

Compliance Assessment Report CAR_NRW0040862

Permit being assessed: DP3432SW.

For: Aberthaw Ash Disposal Site EPR/DP3432SW, held by RWE Generation UK plc

At: Aberthaw Power Station The Leys , Aberthaw, Vale of Glamorgan, CF62 4ZW.

Type of assessment carried out: Site Inspection, Reason: Routine.

On 26/10/2022 between 10:00 and 15:00.

Parts of permit assessed: Emissions, stability, monitoring and reporting

NRW Lead Officer: Antony Leakey, accompanied by Nick Rogers.

Report sent to: Sarah Camps, Environmental Consenting and Permitting Advisor on 20/01/2023.

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

Part of permitted activity assessed (criteria)	Assessment result	Permit condition
B3 - Infrastructure - Site drainage engineering (clean and foul)	Assessed (A)	
C2 - General Management - Management system and operating procedures	Assessed (A)	
E2 - Emissions - Land and groundwater	Assessed (A)	
E3 - Emissions - Surface water	Assessed (A)	
G1 - Monitoring and Records, Maintenance and Reporting - Monitoring of emissions and environment	Assessed (A)	
G4 - Monitoring and Records, Maintenance and Reporting - Reporting and notification to Natural Resources Wales	Assessed (A)	

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?

No action required.

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**Aberthaw Ash Landfill – Site Inspection 2022, Monitoring Reports Review****Site Inspection 2022**

A planned inspection was carried out on 26/10/22 to check surface and slope conditions, monitoring infrastructure and sea defence condition ahead of transfer of the permit to the prospective new owners Cardiff Capital Region Energy (CCR).

Final profiling of the short tipping area was also inspected. No CQA reporting was undertaken for these works which were limited to regrading of the existing slope/side wall with no design specification to check against. The area may require hydroseeding to help establish vegetation to limit wash off, of which there was some evidence of ponded PFA slurry on the western access track at the location of the short tipping area. A short vertical section of the original short tipping area upper edge has been left unprofiled to protect the roots of extensive shrubs and small trees established on the main slope above. This section is likely to reprofile naturally as erosion takes place and will be stabilised by the presence of the tree roots, although again hydroseeding is likely to be necessary at some stage.

ACTION: RWE to confirm before permit transfer that CCR understand restoration issues for resolution prior to aftercare phase.

Identification marking of some monitoring wells was not in place and there was some uncertainty over which wells were which at locations with multiple wells. Also, none of the wells were fitted with security locks.

ACTION: RWE Generation to confirm before permit transfer that all groundwater monitoring wells have appropriate identification markings and security provisions.

The landfill boundary fencing along the sea front (southern end) is not particularly secure and there may be benefit in making improvements to limit trespass, although it is noted that there is public access to the eastern slopes via footpaths from East Aberthaw village.

Stability

All surfaces inspected, except for the short tipping area, some very small areas near the bottom of the slopes and the most recently completed part of the landfill in the north were well sealed and larger vegetation established on some slopes is helping to minimise erosion.

The main power station and ash mound landfill sites are protected from coastal inundation by a concrete sea wall and storm beach. The storm beach is protected on the south facing shore by a series of stone, concrete and timber clad groynes.

RWE undertake regular civil asset surveys, the last formal Engineering Report for the sea flood defence was produced in April 2020. This report, as well as the defect register and

current civil asset defect status, has been shared with CCR via the RWE Handover Health and Safety File (see separate report for permit RP3133LD).

It is unclear if the sea defence is preventing coastal erosion only or is also providing retaining support to the landfill. This aspect needs to be examined more closely because the civil asset surveys will be assessing sea defence structural integrity in isolation.

There is limited geotechnical information on the ash mound construction and no recent formal stability inspections. Information is limited to a basic slope stability analysis carried out in 2001 before the completion of filling and a topographic survey that shows there has been no settlement since completion.

The 2001 slope stability analysis report indicates a good factor of safety for slope failure based on generalised assumptions of the pfa material properties.

The landfill has an extensive flat top that may have implications for future stability because of the greater potential for high infiltration and future resilience to climate change effects upon rainfall intensity and accumulation. It is claimed that due to compaction the PFA has a low permeability and water is shed to the slopes with only shallow infiltration. There was no pooled water and no engineered or natural drainage ditches on the slopes to indicate how water does enter/leave the tip. Note, however, that the inspection took place after a long dry period and an inspection after a season of wet weather may show up different aspects of the site drainage and infiltration performance.

The eastern periphery drainage ditch was not visited but the drainage seen along the western flank was not well maintained resulting in water pooling around the base of the slopes near the short tipping area.

The groundwater regime is complex particularly due to the possible tidal influences. There is however some evidence from the drilling of monitoring bore holes of local sub-artesian pressures beneath the landfill. This is likely to be localised in the region of the "Group 5 Spring" where softening of the base of the PFA fill could occur. There is no evidence in the regular topography surveys of this affecting stability, however an updated stability risk assessment should include consideration of this aspect.

It is unclear how much engineering design (e.g. compaction and moisture content control) went into the construction of the landfill, particularly for the earlier phases dating back to the 1960s. The absence of construction records creates uncertainty in assessing future stability. Under optimum conditions the strength of PFA is known to increase after compaction but the construction conditions for this landfill are not known.

Current stability assessments are based upon the 2001 analysis and regular topography assessments. This is considered to be sufficient, but formalised stability inspections carried out by geotechnically competent personnel will be necessary as part of an updated stability risk assessment at definitive closure and periodically during the aftercare phase.

The aftercare plan, submitted as part of a closure report, must include an updated stability risk assessment (SRA) so that recommendations for further investigations, any remedial works and a safety inspection programme can be implemented. The SRA should include consideration of the sea defence in the stability analyses to demonstrate the degree of

importance of the sea defence for stability of the landfill.

ACTION: RWE to confirm before permit transfer that CCR understand SRA issues for resolution prior to aftercare phase.

Monitoring reports

Six monthly and 2021 annual monitoring data (condition 4.2.1) for H2 2020 though to H1 2022 have been reviewed and the following points noted:

H2 2020 October groundwater pH field measurements show signs of alkaline contamination with results peaking at 14 and falling to less than 10, but still significantly higher than the July results which were all around pH 7.

The 2021 Annual Performance Monitoring Report shows that ammoniacal N consistently exceeds the compliance limit (5 mg/l) in several monitoring wells and the surface water spring monitoring point S1, since monitoring commenced in 2006. Note, however, that currently the compliance limits only apply at BH3 and BH7 and these are currently in compliance. The conclusions of the 2018 HRA explained *that there are no known sources of ammoniacal nitrogen primarily as there is no recent ash deposited in these areas and the very high concentrations appear to correlate to high salinity and therefore it is recommended that the potential for high salinity to interfere with the ammoniacal nitrogen analysis is investigated. In addition, RWE should investigate whether there are any other potential sources which may influence the water quality of the western boundary.* The report also suggests that sewage beds were located near the S1 monitoring location before PFA deposition although no further details are provided to support this claim.

However, it is known that ammonia has been used for ash conditioning to enhance electrostatic precipitator performance since the late 1990s and that NH_4^+ sorbs to soils and sediments via cation exchange and can take years to centuries to flush out in groundwater after initial contamination. Seawater may increase the concentrations of NH_4^+ in solution by flushing off sorbed ammonium ions with Na^+ etc.. Even though there has been no recent ash deposited it does not mean that the measured ammonium is not from the ash mound, as it will take many years for this to be flushed out of the underlying alluvium.

The 2018 HRA report includes a surface water impact assessment for ammoniacal nitrogen and other key substances entering the River Thaw that suggests no impact is expected due to the dilution available. However, the assessment does not consider unionised ammonia impacts, but conservative calculations by NRW suggest that the ionised ammonia EQS will not be exceeded in the river.

The following recommendations were made on page 38 of the 2018 HRA report:

“• Amend monitoring regime to add chromium (VI) and remove aluminium, selenium, nickel and antimony.

- Revise the compliance limits in accordance with Table 10 (of the report).
- Add downstream monitoring point on River Thaw.
- Investigate the potential for ammonia to be present in current ash.
- Investigate the potential for runoff from the temporary storage area to collect in pond S1”.

These recommendations have already been addressed, except for the second which

requires a permit variation. RWE has modified the monitoring regime, although has not been reporting chromium (VI) and River Thaw data to NRW, again because the permit does not currently require it. PFA is known to contain ammonia and examination of the western drainage ditch gradient suggests that flow towards the Group 5 Spring pond is unlikely.

The next HRA review is due in December 2024 and consideration must be given to assessment of chromium VI and lead to establish discernibility of these hazardous substances in ground water as part of the HRA review. The next HRA review should also address the discernibility of arsenic and the implications of any hazardous substance discharges into groundwater for the aftercare period and surrender.

ACTION: RWE to confirm before permit transfer that CCR understand HRA issues for resolution prior to aftercare phase.

Permit status

The current permit is overdue for review to implement the last HRA review recommendations and because further deposit of PFA is not expected due to the closure of the power station, requires a variation to start to move the landfill into definitive closure so that the aftercare phase can begin. Details of the closure process can be found in the following guidance:

[Understanding the Landfill Directive LFD 1 \(naturalresources.wales\)](https://naturalresources.wales/guidance/understanding-the-landfill-directive-lfd-1)

ACTION: RWE to confirm before permit transfer that CCR understand permit issues for resolution prior to the aftercare phase.

END

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.