



Contractor



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Project **FORTH REPLACEMENT CROSSING**

Document title
DUST AND AIR QUALITY MANAGEMENT PLAN

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04	20/06/14	Update to reflect current management structure	SSN	LSN	LSN
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DUST AND AIR QUALITY MANAGEMENT PLAN

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1 INTRODUCTION

1.1.1 This Dust and Air Quality Management Plan (DAQMP) has been produced as part of the Environmental Management Plan (EMP) and takes account of the commitments and requirements as detailed in the following documents:

- Transport Scotland (Dec 2011) Register of Commitments and Undertakings;
- Transport Scotland (Dec 2010) Code of Construction Practice (CoCP) Rev 5;
- Forth Crossing Act (2011);
- Transport Scotland (April 2011) Employers Requirements, TS/MTRIPS/WKS/2009/02; and
- Jacobs Arup (November 2009) Forth Replacement Crossing Environmental Statement.

1.1.2 The following Environmental Statement commitments relating to dust and air quality during construction have been made and will be delivered by this Plan:

- TE23 (Pollution Prevention) Throughout scheme, best practice measures will be implemented to prevent pollution;
- DC13 The Contractor will implement the CoCP and employ Best Practicable Means to control dust and air quality;
- DC14 The Contractor will implement a Dust and Air Quality Management Plan to limit dust and air pollution from the transportation and storage of materials and to limit emissions from construction plant and vehicles;
- DC15 Traffic routing, site access points and hours of operations will be discussed with Fife Council, West Lothian Council and City of Edinburgh Council to reduce potential impacts on local receptors;
- DC16 A dust and air quality monitoring programme for construction activities will be agreed with the local authorities; and
- DC17 Blasting works will be avoided where reasonably practicable.

1.1.3 The Environmental Statement identified construction traffic emissions and dust nuisance as issues for consideration and assessment.

1.1.4 Vehicle exhaust emissions resulting from construction traffic may have the potential to affect local pollution levels, both within and surrounding the site. The pollutants of greatest concern in respect of the impact on public health, which are found in the exhaust emissions of road traffic, are nitrogen dioxide (NO₂), particulate matter (PM₁₀), carbon monoxide (CO) and benzene. Of these pollutants, NO₂ and PM₁₀ are present in the highest concentrations relative to air quality standards and were considered in the Environmental Statement. Statutory objectives apply to ambient concentrations of these pollutants.

1.1.5 The predicted impacts (Jacobs Arup, 2009) from construction traffic on concentrations of NO₂ and PM₁₀ were found to range from negligible to slight adverse in significance.

2 DUST NUISANCE

2.1.1 A number of construction activities can give rise to dust emissions as follows:

- transportation and storage of materials;
- use of haul routes;
- demolition activities;
- excavations and earthworks construction;
- drilling, blasting and grouting works;
- processing and crushing rock for reuse in the works; and
- In addition, some construction activities can result in odours being generated from, for example, smoke, fumes or gases.

2.1.2 Dust and odours can cause nuisance, for example when settled particles show up as deposits on clean surfaces such as cars and window ledges. Dust can also adversely affect ecological receptors.

2.1.3 Under the Environmental Protection Act 1990, dust, odours or air pollution which is prejudicial to health or a nuisance can be a statutory nuisance and best practicable means must be used to prevent or counteract the effects of any nuisance.

2.1.4 Appropriate authorisation procedures will be followed for any plant requiring a permit under The Pollution Prevention and Control (Scotland) Regulations 2012, for example, for mobile crushing or concrete batching plant.

3 SENSITIVE RECEPTORS

3.1.1 Sensitive receptors include areas within 200 m of construction activities and roads used by construction traffic. Within these areas, properties such as residential properties, schools and hospitals will be sensitive to construction impacts. Monitoring equipment is located adjacent to sensitive receptors (see section 7 and Figure 1).



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4 FCBC POLICY ON DUST AND AIR QUALITY MANAGEMENT FOR THE FORTH CROSSING

- 4.1.1 FCBC is committed to implementing best practicable means to minimise construction dust and air quality during the works to meet all of the requirements within the contract documents which detail the commitments undertaken within the Environmental Statement and the Forth Crossing Act 2011. Dust and air quality control form an integral part of the construction process, fully involving the construction team, to ensure that working methods are adopted to minimise dust and air quality in line with the requirements of the Code of Construction Practice.
- 4.1.2 During the planning and Bill process, Transport Scotland (TS) recognised the importance of this issue for local communities and other stakeholders, and established minimum criteria and thresholds to ensure the requirements of the Act are met. These are set out in a number of documents; the Act itself, the Environmental Statement, the Code of Construction Practice and the Employer's Requirements.
- 4.1.3 Best Practicable Means are used to reduce the dust and air pollution levels at receptors to as low as is reasonably practicable. Detailed information regarding the mitigation measures employed is included in sections 5 and 6.
- 4.1.4 Section 7 details how FCBC monitor air quality to determine if fugitive dusts are being caused by construction works and to enable an effective response. The monitoring for dust and air pollution is in 'real time' using sensors placed at sensitive and strategic locations. Action levels are set within the equipment which triggers immediate alarms to the Environmental Team and they are able to take appropriate action at the earliest opportunity.
- 4.1.5 The output from these monitors is made publicly available via the project website. In addition the data from the monitors, along with regular inspections, is used to reduce dust and air pollution levels wherever practicable to do so.



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5 MANAGEMENT AND MITIGATION

- 5.1.1 The Project Management Plan shows a high level organogram outlining the levels of responsibility within FCBC. The Environmental Manager is responsible for the management and implementation of the Dust and Air Quality Management Plan. The Environmental Team also inspect works, respond to potential incidents, advise on suitable controls and report to and assist the Environmental Manager in implementing this plan.
- 5.1.2 FCBC plan the site layout to locate machinery and dust-causing activities away from sensitive receptors, where reasonably practicable to do so. FCBC also use appropriate methods, such as dampening down of ground, where appropriate, to mitigate the spread of dust to any sensitive buildings or other environmental receptors. The site specific controls, including the location of wheel cleaning equipment and haul roads, are detailed in the Area Management Plan.
- 5.1.3 The need for toolbox talks is determined on an operational basis and in response to issues noted on site by operatives, in environmental inspections and in air quality reports.
- 5.1.4 All management, supervising staff and contractors are trained on the procedures within this plan. Activity specific controls identified in method statements are fully briefed to all relevant staff and operatives before works commence.
- 5.1.5 All construction works are designed to implement Best Practicable Means (BPM) as defined in the Control of Pollution Act 1974¹. All measures discussed below are considered to be BPM and hence are implemented during the works where practicable. The list is not considered to be exhaustive and the over-riding principle of BPM applies to all activities at all times. For each process, activity or phase of construction to be undertaken, a method statement is produced. These are reviewed by the Environmental Manager to ensure that they incorporate the BPM for controlling dust and air pollution, and that they comply with the contract and relevant documents including this DAQMP, the CoCP and the Environmental Statement. Where it does not, the method statement is amended and further reviews completed until suitable solutions are identified which incorporate the BPM for controlling dust and air quality.
- 5.1.6 On-going consultation is undertaken with the Environmental Liaison Group (ELG), including the local authorities, on the monitoring and mitigation proposals for air quality.
- 5.1.7 At least two weeks in advance of construction activities in which dust is potentially a risk, FCBC will advise local residents of the planned works and of the proposed air quality monitoring and mitigation. Community engagement is through the Community

¹ Best practicable means is defined in section 72 of the Control of Pollution Act 1974 and in section 79 of the Environmental Protection Act 1990.



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Liaison Officer (CLO), the Community Liaison Team (CLT) and in accordance with the Community Liaison and Communications Procedures Plan (CLCP).

- 5.1.8 Where pollution incidents, nuisance or adverse impacts are identified, FCBC will take action as appropriate to mitigate the impacts, including stopping any works considered to be causing the nuisance and investigating the nuisance incident. All incidents will be investigated thoroughly by FCBC and reported back to the persons affected via the Community Liaison Officer. The method is further described in section 7 of this report and Figure 2.

6 ACTIVITY CONTROLS

Haulage controls

- 6.1.1 FCBC follow best practical means to minimise emissions from Construction Plant and Vehicles. The following measures are implemented to limit emissions from construction plant and vehicles:

- Construction plant operated in accordance with the manufacturer's written recommendations;
- All vehicles and plant switched off when not in use;
- Vehicle cleaning and/or wheel washing before leaving the site if there is a risk of affecting nearby sensitive receptors;
- Vehicle and construction plant exhausts directed away from the ground where possible and positioned at a height to facilitate appropriate dispersal of exhaust emissions;
- Enclosing, shielding or provision of filters on plant likely to generate excessive quantities of dust beyond the site boundaries. Items such as dust extractors, filters and collectors on drilling rigs and silos used where appropriate;
- The movement of construction traffic around the site kept to the minimum reasonable for the effective and efficient operation of the site and construction of the Project;
- Construction plant located away from site boundaries which are close to sensitive receptors where reasonable and practicable;
- Site access points designed as required by the CoCP to avoid queuing traffic adjacent to access points. Parking of vehicles controlled in accordance with the CoCP;
- Use of diesel or petrol powered generators avoided by using mains electricity or battery powered equipment where reasonable and practicable;

- Use of ultra-low sulphur tax-exempt diesel for all non-road mobile machinery where available. Machinery with power outputs of over 37kW be fitted with appropriate exhaust after-treatment from approved Energy Saving Trust list (achieving filtration efficiency of over 85%);



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- Cutting and grinding operations conducted using equipment and techniques which reduce emissions and incorporate appropriate dust suppression measures;
- Appropriate measures employed to keep roads and accesses clean, as required in accordance with Sections 3.5 and 4.6 of the CoCP; and
- Vehicle, plant and equipment maintenance records kept on site and available to the Employer's Representative upon request.

6.1.2 FCBC follow best practical means to minimise emissions from the Transportation, Storage and Handling of materials. The following measures are implemented to limit pollution due to the transportation and storage of materials:

- FCBC employ appropriate measures, such as covering materials deliveries or loads entering and leaving the construction site by a fixed cover or sheeting appropriately fixed and suitable for the purposes of preventing materials and dust spillage. This applies to the transport of materials by road, rail or waterway;
- FCBC cover materials deliveries and loads on vehicles using the haul and access roads;
- The contractor takes appropriate measure to prevent the spread of mud etc. onto public roads. This includes the siting of wheel washes and cleaning equipment, regular brushing and maintaining the internal haulage routes in a suitable condition. Details about the layout of each site are detailed in the Area Management Plans;
- FCBC ensure that vehicles transporting materials within or outside the construction site are not overloaded; and
- Where appropriate, traffic routing, site access points and hours of operations are discussed with Fife Council, West Lothian Council and City of Edinburgh Council to reduce potential impacts on local receptors.

6.1.3 FCBC provide haul routes through the works for use by construction vehicles to minimise the need to use public roads. The following measures are implemented to construct and maintain haul routes to minimise dust and emissions:



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- FCBC agree haul routes with the Employer's Representative prior to their construction and use and advise the Employer's Representative of the intended level of trafficking for haul routes;
- Haul route are surfaced, where appropriate, to avoid dust emissions as far as practicable, taking into account the intended level of trafficking;
- When in use, the contractor maintains the surface of haul routes in a condition appropriate to the surface material and for the purposes of suppressing dust emissions.
- FCBC inspect haul routes regularly and promptly repair haul routes if required;
- Where reasonable, FCBC reuse haul route surfacing materials where the locations of haul routes change during the course of construction;
- FCBC provide areas of hard-standing at site access and egress points to be used by any waiting vehicles;
- The contractor cleans and suppresses dust on haul routes and in designated vehicle waiting areas by spraying with water or using other appropriate measures. The frequency of cleaning is suitable for the purposes of suppressing dust emissions from the site boundaries; and
- The contractor imposes and enforces appropriate speed limits on haul roads and throughout the site for safety reasons and for the purposes of suppressing dust emissions.

6.1.4 Haul routes have been constructed and specific control measures and site control measures as set out in Area Management Plan and CEMP have been implemented.

Material Management

6.1.5 The following measures are implemented to minimise pollution from the storage and handling of materials:

- Long term stockpiles are avoided wherever possible, and FCBC ensure that stockpiles exist for the shortest possible time;
- Where appropriate, stockpiles and mounds are kept away from the site boundary, sensitive receptors, watercourses and surface drains and sited to take into account the predominant wind direction;
- Stockpiles and mounds are at suitable angles of repose and sharp changes in shape are avoided to prevent material slippage;
- Materials stockpiles are enclosed or securely sheeted or kept watered by FCBC, as appropriate;
- The surfaces of long-term stockpiles, which give rise to the risk of dust, have been stabilised. Consideration will be given to the use of appropriate sheeting where reasonably practicable.
- Where reasonably practicable, and where appropriate storage in line with the requirements for covering materials set out above is not implemented, fine dry material (under 3mm particle size) is stored inside buildings or enclosures;
- Bulk storage and use of cement, lime and Pulverised Fuel Ash is operated in accordance with strict controls. The bulk storage of cement and lime is undertaken in accordance with DEFRA process guidance PG3/016. Storage is in silos or other suitable containers with suitable abatement processes. A process specific method statement has been completed which includes the monitoring requirements;
- The operation of the batching plants at Rosyth are in accordance with their PPC Permit (as attached in Appendix A);
- Mixing of large quantities of concrete or bentonite slurries is undertaken in enclosed or shielded areas;
- The number of handling operations for materials are kept to the minimum practicable;
- The contractor maintains materials handling areas to constrain dust emissions. The contractor uses appropriate measures such as watering facilities to reduce or prevent escape of dust from the site boundaries; and
- Mixing of grout or cement-based materials is undertaken using a process suitable for the prevention of dust emissions.

Demolition

6.1.6 FCBC implement the following measures to limit dust pollution from demolition activities:

- Blasting works were kept to the minimum practicable and took into consideration the requirements of the design and programme requirements of the Project;
- Any buildings or structures to be demolished are sprayed with water as necessary, prior to and during demolition to limit dust;
- Appropriate screening of buildings or structures to be demolished;
- Waste chutes are shielded and skips covered and secured;
- Where reasonable, the contractor avoids prolonged storage of waste materials on site;
- Storage of any waste materials on site complies with the requirements of this CoCP relating to storage of materials; and
- Removal of waste from the site complies with the requirements of the CoCP relating to the transportation of materials.

Earthworks

6.1.7 FCBC implement the following measures to limit dust from excavations and earthworks activities:

- Topsoil is stripped as close as reasonably practicable to the period of excavation or other earthworks activities to avoid risks associated with run-off or dust generation;
- Drop heights from excavators to vehicles involved in the transport of excavated material are kept to the minimum practicable to control dust generation associated with the fall of materials;
- Dust emissions are suppressed by spraying with water or using other appropriate measures;
- Deposited materials are compacted, with the exception of topsoil, as soon as possible after deposition; and
- Soiling, seeding, planting or sealing of completed earthworks is undertaken as soon as reasonably practicable following completion of the earthworks.

Drilling and grouting activities

6.1.8 FCBC implement the following measures to limit dust pollution associated with drilling and grouting activities:

- Blasting works have been kept to the minimum practicable taking consideration of the requirements of the design and programme requirements of the Project and are now complete;
- Measures such as enclosing, shielding or provision of filters on plant likely to generate excessive quantities of dust beyond the site boundaries will be employed. Items such as dust extractors, filters and collectors on drilling rigs and silos are used, as appropriate;
- Where appropriate dust is extracted at source to prevent exposure of workers to excessive dust inhalation;
- Materials used for grouting, such as cements or pulverised fuel ash, are stored in accordance with the requirements of this CoCP for materials storage to prevent them becoming an airborne hazard; and
- Mixing of grout or cement based materials is undertaken using a process suitable for the prevention, as far as reasonably practicable, of dust emissions.

Construction of aggregate from demolition or rock

6.1.9 FCBC implement the following measures to limit dust associated with processing and crushing rock for use as aggregate or other materials within the works:

- FCBC comply with the requirements of the CoCP relating to construction plant, transportation and storage of materials;
- Drop heights from excavators to crushing plant, and from crushing plant to stockpiles are kept to the minimum practicable to control dust generation associated with the fall of materials; and
- Appropriate measures are used for any processing, crushing, cutting and grinding activities as required to limit dust pollution.



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7 MONITORING

7.1.1 FCBC inspect and monitor the works using the following procedures:

- A daily visual inspection of site activities, dust controls and site conditions is undertaken and recorded in a daily dust log (also refer to Area Management Plan and general requirements set out in CEMP);
- A visual inspection of haul routes and conditions is undertaken at least monthly or in the event of dust being observed;
- An accurate log of complaints from the public is kept;
- A procedure for notification in the event of a complaint or other event or problem is set out in section 7.1.9;
- Monitor air quality through the use of real time particulate meters and deposition gauges;
- Monitoring wind speed and weather conditions;
- Inspection and maintenance of construction vehicles, plant and machinery in accordance with manufacturer's guidelines and recorded in an inspection and maintenance schedule; and

7.1.2 Real time particulate monitoring can be undertaken by a range of monitors. FCBC have, for most sites, selected the light scatter type monitoring equipment to create a live network which assesses the levels of fugitive particulate matter, principally airborne dust. The monitors require less space, maintenance and power than other real time monitors such as TEOM which is used and designed to measure particulate levels to exceedingly high standards including measuring long term compliance to statutory limits. One TEOM has been deployed at Newton in conjunction with West Lothian Council.

7.1.3 Light scatter meters are practicable to deploy and are becoming the construction and waste industry standard for measuring airborne particulate matter and defining action thresholds to ensure controls are suitably applied. The meters do generally record levels higher than those measured by the TEOM. The meters can also be affected by atmospheric moisture content which further increases reported levels. Accordingly any elevations of statutory limits should be treated as precautionary exceedances. The monitors are reliable for on-site monitoring and the establishment of action thresholds to ensure unforeseen activities generating significant dust are identified and suitably controlled. To verify the recorded levels FCBC will undertake periodic validation monitoring alongside the permanent monitoring.

7.1.4 The real time monitors are supplemented by deposition frisbees at sensitive location in proximity to the site boundary. These monitors are reactive measures of air quality over a defined period, typically a fortnight.

- 7.1.5 The monitoring network is shown in Figure 1. The type of monitoring station by location is shown in Table 1. The monitoring locations have been discussed with the ELG. The plan also shows locations of the weather monitoring stations which record wind speed, direction and rainfall.
- 7.1.6 Baseline monitoring has been established for most stations. Table 2 sets out the action levels for dust and particulate matter. These have been set using recognised standards and the baseline quality information.

Table 1: Monitoring locations

Location	Station type	Determinant monitored
Whinny Hill	Frisbee Light scatter	Dust Deposition rate PM10/Total Suspended Particulates (TSP)
Barracks West	Frisbee	Dust Deposition rate
Inchgarvie Lodge	Frisbee Light scatter	Total deposition PM10/ TSP
Linn Mill	Frisbee Light scatter	Dust deposition rate PM10/ TSP
Clufflat	Frisbee	Dust deposition rate
Clufflat Brae	Frisbee Light scatter	Dust deposition rate PM10/ TSP
Springfield	Frisbee	Dust deposition rate
Echline	Frisbee Light scatter	Dust deposition rate PM10/ TSP
Scotstoun	Frisbee Light scatter	Dust deposition rate PM10/ TSP
Dundas Home Farm	Frisbee Light scatter	Dust deposition rate PM10/ TSP
Newton	Frisbee TEOM (Particulate Meter)	Dust deposition rate PM10/ TSP

- 7.1.7 Monitoring during construction is assessed against action levels. The operation of the monitors and the action thresholds are a key tool in ensuring that measures are suitably applied and pollution and nuisance are avoided.

Table 2: Action thresholds

Parameter	24 hour mean action threshold	Short term (30 min mean) action threshold ($\mu\text{g}/\text{m}^3$)
Total suspended particulates (inhalation fraction <100 μm)	125 $\mu\text{g}/\text{m}^3$ (50% of EU threshold daily mean)	250 (EU daily mean)
Particulate matter (PM10)	45 $\mu\text{g}/\text{m}^3$ (90% of EU daily mean threshold)	150
Frisbee deposition rate	Lower action threshold: - 140 $\text{mg}/\text{m}^2/\text{day}$ (based upon EA Guidance M17 for ranges previously used in Scotland). The action threshold will trigger an informal site review of working controls to ensure working controls are being effectively deployed. Upper action threshold- 250 $\text{mg}/\text{m}^2/\text{day}$.	N/A

- 7.1.8 There are two action thresholds for the real time monitors; short term exceedances and 24 hour averages. Short term action thresholds look to ensure that potentially polluting activities are identified early and investigated in as quickly as possible. The thresholds are set out in Table 2.
- 7.1.9 In the event that either a 24 hour mean is exceeded or there are two consecutive exceedances of the short term threshold it is treated as a potential incident. In the event that an exceedance is substantiated as attributable to construction works it is confirmed as an incident and notified to the Employers Delivery Team within 24 hours of it occurring along with details of the cause and corrective/preventative actions.
- 7.1.10 The action thresholds for frisbee gauges are set out in Table 2. Where concentrations exceed lower action threshold the site works are reviewed to ensure good practice is implemented; it is essentially a warning that additional controls may be required. Exceedances of 250 $\text{mg}/\text{m}^2/\text{day}$ are treated as a potential incident and a formal review of the works in the vicinity of the site is instigated.
- 7.1.11 The review process utilises data from the weather stations to determine whether the source of the exceedance is likely to be from the site, i.e. is recorded potential incident up or down wind of the site. This information is documented during the assessment and reporting of the potential incident.
- 7.1.12 In addition to reactive inspections in the event of elevated monitoring events, FCBC undertake regular inspections across site, in particular near to residential areas to determine whether fugitive emissions are occurring. These inspections assess whether vehicles are operated correctly and accesses remain in a suitable condition and haulage routes adhered to.



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- 7.1.13 During audits, in addition to the requirements of 7.1.12, the Environmental Manager and the Environmental Advisors check maintenance records to ensure that plant is suitably maintained.
- 7.1.14 The monitoring results are included in monthly Air Quality Monitoring Report (AQMR). The report summarises any exceedances and the subsequent actions undertaken. In addition any complaints received are investigated in accordance with the procedure shown in Figure 2. The AQMR summarises each incident and the outcome of the review and any preventative/corrective actions implemented.



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References

Control of Pollution Act 1974

DEFRA Process Guidance Note PG3/016 Secretary of State's Guidance for Mobile Crushing and Screening

DEFRA Process Guidance Note PG3/1 (04) Secretary of State's Guidance for Blending, Packing, Loading and Unloading and Use of Bulk Cement

European Union (EU) Limit as set out in Framework Directive (96/62/EC) and associated Daughter Directives

Environment Agency (2004) M17 Monitoring of particulate matter in ambient air around waste facilities

Environmental Protection Act 1990

Forth Crossing Act 2011;

HSE guidance MDHS 14/3 'General methods for sampling and gravimetric analysis of respirable and inhalable dusts.

Jacobs Arup (November 2009) Forth Replacement Crossing DMRB Environmental Statement

Pollution Prevention and Control (Scotland) Regulations 2000

Scottish Development Department Planning Advice Note 50 [PAN50] Annex D: The Control of Blasting at Surface Mineral Workings

Transport Scotland (Dec 2011) Register of Commitments and Undertakings;

Transport Scotland (Dec 2010) Code of Construction Practice (CoCP) Rev 5;

Transport Scotland (April 2011) Employers Requirements, TS/MTRIPS/WKS/2009/02; and



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FIGURES

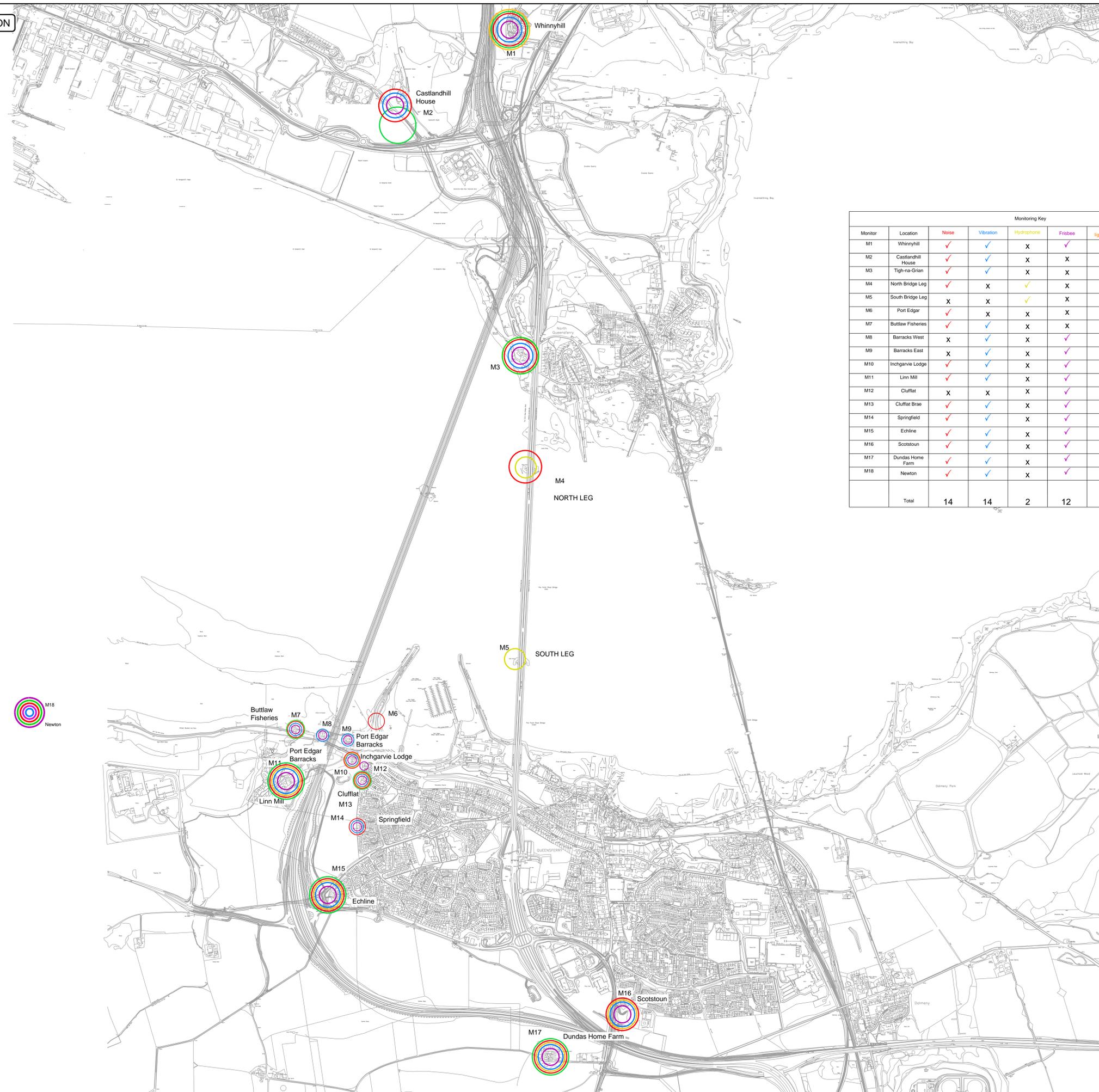
Figure 1: Air Quality Monitoring Locations

1. This drawing shall only be used for the design element stated in the drawing title.
2. Only written dimensions shall be used.
3. All dimensions are in metres unless noted otherwise.

- Legend
- Met
 - TEOM
 - PM10 light scatter
 - Hydrophone
 - Noise
 - Vibration
 - Frisbee

Monitoring Key								
Monitor	Location	Noise	Vibration	Hydrophone	Frisbee	PM10 light scatter	PM10 TEOM	Met
M1	Whinnyhill	✓	✓	X	✓	✓	X	✓
M2	Castlandhill House	✓	✓	X	X	X	X	✓
M3	Tigh-na-Grian	✓	✓	X	X	X	X	✓
M4	North Bridge Leg	✓	X	✓	X	X	X	X
M5	South Bridge Leg	X	X	✓	X	X	X	X
M6	Port Edgar	✓	X	X	X	X	X	X
M7	Buttlaw Fisheries	✓	✓	X	X	X	X	✓
M8	Barracks West	X	✓	X	✓	X	X	X
M9	Barracks East	X	✓	X	✓	X	X	X
M10	Inchgarvie Lodge	✓	✓	X	✓	✓	X	X
M11	Linn Mill	✓	✓	X	✓	✓	X	✓
M12	Cluffat	X	X	X	✓	X	X	X
M13	Cluffat Brae	✓	✓	X	✓	✓	X	✓
M14	Springfield	✓	✓	X	✓	X	X	X
M15	Echline	✓	✓	X	✓	✓	X	✓
M16	Scotstoun	✓	✓	X	✓	✓	X	X
M17	Dundas Home Farm	✓	✓	X	✓	✓	X	✓
M18	Newton	✓	✓	X	✓	X	FCBC/WLC JV	✓
Total		14	14	2	12	7	1	9

A1 - DO NOT SCALE



Rev	Rev. Date	Purpose of revision	Drawn	Checked	Approved
03	01.12.2011	Title amended			
02	10.10.2011	Title amended			
01	12.09.2011	Title amended			



Participant
FORTH CROSSING BRIDGE CONSTRUCTORS (FCBC)
 HOCHTIEF | AR | DRAGADOS | Morrison Construction

Project
FORTH REPLACEMENT CROSSING

Drawing title
MONITORING LOCATIONS

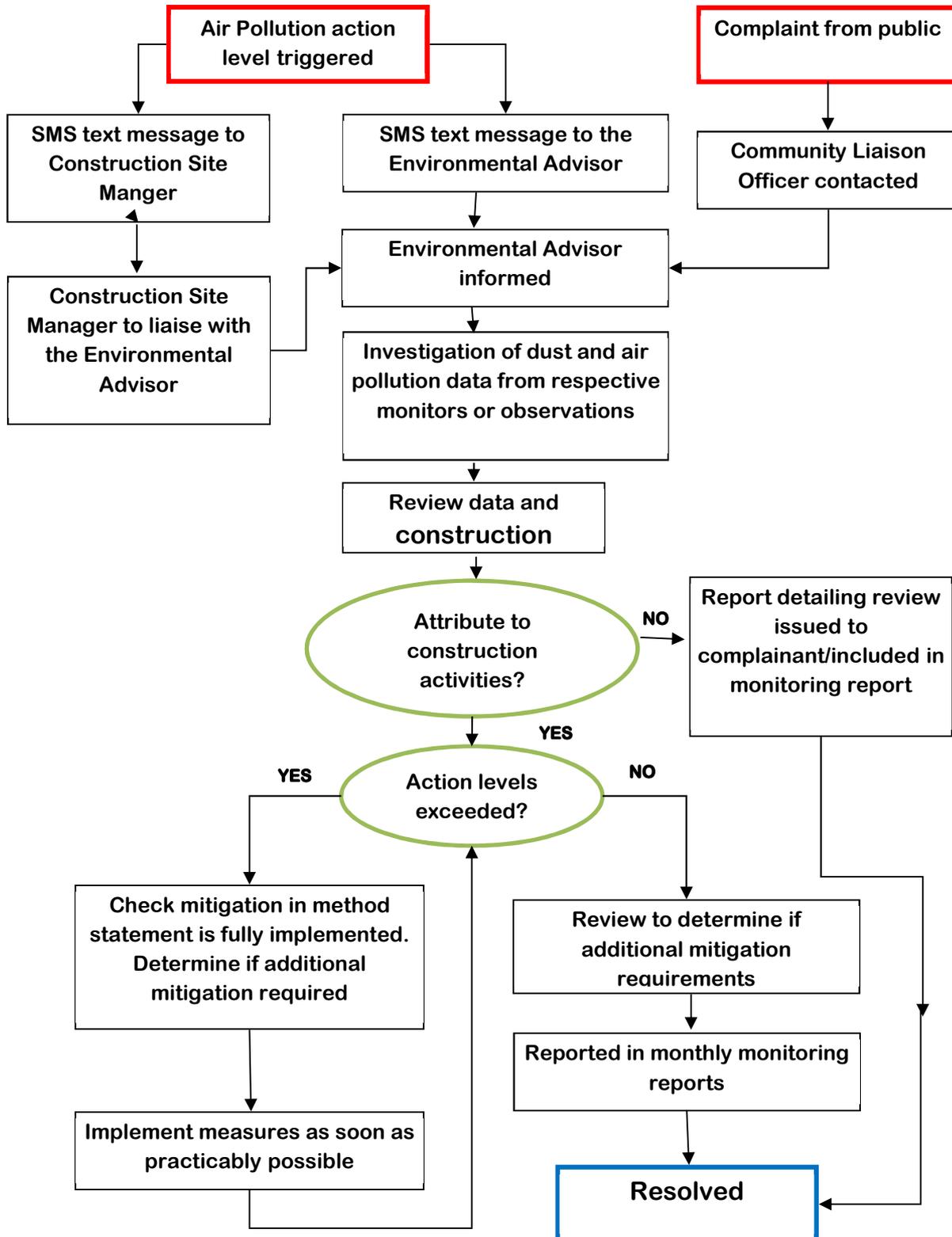
Design JV
 RAMBOLL | Grontmij | Gifford

Independent Checker
AECOM

Drawn by: C.SMITH | Designed by: S.O'LEARY | Checked by: B.V. | Approved by: C.J.V. DM
 Scale: 1:10000

Drawing number: **FRC-OVPCNV-D-NT-ENV-17001** | Rev: **03**

Figure 2: Flow diagram for dealing with a dust and air pollution incident.





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APPENDIX A

received 04/03/12

c/c - C. Lamont
M Lamont
M Abraham
M Dostle

Our Ref: PPC/B/1098984
Your Ref:

Morrison Construction Limited
Atholl House
51 Melville Street
Edinburgh
EH3 7HL
FAO: A S Chalmers

27 February 2012

Dear Sir/Madam

**POLLUTION PREVENTION AND CONTROL (SCOTLAND) REGULATIONS 2000 ("the Regulations")
APPLICATION DETERMINATION**

Application reference number: PPC/B/1098984
Site: Forth Port Authority, Keith Road, Rosyth, Dunfermline, KY11 2UU

Following your application for authorisation to operate the above activity please find enclosed your new pollution prevention and control permit.

If you are unhappy with any of the conditions attached you have the right to appeal to the Scottish Ministers providing the conditions have not been applied as a result of a direction to SEPA from Scottish Ministers. The procedures for making an appeal are explained in regulation 22 and Schedule 8 to the regulations. Your appeal must be made in writing to the Scottish Ministers no later than 27 August 2012. A guidance note is attached to this letter for your assistance

Particular attention should also be paid to the explanatory notes attached to the permit

Please contact Ben Juskowiak at the Glenrothes office, on telephone number 01592 776910, if you have any queries relating to this letter.

Yours faithfully

Julie Oliver
Registry Officer

Enc

Cc: Mr Allan Lamont, Forth Crossing Bridge Constructors, Arrol House, Viking Way, Rosyth, KY11 2UU



Chairman
David Sigsworth

Chief Executive
Dr Campbell Gemmell

Edinburgh Office
Clearwater House, Heriot Watt Research Park
Avenue North, Riccarton, Edinburgh EH14 4AP
tel 0131 449 7296 fax 0131 449 7277
www.sepa.org.uk

GUIDANCE NOTES

Under regulation 22 of the Pollution Prevention and Control (Scotland) Regulations 2000, a person who is aggrieved by the conditions attached by SEPA to a new permit may appeal to the Scottish Ministers. Any person who wishes to appeal under regulation 22 must do so by notice in writing to:

Directorate for Planning and Environmental Appeals, 4 The Courtyard, Callendar Business Park, Callendar Road, Falkirk, FK1 1XR

Tel: 01324 696 400, Fax: 01324 696 444

Email: DPEA@scotland.gsi.gov.uk

Appeals must be notified within 6 months from the date of SEPA's decision. Scottish Ministers may in a particular case allow a longer period for the giving of notice of an appeal.

Any notice of appeal must be accompanied by the following information:-

- a) a statement of the grounds of appeal;
- b) a copy of the relevant application;
- c) A copy of any relevant Permit;
- d) a copy of any relevant correspondence between the appellant and SEPA;
- e) a copy of the decision or notice which is the subject matter of the appeal; and
- f) a statement indicating whether the appellant wishes the appeal to be in the form of a hearing or to be determined on the basis of written representations;

A copy of any appeal notice must also be served on SEPA together with copies of the documents mentioned at paragraphs a) and f) above. Should the appellant wish to withdraw an appeal, they should do so by notifying Scottish Ministers in writing sending a copy of that notification to SEPA.

On determining an appeal, Scottish Ministers will notify the appellant in writing of their decision.

SCOTTISH ENVIRONMENT PROTECTION AGENCY

Pollution Prevention and Control Act 1999

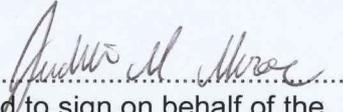
**Pollution Prevention and Control (Scotland) Regulations 2000
("the Regulations")**

PERMIT TO OPERATE A 'PART B' INSTALLATION

Permit Number: PPC/B/1098984

Operator: Morrison Construction Limited

The Scottish Environment Protection Agency ("SEPA"), in accordance with Regulation 7 of the Regulations, hereby grants a Permit to Morrison Construction Limited, company registration number SC178956, having its registered office at Atholl House, 51 Melville Street, Edinburgh, EH3 7HL ("the Operator") to operate an installation, more particularly described in Schedule 1 of this Permit, on a site at Forth Port Authority, Keith Road, Rosyth, Dunfermline, KY11 2UU, more particularly described in said Schedule 1, subject to the requirements of the Regulations and to the conditions contained in the Schedules to this Permit.

Signed.....
Authorised to sign on behalf of the
Scottish Environment Protection Agency

Date: 23 February 2012

Right of Appeal

Under Regulation 22 of the Regulations you are entitled to appeal to the Scottish Ministers against any condition or conditions of this Permit within six months of the date of this Permit, except where SEPA has granted this Permit in implementation of a direction to SEPA of the Scottish Ministers. The bringing of an appeal will not have the effect of suspending the operation of the said condition or conditions. The procedures for the making of an appeal are set out in Schedule 8 of the Regulations.

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INTERPRETATION OF TERMS

For the purposes of this Permit, and unless the context requires otherwise, the following definitions shall apply:

“Aggregate” means gravel or crushed rock, sand, whinstone, lytag, and limestone;

“Authorised Person” means a person who is authorised in writing under Section 108 of the Environment Act 1995 to carry out duties on behalf of SEPA;

“Cement” means Portland cements, High Alumina cements, and other powders used as cementitious materials which may be blended with other materials including for example; Pulverised Fuel Ash (PFA) and Ground Granulated Blast Furnace Slag (GGBFS), in accordance with British or European Standards;

“emission” has the same meaning as in the Regulations in relation to Part B installations;

“incident” means any of the following situations:

- where an accident occurs which has caused or may have the potential to cause pollution;
- where any malfunction, breakdown or failure of plant or techniques is detected which has caused or may have the potential to cause pollution;
- where any substance or heat specified in any Condition of this Permit is detected in an emission from a source not authorised by a Condition of this Permit and in a quantity which may cause pollution;
- where an emission of any pollutant not authorised to be released under any Condition of the Permit is detected;
- where an emission of any substance or heat is detected that has exceeded, or is likely to exceed, or has caused, or is likely to cause to be exceeded any limit on emissions specified in a Condition of this Permit.

“Location Plan” means the plan attached to Schedule 1 of this Permit;

“Log Book” comprises any record or documents, which are required to be maintained by any Condition of this Permit;

“the Permitted Activities” are defined in Schedule 1 of the Permit;

“the Permitted Installation” is defined in Schedule 1 of the Permit and includes references to parts of the Permitted Installation;

“pollutant” and “pollution” have the same meaning as in the Regulations in relation to Part B Installations;

“SEPA” means the Scottish Environment Protection Agency;

“the Site Boundary” is defined in Schedule 1 of the Permit;

“Site Plan” means the plan attached at Schedule 1;

“the Regulations” means The Pollution Prevention and Control (Scotland) Regulations 2000;

Any reference to a group of Conditions, numbered Condition, Schedule, Table, Appendix, Figure or Paragraph is a reference to a group of Conditions, numbered Condition, Schedule, Table, Appendix, Figure or Paragraph bearing that number in this Permit;

Except where specified otherwise in this Permit:

- “day” means any period of 24 consecutive hours,
- “week” means a period of 7 consecutive days,
- “month” means a calendar month,
- “year” means any period of 12 consecutive months;

and any derived words (e.g. “monthly”, “quarterly”) shall be interpreted accordingly.

Except where specified otherwise in this Permit, any reference to an enactment or statutory instrument includes a reference to it as amended (whether before or after the date of this Permit) and to any other enactment, which may, after the date of this Permit, directly or indirectly replace it, with or without amendment.



1 THE PERMITTED INSTALLATION

1.1 Description of Permitted Installation

1.1.1 The permitted installation to which this Permit applies ("the Permitted Installation") is:

1.1.1.1 The stationary technical unit specified in paragraph 1.1.4 ("the Stationary Technical Unit"), where the activities specified in paragraph 1.1.3 are carried out ("the Activities"), together with the directly associated activities specified in paragraph 1.1.5 ("the Directly Associated Activities").

1.1.1.2 The site of the Permitted Installation is delineated in red on the Site Plan ("the Site Boundary").

1.1.2 The general location of the Permitted Installation is as shown on the Location Plan.

1.1.3 The Activities carried out at the Stationary Technical Unit are:

1.1.3.1 Blending cement in bulk or using cement in bulk, including the bagging of cement and cement mixtures, the batching of ready mixed concrete and the manufacture of concrete blocks and other cement products, being activities falling within paragraph (a)(ii) of Part B of section 3.1 of Schedule 1 of the Regulations.

1.1.4 The Stationary Technical Unit comprises the following units:

1.1.4.1 Six bulk cement silos each of 150 tonnes capacity, the locations of which are detailed on the Site Plan.

1.1.4.2 The silo pressure relief valve, and pipe work associated with the transfer of cement.

1.1.4.3 The reverse jet air filtration unit serving the silo designed and sized to capture particulate emissions resulting from silo filling.

1.1.4.4 The wet batch process incorporating the cement and aggregate transfer system, weigh hopper, mixer and emission point to road vehicles.

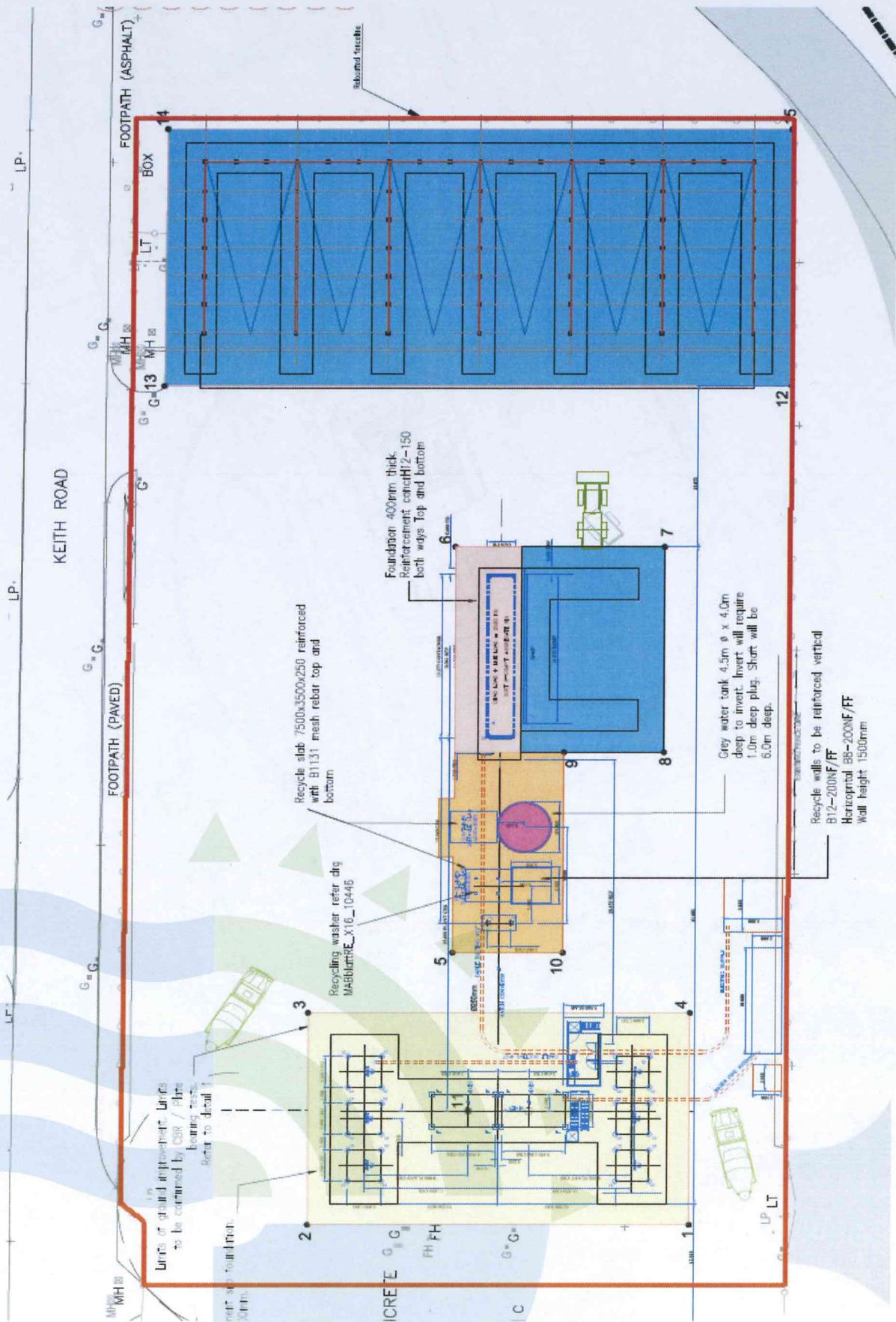
1.1.5 The following Directly Associated Activities are carried out on the Site:

1.1.5.1 The delivery, storage and handling of aggregates and cement admixtures.

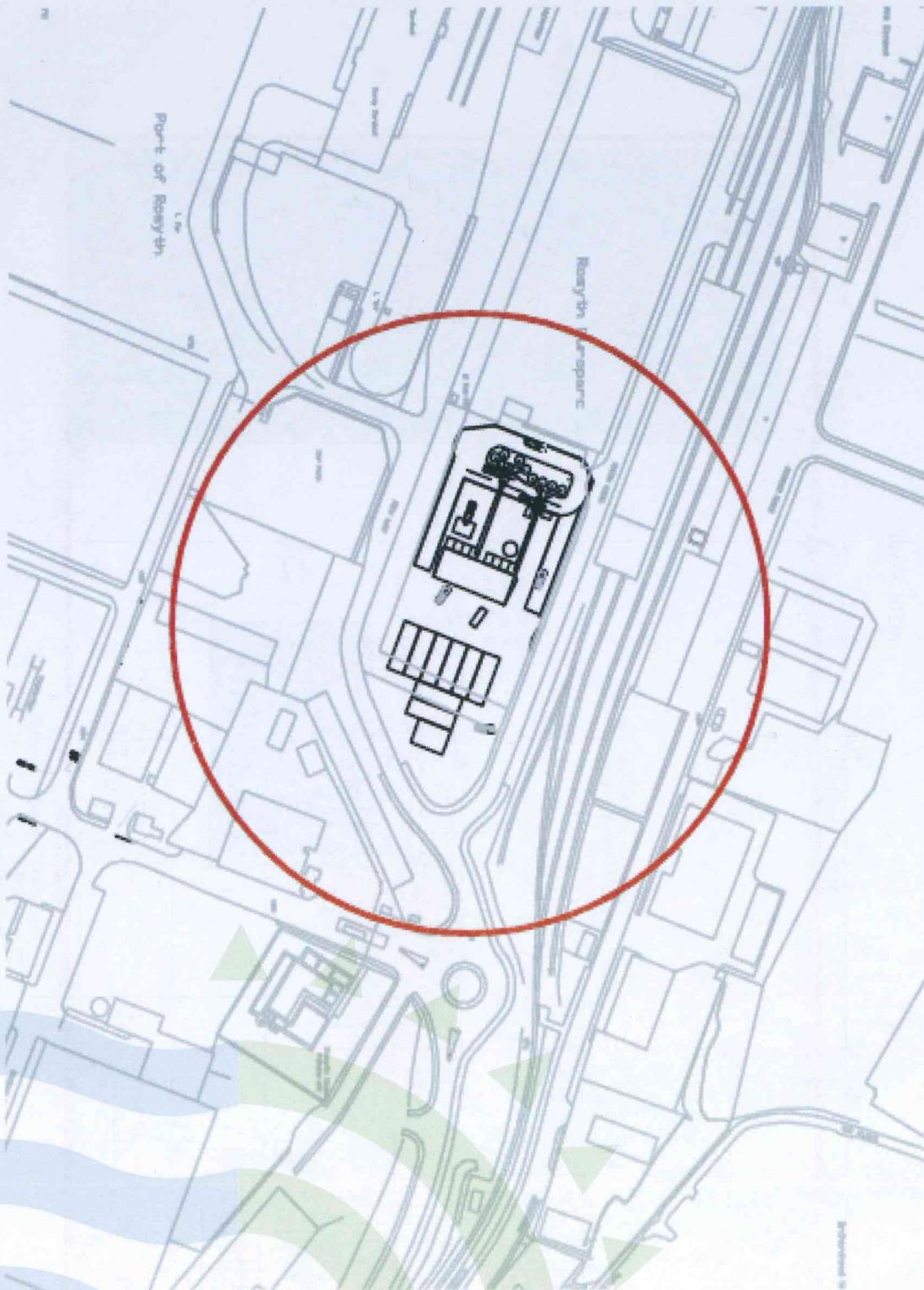
1.1.6 The handling and disposal of wastes generated by return of unused concrete and the washing of truck mixers is not part of the Permitted Installation. (Unless such activities give rise to odour or an emission of particulate matter.)

1.1.7 For the purposes of this Permit, the Activities and Directly Associated Activities shall be known together as "the Permitted Activities".

1.2 Site Plan



Site Location – NGR NT 1069 8217



2 STANDARD CONDITIONS

2.1 Administration

- 2.1.1 The Operator shall have an appropriate person (and deputy) as the primary point of contact with SEPA and shall notify SEPA in writing of the name of the appointed person (and deputy) within 4 weeks of the date of this Permit.
- 2.1.2 In the event of a different person being appointed to act as primary point of contact (or deputy) the Operator shall notify SEPA in writing of the name of the appointed person or deputy without delay.
- 2.1.3 A copy of this Permit shall be kept at the Permitted Installation and shall be made readily accessible for examination by all staff.
- 2.1.4 Any systems or procedures used by the Operator to demonstrate compliance with a Condition of this Permit shall be recorded.

2.2 Records

- 2.2.1 All records made in compliance with this Permit shall be kept in a systematic manner.
- 2.2.2 Unless otherwise specified in a Condition of this Permit, every record made in compliance with a Condition of this Permit shall be preserved for not less than five years from the date of its being made. Every such record shall be kept at the Permitted Installation for not less than one year from the date of its being made and thereafter preserved at a location, previously notified to SEPA in writing, if that location is not the Permitted Installation.
- 2.2.3 All records shall be legible, and any amendment made to any record made in compliance with a Condition of this Permit shall be made in such a way as to leave the original entry clear and legible. The reason for each amendment shall be explained in the said record.
- 2.2.4 Without prejudice to Condition 2.2.2, all operator's records relevant to the operation or maintenance of the Permitted Installation shall be kept at the Permitted Installation for not less than one year from the end of the period to which they apply.

2.3 Reporting

- 2.3.1 Where any Condition of this Permit requires information to be reported, a report shall be forwarded in writing and in duplicate to SEPA at the address specified in the explanatory notes attached to this Permit, on the date(s) or within the period or at the frequency specified in Table 2.1 and, where appropriate, the first report shall be due on the date specified in that Table. All such reports shall include the Permit number and the name of the Operator.

Table 2.1 - Reporting Requirements

Summary of Information to be Reported	Condition	Date/Within period/ Frequency to be Reported	Date First Report Due
The name of the appropriate person (and deputy) appointed as primary point of contact with SEPA in writing	2.1.1	As required	Within 4 weeks of the date of this permit
In the event of a different person being appointed to act as primary point of contact (or deputy) the name of the newly appointed contact or deputy in writing	2.1.2	As required	Without delay
Incident initial report	2.4.2	By next working day after identification on the Incident	N/A
Incident investigation report	2.4.3	Within 14 days of the date of the incident unless otherwise agreed in writing with SEPA	N/A

- 2.3.2 All notifications required by any Condition of this Permit shall be made to SEPA in the manner specified in that Condition to the address specified in the explanatory notes attached to this Permit by the date(s) or within the period or at the frequency specified in Table 2.1 and, where appropriate, the first notification shall be due on the date specified in that Table. All such notifications shall include the Permit number and name of the Operator.

2.4 Incidents

- 2.4.1 In the event of an incident, the Operator shall notify SEPA by telephone, without delay. This notification shall include as far as practicable the information specified in Condition 2.4.2.
- 2.4.2 The Operator shall confirm any incident to SEPA in writing by first class post or fax on the next working day after identification of the incident. This confirmation shall include: the time and duration of the incident; any emissions to air as a result of the incident; an initial estimate of the quantity and composition of any emission, the measures taken to prevent or minimise any emission or further emission, and a preliminary assessment of the cause of the incident.
- 2.4.3 Any incident notified to SEPA shall be investigated by the Operator and a report of the investigation sent to SEPA. The report shall detail, as a minimum, the circumstances of the incident, an assessment of any harm to the environment and the steps taken by the Operator to bring the incident to

an end. The report shall also set out proposals for remediation, where necessary, and for preventing a repetition of the incident.

2.5 Odour/Particulate Matter Conditions

- 2.5.1 All emissions to air from the Permitted Installation shall be free from offensive odour, as perceived by an Authorised Person, outside the Site Boundary.
- 2.5.2 All emissions to air from the Permitted Installation shall be free from visible emissions of particulate matter and fallout of particulate matter beyond the Site Boundary.



3 CONDITIONS APPLYING TO THE TRANSFER AND HANDLING OF BULK CEMENT

3.1 Air Emission Conditions

- 3.1.1 The emissions to air specified in Table 3.1 as annexed at Appendix 1, shall only be permitted from the emission locations specified in that Table and, subject to Condition 3.1.2, shall not exceed the limits for the parameters specified in said Table.
- 3.1.2 The Operator shall carry out spot sampling (SS) of emissions of the parameters specified in Table 3.2 at the sampling location specified in Table 3.1 and subject to the requirements for monitoring specified in Table 3.2.
- 3.1.3 The Operator shall record the date, time, duration and results of monitoring carried out under Condition 3.1.3.

3.2 Operation of Process

- 3.2.1 Bulk cement shall only be stored within the bulk cement silo.
- 3.2.2 Displaced air resulting from delivery of bulk cement to silo shall either be vented to suitable arrestment plant or back vented to the delivery tanker.
- 3.2.3 All new or replacement silo filtration plant shall be designed to operate to an emission standard of less than 10 mg/m³. The Operator shall obtain and make available for inspection the design specification.
- 3.2.4 A high level alarm shall be fitted to the storage silo and shall be tested at least once a week or before a delivery takes place, whichever is the longer interval to ensure correct operation.
- 3.2.5 All new silos shall be installed with automatic protection systems to control delivery of material from the tanker to the silo to prevent overfilling and over-pressurisation of the silo.
- 3.2.6 Deliveries to silos from road vehicles shall only be made using tankers fitted with on-board pressure relief valves and filtration equipment.
- 3.2.7 The filter bags/cartridges forming the arrestment plant to the bulk cement silos shall be inspected for leaks, defects or significant blinding at a frequency of at least once a month. All inspections shall be recorded.
- 3.2.8 Visual assessments of emissions from the particulate matter arrestment equipment serving the silos shall be undertaken during the first and last five minutes of all bulk deliveries of cementitious materials, and also periodically during such deliveries.
- 3.2.9 The seating of the pressure relief valve on the storage silos shall be checked:
- a) at least once a week or before a delivery takes place, whichever is the longer interval;
 - b) in the event that the high level alarm is triggered; and

- c) if it appears that the said valve may have become unseated.
- 3.2.10 The start and finish times of all bulk cement deliveries, together with the quantity of cement transferred, shall be recorded.
- 3.2.11 Facilities for the water spraying of stockpiled aggregate shall be provided and maintained at all times.
- 3.2.12 Aggregate feed hoppers shall be enclosed by at least three walls and a roof.
- 3.2.13 Internal roadways in normal use and any other area where there is regular movement of vehicles shall have a consolidated surface capable of being cleaned. All such surfaces shall be kept clean and in good repair.
- 3.2.14 Stockpiles of dry materials shall be constructed and managed to minimise the wind entrainment of dust. Stockpiles shall be suitably profiled and where shelter exists on site, stockpiles shall be located at sheltered areas.
- 3.2.15 Loading to and from stockpiles shall be undertaken so as to minimise the entrainment of dust.



APPENDIX 1 - EMISSION LIMIT TABLES AS SPECIFIED IN SCHEDULE 3Table 3.1 -Emissions to Air

Source of Emission	Emission point number	1	2	3
	Emission source	Dust arrestment serving the bulk storage silos	Aggregate stockpiles, storage bunkers conveyors, roadways	Dust arrestment serving the cement weigh hopper
	Stack height/diameter (m)	N/A	N/A	N/A
	Location on Site Plan	6	Various	1
	NGR	NT 1068 8218	Various	NT 1074 8215
Monitoring Details	Type of Monitoring	Visual	Visual	Visual
	Sampling location	Within site boundary	Within site boundary	Within Site boundary
Limits for Parameters from Emission Source	Particulate matter	No visible emission	No visible emission	No visible emission

Table 3.2 - Emissions to Air Monitoring Requirements

Parameter	Emission point number	Spot Sampling (SS)			Continuous (C)		
		Standard	Frequency	Operational Mode	Type	Sample Time & Alarm Limits	Averaging Period and Time Span for Percentage Limits
Particulate Matter	1	N/A	First and last 5 minutes of each delivery of cement	Delivery/ transfer of bulk cement	N/A	N/A	N/A
Particulate Matter	2	N/A	At least daily	When operational	N/A	N/A	N/A
Particulate Matter	3	N/A	At least daily	Normal	N/A	N/A	N/A



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EXPLANATORY NOTES

(These explanatory notes do not form part of the Permit)

1. BAT

It should be noted that Regulation 9(11) & (12) of the Regulations specifies that there is an implied Condition in every Permit that, in operating the installation or mobile plant, the Operator shall use the best available techniques (BAT) for preventing or, where that is not practicable, reducing Emissions from the installation or mobile plant.

This implied Condition does not apply in relation to any aspect of the operation of the installation or mobile plant, which is regulated by a specific Condition of the Permit. Examples of aspects of operation that have not been regulated by specific Conditions are management and supervision systems, training and qualification, and maintenance in general. (See paragraph 11 below for detail on management systems.)

BAT is defined in Regulation 3 of the Regulations as follows:

"Best available techniques" means the most effective and advanced stage in the development of activities and their methods of operation which indicates the practical suitability of particular techniques for providing in principle the basis for Emission Limit Values designed to prevent and, where that is not practicable, generally to reduce emissions and the impact on the environment as a whole.

"available techniques" means those techniques which have been developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable Conditions, taking into consideration the cost and advantages, whether or not the techniques are used or produced inside the UK, as long as they are reasonably accessible to the Operator.

"best" means in relation to techniques, the most effective in achieving a high general level of protection of the environment as a whole.

"techniques" includes both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned.

Schedule 2 of the Regulations specifies the matters to be taken into account in determining BAT.

In considering BAT, SEPA would expect the Operator to have regard to all relevant PPC sectoral or other technical guidance, including Process Guidance notes published by the Joint Agencies.

2. GENERAL STATUTORY REQUIREMENTS

The Permit does not detract from any other statutory requirements applicable to you in respect of the Permitted Installation, such as any need to obtain planning permission or building regulations approval or any responsibilities under legislation for health, safety and welfare in the workplace.

3. APPEALS

If you are aggrieved by any of the Conditions of the Permit, you should initially contact the Local SEPA Office at the address or telephone number below. Further information on your right of appeal and the appeals procedure is contained Regulation 22 and Schedule 8 of the Regulations.

4. SUBSISTENCE CHARGES

An annual subsistence charge will be payable in respect of the Permit in terms of the Air Pollution Control Fees and Charges (Scotland) Scheme 2002 or any relevant charging scheme made under Section 41 of the Environment Act 1995, copies of which are available from SEPA.

5. ADDRESS AND TELEPHONE NUMBERS

The contact address and telephone number for all information to be reported in terms of the Permit, is as follows: -

Scottish Environment Protection Agency
Pentland Court
The Saltire Centre
Glenrothes
Fife
KY6 2DA

Tel No: 0800 80 70 60 and/or 01592 776910
Fax No: 01592 775923

6. REVIEW OF CONDITIONS

The Conditions of the Permit will be periodically reviewed by SEPA

7. PROPOSED CHANGE IN OPERATION OF INSTALLATION

It is a requirement of Regulation 12 of the Regulations that if you propose to make a change in the operation of the installation, you must notify SEPA at least 14 days before making the change. The requirement under Regulation 12 does not apply if you have already made an application to SEPA for the variation of the Conditions of the Permit containing a description of the proposed change.

N.B. the requirements of Regulation 12 are in addition to any obligations you may have under the Permit itself to only operate the Permitted Installation in the manner set out in the Permit and to notify SEPA of proposed changes to the Permitted Installation.

Regulation 13 and Schedule 7 of the Regulations provide details on applications for variation of the Permit in respect of proposed changes and substantial changes in operation.

“Change in operation” and “substantial change in operation” are defined in Regulation 2 of the Regulations.

8. ENFORCEMENT & OFFENCES

If SEPA is of the opinion that you have contravened, or are contravening or are likely to contravene a Condition of the Permit it may serve an Enforcement Notice. Further details on Enforcement Notices are provided in Regulation 19 of the Regulations.

If SEPA is of the opinion that the operation of an installation or mobile plant involves a risk of serious pollution it must, in certain circumstances, serve a Suspension Notice on you. Further details on Suspension Notices are provided in Regulation 20 of the Regulations.

It is an offence to operate an installation or mobile plant covered by the Regulations without a Permit or in breach of the Conditions of the Permit. It is an offence to fail to comply with the requirements of an Enforcement or Suspension Notice. It is an offence to intentionally make a false entry in any record required to be kept under a Condition of a Permit. Further details on offences and on penalties liable to be imposed upon conviction of an offence are provided in Regulation 30 of the Regulations.

Directors, managers and other individuals within a company may be held personally liable for offences under the Regulations.

All personnel who are responsible for fulfilling any Condition of the Permit should be made aware of these facts.

9. RECORDED SYSTEMS, PROCEDURES OR INFORMATION RECORDING/ RETURN REQUIREMENTS

Where a Condition requires any system, procedure or information record/return, the Operator may demonstrate compliance by making use of any relevant existing written system used for any other purpose and meets the requirements of the relevant Condition.

10. SURRENDER OF PERMIT

Where the Operator has ceased or intends to cease carrying on the Permitted Activities (or part of them) at the Permitted Installation, SEPA must be notified. The details of the requirements for such notification are contained in Regulation 16 of the Regulations.

11. ENVIRONMENTAL MANAGEMENT REQUIREMENTS

The Regulations place a strong emphasis on the existence of appropriate and effective systems of management for installations to ensure a high level of protection of the environment. In assessing compliance with the requirements of the Permit, in particular the implied Condition, SEPA will consider the management of the installation.

Management systems, as an important component of BAT, play an important role in ensuring the installation is operated efficiently and effectively. Aspects of a good environmental management system include:

- A clear management structure and allocated responsibilities for environmental performance;

- Identification, assessment and management of environmental impacts;
- Compliance with legal and other requirements – impacting on the environment;
- Setting objectives and targets to prevent pollution and to continually improve environmental performance;
- Establishment of operating controls to prevent and minimise significant environmental impacts, particularly for start up, shut down and abnormal conditions; (also consider accident prevention);
- Preventative maintenance programmes for relevant plant, buildings and equipment concerned with the control of emissions to air and methods of recording and reviews; Corrective action to analyse faults and prevent reoccurrence;
- Monitoring and measuring performance of any release to the air from the installation;
- Monitoring and control systems for ensuring intended function occurs, identifying unintended operations and faults;
- Operating staff must be properly trained and management must ensure that appropriate procedures are strictly adhered to. Training requirement includes provision of adequate procedures/work methods, training for all relevant staff (personnel competencies, awareness of regulatory implications of the permit and all potential environmental effects from normal/abnormal operation, prevention of accidents) and implementation and maintenance of training records;
- Communication and reporting of incidents of actual or potential non-compliance and complaints;
- Auditing – to check all activities are being carried out in conformity with these requirements (at least annually);
- Reviewing and reporting environmental performance, incorporation of environmental issues in all other relevant aspects of the business (including control of change processes, allocation of resources, planning, etc);
- Managing documentation and records – to control, locate and update.

Adoption of some form of environmental management system ensures that PPC Part B permit conditions are taken account of in the day to day running of the process. Regulators will use their discretion, in consultation with the individual process operators, in agreeing the appropriate levels of environmental management.

It is not essential for the Operator to obtain certification and/or registration to any formal EMS standard such as ISO14001 or the EC Eco Management and Audit Scheme. Obtainment of certification and/or registration does not lessen to the obligation of the Operator to comply fully to the requirements of the Permit.

Further guidance on the environmental management systems will be contained within the process specific 'Secretary of State's Guidance' (often referred to as Process Guidance notes).