

29 March 2023

Permitting and Support Centre
Water Resources Team
Quadrant 2
99 Parkway Avenue
Parkway Business Park
Sheffield, S9 4WF

Dear Water Resources Team,

HANSON UK LTD

Abstraction Licence Variation Application Licence Ref. 24/67/9/0137 and 24/67/9/0126

Please find on behalf of Castle Cement Ltd, a groundwater abstraction licence variation application for their two licences Ref. 24/67/9/0137 and 24/67/9/0126 which authorise the abstraction of water for use at the Padeswood Cement Works. The licence holder is Castle Cement Ltd, Hanson House, 14 Castle Hill, Maidenhead, Berkshire, United Kingdom, SL6 4JJ. Envireau Water is acting as an agent on behalf of Castle Cement Ltd.

Abstraction licences Ref: 24/67/9/0137 and 24/67/9/0126 authorise abstraction for two boreholes, Borehole 1 and Borehole 2, referred to as the 'Kinnerton Boreholes', from the Sherwood Sandstone Formation at Kinnerton, Flintshire, Wales. The proposed variation is to increase the authorised abstraction from the two boreholes to 1,445,400 m³/year to provide water for Evaporative Cooling at a Carbon Capture and Storage (CCS) scheme at the Padeswood Cement Works. The purpose of abstraction will be also be varied to include evaporative cooling as part of the application.

Enclosed is a letter of authorisation, allowing Envireau Water to act on behalf of Cement Castle Ltd, and supporting information to accompany the online forms WRA and WRD filled out with Ref: WREnvireauWater2903. We will pay the application fee by credit card – please call Jenny Harrison on 07399 213 906 so that we can arrange payment. Please forward us a receipt for this amount addressed to 'Envireau Ltd'.

Please note that this application undergone a pre-application (Ref: WPCC12286 & WPCC12287) in August 2022 and has been discussed in detail with Stefan Le Roy, who should be consulted during the determination process.

Please ensure that all correspondence and questions or queries regarding the application are directed to Envireau Water (philham@envireauwater.co.uk) so that we are able to respond promptly. Please also ensure that we are sent a copy of the draft licence, so that we are able to check it prior to finalisation.

We look forward to receiving a copy of the licence in due course, but in the meantime if you would like to discuss any aspect of the application then please do not hesitate to contact me.

Yours sincerely,


Phil Ham
Managing Director

Castle Cement Limited

Hanson House
14 Castle Hill
Maidenhead
Berkshire SL6 4JJ

Phone 01628 774100

www.hanson.co.uk

22 March 2023

Permitting Receipt Centre
Natural Resources Wales
Ty Cambria
29 Newport Road
Cardiff
CF24 0EY

Dear Sir/Madam,

CASTLE CEMENT LIMITED
ABSTRACTION LICENCES 24/67/9/0126 & 24/67/9/0137

We hereby authorise Envireau Water of Aske Stables, Aske, Richmond, DL10 5HG to represent us and sign on our behalf forms relating to an application to vary the above abstraction licences.

Yours faithfully,



Ed Gretton
Director

HANSON UK LTD

ABSTRACTION LICENCE VARIATION APPLICATION

LICENCE REF: 24/67/9/0137 AND 24/67/9/0126

Continuation Sheet

Background

Castle Cement Limited ("Castle Cement") have two water supply boreholes targeting the Sherwood Sandstone aquifer at Kinnerton ("the Kinnerton boreholes"). These two boreholes are used to supply the Padeswood Cement Works ("the Cement Works") with water for the purpose of Manufacture of Cement – process and cooling. Hanson have two abstraction licences (Ref. 24/67/9/0137 and 24/67/9/0126) authorising them to abstract up to 60m³/hour, 1,500m³/day, 136,500m³/year from each of the Kinnerton boreholes.

Castle Cement are developing a Carbon Capture & Storage (CCS) scheme at the Cement Works. The scheme requires approximately 150m³/hour, 3,600m³/day, 1.3Mm³/year of water for evaporative cooling. This abstraction licence variation application is to increase the abstraction volumes from the Kinnerton Boreholes to 165m³/hour, 3,960m³/day and 1,445,400m³/year, and add the purpose of Evaporative Cooling to the licence. This increase is to supply with CCS with enough water for evaporative cooling, in addition with supplying some water to the cement works.

Following the submission of a WRC form to NRW with an accompanying Water Features Survey (WFS) (Envireau Water, 2022), outlining the potential environmental impact of the increased abstraction rates, Groundwater Investigation Consents (GICs) Ref. WA/067/0009/0001 and WA/067/0009/0002 were issued by Natural Resources Waters (NRW) in December 2022, authorising a test pumping programme to be undertaken on the two boreholes. The results of the test pumping exercise are presented in the attached Report: Padeswood Test Pumping (Envireau Water, 2023).

The location of the Kinnerton Boreholes and two observation boreholes used during this test pumping exercise are shown on Figure 1, with the site boundary, and Kinnerton Boreholes and discharge location shown on Figure 2. Both figures are attached as part of this application.

This continuation sheet is provided to supplement the information provided in the application. The application reference number is: WREnvireauWater2903.

Form WRA – Payment

Envireau Water will pay the application fee by credit card – please call Jenny Harrison on 07399 213 906 so that we can arrange payment. Please forward us a receipt for this amount addressed to 'Envireau Ltd'.

Aske Stables, Aske, Richmond,
North Yorkshire, DL10 5HG

t 01748 889 268
e info@envireauwater.co.uk
w www.envireauwater.co.uk



Form WRA – Applicant Details

Envireau Water has been authorised to act as an agent on behalf of Hanson UK Ltd. Please see the Letter of Authorisation submitted as part of this application.

Form WRA - Land Ownership

The land on which the pump house and Kinnerton boreholes is located on is owned by Castle Cement. The boundary is shown on Figure 2 attached as part of this application.

Form WRA – Pre Application and NRW Discussions

A preapplication (Ref. WPCC12286 & WPCC12287) was submitted on 24th August 2022. The GIC was discussed with Stefan Le Roy (Lead Specialist Advisor - Hydrogeology, Geoscience Team, NRW; stefan.leroy@cyfoethnaturiolcymru.gov.uk). Following the Pre-application, discussions with NRW and the submission of the WFS report and WR32 forms, GICs were issued for both licences (Ref. WA/067/0009/0001 and WA/067/0009/0002), allowing the test pumping of the two boreholes at rates up to 215m³/hr. Details of the borehole construction and the results of the test pumping exercise are presented in the (Envireau Water, 2023).

Form WRD – End of Abstraction Licence

It is expected that the increase in abstraction volumes will be applied to the base licences as a time limited variation until the common end date for the Dee Catchment.

Form WRD - Abstraction Details and Quantities

The abstraction licence for Borehole 2 (Ref 24/67/9/0126) authorises the abstraction of:

- 136,500 m³ per year
- 1,500 m³ per day
- 60 m³ per hour

The abstraction licence for Borehole 1 (Ref. 24/67/9/0137) authorises the aggregate abstraction quantity with Borehole 2 (Ref. 24/67/9/0126) of:

- 136,500 m³ per year
- 1,500 m³ per day

- 60 m³ per hour

For both abstraction licences the purpose of abstraction is for the use in the Manufacture of Cement – process and cooling.

The proposed variation is to increase the abstraction volume for Borehole 2 (Ref. 24/67/9/0126) to:

- 1,445,400 m³ per year
- 3,960 m³ per day
- 165 m³ per hour

And to increase the aggregate abstraction quantity with Borehole 2 (Ref. 24/67/9/0126) authorised for Borehole 1 (Ref. 24/67/9/0137) to:

- 1,445,400 m³ per year
- 3,960 m³ per day
- 165 m³ per hour

In addition, both abstraction licences will have Evaporative Cooling added as a purpose of abstraction.

Form WRD – Means of Abstraction

The pump capacity and dimensions of the permanent pumps will be specified on issue of the licence.

Form WRD – Calculations of Water Use

The CCS scheme has been designed such that water use for process of evaporative cooling will be 150m³/hour.

Water used in the manufacture of cement will be 15m³/hour.

Form WRD – Water Efficiency

The design of the CCS scheme has been designed to optimise the heating and cooling systems. Where possible, air cooling has been selected to minimise water consumption.

Form WRD – Discharge Details

The water use is consumptive and there will be no discharge of groundwater.

Form WRD – Other abstractors / water users

There are Public Water supply boreholes operated by DCWW/Welsh water at Gorstella and Bretton, 2.5km to the northeast. These boreholes also target the Permo-Triassic Sherwood Sandstone Group. The test pumping exercise has shown there will be no impacts to these boreholes as a result of increasing the abstraction (Envireau Water, 2023).

REFERENCES

Envireau Water. (2022). *Technical Note: Padeswood Water Features Survey*.

Envireau Water. (2023). *Padeswood Test Pumping Report*.

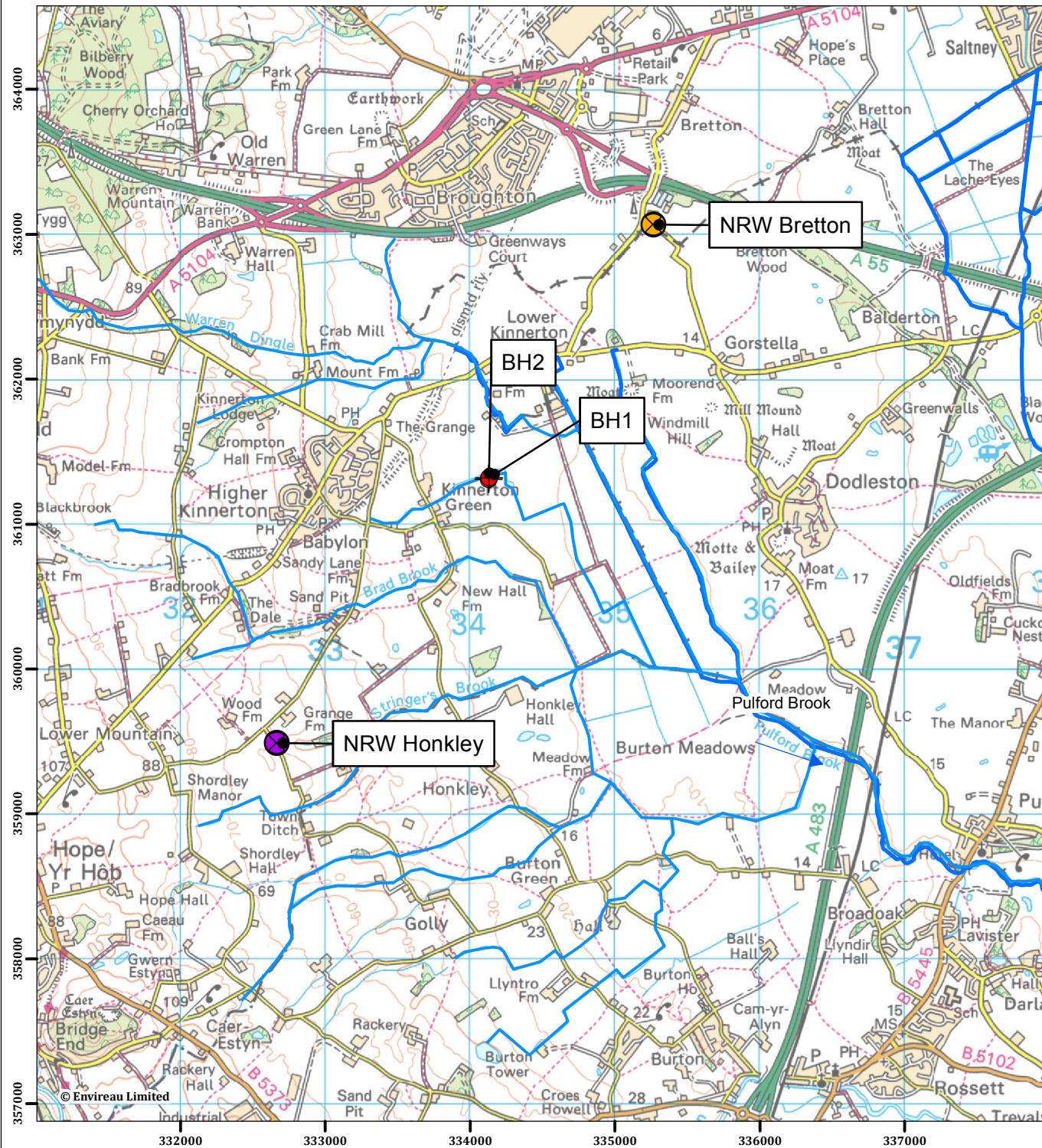


Figure 1: Site Location and Setting

Padeswood, Flintshire



Kinnerton Abstraction Boreholes

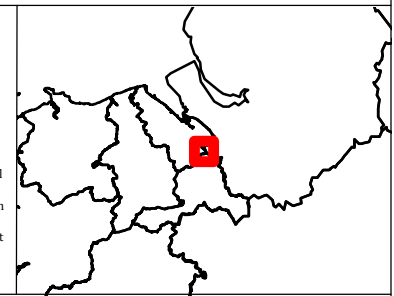
- BH1 Licence Ref. 24/67/9/0137
- BH2 Licence Ref. 24/67/9/0126

Monitoring Locations

- NRW Bretton
- NRW Honkley
- Watercourses

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0 410 820 1,230 1,640 Meters

Scale: 1:40,000 at A4

29 March 2023

NGR: 334,484 E / 360,728 N

Project No. 3490192

Client: Hanson UK Ltd

Drawn by: JH

Ref: Site Setting

envireau
WATER

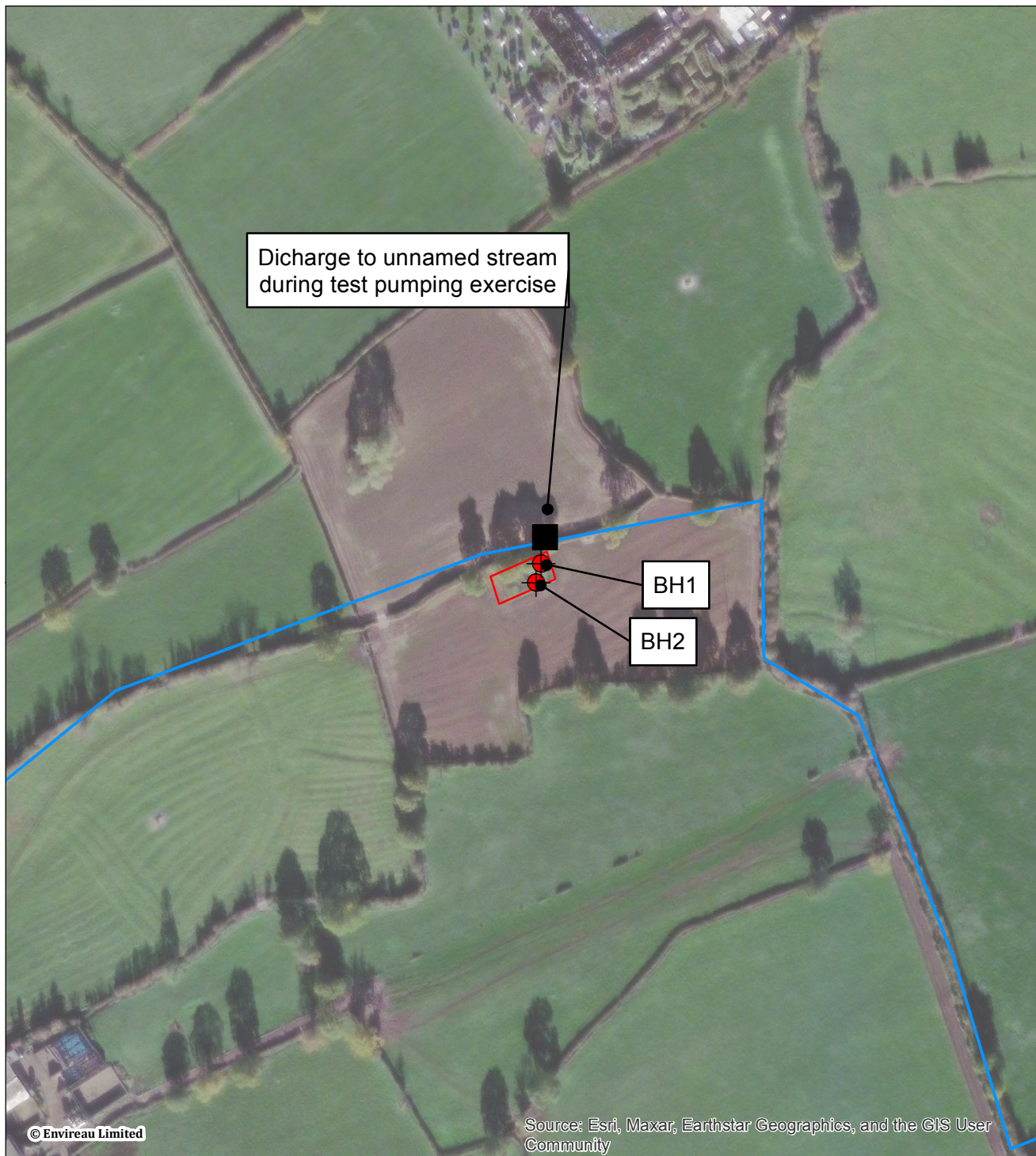


Figure 2: Kinnerton Boreholes

Padeswood, Flintshire



Site Boundary owned by Hanson UK Ltd.

Discharge Location

Kinnerton Abstraction Boreholes

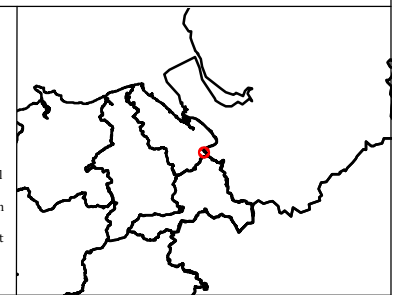
BH1 Licence Ref. 24/67/9/0137

BH2 Licence Ref. 24/67/9/0126

Watercourses

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0 30 60 90 120 Meters

Scale: 1:3,000 at A4

29 March 2023

NGR: 334,127 E / 361,313 N

Project No. 3490192

Client: Hanson UK Ltd

Drawn by: JH

Ref: Kinnerton Boreholes

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