Appendix A12.1
Dust Mitigation Measures

CONTENTS

1. APPENDIX A12.1: DUST MITIGATION MEASURES

1.1 Introduction

The full list of recommended dust minimisation measures for high risk sites are detailed below as per the IAQM guidance. The potential risk from dust emissions has been reviewed for the most important activities and each of the construction areas. Further details on construction methods can be found in Chapter 5 (Construction Strategy) of the EIAR which contains an overview of the typical activities and methods that are anticipated to be used during construction and commissioning of the proposed development. In addition, the mitigation measures document in this section should be considered in parallel with the draft CEMP. Before commencing relevant works, an air quality management plan shall be prepared and submitted for approval to the relevant planning authority. The plan must include all appropriate dust and emissions mitigation measures including for asbestos and aspergillus, applicable to the circumstances of the relevant site, based on the local authority requirements and industry best practices. Dublin City Council (DCC) guidance document titled Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition (DCC 2018) will be taken into consideration with respect to mitigation dust measures

1.1.1 Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site;
- Display the name and contact details of person accountable for air quality and dust issues on the site boundary;
- Display the head or regional office contact information; and
- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. The DMP may include monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring and/or visual inspections.

1.1.2 Site Management

- Regular inspections of the site and boundary should be carried out to monitor dust, records and notes on these inspections should be logged;
- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken;
- Make the complaints log available to the local authority when asked;
- Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book;
- Hold regular liaison meetings with other high risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes;
- Plan site layout: machinery and dust causing activities should be located away from receptors;
- Site access points will be designed to minimise queuing traffic adjacent to access points;

- Erect solid screens or barriers around dust activities or the site boundary that are, at least, as high as any stockpiles on site;
- Stockpiles and mounds will be kept away from sensitive receptors, watercourses and surface drains where reasonably practicable, and sited to take into account the predominant wind direction relative to sensitive receptors;
- Fully enclosure site or specific operations where there is a high potential for dust production and the site is active for an extensive period;
- Avoid site runoff of water or mud;
- The number of handling operations for materials will be kept to the minimum reasonably practicable;
- Keep site fencing, barriers and scaffolding clean using wet methods;
- Remove materials from site as soon as possible;
- Cover, seed or fence stockpiles to prevent wind whipping;
- Carry out regular dust soiling checks of buildings within 100m of site boundary and cleaning to be provided if necessary;
- Provide showers and ensure a change of shoes and clothes are required before going off-site to reduce transport of dust;
- Where possible, commence baseline monitoring at least three months before construction phase begins; and
- Put in place real-time dust and air quality pollutant monitors across the site in locations chosen after consultation with Local Authorities and ensure they are checked regularly.

1.1.3 Monitoring

- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of site boundary, with cleaning to be provided if necessary;
- Carry out regular site inspections to monitor compliance with the dust management plan, record inspection results, and make an inspection log available to the local authority when asked Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions;
- Agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. These will not be necessary for all compounds but should be put in place for sites which have a high risk of dust emissions (for example: Ashtown). While the railline has a high risk overall, professional judgement will be required for the locations which require monitoring due to extended dust emissions and sensitive receptor locations along the railline. Where possible commence baseline monitoring at least three months before work commences on site or, if it is a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction;
- Inspection and maintenance schedules for construction vehicles, plant and machinery must be kept up to date;
- Where there are potentially dust-emitting activities on site, as a minimum, a daily visual inspection will be made, and a yes/no record kept of whether there is a risk of dust emissions that day;

- There will be a nominated person on each site who will investigate, as quickly as reasonably practicable, activities on site that cause exceedances of limit values recorded by the real time monitoring for dust to ascertain if any visible dust is emanating from the site or if any activities are occurring on site that are not in line with the dust control measures;
- Any identified causes of limit value exceedances will be rectified where practicable and actions recorded in the site logbook; and
- If the source of the incident cannot be identified as originating from the site operations, operations of other nearby construction sites and other activities will be investigated for potential causes of exceedances.

1.1.4 Demolition

- Building appraisal and demolition plan: prior to carrying out any building demolition, a detailed pre- demolition and building appraisal by means of surveys, including for asbestos, and appropriate assessments will be required. This will include the surveys listed in the following point. Based on the findings of these surveys, a demolition plan and report will be prepared;
- Building survey: this will cover items such as existing building construction materials and fabric, existing and past use, presence of wastewater and hazardous materials, potential dangerous areas, adjoining areas and site conditions, drainage conditions, any shared facilities with adjoining buildings, hoarding and covered walkway requirements, adjoining pedestrian and vehicular conditions, available space for sorting debris, local sensitive receptors with respect to noise, dust, vibration and traffic impact, and street furniture;
- Minimising drop heights from conveyors, hoppers etc. and use fine water sprays on equipment when appropriate;
- Rubble chutes will be shielded or enclosed or use water to suppress dust emissions from such equipment;
- Ensure all cutting, grinding or sawing equipment on site is fitted with or used in conjunction with dust suppression techniques e.g. water sprays or local extraction;
- Prior to demolition of any properties they should be soft stripped inside the buildings (retaining walls and windows in the rest of the building where possible, to provide a screen against dust); and
- During the demolition process explosive blasting should be avoided, water suppression should be used, preferably with a handheld spray.

1.1.5 Preparing and Maintaining Site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible;
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site;
- Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period;
- Avoid site runoff of water or mud;
- Keep site fencing, barriers and scaffolding clean using wet methods;
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below; and
- Cover, seed or fence stockpiles to prevent wind whipping.

1.1.6 Operating Vehicle/ Machinery and Sustainable Travel

- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems and regularly cleaned;
- Ensure all vehicles switch off engines when stationary - no idling vehicles;
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable;
- Impose and signpost a maximum-speed-limit of 20 kph haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate);
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials;
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing);
- Measures will be implemented to limit emissions from construction plant and vehicles, which will include the following, as appropriate;
- Operation of construction plant in accordance with the manufacturer's written recommendations
- Construction vehicles to conform to the current EU emissions standards and where reasonably practicable, their emissions should meet upcoming standards prior to the legal requirement date for the new standard;
- Vehicle and construction plant exhausts to be directed away from the ground and positioned at a height to facilitate appropriate dispersal of exhaust emissions;
- Devices such as dust extractors, filters and collectors on drilling rigs and silos will be used;
- Movement of construction traffic around the site will be kept to the minimum reasonable for the effective and efficient operation of the site and construction of the project;
- Use of tower cranes to reduce vehicle movements (if possible);
- The use of diesel or petrol-powered generators will be reduced by using mains electricity or battery- powered equipment where reasonably practicable;
- Cutting and grinding operations will be conducted using equipment and techniques that reduce emissions and incorporate appropriate dust suppression measures;
- Damping down of dust-generating equipment and vehicles within the site and the provision of dust suppression in all areas of the site that are likely to generate dust; and
- vehicle, plant and equipment maintenance records will be kept on site and reviewed regularly.

1.1.7 Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems;
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate;
- Use enclosed chutes and conveyors and covered skips;
- Mixing of grout or cement-based materials will be undertaken using appropriate techniques/mitigation suitable for the prevention of dust emissions;

- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate; and
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

1.1.8 Waste Management

- Avoid bonfires and burning of waste materials;
- Skips will be covered and secured;
- Aim for just on time delivery; and
- Avoidance of the prolonged storage of waste materials on site.

1.1.9 Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable;
- Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable;
- Only remove the cover in small areas during work and not all at once;
- Materials will be compacted after deposition, with the exception of topsoil and subsoil on land to be restored for agriculture, forestry, landscaping and wildlife habitats;
- All dusty activities will be damped down, especially during dry weather;
- The area surrounding the blasting for rock excavation will be thoroughly sprayed with water beforehand;
- Blasting area will be covered with blasting mat;
- Appropriate methods of stemming will be used to minimise dust of blasting;
- Water sprinkling methods will be used after blasting where necessary;
- Drop heights from excavators to vehicles involved in the transport of excavated material will be kept to the reasonably practicable minimum;
- Topsoil will be stripped as close as reasonably practicable to the period of excavation or other earthworks activities to avoid risks associated with runoff or dust generation; and
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust

1.1.10 Measures Specific to Construction

- Avoid scabbling (roughening of concrete surfaces) if possible;
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place;
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery;
- Concrete batching plants should have dust collectors fitted and properly maintained. The plants should also install burst bag detectors, which are connected to the automatic silo overfill protection circuit to stop the flow of cement if a filter bag bursts, in all batching plants;

- Concrete batching plants should be maintained on a regular and documented schedule by a competent individual;
- The mixing of grout or cement-based materials will be undertaken using a process suitable for the prevention, as far as reasonably practicable, of dust emissions; and
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

1.1.11 Measures Specific to Trackout

Site roads (particularly unpaved) can be a significant source of fugitive dust from construction sites if control measures are not in place. Due to the compact nature of the site, there are no significant lengths of unpaved roads. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80%.

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use;
- Avoid dry sweeping of large areas;
- Use water-assisted dust sweeper(s) or ideally a suction device for road cleaning will be utilised. Suction devices can access spaces around cars and other street furniture more effectively than traditional dust sweepers, on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use;
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport;
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;
- Record all inspections of haul routes and any subsequent action in a site log book;
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned;
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable) ;
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits; and
- Access gates to be located at least 10m from receptors where possible