APPENDIX G

AQDRA

GREAT ORMOND STREET HOSPITAL – CENTER FOR RESEARCH INTO RARE DISEASES IN CHILDREN

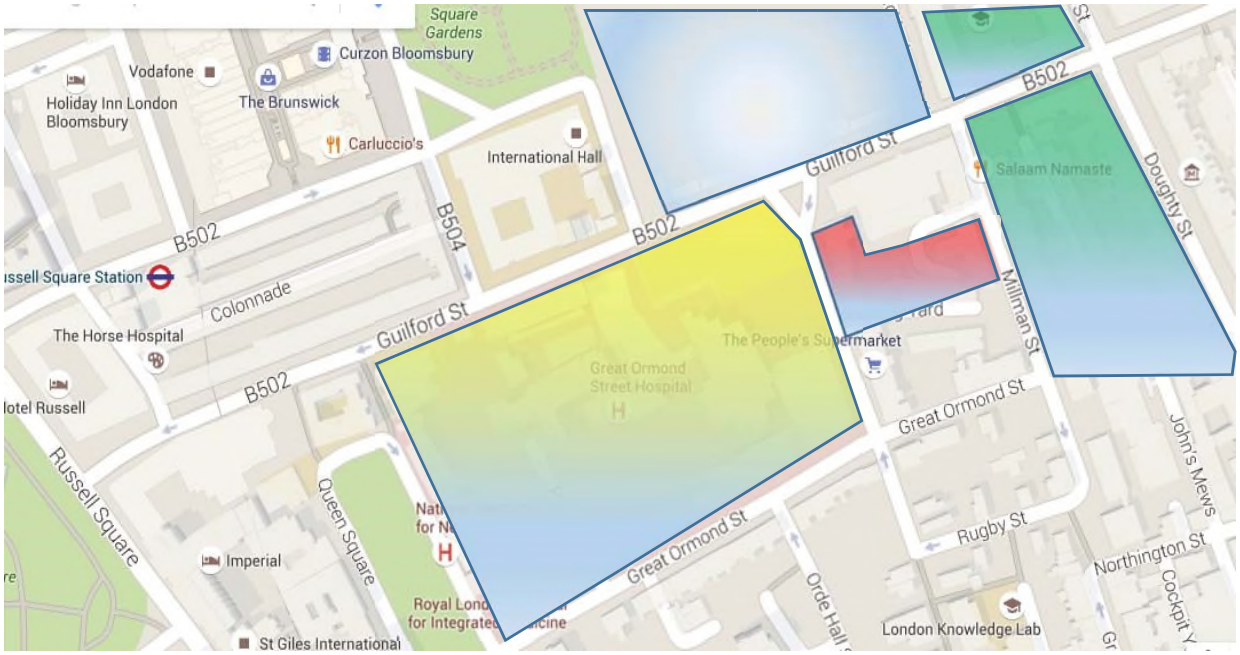
AIR QUALITY AND DUST RISK ASSESSMENT

STEP 1: SCREEN THE NEED FOR A DETAILED ASSESSMENT:

Human receptor:

The site for GOSH-CRRDC, located at 20 Guildford Street, London WC1 1DZ, is surrounded by 3 types of buildings:

- Residential
- Offices and businesses (with occasionally housing on upper floors)
- Health dedicated area (hospital buildings)
- Recreational



At least one of each type of receptor is located less than 20 meters away from site boundary and all blocks shown on the map above have a facade less than 50m away.

The presence of the Great Ormond Street Hospital on the other west side of the site is to be noted as this is a particularly sensitive receptor.

Ecological receptor:

No significant ecological receptor is located in the vicinity of the site.

Description of works:

Works to be carried out for this project are divided into 4 main phases, corresponding to main type of activities described in the SPG:

1. Demolition and Retaining Wall Works (Demolition Phase type) – This includes demolition of the left over existing slabs and retaining walls at ground level left by the demolition contractor currently undertaking the works on site. This phase also includes our works of sheet piling around the whole perimeter of the site.

2. Excavation (Earthworks Phase type) – This includes excavation of the whole site from existing ground level to underside of the raft of the new building, as well as necessary breaking out of obstructions, trimming and disposal of all excavated materials.

3. Building construction (Construction Phase type) – Construction of both substructure and superstructure.

4. Trackout (Trackout Phase type) – All activities related to disposal of demolished and excavated materials as well as waste bentonite + any other truck movements in and out the site during works.

STEP 2: ASSESS THE RISK OF DUST IMPACTS:

STEP 2A: DEFINE THE POTENTIAL DUST EMISSION MAGNITUDE:

For this assessment, the project is split up into 4 different phases, as explained above. For all phases, a dust emission magnitude will be estimated.

Demolition and enabling works Phase:

All of demolition activities will be undertaken at or below current street level. However, leftover slab and retaining walls to be demolished are mainly made of concrete and brickwork, i.e. dusty construction material. Expected total volume of demolition is less than 20,000 m3. As per guidance given in STEP 2A.i Demolition Phase of the SPG (Chapter 4) this operation is considered as **SMALL**.

Excavation Phase:

The excavation phase, considered as Earthworks Phases according to SPG wording, includes the majority of earth movement of this project. It is expected that around 20,000 m3 of soil will be excavated. This automatically yields our site to be labelled as **LARGE** according to STEP 2A.ii Earthworks Phase of the SPG (Chapter 4).

Construction Phase:

Total concrete volume of the new building to be built is around 20,000 m3. No on-site batching will take place due to the strong logistics constraints of the site. Hence, following guidance from STEP 2A.iii Construction Phase of the SPG (Chapter 4), our site is to be labelled as **MEDIUM**.

Trackout Phase:

Trackout phase includes all evacuation of spoil from foundation activities as well as excavated material from both demolition and the main excavation. At peak, it is expected to have around 30 trucks a day leaving site (1 loading location). Transported material will be demolition material, excavation spoil such as clay, sand or gravels. Hence our site falls into the **MEDIUM** category following STEP 2A.iv Trackout Phase of the SPG (Chapter 4).

STEP 2B: DEFINE THE POTENTIAL SENSITIVITY OF THE AREA:

Sensitivity of People to dust soiling effects and health effects of PM10 as well as sensitivity of receptors to ecological effects are to be estimated for all project phases.

Sensitivity of People to dust soiling effects:

Buildings surrounding the site are mostly of four kinds as described above. Closest buildings to site are the Millman Mews state and the Guildford Place House. Hence, those buildings and the others (due to them being further away from the earthworks zone) can be labelled **MEDIUM** SENSITIVITY RECEPTORS for dust soiling effects as per guidance given in STEP 2B.i Sensitivity of People to Dust Soiling Effects of the SPG (Chapter 4).

Sensitivity of People to health effects of PM10:

Building types are the same as defined previously. While buildings of the category of offices and commercial buildings can be considered as Medium sensitivity receptors, buildings falling in the others are **HIGH** SENSITIVITY RECEPTORS for health effects of PM10. The amount of people frequenting those buildings is at any time greater than 100. The SPG guidance allow us to estimate the sensitivity of the area based on our assessment of the sensitivity of the receptors, the annual mean PM10 concentration (taken as 26µg/m3 following measurements from LAEI presented in Air Quality Information for Public Health Professionals in November 2012 by the London Borough of Camden), the number of receptors and their distance from source. This gives for Human Health Impact, a High sensitivity of the area.

Sensitivity of receptors to ecological effects:

Due to the location of the site and the non-existence of significant vegetation around the site, the sensitivity of receptors to ecological effects is considered to be **NEGLIGIBLE.**

STEP 2C: DEFINE THE RISK OF IMPACTS:

Tables 4.6 to 4.9 of the SPG guidance allow us to derive from the sensitivity of the area and the dust emission magnitude the Summary Dust Risk Table.

Summary Dust Risk Table

Potential impact	Demolition	Excavation	Construction	Trackout
Dust soiling	High	Medium	Medium	Medium
Human Health PM10	High	High	Medium	High
Ecological	Negligible	Negligible	Negligible	Negligible

3. RISK REDUCTION MEASURES TO BE IMPLEMENTED:

The site is considered as having a medium to high risk of impact for both Dust Soiling and Human Health, depending on the construction phase. Hence, a Dust Management Plan will be developed to ensure all possible mitigation measures are taken to lower risks of such impacts. Those mitigation measures will be, but not limited to, the following:

Site Management

Develop and implement a stakeholder communication plan before work commences.
Display name and contact details of person(s) responsible for air quality on the site boundary.
Display head office contact information.
Make a complaint log available to the local authority.
Record and respond all dust and air quality complaints.
Increase frequency of site inspections by those accountable for dust and air quality when activities with High risk are being carried out, and during prolonged dry or windy conditions.

Preparing and maintaining the site

Limit stockpiles height so that they do not grow above site hoarding Avoid
site runoff of water and mud.
Remove materials from site as soon as possible. Cover
stockpiles to prevent wind whipping.
Put in place real-time dust and air quality monitors across the site.

Operating vehicle and plant

Ensure all vehicles switch off engines when stationary.

Operations

Only use cutting, grinding or sawing equipment in conjunction with dust suppression techniques such as water sprays.
Minimise drop heights from loading or handling equipment.
Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages quickly after the event using wet cleaning methods.
Reduce double-handling of materials as much as possible. Waste
management.
Avoid bonfires and burning of waste materials.

DEMOLITION AND ENABLING WORKS PHASE

Ensure water suppression is used during demolition operations. Avoid
explosive blasting, using appropriate alternatives.
Bag and remove any biological debris or damp down such material before demolition.

CONSTRUCTION PHASE

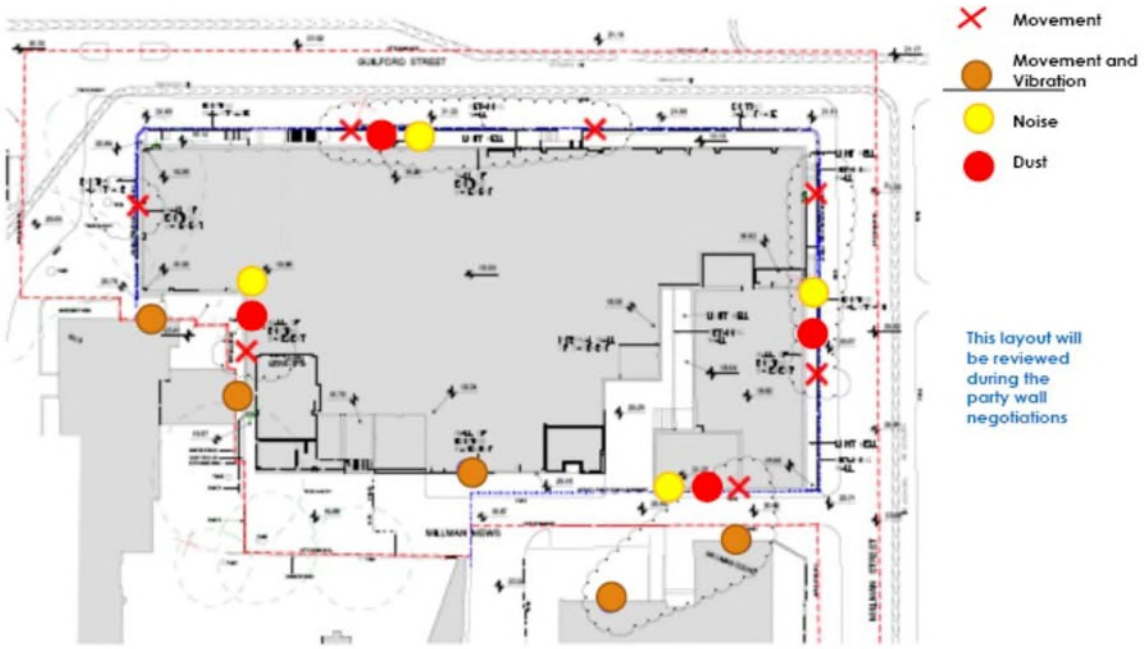
Avoid scrabbling as much as possible.
Ensure bulk cement and other fine powder materials are stored appropriately to prevent dust (silos or sealed bags depending on size).

TRACKOUT PHASE

Regularly use a road sweeper on access and local roads to remove material tracked out of site.
Use appropriate covers to cover trucks leaving site with dusty materials. Use jet wash on all trucks leaving as necessary.

4. MONITORING SCHEME TO BE IMPLEMENTED:

Along with those mitigation measures, a full monitoring plan will be implemented to ensure air quality remains acceptable by all neighbours. This monitoring scheme comprises 4 real time dust monitors monitoring mean PM10 concentration over a period of 15 minutes. Dust monitors will be set up as shown below.



Trigger levels and corresponding action plan to be implemented. As an example, trigger level for dust monitoring is 200µg/m3 of PM10 over a 15-minute period.