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Process Guidance Note 3/15(12)

Statutory guidance for roadstone coating

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Revision of the guidance

The electronic version of this publication is updated from time to time with new or amended guidance. The **Table 0.1** is an index to the latest changes (minor amendments are generally not listed).

Table 0.1 - Revision of the guidance		

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1. Introduction

Legal basis

1.1 This note applies to the whole of the UK. It is issued by the Secretary of State, the Welsh Assembly Government, the Scottish Government and the Department of the Environment in Northern Ireland (DoENI), to give guidance on the conditions appropriate for the control of emissions into the air from the roadstone coating sector. It is published only in electronic form and can be found on the Defra website. It supersedes PG3/15a (04) and NIPG3/15a (04).

1.2 This guidance document is compliant with the Code of Practice on Guidance on Regulation page 6 of which contains the "golden rules of good guidance". If you feel this guidance breaches the code or you notice any inaccuracies within the guidance, please contact us.

1.3 This is one of a series of statutory notes[1] giving guidance on the Best Available Techniques (BAT)[2] The notes are all aimed at providing a strong framework for consistent and transparent regulation of installations regulated under the statutory Local Air Pollution Prevention and Control (LAPPC) regime in England and Wales, Scotland and Northern Ireland. The note will be treated as one of the material considerations when determining any appeals against a decision made under this legislation.

1.4 In general terms, what is BAT for one installation in a sector is likely to be BAT for a comparable installation. Consistency is important where circumstances are the same. However, in each case it is, in practice, for regulators (subject to appeal) to decide what is BAT for each individual installation, taking into account variable factors such as the configuration, size and other individual characteristics of the installation, as well as the locality (e.g. proximity to particularly sensitive receptors).

1.5 The note also, where appropriate, gives details of any mandatory requirements affecting air emissions which are in force at the time of publication, such as those contained in Regulations or in Directions from the Government. In the case of this note, at the time of publication there were no such mandatory requirements.

[1] this and other notes in the series are issued as statutory guidance in England and Wales under regulation 64(2) of the Environmental Permitting Regulations. The notes are also issued as statutory guidance in Northern Ireland and as guidance in Scotland.
further guidance on the meaning of BAT can be found for England and Wales, Scotland, and Northern Ireland.

Simplified or standard permits

1.6 Most of the activities covered by this note will have essentially the same characteristics and it is expected that the application form and model permit in **Appendices 2 and 3** will normally be used in order to simplify for businesses the process of applying for a permit and to simplify for regulators the process of issuing a permit. (See also the relevant LAPPC charging scheme for reduced application and subsistence charges for simplified permits).

If there are good reasons to consider diverging from normal use of the model permit, the starting point for drafting any additional conditions should be the arrowed bullets in the main body of this note.

In the case of activities which are mobile plant it is expected that regulators will continue to use standard applications and permits.

Sites with more than one Pt B activity which in accordance with the relevant charging scheme are to be treated as a single activity will require a full permit not a simplified permit, therefore the whole installation comprising both activities should be subject to a full permit.

1.7 For activities which are mobile plant, in **Section 4** and **Section 5**, arrows are used to indicate the matters which should be considered for inclusion as permit conditions. It is important to note, however, that this should not be taken as a short cut for regulators to a proper determination of BAT or to disregard the explanatory material which accompanies the arrows. In individual cases it may be justified to:

- include additional conditions
- include different conditions
- not include conditions relating to some of the matters indicated.

In addition, conditions will need to be derived from other parts of the note, in particular to specify emission limits, compliance deadlines and mandatory requirements arising from directions or other legislation.

Who is the guidance for?

1.8 This guidance is for:

Regulators

- local authorities in England and Wales, who must have regard to the guidance when determining applications for permits and reviewing extant permits;
- the Scottish Environment Protection Agency (SEPA) in Scotland, and district councils or the Northern Ireland Environment Agency, (NIEA), in Northern Ireland.

Operators who are best advised also to have regard to it when making applications and in the subsequent operation of their installation.

Members of the public who may be interested to know what the Government considers, in accordance with the legislation, amounts to appropriate conditions for controlling air emissions for the generality of installations in this particular industry sector.

Updating the guidance

1.9 The guidance is based on the state of knowledge and understanding, at the time of writing, of what constitutes BAT for this sector. The note may be amended from time to time to keep up with developments in BAT, including improvements in techniques, changes to the economic parameters, and new understanding of environmental impacts and risks. The updated version will replace the previous version on the Defra website and will include an index to the amendments.

1.10 Reasonable steps will be taken to keep the guidance up-to-date to ensure that those who need to know about changes to the guidance are informed of any published revisions. However, because there can be rapid changes to matters referred to in the guidance – for example to legislation – it should not be assumed that the most recent version of this note reflects the very latest legal requirements; these requirements apply.

Consultation

1.11 This note has been produced in consultation with relevant trade bodies, representatives of regulators including members of the Industrial Pollution Liaison Committee, and other potentially-interested organisations.

Policy and procedures

1.12 General guidance explaining LAPPC and setting out the policy and procedures is contained in separate documents for England and Wales, Scotland and Northern Ireland.

2. Timetable for compliance and reviews

Existing processes or activities

2.1 This note contains all the provisions from previous editions which have not been amended or removed. For installations in operation at the date this note is published, the regulator should have already issued or varied the permit having regard to the previous editions. If they have not done so, this should now be done.

2.2 The new provisions of this note and the dates by which compliance with these provisions is expected are listed in **Table 2.1**, together with the paragraph number where the provision is to be found. Compliance with the new provisions should normally be achieved by the dates shown. Permits should be varied as necessary, having regard to the changes and the timetable.

Table 2.1 - Compliance timetable

Guidance	Relevant paragraph/row in this note	Compliance date
Recycling asphalt containing coaltar	5.22	from the month following publication
For a full list of the main changes, please see **Table 6.1** in Section 6.		

2.3 Replacement plant should normally be designed to meet the appropriate standards specified for new installations/activities.

2.4 Where provisions in the preceding guidance note have been deleted or relaxed, permits should be varied as necessary as soon as reasonably practicable. It is expected that local authorities will aim to vary existing permits so as to convert them into the model permit format in **Appendix 2** within 12 months of the publication of this note.

2.5 For new activities, the permit should have regard to the full standards of this guidance from the first day of operation.

2.6 For substantially changed activities, the permit should normally have regard to the full standards of this guidance with respect to the parts of the activity that have been substantially changed and any part of the activity affected by the change, from the first day of operation.

Permit Reviews

2.7 Under LAPPC, the legislation requires permits to be reviewed periodically but does not specify a frequency. It is considered for this sector that a frequency of once every eight years ought normally to be sufficient for the purposes of the appropriate Regulations[3]. Further guidance on permit reviews is contained in the appropriate Guidance Manual for England and Wales, Scotland and Northern Ireland. Regulators should use any opportunities to determine the variations to permits necessitated by paragraph 2.2 above in conjunction with these reviews.

2.8 Conditions should also be reviewed where complaint is attributable to the operation of the process and is, in the opinion of the regulator, justified.

[3] For details see England and Wales General Guidance Manual chapter 26, Scotland, Practical guide section 10, Northern Ireland Part B Guidance page 9, Northern Ireland Part C Guidance chapter 17.

3. Activity description

Regulations

3.1 This note applies to LAPPC installations for the coating of roadstone. The activities for regulation are listed in **Table 3.1**.

Table 3.1 - Regulations listing activities

LAPPC	Activity	England and Wales	Scotland	Northern Ireland
		EPR Schedule 1 reference	PPC Schedule 1 reference	PPC Schedule 1 reference
Part A	Combustion over 50MW site aggregated	Section 1.1 Part A1	Section 1.1 Part A	Section 1.1 Part A
Part B	Coating roadstone with tar or bitumen, combustion less than Part A	Section 3.5 Part B	Section 3.5, Part B	Section 3.5, Part B
Part C	Coating roadstone with tar or bitumen, combustion less than Part A	n/a	n/a	n/a
The links are to the original version of the regulations. A consolidated version is not available on www.legislation.co.uk				

Asphalt

3.2 Asphalt is a mixture of aggregate, sand, filler, binder (often bitumen) and occasionally a number of additives, such as adhesion agents, modifiers and fibres that influence the performance of the product. Sometimes old asphalt or demolition waste is recycled to replace part of the binder and the virgin aggregate. The asphalt production process also allows the incorporation of waste materials from other industries such as concrete waste, fly ash, incinerator ash, etc.

3.3 Bitumen is derived as a residual product from the refining of crude oil. Tar is derived from the pyrolysis of coal. The use of tar in roadstone coating processes is rare due to health and safety concerns relating to the high concentration of polyaromatic hydrocarbons (PAHs), which may be 10,000 times higher than that of bitumen.

Roadstone coating plant size and process design

3.4 Mixing plant varies in size, with production rates from 25 - 800 tonnes per hour. A typical motorway plant is probably 200-300 tonnes per hour, and a typical urban plant is 40-100 tonnes per hour. Typical stack gas flow for a 100 tonne plant is 50,000m^3/hour.

3.5 Production may take place in fixed or mobile plant.

3.6 Process design varies, for example, drying can be batch or continuous. Mixing may be in the dry vessel, batch heater or a separate vessel. The most common process is: continuous drying, stone is stored hot, and mixed in batches.

Hot, cold and warm asphalt mixes

3.7 Hot mix asphalt is a mixture of approximately 92% of well-graded aggregates, together with filler and sometimes additives. Bitumen is the binder that "glues" the asphalt together; it makes up less than 8% of the product. Filler is used to fill out the smallest voids and to stabilise the binder.

3.8 In a number of applications bitumen emulsion is used as a binder. Emulsion based mixes are referred to as "cold mixes". The final properties of cold mix asphalt are different from hot mixes. Mobile cold mix is similar to a concrete batching process, with no heating, and dusty solids.

3.9 Warm mix is an energy saving version of hot mix, where not all the ingredients are heated before mixing.

Batch processes

3.10 Generally an asphalt plant can be divided into the following main parts:

- hoppers of the cold feed
- aggregate heater and dryer
- bitumen storage tanks
- filler silos
- mixer plant
- silos for storing hot asphalt

3.11 Aggregate is conveyed from the cold feed hoppers in metered proportions depending upon the mix required. It is transported to the intake of the rotary drum dryer. This is a steel cylinder placed on a slight inclination, with flights placed on the inside. As the drum rotates, the flights lift the material and let it fall down through the hot air stream in the drum. For the heating and drying process a gas or oil fired burner is positioned at the bottom end of the drum. The gas flow direction is usually opposite to the flow of the aggregate material. Water vapour and exhaust air are extracted from the cold end of the drum to particulate arrestment plant, which is usually a bag filter house. Sometimes cyclones are used and occasionally wet scrubbers. The dust collected is fed back into the mixing process or goes to a separate silo.

3.12 The hot aggregates (135 - 180 °C) drop into a bucket elevator and are lifted to the top of the mixing tower. They are transferred onto vibrating screens and separated into different grades in individual storage bins. The required grade of aggregate is dropped to a weigh hopper then into a pug mill (mixer) where it is coated with bitumen which is pumped from a heated storage tank, weighed and injected into the mixer. Mixing times vary between 25 - 90 seconds depending on plant and mix type. The finished asphalt mix is then transferred directly to a waiting truck for immediate delivery to the site or by a conveyor to heated asphalt storage silos.

3.13 The process is modified slightly if reclaimed materials are added.

Drum mix plants,

3.14 Drum mix plants are less flexible in changing mixes; there were only a few drum mix processes left in the UK in 20004. Both heating and drying of aggregates and the mixing with filler and bitumen takes place in the drum, i.e. no pug mill is involved. Proportional feed controls are used to ensure the correct mix is delivered to the drum. The aggregate is fed into the revolving drum and heated and dried by the burner gases. About midway along the drum, filler and liquid bitumen are injected where they mix with and coat the dried aggregates. From the drum, the finished asphalt is discharged to a conveyor and carried to heated storage bins.

Bulk powdered material transfer

3.15 Powdered materials such as filler are delivered by road or rail in bulk tankers. The powder materials are transferred through a closed system of heavy-duty hoses to storage silos, using compressed air as a carrier medium.

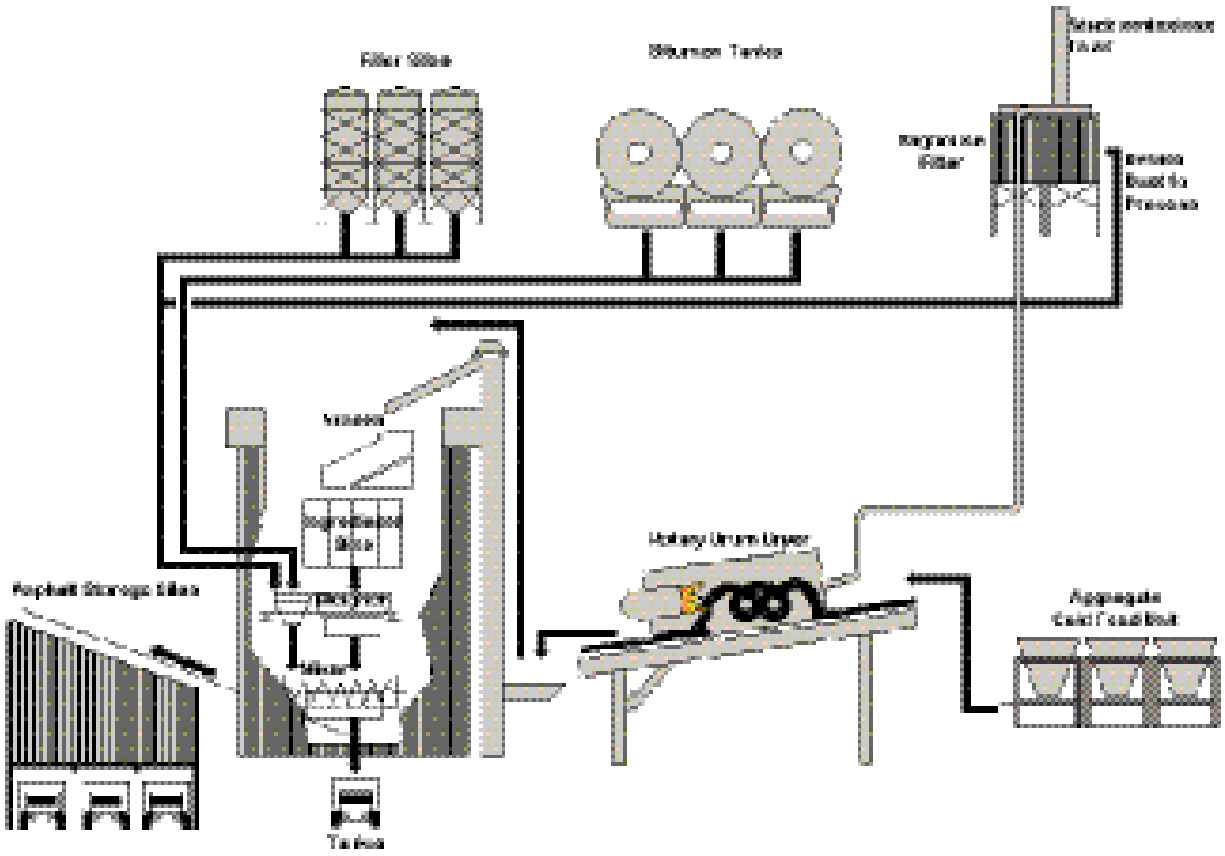

Figure 3.1 Flow diagram of a typical roadstone coating process

4. Emission limits, monitoring and other provisions

4.1 Emissions of the substances listed **Table 4.1** below should be controlled.

4.2 The emission limit values and provisions described in this section are achievable using the best available techniques described in **Section 5**. Monitoring of emissions should be carried out according to the method specified in this section or by an equivalent method agreed by the regulator. Where reference is made to a British, European, or International standard (BS, CEN or ISO) in this section, the standards referred to are correct at the date of publication. (Users of this note should bear in mind that the standards are periodically amended, updated or replaced.) The latest information regarding the monitoring standards applicable can be found at the Source Testing Association website. Further information on monitoring can be found in Environment Agency publications (M1) and (M2).

4.3 All activities should comply with the emission limits and provisions with regard to releases in **Table 4.1**.

The reference conditions for limits in **Section 4** are: 273.1K, 101.3kPa, without correction for water vapour content or oxygen, unless stated otherwise.

Table 4.1 should be considered in conjunction with the monitoring paragraphs found later in this section

Table 4.1 - Emission limits, monitoring and other provisions					
Row	**Substance**	**Source**	**Emission limits / provisions**	**Type of monitoring**	**Monitoring frequency**
Whole site and all authorised emission points					
1	Visible emissions	Site	No visible emissions to cross site boundary	Operator observations	Once a day
2	Visible emission	All authorised emission points	No abnormal emission	Operator observations	
3	Droplets, persistent mist , fume and smoke	All emissions to air (except steam and condensed water vapour)	No droplets, no persistent mist, no persistent fume, No visible smoke except during start up of coating plant and then no darker than Ringelmann 1	Visual observations	On start-up and on at least two more occasions during the working day
Roadstone coating plant					
4	Particulate matter	Roadstone coating plant existing at 1 July 2004, except where new or replacement arrestment equipment is fitted	Where currently achieved: 50 mg/m^3	EITHER: Periodic, quantitative, 6 monthly OR: Periodic, quantitative, annual monitoring; plus continuously recorded filter leak monitoring	
			Where 50 mg/m^3 currently achieved, but only inconsistently: 100 mg/m^3 PLUS efforts should be made to improve consistency.		
			Where 50 mg/m^3 currently not achieved: 100 mg/m^3		
5	Particulate matter	Since 1 July 2004: new roadstone coating plant, and roadstone coating plant with new or replacement arrestment equipment	50 mg/m^3		
6	Sulphur dioxide	All activities using heavy fuel oil or other residual type/comparable Quality Protocol Processed Fuel Oil	1% wt/wt sulphur in fuel	Sulphur content of fuel is regulated under the Sulphur Content of Liquid Fuels Regulations	

7	Sulphur dioxide	All activities using gas oil/ comparable Quality Protocol Processed Fuel Oil	0.1% wt/wt sulphur in fuel	Sulphur content of fuel is regulated under the Sulphur Content of Liquid Fuels Regulations	
Activities burning bio-fuels should have a limit set for sulphur in fuel Activities burning waste oil not covered by the quality protocol processed fuel oil must comply with the Waste Incineration Directive (WID).					
Silos					
8	Particulate matter	Silo inlets and outlets	Designed to emit less than 10mg/m^3 No visible emission	Operator/driver observations Record start and finish times	Every delivery
Arrestment plant not serving silos or roadstone coating plant					
9	Particulate matter	Arrestment equipment with exhaust flow >300 m^3/min: (see note a)	Designed to achieve 50 mg/m^3	Recorded filter leak monitoring	Continuous
10	Particulate matter	Arrestment equipment with exhaust flow >100 m^3/min: (see note a)	Designed to achieve 50 mg/m^3	Filter leak monitoring to demonstrate that the arrestment equipment is functioning correctly	Continuous
11	Particulate matter	Arrestment equipment with exhaust flow =/<100 m^3/min (see note a)	No visible emission	Operator observations OR Filter leak monitoring to show that the equipment is functioning correctly	At least daily Continuous
Notes *All periodic monitoring results shall be checked by the operator on receipt and sent to the Council within 8 weeks of the monitoring being undertaken.* (a) - Where the plant is discharging to the external atmosphere. (b) The reference conditions for limits in Table 1 are: 273.1K, 101.3kPa, without correction for water vapour content. (c) All periodic monitoring shall be representative, and shall use standard methods. (d) The emission limits do not apply during start-up and shut down. All emissions shall be kept to a minimum during these periods.					

Monitoring, investigating and reporting

4.4 The operator should monitor emissions, make tests and inspections of the activity. The need for and scope of testing, (including the frequency and time of sampling), will depend on local circumstances.

- The operator should keep records of inspections, tests and monitoring, including all non-continuous monitoring, inspections and visual assessments. The records should be:
  - kept on site;
  - kept by the operator for at least two years; **and**
  - made available for the regulator to examine.
- If any records are kept off-site they should be made available for inspection within one working week of any request by the regulator.

Information required by the regulator

4.5 The regulator needs to be informed of monitoring to be carried out and the results. The results should include process conditions at the time of monitoring.

- The operator should notify the regulator at least 7 days before any periodic monitoring exercise to determine compliance with emission limit values. The operator should state the provisional time and date of monitoring, pollutants to be tested and the methods to be used.
- The results of non-continuous emission testing should be forwarded to the regulator within 8 weeks of completion of the sampling.
- Adverse results from any monitoring activity (both continuous and non-continuous) should be investigated by the operator as soon as the monitoring data has been obtained. The operator should:
  - identify the cause and take corrective action;
  - clearly record as much detail as possible regarding the cause and extent of the problem, and the remedial action taken;
  - re-test to demonstrate compliance as soon as possible; **and** inform the regulator of the steps taken and the re-test results.

Visible Emissions

4.6 The aim should be to prevent any visible airborne emission from any part of the process. This aim includes all sites regardless of location. Monitoring to identify the origin of a visible emission should be undertaken and a variety of indicative techniques are available.

- Where ambient monitoring is carried out it may also be appropriate for the regulator to specify recording of wind direction and strength.

- Where combustion units are in use for dryers then the combustion process should be controlled and equipment maintained as appropriate.

4.7 Emissions from combustion processes should in normal operation be free from visible smoke. During start up and shut down the emissions should not exceed the equivalent of Ringelmann Shade 1 as described in British Standard BS 2742: 2009

- All other releases to air, other than condensed water vapour, should be free from persistent visible emissions.

- All emissions to air should be free from droplets.

Where there are problems that, in the opinion of the regulator, may be attributable to the installation, such as local complaints of visual emissions or where dust from the installation is being detected beyond the site boundary, the operator should investigate in order to find out which part of their operation(s) is the cause.

If this inspection does not lead to correction of the problem then the operator should inform the regulator who will determine whether ambient air monitoring is necessary. Ambient monitoring may either be by a British Standard method or by a method agreed with the regulator.

Whilst problems are ongoing, a visual check should also be made at least once per day/shift by the operator, when an installation is being operated. The time, location and result of these checks, along with weather conditions such as indicative wind direction and strength, should be recorded. Once the source of the emission is known, corrective action should be taken without delay and where appropriate the regulator may want to vary the permit in order to add a condition requiring the particular measure(s) to be undertaken.

Emissions of Odour

4.8 The overall aim should be that all emissions are free from offensive odour outside the site boundary, as perceived by the regulator. However, the location of the installation will influence the assessment of the potential for odour impact as local meteorological conditions may lead to poor dispersion conditions. Where the site has a low odour impact due to its remoteness from sensitive receptors, the escape of offensive odour beyond the installation would be unlikely to cause harm.

Where there are problems that, in the opinion of the regulator, may be attributable to the installation, such as local complaints of odour or where odour from the installation is being detected beyond the site boundary, the operator should investigate in order to find out which part of their operation(s) is the cause.

Whilst problems are ongoing, a boundary check should also be made at least once per day/shift, by the operator, when an installation is being operated. The time, location and result of these checks, along with weather conditions such as indicative wind direction and strength, should be recorded. Once the source of the emission is known, corrective action should be taken without delay and where appropriate the regulator may want to vary the permit in order to add a condition requiring the particular measure(s) to be undertaken.

- Where it is installed any odour arrestment equipment should be inspected at least once a day to verify correct operation and to identify any malfunctions. Depending upon the type of any arrestment plant used this inspection should include:
  - identification of any leaks in air handling equipment and ductwork
  - in the case of scrubbing equipment, thermal oxidisers and other combustion equipment, the inspection should include verification of the operation of any continuous monitoring equipment, the presence of any blockages and also identification of any leaks of either odorous air or liquid.
  - in the case of biofilters, the surface should be inspected to identify any cracking of the surface or voids in the bed, leaks around the edge of the filter or air handling equipment, review of the moisture content (considering both flooding and drying out) and looking for signs of compaction or uneven flow.
  - in the specific case of soil biofilters, the growth of plants and weeds should be inspected as any excessive flow or odour escape is often indicated by scorching of the earth or plant growth dying off.

Abnormal Events

4.9 The operator should respond to problems which may have an adverse effect on emissions to air.

- In the case of abnormal emissions, malfunction or breakdown leading to abnormal emissions the operator should:
  - investigate and undertake remedial action immediately;
  - adjust the process or activity to minimise those emissions; **and**
  - promptly record the events and actions taken.
- The regulator should be informed without delay, whether or not there is related monitoring showing an adverse result:
  - if there is an emission that is likely to have an effect on the local community; **or**
  - in the event of the failure of key arrestment plant, for example, bag filtration plant or scrubber units.
- The operator should provide a list of key arrestment plant and should have a written procedure for dealing with its failure, in order to minimise any adverse effects

Start up and shutdown

4.10 Higher emissions may occur during start-up and shut-down of a process. These emissions can be reduced, by minimising, where possible, the number of start-ups and shut-downs and having adequate procedures in place for start-up, shut-down and emergency shut-downs.

- The number of start-ups and shut downs should be kept to the minimum that is reasonably practicable.
- All appropriate precautions must be taken to minimise emissions during start-up and shutdown.

Continuous Monitoring

4.11 Continuous monitoring can be either “quantitative” or “indicative”. With quantitative monitoring the discharge of the pollutant(s) of concern is measured and recorded numerically. For pollution control this measurement is normally expressed in milligrams per cubic metre of air, (mg/m^3). Where discharge of the pollutant concerned is controlled by measuring an alternative parameter, (the “surrogate” measurement), this surrogate is also expressed numerically.

Continuous indicative monitoring is where a permanent device is fitted, for example, to detect leaks in a bag filter, but the output, whether expressed numerically or not, does not show the true value of the discharge. When connected to a continuous recorder it will show that emissions are gradually (or rapidly) increasing, and therefore maintenance is required. Alternatively it can trigger an alarm when there is a sudden increase in emissions, such as when arrestment plant has failed.

Where continuous indicative monitoring has been specified, the information provided should be used as a management tool. Where used, the monitor should be set up to provide a baseline output when the plant is known to be operating under the best possible conditions and emissions are complying with the requirements of the permit. Where used to trigger alarms, the instrument manufacturer should be able to set an output level which corresponds to around 75% of the emission limit. Thus the alarms are activated in response to this significant increase in pollutant loading above the baseline, so that warning of the changed state is given before an unacceptable emission occurs. The regulator may wish to agree the alarm trigger level.

4.12 Where continuous monitoring is required, it should be carried out as follows:

- All continuous monitoring readings should be on display to appropriately trained operating staff.
- Instruments should be fitted with audible and visual alarms, situated appropriately to warn the operator of arrestment plant failure or malfunction.
- The activation of alarms should be automatically recorded.
- All continuous monitors should be operated, maintained and calibrated (or referenced, in the case of indicative monitors) in accordance with the manufacturers’ instructions, which should be made available for inspection by the regulator. The relevant maintenance and calibration (or referencing, in the case of indicative monitors) should be recorded.

- Emission concentrations may be reported as zero when the plant is off and there is no flow from the stack. If required a competent person should confirm that zero is more appropriate than the measured stack concentration if there is no flow.

- Any continuous monitor used should provide reliable data>95% of the operating time, (i.e. availability >95%). A manual or automatic procedure should be in place to detect instrument malfunction and to monitor instrument availability

Calibration and compliance monitoring

4.13 Compliance monitoring can be carried out by use of a continuous emissions monitor (CEM), and a specific periodic test carried out at a frequency agreed with the regulator.

4.14 Where a CEM is used for compliance purposes it must be periodically checked, (calibrated), to ensure the readings being reported are correct. This calibration is normally done by carrying out a parallel stand-alone periodic test and comparing the results with those provided by the CEM.

4.15 For periodic testing the sampling should meet the following requirements:

- For batch processes, where the production operation is complete within, say, 2 hours, then the periodic sampling should take place over a complete cycle of the activity; **and**

- For all activities the sampling period should be sufficient such that at least 3 results are obtained.

4.16 Should the activity either be continuous, or have a batch cycle that is not compatible with the time available for sampling, then the data required should be obtained over a minimum period of 2 hours in total.

- For demonstration of compliance where a CEM is used no daily mean of all 15-minute mean emission concentrations should exceed the specified emission concentration limits during normal operation (excluding start-up and shut-down); **and**

- no 15-minute mean emission concentration should exceed twice the specified emission concentration limits during normal operation (excluding start-up and shut-down).

- For periodic testing, no result of monitoring should exceed the emission limit concentrations specified.

4.17 Exhaust flow rates should be consistent with efficient capture of emissions, good operating practice and meeting the requirements of the legislation relating to the workplace environment.

- The introduction of dilution air to achieve emission concentration limits should not be permitted.

Dilution air may be added for waste gas cooling or improved dispersion where this is shown to be necessary because of the operational requirements of the plant, but this additional air should be discounted when determining the mass concentration of the pollutant in the waste gases.

Varying of monitoring frequency

4.18 For coating plant, testing less than once a year is not likely to be appropriate, and nearly all large sites test twice a year.

Where a new or substantially changed process is being commissioned, or where emission levels are near to or approach the emission concentration limits, regulators should consider increasing the frequency of testing.

Monitoring of unabated releases

4.19 Where emission limit values are consistently met without the use of abatement equipment, the monitoring requirement for those pollutants should be dispensed with.

Representative sampling

4.20 Care is needed in the design and location of sampling systems in order to obtain representative samples for all release points. The operator should ensure that adequate facilities for sampling are provided on vents or ducts. Sampling points on new plant should be designed to comply with the British or equivalent standards.

4.21 Where monitoring is not in accordance with the main procedural requirements of the relevant standard, deviations should be reported.

- Sampling points on new plant should be designed to comply with the British or equivalent standards, (see paragraph 4.2).

- The operator should ensure that relevant stacks or ducts are fitted with facilities for sampling which allow compliance with the sampling standards.

Emissions from silos/ storage tanks

4.22 During silo filling it is most likely that any emissions would be released during the first and last five minutes of the delivery. The first few minutes are when emissions, due to leaks or split hoses, would first be noticed. The last few minutes are when excess pressure from the tanker/ blowing system may cause an emission through the pressure relief valve if the delivery is not controlled correctly. During silo filling procedures isokinetic monitoring of emissions from the arrestment plant is not likely to be possible as the delivery period is so short. For this reason there is no numerical emission limit for such plant. It is important however that the plant is designed to cope with the delivery flow rate that is used for the silo.

4.23 Silo systems and storage tanks require appropriate inspections and assessments to minimise potential for emissions during the filling process.

- Operators should have a procedure in place to ensure that visual assessment of emissions from silo inlet connections and the silo arrestment plant are undertaken throughout the duration of all bulk deliveries. The start and finish times of all deliveries should be recorded.

Inspection of filtration plant

4.24 Silo arrestment plant and arrestment plant serving other process operations should be inspected at the frequency specified in **Table 4.2** below:

Table 4.2 - Filtration plant inspection frequency

Filter cleaning method	Frequency of visual inspection
Fitted with reverse jets	at least once a month
Fitted with mechanical shakers	at least once a week
Requiring manual shaking	daily inspection or prior to any delivery being made if deliveries are not daily

4.25 The outlet should be checked for signs that emissions have occurred. The equipment should also be checked for defects in the air flow or the cam shakers. If emissions or defects are detected then corrective action should be taken promptly and before another delivery takes place. Any failure of the silo management system (e.g. high level alarms, filter, pressure relief valve) should lead to full investigation of the operation of the plant and equipment.

4.26 Reduced inspection frequency of bag filter (or cartridge) arrestment plant may be appropriate, as follows:

- where pressure drop sensors or other continuous monitors are used to monitor the arrestment plant; such monitors should be inspected according to manufacturers' recommendations to ensure their proper operation.
- where continuous camera operation enables observation of all emission points from the arrestment plant and pressure relief valves.
- for filters fitted with reverse jets or with mechanical shakers where operating experience has demonstrated satisfactory operation of the arrestment plant.
- where the process operation is infrequent.

5. Control techniques

Summary of best available techniques

5.1 **Table 5.1** provides a summary of the best available techniques that can be used to control the process in order to meet the emission limits and provisions in **Section 4**. Provided that it is demonstrated to the satisfaction of the regulator that an equivalent level of control will be achieved, then other techniques may be used.

Table 5.1 - Summary of control techniques

Substance	Source	Control techniques
Particulate matter	Loading and unloading processes Conveyor transfer points	Within buildings Suppression Reduced drop heights use of variable height conveyors use of chutes Dust arrestment (loading area) bag filters cartridge filters
	Double handling transfer points	Site and process design
	Delivery to silo from road tanker it is common for overcharging of silos to cause the pressure relief valve to lift, thereby causing an unacceptable emission.	Process control, for example, High level monitor with alarms. Tanker delivery controls. Automatic protection system.
	Filling silos	Dust arrestment bag filters cartridge filters
	Dusty material storage	Storage silos Within buildings
	Conveyors, conveyor transfer points	Containment wind boards Appropriate siting Site away from site boundary especially if near residential or other sensitive receptors
	Size reduction, drying and screening processes	Within process buildings Dust arrestment bag filters / cartridge filters
	Roadways including haulage roads	Suppression site and process design

	External operations Conveyors Roadways	Appropriate siting away from site boundary especially if near residential or other sensitive receptors Wind dynamics management use of fencing, bunding, profiling etc
	Vehicles - bodies and wheels	Wheel-wash
	Lorries, trains	Sheeting , dust covers
Odour or bitumen fume	Bitumen loading	Temperature control Site away from boundary Ground based pumps
	Bitumen storage	Temperature control
	Handling hot bitumen or coated roadstone	Temperature control Enclosure
	Heating recycled asphalt	Cold or foam mix techniques
	Some additives	
	Bitumen generally	Choice of low odour bitumen
Tar fume	Heating reclaimed asphalt containing coal tar	Cold or foam mix techniques, not hot mix
Other hydrocarbon emissions	Incomplete combustion	Good combustion
	Release agents	Avoid hot surfaces
Carbon monoxide	Combustion of fuel	Good combustion
Sulphur oxides	Oil combustion	Gas oil has lower sulphur than residual oils Aggregate dust absorbs some sulphur, in duct and in dust filter cake
Nitrogen oxides	Fuel combustion	Short flame, low nitrogen in fuel, low temperature in dryer
Droplet emissions	Wet arrestment	Control airflow speed Fit mist arrestors

Techniques to control emissions from contained sources

5.2 The control techniques described below address the sources of particulate matter and bitumen fume and odour.

Silos

5.3 The delivery of powder from road tankers relies on a compressor (blower) mounted on the tanker lorry providing a supply of air which is used in three ways:

- to pressurise the tank vessel with air so that inside the vessel there is significant pressure which helps feed the powder out of the tankers. The tank is pressurised at the start of the blow, and can be re-pressurised as necessary during the course of discharging.
- a separate feed from the air supply passes to the distributor system which fluidises the powder around the distributor plate.
- a third feed of air receives fluidised powder and flows from the tanker, along the connecting pipework and into the silo. The powder fed from the distributor system is thus transferred to the silo in the air stream.

5.4 The flow of air/material through the pipe depends on the pressure in the blowing line and hence the pressure in the tankers. The pressure required to successfully convey the powders is determined by the resistance to flow and gravity that is to be overcome which varies depending upon the height to which the powders are to be pumped (i.e. the height of the silo) and the pipe length and diameter.

5.5 The tanker discharge is controlled by the tanker driver. The driver controls the flow of air to the tank, the distributor and the silo to maintain a constant flow of material into the silo without exceeding the flow capacity of the filter system or exerting excessive pressure in the silo (which is not a pressure vessel).

5.6 In the event that the silo becomes pressurised the pressure relief valve should lift for safety reasons. If the pressure relief valve is not designed to relieve the pressure quickly enough, the silo may rupture or the filter unit may be ejected from the top of the silo. Such incidents give rise to an unacceptable emission to atmosphere. Such incidents have been caused by excessive pressure being blown from the delivery tanker into the silo at the end of the delivery cycle. Venting the residual air from a tanker should be via a flow restrictor, which limits the rate at which the air is discharged, if it has to be discharged through the silo. Rather than venting through the silo, it is preferable that residual air should be vented to atmosphere using a filtered vent on the tanker.

5.7 All new silos should be installed with automatic protection systems to control the delivery of material from the tanker to the silo such that it is not possible to over-fill or over-pressurise the silo.

5.8 If the filter system on the silo is not capable of handling the large flow of air that is generated during the delivery process, this may cause an increase in pressure within the silo. Filter manufacturers supply information on the pressure drop across filters and the filtration rate. It is important that the filter size is calculated to match the flow rates of air through the silo. The filter systems must be cleaned to prevent blockages and accumulation of powder in the filter system.

5.9 The silo management system includes the high level alarms, arrestment plant and pressure relief device. If best practice is being applied then any failure of the silo management system leads to full investigation of the operation of the plant and equipment. Continuous high level monitoring systems are currently available for use in storage silos. They may be used telemetrically to monitor stock within the silo. They may also be used to automatically stop delivery of material to the silo. It is expected that such systems will become more widely used in the future.

5.10 Careful delivery by trained personnel will avoid materials being blown into silos at a rate which is likely to result in pressurisation of the silo, especially towards the end of the delivery when the quantity of material entering the ducting is reduced. If deliveries are accepted from tankers without on board relief valve and filtration systems, particular care to avoid pressurisation of silos when venting air through the silo at the end of the delivery is needed.

5.11 The following measures relating to arrestment plant on silos and other silo management techniques are only applicable where the silo vents to the external environment or where silo emissions may escape from inside a building into the external environment.

- All dusty or potentially dusty materials should be stored in silos, in confined storage areas within buildings, or in fully enclosed containers / packaging. Where the storage is open within a building, then suitable precautions should be taken to prevent wind whipping.

- When delivery to a silo or bulk storage tank containing dry materials takes place, displaced air should either be vented to suitable arrestment plant (for example cartridge/bag filters) or backvented to the delivery tanker, in order to minimise emissions. Arrestment plant fitted to silos should be of sufficient size (and kept clean) to avoid pressurisation during delivery.

- In order that fugitive emissions are minimised during the charging of silos, transfer lines should be securely connected to the silo delivery inlet point and the tanker discharge point, in that order. Tanker drivers should be informed of the correct procedures to be followed.

- Bulk storage tanks and silos containing dry materials should be equipped with audible and/ or visual high level alarms, or volume indicators, to warn of overfilling. The correct operation of such alarms should be checked in accordance with manufacturers' instructions. If manufacturer's instructions do not specify, then the check should be weekly or before a delivery takes place, whichever is the longer interval.

- If emissions of particulate matter are visible from ducting, pipework, the pressure relief device or dust arrestment plant during silo filling, the operation should cease; the cause of the problem should be rectified prior to further deliveries taking place. Tanker drivers should be informed of the correct procedure to be followed.

- Seating of pressure relief devices on silos should be checked at least once a week, or before a delivery takes place, whichever is the longer interval.

- Immediately it appears that the device has become unseated during silo filling, no further delivery should take place until corrective action has been taken. The pressure relief device should be examined to check for defects before being re-set and a replacement fitted if necessary. Tanker drivers should be informed of the correct procedure to follow.

- Deliveries to silos from road vehicles should only be made using tankers with an on-board (truck mounted) relief valve and filtration system. This means that venting air from the tanker at the end of a delivery will not take place through the silo. Use of alternative techniques may be acceptable provided that they achieve an equivalent level of control with regard to potential for emissions to air.

- Care should be taken to avoid delivering materials to silos at a rate which is likely to result in pressurisation of the silo. If compressed air is being used to blow powder into a silo then particular care is required towards the end of the delivery when the quantity of material entering the ducting is reduced and hence the air flow is increased.

- All new silos should be fitted with an automatic system to cut off delivery in the event of pressurisation or overfilling. Use of alternative techniques may be acceptable provided that they achieve an equivalent level of control with regard to potential for emissions to air.

Aggregate storage (non- mobile plant)

5.12 In areas where aggregate is being offloaded appropriate dust control measures may include the following:

- enclosure fitted with extract ventilation to arrestment plant;
- enclosure fitted with water sprinklers.
- For new processes, where the plant is at a quarry, it should be fed with stone directly by conveyor from storage hoppers, bays or covered stores, except for material imported onto site which may be fed from re-feed hoppers.
- For existing processes where plant is at a quarry, storage of stone should comply with the paragraph below on open storage and all feed hoppers should be located within a structure consisting of at least 3 walls and a roof.

5.13 For plants that are not situated at a quarry authorised in its own right (for example, satellite depots and plant at sand and gravel pits) the following provisions should apply:

- For new plant supplied mainly by road, the day to day stocks of materials, except sand or washed product, should be held in storage bays within a structure consisting of at least three walls and a roof, and of sufficient capacity to enable normal daily requirements to be met without recourse to the use of externally stored material. Stocks in excess of this provision may be stored in the open so as to comply with the provisions of the paragraphs on 'open storage' and 'aggregate storage (mobile plant)'. All feed hoppers should be located within a structure consisting of at least three walls and a roof.
- For existing plant, and for new plant supplied mainly by rail or ship, storage of stone should comply with paragraph on 'open storage' and all feed hoppers should be located within a structure consisting of at least 3 walls and a roof.

Open storage

5.14 No material should be stored in the open except for:

- material that has been screened to remove material 3 mm and under;
- sand;
- scalpings;
- material used for road sub-bases (commonly known as "MOT material") that has been conditioned before deposition;
- crusher run material or blended material that has been conditioned before deposition;
- material under 3 mm that is in excess of the internal storage capacity (the internal storage capacity should be approved by the local enforcing authority). Where the only practicable option for the storage of material under 3 mm is external stockpiles, particularly careful consideration should be given to the measures discussed below.

Aggregate storage (mobile plant)

5.15 Mobile roadstone coating operations are operations of a transient contract nature carried on away from a normal operation - for example, at motorways or airfields. They usually operate for less than 3 years, although, in accordance with the definition of "mobile plant" in section 1(6) of the 1990 Act, the period of operation in one place is not a factor in determining whether a particular plant is mobile.

- Aggregate materials for mobile operations may be held in open stockpiles except for stockpiles of stone under 3 mm where normal day-to-day supplies should be held in storage bays, silos or hoppers.

Stockpiles and ground storage

5.16 Consideration should be given to the siting of stockpiles, based upon such factors as the prevailing winds, sheltered positions, proximity of neighbours and site operations. A method of stockpiling should be employed which minimises dust emissions, e.g. profiling. Minimisation of drop height is very important in stockpiling to reduce wind whipping of particulates. Loading to and from stockpiles should be carried out in such a manner as to minimise wind-borne dust e.g. taking place at sheltered points.

5.17 When necessary to control dust emissions from stockpiles, methods such as limiting the height of stockpiles or using dust suppressants may be used. Other possible controls include wind breaks on stock piles, bunding or fencing around the pile and strategic arrangement of stockpiles. Periodic conditioning with water, according to weather conditions, may be an appropriate measure. Installation of fixed water sprays should be considered for long term stocking areas if appropriate.

Conveying

5.18 There are various ways of keeping conveyor belts and the surrounding areas clean. For example, where chevron belts are used, catch plates may be fitted to contain dust falling from the underside of the belt at the turning point. From a health and safety perspective this is not always possible and hoses and sprinklers is a possible alternative. New conveyors can be designed to minimise free fall at discharge points. A chute, or similar equipment, at the point of discharge from a conveyor reduces dust arising. Arrestment plant might be a suitable control option if dusty emissions arise from conveyor transfer points. The conditions relating to conveyors should not be applied where material has been screened to remove particles under 3 mm in size, unless visible dust emissions have been observed from the conveyors. The following conditions should only be applied where emissions to the external environment are likely to arise:

- Where dusty materials are conveyed, the conveyor (which might be a bucket elevator) and any transfer points should be enclosed to such an extent as to minimise the generation of airborne dust.
- Where dried materials are handled, transfer points should be ducted to arrestment plant.
- Conveyors should be fitted with effective means for keeping the return belt clean and for collecting materials removed by this cleaning operation. For example, belt scrapers fitted at all head drum returns and catch plates fitted to contain falling dust.
- Conveyor belts should not be overloaded.
- Where the free fall of material gives rise to external dust emissions, techniques should be used at the point of discharge to minimise this, for example the use of a chute or similar equipment
- Where dust emissions from conveyors are visible, dust suppression equipment should be used or the plant should be vented to suitable arrestment equipment, as agreed with the regulator.
- Planned preventative maintenance schedules should include conveyor systems.

Process operations

5.19 Emissions from the process operations covered by this note comprise fine particulate matter, in the form of dust, the products of combustion and odour. The control of dust emissions from these processes is mainly by the use of enclosures and extraction to particulate arrestment plant. Internal transport of dusty materials should be carried out so as to prevent or minimise airborne dust emissions, as this then reduces the potential for fugitive emissions.

- All hot storage bins should have level indication and any overflow chutes should have dust arrestment facilities fed into the main dust arrestment system.

- Equipment for the crushing, grinding and screening of minerals should be fitted with dust extraction which is vented to air through arrestment plant.

- Plant should be designed and operated so that emission of dust during the discharge of surplus dried stone or filler is minimised.

Bitumen handling

5.20 In order to minimise emissions of fume and the associated odour, all bitumen and synthetic binder should be stored and handled within the appropriate temperature range for its grade. Details of suitable storage and handling temperatures are given in Appendix 1.

- The temperature gauge on all hot binder storage tanks should be displayed. A high temperature trip device, to prevent the binder overheating, should be operational at all times.

- Where practicable in relation to the viscosity and temperature of material being handled, bulk bitumen and tar storage tanks should be fitted with a high-level alarm or volume indicator to warn of overfilling. Where the fitting of such devices is not practicable, procedures to prevent overfilling should be agreed with the regulator.

Bitumen

5.21 Where plant is situated close to populated areas, and particularly when tar is used as a binder, it may be necessary to abate emissions of binder fume to prevent odour problems during delivery. The following options may be useful and should be considered in such circumstances:

- fume arising from storage tank vents may be ducted to the drier burner provided it is in operation; this should combust any odour arising
- emissions of bitumen fume from deliveries can be reduced by fitting ground based pumps
- where lorry based compressors are used to discharge the delivery, emissions of odour and fume can be reduced; one procedure which can be used in some cases, when clearing hose and lines, is to use two short bursts of air rather than one long one. The procedure to be used should be agreed by the regulator
- bitumen from some sources is more odorous than from others
- some additives are available which are designed to reduce the odour of bitumen

Coal tar

5.22 Some reclaimed asphalt contains coal tar-bound material. To prevent fume being emitted where such material is processed in the roadstone coating activity, it should be

- identified and stored separately from the other reclaimed asphalt, and
- processed only using cold methods: cold bitumen emulsion, bitumen foam mix, and hydraulic binder should be suitable.

For information, a further benefit of cold processing is that it ensures that the coal tar is encapsulated in order to avoid leaching when used.

The removal of coal tar from recycled aggregate is considered to be a Part A1 activity. Once the aggregate is free of coal tar, it may cease to be waste, in which case it can be used in a roadstone coating plant just the same as virgin aggregate can.

Techniques to control fugitive emissions

5.23 Fugitive dust emissions should be prevented whenever practicable. When this is not practicable emissions should be controlled at source by measures agreed between the regulator and the operator. Examples include correct storage of raw materials, organising the process in such a way that spillage is avoided, and maintaining high standards of internal and external housekeeping. Where water is used as a method of dust suppression, processes should have an adequate supply of water and all water suppression systems should have adequate frost protection. To make buildings as dust tight as necessary to prevent visible emissions, self-closing doors and close-fitting entries and exits for conveyors are among the options that may be used. Attention should be paid to preventing and cleaning up deposits of dust on external support structures and roofs, in order to minimise wind entrainment of deposited dust. If necessary, emissions should be controlled and abated using suitable arrestment equipment.

- All process buildings except semi-enclosed mixing buildings should be made as dust tight as is necessary to prevent visible emissions. For mixing buildings which are semi-enclosed, visible dust emissions should be minimised.
- All process buildings should be cleaned regularly, according to a written maintenance programme, to minimise fugitive emissions.
- All new buildings housing processing machinery should be externally clad with materials that can be readily cleaned.
- Where local exhaust ventilation is used, emissions should be ducted to suitable arrestment plant.
- Dusty wastes should be stored in closed containers and handled in a manner that avoids emissions of dust.
- The method of collection of product or waste from dry arrestment plant should be such that dust emissions are minimised.
- A high standard of housekeeping should be maintained.
- All spillages which may give rise to dust emissions should be cleaned up promptly, normally by wet handling methods. Dry handling of dusty spillages should not be permitted other than in fully enclosed buildings. (N.B. Dry handling of dusty spillages within fully enclosed buildings may not be acceptable under COSHH.) In the event of a major spillage it should be dealt with on the same day that it occurs, and measures to minimise emissions, such as wetting the surface to create a crust, should be taken immediately.
- Where particulate matter emissions are abated using a wet scrubber, the scrubber should be regularly inspected and maintained. Action should be taken to deal with any blockages that occur due to

accumulation of solids, for example adding flocculating agents to the liquor to settle the solids out.

Site

5.24 Where stone with the potential to give rise to dust emissions in transit is being delivered to the quarry, the above measures should be complied with prior to the vehicle being admitted on site.

5.25 Loading and unloading of product for transport by road, rail or sea should be carried out so as to minimise the generation of airborne dust.

5.26 Tankers carrying dusty materials should discharge only into silos fitted with an effective dust collecting system.

5.27 Internal road transport of processed materials likely to generate dust should be carried out in closed tankers or sheeted vehicles, or the materials conditioned with water.

Loading, unloading and transport

5.28 Effective dust control measures are required for all vehicles arriving at or leaving the site where the load may give rise to dust in transportation, bearing in mind that emissions from moving vehicles may give rise to a significant problem. Such controls should not normally be required for the transportation of designated material which is above 75mm, as these materials are unlikely to give rise to dust emissions.

Road

5.29 Sheeting is the usual technique required to prevent dust emissions from road vehicles. Where stone is loaded or unloaded, dust emissions should be minimised by water suppression or by local dust extraction.

5.30 A load that contains a significant amount of material less than 6mm is considered to have a much higher potential for dust emissions during transit than a load containing a minimal amount of this size fraction.

5.31 Where specific techniques are referred to below the regulator should agree an alternative method provided it is demonstrated to achieve an equivalent level of control.

- Where road vehicles are used to transport potentially dusty materials, they should be sheeted or otherwise totally enclosed as soon as possible after loading and before leaving the site.

Rail

- Where rail wagons are used to transport potentially dusty materials the following techniques should be used to prevent emissions in transit:

  - For short journeys (typically of duration less than 1 hour) or for mineral loads with a minimal content of particles below 6mm, water suppression will normally be sufficient.

  - For longer journeys, or where a higher proportion of fine material is being transported, then preferably use rail wagons that are "canopied" or aerodynamically designed to prevent or virtually eliminate product blow off. Otherwise, an aqueous polymer dispersion should be applied to the surface of the load.

Roadways and transportation

5.32 In designing a new process, minimising vehicle movement in the site layout will enable better control of roadways with the potential for fugitive emissions.

5.33 Vehicle exhausts directed above the horizontal are preferred as these avoid the impact of the exhaust raising dust when travelling on internal roadways.

5.34 On some sites wheel-cleaning facilities may be useful to prevent dust being carried off the site. Where the plant is co-located with a quarry which has wheel wash available, these might be used where necessary. If a plant is co-located with a quarry which does not have wheel-wash facilities, it may not be appropriate to install them. Vehicles may also be effectively cleaned, prior to leaving site, with a brush and hose. Sometimes the presence of a long access road ensures that any dust falls off the vehicles and does not reach the public highway. Hard surfacing for roadways should normally comprise compacted stone chippings between the loading points and the wheel wash (where present), and macadam or concrete for the final section of road leading to the public highway. Sweeping, wetting or sealing are all techniques that may be used to reduce dust emissions from roads. The technique that should be used depends upon the type of road under consideration.

- Roadways in normal use and any other area where there is regular movement of vehicles should have a hard surface capable of being cleaned or kept wet. They should be kept clean or wet, in order to prevent or minimise dust emissions. They should be adequately drained to avoid ponding of water. They should be kept in good repair. This provision only applies to roads inside a working quarry to the extent that they form part of the Part B installation. (Guidance on the meaning of “installation “ can be found in Annex III of the “General Guidance Manual”)

- Where necessary to prevent visible dust being carried off site, wheel-cleaning facilities should be provided and used by vehicles before leaving the site.

Air Quality

Dispersion & Dilution

5.35 Pollutants that are emitted via a stack require sufficient dispersion and dilution in the atmosphere to ensure that they ground at concentrations that are deemed harmless. This is the basis upon which stack heights are calculated using HMIP Technical Guidance Note (Dispersion) D1. The stack height so obtained is adjusted to take into account local meteorological data, local topography, nearby emissions and the influence of plant structure.

The calculation procedure of D1 is usually used to calculate the required stack height but alternative dispersion models may be used in agreement with the regulator. An operator may choose to meet tighter emission limits in order to reduce the required stack height.

5.36 Where an emission consists purely of air and particulate matter, (i.e. no products of combustion or any other gaseous pollutants are emitted) the above provisions relating to stack height calculation for the purpose of dispersion and dilution should not normally be applied. Revised stack height calculations should not be required as a result of publication of this revision of the PG note, unless it is considered necessary because of a breach or serious risk of breach of an EC Directive limit value or because it is clear from the detailed review and assessment work that the permitted process itself is a significant contributor to the problem.

Where offensive odour is likely outside the process site boundary the assessment of stack or vent height should take into account the need to render harmless residual offensive odour.

Ambient air quality management

5.37 In areas where air quality standards or objectives are being breached or are in serious risk of breach and it is clear from the detailed review and assessment work under Local Air Quality Management that the permitted process itself is a significant contributor to the problem, it may be necessary to impose tighter emission limits or, in the case of this particular note, additional limits for pollutants not listed in table 4.1, such as NOx. If the standard that is in danger of being exceeded is not an EC Directive requirement, then industry is not expected to go beyond BAT to meet it. Decisions should be taken in the context of a local authority's Local Air Quality Management action plan. For example, where a permitted process is only responsible to a very small extent for an air quality problem, the authority should not unduly penalise the operator of the process by requiring disproportionate emissions reductions. Paragraph 59 of the Air Quality Strategy 2007 [Volume 1] gives the following advice:

"...In drawing up action plans, local authority environmental health/pollution teams are expected to engage local authority officers across different departments, particularly, land-use and transport planners to ensure the actions are supported by all parts of the authority. In addition, engagement with the wider panorama of relevant stakeholders, including the public, is required to ensure action plans are fit-for-purpose in addressing air quality issues. It is vital that all those organisations, groups and individuals that have an impact upon local air quality, buy-in and work towards objectives of an adopted action plan."

5.38 In the context of this note (PG3/15) there may be cases where, for air quality reasons, filters or other techniques which achieve a similar level of PM abatement, or SOx abatement, are considered in a particular location to amount to BAT.

Stacks, vents and process exhausts

5.39 Liquid condensation on internal surfaces of stacks and exhaust ducts might lead to corrosion and ductwork failure or to droplet emission. Adequate insulation will minimise the cooling of waste gases and prevent liquid condensation by keeping the temperature of the exhaust gases above the dewpoint. A leak in a stack/vent and the associated ductwork, or a build up of material on the internal surfaces may affect dispersion:

- Flues and ductwork should be cleaned to prevent accumulation of materials, as part of the routine maintenance programme.

5.40 When dispersion of pollutants discharged from the stack (or vent) is necessary, the target exit velocity should be 15m/sec under normal operating conditions, however, lower velocities than 15m/s are acceptable provided adequate dispersion and dilution is achieved (see also the paragraph below regarding wet plumes). In order to ensure dispersion is not impaired by either low exit velocity at the point of discharge, or deflection of the discharge, a cap, or other restriction, should not be used at the stack exit. However, a cone may sometimes be useful to increase the exit velocity to achieve greater dispersion".

5.41 An exception to the above is where wet arrestment is used as the abatement. Unacceptable emissions of droplets could occur from such plant where the linear velocity in the stack exceeds 9 m/sec. To reduce the potential of droplet emissions a mist eliminator should be used. Where a linear velocity of 9m/sec is exceeded in existing plant consideration should be given to reducing this velocity as far as practicable to ensure such droplet entrainment and fall out does not happen.

Management

Management techniques

5.42 Important elements for effective control of emissions include:

- proper management, supervision and training for process operations;
- proper use of equipment;
- effective preventative maintenance on all plant and equipment concerned with the control of emissions to the air; **and**
- ensuring that spares and consumables - in particular, those subject to continual wear – are held on site, or available at short notice from guaranteed local suppliers, so that plant breakdowns can be rectified rapidly. This is important with respect to arrestment plant and other necessary environmental controls. It is useful to have an audited list of essential items.

Appropriate management systems

5.43 Effective management is central to environmental performance; it is an important component of BAT and of achieving compliance with permit conditions. It requires a commitment to establishing objectives, setting targets, measuring progress and revising the objectives according to results. This includes managing risks under normal operating conditions and in accidents and emergencies. It is therefore desirable that installations put in place some form of structured environmental management approach, whether by adopting published standards (ISO 14001 or the EU Eco Management and Audit Scheme [EMAS]) or by setting up an environmental management system (EMS) tailored to the nature and size of the particular process. Operators may also find that an EMS will help identify business savings.

5.44 Regulators should use their discretion, in consultation with individual operators, in agreeing the appropriate level of environmental management. Simple systems which ensure that LAPPC considerations are taken account of in the day-to-day running of a process may well suffice, especially for small and medium-sized enterprises. Regulators are urged to encourage operators to have an EMS for all their activities, but it is outside the legal scope of an LAPPC permit to require an EMS for purposes other than LAPPC compliance. For further information/advice on EMS refer to the appropriate chapter of the appropriate Guidance Manual for England and Wales, Scotland and Northern Ireland.

Training

5.45 Staff at all levels need the necessary training and instruction in their duties relating to control of the process and emissions to air. In order to minimise risk of emissions, particular emphasis should be given to control procedures during start-up, shut down and abnormal conditions. Training may often sensibly be addressed in the EMS referred to above.

- All staff whose functions could impact on air emissions from the activity should receive appropriate training on those functions. This should include:

  - awareness of their responsibilities under the permit;
  - steps that are necessary to minimise emissions during start-up and shutdown;
  - actions to take when there are abnormal conditions, or accidents or spillages that could, if not controlled, result in emissions.

- The operator should maintain a statement of training requirements for each post with the above mentioned functions and keep a record of the training received by each person. These documents should be made available to the regulator on request.

Maintenance

5.46 Because of the harsh operating environment for roadstone coating, effective preventative maintenance plays a key part in achieving compliance with emission limits and other provisions. All aspects of the process including all plant, buildings and the equipment concerned with the control of emissions to air should be properly maintained. In particular:

- The operator should have the following available for inspection by the regulator:

  - a written maintenance programme for all pollution control equipment;
  - a defect report system; **and**
  - a record of maintenance that has been undertaken.

6. Summary of changes

The main changes to this note, with the reasons for the change, are summarised in **Table 6.1**. Minor changes that will not impact on the permit conditions e.g. slight alterations to the Process Description have not been recorded.

Table 6.1 - Summary of changes

Section/ Para / row	Change	Reason	Comment
Introduction			
	Simplification of text	Make Note clearer	
	Addition of links	Change to electronic format	Removes need for extensive footnotes/references
Emission limits, monitoring and other provisions			
Table 4.1	Waste oil provisions omitted	Waste oil combustion is WID, and Part A	Quality Protocol for processed fuel oil describes how waste lubricating oil ceases to be waste
Control techniques			
Dust on - lorries	Body wash deleted	Reappraisal of BAT	Wheel wash is often considered optimum control, body wash may be too much
Coal tar in reclaimed asphalt	For reclaimed asphalt containing coal tar, must be separate storage and only cold processing methods allowed	BAT for reclaimed materials containing coal tar added	
Para 5.23	Emission provision relaxed for semi-enclosed mixing structure	Provision not met in many semi-enclosed plant, enclosure in all sites considered onerous	No visible dust across the boundary is still provided for.
Appendix 1 - recommended bitumen handling and storage temperatures			
Table	Removed and replaced by a hyperlink	Change to electronic format	
Air Quality	Clarification of exhaust velocity requirements		
Application form and simple permit			
	added	To speed applications and permitting	

7. Further information

Sustainable consumption and production (SCP)

Both business and the environment can benefit from adopting sustainable consumption and production practices.

Estimates of potential business savings include:

- £6.4 billion a year UK business savings from resource efficiency measures that cost little or nothing;
- 2% of annual profit lost through inefficient management of energy, water and waste;
- 4% of turnover is spent on waste.

When making arrangement to comply with permit conditions, operators are strongly advised to use the opportunity to look into what other steps they may be able to take. Regulators may be willing to provide assistance and ideas, although cannot be expected to act as unpaid consultants.

For the sector covered by this PG note, it is suggested that operators look particularly at:

- the reuse of reclaimed asphalt;
- warm mix and cold mix methods;
- re-use of fine dusts.

Health and safety

Operators of processes and installations must protect people at work as well as the environment:

- requirements of a permit should not put at risk the health, safety or welfare of people at work or those who may be harmed by the work activity;

- equally, the permit must not contain conditions whose only purpose is to secure the health of people at work. That is the job of the health and safety enforcing authorities.

Where emission limits quoted in this guidance conflict with health and safety limits, the tighter limit should prevail because:

- emission limits under the relevant environmental legislation relate to the concentration of pollutant released into the air from prescribed activities;

- exposure limits under health and safety legislation relate to the concentration of pollutant in the air breathed by workers;

- these limits may differ since they are set according to different criteria. It will normally be quite appropriate to have different standards for the same pollutant, but in some cases they may be in conflict (for example, where air discharged from a process is breathed by workers). In such cases, the tighter limit should be applied to prevent a relaxation of control.

Further advice on responding to incidents

The UK Environment Agencies have published guidance on producing an incident response plan to deal with environmental incidents. Only those aspects relating to air emissions can be subject to regulation via a Part B permit, but regulators may nonetheless wish to informally draw the attention of all appropriate operators to the guidance.

It is not envisaged that regulators will often want to include conditions, in addition to those advised in this PG note, specifying particular incident response arrangements aimed at minimising air emissions. Regulators should decide this on a case-by-case basis. In accordance with BAT, any such conditions should be proportionate to the risk, including the potential for harm from air emissions if an incident were to occur. Account should therefore be taken of matters such as the amount and type of materials held on site which might be affected by an incident, the likelihood of an incident occurring, the sensitivity of the location of the installation, and the cost of producing any plans and taking any additional measures.

Appendix 1 - Recommended bitumen handling and storage temperatures

Recommended bitumen handling and storage temperatures are published by the Energy Institute and maintained by their Energy Institute Bitumen Panels

The maximum handling and storage temperatures are important for odour prevention.

Mixing, application and short term storage temperatures of bitumen will be determined by the particular application. For polymer modified bitumens, emulsions and proprietary products advice on handling and storage should be obtained from the supplier."

The Energy Institute Bitumen safety code contains health and safety as well as environmental protection good practice, however the permit must not contain conditions whose only purpose is to secure the health of people at work.

(These temperatures do not apply to coal tars)

Appendix 2 - Application form

Application for a permit for a roadstone coating installation

Local Authority Pollution Prevention and Control
Pollution Prevention and Control Act, 1999
Environmental Permitting (England and Wales) Regulations 2010

Introduction

When to use this form
Use this form if you are applying for a permit to a Local Authority to operate a roadstone coating installation as defined in Schedule 1 to the Environmental Permitting Regulations.

The appropriate fee must be enclosed with the application to enable it to be processed further. When complete, send the form and the fee and any additional information to:

Insert local authority address

If you need help and advice
We have made the application form as straightforward as possible, but please get in touch with us at the local authority address given above if you need any advice on how to set out the information we need.

For the purposes of Section H of the form, a relevant offence is any conviction for an offence relating to the environment or environmental regulation.

LAPPC application form: to be completed by the operator		
For Local Authority use		
Application reference	Officer reference	Date received

A The basics

A1 Name and address of the installation (not required for mobile plant)

Postcode Telephone

A2 Details of any existing environmental permit or consent *(for waste operations, include planning permission for the site, plus established use certificates, a certificate of lawful existing use, or evidence why the General Permitted Development Order applies.*

A3 Operator details (*The 'operator' = the person who it is proposed will have control over the installation in accordance with the permit (if granted).)*

Name: Trading name, if different:
Registered office address: Principal office address, if different:
Company registration number:

A4 Any holding company?

Is the operator a subsidiary of a holding company within the meaning of section 1159 of the Companies Act 2006? If "yes" please fill in details of the ultimate holding company.

No ☐ Yes ☐

Name: Trading name, if different:
Registered office address;   Principal office address, if different:
Company registration number:

A5 Who can we contact about your application? *It will help to have someone who we can contact directly with any questions about your application. The person you name should have the authority to act on behalf of the operator - This can be an agent or consultant.*

Name and position:_____   Telephone:_____   Email:_____

B **The installation**

B1 **What activities are, or will be, carried on at the installation? Please include "directly associated activities" (this term is explained in Annex III in Part B of the general guidance manual.**

a) are you coating roadstone ☐ Yes ☐ No

b) are you recycling asphalt pavement ☐ Yes ☐ No

c) are you recycling asphalt pavement containing coal tar ☐ Yes ☐ No

d) any other activities? please specify: ☐ Yes ☐ No

_____

If you have answered 'yes' to B1d and specified mobile plant, this activity is not suitable for a simple permit.

B2 **Why is the application being made?**

☐ new installation
☐ change to existing installation means it now needs a permit

B3 **Site maps – please provide:**

- **A location map with a red line round the boundary of the installation**

Document reference: _____

- **A site plan or plans showing where all the relevant activities are on site:**

a) where the processing plant will be installed
b) the areas and buildings/structures designated for materials/ waste storage and the type of storage
c) the conveyors and transfer points
d) any directly associated activities or waste operations.

To save applying for permit variations, you can also show where on site you might want to use for storage etc in the future.

Document reference: _____

B4 **Are there any sites of special scientific interest (SSSIs) or European protected sites nearer than any of the following distances to the proposed installation?**

- 2km - where anyone of the installation burners is over 20MW net thermal rated input

- 1km - otherwise ☐ Yes ☐ No

If 'yes', is the installation likely to have a significant effect on these sites and, if so, please write on a separate sheet or enclose a relevant document explaining what the implications are for the purposes of the Conservation (Natural Habitats etc) Regulations 1994 (see appendix 2 of Annex XVII of the general guidance manual)

B5 Will emissions from the activity potentially have significant environmental effects (including nuisance)?

☐ Yes ☐ No

If 'yes': list the potential significant local environmental effects (including nuisance) of the foreseeable emissions

Document Reference: _____

- please enclose a copy of any environmental impact assessment which has been carried out for the installation under planning legislation or for any other purpose.

Document Reference: _____

C The details

C1 Does your installation have arrestment equipment, with external discharge points, not serving silos or dryers with an airflow of: (*Tick all that apply)*

a) over 300m^3/minute: ☐ Yes ☐ No

b) under 300m^3/minute and over 100m^3/minute: ☐ Yes ☐ No

c) under 100 m^3/minute: ☐ Yes ☐ No

C2 Do you have continuous monitors to show compliance with a numerical limit in Table 1 of the simple permit? *[informs condition 2]*

☐ Yes ☐ No

If yes, do the continuous monitors have alarms which are:
(tick all that apply) *[informs condition 2]*

a) visible? ☐ Yes ☐ No

b) audible? ☐ Yes ☐ No

c) alarm activation recorded automatically? ☐ Yes ☐ No

d) is a trigger level set? ☐ Yes ☐ No

At what percentage of the emission limit is the value set? ……%

Have you undertaken isokinetic sampling at least once to demonstrate compliance with the numerical limit in Table 1?

☐ Yes ☐ No

C3 Is odour arrestment equipment installed? *[informs condition 2]*

☐ Yes ☐ No

If yes please describe it *[informs condition 2]*

_____

_____

Note: "dusty material" should be taken to be any material which can be wind-entrained. It excludes, for example, >3mm material and scalpings.

C4 Which of the following will the fillers and binders be stored in :
(*tick all that apply)* *[informs condition 5]*

	fillers	binders
silo		
bulk storage tank		
within a building		
in fully-enclosed containers/packaging		
other - please specify		

C5 Do you have pneumatic transfer of materials? *[informs condition 6-9]*

☐ Yes ☐ No

If yes, will displaced air from pneumatic loading and unloading of fillers be:
(*tick all that apply)* *[informs condition 9]*

a) vented to arrestment plant ☐

b) back-vented to the delivery tanker ☐

c) other - please specify ☐

C6 Do you have alarms to warn of overfilling of fillers and bitumen?

☐ Yes ☐ No *[informs condition 7]*

C7 Will displaced air from pumping bitumen from tankers be: (*tick all that apply)*
[informs condition 7]

a) vented to arrestment plant ☐

b) other - please specify ☐

C8 Do deliveries of fillers and bitumen automatically stop for: *[informs condition 6]*

	Fillers	binders
over-filling		
over-pressurisation		

If yes, does the displaced air pass through abatement plant prior to emission to air? *[informs condition 9]*

a) fillers ☐ Yes ☐ No

b) binders ☐ Yes ☐ No

C9 For aggregates and recycled asphalt: *[informs condition 4]*

Is the plant in a quarry? ☐ Yes ☐ No

If no, does most stone arrive by road? ☐ Yes ☐ No

C10 Do you have any quarry roads as part of the installation?

☐ Yes ☐ No *[informs condition 13]*

C11 For materials not dealt with in condition 4-7, what facilities will be provided to store any dusty material and waste?
(t*ick all that apply)* *[informs condition 10]*

a) hopper wind-protected on at least 3 sides ☐

b) storage bay without suppression & stockpiles lower than retaining walls ☐

c) storage bay with suppression ☐

d) fully-enclosed stores ☐

e) other - *please specify*: _____

C12 Will any material be stored in the open (unenclosed) other than material wholly comprised of one or more of the following: >3mm material, sand, scalpings, road sub base (MOT) material that has been conditioned before deposit, conditioned crusher-run or blended material? *[informs condition 10]*

☐ Yes ☐ No

C13 Do you have belt conveyors: *[informs condition 11]*

☐ Yes ☐ No

If yes, which of the following facilities will be provided to convey any dusty material and waste (*tick all that apply)* *[informs condition 11]*

a) deep trough ground-level conveyor ☐

b) fully-enclosed conveyor ☐

c) pneumatic handling system ☐

d) bucket elevator ☐

e) wind boards ☐

f) other – *please specify:* _____

C14 Which of the following methods will be used to minimise emissions at belt conveyor transfer points, including free fall of material?
(tick all that apply) *[informs condition 11]*

a) enclosed ☐

b) enclosed and ducted to arrestment equipment ☐

c) fitted with a chute ☐

d) other - please specify_____

C15 Which of the following techniques will be used to clean belt conveyors *(tick all that apply)* *[informs condition 11]*

a) belt scrapers ☐

b) catch plates ☐

c) other techniques for keeping the return belt clean and collecting the material removed by the cleaning – *please specify:*

_____

C16 How will potentially dusty materials (including any raw materials, finished products and waste), arrive at or leave the site? *(tick all that apply)*
[informs Condition 12]

	Raw Materials	Finished Products	Waste
Road			
Rail			
Other			

C17 How will potentially dusty materials, (including any raw material, finished products and waste) be transported within the site
(tick all relevant) *[informs condition 14]*

a) tanker ☐

b) fully-enclosed transport ☐

c) 'canopied' rail wagons ☐

d) sheeted transport ☐

e) water suppression applied to the transported material ☐

f) aqueous polymer suppression applied to the transported material ☐

g) bagged ☐

h) other – please specify: _____

C18 Which techniques will you use to ensure that vehicles do not track material onto the highway? *[informs condition 12]*

a) body and wheel wash ☐ Yes ☐ No

b) wheel wash ☐ Yes ☐ No

c) hose and brush ☐ Yes ☐ No

d) sufficient distance to the site boundary on sealed road before leaving site

☐ Yes ☐ No

e) Other, *please describe*: _____

C19 Are any of your mixing buildings semi-enclosed? *[informs condition 15]*

a) all are enclosed ☐ Yes ☐ No

b) at least one is semi-enclosed ☐ Yes ☐ No

C20 Do you use any of the following fuels? *(tick all that apply)* *[informs stack height]*

a) heavy fuel oil ☐

b) gas oil ☐

c) gas ☐

d) processed fuel oil that complies with the quality protocol ☐

e) other waste derived fuel ☐

f) other (give details): _____

What is the rated thermal input of dryers? Please specify:

_____

C20 Do you have environmental management procedures and policy? *[informs condition 3, 16, 17]*

☐ Yes ☐ No

D **Anything else**

Please tell us anything else you would like us to take account of.

Document Reference _____

E **Application fee**

You must enclose the relevant fee with your application.

If your application is successful you will also have to pay an annual subsistence charge, so please say who you want invoices to be sent to.

F Protection of information

F1 Any confidential or national security info in your application?

If there is any information in your application you think should be kept off the public register for confidentiality or national security reasons, please say what and why. General guidance manual chapter 8 advises on what may be excluded. (*Do not include any national security information in your application. Send it, plus the omitted information, to the Secretary of State or Welsh Ministers who will decide what, if anything, can be made public.)*

Document Reference _____

F2 Please note: data protection

The information you give will be used by the Council to process your application. It will be placed on the relevant public register and used to monitor compliance with the permit conditions. We may also use and or disclose any of the information you give us in order to:

- consult with the public, public bodies and other organisations,
- carry out statistical analysis, research and development on environmental issues,
- provide public register information to enquirers,
- make sure you keep to the conditions of your permit and deal with any matters relating to your permit
- investigate possible breaches of environmental law and take any resulting action,
- prevent breaches of environmental law,
- offer you documents or services relating to environmental matters,
- respond to requests for information under the Freedom of Information Act 2000 and the Environmental Information Regulations 2004 (if the Data Protection Act allows)
- assess customer service satisfaction and improve our service.

We may pass on the information to agents/representatives who we ask to do any of these things on our behalf.

F3 Please note: it is an offence to provide false etc information

It is an offence under regulation 38 of the EP Regulations, for the purpose of obtaining a permit (for yourself or anyone else), to:

- make a false statement which you know to be false or misleading in a material particular,
- recklessly make a statement which is false or misleading in a material particular
- intentionally to make a false entry in any record required to be kept under any environmental permit condition
- with intent to deceive, to forge or use a document issued or required for any purpose under any environmental permit condition.

If you make a false statement

- we may prosecute you, and
- if you are convicted, you are liable to a fine or imprisonment (or both).

H Declarations A and B for signing, please

These declarations should be signed by the person listed in answer to question A3. Where more than one person is identified as the operator, all should sign. Where a company or other body corporate is the operator, an authorised person should sign and provide evidence of authority from the board.

Declaration A: I/We certify

EITHER – As evidence of my/our competence to operate this installation in accordance with the EP Regulations, no offences have been committed in the previous five years relating to the environment or environmental regulation.

OR- The following offences have been committed in the previous five years which may be relevant to my/our competence to operating this installation in accordance with the regulations:

Signature: _____ Name: _____

Position: _____ Date: _____

Declaration B: I/We certify that the information in this application is correct. I/We apply for a permit in respect of the particulars described in this application (including the listed supporting documentation) I/we have supplied. *(Please note that each individual operator must sign the declaration themselves, even if an agent is acting on their behalf.)*

Signature: _____ Name: _____

Position: _____ Date: _____

Signature: _____ Name: _____

Position: _____ Date: _____

Appendix 3 - Model Permit

This appendix contains a model permit for roadstone coating installations – see paragraph 1.6 of this note and paragraph 3.6 of the General Guidance Manual on Policy and Procedures .

Notes:

- text in the model permit written in *italics* is advice to regulators.
- text in the model permit in square brackets offers choice to regulators or indicates where information needs to be inserted from the application.
- text bracketed with asterisks (eg *Alarms shall be tested at least once a week*.) may be omitted by a regulator where the past performance of the plant gives the local authority sufficient reassurance about operator compliance – "earned recognition".
- the model permit has been drafted for local authorities in England and Wales. Regulators in Scotland and Northern Ireland will need to amend the legal heading and, where appropriate, references to 'Council'
- references to 'installation' will need to be substituted with 'mobile plant' in relevant cases, and other amendments made accordingly
- the purpose of the activity description is to set down the main characteristics of the activity, including any directly associated activities, so it is clear to all concerned what is being authorised by the permit and therefore what changes would need further approval. Regulators are advised to include a description of any key items of arrestment and monitoring equipment the operator intends to use or is using.
- it should normally be sufficient for records relating to simplified permits to be kept for no more than 18 months. Where, however, as a result of a 'low risk' rating, inspections are undertaken less often, regulators may want to specify a period which ensures the records are available at the next inspection.

[ ] **COUNCIL**
POLLUTION PREVENTION AND CONTROL ACT 1999
Environmental Permitting Regulations 2010 (as amended)

Permit ref. no:

Name and address of person (A) authorised to operate the installation ('the operator') **Registered number and office of company** (if appropriate)

Address of permitted installation (B)

The installation boundary and key items of equipment mentioned in permit conditions are shown in the plan attached to this permit.

Activity description

The operator (**A**) is authorised to operate the activity[4] at the installation (**B**) subject to the following conditions.

Conditions

Emissions and monitoring

1. No visible particulate matter shall be emitted beyond the installation boundary.

2. The emission requirements and methods and frequency of monitoring set out in Table 1 shall be complied with. Sampling shall be representative

   Any monitoring display required for compliance with the permit shall be visible to operating staff at all times. Corrective action shall be taken immediately if any periodic monitoring result exceeds a limit in Table 1, or if there is a malfunction or breakdown of any equipment which might increase emissions. Monitoring shall be undertaken or repeated as soon as possible thereafter and a brief record shall be kept of the main actions taken.

   Where continuous monitors are fitted to show compliance with a numerical limit in Table 1: All continuous monitors fitted to show compliance with the permit shall be fitted with a [visible] [audible] alarm warning of arrestment failure or malfunction. They shall [activate when emissions reach [75%] of the relevant emission limit in Table 1 and] record automatically each activation. *Alarms shall be tested at least once a week.*

[4] listed in [ ] in Part 2 of Schedule 1 to the Environmental Permitting Regulations

Where odour arrestment equipment is installed: The odour arrestment equipment shall be inspected not less than once a day for at least the following: a) leaks or blockages in air handing equipment, ductwork and arrestment equipment; b) continuous monitors for arrestment equipment; and c) surface cracking, voids, leaks, compaction, moisture content, and plant/weed growth on biofilters.

3. All plant and equipment capable of causing, or preventing, emissions and all monitoring devices shall be calibrated and maintained in accordance with the manufacturer's instructions. *Records shall be kept of such maintenance.*

Recycled asphalt containing coal tar

4. Recycled asphalt pavement containing coal tar shall be:
    - Identified, and stored separately from other recycled asphalt
    - Processed only using cold methods

Silos *where used*

5. Fillers and bitumen shall only be stored within the filler and bitumen silos.

6. Dust emissions from loading or unloading road tankers shall be minimised by [venting to specify type arrestment plant] [backventing to a delivery tanker fitted with an on-board, truck-mounted relief valve and filtration system] and by connecting transfer lines first to the delivery inlet point and then to the tanker discharge point, and by ensuring delivery is at a rate which does not pressurise the silo.

7. Silos shall not be overfilled and there shall be an overfilling alarm.

8. (*for silos new since Jun 2004*) When loading filler silos, deliveries must stop automatically where over-pressurisation or over-filling is identified

9. Displaced air from pneumatic transfer shall pass through abatement plant prior to emission to air.

Aggregates delivery and storage

10. Dusty materials (including dusty wastes) shall only be stored in [specify storage location] as detailed on the plan attached to this permit and shall be subject to suppression and management techniques to minimise dust emissions.

Belt conveying

11. All dusty materials, including wastes, shall be conveyed using [specify conveyor, level of enclosure and enclosure type]. All transfer points shall be fitted with [specify dust control technique].

Loading, unloading and transport

12. No potentially dusty materials (including wastes) or finished products shall arrive on or leave the site other than by use of [specify transport type and dust control technique].

Roadways and transportation

13. All areas where there is regular movement of vehicles shall have a consolidated surface capable of being cleaned, and these surfaces shall be kept clean and in good repair. Quarry haul roads are excluded from this provision.

14. Vehicles shall not track material from the site onto the highway.

Techniques to control fugitive emissions

15. *select according to visible dust potential of each process building* The fabric of [process buildings] shall be [maintained dust tight and doors shall be kept closed when not in use] [maintained so as to minimise visible dust emissions].[Semis-enclosed mixing buildings] shall have visible dust emissions minimised.

Records and training

16. Written or computer records of all tests and monitoring shall be kept by the operator for at least [ ] months. They [and a copy of all manufacturer's instructions referred to in this permit] shall be made available for examination by the Council. *Records shall be kept of operator inspections, including those for visible and odorous emissions.*

17. Staff at all levels shall receive the necessary training and instruction to enable them to comply with the conditions of this permit. Records shall be kept of relevant training undertaken.

The following two conditions are not needed for PPC permits which transferred automatically into the environmental permitting regime by virtue of regulation 69(6) of the 2007 Regulations and regulation 108(4) of the 2010 Regulations. Where permits are issued on or after 6 April 2008 the next two conditions will not automatically apply and need specific inclusion in the permit where required.

Best available techniques

18. The best available techniques shall be used to prevent or, where that is not practicable, reduce emissions from the installation in relation to any aspect of the operation of the installation which is not regulated by any other condition of this permit.

19. If the operator proposes to make a change in operation of the installation, he must, at least 14 days before making the change, notify the regulator in writing. The notification must contain a description of the proposed change in operation. It is not necessary to make such a notification if an application to vary this permit has been made and the application contains a description of the proposed change. In this condition 'change in operation' means a change in the nature or functioning, or an extension, of the installation, which may have consequences for the environment.

Table 1 - Emission limits, monitoring and other provisions					
Row	**Substance**	**Source**	**Emission limits / provisions**	**Type of monitoring**	**Monitoring frequency**
Whole site and all authorised emission points					
1	Visible emissions	Site	No visible emissions to cross site boundary	Operator observations	Once a day
2	Visible emission	All authorised emission points	No abnormal emission	Operator observations	
3	Droplets, persistent mist , fume and smoke	All emissions to air (except steam and condensed water vapour)	No droplets, no persistent mist, no persistent fume, No visible smoke except during start up of coating plant and then no darker than Ringelmann 1	Visual observations	On start-up and on at least two more occasions during the working day
Roadstone coating plant					
4	Particulate matter	Roadstone coating plant existing at 1 July 2004, except where new or replacement arrestment equipment is fitted	Where currently achieved: 50 mg/m^3	EITHER: Periodic, quantitative, 6 monthly OR: Periodic, quantitative, annual monitoring; plus continuously recorded filter leak monitoring	
			Where 50 mg/m^3 currently achieved, but only inconsistently: 100 mg/m^3 PLUS efforts should be made to improve consistency.		
			Where 50 mg/m^3 currently not achieved: 100 mg/m^3		
5	Particulate matter	Since 1 July 2004: new roadstone coating plant, and roadstone coating plant with new or replacement arrestment equipment	50 mg/m^3		
6	Sulphur dioxide	All activities using heavy fuel oil or other residual type/comparable Quality Protocol Processed Fuel Oil	1% wt/wt sulphur in fuel	Sulphur content of fuel is regulated under the Sulphur Content of Liquid Fuels Regulations	

7	Sulphur dioxide	All activities using gas oil/ comparable Quality Protocol Processed Fuel Oil	0.1% wt/wt sulphur in fuel	Sulphur content of fuel is regulated under the Sulphur Content of Liquid Fuels Regulations	
Activities burning bio-fuels should have a limit set for sulphur in fuel Activities burning waste oil not covered by the quality protocol processed fuel oil must comply with the Waste Incineration Directive (WID).					
Silos					
8	Particulate matter	Silo inlets and outlets	Designed to emit less than 10mg/m^3 No visible emission	Operator/driver observations Record start and finish times	Every delivery
Arrestment plant not serving silos or roadstone coating plant					
9	Particulate matter	Arrestment equipment with exhaust flow >300 m^3/min: (see note a)	Designed to achieve 50 mg/m^3	Recorded filter leak monitoring	Continuous
10	Particulate matter	Arrestment equipment with exhaust flow >100 m^3/min: (see note a)	Designed to achieve 50 mg/m^3	Filter leak monitoring to demonstrate that the arrestment equipment is functioning correctly	Continuous
11	Particulate matter	Arrestment equipment with exhaust flow =/<100 m^3/min (see note a)	No visible emission	Operator observations OR Filter leak monitoring to show that the equipment is functioning correctly	At least daily Continuous
Notes *All periodic monitoring results shall be checked by the operator on receipt and sent to the Council within 8 weeks of the monitoring being undertaken.* (a) - Where the plant is discharging to the external atmosphere. (b) The reference conditions for limits in Table 1 are: 273.1K, 101.3kPa, without correction for water vapour content. (c) All periodic monitoring shall be representative, and shall use standard methods. (d) The emission limits do not apply during start-up and shut down. All emissions shall be kept to a minimum during these periods.					

Right to Appeal

You have the right of appeal against this permit within 6 months of the date of the decision. The Council can tell you how to appeal [*or supply details with the permit*]. You will normally be expected to pay your own expenses during an appeal.

You will be liable for prosecution if you fail to comply with the conditions of this permit. If found guilty, the maximum penalty for each offence if prosecuted in a Magistrates Court is £50,000 and/or 6 months imprisonment. In a Crown Court it is an unlimited fine and/or 5 years imprisonment. Our enforcement of your permit will be in accordance with the Regulators' Compliance Code