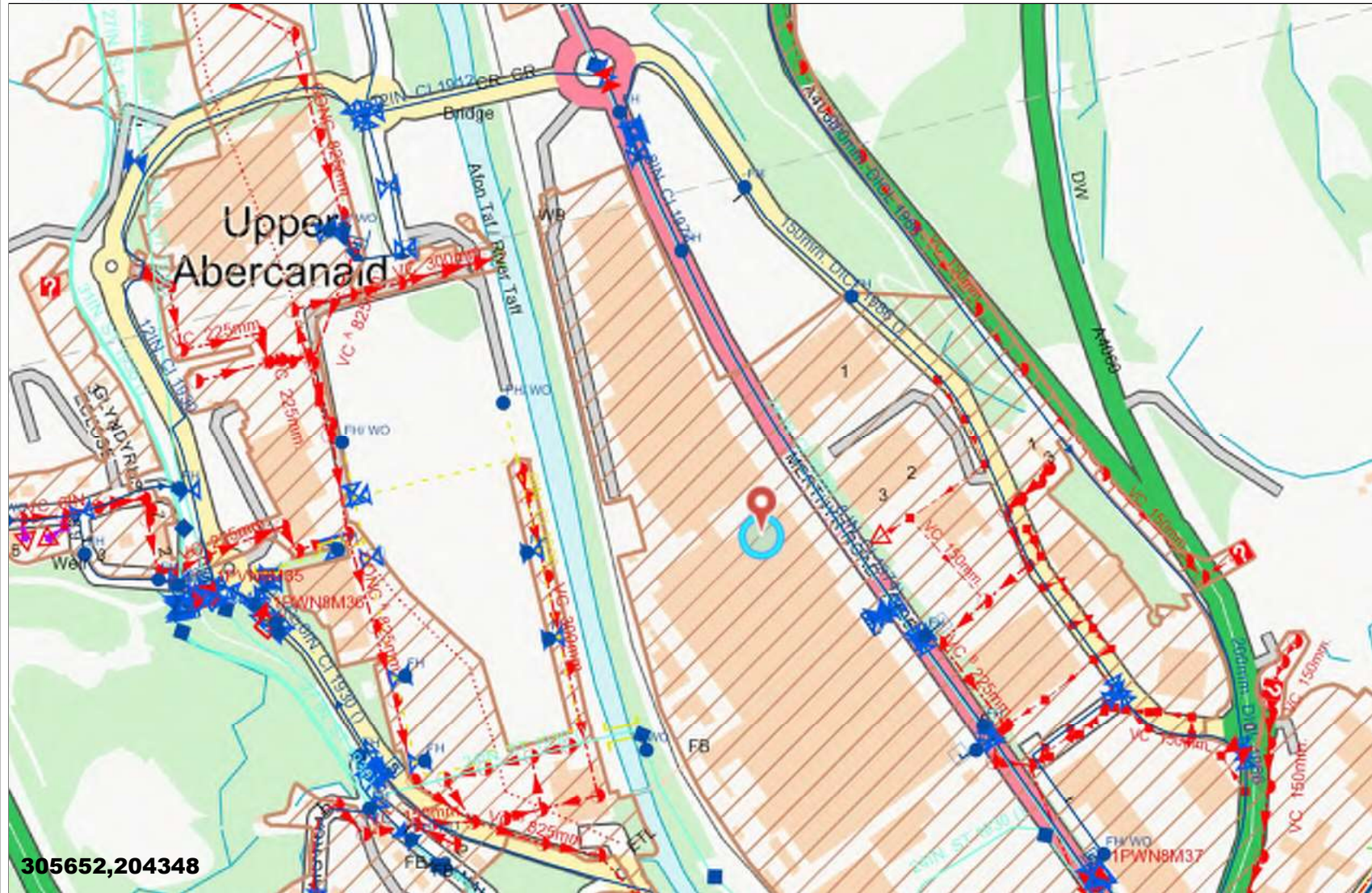




**Scale: 1: 5000**



**LEGEND**

**Clean Water**

- Sluice Val
- Air Val, SINGLE
- Tap
- Pressure Reducing Valve
- Meter
- BULK Meter
- FH

**Cap**

- Existing Main
- NON COMPANY

**Sewerage External**

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

**305652,204348**

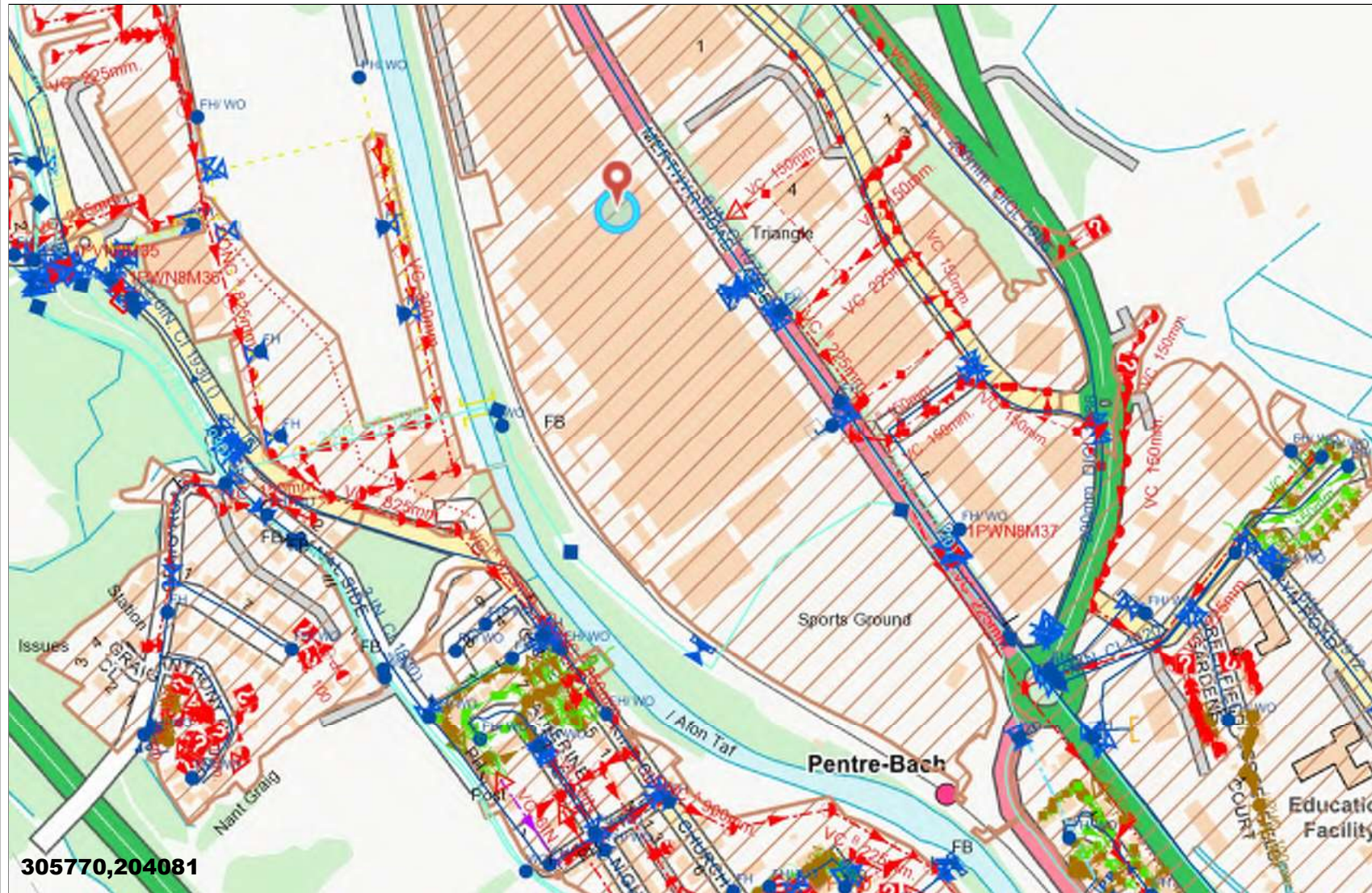
Dŵr Cymru Cyfyngedig ('the Company') gives this information as to the position of its underground apparatus by way of general guidance only and on the strict understanding that it is based on the best information available and no warranty as to its correctness is relied upon in the event of excavations or other works made in the vicinity of the company's apparatus and any onus of locating the apparatus before carrying out any excavations rests entirely on you. The information which is supplied hereby by the company, is done so in accordance with statutory requirements of sections 198 and 199 of the Water Industry Act 1991 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 drain sewer or disposal main 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.

**EXACT LOCATION OF  
ALL APPARATUS TO  
BE DETERMINED ON  
SITE**

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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.





**LEGEND**

**Clean Water**

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

**Sewerage External**

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

**305770,204081**

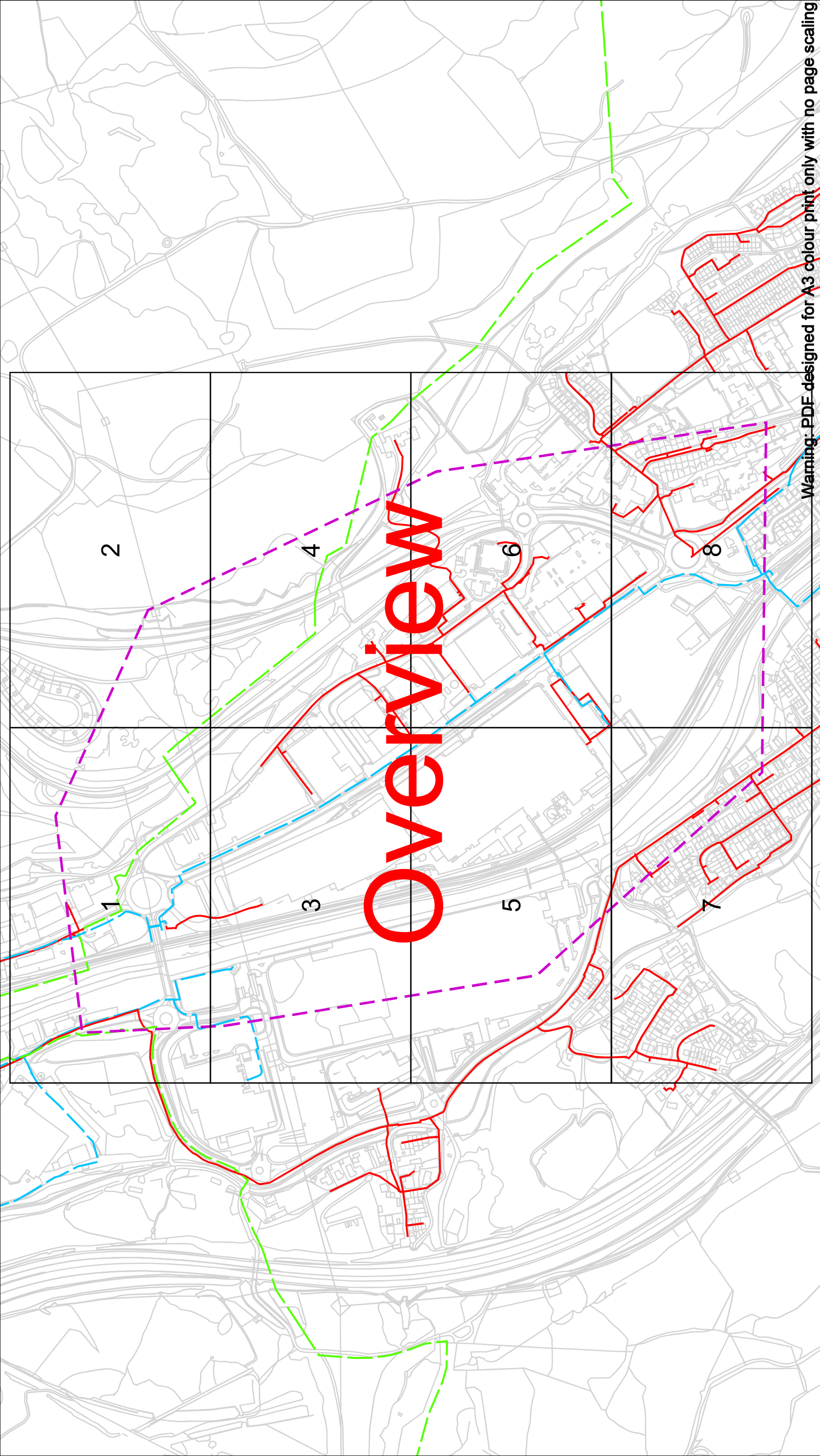
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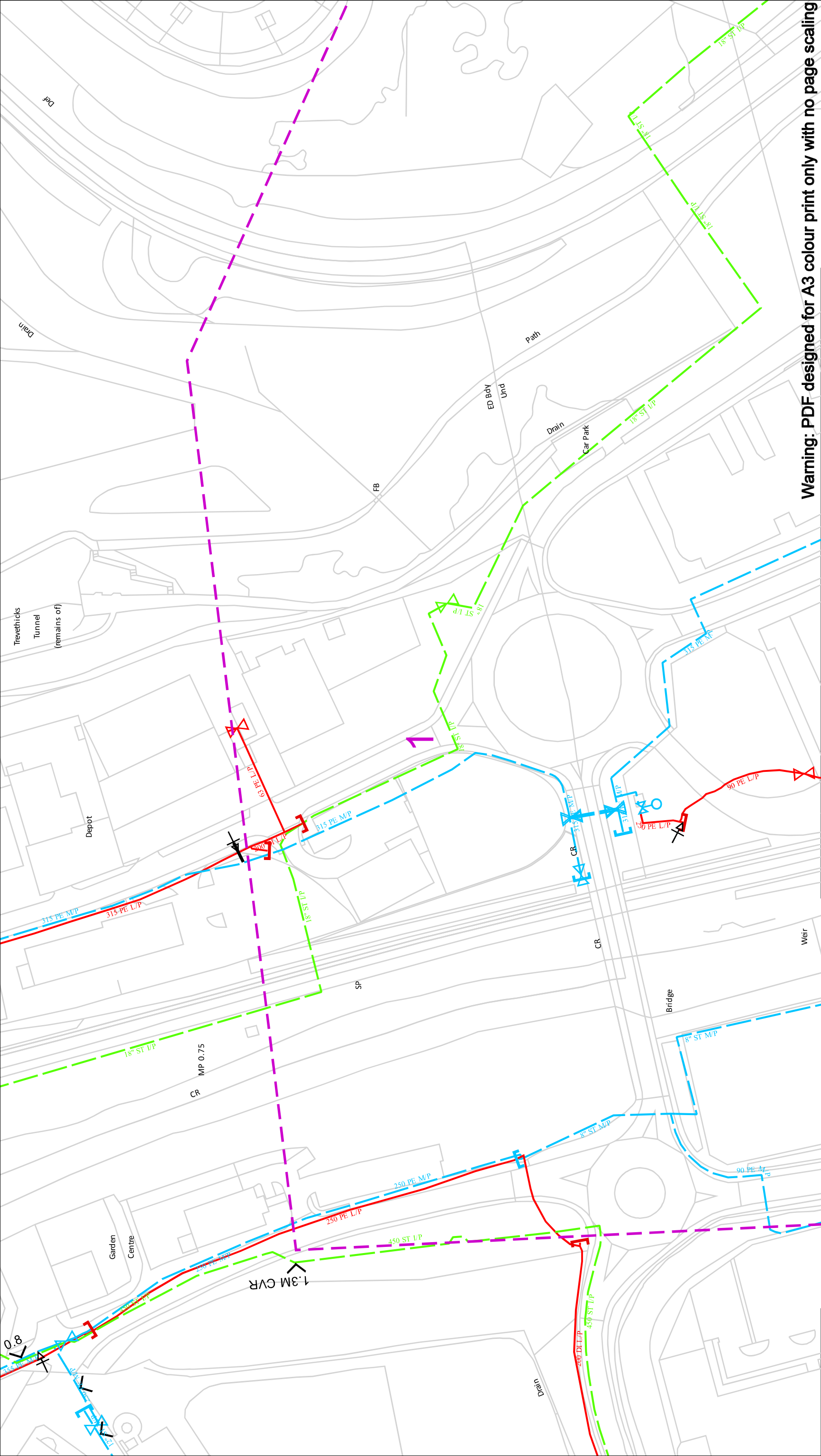




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| <div><div>Contact Us<br/>Mapping Enquiries:<br/>General Enquiries:<br/><br/>02920 278 912<br/>0800 912 2999</div><div><div>Date Requested: 12/10/2021<br/>Job Reference: 23523388<br/>Site Location: 305754 204398<br/>Requested by:<br/>Mr Scott Gaisworthy<br/>Your Scheme/Reference: CS/10/1973<br/>Hoover Line Search</div><div>Scale: 1:1250 (When plotted at A3)</div></div></div> |  | <div><div><b>EXTREME CAUTION. Major Accident Hazard Pipeline in Vicinity</b><br/><b>**RISK OF DEATH OR SERIOUS INJURY**</b><br/>Prior to excavation starting you must contact the plant protection team on 02920 278912</div><div><b>IMPORTANT NOTICES</b><ul style="list-style-type: none"><li>This information is given as a guide only and its accuracy cannot be guaranteed</li><li>The plan only shows those pipes owned by Wales &amp; West Utilities (WWU) as its role as a licensed Gas Transporter</li><li>Service pipes, valves, syphons, stub connections etc. may not be shown but their presence should be anticipated</li><li>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</li><li>It is your responsibility to ensure this information is provided to all persons working near our plant</li><li>If in doubt call the WWU dig team on 02920 278912</li></ul></div></div> |  | <div><div><b>In case of an emergency call 0800 111 999</b></div><div><div><div><div><div><div></div><div>Dig Sites</div></div><div><div><div></div><div>Area:</div></div><div><div><div></div><div>Line:</div></div></div><div><div><div></div><div>Low Pressure (LP) 21mbar – 75mbar</div></div><div><div></div><div>Medium Pressure (MP) 350mbar – 2bar</div></div><div><div></div><div>Intermediate Pressure (IP) 2bar – 7bar</div></div><div><div></div><div>High Pressure (HP) &gt;7bar</div></div></div><div><div><div></div><div>Line/Fire Valve</div></div><div><div></div><div>Governor Station</div></div><div><div></div><div>Change of Diameter</div></div><div><div></div><div>End Cap</div></div><div><div></div><div>Depth of cover</div></div></div></div><div><div><div><div><div></div><div>100m</div></div><div><div></div><div>100m</div></div></div><div><div><div></div><div>Small jobs?<br/>Call the Gas Emergency Services on<br/>0800 111 999.</div></div><div><div><div></div><div>Dial<br/>before<br/>you dig</div></div><div><div><div></div><div>Call 029 2027 0012<br/>before you start work</div></div><div><div><div></div><div>Investigate<br/>before you dig, make sure<br/>you know what's below.</div></div><div><div><div></div><div>GO ahead!</div></div><div><div><div></div><div>Done your emergency?<br/>Have your gas safe today.</div></div></div></div></div></div></div></div></div></div></div></div></div></div></div> |  |
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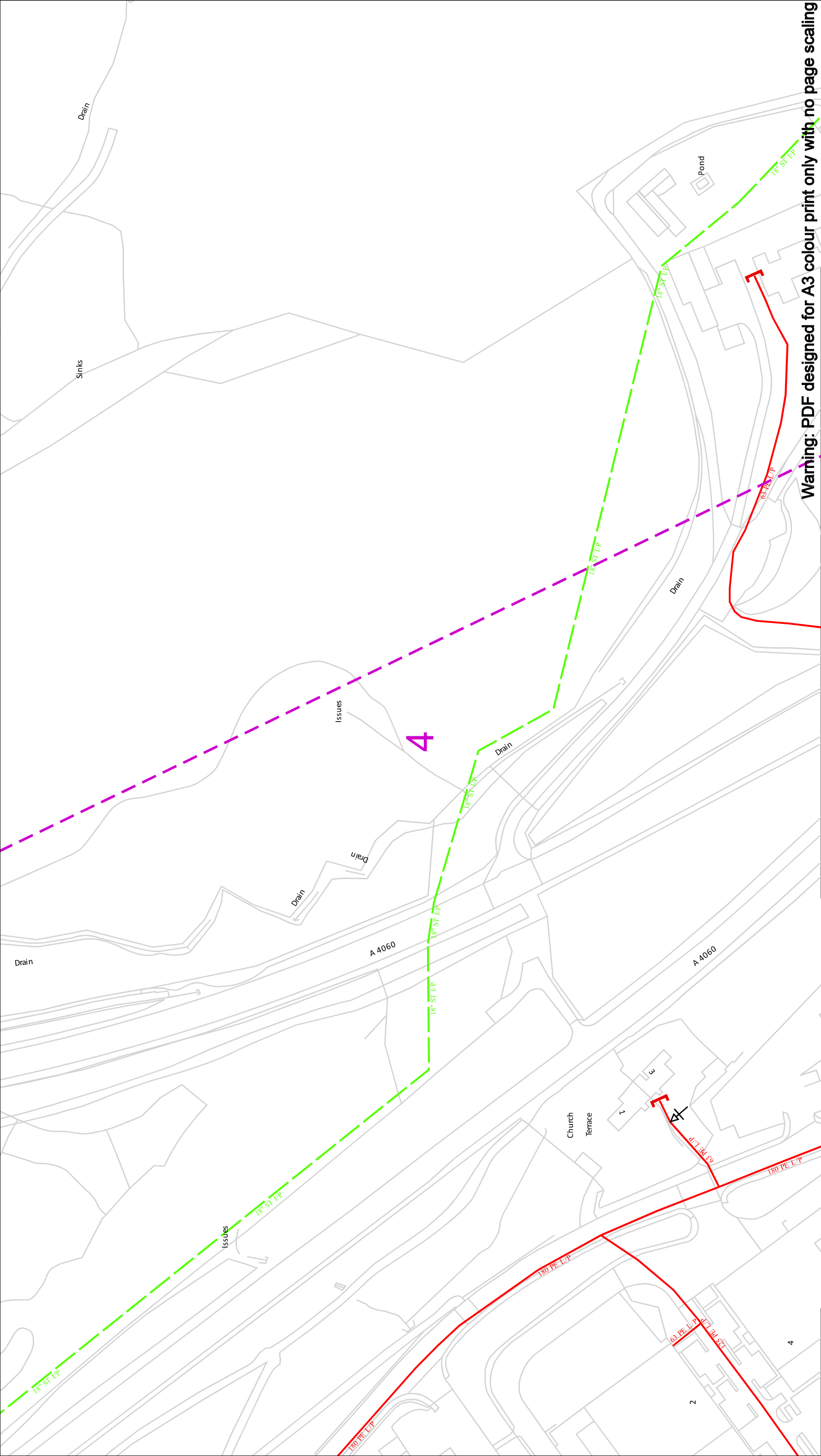












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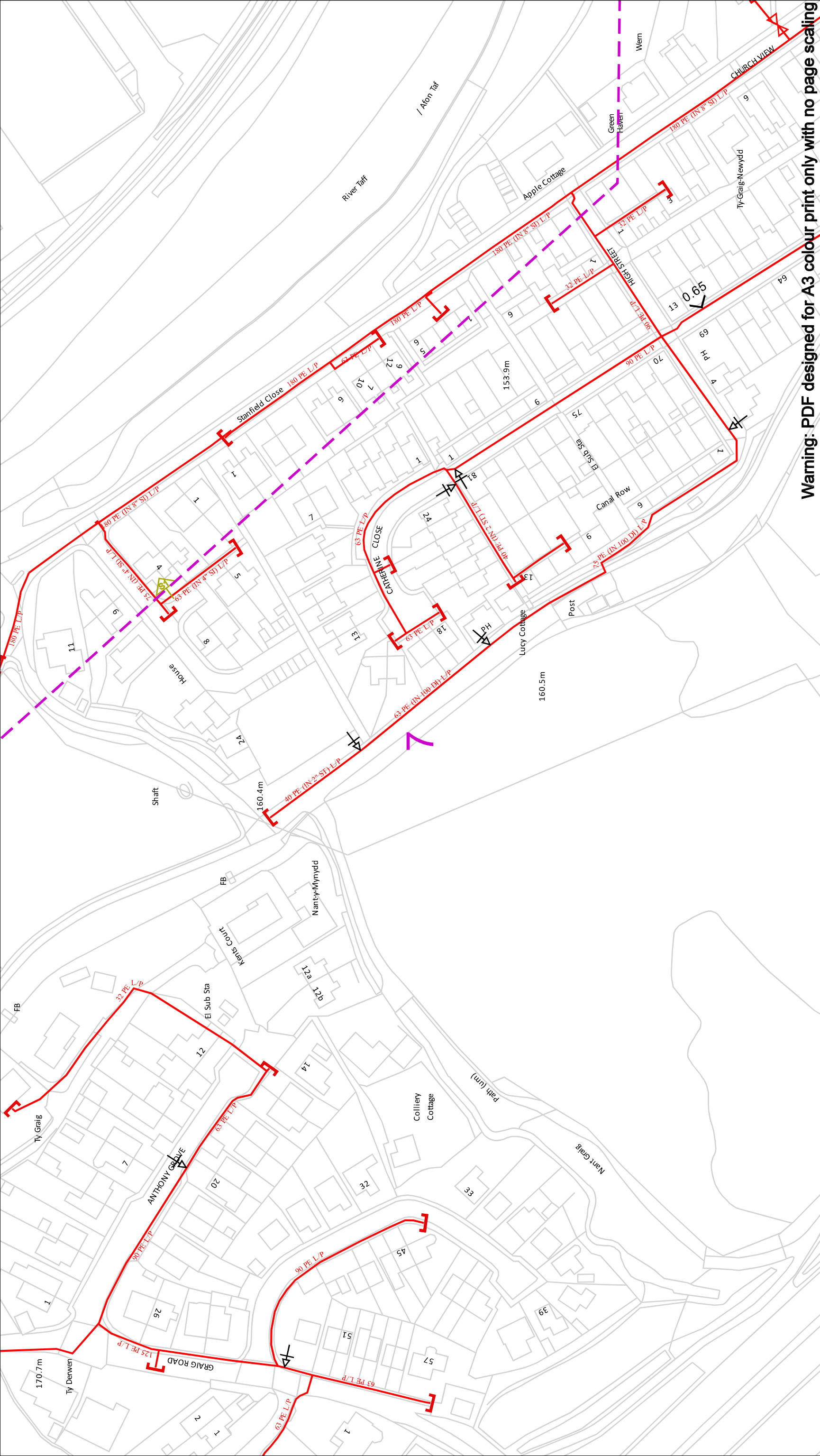
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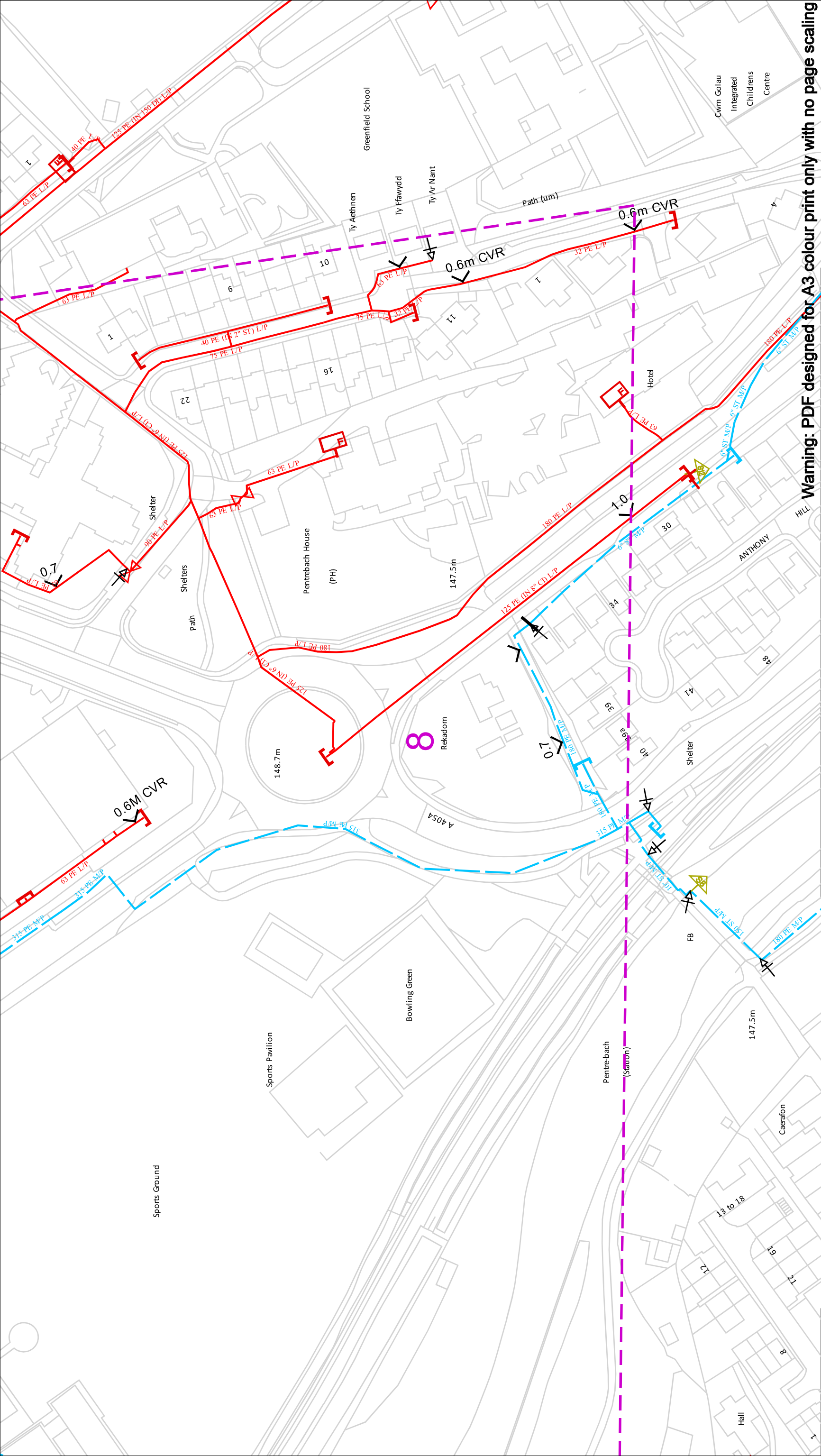




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SPECIFICATION FOR

**SAFE WORKING IN THE VICINITY OF PIPELINES AND  
ASSOCIATED INSTALLATIONS OPERATING ABOVE 2  
BARG - REQUIREMENTS FOR THIRD PARTIES**

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**JUNE 2013**





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## FOREWORD

This Specification was approved, by Chris Clarke, Director of Asset Management and HS&E Dept on 21<sup>st</sup> June 2013 for use by managers, engineers and supervisors throughout Wales & West Utilities Limited.

Documents are revised, when necessary, by the issue of new editions. Users should ensure that they are in possession of the latest edition by referring to the document library available on the company intranet.

Compliance with this document does not confer immunity from prosecution for breach of statutory or other legal obligations.

## BRIEF HISTORY

|                                                                                                                                                                                         |                                                                            |                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-----------------------------------------------------|
| First published as T/SP/SSW22<br>Editorial update to reflect merger October 2002<br>Revised and reissued.<br>Revised and Reissued as T/SP/SSW/22<br>Editorial update to comply with GRM | October 2001<br>November 2002<br>November 2003<br>June 2004<br>August 2004 | EPSG/L01/283<br><br>EPSG/A03/10125<br>EPSG/T04/1209 |
| Document revised to remove reference to Transco and replace with WWU Ltd.                                                                                                               | May 2006                                                                   |                                                     |
| Document revised to reflect WWU management structure, include IP pipelines and update letters                                                                                           | April 2013                                                                 |                                                     |

**KEY CHANGES** (Identify the changes from the previous version of this document)

| Section | Amendments                                                            |
|---------|-----------------------------------------------------------------------|
| 1       | Scope extended from any pipe operating above 7bar to above 2bar gauge |
| 5 & 6   | References added to T/PR/P/18                                         |
| 8       | References added to wind turbine development near pipelines           |

## USE

This document is provided by Wales & West Utilities Limited for information and reference.

## MANDATORY AND NON-MANDATORY REQUIREMENTS

In this document:

**must:** indicates a mandatory requirement.

**should:** indicates best practice and is the preferred option. If an alternative method is used then a suitable and sufficient risk assessment must be completed to show that the alternative method delivers the same, or better, level of protection.





# **SPECIFICATION FOR SAFE WORKING AND DEVELOPMENT IN THE VICINITY OF PIPELINES AND ASSOCIATED INSTALLATIONS OPERATING ABOVE 2 BARG - REQUIREMENTS FOR THIRD PARTIES**

## **INTRODUCTION**

This specification is for issue to third parties carrying out work in the vicinity of high pressure gas pipelines (above 2 bar gauge) and associated installations and is provided to ensure that individuals planning and undertaking work take appropriate measures to prevent damage.

Any damage to a high-pressure gas pipeline or its coating can affect its integrity and can result in failure of the pipeline with potential serious hazardous consequences for individuals located in the vicinity of the pipeline if it were to fail. It is therefore essential that the procedures outlined in this document are complied with when working near to a high pressure, above 2 bar gauge, pipeline. If any work is considered by Wales & West Utilities to be in breach of the requirements stipulated in this document then the Wales & West Utilities responsible person will suspend the work until the non-compliances have been rectified.

The Pipelines Safety Regulations state that “No person shall cause such damage to a pipeline as may give rise to a danger to persons” (Regulation 15). Failing to comply with these requirements could therefore also result in prosecution by the Health and Safety Executive (HSE).

The requirements in this document are in line with the requirements of the IGE (Institution of Gas Engineers) recommendations IGE/SR/18 Edition 2 - Safe Working Practices To Ensure The Integrity Of Gas Pipelines And Associated Installations and the HSE’s guidance document HS(G)47 Avoiding Danger from Underground Services.

It is the responsibility of the third party to ensure that any work carried out also conforms with the requirements of the Construction and Design Management Regulations and all other relevant health and safety legislation.

## WHEN CARRYING OUT WORK IN THE VICINITY OF A HIGH PRESSURE PIPELINE FOLLOW THE FOLLOWING PROCESS

### CONTACT WALES & WEST UTILITIES

Contact Wales & West Utilities to obtain formal consent - Section 2 of this document.

**Note:** at least 7 days' notice prior to commencement of the work is normally required



### CONSIDER SAFETY

Consider the safety requirements - Section 3 of this document.



### INFORM Wales & West Utilities AND REQUEST PIPELINE LOCATION

Inform Wales & West Utilities prior to carrying out work and arrange for Wales & West Utilities to locate the pipeline - Section 4 of this document

**Note:** at least 7 days' notice is normally required



### OBSERVE RESTRICTIONS

Observe Wales & West Utilities restrictions on the allowed proximity of mechanical excavators and other power tools and the measures to protect the pipeline from construction vehicles when carrying out the work – Sections 5, 6 and 7 of this document.

**Note:** Wales & West Utilities may wish to supervise the work, consult Wales & West Utilities to confirm whether or not this is the case.



### SPECIFIC ACTIVITIES

If work involves any of the following activities:

- No-Dig Techniques
- Increase in Cover
- Piling
- Demolition
- Hot Work
- Blasting
- Surface Mineral Extraction
- Deep Mining
- Landfilling
- Pressure Testing
- Seismic Surveys
- Wind Turbines

Comply with the requirements in Section 8 of this document



### CONSULT WALES & WEST UTILITIES

Consult Wales & West Utilities prior to any backfilling over, alongside or under the pipeline and obtain Wales & West Utilities agreement to proceed. Normally Wales & West Utilities require 48 hours notice prior to backfilling - Section 9 of this document.

**IMPORTANT:** This flowchart should be used in conjunction with the entire SSW22 document and not in isolation, AND if at any time during the works the pipeline is damaged even slightly then observe the precautions in Section 10 of this document.

**IF IN DOUBT CONTACT Wales & West Utilities**

## **1. SCOPE**

This specification sets out the safety precautions and other conditions affecting the design, construction and maintenance of services, structures and other works in the vicinity of Wales & West Utilities pipelines and associated installations operating at pressures greater than 2 bar gauge, located in both negotiated easements (see Section 12), in public highways and within the wider area of interest around a pipeline.

## **2. FORMAL CONSENT**

High pressure pipelines are generally laid across country within an easement agreed with the landowner or within the highway.

As the required arrangements for working within an easement and working within the highway differ, this document has been structured to highlight the specific requirements for these two types of area where work may be carried out.

Generally, normal agricultural activities are not considered to affect the integrity of the pipeline, however consult Wales & West Utilities prior to undertaking deep cultivation in excess of 0.5m.

In all other cases no work shall be undertaken in the vicinity of the pipeline without the formal written consent of Wales & West Utilities.

Any documents, handed to contractors on site by Wales & West Utilities must be signed for by the site manager. Wales & West Utilities will record a list of these documents using the form in Appendix A, and the contractor should maintain a duplicate list.

### **2.1 Within an Easement**

The promoter of any works (see Section 12) within an easement must provide Wales & West Utilities with details of the proposed works including a method statement of how the work is intended to be carried out.

Work must not go ahead until formal written consent has been given by Wales & West Utilities. This will include details of Wales & West Utilities protection requirements, contact telephone numbers and the emergency telephone number.

On acceptance of Wales & West Utilities requirements the promoter of the works must give Wales & West Utilities 7 working days' notice, or shorter only if agreed with Wales & West Utilities, before commencing work on site.

### **2.2 Within the Highway**

Work must be notified to Wales & West Utilities in accordance with the requirements of The New Roads and Street Works Act (NRSWA) and HS(G)47.

The promoter of any works within the highway should provide Wales & West Utilities with details of the proposed works including a method statement of how the work is intended to be carried out. This should be submitted 7 working days before the planned work is to be carried out or shorter, only if agreed with Wales & West Utilities. If similar works are being carried out at a number of locations in close proximity a single method statement should be adequate.

Work should not go ahead until formal written consent has been given by Wales & West Utilities. This will include details of Wales & West Utilities' protection requirements, contact telephone numbers and the emergency telephone number.



### **2.3 Within the Area of Interest**

Certain other activities, such as the development of adjacent land with buildings, or other constructions which may have an impact on the safe operation of above 2 bar gauge pipelines, must also be notified to Wales & West Utilities, for example the construction of wind turbines, masts or aerals.

Developers should ensure early consultation with Wales & West Utilities in respect of such development, rather than relying on local authority planning consultation, which may lead to substantial late changes to design or constraints on the planned development.

## **3. HS&E CONSIDERATIONS**

### **3.1 Safe Control of Operations**

All working practices must be agreed by Wales & West Utilities prior to work commencing. All personnel working on site must be made aware of the potential hazard of the pipeline and the actions they should follow in case of an emergency. The Site Document Control Form (Appendix A) should be used to record the list of relevant documents that have been provided by Wales & West Utilities to the contractor.

### **3.2 Deep Excavations**

Special consideration should be given to the hazards associated with deep excavations. The HSE document CIS08 'Safety in Excavations' provides further guidance and is available on the HSE web site [www.hse.gov.uk](http://www.hse.gov.uk)

### **3.3 Positioning of Plant**

Mechanical excavators must not be sited or moved above the pipeline unless written authority has been given by the Wales & West Utilities responsible person.

Mechanical excavators must not dig on one side of the pipeline with the cab of the excavator positioned on the other side.

Mechanical excavators and other traffic must be positioned far enough away from the pipeline trench to prevent trench wall collapse.

### **3.4 General**

Activities associated with working in the vicinity of pipelines operating above 2 bar gauge may have impact on the safety of the general public, Wales & West Utilities staff and contractors, and may affect the local environment. Contractors must carry out suitable and adequate risk assessments prior to the commencement of work to ensure that all such issues are properly considered and risks mitigated.

## **4. PIPELINE LOCATING**

The third party should give 7 working days' notice (or shorter as agreed with Wales & West Utilities) to ensure that the pipeline is suitably located and marked out by Wales & West Utilities prior to the work commencing.

Prior to work commencing on site the pipeline must be located and pegged or suitably marked out by Wales & West Utilities personnel. In exceptional circumstances with the prior agreement of Wales & West Utilities the locating and marking out of the pipeline could be carried out by competent third parties on behalf of the contractor as long as Wales & West Utilities is assured of their competence and the procedures to be followed.

Safe digging practices, in accordance with HSE publication HS(G)47 should be followed as both direct and consequential damage to gas plant can be dangerous both to employees and to the general public.

Previously agreed working practices should be reviewed and revised based on current site conditions. Any changes must be agreed by the Wales & West Utilities responsible person.

The requirements for trial holes to locate the pipeline or determine levels at crossing points must be determined on site by the Wales & West Utilities responsible person.

The excavation of all trial holes must be supervised by the Wales & West Utilities responsible person.

## **5. SLABBING AND OTHER PROTECTIVE MEASURES**

No protective measures including the installation of concrete slab protection should be installed over or near to the Wales & West Utilities pipeline without the prior permission of Wales & West Utilities. Wales & West Utilities will need to agree the material, the dimensions and method of installation of the proposed protective measure. The method of installation must be confirmed through the submission of a formal written method statement from the contractor to Wales & West Utilities.

Where permanent slab protection is to be applied over the pipeline Wales & West Utilities should carry out a survey (Pearson or DCVG Survey) of the pipeline to check that there is no existing damage to the coating of the pipeline prior to the slab protection being put in place. In addition the pipeline records should be consulted to determine whether any other investigations or remedial works would be needed in advance of the slab construction, e.g. reference to T/PR/P/18. Wales & West Utilities must therefore be contacted prior to the laying of any slab protection to arrange this survey. The Safety precautions detailed in Sections 3 and 6 of this document should also be observed during the installation of the pipeline protection.

## **6. EXCAVATION**

### **6.1 In Proximity to a Pipeline in an Easement**

Third parties must not excavate unsupervised, with a powered mechanical excavator closer than 3 metres to the Wales & West Utilities located pipeline or with hand held power tools closer than 1.5 metres. Any fitting, attachment or connecting pipework on the pipeline must be exposed by hand. All other excavation must be by hand.

Consideration may be given to a relaxation of these limits by agreement with the Wales & West Utilities responsible person on site and only whilst he remains on site. In this case a powered mechanical excavator must not be allowed to excavate closer than 0.6 metres to the nearest part of the pipeline.

Where sufficient depth of cover exists, following evidence from hand dug trial holes, light tracked vehicles may be permitted to strip topsoil to a depth of 0.25 metres, using a toothless bucket.

No topsoil or other materials should be stored within the easement without the written permission of Wales & West Utilities.

No topsoil or materials should be stored over the pipeline.

No fires should be allowed in the easement strip or close to above ground gas installations.

After the completion of the work the level of cover over the pipeline should be the same as that prior to work commencing unless agreed otherwise with the Wales & West Utilities responsible person.

No new service shall be laid parallel to the pipeline within the easement. In special circumstances, and only with formal written agreement from Wales & West Utilities, this may be relaxed for short excursions where the service shall be laid no closer than 600 mm to the side of the pipeline.

Where work is being carried out parallel to the pipeline within or just alongside the easement a post and wire fence must be erected as a protective barrier between the works and the pipeline.

## **6.2 In Proximity to a Pipeline in the Highway**

Removal of the bituminous or concrete highway surface layer by mechanical means is permitted to depth of 300 mm, although the use of chain trenchers to do this shall not be permitted within 3 metres of the pipeline. The Wales & West Utilities responsible person may want to monitor this work.

Where the bituminous or concrete highway surface layer extends below 0.3 metres deep it should only be removed by handheld power assisted tools under the supervision of the Wales & West Utilities responsible person. In exceptional circumstances, and following a risk assessment, these conditions may be relaxed by the Wales & West Utilities responsible person.

Third parties should not excavate, unsupervised, with a powered mechanical excavator closer than 3 metres to the located Wales & West Utilities pipeline or with hand held power tools closer than 1.5 metres. Any fitting or attachment must be exposed by hand.

In special circumstances consideration may be given to a relaxation of these rules by agreement with the Wales & West Utilities responsible person on site and only whilst he remains on site only whilst he remains on site and only whilst he remains on site to supervise this work..

The use of 'No dig' techniques is covered in Section 8.1.

Any new service running parallel to the pipeline should be laid no closer than 600 mm to the pipeline (see Section 6.4).

## **6.3 Crossing Over a Pipeline**

Where a new service is to cross over the pipeline a clearance distance of 600 mm between the crown of the pipeline and underside of the service must be maintained. If this cannot be achieved the service must cross below the pipeline with a clearance distance of 600 mm.

In special circumstances this distance may be reduced at the discretion of the Wales & West Utilities responsible person on site.

## **6.4 Crossing Below a Pipeline**

Where a service is to cross below the pipeline a clearance distance of 600 mm between the crown of the service and underside of the pipeline should be maintained.

The exposed pipeline must be suitably supported. The Wales & West Utilities responsible person must be consulted and a stress analysis may be required in order to establish support requirements. The stress analysis should be carried out by individuals with demonstrated expertise in this area, Wales & West Utilities can be consulted for advice on suitable specialists. Wales & West Utilities may request a copy of the stress analysis to confirm its adequacy.

Specific additional constraints apply to Wales & West Utilities pipelines that fall under the requirements of T/PR/P/18.

All supports must be removed prior to backfilling.

The exposed pipelines must be protected by matting and suitable timber cladding.

## **6.5 Cathodic Protection**

Cathodic Protection is applied to all of Wales & West Utilities above 2 bar gauge buried steel pipelines and is a method of protecting pipelines with damaged coatings from corrosion by maintaining an electrical potential difference between the pipeline and anodes placed at strategic points along the pipeline.

Where a new service is to be laid and similarly protected, Wales & West Utilities will undertake interference tests to determine whether the new service is interfering with the cathodic protection of the Wales & West Utilities pipeline.



Should any cathodic protection posts or associated apparatus need moving to facilitate third party works reasonable notice, typically 7 days, should be given to Wales & West Utilities. Wales & West Utilities will undertake this work and any associated costs will be borne by the third party.

## **7. CONSTRUCTION TRAFFIC**

Where existing roads cannot be used construction traffic should ONLY cross the pipeline at previously agreed locations. All crossing points will be fenced on both sides with a post and wire fence and with the fence returned along the easement for a distance of 6 metres. The pipeline shall be protected at the crossing points by temporary rafts of either sleeper or reinforced concrete construction, constructed at ground level. The Wales & West Utilities responsible person will review ground conditions, vehicle types and crossing frequencies to determine the type and construction of the raft required.

Notices directing traffic to the crossing points should be erected.

## **8. SPECIFIC ACTIVITIES**

This section details the precautions that need to be taken when carrying out certain prescribed activities in the vicinity of the pipeline. Consult Wales & West Utilities if you are intending to undertake one of the listed prescribed activities and/or you require further advice on whether the work that you are intending to undertake has the potential to affect the pipeline.

### **8.1 No-Dig Techniques**

Where the contractor intends using no dig techniques then a formal method statement must be produced for all work that would encroach (either above or below ground) within the pipeline easement. This method statement must be formally agreed with Wales & West Utilities prior to the commencement of the work. Wales & West Utilities may wish to be present when the work is being carried out and must therefore be given adequate advance notice before the commencement of the work.

### **8.2 Increase in Cover**

A pipeline integrity assessment must be provided for situations involving a final cover depth exceeding 2.5 metres. This assessment should take due account of both soil 'dead' loading and ground settlement due to earthworks. Embankment design and construction over pipelines must give consideration to prevention of any instability. Expert advice may need to be sought which can be arranged through Wales & West Utilities.

### **8.3 Piling**

No piling will be allowed within 15 metres of a pipeline without an assessment of the vibration levels at the pipeline. The peak particle velocity at the pipeline should be limited to a maximum level of 75 mm/sec. In any event the ground vibration shall be monitored by the contractor and the results available to the Wales & West Utilities Responsible person at their request. A typical monitoring device would be the Vibrock V801 seismograph and tri-axial geophone sensor.

Where ground conditions are of submerged granular deposits of silt and sand, an assessment of the effect of vibration on settlement and liquefaction at the pipeline shall be made.

Expert advice may need to be sought which can be arranged through Wales & West Utilities.

### **8.4 Demolition**

No demolition should be allowed within 150 metres of a pipeline without an assessment of the vibration levels at the pipeline. The peak particle velocity at the pipeline must be limited to a maximum level of 75 mm/sec. In any event the ground vibration shall be monitored by the contractor and the results available to the Wales & West Utilities Responsible person at their request.

Where ground conditions are submerged granular deposits of silt or sand, an assessment of the effect of vibration on settlement and liquefaction at the pipeline shall be made.

Expert advice may need to be sought which can be arranged through Wales & West Utilities.

## **8.5 Blasting**

No blasting should be allowed within 250 metres of a pipeline without an assessment of the vibration levels at the pipeline. The peak particle velocity at the pipeline must be limited to a maximum level of 75 mm/sec. In any event the ground vibration must be monitored by the contractor and the results available to the Wales & West Utilities Responsible person at their request.

Where ground conditions are of submerged granular deposits of silt or sand, an assessment of the effect of vibration on settlement and liquefaction at the pipeline shall be made.

Expert advice may need to be sought which can be arranged through Wales & West Utilities.

## **8.6 Surface Mineral Extraction**

An assessment must be carried out on the effect of surface mineral extraction activity within 100 metres of a pipeline. Consideration should also be given to extraction around groundbeds and other pipeline associated plant and equipment.

Where the mineral extraction extends up to the pipeline easement, a stable slope angle and stand-off distance between the pipeline and slope crest must be determined by Wales & West Utilities. The easement strip should be clearly marked by a suitable permanent boundary such as a post and wire fence, and where appropriate, slope indicator markers shall be erected to facilitate the verification of the recommended slope angle as the slope is formed, by the contractor. The pipeline easement and slope needs to be inspected periodically to identify any signs of developing instability. This may include any change of slope profile including bulging, the development of tension cracks on the slope or easement, or any changes in drainage around the slope. The results of each inspection should be recorded.

Where surface mineral extraction activities are planned within 100 metres of the pipeline but do not extend up to the pipeline easement boundary, an assessment, by Wales & West Utilities must be made on whether the planned activity could promote instability in the vicinity of the pipeline. This may occur where the pipeline is routed across a natural slope or the excavation is deep. A significant cause of this problem is where the groundwater profile is affected by changes in drainage or the development of lagoons.

Where the extraction technique involves explosives the provisions of section 8.5 apply.

## **8.7 Deep Mining**

Pipelines routed within 1 km of active deep mining may be affected by subsidence resulting from mineral extraction. The determination of protective or remedial measures will normally require expert assistance, which can be arranged through Wales & West Utilities.

## **8.8 Landfilling**

The creation of slopes outside of the pipeline easements may promote instability within the vicinity of the pipeline. An assessment should therefore be carried out, by Wales & West Utilities, on the effect of any landfilling activity within 100 metres of a pipeline. The assessment is particularly important if landfilling operations are taking place on a slope in which the pipeline is routed.

## **8.9 Pressure Testing**

Hydraulic pressure testing will not be permitted within 8 metres of the pipeline unless suitable precautions have been taken against the effects of a burst. These precautions should include limiting of the design factor to 0.3 for the third party pipeline for a distance of 6 metres either side of the Wales & West Utilities pipeline, and the use of mill tested pipe or sleeving.

## **8.10 Seismic Surveys**

Wales & West Utilities must be advised of any seismic surveying work in the vicinity of pipeline that will result in Wales & West Utilities' pipeline being subjected to peak particle velocities in excess of 50 mm/sec. In any event the ground vibration near to the pipeline shall also be monitored by the contractor whilst the survey work is being carried out.

Where the peak particle velocity is predicted to exceed 50 mm/sec, the ground vibration should be monitored by the contractor and the results available to the Wales & West Utilities Responsible person at their request.

#### **8.11 Hot Work**

The Wales & West Utilities responsible person on site should supervise all welding, burning or other 'hot work' that takes place within the easement.

#### **8.12 Wind Turbines**

Wales & West Utilities must be advised of any planned development of wind turbines in the vicinity of an above 2 bar gas pipelines to ensure the development does not impact on the future safe operation of the pipeline. Industry guidance states that any wind turbine must be sited no closer than 1.5 times the proposed height of the turbine mast away from the nearest edge of the pipeline.

### **9. BACKFILLING**

Third parties must provide Wales & West Utilities with 7 days' notice, or shorter notice only if agreed with Wales & West Utilities, of the intent to backfill over, under or alongside the pipeline. This requirement should also apply to any backfilling operations alongside the pipeline within 3 metres of the pipeline. Any damage to the pipeline or coating must be reported to the Wales & West Utilities responsible person in order that damage can be assessed and repairs can be carried out.

**Minor damage to pipe coating and damage to test leads will normally be repaired by Wales & West Utilities free of charge.**

No backfilling should be undertaken without Wales & West Utilities agreement to proceed. When backfilling, the pipeline should be surrounded by at least 300mm of soft fill (i.e. stone dust) containing no stones, bricks, lumps of concrete, etc. The Wales & West Utilities responsible person will stipulate the necessary consolidation requirements.

If the pipeline has been backfilled without the knowledge of the Wales & West Utilities responsible person then he will require the material to be re-excavated in order to enable the condition of the pipeline coating to be confirmed.

### **10. ACTION IN THE CASE OF DAMAGE TO THE PIPELINE**

If the Wales & West Utilities pipeline is damaged, even slightly, and even if no gas leak has occurred then the following precautions must be taken immediately:-

- ◆ Shut down all plant and machinery and extinguish any potential sources of ignition.
- ◆ Evacuate all personnel from the vicinity of the pipeline.
- ◆ Notify Wales & West Utilities using the free 24 hour emergency telephone number **0800 111 999**<sup>\*1</sup>
- ◆ Notify the Wales & West Utilities responsible person or his office immediately using the contact telephone number provided.
- ◆ Ensure no one approaches the pipeline.
- ◆ Do not try to stop any leak.

<sup>1</sup> \* All calls are recorded and may be monitored



## 11. REFERENCES

|           |                                                                                              |
|-----------|----------------------------------------------------------------------------------------------|
| NRSAWA    | New Roads & Street Works Act                                                                 |
| HS(G)47   | Avoiding Danger from Underground Services                                                    |
| IGE/SR/18 | Safe Working Practices to Ensure the Integrity of Gas Pipelines and Associated Installations |
| T/PR/P/18 | Working on Pipelines Containing Defective Girth Welds or Girth Welds of Unknown Quality      |
| CIS08     | Safety in Excavations (HSE document)                                                         |

## 12. GLOSSARY OF TERMS

|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contractor:                                | the person, firm or company with whom Wales & West Utilities enters into a contract to which this specification applies, including the Contractor's personal representatives, successors and permitted assigns.                                                                                                                                                                                                                |
| Easement:                                  | Easements are negotiated legal entitlements between Wales & West Utilities and landowner and allow Wales & West Utilities to lay, operate and maintain pipelines within the easement strip. Easement strips may vary in width typically between 6 and 25 metres depending on the diameter and pressure of the pipeline. Consult Wales & West Utilities for details of the extent of the easement strip where work is intended. |
| Liquefaction:                              | Liquefaction is a phenomenon in which the strength and stiffness of the soil is reduced by earthquake shaking or other rapid loading. Liquefaction occurs in saturated soils, that is, soils in which the space between individual particles is completely filled with water. When liquefaction occurs, the strength of the soil decreases and the ability of the soil to support pipelines or other components is reduced.    |
| Pearson Survey:                            | a survey used for locating coating defects on buried pipeline services.                                                                                                                                                                                                                                                                                                                                                        |
| DCVG Survey:                               | Direct Current Voltage Gradient, a survey for locating and grading coating defects on buried pipeline service                                                                                                                                                                                                                                                                                                                  |
| Promoter of new works:                     | the person or persons, firm, company or authority for whom new services, structures or other works in the vicinity of existing Wales & West Utilities pipelines and associated installations operating above 7 bar gauge are being undertaken.                                                                                                                                                                                 |
| Wales & West Utilities responsible person: | the person or persons appointed by Wales & West Utilities with the competencies required to act as the Wales & West Utilities representative for the purpose of the managing the particular activity.                                                                                                                                                                                                                          |
| Wayleave:                                  | general term which is considered equivalent to 'easement' in this document.                                                                                                                                                                                                                                                                                                                                                    |

## APPENDIX A

### SITE DOCUMENT CONTROL FORM - SAMPLE

Emergency Telephone No. **0800 111 999\***  
Plant Protection Telephone No. **02920278912**

#### **SITE DOCUMENT CONTROL FORM**

**Activity Reference:**

**Activity Location:**

**Site Manager:**

*(name & telephone number)*

**Wales & West Utilities Contact:**

*(name & telephone number)*

**The following documents were issued to** *(individual's name)*

..... **of**  
*(company name and address)*

**by** *(Wales & West Utilities representative)*

..... **on**  
*(date)*.....:-

**Documents:-**

*(List of documents)*

---

**Signed :** *(by the recipient)*

**Date of signature :**

**SITE DOCUMENT CONTROL FORM**

**Emergency Telephone No. 0800 111 999\***

**Plant Protection Telephone No. 02920 278912**

**SITE DOCUMENT CONTROL FORM**

**Activity Reference:**

**Activity Location:**

**Site Manager:**

*(name & telephone number)*

**Wales & West Utilities Contact:**

*(name & telephone number)*

**The following documents were issued to** (Individuals Name)

.....**of**  
*(company name and address)*

**by** *(Wales and West Utilities representative)*

.....**on**  
*(date)* ..... :-

**Documents:-**

---

**Signed :**

**Date of signature :**

## **ENDNOTE**

### **Comments**

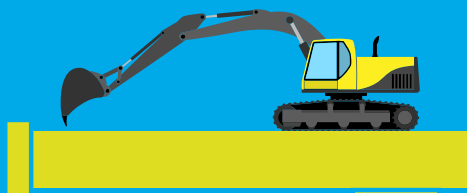
Comments and queries regarding the technical content of this document should be directed to:

Asset Management & HSE Dept  
Wales & West Utilities Ltd  
Wales & West House  
Spooner Close  
Celtic Springs  
Coedkernew  
Newport  
NP10 8FZ.

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Every day, underground gas pipes get damaged by people digging without knowing what's below. This can be catastrophic. It might cause serious injury to you and others around you. The costs of repair, fines and fees can be huge. Your project will be delayed and your reputation damaged.

We have designed this leaflet to help you dig safely. And the first thing to do – long before you start work – is call us.

What's the number?  
**029 2027 8912**

We're here to  
**help**



**Dial  
before  
you dig**

We need  
**10 days'**  
notice



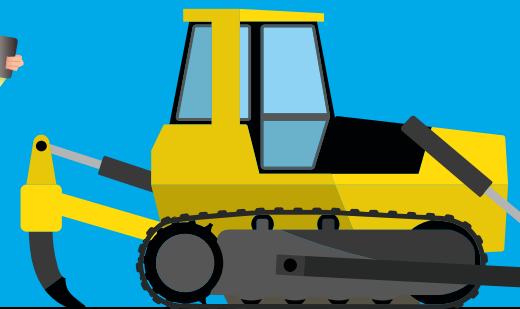
**Need help or advice?**

Call our **Plant Protection** team on  
**029 2027 8912**  
or email **dig@wwutilities.co.uk**



**Smell gas?**

Call the **Gas Emergency Service** on  
**0800 111 999**.



[dig@wwutilities.co.uk](mailto:dig@wwutilities.co.uk)



029 2027 8912



[www.wwutilities.co.uk](http://www.wwutilities.co.uk)



[facebook.com/wwutilities](https://facebook.com/wwutilities)



@WWUtilities



**Dial  
Investigate  
Go ahead**

**YOUR GAS EMERGENCY  
AND PIPELINE SERVICE**



**WALES & WEST  
UTILITIES**

CARD POSITION (DO NOT PRINT)

# Can you DIG it?

We bring the gas to homes and businesses across Wales and the south west of England. We invest money, time and effort every year to make sure our pipelines are protected – but the biggest danger to our network is you.



## D is for Dial

**Digging can be dangerous. Hit a gas pipe and you might cause a gas leak, a fire or explosion.**

So phone us first on **029 2027 8912** or email **[dig@wwutilities.co.uk](mailto:dig@wwutilities.co.uk)**

- You can find out where our pipes are.
- You need to give us 10 working days' notice before you start working.



## I is for Investigate

**It's the only way to stay safe**

- Before you start work, you must get a copy of our up-to-date gas plans and General Conditions and keep them with you on site.
- Use our online mapping service to find the mains pipes under your land.
- Working near a medium-, or intermediate- or high-pressure gas pipe? You might need a site visit – call us so we can arrange it.
- Plan ahead – we need at least 10 days' notice for a site visit.
- You'll also need our publication 'SSW22 Safe working in the vicinity of high-pressure pipelines and associated installations'.
- Remember, you can't work on a Wales & West Utilities wayleave or easement (land which we have rights over to maintain our gas network) without written permission.
- And you can't work near or move heavy equipment over any gas pipeline until all our conditions have been met and we agree your method of working.
- Watch the video on our website to find out more.



## G is for Go ahead

- Make sure you have our up-to-date gas plans on site.
- Need extra advice? Call our Plant Protection team on **029 2027 8912** or email **[dig@wwutilities.co.uk](mailto:dig@wwutilities.co.uk)**
- Use cable- and pipe-locating devices.
- Use safe digging practices, taking every precaution to avoid damaging gas pipes, damaging yourself and damaging your bank balance. You will be billed for any costs if something goes wrong.
- If in doubt, phone us again. We're happy to help.

We need  
**10 days'**  
notice



## Smell gas?

**Our Gas Emergency Service is on call 24 hours a day, seven days a week, 365 days a year.**

If you cause a gas leak, or think the network might be leaking, call the Gas Emergency Service immediately on **0800 111 999**.

- Get everyone away from the leak.
- Ask everyone in nearby buildings to leave until we're sure it's safe.
- Put out all naked flames and other sources of ignition and make sure no one smokes within 15 metres of the leak.
- Don't try to fix the leak by filling the hole, as gas may enter buildings.
- Don't try to operate any valves.
- Don't let anyone go near the leak.
- Help our engineers, the police or fire services if they ask.

# Wales & West Utilities Limited

## General Conditions to be observed for the Protection of Apparatus and the Prevention of Disruption to Gas Supplies.

General conditions affecting the design, construction or maintenance of services and/or structures or other works in the vicinity of Wales & West Utilities (WWU) plant, pipelines and associated installations:

These general conditions apply only to the gas apparatus and pipes operated by WWU. It is possible that there may be other gas transporters with apparatus in the vicinity, therefore you should ensure that you have made enquiries of them and have complied with their requirements.

### 1. GRAPHIC REPRESENTATION OF GAS MAINS

Any plans supplied or marked up by WWU will indicate the **APPROXIMATE** location of its apparatus. This information is provided as a general guide only; its accuracy cannot be guaranteed and is given without obligation or warranty. Service pipes are not shown but their presence should be anticipated. No liability whatsoever is accepted by WWU, its agents or servants for any error, omission, discrepancy or deviation. Plans on site should be current, i.e. no older than 28 days from the date of issue. Gas pipes owned by other Gas Transporters, or otherwise privately owned, may be present in this area (pink areas indicated on our plans). Information with regard to such pipes should be obtained from the relevant owners.

Should you require assistance on site locating WWU apparatus, please contact our Plant Protection Team on **02920 278912**.

### 2. METHODS OF WORKING

The following methods of work shall not normally be permitted within the limits of distance indicated (relative to the established pipe position). Any variances must have consent from WWU before works commence on site:

|                                 |                                       |                             |             |
|---------------------------------|---------------------------------------|-----------------------------|-------------|
| Mechanical Excavation           | <b>3m (1m for low pressure mains)</b> | Hydraulic Testing           | <b>8 m</b>  |
| Piling / Pile removing / Boring | <b>15m</b>                            | Welding or other hot works* | <b>15m</b>  |
| Directional Drill Operations    | <b>15m</b>                            | Explosives                  | <b>250m</b> |

\* NOTE: Welding or other hot works involving naked flames shall be carried out at a safe distance to the satisfaction of a WWU Engineer. A check should be made prior to the commencement of works, to ensure a gas free atmosphere exists. It is also necessary to monitor the atmosphere at regular intervals for the duration of the works. In no case shall such activities take place in any Wales & West Utilities Easement without the written consent and in the presence of a WWU representative.

WWU must be consulted prior to carrying out any excavation work within **10m** of any above or below ground gas installations or pipeline. No excavation works may commence within **50m** of a High Pressure or Very High Pressure Pipeline unless the pipeline has been located by tracing and its precise route identified.

In addition to the above methods of working, WWU must be contacted prior to any External Wall Installation (EWI) schemes, proposed solar farms and wind turbine installations.

No work shall be undertaken near, nor heavy plant or equipment moved over, any gas pipeline or apparatus until all of the conditions specified by WWU have been complied with.

Where WWU have apparatus in the vicinity of your work, any damage to it could have serious consequences. In view of this and in the interests of safety, a meeting should be arranged before the commencement of work on site between WWU representatives, representatives of the promoting authority, the contractors and any other interested parties. At this meeting the suggested program of site works and plant safety should be discussed. It is essential that this meeting is convened well in advance of commencement on site. Access to WWU plant and facilities for inspection by WWU staff must not be affected. Where formal consent has been given, **A MINIMUM OF SEVEN DAYS NOTICE IS REQUIRED** before carrying out work in WWU easements, or the appropriate notice under the New Roads & Street Works Act (NRSWA) where existing plant is situated within the public highway.

Further guidance can also be sought from the document **HS(G)47 – Avoiding Danger from Underground Services** from the HSE website.

### 3. PROXIMITY OF OTHER PLANT

A minimum clearance of **600 millimetres (mm)** should be allowed between all plant being installed and an existing gas main operating above 2 bar medium pressure (MP), whether the adjacent plant is parallel to or crossing the gas pipe. For mains operating at MP or below, this distance can be reduced to 300mm. **NO APPARATUS SHOULD BE LAID OVER AND ALONG THE LINE OF A GAS PIPE, IRRESPECTIVE OF CLEARANCE.**

No manhole or chamber shall be built over or around a gas pipe and no work should be carried out which results in a reduction of cover or protection over a pipe without consultation with and the agreement of WWU staff.

### 4. PROTECTION

Where any works cross or run in close proximity to WWU apparatus, periodic visits must be made by a WWU engineer. His requests for protection or support to the apparatus shall be immediately observed.

Suitably designed crossing points are to be constructed to the satisfaction of a WWU Engineer. These crossing points shall be clearly indicated by the erection of bunting and crossings at other places should be prevented.

Backfill material adjacent to WWU apparatus shall be soft fill or sand, containing no stones, bricks, or lumps of concrete etc., placed to a minimum 150mm around the mains and is to be well compacted by hand. No power consolidation shall take place above the main until 300mm of soft fill has been compacted by hand.

# Wales & West Utilities Limited

## 5. DAMAGE TO COATINGS

Where a gas pipe is coated with special wrapping and this is damaged, even to a minor extent, WWU must be notified so that repairs can be made to prevent future corrosion and subsequent leakage. **WHERE MINOR DAMAGE TO COATING IS REPORTED TO WWU PRIOR TO BACKFILL, THE NECESSARY REPAIR WILL BE MADE FREE OF CHARGE.**

## 6. CATHODIC PROTECTION

Where WWU apparatus is cathodically protected either by sacrificial anode or impressed current systems and where new apparatus is to be laid and is to be similarly protected, WWU will require to carry out interaction tests to determine whether its own system is adversely affected. The cost of any mutually agreed remedial action will be recharged to the authority installing the new apparatus. If any bond wires, test leads etc., used in connection with cathodic protection systems are damaged or found to be in poor condition, broken or disconnected, WWU must be notified prior to backfilling so that a repair can be made.

## 7. HOT WORKS

Even when a gas free atmosphere exists care must be taken when carrying out hot works in close proximity to gas plant in order to ensure that no damage occurs. Particular care must be taken to avoid damage by heat or naked flames to plastic gas pipes or to the protective coatings on other pipes.

## 8. DEMOLITION

Live gas services must be disconnected **PRIOR** to demolishing any property, arrangements must be made for WWU to check for the presence of any live gas services.

## 9. TREE PLANTING

WWU must be contacted prior to all tree-planting works above or near our apparatus. Further information can then be made available.

## 10. DEEP EXCAVATIONS

Any work involving deep excavations (1.5m or more) will be subject to the "Model Consultative Procedure for Pipeline Construction involving Deep Excavations". This may require the diversion of WWU apparatus prior to the commencement of your works. Detailed plans and cross sections will be required in order to determine the effect of these works on WWU apparatus.

## 11. RENEWABLE ENERGY INSTALLATIONS

Wind Turbines – WWU must be advised of any planned development of wind turbines in the vicinity of an above 2 bar gas pipelines to ensure the development does not impact on the future safe operation of the pipeline. Industry guidance states that any wind turbine must be sited no closer than 1.5 times the proposed height of the turbine mast away from the nearest edge of the pipeline.

Solar Farms – WWU must be contacted regarding planned solar farms being considered in the vicinity of WWU gas pipelines.

EWI – WWU must be contacted regarding any EWI scheme to ensure the scheme does not impact upon WWU's apparatus.

## 12. LEAKAGE FROM GAS MAINS OR SERVICES

If damage or leakage is caused or an escape of gas is smelt or suspected the following action should be taken at once:

- Remove all personnel from the immediate vicinity of the escape.
- Inform the 24hr Gas Emergency Service on **0800 111 999**
- Prevent any approach by the public, prohibit smoking, and extinguish all naked flames or other sources of ignition for at least 15 metres from the leakage. Do not operate any electrical switches in the vicinity of the escape.
- Assist gas personnel, Police and/or Fire Services as requested.

**IN THE EVENT OF A LEAK, OBSERVE THE ABOVE BUT DO NOT ATTEMPT TO SEAL THE LEAK  
REMEMBER - IF IN DOUBT; SEEK ADVICE FROM WWU**

## 13. BUILDING PROXIMITIES

There are minimum proximity distances for buildings from WWU mains depending on both the operating pressure and the material of the main. Advice should be sought from WWU prior to building works taking place to confirm these distances. For High Pressure pipelines you must seek further guidance from the HSE and Local Authority Planning team regarding their PADHI distances regarding building proximities as these may be in addition to WWU proximity distances for a pipeline.

Temporary buildings should not be placed above any gas pipe or within 3.0 metres of mains operating above 75mbar (medium, intermediate and high pressure mains) during construction activities and in no circumstances should permanent structures be built over any pipe transporting gas.

## 14. SITE RESPONSIBILITIES

All costs incurred by WWU for the repair of direct or consequential damage to gas plant will be rechargeable (with the exception of paragraph 5). WWU reserves the right to divert any affected apparatus or alternatively specify suitable protection of its apparatus. If proved necessary during the course of site works, the cost of which will be chargeable.

The above requirements do not relieve you of the responsibility of taking all precautions necessary to safeguard the Company's plant and to avoid risk to persons and property. The persons for whom the works are being undertaken, their servants, agents and contractors shall indemnify WWU servants, agents and contractors against any loss, damage, expenses, claims and actions incurred or brought against Wales & West Utilities, its servants, agents and contractors in consequence of the provision of these works and activities associated therewith or ancillary thereto.

## KEY TO MAPS

|           |                       |           |              |
|-----------|-----------------------|-----------|--------------|
| <b>LP</b> | Low Pressure          | <b>CI</b> | Cast Iron    |
| <b>MP</b> | Medium Pressure       | <b>SI</b> | Spun Iron    |
| <b>IP</b> | Intermediate Pressure | <b>DI</b> | Ductile Iron |
| <b>HP</b> | High Pressure         | <b>PE</b> | Polyethylene |
|           |                       | <b>ST</b> | Steel        |



**ADDITIONAL GENERAL CONDITIONS, WALES & WEST UTILITIES LTD.**  
**WORKING IN THE VICINITY OF GAS MEDIUM PRESSURE PIPES/APPARATUS**

|                                                      |
|------------------------------------------------------|
| <b>1. Site Details</b>                               |
| Location:                                            |
| Date of works:                                       |
| Enquirer details: Name, address and contact details: |

**\*Sign to confirm controls in place**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <b>2. Planning the Work</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Signed*</b> |
| <ol style="list-style-type: none"> <li><b>Current</b> gas plans, i.e. no older than 28 days from the date of issue, must be available to relevant personnel on site prior to work starting.</li> <li>Use other signs to assist identification of the presence of gas apparatus, such as valve boxes, meter boxes, above ground gas installations and marker posts.</li> <li>Refer to the "General Conditions to be observed for the Protection of Apparatus and the Prevention of Disruption to Gas Supplies" for instructions relating to work in the vicinity of Wales &amp; West Utilities' ("WWU") plant.</li> <li>Your method of work must incorporate any guidance provided by WWU or its representatives.</li> <li>You should appoint suitably competent operatives to locate and mark the position of underground gas apparatus in accordance with this document and advice provided by WWU.</li> <li>Ensure you have and make use of the contact details of a local WWU Plant Protection representative.</li> </ol> <p><b>Gas plans show only those pipes owned by WWU. Service pipes, valves, siphons, stub connections, etc. may not be shown but their presence should be anticipated.</b></p> |                |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <b>3. Before Starting Work</b>                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Signed*</b> |
| <ol style="list-style-type: none"> <li>Contact the WWU Plant Protection on 02920 278912 to determine if a site visit is required.</li> <li>Pipe locating equipment <b>must</b> be used in all modes in conjunction with the gas plans.</li> <li>Signals received must be marked by your operatives on the ground well beyond the proposed work area.</li> <li>Brief all persons on site regarding the location of gas pipes and the precautions necessary.</li> </ol> |                |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <b>4. When Starting Work</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Signed*</b> |
| <ol style="list-style-type: none"> <li>Hand dig trial holes to confirm the position and depth of gas pipes within the affected area prior to any mechanical excavation.</li> <li>Mechanical excavation must not be used within any exclusion zones marked around WWU apparatus. Hand held power tools must <b>not</b> be used within 500mm of the confirmed position.</li> <li>When hand digging within 500mm of gas pipes, spades and shovels should be used. Picks, forks and pins must <b>not</b> be used.</li> <li>Bars may only be used as a lever to loosen large rocks.</li> <li>Repeat the use of pipe locating equipment as excavation progresses.</li> <li>Do not use gas pipes as a step. Support long spans (&lt;3m) and protect them from falling objects.</li> <li>When backfilling, surround gas pipes with fine backfill. Compaction with hand tools to 300mm above the pipe must take place before using mechanical vibratory equipment (NRSWA CoP)</li> <li>During excavation appropriate PPE must be worn.</li> <li>WWU operates gas pipes/apparatus at different pressure regimes. Unless advice specific to your works is provided by WWU to the contrary, all gas pipes/apparatus shall be treated in accordance with this document.</li> </ol> <p><b>If the above controls cannot be implemented, immediate guidance must be sought from WWU. Contact your local WWU engineer or the Plant Protection Team on 02920 278912.</b></p> |                |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>5. Gas escapes/Damage to Gas Pipes</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <p>If an escape of gas has taken place or is suspected, immediately remove all personnel from the immediate vicinity of the escape, inform the <b>24hr GAS EMERGENCY SERVICE</b> on <b>0800 111999</b>, prevent any approach by the public, extinguish all naked flames or other sources of ignition for at least 15 metres from the escape.</p> <p>Any instances of damage to gas pipes or apparatus should be reported immediately to WWU. Although no immediate gas escape has occurred, the damage may allow a later escape of gas to take place. Additionally, minor damage to gas pipes or apparatus that is not dealt with immediately by WWU may result in a later failure of the plant.</p> |

**IF IN DOUBT CONTACT THE PLANT PROTECTION TEAM ON 02920 278912**

**This document must be completed prior to working in the vicinity of gas pipes and apparatus**

**Company Address**

Wales and West Utilities Ltd,  
Wales and West House,  
Spooner Close, Celtic,  
Springs, Coedkernew,  
Newport, NP10 8FZ

Our Ref: 23523388      CS/101973 - Hoover Line Search

Tuesday, 12 October 2021

Scott Galsworthy  
St David's House Pascal Close St Mellons  
Cardiff  
South Glamorgan  
CF3 0LW

Dear Scott Galsworthy

Thank you for contacting us regarding Wales & West Utilities equipment at the above site.

I enclose an extract from our mains records of the area covered by your proposals together with a comprehensive list of General Conditions for your guidance. This information is given as a general guide and its accuracy cannot be guaranteed. Service pipes, valves, syphons, stub connections, etc., are not shown but their presence should be anticipated.

Where the Wales & West Utilities (WWU) plan includes a warning label about our higher pressure apparatus you must contact the WWU dig team for further guidance. If it is deemed that a site visit is required for this location we require a minimum of 10 days' notice to arrange a site visit for our engineers to give further guidance. Depending upon the nature of the works the site visit may be deemed chargeable.

No liability of any kind whatsoever is accepted by Wales and West Utilities (WWU), its agents or servants for any error or omission. Please note that all WWU equipment on site should be assumed to be LIVE until proven otherwise.

Safe digging practices, in accordance with HS(G)47, Avoiding Danger from underground services must be used to verify and establish the actual position of mains, pipes, services and other apparatus on site before any mechanical plant is used. It is your responsibility to ensure that this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. Safe working procedures should be defined and practiced.

Irrespective of whether the pipeline is directly affected by the proposed development I enclose for information our general requirements for working in the vicinity of gas pipelines operating above 2 barg (T/SP/SSW22). It is our strong recommendation in the interests of safety that these general requirements be adhered to.

There are minimum proximity distances for buildings from WWU mains depending on both the operating pressure and the material of the main. Advice should be sought from WWU prior to building works taking place to confirm these distances. For High Pressure pipelines you must seek further guidance from the HSE and Local Authority Planning team regarding their LUP distances regarding building proximities as these may be in addition to WWU proximity distances for a pipeline.

In the presence of our >2barg gas pipelines no excavations are to take place within 10m of the confirmed position of these mains without prior consultation with WWU.

WWU reserves its position completely to enforce the terms of the easement against the landowner, even if this results in any planning permission granted not being able to be fully implemented.

**Company Address**

Wales and West Utilities Ltd,  
Wales and West House,  
Spooner Close, Celtic,  
Springs, Coedkernew,  
Newport, NP10 8FZ

You must not build over any of our plant or enclose our apparatus.

Where diversions to WWU apparatus are needed to allow change to occur on site, the cost of these alterations may be charged to the persons responsible for the works.

If you have requested a new connection the WWU connections team will where necessary prepare detailed proposals and provide a quotation for any necessary alterations and/or development of our equipment on the site.

Yours sincerely,  
WWU Dig Team

**Gas Emergency Number:**

In an emergency call 0800 111 999, 24 hours a day.

**Mapping Enquiries:**

If you have an enquiry relating to this letter or the attached map plan, please contact us using the following information:

Telephone            02920 278912  
Email                 dig@wwutilities.co.uk

**General Enquiries:**

If you have a general enquiry, please call us on the following number  
All areas             0800 912 29 99

**LinesearchbeforeUdig:**

If you have an enquiry relating to the use of the LinesearchbeforeUdig website please contact LinesearchbeforeUdig using the following information:

Telephone           0845 437 7365  
Email                enquiries@linesearchbeforeudig.co.uk  
Website              www.linesearchbeforeudig.co.uk

**Company Address**

Wales and West Utilities Ltd,  
Wales and West House,  
Spooner Close, Celtic,  
Springs, Coedkernew,  
Newport, NP10 8FZ

Our Ref: 23523324 CS/101973 - Hoover Line Search

Tuesday, 12 October 2021

Scott Galsworthy  
St David's House Pascal Close St Mellons  
Cardiff  
South Glamorgan  
CF3 0LW

Dear Scott Galsworthy

Thank you for contacting us regarding Wales & West Utilities equipment at the above site.

According to our mains records Wales & West Utilities has no apparatus in the area of your enquiry. However Gas pipes owned by other GT's and also privately owned may be present in this area. Information with regard to such pipes should be obtained from the owners.

Safe digging practices, in accordance with HS(G)47, Avoiding Danger from underground services must be used to verify and establish the actual position of mains, pipes, services and other apparatus on site before any mechanical plant is used. It is your responsibility to ensure that this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. Safe working procedures should be defined and practiced.

If you require advice in connection with your proposals please contact the relevant number below.

Yours sincerely,  
WWU Dig Team

**Gas Emergency Number:**

In an emergency call 0800 111 999, 24 hours a day.

**Mapping Enquiries:**

If you have an enquiry relating to this letter or the attached map plan, please contact us using the following information:

Telephone 02920 278912  
Email dig@wwutilities.co.uk

**General Enquiries:**

If you have a general enquiry, please call us on the following number

All areas 0800 912 29 99

**LinesearchbeforeUdig:**

If you have an enquiry relating to the use of the LinesearchbeforeUdig website please contact LinesearchbeforeUdig using the following information:

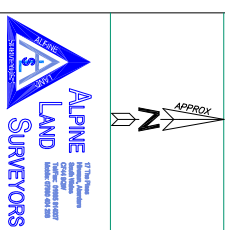
Telephone 0845 437 7365  
Email enquiries@linesearchbeforeudig.co.uk  
Website www.linesearchbeforeudig.co.uk

## Appendix D – GPR Survey

- Utility Survey - sheets 1 to 7



1. SITE GRID AND LEVELS ARE BASED UPON ORDNANCE SURVEY VIA THE ACTIVE GPS NETWORK

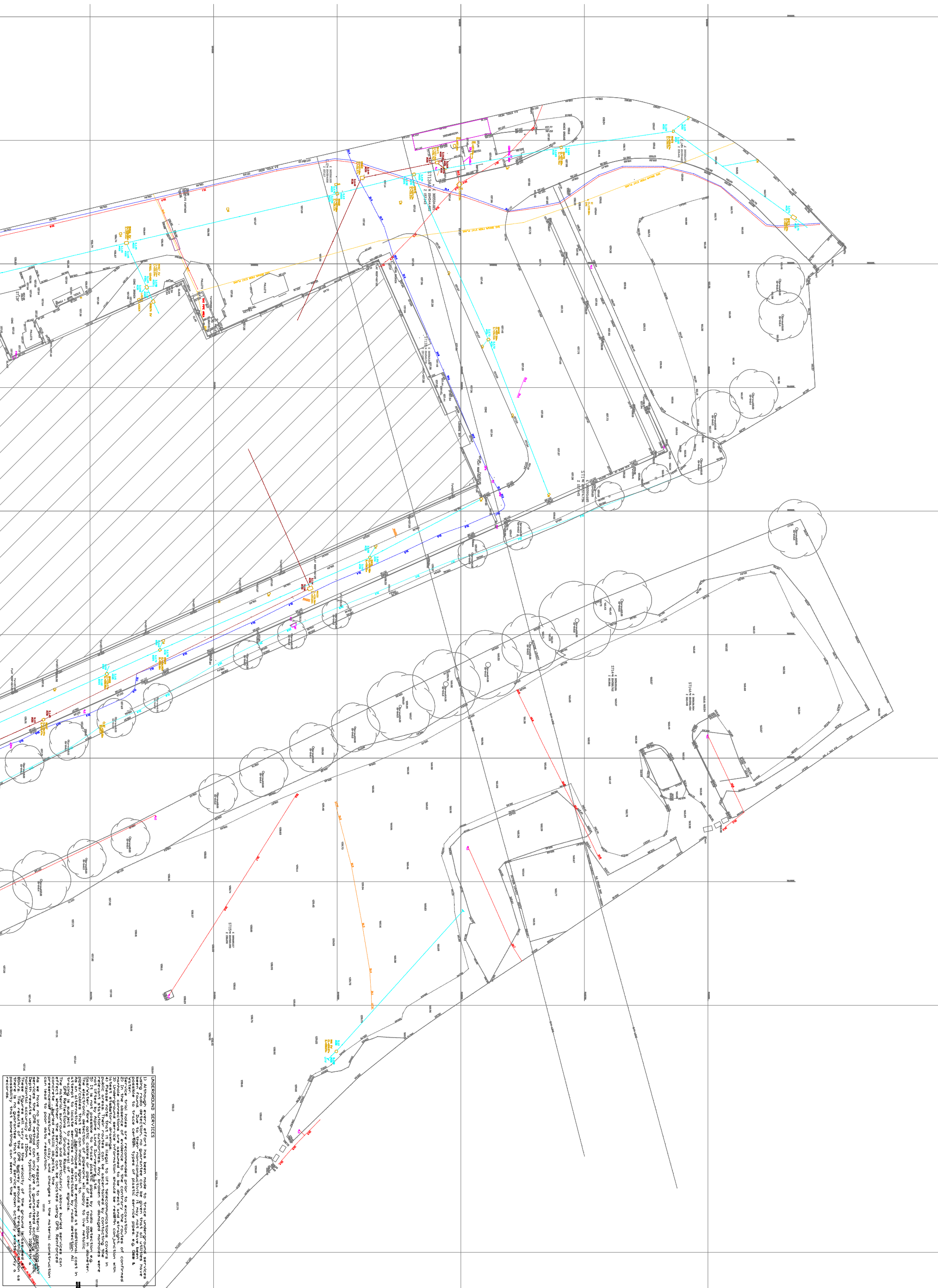
[illegible][illegible]

MTCBC

**PROJECT**  
**UTILITY SURVEY AT**  
**HOOVERS, PENTREBACH,**  
**MERTHYR TYDFIL.**

| Code     | Date       |
|----------|------------|
| 4-250000 | 08/06/2022 |

|            |    |
|------------|----|
| DEGREE     | 02 |
| CORRECTION | 16 |













|                                                                       |
|-----------------------------------------------------------------------|
| 1. SITE GRID AND LEVEL ARE BASED UPON NETWORK DATA FROM THE ACTIVE DB |
| Do not scale this drawing                                             |
| This drawing is copyright                                             |

|                                                                       |
|-----------------------------------------------------------------------|
| 1. SITE GRID AND LEVEL ARE BASED UPON NETWORK DATA FROM THE ACTIVE DB |
| Do not scale this drawing                                             |
| This drawing is copyright                                             |

|                                                                       |
|-----------------------------------------------------------------------|
| 1. SITE GRID AND LEVEL ARE BASED UPON NETWORK DATA FROM THE ACTIVE DB |
| Do not scale this drawing                                             |
| This drawing is copyright                                             |

APPROX

2

ALPINE LAND SURVEYORS

117 The Quadrant  
PO Box 100  
Merton Park NSW 2220

PROJECT

UTILITY SURVEY AT  
HOOKERS PENINSULA,  
MERTON PORT

Scale

1:250@A0

Date

08/06/2022

Drawn

QC

Checked

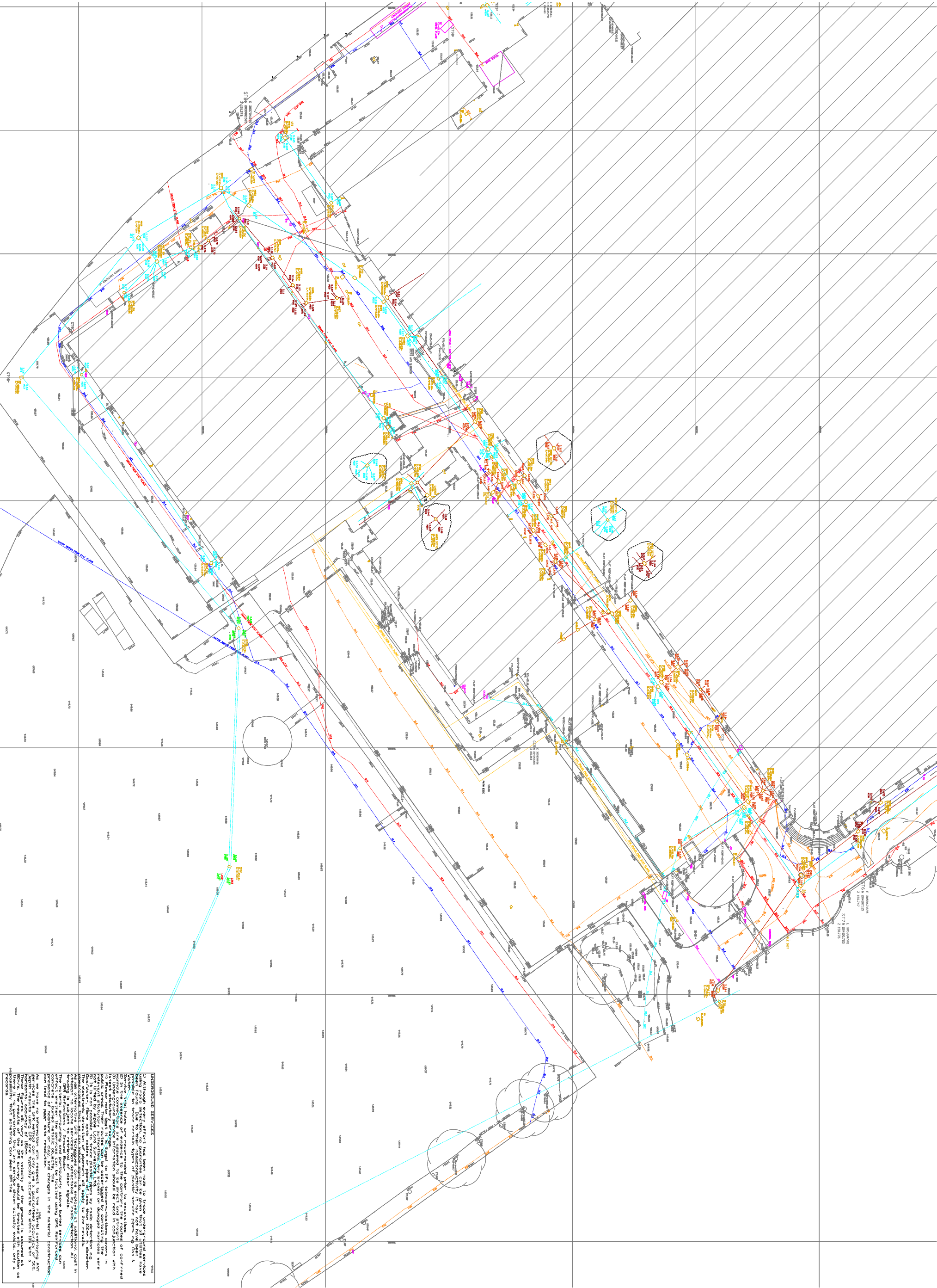
TC

Project Reference No.

ALS4571

Drawing Number

MTCSCH006



UNDERGROUND SERVICES

1) Although every effort has been made to trace underground services using radio detection no guarantee can be given that all utilities have been traced. The drawing is based on the information provided by the client and the results of the survey. The drawing is not to be used as a basis for construction without the approval of the client.

2) The drawing is based on the information provided by the client and the results of the survey. The drawing is not to be used as a basis for construction without the approval of the client.

3) The drawing is based on the information provided by the client and the results of the survey. The drawing is not to be used as a basis for construction without the approval of the client.

4) The drawing is based on the information provided by the client and the results of the survey. The drawing is not to be used as a basis for construction without the approval of the client.

5) The drawing is based on the information provided by the client and the results of the survey. The drawing is not to be used as a basis for construction without the approval of the client.

6) The drawing is based on the information provided by the client and the results of the survey. The drawing is not to be used as a basis for construction without the approval of the client.

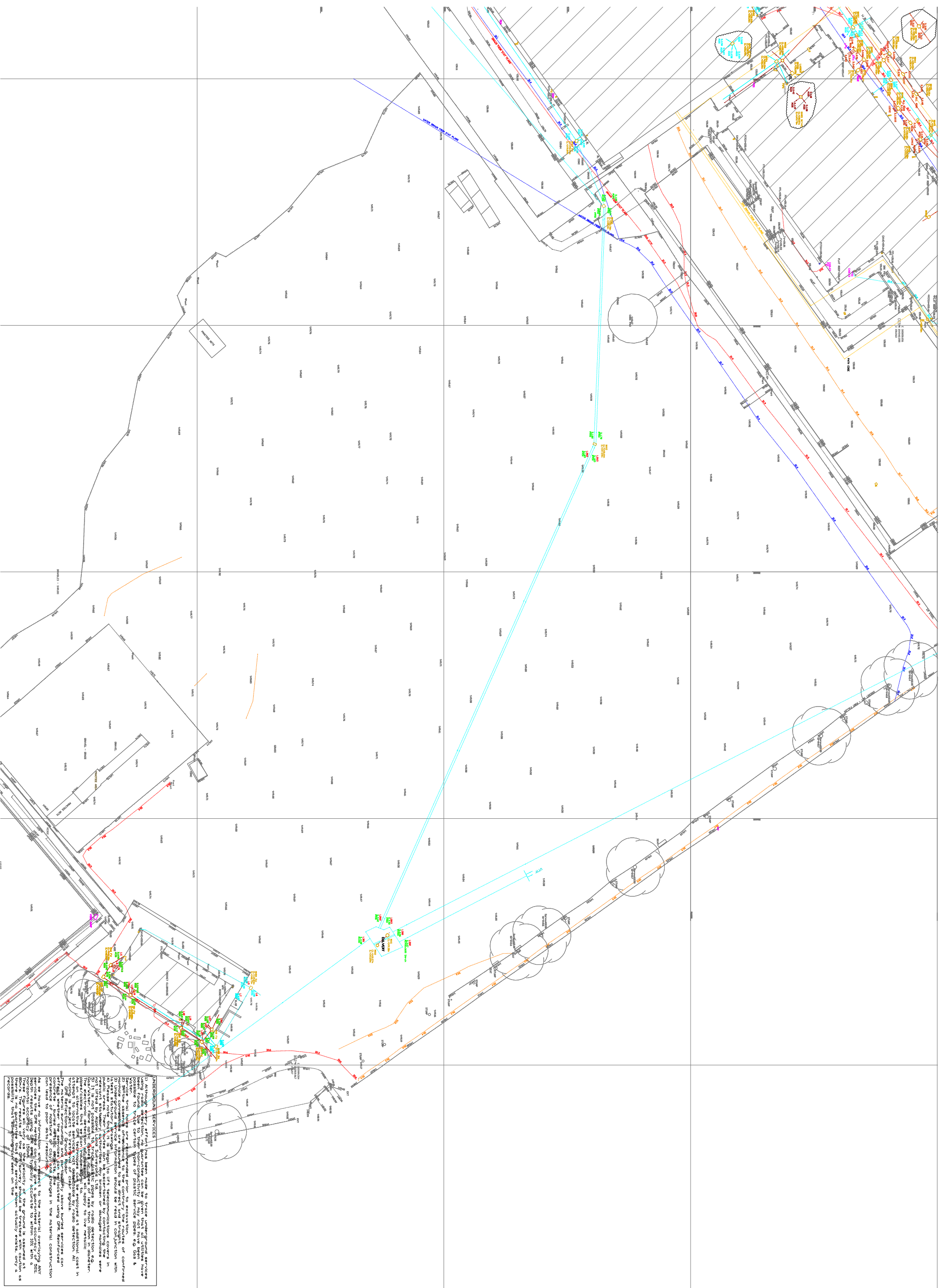
7) The drawing is based on the information provided by the client and the results of the survey. The drawing is not to be used as a basis for construction without the approval of the client.

8) The drawing is based on the information provided by the client and the results of the survey. The drawing is not to be used as a basis for construction without the approval of the client.

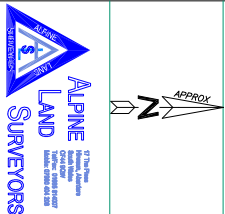
9) The drawing is based on the information provided by the client and the results of the survey. The drawing is not to be used as a basis for construction without the approval of the client.

10) The drawing is based on the information provided by the client and the results of the survey. The drawing is not to be used as a basis for construction without the approval of the client.





|                              |     |
|------------------------------|-----|
| ACQ - CULTURE SURVEY         |     |
| PRINACAC(COMBINED)           | --- |
| GRINACAC(SURFACE)            | --- |
| PRINACAC(BOU)                | --- |
| POWER                        | --- |
| WATER                        | --- |
| BROTHER TELECOM/COMMS        | --- |
| CAS                          | --- |
| UNKNOWN SERVICE              | --- |
| GR ANOMALY                   | --- |
| UTIF UNABLE TO TRACE         | --- |
| UTIF UNABLE TO TRACE FURTHER | --- |
| ASR ASSUMED ROUTE            | --- |
| P PLASTIC                    | --- |
| PH/CS/PF/CABLE INTO GROUND   | --- |
| UTIF UNABLE TO LIFT          | --- |
| DOX DEPTH TO SERVICE (m)     | --- |
| B BLOODED                    | --- |

[illegible]

**CLIENT**  
**MTCCBC**

**PROJECT**  
**UTILITY SURVEY AT**  
**HOOVERS, PENTREBACH,**  
**MERTHYR TYDFIL**

|                       |            |           |            |
|-----------------------|------------|-----------|------------|
| Scale:                | 1:250 @ A0 | Date:     | 08/06/2022 |
| Drawn:                | OZ         | Checked:  | TC         |
| Project Reference No. |            | ALS4574   |            |
| Drawing Number        |            | MTCBCHJ06 |            |



REDSTART

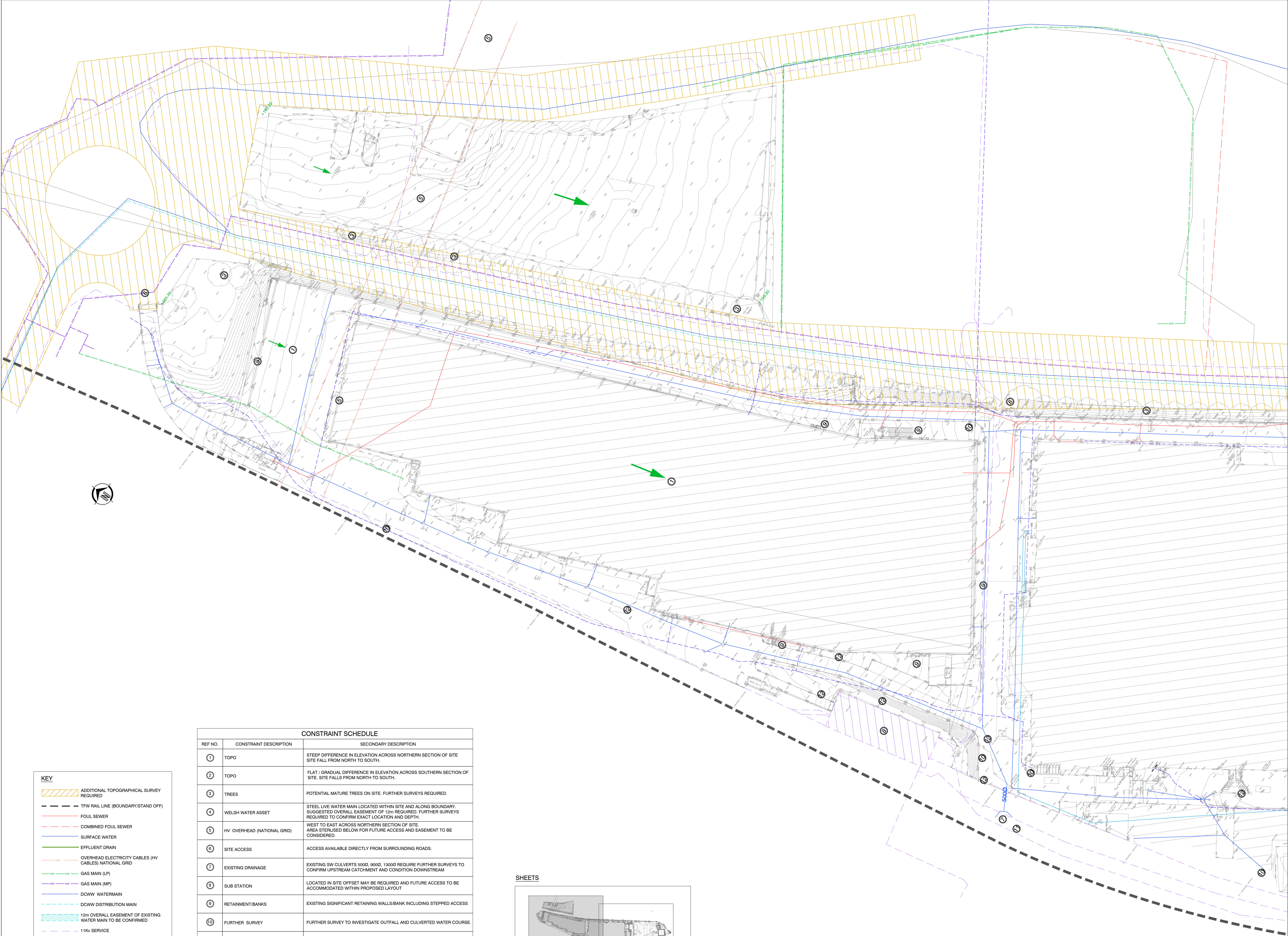
St David's House  
Pascal Close  
St Mellons  
Cardiff  
CF3 0LW

[www.redstartwales.com](http://www.redstartwales.com)



## **APPENDIX C – CONSTRAINTS PLAN**

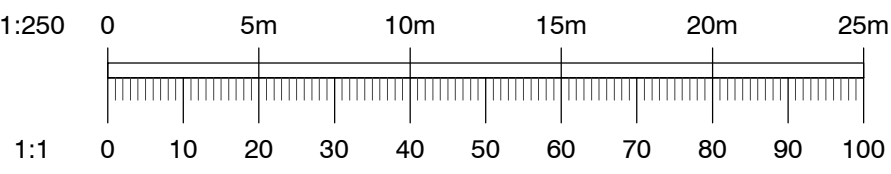
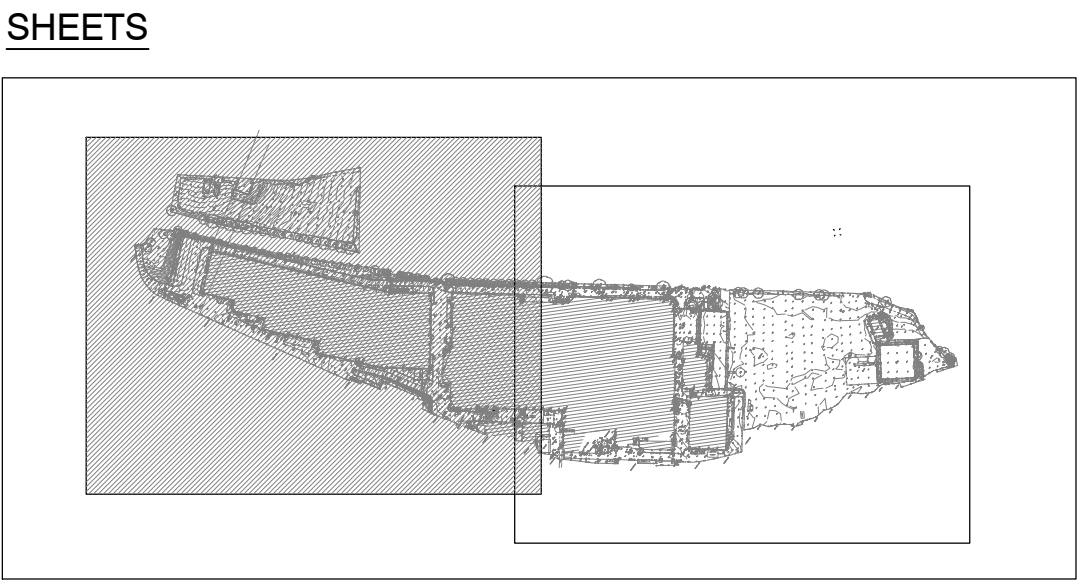




**KEY**

- ADDITIONAL TOPOGRAPHICAL SURVEY REQUIRED
- TFW RAIL LINE (BOUNDARY/STAND OFF)
- FOUL SEWER
- COMBINED FOUL SEWER
- SURFACE WATER
- EFFLUENT DRAIN
- OVERHEAD ELECTRICITY CABLES (HV CABLES) NATIONAL GRID
- GAS MAIN (LP)
- GAS MAIN (MP)
- DCWW WATERMAIN
- DCWW DISTRIBUTION MAIN
- 12m OVERALL EASEMENT OF EXISTING WATER MAIN TO BE CONFIRMED
- 11kv SERVICE
- SUB STATION
- TOPOGRAPHY

| CONSTRAINT SCHEDULE |                                                  |                                                                                                                                                                            |
|---------------------|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| REF NO.             | CONSTRAINT DESCRIPTION                           | SECONDARY DESCRIPTION                                                                                                                                                      |
| 1                   | TOPO                                             | STEEP DIFFERENCE IN ELEVATION ACROSS NORTHERN SECTION OF SITE<br>SITE FALL FROM NORTH TO SOUTH.                                                                            |
| 2                   | TOPO                                             | FLAT / GRADUAL DIFFERENCE IN ELEVATION ACROSS SOUTHERN SECTION OF SITE.<br>SITE FALLS FROM NORTH TO SOUTH.                                                                 |
| 3                   | TREES                                            | POTENTIAL MATURE TREES ON SITE. FURTHER SURVEYS REQUIRED.                                                                                                                  |
| 4                   | WELSH WATER ASSET                                | STEEL LIVE WATER MAIN LOCATED WITHIN SITE AND ALONG BOUNDARY.<br>SUGGESTED OVERALL EASEMENT OF 12m REQUIRED. FURTHER SURVEYS REQUIRED TO CONFIRM EXACT LOCATION AND DEPTH. |
| 5                   | HV OVERHEAD (NATIONAL GRID)                      | WEST TO EAST ACROSS NORTHERN SECTION OF SITE.<br>AREA STERILISED BELOW FOR FUTURE ACCESS AND EASEMENT TO BE CONSIDERED.                                                    |
| 6                   | SITE ACCESS                                      | ACCESS AVAILABLE DIRECTLY FROM SURROUNDING ROADS.                                                                                                                          |
| 7                   | EXISTING DRAINAGE                                | EXISTING SW CULVERTS 5000, 9000, 13000 REQUIRE FURTHER SURVEYS TO CONFIRM UPSTREAM CATCHMENT AND CONDITION DOWNSTREAM                                                      |
| 8                   | SUB STATION                                      | LOCATED IN SITE OFFSET MAY BE REQUIRED AND FUTURE ACCESS TO BE ACCOMMODATED WITHIN PROPOSED LAYOUT                                                                         |
| 9                   | RETAINMENT/BANKS                                 | EXISTING SIGNIFICANT RETAINING WALLS/BANK INCLUDING STEPPED ACCESS                                                                                                         |
| 10                  | FURTHER SURVEY                                   | FURTHER SURVEY TO INVESTIGATE OUTFALL AND CULVERTED WATER COURSE.                                                                                                          |
| 11                  | EXISTING SURFACE WATER AND FOUL DISCHARGE POINTS | EXISTING CONNECTIONS TO BE REVIEWED AND UTILIZED WHERE POSSIBLE FOR PROPOSED SW AND FW DISCHARGE.                                                                          |
| 12                  | UNKNOWN UTILITIES                                | FURTHER INVESTIGATION REQUIRED TO CONFIRM IF EXISTING ASSETS ARE REDUNDANT OR NOT                                                                                          |

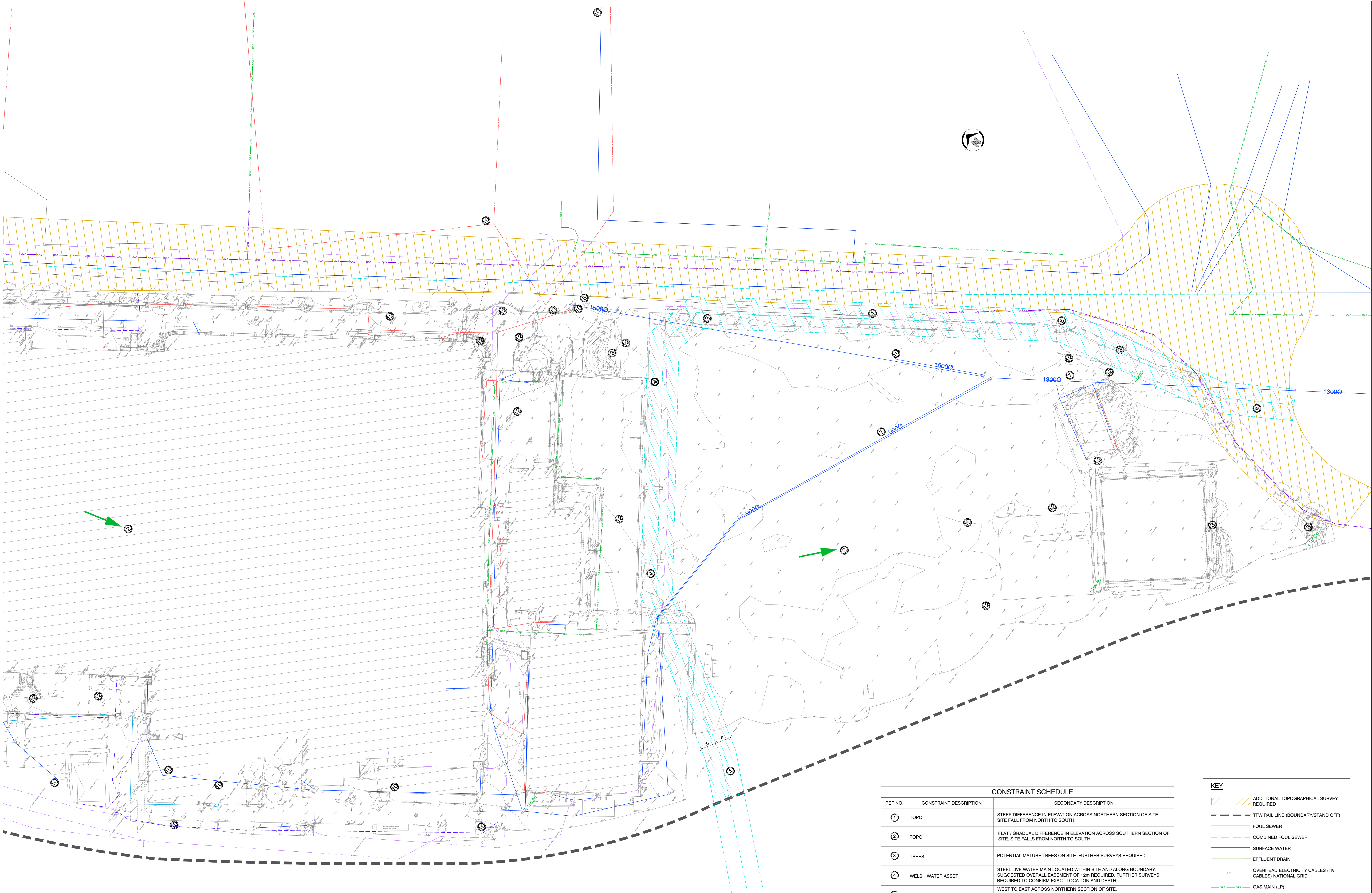


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  - Do not scale from this drawing - use figured dimensions only.
  - This drawing is schematic for clarity only, positions of pipe runs and manholes may vary on site due to site conditions.
  - The contractor is to check and verify all buildings and site dimensions and levels, including existing sewer invert levels, before works start on site. The contractor is to comply in all aspects with the current building legislation, British standards, building regulations etc.

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GC4005-RED-27-XX-RP-C-2701

| Rev                                                                                                                                                                                                                       | Date            | Description                                                                                                                               | By             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| Comments to be verified on site<br>This drawing should not be scaled. Use figured dimensions only.<br>Any discrepancies should be referred to the Engineer prior to work being put in hand.<br>This drawing is copyright. |                 |                                                                                                                                           |                |
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| Client<br><b>WALTERS</b><br>— UK —                                                                                                                                                                                        |                 |                                                                                                                                           |                |
| Project<br><b>HOOVER SITE MERTHYR</b>                                                                                                                                                                                     |                 |                                                                                                                                           |                |
| Title<br><b>CONSTRAINTS PLAN</b>                                                                                                                                                                                          |                 |                                                                                                                                           |                |
| Drawing Sheet<br><b>INFORMATION</b>                                                                                                                                                                                       |                 |                                                                                                                                           |                |
| Geography<br>AV                                                                                                                                                                                                           | Drawn by<br>SLS | Checked by<br>AV                                                                                                                          | Date<br>OCT 24 |
| Drawing No<br>24358-SK-001-0                                                                                                                                                                                              |                 |                                                                                                                                           | Scale<br>250   |



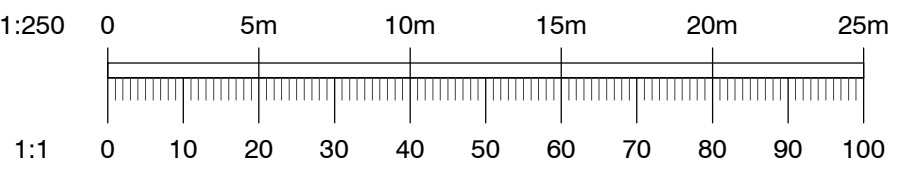
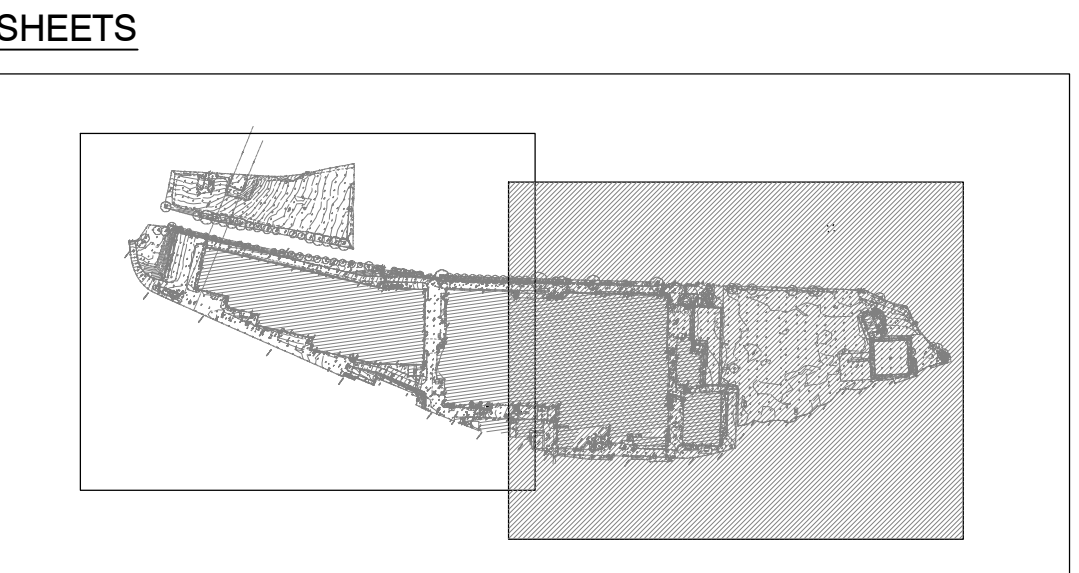


- GENERAL NOTES**
1. This drawing is to be read in conjunction with and checked against all other drawings, engineering details, specifications and any structural, geotechnical or other specialist document provided.
  2. Any discrepancies within all relevant drawings are to be reported to QuadConsult Ltd immediately.
  3. All dimensions and levels are in metres, U.N.O.
  4. Do not scale from this drawing - use figured dimensions only.
  5. This drawing is schematic for clarity only, positions of pipe runs and manholes may vary on site due to site conditions.
  6. The contractor is to check and verify all buildings and site dimensions and levels, including existing sewer invert levels, before works start on site. The contractor is to comply in all aspects with the current building legislation, British standards, building regulations etc.

| CONSTRAINT SCHEDULE |                                                  |                                                                                                                                                                         |
|---------------------|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| REF NO.             | CONSTRAINT DESCRIPTION                           | SECONDARY DESCRIPTION                                                                                                                                                   |
| 1                   | TOPO                                             | STEEP DIFFERENCE IN ELEVATION ACROSS NORTHERN SECTION OF SITE SITE FALL FROM NORTH TO SOUTH.                                                                            |
| 2                   | TOPO                                             | FLAT / GRADUAL DIFFERENCE IN ELEVATION ACROSS SOUTHERN SECTION OF SITE. SITE FALLS FROM NORTH TO SOUTH.                                                                 |
| 3                   | TREES                                            | POTENTIAL MATURE TREES ON SITE. FURTHER SURVEYS REQUIRED.                                                                                                               |
| 4                   | WELSH WATER ASSET                                | STEEL LIVE WATER MAIN LOCATED WITHIN SITE AND ALONG BOUNDARY. SUGGESTED OVERALL EASEMENT OF 12m REQUIRED. FURTHER SURVEYS REQUIRED TO CONFIRM EXACT LOCATION AND DEPTH. |
| 5                   | HV OVERHEAD (NATIONAL GRID)                      | WEST TO EAST ACROSS NORTHERN SECTION OF SITE. AREA STERILISED BELOW FOR FUTURE ACCESS AND EASEMENT TO BE CONSIDERED.                                                    |
| 6                   | SITE ACCESS                                      | ACCESS AVAILABLE DIRECTLY FROM SURROUNDING ROADS.                                                                                                                       |
| 7                   | EXISTING DRAINAGE                                | EXISTING SW CULVERTS 5000, 9000, 13000 REQUIRE FURTHER SURVEYS TO CONFIRM UPSTREAM CATCHMENT AND CONDITION DOWNSTREAM                                                   |
| 8                   | SUB STATION                                      | LOCATED IN SITE OFFSET MAY BE REQUIRED AND FUTURE ACCESS TO BE ACCOMMODATED WITHIN PROPOSED LAYOUT                                                                      |
| 9                   | RETAINMENT/BANKS                                 | EXISTING SIGNIFICANT RETAINING WALLS/BANK INCLUDING STEPPED ACCESS                                                                                                      |
| 10                  | FURTHER SURVEY                                   | FURTHER SURVEY TO INVESTIGATE OUTFALL AND CULVERTED WATER COURSE.                                                                                                       |
| 11                  | EXISTING SURFACE WATER AND FOUL DISCHARGE POINTS | EXISTING CONNECTIONS TO BE REVIEWED AND UTILIZED WHERE POSSIBLE FOR PROPOSED SW AND FW DISCHARGE.                                                                       |
| 12                  | UNKNOWN UTILITIES                                | FURTHER INVESTIGATION REQUIRED TO CONFIRM IF EXISTING ASSETS ARE REDUNDANT OR NOT                                                                                       |

**KEY**

- ADDITIONAL TOPOGRAPHICAL SURVEY REQUIRED
- TFW RAIL LINE (BOUNDARY/STAND OFF)
- FOUL SEWER
- COMBINED FOUL SEWER
- SURFACE WATER
- EFFLUENT DRAIN
- OVERHEAD ELECTRICITY CABLES (HV CABLES) NATIONAL GRID
- GAS MAIN (LP)
- GAS MAIN (MP)
- DCWW WATERMAIN
- DCWW DISTRIBUTION MAIN
- 12m OVERALL EASEMENT OF EXISTING WATER MAIN TO BE CONFIRMED
- 11kV SERVICE
- SUB STATION
- TOPOGRAPHY



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Rev# Date Description By

Quadrant Consult Limited  
Greenwood House, Village Way  
Greenwood Business Park  
Cardiff  
CF15 7NE  
029 2077 9644  
connect@quadrantconsult.co.uk  
www.quadrantconsult.co.uk  
Offices in Cardiff, Gloucester and Llandysul

**Quadrant Consult**  
ENGINEERS IN PARTNERSHIP  
Consulting Civil & Structural Engineers

**WALTERS**  
— UK —

Project: **HOOVER SITE MERTHYR**

Title: **CONSTRAINTS PLAN**

| INFORMATION    |          |            |        |                 |
|----------------|----------|------------|--------|-----------------|
| Discipline     | Drawn by | Checked by | Date   | Scale @ A3 size |
| AV             | SLS      | AV         | OCT 24 | 250             |
| Drawing No     |          |            |        |                 |
| 24358-SK-002-0 |          |            |        |                 |



## **APPENDIX D – FLOOD MAP FOR PLANNING 2025**

Flood Map for Planning - Detail  
Hoover Flood Map for Planning 2025

Legend

--- Flood Defence Locations

TAN15 Defended Zones

▨ Rivers

▨ Sea

▨ Rivers and Sea

Rivers

■ Flood Zone 3

■ Flood Zone 2

Sea

■ Flood Zone 3

■ Flood Zone 2

Surface Water and Small Watercourses

■ Flood Zone 3

■ Flood Zone 2

■ Flood Risk from Reservoirs

— Main Rivers



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Scale at A3: 1:5,000

Date: 04/04/2025

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## APPENDIX E – SAB CORRESPONDENCE

## Steve McCarthy

---

**From:** Williams, Huw (Engineers) <Huw.Williams@merthyr.gov.uk>  
**Sent:** 19 December 2024 17:28  
**To:** Andrew Villis  
**Cc:** Watkins, Craig  
**Subject:** RE: 24358- Hoover Site, Merthyr [NOT PROTECTIVELY MARKED]

### Classification: NOT PROTECTIVELY MARKED

Hi Andrew,

Apologies for the delay in getting back to you on this.

I've reviewed the calculations/rationale and the 50% betterment proposal is acceptable.

I look forward to seeing the attenuation proposals and flow paths through the site as soon as you have some more detail.

Thanks,

Huw.

---

**From:** Andrew Villis <andrew.villis@quadconsult.co.uk>  
**Sent:** 25 November 2024 08:08  
**To:** Williams, Huw (Engineers) <Huw.Williams@merthyr.gov.uk>  
**Cc:** Evans, Alun <Alun.Evans@merthyr.gov.uk>  
**Subject:** RE: 24358- Hoover Site, Merthyr

**\*\*\*WARNING THIS IS AN EXTERNAL EMAIL\*\*\***

**\*\*\*External attachment warning, although this email has been scanned for threats, please take extra care before opening attachments from unrecognised senders.\*\*\***

Morning Huw

I hope are well and had a good weekend.

Would it be possible to provide an update following on from the below correspondence please? Until we understand if the SAB are satisfied with the below, we are unable to progress with the masterplanning of the development.

Hammonds are currently awaiting attenuation footprints to inform the layout, which we are unable to provide until discharge rates are set.

Kind Regards

**Andrew Villis**

*Director*

Tel: +44 (0) 2920 779644  
Mob: +44 (0) 7741 845817

Web: [www.quadconsult.co.uk](http://www.quadconsult.co.uk)

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---

**From:** Andrew Villis

**Sent:** 15 November 2024 10:02

**To:** [Huw.Williams@merthyr.gov.uk](mailto:Huw.Williams@merthyr.gov.uk)

**Cc:** [vahe@integralgeotec.com](mailto:vahe@integralgeotec.com); Meryl Lewis <[MerylLewis@walters-group.co.uk](mailto:MerylLewis@walters-group.co.uk)>

**Subject:** 24358- Hoover Site, Merthyr [Filed 15 Nov 2024 10:02]

Morning Huw

Hope you are well.

Following on from the below and our meeting, would it be possible to confirm if you have reviewed the provided calculations?

We are in the process of obtaining further surveys relating to the existing infrastructure, however, to inform the strategy and placement of attenuation, it would be good to understand if discharge rates are acceptable to move forward.

Kind Regards

**Andrew Villis**

*Director*

Tel: +44 (0) 2920 779644

Mob: +44 (0) 7741 845817

Web: [www.quadconsult.co.uk](http://www.quadconsult.co.uk)

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---

**From:** Rhys Pugh <[rhys.pugh@quadconsult.co.uk](mailto:rhys.pugh@quadconsult.co.uk)>

**Sent:** 06 November 2024 10:19

**To:** Kelsey Eady <[kelsey.eady@quadconsult.co.uk](mailto:kelsey.eady@quadconsult.co.uk)>; [Huw.Williams@merthyr.gov.uk](mailto:Huw.Williams@merthyr.gov.uk);



[vahe@integralgeotec.com](mailto:vahe@integralgeotec.com)

**Cc:** Andrew Villis <[andrew.villis@quadconsult.co.uk](mailto:andrew.villis@quadconsult.co.uk)>

**Subject:** RE: 24358- Hoover Site, Merthyr

Morning Huw,

Hope all well with yourself.

Further to the below meeting minutes and ahead of your proposed meeting tomorrow, we would like to enclose the existing culvert design info for your information.

 [241106 SAB Submission](#)

To summarise:-

- The existing network catchment areas have been reviewed against contours and REFH catchment data and presented on drawings C-011 (site brownfield) & C-013 (greenfield catchment).
- Greenfield runoff rates have been obtained through the REFH data and compiled within CA-605 & 606, these have been used for base flows.
- A WINDES model then set up to cater for site Brownfield areas and base flows from catchments presented within CA-701.
- The flows of which are considered within Brownfield calculations CA-750, presenting adequate capacity within existing system.

It is therefore considered that based on the above presentation of existing infrastructure and catchments, a 50% betterment to proposed surface water flows is acceptable to yourself, this calculated at a rate of 285 l/s for proposed site into southern culvert, with catchment 1 to the north calculated at 162 l/s. We trust this is acceptable.

Best Regards,

Kind Regards

**Rhys Pugh**

*Senior Civil Technician*

Tel: +44 (0) 2920 779644

Web: [www.quadconsult.co.uk](http://www.quadconsult.co.uk)

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**From:** Kelsey Eady <[kelsey.eady@quadconsult.co.uk](mailto:kelsey.eady@quadconsult.co.uk)>  
**Sent:** 28 October 2024 15:30  
**To:** [Huw.Williams@merthyr.gov.uk](mailto:Huw.Williams@merthyr.gov.uk); [vahe@integralgeotec.com](mailto:vahe@integralgeotec.com)  
**Cc:** Andrew Villis <[andrew.villis@quadconsult.co.uk](mailto:andrew.villis@quadconsult.co.uk)>  
**Subject:** 24358- Hoover Site, Merthyr

Hi Huw,

Hope you are well.

Please find attached the meeting minutes from the teams meeting on Thursday the 24<sup>th</sup>.

Cofion/Regards

**Kelsey Eady**  
BSc (Hons)



*Trainee Technician/Technegydd dan hyfforddiant*

Tel: +44 (0) 2920 779644

Web: [www.quadconsult.co.uk](http://www.quadconsult.co.uk)

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Darllenwch ein [hysbysiau preifatrwydd](#) i ddarganfod mwy am sut rydym yn defnyddio eich gwybodaeth personol.

### Cyngor Bwrdeistref Sirol Merthyr Tudful

Canolfan Dinesig  
Stryd Y Castell  
Merthyr Tudful  
CF47 8AN

Teleffon: 01685 725000

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**Cyngor Bwrdeistref Sirol Merthyr Tudful**

Canolfan Dinesig  
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## **APPENDIX F – BROWNFIELD RUNOFF CALCULATIONS**

## **24358-CA-750-MRM-A**

### **Hoover Site, Merthyr**

Using the Modified Rational Method (as set out in CIRIA C753) to calculate the Brownfield runoff rate.

$$Q = 2.78 \times C \times i \times A \text{ (EQ. 24.5)}$$

i = Average rainfall intensity of the design storm in millimetres per hour, mm/hr.

A = Effective impermeable area of the existing site in hectares, ha.

Q = Rainfall runoff rate in litres per second, l/s.

C = Dimensionless Runoff Coefficient. \*

\*Ciria C753 (Section 24.6.2) for paved area runoff, volumetric and routing coefficients CV & CR (CV of the order 0.6 and the routing coefficient, CR of the order of 1.3) the two coefficients are usually incorporated into a single term with a value of between 0.8 and 1.0 depending on how effectively the catchment is drained.

As an initial assessment, a constant rainfall intensity of 35mm/hr has been assumed. The estimated brownfield rainfall rate has been based on the existing drainage systems draining a total area of -

Catchment 1 – 3.33 ha

Catchment 2 – 5.87 ha

Catchment 3 – 0.048 ha

The above figures exclude all permeable areas

Catchment 1 -  $Q = 2.78 \times 1.0 \times 35 \times 3.33 = \mathbf{324 \text{ l/s}}$

Catchment 2 -  $Q = 2.78 \times 1.0 \times 35 \times 5.87 = \mathbf{571 \text{ l/s}}$

Catchment 3 -  $Q = 2.78 \times 1.0 \times 35 \times 0.048 = \mathbf{4.67 \text{ l/s}}$

Following discussions with the Local SAB Authority it was confirmed that a 50% betterment in flows can be provided for future development SW discharge if there is sufficient capacity within the existing sewerage network, this was discussed based on a 2 Year storm event. Quad have considered a more severe storm simulation of 5 year return period for comparison to ensure longevity of proposals.

Refer to Drawing 24358-C-011-Catchment Plan-0

With reference to WINDES calculations 24358-CA-701-0, the existing flows are considered as follows:-

Pipe flow |Capacity (1300 dia.) = 3292l/s (Based on 1:250 gradient pipe, this is likely steeper)

2 Year Storm Brownfield Pipe Flow with 5 Year Greenfield Area from Catchment A & B = 2784 l/s

5 Year Storm Simulation Pipe Flow = 2737 l/s

Therefore with a 50% reduction in future flows from site, there is 793l/s capacity within existing network.

It is therefore considered that there is more than sufficient capacity within the existing network to accommodate a 50% betterment to existing flows for the new development. Allowing a total capacity

Existing runoff rate per connection point, we therefore propose to discharge the development as follows –

Catchment 1 – **162 l/s**

Catchment 2 – **285 l/s**

Catchment 3 – **2.3 l/s**

## **APPENDIX G – EXISTING ‘DUMMY’ DRAINAGE MODEL**



|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                 |                                                                                     |                       |             |                          |             |                      |      |          |     |               |                                 |                               |   |           |       |                             |       |                          |     |                             |       |                                      |    |                                       |       |                      |       |                                    |      |  |  |                                  |     |             |           |             |           |             |           |             |           |     |       |     |       |      |       |       |       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------|-----------------------|-------------|--------------------------|-------------|----------------------|------|----------|-----|---------------|---------------------------------|-------------------------------|---|-----------|-------|-----------------------------|-------|--------------------------|-----|-----------------------------|-------|--------------------------------------|----|---------------------------------------|-------|----------------------|-------|------------------------------------|------|--|--|----------------------------------|-----|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-----|-------|-----|-------|------|-------|-------|-------|
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| Columbus House                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Former Hoover Site              |  |                       |             |                          |             |                      |      |          |     |               |                                 |                               |   |           |       |                             |       |                          |     |                             |       |                                      |    |                                       |       |                      |       |                                    |      |  |  |                                  |     |             |           |             |           |             |           |             |           |     |       |     |       |      |       |       |       |
| Greenmeadow Springs Business Park                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Existing Drainage               |                                                                                     |                       |             |                          |             |                      |      |          |     |               |                                 |                               |   |           |       |                             |       |                          |     |                             |       |                                      |    |                                       |       |                      |       |                                    |      |  |  |                                  |     |             |           |             |           |             |           |             |           |     |       |     |       |      |       |       |       |
| Cardiff, CF15 7NE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Infrastructure                  |                                                                                     |                       |             |                          |             |                      |      |          |     |               |                                 |                               |   |           |       |                             |       |                          |     |                             |       |                                      |    |                                       |       |                      |       |                                    |      |  |  |                                  |     |             |           |             |           |             |           |             |           |     |       |     |       |      |       |       |       |
| Date 06/11/2024 09:52                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Designed by RWP                 |                                                                                     |                       |             |                          |             |                      |      |          |     |               |                                 |                               |   |           |       |                             |       |                          |     |                             |       |                                      |    |                                       |       |                      |       |                                    |      |  |  |                                  |     |             |           |             |           |             |           |             |           |     |       |     |       |      |       |       |       |
| File 24358-CA-701-Dummy Network-0.MDX                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Checked by ACV                  |                                                                                     |                       |             |                          |             |                      |      |          |     |               |                                 |                               |   |           |       |                             |       |                          |     |                             |       |                                      |    |                                       |       |                      |       |                                    |      |  |  |                                  |     |             |           |             |           |             |           |             |           |     |       |     |       |      |       |       |       |
| Innovyze                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Network 2020.1.3                |                                                                                     |                       |             |                          |             |                      |      |          |     |               |                                 |                               |   |           |       |                             |       |                          |     |                             |       |                                      |    |                                       |       |                      |       |                                    |      |  |  |                                  |     |             |           |             |           |             |           |             |           |     |       |     |       |      |       |       |       |
| <div>STORM SEWER DESIGN by the Modified Rational Method</div> <div>Design Criteria for Storm</div> <div>Pipe Sizes STANDARD Manhole Sizes STANDARD</div> <div>FEH Rainfall Model</div> <div><table><tr><td>Return Period (years)</td><td>2</td><td>Volumetric Runoff Coeff.</td><td>1.000</td></tr><tr><td>FEH Rainfall Version</td><td>2013</td><td>PIMP (%)</td><td>100</td></tr><tr><td>Site Location</td><td>GB 306094 204266 SO 06094 04266</td><td>Add Flow / Climate Change (%)</td><td>0</td></tr><tr><td>Data Type</td><td>Point</td><td>Minimum Backdrop Height (m)</td><td>0.000</td></tr><tr><td>Maximum Rainfall (mm/hr)</td><td>150</td><td>Maximum Backdrop Height (m)</td><td>0.000</td></tr><tr><td>Maximum Time of Concentration (mins)</td><td>30</td><td>Min Design Depth for Optimisation (m)</td><td>1.200</td></tr><tr><td>Foul Sewage (l/s/ha)</td><td>0.000</td><td>Min Vel for Auto Design only (m/s)</td><td>1.00</td></tr><tr><td></td><td></td><td>Min Slope for Optimisation (1:X)</td><td>167</td></tr></table></div> <div>Designed with Level Soffits</div> <div>Time Area Diagram for Storm</div> <div><table><tr><td>Time (mins)</td><td>Area (ha)</td><td>Time (mins)</td><td>Area (ha)</td><td>Time (mins)</td><td>Area (ha)</td><td>Time (mins)</td><td>Area (ha)</td></tr><tr><td>0-4</td><td>0.736</td><td>4-8</td><td>4.181</td><td>8-12</td><td>0.760</td><td>12-16</td><td>0.163</td></tr></table></div> <div>Total Area Contributing (ha) = 5.840</div> <div>Total Pipe Volume (m³) = 895.137</div> |                                 |                                                                                     | Return Period (years) | 2           | Volumetric Runoff Coeff. | 1.000       | FEH Rainfall Version | 2013 | PIMP (%) | 100 | Site Location | GB 306094 204266 SO 06094 04266 | Add Flow / Climate Change (%) | 0 | Data Type | Point | Minimum Backdrop Height (m) | 0.000 | Maximum Rainfall (mm/hr) | 150 | Maximum Backdrop Height (m) | 0.000 | Maximum Time of Concentration (mins) | 30 | Min Design Depth for Optimisation (m) | 1.200 | Foul Sewage (l/s/ha) | 0.000 | Min Vel for Auto Design only (m/s) | 1.00 |  |  | Min Slope for Optimisation (1:X) | 167 | Time (mins) | Area (ha) | Time (mins) | Area (ha) | Time (mins) | Area (ha) | Time (mins) | Area (ha) | 0-4 | 0.736 | 4-8 | 4.181 | 8-12 | 0.760 | 12-16 | 0.163 |
| Return Period (years)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2                               | Volumetric Runoff Coeff.                                                            | 1.000                 |             |                          |             |                      |      |          |     |               |                                 |                               |   |           |       |                             |       |                          |     |                             |       |                                      |    |                                       |       |                      |       |                                    |      |  |  |                                  |     |             |           |             |           |             |           |             |           |     |       |     |       |      |       |       |       |
| FEH Rainfall Version                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2013                            | PIMP (%)                                                                            | 100                   |             |                          |             |                      |      |          |     |               |                                 |                               |   |           |       |                             |       |                          |     |                             |       |                                      |    |                                       |       |                      |       |                                    |      |  |  |                                  |     |             |           |             |           |             |           |             |           |     |       |     |       |      |       |       |       |
| Site Location                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | GB 306094 204266 SO 06094 04266 | Add Flow / Climate Change (%)                                                       | 0                     |             |                          |             |                      |      |          |     |               |                                 |                               |   |           |       |                             |       |                          |     |                             |       |                                      |    |                                       |       |                      |       |                                    |      |  |  |                                  |     |             |           |             |           |             |           |             |           |     |       |     |       |      |       |       |       |
| Data Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Point                           | Minimum Backdrop Height (m)                                                         | 0.000                 |             |                          |             |                      |      |          |     |               |                                 |                               |   |           |       |                             |       |                          |     |                             |       |                                      |    |                                       |       |                      |       |                                    |      |  |  |                                  |     |             |           |             |           |             |           |             |           |     |       |     |       |      |       |       |       |
| Maximum Rainfall (mm/hr)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 150                             | Maximum Backdrop Height (m)                                                         | 0.000                 |             |                          |             |                      |      |          |     |               |                                 |                               |   |           |       |                             |       |                          |     |                             |       |                                      |    |                                       |       |                      |       |                                    |      |  |  |                                  |     |             |           |             |           |             |           |             |           |     |       |     |       |      |       |       |       |
| Maximum Time of Concentration (mins)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 30                              | Min Design Depth for Optimisation (m)                                               | 1.200                 |             |                          |             |                      |      |          |     |               |                                 |                               |   |           |       |                             |       |                          |     |                             |       |                                      |    |                                       |       |                      |       |                                    |      |  |  |                                  |     |             |           |             |           |             |           |             |           |     |       |     |       |      |       |       |       |
| Foul Sewage (l/s/ha)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.000                           | Min Vel for Auto Design only (m/s)                                                  | 1.00                  |             |                          |             |                      |      |          |     |               |                                 |                               |   |           |       |                             |       |                          |     |                             |       |                                      |    |                                       |       |                      |       |                                    |      |  |  |                                  |     |             |           |             |           |             |           |             |           |     |       |     |       |      |       |       |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                 | Min Slope for Optimisation (1:X)                                                    | 167                   |             |                          |             |                      |      |          |     |               |                                 |                               |   |           |       |                             |       |                          |     |                             |       |                                      |    |                                       |       |                      |       |                                    |      |  |  |                                  |     |             |           |             |           |             |           |             |           |     |       |     |       |      |       |       |       |
| Time (mins)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Area (ha)                       | Time (mins)                                                                         | Area (ha)             | Time (mins) | Area (ha)                | Time (mins) | Area (ha)            |      |          |     |               |                                 |                               |   |           |       |                             |       |                          |     |                             |       |                                      |    |                                       |       |                      |       |                                    |      |  |  |                                  |     |             |           |             |           |             |           |             |           |     |       |     |       |      |       |       |       |
| 0-4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0.736                           | 4-8                                                                                 | 4.181                 | 8-12        | 0.760                    | 12-16       | 0.163                |      |          |     |               |                                 |                               |   |           |       |                             |       |                          |     |                             |       |                                      |    |                                       |       |                      |       |                                    |      |  |  |                                  |     |             |           |             |           |             |           |             |           |     |       |     |       |      |       |       |       |
| <div>Network Design Table for Storm</div> <div>« - Indicates pipe capacity &lt; flow</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                 |                                                                                     |                       |             |                          |             |                      |      |          |     |               |                                 |                               |   |           |       |                             |       |                          |     |                             |       |                                      |    |                                       |       |                      |       |                                    |      |  |  |                                  |     |             |           |             |           |             |           |             |           |     |       |     |       |      |       |       |       |
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## Network Design Table for Storm

| PN     | Length<br>(m) | Fall<br>(m) | Slope<br>(1:X) | I. Area<br>(ha) | T. E.<br>(mins) | Base<br>Flow (l/s) | k<br>(mm) | HYD<br>SECT | DIA<br>(mm) | Section Type | Auto<br>Design                                                                      |
|--------|---------------|-------------|----------------|-----------------|-----------------|--------------------|-----------|-------------|-------------|--------------|-------------------------------------------------------------------------------------|
| S1.000 | 96.136        | 0.385       | 249.7          | 1.460           | 8.00            | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| S1.001 | 96.136        | 0.385       | 249.7          | 1.460           | 0.00            | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| S1.002 | 66.587        | 0.266       | 250.3          | 1.460           | 0.00            | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| S1.003 | 48.173        | 0.824       | 58.5           | 1.460           | 0.00            | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| S1.004 | 111.192       | 0.445       | 249.9          | 0.000           | 0.00            | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| S2.000 | 161.823       | 0.590       | 274.3          | 0.000           | 8.00            | 2110.0             | 0.600     | o           | 1500        | Pipe/Conduit |  |
| S1.005 | 152.059       | 0.608       | 250.1          | 0.000           | 0.00            | 0.0                | 0.600     | o           | 1300        | Pipe/Conduit |  |
| S3.000 | 86.894        | 1.238       | 70.2           | 0.000           | 8.00            | 757.0              | 0.600     | o           | 900         | Pipe/Conduit |  |
| S1.006 | 64.791        | 0.159       | 407.5          | 0.000           | 0.00            | 0.0                | 0.600     | o           | 1300        | Pipe/Conduit |  |

## Network Results Table

| PN      | Rain<br>(mm/hr) | T. C.<br>(mins) | US/IL<br>(m) | Σ | I. Area<br>(ha) | Σ Base<br>Flow<br>(l/s) | Foul<br>(l/s) | Add Flow<br>(l/s) | Vel<br>(m/s) | Cap<br>(l/s) | Flow<br>(l/s) |
|---------|-----------------|-----------------|--------------|---|-----------------|-------------------------|---------------|-------------------|--------------|--------------|---------------|
| S1. 000 | 37. 15          | 8. 81           | 149. 500     |   | 1. 460          | 0. 0                    | 0. 0          | 0. 0              | 1. 98        | 1258. 6      | 195. 9        |
| S1. 001 | 35. 77          | 9. 62           | 149. 115     |   | 2. 920          | 0. 0                    | 0. 0          | 0. 0              | 1. 98        | 1258. 6      | 377. 2        |
| S1. 002 | 34. 89          | 10. 18          | 148. 730     |   | 4. 380          | 0. 0                    | 0. 0          | 0. 0              | 1. 98        | 1257. 0      | 551. 9        |
| S1. 003 | 34. 60          | 10. 38          | 148. 464     |   | 5. 840          | 0. 0                    | 0. 0          | 0. 0              | 1. 98        | 2609. 8      | 729. 6        |
| S1. 004 | 33. 28          | 11. 31          | 147. 640     |   | 5. 840          | 0. 0                    | 0. 0          | 0. 0              | 1. 98        | 1258. 1      | 729. 6        |
| S2. 000 | 36. 74          | 9. 04           | 147. 760     |   | 0. 000          | 2110. 0                 | 0. 0          | 0. 0              | 2. 59        | 4568. 5      | 2110. 0       |
| S1. 005 | 31. 98          | 12. 34          | 147. 170     |   | 5. 840          | 2110. 0                 | 0. 0          | 0. 0              | 2. 48        | 3292. 2      | 2784. 4       |
| S3. 000 | 37. 93          | 8. 39           | 148. 200     |   | 0. 000          | 757. 0                  | 0. 0          | 0. 0              | 3. 74        | 2381. 1      | 757. 0        |
| S1. 006 | 31. 33          | 12. 89          | 146. 562     |   | 5. 840          | 2867. 0                 | 0. 0          | 0. 0              | 1. 94        | 2575. 5      | 3527. 7       |

|                                                                          |                                                           |                                                                                     |
|--------------------------------------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------------------------------|
| QuadConsult Ltd                                                          |                                                           | Page 4                                                                              |
| Columbus House<br>Greenmeadow Springs Business Park<br>Cardiff, CF15 7NE | Former Hoover Site<br>Existing Drainage<br>Infrastructure |  |
| Date 06/11/2024 09:52<br>File 24358-CA-701-Dummy Network-0.MDX           | Designed by RWP<br>Checked by ACV                         |                                                                                     |
| Innovyze Network 2020.1.3                                                |                                                           |                                                                                     |

Area Summary for Storm

| Pipe Number | PIMP Type | PIMP Name | PIMP (%) | Gross Area (ha) | Imp. Area (ha) | Pipe Total (ha) |
|-------------|-----------|-----------|----------|-----------------|----------------|-----------------|
| 1.000       | -         | -         | 100      | 1.460           | 1.460          | 1.460           |
| 1.001       | -         | -         | 100      | 1.460           | 1.460          | 1.460           |
| 1.002       | -         | -         | 100      | 1.460           | 1.460          | 1.460           |
| 1.003       | -         | -         | 100      | 1.460           | 1.460          | 1.460           |
| 1.004       | -         | -         | 100      | 0.000           | 0.000          | 0.000           |
| 2.000       | -         | -         | 100      | 0.000           | 0.000          | 0.000           |
| 1.005       | -         | -         | 100      | 0.000           | 0.000          | 0.000           |
| 3.000       | -         | -         | 100      | 0.000           | 0.000          | 0.000           |
| 1.006       | -         | -         | 100      | 0.000           | 0.000          | 0.000           |
|             |           |           |          | Total           | Total          | Total           |
|             |           |           |          | 5.840           | 5.840          | 5.840           |

Simulation Criteria for Storm

|                         |       |                                            |       |                                     |       |
|-------------------------|-------|--------------------------------------------|-------|-------------------------------------|-------|
| Volumetric Runoff Coeff | 1.000 | Manhole Headloss Coeff (Global)            | 0.500 | Inlet Coeffiecient                  | 0.800 |
| Areal Reduction Factor  | 1.000 | Foul Sewage per hectare (l/s)              | 0.000 | Flow per Person per Day (l/per/day) | 0.000 |
| Hot Start (mins)        | 0     | Additional Flow - % of Total Flow          | 0.000 | Run Time (mins)                     | 60    |
| Hot Start Level (mm)    | 0     | MADD Factor * 10m <sup>3</sup> /ha Storage | 2.000 | Output Interval (mins)              | 1     |

|                             |   |                              |   |                              |   |
|-----------------------------|---|------------------------------|---|------------------------------|---|
| Number of Input Hydrographs | 0 | Number of Offline Controls   | 0 | Number of Time/Area Diagrams | 0 |
| Number of Online Controls   | 0 | Number of Storage Structures | 0 | Number of Real Time Controls | 0 |

Synthetic Rainfall Details

|                       |                                 |               |       |                       |       |
|-----------------------|---------------------------------|---------------|-------|-----------------------|-------|
| Rainfall Model        | FEH                             | Data Type     | Point | Cv (Winter)           | 0.840 |
| Return Period (years) | 2                               | Summer Storms | Yes   | Storm Duration (mins) | 30    |
| FEH Rainfall Version  | 2013                            | Winter Storms | Yes   |                       |       |
| Site Location         | GB 306094 204266 S0 06094 04266 | Cv (Summer)   | 1.000 |                       |       |

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|                                                                                                                |            |           |               |                |                    |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
|----------------------------------------------------------------------------------------------------------------|------------|-----------|---------------|----------------|--------------------|-----------------|--------------------|---------------|-----------------|-------------------------------------------------------------------------------------|---------------------|-------------|----------------|------------------------|-----------------|------------|
| QuadConsult Ltd                                                                                                |            |           |               |                |                    |                 |                    |               |                 | Page 5                                                                              |                     |             |                |                        |                 |            |
| Columbus House                                                                                                 |            |           |               |                | Former Hoover Site |                 |                    |               |                 |  |                     |             |                |                        |                 |            |
| Greenmeadow Springs Business Park                                                                              |            |           |               |                | Existing Drainage  |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| Cardiff, CF15 7NE                                                                                              |            |           |               |                | Infrastructure     |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| Date 06/11/2024 09:52                                                                                          |            |           |               |                | Designed by RWP    |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| File 24358-CA-701-Dummy Network-0.MDX                                                                          |            |           |               |                | Checked by ACV     |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| Innovyze                                                                                                       |            |           |               |                | Network 2020.1.3   |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| 5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm                           |            |           |               |                |                    |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| Simulation Criteria                                                                                            |            |           |               |                |                    |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| Areal Reduction Factor 1.000    Manhole Headloss Coeff (Global) 0.500    MADD Factor * 10m³/ha Storage 2.000   |            |           |               |                |                    |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| Hot Start (mins) 0    Foul Sewage per hectare (l/s) 0.000    Inlet Coefficient 0.800                           |            |           |               |                |                    |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| Hot Start Level (mm) 0    Additional Flow - % of Total Flow 0.000    Flow per Person per Day (l/per/day) 0.000 |            |           |               |                |                    |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| Number of Input Hydrographs 0    Number of Offline Controls 0    Number of Time/Area Diagrams 0                |            |           |               |                |                    |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| Number of Online Controls 0    Number of Storage Structures 0    Number of Real Time Controls 0                |            |           |               |                |                    |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| Synthetic Rainfall Details                                                                                     |            |           |               |                |                    |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| Rainfall Model FEH    Site Location GB 306094 204266 SO 06094 04266    Cv (Summer) 0.750                       |            |           |               |                |                    |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| FEH Rainfall Version 2013    Data Type    Point Cv (Winter) 0.840                                              |            |           |               |                |                    |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| Margin for Flood Risk Warning (mm) 300.0    DVD Status ON                                                      |            |           |               |                |                    |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| Analysis Timestep 2.5 Second Increment (Extended)    Inertia Status ON                                         |            |           |               |                |                    |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| DTS Status OFF                                                                                                 |            |           |               |                |                    |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| Profile(s)                                                                                                     |            |           |               |                |                    |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, Summer and Winter           |            |           |               |                |                    |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| 2880, 4320, 5760,                                                                                              |            |           |               |                |                    |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| 7200, 8640, 10080                                                                                              |            |           |               |                |                    |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| Return Period(s) (years) 5                                                                                     |            |           |               |                |                    |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| Climate Change (%) 0                                                                                           |            |           |               |                |                    |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| PN                                                                                                             | US/MH Name | Storm     | Return Period | Climate Change | First (X) Surge    | First (Y) Flood | First (Z) Overflow | Overflow Act. | Water Level (m) | Surcharged Depth (m)                                                                | Flooded Volume (m³) | Flow / Cap. | Overflow (l/s) | Half Drain Time (mins) | Pipe Flow (l/s) | Status     |
| S1.000                                                                                                         | S1         | 15 Winter | 5             | +0%            |                    |                 |                    |               | 149.757         | -0.643                                                                              | 0.000               | 0.18        |                |                        | 200.2           | OK         |
| S1.001                                                                                                         | S2         | 15 Winter | 5             | +0%            |                    |                 |                    |               | 149.485         | -0.530                                                                              | 0.000               | 0.35        |                |                        | 390.7           | OK         |
| S1.002                                                                                                         | S3         | 15 Winter | 5             | +0%            |                    |                 |                    |               | 149.200         | -0.430                                                                              | 0.000               | 0.53        |                |                        | 569.2           | OK         |
| S1.003                                                                                                         | S4         | 30 Winter | 5             | +0%            |                    |                 |                    |               | 148.950         | -0.414                                                                              | 0.000               | 0.35        |                |                        | 709.6           | OK         |
| S1.004                                                                                                         | S5         | 30 Winter | 5             | +0%            | 5/15 Summer        |                 |                    |               | 148.856         | 0.316                                                                               | 0.000               | 0.60        |                |                        | 684.6           | SURCHARGED |
| S2.000                                                                                                         | S6         | 30 Winter | 5             | +0%            |                    |                 |                    |               | 148.882         | -0.378                                                                              | 0.000               | 0.53        |                |                        | 2112.2          | OK         |
| S1.005                                                                                                         | S6         | 30 Winter | 5             | +0%            | 5/15 Summer        |                 |                    |               | 148.719         | 0.249                                                                               | 0.000               | 0.93        |                |                        | 2737.0          | SURCHARGED |
| S3.000                                                                                                         | S8         | 15 Summer | 5             | +0%            |                    |                 |                    |               | 148.573         | -0.527                                                                              | 0.000               | 0.36        |                |                        | 757.0           | OK         |
| ©1982-2020 Innovyze                                                                                            |            |           |               |                |                    |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |

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|---------------------------------------------------------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------------------------------|
| QuadConsult Ltd                                                                             |                                                           | Page 6                                                                              |
| Columbus House<br>Greenmeadow Springs Business Park<br>Cardiff, CF15 7NE                    | Former Hoover Site<br>Existing Drainage<br>Infrastructure |  |
| Date 06/11/2024 09:52<br>File 24358-CA-701-Dummy Network-0.MDX                              | Designed by RWP<br>Checked by ACV                         |                                                                                     |
| Innovyze                                                                                    | Network 2020.1.3                                          |                                                                                     |
| <u>5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm</u> |                                                           |                                                                                     |
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| QuadConsult Ltd                                                                      |            |           |               |                |                                                           |                 |                    |               |                 |                                                                                     | Page 7              |             |                |                        |                 |            |
| Columbus House<br>Greenmeadow Springs Business Park<br>Cardiff, CF15 7NE             |            |           |               |                | Former Hoover Site<br>Existing Drainage<br>Infrastructure |                 |                    |               |                 |  |                     |             |                |                        |                 |            |
| Date 06/11/2024 09:52<br>File 24358-CA-701-Dummy Network-0.MDX                       |            |           |               |                | Designed by RWP<br>Checked by ACV                         |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| Innovyze                                                                             |            |           |               |                | Network 2020.1.3                                          |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| 5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm |            |           |               |                |                                                           |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
| PN                                                                                   | US/MH Name | Storm     | Return Period | Climate Change | First (X) Surcharge                                       | First (Y) Flood | First (Z) Overflow | Overflow Act. | Water Level (m) | Surcharged Depth (m)                                                                | Flooded Volume (m³) | Flow / Cap. | Overflow (l/s) | Half Drain Time (mins) | Pipe Flow (l/s) | Status     |
| S1.006                                                                               | S7         | 30 Winter | 5             | +0%            | 5/15 Summer                                               |                 |                    |               | 148.189         | 0.327                                                                               | 0.000               | 1.72        |                |                        | 3490.4          | SURCHARGED |
|                                                                                      |            |           |               |                |                                                           |                 |                    |               |                 |                                                                                     |                     |             |                |                        |                 |            |
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## **APPENDIX H – DCWW CORRESPONDENCE**



Mr Lewis Morgan  
SMS Energy Services  
Prennau House  
Copse Walk Cardiff Gate Business Park  
Cardiff  
CF23 8XH

**Date: 05/09/2024**  
**Our Ref: PPA0008912**

Dear Mr Morgan,

**Grid Ref: 305744 204164**

**Site Address: Former Hoover Site, Merthyr Road, Merthyr Tydfil**

**Development: Residential development comprising 400 dwellings**

I refer to your pre-planning enquiry received relating to the above site, seeking our views on the capacity of our network of assets and infrastructure to accommodate your proposed development. Having reviewed the details submitted I can provide the following comments which should be taken into account within any future planning application for the development.

### **Appraisal**

Firstly, we note that the proposal relates to 400 residential dwellings and acknowledge that this is a brownfield site. Therefore, we offer the following comments as part of our appraisal of this development.

### **Public Sewerage Network**

The proposed development site is located in the vicinity of a separate sewerage system, comprising foul and surface water public sewers, which drains to Cilfyndd Wastewater Treatment Works (WwTW).

You are also advised that some public sewers and lateral drains may not be recorded on our maps of public sewers because they were originally privately owned and were transferred into public ownership by nature of the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011. The presence of such assets may affect the proposal. In order to assist you may contact Dwr Cymru Welsh Water on 0800 085 3968 to establish the location and status of the apparatus in and around your site. Please be mindful that under the Water Industry Act 1991 Dwr Cymru Welsh Water has rights of access to its apparatus at all times.

## **Surface Water Drainage**

As of 07/01/2019, this proposed development is subject to Schedule 3 of the Flood and Water Management Act 2010. The development therefore requires approval of Sustainable Drainage Systems (SuDS) features, in accordance with the 'Statutory standards for sustainable drainage systems – designing, constructing, operating and maintaining surface water drainage systems'. As highlighted in these standards, the developer is required to explore and fully exhaust all surface water drainage options in accordance with a hierarchy which states that discharge to a combined sewer shall only be made as a last resort. Disposal should be made through the hierarchical approach, preferring infiltration and, where infiltration is not possible, disposal to a surface water drainage body in liaison with the Land Drainage Authority and/or Natural Resources Wales.

It is therefore recommended that the developer consult with Merthyr Tydfil County Borough Council, as the determining SuDS Approval Body (SAB), in relation to their proposals for SuDS features. Please note, DCWW is a statutory consultee to the SAB application process and will provide comments to any SuDS proposals by response to SAB consultation. Please refer to further detailed advice relating to surface water management included in our attached Advice and Guidance note and our Developer Services website at <https://developers.dwrcymru.com/en/help-advice/regulation-to-be-aware-of/sustainable-drainage-systems>

## **Foul Water Drainage – Sewerage Network**

We have no objection for the domestic foul flows generated from this development to connect to the public sewer. We advise that the flows can be communicated to the 300mm public combined sewer at manhole SO06030801 as indicated on the extract of public sewer record provided. However, should you wish for an alternative connection point to be considered please provide further information to us in the form of a drainage strategy, preferably in advance of a planning application being submitted.

You may need to apply to Dwr Cymru Welsh Water for any connection to the public sewer under Section 106 of the Water Industry Act 1991. However, if the connection to the public sewer network is either via a lateral drain (i.e., a drain which extends beyond the connecting property boundary) or via a new sewer (i.e., serves more than one property), it is now a mandatory requirement to first enter into a Section 104 Adoption Agreement (Water Industry Act 1991). The design of the sewers and lateral drains must also conform to the Welsh Ministers Standards for Foul Sewers and Lateral Drains and conform with the publication “Sewers for Adoption” – 7th Edition. Further information can be obtained via the Developer Services pages of [www.dwrcymru.com](http://www.dwrcymru.com)



Welsh Water is owned by Glas Cymru – a ‘not-for-profit’ company.  
Mae Dŵr Cymru yn eiddo i Glas Cymru – cwmni ‘nid-er-elw’.

We welcome correspondence in  
Welsh and English

Dŵr Cymru Cyf, a limited company registered in  
Wales no 2366777. Registered office: Pentwyn Road,  
Nelson, Treharris, Mid Glamorgan CF46 6LY

Rydym yn croesawu gohebiaeth yn y  
Gymraeg neu yn Saesneg

Dŵr Cymru Cyf, cwmni cyfyngedig wedi'i gofrestru yng  
Nghymru rhif 2366777. Swyddfa gofrestredig: Heol Pentwyn  
Nelson, Treharris, Morgannwg Ganol CF46 6LY.

We would also point out, that if any of the private connections from the former building was not to be utilised, then they will need to be abandoned and capped off before entering our public sewer. We require these drains to be capped off as to ensure no water infiltration is entering our sewer via your private drain.

### **Sewage Treatment**

No problems are envisaged with the Wastewater Treatment Works for the treatment of domestic discharges from this site.

### **Water Supply**

The water supply system in the immediate vicinity has insufficient capacity to serve the development and will also cause detriment to existing customers' water supply. A hydraulic modelling assessment is required to establish the scope of any reinforcement works to be completed at the same time as the provision of new water mains to serve the new development under Section 41 and Section 51 of the Water Industry Act (1991).

Information relating to our Hydraulic Modelling Assessment process is available on our website and within our guidance notes. The area planning officer will also be able to provide you within information relating to this process.

The proposed development is crossed by a trunk/distribution watermain, the approximate position being shown on the attached plan. Dwr Cymru Welsh Water as Statutory Undertaker has statutory powers to access our apparatus at all times. I enclose our Conditions for Development near Watermain(s). It may be possible for this watermain to be diverted under Section 185 of the Water Industry Act 1991, the cost of which will be re-charged to the developer. The developer must consult Dwr Cymru Welsh Water before any development commences on site.

I trust the above information is helpful and will assist you in forming water and drainage strategies that should accompany any future planning application. I also attach copies of our water and sewer extract plans for the area, and a copy of our Planning Guidance Note which provides further information on our approach to the planning process, making connections to our systems and ensuring any existing public assets or infrastructure located within new development sites are protected.

Please note that our response is based on the information provided in your enquiry and should the information change we reserve the right to make a new representation. Should you have any queries or wish to discuss any aspect of our response please do not hesitate to contact our dedicated team of planning officers, either on 0800 917 2652 or via email at [developer.services@dwrcymru.com](mailto:developer.services@dwrcymru.com)



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Dŵr Cymru Cyf, cwmni cyfyngedig wedi'i gofrestru yng  
Nghymru rhif 2366777. Swyddfa gofrestredig: Heol Pentwyn  
Nelson, Treharris, Morgannwg Ganol CF46 6LY.

Please quote our reference number in all communications and correspondence.

Yours faithfully,

**Rhys Evans**  
**Planning Liaison Manager**  
**Developer Services**

***Please Note that demands upon the water and sewerage systems change continually; consequently, the information given above should be regarded as reliable for a maximum period of 12 months from the date of this letter.***



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Nelson, Treharris, Mid Glamorgan CF46 6LY

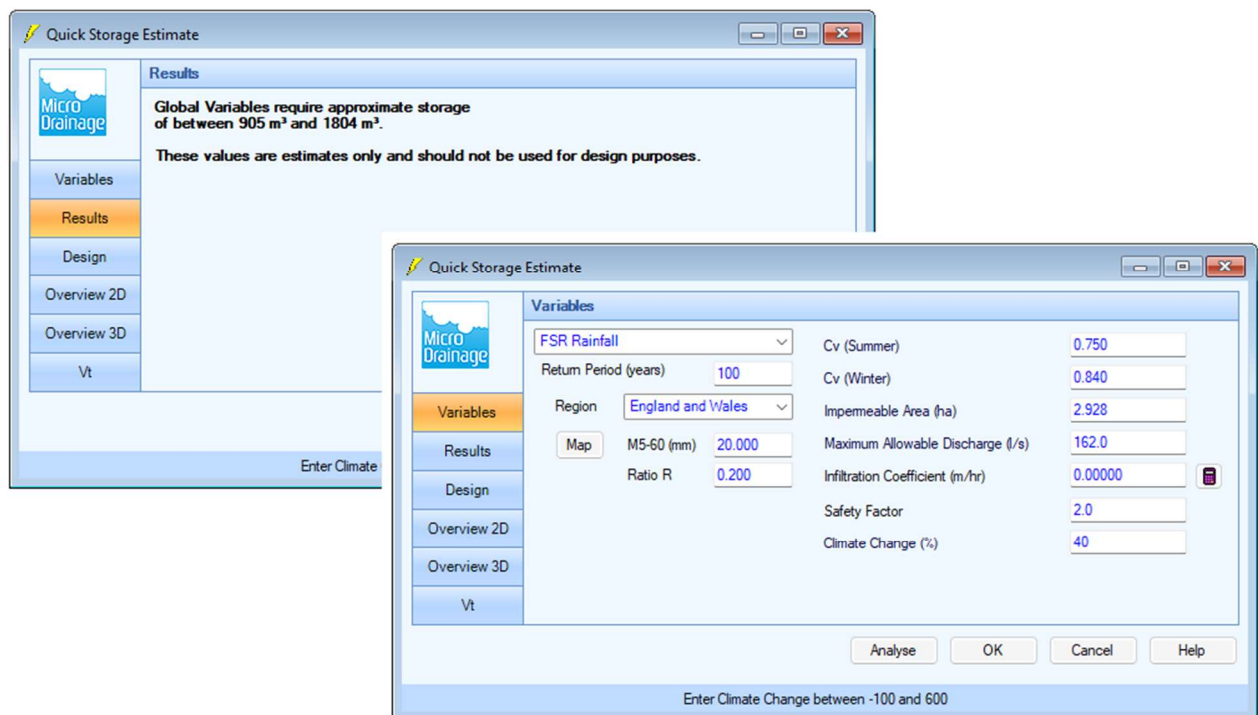
Rydym yn croesawu gohebiaeth yn y  
Gymraeg neu yn Saesneg

Dŵr Cymru Cyf, cwmni cyfyngedig wedi'i gofrestru yng  
Nghymru rhif 2366777. Swyddfa gofrestredig: Heol Pentwyn  
Nelson, Treharris, Morgannwg Ganol CF46 6LY.



## **APPENDIX I – PRELIMINARY ATTENUATION CALCULATIONS**

## Catchment A North (50% betterment)

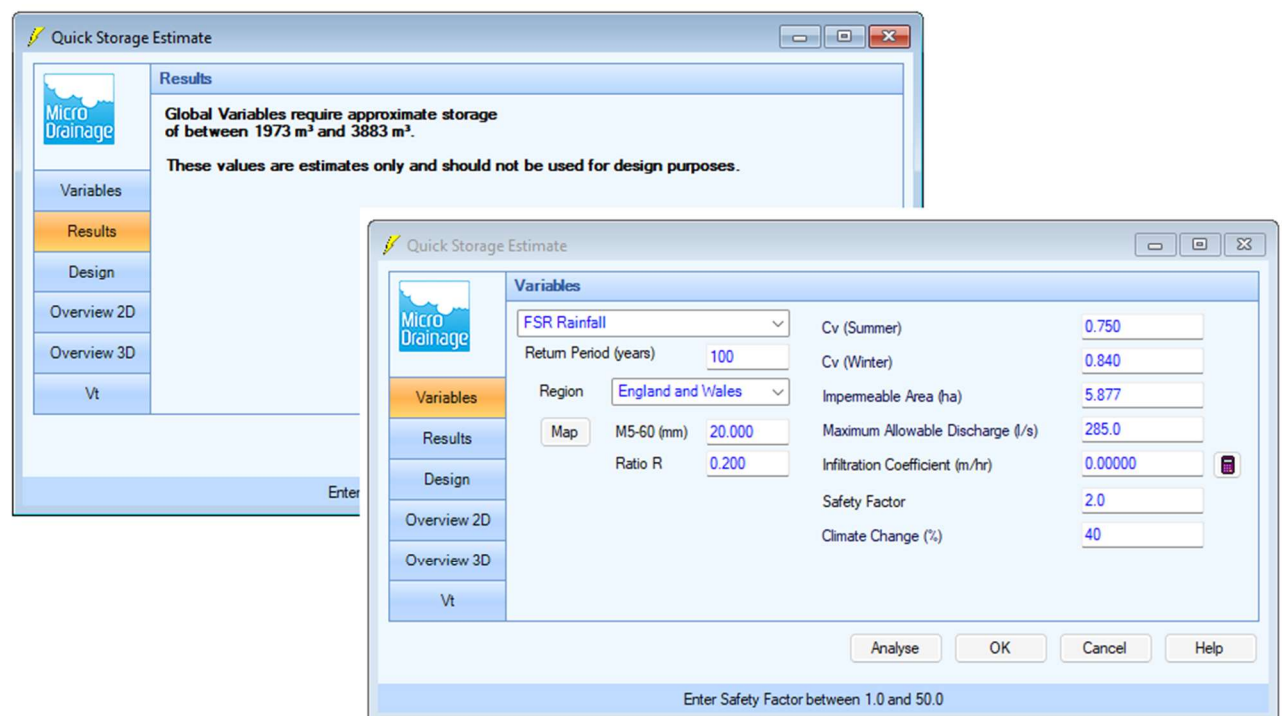


The image shows two overlapping windows of the 'Quick Storage Estimate' software. The background window is in the 'Results' tab, displaying a message: 'Global Variables require approximate storage of between 905 m³ and 1804 m³. These values are estimates only and should not be used for design purposes.' The foreground window is in the 'Variables' tab, showing the following settings:

| Variable                          | Value             |
|-----------------------------------|-------------------|
| FSR Rainfall                      | [Dropdown]        |
| Return Period (years)             | 100               |
| Region                            | England and Wales |
| Map                               | M5-60 (mm)        |
| Ratio R                           | 0.200             |
| Cv (Summer)                       | 0.750             |
| Cv (Winter)                       | 0.840             |
| Impermeable Area (ha)             | 2.928             |
| Maximum Allowable Discharge (l/s) | 162.0             |
| Infiltration Coefficient (m/hr)   | 0.00000           |
| Safety Factor                     | 2.0               |
| Climate Change (%)                | 40                |

Buttons at the bottom: Analyse, OK, Cancel, Help. A status bar at the bottom reads: 'Enter Climate Change between -100 and 600'.

## Catchment B&C South (50% betterment)



The image shows two overlapping windows of the 'Quick Storage Estimate' software. The background window is in the 'Results' tab, displaying a message: 'Global Variables require approximate storage of between 1973 m³ and 3883 m³. These values are estimates only and should not be used for design purposes.' The foreground window is in the 'Variables' tab, showing the following settings:

| Variable                          | Value             |
|-----------------------------------|-------------------|
| FSR Rainfall                      | [Dropdown]        |
| Return Period (years)             | 100               |
| Region                            | England and Wales |
| Map                               | M5-60 (mm)        |
| Ratio R                           | 0.200             |
| Cv (Summer)                       | 0.750             |
| Cv (Winter)                       | 0.840             |
| Impermeable Area (ha)             | 5.877             |
| Maximum Allowable Discharge (l/s) | 285.0             |
| Infiltration Coefficient (m/hr)   | 0.00000           |
| Safety Factor                     | 2.0               |
| Climate Change (%)                | 40                |

Buttons at the bottom: Analyse, OK, Cancel, Help. A status bar at the bottom reads: 'Enter Safety Factor between 1.0 and 50.0'.

# **HOOVER SITE, MERTHYR**

Drainage Strategy Report and Flood Statement



**Consulting Civil & Structural Engineers**

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## **APPENDIX J – DRAINAGE STRATEGY (SURFACE WATER)**





GENERAL NOTES

1. This drawing is to be read in conjunction with and checked against all other drawings, engineering details, specifications and any structural, geotechnical or other specialist document provided.
2. Any discrepancies within all relevant drawings are to be reported to QuadConsult Ltd immediately.
3. All dimensions and levels are in metres, U.N.O..
4. Do not scale from this drawing - use figured dimensions only.
5. This drawing is schematic for clarity only.

LEGEND

- Proposed permeable paving.
- Cellular storage beneath detention basin.
- Proposed primary conveyance swale. (with underdrain)
- Proposed secondary conveyance swale. (with underdrain)
- Proposed outfall.
- Proposed foul.
- Proposed sewer manhole.
- Direction of flow.
- Existing storm water connection.

PLEASE NOTE:  
DRAINAGE HAS BEEN MADE UP FROM HAMMOND  
ARCHITECTS PDF PLAN REF:- 2479-SK01  
EXISTING MANHOLES POSITIONS ADOPTED FROM  
TOPO RECEIVED FROM ALPINE LAND SURVEYORS  
DRAWING NO. HV/MT/TS/09

-INFORMATION-

| Rev | Date | Description | By |
|-----|------|-------------|----|
|-----|------|-------------|----|

Dimensions to be verified on site.  
This drawing should not be scaled. Use figured dimensions only.  
Any discrepancies should be referred to the Engineer prior to work being put in hand.  
This drawing is copyright.

QuadConsult Limited  
Columbus House, Village Way  
Greenmoor Business Park  
Cardiff  
CF15 7NE  
029 2077 9644  
contactus@quadconsult.co.uk  
www.quadconsult.co.uk



|         |                     |
|---------|---------------------|
| Project | HOOVER SITE MERTHYR |
| Title   | DRAINAGE STRATEGY   |

Drawing Status

| INFORMATION |          |            |        |             |
|-------------|----------|------------|--------|-------------|
| Designed by | Drawn by | Checked by | Date   | Scales @ A1 |
| SLS         | SLS      | SM         | Jan 25 | 1:1250      |

Drawing No

|                |
|----------------|
| 24358--C-015-0 |
|----------------|

