

Compliance Assessment Report CAR_NRW0041139

Permit being assessed: AP3990LR.

For: St Modwen Developments Ltd, held by St Modwen Developments Limited

At: Llancoed House, Llandarcy, N P T, SA10 6HJ.

Type of assessment carried out: Report/Data Review, Reason: Routine.

On 10/02/2023.

Parts of permit assessed: IP1 review

NRW Lead Officer: Sally Wakeford.

Report sent to: Peter Britland, St Modwen representative on 10/02/2023.

1. Summary of our findings (full details in section 4)

Part of permitted activity assessed (criteria)	Assessment result	Permit condition
C2 - General Management - Management system and operating procedures	Action only (X)	

Result types are explained in more detail in the 'Important Information' section below.

Total number of non-compliances recorded	Total non-compliance score
0	0

How we use the non-compliance score to calculate your annual fee is explained in the 'Important Information' section below.

2. What action is required?

Criteria	Action needed	Complete by
C2	Provide timescale for completion of updated CWRA.	24/02/2023

Action criteria codes are listed in the 'Important information' section below.

3. What will happen next?

Any non-compliance we have identified and recorded on this form is an offence. It can result in criminal prosecution and/or suspension or revocation of your permit.

At this time, we do not intend to take any further action.

This statement does not stop us from taking additional enforcement action if further relevant information comes to light or offences continue.

4. Details of our assessment

Permit condition 2.4.1 requires the operator to complete the improvements specified in Schedule 1 Table 1.3 by a date agreed in writing with Natural Resources Wales (stated as Environment Agency in the permit).

Table S1.3 Improvement Programme Requirements states for IP1 – Review of Hydrogeological Risk Assessment, Stability Risk Assessment and Gas Risk Assessment reports shall be undertaken by the operator at key stages of the development of the landfill and shall be submitted to NRW (formerly EAW) for written approval.

On 28 November 2022 a Controlled Water Risk Assessment for IP1 was submitted. This has been reviewed by NRW Hydrogeologists and they have provided the following comments.

General

1. No borehole logs have been presented - these should be included for all wells that have been monitored and sampled and results presented.
2. A few of the tables aren't numbered which would be useful for cross-referencing purposes
3. There is reference to monitoring reports (Section 3.1 paragraph 8) – copies of these reports were not provided nor reviewed, and if the information from them is being relied upon to some extent, that information should be included in this report.
4. The 2013 HRA written by Atkins was not previously accepted by NRW (EAW at the time); this report is result of us asking for more information and therefore reference to conclusions of those reports are somewhat irrelevant.
5. As a note, the Crymlyn Bog is a SSSI; SAC and a Ramsar site and there should be no continuing impact on this site from pollutants; hazardous or non-hazardous - especially concerning is the impact from ammonia on this lowland fenn. Under the Groundwater Regulations there is also a "prevent and limit" provision.

Figures

Some general comments on the figures presented (not exhaustive list)

1. The groundwater elevation data - this is poorly presented and doesn't allow the reader to view the data very easily. By presenting so many wells on a graph, it is very difficult to distinguish wells from each other and look at trends / fluctuations in the data.
2. I'm unsure what the purpose of the average groundwater contour maps over multiple years (e.g. 2020 - 2022) are. By presenting average data, all fluctuations in groundwater elevation are removed and this graphic is not actually presenting any true measured data. The reader cannot determine any fluctuations in groundwater elevations and potential change in groundwater flow direction etc.
3. Contours shown are inferred but also do not take account of the other structures on site i.e South Bay is a concrete lined water body and immediately south of this is / was Mussons Channel
4. Concentration contour maps for a number of metal species from May 2022 are presented - it appears that only select wells have been sampled, and these wells are not consistent for all metal species - why is this? It is also questioned whether, given the limited datasets and spatial extents, contours are an appropriate method to display this information; the contours infer concentrations between points which can skew perception of impact when only limited number of well data presented. The data in tabulated format alongside these contours would be beneficial to see actual recorded concentrations.
5. It is recommend not using white symbology to present 0 mg/l; the reader cannot

determine easily what's been monitored and has returned a concentration of 0 mg/l or which wells haven't been monitored

CSM and Site Characterisation

There is not sufficient information presented to confirm that the Source-Pathway-Receptors at the Site have been adequately characterised and understood. Some comments have been included below:

1. A detailed CSM, based on site specific evidence, is lacking; there is limited information on the source (concentrations, spatial extent, changes over time etc) and the pathway; some information on hydrogeological flow paths seems inferred, estimated, anticipated. These are two key components which need to be understood in order to progress with such an assessment
2. Climate change and change of rainfall and intensity of events has not been included.
3. There is very limited information on the NAPL source at the Site, for example previous works for removal, estimated source reduction, assessment of achieving asymptotic conditions, any rebound testing, transmissivity testing etc. This needs to be considered alongside the DQRA.
4. Information has not been included on present NAPL at the site, for example the locations of where the product has been identified, at what thicknesses and how this has changed over time; this should include central and peripheral site wells.
5. We do not know when NAPL pumping activities were undertaken; it would be useful to see this annotated on a groundwater level chart to see the impact, if any, of these activities on groundwater elevations
6. Are there any remaining on-going sources of contamination at the Site? It's difficult to interpret whether persistent dissolved phase / free phase contamination is considered residual or on-going.
7. What is the baseline condition for the receptor (the Crymlyn Bog) that conditions are compared against? What are the performance metrics for measuring success at the site? Is there an understanding of how far does the impact extend out into the bog, how this has been measured, how this has changed over time?
8. The overall water balance for the site is not sufficiently detailed. For example, there is mention of infiltration being a driver for shallow and deep groundwater fluctuations but it's unclear where the main zones or recharge are, both laterally and vertically.
9. There has been no description of the separate catchments for the whole of the Coed Darcy site and the escarpment features to the North- how this impacts the flow across the site.
10. There has been no upstream/ upgradient sampling of the bog or groundwater to understand the quality of the groundwater on the site.
11. We do not agree with the argument that the rest of the oil refinery site has impacted groundwater without evidence to support this statement.
12. We note the statement that LNPAL is preventing downwards migration and reducing hydraulic conductivity- this infers that free product is altering groundwater flow pathways through the site
13. There appears to be a reliance on the presence of an upward hydraulic gradient (Section 3.1 paragraph 9) which "suggests that there is little potential for any dissolved phase contaminants, which may be emanating from the northern site boundary in near surface groundwater, to flow downwards into the underlying glacial

or bedrock aquifers". From the information presented, this is associated with deeper groundwater in some wells generally show higher levels than shallow, although the information also suggests that levels in the two are generally similar. There is data presented for the shallow and deep wells but there is no indication of when the samples were taken, so it cannot be determined if this apparent upward gradient is present all year round; from the data presented there is evidence of fluctuations in both the shallow and the deep which would suggest it isn't. Although the data suggests this could potentially be occurring at times, we do not agree with the more definitive conclusion that this indicates there is little potential for any dissolved phase contamination to flow downwards.

14. Near surface groundwater flow - the discussion around this (Section 2.3) doesn't make it clear what site-specific data was used in this assessment.
15. Section 4: why can the hydraulic gradient of the material not be measured directly?
16. We haven't included comments on my review of the modelling at this stage due to the uncertainties presented in the comments raised herein. As a general comment though, we do note that the model has been run using the 'degradation in all phases' function - in order to confirm that this is appropriate for use given the significant influence it has over the calculated remedial targets, this needs to be supported with strong lines of primary, secondary and/or tertiary lines of evidence. We cannot see any data in support of this so as it currently stands this would not be acceptable. The degradation function should also be presented in the sensitivity analysis

Data

1. Using 'average' data should be done so with caution; it may not be appropriate to draw conclusions from averages when there are notable fluctuations in the data set.
2. Limited analytical data has been presented, only select datasets have been included (noting no chemical analysis certificates or full tabulated datasets). There is a distinct lack of data assessments over time, trends in data etc which constitute primary lines of evidence which are typically analysed in these types of assessments. From the data presented in the report, the reader cannot understand how concentrations have changed over time. This makes it impossible to fully understand the nature and extent of the contaminant source(s) at the Site
3. Section 3.1, paragraph 5: caution should be taken when making statements about conditions which are based on limited datasets as these carry a higher level of uncertainty
4. Data limitations (as mentioned in the point above) i.e. no data from particular parts of the site. It's unclear whether this is consistently or just over a particular time period but what impact does this have on the understanding of groundwater flows at the Site? There is no recognition of the uncertainty that remains within this assessment
5. It seems that some of the data used in the assessment of groundwater flows was undertaken at the time of product recovery, and therefore may have been skewed as a result of artificial pumping activities. This data should be differentiated, and if looking at an assessment of 'stable' conditions, excluded from the dataset.
6. It seems unclear and confused what influences there are on groundwater flow, whether natural (seasonal variation) or anthropogenic (NAPL recovery through pumping). This is important in understanding the hydrogeological regime at the Site, which essentially will drive any off-site migration of dissolved phase / free phase contamination.

7. Section 3.2 paragraph 3 - reference to MBAT analysis to calculate site specific EQS for some metals which has been adopted for this report; this needs to be included as I have not seen the other report within which the assessment is presented. Without this data, we cannot determine if this is appropriate or not. Also, clarification of which surface water body has these been calculated for.
8. We note that the work to date has focused on TPH, PAHs and metals. There are no measurements for solvents and given that the site had a trichloroethene plant on the site, we would have expected to see this as part of the contaminants of concern; no justification has been provided for their removal from the CoC suite. There has not been a list of the likely contaminants that would be in a landfill that served an oil refinery and its domestic provisions too. We also discussed in the December 2023 meeting that PFAS/ PFOS and derivatives should be sampled as these are likely to have been on the site as Aqueous fire fighting foams (AFFFs)
9. In previous RAP works at the site, drums filled with unknown contaminants were removed. It would be prudent to undertake GCMS sampling to understand if there are other contaminants, hazardous or non-hazardous (in terms of groundwater regulations), within the waste mass that require inclusion in this risk assessment.
10. Distribution of CoC in groundwater (Section 3.3); the latest data is good to understand (although tabulated data would be beneficial to actually see the concentrations) but also worth seeing this in the context of previous data, where the changes are and why. Contour plots, as mentioned above, are not the best way to present data from discrete monitoring locations.
11. The table in Section 3.3; qualitative discussion has its place but this isn't giving me a strong understanding of conditions; this should be supplemented with the analytical data

NRW do not accept this version of the Controlled Waters Risk Assessment as meeting the requirements of IP1.

As per Table S1.3 we are required to agree a date as to when a revision of this CWRA will be completed. **Please consider this timeframe and confirm when a further CWRA will be provided for NRW review.**

This review has been marked as Action Only under C2 – Management Systems.

END

Any compliance criteria not highlighted in the above summary should be considered as not assessed.

In this document 'Natural Resources Wales' means the Natural Resources Body for Wales established by Article 3 of the Natural Resource Body for Wales (Establishment) Order 2012.

You should note that the Natural Resources Body for Wales has been formed by bringing together the Countryside Council for Wales, Forestry Commission Wales and Environment Agency Wales. The Natural Resources Body for Wales has been empowered to exercise Welsh devolved functions since 1st April 2013 and has, generally, taken over the responsibilities of the Countryside Council for Wales, the Forestry Commissioners and the Environment Agency for Wales.

If you have any queries about this report, or to discuss completion of any actions, please contact the NRW Officer named above.

Important information

Legal status of this report

Your permit is issued to you under the Environmental Permitting Regulations. You have a responsibility to comply with the conditions of your permit and prevent pollution/harm of the environment. You must also ensure that you comply with any other relevant legislation that may apply to your site's operations.

This report explains the findings of our assessment and any action you are required to take. We categorise non-compliance using our guidance for assessing non-compliance at regulated sites.

When we find potential non-compliance/s we will normally give you advice on how to maintain compliance.

To correct non-compliance, we may:

- require you to take specific actions
- issue a notice
- review the conditions of your permit.

Any advice and guidance we give will be without prejudice to any other enforcement response that we consider may be required.

Assessment results and non-compliance categories (used in section 1):

Assessment result	Description
Assessed (A)	Assessed or assessed in part, no evidence of non-compliance found
Action only (X)	Action only relating to the activity assessment
Ongoing (O)	Ongoing non-compliance, not scored

Non-compliance category	Description	Score
C1 Major	Potential to have a major, serious, persistent and/or extensive impact or effect on the environment, people and/or property	60
C2 Significant	Potential to have a significant impact or effect on the environment, people and/or property	31
C3 Minor	Potential to have a minor or minimal impact or effect on the environment, people and/or property	4
C4 No environmental impact	Non-compliance at a regulated site that cannot foreseeably have any impact on the environment, people and/or property	0.1

How we use assessment scores

The number and severity of non-compliances recorded in a year will affect your annual subsistence fee the following year. A non-compliance factor is added to your site's Operator

Performance Risk Appraisal (OPRA) score when we calculate your fee to reflect the additional resource we use to assess permit compliance.

What are suspended scores?

In line with our guidance, we may suspend scores for up to six months to allow time for remedial action to be taken. Suspended scores will be re-instated if the action is not completed.

Full list of Industry and Waste action criteria (used in section 1 and 2):**A: Permitted activities**

- A1 Specified by permit

B: Infrastructure

- B1 Infrastructure – Engineering for prevention and control of emissions
- B2 Infrastructure – Closure and decommissioning
- B3 Infrastructure – Site drainage engineering (clean and foul)
- B4 Infrastructure – Containment of stored materials
- B5 Infrastructure – Plant and equipment

C: General management

- C1 General management – Staff competency/training
- C2 General management – Management system and operating procedures
- C3 General management – Materials acceptance
- C4 General management – Storage, handling, labelling and segregation

D: Incident management

- D1 Incident management – Site security
- D2 Incident management – Accidents, emergency and incident planning

E: Emissions

- E1 Emissions – Air
- E2 Emissions – Land and groundwater
- E3 Emissions – Surface water
- E4 Emissions – Sewer
- E5 Emissions – Waste

F: Amenity

- F1 Amenity – Odour
- F2 Amenity – Noise
- F3 Amenity – Dust/fibres/particulates and litter
- F4 Amenity – Pests/birds and scavengers
- F5 Amenity – Deposits on road

G: Monitoring and records, maintenance and reporting

- G1 Monitoring and records, maintenance and reporting – Monitoring of emissions and environment
- G2 Monitoring and records, maintenance and reporting – Records of activity, site diary/journal/events
- G3 Monitoring and records, maintenance and reporting – Maintenance records
- G4 Monitoring and records, maintenance and reporting – Reporting and notification to Natural Resources Wales

H: Resources efficiency

- H1 Resource efficiency – Efficient use of raw materials
- H2 Resource efficiency – Energy efficiency

Enforcement response

Any permit condition non-compliance is an offence and we may take legal action against you. Action we take can include prosecution, serving a notice on you and/or suspension or revocation of your permit. See our Enforcement and Sanctions Guidance for further information.

Data protection notice

You should make sure that anyone named in this report knows that the information it contains will be processed by Natural Resources Wales to fulfil its regulatory and monitoring functions and to maintain the relevant public register(s).

We may also use and/or disclose the report in connection with:

- offering or providing you with our literature or services relating to environmental matters
- consulting with the public, public bodies and other organisations (e.g. Health and Safety Executive, local authorities) on environmental issues
- carrying out statistical analysis, research and development on environmental issues
- providing public register information to enquirers
- investigating possible breaches of environmental law
- assessing customer service satisfaction and improving our service
- Freedom of Information Act or Environmental Information Regulations requests.

We may also pass it on to our agents or representatives to do these things on our behalf.

Disclosure of information – this report will be available to view on-line

If you think this report contains commercially confidential information that should not be placed on our public register, you must contact your local Natural Resources Wales office within **fifteen working days** of receiving this report, using the contact details in the accompanying email or letter. You must give a full explanation of why it should not be added to our public register, including specifying which information is commercially confidential. We will assess your request and respond to you within 20 working days to let you know if we agree to your request.

What do I do if I disagree with the report or have a complaint?

If you disagree with this compliance assessment report, you should contact the lead officer without delay to discuss your concerns.

If you are unable to resolve the issue with the lead officer or their line manager you should contact our Customer Contact team on 0300 065 3000 (Monday to Friday 08:00 – 18:00), or email enquiries@naturalresourceswales.gov.uk for details of how to raise your dispute further through our Complaints and Commendations procedure.

If you are dissatisfied with our response, you can contact the Public Services Ombudsman for Wales by phone on 0300 7900203 or by email at ask@ombudsman.wales

Welsh Language Standards

We are committed to establishing Natural Resources Wales as a naturally bilingual organisation. We will provide compliance reports in your preferred language.