

Liz Cole
Water Resources
Natural Resources Wales
Cathays Park
Edward VII Avenue
Cardiff
CF10 3NQ

Application reference: PAN-025790

Date: 20th June 2024

Dear Ms Cole,

Thank you for your letter dated 11 June 2024 in response to RWE Generation UK plc (RWE) water abstraction renewal application (the Application).

Your letter makes various requests relating to clarifications and administrative matters and also asks for further supporting information. We deal with the clarifications and administrative questions first, and the supporting information second.

Clarifications/ administrative matters

Your letter requests various clarifications and administrative formalities be addressed within 10 working days otherwise the application will be returned. We address these matters in this letter within your time frame and ask that you now proceed with the validation of the Application.

Specifically:

Abstraction Quantities: this remains unchanged for the purposes of the Application at 40m³/sec.

Application Form Declarations: the enclosed Delegation of Authority from RWE's Company Secretary confirms the authority of the signatory of the application forms.

Proposed Licensed End Date: we confirm the proposed licence end date of 31 March 2037, in line with the Cleddau and Pembrokeshire Abstraction Licensing Strategy.

Application fee: your letter confirmed that we had paid a fee of £1,398 (which is the normal fee for a like for like renewal) but requested an additional £3,597 on the basis that the application is for a "technical renewal". So that the fees issue does not stand in the way of validation we are paying the additional fee sought, but we do so subject to the points we make below. We also note that while the fee you have requested is the same as that payable for a technical variation, the application nevertheless should be processed as a like for like renewal which is what it is.

As you know, the published guidance on fees says the following:

"Simple variation/renewal

- *split the licensed quantities you abstract between two or more persons (apportionment)*

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- *extension of a self-destruct clause condition (this must be done prior to it coming into effect)*
- *update frequency of recording and reporting conditions in line with current guidance*
- ***same terms renewal (where no environmental or other concerns have been raised in your renewal reminder letter)***
- *different terms renewals (where the change is a reduction. Meaning a reduction in volumes or removal of a point/purpose and associated volumes)*

*For renewals that don't meet the criteria above, for example, a different terms renewal with an increase in volumes **or a same terms renewal where environmental concerns have been raised in the reminder letter, these are charged at the same rate as a technical variation application and require forms WRA and WRD to be completed, see below***. (All emphasis added)

Our Application is for a like for like renewal, against the background that the power station has been subject to an agreed, transparent and thorough monitoring framework since start of its operation in 2012. This agreed framework has given rise to a series of reports agreed by both parties which have concluded no significant impact on the integrity of the Pembrokeshire Marine SAC, thus confirming the environmental acceptability of the existing abstraction for which no changes are proposed in our Application.

Similarly, although NRW's pre-application renewal reminder letter dated 23rd of November 2023 and the subsequent clarification email dated 6th February 2024 ask for information to accompany the Application, neither identify any specific harmful effects from the water abstraction activity.

In any event, the time for assessing the merits of the application is through the normal process of consultation, assessment and requests for further information once the application has been validated. This brings us to your second set of requests.

Supporting information

We are disappointed at your response given the efforts already made by RWE to meet your earlier requests.

As you will know, RWE has sought to engage with NRW over the renewal application since August 2022. RWE also formally submitted a request for pre-application advice (Reference PPN-01182), but were then informed by a phone call from NRW (Liz Cole) that the pre-application advice service was not suitable to RWE's application which was then withdrawn. NRW first requests in relation to the Abstraction Licence Renewal were contained in comments in the 2021 Monitoring Report, which were drafted by NRW in May 2023 but not sent to RWE until November 2023.

As we have pointed out above, the context is one where there is also an agreed framework for monitoring and review and NRW already possesses a vast amount of data and assessment material concerning the power station going back many years, all prepared and analysed on an agreed basis. The purpose of this agreed framework is to ensure that there is a robust and accepted assessment of the environment and the effects of the power station following best practice. Given that NRW has reviewed all of these reports which have not identified any significant adverse effects, we do not understand how it can now be said that NRW have insufficient information to validate the application. We are particularly concerned that NRW's stance on certain matters contradicts the agreed basis of several years' standing on which those matters are to be addressed.

As well as this factual context, the legal framework is also important. The WRA 1991 acknowledges the need for operators to have certainty over the continued running of their plant during the renewal process, hence s46A of the WRA 1991 provides for the continuation of a licence where NRW receives

a valid application not later than the beginning of the period of three months ending on the expiry of the licence being renewed. For RWE's licence, this means receipt of a valid application before the end of December 2024. However, as you will appreciate, RWE cannot wait until then to find out if its Application has been validated because if NRW still decline to validate the Application at that time the plant would need face the unacceptable risk of having to cease future operation. Needless to say this would be a major incident which would jeopardise the country's security of energy supply.

RWE therefore needs to have its Application validated soon or take other steps - including legal avenues - to ensure that the application is validated so that power supply is maintained. It was in anticipation of these time scales that RWE sought to engage with NRW back in August 2022. It is frustrating that despite our efforts we now find ourselves running up against the critical time issues that we have sought to avoid.

Another important aspect of the legal framework is NRW's power to request further information post-validation. NRW's letter recognises that the further information sought will take a considerable amount of time to collate. Section 201 of the WRA 1991 provides NRW with the power to request information post-validation. The statutory framework therefore accepts that not every piece of information is needed before validation can happen and accepts that it is entirely appropriate for the regulator to ask the applicant to supply information after validation has taken place. As you will be aware, the supporting information submitted with the Application provides an ample basis on which to validate it. There is nothing critical to validation that has been left out and given the monitoring framework already in place there is no conceivable basis on which the continued operation of the power station during the processing of the validated application can be open to question.

Now that the clarifications and fee matters have been addressed, **we therefore request that the Application be validated now, and the remaining residual requests for further information be addressed as post-validation requests.**

For the sake of clarity, we now address the substance of those requests.

1 (a) – Provision of raw entrainment data

RWE have submitted raw entrainment data limited to the period of 2019 to 2022. The reason why RWE has provided such time limited data is two-fold. First, neither NRW's Abstraction Licence Renewal Reminder Letter dated 23rd November 2023 ('Reminder Letter') nor the clarification email of 6th February 2024 defined any required time period for this data. Secondly, on the basis of NRW's review, checks and approvals of the previously submitted environmental monitoring reports and all encompassing data, RWE provided data covering the period from the last submitted and accepted monitoring report which was for 2019.

We are surprised to now receive NRW's further request to extend this period to include data since the start of the power station operation. NRW have reviewed and accepted all the previous monitoring reports referred to above.

Nevertheless, RWE will provide data from the very beginning of the power station operation, i.e., from 2012 onwards.

Separate flow rates: the original request in the Reminder Letter and subsequent email did not ask for separate flow rates and RWE notes that the Impingement data sheets provided with the Application included the flows observed during each 24 hour impingement survey and that totals of daily and monthly cooling water abstraction are reported to NRW. NRW has therefore already had access to all historic power station flow data that it requires. The entrainment data was provided in

what RWE considered to be the most useful format (as counts per unit flow) to calculate entrapment. The provided format is that used within the environmental monitoring reporting as it allows the variation in entrainment between surveys to be readily compared.

RWE now understands that NRW require the unscaled entrainment count and sampling pump flows rather than the counts per unit flow. The counts per unit flow were provided because that is the basis that the data is used and presented within the reporting. This will take time to compile and format. Whilst the cooling water abstraction data has already been provided previously to NRW, RWE proposes to also compile this and provide alongside the impingement (abundance and biomass) and entrainment data (counts and sample pump flow).

We can provide this data by 31 July 2024.

1 (b) - Transparently presented calculations of annual estimates of impingement and entrainment from raw entrapment data.

These calculations have been clearly and transparently explained in previously reviewed environmental monitoring reports and in the Application which included a worked example to detail the methodology used to calculate annual impingement from the survey data. The method used to extrapolate the entrainment counts when expressed as a count per unit flow rate is relatively simple and we did not consider it necessary to include a worked example for that calculation.

Nevertheless, we propose to supply an additional worked example to apply to the raw entrainment data (as per request 1 (a)) to demonstrate the process. This will be similar to the example already provided in our Application (in the document titled Summary of Supporting Information for the Renewal of Pembroke Abstraction Licence (Ref ENV/721/2023) .

This can be provided by 31 July 2024.

2. Provision of updated EAVs for the entrapment data

We consider that the application already addresses this issue satisfactorily.

The Renewal Reminder letter and subsequent email of 6th February 2024 asked RWE to update the EAVs used in the entrapment analysis using the latest available literature. As a result, independent environmental consultants Jacobs undertook a literature study. This identified slight variances in parameters but did not identify any material changes. Consequently, the EAVs used in the entrapment analysis did not require updating in the light of the review.

It appears from your letter that despite the findings of the literature review study by Jacobs, NRW still require different EAVs to be used in the entrapment analysis. This will require a significant amount of resources and extensive time both to make the changes and to run the analysis. It will also require RWE to provide a comparison of the entrapment using both the original and changed EAVs. Given the nature of the exercise and Jacob's view that there are no material changes indicated by the literature, we are concerned that NRW will continue to be dis-satisfied with what is produced and that the provision of material to the satisfaction of NRW may become a protracted process.

We consider it likely that providing the material sought to the satisfaction of NRW could take a significant amount of time and therefore prejudice the operation of the power station and RWE's ability to rely on s46A of the WRA 1991. We see no reason why this matter cannot be addressed by

way of a post validation request and given the timescales involved it is essential that it is treated in this way.

You will appreciate that there is a considerable amount of work required to meet the above request. Our current estimate is that we can provide the updated EAV values by 31 October 2024.

3. Provision of annual entrapment estimates using arithmetic means rather than geometric means

We consider that this matter has been addressed adequately in the application material.

The difference between the two approaches is discussed in the document titled Summary of Supporting Information for the Renewal of Pembroke Abstraction Licence (Ref ENV/721/2023) provided with the Application. This outlined NRW and RWEs previous discussions of the relative merits of each technique and the scientific consensus. The Application also highlights that NRW has accepted that the use of a geometric mean was appropriate for skewed samples such as are found with the impingement data. Notwithstanding this Jacobs provided a comparison of the impingement for three years (2020 to 2022) in the Application when scaled using arithmetic and geometric means to demonstrate the potential difference.

It is concerning that NRW's letter asserts that this widely accepted industry-standard approach is under-estimating the entrapment levels, especially in light of all previously accepted environmental reports and conclusions. We also observe that NRW's assertion indicates that it is already engaged in considering the merits of the Application while at the same time declining to register it as valid. While RWE welcomes the opportunity to demonstrate the merits of the Application, due process must be followed. The fact that NRW is already engaged in this process is a further reason supporting the validation of the Application now so that this issue can be addressed fairly.

As your letter acknowledges, there is a timing issue with reworking the entire data set starting from all complete years since start of the power station operation (i.e., from 2013) using an arithmetic means. As with the EAV question, this exercise will require significant time and resources and raises uncertainty about whether NRW will be satisfied with how the data is presented once this exercise is done. Maintaining this request as a validity issue will prejudice the continued operation of the power station.

On current estimate we expect to be able to deliver this information by 31 October 2024.

4. Provision of the uncertainty/variability in annual entrapment estimates to account for sampling resolution and scaling uncertainties

RWE considers that this matter has been satisfactorily addressed.

Within the supporting information submitted with the Application RWE has included a study of the uncertainty in the entrapment calculations due to sampling resolution. This study made use of a bootstrapping technique as suggested by NRW. The species RWE selected for the purposes of the study (sprat, poor cod and sand smelt) were a representation of most commonly appearing species. Jacobs judged this to be appropriate both because they are the species which comprise more than 80% of the impingement and because the bootstrapping is not well suited to those species rarely found during the surveys.

In addition to the bootstrapping, reference was made to an analysis undertaken of the other factors affecting impingement at Pembroke, such as tidal range and wind. The information supplied is reasonable and proportionate.

In order to provide further additional supplementary information post validation of the application, RWE propose to undertake and expand the analysis on seven of the numerically abundant species found at Pembroke which also provides a cross-section of the types of fish found within the impingement data. We propose to do this for all complete years (2013 to 2022) since the start of the power station operation. The fish species are broken down into the following categories: estuarine residents (fish that are there all year round); fish that primarily utilise the estuary as juveniles; and fish that access the estuary at certain times of the year:

- Residents - sand goby, rock goby and common goby
- Juvenile residents - sand smelt, sprat and herring
- Visitors/Transient - poor cod

We trust that the above approach is acceptable and ask that you tell us immediately and explain why and what you require, if not. On our current estimate we expect to provide this information by 31 October 2024.

5. Provision of species-specific trend analysis

RWE considers that this has already been dealt with adequately.

Within the supporting information already supplied with the Application is a discussion of the use of trend in fish populations in the environmental monitoring program. This discussion identified where in the reporting the trends in monthly abundances are plotted. It was noted that that species populations, including fish communities, within the Haven vary in time and space, partly in reflection of the variable habitats and dynamic environment of the estuary; stochastic events and the great variation in survival and recruitment of species (NRW, 2017 1). The presence of boom and bust species such as sprat and sand smelt and rare infrequently recorded species will complicate the application of trend analysis. As discussed in the supporting information accompanying the Application, the reports draw on a wide source of data for a range of species. This is considered by Jacobs and RWE to be the appropriate method of analysis and has previously been accepted by NRW. The observed changes in fish communities remain in line with expected variation, based upon the knowledge from previous years, as well as from historical data. The information already provided with the Application was deemed appropriate given the existing comparison of trends in fish abundances within the monitoring reports and NRW's previous acceptance of these reports.

To complete this analysis for all species and all the sampling data as now requested by NRW will require significant resource and time. It is essential that RWE understands precisely what NRW requires. As you know, questions over analysis methodology have been in the past been addressed via the regular reviews that NRW hold of the monitoring program and a similar process would seem appropriate to address this request.

¹ Natural Resources Wales (2017). Pembrokeshire Marine / Sir Benfro Forol Special Area of Conservation. Advice provided by Natural Resources Wales in fulfilment of Regulation 35 of the Conservation of Habitats and Species Regulations 2010 (as amended). Cardiff, Wales. 131 pp. [Online]. Available at: <https://naturalresources.wales/media/682013/pembrokeshire-marine-reg-35-report.pdf> [Accessed March 2018].

In order to provide further additional supplementary information, RWE propose to identify any overall trends within the impingement data by conducting a series of statistical tests. Initially, the data has to be assessed for normality (or otherwise) of its distribution, this will be achieved using the Shapiro-Wilk test. The results of this test will determine if a parametric or non-parametric approach will be used for the remaining analysis.

To identify trends within the data either a linear regression or Mann-Kendall will be used.

Following on from this, analysis of variance (using ANOVA or Kruskal-Wallis for example) will be used to determine the statistical significance of any variation within the data. To determine the sources of variation within the data set, post-hoc testing such as Tukey or Dunne tests will be used. Overall this will allow for the identification of any trends within the data and analysis of the significance and ultimate source of identifiable trends.

This process will be repeated for total yearly figures and also for monthly data over the sampling period (2013 to 2022). A further analysis will be undertaken using the same process with data for the seven fish species listed in the proposal to address point 4 of the supporting information requests.

We trust that the above approach will be acceptable and ask that you tell us immediately and explain why and what you require, if not. On current estimates we expect to be able to provide this information by 31 October 2024.

The way ahead

The above sets out clearly RWE's position including the provision of further supporting information requested by NRW. RWE is committed to ensuring that the decision on the merits of its like for like renewal is taken on the basis of appropriate information and it acknowledges that disagreements can arise about what information is needed for this purpose. The long history of agreed environmental monitoring continues to provide a reliable framework in this respect, and both RWE and NRW have placed confidence and reliance upon it. RWE's approach is consistent with that agreed framework and includes additional supporting material to address the requests previously made by NRW.

However, the immediate issue is not the merits of the Application but the simple question of validity and the need for certainty and appropriate timescales so that the power station can continue to operate while the Application is assessed. As you will see, requests 2 to 5 relate to matters which RWE considers it has addressed adequately in the Application in response to the Reminder Letter of November 2023 and follow up email of February 2024. While we are committed to meeting the additional requests, the amount of work involved means that they cannot be met until 31 October 2024 at the earliest. As you will appreciate, this does not leave sufficient time to address any further validation issues that might then arise while also ensuring the continued operation of the power station. It is essential that RWE has certainty on this matter in good time. It is in the public interest that the on-going operation of the power station during the renewal process is not in doubt.

We therefore repeat our request for the Application to be validated now, and the above requests treated as post-validation requests, so that the remaining information can be provided during the processing of the Application, in the normal way.

We thank you for your understanding in this matter.

We look forward to hearing from you at your earliest convenience and **in any event by 28th of June or possible sooner.**

Yours sincerely,



Dan McDermott

Roland Long

Regulations Support Engineer

Pembroke Asset Manager

Enclosures:

Letter of authorisation from RWE Generation UK plc Company Secretary

Receipt of payment of Abstraction Licence technical fee