



2012 Action Plan for Low Santon

North Lincolnshire Council

In fulfillment of Part IV of the Environment Act 1995
Local Air Quality Management

January 2012

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Executive Summary

This action plan is submitted following the declaration of an AQMA at Low Santon for breaches of the Annual Mean Objective for PM₁₀. This was declared in 2008 and is situated within the existing 2005 Scunthorpe AQMA for breaches of the Daily Mean Objective. The AQMA covers three properties within the village of Low Santon. This small settlement is situated within 20m of the Integrated Steelworks boundary and has a large number of dust generating activities within 250m. A number of sources have been identified within the report *2011 Further Assessment of PM₁₀ Issues at Low Santon*.

Since the declaration of the AQMA in 2008 the site has demonstrated compliance with the Annual Mean Objective for PM₁₀. The results have demonstrated a step change in compliance in recent years firstly because of the application the Volatile Correction Model and secondly the reporting of results from an FDMS. This small AQMA continues to focus improvements around Low Santon, improving the annual mean concentrations and contributing to improvement in the number of daily mean exceedances.

The Environment Agency conducted a PM₁₀ review of the Integrated Steelworks in 2010 at which time North Lincolnshire Council also carried out a PM₁₀ review of its Part B activities on the site. The reviews made a number of recommendations for improvement, and the Environment Agency drafted an Action Plan for the Integrated Steelworks. The actions contained within the Environment Agency plan form the basis of this air quality action plan to acknowledge their input as the principal regulator on site. Further actions included within the Tarmac Improvement Programme and Harsco Improvement Schemes have been incorporated into this document. The Action Plan also covers new work on data analysis to be carried out by North Lincolnshire Council and other representatives involved within the Low Santon Technical Working Group.

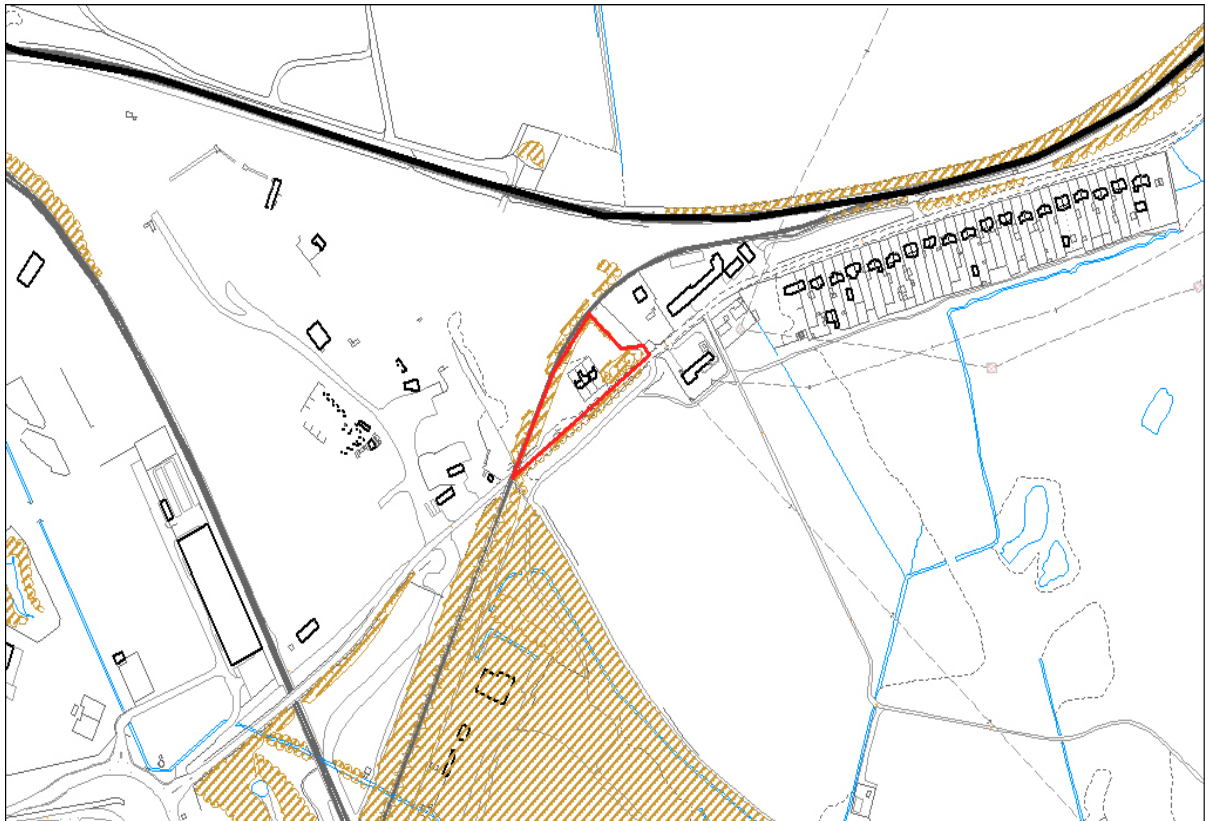
This Action Plan will be reviewed on a regular basis and the improvements measured against a number of key indicators still to be developed. Many of the actions have already been completed given the importance of the situation at Low Santon and the willingness of all operators to make real improvements in PM₁₀ concentrations at Low Santon.

Contents

Page Number	Section
5	Low Santon Overview
7	Section A: Environment Agency Action Plan
19	Section B: Tata Steel Action Plan
20	Section C: Tarmac Action Plan
25	Section D: Harsco Metals Action Plan
26	Section E: North Lincolnshire Council Action Plan
27	Conclusion

Low Santon Overview & Plan Introduction

This Action Plan is designed to tackle the issues behind the declaration of the 2008 Low Santon AQMA for breaches of the Annual Mean Objective for PM₁₀. Santon is separated into two areas, High and Low Santon. Low Santon is made up of three occupied terraced properties, the property boundaries are incorporated in to the AQMA highlighted below. High Santon is approximately 300m from Low Santon and is a row of approximately 40 semi-detached properties.



2008 Low Santon AQMA Boundary – outlined in red

Particulate matter has been measured at Low Santon since 2005. An equivalent Partisol measures particulate within High Santon and helped in defining the above AQMA boundary. An FDMS was installed under the direction of DEFRA in early 2010.

Various reports have been submitted on the issues at Low Santon, the most recent being the 2011 Further Assessment on PM₁₀ within Low Santon. This report brought together current understanding and attempted to identify areas on site likely to give rise to PM₁₀ concentrations. Further documents have included an Environment Agency PM₁₀ review of which many of the actions presented below were taken, the North Lincolnshire Council PM₁₀ review of Part B sites under its control, an AEA modelling exercise which sought to apportion operator responsibility for the issues and an openair report utilising a number of tools specifically designed to identify sources of air quality issues. These are available to view at www.nlincsair.info

A number of short reports have also attempted to identify sources on the Integrated Steelworks. These include the 'Teabreak Report' and a back catalogue of PM₁₀ Reviews following exceedance days at Low Santon.

Since monitoring began a number of corrections have been applied to the data in accordance with DEFRA guidance. The table below shows the data reported to DEFRA within Review and Assessment reports and the associated corrections applied at the time of submission:

Instrument	Year	Correction	Annual Exceedances	Annual Mean
PM ₁₀ TEOM	2005 ¹	TEOM *1.3	42	49
PM ₁₀ TEOM	2006	TEOM *1.3	161	59
PM ₁₀ TEOM	2007	TEOM *1.3	138	51
PM ₁₀ TEOM	2008	VCM	73	38
PM ₁₀ TEOM	2009	VCM	78	39
PM ₁₀ TEOM	2010	VCM	52	33
PM ₁₀ TEOM	2011 ²	VCM	60	41
PM ₁₀ FDMS	2011 ²	No correction	46	36

¹ Monitoring commenced 1st October 2005

² Results until 14th September 2011

In order to understand the improvements that have been made on site over the past few years and remove inconsistencies resulting from data corrections the raw TEOM result has also been calculated. This gives a better indication of the overall trends at Low Santon since monitoring began in 2005:

Instrument	Year	Correction	Annual Exceedances	Annual Mean
PM ₁₀ TEOM	2005 ¹	Raw	23	38
PM ₁₀ TEOM	2006	Raw	106	44
PM ₁₀ TEOM	2007	Raw	83	36
PM ₁₀ TEOM	2008	Raw	61	30
PM ₁₀ TEOM	2009	Raw	73	32
PM ₁₀ TEOM	2010	Raw	50	27
PM ₁₀ TEOM	2011 ²	Raw	55	35

¹ Monitoring commenced 1st October 2005

² Results until 14th September 2011

There are a number of reasons why the number of daily exceedances fluctuates year on year at Low Santon including the recent economic downturn and its effects on production at the Integrated Steelworks and the prevailing weather conditions. A full

explanation for the year on year totals can be found within the 2011 Further Assessment of PM₁₀ at Low Santon.

For the purposes of this plan the following impact, cost and timescales have been applied:

Potential PM10 Impact reduction (probability)	Financial costs	Timescale - Term
Low	Low	Short
<20 %	<£50K	<6 Months
Medium	Medium	Medium
20 to 80%	£50K to £200K	6 to 24 Months
High	High	Long
> 80 %	>£200K	> 24 Months

Section A: Environment Agency Action Plan

Action Reference	Option	Lead Role	Impact	Cost	Time
A1	Develop a programme of education and awareness to embed a culture of behavioural dust management	All	High	Low	Short
A2	Employ a consultant to look at the options for 'greening' the steelworks site, looking at tree planting, using topographical features for mitigation and material type and suitability.	Tata	High	Low	Short
A3	Carry out site wide survey of unmade roads and look to restrict access or close.	Tata	High	Low	Short
A4	Consider options for reducing emissions from the slag haul road such as narrowing and resurfacing.	Tata	High	Low	Short
A5	Consider options for reducing emissions from the slag haul road including re-routing vehicles, reducing volume of traffic and restricting access.	All	High	Low	Short
A6	Consider material types for banks and surfaces and binding loose material on the slag haul road.	Tata	High	Low	Short
A7	There is a need to formally respond to the submission for Improvement Condition 38, which required the formulation of an Air Quality Management Plan. It has been circulated within the Agency. The findings of the PM ₁₀ audit will also be useful as we had a number of comments relating to strategy and the functioning of the EMS.	EA	High	Low	Short
A8	Where emissions from a plant are not at indicative BAT, improvements should be prioritised on potential for mass emission reduction and impact on the AQMA.	Tata	High	Low	Medium
A9	Assess the effectiveness of the ALOATEC camera system and detail improvements that could be made. Areas for consideration may include: consideration of the calibration and resolution of the equipment and how the system might operate in the dark. The assessment should also consider the ALOATEC's capability to monitor emissions from BOS slag tipping, pit excavation, slag breaking and storage of slag.	Tata	High	Low	Medium

Action Reference	Option	Lead Role	Impact	Cost	Time
A10	Corus should determine how effective contractor contractual arrangements are as there is a need to ensure that they specify suitable and sufficient environmental conditions to their contractors like Multiserv and others. Corus also needs to make sure the contractor review system is adequate if the company does delegate and discharge any of its EPR permit activities to contractors. Multiserv (and others) carry out many support services and activities for Corus, many of which the Agency does not directly control by other permits, though Corus has to take responsibility for these where they are delegated.	Tata	High	Low	Medium
A11	Multiserv should determine how effective contractor contractual arrangements are as there is a need to ensure that they specify suitable and sufficient environmental conditions to their contractors like Tarmac and others. Multiserv also needs to make sure the contractor review system is adequate if the company does delegate and discharge any of its EPR permit activities to contractors. Tarmac (and others) carry out many support services and activities for Multiserv, many of which the Agency does not directly control by other permits, though Multiserv has to take responsibility for these where they are delegated.	Multiserv	High	Low	Medium
A12	Consider the regulatory implications of the storage and treatment of steel slag outside of the installation and advise Tarmac of the activities that they should apply for the waste activity authorisations.	EA	High	Low	Medium
A13	Review the possibility of having a single operator permit for the Tarmac activities covering: <ul style="list-style-type: none"> • the directly associated slag cooling area • the IBFSA crushing activity • Yarborough slag storage and weathering area • Santon slag storage and treatment area • the roadstone coating plant. 	EA	High	Low	Medium
A14	Develop a warning system for identifying and reacting to potential PM ₁₀ events using live feed information from ambient monitoring stations and CCTV.	Tata	High	Medium	Short

Action Reference	Option	Lead Role	Impact	Cost	Time
A15	Assess if any further improvements have been made to the ESPs on the Sinter Plant. As the Skewed gas option, had a relatively low capital cost (at the time) of £70, 000 and the reduction in particulates were expected to be of the order of a 30% (it is likely that the PM ₁₀ fraction will impact would be lower), we need to ascertain the current position and require further work if necessary.	EA	High	Medium	Short
A16	Issue a permit variation which more explicitly addresses the control of fugitive emissions. Conditions should include: <ul style="list-style-type: none"> • Fugitive Emission Management Plan (FEMP) • Visual observation inspection regime for particulate fugitives • Proactive interventions on 'high risk' days • Annual reporting of fugitive emissions 	EA	High	Low	Medium
A17	Develop and implement methods for the monitoring of; the particulates that emanate from both the processes within the BOS plant and; from the BOS plant roof. This should include an assessment of the statistical robustness of the data. The findings from the above should be used to inform a strategy to improve emissions from the plant in line with indicative BAT.	Tata	High	Medium	Medium
A18	Continue to support the Strategic Air Quality Management Meetings in its objective to provide a multi-agency input into air quality issues in Scunthorpe, to identify key issues and agree measures for reduction.	EA	Medium	Low	Short
A19	Corus to audit how effectively they are complying with the current permit particulate fugitives visual observation plan within condition 2.1.6, and its suitability to demonstrate further compliance and effectiveness in controlling PM ₁₀ s.	EA	Medium	Low	Short
A20	Issue final Corus major audit report from November 2009 audit. Cross check recommendations from the audit with the action plan from Quick Wins workshop. Agree timescale for completion of any outstanding actions.	EA	Medium	Low	Short
A21	Set appropriate standards for internal works roads to include signage, cleaning, kerbs/verges and designated parking	Tata	Medium	Low	Short
A22	Continue to support the Local Industry Forum, to identify possible causes for the elevated concentrations of PM ₁₀ and agree measures for reduction, share best practice and look for opportunities for joint projects.	EA	Medium	Low	Short

Action Reference	Option	Lead Role	Impact	Cost	Time
A23	Complete the PM ₁₀ Source Characterisation Project. This should characterise particulates and aid in source apportionment.	EA	Medium	Low	Short
A24	Develop the way forward and report on how to verify and collate the many information reports, datasets and diverse into a form of web-based database.	All	Medium	Low	Short
A25	Liase with the Air Quality Technical Working Group to assess Corus on-site monitoring. Feedback from the sub group to be considered at the next AQTWG meeting in March 2010.	EA	Medium	Low	Short
A26	Publish a further analysis of recent Scunthorpe data using the newer analysis tools and approaches of Open Air bi-variant polar plots, conditional tracking, validation and interpretation.	EA	Medium	Low	Short
A27	The Air Quality Technical Working group should consider and report back on whether historic and current monitoring has provided significant and probable sufficient data to carry out source apportionment, with help from many technical partners and be evidence based.	EA	Medium	Low	Short
A28	Review the basis on which the H1 assessment used in improvement condition 1 was used. Given the limitations in H1 it is important to understand what other assessment methods were used to set priorities for environmental improvements.	EA	Medium	Low	Short
A29	All knowledge gained from the triangulation work completed for IC should be fed into the AQMP and FERS. There should be evidence that the areas identified in the triangulation work have been given priority in the AQMP and FERS.	Tata	Medium	Low	Short
A30	Sinter plant starts and stops were modelled and the emissions described as not causing an increase in the maximum hourly concentrations of particulates or PM ₁₀ compared to normal operations. The PC or PEC figures were not given for all of the abnormal operations modelled. This information needs to be evaluated.	Tata	Medium	Low	Short
A31	Carry out a part audit of the actions that Corus have taken to reduce ground level emissions from material handling, including: slag near to BOS plant; ore blending; slag processing and coal storage.	EA	Medium	Low	Short
A32	A report is required which discusses the significance of point sources of PM ₁₀ on ambient air quality. A dispersion model has been requested to show the impact on the environment of each individual, large point source on the Steelworks.	Tata	Medium	Low	Short

Action Reference	Option	Lead Role	Impact	Cost	Time
A33	Undertake additional ambient particulate monitoring only where there is more evidence of generic fugitive dust issues from source apportionment work. On-site ambient monitoring of course particulates can be used. To implement, consider trials to develop dust monitoring by appropriate type dust deposit gauges around strategic problem areas.	All	Medium	Low	Short
A34	For Coke Oven particulate fugitives, carry out Part Audit to review against the sector guidance: consider what the other Steelworks actually do, including the "Competent Person" monitoring regime, frequency, reporting requirements and data quality for monitoring fugitives type permit conditions unique to Coke Oven Battery operations. Ensure consistency of approach across all Integrated Steelworks.	EA	Medium	Low	Short
A35	Corus to assess whether any further work has been undertaken to assess whether further improvement could be made to the BOS secondary ventilation system.	Tata	Medium	Low	Short
A36	Consider installing wheel washes at pertinent points on the slag haul road.	Tata	High	Medium	Medium
A37	Corus need to assess BAT for fugitive emissions including all significant material movement and storage areas. This could be site wide but might be better managed if broken down into plant areas.	Tata	High	Medium	Medium
A38	Provide a plan detailing results of a review of techniques to control emissions from the various quenching towers. This should include: any further monitoring undertaken, further improvements implemented and a comparison with indicative BAT standards in specified guidance notes and BREF.	Tata	High	Medium	Medium
A39	Consider the additional Agency comments on the relocation of some monitoring sites as detailed in Appendix 3 of the steelworks permit review.	NLC	Medium	Low	Medium
A40	Consider specific evidence issues such as: <ul style="list-style-type: none"> • Single, regularly updated inventory of emissions • Logged activity data • Modelling of source contributions • Modelling and tracking of site improvements • Meteorological data • Passive directional sampling 	All	Medium	Low	Medium

Action Reference	Option	Lead Role	Impact	Cost	Time
A41	Develop a consistent way forward with respect to meteorological data. Examine if monitoring stations need their own meteorological stations and decide which data location source is best used for specific pollution events (e.g. Stacks vs. low level ambient).	All	Medium	Low	Medium
A42	Blast Furnace bleeder releases of 5 minutes were modelled, which showed that an event of this magnitude could lead to a short term concentration of PM ₁₀ as high as 168µg/m ³ at the closest receptor. Further work is required to calculate a bleeder release magnitude which would require notification as having a demonstrable environmental impact.	Tata	Medium	Low	Medium
A43	Consider the performance of each individual stack from within the BOS plant area. Corus to assess the performance of each of these in order to assure compliance under all circumstances.	Tata	Medium	Low	Medium
A44	Submit a coke ovens battery maintenance and upgrade programme based on a 5 year timescale.	Tata	Medium	Low	Medium
A45	Critically assess the final submission for improvement condition 33 (assessment of the monitoring data recorded by the on-site air quality monitoring stations and the local NETCEN station to identify process areas/outside influences making significant contribution to the pollutant levels measured). Corus have argued that if a source, such as the slag haul road, is only significant for one of the monitoring sites (here, Low Santon) this could indicate lower levels of PM ₁₀ contribution. This is in complete contrast to the conclusion drawn from the work undertaken by Lancaster University.	EA	Medium	Low	Medium
A46	For Monitoring consistency – A review is required of monitoring across the integrated works, this should ensure that monitoring is at BAT and resources are focussed in the correct areas. It should include Continuous Emissions Monitoring Systems (CEMS) versus Non-Continuous Monitoring, re-assessing certain large emission points (e.g. A301 DLCO), consideration of what is measured, how it is measured (periodic versus continuous), time averaging and surrogate type controls (e.g. obscuration) for particulate matter, as set out in the permit.	EA	Medium	Low	Medium

Action Reference	Option	Lead Role	Impact	Cost	Time
A47	For the EA Pollution Inventory (PI) reporting, the Agency should reconsider the calculation basis for reporting PM ₁₀ s and Particulates, especially in calculating the PM ₁₀ contribution from Total Particulates from all sources. Sector group to lead on this	EA	Medium	Low	Medium
A48	Operators should register exempt waste operations for all waste operations that are not covered within the permits detailed above.	EA	Medium	Low	Medium
A49	Scope the significant uses of steel slag on the site and mark them on a plan of the site within and outside of the installation. The company should then appraise its use and consider the regulatory implications. Any requirement for an exemption coming out of the assessment should be registered.	Tata	Medium	Low	Medium
A50	The installation should be extended to include the slag cooling and storage activities within the Tarmac area as a non listed directly associated activity.	Tarmac	Medium	Low	Medium
A51	For the EA Pollution Inventory (PI) reporting, the Agency should reconsider the calculation basis for reporting PM ₁₀ s and Particulates, especially in calculating the PM ₁₀ contribution from Total Particulates from all sources.	EA	Medium	Low	Medium
A52	Set an improvement condition for the Blast Furnace Granulators to apply the indicative BAT ELV of 20mg/Nm ³ . Compared to Port Talbot and indicative BAT, the 150 mg/m ³ particulate limit appears high for relatively modern technology and abatement. Emission point A48b has no limit because it meets indicative BAT having a fume condensing granulator. Also, no BAT controls have been set on air cooling slag and odour control from hydrogen sulphide and sulphur dioxide. This needs further site specific BAT consideration.	EA	Medium	Low	Medium
A53	Set a granulation target for Corus, Corus are currently required by their permit to only report their monthly granulation usage on a quarterly basis. The Agency opinion is that granulation produces fewer particulate releases than the air cooling, with its associated storage and crushing of slag being a geographically drawn out activity and inherent mechanical handling. There is a need to reconsider the current permit conditions and /or use the EMS to set a percentage target utilisation value for granulation (80% at Port Talbot) and a plant availability percentage target (accounting for planned downtime).	EA	Medium	Low	Medium

Action Reference	Option	Lead Role	Impact	Cost	Time
A54	Set pre-operational permit conditions to operate Queen Mary Blast Furnace in the permit variation. To require; installation and commissioning of a granulator, any other indicative BAT requirements specific to this mothballed furnace (e.g. status of Cast House Fume Arrestment, combustion in air preheating Stoves) and timings to be as part of the planned refractory reline (2012?) to ensure the plant is improved to BAT standards to permit use.	EA	Medium	Low	Medium
A55	Where the survey objective is source apportionment, to draw inferences with confidence, it is recommended that each monitoring site, externally and internally, have their own meteorological station (minimum wind direction and speed). This was shown by Corus Stage 1 & II monitoring, that wind speed and direction need to be recorded at the monitoring site, since building and terrain effects can change the local wind direction and PM ₁₀ dispersion, significantly.	All	Medium	Low	Medium
A56	Carry out a site wide survey of conveyor condition, identifying potential release points and actions to improve performance.	Tata	Medium	Low	Medium
A57	A part audit of the BOS particulate CEM required.	EA	Medium	Low	Medium
A58	The control of fugitive releases should be explicitly described in more detail in the BREF Notes and UK Technical Guidance note and to be translated into the permits. Sector group to lead	EA	High	Low	Long
A59	Corus to provide a written plan for approval detailing the results of a review of techniques to monitor and control particulate emissions from the under-firing stack A301 at DLCO, with a comparison with indicative BAT standards for obscuration monitors in specified guidance notes and BREF. The plan shall contain dates for the implementation of individual measures to meet indicative BAT standards.	Tata	Medium	Medium	Medium

Action Reference	Option	Lead Role	Impact	Cost	Time
A60	Corus to assess compliance by plant area against indicative BAT for all particulate releases. This will need a consideration of the different numerical limits, the different averaging periods, the inclusion of start up and shutdowns and the installations of CEMs, where necessary. The submission for IC 1 in the original permit, undertook a similar exercise but this was not solely focussed on particulate emissions.	Tata	Medium	Medium	Medium
A61	Fit the newer Filter Dynamics Measurement System TEOMs at both Scunthorpe Town and Low Santon sites but retain the existing PM ₁₀ TEOM for data consistency and continuity.	NLC	Medium	Medium	Medium
A62	Since the original submissions for improvement condition 40, the criteria requiring CEMs has moved on. A new improvement condition, in a PM ₁₀ review variation will be inserted requiring Corus to install any CEMs that are required to meet indicative BAT at the coke oven stacks and sinter strands.	EA	Medium	Medium	Medium
A63	Fugitive emissions from OPP have not been adequately considered in the response for improvement conditions 9, 15, 17, 22 and 31). A permit variation is required which includes a plant- specific improvement condition, which covers fugitive emissions from all activities within OPP, including stockyards and vehicle movements.	Tata	Medium	Medium	Medium
A64	A full investigation should be undertaken into the use of reverts and any relationship with dioxin formation and particulate emissions. This would need to pay particular attention to the chloride content and also transition metals such as Cu as a precursor and as catalysts for dioxin formation.	Tata	Medium	Medium	Medium
A65	A new improvement condition should be included by permit variation that is more pertinent and covers the points raised in the section 2.3 of the review - considering the options for BOS off gas particulate monitoring. Combustion sector working group to advise	EA	High	Medium	Long
A66	Look at dust reduction procedures for excavated material following ground works.	Tata	Low	Low	Short
A67	Publish the recent study of ambient air quality at Scunthorpe. This will cover detailed analysis and assessment with conventional tools and presentation of the data with a focus on peak exceedence days.	EA	Low	Low	Short
A68	Question whether any other ADMS modelling has been undertaken at other sites, which show how material stock or 'diffuse' areas give rise to PM ₁₀ impacts.	Tata	Low	Low	Short

Action Reference	Option	Lead Role	Impact	Cost	Time
A69	Drawing number 5530/32-01/015 should be revised in order to reflect the site boundary with particular reference to the coal handling plant, the slag haul road, the Multiserv activities and the olivine stockyard.	Tata	Low	Low	Short
A70	The installation boundary should be amended to incorporate the parts of the slag haul road that are directly associated to the installation and to highlight the areas of the slag haul road that are not regulated by the integrated works permit.	Tata	Low	Low	Short
A71	Issue a permit variation which more explicitly addresses the control of fugitive emissions. Conditions should include: <ul style="list-style-type: none"> • Fugitive emission management plan (FEMP) • Visual observation inspection regime for particulate fugitives • Proactive interventions on high risk days • Annual reporting of fugitive emissions 	EA	Low	Low	Medium
A72	Further analysis is needed on calculating mass emissions of particulates. Pollution Inventory data shows a trend of increasing emissions in recent years.	EA	Low	Low	Medium
A73	Levels of fuel oil used in the Energy Operations may have increased and the conclusions drawn in the report required by IC 28 may no longer be valid. Further information may be required here .	EA	Low	Low	Medium
A74	Take the opportunity during permit variation to get consistency in specifying release points for the integrated steelworks for potential sources of particulates (PM ₁₀ fraction if known). If found to be significant they should be included within the permits, by variation.	EA	Low	Low	Medium
A75	The permit should be revised in order to reflect the site boundary of Multiserv's operations with less of an emphasis on the whole of the installation. Multiserv activities are disparate and each activity may need to be represented on a separate plan.	EA	Low	Low	Medium
A76	An improvement condition is needed which requires Corus to consider the options then implement the outcomes for sinter plant abatement in order to achieve the indicative BAT limit. Issues to be considered include: Waste gas recycling, Lignite, limestone dust and urea addition - probably in one combination or another, Improved ESP - if possible - (the current ESP should be optimised leaving little scope for improvement), and Bag filtration.	Tata	High	High	Long

Action Reference	Option	Lead Role	Impact	Cost	Time
A77	Pre-operational conditions should be applied requiring the Queen Mary cast house abatement to be at BAT. The installation and commissioning of a slag granulator should also be considered before the furnace is operated. In addition a general Blast Furnace improvement condition is required to ensure BAT for cast house abatement.	Tata	High	High	Long
A78	An improvement condition is required to bring the coke oven areas up to the BAT. This should include coke-side abatement, the quench towers and fugitive emissions from the function, including the coal handling plant.	Tata	High	High	Long
A79	There is a mixture of permit templates used for the Landfills. Variation should be undertaken when a variation opportunity or landfill sector review occurs in the future. The variation conditions to be considered are the Fugitive Emissions Management Plan (FEMP), ambient particulate monitoring and a dynamic Air Quality Management Plan. In the meantime, the Operators Environment Management System can be relied on.	EA	Low	Low	Long
A80	We recommend that permit is revised in order to reflect the site boundary of Caparo Merchant Bar's operations.	EA	Low	Low	Long

Section B: Tata Steel Action Plan

Action Reference	Option	Lead Role	Impact	Cost	Time
B1	Reduced speed limits in key areas on internal roads	Tata	High	Low	Complete
B2	A full site 'Air Quality Inventory' of all dust arising activities	Tata	Medium	Medium	Medium
B3	The installation of monitoring equipment - a four camera monitoring system for the site to help develop a alert system	Tata	Medium	Medium	Complete
B4	Targeted road sweeping and review of sweeping and bowsering contracts, routes have been digitally setup and contracts are being reviewed	Tata	High	High	Medium
B5	Improved dust suppression at BOS slag pits – 2 x dust suppression cannons	Tata	High	High	Complete
B6	Reducing the width of slag haul road	Tata	High	Low	Short
B7	Reorganisation of materials handling and stocking facilities	Tata	Medium	High	Medium
B8	Limiting access to unmade roads/areas – segregation and signs in place	Tata	Medium	High	Medium
B9	Review of steel stocking and improve grading of Redbourn	Tata	Medium	High	Long
B10	Landscaping of high-risk areas	Tata	High	High	Long
B11	The installation of 8 wheel washers, (4 are complete) - Dawes Lane Coal Handling Plant, Slag Haul Road, BOS Weighbridge, Ore Blending Plant Reduced lift-off from unmade and tarmac roads	Tata	High	High	Medium
B12	2 x Water bowser quick fill facilities to improve efficiency of our systems to reduced lift-off from unmade and tarmac roads	Tata	Medium	Medium	Long
B13	Hard standing areas are to be created in Redbourn stocking area	Tata	High	High	Long
B14	Air Quality Awareness Campaign to influence behaviours	Tata	High	Low	Medium

Section C: Tarmac Action Plan

Action Reference	Option	Lead Role	Impact	Cost	Time
C1	Haul Road water suppression trial phase area 1 - installation of 6 water sprays - Install 50mm water supply pipe from the Ancholme water supply near the North Iron works substation - local valve required. 6 nozzles are to be installed over a 100mtrs section - 200mtrs of 50mm and 100mtrs of 32mm required	Tarmac	High	Low	Complete
C2	Haul Road water suppression trial phase area 2 - installation of 6 water sprays - Install 50mm water supply pipe from the area 1 pipework to extend the supply further down to the exit of the haul road. 6 nozzles are to be installed over a 100mtrs section - 100mtrs of 50mm and 100mtrs of 32mm required	Tarmac	High	Low	Complete
C3	Haul Road water suppression trial phase area 3 - installation of 4 water sprays - Install 50mm water supply pipe from the area 1 pipework to extend the supply further round to the tunnel. 6 nozzles are to be installed over a 100mtrs section - 100mtrs of 50mm and 100mtrs of 32mm required	Tarmac	High	Low	Complete
C4	Top soil and seed the bund areas where the road has been reduced in width - Purchase top soil and grass seed areas - estimated 200t of top soil required and 2 bags of grass seed	Tarmac	High	Low	Short
C5	Surface the haul road to complete hard surfacing - 280t of asphalt required to be laid of the area to complete - material to be supplied FOC Tata to supply labour	Tarmac	High	Low	Complete
C6	Install pop stones down the bund areas to prevent trucks running up the bank edge - Lay stones down the road edge	Tarmac	High	Low	Complete
C7	Install dust monitor at the mines water pump house - Contact the EHO to arrange a monitor to allow triangulation of the site - 240V power supply required from Tata Steel	Tarmac/NLC	Low	Low	Short
C8	Install road way bunds to define the road way - Install bunds as per plan	Tarmac	Medium	Low	Complete
C9	Top soil and grass seed bunds - 400t of top soil required and 4 bags of grass seed required	Tarmac	Medium	Low	Short

Action Reference	Option	Lead Role	Impact	Cost	Time
C10	Haul Road water suppression trial phase area 1 - installation of 5 water sprays - BG lorry park and wash plant entrance treatment - Install 50mm water supply pipe from the Ancholme water supply near the North Iron works substation - local valve required. 5 nozzles are to be installed over a 100mtrs section - 300mtrs of 50mm and 100mtrs of 32mm required	Tarmac	High	Low	Complete
C11	Install two trenches to allow water system to be installed -Trench across the road way on the outer boundary road - trench across wash plant processing area entrance	Tarmac	Medium	Low	Complete
C12	Haul Road water suppression trial phase area 2 - installation of 6 water sprays - wash plant boundary haul road - Tap into the installed 50mm supply. 6 nozzles are to be installed over a 100mtrs section - 100mtrs of 32mm required	Tarmac	High	Low	Complete
C13	Control system for water valves - Install a trench and ducting to allow control cables to be installed from the wash plant container to the boundary edge protection	Tarmac	Low	Low	Short
C14	Construct a material bund within the wash plant area near the North Iron works sub as a wind deflector - Move waste material into the area and build - cover with top soil and grass seed	Tarmac	Medium	Low	Short
C15	Control system for water valves - Install a PLC to control the water system on timed control in zone areas	Tarmac	Low	Low	Short
C16	Haul Road water suppression trial phase area 1 - installation of 6 water sprays - Boundary haul road through to the rail loading area - Install 50mm water supply pipe from the wash plant supply, 6 nozzles are to be installed over a 100mtrs section - 200mtrs of 50mm and 100mtrs of 32mm required	Tarmac	High	Low	Short
C17	Haul Road water suppression trial phase area 2 - installation of 6 water sprays - Boundary haul road through to the rail loading area - Install 50mm water supply pipe from the wash plant supply, 6 nozzles are to be installed over a 100mtrs section - 200mtrs of 50mm and 100mtrs of 32mm required	Tarmac	High	Low	Short
C18	Installation of material holding bays for rail loading - Contract holding bays for the material to be loaded	Tarmac	Low	Low	Medium

Action Reference	Option	Lead Role	Impact	Cost	Time
C19	Install trench to allow water system to be installed from stop valve through to the boundary road edge - Trench across the road way on the outer boundary road	Tarmac	Low	Low	Complete
C20	Install trench to allow water system to be installed from stop valve through to the intake ramp - Trench across the stockground to the intake to allow power and water supply - change of plan - sleeper wall installed to keep the pipework and power above ground level	Tarmac	Low	Low	Complete
C21	Surface the haul road to complete hard surfacing - boundary road by-passing the dry plant - 240t of asphalt required to be laid of the area to complete	Tarmac	Low	Low	Complete
C22	Haul Road water suppression trial phase area 1 - installation of 6 water sprays - Boundary haul road round the dry plant - Install 50mm water supply pipe from the water stop valve, 6 nozzles are to be installed over a 100mtrs section - 200mtrs of 50mm and 100mtrs of 32mm required	Tarmac	High	Low	Short
C23	Install trench to allow water system to be installed from boundary road through to the bund near the 20mm stock - Trench across the stockground to the intake to allow water supply	Tarmac	Low	Low	Short
C24	Haul Road water suppression trial phase area 2 - installation of 2 water sprays - Boundary haul road round the dry plant - Install 50mm water supply pipe from the boundary dry plant system, 2 nozzles are to be installed over a 50mtrs section - 100mtrs of 50mm and 50mtrs of 32mm required	Tarmac	High	Low	Short
C25	Intake ramp water suppression - installation of 2 water sprays - 2 nozzles required - one at the top of the ramp and the other at the bottom	Tarmac	High	Low	Short
C26	Removal of the intake building - Demolition of the intake building	Tarmac	Low	Low	Complete
C27	Haul Road water suppression link into the wheel wash pump system - two nozzles down the haul road area exit to the wheel wash - Install two nozzles	Tarmac	High	Low	Complete
C28	Haul Road water suppression link into the wheel wash pump system - three nozzles back to the Parker plant stockyard entrance - Install three nozzles	Tarmac	High	Low	Complete

Action Reference	Option	Lead Role	Impact	Cost	Time
C29	Water control system - PLC control required to operate valves on a timer system - Install system to control the water valves to automate the system	Tarmac	Low	Low	Complete
C30	Haul Road water suppression link into the wheel wash pump system - one nozzle on the entrance to the Santon village stock ground - Install one nozzle	Tarmac	High	Low	Complete
C31	Haul Road water suppression spray bar system to supply two nozzles on the site exit and Parker entrance haul roads - Install two nozzles within the system - 25mm pipework	Tarmac	High	Low	Complete
C32	Haul Road water suppression - link into the lab supply to allow a nozzle on the lab inspection platform and the parker exit road - Install two nozzles within the system - 25mm pipework	Tarmac	Medium	Low	Short
C33	Parker hot storage area suppression - link into the water supply to allow two nozzles to be installed - Install a nozzle near Bit tank two front - install nozzle near the booking in room corner	Tarmac	High	Low	Complete
C34	Parker rear of Bit tanks suppression - link into the water supply to allow a nozzle to be installed - Install a nozzle near Bit tank two rear	Tarmac	High	Low	Complete
C35	Construct a material bund to act as a wind deflector on the RHS entrance to the Santon Village area - Construct bund from waste material and top soil and grass seed	Tarmac	High	Low	Short
C36	Parker cold feeder ramp suppression - link into the water supply to allow two nozzles to be installed - Install a nozzle both sides of the ramp system	Tarmac	High	Low	Short
C37	Construct material storage bays to allow additional storage capacity of materials - Construct bays 1-8	Tarmac	High	Low	Medium
C38	Doze the ramp down to the through road - Doze material down - creating a reduced angle to allow top soil to be displayed	Tarmac	Low	Low	Complete
C39	New bund area ramp - Top soil and cover the area with Grass seed - Top soil and seed the area	Tarmac	Low	Low	Short
C40	Construct a edge bund and top soil and grass seed - Construct the edge bund and top soil and grass seed	Tarmac	Low	Low	Short
C41	Block road way and access to the valley loading area - D9 to shape area and construct a high wind break bund	Tarmac	Medium	Low	Complete

Action Reference	Option	Lead Role	Impact	Cost	Time
C42	Removal of the BG asphalt plant - Demolition of the BG plant	Tarmac	Low	Low	Complete
C43	Tap into the wash plant entrance dust suppression system to allow nozzles to be installed in the area - Install 6 trial nozzles	Tarmac	High	Low	Short
C44	Parker cold feeder ramp suppression - Add a central nozzle into the circuit - Install a nozzle in the centre and control isolation valve	Tarmac	Medium	Low	Short
C45	Install filler dust sealed transfer units - Install units from the filler screw to the weigh hopper	Tarmac	Medium	Low	Complete
C46	Installed covered containment for the gathering conveyor transfer point to the incline conveyor - Sheet the area in to control any emission	Tarmac	Medium	Low	Short
C47	Surface the stockyard in phased approaches - Phase in areas 1-4	Tarmac	High	Medium	Long
C48	Santon village area - relocate the 28mm stock	Tarmac	High	Low	Short
C49	Crush the returned asphalt to 20mm down - Crusher the material and stock on the recycled asphalt stockpile	Tarmac	Low	Low	Short
C50	Rip area created from actions 48-49 to allow soil creation trial - Either rip the area or add 0.5mtrs of old steel slag dust to be added to as part of the soil trials with compost	Tarmac	Low	Low	Short
C51	Sow seed as per WRAP instructions - Complete seeding	Tarmac	Medium	Low	Medium
C52	Boundary tree planting trial - Install boundary trees evergreen on the road side edge on the flyover road way	Tarmac	Medium	Low	Short
C53	Boundary tree planting trial - Install boundary trees evergreen on the rail track side edge	Tarmac	Medium	Low	Short
C54	Fixed sprays on the weighbridge area - Install two water sprays on the weighbridge to wet the road way on the exit and midway points - Nozzles 64 & 65	Tarmac	Medium	Low	Short
C55	Doze and create a bund on the boundary - Doze bund	Tarmac	Medium	Low	Complete
C56	Top soil and grass seed the bund created in action 56 - Top soil and grass seed the bund	Tarmac	Low	Low	Complete
C57	Install a misting spray system on the bank top trial 25mtrs - 5mtr high posts to be installed along with 250 nozzles	Tarmac	High	Low	Complete
C58	Install a sleeper wall to contain the raw feed stock - Bund a 2 mtr high bund wall around the feed stock	Tarmac	Medium	Low	Complete
C59	Doze flat the BG stocking ground - Doze the area flat	Tarmac	Medium	Low	Complete

Section D: Harsco Action Plan

Action Reference	Option	Lead Role	Impact	Cost	Time
D1	Metal Recovery Plant - Water suppression fitted on main reception hopper, activated by sensor beam when broken by Shovel / Dumper.	Harsco	High	Low	Complete
D2	Metal Recovery Plant – water spray bars fitted on the first drop No 6 conveyor, to reduce dust lift off.	Harsco	High	Low	Complete
D3	Install additional containers at the NCK at the BOS Plant - Increase the height of the barrier to encapsulate any debris or dust given off during drop balling.	Harsco	Medium	Low	Complete
D4	BOS Production – Tarmac Car park facility	Harsco	Low	Low	Complete
D5	Installation of gas oil tank at SFP - This removes the need for these large vehicles to travel from the Slabyard to the BOS Plant for oil and fuel and the possible dust lift off this can create. The tank is on site, the location requires clearing at area O	Harsco	High	Low	Short
D6	Permit Awareness Signs – Driver awareness signs to be located at BOS, SFP and the MR Plant to fall inline with Environmental 5 day forecast data.	Harsco	Low	Low	Complete
D7	Metal Recovery Plant – Reception hopper hydro seed east side of the bank, and landscape area to the west side of the fire suppression water tanks.	Harsco	Medium	Low	Medium
D8	Metal Recovery Plant – Install water suppress de misters on +300 mm grizzly hopper	Harsco	High	Low	Medium
D9	Metal Recovery Plant – Install suppression on slag silo’s to eliminate lift off whilst the dumpers are being loaded.	Harsco	High	Low	Medium
D10	Metal Recovery Plant – Install additional fixed water sprays along side west haul route adjacent to slag silo’s and near diesel facility.	Harsco	High	Low	Medium
D11	Haul Route – Tata to supply latex agent to add into the water bowser, trial on the length of the haul route.	Harsco	High	Low	Medium
D12	Workshop – Tarmac in front of garage doors and the approach road to the steam cleaning facility.	Harsco	Medium	Low	Medium
D13	Workshop – Plant wild flowers on grass bank east side of workshop	Harsco	Low	Low	Medium

Section E: North Lincolnshire Council Action Plan

Action Reference	Option	Lead Role	Impact	Cost	Time
E1	Participate in the Low Santon Technical Working Group and the Technical Sub Group. Update members of this group with current data trends and investigations being undertaken by North Lincolnshire Council	NLC	Low	Low	Ongoing
E2	Facilitate a Technical Working Group web portal allowing for online discussion, access to reports, electronic action progress, Tata completed Daily Exceedance Reviews and contact details	NLC	Low	Low	Ongoing
E3	Interrogate data in order to measure improvements on site as directed by the Technical Working Group. Investigate historical data in new ways to help identify trends i.e. 'Tea-break Report'.	NLC	High	Low	Ongoing
E4	Develop new ways in which to predict exceedance events. Design a risk assessment suitable for use by local operators to plan accordingly for high risk days and introduce an text alert service building upon work carried out identifying a suitable exceedance threshold signature	NLC	High	Low	Complete
E5	Trial the review of exceedance days for six weeks, to be completed as soon as possible after the event in order to identify the likely sources and inform local operators allowing for site wide improvements	NLC	High	Low	Complete
E6	Continue to run the comprehensive air quality analyser network around Low Santon. Respond to callouts as and when necessary and continue with the current calibration regime as per AURN standards	NLC	Low	High	Ongoing
E7	Allow for the evolution of the NLC air quality network as per current understanding, identifying new sites suitable for measurement.	NLC	Low	High	Ongoing
E8	Consult on review and assessment reports with local site operators ensuring site wide understanding of current PM ₁₀ levels and report progress	NLC	Low	Low	Ongoing
E9	Continue dialogue with all interested parties in order to achieve an acceptable level of PM ₁₀ at Low Santon	NLC	High	Low	Ongoing
E10	Continue effective regulation of North Lincolnshire Council Part A2 and B sites on or around the Local Integrated Steelworks	NLC	High	Low	Ongoing
E11	Carry out a Permit Review of North Lincolnshire Council Part A2 and B sites on or around the Local Integrated Steelworks.	NLC	High	Low	Ongoing
E12	Continue to assist the Environment Agency with Permit queries at Low Santon allowing for complete regulation across the Works	NLC	High	Low	Ongoing

Conclusion

The majority of the actions submitted in this plan fall to the operators themselves to implement. Given the nature of the Integrated Steelworks site it is important that local operators take responsibility for the implementation and day to day management of actions that will reduce PM₁₀ concentrations at Low Santon. The elevated concentrations at Low Santon triggered a number of reports to be written focusing on the origin of the PM₁₀ on and around the site. North Lincolnshire Council and the Environment Agency have worked together on a number of projects since the exceedances at Low Santon were identified. These projects have highlighted areas on the site where improvement needed to be focused. Many of the actions presented in Section A are as a result of this joint working.

Many of the actions within this document have already been completed and have started to show real improvements on the ground. This is due to the commitment of the both the operators and their respective regulators to reduce air quality impacts at Low Santon. The improvements implemented are being assessed by reference to changing trends in air quality data. Although levels of PM₁₀ within Low Santon is still above the relevant objective for the Daily Mean it is clear the overall trend is reducing. Operators now react to exceedance signatures and implement actions on site designed to reduce the chances of daily exceedance occurring. Risk assessments are being completed 5 days in advance to allow for effective process planning to control PM₁₀ producing activities. In the event of exceedance days data is reviewed and shared with site operators to inform future actions and management of the process. These highlight areas on site likely to be the source of the problem on the specific day. This is done via triangulation between the comprehensive monitoring locations strategically placed across the site.

The declining trend in overall concentrations of PM₁₀ suggests that the measures in place continue to have a positive impact at Low Santon. 2011 to date has recorded a higher number of daily exceedances and a higher annual mean than the previous year, these results will be analysed when ratified data is available for the full year. Increases may in part be due to meteorological conditions or production related. More information on the yearly variances are discussed in the 2011 Further Assessment of PM₁₀ at Low Santon. It is hoped that the level of reduction to be demonstrated by these actions will be sufficient to demonstrate compliance at Low Santon.