Canford Renewable Energy Ltd

Proposed Hydrogen Generating Facility
Whites Pit, Poole, Dorset

Standalone Permit Application Section 4.2 Part A(1)(a)(i)
Producing Inorganic Chemicals.

Permit Application Support Document

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Note

The relevant page numbers are in red at the centre of the bottom of the pages, please ignore any page numbers in green to the right of the page as they are from an integrated document.

Introduction

This Application is for a Standalone Permit Hydrogen Generating Plant at the Northern Area of Whites Pit Landfill, Arrowsmith Road, Wimborne, Dorset, BH21 3BQ. The Installation that is contemplated has already been granted a Standard Rules SR2009 No 2 Low Impact Permit number EPR/RP3206LB in May 2021 on a site adjacent to Whites Pit Landfill and the Operator Canford Renewable Energy now wishes to move the Installation onto Whites Pit Landfill adjacent to the Solar Panel Installation which will provide the electrical power for the H_2 Generating Plant. A copy of that Permit is attached for ease of reference at the Appendix 1.

The proposed move has been discussed with the Environment Agency (EA) and the subject of correspondence which is attached and the view of the EA is that because the Plant will be sited on a landfill where the filling of waste has ceased and the site restored it cannot be granted a Low Impact Permit but must have its own its own Standalone Section 4.2 Part A(1)(a)(i) Producing Inorganic Chemicals Permit.

This the Location Plan showing both the previous and proposed sites for the plant.

Application Forms Part A, Part B2, Part B3 and Part F have been completed for the Facility and are attached after this Introduction. An additional copy of those Forms in a separate pdf Document forms part of the Application and is attached to the e-mail that delivered this document.

This document includes all the Supporting Information required by Forms A, B2, B3 and F and for ease of reference each section is titled with the Question or Table number in the relevant Form. For example the document entitled **LCL/CRE/H_2 Whites Pit/202205/B21d** contains the information required by Question 1d of Form B2.

As the plant already has a Permit to avoid duplication of effort for the EA, this Application will be based on the previous Low Impact Application and for each section of this Application the differences between the Plant in the new and old location will be explained with the Documents from the previous Application prepared by Sol Environment Ltd added at Appendices 2 and 2A-I for

ease of reference. For ease of processing by the Environment Agency various section or extractions from sections are repeated where they are relevant.

The Northern Area of Whites Pit Landfill is operated by W H White Ltd under WML 23629 or EPR/BP3293FX/V006. W H White have agreed that Canford Renewable Energy Ltd. (CRE) may use part of the landfill for this installation. CRE will allow W H White to have access to the Facility should this be necessary for the Management of the landfill and the companies have agreed to share relevant monitoring Data to avoid duplication of effort. Neither site should be regards as a muti-operator installation.

Environment Agency Application Forms

Part A

Part B2

Part B3

Part F

Application for an environmental permit
Part A – About you

You will need to fill in this part A if you are applying for a new permit, applying to change an existing permit or surrender your permit, or want to transfer an existing permit to yourself. Please check that this is the latest version of the form available from our website.

You can apply online for Waste standard rules environmental permits, bespoke waste permits and bespoke Medium combustion plant permits

Apply online for an environmental permit.

Please read through this form and the guidance notes that came with it.

The form can be:

1) **saved onto a computer and then filled in. Please note that the form follows a logic that means questions will open or stay closed depending on a previous answer. So you may not be able to enter text in some boxes.**
2) **printed off and filled in by hand. Please write clearly in the answer spaces.**

Note: if you believe including information on a public register would not be in the interests of national security you must enclose a letter telling us that you have told the Secretary of State. We will not include the information in the public register unless directed otherwise.

It will take less than one hour to fill in this part of the application form.

Where you see the term 'document reference' on the form, give the document references and send the documents with the application form when you've completed it.

Contents

1 About you

Are you applying as an individual, an organisation of individuals (for example, a partnership), a company (this includes Limited Liability Partnerships) or a public body?

An individual	☐ Now go to section 2 and if you are applying for a new permit or transferring a permit for an installation or waste activity please also fill in Appendix 1
An organisation of individuals (for example, a partnership)	☐ Now go to section 3 and if you are applying for a new permit or transferring a permit for an installation or waste activity please also fill in Appendix 1
A public body	☐ Now go to section 4
A registered company or other corporate body	☑ Now go to section 5 and if you are applying for a new permit or transferring a permit for an installation or waste activity please also fill in Appendix 1

2 Applications from an individual

2a Please give us the following details

Name

Title (Mr, Mrs, Miss and so on) _____

First name _____

Last name _____

Now go to section 6

3 Applications from an organisation of individuals or charity

3a Type of organisation

For example, a charity, a partnership, a group of individuals or a club

3b Details of the organisation or charity

If you are an organisation of individuals, please give the details of the main representative below. If relevant, provide details of other members (please include their title Mr, Mrs and so on) on a separate sheet and tell us the document reference you have given this sheet

Contact name

Title (Mr, Mrs, Miss and so on)

First name

Last name

Now go to question 3c or section 6

3c Details of charity

Full name of charity

This should be the full name of the legal entity not any trading name.

3d Company registration number

If you are registered with Companies House please tell us your registration number

3e Charity Commission number

If you are registered with the Charity Commission please tell us your registration number

Now go to section 6

4 Applications from public bodies

4a Type of public body

For example, NHS trust, local authority, English county council

4b Name of the public body

4c Please give us the following details of the executive

An officer of the public body authorised to sign on your behalf

Name

Title (Mr, Mrs, Miss and so on)

First name

Last name

Position

Now go to section 6

5 Applications from companies or corporate bodies

5a Name of the company

Canford Renewable Energy Ltd

5b Company registration number

02890411

Date of registration (DD/MM/YYYY)

24/01/1994

If you are applying as a corporate organisation that is not a limited company, please provide evidence of your status and tell us below the reference you have given the document containing this evidence.

Document reference

5 Applications from companies or corporate bodies, continued

5c Please give details of the directors

If relevant, provide details of other directors and company secretary, if there is one, on a separate sheet and tell us the reference you have given this sheet.

Document reference

Details of company secretary (if relevant) and director/s

Title (Mr, Mrs, Miss and so on)

First name

Last name

Title (Mr, Mrs, Miss and so on)

First name

Last name

Now go to section 6

6 Your address

6a Your main (registered office) address

For companies this is the address on record at Companies House.

Contact name

Title (Mr, Mrs, Miss and so on) Mr

First name Rob

Last name Dowding

Address Energy Site Control Centre

Whites Pit Landfill

Magna Road

Wimborne, Dorset

Postcode BH21 3BW

Contact numbers, including the area code

Phone

Fax

Mobile

Email

For an organisation of individuals every partner needs to give us their details, including their title Mr, Mrs and so on. So, if necessary, continue on a separate sheet and tell us below the reference you have given the sheet.

Document reference

6b Main UK business address (if different from above)

Contact name

Title (Mr, Mrs, Miss and so on)

First name

Last name

Address

Postcode

6 Your address, continued

Contact numbers, including the area code

Phone

Fax

Mobile

Email

Now go to section 7

7 Contact details

7a Who can we contact about your application?

It will help us if there is someone we can contact if we have any questions about your application. The person you name should have the authority to act on your behalf.

Please add a second contact on a separate sheet if this person is not always available.

Document reference of this separate sheet

This can be someone acting as a consultant or an 'agent' for you.

Contact name

Title (Mr, Mrs, Miss and so on) Mr

First name Jonathan

Last name Fryett

Address Lindfield Consultants Ltd

64 Queens Road

Swanage

Dorset

Postcode BH19 2EU

Contact numbers, including the area code

Phone

Fax

Mobile 07768 604483

Email lindfieldconltd@btinternet.com

7b Who can we contact about your operation (if different from question 7a)?

Contact name

Title (Mr, Mrs, Miss and so on) Mr

First name Rob

Last name Dowding

Address Canford Renewable EnergyLtd

Whites Pit Landfill

Magna Road

Wimborne, Dorset

Postcode BH21 3BW

Contact numbers, including the area code

Phone 01202 612500

Fax

Mobile 07748 600180

Email rob.dowding@c-r-e.co.uk

7 Contact details, continued

7c Who can we contact about your billing or invoice?

Note: Please provide the name and address that all invoices should be sent to for your subsistence fees.

As in question 7a ☐

As in question 7b ☑

Please give details below if different from question 7a or 7b.

Contact name

Title (Mr, Mrs, Miss and so on)

First name

Last name

Address

Postcode

Contact numbers, including the area code

Phone

Fax

Mobile

Email

8 How to contact us

If you need help filling in this form, please contact the person who sent it to you or contact us as shown below.

General enquiries: 03708 506 506 (Monday to Friday, 8am to 6pm)

Textphone: 03702 422 549 (Monday to Friday, 8am to 6pm)

Email: enquiries@environment-agency.gov.uk

Website: www.gov.uk/government/organisations/environment-agency

If you are happy with our service, please tell us. It helps us to identify good practice and encourages our staff. If you're not happy with our service, please tell us how we can improve it. More information on how to do this is available at: www.gov.uk/government/organisations/environment-agency/about/complaints-procedure.

Please tell us if you need information in a different language or format (for example, in large print) so we can keep in touch with you more easily.

9 Where to send your application

For how many copies to send see the guidance note on part A.

For water discharges by email to PSC-WaterQuality@environment-agency.gov.uk

For waste and installations by email to PSC@environment-agency.gov.uk

For flood risk activity permits send 1 copy only to enquiries@environment-agency.gov.uk or to the local Environment Agency office for where the work is proposed to be carried out.

Or

Permitting Support, NPS Sheffield
Quadrant 2
99 Parkway Avenue
Parkway Business Park
Sheffield
S9 4WF

Feedback

(You don't have to answer this part of the form, but it will help us improve our forms if you do.)

We want to make our forms easy to fill in and our guidance notes easy to understand. Please use the space below to give us any comments you may have about this form or the guidance notes that came with it.

How long did it take you to fill in this form?

We will use your feedback to improve our forms and guidance notes, and to tell the Government how regulations could be made simpler.

Would you like a reply to your feedback?

Yes please ☐

No thank you ☐

Crystal Mark 19101
Clarity approved by Plain English Campaign

For Environment Agency use only

Date received (DD/MM/YYYY)

Our reference number

Payment received?

No ☐

Yes ☐ Amount received

£

Appendix 1 – Date of birth information for installation and waste activities (applications for a new permit or transferring a permit) only

Date of birth information in this appendix will not be put onto our Public Register

Are you applying as an individual, an organisation of individuals (for example, a partnership) or a company (this includes Limited Liability Partnerships)?

An individual	☐ Now go to 2
An organisation of individuals (for example, a partnership)	☐ Now go to 3
A registered company or other corporate body	☑ Now go to 4

2 Applications from an individual

Please give us the following details

Name

Date of birth (DD/MM/YY)

3 Applications from an organisation of individuals or charity

Details of the organisation or charity

If you are an organisation of individuals, please give the date of birth details of the main representative below. If relevant, provide details of other members on a separate sheet and tell us the document reference you have given this sheet.

Name

Date of birth (DD/MM/YY)

Document reference

4 Applications from companies or corporate bodies

Name of the company: Canford Renewable Energy Ltd

Please give the date of birth details for all directors and company secretary if there is one. If relevant, provide those details of other directors on a separate sheet and tell us the document reference you have given this sheet.

Details of company secretary (if relevant) and director/s

Name: Stuart Hudson

Date of birth (DD/MM/YY)

Name: William Riddle

Date of birth (DD/MM/YY)

Name: Nathan Ross

Date of birth (DD/MM/YY)

Document reference

Application for an environmental permit
Part B2 – General – new bespoke permit

Environment Agency

Fill in this part of the form together with parts A and F1 if you are applying for a new bespoke permit. You also need to fill in part B3, B4, B5, B6, or B7 (this depends on what activities you are applying for). Please check that this is the latest version of the form available from our website.

You can apply online for waste bespoke environmental permits at https://apply for environmental permit.service.gov.uk/start/start or open saved

Please read through this form and the guidance notes that came with it.

The form can be:

1) saved onto a computer and then filled in. Please note that the form follows a logic that means questions will open or stay closed depending on a previous answer. So you may not be able to enter text in some boxes.

2) printed off and filled in by hand. Please write clearly in the answer spaces

It will take less than two hours to fill in this part of the application form.

Contents

1 About the permit

1a Discussions before your application

If you have had discussions with us before your application, give us the permit reference or details on a separate sheet. Tell us below the reference you have given this extra sheet.

Permit or document reference: LCL/CRE/H2Whites Pit/202205/B21a

1b Is the permit for a site or for mobile plant?

Site ☑ Now go to section 2

Mobile plant ☐ Now go to question 1c

Note: The term 'mobile plant' does not include mobile sheep dipping units.

Mobile plant

1c Have we told you during pre-application discussions that we believe that a mobile permit is suitable for your activity?

No

Yes

1d Have there been any changes to your proposal since this discussion?

No Now go to section 3

Yes You should send us a description of the activity you want to carry out, highlighting the changes you have made since our pre-application discussions

Document reference

Now go to section 3

2 About the site

But not mobile plant

2a What is the site name, address, postcode and national grid reference?

Site name: CRE Hydrogen Generating Plant

Address: Whites Pit Landfill
Arrowsmith Road
Wimborne
Dorset

Postcode: BH21 3BQ

National grid reference for the site
(for example, ST 12345 67890): SZ 02891 96743

2b What type of regulated facility are you applying for?

Note: if you are applying for more than one regulated facility then go to 2c.

- [x] Installation
- [ ] Waste operation
- [ ] Mining waste operation
- [ ] Water discharge activity
- [ ] Groundwater activity (point source)
- [ ] Groundwater activity (discharge onto land)

What is the national grid reference for the regulated facility (if only one)?
(See the guidance notes on part B2.)

- [x] As in 2a above
- [ ] Different from that in 2a — Please fill in the national grid reference below

National grid reference for the regulated facility:

Now go to question 2d

2 About the site, continued

2c If you are applying for more than one regulated facility on your site, what are their types and their grid references?

See the guidance notes on part B2.

Regulated facility 1

National grid reference

What is the regulated facility type?

Installation ☐
Waste operation ☐
Mining waste operation ☐
Water discharge activity ☐
Groundwater activity (point source) ☐
Groundwater activity (discharge onto land) ☐

Regulated facility 2

National grid reference

What is the regulated facility type?

Installation ☐
Waste operation ☐
Mining waste operation ☐
Water discharge activity ☐
Groundwater activity (point source) ☐
Groundwater activity (discharge onto land) ☐

Use several copies of this page or separate sheets if you have a long list of regulated facilities. Send them to us with your application form. Tell us below the reference you have given these extra sheets.

Document reference

Now go to question 2d

2 About the site, continued

2d Low impact installations (installations only)

Are any of the regulated facilities low impact installations?

No ☐

Yes ☑ If yes, tell us how you meet the conditions for a low impact installation (see the guidance notes on part B2 – Appendix 1).

Document reference: LCL/CRE/H2Whites Pit/202205/B22d

Tick the box to confirm you have filled in the low impact installation checklist in appendix 1 for each regulated facility ☑

2e Treating batteries

Are you planning to treat batteries? (See the guidance notes on part B2.)

No ☑

Yes ☐ Tell us how you will do this, send us a copy of your explanation and tell us below the reference you have given this explanation

Document reference for the explanation

2f Ship recycling

Is your activity covered by the Ship Recycling Regulations 2015? (See the guidance notes on part B2.)

No ☑

Yes ☐ Tell us how you will do this. Please send us a copy of your explanation and your facility recycling plan, and tell us below the reference numbers you have given these documents

Document reference for the explanation

Document reference for the facility recycling plan

2g Multi-operator installation

If the site is a multi-operator site (that is there is more than one operator of the installation) then fill in the table below the application reference for each of the other permits.

Table 1 – Other permit application references

3 Your ability as an operator

If you are only applying for a standalone water discharge or for a groundwater activity, you only have to fill in question 3d.

3a Relevant offences

Applies to all except standalone surface water discharges and groundwater discharges (see the guidance notes on part B2).

3a1 Have you, or any other relevant person, been convicted of any relevant offence?

No ☑ Now go to question 3b

Yes ☐ Please give details below

Name of the relevant person

Title (Mr, Mrs, Miss and so on)

First name

Last name

Position held at the time of the offence

Name of the court where the case was dealt with

Date of the conviction (DD/MM/YYYY)

Offence and penalty set

Date any appeal against the conviction will be heard

(DD/MM/YYYY)

If necessary, use a separate sheet to give us details of other relevant offences and tell us below the reference number you have given the extra sheet.

Now go to question 3b

Please also complete the details in Appendix 2.

3b Technical ability

Relevant waste operations only (see the guidance notes on part B2).

Please indicate which of the two schemes you are using to demonstrate you are technically competent to operate your facility and the evidence you have enclosed to demonstrate this.

ESA/EU skills

Please select one of the following:

I have enclosed a copy of the current Competence Management System certificate ☐

or

We will have a certified Competence Management System within 12 months and have enclosed evidence of the contract with an accredited certification body ☐

3 Your ability as an operator, continued

CIWM/WAMITAB scheme

Your answers below must relate to the person(s) providing technically competent management when the permitted activities start.

Please select **one** of the following:

- I have enclosed a copy of:

  – the relevant qualification certificate/s ☐

  or

  – evidence of deemed competence ☐

  or

  – Environment Agency assessment ☐

  or

  – evidence of nominated manager status under the transitional provisions for previously exempt activities ☐

  and, if deemed competent or Agency-assessed, or nominated manager, or if the original qualification is over two years old:

  I have enclosed a copy of the relevant current continuing competence certificate/s ☐

- The technically competent manager will complete their qualification within four weeks of starting the permitted activities and I have enclosed evidence of their registration with WAMITAB or their EPOC booking as appropriate ☐
- **For medium- and high-risk tier activities other than landfill**
  The technically competent manager will complete the qualification within 12 months and I have enclosed evidence of their registration with WAMITAB and, where relevant, EPOC booking.
  I understand they must complete either four specified units of the relevant qualification or an EPOC within four weeks of the permitted activities commencing ☐

For each technically competent manager please give the following information. If necessary, use a separate sheet to give us these details and tell us below the document reference you have given the extra sheet.

Title (Mr, Mrs, Miss and so on) _____

First name _____

Last name _____

Phone _____

Mobile _____

Email _____

Please provide the environmental permit number/s and site address for all other waste activities that the proposed technically competent manager provides technical competence for, including permits held by other operators. Continue on a separate sheet as required.

3 Your ability as an operator, continued

Permit number	Site address	Postcode

Document reference

Now go to question 3c

Please also complete the details in Appendix 2.

3c Finances

Installations, waste operations and mining waste operations only.

Please note that if you knowingly or carelessly make a statement that is false or misleading to help you get an environmental permit (for yourself or anyone else), you may be committing an offence under the Environmental Permitting (England and Wales) Regulations 2016.

Do you, or any relevant person, or a company in which you (or they) (or any relevant person) were a relevant person, have current or past bankruptcy or insolvency proceedings against you?

No ☑

Yes ☐ Please give details below, including the required set-up costs (including infrastructure), maintenance and clean up costs for the proposed facility against which a credit check may be assessed

We may want to contact a credit reference agency for a report about your business's finances.

Landfill, Category A mining waste facilities and mining waste facilities for hazardous waste only

How do you plan to make financial provision (to operate a landfill or a mining waste facility you need to show us that you are financially capable of meeting the obligations of closure and aftercare)?

Renewable bonds ☐

Cash deposits with the Environment Agency ☐

Other – provide comprehensive details ☐

Document reference

3 Your ability as an operator, continued

Provide a cost profile and expenditure plan of your estimated costs throughout the aftercare period of your site.

Document plan reference

Now go to question 3d

3d Management systems (all)

You must have an effective, written management system in place that identifies and reduces the risk of pollution. You may show this by using a certified scheme or your own system.

Your permit requires you (as the operator) to ensure that you manage and operate your activities in accordance with a written management system.

You need to be able to explain what happens at each site and which parts of the overall management system apply. For example at some sites you may need to show you are carrying out additional measures to prevent pollution because they are nearer to sensitive locations than others.

You can find guidance on management systems on our website at https://www.gov.uk/guidance/develop a management system environmental permits

Tick this box to confirm that you have read the guidance and that your management system will meet our requirements ☐

What management system will you provide for your regulated facility?

ISO 14001 ☐

BS 8555 (Phases 1–5) ☐

Green dragon ☐

Own management system ☑

EMAS Global ☐

Other ☐

Please make sure you send us a summary of your management system with your application.

Document reference/s LCL/CRE/H2Whites Pit/202205/B2A1A

4 Consultation

Fill in 4a to 4c for installations and waste operations and 4d for installations only.

Could the waste operation or installation involve releasing any substance into any of the following?

4a A sewer managed by a sewerage undertaker?

No ☐

Yes ☑ Please name the sewerage undertaker — Wessex Water Authority

4b A harbour managed by a harbour authority?

No ☑

Yes ☐ Please name the harbour authority

4c Directly into relevant territorial waters or coastal waters within the sea fisheries district of a local fisheries committee?

No ☑

Yes ☐ Please name the fisheries committee

4d Is the installation on a site for which:

4d1 a nuclear site licence is needed under section 1 of the Nuclear Installations Act 1965?

No ☑

Yes ☐

4d2 a policy document for preventing major accidents is needed under regulation 5 of the Control of Major Accident Hazards Regulations 2015, or a safety report is needed under regulation 7 of those Regulations?

No ☑

Yes ☐

5 Supporting information

5a Provide a plan or plans for the site

But not any mobile plant

Clearly mark the site boundary or discharge point, or both. Also include site drainage plans, site layout plans, and plant design drawings/process flow diagrams (as required).
(See the guidance notes on part B2.)

Document reference/s of the plans — LCL/CRE/H2Whites Pit/202205/B2Plans

5b Provide the relevant sections of a site condition/baseline report if this applies

See the guidance notes on part B2 for what needs to be marked on the plan.

Document reference of the report — LCL/CRE/H2Whites Pit/202205/B2Baseline

If you are applying for an installation, tick the box to confirm that you have sent in a baseline report ☐

5c Provide a non-technical summary of your application

See the guidance notes on part B2.

Document reference of the summary — LCL/CRE/H2Whites Pit/202205/B2NTS

5 Supporting information, continued

5d Are you applying for an activity that includes the storage of combustible wastes?

This applies to all activities excluding standalone water and groundwater discharges.

No ☑

Yes ☐ Provide a fire prevention plan (see the guidance notes on part B2). You need to highlight any changes you have made since your pre-application discussions.

Document reference of the plan

6 Environmental risk assessment

Provide an assessment of the risks each of your proposed regulated facilities poses to the environment. The risk assessment must follow the methodology set out in 'Risk assessments for your environmental permit' at www.gov.uk/government/collections/technical-guidance-for-regulated-industry-sectors-environmental-permitting or an equivalent method.

Document reference for the assessments LCL/CRE/H2Whites Pit/202205/B2ERA

For Waste and Installation Permits only

All bespoke waste and installations permit applications must carry out a climate change risk assessment if the planned duration of the operation is more than 5 years. This will normally be reviewed and discussed with you as part of our compliance activities. However, we may require you to submit your climate change risk assessment as part of your application depending on your risk screening score. We will consider the information contained within your climate change risk assessment when we grant your permit. Conditions may be applied to some permits to manage climate risks.

6b Climate change risk screening

See the guidance to Part B2.

Mark your score in each category in the table below. Add each individual score to give a total.

CATEGORY	SCREENING QUESTIONS	SCORE	YOUR SCORE
1 TIMESCALES	How long will a permit be required for this site/activity?		
	5 years or less of operation. No need to fill in the rest of the screening. You do not need to fill in a risk assessment. Please go straight to question 7.	0	
	Less than 20 years of operation	1	
	Until between 2040 and 2060 (between 20 and 40 years from now)	3	3
	Until 2060 or beyond (more than 40 years from now)	5	
2 FLOODING	What is your site's risk of flooding from rivers or the sea?		
	Not in a flood-risk zone	0	0
	Very low or Low	1	
	Medium	2	
	High	5	
3 WATER USE	If you use water for your site operations or fire prevention, what is the source of your water?		
	Water not required	0	
	Mains water	1	1
	Surface water or groundwater abstraction	5	
TOTAL SCREENING SCORE			4

If your total screening score is 5 or more, complete the climate change risk assessment and submit it with your permit application.

If you expect to operate for 5 years or less, you do not need to submit a risk assessment with your application, regardless of your screening score.

You must enter your score for every category in the table above. If you expect to operate for 5 years or less you may enter 'Not Applicable' for categories 2 and 3.

Document reference of the risk assessment (if submitted with application)

If your total screening score is less than 5 we may still request your risk assessment as part of determining this application if we believe you face unmanaged climate risks.

If we do not review your risk assessment as part of your application, it will form part of your Environmental Management System and we will discuss it with you as part of our compliance activities.

7 How to contact us

If you need help filling in this form, please contact the person who sent it to you or contact us as shown below. General enquiries: 03708 506 506 (Monday to Friday, 8am to 6pm)

Textphone: 03702 422 549 (Monday to Friday, 8am to 6pm)
Email: enquiries@environment-agency.gov.uk

Website: www.gov.uk/government/organisations/environment-agency

If you are happy with our service, please tell us. It helps us to identify good practice and encourages our staff. If you're not happy with our service, please tell us how we can improve it.

Please tell us if you need information in a different language or format (for example, in large print) so we can keep in touch with you more easily.

Feedback

(You don't have to answer this part of the form, but it will help us improve our forms if you do.)

We want to make our forms easy to fill in and our guidance notes easy to understand. Please use the space below to give us any comments you may have about this form or the guidance notes that came with it.

How long did it take you to fill in this form?

We will use your feedback to improve our forms and guidance notes, and to tell the Government how regulations could be made simpler.

Would you like a reply to your feedback?

Yes please ☐

No thank you ☐

Crystal Mark 19103 Clarity approved by Plain English Campaign

For Environment Agency use only

Date received (DD/MM/YYYY)

Payment received?

No ☐

Yes ☐ Amount received

Our reference number

£

Plain English Campaign's Crystal Mark does not apply to appendix 1.

Appendix 1 – Low impact installation checklist

See the guidance notes on part B2.

Installation reference				
Condition	Response			Do you meet this?
A – Management techniques	Provide references to show how your application meets A			Yes ☑ No ☐
	References LCL/CRE/H2Whites Pit/202205/B2MT			
B – Aqueous waste	Effluent created	2.8	m^3/day	Yes ☑ No ☐
C – Abatement systems	Provide references to show how your application meets C			Yes ☑ No ☐
	References LCL/CRE/H2Whites Pit/202205/B2A1C			
D – Groundwater	Do you plan to release any hazardous substances or non-hazardous pollutants into the ground?		Yes ☐ No ☑	Yes ☑ No ☐
E – Producing waste	Hazardous waste	0	Tonnes per year	Yes ☐ No ☑
	Non-hazardous waste	1.5	Tonnes per year	
F – Using energy	Peak energy consumption	1.5	MW	Yes ☑ No ☐
G – Preventing accidents	Do you have appropriate measures to prevent spills and major releases of liquids?		Yes ☑ No ☐	Yes ☑ No ☐
	Provide references to show how your application meets G			
	References LCL/CRE/H2Whites Pit/202205/B2A1G			
H – Noise	Provide references to show how your application meets H			Yes ☑ No ☐
	References LCL/CRE/H2Whites Pit/202205/B2A1H			
I – Emissions of polluting substances	Provide references to show how your application meets I			Yes ☑ No ☐
	References LCL/CRE/H2Whites Pit/202205/B2A1I			
J – Odours	Provide references to show how your application meets J			Yes ☑ No ☐
	References LCL/CRE/H2Whites Pit/202205/B2a1J			
K – History of keeping to the regulations	Say here whether you have been involved in any enforcement action as described in Compliance History Appendix 1 guidance notes		Yes ☐ No ☑	

Appendix 2 – Date of birth information for Relevant offences and/or Technical ability questions only

Date of birth information in this appendix will not be put onto our Public Register

Have you filled in the Relevant Offences question?

Yes ☐

No ☐

Have you filled in the Technical ability question?

Yes ☐

No ☐

Relevant Offences - date of birth information

Please give us the following details

Name

Date of birth (DD/MM/YYYY)

Technical ability - date of birth information

Name

Date of birth (DD/MM/YYYY)

Application for an environmental permit
Part B3 – New bespoke installation permit

If you are applying for a new bespoke permit for an installation, fill in this part of the form, together with parts A, B2 and F1.

Please check that this is the latest version of the form available from our website.

Please read through this form and the guidance notes that go with it.

If you are applying for a permit for an intensive farm do not use this form, but complete application form part B3.5 instead.

The form can be:

1) saved onto a computer and then filled in. Please note that the form follows a logic that means questions will open or stay closed depending on a previous answer. So you may not be able to enter text in some boxes.
2) printed off and filled in by hand. Please write clearly in the answer spaces.

It will take less than three hours to fill in this part of the application form.

Contents

1 What activities are you applying for?

Fill in Table 1a below with details of all the activities listed in schedule 1 or other references (see note 1) of the Environmental Permitting Regulations (EPR) and all directly associated activities (DAAs) (in separate rows), that you propose to carry out at the installation.

Fill in a separate table for each installation you are applying for. Use a separate sheet if you have a long list and send it to us with your application form. Tell us below the reference you have given the document.

Document reference

1 What activities are you applying for?, continued

Table 1a – Types of activities

Schedule 1 listed activities						
Installation name	Schedule 1 or other references (See note 1)	Description of the activity (See note 2)	Activity capacity (See note 3)	Annex I (D codes) and Annex II (R codes) and descriptions	Hazardous waste treatment capacity (if this applies) (See note 3)	Non-hazardous waste treatment capacity (if this applies) (See note 3)
If there are not enough rows, send a separate document and give the document reference number here	Put your main activity first			For installations that take waste only	For installations that take waste only	For installations that take waste only
CRE Hydrogen Generating	Section 4.2 Part A	Electrolysis of	10m3			

Directly associated activities (See note 4) Also note: if the DAA is a Medium Combustion Plant or Specified Generator (MCP/SG) please also fill in part B2.5, (see https://www.gov.uk/government/publications/application-for-an-environmental-permit-part-b25-new-bespoke-medium-combustion-plant-and-specified-generator-permit)		
Name of DAA If there are not enough rows, send a separate document and give the document reference number here	Description of the DAA (please identify the schedule 1 activity it serves)	
For installations that take waste (See note 5 below)	Total storage capacity	
	Annual throughput (tonnes each year)	

1 What activities are you applying for?, continued

Notes

1. Quote the section number, part A1 or A2 or B, then paragraph and sub-paragraph number as shown in EPR part 2 of schedule 1, schedule 13 and 14 for Local Authority regulated activities, or schedule 25/25B for Medium Combustion Plant or Specified Generators.
2. Use the description from the relevant schedule of the regulations. Include any extra detail that you think would help to accurately describe what you want to do.
3. By 'capacity', we mean:

- the total incineration capacity (tonnes every hour) for waste incinerators
- the total landfill capacity (cubic metres) for landfills
- the total capacity (cubic metres) for the recovery of hazardous waste on land
- the total treatment capacity (tonnes each day) for waste treatment operations
- the total storage capacity (tonnes) for waste storage operations
- the processing and production capacity for manufacturing operations, or
- the thermal input capacity for combustion activities

Fill each listed activity as a separate line and give an accurate description of any other activities associated with your schedule 1 activities. You cannot have Directly Associated Activities (DAAs) as part of a mobile plant application. If the DAA is a Medium Combustion Plant or Specified Generator (MCP/SG) please fill in the table in appendix 1 question 13.

By 'total storage capacity', we mean the maximum amount of waste, in tonnes, you store on the site at any one time.

Types of waste accepted

For those installations that take waste, for each line in Table 1a (including DAAs), fill in a separate document to list those wastes you will accept on to the site for that activity. Give the List of Wastes catalogue code and description (see https://www.gov.uk/government/publications/waste-classification-technical-guidance).

If you need to exclude waste from your activity or facility by restricting the description, quantity, physical nature, hazardous properties, composition or characteristic of the waste, include these in the document. Send it to us with your application form.

Please provide the reference for each document.

You can use Table 1b as a template.

If you want to accept any waste with a code ending in 99, you must provide more information and a full description of the waste in the document, (for example, detailing the source, nature and composition of the waste). Where you only want to receive specific wastes within a waste code you can provide further details of the waste you want to receive. Where a waste is dual coded you should use both codes for the waste.

Document reference of this extra information

1 What activities are you applying for?, continued

Table 1b – Template example – types of waste accepted and restrictions

Waste code	Description of the waste
Example	Example
02 01 08*	Agrochemical waste containing hazardous substances
18 01 03*	Infectious clinical waste, not contaminated with chemicals or medicines – human healthcare (may contain sharps) for alternative treatment
17 05 03*/17 06 05*	Non-hazardous soil from construction or demolition contaminated with fragments of asbestos cement sheet

1c Recovery of hazardous waste on land

Are you applying for a waste recovery activity involving the permanent deposit of inorganic hazardous waste on land for construction or land reclamation?

No ☐ Now go to question 2

Yes ☐

Have you written a waste recovery plan (WRP) that shows that you will use waste to perform the same function as non waste materials you would have used?

No ☐ You must write a WRP to support your application.

Yes ☐

Have we advised you during pre-application discussions that we believe the activity is waste recovery?

No ☐

Yes ☐

Have there been any changes to your proposal since the discussions?

No ☐

Yes ☐

Please send us a copy of your current waste recovery plan that complies with our guidance at https://www.gov.uk/government/publications/deposit-for-recovery-operators-environmental-permits/waste-recovery-plans-and-deposit-for-recovery-permits. You need to highlight any changes you may have made since your pre-application discussions.

Document reference

Please note that there is an additional charge for the assessment or re assessment of a waste recovery plan that must be submitted as part of this application. For the charge see https://www.gov.uk/government/publications/environmental-permitting-charges-guidance/environmental-permitting-charges-guidance

2 Point source emissions to air, water and land

Fill in Table 2 below with details of the point source emissions that result from the operating techniques at each of your installations.

Fill in one table for each installation, continuing on a separate sheet if necessary.

Table 2 – Emissions (releases)

Installation name	CRE Hydrogen Generating Plant			
Point source emissions to air				
Emission point reference and location	Source	Parameter	Quantity	Unit
A1	Electrolysis of	H2, N2	50	kg/day
A2	Electrolysis of	O2,N2	3144	kg/day
Point source emissions to water (other than sewers)				
Emission point reference and location	Source	Parameter	Quantity	Unit
Point source emissions to sewers, effluent treatment plants or other transfers off site				
Emission point reference and location	Source	Parameter	Quantity	Unit
Point source emissions to land				
Emission point reference and location	Source	Parameter	Quantity	Unit

You will also need to complete application form part B6 if your installation includes a point source emission(s) to:

- water
- groundwater or
- sewer

Supporting information

3 Operating techniques

3a Technical standards

Fill in Table 3a for each activity at the installation you refer to in Table 1a above and list the 'Best Available Techniques' you are planning to use. If you use the standards set out in the relevant BAT conclusion(s), BAT reference document(s) (BREF) and/or technical guidance(s) (TGN) there is no need to justify using them within your documents in Table 3a.

For Part A(2) activities refer to https://www.gov.uk/government/collections/integrated-pollution-prevention-and-control-sector-guidance-notes and for Part B and Schedule 14 activities see https://www.gov.uk/government/collections/local-air-pollution-prevention-and-control-lappc-process-guidance-notes

You must justify your decisions in a separate document if:

- there is no technical standard
- the technical guidance provides a choice of standards, or
- you plan to use another standard

This justification could include a reference to the Environmental Risk Assessment provided in part B2 (General bespoke permit) of the application form.

For each of the activities listed in Table 1a, the documents in Table 3a should summarise:

- the operations undertaken
- the measures you will use to control the emissions from your process, as identified in your risk assessment or the relevant BAT conclusions, BREF or technical guidance
- how you will meet other standards set out in the relevant BAT conclusions document, BREF or technical guidance

Table 3 – Technical standards

Fill in a separate table for each activity at the installation.

Installation name	CRE Hydrogen Generating Plant	
Description of the schedule 1 activity or directly associated activity	Best available technique (BATC, BREF or TGN reference) (see footnote below)	Document reference (if appropriate)
Section 4.2 Part A91) (a) (i) Producing Inorganic Chemicals	None available	LCL/CRE/H2 Whites Pit/202205/B3T3

* Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control)

In all cases, describe the type of facility or operation you are applying for and provide site infrastructure plans, location plans and process flow diagrams or block diagrams to help describe the operations and processes undertaken. Give the document references you use for each plan, diagram and description.

Document reference: LCL/CRE/H2 Whites Pit/202205/B3 3a

3b General requirements

Fill in a separate Table 4 for each installation.

Table 4 – General requirements

Name of the installation	CRE Hydrogen Generating Plant
If the technical guidance or your risk assessment shows that emissions of substances not controlled by emission limits are an important issue, send us your plan for managing them	Document reference or references
Where the technical guidance or your risk assessment shows that odours are an important issue, send us your odour management plan	Document reference or references
If the technical guidance or your risk assessment shows that noise or vibration are important issues, send us your noise or vibration management plan (or both)	Document reference or references LCL/CRE/H2 WhitesPit/202205/B2A1H

For guidance on risk assessments for your environmental permit see https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit

3c Types and amounts of raw materials

Fill in Table 5 for all schedule 1 activities. Fill in a separate table for each installation.

Table 5 – Types and amounts of raw materials

Name of the installation		CRE Hydrogen Generating Plant		
Capacity (See note 1 below)				
Schedule 1 activity	Description of raw material and composition	Maximum amount (tonnes) (See note 2 below)	Annual throughput (tonnes each year)	Description of the use of the raw material including any main hazards (include safety data sheets)
Electrolysis	Tap Water split to H2 and O2 released to			Tap Water split to H2 and O2 released to atmosphere

Notes

1 By 'capacity', we mean the total storage capacity (tonnes) or total treatment capacity (tonnes each day).

2 By 'maximum amount', we mean the maximum amount of raw materials on the site at any one time.

Use a separate sheet if you have a long list of raw materials, and send it to us with your application form. Please also provide the reference of this extra sheet.

Document reference

3d Information for specific sectors

For some of the sectors, we need more information to be able to set appropriate conditions in the permit. This is as well as the information you may provide in sections 5, 6 and 7. For those activities listed below, you must answer the questions in the related document.

Table 6 – Questions for specific sectors

Sector	Appendix
Combustion	See the questions in appendix 1
Chemicals	See the questions in appendix 2
Incinerating waste	See the questions in appendix 3
Landfill and recovery of hazardous waste on land	See the questions in appendix 4

General information

4 Monitoring

4a Describe the measures you use for monitoring emissions by referring to each emission point in Table 2 above

You should also describe any environmental monitoring. Tell us:

- how often you use these measures
- the methods you use
- the procedures you follow to assess the measures

Document reference: LCL/CRE/H2 Whites Pit/202205/B3 4a

4b Point source emissions to air only

4b1 Has the sampling location been designed to meet BS EN 15259 clause 6.2 and 6.3?

No ☑
Yes ☐

4b2 Are the sample ports large enough for monitoring equipment and positioned in accordance with section 6 and appendix A of BS EN 15259?

No ☑
Yes ☐

4b3 Is access adjacent to the ports large enough to provide sufficient working area, support and clearance for a sample team to work safely with their equipment throughout the duration of the test?

No ☑
Yes ☐

4b4 Are the sample location(s) at least 5 HD from the stack exit

No ☐
Yes ☑

4b5 Are the sample location(s) at least 2 HD upstream from any bend or obstruction?

No ☐
Yes ☑

4b6 Are the sample location(s) at least 5 HD downstream from any bend or obstruction?

No ☐
Yes ☑

4b7 Does the sample plane have a constant cross sectional area?

No ☐
Yes ☑

4b8 If horizontal, is the duct square or rectangular (unless it is less than or equal to 0.35 m in diameter)

No ☐
Yes ☐

4b9 If you have answered 'No' to any of the questions 4b1 to 4b8 above, provide an assessment to how the standards in BS EN 15259 will be met.

Document reference of the assessment

5 Environmental impact assessment

5a Have your proposals been the subject of an environmental impact assessment under Council Directive 85/337/EEC of 27 June 1985 [Environmental Impact Assessment] (EIA)?

No ☑ Now go to question 6

Yes ☐ Please provide a copy of the environmental statement and, if the procedure has been completed:

- a copy of the planning permission
- the committee report and decision on the EIA

Document reference of the copy

6 Resource efficiency and climate change

If the site is a landfill or a recovery of hazardous waste on land activity, you only need to fill in this section if the application includes gas engines.

6a Describe the basic measures for improving how energy efficient your activities are

Document reference of the description: LCL/CRE/H2 Whites Pit/202205/B3 6a

6b Provide a breakdown of any changes to the energy your activities use up and create

Document reference of the description: LCL/CRE/H2 Whites Pit/202205/B3 6a

6c Have you entered into, or will you enter into, a climate change levy agreement?

No ☑ Describe the specific measures you use for improving your energy efficiency

Document reference of the description

Yes ☐ Please give the date you entered (or the date you expect to enter) into the agreement (DD/MM/YYYY)

Please also provide documents that prove you are taking part in the agreement.

Document reference of the proof

6d Explain and justify the raw and other materials, other substances and water that you will use

Document reference of the justification: LCL/CRE/H2 Whites Pit/202205/B3 6d

6e Describe how you avoid producing waste in line with Council Directive 2008/98/EC on waste

If you produce waste, describe how you recover it. If it is technically and financially impossible to recover the waste, describe how you dispose of it while avoiding or reducing any effect it has on the environment.

Document reference of the description: LCL/CRE/H2 Whites Pit/202205/B3 6e

7 Installations that include a combustion plant (excluding waste incinerators)

7a List all your combustion plant at the site and provide thermal input and operating hours for each

Document reference

7b Do any of your combustion plants have a net rated thermal input of 1 or more MW and is not an excluded MCP?

No ☐ Go to 7c

Yes ☐ Please fill in the table in appendix 1 question 13

7c Is the aggregated net thermal input of your combustion plant more than 20 MW?

No ☐

Yes ☐ Please go to appendix 1 question 11

8 How to contact us

If you need help filling in this form, please contact the person who sent it to you or contact us as shown below.

General enquiries: 03708 506 506 (Monday to Friday, 8am to 6pm)

Textphone: 03702 422 549 (Monday to Friday, 8am to 6pm)

Email: enquiries@environment-agency.gov.uk

Website: https://www.gov.uk/government/organisations/environment-agency

If you are happy with our service, please tell us. It helps us to identify good practice and encourages our staff. If you're not happy with our service, please tell us how we can improve it.

Please tell us if you need information in a different language or format (for example, in large print) so we can keep in touch with you more easily.

Feedback

(You don't have to answer this part of the form, but it will help us improve our forms if you do.)

We want to make our forms easy to fill in and our guidance notes easy to understand. Please use the space below to give us any comments you may have about this form or the guidance notes that came with it.

How long did it take you to fill in this form?

We will use your feedback to improve our forms and guidance notes, and to tell the Government how regulations could be made simpler.

Would you like a reply to your feedback?

Yes please ☐

No thank you ☐

Crystal Mark 19107 Clarity approved by Plain English Campaign

For Environment Agency use only

Date received (DD/MM/YYYY)

Payment received?

No ☐

Yes ☐ Amount received

£

Our reference number

Plain English Campaign's Crystal Mark does not apply to appendices 1 to 4.

Appendix 1 – Specific questions for the combustion sector

1 Identify the type of fuel burned in your combustion units (including when your units are started up, shut down and run as normal). If your units are dual fuelled (that is, use two types of fuel), list both the fuels you use

Fill in a separate table for each installation.

Installation reference			
Type of fuel	When run as normal	When started up	When shut down
Coal	☐	☐	☐
Gas oil	☐	☐	☐
Heavy fuel oil	☐	☐	☐
Natural gas	☐	☐	☐
WID waste	☐	☐	☐
Biomass (see notes 1 and 2 below)	☐	☐	☐
Biomass (see notes 1 and 2 below)	☐	☐	☐
Biomass (see notes 1 and 2 below)	☐	☐	☐
Biomass (see notes 1 and 2 below)	☐	☐	☐
Biomass (see notes 1 and 2 below)	☐	☐	☐
Landfill gas	☐	☐	☐
Other	☐	☐	☐

Notes

1. Not covered by Industrial Emissions Directive 2010/75/EU.
2. 'Biomass' is referred to The Renewables Obligation Order 2002 (https://www.legislation.gov.uk/uksi/2002/914/contents/made)

Give extra information if it helps to explain the fuel you use.

Document reference

Appendix 1 – Specific questions for the combustion sector, continued

2 Give the composition range of any fuels you are currently allowed to burn in your combustion plant

Fill in a separate table for each installation, continuing on a separate sheet if necessary

Fuel use and analysis					
Installation reference					
Parameter	Unit	Fuel 1	Fuel 2	Fuel 3	Fuel 4
Maximum percentage of gross thermal input	%				
Moisture	%				
Ash	% wt/wt dry				
Sulphur	% wt/wt dry				
Chlorine	% wt/wt dry				
Arsenic	% wt/wt dry				
Cadmium	% wt/wt dry				
Carbon	% wt/wt dry				
Chromium	% wt/wt dry				
Copper	% wt/wt dry				
Hydrogen	% wt/wt dry				
Lead	% wt/wt dry				
Mercury	% wt/wt dry				
Nickel	% wt/wt dry				
Nitrogen	% wt/wt dry				
Oxygen	% wt/wt dry				
Vanadium	mg/kg dry				
Zinc	mg/kg dry				
Net calorific value	MJ/kg				

Appendix 1 – Specific questions for the combustion sector, continued

3 If NOx factors are necessary for reporting purposes (that is, if you do not need to monitor emissions), please provide the factors associated with burning the relevant fuels

Fill in a separate table for each installation.

Installation reference	
Fuel	NOx factor (kgt^{-1})
Fuel 1	
Fuel 2	
Fuel 3	
Fuel 4	

Note: kgt^{-1} means kilograms of nitrogen oxides released for each tonne of fuel burned.

4 Will your combustion plant be subject to Chapter III of the Industrial Emissions Directive 2010/75/EU?

No ☐ Now fill in application form part F

Yes ☐

5 What is your plant?

an existing one ☐ A plant licensed before 1 July 1987

a new one ☐ A plant licensed on or after 1 July 1987 but before 27 November 2002, or a plant for which an application was made before 27 November 2002 and which was put into operation before 27 November 2003

a new-new one ☐ A plant for which an application was made on or after 27 November 2002

6 If you run more than one type of plant or a number of the same type of plant on your installation, please list them in the table below

Fill in a separate table for each installation.

Installation reference	
Type of plant	Number within installation
Existing	
New	
New-new	
Gas turbine (group A)	
Gas turbine (group B)	

Appendix 1 – Specific questions for the combustion sector, continued

7 If you run an existing plant, have you submitted a declaration for the 'limited life derogation' set out in Article 33 of Chapter III of the Industrial Emissions Directive?

No ☐ Now go to question 9

Yes ☐

8 Have you subsequently withdrawn your declaration?

No ☐

Yes ☐

9 List the existing large combustion plants (LCPs) which have annual mass allowances under the National Emission Reduction Plan (NERP), and those with emission limit values (ELVs) under the LCPD

Installation reference	
LCPs under NERP	LCPs with ELVs

10 Do you meet the monitoring requirements of Chapter III of the Industrial Emissions Directive?

No ☐

Yes ☐ Document reference _____

11 Have you carried out a cost–benefit assessment (CBA) of opportunities for cogeneration (combined heat and power) or district heating under Article 14 of the Energy Efficiency Directive?

No ☐ Please provide supporting evidence of why a CBA is not required (for example, an agreement from us)

Document reference of this evidence _____

Yes ☐ Please submit a copy of your CBA

Document reference of the CBA _____

Appendix 1 – Specific questions for the combustion sector, continued

12 Does your installation need to be combined heat and power-ready (CHP-ready)?

No ☐ Please provide supporting evidence of why a CHP-ready assessment is not required (for example, an agreement from us)

Document reference of this evidence

Yes ☐ Please provide a copy of your CHP-ready assessment

Document reference of the CHP-ready assessment

13 Information to be provided by the operator to the competent authority for each Medium Combustion Plant as identified in Annex I of Medium Combustion Plant Directive (EU/2015/2193)

MCP specific identifier*	
12-digit grid reference or latitude/longitude	
Rated thermal input (MW) of the MCP	
Type of MCP (diesel engine, gas turbine, other engine or other MCP)	
Type of fuels used: gas oil (diesel), natural gas, gaseous fuels other than natural gas, landfill gas	
Date when the new MCP was first put into operation	
Sector of activity of the MCP or the facility in which it is applied (NACE code)	
Expected number of annual operating hours of the MCP and average load in use	

Where the option of exemption under Article 6(8) is used the operator (as identified on Form A) should sign a declaration here that the MCP will not be operated more than the number of hours referred to in this paragraph	

* identifier – the MCP must be traceable via a serial number or other unique identifier, name plate, manufacturer and or model

NACE code means Nomenclature of Economic Activities and is the European statistical classification of economic activities (http://www.export.gov.il/files/EEN/ListNACEcodes.pdf).

To find out the 12-digit grid reference you can search on the UK Grid Reference Finder website at https://gridreferencefinder.com/

Appendix 2 – Specific questions for the chemical sector

1 Please provide a technical description of your activities

- The description should be enough to allow us to understand:
- the process
- the main plant and equipment used for each process
- all reactions, including significant side reactions (that is, the chemistry of the process)
- the material mass flows (including by products and side streams) and the temperatures and pressures in major vessels
- the all emission control systems (both hardware and management systems), for situations which could involve releasing a significant amount of emissions – particularly the main reactions and how they are controlled
- a comparison of the indicative BATs and benchmark emission levels standards: technical guidance notes (TGNs) (see https://www.gov.uk/government/collections/technical-guidance-for-regulated-industry-sectors-environmental-permitting); additional guidance 'The production of large volume organic chemicals' (EPR 4.01); 'Speciality organic chemicals sector' (EPR 4.02); 'Inorganic chemicals sector' (EPR 4.03); and best available techniques reference documents (BREFs) for the chemical sector

Document reference: LCL/CRE/H2 Whites Pit/202205/B3 App2 1

2 If you are applying for a multi-purpose plant, do you have a multi-product protocol in place to control the changes?

No ☑

Yes ☐ Provide a copy of your protocol to accompany this application

Document reference

3 Does Chapter V of the Industrial Emissions Directive (IED) apply to your activities?

No ☑

Yes ☐ Fill in the following

3a List the activities which are controlled under the IED

Installation reference	
Activities	

3b Describe how the list of activities in question 3a above meets the requirements of the IED

Document reference

Appendix 3 – Specific questions for the waste incineration sector

If you are proposing to accept clinical waste, please complete your answer to question 3a 'Technical standards' with reference to relevant parts of our healthcare waste appropriate measures guidance (see https://www.gov.uk/guidance/healthcare-waste-appropriate-measures-for-permitted-facilities)

1a Do you run incineration plants as defined by Chapter IV of the Industrial Emissions Directive (IED)?

No ☐ You do not need to answer any other questions in this appendix

Yes ☐ IED applies

1b Are you subject to IED as

An incinerator? ☐

A co-incinerator? ☐

2 Do any of the installations contain more than one incineration line?

No ☐ Now go to question 4

Yes ☐

3 How many incineration lines are there within each installation?

Fill in a separate table for each installation.

Installation reference		
Number of incineration lines within the installation		
Reference identifiers for each line		

You must provide the information we ask for in questions 4, 5 and 6 below in separate documents. The information must at least include all the details set out in section 2 ('Key Issues') of S5.01 'Incineration of waste: additional guidance' (under the sub heading 'European legislation and your application for an EP Permit'). See https://www.gov.uk/government/collections/technical-guidance-for-regulated-industry-sectors-environmental-permitting.

You must answer questions 7 to 13 on the form below.

4 Describe how the plant is designed, equipped and will be run to make sure it meets the requirements of IED, taking into account the categories of waste which will be incinerated

Document reference

5 Describe how the heat created during the incineration and co-incineration process is recovered as far as possible (for example, through combined heat and power, creating process steam or district heating)

Document reference

Appendix 3 – Specific questions for the waste incineration sector, continued

6 Describe how you will limit the amount and harmful effects of residues and describe how they will be recycled where this is appropriate

Document reference

For each line identified in question 3, answer questions 7 to 13 below

Question 3 identifier, if necessary

7 Do you want to take advantage of the Article 45 (1)(f) allowance (see below) if the particulates, CO or TOC continuous emission monitors (CEM) fail?

No ☐

Yes ☐ This allows 'abnormal operation' of the incineration plant under certain circumstances when the CEM for releases to air have failed. Annex VI, Part 3(2) sets maximum half hourly average release levels for particulates (150 mg/m3), CO (normal ELV) and TOC (normal ELV) during abnormal operation.

Describe the other system you use to show you keep to the requirements of Article 13(4) (for example, using another CEM, providing a portable CEM to insert if the main CEM fails, and so on).

8 Do you want to replace continuous HF emission monitoring with periodic hydrogen fluoride (HF) emission monitoring by relying on continuous hydrogen chloride (HCl) monitoring as allowed by IED Annex VI, Part 6 (2.3)?

Under this you do not have to continuously monitor emissions for hydrogen fluoride if you control hydrogen chloride and keep it to a level below the HCl ELVs.

No ☐

Yes ☐ Please give your reasons for doing this

Appendix 3 – Specific questions for the waste incineration sector, continued

9 Do you want to replace continuous water vapour monitoring with pre-analysis drying of exhaust gas samples, as allowed by IED Annex VI, Part 6 (2.4)?

Under this you do not have to continuously monitor the amount of water vapour in the air released if the sampled exhaust gas is dried before the emissions are analysed.

No ☐

Yes ☐ Please give your reasons for doing this

10 Do you want to replace continuous hydrogen chloride (HCl) emission monitoring with periodic HCl emission monitoring, as allowed by IED Annex VI, Part 6 (2.5), first paragraph?

Under this you do not have to continuously monitor emissions for hydrogen chloride if you can prove that the emissions from this pollutant will never be higher than the ELVs allowed.

No ☐

Yes ☐ Please give your reasons for doing this

Appendix 3 – Specific questions for the waste incineration sector, continued

11 Do you want to replace continuous HF emission monitoring with periodic HF emission monitoring, as allowed by IED Annex VI, Part 6 (2.5), first paragraph?

Under this you do not have to continuously monitor emissions for hydrogen fluoride if you can prove that the emissions from this pollutant will never be higher than the ELVs allowed.

No ☐

Yes ☐ Please give your reasons for doing this

12 Do you want to replace continuous SO2 emission monitoring with periodic sulphur dioxide (SO2) emission monitoring, as allowed by IED Annex VI, Part 6 (2.5), first paragraph?

Under this you do not have to continuously monitor emissions for sulphur dioxide if you can prove that the emissions from this pollutant will never be higher than the ELVs allowed.

No ☐

Yes ☐ Please give your reasons for doing this

Appendix 3 – Specific questions for the waste incineration sector, continued

13 If your plant uses fluidised bed technology, do you want to apply for a derogation of the CO WID ELV to a maximum of 100 mg/m³ as an hourly average, as allowed by IED Annex VI, Part 3?

No ☐

Does not apply ☐

Yes ☐ Please give your reasons for doing this

14 Have you carried out a cost–benefit assessment (CBA) of opportunities for cogeneration (combined heat and power) or district heating under Article 14 of the Energy Efficiency Directive?

No ☐ Please provide supporting evidence of why a CBA is not required (for example, an agreement from us)

Document reference of this evidence

Yes ☐ Please submit a copy of your CBA

Document reference of the CBA

15 Does your installation need to be combined heat and power-ready (CHP-ready)?

No ☐ Please provide supporting evidence of why a CHP-ready assessment is not required (for example, an agreement from us)

Document reference of this evidence

Yes ☐ Please provide a copy of your CHP-ready assessment

Document reference of the CHP-ready assessment

Appendix 4 – Specific questions for the landfill sector and recovery of hazardous waste on land activities

1. For the landfill sector, provide your Environmental Setting and Installation Design (ESID) report and any other risk assessments to control emissions.

For recovery of hazardous waste on land activities, provide your Environmental Setting and Site Design (ESSD) report and any other risk assessments to control emissions

Document reference

2. For recovery of hazardous waste on land activities, provide your Waste Acceptance Procedures (including Waste Acceptance Criteria)

Document reference

Refer to our guidance at

https://www.gov.uk/government/publications/deposit-for-recovery-operators-environmental-permits/waste-acceptance-procedures-for-deposit-for-recovery

3. Provide your hydrogeological risk assessment (HRA) for the site

Document reference

4. Provide your outline engineering plan for the site

Document reference

5. Provide your stability risk assessment (SRA) for the site

Document reference

6. Provide your landfill gas risk assessment (LFGRA) for the site

Document reference

We have developed guidance on these assessments and their reports which can be found at
https://www.gov.uk/government/collections/environmental-permitting-landfill-sector-technical-guidance

7. For recovery of hazardous waste on land activities, have you completed a monitoring plan for the site?

No ☐ Please refer to the section of your ESSD that explains why this is unnecessary for your site

Document reference of this evidence

Yes ☐ Document reference

Appendix 4 – Specific questions for the landfill sector and recovery of hazardous waste on land activities, continued

8. Have you completed a proposed plan for closing the site and your procedures for looking after the site once it has closed?

No ☐ If you have answered 'no' for recovery of hazardous waste on land activities, refer to the section of your ESSD that explains why this is unnecessary for your site

Document reference of this evidence

Yes ☐ For landfill you must provide a closure and aftercare plan

Document reference

Application for an environmental permit
Part F1 – Charges and declarations

Environment Agency

Fill in this part for all applications for installations, waste operations, mining waste operations, water discharges, point source groundwater discharges and groundwater discharges onto land. Please check that this is the latest version of the form available from our website.

Please read through this form and the guidance notes that came with it.

The form can be:

1) **saved onto a computer and then filled in. Please note that the form follows a logic that means questions will open or stay closed depending on a previous answer. So you may not be able to enter text in some boxes.**

2) **printed off and filled in by hand. Please write clearly in the answer spaces.**

It will take less than two hours to fill in this part of the application form.

Contents

Each individual who is applying for their name to appear on the permit must complete the declaration in section 5. You will have to print a separate copy of the declaration page for each additional individual to complete.

1 Working out charges

You must fill in this section.

You have to submit an application fee with your application. You can find out the charge by searching for 'Environment Agency charging scheme and guidance: environmental permits' at www.gov.uk/government/organisations/environment-agency.

Please remember that the charges are revised on 1 April each year and that there is an annual subsistence charge to cover the costs we incur in the ongoing regulation of the permit.

Table 1 – Type of application (fill number of activity being applied for in each column)

Installation	Waste	Mining waste	Medium Combustion Plant (MCP)/Specified Generator (SG)	Water discharge/point source discharge to groundwater	Groundwater spreading onto land
4.2 Part A (1) (a)(i)					

Table 2 – Charge type (A)

Charge activity reference	Charge activity description	What are you applying to do? E.g. new, minor variation, normal variation, substantial variation, surrender, low risk surrender, transfer	Amount
e.g. 1.17.3	e.g. Sect 5.2 landfill for hazardous waste	e.g. transfer	e.g. £5,561
1.4.4	Section 4.2 - production of a single inorganic ch	New	£ 13,209.00
Total A			£ 13,209.00

1 Working out charges (you must fill in this section), continued

Table 3 – Additional assessment charges (B)

Part 1.19 Charges for plans and assessments			Tick appropriate
Reference	Plan or assessment	Charge	
1.19.1	Waste recovery plan	£1,231	☐
1.19.2	Habitats assessment (except where the application activity is a flood risk activity)	£779	☐
1.19.3	Fire prevention plan (except where the application activity is a farming installation)	£1,241	☐
1.19.4	Pests management plan (except where the application activity is a farming installation)	£1,241	☐
1.19.5	Emissions management plan (except where the application activity is a farming installation)	£1,241	☐
1.19.6	Odour management plan (except where the application activity is a farming installation)	£1,246	☐
1.19.7	Noise and vibration management plan (except where the application activity is a farming installation)	£1,246	☐
1.19.8	Ammonia emissions risk assessment (intensive farming applications only)	£620	☐
1.19.9	Dust and bio-aerosol management plan (intensive farming applications only)	£620	☐
	Advertising	£500	☐
Total B			

Total charges

Total A plus total B £ 13,209.00

2 Payment

Tick below to show how you have paid.

Cheque ☐

Postal order ☐

Cash ☐ Tick below to confirm you are enclosing cash with the application

Credit or debit card ☐

Electronic transfer (for example, BACS) ☑

Remittance number

Date paid (DD/MM/YYYY)

How to pay

Paying by cheque, postal order or cash

Cheque details

Cheque made payable to

Cheque number

Amount £

You should make cheques or postal orders payable to 'Environment Agency' and make sure they have 'A/c Payee' written across them if it is not already printed on.

Please write the name of your company and application reference number on the back of your cheque or postal order. **We will not** accept cheques with a future date on them.

We do not recommend sending cash through the post. If you cannot avoid this, please use a recorded delivery postal service and enclose your application reference details. Please tick the box below to confirm you are enclosing cash.

I have enclosed cash with my application ☐

2 Payment, continued

Paying by credit or debit card

If you are paying by credit or debit card we can call you. We will destroy your card details once we have processed your payment. We can accept payments by Visa, MasterCard or Maestro card only.

Please call me to arrange payment by debit or debit card ☐

Paying by electronic transfer BACS reference

If you choose to pay by electronic transfer you will need to use the following information to make your payment.

Company name	Environment Agency
Company address	SSCL (Environment Agency), PO Box 797, Newport Gwent, NP10 8FZ
Bank	RBS/NatWest
Address	London Corporate Service Centre, CPB Services, 2nd Floor, 280 Bishopsgate, London EC2M 4RB
Sort code	60-70-80
Account number	10014411
Account name	EA RECEIPTS
Payment reference number	PSCAPPXXXXXYYY

You need to create your own reference number. It should begin with PSCAPP (to reflect that the application is for a permitted activity) and it should include the first five letters of the company name (replacing the X's in the above reference number) and a unique numerical identifier (replacing the Y's in the above reference number). The reference number that you supply will appear on our bank statements.

If you are making your payment from outside the United Kingdom, it must be in sterling. Our IBAN number is GB23NWK60708010014411 and our SWIFTBIC number is NWBKGB2L.

If you do not quote your reference number, there may be a delay in processing your payment and application.

Provide a unique reference number for the application, i.e. do not only use the company name only: LCL/CRE/H2 Whites Pit/202205/A

State who is paying (full name and whether this is the agent/ applicant/other): _____

Fee paid: £ _____

Date payment sent (DD/MM/YYYY): _____

Now read section 3 below

You should also email your payment details and reference number to ea_fsc_ar@gov.sscl.com.

3 Privacy notice

The Environment Agency runs the environmental permit application service.

We are the data controller for this service. A data controller determines how and why personal information is processed.

Our personal information charter explains:

- your rights
- what we do with your personal information

We're allowed to process your personal information because we have official authority as the environmental regulator. We need this information to carry out a task in the public interest that is set out in law. As the data controller, when you apply for an environmental permit, we have a legal obligation to process your personal data under the Environmental Permitting Regulations. The second lawful basis for processing your personal data is to comply with this legal obligation.

We need your personal information to process your environmental permit application. If you do not give us this information we cannot issue a permit to you. After we've issued a permit to you, we use your personal information:

- to check that you're complying with your permit
- during any potential enforcement action

What personal information we collect

If you're the individual applicant, director or company secretary of a company applying or a technically competent manager we need your:

- name
- date of birth

- address
- email address

If you're the agent, consultant, employee responsible for the activity or the employee responsible for billing and invoicing we need your:

- name
- address
- email address

If you're the applicant we need details of any:

- convictions
- bankruptcy

We also collect any questions or feedback you leave, including your email address if you contact us.

Your responsibility with other people's personal information

If you've included personal information about other people on your application, you must tell them. You must provide them with a copy of this privacy notice so that they know how their personal information will be used.

What we do with your personal information

We use your personal information to help us decide whether to issue you with a permit.

The information (except dates of birth) is available online on our consultation website during the consultation period. This website is available to everyone so your information may be seen outside the European Economic Area.

After consultation we put all the information (except dates of birth) you give us in your application on our public register.

If you can demonstrate that any information you send us is commercially or industrially confidential, we'll consider withholding that information from our public register.

If you think that the information you'll send us may be a threat to national security you must contact the Secretary Of State before you apply. You must still send us that information with your application. We will not include this information on our public register unless the Secretary of State decides it can be included.

See the environmental permitting guidance for guidance on national security.

We may use your email address to contact you for user research to improve our service. You don't have to take part in the research.

Where your personal information is processed and stored

We store and process your personal information on servers in the UK. We will not host your personal information outside the European Economic Area.

We do not use your personal information to make an automated decision or for automated profiling.

How long we keep your personal information

We keep your personal information while your permit is in use and for 7 years after you surrender your permit. If the permit is for a landfill site, we keep the data for 10 years after surrender.

Removing personal information from the public register

We will remove your personal information from the public register if:

- you withdraw your application
- we refuse your application and the time limit for appealing the decision has expired or an appeal is dismissed
- the information is no longer relevant for public participation purposes under the Environmental Permitting Regulations

Contact

Our Data Protection Team gives independent advice. They monitor how the Environment Agency uses your personal information.

If you have questions or concerns about how we process personal information, or to make a complaint or request relating to data protection, please contact:

Address: Data Protection Team
Environment Agency
Horizon House
Deanery Road
Bristol
BS1 5AH

3 Privacy notice, continued

Email: dataprotection@environment-agency.gov.uk

You can also make a complaint to the Information Commissioner's Office (ICO).

The ICO is the supervisory authority for data protection legislation. The ICO website has a full list of your rights under data protection legislation.

Now read section 4 below

4 Confidentiality and national security

Confidentiality

We will normally put all the information in your application on a public register of environmental information. However, we may not include certain information in the public register if this is in the interests of national security, or because the information is confidential.

You can ask for information to be made confidential by enclosing a letter with your application giving your reasons. If we agree with your request, we will tell you and not include the information in the public register. If we do not agree with your request, we will let you know how to appeal against our decision, or you can withdraw your application. You can find guidance on confidentiality in 'Environmental permitting guidance: core guidance', published by Defra and available via our website at www.gov.uk/government/organisations/environment-agency.

Only tick the box below if you wish to claim confidentiality for your application

Please treat the information in my application as confidential ☐

National security

You can tell the Secretary of State that you believe including information on a public register would not be in the interests of national security. You must enclose a letter with your application telling us that you have told the Secretary of State and you must still include the information in your application. We will not include the information in the public register unless the Secretary of State decides that it should be included.

You can find guidance on national security in 'Environmental permitting guidance: core guidance', published by Defra and available via our website at www.gov.uk/government/organisations/environment-agency.

You cannot apply for national security via this application.

Now fill in section 5

5 Declaration

If you knowingly or carelessly make a statement that is false or misleading to help you get an environmental permit (for yourself or anyone else), you may be committing an offence under the Environmental Permitting (England and Wales) Regulations 2016.

A relevant person should make the declaration (see the guidance notes on part F1). An agent acting on behalf of an applicant is NOT a relevant person.

Each individual (or individual trustee) who is applying for their name to appear on the permit must complete this declaration. You will have to print a separate copy of this page for each additional individual to complete.

If you are transferring all or part of your permit, both you and the person receiving the permit must make the declaration. You must fill in the declaration directly below; the person receiving the permit must fill in the declaration under the heading 'For transfers only'.

Note: we will issue a letter to both current and new holders to confirm the transfer. If you are changing address we will need to send this letter to your new address; therefore please tell us your new address in a separate letter.

If you are unable to trace one or more of the current permit holders please see below under the transfers declaration.

I declare that the information in this application is true to the best of my knowledge and belief. I understand that this application may be refused or approval withdrawn if I give false or incomplete information.

If you deliberately make a statement that is false or misleading in order to get approval you may be prosecuted.

I confirm that my standard facility will fully meet the rules that I have applied for (this only applies if the application includes standard facilities) ☐

Tick this box to confirm that you understand and agree with the declaration above, then fill in the details below (you do not have to provide a signature as well) ☑

Tick this box if you do not want us to use information from any ecological survey that you have supplied with your application (for further information please see the guidance notes on part F1) ☐

5 Declaration, continued

Name

Title (Mr, Mrs, Miss and so on)	Mr
First name	Nathan
Last name	Ross
on behalf of (if relevant; for example, a company or organisation and so on)	Canford Renewable Energy Ltd
Position (if relevant; for example, in a company or organisation and so on)	Director
Today's date (DD/MM/YYYY)	16/06/2022

For transfers only – declaration for person receiving the permit

A relevant person should make the declaration (see the guidance notes on part F1). An agent acting on behalf of an applicant is NOT a relevant person.

I declare that the information in this application to transfer an environmental permit to me is true to the best of my knowledge and belief. I understand that this application may be refused or approval withdrawn if I give false or incomplete information.

Note: If you cannot trace a person or persons holding the permit you may be able to transfer the permit without their declaration as above. Please contact us to discuss this and supply evidence in your application to confirm you are unable to trace one or all of the permit holders.

If you deliberately make a statement that is false or misleading in order to get approval you may be prosecuted.

Tick this box to confirm that you understand and agree with the declaration above, then fill in the details below (you do not have to provide a signature as well)	☐

Name

Title (Mr, Mrs, Miss and so on)	
First name	
Last name	
on behalf of (if relevant; for example, a company or organisation and so on)	
Position (if relevant; for example, in a company or organisation and so on)	
Today's date (DD/MM/YYYY)	

Now go to section 6

6 Application checklist

You must fill in this section.

If your application is not complete we will return it to you. If you aren't sure about what you need to send, speak to us before you submit your application.

You must do the following:

Complete legibly all parts of this form that are relevant to you and your activities	☑
Identify relevant supporting information in the form and send it with the application	☑
List all the documents you are sending in the table below. If necessary, continue on a separate sheet. This separate sheet also needs to have a reference number and you should include it in the table below	☑
For new permits or any changes to the site plan, provide a plan that meets the standards given in the guidance note on part F1	☑
Provide a supporting letter for any claim that information is confidential	☐
Get the declaration completed by a relevant person (not an agent)	☑
Send the correct fee	☑

6 Application checklist, continued

Question reference	Document title	Document reference
All	Permit Application Support Document	LCL/CRE/H2 Whites Pit/202205/A

7 How to contact us

If you need help filling in this form, please contact the person who sent it to you or contact us as shown below.

General enquiries: 03708 506 506 (Monday to Friday, 8am to 6pm)

Textphone: 03702 422549 (Monday to Friday, 8am to 6pm)

Email: enquiries@environment-agency.gov.uk

Website: www.gov.uk/government/organisations/environment-agency

If you are happy with our service, please tell us. It helps us to identify good practice and encourages our staff. If you're not happy with our service, or you would like us to review a decision we have made, please let us know. More information on how to do this is available at: https://www.gov.uk/government/organisations/environment-agency/about/complaints-procedure.

Please tell us if you need information in a different language or format (for example, in large print) so we can keep in touch with you more easily.

8 Where to send your application

For how many copies to send see the guidance note on part F1.

Please send your filled in application form to:

For water discharges by email to PSC-WaterQuality@environment-agency.gov.uk

For waste and installations by email to PSC@environment-agency.gov.uk

Or

Permitting Support, NPS Sheffield
Quadrant 2
99 Parkway Avenue
Parkway Business Park
Sheffield
S9 4WF

Do you want all information to be sent to you by email?

Please tick this box if you wish to have all communication about this application sent via email (we will use the details provided in part A) ☑

Feedback

(You don't have to answer this part of the form, but it will help us improve our forms if you do.)

We want to make our forms easy to fill in and our guidance notes easy to understand. Please use the space below to give us any comments you may have about this form or the guidance notes that came with it.

How long did it take you to fill in this form?

We will use your feedback to improve our forms and guidance notes, and to tell the Government how regulations could be made simpler.

Would you like a reply to your feedback?

Yes please ☐

No thank you ☐

Crystal Mark 19132
Clarity approved by Plain English Campaign

For Environment Agency use only

Date received (DD/MM/YYYY)

Our reference number

Payment received?

No ☐

Yes ☐ Amount received

£

Application Support Document

Part A

Part B2

Part B3

Part A

Form Part A does not require any supplementary or additional information

Part B2 General new Bespoke Installation Permit

Question 1a **Discussions before your Application**

Document Reference: LCL/CRE/H_2 Whites Pit/202205/B21a

This Application is for a Hydrogen Generating Plant at Whites Pit Landfill, Arrowsmith Road, Wimborne, Dorset, BH21 3BQ. The Installation that is contemplated has already been granted a Standard Rules SR2009 No 2 Low Impact Permit number EPR/RP3206LB in May 2021 on a site adjacent to Whites Pit Landfill and the Operator Canford Renewable Energy now wishes to move the Installation onto Whites Pit Landfill adjacent to the Solar Panel Installation which will provide the electrical power for the H_2 Generating Plant. A copy of that Permit is attached for ease of reference at Appendix 1.

The proposed move has been discussed with the Environment Agency (EA) and the subject of correspondence which is attached and the view of the EA is that because the Plant will be sited on a landfill where the filling of waste has ceased and the site restored it cannot be granted a Low Impact Permit but must have its own Standalone Section 4.2 Part A(1)(a)(i) Producing Inorganic Chemicals Permit.

The correspondence is as follows:

Letter 19/02/2021 from Francesco Di Stefano at EA to Canford Renewable Energy Hydrogen

E mail string 25/02/2022, 28/02/02022, 05/04/2022 and 06/04/2022 between Tom Fowler of the EA and Jonathan Fryett of Lindfield Consultants Ltd

From: Jonathan Fryett [mailto:lindfieldconltd@btinternet.com]
Sent: 06 April 2022 12:06
To: 'Fowler, Tom' <tom.fowler@environment-agency.gov.uk>
Subject: RE: Proposed H2 Generating Plant Whites Pit

Hi Tom

Thanks for the rather intriguing mail! I gather that they didn't say "yes, yes, yes that's absolutely correct issue them a Low Impact Permit immediately!"

As you will have seen I have been a bit tied up this morning getting things ready for our meeting on Friday but I am free after 2.00 pm today. Look forward to your call!

Regards

Jonathan

From: Fowler, Tom [mailto:tom.fowler@environment-agency.gov.uk]
Sent: 05 April 2022 17:12
To: lindfieldconltd@btinternet.com
Cc: Nathan Ross <Nathan.Ross@c-r-e.co.uk>; Rob Dowding <Rob.Dowding@c-r-e.co.uk>
Subject: Re: Proposed H2 Generating Plant Whites Pit

Hi Jonathan,

I've spoken to my NPS colleagues so can give you an update on this. I think it'd be best to explain it on the phone, so can you tell me a convenient time to call?

Cheers

Tom

On 17 Mar 2022, at 15:01, Jonathan Fryett <lindfieldconltd@btinternet.com> wrote:

Hi Tom

Thanks very much for the swift reply on the H2 generating plant which I have been thinking about. I have changed the subject title of the mail to reflect the contents of this mail.

That the proposed plant sited in the Site Control Centre already has a Low Impact Installation Permit must mean that the EA view that plant as not presenting any particular risk in respect of its emissions to air, ground or water and nor is its siting in relation to the SSSI boundary a problem. In simple terms it gets a clean bill of health and that is obviously something with which we concur.

Although the plant per se is considered to have a Low Impact the EA in their letter of 19th February 2021 seem to be unduly concerned about the effect that the plant could have on the "closing landfill" and vice-versa and have stated that they need additional plans or risk assessments for

Landfill Gas Risk Assessment and Landfill Gas Management Plan

Landfill Stability affecting the plant

Surface Water Drainage including risks arising from water discharges from the new activities

Impacts on the Restoration of the Site,

Before considering these in more detail I thought it might be helpful to set out quite what it is intended should be constructed or installed on the closed Northern Area. The Northern Area is not a "closing landfill" but one when the tipping of waste ceased many years ago and the restoration also took place following that cessation. The Southern Extension is now in a similar state and it is anticipated that formal Closure for both areas will be achieved in June of this year.

Proposed Installation

Although the proposed H2 Generating Plant on the Northern Area extends over an area of some 48m by 20m the actual plant to be installed is only 2 No Electrolysers, I No Electrolyser Blow Out Preventer, a Compressor Skid, a transformer and space for 2 No Tube Trailers. All of this plant is to be housed in containers. The electrolyser container will be some 12m long by 2.43m wide and will weigh some 33 tons with the compressor container being 8.5m long by 2.43m wide with a weight of 10 tons.

The containers will be sited on reinforced concrete raft foundations with stiffening edge beams. The rafts will extend 2.4m from the side of the container. The rafts will cast on a 1m thickness replacement of selected compacted hardcore with a gas protection membrane incorporated as well as vent trenches beneath the hardcore. . The contact points for the containers on the rafts will have

the provision for the recovery of level should any settlement of the substrate occur. The bearing pressure under the slabs will be some 10 kN/m2 equivalent to an 0.5m depth of soil. . At this level of stress any increase in porewater pressure under the slab as the load is applied will be minimal as will any consolidation type settlement as those increases in pore water pressure, if indeed there are any, dissipate.

Pipe connections between the containers will also have provision to accommodate differential movement between the containers. The same will be true of the electrical connecting cables between the various units which will be horizontally snaked in overwide trenches to allow for some settlement of the trench to occur without rupturing the cables. . An inspection and monitoring regime will also be put in place to ensure that any settlement is addressed before it can cause a problem

The tube trailers will stand on a reinforced concrete slab which will extend under the manoeuvring area. This slab will also be cast on a 300 mm thickness of selected compacted hardcore incorporating a gas protection membrane. The drainage of surface water from this slab will be taken to a Petrol and Oil Interceptor before discharging via a control valve to the perimeter drainage ditch.

The remaining area within the compound will be graded to form terraces with a down slope gradient of 1:100 and then covered with recycled road planings. The surface water for this area will be taken to the perimeter ditch via a control penstock.

Since the plant will only take up a comparatively small area of the compound, should access be needed to the underlying site to attend to any problems with landfill gas migration then this would be possible.

Landfill Gas Risk Assessment and Landfill Gas Management Plan

As can be seen from the above, the extent and weight of the static plant is not going to be significant in relation to the evolution of gas from the underlying landfill. The municipal waste that was tipped there was done so in the late 1980's or early 1990,s when a gas extraction system was installed and which is still operational today. The monitoring of the flammable gas in the extraction wells adjacent to the proposed area has shown that the amount being evolved has now reduced to the extent that the valves to the extraction system are turned off to prevent oxygen being drawn in. As and when a build-up of flammable gas is detected the valves are cracked open but the amount of gas is limited and the valves are then closed again when the CH4 content has fallen and the O2 level risen to an unacceptable amount. .

The wells adjacent to the new plant to be, will be monitored for the presence of landfill gas once a week initially and then the interval extended depending upon results. If any gas is found then the valves to the extraction system will be cracked open until it has been evacuated. A weekly survey with the landfill gas "sniffer" will also be carried out to make sure that nothing is escaping from the landfill.

Should any fugitive landfill gas be found by the “sniffer” monitoring then appropriate measures will be taken either to prevent the continued emissions by excavating to find the source and re-sealing the existing cap or by installing additional collection trenches to take any emissions to the landfill gas collection system . Landfill. Gas will not be allowed to vent to atmosphere.

Landfill Stability affecting the plant

The municipal waste in this part of the site was tipped in the late 1980’s or early 1990’s under the Supervision of the Waste Regulation Authority, subsequently the Environment Agency, and Waste Returns detailing the nature and amount of the waste tipped were submitted in accordance with the Licence or Permit. The tipping of waste in this area of Whites Pit predated the advent of the recycling of waste brought about by the Environmental Protection Act 1990 and the issuing of supplementary credits for Local Authorities for recycling waste in 1991 and so there was more paper and card in the waste as well as hard plastics, organic material and garden waste than would be expected today. The waste also contained inert materials such as soils, ash, rubble and concrete. The waste from the bulky household waste sites was also tipped in the site. As a result although this waste decayed to produce landfill gas it also had a matrix of less degradable or solid materials so that overall its settlement would be less than would be expected from that waste tipped in the containment site. The tipping of waste commenced at about 44.76m AOD and the site was filled to an overfill level and then allowed to settle back to the agreed final contour. In the area of the proposed plant the overfill levels were about 70m AOD with the final level being 67.5m AOD. The most recent survey shows that the site is at or about 73m AOD so above the originally agreed final level. It was originally anticipated that the settlement would be about 12% of the depth of waste. The current level has been achieved by significant up filling with inert material over and above the 1m thick Broadstone Clay cap initially installed. It is extremely unlikely that virtually all the anticipated amount of settlement has not been achieved. This is backed up by the very small amount of landfill gas being produced. The gas is produced when solid carbon that has been tipped into the site is converted by methanogesis to gaseous carbon in the landfill gas. It is this process that results in the large amounts of settlement in putrescible waste sites. So in this part of Whites Pit, the putrescible waste has now decayed to produce the methane and carbon dioxide which have been extracted resulting in the settlement. Thus the amount of settlement yet to take place will be minor and its effects can be accommodated by the specialist foundations for the proposed plant.

The proposed plant is remote from the steeper side slopes of the tipped waste and therefore the stability of these banks is not relevant to the site. The bank to the West of the site is not composed of putrescible waste but of more inert materials against which the municipal waste was tipped.

Surface Water Drainage including risks arising from water discharges from the new activities

Any run off from the proposed plant will be taken to an Interceptor before being piped to the perimeter ditch. This pipe will have a valve on it for control. There will also be a low containment or

bund wall round the slabs to ensure that if there is ever a problem with contamination of any surface water run-off it can be properly managed..

Impacts on the Restoration of the Site

The original plan for the restoration of the site was to grassland with the odd shrub from natural regeneration. Any trees that took seed would be removed to prevent their roots damaging the cap. The installation of the Hydrogen Generating Plant will not affect that grassland except of course where the plant is sited. It is of course a temporary use and so in the fullness of time that part of the landfill can too be restored to grassland.

In view of the above it is not considered that siting the H2 generating plant on the landfill will have any significant adverse effects upon the landfill and vica versa.

Permitting Options

For the proposed plant there appear to be two options for Permitting, one is that the existing Permit for the Landfill Activity is modified to include the new Activity, the other is that the H2 Generating Plant has a separate stand-alone Permit. As far as we are aware it is perfectly possible to have one Permit within or overlapping with another Permit. If we were to pursue a separate Permit then we would be submitting an Application with a 3D boundary rather than a simple 2D one as with a Planning Application. In the XY plane the boundary would be that of the Planning Application but in the Z plane the lower boundary would be within the new selected fill to be placed within the overall area. The operation of the landfill is a very different activity to that of the H2 Generating plant so having separate Permits, although as it happens the same Operator, should not give rise to any complications in the administration of either Permit by the EA as the responsibility will be quite clear. As has already been established the H2 generating Plant does not have any fugitive emissions that might cause Environmental harm and the only discharge from the site will be surface water via a control penstock to the Knighton Stream where the discharge is controlled by the Discharge Consent. Although the discharge of clean surface water does not actually require a consent at all. It is of course quite in order for an EA Permit to require monitoring to take place outside the Permit boundary and indeed the Planning Permission boundary so the requirement to monitor adjacent gas extraction wells on the landfill could be incorporated into the standalone Permit without any difficulty. An alternative would be for the Landfill Closure Plan to have a clause or two added in the Landfill Gas Management Section to require monitoring of gas wells adjacent to other Permitted areas or enclosures on the Landfill.

Returning to the letter from the EA of 19/02/2021., it is our view that the above deals with the concerns raised in Paragraphs 7 and 8.

In Paragraph 9 it is not our view that siting the plant on an area with landfill permit changes the nature of the installation from being a Low Impact one. The paragraphs above in our view demonstrate that the H2 Generating Plant will not have any significant impact on the underlying Landfill so the definition “Low Impact” must still apply as the Permit for the plant is solely concerned

with the impact of that plant and nothing else. Should there be any adverse effects from the landfill then these may or may not, in our view not, impact the H2 Generation Plant but the Permit definition a “Low Impact Installation” must still stand, had the definition been “Low Impacted Installation” then there might be some merit to the argument advanced in Paragraph 9.

The last sentence of Paragraph 9 is intriguing as it implies that the reason to object to a Low Impact Installation is purely commercial rather the Environmental or Legal and in the circumstances is not entirely convincing. It has already been established that the H2 Generating Plant as proposed in the Site Control Centre meets the requirements for a Low Impact Installation so when considering the relocation of that plant the vast majority of the EA’s approval process will not need to be carried out again, so a considerable saving in costs. This saving would surely cover the cost of the “additional permitting and regulatory work” referred to and which can be seen from the above is not exactly overwhelming! If the EA still feel that they will be out of pocket then they can fall back on Section 1.4 of the

Governments Guidance on “Environmental permitting charges” August 2020 https://www.gov.uk/government/publications/environmental-permitting-charges-guidance/environmental-permitting-charges-guidance .

An alternative approach for the EA would simply be to issue a stand-alone Low Impact Permit for the H2 generating Plant and at the same time impose such modifications as they think fit on the Landfill Permit to accommodate the stand-alone plant for which under Section 1.4 they are able to recover their costs. It thus seems that any argument that a Low Impact Permit Installation cannot be successfully processed and issued on economic or commercial grounds is somewhat specious to say the least.

As we discussed the issue for W H White is the time that it will take to obtain a Permit so that the proposed plant can be brought into use to take advantage of the solar power. Our view based on the above is that it is quite in order for the proposed plant to have a stand-alone Low Impact Installation Permit or for the existing Landfill Permit (WML 23629 or EPR /BP3293FX/V006) to be modified to include that Operation. Is that view one which in the light of the above the Agency concur? If we are correct in our view, as the EA workload stands which application, modification or standalone would be determined more quickly?

In terms of Fees, that for a Low Impact Installation is clear but if a Modification is sought to the existing Landfill Permit presumably that would be 1.17.11 of Table 1.17 and would be classed as a Minor Variation, is that correct?

I appreciate that the above is somewhat lengthy but I thought that it would be helpful to set out our arguments so that we can make the appropriate application for the proposed plant to ensure the earliest issuing of the Permit.

Regards

Jonathan

From: Fowler, Tom [mailto:tom.fowler@environment-agency.gov.uk]
Sent: 28 February 2022 16:18
To: lindfieldconltd@btinternet.com
Subject: RE: Spinney Cottage Arboretum Drainage Measures

Hi Jonathan,

Good to catch up on Friday.

I've tracked down the letter from Francesco.

I think point 9 means that your proposal to extend the existing standard rules permit is not going to be acceptable.

"FDS advised that, if the new regulated activities are proposed on land where waste has been deposited, and therefore the above risk assessment requirements apply**, the new proposed activity would not qualify as Low Impact Installation (LII).** Rationale: the risk assessment to be done covers areas that are not compatible with the intrinsically low risk of low impact installations and the associated standard rules. Additional permitting and regulatory work would need to be done, which is not covered by LII fees."

So the application will either need to be to vary the existing landfill to include Section 4.2 Part A(1)(a)(i) Producing inorganic chemicals such as – (i) gases (hydrogen). Or to apply for a standalone Section 4.2 Part A(1)(a)(i) Producing inorganic chemicals such as – (i) gases (hydrogen) activity.

As I mentioned, although there has been some recent improvements in permit determination times, I would say the timescales quoted in the letter are optimistic and a more realistic 6-9 months should be expected.

Regards

Tom

From: Jonathan Fryett <lindfieldconltd@btinternet.com>
Sent: 25 February 2022 12:05
To: Fowler, Tom <tom.fowler@environment-agency.gov.uk>
Subject: RE: Spinney Cottage Arboretum Drainage Measures

Hi Tom

Sorry to hear you have Covid, I trust that you are not suffering too much.

Can we have a call today or would you prefer to wait until Monday?

Regards

Jonathan

From: Fowler, Tom [mailto:tom.fowler@environment-agency.gov.uk]
Sent: 25 February 2022 07:37
To: lindfieldconltd@btinternet.com
Cc: Nathan Ross <Nathan.Ross@c-r-e.co.uk>; Rob Dowding <Rob.Dowding@c-r-e.co.uk>
Subject: Re: Spinney Cottage Arboretum Drainage Measures

Hi Jonathan,

I'm testing positive for Covid at the moment, so won't be visiting site today. Happy to have a teams or old fashioned phone call though?

Regards

Tom

On 25 Feb 2022, at 00:22, Jonathan Fryett <lindfieldconltd@btinternet.com> wrote:

Hi Tom

I understand that the meeting with the BPC Planner re the above has been called off.

Are you still intending to attend at Whites Pit as I was also hoping to have a chat with you about the Permit for the Hydrogen Generating Plant that Whites would still like to site on the Northern Area adjacent to the Solar Panels?

Regards

Jonathan

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Information in this message may be confidential and may be legally privileged. If you have received this message by mistake, please notify the sender immediately, delete it and do not copy it to anyone else. We have checked this email and its attachments for viruses. But you should still check any attachment before opening it. We may have to make this message and any reply to it public if asked to under the Freedom of Information Act, Data Protection Act or for litigation. Email messages and attachments sent to or from any Environment Agency address may also be accessed by someone other than the sender or recipient, for business purposes.

This application is for a Standalone Permit.

As the proposed plant already has a Low Impact Permit in an adjacent location, to avoid duplication of effort for the EA, this Application will be based on that Application and for each section of this Application the differences between the Plant in the new and old location will be explained with the Documents from the previous Application added at Appendix 2 for ease of reference.

Question 1d **Changes in Application since Discussions**

Document Reference: LCL/CRE/H_2 Whites Pit/202205/B21d

Although Question 1d "Have there been any changes to your proposal since this discussion?" is strictly speaking asked in respect of Mobile Plant, it is considered to be relevant here as there have been some changes in the proposed static plant

The Plant for EPR/RP3206LB included 2 x Containerised Modular Silyzer 200 Electrolyser units. It is understood that these Units are no longer available and in their stead 2 Containerised HyProvide™ A90 Electrolyser Units from Green Hydrogen Systems will be adopted. The operation of these Units is explained in **LCL/CRE/H_2 Whites Pit/202205/App 1 C/ Abatement Systems** below.

Question 2d **Low Impact Permit Conditions**

Document Reference: LCL/CRE/H_2 Whites Pit/202205/B22d

Although the Application is for a Standalone Section 4.2 Part A(1)(a)(i) Producing Inorganic Chemicals Permit, the nature of the Installation is that is by definition "Low Impact" based on its Emissions as can been seen from the completed Form at Appendix 1 of Form B2. The EA have required this Standalone Application simply because the H_2 Generating Plant is now to be sited on a closed but Permitted landfill and there is concern of the effects that the Landfill might have on the Plant and vica versa. These concerns are addressed in **LCL/CRE/H_2 Whites Pit/202205/B21a** above.

It is axiomatic that if a plant meets the Low Impact Criteria in one location it will also in respect of its emissions be Low Impact in another location provided sections (a) and (b) of the Introductory Note are met which in this case they are.

Form B2 requires the Appendix 1 to be completed. This has been done and the documents that are relevant from each Section are set out below.

A Management Techniques

Whites Pit Hydrogen Generating Plant- Management Techniques

Reference **LCL/CRE/H_2 Whites Pit/202205/B2A1A**

The proposed Management Techniques for the Plant are set out in the Sol Environment Permit Application Document SOL2101CRE01 Sections 3.6, 3.7, 3.8 at Appendix 2 Annex F with the document entitled "Canford Renewable Energy, Hydrogen Generation Plant Environmental Management Systems" at Appendix 2 F.

There are some changes to the Appendix 2F Document occasioned by the move to a new location and these are set out below.

Section 1

The site NGR is now SZ 02891 96743.

Although the facility in its new location meets the principles for a Low Impact Installation", the EA have requested a full Application as the plant will now be sited on a closed Landfill.

Section 2

The NGR is now OS X (Easting) 402891

OS Y (Northing) 096743

Section 3

The plant now comprises 2 No 40 ft ISO type Shipping Containers each housing:

• Control Cabinet – contains all the electrical / electronic control equipment required to operate the Electrolyser

• Power Cabinet – contains all the electrical power equipment required to operate the Electrolyser

• D.I. Water Plant – creates the D.I. Water required to operate the Electrolyser

• Cooling System – supplies the cooling to keep the Electrolyser within its operating temperature range

• Electrolyser and Purifying Plant– splits D.I. Water to purified Hydrogen and Oxygen

• Hydrogen 'Out' Panel – controls the Hydrogen feed to the Compressor System

• Pneumatics – controls the pneumatically operated valves in the D.I. Water Plant, the Electrolyser and the Hydrogen 'Out' Panel

Further details of the Proposed Container Units are shown at Appendix 5 900-0062_rev2 Hyprovide A-Series Mechanical Drawing 40ft Container.PDF. These include the "Top Frame" with the Cooling Equipment.

The Hydrogen from the Electrolysers will be further compressed so that it can be loaded into tube trailers for transport elsewhere. Each of the two Compressor Systems has the following modules within a Container:

Control Cabinet – contains all the electrical / electronic control equipment required to operate the Compressor

• Power Cabinet – contains all the electrical power equipment required to operate the Compressor

• Cooling System – supplies the cooling to keep the Compressor within its operating temperature range

• Compressor Unit – compresses hydrogen from inlet to outlet pressure

• Dispenser Unit – controls the Hydrogen feed to the Dispenser

• Pneumatics – controls the pneumatically operated valves in the Dispenser

High pressure Alkaline Electrolysers from GHS, 2 per container are now to be used see Appendix 4

Power consumption is now 450kW per Electrolyser and total hydrogen production is 16.2 kg/hr from each container.

The new site layout is below and its setting in relation to Whites Pit can be seen at Appendix 5 Site Location Plan AO where the full version of the Figure below may also be seen.

Section 4

As can be seen from the extract from the Site Location Plan above (complete Plan at Appendix 5),the new location is so close to the previous, albeit at increased elevation, that this Section is still applicable except that the distance to Canford Heath is now 180 m and the others will also have increased and the nearest residential property is now 350 m away. Eastlands Farm is now 1400 m distant. The Plant will now be sited on a Closed Landfill which will have the dominant effect on the underlying groundwater. The quality of the groundwater surrounding the site is already monitored as part of the Landfill Permits.

Section 5

Remains applicable

Section 6

The hydrogen generation plant is set out in Section 3 above.

The discharge consent is an existing Trade Effluent Consent from Wessex Water to discharge Leachate and groundwater from the Landfill site. The Aqueous Waste is surplus mineralised water and will be pumped to the Water tank adjacent to the Methane Stripper and from there it will mixed with extracted leachate from the Landfill and pumped along with extracted groundwater to the sewer. For this reason this discharge has not been included as Point Source Emission to a Sewer in Table 2 of Form Part B3 and nor has a Part B6 Form been completed.

There is no foul drainage from the plant.

Section 7

Remains applicable

Appendix 1 EMS Procedures

These remain the same except that the plant will also be checked on Saturday and Sunday as well as Bank and Religious Holidays.

C Abatement Systems

Whites Pit Hydrogen Generating Plant- Abatement Systems

Reference **LCL/CRE/H_2 Whites Pit/202205/B2A1C/ Abatement Systems**

The EA Guidant Note for a Low Impact Permit Application sates:

***Abatement systems/releases to air**: The installation must comply with the criteria in this guidance without having to rely on active abatement for releases to the environment outside of any buildings. Releases must not be dependent on continuing or correct operation of equipment, where failure of active pollution prevention systems could result in an unacceptable external release. For example, if the installation depends on active abatement in the form of scrubbers, filters or electrostatic precipitators to achieve the releases to the environment set out in this guidance, it is unlikely that it can be treated as having only a low potential for impact. However, abatement systems installed solely for the protection of workers (where abatement is not to attenuate external environmental releases) need not be included in this assessment.*

The plant takes in drinking water from the Water Authority Town supply and after demineralisation subjects it to a DC electrical current to break the H_2O down to H_2 and O_2 in accordance with the following equations:

Cathode: $2H_2O_{(l)}+2e^- \rightarrow H_{2(g)}+2OH^-_{(aq)}$

Anode: $2OH^-_{(aq)} \rightarrow 0.5O_{2(g)}+H_2O_{(l)}+2e^-$

Overall reaction: $H_2O_{(l)} \rightarrow H_{2(g)}+0.5O_{2(g)}$

The produced gases are then passed through gas/water separators and a scrubber to prevent aerosolised electrolyte from escaping the system, and process cooling. Purified H_2 is captured and sent to the Compressor skid for further compression before being stored on a tube trailer for dispatch to Users elsewhere. The purified O_2 is vented to the atmosphere. (See also answers to Form B3 Appendix 2 which discusses this point in more detail).

The only other discharge from the system is mineralised water. If the plant is not being operated ie no electrical power to the stack, it shuts down in safe mode and there are no emissions apart from a Nitrogen purge.

Therefore there are no emissions that give rise to the need for any Abatement Systems.

G Preventing Accidents

Whites Pit Hydrogen Generating Plant- Preventing Accidents

Reference **LCL/CRE/H_2 Whites Pit/202205/B2A1G/Preventing Accidents**

The proposals for the Prevention of Accidents at the Plant are set out in Sol Environment Permit Application SOL2101CRE01 Section 3.9 at Appendix 2 and Annex G at Appendix 2G with the document entitled Accident Management Plan.

There are some changes to that Document occasioned by the move to a new location and these are set out below.

Section 1

The NGR is now SZ 02891 96743

Although the facility in its new location meets the principles for a Low Impact Installation", the EA have requested a full Standalone Installation Application as the plant will now be sited on a closed Landfill and the plant will be operated in accordance with the Environmental Permitting (England and Wales) Regulations 2018.

Table 2.2

Section 3 Flooding

The site is now on top of the landfill and flooding is therefore a Low probability.

H Noise

Whites Pit Hydrogen Generating Plant- Noise Assessment

Reference **LCL/CRE/H_2 Whites Pit/202205/B2A1H/New Noise Assessment**

As the location of the plant has changed a new Noise assessment has been carried out and is attached at Appendix 3. This assessment shows that provided the sound emission from the plant does not exceed 70dB $L_{Aeq,T}$ at one metre distance any noise from the facility is not predicted to result in an "adverse" impact at the nearest residential receptors at any time. This plant will be designed and constructed to ensure that this level of sound emission is met. Therefore although the plant will now be sited nearer to the Residential Receptors it is still considered to meet the requirements of the Part B1 Guidance Notes on Noise.

I Emission of Polluting Substances

Whites Pit Hydrogen Generating Plant- Polluting Emissions

Reference **LCL/CRE/H_2 Whites Pit/202205/B2A1I/Polluting Emissions**

As set out in reference *LCL/CRE/H_2 Whites Pit/202205/App 1 C/ Abatement Systems* above and Section 4 of the Sol Environment Permit Application Document and Section C above, none of the emissions from the plant in operation will give rise to pollution of the Environment. The Management Techniques and Control and Contingency systems will ensure that in the event of loss of power or a leakage of pipework any liquid emission that could give rise to pollution will be kept on site by bunding for collection and proper disposal off site.

J Odours

Whites Pit Hydrogen Generating Plant- Odour

Reference **LCL/CRE/H_2 Whites Pit/202205/B2A1J/Odour**

As set out in reference *LCL/CRE/H_2 Whites Pit/202205/Abatement Systems* above and Section 4.5 of the Sol Environment Permit Application Document the emissions to air from the plant are generally Oxygen with the possibility of Hydrogen and Nitrogen if a shutdown purge is required or there is a leak from the pipes between the Electrolysers and the Compressor Skids or the Compressor skids and the Tube Trailers

Hydrogen, Nitrogen and Oxygen are all gases at room temperature and have no colour, smell or taste and therefore the plant is not considered likely to give offence due to odour in accordance with the requirements of the Part B1 Guidance Notes on Odour.

Question 3d **Management systems**

See Document Reference: LCL/CRE/H_2 Whites Pit/202205/B2A1A at the answers to Appendix 1 of question B2 2d above

Question 5 **Supporting Information**

Question 5a **Plans**

Reference **LCL/CRE/H2Whites Pit/202205/B2 5a Plans**

Site Location Plan

Site Layout Plan AO

Site Layout Plan A3

Plant Design/Process Flow

Details of Electrolyser Container

These Plans are presented at appendix 5

Question 5b **Baseline Report**

Reference **LCL/CRE/H2Whites Pit/202205/B2 5b Baseline**

The Part B2 Guidance states “To surrender the permit you will need to be able to show that the site has been returned to a satisfactory state. In order to achieve this you will produce an SCR which describes the condition of the site. It should identify any substance in, or under the land that may constitute a pollution risk.

The plant is to be sited on an area of Whites Pit Landfill known as the the Northern Area, WML 23629, EPR EA/EPR/BP3293FX/V006, which is not a “closing landfill” but one where the tipping of waste ceased many years ago and the restoration also took place following that cessation.

The municipal waste that was tipped there was done so in the late 1980’s or early 1990,s when a gas extraction system was installed and which is still operational today. The monitoring of the flammable gas in the extraction wells adjacent to the proposed area has shown that the amount being evolved has now reduced to the extent that the valves to the extraction system are turned off to prevent oxygen being drawn in. As and when a build-up of flammable gas is detected the valves are cracked

open but the amount of gas is limited and the valves are then closed again when the CH4 content has fallen and the O2 level risen to an unacceptable amount.

The wells adjacent to the new plant to be, will be monitored for the presence of landfill gas once a week initially and then the interval extended depending upon results. If any gas is found then the valves to the extraction system will be cracked open until it has been evacuated. A weekly survey with the landfill gas "sniffer" will also be carried out to make sure that nothing is escaping from the landfill.

The Landfill, Gas Extraction system is managed by W H White who have agreed to co-operate with CRE and share monitoring information and duties.

Should any fugitive landfill gas be found by the "sniffer" monitoring then appropriate measures will be taken either to prevent the continued emissions by excavating to find the source and re-sealing the existing cap or by installing additional collection trenches to take any emissions to the landfill gas collection system. Landfill. Gas will not be allowed to vent to atmosphere.

Landfill Stability affecting the plant

The municipal waste in this part of the site was tipped in the late 1980's or early 1990's under the Supervision of the Waste Regulation Authority, subsequently the Environment Agency, and Waste Returns detailing the nature and amount of the waste tipped were submitted in accordance with the Licence or Permit. The tipping of waste in this area of Whites Pit predated the advent of the recycling of waste brought about by the Environmental Protection Act 1990 and the issuing of supplementary credits for Local Authorities for recycling waste in 1991 and so there was more paper and card in the waste as well as hard plastics, organic material and garden waste than would be expected today. The waste also contained inert materials such as soils, ash, rubble and concrete. The waste from the bulky household waste sites was also tipped in the site. As a result although this waste decayed to produce landfill gas it also had a matrix of less degradable or solid materials so that overall its settlement would be less than would be expected from that waste tipped in the containment site. The tipping of waste commenced at about 44.76m AOD and the site was filled to an overfill level and then allowed to settle back to the agreed final contour. In the area of the proposed plant the overfill levels were about 70m AOD with the final level being 67.5m AOD. The most recent survey shows that the site is at or about 73m AOD so above the originally agreed final level. It was originally anticipated that the settlement would be about 12% of the depth of waste. The current level has been achieved by significant up filling with inert material over and above the 1m thick Broadstone Clay cap initially installed. It is extremely unlikely that virtually all the anticipated amount of settlement has not been achieved. This is backed up by the very small amount of landfill gas being produced. The gas is produced when solid carbon that has been tipped into the site is converted by methanogesis to gaseous carbon in the landfill gas. It is this process that results in the large amounts of settlement in putrescible waste sites. So in this part of Whites Pit, the putrescible waste has now decayed to produce the methane and carbon dioxide which have been extracted resulting in the settlement. Thus the amount of settlement yet to take place will be minor and its effects can be accommodated by the specialist foundations for the proposed plant.

The proposed plant is remote from the steeper side slopes of the tipped waste and therefore the stability of these banks is not relevant to the site. The bank to the West of the site is not composed of putrescible waste but of more inert materials against which the municipal waste was tipped.

It is therefore apparent that the "ground" beneath the proposed site comprises decayed Municipal Waste and as the proposed development.

Although the proposed H_2 Generating Plant on the Northern Area extends over an area of some 48m by 20m the actual plant to be installed is only 2 No Electrolysers, 2 No Compressor Skids and space for 2 No Tube Trailers. All of this plant is to be housed in containers. The electrolyser container will be some 12m long by 2.43m wide and will weigh some 33 tons with the compressor container being 8.5m long by 2.43m wide with a weight of 10 tons. Isolated Transformers will also be installed.

The containers will be sited on reinforced concrete raft foundations with stiffening edge beams. The rafts will extend 2.4m from the side of the container, see Site Layout Plan A3 at Appendix 5. The rafts will cast on a 1m thickness replacement of selected compacted hardcore with a gas protection membrane incorporated as well as vent trenches beneath the hardcore. . The contact points for the containers on the rafts will have the provision for the recovery of level should any settlement of the substrate occur. The bearing pressure under the slabs will be some 10 kN/m2 equivalent to a 0.5m depth of soil. . At this level of stress any increase in porewater pressure under the slab as the load is applied will be minimal as will any consolidation type settlement as those increases in pore water pressure, if indeed there are any, dissipate.

Pipe connections between the containers will also have provision to accommodate differential movement between the containers. The same will be true of the electrical connecting cables between the various units which will be horizontally snaked in overwide trenches to allow for some settlement of the trench to occur without rupturing the cables. . An inspection and monitoring regime will also be put in place to ensure that any settlement is addressed before it can cause a problem

The tube trailers will stand on a reinforced concrete slab which will extend under the manoeuvring area. This slab will also be cast on a 300 mm thickness of selected compacted hardcore incorporating a gas protection membrane. The drainage of surface water from this slab will be taken to a Petrol and Oil Interceptor before discharging via a control valve to the perimeter drainage ditch.

The isolated transformers will be installed on their own foundations with suitable bunding arrangements to cater for any loss of oil.

The remaining area within the compound will be graded to form terraces with a down slope gradient of 1:100 and then covered with recycled road planings. The surface water for this area will be taken to the perimeter ditch via a control penstock.

Since the plant will only take up a comparatively small area of the compound, should access be needed to the underlying site to attend to any problems with landfill gas migration then this would be possible.

The paragraphs above in our view demonstrate that the H2 Generating Plant will not have any significant impact on the underlying Landfill so the definition “Low Impact” must still apply as the Permit for the plant is solely concerned with the impact of that plant and nothing else. The waste within the Landfill will continue to degrade albeit at a reducing rate and when it comes to the cessation of the H2 generating activities this will entail the removal of the Plant, the RC Slabs, and the hardstanding so that the site can be restored to the same condition as the adjacent landfill. The condition of the underlying landfill will not have been adversely affected by the Hydrogen Generating Installation and its Permit will be able to be surrendered as the responsibility for the condition and management of the underlying Landfill will remain as part of Permit EPR EA/EPR/BP3293FX/V006 as indeed it will for the duration of the H2 Generating Permit.

Consideration has been given to submitting this application with a 3D boundary as opposed to 2D with the base of the site being 300mm above the lowest level of the hardstanding but after further discussion it was felt that the EA would take a pragmatic approach to the difference between the hardstanding or “made ground” beneath the new installation and the underlying landfill so that the Operator of the Hydrogen Plant would not ever be seen as being responsible for the condition and management of the underlying Landfill.

Question 5b **Non-technical Summary**

Reference **LCL/CRE/H2Whites Pit/202205/B2 5c NTS**

The Non-Technical Summary (NTS) for the Hydrogen Generating Plant in its previous location is attached at Appendix 1. This document sets out the differences between that NTS and that which applies for the plant in its new location on the Closed Landfill.

Page 1

This application is for a Stand-alone Permit not a Standard Rules Permit.

The site is now on the closed landfill and is an area of compacted hardcore adjacent to the new Solar Panel installation.

As explained elsewhere although this plant meets the principles of a “Low Impact Installation” as it is now to be sited on a Closed Landfill the EA have requested a full application

Page 2

The plant in its new location is more remote from the Canford Heath SSSI.

The plant now uses pressurised Alkaline Water Electrolysis as opposed to a Proton Exchange Membrane system.

The container has two vent stacks for both Hydrogen and Oxygen at 7.5m height.

Page 3

A new Environmental Noise assessment has been undertaken and is attached at Appendix 3 reference **LCL/CRE/H_2 Whites Pit/202205/B2A1 H/New Noise Assessment**

Page 4

This application is for a Standalone Section 4.2 “Inorganic Chemicals “ part A(1)(a)(i) Permit

The differences between the Permitted Installation and this Application are set out Section by Section

Page 5

Figures 1.1,1.2 and 1.3 are replaced by those at Appendix 5.

Page 9

The proposed plant now has Planning Permission from the Local Planning Authority a copy of which is attached at Appendix 6.

The overall site of Whites Pit Landfill has had a number of Planning Permissions over the years for the extraction of Mineral followed by the backfilling with Municipal Waste. These include Planning Permission for a Landfill Gas Extraction System.

The Landfill also has various Permits from the EA for the Disposal of Waste by Landfill and there is also an area of landfilling where the Control of Pollution Act Licence was handed back.

Page 10

This Application is for a Standalone Section 4.2 Part A(1)(a)(i) Producing Inorganic Chemicals Permit rather than a Low Impact Installation Permit although it is considered that the proposed Installation meets the requirements of such a Permit.

The stack height is 7.5m height.

Pages 11, 12 13 & 14

Section 3.2.1

Figure 1.2 is replaced Site Layout A3 at Appendix 5

As the Plant is now to be sited on the Landfill, the Site Condition Report is replaced by a document **LCL/CRE/H2Whites Pit/202205/B2 5b** Baseline above

Section 3.2.2

As the plant is now to be sited on the Landfill reinforced concrete foundations will be required as set out above.

The proposed installation will now comprise 2No 40 ft ISO type Shipping Containers each housing:

• Control Cabinet – contains all the electrical / electronic control equipment required to operate the Electrolyser

• Power Cabinet – contains all the electrical power equipment required to operate the Electrolyser

• D.I. Water Plant – creates the D.I. Water required to operate the Electrolyser

• Cooling System – supplies the cooling to keep the Electrolyser within its operating temperature range

• Electrolyser and Purifying Plant– splits D.I. Water to purified Hydrogen and Oxygen

• Hydrogen ‘Out’ Panel – controls the Hydrogen feed to the Compressor System

• Pneumatics – controls the pneumatically operated valves in the D.I. Water Plant, the Electrolyser and the Hydrogen ‘Out’ Panel

Further details of the Proposed Container Units are shown at Appendix 5 900-0062_rev2 Hyprovide A-Series Mechanical Drawing 40ft Container.PDF. These include the “Top Frame” with the Cooling Equipment.

The Hydrogen from the Electrolysers will be further compressed so that it can be loaded into tube trailers for transport elsewhere. Each of the two Compressor Systems has the following modules within a Container:

Control Cabinet – contains all the electrical / electronic control equipment required to operate the Compressor

- Power Cabinet – contains all the electrical power equipment required to operate the Compressor
- Cooling System – supplies the cooling to keep the Compressor within its operating temperature range
- Compressor Unit – compresses hydrogen from inlet to outlet pressure
- Dispenser Unit – controls the Hydrogen feed to the Dispenser
- Pneumatics – controls the pneumatically operated valves in the Dispenser

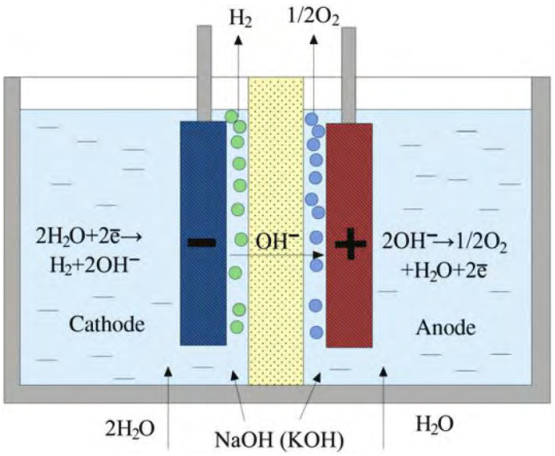
High pressure Alkaline Electrolysers from GHS are now to be used see Appendix 4

The comments on *Site Drainage* remain applicable as do those on *Tanks and Bunds* and *Roadways and External Areas.*

Section 3.3

In respect of the *Electrolysis* Alkaline Water Electrolysis is now to be used rather than Proton Exchange Membrane Electrolyser

This is the Process Schematic for this system.



The Raw Materials to be used remain the same with the addition of Lye.

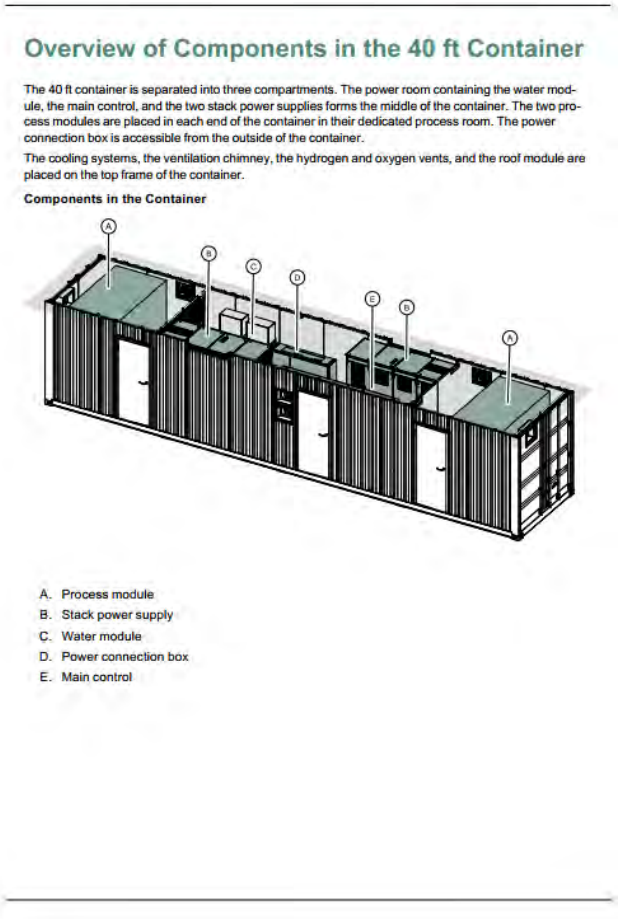
Pages 15, 16, 17 &18

Proposed Process

The process is the production of “green“hydrogen by the electrolysis of de-mineralised water in a highly efficient pressurised alkaline electrolyser using electricity from renewable sources. The hydrogen will be compressed on site for loading into tube trailers for transport to Users.

Main plant and equipment used

The electrolysis will be carried out in 2 No ISO Shipping type containers as shown below with 2 No A90 HyProvide A series electrolysers from Green Hydrogen Systems, brochure attached at Appendix 4, in each container. The Electrolyser System will be supplied as a complete unit and will have the following modules:-



.

• Control Cabinet – contains all the electrical / electronic control equipment required to operate the Electrolyser

• Power Cabinet – contains all the electrical power equipment required to operate the Electrolyser

• D.I. Water Plant – creates the D.I. Water required to operate the Electrolyser

• Cooling System – supplies the cooling to keep the Electrolyser within its operating temperature range

• Electrolyser and Purifying Plant– splits D.I. Water to purified Hydrogen and Oxygen

• Hydrogen ‘Out’ Panel – controls the Hydrogen feed to the Compressor System

• Pneumatics – controls the pneumatically operated valves in the D.I. Water Plant, the Electrolyser and the Hydrogen ‘Out’ Panel

Further details of the Proposed Container Units are shown at 900-0062_rev2 Hyprovide A-Series Mechanical Drawing 40ft Container.PDF. These include the “Top Frame” with the Cooling Equipment.

The Hydrogen from the Electrolysers will be further compressed so that it can be loaded into tube trailers for transport elsewhere. Storage will be for one day prior to removal. Each tube trailer has the capacity of 300 kg, there will be one trailer on site at any time with a daily collection and drop off of an empty unit.

Each of the two Compressor Systems has the following modules:

Control Cabinet – contains all the electrical / electronic control equipment required to operate the Compressor

• Power Cabinet – contains all the electrical power equipment required to operate the Compressor

• Cooling System – supplies the cooling to keep the Compressor within its operating temperature range

• Compressor Unit – compresses hydrogen from inlet to outlet pressure

• Dispenser Unit – controls the Hydrogen feed to the Dispenser

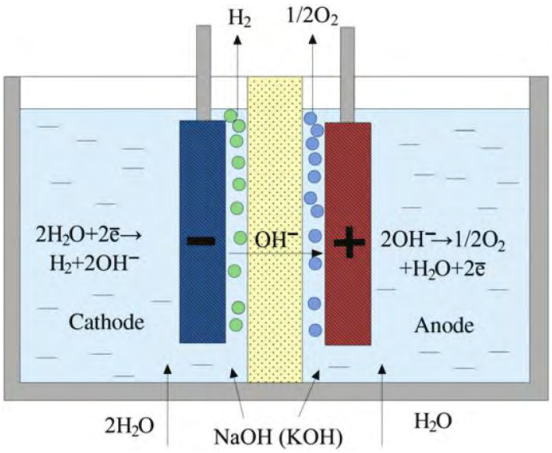
• Pneumatics – controls the pneumatically operated valves in the Dispenser

Principle reactions and typical process diagram

Cathode: $2H_2O_{(l)}+2e^-\rightarrow H_{2(g)}+2OH^-_{(aq)}$

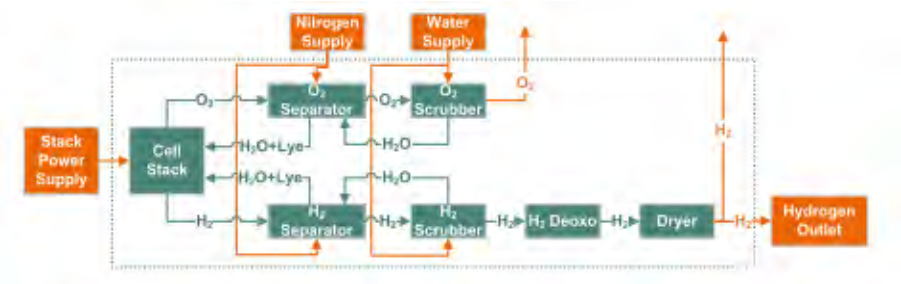
Anode: $2OH^-_{(aq)}\rightarrow 0.5O_{2(g)}+H_2O_{(l)}+2e^-$

Overall reaction: $H_2O_{(l)}\rightarrow H_{2(g)}+0.5O_{2(g)}$



(from Hydrogen Production by Membrane Water Splitting Technologies by Kamaroddin, Sable and Abdullah 2018)

Flow diagram for the GHS Process



The Lye is in this case KOH, Potassium Hydroxide, and effectively acts as a catalyst for the electrochemical reaction and is not depleted by it so no recharge is required. The re-charge of the reaction stack as the H and OH ions are removed by the process is demineralised water.

Drinking Water for demineralisation	7.8 m3 per day
Surplus water to be discharged approximately	8.64 m3 per day,
Total Hydrogen	387 kg per day (1 No Container and 2 No A90 GHS Units)
Total Oxygen	3144 kg per day
Pressure in Stack	35 bar
Temperature in Stack	Average 65^{C} during production
Pressure in Compressor	300 bar
Flow Rate	180 Nm3/hr
Operating Temperature in Compressor	-10^{C} to $+50^{C}$
Nitrogen for purging (per purge)	$1.3Nm^3$
Hydraulic Oil for the Compressor	$<5m^3$ per annum

The system monitors the quality of the H_2 and O_2 produced and if the purity of the H^2 drops below the design limit then the system will be shut down with a Nitrogen purge, to ensure the quality of the H_2 passed to the Tube Trailer is maintained. The amount of any discharge will be very small and may comprise $H_{2'}$ O_2 and possibly some aerolised K that has escaped the scrubber but none of these are considered by the EA to be air pollutants. If NaOh were to be used in place of the KOH, that would not produce and air polluting discharge either. For the O_2 the quality of the gas is also monitored and if the detection of Hydrogen is above 10% of the LEL, the Process Controller removes power from the non-ATEX components and shuts down the system. Again the discharge from the O_2 stack will not contain any components that are considered air pollutant by the EA and as the maximum rate of discharge is 90 Nm^3/hr any discharge during the limited duration of a shutdown will be very small.

The instrumentation and control components, including all safety related sensors and actuators are supplied by a uninterruptible power supply (UPS), ensuring controlled shutdown of the electrolysis system and continued recording of measured values in the event of a power failure at the site. The UPS will continue to power everything on the 24V supply loop e.g. instrumentation, PLC etc and the PLC will notify the relevant parties there has been a loss of power. The UPS will continue to provide power for approximately 30-60 minutes. The system will revert to shutdown until power has been restored. This is the same for both the Electrolyser and our Compression Unit.

Page 19

Sections 3.5, 3.6, 3.7, 3.8 and 3.9

Remain applicable except that

Changes to Annexes F and G are dealt with below.

Pages 22 & 23

Sections 4.1, 4.2, 4.3, 4.4, 4.5 and 4.7

Remain applicable except that

The stack heights are 7.5 m.

Section 4.6

A new Noise assessment at Appendix 3 has shown that provided the plant in its new location does not emit more than 70 dBA at 1 metre distant it will not cause a problem at any time at the nearest Residential Receptors.

Page 24

Sections 5.1, 5.2, 5.3 and 5.4

Remain applicable.

Annexes

Annex A Drawings and Figures

Annex B Technical Data

GHS Hyprovide™ A-Series Brochure at Appendix 4

Annex C Environmental Risk Assessment

Table 1

Point Source\Releases to Air	The stack heights are 7.5m
Emissions to Water	The discharge consent for the mineralised water is a Trade Effluent Consent from Wessex Water

Table 2

Odour	The nearest residents in Arrowsmith Road are some 350m distant form the revised location.

Table 3

Noise	The nearest residents in Arrowsmith Road are some 350m distant form the revised location.

Annex D Noise Assessment

As the location of the plant has changed a Revised Noise assessment has been carried out and is attached at Appendix 3. This assessment shows that provided the sound emission from the plant does not exceed 70dB $L_{Aeq,T}$ at one metre distance, any noise from the facility is not predicted to result in an "adverse" impact at the nearest residential receptors at any time. This plant will be designed and constructed to ensure that this level of sound emission is met. Therefore although the plant will now be sited nearer to the Residential Receptors it is still considered to meet the requirements of the Part B1 Guidance Notes on Noise.

Annex E Site Condition Report

The Site Condition Report for the existing Permit refers to a site that is some 520m to the East of the new location. The new location is on the Closed Landfill of Whites Pit whereas the previous site was on an area of ground adjacent to the landfill where the River Terrace Gravel had been extracted years ago to form a Balancing Lake for the Landfill run-off. More recently the balancing function was moved elsewhere and the site was backfilled with selected inert waste in anticipation of industrial use.

Annex B of that report includes a comprehensive Groundsure Report which is included with this application as the report contains a lot of data that is still relevant for the new location and to obtain a new Groundsure Report centred on the new site is considered somewhat of an overkill. The relevance of each Section of the Groundsure Report to the new location is considered in turn. Following that there is a description of the Conditions obtaining at the new site.

1. Past Land Use
   The area considered is within 500m of the site and includes the new location.
2. Past Land Use un-grouped
   This shows that the excavations for sand and gravel at Whites Pit were active in 1988, in fact they commenced considerably prior to that and the backfilling with Municipal Waste was also under way at the new location.
3. Waste and Landfill
   This gives details of the Permits or Licences under which Municipal Waste was tipped at Whites Pit including the new location of the Hydrogen Generating Plant. It also gives details of the plethora of Licences and Permits that have been given over the years for various Waste related activities at Whites Pit and the area to the North East.
4. Current Industrial Land Use
   This also gives details of some Pollution incidents in 2003 which were deemed to only have a Minor Land Impact. None of these affected the new site of the Hydrogen Generating Plant.
5. Hydrogeology
   This is not considered relevant to the new site as it is on a Landfill the effects of which on any Aquifers and abstractions are already covered by the Environmental Permits which require Monitoring of both the ground and surface water surrounding the new site.
6. Hydrology
   The comments for Section 5 also apply here.
7. River and Coastal Flooding
   Not relevant due to elevation and distance to Main River.

8. Surface Water Flooding
   Not relevant due to the elevation of the new site compared to the Permitted site.
9. Groundwater Flooding
   Not relevant due to the elevation of the new site compared to the Permitted site
10. Environmental Designations
    This is relevant as it considers records within 2000 m of the Permitted site and so effectively includes the new location.
11. Visual and Cultural Designations
    This is relevant as it considers records within 250 m of the Permitted site and so effectively includes the new location
12. Agricultural Designations
    This is relevant as it considers records within 250 m of the Permitted site and so effectively includes the new location
13. Habitat Designations
    This is relevant as it considers records within 250 m of the Permitted site and so effectively includes the new location
14. Geology 1:10,000
    This is relevant as it considers records within 500 m of the Permitted site and so effectively includes the new location. However the diagram on page 89 is not correct as it fails to show that all of Whites Pit is Made Ground
15. Geology 1:50,000
    This is relevant as it considers records within 500 m of the Permitted site and so effectively includes the new location. However the diagram on page 95 is not correct as it fails to show that all of Whites Pit is Infilled Ground
16. Boreholes
17. Natural Ground Subsidence
    This is not relevant as it only considers records within 50m of the Permitted location and the new location is on a Closed Landfill,
18. Mining, Ground Workings and Natural Cavities
    This is relevant as it considers records within 500 or 1000 m of the Permitted location and shows the new location as being on an area which has been subject to surface ground workings ie the winning of gravel and sand which is correct.
19. Radon
    This Is not relevant for the new site as it is on a Closed Landfill
20. Soil Chemistry
    This Is not relevant for the new site as it is on a Closed Landfill
21. Railway Infrastructure and Projects
    This is relevant as it considers records within 250 m of the Permitted location and therefore effectively includes the new location on the Closed Landfill

Annex F Environmental Management System

Section 1

The site NGR is now SZ 02891 96743.

Although the facility in its new location meets the principles for a Low Impact Installation", the EA have requested a full Application as the plant will now be sited on a closed Landfill.

Section 2

The NGR is now OS X (Easting) 402891

OS Y (Northing) 096743

Section 3

The plant now comprises 2 No 40 ft ISO type Shipping Containers each housing:

• Control Cabinet – contains all the electrical / electronic control equipment required to operate the Electrolyser

• Power Cabinet – contains all the electrical power equipment required to operate the Electrolyser

• D.I. Water Plant – creates the D.I. Water required to operate the Electrolyser

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• Cooling System – supplies the cooling to keep the Compressor within its operating temperature range

• Compressor Unit – compresses hydrogen from inlet to outlet pressure

• Dispenser Unit – controls the Hydrogen feed to the Dispenser

• Pneumatics – controls the pneumatically operated valves in the Dispenser

High pressure Alkaline Electrolysers are now to be used.

Power consumption is now 450kW per Electrolyser and total hydrogen production is 16.2 kg/hr from each container.

The new site layout is shown at Site Layout Plans A0 and A3 at Appendix 5.

Section 4

The new location is so close to the previous, albeit at increased elevation, that this Section is still applicable except that the distance to Canford Heath is now 180 m and the others will also have increased and the nearest residential property is now 350 m away. Eastlands Farm is now 1400 m distant.

Section 5

Remains applicable

Section 6

The plant now comprises 2 No 40 ft ISO type Shipping Containers each housing:

• Control Cabinet – contains all the electrical / electronic control equipment required to operate the Electrolyser

• Power Cabinet – contains all the electrical power equipment required to operate the Electrolyser

• D.I. Water Plant – creates the D.I. Water required to operate the Electrolyser

• Cooling System – supplies the cooling to keep the Electrolyser within its operating temperature range

• Electrolyser and Purifying Plant– splits D.I. Water to purified Hydrogen and Oxygen

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• Compressor Unit – compresses hydrogen from inlet to outlet pressure

• Dispenser Unit – controls the Hydrogen feed to the Dispenser

• Pneumatics – controls the pneumatically operated valves in the Dispenser

The discharge consent is a Trade Effluent Consent from Wessex Water.

Section 7

Remains applicable

Appendix 1 EMS Procedures

These remain the same except that

Annex G Accident Management Plan

Section 1

The NGR is now SZ 02891 96743

Although the facility in its new location meets the principles for a Low Impact Installation", the EA have requested a full Standalone Installation Application as the plant will now be sited on a closed Landfill and the plant will be operated in accordance with the Environmental Permitting (England and Wales) Regulations 2018.

Table 2.2

Section 3 Flooding

The site is now on top of the landfill and flooding is therefore a Low probability.

Annex H Discharge Consent

.

The discharge consent is an existing Trade Effluent Consent from Wessex Water to discharge Leachate and Groundwater from the Landfill site rather than a Surface or Groundwater Discharge Consent from the EA and remains applicable. The Aqueous Waste is surplus mineralised water and will be pumped to the Water tank adjacent to the Methane Stripper and from there it will mixed with extracted leachate from the Landfill and pumped along with extracted groundwater to the sewer. For this reason this discharge has not been included as Point Source Emission to a Sewer in Table 2 of Form Part B3 and nor has a Part B6 Form been completed.

Any surface water from the plant will be taken to a Petrol and Oil Interceptor before discharging via a valved connection to the Perimeter Surface Water ditch on the landfill which then runs through a series of reed beds before reaching the Knighton Stream where there is an existing EA discharge consent. The provision of the P&O Interceptor is purely precautionary good practice in case there is a spillage from a vehicle visiting the site but as there are only to be two trailer removals per day the likelihood of such an incident is remote. For this reason the surface water discharge is considered to be "clean" and consequently has not been included as Point Source Emission in Table 2 of Form B3 and nor has a Part B6 Form been completed.

Question 6 **Environmental Risk Assessment**

Reference **LCL/CRE/H2Whites Pit/202205/B2ERA**

The Environmental Risk Assessment of the previous Low Impact Application remains applicable except that there are the following changes to that document, none of which affect the conclusions drawn.

Annex C Environmental Risk Assessment

Table 1

Point Source\Releases to Air	The stack heights are 7.5m
Emissions to Water	The discharge consent for the mineralised water is a Trade Effluent Consent from Wessex Water

Table 2

Odour	The nearest residents in Arrowsmith Road are some 350m distant from the revised location.

Table 3

Noise	The nearest residents in Arrowsmith Road are some 350m distant from the revised location.

Part B3 new Bespoke Installation Permit

Question 3 **Operating techniques**

Table 3 Technical Standards

Reference **LCL/CRE/H2Whites Pit/202205/B3T3**

The Installation is for the production of Green Hydrogen from demineralised tap water using Electrical energy from a renewable source in this case adjacent Solar Panels. The process of Hydrogen Production from the splitting of water is well understood and for Electrolysis the options are Alkaline, Solid Oxide and PEM. Of these only Alkaline and PEM are commercially acceptable and there are no BREF notes, indicative BAT or benchmark emission levels for either process.

The BREF notes are pooled information from EU Member States on BAT and emerging techniques with a view to preventing or minimising emissions and reducing the impact on the Environment of various large Industrial processes. As is set out in the answer to Appendix B3, 2, the potential emissions from the proposed system are Hydrogen, Nitrogen, Oxygen and very small quantities of Potassium or Sodium. As two of these are components of air anyway and none of the others are regarded as pollutants that can diminish air quality (There are no Emission benchmarks for any of these gases in Annex 1 of EPR 4.03) it is considered that the emissions to air aspect of BREF notes are not relevant nor are those related to liquid discharges as these are also innocuous.

The proposed installation has also been considered in respect of EPR 4.03, which applies to the production of gases such as Hydrogen, in the answer to Appendix B3,2 .

The facility will be operated in accordance with the principles of good plant management and environmental practice as set out in Documents:

LCL/CRE/H2Whites Pit/202205/B2A1A	Management Techniques
LCL/CRE/H2Whites Pit/202205/B2A1C	Abatement Techniques
LCL/CRE/H2Whites Pit/202205/B2A1G	Preventing Accidents
LCL/CRE/H2Whites Pit/202205/B2A1H	Noise
LCL/CRE/H2Whites Pit/202205/B2A1I	Emission of Polluting Substances
LCL/CRE/H2Whites Pit/202205/B2a1J	Odours

Document reference LCL/CRE/H2 Whites Pit/202205/B3 3a

Describe the type of facility or operation you are applying for and provide site infrastructure plans, location plans and process flow diagrams or block diagrams to help describe the operations and processes undertaken. Give the document references you use for each plan, diagram and description.

The Installation is for the production of Green Hydrogen from demineralised tap water using Electrical energy from a renewable source in this case adjacent Solar Panels. The process of

Hydrogen Production from the splitting of water is well understood and for this installation Alkaline Electrolysis using plant and equipment from GHS will be used.

The Electrolyser is to be sited at Whites Pit, Arrowsmith Road, Wimborne, Dorset on the Northern Area of the Closed Landfill. The location together with the arrangement of the plant on site is shown on the Drawings and plans at Appendix 5. This proposed facility already has a Low Impact Permit for the previous location shown on the Site Location Plan also at Appendix 5. There is access from the Electrolyser to the Public Highway is via a series of metalled and surfaced tracks and roads to Magna Road. These tracks and roads are shared with the users of the facilities associated with Whites Pit and the adjacent Waste Recycling and Energy Recovery Operations.

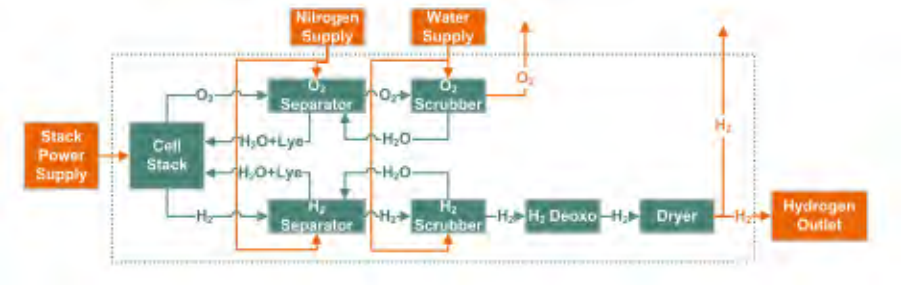
The Principle reactions are:

Cathode: $2H_2O_{(l)}+2e^- \rightarrow H_{2(g)}+2OH^-_{(aq)}$

Anode: $2OH^-_{(aq)} \rightarrow 0.5O_{2(g)}+H_2O_{(l)}+2e^-$

Overall reaction: $H_2O_{(l)} \rightarrow H_{2(g)}+0.5O_{2(g)}$

The process flow is shown below. The Nitrogen supply is for purging. The Hydrogen is taken to a compressor for further compression prior to being sent to the tube trailers for subsequent dispatch to Users elsewhere.



There are no BREF notes, indicative BAT or benchmark emission levels for the process.

Question 3b General requirements Table 4

As the location of the proposed plant has changed a new Noise Assessment has been carried out and this is included in Appendix 3 below, Document LCL/CRE/H2 Whites Pit/202205/B2A1H/New Noise Assessment

Question 4 **Monitoring**

Reference **LCL/CRE/H2 Whites Pit/202205/B3 4a**

It was not possible to enter a reference in space at the bottom of page 9 and so the comments on questions 4b, 1-9 are set out below.

As each container has two electrolysers there are 4 no emission points two for Hydrogen and two for Oxygen.

The Hydrogen stack is only used during start up and close down or emergency. The discharge can only comprise H_2, O_2, H_2O and possibly some aerolised Lye, Na or K. Since none of these are considered by the EA to be air pollutants monitoring of the discharge is not considered to be necessary. However within the process the H_2 stream is sampled to ensure purity and it is this monitoring that will determine whether or not the process should be shut down. Sampling points will be incorporated on the stacks in accordance with the principles of BS EN 15259 to allow occasional sampling of the stacks to check for H_2 and O_2.

The Oxygen stack is used continually during electrolysis. The discharge will be O_2 but might in exceptional circumstances also contain H_2, H_2O and possibly some aerolised Lye, Na or K. Since none of these, nor O_2, are considered by the EA to be air pollutants monitoring of the discharge is not considered to be necessary. However as explained elsewhere within the process the O_2 stream is sampled to ensure purity and it is this monitoring that will determine whether or not the process should be shut down. However a sampling point will be incorporated on the stack in accordance with the principles of BS EN 15259 to allow occasional sampling of the stack to check for H_2 and O_2.

It should be borne in mind that the electrolysis of H_2O to produce H_2 with an O_2 discharge already has a Low Impact Permit in its previous location.

Question 6 **Resource efficiency and climate change**

6a Describe the basic measures for improving how energy efficient your activities are

Reference **LCL/CRE/H2 Whites Pit/202205/B3 6a**

The Process is an electrochemical reaction with the quantity of hydrogen produced being directly dependent upon the electrical energy sent to the stack. There is therefore limited scope to make savings in electrical energy without reducing the quantity of product. That said the Operation will be regularly reviewed to ensure that the ancillary systems are as energy efficient as possible and that will extend to the efficiency of the electrodes. Where appropriate the speed of drives may be adjusted using inverters to optimise their efficiency.

In respect of the IPPC Directive a holistic rather than particular view of the facility should be taken. The aim of the Directive is to prevent or reduce pollution of the atmosphere, water and soil, as well as the quantities of waste arising from industrial and agricultural installations, to ensure a high level of environmental protection. The Facility will produce Hydrogen using Solar Energy that will not give rise to polluting emissions and that Hydrogen will be a transportable fuel that will be able to replace the use of fossil fuels in vehicles with fuel cells which will lead to a reduction of CO2, NOx, Benzene and other airborne pollutants. It will therefore allow others to meet the IPPC Directive.

The breakdown of the Energy in the systems is as follows:

Input Electrical Energy	
Stack Power Supplies	488 kW
Auxiliary Equipment	39 kW
Compressor Unit	60 kW
Energy in Hydrogen produced	319 kW

6b Provide a breakdown of any changes to the energy your activities use up and create

Reference **LCL/CRE/H2 Whites Pit/202205/B3 6a**

See above

6d Explain and justify the raw and other materials, other substances and water that you will use

Reference **LCL/CRE/H2 Whites Pit/202205/B3 6d**

The need for the production of Hydrogen is set out in the document “UK Hydrogen Strategy” published by HM Government in August 2021, with an ambition for “5GW of low carbon hydrogen

production capacity by 2030". The proposed plant is therefore in accordance with Government Policy and requires the following raw materials and other substances to function.

Tap water is required for the electrolysis using electrical energy from Solar Panels
Resins required for demineralising tap water.
Lye required as electrolyte to improve process efficiency (not consumed by process)
Oil required for compressor.

The control system within the plant will ensure that efficient use is made of the raw materials minimising the amount of wastage. When not required the Solar Panel output will be directed to the Grid.

6e Describe how you avoid producing waste in line with Council Directive 2008/98/EC on waste

Reference **LCL/CRE/H2 Whites Pit/202205/B3 6e**

The process has four principle waste streams mineralised water, spent ion exchange resins and filters and Oxygen. It is not possible to recover those wastes at present but the mineralised water is used to dilute the leachate from the landfill prior to its discharge and the spent residues are sent to landfill. During start-up and close-down there will be a purge of Hydrogen, Oxygen and Nitrogen. The possibly of utilising the O_2 waste stream will form part of the annual review of the Plant's performance.

Other wastes may arise as a result of servicing or maintenance of the plant but these will be de minimus. Where any item or component of the plant needs to be replaced, a reconditioned replacement will be used if possible and those items removed will be sent for re-conditioning if that is possible. In the design of the plant standard parts will be used wherever possible to reduce the cost of manufacture and increase the likelihood of re-conditioning.

Part B3 Appendix 2- Specific questions for the chemical sector

Question 1 **Provide a technical description of the proposed activities**.

Reference **LCL/CRE/H2 Whites Pit/202205/B3 App2 1**

Process description

The process is the production of "green"hydrogen by the electrolysis of de-mineralised water in a highly efficient pressurised alkaline electrolyser using electricity from renewable sources. The hydrogen will be compressed on site for loading into tube trailers for transport to Users.

Main plant and equipment used

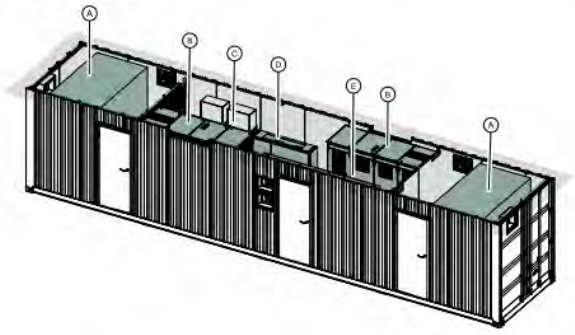
The electrolysis will be carried out in ISO Shipping type containers as shown below with 2 No A90 HyProvide A series electrolysers from Green Hydrogen Systems, brochure attached, in each container. The Electrolyser System will be supplied as a complete unit and will have the following modules:-

Overview of Components in the 40 ft Container

The 40 ft container is separated into three compartments. The power room containing the water module, the main control, and the two stack power supplies forms the middle of the container. The two process modules are placed in each end of the container in their dedicated process room. The power connection box is accessible from the outside of the container.

The cooling systems, the ventilation chimney, the hydrogen and oxygen vents, and the roof module are placed on the top frame of the container.

Components in the Container



A. Process module
B. Stack power supply
C. Water module
D. Power connection box
E. Main control

.

• Control Cabinet – contains all the electrical / electronic control equipment required to operate the Electrolyser

• Power Cabinet – contains all the electrical power equipment required to operate the Electrolyser

• D.I. Water Plant – creates the D.I. Water required to operate the Electrolyser

• Cooling System – supplies the cooling to keep the Electrolyser within its operating temperature range

• Electrolyser and Purifying Plant– splits D.I. Water to purified Hydrogen and Oxygen

• Hydrogen ‘Out’ Panel – controls the Hydrogen feed to the Compressor System

• Pneumatics – controls the pneumatically operated valves in the D.I. Water Plant, the Electrolyser and the Hydrogen ‘Out’ Panel

Further details of the Proposed Container Units are shown at Appendix 5 900-0062_rev2 Hyprovide A-Series Mechanical Drawing 40ft Container.PDF. These include the “Top Frame” with the Cooling Equipment.

The Hydrogen from the Electrolysers will be further compressed so that it can be loaded into tube trailers for transport elsewhere. The Compressor System has the following modules:

Control Cabinet – contains all the electrical / electronic control equipment required to operate the Compressor

• Power Cabinet – contains all the electrical power equipment required to operate the Compressor

• Cooling System – supplies the cooling to keep the Compressor within its operating temperature range

• Compressor Unit – compresses hydrogen from inlet to outlet pressure

• Dispenser Unit – controls the Hydrogen feed to the Dispenser

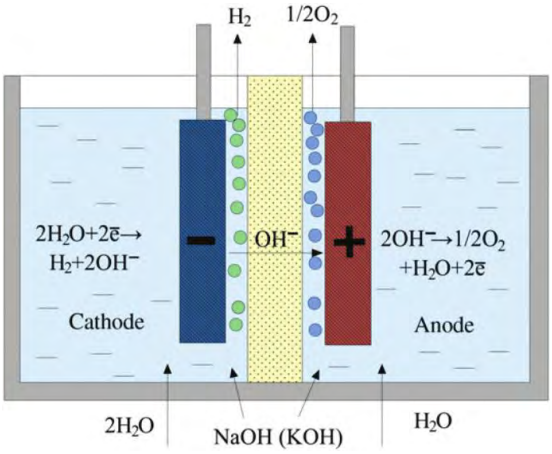
• Pneumatics – controls the pneumatically operated valves in the Dispenser

Principle reactions and typical process diagram

Cathode: $2H_2O_{(l)}+2e^- \rightarrow H_{2(g)}+2OH^-_{(aq)}$

Anode: $2OH^-_{(aq)} \rightarrow 0.5O_{2(g)}+H_2O_{(l)}+2e^-$

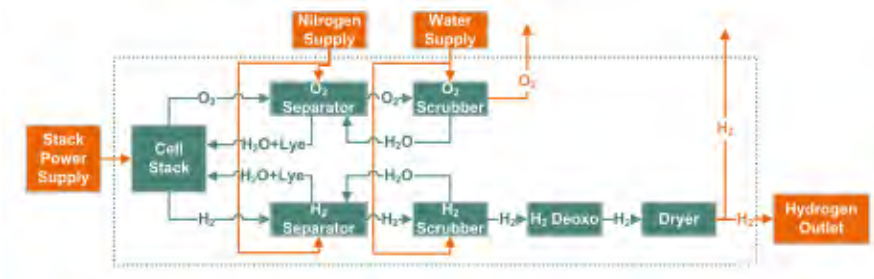
Overall reaction: $H_2O_{(l)} \rightarrow H_{2(g)}+0.5O_{2(g)}$



(*from Hydrogen Production by Membrane Water Splitting Technologies by Kamaroddin, Sable and Abdullah 2018)*

Material mass flows (including by products and side streams) and the temperature and pressures in major vessels

Flow diagram for the GHS Process



The Lye is in this case KOH, Potassium Hydroxide, and effectively acts as a catalyst for the electrochemical reaction and is not depleted by it so no recharge is required. The re-charge of the reaction stack as the H and OH ions are removed by the process is demineralised water.

Drinking Water for demineralisation	7.8 m3 per day
Surplus water to be discharged approximately	8.64 m3 per day,
Total Hydrogen	387 kg per day (1 No Container and 2 No A90 GHS Units)
Total Oxygen	3144 kg per day
Pressure in Stack	35 bar
Temperature in Stack	Average 65^{C} during production
Pressure in Compressor	300 bar
Flow Rate	180 Nm3/hr
Operating Temperature in Compressor	-10^{C} to $+50^{C}$
Nitrogen for purging (per purge)	$1.3Nm^3$
Hydraulic Oil for the Compressor	$<5m^3$ per annum

All emission control systems, both hardware and management systems, for situations with their potential for significant release as relevant to the minimisation of emissions in particular the main reactions and their control

The system monitors the quality of the H_2 and O_2 produced and if the purity of the H_2 drops below the design limit then the system will be shut down with a Nitrogen purge, to ensure the quality of the H_2 passed to the Tube Trailers is maintained. The amount of any discharge will be very small and may comprise H_2, O_2 and possibly some aerolised K that has escaped the scrubber but none of these are considered by the EA to be air pollutants. If NaOh were to be used in place of the KOH, that would not produce and air polluting discharge either. For the O_2 the quality of the gas is also monitored and if the detection of Hydrogen is above 10% of the LEL, the Process Controller removes power from the non-ATEX components and shuts down the system. Again the discharge from the O_2 stack will not contain any components that are considered air pollutants by the EA and as the maximum rate of discharge is 90 Nm^3/hr any discharge during the limited duration of a shutdown will be very small.

The instrumentation and control components, including all safety related sensors and actuators are supplied by a uninterruptible power supply (UPS), ensuring controlled shutdown of the electrolysis system and continued recording of measured values in the event of a power failure at the site. The UPS will continue to power everything on the 24V supply loop e.g. instrumentation, PLC etc and the PLC will notify the relevant parties there has been a loss of power. The UPS will continue to provide power for approximately 30-60 minutes. The system will revert to shutdown until power has been restored. This is the same for both the Electrolyser and our Compression Unit.

Applicable PED Category

Under the Pressure Equipment Directive 2014/68/EC, Pressure Equipment systems are categorised based on the pressure and volume of internal fluid.

Fluid: - Hydrogen (Group 1 gas - flammable and explosive).

Pipework: - Group 1 gas in pipework less than 25mm DN (internal diameter) this is assessed under SEP

HMI

The HMI will display the following:-

- • Operations information

- • Supply progress read-out (including flow rate and total volume dispensed.
- • Pressure of storage tanks
- • Temperature of storage tanks
- • Fault finding information
- • Cooling status
- • Actuated valve status
- • H2 detection status

OPERATING MODES
The following are the modes of operation:-

- • Shutdown
- • Standby
- • Start up
- • Pressurisation
- • Supply (compressors must still be operational during supply)

SAFETY / MAINTENANCE FUNCTIONS
The following are the safety/maintenance functions of the system:-

- • Pressure monitoring for leaks
- • Emergency shutdown
- • Hydrogen detection
- • Maintenance Mode

Comparison with the indicative BATs and benchmark emission levels standards in the Inorganic Chemical TGNs, additional guidance EPR 4.01 "The production of large volume organic chemicals", EPR 4.02 "Speciality organic chemicals sector", EPR 4.03 "Inorganic chemicals sector" and the seven chemical sector BREFs.

The Installation is for the production of Green Hydrogen from demineralised tap water using Electrical energy from a renewable source in this case Solar Panels. The process of Hydrogen Production from the splitting of water is well understood and for Electrolysis the options are Alkaline, Solid Oxide and PEM. Of these only Alkaline and PEM are commercially acceptable and there are no BREF notes, indicative BAT or benchmark emission levels for either process.

The BREF notes are pooled information from EU Member States on BAT and emerging techniques with a view to preventing or minimising emissions and reducing the impact on the Environment of various large Industrial processes. As has been detailed above the potential emissions from the proposed system are Hydrogen, Nitrogen, Oxygen and very small quantities of Potassium or Sodium. As two of these are components of air anyway and none of the others are regarded as pollutants that can diminish air quality (There are no Emission benchmarks for any of these gases in Annex 1 of EPR 4.03) it is considered that the emissions to air aspect of BREF notes are not relevant nor are those related to liquid discharges as these are also innocuous.

The proposed installation has also been considered in respect of EPR 4.03 which applies to the production of gases such as Hydrogen. The Key issues are Fugitive emissions to air, Point Source

emissions to air, Waste minimisation and waste disposal routes, Point source emissions to water, Odour, Energy Efficiency, Noise and Vibration and Accident prevention and control.

1.0 Managing your Activities

The environmental performance of the system will be monitored and benchmarked with a review at least once a year (Annual Performance Review) with a view to producing and implementing an on-going Improvement Programmes. The indicators will be based on tonnes of inorganics produced as they provide a good basis for measuring performance year on year.

The Alkaline process has been selected rather than a PEM process for the following reasons:

Mature Technology	products built commercially proven pressurised alkaline technology
High Efficiency	one of the most efficient solutions on the market with competitive energy to hydrogen conversion
Dynamic operations	the electrolysers are designed to operate handle variable loads suitable for renewable energy
Durability	high durability (10+ year stack durability) and good system uptime
High output pressure	the 30 bar hydrogen output pressure allows for a small product footprint and lower compression costs
Compact Design	Small footprint due to compact modular design increasing number of applications
Sustainable process	Production process independent from scarce and price-sensitive materials like iridium and platinum

2.0 Operations

The potential environmental impacts have been taken into consideration whilst designing the proposed plant in accordance with the objectives of Section 2.1 to produce an installation that is compact and makes efficient uses of resources in a well tried system.

A full HAZOP study has been carried out and forms part of the Operation Manual.

The process is well understood and there is no storage of any reactive chemicals on the site as the quantity of Lye (Electrolyte) required at .88m3 is very small. Over time the Lye will degrade, therefore it's changed. From past experience this has been around 5 years however, the electrolyte is tested regularly and is changed when required during plant servicing obviating the need for site storage.

The same applies to the wastes which are spent water treatment residues which can be kept on site awaiting collection for subsequent proper disposal and excess mineralised water which will be sent to the Landfill Leachate methane stripper to assist with dilution prior to being pumped to the WWA TEC discharge.

The noise study has shown that provided the operation of the plant is limited to 70dBA at one metre then no problems will be caused at the nearest residential receptors and in the commissioning of the

plant the noise emissions will be checked to ensure compliance with the design requirement and the appropriate action taken if the design limit is exceeded. The Noise emissions will form part of the Annual Performance Review referred to above.

In the design of the plant the possibility of over-pressure situation arising has been considered as part of the HAZOP study and the appropriate action to take in each circumstance set out.

The Operation of the plant does not give rise to the emission of VOC's or other similar pollutants.

The generation of Hydrogen is an electrochemical reaction that is driven by the DC electrical current and is therefore very controllable and will fail safe if the current is cut off. The system that is to be used has been developed to optimise the amount of hydrogen generated by control of temperature and pressure in the Stack which has also involved the careful selection of the materials and construction of the stack body and the electrodes to ensure that they can withstand the caustic environment without loss of function for extended periods. However should a leak occur there is a drip tray below the Electrolyser with a level switch which will be triggered sending the Electrolyser into a shutdown. All the pipework between the stack and the compressor and the compressor and the tube trailers has been designed to accommodate changes in temperature, pressure or ground movement without undue distress or leakage and with provision for access for monitoring and cleaning in accordance with good practice.

The requirement for purging at start-up and close-down, emergency or planned has been incorporated into the design as has the ability to carry out regular servicing and maintenance of all the equipment without giving rise to unacceptable emissions to air, land or water. At start-up, DC power is supplied to the cell stack from the stack power supply. A small amount of hydrogen and oxygen is generated and the pressure in the cell stack and the gas systems in the process module increases. The produced hydrogen and oxygen are used to purge the nitrogen out of the gas systems, and the gasses are vented to the atmosphere

The stages of the process subsequent to generation have been designed to allow the purification and drying of the evolved gases to take place in a resource efficient manner at the same time preventing unauthorised emissions. From the scrubbers, the hydrogen flows through the deoxidisation module, and the oxygen is led to the oxygen outlet. In the hydrogen line, the deoxidisation module H2 Deoxo removes any excess oxygen, leaving the hydrogen very pure. The deoxidised hydrogen flows through the dryer module where water vapour is removed from the gas.

These processes have been designed to minimise the use of water, re-using where possible and instrumentation has been installed to detect malfunction with set alarms and process controls to allow any malfunctions to be corrected quickly.

As has been set out above any emissions that a malfunction of the process might cause to air would not be those that the EA considers to be Pollution of the Atmosphere and from part of routine Air Quality Monitoring. Such purification as takes place is to ensure the quality of the product which is itself not a pollutant rather than to limit the emission to air of unacceptable quantities of pollutants.

3.0 Emissions and monitoring

As indicated above the facility will not give rise to emissions of Particulate Matter or Volatile Organic compounds to air. Such emissions as there will be to air will not be of substances that will give rise to Air Pollution. However, monitoring of the system will ensure that the purity of the continuous Oxygen discharge is maintained. Although it is intended to discard the Oxygen the option of

capturing this stream for a use elsewhere will be kept under review. The hydrogen stream will also be monitored to ensure that its purity is maintained.

The stack heights, together with the emission velocities, the location of the plant and the prevailing wind rose are such that such emissions as do occur will be adequately dispersed.

The emissions to water apart from clean surface water will be mineralised water which will be pumped to the Landfill Site Leachate Methane Stripper for mixing with the leachate prior to discharge to sewer via a Trade Effluent Consent.

The amount of cooling water will be minimised by maximising heat transfer between systems and it will be monitored at relevant points to check for losses through leakage.

Spent water treatment residues will be taken to landfill.

The plant will be designed, operated and maintained to ensure that the opportunity for fugitive emissions is kept to a minimum. In this respect the plant will not give rise to any Odour emissions.

The Noise Study has shown that the noise emissions from the plant must not exceed and this will be checked during commissioning and any corrective measure required implemented and should there be any noise complaints in the future the plant will be monitored in response.

In the Operation of the facility, where considered appropriate, an analysis will be carried out covering a broad spectrum of substances to establish that all relevant substances have been taken into account when setting the release limits. Should the process be significantly varied that might affect emissions such tests will be repeated.

Should any substances be found to be of concern, or any other individual substances to which the local environment may be susceptible and upon which the operations may impact be found, the frequency of their Monitoring will be increased.

The plant is to be sited on a Permitted Landfill which already has a Monitoring Regime to check for the effects that the previous landfilling activities may be having on the Environment. This includes surface and groundwater monitoring as well as landfill gas monitoring. The Landfill Operator has agreed to cooperate with CRE in the monitoring of the ground and surface water that may be affected by the Hydrogen Generating plant and to share results and allow monitoring personnel to enter onto each other's Permitted Areas for the purposes of Environmental monitoring.

The above has set out how the Operator considers that the proposed facility will comply with the requirement and Guidance of EPR 4.03

The following Appendices form part of this Document

Appendix 1

Standard Rules SR2009 No 2 Low Impact Permit number EPR/RP3206LB

Appendix 2

Sol Environment Application Support Documents

Appendix 2 A- Figures

Appendix 2 B- Technical Data

Appendix 2 C- ERA

Appendix 2 D- Noise Assessment

Appendix 2 E- Site Condition Report

Appendix 2 F- Working Plan

Appendix 2 G- Accident Management Plan

Appendix 2 H- Discharge Consent

Appendix 2 I-SR Permit see Appendix 1

Appendix 3

New Noise Assessment by Sol Environment

LCL/CRE/H2Whites Pit/202205/B2A1H

Appendix 4

GHS Hyprovide™ A-Series Brochure

Appendix 5

Reference **LCL/CRE/H2Whites Pit/202205/B2 5a Plans**

Site Location Plan

Site Layout Plan AO

Site Layout Plan A3

Plant Design/Process Flow

Details of Electrolyser Container 900-0062_rev2 Hyprovide A-Series Mechanical Drawing 40ft Container

Appendix 6

Planning Permission

Appendix 1

Permit

The Environmental Permitting (England & Wales) Regulations 2016

Canford Renewable Energy Limited

Canford Renewable Energy Hydrogen Plant
Energy Site Control Centre
Arena Way
Wimborne
Dorset
BH21 3BW

Permit number

EPR/RP3206LB

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number

EPR/RP3206LB

The Environment Agency hereby authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2016

Canford Renewable Energy Limited ("the operator"),

whose registered office is

Energy Site Control Centre
Arena Way
Wimborne
Dorset
England
BH21 3BW

company registration number 02890411

to operate an installation described in standard rules **SR2009 No2** at

Canford Renewable Energy Hydrogen Plant
Energy Site Control Centre
Arena Way
Wimborne
Dorset
BH21 3BW

to the extent authorised by and subject to the conditions of this permit.

Under regulation 27(2) of the Regulations, standard rules **SR2009 No2** are conditions of this permit.

Name	Date
Samantha Haddock	14/05/2021

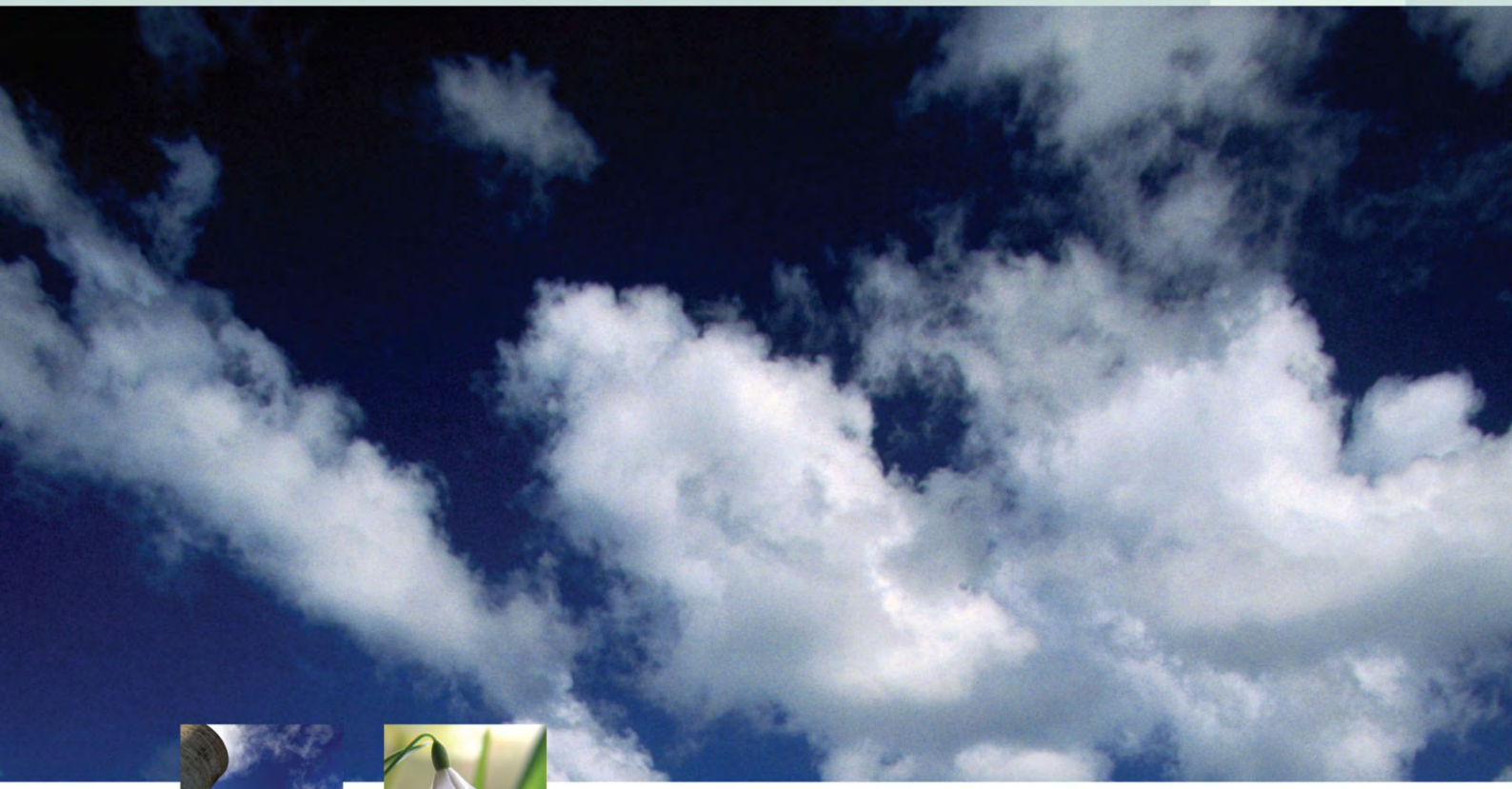
Authorised on behalf of the Environment Agency

Schedule 1 – Site plan

This is the plan referred to in the standard rules SR2009 No2

Outline of site shown in green

Appendix 2



EPR LOW IMPACT INSTALLATION PERMIT APPLICATION

Canford Renewable Energy Green Hydrogen Generation Plant

Prepared by:
Sol Environment Ltd

Date:
March 2021

Project or Issue Number:
SOL2101CRE01

Contract/Proposal No:	SOL2101CRE01
Issue:	1
Author:	Emily Hingston
	
Date:	March 2021

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VERSION CONTROL RECORD				
Issue	**Description of Status**	**Date**	**Reviewer Initials**	**Authors Initials**
1	First Issue to the Environment Agency	March 2021	SB	EH

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NON TECHNICAL SUMMARY

This document has been prepared on behalf of Canford Renewable Energy Ltd ('CRE' or '*The Applicant*' hereafter) by Sol Environment Ltd and provides supporting evidence as required by Environmental Permit Application Form Part B1 issued by Environment Agency (EA).

CRE are making this application for a Standard Rules SR2009 No.2 Low Impact Installation Permit under The Environmental Permitting (England and Wales) Regulations 2018 (as amended) in order to operate a 'green' hydrogen generation plant on their site at Whites Pit Landfill, Dorset.

The subject site is located at Whites Pit Landfill Site, Magna Road, Wimborne, Dorset, BH21 3BW.

The site currently comprises an area of compacted hardstanding currently utilised for storage and carparking adjacent to the former syngas compound and workshop.

The proposed development of the site comprises a simple modular hydrogen electrolysis plant which will utilise mains water for the production of hydrogen for use by vehicles at a filling station within the wider site (but excluded from the permit boundary) or for export. Emissions are limited to oxygen and mineralised water only.

The activities meet the definition of an '*Installation'* by virtue of Schedule 1:

- Section 4.2 'Inorganic Chemicals' Part A(1)(a)(i) *Producing inorganic chemicals such as:—*
  (i) gases, (for example ammonia, hydrogen chloride, hydrogen fluoride, hydrogen cyanide, hydrogen sulphide, oxides of carbon, sulphur compounds, oxides of nitrogen, hydrogen, oxides of sulphur, phosgene).

In addition, it is considered that the facility can meet the principles required to be determined as a '*Low Impact Installation*', as follows.

The Installation must not:

- *Release more than 50 cubic metres per day of waste water* – the plant will produce only approximately 2.7 m^3 per day of waste water.
- *Have to use equipment to reduce or remove emissions before they're released into the outside environment* – emissions to atmosphere are limited to oxygen which will not require abatement.
- *Discharge emissions to groundwater* – the plant design does not include soakaway or discharge to ground or groundwater.
- *Produce more than 1 tonne of waste or 10kg of hazardous waste per day, averaged over a year, with not more than 20 tonnes of waste or 200kg of hazardous waste being released in any one day* – There is no hazardous waste produced by the plant.

- *Consume energy at a rate greater than 3 megawatts (MW)* - plant energy requirements are 1.25 MWe maximum.

The site has been designed with appropriate containment measures, does not require significant management to meet the requirements and has a low or negligible risk of noise and odour impacts occurring outside the boundary of the site.

The facility can meet all the conditions required for the Low Impact Installation Standard Rules SR2009 No.2, despite the close proximity of the Canford Heath SSSI the site is not located adjacent to this designated area and there will be no surface water discharge of aqueous waste.

General Overview

The hydrogen generation plant comprises 2 modular electrolysis units, one electrolyser BOP unit, one compressor unit, one transformer unit and two hydrogen trailer storage parking spaces.

Mains water entering the site is initially treated in a deionization unit via softening, reverse osmosis and electrode ionisation or ion exchanger.

Demineralised water then enters the electrolysis system, flows through a heat exchanger before being pumped into the stack where the production of hydrogen takes place within the electrolysis cells via the solid proton conductive membrane. Separated oxygen and hydrogen then exit the cell, with hydrogen passing through a gas/water separator before undergoing gas treatment.

Emissions from the process are limited to a single emission of oxygen to atmosphere and effluent from the water deionisation plant which comprises simply mineralised water.

The plant consumes approximately 1.25MWe of power which is provided by the adjacent solar installation and is capable of producing hydrogen at a rate of 20.5 kg/hr.

Operation of the plant is fully automated and can be undertaken from a remote location. Maintenance and environmental aspects of the plant will be managed through a dedicated management system.

Emissions to Air

Emissions to atmosphere from the plant are via emission points A1 and A2. The process electrolysis unit has two stacks, 7.6 m and 5.8 m in height. One is an oxygen exhaust and one a hydrogen shutdown vent stack. This vent stack is used periodically during nitrogen purging of the system and in the event of a safety shutdown.

The emissions form the process do not require any form of abatement.

Emissions to Controlled Water

The proposed hydrogen facility will be entirely contained within modular bunded units. All operational and storage areas of the site are located upon good quality concrete hardstanding with a sealed drainage system.

Any uncontaminated surface water run-off is directed to the existing landfill surface water drainage system.

Deionisation of incoming mains water produces an ecologically harmless effluent which is essentially mineralised water. This effluent is regarded as uncontaminated and will be discharged via sewer under the existing consent from Wessex Water.

Emissions to Land

There are no emissions to land arising from the proposed Installation.

Fugitive Emissions

The plant will not give rise to fugitive emissions and is considered non-odorous.

Noise emissions from the plant will be minimal and will not give rise to any impacts beyond the site boundary. An Environmental Noise Assessment in accordance with BS 4142 has been undertaken and concludes no significant impact at the nearest receptors. This assessment is provided in *Annex D*.

Waste / Product Management

The facility will produce hydrogen, oxygen and waste water.

Compressed hydrogen will be temporarily stored onsite within tube trailers. Storage will typically be for 1 day before being exported to the filling station located on the wider Whites Pit Landfill site for use by vehicles or exported offsite.

Additional small volumes of spent ion exchange resins and filters will be produced from the water demineralization plant. These will be transferred offsite to an appropriately licensed disposal or recovery facility.

1 INTRODUCTION

This document has been prepared on behalf of Canford Renewable Energy Ltd ('CRE' or '*The Applicant*' hereafter) by Sol Environment Ltd and provides supporting evidence as required by Environmental Permit Application Form Part B1 issued by Environment Agency (EA).

CRE are making this application for a Standard Rules SR2009 No.2 Low Impact Installation Permit under The Environmental Permitting (England and Wales) Regulations 2018 (as amended) in order to operate a hydrogen generation plant on their site at Whites Pit Landfill, Dorset.

The subject site is located at Whites Pit Landfill Site, Arrowsmith Road, Wimborne, Dorset, BH21 3BQ.

The site currently comprises compacted hard standing currently utilised for storage and carparking adjacent to the former syngas compound and workshop.

The proposed development of the site comprises a simple modular hydrogen electrolysis plant which will utilise mains water for the production of hydrogen for use by vehicles at a filling station within the wider site (but excluded from the permit boundary) or for export. Emissions are limited to oxygen and mineralised water.

The activities meet the definition of an '*Installation'* by virtue of Schedule 1:

- Section 4.2 'Inorganic Chemicals' Part A(1)(a)(i) *Producing inorganic chemicals such as:— (i) gases, (for example ammonia, hydrogen chloride, hydrogen fluoride, hydrogen cyanide, hydrogen sulphide, oxides of carbon, sulphur compounds, oxides of nitrogen, hydrogen, oxides of sulphur, phosgene).*

The facility can meet the criteria to be considered a low impact installation.

The remainder of this application support document is structured accordingly:

- Section 2: Provides a planning history of the site and associated activities;
- Section 3: Provides specific nature of the proposed activities associated with the application;
- Section 4: Provides specific nature and detailed description of the emissions to air and water associated with the Installation;
- Section 7 Provides an Environmental Impact and Assessment of the Installation.

All technical appendices associated with the Installation are included within the following:

- Annex A: Figures;
- Annex B: Technical Information;
- Annex C: Environmental Risk Assessment;
- Annex D: Noise Impact Assessment;

- Annex E: Site Condition Report;
- Annex F: Environmental Management System Manual;
- Annex G: Accident Management Plan;
- Annex H: Existing Discharge Consent; and
- Annex I: SR2009 No.2 Low Impact Installation Permit.

The site location, the proposed Installation Boundary and the proposed site layout are provided overleaf in Figures 1.1, 1.2 and 1.3.

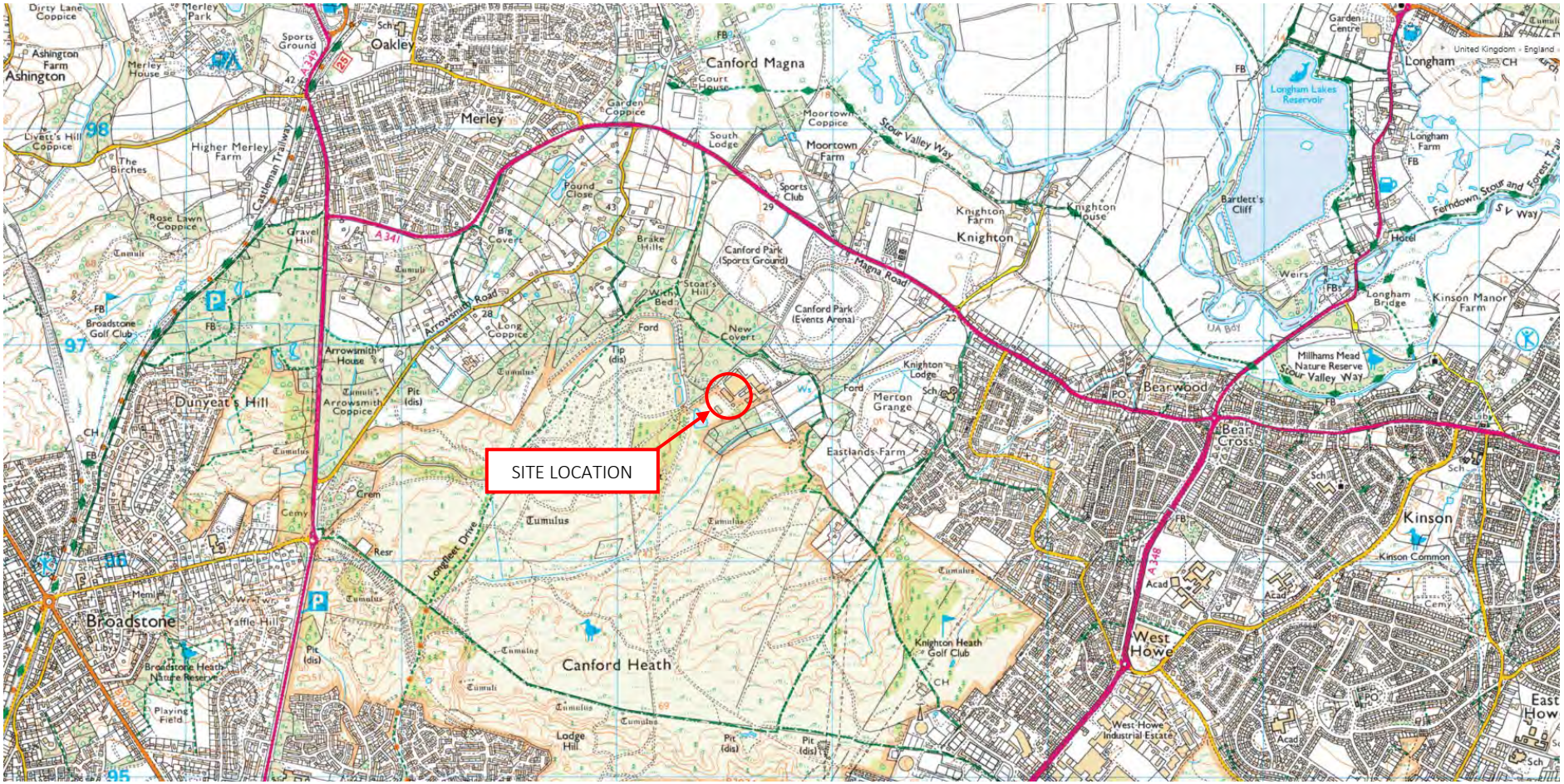


Figure 1.1: Site Location (*OS License No: 100062750*)

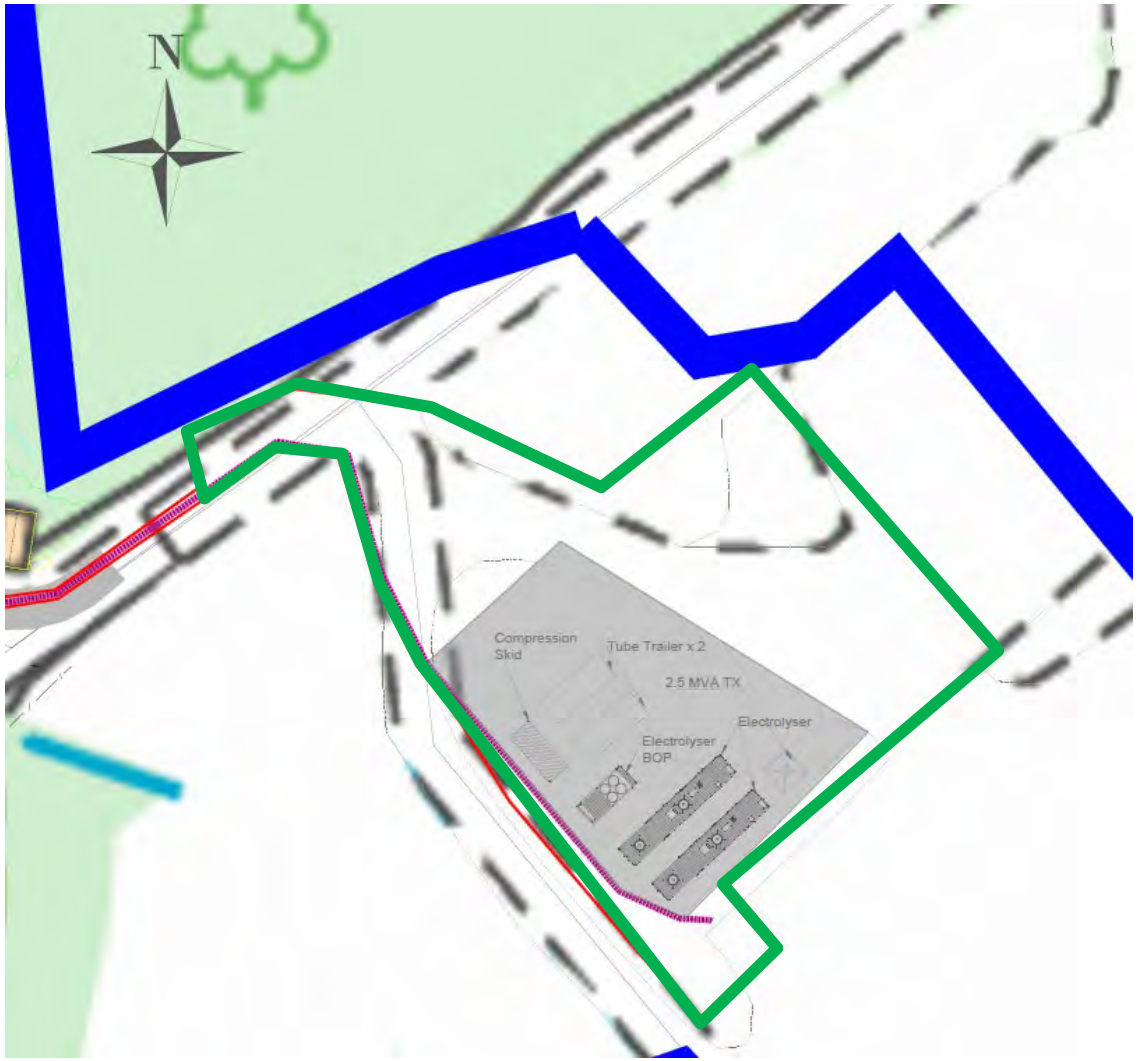


Figure 1.2: Installation Boundary

Figure 1.3: Hydrogen Plant Site Layout

2 PERMITTING & PLANNING HISTORY

A planning application (Ref) for the facility has been submitted and is pending approval by Bournemouth, Christchurch and Poole Council. No details pertaining to the sites planning history are available on the publicly accessible planning portal.

The site has not been previously permitted.

3 PROPOSED ACTIVITIES

3.1 Type of Permit

CRE are making this application for a Standard Rules SR2009 No.2 Low Impact Installation Permit under The Environmental Permitting (England and Wales) Regulations 2018 (as amended) in order to operate a hydrogen generation plant on their site at Whites Pit Landfill, Dorset.

The activities meet the definition of an '*Installation'* by virtue of Schedule 1:

- Section 4.2 'Inorganic Chemicals' Part A(1)(a)(i) *Producing inorganic chemicals such as:— (i) gases, (for example ammonia, hydrogen chloride, hydrogen fluoride, hydrogen cyanide, hydrogen sulphide, oxides of carbon, sulphur compounds, oxides of nitrogen, hydrogen, oxides of sulphur, phosgene).*

This falls within the permitted activities specified in Table 2.1 of Standard Rules SR2009 No.2 for Low Impact Installations, namely falling within a description within Part 2 Schedule 1 of the EP Regulations but not including any 5.1, 5.2, 5.3 or 5.4 activities.

The hydrogen generation plant meet the definition of a low impact installation as follows.

The facility must not:

- *Release more than 50 cubic metres per day of waste water* – the plant will produce only approximately 2.7 m^3 per day of waste water from the deionisation plant.
- *Have to use equipment to reduce or remove emissions before they're released into the outside environment* – emissions to atmosphere are limited to oxygen emitted via the 7.8 m high exhaust stack under normal operation (Emission Point A1). Additional venting of hydrogen will occur periodically via the hydrogen shutdown vent stack (Emission point A2) during nitrogen purging of the system and in the event of a safety shut down.
- *Discharge emissions to groundwater* – the plant design does not include soakaway or discharge to ground or groundwater.
- *Produce more than 1 tonne of waste or 10kg of hazardous waste per day, averaged over a year, with not more than 20 tonnes of waste or 200kg of hazardous waste being released in any one day* – no hazardous waste is produced by the plant.
- *Consume energy at a rate greater than 3 megawatts (MW)* - plant energy requirements are 1.25 MWe maximum.

In addition, the site has been designed with appropriate containment measures, does not require significant management to meet the requirements and has a low or negligible risk of noise and odour impacts occurring outside the boundary of the site.

There are no directly associated activities associated with the hydrogen facility to be included within the permit.

3.2 Details of the Installation

3.2.1 Installation Boundary

All activities will take place within the Installation boundary outlined in Section 1 Figure 1.2.

A Site Condition Report which provides a baseline conceptual model from the site has been completed and included within *Annex E*.

The Site Condition Report does not identify that the existing site neither presents a significant contamination risk, nor does it identify any aspect of the new installation that presents a potential contamination risk to the environment.

All aspects of the new Installation have been designed in accordance with the Environment Agency's Pollution Prevention Guidance and Horizontal Guidance Notes.

3.2.2 Site Infrastructure and Design

The site currently comprises an area of compacted hardstanding. The hydrogen electrolysis facility comprises a simple small scale fully containerised plant which does not require any loadbearing foundations. Infrastructure requirements are limited to a new drainage system and concrete hardstanding will be laid in all operational and storage areas of the site.

The proposed installation will comprise:

- Containerised Water Treatment Plant;
- 2 x Containerised Modular electrolyser units;
- 1 x containerised electrolyser BOP unit;
- Transformer;
- System control unit;
- Compressor unit; and
- 2 x tube trailers for hydrogen storage.

Site Drainage

The site will have a dedicated drainage system.

Uncontaminated surface water run-off will discharge via the existing surface water drainage system including a bypass separator to Knighton Stream.

Deionisation of incoming mains water produces an ecologically harmless effluent which is essentially mineralised water. This effluent is regarded as uncontaminated and will be discharged via sewer under the existing consent from Wessex Water. This drainage consent is provided in *Annex H*.

All site infrastructure (roads, surfacing, drainage systems and equipment) are inspected on a weekly basis by the competent person.

Any faults and repairs will be carried out as soon as practicable and a note made of them in the site diary.

Site drainage plans for surface and foul water are provided within *Annex A.*

Tanks and Bunds

All storage tanks will be installed with secondary containment and be designed to comply with the following standards and guidance[1] requirements;

- Environment Agency Pollution Prevention Guideline Note 2: Above Ground Oil Tanks (PPG2);
- Environment Agency Pollution Prevention Guideline Note 11: Preventing Pollution on Industrial Sites (PPG11);
- Environment Agency Pollution Prevention Guideline Note 26: Pollution Prevention in the Storage and Handling Drums and Intermediate Bulk Containers (IBC's);
- CIRIA C958: Chemical Storage Tank Systems – Good Practice; and
- CIRIA 738: Design of Containment Systems for the Prevention of Water Pollution from Industrial Sites.

Storage tanks associated with the process are limited to those associated with the water treatment plant, which will contain only water.

Roadways and External Areas

An internal roadway system has been designed to give safe access to the modular units associated with the plant.

3.3 Description of the Process

The facility will include the following processes:

- *Water Treatment:* Incoming mains water is deionised through softening, reverse osmosis and electrode ionisation. Emissions from this process comprise simply mineralized water, which is discharged to sewer (S1).

- *Electrolysis:* Deionised water is split into hydrogen and oxygen via a proton exchange membrane (PEM) electrolyser. The produced gases are then passed through gas/water separators. Emissions to atmosphere comprise simply oxygen from this process through a 7.8 m high exhaust stack (Emission Points A1 and A2).

- *Hydrogen Storage:* The produced hydrogen is then temporarily stored onsite within one of two tube trailers prior to export. Hydrogen is typically stored for one day prior to export.

Please refer to the process schematic below for more information.

[1] It is acknowledged that the EA PPG guidance series has been withdrawn, however they are still considered to be best practice and the principles have therefore been adopted where applicable.

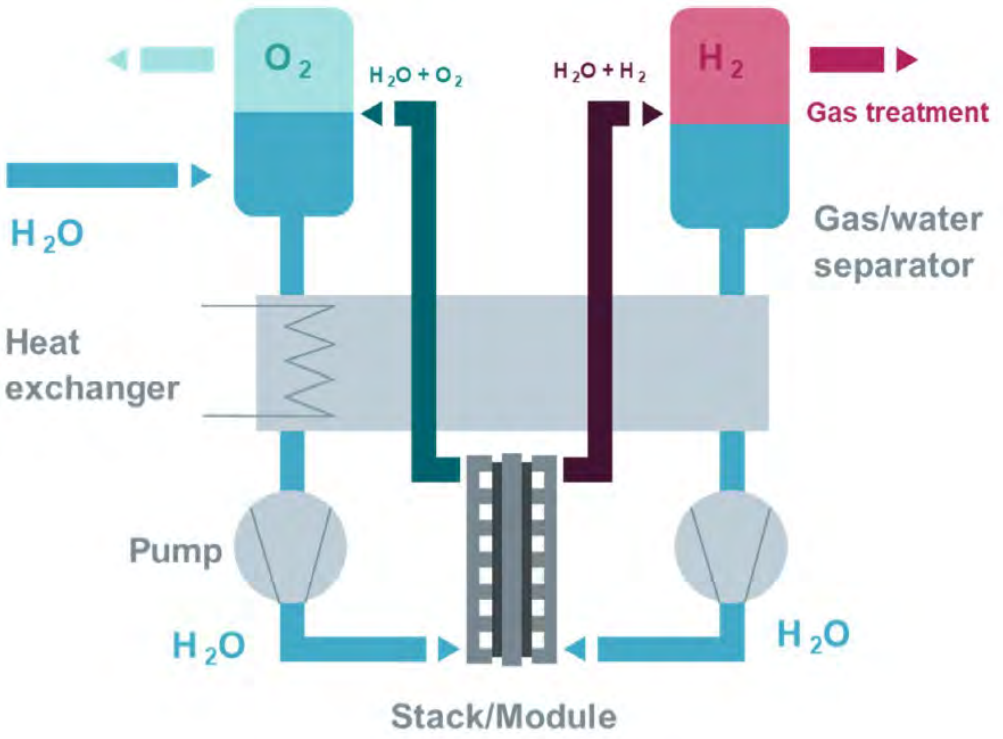


Figure 3.1: Simplified Process Schematic

Raw Materials

Raw materials for the process are limited and summarised in the table below.

Electricity for the process is provided by the 5 MWe solar PV farm located on the landfill site.

Table 3.1: Raw Materials Summary				
Material	Annual Quantity	Use	Storage Arrangements	Fate
Water	Mains fed	Spilt within the electrolyser to produce hydrogen	Incoming mains water is initially deionized within the Water Treatment Unit prior to use	Effluent from the deionization unit comprising water is discharged to sewer
Hydraulic Oil	< 5m^3	Utilised in the compressor unit	Bunded within containerized compression unit	Exported to appropriately licensed disposal/recovery facility
Nitrogen		Utilised for periodic purge of the electrolysis system	Securely within appropriate cylinders	Emitted to atmosphere during purge

3.4 Proposed Process

The proposed hydrogen generation plant is manufactured by Siemens and will be the modular Silyzer 200 or similar. The system is a Proton Exchange Membrane (PEM) electrolyser which has the advantage over other electrolysis systems due to the fact that they do not require the use of alkaline electrolyte substances i.e. potassium hydroxide, thus eliminating the pollution risk to the environment, operators and significantly reducing OPEX costs and space requirements.

The outputs of the plant are limited to high purity hydrogen and oxygen.

The plant consumes approximately 1.25MWe of power which will be supplied from the associated photovoltaic system which is in construction on the adjacent landfill site and is capable of producing hydrogen at a rate of 20.5 kg/hr.

The key components of the electrolysis system is the electrolysis 'skid' which is composed of a number of connected electrolysis cells (the 'stack'), pumps, gas separators and heat exchangers.

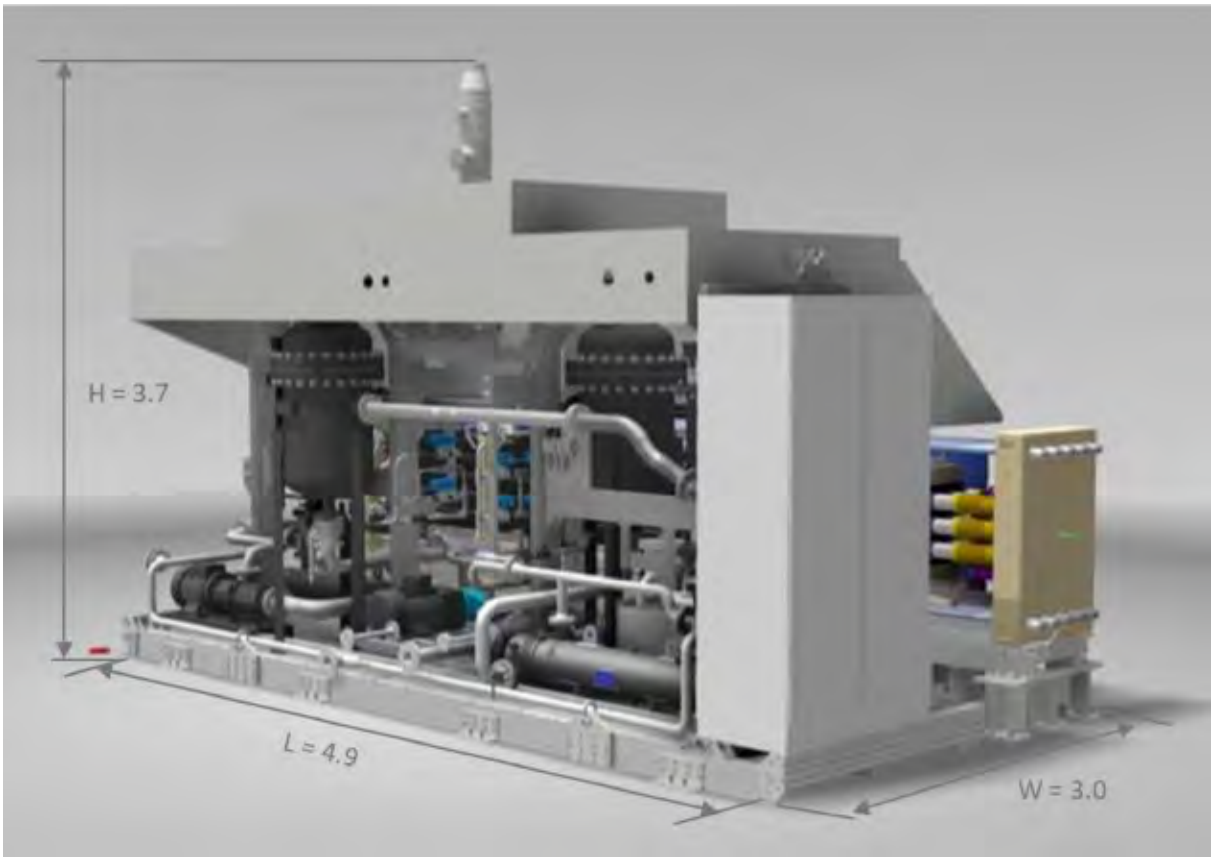


Figure 3.2: Siemens Silyzer 200 skid type electrolyser (Example dimensions only)

Demineralised water then entering the electrolysis system, flows through a heat exchanger before being pumped into the stack where the production of hydrogen takes place within the electrolysis cells via the solid proton-conductive membrane. Separated oxygen and hydrogen then exit the cell, with hydrogen passing through a gas/water separator before undergoing gas treatment.

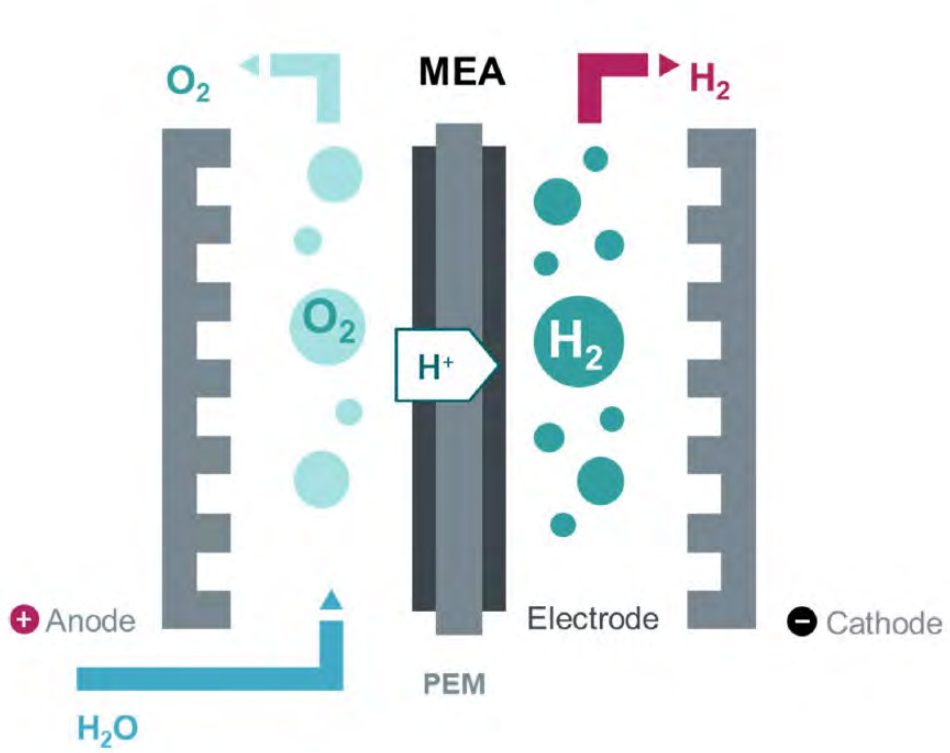


Figure 3.3: PEM electrolysis cell schematic

Purified hydrogen is then temporarily stored onsite in a tube trailer. Storage will be for one day prior to removal. Each tube trailer has a capacity of 300 kg, there will be one trailer onsite at a time with a daily collection and drop off of an empty unit. Exported hydrogen is then utilised on the wider landfill site in the vehicular fleet.

Emissions from the process are limited to a single emission of oxygen to atmosphere and effluent form the demineralisation plant which comprises simply mineralised water. Due to the site location, it is considered that this effluent may be discharged into the drainage systems already in place and permitted on the landfill.

Summary technical information for the Silyzer 200 plant is provided in Table 2.2 below with further details provided in *Annex B*.

Table 3.2 Silyzer 200 Plant Specification	
Parameter	**Technical Data**
Hydrogen production	approx. 20.5 kg/h resp ~ 228 Nm^3/h [(a)]
AC rated system power consumption at nominal H_2 production [(b)]	1.25 MWe
Stack efficiency at nominal H_2 production	68 % / 5.2 kWh/Nm^3 H_2
Stack efficiency at minimal H_2 production [(c)]	77.5% / 4.55 kWh/Nm^3 H_2

AC system efficiency at nominal H_2 production [(d)]	65 % / 5.44 kWh/Nm^3 H_2
Hydrogen delivery pressure electrolyser plant outlet	5 bar Max 35 bar [(e)]
Temperature at electrolyser plant outlet	50 – 70 °C
Hydrogen purity at electrolyser plant outlet	At nominal load typically ~99% (> 99.5 %)
Hydrogen contaminants	Oxygen only
Oxygen quality	Standard operation[(f)]: < 2 % H2 in O2
Dynamics	Volatile power setpoints: 0 – 100% of maximum load > 5 % of nominal electrical load / s
Static power setpoints	< 40 – 100 % of maximum electrical load [(g)] spontaneous load changes are admissible
Start-up time from hot standby	< 20 s until first power uptake
Mains supplied water - Consumption - Quality - Pressure - Temperature - Effluent water	 - approx. 1.5 l/Nm^3 H_2 - tap water according to WHO guidelines - 4 – 5 bar flow pressure - Max 25°C - Approx.. 0.5 l/Nm^3 H_2
Max full pressure cycles	4,000
Certification	CE conformity of delivered components

(a) At 1.013 bar, 0°C
(b) Normal operation without compression (>35 bar)
(c) w/o BoP and compression (>35 bar). Stack operating at 40% nominal electrical load.
(d) System efficiency includes MV transformer and rectifier, cooling and water treatment as well as LV consumption of process technology, but excludes compression > 35 bar and gas treatment > 99.5 % purity
(e) Operating pressure limits of gas treatment option to be considered, if selected
(f) Defined as no duty module operating < 40 % nominal electrical load
(g) Flow velocity limits of gas treatment option to be considered, if selected

Water Treatment

Incoming mains water, which will be split into hydrogen and oxygen in the electrolysis cells, initially requires demineralisation for the electrolyser.

The demineraliser is capable of producing demineralised water from incoming drinking water at a quality down to 1µS/cm, through stages including; softening, reverse osmosis and electrode ionisation.

This demineralised water is then stored in a storage tank and supplied to the electrolysis unit by a booster pump.

The system is controlled through the automated control system of the electrolyser plant.

Effluent produced by the water treatment plant is marginally more ionised than the input water. This effluent stream is therefore considered to be a very low risk waste stream which given that it is discharged to sewer under consent from Wessex Water, presents no risk to the environment.

Cooling System

Heat produced by the electrolysis process is dissipated through autonomous rectifier systems. These are air-cooled, use water or a water/glycol mixture and can operate up to a maximum outside air temperature of 35°C.

Compressed Air

Various components of the electrolysis unit and the water treatment system require dry and oil free compressed air during operation. Approximately 1 m^3/hr is required per electrolysis skid at between 5 and 10 bar pressure. This is provided by the compressed air generating unit onsite.

Control Systems

The electrolysis system is monitored controlled and regulated by an automated SIMATIC PCS7 system that can be remotely operated.

The system incorporates the following monitoring and control sensors;

- Current, voltage and power at the rectifier output;
- Average cell voltage;
- Cell temperature;
- Exhaust O_2 gas quality monitoring (for H_2 content);
- Gas pressure H_2 / O_2;
- Water levels in the gas separators;
- Water pressure in the refill system; and
- Process values including temperature, pressure and flow of the cooling circuit.

A variety of closed-loop control functions are included including;

- Temperature control in the various cooling circuits;
- Set point control for gas pressure in the oxygen and hydrogen circuits; and
- Gas separator level control.

The system monitors its status independently and checks all measured values and message to ensure continued operation within the relevant limits and ranges. Any deviations cause the implementation of safety measures (such as power reduction or shut down) and transmits message to a higher level control system.

The instrumentation and control components, including all safety related sensors and actuators are suppled by an uninterruptible power supply, ensuring controlled shutdown of the electrolysis system and continued recording of measured values in the unlikely event of a power failure at the site.

The plant will be fully designed to the appropriate DSEAR and ATEX standards.

3.5 Energy Efficiency

Energy required by the plant is imported in the form of electricity from the photovoltaic solar farm located on the adjacent landfill site.

The plant will require a maximum of 1.25 MWe.

All plant and equipment has been chosen both on ability to perform and on its energy efficiency. CRE will have an operation and maintenance programme in place to undertaken routine inspections and checks. Plant will be monitored to ensure that no plant is operating ineffectively leading to the loss of energy. Regular maintenance will take place on site and any inefficient plant will be replaced.

3.6 Management System

All operations associated with the hydrogen generation plant are managed in accordance with the recommendations of the OEM equipment recommendations. The plant is automatically controlled and remotely operated thereby requiring minimal levels of management to function.

Due to the size of and the nature of the operations, an Environmental Management System and certification to ISO14001 is not considered appropriate.

The operator will ensure that all necessary procedures are in place and maintained to manage and control all aspects of the plant.

The management system will be produced by the plant manufacturers in the form of an Operational manual and will contain the following key working instructions and procedures.

The management system covers the following key areas:

- Management of the plant;
- Start Up and Shutdown;
- Normal Operation;
- Routine Maintenance and Inspection;
- Monitoring;
- Emergency controls and actions;
- Spill Response Procedure.

The Operations manual and any associated procedures will be in place by the time the plant is fully operational. Procedures specific to environmental matters, namely spillage response, routine inspection and environmental monitoring have been drafted and provided in *Annex F*.

Site Maintenance

The plant itself comprises typically low maintenance components. All maintenance activities on site will be carried out in accordance to the manufacturers' recommendations and will be integrated within the company's environmental management system.

The key aspects of the maintenance management programme will include:

- A programme of Planned Preventative Maintenance (PPM) is undertaken to ensure ongoing management and replacement of key plant and equipment rather than waiting for the equipment to fail and the maintenance of any critical environmental equipment.
- The inspection and maintenance schedules that the manufacturer recommends are adhered to, including any period of recommended shut-down.
- Predictive maintenance is carried out to prevent any catastrophic breakdown.

The management system operated by the site will include procedures for ensuring that adequate maintenance is undertaken at the site.

Regular maintenance activities to be undertaken by the operator include:

- Daily / weekly visual inspection of the plant including site walkover to monitor noise/leakages etc;
- Regular water plant checks including filter status, salt levels etc;
- Regeneration / changes of ion exchange resin cartridges in the water treatment plant;
- Refill / change water in pump flushing unit;
- Calibration checks of the hydrogen detection sensors.

The maintenance programme will ensure that all equipment or infrastructure that is deemed essential in the prevention of pollution to the environment (e.g. hard-standing, bunds, abatement plant etc.) or the prevention of local nuisance impacts (e.g. odour abatement etc.) is maintained and kept in good operating condition.

The manufacturer will also be contracted to carry out further inspection and maintenance measures approximately twice per year.

3.7 Operator Competence

All personnel working at the facility will be trained in the necessary sections of the Operational Manual and any associated procedures. All staff working for and on the behalf of the site will be suitably trained and competent (e.g. professional maintenance engineers, electricians, equipment operators etc.).

The primary role of day staff is to ensure and oversee plant operations, hydrogen transfers and management.

Additional activities will include general site housekeeping and administration activities. Additional staff attending the site will be visiting engineers from the equipment manufacturers who are adequately

trained to perform their duties at the site. The site will maintain written operation instructions all for the plant and monitoring equipment present on site.

Operational Times

The site operational times will be 24/7 with deliveries and collections of hydrogen and trailers limited to daylight hours. Delivery / collection will occur typically only twice per day.

3.8 Site Security

Site Security measures will comprise;

- A perimeter fence which is inspected periodically to ensure that the site security has not been compromised.
- CCTV monitoring of the site perimeter; and
- Lockable gated access.

3.9 Accidents and Emergencies

Accident Management Plan

The Applicant has developed an Accident Management Plan based around the specific risks associated with the site operations.

The key aspects of the Sites Accident Management Plan are:

- Reviewed by the Site Management annually and as soon as practicable after an accident.
- Considers hazards presented by:
  - Emergency shut-down procedures;
  - Actions in case of fire/explosion;
  - Actions in case of fire/emergencies;
  - Contaminated firewater;
  - Failure of any equipment;
  - Spillages and uncontrolled release;
  - Plant or equipment failure (e.g. over-pressure of vessels and pipework, blocked drains);
  - Vandalism; and
  - Flooding.
- Identifies events or failures that could damage the environment.
- Assesses the likelihood and the potential environmental consequences from accidents at the site.
- Proposes action to minimise the potential causes and consequences of accidents.

In the event of an accident, the EA will be immediately informed and necessary measures to limit the environmental impact of the accident will be carried out, as well as measures to prevent further possible accidents.

The sites Accident Management Plan has been included in *Annex G.*

4 EMISSIONS

4.1 Emissions to Air

Emissions to atmosphere from the hydrogen plant comprise simply of oxygen which will be exhausted from the plant via the 7.8 m high stack (Emission Point A1).

Additionally, the electrolysis unit is equipped with a 5.6 m high hydrogen vent stack (Emission point A2). This are used only periodically during nitrogen purge of the system and in the event of safety shutdowns. As such emissions from these vents are limited to hydrogen and nitrogen.

Due to the nature of emissions it is not considered that any abatement is required for these point source emissions to atmosphere.

Monitoring of the exhaust emission is undertaken automatically as part of the plant control system.

4.2 Emissions to Controlled Water

There are no process emissions to controlled water from the site.

Uncontaminated surface water run-off is discharged via the existing surface water drainage system and bypass separator to Knighton Stream.

4.3 Emissions to Sewer

The effluent stream comprises ionised water only and is discharged to sewer directly under consent from Wessex Water.

Effluent volumes are low and will not exceed 2.7 m^3/day. Additionally, the effluent is not contaminated and will not contain any polluting substances. Accordingly there is no potential impact to sewer arising from this discharge.

4.4 Emissions to Land

There are no emissions to land arising as a result of this installation.

All operational and storage areas on site are surfaced with impermeable concrete hardstanding and located within dedicated 'bunded' container modules.

4.5 Fugitive Emissions

There is no potential for odorous or dusty emissions to arise from the facility. The plant is a fully contained modular system with non-odorous inputs and outputs.

Potentially polluting substances onsite are limited to hydraulic oil within the compressor unit and fuel within the hydrogen storage trailers. The compressor unit is a fully containerized module which is situated on concrete hardstanding. Additionally, the trailer storage area is located upon impermeable

concrete hardstanding. As such there is no risk to ground, groundwater or surface water in the unlikely event of any spillage, which would be contained and immediately dealt with.

4.6 Noise

The site is not considered to be located in an area particularly sensitive to noise. The nearest residential properties are located 560 m to the north at Spinney Cottage and approximately 950 m east at Eastlands Farm, on the edge of the residential area of Bearwood.

The plant is considered to be a noise source, albeit at a low level. The electrolyser has been recorded at a level of 70 dBA or less at 1 metre distant. The noisiest item of equipment on site will be the air cooler system which will be designed with attenuation to ensure no noise impact beyond the site boundary.

A noise assessment has been completed and is provided within *Annex D.* This concludes that there will be no significant impact to the nearest sensitive receptor as a result of the installation.

4.7 Waste Summary

The only waste produced generated by the facility will be hydrogen, oxygen and waste water.

Hydrogen will be temporarily stored onsite within tube trailers. Storage will typically not exceed 1 day prior to being exported off site to the filling station.

Effluent produced by the deionization unit is discharged to sewer.

Additional waste produced in very small volumes by the plant include:

- Spent ion exchange resins;
- Spent filters.

These will be removed from site when required and transferred to an appropriately licensed disposal/recovery facility.

5 IMPACT TO THE ENVIRONMENT

5.1 Impacts to Air

There will be no impact to atmosphere arising from the hydrogen facility.

Emissions to atmosphere under normal operation are limited to oxygen only.

5.2 Impacts to Land

There are no impacts to land relating to this proposed Installation.

5.3 Impacts to Controlled Waters

There are no impacts to controlled water relating to this proposed Installation.

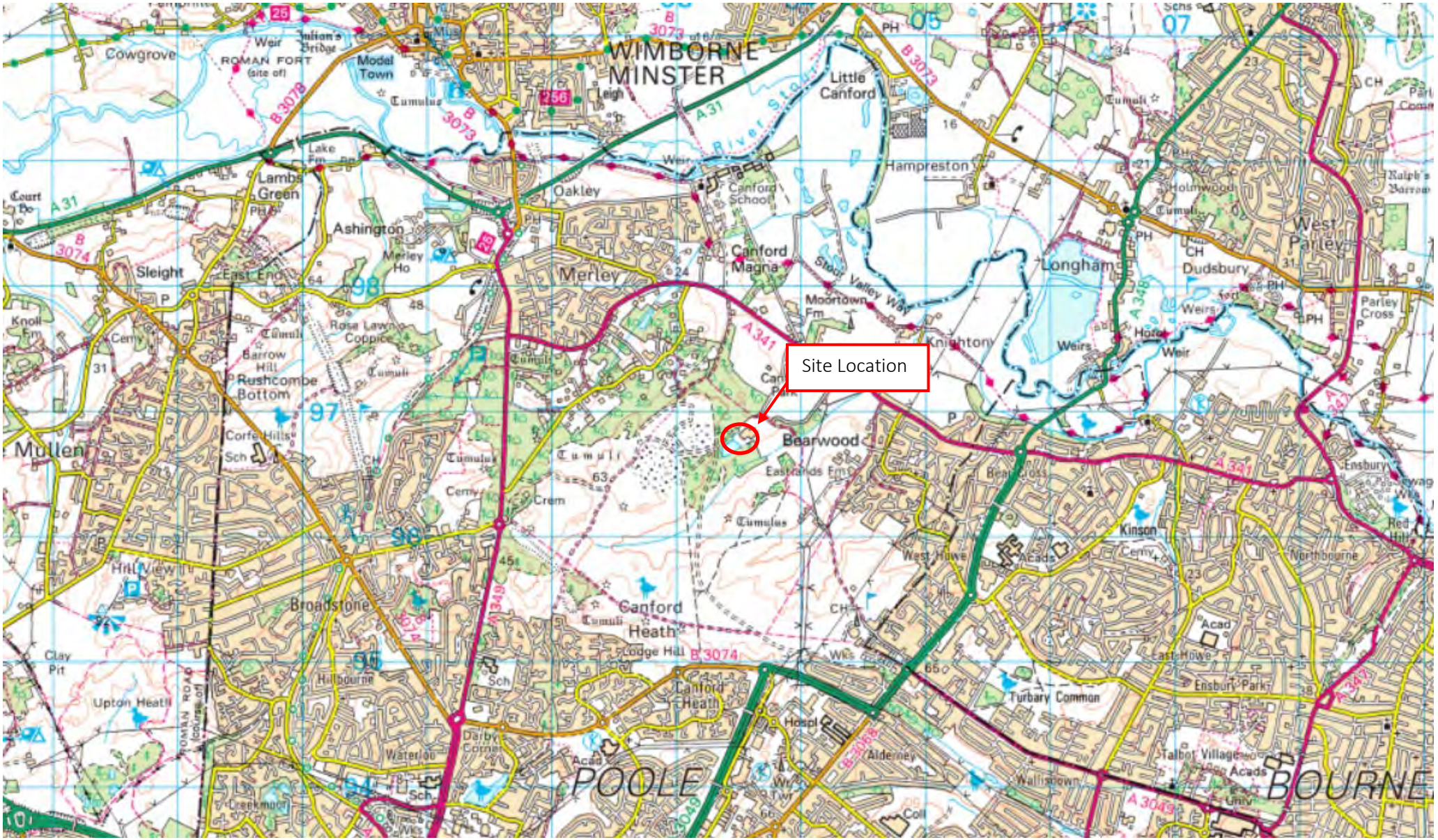
5.4 Impacts to Sewer

There are no impacts to Sewer relating to this proposed Installation.

Emissions to sewer via S1 comprise simply mineralized water and will comply with the discharge consent from Wessex Water.

ANNEXES

Annex A Figures



OS Licence Number (100062750)

sol environment

LEGEND

Mapping extracts (c) Crown copyright and database rights 2018 Ordnance Survey 100018037

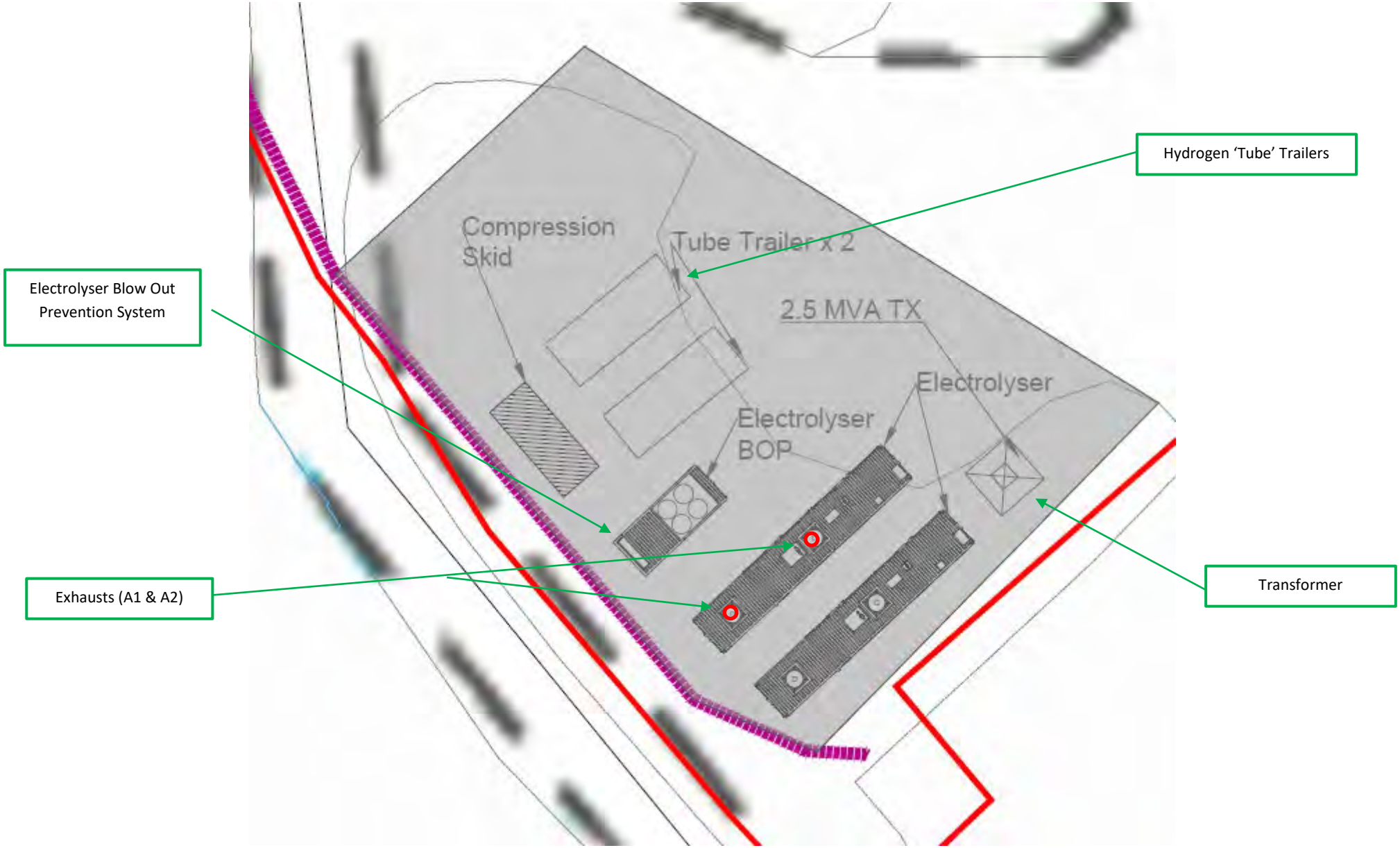
- Site Development Boundary (11.1Ha)
- Biodiversity Planting Areas (0.9Ha)
- Cable Route
- Bund Section (0.043Ha)
- PV Array
- Access Route
- Enhanced Habitats' Maintenance Areas (1.1 Ha)
- Landownership Boundary
- Public Footpath
- Inert Recycling Area
- Fence Line
- Battery System Area
- Hydrogen System
- Swale

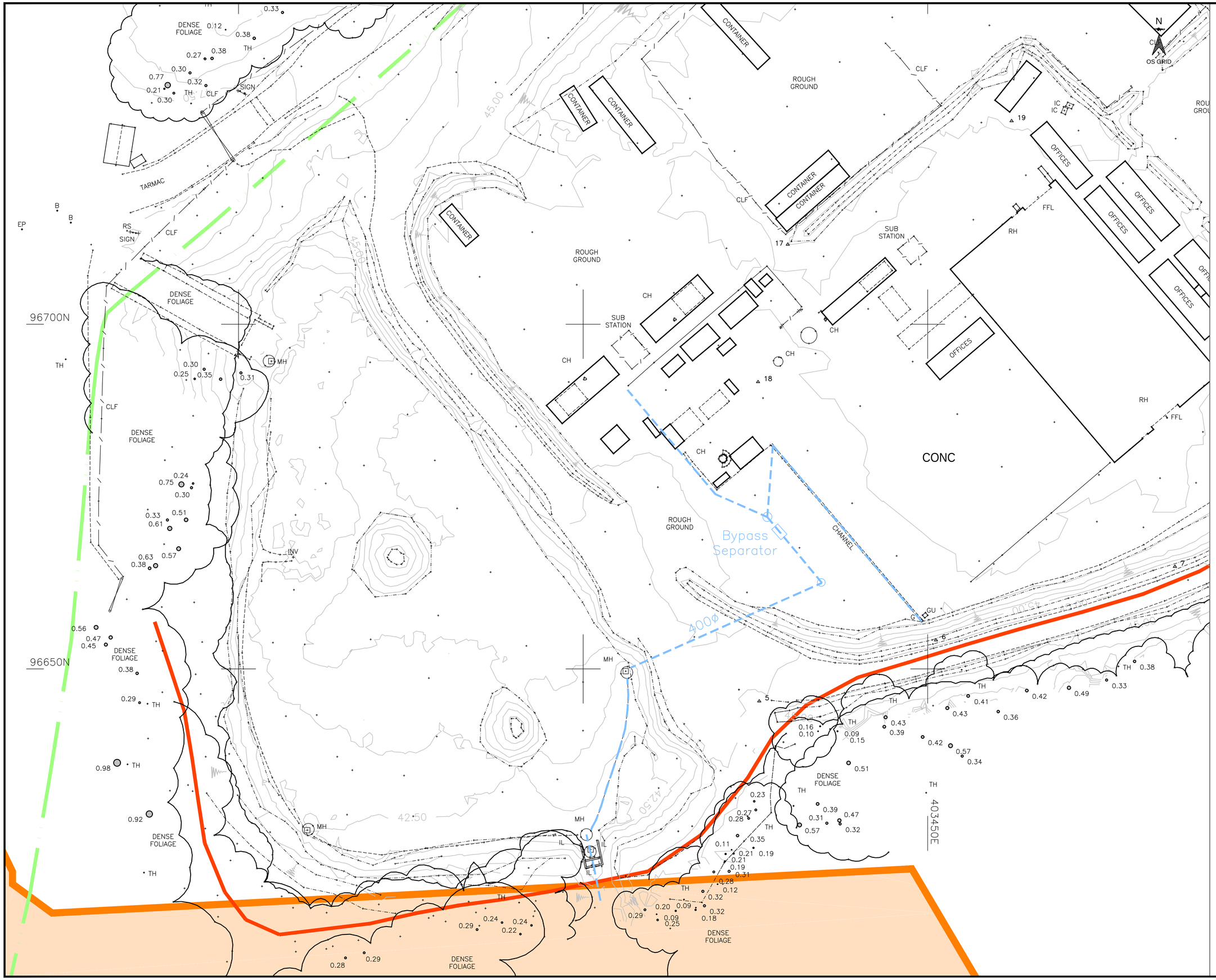
REV	Description			
	DESIGNED	CHECKED	APPROVED	DATE
0	Initial			
	NB	JMM	PC	DD/MM/YY

ethical power

Unit 9. Dunchideock Barton . Dunchideock .
Exeter . Devon . EX2 9UA
(t) 01726 218618
www.ethical-power.com

Project Title:	White's Pit Hydrogen & PV Project
Description:	Hydrogen Site Plan
Location co-ord:	N 50.787 W -1.982
Site address:	White's Pit Landfill SiteCanford Resource ParkMagna RoadWimborneBH21 3BW
Drg No:	EP-1355-D-GA-04
Scale:	1:500@A3
Job No:	1355
Drawn by:	N.B.
Checked by:	JMM
Date:	03/03/21


Hydrogen 'Tube' Trailers
Electrolyser Blow Out Prevention System
Exhausts (A1 & A2)
Transformer
Compression Skid
Tube Trailer x 2
2.5 MVA TX
Electrolyser
Electrolyser BOP



STATION LISTING

STN ID	EASTING	NORTHING	LEVEL	TYPE

DATUM DETAILS

OSGB36, V/A ETRS89 - OSTN15, FLAT PLANE ABOUT E: 403550 N: 96800
OS NEWLYN, V/A ETRS89 - OSGM15

LEGEND

AOD	ABOVE ORDNANCE DATUM
AV	AIR VALVE
B	BOLLARD
BH	BOREHOLE
BB	BELISHA BEACON
BTB	BRITISH TELECOM COVER
BS	BUS STOP
CATV	CABLE TELEVISION COVER
CONC	CONCRETE
CPS	CONCRETE PAVING SLABS
DK	DROP KERB
DP	DOWNPIPE
ECB	ELECTRICITY CONTROL BOX
ELCP	ELECTRICITY CABLE PIT
EP	ELECTRICITY POLE
ERC	EARTH ROD COVER
FH	FIRE HYDRANT
FB	FLOWER BED
FL	FLOOR LEVEL
FP	FOOTPATH / FLAG POLE
GP	GATE POST
GT	GAS VALVE
G	GULLEY
IC	INSPECTION COVER
LB	LETTER BOX
LH	LAMP HOLE
LP	LAMP POST
MH	MANHOLE
MKR	MARKER POST
SNP	STREET NAME PLATE
OSBM	O.S. BENCHMARK
PCE	PRE-CAST CONCRETE EDGING
PCK	PRE-CAST CONCRETE KERBS
PM	PARKING METER
RE	RODDING EYE
RS	ROAD SIGN
RWP	RAINWATER DOWNPIPE
SP	SIGN POST
△	SURVEY STATION
STP	STACK PIPE
ST	STOP VALVE/COCK
TAP	WATER TAP/STANDPIPE
TBM	TEMPORARY BENCHMARK
TCB	TELEPHONE CALL BOX
TH	TREE HEIGHT
TL	TRAFFIC LIGHT
TP	TELEGRAPH POLE
VP	VENT PIPE
WL	WATER LEVEL
WMSV	WATER METER/STOP VALVE
WO	WASH OUT
WT	WATER TROUGH

BUILDING

RH	RIDGE HEIGHT
SL	SOFFIT LEVEL
EL	EAVES LEVEL
FRH	FLAT ROOF HEIGHT

TREES

ALD	ALDER
BCH	BEECH
CED	CEDAR
CHY	CHERRY
CON	CONIFER
CYP	CYPRESS
FRT	FRUIT
HAW	HAWTHORN
HLY	HOLLY
HCH	HORSE CHESTNUT
LAB	LABURNAM
LAR	LARCH
LIM	LIME
MPL	MAPLE
PNE	PINE
POP	POPLAR
RWN	ROWAN
SIB	SILVER BIRCH
SPR	SPRUCE
SCH	SWEET CHESTNUT
SYC	SYCAMORE
WLW	WILLOW
UNK	SPECIES UNKNOWN

Species (if shown)
(Dia of bole) / (No. of bole)
Approx. Height (if shown)

LEANING TRUNK

CANOPY LINE
FOLIAGE LINE
HEDGE LINE
WALL
(Widths drawn to scale)

OAK 0.22T 6

OAK 0.22T 6

1.20H BW

FENCE

BWF	BARBED WIRE FENCE
CBF	CLOSE BOARD FENCE
CIF	CORRUGATED IRON FENCE
CLF	CHAIN LINK FENCE
CPF	CHESTNUT PALING FENCE
CWF	CHICKEN WIRE FENCE
IRF	IRON RAILING FENCE
PCF	POST & CHAIN FENCE
PRF	POST & RAIL FENCE
PWF	POST & WIRE FENCE
WMF	WIRE MESH FENCE
GATE	
STILE	

TELEPHONE CABLE
ELECTRICITY CABLE

NOTES

Tree species, as/if named on this plan, are for general information only and should be confirmed by a taxonomist prior to any detailed design.

Trees, canopies and boles, are shown diagrammatically ie circular, their true shape in plan will be different.

Additional abbreviations maybe present and not indicated above.

Kerb levels, if shown, are taken at the juction of kerb face and tarmac.

Boundaries, as shown, do not necessarily constitute legal boundaries.

This survey has been carried out to an accuracy consistent with the presentation scale shown, therefore interrogated dimensions will be within the tolerance associated with said scale.

BURIED HV

DIGITISED SGN IP MAIN

DIGITISED SSSI

SW DRAINAGE

Rev	By	Chkd	Apprvd	Date	Description

Client

W H WHITE

D G Yeatman Surveying & Engineering Ltd
82A York Road, Broadstone, Dorset, BH18 8EU
Tel: +44 (0)1202 692852
office@dgyeatman.co.uk
www.dgyeatman.co.uk

Project

ENERGY SITE CONTROL CENTRE

Drawing

UPDATE SURVEY 0520
B4 UPDATE - 0221
(DRAINAGE)

Surveyed by:	D.G.Y	Date:	03.20/02.21
Drawn by:	D.G.Y	Date:	02.21
Checked by:		Date:	

Drawing No. SCC-HYDROGENDWGS

Revision

Drawing Scale: 1:250 @ A1

0 2.5 5 7.5 10 15 20m
1:250

Drawing file path & name: C:\Surveys\W H White\SiteControlCentre\Site Control Update - 0320\ SCC-HydrogenDwgs.dwg
User and Plot Date: D Yeatman - 5 Mar 2021 - 6:07 pm


CONDENSATE PIPE
(NB)
DWP
PROPOSED DISCHARGE PIPE
EXISTING DISCHARGE PIPE
PRINCIPLE
MANIFOLD

Annex B: Technical Information

SIEMENS

Hydrogen Solutions

Silyzer 200 Hydrogen Generation Plant
Indicative Technical Description

2020

Content

1 Why a PEM Electrolysis System?

PEM (Proton Exchange Membrane) electrolyser systems have a number of advantages over other electrolysis systems.

PEM is the natural choice for our future renewable energy system:

With its fast dynamics of 10% nominal power per second load change, its operating range between 0% and 100%, and its unlimited number of black starts, PEM is the natural choice to cope with the volatile nature of our future energy system.

PEM is clean by nature:

For each kg of hydrogen produced, traditional methods like Steam Methane Reforming (SMR) emit 8 to 10 kg of CO_2. PEM electrolysis running on renewable energy is CO_2 free.

PEM electrolysis systems only contain water, hydrogen and oxygen. The only “contamination” of the product gas hydrogen are traces of oxygen. PEM based hydrogen therefore easily fulfils highest purity requirements.

There is no aggressive chemical electrolyte required, only pure water - unlike for alkaline systems, which run on caustic and corrosive potassium hydroxide (KOH). This eliminates all hazards and risks to staff and equipment associated with concentrated lye when it comes to maintenance and service, as well as day-to-day operation.

PEM is competitive:

With increasing CO_2 certificate costs and decreasing renewable energy prices “green hydrogen” produced with PEM becomes more and more cost competitive. Under optimal conditions the costs of PEM-produced hydrogen can already be surprisingly close to the cost level of hydrogen produced with SMR.

Compared to alkaline systems, PEM electrolysers can produce the same amount of hydrogen at a significantly lower space requirement.

Due to the absence of aggressive, corrosive chemicals, PEM systems have significantly lower operational expenditures. This OPEX cost difference between the two systems can easily be 50% or more.

As factors like electricity price or availability of green electricity have a significant impact on the overall competitiveness, we recommend performing a project specific Total Cost of Ownership calculation.

Of, course we would be happy to help you with this.

2 Why a Siemens Silyzer?

Siemens offers great customer value beyond the pure electrolyser system.

Industrial Design Principles:

Siemens Silyzers are designed for operation in an industrial environment taking into account every aspect for long-term economic viability. Entire plant is designed for typical industrial lifetimes, 24/7 operation, serviceability, and remote monitoring

Easy Operation & Maintenance:

Our Silyzers have low maintenance requirements, maintenance free PEM modules and are prepared for staff-less operation.

World-Class Customer Care:

We live Customer Care! With our local presence around the whole world, you can be sure that we provide a local counterpart over the whole project execution phase. Our local service team will also support you during the lifetime of your assets.

In-House Know-How and Services:

Siemens produces its own PEM membrane electrode assembly (MEA), as this is the core know-how of an electrolysis system. Siemens Silyzer PEM modules are manufactured in-house.

In addition to the pure electrolyser system, Siemens can connect your system to the grid, and offers power supply, transformers, I&C, line filters & power factor compensation, and much more.

We can customize pressure, dryness and purity of the hydrogen to your specific process requirements.

Siemens has over a century of experience and expertise in executing large projects and always strives for execution excellence. With its worldwide presence and the ability to offer financing we are sure to be able to put together an attractive package for you.

3 General Information

3.1 Modular Hydrogen Electrolysis System SILYZER 200

SILYZER 200 is a modern, PEM-based hydrogen electrolysis system in the megawatt class. The size of the system can be easily scaled-up by connecting several electrolysis skids together. Aligned with the anticipated load profile, an optimized system configuration can be arranged.

3.2 Technical data

All values given in this offer are indicative (preliminary), non-binding and not guaranteed.

The electrolysis plant described herein has been designed with the key technical data shown in Table 1 in mind.

Most importantly, the plant has been designed on the basis, that hydrogen output of the factory is maintained at nominal level over the entire lifetime of the PEM modules. This is achieved by increasing the power fed to the electrolyser in order to compensate the effect of membrane degradation. This design approach is fundamentally different to a design for constant power consumption, which would mean that hydrogen output of the factory would decrease over the years. Such a design can also be offered by Siemens but would require a re-design of our offer.

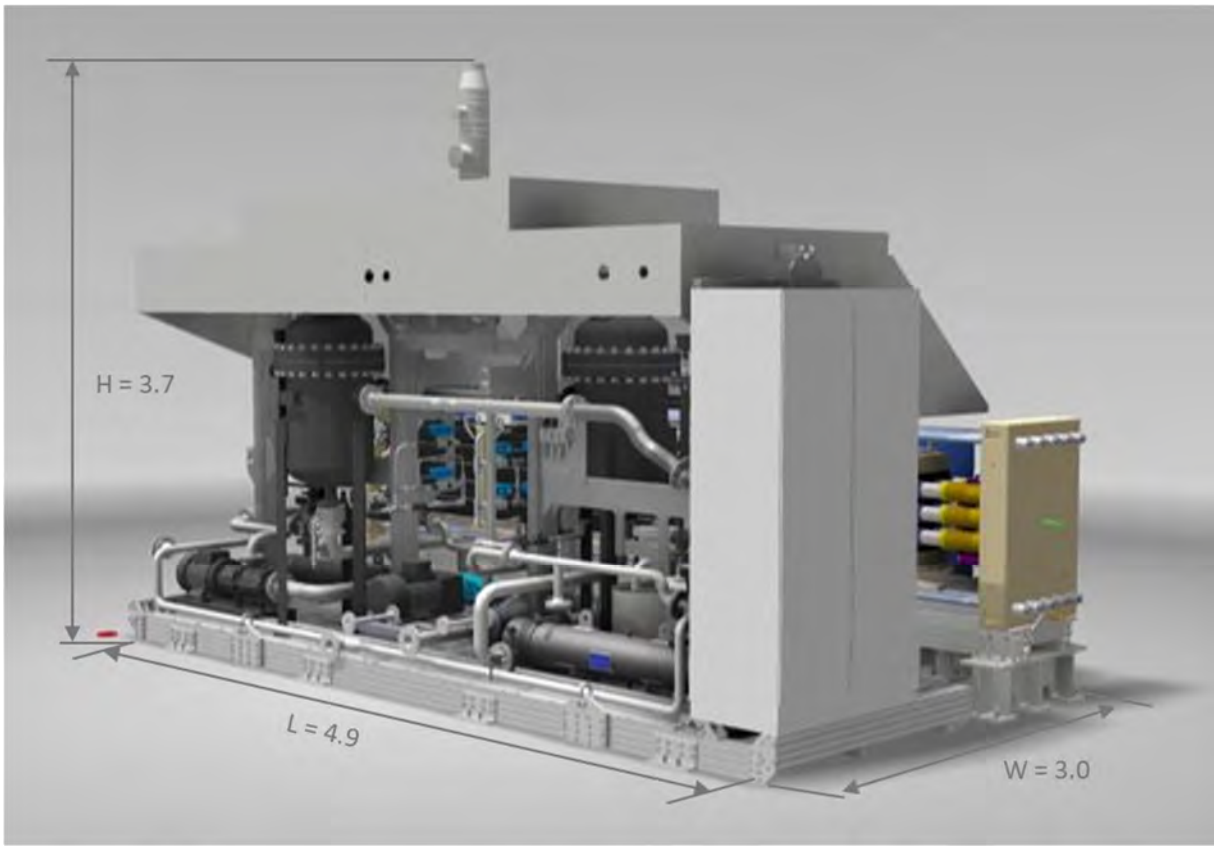


Figure 1: View of an electrolyser skid type Silyzer 200 (not binding for production) with given dimensions

Table 1 presents the most important technical parameter for the offered hydrogen generation plant.

Table 1: Technical data for the Silyzer 200 plant

Parameter	Data
No. of Silyzer 200 Systems	1 Silyzer 200
Hydrogen production per Silyzer 200	approx. 20.5 kg/h resp. ~ 228 Nm^3/h[1]
AC rated system power consumption at nominal H_2 production [2]	1.25 MW
Stack efficiency at nominal H_2 production	68% / 5.2 kWh/Nm^3 H_2
Stack efficiency at minimal H_2 production [3]	77.5% / 4.55 kWh/Nm^3 H_2
AC system efficiency at nominal H_2 production[4]	65% / 5.44 kWh/Nm^3 H_2
Hydrogen delivery pressure electrolyzer plant outlet	5 bar - max. 35 bar[5]
Temperature at electrolyzer plant outlet	typ. 50 °C – 70 °C
Hydrogen purity at electrolyzer plant outlet [6]	> 99.5%, at nominal load typically ~99.9%
Hydrogen contaminants	Oxygen only
Oxygen quality	Standard operation[7]: < 2% H_2 in O_2
Dynamics	Volatile power setpoints: 0 - 100% of maximum load ≥ 5 % of nom. electrical load / s
Static power setpoints	< 40 - 100% of maximum electrical load[8] spontaneous load changes are admissible
Start-up time from hot standby	< 20 s until first power uptake
Tap water – Consumption	 – approx. 1.5 l / Nm^3 H_2

[1] At 1.013 bar, 0°C

[2] Normal operation without compression (>35 bara)

[3] w/o BoP and compression (>35 bara). Stack operating at 40% nominal electrical load.

[4] System efficiency includes MV transformer and rectifier, cooling and water treatment as well as LV consumption of the process technology, but excludes compression > 35 bara and gas treatment > 99.5 % purity

[5] Operating pressure limits of gas treatment option to be considered, if selected.

[6] By using optional downstream gas treatment (DeOxo catalyst with dryer), the hydrogen purity can be further increased and its dew point reduced. Downstream gas treatment can limit operation condition

[7] Defined as: no duty module operating < 40% nominal electrical load

[8] Flow velocity limits of gas treatment option to be considered, if selected

– Quality – Pressure – Temperature – Effluent water	– tap water according to WHO guidelines – 4 - 5 bar flow pressure – max 25°C – approx. 0.5 l / Nm^3 H_2
Max. full pressure cycles	4000
Certification	CE conformity of delivered components

4 SILYZER 200 – Basic System

4.1 Electrolysis Skid

4.1.1 Design and features

The electrolysis skid is the core component of the electrolysis system. It is composed of a number of electrolysis cells connected together - the so-called stack - and also includes a comprehensive, skid-mounted unit of pumps, valves, gas separators, heat exchangers and sensors (just to name the most important components).

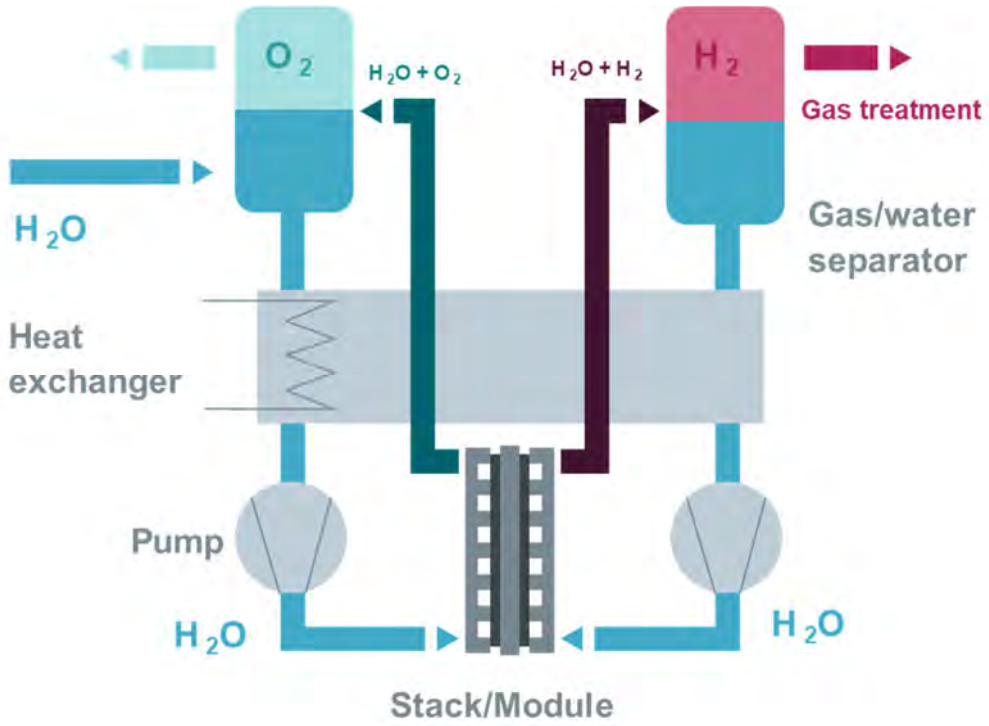


Figure 2: Silyzer 200 process flow scheme

The electrochemical production of hydrogen takes place in the electrolysis cells. The distinctive feature of the cells in this system is their use of a solid proton-conductive membrane and a robust cell design, which enables operation under high pressure and also permits highly dynamic load changes. The specially developed electrodes have a high ampacity and warrant a uniform loading and optimal utilization of the active membrane area, without hot spots or dead corners.

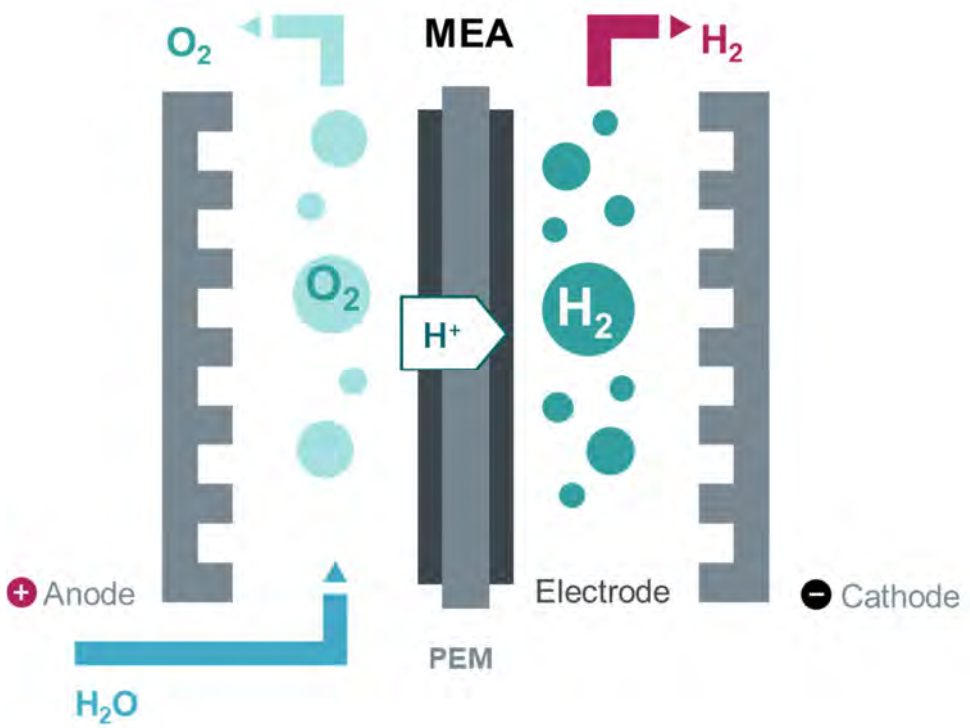


Figure 3: Generic scheme of a PEM electrolysis cell

This design not only leads to an attractive system efficiency but, most importantly, to a long design lifetime of the electrolysis cells.

Despite the careful design, the PEM Electrolyzer ages like every electrochemical cell. The degree of degradation depends on the operation scheme and is not inherently linear in time.

The electrolysis stack is factory assembled with other process components on an open skid and tested as a whole. Thus the produced electrolysis unit represents a compact package that is also easy to maintain.

4.1.2 Transformer and DC power supply

A set of robust current rectifiers are used for each electrolyser to provide the electrolysis stack with a regulated DC supply (SINAMICS product family). Upstream a medium voltage rectifier transformer is connected, which is tailored to the conditions of the local power grid.

Due to the high number of cells connected in series, a typical operation voltage of 500-600 V DC is required. This comparably high voltage enables a DC supply with very high efficiency. Due to the direct connection to the medium voltage grid, cost intensive low voltage distribution and cabling is not required.

A fieldbus is used to connect the rectifiers to the higher-level control which is integrated into the control system. The rectifiers exchange set points, measured values and status information via this connection.

Table 2: Technical Data

Enclosure	Lightweight concrete prefabricated house with separate chambers for the transformer and for the rectifier cabinets.
Dimensions (L x W x H)	Approx. 4.9 m x 3.0 m x 3.7m

Weight incl. fittings	Approx. 35 t
Offered technology	Line-commutated thyristors, 2 rectifiers per system
Nominal design	2 x 1120 A, 650 V DC
MV electrical connection[1]	Rectifier transformer: approx. 1,630 kVA per electrolyzer (depending on local voltage level: 6 kV - 24 kV ± 5%, 3-ph, 50 Hz)
LV electrical connection	Ancillary processes: approx. 20-40 kVA for general functions plus approx. 85 kVA per electrolyzer (400 V ± 5%, 3-ph TN, 50 Hz) approx. 7 kVA per electrolyzer from uninterrupted power supply (UPS) (230 V ± 5%, 1-ph TN, 50 Hz)

Figure 4: Example for a DC power supply with medium voltage transformer and rectifiers in compact prefabricated concrete building

4.1.3 Harmonic filter, Power factor correction (PFC) (optional)

For technical reasons, the DC supply of the electrolysis system produces harmonic distortions and reactive power. The degree of such undesired feedback to the electricity network depends strongly on the current operating point of the plant. The degree of the harmonic voltage distortion at the medium voltage feed-in (“common point of coupling”) depends strongly on the impedance of the electricity network.

With a harmonic filter, the harmonic currents can be reduced and demanding requirements of the local energy supplier ("network connection conditions") can be met. This will be done on

[1] (The connected loads consider active power, reactive power portions and safety reserves. They are used for the configuration of the grid connection. Connected loads should not be confused with the active power requirement, which is of relevance to power consumption, and is typically significantly lower.)

the medium voltage side by main filtering components laid out specifically for each individual project.

The harmonic voltage distortions (THD_U) produced in the mains by the harmonic currents (THD_I) depend on the impedance of the supplying network and must be specifically evaluated for every project. The harmonic voltage distortion bias of the network cannot be known before this evaluation and can lead to additional costs.

Table 3: Power factor

without the “harmonic filter, power factor correction" option	approx. 0.5ind (low partial load) - 0.9ind (full load)
with the "harmonic filter, power factor correction" option	≥ 0.95
Harmonic distortions1	THDI: approx. 10%

4.1.4 Instrumentation and control

The control technology included in the scope of delivery serves to monitor, control and regulate the electrolysis system. The system installed is SIMATIC PCS7 – based, using SIMATIC ET200 as distributed I/O. The operator station is composed of an efficient industrial PC with additional common components such as a flat screen, keyboard, mouse and the software licenses required for operation.

The instrumentation and control components, including all the safety-related sensors and actuators, are supplied by an uninterruptible power supply. This shall ensure a controlled shutdown of the electrolysis system and continued recording of the measured values and events if a power failure occurs.

4.2 Communication

System-internal communication uses Profibus/Profinet. Unless they have a communication interface, sensors and actuators shall be connected through 4-20 mA analogue inputs or 24 V binary inputs/contacts.

The communication with a higher-level control system is possible through a whole range of different protocols and physical interfaces but is not yet included in the scope of the supply.

For the purpose of routine controls and the execution of initial problem analyses in the case of failure, the control system shall include a secured interface to permit remote access.

[1] The harmonic voltage distortions (THD_U) produced in the mains by the harmonic currents (THD_I) depend on the impedance of the supplying network and must be specifically evaluated for every project (“grid study”, not included in the scope of the quotation). By selecting the "Harmonic filter, Power factor correction" option, the harmonic currents can be reduced and demanding requirements of the local energy supplier ("Network connection conditions") can usually be met without any additional filtering measures on the medium voltage side.

4.3 Sensors

Both monitoring and control, as well as the necessary safety functions require comprehensive sensor equipment, such as:

- Current, voltage, power at the rectifier output.
- Average cell voltage
- Cell temperature
- O_2 gas quality monitoring (H_2 content)
- Gas pressure H_2 / O_2
- Water levels in the gas separators
- Water pressure in the refill system
- Process values of the cooling circuit (temperature, pressure and flow)

Received signals shall be functionally processed and also archived at set intervals for future analysis. Highly safety-related signals shall be incorporated into an additional hardwired trigger circuit (besides undergoing software processing). Values which are relevant for system operation shall be additionally visualized in the operator system.

4.4 Safety Integrated Level (SIL)

No Safety Integrated Level or SIL documentation is included. If required, Siemens will be pleased to prepare a respective additional quotation.

4.5 Functions

4.5.1 Operation and Monitoring

The operating station displays the system status (including current measured values) in a clear graphical format. The measured values are stored cyclically in an archive, while operating and fault messages are stored in a logbook.

The system offers various authorization levels to prevent accidental or unauthorized changes to set points or parameters. Similarly, the visualization and/or access to measurement values and other operating data are extended or restricted through these authorization levels. In any case all data from the system necessary for optimized unit operation are always available to the operator.

Start-up and shutdown procedures support commissioning as well as operational start up and shutdown of the system.

4.5.2 Closed-loop monitoring and control functions

The electrolysis plant control system accommodates a variety of closed-loop control functions, such as:

- Temperature control in the various cooling circuits
- Set point control for gas pressure in the oxygen and hydrogen circuits

- Gas separator level control

Regulating functions for optimizing the economic operation of the whole plant are not included in the control system described here. Rather, the system expects load values as set point settings. Intelligent solutions for the automatic regulation of set points taking into account external data such as weather forecast data or current offers on the electricity exchange are available on the market and can, if necessary, be coupled to the control system described here.

4.5.3 Safety functions

The control system monitors the system status independently and checks all relevant messages and measured values to ensure operation within the permitted, specified limits. If there are deviations from these limits, safety measures are implemented (such as power reduction or, in extreme cases, shutting down the system) and corresponding messages are transmitted to the higher-level control system.

4.6 Software

The user software in SIMATIC PCS7 and the subordinate systems are standardized and are fixed components of our delivery scope.

Note: The source code of the installed user software is not part of the contractual scope of delivery. Unauthorized changes to the user programs and parameters delivered by Siemens are not permitted.

4.7 Compressed air

In our standard scope compressed air for instruments is required. Various components of the electrolysis plant and the water treatment system require dry and oil-free compressed air between 5 and 10 bar during operation (approx. 1 m^3/h each skid). This compressed air will be made available on the plant side via a suitable compressed air generating unit.

Table 4: Compressed air

Requirement[1]	approx. 1 m^3/h per Electrolyzer skid.
Quality	Dry and oil-free, pressure: 5.5 - 10 bar (approx. 1 m^3/h each skid)

4.8 Water treatment - Demineraliser

The Electrolyzer requires demineralized water for operation, which will be split into hydrogen and oxygen in the electrolysis cells. A water treatment system for the preparation of the demineralized water is included in the delivery.

The water treatment can be divided into two units:

[1] Note: Selected options could require an additional amount of pressurized air

1. Demineralizer: The demineralizer produces demineralized water from drinking water at a quality down to 1µS/cm. Different processing steps are used, such as softening, reverse osmosis and electrode ionization (EDI) or ion exchanger, which can be combined according to the need.
2. Water Refinement: The water refinement is essentially composed of a storage tank and a booster pump to supply the electrolysis

Most of the components are assembled on a skid (exception: storage tank).

The control unit of the water treatment system is connected to the electrolysis plant's SIMATIC PCS7.

The limit of supply is determined by the drinking water connection and the effluent hook-up which must be installed by the Customer at the planned assembly location of the water treatment system.

The treatment system requires regular maintenance work, such as replacing used ion exchange resins. If de-ionized water is already available in sufficient quantity and quality at the location of assembly, the treatment system offered, and the maintenance services related to the latter may be simplified if an appropriate certificate of water quality is provided.

For technical reasons, the water treatment plant produces effluent at different steps of the process. The resulting ecologically harmless effluent is fed into the required available effluent hook-up.

Table 5: Technical data for water treatment plant

Number	1 system
Installation	Indoor installation
Admissible ambient temperature	2° - 35° C

5 SILYZER 200 Continued

5.1 Cooling

Every electrolyzer has an autonomous system for the dissipation of the heat produced in the electrolysis process. The rectifier systems are air-cooled and do not require a connection to a cooling system.

Table 6: Technical data of cooling plant

Number	1 system per electrolysis skid
Coolant	Water or water/glycol mixture
Cooling via	Outside air
Installation	Outdoors
Admissible ambient temperature	-20° ... 30 °C [1]
Sound power level L_{wA}	approx. 85 dB(A) per cooling system
Typical dimensions (L x W x H)	Approx. 9 m x 2.5 m x 1.5 m
Dead weight	approx. 1,200 kg

The initial fill-up of the cooling circuit with the water or water/glycol mixture is not included in this option.

5.2 Plant piping

The components used in the electrolysis plant must be connected with pipes to create a whole functional system.

Siemens offers for the SILYZER 200 system the construction of these connections, including all necessary materials. The following services are covered by Siemens with this option:

- Connection of the product gas pipes and blow-off pipes (chapter 4.1) to a single interconnection flange within the Electrolyser housing.
- Connection of the water treatment with the Electrolyser Skids.
- Connection of the Cooling (chapter 5.1) with the Electrolyser Skids. The coolers are placed next to the Electrolyser hall.

The plant piping refers to a standard design of an electrolysis hall selected by Siemens with a surface area of approx. 100 m^2 for each Electrolyser Skid. The pipeline bridges and supports within the hall and the wall penetrations necessary for the plant piping are to be executed by the hall constructor and must be agreed with Siemens beforehand.

[1] Outside temperatures of up to 35°C are permitted in nominal load operation, but can lead to automatic, temporary derating if the electrolysis cells are heated to an unacceptably high level

5.3 Ex Zone

The operator of the overall plant is principally responsible for the designation of an explosion protection zone. Due to the technical protection measures installed in the Silyzer, the manufacturer is not required to designate an ex-zone for the Silyzer.

However, the operated can designate a zone in the area of the venting hood, since the electrical equipment installed inside the hood (up to the lower edge of the extraction hood) is designed and installed as electrical equipment suitable for Zone 2 explosive areas (at least Category 3G, Group IIC in accordance with DIN EN 60079-0 and 2014/34/EU).

Other equipment suitable for an Ex-Zone are not considered in this offer.

5.4 Building specifications

The following specifications are intended to support the Customer's building planning and do not form part of the price indication. Further details can be provided as part of the offer review process.

The following foundations and space requirements must be considered during planning:

- Hall building
- Water/Air cooler for electrolyser
- Direct current station

Figure 5 shows a typical layout with two Electrolyser systems.

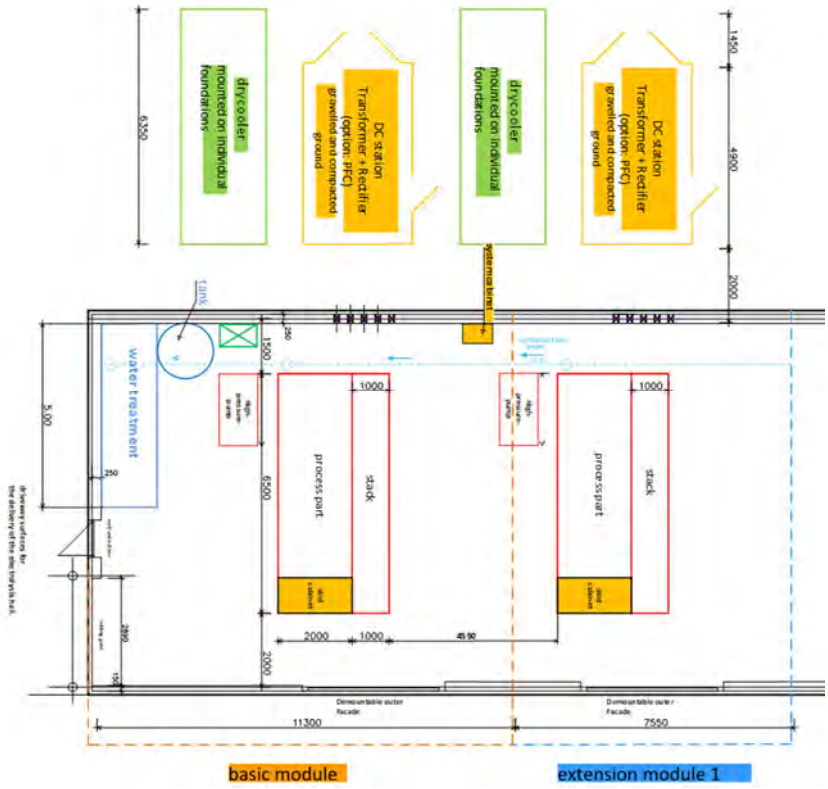


Figure 5: Approximate plant layout

It is generally necessary to consider the stresses caused by the prevailing wind, snow, water level and earthquake conditions at each location when planning the hall.

The hall constructor/operator is responsible for ensuring the suitability of the building to accommodate the contractual equipment, particularly with regard to structural design, lighting, fire protection, escape routes, ventilation and so on.

We would also like to provide the following notes regarding the layout of a hall for 1 electrolysis unit, without any claim for completeness:

1) An area of approximately 100-120 m^2 should be sufficient as the floor space for the hall, given the optimum arrangement of the equipment.
2) The temperature in the hall should not fall below 5°C and should not exceed 35°C.
3) Vehicular access must be ensured by means of the requisite transport openings (e.g. sliding gate W/H 2.9/4.2 m). Access doors and emergency exits must be provided. No permanent workplaces must be planned inside the electrolysis hall.
4) The hall floor must be capable of withstanding area loads of 100 kN/m^2 and concentrated loads of 50 kN, with a load distribution of 40 cm/40 cm. Concentrated loads for inward transport with a superimposed load of 50 kN/wheel must be considered. This corresponds approximately to an SLW 30 (standard vehicle with a total load of 30 t).
5) The plant components can initially be transported into the hall via heavy goods transport vehicles (heavy-duty rollers).
6) Forklifts shall be provided for the overhaul and maintenance of the plant segments, which can access the hall via a sliding gate (the maintenance areas around the Electrolyzer system should be > 2m).
7) For the construction of the hall and the delivery of the plant units, the access routes for vehicles such as an SLW60 standard vehicle and corresponding crane vehicles must be assured.
8) Suitable openings must be provided for the connection between the process equipment/stack and the outdoor direct current stations.

Housing is not part of Siemens' scope of supply, however please find below some additional notes and recommendations.

1) DC supply:

   Installed in housing in lightweight concrete prefabricated house.
2) Electrolyzer:

   Indoor installation in aerated, frost-free industrial building.
3) Indoor installation temperature range:

   +2 °C to +35 °C
4) Permitted installation altitude:

   ≤ 1,000 m above sea level
5) Permitted earthquake zone: 3
6) Weight (gross):

   approx. 17 t

6 Operation & maintenance

6.1 Operation

General information: The electrolysis control system is based on SIMATIC PCS7 which monitors and controls the electrolysis system. Electrolyzer operation is fully automated based on set points for load and pressure. These set points may come from the hydrogen demand side or from the electricity side (i.e. load set points received from the electrical grid control). If the set points are available at the remote-control interface, no operator intervention is required during normal operation.

Typical operation tasks:

- Start and shut down of the electrolysis system according operator needs i.e. H2 production required or electricity available (only if remote control is not used/available)
- Check system status in case of control system alarm indication: measured values, messages (pre-alarms or alarms)
- Inform (Siemens) maintenance team in case of abnormalities

6.2 Maintenance

The electrolysis system consists of high-quality, low-maintenance components. However, in order to maintain high equipment availability, all measures for preventive plant maintenance have to be undertaken according to the maintenance instructions of the individual component descriptions at the intervals given therein.

Any further inspection and maintenance measures can be undertaken by Siemens. Siemens recommends concluding an appropriate maintenance contract for carrying out these necessary inspection and maintenance measures by the Siemens service personnel.

Certain low-level maintenance activities have to be executed regularly by owners' personnel:

- Regular visual check of the system (daily ... weekly), check any leakage/strange noise etc.
- Regular check of the water purification plant (level of salt, filter, etc.)
- Organize or execute regeneration/change of ion exchange resin in the cartridges of the water purification loop
- Refill or change water of flushing unit of pump
- Organize calibration service for hydrogen detection sensors (intervals depending on local regulations)

Further higher-level maintenance tasks are normally contracted with Siemens Service Organization (interval typically twice a year).

7 Documentation

The documentation to be delivered consists of the standardized documentation for Siemens electrolysis systems. The contents can be adapted to a specific project only to a limited degree. The documentation is provided in the respectively specified language in digital form by means of *.pdf files.

Contents of the documentation:

- Operational handbook (English)
- Operational instructions for individual components of third-party manufacturers shall be provided if maintenance is required. The form of third-party manufacturer will not be adapted. (English)
- General P&ID (English)
- Wiring Diagrams
- CE declaration of conformity (English)

8 Site Services

8.1 Assembly supervision and Commissioning

The assembly and connection of the Electrolyser components is done – as far as required - with technical instructions from a Siemens supervisor. The corresponding working hours and travel costs are included in the offer on a fixed price basis. Also already included are the costs for assembly services (fitters, welders, electricians) to the extent that these are required for the assembly of the components or for carrying out piping and connection work according chapter 5.2.

The first commissioning shall be performed by the Siemens specialists and will be supported by the Customer if needed. The working hours and travel costs for the first commissioning are included in the offer.

In order to avoid delays and related additional costs, the Customer must fulfil the following conditions:

- Unobstructed and unrestricted access to the assembly site shall be available to the Siemens personnel for the whole duration of assembly and commissioning services. Any necessary approvals (e.g. fire protection and emissions approvals) shall be obtained by the Customer before the start of assembly and commissioning works.
- Access roads, foundations and/or any planned buildings, electricity, water and effluent hook-ups shall be set up in time.
- The assembly and commissioning works can be started immediately after the arrival of the Siemens personnel.
- It shall be possible for all work on site to be carried out efficiently and without interruptions. Extra costs from works performed outside normal working hours, that are necessary for reasons beyond the Siemens control shall be reimbursed by the Customer.

8.2 Start-up support

Siemens commissioning personnel may provide support after finishing commissioning the electrolysis by starting up the whole plant.

8.3 Training

Training of the operating personnel to operate the electrolysis plant shall be provided on-site by the Siemens commissioning personnel immediately after starting the electrolysis. The training shall take place at the delivered system based on the plant documentation delivered according to the contractual agreement. The preparation of specific training documents is not foreseen.

9 Limits and Interfaces

9.1 Battery limits

Our offer is indicative only at this stage, a division of responsibility would need to be agreed in order to clarify clear responsibilities between Siemens, the customer and any other parties.

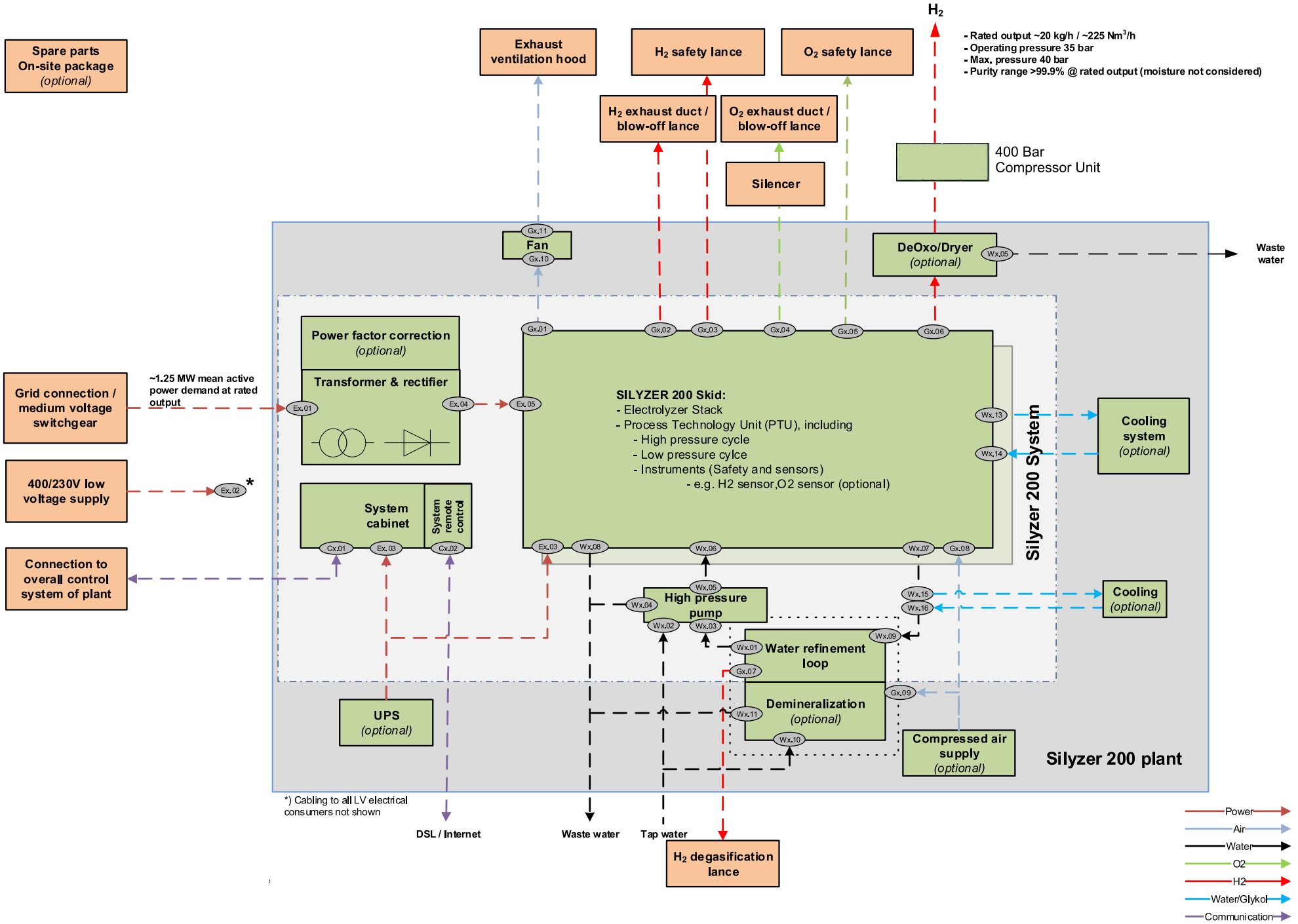
9.2 Industry Standards and EU directives

The Siemens business segment Hydrogen Solutions received DIN ISO 9001 certification on 13 May 2018 from DQS GmbH. A copy of the certificate DIN ISO 9001 will be made available upon request.

Siemens will deliver the product Silyzer in accordance with the EU Conformity regulations for placing on the European market.

For this, the applicable conformity valuation procedure will be carried out for the product, and proved by means of CE conformity certificate.

Relevant codes and standards will be provided with firm offer or at project execution start.



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SIEMENS
Hydrogen Solutions

SILYZER 200 System
Interfaces

Typical project

Template: HY_F_177_en / V2.0 / FF-RW_2019-02-22_1 / HY PPM

Interfaces

Electrical power:
Ex.01: MV (6 to 24 kV) connection to transformer
Ex.02: LV (400/230V) power supply to:
- System cabinet
- Electrolyzer
- DC power supply system
- Water treatment system
- Uninterruptible power supply (UPS)
- Air compressor
- DeOxo/Dryer

Ex.03: UPS power supply:
- To electrolyzer-skid
- To system cabinet

Ex.04: DC connection from transformer to Silyzer 200
Ex.05: DC connection on Silyzer 200 from transformer

Kommunikation
Cx.01: Communication interface to overall plant control system (Ethernet interface in system cabinet)
Cx.02: DSL/Internet for Remote Services (Ethernet interface in system cabinet)

Gas / Luft:
Gx.01: Venting duct of electrolyzer hood
Gx.02: H2 exhaust duct / blow-off lance
Gx.03: H2 safety lance
Gx.04: O2 exhaust duct / blow-off lance, flange on Silencer (optional) or Silyzer skid
Gx.05: O2 safety lance
Gx.06: H2 production line, Flange on DeOxo/Dryer (optional) or Silyzer skid
Gx.07: H2 degassification lance
Gx.08: Compressed air supply, flange on electrolyzer skid
Gx.09: Compressed air supply, flange on water treatment plant
Gx.10: Inlet fan (delivered seperately , installation by customer)
Gx.11: Outlet fan

Wasser:
Wx.01: Outlet flow demineralized water to high pressure pump
Wx.02: Inlet flow tap water to flushing unit high pressure pump
Wx.03: Inlet flow demineralized water to high pressure pump
Wx.04: Outlet flow waste water, flange on flushing unit high pressure pump
Wx.05: Outlet flow demineralized water to Silyzer skid
Wx.06: Inlet flow demineralized water to Silyzer skid
Wx.07: Outlet flow demineralized water to water treatment plant
Wx.08: Outlet flow waste water, flange on electrolyzer skid
Wx.09: Inlet flow demineralized water from electrolyzer
Wx.10: Inlet flow tap water on water treatment plant
Wx.11: Outlet flow waste water, flange on water treatment plant
Wx.12: Outlet flow waste water, flange on DeOxo/Dryer
Wx.13: Cooling water to cooling system
Wx.14: Cooling water from cooling system
Wx.15: Inlet demineralized water to cooling
Wx.16: Outlet demineralized water from cooling

Note:
For all H2 and O2 pipes at the outlet flange of Silyzer skid: Oxygen/ Hydrogen gas is saturated with water. Piping shall have a slope downward. If this is not possible, a condensate trap should be used before an upward pipe.

Annex C: Environmental Risk Assessment




EPR Permit Application

ENVIRONMENTAL RISK ASSESSMENT

Canford Renewable Energy
Hydrogen Generation Facility

Prepared for:
Canford Renewable Energy

Date:
March 2021

Project Issue Number:
SOL2101CRE01

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VERSION CONTROL RECORD			
Contract/Proposal Number:		SOL2101CRE01	
Authors Name:		Emily Hingston	
Signature:			
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1	First submission to the Client	March 2021	SB

1. Introduction

As part of an application for an environmental permit Operators must assess the risk to the environment and human health from the activities they seek to permit. This Environmental Risk Assessment has been undertaken in accordance with the online Environment Agency Guidance for undertaking environmental risk assessments. Environmental risks relevant to the proposed hydrogen generation facility at the W H White Landfill site are:

- Emissions to Air;
- Emissions to Water;
- Emissions to Land;
- Odour;
- Noise;
- Fugitive emissions; and
- Accidents.

For each of the above environmental criteria the approach to the assessment has followed the following four stage process:

- Identify the risks;
- Assess the risks (assuming those control measures proposed are in place);
- Choose appropriate further measures to control these (if required); and
- Present the assessment.

In completing the assessment prevention and control measures proposed by the operator are assumed to be in place. Where relevant details of these measures are identified within the assessment.

Table 1: Environmental Risk Assessment						
Hazard	Receptor	Pathway	Risk Management Techniques	Probability of Exposure	Consequence	Overall Risk (following Mitigation)
Point Source \ Releases to Air	Atmosphere	Airborne	• Emissions to air under normal operation are limited to simply oxygen which is discharged to atmosphere via the 7.8 m high exhaust stack (A1). • The plant is also equipped with a 5.6 m high hydrogen vent stack (A2). This is utilised only in the event of a safety shut down or during nitrogen purge of the system. Emissions are limited to hydrogen and nitrogen. • These emissions do not require abatement. • Monitoring of the emission is automatically undertaken through the sites control system.	Low: offsite receptor impacts	Air Pollution	**Negligible** due to the proposed processes on site
Emissions to Water	Groundwater / Geology / Surface Water	Waterborne	• There will be no direct process emissions to controlled water arising from the hydrogen plant. • All operational and storage areas of the site are constructed on sealed concrete hardstanding. • Uncontaminated surface water run-off is directed via sealed drainage system to the existing landfill drainage system. • There is no storage of fuels/chemicals/oils onsite. Potentially polluting raw materials are limited to hydraulic oil within the compressor unit which is fully contained. • Wastewater from the process is limited to mineralised water from the demineralisation of incoming mains water. This wastewater is not contaminated and will be discharged to sewer under the existing consent from Bournemouth Water.	Low: all runoff is controlled on site, therefore the probability of exposure is low.	Contamination	**VERY LOW** due to the proposed substances onsite, effluent composition, management techniques and drainage arrangements

			• In the event of a fire, all drainage systems can be isolated and all potentially contaminated fire water will be contained within the hydrogen facility. All fire water will then be tankered away to a suitable water treatment facility.			
Emissions to Land	Groundwater / Geology	Spills / Leaks	• There will be no emissions to land arising from the proposed hydrogen facility. • There is no storage of fuels/chemicals/oils onsite. Potentially polluting raw materials are limited to hydraulic oil within the compressor unit which is fully contained. • Tube trailers for hydrogen storage, collection and delivery will be onsite. As such, there is low potential for spills/leaks from vehicles onsite. • All operational and storage areas onsite will be constructed of impermeable concrete hardstanding. • A spill kit will be located onsite. • Minor spills to be cleaned up immediately, using spill kits. Resultant materials to be placed in container for off-site disposal to appropriate facility, if necessary. • Immediate action to be taken in event of any major spills. Spillage to be cleared immediately and placed in containers for offsite disposal. The EA to be informed	Low: spills / leaks could potentially contaminate the ground / groundwater underneath the site.	Contamination	**VERY LOW** due to the materials onsite and proposed risk management techniques

Table 2: Odour Risk Assessment						
Hazard	Receptor	Pathway	Risk Management Techniques	Probability of Exposure	Consequence	Overall Risk (following Mitigation)
Odour	Local residents (nearest residential receptors approx. 300 m north on Arrowsmith Road)	Airborne	• There are no potentially odorous materials used on site as part of the process. Raw materials are limited to mains water and electricity, with outputs limited to oxygen, hydrogen and waste water comprising simply mineralised potable water. • The process itself, namely splitting of hydrogen and oxygen via electricity, is not considered odorous. • There will be no odorous impacts associated with the hydrogen generation facility.	Negligible: due to nature of the facility	Nuisance	**Negligible**

Table 3: Noise Risk Assessment						
Hazard	Receptor	Pathway	Risk Management Techniques	Probability of Exposure	Consequence	Overall Risk (following Mitigation)
Noise emanating from hydrogen generation equipment - Electrolyser - Transformer - Compressed air unit - Air-cooling system	Local Residents & Workers	Airborne	• The site is not considered to be in an area sensitive in regards to noise, the closest residential properties are located approximately 560m distant and are screened by woodland. • All potentially noisy plant will be acoustically enclosed and / or fitted with attenuation. • Appropriate preventative maintenance will be provided for the various elements of the plant. This will ensure no deterioration of plant or equipment that would give rise to increases in noise. • All equipment has been designed in accordance with best practice and to ensure that any noise does not present an issue to the employees at the site under the Control of Noise at Work Regulations, and also to ensure that noise breakout does not lead to noise nuisance at the identified sensitive receptors. • The facility will not give rise to reasonable cause for annoyance. In the unlikely event of any complaints, these will be dealt with in accordance with the sites complaints procedures. • An environmental noise assessment has been completed and concludes no significant impact to the nearest sensitive receptor as a result of the hydrogen facility.	Low: due to proximity of closest receptors and screening	Nuisance	**Low –** due to the proposed management techniques

Noise associated with HGV movements (one lorry movement per day for delivery / collection of hydrogen storage trailer)	Local Residents & Workers	Airborne	• Deliveries and collections will take place once per day, with a full tube trailer collected at the same time as an empty trailer is delivered. • All vehicles would be fitted with white noise reversing signals rather than the traditional 'beeper' warnings. • A BS4142 Noise Assessment has been carried out including a background noise survey and has concluded that there is no significant adverse impact to sensitive receptors.	Low: due to proximity of closest receptors and screening	Nuisance	**Low –** due to the proposed management techniques

Table 4: Fugitive Emissions Risk Assessment						
Hazard	Receptor	Pathway	Risk Management Techniques	Probability of Exposure	Consequence	Overall Risk (following Mitigation)
Leaks / spillages	Land, Groundwater & Surface Water	Waterborne	• The only tanks onsite relate to the water treatment plant and hold incoming mains water, demineralised water and mineralised water. • There is no storage of fuels/chemicals/oils onsite. Potentially polluting raw materials are limited to hydraulic oil within the compressor unit which is fully contained. • Deliveries of the above are supervised by an appropriately trained site operative and take place within the units. Other than this, the main source of any spillages may be due to fuel leaks from vehicles or mobile plant. • All operational and storage areas of the site are surfaced in impermeable concrete hardstanding. • A spill kit will be strategically located on site. • Minor spills to be cleaned up immediately, using spill kits. Resultant materials to be placed in container for off-site disposal to appropriate facility, if necessary. • Immediate action to be taken in event of any major spills. Spillage to be cleared immediately and placed in containers for offsite disposal. EA to be informed.	Low	Contamination	**Very Low: –** due to the proposed management techniques
Dust	Local residents	Airborne	• There are no potentially dusty materials used on site as part of the process. Raw materials are limited to mains water, and electricity, with outputs limited to oxygen, hydrogen and waste water comprising simply mineralised water.	Low: due to process	Nuisance	**Low –** due to the proposed management techniques

			• The process itself, namely splitting of hydrogen and oxygen via electricity, does not have the potential to cause dust. • All operational and storage areas of the site are located upon impermeable concrete hardstanding thereby minimising potential for dust trackout on vehicle wheels.			

Table 5: Accident Risk Assessment						
Hazard	Receptor	Pathway	Risk Management Techniques	Probability of Exposure	Consequence	Overall Risk (following Mitigation)
Fire	Emissions to atmosphere	Airborne	• Arson by intruders is controlled via security of the site itself and the wider landfill facility. • The site is monitored by CCTV. • Visual inspection of all aspects of site are undertaken daily. • Any fire would be identified by the sites CCTV system and landfill personnel. • The sites inspection and maintenance programme will identify any electrical or mechanical machinery faults which could result in a machinery fire. • Machinery is regularly cleaned to remove any dust, etc to ensure that this does not accumulate on moving parts. • The risk of damaged or exposed electrical cables is controlled via the regular inspection and maintenance programme. • Staff and visitors are only permitted to smoke within the designated area, which is located offsite. • There is no smoking permitted within the hydrogen facility site boundary.	Low	Nuisance, damage	VERY LOW due to the proposed risk management techniques
Operator Error	Air / land / water	Various dependant on the nature of the error	• The site is operated remotely and automatically controlled and monitored. • Maintenance and inspection activities carried out within the site are relatively simple. All operational staff will be fully trained against the site operating procedures and manufacturers manual. • Training will include awareness raising of key plant parameters and the potential implications of failure	Low	Various dependant on the nature of the error	VERY LOW due to proposed management techniques

			to control operations as designed and the associated potential impact on the environment. • All incidents will be recorded and investigated appropriately according to the site incident procedure.			
Loss of Containment	Land / water	Site drainage system	• There is no storage of fuels/chemicals/oils onsite. Potentially polluting raw materials are limited to hydraulic oil within the compressor unit which is fully contained. • Deliveries and transfer of hydraulic oil take place within the contained units and is supervised by an appropriately trained operative. Any spillages during this process would be contained within the modular unit. • Containment loss external to the units would be limited to minor fuel spills from hydrogen delivery / collection vehicles. • All operational and storage areas on site are constructed upon impermeable concrete hardstanding with sealed drainage systems. • A spill kit will be available to contain and clean up any spill onsite. Site procedures will be in place to ensure that spill kit inventories are routinely checked and replacements ordered as required. • All incidents will be recorded and investigated appropriately according to the site incident procedure.	Low	Contamination	**VERY LOW** due to proposed management techniques
Vandalism	Operator	The site could be subject to intentional vandalism and damage by	• The site has a CCTV system. • Site is secure. • Unauthorised access is prohibited onsite. • The site will benefit from the wider landfill security systems.	Low: the occurrence of vandalism taking place on site is highly unlikely.	Nuisance, Damage or Fire	**VERY LOW** due to the proposed risk management techniques

		intruders / trespassers who could cause damage or harm to the site or cause fires.				

Annex D: Noise Impact Assessment

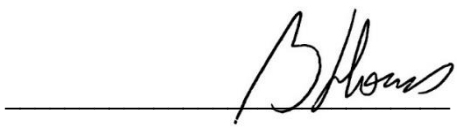
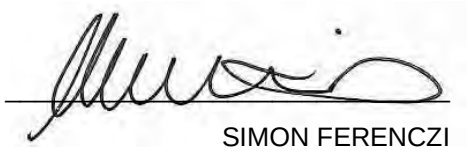
Canford Renewable Energy

Dorset

Environmental Noise Impact Assessment

P1926-REP01-REV A-BDH

15 March 2021

PROJECT:	Canford Renewable Energy Dorset Environmental Noise Impact Assessment
CLIENT:	Sol Environment Ltd 7 Greenway Farm Bath Road, Wick Bristol BS30 5RL
DOCUMENT REFERENCE:	P1926-REP01-REV A-BDH
SIGNED:	 BRIAN HORNER
CHECKED:	 SIMON FERENCZI
DATE:	15 March 2021

CONTENTS

1 EXECUTIVE SUMMARY

Sol Acoustics Ltd has been appointed to provide an environmental noise impact assessment for a small modular hydrogen electrolyser plant to be located at the Whites Pit landfill, Wimborne, Dorset, BH21 3BQ.

The purpose of this acoustic assessment is to determine appropriate maximum permissible environmental noise “Rating Level” limits and suggested corresponding “Specific Sound Level” limits to be achieved at all nearby noise sensitive residential housing, as during daytime and night time periods and all in accordance with the methodology prescribed in relevant Standards and acoustic guidance (i.e. British Standard BS4142: 2014+A1:2019).

These adopted environmental noise limits have been derived from the results obtained from the benchmark environmental noise survey as carried out by Sol between c.13:30 hours during Friday 26 February and c.11:00 hours during Tuesday 2 March 2021. (At the time of the environmental noise survey, the UK was under a national lockdown as a result of the Coronavirus pandemic and thus any environmental noise monitoring as conducted during this period may not be representative of the typical environmental noise climate).

This acoustic assessment report also provides an acoustic assessment of the environmental noise impact that is expected to arise from the anticipated operation of all proposed new plant and processes associated with the Facility at the nearest noise sensitive residential housing (i.e. receptors).

It is the conclusion of this environmental noise impact assessment that the total, aggregate environmental noise impact as arising from the Facility, as based on plant source noise levels provided herein, is capable of meeting the specified maximum permissible environmental noise Rating Level limits, resulting in a “low impact” at the worst affected noise sensitive receptor as during both daytime and night time periods, all as assessed in accordance with British Standard BS4142: 2014+A1:2019 ‘Methods for rating and assessing industrial and commercial sound’.

Please refer to the main report and appendices for further information.

2 INTRODUCTION

Sol Acoustics Ltd ("Sol") has been appointed to provide an environmental noise impact assessment for a small modular hydrogen electrolyser plant to be located at the Whites Pit landfill, Wimborne, Dorset, BH21 3BQ (the plant is henceforth referred to as the "Facility" within this report). The purpose of this acoustic assessment is as follows:

- Identify the nearest pre-existing housing to the site (i.e. noise sensitive receptors, NSRs) which are most likely to be affected by environmental noise arising from plant and processes associated with the operation of the Facility.
- Determine the prevailing, pre-existing weekday and weekend daytime and night time background noise climate at the NSRs, through direct, environmental noise measurement.
- Suggest appropriate environmental noise level limits for the Facility, in the form of "Specific Sound Level" and "Rating Level" limits at the identified NSRs, all in accordance with the methodology prescribed in relevant Standards and guidance (i.e. British Standard 4142: 2014+A1:2019).
- Identify key noise sources which are likely to form part of the Facility, such as specific, fixed items of processing plant and machinery, as well as noise generated from HGVs.
- Obtain indicative source noise level data for the various acoustically significant plant items identified.
- Calculate the resultant environmental noise contribution and impact at the NSRs, as during daytime and night time periods, taking germane factors into account such as distance to receptors, acoustic screening, plant noise source levels stated herein and other environmental features.

This acoustic report is structured as follows:

- Section 3 provides a basic description of the Facility and key surrounding NSRs.
- Section 4 provides summary details of the benchmark environmental noise survey undertaken in order to determine the pre-existing environmental noise climate at the identified NSRs.
- Section 5 provides the results of the benchmark environmental noise survey.
- Section 6 provides a summary of the pertinent acoustic Standard, namely BS4142: 2014+A1:2019, which has been used to assess the magnitude of the noise impact likely to be generated.
- Section 7 provides a summary of the proprietary 3D acoustic models constructed and acoustic calculations undertaken.
- Section 8 provides a BS4142 acoustic assessment.
- Section 9 provides a conclusion statement.

3 DESCRIPTION OF SITE

3.1 General Overview and Noise Sensitive Receptors (NSRs)

The Facility is to be located within the existing Whites Pit Landfill site, as located off Magna Road in Wimborne, Dorset, BH21 3BQ. The site is to be situated in a predominantly rural setting with agricultural and residential uses located further afield.

The nearest identified existing noise sensitive premises to the Facility are as follows:

A. Housing on Arrowsmith Road, located c.550 metres to the north west

B. “Canford Paddock” residential estate (David Wilson Homes development) located off Magna Road, located c.750 metres to the east

C. Housing on Wheelers Lane, located c.900 metres to the east

In addition to the above, the Canford Heath Nature Reserve Site of Special Scientific Interest (SSSI) is located just to the south of the site. However, Sol have been advised that the SSSI designation for this area is due to residential development pressures in the area. The site is not deemed to be noise sensitive (e.g. it is not designated a noise sensitive ecological receptor as according to Sol’s knowledge).

Figure 1 indicates the location of the Facility in relation to the nearest pre-existing NSRs, and also the location of the noise monitoring positions that were used in order to inform the acoustic assessment (these are discussed in Section 4 of this report).

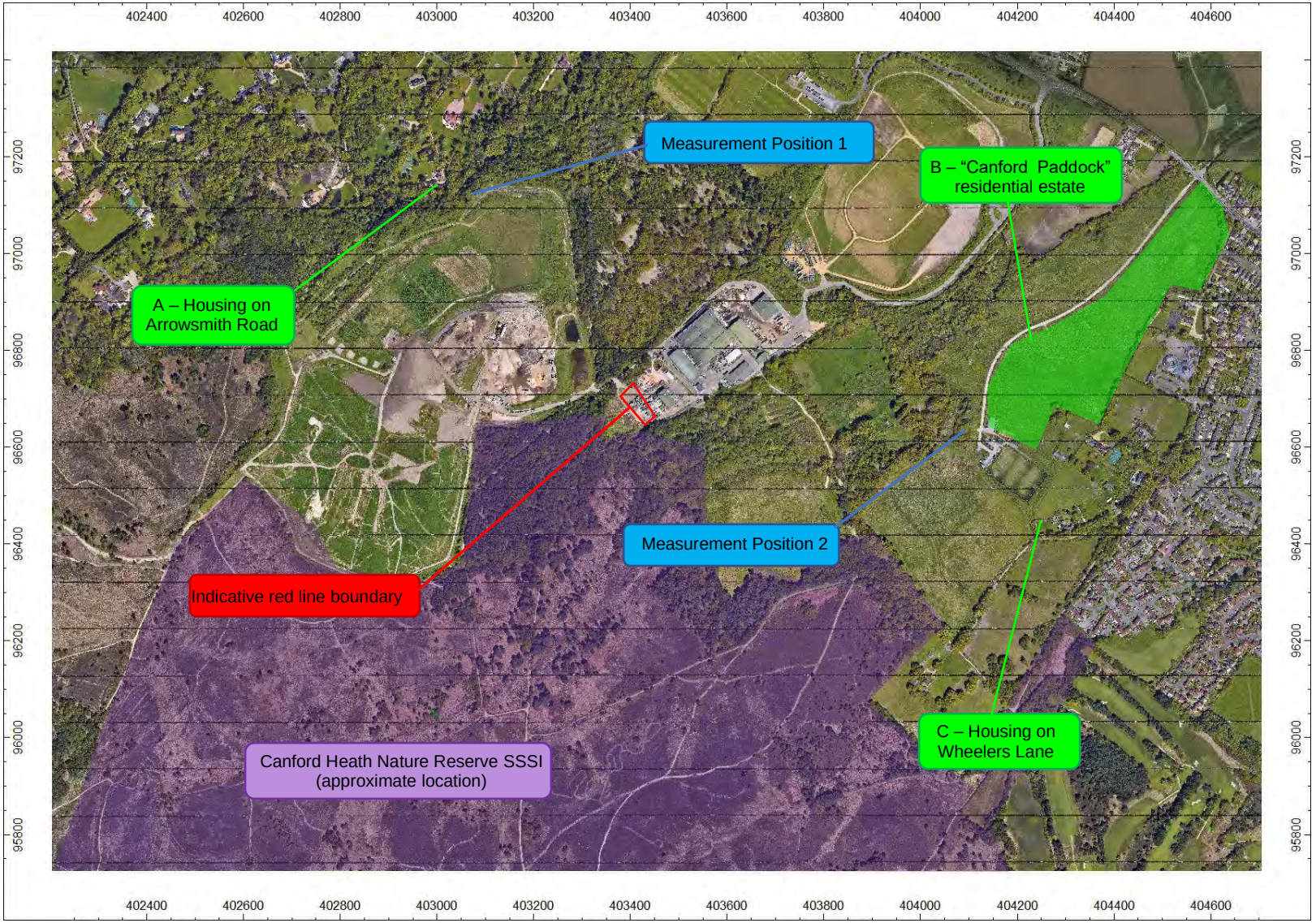


Figure 1: Site and surroundings

3.2 Characteristics of the Facility

3.2.1 Overview

The proposed Facility is a containerised hydrogen electrolysis plant which will process water for the production of hydrogen. The proposed installation will comprise:

- 2 off containerised electrolyser units
- 1 off containerised electrolyser balance of power (BOP) unit
- 2 off cooling units (mounted on top of the electrolysers)
- 1 off compressor unit
- 1 off transformer
- 2 off tube trailers for hydrogen storage

Figure 2 shows the proposed site layout.

3.2.2 Site Deliveries and Collections

The Client has confirmed that there will be up to two HGV movements to/from site per day, as occurring during daytime periods only.

3.2.3 Anticipated Noise Source Level Output

Appendix E provides a preliminary itemised list of likely key acoustically significant plant and processes, as identified by Sol from the current Development plans, which have the potential to create an environmental noise impact at nearby NSRs.

Full details of the anticipated noise level emissions as expected from the plant have not been confirmed to Sol at this stage. Therefore, this assessment is based upon anticipated noise level emissions from the proposed plant as based upon Sol's experience of similar plant (it will need to be confirmed that the proposed plant meets the specified noise level limits). A summary of the adopted noise source level is provided below:

(a) **Electrolyser (casing)**: Achieve a sound pressure level of 75dB $L_{Aeq,T}$ at 1 metre distance from any surface (including any ventilation louvres, personnel doors etc.).

(b) **Electrolyser exhaust**: Achieve a sound pressure level of 75dB $L_{Aeq,T}$ at 1 metre distance from the outlet when measured on axis with plant on full load.

(c) **Cooling system**: Achieve a sound pressure level of 75dB $L_{Aeq,T}$ at 1 metre distance when operating at full design duty.

(d) **Electrolyser BOP**: Achieve a maximum sound pressure level of 75dB $L_{Aeq,T}$ at 1 metre distance from any surface (including any ventilation louvres, personnel doors etc.).

(e) **Compression Unit**: Achieve a maximum sound pressure level of 75dB $L_{Aeq,T}$ at 1 metre distance from any surface (including any ventilation louvres, personnel doors etc.).

Figure 2: Proposed site layout (plan)

4 DETAILS OF INVESTIGATION

4.1 Pre-Existing Environmental Noise Climate

In order to inform the acoustic assessment, an environmental noise survey have been conducted by Sol between c.13:30 hours during Friday 26 February and c.11:00 hours during Tuesday 2 March 2021. The purpose of this survey was to determine the prevailing pre-existing background sound levels at the nearest noise sensitive premises to the Facility, as during typical weekend and weekday, daytime and night time periods, for environmental noise benchmarking and subsequent acoustic impact assessment purposes. (As previously described, the UK was under a national lockdown as a result of the Coronavirus Pandemic at the time of the environmental noise survey, and thus any environmental noise monitoring as conducted during this period may not be representative of the typical environmental noise climate).

The environmental noise survey consisted of two unmanned environmental noise measurement positions as follows:

- **Noise Monitoring Position 1**: Mast mounted microphone sited at c.2.5 metres above local ground level, c.60 metres to the south of the residential housing on Arrowsmith Road.
- **Noise Monitoring Position 2**: Mast mounted microphone sited at c.3m above local ground level, c.50 metres to the west of the residential housing at Canford Paddock.

The location of Measurement Position 1 is shown in Figure 1. The full results are as presented in Appendix B.

The noise survey was carried out using Type 1 Precision Grade noise monitoring equipment, and the complete measuring systems were field calibrated immediately prior to and following the noise survey period. (Full details of the noise monitoring systems are retained on file by Sol, including traceable calibration records; these are available for review if needed).

Meteorological data was recorded at Noise Monitoring Position 2 for the duration of the noise survey, as using a Professional Grade Vaisala “WXT530” weather station. The prevailing weather conditions remained favourable for the whole survey period for the purposes of environmental noise assessment. The average windspeed throughout the survey was less than 2.5 ms^{-1}.

Notwithstanding the weather conditions recorded, the microphone systems were entirely weatherproofed and fitted with all-weather environmental windshields, each with bird spike.

5 ENVIRONMENTAL NOISE SURVEY RESULTS

5.1 Pre-Existing Environmental Noise Climate

Appendix B provides a detailed time history of the background noise levels recorded for the duration of the environmental noise survey and provides details of the equipment used.

Table 1 provides a basic summary of the typical overall, A-weighted noise levels measured at Measurement Positions 1 and 2, in $L_{Aeq,T}$ and $L_{A90,15min}$ terms. The specific, measured noise levels pertinent to the required BS4142 environmental noise assessment are highlighted in ***bold, italic*** text:

Measurement Position	Date	Daytime (07:00 – 23:00 Hours)		Night Time (23:00 – 07:00 Hours)	
		dB $L_{Aeq,T}$	dB $L_{A90,15min}$ (Typical)	dB $L_{Aeq,T}$	dB $L_{A90,15min}$ (Typical)
1	Friday 26 February 2021	42[1]	36	38	***25***
	Saturday 27 February 2021	44	***31***	37	24
	Sunday 28 February 2021	44	35	38	27
	Monday 1 March 2021	46	37	37	30
	Tuesday 2 March 2021	43[1]	38	-	-
2	Friday 26 February 2021	42[1]	***36***	40	33
	Saturday 27 February 2021	48	37	39	***30***
	Sunday 28 February 2021	44	38	39	***30***
	Monday 1 March 2021	49	41	38	*31*
	Tuesday 2 March 2021	48[1]	43	-	-
[1] Measurement not conducted over the full 16-hour daytime assessment period					

Table 1: Summary of typical, measured broadband environmental noise levels

It shall be noted from Table 1 that the measured background sound levels as measured at Measurement Position 1 are low, particularly during the night time period. It is not known whether the measured results were affected by the Coronavirus pandemic national lockdown.

6 ENVIRONMENTAL NOISE PERFORMANCE SPECIFICATION REQUIREMENTS

6.1 BS4142: 2014+A1: 2019 '*Method for rating and assessing industrial and commercial sound*'

British Standard BS4142: 2014+A1: 2019: '*Method for rating and assessing industrial and commercial sound*' (BS4142) is intended to be used to assess environmental noise of an industrial nature, which includes sound from fixed installations, which comprise mechanical and electrical plant and equipment.

The procedure contained in BS4142 for assessing the impact is to compare the measured or predicted noise level from the source in question, the "Specific Sound Level" immediately outside the noise sensitive premises, with the "Background Sound Level". Where the noise contains attention attracting characteristics (i.e. acoustic features) such as tonal, impulsive, intermittent elements, it may be appropriate to apply a correction to the Specific Sound Level to obtain the "Rating Level".

BS4142 states that the significance of sound of an industrial and/or commercial nature depends upon both the margin by which the Rating Level of the specific sound source exceeds the Background Sound Level and the context in which the sound occurs:

- Typically, the greater this difference, the greater the magnitude of the impact.
- A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.
- The lower the Rating Level is relative to the measured Background Sound Level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the Rating Level does not exceed the Background Sound Level, this is an indication of the specific sound source having a low impact, depending on the context.

For the daytime, the assessment is carried out over a one-hour period, and over a 15-minute period at night. The daytime and night time periods are typically defined as occurring between 07:00 hours to 23:00 hours, and 23:00 hours to 07:00 hours respectively.

In full accordance with BS4142 methodology, the context in which the sound occurs must be taken into consideration when demining the magnitude of the noise impact. In this case, the site is situated in a rural setting but with significant existing industrial uses as associated with the existing landfill and recycling facilities within the vicinity of the site.

On this basis and based on the results of the environmental noise survey, Table 2 shows appropriate maximum permissible Rating Level limits which shall be applicable to the Facility at each of the identified NSRs, in order to achieve a BS4142 defined *Low Impact*. These should not be exceeded:

Noise Sensitive Receptors	**Maximum Permissible Noise Rating Level Limit, dB $L_{Ar,Tr}$, for BS4142 defined *Low Impact***	
	Daytime (07:00 – 23:00 hours)	**Night Time (23:00 – 07:00 hours)**
A – Housing on Arrowsmith Road (north west of the Facility)	31	25
B – Housing at Canford Paddock (east of the Facility)	36	30
C – Housing on Wheelers Lane	36	30

Table 2: Maximum permissible Rating Level limits, dB $L_{Ar,Tr}$, to achieve a BS4142 defined *low impact*

These maximum permissible noise level limits are specified in terms of the BS4142 defined Rating Level. The acoustic character of the sound generated from the Facility must therefore be considered and where appropriate, an acoustic character correction (i.e. penalty) must be applied to the predicted Specific Sound Level when assessing compliance with the above specified receptor noise level limits.

Where possible, environmental noise level emissions from the Facility should be controlled such that the total aggregate noise level from all plant and processes does not include any discernible acoustic character (i.e. such as tonal, impulsive, intermittent features etc.). BS4142 states that '…*Where the specific sound features characteristics that are neither tonal nor impulsive, nor intermittent, though otherwise are readily distinctive against the residual acoustic environment, a penalty of 3dB can be applied*…'.

On this basis, Table 3 provides the corresponding maximum permissible Specific Sound Level limits which are applicable to the aggregate noise level emissions from all plant and processes associated with the Facility at the identified NSRs and should also not be exceeded:

Noise Sensitive Receptors	**Representative Noise Measurement Position**	**Maximum Permissible Specific Sound Level Limit, dB $L_{Aeq,T}$, for BS4142 defined *low Impact***	
		Daytime (07:00 – 23:00 hours)	**Night Time (23:00 – 07:00 hours)**
A – Housing on Arrowsmith Road (north west of the Facility)	1	28	22
B – Housing at Canford Paddock (east of the Facility)	2	33	27
C – Housing on Wheelers Lane	2	33	27

Table 3: Maximum permissible Specific Sound Level limits, dB $L_{Aeq,T}$, (no discernible acoustically tonal, and/or impulsive, intermittent features present)

7 ENVIRONMENTAL NOISE MODEL

7.1 Methodology and Basis of 3D Environmental Noise Models

In order to predict the likely noise levels impinging on the surrounding noise sensitive receptors, proprietary 3D computer noise models were created using the DataKustik "CadnaA" noise mapping software. The following assumptions have been made when generating the noise model:

(a) The noise model was set up to apply the noise prediction methodology set out in ISO 9613-2: '*Acoustics – Attenuation of Sound propagation outdoors – Part 2: General Method of Calculation*'.

(b) The model was set to include second order reflected noise from solid structures.

(c) Ground absorption, as defined in ISO 9613-2, has been taken into consideration. The base ground absorption for the model has been set to G=1.0 (soft ground). The ground absorption for large tarmacked areas has been set to G=0.0 (hard ground).

(d) The existing land topography of the site and surrounding area up to and including the nearest NSR has been taken into consideration in the assessment. Third party topographical information has been obtained from emapsite.com.

(e) The noise impact as expected the surrounding residential receptors has been modelled at a height of 4 metres above local ground level.

(f) The noise model assumes that up to one HGVs could arrive at or depart from the Facility during a typical 1-hour daytime assessment period. No HGVs are expected to arrive at, nor depart from the Facility during any night-time period.

(g) The electrolyser, electrolyser BOP and compression unit have each been modelled as a 5-sided 3D noise radiating object, based upon the dimensions stated for the unit, assuming uniform noise propagation from each surface. Each surface of the noise source has been calibrated within the noise model to achieve the stated sound pressure level at 1 metre distance.

(h) The electrolyser exhausts and cooling systems have been modelled as separate and additional points sources, mounted at the appropriate height on top of the electrolyser.

(i) Full octave band noise level data for the proposed plant is not available at this stage. In the absence of full octave band noise data, the noise impact from these noise sources has been modelled a single A-weighted sound power level in the 250Hz octave band only. This assumes that all of the sound energy generated by the noise source is created at relatively low frequencies only. This assumption, in effect, presents the worst case and would be expected to result in a noise impact that is higher than that expected based upon full octave band noise data. This assumption has been adopted for the following reasons:

a. Noise emitted from mechanical plant, such as from acoustically enclosed and packaged equipment is typically higher at such frequencies (in A-weighted terms), most especially the 250Hz octave band.

b. Low frequency noise is more difficult to attenuate when compared to the mid and high frequencies.

c. Any acoustic screening afforded by any intervening buildings and barriers is reduced at low frequency.

d. Attenuation due to atmospheric/environmental factors (such as air and ground absorption), is reduced at low frequency.

(j) Appendix E provides an inventory of plant and process source noise level data; these form the basis of the 3D noise model underpinning the report. These shall not be exceeded.

Figure 3 provides a three-dimensional visualisation of the noise model used to inform the noise impact assessment.

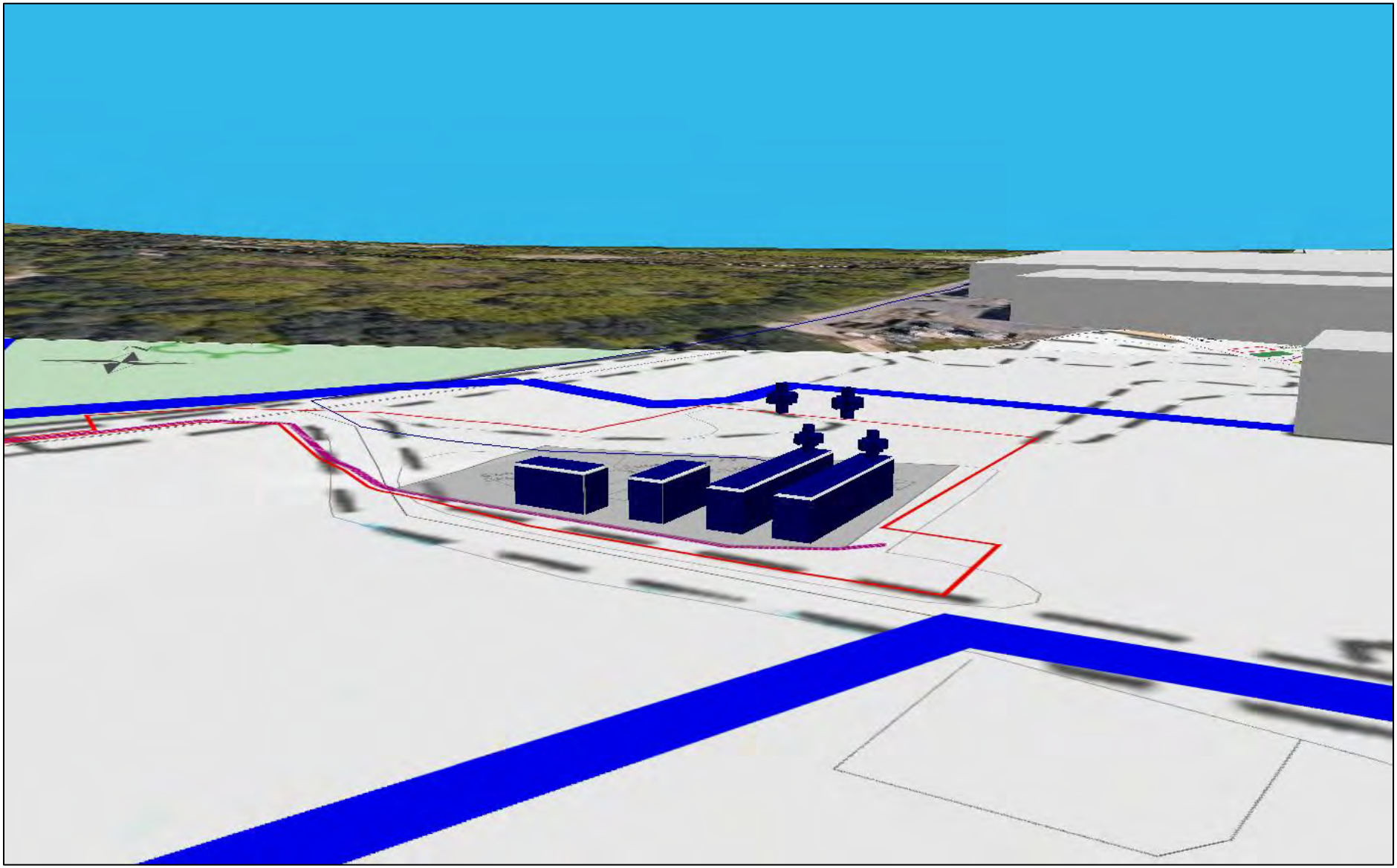


Figure 3: 3D view of the noise model of the Facility

8 ENVIRONMENTAL NOISE IMPACT ASSESSMENT

8.1 BS4142 Assessment

Table 4 presents the predicted overall A-weighted, BS4142-defined Rating Level at the identified NSRs. Appendix D provides full details of CadnaA noise maps which present the daytime and night-time Specific Sound Levels expected.

It shall be noted from the at-receptor partial noise level tables as presented within Appendix D that the noise contribution from all individual noise sources are each below the existing Background Sound Level, at each receptor. As a result, any acoustic character associated with individual noise sources is not expected to be clearly discernible at the nearest noise sensitive receptor above the pre-existing environmental noise climate.

On this basis, and in accordance with BS4142, a conservative correction of +3dB has been applied to the calculated Specific Sound Level, as arising at the noise sensitive receptors from the Facility, in order to allow for any residual "readily distinctive" acoustic features, in order to determine the BS4142 defined Rating Level for acoustic assessment purposes:

Noise Sensitive Receptor	**Assessment Period**	**Predicted Specific Level, dB $L_{Aeq,T}$**	**Predicted Rating Level, dB $L_{Ar,Tr}$**	**Maximum Permissible Noise Rating Level Limit, dB $L_{Ar,Tr}$, for BS4142 Defined *Low Impact***	**Exceedance, dB**
A – Housing on Arrowsmith Road (north west of the Facility)	Daytime (07:00hrs – 23:00hrs) T = 1 hour	23	26	31	-5
	Night Time (23:00hrs – 07:00hrs) T = 15 minutes	22	25	25	0
B – Housing at Canford Paddock (east of the Facility)	Daytime (07:00hrs – 23:00hrs) T = 1 hour	32	35	36	-1
	Night Time (23:00hrs – 07:00hrs) T = 15 minutes	26	29	30	-1
C – Housing on Wheelers Lane	Daytime (07:00hrs – 23:00hrs) T = 1 hour	29	32	36	-4
	Night Time (23:00hrs – 07:00hrs) T = 15 minutes	26	29	30	-1

Table 4: BS4142 summary assessment

Thus, the total, aggregate environmental noise impact as arising from the proposed operation of the Facility, is capable of meeting the specified maximum permissible environmental noise Rating Level limits, resulting in a "low impact" at the identified NSRs, as during both daytime and night time periods, and all as assessed in accordance with BS4142.

8.2 Uncertainty

Section 10 of BS4142: 2014 states the following with regards to uncertainty:

> '… *Consider the level of uncertainty in the data and associated calculations. Where the level of uncertainty could affect the conclusion, take reasonably practicable steps to reduce the level of uncertainty. Report the level and potential effects of uncertainty*…'

In accordance with the requirements of BS4142, SoI have undertaken the following steps to limit the level of uncertainty in the acoustic assessment:

1. All noise measurements have been carried out using Type 1 Precision Grade noise mounting equipment. All noise measuring instruments have traceable laboratory calibration certification.

2. All noise measurements were accompanied by continuous meteorological measurements as conducted at, or close to, the measurement position in order to ensure that the measurement data was not adversely affected by unfavourable weather conditions.

3. Calculations have been conducted in line with appropriate and nationally recognised acoustic standards (ISO 9613-2, BS12354: 2000), and using proprietary 3D noise modelling software, CadnaA.

4. The assessment assumes downwind propagation in all cases as this represents the worst case.

9 CONCLUSION

Sol has been appointed to provide an environmental noise impact assessment for a small modular hydrogen electrolyser plant to be located at the Whites Pit landfill, Wimborne, Dorset, BH21 3BQ.

The purpose of this acoustic assessment is to determine appropriate maximum permissible environmental noise “Rating Level” limits and suggested corresponding “Specific Sound Level” limits to be achieved at all nearby noise sensitive residential housing, as during daytime and night time periods and all in accordance with the methodology prescribed in relevant Standards and acoustic guidance (i.e. British Standard BS4142: 2014+A1:2019).

It is the conclusion of this environmental noise impact assessment that the total, aggregate environmental noise impact as arising from the Facility is capable of meeting the specified maximum permissible environmental noise Rating Level limits, resulting in a “low impact” at the worst affected NSR as during both daytime and night time periods, all as assessed in accordance with British Standard BS4142: 2014+A1:2019 ‘Methods for rating and assessing industrial and commercial sound’.

APPENDIX A

GLOSSARY OF ACOUSTIC TERMS

Term	Abbreviation	Description
Sound Pressure Level	L_{pA}	A measure of the (usually instantaneous) A-weighted sound pressure level. Typically expressed in dB(A) referenced to 2 x 10^{-5} Pascals.
Equivalent Continuous Sound Level	$L_{Aeq,T}$	The steady level of sound over a prescribed time period (*T*) which would contain the same total sound energy as the actual fluctuating noise under consideration as during the same time period (time-averaged noise level).
Statistical Sound Levels	L_{A10} and L_{A90}	The A-weighted sound pressure level that is statistically exceeded for a percentage of the time period being sampled, either 10% or 90% respectively.
Background Sound Level	$L_{A90,T}$	The A-weighted sound pressure level of the residual noise at an assessment position (e.g. receptor) that is statistically exceeded for 90% of a given time period (*T*).
Maximum Sound Level	L_{Amax}	The maximum sound or noise level recorded during a defined measurement time interval, with sound measuring instrumentation set to either a fast time weighting, L_{Afmax}, or a slow time weighting, L_{Asmax}.
Sound Power Level	L_{wA}	A measure of the total A-weighted sound energy radiated from a source (e.g. item of plant). Like sound pressure levels this is also expressed in dB(A), albeit referenced to 1 x 10^{-12} W.
Broadband		Noise data comprising of a wide frequency range (e.g. $L_{Aeq,T}$), as opposed to octave, one-third octave or narrow frequency band noise data.
Narrow-band		Acoustic Energy over a restricted range of frequencies. Used to identify the frequency of audible tones, and to assist in identifying sources of noise in a complex sound environment (e.g. via prominent, tell-tale narrow frequency spectrum).
Ambient Sound		Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources, near and far.
Specific Sound Level	$L_{eq,Tr}$	The Equivalent Continuous A-Weighted Sound Level at an assessment position produced by a specific sound over a given referred time interval, *Tr*
Rating Level	$L_{Ar,Tr}$	The Specific Sound Level plus any adjustment for the acoustic characteristic features of the noise (e.g. intermittency, tones etc.)
Residual Noise	$L_{Aeq,T}$	The ambient sound remaining at given position in a given situation when the specific sound source is suppressed to a degree such that it no longer contributes to the ambient sound.
Sound Reduction Index	*SRI*	The reduction in sound energy when transmitted through a panel or similar planar element, used typically in relation to single octave or one-third octave frequency band values.
Weighted Sound Reduction Index	R_w	The Sound Reduction Index expressed as a single figure.
Dynamic Insertion Loss	*DIL*	Reduction in acoustic energy resulting from the insertion of a noise control element (e.g. an attenuator).

APPENDIX B

NOISE SURVEY DETAILS AND SUMMARY RESULTS

LOCATION

Wimborne, England

WEATHER CONDITIONS

Date	Daytime (07:00 hours – 23:00 Hours)				Night Time (23:00 hours – 07:00 hours)			
	Temp, °C	Rain, mm/h	Wind Direction	Average Wind Speed, m/s	Temp, °C	Rain, mm/h	Wind Direction	Average Wind Speed, m/s
26/02/2021	6	0	S	0.6	1	0	S	0.3
27/02/2021	6	0	SE	0.8	2	0	SW	0.4
28/02/2021	7	0	NW	1.9	3	0	NW	1.1
01/03/2021	8	0	N	2.1	2	0	NW	1.6
02/03/2021	3	0	N	2.5	-	-	-	-

PERSONNEL

Tim Walton – Sol Acoustics

INSTRUMENTATION

Measurement Position 1

01dB Cube Sound level meter (serial no. 11114)

01dB Pre22 Microphone preamplifier (serial no. 1610399)

GRAS 40CD Microphone capsule (serial no. 260807)

01dB Cal21 acoustic calibrator (serial no. 34675320)

Measurement Position 2

01dB Cube Sound level meter (serial no. 11228)

01dB Pre22 Microphone preamplifier (serial no. 1610782)

GRAS 40CD Microphone capsule (serial no. 287832)

01dB Cal21 acoustic calibrator (serial no. 34675320)

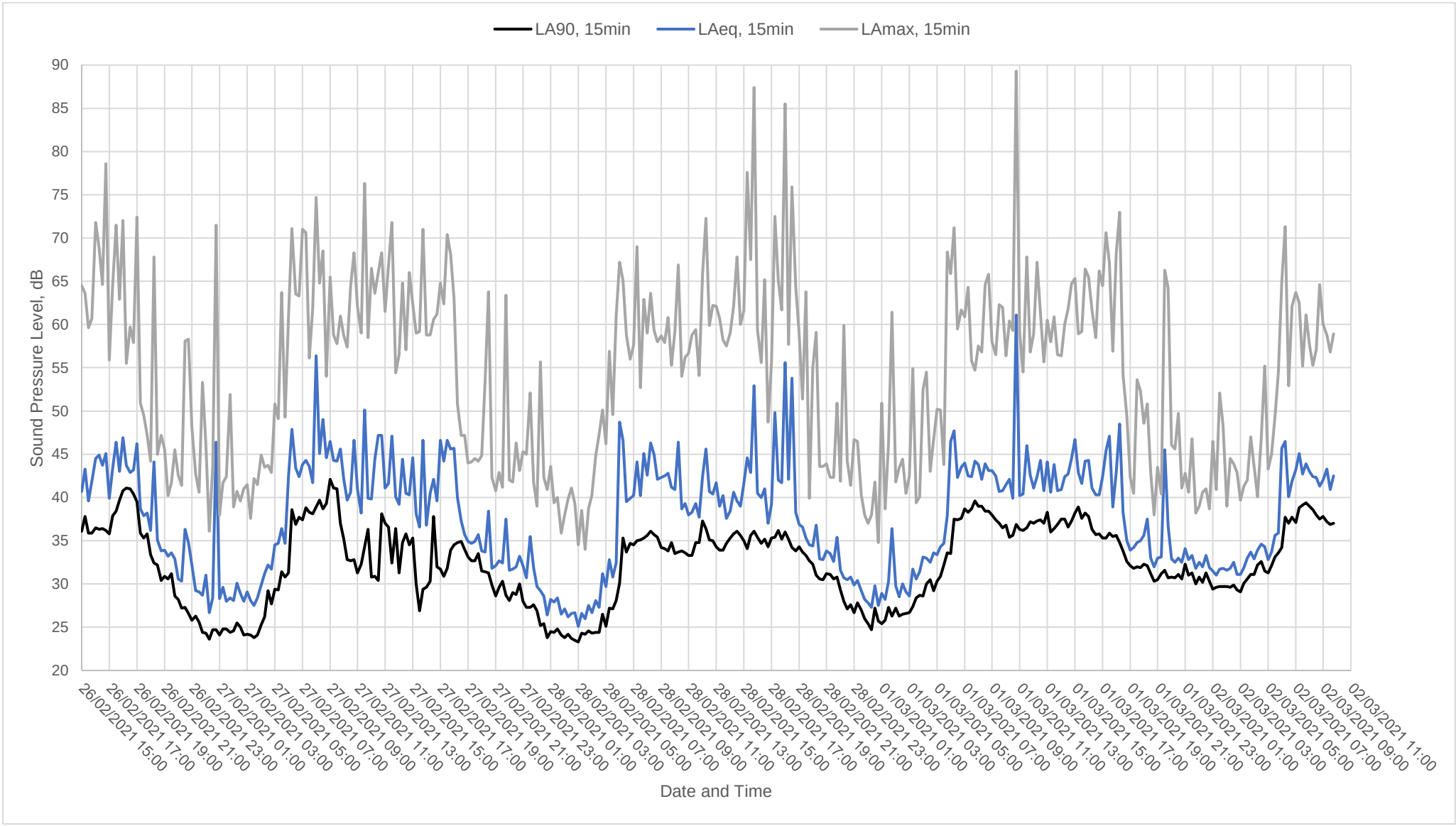
Vaisala WXT520 Weather Station (serial no. M3640013)

METHODOLOGY

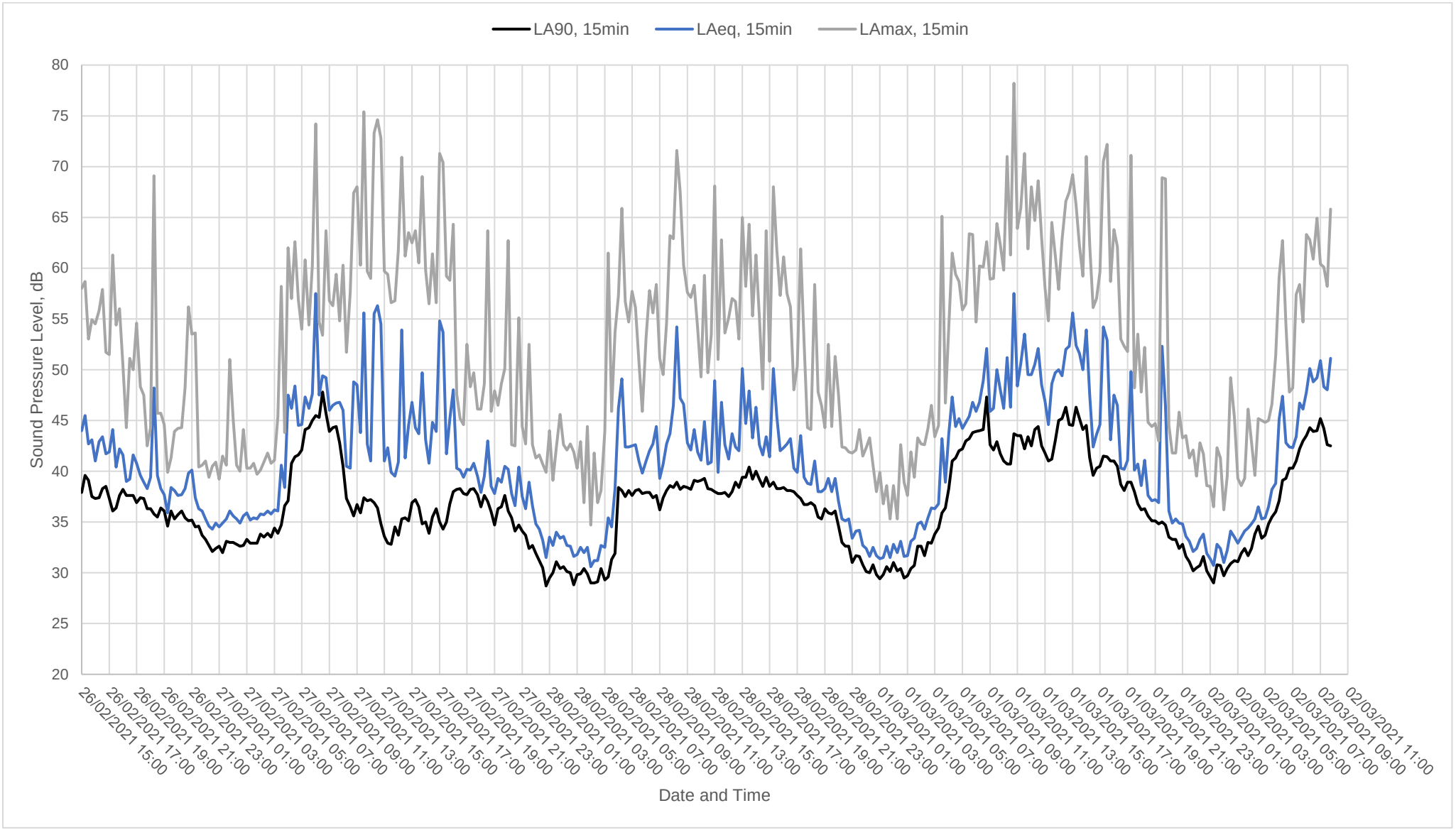
Before and after the measurements the noise monitoring equipment was calibrated to an accuracy of ±0.3dB using the Cal 21 Calibrator. The calibrator produces a sound pressure level of 94dB re 2 x 10^{-5} Pa @ 1kHz.

MEASUREMENT RESULTS

Graphs B1 and B2 summarises the broadband A-weighted results obtained at Monitoring Positions 1 and 2 respectively.



Graph B1: Measurement Position 1, 26 February to 2 March 2021



Graph B2: Measurement Position 2, 26 February to 2 March 2021

APPENDIX C

SITE PLAN INDICATING LOCATION OF NOISE SOURCES

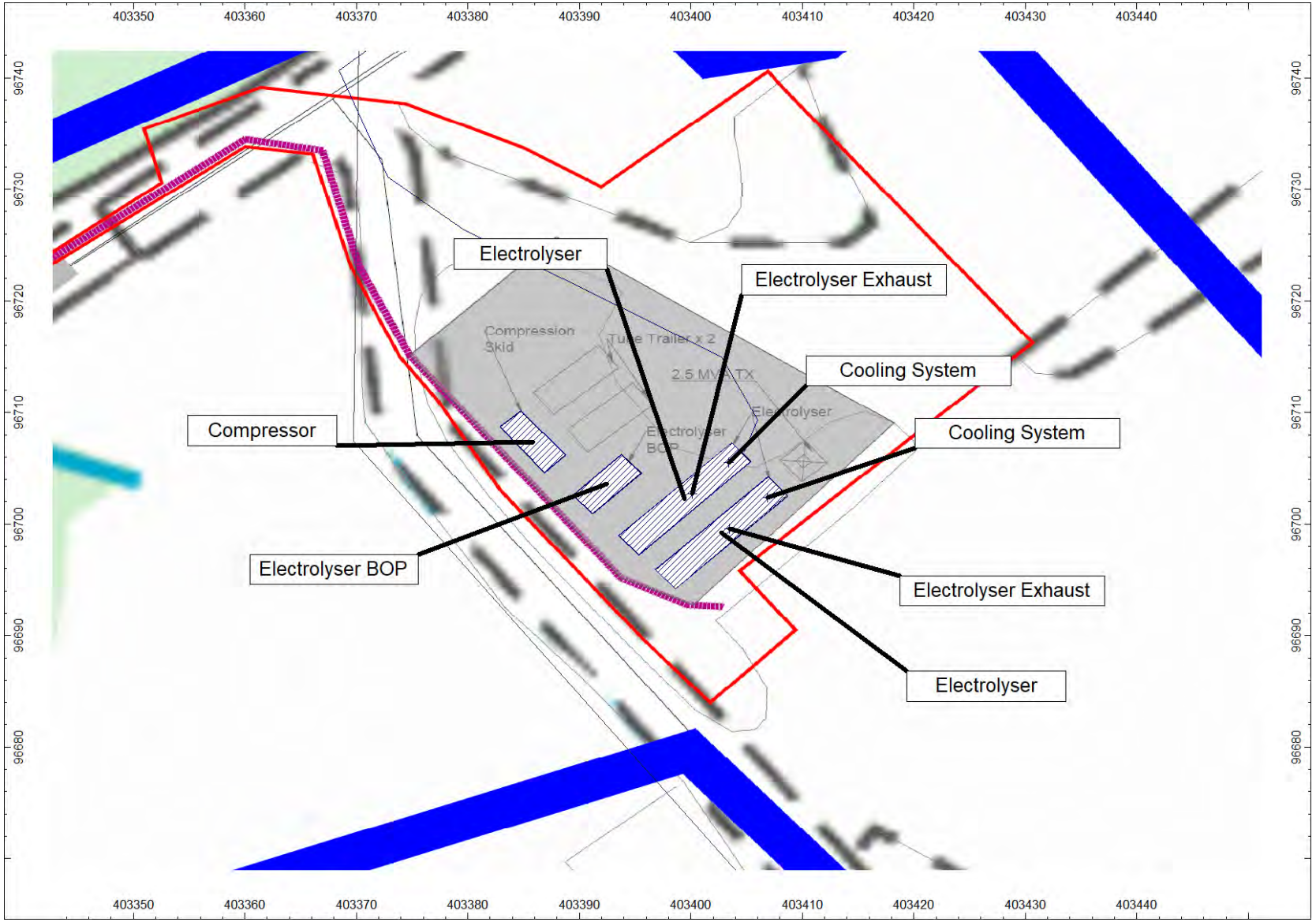


Figure C1: Site plan indicating grid coordinate references x, y coordinates for all external modelled noise sources

APPENDIX D
ENVIRONMENTAL NOISE MODELLING RESULTS

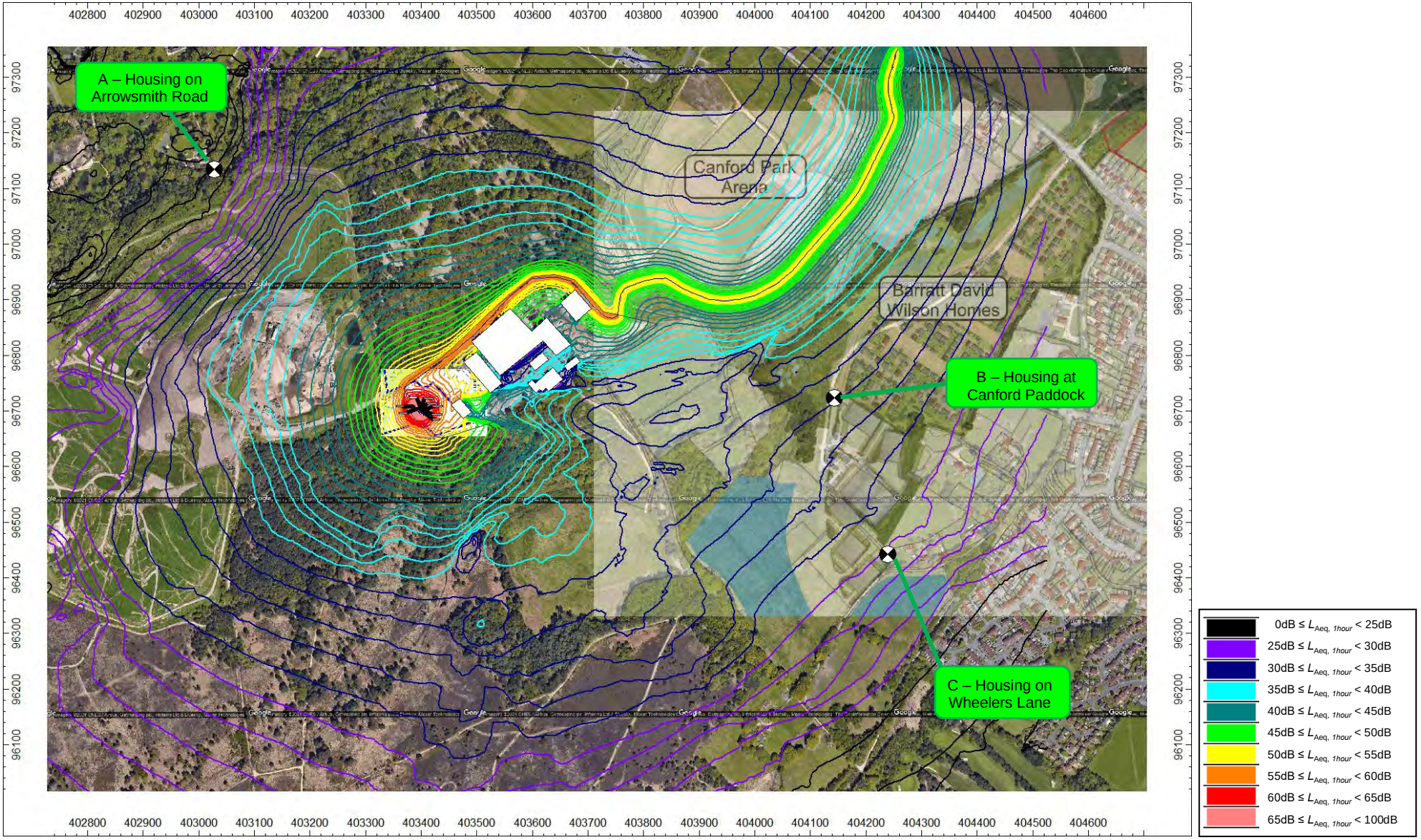


Figure D1: Predicted daytime $L_{Aeq,1hour}$ Specific Sound Level from the installation, at 4 metres grid height

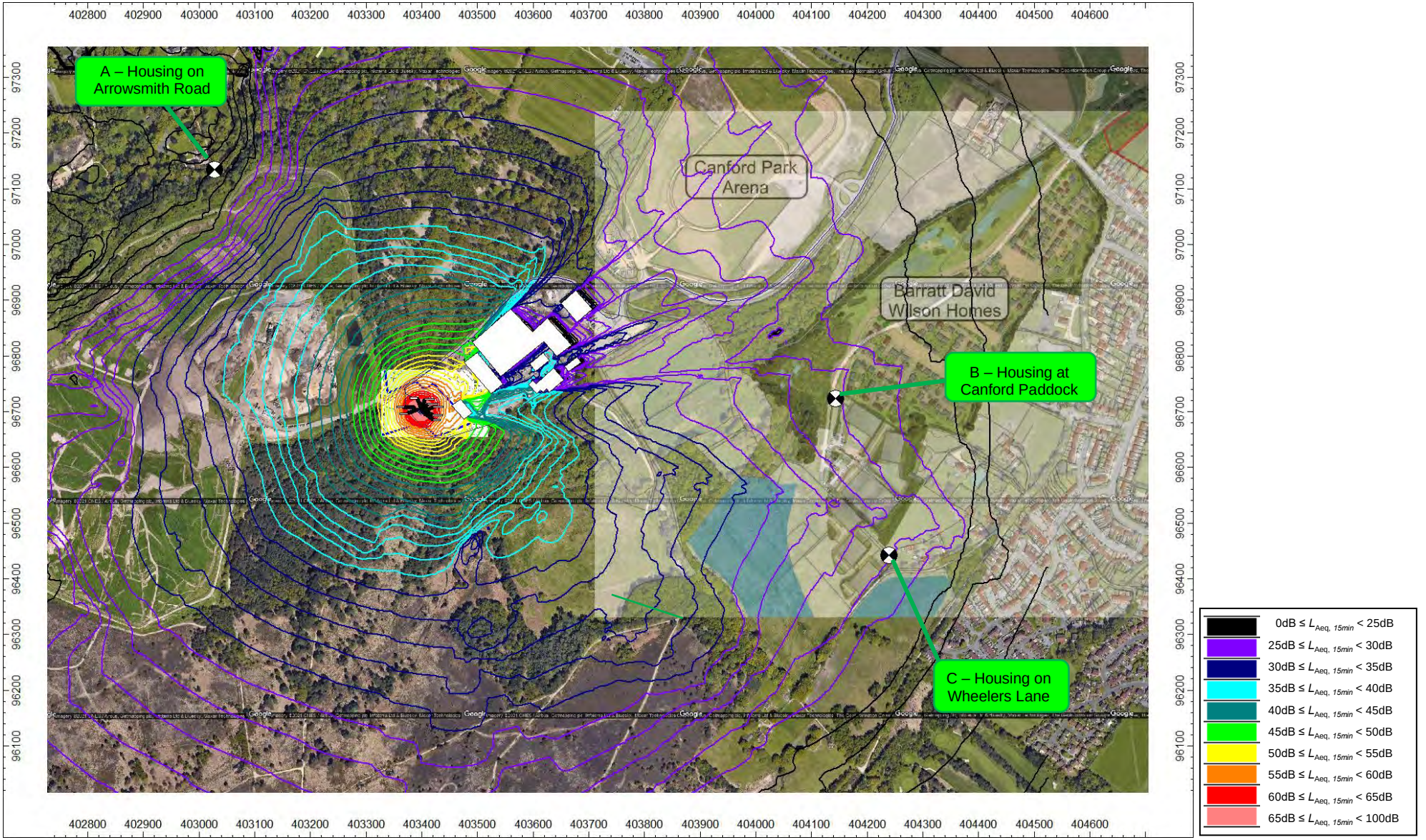


Figure D2: Predicted night time $L_{Aeq,15min}$ Specific Sound Level from the installation, at 4 metres grid height

A – Housing on Arrowsmith Road Predicted Specific Sound Levels Daytime (07:00 – 23:00 Hours)	
Source Description	**Specific Sound Level, dB $L_{Aeq,T}$**
HGV	16.8
Cooling System	13.4
Cooling System	13.3
Electrolyser (Roof)	11.0
Electrolyser (Roof)	10.9
Electrolyser (Side)	9.9
Electrolyser Exhaust	8.5
Electrolyser Exhaust	8.4
Electrolyser (Side)	8.3
Compressor (Side)	8.0
Electrolyser BOP (Roof)	7.8
Compressor (Roof)	7.6
Electrolyser BOP (Side)	7.3
Electrolyser (End)	6.2
Electrolyser (End)	6.1
Electrolyser (Side)	6.1
Electrolyser BOP (End)	6.0
Electrolyser (Side)	5.6
Compressor (End)	5.6
Electrolyser BOP (Side)	2.9
Compressor (Side)	2.9
Electrolyser BOP (End)	0.5
Compressor (End)	0.4
Electrolyser (End)	0.3
Electrolyser (End)	0.3
Total	**23.0**

Table D1: A – Housing on Arrowsmith Road Specific Sound Levels, daytime

A – Housing on Arrowsmith Road Predicted Specific Sound Levels Night time (23:00 – 07:00 Hours)	
Source Description	**Specific Sound Level, dB $L_{Aeq,T}$**
Cooling System	13.4
Cooling System	13.3
Electrolyser (Roof)	11.0
Electrolyser (Roof)	10.9
Electrolyser (Side)	9.9
Electrolyser Exhaust	8.5
Electrolyser Exhaust	8.4
Electrolyser (Side)	8.3
Compressor (Side)	8.0
Electrolyser BOP (Roof)	7.8
Compressor (Roof)	7.6
Electrolyser BOP (Side)	7.3
Electrolyser (End)	6.2
Electrolyser (End)	6.1
Electrolyser (Side)	6.1
Electrolyser BOP (End)	6.0
Electrolyser (Side)	5.6
Compressor (End)	5.6
Electrolyser BOP (Side)	2.9
Compressor (Side)	2.9
Electrolyser BOP (End)	0.5
Compressor (End)	0.4
Electrolyser (End)	0.3
Electrolyser (End)	0.3
HGV	-
Total	**21.9**

Table D2: A – Housing on Arrowsmith Road Specific Sound Levels, night time

B – Canford Paddock Predicted Specific Sound Levels Daytime (07:00 – 23:00 Hours)	
Source Description	**Specific Sound Level, dB $L_{Aeq,T}$**
HGV	30.9
Cooling System	18.3
Cooling System	18.3
Electrolyser (Side)	16.2
Electrolyser (Roof)	15.6
Electrolyser (Roof)	15.5
Compressor (Side)	13.2
Electrolyser BOP (Roof)	12.6
Compressor (Roof)	12.6
Electrolyser Exhaust	12.1
Electrolyser Exhaust	12.0
Electrolyser (Side)	11.4
Electrolyser (End)	10.5
Electrolyser (End)	10.3
Electrolyser BOP (End)	9.0
Electrolyser BOP (Side)	8.2
Compressor (End)	6.6
Electrolyser (Side)	5.8
Electrolyser (Side)	5.1
Electrolyser BOP (Side)	3.2
Compressor (Side)	2.2
Compressor (End)	1.5
Electrolyser (End)	1.4
Electrolyser (End)	0.5
Electrolyser BOP (End)	0.4
Total	**32.1**

Table D3: B – Canford Paddock Specific Sound Levels, daytime

B – Canford Paddock Predicted Specific Sound Levels Night time (23:00 – 07:00 Hours)	
Source Description	**Specific Sound Level, dB $L_{Aeq,T}$**
Cooling System	18.3
Cooling System	18.3
Electrolyser (Side)	16.2
Electrolyser (Roof)	15.6
Electrolyser (Roof)	15.5
Compressor (Side)	13.2
Electrolyser BOP (Roof)	12.6
Compressor (Roof)	12.6
Electrolyser Exhaust	12.1
Electrolyser Exhaust	12.0
Electrolyser (Side)	11.4
Electrolyser (End)	10.5
Electrolyser (End)	10.3
Electrolyser BOP (End)	9.0
Electrolyser BOP (Side)	8.2
Compressor (End)	6.6
Electrolyser (Side)	5.8
Electrolyser (Side)	5.1
Electrolyser BOP (Side)	3.2
Compressor (Side)	2.2
Compressor (End)	1.5
Electrolyser (End)	1.4
Electrolyser (End)	0.5
Electrolyser BOP (End)	0.4
HGV	-
Total	**26.1**

Table D4: B – Canford Paddock Specific Sound Levels, night time

C – Housing on Wheelers Lane Predicted Specific Sound Levels Daytime (07:00 – 23:00 Hours)	
Source Description	**Specific Sound Level, dB $L_{Aeq,T}$**
HGV	25.6
Cooling System	17.1
Cooling System	17.1
Electrolyser (Side)	15.1
Electrolyser (Side)	14.6
Electrolyser (Roof)	14.3
Electrolyser (Roof)	14.3
Electrolyser (Side)	13.4
Electrolyser Exhaust	13.1
Electrolyser Exhaust	13.0
Compressor (Side)	12.3
Electrolyser BOP (Roof)	11.2
Electrolyser BOP (Side)	11.1
Compressor (Roof)	11.0
Electrolyser (End)	9.8
Electrolyser (End)	9.8
Electrolyser (Side)	9.8
Electrolyser BOP (End)	9.3
Electrolyser (End)	8.7
Compressor (End)	8.6
Electrolyser BOP (Side)	6.4
Electrolyser (End)	6.1
Compressor (Side)	6.0
Electrolyser BOP (End)	5.0
Compressor (End)	4.7
Total	**28.9**

Table D5: C – Housing on Wheelers Lane Specific Sound Levels, daytime

C – Housing on Wheelers Lane Predicted Specific Sound Levels Night time (23:00 – 07:00 Hours)	
Source Description	**Specific Sound Level, dB $L_{Aeq,T}$**
Cooling System	17.1
Cooling System	17.1
Electrolyser (Side)	15.1
Electrolyser (Side)	14.6
Electrolyser (Roof)	14.3
Electrolyser (Roof)	14.3
Electrolyser (Side)	13.4
Electrolyser Exhaust	13.1
Electrolyser Exhaust	13.0
Compressor (Side)	12.3
Electrolyser BOP (Roof)	11.2
Electrolyser BOP (Side)	11.1
Compressor (Roof)	11.0
Electrolyser (End)	9.8
Electrolyser (End)	9.8
Electrolyser (Side)	9.8
Electrolyser BOP (End)	9.3
Electrolyser (End)	8.7
Compressor (End)	8.6
Electrolyser BOP (Side)	6.4
Electrolyser (End)	6.1
Compressor (Side)	6.0
Electrolyser BOP (End)	5.0
Compressor (End)	4.7
HGV	-
Total	**26.1**

Table D6: C – Housing on Wheelers Lane Specific Sound Levels, night time

APPENDIX E
NOISE SOURCE SCHEDULE

Equipment Name	Data Source / Specification	Number of Sources	Average Sound Pressure Level, dB, at Octave Band Centre Frequency Hz									Average Sound Pressure Level on Measurement Surface, L_{pA}	Measurement Distance, m	Measurement Surface area at Measurement Position, m^2	Overall Sound Power Level, dB L_{wA}	Utilisation		Source: Area (A) Line (L) Point (P) or internal (I)	Outline Noise Mitigation Design
			32	63	125	250	500	1k	2k	4k	8k					Daytime	Night time		
Electrolyser	Average sound pressure level of 80dB $L_{Aeq,T}$ at 1 metre.	2				84						75	1	212	98	100%	100%	A	
Electrolyser exhaust	Sound pressure level of 75dB $L_{Aeq,T}$ at 1 metre distance from the outlet when measured on axis with plant on full load.	2				84						75	1	13	86	100%	100%	P	
Cooling system	Average sound pressure level of 75dB $L_{Aeq,T}$ at 1 metre.	2				84						75	1	48	92	100%	100%	P	
Electrolyser BOP	Average sound pressure level of 75dB $L_{Aeq,T}$ at 1 metre.	1				84						75	1	125	96	100%	100%	A	
Compression unit	Average sound pressure level of 80dB $L_{Aeq,T}$ at 1 metre.	1				84						75	1	125	96	100%	100%	A	
Transformer	Assumed to be not acoustically significant.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	100%	100%	-	
HGV	Noise spectrum taken from BS5228 Table C.6 reference 21 ("Road Lorry (full)": 39t).	2 per day		96	82	74	73	77	72	71	64	81	10	628	109	1/hour	0	Moving P	

Table E1: Plant and process noise source schedule (indicative plant noise levels shall not be exceeded)

APPENDIX F
DETAILS AND PROFESSIONAL QUALIFICATIONS OF CONTRIBUTING SOL STAFF

Company Details

Name of Organisation: Sol Acoustics Limited

Status: Private Limited Company

Address: Unit 11, Brunel Court,
Gadbrook Park
CW9 7LP

Telephone Number: 01565 632535

E-Mail: info@solacoustics.co.uk

Nature of Business: Acoustic Consultancy

Directors: Simon Ferenczi

Company Registration Number: 4218702

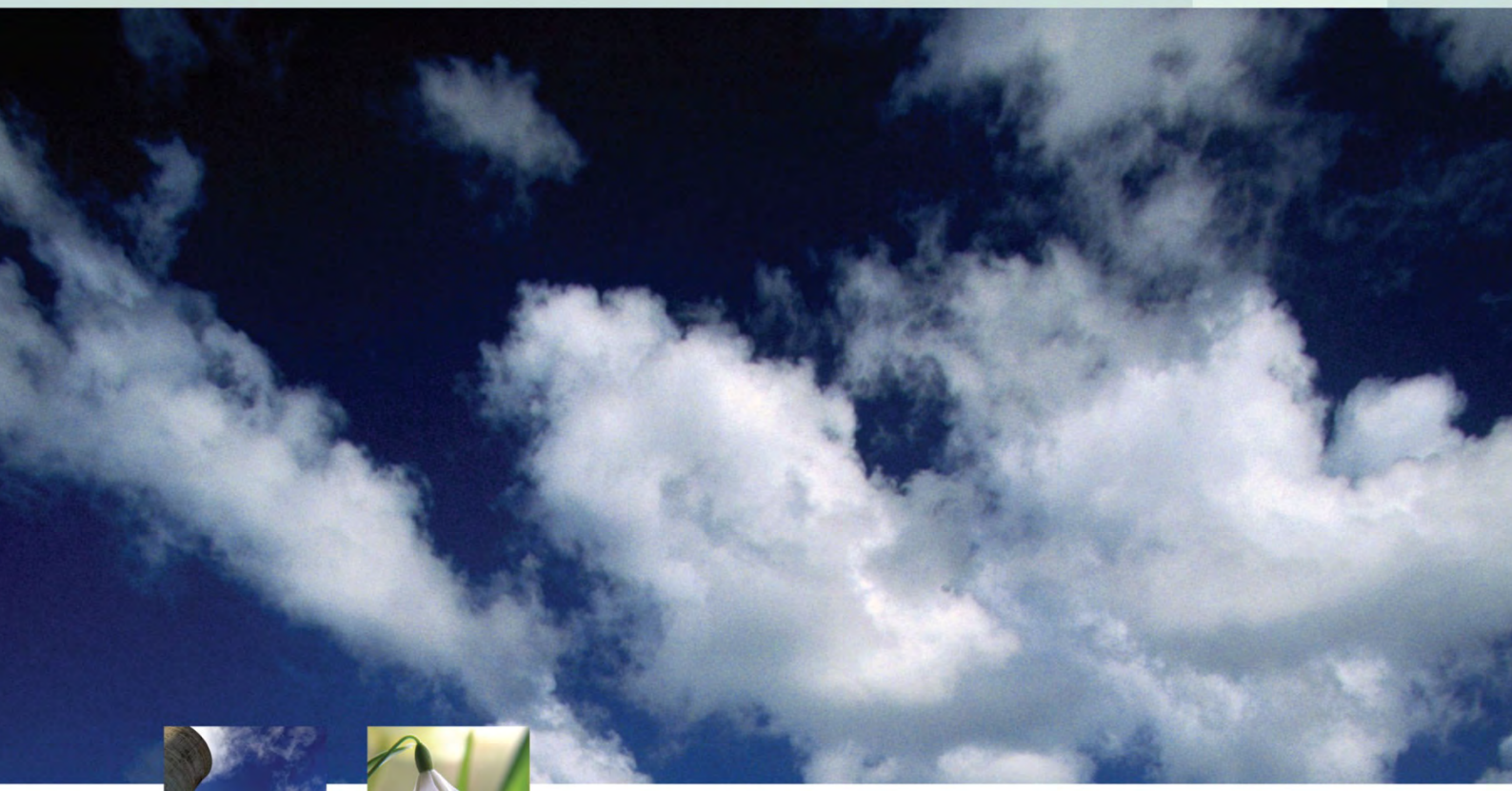
Key Technical Personnel & Qualifications

Simon Ferenczi	Institute of Acoustics Diploma (with additional modules), MIOA
Brian Horner	BSc (Hons), MIOA

Company Accreditations

Sol Acoustics is a member of The Association of Noise Consultants (ANC) and is qualified to perform sound insulation testing under the ANC's accredited testing scheme to demonstrate compliance with the requirements of Approved Document E of the Building Regulations.

Annex E: Site Condition Report



Site Condition Report
Canford Renewable Energy
Hydrogen Generation Plant

Prepared by:
Sol Environment Ltd

Date:
March 2021

Project Issue Number:
SOL2101CRE01

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VERSION CONTROL RECORD			
Contract/Proposal Number:		SOL2101CRE01	
Authors Name:		Emily Hingston	
Issue	**Description of Status**	**Date**	**Reviewer Initials**
1	Draft	March 2021	SMB

Contents

INTRODUCTION

This Application Site Report has been prepared on behalf of Canford Renewable Energy (hereafter referred to as 'CRE' or 'The Applicant') in support of a Low Impact Installation Permit Application under The Environmental Permitting (England and Wales) Regulations 2018 (as amended) for the operation of their hydrogen generation plant.

This document represents the Application Site Condition Report (ASCR) submitted as part of the Application package to the Environment Agency (EA) and has relied on information supplied by the site and various third party information sources (See Section 2).

The hydrogen plant ('the Site' or 'the facility') is located at Whites Pit Landfill Site, Arrowsmith Road, Wimborne, Dorset, BH21 3BQ (National Grid Reference: SZ 03398 96702).

The site currently comprises an area of recently infilled industrial ground within the area of the landfill gas compound and waste recycling facilities associated with the main Whites Pit Landfill.

The proposed development of the site comprises a simple modular hydrogen electrolysis plant which will utilise mains water for the production of hydrogen for use by vehicles at a filling station within the wider site (but excluded from the permit boundary) or for export. Emissions are limited to oxygen and mineralised water.

The activities meet the definition of an '*Installation'* by virtue of Schedule 1:

- Section 4.2 'Inorganic Chemicals' Part A(1)(a)(i) *Producing inorganic chemicals such as:—*
  (i) gases, (for example ammonia, hydrogen chloride, hydrogen fluoride, hydrogen cyanide, hydrogen sulphide, oxides of carbon, sulphur compounds, oxides of nitrogen, hydrogen, oxides of sulphur, phosgene).

In addition, it is considered that the facility can meet the principles required to be determined as a '*Low Impact Installation*'.

This document has been prepared in accordance with the EA's Guidance Document H5 Site Condition Reports Guidance and Templates (Version 2.0, dated 04/08/08). This report provides baseline information in relation to the site.

1. SITE DETAILS

Table 1.1: Site Details	
Name of the Applicant:	Canford Renewable Energy
Activity Address:	Whites Pit Landfill Site, Arrowsmith Road, Wimborne, Dorset, BH21 3BQ
National Grid Reference:	OS X (Eastings) 403398 OS Y (Northings) 096702

Document References:	EP Application Site Condition Report, Canford Renewable Energy Document reference and date: SOL2101CRE01 March 2021
Annexes:	Annex A: Figures Annex B: Groundsure Report Annex C: Conceptual Model Annex D: Infill Materials

2. CONDITION AT PERMIT ISSUE

2.1 Environmental Setting

The location of the subject Site is shown on Figure A1, Annex A, centered at approximate National Grid Reference OS X (Eastings) 403398; OS Y (Northings) 096702. The proposed site layout is shown in Figure A2.

The site is located at Whites Pit Landfill Site, Arrowsmith Road, Wimborne, Dorset, BH21 3BQ.

The application site is located to the north of Canford Heath SSSI on the edge of the township of Poole and Bournemouth, approximately 1km south of the village of Merley. The site itself is to the east of the Whites Pit Landfill, adjacent to industrial buildings associated with landfill gas engines and waste management.

The site is roughly rectangular in shape and covers an area of approximately 0.15 hectares. The site is comprised of compacted hardstanding and is currently utilised for vehicle parking and container storage. The site is bound to the north and west by roadways with an infilled pond to the west and a coppice to the north. To the east and south are industrial units and storage yards associated with the former syngas plant and now utilised as a workshop.

The nearest residential properties lie 560 m to the north at Spinney Cottage and approximately 950 m east at Eastlands Farm, on the edge of the residential area of Bearwood.

Table 2.1 below provides information regarding the surrounding site.

Table 2.1: Site Setting	
Direction	**Observations**
North	Immediate Vicinity: Track/Roadway Within 500m: New Covert Woodland Beyond 500m: Stoats Hill, Woodland, Agricultural Land, A341, Canford Magna, Stour Valley Way
North East	Immediate Vicinity: Track/Roadway Within 500m: New Covert Woodland, Canford Park (Sports Ground) Beyond 500m: Agricultural Land, A341, Moortown Farm, Sports Club, Stour Valley Way, River Stour
East	Immediate Vicinity: Recycling Site Factory, including landfill gas engine compound sand storage yards Within 500m: Woodland, Agricultural Fields Beyond 500m: Agricultural Land, Bearwood School, Residential area of Bearwood/Bearcross
South East	Immediate Vicinity: Recycling Site Industrial Buildings and Yards Within 500m: Woodland, Canford Heath Beyond 500m: Agricultural Land, Residential area of West Howe, Knighton Heath Golf Club
South	Immediate Vicinity: Recycling site storage yard

	Within 500m: Woodland, Canford Heath Nature Reserve. Beyond 500m: Residential area of Poole.
South West	Immediate Vicinity: Infilled Pond Within 500m: Woodland, Heathland, Disused Pit Beyond 500m: Whites Pit landfill, Canford Heath Nature Reserve
West	Immediate Vicinity: Infilled Pond. Within 500m: Whites Pit landfill Beyond 500m: Canfod Heath, Arrowsmith Coppice.
North West	Immediate Vicinity: Whites Pit Landfill Within 500m: Woodland Beyond 500m: Arrowsmith Road (including residential properties), Village of Merley

2.1.1 Geology, Hydrogeology and Surface Waters

Desk-based research of the local geology, hydrogeology and surface waters has been carried out in order to establish the potential for migration of contamination onto or away from the Site, and to assess the surface water and groundwater sensitivity of the site area. Information was obtained from multiple sources, namely:

- Environment Agency Flood Risk Map;
- Information provided by Groundsure Reports (Annex B).
- Geological maps produced by the British Geological Survey (BGS) and the BGS Geology of Britain Viewer (http://maps.bgs.ac.uk/geologyviewer);
- MAGIC (http://magic.defra.gov.uk); and
- BGS Borehole Record Viewer (http://www.bgs.ac.uk/data/boreholescans/home.html).

Geology

According to BGS Geological Mapping the site is underlain by superficial River Terrace Deposits comprising sand and gravel.

The BGS records the underlying bedrock as part of the Poole Formation – sand, silt and clay. This is described in the BGS lexicon as:

'four stacked depositional sequences, each based by an erosion surface and comprising a lower sand unit and an upper clay unit. Sand units: These often have a basal pebble lag. They are medium- to coarse-grained, partly trough and planar cross-bedded, often with water-escape structures, and some thin and lenticular clays. They tend to coarsen westwards, with the development of gravels which include significant proportions of quartz pebbles and pebbles of Palaeozoic and Jurassic rocks. Clay units: These comprise units of kaolinitic clay and silt ('ball clay' or 'pipe clay'), often with varicoloured tops indicating pedogenic overprint, interbedded with organic-rich clays and laminated clays, often channel-filling.

Kaolinitic clays tend to be dominant in the Wareham area and laminated clays in the Bournemouth-Poole area.'

It is also known that the site is underlain by engineered fill, which was laid in 2014 to backfill a rainwater balancing lake (Lake B4) with imported clean granular fill material.

According to data issued by the National Radiological Protection Board (NRPB) in 2002 (now the Health Protection Agency), the site is located in an area that is in a low radon potential area with less than 1% of homes above the action level.

Shrink Swell
The maximum shrink swell hazard rating identified on the application site is very low.

Landslides
The maximum landslide hazard rating identified on the application site is very low.

Soluble Rocks
The maximum soluble rock hazard rating identified on the application site is negligible.

Compressible Ground
The maximum compressible ground hazard rating identified on the application site is negligible.

Collapsible Rocks
The maximum collapsible rocks hazard rating identified on the application site is very low.

Running Sands
The maximum running sand hazard rating identified on the application site is very low.

Hydrogeology

The Environment Agency classifies both the superficial deposits and underlying bedrock geology as Secondary 'A' aquifers. This suggests that there are permeable layers capable of supporting water supplies at a local level rather than a strategic scale, and in some cases forming an important source of base flow to rivers.

The site is not located within a Source Protection Zone (SPZ).

The groundwater vulnerability at the site is classified as a secondary aquifer with high vulnerability and soils of high leaching value.

The site is not located within a Nitrate Vulnerable Zone (NVZ).

There are no active potable groundwater abstraction licenses within 2 km of the site. There are two active groundwater abstraction within 2 km of the site, these are summarised as follows:

- W H White Limited (license number 13/43/037/G/115), located 487 m southwest of the site. This abstraction is for mineral washing, has been active since 14/06/1994 and is limited to an annual volume of 30,000m^3;
- Canford Park Sports Ltd (licence number 13/43/037/G/131), located 491 m northeast of the site. This abstraction is for process water and direct spray irrigation, has been active since 16/08/2000 and is limited to an annual volume of 27,600 m^3.

The site is considered to be situated in an area of moderate sensitivity with respect to groundwater resources as although there are currently no active potable groundwater abstractions within 2km, it is situated upon a Secondary A Aquifer.

Surface Water

The nearest surface water feature is a pond associated with the landfill drainage system approximately 100 m to the northwest of the site. In addition, an unnamed stream is located approximately 170 m south of the site boundary. This stream flows in a northeasterly direction before joining the River Stour approximately 1.7 km to the northeast of the site.

The River Stour was classified by the EA in 2016 as having a 'moderate' ecological status, 'good' chemical status and overall 'moderate' water body rating status.

There are is one identified active surface water abstraction recorded within 2 km of the site. This is licenced to 'Coward' and located at a point on Arrowsmith Stream at Canford Magna for the purposes of lake and pond throughflow. The abstraction has been in place since 1995 and is limited to an annual volume of 56,775m^3.

The site is not located within a Nitrate Vulnerable Zone (NVZ).

The Environment Agency's flood risk map indicates that the site lies within Flood Zone 1; an area where there is a low risk of flooding from rivers and the sea. This is land assessed as having a chance of flooding of less than 1 in 1000 (0.1%) each year.

The site is considered to be in area of moderate sensitivity in regard to surface water due to the proximity of the unnamed stream to the south.

2.1.2 Designated Sites

Environment Agency H1 and H5 guidance states that the potential impacts of the site should be assessed for the following habitat sites within 10km of the Installation:

- Special Areas of Conservations (SACs) and candidate SACs (cSACs) designated under the EC Habitats Directive;

- Special Protection Areas (SPAs) and potential SPAs designated under the EC Birds Directive; and
- Ramsar Sites designated under the Convention of Wetlands of International Importance.

It is also stated that within 2km of the Source:

- Sites of Special Scientific Interest (SSSI) established by the 1981 Wildlife and Countryside Act;
- National Nature Reserves (NNR);
- Local Nature Reserves (LNR);
- Local Wildlife Sites (LWS), County Wildlife Sites (CWS) and potential wildlife sites (PWS);
- Sites of Importance for Nature Conservation (SINC); and
- Ancient Woodland.

Information from the Multi Agency Geographic Information for the Countryside (MAGIC) website (http://magic.defra.gov.uk/) has been used to obtain the above information.

The designated sites relevant to this study are presented in Table 2.2 below:

Table 2.2: Location of Sensitive Habitat Receptors		
Distance and Direction	Receptor	Status
62 m south	Canford Heath	SSSI
77 m southeast	Dorset Heaths	SAC / SPA
1.5 km west	Arrowsmith Coppice	Ancient Woodland
1.6 km southwest	Dorset Heathlands	Ramsar

The site is located within the Bournemouth, Christchurch and Poole greenbelt.

The site is not located within an Air Quality Management Area.

The proposed operation has minimal environmental emissions to land, controlled waters or atmosphere and therefore it is the conclusion of this assessment that there will be no direct or indirect effects on any of the statutory sites described above.

2.2 Pollution History

2.2.1 Environmental Database Records

The following information has been obtained from a search of a publicly available database of environmental information (Groundside Insight Report, provided in Annex B).

The database contains records of information from public registers held by environmental regulatory authorities and can be used to assess the site's sensitivity, the potential for neighbouring activities to pose a risk to the site and to determine whether specific records of pollution relate to the subject site.

Pollution Incidents

There are 4 recorded Pollution Incidents within 500m of the site. These are summarised in the table below.

Table 2.3: Recorded Pollution Incidents within 500m of the Site			
Distance and Direction	Details	Pollutant	Impact
187 m NE	Date: 23/07/2018 Identification: 1636143	Atmospheric Pollutants - Smoke	Water: Category 4 (No Impact) Land: Category 3 (Minor) Air: Category 2 (Significant)
427 m W	Date: 07/07/2003 Identification: 171498	Specific Waste Materials – Household Waste	Water: Category 4 (No Impact) Land: Category 3 (Minor) Air: Category 4 (No Impact)
452 m W	Date: 07/05/2003 Identification: 156690	Specific Waste Materials – Asbestos	Water: Category 4 (No Impact) Land: Category 3 (Minor) Air: Category 4 (No Impact)
497 m W	Date: 13/05/2003 Identification: 158141	Specific Waste Materials – Other	Water: Category 4 (No Impact) Land: Category 3 (Minor) Air: Category 4 (No Impact)

Additionally, there is one recorded site within 500m that is required to report to the pollution inventory annual emissions of certain substances. This is operated by New Earth Solutions (Canford) Ltd and relates to the Canford Mechanical and Biological Treatment Facility (Permit number: EPR/FP3393SB) located 252m north east of the site. In the last complete available year the facility emitted levels of carbon dioxide below the reporting threshold and exported 99,667.22 tonnes of non-hazardous wastes.

Potentially Contaminative Industrial Sites

There are 5 potentially contaminative industrial sites within 250m of the application, the details of which are shown in Table 2.4.

Table 2.4: Potentially Contaminative Industrial Sites within 250m of the Site			
Company / Feature	Distance and Direction	Activity	Category
Public Recycling Facility	142 m NE	Recycling Centres	Infrastructure and Facilities
Chimney	156 m E	Chimneys	Industrial Features
New Earth Solutions	172 m NE	Recycling, Reclamation and Disposal	Recycling Services
Electricity Sub Station	172 m E	Electrical Features	Infrastructure and Facilities
Hopper	235 m E	Hoppers and Silos	Farming

Landfills and Waste Sites

There is one active landfill, Whites Pit landfill, located within 500m of the site. This is operated by W H White Limited and regulated under three separate permits by the EA – EPR/BP3293FX, EPR/VP3897HP and EPR/JP3497HM. The site is classified as an A04: Household, Commercial & Industrial Waste Landfill. This landfill is approximately 300 m west / southwest of the site. It is known that the landfill has ceased accepting waste and is closed, albeit not yet formally.

In addition, there are two historical landfills identified within 500 m. These are summarised below:

- Corporation Tip, approximately 190 m north east – operated by the Poole Corporation accepting commercial liquid sludge, first recorded in 1970.
- Moortown Aerodrome Site, approximately 360 m northeast – operated by Poole Borough Council accepting industrial, commercial and household waste, the licence was held between 1984 and 1992.

There are 25 records of licenced waste sites within 500m. Those within 250m have been summarised below:

Table 2.5 Recorded Waste Management Sites within 250m of the Site

Distance and Direction	Operator & Address	Details	Status
189 m E	W H White Ltd, Whites Pit Landfill, Arrowsmith Road, Wimborne, Dorset, BH21 3BQ	Permit Ref: As above Household, Commercial & Industrial landfill, 500,000 tpa	Issued: 1992
215 NE	Commercial Recycling Ltd, Canford Inert Recycling Centre, Arena Way, Wimborne, Dorset, BH21 3BW	Permit References: EPR/FB3537RS EPR/EB3102FV WML: 103978 Physical Treatment Facility, 25,000 tpa	Issued: 17/05/2012 Modified: 17/06/16
252 m NE	New Earth Solutions (Canford) Ltd, Canford M B T Facility, Site Control Centre, Magna Road, Wimborne, Dorset, BH21 3AP	Permit References: EPR/FB3393SB WML: 230707 Biological Treatmnet Facility / Composting Facilitym 25,000 tpa	Issued: 01/05/2003 Modified: 28/05/2010 Modified: 28/06/2012 Modified: 14/12/2012

Discharge Consents

There is one Licensed Discharge Consent to controlled waters within 2km of the site. This is outlined below.

Table 2.5: Active Licensed Discharge Consents within 2 km of the Site				
Address & Permit Number	Effluent Type	Distance and Direction	Receiving Water	Status
Whites Pit B4 Lagoon, Magna Road, Wimborne, Dorset, BH21 3AP Permit: 400113	Trade Discharges – Site Drainage	181 m SE	Knighton Brook	Issued: 22/12/199 Modified: 25/11/2009

Authorised or Permitted Processes

There are 4 records of Part A(1) regulated facilities within 500 m of the site. Two of these records relate to the New Earth Solution (Canford) MBT facility as described in previous sections. The remaining records relate to waste landfilling operated by Biffa Waste Services under permit number BV7184IP located 247 m west of the site.

Additionally, there is one Part A2 process located 190 m northeast of the site. This is operated by Syngas Products Ltd for the process of combustion and incineration and is recorded as a current permit.

2.2.2 Historical Land Uses

Available historic maps for the site have been reviewed to determine if there is the potential for contamination to be present on Site associated with the Sites historical uses.

The site:

From the earliest available published mapping in 1887 until the early 1940's the site was covered by woodland as part of the Canford Heath Plantations. Following this, woodland was cleared and the site comprised part of the heathland itself until the late 1980's where it is identified on historical mapping from 1988 as being covered by a body of water.

Aerial photography from 2000 and 2005 confirms the site is still a body of water, anecdotally identified as a rainwater balancing pond, referenced Lake B4. From 2009, the pond is clearly undergoing backfill with granular material and photography in 2014 shows the entire site to be completely infilled and used as a storage area for the adjacent wate management facility.

The surrounds:

The earliest available historical mapping in 1887 indicates that the surrounding area comprised the Canford Heath Plantations – a mixture of woodland and heathland. To the southeast lie a few small fields identified by 1900 as a Nursery. A number of small Old Gravel Pits are identified approximately 500 m to the northeast and northwest. By 1900 those in the northwest have joined and are marked as a Gravel Pit, though this remains within woodland.

In the early 1930's Canford Magna Poultry Estate has been constructed approximately 750 m to the east, though the majority of the poultry sheds are removed by 1963. Around this time the gravel pit to the northwest is again marked as ' Old'.

To the northwest the historical gravel pit is developed in the early 1970's into a large Sand & Gravel Pit extending to within 250 m of the site. This remains open and worked until approximately 1988 where mapping shows the initial area as infilled, with excavation moving to the southwest and west. Mapping from 2001 shows the area as a refuse tip and a number of ponds are present to the east (encompassing the site itself). Development of industrial units to the east of the site is evident on mapping dating from 2010.

In regards to the site and surrounds a number of potentially contaminative land uses have been identified. These specifically include the below:

Table 2.7: Potentially Contaminative Land Uses

Activity	Contaminants
Onsite	
Backfilled Lake	Various contaminants dependant on backfill material
Offsite	
Landfill	Various contaminants including heavy metals, organic and inorganics
Industrial Units / Works	Various contaminants including heavy metals, organic and inorganics

2.2.3 Site Reconnaissance

Visual/Olfactory Evidence of Existing Contamination

The site has not been subject to inspection by Sol Environment at the time of writing due to COVID-19 restrictions.

2.3 Evidence of Historic Contamination

2.3.1 Previous Site Investigations

The site has a limited history, namely having been a greenfield location prior to acting a rainwater balancing pond and subsequently having been backfilled, and as such is considered to have a low risk of potential contamination within the soils.

The backfilling of the pond was undertaken in 2014 and was undertaken by New Earth Solutions Ltd in accordance with a stringent Earthworks strategy. As such the backfill material is of known

uncontaminated composition. Details of the strategy and geotechnical tests of the material are provided in Annex D.

Since infilling, the site has been in minimal use, predominantly for vehicle parking and storage. As such it is not considered that further intrusive ground investigation is necessary to provide baseline data of the site, beyond the known composition of the infill material.

2.4 Supporting Information

The supporting documentation consists of:

- Figures detailing the location, boundary and layouts of the Installation are shown in Annex A.
- Groundsure Reports are provided within Annex B.
- A Conceptual Model of the site is shown in Annex C.
- Data regarding the infill material is provided in Annex D.

3. PERMITTED ACTIVITIES

3.1 Proposed Activities Undertaken at the Installation

3.1.1 Description of the Proposed Process

Canford Renewable Energy (the 'Applicant' or Operator') for a Standard Rules SR2009 No.2 Low Impact Installation Permit under The Environmental Permitting (England and Wales) Regulations 2018 (as amended) in order to operate a hydrogen generation plant on their site at Whites Pit Landfill, Dorset.

The site currently comprises an area of compacted hardstanding currently utilised for storage and carparking adjacent to the former syngas compound and workshop.

The proposed development of the site comprises a simple modular hydrogen electrolysis plant which will utilise mains water for the production of hydrogen for use by vehicles at a filling station within the wider site (but excluded from the permit boundary) or for export. Emissions are limited to oxygen and mineralised water.

The activities meet the definition of an '*Installation'* by virtue of Schedule 1:

- Section 4.2 'Inorganic Chemicals' Part A(1)(a)(i) *Producing inorganic chemicals such as:— (i) gases, (for example ammonia, hydrogen chloride, hydrogen fluoride, hydrogen cyanide, hydrogen sulphide, oxides of carbon, sulphur compounds, oxides of nitrogen, hydrogen, oxides of sulphur, phosgene).*

In addition, it is considered that the facility can meet the principles required to be determined as a '*Low Impact Installation*'.

3.1.2 Substances Used at the Installation

Raw materials for the process are limited and summarised in the table below.

Table 3.4: Raw Materials Summary

Material	Use	Storage Arrangements	Fate
Water	Spilt within the electrolyser to produce hydrogen	Incoming mains water is initially deionized within the Water Treatment Unit prior to use	Effluent from the deionization unit comprising water is discharged to sewer
Hydraulic Oil	Utilised in the compressor unit	Bunded within containerized compression unit	Exported to appropriately licensed disposal/recovery facility

All removal / refilling of hydraulic oil takes place internally within the containerised unit under supervision of an appropriately trained site operative.

3.1.3 Waste

The facility will produce hydrogen, oxygen and waste water.

Hydrogen will be temporarily stored onsite within tube trailers. Storage will typically be for 1 day before being exported to the filling station located on the wider Whites Pit Landfill site for use by vehicles.

Effluent produced by the deionization unit is discharged to sewer as outlined below.

Additional small volumes of spent ion exchange resins and filters will be produced from the water demineralization plant. These will be transferred offsite to an appropriately licensed disposal or recovery facility.

3.1.4 Drainage Systems

The site will have a dedicated drainage system.

Uncontaminated surface water run-off will discharge via the existing surface water drainage system including a bypass separator to Knighton Stream.

Deionisation of incoming mains water produces an ecologically harmless effluent which is essentially mineralised water. This effluent is regarded as uncontaminated and will be discharged via sewer under the existing consent from Bournemouth Water.

Hardstanding

All operational and storage areas onsite are surfaced in impermeable concrete hardstanding.

Tanks and Bunds

Storage tanks associated with the process are limited to those associated with the water treatment plant, which will contain only water.

3.1.5 Potential for Fugitive Releases to Soil, Groundwater and Surface Water

The materials and substances used at the site are not considered to have significant potential to cause ground or groundwater contamination under general storage or operating procedures.

The following measures have been incorporated into the design of the activity to protect groundwater and soil from installation substances;

- All operational and storage areas of the site are surfaced in impermeable concrete hardstanding;
- The site has been designed with a sealed drainage system;

- There is no storage of chemicals onsite;
- Potentially polluting substances are limited to hydraulic oil within the containerised compressor unit and fuel within onsite vehicles.
- Emergency spill kits are available in the event of a spillage;
- There are no hazardous substances stored onsite;
- There are no emissions to controlled water arising from the process; and
- There is no sub-surface infrastructure or pipework onsite.

When operated in the manner described above the proposed operations will not introduce any sub surface or potentially polluting activities to the site.

Due to the protection measures mentioned above, the risk to soil and groundwater from the development is considered to be LOW as summarised in the Conceptual Site Model below.

Table 3.3 Conceptual Site Model

Contaminant Source	Contaminants of Concern	Receptor	Exposure Pathway Present?	Likelihood of Risk
Historical soil contamination	N/A – infilled material known to be uncontaminated imported granular fill	Construction Workers	No – The site is modular and does not require significant earthworks	N/A – Use of control measures during construction work including appropriate PPE would minimise potential exposure, however, ground conditions known to be uncontaminated.
		Future Site Users	No – Site is to be covered by concrete hardstanding in all operational and storage areas	N/A - infilled material known to be uncontaminated imported granular fill
		Groundwater	Yes – Leaching of contaminants by infiltrating rainfall would be possible in areas of compacted hardstanding	N/A - infilled material known to be uncontaminated imported granular fill
		Surface Water	Yes – Dissolution of contaminants into surface water run-off would be possible from areas of compacted hardstanding, though minimised as majority of the site is impermeable concrete	N/A - infilled material known to be uncontaminated imported granular fill
Future substances stored onsite as a result of	Limited to hydraulic oil and vehicle fuels	Soil & Groundwater	No –All operational and storage areas of site are surfaced in impermeable concrete hardstanding.	Low – any potential spillages of hydraulic oil would be contained within the unit. All operational and storage areas of the

use as a hydrogen generation facility			Hydraulic oil is within the containerised compressor unit.	site are covered by impermeable concrete hardstanding. Spill kits are located onsite.
		Surface Water	Yes – Uncontaminated clean surface water run-off is discharged to the existing landfill surface water drainage system	Low – the drainage system has the ability to be isolated in the unlikely event of a spillage onsite.

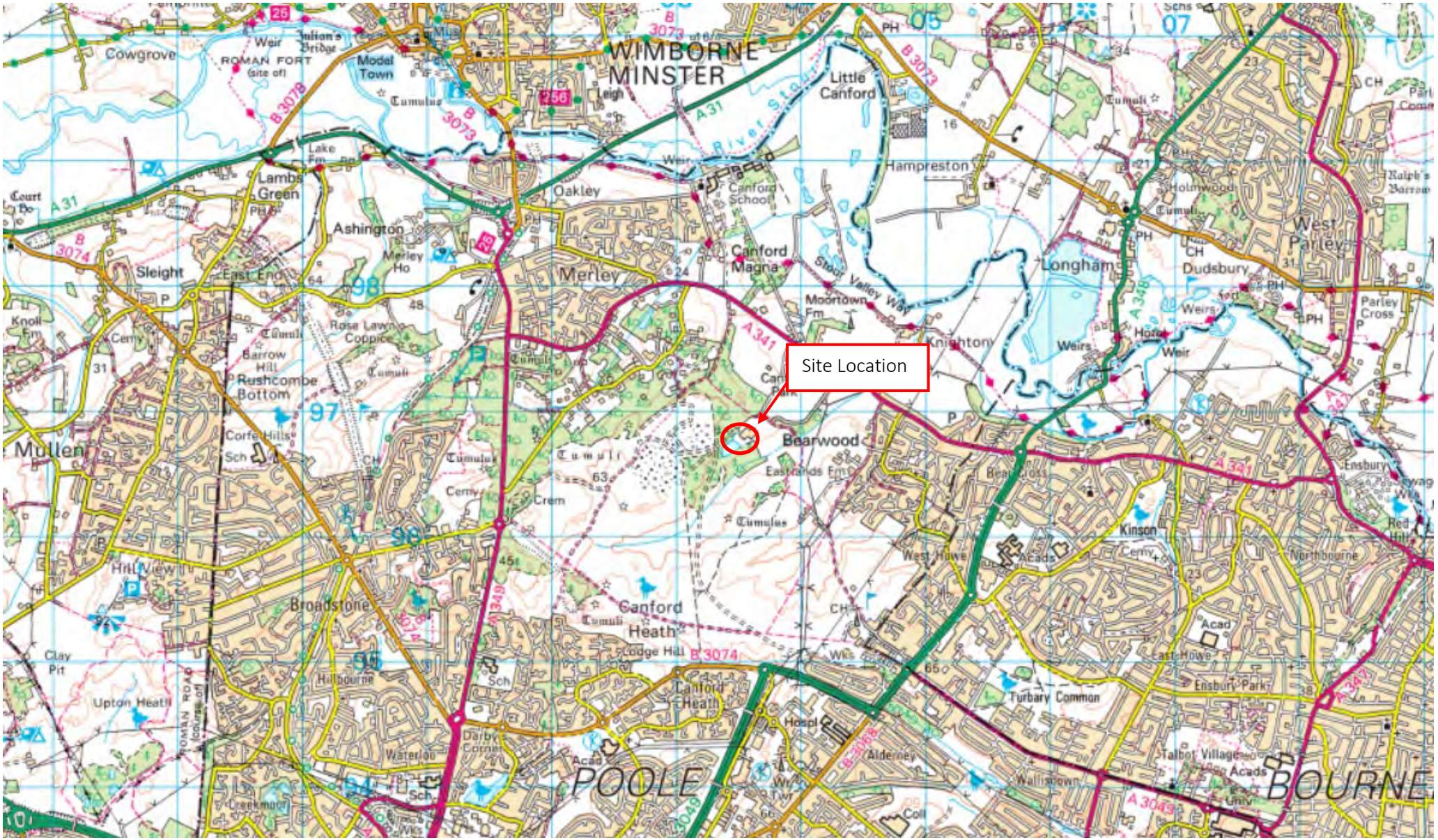
In addition, the site operates in accordance with the environmental management system. The management system includes visual inspections of:

- All storage areas, processing areas and hard standing will be physically inspected to detect any signs of deterioration, leaks or spillage. Any corrective action required is reported to and implemented by the Site Manager; and
- Equipment in all process areas as part of the company's planned/predictive maintenance programme.

Based on this assessment, the potential for the varied site to impact on soil and groundwater underlying the installation is considered to be low.

Non-permitted activities undertaken at the Installation	Not applicable
Plan showing activity layout	Refer to Figure A2, Annex A
Environmental Risk Assessment	See attached Main Application Document SOL2101CRE01.

ANNEX A: FIGURES



OS Licence Number (100062750)

sol environment

LEGEND

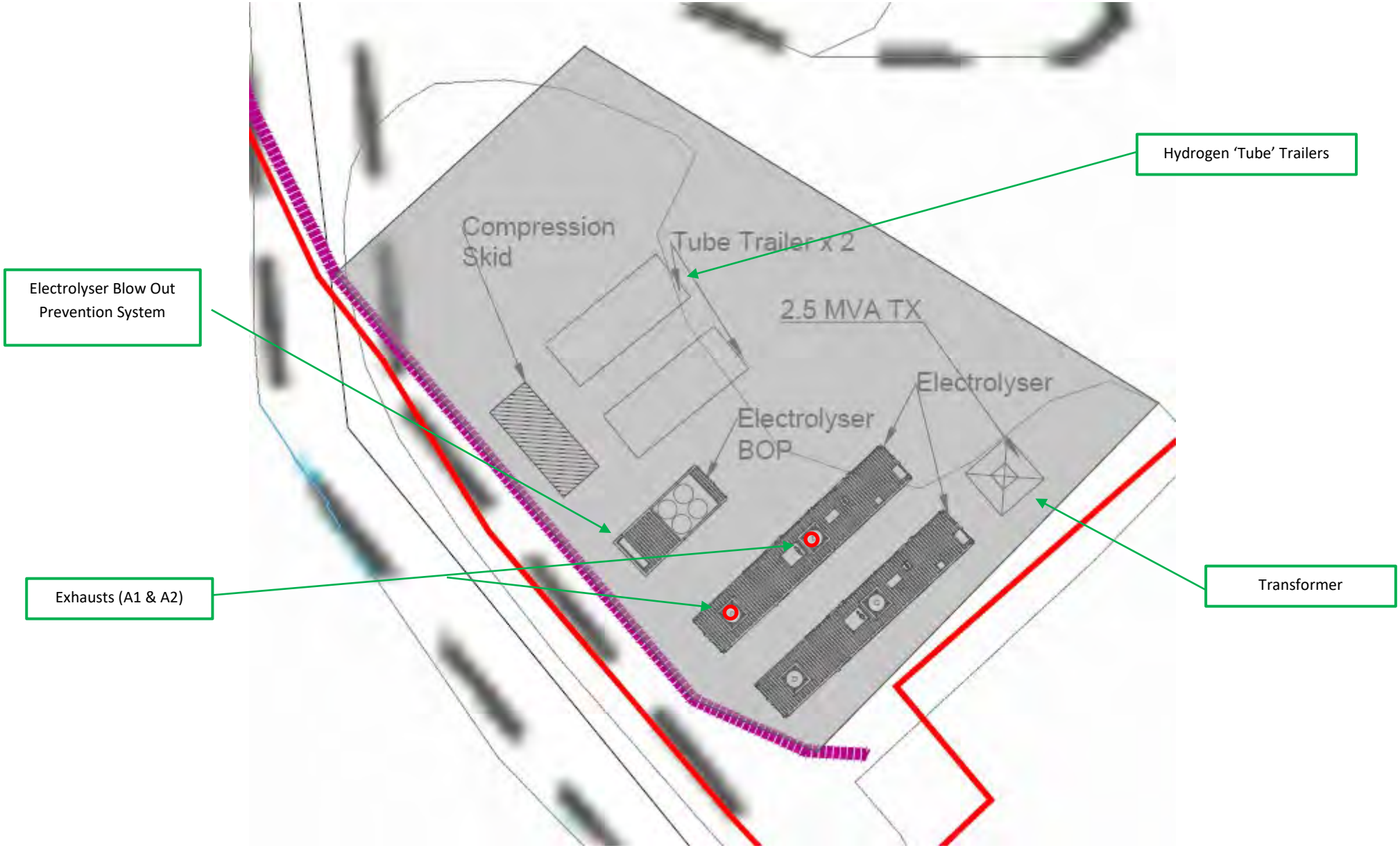
- Site Development Boundary (11.1Ha)
- Biodiversity Planting Areas (0.9Ha)
- Cable Route
- Bund Section (0.043Ha)
- PV Array
- Access Route
- Enhanced Habitats' Maintenance Areas (1.1 Ha)
- Landownership Boundary
- Public Footpath
- Inert Recycling Area
- Fence Line
- Battery System Area
- Hydrogen System
- Swale

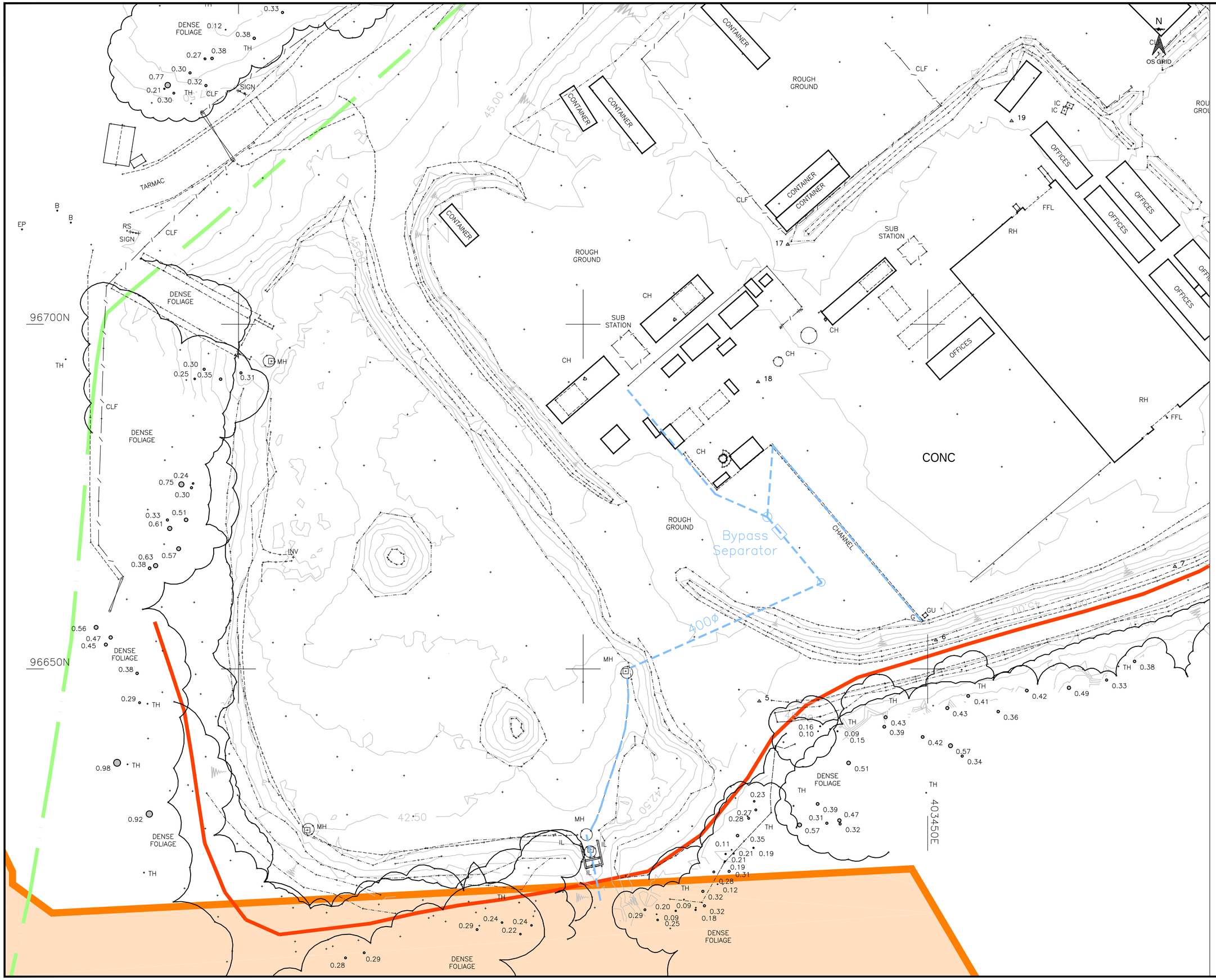
REV	Description			
	DESIGNED	CHECKED	APPROVED	DATE
0	Initial			
	NB	JMM	PC	DD/MM/YY

ethical power

Unit 9. Dunchideock Barton . Dunchideock .
Exeter . Devon . EX2 9UA
(t) 01726 218618
www.ethical-power.com

Project Title:	White's Pit Hydrogen & PV Project
Description:	Hydrogen Site Plan
Location co-ord:	N 50.787 W -1.982
Site address:	White's Pit Landfill SiteCanford Resource ParkMagna RoadWimborneBH21 3BW
Drg No:	EP-1355-D-GA-04
Scale:	1:500@A3
Job No:	1355
Drawn by:	N.B.
Checked by:	JMM
Date:	03/03/21


Hydrogen 'Tube' Trailers
Electrolyser Blow Out Prevention System
Exhausts (A1 & A2)
Transformer
Compression Skid
Tube Trailer x 2
2.5 MVA TX
Electrolyser
Electrolyser BOP



STATION LISTING

STN ID	EASTING	NORTHING	LEVEL	TYPE

DATUM DETAILS

OSGB36, V/A ETRS89 - OSTN15, FLAT PLANE ABOUT E: 403550 N: 96800
OS NEWLYN, V/A ETRS89 - OSGM15

LEGEND

AOD	ABOVE ORDNANCE DATUM
AV	AIR VALVE
B	BOLLARD
BH	BOREHOLE
BB	BELISHA BEACON
BTB	BRITISH TELECOM COVER
BS	BUS STOP
CATV	CABLE TELEVISION COVER
CONC	CONCRETE
CPS	CONCRETE PAVING SLABS
DK	DROP KERB
DP	DOWNPIPE
ECB	ELECTRICITY CONTROL BOX
ELCP	ELECTRICITY CABLE PIT
EP	ELECTRICITY POLE
ERC	EARTH ROD COVER
FH	FIRE HYDRANT
FB	FLOWER BED
FL	FLOOR LEVEL
FP	FOOTPATH / FLAG POLE
GP	GATE POST
GT	GAS VALVE
G	GULLEY
IC	INSPECTION COVER
LB	LETTER BOX
LH	LAMP HOLE
LP	LAMP POST
MH	MANHOLE
MKR	MARKER POST
SNP	STREET NAME PLATE
OSBM	O.S. BENCHMARK
PCE	PRE-CAST CONCRETE EDGING
PCK	PRE-CAST CONCRETE KERBS
PM	PARKING METER
RE	RODDING EYE
RS	ROAD SIGN
RWP	RAINWATER DOWNPIPE
SP	SIGN POST
△	SURVEY STATION
STP	STACK PIPE
ST	STOP VALVE/COCK
TAP	WATER TAP/STANDPIPE
TBM	TEMPORARY BENCHMARK
TCB	TELEPHONE CALL BOX
TH	TREE HEIGHT
TL	TRAFFIC LIGHT
TP	TELEGRAPH POLE
VP	VENT PIPE
WL	WATER LEVEL
WMSV	WATER METER/STOP VALVE
WO	WASH OUT
WT	WATER TROUGH

BUILDING

RH	RIDGE HEIGHT
SL	SOFFIT LEVEL
EL	EAVES LEVEL
FRH	FLAT ROOF HEIGHT

TREES

ALD	ALDER
BCH	BEECH
CED	CEDAR
CHY	CHERRY
CON	CONIFER
CYP	CYPRESS
FRT	FRUIT
HAW	HAWTHORN
HLY	HOLLY
HCH	HORSE CHESTNUT
LAB	LABURNAM
LAR	LARCH
LIM	LIME
MPL	MAPLE
PNE	PINE
POP	POPLAR
RWN	ROWAN
SIB	SILVER BIRCH
SPR	SPRUCE
SCH	SWEET CHESTNUT
SYC	SYCAMORE
WLW	WILLOW
UNK	SPECIES UNKNOWN

Species (if shown)
(Dia of bole) / (No. of bole)
Approx. Height (if shown)

OAK 0.22T 6

OAK 0.22T 6

LEANING TRUNK	
CANOPY LINE	
FOLIAGE LINE	
HEDGE LINE	
WALL (Widths drawn to scale)	1.20H BW

FENCE

BWF	BARBED WIRE FENCE
CBF	CLOSE BOARD FENCE
CIF	CORRUGATED IRON FENCE
CLF	CHAIN LINK FENCE
CPF	CHESTNUT PALING FENCE
CWF	CHICKEN WIRE FENCE
IRF	IRON RAILING FENCE
PCF	POST & CHAIN FENCE
PRF	POST & RAIL FENCE
PWF	POST & WIRE FENCE
WMF	WIRE MESH FENCE
GATE	
STILE	
	TELEPHONE CABLE
	ELECTRICITY CABLE

NOTES

Tree species, as/if named on this plan, are for general information only and should be confirmed by a taxonomist prior to any detailed design.

Trees, canopies and boles, are shown diagrammatically ie circular, their true shape in plan will be different.

Additional abbreviations maybe present and not indicated above.

Kerb levels, if shown, are taken at the juction of kerb face and tarmac.

Boundaries, as shown, do not necessarily constitute legal boundaries.

This survey has been carried out to an accuracy consistent with the presentation scale shown, therefore interrogated dimensions will be within the tolerance associated with said scale.

BURIED HV

DIGITISED SGN IP MAIN

DIGITISED SSSI

SW DRAINAGE

Rev	By	Chkd	Apprvd	Date	Description

Client

W H WHITE

D G Yeatman Surveying & Engineering Ltd
82A York Road, Broadstone, Dorset, BH18 8EU
Tel: +44 (0)1202 692852
office@dgyeatman.co.uk
www.dgyeatman.co.uk

Project

ENERGY SITE CONTROL CENTRE

Drawing

UPDATE SURVEY 0520
B4 UPDATE - 0221
(DRAINAGE)

Surveyed by:	D.G.Y	Date:	03.20/02.21
Drawn by:	D.G.Y	Date:	02.21
Checked by:		Date:	

Drawing No. SCC-HYDROGENDWGS

Revision

Drawing Scale: 1:250 @ A1

0 2.5 5 7.5 10 15 20m
1:250

Drawing file path & name: C:\Surveys\W H White\SiteControlCentre\Site Control Update - 0320\ SCC-HydrogenDwgs.dwg
User and Plot Date: D Yeatman - 5 Mar 2021 - 6:07 pm


CONDENSATE PIPE
DWP
PROPOSED DISCHARGE PIPE
EXISTING DISCHARGE PIPE
PRINCIPLE MANIFOLD

ANNEX B: ENVIRONMENTAL RECORDS

Groundsure LOCATION INTELLIGENCE

Enviro+Geo Insight

403398 096702,

Order Details

Date: 04/03/2021

Your ref: Canford_Renewable_Energy

Our Ref: GS-7627068

Client: Sol Environment

Site Details

Location: 403403 096708

Area: 0.15 ha

Authority: Bournemouth, Christchurch and Poole Council

Contact us with any questions at:
info@groundsure.com
08444 159 000

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
14	1.1	Historical industrial land uses	0	1	9	22	-
16	1.2	Historical tanks	0	0	0	0	-
16	1.3	Historical energy features	0	0	0	0	-
16	1.4	Historical petrol stations	0	0	0	0	-
17	1.5	Historical garages	0	0	0	0	-
17	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
18	2.1	Historical industrial land uses	0	2	10	29	-
20	2.2	Historical tanks	0	0	0	0	-
20	2.3	Historical energy features	0	0	0	0	-
21	2.4	Historical petrol stations	0	0	0	0	-
21	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
22	3.1	Active or recent landfill	0	0	0	3	-
23	3.2	Historical landfill (BGS records)	0	0	1	0	-
23	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
24	3.4	Historical landfill (EA/NRW records)	0	0	1	3	-
25	3.5	Historical waste sites	0	0	2	0	-
25	3.6	Licensed waste sites	0	0	4	21	-
33	3.7	Waste exemptions	0	0	0	0	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
34	4.1	Recent industrial land uses	0	0	5	-	-
35	4.2	Current or recent petrol stations	0	0	0	0	-
35	4.3	Electricity cables	0	0	0	0	-
35	4.4	Gas pipelines	0	0	0	0	-
35	4.5	Sites determined as Contaminated Land	0	0	0	0	-

35	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
36	4.7	Regulated explosive sites	0	0	0	0	-
36	4.8	Hazardous substance storage/usage	0	0	0	0	-
36	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
36	**4.10**	**Licensed industrial activities (Part A(1))**	0	0	3	1	-
37	**4.11**	**Licensed pollutant release (Part A(2)/B)**	0	0	1	0	-
38	4.12	Radioactive Substance Authorisations	0	0	0	0	-
38	**4.13**	**Licensed Discharges to controlled waters**	0	0	2	0	-
38	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
39	4.15	Pollutant release to public sewer	0	0	0	0	-
39	4.16	List 1 Dangerous Substances	0	0	0	0	-
39	4.17	List 2 Dangerous Substances	0	0	0	0	-
39	**4.18**	**Pollution Incidents (EA/NRW)**	0	0	1	3	-
40	**4.19**	**Pollution inventory substances**	0	0	0	1	-
40	**4.20**	**Pollution inventory waste transfers**	0	0	0	1	-
42	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
43	**5.1**	**Superficial aquifer**	Identified (within 500m)				
45	**5.2**	**Bedrock aquifer**	Identified (within 500m)				
47	**5.3**	**Groundwater vulnerability**	Identified (within 50m)				
48	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
48	**5.5**	**Groundwater vulnerability- local information**	Identified (within 0m)				
49	**5.6**	**Groundwater abstractions**	0	0	0	6	1
51	**5.7**	**Surface water abstractions**	0	0	0	0	2
52	5.8	Potable abstractions	0	0	0	0	0
52	5.9	Source Protection Zones	0	0	0	0	-
52	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
53	**6.1**	**Water Network (OS MasterMap)**	0	3	6	-	-

54	6.2	Surface water features	0	2	5	-	-
55	6.3	WFD Surface water body catchments	1	-	-	-	-
55	6.4	WFD Surface water bodies	0	0	0	-	-
55	6.5	WFD Groundwater bodies	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
57	7.1	Risk of Flooding from Rivers and Sea (RoFRaS)	None (within 50m)				
57	7.2	Historical Flood Events	0	0	0	-	-
57	7.3	Flood Defences	0	0	0	-	-
57	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
58	7.5	Flood Storage Areas	0	0	0	-	-
59	7.6	Flood Zone 2	None (within 50m)				
59	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
60	8.1	Surface water flooding	1 in 30 year, 0.1m - 0.3m (within 50m)				
Page	Section	Groundwater flooding					
62	9.1	Groundwater flooding	Low (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
63	10.1	Sites of Special Scientific Interest (SSSI)	0	0	1	0	1
64	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	1
65	10.3	Special Areas of Conservation (SAC)	0	0	1	0	2
66	10.4	Special Protection Areas (SPA)	0	0	1	0	3
66	10.5	National Nature Reserves (NNR)	0	0	0	0	0
67	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
67	10.7	Designated Ancient Woodland	0	0	0	0	1
67	10.8	Biosphere Reserves	0	0	0	0	0
67	10.9	Forest Parks	0	0	0	0	0
68	10.10	Marine Conservation Zones	0	0	0	0	0
68	10.11	Green Belt	1	0	0	0	1
68	10.12	Proposed Ramsar sites	0	0	0	0	0

68	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
69	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
69	10.15	Nitrate Sensitive Areas	0	0	0	0	0
69	**10.16**	**Nitrate Vulnerable Zones**	0	0	0	0	5
70	**10.17**	**SSSI Impact Risk Zones**	1	-	-	-	-
71	**10.18**	**SSSI Units**	0	0	1	2	13
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
79	11.1	World Heritage Sites	0	0	0	-	-
79	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
79	11.3	National Parks	0	0	0	-	-
79	11.4	Listed Buildings	0	0	0	-	-
80	11.5	Conservation Areas	0	0	0	-	-
80	11.6	Scheduled Ancient Monuments	0	0	0	-	-
80	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
81	**12.1**	**Agricultural Land Classification**	Grade 4 (within 250m)				
82	**12.2**	**Open Access Land**	1	0	0	-	-
82	12.3	Tree Felling Licences	0	0	0	-	-
82	12.4	Environmental Stewardship Schemes	0	0	0	-	-
83	**12.5**	**Countryside Stewardship Schemes**	0	1	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
84	**13.1**	**Priority Habitat Inventory**	0	1	22	-	-
86	**13.2**	**Habitat Networks**	1	1	3	-	-
86	**13.3**	**Open Mosaic Habitat**	0	0	1	-	-
87	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
88	**14.1**	**10k Availability**	Identified (within 500m)				
89	**14.2**	**Artificial and made ground (10k)**	0	1	1	1	-
90	**14.3**	**Superficial geology (10k)**	1	2	4	5	-

91	14.4	Landslip (10k)	0	0	0	0	-
92	**14.5**	**Bedrock geology (10k)**	1	0	2	1	-
93	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
94	**15.1**	**50k Availability**	Identified (within 500m)				
95	**15.2**	**Artificial and made ground (50k)**	0	1	1	1	-
96	**15.3**	**Artificial ground permeability (50k)**	0	1	-	-	-
97	**15.4**	**Superficial geology (50k)**	1	1	3	5	-
98	**15.5**	**Superficial permeability (50k)**	Identified (within 50m)				
98	15.6	Landslip (50k)	0	0	0	0	-
99	15.7	Landslip permeability (50k)	None (within 50m)				
100	**15.8**	**Bedrock geology (50k)**	1	0	2	1	-
101	**15.9**	**Bedrock permeability (50k)**	Identified (within 50m)				
101	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
102	16.1	BGS Boreholes	0	0	0	-	-
Page	Section	Natural ground subsidence					
103	**17.1**	**Shrink swell clays**	Very low (within 50m)				
104	**17.2**	**Running sands**	Very low (within 50m)				
105	**17.3**	**Compressible deposits**	Moderate (within 50m)				
107	**17.4**	**Collapsible deposits**	Very low (within 50m)				
108	**17.5**	**Landslides**	Very low (within 50m)				
109	**17.6**	**Ground dissolution of soluble rocks**	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
111	18.1	Natural cavities	0	0	0	0	-
112	**18.2**	**BritPits**	0	0	1	7	-
113	**18.3**	**Surface ground workings**	0	2	9	-	-
114	18.4	Underground workings	0	0	0	0	0
114	**18.5**	**Historical Mineral Planning Areas**	0	0	3	4	-

115	18.6	Non-coal mining	0	0	0	0	0
115	18.7	Mining cavities	0	0	0	0	0
115	18.8	JPB mining areas	None (within 0m)				
115	18.9	Coal mining	None (within 0m)				
116	18.10	Brine areas	None (within 0m)				
116	18.11	Gypsum areas	None (within 0m)				
116	18.12	Tin mining	None (within 0m)				
116	18.13	Clay mining	None (within 0m)				

Page	Section	Radon	
117	**19.1**	**Radon**	Less than 1% (within 0m)

Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
118	**20.1**	**BGS Estimated Background Soil Chemistry**	2	2	-	-	-
118	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
118	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-

Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
119	21.1	Underground railways (London)	0	0	0	-	-
119	21.2	Underground railways (Non-London)	0	0	0	-	-
119	21.3	Railway tunnels	0	0	0	-	-
119	21.4	Historical railway and tunnel features	0	0	0	-	-
119	21.5	Royal Mail tunnels	0	0	0	-	-
120	21.6	Historical railways	0	0	0	-	-
120	21.7	Railways	0	0	0	-	-
120	21.8	Crossrail 1	0	0	0	0	-
120	21.9	Crossrail 2	0	0	0	0	-
120	21.10	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 19/06/2017

Site Area: 0.15ha

Recent site history - 2014 aerial photograph

Capture Date: 22/07/2014

Site Area: 0.15ha

Recent site history - 2009 aerial photograph

Capture Date: 19/08/2009

Site Area: 0.15ha

Recent site history - 2005 aerial photograph

Capture Date: 23/06/2005

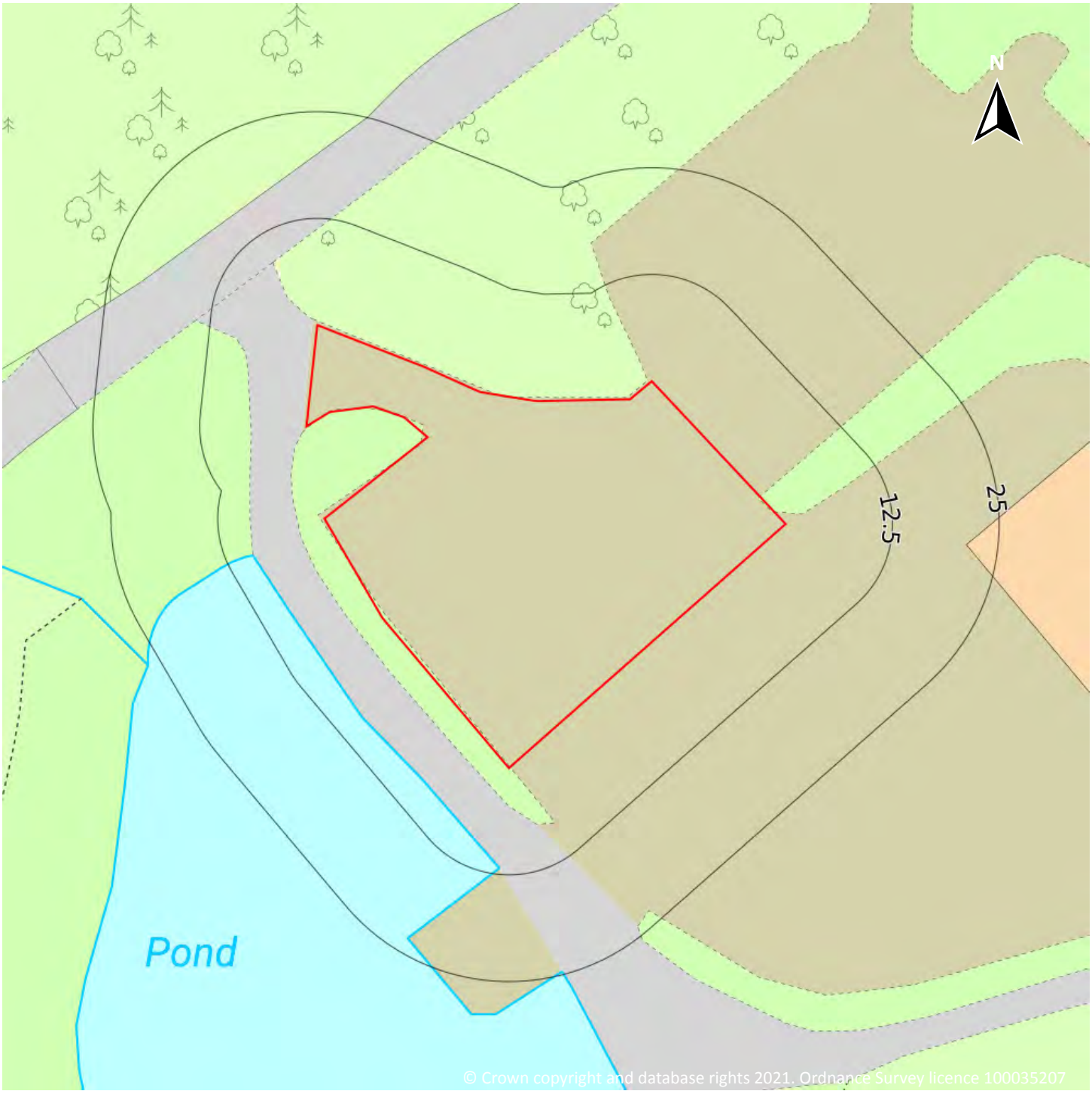
Site Area: 0.15ha

Recent site history - 2000 aerial photograph

Capture Date: 17/06/2000

Site Area: 0.15ha

OS MasterMap site plan



Site Area: 0.15ha

1 Past land use

Site Outline

Search buffers in metres (m)

Historical industrial land uses

1.1 Historical industrial land uses

Records within 500m	32

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
1	35m W	Cuttings	1934 - 1940	1979461

ID	Location	Land use	Dates present	Group ID
A	50m W	Sand and Gravel Pit	1988	1976531
A	52m W	Sand and Gravel Pit	1982	1977528
2	55m NW	Cuttings	1934 - 1940	1975359
3	85m E	Unspecified Disused Pit	1982	1972626
A	96m W	Sand and Gravel Pit	1973	1977201
B	143m N	Cuttings	1940	1982315
B	146m N	Cuttings	1934	1983503
4	147m E	Nursery	1900	1970865
B	180m N	Cuttings	1973	1976446
5	254m NW	Old Gravel Pit	1963	1969720
6	308m SW	Sand Pit	1963 - 1973	1983172
7	312m W	Sand and Gravel Pit	1988	1972233
C	321m N	Unspecified Pit	1940	1976601
C	321m N	Unspecified Pit	1900 - 1926	1980052
C	323m N	Old Gravel Pit	1887	1969722
D	324m NW	Gravel Pit	1887 - 1900	1975057
D	324m NW	Unspecified Pit	1926	1977309
C	325m N	Unspecified Pit	1934	1981208
D	326m NW	Unspecified Pit	1940	1980614
C	328m N	Unspecified Pit	1926	1975341
D	328m NW	Gravel Pits	1934	1971385
D	330m NW	Unspecified Ground Workings	1926	1978699
8	343m NE	Gravel Pit	1887	1972786
E	382m N	Unspecified Ground Workings	1982	1974304
E	382m N	Unspecified Ground Workings	1963 - 1973	1974493
9	386m N	Nursery	1900	1970866
10	429m NW	Unspecified Ground Workings	1963	1984441
F	430m SW	Unspecified Pit	1926	1974211

ID	Location	Land use	Dates present	Group ID
F	430m SW	Unspecified Pit	1940	1984332
G	432m N	Unspecified Bed	1963 - 1973	1977444
G	432m N	Unspecified Bed	1982 - 1988	1984382

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	0

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	0

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	0

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

Records within 500m	0

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

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

2 Past land use - un-grouped

Site Outline

Search buffers in metres (m)

Historical industrial land uses

2.1 Historical industrial land uses

Records within 500m	41

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 18**

ID	Location	Land Use	Date	Group ID
A	35m W	Cuttings	1934	1979461
A	36m W	Cuttings	1940	1979461
B	50m W	Sand and Gravel Pit	1988	1976531

ID	Location	Land Use	Date	Group ID
B	52m W	Sand and Gravel Pit	1982	1977528
C	55m NW	Cuttings	1940	1975359
C	55m NW	Cuttings	1934	1975359
1	85m E	Unspecified Disused Pit	1982	1972626
B	96m W	Sand and Gravel Pit	1973	1977201
D	143m N	Cuttings	1940	1982315
D	146m N	Cuttings	1934	1983503
2	147m E	Nursery	1900	1970865
D	180m N	Cuttings	1973	1976446
3	254m NW	Old Gravel Pit	1963	1969720
E	308m SW	Sand Pit	1973	1983172
E	308m SW	Sand Pit	1963	1983172
4	312m W	Sand and Gravel Pit	1988	1972233
F	321m N	Unspecified Pit	1940	1976601
F	321m N	Unspecified Pit	1926	1980052
F	321m N	Unspecified Pit	1900	1980052
F	323m N	Old Gravel Pit	1887	1969722
G	324m NW	Unspecified Pit	1926	1977309
G	324m NW	Gravel Pit	1900	1975057
F	325m N	Unspecified Pit	1934	1981208
F	325m N	Unspecified Pit	1934	1981208
G	326m NW	Unspecified Pit	1940	1980614
F	328m N	Unspecified Pit	1926	1975341
G	328m NW	Gravel Pits	1934	1971385
G	330m NW	Unspecified Ground Workings	1926	1978699
5	343m NE	Gravel Pit	1887	1972786
G	366m NW	Gravel Pit	1887	1975057
H	382m N	Unspecified Ground Workings	1982	1974304

ID	Location	Land Use	Date	Group ID
H	382m N	Unspecified Ground Workings	1973	1974493
H	382m N	Unspecified Ground Workings	1963	1974493
6	386m N	Nursery	1900	1970866
7	429m NW	Unspecified Ground Workings	1963	1984441
I	430m SW	Unspecified Pit	1940	1984332
I	430m SW	Unspecified Pit	1926	1974211
J	432m N	Unspecified Bed	1988	1984382
J	432m N	Unspecified Bed	1982	1984382
J	432m N	Unspecified Bed	1973	1977444
J	432m N	Unspecified Bed	1963	1977444

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

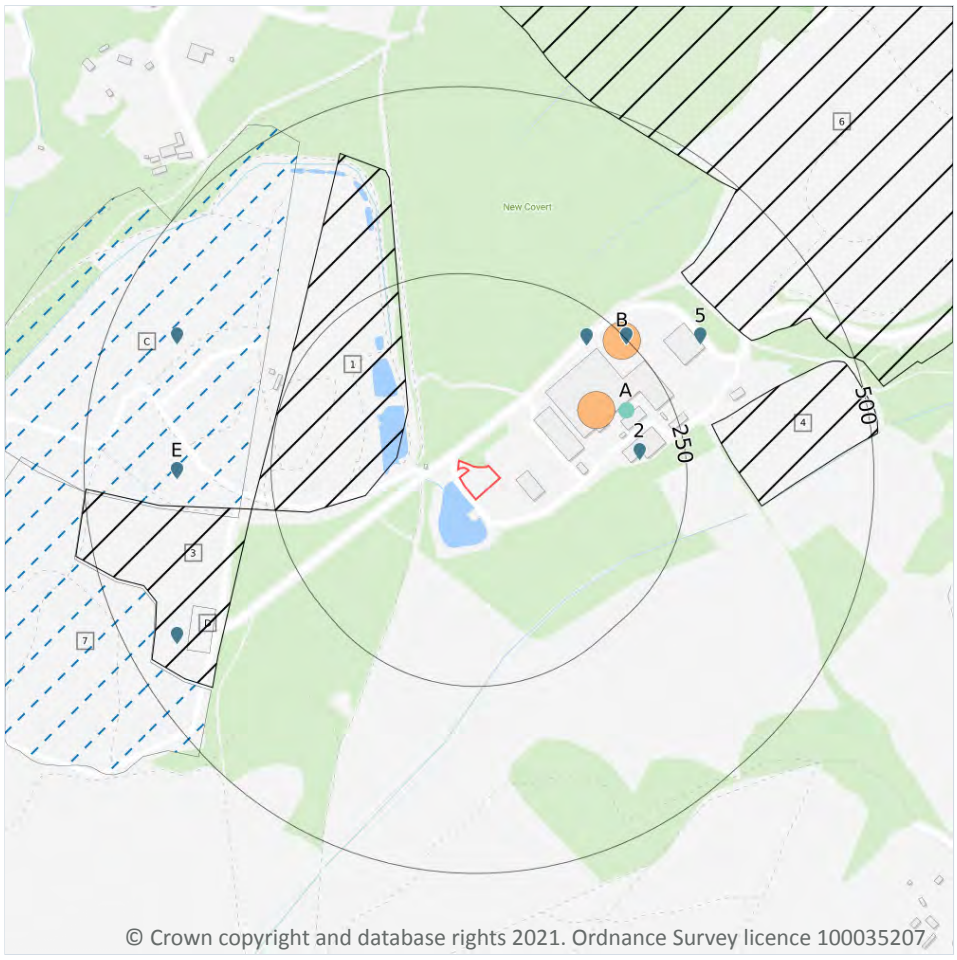
2.5 Historical garages

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



Site Outline

Search buffers in metres (m)

Active or recent landfill

Historical landfill (EA/NRW)

Historical landfill (BGS)

Historical waste sites

Licensed waste sites

3.1 Active or recent landfill

Records within 500m	3

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

Features are displayed on the Waste and landfill map on **page 22**

ID	Location	Details	
C	278m W	Operator: W H White Limited Site Address: White's Pit Landfill, Arrowsmith Road, Wimborne, Poole, Dorset, BH21 3BQ	WML Number: 23629 EPR Reference: WHI098 Landfill type: A04: Household, Commercial & Industrial Waste Landfill Status: Modified IPPC Reference: - EPR Number: EA/EPR/BP3293FX/V006

ID	Location	Details	
D	370m SW	Operator: W H White Limited Site Address: Whites Pit Landfill Site, Arrowsmith Road, Wimborne, Dorset, BH21 3BQ	WML Number: 23530 EPR Reference: WHI097 Landfill type: A04: Household, Commercial & Industrial Waste Landfill Status: Modified IPPC Reference: - EPR Number: EA/EPR/VP3897HP/V003
7	434m SW	Operator: W H White Limited Site Address: Whites Pit Landfill Site, Arrowsmith Road, Wimborne, Dorset, BH21 3BQ	WML Number: 23598 EPR Reference: WHI064 Landfill type: A04: Household, Commercial & Industrial Waste Landfill Status: Modified IPPC Reference: - EPR Number: EA/EPR/JP3497HM/V008

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

3.2 Historical landfill (BGS records)

Records within 500m	**1**

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

Features are displayed on the Waste and landfill map on **page 22**

ID	Location	Address	BGS Number	Risk	Waste Type
A	190m NE	Corporation Tip, Nagna Road, Canford, Poole	1188	No risk to aquifer	N/A

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	**0**

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m	4

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

Features are displayed on the Waste and landfill map on **page 22**

ID	Location	Details		
1	81m W	Site Address: Whites Pit, North Canford Heath, Wimborne, Dorset Licence Holder Address: 1 Wood Lane, Bear Cross, Bournemouth	Waste Licence: Yes Site Reference: R29/634, WDL/175 (M2), WDL/82/68, PU10 Waste Type: Inert, Industrial, Commercial, Household Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 25/05/1983 Licence Surrender: -	Operator: - Licence Holder: W H White and Company Limited First Recorded 31/12/1950 Last Recorded: -
3	280m W	Site Address: Whites Pit / Arrowsmith Road Pit, Cranford Heath, Poole, Wimborne, Dorset Licence Holder Address: Site Control Centre, Magna Road, Wimborne	Waste Licence: Yes Site Reference: WDL/85/86 (M2), R29/655 Waste Type: Inert, Industrial, Commercial, Household Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 13/12/1985 Licence Surrender: -	Operator: - Licence Holder: W H White Limited First Recorded 31/12/1950 Last Recorded: -
4	292m E	Site Address: Corporation Tip, Nagna Road, Canford, Poole, Dorset Licence Holder Address: -	Waste Licence: - Site Reference: - Waste Type: Commercial, Liquid sludge Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: Poole Corporation Licence Holder: - First Recorded 30/06/1970 Last Recorded: -
6	363m NE	Site Address: Moortown Aerodrome Site, Magna Road, Poole, Dorset Licence Holder Address: Civic Centre, Poole, Dorset	Waste Licence: Yes Site Reference: WDL/84/80, R29/654, GDO 183 Waste Type: Industrial, Commercial, Household Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 12/09/1984 Licence Surrender: 30/09/1992	Operator: - Licence Holder: Poole Borough Council First Recorded - Last Recorded: -

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

3.5 Historical waste sites

Records within 500m	2

Waste site records derived from Local Authority planning records and high detail historical mapping.

Features are displayed on the Waste and landfill map on **page 22**

ID	Location	Address	Further Details	Date
A	132m NE	Site Address: New Earth Composting, Facility, Magna Road, Site, Control Centre, WIMBORNE, Dorset, BH21 3AP	Type of Site: Preparation Warehouses & Waste Storage Planning application reference: 06/31392/017/F Description: Scheme comprises retention of 2 storey office block and portacabin and construction of 2 single storey green waste storage and preparation warehouses and installation of water treatment tanks and bio filter bed. An application (ref: 06/31392/017/F) for d etailed planning permission was granted by Poole B.C. Planning decision obtained Data source: Historic Planning Application Data Type: Point	24/10/2006
B	219m NE	Site Address: Canford Recycling Centre, Arena Way, Wimborne, Dorset, BH21 3BW	Type of Site: Waste Materials Recovery Facility Planning application reference: APP/15/00874/Y Description: Scheme comprises construction of commercial and industrial waste materials recovery facility with new weighbridge, office and welfare facilities including SUDS. The associated works include sewer systems, landscaping, infrastructure, enabling and access roads. Data source: Historic Planning Application Data Type: Point	28/10/2015

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m	25

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

Features are displayed on the Waste and landfill map on **page 22**

ID	Location	Details		
2	189m E	Site Name: Whites Pit Landfill Site Site Address: Whites Pit Landfill Site, Arrowsmith Road, Wimborne, Dorset, BH21 3BQ Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste Landfill Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WHI064 EPR reference: EA/EPR/JP3497HM/V003 Operator: W H White Ltd Waste Management licence No: 23598 Annual Tonnage: 500000	Issue Date: 29/05/1992 Effective Date: - Modified:: 08/03/2012 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
B	215m NE	Site Name: Canford Inert Recycling Centre Site Address: Canford Recycling Centre, Arena Way, Wimborne, Dorset, BH21 3BW Correspondence Address: -	Type of Site: Physical Treatment Facility Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: COM177 EPR reference: EA/EPR/FB3537RS/A001 Operator: Commercial Recycling Ltd Waste Management licence No: 103978 Annual Tonnage: 249999	Issue Date: 17/05/2012 Effective Date: - Modified:: - Surrendered Date: 0 Expiry Date: - Cancelled Date: - Status: Issued
B	215m NE	Site Name: Canford Inert Recycling Centre Site Address: Canford Recycling Centre, Arena Way, Wimborne, Dorset, BH21 3BW Correspondence Address: -	Type of Site: Physical Treatment Facility Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: COM203 EPR reference: EA/EPR/EB3102FV/S002 Operator: Commercial Recycling (Southern) Limited Waste Management licence No: 103978 Annual Tonnage: 249999	Issue Date: 17/05/2012 Effective Date: 23/05/2016 Modified:: 17/06/2016 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified

ID	Location	Details		
B	215m NE	Site Name: Canford Inert Recycling Centre Site Address: Canford Recycling Centre, Arena Way, Wimborne, Dorset, BH21 3BW Correspondence Address: -	Type of Site: Physical Treatment Facility Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: COM203 EPR reference: EA/EPR/EB3102FV/S002 Operator: Commercial Recycling (Southern) Limited Waste Management licence No: 103978 Annual Tonnage: 249999	Issue Date: 17/05/2012 Effective Date: 23/05/2016 Modified:: 17/06/2016 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
B	252m NE	Site Name: Whites Pit - Mechanical & Biological Treatment Plant Site Address: Magna Road, Wimborne, Dorset, BH21 3AP Correspondence Address: White House, Magna Road, Wimborne, Bournemouth, Dorset, BH21 3AP	Type of Site: Composting Facility Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WHI106 EPR reference: - Operator: W H White Plc Waste Management licence No: 23707 Annual Tonnage: 12000	Issue Date: 01/05/2003 Effective Date: - Modified:: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued
B	252m NE	Site Name: Canford Recycling Centre Site Address: Site Control Centre, Magna Road, Wimborne, Dorset, BH21 3AP Correspondence Address: -	Type of Site: Material Recycling Treatment Facility Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: COM147 EPR reference: FP3394EZ/V002 Operator: Commercial Recycling Ltd Waste Management licence No: 23718 Annual Tonnage: 175000	Issue Date: 01/03/2004 Effective Date: 14/12/2009 Modified:: 02/06/2010 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
B	252m NE	Site Name: New Earth Solutions (Canford) Ltd Site Address: Site Control Centre, Magna Road, Wimborne, Dorset, BH21 3AP Correspondence Address: -	Type of Site: Composting Facility Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: NEW143 EPR reference: EA/EPR/FP3393SB/V002 Operator: New Earth Solutions (Canford) Ltd Waste Management licence No: 23707 Annual Tonnage: 12000	Issue Date: 01/05/2003 Effective Date: 04/01/2010 Modified:: 28/05/2010 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified

ID	Location	Details		
B	252m NE	Site Name: Canford M B T Facility Site Address: Site Control Centre, Magna Road, Wimborne, Dorset, BH21 3AP Correspondence Address: -	Type of Site: Biological Treatment Facility Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: NEW143 EPR reference: EA/EPR/FP3393SB/V003 Operator: New Earth Solutions (Canford) Ltd Waste Management licence No: 23707 Annual Tonnage: 100000	Issue Date: 01/05/2003 Effective Date: 04/01/2010 Modified:: 28/06/2012 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
B	252m NE	Site Name: Canford Recycling Centre Site Address: Site Control Centre, Magna Road, Wimborne, Dorset, BH21 3AP Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: COM147 EPR reference: EA/EPR/FP3394EZ/V002 Operator: Commercial Recycling Ltd Waste Management licence No: 23718 Annual Tonnage: 175000	Issue Date: 01/03/2004 Effective Date: 14/12/2009 Modified:: 02/06/2010 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
B	252m NE	Site Name: Canford M B T Facility Site Address: Arena Way, Magna Road, Wimborne, Dorset, BH21 3AP Correspondence Address: -	Type of Site: Biological Treatment Facility Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: NEW143 EPR reference: EA/EPR/FP3393SB/V004 Operator: New Earth Solutions (Canford) Ltd Waste Management licence No: 23707 Annual Tonnage: 100000	Issue Date: 01/05/2003 Effective Date: 04/01/2010 Modified:: 14/12/2012 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified

ID	Location	Details		
B	252m NE	Site Name: Canford Recycling Centre Site Address: Canford Recycling Centre, Arena Way, Off Magna Road, Wimborne, Dorset, BH21 3BW Correspondence Address: -	Type of Site: Special Waste Transfer Station Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: COM147 EPR reference: EA/EPR/FP3394EZ/V004 Operator: Commercial Recycling Ltd Waste Management licence No: 23718 Annual Tonnage: 175000	Issue Date: 01/03/2004 Effective Date: 14/12/2009 Modified:: 04/11/2013 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
B	252m NE	Site Name: Canford Recycling Centre Site Address: Canford Recycling Centre, Arena Way, Off Magna Road, Wimborne, Dorset, BH21 3BW Correspondence Address: -	Type of Site: Special Waste Transfer Station Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: COM199 EPR reference: EA/EPR/DB3904GC/T001 Operator: Commercial Recycling (southern) Limited Waste Management licence No: 23718 Annual Tonnage: 175000	Issue Date: 01/03/2004 Effective Date: 11/03/2016 Modified:: 04/11/2013 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred
B	252m NE	Site Name: Canford M B T Facility Site Address: Arena Way, Magna Road, Wimborne, Dorset, BH21 3AP Correspondence Address: -	Type of Site: Biological Treatment Facility Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: NEW143 EPR reference: EA/EPR/FP3393SB/V006 Operator: New Earth Solutions (Canford) Limited Waste Management licence No: 23707 Annual Tonnage: 125000	Issue Date: 01/05/2003 Effective Date: 04/01/2010 Modified:: 09/10/2015 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: To PPC

ID	Location	Details		
B	252m NE	Site Name: Canford M B T Facility Site Address: Arena Way, Magna Road, Wimborne, Dorset, BH21 3AP Correspondence Address: -	Type of Site: Biological Treatment Facility Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: NEW143 EPR reference: EA/EPR/FP3393SB/V006 Operator: New Earth Solutions (Canford) Limited Waste Management licence No: 23707 Annual Tonnage: 125000	Issue Date: 01/05/2003 Effective Date: 04/01/2010 Modified:: 09/10/2015 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: To PPC
B	252m NE	Site Name: Canford Recycling Centre Site Address: Canford Recycling Centre, Arena Way, Off Magna Road, Wimborne, Dorset, BH21 3BW Correspondence Address: -	Type of Site: Special Waste Transfer Station Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: COM199 EPR reference: EA/EPR/DB3904GC/T001 Operator: Commercial Recycling (Southern) Limited Waste Management licence No: 23718 Annual Tonnage: 175000	Issue Date: 01/03/2004 Effective Date: 11/03/2016 Modified:: 04/11/2013 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred
5	328m NE	Site Name: - Site Address: Canford Recycling Centre, Magna Road, Whites Pit, Wimborne, Dorset, BH21 3AP Correspondence Address: -	Type of Site: Biological Treatment Facility Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WHI099 EPR reference: EA/EPR/LP3393FA/S002 Operator: W H White Plc Waste Management licence No: 23644 Annual Tonnage: 0	Issue Date: 07/10/1994 Effective Date: - Modified:: - Surrendered Date: Jul 21 2010 12:00AM Expiry Date: - Cancelled Date: - Status: Surrendered

ID	Location	Details		
E	376m W	Site Name: White's Pit Northern Area Site Address: White's Pit Landfill, Arrowsmith Road, Wimborne, Poole, Dorset, BH21 3BQ Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste Landfill Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WHI098 EPR reference: EA/EPR/BP3293FX/V006 Operator: W H White Limited Waste Management licence No: 23629 Annual Tonnage: 0	Issue Date: 18/06/1982 Effective Date: - Modified:: 06/08/2015 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Closure
E	376m W	Site Name: Whites Pit Landfill Site Site Address: Whites Pit Landfill Site, Arrowsmith Road, Wimborne, Dorset, BH21 3BQ Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste Landfill Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WHI064 EPR reference: EA/EPR/JP3497HM/V008 Operator: W H White Limited Waste Management licence No: 23598 Annual Tonnage: 500000	Issue Date: 29/05/1992 Effective Date: - Modified:: 06/08/2015 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
E	376m W	Site Name: Whites Pit Landfill Site Site Address: Whites Pit Landfill Site, Arrowsmith Road, Wimborne, Dorset, BH21 3BQ Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste Landfill Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WHI097 EPR reference: EA/EPR/VP3897HP/V003 Operator: W H White Limited Waste Management licence No: 23530 Annual Tonnage: 300000	Issue Date: 13/12/1985 Effective Date: - Modified:: 12/08/2015 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified

ID	Location	Details		
E	376m W	Site Name: White's Pit Northern Area Site Address: White's Pit Landfill, Arrowsmith Road, Wimborne, Poole, Dorset, BH21 3BQ Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste Landfill Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WHI098 EPR reference: EA/EPR/BP3293FX/V006 Operator: W H White Limited Waste Management licence No: 23629 Annual Tonnage: 0	Issue Date: 18/06/1982 Effective Date: - Modified:: 06/08/2015 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
E	376m W	Site Name: Whites Pit Landfill Site Site Address: Whites Pit Landfill Site, Arrowsmith Road, Wimborne, Dorset, BH21 3BQ Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste Landfill Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WHI097 EPR reference: EA/EPR/VP3897HP/V003 Operator: W H White Limited Waste Management licence No: 23530 Annual Tonnage: 300000	Issue Date: 13/12/1985 Effective Date: - Modified:: 12/08/2015 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
E	376m W	Site Name: Whites Pit Landfill Site Site Address: Whites Pit Landfill Site, Arrowsmith Road, Wimborne, Dorset, BH21 3BQ Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste Landfill Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WHI064 EPR reference: EA/EPR/JP3497HM/V008 Operator: W H White Limited Waste Management licence No: 23598 Annual Tonnage: 500000	Issue Date: 29/05/1992 Effective Date: - Modified:: 06/08/2015 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified

ID	Location	Details		
C	412m NW	Site Name: Whites Pit (northern Area) Site Address: Arrowsmith Road, Wimborne, Poole, Dorset, BH21 3BQ Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste Landfill Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WHI098 EPR reference: EA/EPR/BP3293FX/A001 Operator: W H White Plc Waste Management licence No: 23629 Annual Tonnage: 75000	Issue Date: 18/06/1982 Effective Date: - Modified:: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued
D	433m SW	Site Name: Whites Pit South Ext Part 1 (Recycling) Site Address: Magna Road, (Recycling Area), Wimborne, Dorset, BH21 3AP Correspondence Address: White House, Magna Road, Wimborne, Dorset, BH21 3AP	Type of Site: Household, Commercial & Industrial Waste Landfill Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WHI097 EPR reference: - Operator: W H White Plc . Waste Management licence No: 23530 Annual Tonnage: 300000	Issue Date: 13/12/1985 Effective Date: - Modified:: 30/04/1998 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
D	433m SW	Site Name: Whites Pit Landfill Site Site Address: Land/ Premises At, Arrowsmith Road, Wimborne, Dorset, BH21 3BQ Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste Landfill Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WHI097 EPR reference: EA/EPR/VP3897HP/V002 Operator: W H White Plc Waste Management licence No: 23530 Annual Tonnage: 300000	Issue Date: 13/12/1985 Effective Date: - Modified:: 30/04/1998 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified

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

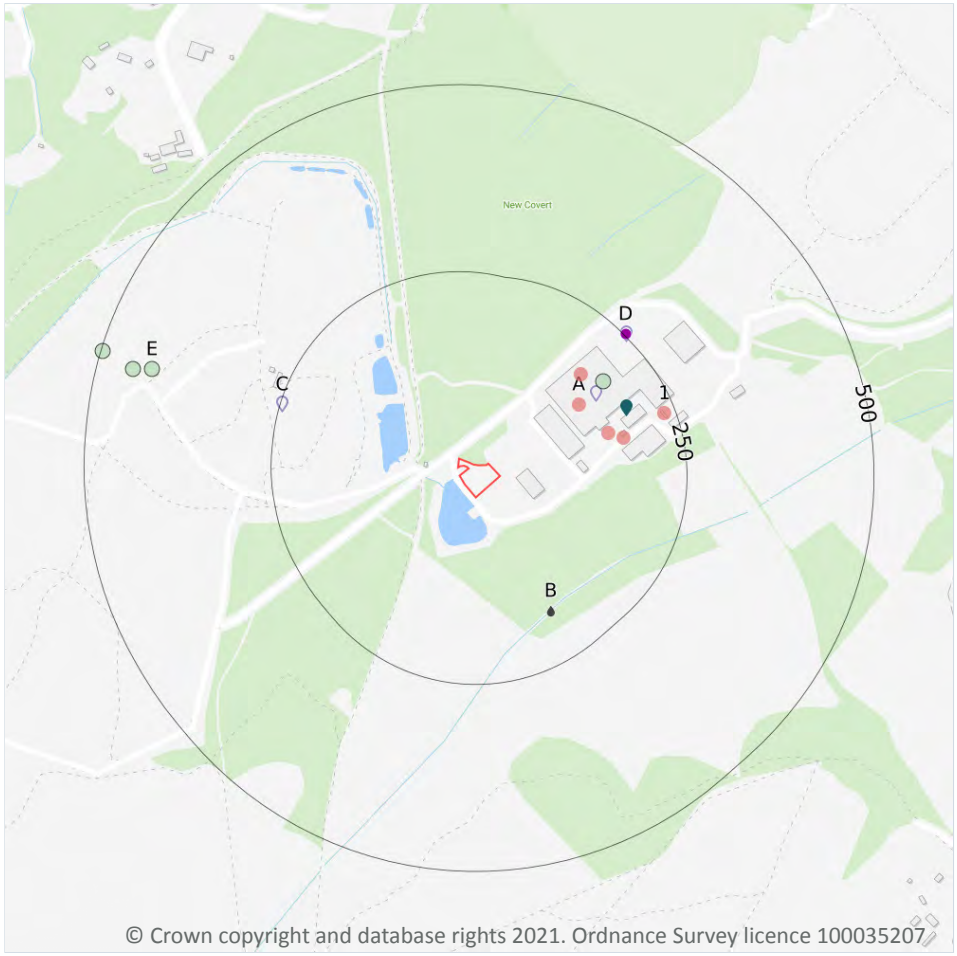
3.7 Waste exemptions

Records within 500m **0**

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

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

4 Current industrial land use



Site Outline

Search buffers in metres (m)

Recent industrial land uses

Part A(1) industrial activities

Licensed pollutant release (Part A(2)/B)

Licensed Discharges to controlled waters

Pollution Incidents (EA/NRW)

Pollution inventory substances

Pollution inventory waste transfers

4.1 Recent industrial land uses

Records within 250m	5

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 34**

ID	Location	Company	Address	Activity	Category
A	142m NE	Public Recycling Facility	Dorset, BH21	Recycling Centres	Infrastructure and Facilities
A	156m E	Chimney	Dorset, BH21	Chimneys	Industrial Features
A	172m NE	New Earth Solutions	Canford Recycling Centre, Arena Way, Wimborne, Dorset, BH21 3BW	Recycling, Reclamation and Disposal	Recycling Services

ID	Location	Company	Address	Activity	Category
A	172m E	Electricity Sub Station	Dorset, BH21	Electrical Features	Infrastructure and Facilities
1	235m E	Hopper	Dorset, BH21	Hoppers and Silos	Farming

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	0

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	0

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	0

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

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

4.10 Licensed industrial activities (Part A(1))

Records within 500m	4

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 34**

ID	Location	Details	
A	168m NE	Operator: NEW EARTH SOLUTIONS (CANFORD) LIMITED Installation Name: CANFORD MBT FACILITY EPR/FP3393SB Process: RECOVERY OR A MIX OF RECOVERY AND DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT Permit Number: FP3908BY Original Permit Number: SP3035AC	EPR Reference: - Issue Date: 18/12/2019 Effective Date: 18/12/2019 Last date noted as effective: 26/10/2020 Status: EFFECTIVE
C	247m W	Operator: BIFFA WASTE SERVICES LTD Installation Name: - Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE Permit Number: BV7184 Original Permit Number: BV7184	EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 01/10/2004 Status: SUPERSEDED BY PAS
C	247m W	Operator: BIFFA WASTE SERVICES LTD Installation Name: WHITES PIT Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE Permit Number: BV7184IP Original Permit Number: BV7184IP	EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 26/10/2020 Status: REFUSED
D	252m NE	Operator: NEW EARTH SOLUTIONS (CANFORD) LIMITED Installation Name: CANFORD MBT FACILITY EPR/SP3035AC Process: RECOVERY OR A MIX OF RECOVERY AND DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT Permit Number: SP3035AC Original Permit Number: SP3035AC	EPR Reference: - Issue Date: 09/10/2015 Effective Date: 09/10/2015 Last date noted as effective: 26/10/2020 Status: SUPERCEDED

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

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m **1**

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 34**

ID	Location	Address	Details	
A	190m NE	Syngas Products Ltd, Canford Low CEF, Arena Way, Poole, BH21 3BW	Process: Combustion & Incineration Status: Current Permit Permit Type: Part A2	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	0

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

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

4.13 Licensed Discharges to controlled waters

Records within 500m	2

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

Features are displayed on the Current industrial land use map on **page 34**

ID	Location	Address	Details	
B	181m SE	WHITE'S PIT B4 LAGOON, MAGNA ROAD, WIMBORNE, DORSET, BH21 3AP	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: 400113 Permit Version: 1 Receiving Water: KNIGHTON BROOK	Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 22/12/1999 Effective Date: 22/12/1999 Revocation Date: 24/11/2009
B	181m SE	WHITE'S PIT B4 LAGOON, MAGNA ROAD, WIMBORNE, DORSET, BH21 3AP	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: 400113 Permit Version: 2 Receiving Water: KNIGHTON BROOK	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 25/11/2009 Effective Date: 25/11/2009 Revocation Date: -

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

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0

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

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

4.15 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

Records within 500m	0

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

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

4.17 List 2 Dangerous Substances

Records within 500m	0

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

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m	4

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

Features are displayed on the Current industrial land use map on **page 34**

ID	Location	Details	
A	187m NE	Incident Date: 23/07/2018 Incident Identification: 1636143 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 2 (Significant)
E	427m W	Incident Date: 07/07/2003 Incident Identification: 171498 Pollutant: Specific Waste Materials Pollutant Description: Household Waste	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

ID	Location	Details	
E	452m W	Incident Date: 07/05/2003 Incident Identification: 156690 Pollutant: Specific Waste Materials Pollutant Description: Asbestos	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
E	497m W	Incident Date: 13/05/2003 Incident Identification: 158141 Pollutant: Specific Waste Materials Pollutant Description: Other Specific Waste Material	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

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

4.19 Pollution inventory substances

Records within 500m	**1**

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

Features are displayed on the Current industrial land use map on **page 34**

ID: D, Location: 252m NE, Permit: FP3393SB
Operator: New Earth Solutions (Canford) Limited
Activity: RECOVERY OR A MIX OF RECOVERY AND DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT
Address: Canford MBT Facility Arena Way Magna Road Wimborne Dorset BH21 3AP
Sector: Biowaste, Sub-sector: Biowaste Treatment
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Carbon dioxide	10000000kg	Below Reporting Threshold

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m	**1**

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

Features are displayed on the Current industrial land use map on **page 34**

ID: D, Location: 252m NE, Permit: FP3393SB
Operator: New Earth Solutions (Canford) Limited
Activity: RECOVERY OR A MIX OF RECOVERY AND DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT
Address: Canford MBT Facility Arena Way Magna Road Wimborne Dorset BH21 3AP
Sector Biowaste, Sub-sector: Biowaste Treatment
Releases:

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
D8	Biological treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numbers D1 to D12	3371.7	Absolute Value	16 10 02	aqueous liquid wastes other than those mentioned in 16 10 01	No
R10	Land treatment resulting in benefit to agriculture or ecological improvement	7870.54	Absolute Value	19 05 99	wastes not otherwise specified	No
R4	Recycling/reclamation of metals and metal compounds	680.92	Absolute Value	19 12 02	ferrous metal	No
R4	Recycling/reclamation of metals and metal compounds	77.62	Absolute Value	19 12 03	non-ferrous metal	No
R1	Use principally as a fuel or other means to generate energy	77959.84	Absolute Value	19 12 10	combustible waste (refuse derived fuel)	No
R3	Recycling/Reclamation of organic substances which are not used as solvents (including composting and other biological transformatin processes)	2284.38	Absolute Value	20 01 08	biodegradable kitchen and canteen waste	No
D8	Biological treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numbers D1 to D12	243.94	Absolute Value	20 03 04	septic tank sludge	No

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
D1	Deposit into or onto land (eg landfill, etc.)	7178.28	Absolute Value	19 12 12	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11	No

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

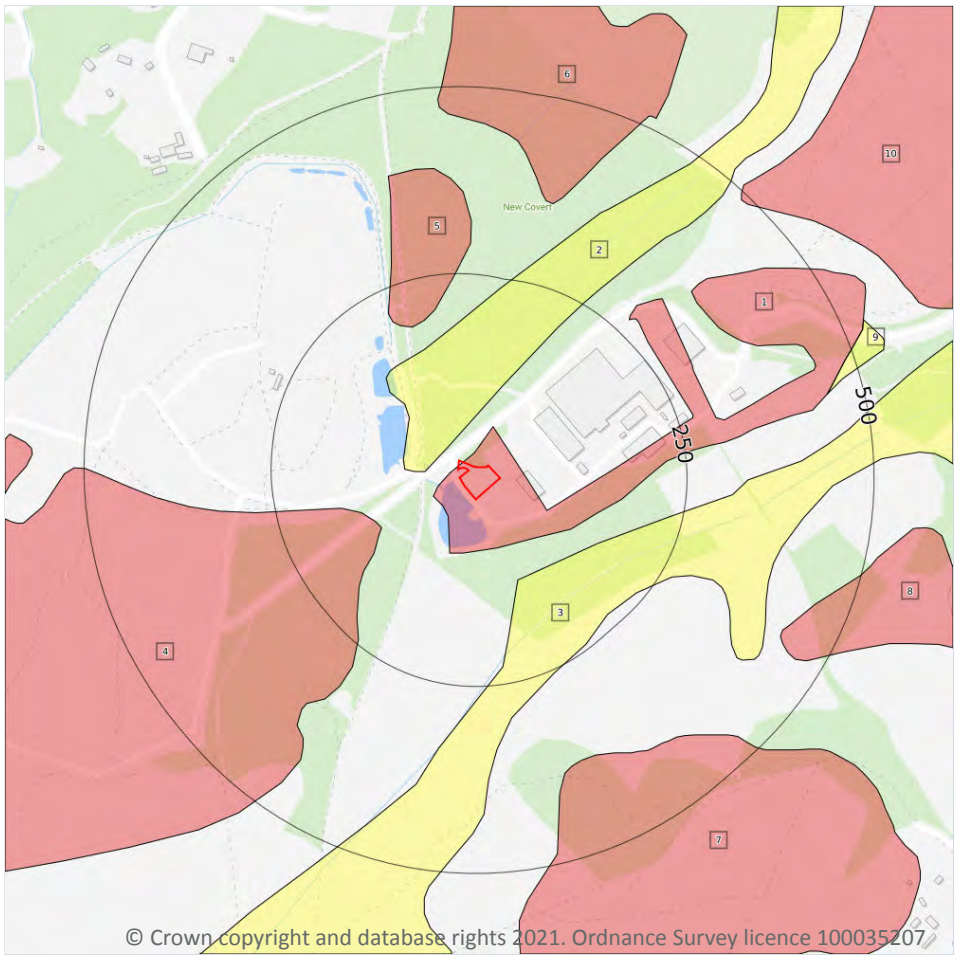
4.21 Pollution inventory radioactive waste

Records within 500m	**0**

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

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

5.1 Superficial aquifer

Records within 500m	10

Aquifer status of groundwater held within superficial geology.

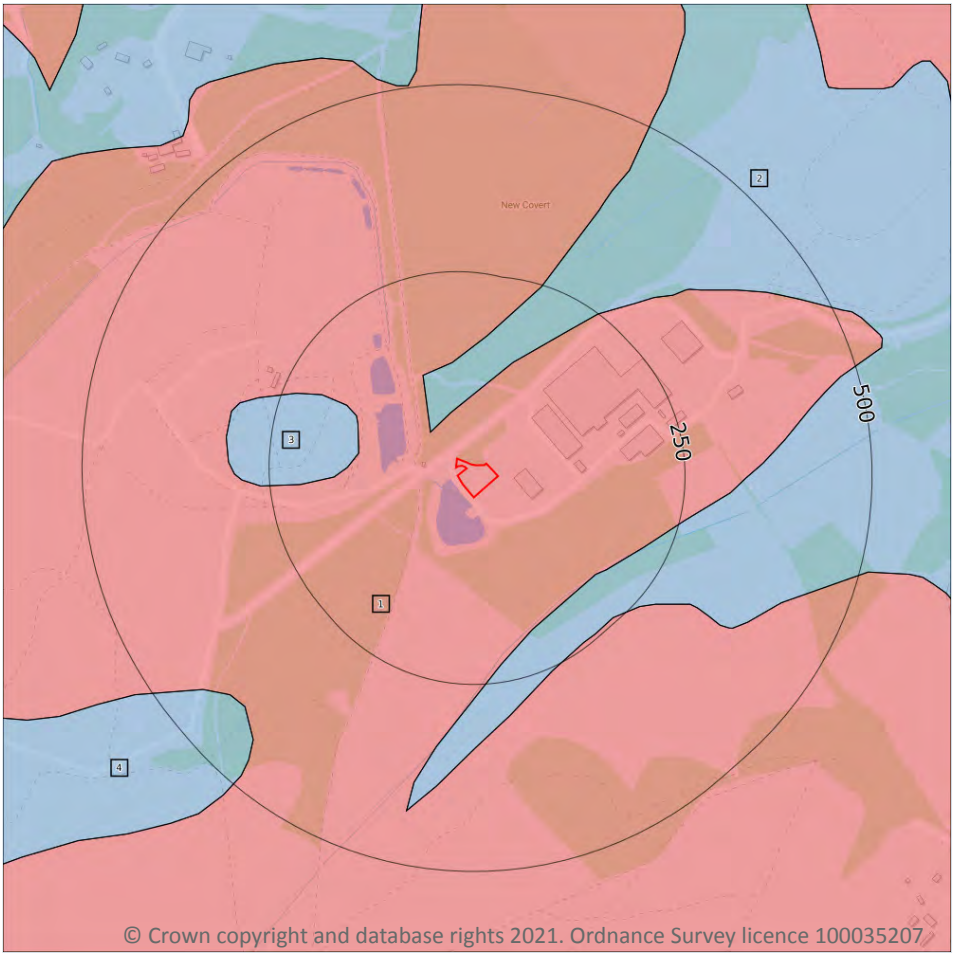
Features are displayed on the Hydrogeology map on **page 43**

ID	Location	Designation	Description
1	**On site**	**Secondary A**	**Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers**
2	23m NW	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

ID	Location	Designation	Description
3	122m SE	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
4	124m SW	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
5	189m N	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
6	361m N	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
7	376m S	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
8	429m SE	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
9	452m E	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
10	490m NE	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

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

Bedrock aquifer



Site Outline

Search buffers in metres (m)

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

5.2 Bedrock aquifer

Records within 500m **4**

Aquifer status of groundwater held within bedrock geology.

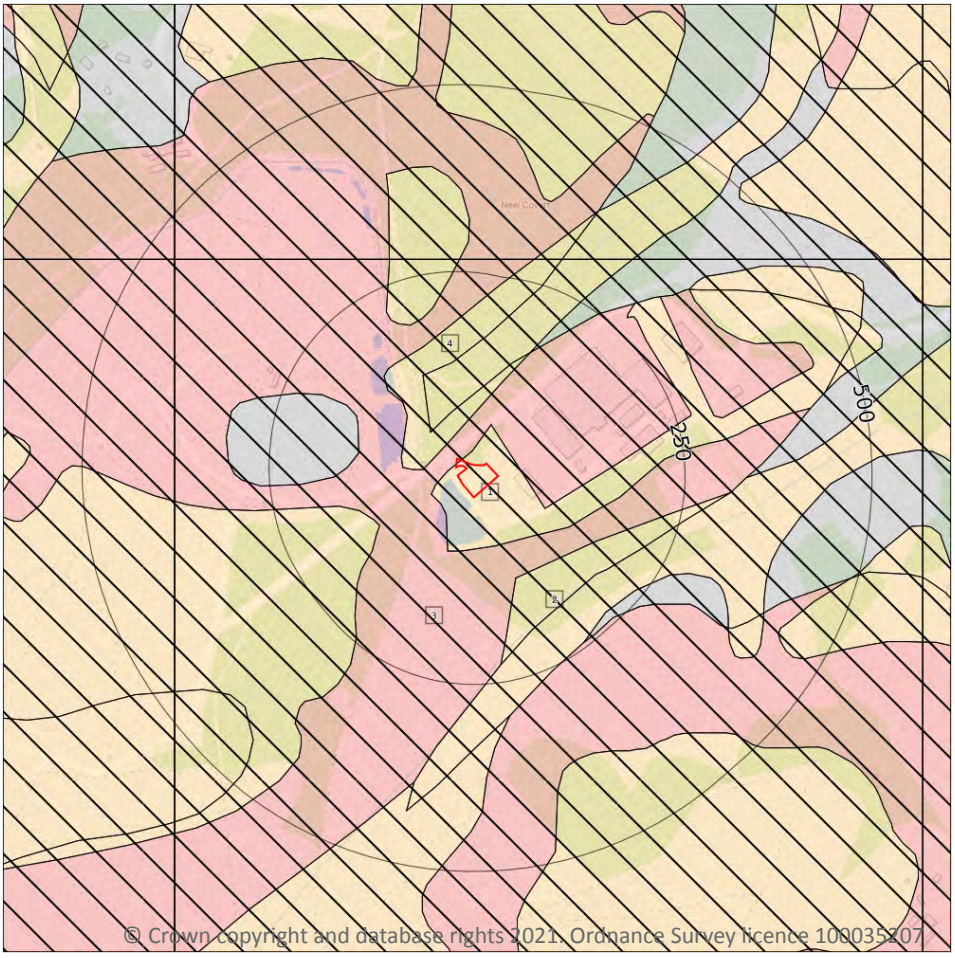
Features are displayed on the Bedrock aquifer map on **page 45**

ID	Location	Designation	Description
1	**On site**	**Secondary A**	**Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers**
2	50m NW	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

ID	Location	Designation	Description
3	132m W	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
4	415m SW	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

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

Groundwater vulnerability



Site Outline

Search buffers in metres (m)

Superficial vulnerability
- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability
- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information
- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m	3

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 47**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	**On site**	**Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: >550mm/year**	**Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: Medium**	**Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures**
3	**On site**	**Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: >550mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: Medium**	**Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures**
4	23m NW	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: >550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: Medium	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures

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

5.4 Groundwater vulnerability- soluble rock risk

Records on site	**0**

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

This data is sourced from the British Geological Survey and the Environment Agency.

5.5 Groundwater vulnerability- local information

Records on site	**1**

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk.

ID	Summary	Additional information
2	**Increased vulnerability of superficial river deposits**	**Exposed areas of river terrace deposits**

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones

Site Outline

Search buffers in metres (m)

- Source Protection Zone 1 — Inner catchment
- Source Protection Zone 2 — Outer catchment
- Source Protection Zone 3 — Total catchment
- Source Protection Zone 4 — Zone of Special Interest
- Source Protection Zone 1c — Inner catchment - confined aquifer
- Source Protection Zone 2c — Outer catchment - confined aquifer
- Source Protection Zone 3c — Total catchment - confined aquifer
- Drinking water abstraction licences
- Drinking water abstraction licences — Polygon features
- Drinking water abstraction licences — Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m	7

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 49**

ID	Location	Details	
A	487m NE	Status: Historical Licence No: 13/43/037/G/131 Details: Spray Irrigation - Direct Direct Source: Ground Water - Fresh Point: CANFORD PARK BOREHOLE #1 Data Type: Point Name: Canford Park Ltd Easting: 403730 Northing: 97100	Annual Volume (m^3): 27600 Max Daily Volume (m^3): 150 Original Application No: - Original Start Date: 16/08/2000 Expiry Date: - Issue No: 101 Version Start Date: 16/08/2000 Version End Date: -
B	487m SW	Status: Historical Licence No: 13/43/037/G/115 Details: General use relating to Secondary Category (Very Low Loss) Direct Source: Ground Water - Fresh Point: "CANFORD HEATH, WIMBORNE BOREHOLE #1" Data Type: Point Name: W H White Plc Easting: 403000 Northing: 96400	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 14/06/1996 Expiry Date: - Issue No: 100 Version Start Date: 14/06/1996 Version End Date: -
B	487m SW	Status: Historical Licence No: 13/43/037/G/115 Details: General Use Relating To Secondary Category (Very Low Loss) Direct Source: Ground Water - Fresh Point: CANFORD HEATH, WIMBORNE BOREHOLE #1 Data Type: Point Name: W H White Plc Easting: 403000 Northing: 96400	Annual Volume (m^3): 30000 Max Daily Volume (m^3): 200 Original Application No: - Original Start Date: 14/06/1996 Expiry Date: - Issue No: 101 Version Start Date: 05/08/2011 Version End Date: -
B	487m SW	Status: Active Licence No: 13/43/037/G/115 Details: Mineral Washing Direct Source: Ground Water - Fresh Point: CANFORD HEATH, WIMBORNE BOREHOLE #1 Data Type: Point Name: W H White Limited Easting: 403000 Northing: 96400	Annual Volume (m^3): 30,000 Max Daily Volume (m^3): 200 Original Application No: - Original Start Date: 14/06/1996 Expiry Date: - Issue No: 102 Version Start Date: 04/07/2017 Version End Date: -
A	491m NE	Status: Active Licence No: 13/43/037/G/131 Details: Process Water Direct Source: Ground Water - Fresh Point: CANFORD PARK BOREHOLE #1 Data Type: Point Name: Canford Park Sports Ltd Easting: 403736 Northing: 97101	Annual Volume (m^3): 27,600 Max Daily Volume (m^3): 150 Original Application No: - Original Start Date: 16/08/2000 Expiry Date: - Issue No: 103 Version Start Date: 20/06/2018 Version End Date: -

ID	Location	Details	
A	491m NE	Status: Active Licence No: 13/43/037/G/131 Details: Spray Irrigation - Direct Direct Source: Ground Water - Fresh Point: CANFORD PARK BOREHOLE #1 Data Type: Point Name: Canford Park Sports Ltd Easting: 403736 Northing: 97101	Annual Volume (m^3): 27,600 Max Daily Volume (m^3): 150 Original Application No: - Original Start Date: 16/08/2000 Expiry Date: - Issue No: 103 Version Start Date: 20/06/2018 Version End Date: -
-	1770m W	Status: Historical Licence No: 13/43/037/G/025 Details: General Farming & Domestic Direct Source: Ground Water - Fresh Point: BLACKWATER FARM WELL POINT #1 Data Type: Point Name: Waters Easting: 401700 Northing: 97300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/07/1967 Expiry Date: - Issue No: 100 Version Start Date: 01/07/1967 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m	**2**

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

Features are displayed on the Abstractions and Source Protection Zones map on **page 49**

ID	Location	Details	
-	1260m N	Status: Historical Licence No: 13/43/037/S/127 Details: General use relating to Secondary Category (Very Low Loss) Direct Source: Surface Water - Fresh Point: ARROWSMITH STREAM AT CANFORD MAGNA Data Type: Point Name: Coward Easting: 402900 Northing: 97900	Annual Volume (m^3): 56775 Max Daily Volume (m^3): 207.4 Original Application No: - Original Start Date: 04/10/1995 Expiry Date: - Issue No: 101 Version Start Date: 01/09/2005 Version End Date: -

ID	Location	Details	
-	1260m N	Status: Active Licence No: 13/43/037/S/127 Details: Lake & Pond Throughflow Direct Source: Surface Water - Fresh Point: ARROWSMITH STREAM AT CANFORD MAGNA Data Type: Point Name: Coward Easting: 402900 Northing: 97900	Annual Volume (m^3): 56,775 Max Daily Volume (m^3): 207.40 Original Application No: - Original Start Date: 04/10/1995 Expiry Date: - Issue No: 101 Version Start Date: 01/09/2005 Version End Date: -

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

5.8 Potable abstractions

Records within 2000m	0

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

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

5.9 Source Protection Zones

Records within 500m	0

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

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

5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

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

6 Hydrology

Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	**9**

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 53**

ID	Location	Type of water feature	Ground level	Permanence	Name
A	26m SW	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
A	26m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	45m W	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
A	76m W	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	111m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	122m NW	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	169m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
1	179m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	182m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	**7**

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 53**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	1

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 53**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
A	**On site**	**River WB catchment**	**Stour (Lower)**	**GB108043011040**	**Dorset Stour**	**Dorset**

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

6.4 WFD Surface water bodies

Records identified	1

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 53**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	1786m NE	River	Stour (Lower)	GB108043011040	Moderate	Good	Moderate	2016

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

6.5 WFD Groundwater bodies

Records on site	1

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on **page 53**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	**On site**	**Lower Dorset Stour and Lower Hampshire Avon**	**GB40802G805800**	**Poor**	**Poor**	**Good**	**2015**

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

7 River and coastal flooding

7.1 Risk of Flooding from Rivers and Sea (RoFRaS)

Records within 50m	0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance).

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

7.2 Historical Flood Events

Records within 250m	0

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

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

7.3 Flood Defences

Records within 250m	0

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

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

7.4 Areas Benefiting from Flood Defences

Records within 250m	0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

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

7.5 Flood Storage Areas

Records within 250m	0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

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

River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

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

7.7 Flood Zone 3

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

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

8 Surface water flooding

Site Outline
Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site	**1 in 100 year, 0.1m - 0.3m**
Highest risk within 50m	**1 in 30 year, 0.1m - 0.3m**

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 60**

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

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

Return period	Maximum modelled depth
1 in 1000 year	Between 0.3m and 1.0m
1 in 250 year	Between 0.3m and 1.0m
1 in 100 year	Between 0.1m and 0.3m
1 in 30 year	Negligible

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding

Site Outline

Search buffers in metres (m)

High

Moderate - High

Moderate

Low

Negligible

9.1 Groundwater flooding

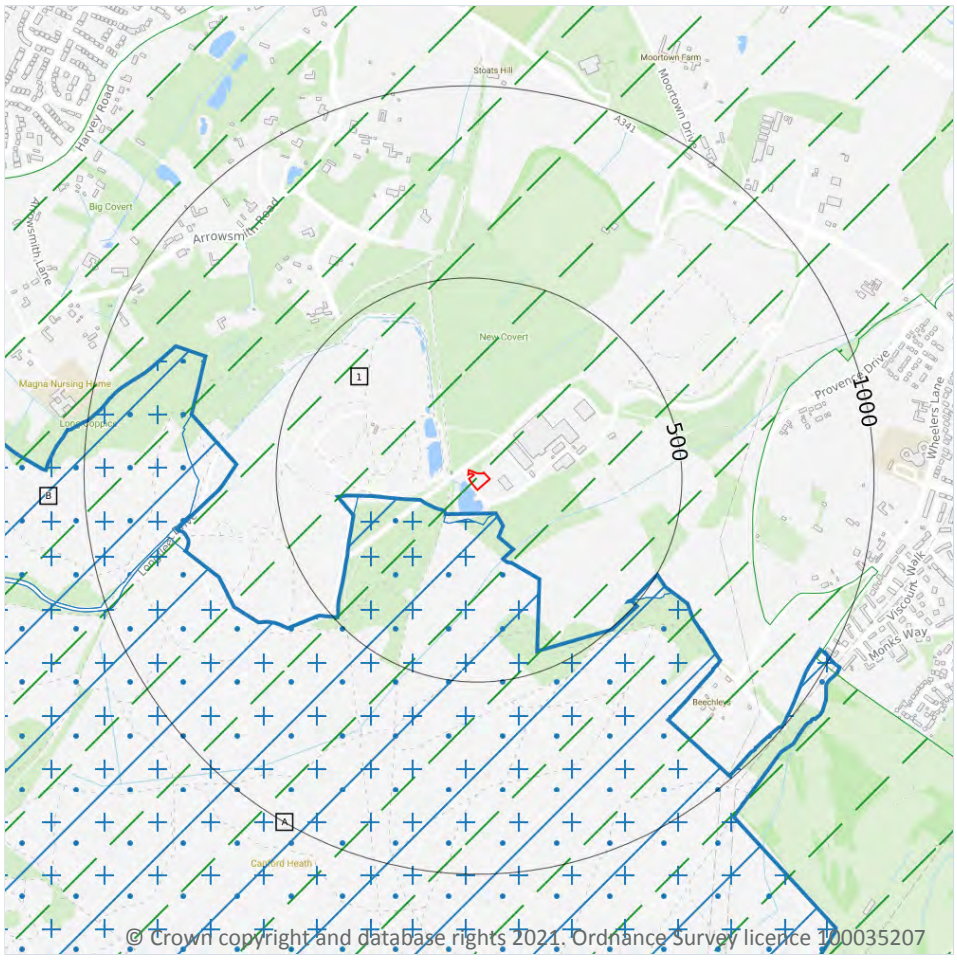
Highest risk on site	**Low**
Highest risk within 50m	**Low**

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 62**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	2

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

Features are displayed on the Environmental designations map on **page 63**

ID	Location	Name	Data source
A	62m S	Canford Heath	Natural England

ID	Location	Name	Data source
-	1773m W	Canford Heath	Natural England

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	**1**

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

Features are displayed on the Environmental designations map on **page 63**

ID	Location	Site	Details
-	1666m SW	Name: Dorset Heathlands Site status: Listed Data source: Natural England	Overview: Extensive and fragmented, these heathland areas are centred around the estuary of Poole Harbour and are adjacent to the urban conurbation of Bournemouth and Poole. The heathland contains numerous examples of wet heath and acid valley mire, habitats that are restricted to the Atlantic fringe of Europe. These heath wetlands are among the best of their type in lowland Britain. There are also transitions to coastal wetland and fen habitat types. The wetland flora and fauna includes a large assemblage of nationally rare and scarce species, especially invertebrates. Ramsar criteria: Ramsar criterion 1 Contains particularly good examples of (i) northern Atlantic wet heaths with cross-leaved heath Erica tetralix and (ii) acid mire with Rhynchosporion. Contains largest example in Britain of southern Atlantic wet heaths with Dorset heath Erica ciliaris and cross-leaved heath Erica tetralix. Ramsar criterion 2 Supports 1 nationally rare and 13 nationally scarce wetland plant species, and at least 28 nationally rare wetland invertebrate species. Ramsar criterion 3 Has a high species richness and high ecological diversity of wetland habitat types and transitions, and lies in one of the most biologically-rich wetland areas of lowland Britain, being continuous with three other Ramsar sites: Poole Harbour, Avon Valley and The New Forest.

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m	3

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

Features are displayed on the Environmental designations map on **page 63**

ID	Location	Name	Features of interest	Habitat description	Data source
A	77m SE	Dorset Heaths	Wet heathland with cross-leaved heath; Wet heathland with Dorset heath and cross-leaved heath; Dry heaths; Purple moor-grass meadows; Depressions on peat substrates; Calcium-rich fen dominated by great fen sedge (saw sedge); Calcium-rich springwater-fed fens; Dry oak-dominated woodland; Bog woodland; Great crested newt; Southern damselfly.	Mixed woodland; Dry grassland, Steppes; Coniferous woodland; Broad-leaved deciduous woodland; Heath, Scrub, Maquis and Garrigue, Phygrana; Bogs, Marshes, Water fringed vegetation, Fens; Humid grassland, Mesophile grassland; Inland water bodies (Standing water, Running water)	Natural England
B	701m W	Dorset Heaths	Wet heathland with cross-leaved heath; Wet heathland with Dorset heath and cross-leaved heath; Dry heaths; Purple moor-grass meadows; Depressions on peat substrates; Calcium-rich fen dominated by great fen sedge (saw sedge); Calcium-rich springwater-fed fens; Dry oak-dominated woodland; Bog woodland; Great crested newt; Southern damselfly.	Mixed woodland; Dry grassland, Steppes; Coniferous woodland; Broad-leaved deciduous woodland; Heath, Scrub, Maquis and Garrigue, Phygrana; Bogs, Marshes, Water fringed vegetation, Fens; Humid grassland, Mesophile grassland; Inland water bodies (Standing water, Running water)	Natural England
-	1773m W	Dorset Heaths	Wet heathland with cross-leaved heath; Wet heathland with Dorset heath and cross-leaved heath; Dry heaths; Purple moor-grass meadows; Depressions on peat substrates; Calcium-rich fen dominated by great fen sedge (saw sedge); Calcium-rich springwater-fed fens; Dry oak-dominated woodland; Bog woodland; Great crested newt; Southern damselfly.	Mixed woodland; Dry grassland, Steppes; Coniferous woodland; Broad-leaved deciduous woodland; Heath, Scrub, Maquis and Garrigue, Phygrana; Bogs, Marshes, Water fringed vegetation, Fens; Humid grassland, Mesophile grassland; Inland water bodies (Standing water, Running water)	Natural England

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

10.4 Special Protection Areas (SPA)

Records within 2000m	**4**

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

Features are displayed on the Environmental designations map on **page 63**

ID	Location	Name	Species of interest	Habitat description	Data source
A	77m SE	Dorset Heathlands	Hen harrier; Merlin; European nightjar; Wood lark; Dartford warbler	Heath, Scrub, Maquis and Garrigue, Phygrana; Inland water bodies (Standing water, Running water); Coniferous woodland; Broad-leaved deciduous woodland; Bogs, Marshes, Water fringed vegetation, Fens; Dry grassland, Steppes; Coastal sand dunes, Sand beache	Natural England
B	701m W	Dorset Heathlands	Hen harrier; Merlin; European nightjar; Wood lark; Dartford warbler	Heath, Scrub, Maquis and Garrigue, Phygrana; Inland water bodies (Standing water, Running water); Coniferous woodland; Broad-leaved deciduous woodland; Bogs, Marshes, Water fringed vegetation, Fens; Dry grassland, Steppes; Coastal sand dunes, Sand beache	Natural England
-	1500m S	Dorset Heathlands	Hen harrier; Merlin; European nightjar; Wood lark; Dartford warbler	Heath, Scrub, Maquis and Garrigue, Phygrana; Inland water bodies (Standing water, Running water); Coniferous woodland; Broad-leaved deciduous woodland; Bogs, Marshes, Water fringed vegetation, Fens; Dry grassland, Steppes; Coastal sand dunes, Sand beache	Natural England
-	1773m W	Dorset Heathlands	Hen harrier; Merlin; European nightjar; Wood lark; Dartford warbler	Heath, Scrub, Maquis and Garrigue, Phygrana; Inland water bodies (Standing water, Running water); Coniferous woodland; Broad-leaved deciduous woodland; Bogs, Marshes, Water fringed vegetation, Fens; Dry grassland, Steppes; Coastal sand dunes, Sand beache	Natural England

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

10.5 National Nature Reserves (NNR)

Records within 2000m	**0**

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

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

10.6 Local Nature Reserves (LNR)

Records within 2000m	0

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

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

10.7 Designated Ancient Woodland

Records within 2000m	1

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

Features are displayed on the Environmental designations map on **page 63**

ID	Location	Name	Woodland Type
-	1593m W	Arrowsmith Coppice	Ancient & Semi-Natural Woodland

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

10.8 Biosphere Reserves

Records within 2000m	0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

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

10.9 Forest Parks

Records within 2000m	0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

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

10.11 Green Belt

Records within 2000m	2

Areas designated to prevent urban sprawl by keeping land permanently open.

Features are displayed on the Environmental designations map on **page 63**

ID	Location	Name	Local Authority name
1	**On site**	**Bournemouth, Christchurch and Poole**	**Poole**
-	1789m NE	Bournemouth, Christchurch and Poole	East Dorset

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m	0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

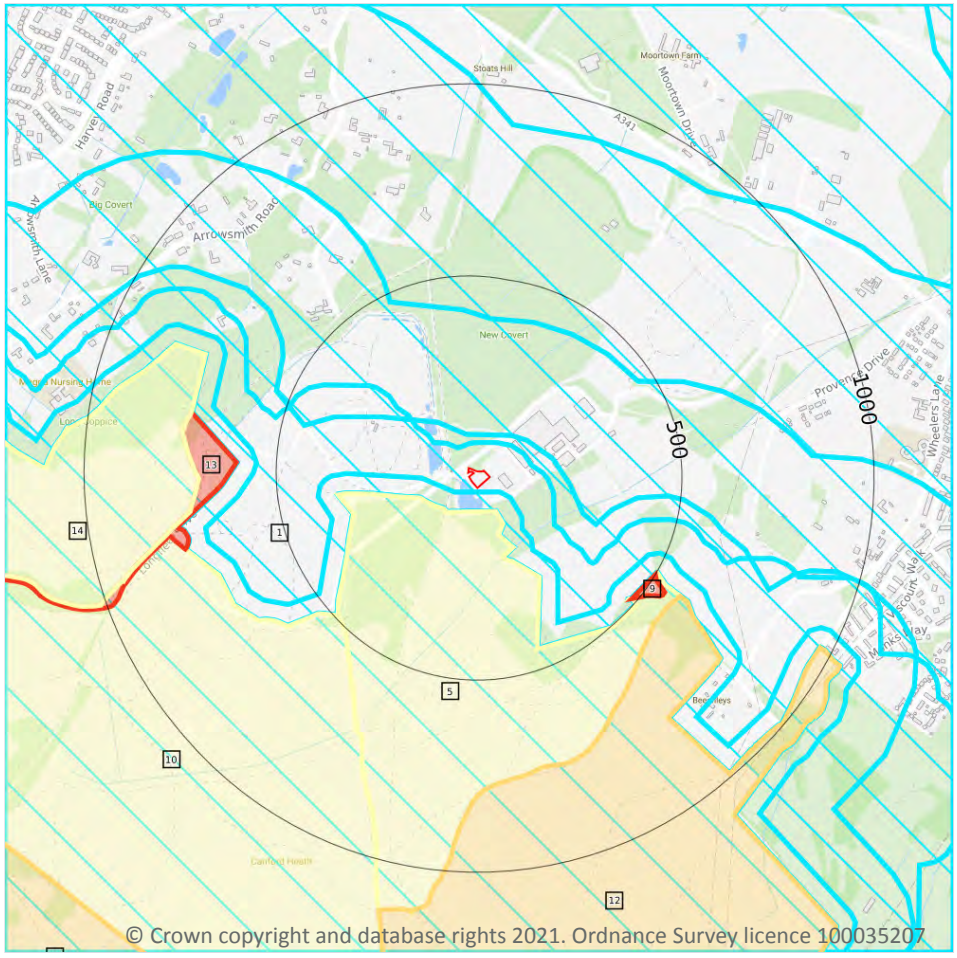
Records within 2000m	5

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

Location	Name	Type	NVZ ID	Status
1574m S	Poole Harbour	Eutrophic Water	ET1	Changed
1615m SE	Poole Harbour	Eutrophic Water	ET1	Changed
1712m SW	Poole Harbour	Eutrophic Water	ET1	Changed
1720m SW	Poole Harbour	Eutrophic Water	ET1	Changed
1800m W	Poole Harbour	Eutrophic Water	ET1	Changed

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units



Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site	1

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on **page 70**

ID	Location	Type of developments requiring consultation
1	On site	**All applications - All Planning Applications (Except Householder) Outside Or Extending Outside Existing Settlements/urban Areas Affecting Greenspace, Farmland, Semi Natural Habitats Or Landscape Features Such As Trees, Hedges, Streams, Rural Buildings/structures Infrastructure - Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals Wind and Solar - Solar schemes with footprint > 0.5ha, all wind turbines Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Rural non-residential - Large non residential developments outside existing settlements/urban areas where net additional gross internal floorspace is > 1,000m² or footprint exceeds 0.2ha Residential - Any residential developments with a total net gain in residential units Rural residential - Any residential developments outside of existing settlements/urban areas with a total net gain in residential units Air pollution - Any development that could cause AIR POLLUTION or DUST either in its construction or operation (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons/manure stores). Combustion - All general combustion processes. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management Composting - Any composting proposal. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Discharges - Any discharge of water or liquid waste that is discharged to ground (ie to seep away) or to surface water, such as a beck or stream (NB this does not include discharges to mains sewer which are unlikely to pose a risk at this location). Water supply - Large infrastructure such as warehousing / industry where net additional gross internal floorspace is > 1,000m² or any development needing its own water supply**

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	**16**

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

Features are displayed on the SSSI Impact Zones and Units map on **page 70**

ID:	5
Location:	62m S
SSSI name:	Canford Heath
Unit name:	Canford Heath North
Broad habitat:	Dwarf Shrub Heath - Lowland
Condition:	Unfavourable - Recovering
Reportable features:	

Feature name	Feature condition	Date of assessment
H4010 Northern Atlantic wet heaths with Erica tetralix	Unfavourable - Recovering	25/11/2010
H4030 European dry heaths	Unfavourable - Recovering	25/11/2010
H7150 Depressions on peat substrates of the Rhynchosporion	Unfavourable - Recovering	25/11/2010

ID: 9
Location: 487m SE
SSSI name: Canford Heath
Unit name: Canford Heath Pit Deletions
Broad habitat: Built Up Areas And Gardens
Condition: Destroyed
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of breeding birds - Dartford warbler, Sylvia undata	Not Recorded	01/01/1900
Assemblages of breeding birds - Lowland heath	Not Recorded	01/01/1900
Sand lizard, Lacerta agilis	Not Recorded	01/01/1900
Smooth snake, Coronella austriaca	Not Recorded	01/01/1900

ID: 10
Location: 492m SW
SSSI name: Canford Heath
Unit name: Canford Heath West
Broad habitat: Dwarf Shrub Heath - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of breeding birds - Dartford warbler, Sylvia undata	Not Recorded	01/01/1900
Assemblages of breeding birds - Lowland heath	Not Recorded	01/01/1900
H4010 Northern Atlantic wet heaths with Erica tetralix	Unfavourable - Recovering	18/09/2009
H4030 European dry heaths	Unfavourable - Recovering	18/09/2009
Sand lizard, Lacerta agilis	Not Recorded	01/01/1900
Smooth snake, Coronella austriaca	Not Recorded	01/01/1900

ID: 12
Location: 570m SE
SSSI name: Canford Heath
Unit name: Canford Heath North East
Broad habitat: Dwarf Shrub Heath - Lowland
Condition: Unfavourable - No change
Reportable features:

Feature name	Feature condition	Date of assessment
H4010 Northern Atlantic wet heaths with Erica tetralix	Unfavourable - No change	25/11/2010
H4030 European dry heaths	Unfavourable - No change	25/11/2010

ID: 13
Location: 604m W
SSSI name: Canford Heath
Unit name: Canford Heath Pit Deletions
Broad habitat: Built Up Areas And Gardens
Condition: Destroyed
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of breeding birds - Dartford warbler, Sylvia undata	Not Recorded	01/01/1900
Assemblages of breeding birds - Lowland heath	Not Recorded	01/01/1900
Sand lizard, Lacerta agilis	Not Recorded	01/01/1900
Smooth snake, Coronella austriaca	Not Recorded	01/01/1900

ID: 14
Location: 701m W
SSSI name: Canford Heath
Unit name: Arrowsmith Road
Broad habitat: Dwarf Shrub Heath - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of breeding birds - Dartford warbler, Sylvia undata	Not Recorded	01/01/1900
Assemblages of breeding birds - Lowland heath	Not Recorded	01/01/1900
H4010 Northern Atlantic wet heaths with Erica tetralix	Unfavourable - Recovering	23/03/2010

Feature name	Feature condition	Date of assessment
H4030 European dry heaths	Unfavourable - Recovering	23/03/2010
Sand lizard, Lacerta agilis	Not Recorded	01/01/1900
Smooth snake, Coronella austriaca	Not Recorded	01/01/1900

ID: -
Location: 1404m S
SSSI name: Canford Heath
Unit name: Lodge Hill East
Broad habitat: Dwarf Shrub Heath - Lowland
Condition: Unfavourable - No change
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of breeding birds - Dartford warbler, Sylvia undata	Not Recorded	01/01/1900
Assemblages of breeding birds - Lowland heath	Not Recorded	01/01/1900
H4010 Northern Atlantic wet heaths with Erica tetralix	Unfavourable - No change	16/03/2007
H4030 European dry heaths	Unfavourable - No change	16/03/2007
Sand lizard, Lacerta agilis	Not Recorded	01/01/1900
Smooth snake, Coronella austriaca	Not Recorded	01/01/1900

ID: 21
Location: 1406m S
SSSI name: Canford Heath
Unit name: Lodge Hill West
Broad habitat: Dwarf Shrub Heath - Lowland
Condition: Unfavourable - No change
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of breeding birds - Dartford warbler, Sylvia undata	Not Recorded	01/01/1900
Assemblages of breeding birds - Lowland heath	Not Recorded	01/01/1900
H4010 Northern Atlantic wet heaths with Erica tetralix	Unfavourable - No change	16/03/2007
H4030 European dry heaths	Unfavourable - No change	16/03/2007
Population of RDB moth - Coscinia cribraria, Speckled Footman	Not Recorded	01/01/1900

Feature name	Feature condition	Date of assessment
Sand lizard, Lacerta agilis	Not Recorded	01/01/1900
Smooth snake, Coronella austriaca	Not Recorded	01/01/1900

ID: -
Location: 1540m S
SSSI name: Canford Heath
Unit name: Culliford Crescent
Broad habitat: Dwarf Shrub Heath - Lowland
Condition: Unfavourable - No change
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of breeding birds - Dartford warbler, Sylvia undata	Not Recorded	01/01/1900
Assemblages of breeding birds - Lowland heath	Not Recorded	01/01/1900
H4010 Northern Atlantic wet heaths with Erica tetralix	Unfavourable - No change	16/03/2007
H4030 European dry heaths	Unfavourable - No change	16/03/2007
Sand lizard, Lacerta agilis	Not Recorded	01/01/1900
Smooth snake, Coronella austriaca	Not Recorded	01/01/1900

ID: -
Location: 1584m S
SSSI name: Canford Heath
Unit name: Belben Road
Broad habitat: Dwarf Shrub Heath - Lowland
Condition: Unfavourable - No change
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of breeding birds - Dartford warbler, Sylvia undata	Not Recorded	01/01/1900
Assemblages of breeding birds - Lowland heath	Not Recorded	01/01/1900
H4010 Northern Atlantic wet heaths with Erica tetralix	Unfavourable - No change	16/03/2007
H4030 European dry heaths	Unfavourable - No change	16/03/2007
Sand lizard, Lacerta agilis	Not Recorded	01/01/1900
Smooth snake, Coronella austriaca	Not Recorded	01/01/1900

ID: -
Location: 1631m SW
SSSI name: Canford Heath
Unit name: Route E
Broad habitat: Dwarf Shrub Heath - Lowland
Condition: Unfavourable - No change
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of breeding birds - Dartford warbler, Sylvia undata	Not Recorded	01/01/1900
Assemblages of breeding birds - Lowland heath	Not Recorded	01/01/1900
H4010 Northern Atlantic wet heaths with Erica tetralix	Unfavourable - No change	16/03/2007
H4030 European dry heaths	Unfavourable - No change	16/03/2007
Sand lizard, Lacerta agilis	Not Recorded	01/01/1900
Smooth snake, Coronella austriaca	Not Recorded	01/01/1900

ID: -
Location: 1667m SW
SSSI name: Canford Heath
Unit name: Tolleford Road
Broad habitat: Dwarf Shrub Heath - Lowland
Condition: Unfavourable - No change
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of breeding birds - Dartford warbler, Sylvia undata	Not Recorded	01/01/1900
Assemblages of breeding birds - Lowland heath	Not Recorded	01/01/1900
H4010 Northern Atlantic wet heaths with Erica tetralix	Unfavourable - No change	16/03/2007
H4030 European dry heaths	Unfavourable - No change	16/03/2007
H7150 Depressions on peat substrates of the Rhynchosporion	Unfavourable - No change	16/03/2007
Sand lizard, Lacerta agilis	Not Recorded	01/01/1900
Smooth snake, Coronella austriaca	Not Recorded	01/01/1900

ID: -
Location: 1670m S
SSSI name: Canford Heath
Unit name: Culliford Crescent
Broad habitat: Dwarf Shrub Heath - Lowland
Condition: Unfavourable - No change
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of breeding birds - Dartford warbler, Sylvia undata	Not Recorded	01/01/1900
Assemblages of breeding birds - Lowland heath	Not Recorded	01/01/1900
H4010 Northern Atlantic wet heaths with Erica tetralix	Unfavourable - No change	16/03/2007
H4030 European dry heaths	Unfavourable - No change	16/03/2007
Sand lizard, Lacerta agilis	Not Recorded	01/01/1900
Smooth snake, Coronella austriaca	Not Recorded	01/01/1900

ID: -
Location: 1715m SW
SSSI name: Canford Heath
Unit name: Sandringham Park
Broad habitat: Dwarf Shrub Heath - Lowland
Condition: Destroyed
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of breeding birds - Dartford warbler, Sylvia undata	Not Recorded	01/01/1900
Assemblages of breeding birds - Lowland heath	Not Recorded	01/01/1900
Sand lizard, Lacerta agilis	Not Recorded	01/01/1900
Smooth snake, Coronella austriaca	Not Recorded	01/01/1900

ID: -
Location: 1716m SW
SSSI name: Canford Heath
Unit name: Gravel Hill
Broad habitat: Dwarf Shrub Heath - Lowland
Condition: Unfavourable - No change
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of breeding birds - Dartford warbler, Sylvia undata	Not Recorded	01/01/1900
Assemblages of breeding birds - Lowland heath	Not Recorded	01/01/1900
H4010 Northern Atlantic wet heaths with Erica tetralix	Unfavourable - No change	16/03/2007
H4030 European dry heaths	Unfavourable - No change	16/03/2007
H7150 Depressions on peat substrates of the Rhynchosporion	Unfavourable - No change	16/03/2007
Sand lizard, Lacerta agilis	Not Recorded	01/01/1900
Smooth snake, Coronella austriaca	Not Recorded	01/01/1900

ID: -
Location: 1773m W
SSSI name: Canford Heath
Unit name: Dunyeat's Hill
Broad habitat: Dwarf Shrub Heath - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of breeding birds - Dartford warbler, Sylvia undata	Not Recorded	01/01/1900
Assemblages of breeding birds - Lowland heath	Not Recorded	01/01/1900
H4010 Northern Atlantic wet heaths with Erica tetralix	Unfavourable - Recovering	19/11/2009
H4030 European dry heaths	Unfavourable - Recovering	19/11/2009
Sand lizard, Lacerta agilis	Not Recorded	01/01/1900
Smooth snake, Coronella austriaca	Not Recorded	01/01/1900

This data is sourced from Natural England and Natural Resources Wales.

11 Visual and cultural designations

11.1 World Heritage Sites

Records within 250m	0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

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

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

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

11.3 National Parks

Records within 250m	0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

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

11.4 Listed Buildings

Records within 250m	0

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

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

11.5 Conservation Areas

Records within 250m	0

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

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

11.6 Scheduled Ancient Monuments

Records within 250m	0

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

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

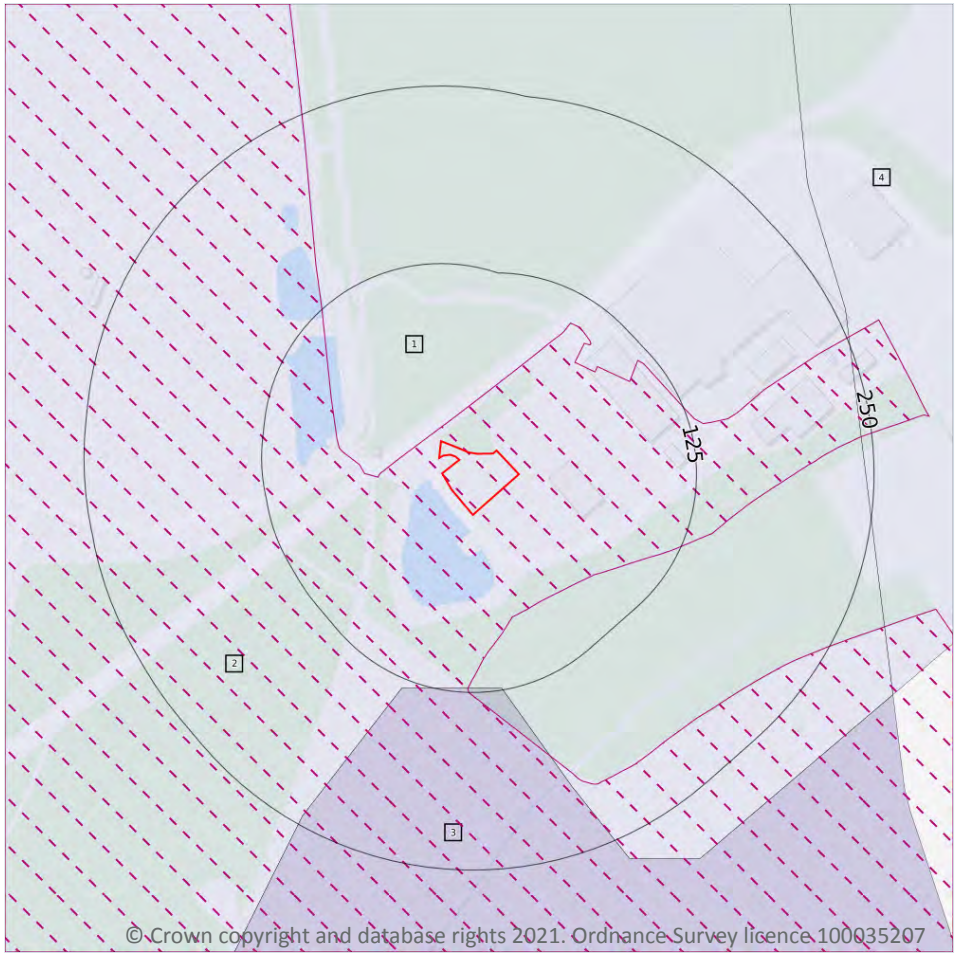
11.7 Registered Parks and Gardens

Records within 250m	0

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

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

12 Agricultural designations



Site Outline

Search buffers in metres (m)

- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m	3

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 81**

ID	Location	Classification	Description
1	On site	Grade 4	**Poor quality agricultural land. Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.**

ID	Location	Classification	Description
3	122m S	Grade 5	Very poor quality agricultural land. Land with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.
4	242m E	Grade 4	Poor quality agricultural land. Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	**1**

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

Features are displayed on the Agricultural designations map on **page 81**

ID	Location	Name	Classification	Other relevant legislation
2	**On site**	-	**Section 4 Conclusive Open Country**	-

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m	**0**

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	**0**

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment.

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

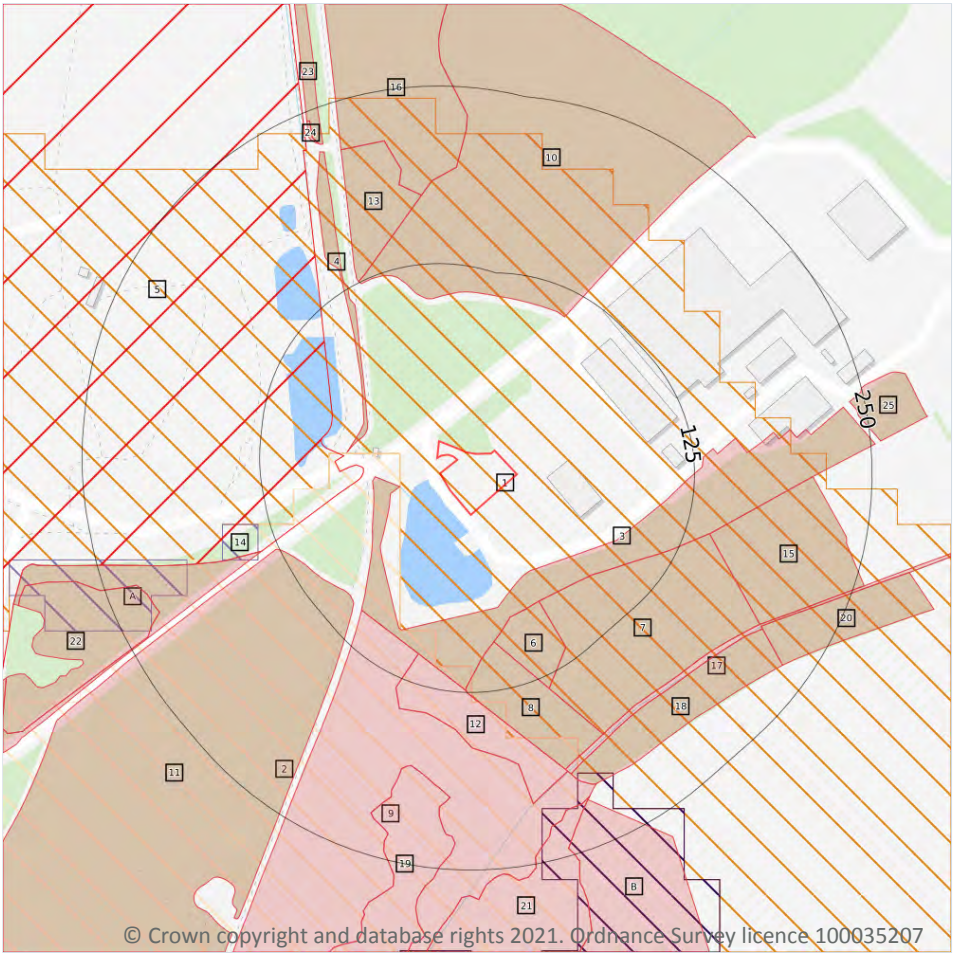
Records within 250m	1

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

Location	Reference	Scheme	Start Date	End Date
46m S	468735	Countryside Stewardship (Higher Tier)	01/01/2018	31/12/2027

This data is sourced from Natural England.

13 Habitat designations



Site Outline

Search buffers in metres (m)

Priority Habitat Inventory
Open Mosaic Habitat
Limestone Pavement Orders

Habitat Networks

Primary Habitat
Restorable Habitat
Associated Habitats
Habitat Restoration-Creation
Network Enhancement Zone 1
Network Enhancement Zone 2

13.1 Priority Habitat Inventory

Records within 250m	23

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

Features are displayed on the Habitat designations map on **page 84**

ID	Location	Main Habitat	Other habitats
3	30m W	Deciduous woodland	Main habitat: DWOOD (INV > 50%); Additional: LFENS (ENSIS L2); LRBOG (ENSIS L2); LHEAT (ENSIS L2); UHEAT (ENSIS L2)
4	51m W	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
6	77m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%); LHEAT (ENSIS L1); UHEAT (ENSIS L1); Additional: LFENS (ENSIS L2); LRBOG (ENSIS L2)

ID	Location	Main Habitat	Other habitats
7	77m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
8	91m S	Deciduous woodland	Main habitat: DWOOD (INV > 50%); LHEAT (ENSIS L1); UHEAT (ENSIS L1); Additional: LFENS (ENSIS L2); LRBOG (ENSIS L2)
9	100m SW	No main habitat but additional habitats present	Main habitat: LHEAT (ENSIS L1); UHEAT (ENSIS L1); Additional: LFENS (ENSIS L2); LRBOG (ENSIS L2)
10	100m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
11	102m SW	No main habitat but additional habitats present	Main habitat: LHEAT (ENSIS L1); UHEAT (ENSIS L1); Additional: LFENS (ENSIS L2); LRBOG (ENSIS L2)
12	105m S	Deciduous woodland	Main habitat: DWOOD (INV > 50%); LHEAT (ENSIS L1); UHEAT (ENSIS L1); Additional: LFENS (ENSIS L2); LRBOG (ENSIS L2)
13	126m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	137m SW	No main habitat but additional habitats present	Main habitat: LHEAT (ENSIS L1); UHEAT (ENSIS L1); Additional: LFENS (ENSIS L2); LRBOG (ENSIS L2)
15	142m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
16	174m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
17	177m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
18	181m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
19	181m S	No main habitat but additional habitats present	Main habitat: LHEAT (INV > 50%, ENSIS L1); UHEAT (ENSIS L1); Additional: LFENS (ENSIS L2); LRBOG (ENSIS L2)
20	203m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
21	215m SE	No main habitat but additional habitats present	Main habitat: LHEAT (INV > 50%, ENSIS L1); UHEAT (ENSIS L1); Additional: LFENS (ENSIS L2); LRBOG (ENSIS L2)
B	217m S	Lowland heathland	Main habitat: LHEAT (INV > 50%, ENSIS L1); UHEAT (ENSIS L1); Additional: LFENS (ENSIS L2); LRBOG (ENSIS L2)
22	220m SW	No main habitat but additional habitats present	Main habitat: LHEAT (INV > 50%, ENSIS L1); UHEAT (ENSIS L1); Additional: LFENS (ENSIS L2); LRBOG (ENSIS L2)
23	225m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
24	226m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
25	240m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	5

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

Features are displayed on the Habitat designations map on **page 84**

ID	Location	Type	Habitat
1	**On site**	**Network Enhancement Zone 1**	**Not specified**
2	26m W	Habitat Restoration-Creation	Not specified
14	133m W	Restorable Habitat	Not specified
A	188m W	Restorable Habitat	Not specified
B	197m SE	Primary Habitat	Lowland heathland

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	1

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

Features are displayed on the Habitat designations map on **page 84**

ID	Location	Site reference	Identification confidence	Primary source	Secondary source	Tertiary source
5	52m W	BRITPITS ref: 18140	Low	British Geological Survey BRITPITS database	Environment Agency Historic Landfill Sites	UK Perspectives Aerial Photography

This data is sourced from Natural England.

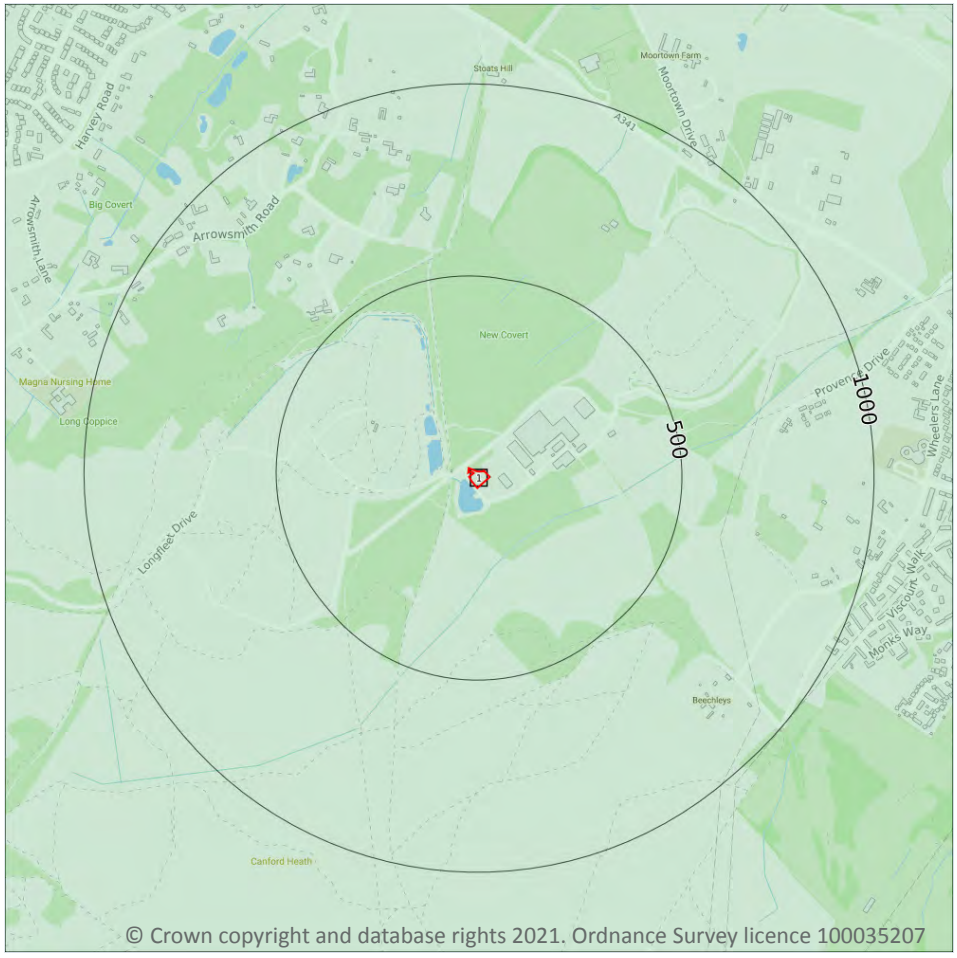
13.4 Limestone Pavement Orders

Records within 250m	0

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



Site Outline

Search buffers in metres (m)

Full coverage

Partial coverage

No coverage

14.1 10k Availability

Records within 500m	1

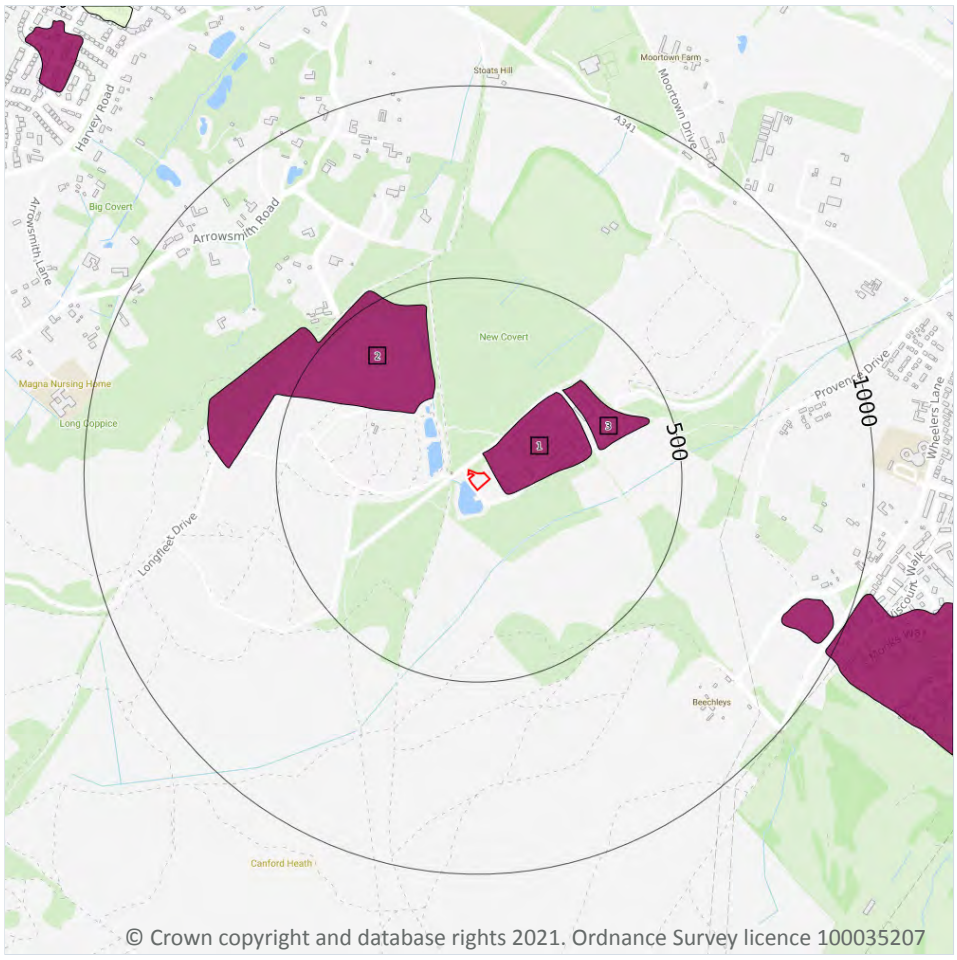
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 88**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**No coverage**	**SZ09NW**

This data is sourced from the British Geological Survey.

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



Site Outline

Search buffers in metres (m)

- Reclaimed ground
- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

14.2 Artificial and made ground (10k)

Records within 500m	3

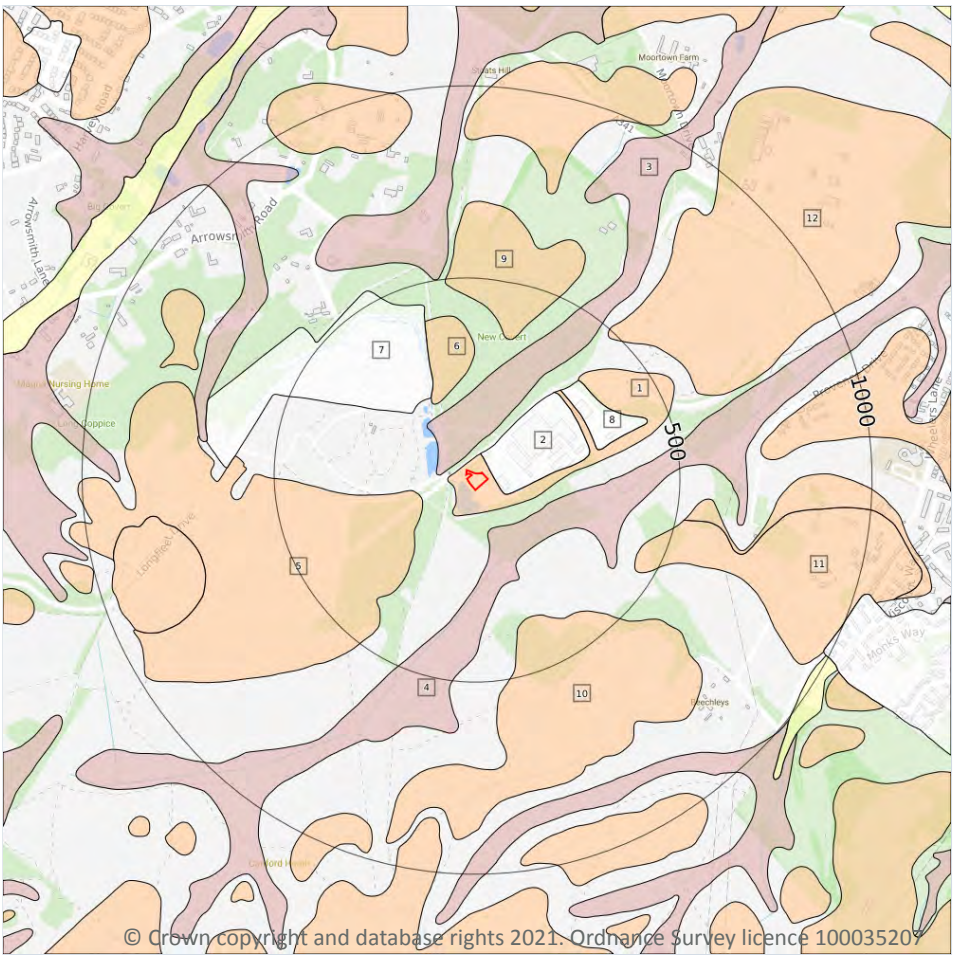
Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 89**

ID	Location	LEX Code	Description	Rock description
1	16m NE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	205m NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
3	292m NE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

Superficial geology (10k)
Please see table for more details.

14.3 Superficial geology (10k)

Records within 500m **12**

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

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 90**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**RTDX-XSV**	**River Terrace Deposits, 10 - Sand And Gravel**	**Sand And Gravel**
2	16m NE	SUPNM-UKNOWN	Superficial Theme Not Mapped [for Digital Map Use Only] - Unknown/unclassified Entry	Unknown/unclassified Entry
3	30m NW	HEAD-XCZSV	Head - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel

ID	Location	LEX Code	Description	Rock description
4	108m SE	HEAD-XCZSV	Head - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
5	129m W	RT12-XSV	River Terrace Deposits, 12 - Sand And Gravel	Sand And Gravel
6	190m NW	RT11-XSV	River Terrace Deposits, 11 - Sand And Gravel	Sand And Gravel
7	205m NW	SUPNM-UKNOWN	Superficial Theme Not Mapped [for Digital Map Use Only] - Unknown/unclassified Entry	Unknown/unclassified Entry
8	292m NE	SUPNM-UKNOWN	Superficial Theme Not Mapped [for Digital Map Use Only] - Unknown/unclassified Entry	Unknown/unclassified Entry
9	354m N	RTDX-XSV	River Terrace Deposits, 10 - Sand And Gravel	Sand And Gravel
10	360m SE	RT12-XSV	River Terrace Deposits, 12 - Sand And Gravel	Sand And Gravel
11	435m SE	RTDX-XSV	River Terrace Deposits, 10 - Sand And Gravel	Sand And Gravel
12	484m NE	RTD8-XSV	River Terrace Deposits, 8 - Sand And Gravel	Sand And Gravel

This data is sourced from the British Geological Survey.

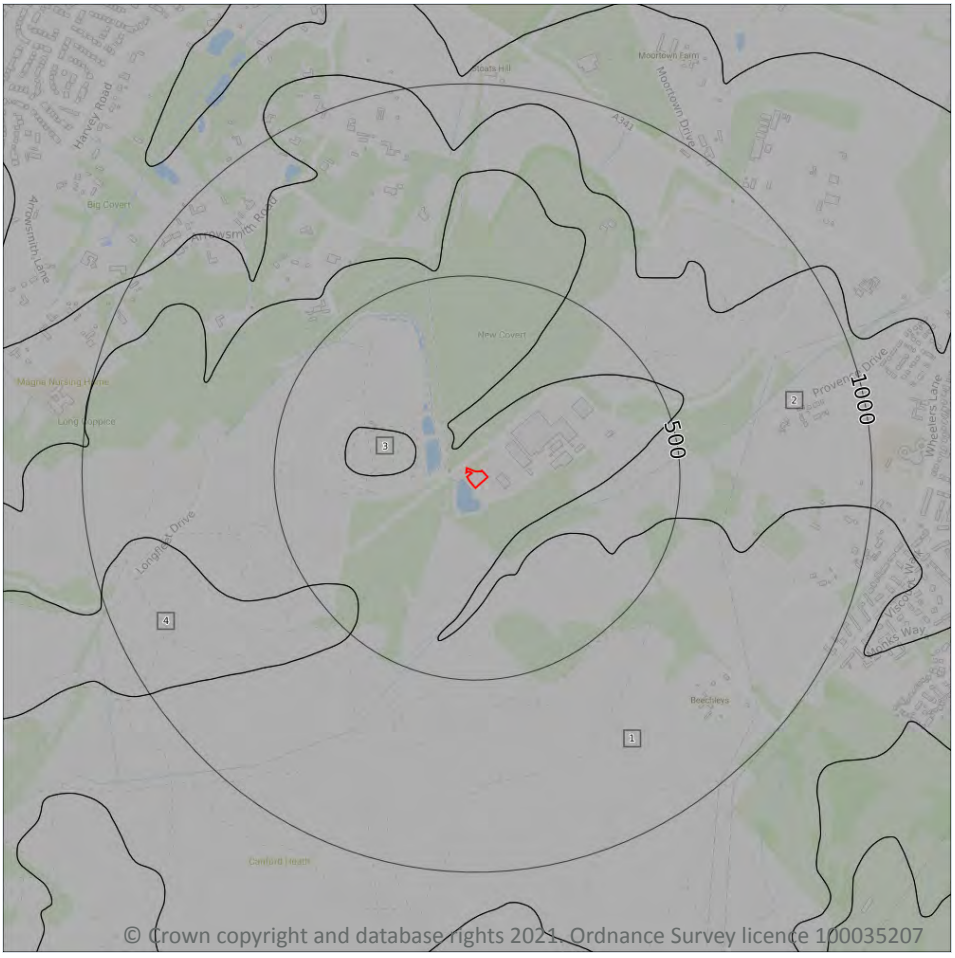
14.4 Landslip (10k)

Records within 500m	**0**

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (10k)

Bedrock geology (10k)
Please see table for more details.

14.5 Bedrock geology (10k)

Records within 500m **4**

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

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 92**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**POOL-SSCL**	**Poole Formation - Sand, Silt And Clay**	**Lutetian Age - Ypresian Age**
2	57m NW	BRTC-SICL	Broadstone Clay Member - Silty Clay	Lutetian Age
3	137m W	BRTC-SICL	Broadstone Clay Member - Silty Clay	Lutetian Age
4	415m SW	PKC-SICL	Parkstone Clay Member - Silty Clay	Lutetian Age

This data is sourced from the British Geological Survey.

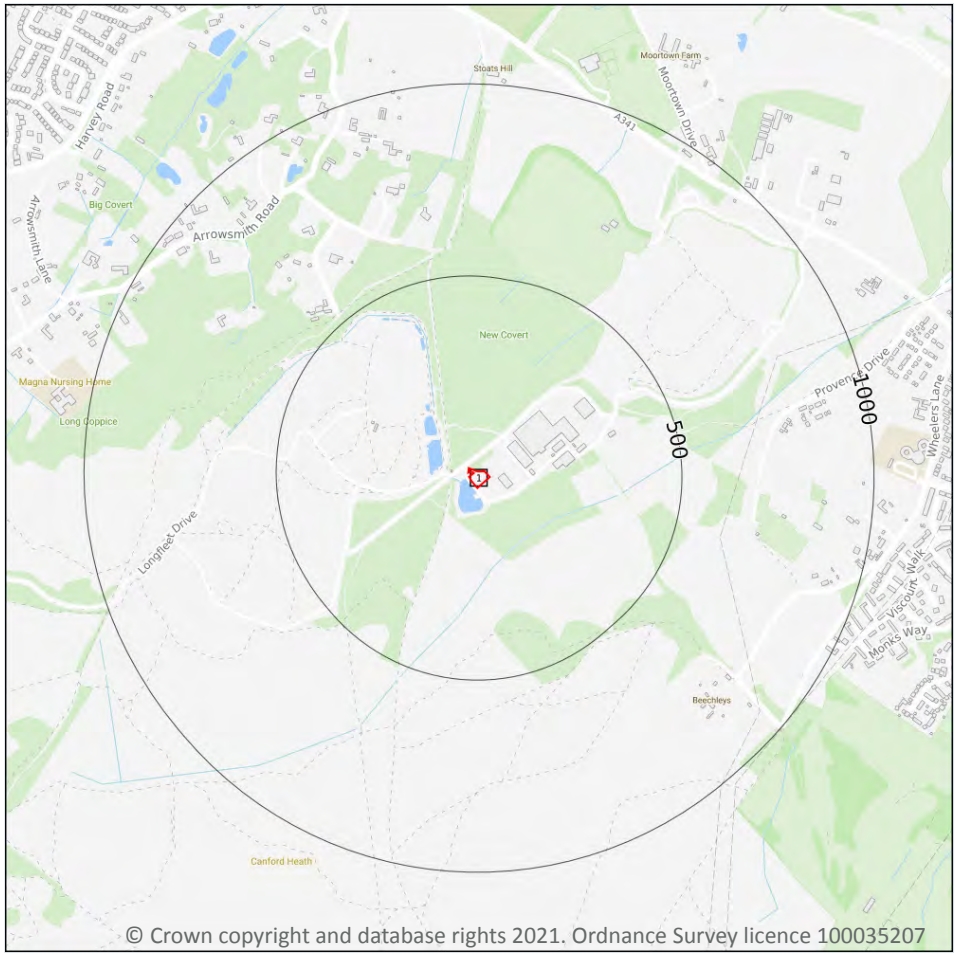
14.6 Bedrock faults and other linear features (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

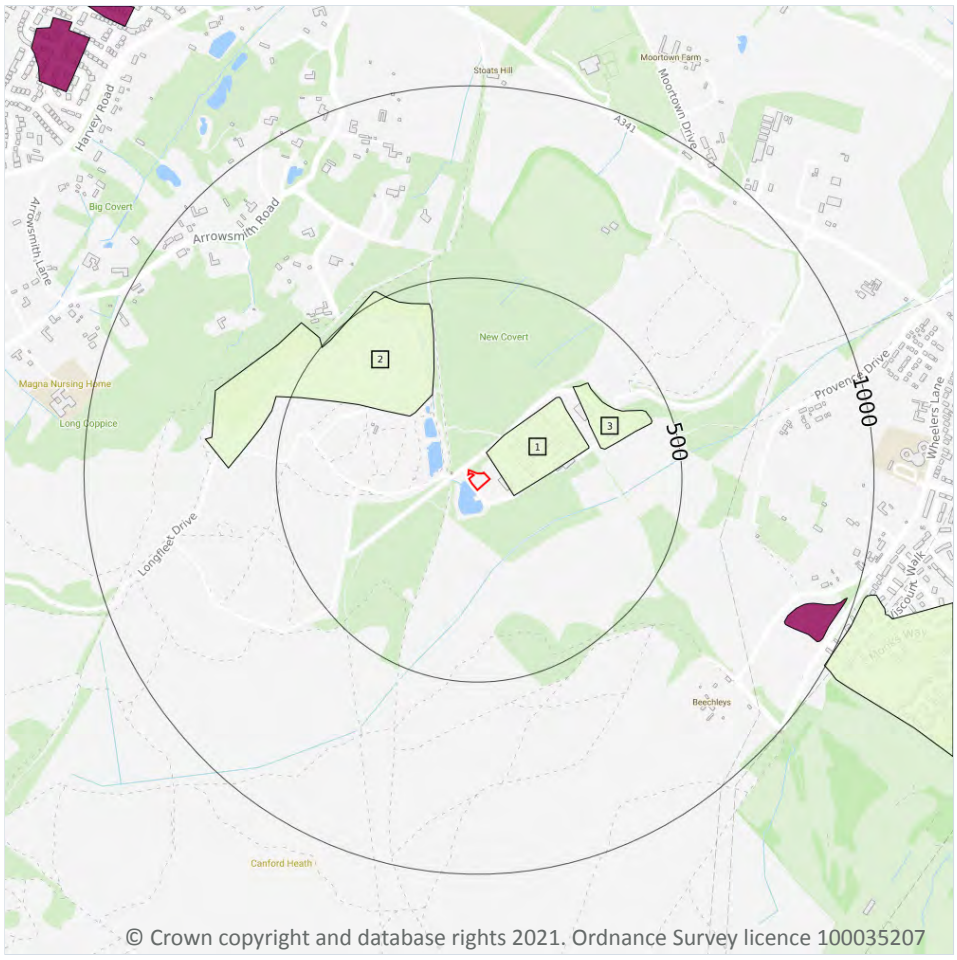
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 94**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**Full**	**EW329_bournemouth_v4**

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Artificial and made ground



Site Outline

Search buffers in metres (m)

- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

15.2 Artificial and made ground (50k)

Records within 500m	3

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 95**

ID	Location	LEX Code	Description	Rock description
1	30m NE	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
2	204m NW	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
3	295m NE	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

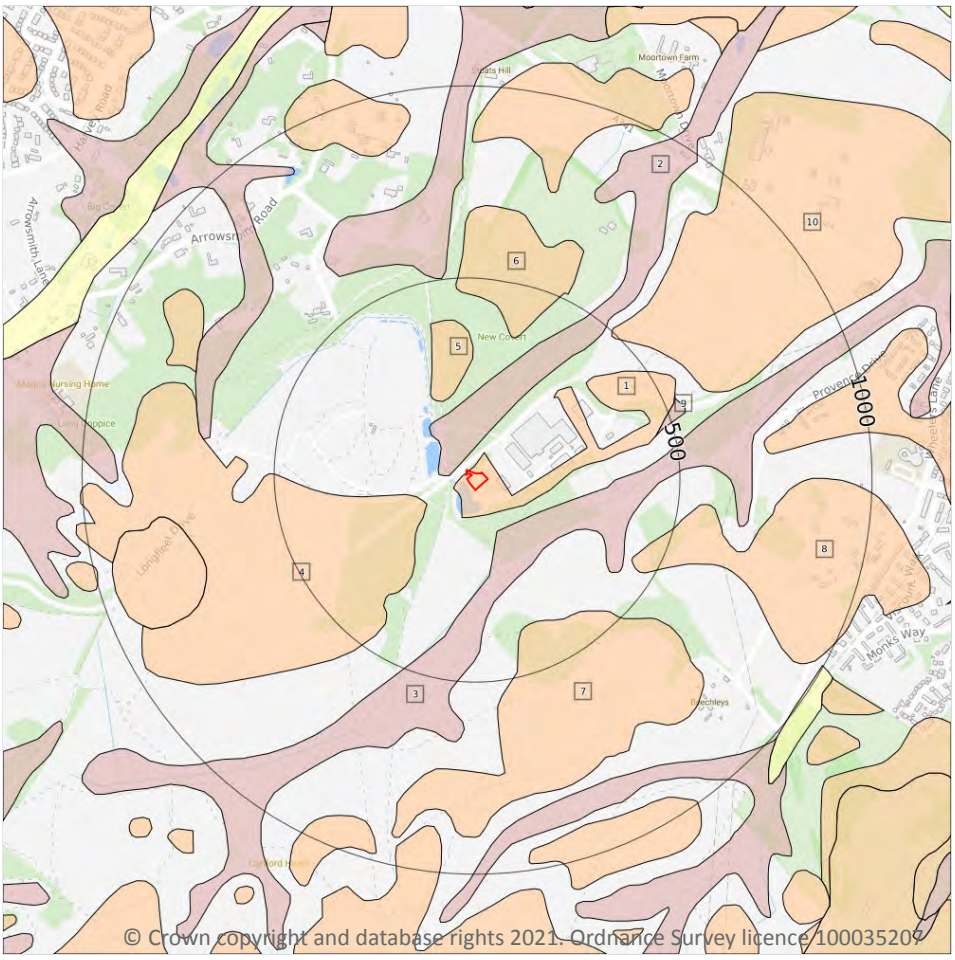
Records within 50m	1

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

Location	Flow type	Maximum permeability	Minimum permeability
30m NE	Mixed	Very High	Low

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

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

15.4 Superficial geology (50k)

Records within 500m	10

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 97**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**RTDX-XSV**	**RIVER TERRACE DEPOSITS, 10**	**SAND AND GRAVEL**
2	23m NW	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
3	122m SE	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL

ID	Location	LEX Code	Description	Rock description
4	124m SW	RT12-XSV	RIVER TERRACE DEPOSITS, 12	SAND AND GRAVEL
5	189m N	RT11-XSV	RIVER TERRACE DEPOSITS, 11	SAND AND GRAVEL
6	361m N	RTDX-XSV	RIVER TERRACE DEPOSITS, 10	SAND AND GRAVEL
7	376m S	RT12-XSV	RIVER TERRACE DEPOSITS, 12	SAND AND GRAVEL
8	429m SE	RTD8-XSV	RIVER TERRACE DEPOSITS, 8	SAND AND GRAVEL
9	452m E	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
10	490m NE	RTD8-XSV	RIVER TERRACE DEPOSITS, 8	SAND AND GRAVEL

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m **2**

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Intergranular**	**Very High**	**High**
23m NE	Mixed	High	Very Low

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m **0**

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

This data is sourced from the British Geological Survey.

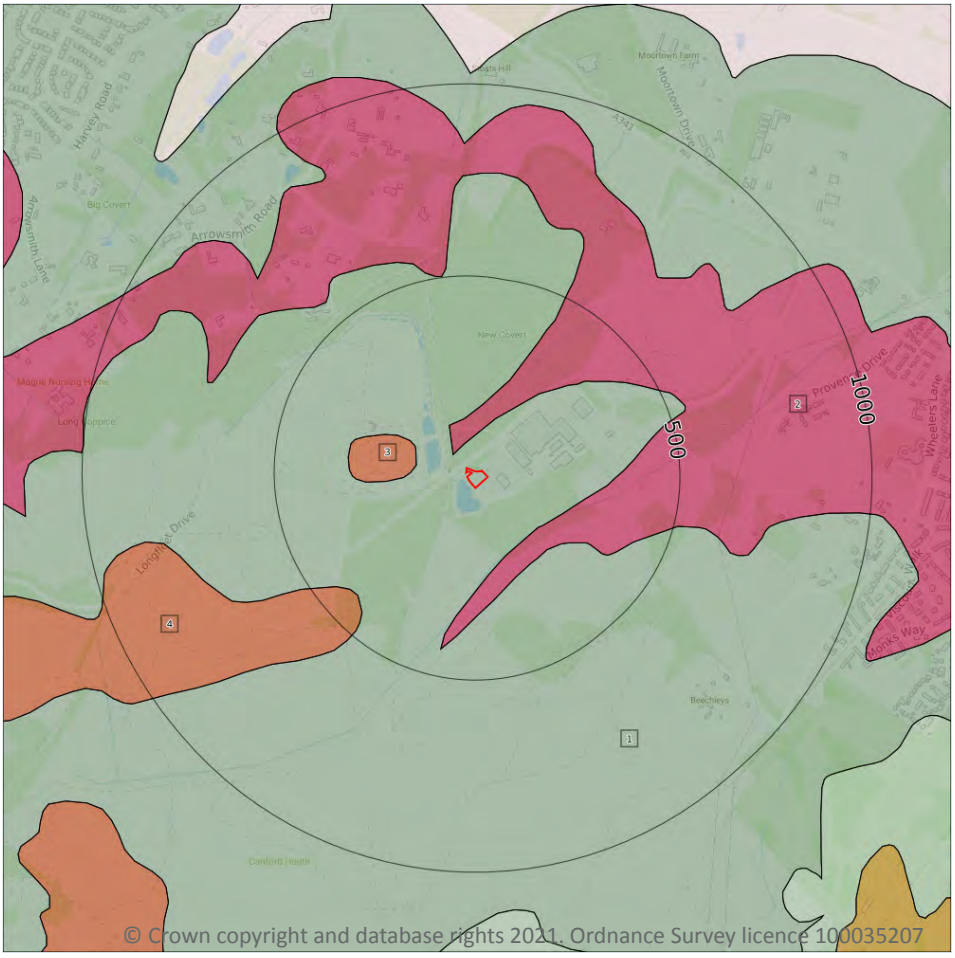
15.7 Landslip permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

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

15.8 Bedrock geology (50k)

Records within 500m **4**

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 100**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**POOL-XSZC**	**POOLE FORMATION - SAND, SILT AND CLAY**	**YPRESIAN**
2	50m NW	BRTC-CZ	BROADSTONE CLAY MEMBER - CLAY, SILTY	LUTETIAN
3	132m W	PKC-C	PARKSTONE CLAY MEMBER - CLAY	-
4	415m SW	PKC-C	PARKSTONE CLAY MEMBER - CLAY	-

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	1

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Intergranular**	**High**	**Low**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

16 Boreholes

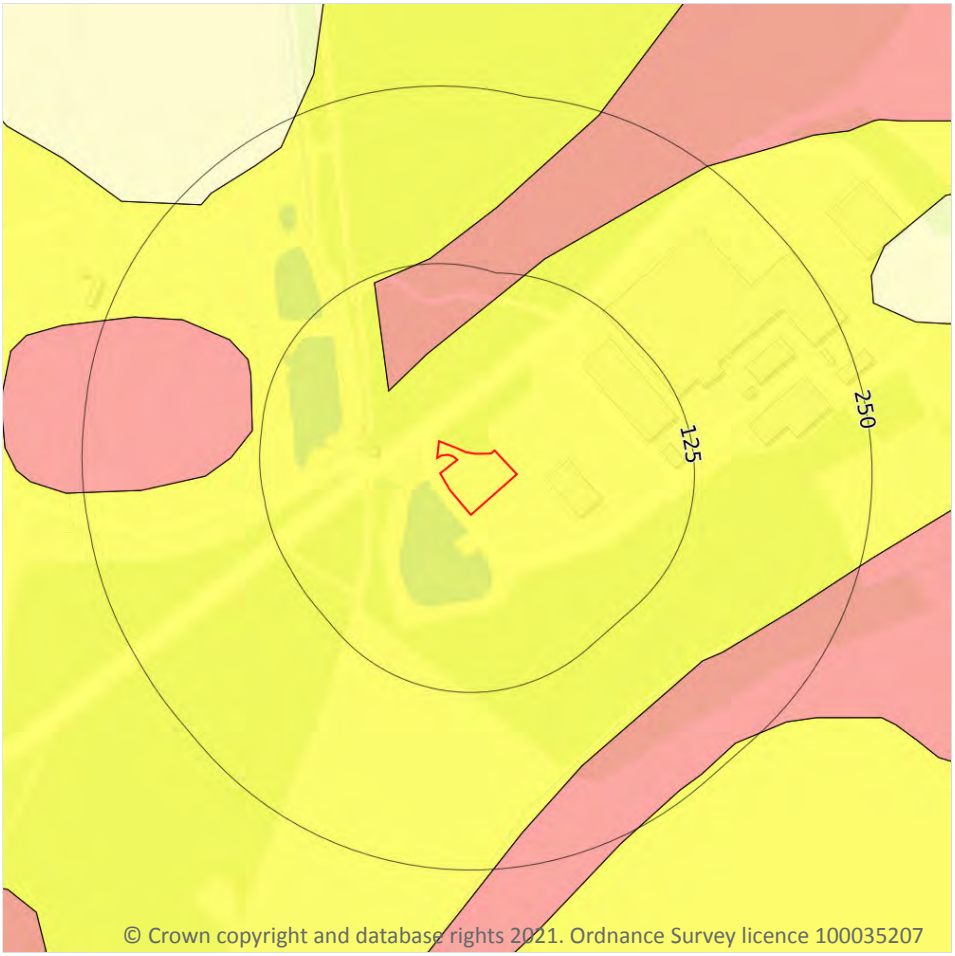
16.1 BGS Boreholes

Records within 250m	0

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

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

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

17.1 Shrink swell clays

Records within 50m	1

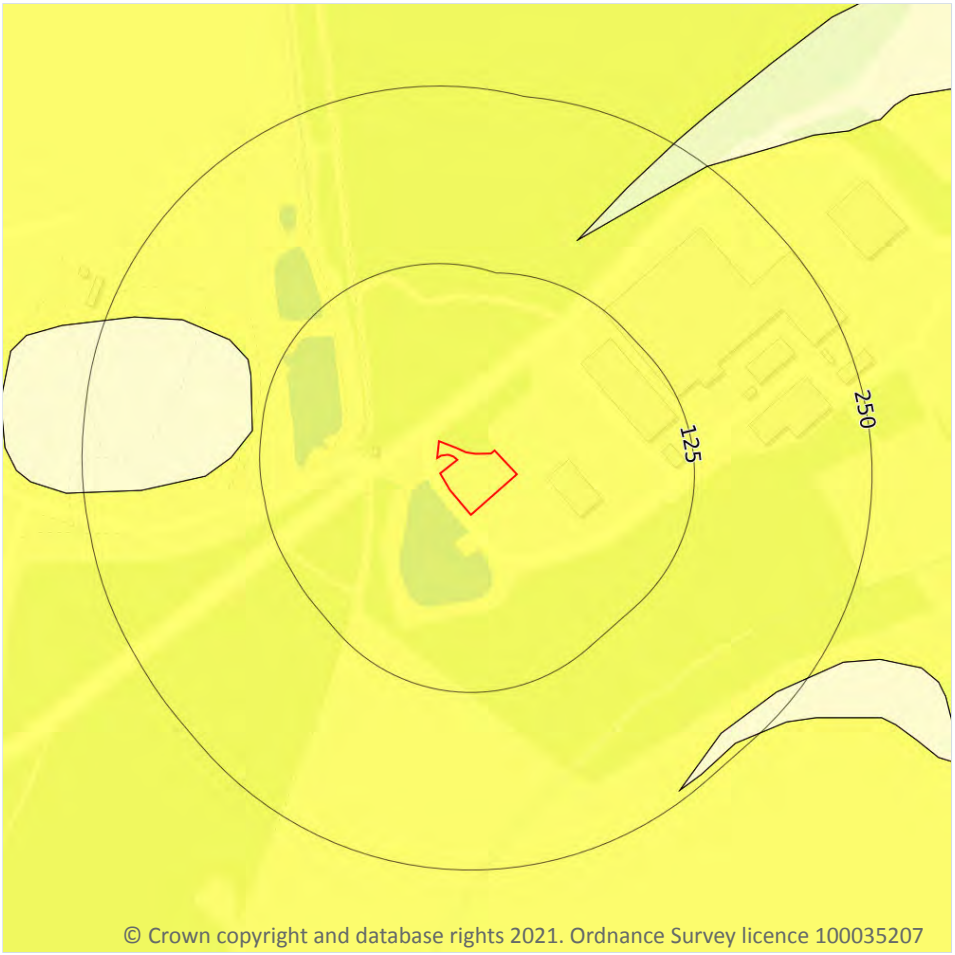
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 103**

Location	Hazard rating	Details
On site	**Very low**	**Ground conditions predominantly low plasticity.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

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

17.2 Running sands

Records within 50m	1

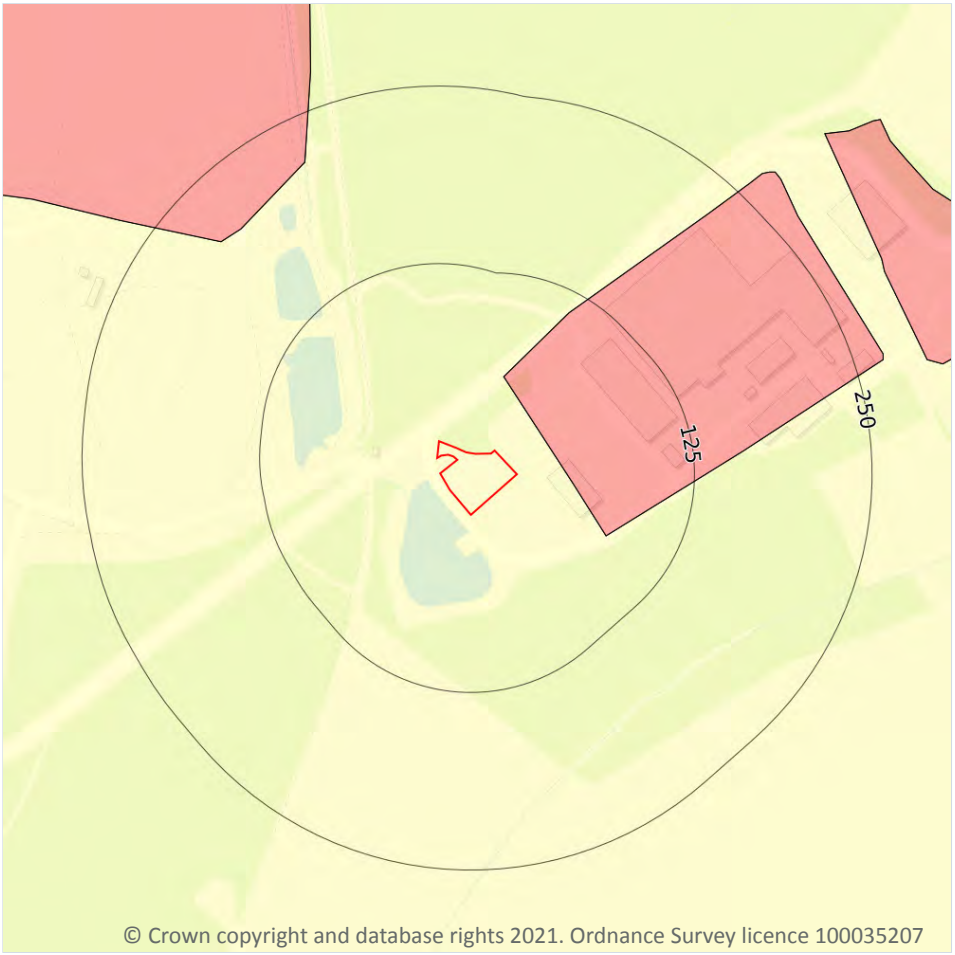
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 104**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



Site Outline

Search buffers in metres (m)

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

17.3 Compressible deposits

Records within 50m	2

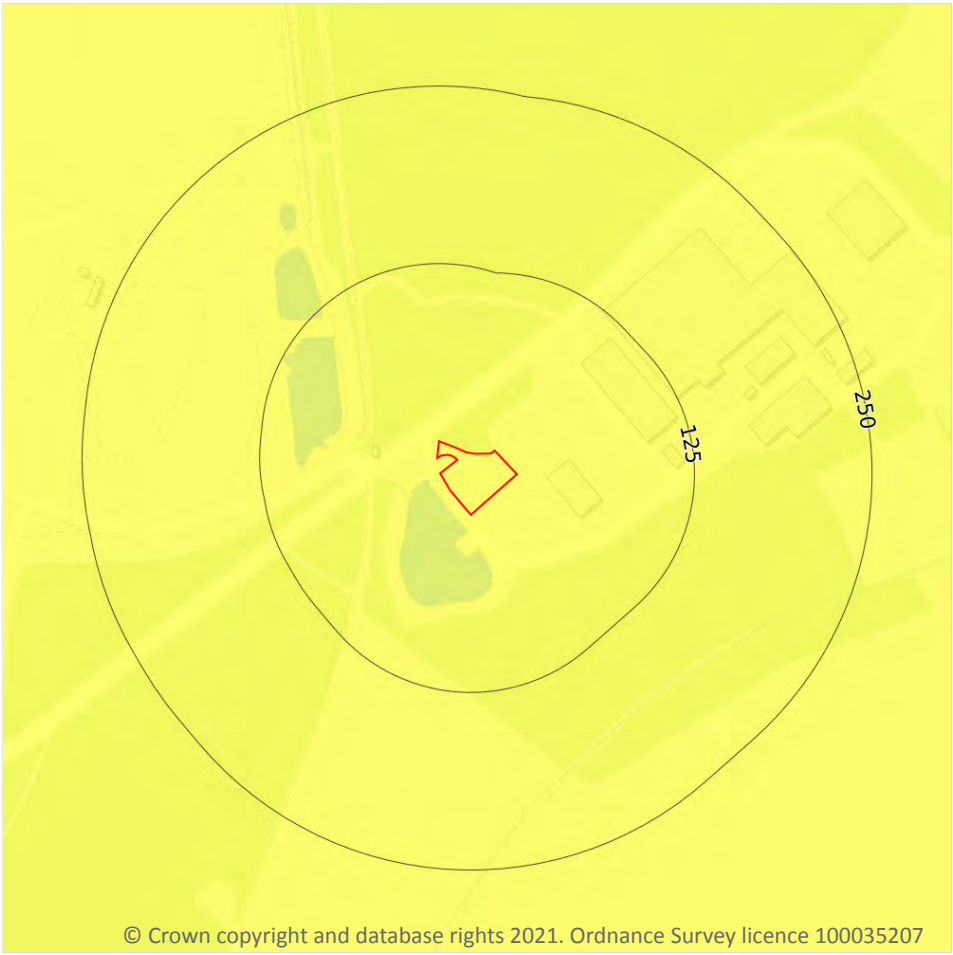
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 105**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**
30m NE	Moderate	Compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

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

17.4 Collapsible deposits

Records within 50m	1

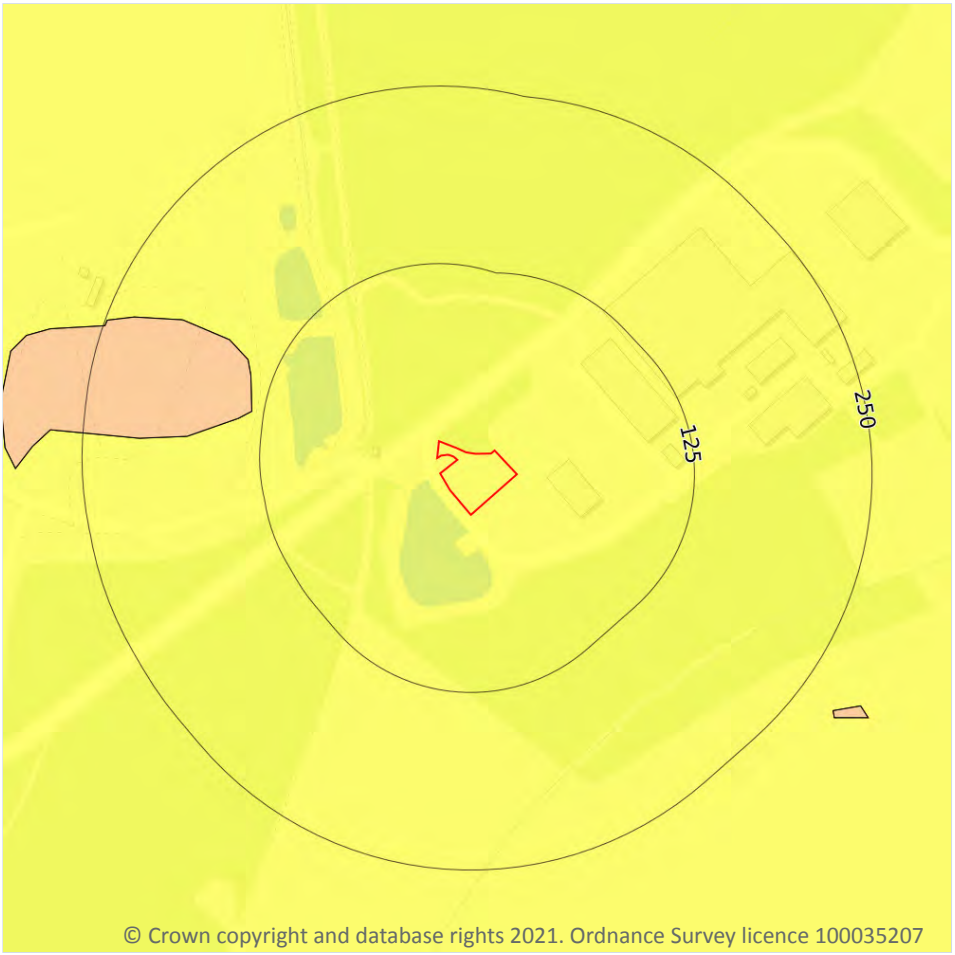
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 107**

Location	Hazard rating	Details
On site	**Very low**	**Deposits with potential to collapse when loaded and saturated are unlikely to be present.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

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

17.5 Landslides

Records within 50m	1

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 108**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks

Site Outline

Search buffers in metres (m)

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

17.6 Ground dissolution of soluble rocks

Records within 50m	1

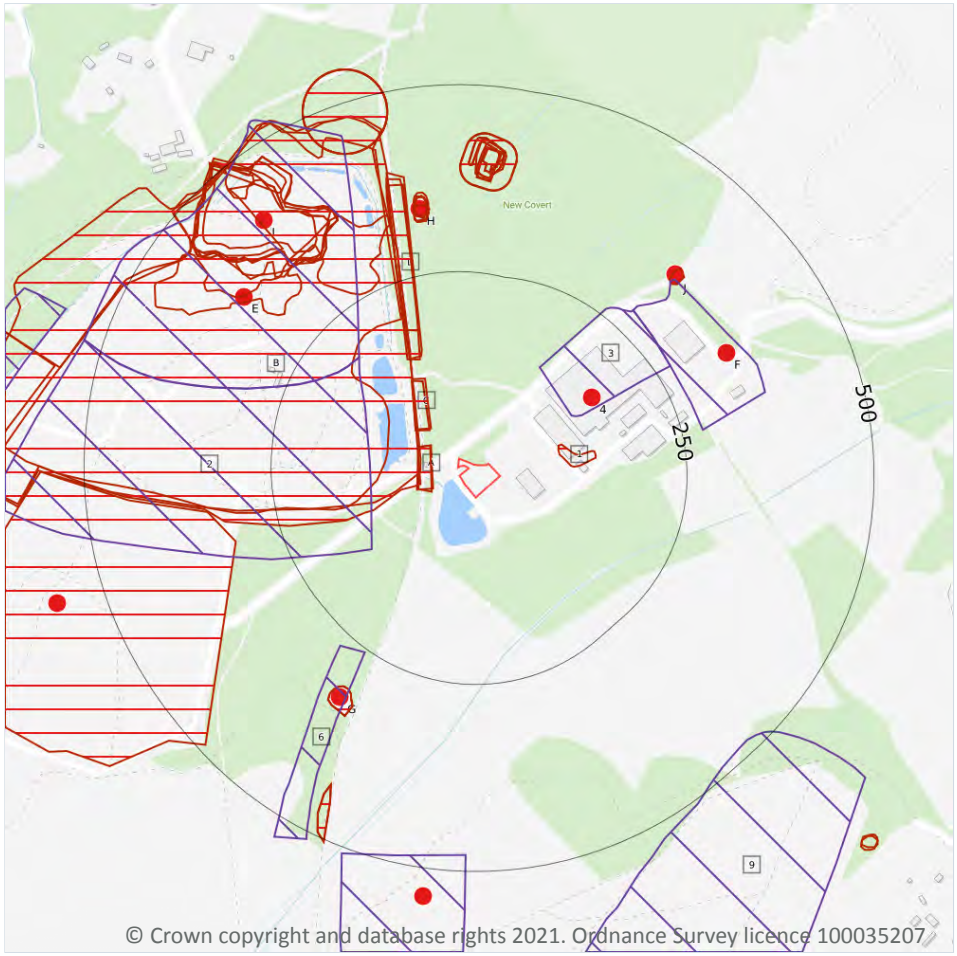
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 109**

Location	Hazard rating	Details
On site	**Negligible**	**Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.**

This data is sourced from the British Geological Survey.

18 Mining, ground workings and natural cavities



Site Outline

Search buffers in metres (m)

Natural cavities (Area)

Natural cavities (Point)

BritPits

Surface ground workings

Underground workings

Historical Mineral Planning Areas

Mining Cavities

Non Coal Mining

Sporadic underground mining of restricted extent possible

Localised small scale underground mining possible

Small scale mining possible

Underground mining known or likely within or in close proximity

Underground mining known within or in very close proximity

18.1 Natural cavities

Records within 500m	0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Peter Brett Associates (PBA).

18.2 BritPits

Records within 500m	8

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

Features are displayed on the Mining, ground workings and natural cavities map on **page 111**

ID	Location	Details	Description
4	161m NE	Name: Stoats Hill Gravel Pits Address: Canford Heath, POOLE, Dorset Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
G	322m SW	Name: Canford Heath Sand Pit Address: Canford, POOLE, Dorset Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
G	322m SW	Name: Canford Heath Sand Pit Address: Canford, POOLE, Dorset Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
H	337m N	Name: Brake Hill Address: Merley, POOLE, Dorset Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
F	344m NE	Name: Stoats Hill Gravel Pits Address: Canford Heath, POOLE, Dorset Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

ID	Location	Details	Description
J	356m NE	Name: New Covert Address: Merley, POOLE, Dorset Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
E	359m NW	Name: Budden Gravel Pit Address: Canford Heath, POOLE, Dorset Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
I	411m NW	Name: Budden Pit Address: Merley, POOLE, Dorset Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m **11**

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining, ground workings and natural cavities map on **page 111**

ID	Location	Land Use	Year of mapping	Mapping scale
A	35m W	Cuttings	1934	1:10560
A	36m W	Cuttings	1940	1:10560
B	50m W	Sand and Gravel Pit	1988	1:10000
B	52m W	Sand and Gravel Pit	1982	1:10000
C	55m NW	Cuttings	1940	1:10560
C	55m NW	Cuttings	1934	1:10560
1	85m E	Unspecified Disused Pit	1982	1:10000

ID	Location	Land Use	Year of mapping	Mapping scale
B	96m W	Sand and Gravel Pit	1973	1:10000
D	143m N	Cuttings	1940	1:10560
D	146m N	Cuttings	1934	1:10560
D	180m N	Cuttings	1973	1:10000

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m	**0**

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

This is data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	**7**

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

Features are displayed on the Mining, ground workings and natural cavities map on **page 111**

ID	Location	Site Name	Mineral	Type	Planning Status	Planning Status Date
2	118m W	Withy Bed	Sand and gravel	Surface mineral working	Valid	27/3/1956
3	125m NE	Stoats Hill	Sand and gravel	Surface mineral working	Valid	Not available
E	190m NW	Withy Bed	Sand and gravel	Surface mineral working	Valid	1/2/1949
6	255m SW	Canford Heath Sand Pits	Sand and gravel	Surface mineral working	Valid	1/2/1949
F	271m NE	Stoats Hill	Sand and gravel	Surface mineral working	Valid	27/5/1956
N	478m S	Canford Heath Sand Pits	Sand and gravel	Surface mineral working	Valid	1/2/1949

ID	Location	Site Name	Mineral	Type	Planning Status	Planning Status Date
9	483m SE	Beechleys Cottage	Sand	Surface mineral working	Valid	Not available

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	0

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m	0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Peter Brett Associates (PBA).

18.8 JPB mining areas

Records on site	0

Areas which could be affected by former coal mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site	0

Areas which could be affected by past, current or future coal mining.

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site	0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.11 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Mining Searches UK.

18.13 Clay mining

Records on site	0

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Radon

Site Outline

Search buffers in metres (m)

Greater than 30%

Between 10% and 30%

Between 5% and 10%

Between 3% and 5%

Between 1% and 3%

Less than 1%

19.1 Radon

Records on site	1

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on **page 117**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Less than 1%**	**None****

This data is sourced from the British Geological Survey and Public Health England.

20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m	4

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

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
23m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
30m NE	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m	0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km^2).

This data is sourced from the British Geological Survey.

20.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km^2.

This data is sourced from the British Geological Survey.

21 Railway infrastructure and projects

21.1 Underground railways (London)

Records within 250m	0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m	0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m	0

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m	0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m	0

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m	0

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

Records within 500m	0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m	0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m	0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 ltd.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference.

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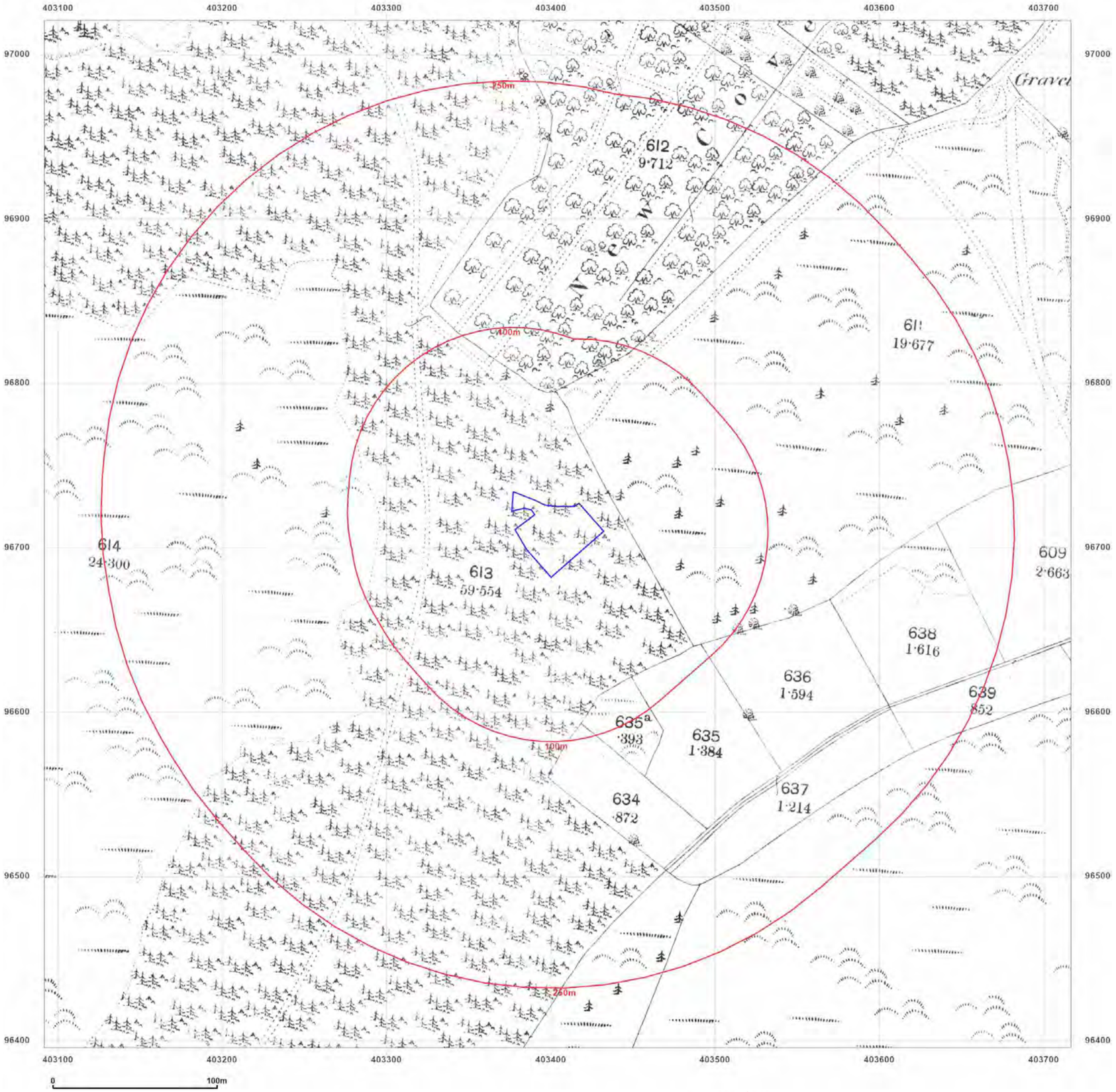

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: County Series

Map date: **1889**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1889
Revised 1889
Edition N/A
Copyright N/A
Levelled N/A

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Map legend available at:
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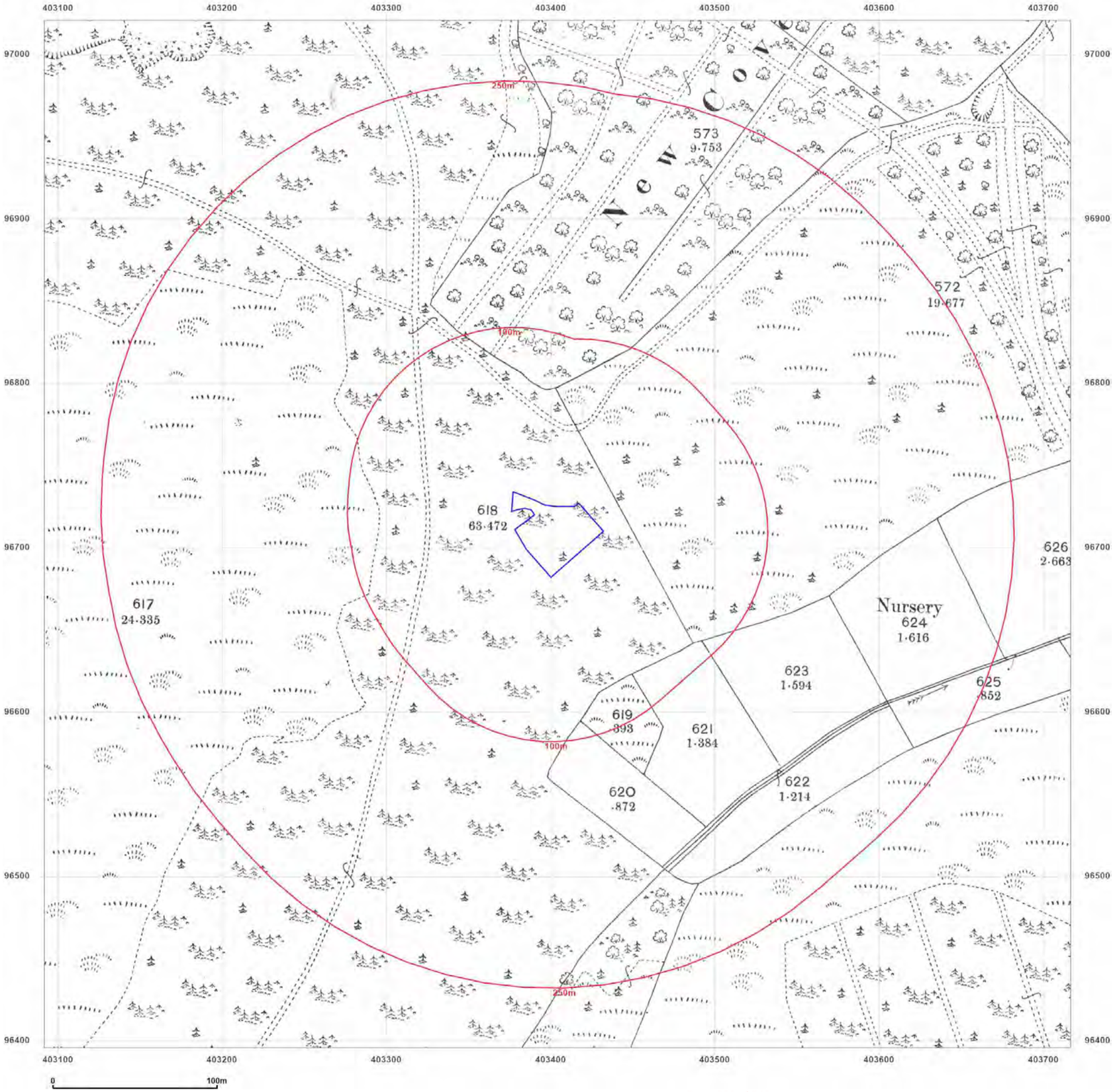

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: County Series

Map date: **1901**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1901
Revised 1901
Edition N/A
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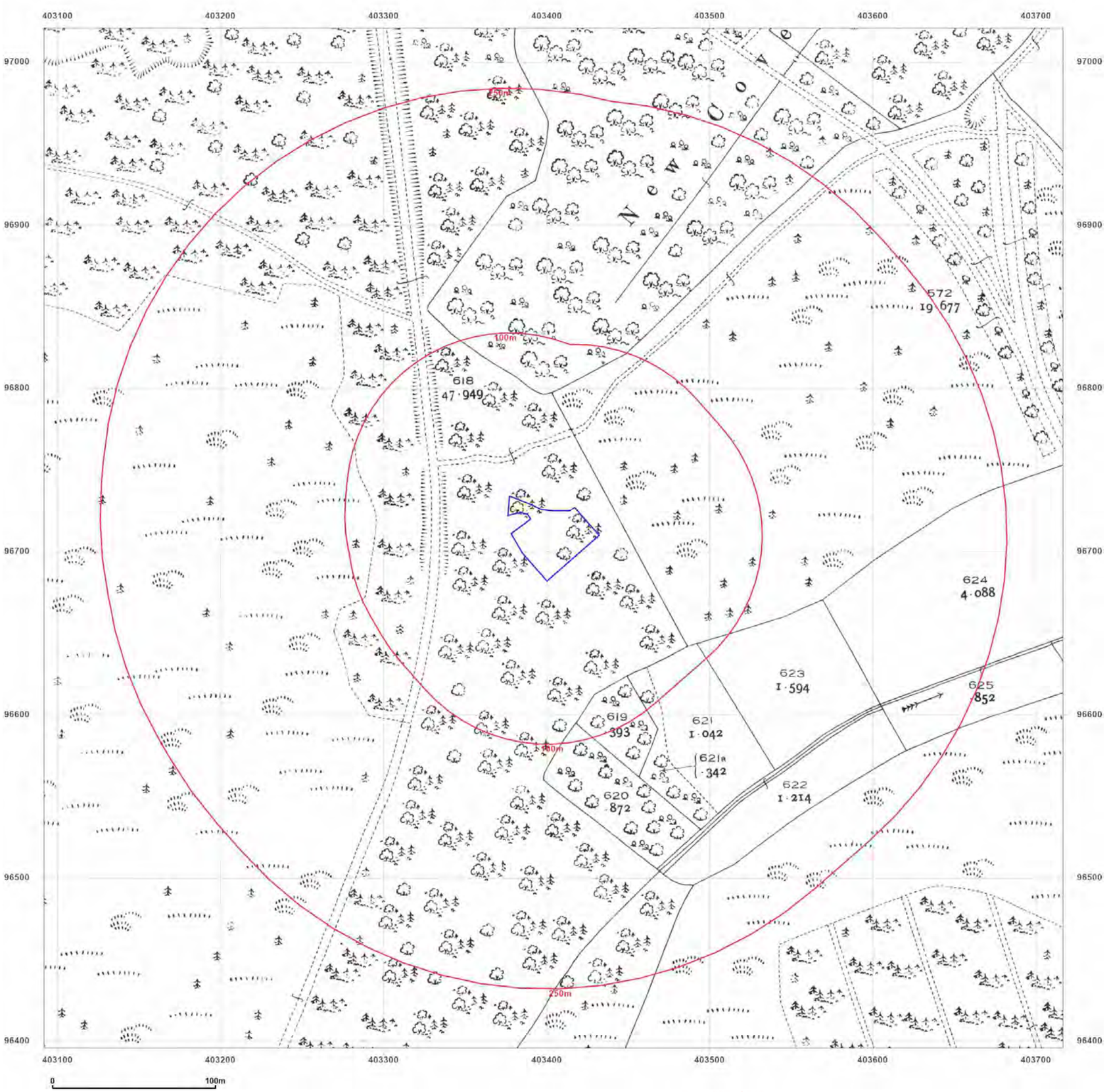

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: County Series

Map date: **1928**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1928
Revised 1928
Edition N/A
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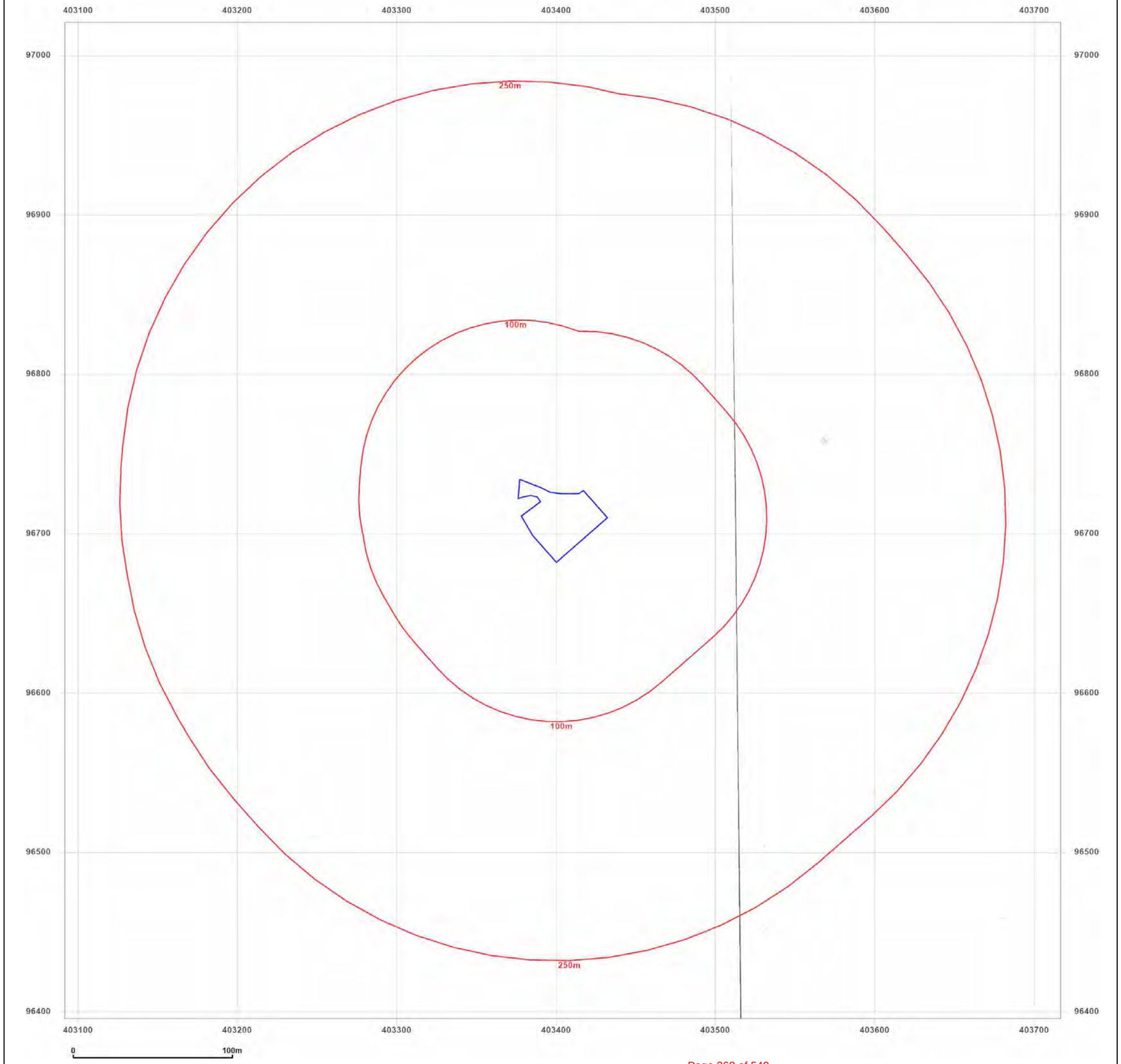

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: County Series

Map date: **1933**

Scale: 1:2,500

Printed at: 1:2,500

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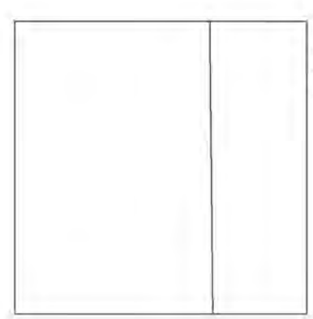

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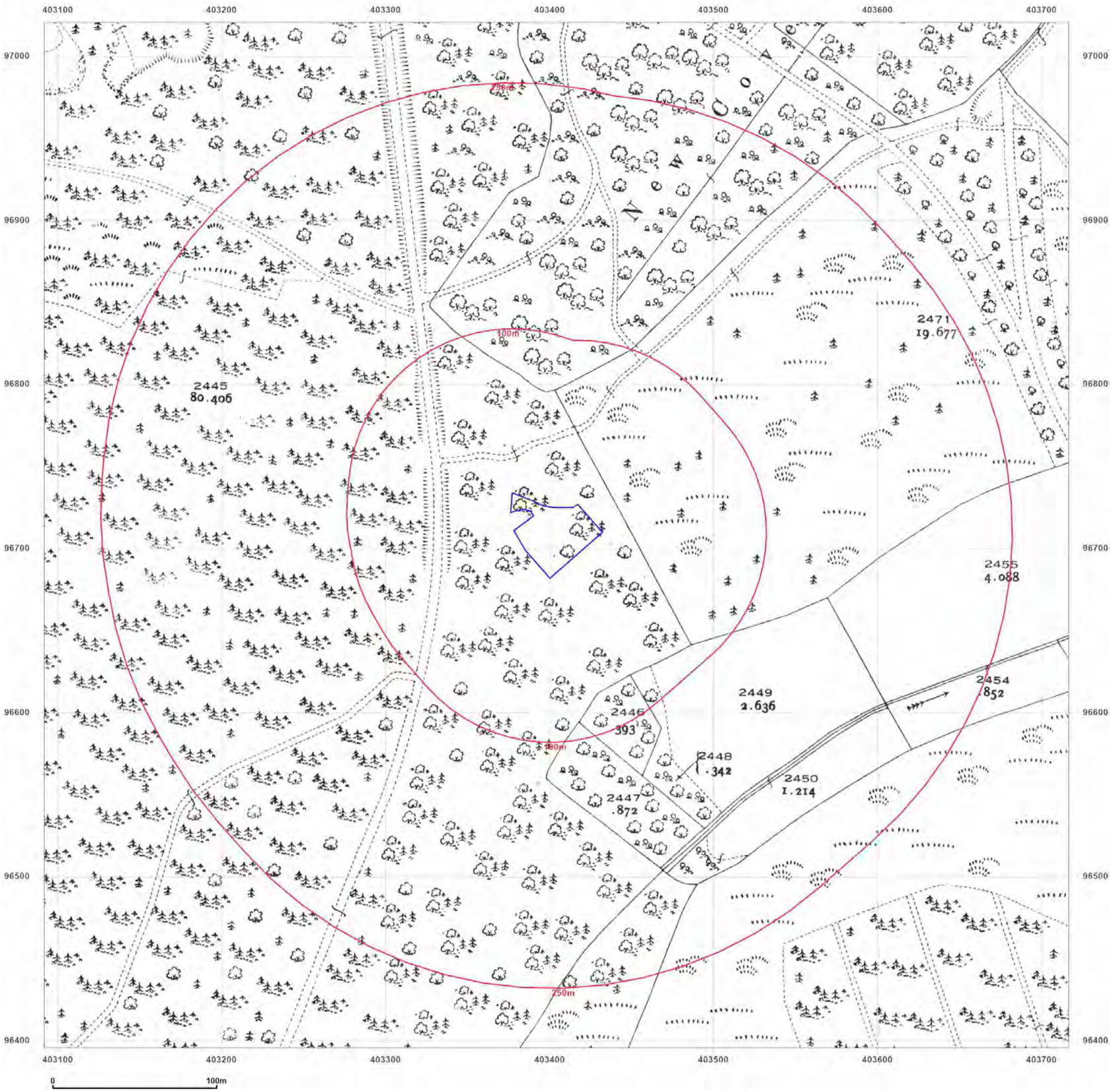

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: County Series

Map date: **1934**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1934
Revised 1934
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 04 March 2021

Map legend available at:
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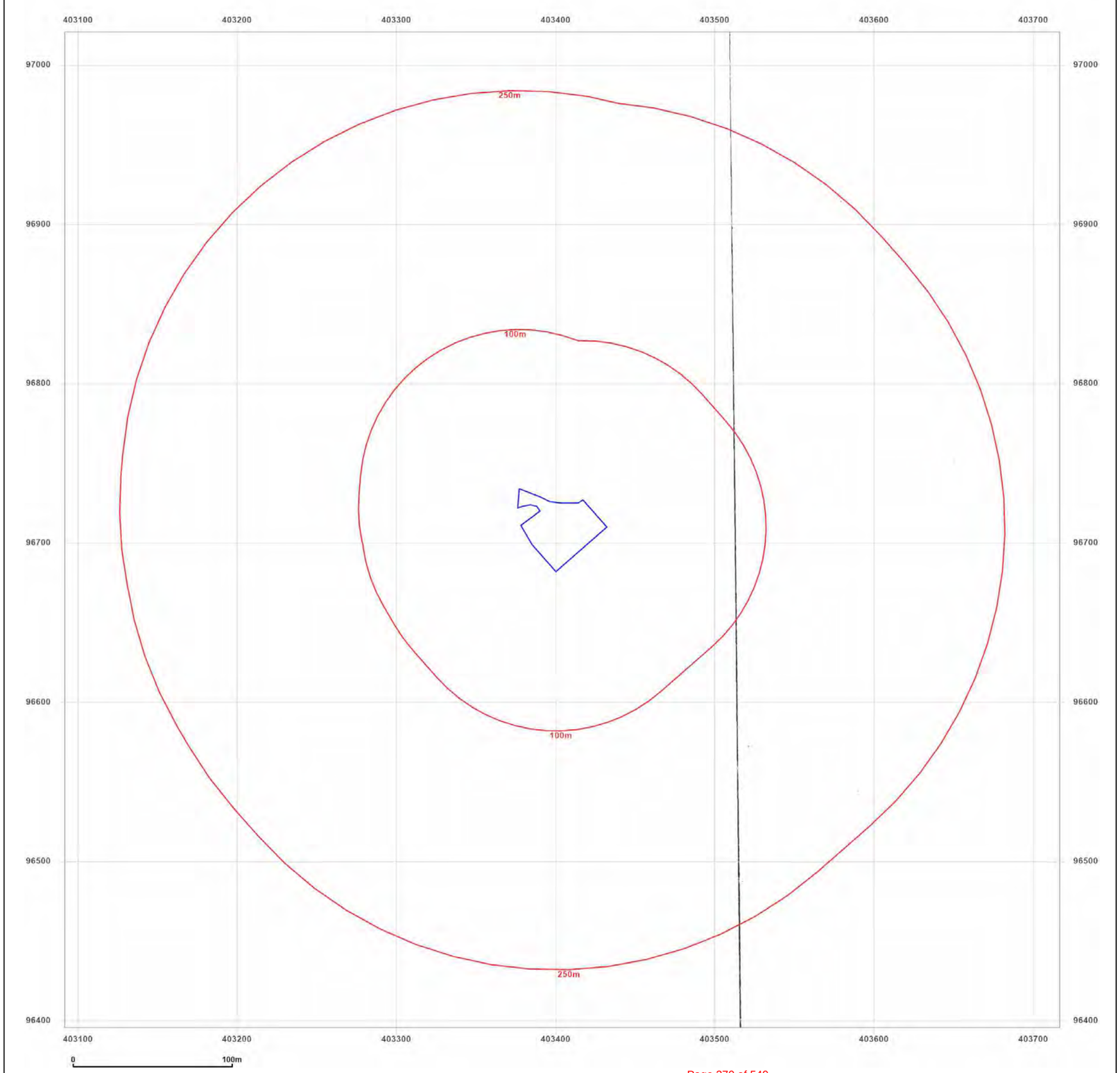

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: County Series

Map date: **1940**

Scale: 1:2,500

Printed at: 1:2,500

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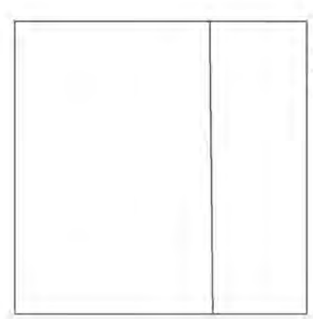

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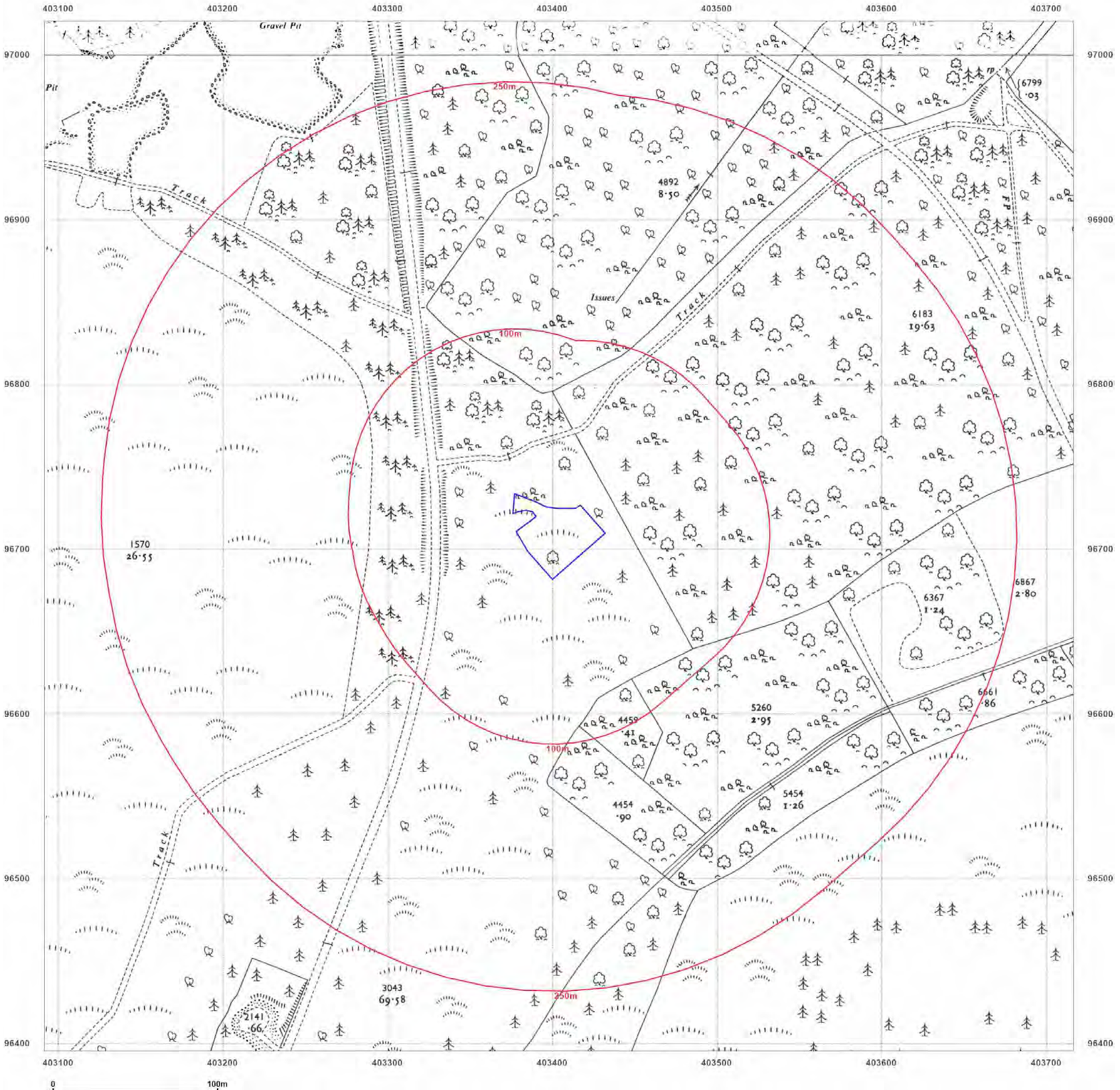

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: National Grid

Map date: **1954**

Scale: 1:2,500

Printed at: 1:2,500

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

Surveyed 1954
Revised 1954
Edition N/A
Copyright N/A
Levelled 1944

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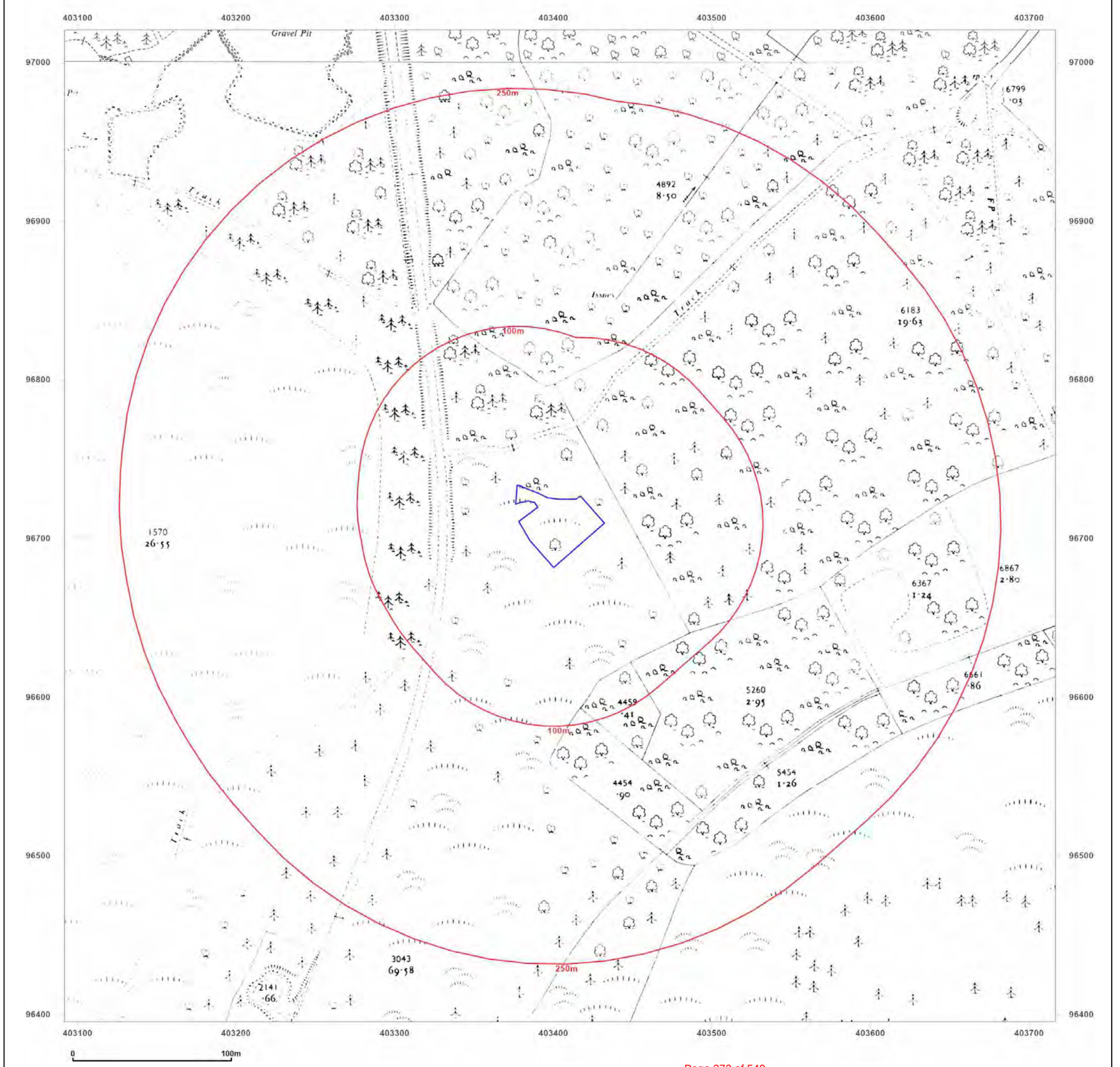

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: National Grid

Map date: **1954-1955**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1954
Revised 1954
Edition N/A
Copyright N/A
Levelled 1944

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

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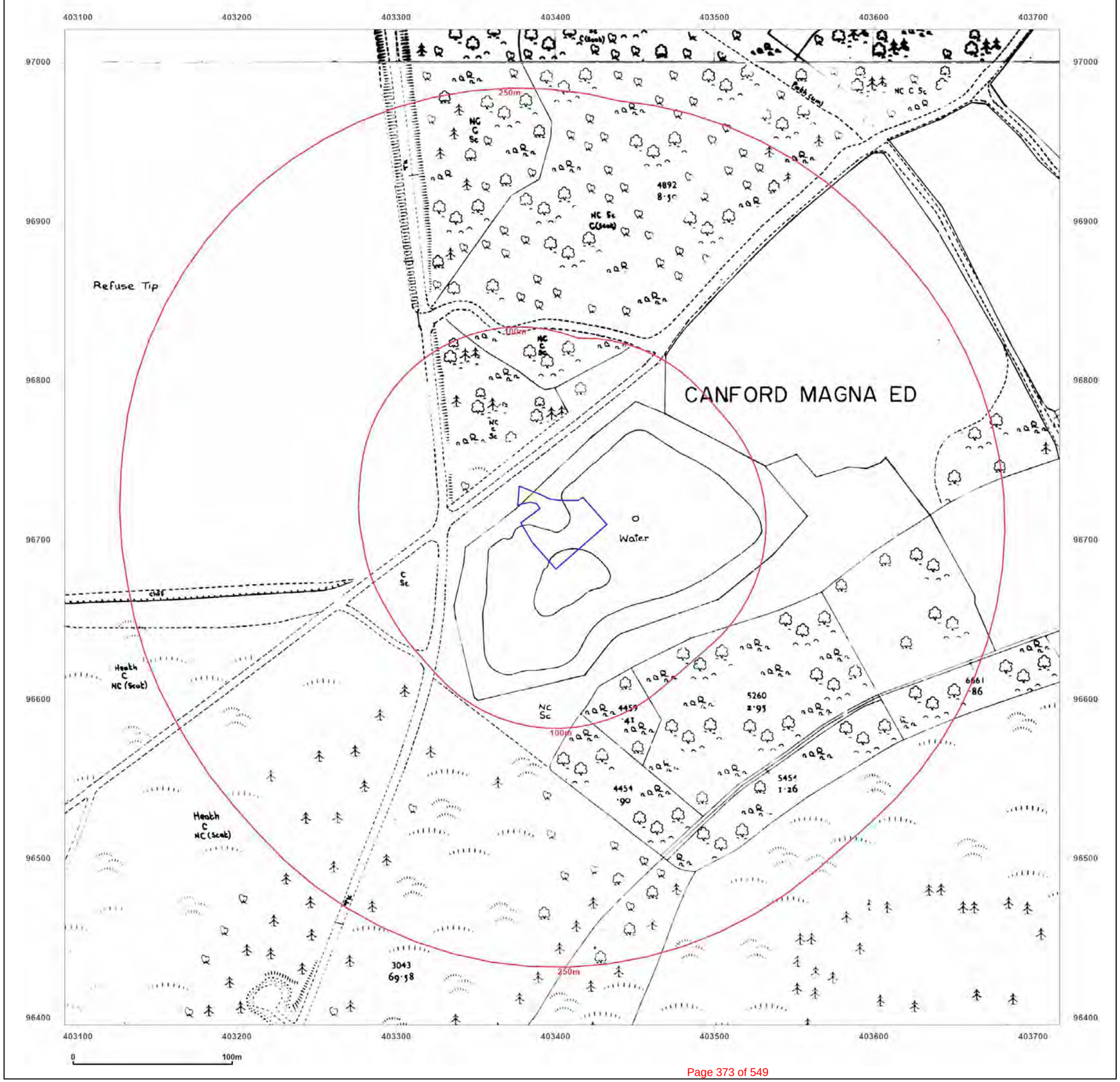

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: National Grid

Map date: **1988-1989**

Scale: 1:2,500

Printed at: 1:2,500

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

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

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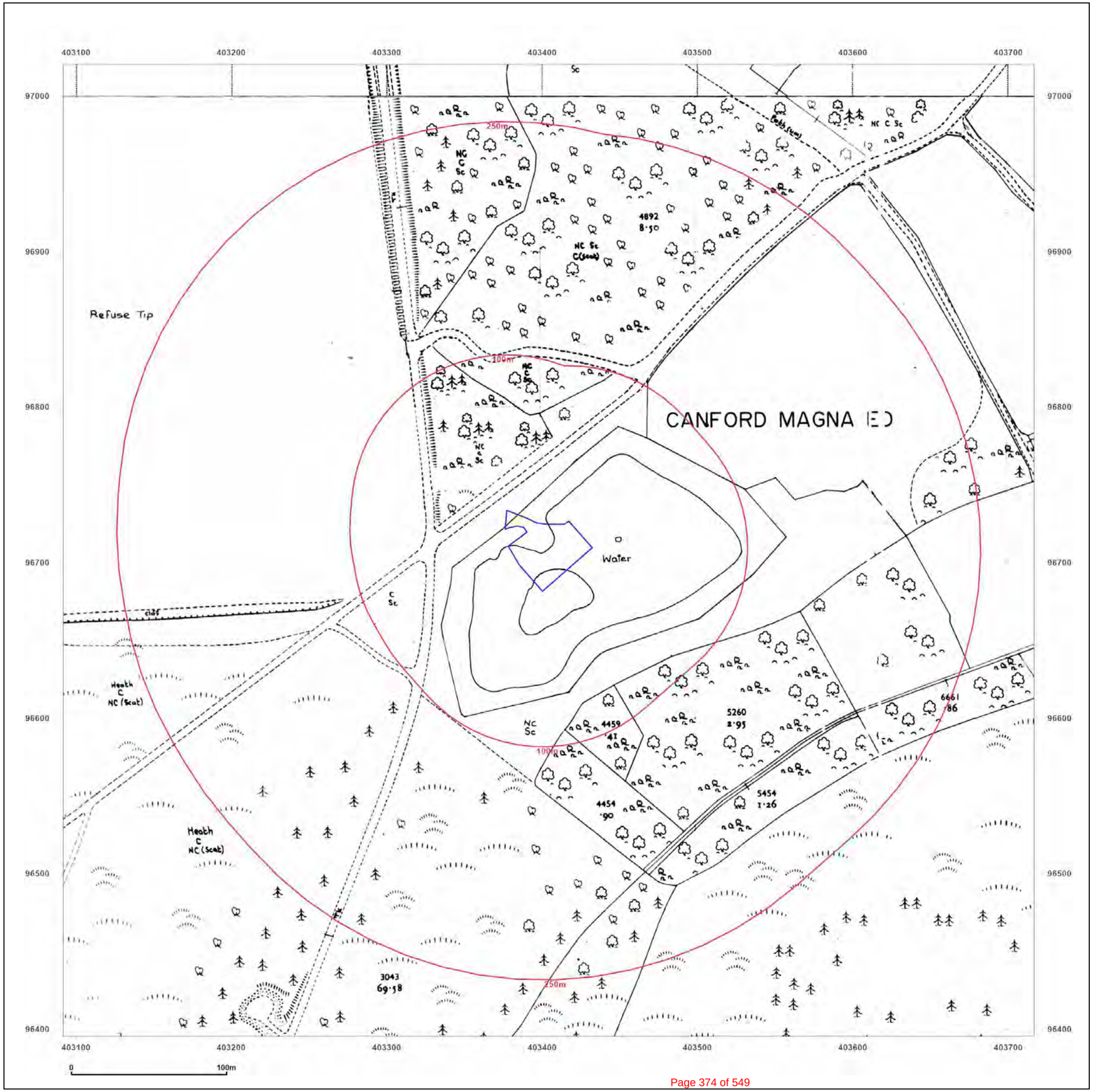

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: National Grid

Map date: **1988-1993**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1988
Revised 1988
Edition N/A
Copyright 1988
Levelled N/A

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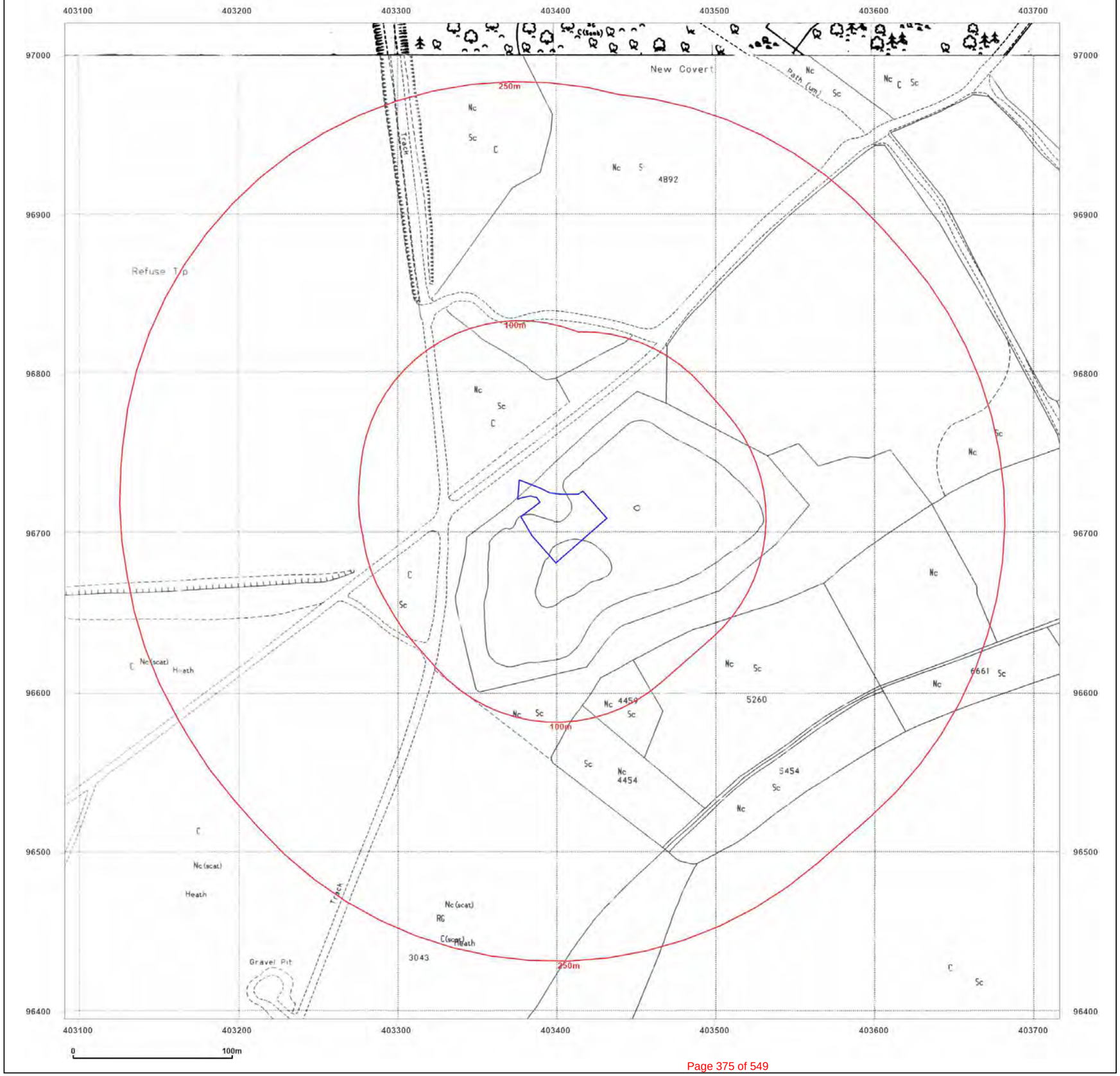

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: National Grid

Map date: **1989-1993**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1944
Revised 1989
Edition N/A
Copyright 1989
Levelled 1944

Surveyed 1993
Revised 1993
Edition N/A
Copyright N/A
Levelled N/A

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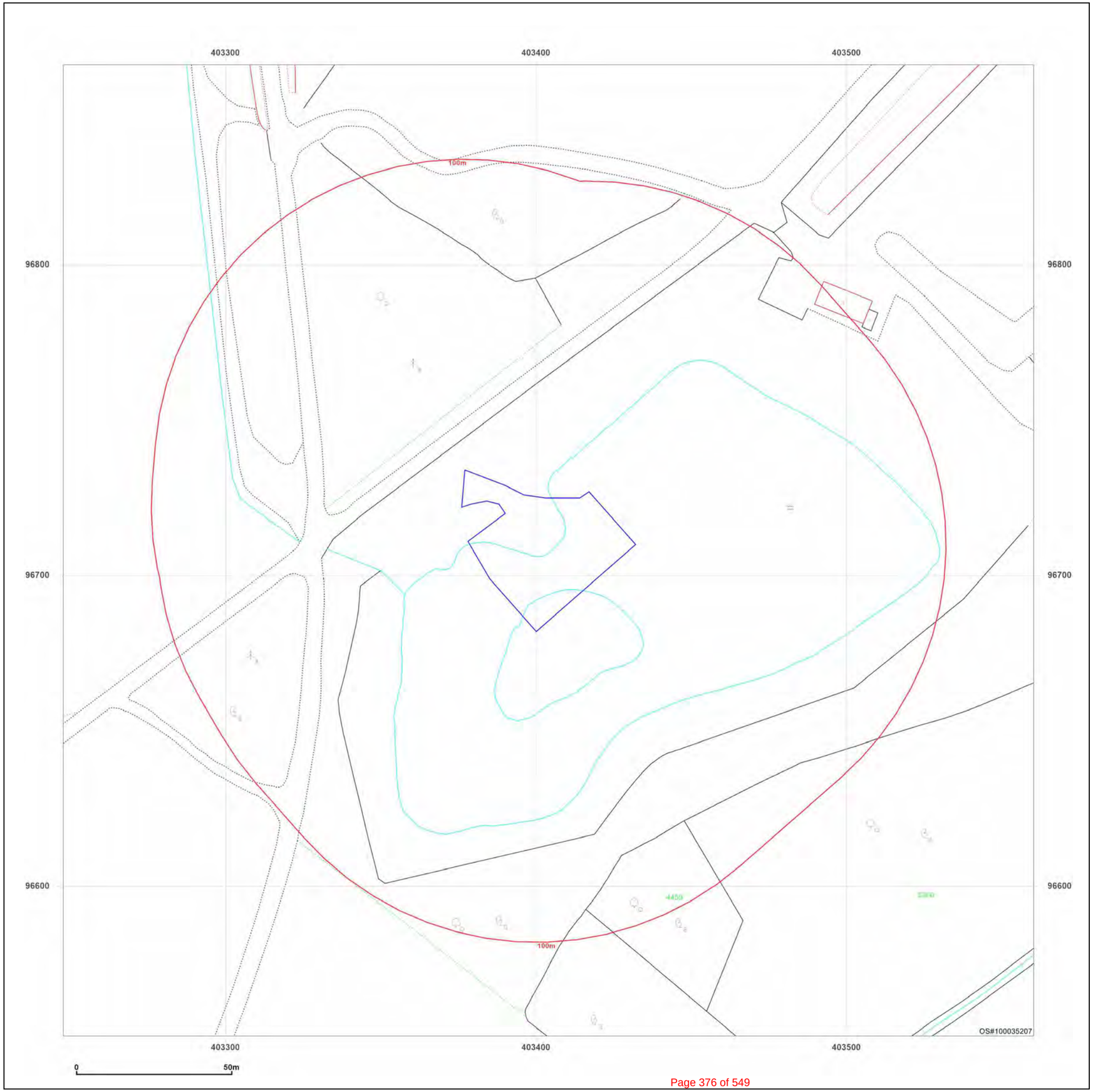

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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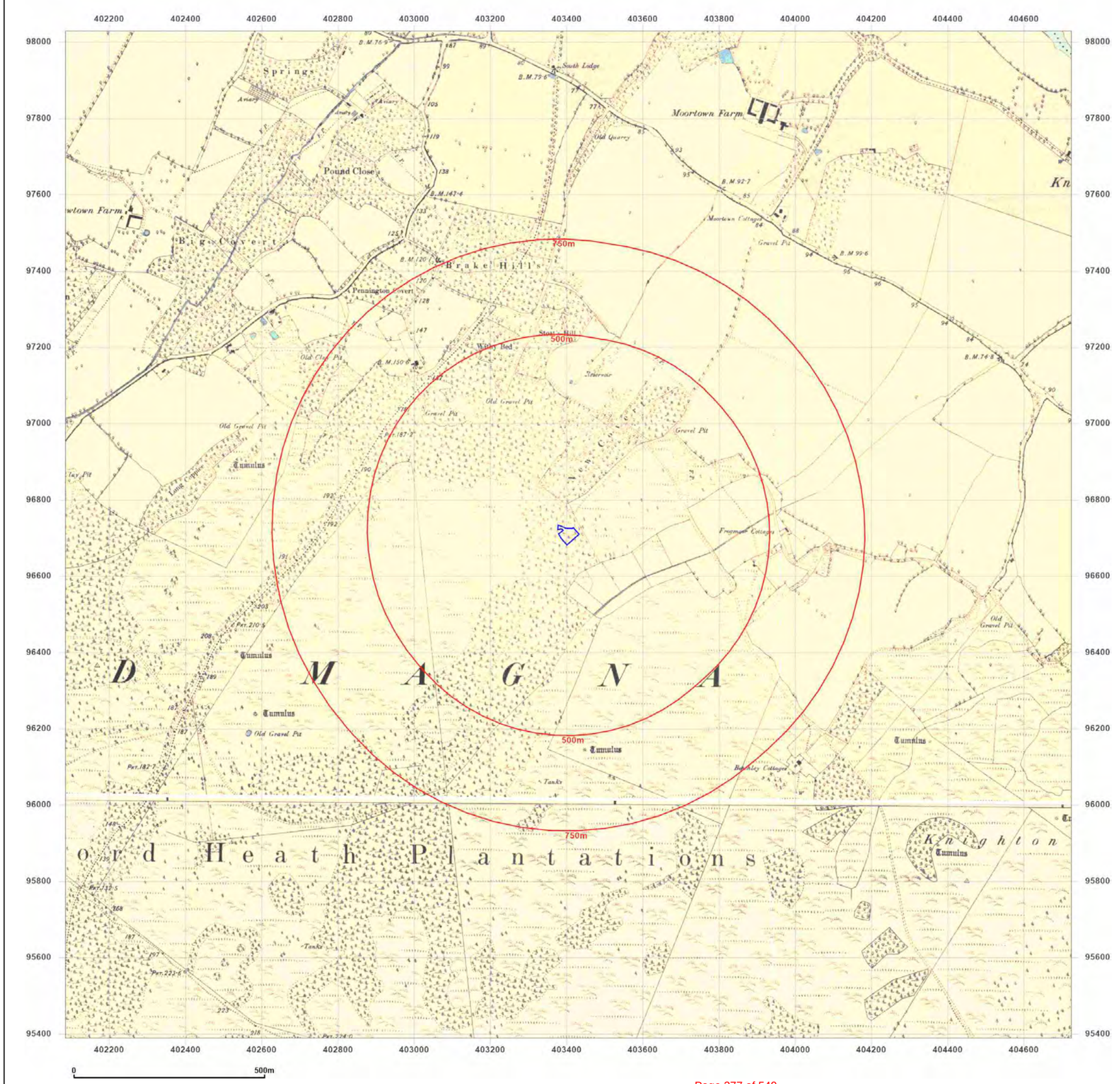

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: County Series

Map date: **1887**

Scale: 1:10,560

Printed at: 1:10,560

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

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

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Production date: 04 March 2021

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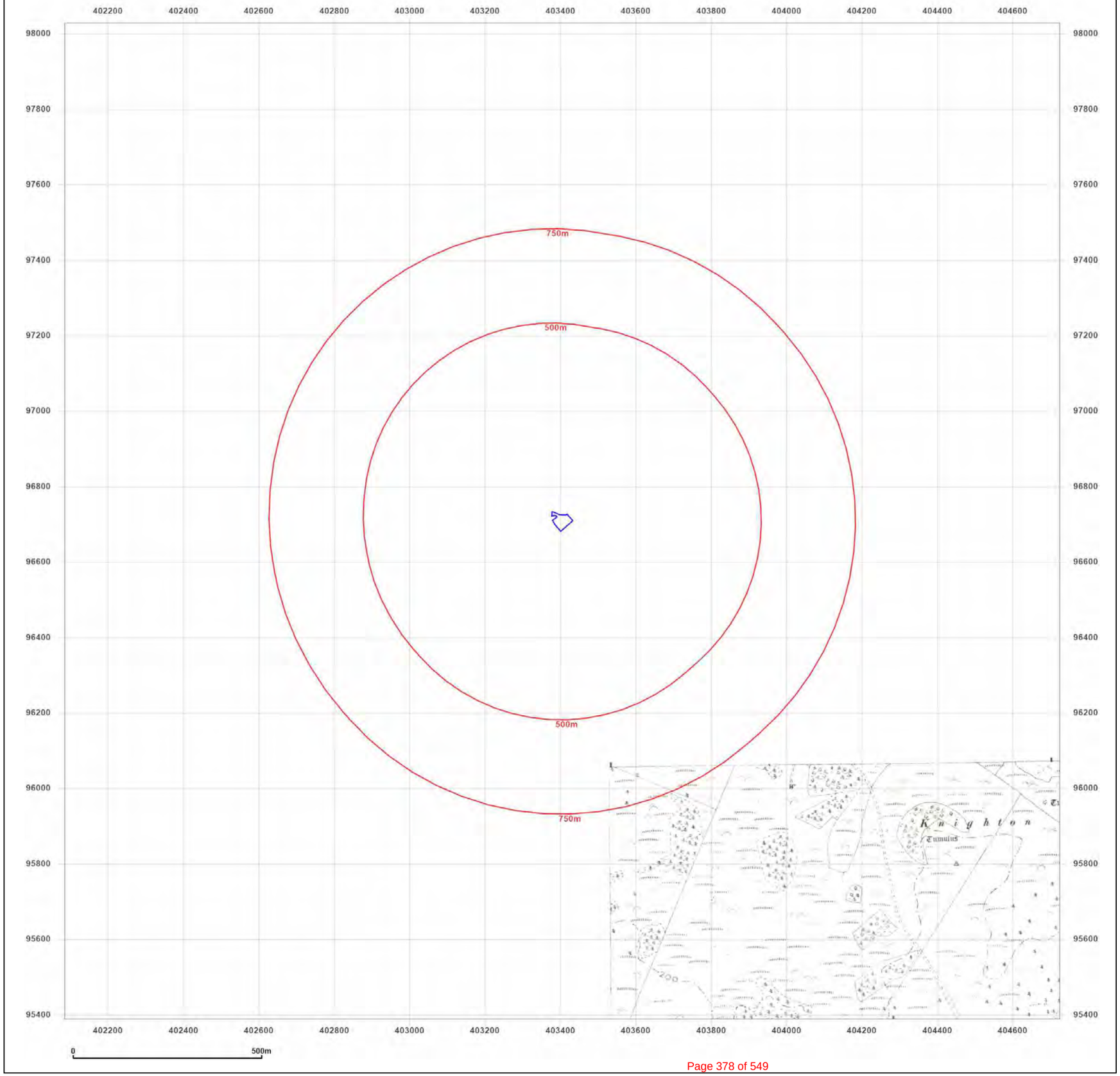

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: County Series

Map date: **1896**

Scale: 1:10,560

Printed at: 1:10,560

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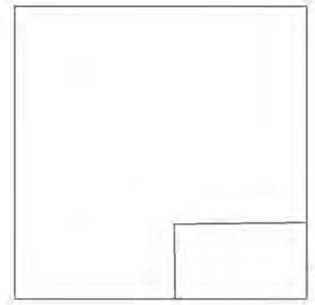

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Production date: 04 March 2021

Map legend available at:
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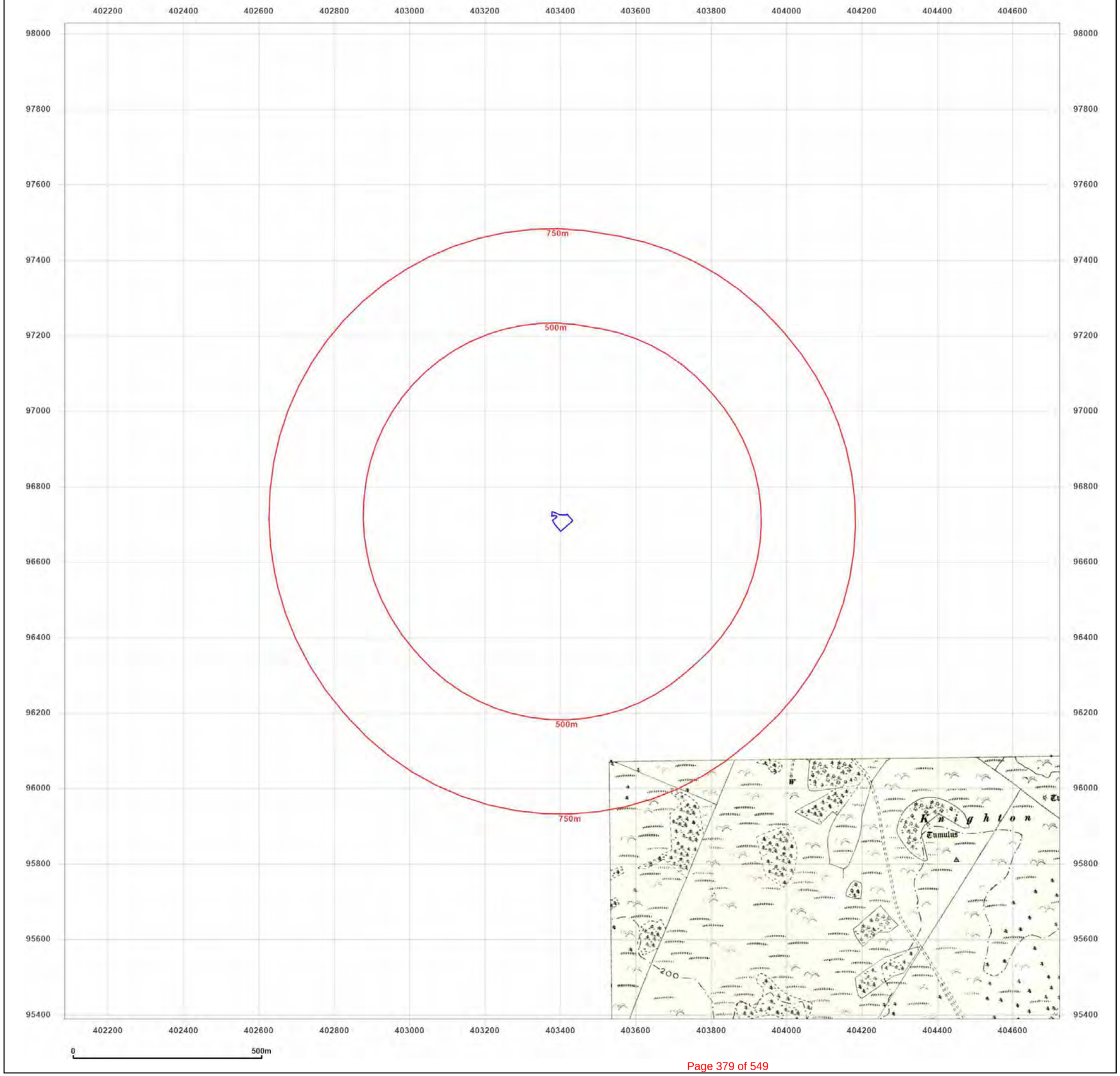

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: County Series

Map date: **1899**

Scale: 1:10,560

Printed at: 1:10,560

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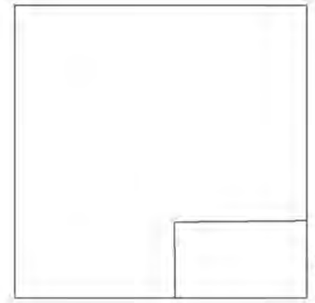

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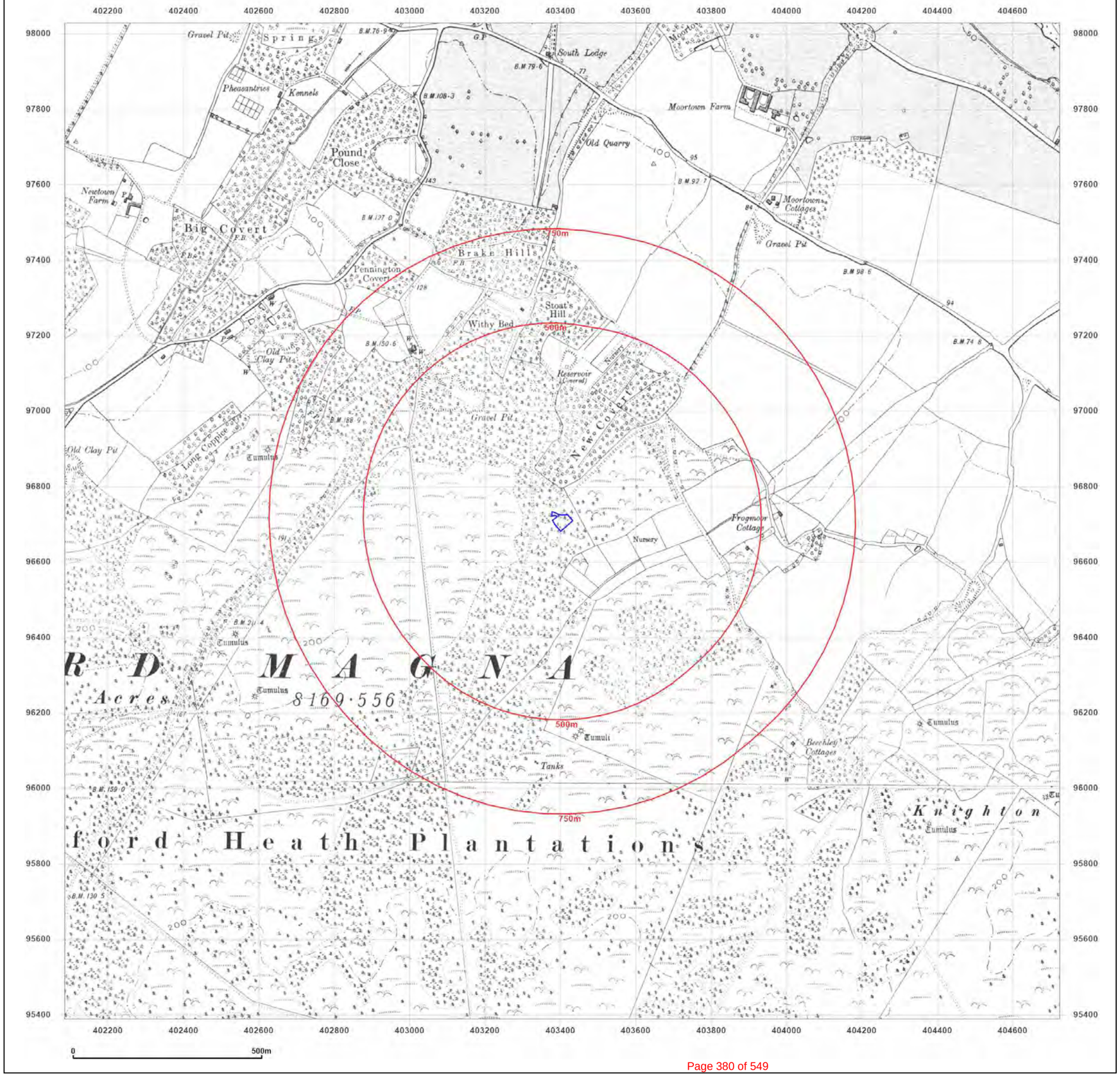

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Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: County Series

Map date: **1900**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1886
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1886
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

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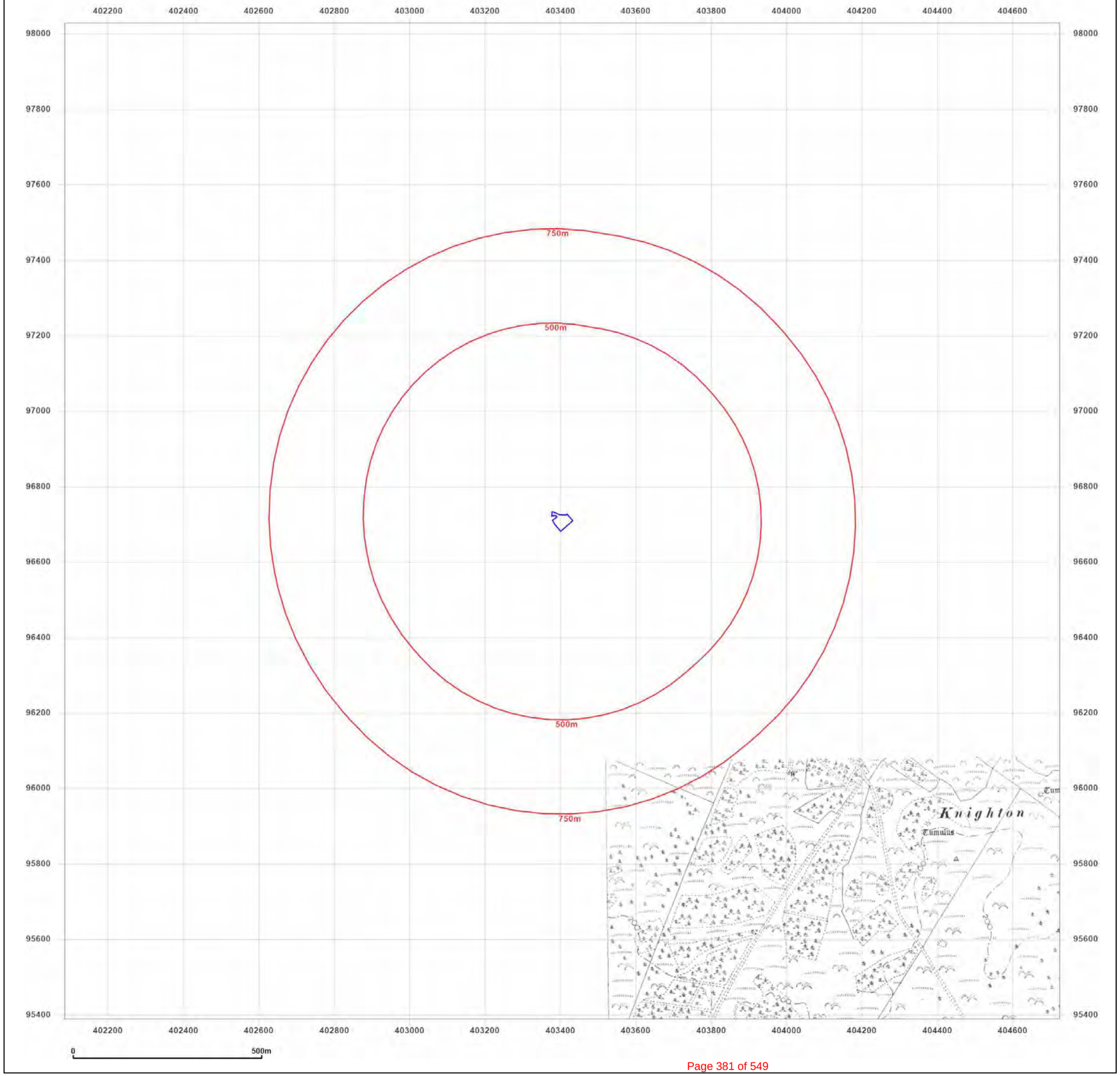

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: County Series

Map date: **1908**

Scale: 1:10,560

Printed at: 1:10,560

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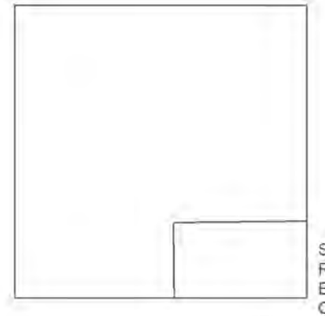

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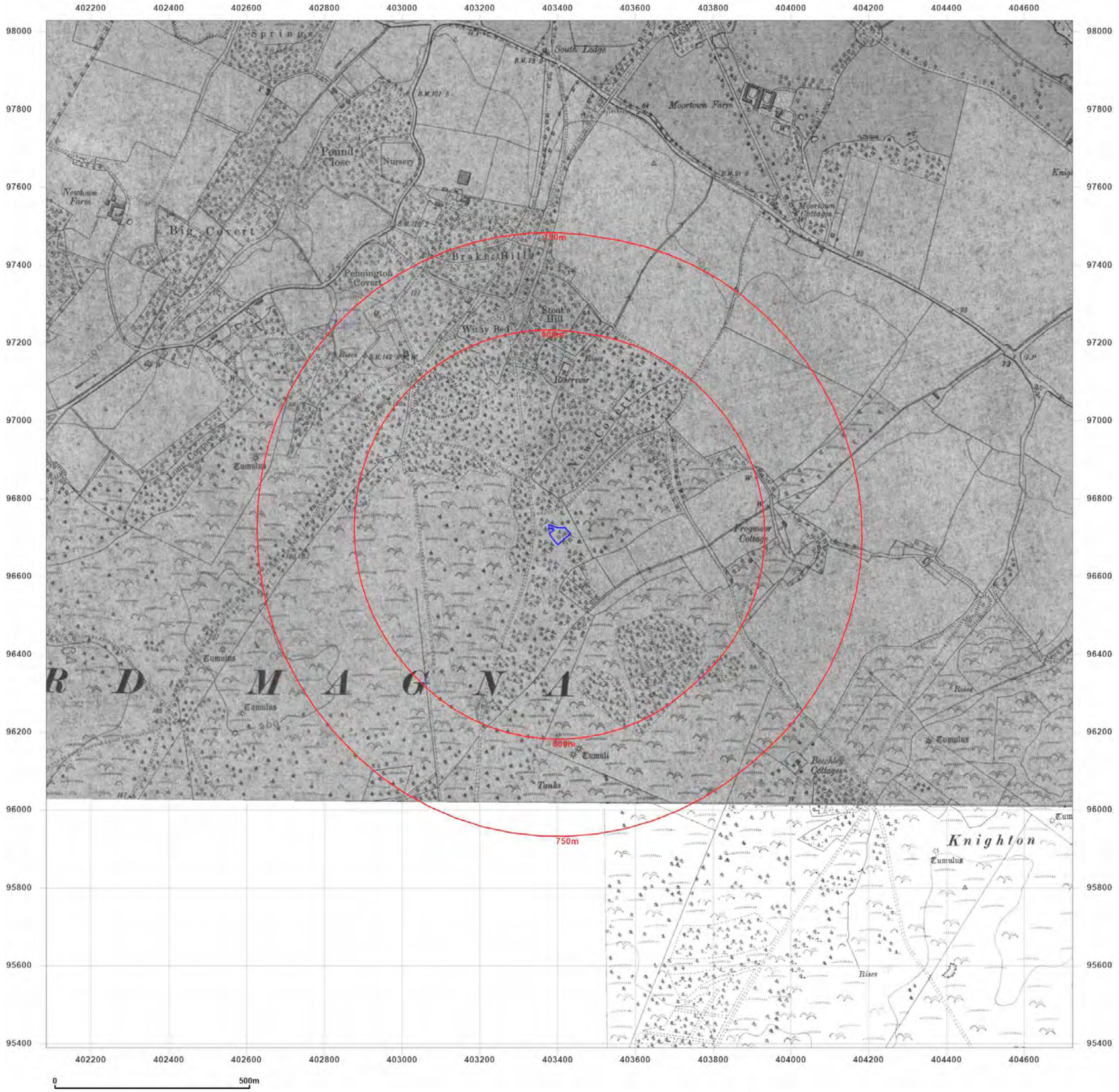

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: County Series

Map date: **1923-1926**

Scale: 1:10,560

Printed at: 1:10,560

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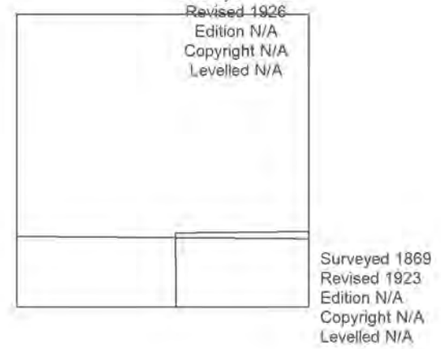

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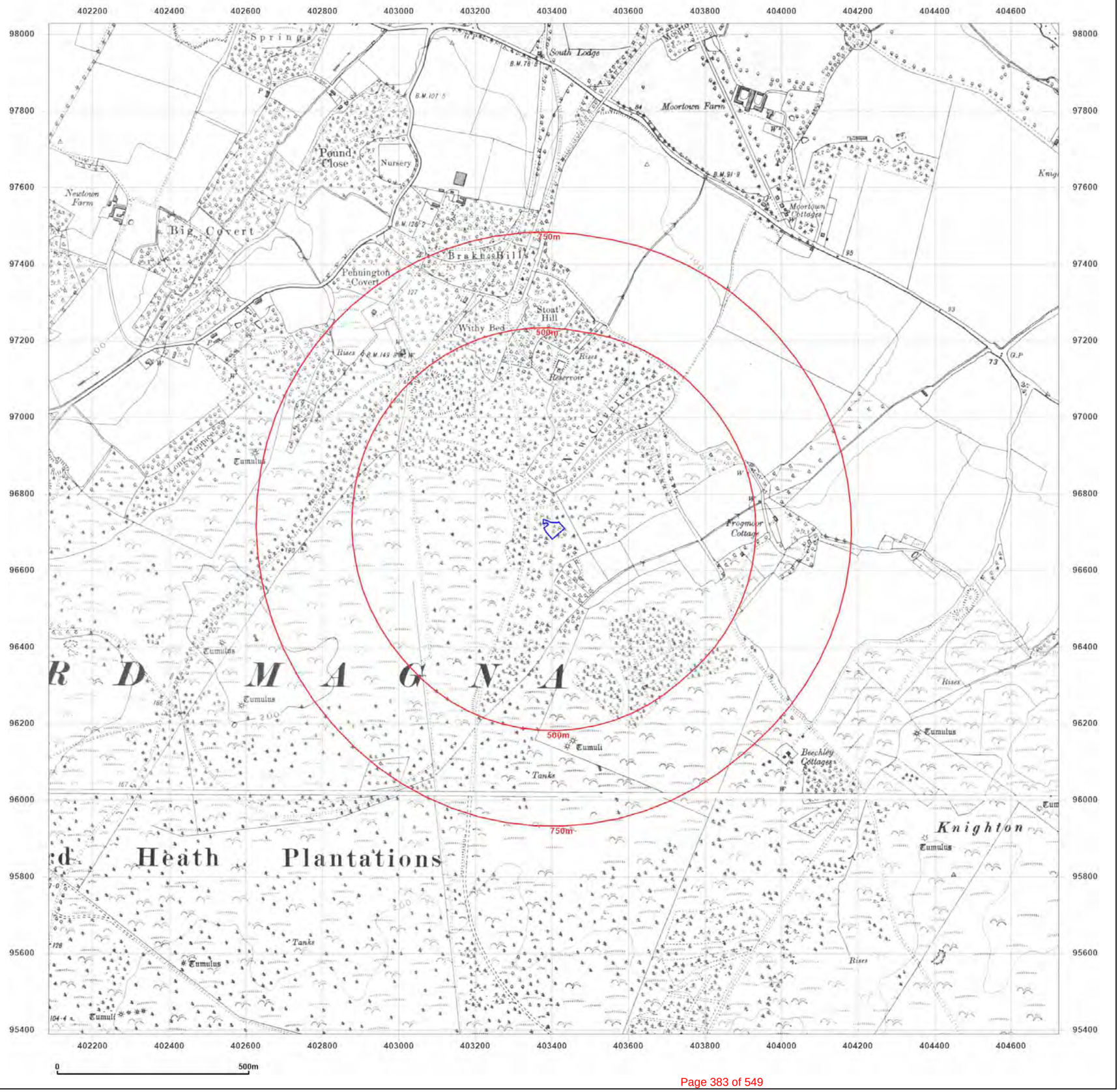

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: County Series

Map date: **1923-1926**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1886
Revised 1926
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1886
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

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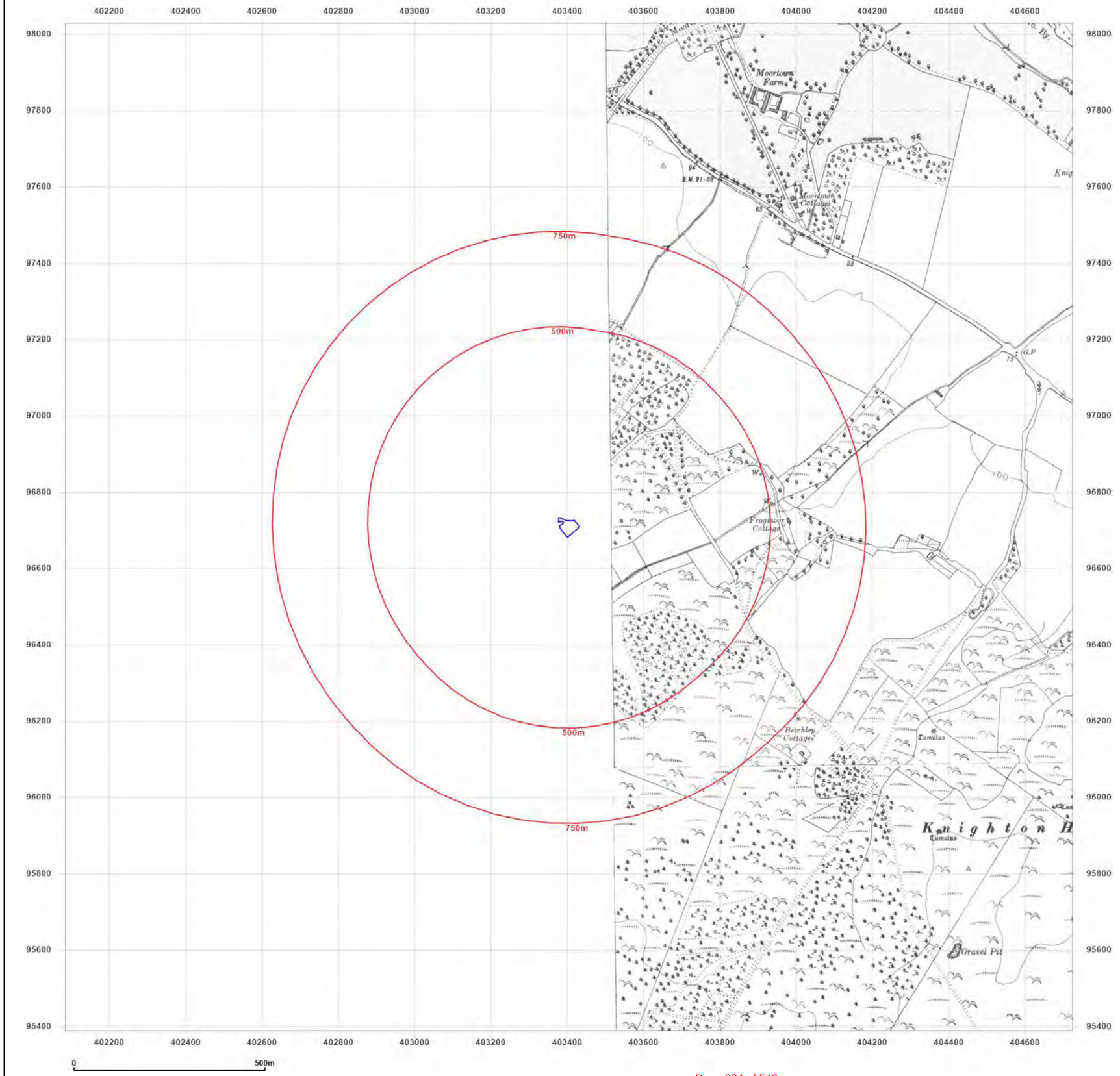

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: County Series

Map date: **1932**

Scale: 1:10,560

Printed at: 1:10,560

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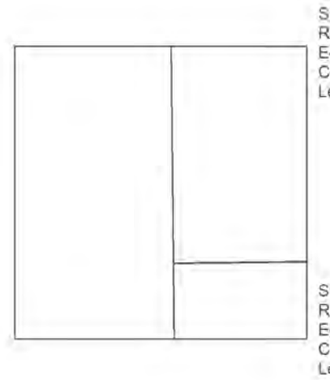

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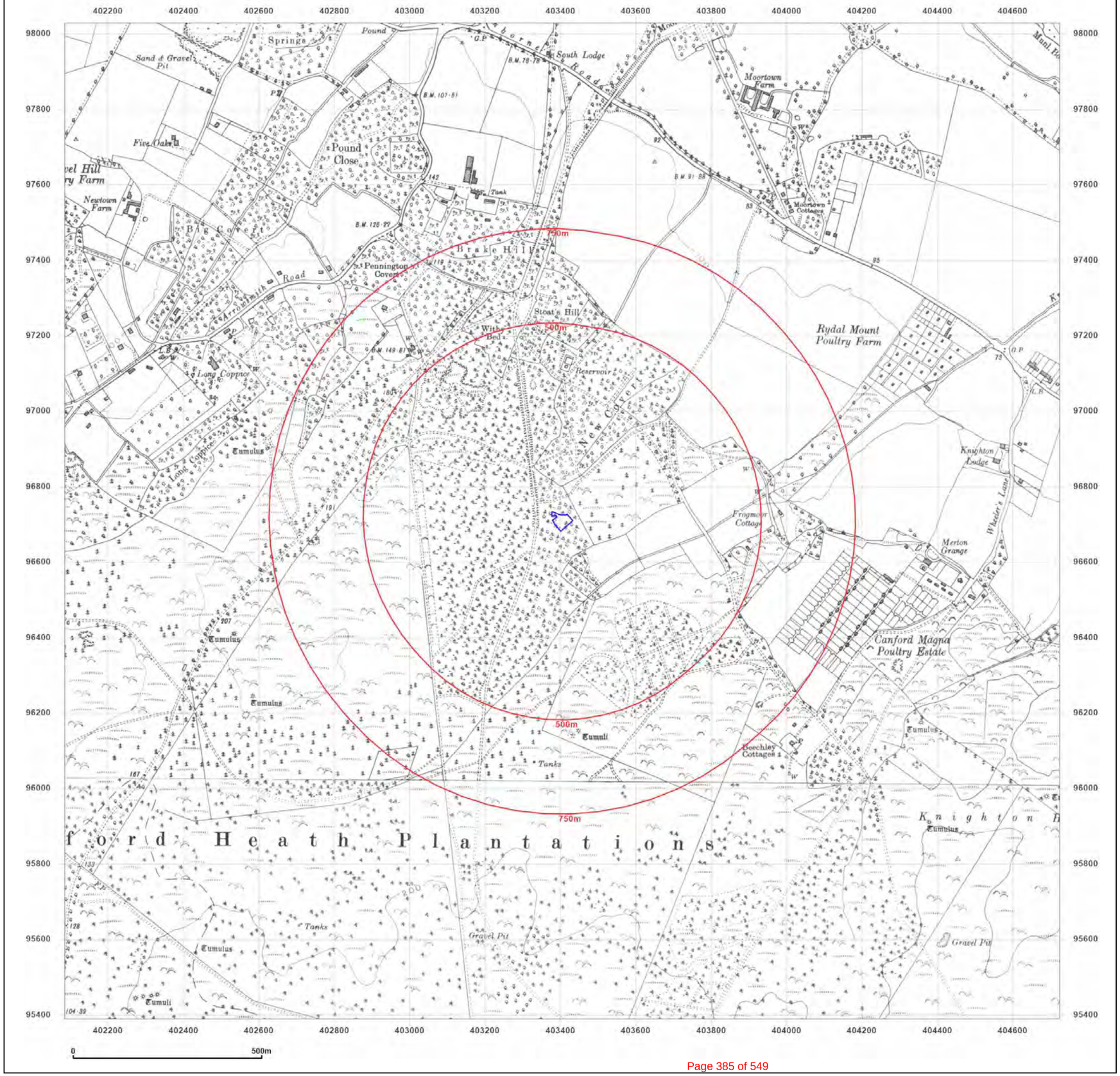

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: County Series

Map date: **1932-1934**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1886
Revised 1934
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

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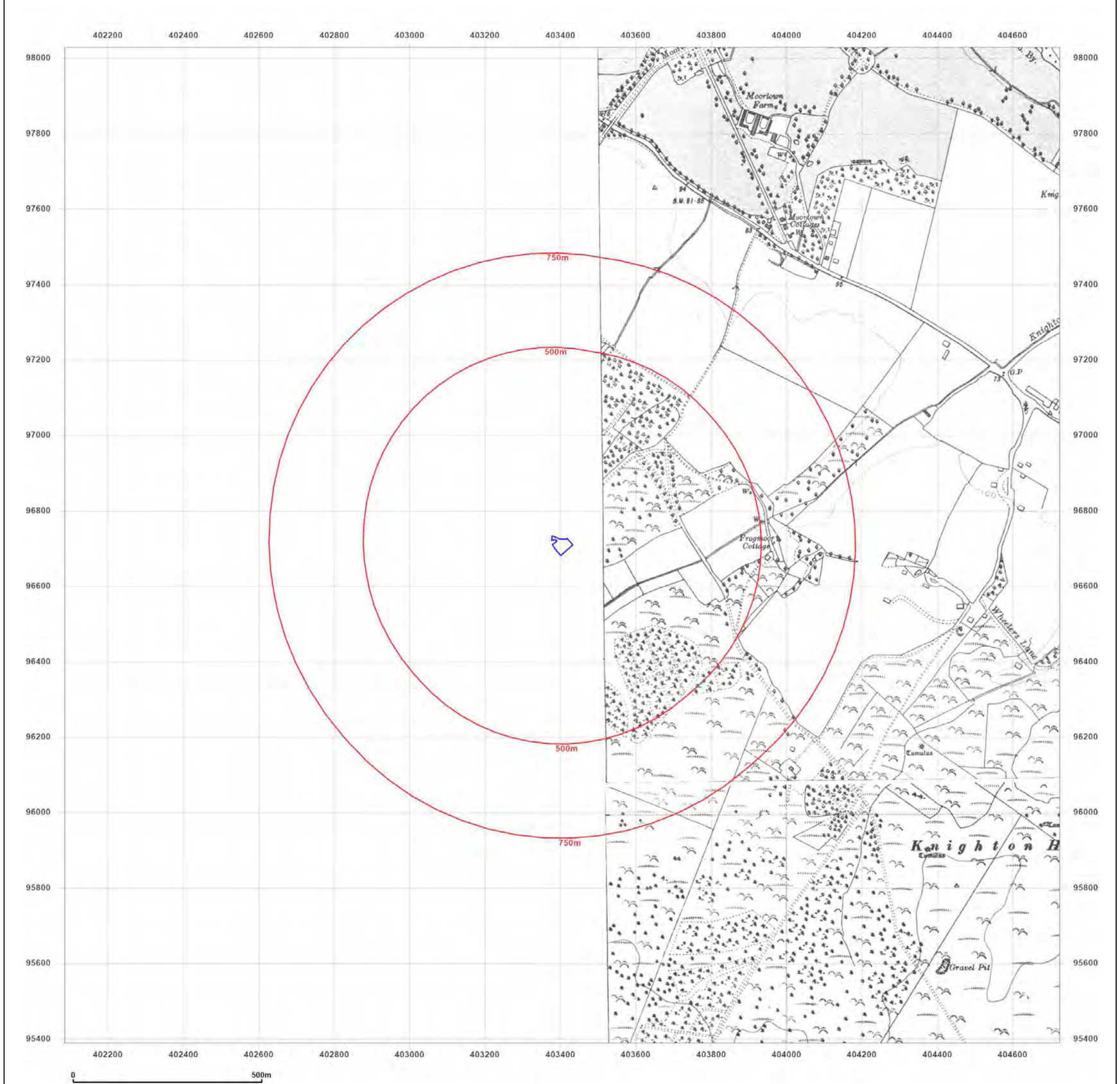

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

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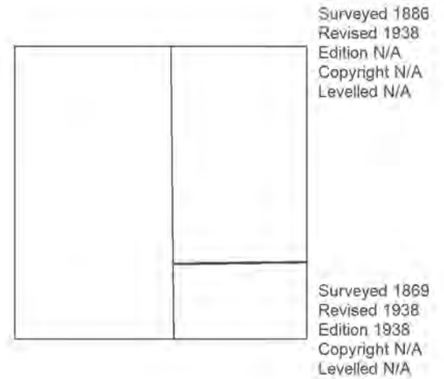

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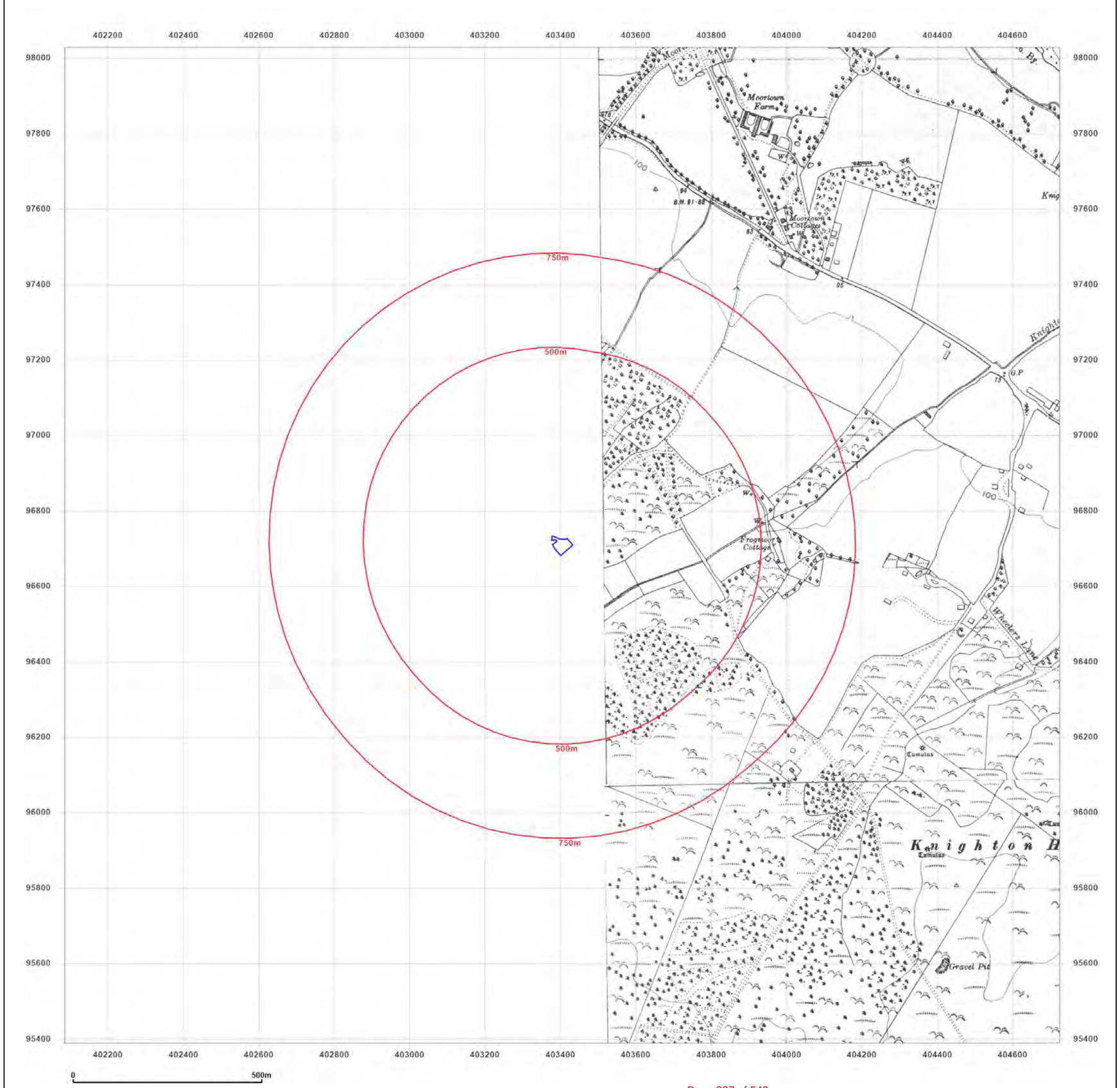

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

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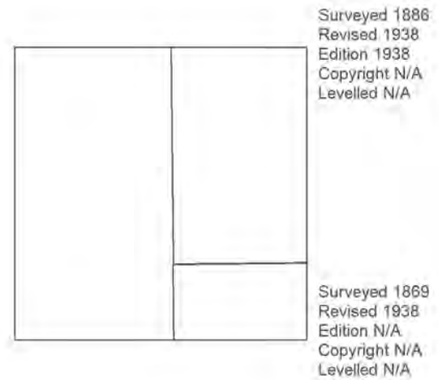

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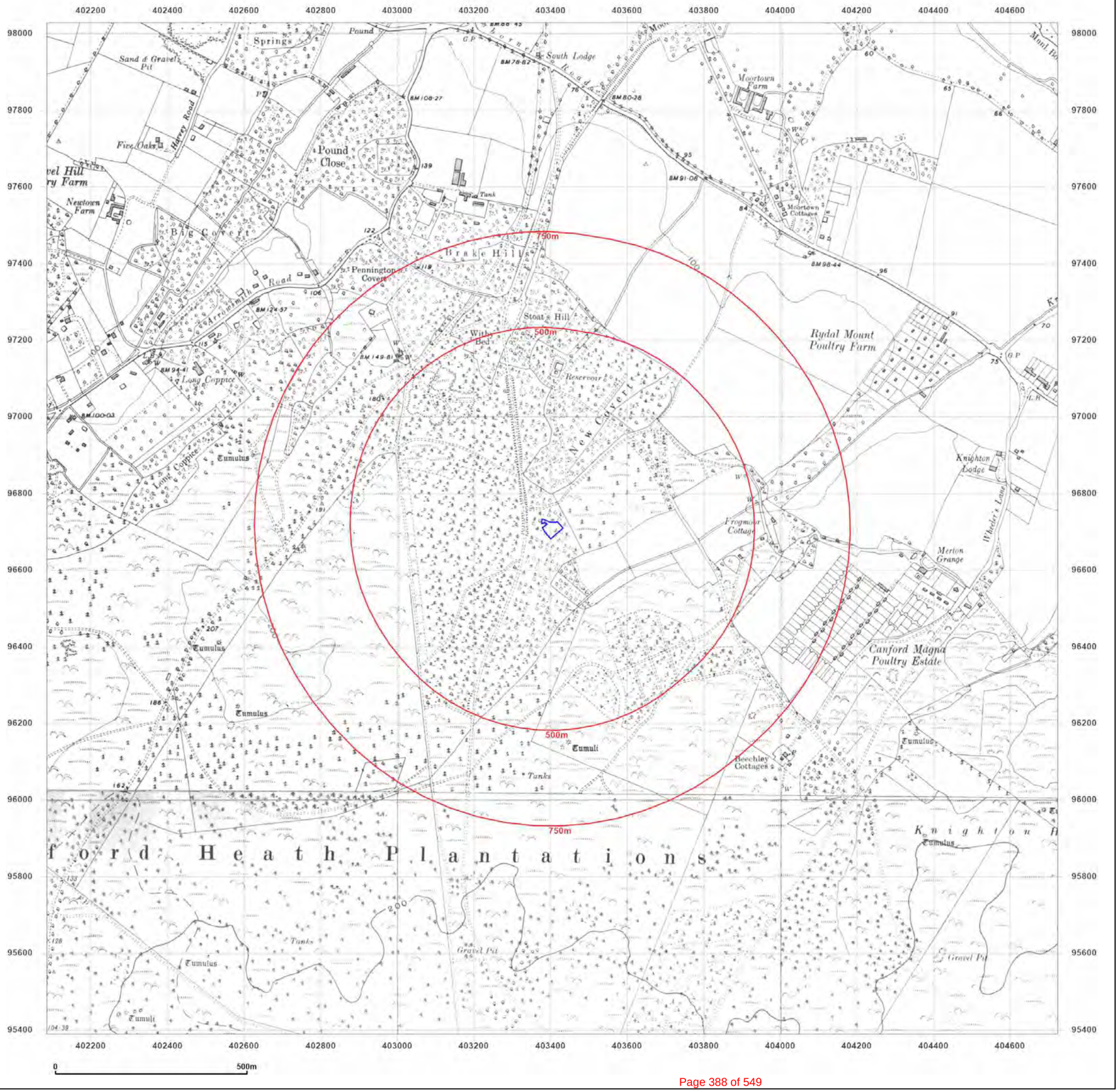

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: County Series

Map date: **1938-1940**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1886
Revised 1940
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

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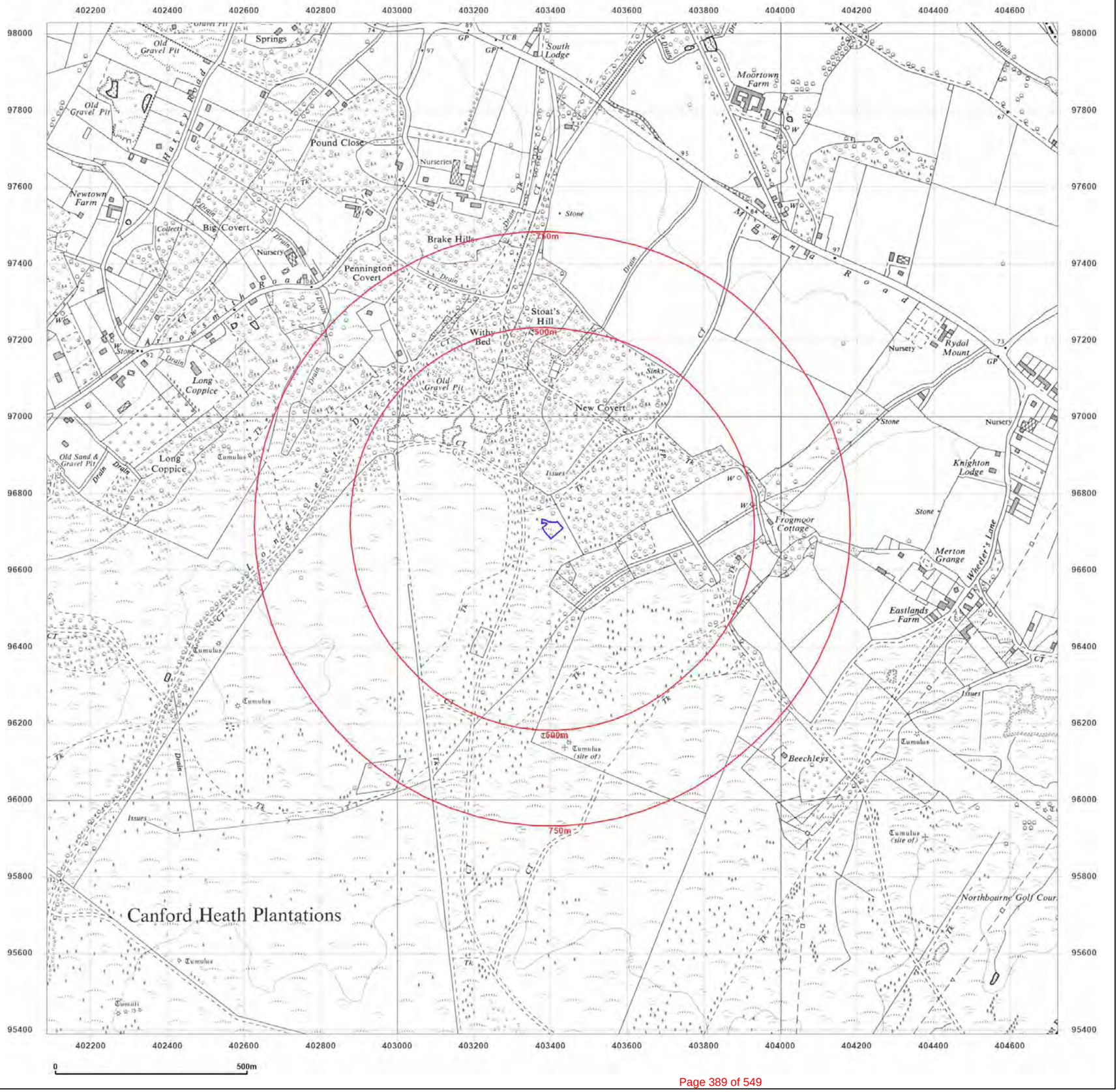

Surveyed 1963
Revised 1963
Edition N/A
Copyright N/A
Levelled N/A

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: Provisional

Map date: **1963**

Scale: 1:10,560

Printed at: 1:10,560

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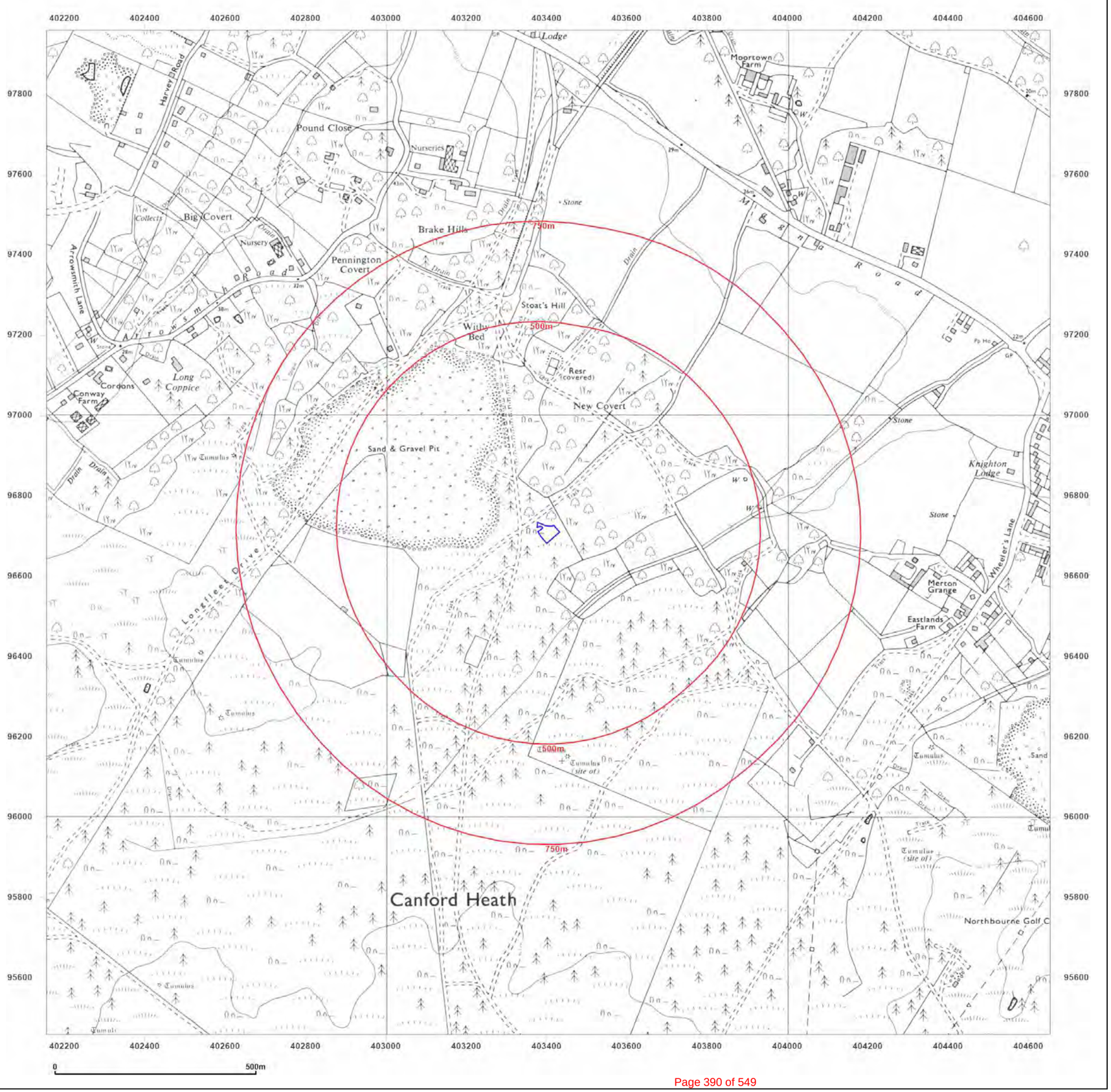

Surveyed 1973
Revised 1974
Edition N/A
Copyright 1974
Levelled N/A

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: National Grid

Map date: **1974**

Scale: 1:10,000

Printed at: 1:10,000

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Map legend available at:
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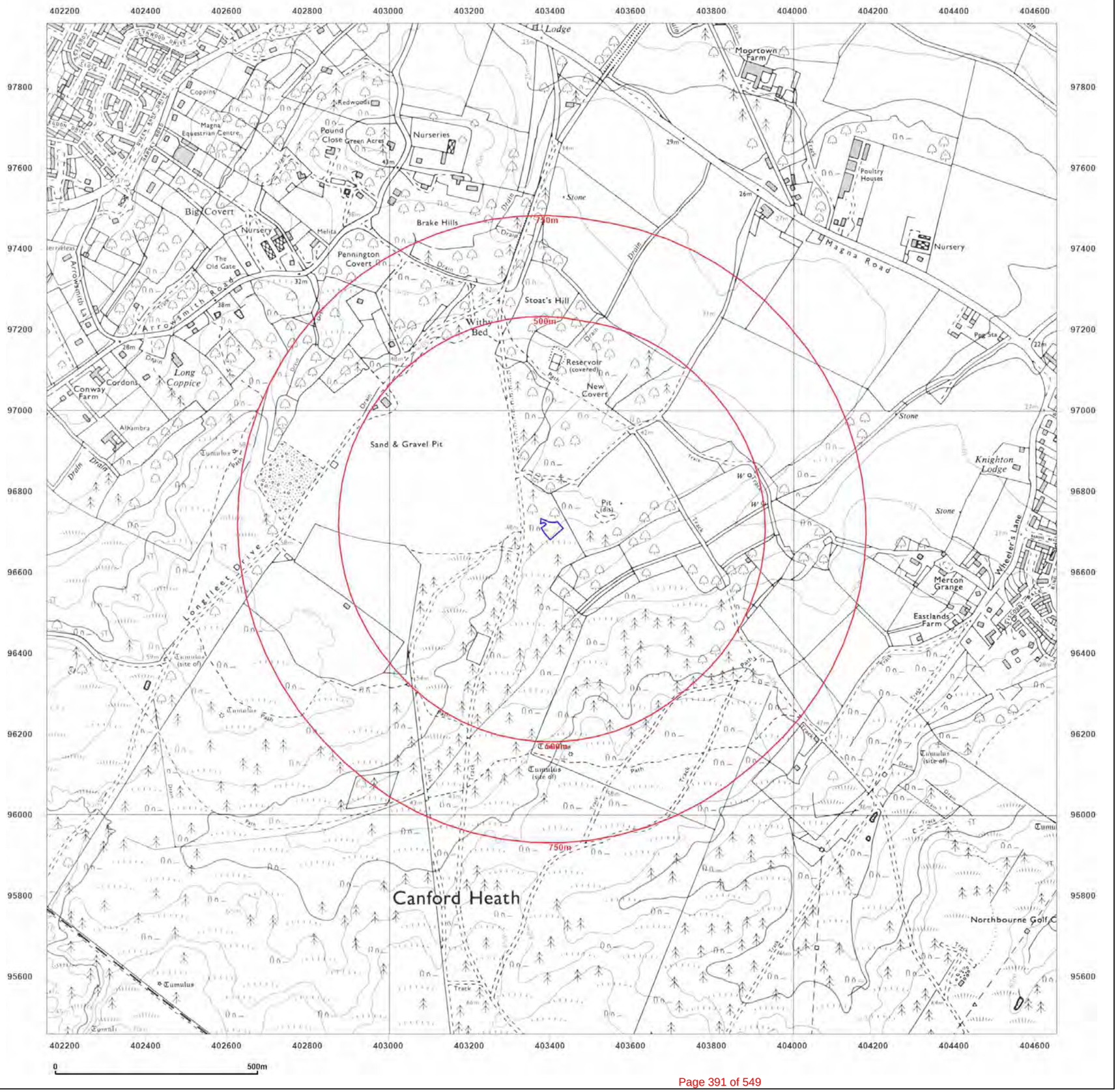

Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: National Grid

Map date: **1982**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1982
Revised 1982
Edition N/A
Copyright N/A
Levelled N/A

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T: 08444 159000
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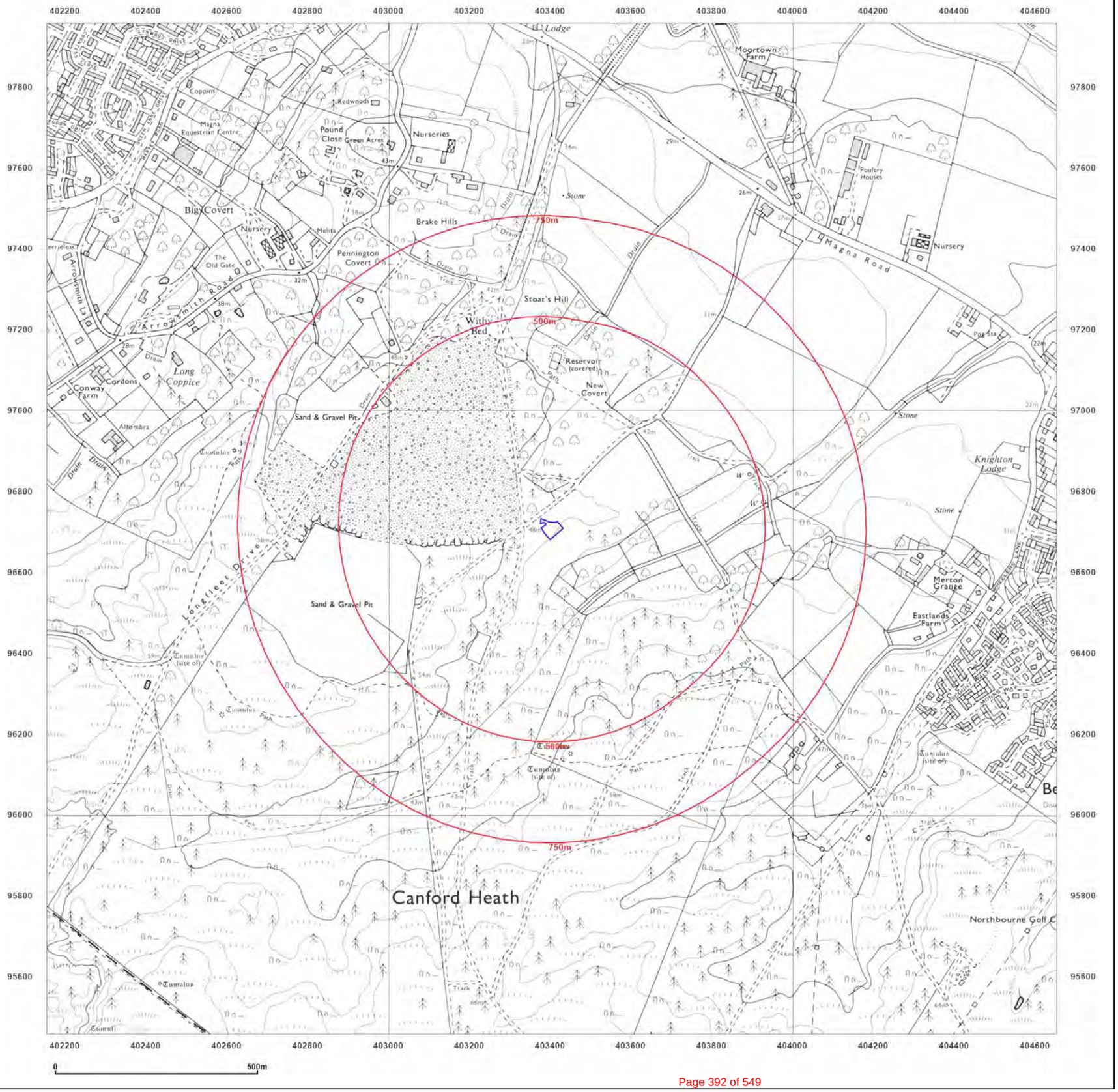
Production date: 04 March 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: National Grid

Map date: **1988**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1986
Revised 1988
Edition N/A
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Map legend available at:
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Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
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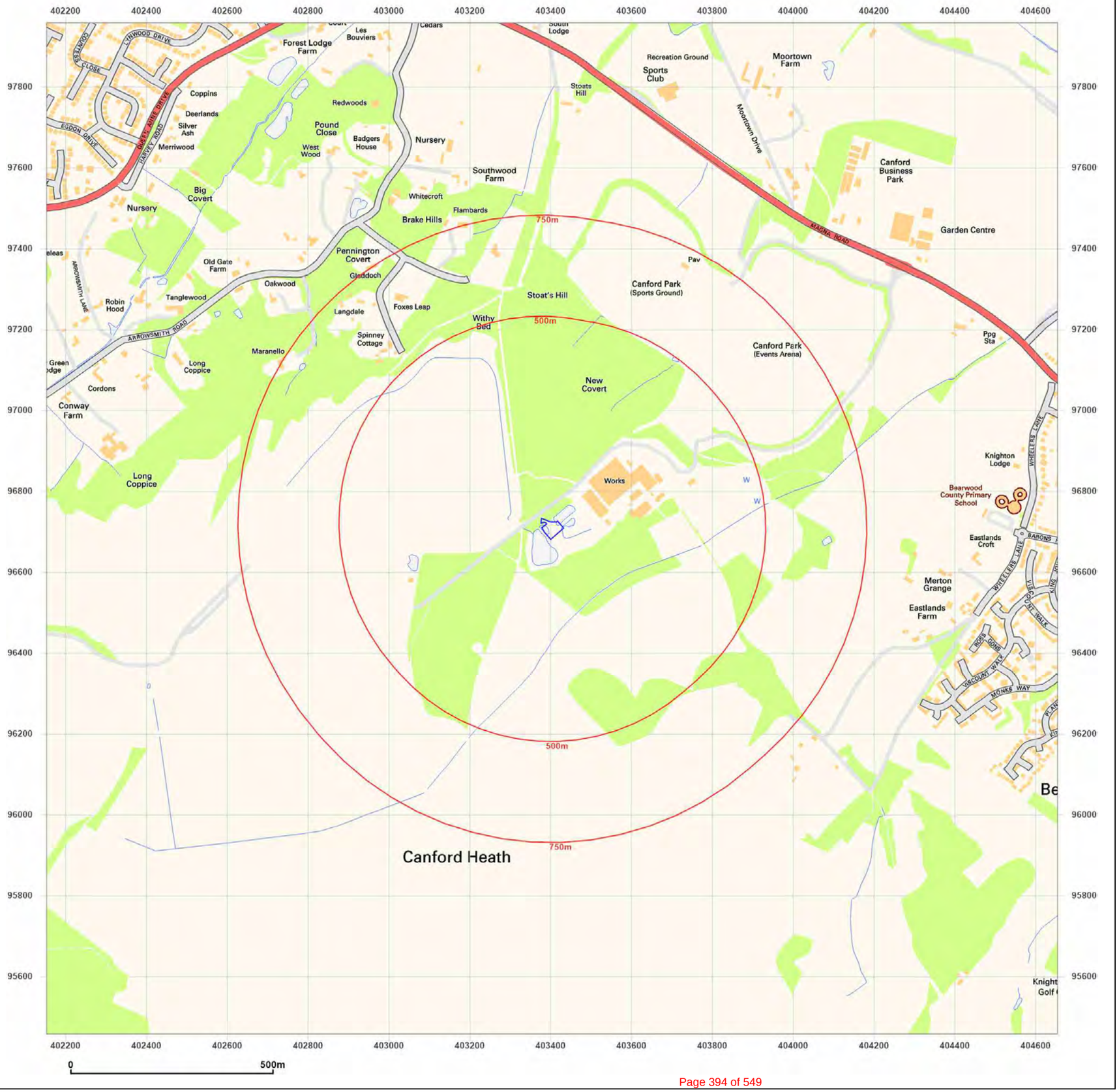
W: www.groundsure.com

Production date: 04 March 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
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Powered by OS

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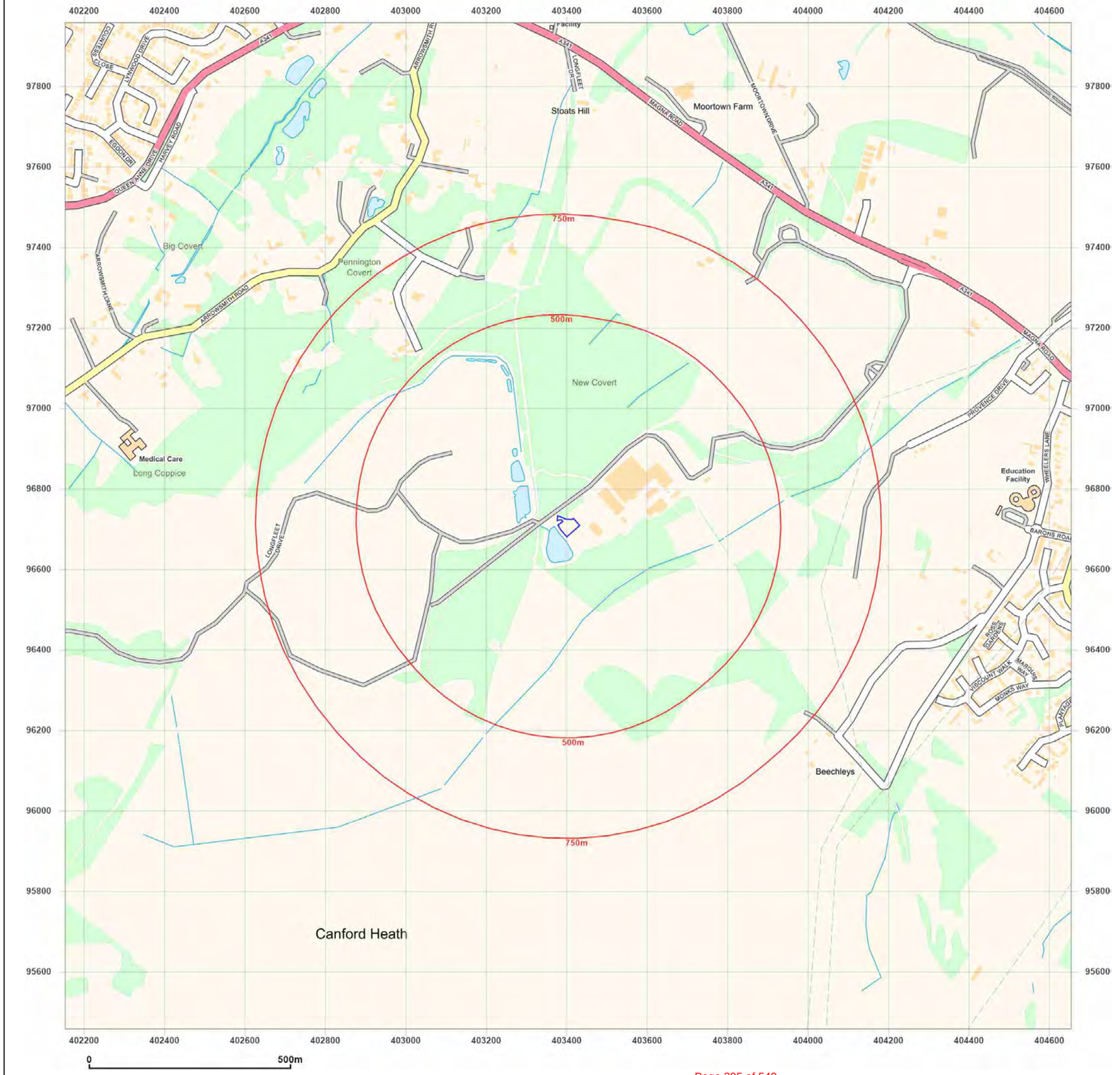
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 04 March 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

403398 096702

Client Ref: Canford_Renewable_Energy
Report Ref: GS-7627067
Grid Ref: 403404, 96708

Map Name: National Grid

Map date: **2021**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
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W: www.groundsure.com

Production date: 04 March 2021

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

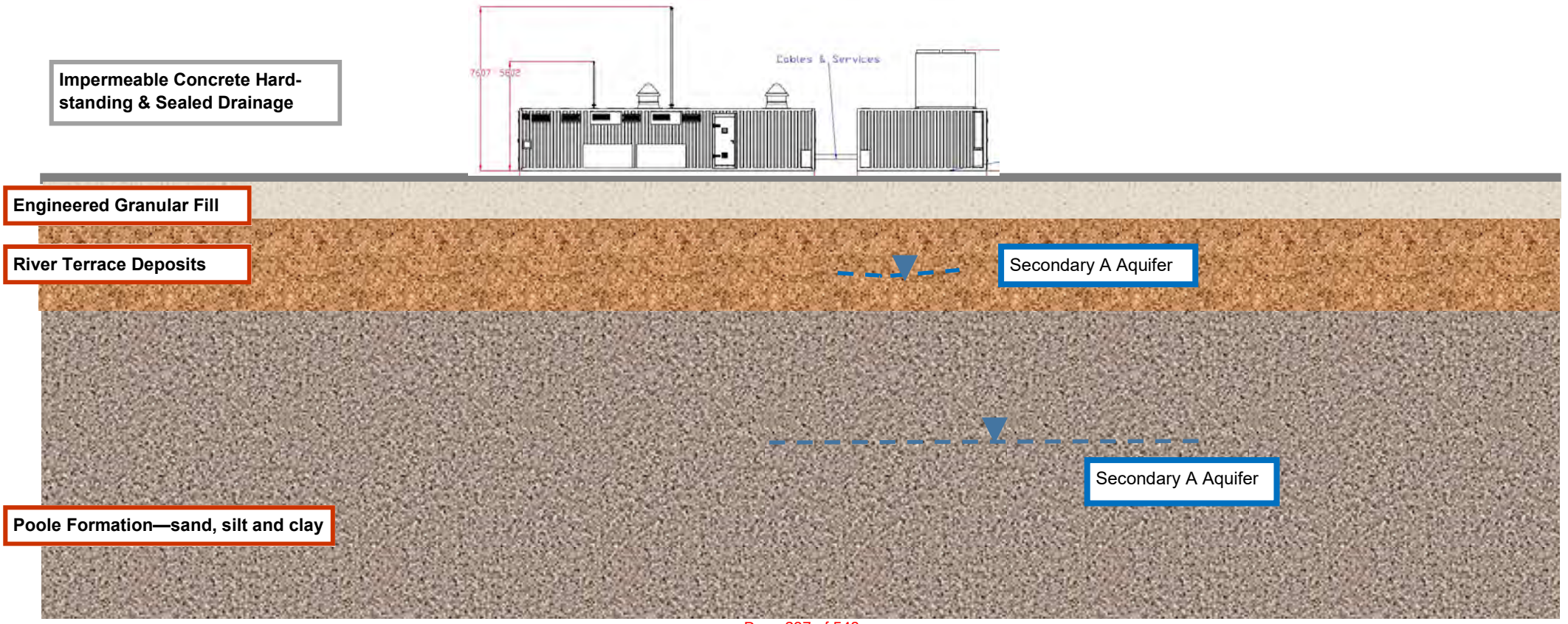
ANNEX C: CONCEPTUAL MODEL

Key:

Site Infrastructure

Potential Receptor

Geology



Annex D: Details of Fill Material

B4 Canford

Earthworks Strategy

Advance earthworks operation to prepare the site to the formation levels generally shown on GGP drawing LAKEB4_090108and 6984-S01,S02,S03,S04, which shows additional levels and sections.

General Principals

The basis of the advanced earthworks is as follows;

The silt shall be excavated out and removed to the adjacent landfill. The granular fill material specified by GGP shall be placed onto this prepared formation and method compaction in accordance with the specification will be carried out. Regular testing shall take place to ensure the compaction is sufficient for the construction platform.

De-Watering	To allow works shall be via the consented discharge point at the remaining lake headwall.
Silt	–2793 cum excavated and deposited in the adjacent landfill.
Sothern Bank	– 4234 cum excavated and deposited in the fill area to the north of the bank.
Main area	+ 34981 cum NET fill to be imported 6F2 or similar granular fill and method placed in accordance with the GGP specification.
Gross fill volume	+ 39216 to be placed and compacted.

Specification

Materials to be tested placed and compacted in line with GGP Earthworks Specification for Engineered Fill.

Site Access

Access to site for the Earthworks Phase shall be from the haul road to the Western edge of the site boundary, from the two way section of the communal site access road. No access shall be allowed through the NES site unless agreed with operations with a minimum of one weeks notice.

Perimeter Batters

Perimeter batters/slopes shall be formed to the details shown on GGP drawings or left as they are on site.

Surplus Material

Excess excavated material during the main contract groundwork phase shall be disposed of within the adjacent WH Whites site.

Briefing Note: Resident Engineer- B4 Enabling Works

(1) This briefing note relates to the construction of the B4 earthworks only and the proposal by NES to use to provide a part time Resident Engineer to oversee the placement of Engineering Fill. Initial earthworks are carried out as a standalone enabling work prior to the main civils and building contract and will utilise W H Whites existing Earthworks contractor on site. It is hoped that the use of a RE will ensure the continuity of knowledge through into the main works and their proactive engagement with the scheme. It is assumed that the RE will have access to the welfare facilities of the site operator.

(2) Resident Engineer's (RE) remit is to supervise and document all works in relation to this phase of the project. Work is to be on a part time basis unless informed otherwise and agreed in writing.

(3) The RE shall be in attendance for all filling works. The duration of these works (circa 16 weeks) is such that the same RE will oversee all works and no changing of personnel is acceptable for anything other than unforeseen illness/bereavement or other extenuating circumstance. Saturday working may be required.

(4) In general the RE's duties centre around:

- Acting as the initial point of contact for the earthworks Contractor and providing a tangible presence on site on behalf of the Engineer and Employer.
- Providing a full and independent contemporary record of the construction works.
- Ensuring that works have been constructed in accordance with the contract specification (in particular works that will be subsequently 'covered up').
- Highlight proactively to NES/W H Whites any conflict between the anticipated works and what is achievable on the ground so that design assumptions can be revised if necessary.
- Ensuring that any testing required in the GGP specification is carried out and complies with the specification.
- Ensuring that the test locations sampled are indicative of the material placed and that the contractor's placement methodology is consistent and professional.
- Ensure that the contractor properly undertakes his obligations in regard to the works in particular defense of the permanent works given that work.
- Since payment for plant and fill materials is based on a day rate and cube rate independently certify that plant utilisation is reasonable and effective.
- Provide all setting out and level control necessary to undertake the works in accordance with GGP contract drawings.
- Provide independent measurement surveys and as-built surveys of the finished works.

(5) The RE should acquaint himself fully with the contract documents, specifications, health & safety documentation and drawings in advance of his attendance on site.

(6) The RE can only attest to work done in so far as it is a matter of record e.g. no. of m3 dug from a soft spot. Any document the RE is requested to sign attesting to the measure as outlined above is to be signed 'for record purposes only'. The RE shall have no delegated powers to amend the works or agree measure/payment with the parties. Where adjudication on such issues is required it shall initially be referred to GGP.

(7) The RE shall be proactive in his dealings with the Contractor. The RE shall ensure that the contractor keeps him fully up to date with progress and expected programme of activities such that we can anticipate his needs. In general the RE should look to walk the site with the contractor's agent at least once a week or organise a semi formal briefing as an alternative.

(8) The RE is to attend any formal site progress meetings and keep records of same.

(9) RE is to keep a weekly record for the duration of the works. Diary should be kept in hard back book and retained by NES on completion of the works. Dairy is to be written by hand in ink, amendments or changes should be crossed out not erased or blocked out. Hand writing should be legible and abbreviations kept to a minimum.

Diary should detail (as a minimum):

- Weather am and pm
- Plant and labour on site
- Visitors
- Sub-contractors
- General progress to including:
    - Description of plant and labour deployment
    - Any decisions or instructions.
    - Pertinent quantities or measurement items
    - Areas of work undertaken
    - Health and Safety issues if applicable
    - testing

Text should be augmented by sketches as applicable. The site diary will be considered as the prime contemporary record of works it is therefore crucial that it is respected accordingly and completed and kept up to date every day. The diary should be filled in on the day in question not filled in retrospectively.

(9) The RE is to maintain a photographic record of the site. RE should use at least one film per week as a general rule or equivalent no. of digital photographs. Photos should be dated automatically. In so far as is possible picture should contain objects and or people to give scale. Photographs should be taken regularly even if there is no apparent progress.

(10) The RE is to brief the NES Project manager on a regular basis as to developments on site and any contractual issues that arise.

(11) The RE has a duty of care to himself and the other people on site and should therefore notify the contractor and project manager immediately of any unsafe practices on site.

(12) It is not anticipated that this site will involve any lone working. Lone working should therefore be avoided.

(13) For consistency and to ensure clear lines of communications the RE is to act through the contractor's delegated representative only. The RE should not therefore need to instruct the plant operators or subcontractors directly. The contractor is to ensure that he has a delegated representative on site at all times. If this representative is not on site it is not the RE's responsibility to instruct the contractor's men.

(14) The RE should keep his own record of weather and if that weather was sufficient to stop work. He should not however instruct the contractor to stop due to weather unless he feels that the works are actively being damaged or practices are unsafe. The decision to pull off and cost implications thereof properly reside with the contractor.

(15) The Contractor is responsible for carrying out and scheduling such testing as is identified in the specification as being carried out by the engineer. The RE should be in attendance during the recovery of all samples. The Contractor shall ensure that results are returned at the earliest opportunity by the soils laboratory. In the first instance results will be checked against the specification by the RE to ensure compliance. Copies will also be sent to a designated GGP specialist off site for secondary check. Final file copy of results is to be dispatch to GGP for filing. The Contractor shall be responsible for ensuring that all test certificates are supplied to GGP in a timely manner.

(16) In order to progress the works it is likely that there will need to be interaction between the contractor and the site operator any such discussions should be held in the presence of the RE such that an independent record is maintained for the benefit of all parties.

New Earth Solutions Group Ltd

Canford Facility – Lake B4

Specification for Engineered Fill

Graham Garner and Partners Ltd
Consulting civil, structural and geotechnical engineers

Canford Facility

Lake B4

SPECIFICATION FOR ENGINEERED FILL

FOR

NEW EARTH SOLUTIONS GROUP LIMITED

Rev	Revision details	Date	Checked

Prepared by	Date	Checked by	Date
P. Hamilton	May 2010		

GRAHAM GARNER & PARTNERS LTD

MAY 2010

6984/PH/CH/ENG FILL SPEC

C O N T E N T S

1.0 GENERAL REQUIREMENTS AND REFERENCES

Reference is made in this specification to The Specification for Highway Works, published by H.M. Stationery Office, and current editions of relevant British Standards.

Materials, design, workmanship, testing and inspection shall all be in accordance with the latest revisions of these specifications and codes and any others which may be relevant, except where otherwise noted or modified by the clauses of this specification.

2.0 ENGINEERED FILL

The existing lake is to be infilled to form a foundation base for future building. The initial layers are to be Class 1C as described and compacted using method compaction in accordance with table 6/4 of The Specification of Highway Works, to the levels shown on Graham Garner and Partners drawings. Above this layers 6F2 and 6F1 are to be adopted and compacted using method compaction in accordance with table 6/4 to the levels shown on Graham Garner and Partners drawings.

3.0 PREPARATION OF SITE

3.1 The area to be filled, shall be graded to falls, and sump pumping or other suitable de-watering facilities shall be provided by the Contractor to keep the base of the excavation dry at all times.

3.2 The excavation shall be inspected and subsequently monitored by the Contractor, to ensure that there is no danger of its collapse during the works with consequences for safety, for existing buildings, or for other construction adjoining.

3.3 All topsoil shall be stripped and, where required for further use, stockpiled in an area provided by the Contractor and agreed by the Engineer.

3.4 All soft and compressible soils or existing fill shall be removed and run to spoil in dumps provided by the Contractor and agreed by the Engineer (including licensed tips in the case of certain contaminated materials). The work shall be accomplished in such a way that there is no undercutting of the sides of existing excavations. Existing sloping faces shall be benched immediately before placing the subsequent fill.

3.5 Existing foundations or ledges of hard rock, roots of trees or former pipelines or services at the base of the area to be filled shall be excavated and replaced with general fill which shall be compacted to the same specification as that adopted for subsequent compaction works.

3.6 Where unsuitable material has been excavated, the underlying natural ground shall be compacted to the same specification as that adopted for subsequent compaction works.

4.0 PLACING AND COMPACTING FILL

4.1 Fill shall be placed and compacted in near horizontal layers of the thicknesses required to achieve the specified end product and shall, as far as practicable, be brought up at a uniform rate so that all parts of the site reach finished (formation) level at the same time.

4.2 The compaction plant selected, the number of passes made and the fill layer thickness and moisture content used shall have regard to the specified end product and the means and manner of control testing.

4.3 Where several different types of fill material (all meeting the requirements of Clause 2 of this specification) are to be employed, they shall be deposited in such a way that all parts of the site receive equal amounts of a given material, in the same sequence, thus ensuring a uniform distribution of fill types over the whole thickness.

4.4 The Contractor shall take all necessary steps to ensure that the fill is placed at the moisture content necessary to achieve the specified level of compaction and shall, where necessary, add water to or dry the fill, in order to obtain this value. Where it is necessary to add water, this shall be done as a fine spray and in such a way that there is time for the water to be absorbed into the fill before being rolled by the plant.

4.5 Cobbles, boulders, rock or waste fragments whose largest dimension is greater than two-thirds of the loose layer thickness shall not be incorporated into the fill.

4.6 No fill shall be placed and left uncompacted at the end of a working day. Compacted fill shall be graded to falls to ensure free run-off of rain-water without ponding.

4.7 Compaction plant and compaction method shall be selected having regard to the proximity of existing trenches, excavations, retaining walls or other structures and all work shall be performed in such a way as to ensure that their existing stability is not impaired.

4.8 If weather conditions are such that the specified moisture content and density values cannot be achieved, the Contractor shall cease work until such time that the fill can be placed and compacted to meet specification requirements.

4.9 If the results of control tests Clause 5.1 indicate that the fill is being placed and compacted in such a way that the desired level of compaction is not being achieved, the Contractor shall further compact or, if necessary, shall excavate the affected work and replace with new fill, compacted to meet the specification requirements.

4.10 If the results of control tests Clause 5.1 indicate that antecedent weather conditions (such as frost or heavy rain) have caused deterioration of finished work such that the work no longer meets specification, the Contractor shall take steps as are necessary to bring the fill to specification requirements at the Contractor's own cost.

5.0 CONTROL TESTING

5.1 The compaction of the fill shall be controlled by in-situ and laboratory testing as deemed necessary during the works. This may include the following:-

(a) in-situ dry density (BS 1377-9:1990, section 2) and moisture content determinations (BS 1377-2:1990, section 3).

(b) where required these tests shall be augmented by moisture content-dry density relationships (BS 1377-4:1990 section 3) and particle density (BS 1377-2:1990, section 8).

(c) Plate Loading Tests in accordance with BS 1377: part 9 at future foundation depth.

5.2 At least 14 working days before the start of site work, the Contractor shall provide the Engineer, for approval, with a list of the equipment that the Contractor proposed to use to undertake these tests.

5.3 Control tests shall be performed throughout the fill at such frequency as shall be directed by the Engineer. Test locations shall be agreed with the Engineer.

5.4 The Engineer will, from time to time and with reasonable notice, request the Contractor to make available equipment to enable the Engineer to perform control tests. The results of these tests shall be used by the Engineer in assessing the Contractor's performance.

6.0 MONITORING OF FILL PERFORMANCE

6.1 If instructed by the Engineer, the Contractor shall make arrangements for the performance of the fill, once placed, to be monitored. Monitoring may take one of more of the following forms:

a) optical levelling of surface monuments
b) standpipes or piezometers
c) load tests
d) other methods as directed by the Engineer

6.2 The Contractor shall, within 21 working days of receiving notification of the Engineer's intention to monitor fill performance, arrange for the procurement and supply of the equipment to the Engineer's written specification and shall inform the Engineer of the date on which the equipment installation shall begin. The specification shall include:

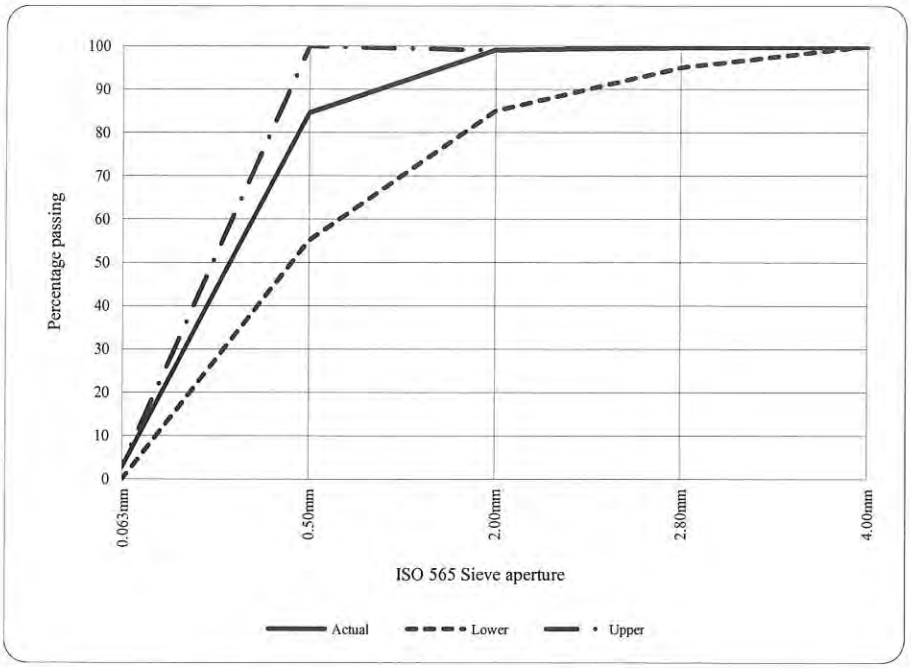
a) a full description of the nature and type of instrument and the purpose it fulfils.
b) the number required and the locations or depths, or both, at which it is to be installed.
c) the frequency, accuracy and duration for which any readings are to be taken.

www.acstesting.co.uk

CERTIFICATE OF TEST - PARTICLE SIZE DISTRIBUTION BY WASHING & SIEVING METHOD
TESTED IN ACCORDANCE WITH BS EN 933-1 : 2012

Laboratory reference no(s) :	**14-53159 - 127224** Head Office Certificate No : **127224-14-53159-E2**
Client :	**Commercial Recycling Limited**
Certificate address :	**Candford Recycling Centre, Magna Road** **Wimborne, Dorset, BH21 3AP**
Contract :	**Washing Plant Recycled Concreting Aggregate**
Source of material (as indicated by client) :	**On Site**
Client reference/data :	**Sample 1**
Location of sample on site :	**Production Pile Beneath Plant**
Date sampled :	**01/05/2014**
Sampled by :	**TH**
Date received :	**01/05/2014**
Material description :	**0/2mm Recycled Washed Sand**
Total mass received :	**35.21** kg
Method of preparation :	**BS EN 932-2 and BS EN 933-1**
Variation from test procedure :	**None**
Sampling certificate :	**Yes - See Enclosed**
Client's indicated specification(s) :	**BS EN 12620 (PD 6682-1 Table D.1), Fine Aggregate, 0/2 (FP), Category G_f 85 & (PD 6682-1 Table 4) Fines Content**

ISO 565 Sieve aperture	Percentage passing	Specification limits (Percentage passing)	
	Actual	Lower	Upper
125.00mm	**100**		
80.00mm	**100**		
63.00mm	**100**		
40.00mm	**100**		
31.50mm	**100**		
20.00mm	**100**		
16.00mm	**100**		
14.00mm	**100**		
10.00mm	**100**		
8.00mm	**100**		
6.30mm	**100**		
4.00mm	**100**	100	100
2.80mm	**100**	95	100
2.00mm	**99**	85	99
1.00mm	**95**		
0.50mm	**85**	55	100
0.250mm	**53**		
0.125mm	**16**		
0.063mm	**2.8**	0.0	3.0



Remarks : **This sample of material complies with the overall grading limits of the clients indicated specification**

Tested by : **SS** Date tested : **08.05.14** Approved : Date : **19/05/2014**

Approved Signatories : [ ] S J White *Head of Laboratories* [✓] A Bates *Laboratory Manager* [ ] K Tiller *Technical Manager* [ ] M Slater *Senior Technician*

Bulk samples shall be retained for 28 days after completion of testing, unless written notice is received within 14 days of certification requesting sample retention.
The statement for compliance with the given specification relates only to the test covered by this certificate.
Opinions and interpretations, if stated above, are not within the scope of UKAS Accreditation. DNS = Data not supplied. DNA = Data not available. ©

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Poole
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ACS Testing Limited
Registered in England and Wales No. 4639658

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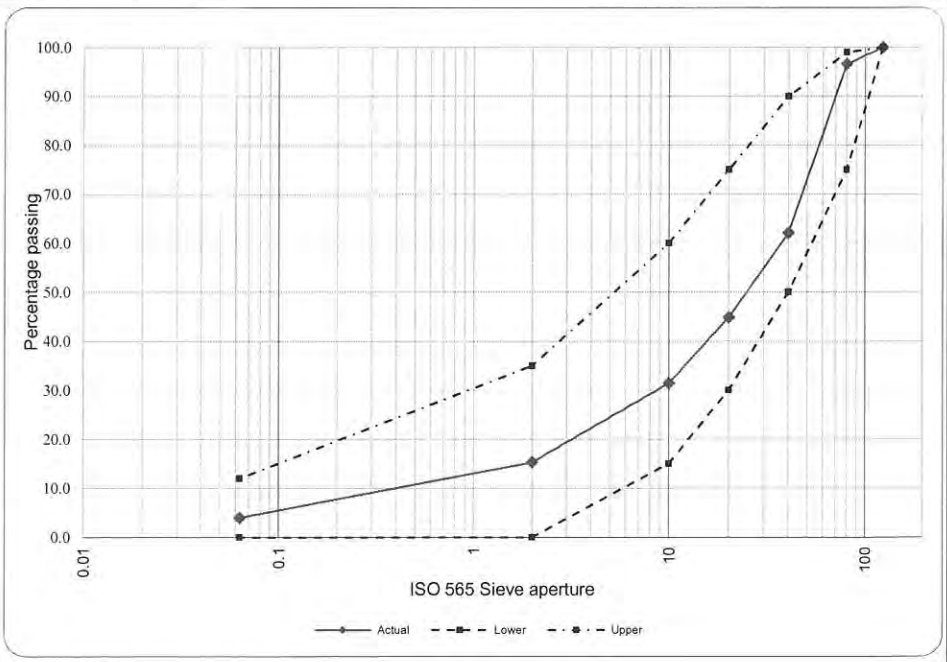
CERTIFICATE OF TEST - PARTICLE SIZE DISTRIBUTION BY WASHING & SIEVING METHOD
TESTED IN ACCORDANCE WITH BS EN 933-1 : 2012

Laboratory reference no(s) :	**14-55779 - 146275** Head Office Certificate No : **146275-14-55779-E02**
Client :	**Commercial Recycling Limited**
Certificate address :	**Candford Recycling Centre, Magna Road Wimborne, Dorset, BH21 3AP**
Contract :	**WRAP Protocol for Inert Dry Screened**
Source of material (as indicated by client) :	**Site**
Client reference/data :	**Sample 1**
Location of sample on site :	**Stockpile**
Date sampled :	**04/08/2014**
Sampled by :	**EW**
Date received :	**04/08/2014**
Material description :	**0/125mm Recycled Aggregate Coarse Capping (6F5)**
Total mass received :	**150.80** kg
Method of preparation :	**BS EN 932-1 and BS EN 933-1**
Variation from test procedure :	**None**
Sampling certificate :	**Yes - See Enclosed**
Client's indicated specification(s) :	**BS EN 13285 (Table 6), 0/80, UF 12, OC 75, Category GE (SHW: Table 6/1: Class 6F5)**

ISO 565 Sieve aperture	Percentage passing	Specification limits (Percentage passing)	
	Actual	Lower	Upper
125.00mm	**100**	100	100
80.00mm	**97**	75	99
63.00mm	**79**		
40.00mm	**62**	50	90
31.50mm	**56**		
20.00mm	**45**	30	75
16.00mm	**41**		
14.00mm	**38**		
10.00mm	**31**	15	60
8.00mm	**28**		
6.30mm	**25**		
4.00mm	**21**		
2.80mm	**17**		
2.00mm	**15**	0	35
1.00mm	**12**		
0.50mm	**10**		
0.250mm	**9**		
0.125mm	**5**		
0.063mm	**4.0**	0.0	12.0



Remarks : **This sample of material complies with the requirements of the clients indicated specification**

Tested by : **AODHF** Date tested : **12.08.2014** Approved : Date : **26/08/2014**

Approved Signatories : [ ] S J White *Head of Laboratories* [ ] A Bates *Laboratory Manager* [ ] K Tiller *Technical Manager* [ ] M Slater *Senior Technician*

Bulk samples shall be retained for 28 days after completion of testing, unless written notice is received within 14 days of certification requesting sample retention.
The statement for compliance with the given specification relates only to the test covered by this certificate.
Opinions and interpretations, if stated above, are not within the scope of UKAS Accreditation. DNS = Data not supplied. DNA = Data not available. ©

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Holton Heath Trading Park
Poole
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ACS Testing Limited
Registered in England and Wales No. 4639658

ACS

Group of Companies

Quality Testing & Materials Consultancy to the Construction Industry

ACS TESTING

Plate Bearing Tests, CBR Tests, Nuclear Density, Bituminous Testing, Concrete Cores, Cubes. Cover Meter & Ferroscan Surveys, Sample collection. Site Investigation, Window Sampling, Dynamic Probing. UKAS accredited laboratory. Landfill gas monitoring & CQA. WRAP Protocol.

ACS ENVIRONMENTAL

UKAS / MCERTS accredited Laboratory. WAC testing, CWG TPH, PAH, metals, BTEX, BOD, COD, TOC, DO, EC, NH_4. Soils, groundwaters leachates, leachability tests. BS 3882 Topsoil.

ACS ANALYSIS

UKAS accredited testing of geotextiles, geocomposites, geosynthetics, geomembranes. Hydraulic press & precision cutting dyes for sample preparation. Dynamic perforation, density, tensile properties, peel and shear. Twenty-four triaxial cells for permeability testing.

General Enquiries – 01202 622858

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ACS Testing Limited - Summary Of Site Results

Client: Canford Renewable Energy Ltd

Contract: Canford Gas

Test Nr.	Location	Result
1	Underside of slab 1	289kn/m² 30%CBR
2	" 2	246kn/m² 22%CBR
3	" 3	342kn/m² 39%CBR
4	Bottom of Foundation 1	553kn/m² 91%CBR
5	" 2	852kn/m² 193%CBR
6	" 3	829kn/m² 183%CBR

Date of Test: 24.11.14

Tested By Technician: TRAVIS

Note : These results are PROVISIONAL PENDING ISSUE OF FORMAL CERTIFICATION

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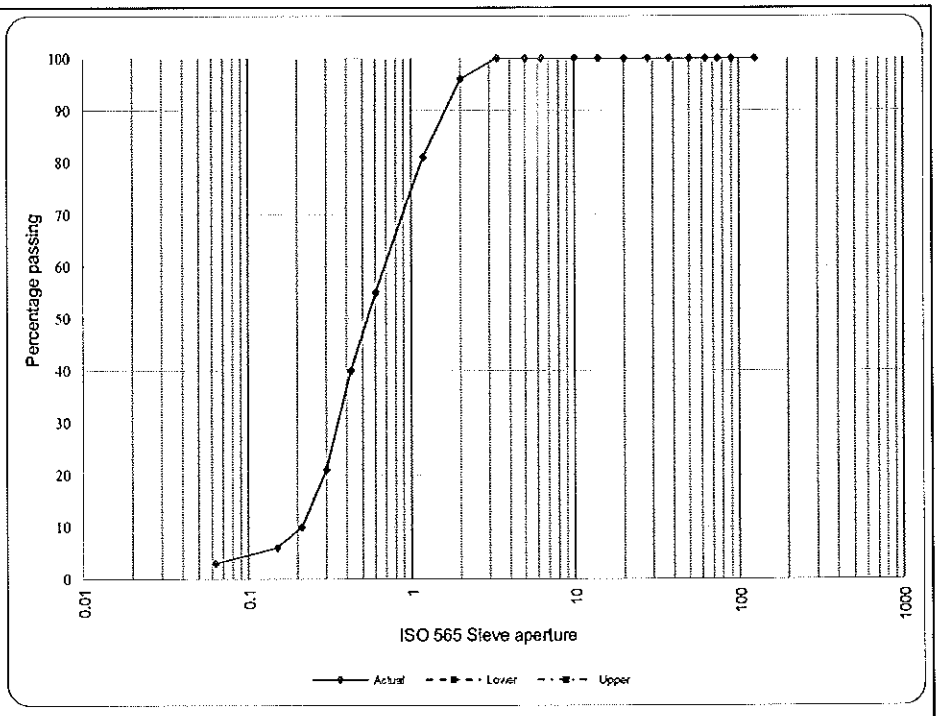
CERTIFICATE OF TEST - PARTICLE SIZE DISTRIBUTION BY WASHING & SIEVING METHOD
TESTED IN ACCORDANCE WITH B.S. 1377 : PART 2 : 1990 : CLAUSE 9.2

Laboratory reference no(s) :	**14-55993 - 147827** Head Office Certificate No : **147827-14-55993-S05**
Client :	**New Earth Solutions Group Ltd**
Certificate address :	**Key House35 Black Moor Road VerwoodDorsetBH31 6AT**
Contract :	**Canford Site**
Source of material (as indicated by client) :	**DNS**
Client reference/data :	**Sample 1**
Location of sample on site :	**Stockpile**
Borehole/pit no / depth	**N/A @ N/A m**
Date sampled :	**08/08/2014**
Sampled by :	**NDR**
Date received :	**12/08/2014**
Material description :	**Orange Sand**
Total mass received :	**4.50 kg**
Method of preparation :	**BS 1377 : Part 1 & Part 2**
Variation from test procedure :	**None**
Location & orientation of test specimen within original sample :	**N/A**
Sampling certificate :	**Yes - See Enclosed**
Client's indicated specification(s) :	**Data not supplied**

ISO 565 Sieve aperture	Percentage passing	Specification limits (Percentage passing)	
	Actual	Lower	Upper
125.00mm	**100**		
90.00mm	**100**		
75.00mm	**100**		
63.00mm	**100**		
50.00mm	**100**		
37.50mm	**100**		
28.00mm	**100**		
20.00mm	**100**		
14.00mm	**100**		
10.00mm	**100**		
6.30mm	**100**		
5.00mm	**100**		
3.35mm	**100**		
2.00mm	**96**		
1.18mm	**81**		
0.600mm	**55**		
0.425mm	**40**		
0.300mm	**21**		
0.212mm	**10**		
0.150mm	6		
0.063mm	**2.5**		



Remarks :

Uniformity Coefficient = 3

See attached compliance query

Tested by : **AOJAS** Date tested : **15/08/2014** Approved : Date : **26/08/2014**

Approved Signatories : [ ] S J White *Head of Laboratories* [ ] A Bates *Laboratory Manager* [ ] K Tiller *Technical Manager* [ ] M Slater *Senior Technician*

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Laboratory Reference : 14-55993 - 147827

BS 410 Sieve aperture	Percentage passing
600.00mm	100
300.00mm	100
125.00mm	100
90.00mm	100
75.00mm	100
63.00mm	100
50.00mm	100
37.50mm	100
28.00mm	100
20.00mm	100
14.00mm	100
10.00mm	100
6.30mm	100
5.00mm	100
3.35mm	100
2.00mm	96
1.18mm	61
600µm	55
425µm	40
300µm	21
212µm	10
150µm	6
63µm	3
U/COEF	3.0

S.H.W. 1998 : Table 6/2 : Grading Requirements	S.H.W. 1998 : Table 6/1 : Uniformity Coefficient Requirements
Complies with the grading requirements for CLASS 1A	Does not comply CLASS 1A
Complies with the grading requirements for CLASS 1B	Complies with the uniformity coefficient requirements for CLASS 1B
Does not comply CLASS 1C	Does not comply CLASS 1C
Does not comply CLASS 2A	N/A
Does not comply CLASS 2B	N/A
Does not comply CLASS 2C	N/A
Does not comply CLASS 2D	N/A
Does not comply CLASS 6A	Does not comply CLASS 6A
Does not comply CLASS 6B	N/A
Does not comply CLASS 6C	Complies with the uniformity coefficient requirements for CLASS 6C
Complies with the grading requirements for CLASS 6E	N/A
Does not comply CLASS 6F1	N/A
Does not comply CLASS 6F2	N/A
Does not comply CLASS 6H	N/A
Complies with the grading requirements for CLASS 6I	Does not comply CLASS 6I
Complies with the grading requirements for CLASS 6J	Does not comply CLASS 6J
Complies with the grading requirements for CLASS 6K	Does not comply CLASS 6K
Complies with the grading requirements for CLASS 6M	Does not comply CLASS 6M
Complies with the grading requirements for CLASS 6N	Does not comply CLASS 6N
Complies with the grading requirements for CLASS 6P	Does not comply CLASS 6P
Does not comply CLASS 7A	N/A
Does not comply CLASS 7C	N/A
Does not comply CLASS 7D	N/A
Does not comply CLASS 7E	N/A
Does not comply CLASS 7F	Does not comply CLASS 7F

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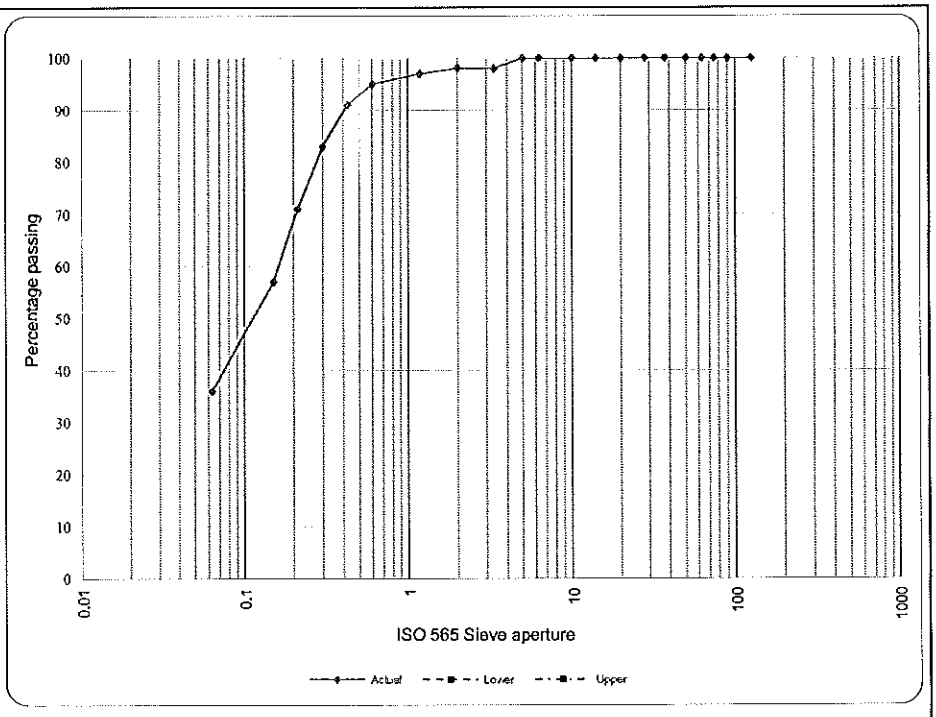
Quality Testing & Materials Consultancy to the Construction Industry

CERTIFICATE OF TEST - PARTICLE SIZE DISTRIBUTION BY WASHING & SIEVING METHOD
TESTED IN ACCORDANCE WITH B.S. 1377 : PART 2 : 1990 : CLAUSE 9.2

Laboratory reference no(s) :	**14-55993 - 147828** Head Office Certificate No : **147828-14-55993-S05**
Client :	**New Earth Solutions Group Ltd**
Certificate address :	**Key House35 Black Moor Road VerwoodDorsetBH31 6AT**
Contract :	**Canford Site**
Source of material (as indicated by client) :	**DNS**
Client reference/data :	**Sample 2**
Location of sample on site :	**Stockpile**
Borehole/pit no / depth	**N/A @ N/A m**
Date sampled :	**08/08/2014**
Sampled by :	**NDR**
Date received :	**12/08/2014**
Material description :	**Orange Sand & Clay/Silt Lumps**
Total mass received :	**3.29 kg**
Method of preparation :	**BS 1377 : Part 1 & Part 2**
Variation from test procedure :	**None**
Location & orientation of test specimen within original sample :	**N/A**
Sampling certificate :	**Yes - See Enclosed**
Client's indicated specification(s) :	**Data not supplied**

ISO 565 Sieve aperture	Percentage passing	Specification limits (Percentage passing)	
	Actual	Lower	Upper
125.00mm	100		
90.00mm	100		
75.00mm	100		
63.00mm	100		
50.00mm	100		
37.50mm	100		
28.00mm	100		
20.00mm	100		
14.00mm	100		
10.00mm	100		
6.30mm	100		
5.00mm	100		
3.35mm	98		
2.00mm	98		
1.18mm	97		
0.600mm	95		
0.425mm	91		
0.300mm	83		
0.212mm	71		
0.150mm	57		
0.063mm	35.6		



Remarks :

Uniformity Coefficient = 9

See attached compliance query

Tested by : **AOJAS** Date tested : **15/08/2014** Approved : Date : **26/08/2014**

Approved Signatories : [ ] S J White *Head of Laboratories* [ ] A Bates *Laboratory Manager* [ ] K Tiller *Technical Manager* [ ] M Slater *Senior Technician*

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Laboratory Reference : 14-55993 - 147828

BS 410 Sieve aperture	Percentage passing
500.00mm	100
300.00mm	100
125.00mm	100
90.00mm	100
75.00mm	100
63.00mm	100
50.00mm	100
37.50mm	100
28.00mm	100
20.00mm	100
14.00mm	100
10.00mm	100
6.30mm	100
5.00mm	100
3.35mm	98
2.00mm	98
1.18mm	97
600µm	95
425µm	91
300µm	83
212µm	71
150µm	57
63µm	36
U/COEF	9.0

S.H.W. 1998 : Table 6/2 : Grading Requirements	S.H.W. 1998 : Table 6/1 : Uniformity Coefficient Requirements
Does not comply CLASS 1A	Does not comply CLASS 1A
Does not comply CLASS 1B	Complies with the uniformity coefficient requirements for CLASS 1B
Does not comply CLASS 1C	Complies with the uniformity coefficient requirements for CLASS 1C
Complies with the grading requirements for CLASS 2A	N/A
Complies with the grading requirements for CLASS 2B	N/A
Does not comply CLASS 2C	N/A
Does not comply CLASS 2D	N/A
Does not comply CLASS 6A	Does not comply CLASS 6A
Does not comply CLASS 6B	N/A
Does not comply CLASS 6C	Complies with the uniformity coefficient requirements for CLASS 6C
Does not comply CLASS 6E	N/A
Does not comply CLASS 6F1	N/A
Does not comply CLASS 6F2	N/A
Does not comply CLASS 6H	N/A
Does not comply CLASS 6I	Does not comply CLASS 6I
Does not comply CLASS 6J	Complies with the uniformity coefficient requirements for CLASS 6J
Does not comply CLASS 6K	Complies with the uniformity coefficient requirements for CLASS 6K
Does not comply CLASS 6M	Complies with the uniformity coefficient requirements for CLASS 6M
Does not comply CLASS 6N	Complies with the uniformity coefficient requirements for CLASS 6N
Does not comply CLASS 6P	Complies with the uniformity coefficient requirements for CLASS 6P
Complies with the grading requirements for CLASS 7A	N/A
Complies with the grading requirements for CLASS 7C	N/A
Does not comply CLASS 7D	N/A
Complies with the grading requirements for CLASS 7E	N/A
Complies with the grading requirements for CLASS 7F	Complies with the uniformity coefficient requirements for CLASS 7F

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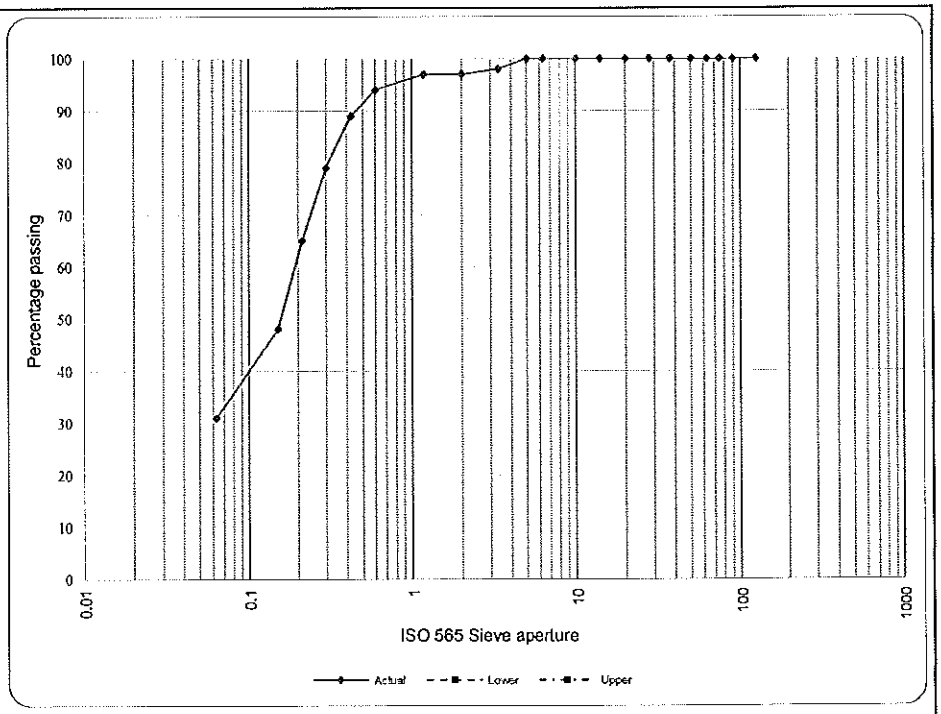
CERTIFICATE OF TEST - PARTICLE SIZE DISTRIBUTION BY WASHING & SIEVING METHOD
TESTED IN ACCORDANCE WITH B.S. 1377 : PART 2 : 1990 : CLAUSE 9.2

Laboratory reference no(s) :	**14-55993 - 147829** Head Office Certificate No : **147829-14-55993-S05**
Client :	**New Earth Solutions Group Ltd**
Certificate address :	**Key House35 Black Moor Road VerwoodDorsetBH31 6AT**
Contract :	**Canford Site**
Source of material (as indicated by client) :	**DNS**
Client reference/data :	**Sample 3**
Location of sample on site :	**Stockpile**
Borehole/pit no / depth	**N/A @ N/A m**
Date sampled :	**08/08/2014**
Sampled by :	**NDR**
Date received :	**12/08/2014**
Material description :	**Orange Sand & Clay/Silt Lumps**
Total mass received :	**4.25 kg**
Method of preparation :	**BS 1377 : Part 1 & Part 2**
Variation from test procedure :	**None**
Location & orientation of test specimen within original sample :	**N/A**
Sampling certificate :	**Yes - See Enclosed**
Client's indicated specification(s) :	**Data not supplied**

ISO 565 Sieve aperture	Percentage passing	Specification limits (Percentage passing)	
	Actual	Lower	Upper
125.00mm	100		
90.00mm	100		
75.00mm	100		
63.00mm	100		
50.00mm	100		
37.50mm	100		
28.00mm	100		
20.00mm	100		
14.00mm	100		
10.00mm	100		
6.30mm	100		
5.00mm	100		
3.35mm	98		
2.00mm	97		
1.18mm	97		
0.600mm	94		
0.425mm	89		
0.300mm	79		
0.212mm	65		
0.150mm	48		
0.063mm	30.7		



Remarks :

Uniformity Coefficient = 10

See attached compliance query

Tested by : **AOJAS** Date tested : **15/08/2014** Approved : Date : **26/08/2014**

Approved Signatories : [ ] S J White *Head of Laboratories* [ ] A Bates *Laboratory Manager* [ ] K Tiller *Technical Manager* [ ] M Slater *Senior Technician*

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Laboratory Reference : 14-55993 - 147829

BS 410 Sieve aperture	Percentage passing
500.00mm	100
300.00mm	100
125.00mm	100
90.00mm	100
75.00mm	100
63.00mm	100
50.00mm	100
37.50mm	100
28.00mm	100
20.00mm	100
14.00mm	100
10.00mm	100
6.30mm	100
5.00mm	100
3.35mm	98
2.00mm	97
1.18mm	97
600µm	94
425µm	89
300µm	79
212µm	65
150µm	48
63µm	31
U/COEF	10.0

S.H.W. 1998 : Table 6/2 : Grading Requirements	S.H.W. 1998 : Table 6/1 : Uniformity Coefficient Requirements
Does not comply CLASS 1A	Complies with the uniformity coefficient requirements for CLASS 1A
Does not comply CLASS 1B	Complies with the uniformity coefficient requirements for CLASS 1B
Does not comply CLASS 1C	Complies with the uniformity coefficient requirements for CLASS 1C
Complies with the grading requirements for CLASS 2A	N/A
Complies with the grading requirements for CLASS 2B	N/A
Does not comply CLASS 2C	N/A
Does not comply CLASS 2D	N/A
Does not comply CLASS 6A	Complies with the uniformity coefficient requirements for CLASS 6A
Does not comply CLASS 6B	N/A
Does not comply CLASS 6C	Complies with the uniformity coefficient requirements for CLASS 6C
Does not comply CLASS 6E	N/A
Does not comply CLASS 6F1	N/A
Does not comply CLASS 6F2	N/A
Does not comply CLASS 6H	N/A
Does not comply CLASS 6I	Complies with the uniformity coefficient requirements for CLASS 6I
Does not comply CLASS 6J	Complies with the uniformity coefficient requirements for CLASS 6J
Does not comply CLASS 6K	Complies with the uniformity coefficient requirements for CLASS 6K
Does not comply CLASS 6M	Complies with the uniformity coefficient requirements for CLASS 6M
Does not comply CLASS 6N	Complies with the uniformity coefficient requirements for CLASS 6N
Does not comply CLASS 6P	Complies with the uniformity coefficient requirements for CLASS 6P
Complies with the grading requirements for CLASS 7A	N/A
Complies with the grading requirements for CLASS 7C	N/A
Does not comply CLASS 7D	N/A
Complies with the grading requirements for CLASS 7E	N/A
Complies with the grading requirements for CLASS 7F	Complies with the uniformity coefficient requirements for CLASS 7F

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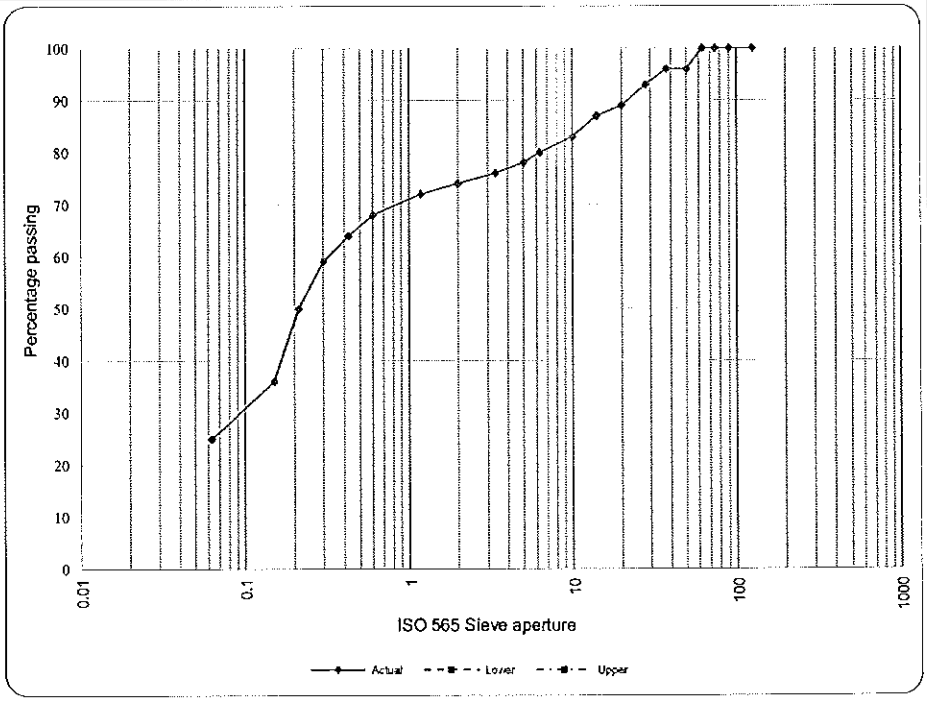
CERTIFICATE OF TEST - PARTICLE SIZE DISTRIBUTION BY WASHING & SIEVING METHOD
TESTED IN ACCORDANCE WITH B.S. 1377 : PART 2 : 1990 : CLAUSE 9.2

Laboratory reference no(s) :	**14-55993 - 147830** Head Office Certificate No : **147830-14-55993-S05**
Client :	**New Earth Solutions Group Ltd**
Certificate address :	**Key House35 Black Moor Road VerwoodDorsetBH31 6AT**
Contract :	**Canford Site**
Source of material (as indicated by client) :	**DNS**
Client reference/data :	**Sample 4**
Location of sample on site :	**Stockpile**
Borehole/pit no / depth	**N/A @ N/A m**
Date sampled :	**08/08/2014**
Sampled by :	**NDR**
Date received :	**12/08/2014**
Material description :	**Brown Silty Sand & Occ. Gravel**
Total mass received :	**4.05 kg**
Method of preparation :	**BS 1377 : Part 1 & Part 2**
Variation from test procedure :	**None**
Location & orientation of test specimen within original sample :	**N/A**
Sampling certificate :	**Yes - See Enclosed**
Client's indicated specification(s) :	**Data not supplied**

ISO 565 Sieve aperture	Percentage passing	Specification limits (Percentage passing)	
	Actual	Lower	Upper
125.00mm	100		
90.00mm	100		
75.00mm	100		
63.00mm	100		
50.00mm	96		
37.50mm	96		
28.00mm	93		
20.00mm	89		
14.00mm	87		
10.00mm	83		
6.30mm	80		
5.00mm	78		
3.35mm	76		
2.00mm	74		
1.18mm	72		
0.600mm	68		
0.425mm	64		
0.300mm	59		
0.212mm	50		
0.150mm	36		
0.063mm	25.2		



Remarks :

Uniformity Coefficient = 13

See attached compliance query

Tested by : **AOJAS** Date tested : **15/08/2014** Approved : Date : **26/08/2014**

Approved Signatories : [ ] S J White *Head of Laboratories* [ ] A Bates *Laboratory Manager* [ ] K Tiller *Technical Manager* [ ] M Slater *Senior Technician*

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UKAS TESTING 0999

Laboratory Reference : 14-55993 - 147830

BS 410 Sieve aperture	Percentage passing
500.00mm	100
300.00mm	100
125.00mm	100
90.00mm	100
75.00mm	100
63.00mm	100
50.00mm	96
37.50mm	96
28.00mm	93
20.00mm	89
14.00mm	87
10.00mm	83
6.30mm	80
5.00mm	78
3.35mm	76
2.00mm	74
1.18mm	72
600µm	68
425µm	64
300µm	59
212µm	50
150µm	36
63µm	25
U/COEF	13.0

S.H.W. 1998 : Table 6/2 : Grading Requirements	S.H.W. 1998 : Table 6/1 : Uniformity Coefficient Requirements
Does not comply CLASS 1A	Complies with the uniformity coefficient requirements for CLASS 1A
Does not comply CLASS 1B	Does not comply CLASS 1B
Does not comply CLASS 1C	Complies with the uniformity coefficient requirements for CLASS 1C
Does not comply CLASS 2A	N/A
Does not comply CLASS 2B	N/A
Complies with the grading requirements for CLASS 2C	N/A
Does not comply CLASS 2D	N/A
Does not comply CLASS 6A	Complies with the uniformity coefficient requirements for CLASS 6A
Does not comply CLASS 6B	N/A
Does not comply CLASS 6C	Does not comply CLASS 6C
Does not comply CLASS 6E	N/A
Does not comply CLASS 6F1	N/A
Does not comply CLASS 6F2	N/A
Does not comply CLASS 6H	N/A
Does not comply CLASS 6I	Complies with the uniformity coefficient requirements for CLASS 6I
Does not comply CLASS 6J	Does not comply CLASS 6J
Does not comply CLASS 6K	Complies with the uniformity coefficient requirements for CLASS 6K
Does not comply CLASS 6M	Complies with the uniformity coefficient requirements for CLASS 6M
Does not comply CLASS 6N	Complies with the uniformity coefficient requirements for CLASS 6N
Does not comply CLASS 6P	Complies with the uniformity coefficient requirements for CLASS 6P
Complies with the grading requirements for CLASS 7A	N/A
Does not comply CLASS 7C	N/A
Complies with the grading requirements for CLASS 7D	N/A
Does not comply CLASS 7E	N/A
Does not comply CLASS 7F	Complies with the uniformity coefficient requirements for CLASS 7F

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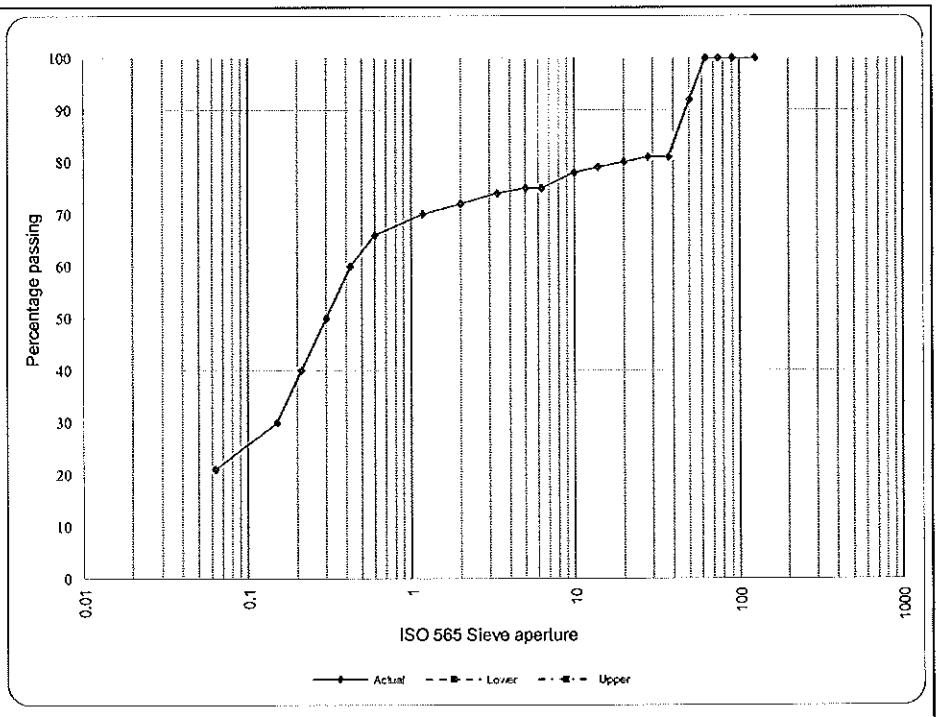
CERTIFICATE OF TEST - PARTICLE SIZE DISTRIBUTION BY WASHING & SIEVING METHOD
TESTED IN ACCORDANCE WITH B.S. 1377 : PART 2 : 1990 : CLAUSE 9.2

Laboratory reference no(s) :	**14-55993 - 147831** Head Office Certificate No : **147831-14-55993-S05**
Client :	**New Earth Solutions Group Ltd**
Certificate address :	**Key House35 Black Moor Road VerwoodDorsetBH31 6AT**
Contract :	**Canford Site**
Source of material (as indicated by client) :	**DNS**
Client reference/data :	**Sample 5**
Location of sample on site :	**Stockpile**
Borehole/pit no / depth	**N/A @ N/A m**
Date sampled :	**08/08/2014**
Sampled by :	**NDR**
Date received :	**12/08/2014**
Material description :	**Brown Silty Sand & Occ. Gravel**
Total mass received :	**4.45 kg**
Method of preparation :	**BS 1377 : Part 1 & Part 2**
Variation from test procedure :	**None**
Location & orientation of test specimen within original sample :	**N/A**
Sampling certificate :	**Yes - See Enclosed**
Client's indicated specification(s) :	**Data not supplied**

ISO 565 Sieve aperture	Percentage passing	Specification limits (Percentage passing)	
	Actual	Lower	Upper
125.00mm	100		
90.00mm	100		
75.00mm	100		
63.00mm	100		
50.00mm	92		
37.50mm	81		
28.00mm	81		
20.00mm	80		
14.00mm	79		
10.00mm	78		
6.30mm	75		
5.00mm	75		
3.35mm	74		
2.00mm	72		
1.18mm	70		
0.600mm	66		
0.425mm	60		
0.300mm	50		
0.212mm	40		
0.150mm	30		
0.063mm	20.6		



Remarks :

Uniformity Coefficient = 14

See attached compliance query

Tested by : **AOJAS** Date tested : **15/08/2014** Approved : Date : **26/08/2014**

Approved Signatories : [ ] S J White *Head of Laboratories* [ ] A Bates *Laboratory Manager* [ ] K Tiller *Technical Manager* [ ] M Slater *Senior Technician*

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Laboratory Reference : 14-55993 - 147831

BS 410 Sieve aperture	Percentage passing
500.00mm	100
300.00mm	100
125.00mm	100
90.00mm	100
75.00mm	100
63.00mm	100
50.00mm	92
37.50mm	81
28.00mm	81
20.00mm	80
14.00mm	79
10.00mm	78
6.30mm	75
5.00mm	75
3.35mm	74
2.00mm	72
1.18mm	70
600µm	68
425µm	60
300µm	50
212µm	40
150µm	30
63µm	21
U/COEF	14.0

S.H.W. 1998 : Table 6/2 : Grading Requirements	S.H.W. 1998 : Table 6/1 : Uniformity Coefficient Requirements
Does not comply CLASS 1A	Complies with the uniformity coefficient requirements for CLASS 1A
Does not comply CLASS 1B	Does not comply CLASS 1B
Does not comply CLASS 1C	Complies with the uniformity coefficient requirements for CLASS 1C
Does not comply CLASS 2A	N/A
Does not comply CLASS 2B	N/A
Complies with the grading requirements for CLASS 2C	N/A
Does not comply CLASS 2D	N/A
Does not comply CLASS 6A	Complies with the uniformity coefficient requirements for CLASS 6A
Does not comply CLASS 6B	N/A
Does not comply CLASS 6C	Does not comply CLASS 6C
Does not comply CLASS 6E	N/A
Does not comply CLASS 6F1	N/A
Does not comply CLASS 6F2	N/A
Does not comply CLASS 6H	N/A
Does not comply CLASS 6I	Complies with the uniformity coefficient requirements for CLASS 6I
Does not comply CLASS 6J	Does not comply CLASS 6J
Does not comply CLASS 6K	Complies with the uniformity coefficient requirements for CLASS 6K
Does not comply CLASS 6M	Complies with the uniformity coefficient requirements for CLASS 6M
Does not comply CLASS 6N	Complies with the uniformity coefficient requirements for CLASS 6N
Does not comply CLASS 6P	Complies with the uniformity coefficient requirements for CLASS 6P
Complies with the grading requirements for CLASS 7A	N/A
Does not comply CLASS 7C	N/A
Complies with the grading requirements for CLASS 7D	N/A
Does not comply CLASS 7E	N/A
Does not comply CLASS 7F	Complies with the uniformity coefficient requirements for CLASS 7F

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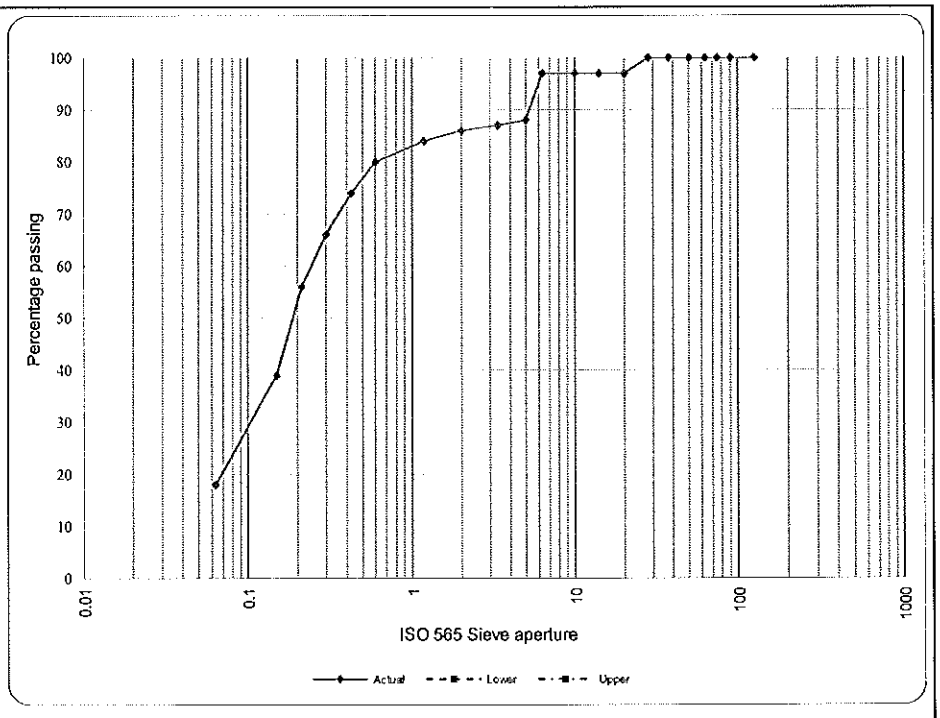
CERTIFICATE OF TEST - PARTICLE SIZE DISTRIBUTION BY WASHING & SIEVING METHOD
TESTED IN ACCORDANCE WITH B.S. 1377 : PART 2 : 1990 : CLAUSE 9.2

Laboratory reference no(s) :	**14-55993 - 147832** Head Office Certificate No : **147832-14-55993-S05**
Client :	**New Earth Solutions Group Ltd**
Certificate address :	**Key House35 Black Moor Road VerwoodDorsetBH31 6AT**
Contract :	**Canford Site**
Source of material (as indicated by client) :	**DNS**
Client reference/data :	**Sample 5**
Location of sample on site :	**Stockpile**
Borehole/pit no / depth	**N/A @ N/A m**
Date sampled :	**08/08/2014**
Sampled by :	**NDR**
Date received :	**12/08/2014**
Material description :	**Brown Silty Sand & Occ. Gravel**
Total mass received :	**4.01 kg**
Method of preparation :	**BS 1377 : Part 1 & Part 2**
Variation from test procedure :	**None**
Location & orientation of test specimen within original sample :	**N/A**
Sampling certificate :	**Yes - See Enclosed**
Client's indicated specification(s) :	**Data not supplied**

ISO 565 Sieve aperture	Percentage passing	Specification limits (Percentage passing)	
	Actual	Lower	Upper
125.00mm	100		
90.00mm	100		
75.00mm	100		
63.00mm	100		
50.00mm	100		
37.50mm	100		
28.00mm	100		
20.00mm	97		
14.00mm	97		
10.00mm	97		
6.30mm	97		
5.00mm	88		
3.35mm	87		
2.00mm	86		
1.18mm	84		
0.600mm	80		
0.425mm	74		
0.300mm	66		
0.212mm	56		
0.150mm	39		
0.063mm	17.6		



Remarks :

Uniformity Coefficient = 7

See attached compliance query

Tested by : **AOJAS** Date tested : **15/08/2014** Approved : Date : **26/08/2014**

Approved Signatories : [ ] S J White *Head of Laboratories* [ ] A Bates *Laboratory Manager* [ ] K Tiller *Technical Manager* [ ] M Slater *Senior Technician*

Bulk samples shall be retained for 28 days after completion of testing, unless written notice is received within 14 days of certification requesting sample retention.
The statement for compliance with the given specification relates only to the test covered by this certificate.
Opinions and interpretations, if stated above, are not within the scope of UKAS Accreditation. DNS = Data not supplied. DNA = Data not available. ©

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UKAS TESTING 0999

Laboratory Reference : 14-55993 - 147832

BS 410 Sieve aperture	Percentage passing
500.00mm	100
300.00mm	100
125.00mm	100
90.00mm	100
75.00mm	100
63.00mm	100
50.00mm	100
37.50mm	100
28.00mm	100
20.00mm	97
14.00mm	97
10.00mm	97
6.30mm	97
5.00mm	88
3.35mm	87
2.00mm	86
1.18mm	84
600µm	80
425µm	74
300µm	66
212µm	56
150µm	39
63µm	18
U/COEF	7.0

S.H.W. 1998 : Table 6/2 : Grading Requirements	S.H.W. 1998 : Table 6/1 : Uniformity Coefficient Requirements
Does not comply CLASS 1A	Does not comply CLASS 1A
Does not comply CLASS 1B	Complies with the uniformity coefficient requirements for CLASS 1B
Does not comply CLASS 1C	Complies with the uniformity coefficient requirements for CLASS 1C
Complies with the grading requirements for CLASS 2A	N/A
Complies with the grading requirements for CLASS 2B	N/A
Does not comply CLASS 2C	N/A
Does not comply CLASS 2D	N/A
Does not comply CLASS 6A	Does not comply CLASS 6A
Does not comply CLASS 6B	N/A
Does not comply CLASS 6C	Complies with the uniformity coefficient requirements for CLASS 6C
Does not comply CLASS 6E	N/A
Does not comply CLASS 6F1	N/A
Does not comply CLASS 6F2	N/A
Does not comply CLASS 6H	N/A
Does not comply CLASS 6I	Does not comply CLASS 6I
Does not comply CLASS 6J	Complies with the uniformity coefficient requirements for CLASS 6J
Does not comply CLASS 6K	Complies with the uniformity coefficient requirements for CLASS 6K
Does not comply CLASS 6M	Complies with the uniformity coefficient requirements for CLASS 6M
Does not comply CLASS 6N	Complies with the uniformity coefficient requirements for CLASS 6N
Does not comply CLASS 6P	Complies with the uniformity coefficient requirements for CLASS 6P
Complies with the grading requirements for CLASS 7A	N/A
Complies with the grading requirements for CLASS 7C	N/A
Does not comply CLASS 7D	N/A
Complies with the grading requirements for CLASS 7E	N/A
Complies with the grading requirements for CLASS 7F	Complies with the uniformity coefficient requirements for CLASS 7F

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Annex F: Environmental Management System Manual

HYDROGEN GENERATION PLANT
ENVIRONMENTAL MANAGEMENT SYSTEM

Table of Contents

1. INTRODUCTION

Canford Renewable Energy ('The Company' hereafter) operate a hydrogen generation plant on their site located at Whites Pit Landfill Site, Arrowsmith Road, Wimborne, Dorset, BH21 3BQ (National Grid Reference: SZ 03398 96702).

The development comprises a simple modular hydrogen electrolysis plant which will utilise mains water for the production of hydrogen for use by vehicles at a filling station within the wider site (but excluded from the permit boundary) or for export. Emissions are limited to oxygen and mineralised water.

The activities meet the definition of an 'Installation' by virtue of Schedule 1:

- Section 4.2 'Inorganic Chemicals' Part A(1)(a)(i) *Producing inorganic chemicals such as:—*
  (i) gases, (for example ammonia, hydrogen chloride, hydrogen fluoride, hydrogen cyanide, hydrogen sulphide, oxides of carbon, sulphur compounds, oxides of nitrogen, hydrogen, oxides of sulphur, phosgene).

In addition, the facility meets the principles required to be determined as a 'Low Impact Installation' and is regulated by the Environment Agency under a Standard Rules SR2009 No.2 Low Impact Installation Permit under The Environmental Permitting (England and Wales) Regulations 2018 (as amended).

This document forms part of the environmental management system and has been prepared in accordance with the following requirements:

- The Environmental Permitting Regulations 2018 (as amended); and
- Environmental Permit

This EMS Manual and associated procedures has been prepared to provide an account of the environmental considerations for the operation of the hydrogen electrolysis plant. Operational practices and associated procedures are outlined separately to this document within the Operations Manual.

A sign which provides the necessary site and operations information is positioned at the entrance to the site. The sign provides all the necessary site information, contact details as required by the sites Environmental Permit.

A copy of the Environmental Permit, Operations Manual and the Management System will be kept in the site office at all times.

2. SITE ACTIVITIES

Table 3.1: Specified Activities	
Site Address	Canford Renewable Energy Hydrogen Generation Plant, Whites Pit Landfill Site, Arrowsmith Road, Wimborne, Dorset, BH21 3BQ
National Grid Reference	OS X (Eastings) 403398 OS Y (Northings) 096702
Operations Manager	TBC
Permit Reference	TBC
Specified Activities	Section 4.2 Part A(1)(a)(i)
Operational Hours	24/7 Operation – remotely controlled Deliveries / Collections limited to daytime hours only
Planning Permission	TBC

3. PROCESS DESCRIPTION

The hydrogen generation plant comprises 2 modular electrolysis units, one electrolyser Blow Out Prevention (BOP) unit, one compressor unit, one transformer unit and two hydrogen trailer storage parking spaces.

Mains water entering the site is initially treated in a deionization unit via softening, reverse osmosis and electrode ionisation or ion exchanger.

Demineralised water then enters the electrolysis system, flows through a heat exchanger before being pumped into the stack where the production of hydrogen takes place within the electrolysis cells via the solid proton conductive membrane. Separated oxygen and hydrogen then exit the cell, with hydrogen passing through a gas/water separator before undergoing gas treatment.

Emissions from the process are limited to a single emission of oxygen to atmosphere and effluent from the water deionistaion plant which comprises simply mineralised water.

The plant consumes approximately 1.5MW of power which is provided by the adjacent solar installation and is capable of producing hydrogen at a rate of 20.5 kg/hr.

The site layout is provided in the figure below.

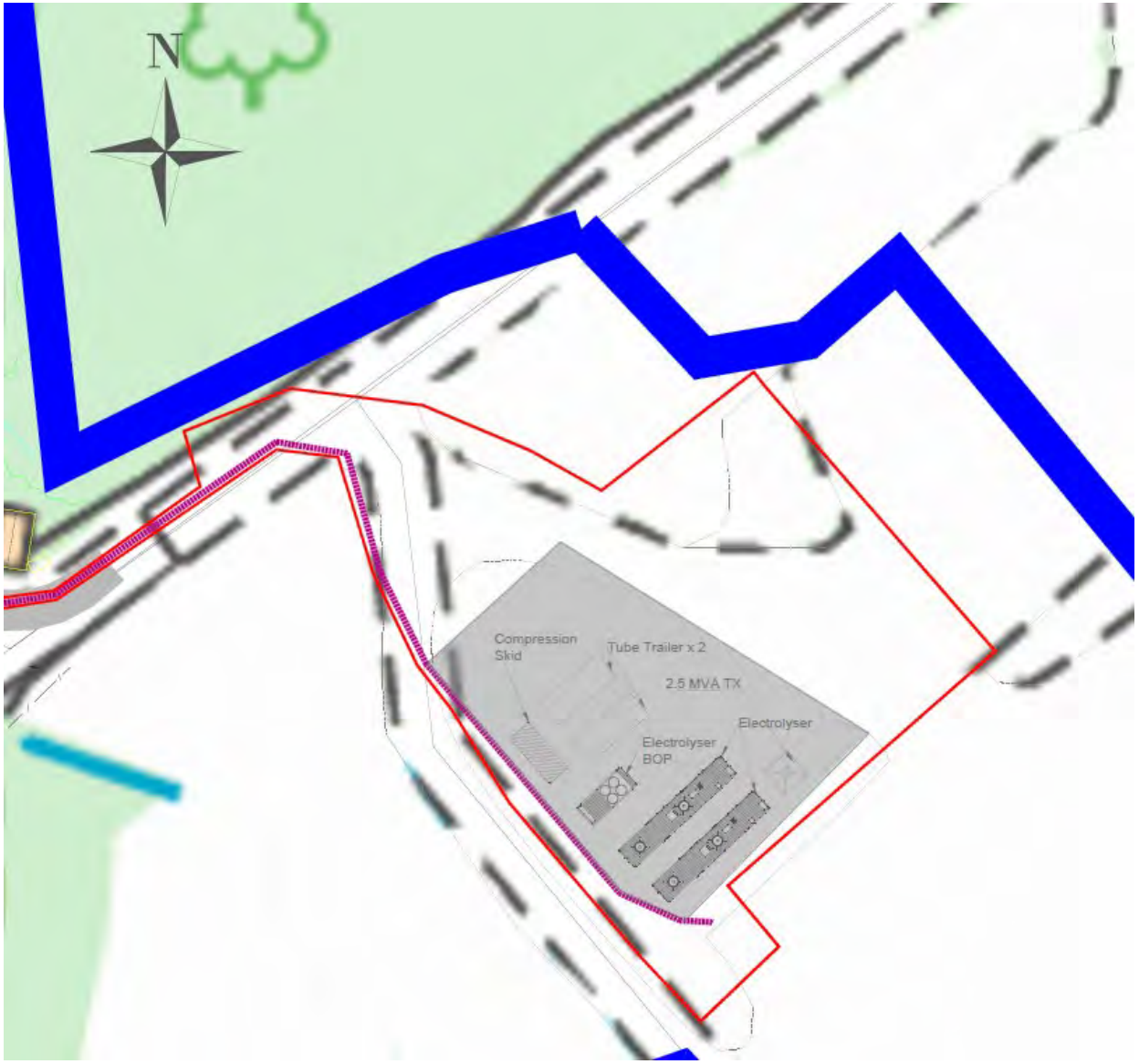


Figure 3.1: Site Layout

4. ENVIRONMENTAL SETTING

Geology and Hydrogeology

The site is underlain by superficial River Terrace Deposits overlying bedrock of the Poole Formation. The Poole Formation is comprises sand, silt and clay.

The Environment Agency classify both the superficial deposits and the bedrock geology as Secondary 'A' Aquifers.

The site is not located within a Source Protection Zone (SPZ).

The groundwater vulnerability at the site is classified as Secondary Aquifer High.

The site is not located within a Nitrate Vulnerable Zone (NVZ).

The site is considered to be situated in an area of moderate sensitivity with respect to groundwater resources, due to its setting upon two aquifers.

Surface Water Features

An unnamed stream is located approximately 170 m south of the site boundary. This stream flows in a northeasterly direction before joining the River Stour approximately 1.7 km to the northeast of the site.

The River Stour was classified by the EA in 2016 as having a 'moderate' ecological status, 'good' chemical status and overall 'moderate' water body rating status..

The site is located within Environment Agency Flood Zone 1 – low risk in regards to fluvial flooding,.

The site is considered to be situated in an area of moderate sensitivity in regard to surface water due to its proximity to the unnamed stream to the south.

Sensitive Environmental Receptors

Within 2 km of the site there are located a number of nationally and internationally designated sites of ecological importance.

The habitat receptor designations and locations relevant to the assessment are shown in the table below.

Table 4.1: Ecological Receptor Locations		
Approximate Distance from Site	Receptor Name	Designation
62 m south	Canford Heath	SSSI
77 m southeast	Dorest Heaths	SAC / SPA
1.5 km west	Arrowsmith Coppice	Ancient Woodland
1.6 km southwest	Dorset Heathlands	Ramsar

The site is not considered likely to have any significant effects on these designated sites due to the limited nature of emissions from the site.

The nearest residential properties lie 560 m to the north at Spinney Cottage and approximately 950 m east at Eastlands Farm, on the edge of the residential area of Bearwood. These receptors will not be impacted by site operations due to the lack of nuisance emissions from the facility (i.e the site is not odorous or dusty and will not create fugitive emissions). Noise from the facility is at sufficiently low levels to not have a significant impact at these residential receptors.

5. Environmental Management

Procedures

In order to ensure the plant is operated in accordance with best practice and the conditions of the environmental permit (Ref. XXXXX), the site have established and operate a suite of procedures for key environmental concerns onsite. These procedures are included in Annex 1 of this working plan and include the following:

Table 5.1 EMS Procedures		
Reference	Title	Purpose
CRE-E01	Maintenance & Inspection	Outline the frequency of inspections onsite
CRE-E02	Spillage Response	Outline the actions to take in the event of a spillage to ensure no risk to the environment
CRE-E03	Environmental Monitoring	Outlines any environmental monitoring procedures and controls.

6. SITE INFRASTRUCTURE

Layout

The hydrogen generation plant consists of the following:

- Containerised Water Treatment Plant;
- 2 x Containerised Modular electrolyser units;
- 1 x containerised electrolyser blow out prevention unit;
- Transformer;
- System control unit;
- Compressor unit;
- 2 x tube trailers for hydrogen storage.

Site Drainage System

All operational and storage areas of the site are constructed on concrete hardstanding with a sealed drainage system.

Uncontaminated surface water run-off will discharge via the existing surface water drainage system including a bypass separator to Knighton Stream.

Deionisation of incoming mains water produces an ecologically harmless effluent which is essentially mineralised water. This effluent is regarded as uncontaminated and will be discharged via sewer under the existing consent from Bournemouth Water.

All surface and foul drainage is within sealed separate drainage systems.

In the event of a fire, all potentially contaminated water will be contained on site.

Any spillage will be contained and cleaned up using one of the spill kits located on site.

All site infrastructure (roads, concrete pads, drainage systems and units) are inspected on a weekly basis by the competent person.

Any faults and repairs will be carried out as soon as practicable and a note made of them in the site diary.

Site Security

Site Security measures comprise;

- A perimeter fence which is inspected periodically to ensure that the site security has not been compromised.
- CCTV monitoring of the site perimeter;

- Lockable gated access.

Infrastructure Monitoring

The infrastructure monitoring of the site will take place in accordance with procedure CRE-E03 Infrastructure Management and Monitoring Programme.

7. TECHNICAL COMPETENCE & TRAINING

The hydrogen generation plant is designed to be self-regulating and remotely operated therefore requires no specialist operational knowledge on-site. As such, all facilities personnel shall be provided with basic operational knowledge of the plant and associated procedures. In the event that any technical issues occur beyond the operational / training remit of on-site personnel, a suitably qualified external contractor shall be utilised in the first instance.

The site manager is responsible for the overall operation of the plant (including monitoring requirements).

All personnel on site have been trained in the site Operations Manual and EMS Procedures.

The site manager is responsible for ensuring that all operators and personnel receive training as required.

Appendix 1 EMS Procedures

Overview

This procedure provides an overview of all the necessary infrastructure monitoring and inspection programmes that need to be carried out in order to ensure compliance with the Site Environmental Permit. Operational inspections and twice yearly maintenance by the plant manufacturer is covered within the Operations Manual.

1. Monitoring

The Site Manager will monitor the key characteristics of the operations and activities that could have a significant impact on the environment.

The Operations Manager will visually inspect the site on a daily basis. If spillages or strong local odours are detected then action will be taken accordingly.

Monitoring duties include:

- Checking roadways for any spills of delivered materials;
- Checking storage areas for any spills or leakages;
- Checking all security measures including the integrity of the site fence;
- Checking the integrity of all concrete hardstanding and drainage systems.

All details are logged in the site diary with any comments and actions taken.

2. Checks and Tasks

There will be daily checks to ensure that all equipment is working properly.

There will be regular inspection and maintenance of all operational and storage areas on site including the following tasks:

- Daily / weekly visual inspection of the plant including site walkover to monitor noise/leakages etc;
- Regular water plant checks including filter status, salt levels etc;
- Regeneration / changes of ion exchange resin cartridges in the water treatment plant;
- Refill / change water in pump flushing unit;
- Calibration checks of the hydrogen detection sensors.

Inspections will pay particular attention to signs of damage, deterioration and leakage. If any damage is noted, it will be recorded in the site dairy and will be repaired as soon as possible. If containment capacity or the capability of containerised unit is compromised then these will be immediately repaired.

Routine mechanical and electrical maintenance shall occur on a regular basis as part of a planned preventive maintenance programme.

Any mechanical or electrical maintenance shall be conducted by a suitably qualified contractor as required.

3. Training Record

The below signatories have received training and understand all aspects of procedure CRE-E01.

Table 3.1: Training

PRINT EMPLOYEE NAME	EMPLOYEE SIGNATURE	DATE	MANAGER INITIALS	UN-CONTROLLED COPY ISSUED (✓)

Daily / Weekly Check-Sheet		
Week Beginning		
Electrolysis Unit 1		
Monday	Checked	Signed
Tuesday	Checked	Signed
Wednesday	Checked	Signed
Thursday	Checked	Signed
Friday	Checked	Signed
Electrolysis Unit 1		
Monday	Checked	Signed
Tuesday	Checked	Signed
Wednesday	Checked	Signed
Thursday	Checked	Signed
Friday	Checked	Signed
Water Treatment Plant		
Monday	Checked	Signed
Tuesday	Checked	Signed
Wednesday	Checked	Signed
Thursday	Checked	Signed
Friday	Checked	Signed
Electrolyser BoP		
Monday	Checked	Signed
Tuesday	Checked	Signed
Wednesday	Checked	Signed
Thursday	Checked	Signed
Friday	Checked	Signed
Cooling System		
Monday	Checked	Signed
Tuesday	Checked	Signed
Wednesday	Checked	Signed
Thursday	Checked	Signed
Friday	Checked	Signed
Compressor Unit		
Monday	Checked	Signed
Tuesday	Checked	Signed
Wednesday	Checked	Signed
Thursday	Checked	Signed
Friday	Checked	Signed
Trailer Storage Area		
Monday	Checked	Signed
Tuesday	Checked	Signed

Wednesday	Checked	Signed
Thursday	Checked	Signed
Friday	Checked	Signed
Hardstanding		
Monday	Checked	Signed
Tuesday	Checked	Signed
Wednesday	Checked	Signed
Thursday	Checked	Signed
Friday	Checked	Signed
Drainage System		
Monday	Checked	Signed
Tuesday	Checked	Signed
Wednesday	Checked	Signed
Thursday	Checked	Signed
Friday	Checked	Signed
Site Boundary		
Monday	Checked	Signed
Tuesday	Checked	Signed
Wednesday	Checked	Signed
Thursday	Checked	Signed
Friday	Checked	Signed

Overview

Potentially polluting substances at the Canford Renewable Energy Hydrogen Generation are plant are limited in nature and comprise the following:

- Hydraulic Oil;
- Deisel/Petrol.

This procedure outlines the actions to be taken in the unlikely event of an onsite spillage of these materials in a safe and environmentally responsible manner.

Any spillage is likely to be minor in nature due to the low volumes of these materials onsite.

1. Procedure

1.1 Upon identification of a spillage STOP work immediately and prevent any more material spilling, e.g. If feasible right the container, close valves, remove the leaking vehicle.

1.2 Eliminate any sources of ignition in the vicinity, e.g. extinguish cigarettes.

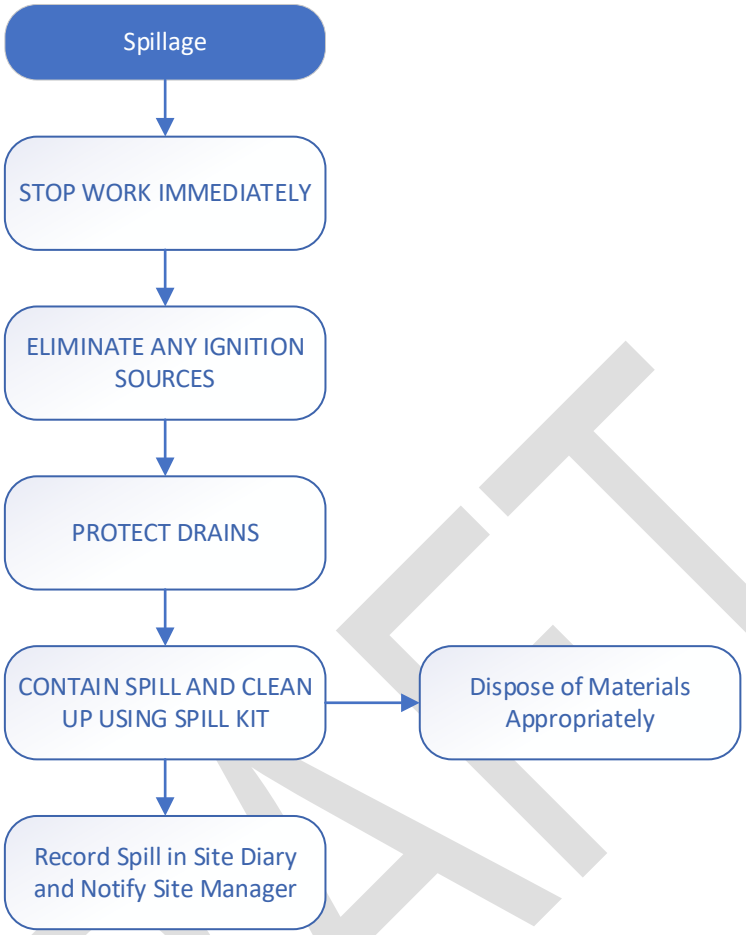
1.3 Check the spillage has not reached any nearby drains, the watercourse or other sensitive area. Protect drains, watercourse or sensitive area with containment materials provided within the spill kit to stop the substance entering the drain, watercourse or sensitive area. Drains are colour coded on site,

BLUE – Surface Water RED – Foul Water

1.4 Contain the spillage using appropriate containment materials from the spill kit.

1.5 Dispose of any materials used to contain clean up the spillage as hazardous waste and store in the appropriate container.

1.6 Notify the site manager of any spillages and subsequent clean up operations. If repairs are required to containment infrastructure ensure these are enacted upon immediately.



2 Documentation & Records

2.1 All spillages should be recorded in the site diary. Site diary records should be retained by the Site Manager for a minimum of two years.

2.2 Hardcopies of associated records will be kept in the site office as well as electronic files on the company computer system and will be available for inspection on request.

3. Training Record

The below signatories have received training and understand all aspects of procedure CRE-E02.

PRINT EMPLOYEE NAME	EMPLOYEE SIGNATURE	DATE	MANAGER INITIALS	UN-CONTROLLED COPY ISSUED (✓)

Overview

This procedure provides an overview of all the necessary environmental monitoring procedures and controls to ensure compliance with the Site Environmental Permit.

There are not considered to be any potential dust or odour issues associated with the site, as such there is no environmental monitoring of these parameters.

1. Noise

The site is not located in an area considered to be overly sensitive to noise. Noise is not considered to be a significant potential source of pollution to the environment due to the mitigation and abatement employed.

The main sources of noise at the site will include:

- Delivery/collection vehicles; and
- Plant.

The following procedures will help minimise noise emissions:

- All plant is fitted within acoustic abatement equipment where required; and
- Deliveries and collections will typically take place during daytime hours where possible.

1.1 Environmental Noise Monitoring

There are no requirements to monitor noise at the site.

Detailed noise monitoring shall be carried out in the unlikely event of an internal or external complaint.

Noise monitoring shall only be carried out by a competent person (as defined by the Institute of Acoustics) to a scope that is determined by the nature of the complaint.

1.2 Occupational Noise Monitoring

Occupational noise and vibration may present a health and safety risk to personnel on site.

Occupational monitoring of a Significant Exposure Groups (SEGs) will be carried out periodically (at least annually) to monitor and risk assess the exposure levels of the personnel.

2. Visual Inspection

All areas of the site shall be visually inspected and monitored for the following:

- Evidence of site security breaches;
- Damage/leaks;
- Noise nuisance;
- Presence of elevated fire risk / storage issues;
- Drainage channels are clear;
- Presence of litter;
- Presence of vermin.

Table 1: Site Environmental Monitoring Summary

Parameter	Purpose	Freq	Location	Responsibility	Comment
Dust, fibre and particulates	None required	None	N/A	N/A	No risk of dust issues onsite.
Noise	Only required in case of specific internal or external noise complaint	As required	TBC	Operations Manager	The noise monitoring shall only be carried out by a competent person (as defined by the Institute of Acoustics) to a scope that is determined by the nature of the complaint.
Odour	None required	None	N/A	N/A	No risk of odour issues onsite.
Groundwater	None required	None	N/A	N/A	No risk of groundwater pollution onsite.
Surface Water	Visual inspection required to ensure that site drainage is clear	Daily / Weekly	Drainage channels	Site Manager	No physical sampling required. Visual inspection only.
Visual	Visual inspection of: • Evidence of site security breaches; • Damage / leaks; • Noise nuisance; • Presence of elevated fire risk / storage issues; • Presence of litter; • Presence of vermin; and • Drainage channels.	Daily / Weekly	Site wide	Site Manager	Recorded in the site dairy.

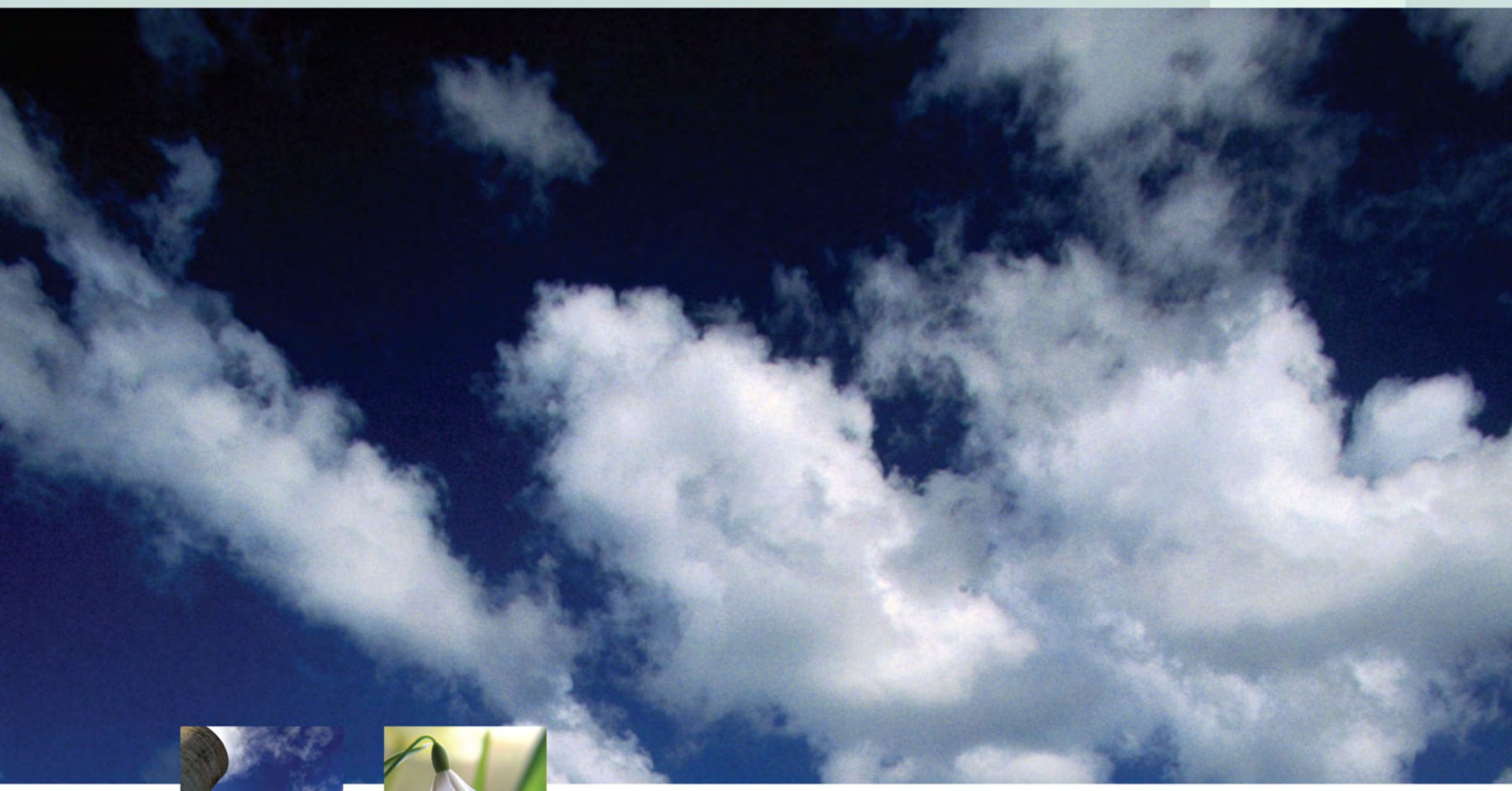
3. Training Record

The below signatories have received training and understand all aspects of procedure CRE-E03.

Table 6.1: Training

PRINT EMPLOYEE NAME	EMPLOYEE SIGNATURE	DATE	MANAGER INITIALS	UN-CONTROLLED COPY ISSUED (✓)

Annex G: Accident Management Plan



ACCIDENT MANAGEMENT PLAN

Canford Renewable Energy
Hydrogen Generation Facility

Prepared by:
Sol Environment Ltd

Date:
March 2021

Project or Issue Number:
SOL2101CRE01

Sol Environment Ltd | Malvern | Bristol | Edinburgh
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VERSION CONTROL RECORD			
Contract/Proposal Number:		SOL2101CRE01	
Authors Name:		Emily Hingston	
Signature:			
Issue	Description of Status	Date	Reviewer Initials
1	First Submission to Client	March 2021	SMB

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CONTENTS

1 INTRODUCTION

This document has been prepared by Sol Environment Ltd on the behalf of Canford Renewable Energy (hereafter referred to as "the applicant" or "CRE") in support of a proposed hydrogen generation facility at their site located at W H White Landfill, Wimborne, Dorset.

This document represents the Accident Management Plan (AMP) submitted as part of the Application package to the Environment Agency (Sol Environment Ref. SOL2101CRE01).

The proposed hydrogen generation facility is located at Whites Pit Landfill Site, Arrowsmith Road, Wimborne, Dorset, BH21 3BQ (National Grid Reference: SZ 02875 96785).

The proposed development of the site comprises a simple modular hydrogen electrolysis plant which will utilise mains water for the production of hydrogen for use by vehicles at a filling station within the wider site. Emissions are limited to oxygen and mineralized water.

The activity will meet the definition of an '*Installation'* by virtue of Schedule 1:

- Section 4.2 'Inorganic Chemicals' Part A(1)(a)(i) *Producing inorganic chemicals such as:— (i) gases, (for example ammonia, hydrogen chloride, hydrogen fluoride, hydrogen cyanide, hydrogen sulphide, oxides of carbon, sulphur compounds, oxides of nitrogen, hydrogen, oxides of sulphur, phosgene).*

The facility will be permitted as a Low Impact Installation by the Environment Agency and will be operated in accordance with the Environmental Permitting (England and Wales) Regulations 2018.

This Accident Management Plan has been produced in accordance with EA guidance Document *'How to comply with your Environmental Permit (EPR 1.00)'*.

It is stipulated under this guidance document that the Accident Management Plan fulfils the following four key requirements:

- Identifies events or failures that could damage the environment;
- Assesses how likely they are to happen and the potential environmental consequences;
- Actions to minimise the potential causes and consequences of accidents; and
- The actions that are required to be carried out if an accident happens.

This Accident Management Plan will be implemented and maintained at the site as part of the company's Environmental Management System and will ensure the site and all operatives within are fully prepared for such incidents.

The Accident Management Plan and all associated procedures will be reviewed at least every four years or as soon as practicable after an incident, with changes made accordingly to minimise the risk of occurrence / recurrence.

2 RISK MAGNITUDE ESTIMATIONS

The Accident Management Plan (Table 2.2 overleaf) has adopted a risk assessment approach to each potential hazard by combining the probability and magnitude of the potential risk to give an estimation of the risk prior to any mitigation measures. The risk management measures, which are designed to reduce the likelihood of occurrence, are then detailed followed by an estimation of the actual risk post-mitigation (Residual Risk Rating).

The DEFRA guide to risk assessment[1] indicates the approach of subjectively classifying the magnitude of potential consequences into four categories depending upon the degree of the impact that the potential risk could have and the context in which the risk is being assessed. The classification is used as a guide in this Risk Assessment.

The four categories are as follows:

- **Severe:** Possible irreparable damage to environmental resources;
- **Moderate:** Possible damage to environmental resources which are limited within a regional context;
- **Mild**: Possible effects might be transient damage to environmental resources which are commonplace on a regional basis and alternative sources are readily available;
- **Negligible:** The effects are negligible or might cause very slight temporary deterioration in the current environmental resource quality.

The matrix shown below considers the probability of the potential risk against the magnitude of the potential impact, thereby giving an estimation of the resulting likelihood of the risk occurring.

Table 2.1: Risk Estimation Matrix

Probability of potential Risk	Magnitude of Potential Impact			
	Severe	Moderate	Mild	Negligible
High	High	High	Medium/Low	Near Zero
Medium	High	Medium	Low	Near Zero
Low	Medium	Medium	Low	Near Zero
Negligible	Medium	Medium/Low	Low	Near Zero

The qualitative risk assessment for the Accident Management Plan has been based on the matrix outlined above.

The final stage of the risk assessment is the judgment of the severity of the residual risk following implementation of the mitigation measures.

[1] A Guide to Risk Assessment and the Risk Management for Environmental Protection, 1995.

Table 2.2: Accident Management Plan					
Accident Scenario	Probability of Accident Occurring	Magnitude of Potential Impact	Risk Rating before mitigation	Risk Management	Residual Risk Rating (following Mitigation)
1 - Spills and Leaks / Loss of containment / transfer of Substances / Overfilling of Vessels	Low	Low to Moderate Spillage and leakage could occur during vehicle breakdowns/ accidents or damage to compressor unit containment Loss of containment could result in potentially polluting materials (limited to hydraulic oil and fuel) being discharged in surface water drainage systems and to controlled waters	Low	• All operational and storage areas of the site are located upon impermeable hardstanding with fully contained and sealed drainage and therefore considered to have a low potential for impacts to land or groundwater; • Polluting substances onsite are limited to hydraulic oil within the contained compressor unit and fuel within the hydrogen tube trailers. • The entire site is inspected visually on a daily basis by site staff to ensure continued integrity of containerised units, and identify any necessary remedial action; • Minor spills to be cleaned up immediately, using onsite spill kit. Resultant materials to be placed in container for off-site disposal to appropriate facility, if necessary; • Immediate action to be taken in event of major spill which is likely to cause polluting emissions to the environment to prevent liquid from entering surface water drains or any adjacent unsurfaced ground. Spillage to be cleared immediately and placed in containers for offsite disposal. EA to be informed; • The plant has been designed in order to include an automated shutdown facility.	Low
2 - Vandalism	Low	Moderate The site could be subject to intentional vandalism and damage by intruders/ trespassers who could cause damage or harm to the	Low	• On-site security measures: • Security cameras are installed at key areas of the site; • Security fencing extends around the site perimeter; – 2.4m palisade or equivalent; • Lockable gates are located at the site entrance; • Gates will be locked whenever the site is closed; • Gates and fencing are inspected daily by operations staff to identify deterioration and damage and the need for repair; • Fencing and gates are maintained and repaired to ensure their	Low

		plant and equipment, spills and leaks to tanks or cause fires.		continued integrity. If damage is sustained, repair will be made within the same working day. If this is not possible, suitable measures will be taken to prevent unauthorised access to the site and permanent repairs will be affected as soon as is practicable; • Operational procedures including regular inspections ensure continual monitoring of security provision at the site.	
3 - Flooding	Medium: The site is located in Flood Zone 1 (low risk).	Severe	Medium	• The site is equipped with a sealed drainage system.	Low
4 - Fire in hydrogen generation plant. Plant malfunction; Electrical equipment that could provide an ignition source; Raw materials that may support combustion.	Medium	Severe	Medium	• All plant is subject to a planned preventative maintenance schedule; • The plant has significant control and safety systems all of which are interlocked to ensure a very controlled shutdown in the event that the plant undergoes operational difficulties; • All plant has been specified to be intrinsically safe and earthed in accordance to best practice; • All aspects of the plant and modular units are constructed of non combustible materials; • The plant has been designed to shut down (fail safe) in the event of an emergency; • Containment system: all tanks and vessels containing flammable and potentially polluting liquids are constructed so that any leaks/spillages are contained and responded to in accordance with established emergency procedures; • Fire suppression, detecting and monitoring systems have been installed were necessary; • In the event of a fire, the following actions will be taken: – The fire brigade will be notified immediately and the EA as soon as practicable. – All drainage systems will be isoloated. – The site will be immediately evacuated. • Records of fire incidences will be kept on site together with a summary of remedial action taken. • The entire site will be subject to a third party DSEAR assessment	Low

				and recommendations / mitigation measures incorporated where appropriate • The EA will be advised of all incidents of fire as soon as is practicable; • Smoking will not be permitted in the operations areas of the site.	
6 – Failure of Mains Services: Failure in the mains services, electricity or water.	Medium	Low	Low	• In the event that mains services of water and electricity supplied to the site are unavailable, the emergency shut down procedure will be initiated. • The plant's control systems will automatically shut down all equipment automatically and initiate nitrogen purge.	Negligible
7. Operator Error / Failure of Equipment: The result of operator error could result in the plant not functioning efficiently or a risk of fugitive emissions to air.	Medium	Low	Low	• The facility has been designed with a number of fail safe and automatic shutdown systems. • All equipment is subject to a Planned and Preventative Maintenance Programme (PPM), to minimise unplanned failures. • The plant also has in place a number of Emergency Shutdown Controls to ensure safe shut down in emergency.	Negligible
8. Hydrogen leak / loss of containment Potential build up of dangerous gas and risk of explosion	Medium	Moderate to severe Leaks from pipework and flanges could cause fire if ignited Loss of containment could cause fire / explosion if ignited	Medium	• All Hydrogen equipment is sited away from sources of ignition and in open air. • Leak detection will be installed where practicable and will be part of the overall plant safety system. • All storage and Hydrogen processing equipment will be constructed and installed to the required British Standards. • The Hydrogen generation / processing equipment will be designed in accordance with DSEAR/ATEX and in accordance with BS EN 1127-1:2007. • The diffusivity, buoyancy and low viscosity of Hydrogen means that small leaks are no immediate risk to the environment. • Leaks from pipework can be mitigated by following correct installation and maintenance procedures. • Loss of containment unlikely, as vessels will be built to code and protected against impact etc. by plant design and adherence to Storage codes and standards.	Low

3 SUMMARY & CONCLUSION

This document has been prepared to meet the requirements pertaining to Accident Management Plans within the Environment Agency guidance document EPR1.00 *'How to Comply with your Permit'.*

It is concluded that the Installation has the potential for a low environmental impact to the environment, and the mitigation measures incorporated into the design of the plant and the site infrastructure are sufficient to mitigate the risks

The company will operate the plant in accordance with the Operational Manual and key working instructions as procedures which detail the required actions to be taken in the event of an emergency and should be used in the first instance for any accident and emergency at site.

Annex H: Existing Discharge Consent

Biffa Waste Services Ltd
C/o Severn Trent Water
Park Lane
Minworth
Sutton Coldfield
West Midlands B76 9BL

Tel: 0121 313 4914
Fax: 0121 313 4763
E-mail: graham.peacock@biffa.co.uk
Web: www.biffa.co.uk

Your ref.
Our ref. GJP/whit010/gjp

30th November 2009

Wessex Water
Claverton Down Road
Calverton Down
Bath
BA2 7WW

For the attention of Mr Martin Venning

Dear Sir

White's Tip Landfill Site;
Transfer of Consent to the Discharge of Trade Effluent

Whereas Biffa Waste Services Limited currently holds a consent for the discharge of trade effluent from White's Pit landfill site, Magna Road, Wimborne, Dorset, BH21 8ND, I wish to advise you that following agreement with W H White plc, of White House, Magna Road, Wimborne, Dorset, BH21 3AP, Biffa has transferred all responsibility for the above site to W H White plc, effective from 17th November 2009.

Accordingly, Biffa is no longer responsible for any discharges from the above site from 17th November 2009, and therefore no longer requires the above consent. I have been asked to enquire whether the above consent may be transferred to W H White plc, who now have responsibility for the site and any discharges from the same. I can confirm that Biffa Waste Services Limited agrees to the transfer of this consent to W H White plc, if this can be effected by you, or otherwise that the consent should be revoked. If you require a contact at W H White plc, I recommend that you contact Mr Jonathan Fryett, Technical Director at the address given for W H White in the first paragraph, above.

I would be grateful if you could confirm at your earliest convenience that the above consent is no longer registered against Biffa Waste Services Limited.

Yours sincerely

Graham Peacock
Technical Development Manager, Biffa Waste Services Ltd

Registered Office: Coronation Road,
Cressex, High Wycombe,
Bucks HP12 3TZ
Registered in England No. 946107

51643

Wessex Water

WATER INDUSTRY ACT 1991

NOTICE OF DIRECTION

TO: Biffa Waste Services Ltd
Coronation Road
Cressex
High Wycombe
Bucks. HP12 3TZ

WHEREAS:

Trade effluent is now discharged from the premises : White's Tip Landfill Site, Arrowsmith Road, Site Control Centre, Magna Road, Wimborne, , Dorset, BH21 8ND

(hereinafter referred to as 'the said premises') under a Consent by Wessex Water Services Limited *(hereinafter recorded as 'the Company')*

NOW THEREFORE the Company HEREBY GIVE NOTICE OF THEIR DIRECTION pursuant to Section 124 of the Water Industry Act 1991.

that as from the 1st day of February 2002

the said Consent shall be varied to the extent set out in the Schedule overleaf.

Dated this 22nd day of January 2002

For and on behalf of Wessex Water Services Ltd

.....

Martin Venning
Head of Environmental Regulation

SCHEDULE

1. The attached Trade Effluent Consent replaces all previous Consents and Notice's of Direction.

NOTE

Your attention is drawn to the right of appeal to the Director General of Water Services which is conferred by Section 126(1) of the Water Industry Act 1991.

"The owner or occupier of any trade premise may -

(a) within two months of the giving to him under subsection(5) of Section 124 of a notice of direction under that section, or

(b) with the written permission of the Director, at any later time, appeal to the Director against the direction."

Wessex Water Services Limited

WATER INDUSTRY ACT 1991

CONSENT TO THE DISCHARGE OF

TRADE EFFLUENT

TO: Biffa Waste Services Ltd
Coronation Road
Cressex
High Wycombe
Bucks. HP12 3TZ

WHEREAS:

I You have served on us Wessex Water Services Limited (*hereinafter referred to as "the Company"*) a Trade Effluent Notice in pursuance of the provisions of the Water Industry Act 1991 dated the 1st day of October 1991 in respect of trade premises situated at White's Tip Landfill Site, Site Control Centre, Magna Road, Wimborne, , Dorset, BH21 8ND

II In pursuance of the provisions of the Water Industry Act 1991, the discharge of trade effluent in accordance with the said trade effluent notice would not be lawful without the Consent of the Company.

III The Company is prepared to give such consent but subject to the conditions hereinafter set forth and to be observed by you.

IV Any connection of your drain to the public sewer necessitated by this consent shall be made at your own expense and to the satisfaction of the Company.

NOW THEREFORE WE HEREBY GIVE YOU NOTICE that the Company's consent to the discharge of trade effluent from the above mentioned premises is subject to the following condition and not otherwise:-

Sewers Affected 1 The public sewer into which the trade effluent may be discharged is the foul sewer situated at Longfleet Drive

Provision of drains for trade effluent only 2 If required by the Company, drains, sampling and testing points shall be provided through which trade effluent and nothing else shall pass.

Change in the point(s) of discharge 3 No change shall be made in the point or points at or through which the trade effluent is to be discharged to the public sewer except with the consent in writing of the Company.

Matters to be eliminated prior to discharge to the sewer 4 The trade effluent shall not include any substances of a nature, composition or quantity likely, either alone or in combination with the contents of the sewer, to:-

(a) injure the public sewers into which it is discharged or by which it is conveyed, or
(b) interfere with the free flow of the contents of the public sewers aforesaid, or
(c) injure the sewage treatment works or any machinery or equipment installed thereat, or
(d) interfere with any processes of purification of sewage or trade effluent, or
(e) cause a nuisance or give off a vapour or harmful substance, or
(f) affect prejudicially the quality of the watercourse receiving the purified sewage effluent.

Condensing water	5	If required by the Company condensing and cooling water shall be eliminated from the effluent.
Changes in composition and cessation of discharge	6	THE COMPANY SHALL BE NOTIFIED FORTHWITH IN WRITING OF ANY CHANGES IN CONDITIONS AND OR PROCESSES WHICH ARE LIKELY TO ALTER THE NATURE OR COMPOSITION OF THE EFFLUENT AND ALSO THE PERMANENT CESSATION OF THE DISCHARGE IN WHICH LATTER CASE THIS CONSENT BECOMES VOID.
Nature or composition	7	The trade effluent to be discharged under this consent shall consist of waste water specified in the said trade effluent notice and derived from Treated Tip Leachate
pH Value	8	The pH of the trade effluent to be discharged under this consent shall not be less than pH 6 or greater than pH 11.
Temperature	9	The temperature of the trade effluent to be discharged under this consent shall not exceed 43.3°C (110°F).
Conditions of acceptance	10	The effluent shall not contain the substances listed in the Appendix in proportions greater than those stated.
Maximum amount to be discharged in any day	11	The maximum quantity of trade effluent which may be discharged into the public sewer on any one day of 24 hours shall not exceed 250 cubic metres (m^3). Variation above or below this maximum will be acceptable provided the total daily load of settled Chemical Oxygen Demand does not exceed 1000 kilograms (kg) in any one period of 24 hours, and that the maximum quantity discharged does not exceed 450 cubic metres (m^3).
Maximum rate of discharge	12	The rate of discharge of trade effluent to the public sewer shall not exceed 6.5 litres per second (l/s).
	13	You shall, if required by the Company at your own expense:-

Inspection Chamber

(a) provide and maintain suitable inspection chambers or manholes in a position and of a type to be approved by the Company in connection with each pipe or channel through which the trade effluent is discharged into the public sewer so as to enable a person readily to take at any time a sample of the trade effluent passing into the public sewer.

Measurement and determination of discharge

(b) provide and maintain in connection with every such pipe or channel either a notch gauge and continuous recorder or some other meter or other apparatus of a type approved by the Company suitable and adequate for measuring and automatically recording the volume and rate of discharge of the trade effluent discharged into the public sewers, and for the testing of such apparatus.

(c) provide and maintain apparatus to be approved by the Company for determining the nature and composition of the trade effluent being discharged from the premises into the public sewer, and for testing of such apparatus.

(d) provide and maintain suitable and adequate treatment plant for the trade effluent if it is shown to be necessary.

(e) keep to the satisfaction of the Company records of the volume, rate of discharge, nature and composition of any trade effluent discharged and records of readings of meters and other apparatus provided in compliance with the conditions of this consent.

Payment	14	(a)	Subject to Section 121(4) of the Water Industry Act 1991 or any amendments, variations or modification thereof, the occupier of the said premises shall pay to the Company such charges as determined by the charging rates as may be prescribed within a scheme of charges made annually pursuant to Section 143 of the Water Industry Act 1991.
		(b)	A Schedule of charging rates including the methods by which, and the principles on which the charges are made, may be inspected during normal business hours at the Office of the Company as designated in paragraph D below or at the Registered Office of the Company, namely Claverton Down Road Claverton Down Bath BA2 7WW
		(c)	All payments arising from the charges as levied by the company in respect of such Trade Effluent Consents shall be paid on demand.
		(d)	All sums due in respect of charges should be remitted (unless otherwise stated by the Company) to Customer Accounts Centre, 1 Clevedon Walk, Nailsea, Bristol, BS19 2QR.
		(e)	The granting of time or any indulgence of any nature by the Company shall not affect or invalidate the rights of Wessex Water or affect, reduce or mitigate the liability of the Occupier.
Failure of recording	15		If any notch gauge or recorder or other apparatus installed for the purpose of complying with conditions imposed by this consent ceases to measure or record or is suspected of not measuring or recording correctly, the quantity of trade effluent discharged on each day into the public sewer during the period from the date on which the records of the volume of trade effluent discharge into the public sewer were last accepted by the Company as being correct, up to the date when the gauge or recorder or other apparatus again registers correctly, shall be deemed for the purpose of any payment to be made to the Company to be the same quantity as the average daily volume of trade effluent discharged during the period of one month preceding the date on which the said records were last accepted as aforesaid, of during the period of one month immediately after the gauge or recorder or other apparatus has been correct, whichever is the greater.
Charging Information	16		All information, figures and records, including those relating to water consumption, required by the Company for the assessing of their charge for reception, conveyance and disposal of the effluent must be given on request.

Dated this 22nd day of January 2002

For and on behalf of Wessex Water Services Ltd

Martin Venning
Head of Environmental Regulation

NOTE

Your attention is drawn to the right of appeal to the Director General of Water Services which is conferred by Section 122 of the Water Industry Act 1991 on any person who is aggrieved by a condition attached to a consent.

Section 122 of the Water Industry Act 1991 further provides that, on such an appeal, the Director may review all the conditions attached to the consent, whether appealed against or not, and may substitute for them any other set of conditions, whether more or less favourable to the appellant, or may annul the conditions. The Director may include provision as to the charges to be made in pursuance of any condition attached to a consent for any period before the determination of the appeal. He may also give a direction that no trade effluent shall be discharged in pursuance of the trade effluent notice in question until a specified date.

CONSENT APPENDIX 1

The effluent shall not at any time include the following substances:-

(a) Volatile petroleum products producing an inflammable vapour at a temperature of less than seventy three degrees Fahrenheit when tested in accordance with the Petroleum (Consolidation) Act 1928.

(b) Solvents of the di and trichloroethylene type.

(c) Methylene chloride.

(d) Calcium carbide.

(e) Soluble oils.

CONSENT APPENDIX 2

1	Synthetic detergents	-	shall not exceed 100 mg/litre (mg/l) and to be at least 90% Biodegradable within the local treatment process.
2	Sulphides	-	expressed as S shall not exceed 10 mg/l of effluent.
3	Sulphates	-	expressed as SO^3 shall not exceed 1000 mg/l of effluent.
4	Suspended Solids	-	shall not exceed 750 mg/l of effluent.
5	Chemical Oxygen Demand	-	shall not exceed 6000 mg/l of effluent.

5a Chemical Oxygen Demand may be varied from the above figure provide the total load of Chemical Oxygen Demand discharged in any one period of 24 hours does not exceed 1000 kilograms(kg).
Samples for the purpose of compliance with Section 5a (Chemical Oxygen Demand) shall be 24-hour composite samples only.

6	Ammonia (as NH3)	-	shall not exceed 750 mg/ of effluent.
6a	Ammonia (as NH3)	-	shall not exceed 100 kg per day of effluent.

(with the proviso that any discharge of trade effluent should not result in a free ammonia concentration in the public sewer of greater than 20% of the threshold limit value)
Samples for the purpose of compliance with Section 6a (Ammonia) shall be 24-hour composite samples only.

The metals listed below shall not exceed the concentration stated in milligrams per litre (mg/l) of effluent of soluble or insoluble salts or compounds, expressed as the metal.

(a) Chromium (Cr) shall not exceed 1 mg/l of effluent.

(b) Copper (Cu) shall not exceed 1 mg/l of effluent.

(c) Lead (Pb) shall not exceed 1 mg/l of effluent.

(d) Nickel (Ni) shall not exceed 1 mg/l of effluent.

(e) Zinc (Zn) shall not exceed 3 mg/l of effluent.

CONSENT APPENDIX 3

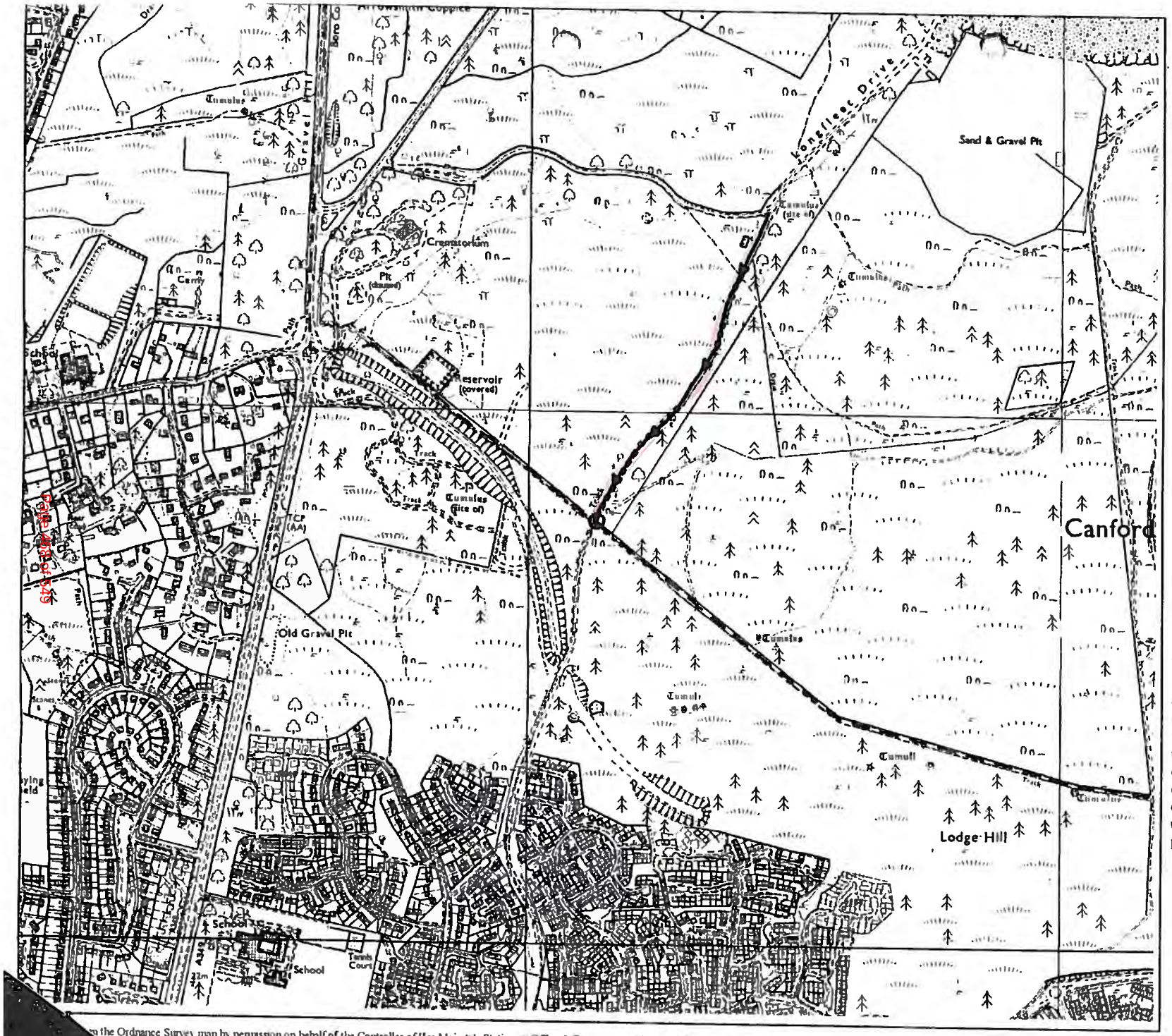
The effluent shall not contain materials which may be retained by a screen having perforations of 6.0 mm in diameter.

CONSENT APPENDIX 4

The effluent shall not at any time contain the following substances, or their compounds, above background level;

Mercury
Cadmium
Hexachlorocyclohexane (Including all isomers and Lindane)
DDT
Pentachlorophenol
Hexachlorobenzene
Hexacholobutadiene
Aldrin
Dieldrin
Endrin
Carbon Tetrachloride
Polychlorinated Biphenyls
Dichlorvos
1, 2 - Dichloroethane
Trichlorobenzene
Atrazine
Simazine
Total Organotin (as Sn) (Including Tributyltin and Triphenyltin)
Trifluralin
Fenitrothion
Azinphos-methyl
Malathion
Endosulfan
Trichloroethylene
Perchloroethylene
Chloroform

NOTE : VARIATION OF SECTION 11 RELATING TO DAILY VOLUME MAY BE MADE FOLLOWING PRIOR WRITTEN NOTIFICATION ONLY.



N
W E
S

Keith Gillard
Developers Group

Legend

WATER MAINS

Public	———
Private	- - - - - -
Abandoned	.....
Raw Water	- - - - - -

SEWERS	Public	Private/Section 104
Foul	———	●———
Combined	———	◐———
Surface	- - - - -	○ .....
Rising Main		
Abandoned	- - - - -	
Culverted Watercourse	———	
Highway Drain	- - - - -	

The information supplied in this plan is for guidance only and Wessex Water does not accept responsibility for any inaccuracies. In carrying out any works, you accept liability for the cost of any repairs required to be undertaken by Wessex Water as a consequence of your actions or those of your contractors. You are advised to commence excavations using hand tools only and not to use mechanical digging equipment until pipework has been precisely located.

Printed on: 21/06/2001 15:37

Centre: 402117.00 , 95813.00
Scale = 1:10000

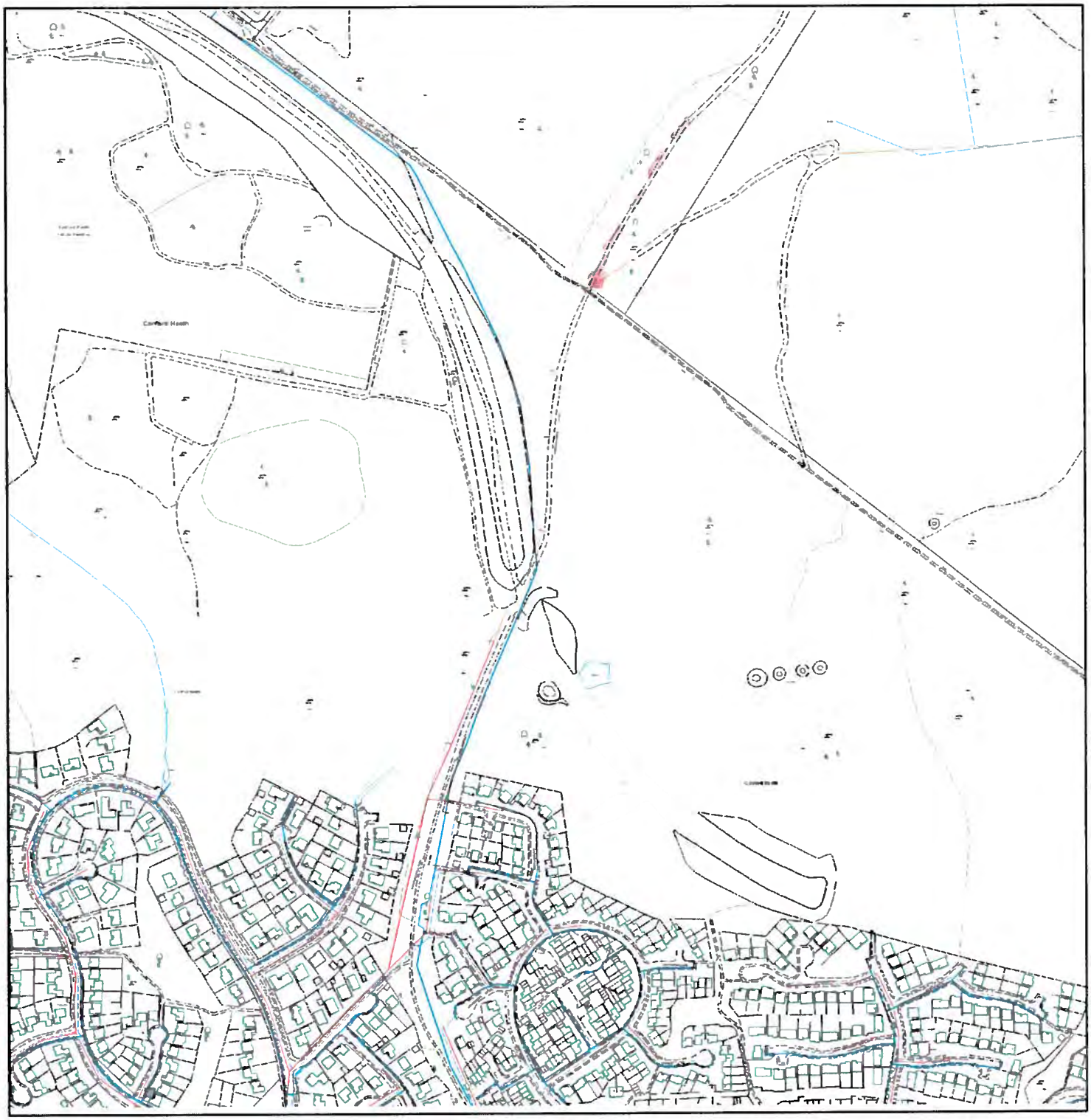
Km 0.2 0.4

Biffa Waste Sevices

Longfleet Drive

Date: 23/01/2002 16:53

Centre: 402085.00 , 95552.00



WATER MAINS

- Public
- Private
- Abandoned
- Raw Water

SEWERS	Public	Private/Section104
Foul		
Combined		
Surface		
Rising Main		
Abandoned		

- Culverted Watercourse
- Highway Drain

N W E S

Scale = 1:5000

Metres 100 200 300

Poole

The information supplied in this plan is for guidance only and Wessex Water does not accept responsibility for any inaccuracies. In carrying out any works, you accept liability for the cost of any repairs required to be undertaken by Wessex Water as a consequence of your actions or those of your contractors. You are advised to commence excavations using hand tools only and not to use mechanical digging equipment until pipework has been precisely located.

Annex I S R Permit

Standard rules

Chapter 4, The Environmental Permitting (England and Wales) Regulations 2016

Standard rules SR2009 No2 – Low Impact Part A Installation

Introductory note

This introductory note does not form part of these standard rules

When referred to in an environmental permit, these rules will allow the operator to operate a Part A Low Impact Installation (LII) at a specified location in accordance with the LII criteria specified in the Environment Agency's Environmental Permitting application form at the time the permit application is duly made and provided that:

(a) the activities are not carried out on or immediately adjacent to a European Site[1], Ramsar Site, Site of Special Scientific Interest (SSSI), National Nature Reserve, Local Nature Reserve or Ancient Woodland; and

(b) there is no direct discharge of aqueous waste within 10km upstream of a European Site, Ramsar site or a SSSI, within 100 metres upstream of a National Nature Reserve, Local Nature Reserve or Ancient Woodland, or within a National Park.

The only wastes allowed to be accepted as part of the operation of the installation are spent ion exchange resins.

The rules do not apply to installations with more than one operator.

End of introductory note

[1]A candidate or Special Area of Conservation (cSAC or SAC)and proposed or Special Protection Area (pSPA or SPA) in England and Wales.

Rules

1 – Management

1.1 General management

1.1.1 The operator shall manage and operate the activities:

(a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints; and

(b) using sufficient competent persons and resources.

1.1.2 Records demonstrating compliance with rule 1.1.1 shall be maintained.

1.1.3 Any person having duties that are or may be affected by the matters set out in these standard rules shall have convenient access to a copy of them kept at or near the place where those duties are carried out.

1.3 Energy efficiency

1.3.1 The operator shall:

(a) take appropriate measures to ensure that energy is used efficiently in the activities;

(b) review and record at least every 4 years whether there are suitable opportunities to improve the energy efficiency of the activities; and

(c) take any further appropriate measures identified by a review.

1.4 Efficient use of raw materials

1.4.1 The operator shall:

(a) take appropriate measures to ensure that raw materials and water are used efficiently in the activities;

(b) maintain records of raw materials and water used in the activities;

(c) review and record at least every 4 years whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use; and

(d) take any further appropriate measures identified by a review.

1.5 Avoidance, recovery and disposal of wastes produced by the activities

1.5.1 The operator shall take appropriate measures to ensure that:

(a) the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste by the activities; and

(b) any waste generated by the activities is treated in accordance with the waste hierarchy referred to in Article 4 of the Waste Framework Directive; and

(c) where disposal is necessary, this is undertaken in a manner which minimises its impact on the environment.

The operator shall review and record at least every four years whether changes to those measures should be made and take any further appropriate measures identified by a review.

2 – Operations

2.1 Permitted activities

2.1.1 The operator is only authorised to carry out the activities specified in table 2.1 below ("the activities").

Table 2.1 activities	
Description of activities	**Limits of activities**
The activity shall fall within a description in Part 2 of Schedule 1 of the EP Regulations, but shall not include any activity described in Sections 5.1, 5.2, 5.3 or 5.4 (with the exception of the regeneration of ion exchange resins as described in 5.4(b)) in Part 2 of Schedule 1.	The activities shall, subject to these rules, be operated in accordance with the Low Impact Installation criteria specified in the Environment Agency's Environmental Permitting application form at the time the permit application was duly made.
Directly Associated Activity	
-	-

2.2 Waste acceptance

2.2.1 Waste shall only be accepted if:

(a) it is of a type and quantity listed in table 2.2 below; and

(b) it conforms to the description in the documentation supplied by the producer and holder.

Table 2.2 Permitted waste types and quantities	
Waste code	**Description**
11 01 16*	Spent ion exchange resins
19 08 06*	Spent ion exchange resins
19 09 05	Spent ion exchange resins

2.3 The site

2.3.1 The activities shall not extend beyond the site, being the land shown edged in green on the site plan attached to the permit.

2.3.2 The activities shall not be carried out on or immediately adjacent to a European Site, SSSI, National Nature Reserve, Local Nature Reserve, Ancient Woodland or National Park.

3 – Emissions and monitoring

3.1 Emissions to air, water or land

3.1.1 Substances from point source emissions to water or air shall not be released at a rate that is greater than that determined as “insignificant”, as set out in the Environment Agency’s H1 Environmental Risk Assessment.

3.1.2 There shall be no direct discharge of aqueous waste within 10km upstream of a European Site or a SSSI; within 100 metres upstream of a National Nature Reserve, Local Nature Reserve or Ancient Woodland, or within a National Park.

3.2 Emissions of substances not controlled by emission limits

3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this rule if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.

3.2.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution, submit to the Environment Agency for approval within the period specified, an emissions management plan;

(b) implement the approved emissions management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.2.3 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.

3.3 Odour

3.3.1 Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable, to minimise, the odour.

3.3.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to odour, submit to the Environment Agency for approval within the period specified, an odour management plan;

(b) implement the approved odour management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.4 Noise and vibration

3.4.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan, to prevent or where that is not practicable, to minimise, the noise and vibration.

3.4.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Environment Agency for approval within the period specified, a noise and vibration management plan;

(b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

4 – Information

4.1 Records

4.1.1 All records required to be made by these standard rules shall:

(a) be legible;

(b) be made as soon as reasonably practicable;

(c) if amended, be amended in such a way that the original and any subsequent amendments remain legible or are capable of retrieval; and

(d) be retained, unless otherwise agreed by the Environment Agency, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:

(i) off-site environmental effects; and

(ii) matters which affect the condition of land and groundwater.

4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by these standard rules, unless otherwise agreed in writing by the Environment Agency.

4.2 Reporting

4.2.1 The operator shall send all reports and notifications required by these standard rules to the Environment Agency using the contact details supplied in writing by the Environment Agency.

4.2.2 A report on the performance of the activities over the previous year shall be submitted to the Environment Agency by 31 January (or other date agreed in writing by the Environment Agency) each year. The report shall include as a minimum, a review of the results of the actual and anticipated operation of the installation against the low impact criteria issued by the Environment Agency at the time of the review.

4.3 Notifications

4.3.1 In the event

(a) That the operation of the activities give rise to an incident or accident that significantly affects or may significantly affect the environment, the operator must immediately:

(i) Inform the Environment Agency

(ii) take the measures necessary to limit the environmental consequences of such an incident or accident, and

(iii) take the measures necessary to prevent further incidents or accidents.

(b) Of a breach of any permit condition the operator must immediately –

(i) Inform the Environment Agency, and

(ii) Take the measure necessary to ensure that compliance is restored within the shortest possible time

(c) Of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment, the operator must immediately suspend the operation of the activities or the relevant part of it until compliance with the permit conditions has been restored.

4.3.2 Written confirmation of actual or potential pollution incidents and breaches of emission limits shall be submitted within 24 hours.

4.3.3 Where the Environment Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Environment Agency when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to the Environment Agency at least 14 days before the date the monitoring is to be

undertaken.

4.3.4 The Environment Agency shall be notified within 14 days of the occurrence of the following matters except where such disclosure is prohibited by Stock Exchange rules:

a) Where the operator is a registered company:
- any change in the operator's trading name, registered name or registered office address; and
- any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

b) Where the operator is a corporate body other than a registered company:
- any change in the operator's name or address; and
- any steps taken with a view to the dissolution of the operator.

c) In any other case:
- the death of any of the named operators (where the operator consists of more than one named individual);
- any change in the operator's name(s) or address(es); and
- any steps taken with a view to the operator, or any one of them, going into bankruptcy, entering into a composition or arrangement with creditors, or, in the case them being in a partnership, dissolving the partnership.

4.3.5 Where the operator has entered into a climate change agreement with the Government, the Environment Agency shall be notified within one month of:

(a) a decision by the Secretary of State not to re-certify the agreement;

(b) a decision by either the operator or the Secretary of State to terminate the agreement; and

(c) any subsequent decision by the Secretary of State to re-certify such an agreement.

4.4 Interpretation

4.4.1 In these standard rules the expressions listed below shall have the meaning given.

4.4.2 In these standard rules references to reports and notifications mean written reports and notifications, except when reference is being made to notification being made "immediately", in which case it may be provided by telephone.

"accident" means an accident that may result in pollution.

"authorised officer" means any person authorised by the Environment Agency under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in Section 108(4) of that Act.

"EP Regulations" means The Environmental Permitting (England and Wales) Regulations SI 2010 No.675 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

"emissions of substances not controlled by emission limits" means emissions of substances to air, water or land from the activities, either from emission points specified in these standard rules or from other localised or diffuse sources, which are not controlled by an emission limit.

"European Site" means a European site within the meaning of Regulation 8 of the Conservation of Habitats and Species Regulations 2017.

"groundwater" means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

"Local Nature Reserve" means an area designated by a local authority under the National Parks and Access to the Countryside Act 1949.

"National Nature Reserve" means an area that has been designated by Natural England or the Countryside Council for Wales under the Wildlife and Countryside Act 1981 as among the best examples of a particular habitat. National Nature Reserves are of national importance.

"SSSI" means Site of Special Scientific Interest within the meaning of the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000).

"Waste code" means the six digit code referable to a type of waste in accordance with the List of Wastes and in relation to hazardous waste, includes the asterisk. 'List of Wastes' means the list of wastes established by Commission Decision 2000/532/EC replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste, as amended from time to time.

"year" means calendar year commencing on 1st January.

End of standard rules

Appendix 3

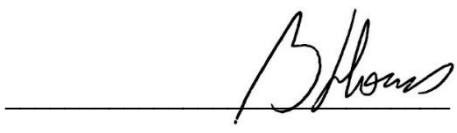
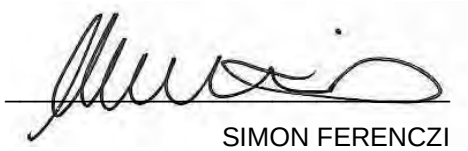
Canford Renewable Energy

Dorset

Environmental Noise Impact Assessment

P1926-REP02-BDH

27 May 2022

PROJECT:	Canford Renewable Energy Dorset Environmental Noise Impact Assessment
CLIENT:	Sol Environment Ltd 7 Greenway Farm Bath Road, Wick Bristol BS30 5RL
DOCUMENT REFERENCE:	P1926-REP02-BDH
SIGNED:	 BRIAN HORNER
CHECKED:	 SIMON FERENCZI
DATE:	27 May 2022

CONTENTS

1 EXECUTIVE SUMMARY

Sol Acoustics Ltd has been appointed to provide an environmental noise impact assessment for a small modular hydrogen electrolyser plant to be located at the Whites Pit Landfill, Wimborne, Dorset, BH21 3BQ.

This acoustic assessment report considers the environmental noise impact as arising from the operation of all plant and processes associated with the intended installation, as at the nearest Noise Sensitive Receptors (NSRs) as during the proposed hours of operation.

The pre-existing environmental noise climate at the identified NSRs has been measured by Sol Acoustics, as occurring between c.13:30 hours during Friday 26 February and c.11:00 hours during Tuesday 2 March 2021. (At the time of the environmental noise survey, the UK was under a national lockdown as a result of the Coronavirus Pandemic, and thus any environmental noise monitoring as conducted during this period may not be wholly representative of the typically prevailing environmental noise climate).

The environmental noise emissions that shall be arising from the operation of the plant have been quantified, modelled, and assessed using proprietary “CadnaA” 3D noise modelling software.

It is the conclusion of this environmental noise assessment that the total, aggregate environmental noise impact arising from the proposed operation of the plant, in full compliance with the plant noise specification as presented herein, does not result in an “adverse” noise impact at the worst affected noise sensitive receptors during the proposed hours of site operation, all as assessed in accordance with British Standard BS4142: 2014+A1: 2019.

Please refer to the main report and appendices for further information.

2 INTRODUCTION

Sol Acoustics Ltd ("Sol") has been appointed to provide an environmental noise impact assessment for a small modular hydrogen electrolyser plant to be located at the Whites Pit Landfill, Wimborne, Dorset, BH21 3BQ (the plant is henceforth referred to as the "Facility" within this report). The purpose of this acoustic assessment is as follows:

- To identify the nearest pre-existing housing to the site (i.e. noise sensitive receptors, NSRs) which are most likely to be affected by environmental noise arising from plant and processes associated with the operation of the Facility.
- To determine the prevailing, pre-existing week day and weekend daytime and night time background noise climate at the NSRs, through direct, environmental noise measurement.
- To identify all significant noise sources associated with the proposed Facility.
- To provide a specification for all proposed new plant.
- To calculate the resultant environmental noise level contribution and impact at the nearest NSRs to the Facility, taking factors such as distance to receptors, acoustic screening and other environmental features into consideration.
- To carry out an environmental noise assessment of the Facility in accordance with the assessment methodology that is prescribed in relevant Standards and other acoustic guidance, in order to determine the likely significance of the noise impact generated.

This acoustic report is structured as follows:

- Section 3 provides a basic description of the Facility and key surrounding NSRs.
- Section 4 provides summary details of the benchmark environmental noise survey undertaken in order to determine the pre-existing environmental noise climate at the identified NSRs.
- Section 5 provides the results of the benchmark environmental noise survey.
- Section 6 provides a summary of the pertinent acoustic Standards which has been used to assess the magnitude of the noise impact likely to be generated.
- Section 7 provides a summary of the proprietary 3D acoustic models constructed and acoustic calculations undertaken.
- Section 8 provides a BS4142 acoustic assessment.
- Section 9 provides a conclusion statement.
- *Appendix A provides a glossary of acoustic terminology.*
- *Appendix B provides details of the noise surveys undertaken and a summary of the data obtained from these.*
- *Appendix C provides a detailed site plan showing the approximate location of significant site plant and environmental noise sources.*
- *Appendix D provides details of the 3D computer noise model as constructed for this project*
- *Appendix E provides an outline description of all key noise sources and provides indicative plant noise levels which shall not be exceeded.*
- *Appendix F gives details and qualifications of contributing Sol Acoustics' staff.*

3 DESCRIPTION OF SITE

3.1 General Overview and Noise Sensitive Receptors (NSRs)

The Facility is to be located within the existing Whites Pit Landfill site, as located off Magna Road in Wimborne, Dorset, BH21 3BQ. The site is situated in a predominantly rural setting with agricultural and residential uses located further afield.

The nearest identified existing noise sensitive premises to the Facility are as follows:

A. Housing at Spinney Cottage, located c.330 metres distance to the north

B. Housing at Maranello, located c.320 metres distance to the north

C. Housing at Long Coppice, located c.507 metres distance to the north

D. The “Canford Paddock” residential estate (David Wilson Homes development) located off Magna Road, located c.1.2km distance to the east

E. Housing on Wheelers Lane, located c.1.4km distance to the east

In addition to the above, the Canford Heath Nature Reserve Site of Special Scientific Interest (SSSI) is located to the south of the proposed Facility. However, Sol have been advised that the SSSI designation for this area is due to residential development pressures in the area. The site is not deemed to be noise sensitive (e.g. it is not designated a noise sensitive ecological receptor as according to Sol Acoustics’ knowledge).

Figure 1 indicates the location of the Facility in relation to the nearest pre-existing NSRs, and also the location of the noise monitoring positions that were used in order to inform the acoustic assessment (these are discussed in Section 4 of this report).

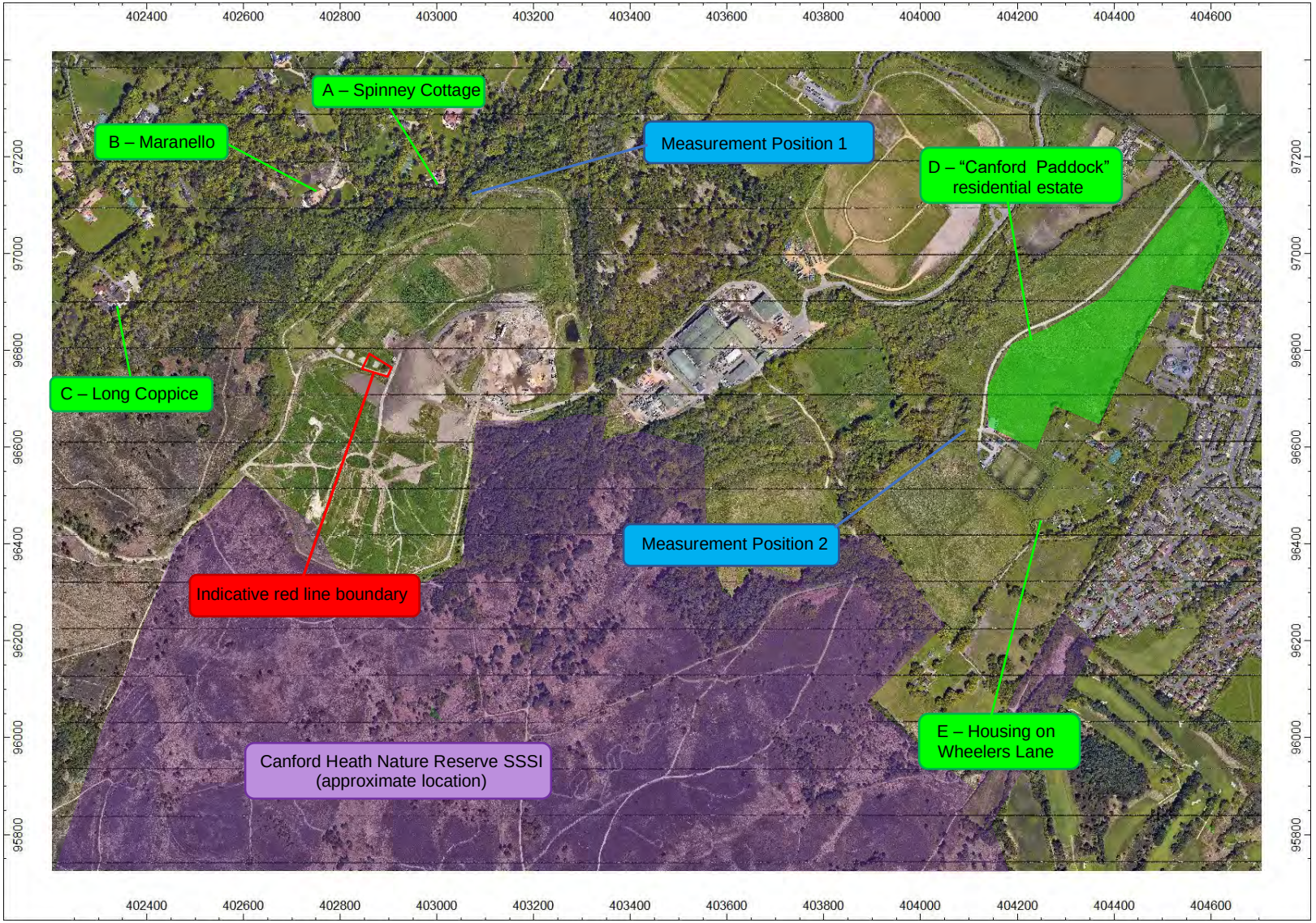


Figure 1: Site and the surroundings

3.2 Characteristics of the Facility

3.2.1 Overview

The proposed Facility is a containerised hydrogen electrolysis plant which will process water for the production of hydrogen. The proposed installation will comprise:

- 2 off containerised electrolyser units
- 2 off cooling units (mounted on top of the electrolysers)
- 2 off containerised 7.6 metre high electrolyser exhaust stacks
- 2 off compressor units
- 2 off containerised Battery Systems (BESS) units
- 4 off transformers

Figure 2 shows the proposed site layout.

3.2.2 Site Deliveries and Collections

The Client has advised that there will be up to two HGV movements to/from site per day, as occurring during daytime periods only.

3.2.3 Anticipated Noise Source Level Output

Appendix E provides a preliminary, itemised list of likely key acoustically significant plant and processes, all as identified by Sol Acoustics from the current development plans, which have the potential to create an environmental noise impact at nearby NSRs.

Full details of the anticipated noise level emissions as expected from the plant have not been advised to Sol Acoustics at this stage. Therefore, this assessment is based upon anticipated noise level emissions from the proposed plant as based upon Sol Acoustiics' experience of similar plant (it will need to be confirmed that the proposed plant meets the specified noise level limits). A summary of the adopted noise source level is provided below:

(a) **Electrolyser (casing)**: Achieve a maximum permissible sound pressure level of 70dB $L_{Aeq,T}$ at 1 metre distance from any external surface (including any ventilation louvres, personnel doors etc.), and for all required modes of operation (including all required plant speeds etc.).

(b) **Cooling system**: Achieve a maximum permissible sound pressure level of 70dB $L_{Aeq,T}$ at 1 metre distance when operating at full design duty.

(c) **Electrolyser exhaust**: Achieve a maximum permissible sound pressure level of 70dB $L_{Aeq,T}$ at 1 metre distance from the outlet when measured on axis with plant operating on full load.

(d) **Compression Unit**: Achieve a maximum permissible sound pressure level of 70dB $L_{Aeq,T}$ at 1 metre distance from any surface (including any ventilation louvres, personnel doors etc.) and for all required modes of operation (including all required plant speeds etc.).

(e) **Battery System (BESS)** : Achieve a maximum permissible sound pressure level of 70dB $L_{Aeq,T}$ at 1 metre distance from any surface (including any ventilation louvres, personnel doors etc.) and for all required modes of operation (including all required plant speeds etc.).

Please note that the noise impact from any plant which not listed must be duly assessed in acoustic terms. The actual/anticipated noise level emissions as expected from the plant must be reviewed once available.

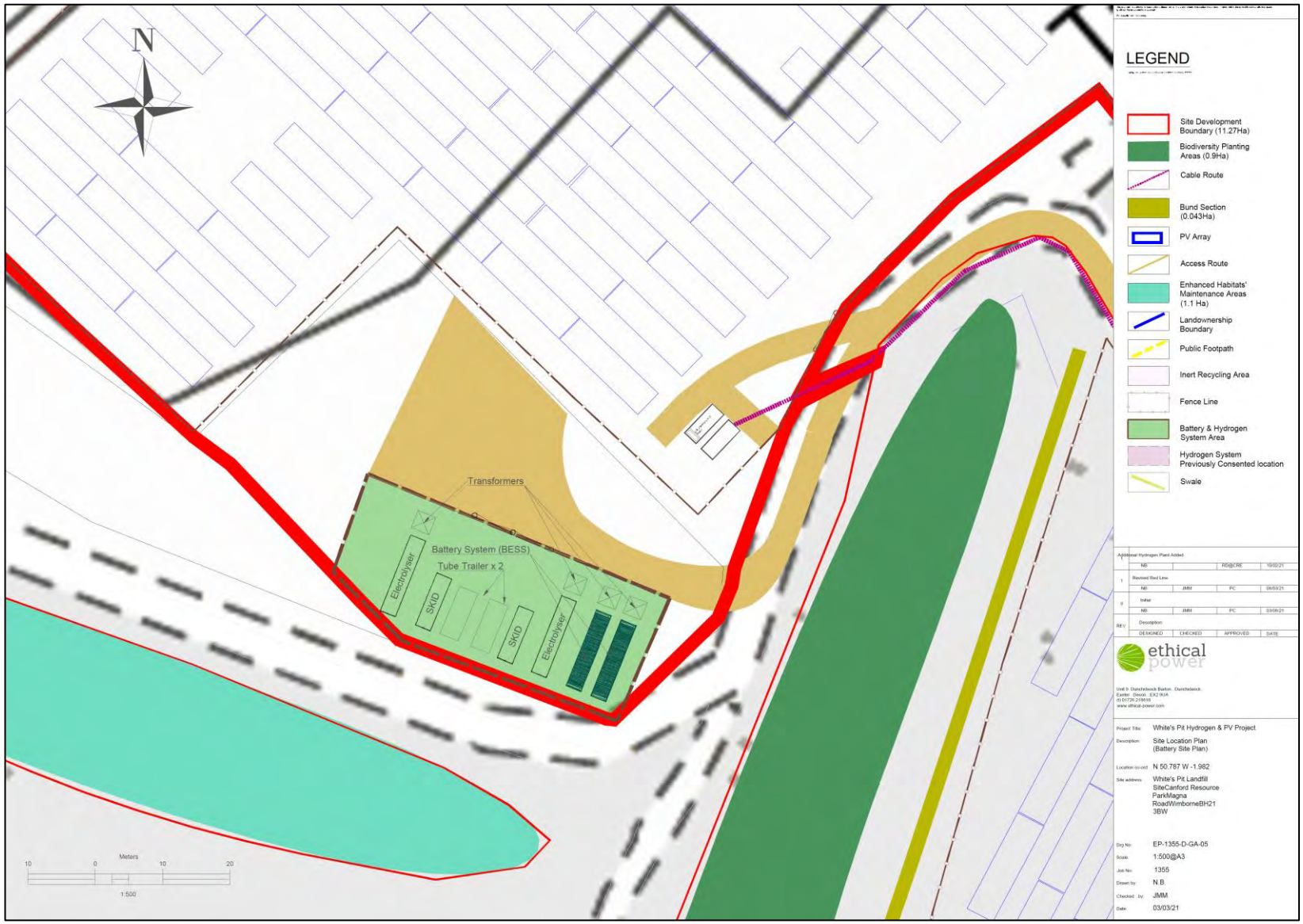


Figure 2: Proposed site layout (plan)

4 DETAILS OF INVESTIGATION

4.1 Pre-Existing Environmental Noise Climate

In order to inform the acoustic assessment, an environmental noise survey have been conducted by Sol Acoustics between c.13:30 hours during Friday 26 February and c.11:00 hours during Tuesday 2 March 2021. The purpose of this survey was to determine the prevailing pre-existing background sound levels at the nearest noise sensitive premises to the Facility, as during typical weekend and weekday, daytime and night time periods, for environmental noise benchmarking and subsequent acoustic impact assessment purposes. (As previously described, the UK was under a national lockdown as a result of the Coronavirus Pandemic at the time of the environmental noise survey, and thus any environmental noise monitoring as conducted during this period may not be representative of the typical environmental noise climate).

The environmental noise survey consisted of two unmanned environmental noise measurement positions as follows:

- **Noise Monitoring Position 1**: Mast mounted microphone sited at c.2.5 metres above local ground level, c.60 metres to the south of the residential housing on Arrowsmith Road.
- **Noise Monitoring Position 2**: Mast mounted microphone sited at c.3m above local ground level, c.50 metres to the west of the residential housing at Canford Paddock.

The location of Measurement Position 1 is shown in Figure 1.

Appendix B provides full detailed time history for the environmental noise levels as recorded at Measurement Position 1 and 2 for the duration of the environmental noise survey.

The noise survey was carried out using Type 1 Precision Grade noise monitoring equipment, and the complete measuring systems were field calibrated immediately prior to and following the noise survey period. (Full details of the noise monitoring systems are retained on file by Sol Acoustics, including traceable calibration records; these are available for review if needed).

Meteorological data was recorded at Noise Monitoring Position 2 for the duration of the noise survey, as using a Professional Grade Vaisala “WXT530” weather station. The prevailing weather conditions remained favourable for the whole survey period for the purposes of environmental noise assessment. The average windspeed throughout the survey was less than 2.5 ms^{-1}.

Notwithstanding the weather conditions recorded, the microphone systems were entirely weatherproofed and fitted with all-weather environmental windshields, each with bird spike.

5 ENVIRONMENTAL NOISE SURVEY RESULTS

5.1 Pre-Existing Environmental Noise Climate

Appendix B provides a detailed time history of the baseline environmental noise levels recorded for the duration of the environmental noise survey and provides details of the equipment used.

Table 1 provides a basic summary of the typical overall, A-weighted noise levels measured at Measurement Positions 1 and 2, in $L_{Aeq,T}$ and $L_{A90,15min}$ terms. The specific, measured noise levels pertinent to the required BS4142 environmental noise assessment are highlighted in ***bold, italic*** text:

Measurement Position	Date	Daytime (07:00 – 23:00 Hours)		Night Time (23:00 – 07:00 Hours)	
		dB $L_{Aeq,T}$	dB $L_{A90,15min}$ (Typical)	dB $L_{Aeq,T}$	dB $L_{A90,15min}$ (Typical)
1	Friday 26 February 2021	42[1]	36	38	***25***
	Saturday 27 February 2021	44	***31***	37	24
	Sunday 28 February 2021	44	35	38	27
	Monday 1 March 2021	46	37	37	30
	Tuesday 2 March 2021	43[1]	38	-	-
2	Friday 26 February 2021	42[1]	***36***	40	33
	Saturday 27 February 2021	48	37	39	***30***
	Sunday 28 February 2021	44	38	39	***30***
	Monday 1 March 2021	49	41	38	*31*
	Tuesday 2 March 2021	48[1]	43	-	-
[1] Measurement not conducted over the full 16-hour daytime assessment period					

Table 1: Summary of typical, measured broadband environmental noise levels

It shall be noted from Table 1 that the measured background sound levels as measured at Measurement Position 1 are low, particularly during the night time period. It is not known whether the measured results were affected by the Coronavirus pandemic national lockdown.

6 ENVIRONMENTAL NOISE PERFORMANCE SPECIFICATION REQUIREMENTS

6.1 Guidance on Noise and vibration Management: Environmental Permits

Published by the Environment Agency, Scottish Environment Protection Agency (SEPA), Natural Resources Wales (NRW) and Northern Ireland Environment Agency (collectively referred to as the "Environment Agencies") during 23 July 2021, and subsequently updated 31 January 2022, this guidance sets out the minimum requirements for environmental noise and vibration impact assessments, as required to support a Permit Application. It replaces the Environment Agency's previous Horizontal Guidance for Noise (H3), Parts 1 and 2. The key requirements of the guidance, which are applicable to this assessment, are as presented below:

- The environmental noise impact assessment must be undertaken in accordance with British Standard BS4142: 2014+A1: 2019: '*Method for rating and assessing industrial and commercial sound*' (BS4142). A summary of this Standard is provided in Section 6.2.

- When applying for a variation, the environmental noise impact assessment must consider all the noise resulting from the Facility, including all existing and new proposed noise sources. The noise impact assessment must present the potential noise impact from all existing and new proposed noise separately and also added together.

- The acoustic character of the sound generated must be considered. This must consider whether the sound is tonal, impulsive, or intermittent in operation. For industrial noise sources where the sound is neither impulsive nor tonal, but is readily distinguishable against the residual acoustic environment, the Environment Agency will a expect a minimum acoustic character correction of +3dB unless otherwise justified.

- The BS4142 defined Background Sound Levels and Residual Sound Levels as used to inform the assessment must not include noise from the Facility. The Facility must not be operational during the environmental noise level measurements.

- Noise arising from the normal operation of the Facility (both "NOC" and "OTNOC") must not result in a BS4142 defined '*significant adverse impact*' (following consideration of the context) at the surrounding NSRs. The "Environment Agencies" will not issue a Permit where the site is, or predicted to be, operating at this level.

- As stated above, the guidance recognises that the *context* of the situation can affect the outcome of the BS4142 assessment but states that there are practical limits. The guidance stipules that it is unlikely to be acceptable to adjust the magnitude of the impact beyond the next BS4142 assessment magnitude band (e.g., suggesting that a Rating Level of around 10dB above the Background Sound level – defined by the Standard as a "significantly adverse" impact, depending on the context - is actually a "low impact" purely on the grounds of context etc.).

Notwithstanding the above, the assessment must demonstrate that Best Available Techniques (BAT) has been applied to prevent or minimise noise emissions.

6.2 BS 4142: 2014+A1: 2019

British Standard BS 4142: 2014+A1: 2019: *'Method for rating and assessing industrial and commercial sound*' ("BS4142") is intended to be used to assess environmental noise of an industrial nature, which includes sound from fixed installations, which comprise mechanical and electrical plant and equipment. The methods prescribed in the British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

The procedure contained in BS4142 for assessing the impact is to compare the measured or predicted noise level from the source in question, the "Specific Sound Level" immediately outside the noise sensitive premises, with the "Background Sound Level". Where the noise contains attention attracting characteristics (i.e. acoustic features) such as tonal, impulsive, intermittent elements, it may be appropriate to apply a correction to the Specific Sound Level to obtain the "Rating Level".

BS4142 states that the significance of sound of an industrial and/or commercial nature depends upon both the margin by which the Rating Level of the specific sound source exceeds the Background Sound Level and the context in which the sound occurs:

- Typically, the greater this difference, the greater the magnitude of the impact.
- A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.
- The lower the Rating Level is relative to the measured Background Sound Level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the Rating Level does not exceed the Background Sound Level, this is an indication of the specific sound source having a low impact, depending on the context.

For the daytime, the assessment is carried out over a one-hour period, and over a 15-minute period at night. The daytime and night time periods are typically defined as occurring between 07:00 hours to 23:00 hours, and 23:00 hours to 07:00 hours respectively.

BS4142 states that in using the Background Sound Level in the method for rating and assessing industrial and commercial sound, it is important to ensure that values are reliable and suitably represent both the particular circumstances and periods of interest. For this purpose, the objective is not simply to ascertain a *lowest* measured Background Sound Level, but rather to quantify what is *typical* during particular time periods.

In full accordance with BS4142 methodology, the context in which the sound occurs must be taken into consideration when determining the magnitude of the noise impact.

Table 2 presents a summary of the as measured typical Background Sound Level at each of the identified residential noise sensitive receptors (NSRs):

Noise Sensitive Receptors	**Representative Noise Measurement Position**	**Typical Background Sound Level, dB $L_{A90,15min}$**	
		Daytime (07:00 hours – 23:00 hours)	**Night Time (23:00 hours – 07:00 hours)**
A – Spiney Cottage (north of the Facility)	1	31	25
B – Maranello (north of the Facility)	1	31	25
C – Long Coppice (north of the Facility)	1	31	25
D – Housing at Canford Paddock (east of the Facility)	2	36	30
E – Housing on Wheelers Lane (east of the Facility)	2	36	30

Table 2: Summary of typical Background Sound Levels applicable each assessed NSR

6.3 BS8233: 2014

British Standard 8233:2014: '*Guidance on sound insulation and noise reduction for buildings*' provides guidance for the control of noise in and around buildings. The guidance provided within the document is applicable to the design of new buildings, or refurbished buildings undergoing a change of use, but does not provide guidance on assessing the effects of changes in the external noise levels to occupants of an existing building.

The guidance provided includes appropriate internal and external noise level criteria which are applicable to dwellings for steady external noise sources. It is stated that it is desirable that the internal ambient noise level does not exceed the criteria set out in Table 3:

BS8233: 2014 – Indoor ambient noise levels for dwellings			
Activity	**Location**	**07:00 to 23:00**	**23:00 to 07:00**
Resting	Living room	35dB $L_{Aeq,16hours}$	-
Dining	Dining room / area	40dB $L_{Aeq,16hours}$	-
Sleeping (daytime resting)	Bedroom	35dB $L_{Aeq,16hours}$	30dB $L_{Aeq,8hours}$

Table 3: Indoor ambient noise levels for dwellings

With respect to external amenity space such as gardens and patios, it is stated that it is desirable that the noise level does not exceed 50dB $L_{Aeq,T}$, with an upper guideline value of 55dB $L_{Aeq,T}$ which would be acceptable in noisier environments.

The Standard also advises that higher external noise criteria may be appropriate under certain circumstances, such as within city centres urban areas and locations adjoining the strategic network, where it may be necessary to compromise between elevated noise levels and other factors such as convenience of living, and efficient use of land resource. In these cases, the development should be designed to achieve the lowest practicable levels in external amenity spaces but should not be prohibited.

7 ENVIRONMENTAL NOISE MODEL

7.1 Methodology and Basis of 3D Environmental Noise Models

In order to predict the likely noise levels impinging on the surrounding noise sensitive receptors, proprietary 3D computer noise models were created using the DataKustik "CadnaA" noise mapping software. The following assumptions have been made when generating the noise model:

(a) The noise model was set up to apply the noise prediction methodology set out in ISO 9613-2: '*Acoustics – Attenuation of Sound propagation outdoors – Part 2: General Method of Calculation*'.

(b) The model was set to include third order reflected noise from solid structures.

(c) Ground absorption, as defined in ISO 9613-2, has been taken into consideration. The base ground absorption for the model has been set to G=1.0 (soft ground). The ground absorption for large tarmacked areas has been set to G=0.0 (hard ground).

(d) The existing land topography of the site and surrounding area up to and including the nearest NSR has been taken into consideration in the assessment. Third party topographical information has been obtained from emapsite.com.

(e) The noise impact as expected the surrounding residential receptors has been modelled at a height of 4 metres above local ground level.

(f) The noise model assumes that up to one HGVs could arrive at or depart from the Facility during a typical 1-hour daytime assessment period. No HGVs are expected to arrive at, nor depart from the Facility during any night-time period.

(g) The electrolysers, compressor and batteries have each been modelled as a 5-sided 3D noise radiating object, based upon the dimensions stated for the unit, assuming uniform noise propagation from each surface. Each surface of the noise source has been calibrated within the noise model to achieve the stated sound pressure level at 1 metre distance.

(h) The electrolyser exhausts and cooling systems have been modelled as separate and additional points sources, mounted at the appropriate height on top of each electrolyser.

(i) Full octave band noise level data for the proposed plant is not available at this stage. In the absence of full octave band noise data, the noise impact from these noise sources has been modelled a single A-weighted sound power level in the 250Hz octave band only. This assumes that all of the sound energy generated by the noise source is created at relatively low frequencies only. This assumption, in effect, presents the worst case and would be expected to result in a noise impact that is higher than that expected based upon full octave band noise data. This assumption has been adopted for the following reasons:

a. Noise emitted from mechanical plant, such as from acoustically enclosed and packaged equipment is typically higher at such frequencies (in A-weighted terms), most especially the 250Hz octave band.

b. Low frequency noise is more difficult to attenuate when compared to the mid and high frequencies.

c. Any acoustic screening afforded by any intervening buildings and barriers is reduced at low frequency.

d. Attenuation due to atmospheric/environmental factors (such as air and ground absorption), is reduced at low frequency.

(j) *Appendix E provides an inventory of plant and process source noise level data; these form the basis of the 3D noise model underpinning the report. These shall not be exceeded.*

Figure 3 provides a three-dimensional visualisation of the noise model used to inform the noise impact assessment.

Appendix D provides further information in respect of the 3D computer environmental noise model.

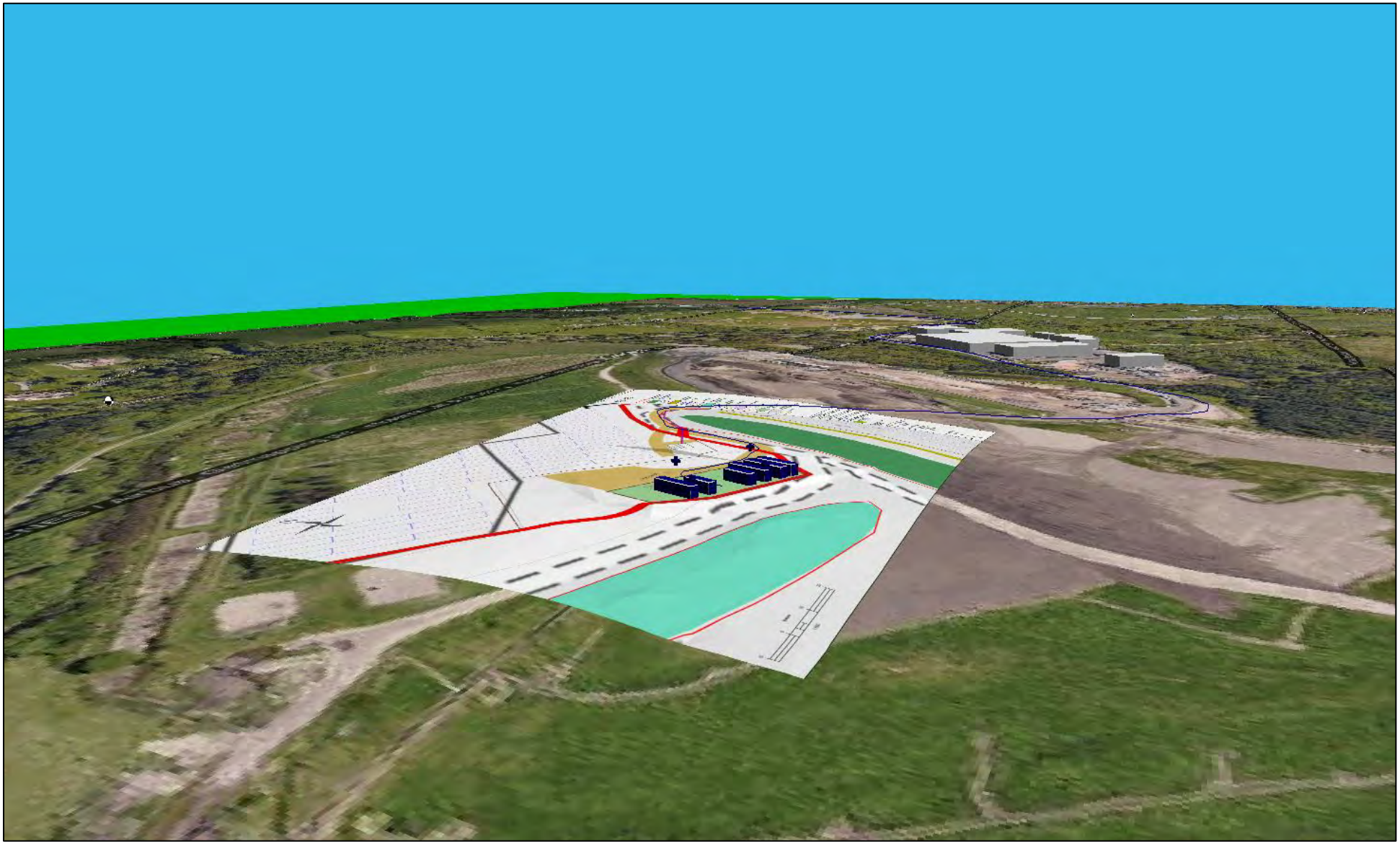


Figure 3: 3D view of the noise model of the Facility

8 ENVIRONMENTAL NOISE IMPACT ASSESSMENT

8.1 BS4142 Assessment

Table 4 presents the predicted overall A-weighted, BS4142-defined Rating Level at the identified NSRs.

Appendix D provides full details of CadnaA noise maps which present the daytime and night-time Specific Sound Levels expected.

It shall be noted from the at-receptor partial noise level tables as presented within Appendix D that the noise contributions from all individual noise sources are each below the existing Background Sound Level, at each receptor. As a result, any acoustic character associated with individual noise sources is not expected to be clearly discernible at the nearest noise sensitive receptor above the pre-existing environmental noise climate.

On this basis, and in accordance with BS4142, a conservative correction of +3dB has been applied to the calculated Specific Sound Level, as arising at the noise sensitive receptors from the Facility, in order to allow for any residual "readily distinctive" acoustic features, in order to determine the BS4142 defined Rating Level for acoustic assessment purposes:

Noise Sensitive Receptor	Assessment Period	Predicted Specific Level, dB $L_{Aeq,T}$	Predicted Rating Level, dB $L_{Ar,Tr}$	Typical Background Sound Level, dB L_{A90}	Rating Level sub. Background ±dB
A – Spiney Cottage (north of the Facility)	Daytime (07:00hrs – 23:00hrs) T = 1 hour	31	34	31	+3
	Night Time (23:00hrs – 07:00hrs) T = 15 minutes	30	33	25	+8
B – Maranello (north of the Facility)	Daytime (07:00hrs – 23:00hrs) T = 1 hour	31	34	31	+3
	Night Time (23:00hrs – 07:00hrs) T = 15 minutes	30	33	25	+8
C – Long Coppice (north of the Facility)	Daytime (07:00hrs – 23:00hrs) T = 1 hour	27	30	31	-1
	Night Time (23:00hrs – 07:00hrs) T = 15 minutes	27	30	25	+5
D – Housing at Canford Paddock (east of the Facility)	Daytime (07:00hrs – 23:00hrs) T = 1 hour	31	34	36	-2
	Night Time (23:00hrs – 07:00hrs) T = 15 minutes	17	20	30	-10
E – Housing on Wheelers Lane (east of the Facility)	Daytime (07:00hrs – 23:00hrs) T = 1 hour	27	30	36	-6
	Night Time (23:00hrs – 07:00hrs) T = 15 minutes	17	20	30	-10

Table 4: BS4142 summary assessment

The total, aggregate environmental noise impact as arising from the proposed operation of the Facility exceeds the typical Background Sound Level by 8dB as during the night time period at the worst affects NSRs (both Spiney Cottage and Maranello). This is above the threshold for an indication of an '*… adverse impact, depending on the context*…' in BS4142 terms.

The predicted magnitude of the impact is subject to the consideration of context. BS4142 states the following with regards to context:

> '… *Where the initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration, including the following.*
>
> *1) The absolute level of sound. For a given difference between the rating level and the background sound level, the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low.*
>
> *Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night* …'

The predicted Specific Sound Level at both the Spiney Cottage and Maranello NSRs is predicted to be just 30dB $L_{Aeq,T}$ as during the night time period (23:00 hours to 07:00), which is considered to be low in absolute noise level terms.

It is reasonable to assume that occupants of the worst affected NSRs would be within the dwelling as during the night time period. Allowing for a 12dB reduction for a partially open window (in line with guidance as presented in '*Acoustics of Schools: a design guide*' as published by Institute of Acoustics and the Association of Noise Consultants in November 2015), the predicted noise level within the worst affected dwelling is likely to be just 18dB $L_{Aeq,15min}$ during night time periods, which is significantly below the BS8233 desirable night time indoor ambient noise level limit of 30dB $L_{Aeq,8hour}$ for resting and sleeping within dwellings (see Table 3 of Section 6.3).

Furthermore, it shall be noted that the environmental noise survey was undertaken during February/March 2021 as during a national lockdown as a result of the Coronavirus pandemic. Whilst it is not possible to verify this without further environmental noise level measurements it may be the case that the measured Background Sound Level were lower than those typically expected at these properties. In which case, the predicted magnitude of the noise impact would be lower.

Therefore, taking the context in which the sound occurs into consideration, noise from the Facility is not expected to result in an adverse noise level impact.

8.2 Uncertainty

Section 10 of BS4142: 2014 states the following with regards to uncertainty:

> '… *Consider the level of uncertainty in the data and associated calculations. Where the level of uncertainty could affect the conclusion, take reasonably practicable steps to reduce the level of uncertainty. Report the level and potential effects of uncertainty*…'

In accordance with the requirements of BS4142, Sol have undertaken the following steps to limit the level of uncertainty in the acoustic assessment:

1. All noise measurements have been carried out using Type 1 Precision Grade noise mounting equipment. All noise measuring instruments have traceable laboratory calibration certification.

2. All noise measurements were accompanied by continuous meteorological measurements as conducted at, or close to, the measurement position in order to ensure that the measurement data was not adversely affected by unfavourable weather conditions.

3. Calculations have been conducted in line with appropriate and nationally recognised acoustic standards (ISO 9613-2, BS12354: 2000), and using proprietary 3D noise modelling software, CadnaA.

4. The assessment assumes downwind propagation in all cases as this represents the worst case.

9 CONCLUSION

Sol Acoustics has been appointed to provide an environmental noise impact assessment for a small modular hydrogen electrolyser plant to be located at the Whites Pit Landfill, Wimborne, Dorset, BH21 3BQ.

This acoustic assessment report considers the environmental noise impact as arising from the operation of all plant and processes associated with the Facility at the nearest Noise Sensitive Receptors (NSRs), as during the proposed hours of operation.

The environmental noise emissions that shall be arising from the operation of the Facility have been quantified, modelled, and assessed using proprietary “CadnaA” 3D noise modelling software.

It is the conclusion of this environmental noise assessment that the total, aggregate environmental noise impact arising from the proposed operation of the Facility, in full compliance with the plant noise specification as presented herein, does not cause an “adverse” noise impact at the worst affected noise sensitive receptors during the proposed hours of site operation, duly taking context into account (as afforded by the Standard), and all as assessed in accordance with British Standard BS4142: 2014+A1: 2019.

APPENDIX A
GLOSSARY OF ACOUSTIC TERMS

Term	Abbreviation	Description
Decibel	dB	A scale for comparing the ratios of two quantities, including sound pressure and sound power.
A-weighting	dB(A)	The unit of sound level, weighted according to the A-scale, which takes into account the change in sensitivity of the human ear at varying frequencies.
Sound Pressure Level	L_{pA}	A measure of the sound pressure at a particular location. Typically expressed in dB(A) referenced to $2x10^{-5}$ Pascals.
Equivalent Continuous Sound Level	$L_{Aeq,T}$	The steady level of sound over a prescribed period of time which would contain the same total sound energy as the actual fluctuating noise under consideration in the same period of time.
Statistical Sound Levels	L_{A10} and L_{A90}	The level of noise exceeded for a percentage of the time period being sampled, namely 10% or 90% respectively.
Background Sound Level	$L_{A90,T}$	The A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90% of the time period being sampled.
Maximum Sound Level	L_{Amax}	The maximum sound or noise level determined with instrumentation set to either a fast time weighting, L_{AFmax}, or a slow time weighting, L_{Asmax}, as occurring during the time period being sampled.
Sound Power Level	L_{wA}	A measure of the total sound energy radiated from a source. Like sound pressure levels, this is also expressed in dB(A) terms, but it is referenced to 1×10^{-12} W.
Broadband		Sound sampled over a wide range of frequencies.
Narrow band		Sound sampled over a specific, restricted frequency range. Used to ascertain the amplitude and significant of individual, audible tones, and to assist in identifying particular sources of noise within a complex, multi-source soundscape environment.
Ambient Sound	$L_{eq,T}$	Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources, both near and far.
Specific Sound Level	$L_{eq,T}$	The Equivalent Continuous A-Weighted Sound Level at an assessment position produced by a specific sound over a given reference time interval, *Tr*
Rating Level	$L_{Ar,Tr}$	The Specific Sound Level plus any adjustment for the acoustic characteristic features of the noise (e.g. intermittency, tones etc.).
Residual Noise	$L_{Aeq,T}$	The ambient sound remaining at given position in a given situation, when the specific sound source is suppressed to such an extent that it no longer contributes to the ambient sound.
Sound Reduction Index	SRI	The reduction in sound energy when transmitted through a panel or similar planar element, typically used in relation to single octave or one-third octave frequency band values.
Weighted Sound Reduction Index	R_w	The Sound Reduction Index expressed as a single figure, as expressed against a reference curve.
Dynamic Insertion Loss	DIL	Reduction in acoustic energy resulting from the insertion of a noise control element (e.g. an attenuator, acoustic enclosure etc.).
Free Field		Noise measuring location that is free from the presence of sound reflecting objects (except the ground), usually taken to mean being at least 3.5 metres distance from reflective surface(s) or greater.

Term	Abbreviation	Description
Normal Operating Conditions	NOC	Used to describe the normal operation of the complete plant installation (e.g. power station). This includes start-up and shutdown conditions (but not steam bypass).
Other Than Normal Operating Conditions	OTNOC	Used to describe the abnormal operation of the complete plant installation, which may include emergency operation and/or steam bypass etc.

APPENDIX B

NOISE SURVEY DETAILS AND SUMMARY RESULTS

LOCATION

Wimborne, England

WEATHER CONDITIONS

Date	Daytime (07:00 hours – 23:00 Hours)				Night Time (23:00 hours – 07:00 hours)			
	Temp, °C	Rain, mm/h	Wind Direction	Average Wind Speed, m/s	Temp, °C	Rain, mm/h	Wind Direction	Average Wind Speed, m/s
26/02/2021	6	0	S	0.6	1	0	S	0.3
27/02/2021	6	0	SE	0.8	2	0	SW	0.4
28/02/2021	7	0	NW	1.9	3	0	NW	1.1
01/03/2021	8	0	N	2.1	2	0	NW	1.6
02/03/2021	3	0	N	2.5	-	-	-	-

PERSONNEL

Tim Walton – Sol Acoustics

INSTRUMENTATION

Measurement Position 1

01dB Cube Sound level meter (serial no. 11114)

01dB Pre22 Microphone preamplifier (serial no. 1610399)

GRAS 40CD Microphone capsule (serial no. 260807)

01dB Cal21 acoustic calibrator (serial no. 34675320)

Measurement Position 2

01dB Cube Sound level meter (serial no. 11228)

01dB Pre22 Microphone preamplifier (serial no. 1610782)

GRAS 40CD Microphone capsule (serial no. 287832)

01dB Cal21 acoustic calibrator (serial no. 34675320)

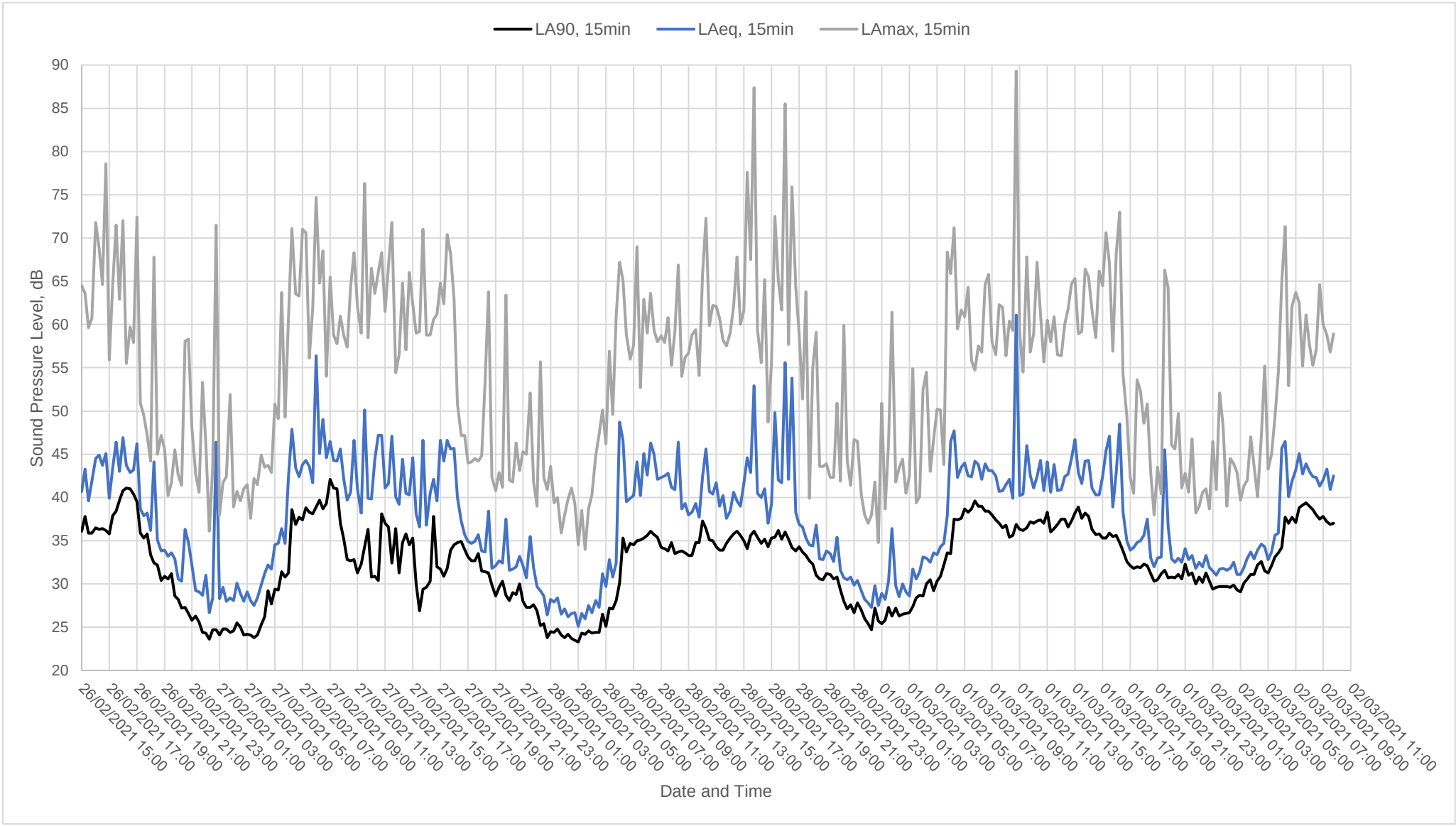
Vaisala WXT520 Weather Station (serial no. M3640013)

METHODOLOGY

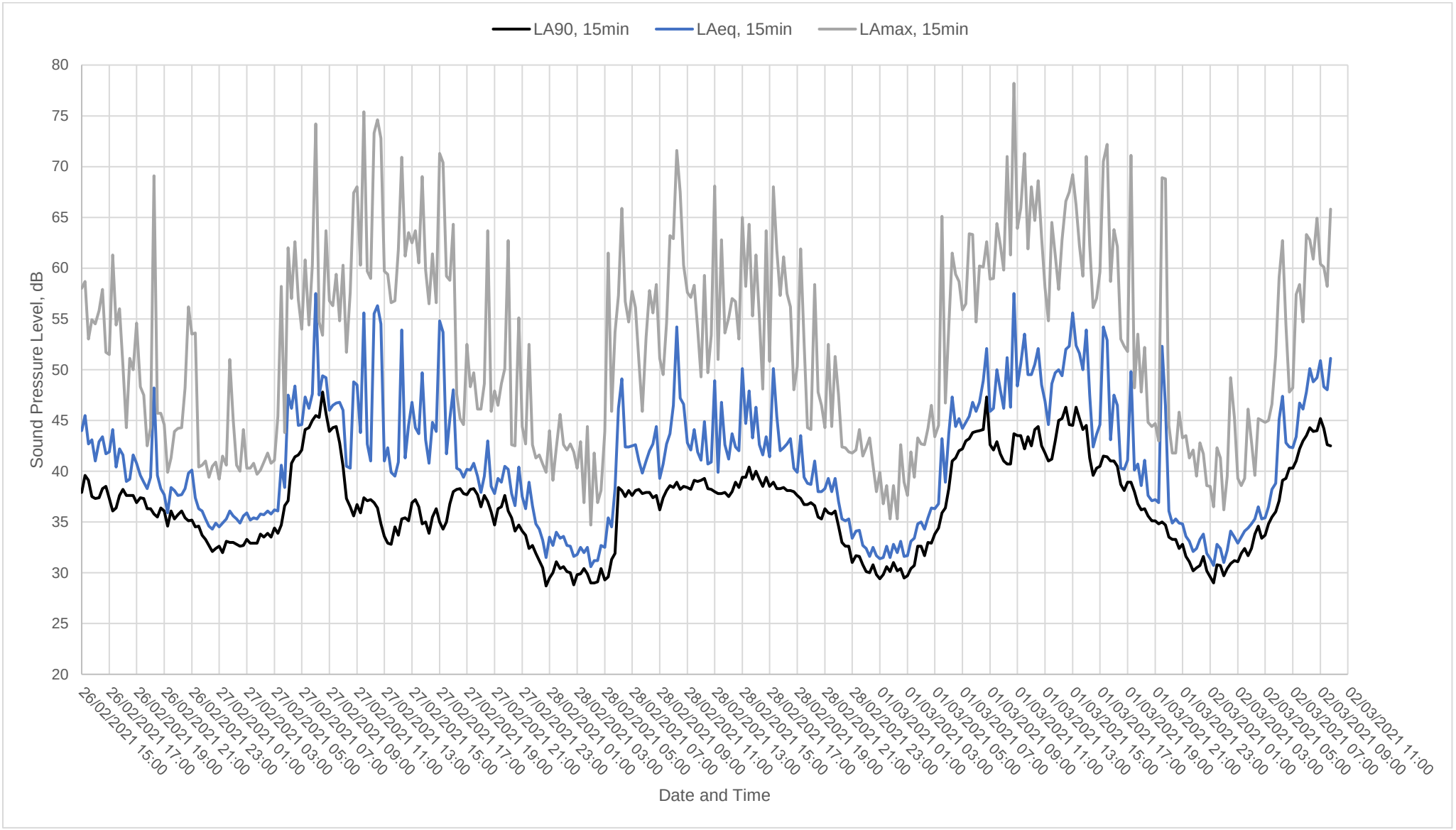
Before and after the measurements the noise monitoring equipment was calibrated to an accuracy of ±0.3dB using the Cal 21 Calibrator. The calibrator produces a sound pressure level of 94dB re 2 x 10^{-5} Pa @ 1kHz.

MEASUREMENT RESULTS

Graphs B1 and B2 summarises the broadband A-weighted results obtained at Monitoring Positions 1 and 2 respectively.



Graph B1: Measurement Position 1, 26 February to 2 March 2021



Graph B2: Measurement Position 2, 26 February to 2 March 2021

APPENDIX C

SITE PLAN INDICATING LOCATION OF NOISE SOURCES

Figure C1: Site plan indicating grid coordinate references x, y coordinates for all external modelled noise sources

APPENDIX D
ENVIRONMENTAL NOISE MODELLING RESULTS

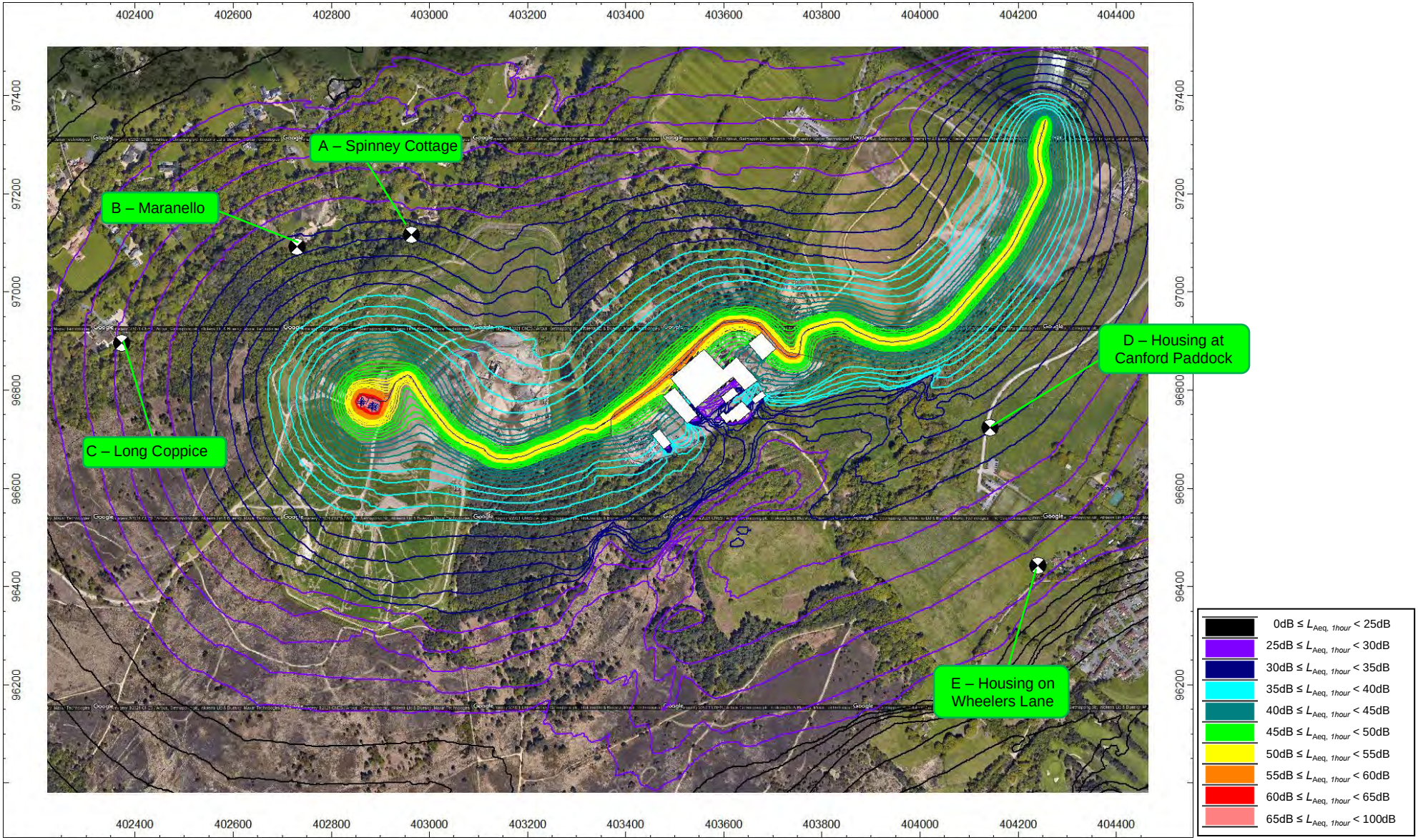


Figure D1: Predicted daytime $L_{Aeq,1hour}$ Specific Sound Level from the installation, at 4 metres grid height (Google 2022)

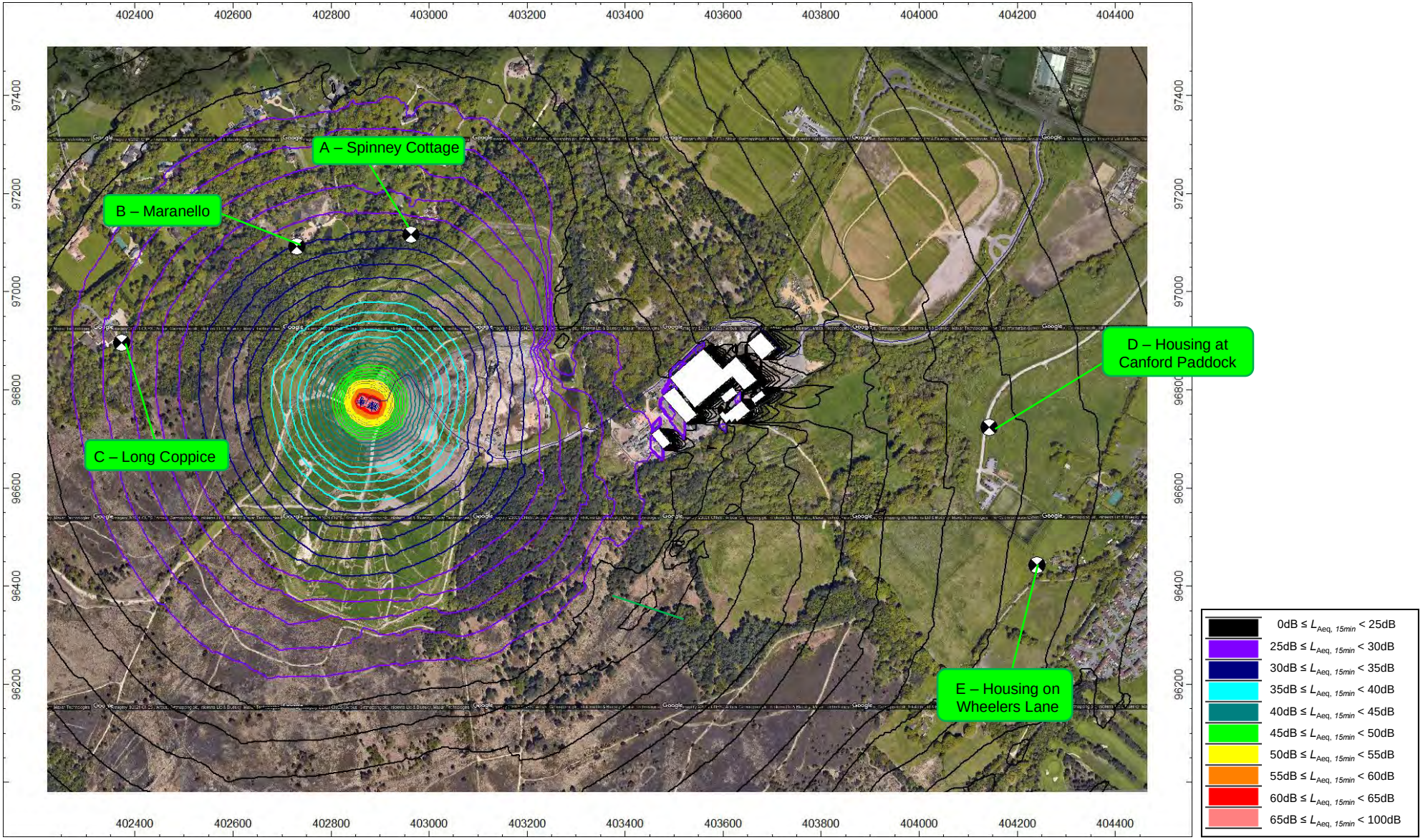


Figure D2: Predicted night time $L_{Aeq,15min}$ Specific Sound Level from the installation, at 4 metres grid height (Google 2022)

A – Spiney Cottage Predicted Specific Sound Levels Daytime (07:00 – 23:00 Hours)	
Source Description	**Specific Sound Level, dB $L_{Aeq,T}$**
HGV	21.8
Cooling System	20.1
Cooling System	19.6
Electrolyser (Side)	17.0
Electrolyser (Side)	16.9
Battery System (Side)	16.8
Electrolyser (Roof)	16.7
Battery System (Side)	16.6
Electrolyser (Roof)	16.5
Battery System (Roof)	16.4
Battery System (Roof)	16.3
Electrolyser (Side)	15.6
Compressor (Side)	15.6
Compressor (Side)	15.6
Electrolyser (Side)	15.3
Battery System (Side)	15.1
Compressor (Roof)	14.9
Compressor (Roof)	14.9
Battery System (Side)	14.6
Compressor (Side)	14.4
Compressor (Side)	14.4
Electrolyser Exhaust	13.4
Electrolyser Exhaust	12.2
Compressor (End)	11.7
Compressor (End)	11.6
Electrolyser (End)	11.4
Battery System (End)	11.4
Electrolyser (End)	11.3
Battery System (End)	11.2
Battery System (End)	7.3
Compressor (End)	7.2
Electrolyser (End)	7.1
Compressor (End)	6.9
Electrolyser (End)	6.3
Battery System (End)	5.9
Total	**30.7**

Table D1: A – Spiney Cottage
Specific Sound Levels, daytime

A – Spiney Cottage Predicted Specific Sound Levels Night time (23:00 – 07:00 Hours)	
Source Description	**Specific Sound Level, dB $L_{Aeq,T}$**
Cooling System	20.1
Cooling System	19.6
Electrolyser (Side)	17.0
Electrolyser (Side)	16.9
Battery System (Side)	16.8
Electrolyser (Roof)	16.7
Battery System (Side)	16.6
Electrolyser (Roof)	16.5
Battery System (Roof)	16.4
Battery System (Roof)	16.3
Electrolyser (Side)	15.6
Compressor (Side)	15.6
Compressor (Side)	15.6
Electrolyser (Side)	15.3
Battery System (Side)	15.1
Compressor (Roof)	14.9
Compressor (Roof)	14.9
Battery System (Side)	14.6
Compressor (Side)	14.4
Compressor (Side)	14.4
Electrolyser Exhaust	13.4
Electrolyser Exhaust	12.2
Compressor (End)	11.7
Compressor (End)	11.6
Electrolyser (End)	11.4
Battery System (End)	11.4
Electrolyser (End)	11.3
Battery System (End)	11.2
Battery System (End)	7.3
Compressor (End)	7.2
Electrolyser (End)	7.1
Compressor (End)	6.9
Electrolyser (End)	6.3
Battery System (End)	5.9
HGV	-
Total	**30.2**

Table D2: A – Spiney Cottage
Specific Sound Levels, night time

B – Maranello Predicted Specific Sound Levels Daytime (07:00 – 23:00 Hours)	
Source Description	**Specific Sound Level, dB $L_{Aeq,T}$**
Cooling System	21.1
HGV	20.7
Cooling System	20.2
Electrolyser (Side)	17.4
Electrolyser (Roof)	17.2
Electrolyser (Roof)	16.9
Electrolyser (Side)	16.8
Battery System (Roof)	16.7
Battery System (Roof)	16.5
Compressor (Side)	16.4
Battery System (Side)	15.9
Compressor (Roof)	15.6
Battery System (Side)	15.5
Compressor (Roof)	15.4
Compressor (Side)	14.8
Battery System (Side)	14.3
Electrolyser Exhaust	14.0
Electrolyser Exhaust	13.5
Compressor (End)	12.3
Electrolyser (End)	12.2
Compressor (End)	12.2
Electrolyser (End)	11.9
Battery System (End)	11.8
Electrolyser (Side)	11.7
Battery System (End)	11.7
Electrolyser (Side)	11.6
Compressor (Side)	10.9
Battery System (Side)	10.7
Compressor (Side)	10.3
Compressor (End)	9.5
Electrolyser (End)	8.9
Battery System (End)	6.0
Electrolyser (End)	5.8
Compressor (End)	5.6
Battery System (End)	4.4
Total	**30.5**

Table D3: B – Maranello
Specific Sound Levels, daytime

B – Maranello Predicted Specific Sound Levels Night time (23:00 – 07:00 Hours)	
Source Description	**Specific Sound Level, dB $L_{Aeq,T}$**
Cooling System	21.1
Cooling System	20.2
Electrolyser (Side)	17.4
Electrolyser (Roof)	17.2
Electrolyser (Roof)	16.9
Electrolyser (Side)	16.8
Battery System (Roof)	16.7
Battery System (Roof)	16.5
Compressor (Side)	16.4
Battery System (Side)	15.9
Compressor (Roof)	15.6
Battery System (Side)	15.5
Compressor (Roof)	15.4
Compressor (Side)	14.8
Battery System (Side)	14.3
Electrolyser Exhaust	14.0
Electrolyser Exhaust	13.5
Compressor (End)	12.3
Electrolyser (End)	12.2
Compressor (End)	12.2
Electrolyser (End)	11.9
Battery System (End)	11.8
Electrolyser (Side)	11.7
Battery System (End)	11.7
Electrolyser (Side)	11.6
Compressor (Side)	10.9
Battery System (Side)	10.7
Compressor (Side)	10.3
Compressor (End)	9.5
Electrolyser (End)	8.9
Battery System (End)	6.0
Electrolyser (End)	5.8
Compressor (End)	5.6
Battery System (End)	4.4
HGV	-
Total	**30.1**

Table D4: B – Maranello
Specific Sound Levels, night time

C – Long Coppice Predicted Specific Sound Levels Daytime (07:00 – 23:00 Hours)	
Source Description	**Specific Sound Level, dB $L_{Aeq,T}$**
HGV	18.0
Cooling System	17.4
Cooling System	17.3
Electrolyser (Roof)	13.9
Battery System (Roof)	13.6
Battery System (Roof)	13.5
Electrolyser (Side)	13.5
Electrolyser (Roof)	13.4
Battery System (Side)	12.9
Electrolyser (Side)	12.7
Compressor (Side)	12.6
Battery System (Side)	12.4
Compressor (Roof)	12.2
Compressor (Roof)	11.6
Battery System (Side)	11.3
Compressor (Side)	10.7
Electrolyser Exhaust	10.4
Electrolyser Exhaust	10.1
Electrolyser (End)	9.4
Battery System (End)	9.2
Battery System (End)	9.0
Compressor (End)	8.9
Compressor (End)	8.0
Electrolyser (Side)	7.8
Electrolyser (End)	7.3
Electrolyser (End)	6.8
Electrolyser (Side)	6.2
Battery System (Side)	6.0
Battery System (End)	5.8
Compressor (Side)	5.7
Compressor (Side)	5.4
Electrolyser (End)	5.2
Compressor (End)	5.2
Battery System (End)	4.3
Compressor (End)	4.0
Total	**27.2**

Table D5: C – Long Coppice Specific Sound Levels, daytime

C – Long Coppice Predicted Specific Sound Levels Night time (23:00 – 07:00 Hours)	
Source Description	**Specific Sound Level, dB $L_{Aeq,T}$**
Cooling System	17.4
Cooling System	17.3
Electrolyser (Roof)	13.9
Battery System (Roof)	13.6
Battery System (Roof)	13.5
Electrolyser (Side)	13.5
Electrolyser (Roof)	13.4
Battery System (Side)	12.9
Electrolyser (Side)	12.7
Compressor (Side)	12.6
Battery System (Side)	12.4
Compressor (Roof)	12.2
Compressor (Roof)	11.6
Battery System (Side)	11.3
Compressor (Side)	10.7
Electrolyser Exhaust	10.4
Electrolyser Exhaust	10.1
Electrolyser (End)	9.4
Battery System (End)	9.2
Battery System (End)	9.0
Compressor (End)	8.9
Compressor (End)	8.0
Electrolyser (Side)	7.8
Electrolyser (End)	7.3
Electrolyser (End)	6.8
Electrolyser (Side)	6.2
Battery System (Side)	6.0
Battery System (End)	5.8
Compressor (Side)	5.7
Compressor (Side)	5.4
Electrolyser (End)	5.2
Compressor (End)	5.2
Battery System (End)	4.3
Compressor (End)	4.0
HGV	-
Total	**26.6**

Table D6: C – Long Coppice Specific Sound Levels, night time

D – Housing at Canford Paddock Predicted Specific Sound Levels Daytime (07:00 – 23:00 Hours)	
Source Description	**Specific Sound Level, dB $L_{Aeq,T}$**
HGV	31.0
Cooling System	7.8
Cooling System	7.5
Electrolyser (Roof)	5.3
Electrolyser (Roof)	5.2
Battery System (Roof)	4.9
Battery System (Roof)	4.7
Electrolyser (Side)	4.6
Compressor (Side)	4.3
Compressor (Roof)	3.6
Battery System (Side)	3.6
Electrolyser (Side)	3.5
Compressor (Roof)	3.4
Compressor (Side)	2.1
Battery System (Side)	1.7
Electrolyser (End)	1.0
Electrolyser (End)	0.9
Compressor (End)	0.8
Battery System (End)	0.4
Electrolyser Exhaust	0.2
Battery System (End)	-0.5
Electrolyser Exhaust	-0.8
Compressor (End)	-0.9
Battery System (Side)	-2.8
Electrolyser (Side)	-3.0
Battery System (Side)	-3.1
Electrolyser (Side)	-4.2
Compressor (Side)	-4.5
Compressor (Side)	-4.9
Battery System (End)	-5.8
Battery System (End)	-5.9
Electrolyser (End)	-6.6
Compressor (End)	-7.7
Electrolyser (End)	-8.0
Compressor (End)	-8.3
Total	**31.2**

Table D7: D – Housing at Canford Paddock Specific Sound Levels, daytime

D – Housing at Canford Paddock Predicted Specific Sound Levels Night time (23:00 – 07:00 Hours)	
Source Description	**Specific Sound Level, dB $L_{Aeq,T}$**
Cooling System	7.8
Cooling System	7.5
Electrolyser (Roof)	5.3
Electrolyser (Roof)	5.2
Battery System (Roof)	4.9
Battery System (Roof)	4.7
Electrolyser (Side)	4.6
Compressor (Side)	4.3
Compressor (Roof)	3.6
Battery System (Side)	3.6
Electrolyser (Side)	3.5
Compressor (Roof)	3.4
Compressor (Side)	2.1
Battery System (Side)	1.7
Electrolyser (End)	1.0
Electrolyser (End)	0.9
Compressor (End)	0.8
Battery System (End)	0.4
Electrolyser Exhaust	0.2
Battery System (End)	-0.5
Electrolyser Exhaust	-0.8
Compressor (End)	-0.9
Battery System (Side)	-2.8
Electrolyser (Side)	-3.0
Battery System (Side)	-3.1
Electrolyser (Side)	-4.2
Compressor (Side)	-4.5
Compressor (Side)	-4.9
Battery System (End)	-5.8
Battery System (End)	-5.9
Electrolyser (End)	-6.6
Compressor (End)	-7.7
Electrolyser (End)	-8.0
Compressor (End)	-8.3
HGV	-
Total	**17.3**

Table D8: D – Housing at Canford Paddock Specific Sound Levels, night time

E – Housing on Wheelers Lane Predicted Specific Sound Levels Daytime (07:00 – 23:00 Hours)	
Source Description	**Specific Sound Level, dB $L_{Aeq,T}$**
HGV	26.0
Cooling System	7.4
Cooling System	6.6
Electrolyser (Roof)	4.2
Electrolyser (Roof)	3.7
Electrolyser (Side)	3.6
Compressor (Side)	3.3
Battery System (Roof)	3.2
Battery System (Roof)	3.0
Electrolyser (Side)	2.9
Compressor (Roof)	2.4
Compressor (Roof)	2.4
Battery System (Side)	1.9
Battery System (Side)	1.4
Compressor (Side)	1.2
Electrolyser Exhaust	0.6
Electrolyser Exhaust	0.6
Electrolyser (End)	0.1
Compressor (End)	-0.2
Electrolyser (End)	-0.6
Battery System (Side)	-0.8
Battery System (End)	-1.1
Battery System (Side)	-1.4
Compressor (End)	-1.7
Electrolyser (Side)	-2.3
Battery System (End)	-2.3
Battery System (End)	-3.8
Battery System (End)	-3.9
Compressor (Side)	-4.3
Electrolyser (Side)	-4.7
Electrolyser (End)	-4.8
Compressor (Side)	-5.5
Compressor (End)	-6.8
Electrolyser (End)	-7.4
Compressor (End)	-7.9
Total	**26.5**

Table D9: E – Housing on Wheelers Lane Specific Sound Levels, daytime

E – Housing on Wheelers Lane Predicted Specific Sound Levels Night time (23:00 – 07:00 Hours)	
Source Description	**Specific Sound Level, dB $L_{Aeq,T}$**
Cooling System	7.4
Cooling System	6.6
Electrolyser (Roof)	4.2
Electrolyser (Roof)	3.7
Electrolyser (Side)	3.6
Compressor (Side)	3.3
Battery System (Roof)	3.2
Battery System (Roof)	3.0
Electrolyser (Side)	2.9
Compressor (Roof)	2.4
Compressor (Roof)	2.4
Battery System (Side)	1.9
Battery System (Side)	1.4
Compressor (Side)	1.2
Electrolyser Exhaust	0.6
Electrolyser Exhaust	0.6
Electrolyser (End)	0.1
Compressor (End)	-0.2
Electrolyser (End)	-0.6
Battery System (Side)	-0.8
Battery System (End)	-1.1
Battery System (Side)	-1.4
Compressor (End)	-1.7
Electrolyser (Side)	-2.3
Battery System (End)	-2.3
Battery System (End)	-3.8
Battery System (End)	-3.9
Compressor (Side)	-4.3
Electrolyser (Side)	-4.7
Electrolyser (End)	-4.8
Compressor (Side)	-5.5
Compressor (End)	-6.8
Electrolyser (End)	-7.4
Compressor (End)	-7.9
HGV	-
Total	**16.6**

Table D10: E – Housing on Wheelers Lane Specific Sound Levels, night time

APPENDIX E
NOISE SOURCE SCHEDULE

Equipment Name	Data Source / Specification	Number of Sources	Average Sound Pressure Level, dB, at Octave Band Centre Frequency Hz									Average Sound Pressure Level on Measurement Surface, L_{pA}	Measurement Distance, m	Measurement Surface area at Measurement Position, m^2	Overall Sound Power Level, dB L_{wA}	Utilisation		Source: Area (A) Line (L) Point (P) or internal (I)	Outline Noise Mitigation Design
			32	63	125	250	500	1k	2k	4k	8k					Daytime	Night time		
Electrolyser	Achieve a sound pressure level of 70dB $L_{Aeq,T}$ at 1 metre distance (or lower) from any surface (including any ventilation louvres, personnel doors etc.).	2				79						70	1	210	93	100%	100%	A	TBC based upon manufacturer/supplier data.
Cooling System	Achieve a sound pressure level of 70dB $L_{Aeq,T}$ at 1 metre distance (or lower) when operating at full design duty.	2				79						70	1	48	87	100%	100%	P	TBC based upon manufacturer/supplier data
Electrolyser Exhaust	Achieve a sound pressure level of 70dB $L_{Aeq,T}$ at 1 metre distance from the outlet (or lower) when measured on axis with plant on full load.	2				79						70	1	13	81	100%	100%	P	TBC based upon manufacturer/supplier data
Compression Unit	Achieve a maximum sound pressure level of 70dB $L_{Aeq,T}$ at 1 metre distance (or lower) from any surface (including any ventilation louvres, personnel doors etc.).	2				79						70	1	162	92	100%	100%	A	TBC based upon manufacturer/supplier data
Battery System (BESS)	Achieve a maximum sound pressure level of 70dB $L_{Aeq,T}$ at 1 metre distance (or lower) from any surface (including any ventilation louvres, personnel doors etc.).	2				79						70	1	211	93	100%	100%	A	TBC based upon manufacturer/supplier data
Transformer	Assumed to be not acoustically significant.	4	-	-	-	-	-	-	-	-	-	-	-	-	-	100%	100%	-	-
HGV	Noise spectrum taken from BS5228 Table C.6 reference 21 ("Road Lorry (full)": 39t).	2 per day		96	82	74	73	77	72	71	64	81	10	628	109	1/hour	0	Moving P	-

Table E1: Plant and process noise source schedule (indicative plant noise levels shall not be exceeded)

APPENDIX F

DETAILS AND PROFESSIONAL QUALIFICATIONS OF CONTRIBUTING SOL STAFF

Company Details

Name of Organisation: Sol Acoustics Limited

Status: Private Limited Company

Address: Unit 11, Brunel Court,
Gadbrook Park
CW9 7LP

Telephone Number: 01565 632535

E-Mail: info@solacoustics.co.uk

Nature of Business: Acoustic Consultancy

Directors: Simon Ferenczi

Company Registration Number: 4218702

Key Technical Personnel & Qualifications

Simon Ferenczi	Institute of Acoustics Diploma (with additional modules), MIOA
Brian Horner	BSc (Hons), MIOA

Company Accreditations

Sol Acoustics is a member of The Association of Noise Consultants (ANC) and is qualified to perform sound insulation testing under the ANC's accredited testing scheme to demonstrate compliance with the requirements of Approved Document E of the Building Regulations.

Appendix 4

HyProvide™ A-Series

Produce your own hydrogen from renewable energy sources at the lowest cost possible

GREEN
HYDROGEN
SYSTEMS

v 1.5
Apr 21'

Cracking the code to viable **green hydrogen**

Infinitely available and potentially green, hydrogen comprises an ever-growing share of the world's energy mix. The barrier has always been the cost of delivering hydrogen "green."

At GHS, we have cracked the code to producing green hydrogen at any volume – from just a few hundred kW to multi-MW scale .

We have done it by combining our highly efficient pressurised alkaline electrolyzers, a modular, scalable approach to system design, and our on-site production philosophy, resulting in low-CAPEX electrolysis solutions that our customers around the world are deploying today.

Meet the HyProvide™
A-Series

The HyProvide™ A-Series is available in standardised, modular configurations for maximum efficiency, versatility and scalability.

Next-generation technology makes the A-Series one of the most efficient alkaline electrolysers available today. And the unit is designed from the ground up to accommodate the input fluctuations that come with renewable energy sources.

The result is consistently high output, very low power consumption and >99.998% pure and dry hydrogen supplied at 35 bar – ideal for further compression, immediate use as is or direct storage.

Based on a decade of research and development, we have achieved a unique, proven, and cost-competitive technology. Available in 30, 60 or 90 Nm^3/h versions and fully upgradable, the HyProvide units can operate stand alone or clustered to meet required volumes of green hydrogen up to multi-MW scale.

One of the **most efficient** alkaline electrolysers **on the market**

Technical Overview
HyProvide™ A-Series specifications

Electrolyser unit	A30	A60	A90
Hydrogen production rate (Nm^3/hour | kg/hour)	30 | 2.7	60 | 5.4	90 | 8.1
Hydrogen pressure (bar)	35	35	35
Hydrogen purity (%)	>99.998	>99.998	>99.998
Hydrogen dew point (°C)	-70	-70	-70
Oxygen purity (%)	>99	>99	>99
Maximum stack power consumption (kW) BOL-EOL*	125 - 150	250 - 300	390 - 450
Maximum stack voltage max. (DC)	120	250	250
Stack current at 100% load (A)	1200	1200	1800
Stack at 100% load BOL:			
Power consumption (kWh/Nm^3)	4.17	4.17	4.33
Efficiency HHV (%)	84.97	84.97	81.8
Stack at 50% load BOL:			
Power consumption (kWh/Nm^3)	4,15	4,15	4,15
Efficiency HHV (%)	85,2	85,2	85,2
Total system at 100% load BOL container:			
Power consumption (kWh/Nm^3)	4,69	4,69	4,82
Energy consumption (kWh/kg hydrogen)	52,2	52,2	53,6
Efficiency HHV (%)	75,4	75,4	73,5
Efficiency LHV (%)	63,9	63,9	62,2
Total system at 100% load BOL Electrolyser & Power supply:			
Power consumption (kWh/Nm^3)	4,5	4,5	4,65
Energy consumption (kWh/kg hydrogen)	50,1	50,1	51,7
Efficiency HHV (%)	78,7	78,6	76,2
Electrical interface	3 phase 400 V +/- 10 %, 50-60 Hz	3 phase 400 V +/- 10 %, 50-60 Hz	3 phase 400 V +/- 10 %, 50-60 Hz
Stack water intake (litres/Nm^3)	0.9	0.9	0.9
Water quality (µS/cm)	<5	<5	<5
Liquid cooling requirements (kW)	40	80	120
Communication interface	Ethernet/Mod-bus	Ethernet/Mod-bus	Ethernet/Mod-bus
Control software	HyProManager™	HyProManager™	HyProManager™
Installation	Indoors or container	Indoors or container	Indoors or container
Ambient humidity skid frame (, non-condensing)	0–90	0–90	0–90
Ambient temperature skid frame (°C)	+5 - +35	+5 - +35	+5 - +35
Ambient temperature container (°C)	-20 - +35	-20 - +35	-20 - +35
Skid frame measurements wxdxh (mm)	2100x 1300 x 2416	2100x 1300 x 2416	2100x 1300 x 2416
Skid frame weight (kg)	<3400	<3500	<3500
Expected stack service life (operational hours)	100.000+	100.000+	100.000+

All configurations are CE- approved and compliant with:
Hydrogen generators 22734: 2019
EMC directive (2014/30/EU)
Low voltage directive (2014/35/EU)
Machine directive 3 (2006/42/EC)
PED directive (2014/68/EU)
Measurements carried out in GHS lab

* BOL - Beginning of life
EOL - End of life

Unique scalability and modularity

Start small or scale it up

complete **green hydrogen factory** in a container **16m²**

Containerised solution

HyProvide™ A-Series installed in a 20ft container, allows for a rapid deployment of a fully self-contained electrolyser with no requirement of construction of a building

Cluster to scale

As one of the only standardised, modular electrolysers on the market, the A-Series lets you cluster units to scale from 15 Nm^3/1.4 kg to over 3330 Nm^3/300 kg of hydrogen per hour. When clustering, our control system enables you to operate units individually or together as a group for ultimate flexibility.

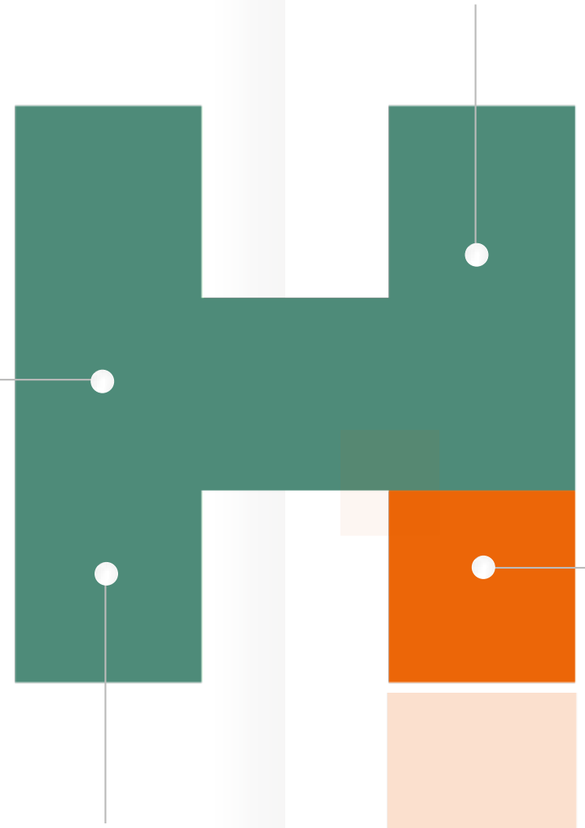
For all these installations, high-efficiency electrolysis, a modular, scalable approach and on-site production can drive costs down to below the cost of hydrogen delivered in pressurized cylinders or tube trailers.

Factory-installed cluster
A factory-installed HyProvide™ A-Series cluster, including smart controller.

Who is using GHS's electrolysers?
Applications

Refueling Stations

Our electrolysers are currently producing hydrogen from renewable energy for fuel cell electric busses and cars, with several new deployments planned for the near future like zero emission trains and ferries.



Power-to-X

Our electrolysers can produce green hydrogen for direct injection into the natural gas grid, or for combining with CO2 to produce clean methane and methanol. Another example is production of alternative fuel for ships like green ammonia or DME. Our electrolysers are also ideal for power-to-power applications in off-grid communities and remote locations, in combination with hydrogen fuel cells

Industry

Producing green hydrogen on-site using scalable GHS electrolyser clusters is a viable alternative for many industrial sites, enabling them to improve their green profile and become more energy independent. What's more, green hydrogen produced via on-site electrolysis is often considerably less costly than hydrogen delivered from industrial gas companies.

Power-to-Power

Our electrolysers are also ideal for power-to-power applications in off-grid communities and remote locations, in combination with hydrogen fuel cells or a hydrogen-powered generator as a clean replacement for diesel gensets.

Green Hydrogen Systems

Nordager 21
DK-6000 Kolding
Demark
Tel: +45 7550 3500
sales@greenhydrogen.dk

About **Green Hydrogen Systems**

Green Hydrogen Systems is a leading provider of standardised and modular electrolysers for the production of green hydrogen solely based on renewable energy. With its wide range of possible applications, green hydrogen plays a key role in the ongoing fundamental shift in our energy systems towards a net-zero emission society in 2050. As a result, the demand for green hydrogen is surging, requiring a significant scale-up of electrolysis capacity.

Founded in 2007 and building on more than 10 years of technology development, we today have a commercially proven and cost competitive electrolysis technology, endorsed by leading wind energy companies.

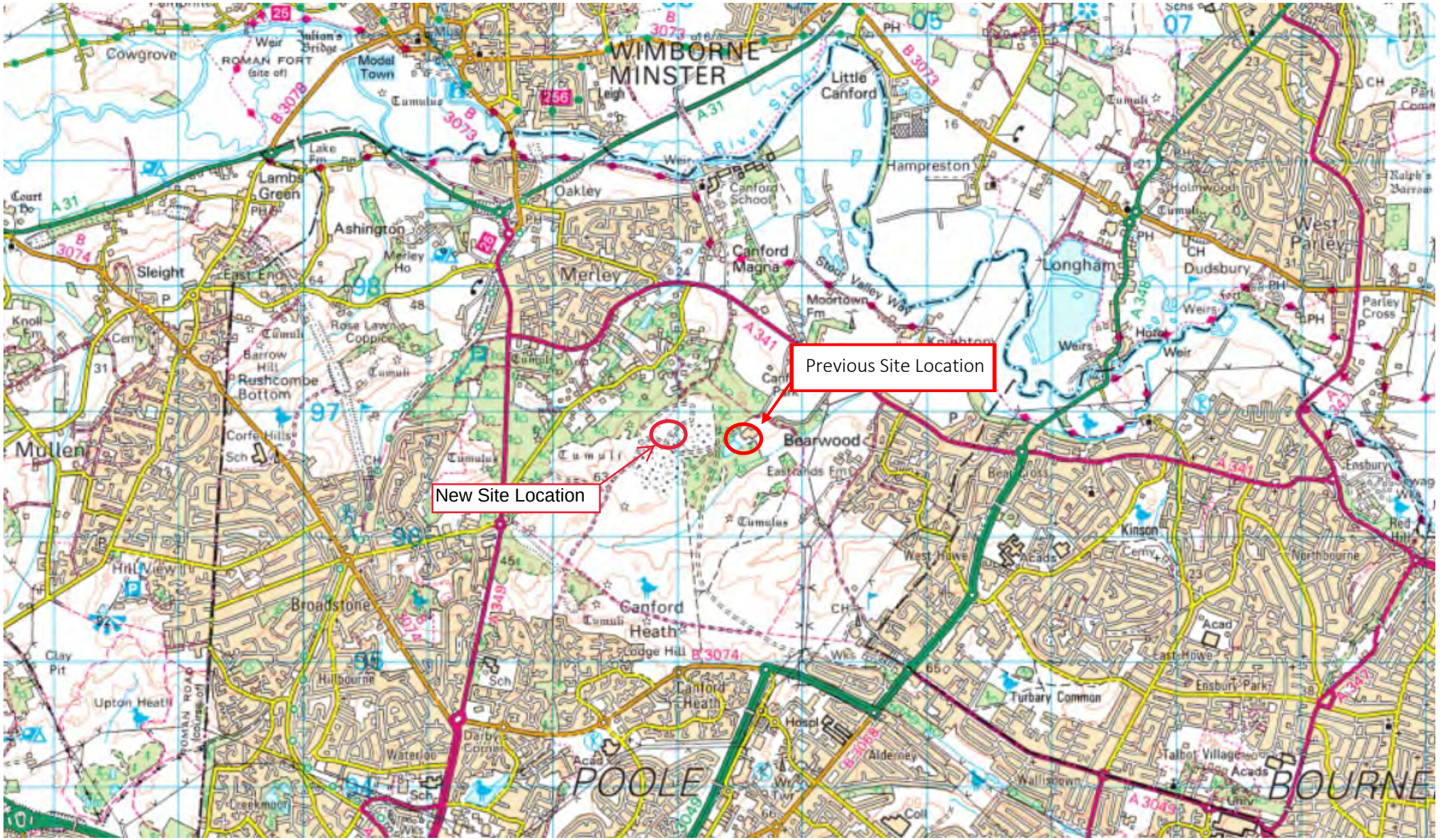
Green Hydrogen Systems combines ultra-efficient, standardised and modular electrolysis technology with an on-site production approach to bring cost competitive green hydrogen to producers of hydrogen fueling stations, those requiring hydrogen in power-to-X installations, industrial facilities and more. Our technology is already in use in several places in Europe, with the rapidly emerging OEM segment as a particular focus of future growth.

Our modern and state-of-the-art manufacturing, R&D and office facility in Kolding, Denmark, is armed with production and testing equipment to optimize optimise manufacturing and provide the highest levels of quality and safety. The 4,500 m2 facility with a production capacity of 75 MW per year completes the first phase of our expansion plan.

GREEN
HYDROGEN
SYSTEMS

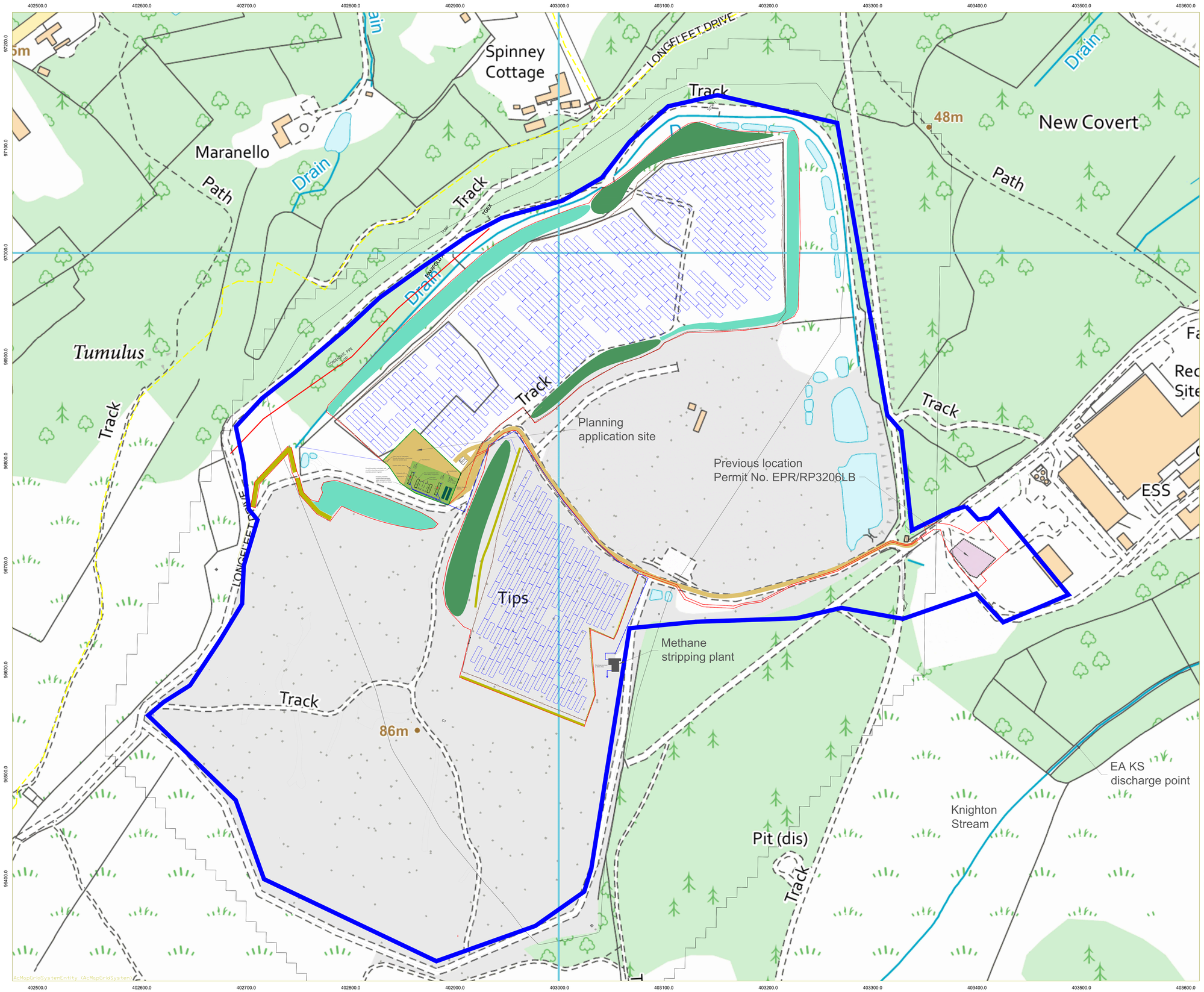
www.greenhydrogen.dk

Appendix 5



OS Licence Number (100062750)

sol environment



LEGEND

- Project Boundary & Fence Line (8.4Ha)
- Biodiversity & Planting Areas (0.86Ha)
- Cable Route
- Bund Section (0.043Ha)
- PV Array
- Access Route
- Enhanced Habitats' Maintenance Areas (1.02 Ha)
- Landownership

Additional foundation and drainage information added by CRE Ltd 05.2022
Drawing reference number: 01

Permit application reference:
LCL/CRE/H2 Whites Pit/2022 05/B2 5a Plans

REV	Description	DESIGNED	CHECKED	APPROVED	DATE
0	Initial Review	NB	CB	PC	24/01/21

Unit 9. Dunchideock Barton . Dunchideock .
Exeter . Devon . EX2 9UA
(t) 01726 218618
www.ethical-power.com

Project Title:	White Pit Project
Description:	White Pit Planning & Offset Areas
Location co-ord:	N 50.787 W -1.982
Site address:	
Drg No:	EP-1355-L-LP-01
Scale:	1:1250@A0
Job No:	1355
Drawn by:	N.B.
Checked by:	P.C.
Date:	24/01/21

Site Reference
WHITE'S PIT

Job title

Drawing title

CANFORD RENEWABLE ENERGY

Energy Site Control Centre, Arena Way, Wimborne, Dorset BH21 3BW
Telephone: (01202) 612500 Fax: (01202) 331974

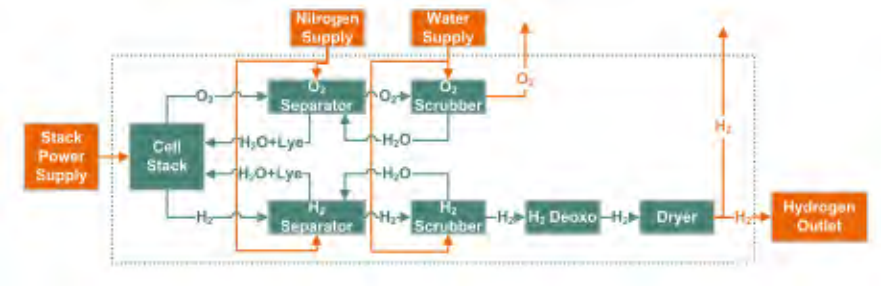
chkd.	date	scale	drawn
	08/06/2022	1:500	LH

DRAWING No 02

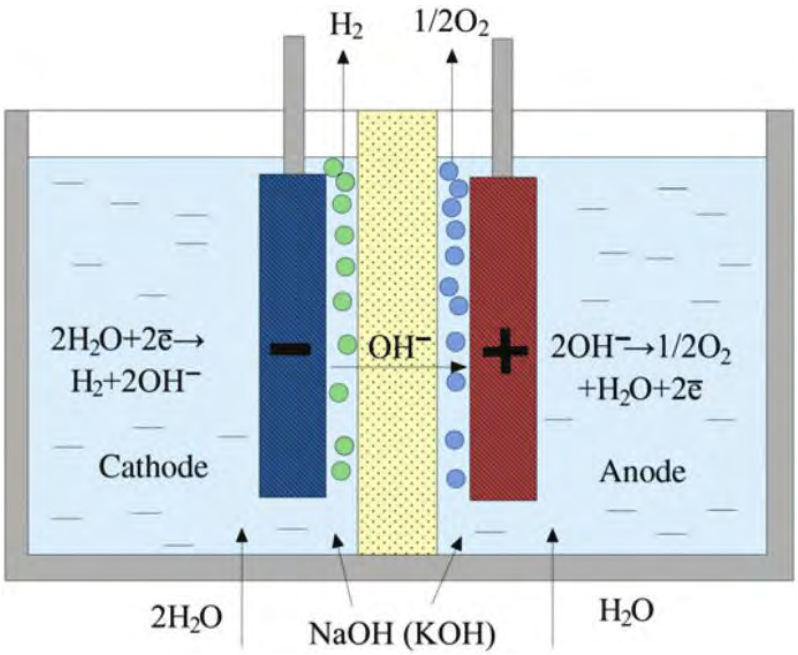
Canford Renewable Energy Ltd

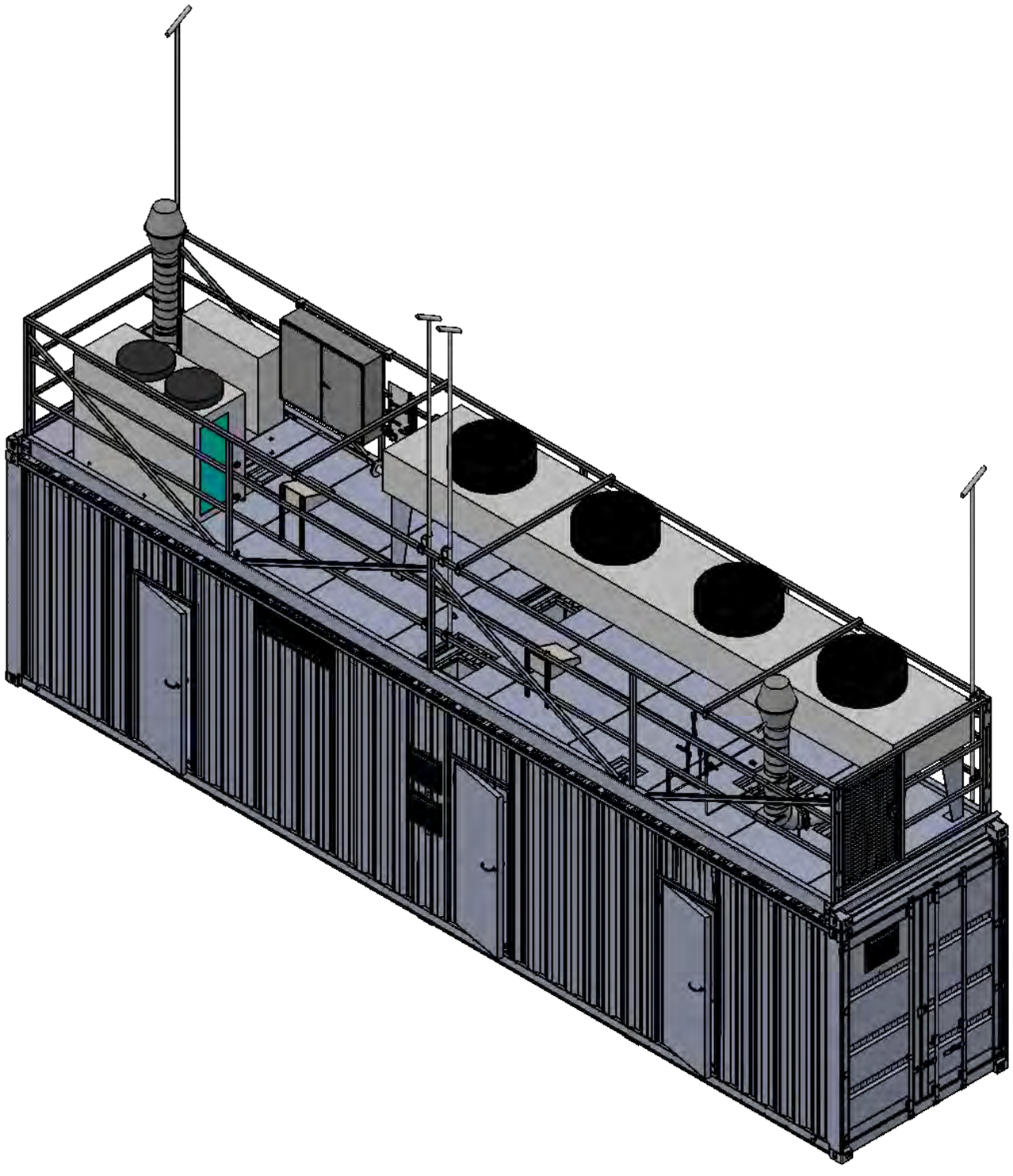
Proposed Hydrogen Generating Plant Whites Pit

Process Flow Diagram for Whites Pit



Generic Electrolysis Block Diagram





REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	02-00	• Position of cooler updated • Position of purges updated • Specification of concrete foundation replaced by container support area • Dimensions added to service access • H2 and N2 outlet position updated • Protective equipotential bonding added • Notes for process module 1 and 2 added	14-01-2022	BAN

HyProvide A-series
2x Process modules mounted in 40' high cube shipping container

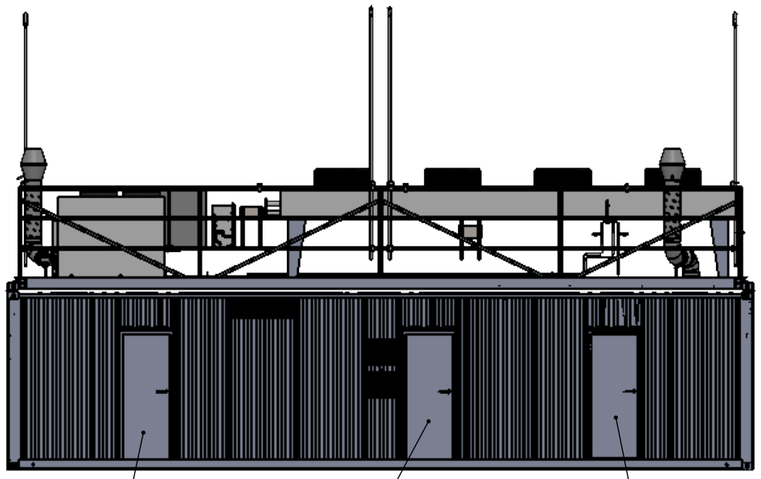
	Init.	Date
Created	MDA	25-03-2021
Revision	MDA	21-01-2022
Approved	BAN	21-01-2022
3D Designer	MDA	
Tolerance	N/A	
Certificate	N/A	
Material	N/A	
Weight	N/A	[kg]

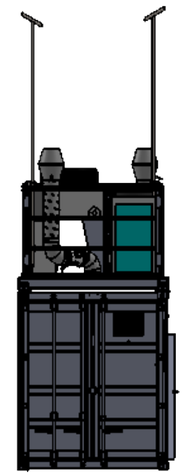
UNLESS OTHERWISE SPECIFIED:
Dimensions are in millimeters
Projection:

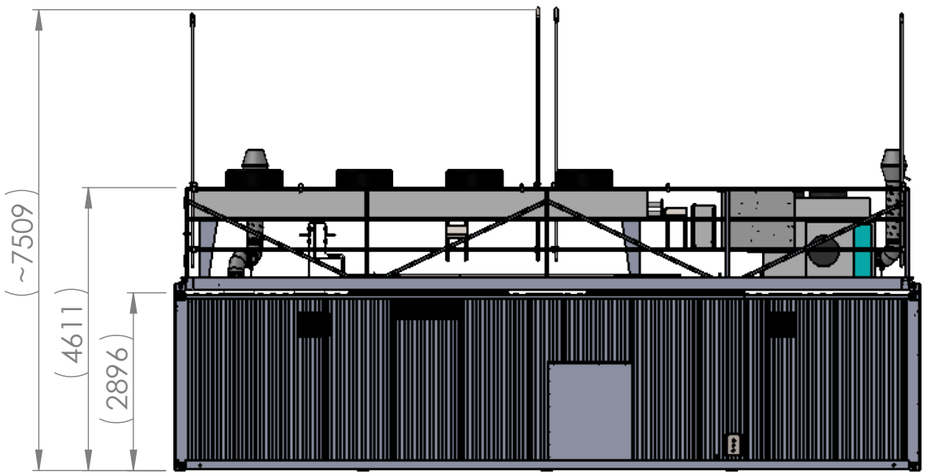
GREEN HYDROGEN SYSTEMS
Nordager 21
DK-6000 Kolding
CVR: 30548701
Phone: +45 75 50 35 00

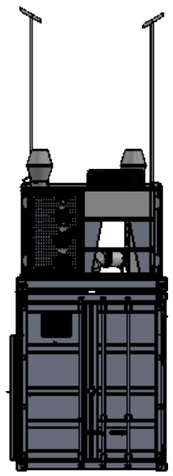
Description
A-Series Mechanical Drawing 40 Ft Container

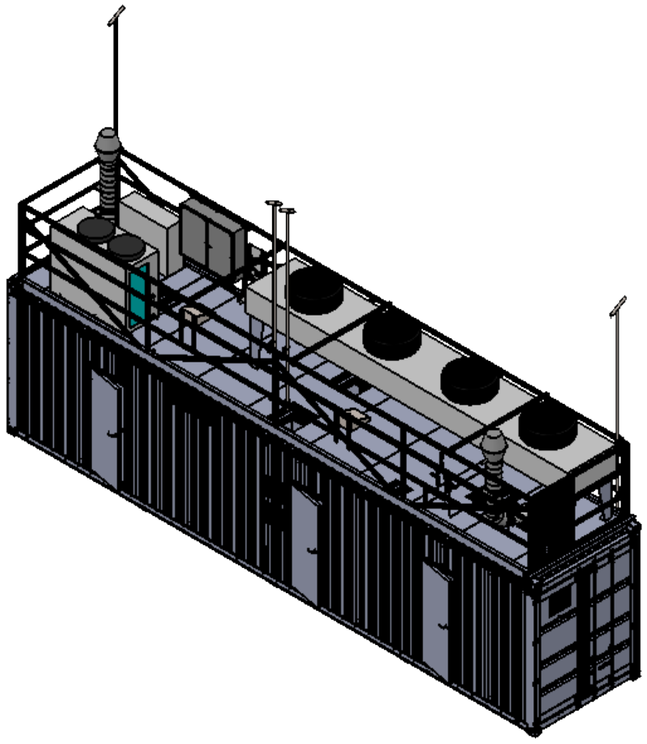
Part No.	Revision No.	Scale	Sheet	Size
900-0062	Rev. 02	1:50	1/9	A3

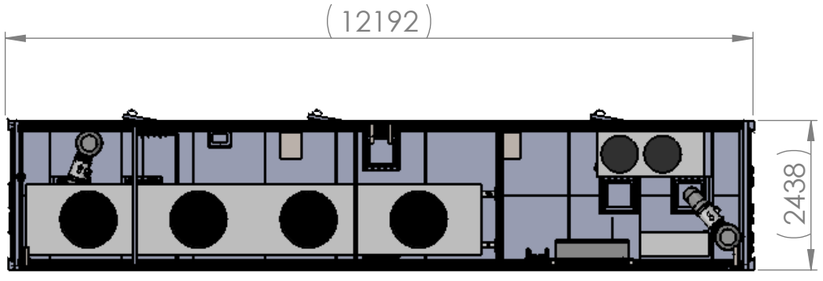












Note: Measurements only for guidance

	Init.	Date
Created	MDA	25-03-2021
Revision	MDA	21-01-2022
Approved	BAN	21-01-2022
3D Designer	MDA	
Tolerance	N/A	
Certificate	N/A	
Material	N/A	
Weight	N/A	[kg]

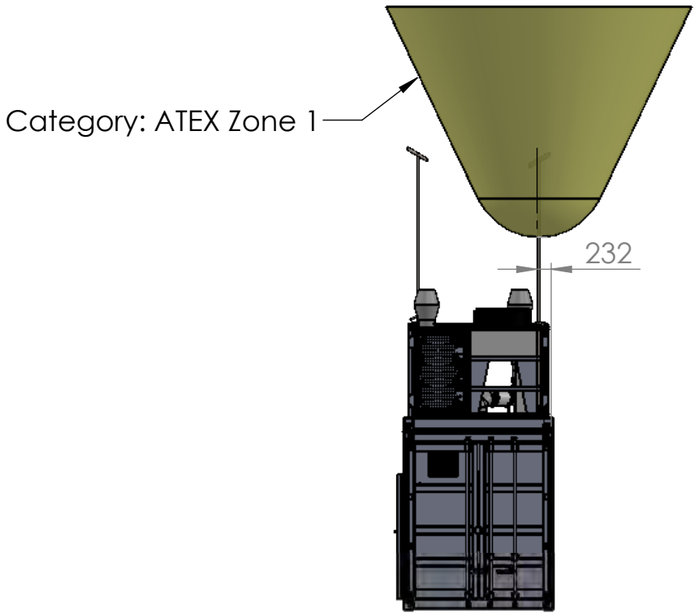
UNLESS OTHERWISE SPECIFIED:
Dimensions are in millimeters
Projection:

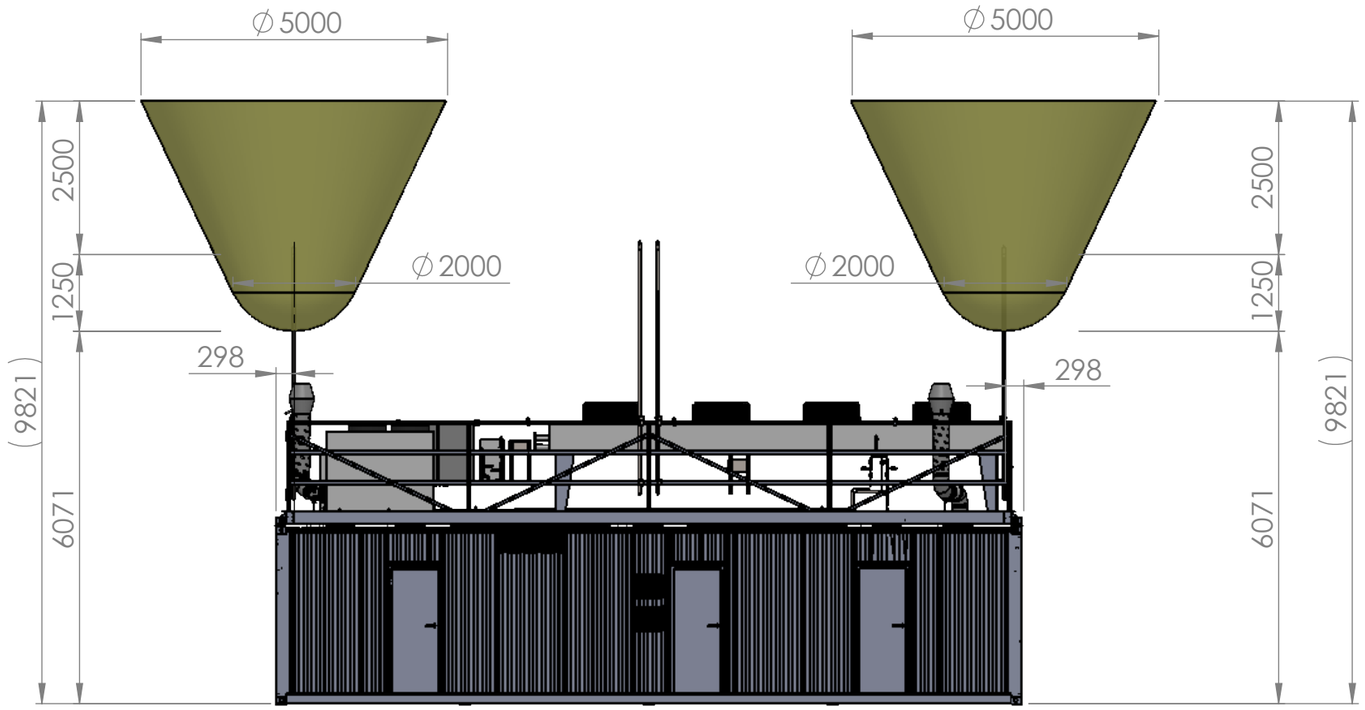
GREEN HYDROGEN SYSTEMS
Nordager 21
DK-6000 Kolding
CVR: 30548701
Phone: +45 75 50 35 00

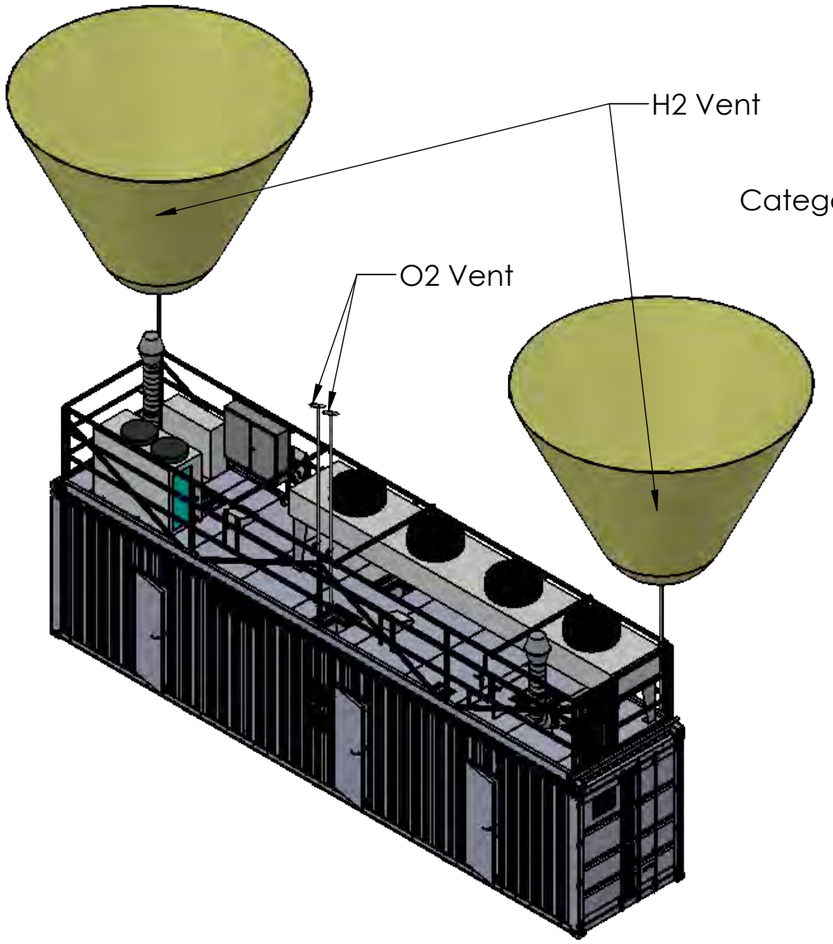
Description
A-Series Mechanical Drawing 40 Ft Container

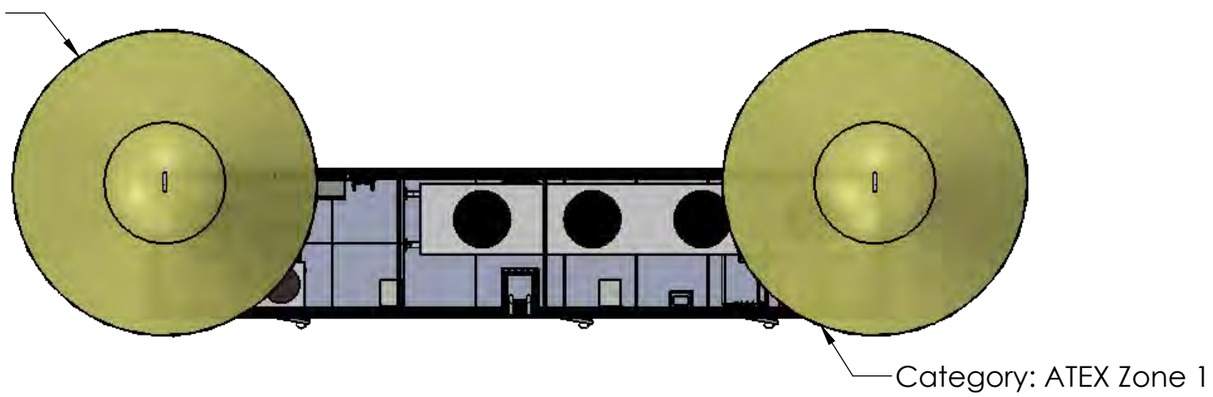
Part No.	Revision No.
900-0062	Rev. 02

Scale 1:100 Sheet 2/9 Size A3









	Init.	Date
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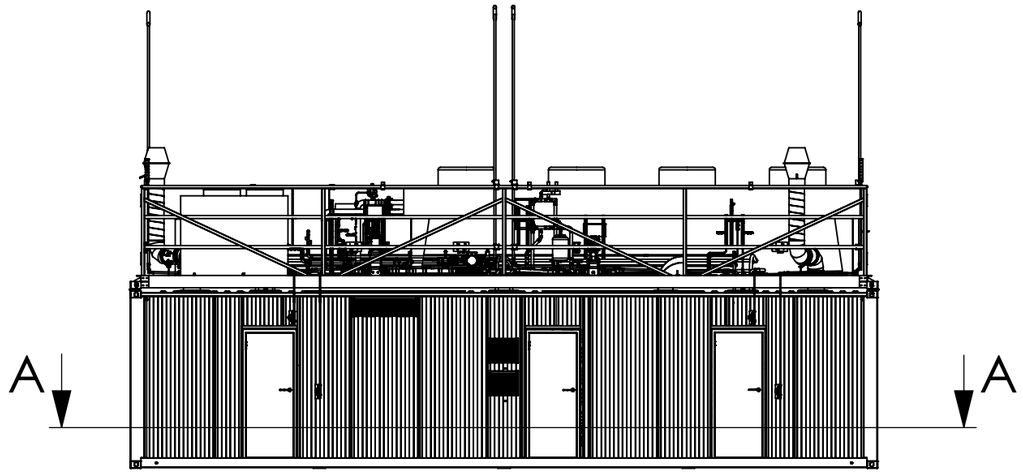
Revision	MDA	21-01-2022
Approved	BAN	21-01-2022
3D Designer	MDA	
Tolerance	N/A	
Certificate	N/A	
Material	N/A	
Weight	N/A	[kg]

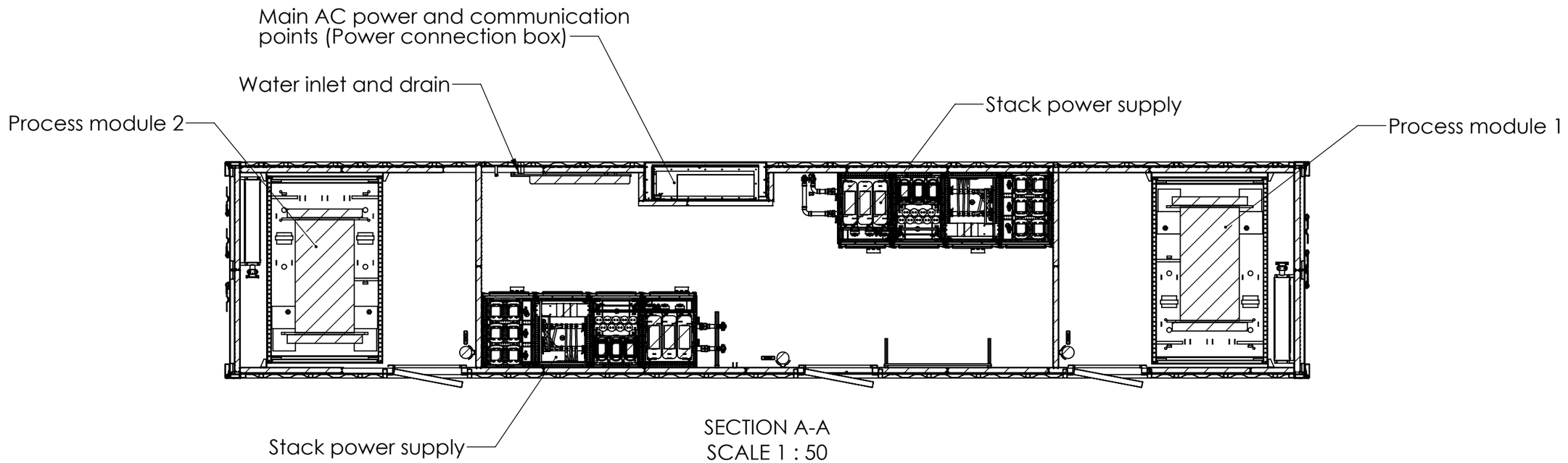
UNLESS OTHERWISE SPECIFIED:
Dimensions are in millimeters
Projection:

GREEN HYDROGEN SYSTEMS
Nordager 21
DK-6000 Kolding
CVR: 30548701
Phone: +45 75 50 35 00

Description
A-Series Mechanical Drawing 40 Ft Container

Part No.	Revision No.	Scale	Sheet	Size
900-0062	Rev. 02	1:100	3/9	A3





SECTION A-A
SCALE 1 : 50

Only main components are illustrated

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Created	MDA	25-03-2021
Revision	MDA	21-01-2022
Approved	BAN	21-01-2022
3D Designer	MDA	
Tolerance	N/A	
Certificate	N/A	
Material	N/A	
Weight	N/A	[kg]

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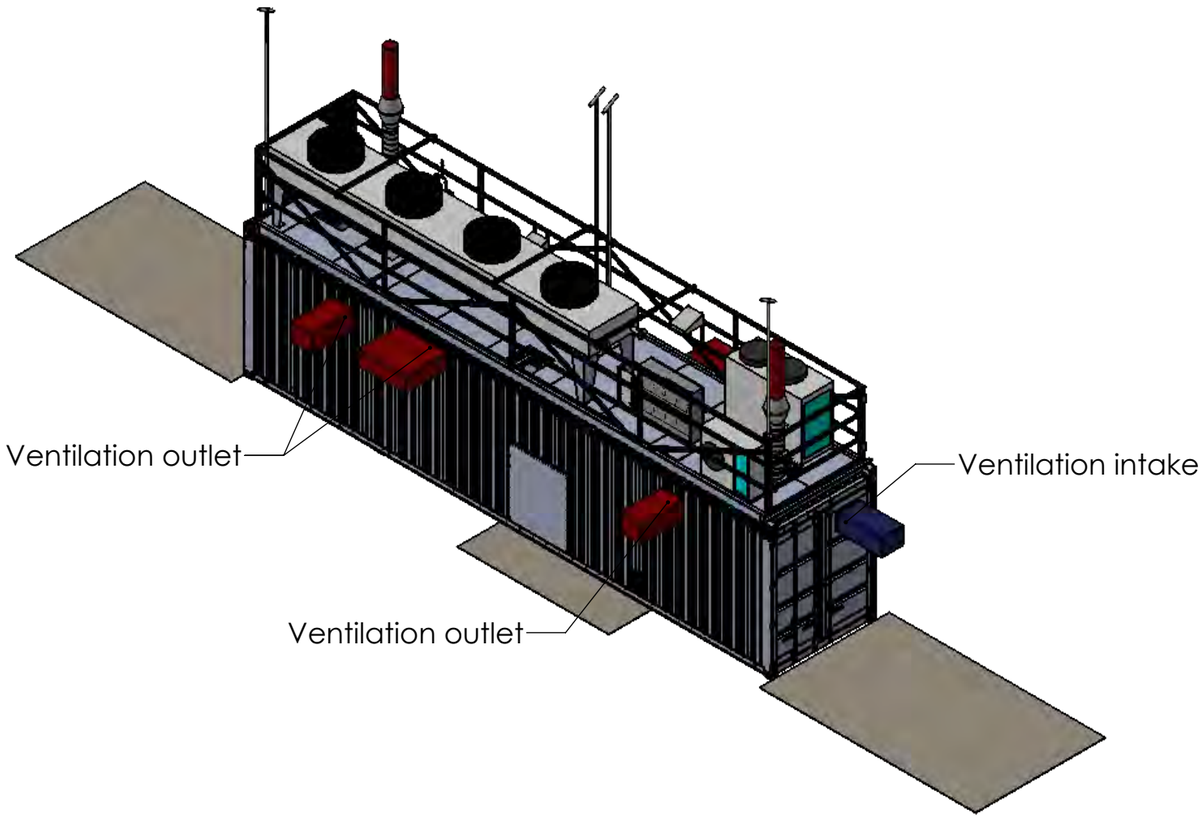
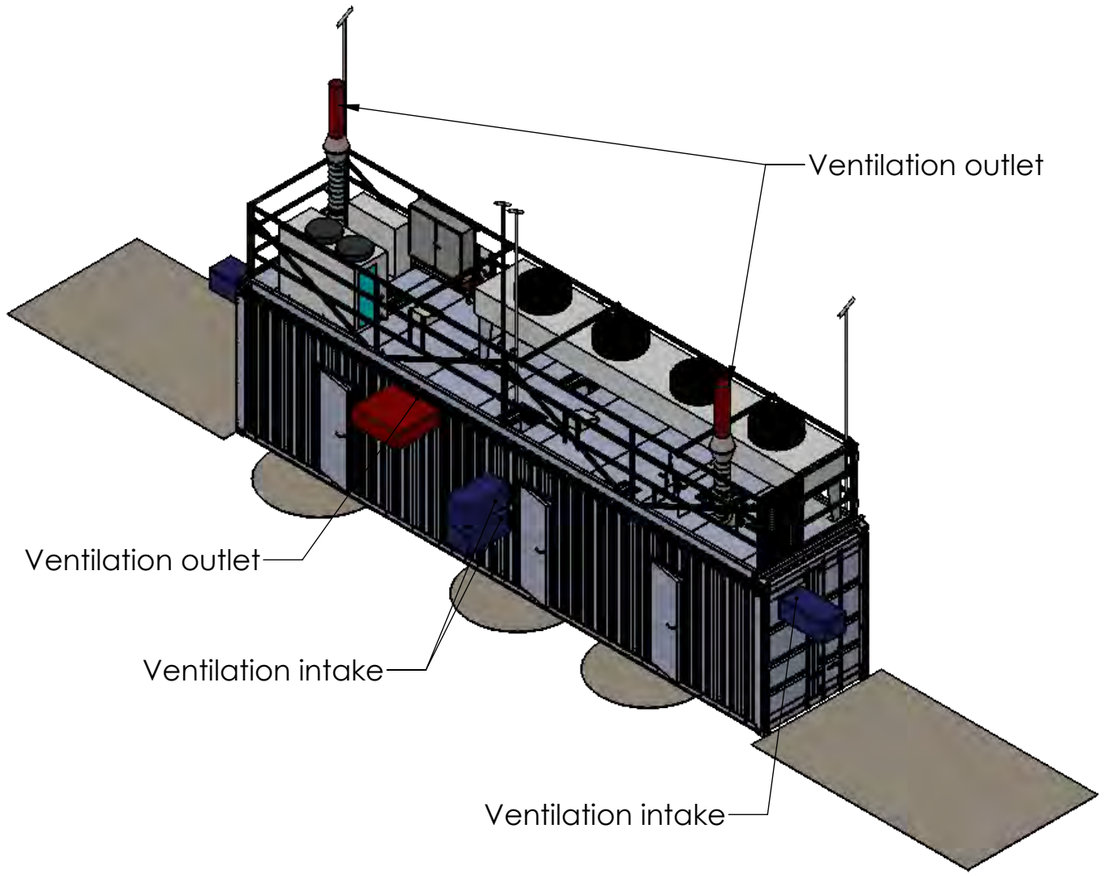
Projection:

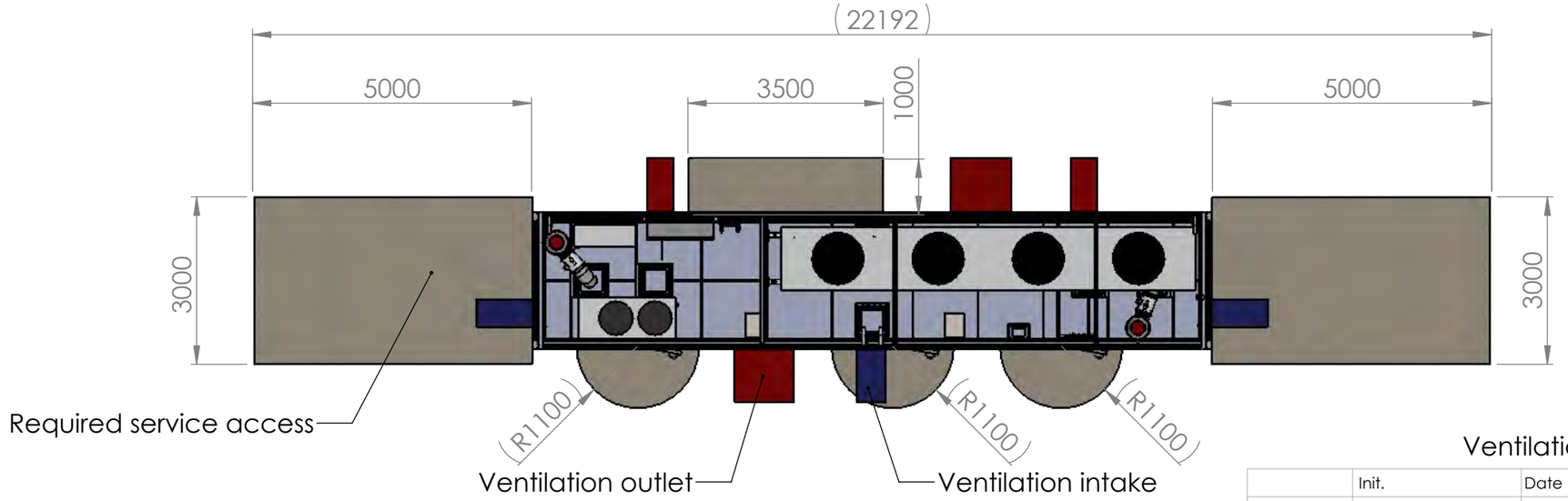
GREEN HYDROGEN SYSTEMS
Nordager 21
DK-6000 Kolding
CVR: 30548701
Phone: +45 75 50 35 00

Description
A-Series Mechanical Drawing 40 Ft Container

Part No.	Revision No.	Scale	Sheet	Size
900-0062	Rev. 02	1:100	4/9	A3







Ventilation intake/outlet must not be obstructed

	Init.	Date
Created	MDA	25-03-2021
Revision	MDA	21-01-2022
Approved	BAN	21-01-2022
3D Designer	MDA	
Tolerance	N/A	
Certificate	N/A	
Material	N/A	
Weight	N/A	[kg]

UNLESS OTHERWISE SPECIFIED:
Dimensions are in millimeters
Projection:

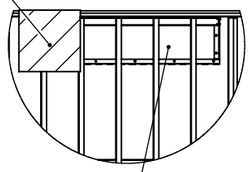
GREEN HYDROGEN SYSTEMS
Nordager 21
DK-6000 Kolding
CVR: 30548701
Phone: +45 75 50 35 00

Description
A-Series Mechanical Drawing 40 Ft Container

Part No.	Revision No.	Scale	Sheet	Size
900-0062	Rev. 02	1:100	5/9	A3

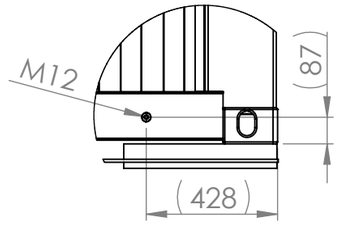
Be aware of customer supplied foundation

DETAIL E
SCALE 1 : 50

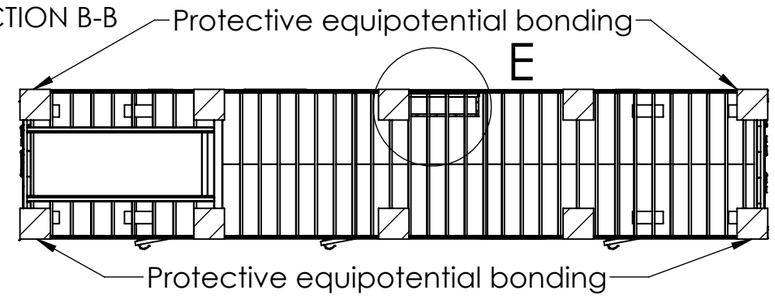


Power and signal cables to be routed through floor

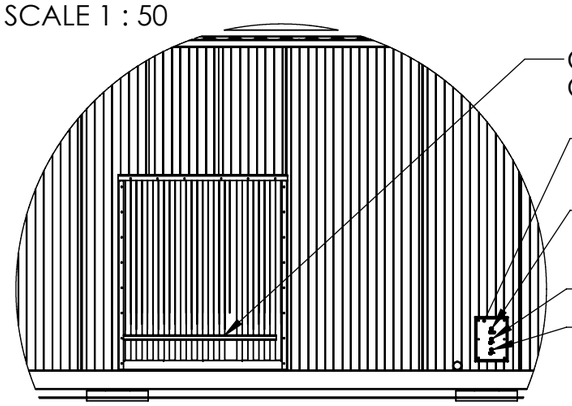
DETAIL N
SCALE 1 : 20
4x Protective equipotential bonding



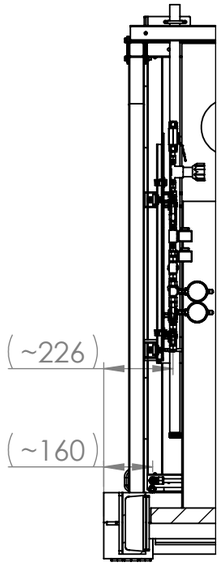
SECTION B-B

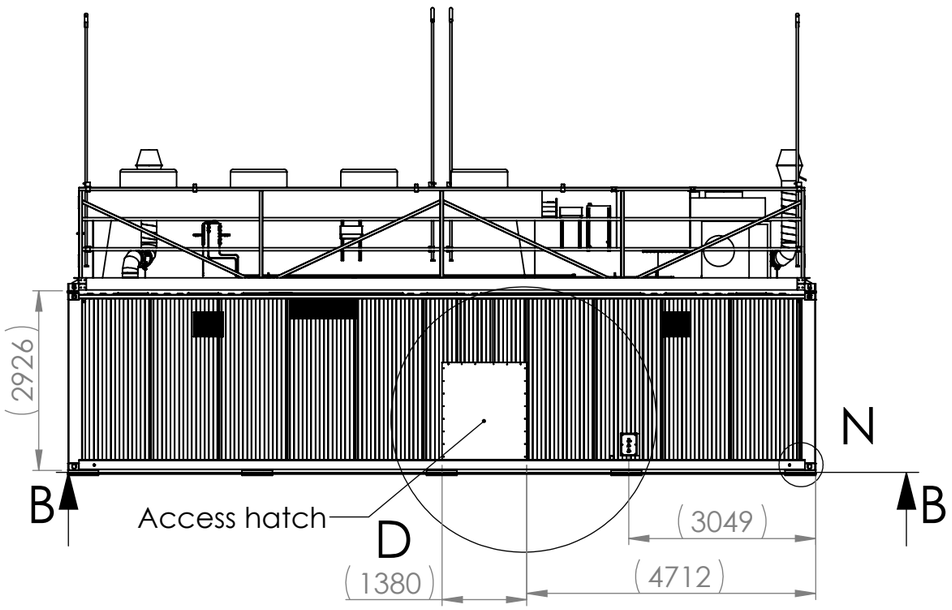


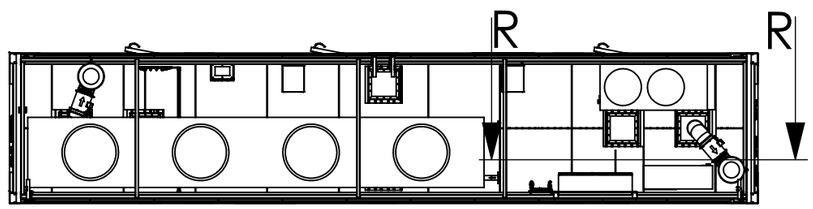
DETAIL D
SCALE 1 : 50



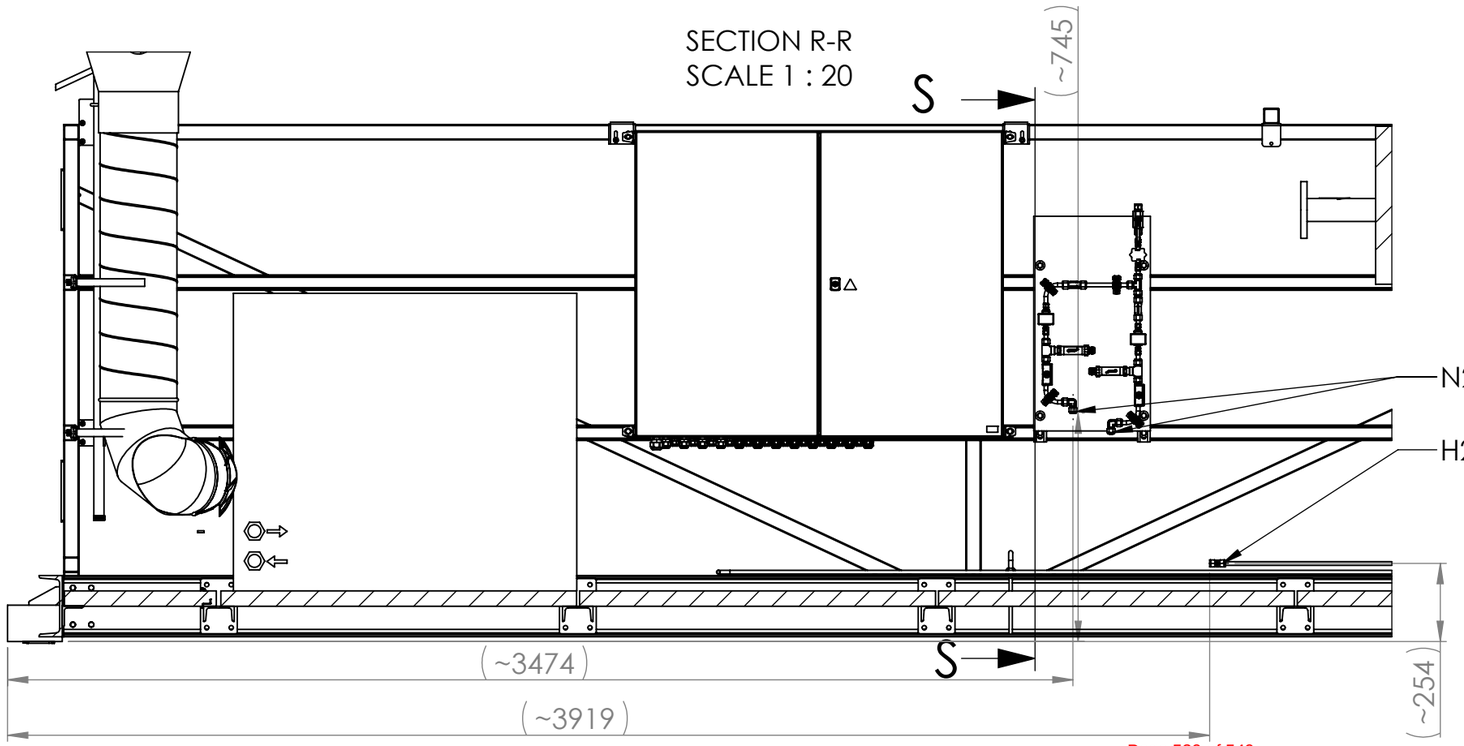
SECTION S-S
SCALE 1 : 20







SECTION R-R
SCALE 1 : 20



N2 inlet - 12mm stainless steel tube fitting

H2 outlet - 12mm stainless steel tube fitting

	Init.	Date
Created	MDA	25-03-2021
Revision	MDA	21-01-2022
Approved	BAN	21-01-2022
3D Designer	MDA	
Tolerance	N/A	
Certificate	N/A	
Material	N/A	
Weight	N/A	[kg]

UNLESS OTHERWISE SPECIFIED:
Dimensions are in millimeters
Projection:

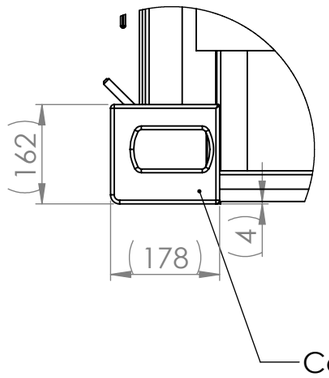
GREEN HYDROGEN SYSTEMS
Nordager 21
DK-6000 Kolding
CVR: 30548701
Phone: +45 75 50 35 00

Description
A-Series Mechanical Drawing 40 Ft Container

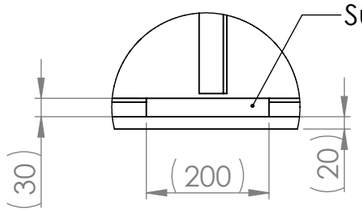
Part No.	Revision No.
900-0062	Rev. 02

Scale 1:100 Sheet 6/9 Size A3

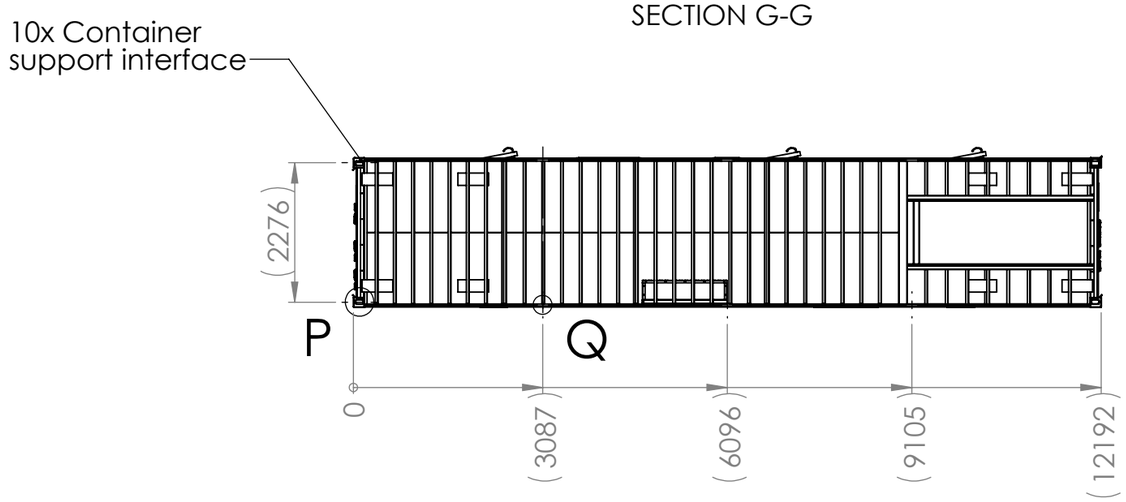
DETAIL P
SCALE 1 : 10
(seen from below)
4x

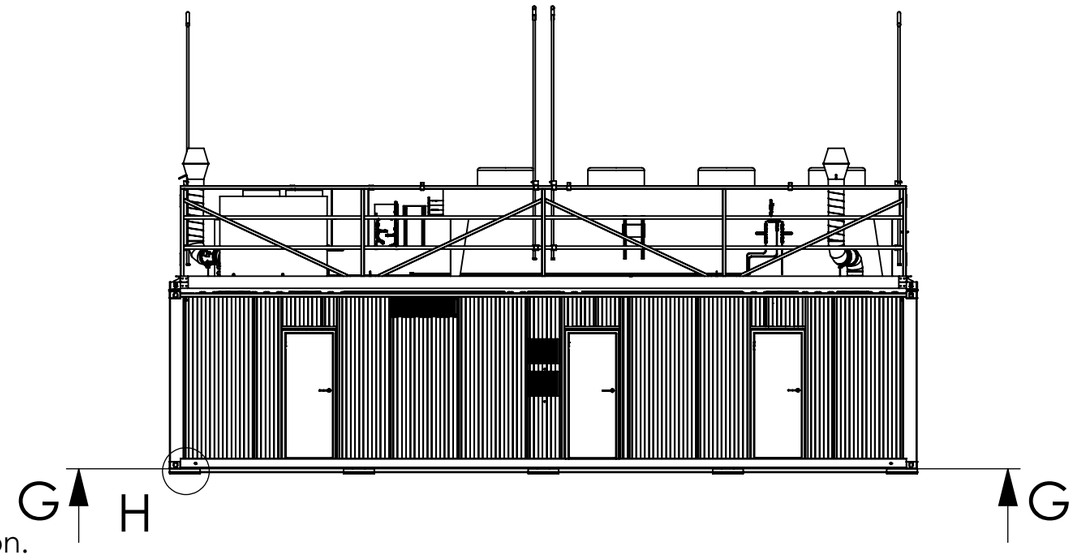


DETAIL Q
SCALE 1 : 10
(seen from below)
6x

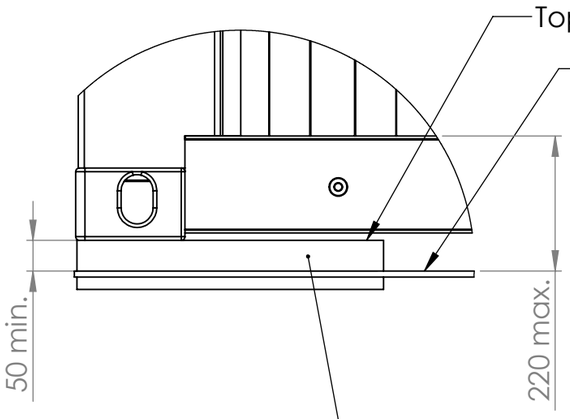


SECTION G-G





DETAIL H
SCALE 1 : 10



Ground clearance must be 50-80mm to avoid corrosion.
If this distance is exceeded it can be necessary to
install steps in front of access doors (max height step 220 mm)

The top surface of the customer supplied support areas must be within 10mm height difference

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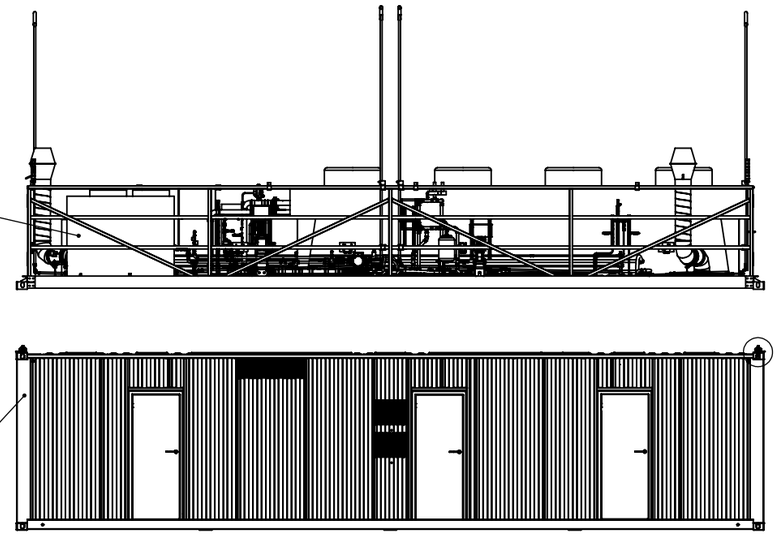
3D Designer	MDA	UNLESS OTHERWISE SPECIFIED: Dimensions are in millimeters
Tolerance	N/A	Projection:
Certificate	N/A	
Material	N/A	
Weight	N/A	[kg]

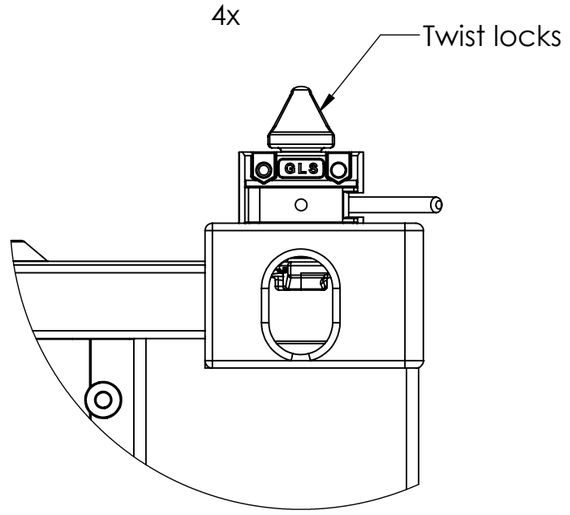
GREEN HYDROGEN SYSTEMS
Nordager 21
DK-6000 Kolding
CVR: 30548701
Phone: +45 75 50 35 00

Description
A-Series Mechanical Drawing 40 Ft Container

Part No. 900-0062
Revision No. Rev. 02
Scale 1:100 Sheet 7/9 Size A3



DETAIL J
SCALE 1 : 5
4x



Container and top frame are assembled with twist locks and subsequently the electrical and fluid lines are connected on site

	Init.	Date
Created	MDA	25-03-2021
Revision	MDA	21-01-2022
Approved	BAN	21-01-2022
3D Designer	MDA	
Tolerance	N/A	
Certificate	N/A	
Material	N/A	
Weight	N/A	[kg]

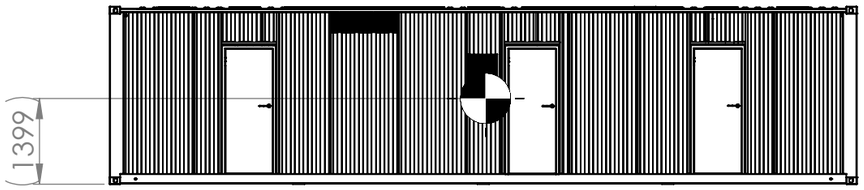
UNLESS OTHERWISE SPECIFIED:
Dimensions are in millimeters
Projection:

GREEN HYDROGEN SYSTEMS
Nordager 21
DK-6000 Kolding
CVR: 30548701
Phone: +45 75 50 35 00

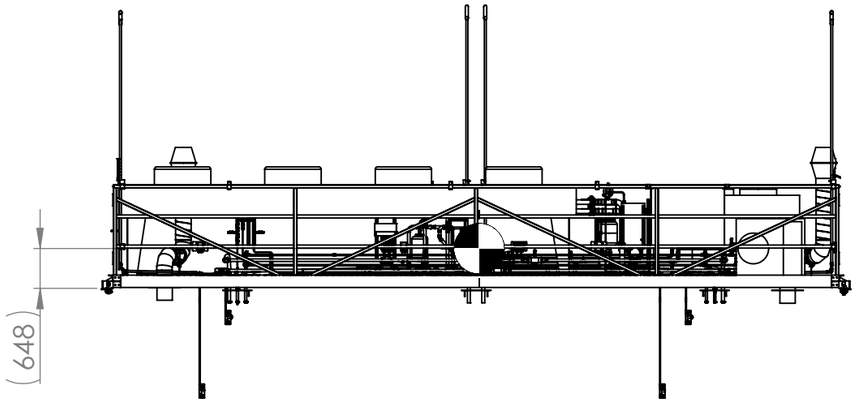
Description
A-Series Mechanical Drawing 40 Ft Container

Part No.	Revision No.	Scale	Sheet	Size
900-0062	Rev. 02	1:100	8/9	A3

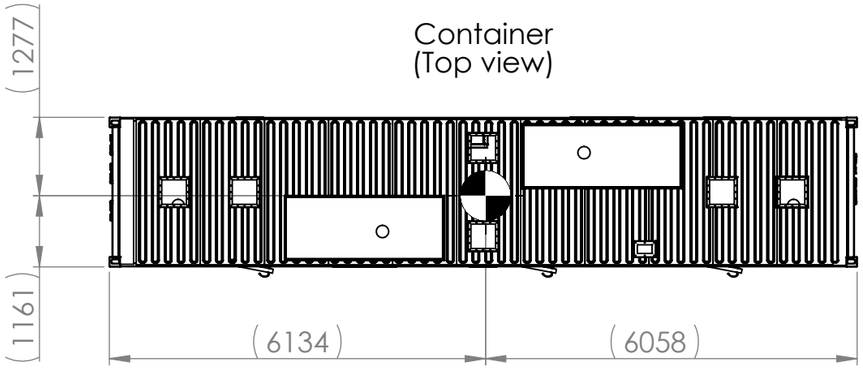
Container
(Side view)



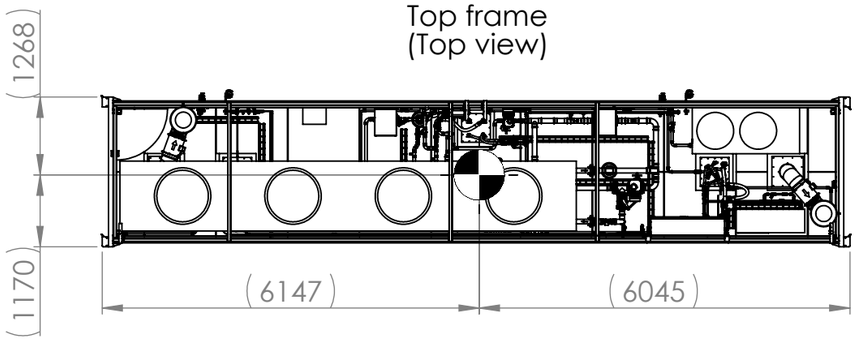
Top frame
(Side view)



Container
(Top view)



Top frame
(Top view)



Type	40ft Container	40ft Top frame
Dry/Lifting weight (t)	26,5	5,1

	Init.	Date
Created	MDA	25-03-2021
Revision	MDA	21-01-2022
Approved	BAN	21-01-2022
3D Designer	MDA	UNLESS OTHERWISE SPECIFIED: Dimensions are in millimeters Projection:
Tolerance	N/A	
Certificate	N/A	
Material	N/A	
Weight	N/A	[kg]

GREEN HYDROGEN SYSTEMS
Nordager 21
DK-6000 Kolding
CVR: 30548701
Phone: +45 75 50 35 00

Description
A-Series Mechanical Drawing 40 Ft Container

Part No.	Revision No.	Scale	Sheet	Size
900-0062	Rev. 02	1:200	9/9	A3

Appendix 6

BCP Council Civic Centre - Planning Services
Bourne Avenue, Bournemouth, Dorset, BH2 6DY

Tel: (01202) 123321

Email: planning.poole@bcpcouncil.gov.uk
Web: www.bcpcouncil.gov.uk/Planning-and-building-control

Application No: APP/22/00284/F

TO:

CLPlanning
Chapman Lily Planning Ltd
Unit 5 Designer House
Sandford Lane
Wareham
BH20 4DY

Town and Country Planning Act 1990
Town and Country Planning (Development Management Procedure) (England) Order 2015
Town and Country Planning (General Permitted Development) (England) Order 2015

GRANT OF PLANNING PERMISSION

This permission does not carry any approval or consent which may be required under any enactment, by-law, order or regulation (eg in relation to Building regulations or the Diversion of Footpaths etc) other than Section 57 of the Town and Country Planning Act, 1990.

Applicant: Canford Renewable Energy Ltd
Case Officer: Sophie Burch
Det Level: Fully Delegated

Location of Development:

Canford Renewable Energy, Canford Recycling Centre, Arena Way, Wimborne, BH21 3BW

Description of Development:

Variation of Condition 2 of Planning Permission APP/21/00400/F as described in that Description of Development to revise the list of approved plans and technical reports to allow for the co-location of the hydrogen plant with the approved battery store on the restored landfill; the consequential amendments to conditions 4, 6, 7, 8, 11 and 12.

In pursuance of their powers under the above mentioned Act, The Local Planning Authority HEREBY GRANT PLANNING PERMISSION for the development described above in accordance with the details given in the application numbered above.

Signed Nick Perrins

Head of Planning
Date of Decision: 20/05/2022

Subject to the following condition(s):-

1 The development to which this permission relates shall be begun not later than the expiration of three years beginning with the date of the original permission granted under reference APP/21/00400/F.

Reason -
This condition is required to be imposed by the provisions of Section 91 of the Town and Country Planning Act 1990 and amended by Section 51(1) of the Planning and Compulsory Purchase Act 2004.

2 The development hereby permitted shall be carried out in accordance with the following approved plans:

Site location plan, Drg No. EP-1355-D-GA-01 received 26th April 2022
Battery site Plan, Drg No. EP-1355-D-GA-05 received 26th April 2022
Landscape Plan, Drg No. 019_200 REVA received 29th April 2022
Whites Pit battery container cross section Drawing number EP 1355 D GA 06 received on 12 March 2021
Whites Pit transformer container TX Sub Station Cross Section scale 1:50 at A3 Drawing number EP 1355 D GA 07 received on 12 March 2021
Canford Resource Park sewer pipe connection route received on 12 March 2021
RESTORATION SOIL THICKNESS - scale 1:1000 at A3L Drawing number CRE1000/04/02 received on 23 June 2021
CONCEPTUAL SITE MODEL - CROSS-SECTIONS - Drawing number CRE1000/04/03 received on 23 June 2021
Conceptual Site Model & Controlled Water Risk Assessment, Doc Ref CRE1000/03.R1 as prepared by Sirius Environmental Limited dated and
received on 23 June 2021
Whites Pit Conceptual Site Model & Controlled Water Risk Assessment: Extent of report assessment area Drawing Number CRE 1000/04/01 received on 23 June 2021
Whites Pit, Landscape and Ecological Management Plan, report number 20/3725.03 Revision 01 dated 09/03/2021 as prepared by Devon Wildlife Consultants Limited received on 12 March 2021
Nightjar Assessment Report Number 20/3725.02 dated February 2021 as prepared by Devon Wildlife Consultants Limited received on 12 March 2021 (Confidential)

Reason -
For the avoidance of doubt and in the interests of proper planning.

3 The use of the site for the approved renewable energy and fuel generation stations as stated in the development description shall cease and any structure, building or track hereby permitted shall be removed and the land reinstated in accordance with a decommissioning and reinstatement plan to be submitted to,and approved in writing by the Local Planning Authority as required under condition 5 prior to the expiration of the said period, 30 October 2051.

Reason -
The development is permitted in the light of the particular circumstances of the case and for the avoidance of doubt.

4 Construction shall be undertaken in accordance with the approved plan 'Construction Environment Management Plan and Grounds Work Method Statement' submitted on 10th December 2021.

Reason -
To minimise the threat of pollution and disturbance to local amenity.'

5 Notwithstanding condition 3, within six months of the cessation of power production on the site (measured by way of export to the electricity distribution network and / or the hydrogen production plant') for a period in excess of six months or during the 3 months period prior to the 25th anniversary of the commencement of development (whichever is sooner) a Decommissioning Method Statement shall be submitted to and approved in writing by the local planning authority.

The Decommissioning Method Statement shall include; the timing for decommissioning of the solar farm. the measures for decommissioning. Such measures shall include the removal of all development hereby permitted (with the exception of landscaping and ecological works unless required for efficient agricultural operation of the land) including solar panels, support structures, buildings, plant, fencing and equipment and any ancillary structures and hard standing, a timetable for completion of decommissioning including the removal of all structures from the site.

In the event of cessation of power production (measured by way of export to the electricity distribution network) for a period in excess of six months following first power generation, the Decommissioning Method Statement shall set a timescale for decommissioning within 12 months of its submission unless power production is to resume within the temporary period of the permission and evidence is provided with regard to the resumption. If power production is not resumed within 6 months of the date provided, then a Decommissioning Method Statement shall be submitted and agreed in writing with the Local Planning Authority setting out works of decommissioning to be fully undertaken within 12 months of its submission.

Decommissioning shall be carried out in accordance with the approved Decommissioning Method Statement including the timing of works.

Reason -
In the interests of the character of the strategic gap. To ensure the satisfactory restoration of the site in accordance with the NPPF and paragraph 27 of Planning Practice Guidance for renewable and low carbon energy.

6 The identification and assessment of any risks to cap and pollution control infrastructure from construction and operational activities including mitigation measures shall be undertaken in accordance with the approved plan 'Construction Environment Management Plan and Grounds Work Method Statement' submitted on 10th December 2021.

Reason -
To prevent damage to the capping layer and pollution control infrastructure of the landfill area.

7 The installation of the CCTV Provisions will be in accordance with the approved plans 'EP-1355-CCTV Pole Elevation', 'EP-1355-CCTV Cabinet Elevation' and 'EP-1355- Site Layout' submitted on 9th December 2021.

Reason -
In the interest of privacy and visual amenity

8 The use hereby approved shall not include for the provisions of external lighting except for the provisions of emergency lighting for the ancillary infrastructure as shown on the approved plan 'EP-1355-CSS Elevation' submitted on 10tH December 2021.

Reason -
To protect the character of the locality.

9 The development hereby permitted shall comply with the LEMP and EMS. The scheme shall cover all hard and soft landscaped areas and shall provide details of timings for all landscaping and any future review periods at five, ten and fifteen years. The works shall be carried out in accordance with the approved plans and to the appropriate British Standard relevant at the time.

Reason -
In the interests of the visual amenity of the locality and to safeguard the amenities of neighboring residents.

10 No construction, demolition or deliveries to the site shall take place during the construction period except between the hours of 0700 to 1800 Mondays to Fridays or 0800 to 1300 on Saturdays and not at all on Sundays or Bank Holidays.

Reason -
To protect the amenities of the occupiers of nearby dwellings.

11 The installation of the ancillary invertor shall comply with the approved plans 'EP-1355-STS Elevation', 'EP-1355-INV Elevations' and 'EP-1355-AUX Elevation' submitted on 9th December 2021.

Reason -
In the interest of visual amenity

12 The development hereby permitted shall comply with the approved Glint and Glare Management Plan submitted on 20th December 2021.

Reason -
In the interest of Aviation safety.

Informative Note(s):-

1. In accordance with the provisions of paragraphs 38 of the NPPF the Local Planning Authority (LPA) takes a positive and creative approach to development proposals focused on solutions. The LPA work with applicants/agents in a positive and proactive manner by;
- offering a pre-application advice service, and
- advising applicants of any issues that may arise during the consideration of their application and, where possible, suggesting solutions.

- the application was considered and approved without delay

Please see Additional Information/Notes below

PLANNING PERMISSION REFUSED?

Appeals to the Secretary of State

- If you are aggrieved by the decision of your local planning authority to refuse permission for the proposed development or to grant it subject to conditions, then you can appeal to the Secretary of State under section 78 of the Town and Country Planning Act 1990.

- If an enforcement notice is served relating to the same or substantially the same land and development as in your application and if you want to appeal against your local planning authority's decision on your application, then you must do so within:
  28 days of the date of service of the enforcement notice, or within 6 months [12 weeks in the case of a householder appeal] of the date of this notice, whichever period expires earlier.

- If this is a decision to refuse planning permission for a householder application, if you want to appeal against your local planning authority's decision then you must do so within 12 weeks of the date of this notice.

- If this is a decision to refuse planning permission for a minor commercial application, if you want to appeal against your local planning authority's decision then you must do so within 12 weeks of the date of this notice.

- If this is a decision to refuse express consent for the display of an advertisement, if you want to appeal against your local planning authority's decision then you must do so within 8 weeks of the date of receipt of this notice.

- If you want to appeal against your local planning authority's decision then you must do so within 6 months of the date of this notice.

- Appeals can be made online at: https://www.gov.uk/planning-inspectorate.
  If you are unable to access the online appeal form, please contact the Planning Inspectorate to obtain a paper copy of the appeal form on tel: 0303 444 5000.

- The Secretary of State can allow a longer period for giving notice of an appeal but will not normally be prepared to use this power unless there are special circumstances which excuse the delay in giving notice of appeal.

- The Secretary of State need not consider an appeal if it seems to the Secretary of State that the local planning authority could not have granted planning permission for the proposed development or could not have granted it without the conditions they imposed, having regard to the statutory requirements, to the provisions of any development order and to any directions given under a development order.

If you intend to submit an appeal that you would like examined by inquiry then you must notify the Local Planning Authority and Planning Inspectorate (inquiryappeals@planninginspectorate.gov.uk) at least 10 days before submitting the appeal. Further details are on GOV.UK.

Purchase Notices

- If either the local planning authority or the Secretary of State refuses permission to develop land or grants it subject to conditions, the owner may claim that the owner can neither put the land to a reasonably beneficial use in its existing state nor render the land capable of a reasonably beneficial use by carrying out of any development which has been or would be permitted.
- In these circumstances, the owner may serve a purchase notice on the Council (that is, where the land is situated in a National Park, the National Park authority for that Park, or in any other case the district council (or county council which is exercising the functions of a district council in relation to an area for which there is no district council), London borough council or Common Council of the City of London in whose area the land is situated). This notice will require the Council to purchase the owner's interest in the land in accordance with the provisions of Chapter I of Part VI of the Town and Country Planning Act 1990.

Additional Information/Notes

- These notes DO NOT apply to Decisions for Work on Protected Trees.
- Your planning application has been determined and the Decision Notice is above these notes.
- These notes are intended as helpful advice before you proceed further. PLEASE READ THEM CAREFULLY.
- Keep the decision safely - it may be needed when you sell your property.
- Make sure everyone has a copy who needs it. Most importantly make sure your builder or contractor has a copy to work from on the site.

PLANNING PERMISSION GRANTED?

Conditions:

- If permission has been granted you will see that it maybe subject to Conditions. They are an integral part of the Decision and are important because they describe how the Council requires you to carry out the approved work or operate the premises. It is YOUR responsibility to comply fully with them.

- Please pay particular attention to those Conditions which have to be met before work commences, such as obtaining approval for the siting and levels of buildings and the protection of trees on the site.
- If you do not comply with all the conditions in full this may invalidate the permission.

Informative Notes:

- Informative Notes do not form part of the Decision itself but are included as helpful advice and guidance.

OTHER LEGISLATION:

- This Notice is a decision under the Planning Acts only. It should not be taken to imply that the scheme meets the requirements of any other Agency which may be involved. Please make sure that you have obtained all the approvals you need before starting work. If you are in any doubt you should obtain professional advice.

Changes to Plans:

- Should you wish to change your plans for any reason, including the need to meet requirements of other legislation, it is important that you notify the Local Planning authority before carrying on with work. Many amendments can be quickly agreed but more substantial ones may require a fresh application and could even prove to be unacceptable.