

Compliance Assessment Report CAR_NRW0045170

Permit being assessed: TP3639BH.

For: Tremorfa Melt Shop, **held by:** Celsa Manufacturing UK Ltd

At: Seawall Road, Tremorfa, Cardiff, South Wales, CF24 5TH.

Type of assessment: Report/Data Review,

Reason: Routine.

On: 11/09/2024.

Parts of permit assessed: EAF - 'Cement 2 Zero' Trial.

NRW Lead Officer: Dale Padfield.

Report sent to: -, Environmental Manager, on 11/09/2024.

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

Part of permitted activity assessed (compliance criteria)	Assessment result	Permit condition
IR2A - Installations - Operations - Permitted activities	Assessed (A)	

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

Total 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

Celsa Manufacturing (UK) Limited

EPR/TP3639BH

The purpose of this compliance assessment report is to review Celsa's proposal to trial the use of recovered cement paste (RCP) and Hydrated Cement Paste (HCP) to be used as a replacement flux in the electric arc furnace.

The trial is an upscaling of smaller trials that have already been conducted at the Materials Processing Institute (MPI) in Middlesbrough. The trial process looks to assess the feasibility of using RCP / HCP as a flux replacement, this would not only reduce the use of raw material in the EAF, but it is hoped that the RCP / HCP can be transformed back into useful cement clinker, which can then be recycled back into cement.

The trial will result in some deviation from the current permit, however, the trial meets the description and requirements of Schedule 1 Part 1, 3 (c) of the EPR regulations in that this trial is for research and the development and testing of a new product, utilising an existing process ~ the electric arc furnace. As such, an exemption will be agreed through this mechanism, to allow Celsa to trial the use of this material within the process.

Summary of trial

The trial requires small changes to the existing process, with the primary change being the use of up to 1 tonne per melt of RCP / HCP in place of some of the current flux additives.

Celsa are planning to conduct 8-12 consecutive melts, with flux additions mid-melt depending on live analysis results. Slag cooling will be undertaken as it is required to fix cementitious phase. The only changes to current EAF process will be the flux materials and quantities, as such, there are limited impacts envisaged on the primary operation.

The quality of the RCP and HCP has been assessed. Maximum sulphate concentrations of the material have been determined. This data, along with current process emissions data has been utilised to provide a worst-case estimate on the impact to the SO₂ emissions from the furnace during the trial. Considering the lowest possible dilution ratio, Celsa have estimated the total SO₂ emissions to be 21.61mg/m³, this is below the current permitted level of 25 mg/m³.

Other aspects such as storage and handling have been detailed in the submitted documentation and environmental risk assessments.

If successful, the process would result in multiple environmental benefits including a potentially generous CO₂ reduction in the cement sector, a reduction in raw materials used for flux additives in the EAF. The circular economy and carbon saving potential of this new process are potentially significant.

Upon completion of the trial, if Celsa plan to move forward and routinely use RCP / HCP, a permit variation will be required.

Some questions remain around the status of the RCP and HCP, and it is assumed these materials are still considered a waste. The potential impact on the current quality protocol for the end of waste for aggregate from waste steel slag may need to be discussed. However, this can be addressed if and when Celsa decide to utilise RCP and HCP on a permanent basis.

Trial agreement conditions

Conditions of commencing the trial Natural Resources Wales will allow the trial to commence with the following conditions:

- The trial is conducted in-line with the information submitted in the ‘Cement 2 Zero Full Scale Sign off presentation and ‘Environment Risk Assessment – C2Z trial 3 – Hydrated Cement Paste revision 1.0’ documents submitted on the 21st of August 2024.
- The slags arising from the trial process will be consigned from site as waste and not as a product;
- You must notify Natural Resources Wales prior to commencement of the trial activity;
- The trial activity will last no longer than is necessary to establish the efficacy of the process and will in any event cease after 3 months from the date of commencement;
- You must notify Natural Resources Wales upon cessation of the trial activity;
- Natural Resources Wales are informed of the outcome of the trial.
- In the event the trial gives rise to pollution or a negative environmental impact, the trial must be immediately stopped, and Natural Resources Wales notified.

	Information	Justification ?
1	Details explaining the proposed operation (including waste types and quantities), purpose and intended outcome of the trial. Details of on-site operation/activity including quantities of waste to be stored and processed, and the method of storage and processing. Intended environmental or commercial benefits, waste inputs and outputs – include details of any residual waste not recovered more efficiently. Any amendments needed to EMS and risk assessment.	Detailed in the Trial submission document
2	Is this procedure or process that you’re requesting unique? Have you explored the uniqueness and whether there are existing methods capable of being used to achieve the objective – not just in the UK?	Yes, this is a unique approach. Although small scale trials have been conducted at the MPI, the overall process is considered a novel approach for this ‘waste stream’.

3	Actions that will be taken following completion of the trial, e.g. what permit will be needed for the proposed activity, will an application for a permit be made, removal of wastes/infrastructure, etc. The completion criteria should be clearly explained.	Explained in the CAR form
4	Period of trial – normally the activity should not exceed six months. You will have to justify any longer period.	Limited in the CAR form to 3 months
5	Whether a market already exists for the output you are proposing and, if so, how the trial will affect that market.	Large market for the output – ‘Cement Clinker’. Positive impact on the market, reduced CO ₂ emissions associated with the sector.
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.

If your assessment result in Section 1 is suspended, what does this mean?

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 compliance criteria (used in section 1 and 2):

1. Management

- IR1A – General management
- IR1B – Finance (only applicable to Landfill)
- IR1C – Energy efficiency
- IR1D - Efficient use of raw materials
- IR1E - Avoidance, recovery and disposal of wastes produced by the activities
- IR1F - Multiple operator installations

2. Operations

- IR2A – Permitted activities
- IR2B – The site
- IR2C – Operating techniques
- IR2D – Technical requirements
- IR2E – Improvement programme
- IR2F – Pre-operational conditions
- IR2G – Landfill engineering (only applicable to Landfill)
- IR2H – Waste acceptance (only applicable to Landfill)
- IR2I – Leachate levels (only applicable to Landfill)
- IR2J – Closure and aftercare (only applicable to Landfill)
- IR2K – Landfill gas management (only applicable to Landfill)

3. Emission and Monitoring

- IR3A – Emissions to water, air or land
- IR3B – Emissions of substances not controlled by emission limits
- IR3C – Odour
- IR3D – Noise and vibration
- IR3E – Monitoring
- IR3F – Pests
- IR3G – Air quality management plans
- IR3H – Monitoring for the purposes of the Industrial Emissions Directive (this heading includes Large Combustion Plants)
- IR3I – Fire

4. Information

- IR4A – Records
- IR4B – Reporting
- IR4C – Notification

Enforcement response

Any non-compliance with a permit condition 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 twenty 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 to 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.