

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

Site	Tata Steel Port Talbot steelworks	Permit Ref	BL7108IM (as amended)
Operator/ Permit holder	Tata Steel UK Ltd		
Date	19 November 2015	Time in	09.00 Out 15.30
What parts of the permit were assessed	See below		
Assessment	EPR - inspection	EPR Activity:	Installation X Waste Op Water Discharge
Recipient's name/position	Jason Heatman, Lead Environmental Engineer, Tata Steel Port Talbot		
Officers names	DMP Broom, DE Cowie & P Gibson	Date issued	04 April 2016

Section 1 - Compliance Assessment Summary

This is based on the requirements of the permit under the Environmental Permitting Regulations. A detailed explanation and any action you may need to take are given in the "Detailed Assessment of Compliance" (section 3). 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

Condition(s) breached

a) Permitted activities	1. Specified by permit	A	
b) Infrastructure	1. Engineering for prevention & control of pollution	A	
	2. Closure & decommissioning	N	
	3. Site drainage engineering (clean & foul)	N	
	4. Containment of stored materials	N	
	5. Plant and equipment	A	
c) General management	1. Staff competency/ training	N	
	2. Management system & operating procedures	A	
	3. Materials acceptance	A	
	4. Storage handling, labelling, segregation	N	
d) Incident management	1. Site security	N	
	2. Accident, emergency & incident planning	A	
e) Emissions	1. Air	A	
	2. Land & Groundwater	N	
	3. Surface water	N	
	4. Sewer	N	
	5. Waste	N	
f) Amenity	1. Odour	N	
	2. Noise	N	
	3. Dust/fibres/particulates	A	
	4. Pests, birds & scavengers	N	
	5. Deposits on road	N	
g) Monitoring and records, maintenance and reporting	1. Monitoring of emissions & environment	A	
	2. Records of activity, site diary, journal & events	A	
	3. Maintenance records	N	
	4. Reporting & notification	A	
h) Resource efficiency	1. Efficient use of raw materials	A	
	2. Energy	N	

KEY: C1, C2, C3, C4 = CCS breach category (* suspended scores are marked with an asterisk),
A = Assessed or assessed in part (no evidence of non-compliance), N = Not assessed, NA = Not Applicable

Number of breaches recorded	0	Total compliance score (see section 5 for scoring scheme)	0
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If the Total No Breaches is greater than zero, then please see Section 3 for details of 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 (e.g. 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 suspended or consolidated scores.
- details of advice given
- any other areas of concern
- all 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. Two other companies, Cambrian Stone and Harsco, undertake separately-permitted slag handling and iron plating activities at the steelworks on Tata's behalf.

Purpose of visit/assessment

The primary aims of this visit focused on the Basic Oxygen Steelmaking (BOS) Plant. Tata Steel's investigation into the failure of Fan 3 in November 2014 was reviewed. The BOS Plant Air Quality Management Plan (AQMP) was examined and its use reviewed. Finally, we discussed Tata Steel's permit variation application for the proposed new power plant.

Person(s) present (Office based and BOS plant inspection)

Tata Steel	Dr Frank Ahrenhold (BOS general)	NRW	Mark Broom
	Jason Heatman (BOS general & Fan 3)		Doug Cowie
	Jerry Elward (BOS general & Fan 3)		Paul Gibson
	George Govan (BOS general & Fan 3)		Victoria Seller (Power plant)
	Simon Life (BOS Fan 3)		
	Andrew Taylor (BOS Fan 3)		
	Peter Jones (BOS Fan 3)		
	Guy Simms (Power plant)		
	Muhammad Zee Jhandeer (Power plant)		

Fan 3 failure Nov 2014

On 1 November 2014 at 06.50hrs a catastrophic failure of the BOS Plant No. 3 Fume Extraction Fan occurred. Fan 3 and its newer sister Fan 3A extract hot air from the Hot Metal Pouring Bay and pass it through a bag filter before it is discharged through permitted release points A10 and A10A. Fan 3 (A10) had a variable speed drive (VSD) and a new impellor fitted in 2007. The VSD allowed the fan to operate in a more efficient manner and change speed between ~1000 and ~300rpm several times a day.

Despite being fitted with online Plant Condition Monitoring (PCM), which showed no significant issues until the actual event on 01/11/2014, Fan 3 failed catastrophically and fragments of the impellor were thrown a considerable distance over the BOS plant clarifiers and onto the BOS admin block approach road. Fortunately no one was injured, but the incident caused slight damage to surrounding structures and had potential for more severe consequences had any personnel been in the affected areas.

Following a detailed investigation and report by Tata Steel with input from the original equipment manufacturer (OEM), Howden UK, Tata has concluded that the direct cause of the fan failure was cyclic fatigue of the impellor. The introduction of the VSD is thought to have exacerbated this fatigue as this changed the fan working parameters and reduced its working life. Possible welding issues during manufacture may have also contributed to the failure.

A 2.5 metre diameter fan operating at 1000rpm has a blade tip speed of just under 300mph and the same fan operating at 300 rpm has a blade tip speed of just under 90mph. The blade tip speed together with the kinetic energy generated by the moving fan explains why fragments of the fan flew so far. If the fan speed were to operate between 600 – 1000rpm with the blade tip speed moving within a limited speed range of 175 – 300mph, this should reduce the stresses placed on the fan blades.

Tata has now changed the operational mode of Fan 3 so that it does not cycle as much nor is the change of speed as large. It is better to reduce the number of speed changes and to have fewer and smaller speed changes if possible to reduce the risk of blade 'flexing' and fatigue due to cycling. A fixed-speed fan which previously started up once to reach a single operating speed may experience considerably more operations with a VSD fitted.

Along with these changes, the operational life of the fan has been set at 9 years after which it will have to be replaced. Howden has held a training event for Tata engineers in March 2015 and fan design now features in Tata's own engineering induction. Up until this event, fan failure did not feature as a major risk compared to some of the other potential engineering problems that could occur at an integrated steelworks.

When the VSD was installed at Fan 3 to reduce energy consumption, the risks of introducing fatigue cycling was not raised with the OEM, Howden. This appears to have been an oversight and in 2006 no Management of Change (MoC) procedure was in place to prompt a risk analysis of not consulting the OEM. Tata now has an established MoC procedure and since the incident has started progressively reviewing all its fans fitted with VSDs in a prioritised manner to take into account the fatigue cycling phenomenon. This review includes VSD fans at other Tata sites e.g. Llanwern steelworks.

Fan 3 was repaired, tested and returned to normal duty in June 2015 following technical support from Howden engineers. Tata now records the cycles on the fan blades to help track and manage the fan life accordingly. Any proactive and reactive maintenance actions are tracked using Tata's SAP system. Based on this mode of operation the new fan will need replacing at around 9 years of age (~2024). The lessons learned from this event have been shared within the wider Tata Steel group.

NRW is satisfied with Tata Steel's investigation into this event and that appropriate actions have been/are being taken in respect of Fan 3 and other fans fitted with VSDs at the steelworks. No non-compliance with Tata's permit conditions has been identified.

Zinc and related issues at the BOS plant

Tata Steel Port Talbot continues to receive non-galvanised scrap metal for use at the BOS Plant, but has stopped using galvanised scrap for the time being in an effort to reduce zinc levels. Elsewhere both types of scrap are used at Tata's Aldwarke works in South Yorkshire which now receives galvanised scrap previously directed to Port Talbot. The current approach is subject to review by Tata Steel Europe and may only be a short term situation. This current mode of operation at Port Talbot does mean that around 80% of the BOS dusts or 'reverts' are being recycled back through the sinter plant now that the zinc content of the dusts is low enough. This clearly offers benefits in terms of the waste hierarchy¹ and raw materials savings at the sinter plant. Tata is looking to achieve complete BOS dust recycling through the sinter plant and the company is also seeking other ways to recycle or reuse this material on site and/or elsewhere.

BOS Slag

If the Swansea Bay Tidal Lagoon project goes ahead, there may be an opportunity for Tata Steel to use BOS slag in its construction. The 'LD Gravel' process used in Europe can make a dense, castable construction block that is comparable to granite. NRW understands this type of material has been used in coastal defence projects in Europe and could potentially be a suitable material for tidal lagoon construction.

Slop Control

NRW has discussed this subject extensively with Tata Steel during previous BOS Plant inspections in 2014 (CAR 5784, 5787 & 5788). Steelmaking 'slops' are known to cause visible fugitive releases of fume and smoke from the BOS Plant and have been the subject of several environmental complaints received by NRW. An update on slop control was provided to the inspecting officers as part of this visit.

The steelworks has managed to obtain two 'slop' cameras that are linked to Tata's data information system. These cameras were installed during recent BOS converter relining work. Tata also has a data management system called 'ELVIS' which has enabled the BOS Plant teams to detect potential slops and then examine what converter activities coincided with these events. These 'potential' slops recorded by the cameras do not always result in visible fume/emissions from the roof of the BOS plant. The inspecting officers were shown examples of ELVIS telemetry and camera footage where potential slops had been recorded.

¹ Article 4 of the revised EU Waste Framework Directive (Directive 2008/98/EC) sets out five steps for dealing with waste, ranked according to environmental impact – the 'waste hierarchy'. Businesses and public bodies now have a duty to apply the waste hierarchy when making decisions about their waste. The Welsh Government has published [guidance](#) on applying the waste hierarchy for businesses in Wales.

As a result of this slop analysis work, Tata has changed its operations to reduce the risk of a slop occurring. Early iron ore additions to the converter have been stopped as this was found to increase the risk of a slop. The program that controls the depth of the oxygen lance inside the converter during the 'blow' is being changed; deeper lance depths have been found to increase the risk of a slop occurring. The depth of the lance can also be changed to account for higher silicon levels in the hot metal. High silicon levels are known to cause stability issues during the blow.

Slop prediction and control remains a key focus for the BOS Plant and the company is continuing to develop and refine a model that can be used routinely during steelmaking operations. The work undertaken during 2015 is encouraging and NRW is satisfied that demonstrable progress is being made to reduce slops and associated fugitive emissions. Tata's work is nearing completion and NRW will return to the BOS Plant to review progress in Spring 2016.

BOS plant Air Quality Management Plan (AQMP)

Tata Steel's local AQMP for Steel & Slab (Revision 3) was reviewed as part of this inspection and its use in response to elevated PM₁₀ levels between 10 and 11 November 2015 was examined. Tata's staff presented evidence that they had carried out actions identified in the Steel & Slab AQMP through the use of additional activity checks, use of water bowsers/road sweepers and submission of shift reports to Tata's Safety, Health & Environment (SHE) Team. The SHE Team have developed a checklist template to aid capture of works area feedback. This could be adopted by the Steel & Slab works area to facilitate the capture and feedback of key information.

The Steel & Slab AQMP is reviewed annually in line with other works area AQMPs and the over-arching installation AQMP. Revision 3 has been recently audited by the SHE Team and Revision 4 may include changes.

The Steel & Slab Environment Manager is leading environmental awareness sessions for works area staff with support from the SHE Team. This is part of a wider awareness raising programme being rolled out across the steelworks. The use and submission of shift reports and Environmental Incident Forms (EIFs) is discussed during these sessions. Staff are encouraged to be as descriptive as possible when compiling these reports and forms. The use of EIFs is quite well developed in Steel & Slab – this has previously been assessed in CAR 5594.

Tata's email distribution list for air quality alerts should be reviewed to ensure all key Steel & Slab personnel are able to receive these communications in a timely manner. This applies to any internal air quality alerts issued by the SHE Team and the automated Neath Port Talbot County Borough Council (NPTCBC) air quality email alerts. Tata should also ensure the Prince Street 2 and Little Warren monitoring stations are included for the NPTCBC alerts. From April 1 2016 the automated alerts will be issued solely by NPTCBC and not by Ricardo-AEA.

Resilience and contingency planning in the event key Steel & Slab personnel e.g. Environment Manager are not available was also discussed. At the time of inspection, Tata's workforce structures had enough flexibility to allow different Environment Managers to cover each other's roles in the event of absence. For Steel & Slab, relationships with the Hot Mill and Iron & Coke making are well established. Resilience should be reviewed in the event of significant change to Tata's workforce structures.

Power plant project

Tata's Power Plant Project Team would like to have a permit in place by the end of March 2016 so that the project can conclude this phase of its 'life'. The Team expects a decision on the Development Consent Order (DCO) application in early December 2015. NRW's Permitting Team has a small amount of work to do before it can issue a draft consolidated permit (V015) to Tata Steel. Tata will have 14 days to comment on the draft permit in which any changes will be highlighted in red. The permit will then go to public consultation for 28 days and will be published on NRW's website. The Permitting Team will need time to review any public comments or representations before the permit can be issued.

The possibility of including revised IED derogation requests with the current power plant variation application was discussed. Tata may wish to consider separating these work packages as any necessary additional technical assessment by NRW is likely to extend the current permit determination period beyond March 2016.

Update – March 2016

Tata Steel's DCO application was subsequently approved by the Secretary of State (SoS) for Energy and Climate Change on 8 December 2015 following a report by the examining authority, The Planning Inspectorate (PINS).

Tata Steel's environmental permit variation application was subsequently approved by NRW and the varied and consolidated permit V015 was issued to the company on 8 February 2016.

Conclusions and further actions required

NRW is satisfied with Tata Steel's investigation into the Fan 3 event in November 2014 and that appropriate actions have been/are being taken. No non-compliance with Tata's permit conditions has been identified.

The progress made so far in terms of steelmaking slop control is encouraging and NRW will return to the BOS plant to review this area of work during Spring 2016.

Tata's air quality response to the elevated PM₁₀ levels in November 2015 was in accordance with the company's air quality management plan for Steel & Slab. The SHE Team's checklist template could be adopted by the Steel & Slab works area to facilitate the capture and feedback of key information. The email distribution lists for air quality alerts should be reviewed to ensure all key Steel & Slab personnel are able to receive these communications in a timely manner. Resilience and contingency planning in the event key Steel & Slab personnel e.g. Environment Manager are not available should be reviewed in the event of significant change to Tata's workforce structures.

[END OF SECTION 2]

	EPR Compliance Assessment Report	Report ID: 6051	
This form will report non-compliance with your permit as determined by an NRW officer			
Site	Tata Steel Port Talbot steelworks	Permit	BL7108IM (as amended)
Operator/ Permit	Tata Steel UK Ltd	Date	04 April 2016

Section 3- Enforcement Response		Only one of the boxes below should be ticked
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.		
Other than the provision of advice and guidance, at present we do not intend to take further enforcement action in respect of the non-compliance identified above. This does not preclude us from taking enforcement action if further relevant information comes to light or advice isn't followed.		n/a
In respect of the above non-compliance you have been issued with a warning. At present we do not intend to take further enforcement action. This does not preclude us from taking additional enforcement action if further relevant information comes to light or offences continue.		n/a
We will now consider what enforcement action is appropriate and notify you, referencing this form.		n/a

Section 4- Action(s)			
Where a non - compliance has been detected and an enforcement response has been selected above, this section summarises the steps you need to take to return to compliance and also provides timescales for this to be done.			
Criteria Ref.	CCS Category	Action Required/Advised	Due Date
See Section 1 above			
N/A	N/A	N/A	N/A

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 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 which 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 Natural Resources Wales (NRW) to fulfill its regulatory and monitoring functions and to maintain the relevant public register(s). 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 (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 and taking any resulting action
- preventing breaches of environmental law
- assessing customer service satisfaction and improving its service
- Freedom of Information Act/Environmental Information Regulations request.

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

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 twenty 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 the officer's line managers. 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. 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) 601 0987**.