

## Compliance Assessment Report

**Report ID:**  
**CAR\_NRW0031267**

**This form will report compliance with your permit as determined by an NRW officer**

|                              |                                                                       |             |            |     |       |
|------------------------------|-----------------------------------------------------------------------|-------------|------------|-----|-------|
| Site                         | Port Talbot Steel Works EPR/BL7108IM                                  | Permit Ref  | BL7108IM   |     |       |
| Operator/Permit holder       | Tata Steel UK Limited                                                 |             |            |     |       |
| Regime                       | Installations                                                         |             |            |     |       |
| Date of assessment           | 03/11/2016                                                            | Time in     | 10:00      | Out | 12:30 |
| Assessment type              | Audit                                                                 |             |            |     |       |
| Parts of the permit assessed | 1 Management; 2 Operations; 3 Emissions and Monitoring; 4 Information |             |            |     |       |
| Lead officer's name          | Cowie, Douglas                                                        |             |            |     |       |
| Accompanied by               | Broom, Mark                                                           |             |            |     |       |
| Recipient's name/position    | Jason Heatman/ Lead Environmental Engineer                            | Date issued | 13/04/2017 |     |       |

### Section 1 – Compliance Assessment Summary

This is based on the requirements of the permit under the Environmental Permitting Regulations or the licence under the Water Resources Act 1991 as amended by the Water Act 2003. A detailed explanation is captured in "Compliance Assessment Report Detail" (Section 2) and any actions you may need to take are given in the "Action(s)" (section 4). This summary details where we believe any non-compliance with the permit has occurred, the relevant condition and how the non-compliance has been categorised using our Compliance Classification Scheme (CCS). CCS Scores can be consolidated or suspended where appropriate, to reflect the impact of some non-compliances more accurately. For more details of our CCS scheme, contact your local office.

| Permit conditions and compliance summary                                                                       | CCS Category | Condition(s) breached |
|----------------------------------------------------------------------------------------------------------------|--------------|-----------------------|
| A1 - Specified by permit                                                                                       | A            |                       |
| B1 - Infrastructure - Engineering for prevention and control of emissions                                      | A            |                       |
| C2 - General Management - Management system and operating procedures                                           | X            |                       |
|                                                                                                                | X            |                       |
| E1 - Emissions - Air                                                                                           | A            |                       |
| G1 - Monitoring and Records, Maintenance and Reporting - Monitoring of emissions and environment               | A            |                       |
| G3 - Monitoring and Records, Maintenance and Reporting - Maintenance records                                   | A            |                       |
| G4 - Monitoring and Records, Maintenance and Reporting - Reporting and notification to Natural Resources Wales | A            |                       |
| H1 - Resource Efficiency - Efficient use of raw materials                                                      | X            |                       |

**KEY:** See Section 5 for breach categories, suspended scores will be indicated as such.

**A** = Assessed or assessed in part (no evidence of non-compliance), **X** = Action only,

**O** = Ongoing non-compliance, not scored.

|                                    |          |                                                                     |          |
|------------------------------------|----------|---------------------------------------------------------------------|----------|
| <b>Number of breaches recorded</b> | <b>0</b> | <b>Total compliance score</b><br>(see section 5 for scoring scheme) | <b>0</b> |
|------------------------------------|----------|---------------------------------------------------------------------|----------|

**If the Number of breaches recorded is greater than zero, please see Section 3 for our proposed enforcement response**

## Section 2 – Compliance Assessment Report Detail

This section contains a report of our findings and will usually include information on:

- The part(s) of the permit that were assessed (eg. Maintenance, training, combustion plant, etc)
- Where the type of assessment was 'Data Review' details of the report/results triggering the assessment
- Any non-compliances identified
- Any non-compliances with directly applicable legislation
- Details of any multiple non-compliances
- Information on the compliance score accrued inc.
- Details of advice given
- Any other areas of concern
- Any actions requested
- Any examples of good practice
- A reference to photos taken

### Site description

Tata Steel UK Ltd (Tata) operates an integrated iron and steel works at Port Talbot, Neath Port Talbot. The site is permitted as an installation under the Environmental Permitting Regulations (EPR). The steelworks has several identifiable permitted processes which are carried out sequentially across the installation to convert raw iron ores and coal to semi-finished (slab) and finished steel products (such as hot rolled, pickled and oiled, cold rolled and annealed). The permit also covers coke making and the reception, stockpiling and blending of raw iron making materials. Three other companies, Cambrian Stone, Harsco Metals and ICL, undertake separately-permitted slag handling, iron plating and cold mill effluent treatment activities at the steelworks on Tata's behalf.

### Purpose of visit/assessment

This inspection focused on Tata's Sinter Plant which prepares, blends and heats raw materials for use in the blast furnaces. During this visit we continued ongoing discussions with Tata regarding abnormal operations criteria (including start-up and shutdown) for the sinter plant, permit emission limit values and reporting of sinter plant monitoring data to the regulator. In particular we aimed to agree the circumstances in which monitoring data is excluded according to defined criteria.

Other matters in relation to an expected permit variation, water abstractions and hot metal silicon were also discussed during this intervention.

The relevant permit conditions are listed under Sections 1.1, 1.3, 2.1, 2.3, 3.1, 4.2, 4.3 and 4.4 of Tata's permit. Water abstraction is regulated separately under the Water Resources Act 1991 through a system of licences.

### Person(s) present

#### Tata Steel

Jason Heatman

Jason Massey

Andrew Townsend

Tom Watson (Sinter plant)

Darren Isaac (Sinter plant)

#### NRW

Mark Broom

Doug Cowie

### Sinter plant abnormal operations

Following on from the interventions identified in CAR\_NRW0025274, Tata's engineers have been looking at how they can define 'normal' operations for the Sinter plant at Port Talbot steelworks. It follows that abnormal operations criteria can also be identified by undertaking this exercise. They

have looked at their normal operating parameters and have used statistics to set boundaries to these parameters – mean ( $\mu$ ) and standard deviation ( $\sigma$ ). They are using three-sigma ( $\sigma$ ) either side of the hourly mean, but only taking 90% of that deviation which is a more conservative approach than normal. The parameters Tata is using are: Electrostatic Precipitator (ESP) temperature; wind main temperature and chain conveyor temperature below each ESP.

Tata's approach extracts raw data from the Sinter plant Continuous Emission Monitoring Systems (CEMS), examines the start-up and shut down ranges, reviews data for each hour against these criteria and finally highlights if the data has been excluded. Tata has developed a procedure and a spreadsheet with formulas to capture and analyse data according to these criteria. When data is excluded, a separate set of colour coded spreadsheet columns clearly show which parameter has led to the data exclusion.

The inspecting officers were shown examples of excluded data using actual sinter plant monitoring data extracted from Tata's PI system. Data capture was mostly about 85-90% for the examples shown, but ~75% in some instances. A minimum daily data capture figure (%) should be defined to accurately calculate the daily mean (reportable) result. Tata's procedure is in the final stages of development and should address this question.

The final stage is to use Tata Steel Process Control to support the Sinter plant engineers and allow this approach to be reflected as live data at the Sinter plant control room. This should inform and warn the sinter plant operators when problems are likely to occur, assisting permit compliance.

NRW is satisfied that Tata's approach is sound, transparent and auditable for the exclusion of data from abnormal operation situations at the sinter plant. A copy of the final procedure should be shown to the inspecting officers when complete. Tata should also inform NRW about any future modifications to this procedure.

The approach for the Sinter plant could be applied to other CEMS systems within the steelworks that have start-up and shutdown criteria. For its Large Combustion Plant (LCP) Tata is looking to use 50% Blast Furnace Gas (BFG) availability as a criteria.

### **Sinter plant main waste gas system**

The Sinter plant uses two very large fans to draw air through the sinter strand and propel waste gases along large ducts (known as wind mains) towards the two main ESPs. The plant has the capability to operate in one-fan mode, where all the waste gases pass through a single ESP rather than being split between the North and South ESPs. Both ESPs are configured and optimised for two-fan mode which is the normal mode of operation; the dust capture is reduced in single-fan mode.

Tata believes that the Sinter plant ESPs cannot consistently achieve the 40mg/m<sup>3</sup> BAT-AEL (permitted ELV) in one-fan mode. One-fan operation is used before and after scheduled Sinter plant maintenance stops; operating in this way allows Tata to isolate an ESP, ducting and fans for maintenance work while continuing to manufacture sinter at a lower rate.

One-fan operation also minimises the wear and stress placed on the ESPs during start-up. Deterioration of wind main and ESP panels, joints and ducting has been clearly evident during previous inspections. The level of refurbishment work that has been necessary to address this is clear evidence of the abrasive and corrosive conditions within the system. The ESPs are critical to Tata's efforts in meeting the BAT-AEL for particulates and therefore the company is keen to prolong their working life and operate them in the most sustainable way possible.

NRW understands the challenges faced by Tata in respect of the Sinter plant ESPs. We will normally support sustainable methods of operating the plant but we must also ensure main stack particulate emissions are controlled during either mode of operation. In principle NRW is content

to treat **reactive maintenance** as abnormal operations and therefore emissions monitoring data during these periods can be excluded.

We believe a different approach is necessary for **notified, scheduled maintenance** situations involving one-fan mode of operation. An initial discussion suggests that a higher daily mean ELV for one-fan operation either side of scheduled maintenance work could be applied. However further discussion is needed to better understand Tata's longer term intentions (including any planned investment) for the Sinter plant and how frequent one-fan operation may become in future. NRW requests a further meeting with the relevant Tata personnel at their earliest convenience.

There remains one section of wind main serving the North ESP that needs to be repaired. The Sinter plant will shortly return to a 'two-fan' operation following the recent scheduled maintenance stop. Re-machining of one main waste gas fan base has been necessary to reduce vibration. There is also a plan to replace a fan motor.

As an aside the ESP power fields are aligned from north to south. The seven chain conveyors below the ESPs (4 x North; 3 x South) collect precipitated dust from all fields, but are orientated perpendicular to the fields rather than collecting dust from each field separately. This means that dust cannot be collected by fraction at Port Talbot – dust from each power field is mixed and combined as the conveyor passes below the ESP.

### **Sinter plant emissions monitoring**

Tata asked about a linearity problem they have with one of their CEMs. NRW will seek specialist advice internally on this subject.

In CAR\_NRW0025273 we outlined the expected standards for CEMS fitted to non-Waste Incineration Directive (WID) and non-Large Combustion Plant (LCP) industrial processes. Tata has examples of non-WID and non-LCP CEMS across the steelworks, including at the Sinter plant.

Applying the CEMS QA standard to the dust monitoring across the site is proving to be a challenge for Tata's sampling teams due to the number of Continuous Emissions Monitoring systems (CEMS) installed and work required to meet BS EN 14181 in full. NRW has been drafting a position that means that not all the requirements of BS EN 14181 will be required for CEMS fitted to non-WID and non-LCP industrial processes. **The inspecting officers will share this position with Tata as soon as it is published.**

NRW's draft position for non-WID and non-LCP CEMS is that we would expect the following parts of BS EN 14181 to be applied as a minimum:

- Annual Functional Tests (including linearity, response time & system integrity, all prior to CEM calibration)
- Verify CEM reads zero at zero emissions
- Parallel Tests with CEM using Standard Reference Method [SRM] (to generate a valid calibration function).

Three repetitions of the SRM over 1 day would be acceptable for low-level cluster emissions (not more than 30% of the daily mean ELV)

There would be no specific requirements to carry out a QAL3 procedure (i.e. ongoing routine zero and span checks) for non-WID and non-LCP CEMS. Also, there would be no requirement to produce a fully compliant BS EN 14181 report.

Based on this position, Tata should be able to apply the principles of BS EN 14181 to help ensure the quality assurance of the current range of particulate and other monitors for their iron and steel plant releases. Obviously this position does not apply to the steelworks LCP that will need to

continue to meet the requirements of BS EN 14181 in full.

Once NRW has shared its position, Tata should submit a plan outlining its monitoring strategy for non-WID and non-LCP CEMS which explains how it proposes to meet the principles of BS EN 14181.

### **Permit variation V016**

Tata needs to submit its variation application for the 'HAA' waste treatment area and the IED derogation extension requests. An application is expected to be submitted to NRW shortly.

### **Water abstraction and use**

October 2016 has been an exceptionally dry month which has in turn affected river levels across Wales. The River Afan has been badly affected with much less water flowing through the fish pass at the Afan weir. Tata's three licenced abstractions within the Afan catchment are:

- 21/58/61/0009: Afan Docks Feeder
- 21/58/61/0012: Docks Cooling Water Flume
- 21/58/61/0024: Ffrwdwyllt intake

Tata's monitoring records show that the Docks Feeder and the Ffrwdwyllt abstractions are currently below the licenced limits. The Docks Cooling Water Flume is more complex as there are a number of abstraction pumps and a cooling water return from the power plant. For this abstraction, the *net loss* (the difference between abstracted volumes and return volumes) is key. NRW has asked Tata to supply data demonstrating that this abstraction is within its licenced limits.

Going forward, Tata and NRW need to plan for similar extended periods of dry weather to work out what can be done to change or optimise water usage patterns across the steelworks and realise greater water efficiencies. This work should help maximise the water flow through the fish pass at the Afan weir at critical times of the year, which will support fish populations. 2015 saw extremely low levels of returning salmon and sea trout; so much so that mandatory 'catch and release' could be necessary in future years. A complete ban on fish catches for certain species is also being considered.

Previous water resources modelling work has emphasised that during critical dry periods there is insufficient fresh water available to meet industrial and business needs in and around Port Talbot Docks. Fresh water shortages are a long term risk for both the environment and industries such as Tata Steel. Water savings, efficiencies and additional sources of supply should be investigated to mitigate this risk.

NRW believes there are three basic scenarios where steelworks water supply could be challenged:

- Shortage in the Afan catchment
- Shortage in the Kenfig catchment
- Shortage in both catchments

Tata needs to review its ability to respond to these scenarios and how steelworks personnel can adjust the water balance across the installation to tackle each of these scenarios in a proactive way, rather than waiting and then reacting to these events.

The Afan Water Management Group is an established partnership between NRW, Tata Steel, Associated British Ports and other partner organisations. The Group provides a forum for exchange of ideas, allows dialogue between key stakeholders and promotes a wider understanding of key pressures and concerns within the Afan catchment. The Group's work will

inform NRW's EPR inspection plan in respect of water use at the steelworks; in the same way NRW's inspecting officers will engage with the Group to ensure dialogue on this topic is aligned.

Efficient use of raw materials (Section 1.3 of Tata's permit) and specifically water use will form the basis of a future compliance intervention at the steelworks in 2017/18.

### Hot metal silicon

Tata have reduced the quality specification for hot metal silicon at the Blast Furnaces from 0.6 to 0.4%. High levels of silicon can increase the risk of a slop at the steel (BOS) plant, so reducing this parameter should help reduce the risk and incidence of slopping.

### Conclusions

A constructive discussion took place about defining abnormal operating conditions for the Sinter plant. Tata's engineers need to undertake some additional work before these conditions can be agreed with NRW, however we are satisfied that the approach taken is sound, transparent and auditable.

A minimum daily data capture figure (%) should be defined to accurately calculate the daily mean (reportable) result. A copy of the final procedure for Sinter plant abnormal operating conditions and data exclusion should be shown to the inspecting officers when complete.

The approach for the Sinter plant could be applied to other CEMS systems within the steelworks that have start-up/shutdown/abnormal operations criteria.

NRW understands the challenges faced by Tata in respect of the Sinter plant ESPs, but must also ensure main stack particulate emissions are controlled during one-fan and two-fan modes of operation. In principle NRW is content to treat **reactive maintenance** as abnormal operations and therefore emissions monitoring data during these periods can be excluded.

We believe a different approach is necessary for **notified, scheduled maintenance** situations involving one-fan mode of operation. Further discussion is needed to better understand Tata's longer term intentions (including any planned investment) for the Sinter plant and how frequent one-fan operation may become in future. NRW requests a further meeting with the relevant Tata personnel at their earliest convenience.

Tata asked about a linearity problem they have with one of their CEMs. NRW will seek specialist advice internally on this subject.

NRW has been drafting a position that means that not all the requirements of BS EN 14181 will be required for CEMS fitted to non-WID and non-LCP industrial processes. The inspecting officers will share this position with Tata as soon as it is published. Once NRW has shared its position, Tata should submit a plan outlining its monitoring strategy for non-WID and non-LCP CEMS which explains how it proposes to meet the principles of BS EN 14181.

Tata needs to submit its variation application for the 'HAA' waste treatment area and the IED derogation extension requests. An application is expected to be submitted to NRW shortly.

NRW has asked Tata to supply data demonstrating that the Docks Cooling Water Flume abstraction is within its licenced limits.

Tata and NRW need to plan for extended periods of dry weather to work out what can be done to change or optimise water usage patterns across the steelworks and realise greater water efficiencies. Fresh water shortages are a long term risk for both the environment and industries such as Tata Steel. Tata needs to review its ability to respond to water shortage scenarios and how steelworks personnel can adjust the water balance across the installation to tackle each of these scenarios in a proactive way, rather than waiting and then reacting to these events.

Efficient use of raw materials (Section 1.3 of Tata's permit) and specifically water use will form the basis of a future compliance intervention at the steelworks in 2017/18.

[ENDS]

## EPR Compliance Assessment Report

**Report ID:  
CAR\_NRW0031267**

**This form will report compliance with your permit as determined by an NRW officer**

|                        |                                         |            |            |
|------------------------|-----------------------------------------|------------|------------|
| Site                   | Port Talbot Steel Works<br>EPR/BL7108IM | Permit Ref | BL7108IM   |
| Operator/Permit holder | Tata Steel UK Limited                   | Date       | 03/11/2016 |

### Section 3 – Enforcement Response

You must take immediate action to rectify any non-compliance and prevent repetition. Non-compliance with your permit conditions constitutes an offence and can result in criminal prosecutions and/or suspension or revocation of a permit. Please read the detailed assessment in Section 2 and the steps you need to take in Section 4 below.

### Section 4 – Action(s)

This section summarises the actions identified during the assessment along with the timescales for when they will need to be completed.

| Criteria Ref.       | CCS Category | Action required/advised                                                                                                                                                                                                                                                                         | Due Date   |
|---------------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| See Section 1 above |              |                                                                                                                                                                                                                                                                                                 |            |
| H1                  | X            | Tata needs to review its ability to respond to water shortage scenarios and how steelworks personnel can adjust the water balance across the installation to tackle each of these scenarios in a proactive way, rather than waiting and then reacting to these events.                          | 29/09/2017 |
| C2                  | X            | Further discussion is needed to better understand Tata's longer term intentions (including any planned investment) for the Sinter plant and how frequent one-fan operation may become in future. NRW requests a further meeting with the relevant Tata personnel at their earliest convenience. | 30/06/2017 |
| C2                  | X            | A copy of the final procedure for Sinter plant abnormal operating conditions and data exclusion should be shown to the inspecting officers when complete. A minimum daily data capture figure (%) should be defined to accurately calculate the daily mean (reportable) result.                 | 30/06/2017 |

## Section 5 – Compliance notes for the Operator

To ensure you correct actual or potential non-compliance we may

- Advise on corrective actions verbally or in writing
- Require you to take specific actions verbally or in writing
- Issue a notice
- Require you to review your procedures or management system
- Change some of the conditions of your permit
- Decide to undertake a full review of your permit

Any breach of a permit condition is an offence and we may take legal action against you

- We will normally provide advice and guidance to assist you to come back into compliance either after an offence is committed or where we consider that an offence is likely to be committed. This is without prejudice to any other enforcement response that we consider may be required.
- Enforcement action can include the issue of a formal caution, prosecution, the service of a notice and/or suspension or revocation of the permit.

**See our Enforcement and Civil Sanctions guidance for further information**

This report does not relieve the site operator of the responsibility to

- Ensure you comply with the conditions of the permit at all times and prevent pollution of the environment
- Ensure you comply with other legislative provisions which may apply

### Non-compliance scores and categories

| CCS category | Description                                                          | Score |
|--------------|----------------------------------------------------------------------|-------|
| C1           | A non-compliance that could have a major environmental effect        | 60    |
| C2           | A non-compliance which could have a significant environmental effect | 31    |
| C3           | A non-compliance which could have a minor environmental effect       | 4     |
| C4           | A non-compliance which has no potential environmental effect         | 0.1   |

**Operational Risk Appraisal (Opra)** - Compliance assessment findings may affect your Opra score and/or your charges. This score influences the resource we use to assess permit compliance.

## Section 6 – General information

### Data protection notice

The information on this form will be processed by the Natural Resources Wales (NRW) to fulfil its regulatory and monitoring functions and to maintain the relevant public register(s). The NRW may also use and/or disclose it in connection with:

- Offering/providing you with its literature/services relating to environmental matters
- Consulting with the public, public bodies and other organisations (eg. 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 its service
- Freedom of Information Act/Environmental Regulations request

The NRW may pass it on to its agents/representatives to do these things on its behalf. You should ensure that any persons named on this form are informed of the contents of this data protection notice.

### Disclosure of information

The NRW will provide a copy of this report to the public register(s). However, if you consider that any information contained in this report should not be released to the public register(s) on the grounds of commercial confidentiality, you must write to your local area office within fifteen working days of receipt of this form indicating which information it concerns and why it should not be released, giving your reasons in full.

### Customer charter

#### What can I do if I disagree with this compliance assessment report?

If you are unable to resolve the issue with your site officer, you should firstly discuss the matter with officer's line managers using the informal appeals procedure. If you wish to raise your dispute further through our official Complaints and Commendations procedure, phone our general enquiry number 0300 065 3000 (Mon to Fri 08.00 – 18.00) and ask for the Customer Contact team or send an email to [enquiries@naturalresourceswales.gov.uk](mailto:enquiries@naturalresourceswales.gov.uk). If you are still dissatisfied you can make a complaint to the Public Services Ombudsman for Wales. For advice on how to complain to the Ombudsman phone their helpline on 0845 607 0987.

#### Welsh Language

If you would like this form in Welsh please contact your Regulatory Officer.