



SKANSKA

# C412 – Bond Street Station Main Works, Fit Out, M&E

## Air Quality Control Plan

CRL Document Number: C412-SKC-T1-STP-C125-50006

Contract MDL reference C07.002

### 1. Contractor Document Submittal History:

Revision:	Date:	Prepared by:	Checked by:	Approved by:	Reason for Issue:
5.0	23/10/2014	Melissa Wellings	Claire Carr	James Moloney	For Information
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### 2a. Stakeholder Review Required? YES NO

Stakeholder submission required: LU  RfL  Purpose of submission: For no objection   
 NR  LO  For information   
 DLR  Other: \_\_\_\_\_

This document has been reviewed by the following individual for coordination, compliance, integration and acceptance and is acceptable for transmission to the above stakeholder for the above stated purpose.

Sign: \_\_\_\_\_ Role: \_\_\_\_\_ Name: \_\_\_\_\_ Date: \_\_\_\_\_

Sign: \_\_\_\_\_ Role: \_\_\_\_\_ Name: \_\_\_\_\_ Date: \_\_\_\_\_

### 2b. Review by Stakeholder (if required):

Stakeholder Organisation	Job Title	Name	Signature	Date	Acceptance
					<input type="checkbox"/>
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### 3. Acceptance by Crossrail:

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<i>MTT Houston</i>	<i>MTT HOUSTON</i>	<i>CM</i>	<i>11/11/14</i>	
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## AIR QUALITY CONTROL PLAN

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## 1.0 ASPECT/ACTIVITIES

The purpose of this plan is to describe the measures to be taken to minimise the risk of dust and air pollution as a result of works at the Crossrail Bond St Station, Eastern Ticket Hall (Hanover Square) and Western Ticket Hall (Davies St) work sites. This includes the monitoring of dust emissions and actions that will be taken in response to trigger levels being exceeded.

The aim is to prevent the negative impact of dust and air pollution by reducing or controlling those aspects of construction that may result in high levels of air pollution. We shall also control other aspects of work so as to minimise the nuisance factor that our works and assets might impart upon our sensitive receptors.

## 2.0 RESPONSIBILITIES

The following roles and responsibilities are applicable to this plan:

**Works Manager:** responsible for communicating the Dust and Air Control Plan requirements to subcontractors and the effective management of the works in line with the Dust and Air Control Plan and additional agreements between the project and Westminster City Council.

**Section Managers:** responsible for managing construction and producing Work Package Plans that include information and requirements covered by the Site Environmental Control Plans.

**Air Quality Specialist:** responsible for locating, set-up and overseeing permanent dust monitoring stations in consultation with the Project Manager and Westminster City council; Training nominated staff to undertake basic monitoring tasks correctly e.g. downloading data and undertaking initial checking of results for compliance with requirements; Checking all results for compliance with requirements and advise construction teams on action required and follow-up; Working closely with construction teams; Liaising with Local Authorities as necessary and in conjunction with the Project Manager; including providing them with monitoring results in any timescales agreed with them

**Environmental Manager:** responsible for advising the Project Team and monitoring compliance, for obtaining and managing consents, the provision of training of the Air Quality Champion (so that they can effectively monitor and record the air quality and dust control via the weekly dust monitoring visual inspection log), and for managing communications with Westminster City Council.

**Community Relations Representative:** responsible for receiving dust related comments or complaints from resident and stakeholders.

**Site Supervisors:** responsible for the day to day implementation of the mitigation measures required to minimise the impact arising from the works, and for visual monitoring and filling out daily dust monitoring logs.

**All employees:** responsible for complying with the Plan in relation to the work they are undertaking and for reporting and responding to ANY trigger alert or environmental incident.

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### 3.0 CONSENT REQUIREMENTS/ ASSURANCES

No consents are required for installation of monitors (NB: All monitors are CRL owned and currently in-situ).

CSJV will record, review and provide monitoring data to the Local Environmental Health Officer (Westminster City Council) on a monthly basis or upon request.

### 4.0 CLIENT REQUIREMENTS

The Bond Street Station Main Works sites are considered tier three sites and will implement the air quality monitoring and mitigation measures outlined in Part 21 of the Works Information. Sensitive receptors surround both worksites and air quality needs to be carefully controlled.

### 5.0 GENERAL CONTROL MEASURES

The Environmental Aspects Register within the Construction Phase Plan includes activities, which may give rise to air pollution & dust. Controls from this plan will be applied to mitigate the impact of the projects activities as far as is reasonably practicable.

The Project Management Team recognises the importance of maintaining good relations with the local community. We will undertake frequent inspections of the site to ensure that it remains in a good state, with all housekeeping issues under control resulting in the development of a positive perception of the public in respect to the project.

Crossrail will provide a 24hour helpline during the works. Costain-Skanska will provide updates to the helpline on the activities taking place.

All complaints received will be recorded, investigated and corrective actions implemented and feedback given to the complainant.

Letter drops will be undertaken prior to any significant work activities taking place that could affect local residents, such as weekend possessions, road closure etc, and will as a minimum includes residential properties and other sensitive receptors surrounding the worksite.

The following generic measures will be implemented when construction methods are being considered:

- Choice of methodology/ technique for dusty operations will be considered in order to eliminate or reduce dust.
- Whenever possible fabrication/ dismantling will be undertaken off site.
- Dust producing plant will be kept as far away as possible from sensitive areas (and may be screened).
- Plant will be well maintained (with efficient dust suppression systems) and switched off when not in use.
- Where demolition and other breaking out activities are necessary. Percussive or impact breaking equipment / methods will not be used where possible. Wherever it is practical to do so, pulverisers (munchers) will be used to carry out the bulk of the demolitions achieving a much lower level of dust production.



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- The movement of delivery materials outside of normal working hours shall be kept to a minimum and handled in a manner that minimises dust production and disturbance.
- All employees shall be provided with an appropriate induction and ongoing briefings regarding management of environmental issues i.e. Dust mitigation measures required for the work they are carrying out.
- If any damage is caused to property despite the use of control measures e.g. dust on cars and windows the impact will be remediated (e.g. washing of cars and cleaning windows) or by compensating affected receptors.

## 6.0 SPECIFIC CONTROL MEASURES

Tier 3 mitigation measures will be implemented at the C412 worksites where practicable, which is the highest standard of dust control reasonably achievable. All the techniques set out below will be employed and will include additional measures to control the high risk. The measures adopted will be proportionate to the risk and will be site specific.

### 6.1 Standard Dust Control Procedures (Tier 1 sites)

- (a) No burning of waste materials will take place on site;
- (b) An adequate water supply will be provided on the site;
- (c) Disposal of run-off water from dust suppression activities will be in accordance with the appropriate legal requirements;
- (d) All dust control equipment will be maintained in good condition and maintenance activities recorded;
- (e) Site fencing, barriers and scaffolding will be kept clean using wet methods;
- (f) Easily cleaned hardstanding will be provided for vehicles;
- (g) Regular cleaning of hardstanding using wet sweeping methods;
- (h) There will be no dry sweeping of large areas;
- (i) Wheel-wash facilities will be provided near the site wherever there is potential for carrying dust or mud off the site;
- (j) Wheel-washers with rumble grids to dislodge accumulated dust and mud prior to leaving the site will be fitted wherever there is potential for carrying dust or mud off the site and where reasonably practicable;
- (k) An adequate area of hard surfaced road between the wheel wash facility and the site exit will be provided, wherever site size and layout permits;
- (l) Hard surfaced long term haul routes will be installed, which are regularly damped down with fixed or mobile sprinkler systems and regularly cleaned;
- (m) All inspections for integrity of surfaces will be recorded and necessary repairs instigated to the surface as soon as reasonably practicable;
- (n) All inspections of haul routes will be recorded and any subsequent action in a site log book which may be in hand or electronic format;
- (o) Un-surfaced haul routes and work areas will be regularly damped down in dry conditions;
- (p) Public roads will be routinely cleaned and access routes using wet sweeping methods;
- (q) Vehicles working on site will have exhausts positioned such that the risk of re-suspension of ground dust is minimised (exhausts will preferably point upwards), where reasonably practicable;



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- (r) Maximum speed limits of 5 mph will be imposed and signed on un-surfaced haul routes and surfaced haul routes and work areas, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate;
- (s) All vehicles carrying loose or potentially dusty material to or from the site will be fully sheeted;
- (t) Bulk cement and other fine powder materials will be delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery;
- (u) Large quantities of cement, bentonite, grouts and other similar materials will only be mixed in designed areas, which will be enclosed or shielded;
- (v) Materials with the potential to produce dust will be stored away from the site boundaries where reasonably practicable;
- (w) Sand and other aggregates will be stored in bunded areas and not allowed to dry out;
- (x) The amount of excavated material held on site will be minimised;
- (y) Unavoidable stockpiles of excavated material held on site, will be sheeted, sealed or damped down where required;
- (z) Double handling of material will be avoided wherever reasonably practicable;
- (aa) Water suppression will be used during demolition operations;
- (bb) Any crushing or grinding plant used on the site, which falls within the definition in Section 3.5 Chapter 3 of the Pollution Prevention and Control (England and Wales) Regulations 2000 SI 1973, will have an appropriate permit issued and is maintained according to the procedures set out in the Pollution, Prevention and Control Act 1999;
- (cc) Any plant, identified above, will be operated in accordance with the conditions set out in the permit and a copy of the permit is held on site;
- (dd) Enclosed rubble chutes and conveyors will be used where reasonably practicable or water used to suppress dust emissions from such equipment;
- (ee) Enclosed conveyors will always be used where crossing roads, other public areas and property which is not in the ownership or control of the nominated undertaker;
- (ff) Loaded bins and skips will be enclosed or sheeted;
- (gg) Drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment will be minimised and fine water sprays used on such equipment wherever appropriate;
- (hh) Completed earthworks will be sealed or re-vegetated as soon as reasonably practicable after completion;
- (ii) Design/ prefabrication will be used to reduce the need for grinding, sawing and cutting on site wherever reasonably practicable;
- (jj) Cutting, grinding or sawing equipment will only be used fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction;
- (kk) Site inspections will be carried out regularly to monitor compliance with dust control procedures set out above and the results recorded, including nil returns;
- (ll) The frequency of site inspections will be increased when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions; and
- (mm) Any exceptional incidents causing dust episodes on or off the site will be recorded and the action taken to resolve the situation in the log book.



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## 6.2 Sites with a Medium of High Risk of Dust Emissions (Tier 2)

The additional measures detailed below will also be adopted as appropriate. Alternatives may be proposed to suit specific circumstances providing the resulting control is at least as effective as that arrived at using the specified measures.

The enhanced dust control procedures will include, as appropriate, site controls to:

- (a) Insides of buildings will be stripped, as far as reasonably practicable, before demolition;
- (b) Biological debris will be bagged and removed (such as birds nests and droppings) or dump down such material prior to demolition;
- (c) Wherever reasonably practicable, walls and windows will be retained while the rest of the building is demolished to provide a screen against dust;
- (d) Buildings will be screened, where dust producing activities are taking place, with debris screens or sheeting;
- (e) Carrying out earthworks during dry weather will be avoided if possible or appropriate water sprays will be supplied and utilised to control dust;
- (f) Medium or long term excavated material and soil stockpiles will be sealed or seeded;
- (g) Slopes on stockpiles will be no steeper than the natural angle of repose of the material and maintain a smooth profile;
- (h) Equipment will be readily available on site to clean any spillages and clean up spillages as soon as possible after the event using wet cleaning methods;
- (i) Mixing of cement, bentonite, grout and other similar materials will take place in enclosed areas remote from site boundaries and potential receptors;
- (j) Where appropriate increased hoarding height to will be used protect receptors;
- (k) Full enclosure of sites or specific operations will be considered where there is a high potential for dust and the site is active for an extensive period; and
- (l) Installation of hard standing across site where there is a high potential for dust and the site is active for an extensive period.

## 6.3 Advanced Dust Control Procedures on Sites with a High Risk of Dust Emissions (Tier 3)

The additional measures detailed below will also be adopted as appropriate. Tier 3 mitigation include the following:

- (a) Emergency control arrangements will be adopted in the event of a pollution incident arising from dust. This will include appropriate liaison with the Westminster City Council's EHO; and
- (b) Monitoring will be undertaken to measure impact of local dust and PM10 concentrations as detailed below. Where necessary appropriate action will be taken to limit escape from construction sites identified as a result of monitoring.

## 6.4 Vehicle and Equipment Emissions

The following measures will be used to limit emissions and avoid nuisance:

- Not leave the engines of all vehicles and Equipment running unnecessarily;
- Maintain Equipment through routine servicing of Equipment and vehicles, to be completed in accordance with the manufacturer's recommendations and maintain records for the work undertaken;
- Locate haul routes and operate Equipment away from potential receptors including, but not limited to, houses, schools and hospitals;



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- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment; and
- Use commercial road vehicles that meet Euro 3 standards during the works as set out in the EC Directive 98/69/EC (commonly known as Euro standards).

**All non-road mobile machinery shall:**

- Use fuels with a sulphur content equivalent to ultra low sulphur diesel fuel meeting the specification within EN590:2004;
- Comply with the current or immediately previous EU Directive Staged Emission Standards;
- If power output is over 37kW, be fitted with an after-treatment device(s) stated on the approved list managed by the Energy Saving Trust, and ongoing conformity to a performance standard to be defined by the Project Manager shall be ensured through a programme of on-site checks which shall be recorded; and
- The requirements of the works information will be communicated contractually to the plant supplier, subsequent on-site checks will occur when the plant arrives to site as well as during environmental inspections. The checks will entail a review of C412 Plant Register that details the power output of the machinery and the diesel particulate filter installation certificate (if applicable) to ensure compliance with the works information.

**6.5 Odours**

The following measures will be adopted to avoid the creation of statutory nuisance from odours, including, but not limited to:

- Covering containers holding waste and regularly removing waste containers from site;
- Programming works including, but not limited to, works on sewers;
- Removing odour source;
- Spraying with an approved oxidising agent; and
- Applying an odour guard or masking agent.

**7.0 MONITORING, MEASUREMENT AND MAINTENANCE**

**7.1 Monitoring and Measurement**

A baseline will be established prior the works using information obtained from by Crossrail.

During construction particulate monitoring will be undertaken by CSJV utilising Osiris dust monitors at two locations, adjacent to the vehicle entrance and exit, on each of the Eastern Ticket Hall (Hanover Square) and Western Ticket Hall (Davies Street) site to ensure appropriate control measures are in place to protect the nearby residential, commercial and general public receptors. An alarm in the form of a mobile phone text message will be activated when a predetermined site action / trigger level is reached. If the alarm is activated the following actions will be taken:

- (a) The Works Manager or someone delegated by the Works Manager (Air Quality Champion) will as quickly as reasonably practicable investigate activities on the site to ascertain if any visible dust is emanating from the site or activities are occurring that are not in line with dust control procedures;
- (b) Any identified causes will be rectified where practicable (i.e. damping down or ceasing of dusty works). Actions will be recorded in the site dust monitoring visual inspection log and Westminster City Council will be notified of the trigger alerts and actions on a monthly basis or upon request; and
- (c) If the cause of the alarm is not related to site operations the outcome of any investigation will be recorded in the site logbook.



A site action level of 250ug/m<sup>3</sup> (15 minute average) will be established in consultation with Westminster City Council and the Project Manager.

CSJV will carry out dust inspections a minimum of once a day, or upon receipt of an alert, and this will be recorded in the log shown in Appendix 1.

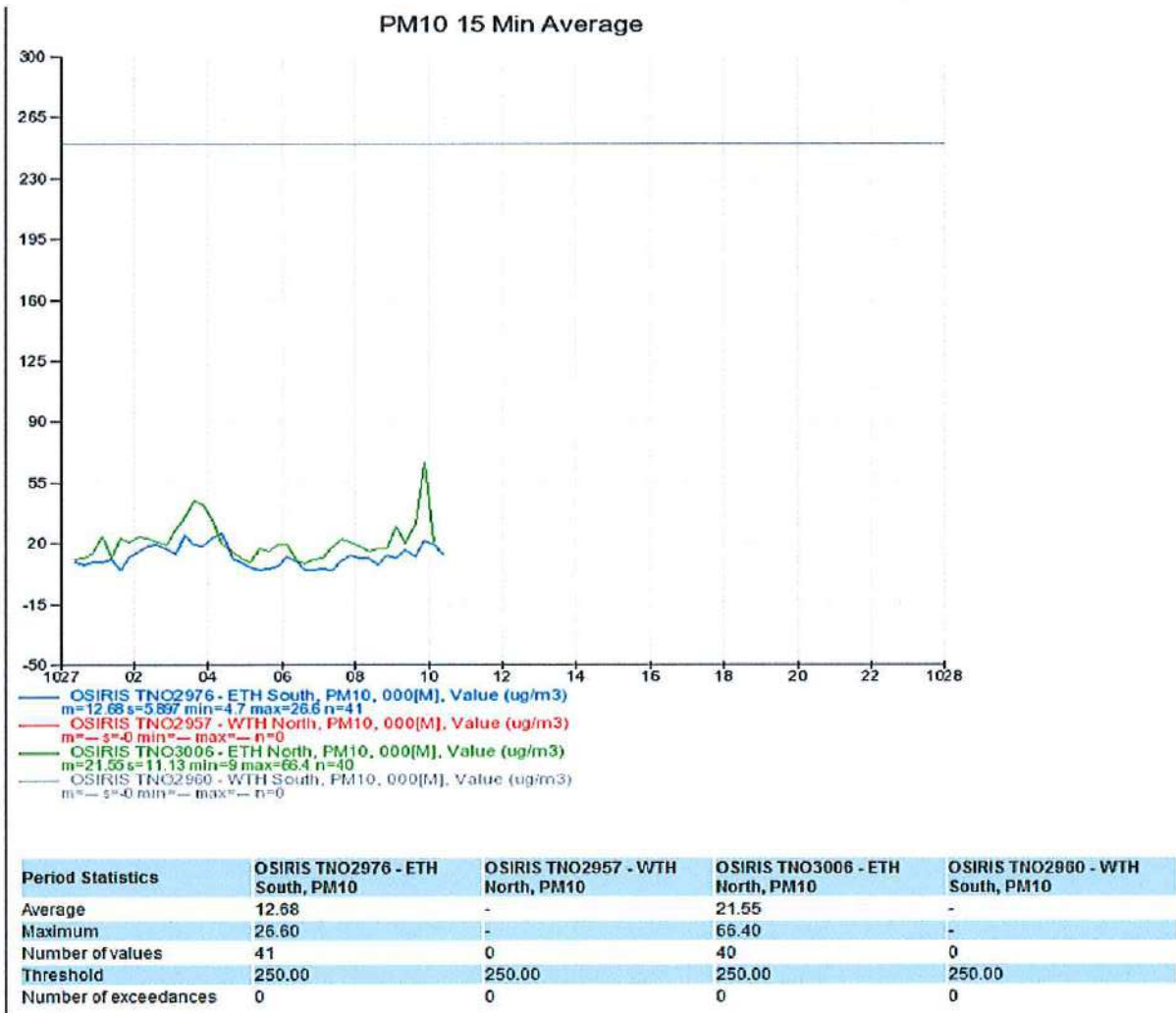
Monthly air quality monitoring reports will be submitted to the Project Manager via the eB document control systems and also forwarded to Westminster City Council.

CSJV will implement a web based dust monitoring system that allows 24/7 access to the historic and current dust monitoring results for the four Osiris dust monitors located on site. The results are reviewed regularly and exceedances investigated by CSJV. Trigger alerts will be recorded in a trigger alert log and provided upon request. The website will be made available to Westminster City Council to view the data as required.

Three reports will be able to be generated from the website for any given time period:

- PM10 15 Min Average
- PM10 Hourly Averages + Background
- TSP 15 Min Average

An example report is included below for PM10 15 minute average the time period.



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## 7.2 Service Maintenance and Calibration

CSJV will enter into a Comprehensive Service Agreement (CSA) with Turnkey, the manufacturer of the monitoring instruments. Additionally a three monthly filter change and air flow check is undertaken on all monitors.

## 8.0 RELATED DOCUMENTS

The following documentation and records will be produced, filed and maintained:

- Dust Level Readings, Monitoring Reports, Logs and Investigations
- C412 NRMM Plant Register Jan 2014 – Mar 2014 (updated on a quarterly basis)



Appendix 1 – Dust Monitoring Log



WEEKLY DUST MONITORING VISUAL INSPECTION LOG

Week Commencing	Name/Job title:						Signature:		
Dust Visible on Site	Yes/No	Ground Surface:		Dry		Damp		Wet (puddles)	
Wind	None	Light Wind		Strong Wind					
Wind direction from	N	NE	E	SE	S	SW	W	NW	
	MON	TUES	WED	THURS	FRI	SAT	SUN		
ARE SITES DAMPED DOWN DURING DRY WEATHER?									
ARE VEHICLES LEAVING THE SITE SHEETED?									
ARE BULK CEMENTS AND FINE POWDERS STORED CORRECTLY ARE PUBLIC ROADS AND ACCESS ROADS CLEANED?									
IS WHEEL-WASH / JETWASH OPERATIONAL AT EXITS?									
ARE STOCKPILES SHEETED OR DAMPED DOWN?									
IS ROAD SWEEPER BEING USED TO CLEAN PUBLIC ROADS?									
HAS THERE BEEN A DUST TRIGGER ALERT? IF YES, WHAT ACTIVITY WAS BEING UNDERTAKEN AT THE TIME? (fill out in comments section) WHAT ACTION WAS TAKEN? (fill out in comments section)									
HAS THE ENVIRONMENT MANAGER/ENVIRONMENT ADVISOR BEEN INFORMED OF DUST ISSUES AND ACTIONS TAKEN DURING TRIGGERS?									
<b>COMMENTS:</b>									

Appendix 2 – Dust Monitor Location Plan

