



ENVIRONMENT
AGENCY

Permit with introductory note

Pollution Prevention and Control Regulations 2000

Name of Installation
**TEESSIDE INTEGRATED IRON AND
STEELWORKS**
Corus UK Ltd
Redcar
Cleveland
TS10 5QW

Permit number

BK0493

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Introductory note

This introductory note does not form a part of the Permit

The following Permit is issued under Regulation 10 of the Pollution Prevention and Control (England and Wales) Regulations 2000 (S.I.2000 No.1973), as amended, ("the PPC Regulations") to operate an installation carrying out one or more activities listed in Part 1 to Schedule 1 of the PPC Regulations, to the extent authorised by the Permit:

Aspects of the operation of the installation which are not regulated by conditions of the Permit are subject to the condition implied by Regulation 12(10) of the PPC Regulations, i.e. the Operator shall use the best available techniques for preventing or, where that is not practicable, reducing emissions from the installation.

Techniques include both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned.

In some sections of the Permit conditions require the Operator to use Best Available Techniques (BAT), in each of the aspects of the management of the installation, to prevent and where that is not practicable to reduce emissions. The conditions do not explain what is BAT. In determining BAT, the Operator should pay particular attention to relevant sections of the IPPC Sector guidance, appropriate Horizontal guidance (H1 to H4) and other relevant guidance.

A non-technical description of the installation is given in the Application, but the main features of the installation are as follows.

Teesside Integrated Iron and Steelworks is an integrated steelworks owned by Corus UK Ltd on the banks of the River Tees in the North East of England. The site is situated on the South bank of the river from South Bank to the mouth of the estuary at Redcar and comprises historically three main areas, Cleveland, Lackenby and Redcar Works.

At an integrated steel works there are several identifiable processes which are carried out sequentially across the installation in order to convert the raw iron ores and coal to semi-finished slabs for export off site and finished products such as sections for sale in the world market place. Bulk raw materials arrive by large bulk carrier at the deep water port at Redcar and are discharged by unloader cranes to be stocked out in discrete stockpiles in the ore and coal stocking areas at Redcar Works. Lump ore is fed direct to the blast furnace and BOS plants. The finer material stockpiled are then blended together into a sinter plant feed along with reverts and other fine recyclable material. This blend is laid down in "beds" to allow good mixing of material.

Sinter feed is then recovered from the beds by barrel reclaimers and a blend of sinter bed material, fluxes, coke breeze and limestone is fed onto a travelling grate at the Sinter Plant where it is heated to a high temperature in the region of 1300 °C. Air is drawn through the bed of heated material and the flame front fuses the fine material into a clinker -"sinter". This sinter is cooled and screened prior to being transferred to the blast furnace stockhouse. The products of combustion pass through an electro static precipitator and are discharged through a 105m high stack.

Coal is also carefully blended to form a coal mix and layered in coal beds prior to being recovered by a barrel reclaimer and taken by conveyor belt or road to one of the two coke ovens on site (Redcar Coke Ovens and Southbank Coke Ovens) Here the coal is charged to air tight ovens where it is heated at a temperature of between 1200 -1300 °C for a period of around 18 hours to produce coke before being pushed out of the oven and quenched by water. After quenching the coke is transferred to the blast furnace stockhouse. Gas driven off in the ovens is cooled and cleaned and by-products removed from it prior to their sale or re-use. Clean gas is recycled within the site as fuel and excess gas may be vented through a flarestack and ignited. Cooling and cleansing water from the by-products plant is treated in a either an on site biological effluent treatment plant, at Redcar Coke Ovens prior to its consented discharge into the River Tees, or in the case of South Bank Coke Ovens it is transferred to Northumbrian Water biological effluent treatment plant.

At the Blast Furnace stockhouse coke, iron ore and sinter, along with fluxes, are carefully weighed and batched to be charged to the blast furnace. The Blast Furnace operates on a continuous basis and the furnace is maintained at a full stockline level, by charging alternate layers of coke and ore. Air produced at a high pressure in the Power Station is passed through the furnace stoves where it is heated to temperatures in the range generally 1000- 1200 °C. The air at high temperature and pressure is then injected together with heavy fuel oil into the furnace at "tuyere" level just above the hearth and flows upwards to the top of the furnace. This air reacts with carbon from the heavy fuel oil and the coke at the tuyeres to form carbon monoxide which reduces the iron ore to iron as it travels up the furnace. Further reduction of the iron ore is undertaken directly by the coke in the bosh and stack areas of the furnace. Gangue material in the ores and coke agglomerate together to form a slag material which is at high temperatures produced from the exothermic reduction reactions. The iron produced in the furnace is also molten and both iron and slag fall to the hearth of the furnace where they are periodically "tapped" through a taphole.

The blast furnace gas leaves the furnace top at a high pressure usually in excess of 2.0 bar pressure and is cooled and cleaned in the gas cleaning system. The gas undergoes a further pressure reduction in the ERT (Energy Reduction Turbine) which converts the pressure loss into electrical energy for sale or use within the Site. Clean gas is then recycled back through the blast furnace process by reheating the air prior to its injection at the tuyeres and by feeding the boilers at the Power Station. Excess gas can be vented through a triple leg flarestack. The iron and slag flowing from the taphole are separated in the iron runner with the slag being skimmed off the top of the iron into the slag runner to be further processed in the slag pit, pelletiser or granulator, as necessary. The iron flows underneath a skimmer arrangement to ensure slag free iron can then pass into torpedo ladles to allow transportation to the Steel plant. Excess iron may be granulated in the Iron Granulator or ponded in the iron ponds. Both these routes lead to high energy losses as they produce cold iron for use as scrap.

The liquid iron is transported 7 km by rail to the BOS plant in refractory lined torpedo ladles with a capacity of approx. 320 tonne. The ladles are lidded prior to leaving the Blast Furnace whilst travelling to the BOS plant and vice versa, primarily to reduce energy loss from the ladle but it also has a secondary effect of reducing the emissions from the ladle mouth. On arrival at the BOS plant the ladle is poured into a transfer ladle and desulphurised, if necessary, prior to transfer to the steelmaking vessel. The sulphur is transferred to a slag which is cooled and sent for further processing and the fume is collected in a bag filter prior to discharge to the atmosphere.

Desulphurised iron is then charged in typically 220 tonnes batches to one of three BOS vessels where scrap and fluxes are added to the melt and oxygen is used to refine the iron to steel. The oxygen is blown on to the surface of the steel at supersonic velocity and the process is controlled by a complex software system that automatically adjusts the lance height during the blow period. After sampling for quality the melt, now steel, may be re-blown for a final trim or tapped into a ladle for further processing. Fume from the process is cleaned in a gas cleaning plant and vented to atmosphere through flarestacks. Slurry from the gas cleaning plant goes for further treatment prior to sale, internal use or landfill. Slag from the vessel is demetalled by a contractor on site and then either forwarded to a Slag Company for further treatment, used for roadway/dockside/storage area maintenance on the site or disposed of to two internal landfill sites.

Following the Primary Steelmaking process the steel can go through a number of Secondary Steelmaking processes before being converted into a solid form. To homogenise the steel chemistry and temperature the steel may be bottom stirred or top lance flushed at the flushing station. This area is covered by the dust extraction system. Following flushing the steel may be refined to customer requirements in the Ladle Metallurgy Facility (LMF) plant, Tank Degasser, Scandinavian Lance Injection and/or RH Degasser -all of which have fume collection facilities.

Following treatment to the customer requirements the steel is transported either to the Continuous Casting plant (Concast) to form either slabs or blooms or, by exception, cast directly into ingot. At Concast the steel is vertically teemed into reciprocating cooled copper moulds and drawn from the mould in a semi finished partially solid state, cooling whilst it is drawn horizontal and cut to length. The plant currently consists of two slab casters and one 8 strand bloom caster and provision for tundish changing and sequential casting of different steel grades allow long production sequences. Cooling water from the plant is recycled and any scale formed is usually recycled back to the sinter process.

The blooms and slabs may then further undergo surface treatment in a scarfing plant before passing on for sale to other Steelmaking sites, external sale or for use in the Beam Mill. In the Beam Mill the slabs are rolled into sections by heating the slab in the reheat furnace and then passing it through a number of rolls to form it into a H section shape before this hot section is cut to length. The section is then allowed to cool and may then be sold in the market place. Prior to discharge from the Site the sections are stored on open 'made' ground. Waste from the installation may be disposed of at one of three internal landfill sites and in one area the dusts and slurries from the processes are refined prior to sale or being disposed of to a landfill site. The primary recycling streams, by products and wastes are identified and quantified in the permit application.

The main energy input into Teesside Site is in the form of coal which accounts for the majority of all delivered energy. This coal is converted to coke in two coke oven plants and the arising by product gas (Coke Oven Gas) is distributed throughout the site for use as a fuel. The coke is charged into the blast furnace where it acts as a reductant on the iron ore to produce iron. As a consequence of the ironmaking process vast quantities of low calorific value gas (Blast Furnace Gas) are produced. This gas is fired on the blast furnace stoves and also the power station. The above integration of energy producers and consumers enables the maximum use of the Sites arising gases and minimises the use of purchased premium fuels

Note that the Permit requires the submission of certain information to the Agency (see Sections 4 and 5). In addition, the Agency has the power to seek further information at any time under regulation 28 to the PPC Regulations provided that it acts reasonably.

Other PPC Permits relating to this installation		
Permit holder	Permit Number	Date of Issue
Heckett Multiserve (UK) Ltd	BK0531	1/4/04
Short Brothers (Plant) Ltd	BM0206	1/4/04

Superseded Licences/Authorisations/Consents relating to this installation		
Holder	Reference Number	Date of Issue
Corus (UK) Ltd Main Authorisation	AR0241	14/09/95
Corus (UK) Ltd SBCO	AF8530	23/07/93
Corus (UK) Ltd RCO	AF8548	23/07/93
Discharge consent	C3	27/02/98

Other activities may take place on the site of this installation which are not regulated under this Permit or any other PPC Permit referred to in the Table above.

Public Registers

Considerable information relating to Permits including the Application is available on public registers in accordance with the requirements of the PPC Regulations. Certain information may be withheld from public registers where it is commercially confidential or contrary to national security.

Variations to the Permit

This Permit may be varied in the future (by the Agency serving a Variation Notice on the Operator). If the Operator itself wants any of the Conditions of the Permit to be changed, it must submit a formal Application. The Status Log within the Introductory Note to any such Variation Notice will include summary details of this Permit, variations issued up to that point in time and state whether a consolidated version of the Permit has been issued.

Surrender of the Permit

Before this Permit can be wholly or partially surrendered, an Application to surrender the Permit has to be made by the Operator. For the application to be successful, the Operator must be able to demonstrate to the Agency that there is no pollution risk and that no further steps are required to return the site to a satisfactory state.

Transfer of the Permit or part of the Permit

Before the Permit can be wholly or partially transferred to another person, an Application to transfer the Permit has to be made jointly by the existing and proposed holders. A transfer will be allowed unless the Agency considers that the proposed holder will not be the person who will have control over the operation of the installation or will not comply with the conditions of the transferred Permit. If, however, the Permit authorises the carrying out of a specified waste management activity, the transfer will only be allowed if the proposed holder is also considered to be "a fit and proper person" as required by the PPC Regulations.

Talking to us

Please quote the Permit Number if you contact the Agency about this Permit.

To give a Notification under Condition 5.1.1, the Operator should use the Incident Hotline telephone number (0800 80 70 60) or any other number notified in writing to the Operator by the Agency for that purpose.

Status Log

Detail	Date	Comment
Application BK0493 Received	28 August 2001	
Application BK0493 Duly made	31 August 2001	
1 st Schedule 4 notice issued	29 November 2001	Period 62 days(30/01/02)
1 st request to extend determination period issued	29 November 2001	Period 30 days
2 nd Schedule 4 notice issued	22 March 2002	Period 71 days (24/03/02)
3 rd Schedule 4 notice issued	24 May 2002	Reply required 31 August 2002 (29/08/02)
2 nd request to extend determination period issued	24 May 2002	Period of extension agreed pending resolution of site report issues.
Permit issued		

End of Introductory Note.



Permit

Permit number

BK0493

The Environment Agency (the Agency) in exercise of its powers under Regulation 10 of the Pollution Prevention and Control (England and Wales) Regulations (SI 2000 No 1973), hereby authorises

Teesside Integrated Iron and Steelworks ("the Operator"),

Of/ whose Registered Office (or principal place of business) is

30 Millbank

London

SW1P 4WY

Company registration number 2280000

to operate [part of] an Installation(s) at

Teesside Integrated Iron and Steelworks

Corus UK Ltd

Redcar

Cleveland

TS10 5QW

to the extent authorised by and subject to the conditions of this Permit.

Signed

Date

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Authorised to sign on behalf of the Agency

Conditions

1 General

1.1 Permitted Activities

- 1.1.1 The Operator is authorised to carry out the activities and the associated activities specified in Table 1.1.1.

Table 1.1.1

Activity under Schedule 1 of the Regulations/ Associated Activity	Description of specified activity	Limits of specified activity
2/2.1/A(1)(d)	Iron ore storage and handling	From receipt of materials to their dispatch to process.
3/3.5/B/(b)(iii)	Loading/unloading coal and coke	From receipt of materials to their dispatch to process.
2/2.1/A(1)(a)	Sintering	From receipt of raw materials to finished product.
1/1.2/A(1)(c)	Coke making	From receipt of raw materials to finished product.
2/2.1/A(1)(b)	Blast Furnace/BOS Vessels/Secondary Steelmaking/Continuous Casting	From receipt of raw materials to finished product.
2.2/2.1/A(1)(c)	Hot Rolling Mill	From receipt of raw materials to finished product.
1/1.1/A(1)(a)	Power Station boilers/Reheat Furnaces	From receipt of fuel to energy export.
Directly Associated Activities		
3/3.5/B/(b)(ii)	Unloading, transport, storage and treatment of raw materials	
3/3.5/B/(b)(iii)	Hot metal transfers/tipping and recovery	
2/2.1/B/(c)	Iron Desulphurisation	
	On line process Analysis	
	Collection and use of BF and CO gas	
	Aqueous Effluent Treatment	
	Millscale Handling	
	Slag handling, including pit operations, Pelletising and Granulating	
	Storage of intermediate or waste products	
	Ferrous Slurry conditioning	

- 1.1.2 Where waste on site is subjected to activities that are exempt from control under the Waste Management Licensing Regulations 1994 then the wastes controlled under condition 1.1.1, above, shall be clearly identified and kept separate from such exempt waste activities and a record shall be kept of where such exempt activities are conducted.

1.2 Site

- 1.2.1 The activities authorised under condition 1.1.1 shall not extend beyond the Site, being the land shown edged in green on the Site Plan at Schedule 5 to this Permit.

1.3 Overarching Management Condition

- 1.3.1 Without prejudice to the other conditions of this Permit, the Operator shall implement and maintain a management system, organisational structure and allocate resources that are sufficient to achieve compliance with the limits and conditions of this Permit.

1.4 Improvement Programme

- 1.4.1 The Operator shall complete the improvements specified in Table 1.4 by the date specified in that table, and shall send written notification of the date of completion of each requirement to the Agency within 14 days of the completion of each such requirement

Table 1.4: Improvement programme requirements

Reference	Requirement	Date
1.4.1	The Operator shall, within 48 months of the issue of this Permit, submit a report on potential environmental improvements to the Permitted Installation. For each of the subject areas identified in Section 2 of the appropriate technical guidance, the report shall assess the costs and benefits of alternative techniques that may provide environmental improvement. This shall include, but not be limited to, those techniques listed in guidance. The methodologies used should be based on those given in Agency guidance note (H1) and should justify, against the BAT criteria, where potential improvements are not planned to be implemented. As part of their management system, the Operator shall submit an updated report every 36 months	<i>48 months from the issue of the permit.</i> <i>Update report to be submitted every 36 months thereafter.</i>
1.4.2	Fugitive emissions shall be reviewed on an annual basis and a summary report on this review shall be sent to the Agency detailing such releases and the measures taken to reduce them.	Report to be submitted every 24 months from the issue of the permit.
1.4.3	The formation of PCDD/Fs show dependence on the amounts of reverts present in the sinter mixture. In particular that their presence disrupts the normal propagation of the heat and flame fronts through the bed and thereby give rise to PCDD/F formation. Therefore for each of the materials identified in Table 6 of Dioxins in the Integrated Iron and Steel Making Process - Iron Ore Sintering, the Operator shall identify and provide a written report to the Environment Agency by the due date, on what are the typical compositions of the material being recycled (max, min, and average composition), what frequency the composition of these are materials measured.	31/1/05
1.4.4	The operator shall provide a written report on how it selects the composition, type, and quantity of reverts to be used at anyone particular point in time, specifically to minimise the deposition alkali metal chlorides on the ESP plates in the Redcar Sinter Plant	1/4/05
1.4.5	The Operator shall provide a written report on the cost comparison of advanced ESP technologies such as high frequency voltage pulsating precipitators (Coromax) and moving electrode precipitators compared with the existing electrostatic precipitators on the Redcar Sinter Plant. The report shall identify what are the benefits (and drawbacks) for these systems	30/6/05
1.4.6	The application of Skewed Gas Flow Technology (ie the incorporation of baffles in ESPs) to reduce particulate emissions does not appear to have been explored in detail in the Operator's application for a Permit. The Operator shall report on what work it has done on investigating this technique and identify what are the benefits (and drawbacks) for implementing such a scheme on Sinter Plants.	30/6/05
1.4.7	The operator shall investigate or develop techniques to comply with a dioxin and furan concentration of 1 ng/m ³ (I-TEQ) from release point A2 by the due date.	31/1/05
1.4.8	The operator shall submit written reports, on a six monthly basis, detailing the process made in achieving improvement condition 1.4.7	31/1/05
1.4.9	The operator shall undertake MEF monitoring at Redcar Coke	31/12/05

	Ovens during a representative period, to be agreed with the Environment Agency, in order to demonstrate that have achieved "smokeless" charging of coal.	
1.4.10	The Operator shall investigate methods and techniques of improving the condition of the door sealing arrangements at South Bank Coke Ovens. A written report shall be submitted to the Environment Agency by the due date	31/7/05
1.4.11	The operator shall undertake MEF monitoring at South Bank Coke Ovens during a representative period, to be agreed with the Agency in order to demonstrate that they have achieved "smokeless" charging of coal.	31/12/04
1.4.12	The Operator shall investigate methods and techniques to further maximise the capture of fugitive fume releases from the cast house floor. A written report shall be submitted to the Environment Agency by the due date.	31/7/05
1.4.13	The Operator shall investigate cost benefit of reducing fugitive particulate releases from the Blast Furnace stock house. A written report shall be submitted to the Environment Agency by the due date.	31/7/05
1.4.14	The operator shall investigate and report on further management techniques, operational procedures, and maintenance routines which will reduce and minimise releases from the BOS plant building, identifying suitable targets, implementation dates, and measures of success by which these improvements can be judged. A written report shall be submitted to the Environment Agency by the due date.	31/7/05
1.4.15	The Operator shall provide copies of the sound level measurement results that show that the Redcar Sinter Plant Waste Gas Fans have reduced by 20 dBA (referred to in response to schedule 4 notice, part 2) within 4 months of issue of the permit. The Operator shall confirm, by the due date, that the Lackenby BOS plant Flare Stack ignition problem has been resolved, that the on-line slab "debearding" machine has been installed at the Lackenby Slabyard, and that there is now a much reduced need to turn slabs over for manual dressing	31/12/04
1.4.16	The Operator shall forward written proposals for reducing noise emissions from the Lackenby Beam Mill finishing end operations within 12 months of permit issue, or shall provide a justification to the satisfaction of the Agency that such measures are unnecessary.	12 months from permit issue.
1.4.17	The noise and vibration management plan referred to in permit condition 2.9.5 shall be drawn up by the Operator and be available for inspection within 12 months of permit issue.	12 months from permit issue.
1.4.18	The operator shall review adequacy of the current waste handling/storage infrastructure and procedures, against the standards specified in Table 2.5.2 of this permit, and where there is a difference present a report to the Agency which identifies the time scale by which these conditions shall be met.	6 months from permit issue.
1.4.19	The operator shall provide a system to the agreement of the Agency to calculate the daily quantity of each stream of waste material deposited into the SLEMS lagoons and the daily quantity of materials extracted by dredging for processing in the drying area.	6 months from permit issue.

1.4.20	The operator shall agree with the Environment Agency measures to control and monitor emissions of dusts, from the SLEMS drying and screening process area. The measures shall be implemented and maintained during the drying/processing operation.	6 months from permit issue.
1.4.21	The Operator shall develop and implement, following agreement with the Environment Agency, a representative methodology for continually assessing, grading and reporting of fugitive BOS roof and building emissions. A proposal report with implementation timetable shall be sent to the Environment Agency.	Proposal Submission 31/03/2005
1.4.22	The operator shall undertake an investigation to monitor and quantify point source and fugitive particulate matter (including PM10 and PM2.5) emissions resulting from BOS plant point source emissions and associated activities. The investigation should aim to confirm and establish typical release rates/ emission characteristics from significant sources and include localised ambient air quality monitoring. The proposed scope and methodology to be adopted, with time scales, should be submitted in advance of any study and agreed with the Environment Agency. A report of the investigation shall be sent to the Environment Agency.	Scope/ method 30/4/2005
1.4.23	The Operator shall continue urea addition trials at a nominated site with a view to permanent implementation at Teesside steelworks by 1 June 2006. The Operator shall submit a timetable of trial activities, objectives and success criteria prior to a trial start date no later than 1 January 2005. The Operator shall submit six-monthly progress reports against the trial activity programme, objectives and success criteria identified. The final report should contain a detailed BAT cost benefit assessment of sinter plant urea addition. The methodology used should be based on that given in Agency guidance note H1 "Environmental assessment and BAT appraisal."	1/1/2005 1/6/2006 six monthly progress reports
1.4.24	The Operator shall submit written proposals to install CEMS to monitor all relevant determinands specified by the LCPD (Annex VIII) for emissions to air via release points A38, A39 and A40. The report should demonstrate compliance against the directive requirements/relevant standards in relation to parameters measured, sampling locations and equipment performance specification. The report should also consider and propose appropriate performance testing, confidence interval assessment and calibration procedures that demonstrate compliance with the requirements of the LCPD within the specified deadlines (27/11/2004).	30/07/2004
LCPD CEMS		
1.4.25	The Operator shall carry out an assessment of all periodic and continuous air emission monitoring locations, equipment, methods and calibration procedures against the relevant standards contained within Agency Technical Guidance Note M1 and M2. The Operator shall submit a prioritised rolling program of assessment based on emission point mass/impact magnitude and implement identified improvements as required. The operator shall provide six monthly progress / update reports following assessment programme submission.	Programme submission 31/12/2004 6 monthly progress reports
1.4.26	The operator shall submit written proposals to install CEMs on the following release point for the following parameters or provide	Proposal 01/04/2005

General CEMS Installation	suitable demonstration that their installation is not technically or economically possible. Sinter Plant Waste Gas Chimney A2 (SO₂, NO_x, CO, O₂, H₂O temperature and Particulates). SBCO1, RCO1 and RCO2 (SO₂, NO_x, CO, O₂, H₂O and temperature) The report should demonstrate compliance against relevant monitoring standards in relation to sampling locations and equipment performance specification and consider and propose appropriate performance testing, confidence interval assessment and calibration procedures. The report shall be submitted to the Environment Agency.	installation programme complete 01/04/2007
1.4.27	With regard to particulate emissions from the installation, the operator shall carry out an assessment of the effect of this emission on South Gare and Cotham Sands. The scope and methodology of the assessment is to be agreed with the Agency by 31 st December 2004 with a report being submitted by 31 st December 2005 and every 24 months thereafter.	Scope/ method 31/12/2004 Report 31/12/2005 Review report every 24months thereafter.
1.4.28	The operator shall undertake a direct toxicity assessment of direct releases to controlled waters from release points C3 and R1 or otherwise demonstrate to the Agency's satisfaction that the installation does not give rise to acute toxic effects in controlled waters. The results of this assessment shall be submitted in writing to the Environment Agency including, where appropriate, a timetable for improvements to prevent any acute toxic effects in the receiving waters.	31/12/05
1.4.29	The operator shall reduce smoke emissions from the battery stacks RCO1 and RCO2 to a maximum obscuration of 20% on a daily average basis by 1 st October 2005.	1/10/05
1.4.30	Following on from the BOS primary off-gas continuous particulate monitoring trial work undertaken at Llanwern, the Operator shall investigate and report on the potential availability/development of an intrinsically safe continuous particulate monitor suitable for BOS primary off-gas emission monitoring. Subject to the availability of a suitable monitor, the Operator shall install continuous particulate monitoring for all BOS primary off-gas emission points.	6 monthly progress reports from date of permit issue
1.4.31	The operator shall undertake an investigation into particulate matter (including PM10 and PM2.5) emissions from wet quenching of coke. The investigation should compare the emission reduction measures and emission performance against the techniques and achievable emission levels referred in the Iron and Steel BREF note. A report of the investigation shall be sent to the Environment Agency.	01/07/2005
1.4.32	For SBCO and RCO, the Operator shall provide a detailed costed annual battery maintenance/upgrade programme in accordance with sector guidance, including projected date for next major rebuild (with associated upgrades to Low NO _x burners and hood on coke guide with remote stationary abatement).	31/03/05 and Anniversary reports

1.4.33	The Operator shall undertake an investigation to monitor, quantify and speciate fugitive VOC/PAH emissions resulting from coke oven battery operations. The investigation should aim to establish typical release rates/ emission characteristics from significant sources (e.g. charging and pushing operations, door/top leakage) and include localised ambient air quality monitoring. The proposed scope and methodology to be adopted should be submitted in advance of any study and agreed with the Environment Agency. A report of the investigation shall be sent to the Environment Agency.	Scope/method 30/4/2005
1.4.34	The Operator shall carry out a review of alternative methodologies for estimating annual coke oven by-product tank vent releases of VOC/PAH emissions for comparison with the current emission factor based accounting method. This shall include, but not be limited to calculated releases based on tank movements, temperature and vapour pressure and releases based on tank movements and appropriate sampling and monitoring (headspace/tank vent). A report of the review and comparison shall be sent to the Environment Agency.	31/12/2005
1.4.35	The Operator shall assess releases of heavy metals from the LCPD plant release points and review the techniques available to minimise the heavy metals from the LCPD plant under the full range of operating conditions. A report shall be submitted to the Environment Agency	30/06/2005
1.4.36	The operator shall formulate an air quality management plan for the installation aimed at reducing the impact of pollutants emitted from the installation and ensuring it does not significantly contribute to breaches of the National Air Quality Strategy standards/objectives or EU Directive limits. Initially, the plan should be based on current emissions and impact assessment knowledge and developed further from the conclusions drawn from responses made to relevant improvement programme requirements contained within this Permit. The plan should take account of any Local Authority air quality management plans. The Operator shall review the air quality management plan annually and include actions to ensure the aim of the plan is delivered. The initial plan and annual reviews shall be submitted to the Environment Agency.	01/10/2004 and annual updates on the anniversary
1.4.37	The operator shall carry out an investigation in order to characterise the flow rate and the levels and nature of substances in effluent from the C3 outfall and its various contributors, in particular during dredging operations. This investigation should include both dry and wet weather conditions. The methodology for this investigation shall be agreed with the Agency in writing in advance of the work being undertaken. The operator shall submit a report to the Agency containing the results of this study no later than 30 th September 2006	30/9/06

1.4.2 Where the Operator fails to comply with any requirement by the date specified in Table 1.4.1 the Operator shall send written notification of such failure to the Agency within 14 days of such date.

1.5 Minor Operational Changes

- 1.5.1 The Operator shall seek the Agency's written agreement to any minor operational changes under condition 2.1.1 of this Permit by sending to the Agency: written notice of the details of the proposed change including an assessment of its possible effects (including waste production) on risks to the environment from the Permitted Installation; any relevant supporting assessments and drawings; and the proposed implementation date.
- 1.5.2 Any such change shall not be implemented until agreed in writing by the Agency. As from the agreed implementation date, the Operator shall operate the Permitted Installation in accordance with that change, and relevant provisions in the Application shall be deemed to be amended.
- 1.5.3 When the qualification "unless otherwise agreed in writing" is used elsewhere in this Permit, the Operator shall seek such agreement by sending to the Agency written notice of the details of the proposed method(s) or techniques.
- 1.5.4 Any such method(s) or techniques shall not be implemented until agreed in writing by the Agency. As from the agreed implementation date, the Operator shall operate the Permitted Installation using that method or technique, and relevant provisions in the Application (and the Site Protection and Monitoring Programme) shall be deemed to be amended.

1.6 Pre-Operational Conditions

- 1.6.1 There are no pre-operational conditions

1.7 Off-site Conditions

- 1.7.1 There are no off-site conditions

2 Operating conditions

2.1 In-Process Controls

- 2.1.1 The Permitted Installation shall, subject to the conditions of this Permit, be operated using the techniques and in the manner described in the application and subsequent schedule 4 responses.
- 2.1.2 The Permitted Installation shall, subject to the other conditions of this Permit, be operated using the techniques and in the manner described in the Site Protection and Monitoring Programme submitted under condition 4.1.7 of this Permit (as amended from time to time under condition 4.1.8), or as otherwise agreed in writing by the Agency.

2.2 Emissions

2.2.1 Emissions to Air, (including heat, but excluding Odour, Noise or Vibration) from Specified Points

- 2.2.1.1 This Part 2.2.1 of this Permit shall not apply to releases of odour, noise or vibration.
- 2.2.1.2 Emissions to air from the emission points in Table 2.2.1 shall only arise from the source(s) specified in that Table.

Table 2.2.1.1: Emission points into air		
Emission point reference/description	Source	Location of emission point
IRON ORE & SINTERING		
A1	Lump Ore Screen Filter	NZ 5577 2522
A2	Sinter Plant Waste Gas Chimney	NZ 5679 2495
A3	Sinter Plant Dedust System Chimney	NZ 5666 2496
A4	Mixer Drum Chimney	NZ 5659 2500
IRON MAKING		
A5	Stove Chimney	NZ 5662 2574
A6	Backdraught Chimney	NZ 5665 2573
A7	Slag Pelletiser Chimney (2)	NZ 5656 2579
A8	Slag Granulator	NZ 5663 2587
A9	East Ametherm Roof Vent	NZ 5663 2589
A10	West Ametherm Roof Vent	NZ 5663 2585
A11	Furnace Top Bleeders	NZ 5660 25810
A12	Charging Hopper Relief	NZ 5660 25810
A13	Blast Furnace Gas Flare Stack	NZ 5636 25580
STEELMAKING		
A14	"A" Vessel Primary Waste Gas Chimney	NZ 5526 2167
A15	"B" Vessel Primary Waste Gas Chimney	NZ 5526 2167
A16	"C" Vessel Primary Waste Gas Chimney	NZ 5526 2167
A17	North Secondary Ventilation Chimney	NZ 5525 2166
A18	Centre Secondary Ventilation Chimney	NZ 5525 2166
A19	South Secondary Ventilation Chimney	NZ 5525 2166
A20	"Kish Secondary Ventilation Chimney	NZ 5527 2172
A21	Iron Desulphurisation Bag Filter Chimney	NZ 5526 2154
A22	Ladle Metallurgy facility Bag Filter Chimney	NZ 5541 2159
A23	Powder Injection Plant Bag Filter Chimney	NZ 5533 2181
A24	Raw Materials handling Bag Filter Chimney	NZ 5533 2187
A25	Vacuum Degassing Plant No1 Vent	NZ 5541 2173
A26	Vacuum Degassing Plant No2 Vent	NZ 5541 2173
A27	Vacuum Degassing Plant No3 Vent	NZ 5541 2173
A41	Tank Degassing Unit	NZ 5541 2148
CONCAST		
A28	No1 Slab Caster Steam Vents	NZ 5535 2185
A29	No2 Slab Caster Steam Vents	NZ 5535 2185
A30	Bloom Caster Steam Vents	NZ 5535 2185
REHEAT FURNACES		
A32	Beam Mill Stack	NZ 5596 2169
A42	No 2 Primary Mill Vents (11 off)	NZ 5565 2134

POWER PLANT BOILERS		
A38	Redcar Power Station Boiler Flue No1	NZ 5645 2551
A39	Redcar Power Station Boiler Flue No2	NZ 5645 2551
A40	Redcar Power Station Boiler Flue No3	NZ 5645 2551
A43	Rushton Boiler 1 & 2	NZ 5567 2172
A44	Rushton Boiler 3 & 4	NZ 5567 2172
A31	Cleveland Oil Installation Package Boiler Chimney	NZ 5364 2266
REDCAR COKE OVENS		
RCO1	Battery 1 Stack	NZ 5611 2566
RCO2	Battery 2 stack	NZ 5600 2571
RCO3	Ammonia Incinerator	NZ 5598 2586
RCO4	Battery Bleeder (16 off)	NZ 5610 2556
RCO5	RCO Flare Stack (3 off)	NZ 5631 2556
RCO6	Screenhouse Main Midac System	NZ 5626 2566
RCO7	Midac Extraction System	NZ 5632 2573
RCO8	Battery 1 Quench Tower	NZ 5596 2575
RCO9	Battery 2 Quench Tower	NZ 5620 2567
RCO10	Battery 1	NZ 5610 2556
RCO11	Battery 2	NZ 5610 2556
SOUTH BANK COKE OVENS		
SBCO1	Battery Stack	NZ 5390 2155
SBCO2	Bleeders (12 off)	NZ 5390 2148
SBCO3	Flare Stack	NZ 5369 2160
SBCO4	EMSTAR Boilers (3 off)	NZ 5362 2161
SBCO5	Simons Quencher	NZ 5398 2151
SBCO6	Wilput Quencher	NZ 5382 2148
SBCO7	Battery	NZ 5390 2148

2.2.1.3 The limits for emissions to air for the parameter(s) and emission point(s) set out in Table 2.2.2 shall not be exceeded.

Table 2.2.2: Emission limits into air sintering and iron making

Parameters		Emission Point				
		A2	A3	A5	A9	A10
Particulate	mg/m ³	100 (b,c,d)	100 (b,c,d)		(e)	(e)
Frequency of monitoring		Continuous Daily Coverage	Continuous Daily Coverage	Annual spot		
Particulate	mg/m ³	200 (b,c)	200 (b,c)			
Frequency of monitoring		Continuous 4 hourly average	Continuous 4 hourly average			
NOx	mg/m ³	500 (a)		125		
Frequency of monitoring		Quarterly average spot		Annual spot		
SOX	mg/m ³	500 (a)		130		
Frequency of monitoring		Quarterly average spot		Annual spot		
Dioxin ITEQ Ng/m3		2				
		6 Monthly spot				

- (a) Based on an extractive spot measurement. Average of all extractive spot samples carried out during a single calendar year
- (b) Daily and hourly period refer to discrete periods, ie not rolling averages.
- (c) Shutdown periods are excluded.
- (d) The limit applies for part day operation unless that period of operation is less than 4 hrs.
- (e) No visible releases of dust with no evidence of deposition in the vicinity of the release point

Table 2.2.2: Emission limits into air – Steelmaking

Parameters		Emission Point				
		A14	A15	A16	A17	A18
Particulate	mg/m3	150	150	150	80	80
Frequency of monitoring		Annually	Annually	Annually	Annually	Annually

Table 2.2.2: Emission limits into air – Steelmaking (cont)

Parameters		Emission Point				
		A19	A20	A21	A22	A23
Particulate	mg/m3	80	80	50	50	100
Frequency of monitoring		Annually	Annually	Annually	Annually	Annually

Table 2.2.2: Emission limits into air – Steelmaking (cont)

Parameters		Emission Point				
		A24	A25	A26	A27	A41
Particulate	mg/m3	100	50	50	50	50
Frequency of monitoring		Annually	Annually	Annually	Annually	Annually

Table 2.2.2: Emission limits into air – Reheat Furnaces

Parameters		Emission Point
		A32
SOx	mg/m3	1500 (a)
		3600 (b)
		35 (c)
Frequency of monitoring		Annually
NOx	mg/m3	550
		Annually
Particulate	mg/m3	50 (b)
		Annually
Ringleman Shade		1 (d)
		2 (e)
Frequency of monitoring		Continuous

(a) This limit applies when the predominant fuel is coke oven gas

(b) This limit applies if greater than 13 days firing on heavy fuel oil as the predominant fuel

(c) This limit applies when the predominant fuel is natural gas

(d) This limit excludes the first 15 minutes of start up from cold or during a fuel change over.

(e) This limit applies during the first 15 minutes of start up from cold or during a fuel change over.

Table 2.2.2: Emission limits into air – Power Plant Boilers

Parameters		Emission Point		
		A38	A39	A40
SOx	mg/m3	200 (a)	200 (a)	200 (a)
Frequency of monitoring		Annually	Annually	Annually
NOx	mg/m3	80 (a)	80 (a)	80 (a)
		750 (b)	750 (b)	750 (b)
Frequency of monitoring		Annually	Annually	Annually
Particulate	mg/m3	200 (b)	200 (b)	200 (b)

Frequency of monitoring	Annually	Annually	Annually
Ringleman Shade	1 (c)	1 (c)	1 (c)
	2 (d)	2 (d)	2 (d)
Frequency of monitoring	Continuous	Continuous	Continuous

- (a) This limit applies when the predominant fuel is any mixture of coke oven gas and blast furnace gas.
- (b) This limit applies if greater than 13 days firing on heavy fuel as the predominant fuel.
- (c) This limit excludes the first 15 minutes of start up from cold or during a fuel change over.
- (d) This limit applies during the first 15 minutes from start up from cold or during a fuel change over.

2.2.1.3.1 Revised limits for the Power Plant Boilers are to be notified to the operator following installation of CEMS for LCPD compliance (IMP 1.4.27).

Table 2.2.2: Emission limits into air – Redcar Coke Ovens

Parameters	Emission Point				
	RC010 Battery	RC011 Battery	RCO1 Battery 1 chimney	RCO2 Battery 2 chimney	RCO3 Ammonia Incinerator
DCLF (minimum)	98.5	98.5			
Frequency of monitoring	Twice weekly	Twice weekly			
TLCF (minimum)	99.0*	99.0*			
Frequency of monitoring	Twice weekly	Twice weekly			
PEF (maximum)	0.2	0.2			
Frequency of monitoring	weekly	weekly			
Smoke Obstruction			(c)	(c)	
Frequency of monitoring			Continuous	Continuous	
SOx mg/m ³			1200	1200	5500
Frequency of monitoring			6 monthly	6 monthly	6 monthly
NOx mg/m ³			1400	1400	120
Frequency of monitoring			6 monthly	6 monthly	6 monthly
NH3 mg/m ³					100
Frequency of monitoring					6 monthly

- (a) Assessment of fugitive releases (DLCF and TLCF shall be in accordance with the Agreed Uniform Techniques, British Carbonisation Research Association (BCRA) special Publication No 19 April.

- (b) Pushing emission factors (PEF) shall be assessed by the method defined in the application and shall be based on a random survey of a minimum of 7.5% observations of all working ovens, on a single day.
- (c) Subject to Improvement Condition 1.4.32 visible smoke emitted from any battery chimney shall not exceed an obscuration reading of 36% on a daily average basis.

* to be calculated excluding spigots and spindles until 31st December 2005.

TABLE 2.2.2: Emission limits into air – South Bank Coke Ovens

Parameters	Emission Points	
	SBC07 Battery	SBC01 Battery chimney stack
DLCF (minimum)	97.0 (d)	
Frequency of monitoring	Twice weekly	
TLCF (minimum)	99.0 (d)	
Frequency of monitoring	Twice weekly	
PEF (maximum)	1.0 (e)	
Averaged over a quarter		
Frequency of monitoring	weekly	
Smoke Obstruction		(f)
Frequency of monitoring		continuous
SO _x mg/m ³		2000
Frequency of monitoring		6 monthly
NO _x mg/m ³		1400
Frequency of monitoring		6 monthly

- (d) Assessment of fugitive releases (DLCF and TLCF) shall be in accordance with the Agreed Uniform Techniques, British Carbonisation Research Association (BCRA) special Publication No 19 April.
- (e) Pushing emission factors (PEF) shall be assessed by the method defined in the application and shall be based on a random survey of a minimum of 10% observations of all working ovens, on a single day.
- (f) Not to exceed equivalent of Ringlemann Shade 1 for more than 240 minutes a day, expressed as weekly average, and not to exceed 400 minutes in any single day.

2.2.1.4 Total emissions to air in any year of a substance listed in Table 2.2.3 should not exceed the relevant limit in that Table.

Table 2.2.3 Annual limits

Substance	Limit – tonnes
Oxides of Sulphur	1754 (Emission Points A38 to A40)
	1000 (Emission Point SBC01)
	2000 (Emission Points RC01 & RC02)
Oxides of Nitrogen	813 (Emission Points A38 to A40)
	750 (Emission Point SBC01)
	1700 (Emission Points RC01 & RC02)

2.2.1.5 Other than releases from the release points identified in Table 2.2.1.1 there are from time to time, emissions emanating from operations, which are largely controlled through operating procedures and to which release limits cannot be applied. These emissions are outlined in the table below.

Table 2.2.3.1

Process	Emission	Characteristic
Ore stock yards and roads	Particulate matter	Visible
Sinter plant hot screens	Particulate matter	Visible
Sinter coolers	Particulate matter	Visible
Raw materials conveyor systems	Particulate matter	Visible
Iron ponding	Particulate matter and iron oxide fume	Visible
Air and water cooling of blast furnace slag	Hydrogen sulphide and sulphur dioxide	Visible
BOS plant roof	Particulate matter and iron oxide fume	Visible

2.2.2 Emissions to water (other than groundwater), including heat, from specified points

2.2.2.1 This Part 2.2.2 of this Permit shall not apply to releases of odour, noise or vibration or to releases to groundwater.

Emissions to Water (other than to Sewer.)

2.2.2.2 Emissions to water from the emission point(s) specified in Table 2.2.4 shall only arise from the source(s) specified in that Table

Table 2.2.4: Emission point to water		
Emission Point Reference or description	Source	Receiving Water
W1	Cleveland Oil Installation	River Tees (NZ 5370 2276)
W2	Iron Granulation Plant	Dabholm Beck (NZ 5650 2260)
W3	Redcar Power Station	Tees Bay (NZ 5690 2700)
C3	Lackenby & Cleveland Works	River Tees (NZ5410 2330)
R1	Redcar Coke Ovens Effluent Treatment Plant	River Tees Estuary (NZ 5470 2640)

2.2.2.4 The limits for the emissions to water for the parameter(s) and emission point(s) set out in Table 2.2.5 shall not be exceeded.

2.2.2.5 The Operator shall carry out monitoring of the parameters listed in Table 2.2.5, from the emission points and at least at the frequencies specified in that Table.

Table 2.2.5: Emission limits into water

Parameter	Emission Point W1	Monitoring Frequency
PH	-----	Three monthly
Oil & Grease (mg/l)	-----	Three monthly
Suspended Solids (mg/l)	150	Three monthly
Temperature (°C)	30	Three monthly

Parameter	Emission Point W2	Monitoring Frequency
pH max	9	Three monthly
pH min	5	Three monthly
Suspended Solids (mg/l)	100	Three monthly
Temperature (°C)	30	Three monthly
Oil & Grease		Three monthly

Parameter	Emission Point W3	Monitoring Frequency
pH max	9	Three monthly
pH min	5	Three monthly
Suspended Solids (mg/l)	-----	Three monthly
Oil & Grease	No significant trace	Three monthly
Temperature	no more than 15°C in excess of that of the intake water.	Three monthly
Total residual Chlorine	1 mg/l	Three monthly

Parameter	Emission Point R1	Monitoring Frequency
Volume (litres/sec)	35	monthly
pH max	9	monthly
pH min	5	monthly
COD (mg/l)	1500	monthly -(Cnn. + Load)
Suspended Solids (mg/l)	200	monthly
Ammonia as N (mg/l)	300	monthly -(Cnn. + Load)
Oil & Grease (mg/l)	No significant trace	monthly
Temperature (°C)	35	monthly
Cyanide (mg/l)	0.5	monthly
Thiocyanate	-----	monthly
Monohydric Phenol (mg/l)	2	monthly
Zn (mg/l)	-----	monthly -(Cnn. + Load)
Pb (mg/l)	-----	monthly -(Cnn. + Load)
Cd (mg/l)	-----	monthly -(Cnn. + Load)
Cu (mg/l)	-----	monthly -(Cnn. + Load)
Fe (mg/l)	-----	monthly
Cr (mg/l)	-----	monthly
Hg (mg/l)	-----	monthly
Mn (mg/l)	-----	monthly

Ni (mg/l)	-----	monthly
B (mg/l)	-----	monthly
Fe (mg/l)	-----	monthly
V (mg/l)	-----	monthly
As (mg/l)	-----	monthly
NaNO3 (mg/l)	-----	monthly

Parameter	Emission Point C3	Monitoring Frequency
pH max	11	monthly
pH min	6	monthly
COD (mg/l)	-----	monthly -(Cnn. + Load)
Suspended Solids (mg/l)	150	monthly
Ammonia as N (mg/l)	10	monthly -(Cnn. + Load)
Oil & Grease (mg/l)	25	monthly
Zn (mg/l)	-----	monthly -(Cnn. + Load)
Pb (mg/l)	-----	monthly -(Cnn. + Load)
Cd (mg/l)	-----	monthly -(Cnn. + Load)
Cu (mg/l)	-----	monthly -(Cnn. + Load)
Cyanide (mg/l)	-----	monthly
Fe (mg/l)	-----	monthly
Cr (mg/l)	-----	monthly
Hg (mg/l)	-----	monthly
Mn (mg/l)	-----	monthly
Ni (mg/l)	-----	monthly
B (mg/l)	-----	monthly
Fe (mg/l)	-----	monthly
V (mg/l)	-----	monthly
As (mg/l)	-----	monthly

- 2.2.2.5.1 There shall be no emission into water from the Permitted Installation of any substance prescribed for water for which no limit is specified in Table 2.2.5 except in a concentration which is no greater than the background concentration.
- 2.2.2.5.2 The Operator shall notify the Agency in writing if any known introduction or material change in respect of operations on site, occurs that may increase or introduce in to the emissions to water any "dangerous substance" included in List I and List II and in the list of Dangerous Substances, included in this Permit, or any other substance considered by the Operator as having or likely to have a significant effect on the receiving waters.
- 2.2.2.5.3 As far as is reasonably practicable, the site and treatment plants shall be operated so as to prevent:-

Any matter being present in the emissions to water, other than matter specifically covered by numerical conditions in this Authorisation, to such an extent as to cause the receiving waters, or any waters of which the receiving waters are a tributary, to be poisonous or injuries to fish in those waters, or to the spawning grounds, spawn or food of fish in those waters, or otherwise cause damage to the ecology of those waters; And the emission from having other adverse environmental impact.

- 2.2.2.5.4 In relation to the monitoring included in Table 2.2.5, where the reporting frequency is followed by “(Cnn. +Load)”, the monitoring requirements include both concentration and weekly and annual loads.
- 2.2.2.5.5 There shall be no significant increase in the volume discharge to water [other than emissions to sewer] above that stated in the application, without prior permission to the Agency.
- 2.2.2.5.6 Annual mass releases limit from release point E1 at SBCO. Total emissions to water in any year of a substance listed in Table 2.2.6 shall not exceed the relevant limit in that Table

Table 2.2.6 Annual emission limits

Substance	Limit – tonne
Ammoniacal Nitrogen (as N)	3000
Cyanide (Simple as Cn)	250
Monohydric Phenols	130
Thiocyanate	730
Sulphide	1200

Emissions to sewer

- 2.2.2.7 No emission shall be made into any sewer from the Permitted Installation

2.2.3 Emissions to groundwater

- 2.2.3.1 No emission from the Permitted Installation shall give rise to the introduction into groundwater of any substance in List I (as defined in the Groundwater Regulations 1998 (S.I. 1998 No. 2746)).

2.2.3.2 No emission from within the Permitted Installation shall give rise to the introduction into groundwater of any substance in List II (as defined in the Groundwater Regulations 1998 (S.I. 1998 No. 2746)) so as to cause pollution (as defined in the Groundwater Regulations 1998 (S.I. 1998 No. 2746)).

2.2.3.3 For substances other than those in List I or II (as defined in the Groundwater Regulations 1998 (SI 1998 No.2746)), the Operator shall use BAT to prevent or where that is not practicable to reduce emissions to groundwater from the Permitted Installation provided always that the techniques used by the Operator shall be no less effective than those described in the Application, where relevant.

2.2.3.4 Emissions into or onto land from the emission point(s) specified in Table 2.2.7 shall only arise from the source(s) and shall be emitted only to the soakaway specified in that Table.

Table 2.2.7 Emission points into land		
Emission point reference/description	Source	Soakaway
W4	Redcar Blast Furnace Slag Quench Tank overflow water	Redcar soak away area Discharge to groundwater at NZ 5666 2587
W5	Cleveland Oil installation General surface water run-off	Cleveland Oil Farm soak away Discharge to groundwater at NZ 5372 2257
W6	Redcar Coke Ovens fire-fighting water	Benzole fire-water soak away Discharge to groundwater at NZ 5617 2593

2.2.3.5 The operator shall carry out monitoring of the parameters listed in Table 2.2.8, from the emission points and at least at the frequencies specified in that table.

Table 2.2.8 Emissions into groundwater - monitoring

Parameter	Emission Point W4	Monitoring Frequency
pH		Six monthly
Suspended Solids (mg/l)		Six monthly
Ammonia as N (mg/l)		Six monthly
Cyanide		six monthly
Thiocyanate		Six monthly
Sulphide		Six monthly
COD		Annually
Oil & grease		annually
Parameter	Emission Point W5	Monitoring Frequency
pH		Six monthly
Oil & Grease		Six monthly
Parameter	Emission Point W6	Monitoring Frequency
pH		Six monthly
Suspended Solids (mg/l)		Six monthly
COD (mg/l)		Six monthly
Ammonia as N (mg/l)		Six monthly
Cyanide		Six monthly
Thiocyanate		Six monthly
Monohydric		Six monthly
Oil & Grease		Annually

2.2.3.6 There shall be no emission into groundwaters from the Permitted Installation of any substance prescribed for water for which no limit is specified in this Section (6.2 – Emissions to land) except in a concentration which is no greater than the background concentration.

2.2.3.7 The operator shall notify the Agency, as soon as practicable, of any information concerning the state of the site which affects or updates that provided to the Agency as part of the Site report submitted with the application for this permit.

2.2.4 Fugitive emissions of substances to air

2.2.4.1 The Operator shall use BAT so as to prevent or where that is not practicable to reduce fugitive emissions of substances to air from the Permitted Installation in particular from:

- storage areas
- buildings
- pipes, valves and other transfer systems
- open surfaces

provided always that the techniques used by the Operator shall be no less effective than those described in the Application, where relevant.

2.2.5 Fugitive emissions of substances to water and sewer

2.2.5.1 Subject to condition 2.2.5.2 below, the Operator shall use BAT so as to prevent or where that is not practicable to reduce fugitive emissions of substances to water (other than Groundwater) and sewer from the Permitted Installation in particular from:

- all structures under or over ground
- surfacing
- bunding
- storage areas

provided always that the techniques used by the Operator shall be no less effective than those described in the Application, where relevant.

2.2.5.2 There shall be no release to water that would cause a breach of an EQS established by the UK Government to implement the Dangerous Substances Directive 76/464/EEC.

2.2.6 Odour

2.2.6.1 The Operator shall use BAT so as to prevent or where that is not practicable to reduce odorous emissions from the Permitted Installation, in particular by:

- limiting the use of odorous materials
- restricting odorous activities
- controlling the storage conditions of odorous materials
- controlling processing parameters to minimise the generation of odour
- optimising the performance of abatement systems
- timely monitoring, inspection and maintenance
- employing, where appropriate, an approved odour management plan

provided always that the techniques used by the Operator shall be no less effective than those described in the Application, where relevant.

2.2.7 Emissions to Land

2.2.7.1 This Part 2.2.7 of this Permit shall not apply to emissions to groundwater.

2.2.8 Equivalent Parameters or Technical Measures

2.2.8.1 The sulphur content of fuel injected into the Redcar Blast Furnace shall not exceed the limits in Table 2.2.9

Table 2.2.9	
Fuel	Maximum Sulphur Content % W/W(a)
	Blast Furnace
Heavy Fuel Oil	1.0
Substitute Fuel Oil	1.0

Any sample taken and analysed in accordance with appropriate British Standards when considered together with a Sampling and Estimation Protocol to be agreed in writing with the Agency shall not exceed this limit

2.2.8.2 Oil supplied to the Operator's Premises for use in the Authorised process shall be sampled as frequently as necessary to obtain a representative sample of oil and each sample shall be analysed for sulphur content in accordance with BS 2000: Part 61: 1993 or other such method as agreed by the Environment Agency.

2.2.8.3 The sulphur content of fuel fed to the main boilers of the Authorised Process shall not exceed the limits in Table 2.2.10

Table 2.2.10	
Fuel	Maximum Sulphur Content % W/W(a)
Boilers 1 -3	
Oil	1.0

(a) Any sample taken and analysed in accordance with appropriate British Standards when considered together with a Sampling and Estimation Protocol to be agreed in writing with the Agency shall not exceed this limit.

2.4 Efficient use of raw materials

2.4.1 The Operator shall -

- 2.4.1.1 maintain the raw materials table or description submitted in response to Section 2.4 of the Application and in particular consider on a periodic basis whether there are suitable alternative materials to reduce environmental impact;
- 2.4.1.2 carry out periodic waste minimisation audits and water use efficiency audits. If such an audit has not been carried out in the 2 years prior to the issue of this Permit, then the first such audit shall take place within 2 years of its issue. The methodology used and an action plan for increasing the efficiency of the use of raw materials or water shall be submitted to the Agency within 2 months of completion of each such audit and a review of the audit and a description of progress made against the action plan shall be submitted to the Agency at least every 4 years thereafter; and
- 2.4.1.3 ensure that incoming water use is directly measured and recorded.
- 2.4.1.4 During storage and collection, the Operator shall not mix waste oils with PCBs within the meaning of Directive 96/59/EC.

2.5 Waste Storage and Handling

- 2.5.1 The Operator shall design, maintain and operate all facilities for the storage and handling of waste on site such that there are no releases to water or land during normal operation and that emissions to air and the risk of accidental release to water or land are minimised.
- 2.5.2 Waste materials specified in Table 2.5.2 shall only be stored on the site in the location and manner specified in that Table, subject to Improvement Condition 1.4.18.

TABLE 2.5.2: Waste stored on site

Description of Waste	Location of Storage	Manner of Storage	Storage Conditions
Liquid wastes including Waste Oil	Segregated and labelled locations clearly defined and identified in the Site Environmental Management System	Stored in liquid-retaining, covered containers of sufficient strength and structural integrity to ensure that they are unlikely to burst or leak in ordinary use.	All liquid storage containers to be clearly marked and must be situated within an impermeable secondary containment system that would contain at least 110% of the contents of the largest single container located therein.
Solid wastes which are likely to produce contaminated or polluting run-off i.e. non-inert wastes.	Segregated and labelled locations clearly defined and identified in the Site Environmental Management System	- Stored in sealed containers; or - Stored in covered shelters or roofed areas; or - Stored in bays	Stored in areas with impermeable hard standing which shall be constructed and maintained so as to prevent fluids running off the hard standing and the transmission of fluids through the hard standing or joints.
Oily Mill Scale			Drainage from the impermeable hard standing shall be provided by either: - A sealed sump, which shall be inspected no less frequently than weekly and after rain (if open to atmosphere), emptied when the collected liquids reach 80% of the its capacity as measured using a dipstick or equivalent gauge, and constructed and maintained so as to collect and contain all liquids which run off the pavement; or - To the site drainage system which discharges from the site under the terms of this permit.

2.5.3 Each skip, drum or other mobile container used to hold wastes which consist of or contain potentially polluting liquids, sludges or powders, shall be, while on the site:

- a** loaded and unloaded;
- b** filled and emptied;
- c** clearly and unambiguously labelled regarding its contents, unless the contents are clearly identifiable by visual inspection;
- d** inspected and maintained according to documented and recorded maintenance schedules and procedures;
- e** in the event of damage or deterioration to a container that is, or is likely to cause, a leak, that container shall be repaired or replaced immediately;

In accordance with the standards specified in Table 2.5.4 below.

- 2.5.4 In the event of any potentially polluting leak or spillages occurring on site, documented control and remediation procedures shall be implemented immediately and recorded, and shall meet the standards specified in Table 2.5.4 below.

Table 2.5.4: Standards for prevention and control of leaks and spillages	
Action	Specified standards
a) Loading and unloading skips, drums and other mobile containers	i. Lids/caps/bungs or other closures shall be in place during loading/unloading. ii. Loading/unloading shall be carried out in an area provided with engineered containment of the type required for that waste under condition 2.5.2, and of the standard of containment specified under condition 2.5.2
b) Filling and emptying drums and other mobile containers	i. Lids/caps/bungs or other closures shall be in place at the end of filling. ii. Containers shall not be filled beyond their operational capacity. iii. Loading/unloading shall be carried out in an area provided with engineered containment of the type required for that waste under condition 2.5.2 and of the standard of containment specified under condition 2.5.2. iv. Measurement of level/void space shall be by physical dipping prior to loading.
c) Inspection, maintenance and repair of drums and other mobile containers	i. Procedures shall be in place to regularly inspect containers for leaks. ii. Containers found to be leaking either shall be immediately transferred to a larger over-container or shall have their contents immediately transferred to an alternative container.
d) Control and remediation of leaks and spillages	i. Minor spillages shall be cleaned up immediately, using sand or proprietary absorbent to clean up liquids. ii. Major spillages, which are causing or are likely to cause polluting emissions to the environment. • Immediate action shall be taken to contain the spillage and prevent liquid from entering site drains, water courses and unsurfaced ground; • The spillage shall be cleared immediately and placed in alternative sealed containers; • The Agency shall be informed without delay.

2.6 Waste recovery or disposal

- 2.6.1 Waste produced at the Permitted Installation shall be recycled or recovered unless technically impossible and/or excessively costly.
- 2.6.2 The Operator shall maintain the waste recovery or disposal table or description submitted in response to Section 2.6 of the Application and in particular identify the best practicable environmental options for waste disposal.

- 2.6.3 The Operator shall maintain and implement a system which ensures that a record is made of the quantity, composition, origin, destination (including whether this is a recovery or disposal operation) and where relevant removal date of any waste that is produced at the Permitted Installation.
- 2.6.4 The Operator shall maintain and implement a system which ensures that a record is made of the quantity, composition, origin and delivery date of any waste that is received for disposal or recovery at the Permitted Installation.
- 2.6.5 During storage and collection, the Operator shall not mix waste oils with PCBs within the meaning of Directive 96/59/EC.
- 2.6.6 A network of stable, permanent survey control stations [minimum two] shall be established and maintained for the control of survey work around the drying area. The stations shall be referenced to Ordnance Survey National Grid co-ordinates, the grid alignment to be within +/-1 metre and Levels referenced to Ordnance Datum. The accuracy of horizontal control shall not be less than 1:20 000. The level values of adjacent stations shall agree to less than or equal to 0.005 metres.
- 2.6.7 A topographic survey shall be undertaken of the SLEMS drying/processing area within three months of this being requested in writing by the Agency. The scale shall adequately show surveyed features and be at least 1:1250. The surveys shall be sufficient to produce plans that include all roads, structures, boundaries and all other relevant site features. The results of the survey shall be presented as a plan. Plan positions of ground features to be shown to within 1 metre. Spot levels to 0.01m shall be shown at significant landform changes to a density to adequately indicate the true landform, no greater than 50 metre interval in open areas of even gradient, closer when indicating embankments, stockpiles, etc. The results of the survey shall be submitted to the Environment Agency within 1 month of the survey being carried out.
- 2.6.8 All emissions to air from the SLEMS drying and loading area shall be free from visible concentrations of dusts as are likely to cause pollution of the environment or harm to human health or serious detriment to the amenity of the locality outside the site boundary, as perceived by an authorised officer of the Agency.
- 2.6.9 In the event that dry dusts arising from the drying or screening process are released in such quantities or concentrations that they are likely to cause pollution of the environment or harm to human health or serious detriment to the amenity of the locality, then control measures, shall be implemented immediately.

2.7 Energy Efficiency

- 2.7.1 The Operator shall, subject to the conditions of this Permit, use energy as described in the documentation specified in Table 2.7.1, or as otherwise agreed in writing by the Agency.

Table 2.7 1: Energy efficiency

Description	Parts	Date Received
Application	The response to question 2.7 given in section B2.7 of the application.	31/08/04

- 2.7.2 The operator shall have an energy management plan, which shall be updated annually. The plan shall include proposals for energy efficiency (including those proposed under any negotiated agreement or trading agreement) together with target setting and monitoring details.
- 2.7.3 The Operator shall notify the Environment Agency in the case of the permitted installation leaving a Climate Change agreement or a trading agreement.
- 2.7.4 Following a notification under condition 2.7.3 the operator shall forward without delay to the Agency an Energy Efficiency Plan and respective targets collated in the agreement.

2.8 Accident prevention and control

- 2.8.1 The Operator shall maintain and implement when necessary the accident management plan submitted or described in response to Section 2.8 of the Application. The plan shall be reviewed at least every 2 years or as soon as practicable after an accident, whichever is the earlier, and the Agency notified of the results of the review within 2 months of its completion.

2.9 Noise and Vibration

- 2.9.1 The Operator shall use BAT so as to prevent or where that is not practicable to reduce emissions of noise and vibration from the Permitted Installation, in particular by:
- equipment maintenance, eg. of fans, pumps, motors, conveyors and mobile plant;
 - use and maintenance of appropriate attenuation, eg. silencers, barriers, enclosures;
 - timing and location of noisy activities and vehicle movements;
 - periodic checking of noise emissions, either qualitatively or quantitatively; and
 - maintenance of building fabric,

provided always that the techniques used by the Operator shall be no less effective than those described in the Application, where relevant.

- 2.9.2 Torpedo ladle lining wrecking by machine in the open air shall only be carried out between 07.30 and 16.00 hours.
- 2.9.3 Installation noise monitoring will be carried out in accordance with BS 4142. Measurements will be taken on one Weekday, one Saturday and one Sunday during the daytime (ie in the period 09.00 to 17.00 hours) and the quietest night time period (ie in the period 01.00 and 04.00 hours). Representative measurement periods will be used and the following parameters reported: ambient noise, residual noise, LA90 background, specific noise rating level and likelihood of complaints assessment result. The measurement positions should be in the vicinity of the sensitive receptor locations identified in the application or at any other location agreed in writing by the Environment Agency. The first assessment to be undertaken within 4 months of the permit issue date and thereafter every 12 months, the results of the assessment shall be sent to the Environment Agency at the reporting address.
- 2.9.4 The operator shall maintain a noise and vibration management plan with the objective of reducing to a minimum noise and vibration emissions so as to avoid harm or annoyance to people in the community. The plan shall include an inspection and corrective maintenance regime for the noise abatement measure adopted in the installation. The plan shall include a procedure for recording, investigating and resolving noise complaints. The plan shall be in writing and be available for inspection on-site by officers of the Agency.

2.10 On-site Monitoring

- 2.10.1 The Operator shall, subject to the conditions of this Permit, carry out, evaluate and assess monitoring as described in the documentation specified in Table 2.10.1, or as otherwise agreed in writing by the Agency.

Table 2.10.1 : Monitoring

Description	Parts	Date Received
Application	The response to question 2.10 given in Section 2.10 of the application	28/08/01
Response to Schedule 4 Part 1 Notice Response served 29/11/01	Response to Question 2.10 nos 1 to 7	30/01/02

- 2.10.2 Where requested in writing by the Agency, the Operator shall provide at least 14 days advance notice of undertaking monitoring/spot sampling.
- 2.10.3 There shall be provided:
- a** safe and permanent means of access to enable sampling/monitoring to be carried out in relation to the emission points specified in Schedule 2, unless otherwise specified in that Schedule and
 - b** safe means of access to other sampling/monitoring points when required by the Agency.
- 2.10.4 The installed continuous smoke monitors shall be calibrated to manufactures instructions for each instrument.
- 2.10.5 The Operator shall assess, twice weekly, fugitive releases from the coke ovens using the DLCFs, TLCFs and PEFs unless carbonising times prevent daylight assessment. If the results indicate exceedance of a limit then efforts shall be made to monitor that same oven at the next opportunity and thereafter until compliance is attained. Assessment of PEF shall be based on a minimum observation of 8 ovens per week. The emission factor measurements (DLCF, TLCF and PEF) specified in Table 5.2 shall be audited against BCRA standards at a frequency of not less than once every two years. The results of the audit shall be copied to the Agency at the reporting address within 30 days of it's receipt.
- 2.10.6 The Operator shall carry out the on-going monitoring identified in the Site Protection and Monitoring Programme submitted under condition 4.1.7, unless otherwise agreed in writing by the Agency.
- 2.10.7 The Operator shall, within 6 months of the issue of this Permit, in accordance with and using the format given in the Land Protection Guidance:
- 2.10.7.1 collect the site reference data identified in the Site Protection and Monitoring Programme submitted under condition 4.1.7, and
 - 2.10.7.2 report that site reference data to the Agency,- unless otherwise agreed in writing by the Agency.

2.11 Closure and Decommissioning

- 2.11.1 The Operator shall maintain and operate the Permitted Installation so as to prevent or minimise any pollution risk, including the generation of waste, on closure and decommissioning in particular by:-
- 2.11.1.1 attention to the design of new plant or equipment;

- 2.11.1.2 the maintenance of a record of any events which have, or might have, impacted on the condition of the site along with any further investigation or remediation work carried out; and
- 2.11.1.3 the maintenance of a site closure plan to demonstrate that the installation can be decommissioned avoiding any pollution risk and returning the site of operation to a satisfactory state.
- 2.11.2 Notwithstanding condition 2.11.1 of this Permit, the Operator shall carry out a full review of the Site Closure Plan at least every 4 years.
- 2.11.3 The site closure plan shall be implemented on final cessation or decommissioning of the Permitted activities or part thereof.
- 2.11.4 The Operator shall give at least 30 days written notice to the Agency before implementing the site closure plan.

2.12 Multiple Operator installations

- 2.5.5 The Operator shall, subject to the conditions of this Permit, use the techniques and measures described in the documentation specified in Table 2.12.1, or as otherwise agreed in writing by the Agency.

Table 2.12.1: Multi-operator Installations

Description	Parts	Date Received
Application	The response to question 2.12 given in Section 2.12 of the application	28/08/01

2.13 Transfer to effluent treatment plant

- 2.13.1 There shall be no transfer to effluent treatment plant of any substance prescribed for water for which no limit is specified in Table 2.2.6 except in a concentration which is no greater than the background concentration.
- 2.13.2 Notwithstanding 2.2.6 above, the following substances are prohibited from the transfer to the effluent treatment plant:-
 - Calcium carbide
 - Organo-halogens
 - Carbon di-sulphide
 - Petroleum spiritSubstances included in List I, List II and the red List other than those identified in 2.2.6 above.

- 2.13.3 All liquid effluent transferred to Northumbrian Water Limited's Bran Sands Effluent Treatment Works shall be biologically treated prior to discharge into the River Tees, by 1st April 2005.
- 2.13.4 The Operator shall notify the Agency, as soon as practicable, of any significant interruption in the transfer process of liquid effluent from the installation to bran sands Effluent Treatment Works.

3 Records

- 3.5.4 A record (a "Specified Record") shall be made of:-
- a** any malfunction, breakdown or failure of plant, equipment or techniques (including down time and any short term and long term remedial measures) that may have, has had or might have had an effect on the environmental performance of the Permitted Installation. These records shall be kept in a log maintained for that purpose;
 - b** all monitoring and sampling taken or carried out and any assessment or evaluation made on the basis of such data;
- 3.5.5 There shall be made available for inspection by the Agency at any reasonable time:
- a** Specified Records;
 - b** any other records made by the Operator in relation to the operation of the Permitted Installation ("Other Records")
- 3.5.6 A copy of any Specified or Other Records shall be supplied to the Agency on demand and without charge
- 3.5.7 Specified Records and Other Records shall:-
- a** be legible;
 - b** be made as soon as reasonably practicable;
 - c** indicate any amendments which have been made and shall include the original record wherever possible; and
- 3.5.8 Specified Records and Other Records shall be retained for a minimum period of **4** years from the date when the records were made at the permitted installation.
- 3.5.9 For all waste received at or produced from the Permitted Installation, the Operator shall record (and shall retain such records for a minimum of **4** years)
- a** its composition, or as appropriate, description;
 - b** the best estimate of the quantity produced;
 - c** its disposal routes; and
 - d** the best estimate of the quantity sent for recovery.
- 3.5.10 A record shall be made at the Permitted Installation of any complaints concerning the Installation's effect or alleged effect on the environment. The record shall give the date of complaint, time of complaint, a summary of any investigation and the results of such investigation. Such records shall be made in a log kept for this purpose.
- 3.5.11 The Operator shall record any sticker oven, to include oven number, carbonising time, temperatures recorded, any coal blend variation, the date and time the oven was eventually discharged and any remedial work required to the oven.
- 3.5.12 The availability of the Cokeside Abatement Systems to abate coke side emission during the discharging of ovens shall be recorded. The number of ovens discharged with the unit, expressed as a percentage (%) of the total ovens discharged in the quarter, shall be recorded.
- 3.5.13 In addition to the notification requirements of Conditions 5.1.1 and 5.1.2, the Operator shall keep records of:
- a) time, date and duration of bleeder openings;

Records

- b) time of ignition of raw coke oven gas and the duration of flaring of coke oven gas at release points RCO4 4SBC02
 - c) the volume of coke oven gas released to the bleeders (RCO4 and SBCO2);
 - d) written justification as to why the release was not prevented and ignition not achieved sooner than identified in the application
- 3.5.14 A record of the fuel usage for each boiler shall be maintained.
- 3.5.15 A record of the fuel and boiler flue gas characteristics boiler operating time, mean load and flue gas flow shall be maintained.
- 3.5.16 The operator shall record the time, date, volume released, duration and reason for each blast furnace gas main bleeder (A11) release of duration greater than 30 seconds and reason for operation.
- 3.5.17 A record of blast furnace gas production (make), flaring and venting shall be maintained.
- 3.5.18 An operational record of sinter strand stoppages, the duration thereof and the reason(s) for the stoppage together with proposed corrective action, if applicable, shall be maintained.
- 3.5.19 A record of all iron ponding operations and reasons for operation shall be maintained and the tonnage each month shall be reported quarterly on Form FA10
- 3.5.20 A record of all BOS plant secondary ventilation non operational periods shall be submitted and reported quarterly on form FA9.
- 3.5.21 For particulate release from A2, any four hourly average exceeding the continuous four hourly average limit specified in Table 6.1.2 shall be recorded and a report submitted each quarter.
- 3.5.22 A record of slag granulation non-operation shall be logged together with a record of the total slag production, including the percentage of the total slag tonnage granulated.
- 3.5.23 The Operator shall notify the Agency, on an annual basis in writing, at the reporting address of the total quantity of ECO oil or Petrinex used as a reductant in the Blast Furnace.
- 3.5.24 A record shall be made of the number of trips occurring on the Redcar Coke Oven Incinerator.

4 Reporting

- 4.1.1 All reports and written and or oral notifications required by this Permit and notifications required by Regulation 16 of the PPC Regulations shall be made or sent to the Agency using the contact details notified in writing to the Operator by the Agency.
- 4.1.2 The Operator shall, unless otherwise agreed in writing, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit as follows:-
 - 4.1.2.1 in respect of the parameters and emission points specified in Table S2 to Schedule 2;
 - 4.1.2.2 for the reporting periods specified in Table S2 to Schedule 2 and using the forms specified in Table S3 to Schedule 3;
 - 4.1.2.3 giving the information from such results and assessments as may be required by the forms specified in those Tables; and
 - 4.1.2.4 to the Agency within 28 days of the end of the reporting period.
- 4.1.3 The Operator shall submit to the Agency a report on the performance of the Permitted Installation over the previous year, by 31 January each year, providing the information listed in Tables S4.1 and S4.2 of Schedule 4, assessed at any frequency specified therein, and using the form specified in Table S3 to Schedule 3.
- 4.1.4 The Operator shall review fugitive emissions, having regard to the application of Best Available Techniques, on an annual basis, or such other period as shall be agreed in writing by the Agency, and a summary report on this review shall be sent to the Agency detailing such releases and the measures taken to reduce them within 3 months of the end of such period.
- 4.1.5 Where the Operator has a formal environmental management system applying to the Permitted Installation which encompasses annual improvement targets the Operator shall, not later than 31 March in each year, provide a summary report of the previous year's progress against such targets.
- 4.1.6 The Operator shall, within 6 months of receipt of written notice from the Agency, submit to the Agency a report assessing whether all appropriate preventive measures continue to be taken against pollution, in particular through the application of the best available techniques, at the installation. The report shall consider any relevant published technical guidance current at the time of the notice which is either supplied with or referred to in the notice, and shall assess the costs and benefits of applying techniques described in that guidance, or otherwise identified by the Operator, that may provide environmental improvement.
- 4.1.7 The Operator shall, within two months of the date of this permit, submit a detailed Site Protection and Monitoring Programme for the Cleveland area, with four months for Lackenby area, and six months for Redcar area of the installation, in accordance with and using the appropriate template format given in the Land Protection Guidance.
- 4.1.8 The Operator shall maintain the Site Protection and Monitoring Programme (SPMP) submitted under condition 4.1.7, and shall carry out regular reviews of it. The results of such reviews and any changes made to the SPMP shall be reported to the Agency within 1 month of the review or change.

5 Notifications

5.1.1 The Operator shall notify the Agency **without delay** of:-

- 5.1.1.1 the detection of an emission of any substance which exceeds any limit or criterion in this Permit specified in relation to the substance;
- 5.1.1.2 the detection of any fugitive emission which has caused, is causing or may cause significant pollution unless the quantity emitted is so trivial that it would be incapable of causing significant pollution;
- 5.1.1.3 the detection of any malfunction, breakdown or failure of plant or techniques which has caused, is causing or has the potential to cause significant pollution; and
- 5.1.1.4 any accident which has caused, is causing or has the potential to cause significant pollution.

5.1.2 The Operator shall submit written confirmation to the Agency of any notification under condition 5.1.1, by sending:-

- 5.1.2.1 the information listed in Part A of Schedule 1 to this Permit within 24 hours of such notification; and
- 5.1.2.2 the more detailed information listed in Part B of that Schedule as soon as practicable thereafter;

and such information shall be in accordance with that Schedule.

5.1.3 The Operator shall give written notification as soon as practicable prior to any of the following:-

- 5.1.3.1 permanent cessation of the operation of part or all of the Permitted Installation;
- 5.1.3.2 cessation of operation of part or all of the Permitted Installation for a period likely to exceed 1 year; and
- 5.1.3.3 resumption of the operation of part or all of the Permitted Installation after a cessation notified under condition 5.1.4.2.

5.1.4 The Operator shall notify the Agency, as soon as reasonably practicable, of any information concerning the state of the Site which adds to that provided to the Agency as part of the Application [or to that in the Site Protection and Monitoring Programme submitted under condition 4.1.7 of this Permit].

5.1.5 The Operator shall notify the following matters to the Agency in writing within 14 days of their occurrence:-

- 5.1.5.1 where the Operator is a registered company:-
 - any change in the Operator's trading name, registered name or registered office address;
 - any change to particulars of the Operator's ultimate holding company (including details of an ultimate holding company where an Operator has become a subsidiary)
 - any steps taken with a view to the Operator going into administration, entering into a company voluntary arrangement or being wound up;
- 5.1.5.2 where the Operator is a corporate body other than a registered company:
 - any change in the Operator's name or address;
 - any steps taken with a view to the dissolution of the Operator.
- 5.1.5.3 In any other case: -

Notifications

- the death of any of the named Operators (where the Operator consists of more than one named individual);
- any change in the Operator's name(s) or address(es);
- any steps taken with a view to the Operator, or any one of them, going into bankruptcy, entering into a composition or arrangement with creditors, or, in the case them being in a partnership, dissolving the partnership;

5.1.6 Where the Operator has entered into a Climate Change Agreement with the Government, the Operator shall notify the Agency within one month of:-

- 5.1.6.1 a decision by the Secretary of State not to re-certify that Agreement.
- 5.1.6.2 a decision by either the Operator or the Secretary of State to terminate that agreement.
- 5.1.6.3 any subsequent decision by the Secretary of State to re-certify such an Agreement.

5.1.7 Where the Operator has entered into a Direct Participant Agreement in the Emissions Trading Scheme which covers emissions relating to the energy consumption of the activities, the Operator shall notify the Agency within one month of:-

- 5.1.7.1 a decision by the Operator to withdraw from or the Secretary of State to terminate that agreement.
- 5.1.7.2 a failure to comply with an annual target under that Agreement at the end of the trading compliance period.

5.1.8 The operator shall inform the Agency in advance of any dredging operations likely to affect the C3 outfall at least seven days (or other period agreed by the Agency in writing) in advance of such an activity.

6 Interpretation

6.1.1 In this Permit, the following expressions shall have the following meanings:

“Authorised Officer”

means any person authorised by the Agency under section 108(1) of the Environment Agency 1995 to exercise, in accordance with the terms of any such authorisation, powers specified in Section 108(4) of that Act.

“Background concentration”

means the same as “background quantity” as defined in paragraph 11 to Part 2 to Schedule1 of the PPC Regulations.

“BFG”

means Blast Furnace Gas.

“BOS”

means Basic Oxygen Steelmaking.

“Carbonising time”

means the time between coal being charged into an oven and the time when coke is then discharged from the same oven;

“COG”

means coke oven gas

“Controlled waters”

has the same meaning as in Part III of the Water Resources Act 1991.

“Dangerous Substances”

This refers to substances shown in Table 10.1 issued under the provision of Dangerous Substances Directive 76/464/EEC.

“Day”

means any period of 24 consecutive hours commencing at 06:00hrs;

“Dioxins”

means the family of compounds comprising polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs). Reporting of dioxins are expressed in terms of international toxic equivalents (I-TEQ) referenced to 2,3,7,8-TCDD.

“Dioxins in the integrate iron and steelmaking process”

Refers to the publication dioxins in the integrated iron and steelmaking process by R Fisher and DR Andelson, Corus R, D & T, Environment Department, Swindon Technology Centre, Rotherham.

Interpretation

“Directive 96/59/EC”

is a Council Directive of 16 September 1996 on the disposal of Polychlorinated Biphenyls and Polychlorinated Terphenyls (PCB/PCT).

“DLCF”

means Door leakage Control factor which is a relative measure of the visible fugitive releases from around the seal on the coke oven doors and is used to assess fugitive releases from the coke oven doors. This assessment technique is described in the Agreed Uniform Technique, British Carbonisation Research Association (BCRA) Special Publication No.19 April 1977;

“EPAQS”

means Expert Panel on Air Quality Standards.

“Fugitive emission”

means an emission from any point other than those specified in the Tables in part 6 of this permit.

“GJ”

means gigajoule.

“Guidance Note S2 1.06”

means the Chief Inspectors Guidance Note S2 1.06 Carbonisation Processes: coke Manufacture London: HMSO September 1995;

“Insignificance”

– The Technical Guidance (Environmental) Note E1, Best Practicable Environmental Option Assessments for Integrated Pollution Control contains a definition of insignificance although other definitions may be acceptable to the Environment Agency.

“LAeq”

means the A-weighted equivalent continuous equal energy level (dBA)

“MCR”

means maximum continuous rating.

“MEF”

means the Mass Emission Factor that is used to assess releases from charging coal into coke ovens and is a relative measure of the fugitive releases from this operation. This assessment technique is described in the Chief Inspectors Guidance Note S2 1.06 Carbonisation Processes: Coke Manufacture London: HMSO September 1995;

“Monitoring”

includes the taking and analysis of samples, instrumental measurements (periodic and continual), calibrations, examinations, tests and surveys.

“Month”

means a Corus UK integrated iron and steelworks monthly reporting period.

“NAQ”

means the National Air Quality Regulations 1997, SI 3043 (as amended).

Interpretation

"NAQS"

means the National air Quality Strategy.

"NO_x"

means oxides of nitrogen;

"NO₂"

means all oxides of, excluding dinitrogen oxide, exposed as NO₂

"Oxides of Nitrogen"

means nitric oxide (NO) and nitrogen dioxide (NO₂) (expressed as nitrogen dioxide).

"PAH"

refers to the use of benzo[a]pyrene {B[a]P} which acts as a representative marker substance for this wide range of polycyclic aromatic hydrocarbons;

"PAH's"

means Anthracene, Fluorene, Napthalene, Phenanthrene, Benzo[ghi]perylene, Acenaphthylene, Acenaphthene, Fluoranthene, Pyrene, Chrysene, Benz[a]anthracene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Benzo[a]pyrene, Dibenz[ah]anthracene, Indeno [1,2,3-cd] pyrene in any combination or singly, expressed as Benzo[a]pyrene.

"PEF"

means the Pushing Emission Factor that is used to assess releases to air from emptying (pushing) a coke oven and is a relative measure of the visible fugitive releases that may occur while coke is being pushed out of an oven into the coke car and taken to be quenched. This assessment technique is described in the Chief Inspectors Guidance Note S2 1.06 Carbonisation Processes: Coke Manufacture London: HMSO September 1995.

"PMIOs"

means particles with a mean equivalent diameter of 10 microns or less.

"Permitted Installation"

means the activities and the limits to those activities described in Table 1.1.1 of this Permit.

"Potential dust source"

shall mean a source within the Authorised Process that may cause the release to air of particulate matter which may subsequently be deposited, either directly or indirectly, on land outside the process boundary.

"PPC Regulations"

means the Pollution Prevention and Control Regulations 2000 (S.I. 2000 No. 1973) and words and expressions defined in the PPC Regulations shall have the same meanings when used in this Permit.

Interpretation

"Prescribed substance"

means any substance prescribed in Schedule 5 to the Environmental Protection (Prescribed Processes and Substances) regulations (SI 1991/472).

"Public sewer"

has the same meaning as in the Water Industry Act 1991

"Quarter"

means a period of three consecutive months (Quarter 1 means 1st January to 31st March, Quarter 2 means 1st April to 30th June, Quarter 3 means 1st July to 30th September, and Quarter 4 means 1st October to 31st December).

"Release point"

followed by the letter A, W, E or S means respectively a point shown on a map or plan forming part of the Application for the release from the Authorised Process into the air, into controlled waters, into an on-site effluent treatment plant or into a public sewer.

"Relevant environmental standards"

includes NAQ standards or objectives, existing and proposed EU Air Quality Limit Values and EPAQS proposals or EPAQS published standards.

"Relevant wastes/release"

means all wastes, other than releases into the air, controlled waters, any on-site effluent treatment system or any public sewer, arising from the Authorised Process.

"Reporting Address"

means the address for reporting purposes from time to time notified in writing to the Operator by the Environment Agency.

"Ringlemann Shade Numbers"

Ringlemann Shade numbers for visible smoke refer to an assessment made with either the Ringlemann Chart or miniature smoke chart, in accordance with BS 2742: 1969, as amended.

"Significant water use activity"

means any activity carried out at a specific location as part of the Authorised Process that in any 12-month period uses more than 1000m³ of water.

"Significant source"

shall mean a potential dust source where the direct or indirect deposition of particulate matter from that source causes harm as defined in section 1(4) of the 1990 Act.

"Slems"

Refers to the Corus Solids and Liquids Environmental Management System.

"SO₂"

means sulphur dioxide.

"Staff"

includes employees, directors or other officers of the Operator, and any other person under the Operator's direct or indirect control, including contractors.

Interpretation

“Sticker oven”

means an oven that cannot be discharged with the ram beam without significant prior manual treatment of the coke batch.

“Substance prescribed for water”

means a substance prescribed by regulation 6(2) of the Environmental Protection (Prescribed Processes and Substances) Regulations 1991 (S.I. 1991/472) and set out in Schedule 5 to those regulations.

“TLCF”

means the Top Leakage Control factor which is a relative measure of the visible fugitive releases from all potential release points on top of the coke oven battery and is used to assess fugitive releases from the coke oven battery charging lids. This assessment technique is described in the Agreed Uniform Technique, British Carbonisation Research association (BCRA) Special Publication No. 19 April 1977.

“VOCs”

mean any volatile organic compound capable of being released to air as a gaseous release.

“waste oil”

means any mineral-based lubrication or industrial oil that has become unfit for the use for which it was originally intended.

“week”

means any period of 7 consecutive days commencing at 06.00 hours on Sunday morning.

“year”

means calendar year.

6.1.2 Where a minimum limit is set for any emission parameter, references to exceeding the limit shall mean that the parameter shall not be less than that limit.

6.1.3 Unless otherwise stated, any references in this Permit to concentrations of substances in emissions into air means;

a in relation to gases from combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 3% dry for liquid and gaseous fuels, 6% dry for solid fuels; and/or

b in relation to gases from non-combustion sources, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, with no correction for water vapour content.

Interpretation**Table 6.1 List of Dangerous Substances**

Mercury and its compounds	Cadmium and its compounds	Hexachlorocyclohexane (lindane and related compounds)
Carbon tetrachloride	DDT (the isomers of 1,1,1-trichloro-2,2 bis[p-chlorophenyl] ethane)	Pentachlorophenol (PCP)
Aldrin	Dieldrin	Endrin
Chloroform	Hexachlorobenzene (HCB)	Hexachlorobutadiene (HCBD)
1,2-Dichloroethane	Polychlorinated biphenyls	Dichlorvos
Simazine	Trichlorobenzene	Atrazine
Trifluralin	Tributyltin compounds	Triphenyltin compounds
Malathion	Fenitrothion	Azinphos-methyl
Chromium	Endosulfan	Lead
Nickel	Zinc	Copper
pH outside range 5.5 to 9.0	Arsenic	Iron
PCSD'S	Boron	Vanadium
Flucifuron	Cyfluthrin	Sulcofuron
2-Chlorophenol	Permethrin	4-Chloro-3-methyl-phenol
2,4-D (non ester)	2,4-Dichlorophenol	2,4-D (ester)
Bentazone	1,1,1-Trichloroethane	1,1,2-Trichloroethane
Chloronitrotoluenes	Benzene	Biphenyl
Linuron	Demeton	Dimethoate
Mevinphos	MCPA	Mecoprop
Toluene	Napthalene	Omethoate
Cyanide	Triazophos	Xylene
Parathion	Azinphos-ethyl	Fenthion
Tetrachloroethylene	Parathion-methyl	Trichloroethylene
Nonyl phenol	Dioxins	PAHs
Bisphenol-A	Nonyl phenyl ethoxylate	Di-ethylhexyl phthalate
Chlorotoluron	Diazinon	Chlorfenvinphos
Propetamphos	Isoproturon	Diuron
High-Cis Cypermethrin	Flumethrin	Amitraz
Cypermethrin	Cyromazine	Deltamethrin

This list is applicable as at 1 December 1998 and will be updated as and when changes to the relevant legislative requirements occur.

Schedule 1 - Notification of abnormal emissions

This page outlines the information that the Operator must provide to satisfy conditions 5.1.1 and 5.1.2 of this Permit.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet and accompanied by an application for commercial confidentiality under the provisions of the PPC Regulations.

Part A

Permit Number	
Name of Operator	
Location of Installation	
Location of the emission	
Time and date of the emission	

Substance(s) emitted	Media	Best estimate of the quantity or the rate of emission	Time during which the emission took place
	<i>eg air</i>		
	<i>eg groundwater</i>		

Measures taken, or intended to be taken, to stop the emission	
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Part B

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment or harm which has been or may be caused by the emission	
The dates of any unauthorised emissions from the installation in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of *[OPERATOR NAME]*

Schedule 2 - Reporting of monitoring data

Parameters for which reports shall be made, in accordance with conditions 4.1.2 and 4.1.3 of this Permit, are listed below.

Table S2: Reporting of monitoring data

Parameter	Emission point	Reporting period	Form number
Particulates (mg/m ³)	A2	Quarterly	FA1 (maybe submitted in graphical form)
	A3	Quarterly	FA1 (maybe submitted in graphical form)
	A5	Annually	FA3
	A14 or	Annually	FA5
	A15 or	Annually	FA5
	A16	Annually	FA5
	A17 or	Annually	FA5
	A18 or	Annually	FA5
	A19 or	Annually	FA5
	A20	Annually	FA5
	A21	Annually	FA5
	A22	Annually	FA5
	A23	Annually	FA5
	A24	Annually	FA5
	A25	Annually	FA5
	A26	Annually	FA5
	A27	Annually	FA5
	A32	Annually	FA5
	A41	Annually	FA5
Dioxins ITEQ (ng/m ³)	A2	Six monthly	FA6
Oxides of Sulphur (mg/m ³)	A2	Quarterly	FA2
	A5	Annually	FA3
	RCO1	Six monthly	FA4
	RCO2	Six monthly	FA4
	RCO3	Six monthly	FA4
	SBCO1	Six monthly	FA4
	A32	Annually	FA7
	A38	Annually	FA7
	A39	Annually	FA7
	A40	Annually	FA7
Oxides of Nitrogen (mg/m ³)	A2	Quarterly	FA2
	A5	Annually	FA3
	RCO1	Six monthly	FA4
	RCO2	Six monthly	FA4
	RCO3	Six monthly	FA4
	SBCO1	Six monthly	FA4
	A32	Annually	FA7

Schedule 2 - Reporting of monitoring data

	A38	Annually	FA7
	A39	Annually	FA7
	A40	Annually	FA7
Ammonia (mg/m ³)	RCO3	Six monthly	FA4
Stack Obscuration mins/day above ringlemann 1	SBCO1	Quarterly	To be submitted in graphical form
	RCO1	Quarterly	FA 11
	RCO2	Quarterly	FA 11
DCLF	SBCO7	Quarterly	FA 11
	RCO10 & RCO11	Quarterly	FA 11
TLCF	SBCO7	Quarterly	FA 11
	RCO10 & RCO11	Quarterly	FA 11
PEF	SBCO7	Quarterly	FA 11
	RCO10 & RCO11	Quarterly	FA 11
Volume (m ³ /d)	R1	Six monthly	FW1
Volume (m ³ /d)	W1, W2, W3	Six monthly	FW3
Volume (litres/sec)	W2	Six monthly	FW3
pH max	W1, W2, W3, R1, C3	Six monthly	FW1, FW2, FW3
pH min	W1, W2, W3, R1, C3	Six monthly	FW1, FW2, FW3
COD (mg/l)	R1, C3	Six monthly	FW2, FW3
Suspended Solids (mg/l)	W1, W2, W3, R1, C3	Six monthly	FW1, FW2, FW3
Oil & Grease (mg/l)	W1, W2, W3, R1, C3	Six monthly	FW1, FW2, FW3
Temperature	W1, W2, W3, R1, C3	Six monthly	FW1, FW2, FW3
Total residual Chlorine (mg/l)	W3	Six monthly	FW3
Ammonia as N (mg/l)	R1, C3	Six monthly	FW1, FW2
Cyanide (mg/l)	R1, C3	Six monthly	FW1, FW2
Thiocyanate	R1	Six monthly	FW1
Monohydric Phenol (mg/l)	R1	Six monthly	FW1
Zn (mg/l)	R1, C3	Six monthly	FW1, FW2
Pb (mg/l)	R1, C3	Six monthly	FW1, FW2
Cd (mg/l)	R1, C3	Six monthly	FW1, FW2
Cu (mg/l)	R1, C3	Six monthly	FW1, FW2
Fe (mg/l)	R1, C3	Six monthly	FW1, FW2
Cr (mg/l)	R1, C3	Six monthly	FW1, FW2

Schedule 2 - Reporting of monitoring data

Hg (mg/l)	R1, C3	Six monthly	FW1, FW2
Mn (mg/l)	R1, C3	Six monthly	FW1, FW2
Ni (mg/l)	R1, C3	Six monthly	FW1, FW2
B (mg/l)	R1, C3	Six monthly	FW1, FW2
Fe (mg/l)	R1, C3	Six monthly	FW1, FW2
V (mg/l)	R1, C3	Six monthly	FW1, FW2
As (mg/l)	R1, C3	Six monthly	FW1, FW2
NaNO ₃ (mg/l)	R1	Six monthly	FW1
Volume (m ³ /d)	E1	Annually	FW4
pH min	E1	Annually	FW4
pH max	E1	Annually	FW4
Chemical Oxygen Demand (average daily load in tonnes)	E1	Annually	FW4
Biological Oxygen Demand (average daily load in tonnes)	E1	Annually	FW4
Suspended Solids (mg/l)	E1	Annually	FW4
Total Nitrogen (average daily load in tonnes)	E1	Annually	FW4
Total Ammoniacal Nitrogen (average daily load in tonnes)	E1	Annually	FW4
Monophenol (average daily load in tonnes)	E1	Annually	FW4
Thiocyanate (average daily load in tonnes)	E1	Annually	FW4
Cyanide (average daily load in Kg of SCN)	E1	Annually	FW4
Sulphide (average daily load in Kg of S)	E1	Annually	FW4
Temperature (average daily °C)	E1	Annually	FW4
Oil & Grease (mg/l)	E1	Annually	FW4

Schedule 3 - Forms to be used

Table S3: Reporting Forms		
Media / parameter	Form Number	Date of Form
Air	FA1, FA2, FA3, FA4, FA5, FA6, FA7, FA8, FA9, FA10, FA11	01/08/04
Water	FW1, FW2, FW3, FW4	01/08/04

Schedule 4 - Reporting of performance data

Data required to be recorded and reported by Condition 4.1.3. The data should be assessed at the frequency given and reported annually to the Agency.

Table S4.1: Performance parameters			
Parameter		Frequency of assessment	Performance indicator
<i>Potable water use</i>		<i>Quarterly</i>	<i>m³/t</i>
<i>Non potable water use</i>		<i>Quarterly</i>	<i>m³/t</i>

Schedule 5 - Site Plan



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END OF PERMIT