|
| Electricity | SP Energy Networks |
| Gas | Wales & West Utilities |
| Water | Dŵr Cymru Welsh Water |
| Telecoms | Openreach |

Table 1.2 – Host Statutory Network Operators

UCML is not responsible for the accuracy or quality of the information provided on statutory utility infrastructure records, and has attempted to use reasonable skill and care in investigating the existing site services. Unless stated otherwise, UCML has not made any provision for out-of-area water mains, private networks, unrecorded networks, Liquid Petroleum Gas (LPG) networks, street lighting, CCTV, traffic signals/illuminated signage, data centre networks, electricity generation installations, interconnectors, or drainage/sewerage networks.

Please note, all information on the drawings contained within this utility study and elsewhere is indicative only. The verification of the details and plant location given on the relevant infrastructure records should be undertaken using the following methods;

- The use of plant location equipment to trace all underground plant.
- The use of hand dug trial holes to confirm the precise location of plant.

- The use of suitable paint or markers on the surface to clearly indicate the position of buried apparatus.

All works undertaken are to be in accordance and compliance with the Construction Design and Management 2015 Regulations, published Health & Safety Guidelines, and the agreed working practices of the relevant utility companies. The following assumptions must be made in regards to any existing utility apparatus;

- All mains, services cables, and pipes should be assumed live until proven dead prior to any excavation, demolition or groundworks commencing.
- Any existing building is assumed to have live services until proven otherwise.
- Any site is assumed to have existing utility apparatus located within the boundary until proven otherwise.
- Service connections are not indicated on all utility infrastructure records. Where no service connections are indicated, their presence should be anticipated until proven otherwise.

## 2.0 Scope and Objectives

Utilities Connections Management Limited (UCML) is an independent Utility Consultancy providing services relating to the provision of utility connections to all types of developments.

This desktop utility study aims to provide a 'snapshot' in time of the current statutory utility networks and review the potential connection, diversion, and disconnection works that may be required to accommodate the development proposals. The objective of the commission is to provide a level of information relating to budgetary costs and risks, without incurring significant costs relating to distribution network studies. It should be noted that as this study is desktop in nature, no site visits or surveys have been undertaken during its completion.

The scope of works undertaken by UCML may be summarised as follows;

- Obtain the statutory Network Operators' infrastructure records.
- Review the existing utility distribution networks within the local area of the site.
- Application for firm points of connection for electricity, gas, and water supplies to the site to determine the location of proposed connection.
- Consider the impact existing utility apparatus will have on proposed development works and provide a technical review and analysis of all statutory authority infrastructure affected by proposed on and off-site works, including the provision of the following;
    - Budget estimates for anticipated disconnection and diversion works.
    - Budget estimates for connection works, derived from firm non-contestable charges including an estimate of required reinforcement works where applicable.
    - Cost risk and analysis.
    - Timescales for provision and execution of quotations for the required works, highlighting risks to project programme.
    - Highlight of abnormal legal requirements including wayleaves and easements, and explanation of requirements to mitigate risk.

UCML's desktop utility studies provide a detailed overview of the statutory electricity, gas, clean water, and telecommunications infrastructure in the vicinity of a proposed site, ideal for:

- Due diligence prior to land purchase to allow negotiation.
- Risk assessment prior to tender.
- Assistance with site layout design to minimise impact on existing utilities, taking statutory utility infrastructure legal requirements into account.
- Detailed planning statements.
- Investment analysis.

## 3.0 Assumptions and Exclusions

In view of the limitations of the available information, the following assumptions have been made to produce this utility study;

- All estimated loads have been based on information provided in the Network Operators Distribution Code and other documented standards.
- The information provided within the desktop study is based on the development site area as identified on the proposed site layout plan shown in Figure 1.2 within the introduction. Any land falling outside of the provided boundary is outside of the scope of this desktop study and, should it be incorporated within the proposed development boundary, this may affect the information and recommendations provided within this desktop study.
- The desktop study has been produced based on the specification provided by the Client/Developer at the time of instruction. Any changes to the size, type, number of specification of the development (for instance the extent of EV charging provision and/or use of Low Carbon heating solutions) may affect the information and recommendations provided within this desktop study.
- In the timescales and budget costs quoted, no allowances have been made in respect to the following unless stated otherwise;
    - Wayleaves, easements, or access rights.
    - Reinforcement charges.
    - Land transfers or lease arrangements for substation requirements if applicable.
    - Abnormal off-site civils.
    - Specialist traffic management (non-standard).
    - On-site civils and builders work.
    - Seasonal Embargoes.

  It should be noted that all budgetary figures quoted are exclusive of any Value Added Tax (VAT) that may be applicable unless stated otherwise.

## 4.0 Terms and Definitions

| | |
|---|---|
| ADMD | After Diversity Maximum Demand. The development demand considering diversity of usage. |
| ASHP | Air Source Heat Pump. |
| CHP | Combined Heat and Power generator. |
| CSEP | Controlled System Exit Point. Gas mains connection point. |
| DNO | Distribution Network Operator. This is the licensed electricity distributor for the geographic region. |
| EV | Electric Vehicle. Charging points for electric vehicles can significantly increase electricity demand of a development. |
| FTTP | Fibre to the Premise telecommunications connection. |
| GT | Gas Transporter. The GT is the licensed gas network operator for a specific geographical area. |
| GSHP | Ground Source Heat Pump. |
| ICP | Independent Connection Providers. Undertake new electrical connections, however they do take ownership of the asset. |
| IDNO | Independent Distribution Network Operator. Network owners and operators that are not constrained to a geographic area. |
| IGT | Independent Gas Transporter. A GT that is not governed by its geographic location. |
| NAV | New Appointment and Variation. Agreements signed by independent water network operators, not governed by geographical area, with Ofwat to adopt water infrastructure within a given boundary. |
| POC | Point of Connection. This is a formal document submitted by the DNO identifying the location for a new electrical connection. |
| PV | Photovoltaic generation. |

## 5.0 Executive Summary

This study comprises the results of the investigation and appraisal undertaken by UCML of the existing utility infrastructure located in the vicinity of the development site, and provides an overview of the likely demand requirements to support the proposed development works along with a review of any network reconfiguration works that are currently anticipated.

The relevant sections of the study will discuss the development requirements and constraints in further detail, however UCML would highlight the following main site constraints, along with the recommended next steps to be taken;

- SP Energy Networks has confirmed sufficient capacity is available in the 11 kV HV network to support the demand requirement for the development. Note, due to the location of the provided POC, off-site HV mains lay will be required to bring capacity to site.

- Use of the provided 11 kV HV POC will trigger the requirement for an on-site substation to be installed and sufficient space will need to be allowed for a substation compound within the development site boundary.

- Dŵr Cymru Welsh Water has confirmed sufficient capacity is available in the existing distribution network to support the demand requirement for the development.

- Diversionary works are required to reconfigure the section of 33 kV EHV overhead line currently crossing the development site.

- Diversionary works may be required to reconfigure a section of water mains apparatus routed across the development site. Further review is recommended along with consultation with Dŵr Cymru Welsh Water to determine if diversionary works are viable – note, diversionary works are likely to have a significant associated cost. Further review of the site layout plan may be beneficial to determine if there is scope to incorporate the route of the main within the layout design.

- Diversion of gas mains apparatus, water mains apparatus, and Zayo comms apparatus may be required to accommodate the construction of the site entrance off Llanberis Road. Trial excavations are recommended to confirm the location of depth of utility apparatus at the location of the proposed entrance to determine the extent of diversionary works required.

- Construction of the proposed footpath along the section of grass verge of Llanberis Road at the western site boundary may increase the level of cover above existing utility apparatus. Further consultation with the relevant utility network operators will be required when detailed drawings of the footpath construction are available to review.

## Cost Summary

Table 5.1 below summarises the total anticipated budget costs for the required utility works.

Please refer to the relevant section of the study for further detail.

| Electricity | Budget Cost |
|---|---|
| Non-Contestable Works | £9,810.95 |
| Contestable Connection Works | £178,500.00 |
| Diversionary Works | £131,000.00 |
| Disconnection Works | £N/A |
| Total Electricity Costs | £319,310.95 |
| **Gas** | **Budget Cost** |
| Connection Works | £N/A |
| Diversionary Works | £9,500.00 |
| Disconnection Works | £N/A |
| Total Gas Costs | £9,500.00 |
| **Water** | **Budget Cost** |
| Connection Works | £75,000.00 |
| Diversionary Works | £114,000.00 (TBC) |
| Disconnection Works | £N/A |
| Total Water Costs | £189,000.00 |
| **Openreach** | **Budget Cost** |
| Connection Works | £Nil |
| Diversionary Works | £N/A |
| Disconnection Works | £N/A |
| Survey Fees | £N/A |
| Total Openreach Costs | £Nil |
| **Other – Zayo Group** | **Budget Cost** |
| Diversionary Works | £25,000.00 |
| Survey Fees | £3,000.00 |
| Total Zayo Group Costs | £28,000.00 |
| Budgetary sums exclude Value Added Tax, on-site civils, and principal contractor preliminaries. | |

Table 5.1 – Cost Summary Table

# 6.0 Electricity

## 6.1 Existing Electricity Network

The electricity distribution network in the vicinity of the development site is under the ownership of SP Energy Networks (SPEN) and is operated within the terms of its Electricity Distribution License issued by Ofgem. The local electricity distribution network in the immediate vicinity of the site comprises of underground cables and associated substations operating at Extra High Voltage (EHV), High Voltage (HV) and Low Voltage (LV).

The figure below illustrates the location of existing SPEN infrastructure which has been extracted from its network records. The cables shown in green are operated at 33,000 Volts (EHV), those shown in red are operated at 11,000 Volts (HV), and those shown in brown are operated at 415 Volts (LV). Please refer to the infrastructure record appended to this study for further detail.

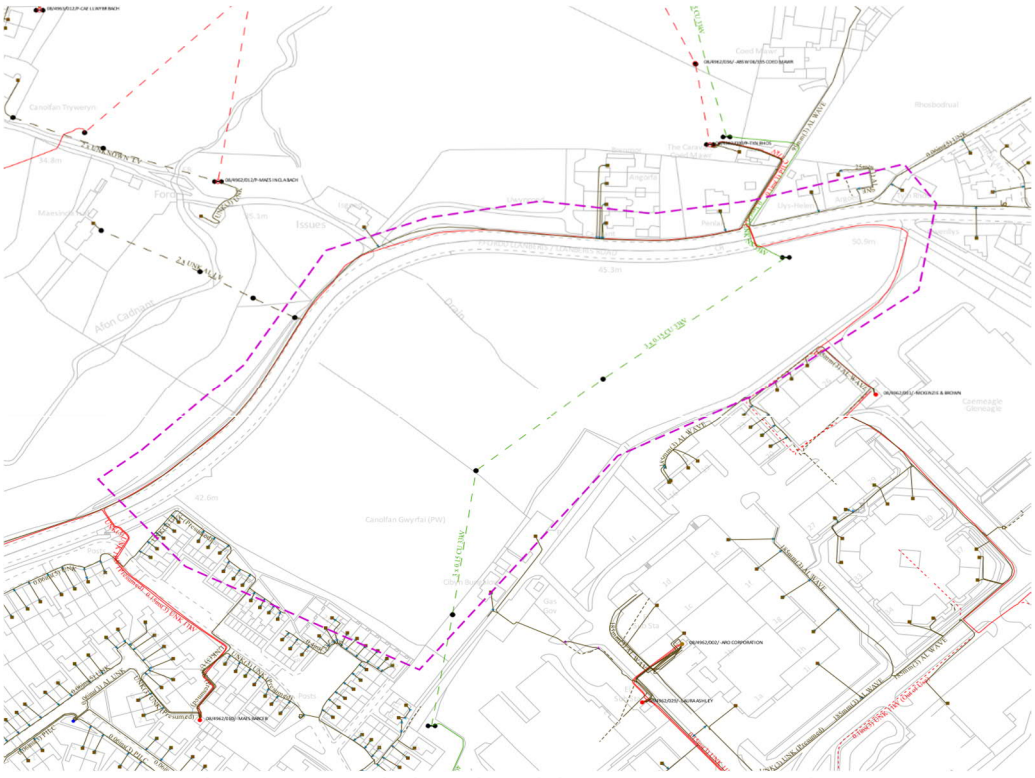
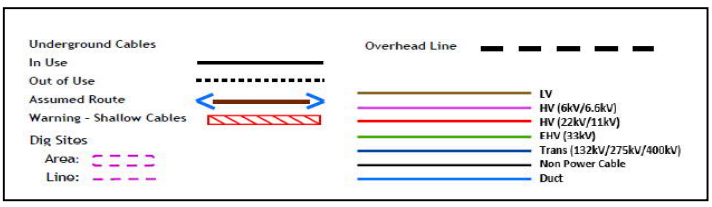


Figure 6.1 – Existing Electricity Infrastructure Plan



## 6.2 Connection Works

### 6.2.1 Non-Contestable Works

The non-contestable element of the connection works are works required to accommodate the provision of capacity for the development, which can only be undertaken by the relevant Distribution Network Operator (DNO). The non-contestable costs are covered within a Point of Connection (POC) quotation.

Based on the development information as outlined within the introduction, UCML has estimated the electrical load requirement for the proposed residential development of 36 no. dwellings to be 121 kVA, based on the use of electric heating and an allowance of 1 no. 7.4 kW rated Electric Vehicle (EV) charging point per dwelling. Based on this estimated load, UCML requested a Point of Connection quotation for the non-contestable works from SPEN.

SPEN has provided a POC quotation for a load of up to 121 kVA, confirming the development can be connected to the 11 kV HV distribution network. The POC will be located from an existing 11 kV HV cable routed in the footpath of Llanberis Road to the north of the development site as indicated in Figure 6.2 below.

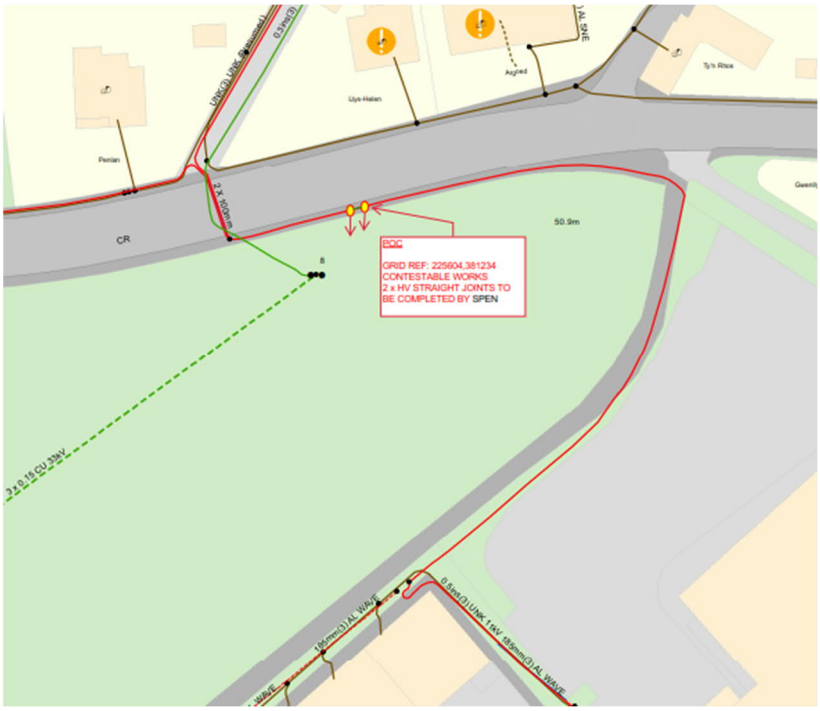



Figure 6.2 – Plan showing electricity HV Point of Connection

Figure 6.3 below is an aerial image of the site provided to indicate the location of the POC in relation to the site boundary for further information.


Figure 6.3 – Plan showing location of POC in relation to site

UCML has queried the location of the POC with SPEN to determine if an alternative can be provided that is located closer to the site entrance; however, SPEN has advised that the demand requested can only be provided from this POC location.

SPEN has advised that, based on current network availability, there is sufficient electric capacity available within the existing electricity infrastructure to serve the proposed development; therefore, no reinforcement works are currently required. However, no capacity can be reserved until payment is made for a valid SPEN non-contestable POC offer.

As part of the non-contestable works, SPEN will undertake ICP design approval and inspections. Cable jointing works for the POC will typically be undertaken by a SPEN Engineer. Please refer to Section 6.2.2 for further detail on the associated contestable connection works required to utilise the provided HV POC.

The total cost and breakdown of the SPEN non-contestable POC is detailed below;

| Description | Cost |
|---|---|
| Assessment Charges | £1,250.00 |
| Design Charges | £1,000.00 |
| Operational Work | £4,922.95 |
| Legal Costs | £2,288.00 |
| Inspection Charges | £350.00 |
| Total Non-Contestable Charges | £9,810.95 |

Table 6.1 – Point of Connection cost breakdown

### 6.2.2 Contestable Works

The contestable element of the connection works are works required to construct the proposed new network for the development, which can be undertaken by the relevant DNO. Alternatively, an Independent Connection Provider (ICP) can be appointed to complete the works.

Based on the confirmed non-contestable POC provided by SPEN, the following contestable connection works will need to be undertaken to provide connections to the proposed dwellings;

- Lay HV cabling from Point of Connection to proposed substation position.
- Excavate, backfill, and permanently reinstate public highway/footpath to Local Authority standards.
- Supply, install and commission the following within the substation housing;
  - High Voltage Ring Main Units
  - 1 no. 500kVA 11kV/433v distribution transformer
  - Low Voltage distribution board
- Lay LV mains infrastructure on-site.
- Install LV service connections to each dwelling, and connect to LV mains infrastructure.

Allow a budget cost of £178,500.00 for the contestable works. This cost is based on an estimated 350 metres of off-site mains lay required from the POC location, as shown in Figure 6.2 in the previous Section, to the site entrance.

The cost provided is based on the developer undertaking all on-site excavation, reinstatement and civils works; including the construction of the substation concrete plinth and housing to the DNO, or appointed Independent Network Operator (IDNO), standard.

As discussed overleaf, the use of a HV POC will trigger the requirement for a secondary substation to be constructed on-site. To accommodate the construction of a secondary substation, a parcel of land of approximately 5m x 5m, along with suitable access and egress, will need to be allowed within the development boundary to accommodate the substation compound.

It should be noted that the use of an ICP to undertake the contestable connection works discussed in this section provides the opportunity to open the contestable element of the works to competitive tender, which may provide significant cost savings in comparison to the DNO undertaking the works.

If an ICP is appointed, the network can then be adopted by an Independent Distribution Network Operator (IDNO). The license of an IDNO allows for an asset value to be offered to the appointed ICP for the adoption of the constructed network. The asset value offered by the IDNO reflects the anticipated value in adopting the newly constructed network, based on the expected revenue that may be generated from the acquisition of new customers. The cost incurred by the ICP in constructing the network may be offset by any asset value offered by the IDNO, which could provide further cost savings.

## 6.3 Diversionary Works

SPEN infrastructure record indicates the development site is crossed by a section of 33 kV EHV overhead line, which crosses both phases of the site. The section within Phase 1 consists of 1 no. span of overhead line, and the section within the boundary of Phase 2 consists of a further 2 no. spans terminating at a 'H' pole in the north eastern corner of Phase 2, where the cable is undergrounded and routed off-site.

Diversionary works will be required to reconfigure the 33 kV EHV network to accommodate the development proposals. UCML has obtained a budget diversion design and cost from SPEN for the required diversion. An off-site diversion has been provided to date as, based on review of the current Phase 1 layout plan, a suitable route is not available through the development site boundary to maintain network interconnectivity as the apparatus cannot be routed within private gardens. SPEN has provided a budget cost of £131,000.00 for the diversionary works, and the proposed off-site diversion route is shown in Figure 6.4 below.

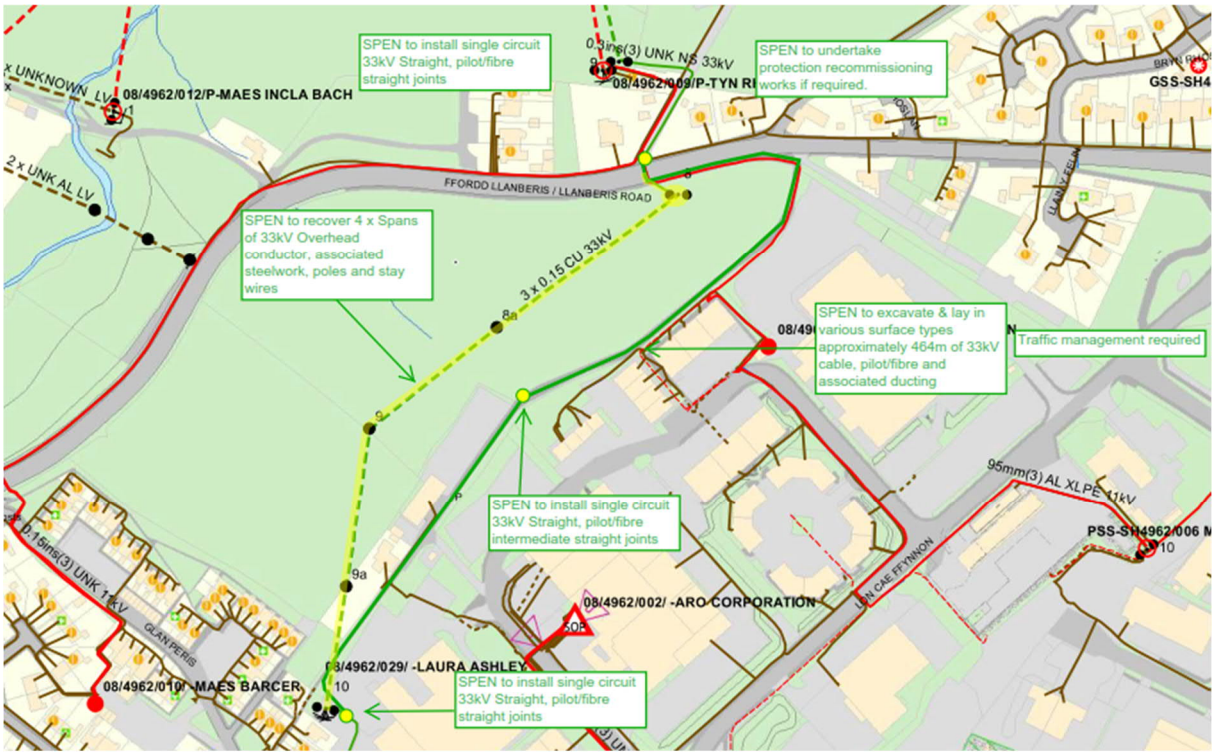



Figure 6.4 – Indicative SPEN diversion route drawing

This indicative route requires cables to be laid within the public right of way footpath linking Llanberis Road and Glan Peris. It is recommended that legal searches are undertaken to confirm the ownership status of the footpath to confirm the use of this route is viable. If the footpath is owned by a third party, legal agreements will be required for the cable. The typical easement for a 33 kV EHV cable is 3 metres wide for the length of the cable in private land, which will need to be retained as clear open space.

The off-site diversion route proposed will also clear the apparatus from the Phase 2 site area to accommodate the future development works on this section of the site without the requirement for further diversionary works.

UCML has liaised with SPEN to determine if an on-site route for the 33 kV EHV diversion can be agreed to negate the requirement for an off-site route, and to enable the diversionary works to be completed in phases. SPEN has advised that they could accept an on-site route for the diversion of the 33 kV cables; however, the site layout plan would need to be amended to ensure a clear route for the cables can be provided.

To enable the 33 kV EHV cables to be routed through site, the cables cannot be routed through private gardens, and must be in clear open space. The route would need to be within either public footpath or road or, where in private land, an easement strip of a minimum of 3 metres must be provided. Full 24 hour access and egress along the cable route within the site boundary will be required for access and maintenance.

In regards to the phasing of the diversion, SPEN has advised that due to the significant planning required to complete the works along with the restriction on outages during the winter months (typically November to February), a significant period between 2 no. phases of a diversion must be achieved. From a timescale point of view, SPEN has advised that it is unlikely they could accommodate a second outage on the 33 kV EHV network within 12 – 24 months of the completion of the initial diversion within the boundary of Phase 1. This restriction would need to be accommodates within the development programme for Phase 2 to make a phased diversion workable.

Once an updated site layout plan for Phase 1 is available for review, it is recommended that consultation with SPEN is continued to obtain a formal diversion quotation for Phase 1, provided the lead in timescale for the future diversion is acceptable for the proposed Phase 2 programme.

SPEN infrastructure record indicates an 11 kV HV cable and an LV cable routed within the adjacent side footpath of Llanberis Road to the site boundary and the location of the proposed site entrance for Phase 1. Based on review of the current site layout plan which indicates no alterations are proposed to the adjacent side footpath, it appears the apparatus will not be affected by the development proposals.

### 6.4 Disconnection Works

SPEN infrastructure record does not indicate any existing service cables located within the development site boundary and, as desktop review indicates the site is greenfield, it can be assumed none are present. No disconnection works are currently anticipated.

## 6.5 Conclusion – Cost & Risk Analysis

Costs relating to the reconfiguration of the existing SPEN distribution system are identified in the following table;

| Detail | Cost |
|---|---|
| Non-Contestable Works | £9,810.95 |
| Contestable Connection Works | £178,500.00 |
| Diversionary Works | £131,000.00 |
| Disconnection Works | None currently anticipated |
| Total | £319,310.95 |

Table 6.2 – Electricity costs

The main risks associated with the procurement of proposals and required works are as follows;

- Some figures have been applied based on previous projects of similar size and UCML's experience, others have been provided for budgetary purposes by SPEN.

- The Point of Connection is valid for only 3 months from submission. The network capacity can only be reserved upon submission of signed acceptance and a suitable design from either an Independent Connection Provider or Independent Distribution Network Operator.

- Legal agreements corresponding with the proposed substation installation may cause time delays. To mitigate any potential negative impact on the project programme, it may be prudent to ensure solicitors representing all relevant parties start communication at the earliest opportunity.

- Diversionary works where required are not regulated by Ofgem, it is therefore advised that a work commencement date is identified as early as possible as this may have a significant impact on any construction programme.

- Amendment to the site layout plan will be required to progress with a phased approach to the diversion of the 33 kV EHV assets crossing the development site.

- In regards to the works required to the EHV network, there may be outage restrictions applicable (typically during November to February) that will need to be accommodated within the project programme for the completion of the diversionary works.

# 7.0 Gas

## 7.1 Existing Gas Network

The local Gas Distribution Network in the vicinity of the development site is owned and operated by Wales & West Utilities under its Gas Transportation License issued by Ofgem. The gas network in the immediate vicinity of the site comprises of gas mains and apparatus operating at Intermediate Pressure (IP) and Low Pressure (LP).

The figure below is an extract from Wales & West Utilities statutory records and details the currently indicated position of existing infrastructure, however it may be prudent to undertake a below ground survey to ensure there are no services present which are not recorded on statutory records. Please refer to the infrastructure record appended to this study for further detail.

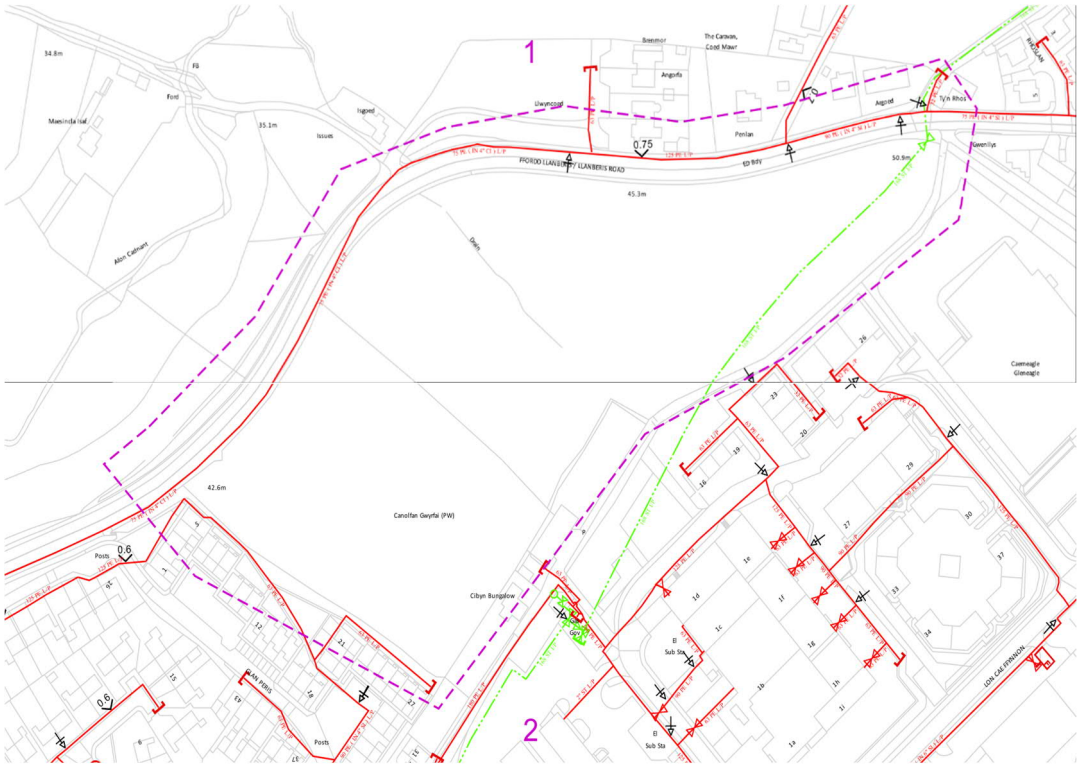
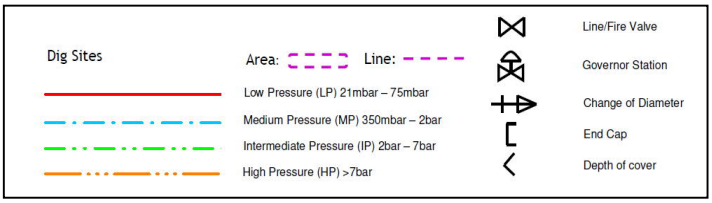



Figure 7.1 – Existing gas infrastructure plan



### 7.2 Connection Works

As outlined within the introduction, it is currently anticipated that the development will utilise an electrical heating strategy. Therefore, there is no current requirement for mains gas connections.

### 7.3 Diversionary Works

Wales & West Utilities infrastructure records indicate a 75mm polyethylene LP main (slip lined within a 4" cast iron main) routed within the site side grass verge of Llanberis Road. Depending on the existing depth of the main below the current ground level, this apparatus may be affected by the proposed site entrance construction works to the extent diversionary works are required.

It is recommended that trial excavations are undertaken to determine the exact depth and location of the main. Should it be confirmed that the main in question is at a depth of 750mm below the finished ground level at the location of the proposed site entrance, diversionary works may be negated through discussions with Wales & West Utilities. When excavating in the immediate vicinity of this LP main, the HSG47 guide should be complied with at all times.

If the apparatus is proved shallow and diversionary works are required, allow a budget cost of £9,500.00 for the works based on a maximum diversion length of 20 metres.

It should be noted that the LP main routed within the site side verge may also be affected by the construction of the proposed footpath along the frontage of the site to Llanberis Road. It is assumed that as the construction of the footpath will likely increase cover above the main, diversionary works would not be triggered. However, formal consultation with Wales & West Utilities will be required to confirm.

Wales & West Utilities infrastructure record also indicates an IP main in the vicinity of the development site, which crosses into the boundary of Phase 2 in the north eastern corner of the Phase 2 area. This main will not be affected by the Phase 1 site works reviewed in this study; however, the location of this apparatus will need to be considered during the Phase 2 design.

### 7.4 Disconnection Works

Wales & West Utilities do not typically indicate individual service pipes and associated apparatus on their infrastructure records; however, their presence should be anticipated until proven otherwise. In this instance, as desktop review indicates the development site is greenfield, it is assumed none are present. No disconnection works are currently anticipated.

## 7.5 Conclusion – Cost & Risk Analysis

Costs relating to the reconfiguration of the existing Wales & West Utilities network are identified in the following table;

| Detail | Cost |
|---|---|
| Connection Works | N/A |
| Diversionary Works | £9,500.00 |
| Disconnection Works | None currently anticipated |
| Total | £9,500.00 |

Table 7.1 – Gas costs

The main risks associated with the procurement of proposals and required works are as follows;

- If the development reverts to requiring mains gas connections, consultation will be required with Wales & West Utilities to confirm the availability of capacity within the local network and confirm a connection point for the development.

- Diversionary works are not regulated by Ofgem and it is therefore advisable to programme the works at the earliest opportunity.

- Excavation within the immediate vicinity of Intermediate Pressure gas mains should not be undertaken prior to consultation with the gas transporter.

# 8.0 Water

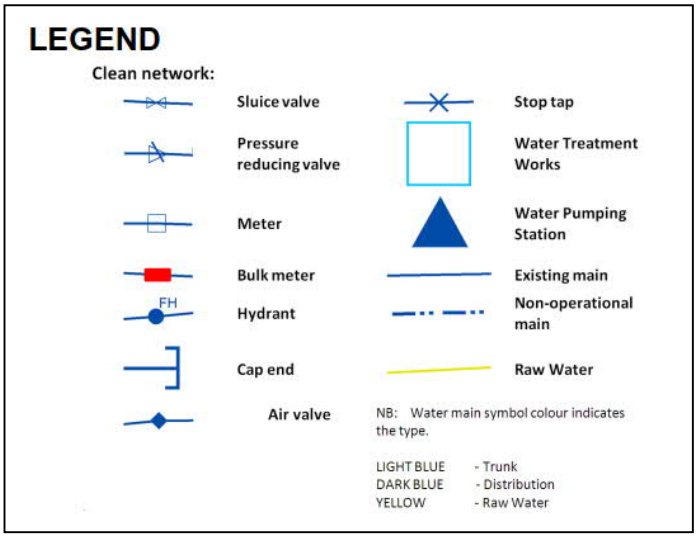
## 8.1 Existing Water Network

The local clean water distribution network in the vicinity of the development site is owned and operated by Dŵr Cymru Welsh Water within the terms of its statutory license issued by Ofwat. The clean water network in the immediate vicinity of the site comprises of distribution water mains and associated apparatus. Please refer to the infrastructure record appended to this study for further detail.

The figure overleaf is an extract from Dŵr Cymru Welsh Water statutory records and details the current indicated position of existing infrastructure, however it may be prudent to undertake a below ground survey to ensure there are no unknown services which are not recorded.

Please note on rare occasions 'out of area' water supply authorities have water mains crossing other water supply authority areas. This is typically trunk or raw water mains transporting water extracted from reservoirs or water courses between areas. Unless stated otherwise, UCML's utility study covers the statutory water network operator for this region as identified within the introduction only.


Figure 8.1 – Existing water infrastructure plan



## 8.2 Connection Works

UCML has been provided with a pre-development response sourced by the Client from Dŵr Cymru Welsh Water to establish the availability of capacity within the local distribution network, and confirm the likely connection point for the development. Dŵr Cymru Welsh Water has advised that sufficient capacity is available within the existing network to accommodate the development.

The pre-development response Dŵr Cymru Welsh Water has provided does not include a connection point. For the purpose of establishing provisional sums it is assumed that a connection point can be provided from either the existing main located at the site entrance or the main crossing the site entrance.

The provision of new water mains could be carried out under Section 41 of the Water Act 1991 whereby the developer may elect to pay a commuted sum amount based on projected occupancy of the units. This cost would be provided by Dŵr Cymru Welsh Water once they have prepared a mains design for the site. In advance of this, a budget cost of £75,000.00 is recommended for mains and connections.

A Phase 2 ground investigation and risk assessment will be required to precisely identify contaminated and uncontaminated ground within the site. The level of contamination on-site will determine the material used for the water mains and service pipes on-site. If the level of contamination is low, standard polyethylene pipe could be used. However, if the level of contamination on-site is determined to be high, the site will require the use of barrier pipe laid in a sterile trench. Should the use of barrier pipe be required, this will increase the cost of connections significantly. As this is generally a greenfield site, it has been anticipated that the levels of contamination may be low and so standard polyethylene pipe could be used.

The Domestic Fire Safety (Wales) Measure, which was passed by the Welsh Assembly Government in February 2011, requires the installation of domestic fire sprinkler systems within all new build residential dwellings constructed from January 2016. The responsibility for the design of the sprinkler system will rest with the developer, installer or domestic fire

sprinkler system designer, and the system should be in accordance with BS 9251:2014 (Fire Sprinkler Systems for Domestic and Residential Occupancies – Code of Practice) or BS 8458:2015 (Fixed Fire Protection Systems – Residential and Domestic Watermist System – Code of Practice for Design and Installation).

Dŵr Cymru Welsh Water will be required to assess the proposed fire sprinkler system design as part of their obligation to comply with the Water Regulations to ensure they meet the national requirements for design, composition and maintenance for water fixtures and fittings. For all single dwellings requiring a combined domestic and water/fire sprinkler system, a 32mm metered connection will be provided. Any water used by domestic fire sprinklers for firefighting purposes will not incur charges, and a rebate will be made for any water used for firefighting.

Several options are available for the fire sprinkler systems installed within residential apartment blocks and multi-occupancy premises. Dŵr Cymru Welsh Water will not provide design guidance for sprinkler systems, the responsibility for the design of a suitable system for a development rests with the developer, installer, or domestic fire sprinkler system designer.

### 8.3 Diversionary Works

Dŵr Cymru Welsh Water infrastructure records indicate the development site is crossed by an 8" unplasticised polyvinyl chloride main which will be affected by the development proposals.

Dŵr Cymru Welsh Water has advised the main is subject to a 10 metre easement, extending 5 metres either side of the main, within which Dŵr Cymru Welsh Water will not permit development works. This will include the construction of permanent structures and significant changes to ground level, and will also include restrictions on planting within the easement, along with possible restriction on car parking spaces within the easement.

To negate the requirement to divert the main, the route of the main and the associated easement would need to be incorporated into the development layout design, and the main and easement would need to be retained as open public space, with 24 hour access and egress along its length and width within the site boundary. Please note, the main and easement cannot be routed within private gardens. Review of the current site plan indicates retaining the main in situ with the current planned layout design is not currently viable.

If the layout design cannot be changed to incorporate the main and easement, diversion of the main may be required. Review of the layout plan indicates a diversion route may need to utilise an off-site route, and may need to include land within the Phase 2 area to reduce the extent of off-site works. In a potential scenario that any diversion would have to be off-site for a length of c.200 metres, the associated cost could be in excess of £100,000.00, and the cost would increase if the diversion distance is increased. It is recommended that the layout plan is reviewed to identify if there is scope to incorporate the main, easement, and associated restrictions. If not, further consultation will be required with Dŵr Cymru Welsh Water to identify a workable diversion route.

Dŵr Cymru Welsh Water infrastructure records indicate a 4" cast iron water main routed within the site side verge of Llanberis Road. Depending on the existing depth of the main

below the current ground level, this apparatus may be affected by the proposed site entrance construction works to the extent diversionary works are required.

It is recommended that trial excavations are undertaken to determine the exact depth and location of the main. Should it be confirmed that the main in question is at a depth of 900mm below the finished ground level at the location of the proposed site entrance, diversionary works may be negated through discussions with Dŵr Cymru Welsh Water. When excavating in the immediate vicinity of this main, the HSG47 guide should be complied with at all times. If the apparatus is proved shallow and diversionary works are required, allow a budget cost of £14,000.00 for the works based on a maximum diversion length of 20 metres.

It should be noted that the main routed within the site side verge may also be affected by the construction of the proposed footpath along the frontage of the site to Llanberis Road. It is assumed that as the construction of the footpath will likely increase cover above the main, diversionary works would not be triggered. However, formal consultation with Dŵr Cymru Welsh Water will be required to confirm.

### 8.4 Disconnection Works

Dŵr Cymru Welsh Water do not typically indicate individual service pipes and associated apparatus on their infrastructure records; however, their presence should be anticipated until proven otherwise. In this instance, as desktop review indicates the development site is greenfield, it is assumed none are present. No disconnection works are currently anticipated.

8.5 Conclusion – Cost & Risk Analysis

Costs relating to the reconfiguration of the existing Dŵr Cymru Welsh Water network distribution system are identified in the following table;

| Detail | Cost |
|---|---|
| Connection Works | £75,000.00 |
| Diversionary Works | £114,000.00 (TBC) |
| Disconnection Works | None currently anticipated |
| Total | £189,000.00 (TBC) |

Table 8.1 – Water costs

The main risks associated with the procurement of proposals and required works are as follows;

- Some figures have been applied based on previous projects of similar size and UCML's experience, others have been provided for budgetary purposes by Dŵr Cymru Welsh Water.

- The pre-development response is valid for only 12 months from submission. The available network capacity can vary continually, due to proposed developments taking capacity from the water distribution network within the vicinity of this specific scheme.

- The developer cannot reserve any water capacity and pressure until a formal order has been placed with the relevant water Network Operator.

- Diversionary works are not regulated by Ofwat and it is therefore advisable to programme the works at the earliest opportunity.

- Further consultation is recommended with Dŵr Cymru Welsh Water in regards to the on-site water main.

- Please be aware that the position of any required fire hydrants will be determined and implemented upon the advice and requirements of the Local Fire Authority.

# 9.0 Communications

## 9.1 Openreach

Openreach own and operate telecommunications apparatus in the vicinity of the development site within the terms of its statutory license issued by Ofcom. The Openreach network in the immediate vicinity of the site comprises of underground cables, overhead lines, and associated apparatus. Please refer to the infrastructure record appended to this study for further detail.

The figure below is an extract from Openreach records and details the current indicated position of existing infrastructure, however it may be prudent to undertake a below ground survey to ensure there are no unknown services which are not recorded.

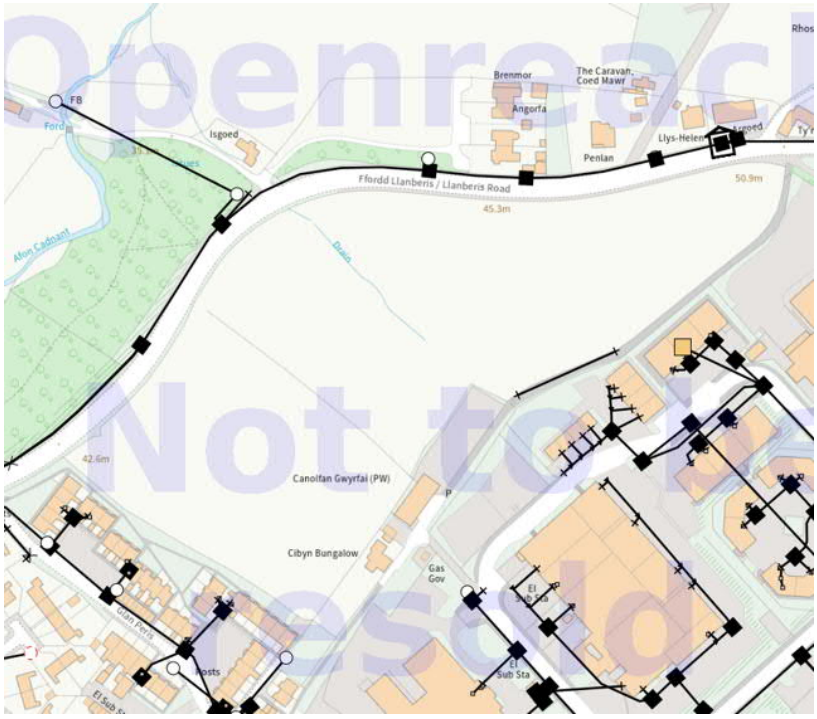
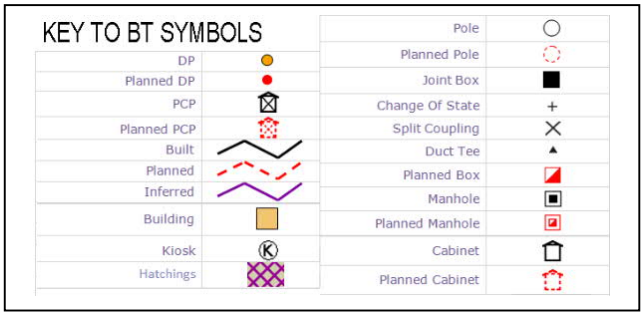



Figure 9.1 – Existing Openreach infrastructure



### 9.1.1 Connection Works

Openreach provide a Fibre to the Premise (FTTP) connection design as standard for new developments. FTTP connections will provide ultrafast broadband speeds to each dwelling and deliver a level of future proofing for broadband as the demand for speed increases. Openreach will provide an allowance of up to £3,400.00 per plot to undertake all off-site works required, however any costs incurred above this allowance will be chargeable to the developer. As the development consists of over 20 no. residential dwellings, Openreach will likely provide FTTP connections free of charge.

Openreach FTTP network is constructed as an Open Access Network, allowing multiple Internet Service Providers (ISPs) to provide services to future residents and customers utilising the same infrastructure. The installation of Open Access Networks mitigate the requirement for multiple service providers installing duplicate infrastructure within the development site.

Typically, the work undertaken by the developer as part of an Openreach FTTP network installation will consist of laying on-site duct and tubing, building all joint boxes, and providing a cable from a designated joint box to each dwelling (with cappings and covers over external entry points). Openreach will carry out all excess construction works outside of the site boundary and in the public highway.

For a FTTP installation, the developer will need to sign a contract and Wayleave agreement with Openreach. This is a legal requirement for Openreach to install and access its infrastructure. However, if the installation of an independent fibre network is being considered for the development site, exclusivity may be required and therefore the Openreach wayleave should not be signed until it is confirmed an independent third party fibre provider will not be used.

As part of the contract for the installation of Openreach connections, the developer may receive a rebate of up to £140.00 per house and £50 per flat for carrying out on-site works as detailed within the contract provided with their connection proposal. The rebate is in line with

the Home Builders Federation (HBF) rates and are payable by BT Plc through its Openreach division.

For the installation of FTTP within an individual dwelling, an Optical Network Termination (ONT) will be installed. The ONT is the Openreach demarcation point and replaces the traditional copper master socket. The Openreach ONT will sit in a wall mounted enclosure along with a Battery Backup Unit (BBU) and the associated wiring. The ONT will include an optical port which connects to the external Customer Splice Point (CSP), an Ethernet port which connects to the communications provider's router, and a telephony port to connect to the voice call network.

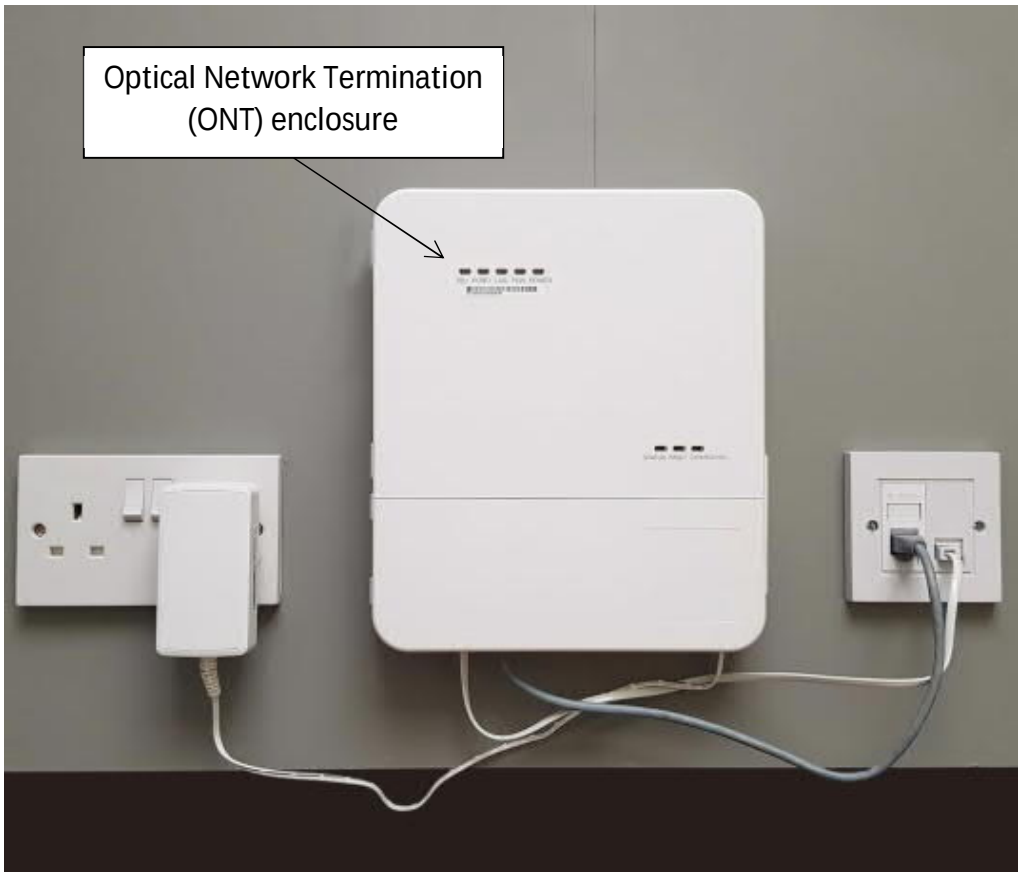



Figure 9.2 – Openreach FTTP Internal Equipment

For all sites installing Openreach Full Fibre Infrastructure, the ONT will be installed by an Openreach engineer. The ONT will be installed at the position of the incoming fibre cable. Figure 9.3 below illustrates the typical installation for the FTTP equipment in a domestic dwelling, where the ONT and associated equipment is located adjacent to the outside wall where the incoming fibre cable is located.

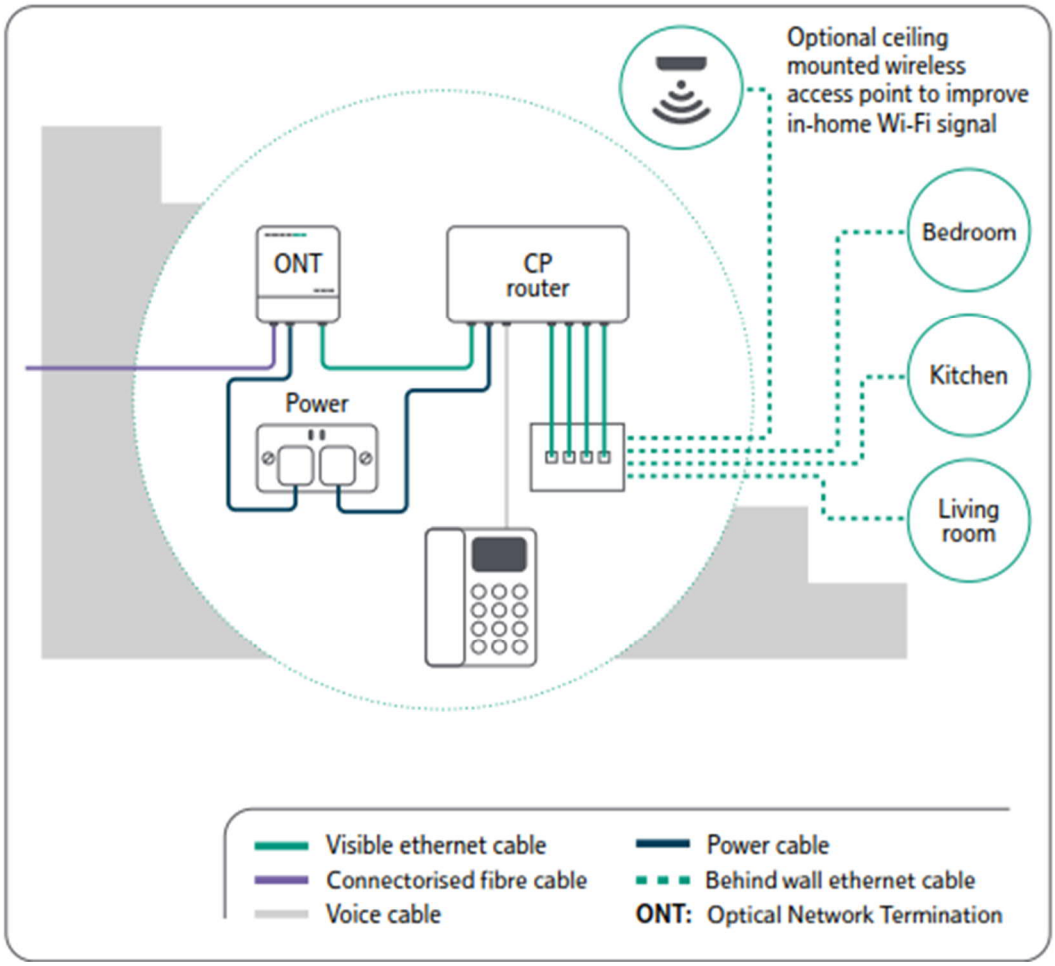



Figure 9.3 – Typical FTTP installation

### 9.1.2 Diversionary Works

Openreach infrastructure record indicates underground apparatus routed within the adjacent side footpath of Llanberis Road to the site boundary and the location of the proposed site entrance for Phase 1. Based on review of the current site layout plan, which indicates no alterations are proposed to the adjacent side footpath, it appears the apparatus will not be affected by the development proposals.

### 9.1.3 Disconnection Works

Openreach do not typically indicate individual service connections on their infrastructure records; however, their presence should be anticipated until proven otherwise. In this instance, as desktop review indicates the development site is greenfield, it is assumed none are present. No disconnection works are currently anticipated.

### 9.1.4 Conclusion – Cost & Risk Analysis

Costs relating to the reconfiguration of the existing Openreach distribution network are identified in the following table;

| Detail | Cost |
|---|---|
| Connections | £Nil |
| Diversions | None currently anticipated |
| Disconnections | None currently anticipated |
| Survey Fees | N/A |
| Total | £Nil |

Table 9.1 – Openreach Costs

The main risks associated with the procurement of proposals and the required works are as follows;

- Provisional sums have been applied based on previous projects of similar size and UCML's experience.

- Openreach infrastructure records currently do not differentiate between copper and fibre optic cables, and as such the type of infrastructure within the ground cannot be determined through desktop review of their statutory infrastructure records. Please note, the presence of fibre optic cables could multiply anticipated diversion costs significantly.

## 10.0 Other

In addition to the statutory network operators operating within the vicinity of the development site, UCML has contacted several Independent Distribution Networks Operators (IDNOs), Independent Gas Transporters (IGTs), telecommunications providers, pipeline operators, and other third parties who own and operate apparatus nationwide to determine whether any apparatus is located within the vicinity of the development site.

The companies contacted, and their associated response, are summarised within Table 10.2 overleaf. Please refer to the key provided below for further detail on the definitions used.

| Table Key | Definition |
|---|---|
| Affected | Utility apparatus is indicated as being located within the vicinity of the development site. |
| Not Affected | Utility apparatus is not indicated as being located within the vicinity of the development site. |
| No Response | No response has been received from the utility provider to date. |
| Desk Research | Any response determined from desktop research is indicated in this column. This indicates utility infrastructure records have been obtained in house using mapping software provided by the relevant utility provider. |

Table 10.1 – Plant Enquiry Response Key

| Utility | Company | Desk Research | Affected (date issued) | Not Affected (date issued) | No Response |
|---|---|---|---|---|---|
| IDNO | Leep Utilities | ✓ | | 24/07/2024 | |
| IDNO | Utility Assets | | | | 12/07/2024 |
| IDNO | Eclipse Power Networks Ltd | | | 31/07/2024 | |
| IGT | BBL Company | | | | 12/07/2024 |
| IGT | GTC* | ✓ | | 01/08/2024 | |
| IGT | Interconnector UK LTD | | | | 12/07/2024 |
| Comms | Arqiva | | | | 12/07/2024 |
| Comms | Arelion (formerly Telia Carrier) | ✓ | | 23/07/2024 | |
| Comms | Cityfibre | ✓ | | 23/07/2024 | |
| Comms | CA Telecom | | | 31/07/2024 | |
| Comms | Instalcom | | | | 12/07/2024 |
| Comms | McNicholas (TATA) | | | | 12/07/2024 |
| Comms | Mobile Broadband Network LTD | | | 31/07/2024 | |
| Comms | O'Connor Utilities** | | | 31/07/2024 | |
| Comms | Sky UK LTD | | | 31/07/2024 | |
| Comms | SOTA | | | 31/07/2024 | |
| Comms | Spectrum Communications | | | | 12/07/2024 |
| Comms | Telent | | | 31/07/2024 | |
| Comms | Verizon | | | | 12/07/2024 |
| Comms | Virgin Media | ✓ | | 23/07/2024 | |
| Comms | Vodafone | ✓ | | 23/07/2024 | |
| Transport | National Highways | | | | 12/07/2024 |
| Transport | Network Rail | | | 31/07/2024 | |
| Other | Mastdata.com (Mobile Phone Masts) | ✓ | | 19/07/2024 | |

Table 10.2 – Plant Enquiry Responses

*Note GTC includes: GTC Pipelines Ltd, Independent Pipelines Ltd, Quadrant Pipelines Ltd, Electricity Network Company Ltd, Independent Power Networks Ltd, Independent Water Networks Ltd, Independent Fibre Networks Ltd, and Independent Community Heating Ltd.
** O'Connor Utilities includes: Lumen Technologies (formerly CenturyLink Communications UK Limited, Level 3, Global Crossing (Uk) Ltd, Global Crossing PEC, Fibernet UK Ltd and Fibrespan Ltd.

## Optional Searches

Some utility providers are rarely confirmed to be in the vicinity of infrastructure record searches and are therefore only included within the search upon request, as the charge per enquiry is disproportionate to the number of affected responses received. Please advise UCML if you would like to include these additional searches at an additional cost. These optional searches are as follows;

| Optional Searches | | |
|---|---|---|
| IDNO | Harlaxton | Approximate cost £35 (plus VAT) |
| IDNO | UK Power Distribution | Cost ranges from £9 - £95 (plus VAT) subject to site size |

Table 10.3 – Optional Searches

## LinesearchbeforeUDig

Several asset owners are registered with LinesearchbeforeUDig (LSBUD), an online service used to review the location of utility assets in relation to a development site location. UCML has undertaken an LSBUD search for this development site, and the response is shown in Figure 10.1 below.

**Affected LSBUD members**
**(LSBUD Members who have assets registered on LSBUD within the vicinity of your search area.)**
**Do not proceed until all Members listed below have confirmed that your works can continue.**

| Asset Owner | Phone/Email | Emergency Only | Status |
|---|---|---|---|
| SP Energy Networks | 08452734444 | 08000929290 / 105 | Await response |
| Wales and West Utilities | 02920278912 | 0800111999 | Await response |
| Zayo Group UK Ltd c/o JSM Group Ltd | 01992 655 919 | 0800 169 1646 | Await response |

**List of not affected LSBUD members**
**(LSBUD Members who do not have assets registered on the LSBUD service within the vicinity of your search area.)**

| | | |
|---|---|---|
| Angus Energy | AWE Pipeline | B & D Energy Limited |
| Balfour Beatty Investments Limited | BOC Limited (A Member of the Linde Group) | Box Broadband |
| BP Exploration Operating Company Limited | BPA | Cadent Gas |
| Cambridge Water | Cambridgeshire County Council Climate Change and Energy Services | CATS Pipeline c/o Wood Group PSN |
| Cemex | Centrica Storage Ltd | CNG Services Ltd |
| Concept Solutions People Ltd | ConocoPhillips (UK) Teesside Operator Ltd | D.S.Smith |
| Diamond Transmission Corporation | DIO (MOD Live Pipelines) | Drax Power Limited |
| E.ON UK CHP Limited | EDF Energy Renewables Ltd | EET Fuels |
| EirGrid | Eleclink Limited | Electricity North West Limited |
| Energy Assets Networks | ENI & Himor c/o Penspen Ltd | EnQuest NNS Limited |
| EP Langage Limited | ESB CCGT Power station (Carrington Gas Pipeline) | ESP Utilities Group |
| Esso Petroleum Company Limited | euNetworks Fiber UK Ltd | EXA Infrastructure |
| Exolum Pipeline System | Fulcrum Electricity Assets Limited | Fulcrum Pipelines Limited |
| Gamma | Gas Networks Ireland (UK) | Gateshead Energy Company |
| Gigaclear Ltd | Harbour Energy | Heathrow Airport LTD |
| Humbly Grove Energy | IGas Energy | INEOS FPS Pipelines |
| INEOS Manufacturing (Scotland and TSEP) | INOVYN ChlorVinyls Limited | INOVYN Enterprises Limited |
| Intergen (Coryton Energy or Spalding Energy) | Jurassic Fibre Ltd | Kensa Utilities |
| Last Mile | Mainline Pipelines Limited | Manchester Jetline Limited |
| Manx Cable Company | Marchwood Power Ltd (Gas Pipeline) | Melbourn Solar Limited |
| MUA Group Limited | National Gas Transmission | National Grid Electricity Distribution |
| National Grid Electricity Transmission | National Grid Ventures | Neos Networks |
| Northern Gas Networks Limited | Northumbrian Water Group | NPower CHP Pipelines |
| NTT Global Data Centers EMEA UK Ltd | NYnet Ltd | Ogi |
| Oikos Storage Limited | Ørsted | Palm Paper Ltd |
| Perenco UK Limited (Purbeck Southampton Pipeline) | Petroineos | Phillips 66 |
| Portsmouth Water | Premier Transmission Ltd (SNIP) | Redundant Pipelines - LPDA |
| RWE - Great Yarmouth Pipeline (Bacton to Great Yarmouth Power Station) | RWEnpower (Little Barford and South Haven) | SABIC UK Petrochemicals |
| SAS Utility Services Ltd | Scottish and Southern Electricity Networks | Scottish Power Generation |
| Seabank Power Ltd | SES Water | SGN |
| Shell | Shell NOP | South Staffs Water |
| Spring Fibre Limited | Squire Energy Networks | SSE Generation Ltd |
| SSE Transmission | SSE Utility Solutions Limited | Storengy |
| Tata Communications (c/o JSM Construction Ltd) | TfL – London Underground HV Cables (Road Side Cables) | toob Limited |
| Total Colnbrook Pipelines | Total Finaline Pipelines | Transmission Capital |
| Trojan Energy Limited | UK Power Networks | Uniper UK Ltd |
| University of Cambridge Granta Backbone Network | Vattenfall | Veolia ES SELCHP Limited |
| Veolia ES Sheffield Ltd | Voneus Limited | VPI Power Limited |
| Welsh Power | West of Duddon Sands Transmission Ltd | West Sussex OpenNetwork (Cooperative National Infrastructure) |
| Westminster City Council | | |

Figure 10.1 – LSBUD search result

## 10.1 Zayo Group Ltd

Zayo Group Ltd has confirmed they own and operate telecommunications apparatus in the vicinity of the development site within the terms of its statutory license issued by Ofcom. The Zayo Group network in the immediate vicinity of the site comprises of underground cables and associated apparatus. Please refer to the infrastructure record appended to this study for further detail.

The figure below is an extract from Zayo Group records and details the current indicated position of existing infrastructure, however it may be prudent to undertake a below ground survey to ensure there are no unknown services which are not recorded.

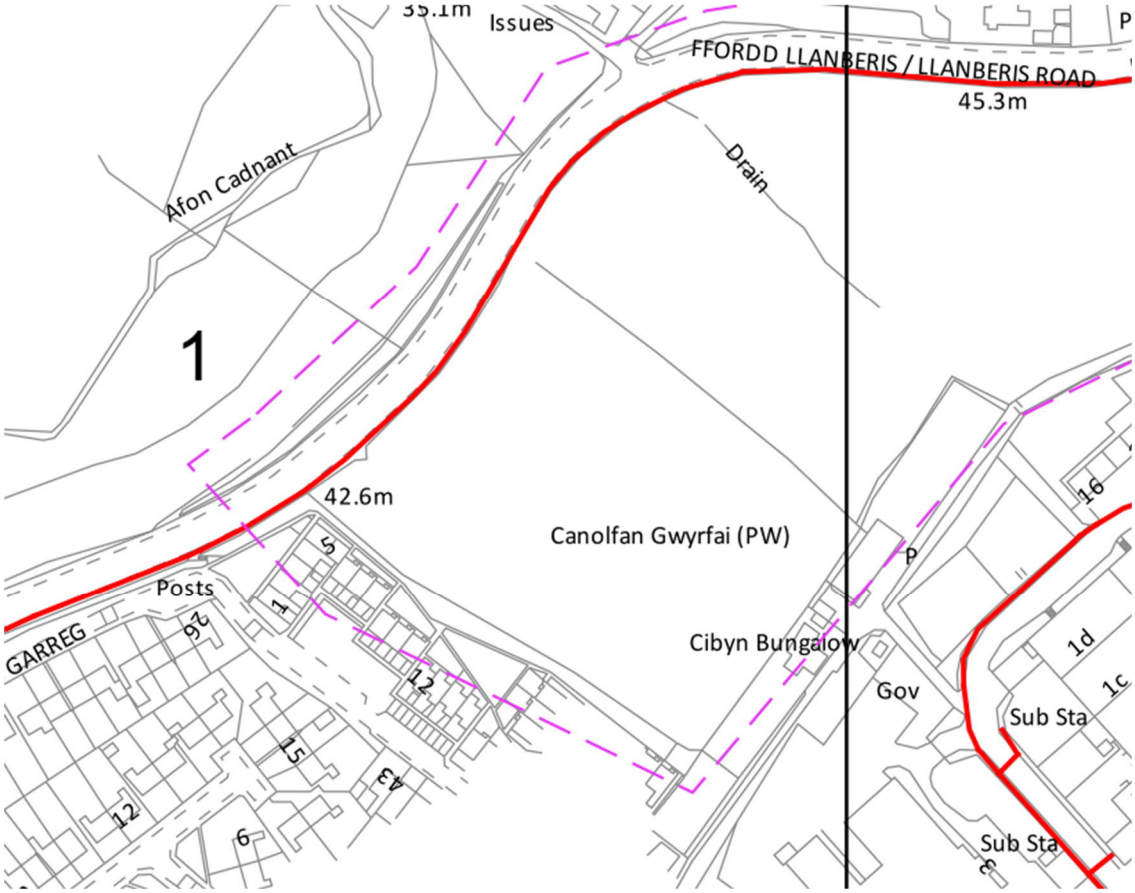



Figure 10.2 – Existing Zayo Group infrastructure

Zayo Group infrastructure records indicate underground duct routed within the site side verge of Llanberis Road. Depending on the existing depth of the apparatus below the current ground level, this apparatus may be affected by the proposed site entrance construction works to the extent diversionary works are required.

It is recommended that trial excavations are undertaken to determine the exact depth and location of the duct. Should it be confirmed that the apparatus in question is at a minimum depth of 450mm below the finished ground level at the location of the proposed site entrance, diversionary works may be negated through discussions with Zayo Group. When excavating in the immediate vicinity of this main, the HSG47 guide should be complied with at all times. If the apparatus is proved shallow and diversionary works are required, allow a budget cost of £25,000.00 for the works based on a maximum diversion length of 20 metres and assuming a chamber construction either side of the proposed entrance.

Zayo Group will need to undertake a site survey to provide a detailed estimate for the works required, and the provision of a site survey is chargeable to the Client. The fee is site specific, and will be confirmed by Zayo Group on formal application. In advance of this, a budget cost of £3,000.00 is recommended for the survey fee in additional to the budget diversion cost provided.

It should be noted that the apparatus routed within the site side verge may also be affected by the construction of the proposed footpath along the frontage of the site to Llanberis Road. It is assumed that as the construction of the footpath will likely increase cover above the apparatus, diversionary works would not be triggered. However, formal consultation with Zayo Group will be required to confirm.

## 11.0 Conclusion

Based on the information currently available for review, the existing utility infrastructure within the vicinity of the development site appears to be capable of supporting the additional demand required to provide connections for the proposed development of 36 no. residential dwellings. As discussed within the study, UCML has undertaken capacity checks with the relevant statutory network operators who have provided confirmation that the existing electricity, clean water, and telecoms services in the vicinity of the development site currently have sufficient capacity to serve the development.

The connection costs provided in the main body of the report are based on individual utility connection proposals being accepted. It may be possible to undertake the connections works as part of a multi utility offering which can combine the installation of electricity, clean water, and telecoms under a single works contract. For some sites, the appointment of a multi utility provider may be more cost-effective option for the connections.

## 12.0 Risk Matrix

Based upon the anticipated utility works required for this development discussed within this study, UCML has drawn up an indicative risk matrix for the development. For the risk matrix, each item is allocated a 'traffic light' score based on the anticipated risk to the development and associated timescales based on the key shown below.

| Matrix Key | |
|---|---|
| | Do not envisage any major issues. |
| | Could cause delay that can be measured in weeks, and can also be prevented. |
| | Could cause delay that can be measured in months, and may be prevented. |
| | Could cause major delay, that may not be mitigated. |

| Utility | Risk |
|---|---|
| Electricity | |
| Connection Works – HV POC, off-site HV mains lay, on-site HV mains lay, installation of on-site substation, on-site LV mains lay, and installation of LV service connection to each dwelling.<br>Diversionary Works – Diversion of overhead 33 kV EHV overhead line off-site.<br>Disconnection Works – None currently anticipated. | |
| Gas | |
| Connection Works – None required.<br>Diversionary Works – LP mains diversion to accommodate site entrance construction.<br>Disconnection Works – None currently anticipated. | |
| Water | |
| Connection Works – Off-site mains lay where required, on-site mains lay, and installation of service connection to each dwelling.<br>Diversionary Works – Possible diversion of trunk main off-site (further review required) and mains diversion to accommodate site entrance construction.<br>Disconnection Works – None currently anticipated. | |
| Telecoms – Openreach | |
| Connection Works – FTTP network installation.<br>Diversionary Works – None currently anticipated.<br>Disconnection Works – None currently anticipated. | |
| Other – Zayo Group | |
| Diversionary Works – Diversion to accommodate site entrance construction. | |

Table 12.1 – UCML Risk Matrix

## 13.0 Street Works UK

Existing and new utilities are assumed to be located in accordance with the Street Works UK (formerly the National Joint Utility Group) guidelines. However, in reality, existing utilities are often not laid to these guidelines. Where new road entrances are being formed it is recommended that trial hole investigations are carried out to verify the precise position and depth of infrastructure. In some cases, if the utility infrastructures are sufficiently deep, this may enable the extent and cost of diversions to be reduced.

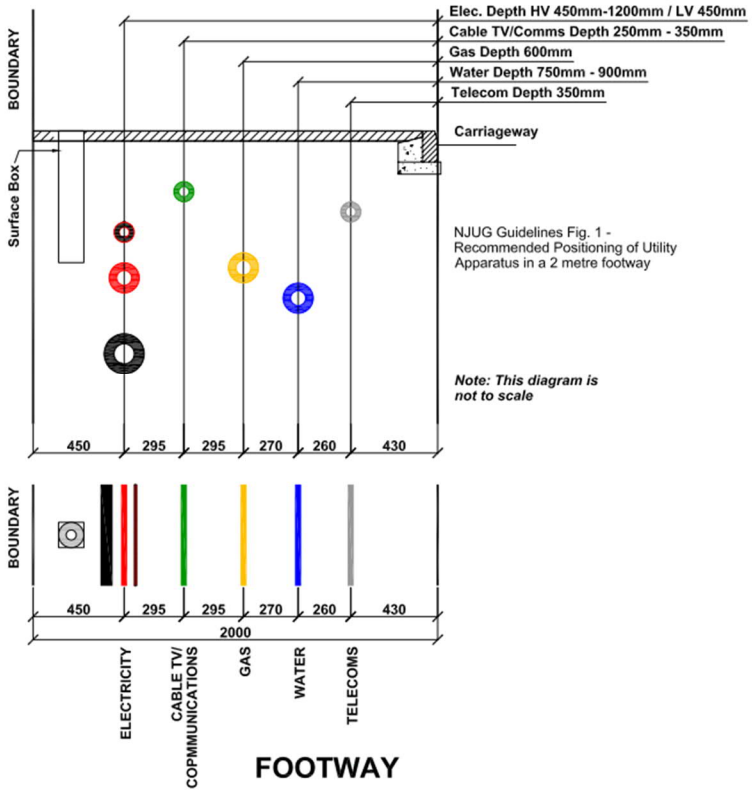



Figure 13.1 – Recommended positioning of utility apparatus in a footpath

The position and depths of underground and overhead apparatus as indicated on infrastructure records included within the utility study are approximate and may deviate from the marked route. The plan information shown is given without warranty and is derived from statutory network information provided by others. The accuracy thereof must not be relied upon in the event of any development or works without further below ground investigations taking place.

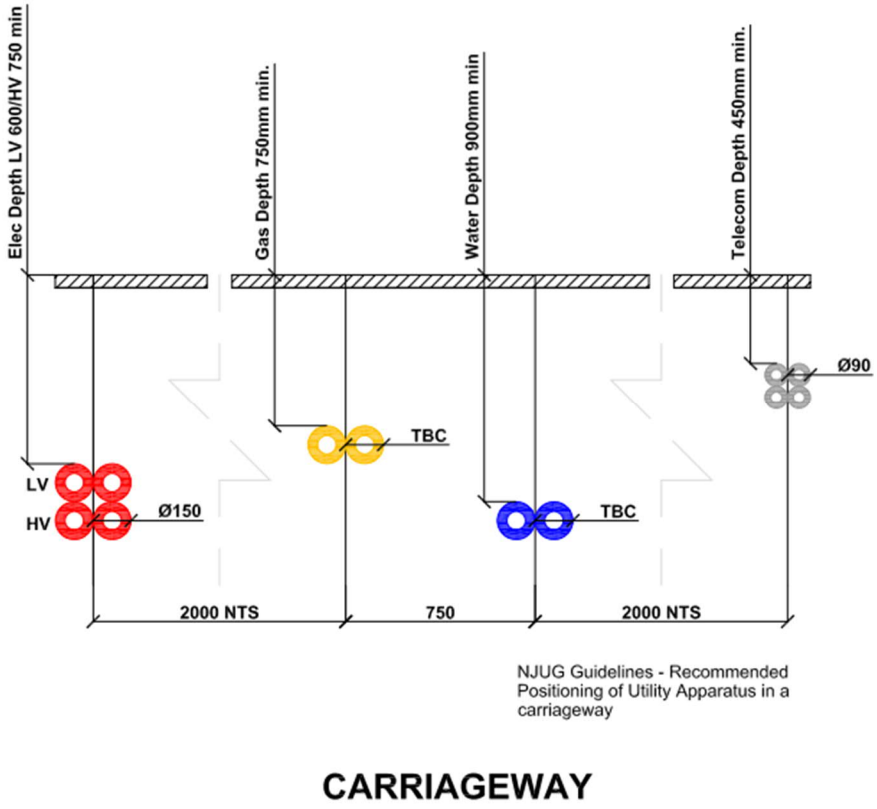



Figure 13.2 – Recommended positioning of utility apparatus in carriageway

When on-site, the contractor must use safe digging practices, in accordance with HSG 47, to verify and establish the actual position of mains, pipes, services, and any other apparatus on-site before any mechanical plant is used. The responsibility for locating the apparatus precisely before commencing any works rests entirely upon the person undertaking or directly responsible for those works.

The Contractor is to refer to the following documents before works commence within the vicinity of existing services;

- Health and Safety Guidance HSG 47 Avoiding Dangers from Underground Services.
- Health and Safety Guidance GS6 Avoiding Danger from Overhead Electric Lines.
- Street Works UK (formerly NJUG) Guidelines.
- General Safety Measures to Avoid Injury and Damage to Gas Apparatus.
- CDM Regulations 2015 (Regulation 25 – Energy Distribution Installations).

This desktop utility study covers statutory infrastructures surrounding the site. All information has been taken from the records of the statutory authorities and although this information is the most accurate available it may be prudent to undertake trial excavations in strategic locations to definitively determine the depth and location of infrastructure. Utility Providers Networks are constantly under review and subject to applications from other parties and the capacities and loads currently available may be subject to change.

The costs provided are advised as a predicted worst-case scenario of the foreseeable works. However, as these are only budget figures the actual costs entailed will not be determined until detailed proposals are received from the owners of the infrastructure.

Prepared by;
Joanne Blackburn BA (Hons) – Associate Director
Utilities Connections Management Ltd.

Checked by;
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Utilities Connections Management Ltd.

# 14.0 Further UCML Services

## Pre-Construction Utility Consultancy

UCML's Pre-Construction Utility Consultancy service deals with the obtaining of capacity checks as well as disconnection, diversion, connection, service alteration and temporary supply quotations. These include electricity, gas, clean water, and telecom supplies for all forms of residential, commercial, and industrial developments. Use of our pre-construction consultancy services can result in;

- Considerable cost savings.
- Reduced overheads.
- Reduced timescales.
- Reduced delays.
- Reduced time expenditure.
- Removal of provisional sums from tender submissions.

The services provided by UCML's Pre-Construction Utility Consultancy service includes;

- Review of proposed meter positions to ensure technical and regulatory viability.
- Application for:
  - Existing statutory infrastructure records.
  - Disconnection quotations including meter removals where required.
  - Statutory infrastructure diversion quotations.
  - Temporary building supplies.
  - New connections quotations.
  - Legal searches including easement, wayleaves, and Land Registry title searches.
- Technical review of all quotations received including technical and commercial comparison across all competing quotes.
- Submission of successful quotations for acceptance.
- Single point of contact for project administration, and an assigned Technical Engineer to each scheme.

## Delivery Coordination

UCML's Delivery Coordination service deals with the coordination of disconnections, diversions, connections, service alterations, capacity checks and temporary supply installations for all forms of residential, commercial, and industrial developments. Use of our Delivery Coordination service can result in:

- Improved program planning accuracy.
- Reduced time expenditure.
- Reduced abortive visit charges.
- Reduced delivery timescales and as a result less delays.

The services provided by UCML's Delivery Coordination service includes;

- Coordination of statutory connections from quotation acceptance to completion.
- Assigned Project Coordinator to the scheme to provide a single point of contact for site staff and attend site meetings and design team meetings as required.
- Provision of a site pack including existing and proposed drawings and relevant technical information relating to dimensions and layout of metering enclosures.
- Coordination of legal agreements required including wayleaves, easements, and adoption agreements.

# Appendices

Appendix 1 – SP Energy Networks Infrastructure Plan

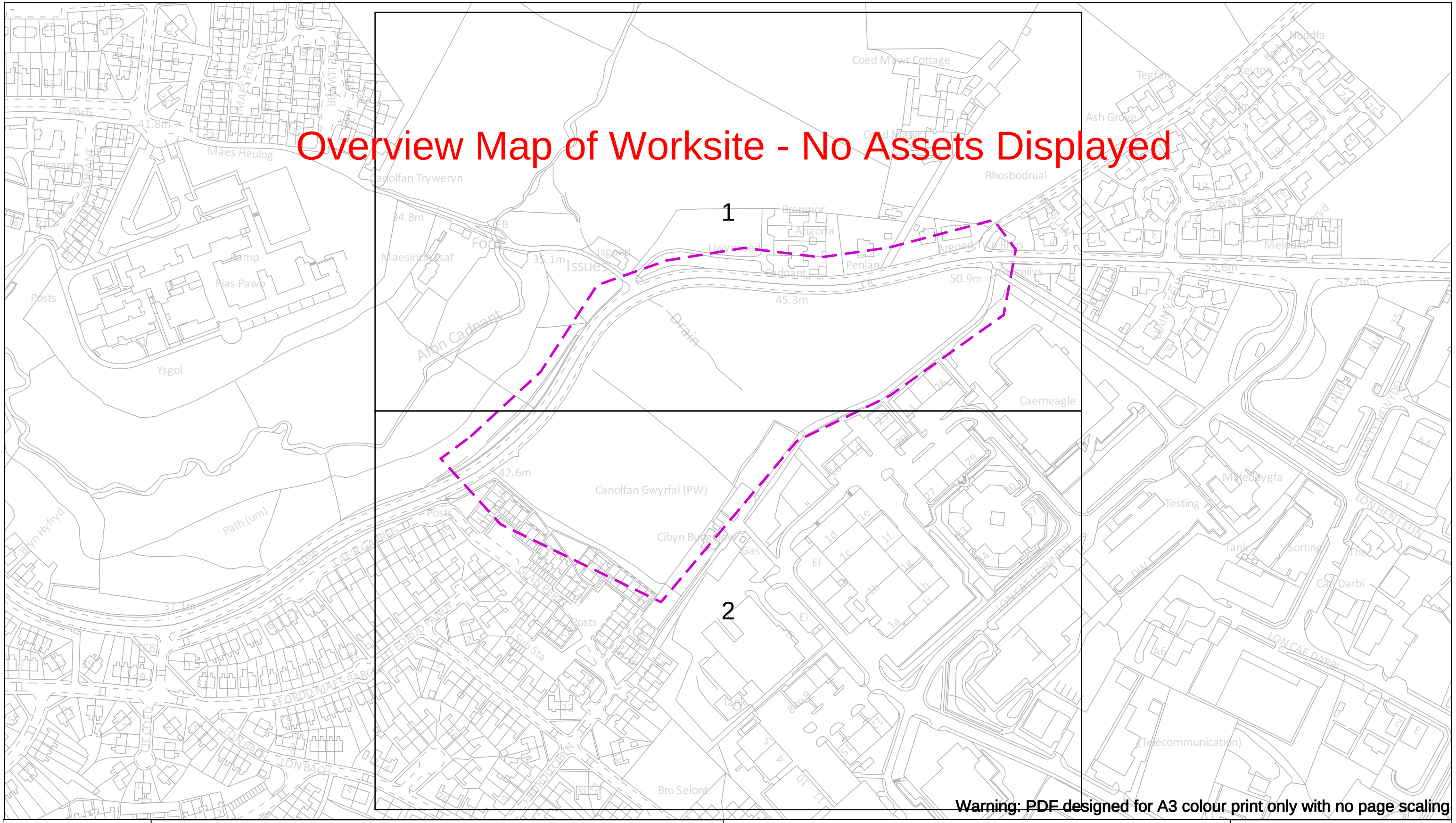
Appendix 2 – Wales & West Utilities Infrastructure Plan

Appendix 3 – Dŵr Cymru Welsh Water Infrastructure Plan

Appendix 4 – Openreach Infrastructure Plan

Appendix 5 – Zayo Group Infrastructure Plan

# Overview Map of Worksite - No Assets Displayed




**Warning: PDF designed for A3 colour print only with no page scaling**

Date Requested: 31/07/2024
Job Reference: 34245180
Site Location: 249281 362799
Requested by:
Miss Megan Wright
Your Scheme/Reference:
Llanberis Road

Scale: 1:2562 (When plotted at A3)

IMPORTANT NOTICES

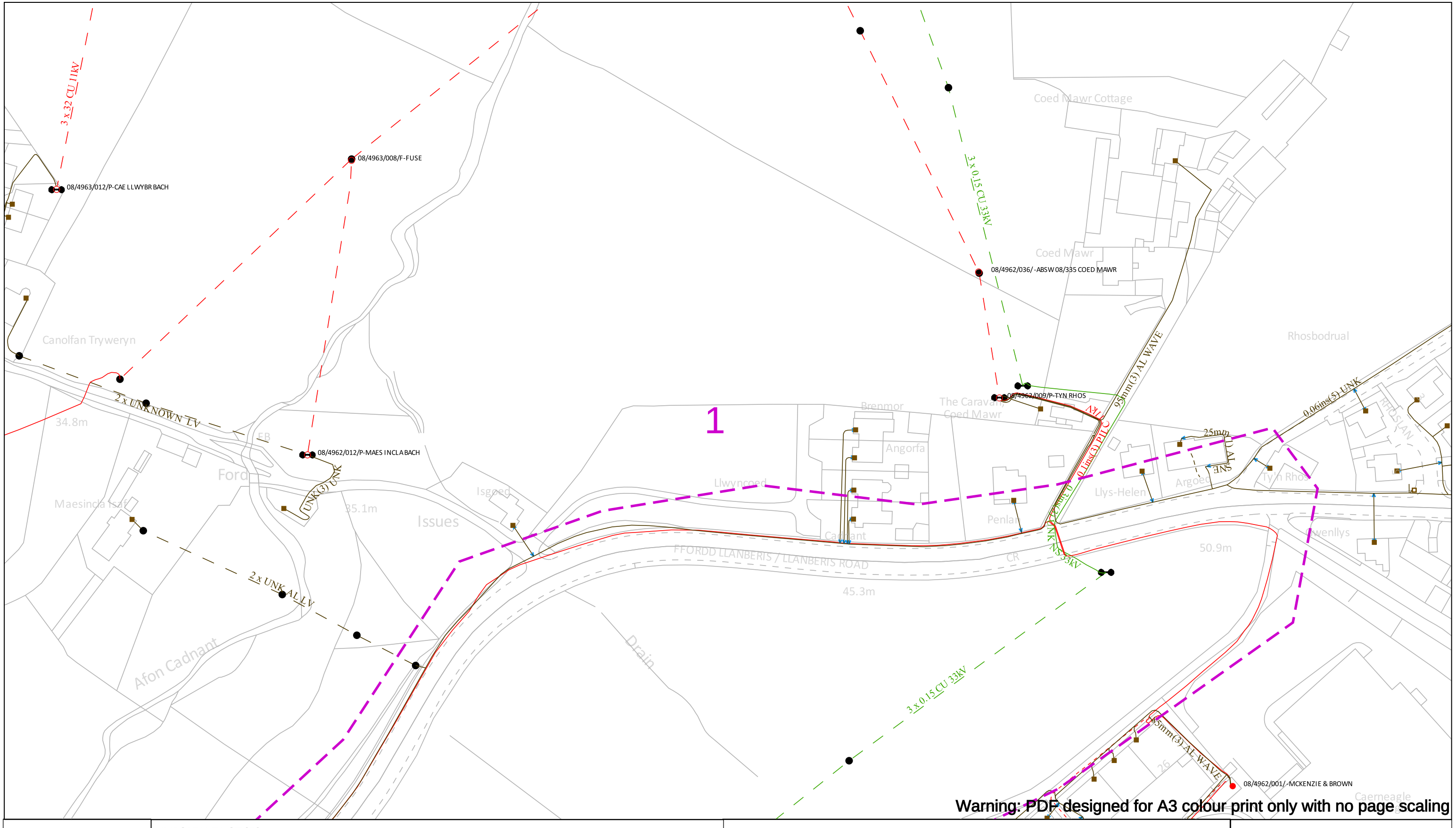
- This information shown on this plan is indicative only and its accuracy cannot be guaranteed.
- The plan only shows assets owned by SP Energy Networks.
- Positions and depths of cables may have altered since being recorded. A line on a plan may represent more than one cable. Normally electric cables are laid at depths between 450mm and 1m but depths may have changed if land surface levels have since altered.
- The plan may not show, or may inaccurately show, individual property services and services to street lighting installations. Underground services may be found in roads, footpaths and on sites. Always assume that they are present for each property, lamp column and street sign etc and treat any services found anywhere as live.
- You must use safe digging practices in accordance with HS(G)47 to establish the actual position of mains cables, services and other apparatus before any mechanical excavation is used.
- Where overhead lines cross your site, you must comply with the requirements of Health & Safety Executive guidance as laid down in GS6, Avoidance of Danger from Overhead Electric Lines.
- Any works that fall within **5m** of any 132kv or Transmission cables, or within **15m** of any 132kV or Transmission OHL's, please contact our General Enquiries Team **0845 273 4444 / 0330 10 10 444** for further safety advice.
- In the event of an emergency or for further assistance contact **0800-092-9290 (Central & Southern Scotland) or 0800-001-5400 (Merseyside, Cheshire & North Wales) or by dialling 105**
- It is your responsibility to ensure this information is provided to all persons working near our plant.

Underground Cables
In Use
Out of Use
Assumed Route
Warning - Shallow Cables

Dig Sites
Area:
Line:

Overhead Line
LV
HV (6kV/6.6kV)
HV (22kV/11kV)
EHV (33kV)
Trans (132kV/275kV/400kV)
Non Power Cable
Duct

SP ENERGY NETWORKS

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100m

Underground Cables
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Out of Use
Assumed Route
Warning - Shallow Cables

Overhead Line

Dig Sites
Area:
Line:

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HV (6kV/6.6kV)
HV (22kV/11kV)
EHV (33kV)
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Duct

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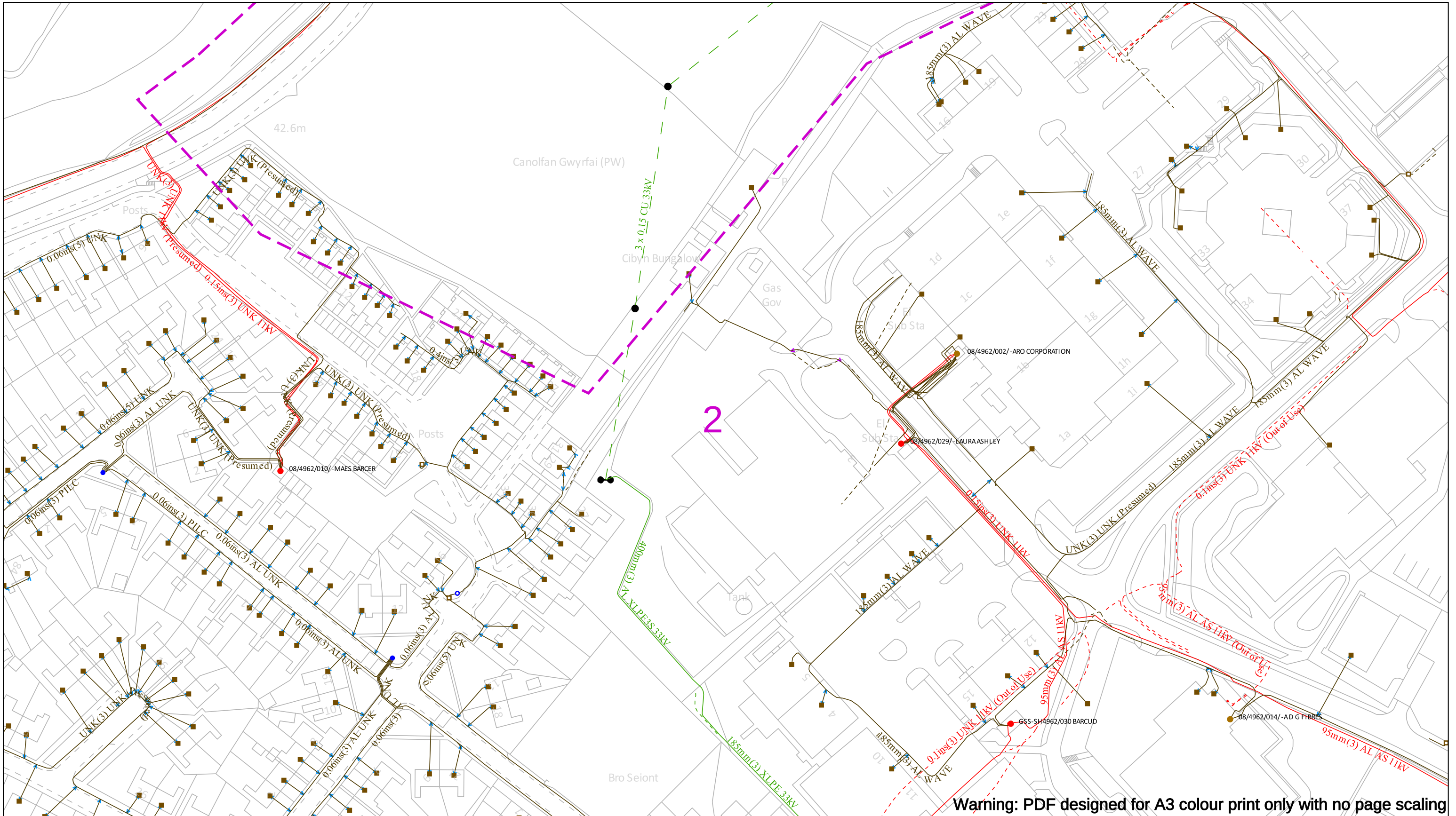


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In Use
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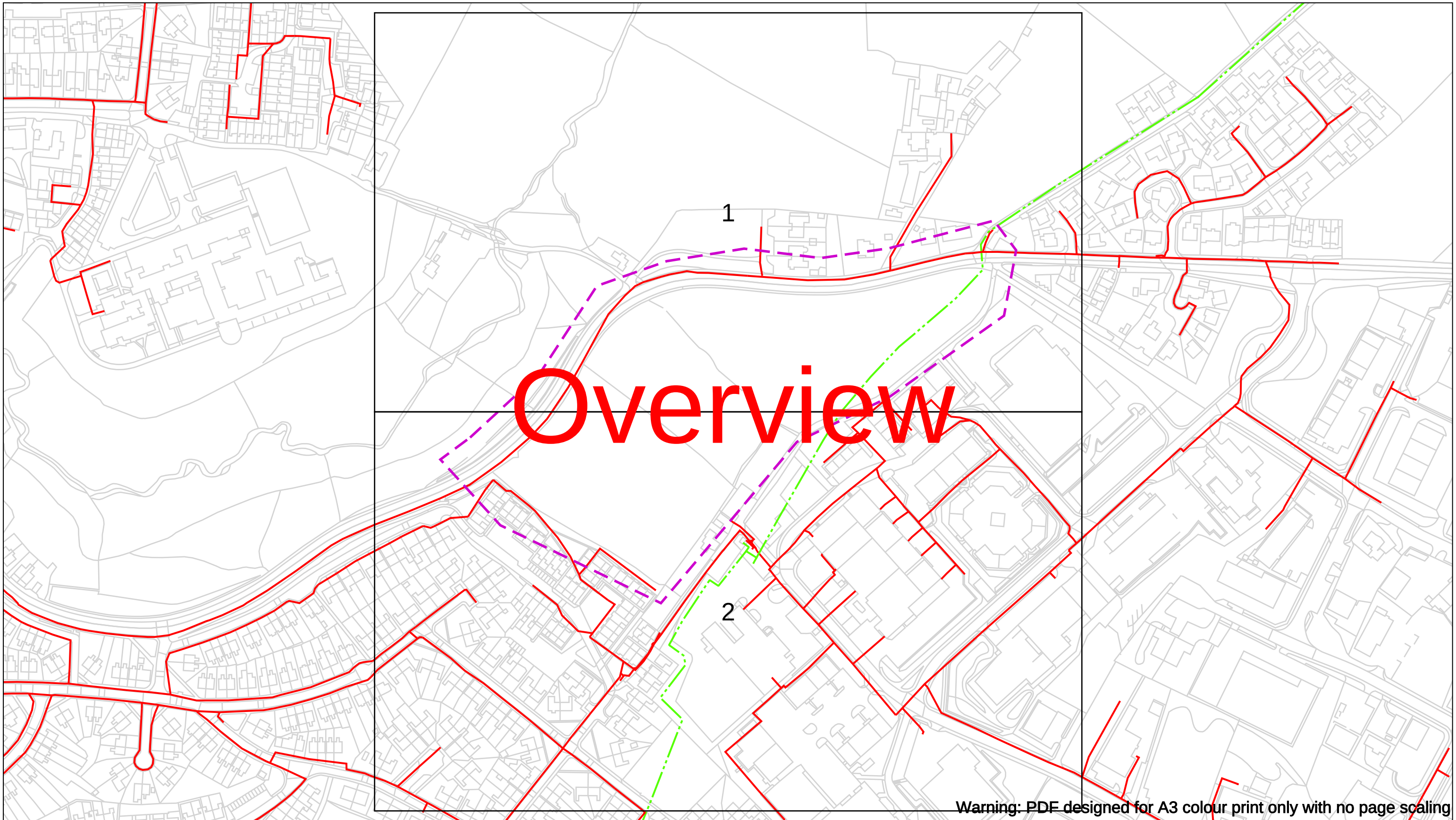


Warning: PDF designed for A3 colour print only with no page scaling

Contact Us
Mapping Enquiries: 02920 278 912
General Enquiries: 0800 912 2999

Date Requested: 31/07/2024
Job Reference: 34245180
Site Location: 249281 362799
Requested by:
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Scale: 1:2562 (When plotted at A3)

**EXTREME CAUTION. Major Accident Hazard Pipeline in Vicinity**
****RISK OF DEATH OR SERIOUS INJURY****
**Prior to excavation starting you must contact the plant protection team on 02920 278912**

IMPORTANT NOTICES

- This information is given as a guide only and its accuracy cannot be guaranteed
- The plan only shows those pipes owned by Wales & West Utilities (WWU) as its role as a licensed Gas Transporter
- Service pipes, valves, syphons, stub connections etc. may not be shown but their presence should be anticipated
- You must use safe digging practices in accordance with HS(G)47 to establish the actual position of mains, services and other apparatus before any mechanical excavation is used
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- If in doubt call the WWU dig team on 02920 278912

**In case of an emergency call 0800 111 999**

Dig Sites

Area: Line:

- Low Pressure (LP) 21mbar – 75mbar
- Medium Pressure (MP) 350mbar – 2bar
- Intermediate Pressure (IP) 2bar – 7bar
- High Pressure (HP) >7bar

- Line/Fire Valve
- Governor Station
- Change of Diameter
- End Cap
- Depth of cover

WALES&WEST UTILITIES

Smell gas?
Call the Gas Emergency Service on 0800 111 999.

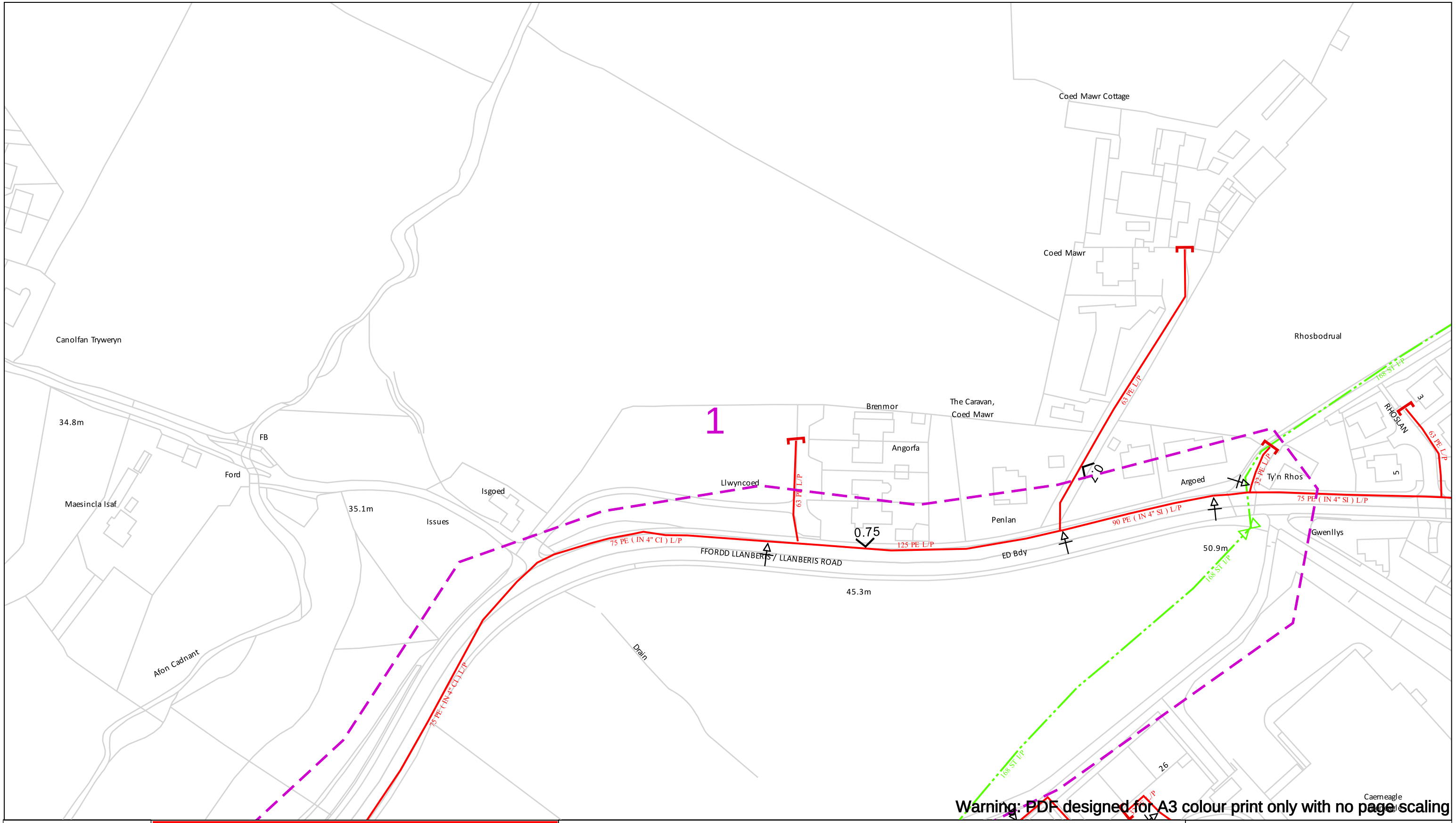
Dial before you dig

Dial
Call 029 2027 8912 before you start work.

Investigate
Before you dig, make sure you know what's below.

Go ahead
Done your research? Now you can dig safely.

We need 10 days' notice

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100m

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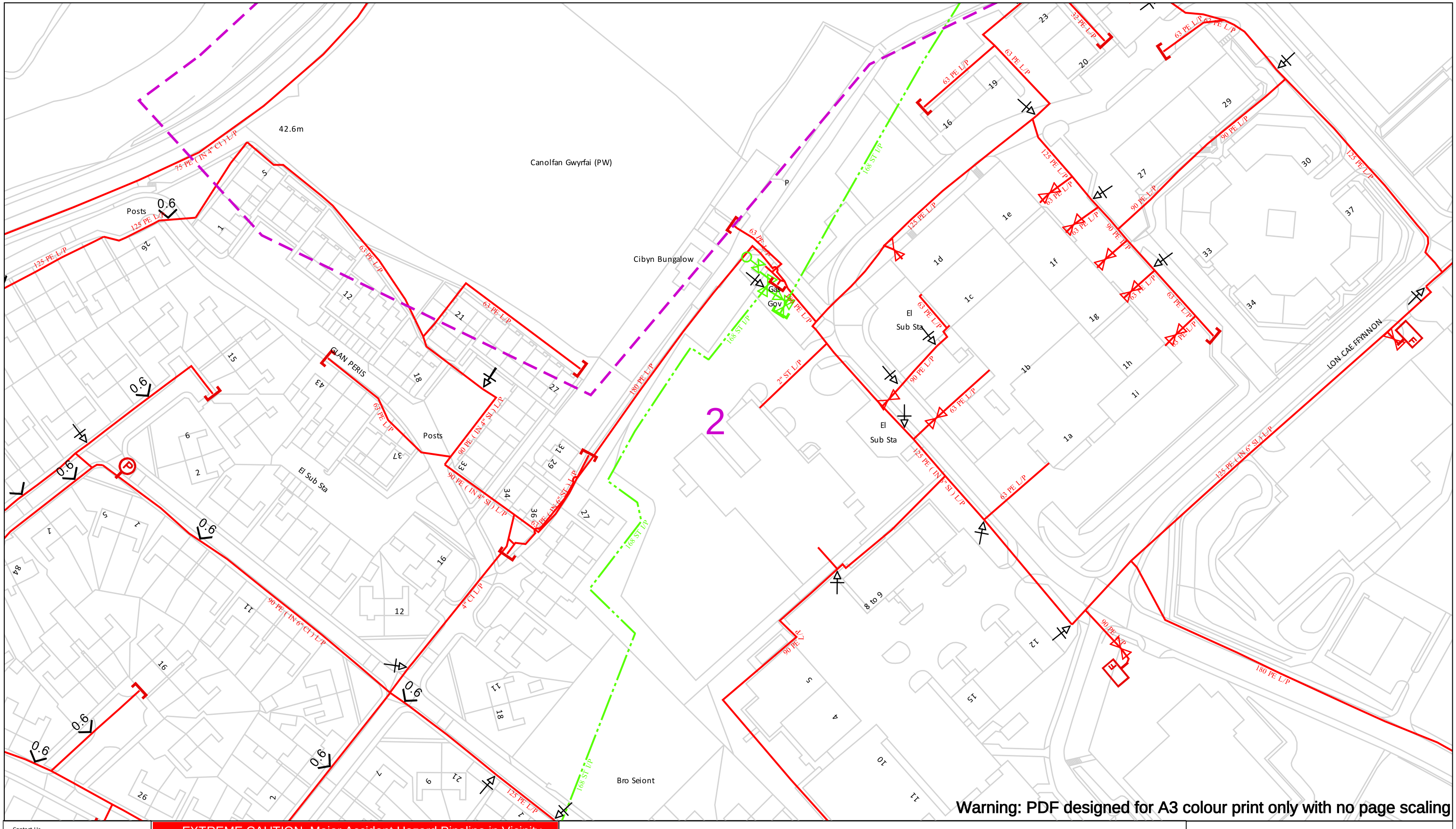


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We need 10 days' notice

Dŵr Cymru
Welsh Water

Llanberis Road, Caernarfon, Gwynedd, LL55 2BS

N
W E
S

## LEGEND

**Clean network:**

- Sluice valve
- Pressure reducing valve
- Meter
- Bulk meter
- Hydrant (FH)
- Cap end
- Air valve
- Stop tap
- Water Treatment Works
- Water Pumping Station
- Existing main
- Non-operational main
- Raw Water

NB: Water main symbol colour indicates the type.

LIGHT BLUE - Trunk
DARK BLUE - Distribution
YELLOW - Raw Water

## Notes:

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

Dŵr Cymru Cyfyngedig ('the Company') gives this information as to the position of its underground apparatus by way of general guidance only and on the strict understanding that it is based on the best information available and no warranty as to its correctness is relied upon in the event of excavations or other works made in the vicinity of the company's apparatus. The onus of locating apparatus before carrying out any excavations rests entirely on you. The information which is supplied by the Company, is done so in accordance with statutory requirements of sections 198 and 199 of the Water Industry Act 1991 which is based upon the best information available and, in particular, but without prejudice to the generality of the foregoing, it should be noted that the records that are available to the Company may not disclose the existence of a water main, service pipe, sewer, lateral drain or disposal main and any associated apparatus laid before 1 September 1989, or, if they do, the particulars thereof including their position underground may not be accurate. It must be understood that the furnishing of this information is entirely without prejudice to the provision of the New Roads and Street Works Act 1991 and the Company's right to be compensated for any damage to its apparatus.

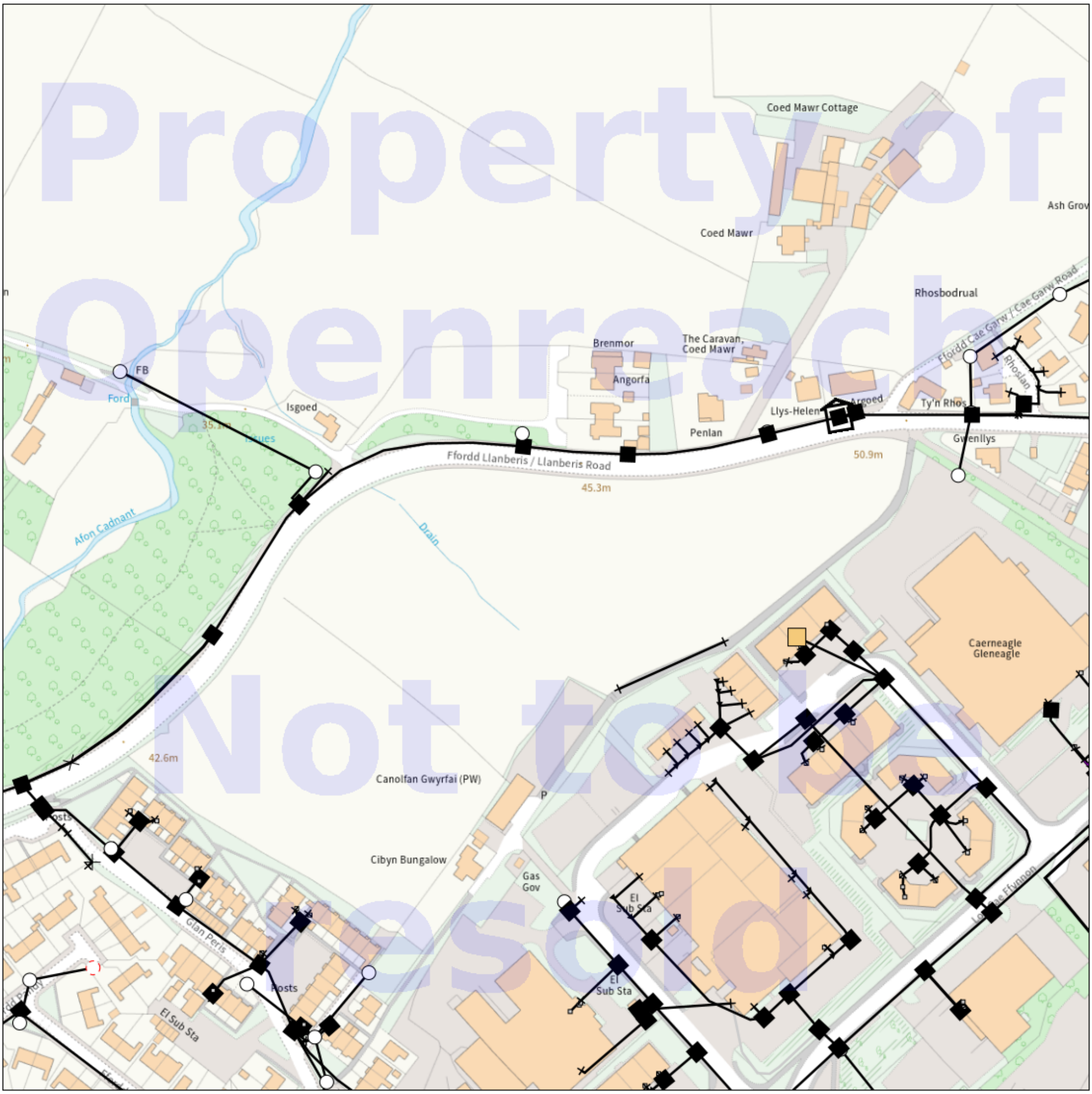
Service pipes are not generally shown but their presence should be anticipated.

**EXACT LOCATIONS OF ALL APPARATUS TO BE DETERMINED ON SITE.**



| | |
|---|---|
| Map Ref: | 249344,362854 |
| Map scale: | 1:2500 |
| Printed by: | Tyrieque Golding |
| Printed on: | 02 Aug 2024 |

# Maps on Demand Plant Information Reply






**IMPORTANT WARNING**

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

openreach

## CLICK BEFORE YOU DIG

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

**email cbyd@openreach.co.uk**

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

### Accidents happen

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



**KEY TO BT SYMBOLS**

| | *Planned* | *Live* |
|---|---|---|
| PCP | | |
| Pole | | |
| Box | | |
| Manhole | | |
| Cabinet | | |

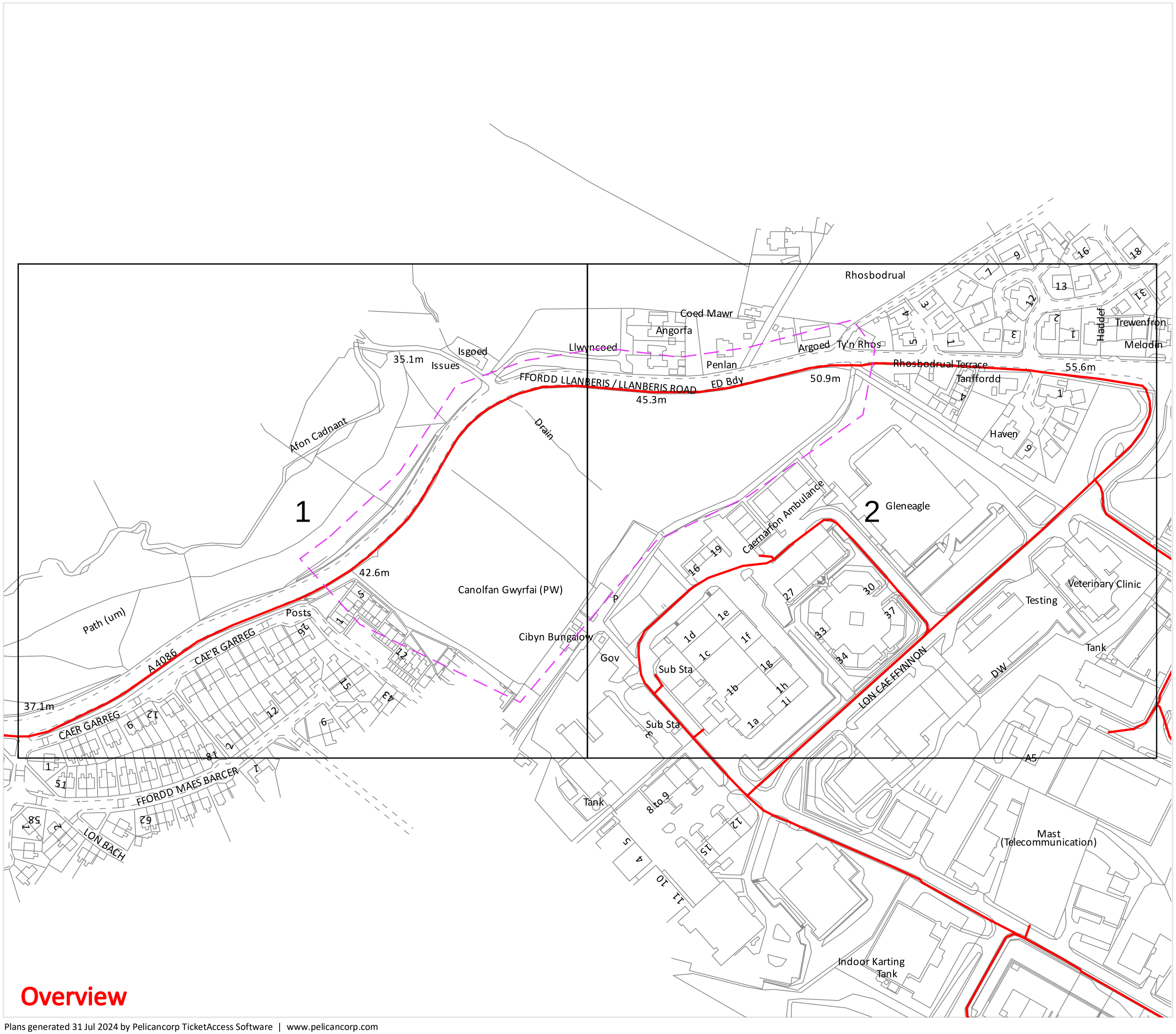
| | |
|---|---|
| Change Of State | + |
| Split Coupling | × |
| Duct Tee | ▲ |
| Building | |
| Kiosk | K |
| Hatchings | |
| Built | |
| Planned | |
| Inferred | |
| Duct | |

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

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

BT Ref : LEQ11049N
Map Reference : (centre) SG4934362853
Easting/Northing : (centre) 249343,362853
Scale : 1:500
Issued : 31/07/2024 11:04:46

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




# Overview


**Zayo Group UK Ltd**
4th Floor Harmsworth House
13-15 Bouverie Street
London, EC4Y 8DP

**JSM Group Ltd**
Sterling House
Mutton Lane, Potters Bar
Hertfordshire, EN6 3AR
T: 01992 655 919
zayoplantenquiries@jsmgroup.com


Legend

- Zayo Duct
- Zayo Chamber
- Enquiry Area

| | |
|---|---|
| Date requested: | 31 Jul 2024 |
| Requested by: | Miss Megan Wright |
| Company: | UCML |
| Job reference: | 34245180 |
| Your reference: | Llanberis Road |

Scale on A3 paper: 1:2562

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Isgoed
35.1m
Issues
Afon Cadnant
Drain
Path (um)
A 4086
CAE'R GARREG
Posts
42.6m
Canolfan Gwyrfai (PW)
Cibyn Bungalow
37.1m
CAER GARREG
FFORDD PANDY
N



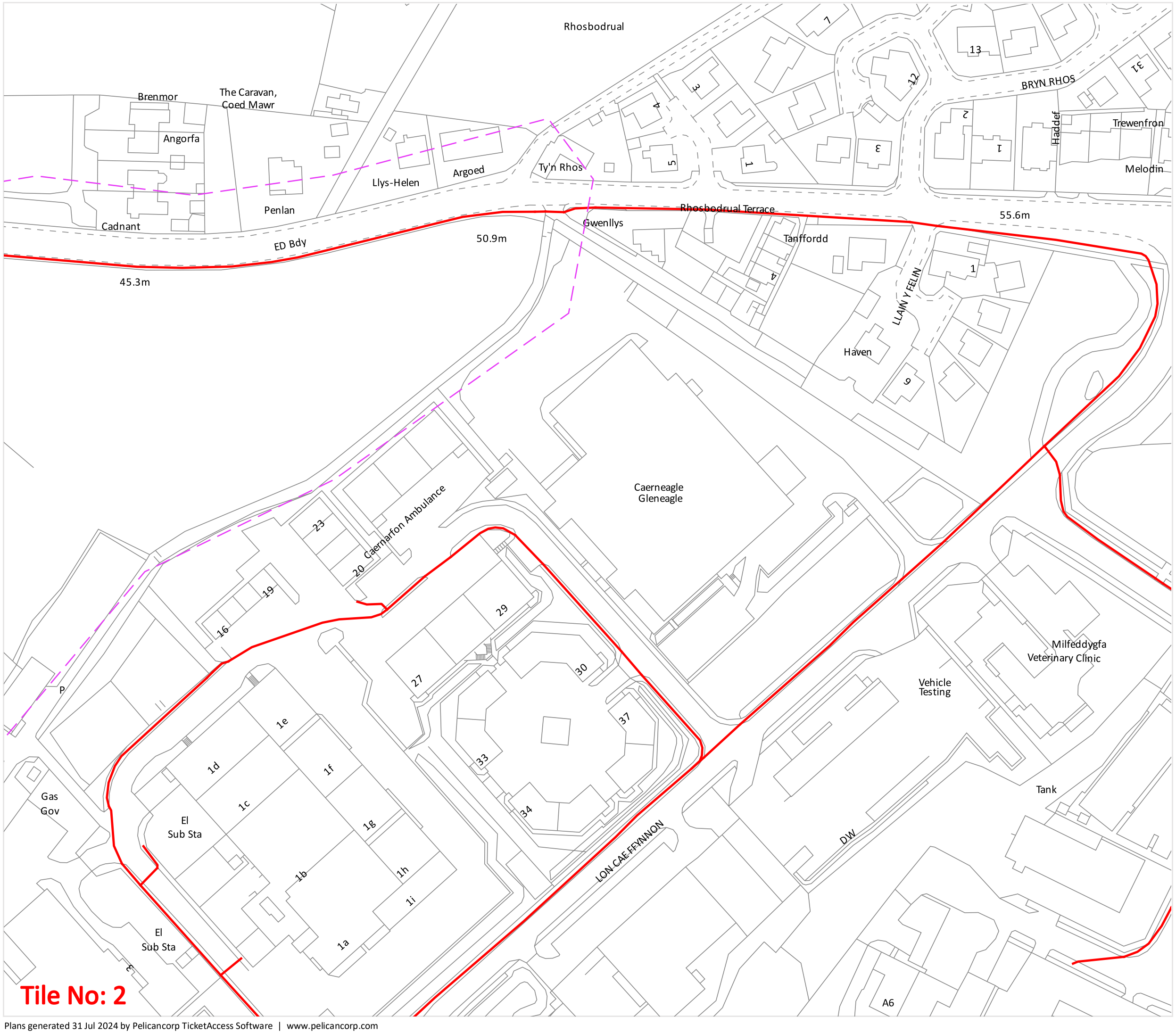
Linesearch before dig

**Protecting Lives, Cables & Pipes**

**In Emergency Only and if Zayo Plant or Cables damaged call: 0800 169 1646**



**Tile No: 1**

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