Dust Control Plan

General:

All demolition workers, and particularly Supervisors, undertake significant training via the National Federation of Demolition Contractors (NFDC) on the importance of environmental controls during demolition and in particular on the control of dusts. The Site is under the control of a full Demolition Supervisor and part of his responsibilities is to conduct regular checks on the efficacy of the dust control measures and this is recorded in his daily log book. He is provided with a copy of the Best Practise Guide from The Mayor's Office. All operatives will be provided with site specific training in the key points of this document before commencement of the Structural Demolition.

The site will be fully enclosed in 2.4 m timber hoardings OR will make use of the existing buildings during the early phases of demolition to ensure that site is constantly surrounded by solid barriers to all public boundaries.

Internal Soft Stripping:

Throughout the works, wherever and whenever operations are likely to produce nuisance dust, hand pump spay bottles will be used within the rooms being soft stripped to create a fine mist to suppress dust levels. Windows will be kept closed where these form the elevations marking the site boundary.

Loading Operations and "Drop zones":

Clifford Devlin will utilise specific employees to keep demolition / loading operations dampened with constant water spray hosing. Water sprays are used to thoroughly dampen the material stockpile in order to reduce dust generation during to process of loading materials into the skip using the excavator and/or to dampen materials as they are loaded where the loading process involves allowing materials to drop directly into the skip. All such chutes will be enclosed.

It should be noted that during machine demolition, it is not practicable to enclose areas where materials can fall from the demolition process. Dust control is described under "structural demolition".

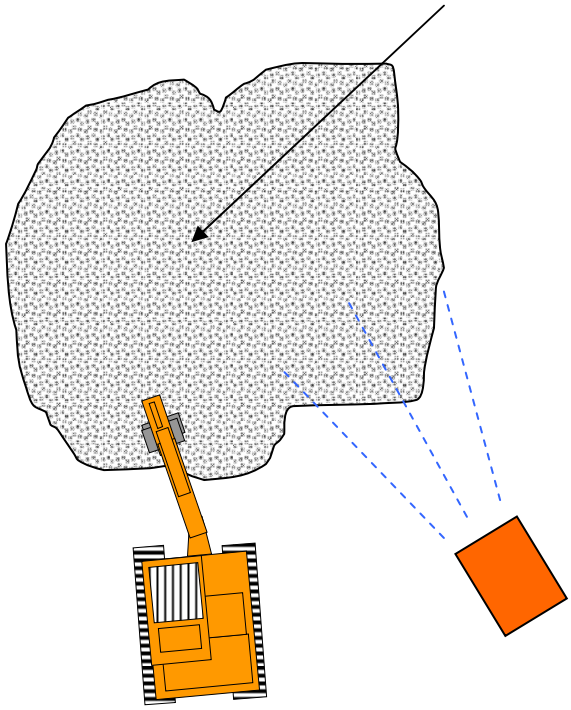
Structural Demolitions:

The main structures to be demolished, principally, the DHO Office on Wellesley Rd will be enclosed in full height scaffolding clad in Monarflex sheeting. This serves not only to provide dust protection during the demolition of this building, but ensures that the site boundary to the most sensitive receptors is fully enclosed, restricting dust emissions to within the site boundary.

To limit nuisance dust emission during the floor by floor demolition and during general structural demolition by excavator, a dust boss will be used.

Nuisance dust is further controlled at ground level during structural demolition and during crushing or loading operations with the utilisation of the 'Dust Boss' water misting suppression system, depicted in the following schematic.

Demolished material to be loaded into skips



The Dust Boss would be located behind and to the rear of the demolition excavator, spraying a fine mist of water over the loading operation / dust source.

The Dust Boss can be set to oscillate, in order to cover a wider area, working from side to side, for example during loading or crushing operations where the excavator is fitted with a bucket and works progressively through the stockpile, **OR** can be positioned statically to suit the use of the demolition attachment, as in the photograph above. The unit can be quite easily redirected as need be to suit the progress of the demolition.

It also uses only 10% of the water required from a traditional hose, and there will be no run-off generated by the damping process.

Crushing of Arisings:

It is planned that all arisings (aka Hardcore, specifically concrete, brick and ceramics) shall be crushed on site for re-use backfilling voids from the removal of foundations and drainage and the like and to provide for a piling mats specifically and generally for a clean firm level surface post-demolition. All crushers come with their own environmental Permit (usually the original PPC permit from their first use). Clifford Devlin Document IMS doc 147 (attached to this document), records the risk assessment for crushing operations and the standard controls including the use of a log book to monitor emissions. This document shall be used to create a site specific assessment and records before the crushing operation commences. The use of a crusher on site will greatly reduce the overall numbers of vehicle movements required. Dust control for the operation will be a combination of the Dust Boss as noted above used on the process and particularly on stockpiles, combined with fixed suppression systems mounted on the conveyors. Stockpiles will be located to provide additional noise screening to the local environment. It is presumed that the following Principal Contractor will take responsibility for stockpiles remaining on site at handover and will re-use the materials or remove the excess.

Site Layout:

The sequence of structural demolition has been selected so that the building to be demolished first are segregated from the general environment by the main perimeter buildings. This will serve to reduce both noise and dust impacts.

Other General Arrangements:

Sheeting of Vehicles: All lorries leaving site with demolition spoil shall be securely sheeted before leaving the Site. No **Bonfires** shall be permitted.

Internal Haul Roads: The site is covered in hardstanding and this will remain in site throughout the above ground demolitions. when groundworks commence, the sequence will enable lorries to run on the hardstanding for as long as reasonably practicable. As the vast majority of arisings will be stable and clean, there will be no need for wheel washing facilities, however, the Gateman will be tasked with checking the condition of vehicles leaving site and taking any necessary remedial action, for example during spells of heavy rain during the groundworks to ensure that tyres have not picked up deposits that may be transferred to the roads.

Dust Monitoring: Two permanent optical, real time dust monitoring stations are planned, the locations proposed being varied to suit the progress of the demolition as shown on the attached drawing. These are to be set up with alarm levels fixed at 250 micrograms per cubic metre PM_{10} measured over a rolling continuous 15 minute mean and reportable via text message. Receipt of a message indicating exceedance of the agreed alarm levels will result in cessation of activities until the source has been identified and contained. A log of all exceedances shall be kept along with details of the action taken to rectify the issue. See also document Dust Monitoring TN001A.

Vehicles: Lorries arriving at site will comply with the Low Emission Zone rules and regulations. a 10 mph speed limit will apply to all internal haul roads.

Machines: all excavators shall use ULSD and shall be fitted with suitable exhaust after treatment.
Engines: all machine operators and drivers will be required to switch off engines when machines are not in use.

Alternative Waste Routes (Rail/Water): No viable alternatives exist to road haulage, the railway being situated in a deep cutting.

Where dust control is achieved is achieved by the of extraction equipment, **fans and filters** will be cleaned regularly (principally, the asbestos removal processes).

DUST MONITORING POSITIONS

Key: Suggested Locations stage 1.1: Positions to be reviewed weekly and alternative positions selected based on prevailing wind directions
Suggested Locations Stage 1.2:
Suggested Locations Stage 1.3: Positions to be reviewed weekly and alternative positions selected based on prevailing wind directions

Clifford Devlin Ltd,
Clifford House, Towcester Rd, Bow, London, E3 3ND
E-mail- Info@clifford-devlin.co.uk Web- www.clifford-devlin.co.uk
Tel – 020 7538 8721 Fax – 020 79871857

BASELINE RISK ASSESSMENT (HEALTH, SAFETY, QUALITY AND ENVIRONMENT)
OPERATING PROCEDURES
FOR CRUSHER / RECYCLING OPERATIONS

The following assessment considers the general categories of hazards arising in crusher/recycling operations together with certain specific associated activities commonly encountered, and considers the appropriate Control Measures to be applied to reduce the risks arising to an acceptable level.

As such, it forms a starting point for a site-specific assessment of each project. On most Projects, the detailed description of the sequence of works including the Control Measures being applied is recorded as a Method Statement. The complexity of the work being planned will dictate the necessity for further assessment of risk, for simple projects no additional written assessment will be required, highly complex projects may require several task or location specific Assessments and Method Statements. Because the day-to-day operation of the facility does not vary significantly with location this assessment shall be used at all operating locations and site-specific elements of risk created by location, movement of the facility or local hazards such as electricity lines may be dealt with under the risk assessment(s) and method statements for the project.

In all cases, the process of risk assessment is reiterative and all assessments shall be reviewed for adequacy at least during the initial site set up.

Reference may be made to the company's procedure for Risk Assessment.
Abbreviations:

CPCS	Construction Plant Certification Scheme.
CCDO	Certificate of Competence Demolition Operatives
PPE	Personal Protective Equipment.
CDM	Construction (Design and Management) Regulations 2007.
NAW	Noise at Work Regulations 2005.
LAW	Lead at Work Regulations 1998.
CAW	Control of Asbestos Regulations 2012.
COSHH	Control of Substances Hazardous to Health Regulations 2002.

GENERAL OPERATING ARRANGEMENTS

Material / Stockpiling

Stockpiles generated by the normal use are “scrap”, “crushed concrete”, “hardcore” and “type 1/6F2" dependant upon the quality of source material.

Material for crushing / recycling is delivered via the main gate/brought from the demolition zones and tipped in the stockpile area. Where applicable, drivers are issued with a receipt via their controlled waste carriers conveyance note and the receiver’s information logged in the site office and reports shall be made of non-conformance of delivered material against delivery information. The identification of hazardous materials shall require work to be halted until these can be removed or made safe. Examples include suspected asbestos containing materials, gas cylinders, refrigerators, chemical containers, fire extinguishers etc. **(see also IMS Doc 475 Waste Acceptance Criteria)**

A variety of machines are used to sort the material comprising:

- excavator fitted with bucket, pulveriser or grab as necessary to reduce large concrete blocks, remove reinforcing bar and other scrap metal or to remove timber,
- loading shovel

Once sorted, material for crushing is stockpiled behind the crusher from where it is loaded into the crushing hopper by excavator with bucket attachment. Fine material falls through the hopper and is set aside by a conveyor belt.

As each completed crushed stockpile grows material is progressively removed to the main stockpile area by loading shovel.

If finished crushed material is to be removed from site by LGV, vehicles will be loaded by loading shovel prior to despatch. Documentary evidence shall be kept of material classification, quantity and destination countersigned by the LGV driver.

Location / Relocation / Machine setup

Relocation of a crusher is a specialised task. Preparation for transport and resetting of crusher shall be supervised by a competent crusher operator; CPCS category code A42, and shall follow all manufacturers' guidelines. In particular; all restraining bolts shall be fitted before vehicle movement; and before operation, all such shall be removed and installation shall be completed of all guarding and securing bolts to legs and ladders etc.

The crusher operator shall liaise with other machine operators, demolition foremen, construction managers as necessary to maintain demarcation of "safe" and "machinery" areas.

The crusher comprises various moving parts:

- Hopper,
- Screener and feed belt,
- Crushing plates,
- Feed belt and
- Scrap belt

together with manufacturers warning signs that are fitted at relevant points together with proprietary guards.

Personnel shall be excluded from beneath the conveyor belts because of the falling material and machinery hazards. All guards shall be in place before the machine is allowed to be switched on.

Fuel / Oil Storage & Spill Kits

Fuel storage for all machinery is in a bunded diesel bowser. A fire point is established adjacent to but at a safe distance from the bowser.

A specific spill kit must be located adjacent to the crusher and contain sufficient and suitable absorbent materials for the quantity of fluid in the machine

Dust Control

Damping down is achieved by fixed water sprays over the relevant conveyors using low volume, wide-angle mist delivery and this is complemented with mobile hoses being used at the delivery stockpile, particularly in hot, dry weather.

DATE OF ASSESSMENT	***BASELINE***	**NAME OF PERSON UNDERTAKING ASSESSMENT**	Iain Kirk

Number of people exposed	All demolition and asbestos removal operatives	**Under 18?**	No	**How often and for how long are people exposed to activity?**	Variable frequencies, with

Activity covered by this assessment:	**CRUSHER – TRACKED**

Description of the activity covered by this assessment:

General use of tracked crushers.

General use describes basic tracking movements in line with machine preparation, delivery etc. for specific risks on site refer to the method statement for works.

[1]

Reason for Assessment Please Tick✓					
	New Procedure/Task/Area		Changes in Task/Procedure/Area		
	Relocation of Task/Area		Following Observation		
	Following Safety Alert		Following Accident / Incident		
	Union /Employee / Rep. Request		Review of Risk Assessment*	✓	

Date the Next Review Is Required	1 Year
* If Review- Dates of review	30th June 2013

SEVERITY	RISK ASSESSMENT MATRIX							
6 MULTI-FATAL	6	12	18	24	30	36		VERY HIGH RISK
5 FATALITY	5	10	15	20	25	30		
4 MAJOR	4	8	12	16	20	24		HIGH RISK
3 NOTIFIABLE	3	6	9	12	15	18		
2 MINOR	2	4	6	8	10	12		MEDIUM RISK
1 NEGLIGIBLE	1	2	3	4	5	6		LOW RISK
1 VERY RARE						6 ALMOST CERTAIN		
2 REMOTE					5 FREQUENT			
3 OCCASIONAL				4 REGULAR				

VERY HIGH RISK	Intolerable – Do not start work
HIGH RISK	Work can only commence with extensive reassessment of the risk levels and direct supervision
MEDIUM RISK	Tolerable – Reduce where practicable
LOW RISK	Safe Condition

No.	Hazard Identified: (Relevant Statutory provision)	Consequence	*Initial risks*			Existing Controls	Present Risk Factor			Additional Controls Required	Residual Risk Factor		
			S	L	R/F		S	L	R/F		S	L	R/F
1	Falling materials (Working at Height Regs 2005)	Fatality ~ Musculoskeletal injury	6	5	30	Establish exclusion zones around stockpiles with barriers and warning signs and provide notices of machine working areas	5	2	10				
2	Work at height (Working at Height Regs 2005)	Fatality ~ Musculoskeletal Injury	5	5	25	Proprietary safe working platforms and safe means of access are provided. These shall be kept clean and clear.	5	2	10				
3.	Hazardous substances and toxic materials (C.O.S.H.H. Regs 2002)	Fatality ~ Respiratory disorder	5	4	20	Assessment of exposure and control of work as required by COSHH,. Substances include; MMMF, silica, dust (nuisance), Weils disease, pigeon droppings, and those used in working processes such as mineral oils, fuels etc. Nuisance control by "damping down" at crushing point and stockpile delivery conveyor(s). Dust monitoring at site perimeter as per Permit. Sorting to be halted if suspected asbestos observed or any chemical container or pressurised container identified.	5	2	10				
4	Fire (C.D.M Regs 2007 Sect 38-41) (Regulatory Reform (Fire Safety) Order 2005)	Multiple fatality ~ Serious Burns	6	4	24	Site specific fire risk assessment and a fire plan must be amended before work commences. Establish procedure for serious and imminent danger. Fire fighting equipment to be available, at fuel points, and at site offices. Fuels to have designated storage. Ensure all fire exit routes are kept clear for ease of egress, clearly marked, adequately lit, kept clear of flammable materials. Spillage's to be prevented / controlled.	6	2	12				

No.	Hazard Identified: (Relevant Statutory provision)	Consequence	*Initial risks*			Existing Controls	Present Risk Factor			Additional Controls Required	Residual Risk Factor		
			S	L	R/F		S	L	R/F		S	L	R/F
5	Noise (Noise at Work Regs 2005)		4	4	16	Assessment as N@W regs. Provision and use of PPE. Provide information, instruction and training on when and how to correctly use hearing protection. All gantries on crusher to be designated hearing protection zone whilst machine in use. Nominally a HPZ to be established 5m from crusher	4	2	8				
6	Movement of MACHINERY AND VEHICLES 1 Crusher 2 Excavator 3 Lorries (C.D.M Regs 2007 Sect 36 & 37)		5	5	25	Drivers to hold appropriate (CPCS) training. Plant to be adequately maintained, tested and inspected. Warning signs as necessary. All as directed by PUWER assessments. Appropriately trained traffic marshals to be used, where any movement occurs. Control site access points. Designated vehicle routes segregated from pedestrian routes. High visibility clothing is compulsory. Adequate training must be given in crusher operation and in particular of arrangements for safe transportation.	5	2	10				
8	Security (Guard Dogs Act 1975)				N/A	Where overnight security is enhanced by the use of guard dog, the person who owns the dog shall indemnify the company from responsibility for mistreatment of the animal and from any injury received whilst handling the animal. Warning notices shall be posted at the perimeter.							

Signature of Person Undertaking Assessment:		**Passed for Action to:**		**POSITION**		**DATE**	
Timescale for actions to be carried out in:						**By (date)**	

Hazard and risk reduced by the following actions

Hazard No.	Reduced By: (Further Controls)	Date to be completed	Completed on:	Reason Not Completed	New Completion date	Completed on:	Completed By	Verified by:
		-	-	-	-	-	Ongoing	
		-	-	-	-	-	Ongoing	
		-	-	-	-	-	Ongoing	
		-	-	-	-	-	Ongoing	
		-	-	-	-	-	Ongoing	

All actions have now been completed and assessment of risk is to be presented to all persons concerned in its operation.

Signed: …….. Print Name: …….

STANDARD PERMIT CONDITIONS

EMISSION LIMITS AND CONTROLS

1. All emissions to air, other than steam or water vapour shall be colourless and free from persistent mist.
2. All emissions to air shall be free from persistent fume and free from droplets.

MONITORING SAMPLING AND MEASUREMENT OF EMISSIONS

3. A visual assessment of particulate emissions from the crusher shall be made frequently and at least twice during each crushing run. The results of this assessment shall be recorded in the log book required to be kept in accordance with Condition 4.
4. A log book shall be kept containing a record of all visual assessments made in accordance with Condition 3, 5 and 15. The record shall include the time and date of the assessments, the result, and the name of the person undertaking the assessment. The log book shall be kept available with the mobile plant for inspection by an authorised Officer and shall contain at least the previous two years' records.
5. Remedial action shall be taken in the case of abnormal emissions. Details of abnormal emissions shall be recorded in the logbook required to be kept in accordance with Condition 4. The time, date, and remedial action taken shall be noted in the log book, and the Regulator immediately informed of any abnormal emissions.

PROCESS OPERATIONS

6. The point of discharge from the crusher to the conveyor shall be enclosed as far as practicable.
7. The last metre of the discharge conveyor and the first 0.5 metre of the freefall of material shall be fitted with water suppression which should be employed when conditions are likely to cause abnormal particulate emissions, as deemed necessary by the site foreman. Belt scrapers shall be fitted for the cleaning of returning conveyors.
8. The feed area of the crusher and the screens shall be fitted with a water suppression system, which should be employed when conditions are likely to cause abnormal particulate emissions, as deemed necessary by the site foreman.

MATERIALS HANDLING

9. The construction and management of stockpiles shall be carried out in such a manner so as to avoid the creation of excessive air-borne dust. Water suppression shall be employed when conditions are likely to cause abnormal particulate emissions, as deemed necessary by the site foreman.
10. The loading to and from stockpiles shall be carried out in a manner so as to avoid the creation of excessive air-borne dust. Water suppression techniques shall be employed when conditions are likely to cause abnormal particulate emissions, as deemed necessary by the site foreman.
11. During periods of dry weather an adequate supply of water shall be maintained on site at all times.
12. Drop heights from conveyors to crushers, screens or stockpiles shall be minimised.
13. Dust emissions from the loading of processed material into road vehicles shall be minimised by dampening as conditions require and minimising drop heights.
14. Vehicles under the control of the process operator shall be sheeted or otherwise enclosed when carrying dusty materials.

GENERAL OPERATIONS

15. All malfunctions or breakdowns leading to abnormal emissions shall be dealt with promptly, and, if necessary, process operations shall be adjusted to mitigate the effects of the malfunction/breakdown until normal operations can be restored. All such malfunctions shall be recorded in the log book required to be kept in accordance with Condition 4. The time, date, action taken and person on site dealing with the situation shall be noted in the logbook.
16. All plant and machinery likely to either prevent or cause emission to air of any substance listed in the "Air" list of Schedule 5 of the Pollution Protection and Control (England and Wales) Regulations 2000 (as amended) shall be maintained in good working order to ensure that emissions from the plant are kept to a minimum. Either essential spares and consumables shall be held at the installation (or available locally at short notice), or alternatively, 1) a service contract for the plant, which includes a priority attendance requirement for equipment failure, shall be held with a suitable contractor, or 2) a mobile service and repair engineer carrying essential spares and consumables is employed by the Company.

17. All staff whose duties include the operation of plant and machinery likely to either prevent or cause emission to air of any substance listed in the "Air" list of Schedule 5 of the Pollution Protection and Control (England and Wales) Regulations 2000 (as amended) shall receive the appropriate training, supervision and instructions as specified in paragraph 29 of Process Guidance Note PG3/16(96).

18. The local authority shall be notified in writing no less than one week before the mobile process is to be moved to another location. Such notification shall include details of the intended new location and the likely duration of the process at that location. (To be done by rental machine owner and copied to CDL)

19. An Environmental Management System should be adopted to meet, at minimum, the requirements of Phase 1 and 2 of BS8555 within 6 months of the date of issue of the permit (see Schedule B)

EXTRACTS FROM PGN 3/16

LAPPC and LAPC

5 Emission limits, monitoring and other provisions

5.1 The emission limit values and provisions described in this section are achievable using the best available techniques described in Section 6. Monitoring of emissions should be carried out according to the method specified in this section or by an equivalent method agreed by the regulator. (See Ref. (e) (M1) and Ref. (f) (M2))

Table 2: Emission limits, monitoring and other provisions

Row	Substance	Source	Limit/ provision	Type of monitoring	Monitoring frequency
1	Particulate matter	Whole process	Avoidance of visible emissions crossing the site boundary	Recorded operator observations.	On start up and on at least two more occasions each day

5.2 The aim is to prevent an emission from the site which is harmful or offensive. This aim includes all sites, regardless of location. Proper site management and use of environmental controls can create a site that is substantially free from airborne particulate emissions due to the process. It is expected that the process can be controlled such that, even during minor emission incidents that might arise from time to time, there are no visible emissions more than about 10 metres from plant, conveyor or stockpiles. It is expected that any emission incidents will be brought under control as soon as they are observed and will not be allowed to cause an exceedance of the limits. It should be noted that the authorisation only seeks to control emissions from the prescribed process and that other operations on site, not controlled by the operator, such as demolition for example, may be giving rise to emissions which if unacceptable should be regulated using the appropriate regulatory regime.

Monitoring, investigations and recording

5.3 The need for and scope of testing, and the frequency and time of sampling depend on local circumstances, operational practice and the scale of operation. As part of proper supervision the operator will monitor emissions, make tests and inspections of the process and keep records, in particular:

- 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
- any historical records kept off-site should be made available for inspection within one working week of any request by the regulator.

Visible emissions

5.4 Emissions should be limited and monitored. Site operations likely to be of a long duration may require monitoring stations to be set up around the site, using deposition gauges to demonstrate that arrestment techniques are controlling emissions satisfactorily. This would be a site-specific provision depending upon the nature of the contract being undertaken. Abnormal emissions require action as described in paragraph 5.5.

- Emissions from combustion processes should in normal operation be free from visible smoke and in any case should not exceed the equivalent of Ringelmann Shade 1 as described in British Standard BS 2742:1969.
- Visual assessments of emissions should be made frequently, and at least three times a day during operations. The time, location and result of these assessments should be recorded.
- Where, in the opinion of the regulator, there is evidence of airborne dust from the process off the site, corrective action should be taken without delay. If the source of the emission is uncertain the operator should make their own inspection and assessment, and where necessary undertake ambient monitoring with the aim of identifying those process operations giving rise to the dust. The monitoring may either be by a British Standard method or by a method agreed with the regulator. In these situations, determination of wind direction may be required.
- All releases to air, other than condensed water vapour, should be free from persistent visible emissions.
- All emissions to air should be free from droplets.

Abnormal events

5.5 The regulator needs to be notified about certain events, whether or not there is related monitoring showing an adverse result, and 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 local regulator in whose area the plant is operating should be informed without delay if there is an emission that is likely to have an effect on the local community, as well as the authority that issued the authorisation.

Notifying regulator of operations

5.6 The regulator needs to be notified of mobile crusher activities and requires the operator to respond to problems:

- The Pollution Control or Environmental Health Department of the local authority in whose area the plant is operating in England or Wales, or the local SEPA office in Scotland, should be informed of the operational work plan prior to operations commencing. The local enforcing authority that authorised the mobile crusher operation should also be informed. This should also apply in the event that mobile plant is brought onto a quarry site.

6 Control techniques

Summary of best available techniques

6.1 The following table 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 5. 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 3: Summary of control techniques

Sources of particulate matter	Control technique
Loading and unloading processes • Transfer of materials	Containment Suppression Reduced drop heights • use of variable height conveyors • use of chutes
Double handling transfer points	Site and process design
Stockpiles	Wind dynamics management • use of fencing, bunding, profiling etc. Reduced drop heights Suppression • water and/or suppressants • sufficient coverage by sprays Covering • below ground or covered stock bins • dust covers • housing
Crushing, grinding, screening and separation	Containment Dust arrestment Suppression
Conveyors, conveyor transfer points	Containment • wind boards Appropriate siting • away from site boundary especially if near residential or other sensitive receptors
Blending, packing processes etc	Containment Reduced drop heights Dust arrestment • bag filters / cartridge filters
Roadways including haulage roads	Suppression • site and process design
External operations • Conveyors • Stockpiles • 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 and under-body vehicle wash

Techniques to control emissions from contained sources

6.2 The crushing, grinding and screening plant and the stockpiles of crushed material should be designed, set up and operated in such a way that any substances released have the minimum impact on the environment. The operator should have reviewed all available techniques, and be able to demonstrate that the selection of process equipment and dust control strategies represent BAT. In addition to technical and technological means the use of BAT should incorporate adequate training of site operatives and supervision of the process.

6.3 Best available techniques are required to control dust emissions, for example from reception and storage of potentially dusty materials, internal transportation (whether in vehicles, front loaders or on conveyors), size reduction operations, stockpiles, loading and unloading. Also other potential fugitive emissions, such as roads and other surfaces, need to be controlled. The layout, design, construction and maintenance of the process equipment is extremely important to control of emissions and require the attention of experienced, competent personnel.

6.4 The main principles for preventing dust emissions are containment of dusty processes and suppression of dust using water. Suppression techniques need to be properly designed, used and maintained, in order to be effective. For example, where water is used for dust suppression, processes require an adequate supply of water and all water suppression systems need adequate frost protection. For information, discharges from the use of water suppression will be subject to Environment Agency regulation under Groundwater Regulations 1998.

Stockpiles and ground storage

6.5 Consideration should be given to the siting of potentially dusty stockpiles, based upon such factors as the prevailing winds, proximity of neighbours to the site boundary and site operations. Minimisation of drop height is very important in stockpiling to reduce wind whipping of particulates. Wherever possible, loading/unloading should take place at sheltered points around the stockpile to prevent entrainment of dust in the wind.

6.6 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 given the nature of the material stored. If necessary, covers or dust suppressants should be used.

- Loading to and from stockpiles, and construction and management of stockpiles should be carried out in such a manner as to minimise wind-borne dust, e.g. taking place at sheltered points.
- No material should be stored in the open except for:
  (a) material that has been screened to remove material 3 mm and under;
  (b) sand;
  (c) scalpings;
  (d) material used for road sub-bases (commonly known as "MOT material", or "type 1" or "type 2" material) that has been conditioned before deposition;
  (e) crusher run material that has been conditioned before deposition;
  (f) material under 3 mm where the volume 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 3mm is external stock-piles, particularly careful consideration should be given to the guidance outlined in this guid-ance note.
- Storage areas where there is vehicular movement should either have a consolidated surface which should be kept clean and in good repair, or should be kept wet. Sweeping, wetting or sealing are all techniques that may be used to reduce dust emissions from roads. The tech-nique that should be used depends upon the type of road under consideration.

- To control dust emissions from stockpiles, storage bays should be used. If necessary, covers or dust suppressants should be used.
- When using storage bays, storage height should be lower than external walls of the bays unless suppression is provided to control emissions. Stock should not be piled forward of the bay.
- Where dusty materials are stored, stockpiles should be wetted where necessary to minimise dust emissions. Fixed water sprays should be installed for long term stocking areas if appropriate.
- Conditioning with water or proprietary conditioning agents should take place at or before the point of discharge from the conveyor.
- Stockpiles should be suitably profiled and conditioned with water or proprietary conditioning agents, according to weather conditions.
- All processed materials that have not been screened to remove material under 3mm should be conditioned with water or proprietary conditioning agents at or before the point of discharge onto the stockpile.
- Storage areas should be kept in a condition that does not give rise to visible dust emissions.
- Unused stocking areas should also be controlled to prevent visible dust emissions.

Process operations

Crusher processes

6.7 The control of dust emissions from these processes is mainly by the use of suppression and appropriate siting of equipment. Crushers can be inter-linked with water flow detectors so that they cannot operate unless a water supply is operational. High pressure, low volume water sprays over the feed area should provide adequate dust control if operated correctly.

Where the pressure of the water on site is not adequate to maintain the dust suppression then extra pumps can be used to increase the water pressure. Extra pumps can sometimes be necessary both in the event that water is delivered by bowser and where it is delivered by mains supply.

Material with an inherent moisture content greater than 3% e.g. sand or gravel, would not be expected to give rise to emissions of dust, so the following controls would probably not be necessary when such materials are being handled. In winter materials may not require the same degree of suppression in order to achieve the emission limits.

It is unlikely that screens give rise to significant quantities of airborne dust as the top screen handles larger material and the lower screens handling the finer material are enclosed. Materials should be deposited carefully onto screens to minimise dust emissions.

Total containment might be an option. Crushers should be totally contained or fitted with a water suppression system over the crusher aperture.

- Crushers should be totally contained or fitted with a water suppression system over the crusher aperture.
- Where the use of water as a method of dust suppression is necessary in order to meet the emission limits, it should be used. In such circumstances, if water of the required pressure is not available for use on the suppression system, then the process should not operate.
- Where water suppression does not provide adequate dust control to comply with the emission limits then the process should be carried out under cover. If necessary dust extraction and arrestment should be employed.

- Where water suppression does not provide adequate dust control to comply with the emission limits then the process should be carried out under cover. If necessary dust extraction and arrestment should be employed.
- If dust extraction and arrestment plant is required to meet the emission limits then this should be operational.
- The discharge from crushers and screens onto conveyors or into other equipment should be enclosed as far as is practicable.
- Deposits of dust on external parts of the plant should be cleaned off at the end of each working day in order to minimise the potential for wind entrainment.

Techniques to control fugitive emissions

6.8 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 housekeeping. Attention should be paid to preventing and cleaning up deposits of dust on external support structures, in order to minimise wind entrainment of deposited dust.

Conveying

6.9 All new conveyors should be designed to minimise dust emissions at discharge points. If material has already been screened to remove material under 3mm size then it might not be considered as dusty. Operational experience on site would enable decisions to be made with regard to the dustiness of conveyed material. In any case, equipment should be available to enable operations to comply with the authorised emission limits. Regard should be had to how material cleaned from conveyors is dealt with.

- Conveyors should be of sufficient capacity to handle maximum loads without spillage.
- Where dusty materials are conveyed, the conveyor and any transfer points should be provided with adequate protection against wind whipping.
- The conveyors should be fitted with means for keeping the belt clean.
- Where chevron belts are used, catch plates should be fitted to contain dust falling from the underside of the belt at the turning point.
- Conveyor belts should not be overloaded.
- Where the design of the conveyor allows free fall of material to occur, techniques should be used at the point of discharge to minimise this, for example the use of a chute or similar equipment.
- Where water is available it should be used at conveyor discharge points for dust suppression. (This may not be necessary where the material has already been screened to remove material under 3mm size.)
- The last metre of any final size discharge conveyor or stockpile discharge conveyor and the first 0.5 metre of the free fall of materials from conveyors carrying material of a consistent size and shape, should be fitted with a full hood. (The hood ensures that the application of water from spray bars at this point is most effective.)

Loading/unloading

6.10 The principle is that loading and unloading processes should be carried out so as to minimise the generation of airborne dust.

- Vehicles should be loaded in such a way as to minimise airborne dust emissions, for example by loading with wet materials, or by using a load out area protected by enclosure or a dust suppression system.
- The vehicle should be sheeted or otherwise totally enclosed as soon as possible after loading and before leaving the site. This need not be applied to the loading of crushed material greater than 75 mm.
- Loading and unloading of rail vehicles should be as agreed between the operator and the regulator.

Roadways and Transportation

6.11 Transport of dusty materials should be carried out so as to prevent or minimise airborne dust emissions. When setting up on a new site, consideration should be given to a site layout minimising vehicle movement. It is preferable that potentially dusty material being delivered to the site should be sheeted or held in closed containers before being admitted to the site.

6.12 On some sites wheel-cleaning facilities may be useful to prevent dust being carried off the site should be provided and used by vehicles before leaving the site. Where the plant is co-located with a quarry which is not a prescribed process, it may not be appropriate.

- Where necessary, wheel-cleaning facilities should be provided and used by vehicles before leaving the site.
- Processed materials likely to generate dust should be conditioned with water prior to internal transfer.
- Roadways in normal use and any other area where there is regular movement of vehicles should have a consolidated surface capable of being cleaned. They should be kept clean in order to prevent or minimise dust emissions. They should be kept in good repair.

Air quality

Ambient air quality management

6.13 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 Part B process itself is a significant contributor to the problem, it may be necessary to impose tighter emission limits. 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 Part B 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. More guidance on this is provided in paragraph 360 of the Air Quality Strategy which gives the following advice:

"*The approach from local authorities to tackling air quality should be an integrated one, involving all strands of local authority activity which impact on air quality and underpinned by a series of principles in which local authorities should aim to secure improvements in the most cost-effective manner, with regard to local environmental needs while avoiding unnecessary regulation. Their approach should seek an appropriate balance between controls on emissions from domestic, industrial and transport sources and draw on a combination and interaction of public, private and voluntary effort.*"

Management

Management techniques

6.14 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
- it is good practice to ensure that spares and consumables are available at short notice in order to rectify breakdowns 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.

- Spares and consumables - in particular, those subject to continual wear - should be held on site, or should be available at short notice from guaranteed local suppliers, so that plant breakdowns can be rectified rapidly.

Appropriate management systems

6.15 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 processes 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.

Regulators should use their discretion, in consultation with individual operators, in agreeing the appropriate level of environmental management. Simple systems which ensure that LAPC considerations are taken account of in the day-to-day running of a process may well suffice, especially for small and medium-sized enterprises. While authorities may wish to encourage wider adoption of EMS, it is outside the legal scope of an LAPC authorisation/LA-PPC permit to require an EMS for purposes other than LAPC/LA-PPC compliance. For further information/advice on EMS refer to EMS Additional Information in **Section 8**.

Training

6.16 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.

- Training of all staff with responsibility for operating the process should include:
  - awareness of their responsibilities under the permit, for example;
  - minimising emissions on start up and shut down
  - action to minimise emissions during abnormal conditions
- The operator should maintain a statement of training requirements for each operational post and keep a record of the training received by each person whose actions may have an impact on the environment. These documents should be made available to the regulator on request.

Maintenance

6.17 Effective preventative maintenance should be employed on all aspects of the process including all plant, buildings and the equipment concerned with the control of emissions to air. In particular:

- A written maintenance programme should be provided to the regulator with respect to pollution control equipment; and
- A record of such maintenance should be made available for inspection.

TRAINING REQUIREMENTS

Basic Requirements:	Provider
Knowledge of permit restrictions, these procedures, forms/records to be completed,	In-House
Environmental Management System and basic environmental awareness training,	In-House
Crushing Foreman	
Operation and maintenance of Crusher	CPCS registration by assessment once competent.
Crusher Operator	
Operation and maintenance of Crusher	CPCS registration by assessment once competent.
Loading Shovel/Excavator Operators	
CPCS categories A21 (Loading Shovel) A58/9 excavator	CPCS registration by assessment once competent.
Note: Demolition Excavator Categories A65 Endorsements A Materials Processing, B Non-hydraulic, C Hydraulic rotating and D High Reach	

RECORDS

CRUSHER OPERATIONS LOG BOOK			
Site:		Date	
Crushing Foreman		Crusher Operator	
Plant Operators – Machine and Name			
Loading Shovel		Dumper	
Excavator 1			
Excavator 2			
Daily Dust/Emissions Observations			
Observation	Time	Comments	
Shift Start AM			
Intermediate AM			
Intermediate AM			
Shift Start PM			
Intermediate PM			
Intermediate PM			
Malfunctions			
Time	Cause	Action Taken	

Signed Crushing run completed at ……. Hrs ……

Procedure: Form to be completed daily to comply with Permit Clauses as follows:

3. A visual assessment of particulate emissions from the crusher shall be made frequently and at least twice during each crushing run. The results of this assessment shall be recorded in the log book required to be kept in accordance with Condition 4.

4. A log book shall be kept containing a record of all visual assessments made in accordance with Condition 3, 5 and 15. The record shall include the time and date of the assessments, the result, and the name of the person undertaking the assessment. The log book shall be kept available with the mobile plant for inspection by an authorised Officer and shall contain at least the previous two years' records.

5. Remedial action shall be taken in the case of abnormal emissions. Details of abnormal emissions shall be recorded in the logbook required to be kept in accordance with Condition 4. The time, date, and remedial action taken shall be noted in the log book, and the Regulator immediately informed of any abnormal emissions.

15. All malfunctions or breakdowns leading to abnormal emissions shall be dealt with promptly, and, if necessary, process operations shall be adjusted to mitigate the effects of the malfunction/breakdown until normal operations can be restored. All such malfunctions shall be recorded in the log book required to be kept in accordance with Condition 4. The time, date, action taken and person on site dealing with the situation shall be noted in the logbook.