

North Lincolnshire Council

Action Plan for the Scunthorpe PM₁₀ AQMA



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Further Assessment Report of PM₁₀ in the Scunthorpe Area

1. **Introduction**

Local Air Quality Management (LAQM) was introduced under Part IV of the Environment Act 1995. Chapter 82 of the Act placed a duty on all Local Authorities to review air quality in their area.

Local authorities use a number of techniques to assess the impacts of potentially polluting activities such as transport including road, rail and air, industry and domestic emissions. Assessments can be made using indicative or quantitative monitoring techniques, air quality modelling, or screening tools formulated using a wealth of data from similar scenarios.

The resulting information is subsequently compared with the Air Quality Objectives for the seven specified pollutants shown in Table 1.

The Air Quality Objectives are based on Air Quality Standards set by the Expert Panel on Air Quality Standards (EPAQS) and are the maximum acceptable level of a pollutant in the air that will not present a risk to the health of the most susceptible groups in the population.

Pollutant	Objective		To be achieved by
	Concentration	Measured as	
Benzene	16.25 µg/m ³	Running annual mean	31/12/2003
	5 µg/m ³	Annual mean	31/12/2010
1,3 Butadiene	2.25 µg/m ³	Running annual mean	31/12/2003
Carbon Monoxide	10 mg/m ³	Maximum daily running 8-hour mean	31/12/2003
Lead	0.5 µg/m ³	Annual mean	31/12/2004
	0.25 µg/m ³	Annual mean	31/12/2008
Nitrogen dioxide	200 µg/m ³	1-hour mean not be exceeded more than 18 times a year	31/12/2005
	40 µg/m ³	Annual mean	31/12/2005
Particles (PM ₁₀ gravimetric)	50 µg/m ³	24 hour mean (midnight to midnight) not be exceeded more than 35 times a year	31/12/2004
	40 µg/m ³	Annual mean	31/12/2004
Sulphur Dioxide	350 µg/m ³	1-hour mean not be exceeded more than 24 times a year.	31/12/2004
	125 µg/m ³	24-hour mean not to be exceeded more than 3 times a year	31/12/2004
	266µg/m ³	15-minute mean not to be exceeded more than 35 time a year	31/12/2005

Table 1: The Air Quality Objectives that the Council is required to assess within its area.^{1,2}

The Air Quality Objectives can be defined as the Government's medium term target for each pollutant and includes a date by which the standard must be achieved. The length of time to achieve the standard for each pollutant takes into account the costs to industry, the expected rate of improvements in available technology and the health effects on the country's population in the mean time.

North Lincolnshire is a mainly rural area, home to approximately 152,000 people, made up of market towns surrounded by many small villages. In the centre of the area is the town of Scunthorpe, with a population of 62,000 that grew from a number of small villages, due to the development of the iron and steel industry in the area.

The pollutant of concern in North Lincolnshire is small dust particles known as particulate matter less than 10 µm in size (known as PM₁₀). In November 2005 an Air Quality Management Area (AQMA) was declared in Scunthorpe in relation to a breach of the 24-hour mean objective for PM₁₀, this was followed by a further assessment into the sources of the pollutant.

Having identified Scunthorpe's iron and steel manufacturing capacity it will be no surprise that the predominant source of PM₁₀ arise from industrial emissions within the Scunthorpe area.

It is important to note that the iron and steel industry is complex and operating on a vast site. It involves the interaction of many different companies and regulation is split between the Council and the Environment Agency based in Nottingham. The major installations on the site are regulated by the Environment Agency with less polluting processes under the jurisdiction of the Council.

Whilst the Council is under a legal obligation to review air quality there is no legal duty placed upon the Council to achieve the Objectives, the Council must however demonstrate that it is working towards achieving the Air Quality Objectives. This is in part because contributions may arise from sources outside the Council's control, e.g. Environment Agency regulated processes or Highways Agency controlled roads. In addition, regional and global sources of pollution as well as local sources can make a significant contribution to air pollution in a particular area.

The main aim of the Action Plan is to reduce PM₁₀ concentrations within the AQMA so that they are lower than the Government's Air Quality Objectives as soon as possible and to ensure that they remain so in the future. This document sets out a list of actions and measures that the Council will pursue to improve air quality within the AQMA.

Indirectly other benefits may result from the action plan:

- Improved competitiveness and fewer burdens on industry.
- Improved health and safety on site.
- Reduced levels of nuisance dust.
- Reduced levels of traffic and a better environment for the community.

2. Work to Date

The review and assessment process requires that every three years councils publish an 'Updating and Screening Assessment' report, which reviews air quality and sources of pollutants in their area. Where it identifies a potential risk that an objective may be breached, at a particular location, the Council is required to proceed to a detailed assessment. If a breach of the objective is shown an Air Quality Management Area (AQMA) must be declared. Thereafter a process of further assessment and action planning is required. A summary of the process in relation to this AQMA is shown in Figure 1.

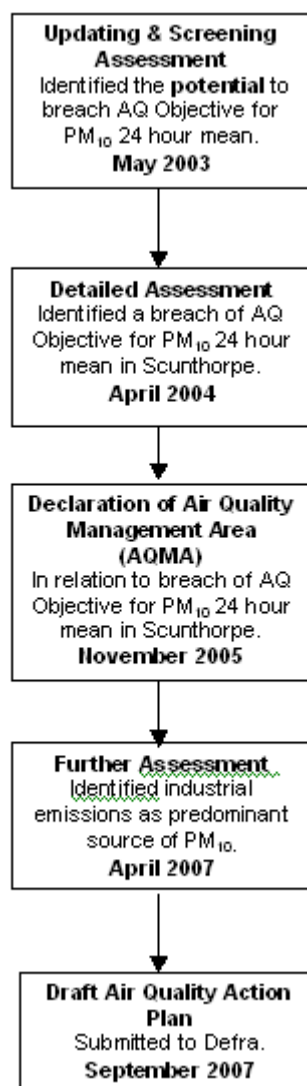
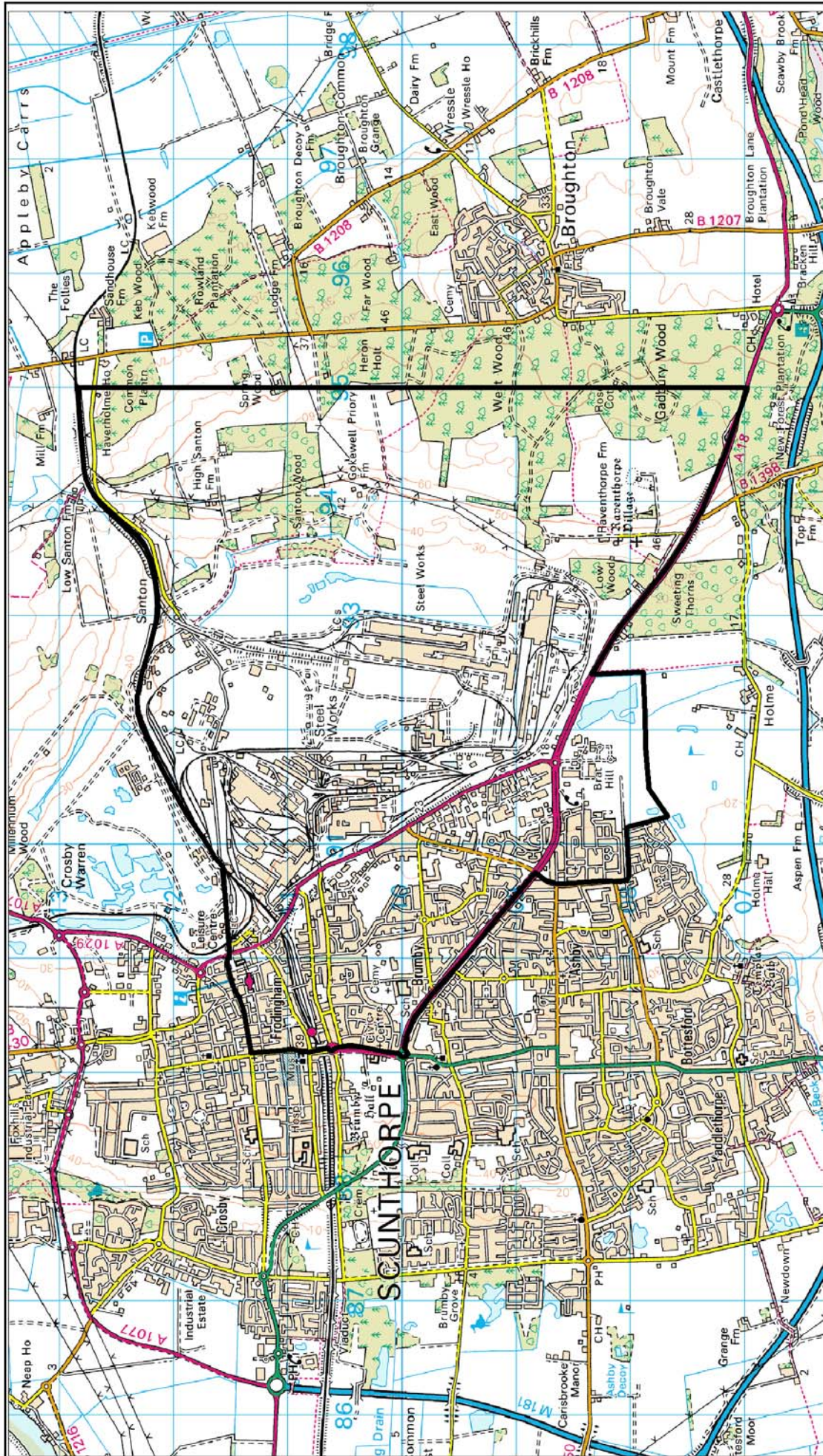


Figure 1: The process to date with regard to this AQMA.

3. **Air Quality Management Area Declaration**

If an area has been identified as breaching an Air Quality Objective an Air Quality Management Area (AQMA) must be declared. North Lincolnshire Council declared an AQMA in the Scunthorpe area in November 2005. Within this area levels of PM₁₀ are above the daily mean Air Quality Objective (see Table 1). The area of the AQMA is shown in Figure 2.

It should be noted that AQMAs are not unique to North Lincolnshire, over 215 local authorities have now declared AQMAs within their areas. This includes neighbouring Council's such as North East Lincolnshire Council, Lincoln City Council, Doncaster Metropolitan Borough Council and Hull City Council.² It should be noted however that the majority of AQMAs in the UK relate to transport issues. The size, complexity and regulatory responsibilities of the industrial site in Scunthorpe makes the Action Planning process somewhat different and complex compared to the few other AQMAs declared in relation to industrial emissions.




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Figure 2: The Air Quality Management Area . Reference 3.

4. Further Assessment Report

Having declared the AQMA the Council produced a report (the Further Assessment), which looked in some detail at the potential sources contributing to the breach of the objective.

Subsequent monitoring presented in the Further Assessment report indicated that North Lincolnshire Council was correct to declare the AQMA and that the boundaries are approximately correct. Table 2 shows the number of exceedances recorded at the monitoring stations inside the AQMA in 2006 and the number of exceedances allowed by the objective.

	Exceedances	Objective
East Common Lane	43	35
Santon	158	35
Scunthorpe Town	37	35

Table 2: The number of exceedances at the PM₁₀ monitoring stations in the AQMA in 2006.

The Further Assessment indicated that tailpipe emissions from road traffic and bonfire night celebrations have a limited impact on the PM₁₀ concentrations in the area. It is clear that local industry is responsible for a significant number of the PM₁₀ exceedances recorded in the Scunthorpe area; although it is likely that there is not a single source responsible for the PM₁₀.

The data suggests that elevated concentrations are more likely to occur during the daytime, and this is particularly evident at the Santon site. However, night-time concentrations at Scunthorpe Town are still elevated when the wind originates from the direction of local industry.

In general, more exceedances occur during the summer than the winter. However, the results suggest that wind direction is the most crucial factor and exceedances are most likely to occur in Scunthorpe when the wind originates from an easterly or south-easterly direction.

The impact that meteorological conditions have on PM₁₀ concentrations mean that the true percentage improvement needed could be as high as 48% rather than a relatively simple reduction of two exceedances (for Scunthorpe Town) to ensure that the Air Quality Objective is not breached regardless of the prevailing meteorological conditions.

The Department for Environment, Food and Rural Affairs (Defra) have accepted the Further Assessment report and the conclusions reached. A full copy is attached as an Appendix to this report, all the Council's air quality reports will be available via the Council's dedicated air quality website, see Action B2.

5. Context

In contrast to most other AQMAs declared in the UK, the most significant cause of the PM₁₀ pollution is from industry. Additionally, there is not a single easily identifiable source of PM₁₀; but multiple sources all within close proximity of each other, many of which are **not** regulated by the Council.

The map shown in Figure 3 identifies the numerous companies operating on the integrated steelworks site, it also shows the sheer size of the complex, in comparison to the size of the Town, with each grid square being 1 km long.

Corus UK Ltd and Multiserv Group Ltd each hold a permit under Part A of the Pollution Prevention and Control Regulations and are regulated by the Environment Agency. The Council has **no direct** control of these with respect to Air Quality and many other issues.

The Council has regulatory responsibility for a number of 'lesser polluting' processes under Part A2 and B of the same regulations who are within the AQMA and may have the potential to emit PM₁₀. The companies are Civil and Marine Ltd, Carbon International Ltd, and Tarmac Ltd. A number of mobile crushers (currently three) also operate on the industrial site. The permits for these processes (Part B) are issued by Richmondshire District Council. North Lincolnshire Council then performs the inspections on their behalf. There are also parts of the industrial site that fall outside of any PPC permit.

Due to the number of industrial operators involved on the integrated steelworks site and the discrete regulatory roles it is important that the Council is able to work with other organisations in seeking to achieve the objectives.

The permits issued by the Environment Agency and the associated improvement conditions are not driven by the local air quality management (LAQM) timetable but the permit process and Best Available Technique (BAT) requirements, consequently it is not appropriate for the Council to determine deadlines and priorities for those sites. This is applicable to actions A4, A6, A7

and A8. These actions are parts of Corus' improvement programme, the Council is committed to working with the Environment Agency to ensure that these actions are fulfilled.

The action planning process will involve working with a number of stakeholders namely:

- Local Industry,
- The Environment Agency,
- The Health Protection Agency,
- Other Council departments,
- Local residents,
- Defra.



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Drawing Title: Industrial operations in the AQMA	
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Scale:	OS Grid Ref: SE92011080

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NORTH LINCOLNSHIRE COUNCIL

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Figure 3: Industrial operations within the AQMA.

6. Actions

The actions are listed on pages 16 to 28.

Financial costs in the plan have been very approximately graded according to the following scheme:

High: > £200k,

Medium: £50k to £200k,

Low: < £50k.

Abbreviations:

EA Environment Agency

HPA Health Protection Agency

NLC North Lincolnshire Council

PCT (North Lincolnshire) Primary Care Trust

The impacts listed as high, medium or low refer to how the action will impact upon exposure to PM₁₀ within the AQMA.

Table 3: Actions

A. Air Quality Monitoring & Reports					
Ref	Option	Lead Role	Impacts	Cost	Timescale
A1	Maintain network of ten PM ₁₀ analysers at nine locations. Four locations are within the AQMA and five outside.	NLC	Low, but essential to process.	Medium (£75,000 per annum)	Ongoing
A2	Boundary monitoring of PM ₁₀ , PM _{2.5} , PM ₁ and Total Suspended Particles at Part A2 and B PPC sites within the AQMA. Including a PM _{2.5} (TEOM) monitor at Low Santon.	NLC EA	Low, but essential to process.	Medium	1 st monitor in by February 2008.
A3	Traffic count & visual observations at Santon to assess likely contribution from re-suspended road dust.	NLC	Low, but essential to process.	Low	Start summer 2008.

Ref	Option	Lead Role	Impacts	Cost	Timescale
A4	PPC Permit Improvement Programme IP 9,15,17 & 22 Corus UK Ltd shall undertake a further investigation to monitor and quantify point source and fugitive particulate matter (including PM ₁₀ and PM _{2.5}) emissions resulting from BOS plant, Sinter Plant, Blast Furnaces, Appleby Frodingham / Dawes Lane Coke Ovens 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 method to be adopted, with timescales, 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.	Corus UK Ltd EA	For Corus to determine, potentially high.	Not disclosed	Initial report due January 2008.
A5	Study into a local TEOM to Partisol correction factor. Consideration of alternative measurements techniques or correction factors as developed.	NLC	Low	Low	Discuss in review and assessment reports.

Ref	Option	Lead Role	Impacts	Cost	Timescale
A6	PPC Permit Improvement Programme IP 33 Corus UK Ltd shall assess the monitoring data recorded by the air quality monitoring stations and the local NETCEN station (including triangulation between stations) to identify process areas/outside influences making significant contribution (short and/or long term) to the pollutant levels measured. The operator shall submit quarterly reports of interpreted monitoring to the Environment Agency. (format to be proposed with 1 st submission).	Corus UK Ltd EA	For Corus to determine, potentially high.	Not disclosed	Ongoing
A7	PPC Permit Improvement Programme IP 37 Corus UK Ltd shall review annually the emissions to air impact assessment and amend as necessary following progressive completion of relevant improvement programme requirements contained within this Permit or the identification of any other relevant information or data concerning emissions, dispersion or environmental impact. An annual review report shall be submitted to the Environment Agency.	Corus UK Ltd EA	For Corus to determine, potentially high.	Not disclosed	Ongoing

Ref	Option	Lead Role	Impacts	Cost	Timescale
A8	<p>PPC Permit Improvement Programme IP 38 Corus UK Ltd 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.</p>	<p>Corus UK Ltd EA</p>	<p>For Corus to determine, potentially high.</p>	<p>Not disclosed</p>	<p>Ongoing</p>

B. Information to the Public					
Ref	Option	Lead Role	Impacts	Cost	Timescale
B1	Launch and maintain North Lincolnshire air quality website with: <ul style="list-style-type: none"> • Access to real time & historical data, • Production of graphs and pollution roses, • Access to air quality reports and latest news updates, • General information on air pollution. 	NLC	High (in terms of potential exposure).	Low	January 2008
B2	Review existing methods of communication of real time data to public and consider alternatives to internet access. Implement one further method.	NLC	High (in terms of potential exposure).	Low	2009
B3	Investigate potential for air pollution forecasting in Scunthorpe.	NLC	High (in terms of potential exposure).	High	2009
B4	Provide information to the public through publicity campaigns about how they can improve air quality from domestic situation e.g. bonfires and heating fuels.	NLC	Low	Low	June 2008

C. Bonfires & Non-permitted Process Emissions					
Ref	Option	Lead Role	Impacts	Cost	Timescale
C1	Raise profile & encourage attendance at organised community bonfire celebrations rather than individual bonfires.	NLC	Accident reduction, Low AQ impact.	Low	November 2008.
C2	Conduct a publicity campaign advising commercial organisations about their legal obligations in relation to their waste arisings with particular reference to burning of trade waste. To be conducted in co-operation with the Environment Agency.	NLC EA	Low	Low	April 2008 and ongoing.
C3	Complaints in respect of dust and smoke from commercial premises (not regulated under IPPC regime) will be investigated as a priority and enforcement action taken in accordance with the enforcement policy.	NLC	Low	Low	Ongoing
C4	Identify current road sweeping schedules within the Scunthorpe AQMA and realign schedules as appropriate to minimise re-suspended dust emissions from areas such as Brigg Road.	NLC	Low	Low	Summer 2009.

Ref	Option	Lead Role	Impacts	Cost	Timescale
C5	Conduct a publicity campaign advising local residents the implications of living in a domestic smoke control area and encourage people to complain if they are affected by smoke from domestic chimneys.	NLC	Low	Low	Ongoing
C6	Complaints in respect of domestic smoke control will be investigated as a priority and enforcement action taken in accordance with the enforcement policy.	NLC	Low	Low	Ongoing

D. Industry					
Ref	Option	Lead Role	Impacts	Cost	Timescale
D1	The Council will organise strategic air quality management meetings with other relevant organisations with an interest in air quality issues, including the Health Protection Agency, Primary Care Trust and Environment Agency. The purpose of the group will be to identify key air quality issues and agree measures for reduction. Meetings to be scheduled approximately quarterly.	NLC, HPA, PCT, EA.	High	Low	Current and ongoing.
D2	Set up a Local Industry Forum involving the Environment Agency, NLC and local industry with the potential to emit PM ₁₀ . The purpose of the group is to identify key issues, agree measures for reduction of PM ₁₀ and formulate a memorandum of understanding between all industrial operators particularly in respect of issues falling outside the scope of permitting. Meetings to be scheduled approximately every six months. This group may include representatives from other steelworks area sites (Council, EA and Corus).	NLC	High	Low	1 st meeting held July 2007 (in relation to operations near Santon). Ongoing.

Ref	Option	Lead Role	Impacts	Cost	Timescale
D3	Formulate an industry overview for the integrated steelworks site, identifying process areas, haul routes, vehicle flows and operating hours to consider in conjunction with monitoring data. Identify areas of responsibility within general areas of the steelworks site, areas outside permit regime and regulatory responsibility for the same.	NLC	Medium	Low.	November 2008
D4	Continue to lobby central government in relation to permitting of mobile plant and look to identify improved mechanisms of regulation and enforcement.	NLC	Low	Low	Ongoing
D5	Ensure that the requirements of the PPC permitting regime are appropriately enforced, with inspections prioritised on a risk basis taking account of PM ₁₀ emissions. Regulators will work closely with process operators to minimise PM ₁₀ emissions and seek long-term solutions to address dusty operations.	NLC	Low	Potential to be high	Ongoing
D6	Ensure permits issued under LA-IPPC are reviewed in accordance with guidance, with particular attention to processes within the AQMA with the potential to emit PM ₁₀ .	NLC	Low	Low	Ongoing
D7	Work with local industry and EA towards the development of relevant measurable indicators of changes in significant emissions of PM ₁₀ .	NLC EA Industry	Low	Potential to be high	2009
D8	Work with local industry and the EA to develop targets for the reduction of the area covered by the AQMA so that the number of properties affected will be reduced.	NLC EA Industry	High	Potential to be high	2010

E. Development Control					
Ref	Option	Lead Role	Impacts	Cost	Timescale
E1	The impact of development within the Air Quality Management Area shall be considered in relation to air quality. Exposure of new receptors or the introduction of significant new sources of PM ₁₀ will need to be appropriately addressed until such time as action E2 has been completed.	NLC	High	Low	Short-term
E2	Develop a Supplementary Planning Document (SPD), which identifies the constraints and mitigation to development within the Air Quality Management Area.	NLC	High (for new sites)	Directly low, indirectly high.	April 2009

F. Tailpipe Emissions

Air Quality relating to traffic is considered within the Council's 2006/11 Local Transport Plan with the following actions relating directly to Air Quality. As tailpipe emissions have little impact on the AQMA the following section has been summarised from the Council's Local Transport Plan 2006/11, the Council is committed to the following actions:

F. Tailpipe Emissions					
Ref	Option	Lead Role	Impacts	Cost	Timescale
F1	Review new and existing development sites, to monitor the impact of road, rail, air and water traffic and their emission levels.	NLC	Low	Medium	Ongoing
F2	Implementing bus priority measures as appropriate at new residential developments to help ensure that public transport is a quicker and more direct means of transport than the car.	NLC	Low	Medium	Ongoing
F3	The main measures to implement are improving facilities for pedestrians and cyclists, school and workplace travel planning, promotional work such as Travelwise, implementation of school safety zones, bus infrastructure enhancements and simplification of the network, ticketing in Scunthorpe and the main rural routes and managing our car parks and tariff structure.	NLC	Low	High	Ongoing

Ref	Option	Lead Role	Impacts	Cost	Timescale
F4	The implementation of an Urban Traffic Control system will assist the Traffic Manager in delivering a smoother flow of traffic in the urban area of Scunthorpe and reduce levels of congestion. This has been programmed for delivery during the period of this and the next Local Transport Plan.	NLC	Low	High	Under review. Still delivery output of LTP.
F5	Reducing incidents of dangerous driving and enforcing compliance with speed limits will also help maintain a smooth flow of traffic and minimise sudden braking and acceleration.	NLC	Low	Medium	Ongoing
F6	Through the North Lincolnshire Road Safety and Safety Camera Partnerships we will deliver continued enforcement of speed limits and driving standards.	NLC	Low	Medium	Ongoing
F7	Through the quality bus partnership we will work with operators to encourage the replacement of vehicles to the latest European emission standards wherever possible.	NLC	Low	High	Ongoing

Ref	Option	Lead Role	Impacts	Cost	Timescale
F8	A fleet of vehicles that are powered by LPG already operates (predominantly in waste management), we will continue to update and operate our fleet vehicles to use more environmentally friendly forms of fuel. Particulate traps on our vehicles are also used and we will continue to promote their use to reduce particulate matter.	NLC	Low	Low	Ongoing
F9	<p>The Council will aim to:</p> <ul style="list-style-type: none"> • Reduce traffic flows through promotion of sustainable travel and demand management measures. • Reduce transport related emissions by reducing traffic flows and making more efficient use of the network. • Deliver environmental improvements. • Improve the street scene. • Make communities places where people want to live. 	NLC	Low	Low	Ongoing

7. Costs and Improvements

Defra does not expect the Council to perform a full cost benefit analysis of the actions within the action plan. In North Lincolnshire's case, even if costs were known in more detail, commercial operators may not wish to share such confidential information, especially where the Council does not regulate the operations.

Within the industrial site there are multiple sources of PM₁₀ that are in close proximity to each other. This variety of sources along with the significant day-to-day and hour-to-hour variation in PM₁₀ concentrations means that in the short term it will be difficult to identify whether specific actions are improving air quality. In addition, it has been observed that concentrations are strongly dependent on the prevailing meteorological conditions, which will also hinder identifying whether specific actions have improved air quality.

8. Potential Economic, Social and Environmental Impacts

Economic

At the Scunthorpe site, Corus UK Ltd directly employ 4,000 people, there are also a varying number of temporary contractors who work on the site, this currently stands at around 1,500. The Scunthorpe site is the most significant part of the long products division within Corus UK Ltd; in 2006 this division had a turnover of £2.7 billion. An example of a recent project was the recent re-line of two of the four blast furnaces, this involved 350 local companies and cost £44 million.⁴ With the official population ⁵ of North Lincolnshire being 152,839 it can be seen that the industry in Scunthorpe plays a crucial role in the local economy.

The nature of the integrated steelworks site is such that many of the associated activities are contracted to third parties.

Social

The main social effect that needs to be considered is whether there would be a loss of jobs in the area if the commercial or physical ability of the numerous companies operating on the integrated steelworks site were affected by any proposed pollution reduction measures.

At this stage the Action Plan is not aiming to change the public's personal transport choices, any social impact in this respect is negligible.

The development of a Supplementary Planning Document will also need to be considered against other policies and objectives that the Council is responsible for. For example, use of brownfield sites for development (the difference in North Lincolnshire is that industry still operates next to brownfield sites), transport policy with regard to reducing travel, i.e. a greater population within urban areas, in Scunthorpe's case greater development would be more likely to occur in the AQMA.

Environmental

There is a need to acknowledge the possible effect of pollution transfer, i.e. electrostatic precipitators transfer pollution from the atmosphere to landfill sites, there could also be increased water use and issues with its disposal if roads have to be constantly wetted.

Health and Safety aspects of on-site operations must also be taken into account in determining future actions. Although it could be that solutions to air quality problems also help to improve on-site health and safety issues as well.

9. **Conclusions and Future Reporting**

The action plan and further assessment has shown that the PM₁₀ issue in Scunthorpe is complex with multiple stack and fugitive industrial sources in addition to the other usual sources (traffic etc). There are also several companies involved, some of which the Council has no regulatory control over. Work will continue on monitoring as well as actions to reduce the problem.

North Lincolnshire Council will include an annual update on this Action Plan in each Review and Assessment report due at the end of April. This will present the progress made on actions in this plan, but will also outline any new actions if the information regarding sources and impacts in the AQMA change. The Council does not see the Action Plan or Further Assessment as a final document, rather it will evolve with time as more study is done and further ideas are proposed.

10. References

1. The Air Quality Regulations 2007, available from:
<http://www.opsi.gov.uk/si/si2007/20070064.htm>.
2. Air Quality Archive, www.airquality.co.uk.
3. Further Assessment of PM₁₀ in the Scunthorpe Area, North Lincolnshire Council, April 2007.
4. Personal communication, Virginia Ramsden, Corus UK Ltd.
5. 2001 census, from the North Lincolnshire Website,
www.northlincs.gov.uk.

All websites were accessible in September 2007.

Appendix

Further Assessment follows.