

**Low Emissions Strategy  
Acton Goods Yard  
Horn Lane  
Acton**

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## Contents

1.	Introduction	1
2.	Acton Goods Yard	4
3.	Low Emissions Strategy	9
	Introduction	9
	Best Practice Measures	11
	Site Management	11
	Staff Training	12
	Visitor and HGV Driver Training	12
	Monitoring	12
	Inspection and Maintenance	13
	Lighting	14
	Water Dust Suppression	14
	Access Road	15
	Hardstanding	15
	Vehicle Washing	16
	HGVs and mobile machinery	16
	Locomotive Exhaust Emissions	17
	Materials Handling and Storage	17
	Conveyors	17
	Permit and Planning Requirements	18
4.	Low Emission Strategy Checklist	19

## Figures

Figure 1: Schematic Representation of the Contribution from .....	2
Figure 2: Occupiers of the Eastern End of the Acton Goods Yard .....	5
Figure 3: Acton Goods Yard Access Road .....	6
Figure 4: Junction between the Acton Goods Yard Access Road and Horn Lane .....	6

Figure 5: Enclosed truck wash at the J Simpson Waste Management site ..... 7  
Figure 6: Wheel wash before the weighbridge at the Aggregate Industries site exit..... 7  
Figure 7: Cement mixer wagon washed by hand at the Hanson site ..... 8

# 1. Introduction

Brook Cottage Consultants, working with DustScan Ltd, was commissioned to prepare a Low Emissions Strategy (LES) for the Acton Goods Yard by Ealing Council.

Unusually high concentrations of particulate matter (PM<sub>10</sub>) have been measured at the nearby Horn Lane monitoring station for many years. Nitrogen dioxide (NO<sub>2</sub>) has also been measured at this location, although concentrations of this pollutant are not exceptionally high and are similar to those at some other roadside monitoring stations in London. Both the national air quality objectives and the EU limit values for both pollutants are exceeded at this location. The major factor believed to give rise to the exceptional PM<sub>10</sub> concentrations at the Horn Lane monitoring station are dust emissions from the Acton Goods Yard, either directly from the operations within the Goods Yard or as a result of deposits 'tracked out' onto Horn Lane by traffic leaving the site. There has, however, been significant improvement in air quality at Horn Lane over the past decade and the annual mean PM<sub>10</sub> objective (40 µg/m<sup>3</sup>) has been achieved for a number of years, though the daily objective continues to be exceeded by a wide margin. For example in 2014 it was exceeded on 67 days compared to the permitted 35 days. Further details are provided in Appendix 1.

The Horn Lane monitoring station was upgraded in mid-2014 and is now part of Defra's PM<sub>10</sub> monitoring network for compliance with EU legislation. In 2016 the monitoring data from Horn Lane will be reported to the European Commission. As there are currently no exceedences of the mandatory EU PM<sub>10</sub> limit values recorded in Defra's existing network continued high concentrations at Horn Lane are a real concern.

Exposure to PM<sub>10</sub> is known to cause a range of health effects including mortality (see Appendix 2), and therefore poor air quality around Horn Lane needs to be addressed. These emissions also affect the amenity of the local community.

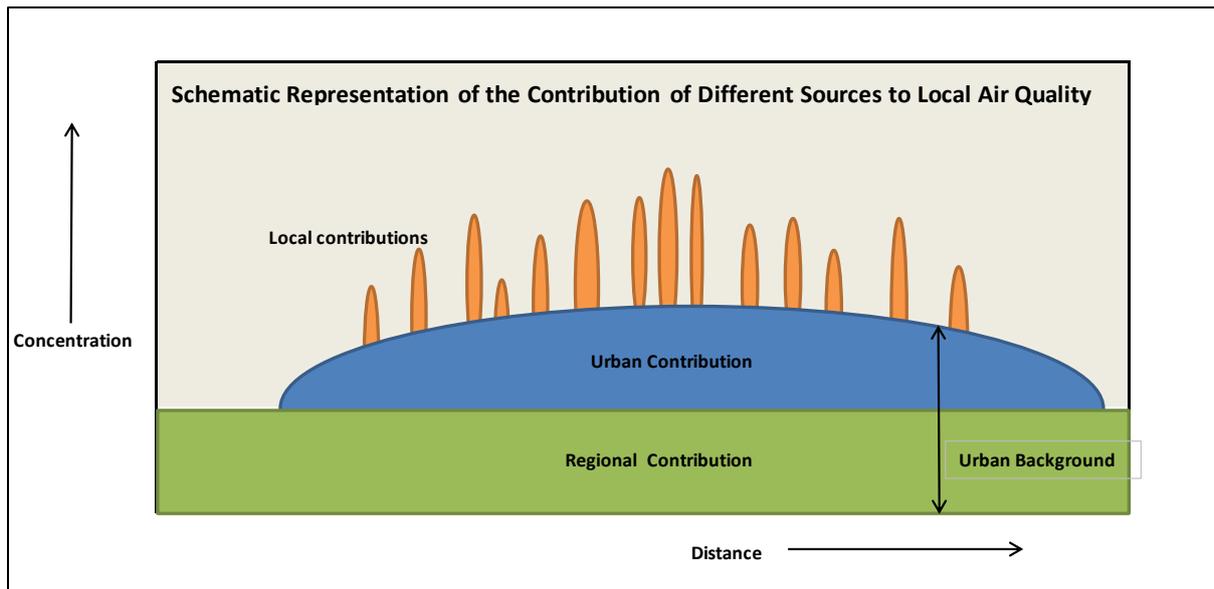
Measured concentrations comprise a number of different sources of pollution. Broadly these can be defined as:

- Regional pollution, which may originate hundreds of kilometres away,
- Urban or city-wide pollution sources which include traffic, industry, and commercial, institutional and residential properties, and finally
- Local sources, which include road traffic and local industry.

These sources are illustrated in Figure 1 as a schematic cross section representing contributions to long term air quality across an urban area.

As illustrated in Figure 1 the regional contribution is fairly constant over a large area, and is not influenced by local factors. The urban background represents the contribution of many sources over an urban area, while the local contribution is the result of nearby emissions. It is important to note that Figure 1 illustrates how air quality may change with distance across an urban area averaged over a long period but it does not show the significant variations in concentrations at different times of the day or indeed on different days.

The relative contributions of the three source categories (regional, urban and local) vary according to location, time of day, season, weather condition and pollutant. In London the regional component of PM<sub>10</sub> is often the major source. For NO<sub>2</sub> the urban background is important, but the highest concentrations occur close to busy roads.



**Figure 1: Schematic Representation of the Contribution from Different Sources of Air Pollution**

The concentrations of PM<sub>10</sub> and NO<sub>2</sub> measured at the Horn Lane monitoring site are a combination of all these sources and show significant variation on an hour by hour basis. The reason for the exceptionally high PM<sub>10</sub> concentrations at Horn Lane monitoring station is the large local component.

The Government's air quality objectives for these pollutants<sup>a</sup> have been exceeded for many years at the Horn Lane monitoring site. Ealing Council has a legal responsibility to work towards achieving these objectives<sup>b</sup>. Consequently, it has commissioned this LES to help meet this requirement.

The main focus of this LES is on controlling local sources of PM<sub>10</sub> from the various operations within the Acton Goods Yard, because these activities contribute to the high concentrations measured in Horn Lane. Few of the other monitoring sites in London exceed the PM<sub>10</sub> objectives and therefore Horn Lane is an unusual monitoring site.

This LES also addresses local emissions of nitrogen oxides (NOx)<sup>c</sup> which contribute to elevated NO<sub>2</sub> concentrations measured at the monitoring station. The main local NOx source is road traffic, with smaller contributions from diesel powered mobile machinery and locomotives using the goods yard.

The annual mean NO<sub>2</sub> objective is widely exceeded at roadside monitoring sites in London and elsewhere<sup>d</sup>. To some extent this is due to the failure of EU legislation to reduce real-world emissions of NOx from diesel road vehicles<sup>e</sup>, but is also due to a number of other factors such as the increased

<sup>a</sup> Air Quality (England) Regulations 2000.

<sup>b</sup> Environment Act 1995, Part IV.

<sup>c</sup> NOx is generally considered to be a mixture of nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>). NOx emissions from combustion sources including road vehicles, is predominantly NO which is rapidly converted in the air to NO<sub>2</sub>. The increasing use of diesel cars has increased the proportion of NOx emitted directly as NO<sub>2</sub>.

<sup>d</sup> Defra, 2012, Government gives a £2 million boost to tackling air pollution. Press release issued 31 December 2012, <https://www.gov.uk/government/news/government-gives-a-2-million-boost-to-tackling-air-pollution>, accessed 11 April 2014.

<sup>e</sup> Carslaw D C. and G. Rhys-Tyler, 2013, New insights from comprehensive on-road measurements of NOx, NO<sub>2</sub> and NH<sub>3</sub> from vehicle emission remote sensing in London, UK, Atmospheric Environment, Vol 81, pp 339–34

proportion of diesel cars on UK roads. The UK government is currently facing infraction proceedings from the European Union for non-compliance with the air quality directive (2008/50/EC), and associated fines, therefore this is an important issue and any measures to reduce emissions have a part to play in reducing ambient concentrations. The evidence of the health effects of exposure to NO<sub>2</sub> is growing<sup>f</sup> and a recent report from Kings College London suggests that mortality due to exposure to it may be greater than that due to exposure to particulate matter<sup>g</sup>.

The principal emissions sources at the Horn Lane Goods Yard are considered below. Further information on the site operators at the Goods Yard, the emissions associated with the processes carried out, and impacts on local air quality, is provided in the Appendices to this LES.

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<sup>f</sup> WHO (2013b) Health risks of air pollution in Europe – HRAPIE project Recommendations for concentration–response functions for cost–benefit analysis of particulate matter, ozone and nitrogen dioxide  
<http://www.euro.who.int/en/health-topics/environment-and-health/airquality/publications/2013/health-risks-of-air-pollution-in-europe-hrapie-projectrecommendations-for-concentrationresponse-functions-for-costbenefit-analysis-of-particulatematter,-ozone-and-nitrogen-dioxide>

<sup>g</sup> Walton et al., 2015, Understanding the Health Impacts of Air Pollution in London, Report for Transport for London and the Greater London Authority.  
[http://www.london.gov.uk/sites/default/files/HIAinLondon\\_KingsReport\\_14072015\\_final.pdf](http://www.london.gov.uk/sites/default/files/HIAinLondon_KingsReport_14072015_final.pdf)

## 2. Acton Goods Yard

Acton Goods Yard is a narrow, rectangular parcel of land, running approximately west-south-west to east-north-east and covering roughly 1250 × 150 m, immediately to the north of the main rail line from London Paddington. With the exception of one business which has direct access onto Horn Lane (the A4000), the Goods Yard is accessed via a short road from Horn Lane, to the north of the bridge over the railway line and Action Main Line station.

Acton Goods Yard is used for a variety of industrial and commercial operations and is also an important part of the freight railway infrastructure, with trains being loaded/unloaded and their loads stored and sorted from sidings within the Goods Yard.

At the western end of the Goods Yard, freight trains deliver aggregates and used ballast from London Underground for recycling. There are a number of organisations with an interest in parts of the Goods Yard, including D B Schenker Rail (UK) Ltd, which both operates the rail freight yard and acts as the landlord of parts of the site. Network Rail owns the site and is responsible for the access road.

The eastern end of the Goods Yard has been developed for a range of industrial activities as follows (colour in brackets refers to Figure 2):

- J. Simpson Waste Management Ltd (outlined in dark blue), a waste transfer station for construction and demolition waste
- Hanson (red) (referred to as Hanson in this report), a concrete batching plant
- Horn Lane Metals (orange), compaction, packaging and distribution of non-ferrous metals
- Aggregate Industries (green), major storage, handling and distribution of sand and gravel, aggregates and recycling of used London Underground ballast. There are two other occupiers of this site: Day Aggregates, which packages aggregates for retail sale and Mixamate, a small-scale mobile concrete batching operation.

Derlin Construction Ltd occupies a small site (not shown) north of the access road, between J. Simpson Waste Management and Hanson. The site is used to store and maintain construction equipment.

Figure 2 also shows the houses that lie to the north and east, and the apartment blocks that lie to the south of the Goods Yard and its access road.

The main potential sources of dust from these sites are:

- Driving on unmade ground or over spillages of material on made ground and hard standings
- Handling, transfer and storage of friable and potentially dusty materials
- Processing of materials
- Spillages of potentially dusty materials

In addition, the exhaust emissions of site vehicles and mobile plant contribute to ambient PM<sub>10</sub> and NO<sub>2</sub> concentrations.



**Figure 2: Occupiers of the Eastern End of the Acton Goods Yard**

### Acton Goods Yard Access Road

Dust (including  $PM_{10}$  emissions) occurs whenever vehicles travel over a road. These occur due to direct emissions from vehicle exhausts, brake and tyre wear, abrasion of the road surface and resuspension of material deposited on the road surface. The non-exhaust emissions can be greater than the exhaust emission.<sup>h</sup>

In the absence of continuous addition of fresh material (for example, through localised track out), the road surface loading should reach an equilibrium in which the amount of material resuspended matches the amount replenished. The equilibrium surface loading depends upon numerous factors. It is believed that the most important factors are: mean speed of vehicles traveling on the road; the average daily traffic; the fraction of heavy vehicles (buses and heavy goods vehicles); and the presence or absence of drainage and parking lanes<sup>i</sup>. The majority of operations in the eastern end of Acton Goods Yard rely on heavy goods vehicles (HGVs) to transport materials into and out from their sites. An indicative traffic count suggests that around 40 HGVs per hour enter or leave the Good Yard

<sup>h</sup> Harrison, RM, Jones, AM, Gietl, J, Yin, J & Green D., 2012, Estimation of the contributions of brake dust, tire wear, and resuspension to non-exhaust traffic particles derived from atmospheric measurements. *Environmental Science & Technology*, 46 (12) 6523-6529. DOI: 10.1021/es300894r

<sup>i</sup> US EPA AP42 Chapter 13 Miscellaneous Sources 13.2.1 Paved Roads

via the Assess Road during a typical working day (see Appendix 2)<sup>j</sup>. Exhaust emissions from these vehicles will include PM and NOx. There will also be some emissions of PM due to brake, tyre and component wear, but probably more significant is the resuspension of road dust.

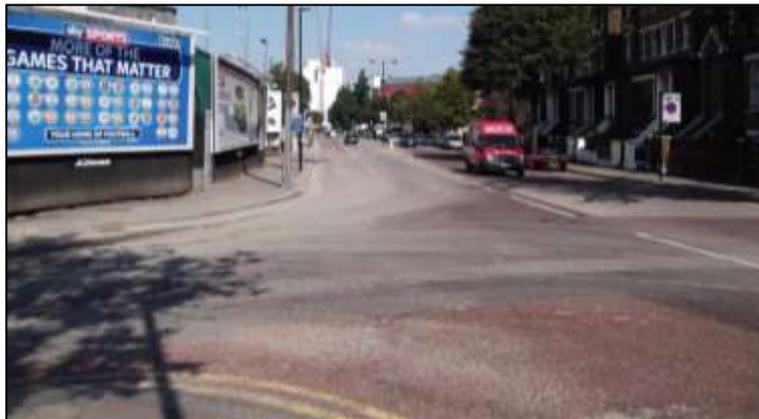
All the operators except J. Simpson Waste Management Ltd access Horn Lane via the Acton Goods Yard access road. The waste transfer station has its own entrance onto Horn Lane.

The access road is paved but is in poor condition, with dust accumulating as illustrated on Figure 3, taken on 8<sup>th</sup> September 2014. Network Rail owns the access road and is progressing with resurfacing works. The tenants have an obligation to maintain their drains to reduce the flow of water onto the road.



**Figure 3: Acton Goods Yard Access Road**

Due to the nature of operations in the eastern end of Acton Goods Yard and especially the numbers of HGVs entering and leaving the various premises material on the surface of the access road gets tracked out onto Horn Lane, as illustrated in Figure 4.



**Figure 4: Junction between the Acton Goods Yard Access Road and Horn Lane**

Most HGVs turn north from the Goods Yard onto Horn Lane towards the A40, due to the weight restriction on the bridge that crosses the main line railway, which lies immediately to the south of the access road. In Figure 4, light coloured dust can be seen on the red road surface on the north-bound bus lane of Horn Lane, whilst prior to the junction the red road surface has little deposited dust on the

<sup>j</sup> To put these vehicles into context, the Department for Transport annual average daily flow data shows 813 HGVs on Horn Lane in 2014. Assuming all sites work 8 hours the data in Appendix 2 would suggest almost 350 HGV movements from the Goods Yard per working day.

surface. As shown in Figure 4 there is evidence that some vehicles turn south onto Horn Lane, although it is unclear as to whether these are HGVs or permitted light duty vehicles.

Aggregate Industries and Hanson are believed to be the main sites with the potential to contribute to track-out onto the access road and then onto Horn Lane. This is due to the nature of their operations and the numbers of HGVs accessing their sites. J Simpson Waste Management Ltd also has the potential to cause the track-out of material directly onto Horn Lane. Relatively minor track-out is believed to be associated with Horn Lane Metals and Derlin Construction Ltd, due to the nature of operations carried out and the levels of traffic associated with their sites. The BAM Nuttall Construction (Crossrail contractors) site is at the western end of the Goods Yard and given the distance is unlikely to be a significant direct source of PM at Horn Lane. However traffic including HGVs pass through the DB Schenker Rail (UK) Ltd site, travelling over unmade ground to the Goods Yard access road. There is no wheel wash on the exit to this site.

J. Simpson Waste Management Ltd, Aggregate Industries and Hanson Concrete all have washing facilities and procedures at their sites to reduce track-out. Figures 5 to 7 illustrate the methods used at the three sites.



**Figure 5: Enclosed truck wash at the J Simpson Waste Management site**



**Figure 6: Wheel wash before the weighbridge at the Aggregate Industries site exit**



**Figure 7: Cement mixer wagon washed by hand at the Hanson site**

A visual survey of the apparent cleanliness of the HGVs leaving the Goods Yard was undertaken on 24<sup>th</sup> September 2014 (see Appendix 3 for details). It found that none of the HGVs leaving J. Simpson Waste Management were dirty, but 11% and 53% of the HGVs leaving the Hanson and Aggregate Industries sites respectively were dirty. The site operators were not given advance notice of the survey and it should be noted that it was established after the survey that the wheel wash at the Aggregate Industries site was not operational on the day the survey was undertaken. It should be noted that there is likely to be some day-to-day variation in the cleanliness of vehicles from each site.

The access road as well as the bus lane on Horn Lane is cleaned daily, Monday to Friday, using a contracted road sweeper, paid for by Aggregate Industries and Hanson. In addition, the access road is power washed up to three times a day when required using a specialist road cleaning trailer provided by Aggregates Industries.

#### **Other Emissions Sources within Acton Goods Yard**

There are a number of other sources of dust emission sources within Acton Goods Yard. These include:

- BAM Nuttall's construction of the main line dive-under for Crossrail, due to be completed in Autumn 2015. It is understood that when there are trains blocking BAM Nuttall's exit they use Aggregate Industries' exit, but do not use the wheel wash.
- Freight locomotive exhaust emissions from trains lying over at the Goods Yard
- HGV and mobile plant exhaust emissions, which occur when idling as well as when moving.

The locomotives, HGVs and mobile plant are also a source of NO<sub>x</sub> emissions.

### 3. Low Emissions Strategy

#### Introduction

The Low Emission Strategy (LES) provides a framework for voluntary agreement between the site operators and Ealing Council to reduce emissions and improve local air quality. It aims to secure a commitment from each of the occupiers to take all reasonable steps to change Acton Goods Yard from a high-profile pollution hotspot into an example of good environmental management.

Not all measures in the LES will be relevant to all occupiers of the Goods Yard and therefore it is intended that each site operator will have in place a site-specific Dust Management Plan, to be agreed with Ealing Council (or the Environment Agency where it regulates the site or activity), that provides a comprehensive list of the measures that they are specifically committed to. Each site-specific DMP should include measures that are required as a result of any environmental permit and/or planning condition applicable to the site and any additional voluntary measures drawn from the LES.

The aim is not to duplicate any permit or consent but, given the need to protect the area, to encourage further actions over and above those legally required. The LES is therefore complementary to any permit or planning condition, and it is assumed that these will be complied with as well as the LES. In the future, if amendments to permit conditions require new measures this LES should be updated to reflect them.

Representatives of the major occupiers have been consulted on the rationale behind, and content of, the LES and their contributions to it have been incorporated where possible. The following occupiers of Acton Goods Yard are anticipated to commit to the LES:

- Aggregate Industries
- Hanson UK
- J. Simpson Waste Management
- D B Schenker
- Network Rail
- Horn Lane Metals
- Day Aggregates
- Mixamate
- BAM Nuttall

Although both environmental permit and planning conditions are binding and enforceable by the relevant authority, Ealing Council does not have the power to make the LES legally binding and therefore it relies on voluntary actions by the individual companies to be good neighbours. Appendix 4 provides information on the Council's current legal powers to control emissions and improve air quality. The major operators have an Environmental Management System certified to the ISO 14001 standard, which requires continual improvement.

Hanson and J. Simpson Waste Management Ltd have Environmental Permits that cover all operations on their respective sites. The situation is more complex for Aggregates Industries, as only a small part of their site is covered by their Environmental Permit, i.e. where they process used railway ballast towards the western end of their site. As a condition of these permits these operations have a Dust Management Plan (DMP) in place.

The area around Acton Goods Yard, particularly at the eastern end, is vulnerable to impacts from dust emissions from the industrial activities within the Goods Yard. This is due to a combination of potentially high emissions from the operations in the Goods Yard, the prevailing south-westerly wind and the number of dwellings in close proximity.

Since 2005, when Ealing Council established the Horn Lane monitoring station, measured concentrations of PM<sub>10</sub> have been some of the highest recorded in the UK with consequently serious breaches of UK and EU air quality standards and limit values.

Reducing emissions to achieve acceptable air quality requires the implementation of a large number of actions. Whilst most will make a relatively small contribution to improving air quality in isolation, cumulatively they can make a significant difference.

Historically, fugitive emissions from waste and aggregate handling, and concrete batching, were the major sources of dust from the Goods Yard. An order of magnitude reduction in the permitted waste throughput at the waste transfer station by the Environment Agency and the construction of a new concrete batching plant are both likely to have played a role in reducing direct emissions of PM from the sites concerned.

The largest local source of PM emissions affecting air quality at the Horn Lane monitoring site now is likely to be material tracked out from several of the operations within the Goods Yard which is deposited onto the access road and Horn Lane. This material is subsequently broken down into smaller particles and entrained into the air by the movement of vehicles.

Ealing Council's street cleansing contractors are scheduled to sweep the Horn Lane footways on a daily basis. The left (nearside) lane of the carriageway should also be swept several times per week by a mechanical sweeper. The outer (offside) lane can only be cleansed with assistance from a Transport for London (TfL) provided Impact Protection Vehicle where there is a central reservation. This is scheduled to take place once per month. Aggregate Industries and Hanson clean the access road on a daily basis and Aggregate Industries also clean the Horn Lane bus lane daily. This cleaning has not fully solved the PM<sub>10</sub> issue and to further improve air quality in the area, pollutant emissions from the multitude of sources within the Goods Yard need to be reduced.

The low emission strategy uses the term dust, which is defined as particulate matter less than 75 µm (a micron; millionth of a metre). The visible dust fraction (typically greater than 20 µm) is larger than PM<sub>10</sub>, but associated with this visible dust will also be the finer particles associated with a range of health effects (see Appendix 2).

A LES checklist is provided at the end of this document to assist site occupiers in developing their DMP. This checklist is a summary of the actions and cross references the paragraphs in this section, which is more detailed and should be complied with, as appropriate, in order to achieve the full benefit of the measures outlined.

Standard good practice on dust control is set out in several of Defra's process guidance notes (PGNs), including PGN 3/01(12) for bulk cement handling and, for general materials handling including crushing and screening, PGN 3/16(12)<sup>k</sup> is appropriate. Whilst not all activities on the Goods Yard require an Environmental Permit, the dust control measures set out in these documents are generally applicable as best practice due to the close proximity of residential areas. Operators of regulated facilities that have an environmental permit will also need to maintain better control of dust

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<sup>k</sup> <http://www.defra.gov.uk/industrial-emissions/las-regulations/guidance/>

emissions than may apply elsewhere due to the location of the Goods Yard within the Horn Lane residential area.

In this LES the term 'site' refers to the area leased by each company, unless clearly stated otherwise. The terms 'Goods Yard' or 'Acton Goods Yard' are been used to describe the whole goods yard with multiple site operators.

This LES focuses on existing good practice to reduce emissions. However, in the future effective new methods may emerge as best practice is further developed. This LES does not preclude their use, but they would need to be included in the site Dust Management Plan and approved by Ealing Council, or the Environment Agency for the processes each regulates.

*The overriding priority of the LES is that dust emissions into the air should be minimised using best practice control measures.*

## **Best Practice Measures**

### Site Management

1. All sites within the Goods Yard should have a written Dust Management Plan (DMP), to be agreed with Ealing Council or the Environment Agency if permitted by it.
2. The site DMPs should include **all** measures in this LES relevant to site operations, which will vary depending on the site. The DMP should be reviewed by the operator on an annual basis and any changes agreed with Ealing Council, or the Environment Agency if permitted by it.
3. Each Site Manager should give a named person responsibility for on-site dust management (the Responsible Person or RP). The RP will be responsible for receiving automated pollution alerts. The RP could be the Site Manager or a suitably trained member of staff, who would have day-to-day control of dust emissions from the operation. The Site Manager should be ultimately responsible for ensuring compliance with the site DMP.
4. A deputy RP should be named, to take responsibility when needed. In the absence of both the RP and deputy RP the Site Manager should nominate a suitable temporary replacement with the same authority.
5. The RP should have the authority to modify or cease operations to reduce emissions on a temporary or permanent basis until there is no longer a risk of dust emissions.
6. The RP should ensure that all members of staff, including temporary staff, and appropriate visitors, such as HGV drivers delivering to or collecting from the site, are aware of the site dust management procedures.
7. The RP should ensure high standards of housekeeping to minimise track-out and wind-blown dust are adhered to, including the regular inspection, maintenance and cleaning of all machinery and vehicles within the site operator's control.
8. The RP should ensure that the site is managed to reduce the risk of exhaust emissions from road vehicles, locomotives and plant, where appropriate, at **all** times.
9. All activities with the potential to cause fugitive dust emissions (e.g. wind-blown dust) should be monitored as set out below. If visible dust is generated, the source(s) of the dust should be identified and the necessary corrective action should be taken as soon as practicable. If necessary, processes causing visible dust emissions should be modified, reduced or suspended until effective remedial action can be taken or the conditions giving rise to the emissions (e.g. high wind speeds) have moderated.

10. Subject to their level of responsibility within their organisation, all site personnel should be empowered to take appropriate action whenever visible dust emissions are observed, or appear likely to occur, as a result of any operation or process on the site.
11. When third party contracts are agreed a clause should be included requiring compliance with the DMP, where relevant. This provides a very clear message as to the importance of the issue for operators at the Acton Goods Yard and the priority that should be given to minimising emissions in the area. This applies to tenancy and haulage contracts.
12. Any complaint to a site operator should be investigated as soon as possible and the complainant kept informed throughout the investigation. Ealing Council, and the Environment Agency where appropriate, should be informed promptly that a complaint has been received and be kept informed of the results of any subsequent investigation. Records should be kept in the site log.
13. A site log should be kept on site to record daily operations, weather conditions, abnormal events, mitigation measures used, complaints from the public and the results of any air pollution investigation, *etc.* This log should be kept on site and made available to representatives of Ealing Council and the Environment Agency on request.

### Staff Training

14. Staff at all levels should receive training and instruction in their duties relating to dust management and include the following:
  - The causes of dust emissions
  - Risks to public health of air pollution
  - The particular importance of Acton Goods Yard as a source of air pollution
  - Methods to reduce emissions.
15. All new staff should be given suitable, job specific, dust training shortly after commencing employment, preferably on induction. The training should be repeated following any abnormal dust event on site and should be refreshed at least once per year.
16. Any member of staff who fails to comply with the provisions of the DMP or undertakes actions that generates abnormal dust should be re-trained as necessary and might also be subject to disciplinary action.
17. All training, including the names and positions of the people trained, should be recorded in the site log.

### Visitor and HGV Driver Training

18. The RP should ensure that customers and suppliers are aware of the need to comply with the provisions of the site's DMP in so far as they are relevant to the reason for visiting the site.
19. All contracted HGV drivers should be given training in the relevant parts of the DMP within existing induction or other regular training sessions. Ex-works customers should be verbally instructed as to what is expected of them.
20. Any driver who fails to comply should be given a warning and asked to comply immediately. Any driver who is given three warnings will be banned from site.

### Monitoring

21. The weather forecast should be reviewed at the start of each working day to enable appropriate planning of the day's work. During dry weather in general, and during dry windy weather in

particular, dust emissions are likely to occur, and therefore a higher degree of vigilance is needed. This is likely to include ensuring sufficient dust suppression resources are available, all haul routes and storage areas are kept damp and the avoidance of dust generating activities that can be delayed until weather conditions change. Adverse weather conditions should be recorded in the site log.

22. A visual assessment of dust emissions should be made at least twice per day, with the results recorded in the site log at least once per day. During dry weather, if any operations cause or are likely to cause visible dust emissions, or if abnormal emissions are observed within the site, site operations should be halted or modified until effective remedial actions can be taken and/or the weather conditions giving rise to the emissions have moderated.
23. Continuous monitoring of airborne particulate matter (preferably both PM<sub>10</sub> and PM<sub>2.5</sub>) should be undertaken at locations agreed by Ealing Council and the Environment Agency, as appropriate, at the three main sites (Aggregate Industries, Hanson and J. Simpson Waste Management). Where the software allows the data should be uploaded regularly to the London Air Quality Network Construction website operated by the Environmental Research Group at King's College, London<sup>1</sup>. This allows comparison of the data between sites and is a useful tool for understanding the contribution of these sites to the local airborne PM concentrations. It also provides e-mail pollution alerts to site personnel when there are exceedances of alerts levels at any of the monitoring locations, to enable a rapid response to any site-specific issues.
24. Monitoring is currently undertaken by site operators at the following locations
  - J. Simpson Waste Management: at north-east of site near to the entrance from Horn Lane
  - Aggregates Industries: near the site recycling activities
  - Hanson site: in the north east corner of the site
25. In addition PM is monitored by Ealing Council on the access road outside Derlin Construction. The PM monitoring stations are shown in Appendix 5.
26. It is recommended that Aggregate Industries also locates an additional continuous monitor at a suitable location to the east end of the site where there is potentially greater impact on PM<sub>10</sub> concentrations at relevant receptors.
27. The instruments should be calibrated and serviced at a frequency recommended by the manufacturer or as agreed by the site regulator. There should be an absolute minimum data capture rate of 75% over a year, with a target of 90%. There should be no gaps in the data of more than five days.
28. Unless required to be maintained under a permit or planning condition, the need for monitoring and uploading of the data will be kept under review by the appropriate parties and regulators taking into account whether there has been sustained improvements and compliance.

### Inspection and Maintenance

29. There should be good standards of housekeeping including ensuring that regular inspections of plant, vehicles and storage facilities are carried out. This and the regular maintenance of all equipment, vehicles, mobile plant etc. should follow the manufacturers' instructions including the minimum frequency of servicing and replacement of parts.

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<sup>1</sup> Instructions as to how to do this can be provided by Ealing Council

30. Essential spare parts should be stored on-site to minimise any delays in repairing equipment.

### Lighting

31. Businesses on the Goods Yard operate in hours of darkness when site cleaning can be difficult. Therefore all sites should have adequate lighting to enable effective cleaning following a spill where operations take place after dusk.

### Water Dust Suppression

32. Water is commonly used to suppress emissions, e.g. wet methods are used to clean dusty spillages and water bowsers are used to reduce dust emissions from haul roads.
33. As an over-riding requirement dust suppression should be used when and where required, in particular during periods of dry weather.
34. To ensure that these methods are effective it is important that:
- Only clean water is used (to stop the recirculation of dust).
  - There must be an adequate supply of clean water at all times<sup>m</sup>.
  - There are mains water pressure issues at the Goods Yard and therefore there should be sufficient storage of water on-site for the driest periods of the year when there may be no or minimal rain for weeks. Rainwater and run-off may be collected on-site and used for dust suppression provided that it is clean when used.
  - In the event of a serious and unavoidable disruption of supply (such as the issue of a drought order) alternative dust suppression measures, such as surface binding agents (e.g. calcium magnesium acetate (CMA)), should be used.
  - CMA or other dust suppressants may be useful for controlling dust emissions by some site operators even when there is sufficient water.
  - One method that has been used elsewhere in London is to apply a dust suppressant on aggregates prior to dispatch from the quarry, and this may be a useful method to reduce dust emission at this site
  - Any sprays, cannons, tanks and bowsers should be regularly inspected for leaks, and any leaks promptly repaired, to ensure downtime is minimised.
  - Essential spare parts for dust suppression equipment and facilities should be kept on site at all times.
  - All uncovered storage piles should be kept damp at all times using an appropriate method such as sprays.
  - All haul roads should be wetted as necessary, e.g. using a water bower.
  - Water pipes and pumps should be protected from frost where practicable.

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<sup>m</sup> It is recognised that this may be a problem during periods with drought orders in place, but during these periods there should be sufficient water stored on-site to allow the use of a dust suppressant such as CMA which should reduce the demand for water. Hanson recycle process water and the use of CMA may contaminate their product. Therefore the use of CMA may not be appropriate for this site.

### Access Road

35. This section of the LES applies to Network Rail, as the main landlord of Acton Goods Yard, and those tenants that use the Acton Goods Yard access road to Horn Lane as appropriate.
36. The access road should be remade (not patched) by Network Rail to provide a good surface and a suitable profile for efficient drainage into the gullies. It should be regularly maintained and any necessary repairs should be carried out to a high standard to ensure a durable surface.
37. Network Rail should seriously consider optimising the road surfacing material to minimise the dust accumulation potential of the road<sup>n</sup>.
38. Routine cleaning of the access road is very important to stop accumulation of material on the surface. This is primarily the responsibility of the two main users: Aggregate Industries and Hanson Concrete. The cost of cleaning should be shared between all relevant operators. The daily cleaning should be co-ordinated to ensure that the road is clean at all times. Only wet methods should be used to remove accumulations of dusty materials.
39. Periodic power washing of the access road should continue.
40. All site operators should clean spills onto the access road for which they are responsible using wet methods promptly. Major spills should be cleaned immediately and driving over spilt material should be avoided.
41. A written cleaning procedure for the road should be produced and agreed with Ealing Council. It should include the maximum speed of the road sweeper, equipment and frequency and standard of cleanliness.
42. All operators should inspect the drains on their own premises on a regular basis and ensure they are maintained to allow free drainage.
43. To minimise HGV exhaust emissions, engines should be switched off when they are likely to be stationary for more than 2 minutes (see paragraph 57). Subject to landlord's consent, suitable signage should be erected on the site. The RP should be responsible for enforcing this with regard to the vehicles connected with their operation.
44. There should be no parking on the access road; vehicles attending any site may wait on the access road for a reasonable period should there be insufficient space within that site. Vehicles should not be left unattended on the access road and arrangements should in place to facilitate prompt movement of vehicles (e.g. driver's contact details) to enable the road to be effectively cleaned.
45. A speed limit of 10 mph should be introduced and enforced on the access road.

### Hardstanding

46. All permanent haul roads and trafficked areas should have hardstanding where possible.
47. This hardstanding should be regularly inspected and kept in a good state of repair.
48. There should be effective drainage where the hardstanding allows.
49. The hardstanding should also be regularly cleaned using wet methods to reduce the risk of trackout from the site, where possible.

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<sup>n</sup> There is some evidence that larger aggregates in the road surface result in a rougher surface that acts as a 'store' for deposited dust, increasing emissions as vehicles drive over it.

50. All operators should clean spills promptly using wet methods. Major spills to be cleaned immediately and driving over spilt material should be avoided. There should be good drainage to stop dust laden water leaving the site through run-off.
51. There should be a speed limit of 10 mph.

### Vehicle Washing

52. All vehicles leaving the site **must be** clean of material that could cause contamination of the local environment, particularly the wheels, tyres, underside of vehicles, chutes and tailgates.
53. If no suitable cleaning method is available vehicles should not be accepted on the site.
54. Suitable HGV washing facilities must be available on the three main sites (Aggregate Industries, Hanson UK and J Simpson Waste Management). The HGV washing facilities should conform to best practice and be fit for purpose.
55. If for operational reasons it is not possible to use a fixed wheel wash (space constraints or the washer is broken) the manual washing of vehicle wheels and wheel arches is an acceptable alternative, preferably using a pressurised supply and spray lance, but only where there is a written procedure that includes methods to control water in the yard being picked up by vehicles, evidence of staff trained in cleaning vehicles and inspection of all vehicles immediately prior to leaving the site by an operative.

### HGVs and mobile machinery

56. All plant and vehicles should be maintained according to manufacturers' specification to minimise emissions.
57. There should be no idling of engines within the Acton Goods Yard. All vehicles and mobile machinery likely to be stationary for more than 2 minutes should have their engines switched off to reduce exhaust emissions, unless there are good operational reasons (not driver preferences) for the engine to continue running. Where operational constraints prevent the no-idling policy being fully implemented, site occupiers should ensure that arrangements are reviewed regularly to assess whether there is scope for introducing further measures to minimise idling. Clear notices should be erected on site in appropriate locations to inform drivers of the no-idling requirement.
58. Where possible, site managers should ensure that the most recent vehicles and mobile machinery in their company fleets are deployed at their Acton Goods Yard operations. The newest vehicles tend to have the lowest exhaust emissions. Consideration should be given to retrofitting diesel particle filters to vehicles/mobile machinery accessing or used on the site. All vehicles and mobile plant
59. All fuel used on the sites should be purchased from reputable suppliers and confirm to the relevant British Standard (e.g. BS590 for automotive diesel).
60. All tipper trucks leaving the sites should be sheeted when accessing or egressing the public highway (Horn Lane).
61. All mobile machinery should be operated with care to minimise spillages from loader buckets etc. Machinery should be driven appropriately without sudden changes in direction.
62. There should be a speed limit of 10 mph across all sites for HGVs and mobile machinery. Exceeding it should result in disciplinary action.

### Locomotive Exhaust Emissions

63. Locomotive engines under the control of a site operator should be maintained to minimise emissions.
64. Consideration should be given to the use of low emission locomotives e.g. using stop start technology, where practicable.
65. There should be no idling. Engines should be switched off when in Acton Goods Yard to reduce unnecessary emissions, unless there are good operational reasons for running the engine(s). D B Schenker should take responsibility for ensuring that the locomotive no idling policy is complied with.
66. D B Schenker and possibly Aggregates Industries should erect additional notices at appropriate locations in the Goods Yard, to inform drivers of the no idling requirement and indicate its importance at the Acton Goods Yard (i.e. using bespoke signs, possibly similar to those used for the London low emission zone).

### Materials Handling and Storage

67. The risk of dust emissions from materials handling will vary according to the nature of the materials handled. Dry and friable materials are liable to break and emit dust, and must be handled with particular care to reduce dust emissions.
68. In general, powders should be stored in silos, in confined storage areas within a building or in fully enclosed containers.
69. All activities with the potential to generate dust should be protected from the wind and all areas at risk of generating dust should be wetted down as appropriate to minimise emissions e.g. the areas in front of loading bays (see section on water suppression).
70. Aggregates (except powders) should be tipped only within and no higher than the designated storage bays and covered or the surface stabilised e.g. by wetting, with two exceptions due to operational difficulties. These exceptions apply only to parts of the Aggregate Industries site where 1. the railway ballast recycling occurs; and 2. train loads are discharged and fixed dust suppression measures are in place.
71. All waste at J. Simpson Waste Management should be tipped and stored within the building and the spray mist operational at all times during working hours. The condition of the plastic screen should be routinely inspected and maintained to ensure its on-going effectiveness.
72. As dust is generated during loading and unloading activities drop heights should be minimised where possible.
73. Spillages which might give rise to dust emissions should be cleaned up promptly, major spillages immediately using wet cleaning methods. Vehicles and mobile plant should avoid driving through spilt material. This may be by hand or using an industrial grade road cleaner. Dry handling of dusty spillages should not be allowed.
74. A dust suppressant such as CMA may be used.

### Conveyors

75. Enclosures (i.e. covers and weather boards), should be provided in all critical areas where dust emissions occur, where practicable. Any damaged or missing covers and weather boards should be replaced promptly.

76. Return belt cleaners should be fitted where practicable and arisings collected into a bin or cleaned up using wet methods. There should be a regular maintenance programme for the conveying structures and rollers to minimise spillages.
77. Spillages should be cleaned regularly to minimise accumulations of loose dry material around the structures.

#### Permit and Planning Requirements

78. All operations at each site should comply with environmental permit and/or planning conditions, where appropriate, as well as the LES.

## 4. Low Emission Strategy Checklist

All actions in this checklist are cross referenced with the paragraph number in the main section of the LES, where further detail is provided. The main section provides the definitive version of the LES; the checklist is abbreviated. The vast majority of the LES actions apply to **all occupiers of Acton Goods Yard** including any sub-tenants. Where an action is specific to one operator it is clearly stated in the main section of the LES.

Where processes have an Environmental Permit this checklist includes many of the actions expected of operators under their permit, but given the cumulative impact of all the operations within Acton Goods Yard, operators are also expected to comply with the additional measures.

### 1. Site Management

Item	Action	Paragraph	Completed
Dust Management Plan (DMP)	The written DMP should include all relevant actions in this LES.	1, 2	
	To be agreed with Ealing Council or, for waste processes, the Environment Agency.	1, 2	
	To be reviewed on at least an annual basis.	2	
Responsible Person (RP)	A named person should have responsibility and the authority for managing dust on-site (the Responsible Person, RP). The RP will receive automated pollution alerts. A deputy RP should also be named to take responsibility when needed.	3, 4	
	The RP should ensure that the site is managed to reduce the risk of dust emissions	3	
	The RP should be able to modify or cease operations until effective remedial action is taken or conditions change and there no longer is a risk of dust emissions.	5, 9	
	The RP should ensure all relevant people, including staff, are trained in dust management.	6	
	The RP should ensure high standards of house-keeping to minimise track-out and wind-blown dust.	7	
	The RP should ensure that at all times the site is managed to reduce the risk of exhaust emissions from vehicles, locomotives (where appropriate) and machinery.	8	
Staff	Staff should be trained and empowered to take appropriate action to minimise dust emissions.	6, 10, 14-20	
Customers and suppliers	Should be made aware of the DMP, when relevant	6,18-20	
Regular inspection and maintenance	Plant, machinery, and storage facilities should be inspected regularly for malfunction, leakages etc., and be well maintained	7, 29, 34, 42, 47, 55,	

Item	Action	Paragraph	Completed
	according to any manufacturers specifications.	56, 71, 76	
	Essential spare parts should be stored on-site to minimise any delays in repairing equipment.	30	
Lighting	There should be adequate lighting on site.	31	
Third party contracts	Should include a clause on the need to comply with the DMP where relevant. The requirement to minimise emissions to air may form part of an operators' site induction procedures for contractors.	11, 19	
Complaints	All complaints should be investigated as soon as possible and the complainant kept informed throughout the investigation. Ealing Council and, where relevant, the Environment Agency should be informed promptly that a complaint has been received and be kept informed of the results of any subsequent investigation.	12, 13	
Site Log	Should be kept on-site and made available to Ealing Council or the Environment Agency, as appropriate, on request.	13	
	Should record daily operations, adverse weather conditions, abnormal events, mitigation measures, complaints and results of any air pollution/dust investigation.	13, 17, 21, 22.	

## 2. Staff training

Item	Action	Paragraph	Completed
Training for all staff	All employees should be trained in the importance of minimising emissions from operations and the specific sensitivity of the site.	6, 14, 15, 16, 17	
	All employees should be given job specific training on reducing emissions.	15	
Frequency of training	At start of employment.	15	
	At least once per year.	15	
	Immediately after any abnormal dust event.	15	
	Following failure to comply with DMP or a dust event caused by an individual's behaviour or lack of knowledge.	16	
Records	All training, including the names and positions of the people trained, should be recorded in the site log.	17	

## 3. Visitor and HGV Driver Training

Item	Action	Paragraph	Completed
Customers and suppliers	Should be made aware of the DMP, where relevant	18	
HGV Drivers	Contracted drivers to be given training in the relevant parts of the DMP within existing	19	

Item	Action	Paragraph	Completed
	induction or other regular training sessions. Ex-works customers will be verbally instructed as to what is expected of them.		
	Any driver who fails to comply should be given a warning and asked to comply immediately. Any driver who is given three warnings will be banned from the site.	20	

#### 4. Monitoring Emissions and Air Quality

Item	Action	Paragraph	Completed
Weather	Review forecast for dry windy weather and adjust site activities accordingly.	21	
Visual assessment of dust emissions	Twice per day with the results recorded in site log.	22	
Continuous particulate matter monitoring	Three main sites should undertake continuous monitoring of PM <sub>10</sub> and preferably also PM <sub>2.5</sub> .	23 - 28	
	Instruments should be calibrated, serviced and maintained in accordance with the manufacturer's specifications to meet the data capture targets.	27	
	Data should be uploaded to the London Construction website	23	

#### 5. Water Dust Suppression

Item	Action	Paragraph	Completed
Operation	Should be used when and where required.	21, 32-34	
Maintenance	Should be regularly inspected and maintained to ensure downtime is minimised.	34	
	Essential spare parts should be kept on-site.	34	
Water	Should use clean water only.	34	
	Should have an adequate supply of clean water.	34	
	In the event of a serious and unavoidable disruption of supply (such as the issue of a drought order) alternative dust suppression measures, should be used where practicable.	34	

#### 6. Access Road

Item	Action	Paragraph	Completed
Maintenance	Remake access road and keep well maintained.	36	
	Consider using a road surface that will minimise dust accumulation.	37	
Cleaning (using wet methods only)	Regular cleaning to be undertaken with the cost of cleaning shared as appropriate between site operators.	38, 39	
	All spillages should be cleaned promptly; major	40	

Item	Action	Paragraph	Completed
	spillages to be cleaned immediately, and avoid vehicles driving through/over spilt material. Spillages should be cleared by the site operator responsible for the spillage.		
	Written cleaning protocol should be agreed with Ealing Council and Contractor.	41	
Drains	Drains should be inspected regularly and maintained to allow free drainage.	42	
Idling	Clear notices should be erected on site in appropriate locations to inform drivers of the no idling policy. The RP from each relevant site should enforce.	43, 57	
Parking/waiting	There should be no parking on the access road; vehicles attending any site may wait on the access road for a reasonable period should there be insufficient space within that site. Vehicles should not be left unattended on the access road and arrangements should in place to facilitate prompt movement of vehicles (e.g. driver's contact details).	44	
Speed limit	There should be a 10 mph limit for all vehicles	45	

## 7. Hardstanding

Item	Action	Paragraph	Completed
Where	All permanent haul roads and trafficked areas should have hardstanding.	46	
Maintenance	Surface should be regularly inspected and maintained.	47	
Drains	There should be effective drainage.	48	
Cleaning (using wet methods only)	Regular cleaning should be undertaken where possible.	49	
	Spillages should be cleaned promptly; major spillages should be cleaned immediately and vehicles should not drive through/over spilt material.	50	
Speed limit	There should be a 10 mph limit for all vehicles	51, 62	

## 8. Vehicle Washing

Item	Action	Paragraph	Completed
Vehicle cleaning	All vehicles leaving a site <b>must</b> be clean particularly the wheels, tyres, underside of vehicle, chutes and tailgates.	52	
	If no suitable cleaning method is available vehicles should not be accepted on the site.	53	
	HGV washing facilities should conform to best practice and be fit for purpose.	54	
	If a fixed wheel wash cannot be used manual washing may be used provided that the vehicle is adequately cleaned and inspected prior to	55	

Item	Action	Paragraph	Completed
	leaving the site.		

### 9. HGVs and Mobile Plant Emissions

Item	Action	Paragraph	Completed
Low emissions	Use most recent road vehicles/mobile machinery in company fleet at site.	58	
Idling (all vehicles/mobile machinery)	Switch off engine; no idling where practicable	57	
	Notices on site in appropriate locations to inform drivers of the no idling requirement	57	
Maintenance	Maintain according to manufacturers' recommendations, including minimum frequency.	29, 56	
Fuel	All fuel to be purchased from reputable suppliers and meet the relevant British standard (BS590)	59	
Tipper trucks vehicles	All tipper trucks to be sheeted when accessing from or egressing to the public highway (Horn Lane).	60	
No spillages	All machinery should be operated with care to minimise spillages from loader buckets, <i>etc.</i>	61	
Speed limit	All vehicles/machinery should travel no more than 10 mph on the site	45,51,62	

### 10. Locomotive Emissions

Item	Action	Paragraph	Completed
Low emissions	All locomotives under the control of a site operator should be maintained to minimise emissions.	63	
	Consideration should be given the use of low emission locomotives e.g. using stop-start technology, were practicable	64	
Idling	Switch off engine(s); no unnecessary idling on Acton Goods Yard.	65	
	Notices on site in appropriate locations to inform drivers of the no idling requirement	66	
	Low emission zone signs should be erected	66	

### 11. Material Handling and Storage

Item	Action	Paragraph	Completed
All	All activities be undertaken to reduce emissions to air.	67-77	
	Spillages should be cleaned by wet methods promptly; major spillages immediately, and avoid vehicles running through spilt material.	73-74	
Loading/unloading	Drop heights should be minimised.	72	
	Aggregates (except powders) should be tipped only within designated storage bays except at the waste management facilities.	70	

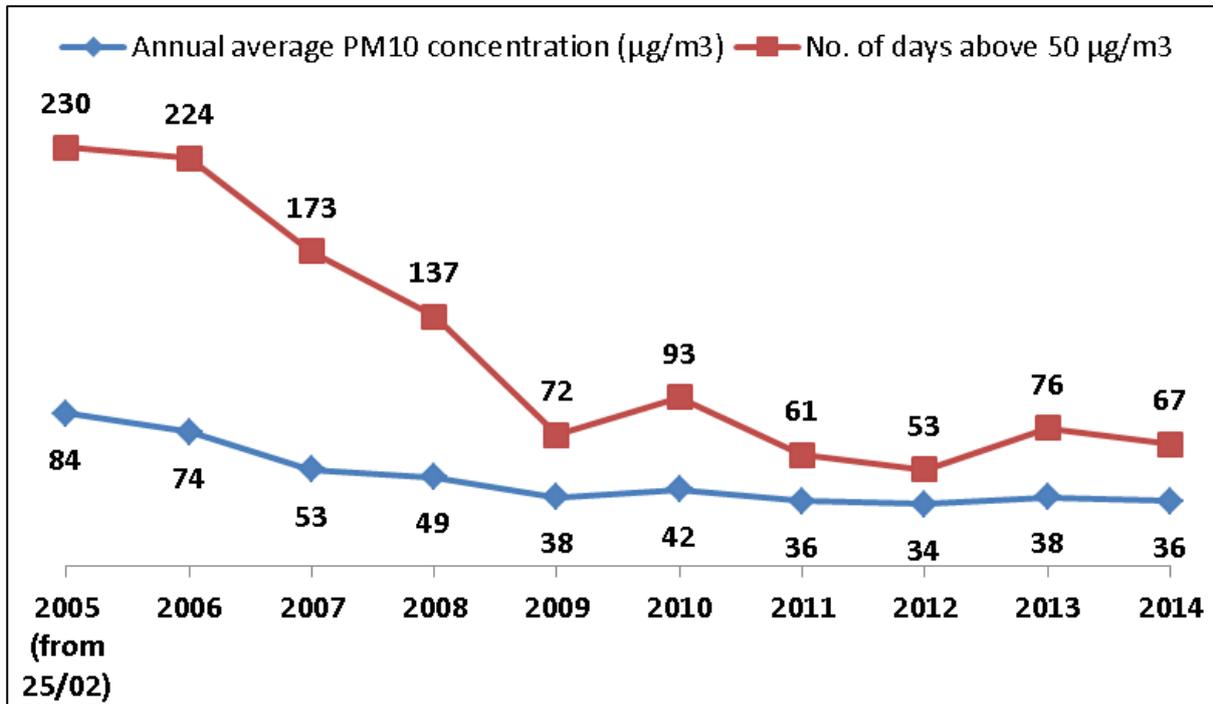
Item	Action	Paragraph	Completed
	Waste at J. Simpson Waste Management should be tipped only within the building.	71	
Storage	As a general rule powders should be stored in silos, in confined storage areas within buildings, or in fully enclosed containers.	68	
	There should be no storage of aggregates above or outside the sides of the dedicated storage bay, except where train loads are discharged and fixed dust suppression measures are in place.	70	
	Storage bays should be covered or exposed surfaces kept damp by appropriate means.	70	
	Spillages should be cleaned (using wet methods where practicable) regularly to prevent the accumulation of loose material.	73, 77	
Conveyors	Covers and weather boards should be used to control dust emissions.	75	
	Should be regularly cleaned and maintained.	75-77	
	Return belt cleaners should be fitted where practicable and arisings collected into bins or cleaned up.	77	

## 12. Permit Requirements

All operations on the site must comply with environmental permit and planning conditions as well as this low emissions strategy.	78	
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## APPENDIX 1: PM<sub>10</sub> and NO<sub>2</sub> Concentrations

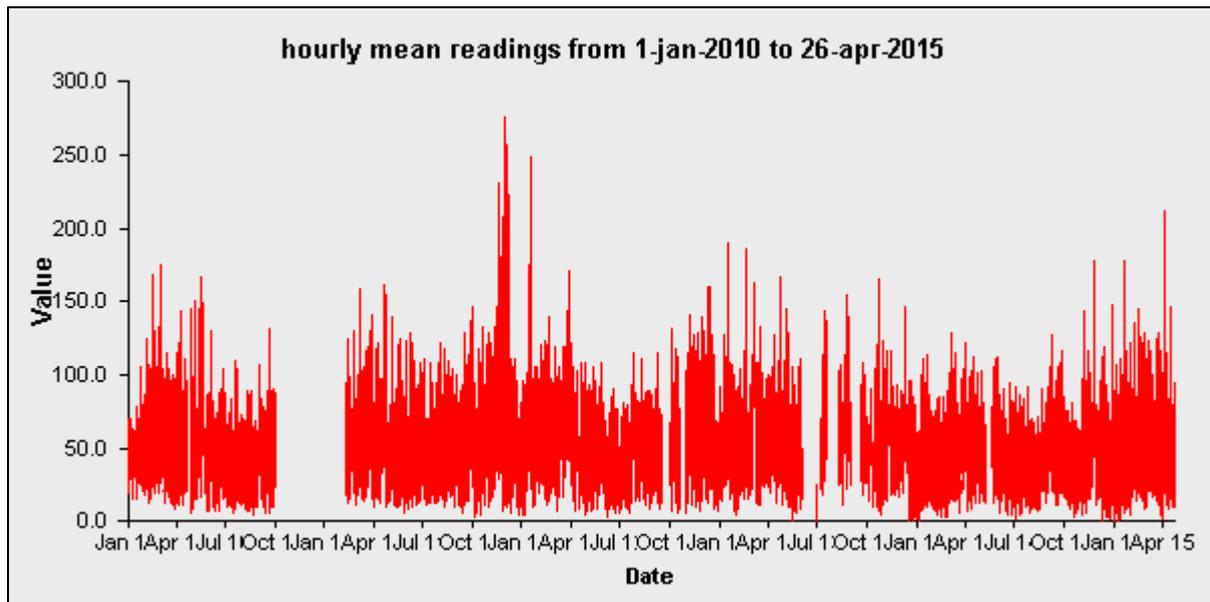
### PM<sub>10</sub> Concentrations at Horn Lane 2005-2014



**Air quality objectives/EU limit values:**

Annual mean: 40 µg/m<sup>3</sup>

Daily mean: 50 µg/m<sup>3</sup> not to be exceeded more than 35 days per year.

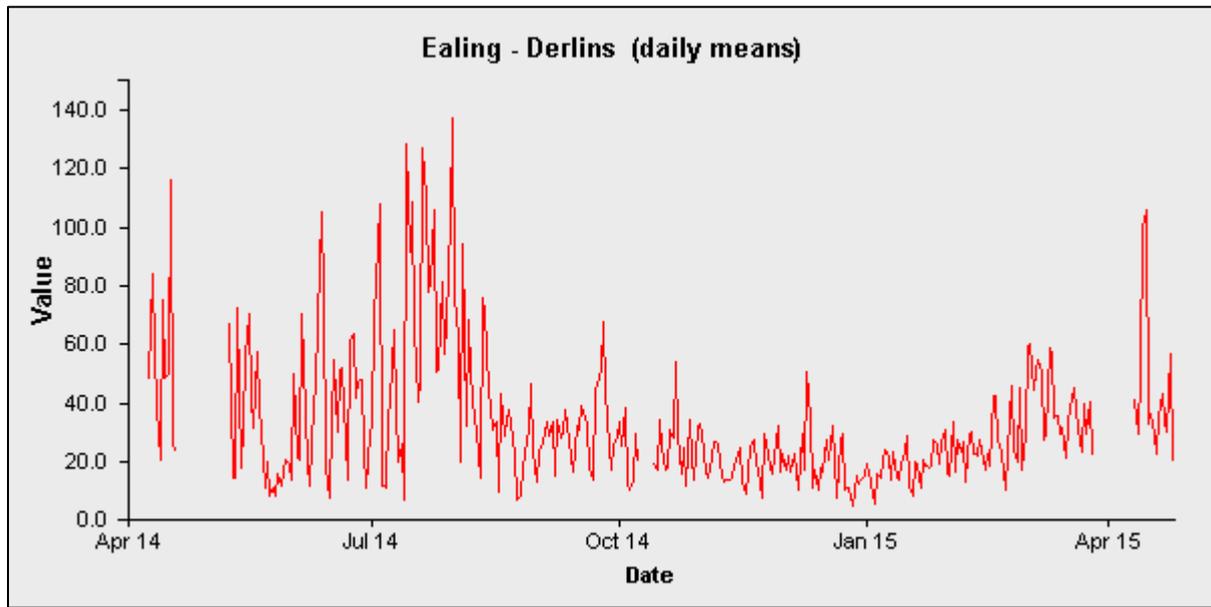
**Nitrogen dioxide (NO<sub>2</sub>) Concentrations (µg/m<sup>3</sup>) at Horn Lane 1<sup>st</sup> January 2010 to 26<sup>th</sup> April 2015****Air quality objectives/EU limit values:**

Annual mean: 40 µg/m<sup>3</sup>

1-hour mean: 200 µg/m<sup>3</sup> not to be exceeded more than 18 hours per year.

The annual mean has been in the range 46-57 µg/m<sup>3</sup> since monitoring commenced in 2010.

**PM<sub>10</sub> Concentrations (µg/m<sup>3</sup>) at Acton Goods Yard Access Road 6<sup>th</sup> April 2014 to 26<sup>th</sup> April 2015**



Note: Measurements from an indicative monitor.

**Air quality objectives/EU limit values:**

Annual mean: 40 µg/m<sup>3</sup>

Daily mean: 50 µg/m<sup>3</sup> not to be exceeded more than 35 days per year.

## APPENDIX 2: Health Effects of Particulate Matter

The health effects of air pollution receive little public attention even though they are associated with significant mortality and economic costs. A conservative estimate for particulate matter (PM) is that it reduces life expectancy in the UK by around six months at a cost of about £15 billion to society each year a similar amount to that estimated for obesity<sup>o</sup>.

It has been estimated that removing all fine particulate air pollution would have a bigger impact on life expectancy in England and Wales than eliminating passive smoking or road traffic accidents<sup>p</sup>.

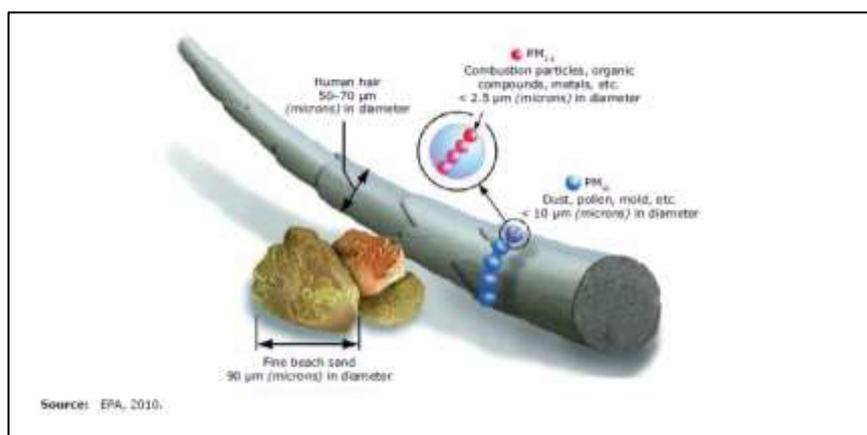
The Government's Committee on the Medical Effects of Air Pollution has estimated that PM in the air leads to 29,000 premature deaths each year in the UK<sup>q</sup>. Public Health England has estimated that 7.2% of deaths in 2010 in the London Borough of Ealing were associated with anthropogenic PM. This compares to a UK average of 5.3% and is one of the highest in outer London.<sup>r</sup>

This estimate just takes account of the health effects of PM. The evidence of the effects of public exposure to nitrogen dioxide (NO<sub>2</sub>) is less well understood, but it is known that long term exposure also contributes to premature deaths.

For many years the main indicator of PM pollution was PM<sub>10</sub><sup>s</sup>, and there has been a significant amount of monitoring of this pollutant in London and elsewhere. In recent years there has been more focus on PM<sub>2.5</sub>, but there is much less data available for this pollutant.

Figure 2 provides an illustration of the size of PM<sub>10</sub> and PM<sub>2.5</sub> particles in relation to a human hair and fine beach sand. Airborne particles from the Acton Goods Yard operations are in both the PM<sub>2.5</sub> and PM<sub>10</sub> size fractions.

### Illustration of the size of PM<sub>10</sub> and PM<sub>2.5</sub> particles (US Environmental Protection Agency)



<sup>o</sup> Defra, 2010, Air pollution: Action in a changing climate.

<sup>p</sup> Institute of Occupational Medicine, 2006, Comparing estimated risk for air pollution with risks for other health effects.

<sup>q</sup> The mortality effects of long-term exposure to particulate air pollution in the United Kingdom, Committee on the Medical Effects of Air Pollutants, (COMEAP), 2010.

<sup>r</sup> Public Health England, 2014, Estimating local mortality burdens associated with particulate air pollution.

<sup>s</sup> PM<sub>10</sub> and PM<sub>2.5</sub> are essentially particulate matter with an aerodynamic diameter of less than 10 μm and 2.5 μm (1 μm one millionth of a metre) respectively.

A wide range of health effects have been associated with exposure to PM and/or NO<sub>2</sub> pollution including<sup>t</sup>:

- mortality and hospital admission in chronic obstructive pulmonary disease (COPD) patients
- exacerbation of asthma symptoms
- mortality and hospital admission in cardiovascular patients
- mortality and hospital admission in diabetic patients
- increased risk for myocardial infarction (heart attack)
- lung inflammation
- systemic inflammation
- endothelial and vascular dysfunction
- development of atherosclerosis
- increased incidence of infection
- respiratory cancer (linked to exposure to diesel particles)
- adverse birth outcomes including on neurological development and cognitive function.

The UK air quality objectives and the EU limit values have been set at levels to protect human health. However, there is evidence of effects on health below these levels can occur. For PM there is no threshold below which effects do not occur. For NO<sub>2</sub> the World Health Organization (WHO)<sup>u</sup> has recently stated that health effect following long term exposure occurs below the EU annual mean limit value.

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<sup>t</sup> WHO, 2005, Air Quality Guidelines Global update 2005: particulate matter, ozone, nitrogen dioxide and sulphur dioxide, Copenhagen.

<sup>u</sup> WHO, 2013, Review of the evidence on health aspects of air pollution – REVIHAPP project: technical report, Copenhagen

### APPENDIX 3: Vehicle Cleanliness Survey

A visual survey of the cleanliness of heavy goods vehicles entering and leaving Aggregate Industries, Hanson and J. Simpson Waste Management Ltd was undertaken between 8.00am and 1.30 pm on Wednesday 24<sup>th</sup> September 2014. The observer was asked to record the number of vehicles entering and leaving each site and whether their wheels were clean when leaving the sites.

The results are presented below. It should be noted that the survey did not include the shuttle between Aggregate Industries and Hanson.

As set out in the main text of this report it was established that the wheel wash at the Aggregate Industries site was not operational at the time the HGV cleanliness survey was undertaken.

Hours	Hanson	Vehicle movements		Outward vehicle movements	
		in	out	Clean	not clean
8am - 9am		3	4	3	1
9am - 10am		9	6	6	0
10am - 11am		4	6	5	1
11:30am - 12:30pm		9	4	4	0
12:30pm - 1:30pm		5	7	6	1
	total	30	27	24	3
				89%	11%
		Vehicle movements		Outward vehicle movements	
	<b>Aggregate Industries</b>	in	out	Clean	not clean
8am - 9am		3	5	3	2
9am - 10am		13	7	2	5
10am - 11am		7	13	7	6
11:30am - 12:30pm		12	10	7	3
12:30pm - 1:30pm		13	10	2	8
	total	48	45	21	24
				47%	53%
		Vehicle movements		Outward vehicle movements	
	<b>J. Simpson</b>	in	out	Clean	not clean
8am - 9am		1	3	3	0
9am - 10am		4	1	1	0
10am - 11am		7	7	7	0
11:30am - 12:30pm		0	1	1	0
12:30pm - 1:30pm		6	2	2	0
	total	18	14	14	0
				100%	
		Vehicle movements		Outward vehicle movements	
	<b>Other</b>	in	out	Clean	not clean
8am - 9am		2	4	3	1
9am - 10am		4	1	1	0
10am - 11am		5	5	2	3
11:30am - 12:30pm		3	4	3	1
12:30pm - 1:30pm		5	2	2	0
	total	19	16	11	5
				69%	31%
		in	out		
	Number of vehicles entering and leaving Acton Goods Yard	115	102		

## APPENDIX 4: Local Authority's Duties and Powers

This appendix provides a brief summary of Ealing Council's duties and powers with respect to improving air quality. It is intended to be a short non-technical resumé of the legislation and has not been written by a lawyer.

**Local Air Quality Management (LAQM) (Environment Act 1995, Part IV)** - requires local authorities to review and assess air quality and to designate an air quality management area (AQMA) where the air quality objectives are not achieved or likely to be achieved (S. 83) Where an AQMA is designated the local authority must prepare an assessment and an action plan (S.85). In Defra's guidance to local authorities it makes clear that they have to 'work towards' achieving the air quality objectives which are set out in Regulations (e.g. Air Quality (England) Regulations 2000). There is no obligation on local authorities to ensure that the objectives are achieved. This is in recognition that the control of many emission sources is outside their control role and that national and international polices are better at controlling emissions of some sources (e.g. vehicle emission standards). In Ealing the whole borough is an AQMA for PM<sub>10</sub> and nitrogen dioxide.

**EU Air Quality Standards (European Directive 2008/50/EC, implemented via the Air Quality Standards Regulations 2010)** requires the competent authority to assess air quality in its area and ensure that the air quality limit values are achieved. The relevant UK competent authority is Defra. The limit values are mandatory and the UK Government is currently subject of infraction proceeding relating to exceedences of the NO<sub>2</sub> limits. The UK Government is not officially in breach of the EU PM<sub>10</sub> limit values but has not yet included the data from the Horn Lane monitoring station in its annual submissions to the European Commission. Defra adopted the monitoring station into its automatic urban and rural network (AURN) in May 2014 and will in the future report the data. As the limit value is mandatory there is pressure to achieve compliance.

**Environmental Permits (Environmental Permitting (England & Wales) Regulations 2010)** - certain processes required an Environmental Permit issued by either the Environmental Agency (for the most polluting processes and waste management facilities) or the local authority. Environmental Permits set conditions for the operation of a site. There is a series of process guidance notes that set out best practice, which typically are required for new processes, but may also be applied to existing processes. If an operator breaches the Permit conditions the regulator can serve an enforcement notice and prosecute. There are defined procedures for doing this. An operator can appeal if the conditions are too stringent.

**Planning Permission (Town and Country Planning Act, 1990)** - For most new developments planning permission is required. Conditions to control pollution can be set as part of the permission, but typically emissions are controlled via the Environmental Permit where one is in place. Once a planning permission is given the conditions cannot be changed other than via a further application to vary the condition.

**Statutory Nuisance (Environmental Protection Act 1990, sections 79 & 80)** – If there is no environmental permit covering the activity, a local authority is under a duty to serve an abatement notice on the responsible party if it believes they are causing a statutory nuisance. With respect to air quality this is where dust, smoke, fumes, gases, or smell are emitted from premises so as to be prejudicial to health or a nuisance. Prosecution can result where there is sufficient evidence of breaches of the notice.

## APPENDIX 5: PM<sub>10</sub> monitoring locations

### PM<sub>10</sub> monitoring locations in and around Acton Goods Yard



Satellite image obtained from Bing Maps (Microsoft Corporation)

#### Key to monitoring sites

- Site operators
- Ealing Council
- Defra/Ealing Council