



CHP Operational Data

Areas Served by CHP (heat)	Building Type 1 only
System Operational Mode	Heating & DHW
Electrical Output to Supply	Building Type 1 only
Number of CHP Units	1 unit
Electrical Output of Unit	30 kW _e
Heat Output of Unit	44 kW _{th}
CHP Gas Consumption	102 kW _{gas}
Usable Heat : Electric Output	147 % [°]
CHP Electrical Efficiency	29 %
CHP Thermal Efficiency	43 %
Overall CHP Efficiency	73 %

Annual CO2 Emissions Reduction (Including Exports)

CO2 Saving from Exported Electricity	1321 kgCO ₂ /yr
Potential Emissions Reduction	11 %

N _{power} N _{heat}	28% 43%	POOR
QI Rating	115.9	

QI Rating

70000 60000 50000 kWh 40000 30000 20000 10000 0

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HEAL'S REDEVELOPMENT, TOTTENHAM COURT ROAD **ENERGY STATEMENT**

Communal systems - Combined Heat & Power (CHP)

There is no existing district schemes in the proximity of the Heal's development, the nearest planned district heating network is the Euston Rd heating network. There is a number of standalone CHP schemes which are indicated in yellow on the adjacent plan, the nearest is approximately 500m away from the Heal's building.

As the main demand for energy on site is for electricity, there is little benefit in terms of carbon reduction in connecting to a heat network. Therefore it is not proposed at this stage to design the building to allow it to connect to a future heat network.

An assessment of the viability of a combined heat and power systems has been undertaken and the results are presented below. The load profile indicates that the base demand for hot water on the site is low. This would result in the CHP being switched off in summer resulting in a Poor Quality index for the system. It is therefore not proposed to install a CHP plant as part of this redevelopment.



genesys environmental

CUNDALL



CHP Operational Data

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QI Rating	115.9	

QI Rating

4.1 Communal systems - (

Heat Network

There is no existing district schemes in the proximity of the Heal's development, the nearest planned district heating network is the Euston Rd heating network. There is a number of standalone CHP schemes which are indicated in yellow on the adjacent plan, the nearest is approximately 500m away from the Heal's building.

As the main demand for energy on site is for electricity, there is little benefit in terms of carbon reduction in connecting to a heat network. Therefore it is not proposed at this stage to design the building to allow it to connect to a future heat network.

CHP

An assessment of the viability of a combined heat and power systems has been undertaken and the results are presented below. The load profile indicates that the base demand for hot water on the site is low. This would result in the CHP being switched off in summer resulting in a Poor Quality index for the system. It is therefore not proposed to install a CHP plant as part of this redevelopment.



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HEAL'S REDEVELOPMENT, TOTTENHAM COURT ROAD ENERGY STATEMENT

Communal systems - Combined Heat & Power (CHP)









4.3 **Solar Thermal Collectors**

Solar thermal collectors utilise solar radiation to heat water for use in water heating of a building. The radiation is converted using a solar collector, of which there are two main types available: Flat Plate and Evacuated Tube collectors. Evacuated tube systems occupy a smaller area and are more efficient, but also generally more expensive. Flat plate systems are cheaper to install but generally less efficient.

- The solar coverage indicates what percentage of the annual domestic hot water energy requirement can be covered by a solar water heating system. The higher the solar coverage, the more conventional energy usage can be offset, but can cause excess heat generation in the peak summer months and generally lower the average collector efficiency. Therefore solar coverage is up to 40% in non-domestic buildings is recommended.
- Solar thermal systems in the UK normally operate with a backup fuel source, such as gas or electricity. The solar system pre-heats the water up to a maximum hot water temperature. If there is not enough solar power available to fully meet the required hot water load, then the back-up fuel system fires up to meet this short fall.
- The optimum orientation for a solar collector in the UK is a ٠ south facing surface, tilted at an angle of 30° from the horizontal. However, orientation and are not critical, with azimuths of $\pm -30^{\circ}$ from South and angles of $\pm -20^{\circ}$ from 30° still achieve reasonable outputs.
- In order for the solar water heating system to run safely and ٠ efficiently, a series of temperature sensors are connected to a digital solar controller to switch the system on or off according to the solar energy available.

Systems Design Considerations

The system considered is a roof mounted evacuated tube collector array space. Collectors with tubes tilted south to obtain optimum inclination and maximise the operational efficiency of the system.

Viability

- •

Solar Thermal

Areas S Collecto Collecto Collecto

Energy

Potentia Potentia Installed Percent

Emissions

Potentia Potentia

HEAL'S REDEVELOPMENT, TOTTENHAM COURT ROAD **ENERGY STATEMENT**

• The analysis indicates that 20m² of solar thermal collectors could potentially generate up to 60% of the office part DHW (domestic hot water) requirement. This equates to approximately 1.4% of its annual CO₂ emissions.

• Application of solar collectors can potentially make a very modest contribution towards the target of 20% of the carbon dioxide emission using the renewable energy sources

• The remainder of the DHW requirements will be provided by a backup fuel source. The solar system pre-heats the water up to the design temperature. If there is not enough solar power available to fully meet the required hot water load, then the back-up fuel system fires up to meet this short fall.

Solar collectors are reasonably inexpensive and once the systems are installed they require minimal maintenance over their operational lives and have no primary fuel requirements.

erved by Solar Thermal	All Building Types
r Type	Evacuated Tubes
r Area	20 m ²
r System Efficiency	60 %

I Annual Energy Generated	9493 kWh/yr
I Energy Generation Per m ²	475 kWh/m ²
Power (kWp)	12.0 kWp
age of DHW Generated	59.0 %

I Annual CO ₂ Saving	4908 kgCO ₂ /yr
I Emissions Reduction	1.4 %



4.4 **Photovoltaic Panels**

Photovoltaic solar cells convert solar energy directly into electricity. The cells consist of two layers of silicon with a chemical layer between. The incoming solar energy charges the electrons held within the chemical. The energised electrons move through the cell into a wire creating an electrical current.

A range of Photovoltaic products and colours are available, varying in efficiency and cost. These include Monocrystalline, Polycrystalline, Thin Film and Hybrid Panels. Hybrid panels are the most energy efficient and Thin Film the least.

All of the above technologies can be installed in roof and wall mounted arrays or as integrated building members, giving the additional benefit of offsetting the cost of other construction materials, such as weather proof roof membranes or integrated into glazed wall constructions.

The installation of a PV system requires other equipment ("balance of system"), in addition to the PV modules which generally include: system wiring and junction boxes, support structures, DC switch panel, power conditioning unit (PCU), with: inverters from DC to AC, maximum power point tracker, protection devices (lightning protection, over current protection and ground-fault protection), batteries, charge regulators and meters.

Systems Design Considerations

The proposal is to incorporate a number of solar cells on south facing part of the roof of the proposed building.

Viability

- 55m² of PV panels are required to offset every 1% of the CO₂ emissions for office part of the Heal's development.
- There is insufficient space available on the roof to reach the target of 20%, as approximately 2000 m² of roof area would need to be allocated for 1100m² PV matrix.
- Once photovoltaic cells are installed they require minimal maintenance over their operational life and have no primary fuel requirements

As there is limited roof space available, this is being reserved for the solar thermal panels as they are more efficient and provide greater carbon reduction per square meter. Therefore photovoltaics are not proposed for incorporation in the development.

Note: The figures quoted for both of the solar options are only initial indications; should these options be investigated further, several issues need to be considered, i.e. available free roof areas and potential overshadowing effects.

Photovoltaic Collectors (PVs)

PV System Type
PV Collectors
Collector Area
Manufacture
Collector Type
Module Efficiency
Total System Efficiency

Energy

Potential Annual Energy Generate Energy Generated Per m² Installed Power (kWp) Percentage of Electricity Generat

Emissions

Potential Annual CO₂ Saving Potential Emissions Reduction







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HEAL'S REDEVELOPMENT, TOTTENHAM COURT ROAD **ENERGY STATEMENT**

New Build
Yingli Solar (235 W)
55 m ²
Solarcentury
Polycrystalline
14.4 %
10.2 %

ed	6410 kWh/yr
	117 kWh/m ²
	7.9 kWp
ed	1.0 %

3391 kgCO ₂ /yr	
1.0 %	

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	Equipment	Annual CO ₂ Emissions Savings	Potentially feasible (yes/no)	Additional Comments
Air Source Heat Pump	Air Source VRV Heat Pumps to every tenant	8.6%	YES	High efficiency VRV system allow s for flexible arrangement of heating and cooling per each tenant w ith minimum space required per floor.
Solar Thermal	20m² of Evacuated Tubes Collectors	1.4%	YES	Application of collectors w ould impose the use to centralised hot w ater distribution system. Solar collectors need to be carefully sitted as: - there is limted space available (Most of the available roof space allocated for plant) - long pipew ork runs may be required betw een solar collectors and storage heaters
Photovoltaics	55m² of Yingli Solar (235 W) Polycrystalline PV panels	1.0%	Possible	Approximately 55m ² of good quality PV panels (14.4% efficient) w ould be required to offset single percent of the building CO ₂ emissions.

We have reviewed all renewable energy technologies available and of these only a few are compatible with the buildings listed status.

From the options considered, our calculations indicate that the application of an air source VRV system would be the most feasible, providing almost an 8% reduction in the building's CO_2 emissions. In addition to this, 20 m² solar collectors would satisfy a portion of the hot water demand and offset an additional 1% of CO₂ emissions.

The amount of roof space available for solar hot water collectors and or PV's is limited. The majority of available roof area (some 340 sq m) has been given over to green roofs, in accordance with Policy and is also required to meet the BREEAM Targets. Coverage of this area with solar panels and or photovoltaics has practical implications and would cause a considerable amount of shading to the Green Roof limiting its success and contribution to the buildings bio-diversity.

The only remaining area of roof is to the Tottenham Court Road frontage and this has been discounted, as the panels would be visible in views from street level and could impact upon the setting of the listed building.

The total CO₂ savings from application of the proposed renewable energy sources together with the contribution of the proposed energy saving measures, equals to 56t CO₂ (15.5% CO₂ emissions) when compared to baseline emission. Given the constraints on site this is a considerable saving, given that the building at present does not comply with Part L.

4.5 Low or Zero Carbon Technologies - Summary

D DAY/SUNLIGHT ASSESSMENT

JB/RY/4083/11

13th December 2011

Development Control Manager Environment and Planning Camden Town Hall Argyle Street WC1H 8EQ

Dear Sirs,

RE: THE PROPOSED DEVELOPMENT LOCATED AT HEALS OF LONDON - DAYLIGHT AND SUNLIGHT

Further to our appointment and subsequent to receipt of the drawings produced by John McAslan and Partners highlighting the proposed scheme for the Heals building on Tottenham Court Road, please find below the results of our desktop study and site visit in relation to the potential Daylight and Sunlight impacts to those neighbouring properties surrounding and facing the Heals site.

In considering the proposed scheme and the quality of amenity for the neighbouring properties once the scheme has been implemented, a review based upon the British Research Establishment (BRE) Guideline and in particular, their publication, *Site Layout and Planning for Daylight and Sunlight* dated 1991 has been undertaken. The BRE handbook provides the criteria and methodology for calculation in connection with Daylight and Sunlight. It is acknowledged as the primary authority for this subject and therefore is not only this practice, but also the London Borough of Camden who will be considering your application by reference to these Guidelines. I should point out that the 1991 Guidelines themselves have been updated relatively recently (October 2011) and whilst the Daylight criteria has not materially altered, the provisions identified by reference to sunlight have changed slightly to also include windows which face north. The revised Guidelines themselves have not been adopted by the Local Authority in their Unitary Development Plan (UDP) and thus the extent of this review considers the methodology and approaches made to the 1991 BRE Guidelines.

The BRE Guidelines provide two main methods for calculating Daylight. The first is referred to as the Vertical Sky Component (VSC) which considers the potential for daylight by calculating the average of the vertical sky at the centre of each of the windows serving the residential buildings which look towards the site. This is a more simplistic approach and it could be considered 'rule of thumb' to highlight whether there are any potential concerns to the amenity serving a particular property.

The second method is the No SkyLine (NSL) or Daylight Distribution (DD) method, which assesses the change in position of the No Skyline between the existing and the proposed situation within the room behind the aperture. It does take into account the number and size of the windows which serve a habitable space but does not give any qualitative or quantitative (by reference to light intensity) assessment of light within the room, but rather where sky can be seen from the working plane.

In relation to sunlight the criteria given calculates the Annual Probably Sunlight Hours (APSH) which considers the amount of sun available in both the summer and the winter for each given residential window which faces within 90 degrees of due south. Summer is considered to be the 6 months between March 21st and September 21st and winter the remaining period.







Having visited the Heals development, it would appear that there are a number of buildings which include a residential component such as: 77 and 79 Tottenham Court Road (the upper levels), the residential block on the corner of Torrington Place and Huntley Street (First floor and higher) as well as the residential buildings fronting Huntley Street, albeit it is the rear elevation of these buildings which face the Heals development site. This review therefore considers the potential light impacts to these buildings as a result of the successful implementation of the proposed John McAslan and Partners scheme. The drawings which have been considered by reference to Daylight and Sunlight include those numbers:

1262-G200-E-NS-200,	1262
1262-G200-E-W-200,	1262
1262-G200-P-00-200,	1262
1262-G200-P-01-200	1262
1262-G200-P-02-200	1262
1262-G200-P-03-200	1262
1262-G200-P-04-200	1282
1262-G200-P-05-200	

The extent of the scheme does not include substantial massing changes to the existing building configuration but rather very small alterations to parapet heights to a limited degree as well as the inclusion of a number of air handling units and general plant. The changes in light levels produced as a result of these modifications are unlikely to affect the daylight and sunlight condition to those neighbouring properties which surround and overlook the Heals Building complex. The BRE provide a permissible 20 percent reduction of both VSC and NSL as a result of a proposed development against those neighbouring properties which have been determined as residential. It is unlikely that these minor alterations will result in a change in light beyond these permissible values.

Having considered the extent of the proposed scheme and in relation to Daylight and Sunlight, it is unlikely that the occupants within any of the neighbouring buildings will even notice the small change to their received light.

Yours sincerely, For and on behalf of GIA

Partner

justin,bolton@gia.uk.con

52-G200-P-06-200 52-G200-P-RF-200 52-G200-S-AA-BB-200 52-G200-S-CC-DD-200 52-G200-S-EE-FF-200 52-G200-S-GG-HH-200 52-G200-SS-II-JJ-KK-LL-200

E CONSTRUCTION MANAGEMENT PLAN





Threadneedle Pensions Limited & **Bedford Estates**

Heal's Building Redevelopment

Construction Management Plan

2 Issue

06 December 2011 Date

miller

Miller Construction Wonersh House Old Portsmouth Road Guildford Surrey GU3 1LR

0870 336 4500

HEALS

CONSTRUCTION MANAGEMENT PLAN - DRAFT ISSUE HEALS BUILDING REDEVELOPMENT LONDON W1T 7LQ

Date 06 December 2011

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1

Introduction

The following Construction Management Plan (CMP) provides summary details for the project, its construction elements and traffic management proposals for deliveries to the site and specific access and egress arrangements to Alfred Mews and Torrington Place affecting the public highways and adjacent premises.

The key elements of the project focus upon logistics and deliver / removal of material and arisings from the construction site rather than on the intricacies of construction.

A further crucial component is Health and Safety. Not only the safety of the workforce in operating within the HSE and Miller requirements, but also within "Considerate Contractors" guidelines, and the safety of all third parties where construction interfaces with the general public, highways, adjacent residences and businesses.

The contents of this CMP therefore relate directly to the Camden Council standard CMP criteria required for planning applications, addressing key aspects for construction operations in the locality.

Peter Francis Pre-Construction Manager Miller Construction

07710 190692 m peter.francis@millerbcs.com e

HEALS

2

A brief description of the site, surrounding area and development proposals for which the CMP applies.

The Heals site is located directly on Tottenham Court Road and wrapped on the two flanks by Torrington Place and Alfred Mew, the remaining flank to the North East being a private residential mews. Whilst Tottenham Court Road is a main arterial road, Torrington Place is a secondary distribution road, with Alfred mews a no through road primarily for deliveries and foot traffic in association with adjacent tenancies.

Tottenham Court Road is classified a "Red Route" with northbound traffic, a dedicated bus lane and zonal cycle-path. Torrington Place contains a westbound traffic flow [single carriageway width] with a dedicated cycle-path to the north.

The development proposals are contained within the Heals building tenanted areas being as follows.....

- -Redevelopment of a central courtyard area to improve and enhance tenant's circulation and leisure facilities.
- New glazed roofs to provide covered atria
- Enhancement of the office entrance in Torrington Place
- Enhancements to the existing tenant's reception and circulation space -

Although the construction elements and techniques are relatively simple / traditional, the arrangements and methodology for delivery of material, prefabricated components and removal of demolition and construction arisings provides the greater challenge and risk to the local community, premises and residences, along with localised traffic flow.

Refer to Appendix 1 for the "Air Quality Assessment Report that discusses the impact from construction and permanent operational usage

Refer to Appendix 2 for a Location Plan identifying the key elements described.





3 Timescales

3.1 Programme / Phasing

The proposed site operations are currently planned to commence 02 July 2012 completing in circa 45 weeks. There will however be no work undertaken that will involve major deliveries and road closures during the period of the Olympic Games, all construction work prior to and during the "Games" being essentially internal modifications to provide temporary occupant movements within the affected areas.

Phasing proposals are currently being developed with the development design but indicatively may be as follows......

- 1 Enhanced entrance from Torrington Place
- 2 Reception alterations
- *3 Feature Atria roofs*
- 4 Atria surface / Elevational enhancements
- 5 Courtyard enhancements

.....this sequence of work will involve parallel operations being undertaken maximising efficient construction resources and delivery constraints.

3.2 Operational Hours

It is proposed that the core working hours for demolition and construction will be set out as follows:

0800 – 1800 hours Weekdays; 0800 – 1300 hours Saturday

Deliveries will generally be kept between the hours of 09.30 and 16.00 in order that vehicle movements in Tottenham Court Road, Torrington Place and Alfred Mews take place outside peak traffic periods. Vehicle movements in Alfred Mews will also take account of public access to the adjoining premises and goods movements into / from the Heals building.

All deliveries will be co-ordinated and managed on a 'just-in-time' delivery basis. All contractors and suppliers will be required to agree dates and times prior to delivery in addition confirmation of size of vehicle and unloading point.

All work outside these hours will be subject to prior agreement, and / or reasonable notice to the London Borough of Camden. Although night time working will not normally be undertaken, it is possible that some deliveries, i.e. positioning of new M&E plant and equipment will take place at weekends or after 19.00 weekdays.



It is envisaged isolated operations may require road closures in order to erect and dismantle major items of construction plant i.e. tower crane. Such operations would normally be undertaken at weekends between 09.00 and 15.00 and will be discussed with Camden Council before applying for the necessary permissions and orders.

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4 Transportation

4.1 Access Arrangements

Two access / delivery points will be required to serve the site, these being highlighted on Appendices 4 and 5 respectively.

Alfred Mews

Access into Alfred Mews will be via its narrow entrance from Tottenham Court Road, however it is envisaged that the majority of delivery vehicles will be sized to enable swept paths from Tottenham Court Road and manoeuvring within the delivery area to negated reversing to leave.

Deliveries into the building will be directly into the Heals goods loading area or via aerial distribution utilising the tower crane.

Torrington Place

The second delivery location will be via Torrington Place, however due to the narrow width of the carriageway, this facility will only be available when a road closure has been approved by Camden Borough Council, and is in force.

It was noted during a site visit that a road closure was in force for some localised work to the carriageway, and therefore for this CMP we have assumed similar short-term closures can be negotiated, especially when work to the New Entrance and Reception area is undertaken.

During any such road closures, the cycle path will remain in operation, however it is likely the public footpath will be diverted to the opposite [north] footpath to ensure public safety during key operations.

4.2 Proposed routes for vehicles between the site and the Transport for London Road Network (TLRN). Consideration should also be given to weight restrictions, low bridges and cumulative affects of construction on the highway.

Details of the TLRN have been downloaded and are contained within Appendix3.

From this information, and reviewing the major deliveries envisaged from outside the locality, the initial proposal will be to instruct all suppliers to access the site from Junction 25 of the M25 utilising the A10 and A503 towards Camden. From Camden gyratory system traffic will utilise two separate routes subject to intended delivery point.

HEAL'S

As an integral part of the detailed pre-construction logistics, a deliver mock-up will be undertaken from the M25 for both of the above routes to ensure these take account of weight restrictions, low bridges and additional constraints, all of which, if encountered, mean the proposed route[s] will be altered accordingly. Once prescribed routes and holding depots are defined these will form part of the contractor's pre-order meetings with suppliers and sub-contractors, along with highlighting the need to utilise these route at the Miller weekly site transport inductions.

The traffic management proposals will also include restrictions and site constraints during the build-up and the period on the 2012 London Olympics if applicable to this locality and road system.





5

Vehicle / Plant Schedule

5.1 Sizes of all vehicles and the frequency and times of day when they will need access to the site, for each phase of construction.

The following details and schedules provide an overview of all plant and vehicles that will be involved in the delivery of materials and construction activities on site.

The frequency of deliveries will be ascertained during the detailed logistics and traffic management statement produced during the pre-construction period, and as the vehicle movement statistics are generated to reflect the works programme and design components.

Table 1: Estimated Types of Plant

Plant	Substructure	Superstructure	Fit-out
Mini Excavators	\checkmark	\checkmark	
Mini Dumpers	\checkmark	\checkmark	
Telehandler	\checkmark	\checkmark	\checkmark
Tower Crane	\checkmark	\checkmark	
Air Compressors	\checkmark	\checkmark	\checkmark
Power Tools	\checkmark	\checkmark	\checkmark
Hand/Power Tools	\checkmark	\checkmark	\checkmark
Scaffold	\checkmark	\checkmark	
Delivery Trucks	\checkmark	\checkmark	
Skips and Skip Trucks		\checkmark	\checkmark

Demolition and Waste Management Skip options:

	6 cubic yard	10 cubic yard	14 cubic yard
Width	3.10 metres	3.75 metres	4.10 metres
Height	1.10 metres	1.55 metres	1.85 metres
Depth	1.80 metres	1.80 metres	1.80 metres

Typical usage:

General heavy, bulky dry non-hazardous construction, industrial / commercial wastes.

Vehicle dimensions

Although it is possible to manoeuvre the majority of vehicles into Alfred Mews, occasionally the width or length of a vehicle may prohibit turning round and therefore banksmen will control vehicle movements into Tottenham Court Road.

9

Typical dimensions.

 Telehandler
 2.35W x 4.96L x 2.77H

 Mini Excavator
 2.3W x 6.5L (max) x 2.70H

 Rigid Lorry 7.5t 9.0L x 2.5W
 2.55W x 9.39L x 3.71H

 Ready Mix Concrete
 2.55W x 9.39L x 3.71H

 Tipper Truck 10t
 4.5L x 2.5W





Approximate Timescale of Plant Usage

Plant	Number of Vehicle Movements/ Week	Number of Weeks construction {indicative]	Notes
Small Excavator	Continuous within site boundary	18 weeks	Required during atria and courtyard works
Breaker	Continuous within site boundary	8 weeks	Required during atria and courtyard works
Telehandler	Continuous within and adjacent to site	15 weeks	Required for atria roof construction, fenestration enhancements and courtyard
Tower Crane	Continuous within site boundary	20 weeks	Required for general material handling and placement of structural and glazed components
Air Compressors	Continuous within site boundary	18 weeks	Required during demolition and groundwork period
6 cu.mtr. Ready Mix Lorry	2-3	6 weeks	Vehicle movements during groundwork construction period within new entrance, atria and courtyard works
Articulated lorries	At weekends	2 weekends	Vehicle movements for tower crane components
10t Delivery Trucks	2-3	40 weeks	Vehicle movements for general material deliveries
Skips and Skip Trucks	1-2	40 weeks	General waste control during construction period

5.2 Swept Path Analysis

Swept path analysis will be undertaken to confirm all vehicles attending site can manoeuvre within carriageway constraints with vehicle turning in Alfred Mews to negate reversing into Tottenham Court Road.

The exception to this will be mobile craneage and articulated vehicles entering Alfred Mews when the tower crane is erected and dismantled. During these periods a team of banksmen under the control of a Site Supervisor will manage all vehicle movements in the vicinity. Please refer to Appendix 6.

5.3 Any highway works necessary to enable construction to take place.

No temporary or permanent highway works are envisaged to enable construction to take place, albeit Torrington Place may require a closure during the structural alterations to the office reception enhancements and Tottenham Court Road will required isolated closure on the weekends the tower crane is erected and dismantled.

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6 Construction Facilities

Site Compound, Parking and Loading arrangement of vehicles and delivery of materials and plant to the site.

The response to this aspect covers 4 principle elements of the project, these being:

- 6.1 Site Compound
- 6.2 Alfred Mews Logistics
- 6.3 Specific measures required in Torrington Place during key periods
- 6.4 The erection of a single tower crane in Alfred Mews

6.1 Site Compound – Appendix 4

Negotiations will take place to identify if vacant office space is available within the Heals tenanted areas for a small management suite providing facilities for the Miller management team, client site meetings and welfare facilities.

Externally within Alfred Mews a compound containing an operative welfare facilities coupled with a skip / material compound will be established in a location that allows current usage and vehicle movements to be unhindered.

It was noted during a recent site visit that a similar compound facility for the adjoining building is currently established with full welfare provisions and infrastructure connections. Subject to timescales this facility would be duplicated to provide a working compound for the duration of the works.

For details and location of the proposed compound in Alfred Mews please refer to Appendix 3

6.2 Alfred Mews logistics – Appendix 4

The essential requirement for logistics in Alfred mews is the retention of pedestrian and vehicular access to both Heals and adjacent business premises. These requirements can be fulfilled with the aid of dedicated pedestrian access being established and positioning of the proposed construction compound.

For details of logistics operations within Alfred mews please refer to Appendix 4

6.3 Specific measures required in Torrington Place – Appendix 5

The measures required in Torrington Place will be isolated for the period of alterations to the main entrance and reception area, primarily the former when both structural and fenestration work will be undertaken.



HEAL'S

A road closure, similar to that inforce for infrastructure improvements, may be negotiated with Camden Borough Council to ensure the construction and public domain are fully isolated. Internal alterations will require redefining temporary access

/ egress for the tenant's staff; however this can be established either via temporary localised hoardings or temporary relocation of entrance facilities and security.

During the period of structural alteration and office frontage enhancements, and any required road closure[s], temporary diversions of the footpath will be in place couple with signage to direct pedestrians to the opposite footpath. The cycle-path will remain open and protected with solid heras hoarding panels.

For details of proposed logistics within Torrington Place please refer to Appendix 5.

6.4 Erection / Dismantling of the Tower Crane within Alfred Mews – Appendix 6

These operations will be undertaken at a weekend following full negotiation with and approval from Camden Borough Council, this approval will involve the partial closure of Tottenham Court Road to provide a vehicle holding lane, with manoeuvring the vehicles into Alfred Mews requiring suspension of traffic flow for the short period[s].

The operations will be undertaken utilising a 150 tonne mobile crane located within Alfred Mews with full protective mats to ensure no damage to the highway or underlying infrastructure.

The crane components will be delivered / removed utilising articulated lorries, with these being reversed into Alfred Mews from Tottenham Court Road, full traffic management will be provided utilising experienced supervisors and banksmen.

If acceptable to Camden Borough Council, a full closure of Tottenham Court Road for normal vehicular traffic during the duration of operations would benefit these operations.

During either a partial or full road closure, it would be the intention to keep Goodge Street underground station operational along with the western footpath, the eastern footpath being closed for erection and dismantling operations, however access into Heals, retail and private premises being maintained.

In preliminary discussions with our crane specialist, it is envisaged these operations will require 2 weekend periods, with a comprehensive method statement being produced and issued for the negotiations with Camden Borough Council and inclusion into the Closure Licence.

Refer to Appendix 6 for location of tower crane and plant required for erection and dismantling, including oversailing patterns and indicative vehicle swept path.



7 Offsite Logistics

7.1 Pedestrian gantries overhanging the public highway

No scaffolding or pedestrian gantries will be required in the vicinity of the public highway or footpaths in Tottenham Court Road. In Alfred Mews redirection of the pedestrian route will be in place to direct pedestrians to the southern footpath thus preventing interface with deliveries and tower crane operations.

In Torrington Place it is not envisaged that overhead gantries will be required, as during structural and fenestration alterations to the new entrance pedestrians will be diverted to the opposite footpath.

These proposals will however be confirmed when full design information is available, and the full scope of works will be available.

7.2 Proposed oversailing of the public highway by craneage.

It is proposed to utilise a CTL 180 luffing jib tower crane that will predominately operate within the confines of the site and the agreed / approved oversailing of the public highway. Oversailing licenses will be negotiated with the local authority and all affected adjoining premises. The extent of the crane radius and oversailing is highlighted in Appendix 5.

7.3 Details of hoarding required or any other occupation of the public highway

Refer to Appendices 3 and 4 for details of proposed hoardings. All hoardings will be solid "Heras" hoarding panels, fully lit and inspected daily prior to commencement of works and before site closure.

7.4 Details of how pedestrian and cyclist safety will be maintained, including any proposed alternative routes (if necessary), and any Banksman arrangements.

Refer to Appendix 4 for proposed arrangements for diverting pedestrians during construction of the new entrance in Torrington Place.

7.5 Details of how traffic associated with the development will be managed in order to reduce congestion.

All deliveries will generally be kept between the hours of 9.30am and 4.00pm to enable public access to the heals Store, tenanted entrances and access to adjoining third party premises in maintained unhindered during peak periods.

HEAL'S

All deliveries will be scheduled on a weekly basis and individual movements will be co-ordinated and managed on a 'just-in-time' delivery basis. All contractors will be required to agree delivery dates and times prior to delivery. With this size of project and the relatively slow construction pace, we do not envisage the need for an off-site holding compound; however this will be located as integral part of the "Project Transport Plan"

As described, all vehicle movements in Tottenham Court Road, Torrington Place and Alfred Mews will be managed by a trained traffic marshal and team of banksmen, installing correct and adequate signage with pedestrian barriers where required for safety isolation measures.

7.6 Design Impact on Construction

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The design of the new construction will be reviewed by Miller Construction in association with the Client's Design Team to review and integrate construction components and techniques that if modified or changed will result in reducing, minimising or negating the specific requirements for site logistics, traffic management etc.

This process has proved invaluable in previous projects where, for example, sections of the proposed structure / envelope are pre-fabricated off-site then installed in a single operation thus reducing vehicle movements and their impact.

7.7 Treatment of dirt or dust that may be spread onto the public highway will be cleaned or prevented.

With exception of the demolition and groundworks elements, all operations will not generate spoil being deposited on the highway. Removal of arising from these operations material will be via small dumper directly into the compound and then into grab-lorries. Additionally when the tower crane is operational, materials removed from the site area will be off-loaded directly into lorries. The site Utility Gang will clear any spoil deposited within the locality and regularly sweep the footpaths in Alfred Mews and Torrington Place to keep the environment clean.

During spells of hot weather, when work results in dust from construction activities, water suppression will be utilised to dampen arisings, again as required the Utility Gang will clean surrounding roads and windows of adjoining premises.

It is envisaged that all internal operations will not generated dirt or dust.



8 Liaison

8.1 Consultation Process

As an integral part of the Planning process a full consultation programme will be developed in order to familiarise local business and residents for the finalised CMP proposals for construction of the development's scope of works, specific construction operations and intended temporary provisions to minimise and / or negated impact on business and the local environment.

This consultation process will also include discussions and meetings with Ward Councillors.

We will consult with Camden Borough Council and check our proposed approach to consultation before undertaking consultations. Details will include who was consulted, how the consultation was conducted and the comments received in response to the consultation

These consultations will be via the following facilities.....

- Public Meetings
- Business Forums
- Informative leaflets
- Specific "E-Helpline"

The CMP will be amended as appropriate throughout its development with the finalised CMP including a list of all consultations undertaken and requisite comments received.

8.2 Construction Working and Continued Liaison

The potential impact this project will have to local residents and business premises is categorised as low given the size and the scope of the project. The primary risk however is the correct vehicle management, delivery constraints and impact on pedestrian routes when in-force.

To provide continuity with consultations during the pre-construction process, the following facilities will be provided by Miller throughout the construction period to maintain the close interface with the public domain.....

- A senior site manager as "Liaison Officer" having direct phone and e-mail contacts with the brief to maintain a constant dialogue with the local community.
- Informative leaflets to advise prominent site activities that will impact on the local environment.
- Public Information Sign-boards when off-site temporary works are in progress.



HEAL'S

Where specific impact is recognised, individual liaison meetings will be held to establish any necessary protocol required to mitigate impact to business and the local environment throughout the individual element of construction.

8.3 "Considerate Contractors Scheme"

Miller Construction are approved and act within the guidelines of the "Considerate Contractor's Scheme". During the pre-construction stages when detailed logistics and methodology are finalised, a meeting will be arranged with appropriate personnel at Camden Council to review the "Camden's Considerate Contractor's Manual" and modify and introduce specific measures required to work within these guidelines and their subsequent implementation during the site works.

8.4 Amelioration and monitoring measures of construction traffic

For all major deliveries the driver will be required to compile a brief report of delays and constraints to his journey, in monitoring journeys any continual situations can be reviewed and if required designated route changed either short-term or for the remaining duration of the works.

Initial discussions will be undertaken with all affected premises in the locality of the delivery zones and construction work, to advise them of the period, method and frequency of deliveries. Contact details for the site management team will be included on informative leaflets to provide instance access to the Liaison Officer via phone and e-mail.

Regular liaison will be undertaken with such premises on a regular basis [weekly during main construction activities] to ensure a dialogue is maintained and improvement actions introduced where appropriate.

8.5 Details of other construction sites in the local area and how your CMP takes into consideration the cumulative effects of construction local to your site.

With this project in the early stages of evolvement and design, current construction in the locality is unlikely to required consideration at this point in time. A review will be undertaken approximately 3 months prior to commencement of this project to ascertain the additional affect this specific project will have within the locality, and in reverse, any major developments that may affect proposals set out in this CMP.

As stated, this project be undertaken having full consideration of the 2012 Olympic and Para-Olympics Games constraints imposed.

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9 CMP

9.1 CMP Development

The above statements provide detail review of traffic and transport proposals, this CMP will be reviewed throughout the pre-construction phase being revised and enhanced with further detail as appropriate.

9.2 Camden Council Approval and Compliance with this CMP.

"The agreed contents of the CMP will / must be complied with unless otherwise agreed with Camden Borough Council. The person responsible for implementing this CMP shall work with the Council to review / amend should individual circumstances occur or change in relation to the construction of the development.

Any future revised plan to be issued to, and approved by the Council and complied with thereafter."

HEAL'S

Appendices

- 1 Air Quality Assessment
- 2 Development Plan
- 3 Transportation
- 4 Alfred Mews Logistics
- 5 Torrington Place Logistics
- 6 Tower Crane Logistics





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CMP Appendices

Heal's Building Redevelopment

Construction Management Plan Appendices

- 1 Air Quality Assessment
- 2 Development Plan
- 3 Transportation
- 4 Alfred Mews Logistics
- 5 Torrington Place Logistics
- 6 Tower Crane Logistics



WORK ZONES

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Refer to Appendices 4 and 5 for detailed logistics within Alfred Mews and Torrington Place



Project Title Doc Ref Date Rev Date

PUBLIC HIGHWAYS

gery Date: 6/27/2010

Torrington Place Tottenham Court Road

Alfred Mews



Courtyard Enhancements

Covered Atria Spaces

Office Entrance and Reception

HEALS REDEVELOPMENT APPENDIX 2 LOCATION PLAN CMP *06 December 2011*





Note

A holding area will also be located in case of highway disruption to the road network.



Project Title

Doc Ref Date

Rev Date



PROPOSED HIGHWAY ROUTES

M25 to Camden In-bound A503 / A1 / A104 / A5201 Out-bound A400 / A4200 / A503

A transportation mock-up will be undertaken from the M25 for the indicated routes. This will pinpoint constraints that may affect certain large deliveries.

The traffic management proposals will also include restrictions and site constraints during the build-up and the period on the 2012 London Olympics if applicable to this locality and road system.

> HEALS REDEVELOPMENT APPENDIX 3 **VEHICLE ROUTES** CMP 06 December 2011



Appendix 4

ALFRED MEWS LOGISTICS

Access / egress route for operatives and small / lightweight deliveries

Site Compound [Option 1]

- → Operative's welfare / canteen facilities
- Skip Area
- → Short-term material storage

Pedestrian route defined by low level barrier Vehicular access to adjoining premises maintained Vehicular access to Heals un-loading docks maintained

Tower Crane location with maximum unloading radius for full details of proposed tower crane refer to Appendix 6

Traffic movement into Alfred Mews and exiting Alfred Mews

Notes

A full Swept Path Analysis to be undertaken on confirmation of size of vehicle delivery construction components.

A comprehensive method statement and risk assessment to be compiled following initial discussions with CDC Highways Dept. prior to application of appropriate licences,



Project Title Doc Ref Date

Rev Date



HEALS REDEVELOPMENT APPENDIX 4 ALFRED MEWS CMP 06 December 2011



Rev Date





HEALS REDEVELOPMENT APPENDIX 5 TORRINGTON PLACE CMP *06 December 2011*



Appendix 6 Crane Logistics

TOWER CRANE SPECIFICATION

Comedil CTL 140-10 TS 40 m 3200kg @ 40 m OOS Radius 18.7 m Cruciform 104 kVA Mobile Crane 150 tonne

Out of Service radius retained within Heals demise to negate oversailing of adjacent property

Operating radius to oversail the public highway [Alfred Mews] during material hoisting

Indicative Swept Path. Full analysis to confirm mobile crane and articulated vehicles are able to reverse into Alfred Mews

Road closure during erection and dismantling operations.

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HEALS REDEVELOPMENT APPENDIX 6 TOWER CRANE LOGISTICS CMP *06 December 2011*





F ACOUSTIC REPORT

<u>MPhilip Acoustics Ltd.</u>

Consultants in Noise and Vibration

		CONTE	INTS			
REPORT TITLE:	ACOUSTIC REPORT IN SUPPORT OF PLANNING APPLICATION		SUMMARY			
	FOR NEW ROOF TOP MECHANICAL SERVICES EQUIPMENT AT HEAL'S BUILDING, TOTTENHAM COURT ROAD, LONDON W1P 9LD	1.	INTRODUCTION			
		2.	LONDON BOROUGH OF CAMDEN NOISE CONDITIONS			
		3.	BACKGROUND NOISE SURVEY			
		3.1	Instrumentation			
		3.2	Measurement Procedure			
		3.3	Measurement Results			
		4.	NOISE FROM MECHANICAL SERVICES EQUIPMENT			
REPORT REF:	11155-004	5.	VIBRATION FROM MECHANICAL SERVICES EQUIPMENT			
ISSUED TO:	Tuffin Ferraby Taylor LLP 2 Throgmorton Avenue London EC2N 2DG					
	MA	Append	ix A: London Borough Of Camden Noise Conditions For Mechanica			
ISSUED BY:	David R Philip BEng (Hons) MIOA	Append	ix B: Noise Survey Instrumentation			
DATE:	September 2011	Append	ix C: Plan Drawing Showing Heal's Building, Noise Survey Location Residential Properties			
		- Append	ix D: Graphs Of Noise Survey Results			
107 Bancroft, Hitchir E-mail: <u>admin@philip</u> Member of The Asso	n, Hertfordshire, SG5 1NB Tel: 01462 431877 Fax: 01462 431764 <u>pacoustics.co.uk</u> ciation of Noise Consultants Registered in England No.: 4560265					

MPhilip Acoustics Ltd.

brough Of Camden Noise Conditions For Mechanical Services Equipment

ving Showing Heal's Building, Noise Survey Locations And Direction Of Nearest

Page 1 of 6

SUMMARY

- Philip Acoustics Ltd has been commissioned to carry out an early stage assessment of noise from proposed • new and replacement mechanical services equipment at roof level of Heal's Building, Tottenham Court Road, London W1P 9LD. The new equipment will consist of Air Handling Units (AHUs) and VRV/VRF heating/cooling units to serve tenant and landlord spaces within the building. The assessment considers London Borough of Camden's planning consent noise conditions for mechanical services equipment.
- London Borough of Camden's requirement is nominally that noise from mechanical services equipment shall be designed to at least 10dB below the lowest background noise level at 1m outside nearest windows of the nearest affected residential properties.
- It is anticipated the new equipment will potentially operate at any time over 24 hours. Acoustic tests have therefore been done over several days including weekdays and weekend to establish lowest existing background noise levels at locations representative of outside windows of nearest residential properties.
- Background noise levels in the vicinity are dominated by traffic and general activity on surrounding roads. The area along Tottenham Court Road has traffic during the entire 24 hour period. Based on results of the background noise measurements and London Borough of Camden's requirement, overall noise limits for the new equipment have been established for outside residential properties to different elevations of the building.
- The new equipment is not yet selected and therefore it is not possible at this stage to undertake acoustic assessment of noise from specific items of equipment to check compliance with London Borough of Camden's requirement. However, to comply with London Borough of Camden's requirement, then during course of the works a specification for mechanical services noise limits would be issued to provide an exact noise limit and review of any noise reduction treatments necessary for each item of equipment. It is likely that individual equipment limits would be in the region 60 to 65dBA at 1m from the equipment item depending upon equipment numbers and location. Based upon experience from other similar project sites with residences at an equivalent distance and same level of existing background noise, it is expected that low noise equipment will be selected and ducted AHU systems for ventilation may require modest performance in-line duct silencers. Some equipment may also require acoustic screening.
- The locations for the new mechanical equipment are potentially structurally linked to residential properties and also offices within Heal's Building. It will therefore be necessary to mount the equipment using vibration isolators. Specification of vibration isolators will depend upon the equipment type and location. However as a guide, the isolators are likely to include proprietary rubber/neoprene and/or spring mountings.

INTRODUCTION 1.

New and replacement mechanical services equipment is proposed to be installed externally in various locations at roof level of Heal's Building, Tottenham Court Road, London W1P 9LD as part of refurbishment works for the building. The new equipment will consist of Air Handling Units (AHUs) and VRV/VRF heating/cooling units to serve tenant and landlord spaces within the building.

As part of a planning application for the refurbishment works and associated new mechanical services equipment, it is anticipated that the Planning Department of London Borough of Camden will require information in the form of an acoustic report regarding noise and vibration from the equipment.

Philip Acoustics Ltd has therefore been commissioned to provide an early stage acoustic assessment for the equipment. This report presents results of the assessment and includes:-

- Confirmation of London Borough of Camden's planning consent acoustic requirements;
- Measurement of existing background noise levels;
- Calculation of permissible equipment noise levels;
- Consideration of vibration from the equipment;
- Early stage discussion of any noise/vibration control treatments necessary to comply with London Borough of Camden's planning consent acoustic requirements.

LONDON BOROUGH OF CAMDEN NOISE CONDITIONS 2.

A copy of London Borough of Camden's normal planning consent noise conditions for mechanical services equipment is shown in Appendix A. In summary, London Borough of Camden's noise conditions are:

- That overall dBA noise from equipment shall be designed to at least 5dB below the existing L90 dBA i background noise level;
- ii. That, where it is anticipated any equipment will have a noise that has a distinguishable discrete note (whine, hiss, screech or hum) and/or there are distinct impulses (bangs, clicks, clatters and thumps) then the overall dBA noise from equipment shall be designed to at least 10dB below the existing L90 dBA background noise level. Note that although it is the author's experience and opinion that the type of modern mechanical services equipment subject to this assessment generates a typically broadband type of noise (i.e. without any of the characteristics described above) and therefore this condition item is not considered applicable in this instance, nevertheless to provide a robust noise assessment the more onerous condition of 10dB below the existing L90 dBA background noise level is used for this assessment:
- That for each octave band (63Hz to 8KHz) noise from equipment shall be designed to not add more iii. than 1dB to the existing L90 dB octave band background noise level.

All of the above (i to iii) are applicable over a period of 60 minutes and measured at 1m external to noise sensitive facades (noise sensitive facades are nearest residential windows).

MPhilip Acoustics Ltd.

Page 3 of 6

BACKGROUND NOISE SURVEY 3.

In order to assess noise from the proposed new equipment it is necessary to establish representative background noise levels at nearest residential properties. Details of the background noise survey done by Philip Acoustics Ltd are provided in Sections 3.1 to 3.3.

3.1 Instrumentation

Details of the noise survey instrumentation used are provided in Appendix B. The sound level meters were calibrated before and after the survey measurements using the UKAS certified calibrator.

3.2 Measurement Procedure

Noise surveys were carried out at three locations in order to obtain samples of background noise levels representative of outside nearest residential properties to the site in different directions:

- Location A: Torrington Place elevation, representative of residential properties within Woburn Mansions (part of Heal's Building) and Cordon Mansions (opposite side of Torrington Place);
- Location B: Huntley Street elevation, representative of the rear of residential properties along Huntley Street including Bloomsbury Terrace;
- Location C: Tottenham Court Road elevation, representative of possible residential properties above • retail shops along Tottenham Court Road including above Café Nero and Starbucks.

A plan drawing of Heal's Building showing the noise survey locations and direction to the nearest residential properties identified above is provided in Appendix C.

The measurement locations were selected at roof level of Heal's Building well away from any existing mechanical equipment (so as not to influence the noise survey results) and facing the direction of nearest residential properties. The measurement locations were achieved using a telescopic extension pole and microphone extension cable arrangement.

It is anticipated the new equipment will potentially operate at anytime over 24 hours and therefore noise levels at each location were recorded over at least a 24 hour period with the survey locations A and B including weekdays and a weekend.

The background noise survey was done over the period 31 August 2011 to 06 September 2011. The weather included dry and clam periods during the day and also night time.

In accordance with London Borough of Camden's noise conditions item 1c, the Rion NL-31 logging sound level meters were set up to record background noise levels over 60 minute periods (split into 12 x 5 minute periods to enable more accurate analysis of results as required). Measurements of background noise were recorded as overall LA90 dB values.

In addition to the overall LA90 dB values, several manual samples of linear L90 dB octave band background noise were also recorded using the Bruel & Kjaer 2260 sound level meter to establish typical background noise octave band spectra.

3.3 Measurement Results

Existing background noise levels in the vicinity are dominated by traffic and general activity on surrounding roads. The area along Tottenham Court Road has traffic during the entire 24 hour period.

The lowest background noise level in terms of overall LA90 dB and associated octave band values measured over 60 minutes during the survey at each location is shown in Table 1. Graphs showing the overall LA90 dB measurements over the entire monitoring period at each location are provided in Appendix D.

Description	Overall	II Octave Band Centre Frequency (Hz) (linear L90 dB					dB)		
Description	LA90 dB	63	125	250	500	1k	2k	4k	8k
Location A: Torrington Place elevation	.ocation A: Torrington Place elevation								
Lowest background noise level measured around 3 to 4am L _{90 (60 minutes)}	52	64	59	53	50	47	42	34	23
London Borough of Camden noise limit	42	60	55	49	46	43	38	30	19
Location B: Huntley Street elevation									
Lowest background noise level measured around 3 to 4am L _{90 (60 minutes)}	48	60	55	49	46	43	38	30	19
London Borough of Camden noise limit	38	56	51	45	42	39	34	26	15
Location C: Tottenham Court Road elev	vation								
Lowest background noise level measured around 3 to 4am L _{90 (60 minutes)}	56	68	63	57	54	51	46	38	27
London Borough of Camden noise limit	46	64	59	53	50	47	42	34	23

Table 1: Lowest measured background noise levels and London Borough of Camden's noise conditions (overall noise limit 10dBA below background level and octave band limit to not add more than 1dB to existing octave band noise levels)

The overall dBA noise limits to comply with London Borough of Camden's planning consent noise conditions are 10dB below the lowest existing background noise level during the times of operation for the equipment. At this level, noise from the equipment will be significantly below the existing lowest night time background noise at locations around the building and would not be expected to be audible nor disturbing to any nearby residents.

4. NOISE FROM MECHANICAL SERVICES EQUIPMENT

The new and replacement mechanical services equipment is not yet selected and therefore it is not possible at this stage to undertake acoustic assessment of noise from specific items of equipment to check compliance with London Borough of Camden's planning consent acoustic requirements.

However, to comply with London Borough of Camden's planning consent acoustic requirements, then during course of the works the project acoustic consultant retained on behalf of the client would issue a specification for mechanical services noise limits to the mechanical contractor(s) to provide an exact noise limit and review of any noise reduction treatments necessary for each item of equipment.

The individual equipment limits would typically be set at 1m from the equipment (to allow the contractors to more easily select equipment and/or appropriate noise control) and will be dependent upon the quantity of items, their final specification and their location. Noise limits for individual equipment items would be lower than the overall noise limit to account for accumulation of noise.

As a guide, it is likely that individual equipment limits would be in the region 60 to 65dBA at 1m from the equipment item depending upon equipment numbers and location.

Based upon experience from other similar project sites with residences at an equivalent distance and same level of existing background noise, it is expected that low noise equipment will be selected and ducted AHU systems for ventilation may require modest performance in-line duct silencers. Some equipment may also require acoustic screening.

The above comments are based on all equipment potentially operating at any time over 24 hours. If some equipment items only operate during daytime hours, then it is likely that the noise limits for those items of equipment could be relaxed.

Once specific equipment items are selected it will also be necessary to carry out an assessment of noise from the equipment to inside offices considering guidance on levels of noise intrusion advised for offices in BS8233:1999 and/or considering any other acoustic criteria of the client for offices within Heals' Building itself.

5. VIBRATION FROM MECHANICAL SERVICES EQUIPMENT

The locations for the new mechanical equipment are potentially structurally linked to residential properties and also offices within Heal's Building. It will therefore be necessary to mount the equipment using vibration isolators.

The mechanical services specification issued to the contractor (as discussed in item 4) should therefore also include recommendations for vibration isolators. Specification of vibration isolators will depend upon the equipment type and location. However as a guide, the isolators are likely to include proprietary rubber/neoprene and/or spring mountings.

APPENDIX A

London Borough Of Camden Noise Conditions For Mechanical Services Equipment

FINAL DRAFT

CAMDEN COUNCIL NOISE STANDARDS IN RESPECT OF PLANNING AND LICENSING APPLICATIONS

The main noise standards for Planning and Licensing are set out below. When compiling your Acoustic Report, please refer to the standards appropriate to your application. Where premises will have machinery/equipment in terms of airconditioning, refrigeration and ventilation and entertainment, both sets of standards will apply.

NOISE STANDARDS FOR PLANNING APPLICATIONS

It is the Council's duty to ensure that no process shall be carried on or equipment/machinery installed which is not such as could be carried on or installed in any residential area without detriment to the amenity of that area because of noise, vibration, smell, fumes, smoke, soot, ash, dust, or grit. Thus, for noise and vibration, an Acoustic Consultant's report is required detailing works to be carried out in order that the Council's requirements are met, taking into consideration the following:

The following standard applies to all air-cooled, heating, ventilation, extraction and conditioning systems and ancillary plant, ducting and equipment, which would have an impact on the external environment. In order to protect existing levels and prevent "creep" (a rise in background noise levels), the Council seeks to ensure that noise level output from all such systems does not increase existing background noise levels.

Thus, for new developments involving noisy plant/equipment or other uses, design measures should be taken to ensure that:

<u>1a.</u>

Noise levels at a point 1 metre external to sensitive facades are at least 5dB(A) less than the existing background measurement (LA90), expressed in dB(A) when ALL plant/equipment are in operation. Where it is anticipated that any plant/equipment will have a noise that has a distinguishable, discrete continuous note (whine, hiss, screech, hum) and/or if there are distinct impulses (bangs, clicks, clatters, thumps) special attention should be given to reducing the noise levels from that piece of plant/equipment at any sensitive façade to at least 10dB(A) below the LA90, expressed in dB(A).

And.

1b.

For each of the octave band of centre frequencies 63Hz-8KHz inclusive, noise levels from ALL plant/equipment (measured in LAeq) when in operation shall at all times add not more than 1 decibel to the existing background noise level LA90, expressed in dB(A), in the same octave band as measured 1 metre external to sensitive facades.

<u>1c.</u>

All related measurements shall be carried out over a period of 60 minutes (that is, hourly recorded measurements shall be presented over a 24 hour period).

M Philip Acoustics Ltd.

Heal's Building, Tottenham Court Road, London W1P 9LD Project: Reference: 11155-004 Appendix B Date: September 2011

NOISE SURVEY INSTRUMENTATION

Consultants in Noise and Vibration

Noise Survey Position A:

- Rion sound level meter type NL-31 Class 1 serial number 00431030 plus Rion microphone type UC-53A serial number 00315091 complete with weatherproof and lockable outdoor environmental kit, microphone extension lead and extension boom arrangement;
- Bruel & Kjaer calibrator type 4231 serial number 2642929 (UKAS certified).

Noise Survey Position B & Position C:

- Rion sound level meter type NL-31 Class 1 serial number 00773045 plus Rion microphone type UC-53A serial • number 313002 complete with weatherproof and lockable outdoor environmental kit, microphone extension lead and extension boom arrangement;
- Bruel & Kjaer calibrator type 4231 serial number 2642929 (UKAS certified).

Noise Survey Samples To Other Parts Of Site Including Octave Band Levels:

- Bruel & Kjaer sound level meter type 2260 serial number 2627604 plus Bruel & Kjaer microphone type 4189 serial number 2625249 plus microphone extension lead and tripod or extension boom arrangement;
- Bruel & Kjaer calibrator type 4231 serial number 2642929 (UKAS certified).

PHILIP ACOUSTICS LTD

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Member of The Association of Noise Consultants Registered in England No.: 4560265

APPENDIX B

Noise Survey Instrumentation

APPENDIX C

Plan Drawing Showing Heal's Building, Noise Survey Locations And Direction Of Nearest Residential Properties

3.0 | **EXISTING CONDITION** Ground Floor



APPENDIX D

Graphs Of Noise Survey Results



BACKGROUND NOISE SURVEY RESULTS AT LOCATION A: TORRINGTOM PLACE ELEVATION OF HEAL'S BUILDING, TOTTENHAM COURT ROAD, LONDON W1P 9LD

Date / Time





BACKGROUND NOISE SURVEY RESULTS AT LOCATION B: HUNTLEY STREET ELEVATION OF HEAL'S BUILDING, TOTTENHAM COURT ROAD, LONDON W1P 9LD

Date / Time

BACKGROUND NOISE SURVEY RESULTS AT LOCATION C: TOTTENHAM COURT ROAD ELEVATION OF HEAL'S BUILDING, TOTTENHAM COURT ROAD, LONDON W1P 9LD



G AIR QUALITY REPORT









Air Quality Assessment: Camden, Heals Building

Experts in air quality management & assessment



Document Control

Client	Threadneedle Pensions Ltd	Principal Contact	Robin Keates (Tuffin Ferraby Taylor LLP)
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Job Number	J1373
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Report Prepared By: Mella O'Driscoll and Penny Wilson		
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Document Status and Review Schedule

Report No.	Date	Status	Reviewed by
1373/1/F1	5 December 2011	Final Report	Prof. Duncan Laxen

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2	Policy Context and Assessment Criteria
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A2	Construction Dust Assessment Criteria
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Introduction 1

- 1.1 This report describes the potential air quality impacts associated with the proposed commercial development of Heals Building, Tottenham Court Road, Camden. The assessment has been carried out by Air Quality Consultants Ltd on behalf of Threadneedle Pensions Ltd
- The proposed scheme would involve the refurbishment of an existing Grade II listed commercial 1.2 building, including the covering over of an existing out door atrium at the centre. It lies within an Air Quality Management Area (AQMA) declared by the London Borough (LB) of Camden for exceedences of the annual mean and one-hour nitrogen dioxide objective and the annual mean PM₁₀ objectives. Traffic related impacts of the scheme are considered. The main air pollutants of concern related to traffic emissions are nitrogen dioxide and fine particulate matter (PM10 and PM_{2.5}). There is also the potential for the construction activities to impact upon existing properties. The main pollutants of concern related to construction activities are dust and PM₁₀.
- 1.3 This report describes existing local air quality conditions, and considers the potential impacts of the scheme on local air quality during both the construction and operational phases.
- This report has been prepared taking into account all relevant local and national guidance and 1.4 regulations, and follows a methodology agreed with LB of Camden.

2 **Policy Context and Assessment Criteria**

Air Quality Strategy

2.1 The Air Quality Strategy published by the Department for Environment, Food, and Rural Affairs (Defra) provides the policy framework for air quality management and assessment in the UK. It provides air quality standards and objectives for key air pollutants, which are designed to protect human health and the environment (Defra, 2007). It also sets out how the different sectors: industry, transport and local government, can contribute to achieving the air quality objectives. Local authorities are seen to play a particularly important role. The strategy describes the Local Air Quality Management (LAQM) regime that has been established, whereby every authority has to carry out regular reviews and assessments of air quality in its area to identify whether the objectives have been, or will be, achieved at relevant locations, by the applicable date. If this is not the case, the authority must declare an Air Quality Management Area (AQMA), and prepare an action plan which identifies appropriate measures that will be introduced in pursuit of the objectives.

Planning Policy

- 2.2 National policy on air quality and planning is set out in Planning Policy Statement 23: Planning and Pollution Control (PPS23) (2004). This contains advice on when air quality should be a material consideration in development control decisions. Existing, and likely future, air quality should be taken into account, as well as the presence of any AQMAs. PPS23 notes that the findings of local authority air quality reviews and assessments will be important, as they will identify local air pollution problems, which may in turn influence the siting of certain types of development. The need for compliance with any statutory environmental guality standards or objectives, including the air quality objectives prescribed by the Air Quality Regulations 2000, Statutory Instrument 928 (2000) and Amending Regulations 2002 (The Air Quality (England) (Amendment) Regulations, 2002, Statutory Instrument 3043, 2002), will also be a factor in determining whether air quality is a material consideration. PPS23 also explains that loss of amenity can occur without there being a statutory nuisance.
- 2.3 Further emphasis is given to the importance of air quality objectives and AQMAs in the Appendices to PPS23. The impact of a development on air quality is likely to be particularly important:
 - where the development is proposed inside, or adjacent to an AQMA;
 - where the development could in itself result in the designation of an AQMA; and
 - where to grant planning permission would conflict with, or render unworkable, elements of a LA's air quality action plan.



Air Quality

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24 PPS23 states clearly that not all planning applications for developments inside or adjacent to AQMAs should be refused, even if the development would result in a deterioration of local air quality, as such an approach could sterilise development.

The London Plan

- 2.5 The London Plan 2011 (GLA, 2011) sets out the spatial development strategy for London. It brings together all relevant strategies, including those relating to air guality.
- Policy 7.14, 'Improving Air Quality', addresses the spatial implications of the Mayor's Air Quality 26 Strategy and how development and land use can help achieve its objectives. It recognises that Boroughs should have policies in place to reduce pollutant concentrations, having regard to the Mayor's Air Quality Strategy. Further details of the London Plan in relation to planning decisions are provided in Appendix A1.

The Mayor's Air Quality Strategy

2.7 The revised Mayor's Air Quality Strategy (MAQS) was published in December 2010 (GLA, 2010). The overarching aim of the Strategy is to reduce pollution concentrations in London to achieve compliance with the EU limit values as soon as possible. The Strategy commits to the continuation of measures identified in the 2002 MAQS, and sets out a series of additional measures. These additional measures and the role of the Low Emission Zone are described in Appendix A1.

Local Policies

2.8 The LB of Camden Unitary Development Plan (UDP) was adopted in June 2006 (LB of Camden, 2006). It included Policy SD9A Resources and energy - Air Quality. However, changes to the planning legislation required the Council to replace the UDP with a Local Development Framework (LDF) (LB of Camden, 2011a). The Local Development Framework (LDF), which replaced the Unitary Development Plan (UDP) in November 2010, is a collection of planning documents that (in conjunction with national planning policy and the Mayor's London Plan) set out the strategy for managing growth and development in the borough, including where new homes, jobs and infrastructure will be located. Policy DP32 Air quality and Camden's Clear Zone, in the Camden Development Policies Local Development Framework document sets out how Camden will expect developments to reduce their impact on air quality. It states:

> 'The Council will require air quality assessments where development could potentially cause significant harm to air quality. Mitigation measures will be expected in developments that are located in areas of poor air quality.'

29 It also states:

.11373

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'Our growth areas of Euston, Kings Cross, Holborn, Tottenham Court Road and West Hampstead are located along busy roads and currently experience poor levels of air quality and disturbance from noise. Developments in these areas will need to be well protected against air and noise pollution to ensure they are suitable for occupation.'

- 2.10 LB of Camden has also prepared a Supplementary Planning Document Camden Planning Guidance (CPG) 6 Amenity (LB of Camden, 2011b), which provides further guidance on air quality. It includes information on when an air quality assessment will be required, what an air quality assessment should cover and what measures can reduce air quality emissions and protect public exposure. It states that the council require developments to be 'air quality neutral' and assessments would be required for:
 - 'development that could have a significant negative impact in air quality. This impact can arise during both the construction and operational stages of a development as a result of increased NOx and PM₁₀ emissions.'
- 2.11 It lists criteria where an air quality assessment would be required, and includes (amongst others) developments:
 - With potential to significantly change road traffic on any road exceeding 10,000 vehicles per day;
 - That introduce, or increase car parking facilities by 100 spaces or more;
 - With commercial floor space of more than 1,000sq m; and
 - Where people will be exposed to poor air quality for significant periods of the day, in particular developments on busy roads.'

Air Quality Action Plan

2.12 LB of Camden has declared an AQMA for nitrogen dioxide and PM₁₀ that covers the whole Borough. The Council has since developed an Air Quality Action Plan 2009 - 2012 (LB of Camden, 2011c). This identifies actions and mitigating measures necessary to improve air quality in the Borough. It sets out objectives to reduce transport emissions and any emissions associated with new development. Key objectives associated with new development include identifying the impact of new development on air quality and controlling emissions from construction sites.

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Assessment Criteria

Health Criteria

- 2.13 The Government has established a set of air quality standards and objectives to protect human health. The 'standards' are set as concentrations below which effects are unlikely even in sensitive population groups, or below which risks to public health would be exceedingly small. They are based purely upon the scientific and medical evidence of the effects of an individual pollutant. The 'objectives' set out the extent to which the Government expects the standards to be achieved by a certain date. They take account of economic efficiency, practicability, technical feasibility and timescale. The objectives for use by local authorities are prescribed within the Air Quality Regulations, 2000, Statutory Instrument 928 (2000) and the Air Quality (England) (Amendment) Regulations 2002, Statutory Instrument 3043 (2002).
- 2.14 The objectives for nitrogen dioxide and PM₁₀ were to have been achieved by 2005 and 2004 respectively, and continue to apply in all future years thereafter. The PM_{25} objective is to be achieved by 2020. Measurements across the UK have shown that the 1-hour nitrogen dioxide objective is unlikely to be exceeded where the annual mean concentration is below 60 µg/m³ (Defra, 2009).
- 2.15 The objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective. Defra explains where these objectives will apply in its Local Air Quality Management Technical Guidance (Defra, 2009). The annual mean objectives for nitrogen dioxide and PM₁₀ are considered to apply at the facades of residential properties, schools, hospitals etc.; they do not apply at hotels or commercial properties. The 24-hour objective for PM_{10} is considered to apply at the same locations as the annual mean objective, as well as in gardens of residential properties and at hotels, however it does not apply at commercial properties. The 1-hour mean objective for nitrogen dioxide applies wherever members of the public might regularly spend 1-hour or more, including outdoor eating locations and pavements of busy shopping streets.
- 2.16 The European Union has also set limit values for nitrogen dioxide, PM₁₀ and PM₂₅. Achievement of these values is a national obligation rather than a local one (Directive 2008/50/EC of the European Parliament and of the Council, 2008). The limit values for nitrogen dioxide are the same levels as the UK objectives, but applied from 2010 (The Air Quality Standards Regulations 2010 (No. 1001), 2010). The limit values for PM_{10} and $PM_{2.5}$ are also the same level as the UK statutory objectives, but applied from 2005 for PM₁₀ and will apply from 2015 for PM_{2.5}. As the latter is more stringent than the UK objective (as it applies from 2015 rather than 2020) it is used as the relevant assessment criterion in this assessment.
- 2.17 The relevant air quality criteria for this assessment are provided in Table 1.

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Table 1: Air Quality Criteria for Nitrogen Dioxide, PM ₁₀ and PM _{2.5}				
Pollutant	Time Period	Objective		
Nitrogen	1-hour mean	200 μ g/m ³ not to be exceeded more than 18 times a year		
Dioxide	Annual mean	40 μg/m ³		
Fine Particles	24-hour mean	50 $\mu\text{g/m}^3$ not to be exceeded more than 35 times a year		
(PM ₁₀)	Annual mean	40 μg/m ³		
Fine Particles (PM _{2.5}) ^a	Annual mean	25 μg/m³		

^a The PM_{2.5} objective, which is to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it. The EU limit value is the same, but is to be met by 2015.

Construction Dust Criteria

2.18 There are no formal assessment criteria for dust. In the absence of formal criteria, a set of distance based criteria has been developed. These criteria, which apply to the construction site and to trackout of dust and dirt onto the public highway, are set out in Appendix A2. They are based on the professional experience of the consultants, drawn from many years of involvement with assessments of different types of project, together with discussions with practitioners in the field, and consideration of a range of published reports.



3 **Assessment Approach**

Consultation

The assessment follows a methodology agreed with LB of Camden via e-mail correspondence 3.1 between Katie Watson (Air Quality officer at LB Camden) and Mella O'Driscoll (Air Quality Consultants) on 24th and 25th November 2011.

Existing Conditions

- 3.2 Existing sources of emission within the study area have been defined using a number of approaches. Industrial and waste management sources that may affect the area have been identified using Defra's Pollutant Release and Transfer Register (Defra, 2011a). Local sources have also been identified through examination of the Council's air quality Review and Assessment reports.
- 3.3 Information on existing air quality has been obtained by collating the results of monitoring carried out by the local authority. The background concentrations across the study area have been defined using the national pollution maps published by Defra (2011b). These cover the whole country on a 1x1 km grid.

Road Traffic Impacts

- 3.4 Traffic related air quality impacts at sensitive locations in the site vicinity have been considered. Relevant sensitive locations are places where members of the public might be expected to be regularly present over the averaging period of the objectives. For the annual mean and daily mean objectives, sensitive receptors will generally be residential properties, schools, nursing homes, etc..
- 3.5 Annual Average Daily Traffic (AADT) flows, and the proportions of HDVs, for the roads adjacent to the proposed development site have been taken from the London Atmospheric Emissions Inventory (LAEI) (GLA, 2009).

Construction Impacts

- Locations sensitive to dust emitted during construction will be places where members of the public 3.6 are regularly present. Residential properties and commercial operations close to the site will be most sensitive to construction dust. Any areas of sensitive vegetation or ecology that are very close to dust sources may also be susceptible to some negative effects.
- It is very difficult to quantify emissions of dust from construction activities. It is thus common 3.7 practice to provide a qualitative assessment of potential impacts, making reference to the assessment criteria set out Appendix A2.

Site Description and Baseline Conditions 4

- The proposed scheme site is located at the junction between Tottenham Court Road and 4.1 Torrington Place in central London. It currently consists of a five storey commercial premises, which is to be redeveloped, and refurbished. Minor construction activities would include some external re-cladding, internal works, and the covering of an existing out-door atrium. The site is in a predominantly commercial setting; however there are some residential properties along Torrington Road, and along Huntley Street to the east of the site.
- 4.2 A search of the UK Pollutant Release and Transfer Register website (Defra, 2011a) did not identify any industrial or waste management sources within 1 km of the proposed scheme.
- 4.3 The LB of Camden has investigated air quality within its area as part of its responsibilities under the LAQM regime. The Council has declared a borough wide AQMA declared for exceedences of the annual mean and one-hour nitrogen dioxide objective and the PM₁₀ objectives. (LB of Camden, 2011d). A site location plan showing nearby monitoring sites is shown in Figure 1.



Figure 1: Site Location – Site Boundary Shown in Red; Automatic Monitoring Sites Shown as Pink Circles; Diffusion Tube Monitoring Sites Shown as Blue Triangles Contains Ordnance Survey data © Crown copyright and database right [2011]

AirQuality





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4.4 The LB of Camden operates three long-term automatic monitoring stations within its area. London Bloomsbury, an urban background monitoring site, is located approximately 130 m east of the development site. Shaftsbury Avenue, a roadside monitoring site, is located approximately 170 m south of the development site. The Council also operates a number of nitrogen dioxide diffusion tubes, prepared and analysed by Gradko Environmental (using the 50% TEA in acetone method), the closest of which are CA 9, CA 22 and CA11. Data for 2007 to 2010 are presented in Table 2.

Site No.	Site Type	Location	2007	2008	2009	2010
Automatic Monitors - Annual Mean (µg/m³) ^a						
LB	Urban Background	London Bloomsbury	61	55	54	55
CD3	Roadside	Shaftsbury Avenue	75	78	87	89
Objective 40				0		
Automatic Monitors - No. of Hours > 200 μg/m ³						
LB	Urban Background	London Bloomsbury	6	0	2	1
CD3	Roadside	Shaftsbury Avenue	24	9	11	21
Objective 18						
Diffusion Tubes - Annual Mean (µg/m³)						

Table 2: Summary of Nitrogen Dioxide (NO₂) Monitoring (2007-2010) ^{a b}

Exceedences of the annual mean objectives are shown in bold; exceedences of 60 μ g/m³ are show in red

95

101

-

-

73.

84.

56.8

77

86

108

61

81

40

74

92

50

41

Data have been taken from the 2010 Action Plan Progress Report (LB of Camden, 2011e).

63 Gower Street

Tottenham Court Road

Goodge Street

Bloomsbury Street

Objective

4.5 Measured concentrations exceed the annual mean nitrogen dioxide objectives at all monitoring sites. The number of measured exceedences of the 1-hour objective has been below the objective at the London Bloomsbury background monitoring site for the past four years. The 1-hour objective was exceeded at the Shaftsbury Avenue monitoring site in 2010, however, concentrations were below the objective in the two preceding years. Annual mean concentrations exceed 60 µg/m³ at a number of locations, and therefore the 1-hour objective may also be exceeded at these sites.

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- 4.6 There are no clear trends in monitoring results for the past four years. This contrasts with the expected decline due to the progressive introduction of new vehicles operating to more stringent standards.
- The London Bloomsbury and Shaftsbury Avenue automatic monitoring stations also measure PM₁₀ 4.7 concentrations. Data are presented in Table 3. All concentrations are below the objectives. Measured concentrations of PM₁₀ have been lower in recent years, however, the Council states that this reduction in emissions can be attributed to a change in monitoring methodology from TEOM to FDMS, rather than any decrease in pollutant concentrations (LB of Camden, 2011d).

Table 3: Summary of PM₁₀ Automatic Monitoring (2007-2010)^{a,b}

Site No.	Site Type	Location	2007	2008	2009	2010	
PM ₁₀ Annual Mean (μg/m³)							
LB	Urban Background	London Bloomsbury	26	23	19	18	
CD3	Roadside	Shaftsbury Avenue	33	29	32	29	
Objective			40				
PM ₁₀ No. Days >50 μg/m ³							
LB	Urban Background	London Bloomsbury	22	10	9	2	
CD3	Roadside	Shaftsbury Avenue	32	20	19	5	
Objective				3	5		

- а Data have been taken from the 2010 Action Plan Progress Report (LB of Camden, 2011e).
- b Reference equivalent.
- There are no objectives for PM2.5 that apply during these years, however the European Union limit value of 25 μ g/m³ is to be met by 2015.
- 4.8 In addition to these locally measured concentrations, estimated background concentrations in the study area have been obtained from the national maps for 2011 (Table 4). The site lies between two grid squares, and therefore a range is presented. The background nitrogen dioxide concentrations exceed the annual mean objective. The background PM₁₀ and PM₂₅ concentrations are all well below the objectives.

CA9

CA11

CA22

CA21

Roadside

Roadside

Roadside

Roadside

