CORNERSTONE PROJECTS LTD

Utilities Search Report

Thursday, 04 Mar 2021

Search Acumen

135036107

FULL

LAND ON THE EAST SIDE OF

[redacted]

www.cornerstoneprojects.co.uk
VAT Reg. No. 851 4941 19
Company No. 5132353

Registered in England. Registered Address : Cornerstone Projects Ltd, 91 Market Street, Hoylake, Wirral CH47 5AA

CORNERSTONE PROJECTS LTD

Table of contents:

Utility / Service	Included
Basic Search	
Gas	**Yes**
Water	**Not Requested**
Sewers	**Not Requested**
BT	**Yes**
Electricity	**Yes**
3rd Party Searches*	**Yes**
Cable Search	
Vodafone	**Yes**
Virgin Media	**Yes**
BSkyB	**Yes**
GTT	**Not Affected**
Colt	**Yes**
Sota	**Not Affected**
CGI Logica	**Not Affected**
SSE Telecom	**Not Affected**
City Fibre	**Yes**
Telia Sonera	**Not Affected**
Instalcom**	**Yes**
KCom	**Not Affected**
Verizon	**Yes**
Trafficmaster	**Not Affected**
Zayo Group	**Not Affected**
Tata Communications	**Not Affected**
Gamma	**Not Affected**
Gigaclear Plc	**Not Affected**

Utility / Service	Included
Independent Utilities	
GTC	**Yes**
Last Mile	**Yes**
SSE	**Not Affected**
Harlaxton	**Not Affected**
Utility Assets	**Not Affected**
UK Power Distribution	**Yes**
Albion Water	**Not Affected**
ESP	**Yes**
Fulcrum Pipelines	**Not Affected**
Energy Assets	**Yes**
ENGIE	**Not Affected**
Leep Utilities	**Not Affected**
Others	
CAD Pack	**Not Requested**
Smart pdf	**Not Requested**
Coal Authority Report	**Not Requested**

*Includes Utilibilly and Linesearch

**Includes Level3, GC(UK) Ltd, GC PEC, Fibrenet UK and Fibrespan

NB: All plans / responses are valid for a maximum of three months unless noted otherwise

[redacted]

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Order Summary

[redacted]
www.cornerstoneprojects.co.uk
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Company No. 5132353

ICORNERSTONE PROJECTS LTD

Summary of your utility search details:

Site Name	LAND ON THE EAST SIDE OF	
Site Ref	135036107	
Address	WINNYCROFT LANE , MATSON, GLOUCESTER, GL4	
Postcode	GL4	
Grid Ref	E 385188	N 214179

Area Covered

Options Selected		Options Selected	
Gas	✓	**Independent utilities search - inc non-chargeable searches**	✓
Water	X	Harlaxton	✓
Sewer	X	UK Power Distribution	✓
Electric	✓		
BT	✓	**Coal Authority search**	X
3rd Party searches	✓		
		Other Options	
Cable / Fibre searches inc non-chargeable searches	✓	Plans by post	X
Virgin Media	✓	CAD Pack	X
Vodafone	✓	CAD OS mapping	X
		Smart pdf	X
		Instant Access Plans	X

GAS

[redacted]
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Company Address
Wales and West Utilities Ltd,
Wales and West House,
Spooner Close, Celtic,
Springs, Coedkernew,
Newport, NP10 8FZ

Our Ref: 21355048 135036107

Friday, 19 February 2021

[redacted]
91 Market Street
Hoylake
Merseyside
CH47 5AA

Dear [redacted]

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.

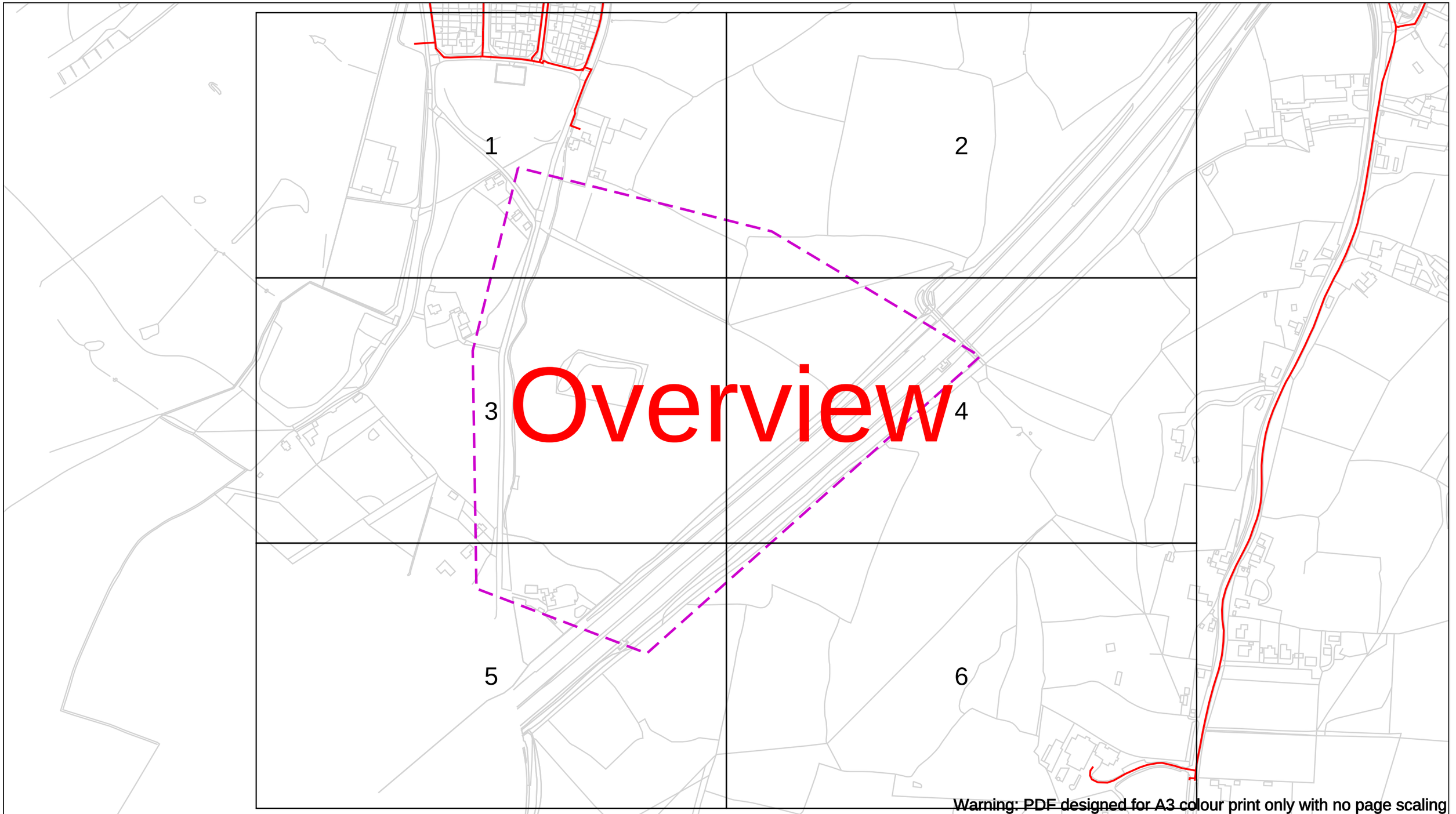
Yours sincerely,
WWU Dig Team

Gas Emergency Number:
In an emergency call [redacted], 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 [redacted]
Email [redacted]

General Enquiries:
If you have a general enquiry, please call us on the following number
All areas [redacted]

LinesearchbeforeUdig:
If you have an enquiry relating to the use of the LinesearchbeforeUdig website please contact LinesearchbeforeUdig using the following information:
Telephone [redacted]
Email [redacted]
Website www.linesearchbeforeudig.co.uk



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

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

Date Requested: 19/02/2021
Job Reference: 21355048
Site Location: 385147 214105
Requested by:
Mr Duncan Phillips
Your Scheme/Reference:
135036107

Scale: 1:3844 (When plotted at A3)

IMPORTANT NOTICES

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

In case of an emergency call [redacted]

Dig Sites

Area: Line:

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

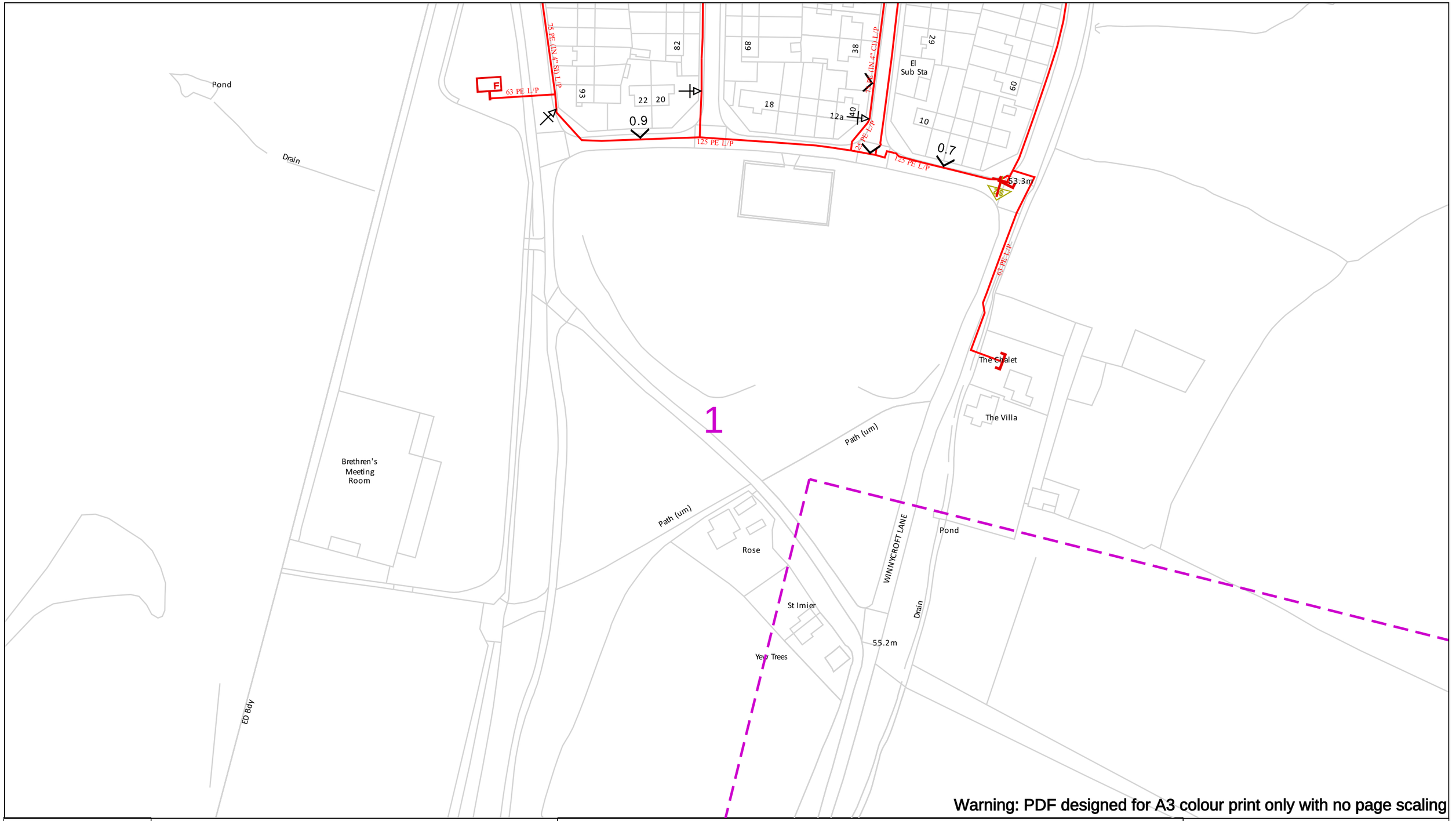
- Line/Fire Valve
- Governor Station
- Change of Diameter
- End Cap
- Depth of cover

WALES&WEST UTILITIES

Dial before you d

We need 10 days' notice

[redacted]



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Date Requested: 19/02/2021
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Site Location: 385147 214105
Requested by:
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Scale: 1:1250 (When plotted at A3)

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100m

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End Cap
Depth of cover

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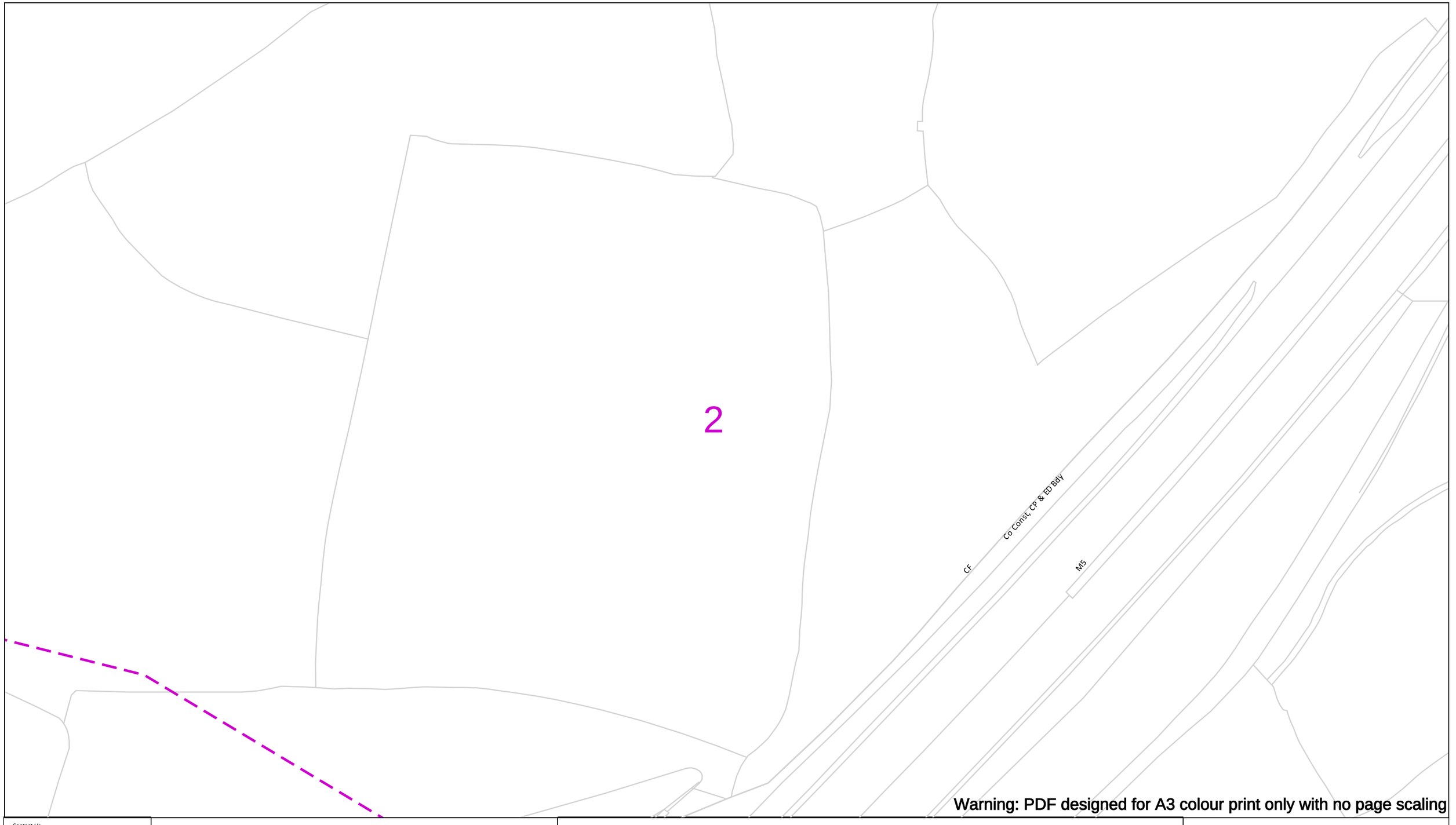

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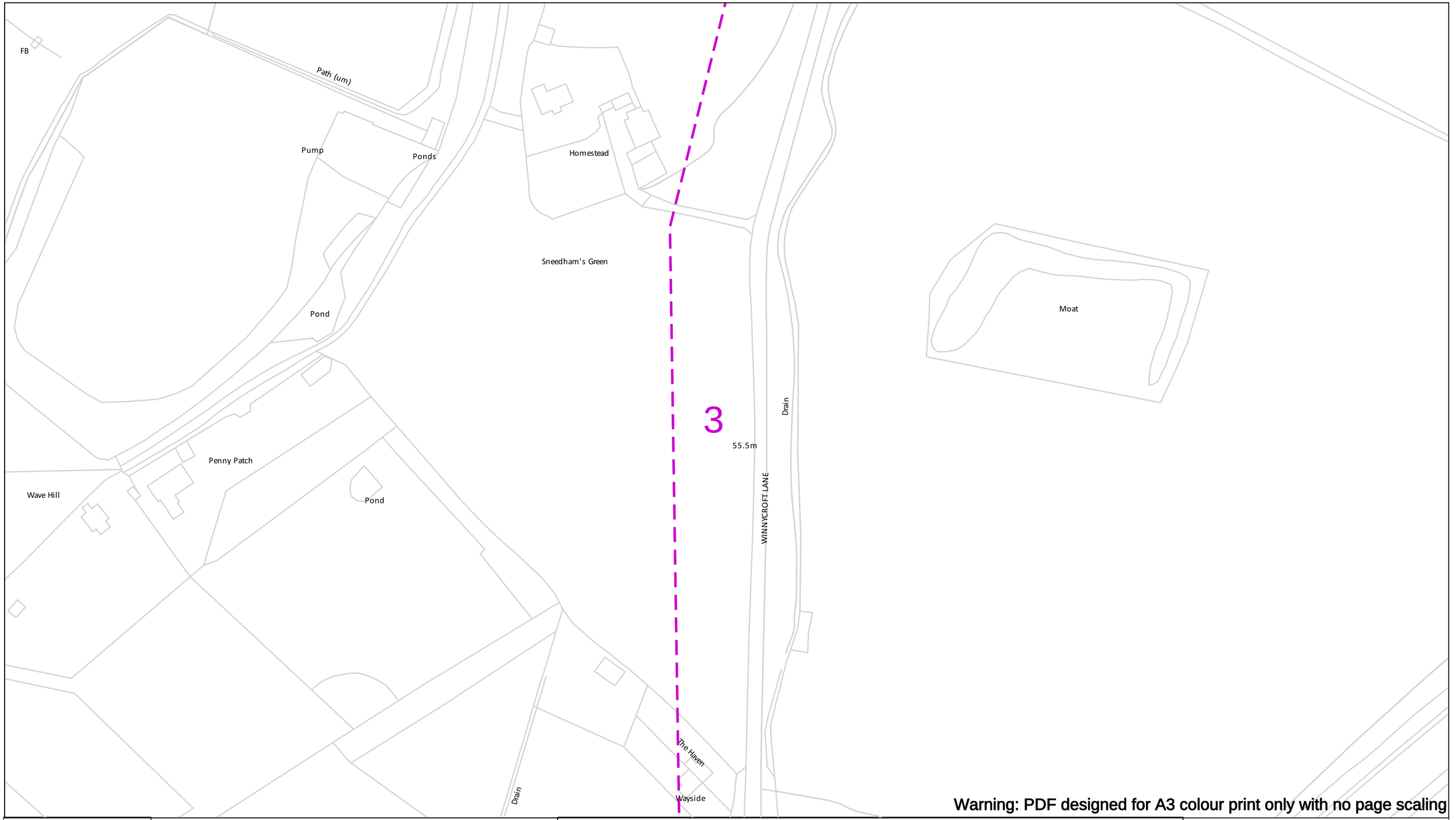

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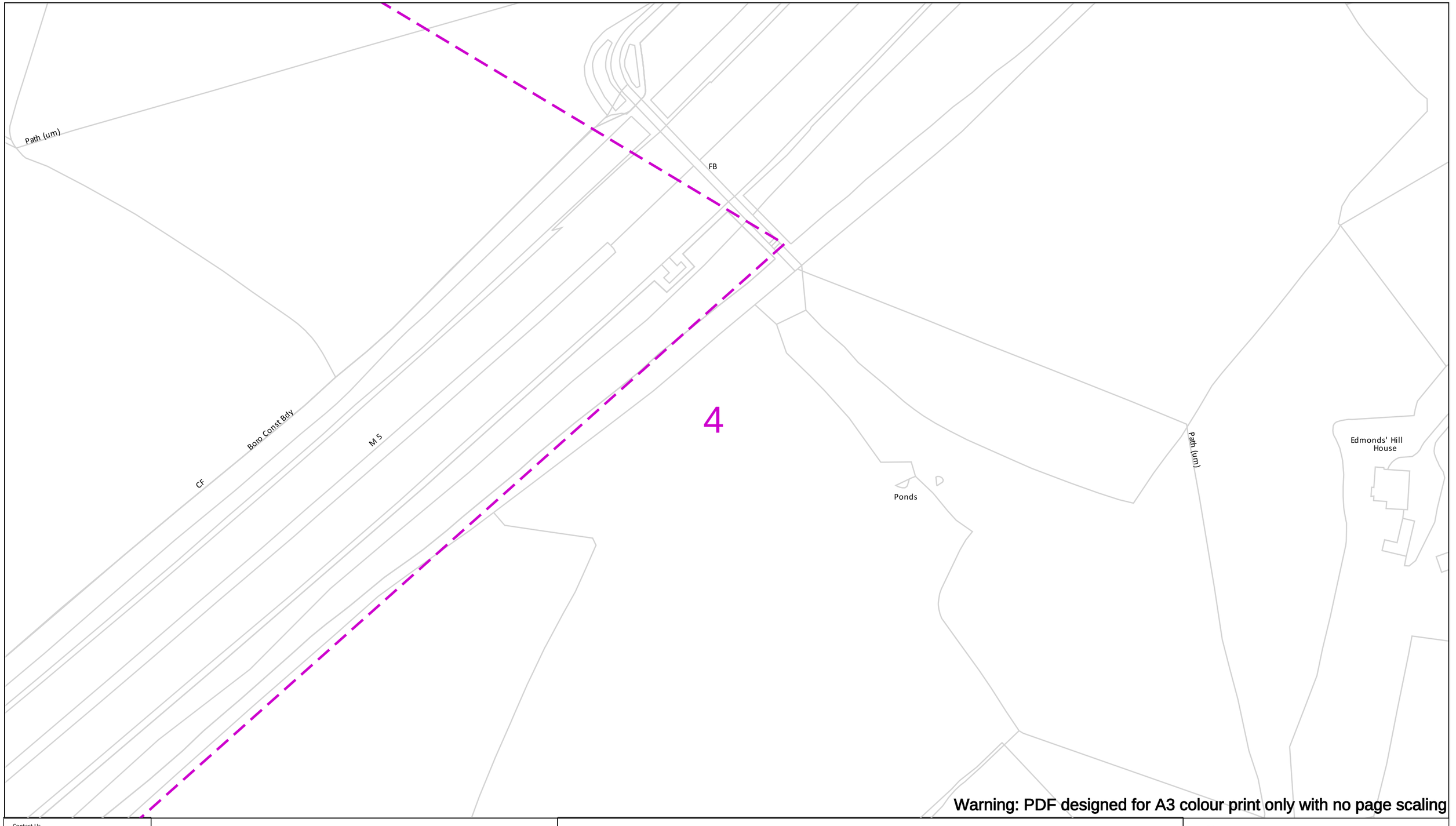

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WALES&WEST UTILITIES

Dial before you dig

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[redacted]

House

Capel Cottage

Green

Farm

Pond

5

M5

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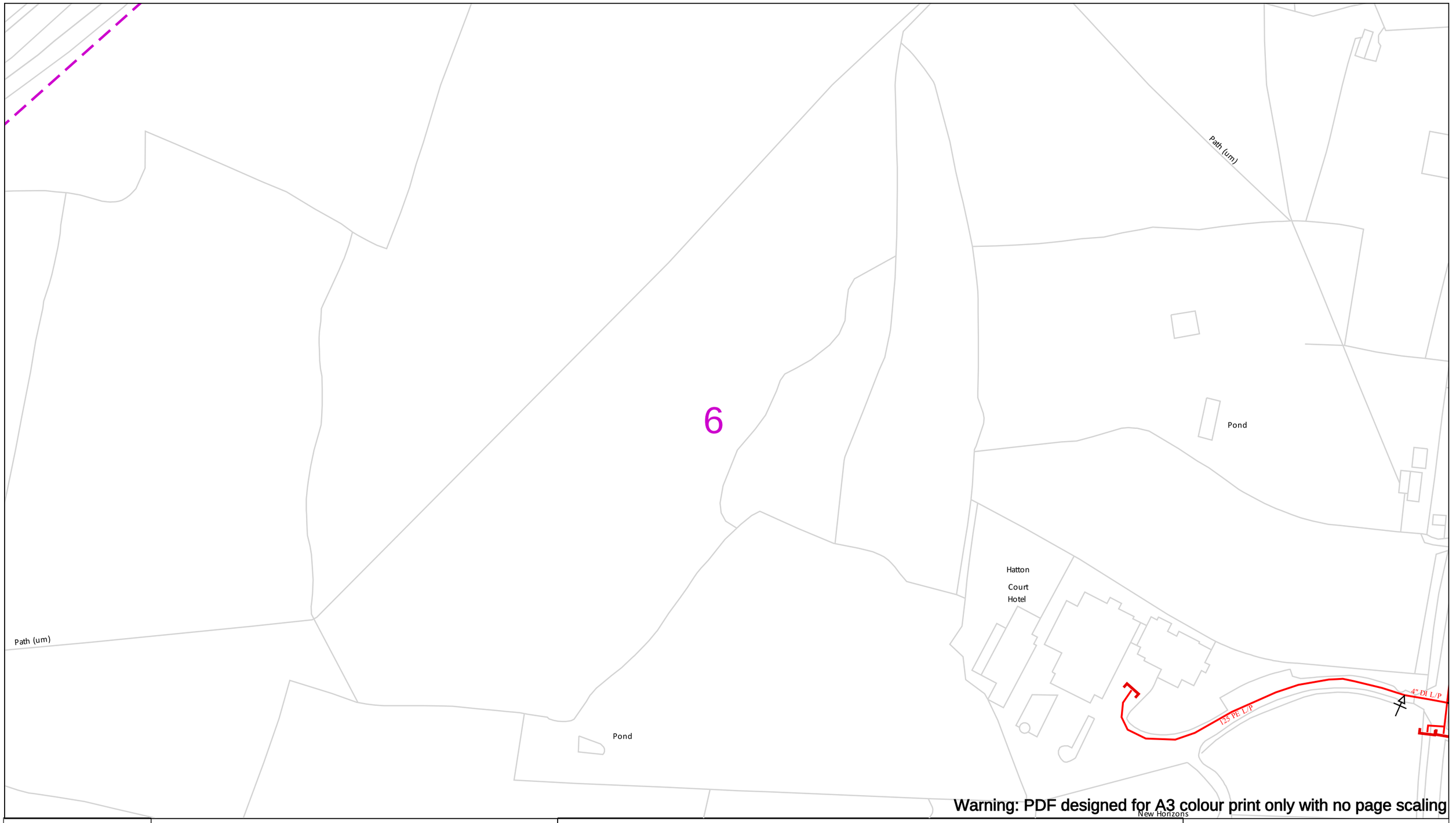

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We need 10 days' notice

[redacted]

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

* 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.

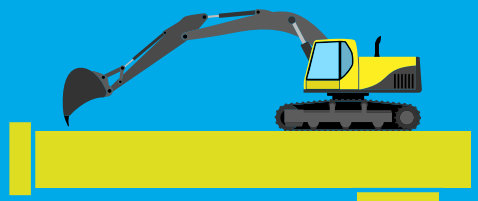
14. SITE RESPONSIBILITIES

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

LP	Low Pressure	**CI**	Cast Iron
MP	Medium Pressure	**SI**	Spun Iron
IP	Intermediate Pressure	**DI**	Ductile Iron
HP	High Pressure	**PE**	Polyethylene
		ST	Steel

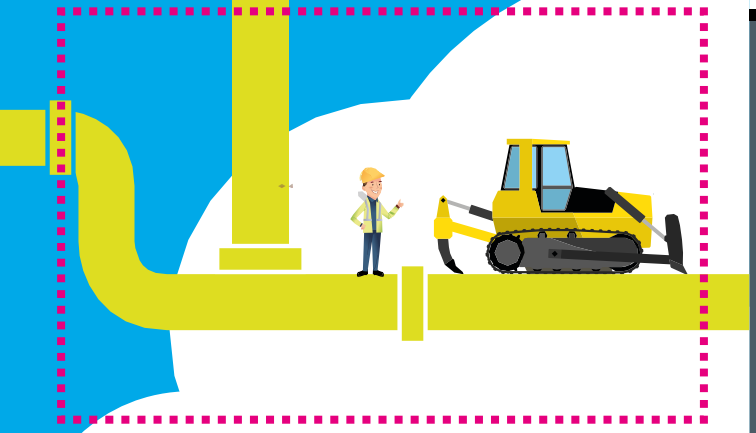


Every day, underground gas pipes get damaged by people digging without knowing what's below. This can be catastrophic. It might cause serious injury to you and others around you. The costs of repair, fines and fees can be huge. Your project will be delayed and your reputation damaged.

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?

[redacted]



CARD POSITION (DO NOT PRINT)

We're here to

help

Need help or advice?

[redacted]

Smell gas?

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

Dial before you dig

We need **10 days'** notice

[redacted]

[redacted]

www.wwutilities.co.uk

facebook.com/wwutilities

@WWUtilities

Crystal Mark 21918
Clarity approved by Plain English Campaign

Dial
Investigate
Go ahead

YOUR GAS EMERGENCY AND PIPELINE SERVICE

WALES&WEST UTILITIES

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**

- 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**
- 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.

BT

[redacted]
www.cornerstoneprojects.co.uk
VAT Reg. No. 851 4941 19
Company No. 5132353

Our Ref: Ref shown on map

email: [redacted]

Date of issue shown on map

Dear Customer,

NR & SW ACT 1991 – PROPOSED WORKS AT:

Prior to commencement of work: for free onsite guidance and accurate up to date location of BT plant please contact our Plant Protection Service by the following methods
Email Dial before you dig CBYD@openreach.co.uk
Visit the website www.openreach.co.uk/cbyd

Thank you for your request of describing the above proposals.

Enclosed are copies of our drawing marked up to show the approximate locations of BT apparatus which is present in the immediate vicinity of your works. It is intended for general guidance only. No guarantee is given of its accuracy.

It should not be relied upon in the event of excavations or other works made near to British Telecommunications plc apparatus which may exist at various depths and may deviate from the marked route.

To avoid damage it is recommended that mechanical excavators or borers are not used within 600mm of British Telecommunications plc plant. If scaffolding is erected, please ensure that our equipment is not enclosed, blocked, covered or otherwise obstructed by the scaffolding.

In the event of BT apparatus being in the area of works we recommend that your plant/vehicle crossing is either resited, or apply for a budget estimate by submitting detailed plans to the above address, these will be forwarded to the appropriate department for their comments.

Please ensure you quote our reference on any future correspondence.

Yours faithfully,

Openreach Plant Maps Requested

NewSite Office (addresses can be found on the New Developments contact page)

Dear Sir/Madam,

You have downloaded copies of our drawings marked up to show the approximate location of Openreach apparatus, which is present in the immediate vicinity of your works. It is intended for general guidance only. No guarantee is given of its accuracy. It should not be relied upon in the event of excavations or other works made near to Openreach apparatus, which may, exist at various depths and may deviate, from the marked route.

To avoid damage it is recommended that mechanical excavators or borers are not used within 600mm of Openreach plant. Please ensure that our equipment is not enclosed, blocked, covered or otherwise obstructed by your plant. In the event of clearance not being adequate we anticipate that your plant is either resited, or an order is placed with Openreach for rearrangements of its plant. If there are any difficulties with the Map please email cbyd@openreach.co.uk

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Please contact our Network Protection Service by Email on cbyd@openreach.co.uk giving four calendar weeks notice of your commencement date. This will provide you with on-site advice and a check of location for any Openreach apparatus.

Further to this, I hope the following points will assist you at the new development: -

Openreach has a licence obligation to provide service to any end customer requiring a connection. A Developer would not normally be charged for provision of service, our standard connection charges would apply to the end user when orders are placed with the communication provider of choice. However, should a Developer insist on an underground service in an area where Openreach plant is provided overhead, charges may be incurred.

When the Developer has obtained contract and planning permission Openreach would request a 'Clean', scaled Site Layout, Location Map and a covering letter be sent to the relevant newSite Office. We would particularly request that you give details of your programmed site start date and likely first occupancy date where possible. To obtain contact details of the newSite office covering the development area click on the URL below.

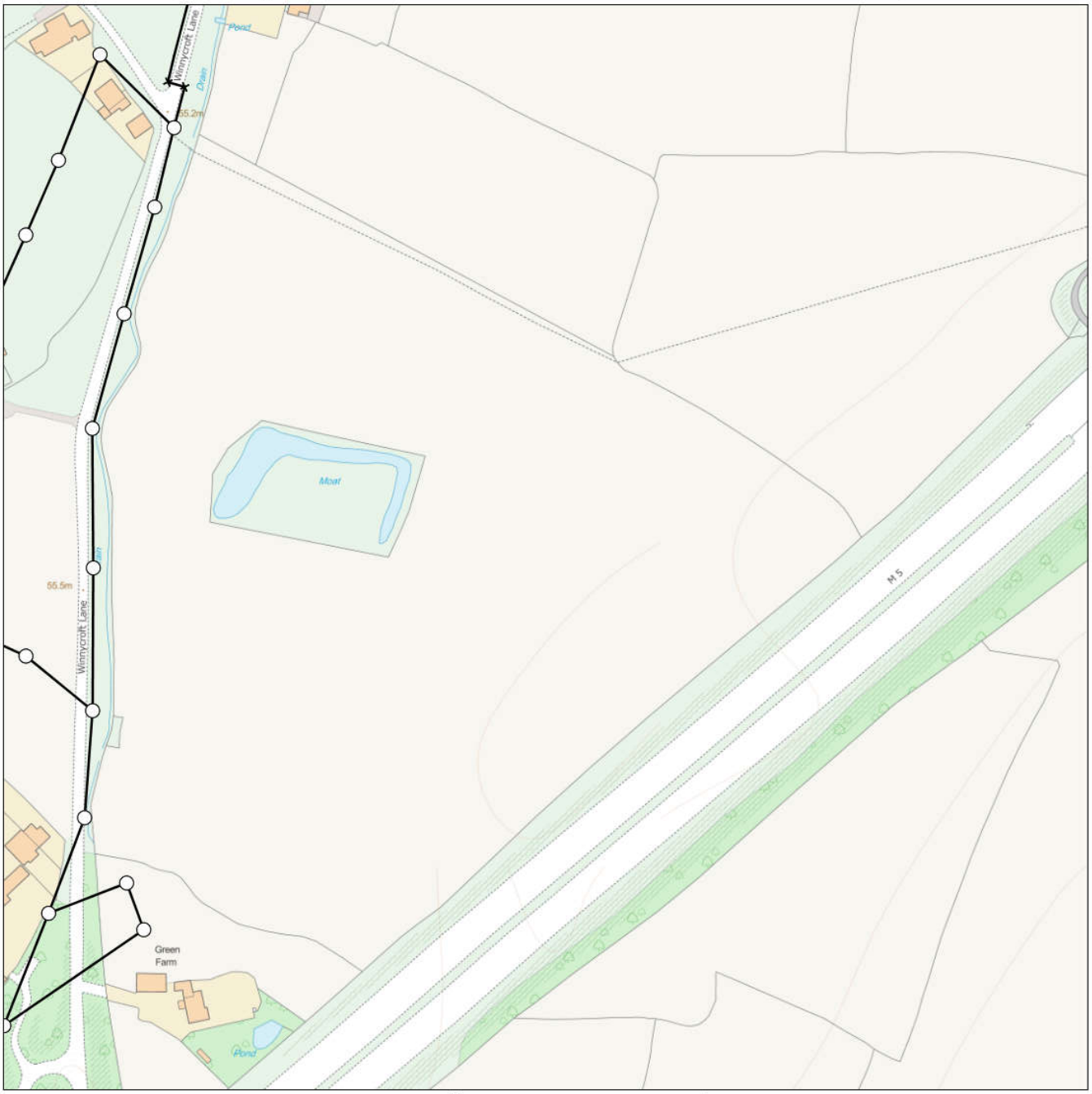
http://www.newdevelopments-openreach.co.uk/ContactUs.aspx

Where a development affects existing Openreach apparatus in the public highway, the cost of any necessary protection or diversionary works must be borne by the Developer. In this case where a budget estimate is required a Site Plan, Location Map and a covering letter should be forwarded to the Repayments Project Office. Please visit www.openreach.co.uk/alterationscontacts for contact details of the Repayments Office covering the development area.

Yours faithfully,

Openreach newSites

Maps by email Plant Information Reply



IMPORTANT WARNING

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

openreach

CLICK BEFORE YOU DIG

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

email [redacted]

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

Accidents happen

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

KEY TO BT SYMBOLS

	Planned	Live
PCP		
Pole		
Box		
Manhole		
Cabinet		

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

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

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

BT Ref : TGK03077L
Map Reference : (centre) SO8518814179
Easting/Northing : (centre) 385188,214179
Issued : 19/02/2021 15:07:18

WARNING: IF PLANNED WORKS FALL INSIDE HATCHED AREA IT IS ESSENTIAL BEFORE PROCEEDING THAT YOU CONTACT THE NATIONAL NOTICE HANDLING CENTRE. PLEASE SEND E-MAIL TO: [redacted]

ELECTRIC

[redacted]

www.cornerstoneprojects.co.uk
VAT Reg. No. 851 4941 19
Company No. 5132353

Registered in England. Registered Address : Cornerstone Projects Ltd, 91 Market Street, Hoylake, Wirral CH47 5AA

Our Ref: 21355048 Your Ref: 135036107

Friday, 19 February 2021

[redacted]
91 Market Street
Hoylake
Merseyside
CH47 5AA

Western Power Distribution,
Mapping Centre
Toll End Road
Tipton
West Midlands
United Kingdom
DY4 0HH
www.westernpower.co.uk

Map Response
[redacted]

LinesearchbeforeUdig
Help Desk 0845 437 7365

Dear [redacted]

Thank you for your enquiry dated Friday, 19 February 2021

I now enclose a copy of our plan showing existing Western Power Distribution (WPD) Electricity / WPD Surf Telecom apparatus in the vicinity of your proposed works. This information is given as a general guide only and its accuracy cannot be guaranteed. Please note that all WPD equipment on site should be assumed to be LIVE until WPD prove otherwise and provide you with confirmation to this effect in writing. Recent additions to our network, or service connections between the main cable and a building or street lamp may not be shown.

Damage to underground cables and contact with overhead lines can cause severe injury or may prove fatal. If you are excavating on site in the vicinity of either WPD Electrical apparatus or WPD Surf Telecom apparatus you must comply with the requirements of the following:-

Health & Safety Executive guidance HS(G)47, Avoiding Danger from underground services.

Work taking place in the vicinity of our plant is also regulated under the:-

Electricity at Work Regulations 1989, Health and Safety Act 1974, CDM Regulations 2015.

Safe working procedures should be defined and practiced

Please ensure that the use of mechanical excavators in the vicinity of our plant is kept to a minimum. WPD Surf Telecom ducts contain fibre cables, which are expensive to repair. Therefore, extreme care must be taken whilst working in the vicinity of these ducts, hand digging methods being used to determine their precise position.

If there are overhead lines crossing your site and your proposal involves building works which may infringe the clearance to our overhead system then you should call the relevant general enquiries number (see page 2 of this letter) for advice. Where overhead lines cross your site you must comply with the requirements of Health & Safety Executive guidance as laid down in GS6, Avoidance of Danger from Overhead Electric Lines.

Where diversions to WPD 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 require advice in connection with your proposals please contact the relevant general enquiries number (see page 2 of this letter)

Following consultation the local Western Power Distribution 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
WPD Map Response Team

Western Power Distribution PLC
South West - 02366894
South Wales - 02366985
East Midlands - 02366923
West Midlands - 03600574

Registered in
England and Wales

Registered Office:
Avonbank
Feeder Road
Bristol
BS2 0TB

Safety Documents:
https://www.westernpower.co.uk/customers-and-community/health-safety/public-safety-advice

Contact Us

Emergency or Power Supply issues
In an emergency call 105, 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 [redacted]
Email [redacted]

General Enquiries
If you have a general enquiry, please call us on the following telephone number:
All areas [redacted]

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

Telephone [redacted]
Email [redacted]
Website www.linesearchbeforeudig.co.uk

Steps to help keep you safe

- **If you are working within 10 metres of our 33kV, 66kV, 132kV underground electricity cables or within 10 metres of an overhead electricity line you should call the relevant General Enquiries for free safety advice.**

  Safety Documents – please download our informative safety documents to help ensure that you, your staff and the public are kept safe whilst working in the vicinity of electricity.
  https://www.westernpower.co.uk/customers-and-community/health-safety/public-safety-advice

- **Make sure you have up to date plans** - remember that recent additions to our network or service connections between the main cable and a building or street lamp may not be shown.

- **Look for signs of service cables -** an electricity meter box or nearby streetlamp may give you an indication that service cables are present in your area of work.

- **Non WPD Network -** electricity cables, lines and equipment owned by others may also be present in addition to WPD network. They are unlikely to be shown on our plans.

- **Use a cable locator** - trace electricity cables and mark the position of them using paint or other waterproof marking on the ground.

- **Hand dig trial holes** - to confirm the position of cables in close proximity to your area of your work and use spades and shovels rather than picks, pins or forks.

- **Have an emergency plan** - so that everyone working on site understands what to do in the event of an underground electricity cable being damaged or contact being made with an overhead electricity line.

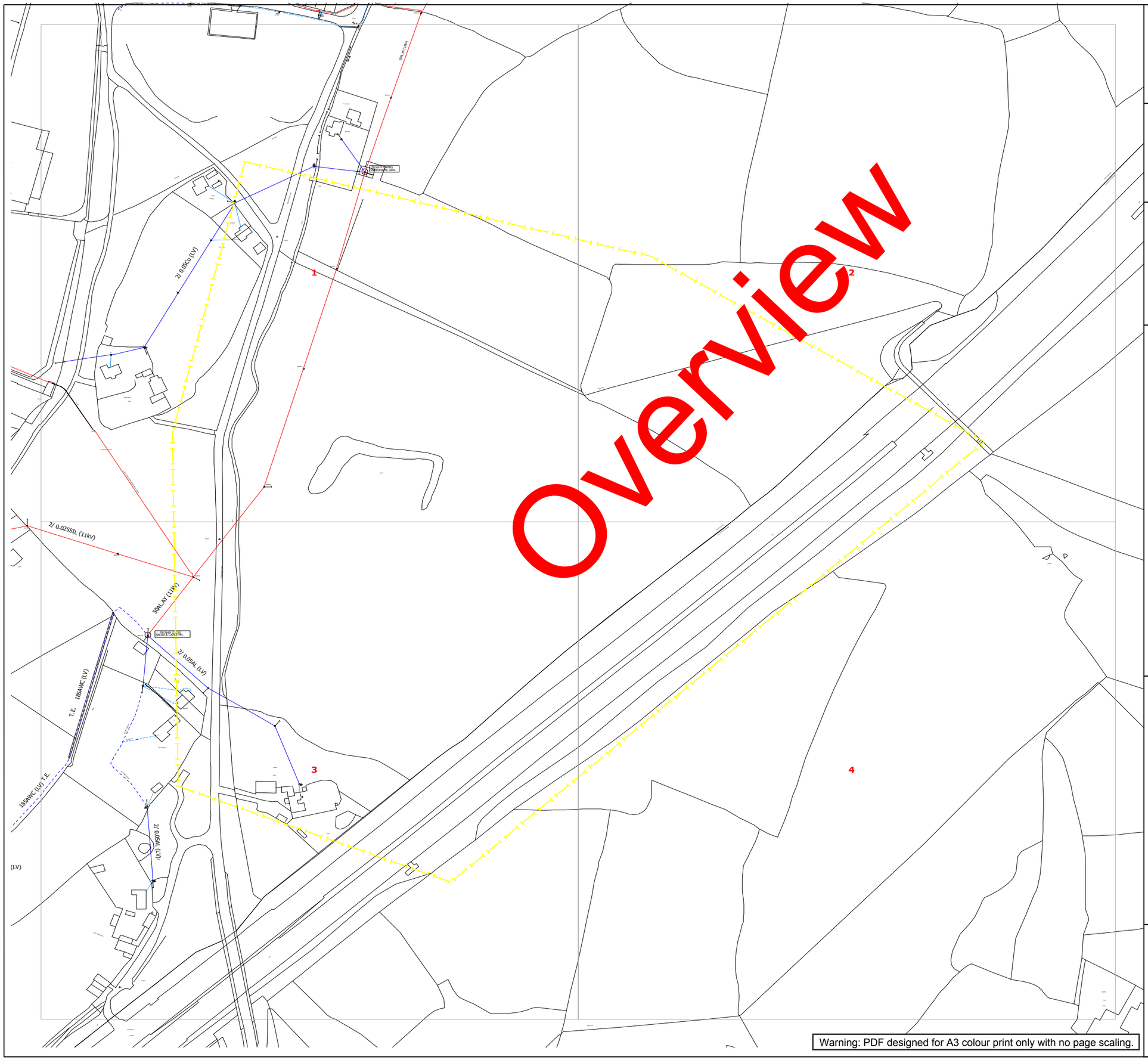
- **If you are working within 10 metres** of an overhead electricity line then it may be necessary for you to erect warning signs and markers, or height restriction goal posts. Ensure that you comply with the requirements of Health & Safety Executive guidance laid down in GS6, Avoidance of Danger from Overhead Electric Lines.

- **If you are erecting a structure** that could allow anyone standing on it, or its access device (ladder, scaffold, MEWP), to come within 3m of any overhead electric line then **you must inform us**. This is your duty and a legal requirement under the Electricity Safety, Quality & Continuity Regulations 2002.

- **If you cannot work safely** around the underground electricity cable or overhead electricity line, then you may need to get it moved to allow your works to go ahead. Call the general enquiry numbers above for guidance.

- **It is possible that cables or pipes may be embedded in concrete** - electricity cables embedded in concrete MUST be made 'dead' by Western Power Distribution or the cable owner before the concrete is broken out. Alternatively, another safe way of working should be agreed.

Cables are sometimes covered by tiles or a marker tape - these can be concrete, polythene or earthenware and are a useful early warning of the presence of cables; you should avoid disturbing any tiles or tape to expose the cable. Not all cables have these warning indicators.



Plans generated by DigSAFE Pro (tm) software provided by LinesearchbeforeUdig

WESTERN POWER DISTRIBUTION

Serving the Midlands, South West and Wales

Contact Us

Mapping Enquiries:
All areas [redacted]

General Enquiries:
All areas [redacted]

Report damage immediately – KEEP EVERYONE AWAY FROM THE AREA
0800 6783 105

Date Requested: 19/02/2021
Job Reference: 21355048
Site Location: 385216 214172
Requested by: Mr Duncan Phillips
Your Scheme/Reference: 135036107

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- You should always verify exact locations of cables using a cable locator and by careful use of hand tools in accordance with HSE guidance note HSG47.
- When working within 10m of any overhead electric line you should follow the requirements of HSE Guidance Note GS6.
- For further advice on working near our electricity cables or lines, call our Contact Centre on 0800 096 3080.
- Advice should be sought from the Western Power Distribution Contact Centre for any work that is to take place in proximity to 66kV or 132kV underground cables and 66kV 132kV overhead lines – 0800 096 3080

Overhead Line

- PL
- Service
- LV
- HV (11kV)
- HV (33kV)
- HV (66kV)
- HV (132kV)

Underground Cable

SURF Telecoms (S — S)

Pilot Cables (P — P)

Link Box

PME Earth

Pole Mounted Transformer

Site Location

Line/Area

Underground Earth (E)

Ground Mounted Transformer

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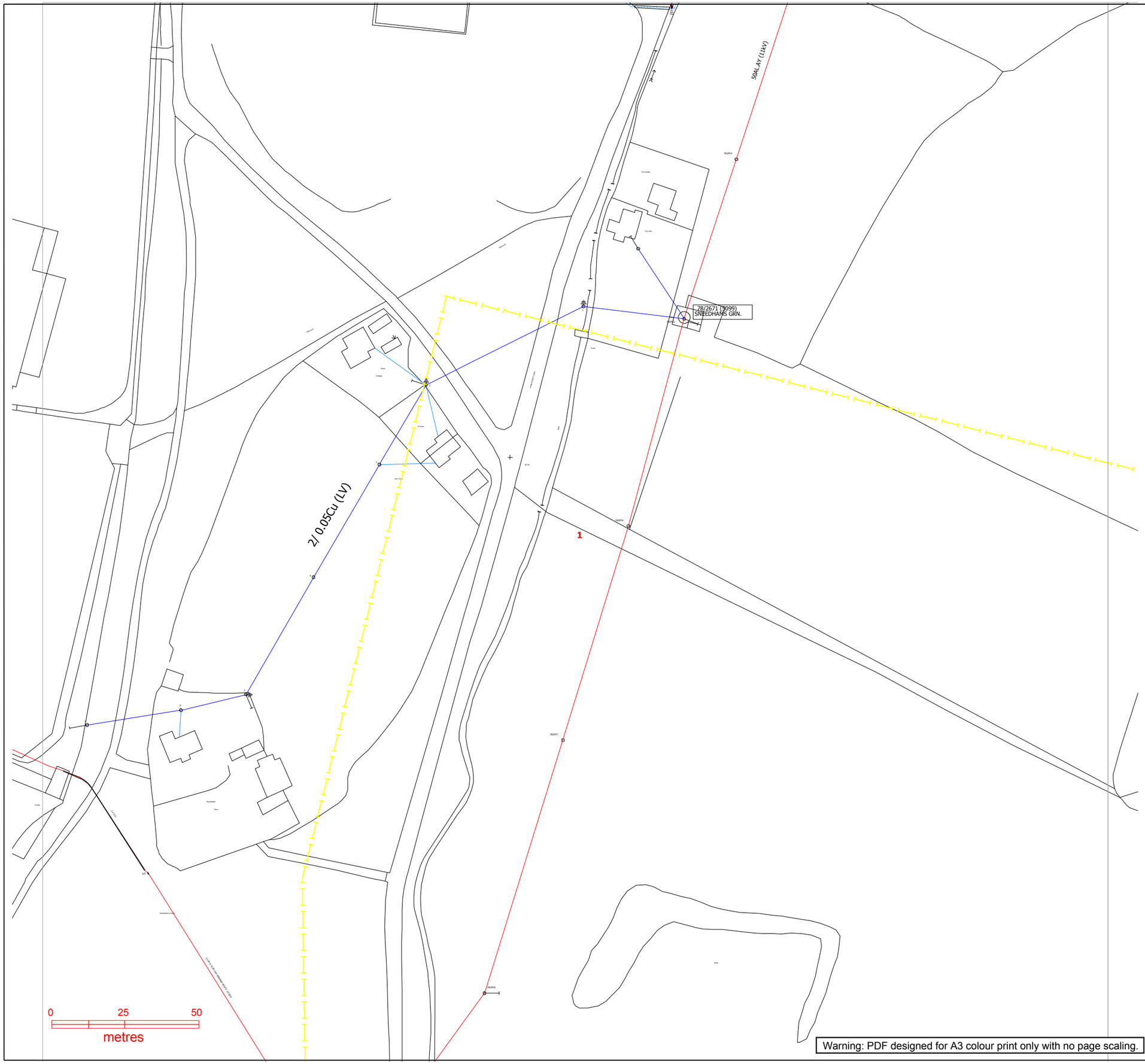

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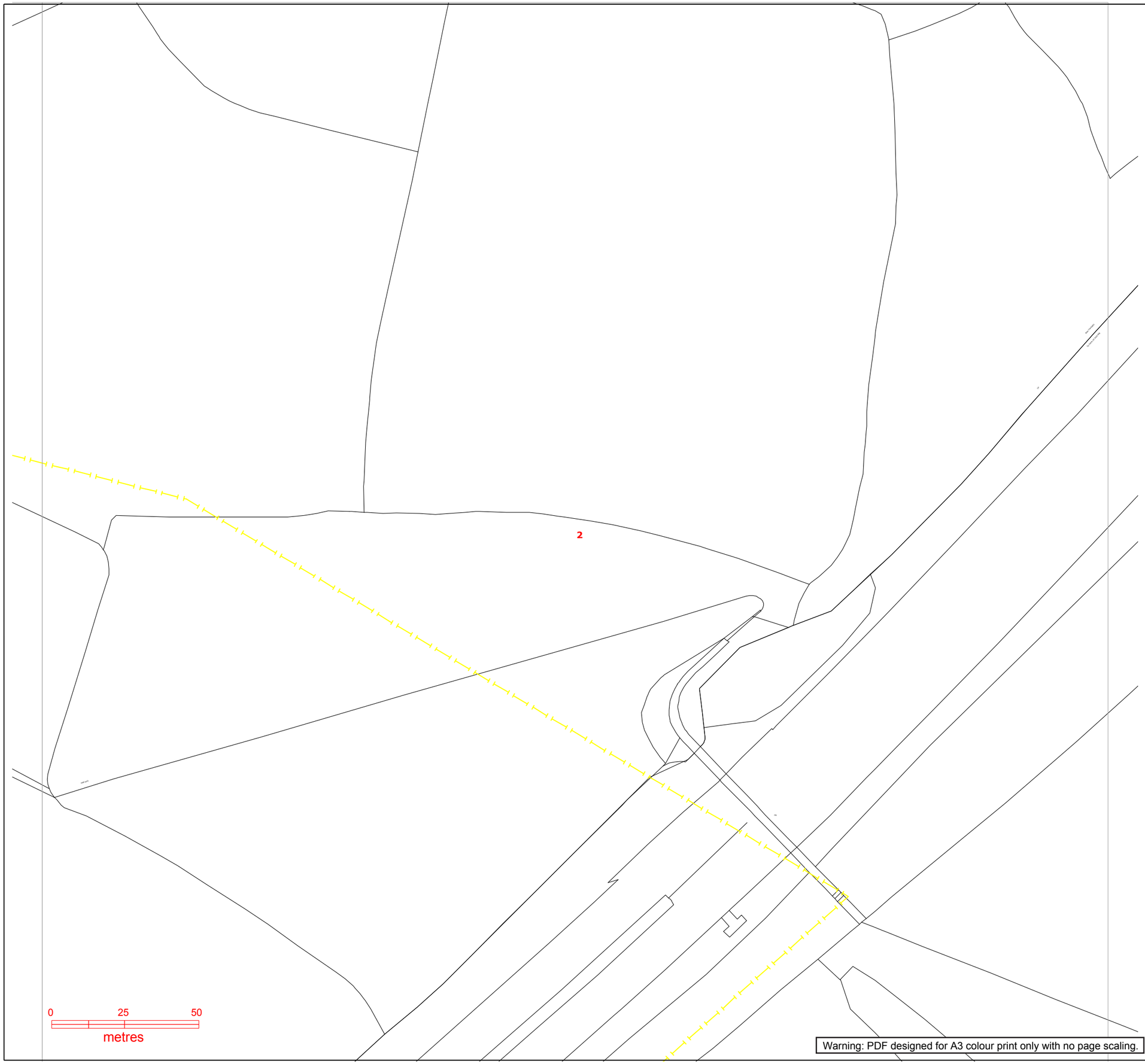
E **Underground Earth**

Ground Mounted Transformer



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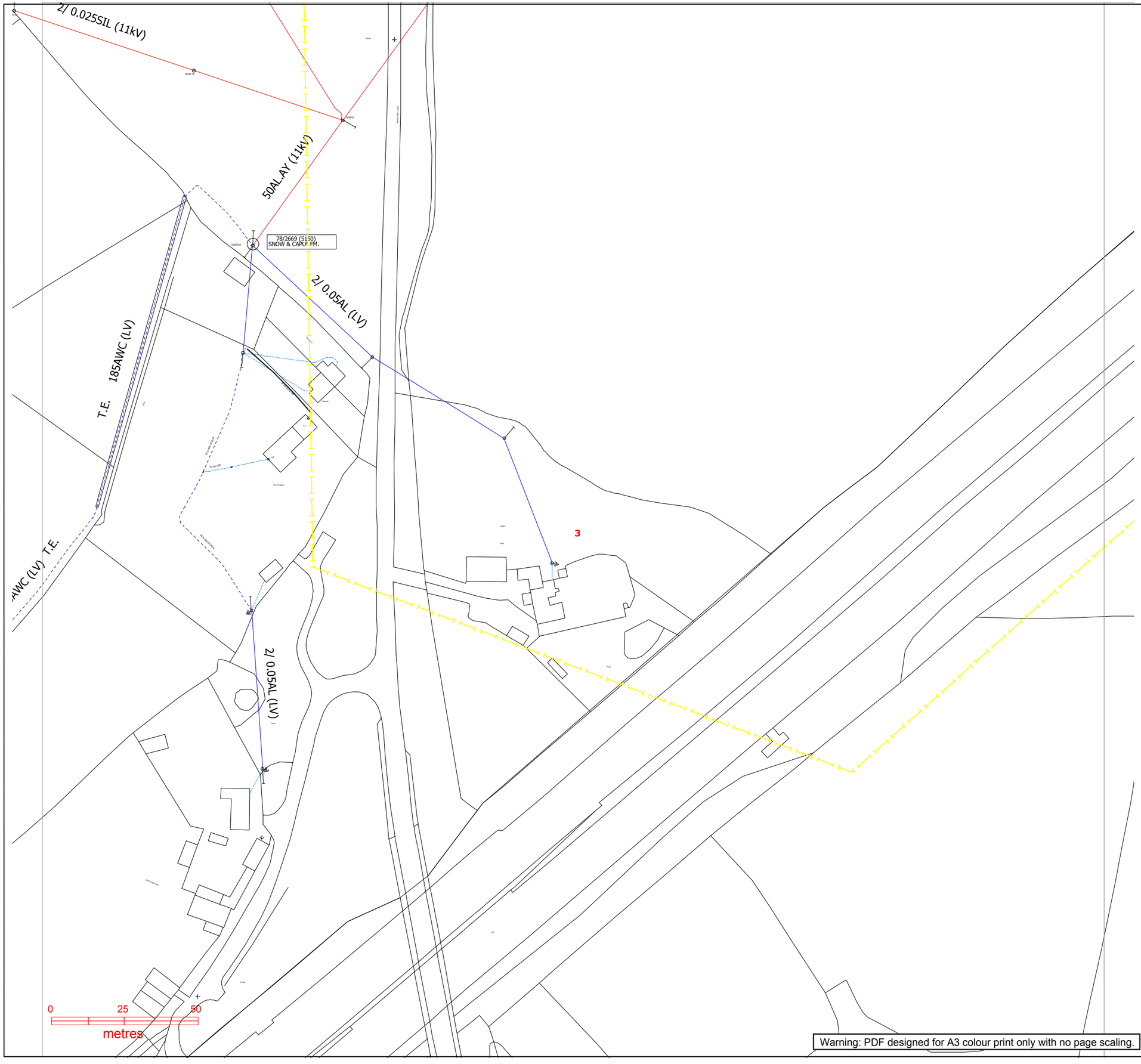

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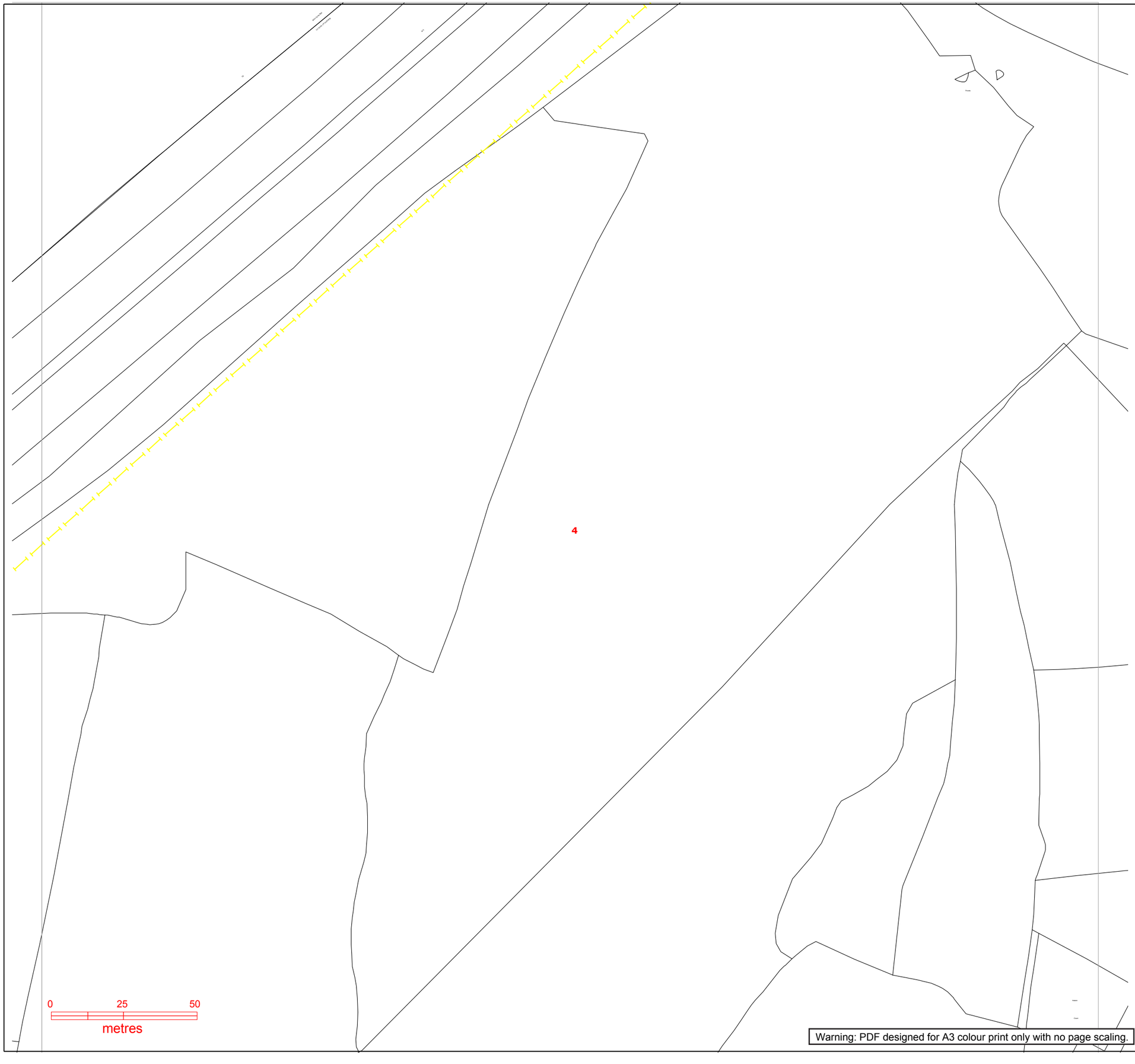

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Avoidance of Danger from Electricity Overhead Lines and Underground Cables

WESTERN POWER DISTRIBUTION
Serving the Midlands, South West and Wales

Avoidance of Danger from Electricity Overhead Lines and Underground Cables

Introduction

In the UK on average, 20 people are killed and 400 people are injured as a result of coming into contact (or close proximity) with electricity overhead lines and underground cables.

Although electric shock is the first thing that people associate with coming into contact with our network, those who have witnessed the effects of damage to our system are shocked by the amounts of heat, light and noise that are the result of an electrical flashover.

In the Midlands, South West and South Wales, Western Power Distribution (WPD) have had to attend to incidents where people have accidentally made contact with one of our live electricity overhead lines or damaged an underground cable and become seriously injured.

A significant number of these accidents occurred whilst people were working in the vicinity of overhead and underground electrical apparatus and this booklet has been produced to provide general guidance on how you and your employees can avoid becoming one of these statistics.

Our Operational Area

PLANNING YOUR WORK.

It makes sense to consider your safety while in the vicinity of our equipment as early in your planning process as possible.

One of the first things you should do whenever you are planning your work is to check whether there is any of our equipment in the immediate vicinity. You should do this whether your work is taking place on public (e.g. highways and footpaths) or on private land.

For instance, take a good look around your site to see if there are any visible overhead lines. You should also bear in mind that we have a very extensive network of underground cables, and we are always happy to supply a plan from our Map Response Team who can be contacted via the following;

Tel: [redacted]
Fax: [redacted]

[redacted]

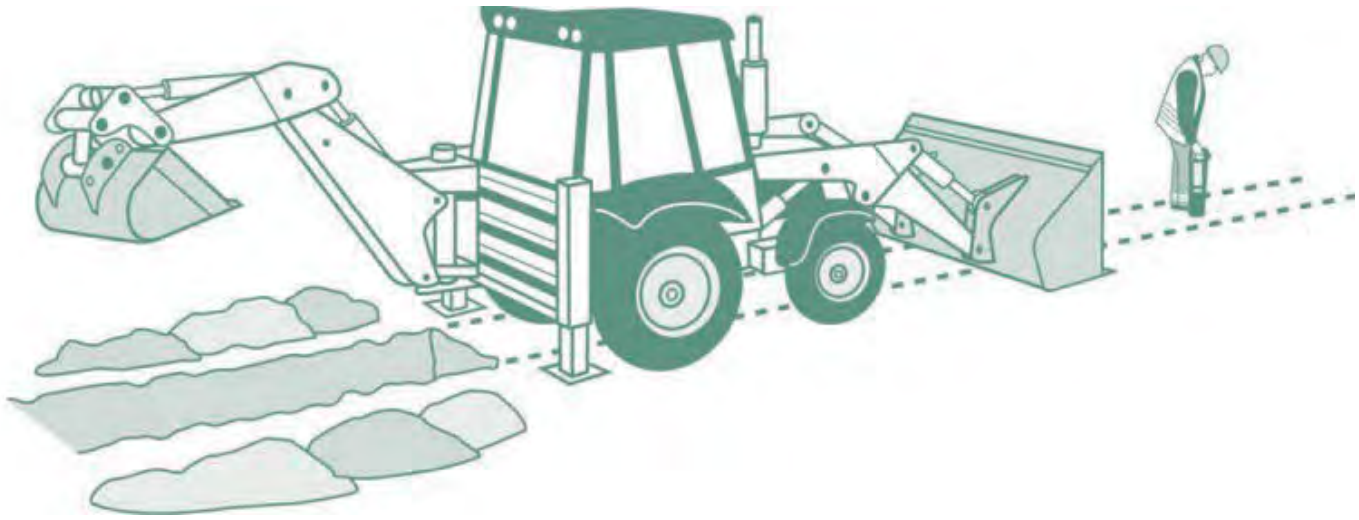
An online mapping service is available at
www.westernpower.co.uk/locationplans

It is always safer to assume that there are underground cables present in the ground until you have proven otherwise.

WORKING IN THE VICINITY OF UNDERGROUND CABLES

Having obtained copies of our network maps, it is important to recognise that in most cases there will be no surface indication of the presence of our underground cables. We therefore advise that you take the following actions:

- Make sure that you have up-to-date copies of our cable record plans ON SITE - not back in the office.
- Don't assume that these plans are to scale if they have been faxed or copied.
- Make sure that a competent person using a Cable Avoidance Tool (CAT) locates all of the cables shown on these plans.
- Mark the locations of cables on the ground surface with waterproof road paint or other permanent marker.
- Always assume that our cables are live unless we have informed you, in writing, otherwise.



- By hand, dig trial holes to locate the exact position of all cables. Always use a spade or shovel – never use a pick, fork or power tool – push the spade or shovel into the ground applying foot pressure.

- Look out for ducts, marker tape or tiles but do not rely on these. Even if a cable route was originally laid in a duct or with a marker tape, these may have been removed during other excavations at a later date along all or part of the cable route.
- Brief all people working in the vicinity of the presence and location of all underground cables.

UNDER NO CIRCUMSTANCES SHOULD YOU ATTEMPT TO WORK ON, OR INTERFERE WITH, ANY OF OUR UNDERGROUND CABLES.

The only people qualified to work on this equipment are our operatives; who have been specifically trained and are authorised in writing to do so.

Please also be aware that:

- Cable record plans are not guaranteed to be completely accurate. Kerb lines, roads and buildings may have been moved or altered since the cables were laid.
- Cables should ordinarily be at least 450mm deep but don't assume this to be the case where you are working – ground levels could have changed.
- Not all service cables are shown on record plans, so look for cables running down poles and bear in mind that all buildings, street lights and street furniture are likely to have cables running to them. Cables feeding street furniture may be relatively shallow near to the furniture.
- Cables do not run in straight lines. They often "snake" through the ground avoiding surface and buried obstacles that may not be visible to you.
- Cables are flexible and can change direction and depth abruptly – for this reason never use mechanical excavators within 0.5m of any underground electricity cable even if you have located it with trial holes.

- **No attempt should be made to break out concrete surrounding a cable. Please contact us immediately on our general enquiries number and we will discuss the options for safe working which may include making the cable dead or you moving your work site if possible. If we need to make the cable dead we may need to provide our customers with two weeks notice of the power interruption.**
- Our cables and joints are not designed to act as steps or to be left unsupported. If you remove support from any cable, you will need to support it using temporary hangers at not more than 0.5m intervals.
- When backfilling, please consolidate the ground under the cables, cover the cable with soil free of stones or with stone dust and replace any cable marker tiles, ducts and tape.

IF YOU DAMAGE AN UNDERGROUND CABLE

you must immediately clear the area of personnel, because the cable could still be live, or become live again.

If a machine is still in contact with the cable, instruct the driver to JUMP clear. Do not touch any part of the machine.

Please contact us on our emergency number immediately and tell us what has happened. Please be ready to provide us with a contact telephone number and an accurate location or set of directions – this will help us in getting our staff to site quickly to minimise any danger and lessen the disruption to your work.

Please report any damage to a cable, however superficial it might seem. The cable may not fail at the time of damage, but it could fail later, causing danger to our staff and other contractors, disruption to our customers' supplies, and also – if we trace the damage back to you – a very much larger repair bill.

WORKING IN THE VICINITY OF OVERHEAD LINES

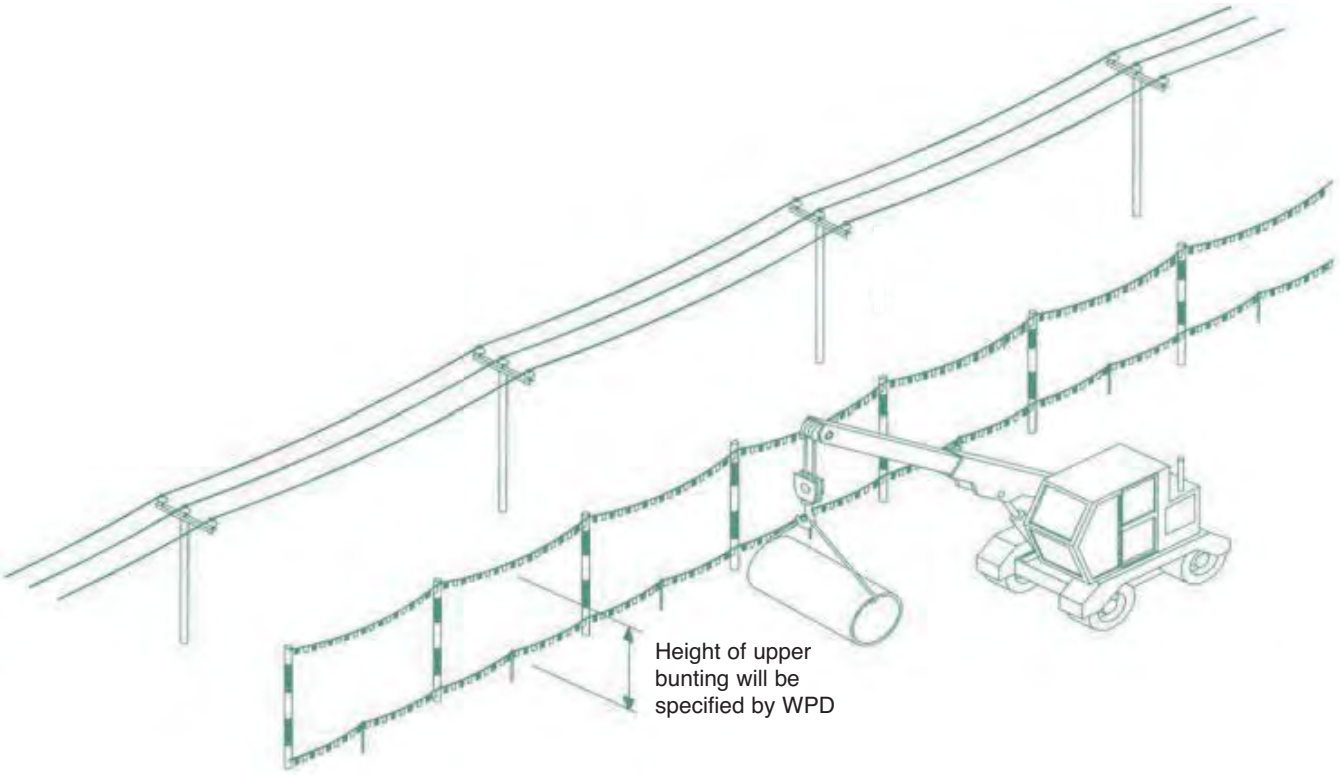
UNDER NO CIRCUMSTANCES SHOULD YOU ATTEMPT TO WORK ON, OR INTERFERE WITH ANY OF OUR OVERHEAD LINE EQUIPMENT OR SERVICE WIRES.

The only people qualified to work on this equipment are our operatives; who have been specifically trained and are authorised in writing to do so.

Overhead lines have the advantage that, unlike underground cables, they can easily be seen.

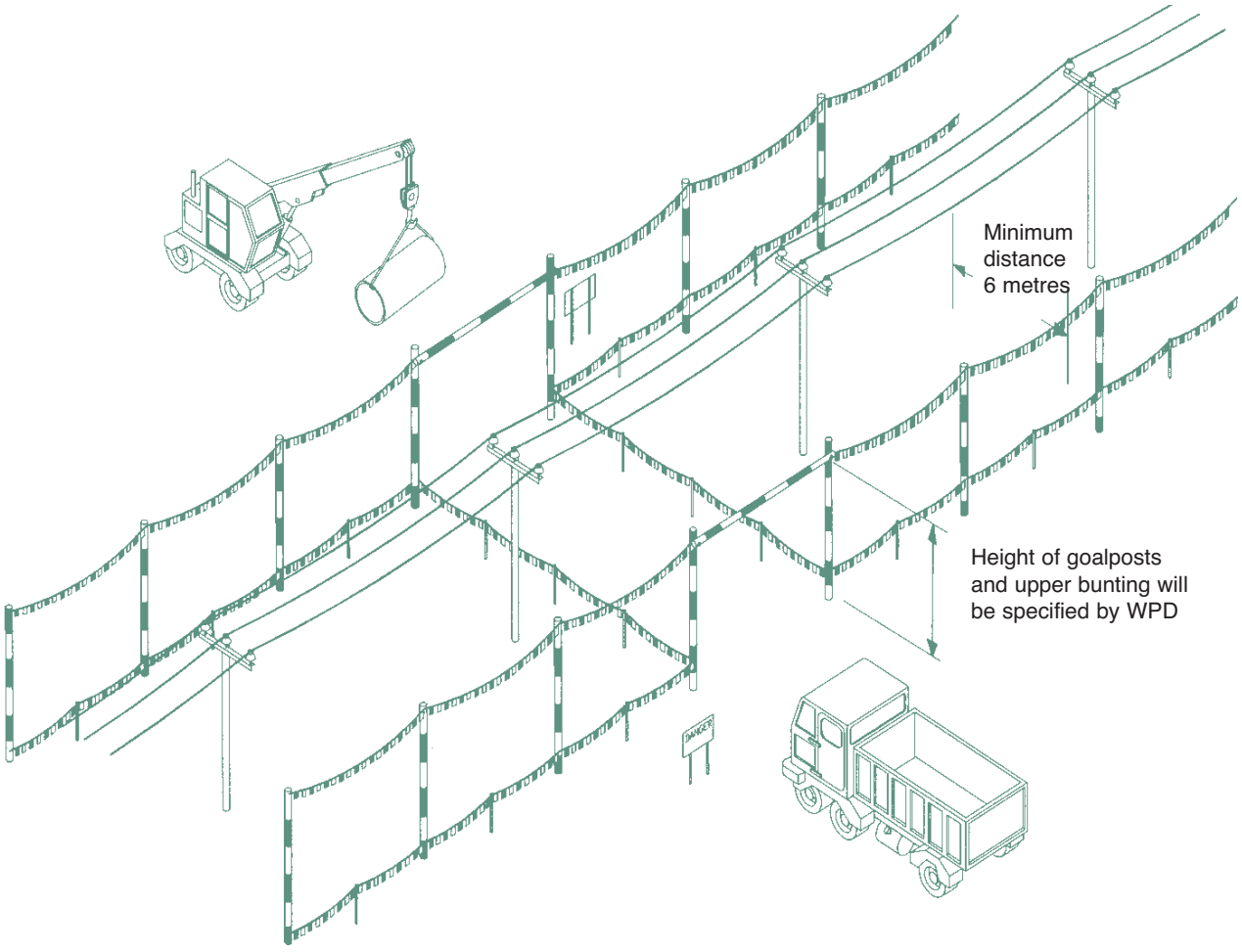
- Always assume that our overhead lines are live unless we have informed you otherwise in writing.
- We will be able to advise you about the type and voltage of the overhead lines in question and provide you with information about the clearances that you must adhere to during your work. Please ring our regional general enquiries number for further advice.
- If you are in any doubt about whether the overhead lines in question are power or telephone (this is a very common mistake) – please ask us.
- In some circumstances, we may be able to temporarily shroud low voltage overhead lines and services running to buildings if you need to work in the vicinity e.g. for scaffolding erection, fascia repairs and painting work on domestic properties. We don't normally charge for the shrouding of overhead lines, but please give us as much notice as possible.
- If you think that you will be working close to our overhead lines and they need shrouding – please don't start work until we have agreed what needs to be done and all safety precautions are in place.
- Please note that it is not technically possible to shroud high voltage lines, so if you cannot avoid working near to our high voltage lines, contact us and we will be happy to meet with you to discuss safe alternatives.

- If it is decided that work can go ahead in the vicinity of our overhead lines but there is a risk of you infringing the safety clearances from the overhead lines, you have a responsibility to erect safety barriers to segregate your works from the area around the overhead lines. The detailed requirements for these barriers are provided in the HSE document GS6 ‘Avoidance of Danger from Overhead Lines’. As a summary they should consist of:
  - Red and white coloured posts erected at 6m intervals, with coloured bunting stretched between their tops, supplemented by low level bunting erected at 1m above ground level, supported at 3m intervals on red and white coloured posts. This is shown below.



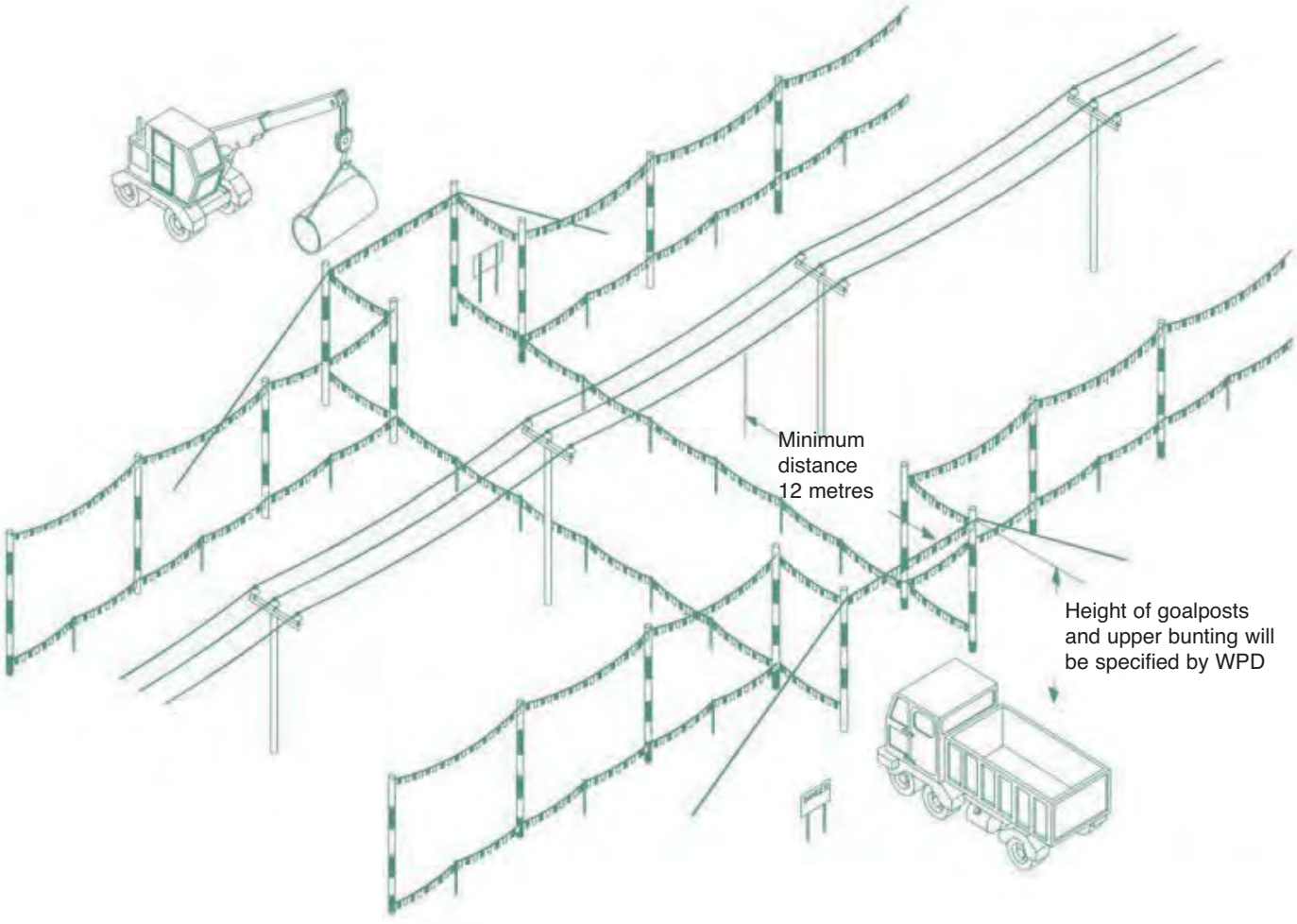
  - We are able to advise you on the height of the barriers and any additional clearances necessary if you are using large plant on your site.
  - Any bunting, ropes and lanyards used should be made from an insulating material.
  - These barriers should be erected parallel to the overhead line at a minimum distance of 6m horizontally from the outermost conductor of the overhead line.

- The supports may be supported by rubble or concrete filled barrels or buried directly in the ground.
- Danger Notices should be fixed to all of your high level supports.
- The ground enclosed within these barriers is best regarded as “dead ground” in which all foot and vehicular traffic is forbidden, in all circumstances, for the duration of your work.
- Where it is necessary for foot and vehicular traffic to pass under the line, you will need to form a marked access way between the barriers as shown below.



- This access way should comprise of bunting erected 1m above ground, supplemented by high level “goal-posts” erected at either end.
- The goal post cross bars should be rigid, made of insulating material and positioned in a location and at a height specified by us.

- The access route should be as narrow as possible and should not normally exceed 10m in width.
- If it is necessary to make the access route wider than this, you may find it impractical to use rigid cross bars, so you may use a tensioned rope and bunting instead. If you use rope and bunting as a cross bar, you should move the entrance to the access route out to a minimum distance of 12m from the outermost conductor of the line. This is to allow for any stretching of the rope if pulled by your plant.



- If you decide to use steel wire rope to support the barrier, this must be effectively connected to earth at both ends.
- You should also install Danger Notices at all probable directions of approach and clearly display the cross bar height.
- If you are working at night, or in conditions or poor visibility, you should ensure the area is well lit and that the overhead lines are clearly visible.
- Whatever measures you take, you should ensure that everyone working in the vicinity of overhead lines is briefed about the risks and what safety measures are in place. Do not permit anyone to carry long objects, especially scaffold poles, ladders and irrigation pipes in the vicinity of overhead lines.
- You should ensure that all shrouding, barriers and signs are regularly inspected and maintained so that they remain effective.
- Overhead lines are not normally insulated and electricity at high voltages may jump, so a dangerous situation can arise just from a close approach.
- Cranes and excavators working near overhead lines are at increased risk because of the possibility of the jib/arm slewing or being raised into the overhead line, or the load swinging into the overhead line. You may therefore also need to fit plant and vehicles with restricting chains etc. to physically restrain their operation – we can advise on this if you wish.
- If you are planning to carry out tree cutting or arboriculture work in the vicinity of our overhead lines, you need to be aware that this is a complex, high risk activity and we recommend that you employ a competent tree surgeon, who complies with all of the requirements of Forestry industry Safety Accord (FISA) publication FISA 804 - Electricity at work: Forestry.

If contact is made with an overhead line

you must immediately clear the area and suspend all work within 50m of the damage because the line could still be live, or become live again.

The operator of a machine that is in contact with an overhead line should:

- **if the machine is still operable and the operator is still in the cab:**

  provided that you do not risk breaking the overhead line or dragging it to the ground, immediately lower the raised parts of the machine USING ONLY THE CONTROLS IN THE CAB and/or drive the vehicle clear of the overhead line.

  contact us immediately on our emergency number so that we can check the overhead lines.

  instruct other people in the vicinity not to approach the vehicle.

- **if the machine is not operable, cannot be driven clear of the overhead line or there is a risk that doing so will break the line or drag it to the ground:**

  stay in the cab.

  contact your site manager or us immediately on our emergency number by radio or mobile phone or as soon as possible by any other method.

  instruct everyone outside the vehicle not to approach it.

  do not exit the cab until given confirmation BY WPD PERSONNEL that it is safe to do so.

- **if the machine is inoperable or cannot be driven free and there is risk of fire or other immediate hazard:**

  JUMP clear of the vehicle, avoiding simultaneous contact with any part of the machine and the ground.

  try to land with your feet as close together as possible.

  where possible, continue to move away from the vehicle using “bunny hops” with your feet together until at least 15m from the vehicle.

  instruct other people in the vicinity not to approach the vehicle.

  contact us immediately on our emergency number.

  do not return to the vehicle until given confirmation by WPD PERSONNEL that it is safe to do so.

Whatever the circumstances please contact us on our emergency number immediately and tell us what has happened. Please be ready to provide us with a contact telephone number and an accurate location or set of directions – this will help us in getting our staff to site quickly to minimise any danger and lessen any disruption to your work.

Please report any damage or contact no matter how minor they may seem to you at the time. The damage may not cause a serious problem at the time of damage, but it could fail later, causing danger to our staff and members of the public, disruption to our customers' supplies, and – if we trace the damage back to you – a large repair bill.

MORE INFORMATION

For your information, we are legally obliged to report all contact with our system to the Health & Safety Executive (HSE), and, if you are an employer, you may be obliged to report incidents involving your staff or contractors to the HSE. Even if no one is hurt, you could be prosecuted for failing to report such an incident.

More detailed general information on this subject is available in the following publications from the HSE:

HSG(47) – Avoiding Danger from Underground Services

GS6 – Avoidance of Danger from Overhead Lines

Along with Forestry Industry Safety Accord (FISA) publication FISA 804 – Electricity at Work: Forestry

If you require more site-specific information relating to our equipment at your location please contact us on our regional general enquiries numbers.

Our general enquiries numbers are;

Midlands
General Enquiries

South Wales
General Enquiries

South West
General Enquiries

FINALLY…

Please, always remember that electricity cables and overhead lines can be very dangerous – the general rule is STAY AWAY and stay safe.

NOTES

WESTERN POWER DISTRIBUTION

Serving the Midlands, South West and Wales

This booklet is issued by the Safety Team

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2014, 4th issue

Our emergency number is:

[redacted]

Calling from a mobile?

East Midlands

[redacted]

West Midlands

[redacted]

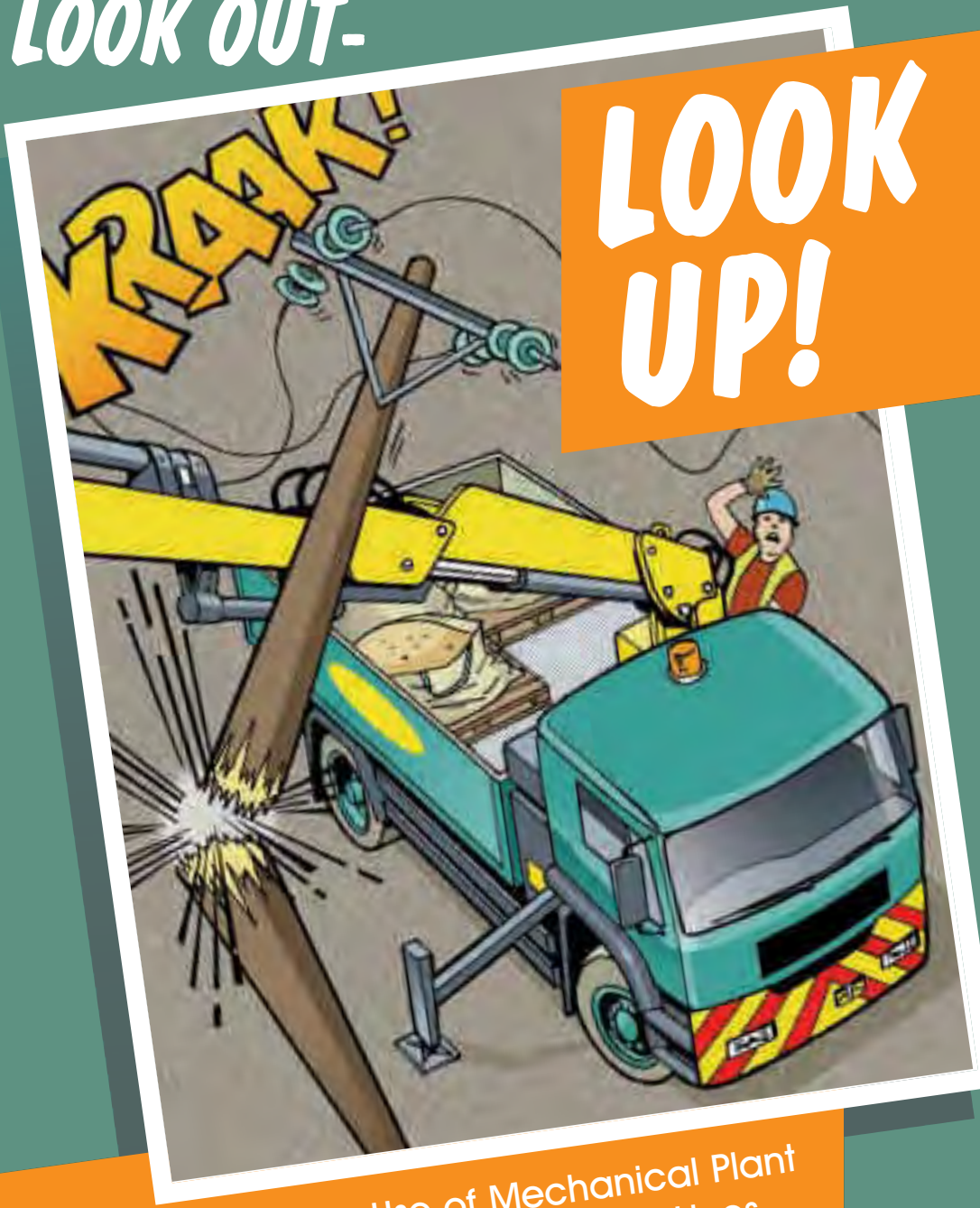
South Wales

[redacted]

South West

[redacted]

LOOK OUT-



LOOK UP!

A Guide to the Safe Use of Mechanical Plant in the Vicinity of Electricity Overhead Lines

WESTERN POWER DISTRIBUTION
Serving the Midlands, South West and Wales

The Safe Use of Mechanical Plant in the Vicinity of Electricity Overhead Lines

Introduction

Every year in the UK on average, two people are killed and many more are injured when mechanical plant and machinery comes into contact or close proximity to overhead electricity lines.

This booklet has been produced for anyone who uses mobile plant, (such as Hiabs, MEWPs, Tipper Lorries and Trailers, Grab Lorries, Concrete Conveyors and Excavators) for short duration work and provides general guidance on how to avoid becoming part of these statistics.

1 BEFORE STARTING WORK

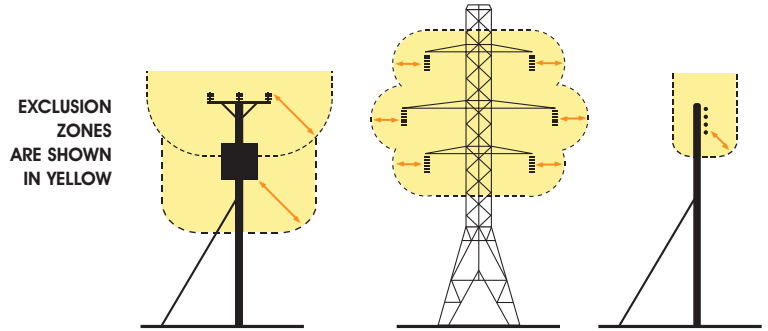
- Overhead lines have the advantage that they can easily be seen, so before you set up your vehicle or plant always:

STOP AND LOOK UP!

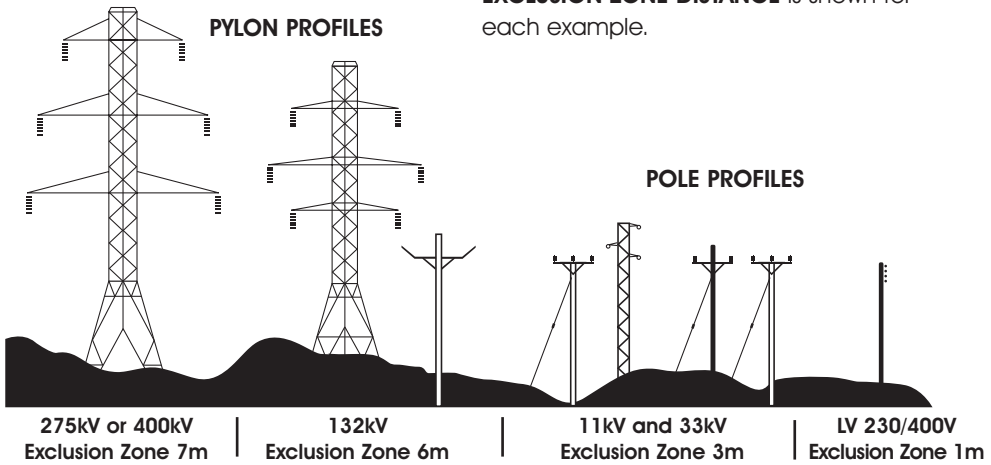
- If you are working at night, or in conditions of poor visibility, you should use spotlights or a torch to carefully check that there are no overhead lines within your vehicle's reach.
- Always assume that our lines are live unless we have informed you otherwise in writing.
- If you are in any doubt about whether the lines in question are power or telephone (this is a very common mistake) – always assume that they are power lines and are live.
- It is not normally practical for electricity companies to shroud high voltage conductors and even when low voltage conductors are shrouded, the shrouding is not designed to protect against contact by mechanical plant – again, always assume the lines are live.

2 EXCLUSION ZONES

- Overhead power lines are not normally insulated and so any contact can result in serious or fatal injuries.
- Electricity at high voltages can also jump gaps with no warning whatsoever, so it is also dangerous to let your plant approach too close to a line.
- The distance that electricity can jump depends on the voltage of the line. The higher the voltage, the further you must stay away from the line and any other equipment that may be fitted to the pole or pylon. This distance is called the **EXCLUSION ZONE.** Examples of this are shown highlighted in the diagram below.



- You must not allow any part of your plant to enter the **EXCLUSION ZONE.**
- The diagram below shows typical types of overhead lines and provides a guide to help you assess the line voltage of lines on wooden poles or steel pylons. The minimum **EXCLUSION ZONE DISTANCE** is shown for each example.

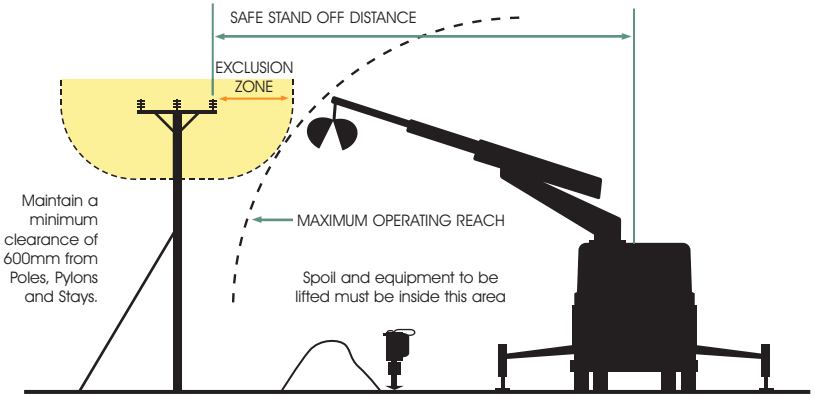


- Please note that these are absolute minimum distances that should under no circumstances be infringed. ***If you do – it could prove fatal.***

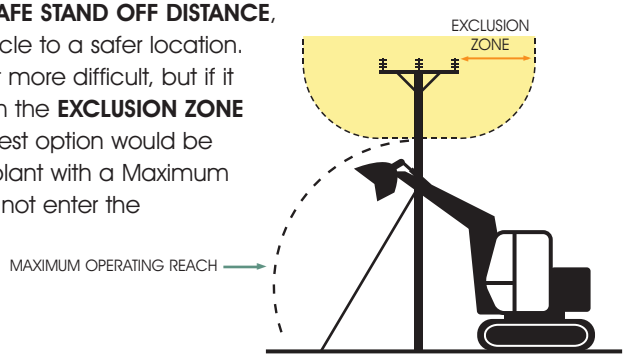
- As well as staying away from the lines or equipment, you should also stay at least 600mm away from any part of poles, pylons and stay wires.
- Please remember that is for guidance only, and if you are in any doubt, please call us for advice before setting up your plant or starting work.

3 STAND OFF DISTANCES

- If there are power lines in the vicinity of your work the best way to make sure you stay out of the **EXCLUSION ZONE** is to position your vehicle at a **SAFE STAND OFF DISTANCE** so that, even when fully extended, no part of it can accidentally reach inside the **EXCLUSION ZONE**.
- This **SAFE STAND OFF DISTANCE** can be calculated by adding the **EXCLUSION ZONE** distance for the appropriate voltage of the line to the Maximum Operating Reach of your vehicle. This is shown in the diagram below.

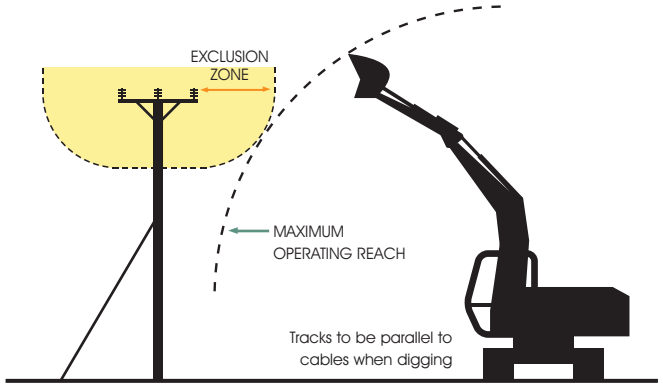


- If you position your vehicle outside of the **SAFE STAND OFF DISTANCE**, there is no risk of accidental contact with the lines and no danger of electricity jumping from the line to your vehicle.
- If you cannot achieve a **SAFE STAND OFF DISTANCE**, consider moving your vehicle to a safer location. It may make your job a bit more difficult, but if it means you stay away from the **EXCLUSION ZONE** - it will be safer. The next best option would be to consider using smaller plant with a Maximum Operating Reach that cannot enter the **EXCLUSION ZONE**.



- You may not be able to achieve either of these options, so, as a last resort, if you cannot avoid operating large items of plant in the vicinity of lines, you **MUST** make sure that the plant is fitted with restraints to ensure that the **EXCLUSION ZONE** cannot be entered. These restraints may be electrical or hydraulic systems fitted to the plant, or mechanical devices such as chains.

  Please seek advice from the plant manufacturer for more information on choices available for your particular item of plant.
- If you are using a mechanical excavator to dig parallel to the line, it is good practice to position the excavator with the tracks or wheels parallel to the line, so as you move along the excavation the **SAFE STAND OFF DISTANCE** is easily maintained.



- Care must also be taken to avoid non-mechanical equipment, (e.g. scaffold poles, ladders and long loads such as lengths of steel or timber) from entering the **EXCLUSION ZONE**.
- Always maintain at least 600mm clearance from your plant to any of our poles, stay wires or pylons. Any contact with these by your plant could cause the line to break and fall to the ground.

4 EMERGENCY PROCEDURES

If contact is made with an overhead line, you must immediately clear the area and suspend all work within 50m of the damage because the line could still be live, or become live again.

The operator of a machine that is in contact with an overhead line should take the following steps:

- **If the machine is still operable:**
  - lower any raised parts that are controlled from the driving position and/or drive the vehicle clear of the line, as long as neither of these actions risk breaking the line or dragging it to the ground.

- **If the machine is not operable or cannot be driven clear of the line:**
  - stay in the cab.
  - contact your site manager or us immediately by radio or mobile phone or as soon as possible by any other method.
  - instruct everyone outside the vehicle not to approach it.
  - do not exit the cab until given confirmation BY WPD PERSONNEL that it is safe to do so.

- **If the machine is inoperable or cannot be driven free and there is risk of fire or other immediate hazard:**
  - jump clear of the vehicle, avoiding simultaneous contact with any part of the machine and the ground.
  - try to land with your feet as close together as possible.
  - where possible, continue to move away from the vehicle using "bunny hops" with your feet together until at least 15m from the vehicle.
  - instruct other people in the vicinity not to approach the vehicle.
  - do not return to the vehicle until given confirmation BY WPD PERSONNEL that it is safe to do so.

Whatever the circumstances please contact us on our emergency number immediately and tell us what has happened.

Please be ready to provide us with a contact telephone number and an accurate location or set of directions – this will help us in getting our staff to site quickly to minimise any danger and to reduce any disruption to your work.

Our emergency number is:

[redacted]

Please report any damage or contact no matter how minor they may seem to you at the time. Whilst the damage may not cause a serious problem at the time of contact it could fail later, causing danger to our staff and members of the public, disruption to our customer's supplies, and – if we trace the damage back to you – a larger repair bill!

5 MORE INFORMATION

- Proximity Warning Systems (such as Wire Watcher – see *wirewatcher.co.uk* for information) may be fitted to your vehicle. Never turn these devices off or disable them in any way.
- Take note of any warnings these proximity warning systems may provide but do not use the presence of such devices as a reason not to follow the advice provided in this leaflet.
- For your information, we are legally obliged to report all contact with our system to the Department of Trade and Industry (DTI), and, if you are an employer, you may be obliged to report incidents involving your staff or contractors to the Health & Safety Executive (HSE). Even if no one is hurt, you could still find yourself being prosecuted for causing a dangerous occurrence.

6 FURTHER READING

For advice related to signing and guarding at longer term work sites please also refer to WPD booklet "Avoidance of Danger from Electricity Overhead Lines and Underground Cables"

More detailed information is also published in the following documents available from the HSE.

GS6 – Avoidance of Danger from Overhead Lines.

HS(G) 47 – Avoiding Danger from Underground Services.

Along with Forestry Industry Safety Accord (FISA) publication **FISA 804 - Electricty at Work: Forestry.**

If you require more site-specific information relating to our equipment at your location please contact us on the relevant **GENERAL ENQUIRIES NUMBER**:

[redacted]

FINALLY.... Please, always remember that electricity overhead lines can be very dangerous **– the general rule is *STAY AWAY and STAY SAFE!***

For the Safe Use of Mechanical Plant in the Vicinity of Electricity Overhead Lines ALWAYS FOLLOW THESE SIMPLE RULES – THEY COULD SAVE YOUR LIFE!

- **Treat all overhead lines as live and dangerous**
- **Any contact may be fatal or cause very serious injuries**
- **Electricity can jump gaps**
- **Before you set up or use plant near to lines – STOP and LOOK UP**
- **Take special care and use lights in the dark or poor light conditions**
- **If there are lines in the vicinity of your work – stay well away**
- **Set up your plant with care to reduce the chance of contact**
- **If you are unsure or need advice**

  - please ask us before starting work

Our emergency number is: [redacted]

You can also call 105 if you spot damage to electricity power lines, poles and substations which could put you or someone else in danger.

If there's a serious immediate risk, you should also call the emergency services.

This booklet is issued by the Safety Team: [redacted]

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Registered Office: Avonbank, Feeder Road, Bristol BS2 0TB

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THIRD PARTY SEARCHES

[redacted]
www.cornerstoneprojects.co.uk
VAT Reg. No. 851 4941 19
Company No. 5132353

Search requested by:			Date / Time: Fri, 19 Feb 2021 12:18
Name	[redacted]	**Company**	CORNERSTONE PROJECTS LTD
Address	91 Market Street, Hoylake, Wirral, CH47 5AA		
Email	[redacted]	**Telephone**	[redacted]

Search details:			
Site Name	135036107	**Work type**	Other
Site Ref. No 1	135036107	**Site Ref. No 2**	
Address	GL4 6EF		
Grid Reference	385186 / 214182		

Search area:

There are no affected Utilibilly asset owners.

Unaffected Utilibilly asset owners:
Albion Water
SOTA
Telent
KCom
Cholderton Water
Leep Utilities
CGI Logica
Trafficmaster
Engie
Enviroenergy
Wight Fibre
Granta Backbone Network

Enquiry Confirmation

LSBUD Ref: 21355048

Date of enquiry: 19/02/2021
Time of enquiry: 12:19

Enquirer

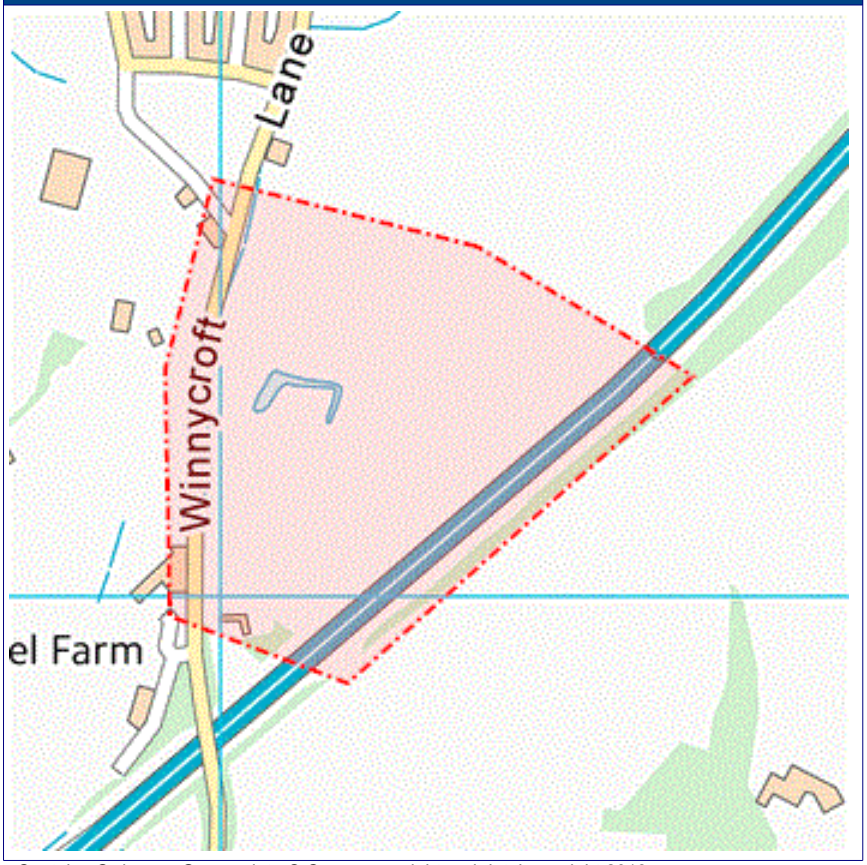
Name	[redacted]	Phone	[redacted]
Company	Cornerstone Projects	Mobile	Not Supplied
Address	91 Market Street Hoylake Merseyside CH47 5AA		
Email	[redacted]		

Enquiry Details

Scheme/Reference	135036107		
Enquiry type	Initial Enquiry	Work category	Development Projects
Start date	31/03/2021	Work type	Commercial/industrial
End date	31/03/2021	Site size	177800 metres square
Searched location	XY= 385188, 214179	Work type buffer*	25 metres
Confirmed location	385147 214105		
Site Contact Name	Not Supplied	Site Phone No	Not Supplied
Description of Works			

* The WORK TYPE BUFFER is a distance added to your search area based on the Work type you have chosen.

Site Map



Enquiry Confirmation

LSBUD Ref: 21355048

Date of enquiry: 19/02/2021
Time of enquiry: 12:19

Asset Owners

Terms and Conditions. Please note that this enquiry is subject always to our standard terms and conditions available at www.linesearchbeforeudig.co.uk ("Terms of Use") and the disclaimer at the end of this document. Please note that in the event of any conflict or ambiguity between the terms of this Enquiry Confirmation and the Terms of Use, the Terms of Use shall take precedence.

Notes. Please ensure your contact details are correct and up to date on the system in case the LSBUD Members need to contact you.

Validity and search criteria. The results of this enquiry are based on the confirmed information you entered and are valid only as at the date of the enquiry. It is your responsibility to ensure that the Enquiry Details are correct, and LinesearchbeforeUdig accepts no responsibility for any errors or omissions in the Enquiry Details or any consequences thereof. LSBUD Members update their asset information on a regular basis so you are advised to consider this when undertaking any works. It is your responsibility to choose the period of time after which you need to resubmit any enquiry but the maximum time (after which your enquiry will no longer be dealt with by the LSBUD Helpdesk and LSBUD Members) is 28 days. If any details of the enquiry change, particularly including, but not limited to, the location of the work, then a further enquiry must be made.

Asset Owners & Responses. Please note the enquiry results include the following:

1. "LSBUD Members" who are asset owners who have registered their assets on the LSBUD service.
2. "Non LSBUD Members" are asset owners who have not registered their assets on the LSBUD service but LSBUD is aware of their existence. Please note that there could be other asset owners within your search area.

Below are three lists of asset owners:

1. LSBUD Members who have assets registered within your search area. ("Affected")
   a. These LSBUD Members will either:
      i. Ask for further information ("Email Additional Info" noted in status). The additional information includes: Site contact name and number, Location plan, Detailed plan (minimum scale 1:2500), Cross sectional drawings (if available), Work Specification.

      ii. Respond directly to you ("Await Response"). In this response they may either send plans directly to you or ask for further information before being able to do so, particularly if any payments or authorisations are required.

2. LSBUD Members who do not have assets registered within your search area. ("Not Affected")

3. Non LSBUD Members who may have assets within your search area. Please note that this list is not exhaustive and all details are provided as a guide only. It is your responsibility to identify and consult with all asset owners before proceeding.

National Grid. Please note that the LSBUD service only contains information on National Grid's Gas above 7 bar asset, all National Grid Electricity Transmission assets and National Grid's Gas Distribution Limited above 2 bar asset.

For National Grid Gas Distribution Ltd below 2 bar asset information please go to www.beforeyoudig.nationalgrid.com

Enquiry Confirmation

LSBUD Ref: 21355048

Date of enquiry: 19/02/2021
Time of enquiry: 12:19

LSBUD Members who have assets registered on the LSBUD service within the vicinity of your search area.

List of affected LSBUD members			
Asset Owner	**Phone/Email**	**Emergency Only**	**Status**
ESP Utilities Group	[redacted]		Await response
Wales and West Utilities			Await response
Western Power Distribution			Await response

LSBUD Members who do not have assets registered on the LSBUD service within the vicinity of your search area. Please be aware that LSBUD Members make regular changes to their assets and this list may vary for new enquiries in the same area.

List of not affected LSBUD members		
AWE Pipeline	Balfour Beatty Investments Limited	BOC Limited (A Member of the Linde Group)
Box Broadband	BP Exploration Operating Company Limited	BPA
Carrington Gas Pipeline	CATS Pipeline c/o Wood Group PSN	Cemex
Centrica Storage Ltd	Chrysaor Production (UK) Limited	CLH Pipeline System Ltd
CNG Services Ltd	Concept Solutions People Ltd	ConocoPhillips (UK) Teesside Operator Ltd
Diamond Transmission Corporation	DIO (MOD Abandoned Pipelines)	DIO (MOD Live Pipelines)
Drax Group	E.ON UK CHP Limited	EirGrid
Electricity North West Limited	ENI & Himor c/o Penspen Ltd	EnQuest NNS Limited
EP Langage Limited	ESSAR	Esso Petroleum Company Limited
Fulcrum Pipelines Limited	Gamma	Gas Networks Ireland (UK)
Gateshead Energy Company	Gigaclear Ltd	Gtt
Heathrow Airport LTD	Humbly Grove Energy	IGas Energy
INEOS FPS Pipelines	INEOS Manufacturing (Scotland and TSEP)	INOVYN ChlorVinyls Limited
INOVYN Enterprises Limited	Intergen (Coryton Energy or Spalding Energy)	Jurassic Fibre Ltd
Mainline Pipelines Limited	Manchester Jetline Limited	Manx Cable Company
Marchwood Power Ltd (Gas Pipeline)	Melbourn Solar Limited	Murphy Utility Assets
National Grid Gas (Above 7 bar), National Grid Gas Distribution Limited (Above 2 bar) and National Grid Electricity Transmission	Northumbrian Water Group	NPower CHP Pipelines
NYnet Ltd	Oikos Storage Limited	Ørsted
Perenco UK Limited (Purbeck Southampton Pipeline)	Petroineos	Phillips 66
Portsmouth Water	Premier Transmission Ltd (SNIP)	Redundant Pipelines - LPDA
RWE - Great Yarmouth Pipeline (Bacton to Great Yarmouth Power Station)	RWEnpower (Little Barford and South Haven)	SABIC UK Petrochemicals
Scottish and Southern Electricity Networks	Scottish Power Generation	Seabank Power Ltd
SES Water	SGN	Shell
Shell NOP	SSE Enterprise Telecoms	SSE Generation Ltd
SSE Utility Solutions Limited	Tata Communications (c/o JSM Construction Ltd)	Total (Colnbrook & Colwick Pipelines)
Total Finaline Pipelines	Transmission Capital	UK Power Networks

Uniper UK Ltd	University of Cambridge Granta Backbone Network	Vattenfall
Veolia ES SELCHP Limited	Veolia ES Sheffield Ltd	West of Duddon Sands Transmission Ltd
Westminster City Council	Zayo Group UK Ltd c/o JSM Group Ltd	

CABLE

[redacted]
www.cornerstoneprojects.co.uk
VAT Reg. No. 851 4941 19
Company No. 5132353

Searches - Cornerstone Projects Ltd

From: [redacted]
Sent: 22 February 2021 17:04
To: Searches - Cornerstone Projects Ltd
Subject: RE: Plant Enquiries - Site Ref. 135036107 LAND ON THE EAST SIDE OF

Please accept this email as confirmation that Vodafone: Fixed **does not** have apparatus within the vicinity of your proposed works detailed below.

Many thanks.

Plant Enquiries Team
[redacted]

ATKINS working on behalf of Vodafone: Fixed

This response is made only in respect to electronic communications apparatus forming part of the Vodafone Limited electronic communications network formerly being part of the electronic communications networks of Cable & Wireless UK, Energis Communications Limited, Thus Group Holdings Plc and Your Communications Limited.

PLEASE NOTE:

The information given is indicative only. No warranty is made as to its accuracy. This information must not be solely relied upon in the event of excavation or other works carried out in the vicinity of Vodafone plant. No liability of any kind whatsoever is accepted by Vodafone, its servants, or agents, for any error or omission in respect of information contained on this information. The actual position of underground services must be verified and established on site before any mechanical plant is used. Authorities and contractors will be held liable for the full cost of repairs to Vodafone's apparatus and all claims made against them by Third parties as a result of any interference or damage.

IMPORTANT - PLEASE READ:-
Diversionary works may be necessary if the existing line of the highway/railway or its levels are altered, where apparatus is affected. Where apparatus is affected and requires diversion, you must submit draft details of the proposed scheme with a request for a 'C3 Budget Estimate' to c3requests@vodafone.com These estimates should be provided by Vodafone normally within 20 working days from receipt of your request. Please include proof of this C2 response when requesting a C3 (using the 'forward' option).

Please consider the environment before printing this e-mail

From: [redacted]
Sent: 19 February 2021 17:52
To: [redacted]
Subject: Plant Enquiries - Site Ref. 135036107 LAND ON THE EAST SIDE OF

Dear Sir/Madam,

Re: - Underground Apparatus / Plant

Site Ref. 135036107 LAND ON THE EAST SIDE OF - WINNYCROFT LANE , MATSON, GLOUCESTER - NGR E385188 N214179

In order that all reasonable precautions may be taken to avoid risk to health and safety through contact with any of your existing apparatus during execution of works at the above site location, please provide plan(s) indicating the general position and nature of your apparatus in the locality. In addition, please highlight any likely special problems that could arise in connection with your apparatus as a result of the works and any limitations on the quality of the information provided.

Cornerstone Projects Ltd
91 Market Street
Hoylake
Wirral
CH47 5AA

Virgin Media
Field Services
Units 1-12
Broad Lane
Mayfair Business Park
Bradford
Yorkshire
BD4 8PW

[redacted]

Plant Enquiry Ref:	VM.1186411
Your Letter Date:	19.02.2021
Your Ref:	135036107 LAND ON THE EAST SIDE OF
Date:	22.02.2021

Dear Sir /Madam

Enquiry Location: WINNYCROFT LANE , MATSON, GLOUCESTER

Thank you for your enquiry regarding work at the above location.

Virgin Media and Viatel plant should not be affected by your proposed work and no strategic additions to our existing network are envisaged in the immediate future.

Should your request be in relation to a Residential New Development, Virgin Media would like the opportunity to assist with your diversionary quote and serve your site free of charge, offering your customers the fastest widely available broadband speeds on the market up to 500Mbps.
For Commercial New Developments our team can also be reached through the below link, ensuring future businesses to your site are connected to our fibre network.

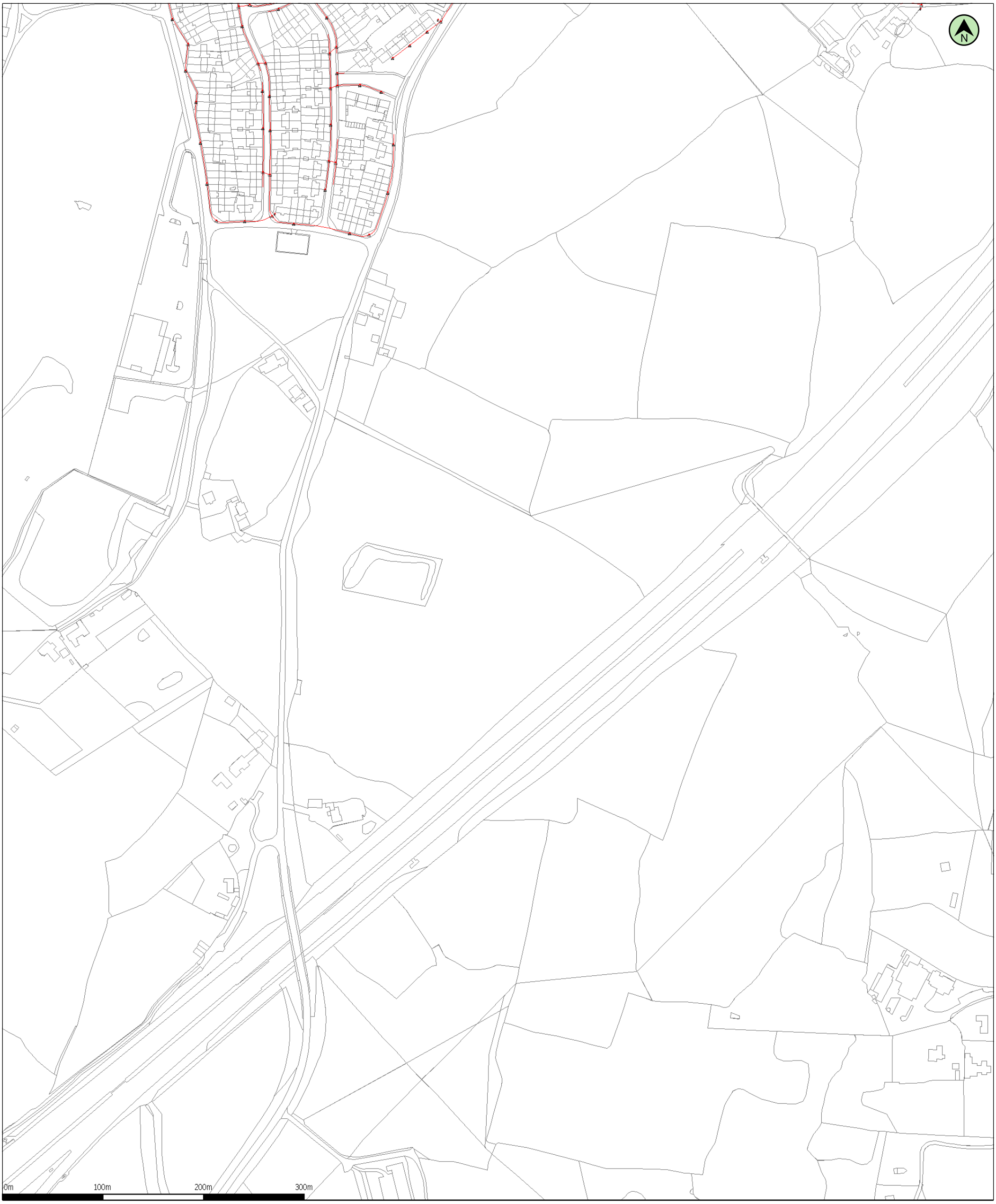
Simply head over to www.virginmedia.com/developer and fill in the enquiry form and a member of our New Developments team will be in touch within 48 hours.
You will also find useful information about additional benefits to you and your site, plus a handy 'developers guide' can be downloaded with detailed installation requirements.

Or if you prefer to talk, please call the New Developments team on: 0800 408 0088 Option 2

Yours faithfully,

National Plant Enquiries Team
[redacted]

Please note: National Plant Enquiries Team (Bradford) cover and respond to plant enquiries for all ex ntl: Telewest franchise areas.



Scale: 1:3555

Date: 22/02/21

Telecoms Plan A3

Data updated: 05/02/21

Map Centre: 385188,214179

Powered by digdat

Duct, Trench

Chamber

Cabinet

stephy.jaison@virginmedia.co.uk

VM.1186411

Searches - Cornerstone Projects Ltd

From: [redacted]
Sent: 22 February 2021 09:45
To: [redacted]
Subject: Plant Enquiries - Site Ref. 135036107 LAND ON THE EAST SIDE OF - WINNYCROFT LANE , MATSON, GLOUCESTER - NGR E385188 N214179

Thank you for your enquiry.

Please be advised that Sky Telecommunications Services Ltd will not be affected by your proposal.

Best endeavours have been made to ensure accuracy, however if you require further information, please contact us by email at [redacted].

Regards

NRSWA Department
Sky UK – Technology - Operations
[redacted]

[redacted]

From: [redacted]
Sent: 19 February 2021 12:23
To: Searches - Cornerstone Projects Ltd <searches@cornerstoneprojects.co.uk>
Subject: [EXTERNAL] Plant Enquiries - Site Ref. 135036107 LAND ON THE EAST SIDE OF - WINNYCROFT LANE , MATSON, GLOUCESTER - NGR E385188 N214179

Dear Sir/Madam,

Re: - Underground Apparatus / Plant

Site Ref. 135036107 LAND ON THE EAST SIDE OF - WINNYCROFT LANE , MATSON, GLOUCESTER - NGR E385188 N214179

Searches - Cornerstone Projects Ltd

From: [redacted]
Sent: 23 February 2021 08:44
To: [redacted]
Subject: RE: Plant Enquiries - Site Ref. 135036107 LAND ON THE EAST SIDE OF - WINNYCROFT LANE , MATSON, GLOUCESTER - NGR E385188 N214179

Please Note: Our search criteria has changed. We previously searched for Colt Network which was within 200 metres, this has now changed to 50 metres. The negative response will be for all enquiries that the network is 50 metres or more away from the place of enquiry.

Dear Sir/Madam,

Thank you for your enquiry for the above reference.

We can confirm that Colt Technology Services do not have apparatus near the above location as presented on your submitted plan, if any development or scheme amendments fall outside the 50 metre perimeter new plans must be submitted for review.

Search is based on Overseeing Organisation Agent data supplied; we do not accept responsibility for O.O. Agent inaccurate data.

If we can be of any further assistance please do not hesitate to contact us.

Kind regards,

Plant Enquiry Team

C.A. TELECOM UK LIMITED

Please consider the environment before printing this email.

From: [redacted]
Sent: 19 February 2021 12:23
To: [redacted]

Searches - Cornerstone Projects Ltd

From: [redacted]
Sent: 19 February 2021 15:09
To: [redacted]
Subject: CityFibre Plant Enquiry, issued on 2/19/21 3:08 PM. Reference 766528be-ec26-4d37-bd00-5d95578ff2bc.
Attachments: emap.pdf

You recently requested information pertaining to the above location and in relation to CityFibre Holdings Ltd plant.

Reference 766528be-ec26-4d37-bd00-5d95578ff2bc
User: User
Title: 135036107
Comment:

Please find attached a plan of the area of your interest that may contain plant which may be affected by your proposed works.

The validity of this response is 6 weeks, after such time a new enquiry would need to be made.

Please see the points of contact below if they are required:

Plant Enquiries
Rutherford House
Birchwood Park
Warrington
WA3 6ZH
[redacted]

Please quote the Reference ID in the subject line in any correspondence.

Please be aware that all information included in this eMap is the property of the sender and subject to copyright. It is illegal to copy or send this information to any third party without the permission of the sender.

_____
Plant Enquiries [CityFibre]

[redacted]2

[CityFibre]<https://www.cityfibre.com>

[Follow CityFibre on LinkedIn]<https://www.cityfibre.com> [Follow CityFibre on LinkedIn] <https://www.linkedin.com/company/cityfibre> [Follow CityFibre on Twitter] <https://www.twitter.com/CityFibre>

bitmap_layout select_raster

LEGEND

EXISTING PLANT

EXISTING PLANT

bitmap_layout select_raster

Head Office
CityFibre Holdings Ltd
15 Bedford Street,
London,
WC2E 9HE

Asset Office
CityFibre Holdings Ltd,
Rutherford House,
Birchwood,
Warrington,
WA3 6ZH

[redacted]

Disclaimer:

Information shown on this plan is for general guidance only. No warranty is made as to its accuracy.
This plan must not be solely relied upon in the event of excavation or other works being carried out in the vicinity of Cityfibre plant.
No liability of any kind is accepted by Cityfibre, its agents or servants for any error, omission, discrepancy or deviation. This information is valid for the date printed.

Project

Plant Enquiry

Drawing

Existing Plant

Drawn by:

smallworld

Date: 19/02/2021

Drawing No.

CFH_EP_000001

Revision

001

Scale: 1:2500

A4

0m 20m 40m 60m 80m 100m

N

bitmap_layout select_raster

LEGEND

EXISTING PLANT

EXISTING PLANT

bitmap_layout select_raster

Head Office
CityFibre Holdings Ltd
15 Bedford Street,
London,
WC2E 9HE

Asset Office
CityFibre Holdings Ltd,
Rutherford House,
Birchwood,
Warrington,
WA3 6ZH

[redacted]

Project

Plant Enquiry

Drawing

Existing Plant

Drawn by:

smallworld

Date: 19/02/2021

Drawing No.

CFH_EP_000001

Revision

001

Scale: 1:2500

A4

0m 20m 40m 60m 80m 100m

N

Searches - Cornerstone Projects Ltd

From: [redacted]
Sent: 25 February 2021 09:59
To: [redacted]
Subject: E02-21-6806 RE: Plant Enquiries - Site Ref. 135036107 LAND ON THE EAST SIDE OF - WINNYCROFT LANE , MATSON, GLOUCESTER - NGR E385188 N214179

Dear Sir or Madam,

Thank you for your plant enquiry below.

We can confirm that Lumen Technologies (formerly CenturyLink Communications UK Limited, Level 3, Global Crossing (Uk) Ltd, Global Crossing PEC, Fibernet UK Ltd and Fibrespan Ltd) do not have any apparatus within the indicated works area.

Instalcom responds to plant enquiries for all of the above and therefore you only need send one plant enquiry to cover all of these companies.

Please note that this response is only valid for 3 months. If your works do not commence within this time period, please resubmit your plant enquiry for assessment before any works commence.

Regards

Plant Enquiries Dept
Instalcom Limited
Borehamwood Ind. Park
Rowley Lane
Borehamwood
WD6 5PZ

[redacted]

Web: http://www.instalcom.co.uk

From: [redacted]
Sent: 19 February 2021 12:23
To: [redacted]
Subject: Plant Enquiries - Site Ref. 135036107 LAND ON THE EAST SIDE OF - WINNYCROFT LANE , MATSON, GLOUCESTER - NGR E385188 N214179

Searches - Cornerstone Projects Ltd

From: [redacted]
Sent: 22 February 2021 09:13
To: [redacted]
Cc:
Subject: RE: [E] Plant Enquiries - Site Ref. 135036107 LAND ON THE EAST SIDE OF - WINNYCROFT LANE , MATSON, GLOUCESTER - NGR E385188 N214179

Dear Sir/Madam

Verizon is a licensed Statutory Undertaker.

We have reviewed your plans and have determined that Verizon (Formally known as MCI WorldCom, MFS) has no apparatus in the areas concerned.

If you have any further queries please do not hesitate to get in touch.

Yours faithfully

Plant Protection Officer (GB) [redacted]

From: [redacted]
Sent: 19 February 2021 12:23
To: [redacted]
Subject: [E] Plant Enquiries - Site Ref. 135036107 LAND ON THE EAST SIDE OF - WINNYCROFT LANE , MATSON, GLOUCESTER - NGR E385188 N214179

Dear Sir/Madam,

Re: - Underground Apparatus / Plant

Site Ref. 135036107 LAND ON THE EAST SIDE OF - WINNYCROFT LANE , MATSON, GLOUCESTER - NGR E385188 N214179

In order that all reasonable precautions may be taken to avoid risk to health and safety through contact with any of your existing apparatus during execution of works at the above site location, please provide plan(s) indicating the general position and nature of your apparatus in the locality. In addition, please highlight any likely special problems that could arise in connection with your apparatus as a result of the works and any limitations on the quality of the information provided.

The proposed site area is centered accurately on the OS grid reference above and will be no more than 200m x 200m, unless noted otherwise in which case the site boundaries will be as marked on the attached plan. If you have no apparatus in the area of the proposed works, please send a nil return.

Your earliest response would be greatly appreciated.

Thanks,

CORNERSTONE PROJECTS LTD

INDEPENDENT UTILITIES

[redacted]

www.cornerstoneprojects.co.uk
VAT Reg. No. 851 4941 19
Company No. 5132353

Registered in England. Registered Address : Cornerstone Projects Ltd, 91 Market Street, Hoylake, Wirral CH47 5AA

Searches - Cornerstone Projects Ltd

From: [redacted]
Sent: 19 February 2021 15:11
To: [redacted]
Subject: GTC Plant Enquiry - Ref- 1717051
Attachments: 1717051.png

GTC Apparatus Not Found In Search Area

Our Plant Enquiry Service Ref: 1717051
Your Enquiry Ref: 135036107

Dear [redacted],

Thank you for your enquiry concerning apparatus in the vicinity of your proposed work. GTC can confirm that we have no apparatus in the vicinity but please note that other asset owners may have and ensure all utility owners have been consulted. For your records, the search area is shown in the attached map.

Please note our assets now include those owned and operated by:

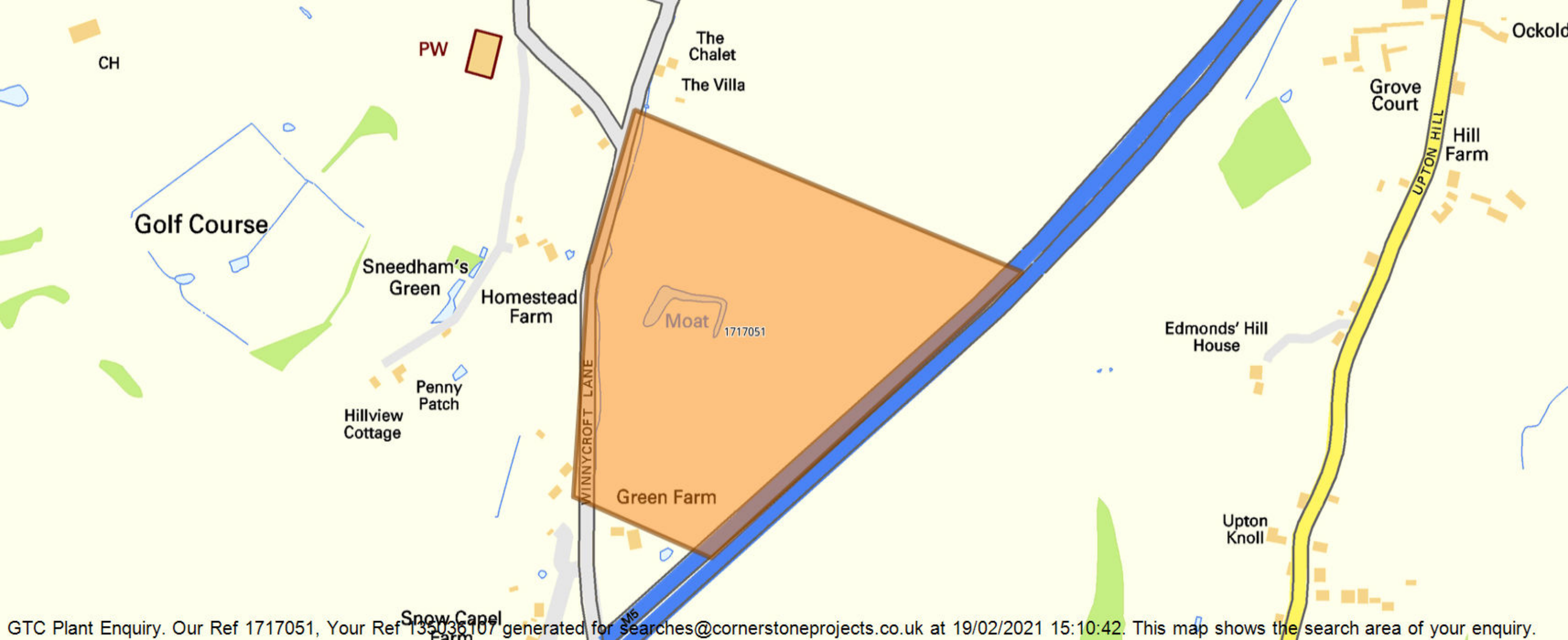
- GTC Pipelines Limited
- Independent Pipelines Limited
- Quadrant Pipelines Limited
- Electricity Network Company Limited
- Independent Power Networks Limited
- Independent Water Networks Limited
- Open Fibre Networks Limited
- Independent Community Heating Limited

If you have any queries or require any further information please do not hesitate to contact us.

Your sincerely,

GTC Plant Enquiry Service.

GTC
Synergy House
Woolpit Business Park
Woolpit
Bury St Edmunds
Suffolk, IP30 9UP
[redacted]



Searches - Cornerstone Projects Ltd

From: [redacted]
Sent: 19 February 2021 12:27
To: [redacted]
Subject: RE: Plant enquiry - Site Ref. 135036107 LAND ON THE EAST SIDE OF - WINNYCROFT LANE , MATSON, GLOUCESTER - NGR E385188 N214179

Dear Sir/Madam,

Thank you for submitting your recent plant enquiry.

Based on the information provided, I can confirm that Last Mile **does not** have any plant within the area(s) specified in your request.

If you require further assistance with outstanding enquiries, please call [redacted]

Please ensure all plant enquiries are sent to [redacted]

Regards

energetics
Design | Build | Connect

Plant Enquiries

[redacted] | w: www.energetics-uk.com
a: Fenick House, Lister Way, Hamilton International Technology Pa

From: [redacted]
Sent: 19 February 2021 12:22
To: [redacted]
Subject: Plant enquiry - Site Ref. 135036107 LAND ON THE EAST SIDE OF - WINNYCROFT LANE , MATSON, GLOUCESTER - NGR E385188 N214179

Dear Sir/Madam,

Re: - Underground Apparatus / Plant

Site Ref. 135036107 LAND ON THE EAST SIDE OF - WINNYCROFT LANE , MATSON, GLOUCESTER - NGR E385188 N214179

In order that all reasonable precautions may be taken to avoid risk to health and safety through contact with any of your existing apparatus during execution of works at the above site location, please provide plan(s) indicating the general position and nature of your apparatus in the locality. In addition, please highlight any likely special problems that could arise in connection with your apparatus as a result of the works and any limitations on the quality of the information provided.

The proposed site area is centered accurately on the OS grid reference above and will be no more than 200m x 200m, unless noted otherwise in which case the site boundaries will be as marked on the attached plan. If you have no apparatus in the area of the proposed works, please send a nil return.

Your earliest response would be greatly appreciated.

Searches - Cornerstone Projects Ltd

From: [redacted]
Sent: 19 February 2021 15:11
To: [redacted]
Subject: Your UK Power Distribution Order - #9643
Attachments: invoice-9643.pdf

Thank you for your order

Thanks for your recent enquiry to UK Power Distribution.

Please find attached your invoice. The details of your order are also below:

According to our database there are no UK Power Distribution records within your search area.

Please note that any recent additions or alterations to our network may not be shown. Cables or pipes owned by other network owners or private companies will not be shown.
Before any excavations are undertaken you should always verify exact locations of cables using a cable locator, and by careful use of hand tools in accordance with HSE guidance note HSG47 “Avoiding danger from underground services”
Other useful documents to read prior to undertaking any works are HSE GS6, “Avoiding danger from overhead power lines” and HSE “Avoiding concealed services and overhead power lines”

Order number: #9643

Description	Date	Qty	Amount (£)
Utility Records Search View Map	19-02-2021 15:11:01	1	12.50
		VAT (@ 20%)	2.50
		Grand Total	**15.00**

Your Details

[redacted]

[redacted]

Billing Address

91 Market Street,
Hoylake,
Wirral, Merseyside,
Merseyside,
CH47 5AA

https://ukpd.virtual-utilities.co.uk


Winnycroft Ln
Winnycroft Ln
Winnycroft Ln
Winnycroft Ln
Moat
Wysis Way
M5
M5
M5
M5
M5
Google
(https://maps.google.com/maps?ll=51.826037,-2.216572&z=17&t=h&hl=en-US&gl=US&mapclient=apiv3)
Map data ©2021 Imagery ©2021 , CNES / Airbus, Getmapping plc, Infoterra Ltd & Bluesky, Maxar Technologies, The GeoInformation Group

Searches - Cornerstone Projects Ltd

From: [redacted]
Sent: 04 March 2021 13:07
To: [redacted]
Subject: Your Reference: 135036107 Our Reference: PE155041. Plant Affected Notice from ES Pipelines
Attachments: AffectedPlantEnquiryGuidelinesGas.pdf; ESN021733 gas proposal.1.pdf

searches
Cornerstone Projects
91 Market Street
Hoylake
Merseyside
CH47 5AA

4 March 2021

Our Ref: PE155041
Your Ref: 135036107

Winnycroft Lane.

Dear Sir/Madam,

Further to your enquiry received on 03/03/2021, I can confirm that ESP Utilities Group Ltd may be affected by the proposed works in the area of Winnycroft Lane.. ESP Utilities Group Ltd has a low pressure gas main serving the area in question (Reference **ESN021733**) at grid reference E385147, N214105 and security of supply is vitally important.

Project drawing proposal extracts for these sites are enclosed (not to scale) for your information which show the approximate location of the ESP Utilities Group Ltd network close to the area of interest off Winnycroft Lane..

As your plans for the proposed work develop you are required to keep ESP Utilities Group Ltd regularly updated about the extent and nature of your proposed works in order for us to fully establish whether any additional precautionary or diversionary works are necessary to protect our network.

Arrangements can be set in place so that one of our representatives can meet on site (date to be agreed) and we will be happy to discuss the impact of your proposals on the network once we have received the details.

A list of precautionary measures is attached for your information. This must be passed on to the appointed contractors carrying out the work and any other associated parties.

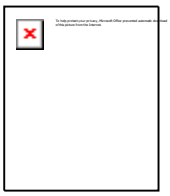
ESP are continually constructing new gas and electricity networks and this notification is valid for 90 days from the date of this letter. If your proposed works start after this period of time, please re-submit your enquiry.

If you wish to discuss the matter further please contact myself or the team on [redacted] alternatively you can email us at [redacted]

ESP have provided you with all the information we have to date however, there may be inaccuracies or delays in data collection and digitisation caused by a range of practical and unforeseeable reasons and as such, we recommend the following steps are taken as a minimum before work is commenced that involves the opening of any ground and reference made to HSG47 (Avoiding danger from underground services).
A. Plans are consulted and marked up on site
B. The use of a suitable and sufficient device to locate underground utilities before digging (for example the C.A.T and Genny)
C. Trial holes are dug to expose any marked up or traced utilities in the ground
D. If no utilities are shown on any plans and no trace is received using a suitable and sufficient device, trial holes are dug nonetheless using hand tools at the location or at regular intervals along the location that the work is being carried out depending on the length of excavation work being undertaken
E. All location work is carried out by individuals with sufficient experience and technical knowledge who may choose to control this activity under a Safe System Of Work

Yours faithfully,

Plant Protection Team
ESP Utilities Group Ltd



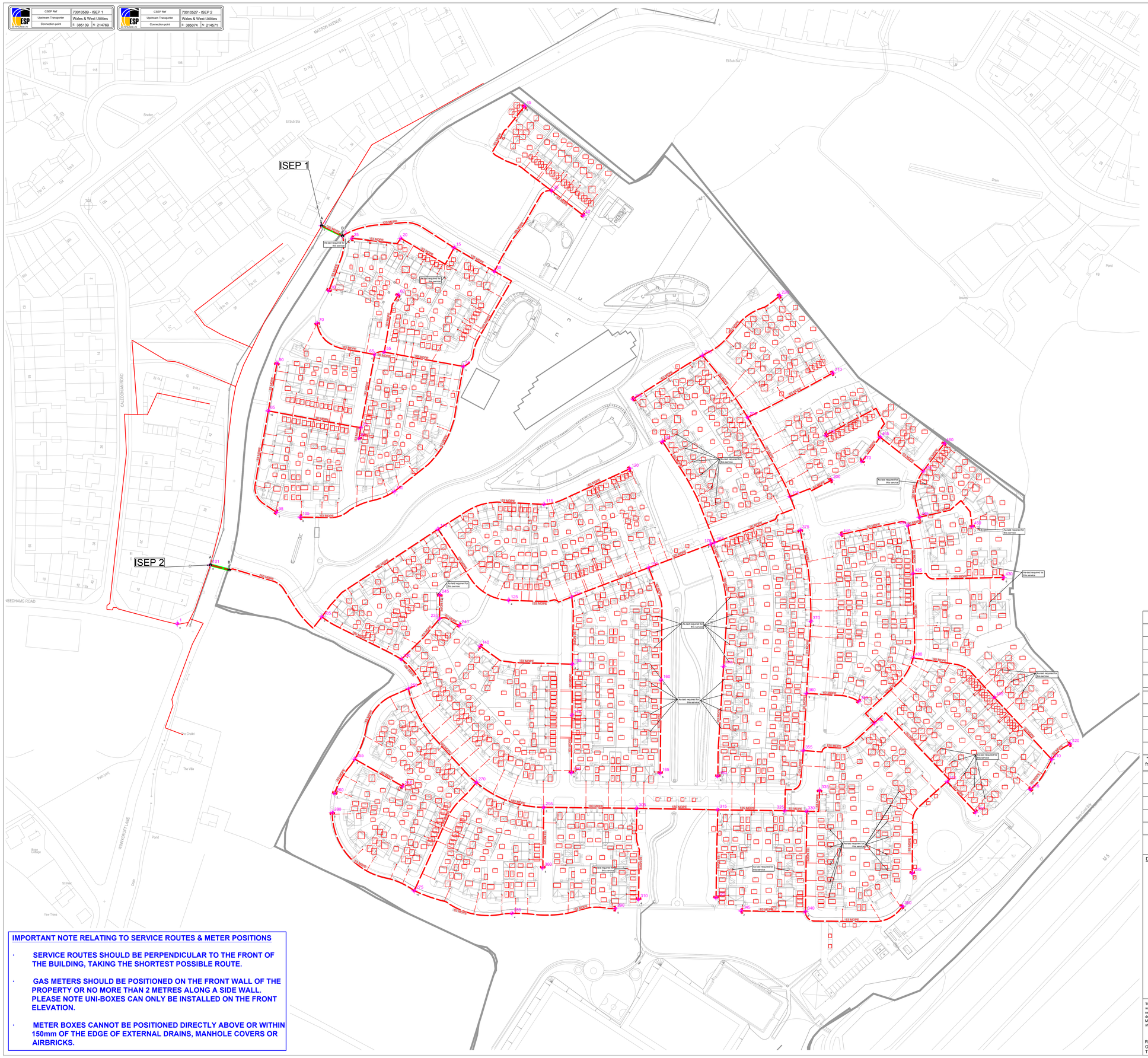
Bluebird House
Mole Business Park
Leatherhead
KT22 7BA
[redacted]

http://www.espug.com

CSEP Ref	70010589 - ISEP 1
Upstream Transporter	Wales & West Utilities
Connection point	E: 385139 N: 214769

CSEP Ref	70010527 - ISEP 2
Upstream Transporter	Wales & West Utilities
Connection point	E: 385074 N: 214571

UNCONTROLLED WHEN PRINTED



IMPORTANT NOTE RELATING TO SERVICE ROUTES & METER POSITIONS

- SERVICE ROUTES SHOULD BE PERPENDICULAR TO THE FRONT OF THE BUILDING, TAKING THE SHORTEST POSSIBLE ROUTE.
- GAS METERS SHOULD BE POSITIONED ON THE FRONT WALL OF THE PROPERTY OR NO MORE THAN 2 METRES ALONG A SIDE WALL. PLEASE NOTE UNI-BOXES CAN ONLY BE INSTALLED ON THE FRONT ELEVATION.
- METER BOXES CANNOT BE POSITIONED DIRECTLY ABOVE OR WITHIN 150mm OF THE EDGE OF EXTERNAL DRAINS, MANHOLE COVERS OR AIRBRICKS.

Materials	Description
DI	Ductile Iron Main
CI	Cast Iron Main
ST	Steel main or service
MDPE (17.6)	Medium Density Polyethylene (SDR Rating) main or service
HDPE (11)	High Density Polyethylene (SDR Rating) main or service

Size	Description
12"	Metallic main or service - Imperial (nominal bore)*
150mm	Metallic main or service - Metric (nominal bore)
3"	Polyethylene main or service - Imperial (nominal bore)
90	Polyethylene main or service - Metric (outsidediameter)

* note - for Steel 18" denotes the pipe size where the designation changes from nominal bore to outside diameter

Pressure	Description
LP	Low Pressure - up to 75 millibar gauge
MP	Medium Pressure - between 75 millibar and 2 bar gauge
IP	Intermediate Pressure - between 2 bar and 7 bar gauge
HP	High Pressure - above 7 bar gauge

MDPE Mains: 90mm & above: SDR 17.6; 63mm: SDR 11

Drawing Nomenclature

- 90 | 125 — Change in diameter nominal bore
- Mains not connected
- Valve
- Pressure Regulator
- Cap End
- Pressure / Purge point
- 0.8m C — Depth of Cover main or service
- 1 — Node

Key for Mains & Service Pipework

- Existing LP mains or services operating up to 75 millibar gauge
- Proposed LP mains or services operating up to 75 millibar gauge
- Existing MP mains or services operating between 75 millibar and 2 bar gauge
- Proposed MP mains or services operating between 75 millibar and 2 bar gauge
- Existing IP mains or services operating between 2 bar and 7 bar gauge
- Proposed IP mains or services operating between 2 bar and 7 bar gauge

ESP GAS GROUP
ES Pipelines
HAZELDEAN
STATION ROAD
LEATHERHEAD
SURREY
KT22 7AA

N E S W

Drawn by	Scale:	Date created:
SJL	1/750	20/02/2019

DRAWING TITLE

Winnycroft Lane
Gloucester
GL4 6EJ

Drawing No	ESN021733 - C547	REV:	1
Issue Number: 0	SHEET: 1 of 1	Printed:	

Pipe Lengths (mtrs)

	63mm	90mm	125mm	180mm	250mm	315mm	355mm
LP	2,590	698	547	377	83		
MP							
IP							

REV	DETAILS OF REVISION	Date
1	New site layout	10/2019

E S PIPELINES LIMITED

PRECAUTIONS TO BE TAKEN WHEN CARRYING OUT WORK IN THE VICINITY OF UNDERGROUND GAS PIPES

ADVICE TO SITE PERSONNEL

MANAGEMENT NOTE

Please ensure that a copy of this note is read by your site management and to your site operatives.

Early consultation with ES Pipelines Ltd prior to excavation is recommended to obtain the location of plant and precautions to be taken when working nearby.

This note has been produced after consultation with and at the request of the Health and Safety Executive, the construction industry and the local authorities as an interim measure pending the issue of an HSE Guidance Note.

Introduction

Damage to ES Pipelines Ltd's plant can result in uncontrolled gas escapes which may be dangerous. In addition these occurrences can cause expense, disruption of work and inconvenience to the public.

Various materials are used for gas mains and services. Cast Iron, Ductile Iron, Steel and Plastic pipes are the most widely found. Modern Plastic pipes are either bright yellow or orange in colour.

Cast Iron and Ductile Iron water pipes are very similar in appearance to Cast Iron and Ductile Iron gas pipes and if any Cast Iron or Ductile Iron pipe is uncovered, it should be treated as a gas pipe. ES Pipelines Ltd do not own any metallic gas pipes but their gas network infrastructures may be connected to Cast Iron, Ductile Iron or Steel pipes owned by Transco.

The following general precautions apply to Intermediate Pressure (2-7barg MOP), Medium Pressure (75mbarg-2barg MOP), Low Pressure (up to 75mbarg MOP) and other gas mains and services likely to be encountered in genera! site works and are referred to within this document as '**pipes**'.

Locating Gas Pipes

It should be assumed when working in urban and residential areas that gas mains and services are likely to be present. On request, E S Pipelines Ltd will give approximate locations of pipes derived from their records. The records do not normally show the position of service pipes but their probable line can be deducted from the gas meter position. E S Pipelines Ltd's staff will be pleased to assist in the location of gas plant and provide advice on any precautions that may be required. The records and advice are given in good faith but cannot be guaranteed until hand excavation has taken place. Proprietary pipe and cable locators are available although generally these will not locate plastic pipes.

Safe working Practices

To achieve safe working conditions adjacent to gas plant the following must be observed:

Observe any specific request made by E S Pipelines Ltd's staff.

Gas pipes must be located by hand digging before mechanical excavation. Once a gas pipe has been located, mechanical excavation must proceed **with care**. A mechanical excavator must not in any case be used within 0.5 metre of a gas pipe and greater safety distances may be advised by E S Pipelines Ltd depending on the mains maximum operating pressure (MOP).

Where heavy plant may have to cross the line of a gas pipe during construction work, the number of crossing points should be kept to a minimum. Crossing points should be clearly indicated and crossings at other places along the line of the pipe should be prevented.

Where the pipe is not adequately protected by an existing road, crossing points should be suitably reinforced with sleepers, steel plates or a specially constructed reinforced concrete raft as necessary. E S Pipelines Ltd staff will advise on the type of reinforcement necessary.

No explosives should be used within 30 metres of any gas pipe without prior consultation with E S Pipelines Ltd.

E S Pipelines Ltd must be consulted prior to carrying out excavation work within 10 metres of any above ground gas installation.

Where it is proposed to carry out piling or boring within 15 metres of any gas pipe, E S Pipelines Ltd should be consulted prior to the commencement of the works.

Access to gas plant must be maintained at all times during on site works.

Proximity of Other Plant

A minimum clearance of 300 millimetres (mm) should be allowed between any plant being installed and an existing gas main to facilitate repair, whether the adjacent plant be parallel to or crossing the gas pipe. No apparatus should be laid over and along the line of a gas pipe irrespective of clearance.

No manhole or chambers 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 E S Pipelines Ltd.

Support and Backfill

Where excavation of trenches adjacent to any pipe affects its support, the pipe must be supported to the satisfaction of E S Pipelines Ltd and must not be used as an anchor or support in any way. In some cases, it may be necessary to divert the gas pipe before work commences.

Where a trench is excavated crossing or parallel to the line of the gas pipe, the backfill should be adequately compacted, particularly beneath the pipe, to prevent any settlement which could subsequently cause damage to the pipe.

In special cases it may be necessary to provide permanent support to the gas pipe, before backfilling and reinstatement is carried out. Backfill material adjacent to gas plant must be selected fine material or sand, containing no stones, bricks or lumps of concrete, etc., placed to a minimum depth of 150mm around the pipes and well compacted by hand. No power compaction should take place until 300 mm of selected fine fill has been suitably compacted.

If the road construction is in close proximity to the top of the gas pipe, a "cushion" of selected fine material such as sand must be used to prevent the traffic shock being transmitted to the gas pipe. The road construction depth must not be reduced without permission from the local Highway Authority.

No concrete or other hard material must be placed or left under or adjacent to any Cast Iron pipe as this may cause fracture of the pipe at a later date.

Concrete backfill should not be used closer than 300 mm to the pipe.

Damage to Coating

Where a gas pipe is coated with special wrapping and this is damaged, even to a minor extent E S Pipelines Ltd must be notified so that repairs can be made to prevent future corrosion and subsequent leakage.

Welding or "Hot Works"

When welding or other "hot works" involving naked flames are to be carried out in close proximity to gas plant and the presence of gas is suspected, E S Pipelines Ltd must be contacted before work commences to check the atmosphere. 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 flame to plastic gas pipes or to the protective coating on other gas pipes.

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;
- Contact Transco's National Gas Escape Call Centre, on: **0800 111 999**;
- Prevent any approach by the public, prohibit smoking, extinguish all naked flames or other source of ignition for at least 15 metres from the leakage;
- Assist gas personnel, Police or Fire Service as requested.

REMEMBER - IF IN DOUBT, SEEK ADVICE FROM E S PIPELINES LTD.

ES Pipelines Ltd can be contacted at:

Office Address: Hazeldean, Station Road, Leatherhead, Surrey, KT22 7AA

[redacted]

Searches - Cornerstone Projects Ltd

From: [redacted]
Sent: 19 February 2021 13:14
To: [redacted]
Subject: RE: [EXTERNAL] Plant enquiry - Site Ref. 135036107 LAND ON THE EAST SIDE OF - WINNYCROFT LANE , MATSON, GLOUCESTER - NGR E385188 N214179

Good Afternoon

With regards to your request for details of existing services, we can confirm that based on the details provided to us, we have no buried plant or equipment in the identified area.

Kind Regards,

[redacted]

From: [redacted]
Sent: 19 February 2021 12:22
To: [redacted]
Subject: [EXTERNAL] Plant enquiry - Site Ref. 135036107 LAND ON THE EAST SIDE OF - WINNYCROFT LANE , MATSON, GLOUCESTER - NGR E385188 N214179

Dear Sir/Madam,

Re: - Underground Apparatus / Plant

Site Ref. 135036107 LAND ON THE EAST SIDE OF - WINNYCROFT LANE , MATSON, GLOUCESTER - NGR E385188 N214179

In order that all reasonable precautions may be taken to avoid risk to health and safety through contact with any of your existing apparatus during execution of works at the above site location, please provide plan(s) indicating the general position and nature of your apparatus in the locality. In addition, please highlight any likely special problems that could arise in connection with your apparatus as a result of the works and any limitations on the quality of the information provided.

The proposed site area is centered accurately on the OS grid reference above and will be no more than 200m x 200m, unless noted otherwise in which case the site boundaries will be as marked on the attached plan. If you have no apparatus in the area of the proposed works, please send a nil return.

Your earliest response would be greatly appreciated.

Thanks,

[redacted]
Projects Manager
Cornerstone Projects Ltd
91 Market Street, Hoylake, Wirral CH47 5AA
www.cornerstoneprojects.co.uk
[redacted]

QUALITY CHECK

Checked and issued by:	[redacted]
Name:	
Date:	04/03/21
Plans are valid until:	02/06/21

Unless noted otherwise plans are valid for three months from date of issue - please note the date shown above is approximate. After the above date please contact us to arrange a refreshed utility search pack at www.cornerstoneprojects.co.uk
Please refer to www.cornerstoneprojects.co.uk/terms.html for full Terms and Conditions.

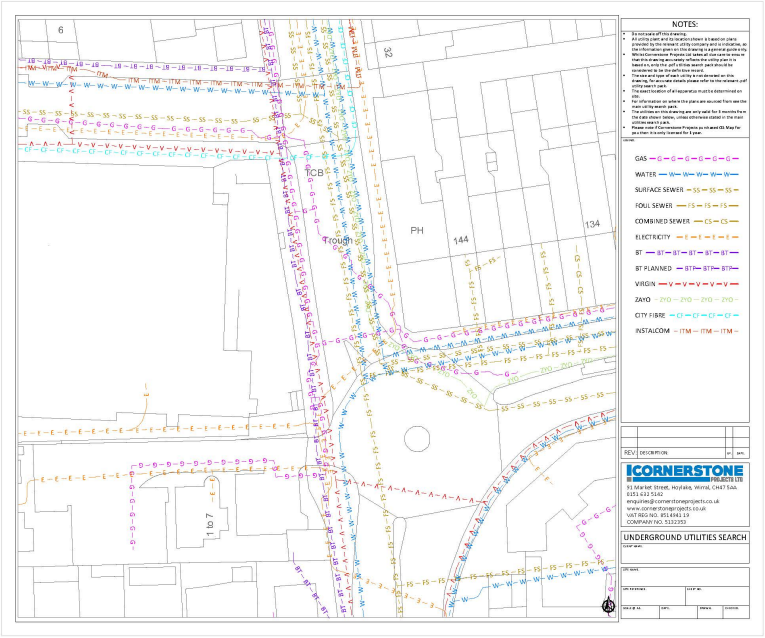
Cornerstone Projects Ltd is a UK wide desktop underground utility search expert:

- Market leading pricing and response times
- Comprehensive utility database
- 15 Years plus experience
- Over 50,000 completed searches
- Over 2750 registered businesses
- Searches to PAS 128 survey level D
- ISO9001 certified company

[redacted]
www.cornerstoneprojects.co.uk
VAT Reg. No. 851 4941 19
Company No. 5132353

Want an easier way to interpret your utility search results?

Searching through your utility results can be time consuming and complex. Here at Cornerstone, we have the ability to produce one consolidated drawing which will allow you to view all your results on a single plan. Moreover, as the utilities are drawn in separate layers, you will also be able to turn different layers on and off to allow you to focus on individual utilities.



We can produce your consolidated drawing in .dwg (CAD) format from £60.00 + VAT.
We can also convert this into a Smart .PDF starting from £70.00 + VAT.

Call us on [redacted] or **email** [redacted] for a quote for this site. Please provide your site name/reference.

Need help with administering road opening licences, capacity checks or gaining quotes from the utility companies for connecting or diverting services?

Section 50 /Road Opening Licence – We will complete the application required to obtain the Section 50 and/or road opening licence on your behalf – our fee is from as little as £150.00+VAT plus Council charges.

Capacity check – We will complete an application to determine whether a utility has sufficient capacity for your proposed development and if not, what budget costs would be required to reinforce the network – our fee is from as little as £150.00+VAT per utility plus disbursements.

New Connections/Disconnections – We will complete the administration required to obtain quotes from the utilities to connect or disconnect from as little as £150.00+VAT per utility plus disbursements.

Diversions – We will complete the application required to obtain costs and suggested diversions required for your intended works from as little as £150.00+VAT per utility plus disbursements.

[redacted]
www.cornerstoneprojects.co.uk
VAT Reg. No. 851 4941 19
Company No. 5132353

24Acoustics
Armstrong House
3 Bassett Avenue
Southampton
SO16 7DP

T: [redacted]

PROPOSED RESIDENTIAL DEVELOPMENT
LAND AT SNOW CAPEL
GLOUCESTER

NOISE IMPACT ASSESSMENT

Technical Report: R9061-1 Rev 3

Date: 7th April 2022

For: Edward Ware Homes and Bromford
45 Oakfield Road
Bristol
BS8 2AX

24 Acoustics Document Control Sheet

Project Title: Proposed Residential Development, Land at Snow Capel, Gloucester - Noise Impact Assessment

Report Ref: R9061-1 Rev 3

Date: 7th April 2022

	Name	Position	Signature	Date
Prepared by	[redacted]			07/04/2022
Reviewed & Approved by				07/04/2022
For and on behalf of 24 Acoustics Ltd				

Document Status and Approval Schedule

Revision	Description	Prepared By	Reviewed By	Approved By
0	Approved for Issue	[redacted]		
1	Update			
2	Update			
3	Layout Update			

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24 Acoustics Ltd accepts no responsibility whatsoever, following the issue of the report, for any matters arising outside the agreed scope of the works.

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CONTENTS

1.0 INTRODUCTION

1.1 24 Acoustics Ltd has been instructed by Edward Ware Homes to undertake a noise impact assessment at a proposed development known as Land at Snow Capel, Gloucester. It is proposed to develop the site for 190 dwellings.

1.2 This report has assessed noise from road traffic at the proposed development. The primary noise source in the area is road traffic on the M5 to the east and south and Winnycroft Lane to the west and south.

1.3 All noise levels in this report are quoted in dB relative to 20 μPa. A definition of noise parameters described in this report is provided in Appendix A.

2.0 SITE DESCRIPTION AND PROPOSED DEVELOPMENT

2.1 The site is located to the south of Gloucester and currently comprises farmland. Existing vehicular access to the site is located to the north, from Winnycroft Lane. The M5, which is the dominant noise source locally, is located on the south eastern boundary in a low cutting. Existing residential properties are located directly south of the site as well as to the west on Winnycroft Lane.

2.2 Planning consent is sought to construct 190 residential dwellings, comprising a mixture of terrace, detached and semi-detached houses as well as apartment blocks. Existing access from Winnycroft Lane will be retained.

2.3 The primary noise sources in the area include road traffic on the M5 and Winnycroft Lane. Therefore, this assessment considers noise impact from the surrounding road network, incident at the proposed development.

2.4 The site location is shown in Figure 1 with the site masterplan shown in Figure 2.

3.0 STANDARDS AND GUIDANCE

National Planning Policy

3.1 Paragraph 185 of the National Planning Policy Framework (NPPF) [Reference 1] states that planning policies and decisions should:

- mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;
- identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

3.2 The NPPF also refers to the Noise Policy Statement for England (NPSE) [Reference 2] which is intended to apply to all forms of noise, including environmental noise, neighbour noise and neighbourhood noise. The NPSE sets out the Government's long-term vision to 'promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development' which is supported by the following aims:

- Avoid significant adverse impacts on health and quality of life;
- Mitigate and minimise adverse impacts on health and quality of life;
- Where possible, contribute to the improvement of health and quality of life.

3.3 The NPSE defines the concept of a 'significant observed adverse effect level' (SOAEL) as 'the level above which significant adverse effects on health and quality of life occur'. The following guidance is provided within the NPSE:

> *"It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available."*

3.4 The National Planning Practice Guidance (NPPG) [Reference 3] is written to support the NPPF with more specific planning guidance. The NPPG reflects the NPSE and states that noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment. It also states that opportunities should be taken, where practicable, to achieve improvements to the acoustic environment. The NPPG states that noise can over-ride other planning concerns but should not be considered in isolation from the other economic, social and environmental dimensions of the proposed development.

3.5 The NPPG expands upon the concept of SOAEL (together with Lowest Observable Adverse Effect Level, LOAEL, and No Observed Effect Level, NOEL) as introduced in the NPSE and provides a table of noise exposure hierarchy for use in noise impact assessments in the planning system. Table 1 is reproduced from the PPG and summarises the noise exposure hierarchy, based on the likely average response.

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life	No Observed Adverse Effect	No specific measures required
Lowest Observable Adverse Effect Level (LOAEL)			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/ or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level (SOAEL)			
Noticeable and disruptive	The noise causes a material change in behaviour and/ or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extension and regular changes in behaviour and/ or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/ awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non auditory	Unacceptable Adverse Effect	Prevent

Table 1: PPG Noise Exposure Hierarchy

3.6 In general terms it is considered that a noise impact with an effects level which is lower than SOAEL is acceptable (providing the effect is mitigated to a minimum). There is currently, however, a discontinuity between the above guidance and objective technical criteria for use in planning noise impact assessments.

Internal Noise Levels

3.7 For residential developments 24 Acoustics considers that the spirit of the requirements of the NPPF, NPSE and PPG will be complied with if criteria from British Standard 8233:2014 [Reference 4] and World Health Organisation guidelines [Reference 5] are adopted for internal noise within dwellings.

3.8 BS 8233 provides desirable internal ambient noise levels for habitable rooms. Table 2 shows a summary of the levels recommended in BS 8233 for living rooms and bedrooms.

Activity	Location	Daytime 07:00 to 23:00	Night-time 23:00 to 07:00
Resting	Living Room	35 dB $L_{Aeq,\ 16\ hour}$	--
Sleeping (daytime resting)	Bedroom		30 dB $L_{Aeq,\ 8\ hour}$

Table 2: Indoor Ambient Noise Levels as Recommended in BS 8233

3.9 The World Health Organisation provides guidance on desirable internal noise levels to minimise the risk of sleep disturbance. The WHO guidelines suggest internal noise levels not exceeding 30 dB L_{Aeq} or regularly exceeding 45 dB $L_{Amax,f}$ for 'a good sleep'.

External Noise Levels

3.10 The World Health Organisation provides guidance on the relationship between annoyance and noise levels in external amenity areas (gardens, terraces, balconies etc.). The guidance defines noise levels of 55 dB $L_{Aeq,\ 16\ hour}$ as the onset of significant community annoyance for these areas during daytime hours (07:00 and 23:00 hours). It should be noted that these values are aspirational and BS 8233:2014 refers to these levels as 'not achievable in all circumstances where development might be desirable'. In such situations, development should be designed to achieve the lowest levels practicable in external amenity spaces, but development should not be prohibited.

Summary of Proposed Criteria

3.11 Based upon the review of standards described above, noise has been assessed in accordance with the following approach:

- BS 8233 for recommended internal noise levels inside the properties. It is considered that an upper internal daytime level of 35 dB $L_{Aeq,16hr}$ for lounges or living rooms and a night-time level for bedrooms of 30 dB $L_{Aeq,8hr}$ should apply. Similarly, a maximum night-time internal level of 45 dB $L_{Amax,f}$ should apply in bedrooms for regular events;

- Noise levels in external amenity areas to be as low as practically possible given the constraints of the scheme.

4.0 AMBIENT NOISE SURVEYS

Methodology

4.1 Environmental noise measurements were undertaken at the undeveloped site in order to establish existing ambient noise levels. Noise measurements were undertaken between 20th and 25th May 2021. The site and measurement locations are shown in Figure 1 and described below:

- Location 1: Eastern boundary of the site, overlooking the M5, approximately 1.8m above local ground level;

- Location 2: Western site boundary, overlooking Winnycroft Lane , approximately 2m above local ground level;

4.2 Additional measurements were also undertaken at three locations during the 25th May 2021 morning rush hour period (08:00 to 09:00 hours).

4.3 Ambient noise measurements were undertaken using the following equipment:

3 Nº Rion Class 1 sound level meter	Type NL52;
Brüel and Kjær acoustic calibrator	Type 4231.

4.4 All noise measurements were undertaken in free field conditions. Environmental windshields were fitted to the microphones and instrumentation was configured to measure and store overall A-weighted statistical parameters such as L_{Aeq}, L_{Amax} and L_{A90} (all measured on fast response) in 5-minute intervals. Measurements were made in accordance with BS 7445: 1991 "Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use" [Reference 6].

4.5 Weather conditions during the survey period were variable, with periods of wind and rain. Measurements affected by meteorological conditions have been removed from the assessment.

Measurement Results

4.6 Measurement results are shown graphically in Appendix B and are summarised in Tables 3 and 4 below.

Location 1: Measurement Results		
Day 07:00- 23:00 hours Average dB $L_{Aeq\ 16\ hour}$	**Night 23:00- 07:00 hours**	
	Average dB $L_{Aeq\ 8\ hour}$	**Typical dB $L_{Amax\ f}$**
74	70	81

Table 3: Measurement Results, Location 1 (Eastern Boundary)

Location 2: Measurement Results		
Day 07:00- 23:00 hours Average dB $L_{Aeq\ 16\ hour}$	**Night 23:00- 07:00 hours**	
	Average dB $L_{Aeq\ 8\ hour}$	**Typical dB $L_{Amax\ f}$**
60	53	76

Table 4: Measurement Results, Location 2 (Western Boundary)

4.7 It should be noted that the levels at Location 1 are at the boundary with the M5 prior to any screening.

4.8 24 Acoustics determines the typical maximum noise level to be the tenth highest measured level during the relevant period. Measured ambient noise levels at other representative locations were 59 dB $L_{Aeq,\ 15\ min}$ with maximum noise levels in the order of 62 to 63 dB $L_{Amax,\ f}$.

4.9 It is relevant to note that a development site directly to the north has recently gained planning consent (Planning Reference: 18/01141/REM) for the construction of 420 residential dwellings.

4.10 As part of the approved development to the north, a 3m high barrier / bund combination is proposed to the eastern site boundary. The barrier will also provide a degree of screening to the dwellings proposed within this application, particularly to the northeast.

Noise Propagation Model

4.11 Noise measurements have been used to populate an acoustic model of the site, using IMMI v2017 noise-mapping software, to determine road traffic noise levels at the proposed site. This has used the propagation methodology of CRTN [Reference 7] taking into account the effects of geometric divergence, atmospheric and ground absorption and acoustic screening. The following parameters have been used in the model:

- Ambient temperature: 10 degrees centigrade;
- Relative humidity: 70%;
- Ground effects: G=0 ('hard' ground);
- Downwind propagation conditions.

4.12 The acoustic model has considered the proposed site layout including topography of the site for receptor heights at both ground floor and first floor level (1.5 m and 4 m receptor heights). A proposed 3 m barrier/bund to the eastern boundary (shown in Figure 2) and 1.8m fences to select external amenity areas have been included in the model. The acoustic model results are shown as noise contours in Figures 3 and 4.

4.13 The model assumes that all barriers and fences are of a solid construction, containing no holes or gaps, and comprise a minimum surface density of 15 kg/m^2. This requirement can typically be achieved by a 15mm close boarded timber fence with 50% overlap.

5.0 ASSESSMENT

5.1 This assessment has considered noise levels in proposed habitable rooms across the development site as well as external noise levels in amenity spaces.

External Noise Levels

5.2 Noise measurement and propagation model results (as shown in Figure 3) show that, based on proposed layout plans (Origin 3 Studio Ltd in April 2022), external noise levels in the majority of the private gardens will be lower than 55 dB $L_{Aeq,\ 16\ hour}$.

5.3 Considering the current constraints and site layout, and assuming a 3m barrier to the east with 1.8m boundary fences to gardens, it is considered that the development will be designed to achieve the lowest practicable levels in external amenity spaces.

5.4 On this basis it is considered that providing the relevant development needs can be met and the proposals, as presented, are acceptable on noise grounds.

Internal Noise Levels

5.5 Based on the modelling results, calculations have been undertaken to determine the window, glazing and ventilation requirements for the proposed residential scheme, which will ensure that noise levels inside the properties do not exceed 35 dB $L_{Aeq,\ 16\ hour}$ during the day and 30 dB $L_{Aeq,\ 8\ hour}$ at night (and also not regularly exceed 45 dB $L_{Amax\ f}$ at night).

5.6 The calculations are based on typical room volumes and window aperture areas and assume a masonry cavity wall construction, achieving a minimum sound insulation performance of 52 dB R_w, with tiled or slate roofs. These calculations should be updated as a matter of detailed design (post planning).

Windows and Glazing

5.7 The required sound insulation performance for each window type is described in Table 5. The recommended locations for each window type to habitable rooms are shown in Figure 2.

Window Type	**Minimum Octave (Hz) Band Sound Reduction Index, dB**					
	125	**250**	**500**	**1k**	**2k**	**4k**
A	24	25	31	42	44	49
B	24	22	29	40	44	46
C	24	20	25	35	38	35

Table 5: Window System Sound Reduction Specification

5.8 In making a comparison with the values in Table 5, it is important that the figures used are the result of tests in accordance with ISO 10140, Part 2: 2010. The quoted minimum sound reduction specifications must be achieved by the entire window system as a whole, including glazing, frames, seals, any insulated panels. The requirements also apply to any external doors to habitable rooms.

5.9 Acoustically rated window systems will be required to achieve the minimum sound reduction performance for Window Types A and B. The performance of Window Type C can typically be achieved by standard thermal double glazing, subject to the widow system as a whole (i.e. frames, seals, etc) achieving the minimum sound reduction performance.

5.10 For guidance, manufacturer's data for the following glazing configurations would be capable of achieving the required sound reduction performance, if installed correctly and with suitably rated frames and adequate seals:

- Window Type A (37 dB $D_{n,e,w}$): 6mm glass; 12mm cavity; 6.4mm Stadip Silence (or similar);
- Window Type B (34 dB $D_{n,e,w}$): 4mm glass; 12mm cavity; 6.4mm Stadip Silence (or similar);
- Window Type C (31 dB $D_{n,e,w}$): 4mm glass; 12mm cavity; 4mm glass.

Ventilation

5.11 The required sound insulation performance for trickle ventilation units is described in Table 6. The recommended locations for each vent type are shown in Figure 2.

5.12 Note, it is recommended that a Mechanical Ventilation and Heat Recovery (MVHR) system is used to provide ventilation to select plots at the southern and eastern site boundaries (see Figure 2). An alternative ventilation strategy for these areas would be to install individual mechanical ventilators in the habitable rooms, capable of achieving 50 dB $D_{n,e,w}$ (e.g. Sonair F+).

Ventilation Type	**Minimum Octave (Hz) Band Sound Reduction Index, dB**					
	125	**250**	**500**	**1k**	**2k**	**4k**
A	40	36	34	35	44	40
B	40	36	35	31	32	37
C	23	26	29	30	33	33

Table 6: Trickle Vent Sound Reduction Specification

5.13 Note that the stated minimum performance value for each ventilation unit is for the open vent and assumes one ventilator per habitable room.

5.14 In making a comparison with the ventilation acoustic specification in Table 6, it is important that the vent manufacturer's test data is the result of laboratory tests undertaken on the specific model, size, and free area of the proposed unit. The tests must be undertaken with the vent open and installed in a manner that is representative of the proposed installation. If multiple vents are required, it will be necessary to correct the test data to allow for the number of vents required in each room (please confirm if this is the case).

5.15 For guidance, manufacturer's data for the following ventilation units would be capable of achieving the required sound reduction performance if installed properly (minimum performance for when vent is open):

- Ventilation Type A (39 dB $D_{n,e,w}$): Simon Acoustic EHAS;
- Ventilation Type B (33 dB $D_{n,e,w}$): Simon Acoustic FV;
- Ventilation Type C (32 dB $D_{n,e,w}$): Standard trickle vent.

5.16 Any considerations affecting the acoustic performance that are specific to each model of vent (e.g. angle of incidence) should be considered by the ventilation unit's supplier/manufacturer and factored into the quoted sound insulation performance.

6.0 CONCLUSIONS

6.1 24 Acoustics Ltd has been instructed by Edward Ware Homes to undertake a noise impact assessment at a proposed development site at Land at Snow Capel, Gloucester. It is proposed to submit a planning application to develop the site for residential use for 190 dwellings.

6.2 Environmental noise measurements have been undertaken at the site to establish the prevailing ambient noise levels.

6.3 External noise levels in the majority of private gardens within the developed site are predicted to be at or below 55 dB $L_{Aeq,\ 16\ hour}$ with raised levels to the southern and eastern boundaries.

6.4 Calculations have been undertaken, based upon typical room volumes and glazed areas, which show that a satisfactory internal environment in all habitable rooms can be achieved via the specification of appropriate glazing and ventilation.

6.5 On the above basis, it is considered that satisfactory noise levels can be achieved throughout the proposed development.

REFERENCES

1. Department for Communities and Local Government. National Planning Policy Framework, Revised July 2021.

2. DEFRA. Noise Policy Statement for England, 2010.

3. Department of Communities and Local Government. National Planning Practice Guidance, July 2019.

4. British Standards Institution. British Standard 8233: Guidance on sound insulation and noise reduction for buildings, 2014.

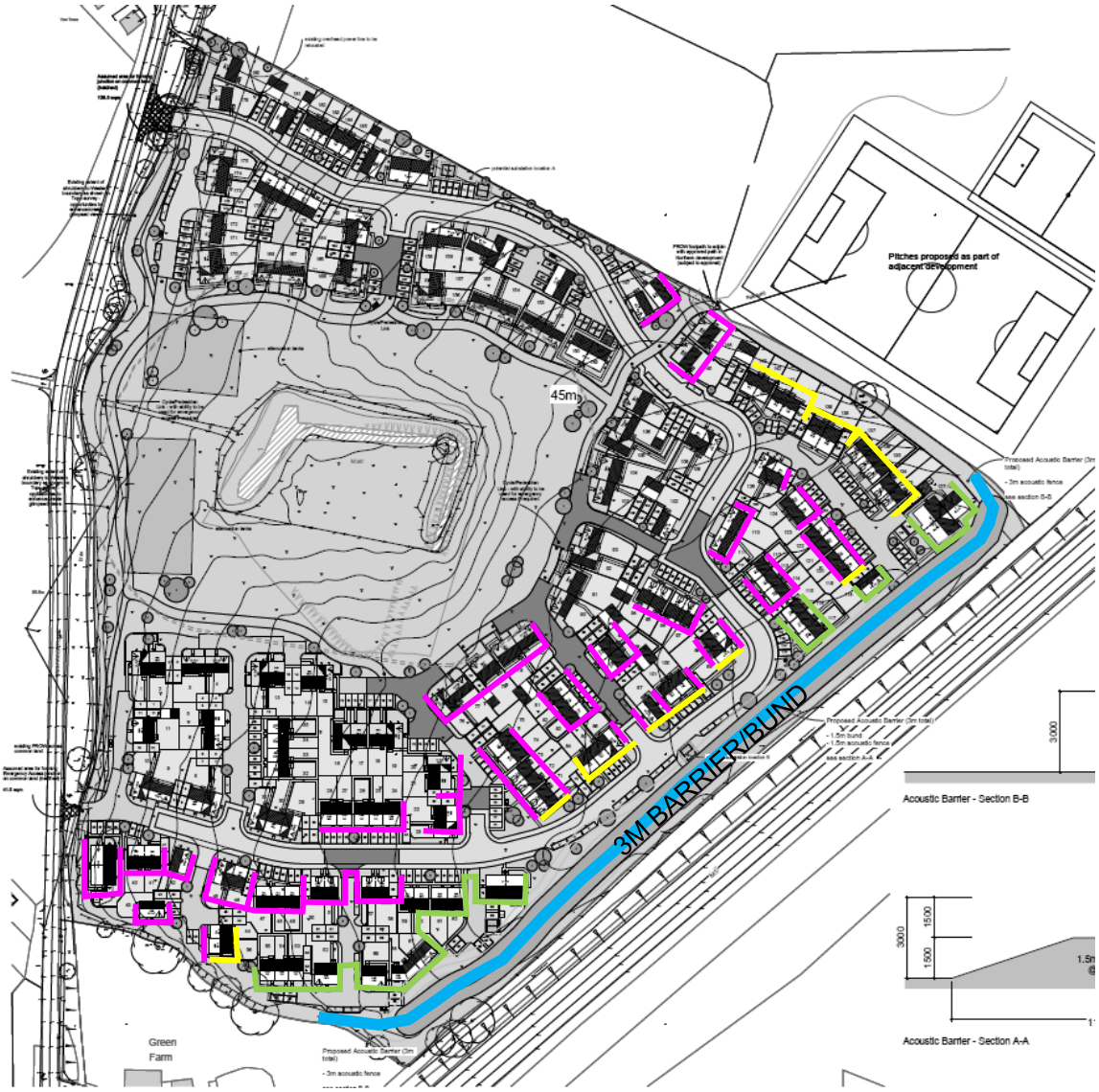
5. World Health Organisation. Guidelines for Community Noise, 2000.

6. British Standards Institution. British Standard 7445: 1991 Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use.

7. Department of Transport. Calculation of Road Traffic Noise, 1988.

Additional Measurement Locations

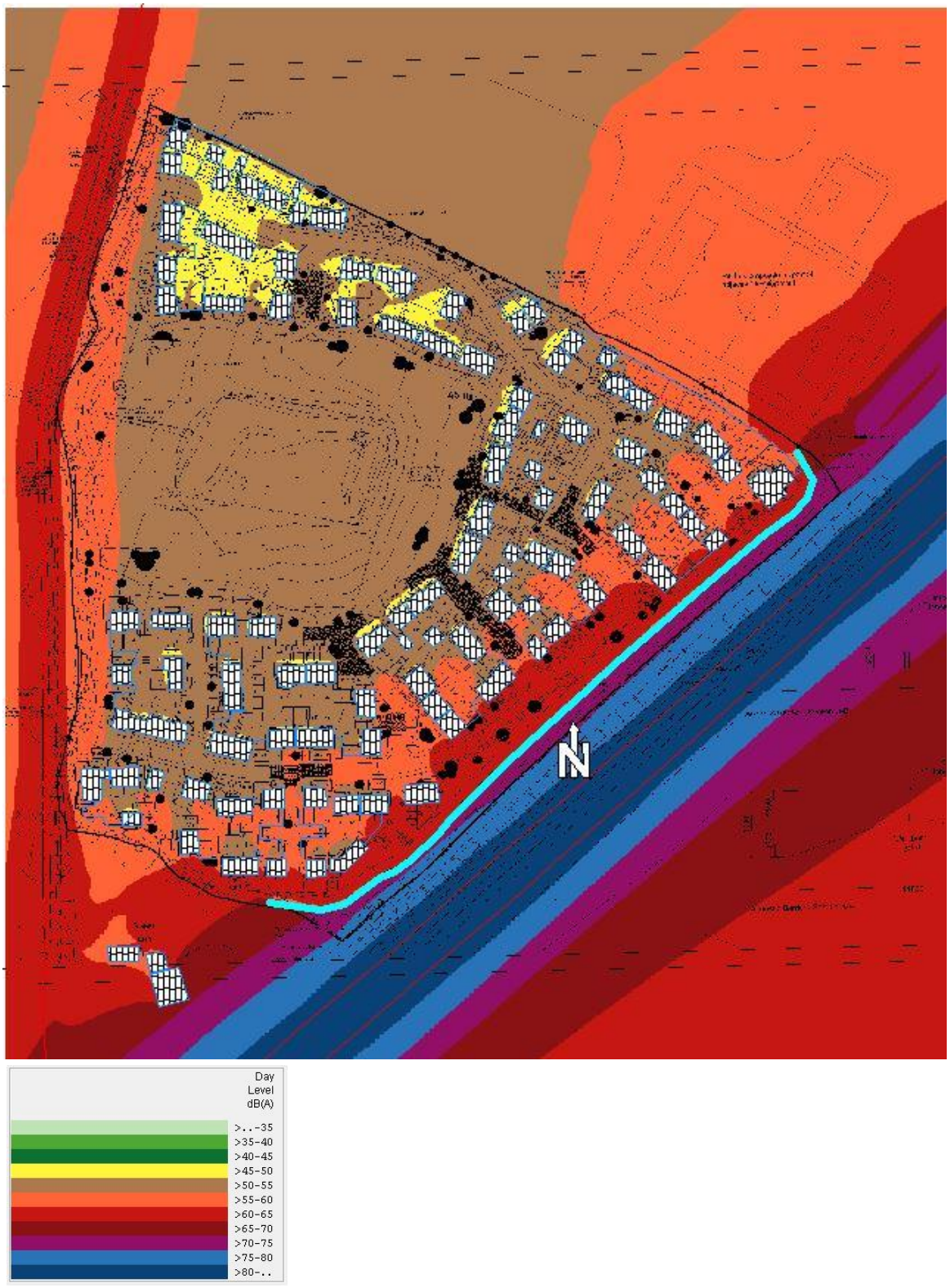
Project: Land at Snow Capel, Gloucester	**Title:** Site Location Plan/ Measurement Locations	
DWG No: Figure 1	**Scale:** N.T.S.	**Rev:** 0
Date: April 2022	**Drawn By:** KE	**Job No:** 9061-1



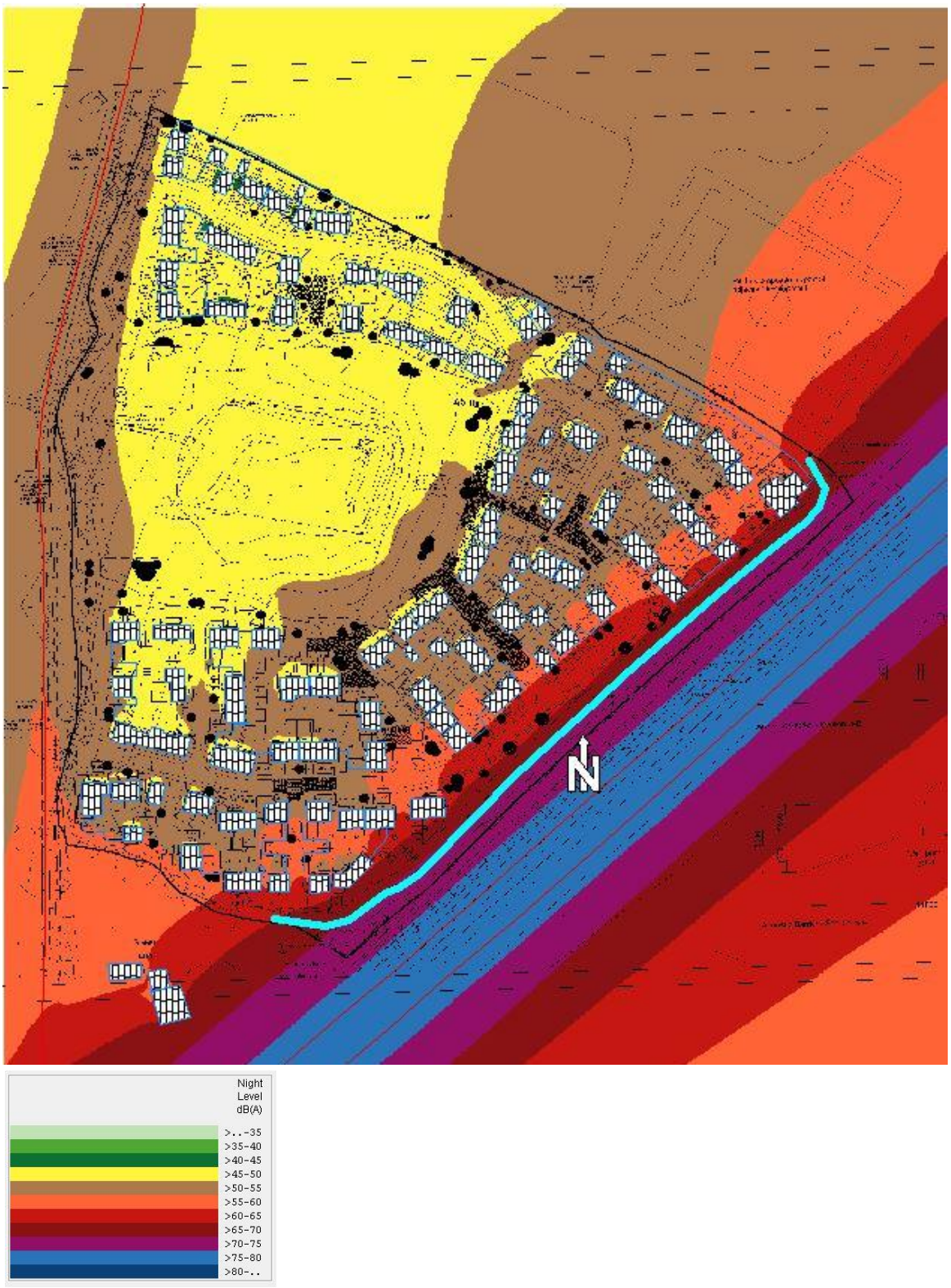
Habitable Room Window and Vent Type Locations:

Window Type A and MVHR	
Window Type B and Vent Type A	
Window Type C and Vent Type B	
Window Type C and Vent Type C	All unmarked façades

Project: Land at Snow Capel, Gloucester	**Title:** Proposed Development Scheme and Habitable Room Window/Vent Type Locations	
DWG No: Figure 2	**Scale:** N.T.S.	**Rev:** 0
Date: April 2022	**Drawn By:** KE	**Job No:** 9061-1



Project: Land at Snow Capel, Gloucester	**Title:** Daytime Noise Contours, dB $L_{Aeq,\ 16\ hour}$ at 1.5m	
DWG No: Figure 3	**Scale:** N.T.S.	**Rev:** -
Date: April 2022	**Drawn By:** KE	**Job No:** 9061-1



Project: Land at Snow Capel, Gloucester	**Title:** Night-time noise contours, dB $L_{Aeq,\ 8\ hour}$ at 4m (applicable to facades only)		24Acoustics
DWG No: Figure 4	**Scale:** N.T.S.	**Rev:** -	
Date: April 2022	**Drawn By:** KE	**Job No:** 9061-1	

APPENDIX A: NOISE UNITS

Noise

Noise is defined as unwanted sound. The range of audible sound is from 0 to 140 dB. The frequency response of the ear is usually taken to be around 18 Hz (number of oscillations per second) to 18000 Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in important by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dB(A) weighting. This is an internationally accepted standard for noise measurements.

For variable sources, such as traffic, a difference of 3 dB(A) is just distinguishable. In addition, a doubling of traffic flow will increase the overall noise by 3 dB(A). The 'loudness' of a noise is a purely subjective parameter, but it is generally accepted that an increase/ decrease of 10 dB(A) corresponds to a doubling/ halving in perceived loudness.

External noise levels are rarely steady, but rise and fall according to activities within an area. In attempt to produce a figure that relates this variable noise level to subjective response, a number of noise indices have been developed. These include:

i) The L_{Amax} noise level

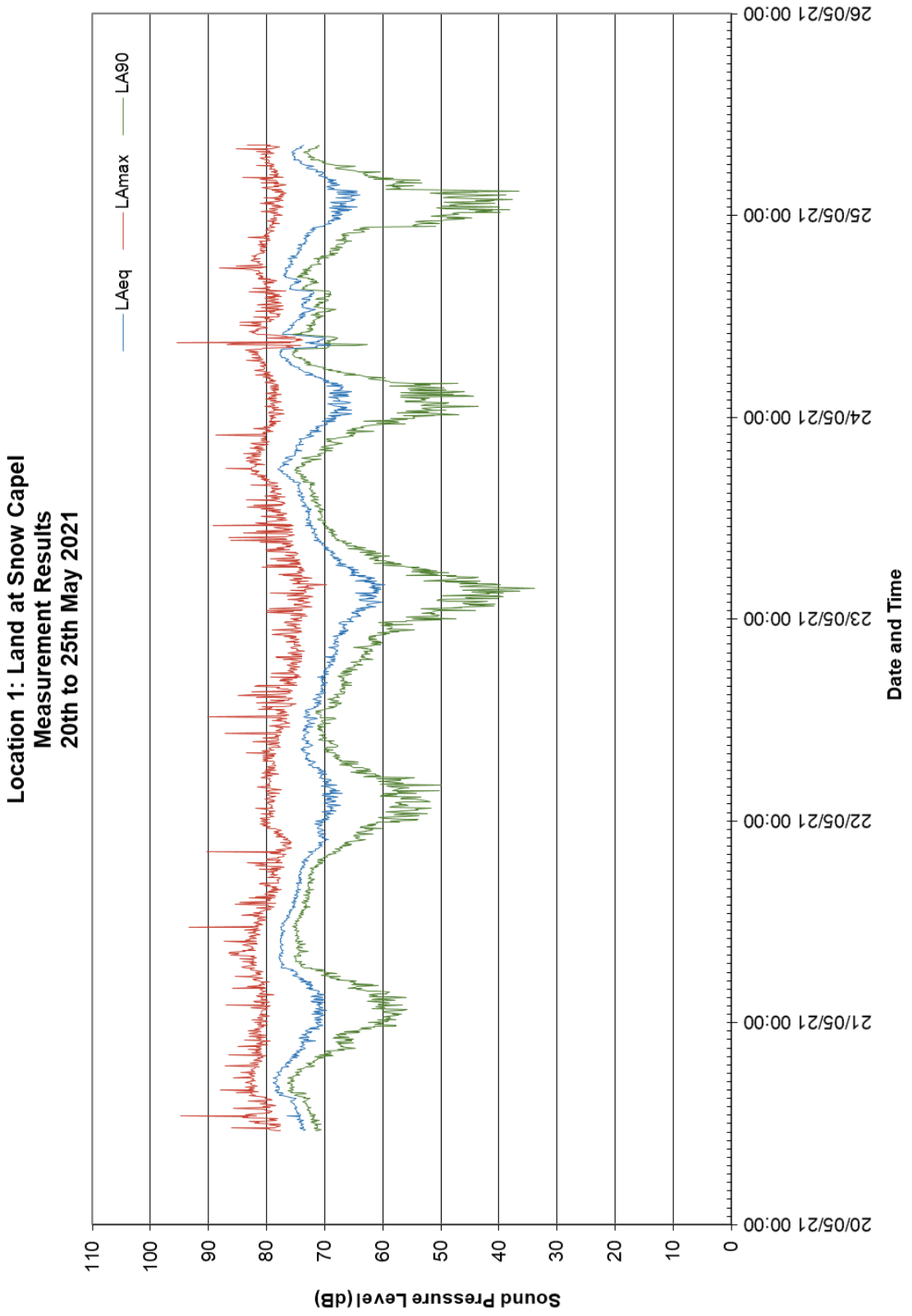
This is the maximum noise level recorded over the measurement period.

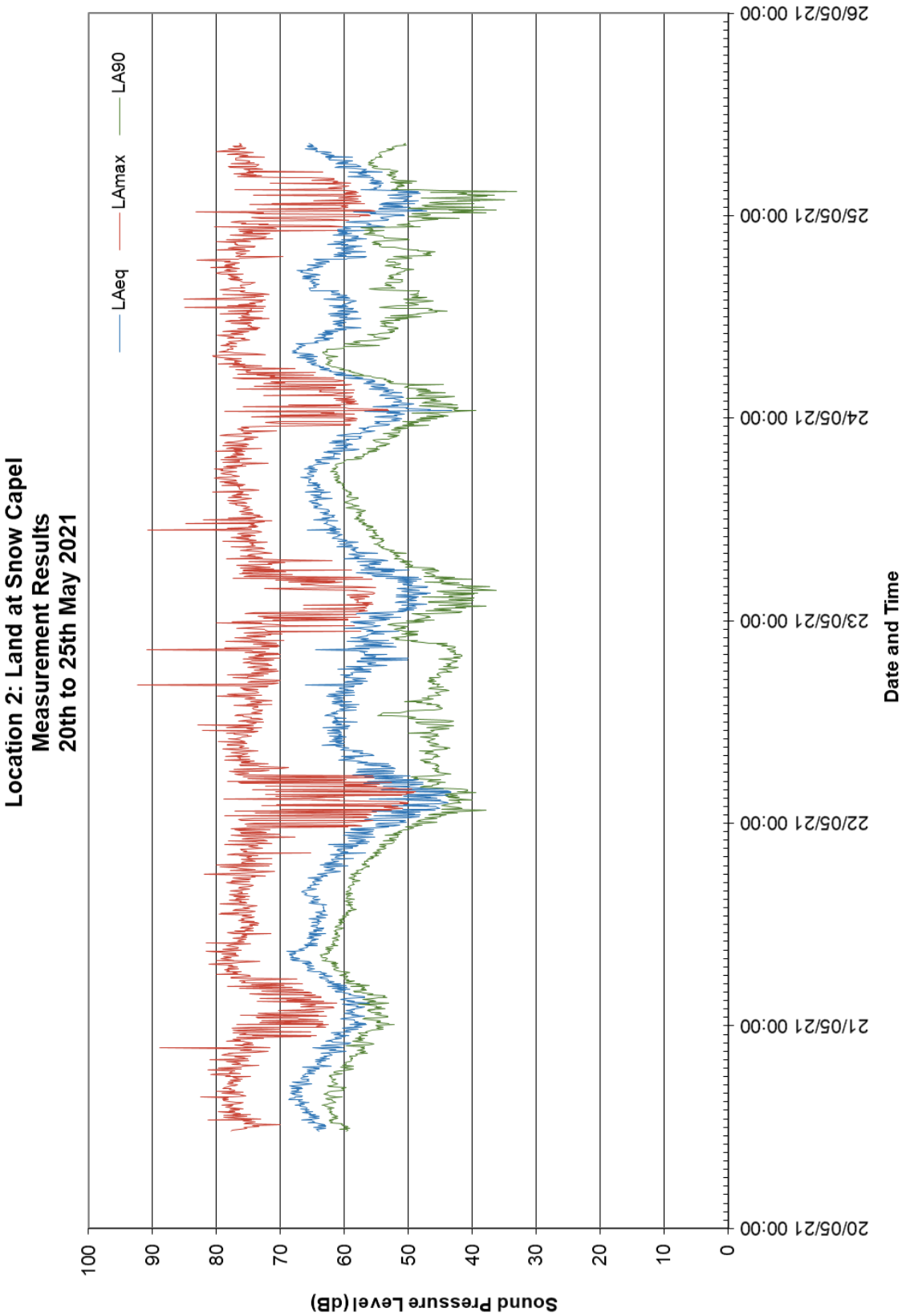
ii) The L_{Aeq} noise level

This is "equivalent continuous A-weighted sound pressure level, in decibels" and is defined in British Standard BS 7445 as the "value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time internal, T, has the same mean square sound pressure as a sound under consideration whose level varies with time".

It is a unit commonly used to describe construction noise and noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise. In more straightforward terms, it is a measure of energy within the varying noise.

APPENDIX B: AMBIENT NOISE MEASUREMENT RESULTS




Location 2: Land at Snow Capel
Measurement Results
20th to 25th May 2021
LAeq
LAmax
LA90
Sound Pressure Level (dB)
100
90
80
70
60
50
40
30
20
10
0
20/05/21 00:00
21/05/21 00:00
22/05/21 00:00
23/05/21 00:00
24/05/21 00:00
25/05/21 00:00
26/05/21 00:00
Date and Time

Snow Capel Farm, Matson

Remediation Strategy

Report for:

Bromford Housing Association

Reference:

P0272/CS-J-1486

T & P Regeneration Ltd
Unit 4, Brunel Lock Development
Smeaton Road
Bristol
BS1 6SE

Document Revision

Client		Bromford Housing Association		Project Reference	P0272/CS-J-1486
Site Address		Snow Capel Farm, Matson			
Issue	**Date**	**Revision Details**	**Prepared by**	**Checked by**	**Approved by**
01	13/05/2022	Original Issue	[redacted]	[redacted]	[redacted]

CONTENTS

APPENDICES

A DRAWINGS

1 INTRODUCTION

1.1 Background

Following instruction from Bromford Housing Association (the 'client'), this report presents a Remediation Strategy for a proposed residential development at Snow Capel Farm, Matson (the 'site').

1.2 Site Location and Description

The site is approximately centred on National Grid Reference 385099, 214213. The nearest postcode is GL4 6EQ. A site location plan is included within Appendix A.

The site comprises a roughly rectangular shaped parcel of grassland comprising 7.8 hectares measuring 350m northwest to south-east and 295m northeast to south-west.

The site slopes gently from the southeast (61.5mAOD) to the northwest (50mAOD) and is level to the adjacent road to the northwest. A moat is situated within the central portion of the site.

1.3 Proposed Development

Information presented to T&P Regeneration Ltd (T&P) indicates that the proposed development is intended to comprise the construction of 190N^{o} residential dwellings with associated areas of communal and private soft landscaping with hard landscaped access and parking.

A Proposed Development Plan is included within Appendix A.

1.4 Previous Reports

Previous reports pertaining to the site are listed in Table 1.1. Pertinent information is summarised in this report where appropriate. However, reference should be made to these reports directly for further detail.

Table 1.1 Summary of Previous Reports

Date	Title	Reference	Author
2017	Geotechnical and Phase 2 Contamination Report	1826	Integrale
2018	Supplementary Ground Gas Risk Assessment	180321_SNO1877_HM	T&P Regeneration Ltd
2021	Ground Investigation Report	P0272/CS-J-0828	T&P Regeneration Ltd

1.5 Objectives

The objective of this remediation strategy is to outline the risk mitigation measures required to address identified unacceptable risks presented to human health or the environment in the context of the site's proposed future end use as a residential development.

1.6 Report Limitations

The recommendations, interpretations and conclusions of this report are based solely on the site conditions observed and the ground conditions revealed during previous site investigation works undertaken by T&P and/or third parties. No responsibility can be accepted for the accuracy of third-party data. Due to the inherent variability of the ground conditions between exploratory hole positions these conditions can only be interpreted and are accurate only for the date of the investigation works.

2 BACKGROUND INFORMATION AND SITE SETTING

2.1 Information Sources

Reference has been made to previous reports and publicly available information from the Environment Agency, MAGIC and BGS websites, as relevant. Background and site setting information has been provided to provide context to the site, proposed development and remediation strategy.

2.2 Geology, Hydrology and Hydrogeology

Available geological records show the site is underlain entirely by the Charmouth Mudstone Formation which is classified as a Secondary (undifferentiated) Aquifer. The site is not located within a groundwater Source Protection Zone. There is a single licensed groundwater abstraction point in the southern portion of the site, issued in 1966 and used for general farming and domestic use.

The nearest surface water feature is an unnamed tertiary river with forms the western boundary and flows to the north. In addition, a portion of a moat is located within the central area of the site, which is also a scheduled ancient monument.

2.3 Site History

From the earliest maps available the site is shown to comprise agricultural fields with a moat structure in the centre. The northern portion of the moat structure is indicated to contain water while the southern portion is shown as a break of slope alongside an internal field boundary marked by trees. The southern portion of the moat is shown to be potentially infilled by 1994 with the internal field boundaries also removed. No further significant changes were noted within the site.

The wider surrounding area was shown to comprise agricultural land with Snow Capel farm adjacent to the south west boundary and a road running north-south adjacent to the western boundary. By 1966-1971 the M5 motorway had been constructed adjacent to the eastern boundary within a cutting.

2.4 Summary of Previous Findings

A summary of principal findings of previous ground investigation is provided below. Further detail can be obtained with reference to the original reports.

2.4.1 Ground Conditions

Made ground was encountered across the majority of the site area with the exception of the far western boundary.

The made ground predominantly comprised of brown mottled grey slightly gravelly clay with rare organic fragments ranging in depth from between 1.30 – >3.50mbgl and is considered consistent with previous descriptions of natural spoil derived from the nearby M5 construction.

Within the central portion of site, immediately south of the moat, the made ground was locally different with an increased organic content noted including larger wood fragments.

Natural soil of the Charmouth Mudstone Formation was recorded beneath topsoil/made ground across the site and generally the upper weathered portion comprised firm to stiff, brownish grey mottled orangish brown silty clay. The unweathered extremely weak Charmouth Mudstone Formation was encountered within BH201 and BH202 from a depth of 5-6mbgl to a maximum depth of >9.00mbgl.

2.4.2 Evidence of Contamination

With the exception of the made ground and localised increased organic content in the vicinity of the infilled southern portion of the moat, no significant visible or olfactory evidence of any contamination was noted during the ground investigations.

2.4.3 Groundwater

Groundwater was encountered in post-works monitoring, ranging between 0.04m and 3.4mbgl in monitoring wells.

2.4.4 Human Health Risk Assessment

Soil laboratory analysis results were compared against generic standards[1] for a 'residential with homegrown produce' end use.

The majority of the site was shown to be underlain by a thin veneer of topsoil above predominantly cohesive made ground considered to relate to spoil originating from the construction of the adjacent M5 motorway. Chemical testing of this made ground has shown no exceedances for contaminants of potential concern above assessment criteria levels. In addition, this material was considered physically suitable to remain within areas of soft landscaping with occasional organic fragments recorded.

Deeper and older made ground present within the central portion of the site associated with the potentially infilled moat was shown to contain significantly increased organic content including large wood fragments. Additionally, elevated lead has been recorded within this material at a depth of 1.30mbgl.

As such, based upon the assumption that final levels will remain broadly similar to existing, no risk to human health has been identified within shallow soils and these are considered chemically suitable to remain within areas of soft landscaping.

However, should proposed site levels be reduced, within the central portion of site where deeper and older made ground associated with the infilled moat is present which might expose it within the upper 600mm of the intended finished site levels localised remedial works may be required. This would be considered necessary due to the chemical and physical nature of the older organic fill material which is considered unsuitable to remain beneath areas of soft landscaping and provision of a suitable thickness of capping soils may be required as a result.

2.4.5 Controlled Waters Risk Assessment

The ground investigations identified site wide made ground typically comprising a slightly gravelly clay, with rare organic fragments. No significant visual or olfactory evidence of gross contamination was observed. Furthermore, although leachate testing was not undertaken as part of the assessments, the encountered soil concentrations of mobile contaminants (Polycyclic Aromatic Hydrocarbons) were assessed to be below levels of potential concern. Additionally, the cohesive nature of both the made ground and natural soils across the site will limit any lateral/vertical leaching pathways.

As such, the risk to controlled waters was considered to be acceptably low owing to the low soil concentrations encountered within the made ground, and lack of a significant vertical leaching pathway. No further work was considered necessary.

---

[1] *The LQM/CIEH S4ULs for Human Health Risk Assessment. Nathanail, C.P. et al., 2015.*
SP1010. Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination. CLAIRE. 2014.

2.4.6 Phytotoxic Risk Assessment

Concentrations of boron were found to exceed the adopted phytotoxic screening values in 1Nº of the 7Nº samples tested from made ground and 1Nº of the 3Nº samples tested from natural ground. The exceedances of boron recorded in two samples are considered to represent localised occurrences and given the marginal nature of the exceedances are unlikely to significantly impact future plant growth.

2.4.7 Ground Gas Risk Assessment

Previous phases of ground gas monitoring have been completed by Intégrale in 2017 then T&P Regeneration in 2018 and 2021. Results from the Intégrale investigation found high levels of methane (61.1-61.6%) and carbon dioxide (35.2-35.7%) within WS1 locally, with lower levels across the remainder of the site.

The results of the 2018 T&P Ground Investigation found peak methane and carbon dioxide concentrations to be generally below instrument detection level (<0.1%) in the majority of monitoring wells, with the exception of WS1 and WS102. Results from WS1 and WS102 corresponded to the earlier Intégrale results and indicated a locally 'Red' classification when assessed against the NHBC Traffic Light System. The remainder of the site was indicated to be classified as either 'Green', or 'Amber 1/2'.

The results of the 2021 T&P investigation showed a similar trend, with high values of methane (74.5%) and carbon dioxide (71%) recorded within WS202 and WS204, located within the potentially infilled moat with the remainder of the site showing reduced ground gas concentrations.

As such, an area classified as 'Red' in accordance with the NHBC Traffic Light system has been identified in the central portion of the site in association with this. Subsequently areas which require 'Amber 2' protection measures have been defined as shown in the ground gas protection drawing attached to this report. The remainder of the site is classified as requiring 'Amber 1' protection measures. In addition, no radon protection measures are required across the site.

2.4.8 Potable Water Supply

No significantly elevated concentrations of benzo(a)pyrene (BaP) were identified in topsoil or made ground soil results. Therefore, it is considered that standard PE pipework will be suitable for the buried potable water supply network on site.

3 REFINED CONCEPTUAL SITE MODEL

3.1 General

Following completion of previous ground investigation and risk assessment, a refined conceptual site model has been developed as detailed below. Further detail of the assessment undertaken is provided in previous reports as listed in Table 1.1.

3.2 Sources

With consideration of the assessment summarised in Section 2, the following Areas of Potential Concern (APC) have been identified which require risk mitigation:

- **APC 1:** Made ground associated with motorway spoil/trackways;
    - Elevated carbon dioxide and methane levels encountered during site monitoring.
- **APC 3a:** Made ground within infilled section of moat.
    - Single exceedance for lead compared against human health screening levels.
    - Elevated carbon dioxide and methane levels encountered during site monitoring.

3.3 Risk evaluation

National guidance[2,3,4] has been considered in the development of the conceptual model for the site to inform an estimation of risk in relation to each plausible source-pathway-receptor (SPR) identified. Table 3.1 presents a summary of the (SPR) relationships identified as a moderate/low risk or higher which will require remedial action and/or management to mitigate unacceptable risks identified, further detail of which will be provided in later sections of this report.

[2] *Contaminated Land Risk Assessment. A Guide to Good Practice. CIRIA C552. 2001.*
[3] *Land contamination risk management - https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm.*
[4] *Guidance for the Safe Development of Housing on Land Affected by Contamination. NHBC. 2008.*

Table 3.1 Source-Pathway-Receptor (SPR) Relationships Requiring Risk Mitigation

APC Nº	Source	Pathway (s)	Receptor	Consequence	Probability	Risk*	Comment
1	On-site Made ground associated with motorway construction spoil/trackways.	Gas / vapour inhalation/explosion	Future residents and maintenance workers	Medium	Likely	**Moderate**	GGRA indicates plots will require protection measures in line with either an Amber 1 or Amber 2 classification was shown within Appendix A.
3a	On-site Potentially infilled section of moat.	Oral ingestion	Future residents and maintenance workers	Medium	Low likelihood	**Moderate/ Low**	A single exceedance for lead was noted within the made ground associated with the infilled moat in TP203 at a depth of 1.30-1.50mbgl (within the overall strata encountered from 1.30-2.80mbgl). Made ground above this originates from the M5 spoil and no exceedances above human health screening levels were recorded. Subsequently the made ground associated with the infilled moat is effectively capped by 1.30m of chemically and physically suitable soil and is not therefore likely to represent a significant risk to human health should site levels remain as they are.
		Vegetable uptake	Future residents	Medium	Low likelihood	**Moderate/ Low**	
		Dermal contact	Future residents and maintenance workers	Medium	Low likelihood	**Moderate/ Low**	
		Dust migration/inhalation	Future residents, maintenance workers and off-site residents/workers	Medium	Low likelihood	**Moderate/ Low**	
		Gas / vapour inhalation/explosion	Future residents and maintenance workers	Medium	High likelihood	**High**	GGRA shows a 'Red' classification when compared against the Traffic Light System.

Where multiple receptors exist the risk classification is based on most sensitive receptor for conservatism.

4 REMEDIATION STRATEGY

4.1 Remediation Objectives

The objective of the proposed remedial strategy is to render the site suitable for a proposed future residential end-use. In addition, the remedial strategy will address statutory risks, such that the site would not be determined as Contaminated Land under Part 2A of the Environmental Protection Act 1995.

4.2 Remediation Strategy

Remedial recommendations are made in the context of the proposed development which will comprise the construction of 190N^{o} residential dwellings with associated areas of private and public soft landscaping, hard landscaped areas and parking.

4.3 Risk Mitigation

As summarised in Table 3.1, several SPR relationships have been identified which are considered to present an unacceptable risk to identified receptors, and which will require risk mitigation measures to be applied, as discussed further in subsequent sections. Reference should be made to the Remedial Strategy Plan included within Appendix A. Recommendations for risk mitigation actions are made in the context of client supplied development information including earthworks strategy and landscaping proposals. In the event that significant changes to the development proposals are made, these recommendations should be reviewed and updated as necessary.

Remediation verification requirements are set out within Section 6.

4.3.1 Ground Gases

- Amber 1/CS2 protection measures, in line with BS8485[5], are recommended for the majority of plots across the site. A number of plots, as shown within Appendix A, require gas protection measures for an Amber 2/CS3 classification.
- Gas protection measures for Amber 2/CS3 should be designed with a minimum gas protection score of 4.5 to be achieved for a Type A building. Gas protection measures for Amber 1/CS2 should be designed for a minimum gas protection score of 3.5.
- It is anticipated that protection measures would comprise a passive sub floor dispersal layer together with installation of a dual-purpose waterproofing layer which will also serve as a gas/vapour protection barrier to mitigate against potentially unacceptable residual vapour risks.

4.3.2 General Recommendations

- Vigilance should be employed for any unforeseen ground conditions when excavating in previously inaccessible areas and when grubbing out, where specialist advice may be required.
- On-site boreholes should be protected until such time as the regulators have confirmed agreement with the gas risk conclusions. Following approval from the regulators, the monitoring boreholes should be decommissioned in line with Environment Agency guidance.

[5] *Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings. BS8485. 2015.*

4.4 Soil Re-Use Opportunities

As with all construction projects, it is preferable to maximise the reuse of soils on-site and minimise the amounts of off-site disposal. To achieve this whilst accomplishing the remedial objective, a number of potential re-use opportunities have been identified and which are described in later sections of this report which may be undertaken in line with the CL:AIRE Definition of Waste Code of Practice (DoW:CoP).

4.4.1 Made Ground

The site wide made ground associated with the M5 spoil is considered to be chemically and physically suitable for re-use across the proposed development within areas of soft landscaping or beneath hardstanding subject to geotechnical testing.

Made ground associated with the infilled moat is not considered physically or chemically suitable for re-use within areas of soft landscaping but may be suitable for re-use beneath an appropriate thickness of capping soils, hard landscaped areas or beneath buildings. However, supplementary screening to remove large wood fragments and subsequent geotechnical characterisation may be required to determine material type and likely compaction requirements depending on the end use specification required, from a geotechnical perspective.

4.4.2 Natural Soils

Chemical analysis has indicated that natural soils will be suitable for retention/re-use within private garden areas or areas of POS_{resi}.

4.5 Residual Risk and Uncertainty

Subject to implementation of the risk mitigation measures described throughout Section 4.3, it is considered that no areas of uncertainty or residual risk will remain.

5 MANAGEMENT OF WORKS

5.1 Health and Safety

The works should be carried out in accordance with the Construction (Design & Management) Regulations 2015. These regulations place specific responsibilities on the Principal Contractor, Principal Designer and Employer. The Employer should appoint a Principal Designer and a Principal Contractor for the works.

The Principal Contractor shall develop appropriate methods of working to ensure the health and safety of workers, visitors and neighbours and also protect the environment, in accordance with management procedures outlined in their Construction Phase Plan.

Following completion of the remediation works, pertinent information shall be supplied to the Principal Designer for incorporation into the site Health and Safety File.

5.2 On-Site Material Management

In the event that on-site re-use of made ground is proposed, this may be undertaken in accordance with the CL:AIRE Development Industry Definition of Waste Code of Practice. In this case, a Materials Management Plan (MMP) shall be prepared to document the principles of re-use outlined within this Remediation Strategy prior to any excavation or stockpiling works commencing on site.

Alternatively, application of a U1 waste exemption may be an appropriate route to support re-use of smaller volumes of site won soils in construction projects. This allows re-use of suitable waste rather than virgin raw material providing site complies with standard rules as set out by the Environment Agency[6].

Re-use of aggregates from inert waste may also be undertaken in line with the WRAP Quality Protocol.

5.3 Waste Management Strategy

It is a requirement of the Landfill Regulations 2002 that all waste must be treated to reduce its quantity and/or its environmental impact before being disposed of to landfill. This process has been undertaken as part of this remediation design and is demonstrated by the following:

- Intrusive ground investigation has been undertaken at the site in order to identify areas where contamination deemed to present an unacceptable risk to identified receptors is present. Reference should be made to previous ground investigation reports for further details.
- The Principal Contractor is required to further reduce the volume of material for off-site disposal and/or treatment by the sorting of inert rubble, metal, etc. from all excavated and/or stockpiled soils where practically possible.

In line with the waste hierarchy, it is preferable to retain as much site won material as possible, in line with the reuse opportunities set out in Section 4.4.

Excavated soils requiring off-site disposal will be transported in road going lorries, in accordance with appropriate duty of care requirements[7]. The waste haulier will be a licensed waste carrier, with evidence of registrations obtained prior to consigning waste for off-site treatment and/or disposal. Appropriate controls will be put in place for handling/transportation of materials

[6] https://www.gov.uk/guidance/waste-exemptions-using-waste
[7] *Waste Duty of Care Code of Practice. Defra. 2016.*

including any which may contain asbestos. Laboratory results of the excavated material will be passed on to the haulier and the material will be transported and disposed of accordingly.

Demolition rubble or other recyclable aggregates, metals or other inert and recoverable materials may be segregated for re-use on-site or sent for off-site recycling to an appropriately licensed facility.

5.4 Waste Characterisation

A preliminary review of ground investigation data has been completed to support waste characterisation and pre-classification in the event that off-site disposal of soils is required, which is separate to human health or other environmental risk assessment completed to support the remediation strategy. Reference should be made to previous reports for detail on this assessment.

In summary, this waste assessment indicated that the made ground and natural soils across the site are likely to be classified as non-hazardous. In the event that off-site disposal of surplus excavated soils to landfill is intended, chemical results should be supplied to the receiving facility to confirm they will be able to accept the material. Supplementary testing may be required by the receiving facility, including WAC testing, to confirm the preliminary waste characterisation assessment and to ensure WM3 requirements have been met.

5.5 Unexpected Contamination

If during the subsequent construction works additional suspected contaminated soils (e.g. visible/odorous hydrocarbon impacted soils) or structures/infrastructure with the potential to contain contamination are subsequently revealed, it will be necessary to contact a suitably qualified environmental consultant who will be able to attend site and advise upon the most appropriate course of action.

5.6 Control Measures and Monitoring

An environmental risk assessment shall be undertaken by the Principal Contractor which shall establish appropriate environmental control measures and monitoring protocols required during the works, which should be documented within a site-specific Environmental Management Plan. The Principal Contractor shall implement appropriate dust and noise control measures as appropriate and shall ensure that competent staff are on-site to implement the controls when necessary. Where/if movement of asbestos impacted soils/material is required, appropriate controls shall be implemented e.g. damping down and monitoring undertaken as required.

6 VERIFICATION

6.1 Ground Gas Protection

Following confirmation of construction design details, a ground gas protection design should be prepared and finalised in accordance with BS8485:2015[8] to demonstrate how the necessary gas protection score shall be achieved.

This must be encapsulated within a site-specific Gas Protection Verification Plan and should be prepared in line with CIRIA C735[9] which sets out the requirements for gathering information to demonstrate that the gas protection measures meet the remediation objectives. This report would typically include clear assignment of responsibilities for verification, details of the type and frequency of inspection/testing required aligned with the construction programme and records which must be kept. As part of this process, the responsible party for the Verification Plan should review the design to confirm the suitability of the proposed products, particularly with regard to their durability within the construction process. It is important to ensure that the proposed verification activities are appropriate and proportionate to the level of risk.

On completion of these works a ground gas verification report must be prepared to demonstrate the successful installation of the gas protective measures in accordance with the verification plan. These details can form part of a broader remedial completion report where verification of other on-site remedial mitigation measures is applicable. Details of necessary record keeping requirements relating to the above are detailed below.

6.2 Record Keeping

Records of operations relating to the remediation works will be maintained on-site by the Principal Contractor and provided to the client for inclusion within the Remediation Completion Report. These records shall include the following, where relevant/appropriate:

- Environmental monitoring undertaken (if required); and,
- Inspection records for gas protection measures including photos, integrity test data, defects and remedial measures undertaken (as appropriate) with reference to the requirements of the Gas Protection Verification Plan.

In addition, where reuse of materials is undertaken in line with an MMP the following shall be recorded:

- Wagon movements on- and off-site;
- On- and off-site soil movement records; and,
- Volumes and placement locations/depths of soil reuse.

6.3 Remediation Completion Report

A Remediation Completion Report will be prepared that will include a summary of the works undertaken to demonstrate that the remediation objectives have been met. Supporting information will be provided as summarised in Section 6.2, the report will also serve to demonstrate compliance with the principles of material re-use outlined within the supporting MMP and will be submitted to CL:AIRE as a final record, if required.

The Remediation Completion Report shall be issued to the regulators upon completion of the works.

---

[8] *Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings. BS:8485 (2015) + A1 2019.*
[9] *Good Practice on the Testing and Verification of Protective Systems. CIRIA C735. (2014).*

Appendix A – Drawings

Site Boundary

Base Map
Company: - Autodesk License
DWG Title: -
DWG Number: -
Date: -

-	-	-	-	-
Drawn	Checked	Amendment	Date	Rev.

Client: Edward Ware Homes

Project: Snow Capel

Title: Site Location Plan

T&P Regen

Unit 4 Brunel Lock Development, Smeaton Road, Bristol, BS1 6SE

[redacted]

Scale	Date	Drawn by	Check by	Rev.	Drawing No.
1:5000@A3	12/11/20	AW	SH	-	P0274-01-002

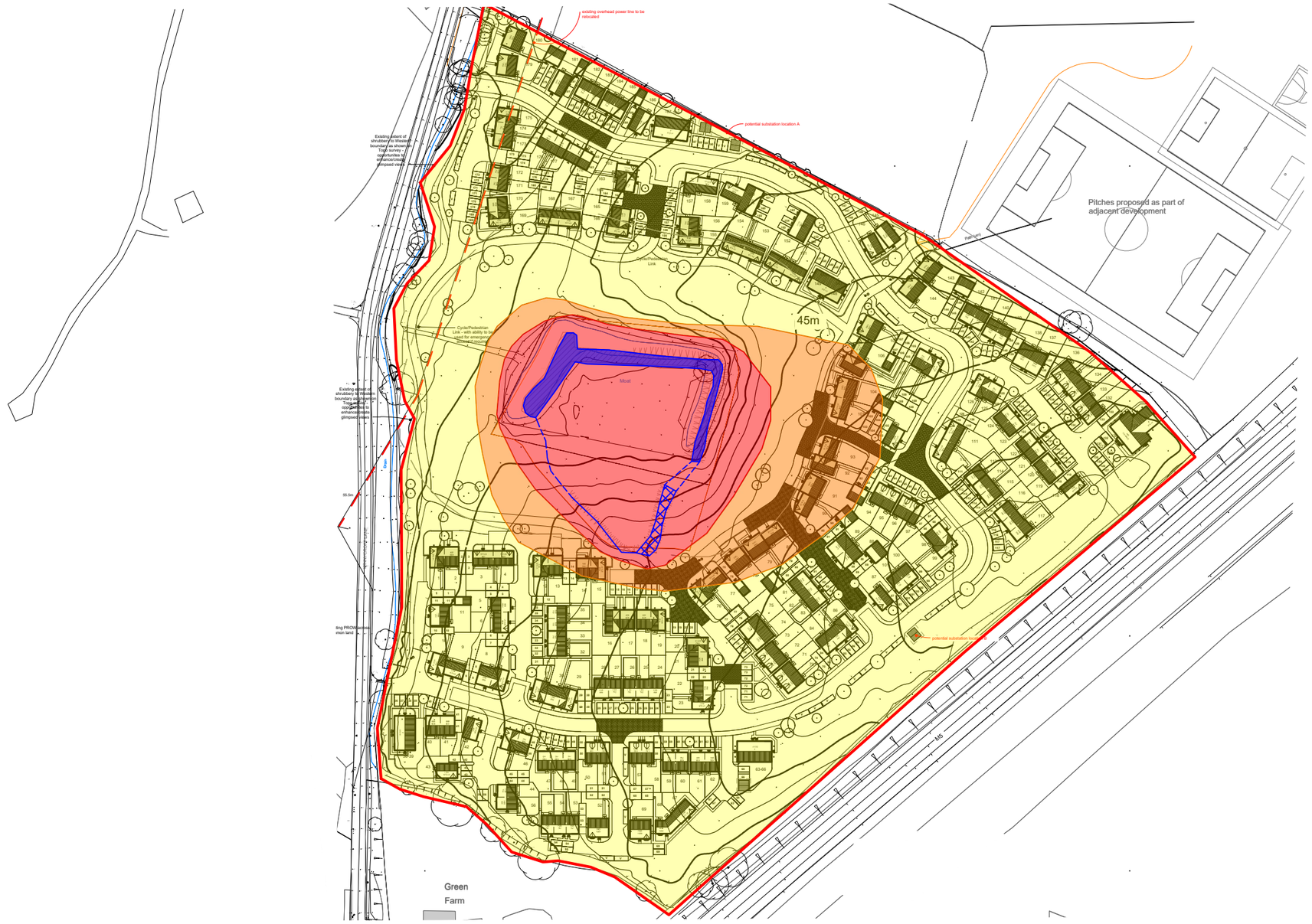
0 125 250m

Scaled in Metres

- Site Boundary
- Existing Moat Extent
- Historic Moat Location
- Inferred Moat Location

Gas Risk Zones - NHBC Traffic Light System

- Amber 1
- Amber 2
- Red



Base Map
Company: - Origin3
DWG Title: - Proposed Site Plan
DWG Number: - 3250-O3S-ZZ-XX-M3-A-Snow Capel Farm
Date: - Not Available

AW	SH	Updated base drawing to latest proposed development	11/05/22	A
Drawn	Checked	Amendment	Date	Rev.

Client: Edward Ware Homes

Project: Snow Capel

Title: Gas Risk Zonal Plan

Scale	Date	Drawn by	Check by	Rev.	Drawing No.
1:2000@A3	07/05/21	AW	SH	A	P0272-01-010

T&P Regen
Unit 4 Brunel Lock Development, Smeaton Road, Bristol, BS1 6SE
[redacted]

0 60 120
Scaled in Metres

- Site Boundary
- Existing Moat Extent
- Historic Moat Location
- Inferred Moat Location

Existing moat area is not infilled and as such the designed gas risk zonation is considered a precautionary approach.

Gas Risk Zones - NHBC Traffic Light System

- Amber 1
- Amber 2
- Red

T&P Investigation December 2020

- Windowless Sampling Locations (WS201 - WS207)
- Trial Pit Locations (TP209 - TP223)

T&P Investigation October 2020

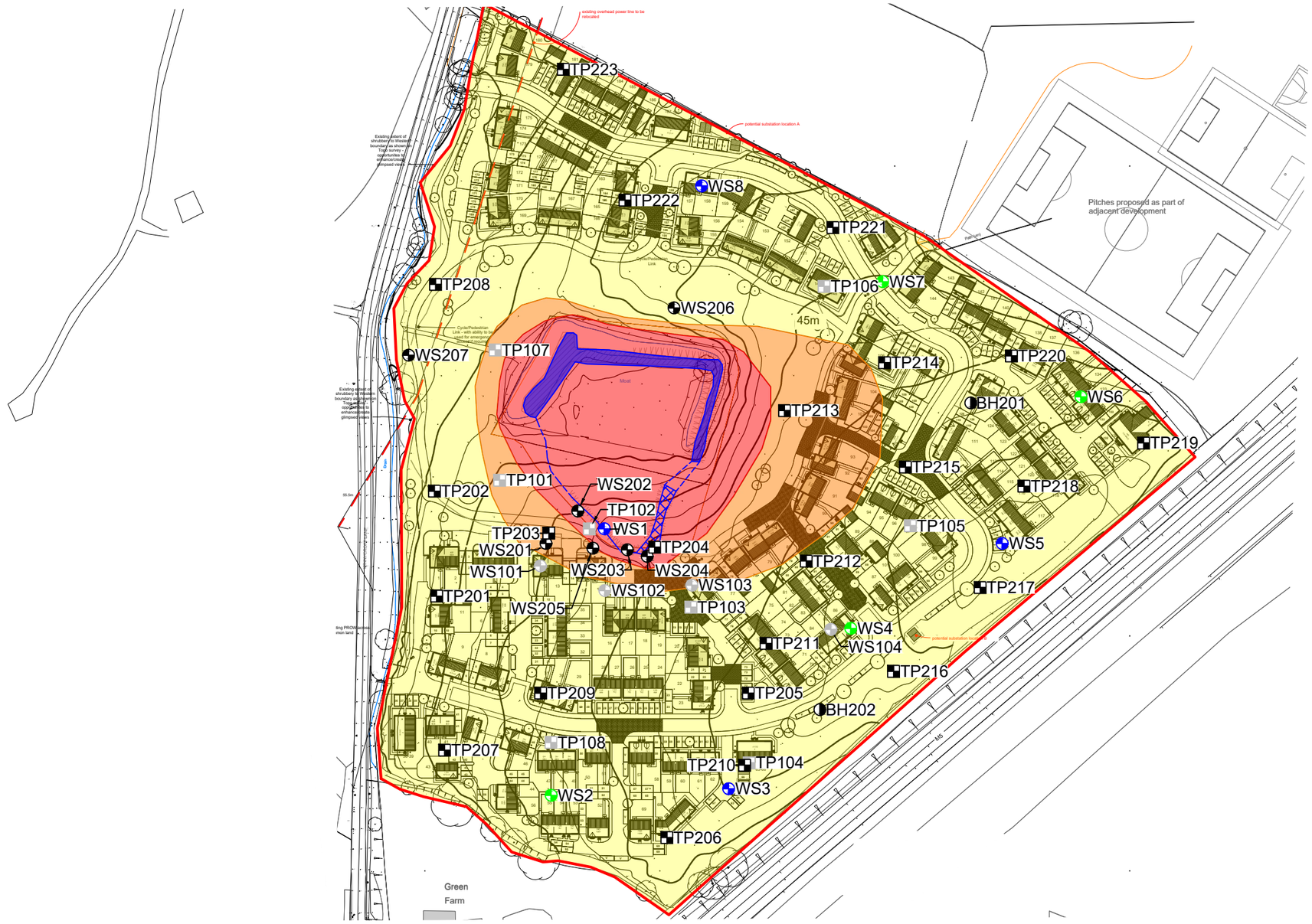
- Trial Pit Locations (TP201 - TP208)

T&P Investigation November 2017

- Windowless Sampling Locations (WS101 - WS104)
- Trial Pit Locations (TP101 - TP108)

Intergrale Investigation May 2017

- Windowless Sampling Locations (Installations) (WS1, WS3, WS5, WS8)
- Windowless Sampling Locations (WS2, WS4, WS6 - WS7)



Base Map
Company: - Origin3
DWG Title: - Proposed Site Plan
DWG Number: -3250-O3s-ZZ-XX-M3-A-SnowcapelFarm
Date: - Not Available

AW	SH	Updated base drawing to latest proposed development	11/05/22	A
Drawn	Checked	Amendment	Date	Rev.

Client: Edward Ware Homes

Project: Snow Capel

Title: Gas Risk Zonal Plan with Exploratory Hole Locations

Scale	Date	Drawn by	Check by	Rev.	Drawing No.
1:2000@A3	07/05/21	AW	SH	A	P0272-01-011

T&P Regen
Unit 4 Brunel Lock Development, Smeaton Road, Bristol, BS1 6SE

0 60 120
Scaled in Metres

Site Boundary

Gas Risk Zones - NHBC Traffic Light System

Plots requiring Amber 2 Gas Protection

- Plots not highlighted require Amber 1 Gas Protection

Gas Protection Measures

- Gas protection measures for Amber 2/CS3 should be designed with a minimum gas protection score of 4.5 to be achieved for a Type A building. Gas protection measures for Amber 1/CS2 should be designed for a minimum gas protection score of 3.5.

- It is anticipated that protection measures would comprise a passive sub floor dispersal layer together with installation of a dual-purpose waterproofing layer which will also serve as a gas/vapour protection barrier to mitigate against potentially unacceptable residual vapour risks.

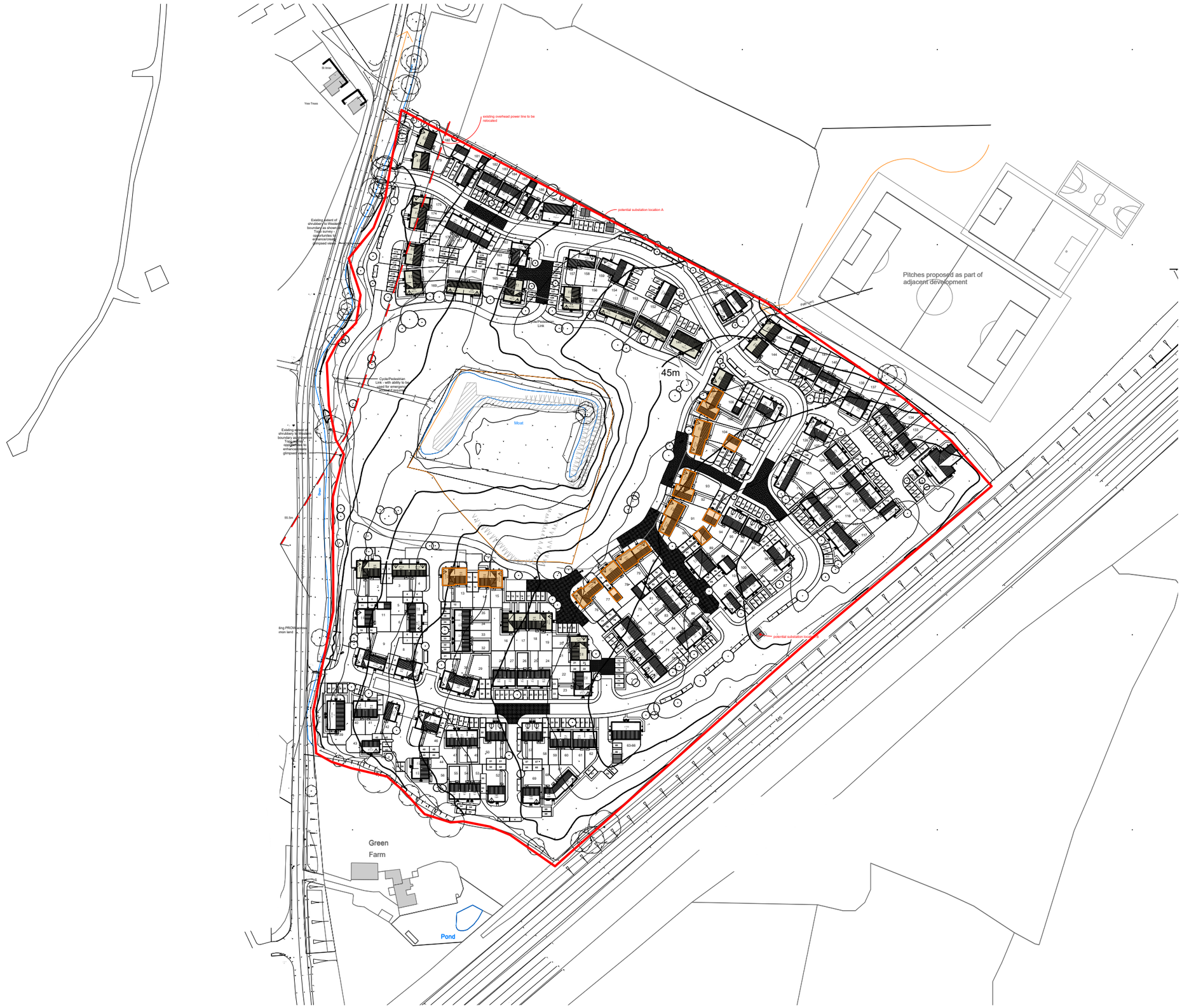
General Recommendations

- Vigilance should be employed for any unforeseen ground conditions when excavating in previously inaccessible areas and when grubbing out, where specialist advice may be required.

- On-site boreholes should be protected until such time as the regulators have confirmed agreement with the gas risk conclusions. Following approval from the regulators, the monitoring boreholes should be decommissioned in line with Environment Agency guidance.

Verification

- All remedial measures should be verified in accordance with section 6 of the Remedial Strategy report (P0272/CS-J-1486).



Base Map
Company: - Origin3
DWG Title: - Proposed Site Plan
DWG Number: - 3250-O3S-ZZ-XX-M3-A-Snow Capel Farm
Date: - Not Available

Drawn	Checked	Amendment	Date	Rev.

Client: Bromford Housing Association

Project: Snow Capel

Title: Remedial Strategy Plan

T&P Regen

Unit 4 Brunel Lock Development, Smeaton Road, Bristol, BS1 6SE

[redacted]

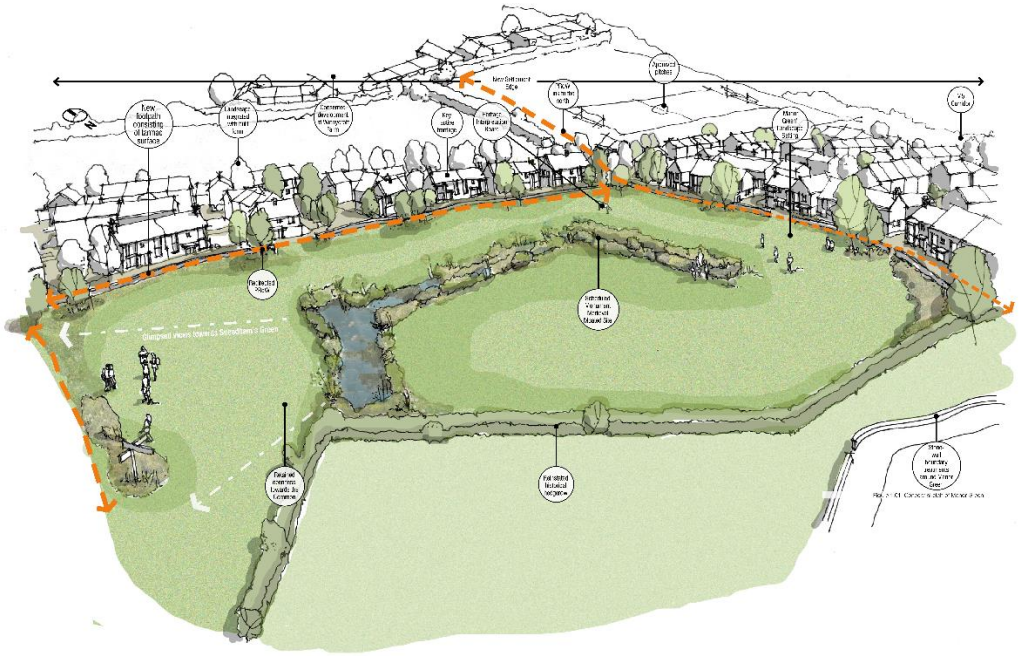
Scale	Date	Drawn by	Check by	Rev.	Drawing No.
1:2000@A3	11/02/22	AW	SH	-	P0272-01-012

0 60 120

Scaled in Metres

conversation PR

May 2022
Statement of Community Involvement
Snow Capel, Matson, Gloucester
Bromford



Prepared by Conversation PR on behalf of Bromford

Executive summary

- The purpose of this report is to:
  - Detail the consultation undertaken by the applicant;
  - Summarise feedback resulting from the consultation;
  - Explain how the proposal has been influenced by those comments.
- This consultation follows best practice and advice set out in Gloucester City Council's Statement of Community Involvement (2015) as well as national planning policy and guidance.
- Ward councillors were briefed on the proposal; meetings were held with key community groups, Together in Matson and Gloucestershire Gateway Trust (GGT).
- Contact was made with Richard Graham MP's office, with a briefing arranged for June.
- Contact has been made, by Bromford's ecological consultant, with Gloucestershire Wildlife Trust, as the request of the GGT.
- Discussions have been ongoing with Gloucester City Homes to seek to provide affordable homes within the scheme to assist with GCH's Matson renewal project.
- A public exhibition was held at Matson's Redwell Centre on April 27. 1,684 A5 postcard invitations were delivered by Royal Mail, to promote the event. 45 people attended the event. 10 feedback forms were completed.
- The applicant invited general feedback, as well as asking three specific questions. The number of respondents was very low but provides a measure of local feelings. Of those who answered the questions:
  - 6/7 (86 per cent) believe more homes - particularly affordable - are needed in Matson;
  - 3/5 (60 per cent) think the proposed traffic measures would improve safety for pedestrians;
  - 4/5 (80 per cent) would use the new public open space proposed within the site.
- Key positive comments included: new homes are needed, site suitable for new homes, work with GCH to help with regeneration, good opportunity to enhance the historic moat;
- Concerns raised included: additional traffic, speed of existing traffic along (& poor condition of) Winnycroft Lane; ensure the scheme doesn't negatively impact common-grazing sheep; loss of green space; lack of public transport; flooding; too many homes.
- The applicant responds to these - and all points raised by the community - in this report.
- As a direct result of feedback, the applicant has committed to working with the community, including to create employment opportunities; to seek opportunities for local people to be prioritised for the new homes; to liaise with Gloucestershire Wildlife Trust; to seek further dialogue to bring bus services nearer to the site; and, to provide a percentage of the affordable homes to help the Matson regeneration.
- As a long-term stakeholder, Bromford is committed to ongoing engagement with the community.

Contents

Introduction

The proposal

The proposal, from Registered Provider Bromford, is for 190 homes on land off Winnycroft Lane in Matson, Gloucester. Half the homes would be affordable. A large public open space is proposed at the centre of the scheme, creating a buffer around an ancient monument, part of an old moat.

The applicant's approach

This consultation follows best practice and advice set out in Gloucester City Council's Statement of Community Involvement (2015) as well as national planning policy and guidance on pre-application engagement within the National Planning Policy Framework (NPPF) and national Planning Practice Guidance (PPG).

Gloucester City Council's SCI states:

4.14 For major developments, Gloucester City Council strongly encourages applicants before the application is submitted to arrange a public meeting or exhibition at a suitable location such as a local hall in close proximity to the application site, in order to allow the proposal to be more fully understood by the local community prior to submission.

4.15 When they submit their application, Gloucester City Council also encourages applicants to:

Submit a brief statement as part of the application submission outlining how the results of the Pre-application Consultation Exercise have been considered in the final application documentation.

Attend meetings with local groups that are likely to have an interest in the application proposal.

Programme of activity

The consultation programme included:

a. Briefing with ward members
b. Meeting with Together in Matson
c. Meeting with Gloucestershire Gateway Trust
d. Discussions with Gloucester City Homes
e. Public exhibition
f. Statement of Community Involvement.

a. Briefing with ward members

The applicant team briefed Cllr Alastair Chambers, Cllr Brendon O'Donnell and Cllr Raymond Padilla on 4 April 2022. The response was positive, notably that the scheme would deliver 50 per cent affordable homes. Points raised by ward councillors included: community liaison is really important, particularly during construction; keen to see employment and subcontractor opportunities for local people; collaboration with GCH really important to help with the wider Matson regeneration.

b. Meeting with Together in Matson

The applicant team met with local community charity Together in Matson on 6 April 2022. Points raised included: Junction of Corncroft Lane and Painswick Road needs fully assessing; green space in the centre of the scheme very positive; helping GCH with Matson regeneration very welcome.

c. Meeting with Gloucestershire Gateway Trust

The applicant team met with GGT's CEO on 8 April 2022. Points raised included: best to attend the existing Matson Robinswood and White City Community Partnership, rather than set up a new community liaison group; can Bromford review the existing community economic plan to ensure the scheme aligns, as far as it can; GGT coordinates a programme to create work opportunities for local people…can Bromford get involved?; can Bromford liaise with Gloucestershire Wildlife Trust?; can the speed of Winnycroft Road be reduced?; a big win if Bromford commits to some of the affordable homes going to GCH; locals-first on affordable and market homes; pleased with proposed moat treatment, keen for the scheme to help draw in visitors to the area; be mindful not to impact the common-grazing sheep.

d. Discussions with Gloucester City Homes

Bromford is in ongoing discussions about collaborating with Gloucester City Homes at Matson and across the city. Bromford's intention is for GCH to utilise a significant number of the proposed new affordable homes to help with GCH's Matson regeneration. This would allow households of the homes for renewal to be re-homed within the proposed new scheme, allowing those works to progress.

e. Public exhibition

A public exhibition was held at Matson's Redwell Centre on April 27. 1,684 A5 postcard invitations were delivered by Royal Mail to homes and businesses in the neighbourhood. The applicant understands local ward councillors and community groups also shared information about the event. Bromford's team attended, including three members of the Bromford team, the lead architect, lead planning adviser, transport adviser and consultation coordinator. Feedback forms were provided. 45 people attended the exhibition, with 10 feedback forms completed.

f. Statement of Community Involvement

This Statement of Community Involvement (SCI) has been prepared to accompany the submission of the planning application. In this SCI the team summarises the issues received through the consultation and explains its response.

Consultation findings and response

The applicant has received:

1. Feedback from the forms completed at the public exhibition;
2. Written and verbal feedback during stakeholder briefings.

The team received a total of 10 feedback forms: this information can be made available to officers in a redacted form if required.

The feedback form invited respondents to answer three specific questions, to obtain a more quantifiable measure of local feelings on specific points. It then asked for general, unprompted feedback.

The issues, comments and questions raised have been summarised in the table below, along with the applicant's response.

The low level of completed feedback forms means the results can only be taken as a guide to local sentiment.

1. Feedback and response table

Issue	Detail & Bromford's response (in blue italics)
New homes	While one respondent said there were enough homes in Matson already, most of those completing a feedback form echoed what the community groups said, that new homes were needed, particularly affordable homes. In the context of the larger 'Big Winny' delivering no affordable homes, the proposal for 50 per cent being affordable was particularly welcomed. One respondent said: 'the more affordable homes the better.'
Access for local people to secure new affordable homes	GGT asked that local residents were prioritised for both affordable and market homes. *Bromford will discuss this with Gloucester City housing officers, to see if a mechanism can be agreed to give local people first choice of affordable homes. It will also consider if there is a way to give local people a chance to view the new homes for sale, perhaps a preview for locals when the showroom is ready. Bromford would also highlight that in GCH having a significant number of the affordable homes, local people are already being prioritised. As a long-term local stakeholder Bromford is very keen to work closely with the community, including on these issues.*
Local roads	Concerns were raised about existing and potential future traffic issues resulting from the development. The junction of Corncroft Lane and Painswick Road was specifically raised. Speeds along Winnycroft Lane were also raised. *The Bromford team has undertaken a full traffic assessment, to be submitted as part of the planning application. It will work with highways*

	officers to understand if investment is required at any of the relevant local junctions. The team is proposing the speed restriction is extended along the site boundary.
Pedestrians	Though no-one submitted this on a feedback form, there were conversations about the safety of pedestrians along Winnycroft Lane. *Bromford understands local community groups have been pressing for a footway on the west side of the lane. Bromford is proposing pedestrian and cycle corridors within the site, which will give pedestrians and cyclists safe and attractive route options that are segregated and separated from traffic. Bromford is also willing in principle to introduce improvements to links off-site where possible and realistic, working with the highway authority; and this may lead to some compatibility with the local community groups' objectives.*
Public transport	One person said they were disappointed there was no public transport directly to the site. *Bromford is willing in principle to work with the local stakeholders to help provide enhancements in the local area, although it is considered unlikely that a bus will penetrate the site itself.*
Public open space	The response from stakeholders was that the green, public, open space in the centre of the scheme was very positive. In the small response to the consultation feedback forms, four out of five people said they would expect to use this new space.
Matson regeneration	Ward councillors and community groups are very keen to ensure Bromford works with GCH so that some of the affordable homes can be used to move residents out of the homes due for renewal and into some of the new affordable homes. This would help unlock the Matson regeneration scheme. *Bromford is in talks with GCH about a cross-city collaboration and expects to agree that a significant number of new proposed homes would be transferred to GCH to help the Matson renewal project.*
Heritage	One respondent - a local history enthusiast - said they were pleased to see the proposed moat treatment. The GGT also welcomed the strategy, keen to harness it as a potential visitor attraction to help draw additional footfall and spending in the neighbourhood. *Bromford believes that in opening up access to the moat, explaining it through onsite boards, and by creating a large open, public green space around it, that the moat will become much better known about, offering the opportunity for schools and local groups to visit the site.*
Local employment & sub-contractor opportunities	GGT and ward councillors are very keen that local people are given employment, training and sub-contractor opportunities. GGT operates a programme to help get local people into employment and is keen for Bromford to participate. *Bromford is very keen to find opportunities to employ local people and harness local sub-contractor skills. Once planning permission is [hopefully] granted it is very keen to work with GGT and other local & city organisations, and its main contractors, to seek opportunities to employ local people.*

Community liaison	Community groups and ward councillors pointed out the importance of working - and communicating - with local residents, particularly around construction. The GGT suggested that - rather than set up a new community liaison group - Bromford instead links in with the Matson Robinswood and White City Community Partnership. *Bromford will remain part of this community for the long-term as the owner and landlord of the affordable-rented homes, so it is fully committed to building good relationships with the community. Bromford will agree with the community the best way to involve and inform residents about the proposals, construction and management of the scheme.*
Ecology	The GGT asked Bromford to liaise with Gloucestershire Wildlife Trust; several mentions were also made about being careful not to impact the common-grazing sheep. *Bromford's consultant ecologist has now contacted the GWT to discuss the ecology, and biodiversity strategy, to try and ensure the scheme aligns - where it can - with the GWT's aspirations. A full ecological study will be submitted with the planning application. While some residents complained about the sheep eating their garden flowers (!), the sheep seem to play a key role in this community. Bromford will be careful not to impact the sheep, including during construction.*
Local facilities	Capacity of local schools, as well as GPs and shops were raised as concerns. *Capacity in local schools will be considered alongside the planning application and, where necessary, an approach to providing additional capacity will be incorporated. The additional residents will bring additional spending to further underpin the viability of the local shops, with improved pedestrian connectivity where possible to help encourage residents to walk to those shops. GPs (which effectively operate as private businesses) remain outside the S106 agreement; Bromford acknowledges that GP shortages is an issue across the UK.*
Flooding	Two concerns were raised (one written, one verbal) about ground water on the site. *Bromford's scheme is designed to manage drainage in accordance with current policies. This will include the use of Sustainable Urban Drainage methods.*

Conclusion

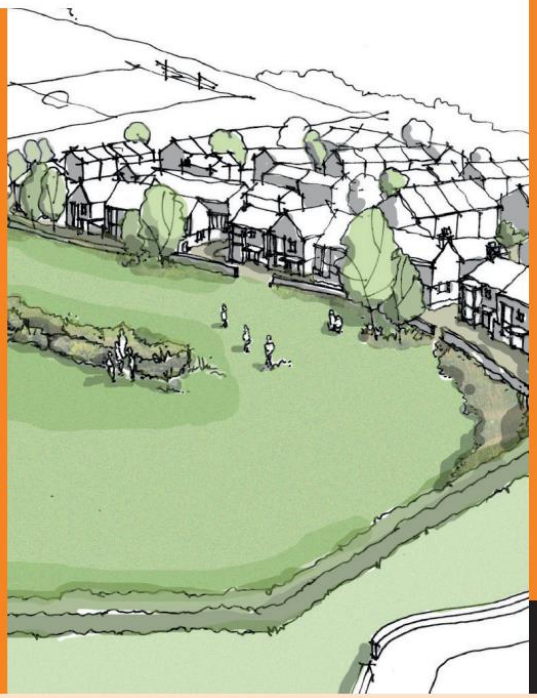
The applicant's team has sought to engage effectively with residents, their representatives and other stakeholders using a variety of consultation methods, in line with best practice.

The applicant strongly believes the consultation was executed in an open and inclusive way; has proactively engaged with residents and stakeholders to explain the proposals; and remains committed to an ongoing open dialogue.

Appendix

Bromford.

Matson, Gloucester



We want your feedback

We would like your feedback on our proposal to build **190 homes** – including 50 percent affordable – in Matson.

We invite you to a public exhibition where you can find out all about our proposal and ask our team any questions.

Wednesday 27 April, 3.30pm - 7.30pm

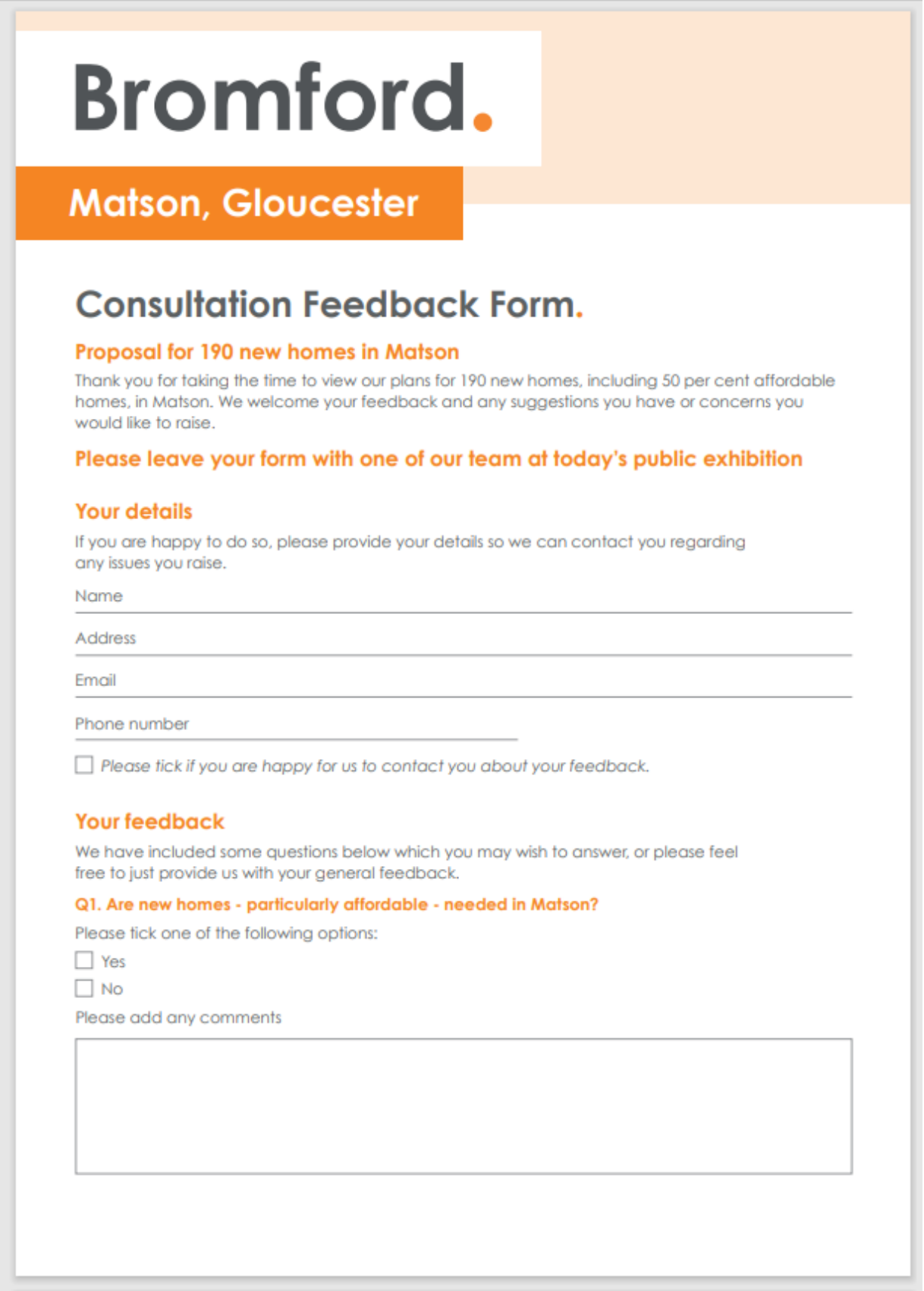
The Redwell Centre, Redwell Road, Matson, Gloucester, GL4 6JG.

We hope you can make the event and look forward to hearing your feedback.

About our scheme

- Large public, green space to sit at heart of the scheme, open to everyone
- This green space would form a buffer around the remains of an ancient moat, currently inaccessible to the public
- Half the new homes would be affordable – a mix of discounted homes to rent & buy
- All homes will be energy efficient & highly sustainable
- All homes will have ample parking, many with electric vehicle charging
- Attractive landscaping, with cycling & pedestrian access through the site, including enhancements to a [slightly diverted] Public Right of Way

Bromford.



Bromford.

Matson, Gloucester

Consultation Feedback Form.

Proposal for 190 new homes in Matson

Thank you for taking the time to view our plans for 190 new homes, including 50 per cent affordable homes, in Matson. We welcome your feedback and any suggestions you have or concerns you would like to raise.

Please leave your form with one of our team at today's public exhibition

Your details

If you are happy to do so, please provide your details so we can contact you regarding any issues you raise.

Name

Address

Email

Phone number

☐ *Please tick if you are happy for us to contact you about your feedback.*

Your feedback

We have included some questions below which you may wish to answer, or please feel free to just provide us with your general feedback.

Q1. Are new homes - particularly affordable - needed in Matson?

Please tick one of the following options:

☐ Yes

☐ No

Please add any comments

Q2. Do you think the proposed traffic slowing and pavement will help make it safer for pedestrians?

☐ Yes
☐ No

Please add any comments

Q3. Do you think you would use the new public, open green space around the moat?

☐ Yes
☐ No

Please add any comments

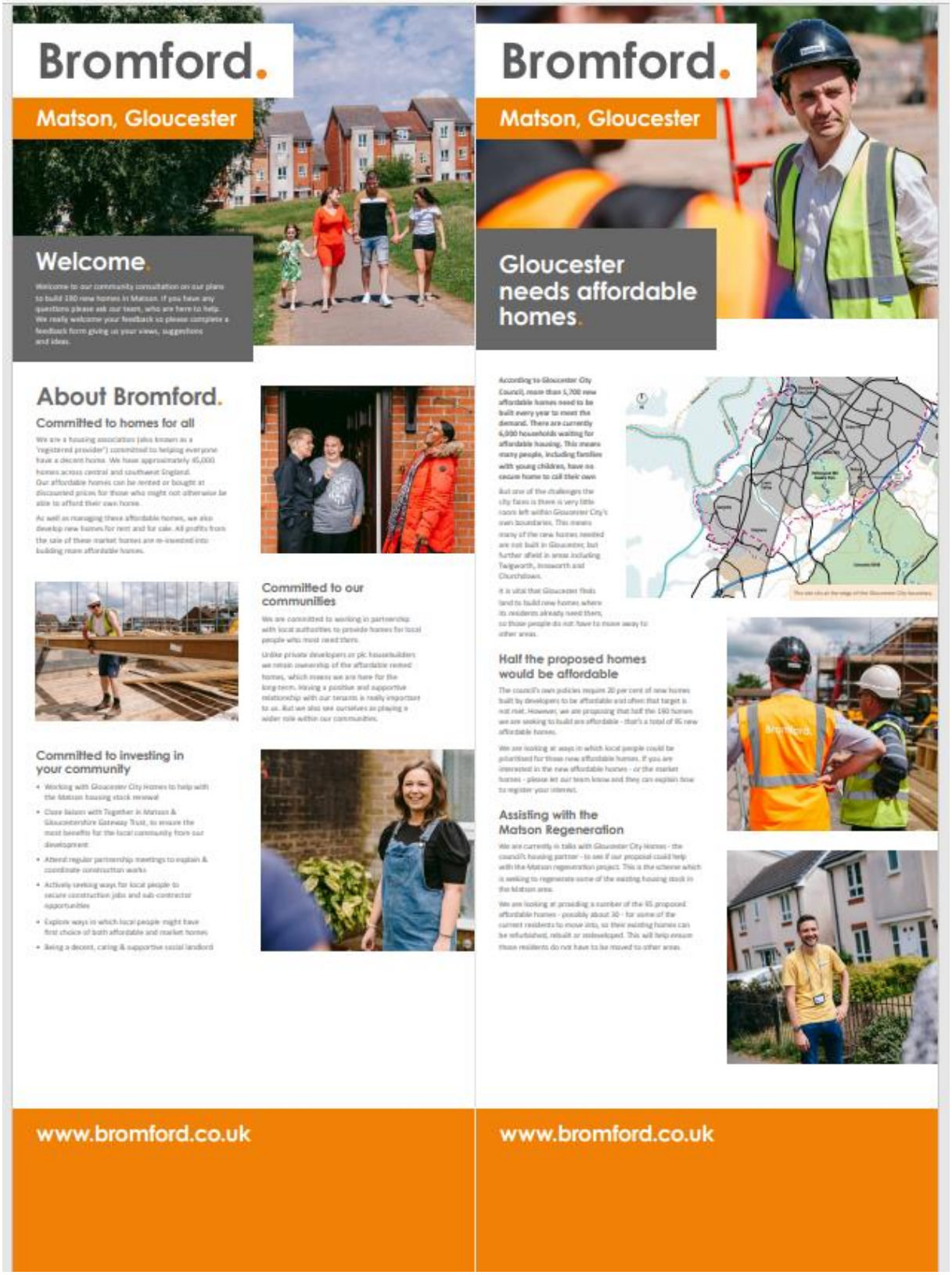
Q4. Is there anything else you feel we should consider in our proposal?

Please add any comments

Your general feedback

Data & privacy statement. We will hold your personal data in accordance with GDPR data protection laws. We will only contact you if you tick the box saying you are happy for us to do so, and only in relation to this planning application.

For more information about Bromford please visit **www.bromford.co.uk.**
Thank you for your feedback


Bromford.
Matson, Gloucester
Welcome.
Welcome to our community consultation on our plans to build 190 new homes in Matson. If you have any questions please ask our team, who are here to help. We really welcome your feedback so please complete a feedback form giving us your views, suggestions and ideas.
About Bromford.
Committed to homes for all
We are a housing association (also known as a 'registered provider') committed to helping everyone have a decent home. We have approximately 45,000 homes across central and southwest England. Our affordable homes can be rented or bought at discounted prices for those who might not otherwise be able to afford their own home.
As well as managing these affordable homes, we also develop new homes for rent and for sale. All profits from the sale of these market homes are re-invested into building more affordable homes.
Committed to our communities
We are committed to working in partnership with local authorities to provide homes for local people who most need them.
Unlike private developers or plc housebuilders we retain ownership of the affordable rented homes, which means we are here for the long-term. Having a positive and supportive relationship with our tenants is really important to us. But we also see ourselves as playing a wider role within our communities.
Committed to investing in your community
Working with Gloucester City Homes to help with the Matson housing stock renewal
Close liaison with Together in Matson & Gloucestershire Gateway Trust, to ensure the most benefits for the local community from our development
Attend regular partnership meetings to explain & coordinate construction works
Actively seeking ways for local people to secure construction jobs and sub-contractor opportunities
Explore ways in which local people might have first choice of both affordable and market homes
Being a decent, caring & supportive social landlord
www.bromford.co.uk
Bromford.
Matson, Gloucester
Gloucester needs affordable homes.
According to Gloucester City Council, more than 1,700 new affordable homes need to be built every year to meet the demand. There are currently 6,000 households waiting for affordable housing. This means many people, including families with young children, have no secure home to call their own
But one of the challenges the city faces is there is very little room left within Gloucester City's own boundaries. This means many of the new homes needed are not built in Gloucester, but further afield in areas including Twigworth, Innsworth and Churchdown.
It is vital that Gloucester finds land to build new homes where its residents already need them, so those people do not have to move away to other areas.
Half the proposed homes would be affordable
The council's own policies require 20 per cent of new homes built by developers to be affordable and often that target is not met. However, we are proposing that half the 190 homes we are seeking to build are affordable - that's a total of 95 new affordable homes.
We are looking at ways in which local people could be prioritised for those new affordable homes. If you are interested in the new affordable homes - or the market homes - please let our team know and they can explain how to register your interest.
Assisting with the Matson Regeneration
We are currently in talks with Gloucester City Homes - the council's housing partner - to see if our proposal could help with the Matson regeneration project. This is the scheme which is seeking to regenerate some of the existing housing stock in the Matson area.
We are looking at providing a number of the 95 proposed affordable homes - possibly about 30 - for some of the current residents to move into, so their existing homes can be refurbished, rebuilt or redeveloped. This will help ensure those residents do not have to be moved to other areas.
www.bromford.co.uk

Bromford.

Matson, Gloucester

About the site.

The site - which will be familiar to anyone who lives in this neighbourhood - is eight hectares in size and currently a field used for grazing.

Winnycroft Lane sits at the western boundary and the M5 to the east. The site stops short of the farm buildings to the south, and Barratt Homes' 'Big Winny' development of 320 homes sits immediately to the north. Unfortunately, due to viability constraints, the Big Winny proposal will not deliver any affordable homes.

Sitting in the centre of the site are the remains of an historic moat, which is designated as a Scheduled Monument by Historic England. There are a number of similar sites in other parts of the city.

While an important heritage asset, there is currently no public access to the moat, other than a Public Footpath (PROW) which crosses the site. To the untrained eye it might appear to only be an overgrown trough. When the M5 was built, much of the area around the moat was excavated and later filled with spoil.

Given the number of local people struggling to find a secure, high quality and affordable home, we believe the site is a logical place to build some of those much-needed homes.

However, our proposal has been carefully considered not just to help address that housing need, but to also create a high quality place that integrates physically and socially with the existing community - and one that brings benefits to all residents not just the people living in the new homes.

www.bromford.co.uk

Bromford.

Matson, Gloucester

Our proposal.

Public, green space at its heart

- A large green public open space would sit around the moat...a total of 2.57 hectares, the size of more than three football pitches
- Some of this space will form a protective 'buffer' around the moat, but the equivalent of more than two football pitches of green open space will be open to everyone
- This new community space could be used for picnicking, playing games etc

Protecting & sharing the moat

- Historic moat would sit at heart of the public, green space
- The moat would be sensitively managed& protected
- Educational boards would be installed explaining the historical importance of the moat
- The site could be used by local schools for history lessons & local groups interested in Gloucester's heritage
- We will prepare a Conservation Management Plan for the ongoing up-keep of the moat

Improving pedestrian connectivity & safety

- Scheme designed to make it easy & safe to walk to existing shops and facilities
- A new footpath is proposed along the eastern side of Winnycroft Lane
- There would also be a new pedestrian & cycling route within our site, running parallel to Winnycroft Lane
- The existing footpath (Public Right of Way) running across the site would be slightly diverted & enhanced
- This footpath will provide a direct walking & cycling link into Big Winny

Slowing traffic & improving public transport

- Reducing the speed from 60mph, probably to 40mph
- Ample parking (400 spaces, including for visitors) will keep all vehicles on the site
- Seeking to extend bus service to improve accessibility to public transport
- One vehicle access only, located at the north of the site, onto Winnycroft Lane
- Secondary access at south of site also onto Winnycroft Lane, but only for emergency vehicles, pedestrians & cyclists

www.bromford.co.uk

Bromford.

Matson, Gloucester

Our proposal.

A range of homes to suit as many people as possible

- Total 190 homes
- 50 per cent affordable: a mix of lower cost homes to rent & buy
- Of the 95 affordable homes, about 71 would be discounted rents; the other 24 would be 'First Homes' which are homes for sale, but reduced by at least 30 per cent of the market price
- 165 houses: 55 two-bed, 82 three-bed & 18 four-bed
- 25 one-bed & two-bed apartments

Gardens & private outside spaces for all residents

- Almost all the homes (165 out of 190) are houses with gardens
- All 190 homes have their own private outside space, including the flats
- Highly-sustainable, low energy homes
- Renewable energy, probably using air source heat pumps and solar panels
- Provision of electric vehicle charging

Draft layout showing the green space rolling across Smallhorn's Green

Landscaping & biodiversity improvements

- Large parts of the site will be retained for landscaping & biodiversity
- Extensive planting of new trees and native species across the development
- More than one hectare in and around the road, retained & enhanced as biodiverse-rich habitat
- Large 'bund' along the eastern edge which will also act as a barrier to the motorway

Example drawings of the range of the proposed new homes

www.bromford.co.uk

Bromford.

Matson, Gloucester

What happens next.

Your feedback

- Please complete your feedback form and leave it with our team
- We will review your comments before submitting our planning application
- Once the application is in, the council will also invite comments from the community
- During the period in which the council assesses our application we will continue to liaise with local groups to seek ways to ensure our scheme benefits the community as much as possible

Timetable

- Submit planning application - end-April
- Planning application determined - October/November 2022
- Prepare site for construction – end 2022
- New homes ready for occupation – mid/late 2023

Minimising disruption to local residents

- We will produce a construction management plan
- This will set out agreed construction working hours, vehicle routes etc
- Particular care will be taken to protect the local sheep flock
- We will agree the best way to share construction details with the community, so there are no unwelcome surprises
- 24/7 helpline for residents
- We will provide details of local site manager to your councillors and community groups

How to register your interest

- If you are interested in the affordable homes please contact XXXX
- If you are interested in the market homes please keep an eye out for updates to the Bromford website XXX. Please note it will be some time before any homes reach the market, as set out in the timetable
- If you are interested in employment or sub-contractor opportunities, please visit XXX.

Thank you for your time and feedback. We look forward to hopefully becoming part of your community.

www.bromford.co.uk

[redacted]
Edward Ware Homes Ltd
45 Oakfield Road
Clifton
Bristol
BS8 2AX

Date 21 March 2018
Our ref: 180321_SNO1877_HM

Dear [redacted],

Re: Snow Capel Farm, Matson, Gloucester, GL4 6EQ – Supplementary Ground Gas Risk Assessment

Further to the completion of a supplementary ground investigation and programme of gas monitoring at the above site, we are pleased to present the results of a supplementary gas risk assessment together with our conclusions and recommendations. A site location drawing is provided in Appendix A.

Background and Objectives

A third-party[1] ground investigation was undertaken in May 2017 at the above site which identified deep made ground which varied in thickness between 1.50-3.40 metres below ground level (mbgl), generally appearing to become thicker towards the south-west. This was found to comprise silt, mudstone gravel and clay with pockets of buried topsoil. The composition of the material was found to be very similar to the underlying natural strata. This material is assumed to be associated with historical placement of surplus excavated soils from the construction of the M5 motorway which lies adjacent to the south-eastern boundary of the site.

Groundwater and ground gas monitoring wells were installed within WS1, WS3, WS5 and WS8 and monitored on 2N^{o} occasions by Integrale during July 2017. The monitoring visits indicated high levels of methane (61.1-61.6%) and carbon dioxide (35.2-35.7%) within WS1 locally. Lower but still significant concentrations of carbon dioxide and methane were encountered in WS3 of 7.1-8.5% and 2.8-2.9% respectively. WS5 and WS8 recorded trace concentrations of methane but concentrations of carbon dioxide were <5%. There was negligible gas flow within all of the installations, where WS1 and WS8 had maximum values of 0.1l/hr.

Encountered methane concentrations in WS01 were reported to be consistent with a “red” classification, in accordance with the NHBC[2] traffic light scheme, but elsewhere results were indicative of Amber 1. It was acknowledged that only 2N^{o} gas monitoring results were undertaken and which may not be reflective of worst case conditions. Results from WS01 were inferred to be a localised occurrence; however, no

[1] Geotechnical and Phase II Contamination Report. Intégrale. August 2017. Ref: 1826
[2] Guidance on Evaluation of Development Proposals on Sites Where Methane and Carbon Dioxide are Present. NHBC. 2007.

consideration or discussion of the conceptual site model was provided in the context of the findings and the wider ground gas regime.

It is understood that the site is intended to be redeveloped for low rise residential housing. On this basis, the principal objective of this supplementary investigation and monitoring programme is to enable refinement of the conceptual site model and understanding of the ground gas regime at the site in order to make an updated assessment of the risk presented to future residents and possible remedial requirements.

Supplementary Ground Investigation

A supplementary ground investigation was completed on the 28th and 29th November 2017 which comprised the excavation of 8Nº trial pits (TP101-TP108) to a maximum depth of 3.40mbgl and the drilling of 4Nº dynamic windowless boreholes (WS101-WS104) to a maximum depth of 5.0mbgl, all of which were installed as ground gas monitoring wells. The locations of monitoring wells are shown the drawing within Appendix A. The rationale for selected exploratory locations is summarised in Table 1.

Table 1 – Exploratory Hole Rationale

Exploratory hole(s)	Response Zone (m)	Target
TP101	n/a	General site coverage.
TP102	n/a	Adjacent to historical borehole with high methane concentrations.
TP103	n/a	Delineation of buried topsoil.
TP104	n/a	
TP105	n/a	General site coverage.
TP106	n/a	
TP107	n/a	
TP108	n/a	
WS101	1.0-3.0	Delineation of high methane concentrations.
WS102	2.0-4.0	
WS103	1.0-4.0	General site coverage.
WS104	1.5-3.5	

A summary of ground conditions encountered during the November 2017 ground investigation is provided in Table 2. Borehole logs are provided in Appendix B, with site photographs included in Appendix C.

Table 2 – Summary of Ground Conditions				
Depth (m bgl)		Exploratory holes identified	Soil type	General description/comments
Top depth range	Base depth range			
Ground level	0.2-0.3	TP101-TP108. WS101-WS104.	Topsoil	Silty gravelly clay. [TOPSOIL]
0.2-0.3	0.6-0.7	TP101-TP106, TP108. WS101-WS104.	Made Ground	Firm to stiff bluish grey mottled orangish brown gravelly clay.
0.6-2.7	0.3-4.6	TP101-TP106, TP108. WS101-WS104.	Made Ground	Soft, firm and stiff dark grey clay with organic material.
1.2 - 2.7	1.3 – 3.4	TP102, TP103, TP105, TP106, TP108, WS101	Relict Topsoil	Dark brown and black clay with roots and rootlets.
0.2-4.6	>2.0-5.0	TP104-TP107. WS101-WS104.	Natural Ground	Stiff and very stiff orangish brown, bluish grey and dark grey gravelly clay. Extremely weak mudstone. [CHARMOUTH MUDSTONE FORMATION]

No visual or olfactory evidence of contamination was noted. Relict topsoil was encountered across the majority of the site within TP102, TP103, TP05, TP106, TP108 and WS101, ranging in depth between 1.20mbgl and 3.40mbgl. Relict topsoil was only identified within WS2 in the third-party investigation (1.45-1.55mbgl) which correlates with the depth of relict topsoil encountered within TP08 (1.20-1.30mbgl) in the same area.

Within TP02, the wood, twigs and plastic were encountered at depth (2.70mbgl) which indicates that the material above has been placed there relatively recently. The clay material above appears to be naturally derived as the descriptions match the natural strata encountered across the rest of the site. These observations, along with the large gradient change across the site indicate that reprofiling of the site has taken place in the past.

Selected soil samples from the investigation were forwarded to The Environmental Laboratory Ltd, a UKAS and MCERTS accredited laboratory for analysis for Total Organic Carbon. The concentrations of Total Organic Carbon (TOC) range between 0.3-1.1% which is a relatively low concentration for an organic material such as buried topsoil. Complete chemical results are provided in Appendix D.

Groundwater was not encountered during drilling. Groundwater levels were recorded during gas monitoring visits, as summarised in Table 3. Groundwater was recorded between 54.8 and 61.9 metres Above Ordnance Datum (mAOD). Saturated ground

was encountered during several monitoring visits, with surface water also observed within the moat area. A selection of photos is provided in Appendix C.

Table 3 – Summary of Groundwater Elevations														
Monitoring Well ID	**Screened Geological Unit**	**05/12/17**		**22/12/17**		**03/01/18[b]**		**16/01/18 [b]**		**30/01/18**		**13/02/18**		**Comment**
		mbgl	**mAOD**	**mbgl**	**mAOD**	**mbgl**	**mAOD**	**mbgl**	**mAOD**	**mbgl**	**mAOD**	**mbgl**	**mAOD**	
WS1	Made ground	NR	NR	2.60	55.84	0.70	57.74	0.80	57.64	1.08	57.36	-[a]	-[a]	-
WS3	Made ground	1.65	58.31	1.56	58.40	0.85	59.11	0.92	59.04	0.30	59.96	0.24	59.72	-
WS5	Made ground	NR	NR	-[a]	-[a]	0.36	61.54	0.45	61.45	0.43	61.90	0.15	61.75	-
WS8	Made ground	2.53	55.01	-[a]	-[a]	-[a]	-[a]	-[a]	-[a]	-[a]	-[a]	-[a]	-[a]	Monitoring well flooded from surface water. Oily scum observed during 5th and 6th monitoring rounds which may be organic residue. No hydrocarbon odour recorded.
WS101	Relict topsoil/ Charmouth Mudstone	NR	NR	0.60[c]	57.26	0.48 [c]	57.38	0.52 [c]	57.34	0.32 [c]	57.54	0.10 [c]	57.76	-
WS102	Relict topsoil/ Charmouth Mudstone	3.77	54.79	3.10	55.46	1.50 [c]	57.06	2.50	56.06	-[a]	-[a]	0.11 [c]	58.45	-
WS103	Made ground	3.76	55.62	-[a]	-[a]	0.05 [c]	59.33	0.05 [c]	59.33	0.18 [c]	59.20	0.11 [c]	59.27	-
WS104	Relict topsoil/ Charmouth Mudstone	NR	NR	2.60	57.16	0.55 [c]	59.21	0.65 [c]	59.11	0.24 [c]	59.92	0.16 [c]	59.60	-

a Water level recorded above top of monitoring installation due to surface water flooding.
b Water levels reported prior to bailing, which was carried out to remove surface water/lower water levels.
c Water level recorded above slotted pipe section.
NR – Groundwater not recorded.

Ground Gas Monitoring

T&P attended site on 6Nº separate occasions over a three-month period (December 2017 to February 2018) to monitor ground gases from initial ground gas monitoring wells (WS1, WS4, WS5 and WS8) and the supplementary installations (WS101-WS104). The monitoring schedule is summarised in Table 3.

Gas monitoring was undertaken using a hand held Infrared Gas Analyser with integral flow measuring capability. Concentrations of methane, hydrogen sulphide, carbon dioxide and oxygen were recorded from the standpipes along with gas flow rates, atmospheric pressure and general weather conditions. Volatile compounds were measured using a Photo-Ionisation Detector (PID).

Monitoring wells were found to be submerged under surface water on a number of occasions which prohibited completion of gas monitoring. On other occasions, where water levels within monitoring installations were recorded above the top of the slotted pipe section, water was removed via bailer. The bung was replaced following bailing for a minimum of 30 minutes before gas monitoring was completed.

Results

Monitoring was completed between December 2017 and February 2018. Complete soil gas monitoring records are included in Appendix E and summarised below:

- Atmospheric pressure conditions were recorded between 1035mB and 994mB during the monitoring period. The fist and fourth monitoring rounds were conducted during falling pressure conditions, with the remainder generally in rising conditions.
- Peak methane concentrations were recorded to be generally below instrument detection level (<0.1% v/v) in the majority of monitoring wells, with the exception of WS01 and WS102, located to the south of the scheduled monument. In WS01 a peak and steady value of 54% by volume was encountered during the second monitoring visit, with a steady value of 29.5% by volume on the first monitoring visit. In WS102 a peak value of 0.4% was measuring during the first visit, with all other occasions recording results below detection limit.
- Carbon dioxide levels were found to range from instrument detection level (<0.1%v/v) up to 17.0% by volume with the highest values recorded in WS01 located in the central part of the site. Levels of carbon dioxide were greater than 5% in WS03, WS101 and WS102 during the first and second monitoring rounds. All other results were recorded to be below 5% in all other monitoring well locations.
- Oxygen levels were found to vary between 9.8% and 21.4% by volume.
- Hydrogen sulphide concentrations were all found to be below instrument detection level (<0.1 parts per million (ppm)) with the exception of WS01, where a peak value of 19.5 ppmv was recorded during the first monitoring round only.
- Peak soil gas flow rates were recorded to range between instrument detection level (0.1litres/hour (l/h)) and 29.8l/h. The maximum peak flow rate was recorded

in WS01 during the first monitoring round, which correspondingly reduced to 11l/hr steady flow. Steady flow rates of 2.4 and 8.1l/hr were also recorded in WS03 and WS08 respectively during the second monitoring round. Negative flow rates were frequently recorded, which are likely to be associated with higher pressure conditions or windy conditions. Furthermore, gas flows are anticipated to be significantly influenced by variation in groundwater recorded during the monitoring period, and as such, recorded flows may not be indicative of significant gas generation, rather a response to changing pressure conditions.

- PID readings were generally low, with the exception of WS101 when a reading of 51ppm was encountered during the first visit. In addition, erroneously high readings were recorded in WS102 during two monitoring visits, which may be due to instrument interference due to high moisture content. As such, these results have been discounted as reliable.

Risk assessment

The following section provides an assessment and discussion of the risks posed to sensitive human receptors (future residents) from on-site sources of soil gas.

Carbon dioxide and methane

Guideline gas screening values (GSV) (Q_{hg}) for methane and carbon dioxide concentrations recorded at the site can be considered through calculation of the hazardous gas flow rate (Q_{hg}) in accordance with BS8485:2015 (*Code of Practice for the characterization and remediation from ground gas in affected development - 2007)* and CIRIA 665 (*Assessing risks posed by hazardous ground gases for buildings - 2007)* using the following equation:

$$Q_{hg} = \frac{C_{hg} \times q}{100}$$

Where 'C_{hg}' is the gas concentration measured as a percentage and 'q' is the flow rate in litres per hour (l/h). This calculation is undertaken separately for both carbon dioxide and methane in accordance with NHBC guidance[3]. The maximum Q_{hg} is considered for methane along with the peak flow rate, given the worst potential consequence of methane build up is explosion. For assessment of carbon dioxide, the steady state conditions are considered, as the build up of carbon dioxide would occur over time. Where no gas or flow is detected the gas detector limit of 0.1l/hr is employed in the calculation for conservatism. As a precautionary approach, peak flow rates have been utilised in these calculations, to determine a worst case GSV for each monitoring well individually. Where negative flow rates were measured, the instrument detection level has been utilised.

Q_{hg} (GSV) – methane = 9.98 (WS01)

[3] NHBC – Guidance on evaluation of development proposals on sites where methane and carbon dioxide are present. Report Edition 04. 2007.

Q_{hg} (GSV) – carbon dioxide = 4.92 (WS01)

Results have been assessed against the NHBC traffic light classification scheme for a low-rise housing scheme.

With the exception of WS01, on the first monitoring round, all calculated GSVs were consistent with a “green” classification. GSVs for methane and carbon dioxide during the first round are classified as “red”. This is consistent with the results of previous gas monitoring conducted by Integrale in 2017 which also identified results in WS01 consistent with a “red” classification. The closest monitoring wells installed during the supplementary investigation are WS101 and WS102, which do not record the same elevated results, supporting an assessment that this is a localised occurrence.

Maximum reported concentration of methane was 54%v/v and 33.5%v/v in WS01 during the second and first monitoring rounds respectively, both of which exceed the typical maximum concentration for a red site. Elsewhere on-site, concentrations were recorded as a maximum of 2.7%v/v or below detection limit. These results are consistent with previous findings.

Besides WS01, encountered concentrations of carbon dioxide were also above 5%v/v in WS101, WS102 during the first and second monitoring rounds, with steady state concentrations between 5.2 and 9.0%v/v, which are consistent with an Amber 1/2 classification. WS101 and WS102 are located in close proximity to WS01.

Carbon monoxide and hydrogen sulphide

In terms of carbon monoxide and hydrogen sulphide the guidance documents do not advocate the generation of a GSV with a more site-specific risk assessment required where these compounds are identified to be present at significant concentrations.

With the exception of an elevated result of hydrogen sulphide at 18.0 % ppmv in WS01 in the first monitoring round, no concentrations were recorded greater than the detection limit during all monitoring rounds. This result corresponds with very low oxygen results <10%v/v).

Discussion

Previous ground investigation identified the presence of localised buried topsoil in WS2 at 1.45-1.55mbgl in the south of the site. Elsewhere, approximately 3m of made ground comprising gravelly silty clay with localised organic content was identified. Alluvium was recorded within WS2 and WS8, with occasional organic fragments and wood.

Supplementary ground investigation by T&P established the presence of a generally site wide layer of relict topsoil with corresponding organic odour within TP101, TP102, TP103, TP105, TP106 and TP108 at between 1.2 and 3.1mbgl. In consideration of the adjacent M5 motorway and site topography, it is likely that cuttings from construction works were placed on the site above existing topsoil. With the exception of WS01, monitoring results and calculated GSVs across the site are consistent with a

"green" classification. However, elevated levels of carbon dioxide in WS01, WS101 and WS102 which would correspond with an Amber 1/2 classification. Furthermore, marginally elevated levels of carbon dioxide were also recorded in WS03 in the south-east of the site at a steady level of 5.2% in the second monitoring round only. However, previous monitoring results showed levels of 8.5% and 7.2%, which would be consistent with an Amber 1 classification.

Given the general absence of significant gas flow and significantly elevated ground gas concentrations across the wider monitoring network at the site, it is considered unlikely that made ground/relict topsoil is a significant ongoing source of ground gases. This is further supported by chemical results which suggest a low organic content, with a maximum value of 1.9%, and an average value of 0.89%.

However, in TP102, located adjacent to WS01 where high methane and carbon dioxide results were recorded, the presence of wood and plastic was recorded at approximately 2.7mbgl, which corresponds with the findings in WS01. In consideration of the localised nature of the elevated methane and carbon dioxide, it is considered possible that a local source of physically distinct infilled ground may be generating elevated concentrations of hazardous ground gases which warrants further investigation.

It is noted that shallow groundwater/surface water flooding was encountered during later gas monitoring rounds, whereby water levels were above screened sections in monitoring wells. Where possible, water levels were lowered through bailing, although due to ingress of surface water in some instances, it was not possible to lower levels to be the slotted screen. As such, caution is recommended in interpreting these results, as an overburden of saturated ground gas influence ground gas migration.

Conclusions and Recommendations

Supplementary investigation and ground gas monitoring has been completed with the aim of investigating the source of previously identified elevated methane and carbon dioxide in the vicinity of WS1 to the south of the moat to inform further assessment of the ground gas regime at the site. Additional monitoring has confirmed elevated results consistent with a "red" classification to be limited to WS1, with results in nearby WS101 and WS102 showing results consistent with Amber 1/2. The next closest monitoring well WS103 showed results consistent with a "green" classification. Furthermore, locally elevated carbon dioxide was recorded in WS3, but which were lower in WS104. On this basis, as a precautionary approach, it is considered appropriate to consider the south-east area as requiring Amber 1 gas protection. Indicative zoning of the site from the perspective of gas protection requirements is provided in Appendix A.

Supplementary investigation of the source of elevated gases in the vicinity of WS01 is recommended to support this assessment, which it is anticipated could comprise excavation of trial pits in the vicinity of WS01. In the event of establishing/delineating a source, removal of this material may enable downgrading/reduction/removal of the "red" zone. Alternatively, it may be possible to review the development masterplan in light of these results, to site sensitive development at an appropriate distance from the designated "red" zone to provide suitable risk mitigation. At the same time,

incorporation of gas protection measures in line with an Amber 2 classification within closest plots may be recommended as a precaution.

Given the presence of shallow groundwater/surface water flooding encountered during gas monitoring, and the limitations this presented to completion of gas monitoring across all 6N° monitoring rounds, it is also recommended that supplementary monitoring is undertaken, in the form of continuous down-hole monitoring during dryer months when flooding has receded or alternatively placement of flux boxes to measure ground gas release at surface to confirm these conclusions and to refine remedial recommendations.

Should you have any further queries please do not hesitate to contact us.

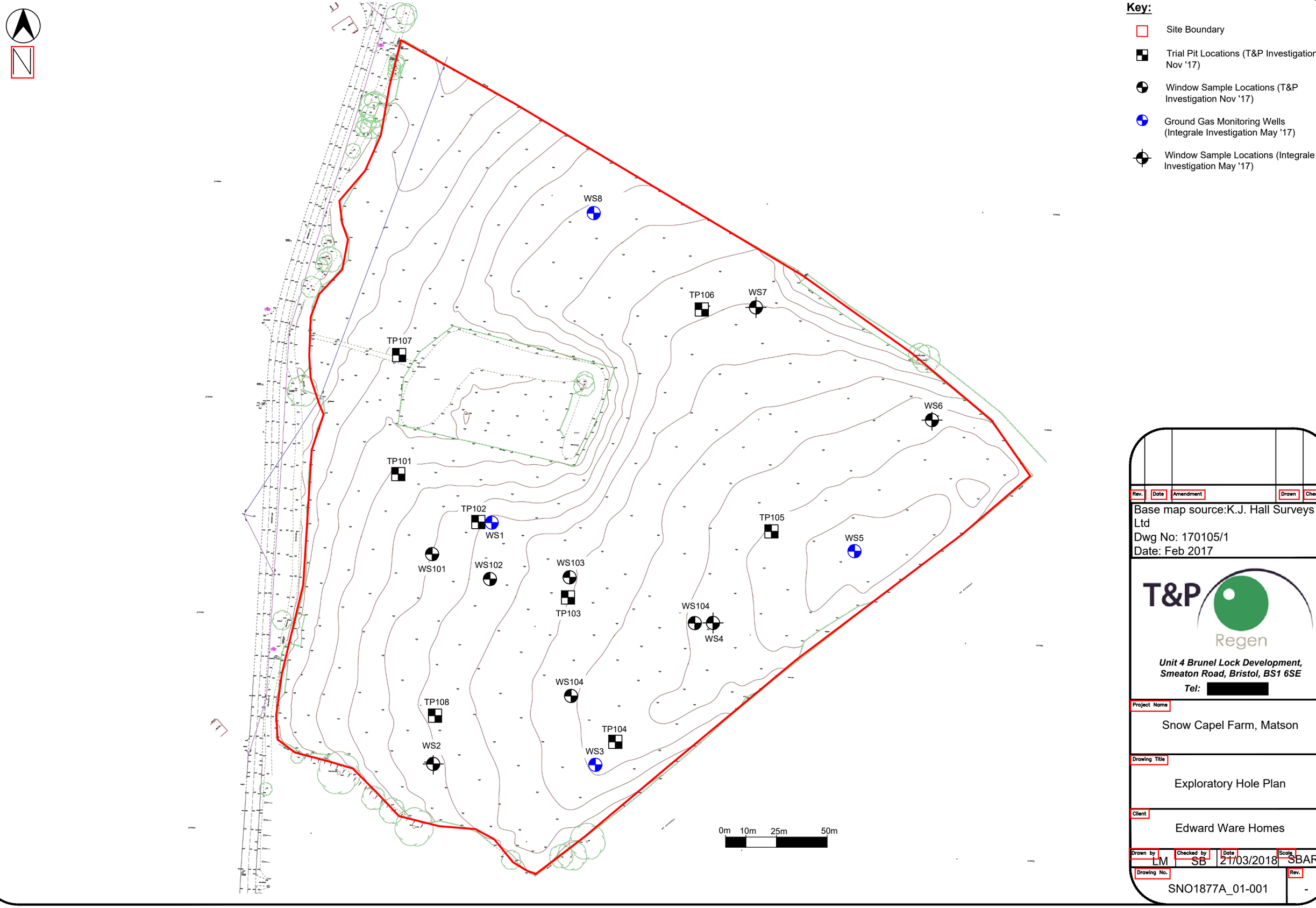
Yours sincerely

[redacted]

for *T&P Regeneration Ltd*

Appendix A – Drawings
Appendix B – Exploratory Logs
Appendix C – Photographs
Appendix D – Chemical Results
Appendix E – Ground Gas Monitoring Records

Appendix A – Drawings



Key:

- Site Boundary
- Trial Pit Locations (T&P Investigation Nov '17)
- Window Sample Locations (T&P Investigation Nov '17)
- Ground Gas Monitoring Wells (Integrale Investigation May '17)
- Window Sample Locations (Integrale Investigation May '17)

Rev.	Date	Amendment	Drawn	Checked

Base map source:K.J. Hall Surveys Ltd
Dwg No: 170105/1
Date: Feb 2017

T&P Regen
Unit 4 Brunel Lock Development, Smeaton Road, Bristol, BS1 6SE
Tel: [redacted]

Project Name: Snow Capel Farm, Matson

Drawing Title: Exploratory Hole Plan

Client: Edward Ware Homes

Drawn by	Checked by	Date	Scale
LM	SB	21/03/2018	SBAR

Drawing No.: SNO1877A_01-001
Rev.: -

Key:

- Site Boundary
- Trial Pit Locations (T&P Investigation Nov '17)
- Window Sample Locations (T&P Investigation Nov '17)
- Ground Gas Monitoring Wells (Integrale Investigation May '17)
- Window Sample Locations (Integrale Investigation May '17)
- Inferred Boundary

NHBC Traffic Light Classification (NHBC, 2007)

- Red
- Amber 2
- Amber 1

- Remainder of site classified as "green" whereby no gas protection required.
- Zones are indicative only and should be recieved upon finalisation of master planning and completion of supplementary investigation/monitoring as required.

Note:
WS2,4,6 and 7 are not geo-located.

Rev.	Date	Amendment	Drawn	Checked

Base map source:K.J. Hall Surveys Ltd
Dwg No: 170105/1
Date: Feb 2017

T&P Regen
Unit 4 Brunel Lock Development, Smeaton Road, Bristol, BS1 6SE
Tel: [redacted]

Project Name
Snow Capel Farm, Matson

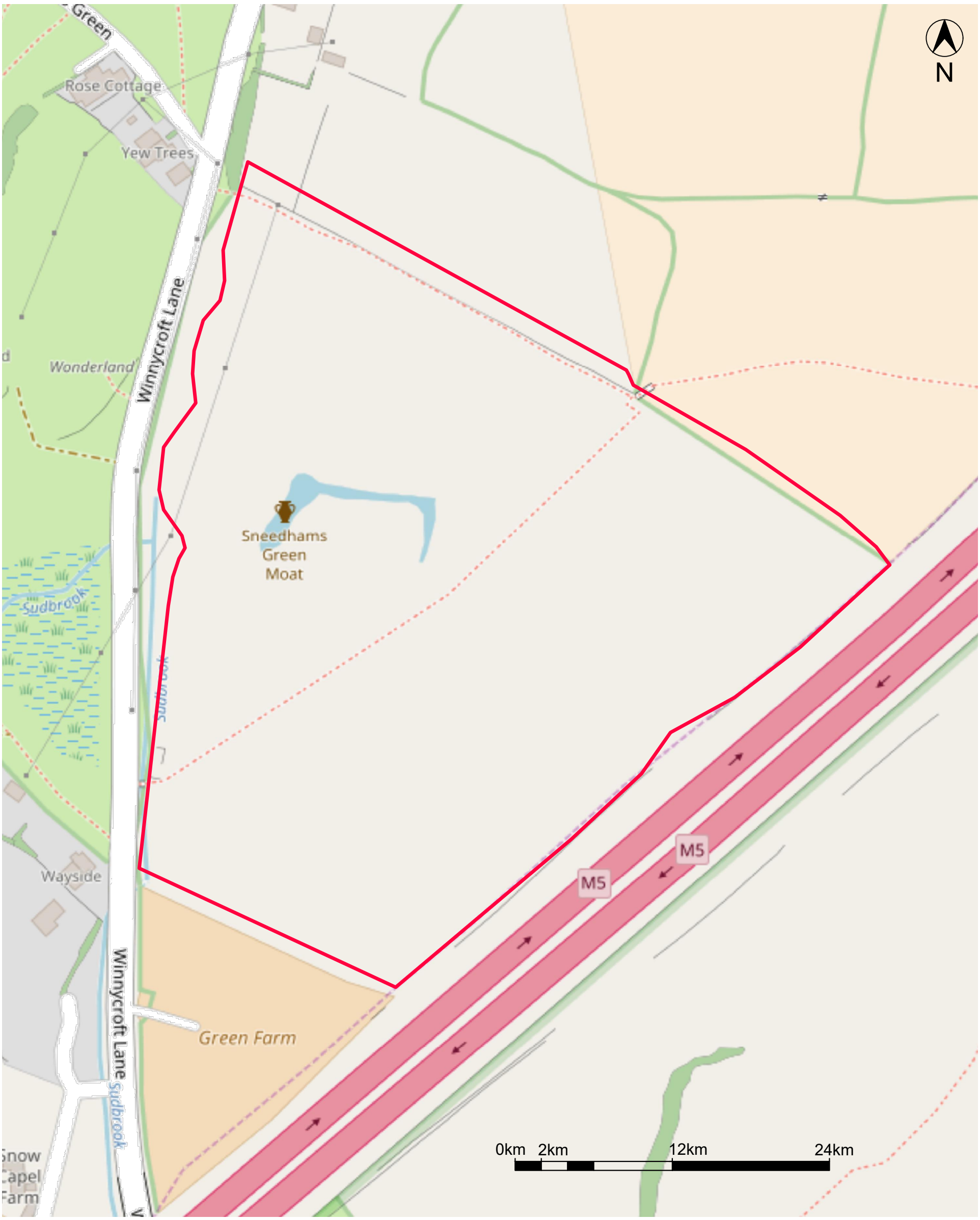
Drawing Title
Indicative Gas Protection Zones

Client
Edward Ware Homes

Drawn by	Checked by	Date	Scale
LM	SB	21/03/2018	SBAR

Drawing No.
SNO1877A_01-002

Rev.
-



Rev.	Date	Amendment	Drawn	Checked

Project Name: Snow Capel, Matson			Client: Edward Ware Homes	
Drawing Title: Site Location Plan	Drawn by: LM	Checked by: SH	Date: 23/11/2017	Scale: S-BAR
	Drawing No.: SNO1877_01-SLP1			Rev.: -

T&P Regen
Unit 4 Brunel Lock Development,
Smeaton Road, Bristol, BS1 6SE
Tel: [redacted] *Fax: 0117 927 6309*

Appendix B – Exploratory Logs

T&P Regen

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Contract Name:	Client:	Trial Pit ID:
Snow Capel	Edward Ware Homes	TP101

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
SNO1877a	28/11/2017	SB	JF	FINAL	

Trial Pit Log	Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
	385027	214169	56.90mOD	JCB 3CX	04/12/2017	1:25

Weather: Sunny | Termination: Target depth achieved | Stability: Stable

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
			56.60	(0.30) 0.30		MADE GROUND: Brown silty CLAY with rootlets. (Topsoil)		
				(1.10)		MADE GROUND: Stiff bluish grey mottled orangish brown slightly gravelly CLAY. Gravel is sub-angular fine to coarse of limestone.		
			55.50	1.40		MADE GROUND: Stiff dark grey CLAY with pockets (10mm) of organic material.		
2.00 - 2.20	ES1			(1.00)				
			54.50	2.40		End of Trial Pit at 2.40m		

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:

Groundwater not encountered.

Dimensions:

Length:

Width:

Orientation: °

Groundwater Details

Depth encountered (m)	Remarks

T&P Regen

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Contract Name:		Client:			Trial Pit ID:
Snow Capel		Edward Ware Homes			TP102
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
SNO1877a	28/11/2017	SB	JF	FINAL	
Trial Pit Log	Easting: 385069	Northing: 214146	Ground Level: 58.40mOD	Plant Used: JCB 3CX	Print Date: 04/12/2017	Scale: 1:25

Weather: Sunny | Termination: Target depth achieved | Stability: Stable

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
				(0.30)		MADE GROUND: Brown silty gravelly CLAY with rootlets. Gravel is sub-angular fine to coarse of mudstone. (Topsoil)		
			58.10	0.30		MADE GROUND: Stiff orangish brown mottled bluish grey slightly gravelly CLAY. Gravel is sub-angular fine to coarse of mudstone.		
				(2.40)				
			55.70	2.70		MADE GROUND: Firm dark bluish grey CLAY with wood, twigs and plastic. (Relict Topsoil) *Between 2.70-3.00mbgl: Strong organic odour.*		
			55.40	3.00		End of Trial Pit at 3.00m		

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:

Groundwater not encountered.

Dimensions:

Length:

Width:

Orientation: °

Groundwater Details

Depth encountered (m)	Remarks

T&P Regen www.tandpregeneration.co.uk	Contract Name: Snow Capel		Client: Edward Ware Homes			Trial Pit ID: TP103 Sheet 1 of 1
	Contract Number: SNO1877a	Date Started: 28/11/2017	Logged By: SB	Checked By: JF	Status: FINAL	
Trial Pit Log	Easting: 385111	Northing: 214108	Ground Level: 59.47mOD	Plant Used: JCB 3CX	Print Date: 04/12/2017	Scale: 1:25
Weather: Sunny	Termination: Target depth achieved		Stability: Stable			

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
				(0.30)		MADE GROUND: Brown silty gravelly CLAY with rootlets. Gravel is sub-angular fine to coarse of mudstone. (Topsoil)		
			59.17	0.30		MADE GROUND: Stiff orangish brown mottled bluish grey slightly gravelly CLAY. Gravel is sub-angular fine to coarse of mudstone and pottery.		
				(2.40)				
			56.77	2.70		MADE GROUND: Stiff bluish grey slightly gravelly CLAY. Gravel is sub-angular fine to coarse of mudstone. Occasional pockets of black organic material. (Relict Topsoil)		
3.00 - 3.40	ES1			(0.70)		*Between 2.70-3.40mbgl: Strong organic odour.*		
			56.07	3.40		End of Trial Pit at 3.40m		

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:

Groundwater not encountered.

Dimensions:

Length:

Width:

Orientation: °

Groundwater Details

Depth encountered (m)	Remarks

T&P Regen

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Contract Name:	Client:	Trial Pit ID:
Snow Capel	Edward Ware Homes	TP104

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
SNO1877a	28/11/2017	SB	JF	FINAL	

Trial Pit Log	Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
	385134	214037	60.20mOD	JCB 3CX	04/12/2017	1:25

Weather: Sunny | Termination: Target depth achieved | Stability: Stable

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
			60.00	0.20		MADE GROUND: Brown silty gravelly CLAY with rootlets. Gravel is sub-angular fine to coarse of mudstone. (Topsoil)		
				(0.40)		MADE GROUND: Firm orangish brown silty CLAY.		
			59.60	0.60		MADE GROUND: Soft dark grey CLAY. *Between 0.60-3.00mbgl: Strong organic odour.*		
1.00 - 1.20	ES1							
				(2.40)				
			57.20	3.00		Stiff orangish brown and bluish grey mottled CLAY.		
				(0.40)				
			56.80	3.40		End of Trial Pit at 3.40m		

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:

Groundwater not encountered.

Dimensions:

Length:

Width:

Orientation: °

Groundwater Details

Depth encountered (m)	Remarks

T&P Regen

www.tandpregeneration.co.uk

Contract Name:	Client:	Trial Pit ID:
Snow Capel	Edward Ware Homes	TP105

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
SNO1877a	28/11/2017	SB	JF	FINAL	

Trial Pit Log	Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
	385211	214141	61.30mOD	JCB 3CX	04/12/2017	1:25

Weather: Sunny | Termination: Target depth achieved | Stability: Stable

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
			61.10	0.20		MADE GROUND: Brown silty gravelly CLAY with rootlets. Gravel is sub-angular fine to coarse of mudstone. (Topsoil)		
				(1.70)		MADE GROUND: Stiff orangish brown mottled bluish grey CLAY.		
2.00 - 2.20	ES1		59.40	1.90		MADE GROUND: Firm dark bluish grey CLAY. (Relict Topsoil) *Between 1.90-2.60mbgl: Slight organic odour.*		
				(0.70)				
			58.70	2.60		Stiff bluish grey mottled orangish brown CLAY with sub-angular to sub-rounded fine to coarse gravel sized mudstone lithoreltics. (CHARMOUTH MUDSTONE FORMATION)		
				(0.80)				
			57.90	3.40		End of Trial Pit at 3.40m		

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:

Groundwater not encountered.

Dimensions:

Length:

Width:

Orientation: °

Groundwater Details

Depth encountered (m)	Remarks

T&P Regen www.tandpregeneration.co.uk	Contract Name: Snow Capel		Client: Edward Ware Homes			Trial Pit ID: TP106 Sheet 1 of 1
	Contract Number: SNO1877a	Date Started: 28/11/2017	Logged By: SB	Checked By: JF	Status: FINAL	
Trial Pit Log	Easting: 385177	Northing: 214250	Ground Level: 58.93mOD	Plant Used: JCB 3CX	Print Date: 04/12/2017	Scale: 1:25
Weather: Sunny	Termination: Target depth achieved		Stability: Stable			

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
			58.73	0.20		MADE GROUND: Brown silty gravelly CLAY with rootlets. Gravel is sub-angular fine to coarse of mudstone. (Topsoil)		
				(0.60)		MADE GROUND: Stiff orangish brown mottled bluish grey CLAY.		
			58.13	0.80		MADE GROUND: Firm dark grey CLAY.		
				(0.70)				
1.50 - 1.60	ES1		57.43	1.50		MADE GROUND: Dark grey CLAY with roots and rootlets. (Relict Topsoil)		
			57.33	1.60		*Between 1.50-1.60mbgl: Slight organic odour.* Stiff orangish brown mottled bluish grey CLAY with sub-angular fine to coarse gravel sized mudstone lithorelicts. (CHARMOUTH MUDSTONE FORMATION)		
				(1.10)				
			56.23	2.70		End of Trial Pit at 2.70m		

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:

Groundwater not encountered.

Dimensions:

Length:

Width:

Orientation: °

Groundwater Details

Depth encountered (m)	Remarks

T&P Regen

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Contract Name:		Client:			Trial Pit ID:
Snow Capel		Edward Ware Homes			TP107
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
SNO1877a	28/11/2017	SB	JF	FINAL	
Trial Pit Log	Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
	385028	214228	55.95mOD	JCB 3CX	04/12/2017	1:25

Weather: Sunny | Termination: Target depth achieved | Stability: Stable

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
			55.75	0.20		MADE GROUND: Brown silty gravelly CLAY with rootlets. Gravel is sub-angular fine to coarse of mudstone. (Topsoil)		
				(0.60)		Stiff dark grey gravelly CLAY. Gravel is sub-angular fine to coarse of limestone and shell fragments. (CHARMOUTH MUDSTONE FORMATION)		
			55.15	0.80		Firm orangish brown mottled bluish grey gravelly CLAY with sub-angular fine to coarse mudstone lithorelicts. (CHARMOUTH MUDSTONE FORMATION)		
				(1.20)				
			53.95	2.00		Stiff dark bluish grey mottled orangish brown laminated CLAY with sub-angular fine to coarse gravel sized mudstone lithorelicts. Frequent pockets of sand sized gypsum crystals. (CHARMOUTH MUDSTONE FORMATION)		
				(0.70)				
			53.25	2.70		End of Trial Pit at 2.70m		

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:

Groundwater not encountered.

Dimensions:

Length:

Width:

Orientation: °

Groundwater Details

Depth encountered (m)	Remarks

T&P Regen

www.tandpregeneration.co.uk

Contract Name:		Client:			Trial Pit ID:
Snow Capel		Edward Ware Homes			TP108
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
SNO1877a	28/11/2017	SB	JF	FINAL	
Trial Pit Log	Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
	385045	214050	58.25mOD	JCB 3CX	04/12/2017	1:25

Weather: Sunny | Termination: Target depth achieved | Stability: Stable

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
			58.05	0.20		MADE GROUND: Brown silty gravelly CLAY with rootlets. Gravel is sub-angular fine to coarse of mudstone. (Topsoil)		
				(1.00)		MADE GROUND: Firm orangish brown slightly gravelly CLAY. Gravel is fine to coarse of limestone, mudstone and shell fragments.		
			57.05	1.20		MADE GROUND: Dark brown and black CLAY with roots and rootlets. (Relict Topsoil)		
			56.95	1.30		*Between 1.20-1.30mbgl: Slight organic odour.*		
				(0.80)		Firm to stiff orangish brown mottled bluish grey CLAY. (CHARMOUTH MUDSTONE FORMATION)		
			56.15	2.10		End of Trial Pit at 2.10m		

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:

Groundwater not encountered.

Dimensions:

Length:

Width:

Orientation: °

Groundwater Details

Depth encountered (m)	Remarks

T&P Regen
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Contract Name:	Client:	Borehole ID:
Snow Capel	Edward Ware Homes	WS101

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
SNO1877a	29/11/2017	SB	JF	FINAL	

Windowless Sample Borehole Log	Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
	385044	214130	57.86mOD	Terrier Rig	04/12/2017	1:25

Weather: Frosty

Termination: Target depth achieved

Samples & In Situ Testing				Strata Details				Groundwater	
Depth	Sample ID	Windowless Sample Recovery	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill / Installation
		0.00 - 1.00 = 95%		57.66	0.20		MADE GROUND: Brown silty gravelly CLAY with rootlets. Gravel is sub-angular fine to coarse of mudstone. (Topsoil)		
		1.00 - 2.00 = 90%			(2.00)		MADE GROUND: Stiff orangish brown and bluish grey slightly gravelly CLAY. Gravel is sub-angular fine to coarse of mudstone with sand sized gypsum crystals.		
1.80 - 2.00	ES1								
		2.00 - 3.00 = 90%							
2.20 - 2.40	ES2			55.66	2.20		MADE GROUND: Firm black mottled dark grey CLAY with roots and rootlets. (Relict Topsoil)		
				55.46	2.40		*Between 2.20-2.40mbgl: Strong organic odour.*		
2.50 - 2.60	ES3						Stiff orangish brown and bluish grey CLAY. (CHARMOUTH MUDSTONE FORMATION)		
		3.00 - 4.00 = 95%			(1.60)				
				53.86	4.00		End of Borehole at 4.00m		

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter

Depth (m)	Dia (mm)

Casing Diameter

Depth	Dia (mm)

Remarks:
Groundwater not encountered.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	1.00	PLAIN	50
1.00	3.00	SLOTTED	50

T&P Regen
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Contract Name:		Client:			Borehole ID:
Snow Capel		Edward Ware Homes			WS102
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
SNO1877a	29/11/2017	SB	JF	FINAL	
Windowless Sample Borehole Log	Easting: 385072	Northing: 214118	Ground Level: 58.56mOD	Plant Used: Terrier Rig	Print Date: 04/12/2017	Scale: 1:25
Weather: Frosty	Termination: Target depth achieved				

Samples & In Situ Testing				Strata Details				Groundwater	
Depth	Sample ID	Windowless Sample Recovery	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill / Installation
		0.00 - 1.00 = 100%		58.36	0.20		MADE GROUND: Brown silty gravelly CLAY with rootlets. Gravel is sub-angular fine to coarse of mudstone. (Topsoil)		
		1.00 - 2.00 = 100%			(1.60)		MADE GROUND: Stiff orangish brown mottled bluish grey slightly gravelly CLAY with rootlets. Gravel is sub-angular fine to coarse of mudstone.		
1.40 - 1.60	ES1								
				56.76	1.80		MADE GROUND: Firm bluish grey CLAY with occasional rootlets. *Between 1.80-3.10mbgl: Slight organic odour.*		
		2.00 - 3.00 = 95%							
2.20 - 2.40	ES2				(1.30)				
		3.00 - 4.00 = 90%							
				55.46	3.10		Stiff orangish brown mottled bluish grey CLAY with sub-angular fine to coarse mudstone lithorelicts. (CHARMOUTH MUDSTONE FORMATION)		
3.20 - 3.40	ES3				(0.70)				
				54.76	3.80		Very stiff dark grey CLAY with sub-angular fine to coarse mudstone lithorelicts. (CHARMOUTH MUDSTONE FORMATION)		
				54.56	4.00		End of Borehole at 4.00m		

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter

Depth (m)	Dia (mm)

Casing Diameter

Depth	Dia (mm)

Remarks:
Groundwater not encountered.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	2.00	PLAIN	50
2.00	4.00	SLOTTED	50

T&P Regen www.tandpregeneration.co.uk	Contract Name: Snow Capel		Client: Edward Ware Homes		Borehole ID: WS103 Sheet 1 of 1
	Contract Number: SNO1877a	Date Started: 29/11/2017	Logged By: SB	Checked By: JF	Status: FINAL
Windowless Sample Borehole Log	Easting: 385112	Northing: 214118	Ground Level: 59.38mOD	Plant Used: Terrier Rig	Print Date: 04/12/2017
					Scale: 1:25
Weather: Frosty		Termination: Target depth achieved			

Samples & In Situ Testing				Strata Details				Groundwater	
Depth	Sample ID	Windowless Sample Recovery	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill / Installation
		0.00 - 1.00 = 100%		59.18	0.20		MADE GROUND: Brown silty gravelly CLAY with rootlets. Gravel is sub-angular fine to coarse of mudstone. (Topsoil)		
							MADE GROUND: Stiff orangish brown mottled bluish grey gravelly CLAY. Gravel is sub-angular fine to coarse of mudstone. *Between 0.20-1.20mbgl: Frequent rootlets and wood fibres.*		
		1.00 - 2.00 = 90%			(2.35)				
1.50 - 1.70	ES1								
		2.00 - 3.00 = 75%							
2.60 - 2.80	ES2			56.83	2.55		MADE GROUND: Soft bluish grey silty CLAY. *Between 2.60-4.60mbgl: Slight organic odour.*		
		3.00 - 4.00 = 50%							
					(2.05)				
3.80 - 4.00	ES3								
		4.00 - 5.00 = 75%							
				54.78	4.60		Extremely weak orangish brown MUDSTONE with shell fragments. (CHARMOUTH MUDSTONE FORMATION)		
					(0.40)				
				54.38	5.00		End of Borehole at 5.00m		

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter

Depth (m)	Dia (mm)

Casing Diameter

Depth	Dia (mm)

Remarks:
Groundwater not encountered.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	1.00	PLAIN	50
1.00	4.00	SLOTTED	50

T&P Regen
www.tandpregeneration.co.uk

Contract Name:	Client:	Borehole ID:
Snow Capel	Edward Ware Homes	WS104

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
SNO1877a	29/11/2017	SB	JF	FINAL	

Windowless Sample Borehole Log	Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
	385112	214060	59.76mOD	Terrier Rig	04/12/2017	1:25

Weather: Frosty

Termination: Target depth achieved

Samples & In Situ Testing				Strata Details				Groundwater	
Depth	Sample ID	Windowless Sample Recovery	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill / Installation
		0.00 - 1.00 = 100%		59.56	0.20		MADE GROUND: Brown silty gravelly CLAY with rootlets. Gravel is sub-angular fine to coarse of mudstone. (Topsoil)		
				59.36	0.40		MADE GROUND: Stiff orangish brown slightly gravelly CLAY. Gravel is sub-angular fine to coarse of limestone.		
					(1.00)		MADE GROUND: Stiff orangish brown mottled bluish grey slightly gravelly CLAY. Gravel is sub-angular fine to coarse of mudstone with sand sized gypsum crystals.		
		1.00 - 2.00 = 100%					1		
1.20 - 1.40	ES1								
				58.36	1.40		MADE GROUND: Firm bluish grey and black CLAY with pockets (20-30mm) of fibrous organic material and roots.		
1.50 - 1.70	ES2				(0.40)		*Between 1.40-1.80mbgl: Slight organic odour.*		
				57.96	1.80		MADE GROUND: Stiff grey CLAY.		
2.00 - 2.20	ES3	2.00 - 3.00 = 100%			(0.70)		2		
				57.26	2.50		MADE GROUND: Stiff dark grey mottled black CLAY.		
2.60 - 2.80	ES4				(0.40)		*Between 2.50-2.90mbgl: Slight organic odour.*		
				56.86	2.90		Stiff orangish brown mottled bluish grey CLAY. (CHARMOUTH MUDSTONE FORMATION)		
3.00 - 3.20	ES5	3.00 - 4.00 = 100%			(1.10)		3		
				55.76	4.00		End of Borehole at 4.00m		
							4		
							5		

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Borehole Diameter

Depth (m)	Dia (mm)

Casing Diameter

Depth	Dia (mm)

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	1.50	PLAIN	50
1.50	3.50	SLOTTED	50

Remarks:
Groundwater not encountered.

Appendix C – Photographs

APPENDIX - SITE PHOTOGRAPHS

PLATE 01 – Profile of naturally derived soil – TP102.

PLATE 02 – Twigs and plastic found within TP102.

PLATE 03 – Profile of soils with buried topsoil within WS101.

PLATE 04 – View of saturated ground and surface water flooding around monitoring well installation.

	
PLATE 05 – View of water level in vicinity of moat.	**PLATE 06 – View of water level at top of standpipe in monitoring installation and ingress of surface water.**

Appendix D – Chemical Results

Unit A2
Windmill Road
Ponswood Industrial Estate
St Leonards on Sea
East Sussex
TN38 9BY
[redacted]

THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 17-15293

Issue: 1

Date of Issue: 11/12/2017

Contact: [redacted]

Customer Details: T & P Regeneration Ltd (Smeaton Road)
Unit 4
Brunel Lock Development
Bristol
BS1 6SE

Quotation No: Q15-00390

Order No: 3390-SNO1877a

Customer Reference: SNO1877a

Date Received: 04/12/2017

Date Approved: 11/12/2017

Details: SNO1877a

Approved by: [redacted]

[redacted] Technical Manager

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683

Sample Summary

Report No.: 17-15293

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
120569	TP101 2.00 - 2.20	28/11/2017	07/12/2017	Silty clayey loam	
120570	TP103 3.00 - 3.40	28/11/2017	07/12/2017	Silty clayey loam	
120571	TP105 2.00 - 2.20	28/11/2017	07/12/2017	Silty clayey loam	
120572	TP106 1.50 - 1.60	28/11/2017	07/12/2017	Silty clayey loam	
120573	WS101 1.80 - 2.00	29/11/2017	07/12/2017	Silty clayey loam	
120574	WS101 2.20 - 2.40	29/11/2017	07/12/2017	Silty clayey loam	
120575	WS101 2.50 - 2.60	29/11/2017	07/12/2017	Clayey loam	
120576	WS102 1.40 - 1.60	29/11/2017	07/12/2017	Silty clayey loam	
120577	WS102 2.20 - 2.40	29/11/2017	07/12/2017	Silty clayey loam	
120578	WS102 3.20 - 3.40	29/11/2017	07/12/2017	Clayey loam	
120579	WS103 1.50 - 1.70	29/11/2017	07/12/2017	Clayey loam	
120580	WS103 2.60 - 2.80	29/11/2017	07/12/2017	Silty clayey loam	
120581	WS103 3.80 - 4.00	29/11/2017	07/12/2017	Silty clayey loam	
120582	WS104 1.20 - 1.40	29/11/2017	07/12/2017	Silty clayey loam	
120583	WS104 1.50 - 1.70	29/11/2017	07/12/2017	Silty clayey loam	
120584	WS104 2.00 - 2.20	29/11/2017	07/12/2017	Clayey loam	
120585	WS104 2.60 - 2.80	29/11/2017	07/12/2017	Clayey loam	
120586	WS104 3.00 - 3.20	29/11/2017	07/12/2017	Silty clayey loam	

Results Summary

Report No.: 17-15293

			ELAB Reference	120569	120570	120571	120572	120573	120574
			Customer Reference						
			Sample ID						
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sample Location	TP101	TP103	TP105	TP106	WS101	WS101
			Sample Depth (m)	2.00 - 2.20	3.00 - 3.40	2.00 - 2.20	1.50 - 1.60	1.80 - 2.00	2.20 - 2.40
			Sampling Date	28/11/2017	28/11/2017	28/11/2017	28/11/2017	29/11/2017	29/11/2017
Determinand	**Codes**	**Units**	**LOD**						
Miscellaneous									
Total Organic Carbon	N	%	0.01	0.42	0.71	1.1	0.61	0.33	0.91

Tests marked N are not UKAS accredited.

Results Summary

Report No.: 17-15293

			ELAB Reference	120575	120576	120577	120578	120579	120580
			Customer Reference						
			Sample ID						
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sample Location	WS101	WS102	WS102	WS102	WS103	WS103
			Sample Depth (m)	2.50 - 2.60	1.40 - 1.60	2.20 - 2.40	3.20 - 3.40	1.50 - 1.70	2.60 - 2.80
			Sampling Date	29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Determinand	**Codes**	**Units**	**LOD**						
Miscellaneous									
Total Organic Carbon	N	%	0.01	0.36	0.42	0.48	0.37	0.59	0.30

Results Summary

Report No.: 17-15293

			ELAB Reference	120581	120582	120583	120584	120585	120586
			Customer Reference						
			Sample ID						
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sample Location	WS103	WS104	WS104	WS104	WS104	WS104
			Sample Depth (m)	3.80 - 4.00	1.20 - 1.40	1.50 - 1.70	2.00 - 2.20	2.60 - 2.80	3.00 - 3.20
			Sampling Date	29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017	29/11/2017
Determinand	**Codes**	**Units**	**LOD**						
Miscellaneous									
Total Organic Carbon	N	%	0.01	0.36	0.41	0.49	0.46	0.53	0.41

Method Summary

Report No.: 17-15293

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
Total organic carbon/Total sulphur	N	Air dried sample	11/12/2017	210	IR

Tests marked N are not UKAS accredited

Report Information

Report No.: 17-15293

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"

Soil sample results are expressed on an air dried basis (dried at < 30°C)
Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
PCB congener results may include any coeluting PCBs
Uncertainty of measurement for the determinands tested are available upon request

Deviation Codes

a	No date of sampling supplied
b	No time of sampling supplied (Waters Only)
c	Sample not received in appropriate containers
d	Sample not received in cooled condition
e	The container has been incorrectly filled
f	Sample age exceeds stability time (sampling to receipt)
g	Sample age exceeds stability time (sampling to analysis)

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month
All water samples will be retained for 7 days following the date of the test report
Charges may apply to extended sample storage

Appendix E – Ground Gas Monitoring Records

Gas Monitoring Records

Client: Edward Ware Homes
Site: Land east of Snow Capel Farm, Matson
Date: 05/12/2017

Job No: SNO1877a
Visit No: 1 **of** 6
Operator: LM
Project Manager: SB

	VOLATILES	FLOW DATA				GAS CONCENTRATIONS												WELL AND WATER DATA									Comments
Monitoring Point	PID Peak (ppm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (sec)	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		Run time (min)	Product thickness (mm)	Water Level pre-bailing (mbgl)	Bailed water level (mbgl)	Minutes passed	Ground level (mAOD)	Water level (mbgl)	Base of well (mbgl)	Water level (mAOD)	Response zone range (m)	
		Peak	Steady			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Min.	Steady											
WS01	0.3	29.8	11	135	180	33.5	29.5	<0.1	<0.1	16.6	16.5	<0.1	<0.1	19.5	18.01	9.8	10.2	4	ND	-	-	-	58.44	ND	2.58	-	0.5-2.7	
WS03	<0.1	-0.1	<0.1	0	30	<0.1	<0.1	<0.1	<0.1	5.3	5.2	<0.1	<0.1	<0.1	<0.1	16.8	16.8	3	ND	-	-	-	59.96	1.65	2.15	58.31	1-2	
WS05	<0.1	<0.1	<0.1	0	-	<0.1	<0.1	<0.1	<0.1	2.3	2.3	<0.1	<0.1	<0.1	<0.1	19.5	19.5	3	ND	-	-	-	61.9	ND	2.95	-	1-3	
WS08	<0.1	-0.1	<0.1	0	10	<0.1	<0.1	<0.1	<0.1	2.2	2.2	<0.1	<0.1	<0.1	<0.1	19.8	19.8	3	ND	-	-	-	57.54	2.53	3.03	55.01	1-3	
WS101	51	-0.1	-0.1	0	20	<0.1	<0.1	<0.1	<0.1	4.5	4.4	<0.1	<0.1	<0.1	<0.1	17.4	17.5	3	ND	-	-	-	57.86	ND	2.89	-	1-3	
WS102	5000+	-0.2	0.1	0	30	0.4	0.3	<0.1	<0.1	6.4	6.3	6.1	6.1	<0.1	<0.1	15.4	15.4	4	ND	-	-	-	58.56	3.77	3.87	54.79	2-4	
WS103	<0.1	<0.1	<0.1	0	-	<0.1	<0.1	<0.1	<0.1	3.7	3.6	<0.1	<0.1	<0.1	<0.1	17	17.1	3	ND	-	-	-	59.38	3.76	3.93	55.62	1-4	
WS104	13.5	<0.1	<0.1	0	-	<0.1	<0.1	<0.1	<0.1	4.7	4.6	<0.1	<0.1	<0.1	<0.1	16.5	16.5	3	ND	-	-	-	59.76	ND	3.34	-	1.5-3.5	
Max	**51.0**	**29.8**	**11.0**	**135**		**33.5**	**29.5**	**0.0**	**0.0**	**16.6**	**16.5**	**6.1**	**6.1**	**19.5**	**18.01**	**19.8**	**19.8**											
Min	**0.3**	**-0.2**	**-0.1**	**0**		**0.4**	**0.3**	**0.0**	**0.0**	**2.2**	**2.2**	**6.1**	**6.1**	**19.5**	**18.01**	**9.8**	**10.2**											

ND - Not detected
NR - Not recorded

METEOROLOGICAL AND SITE INFORMATION: (Put X in front of selected or enter data as applicable)

State of ground:	Dry		Moist		**Wet**		Snow		Frozen
Wind:	**Calm**		Light		Moderate		Strong		
Cloud cover:	None		Slight		Cloudy		**Overcast**		
Preciptation:	None		Slight		Moderate		Heavy		
Time monitoring performed:	Start	**09:00**			End	**11:00**			
Barometric pressure (mbar):	Start	**1035**			End	**1034**			
Pressure trend:	**Falling**		Steady		Rising				
Air temperature (degree C):	Before		**8**		After		8		

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter:	GAS DATA LMS xi					**PID:**	Micro5
Gas range:	**CH_4:**	0 - 100%	**CO_2:**	0 - 100%	**O_2:**	0 -25%	Calibrated range:	0-99 ppm
Gas flow range:	+30/-10 l/hr						Calibration gas:	Isobutylene
Differential pressure:	+300/-30 Pa						Response time:	2 seconds
Date of last calibration:	09/02/2017						Accuracy:	0.1 ppm
Date of next calibration:	09/02/2018						**Date of last calibration:**	13/07/2017
							Date of next calibration:	13/07/2018

Gas Monitoring Records

Client: Edward Ware Homes
Site: Land east of Snow Capel Farm, Matson
Date: 22/12/2017

Job No: SNO1877a
Visit No: 2 **of** 6
Operator: CT
Project Manager: SB

	VOLATILES	FLOW DATA				GAS CONCENTRATIONS													WELL AND WATER DATA									Comments
Monitoring Point	PID Peak (ppm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (sec)	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		Run time (min)	Product thickness (mm)	Water Level pre-bailing (mbgl)	Bailed water level (mbgl)	Minutes passed	Water level (mbgl)	Base of well (mbgl)	Ground level (mAOD)	Water level (mAOD)	Response zone range (m)	
		Peak	Steady			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Min.	Steady											
WS01	1.1	-3.7	-3.7	-9	10	54	54	<0.1	<0.1	17	16	<0.1	<0.1	<0.1	<0.1	16.7	16.8	2	ND	-	-	-	2.60	3.30	58.44	55.84	0.5-2.7	Water level recorded above top of bung. Water refilled too quickly to enable monitoring to be completed.
WS03	1.8	-0.1	<0.1	0	10	<0.1	<0.1	<0.1	<0.1	5	4.9	<0.1	<0.1	<0.1	<0.1	17.9	17.9	2	ND	-	-	-	1.56	2.20	59.96	58.40	1-2	
WS05	NR	NR	NR	NR	-	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	-	ND	-	-	-	-	2.95	61.90	-	1-3	Water level recorded above top of bung.
WS08	NR	NR	NR	NR	-	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	-	ND	-	-	-	-	3.03	57.54	-	1-3	Water level recorded above top of bung.
WS101	14.9	0.5	0.2	0	30	<0.1	<0.1	<0.1	<0.1	7.9	7.7	<0.1	<0.1	<0.1	<0.1	13.7	13.7	3	ND	-	-	-	0.60	2.95	57.86	57.26	1-3	
WS102	5000+	<0.1	<0.1	0	-	<0.1	<0.1	<0.1	<0.1	9.1	9	<0.1	<0.1	<0.1	<0.1	14.3	14.3	3	ND	-	-	-	3.10	3.99	58.56	55.46	2-4	
WS103	NR	NR	NR	NR	-	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	-	ND	-	-	-	-	3.93	59.38	-	1-4	Water level recorded above top of bung.
WS104	4.3	-0.1	-0.1	0	10	<0.1	<0.1	<0.1	<0.1	5	4.7	<0.1	<0.1	<0.1	<0.1	16.7	16.8	2	ND	-	-	-	2.60	3.30	59.76	57.16	1.5-3.5	PID took a long time to stabilise.
Max	**14.9**	**0.5**	**0.2**	**0**		**54.0**	**54.0**	**0.0**	**0.0**	**17.0**	**16.0**	**0**	**0**	**0**	**0**	**17.9**	**17.9**											
Min	**1.1**	**-3.7**	**-3.7**	**-9**		**54.0**	**54.0**	**0.0**	**0.0**	**5.0**	**4.7**	**0**	**0**	**0**	**0**	**13.7**	**13.7**											

ND - Not detected
NR - Not recorded

METEOROLOGICAL AND SITE INFORMATION: (Put X in front of selected or enter data as applicable)

State of ground:	Dry	Moist	**Wet**	Snow	Frozen
Wind:	Calm	**Light**	Moderate	Strong	
Cloud cover:	None	Slight	**Cloudy**	Overcast	
Precipitation:	None	Slight	**Moderate**	Heavy	
Time monitoring performed:	Start **08:28**		End **10:05**		
Barometric pressure (mbar):	Start **1032**		End **1033**		
Pressure trend:	Falling	Steady	**Rising**		
Air temperature (degree C):	Before **10**		After 10		

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GAS DATA LMS xi
Gas range: **CH_4:** 0 - 100% **CO_2:** 0 - 100% **O_2:** 0 -25%
Gas flow range: +30/-10 l/hr
Differential pressure: +300/-30 Pa
Date of last calibration: 09/02/2017
Date of next calibration: 09/02/2018

PID: Micro5
Calibrated range: 0-99 ppm
Calibration gas: Isobutylene
Response time: 2 seconds
Accuracy: 0.1 ppm
Date of last calibration: 13/07/2017
Date of next calibration: 13/07/2018

Gas Monitoring Records

Client: Edward Ware Homes
Site: Land east of Snow Capel Farm, Matson
Date: 03/01/2018

Job No: SNO1877a
Visit No: 3 **of** 6
Operator: CT
Project Manager: SB

Monitoring Point	VOLATILES	FLOW DATA				GAS CONCENTRATIONS													WELL AND WATER DATA									Comments
	PID Peak (ppm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (sec)	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		Run time (min)	Product thickness (mm)	Water Level pre-bailing (mbgl)	Bailed water level (mbgl)l	Minutes passed	Water level (mbgl)	Base of well (mbgl)	Ground level (mAOD)	Water level (mAOD)	Response zone range (m)	
		Peak	Steady			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Min.	Steady											
WS01	<0.1	<0.1	<0.1	0	-	0.1	0.1	1.8	1.8	0.4	0.1	9	3	<0.1	<0.1	21.2	21.1	1.5	ND	0.70	0.83	44.00	0.78	3.30	58.44	57.66	0.5-2.7	Bailed out. Monitoring time limited by surface water back-fill.
WS03	1.6	16.6	2.4	6	30	<0.1	<0.1	<0.1	<0.1	4.2	4.1	<0.1	<0.1	<0.1	<0.1	18.6	18.6	3	ND	0.85	-	-	1.00	2.20	59.96	58.96	1-2	
WS05	2.6	16	2.2	5	20	<0.1	<0.1	<0.1	<0.1	0.5	0.5	<0.1	<0.1	<0.1	<0.1	20.9	20.9	3	ND	0.36	2.56	24.00	1.98	3.00	61.90	59.92	1-3	Bailed out.
WS08	0.1	25	8.1	22	60	<0.1	<0.1	<0.1	<0.1	0.6	0.6	<0.1	<0.1	<0.1	<0.1	21.4	21.4	3	ND	0.00	2.58	49.00	1.35	3.00	57.54	56.19	1-3	Bailed out.
WS101	0.4	<0.1	<0.1	0	-	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	21.1	21.1	3	ND	0.48	2.20	30.00	2.10	3.95	57.86	55.76	1-3	Required 20 + bail loads.
WS102	17.1	<0.1	<0.1	0	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	21.1	21.1	3	ND	1.50	2.20	31.00	2.14	3.95	58.56	56.42	2-4	Bailed out.
WS103	<0.1	<0.1	<0.1	0	-	<0.1	<0.1	<0.1	<0.1	0.6	0.6	<0.1	<0.1	<0.1	<0.1	21.1	21.1	5	ND	0.05	2.55	41.00	2.45	3.98	59.38	56.93	1-4	Bailed out.
WS104	<0.1	<0.1	<0.1	0	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	21.2	21.2	3	ND	0.55	3.00	45.00	2.84	3.35	59.76	56.92	1.5-3.5	Bailed out.
Max	**17.1**	**25.0**	**8.1**	**22**		**0.1**	**0.1**	**1.8**	**1.8**	**4.2**	**4.1**	**9**	**3**	**0**	**0**	**21.4**	**21.4**											
Min	**0.1**	**16.0**	**2.2**	**0**		**0.1**	**0.1**	**1.8**	**1.8**	**0.3**	**0.1**	**9**	**3**	**0**	**0**	**18.6**	**18.6**											

ND - Not detected
NR - Not recorded

METEOROLOGICAL AND SITE INFORMATION: (Put X in front of selected or enter data as applicable)

State of ground:	Dry	Moist	**Wet**	Snow	Frozen	
Wind:	Calm	Light	Moderate	**Strong**		
Cloud cover:	None	Slight	**Cloudy**	Overcast		
Precipitation:	None	**Slight**	Moderate	Heavy		
Time monitoring performed:	Start	**09:43**	End	**13:27**		
Barometric pressure (mbar):	Start	**994**	End	**998**		
Pressure trend:	Falling	Steady	**Rising**			
Air temperature (degree C):	Before	**9**	After	**10**		

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter:	GAS DATA LMS xi				
Gas range:	**CH_4:** 0 - 100%	**CO_2:**	0 - 100%	**O_2:**	0 -25%
Gas flow range:	+30/-10 l/hr				
Differential pressure:	+300/-30 Pa				
Date of last calibration:	09/02/2017				
Date of next calibration:	09/02/2018				

PID:	Micro5
Calibrated range:	0-99 ppm
Calibration gas:	Isobutylene
Response time:	2 seconds
Accuracy:	0.1 ppm
Date of last calibration:	13/07/2017
Date of next calibration:	13/07/2018

Gas Monitoring Records

Client: Edward Ware Homes
Site: Land east of Snow Capel Farm, Matson
Date: 16/01/2018

Job No: SNO1877a
Visit No: 4 of 6
Operator: CT
Project Manager: SB

	VOLATILES	FLOW DATA				GAS CONCENTRATIONS												WELL AND WATER DATA									Comments
Monitoring Point	PID Peak (ppm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (sec)	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		Run time (min)	Product thickness (mm)	Water Level pre-bailing (mbgl)	Bailed water level (mbgl)l	Minutes passed	Water level (mbgl)	Base of well (mbgl)	Ground level (mAOD)	Water level (mAOD)	Response zone range (m)	
		Peak	Steady			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Min.	Steady											
WS01	<0.1	<0.1	<0.1	0	-	2.7	2.7	52.5	52.5	1.1	1.1	<0.1	<0.1	<0.1	<0.1	18.9	18.9	2.5	ND	0.80	1.95	109	0.88	3.98	58.44	57.56	0.5-2.7	Bailed out. Monitoring time limited by surface water back-fill.
WS03	1.8	16.2	0.5	1	20	0.1	0.1	3.2	3.1	0.6	0.6	<0.1	<0.1	<0.1	<0.1	21	21	3.5	ND	0.92	1.77	110	1.65	2.20	59.96	58.31	1-2	
WS05	0.5	1.4	1.1	2	10	<0.1	<0.1	<0.1	<0.1	0.5	0.5	<0.1	<0.1	<0.1	<0.1	20.8	20.8	5	ND	0.45	2.30	111	2.04	3.00	61.90	59.86	1-3	
WS08	NR	NR	NR	NR	-	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	-	ND	-	1.95	90	-	3.00	57.54	-	1-3	Water above top of bung - well flooded. Unable to monitor ground gases.
WS101	2.8	<0.1	<0.1	0	-	<0.1	<0.1	<0.1	<0.1	2.1	2.1	<0.1	<0.1	<0.1	<0.1	19.7	19.7	6	ND	0.52	2.33	117	2.20	3.95	57.86	55.66	1-3	
WS102	46.5	<0.1	<0.1	0	-	<0.1	<0.1	<0.1	<0.1	0.4	0.4	<0.1	<0.1	<0.1	<0.1	21	21	3	ND	2.50	2.80	111	2.47	3.98	58.56	56.09	2-4	
WS103	<0.1	-0.7	-0.4	0	20	<0.1	<0.1	<0.1	<0.1	0.9	0.9	<0.1	<0.1	<0.1	<0.1	20.8	20.8	3	ND	0.05	2.20	102	2.08	4.00	59.38	57.30	1-4	
WS104	0.1	<0.1	<0.1	0	-	<0.1	<0.1	<0.1	<0.1	0.3	0.2	<0.1	<0.1	<0.1	<0.1	21	21	4	ND	0.65	2.20	108	2.05	3.40	59.76	57.71	1.5-3.5	
Max	**46.5**	**16.2**	**1.1**	**2**		**2.7**	**2.7**	**52.5**	**52.5**	**2.1**	**2.1**	**0**	**0**	**0**	**0**	**21.0**	**21.0**											
Min	**0.1**	**-0.7**	**-0.4**	**0**		**0.1**	**0.1**	**3.2**	**3.1**	**0.3**	**0.2**	**0**	**0**	**0**	**0**	**18.9**	**18.9**											

ND - Not detected
NR - Not recorded

METEOROLOGICAL AND SITE INFORMATION: (Put X in front of selected or enter data as applicable)

State of ground:	Dry		Moist		**Wet**		Snow	Frozen
Wind:	Calm		Light		**Moderate**		Strong	
Cloud cover:	None		Slight		**Cloudy**		Overcast	
Precipitation:	None		**Slight**		Moderate		Heavy	
Time monitoring performed:	Start	**12:13**			End	**14:18**		
Barometric pressure (mbar):	Start	**997**			End	**994**		
Pressure trend:	**Falling**		Steady		Rising			
Air temperature (degree C):	Before	**7**			After	**7**		

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter:	GAS DATA LMS xi						**PID:**	Micro5
Gas range:	**CH_4:**	0 - 100%	**CO_2:**	0 - 100%	**O_2:**	0 -25%	Calibrated range:	0-99 ppm
Gas flow range:	+30/-10 l/hr						Calibration gas:	Isobutylene
Differential pressure:	+300/-30 Pa						Response time:	2 seconds
Date of last calibration:	09/02/2017						Accuracy:	0.1 ppm
Date of next calibration:	09/02/2018						**Date of last calibration:**	13/07/2017
							Date of next calibration:	13/07/2018

Gas Monitoring Records

Client: Edward Ware Homes
Site: Land east of Snow Capel Farm, Matson
Date: 30/01/2018

Job No: SNO1877a
Visit No: 5 **of** 6
Operator: CT
Project Manager: SB

Monitoring Point	VOLATILES	FLOW DATA				GAS CONCENTRATIONS													WELL AND WATER DATA									Comments
	PID Peak (ppm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (sec)	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		Run time (min)	Product thickness (mm)	Water Level pre-bailing (mbgl)	Bailed water level (mbgl)	Minutes passed	Water level (mbgl)	Base of well (mbgl)	Ground level (mAOD)	Water level (mAOD)	Response zone range (m)	
		Peak	Steady			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Min.	Steady											
WS01	<0.1	f<<<l/h	f<<<l/h	<<	-	2.4	<0.1	42.8	<0.1	3.8	0.2	<0.1	<0.1	<0.1	<0.1	17.2	17.2	9	ND	-	-	-	1.08	3.98	58.44	57.36	0.5-2.7	
WS03	1.8	0.5	<0.1	0	10	<0.1	<0.1	<0.1	<0.1	2.7	<0.1	<0.1	<0.1	<0.1	<0.1	19.7	19.7	15 secs	ND	-	-	-	0.30	2.18	59.96	59.66	1-2	Surface water overflow into standpipe occurring.
WS05	<0.1	0.6	<0.1	0	10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	19.6	19.6	10 secs	ND	-	-	-	0.43	3.00	61.90	61.47	1-3	Surface water overflow into standpipe occurring.
WS08	NR	NR	NR	NR	-	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	-	ND	-	-	-	-	3.00	57.54	-	1-3	Water level recorded above top of bung. Water refilled too quickly to enable monitoring to be completed. Oily scum on water.
WS101	<0.1	<0.1	<0.1	0	-	<0.1	<0.1	<0.1	<0.1	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	21	21.1	2	ND	-	-	-	0.32	3.94	57.86	57.54	1-3	
WS102	NR	NR	NR	NR	-	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	-	ND	-	-	-	-	3.00	58.56	-	2-4	Water level recorded above top of bung. Water refilled too quickly to enable monitoring to be completed.
WS103	<0.1	2.6	<0.1	0	10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	21.3	21.3	3	ND	-	-	-	0.18	4.00	59.38	59.20	1-4	
WS104	<0.1	<0.1	<0.1	0	-	<0.1	<0.1	<0.1	<0.1	1	<0.1	<0.1	<0.1	<0.1	<0.1	21.2	21.2	3	ND	-	-	-	0.24	3.38	59.76	59.52	1.5-3.5	
Max	**1.8**	**2.6**	**0.0**	**0**		**2.4**	**0.0**	**42.8**	**0.0**	**3.8**	**0.2**	**0**	**0**	**0**	**0**	**21.3**	**21.3**											
Min	**1.8**	**0.5**	**0.0**	**0**		**2.4**	**0.0**	**42.8**	**0.0**	**0.6**	**0.2**	**0**	**0**	**0**	**0**	**17.2**	**17.2**											

ND - Not detected
NR - Not recorded

METEOROLOGICAL AND SITE INFORMATION: (Put X in front of selected or enter data as applicable)

State of ground:	Dry		Moist		**Wet**		Snow		Frozen
Wind:	Calm		**Light**		Moderate		Strong		
Cloud cover:	**None**		Slight		Cloudy		Overcast		
Precipitation:	None		**Slight**		Moderate		Heavy		
Time monitoring performed:	Start	**11:05**			End	**12:13**			
Barometric pressure (mbar):	Start	**1022**			End	**1024**			
Pressure trend:	Falling		Steady		**Rising**				
Air temperature (degree C):	Before		**3**		After		**6**		

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter:	GAS DATA LMS xi				**PID:**	Micro5
Gas range:	**CH_4:**	0 - 100%	**CO_2:**	0 - 100%	Calibrated range:	0-99 ppm
Gas flow range:	+30/-10 l/hr		**O_2:**	0 -25%	Calibration gas:	Isobutylene
Differential pressure:	+300/-30 Pa				Response time:	2 seconds
Date of last calibration:	09/02/2017				Accuracy:	0.1 ppm
Date of next calibration:	09/02/2018				**Date of last calibration:**	13/07/2017
					Date of next calibration:	13/07/2018

Gas Monitoring Records

Client: Edward Ware Homes
Site: Land east of Snow Capel Farm, Matson
Date: 13/02/2018

Job No: SNO1877a
Visit No: 6 **of** **6**
Operator: CT
Project Manager: SB

Monitoring Point	VOLATILES	FLOW DATA				GAS CONCENTRATIONS													WELL AND WATER DATA									Comments
	PID Peak (ppm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (sec)	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		Run time (min)	Product thickness (mm)	Water Level pre-bailing (mbgl)	Bailed water level (mbgl)l	Minutes passed	Water level (mbgl)	Base of well (mbgl)	Ground level (mAOD)	Water level (mAOD)	Response zone range (m)	
		Peak	Steady			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Min.	Steady											
WS01	NR	NR	NR	NR	-	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	-	ND	-	-	-	-	3.98	58.44	-	0.5-2.7	Surface water prevented monitoring.
WS03	2.4	2.4	-2.8	-17	10	<0.1	<0.1	<0.1	<0.1	2.8	<0.1	<0.1	<0.1	<0.1	<0.1	17.8	18.6	3	ND	-	-	-	0.24	2.18	59.96	59.72	1-2	
WS05	1.1	4.8	-2	-11	-	<0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	19.7	19.7	3.5	ND	-	-	-	0.15	3.00	61.90	61.75	1-3	
WS08	NR	NR	NR	NR	-	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	-	NR	-	-	-	-	3.00	57.54	-	1-3	Water level recorded above top of bung. Water refilled too quickly to enable monitoring to be completed. Oily scum on water.
WS101	NR	-2.7	-2.5	-16	10	<0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	20	20	2	ND	-	-	-	0.10	3.94	57.86	57.76	1-3	
WS102	NR	-2.6	-2.7	-17	10	<0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	20	20	2	ND	-	-	-	0.11	3.00	58.56	58.45	2-4	
WS103	NR	-2.5	-2.8	-17	10	<0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	20	20	2	ND	-	-	-	0.11	4.00	59.38	59.27	1-4	
WS104	1.2	-2.5	-2.7	-16	10	<0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	20	20.1	2.5	ND	-	-	-	0.16	3.38	59.76	59.60	1.5-3.5	
Max	**2.4**	**4.8**	**-2.0**	**-11**		**0.0**	**0.0**	**0.0**	**0.0**	**2.8**	**0.1**	**0**	**0**	**0**	**0**	**20.0**	**20.1**											
Min	**1.1**	**-2.7**	**-2.8**	**-17**		**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**	**0**	**0**	**0**	**0**	**17.8**	**18.6**											

ND - Not detected
NR - Not recorded

METEOROLOGICAL AND SITE INFORMATION: (Put X in front of selected or enter data as applicable)

State of ground:	Dry	Moist	**Wet**	Snow	Frozen
Wind:	Calm	Light	**Moderate**	Strong	
Cloud cover:	None	Slight	**Cloudy**	Overcast	
Precipitation:	None	Slight	**Moderate**	Heavy	
Time monitoring performed:	Start **10:02**		End **11:20**		
Barometric pressure (mbar):	Start **984**		End **984**		
Pressure trend:	Falling	**Steady**	Rising		
Air temperature (degree C):	Before **3**		After **6**		

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter:	GAS DATA LMS xi				
Gas range:	**CH_4:**	0 - 100%	**CO_2:**	0 - 100%	**O_2:** 0 -25%
Gas flow range:	+30/-10 l/hr				
Differential pressure:	+300/-30 Pa				
Date of last calibration:	13/02/2017				
Date of next calibration:	Mar-19				

PID:	Micro5
Calibrated range:	0-99 ppm
Calibration gas:	Isobutylene
Response time:	2 seconds
Accuracy:	0.1 ppm
Date of last calibration:	Feb-18
Date of next calibration:	Feb-19