Nant Helen Surface Mine groundwater abstraction

1. Purpose of this document

This report:

- explains how the application for a transitional full licence (also known as 'New Authorisation' licence) has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account
- justifies the use of specific bespoke conditions within the licence.

In determining this application, NRW has exercised its duties and powers under The Water Abstraction (Transitional Provisions) Regulations 2017.

2. Table of Contents

3. Summary of the application

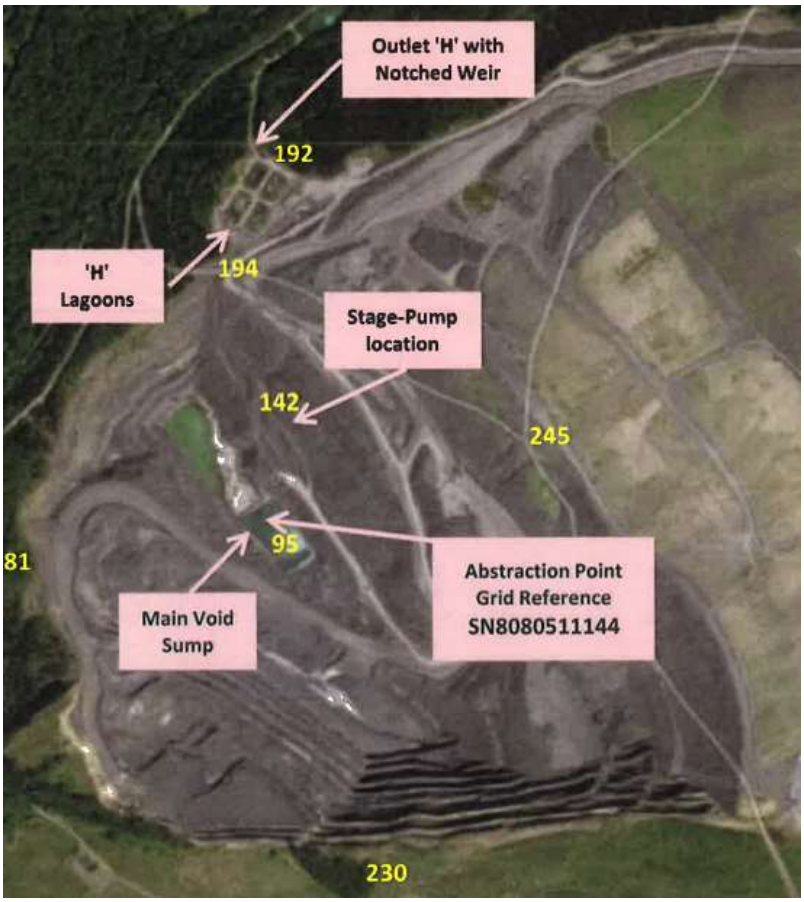
An application to licence an existing, previously exempt groundwater abstraction from a void sump at Nant Helen surface coal mine, Coelbren, Neath.

The main void sump is the source for mine dewatering. As shown in the map below, water is pumped from the sump to 'H-Lagoons' and then to 'Outlet H' for discharge from the site to a small pond, which then flows to a tributary of the Tawe, known as the Little London Stream at NGR SN 80893 11799. The discharge is authorised under permit reference BP0345401.

Water for dust suppression is diverted from the 'H-lagoons' and is water that otherwise would have been discharged from the site. Dust suppression is an intermittent activity and only required when mining is ongoing and weather is dry / semi dry.

The site was put into 'care + maintenance' condition in November 2016 which meant mining operations ceased (including dust suppression) but dewatering continued at the same rate, maintaining the site ready for an operational restart in January 2019.

It is understood that the extraction of coal ceased in August 2021 and the site is now in restoration phase. However, dewatering is expected to continue to the end of 2022 to control water levels within the void and de-watering pumping will continue intermittently in line with rates applied for. Following this, it is anticipated de-watering pumping will no longer be required and the ground water will be left to find its new natural level in its new surroundings. Water for dust suppression is also expected to be required at similar levels of use as operations move from mining to restoration. Restoration likely to be completed by 2023 (see correspondence with applicant dated 25/11/2021).



Aerial view showing main void sump, abstraction point, pump location, H-lagoons and H- outlet

We have decided to issue the licence application on 6/1/2022. Licensing this abstraction is considered a first step to move towards sustainable abstraction and it will continue to be reviewed through future sustainability review processes.

4. Application and licence determination details

Application details	
Applicant name and address	Celtic Energy Limited, 9 Beddau Way, Castlegate Business Park, Cardiff, CF83 2AX
Application contact details	John Rees JRees@coal.com
Application reference number	PAN-006902
New licence number	WA/059/0001/027
WFD Waterbody number & name	GB41002G201000 - Swansea Carboniferous Coal Measures GB110059032240 - Tawe - conf with Nant Llech to conf with Giedd
Abstraction Licensing Strategy (ALS)	Swansea Bay, Neath, Afan & Tawe
Catchment and sub-catchment	059 Swansea Bay, 0001: Tawe
NRW Area	Mid

Determination process details	
Date application received	10/9/2019
Date technical checks undertaken	19/9/2019 (Invalid letter sent 4/12/2019)
Date any final further information received and application validated	13/12/2019 – applicant provided confirmation of maximum abstraction quantities, clarification re. instantaneous flow and pump capacity and NGRs of pumped area. 6/1/2020 – application validated. 25/1/2021 – update from applicant regarding dewatering timescales. 25/11/2021 – update from applicant regarding site restoration timescales. 16/12/2021 – clarification from applicant regarding annual quantity for dust suppression.
Reason abstraction was previously exempt	Abstraction as part of mining operations was previously exempt from licensing under section 29 the Water Resources Act 1991. Dust Suppression is considered to form part of the site operation and so also covered by previous exemption.
Non- statutory determination date	31/12/2021
Application publication	Application advertised South Wales Evening Post on Thursday 17th June 2021 and no public representations or comments from statutory bodies were received. This advertising decision was agreed by the NA Panel and recorded in the NA Screening spreadsheet.
National Park notification	Not relevant as abstraction not located within a National Park.
External Consultation	None undertaken in accordance with current policies and guidance.
Environmental Impact Assessment Regulations (EIA) requirements	The proposal is not relevant under these regulations; therefore no environmental statement is required.

Abstraction details	Licence details
Location of abstraction	Void sump at Nant Helen surface mine, Coelbren, Neath.
Source(s) of supply	Underground strata comprising of South Wales Middle Coal Measures Formation.

Abstraction details	Licence details	
Points of abstraction (NGR) (area)	Within the area marked 'Area A' on the map and not outside the boundary formed by straight lines running between the following National Grid References SN 8065811290, SN 8070411329, SN 8082511074 and SN 8086911103.	
Purposes of abstraction	Transfer for the purpose of mine dewatering. Industrial: Dust suppression.	
Period of abstraction	All year	
Quantities and rates:	Transfer for the purpose of mine dewatering.	For the purpose of Dust suppression
cubic metres per hour	522	
cubic metres per day	12,528	945
cubic metres per year	4,083,000	122,017
Means of abstraction	An electrical submersible pump.	
Measurement of abstraction	Transfer for the purpose of mine dewatering: Abstraction volumes will be calculated by multiplying the number of hours of operation of the pump by the defined output of the pump in one hour. For dust suppression: Abstraction volumes will be calculated by multiplying number of each type of bowser filled per day to be multiplied by the maximum bowser capacity.	
Frequency of measurement	Weekly	
Frequency of recording/reporting	Weekly	
Annual returns requirement	Yes	
Licence end date	31/03/2029 in accordance with Swansea Bay Rivers ALS	
Minimum value condition (Y/N)	N/a – licence duration less than 12 years.	
Issue date	6/1/2022	
Effective date	6/1/2022	

5. Advertisement of application

See section 4 'application publication' above.

6. Location of abstraction and discharge

The original application form WRH stated that the abstraction is located at a single point at NGR SN 808051144. The applicant was subsequently asked to provide NGRs for the corners of the area being dewatered. In response, the applicant provided a map which demonstrates that an abstraction area is located within the bounds of National Grid References SN 8065811290, SN 8070411329, SN 8082511074 and SN 8086911103 (see map below and email correspondence dated 13/12/2019).

The original application form WRH states that water is discharged from the site at NGR SN 81028 11744 under permit reference BP0345401. The NGR provided by the applicant is incorrect and according to the permit the discharge point is actually located at NGR SN 80893 11799. This was confirmed by the Environment team (see email correspondence dated 16/12/2021).

Aerial view showing NGRs for the corners of the pumped area

7. Rights of Access

The original application form WRH states that the applicant owns the land where the abstraction takes place. The aerial map shown on page 1 of the supporting information shows the abstraction point lies within the site boundary.

8. Historical Evidence of abstraction and volumes

As part of the transitional licence application, applicants were required to submit evidence to demonstrate the quantities of water abstracted and when the abstraction took place during the seven year 'qualifying period' (January 2011 – December 2017).

To demonstrate the application was occurring during the qualifying period, the applicant provided details regarding the site's existing Planning Permission (P/2011/0217), which according to Powys County Council's planning webpages, was issued in March 2012 i.e. during the 'qualifying period'. The applicant also provided details of an existing Discharge Permit (BP0345401) which was issued in 2005 and is still active. This demonstrates abstraction was occurring before and during the 2011 – 2017 'qualifying period'.

Volumes for dewatering

The **hourly** and **daily** volumes for **dewatering** purposes were calculated using the instantaneous peak flow rate of the pump. Although the discharge permit limits instantaneous flow to 150 l/s, the applicant advised that his calculations used a flow rate of 145 l/s (based on the theoretical 'Performance Curve' for the pump) as follows:
145 l/s x 60 x 60 = **522 m^3 per hour**
522 x 24 = **12,528 m^3 per day**

The **annual dewatering** quantity is calculated from a 350 day year at a rate of 135 l/s, as follows:
135 x 60 x 60 = 486 m^3 per hour
486 x 24 = 11,664 m^3 per day
11,664 x 350 = 4,082,400
This annual quantity was rounded **to 4,083,000 m^3 per year** in form WRH but is still considered reasonable as it is less than the maximum daily of 12,528 m^3 x 350 days = 4,384,800 m^3.

For further information, see Supporting Information document (Doc Ref: *NH Section 8.4 h – De-watering Calculations*).

Volumes for dust suppression

The estimated volumes for dust suppression were based on bowser capacity, the total number of loads per day and the number of dry and semi dry days per year (using rainfall data dated between 2014 – 2018), as shown below follows:

	CAT 773 bowser	Volvo A35 Bowser	Tractor & Tank	Total
Capacity (m^3)	50.4	21.4	12.9	
Loads per day (dry days)	10	11	16	
Loads per day (semi-dry days)	7	8	11	
Max daily total	50.4 x 10 = 504	21.4x 11 = 235.4	12.9 x 16 = 206.4	**945.8 m^3 per day**
No. of dry days	110	110	110	
No. of semi-dry days	27	27	27	
Annual volume (dry days)	50.4 x 10 x 110 = 55,440	21.4 x 11 x 110 = 25,894	12.9 x 16 x 110 = 22,704	104,038 m^3 per year
Annual volume (semi-dry days)	50.4 x 7 x 27 = 9,526	21.4 x 8 x 27 = 4,622	12.9 x 11 x 27 = 3,831	17,979.3 m^3 per year
Total annual volume per vehicle	64,966	30,516	26,535	**122,017 m^3 per year**

For further information, see Supporting Information document (Doc Ref: *NH Section 8.4 i – Dust Suppression Calculations*).

The total annual volume for dust suppression shown above (122,0***1***7 m^3 per year) is different to the volume specified in form WRH (122,0***4***7 m^3 per year). The applicant confirmed the correct volume is **122,017 m^3 per year** in an email dated 16/12/2021.

The final confirmed quantities to be included on the licence are shown in section 4 above.

NRW considers the volumes applied for acceptable, and that the evidence submitted supports the application and demonstrates that the abstraction has occurred during the qualifying period.

9. Technical assessment of the proposal

The application has been screened according to the New Authorisations (NA) screening process and the results are recorded within the NA screening spreadsheet.

Based on the initial MyMap screening outputs, the application was assigned a **low** risk and complexity score. However, this initial screening was based on incorrect abstraction quantities and the application was screened again resulting in the identification of nearby designated sites (see section 9.6 below). As a result, the application was re-assigned a **moderate** risk and complexity score (see correspondence dated 1/2/2021).

9.1 Water Framework Directive Regulations 2017

The abstraction is located within WFD groundwater body GB41002G201000 – 'Swansea Carboniferous Coal Measures'.

The application has been screened out from further assessment under the WFD Regulations 2017 for the following reasons:

- The status of this waterbody is at Good quantitative status.
- The abstraction is from groundwater and although connectivity with surface water flows cannot be ruled out, the surface water body is at Good Ecological Status, and surface water

flows are classed as supporting this. Therefore there are no concerns regarding the impact of the abstraction on surface water flows / the ecological status of the water body.
- The abstraction has been ongoing for many years with no reported impacts to the WFD status of the waterbody.
- The abstraction will be licensed based on historic operation so there will be no change in groundwater levels / river flows or quantitative status / ecological status of the waterbody as a result of this abstraction.

Licensing this abstraction is considered a first step to move towards sustainable abstraction and it will continue to be reviewed through future sustainability review processes.

9.2 Hydrogeology/Hydrology and low flows protection

The abstraction is located in South Wales Middle Coal Measures Formation underground strata. Although the abstraction is from groundwater, connectivity with surface water flows cannot be ruled out. However, the abstraction has been ongoing for many years with no reported impacts to surface water flows or WFD flow status.

The 2017 Government response allows NRW as the regulator to have some discretion about the application Hands off Flow (HoF) conditions to transitional licences. For abstractions that are located within WFD waterbodies where flows are 'supporting good ecological status', the 2017 Government response suggests the application of a 75% of Qn99 HoF condition. However, in line with our regulatory discretion, NRW consider this HoF is not required for the following reasons:

- The abstraction is from groundwater. The status of this waterbody is at Good quantitative status. Although connectivity with surface water flows cannot be ruled out, surface water flows are considered to support the Good Ecological Status of the surface water body.
- There is insufficient evidence in Wales that a prescribed flow of 75% of Qn99 would provide any environmental benefit / be likely to result in any improvement to WFD status.
- Finally, flow gauges are not generally considered to operate reliably at such low flows, and therefore any condition applying this HoF would not be considered legally enforceable.

It is recognised that not applying a HoF condition may not be in line with the Abstraction Licensing Strategy (ALS) for the Swansea Bay Rivers catchment, but licensing the abstraction is considered a first step towards sustainable management, through future sustainability review processes.

9.3 Impact on fisheries

Not applicable to this application as a groundwater abstraction and no impacts to surface waters / fisheries have been identified.

9.4 Impact on water quality

Following MyMap screening 15 discharges have been identified in the vicinity of the abstraction. As the abstraction has been occurring for considerable time and there have been no reported impacts to local water quality, NRW are satisfied that any risk to water quality is insignificant.

The majority of water abstracted is discharged through a lagoon system to a tributary of the Tawe under an existing discharge permit (BP0345401). The local environment team have advised that no recent incidents have been reported at the location regarding mine discharge activities. A condition is included within the licence to ensure that water abstracted is discharged to the nearby watercourse ensuring that the abstraction is largely non-consumptive.

9.5 Protected rights and lawful users

Following MyMap screening the following abstractions / lawful users have been identified in the vicinity of the abstraction:

Licence serial number	Approx. distance / direction from abstraction
22/59/1/0132	2.5Km North East of abstraction
WA/059/0001/004	3.9Km South West of abstraction
WA/059/0001/010	2.6Km North East of abstraction
22/59/1/0032(deregulated)	3.6Km North East of abstraction
22/59/1/0122 (deregulated)	2.3Km North East of abstraction

Geoscience have advised that they have no comments regarding these abstractions as they are all located some distance from the dewatering area.

NRW acknowledges that the existing abstraction has been operating lawfully for many years under an exemption, without any concerns about impact to other water users/abstractors being raised. NRW considers the abstraction poses no risk to existing water users and should be licensed.

9.6 Habitats Directive, CROW Act, Conservation, heritage and landscape impacts

The following sites have been identified as a result of screening the application using MyMap. See MyMap screening result for full details.

Designation Type	Name of Site	Potential Impact	Distance & Direction from abstraction
SAC	None identified	n/a	n/a
SPA	None identified	n/a	n/a
RAMSAR	None identified	n/a	n/a
SSSI	Rhos Hen-Glyn-Isaf Nant Llech Nant y Rhos Gorsllwyn, Onllwyn (not picked up by MyMap screening tool but identified in visual MyMap checks.	Yes, see below.	Approx. 2500m NW of sump Approx. 2900m NE of sump Approx. 3600m SW of sump Approx. 4150m E of sump
AONB	None identified	n/a	n/a
Protected habitat	Fens and Reedbeds	No, the abstraction has been occurring lawfully with no reported impacts, and in accordance with Government policy a 'light touch risk-based' approach to	

		licensing needs to be applied.	
Source Protection zone	None identified	n/a	n/a
National Park	None identified	n/a	n/a

Work undertaken by ESI consultants in 2014-2015 on behalf of NRW to understand likely impacts of dewatering operations on SSSIs indicated that there was likely to be no impact upon nearby SSSIs from the existing dewatering operation.

As the work undertaken by ESI was completed some time ago, an Appendix 4 has been completed to re-assess potential impacts upon the Nant Llech, Nant y Rhos, Rhos Hen-Glyn-Isaf and Gorsllwyn, Onllwyn SSSIs. This assessment concluded that the abstraction is not considered to damage any of the flora or fauna of the site as the conditions within the licence reflect the historical abstraction operation. The assessment was approved by the conservation officer on 14/12/2021 (see DMS email).

9.7 Serious Damage
Not applicable to this application.

9.8 Cumulative Impacts
The abstraction has been ongoing for many years with no reported impacts, therefore we are satisfied that there are no anticipated cumulative / in-combination impacts.

9.9 Subsidence and Desiccation
The abstraction has been ongoing for many years with no reported impacts, therefore we are satisfied that there are no anticipated impacts relating to subsidence and desiccation.

9.10 Existing legislation and permissions
To support the application, the applicant provided details regarding the site's existing Planning Permission (P/2011/0217), which according to Powys County Council's planning webpages, was issued in March 2012. It was not considered necessary to reflect the planning requirements in any licence issued for the abstraction.

The applicant also provided details of an existing Discharge Permit (BP0345401) which was issued in 2005 and is still active. The volumes and point of return condition specified on the licence are in line with the existing permit.

10. Means of measurement of abstraction
The abstraction is not currently metered and the volumes applied for are based on pump capacity. Therefore, the means of measurement condition for dewatering will specify that actual abstraction volumes are calculated by multiplying the number of hours of operation of the pump by the output of the pump in one hour.

Quantities for dust suppression were estimated based on bowser capacity and the total number of loads per day. Therefore the means of measurement condition for dust suppression will specify that actual abstraction volumes are calculated by multiplying number of each type of bowser filled per day to be multiplied by the maximum bowser capacity, as follows:

Bowser Type	Capacity (m^3)
CAT 773 bowser	50.4
Volvo A35 Bowser	21.4
Tractor & Tank	12.9

This method of measurement was discussed and agreed with the NA Panel on 18/11/2021 (see 'NA Panel log' in NA Determination Work Plan).

Given the activity is considered to be low environmental risk and the abstraction activity is expected to cease by the end of 2022, this is considered an appropriate means of measurement (see consultation responses on the DMS) and the applicant will not be required to install a meter to measure the actual amount of groundwater being abstracted.

11. Considerations of SMNR – Compliance with our General Purpose

We are satisfied that this decision is compatible with our general purpose of pursing the sustainable management of natural resources in relation to Wales and applying the principles of sustainable management of natural resources.

12. Criticality, PALS purposes and abstraction annual charges

Criticality Class

Less Critical

PALS Purposes

Primary Code	Secondary Code	Use/Loss Level code
Industrial, commercial + Public Services (I)	Extractive (EXT)	660: Dewatering - Very low
Industrial, commercial + Public Services (I)	Extractive (EXT)	060: Dust suppression - High

Abstraction annual charges

The licence will be charged by multiplying together the following factors:

STANDARD CHARGE:						
Volume (ML)	**Source**	**Season**	**Loss** Purpose:	**Special Charges Agreements**	**SUC**	**Charge**
Dewatering: 4,083	1	1	0.003	N/a	15.89	£194.64
Dust suppression: 122.017	1	1	1	N/a	15.89	£ 1,938.85

PLUS

COMPENSATION CHARGE:						
Volume (ML)	**EIUC Source**	**Season**	**Loss** Purpose:	**Special Charges**	**EIUC**	**Charge**
Dewatering: 4,083	1	1	0.003	N/a	0	£0
Dust suppression: 122.017	1	1	1	N/a	0	£0

Total Charge for 2021/22	**£2,133.49**