

Demolition Management Plan

pro forma

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Revisions & additional material

Please list all iterations here:

Date	Version	Produced by
2/7/21	Draft	Tony Crawford

Additional sheets

Please note – the review process will be quicker if these are submitted as Word documents or searchable PDFs.

Date	Version	Produced by
	REV 00	Andres Fisher/Tony Crawford

Introduction

The purpose of the **Construction (Demolition Management Plan (CMP))** is to help developers to minimise construction impacts, and relates to all construction activity both on and off site that impacts on the wider environment.

It is intended to be a live document whereby different stages will be completed and submitted for application as the development progresses.

The completed and signed CMP must address the way in which any impacts associated with the proposed works, and any cumulative impacts of other nearby construction sites, will be mitigated and managed. The level of detail required in a CMP will depend on the scale and nature of development. Further policy guidance is set out in Camden Planning Guidance **(CPG) 6: Amenity** and **(CPG) 8: Planning Obligations**.

This CMP follows the best practice guidelines as described in the [Construction Logistics and Community Safety \(CLOCS\)](#) Standard and the [Guide for Contractors Working in Camden](#).

Camden charges a [fee](#) for the review and ongoing monitoring of CMPs. This is calculated on an individual basis according to the predicted officer time required to manage this process for a given site.

The approved contents of this CMP must be complied with unless otherwise agreed with the Council in writing. The project manager shall work with the Council to review this CMP if problems arise during construction. Any future revised plan must also be approved by the Council and complied with thereafter.

It should be noted that any agreed CMP does not prejudice or override the need to obtain any separate consents or approvals such as road closures or hoarding licences.

If your scheme involves any demolition, you need to make an application to the Council's Building Control Service. Please complete the "[Demolition Notice](#)."

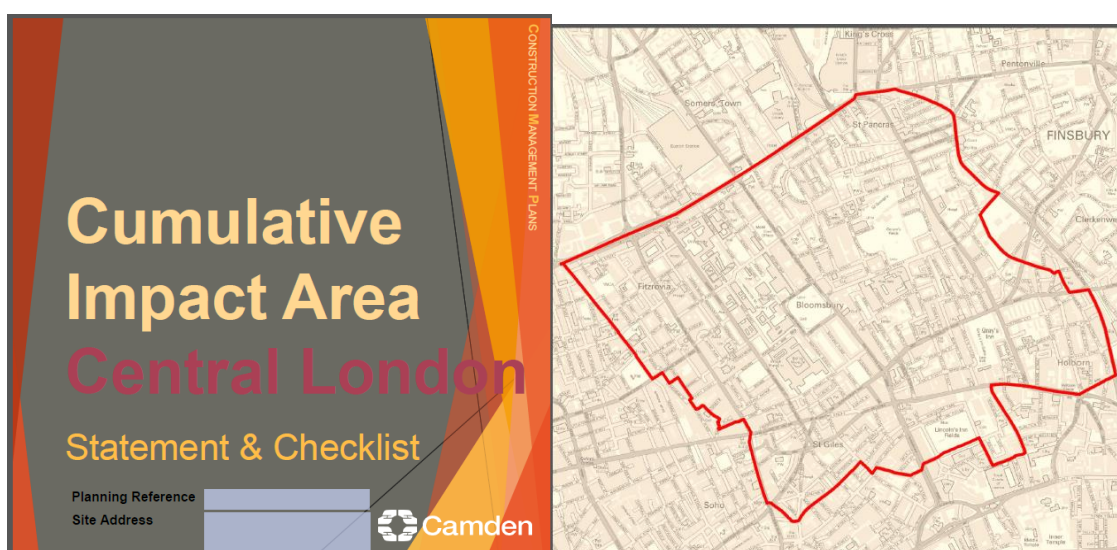
Please complete the questions below with additional sheets, drawings and plans as required. The boxes will expand to accommodate the information provided, so please provide as much information as is necessary. It is preferable if this document, and all additional documents, are completed electronically and submitted as Word files to allow comments to be easily documented. These should be clearly referenced/linked to from the CMP. Please only provide the information requested that is relevant to a particular section.

(Note the term 'vehicles' used in this document refers to all vehicles associated with the implementation of the development, e.g. demolition, site clearance, delivery of plant & materials, construction etc.)

Revisions to this document may take place periodically.

IMPORTANT NOTICE: If your site falls within a Cumulative Impact Area (as of 03/02/2020 to 03/08/2020 there is only one established CIA for the Central London area) you are required to complete the CIA Checklist and circulate as an appendix to the CMP and included as part of any public consultation – a CMP submission will not be accepted until evidence of this has been supplied.

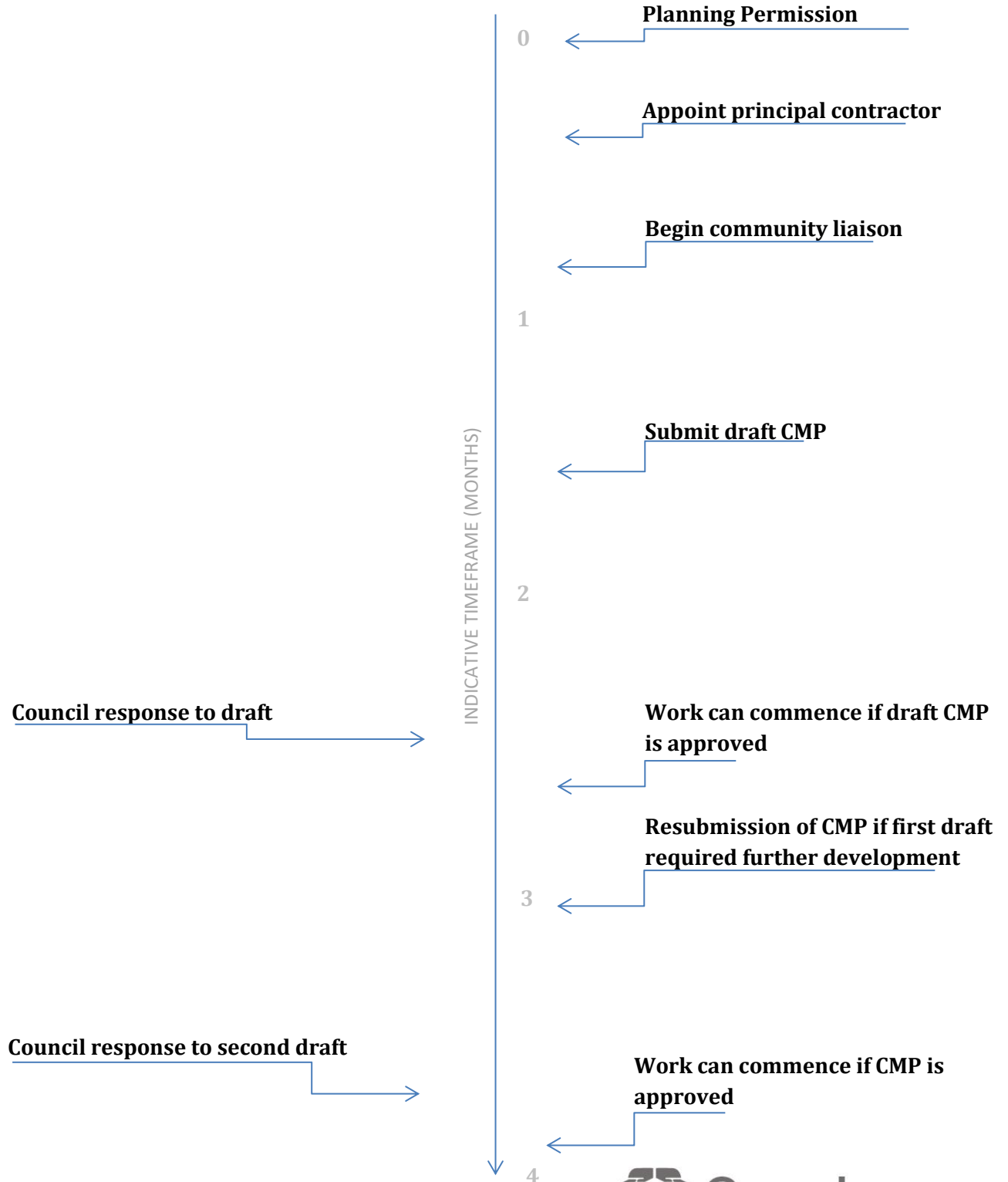
The CIA Checklist can be found at <https://www.camden.gov.uk/about-construction-management-plans>



Timeframe

COUNCIL ACTIONS

DEVELOPER ACTIONS



Contact

1. Please provide the full postal address of the site and the planning reference relating to the construction works.

Address: The Fitzrovia, 247 Tottenham Court Road, London, W1T 7QZ

Planning reference number to which the CMP applies:

2. Please provide contact details for the person responsible for submitting the CMP.

Name: Tony Crawford

Address: 15 Buckingham Street WC2N 6DU

Email: Tony.crawford@deconstructuk.com

Phone: 07769670987

3. Please provide full contact details of the site project manager responsible for day-to-day management of the works and dealing with any complaints from local residents and businesses.

Name: Tony Crawford

Address: 15 Buckingham Street WC2N 6DU

Email: tony.crawford@deconstructuk.com

Phone: 07769670987

4. Please provide full contact details of the person responsible for community liaison and dealing with any complaints from local residents and businesses if different from question 3. In the case of Community Investment Programme (CIP), please provide contact details of the Camden officer responsible.

Name: Tony Crawford

Address: 15 Buckingham Street WC2N 6DU

Email: tony.crawford@deconstructuk.com

Phone: 07769 670 987

5. Please provide full contact details including the address where the main contractor accepts receipt of legal documents for the person responsible for the implementation of the CMP.

Name: Deconstruct UK Ltd

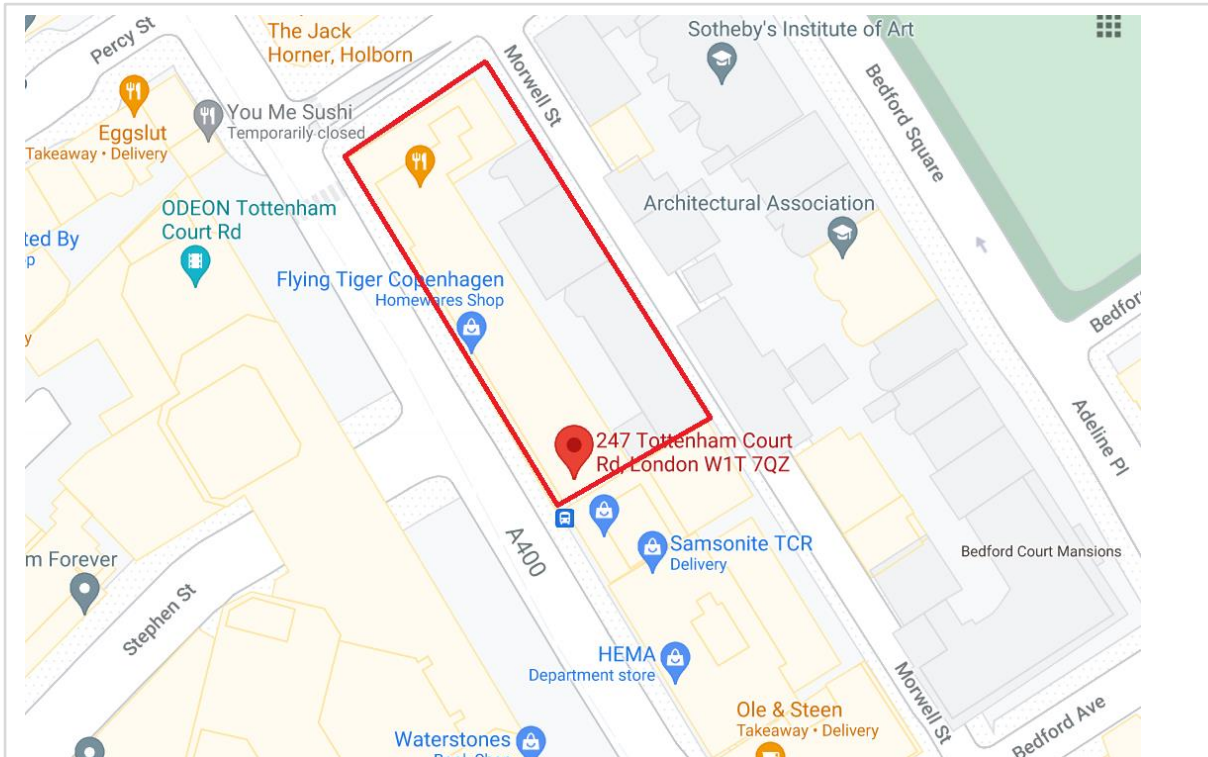
Address: Burdett House, 15-16 Buckingham Street, London, WC2N 6DU

Email: enquiries@deconstructuk.com

Phone: 0207 734 6655

Site

6. Please provide a site location plan and a brief description of the site, surrounding area and development proposals for which the CMP applies.



The current site, which incorporates five buildings – 247 Tottenham Court Road, 3 Bayley Street and 1-4 Morwell Street.

The site is bounded on 3 sides by roads, on the west side, it's Tottenham Court Rd where the current entrance for 247 is located. Bayley Street on the North side is used as a cycle lane and pedestrian only access into Tottenham Court Rd and a less busy Morwell Street located on the east side of the site.

7. Please provide a very brief description of the construction works including the size and nature of the development and details of the main issues and challenges (e.g. narrow streets, close proximity to residential dwellings etc).

The scope of works includes the following:

- Site set up and temporary services installation within the building.
- Survey mechanical, electrical and comm's services.
- Site welfare established within the existing building.
- Utilities surveys followed by utilities termination/ isolation within site confines completed by previous contractor.
- Implement Fire safety and evacuation site procedures/ plan.
- Installation of hoarding.
- Soft strip of various areas.
- Enabling works to establish loading area on Morwell Street including early demolition of No.2.
- Erect Scaffolding to all elevations.
- Demolition of structures down to ground level.
- Berm basement retaining walls.
- Demolition of ground floor slab and installation of piling mat.
- Construct secant pile wall to site boundary.
- Construct capping beam and install temporary works.
- Excavate down to new formation level including temporary sheet piles for B2 support.

The main issues and challenges the project will face are:

- Neighbouring properties being affected by site vehicle movements, noise, vibration and air quality from demolition operations
- Heavily pedestrianised Tottenham Court Rd

8. Please provide the proposed start and end dates for each phase of construction as well as an overall programme timescale. (A Gantt chart with key tasks, durations and milestones would be ideal)

See appendix 8a (Tender programme)

9. Please confirm the standard working hours for the site, noting that the standard working hours for construction sites in Camden are as follows:

- 8.00am to 6pm on Monday to Friday
- 8.00am to 1.00pm on Saturdays
- No working on Sundays or Public Holidays

- 8.00am to 6pm on Monday to Friday
- 8.00am to 1.00pm on Saturdays
- No working on Sundays or Public Holidays
- Noisy works will be subject to 2 hours on and 2 hours off: this is a voluntary concession/agreement from Deconstruct
 - Monday to Friday, 8.00am - 10.00am, 12.00pm – 14.00pm, 16.00pm – 18.00pm.
 - Saturday, 10.00am – 12.00pm.

Community Liaison

A neighbourhood consultation process must have been undertaken prior to submission of the CMP first draft.

This consultation must relate to construction impacts, and should take place following the granting of planning permission in the lead up to the submission of the CMP. A consultation process specifically relating to construction impacts must take place regardless of any prior consultations relating to planning matters. This consultation must include all of those individuals that stand to be affected by the proposed construction works. These individuals should be provided with a copy of the draft CMP, or a link to an online document. They should be given adequate time with which to respond to the draft CMP, and any subsequent amended drafts. Contact details which include a phone number and email address of the site manager should also be provided.

Significant time savings can be made by running an effective neighbourhood consultation process. This must be undertaken in the spirit of cooperation rather than one that is dictatorial and unsympathetic to the wellbeing of local residents and businesses.

These are most effective when initiated as early as possible and conducted in a manner that involves the local community. Involving locals in the discussion and decision making process helps with their understanding of what is being proposed in terms of the development process. **The consultation and discussion process should have already started, with the results incorporated into the CMP first draft submitted to the Council for discussion and sign off.** This communication should then be ongoing during the works, with neighbours and any community liaison groups being regularly updated with programmed works and any changes that may occur due to unforeseen circumstances through newsletters, emails and meetings.

Please note that for larger sites, details of a construction working group may be required as a separate S106 obligation. If this is necessary, it will be set out in the S106 Agreement as a separate requirement on the developer.

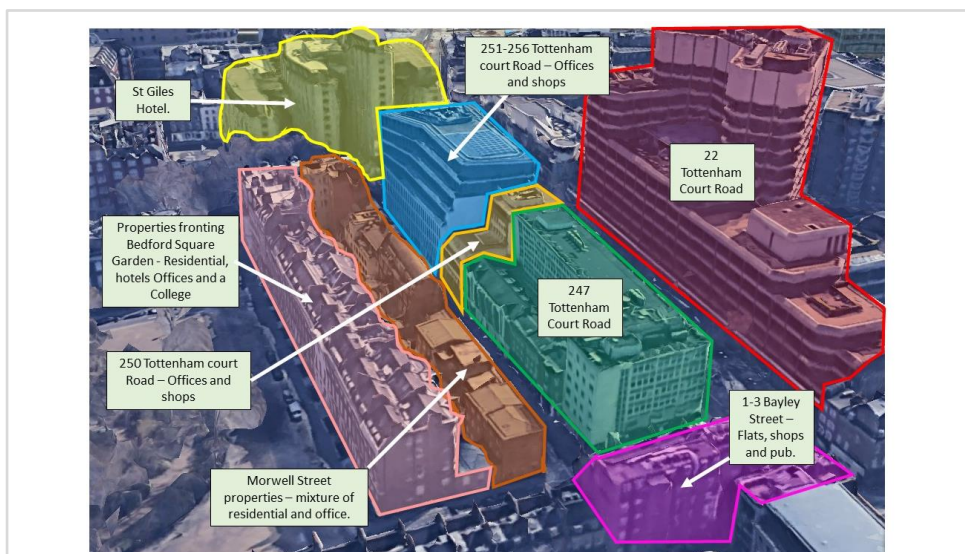
Cumulative impact

Sites located within high concentrations of construction activity that will attract large numbers of vehicle movements and/or generate significant sustained noise levels should consider establishing contact with other sites in the vicinity in order to manage these impacts.

The Council can advise on this if necessary.

10. Sensitive/affected receptors

Please identify the nearest potential receptors (dwellings, business, etc.) likely to be affected by the activities on site (i.e. noise, vibration, dust, fumes, lighting etc.).



11. Consultation

The Council expects meaningful consultation. For large sites, this may mean two or more meetings with local residents **prior to submission of the first draft CMP**.

Evidence of who was consulted, how the consultation was conducted and a summary of the comments received in response to the consultation should be included. Details of meetings including minutes, lists of attendees etc. should be appended.

In response to the comments received, the CMP should then be amended where appropriate and, where not appropriate, a reason given. The revised CMP should also include a list of all the comments received. Developers are advised to check proposed approaches to consultation with the Council before carrying them out. If your site is on the boundary between boroughs then we would recommend contacting the relevant neighbouring planning authority.

Please provide details of consultation of draft CMP with local residents, businesses, local groups (e.g. residents/tenants and business associations) and Ward Councillors.

See Appendix 11

12. Construction Working Group

For particularly sensitive/contentious sites, or sites located in areas where there are high levels of construction activity, it may be necessary to set up a construction working group.

If so, please provide details of the group that will be set up, the contact details of the person responsible for community liaison and how this will be advertised to the local community, and how the community will be updated on the upcoming works i.e. in the form of a newsletter/letter drop, or weekly drop in sessions for residents.

At this time, three Construction Working Group Meetings have been held.

Our Senior Project Manager, Tony Crawford who is providing our dedicated stakeholder liaison role will attend all future Construction Working Groups

As part of our stakeholder management, we are proposing a newsletter drop and email to identified stakeholders that may be affected by the works. This initial newsletter will introduce the team and in particular our initial stakeholder engagement forum that we are proposing in order that our neighbors can meet our team and voice any concerns. We will address details of upcoming events notified on the regular monthly newsletters. Regular updates will also be posted on the external notice boards of the project.

Our Senior Project Manager will attend all future meetings. Deconstruct UK will further develop the Construction Management Plan to consider and take in to account previous comments raised from local residents and businesses.

13. Schemes

Please provide details of your Considerate Constructors Scheme (CCS) registration. Please note that Camden requires [enhanced CCS registration](#) that includes CLOCS monitoring. Please provide a CCS registration number that is specific to the above site.

Contractors will also be required to follow the [Guide for Contractors Working in Camden](#). Please confirm that you have read and understood this, and that you agree to abide by it.

Deconstruct CCS registration number – C2255

14. Neighbouring sites

Please provide a plan of existing or anticipated construction sites in the local area and please state how your CMP takes into consideration and mitigates the cumulative impacts of construction in the vicinity of the site. The council can advise on this if necessary.

See Appendix 14 for a map showing the nearest construction sites to 247 Tottenham Court Road. There are no major construction sites within close proximity to the site that may have an impact in the vicinity of the site,

Transport

This section must be completed in conjunction with your principal contractor. If one is not yet assigned, please leave the relevant sections blank until such time when one has been appointed.

Camden is a CLOCS Champion, and is committed to maximising road safety for Vulnerable Road Users (VRUs) as well as minimising negative environmental impacts created by motorised road traffic. As such, all vehicles and their drivers servicing construction sites within the borough are bound by the conditions laid out in the CLOCS Standard.

This section requires details of the way in which you intend to manage traffic servicing your site, including your road safety obligations with regard to VRU safety. It is your responsibility to ensure that your principal contractor is fully compliant with the terms laid out in the CLOCS Standard. It is your principal contractor's responsibility to ensure that all contractors and sub-contractors attending site are compliant with the terms laid out in the CLOCS Standard.

Checks of the proposed measures will be carried out by CCS monitors as part of your enhanced CCS site registration, and possibly council officers, to ensure compliance. Please refer to the CLOCS Standard when completing this section.

Please contact CLOCS@camden.gov.uk for further advice or guidance on any aspect of this section.

CLOCS Contractual Considerations

15. Name of Principal contractor:

Deconstruct UK Ltd

16. Please submit the proposed method for checking operational, vehicle and driver compliance with the CLOCS Standard throughout the duration of the contract.

As part of our robust pre-qualification procedure, all approved suppliers are required to confirm their accreditation to CLOCS standards prior to being accepted on to our approved supply list.

CLOCS approved operators only will be selected for the Fitzrovia project. Beyond our approved supply chain, at the point of order placement, up to date CLOCS accreditation certificates will be requested for storage on site.

All vehicles and supplier's vehicles are minimum FORS Silver accredited for vehicles over 3.5t. All drivers of vehicles over 3.5t have undertaken a Safe Urban Driving training and vehicles will be fitted with blind spot minimization equipment and audible left turn alerts.

17. Please confirm that you as the client/developer and your principal contractor have read and understood the CLOCS Standard and included it in your contracts.

I confirm that I have included the requirement to abide by the CLOCS Standard in my contracts to my contractors and suppliers:

We (Deconstruct UK) confirm that we have included the requirement to abide by the CLOCS Standard in my contracts to my contractors and supplier.

Please contact CLOCS@camden.gov.uk for further advice or guidance on any aspect of this section.

Site Traffic

Sections below shown in blue directly reference the CLOCS Standard requirements. The CLOCS Standard should be read in conjunction with this section.

18. Traffic routing: *"Clients shall ensure that a suitable, risk assessed vehicle route to the site is specified and that the route is communicated to all contractors and drivers. Clients shall make contractors and any other service suppliers aware that they are to use these routes at all times unless unavoidable diversions occur."* (P19, 3.4.5)

Routes should be carefully considered and risk assessed, taking into account the need to avoid where possible any major cycle routes and trip generators such as schools, offices, stations, public buildings, museums etc.

Consideration should also be given to weight restrictions, low bridges and cumulative impacts of construction (including neighbouring construction sites) on the public highway network. The route(s) to and from the site should be suitable for the size of vehicles that are to be used.

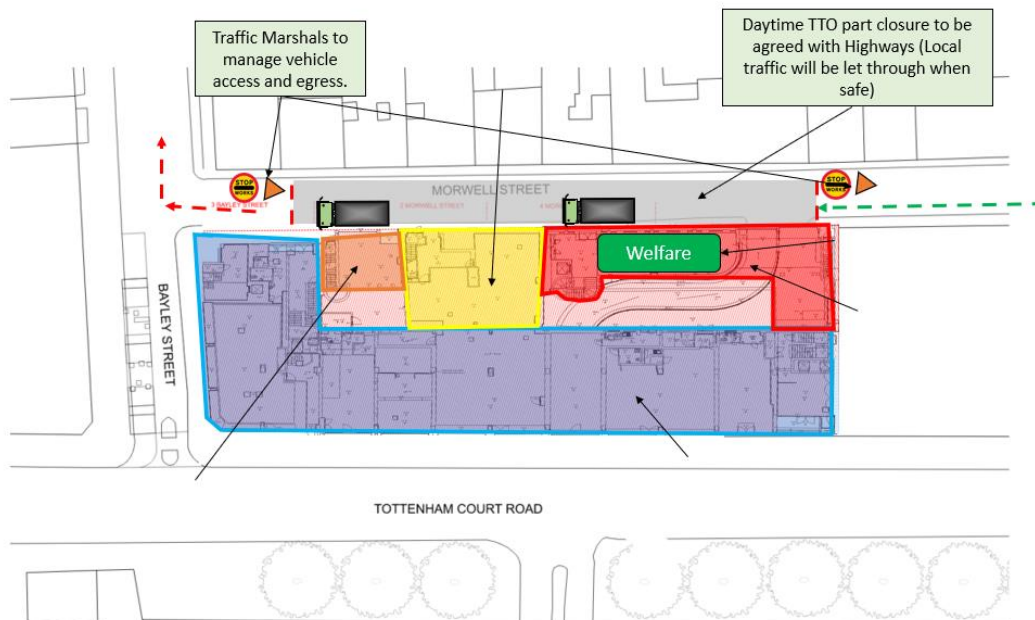
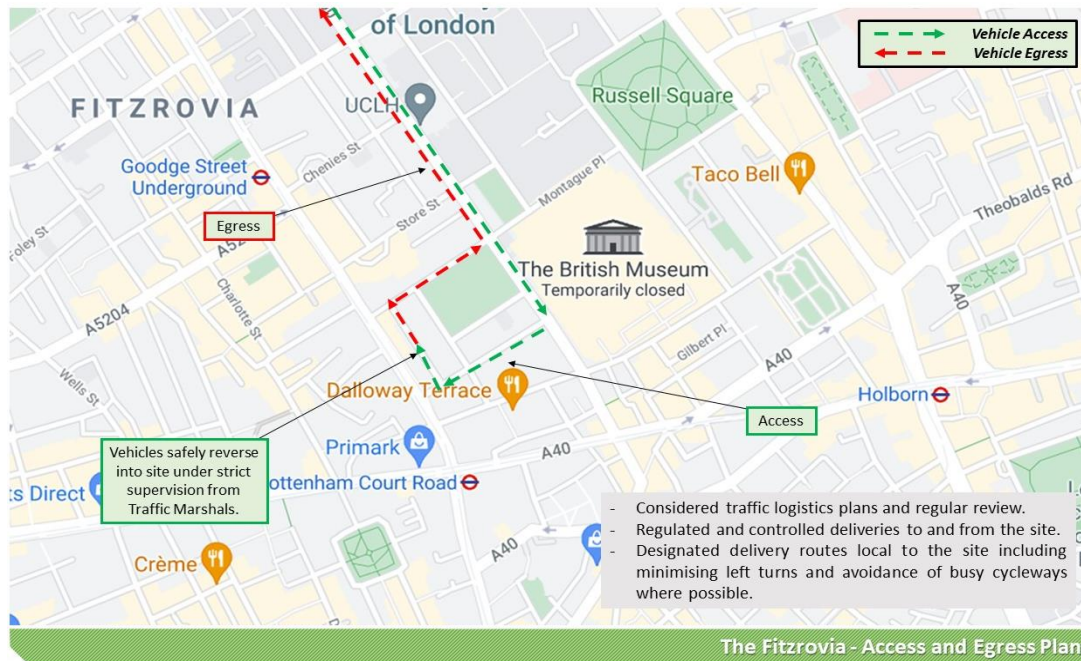
Please show vehicle approach and departure routes between the site and the Transport for London Road Network (TLRN). Please note that routes may differ for articulated and rigid HGVs.

Routes should be shown clearly on a map, with approach and departure routes clearly marked. If this is attached, use the following space to reference its location in the appendices.

See images below and also Appendix 18a.

Access : Site traffic will operate in a one way system, heading southbound down Bloomsbury St, turning right into Bedford Avenue and down into Morwell St on the right

Egress: Exit site heading northbounds on Morwell St, turn right at junction onto Bayley Street and left at the Gower Street junction.



b. Please confirm how contractors and delivery companies will be made aware of the route (to and from the site) and of any on-site restrictions, prior to undertaking journeys.

As part of the project procurement process, a delivery plan with advisable routes and contact numbers for our traffic management team will be created for issue to suppliers. At the point of order and purchase order creation, the delivery plan will be attached and sent to suppliers for sharing with all drivers planned to visit our site. We have used this method on previous projects within central London and found it to be extremely effective. The traffic management team will be provided with a swathe of leaflets containing the delivery route, these will be reissued to drivers leaving the project as well.

Deconstruct will endeavor to organise deliveries/collections to and from site taking into consideration schools within close proximity so such vehicle movements are carried out in hours that don't affect school runs and school traffic.

The nearest school to site is Jeannie Ecole Manuel, who we've had a meeting with on the 13th of July to discuss our traffic routes and logistics and their peak time school traffic hours being 8:00 – 8:15 and 15:00 – 15:30 and their drop off point located in Bedford Square which is out of our construction transport route.

19. Control of site traffic, particularly at peak hours: *"Clients shall consider other options to plan and control vehicles and reduce peak hour deliveries" (P20, 3.4.6)*

Construction vehicle movements should be restricted to the hours of 9.30am to 4.30pm on weekdays and between 8.00am and 1.00pm on Saturdays. If there is a school in the vicinity of the site or on the proposed access and/or egress routes, then deliveries must be restricted to the hours of 9.30am and 3pm on weekdays during term time.

Vehicles may be permitted to arrive at site at 8.00am if they can be accommodated on site. Where this is the case they must then wait with their engines switched off.

A delivery plan should ensure that deliveries arrive at the correct part of site at the correct time. Instructions explaining such a plan should be sent to all suppliers and contractors.

Please provide details of the types of vehicles required to service the site and the approximate number of deliveries per day for each vehicle type during the various phases of the project. For Example:

32t Tipper: 10 deliveries/day during first 4 weeks

Skip loader: 2 deliveries/week during first 10 weeks

Artic: plant and tower crane delivery at start of project, 1 delivery/day during main construction phase project

18t flatbed: 2 deliveries/week for duration of project

3.5t van: 2 deliveries/day for duration of project

8 Wheel tipper lorries:

- 3-5 collections per day during strip out process
- 15-25 collections per day during demolition - 12 weeks from 18/10/2021
- 15-25 collections a week during groundworks - 12 weeks from 10/02/2022

Concrete lorries:

6 per day during piling works – 18 weeks from 10/02/2021

Low Loaders/Rigids:

Will be used to deliver and collect plant to and from site (approximately 6 deliveries and 6 collections)

Scaffold lorries:

- 5 deliveries per week during scaffold erection from 13/09/2021 – 11/10/2021
- 3 lorries per week during demolition phase

3.5t van:

- 3 deliveries/ week for duration of project.

b. Cumulative effects of construction traffic servicing multiple sites should be minimised where possible. Please provide details of other developments in the local area or on the route that might require deliveries coordination between two or more sites. This is particularly relevant for sites in very constrained locations.

Deconstruct UK Ltd are currently unaware of any projects in such a proximity that have the potential to disrupt servicing of the works

c. Please provide swept path analyses for constrained manoeuvres along the proposed route.

See Appendix 19c

d. Consideration should be given to the location of any necessary holding areas/waiting points for sites that can only accommodate one vehicle at a time/sites that are expected to receive large numbers of deliveries. Vehicles must not queue or circulate on the public highway. Whilst deliveries should be given set times to arrive, dwell and depart, no undue time pressures should be placed upon the driver at any time.

Please identify the locations of any off-site holding areas or waiting points. This can be a section of single yellow line that will allow the vehicle to wait to phone the site to check that the delivery can be accommodated.

Please refer to question 24 if any parking bay suspensions will be required to provide a holding area.

Once number 1 and 2 Morwell Street have been demolished, which are programmed with priority to other demolition works, vehicles will be able to turn into site leaving space available in the pit lane for vehicles to wait in. (sequence shown in our logistics plan) **Appendix 19d**

e. Delivery numbers should be minimised where possible. Please investigate the use of construction material consolidation centres, and/or delivery by water/rail if appropriate.

Deliveries will be carefully considered by our Project Manager and Traffic management teams, in particular to minimise the use of “part loads” which will in turn increase unnecessary vehicle attendance to the project. Deconstruct will make beneficial use of our own consolidation facility in Childerditch, Essex, so that wherever appropriate we are able to manage effectively large deliveries where large loads, likely to be delivered on a flat bed or arctic lorry can be split into manageable deliveries.

Deconstruct will also be crushing hardcore from demolition arisings onsite for the installation of the piling mat which will minimise significantly the number of lorries visiting site to deliver 6F2 aggregate for the piling mat. (Circa 300 vehicle movements avoided)

f. Emissions from engine idling should be minimised where possible. Please provide details of measures that will be taken to reduce delivery vehicle engine idling, both on and off site (this does not apply to concrete mixers).

As part of Deconstruct UK Ltd site rules, vehicles attending and waiting on site will be requested to turn off their engine to prevent idling. This information is included within our standard site rules for deliveries which are issued alongside purchase orders.

Traffic Marshals that facilitate the safe maneuvering of vehicles at the site and will be instructed to ensure that attending drivers turn off their engines at any possible opportunity.

20. Site access and egress: *“Clients shall ensure that access to and egress from the site is appropriately managed, clearly marked, understood and clear of obstacles.” (P18, 3.4.3)*

This section is only relevant where vehicles will be entering the site. Where vehicles are to load from the highway, please skip this section and refer to Q23.

Vehicles entering and leaving the site should be carefully managed, using gates that are clearly marked and free from obstacles. Traffic marshals must ensure the safe passage of all traffic on the public highway, in particular pedestrians and cyclists, when vehicles are entering and leaving site, particularly if reversing.

Traffic marshals, or site staff acting as traffic marshals, should hold the relevant qualifications required for directing large vehicles when reversing. Marshals should be

equipped with 'STOP – WORKS' signs (not STOP/GO signs) if control of traffic on the public highway is required. Marshals should have radio contact with one another where necessary.

a. Please detail the proposed site access and egress points on a map or diagram. If this is attached, use the following space to reference its location in the appendices.

See drawing below and appendixes 18a and 19d



b. Please describe how the access and egress arrangements for construction vehicles in and out of the site will be managed, including the number and location of traffic marshals where applicable. If this is shown in an attached drawing, use the following space to reference its location in the appendices.

Access and egress for construction vehicles will be managed by our trained Deconstruct Traffic Marshals. Chapter 8 barriers/ concertina barriers will be utilised to protect the public during vehicle access and egress. All vehicle movements from within the site will be managed by Banksmen.

There will be a minimum of 3 traffic marshals located on the corner of Bayley St dispatching vehicles, Morwell St escorting vehicles into the pit lane/site and on Bedford Avenue to support larger vehicles with right turn manoeuvres into Bedford Avenue as well as the crossing at the Adeline Place junction which would be no issue except for the school children crossing there through the day. (See Appendix 19d, logistics)

c. Please provide swept path drawings for vehicles accessing/egressing the site if necessary. If these are attached, use the following space to reference their location in the appendices.

See appendix 19c

d. Provision of wheel washing facilities should be considered if necessary. If so, please provide details of how this will be managed and any run-off controlled. Please note that wheel washing should only be used where strictly necessary, and that a clean, stable surface for loading should be used where possible.

All works will be dust contained at source by the use of screens and fine mist dampening during dusty operations including loading within the site confines at ground level.

Wheel wash facilities will be available at the site entrance. As vehicles exit the loading area, the wheels will be jet washed to remove all debris and mud prior to driving out of site. This will prevent dust and dirt to migrate on to the surrounding roads.

In addition to the above, a road sweeper will visit to ensure roads are kept clean as and when necessary.

Hardcore capping (if required) within the loading area will further ensure that neighbouring roads and environment are kept clean. The area for vehicles to exit will be jet washed to create a clean environment.

Site will be protected by a 2.4m high timber hoarding installed on temporary concrete blocks. Hoarding will be constructed and lit in line with Camden Council's Code of Practice. All doors and gates within the hoarding will be padlocked from the outside during out of work hours. Existing main door will be locked shut during out of work hours.

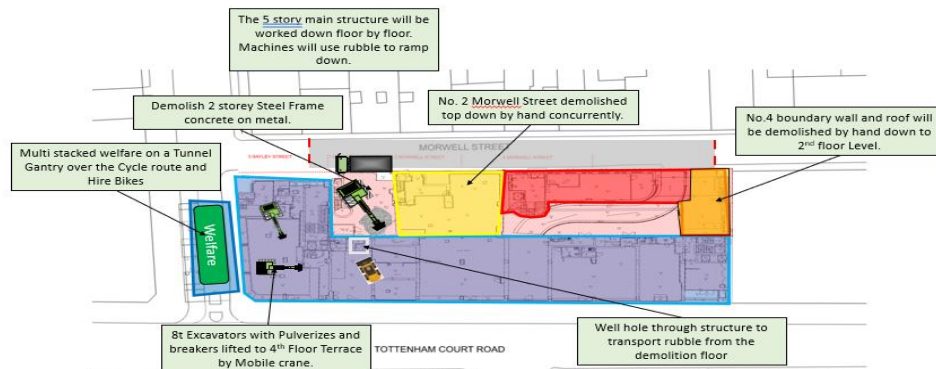
21. Vehicle loading and unloading: *"Clients shall ensure that vehicles are loaded and unloaded on-site as far as is practicable."* (P19, 3.4.4)

This section is only relevant if loading/unloading is due to take place off-site on the public highway. If loading is taking place on site, please skip this section.

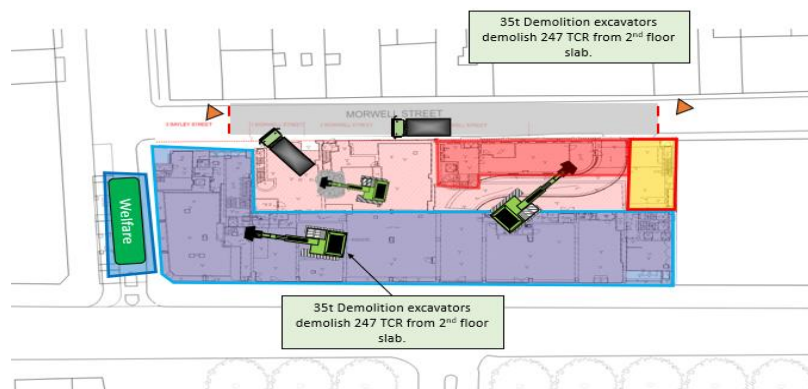
a. please provide details of the parking and loading arrangements for construction vehicles with regard to servicing and deliveries associated with the site (e.g. delivery of materials and plant, removal of excavated material). This is required as a scaled site plan, showing all points of access and where materials, skips and plant will be stored, and how vehicles will access and egress the site. If this is attached, use the following space to reference its

location in the appendices. Please outline in question 24 if any parking bay suspensions will be required.

Until the demolition of no.1 and no. 2 Morwell St, all waste will be loaded into vehicles stationed on Morwell Street's pit lane and if possible inside the courtyard of 1 Morwell Street. See image below:



Once these 2 buildings have been demolished, vehicles will be able to gain access inside the site to be loaded, which will also enable other vehicles to wait outside in the pit lane. See image below:



b. Where necessary, Traffic Marshalls must ensure the safe passage of pedestrians, cyclists and motor traffic in the street when vehicles are being loaded or unloaded. Please provide detail of the way in which marshals will assist with this process, if this differs from detail provided in Q20 b.

We would further confirm that we propose to use chapter 8 barriers and standard concertina barriers to segregate pedestrians from loading / unloading activities. Traffic Marshals will control this process and extend / retract barriers as necessary to provide a safe holding point for pedestrians until loading activities are completed. This will of course be kept to a minimum and pedestrians given right of way where we can permit.

Street Works

Full justification must be provided for proposed use of the public highway to facilitate works. Camden expects all options to minimise the impact on the public highway to have been fully considered prior to the submission of any proposal to occupy the highway for vehicle pit lanes, materials unloading/crane pick points, site welfare etc.

Please note that Temporary Traffic Orders (TTOs) and hoarding/scaffolding licenses may be applied for prior to CMP submission but won't be granted until the CMP is signed-off.

Please note that there is a two week period required for the statutory consultation process to take place as part of a TTO.

If the site is on or adjacent to the TLRN, please provide details of preliminary discussions with Transport for London in the relevant sections below.

If the site conflicts with a bus lane or bus stop, please provide details of preliminary discussions with Transport for London in the relevant sections below.

22. Site set-up

Please provide a scaled plan detailing the local highway network layout in the vicinity of the site. This should include details of on-street parking bay locations, cycle lanes, footway extents, relevant street furniture, and proposed site access locations. If these are attached, use the following space to reference their location in the appendices.

See Appendix 22

23. Parking bay suspensions and temporary traffic orders

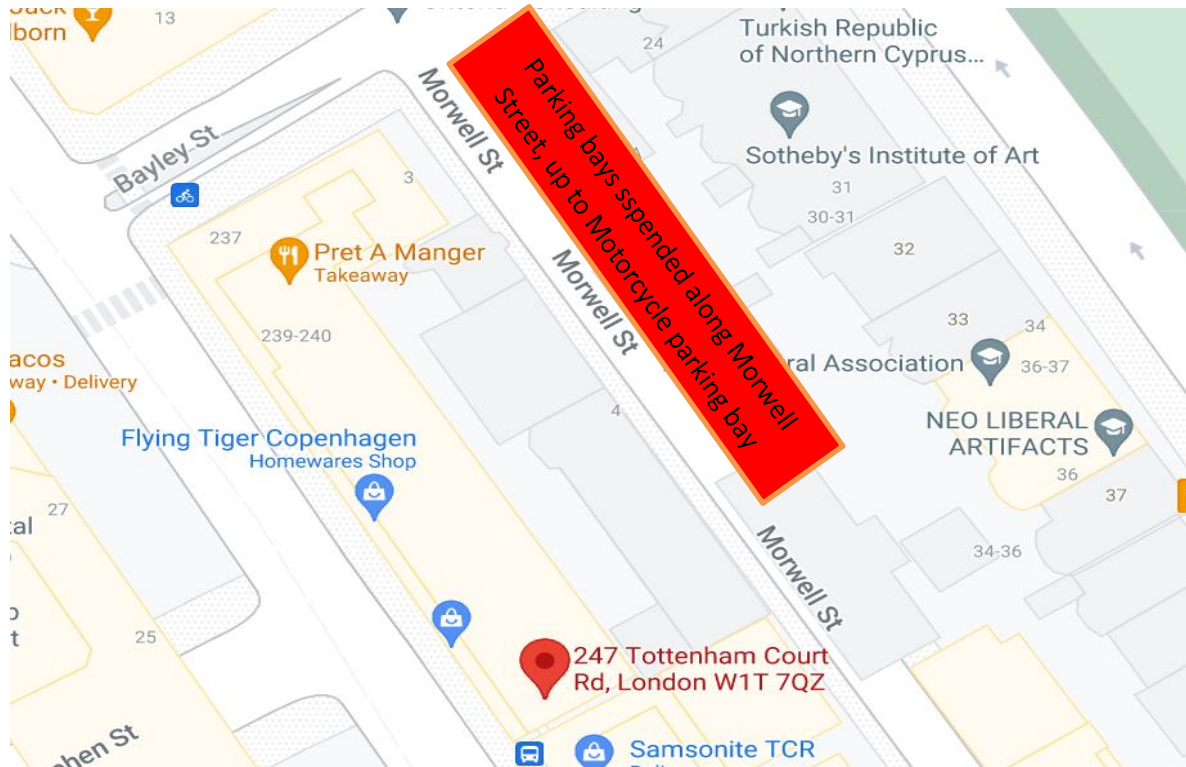
Parking bay suspensions should only be requested where absolutely necessary and these are permitted for a maximum of 6 months only. For exclusive access longer than 6 months, you will be required to obtain a [Temporary Traffic Order \(TTO\)](#) for which there is a separate cost.

Please provide details of any proposed parking bay suspensions and/or TTO's which would be required to facilitate the construction - include details of the expected duration in months/weeks. Building materials and equipment must not cause obstructions on the highway as per your CCS obligations unless the requisite permissions are secured.

Information regarding parking suspensions can be found [here](#).

To facilitate the site's logistics and vehicle operations all parking bays opposite the site will need suspending (within our boundary line)

Half of the motorcycle bay in Morwell Street will need to be suspended or extended towards the right handside. TBC with Camden Highways.



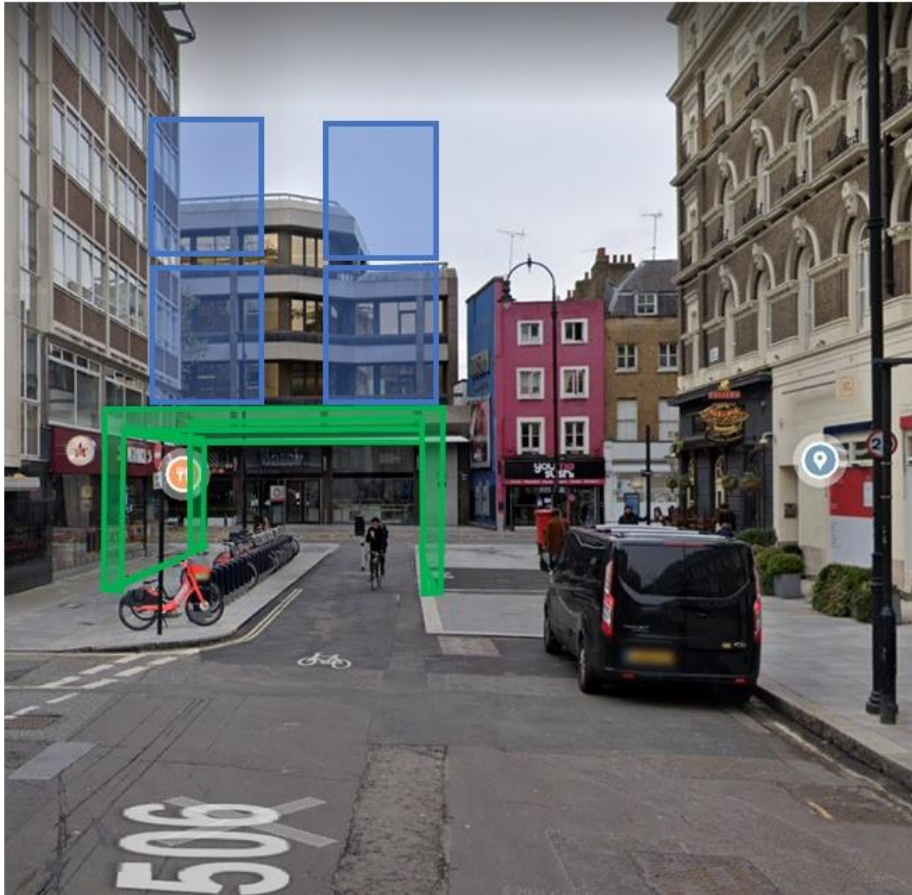
24. Occupation of the public highway

Please note that use of the public highway for storage, site accommodation or welfare facilities is at the discretion of the Council and is generally not permitted. If you propose such use you must supply full justification, setting out why it is impossible to allocate space on-site. We prefer not to close footways but if this is unavoidable, you should submit a scaled plan of the proposed diversion route showing key dimensions.

a. Please provide justification of proposed occupation of the public highway.

Footpath closed by southside of no.4 Morwell St to allow erection of scaffold. Pedestrians will be diverted to the pavement on the other side of the road. (Appendix 25) TMP drawing.

It will also be necessary to move our welfare from the building into site cabins and set up in a temporary location outside the site footprint. This location need to be strategically positioned to allow construction during the demolition phase. We have proposed a tunnel gantry spanning over the Hire Bikes and cycle lane on Bayley Street. This location is yet to be approved by Camden. See image below.



b. Please provide accurate scaled drawings of any highway works necessary to enable construction to take place (e.g. construction of temporary vehicular accesses, removal of street furniture etc). If these are attached, use the following space to reference their location in the appendices.

Same as above no.24

25. Motor vehicle and/or cyclist diversions

Where applicable, please supply details of any diversion, disruption or other anticipated use of the public highway during the construction period. Please show locations of diversion signs on drawings or diagrams. If these are attached, use the following space to reference their location in the appendices.

Part closure of Morwell Street during working hours, pavement to remain open on the opposite side of the road but extended so access width is 1,5m away from furthest obstruction from the wall i.e. lampposts. This will also assist the access and egress of neighbouring buildings such as the Architect Association, etc. Neighbours that require access through to Morwell Street for deliveries etc.... will be granted access by our traffic marshals, this includes coaches from the St Giles hotel. See appendix 25 TMP drawing.

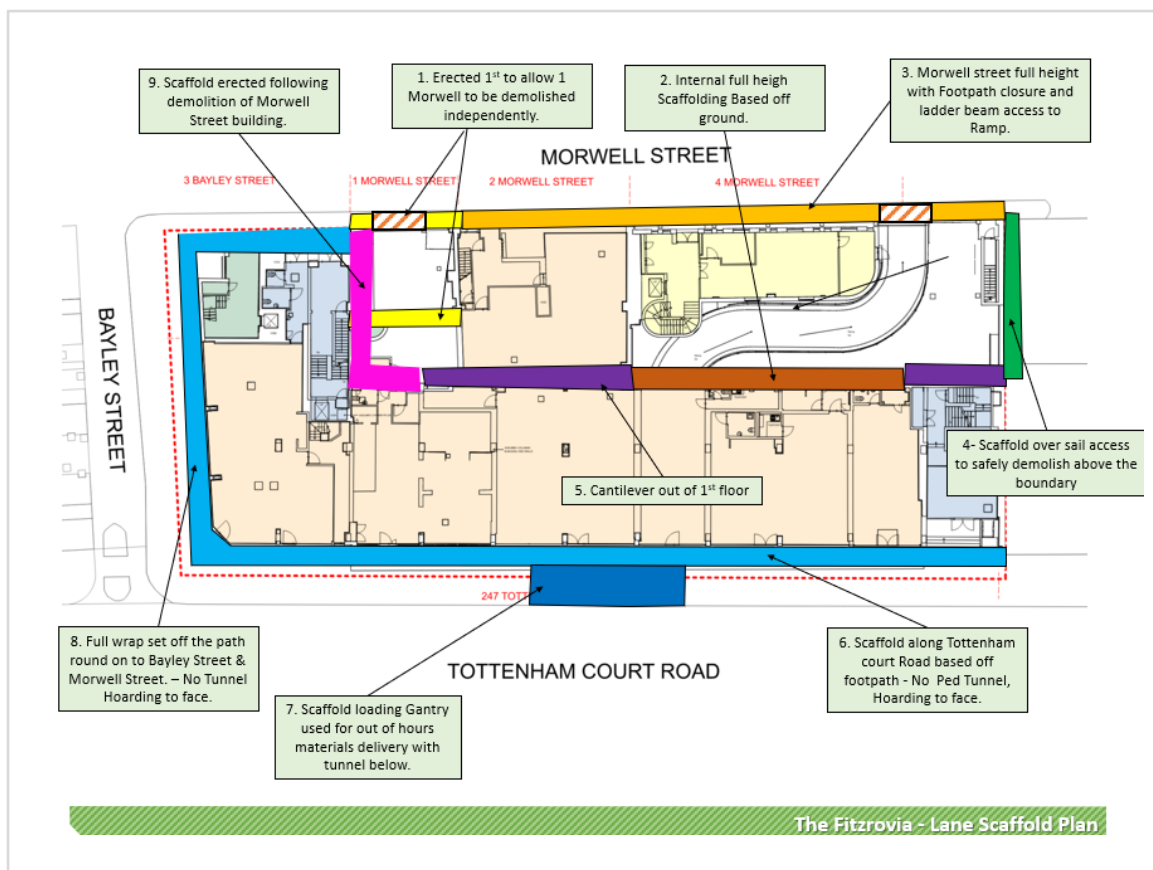
26. Scaffolding, hoarding, and associated pedestrian diversions

Pedestrians safety must be maintained if diversions are put in place. Vulnerable footway users should also be considered. These include wheelchair users, the elderly, those with walking difficulties, young children, those with prams, the blind and partially sighted. Appropriate ramps must be used if cables, hoses, etc. are run across the footway.

Any work above ground floor level may require a covered walkway adjacent to the site. A licence must be obtained for scaffolding and gantries. The adjoining public highway must be kept clean and free from obstructions, and hoarding should not restrict access to adjoining properties, including fire escape routes. Lighting and signage should be used on temporary structures/skips/hoardings etc.

A secure hoarding will generally be required at the site boundary with a lockable access.

a. Where applicable, please provide details of any hoarding and/or scaffolding that intrudes onto the public highway, describing how pedestrian safety will be maintained through the diversion, including any proposed alternative routes. Please provide detailed, scale drawings that show hoarding lines, gantries, crane locations, scaffolding, pedestrian routes, parking bay suspensions, remaining road width for vehicle movements, temporary vehicular accesses, ramps, barriers, signage, lighting etc. If these are attached, use the following space to reference their location in the appendices.



b. Please provide details of any other temporary structures which would overhang/oversail the public highway (e.g. scaffolding, gantries, cranes etc.) If these are attached, use the following space to reference their location in the appendices.

Gantry tunnel for temporary welfare cabins located on Bayley Street pavement above bicycle parking bay.

A second gantry will be located on Tottenham Court Road for weekend and out of hours loading of scaffold materials, this is to avoid walking scaffold materials around the building for the front elevations

27. Services

Please indicate if any changes to services are proposed to be carried out that would be linked to the site during the works (i.e. connections to public utilities and/or statutory undertakers' plant). Larger developments may require new utility services. If so, a strategy and programme for coordinating the connection of services will be required. If new utility services are required, please confirm which utility companies have been contacted (e.g. Thames Water, National Grid, EDF Energy, BT etc.) You must explore options for the utility companies to share the same excavations and traffic management proposals. Please supply details of your discussions.

Deconstruct will be arranging disconnections for gas, water, electric and telecommunications with the suppliers listed below:

Water: Thames Water

Gas: Cadent

Electricity: UKPN

Telecoms: Virgin and BT

Any excavations or works that may affect the public will be notified to the local authority.

Environment

To answer these sections please refer to the relevant sections of **Camden's Minimum Requirements for Building Construction (CMRBC)**.

28. Please list all [noisy operations](#) and the construction method used, and provide details of the times that each of these are due to be carried out.

See attached programme of superstructure demolition, piling works and reduced level excavation. A summary of noisy operations include demolition, piling and reduced level excavations with associated works. For more information see the Noise Modelling Report (NMR) for this project (*Reference: EEMC_206_001_NMR Rev 00 – 247 Tottenham Court Road*)

Please refer to appendix 8.a and 8.b for programme of works. A summary of noisy operations can be found in appendix 28.a Noise Modelling Report.

All noisy works will be undertaken during the agreed times:

- Noisy works will be subject to 2 hours on and 2 hours off:
 - Monday to Friday, 8.00am - 10.00am, 12.00pm – 14.00pm, 16.00pm – 18.00pm.
 - Saturday, 10.00am – 12.00pm.

29. Please confirm when the most recent noise survey was carried out (before any works were carried out) and provide a copy. If a noise survey has not taken place please indicate the date (before any works are being carried out) that the noise survey will be taking place, and agree to provide a copy.

Baseline monitoring already in place and installed by SES.

There are currently 3 monitoring points for dust, noise and vibration, two located on the roof and one in the courtyard in Morwell Street

Noise impact assessment undertaken as part of planning activities in July 2020. Please refer to appendix 29.a Noise Impact Assessment July 2020

Due to reduced ambient noise during Covid lockdown a noise survey at that time would not replicate typical ambient noise levels in the area. It is the intention to undertake a baseline ambient noise survey prior to works start.

30. Please provide predictions for [noise](#) and vibration levels throughout the proposed works.

Noise modelling and noise predictions for the nearest most sensitive receptors are presented in our Noise Modelling Report Appendix 28a (Ref: EEMC_206_001_NMR Rev 00 – 247 Tottenham Court Road)

Vibration magnitudes are difficult to predict with any accuracy in a complicated transmission route. A vibration survey before work starts and vibration monitoring during the works will be undertaken as required with set trigger and action levels.

31. Please provide details describing mitigation measures to be incorporated during the construction/[demolition](#) works to prevent noise and vibration disturbances from the activities on the site, including the actions to be taken in cases where these exceed the predicted levels.

Mitigation measures are summarised in the Noise, Dust & Vibration Monitoring Plan (NDVMP) prepared for the project (ref: EEMC-NDVMP001-206 Rev00 – 247 Tottenham Court Road)

Mitigation measures will include, but not be limited to the following:

- Arrange main electricity supply as early as possible to avoid generator use.
- Avoid percussive techniques if practicable alternatives are available.
- Stationary plant such as temporary generators will be located as far as practicable away from the nearest sensitive receptor;
- Plant will be used and maintained in accordance with the manufacturers' recommendations;
- Plant such as mobile cranes which are used intermittently will be shut down between work periods or throttled down to a minimum;
- Acoustic covers to engines will be kept closed when engines are in use;
- Appropriate screens or enclosures will be provided where required;
- Continuous monitoring will be undertaken throughout the works, breaking and other high impact activities will be monitored closely.
- Site personnel will be instructed in environmental matters and the adoption and implementation of BPM to minimise noise and vibration. Site Operatives will be informed in the site induction into the surrounding environment.
- Loading of material into vehicles within designated bays only
- Sensitive location of drop zones and loading areas and arrange full loads where possible at off-peak times.
- All deliveries to be scheduled to occur during daytime permitted hours only and engines to be switched off when waiting
- All plant to comply with relevant national and international standards, Directives and recommendations.
- Hydraulic powered Pulverisers and shears to be used when practicable (in lieu of pneumatic hammers)
- Dedicated deliveries holding area established within the site boundary
- For unforeseen but necessary works required to be carried outside agreed hours the site will optimise sequencing to minimise duration, seek dispensation/derogation or variation from the Local Authority and inform neighbours as early as possible.
- Electrical or LPG powered plant will be used, where practicable, rather than plant powered by combustion engine;

As set out in the NDVMP Noise and vibration monitoring stations will be installed and set up to provide trigger alert and action alert emails. The project team will maintain a diary record log of all site activities and on receipt of email alerts for any noise/vibration exceedances will inspect the works activities on the site at the time of the alert and review the methodology being used and investigate any further practicable B.P.M measures that may be available. A complete record log of all exceedances will be maintained detailing responses and actions taken.

In the event of a noise or vibration incident or complaint the form template included within the NDVMP will be completed as a record for issue to LB Camden.

32. Please provide evidence that staff have been trained on BS 5228:2009

We have appointed European Environmental Monitoring and Consultancy (EEMC) as our acoustic consultant and will train and instruct a designated member of staff on the relevant requirements of BS5228:2009. The designated member of staff will carry out all noise and vibration monitoring with EEMC to provide ongoing technical advice.

The control of noise and vibration on sites is also covered within NVQ L6, SMSTS, SSSTS, CCDO, CPCS and within our own Demolition and Groundworks General Procedures documents.

33. Please provide specific details on how air pollution and dust nuisance arising from dusty activities on site will be prevented. This should be relevant and proportionate to activities due to take place, with focus on both preventative and reactive mitigation measures.

A Dust and Air Quality Management Plan (AQDMP) has been produced for this project Appendix 33. (Reference: EEMC-AQDMP001-206 Rev00 - 247 Tottenham Court Road Air Quality Dust Management Plan) and undertakes a dust risk assessment for site.

As far as practicable construction techniques will be adopted that minimize dust emissions. The highly recommended mitigation methods for this site, is detailed in the SPG guidance and will be adopted, as referenced in the AQDMP – see a summary below

The existing buildings envelope will be encapsulated in fire retardant monaflex sheeting fixed to the external face of a full height building scaffold erected to contain dust. The scaffold will be dismantled as demolition progresses down the buildings.

The demolition methodology will use crushing and munching attachments and minimise use of percussive methods as far as practicable.

34. Please provide details describing how any significant amounts of dirt or dust that may be spread onto the public highway will be prevented and/or cleaned.

Vehicles departing the project will be fully sheeted (where applicable) prior to leaving, this will prevent the likelihood of spoil leaving the back of tipper lorries during departure.

Traffic Marshals will be under instruction to inspect vehicle wheels prior to departure and where required, jet wash significant amounts of dirt or dust.

In the event of particularly wet weather, it is proposed that a visiting road sweeper will be utilised to provide additional support to keeping the highway clean. Typically, Traffic Marshals will maintain the cleanliness of the roadway as part of our maintenance regime around the site.

35. Please provide details describing arrangements for monitoring of [noise](#), vibration and dust levels, including instrumentation, locations of monitors and trigger levels where appropriate.

The site will be monitored for dust (PM₁₀), noise and vibration. It is anticipated this will require the following monitoring locations:

Four (4) No. dust (PM₁₀) MCerts certified monitors, set with:

- 150µg/m³ (15 minute average) Trigger Level; and
- 250µg/m³ (15 minute average) and 190µg/m³ (1 hour average) Action levels.

See the AQDMP for more information.

A minimum of:

- Two (2) No. Class 1 Noise monitors configured to send email noise alerts in the event of exceedance events;
- Two (2) Din 45669 compliant Vibration monitors will be configured to send email alerts in the event of exceedance events.

See the Noise, Dust and Vibration Management Plan (NDVMP) for more information
(Reference EEMC-NDVMP001-188 Rev02 – 247 Tottenham Court Road)

Noise modelling for the project can be seen in the Noise Modelling Report

Noise and Vibration proposed Trigger and Action Levels are outlined in the NDVMP

36. Please confirm that an Air Quality Assessment and/or Dust Risk Assessment has been undertaken at planning application stage in line with the GLA policy [The Control of Dust and Emissions During Demolition and Construction 2014 \(SPG\)](#) (document access at bottom of webpage), and that the summary dust impact risk level (without mitigation) has been identified. The risk assessment must take account of proximity to all human receptors and sensitive receptors (e.g. schools, care homes etc.), as detailed in the [SPG](#). **Please attach the risk assessment and mitigation checklist as an appendix.**

A dust risk assessment has been undertaken in the Air Quality Dust Management Plan (AQDMP) prepared for this project. It is noted that the site is a high-risk site for the demolition phase and as such will require four real-time monitors.

Details of the proposed dust monitoring can be found in the AQDMP for this project.

The highly recommended mitigation measures, are listed in Appendix 7 of the SPG Guidance and will be adopted. These measures are summarised in the attached AQDMP.

37. Please confirm that all of the GLA's 'highly recommended' measures from the SPG document relative to the level of dust impact risk identified in question 36 have been addressed by completing the GLA mitigation measures checklist. (See Appendix 7 of the SPG document.)

Deconstruct will employ the relevant highly recommended mitigation measures for this site as listed in Appendix 7 of the SPG. In line with the risk assessment specific mitigation for each phase will also be adopted.

38. Please confirm the number of real-time dust monitors to be used on-site.

Note: **real-time dust (PM₁₀) monitoring with MCERTS 'Indicative' monitoring equipment will be required for all sites with a high OR medium dust impact risk level**. If the site is a 'high impact' site, 4 real time dust monitors will be required. If the site is a 'medium impact' site', 2 real time dust monitors will be required.

The dust monitoring must be in accordance with the SPG and IAQM guidance, and **the proposed dust monitoring regime (including number of monitors, locations, equipment specification, and trigger levels) must be submitted to the Council for approval**. Dust monitoring is required for the entire duration of the development and must be in place and operational **at least three months prior to the commencement of works on-site**. Monthly dust monitoring reports must be provided to the Council detailing activities during each monthly period, dust mitigation measures in place, monitoring data coverage, graphs of measured dust (PM₁₀) concentrations, any exceedances of the trigger levels, and explanation on the causes of any and all exceedances in addition to additional mitigation measures implemented to rectify these.

In accordance with Camden's Clean Air Action Plan, the monthly dust monitoring reports must also be made readily available and accessible online to members of the public soon after publication. Information on how to access the monthly dust monitoring reports should be advertised to the local community (e.g. presented on the site boundaries in full public view).

Inadequate dust monitoring or reporting, or failure to limit trigger level exceedances, will be indicative of poor air quality and dust management and will lead to enforcement action.

A dust risk assessment has been undertaken and detailed in the AQDMP for this project. We have determined the site to be a high-risk site for Dust Soiling in the Demolition phase.

As a high risk site, four Mcerts certified dust (PM₁₀) monitors are to be installed with monitoring data reports submitted on a monthly basis. Limits to be set at 150µg/m³ (15 minute average) Trigger Level and 250µg/m³ (15 minute average) and 190µg/m³ (1 hour average) Action levels, as per LBC and the SPG guidance. The site team will be configured to receive email alerts in the event of exceedance events.

39. Please provide details about how rodents, including rats, will be prevented from spreading out from the site. You are required to provide information about site inspections carried out and present copies of receipts (if work undertaken).

The existing building will be assessed for the presence of rodents and vermin prior to demolition. Should any rodent or vermin issues be present, an external contractor will be appointed to eradicate these. All redundant sewage connections will be capped or bunged to prevent rodents from spreading out from site.

All pest control will be carried out in accordance with section 7.3 of "Guide for Contractors Working in Camden".

40. Please confirm when an asbestos survey was carried out at the site and include the key findings.

An asbestos survey has been carried out already however, there were certain parts of the buildings that were inaccessible due to tenants still occupying them so an additional survey and asbestos removal works will be required.

41. Complaints often arise from the conduct of builders in an area. Please confirm steps being taken to minimise this e.g. provision of a suitable smoking area, tackling bad language and unnecessary shouting.

The conduct of operatives and staff members on the project will be addressed as part of our induction procedure, with the repercussions of poor behavior made abundantly clear. The following topics will be covered within our induction process:

- Congregation outside of the project perimeter
- Arrival and departure from the project
- Allocated smoking areas
- Requirements for removing PPE before leaving the project
- Interaction with the public
- Respect of the community
- Supporting local establishments
- Effective communication

As part of the induction process, it will be made clear that in the event a member of staff is in breach of our policies for any of the above items there will be an escalation process which can ultimately result in permanent dismissal from the project.

42. If you will be using non-road mobile machinery (NRMM) on site with net power between 37kW and 560kW it will be required to meet the standards set out below. The standards are applicable to both variable and constant speed engines and apply for both PM and NOx emissions. See the Mayor of London webpage 'Non-Road Mobile Machinery (NRMM)' for more information, a map of the Central Activity Zone, and for links to the NRMM Register and the NRMM Practical guide: <https://www.london.gov.uk/what-we-do/environment/pollution-and-air-quality/nrmm>

From 1st September 2015

(i) Major Development Sites – NRMM used on the site of any major development will be required to meet Stage IIIA of EU Directive 97/68/EC

(ii) Any development site within the Central Activity Zone - NRMM used on any site within the Central Activity Zone will be required to meet Stage IIIB of EU Directive 97/68/EC

From 1st September 2020

(iii) Any development site - NRMM used on any site within Greater London will be required to meet Stage IIIB of EU Directive 97/68/EC

(iv) Any development site within the Central Activity Zone - NRMM used on any site within the Central Activity Zone will be required to meet Stage IV of EU Directive 97/68/EC

Please provide evidence demonstrating the above requirements will be met by answering the following questions:

- a) Construction time period (mm/yy - mm/yy):
- b) Is the development within the CAZ? (Y/N):
- c) Will the NRMM with net power between 37kW and 560kW meet the standards outlined above? (Y/N):
- d) Please confirm that all relevant machinery will be registered on the NRMM Register, including the site name under which it has been registered:
- e) Please confirm that an inventory of all NRMM will be kept on site and that all machinery will be regularly serviced and service logs kept on site for inspection:
- f) Please confirm that records will be kept on site which details proof of emission limits, including legible photographs of individual engine plates for all equipment, and that this documentation will be made available to local authority officers as required:

43. Vehicle engine idling (leaving engines running whilst parked or not in traffic) produces avoidable air pollution and can damage the health of drivers and local communities. Camden Council and City of London Corporation lead the London **Idling Action Project** to educate drivers about the health impacts of air pollution and the importance of switching off engines as a simple action to help protect the health of all Londoners.

Idling Action calls for businesses and fleet operators to take the **Engines Off pledge** to reduce emissions and improve air quality by asking fleet drivers, employees and subcontractors to avoid idling their engines wherever possible. Free driver training materials are available from the website: <https://idlingaction.london/business/>

Please provide details about how you will reduce avoidable air pollution from engine idling, including whether your organisation has committed to the Engines Off pledge and the number of staff or subcontractors who have been provided with free training materials.

We will educate drivers by using the Indling Action workshop

Informing drivers at induction stage and regular toolbox talks

Promoting campaign with posters displayed around site to create awareness

Displaying signs/notices inside cabins

Informing external delivery drivers in our delivery instructions forms

 SYMBOL IS FOR INTERNAL USE

Agreement

The agreed contents of this Construction Management Plan must be complied with unless otherwise agreed in writing by the Council. This may require the CMP to be revised by the Developer and reapproved by the Council. The project manager shall work with the Council to review this Construction Management Plan if problems arise in relation to the construction of the development. Any future revised plan must be approved by the Council in writing and complied with thereafter.

It should be noted that any agreed Construction Management Plan does not prejudice further agreements that may be required such as road closures or hoarding licences.

Signed:

Date:

Print Name:

Position:

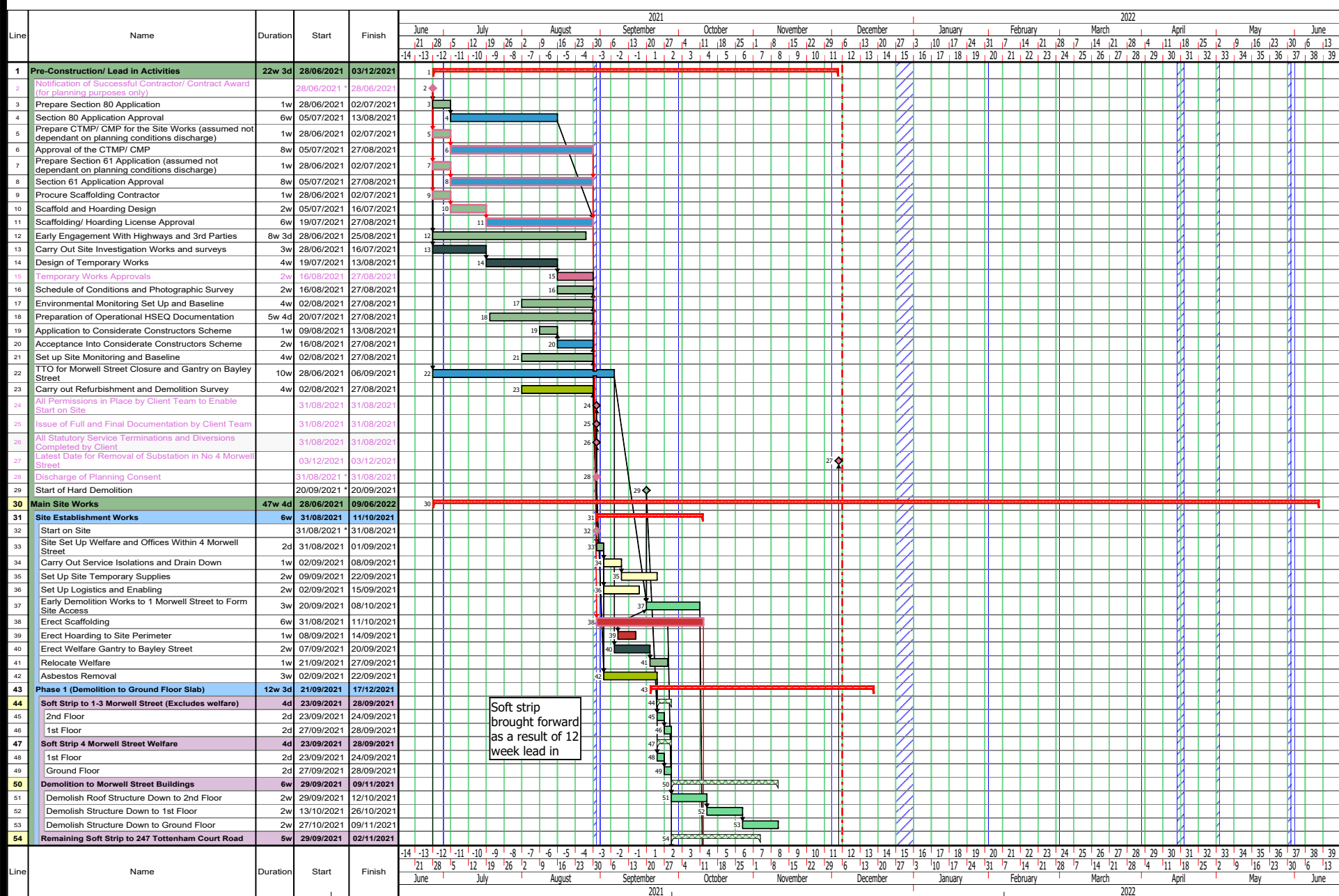
Please submit to: planningobligations@camden.gov.uk

End of form.

V2.6

Option 2 Optimal Tender Programme for The Fitzrovia (247 Tottenham Court Road) for

M and G Real Estate Limited



Drawn By: Steve Blenkinsop

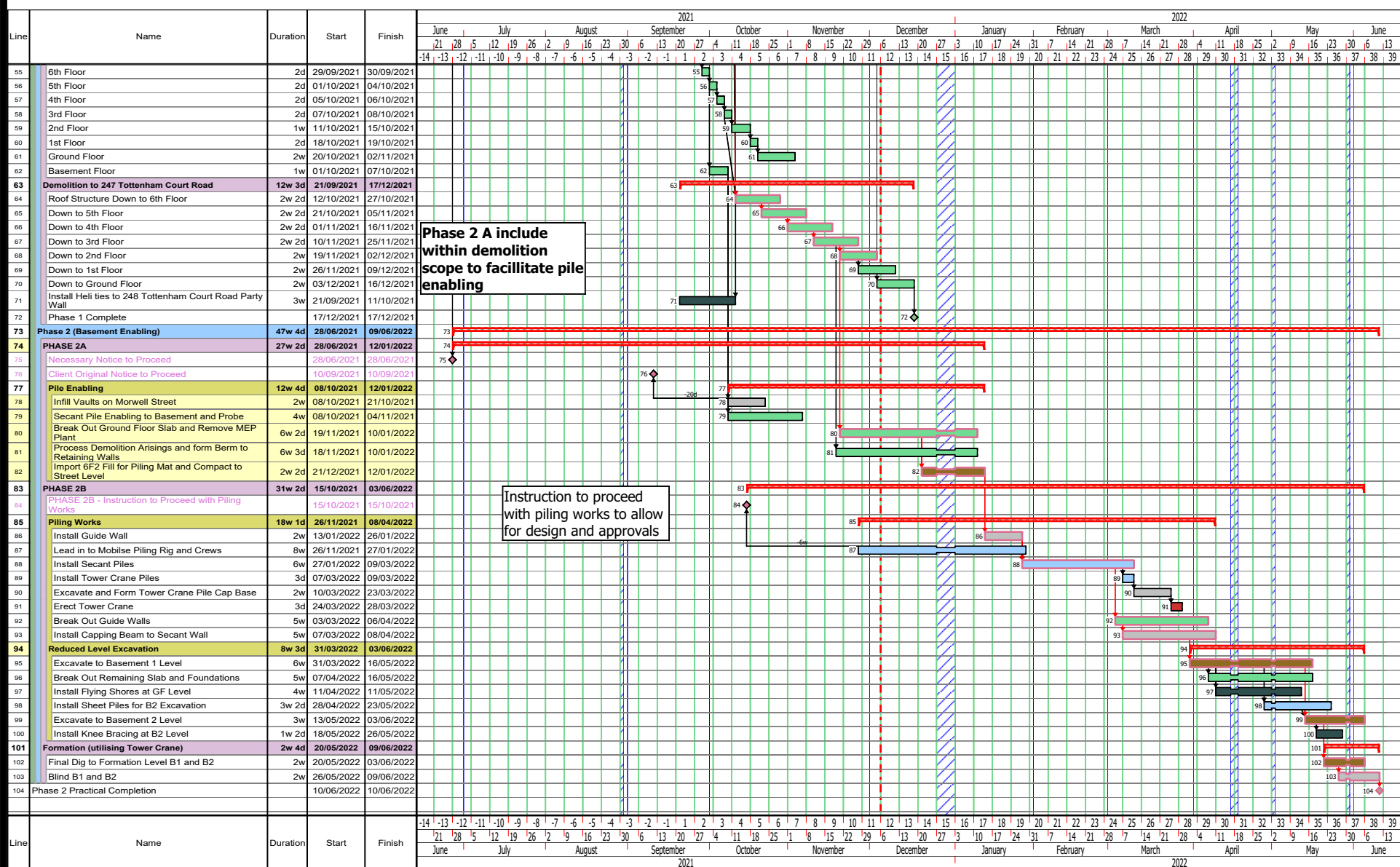
Dwg No. 00001

Date: 21/06/2021

Notes: Comment - Chart Properties

Option 2 Optimal Tender Programme for The Fitzrovia (247 Tottenham Court Road) for

M and G Real Estate Limited



Action By

Client Action Items Contractor Action Items 3rd Party Action Items Temporary Works Asbestos Removal Site Services and Logistics Demolition Scaffold, Hoarding and Access

Milestone Appearances

Diamond

Drawn By: Steve Blenkinsop

Dwg No. 00001

Date: 21/06/2021

Notes: Comment - Chart Properties

**CO-RE – 247 TOTTENHAM COURT ROAD
CONSTRUCTION AND DEMOLITION MANAGEMENT PLAN: CONSULTATION
FROM LONDON COMMUNICATIONS AGENCY
JULY 2021**

This document provides a summary of the communication activities undertaken to support the redevelopment of 247 Tottenham Court Road and is to be included in the Construction Management Plan.

1. Construction Management Plan Consultation Programme

Construction Working Group: Membership

Following the approval of the planning application in January 2021, discussions were held between LB Camden, the project team, and key representatives of the local community, to agree a list of prospective members to join the Construction Working Group (CWG).

The pre-application consultation website was significantly updated – www.247tottenhamcourtrroad.co.uk – and included detailed information on the construction programme along with contact information for residents to submit comments or questions they might have about the development.

First Construction Working Group: April – May 2021

Letters were issued to members on 16 April 2021, informing them the first CWG would be taking place on Thursday 29 April. Due to social distancing restrictions in response to the Coronavirus pandemic, this meeting, and subsequent CWGs, have been held virtually.

In this meeting, members were provided with a detailed overview of the construction programme for the redevelopment of 247 Tottenham Court Road, and how to get in touch with the project team with any questions they might have about the development or upcoming works. Minutes highlighting the main items of discussion of the CWG were compiled and shared with members after the meeting.

As highlighted in the presentation, stakeholders were encouraged to get in touch using a variety of feedback mechanisms, including the Freephone service (0800 307 7548), emailing the consultation address (247Tottenhamcourtrroad@londoncommunications.co.uk) or using the website's online feedback form.

Second Construction Working Group: June 2021

A second CWG meeting was arranged on 14 June, where members were informed that progress had been made on the appointment of a demolition/construction contractor, in addition to the working operations that had been completed on site in recent weeks. As before, a copy of the minutes was shared with members.

Third Construction Working Group: July 2021

The third CWG meeting was held on Thursday 22 July, following confirmation that Deconstruct had been appointed as the construction contractor to lead on the enabling works programme. Representatives from the organisation attended the CWG, where they provided an update on the transportation routes to and from the site and the measures, they will undertake to minimise disruptions on neighbours and residents.



A copy of the draft Demolition Management Plan was shared with members following the meeting for comment.

Meetings with Stakeholders

At the request of one member, the project team met with a local resident in May 2021, following the first CWG, to discuss the wider redevelopment of 247 Tottenham Court Road.

Separate meetings were also arranged with Jeannie Ecole Manuel (14 July) and Architectural Association (22 July), Bedford Estates and Bloomsbury Association (27 July) to discuss the transportation routes to and from the site in further detail and any other questions they had about the project.

At present, the project team are also in the process of finalising a follow-up meeting with the Bedford Estates and Bloomsbury Association, due to be held in late July.

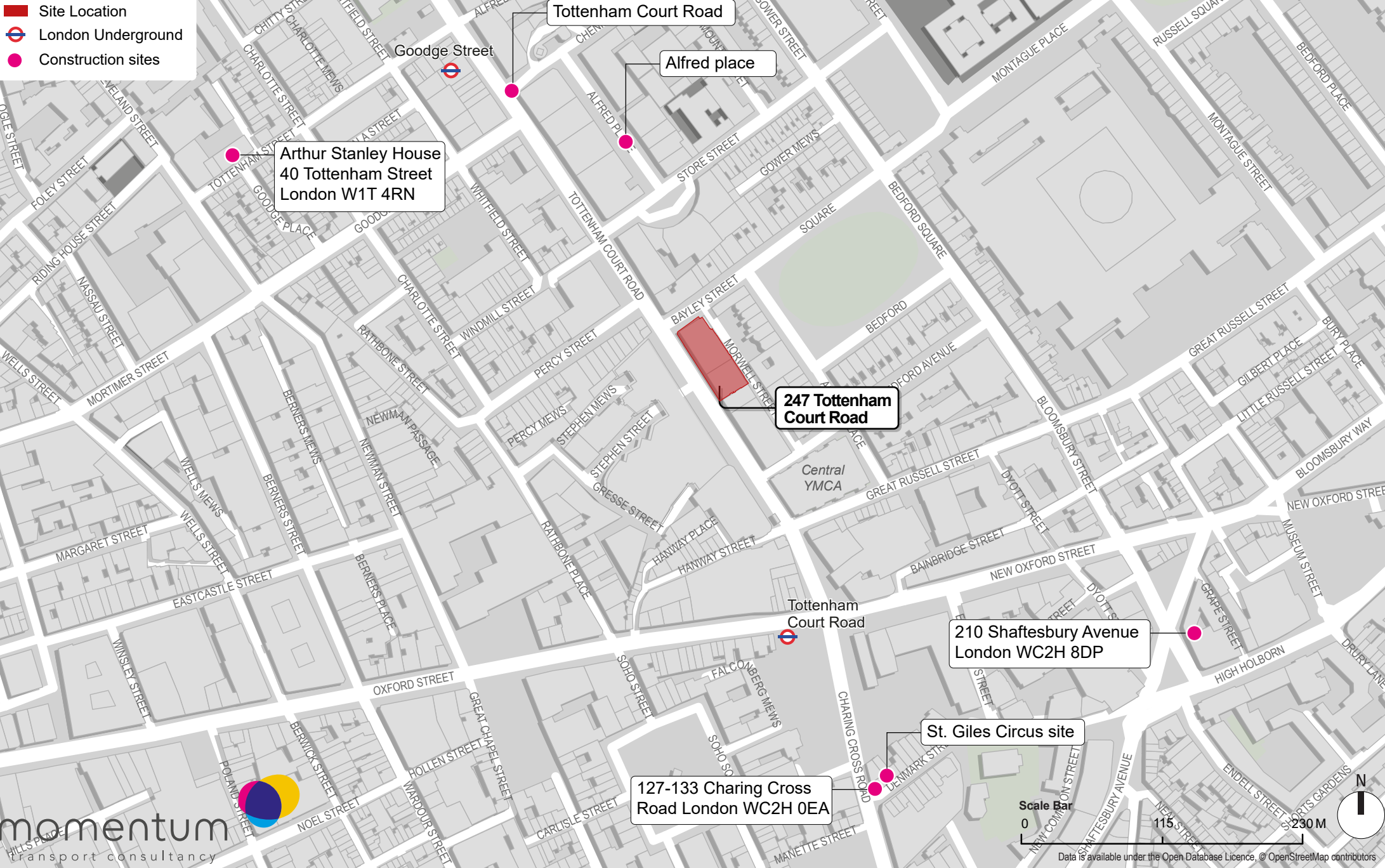
Future Engagement

As CWG meetings continue to be arranged over the coming months, quarterly newsletters will be delivered to the local community, to inform them about the progression of the construction programme and other key milestones on the development. This information will also be shared on the project website.

247 TOTTENHAM COURT ROAD

NEIGHBOURING CONSTRUCTION SITES

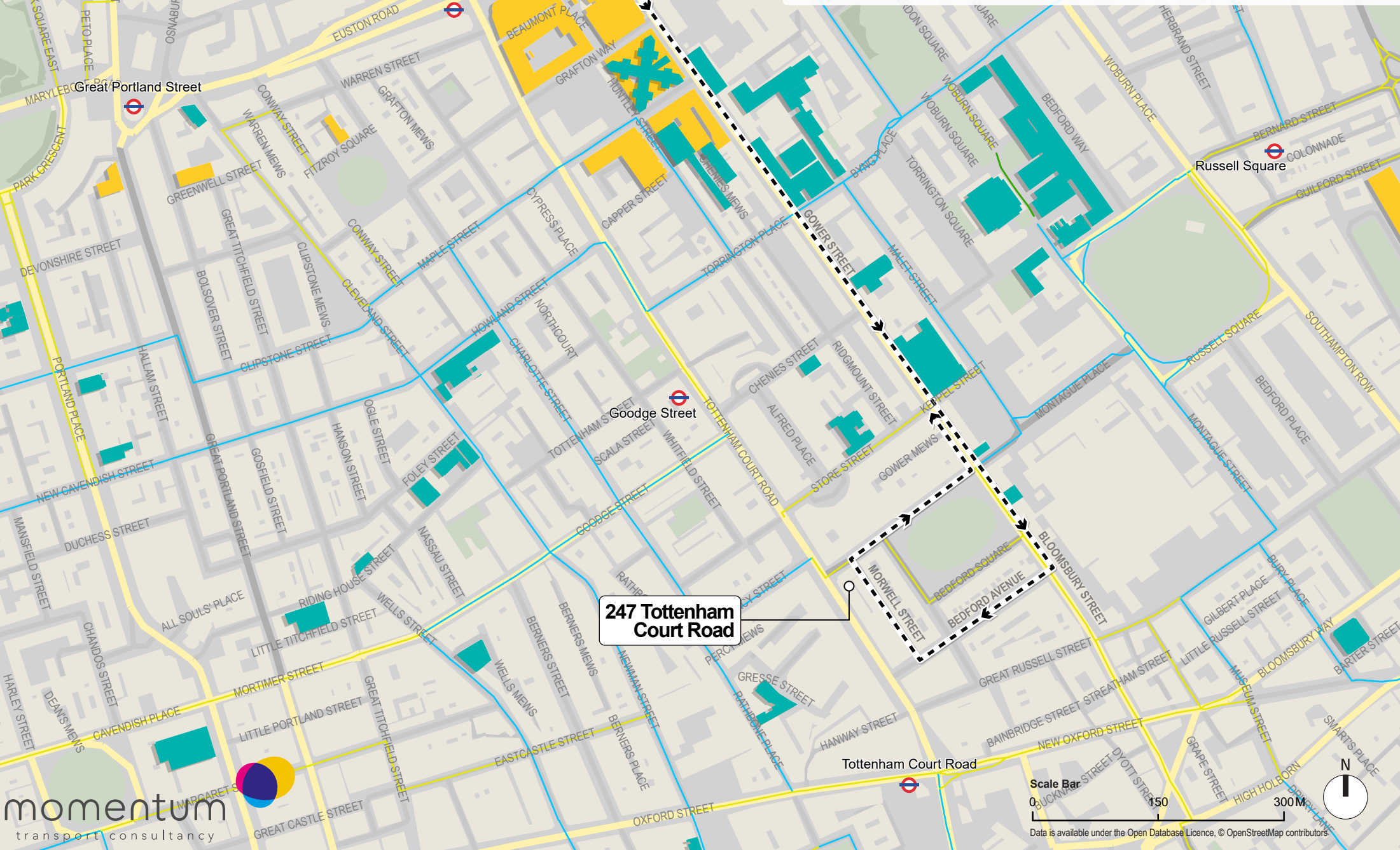
- Site Location
- London Underground
- Construction sites











247 TOTTENHAM COURT ROAD

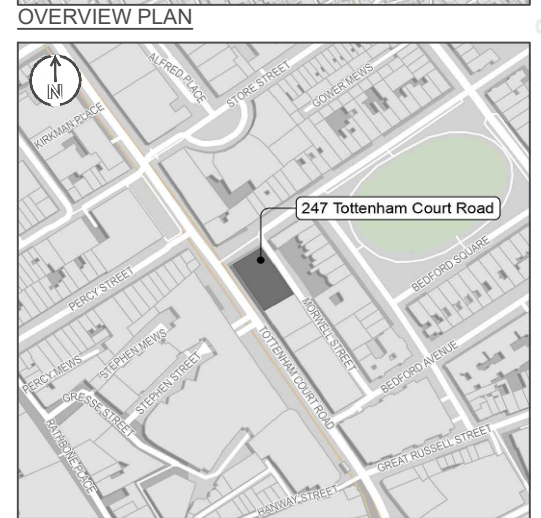
CONSTRUCTION ROUTE

- Site Location
- Proposed Construction Route
- Ⓜ London Underground
- ↶ Left Turn (Inbound)
- Hospital
- School
- Advisory Cycle Route
- Park / Canal Route
- Signed Cycle Route



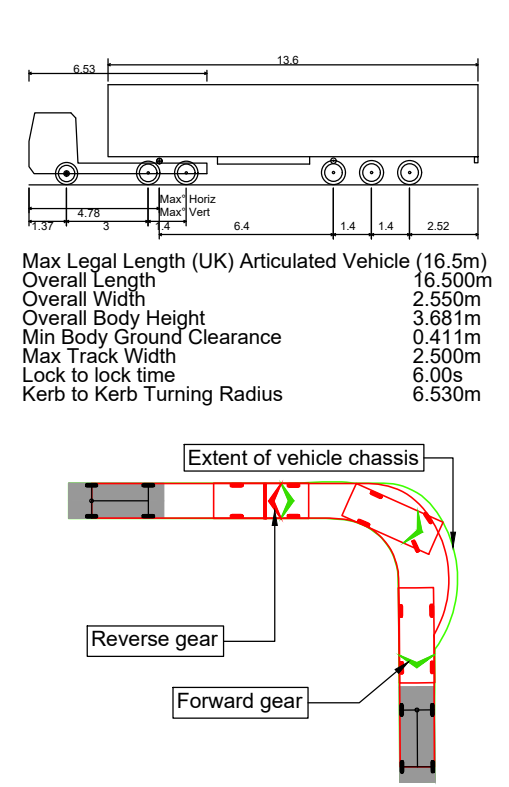
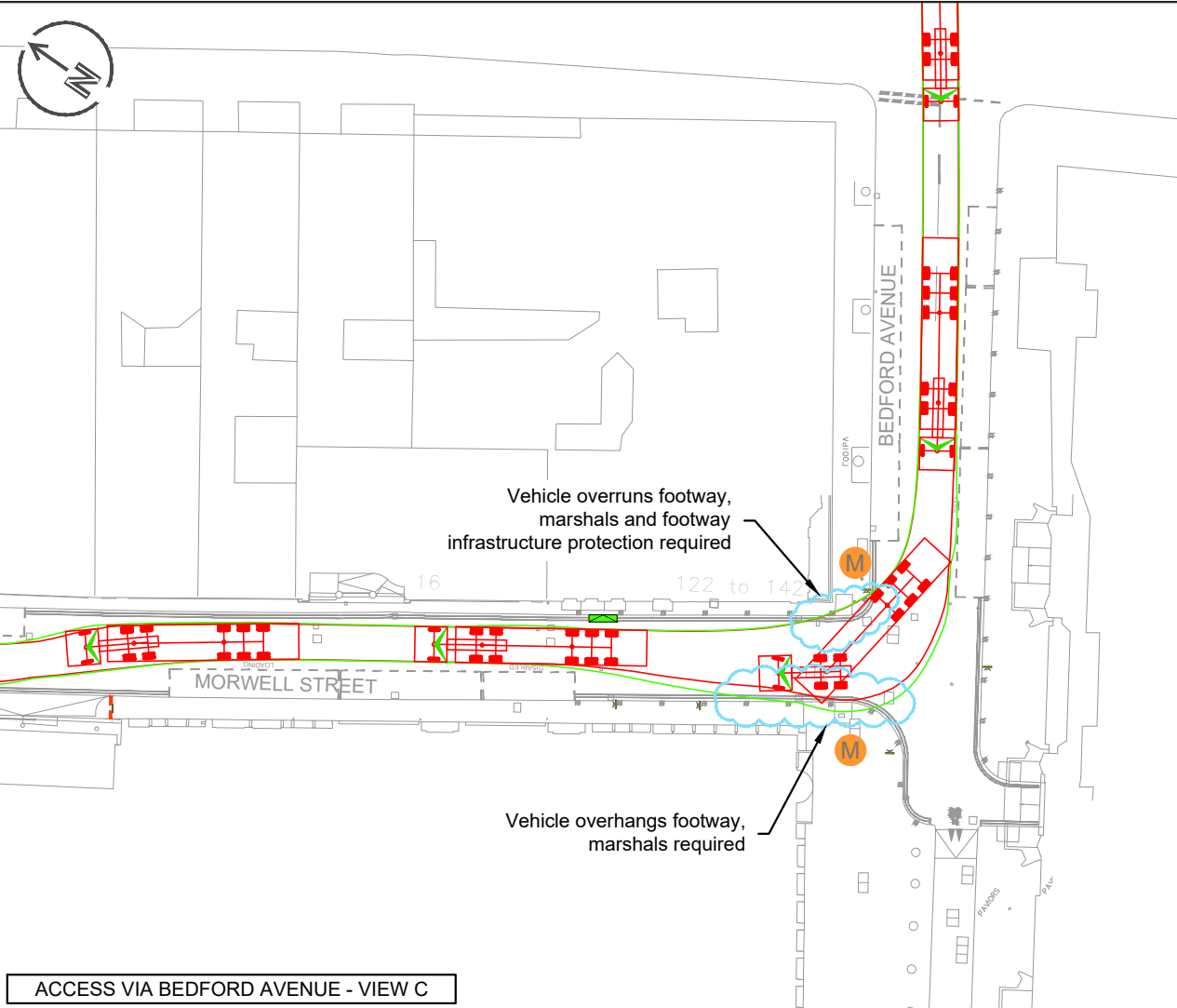
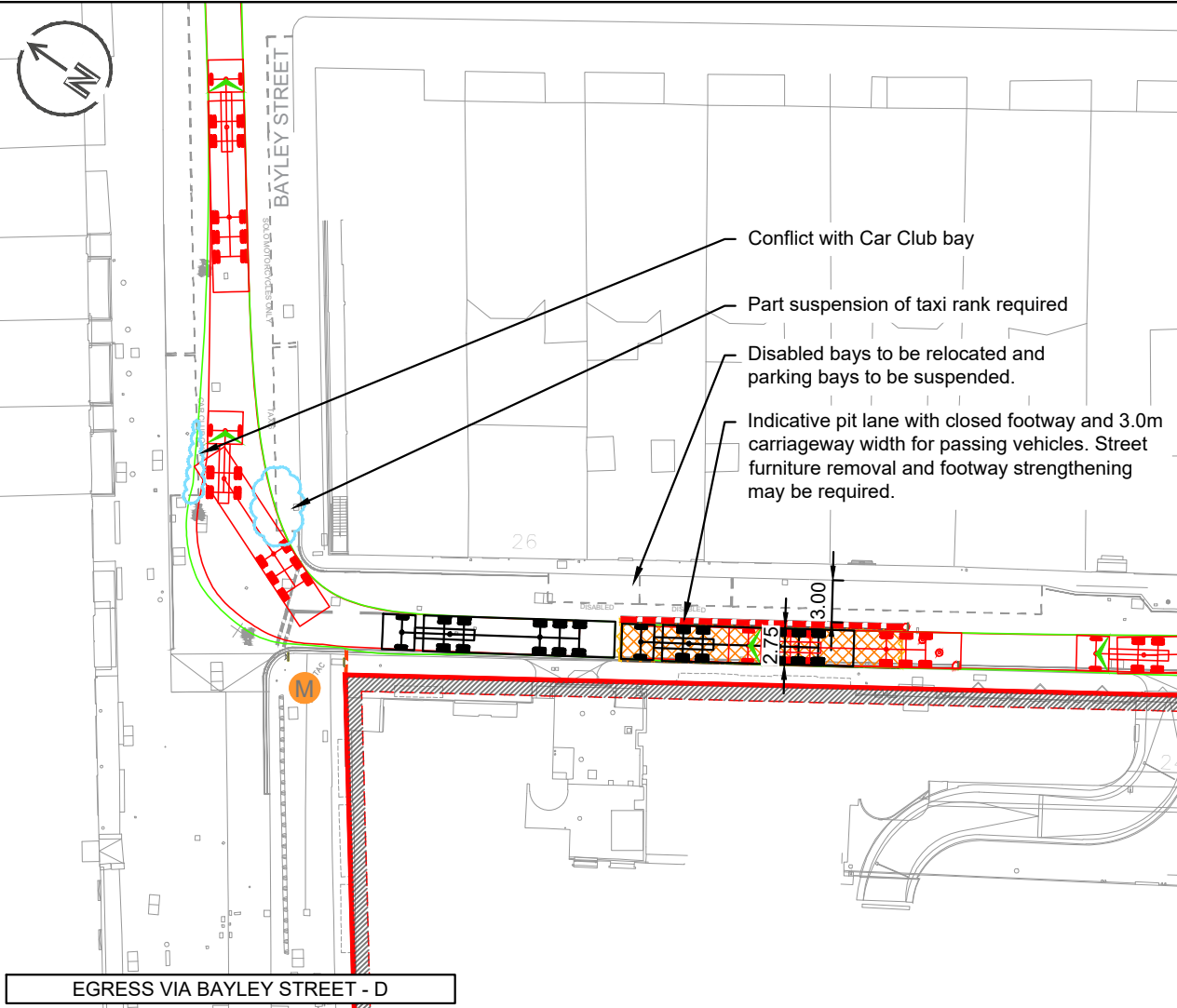
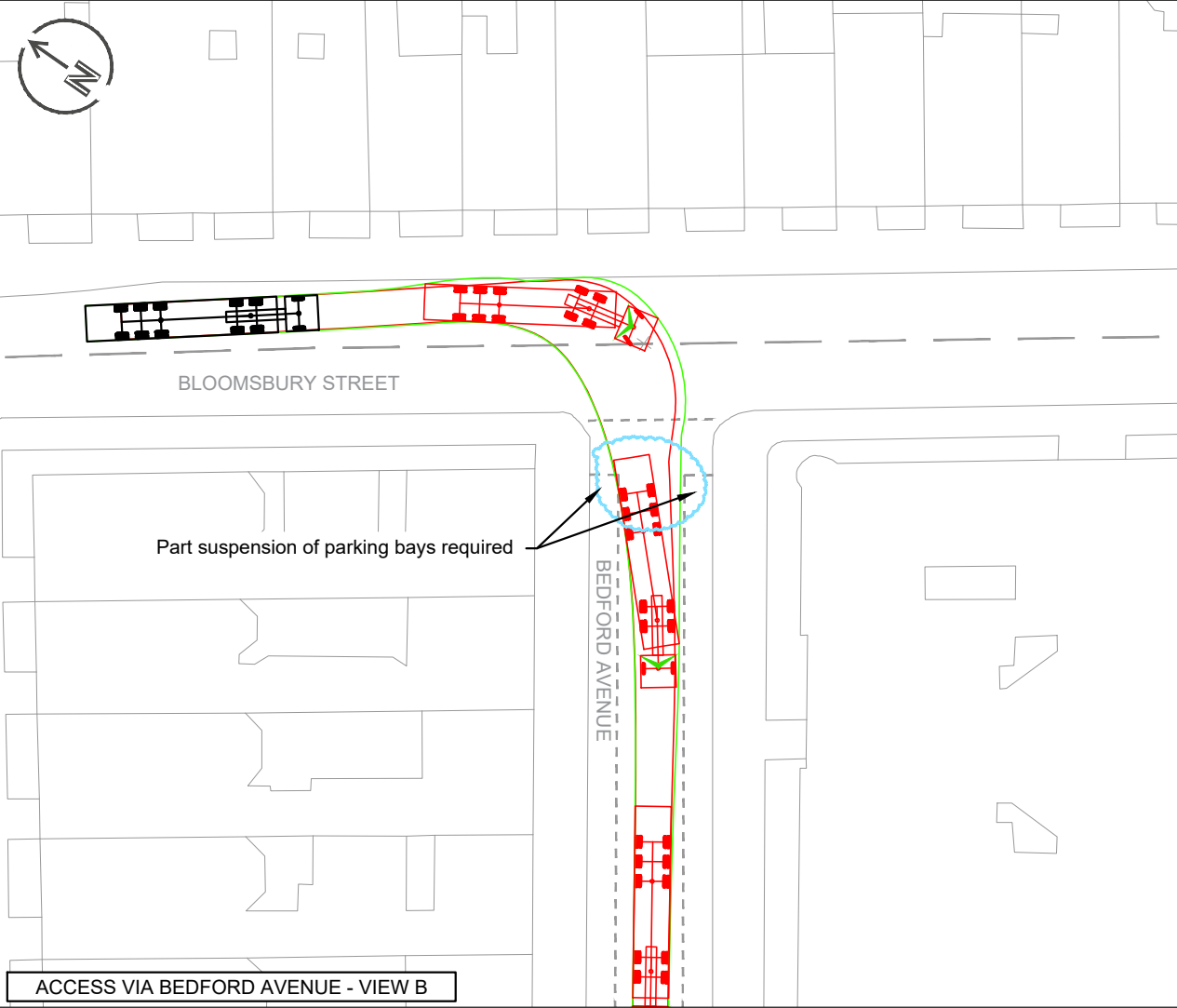
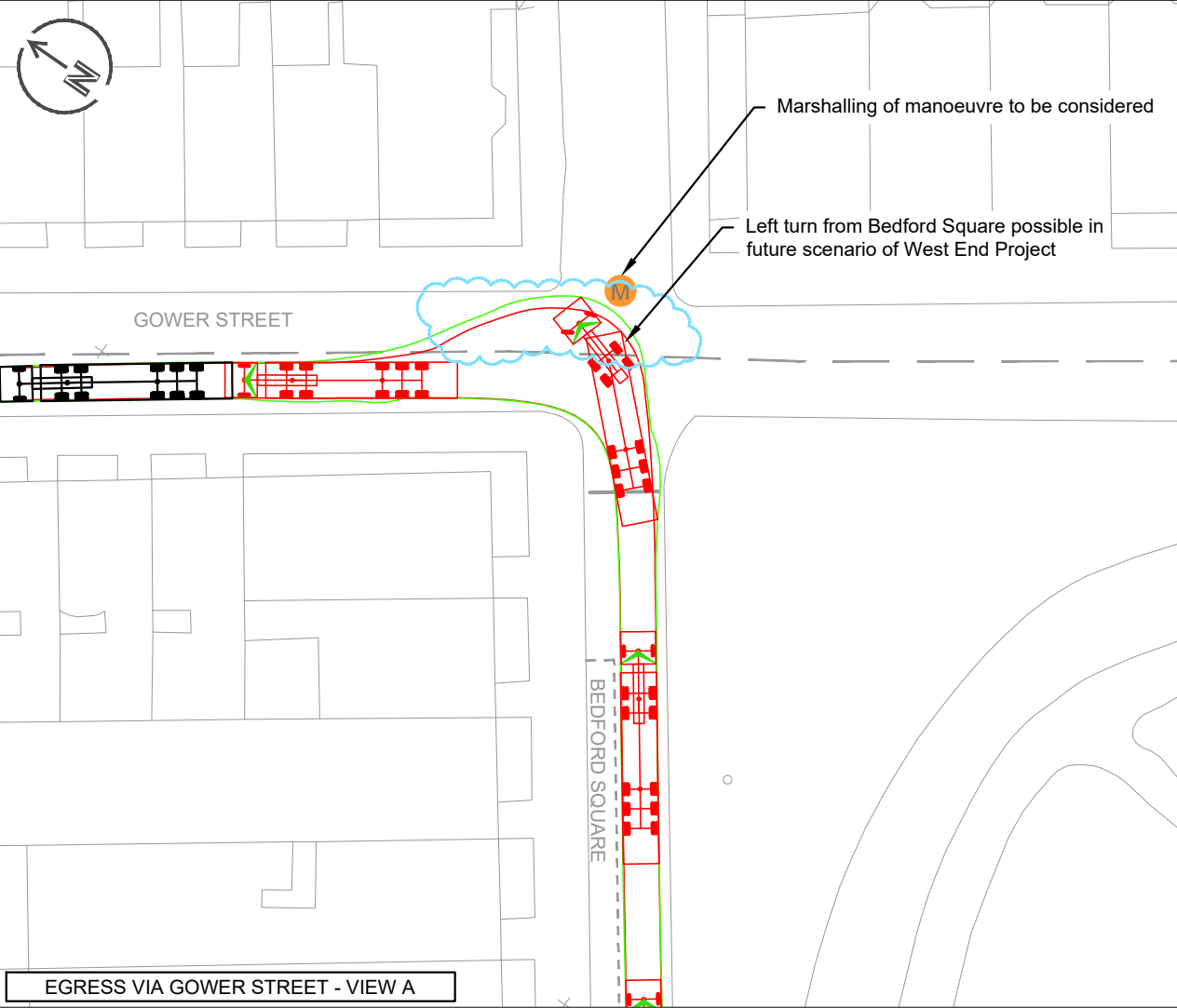
- KEY**

 -  Mass barrier
(As per Evo 80 Road Barrier or similar approved)
 -  Hoarding (Indicative)
 -  Pedestrian barrier
 -  Concertina barrier
 -  Temporary traffic sign
 -  Traffic cones
 -  Traffic marshal
 -  Pedestrian diversion route
 -  Pedestrian ramp



momentum transport consultancy		
CLIENT:		
CO-RE		
JOB TITLE:		
247 TOTTENHAM COURT ROAD		
DRAWING TITLE:		
TEMPORARY TRAFFIC MANAGEMENT PLAN MORWELL STREET		
STATUS:		
FOR INFORMATION		
DRAWING NO: M000431-2-1-DR-006	REV: A	SCALE: 1:350

ISO FULL BLEED A3 420 X 297 MM



Max Legal Length (UK) Articulated Vehicle (16.5m)	16.500m
Overall Length	2.550m
Overall Width	3.681m
Overall Body Height	0.411m
Min Body Ground Clearance	2.500m
Max Track Width	6.00s
Lock to lock time	6.530m
Kerb to Kerb Turning Radius	

- NOTES
- Existing road markings are indicative and based on OS mapping, provided by PLP Architects. This drawing also includes a topographical survey provided by Point 2 Surveyors.
 - For overview vehicle construction route see drawings M000431-2-1-DR-005
 - Swept path analysis is based on the above vehicle traveling at 5mph.

- KEY
- Indicative pit lane. See drawing M000431-2-1-DR-006
 - Vehicle swept path conflicts with existing highway infrastructure/operation
 - Indicative Traffic Marshal positions

REV	DATE	REVISION DESCRIPTION / DETAILS	DRN BY	CHKD BY	APRVD BY
C	27/04/21	Pitlane revised	IH	OB	IRT
B	16/10/20	Revised access and egress routes	PD	OB	IRT
A	21/07/20	First issue	PD	IH	IRT

momentum transport consultancy

CLIENT: CO-RE

JOB TITLE: 247 TOTTENHAM COURT ROAD

DRAWING TITLE: CONSTRUCTION VEHICLE ACCESS SWEPT PATH ANALYSIS

STATUS: FOR INFORMATION

DRAWING NO: M000431-2-1-TR-003

REV: C

SCALE: 1:500

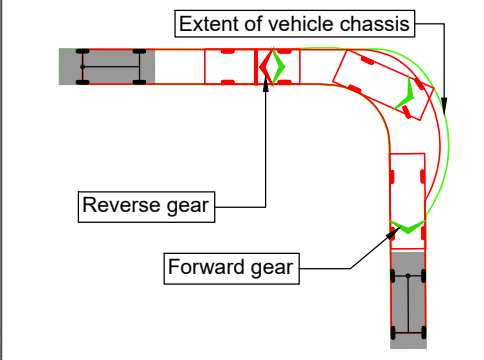
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NOTES

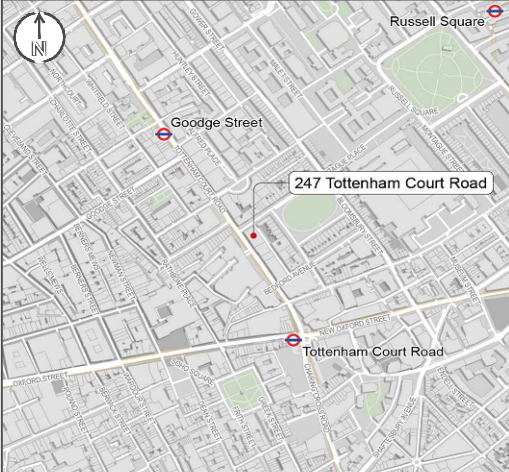
- Existing road markings are indicative and based on OS mapping, provided by PLP Architects. This drawing also includes a topographical survey provided by Point 2 Surveyors.
- For overview vehicle construction route see drawing M000431-2-1-DR-005
- For swept path analysis of junctions along the vehicle construction route see drawing M000431-2-1-TR-003
- Swept path analysis is based on the below vehicle traveling at 5mph:

Max Legal Length (UK) Articulated Vehicle (16.5m)
Overall Length 16.500m
Overall Width 2.550m
Overall Body Height 3.681m
Min Body Ground Clearance 0.411m
Max Track Width 2.500m
Lock to lock time 6.00s
Kerb to Kerb Turning Radius 6.530m

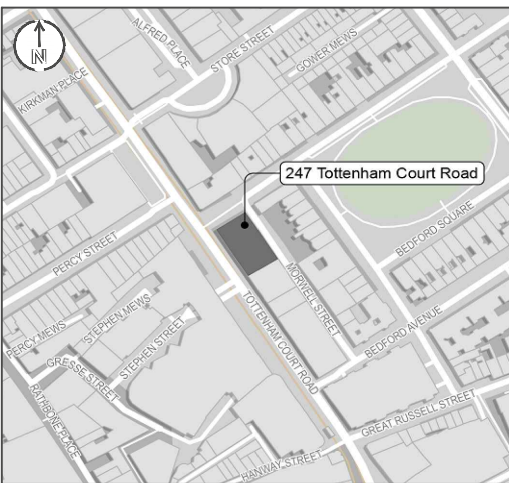


KEY

- Hoarding (Indicative)
- Concertina barrier
- Traffic marshal
- Site gate



OVERVIEW PLAN



LOCATION PLAN

A	27/04/21	First issue	IH	OB	IRT
REV	DATE	REVISION DESCRIPTION / DETAILS	DRN BY	CHKD BY	APRVD BY

CLIENT: **CO-RE**

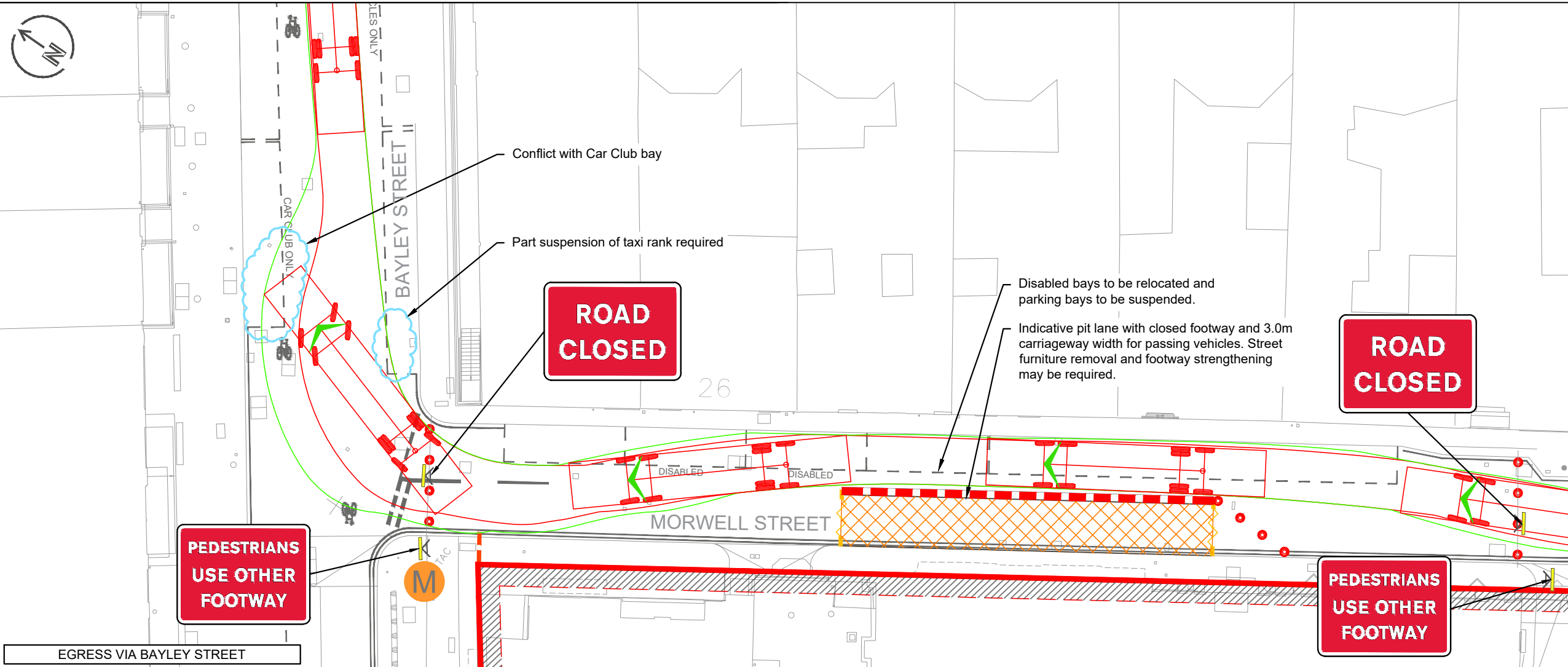
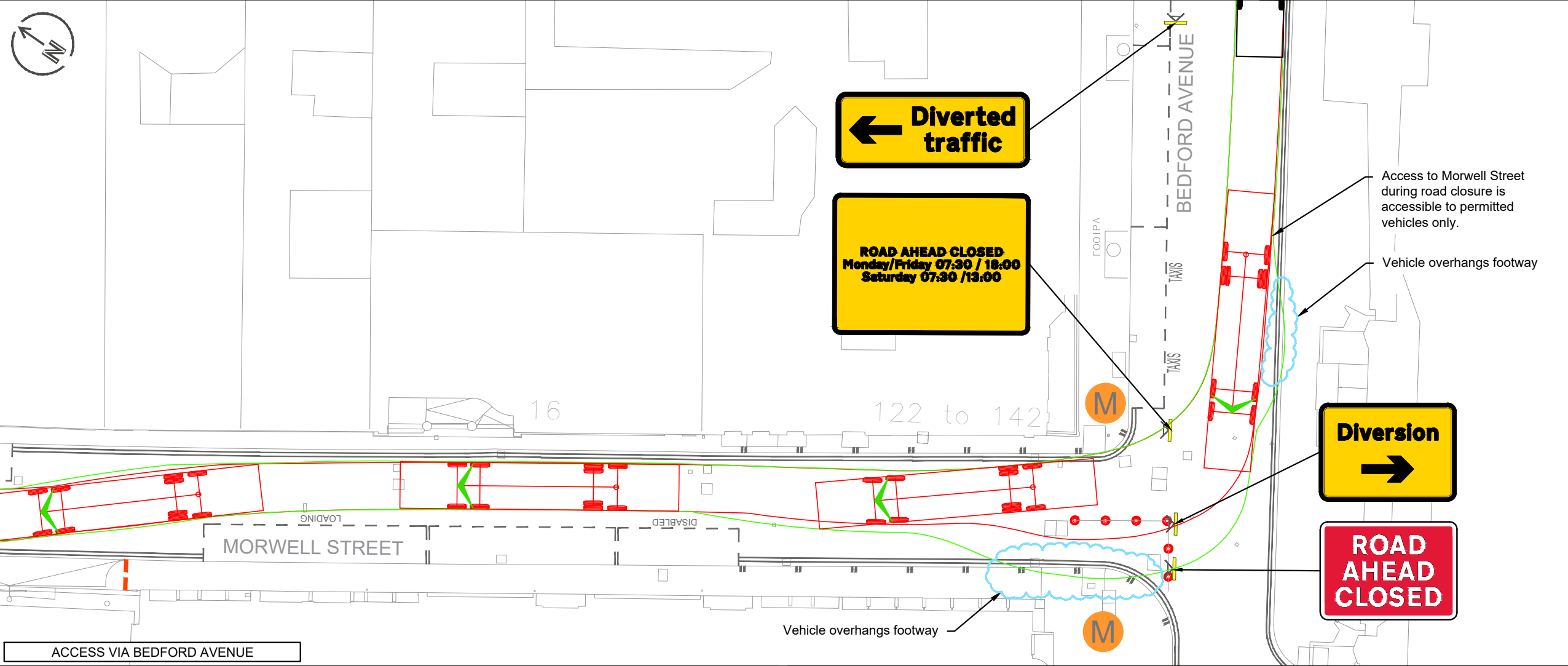
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DRAWING TITLE: **CONSTRUCTION SITE ACCESS & EGRESS VIA MORWELL STREET SWEPT PATH ANALYSIS**

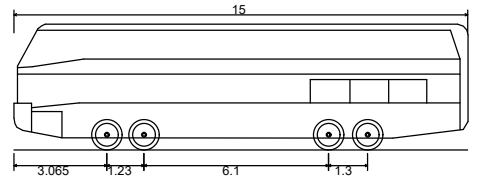
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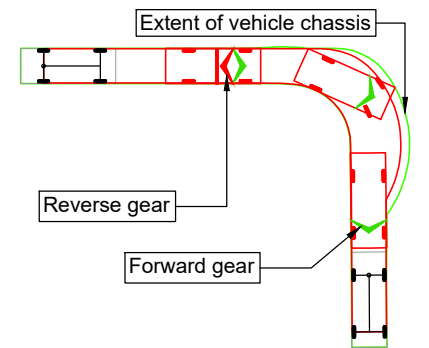
ISO FULL BLEED A3 420 X 297 MM



- NOTES**
- Existing road markings are indicative and based on OS mapping, provided by PLP Architects. This drawing also includes a topographical survey provided by Point 2 Surveyors.
 - For overview vehicle construction route see drawings M000431-2-1-DR-005.
 - Swept path analysis is based on the above vehicle traveling at 5mph.
 - Temporary Traffic Management design has been provided by others.



15m 6WS Luxury Coach
Overall Length 15.000m
Overall Width 2.500m
Overall Body Height 4.157m
Min Body Ground Clearance 0.397m
Track Width 2.500m
Lock to lock time 5.00s
Wall to Wall Turning Radius 12.490m



- KEY**
- Indicative pit lane. See drawing M000431-2-1-DR-006
 - Vehicle swept path conflicts with existing highway infrastructure/operation
 - Indicative traffic marshal positions
 - Temporary traffic signs
 - Traffic cones

REV	DATE	REVISION DESCRIPTION / DETAILS	DRN BY	CHKD BY	APRVD BY
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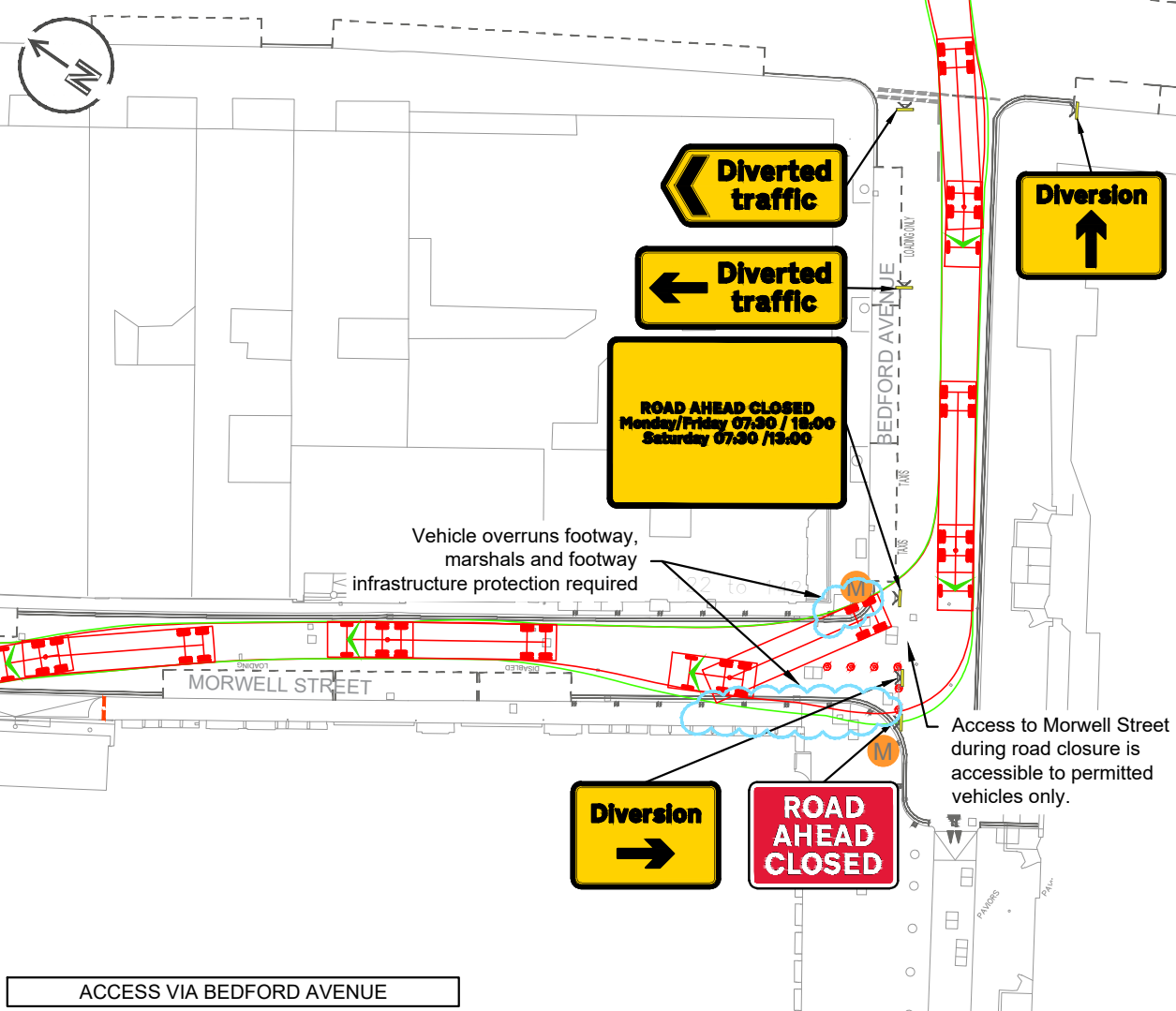
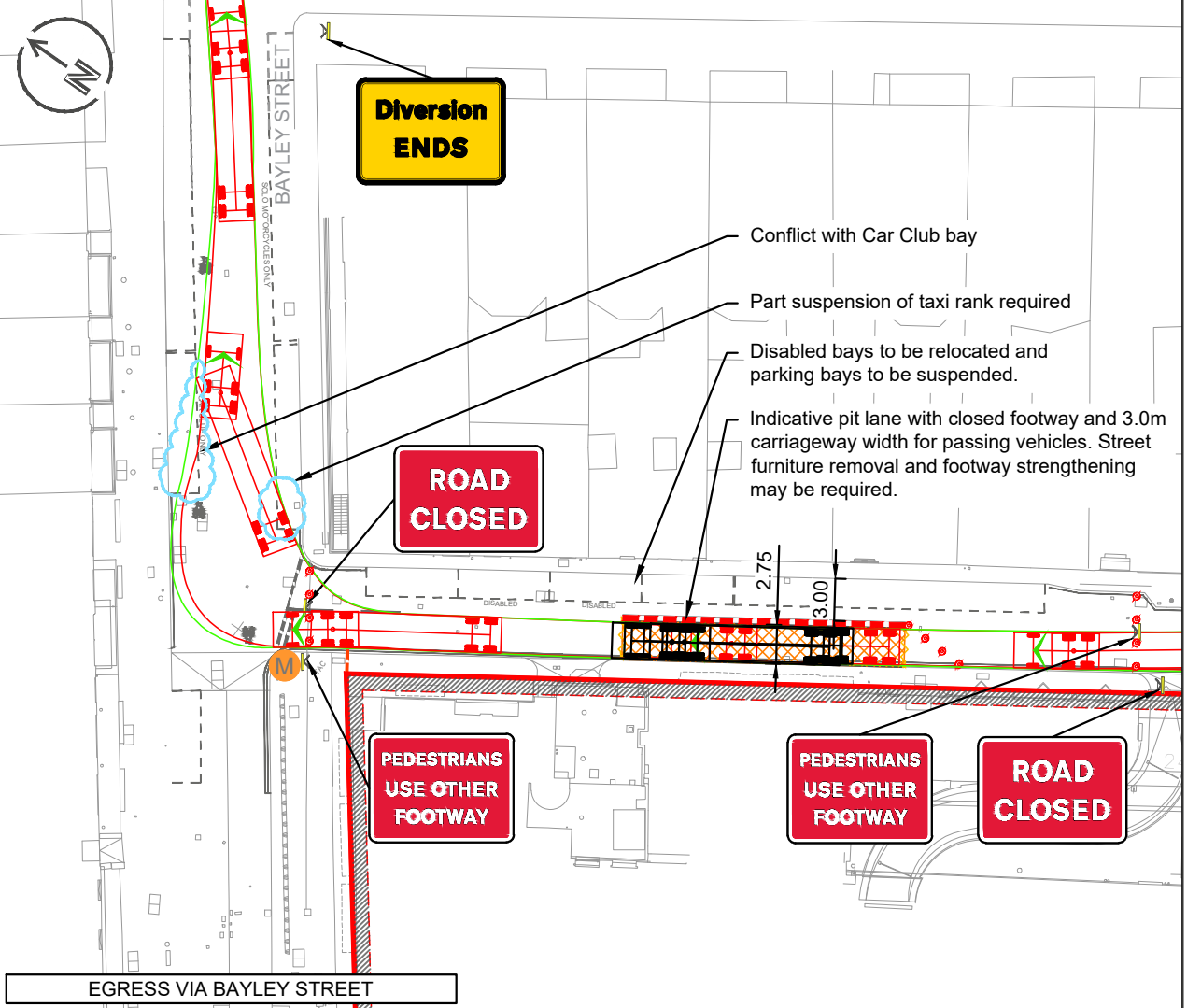
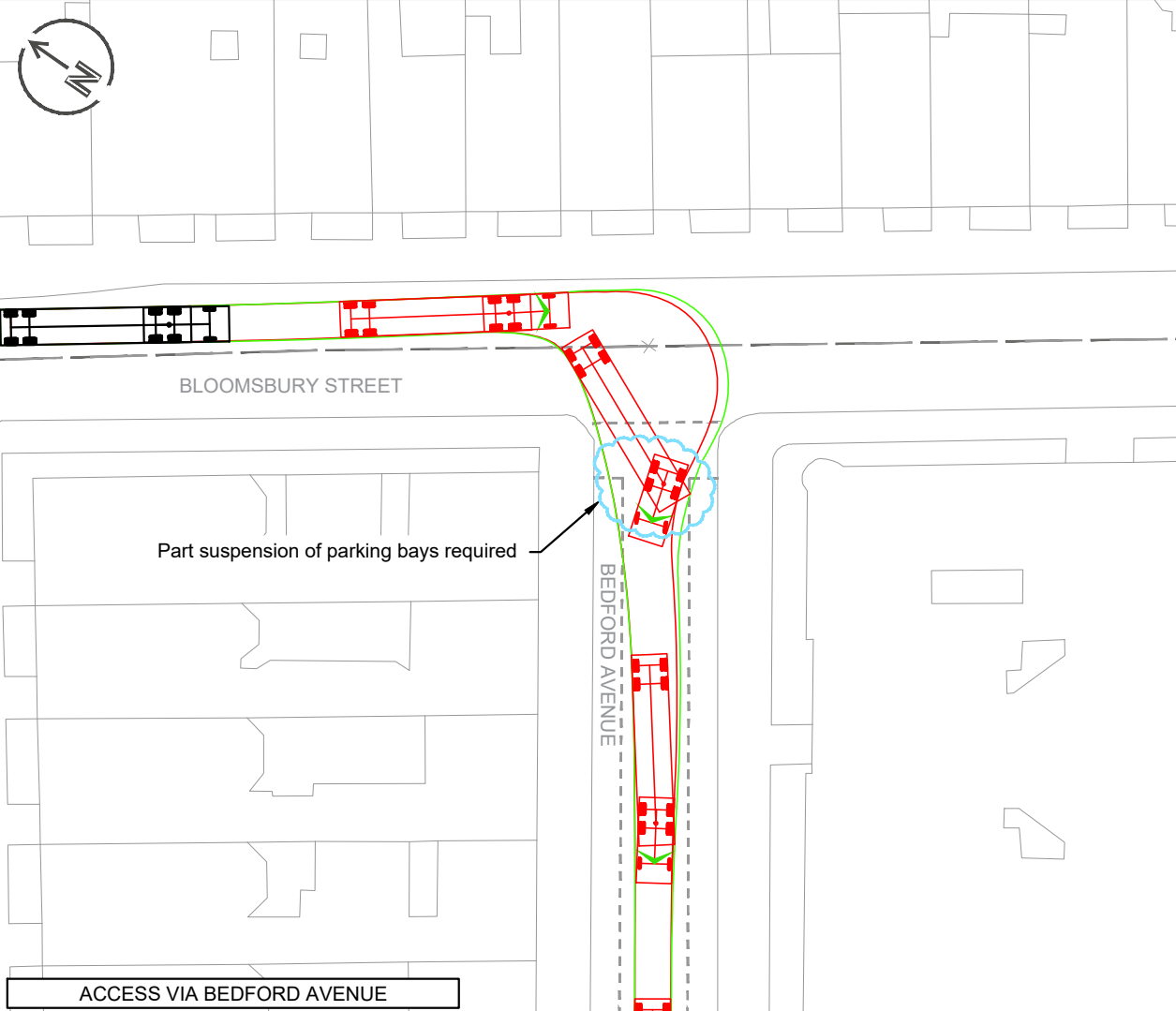
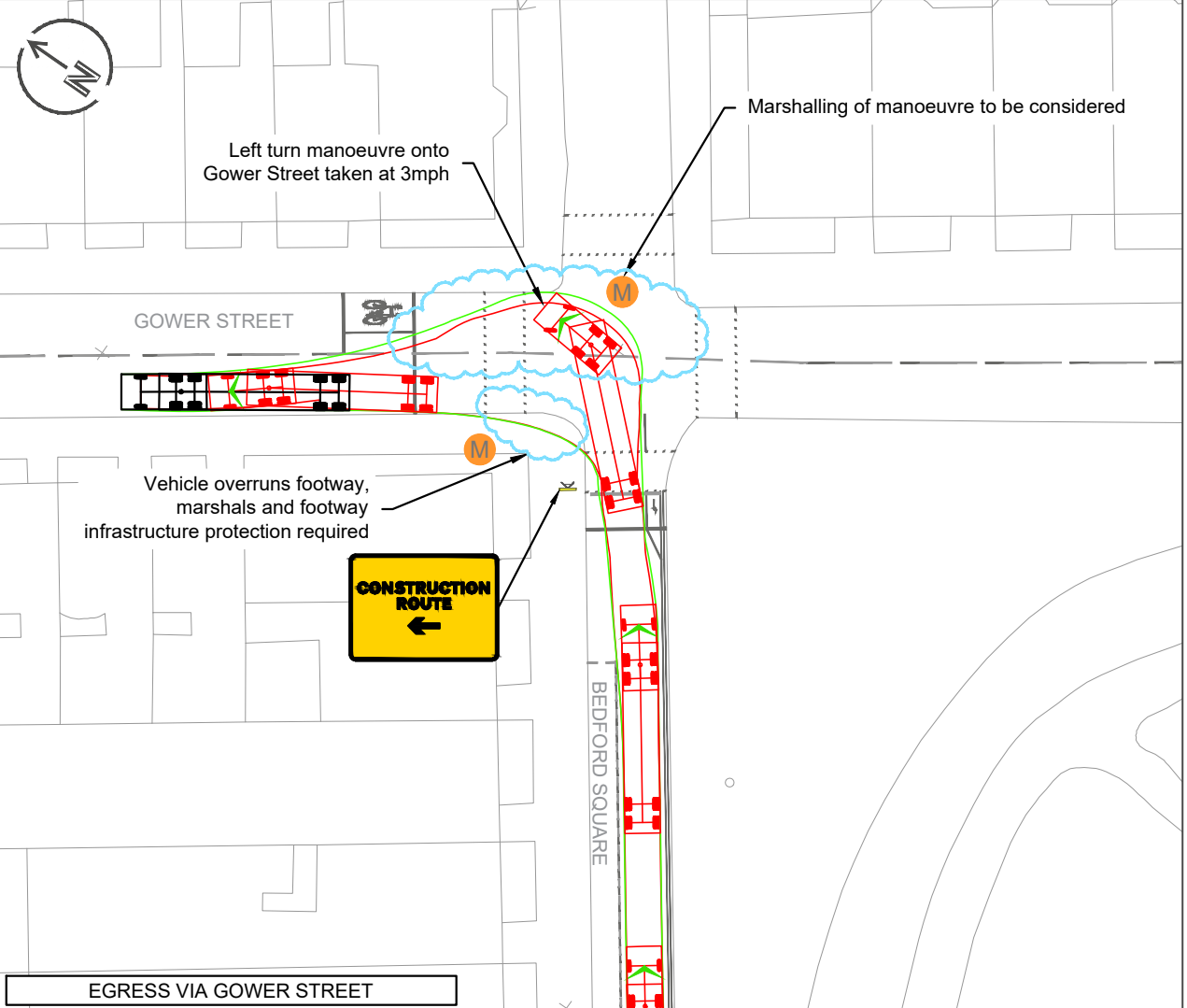
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DRAWING TITLE: COACH ACCESS SWEPT PATH ANALYSIS

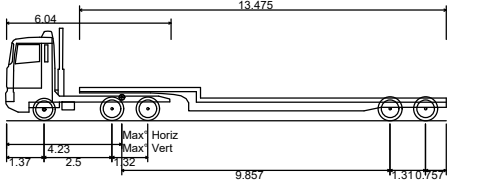
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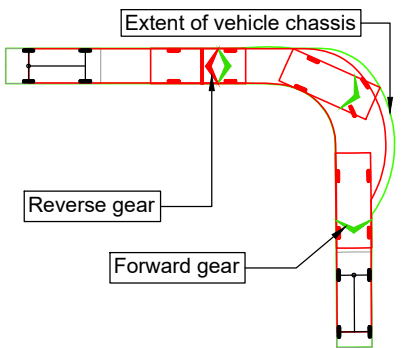
ISO FULL BLEED A3 420 X 297 MM



- NOTES
- Existing road markings are indicative and based on OS mapping, provided by PLP Architects. This drawing also includes a topographical survey provided by Point 2 Surveyors.
 - For overview vehicle construction route see drawings M000431-2-1-DR-005.
 - Swept path analysis is based on the above vehicle traveling at 5mph.
 - Temporary Traffic Management design has been provided by others.



Low Loader
Overall Length 16.154m
Overall Width 2.520m
Overall Body Height 3.393m
Min Body Ground Clearance 0.318m
Max Track Width 2.500m
Lock to lock time 6.00s
Kerb to Kerb Turning Radius 6.990m



- KEY
- Indicative pit lane. See drawing M000431-2-1-DR-006
 - Vehicle swept path conflicts with existing highway infrastructure/operation
 - Indicative traffic marshal positions
 - Temporary traffic signs
 - Traffic cones

A	22/07/21	First issue	LT	IRT	OB
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JOB TITLE: 247 TOTTENHAM COURT ROAD

DRAWING TITLE: LOW LOADER ACCESS SWEPT PATH ANALYSIS

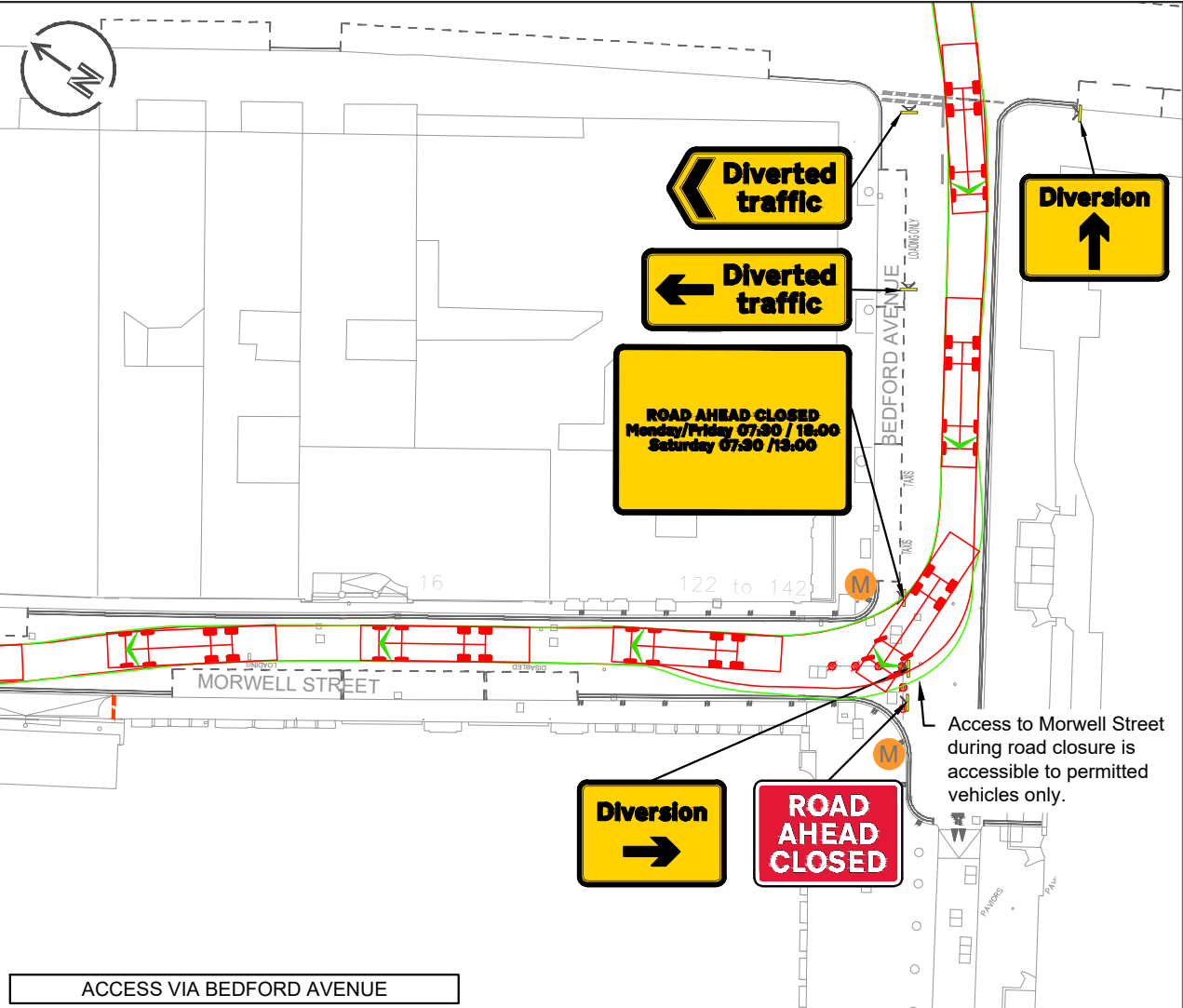
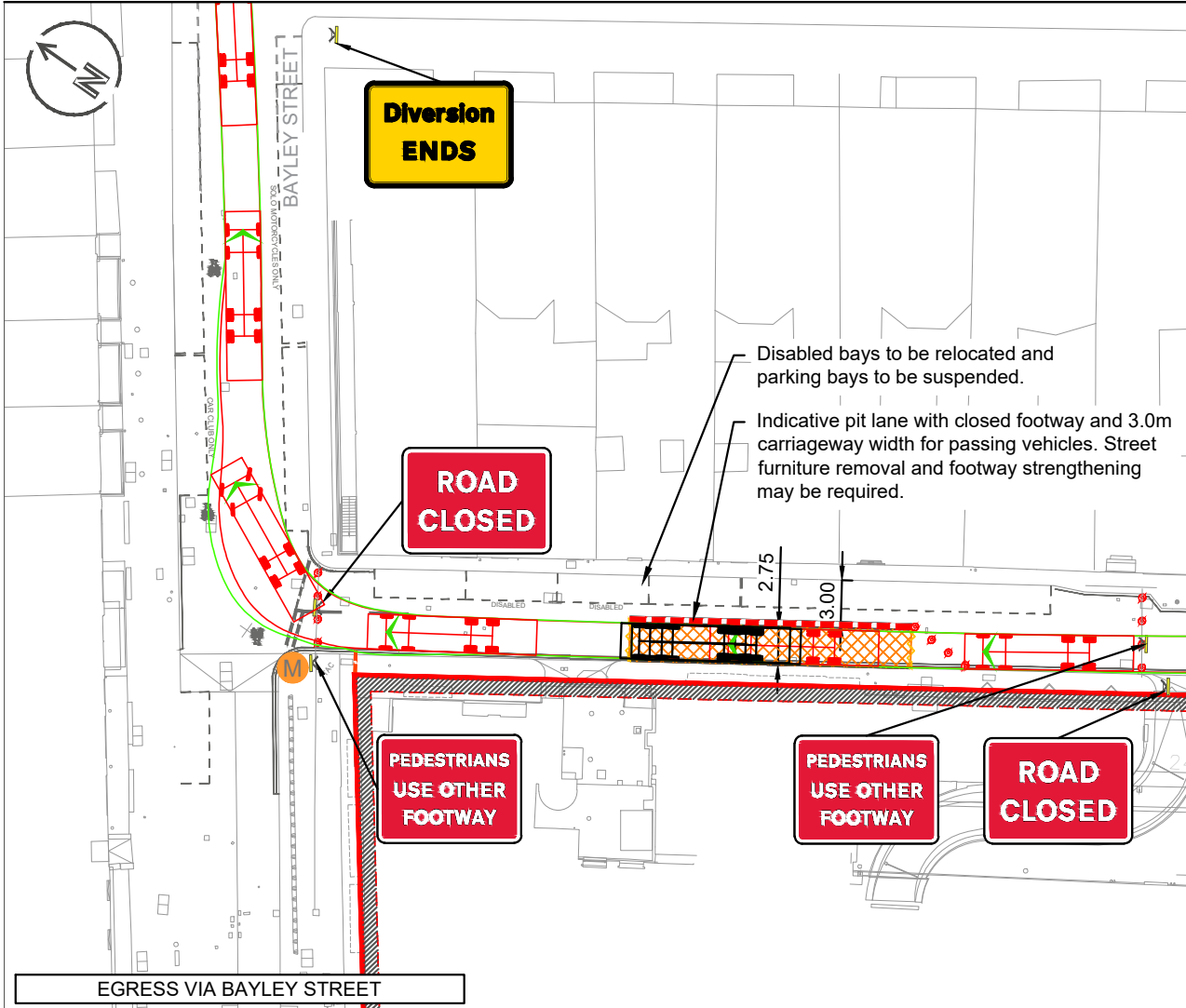
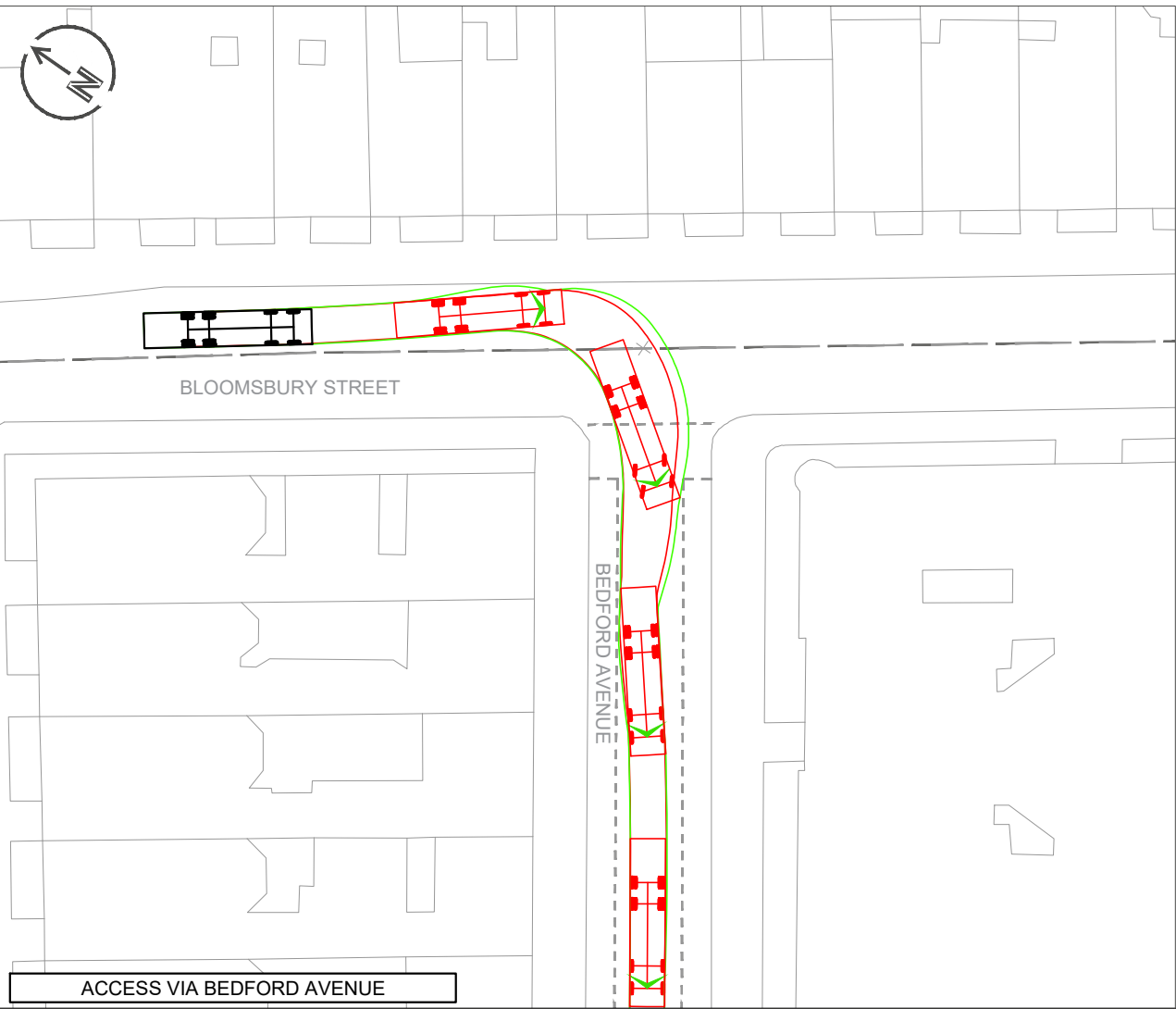
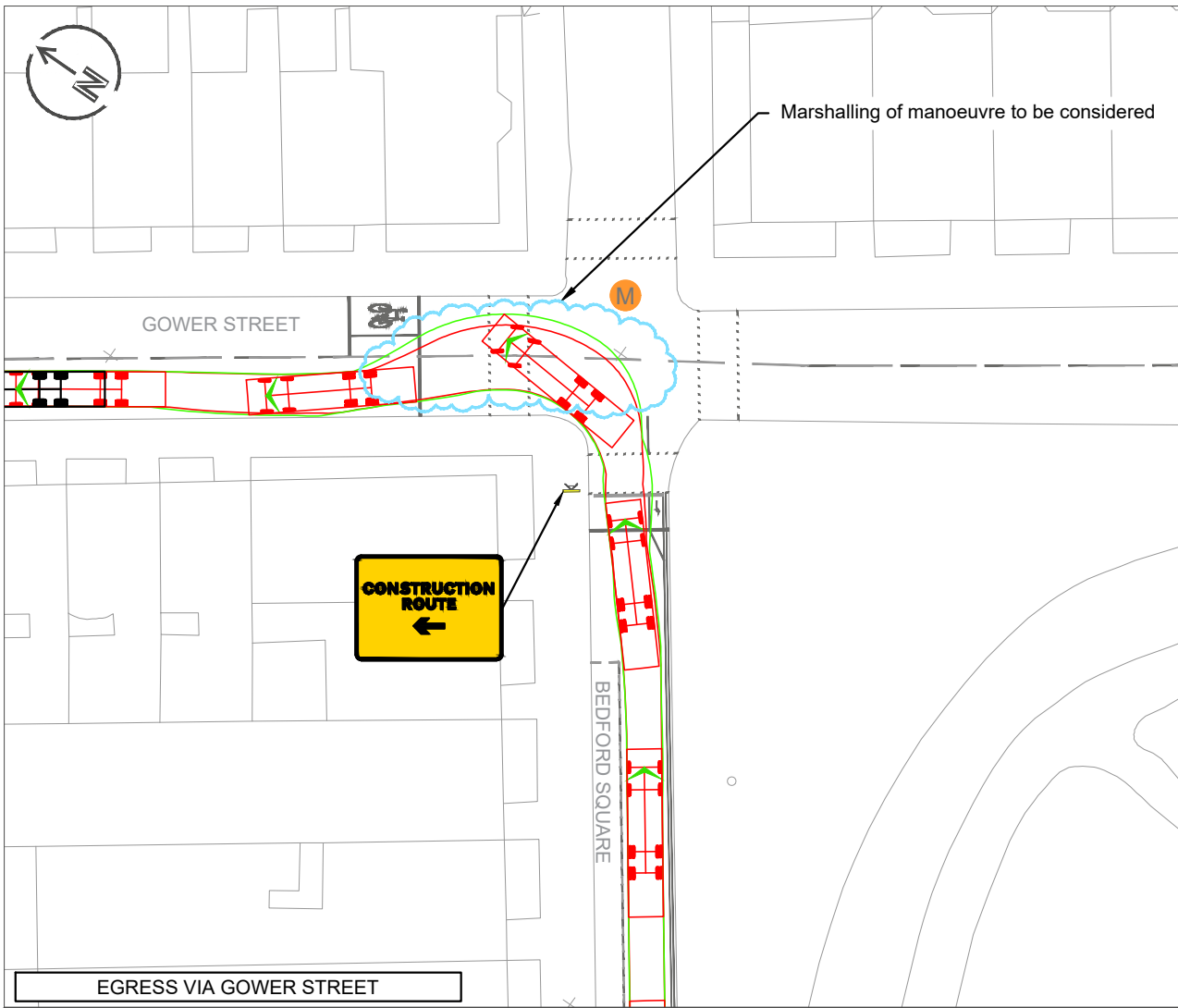
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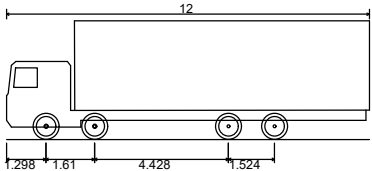
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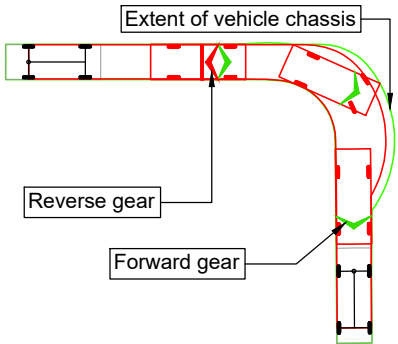


NOTES

- Existing road markings are indicative and based on OS mapping, provided by PLP Architects. This drawing also includes a topographical survey provided by Point 2 Surveyors.
- For overview vehicle construction route see drawings M000431-2-1-DR-005.
- Swept path analysis is based on the above vehicle traveling at 5mph.
- Temporary Traffic Management design has been provided by others.



Rigid Truck
Overall Length 12.000m
Overall Width 2.500m
Overall Body Height 3.928m
Min Body Ground Clearance 0.412m
Track Width 2.471m
Lock to lock time 6.00s
Kerb to Kerb Turning Radius 11.900m



KEY

- Indicative pit lane. See drawing M000431-2-1-DR-006
- Vehicle swept path conflicts with existing highway infrastructure/operation
- Indicative traffic marshal positions
- Temporary traffic signs
- Traffic cones

REV	DATE	REVISION DESCRIPTION / DETAILS	DRN BY	CHKD BY	APRVD BY
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CLIENT: CO-RE

JOB TITLE: 247 TOTTENHAM COURT ROAD

DRAWING TITLE: 12M RIGID TRUCK ACCESS SWEPT PATH ANALYSIS

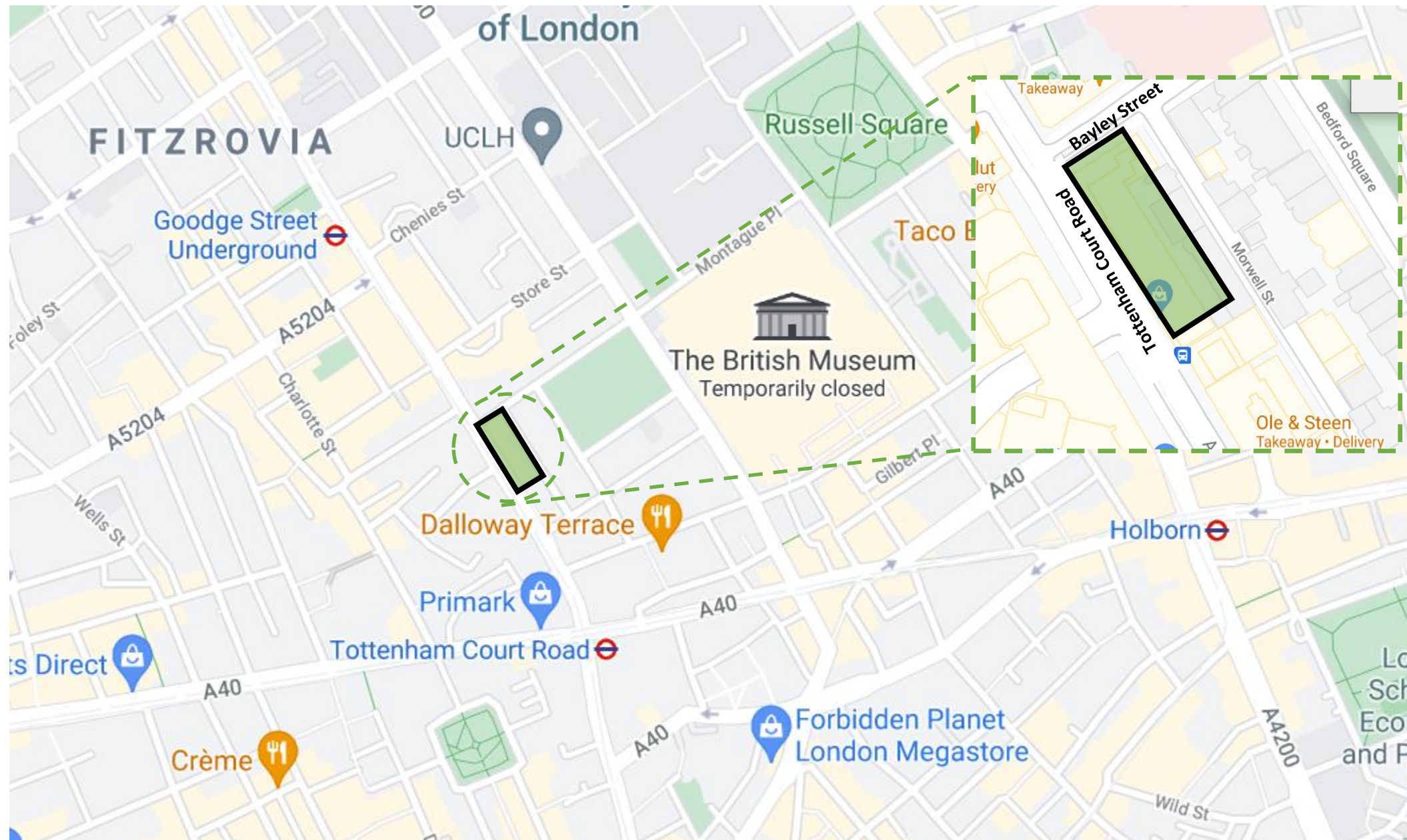
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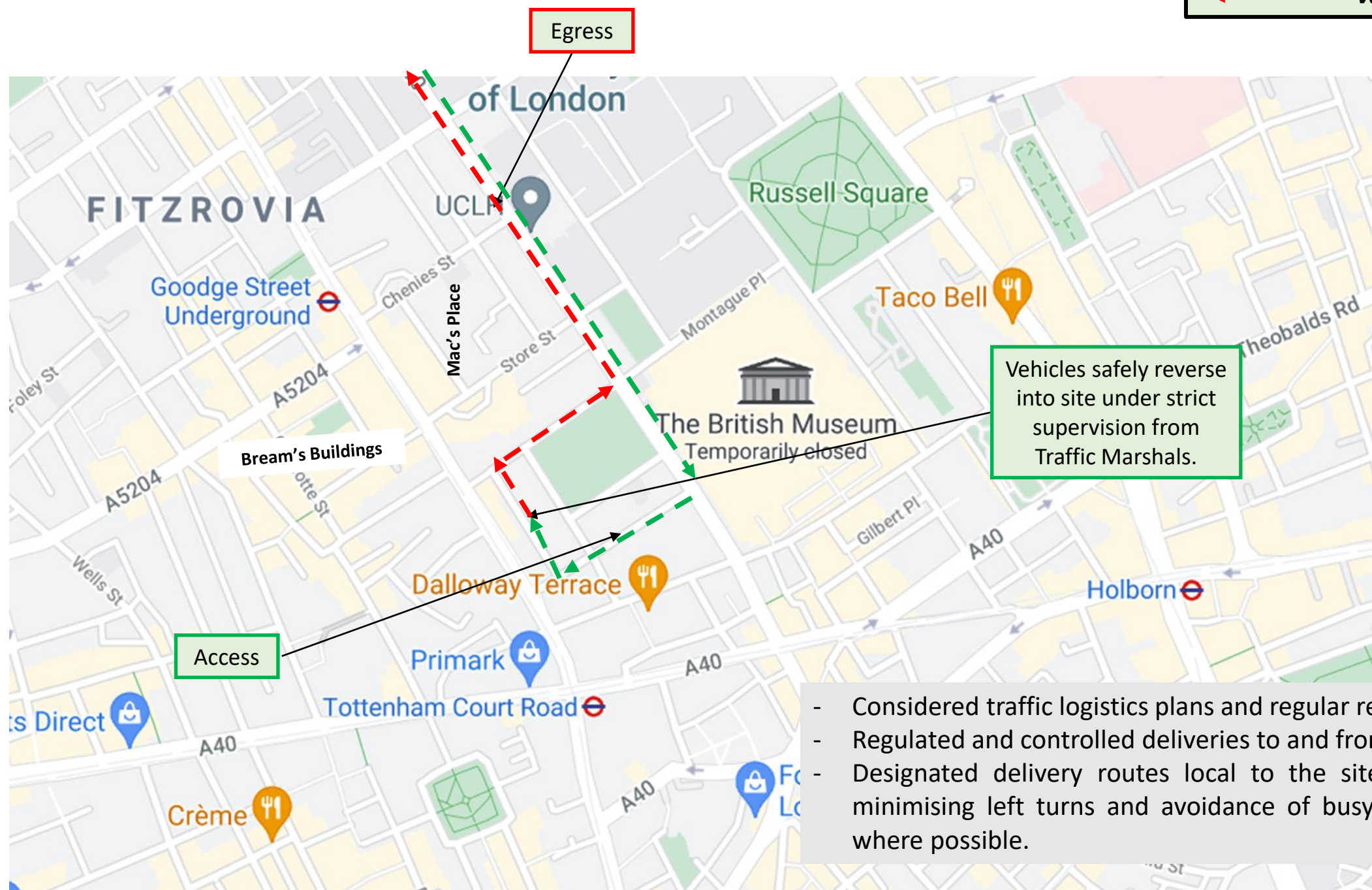
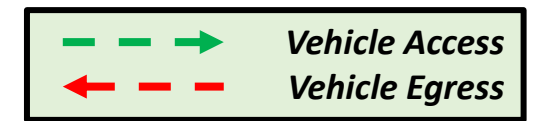
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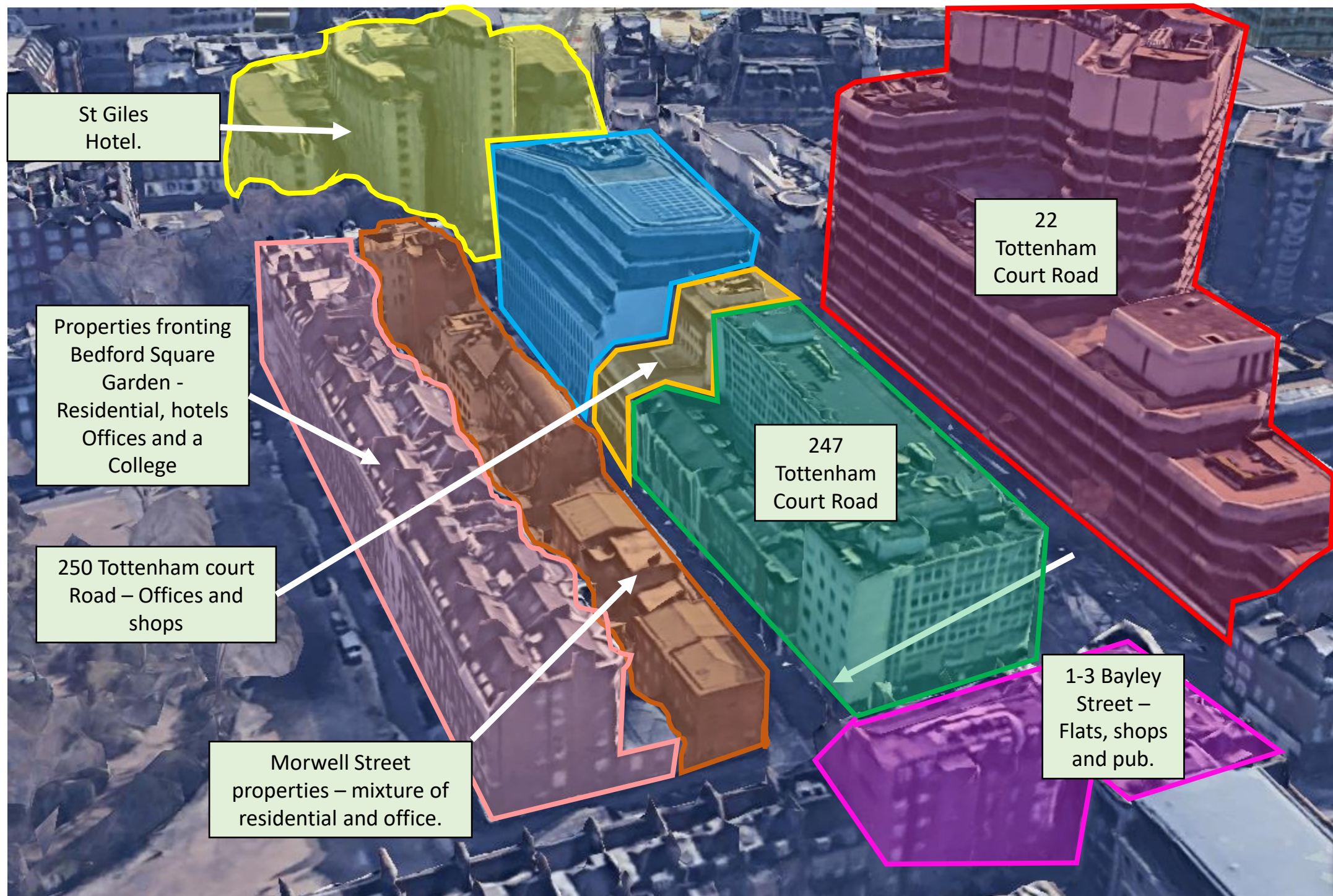
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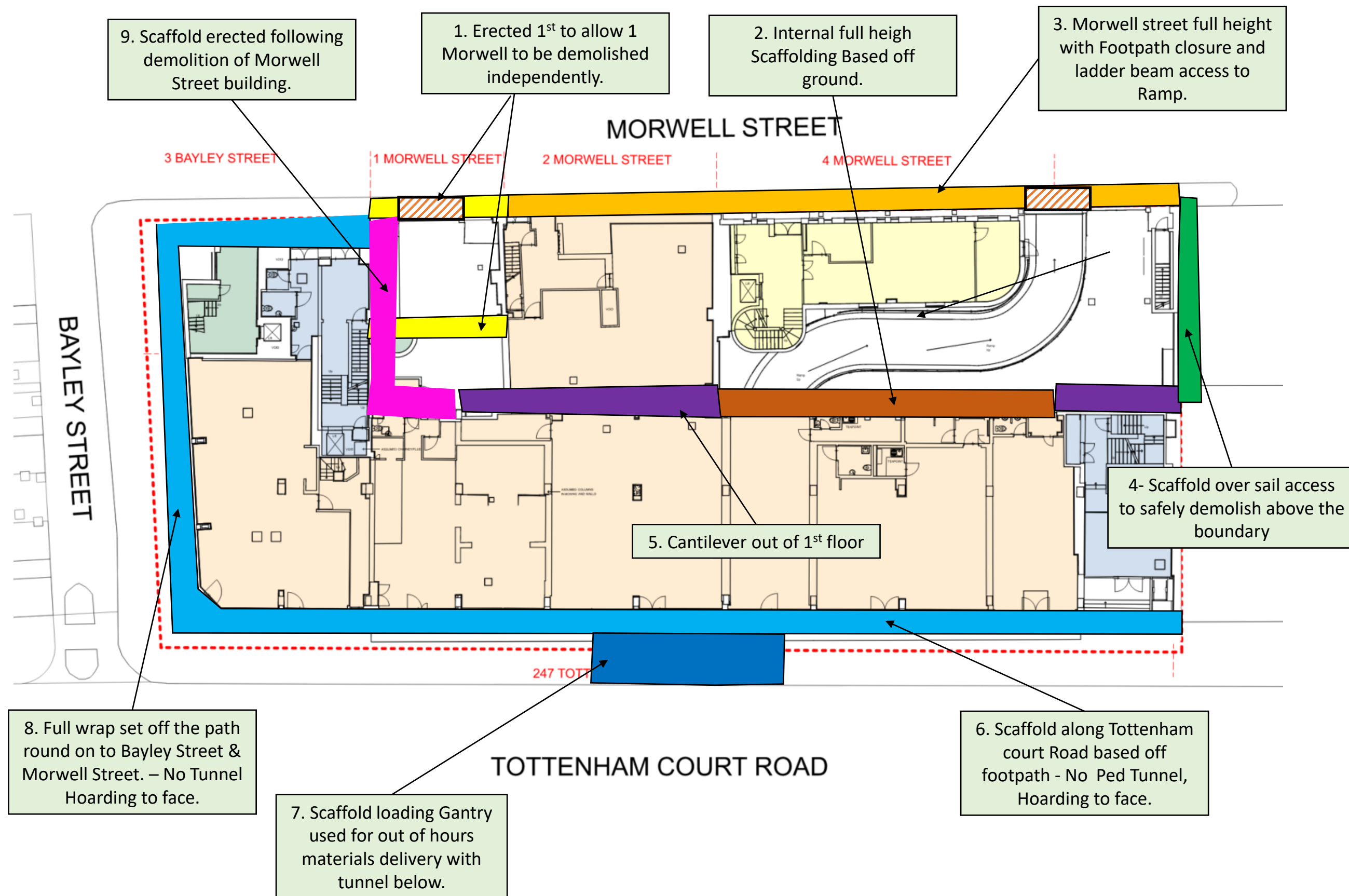


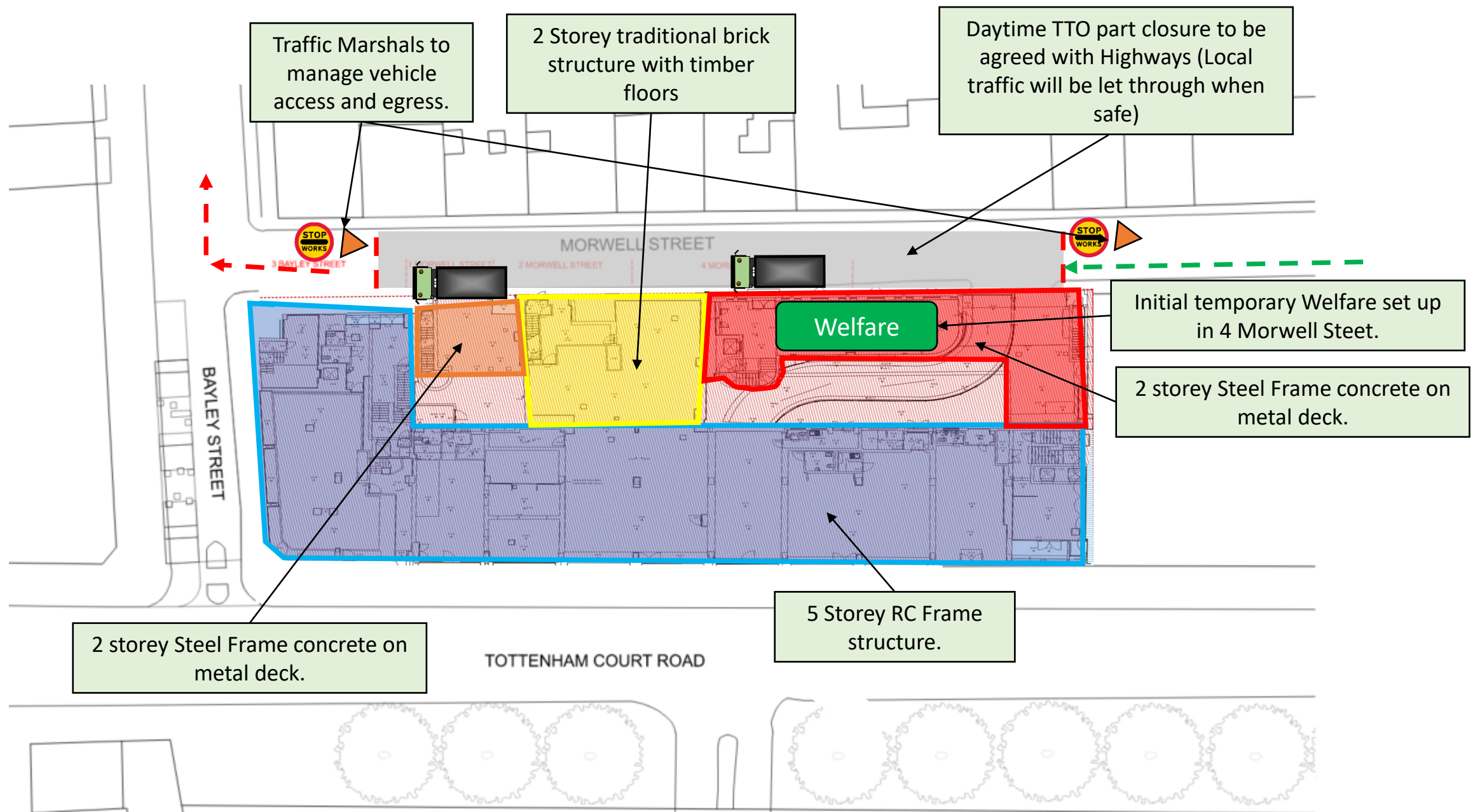


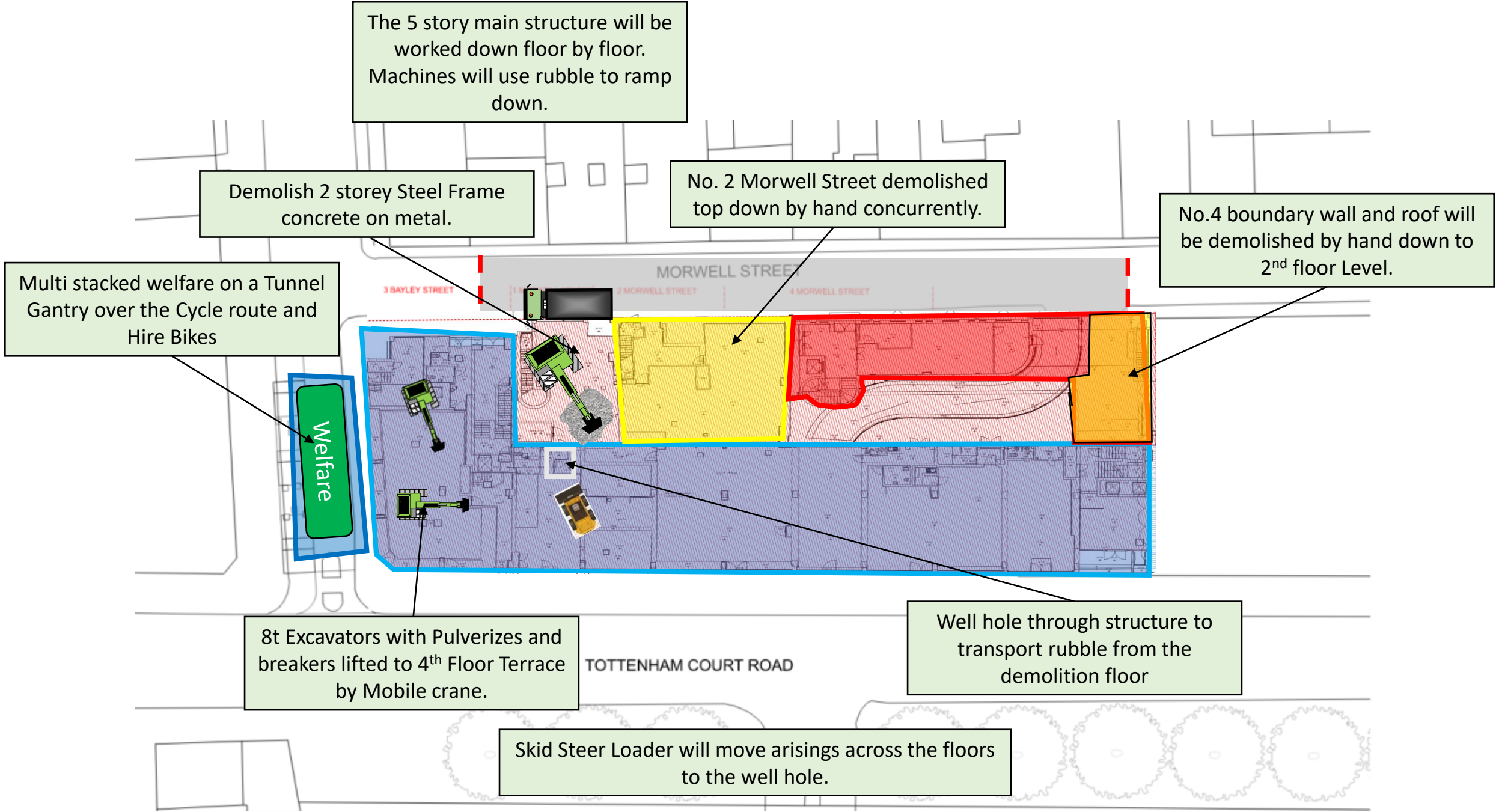
Location of Site: The Fitzrovia.

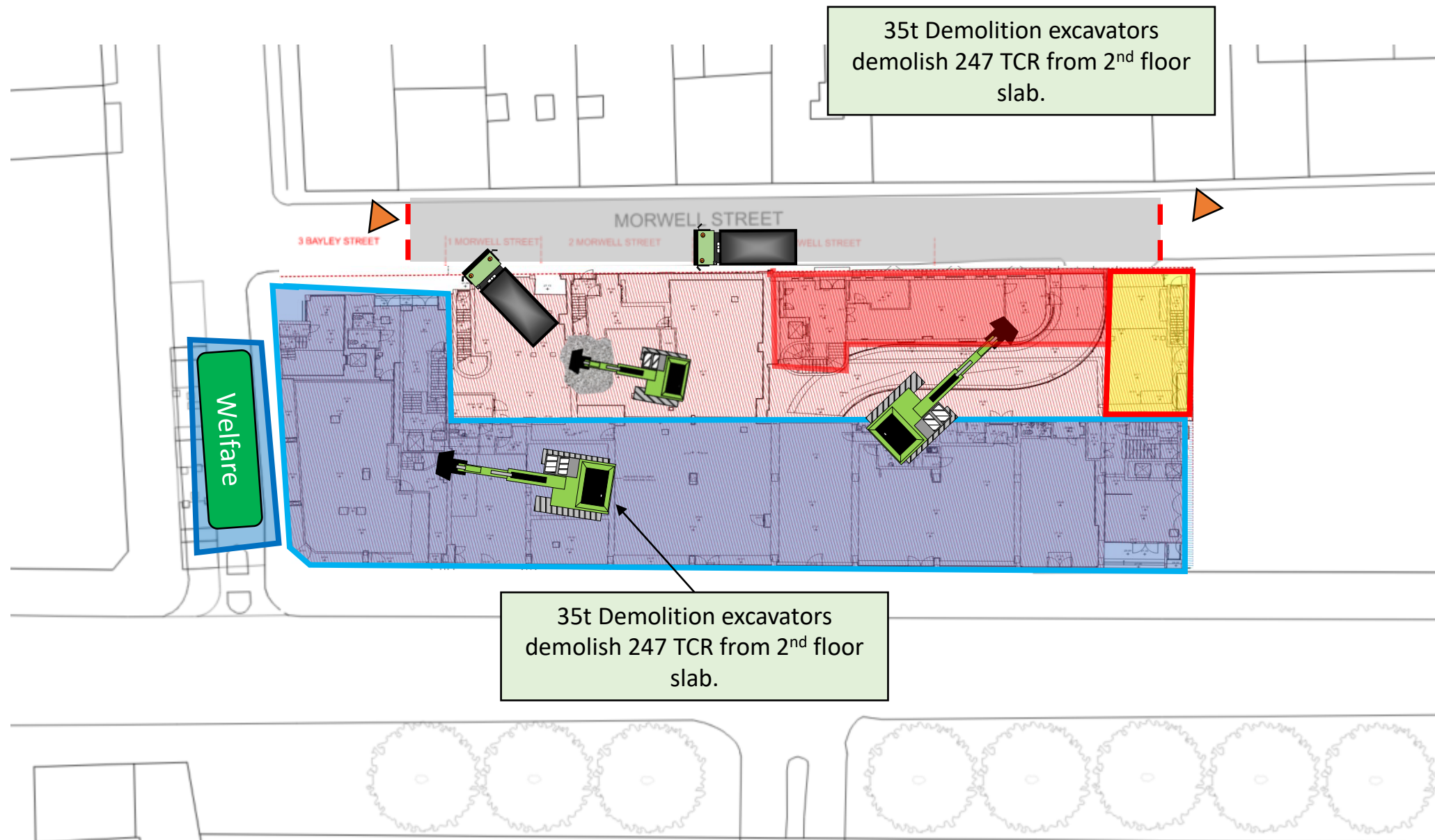


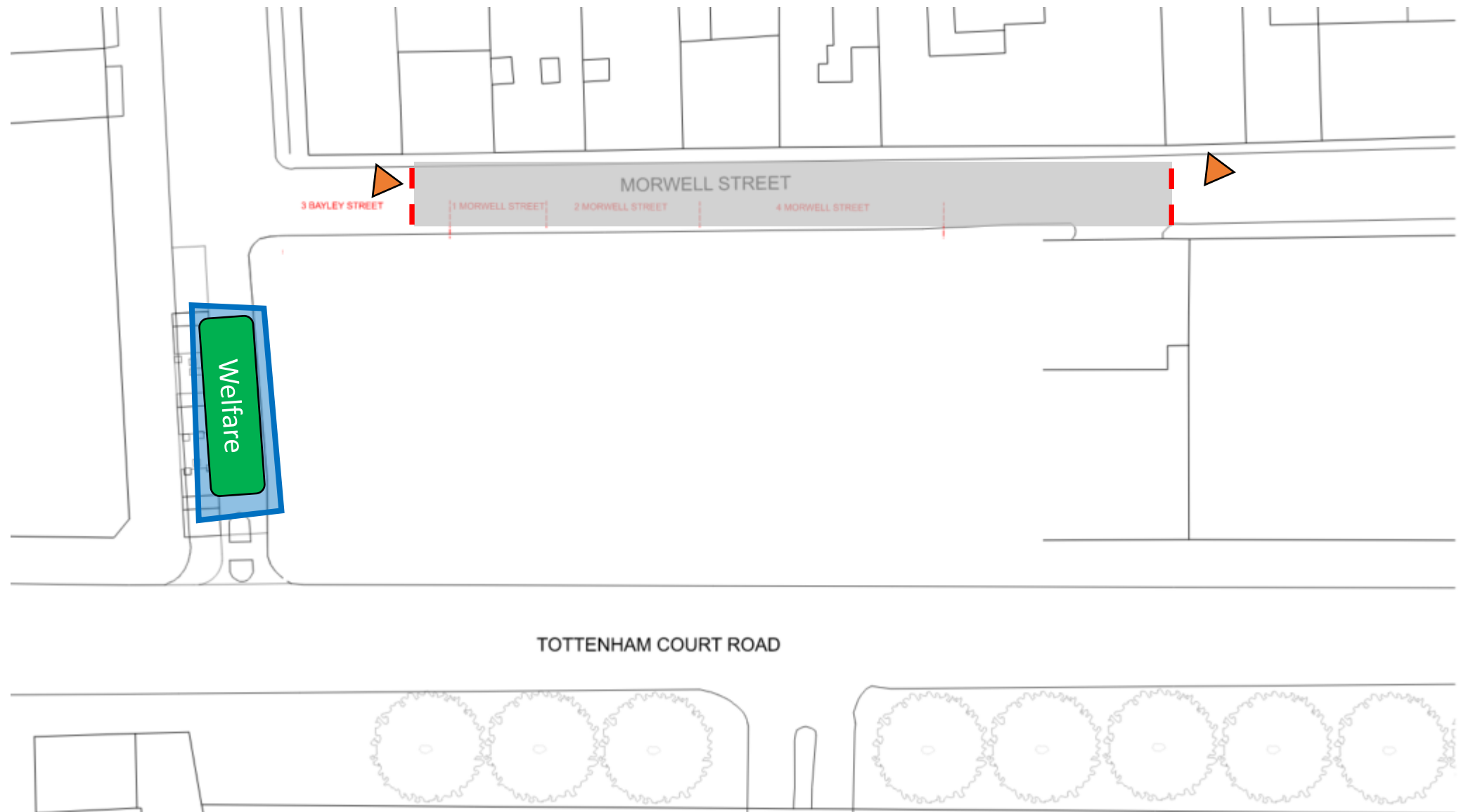


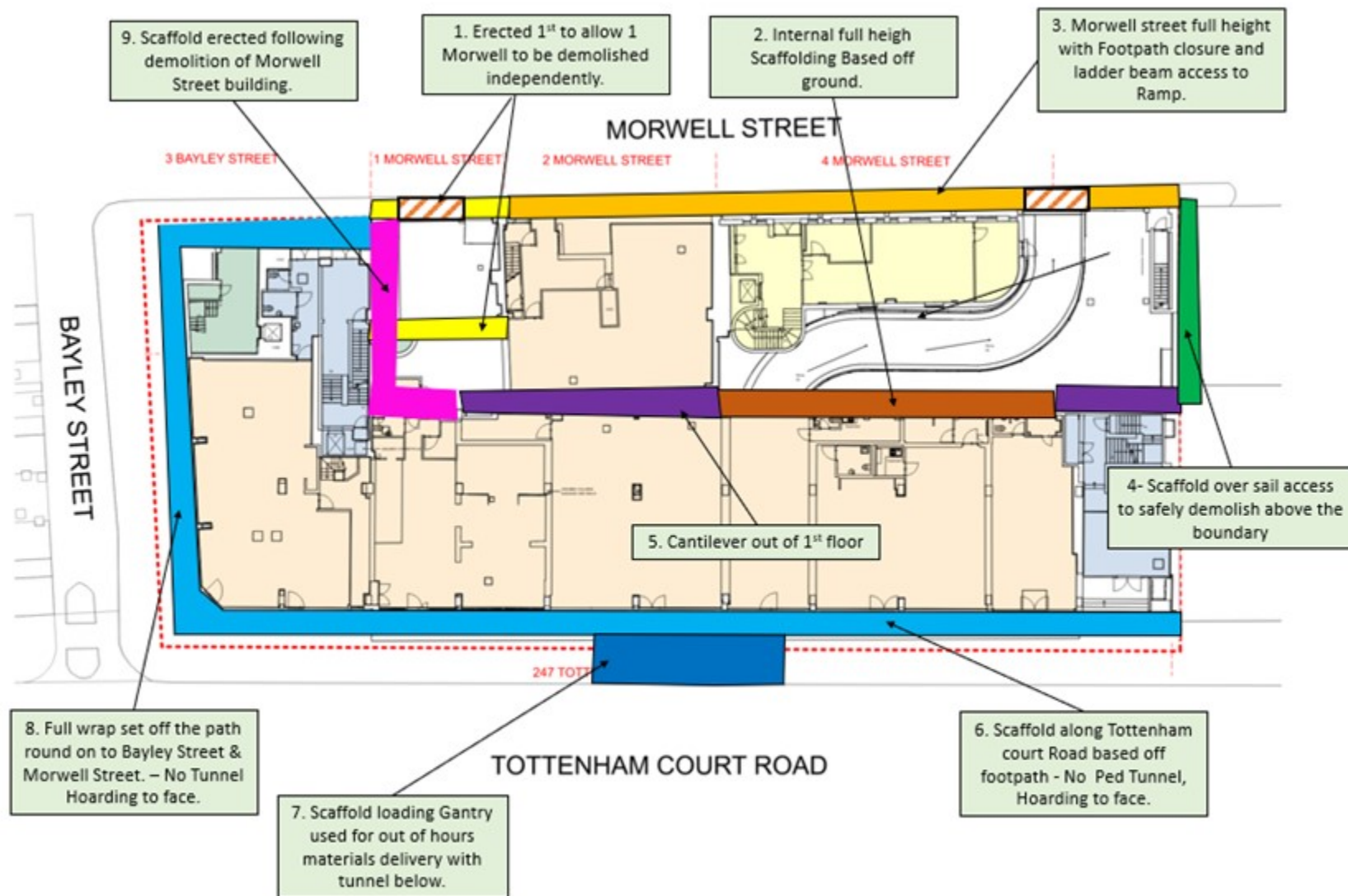












The Fitzrovia - Lane Scaffold Plan

Noise Modelling Report

Client: Deconstruct UK Ltd

Project: 247 Tottenham Court Road



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DOCUMENT REFERENCE: EEMC_206_001_NMR - Rev 00

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AMENDMENT HISTORY			
Issue	Status	Description	Date
00	Draft	First Issue (draft)	13 th July 2021

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Glossary & Abbreviations

The abbreviations listed below apply to this document:

Ambient Noise	The total noise from all sources near and far impacting a specific location in an outside environment, which varies dependent on the location.
PM	Project Management
dB (A)	Decibel 'A' weighting - sound pressure level that corresponds to the frequency response of the human ear.
LAeqT	The level of steady sound over period time T that would have the same sound energy as the 'A' weighted fluctuating sound level over time T
EHO	Environmental Health Officer
Section 60 Notice	Served under The Control of Pollution Act 1974 with conditions to control noise and vibration during construction. The conditions must be complied with until revoked or successfully appealed against
Section 61 Prior Consent	Notice served under the Control of Pollution Act 1974 to permit noise on construction sites with conditions to be complied with.
LA	Local Authority (Camden London Borough Council)

1. Introduction

European Environmental Monitoring and Consultancy (EEMC) Limited have been instructed to undertake noise modelling and noise predictions for planned demolition, piling and associated works at 247 Tottenham Court Road, on behalf of Deconstruct UK Ltd

This document provides output of the noise modelling exercise for each planned phase. The Noise modelling provides a prediction of noise levels generated by the proposed demolition, piling and associated activities during each phase on each of the nearby commercial and residential receptors. This Noise Modelling Report will supplement the Environment section of the Construction Management Plan (CMP).

The noise modelling undertaken and detailed in this report is based upon information provided. It is assumed that all relevant information has been supplied by those parties from whom it has been requested and that such information is accurate.

Based on the predicted noise levels and the requirements of London Borough of Camden noise and vibration monitoring trigger levels will be set. The works will adopt and implement best practicable means mitigation measures to minimise impacts as far as practicable.

EEMC will provide guidance regarding the approach for monitoring and reporting of noise, and vibration generated during demolition, piling and associated works, including proposed trigger levels.

2. Relevant Legislations and Local Policy

In addition to contractual requirements, all works will be carried out in compliance with the following legislation:

- Control of Pollution Act 1974
- Control of Noise at Work Regulations 2005;
- Health and Safety at Work Act 1974; and
- BS5228 – Code of practice for noise and vibration control on construction and open sites, Part 1 Noise, Part 2 Vibration.

2.1. Local Policy – Camden London Borough Council

The Camden London Borough Council “Guide for Contractors” is the relevant document of local policy and states the standard hours of work.

"Although there are certain noise levels allowed on the site, you must try to control the hours of noisy work. We normally ask that all work, which might be heard from outside the site, must be carried out between the following hours.

- 08:00 – 18:00 (Monday to Friday)
- 08:00 – 13:00 (Saturday)
- No noisy working is permitted on Sundays, Bank or Public Holiday.

*Noise and vibration from work during the permitted hours may be difficult to control. However, you must show that you are taking the **Best Practicable Means** to reduce the noise created. “*

Camden also require the submission of a Construction/Demolition Management Plan (CMP/DMP) outlining the noise, dust and vibration management methods to be used on the project.

3. Noise Modelling

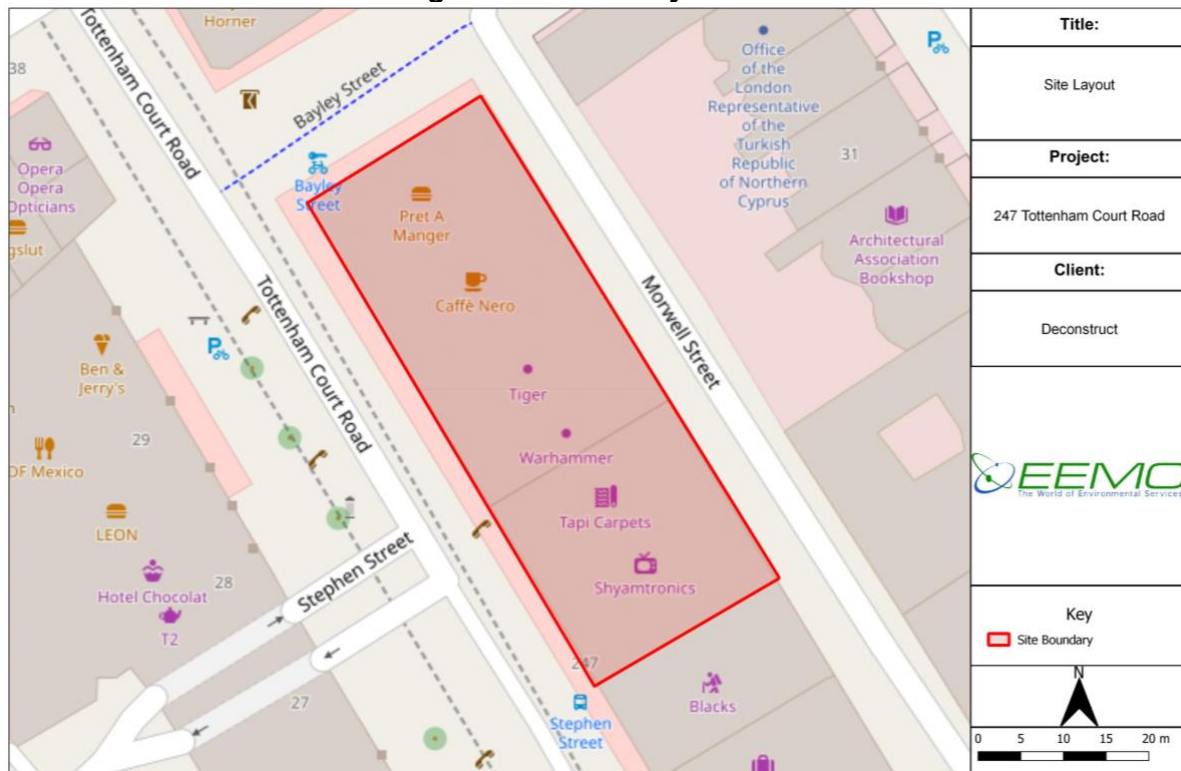
EEMC utilises DataKustik CadnaA noise modelling software to predict noise levels generated by proposed demolition activities. The noise model provides a 3-dimensional representation of the site and its surroundings and can handle complex geometries. The model can be used to assess different options for mitigation of noisy activities, as necessary.

4. Demolition, Piling and Enabling Works Activities Summary

4.1. Site Plan and Local Area.

The site is bounded by roads on three sides and shares a party wall with 248 Tottenham Court Road on the fourth side, to the south. Tottenham Court Road lies to the west of site, with Bayley Street to the north and Morwell Street to the east. The site layout plan is shown in Figure 4.1 below

Figure 4.1 – Site Layout Plan



4.2. Sensitive Receptors

Site is surrounded largely by commercial receptors with some residential receptors nearby. Figure 4.2 shows the closest sensitive receptors, and Table 4.2 lists the closest sensitive receptors.

Figure 4.2 – Receptors Map

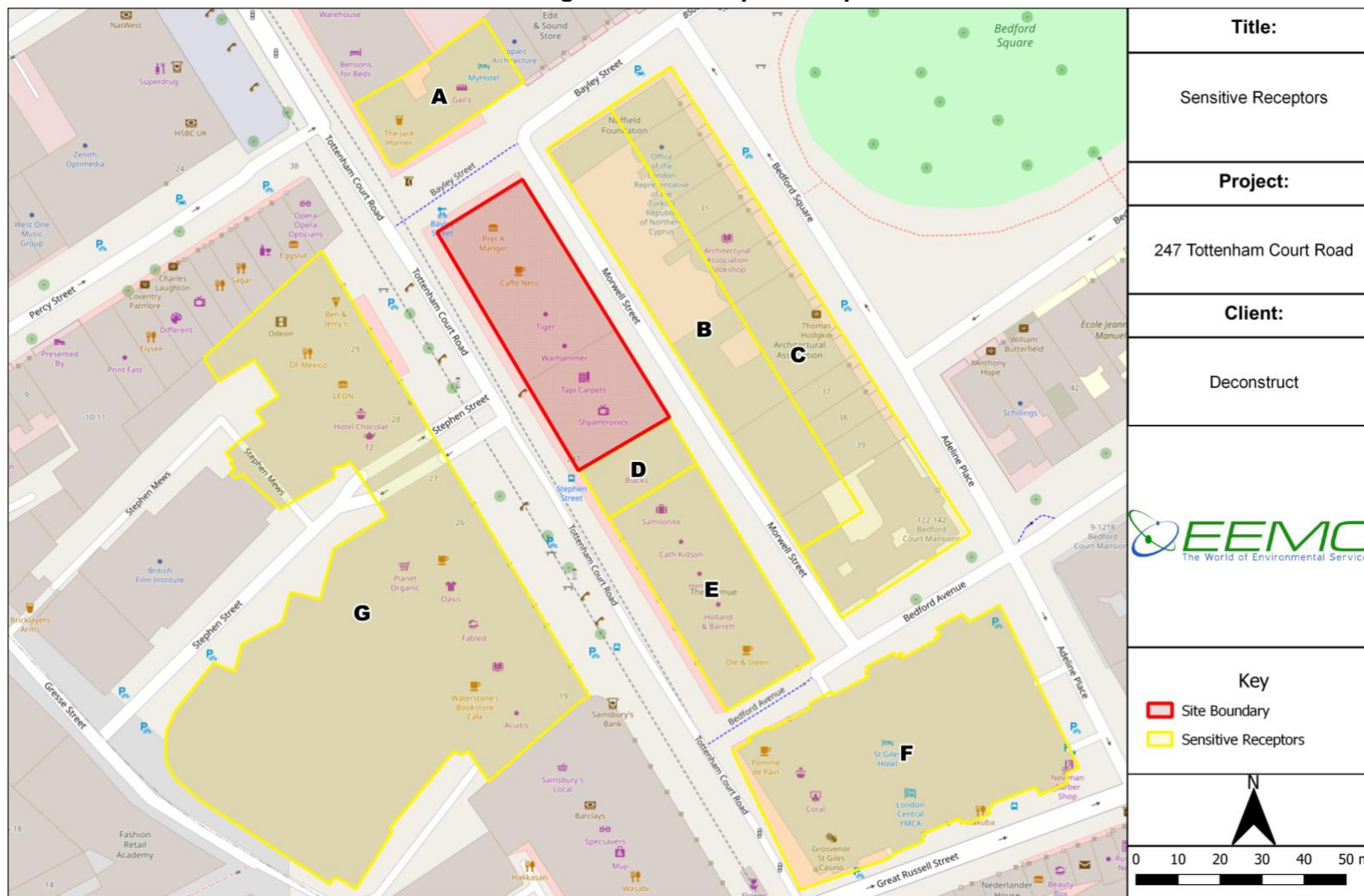


Table 4.2 – Closest Sensitive Receptors

Receptor ID	Building Use	Sensitive Receptor
A	Flats, Shops, Pub and Hotel	11 – 13 Bayley Street and 234-236 Tottenham Court Road
B	Residential and Offices	Morwell Street Properties
C	Residential, Offices, Hotel and a College	122 – 142 Bedford Court Mansions, 28-39 Bedford Square and Sotheby's Institute of Art
D	Shop and Offices	250 Tottenham Court Road
E	Shops and Offices	251 – 256 Tottenham Court Road
F	Hotel	St Giles Hotel
G	Shops and Offices	19-30 Tottenham Court Road

5. Predicted Demolition Noise at Nearest Receptors

Five sequences of work are proposed to be carried out during the demolition process.

For each sequence there is a detailed map of the area showing where each item of plant will be used, the map provided has noise contours colour coded to show the predicted impact from noise.

Each sequence also provides details of the proposed plant used and the resultant predicted noise level at each sensitive receptor.

5.1. Sequence 1 – Demolition of Morwell Street Buildings and Soft Strip of 247 Tottenham Court Road

Sequence 1 involves the demolition of the two storey buildings along Morwell Street and the soft strip of Tottenham Court Road.

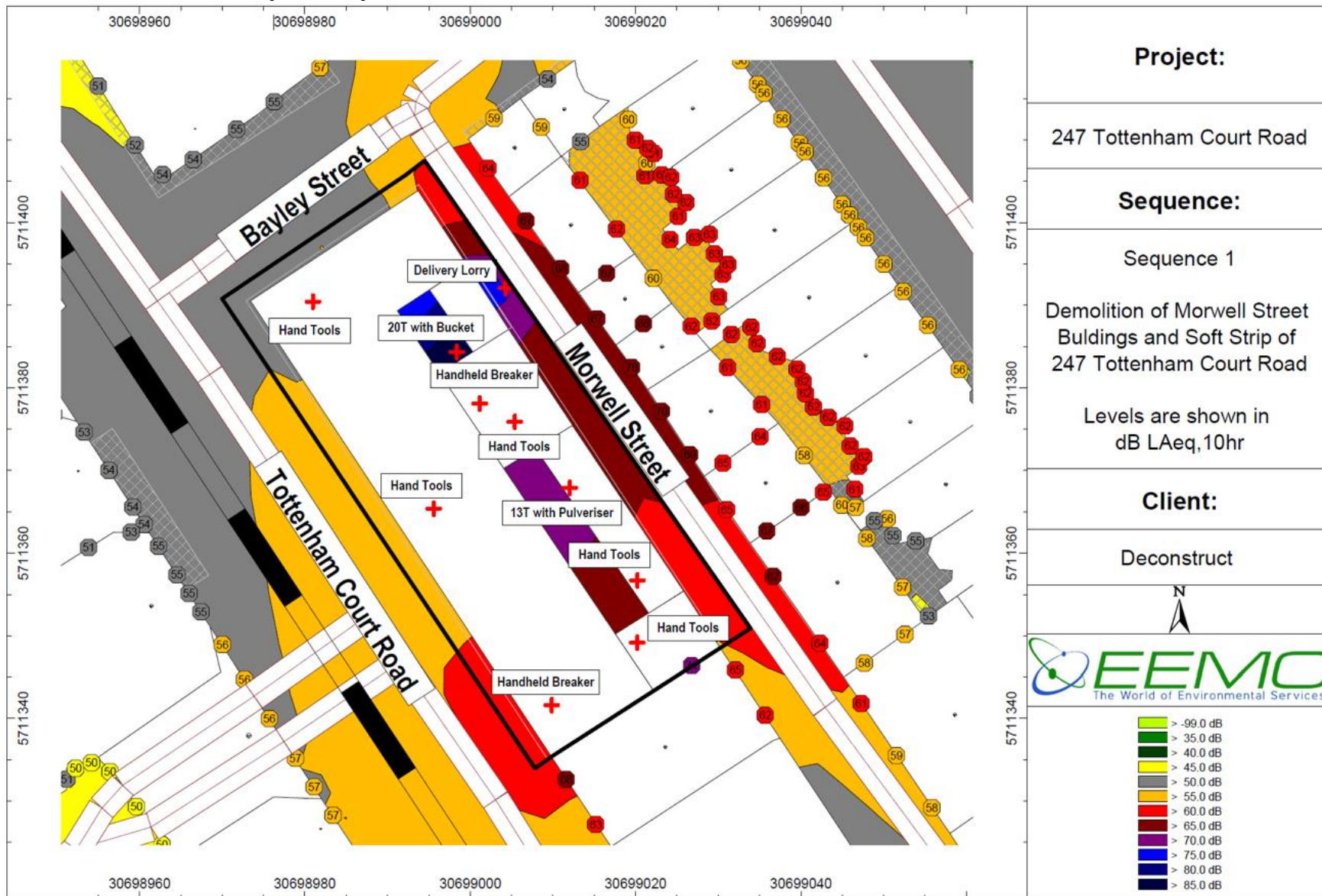
Table 5.1.1 – Plant List for Sequence 1

Plant	BS5228 ref (or other source)	No of items	SWL	LAeq @10m	% on time
13T with pulveriser	C.1 Ref 5	1	100	72	60
20T with bucket	C.6 Ref 9	1	104	72	60
Waste/ Delivery lorries	Measured	1	98	80	20
Hand tools	Measured	5	97	69	30
Handheld breaker	C.1 Ref 6	2	111	83	30

Table 5.1.2 – Predicted Noise Levels at the Nearest Receptors for Sequence 1

Receptor ID	Sensitive Receptors	Predicted noise levels L _{Aeq, 10h} dB(A) includes façade reflection
A	11 – 13 Bayley Street and 234-236 Tottenham Court Road	58
B	Morwell Street Properties	70
C	122 – 142 Bedford Court Mansions, 28-39 Bedford Square and Sotheby's Institute of Art	64
D	250 Tottenham Court Road	70
E	251 – 256 Tottenham Court Road	66
F	St Giles Hotel	56
G	19-30 Tottenham Court Road	56

Figure 5.1.1 – Noise Contour Map for Sequence 1



5.2. Sequence 2 – Demolition of 247 Tottenham Court Road from 6th to 2nd Floor

Sequence 2 involves the demolition of 247 Tottenham Court Road utilizing 13T excavators from the 6th floor down to the 2nd floor then changing to 45T excavators for the remaining two lower floors.

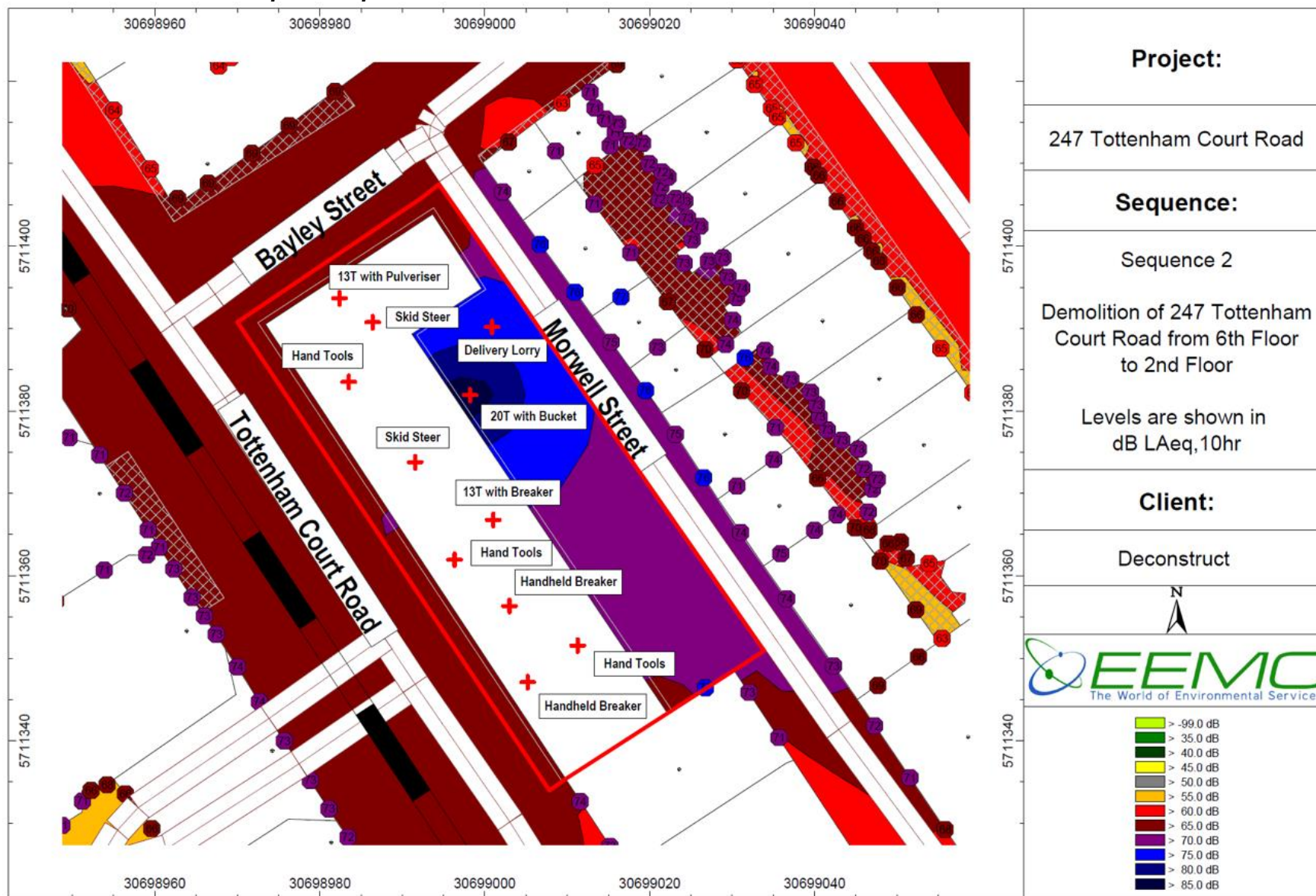
Table 5.2.1 – Plant List for Sequence 2

Plant	BS5228 ref (or other source)	No of items	SWL	LAeq @10m	% on time
13T with pulveriser	C.1 Ref 5	1	100	72	60
13T with breaker	Measured	1	118	90	50
20T with bucket	C.6 Ref 9	1	104	72	60
Skid Steer	Measured	2	110	82	60
Waste/ Delivery lorries	Measured	1	98	80	20
Hand tools	Measured	3	97	69	30
Handheld breaker	C.1 Ref 6	2	111	83	30

Table 5.2.2 - Predicted Noise Levels at the Nearest Receptors for Sequence 2

Receptor ID	Sensitive Receptors	Predicted noise levels L _{Aeq, 10h} dB(A) includes façade reflection
A	11 – 13 Bayley Street and 234-236 Tottenham Court Road	69
B	Morwell Street Properties	76
C	122 – 142 Bedford Court Mansions, 28-39 Bedford Square and Sotheby's Institute of Art	75
D	250 Tottenham Court Road	77
E	251 – 256 Tottenham Court Road	77
F	St Giles Hotel	68
G	19-30 Tottenham Court Road	73

Figure 5.2.1 – Noise Contour Map for Sequence 2



5.3. Sequence 3 – Demolition of 247 Tottenham Court Road from 2nd Floor to Ground and Piling Enabling Works

Sequence 3 involves the demolition of 247 Tottenham Court Road from 2nd floor down to and including ground floor using 45T excavators followed by piling enabling works.

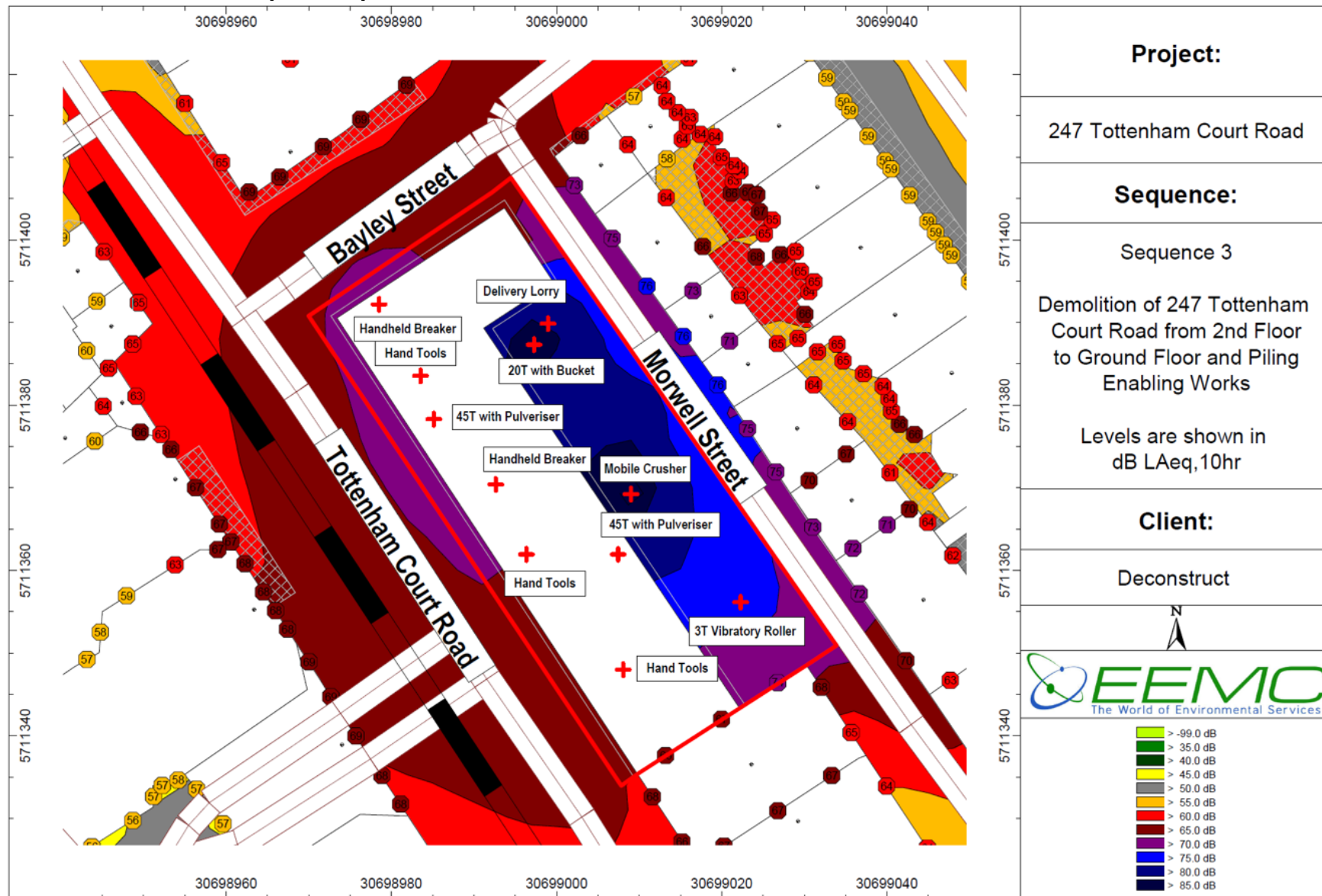
Table 5.3.1 – Plant List for Sequence 3

Plant	BS5228 ref (or other source)	No of items	SWL	LAeq @10m	% on time
45T with pulveriser	C.1 Ref 3	2	108	80	60
20T with bucket	C.6 Ref 9	1	104	72	60
Waste/ Delivery lorries	Measured	1	98	80	20
Hand tools	Measured	3	97	69	30
Handheld breaker	C.1 Ref 6	2	111	83	30
3T Vibratory Roller/ Compactor	T.5 Ref 26	1	95	67	30
Mobile crusher	C.1 Ref 14	1	110	82	50

Table 5.3.2 - Predicted Noise Levels at the Nearest Receptors for Sequence 3

Receptor ID	Sensitive Receptors	Predicted noise levels L _{Aeq, 10h} dB(A) includes façade reflection
A	11 – 13 Bayley Street and 234-236 Tottenham Court Road	69
B	Morwell Street Properties	75
C	122 – 142 Bedford Court Mansions, 28-39 Bedford Square and Sotheby's Institute of Art	67
D	250 Tottenham Court Road	74
E	251 – 256 Tottenham Court Road	67
F	St Giles Hotel	61
G	19-30 Tottenham Court Road	68

Figure 5.3.1 – Noise Contour Map for Sequence 3



5.4. Sequence 4 – Piling Works

Sequence 4 involves piling works on site with a SR-75, or similar, piling rig ready for the reduced level excavation.

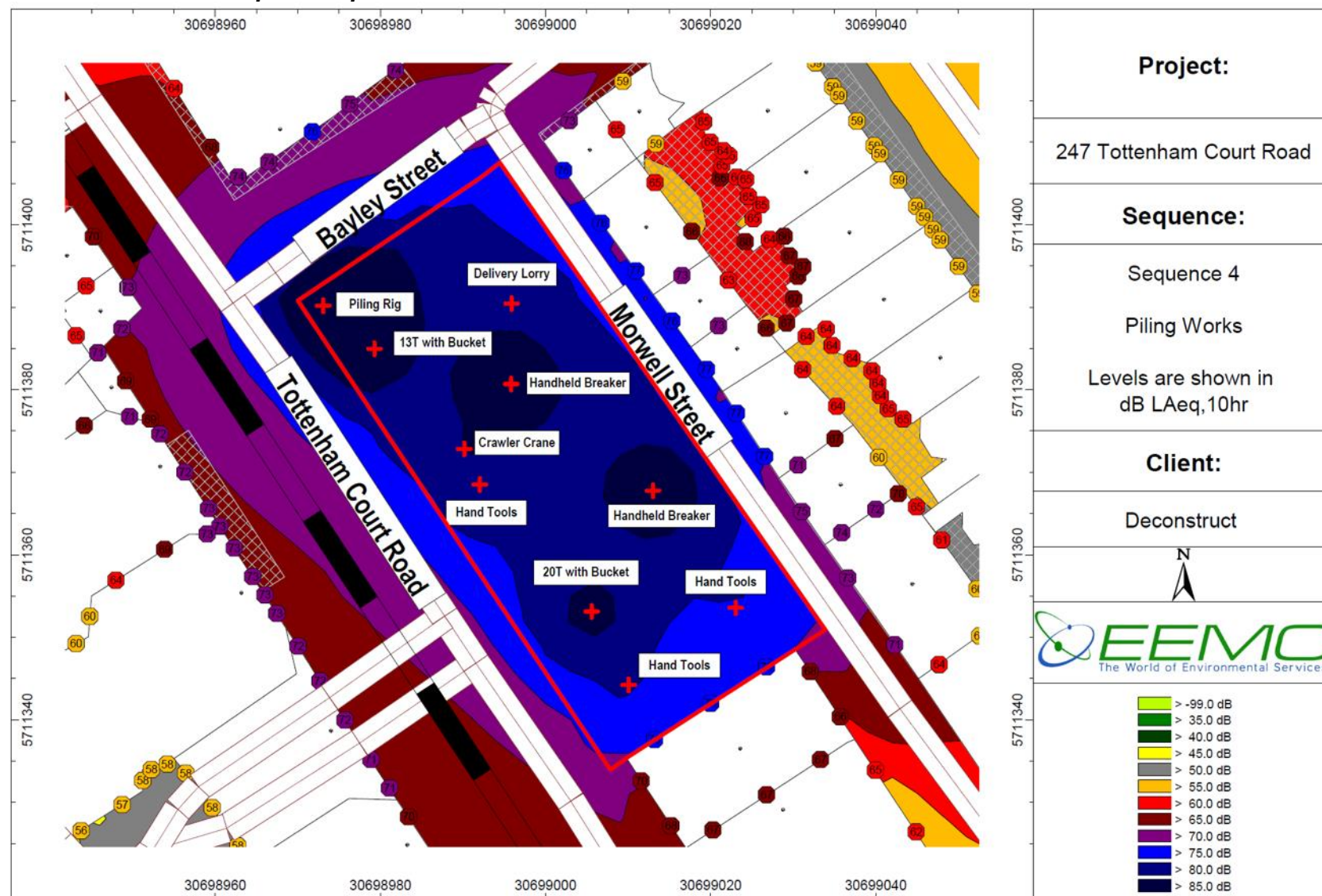
Table 5.4.1 – Plant List for Sequence 4

Plant	BS5228 ref (or other source)	No of items	SWL	LAeq @10m	% on time
75T Piling Rig (SR-75)	Measured	1	114	86	60
13T with bucket	C.2 Ref 25	1	97	69	60
20T with bucket	C.6 Ref 9	1	104	72	60
Waste/ Delivery lorries	Measured	1	98	80	20
Hand tools	Measured	3	97	69	30
Handheld breaker	C.1 Ref 6	2	111	83	30
Crawler Crane	T.3 Ref 29	1	98	70	60

Table 5.4.2 - Predicted Noise Levels at the Nearest Receptors for Sequence 4

Receptor ID	Sensitive Receptors	Predicted noise levels L _{Aeq, 10h} dB(A) includes façade reflection
A	11 – 13 Bayley Street and 234-236 Tottenham Court Road	75
B	Morwell Street Properties	77
C	122 – 142 Bedford Court Mansions, 28-39 Bedford Square and Sotheby's Institute of Art	68
D	250 Tottenham Court Road	76
E	251 – 256 Tottenham Court Road	67
F	St Giles Hotel	62
G	19-30 Tottenham Court Road	73

Figure 5.4.1 – Noise Contour Map for Sequence 4



5.5. Sequence 5 – Reduced Level Excavation.

Sequence 5 involves the reduced level excavation to formation level with a tower crane.

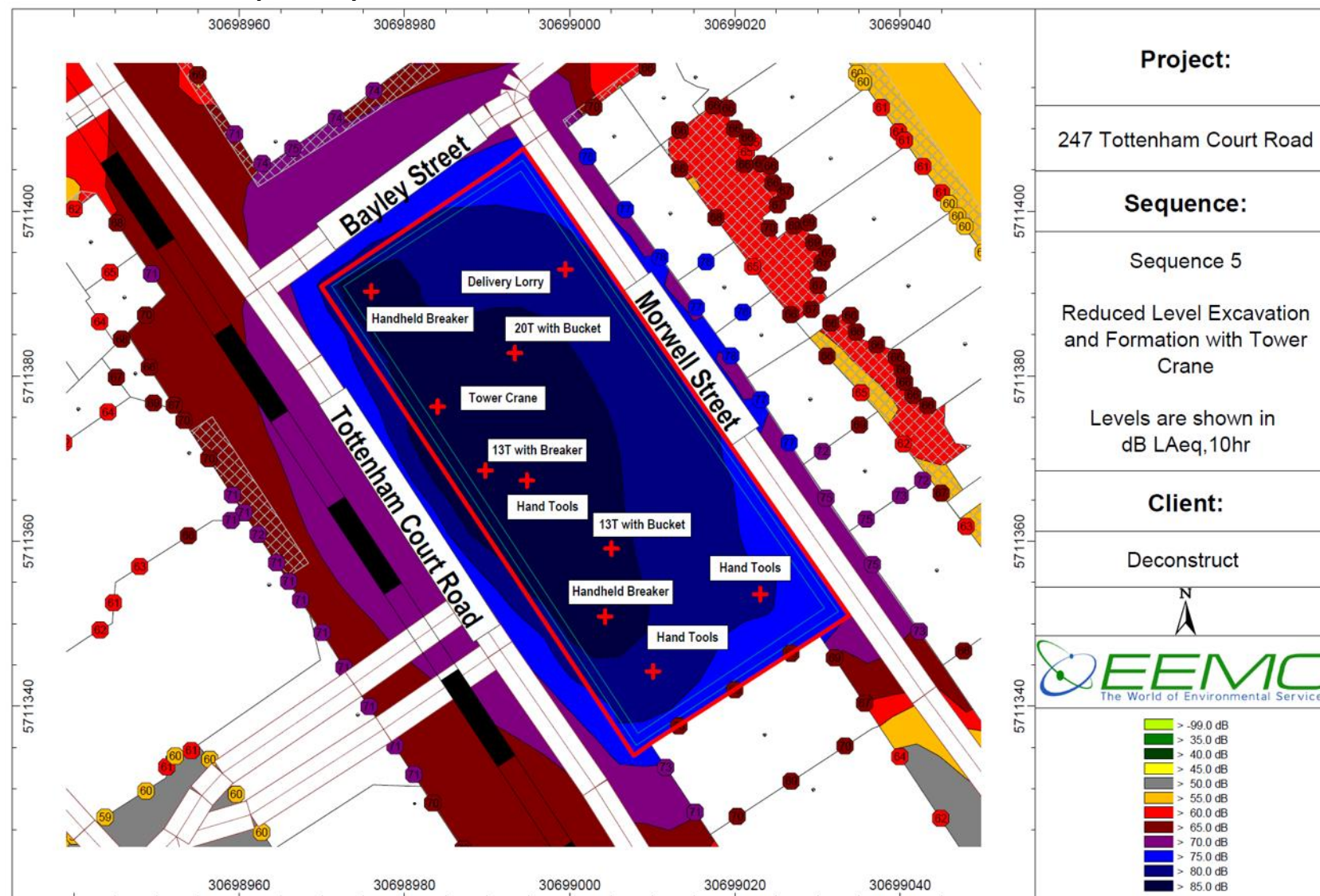
Table 5.5.1 – Plant List for Sequence 5

Plant	BS5228 ref (or other source)	No of items	SWL	LAeq @10m	% on time
13T with bucket	C.2 Ref 25	2	97	69	60
13T with breaker	Measured	1	118	90	50
20T with bucket	C.6 Ref 9	1	104	72	60
Waste/ Delivery lorries	Measured	1	98	80	20
Hand tools	Measured	3	97	69	30
Handheld breaker	C.1 Ref 6	2	111	83	20
Tower Crane	T.4 Ref 48	1	104	76	50

Table 5.5.2 - Predicted Noise Levels at the Nearest Receptors for Sequence 5

Receptor ID	Sensitive Receptors	Predicted noise levels L _{Aeq, 10h} dB(A) includes façade reflection
A	11 – 13 Bayley Street and 234-236 Tottenham Court Road	74
B	Morwell Street Properties	77
C	122 – 142 Bedford Court Mansions, 28-39 Bedford Square and Sotheby's Institute of Art	76
D	250 Tottenham Court Road	73
E	251 – 256 Tottenham Court Road	70
F	St Giles Hotel	63
G	19-30 Tottenham Court Road	71

Figure 5.5.1 – Noise Contour Map for Sequence 5



6. Summary

European Environmental Monitoring and Consultancy (EEMC) Limited have undertaken noise modelling for the planned demolition and associated works at the 247 Tottenham Court Road Project

Noise contour maps and the predicted noise levels at the nearby sensitive receptors are presented in the tables in Section 5.

Noise predictions from Section 5 show that the Morwell Street properties and 250 Tottenham Court Road are likely to experience the highest predicted demolition noise levels affecting sensitive receptors during the proposed works. The work methodology and quiet periods and bpm strategy for the site will be reviewed as the project progresses to identify any further practicable mitigation measures that may be available to minimise noise impact on these properties.

NOISE ASSESSMENT

AECOM

247 TOTTENHAM COURT ROAD

JULY 2020



247 Tottenham Court Road





Noise Assessment

Prudential UK Real Estate Nominee 1 Limited and
Prudential UK Real Estate Nominee 2 Limited.

Project number: TBC

29 July 2020

Quality information

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1. Introduction

This Noise Assessment has been prepared on behalf of Prudential UK Real Estate Nominee 1 Limited and Prudential UK Real Estate Nominee 2 Limited in support of an application at 247 Tottenham Court Road for full planning permission for:-

“Demolition of 247 Tottenham Court Road, 3 Bayley Street, 1 Morwell Street, 2-3 Morwell Street and 4 Morwell Street and the erection of a mixed use office led development comprising ground plus five storey building for office (Class B1) use, flexible uses at ground and basement (Class A1/A2/A3/B1/D1/D2), residential (Class C3) use, basement excavation, provision of roof terraces, roof level plant equipment and enclosures, cycle parking, public realm and other associated works.”

The purpose of this noise assessment is to determine the noise climate in the vicinity of the site. From these determined levels outline recommendations for glazing and ventilation requirements can be given to meet internal ambient noise criteria and confirm the site suitability for the intended use. Maximum operational noise limits from fixed plant and building services at nearby noise sensitive receptors has also been identified. These noise limits are identified as to ensure that plant from the development doesn't increase background noise levels at nearby sensitive receptors causing a breach of relevant noise criteria.

Due to constraints given the on-going coronavirus outbreak, it was not feasible to undertake a representative baseline noise survey to inform this assessment. It was not possible to measure representative baseline sound levels because typical road, air and rail transport usage has been reduced by travel restrictions and social distancing measures. As such a desktop study has been undertaken to determine the noise environment across the site.

AECOM has used a number of previous planning application noise surveys, with approval from the London Borough of Camden (LBC), to determine the noise climate in the vicinity of the site. The following statement was given by LBC “I've also discussed your query regarding the noise impact assessment with our EHO who has confirmed they can use a comparable report carried out before Covid-19 as long as it is stated within their submission.” This survey information was also used to determine noise levels at nearby noise sensitive receptors. DEFRA noise mapping has also been used to predict the daytime $L_{Aeq,16h}$ and night-time $L_{Aeq,8h}$ noise level indicators at the facades of the site facing Tottenham Court Road, Morwell Street and Bayley Street. This information is used to provide outline recommendations for glazing and ventilation requirements in order to achieve internal ambient noise criteria and confirms the site suitability for the intended use.

Using the information above it can be considered that this assessment provides a reasonable worst-case scenario of external noise in the vicinity of the site.

This report presents the criteria to which the noise limits are established, the prediction of noise levels in the vicinity of the site and nearby noise sensitive receptors, a comparison of external noise and internal noise levels set out in the noise criteria and finally the glazing and ventilation recommendations from the results of the assessment.

A glossary of acoustic terminology can be found in Appendix A.

2. Application Site Description

The application site is located at 247 Tottenham Court Road in the London Borough of Camden. The application includes redevelopment of 247 Tottenham Court Road, 3 Bayley Street, 1 Morwell street, 2-3 Morwell Street and 4 Morwell Steet into a new mixed use office led development with the addition of roof level plant.

Figure 2-1 presents the site location within red line boundary (created by Stiff + Trevillion Architects Ltd. Document number ST-PR-01-003).



NOTE: THIS APPROX SITE BOUNDARY
WAS SCALED FROM A PDF DOCUMENT
AND THEREFORE SHOULD NOT BE USED
FOR MEASURING PURPOSES

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Date	Scale (A1)	Scale (A4)	
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Project No.	Drawing No.	Revision	
4486	ST-PR-01-003		

3. Noise Guidance and Assessment Criteria

The noise assessment has been carried out in accordance with the following policy and guidance:

- National Planning Policy Framework (2019);
- Noise Policy Statement for England (2010);
- Planning Practice Guidance Noise (2019);
- Camden Local Plan (2017);
- BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings (2014); and
- Professional Practice Guidance: Planning & Noise (2017).

Detailed information on the reference planning policy context and noise guidance is provided in Appendix B.

3.1 Indoor Ambient Noise (external noise sources)

A summary of noise criteria in relation to suitable internal ambient noise of residential dwellings and outdoor amenity areas within the proposed development is given within the Camden Local Plan. The local plan also makes reference to BS 8233 and the internal noise criteria for offices has been made using this standard. Table 3-1 below outlines these criteria. The $L_{Aeq,T}$ noise thresholds indicate a logarithmically averaged internal noise level over a time period T. While the L_{AFmax} indicates the maximum noise level internally.

Table 3-1 Indoor Ambient Noise Levels

Type	Activity	Location	07:00-00 to 23:00	23:00 to 07:00
Residential	Resting	Living Room	35 dB $L_{Aeq,16h}$	-
	Dining	Dining Room / Area	40 dB $L_{Aeq,16h}$	-
	Sleeping (Daytime Resting)	Bedroom	35 dB $L_{Aeq,16h}$	30 dB $L_{Aeq,8h}$ 42 dB L_{AFmax}
Outdoor living Space	-	-	50 dB $L_{Aeq,16h}$	-
Open Plan Office	-	-	45-50 dB $L_{Aeq,8h}$	

3.2 Industrial and Commercial Noise

A summary of noise criteria in relation to industrial and commercial noise affecting a dwelling is given in the Camden Local Plan. Table 3-2 below outlines these criteria. The Camden Local Plan rates noise from industrial and commercial sources via a traffic light system of Green, Amber and Red. Green levels and below are considered desirable whereas Red and above are undesirable. Industrial and commercial noise is rated against the background noise level to determine which category it falls under. A rating level of 10dB below background means that the noise coming from any industrial or commercial plant will be 10dB below background noise when measured at the affected dwelling. No events exceeding 57dB L_{Amax} mean that at any time plant from industrial and commercial sources must not exceed 57dB when measured at the effected dwelling.

Table 3-2 Noise from industrial and Commercial noise affecting a dwelling

Location	Period of Day	LOAL(Green)	LOAL to SOAEL(Amber)	SOAL(Red)
Amenity area e.g. Garden	Day	'Rating level' 10dB below background	'Rating level' between 9dB below and 5dB above background	'Rating level' Greater than 5dB above Background
Facade	Night	'Rating level' 10dB below background (to be changed to 15dB if source contains tonal elements) and no events exceeding 57dB L_{Amax}	'Rating level' between 9dB below and 5dB above background or noise events between 57dB and 88dB L_{Amax}	'Rating level' Greater than 5dB above background and/or events exceeding 88dB L_{Amax}

4. External Noise Levels

Noise levels in the vicinity of the site have been determined by using existing planning applications in order to determine baseline conditions at nearby receptors and the site. DEFRA Noise Mapping has also been used to determine the daytime and Night-time L_{Aeq} noise level contribution from Tottenham Court Road experienced at the Tottenham Court Road façade of the site. An overall summary has been provided showing the overall predicted noise levels used in the assessments.

4.1 Review of Historic Noise Surveys

AECOM has identified several historic noise survey reports produced as part of previous planning applications in the local area. The following planning applications have been identified as containing noise survey data;

- Austin Friars House 1 Stephen Street, ref. 2019/2356/P¹ – survey undertaken in April 2019
- Central YMCA, 112 Great Russell Street ref. 2017/0487/P² – survey undertaken in November 2016
- 21 Stephen Street, ref. 2017/1922/P³ – survey undertaken in May 2017;
- 233 Tottenham Court Road, ref. 2016/2440/P⁴ – survey undertaken in March 2016
- 1 Stephen Street ref. 2015/5822/P⁵ – survey undertaken in January 2016
- Units 6 - 7, 6 - 17 Tottenham Court Road ref. 2015/1816/P⁶ – survey undertaken in June 2015; and
- 112A Great Russell Street, ref. 2015/3605/P⁷ – survey undertaken in March 2012

Further information about these surveys can be found in Appendix C.

Figure 4-1 on the next page shows these surveys marked up on a location map with a summary of the measured noise levels.

¹ [http://camdocs.camden.gov.uk/HPRMWebDrawer/PlanRec?q=recContainer:"2019/2356/P"](http://camdocs.camden.gov.uk/HPRMWebDrawer/PlanRec?q=recContainer:)

² [http://camdocs.camden.gov.uk/HPRMWebDrawer/PlanRec?q=recContainer:"2017/0487/P"](http://camdocs.camden.gov.uk/HPRMWebDrawer/PlanRec?q=recContainer:)

³ [http://camdocs.camden.gov.uk/HPRMWebDrawer/PlanRec?q=recContainer:"2017/1922/P"](http://camdocs.camden.gov.uk/HPRMWebDrawer/PlanRec?q=recContainer:)

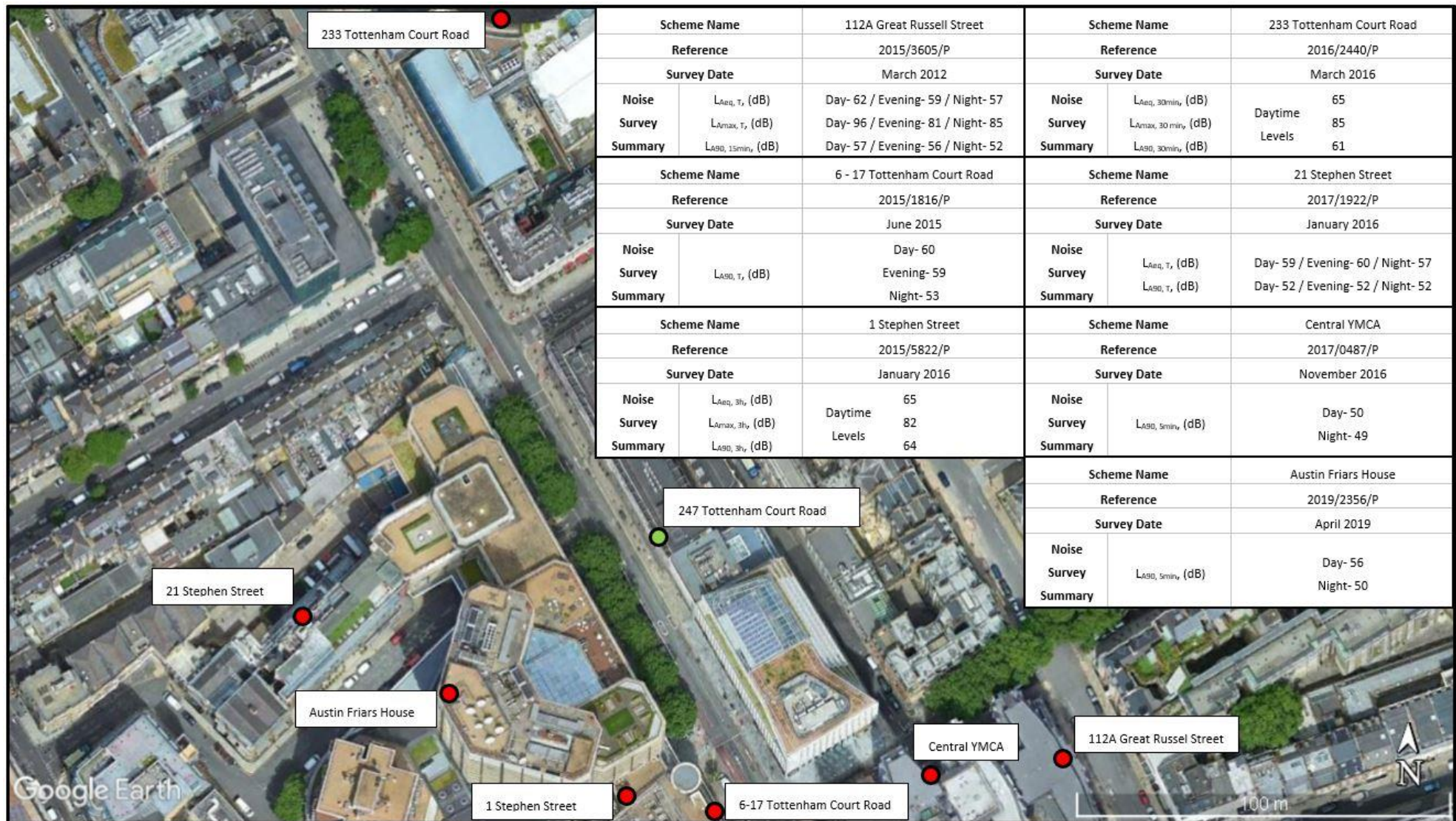
⁴ [http://camdocs.camden.gov.uk/HPRMWebDrawer/PlanRec?q=recContainer:"2016/2440/P"](http://camdocs.camden.gov.uk/HPRMWebDrawer/PlanRec?q=recContainer:)

⁵ [http://camdocs.camden.gov.uk/HPRMWebDrawer/PlanRec?q=recContainer:"2015/5822/P"](http://camdocs.camden.gov.uk/HPRMWebDrawer/PlanRec?q=recContainer:)

⁶ [http://camdocs.camden.gov.uk/HPRMWebDrawer/PlanRec?q=recContainer:"2015/1816/P"](http://camdocs.camden.gov.uk/HPRMWebDrawer/PlanRec?q=recContainer:)

⁷ [http://camdocs.camden.gov.uk/HPRMWebDrawer/PlanRec?q=recContainer:"2015/3605/P"](http://camdocs.camden.gov.uk/HPRMWebDrawer/PlanRec?q=recContainer:)

Figure 4-1 Historic Survey Locations and Summaries



4.2 Defra Noise Maps

The 2017 (Round 3) DEFRA Strategic noise mapping dataset⁸ has been used to help determine the $L_{Aeq,16h}$ and $L_{Aeq,8h}$ noise levels at the façade of the proposed development facing Tottenham Court Road.

The DEFRA noise map data gives information on the estimated noise from major road and rail sources across England in 2017. This was developed as part of the Environmental Noise Directive. Tottenham Court Road has been included in the data. Minor roads have not been included in the data set such as that of Bedford Avenue and Bayley Street. This is not expected to have an impact on the noise level at the Façade of the proposed development facing Tottenham Court Road as noise from minor roads such as Bedford Avenue and Bayley Street will be much lower than Tottenham Court Road meaning they will have negligible impact on the overall noise level. Rail noise has been discounted from the analysis because they are no rail lines close enough to be considered to have an impact on the proposed development.

DEFRA noise mapping has predicted a daytime $L_{Aeq,16h}$ noise level of 70-75dB and a night-time $L_{Aeq,16h}$ noise level of 60-65dB at the façade of 247 Tottenham Court Road.

4.3 Summary of Noise Levels

From review of existing noise levels in the area and DEFRA noise maps the below baseline noise levels to be used in the assessments have been predicted.

L_{Amax} noise levels have been determined by using past noise surveys AECOM has undertaken in similar noise environments e.g. dominated by road traffic and similar L_{Aeq} levels as that experienced by the site.

Table 4-1 below shows the summary L_{Aeq} and L_{Amax} noise levels experienced at the façade of the Site facing Tottenham Court Road these levels were predicted by using the DEFRA Noise Maps. Physical screening provided by buildings typically provides 10 dB of noise attenuation; as such noise levels on the opposite side of the building along Morwell Street have also been estimated. Façades along Bayley Street have direct line of sight to Tottenham Court Road as such noise levels are expected to be similar to that of Façades facing Tottenham Court Road.

Table 4-1 Summary noise Levels at the Site (Free field)

Side of Building	Daytime (07:00 – 23:00) $L_{Aeq,16h}$ dB	Night-time (07:00 – 23:00) $L_{Aeq,8h}$ dB	Maximum noise level L_{Amax} dB
Facades facing Tottenham Court Road	70-75	60-65	85
Facades facing Morwell Street	60-65	50-55	75

Table 4-2 below shows the L_{A90} noise levels experienced at nearby noise sensitive receptors. These noise levels will be used in the assessment of plant and building services noise found in Section 6. Properties along Morwell Street have had the noise levels at these receptors determined by using the Central YMCA historic survey. Properties adjacent to site and opposite along Tottenham Court Road have had the noise levels at these receptors determined by the 6-17 Tottenham Court Road historic survey.

Table 4-2 Summary background noise levels of nearby residential receptors (Free field)

Location	Planning Application Data Source	Daytime (07:00 – 23:00) L_{A90} , dB	Night-time (07:00 – 23:00) L_{A90} , dB
Properties behind the Site (Morwell Street)	Central YMCA*	47	46
Properties adjacent to the Site	6-17 Tottenham Court Road	60	53

⁸ <https://www.gov.uk/government/publications/strategic-noise-mapping-2019>

Properties opposite along Tottenham Court Road	6-17 Tottenham Court Road	60	53
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* Measured levels included façade reflection therefore a -3dB correction has been made to convert to free field

4.4 Limitations

The use of DEFRA Noise mapping and historic noise surveys as a method to determine the baseline noise levels in the vicinity of the site does have some limitations compared to a background noise survey. Firstly, a background noise survey provides recent up to date information on the background noise as measured at a representative location for the site. This undoubtedly is the most accurate method. However due to the current situation this would not be accurate at all if a survey was to be undertaken at this time.

DEFRA Noise Mapping was undertaken in 2017. This is considered recent enough to provide accurate noise levels at the site. Due to the fact there has been no major development in the local area that would increase the amount of road users in the area or no change to the road layout since these maps were created it is unlikely that the noise levels have changed by a significant amount. Therefore, the use of the DEFRA noise maps can provide an accurate estimate for noise levels at the Façade of the site facing Tottenham Court Road. The prediction of noise levels at the façade of the site facing Morwell Street was estimated by subtracting 10dB from the DEFRA Noise Maps as screening typically provides 10dB of noise attenuation. This method of estimation is a limitation as the total amount of screening is unknown without taking site measurements. However, the 10dB noise attenuation estimation has been assigned using technical experience and provides a good estimate for noise levels along Morwell Street.

The use of historic noise surveys provides the same limitation as above in that a background noise survey at the desired location would provide more accurate results. The survey used to predict the noise levels at properties opposite the site along Tottenham Court Road was undertaken in 2015. A comparison of this survey with the 2017 DEFRA Noise Maps shows a strong correlation between the noise levels. Due to the correlation between these levels it is likely noise levels haven't changed by a significant amount in the two years between them. Also due to there not being any significant developments in the area after 2017 it can be said that in 2020 noise levels are most likely not to have changed by a significant amount either from when the historic surveys were undertaken.

5. Outline Façade Requirements and Recommendations

Based on the external noise levels presented in Table 4-1, the following sound reduction performance is required to mitigate against external ambient noise and achieve the Camden Local Plan internal ambient noise criteria and BS 8233 criteria given in Table 3-1.

Glazing recommendations are provided using the $R_w + C_{tr}$ index, a commonly used single figure term used to specify the sound insulation requirements of façades affected by traffic noise (i.e. urban road traffic and low speed rail noise). All recommendations refer to the performance post installation of the entire construction (i.e. frame and glazing).

Table 5-1 Façade Minimum Reduction Performance Requirements for Residential Dwellings (dB)

Proposed Façade	Period	Predicted External Noise Level (dB)	Internal Noise Requirement (dB)	Sound Reduction Performance Requirement R_w (dB)
Facades of the Site facing Tottenham Court Road and Bayley Street	Daytime (07:00-19:00)	75 $L_{Aeq,16h}$	35	43
	Night-time (23:00-07:00)	65 $L_{Aeq,8h}$	30	
	Night-time (23:00-07:00)	85 L_{AFmax}	42	
Facades of the Site facing Morwell Road	Daytime (07:00-19:00)	65 $L_{Aeq,16h}$	35	33
	Night-time (23:00-07:00)	55 $L_{Aeq,8h}$	30	
	Night-time (23:00-07:00)	75 L_{AFmax}	42	

Table 5-2 Façade Minimum Reduction Performance Requirements for Offices (dB)

Proposed Façade	Predicted External Noise Level (dB)	Internal Noise Requirement (dB)	Sound Reduction Performance Requirement R_w (dB)
Facades of the Site facing Tottenham Court Road and Bayley Street	75 $L_{Aeq,16h}$	45-50	30
Facades of the Site facing Morwell Road	65 $L_{Aeq,16h}$	45-50	20

For residential facades directly fronting onto Tottenham Court Road and Bayley Street, internal noise criteria can be achieved using a high performance acoustic glazing such as 12.8mm Pilkington Optiphon⁹ / 20 mm argon / 16.8 mm Pilkington Optiphon, which will achieve 43 dB $R_w + C_{tr}$.

For office facades directly fronting onto Tottenham Court Road and Bayley Street internal noise criteria can be achieved using double pane units of 10 mm glass / (6-16) mm air cavity / 4 mm glass which will achieve 30 dB $R_w + C_{tr}$.

For residential facades directly fronting onto Morwell Street, internal noise criteria can be achieved using an acoustic glazing such as 6mm Pilkington Optiphon / 16 mm argon / 6.8 mm Pilkington Optiphon, which will achieve 33 dB $R_w + C_{tr}$.

For office facades directly fronting onto Morwell Street internal noise criteria can be achieved using double pane units of 4 mm glass / (6-16) mm air cavity / 4 mm glass which will achieve 20 dB $R_w + C_{tr}$.

⁹ Pilkington United Kingdom Limited, Optiphon Brochure, <https://www.pilkington.com/en-gb/uk/products/product-categories/noise-control/pilkington-optiphon#brochures>

Note that the glazing performance requirements apply to the whole window unit. Window performance is dependent on elements of the glazing unit including the frames, seals, wall interface, etc. Weak non-glass elements will require the use of higher performance glass units to maintain the required sound insulation. Test reports of a typical framed element performance from independent test authorities are required to substantiate the performance.

Due to the ambient noise levels along Tottenham Court Road, Bayley Street and Morwell Street, windows directly facing this road to lead to habitable rooms would be required to be closed to achieve internal noise criteria. When windows are opened (e.g. for purge ventilation) then internal ambient noise criteria may be exceeded, although opening windows for the purposes of ventilation would be at the discretion of the room occupant.

To comply with Building Regulations (Part F) (Ref 16)¹⁰, it will be necessary to provide ventilation so that occupants can ventilate their property without breaking the acoustic seal of the building envelope. Mechanical ventilation has been chosen for the base build scheme. Mechanical ventilation will negate the need to open windows for ventilation and keep the building façade sealed so maintaining the attenuation performance of the glazed element of the façade.

The sound reduction performance requirements provided refer to the worst case. As the design progresses, glazing and ventilation performance requirements will be refined and determined for all facades of the development buildings.

The Camden Local Plan states that noise in amenity areas should not exceed 50dB $L_{Aeq, 16h}$ in order to achieve the Lowest Observed Adverse Effect Level (LOAL) Green condition. The $L_{Aeq, 16h}$ level at the façade facing Tottenham Court Road has been predicted to be 65 dB $L_{Aeq, 16h}$. Due to the amenity area being located on the roof a 10dB noise attenuation can be applied from screening from the building. This results in a level of 55dB $L_{Aeq, 16h}$. This is 5db above the Camden Local Plan LOAL condition and sits in the LAOL to Significant Observed Adverse Effect (SOAL) Amber condition. In order to meet the Green condition further noise attenuation may be required in areas of Amenity.

¹⁰ HM Government, The Building Regulations 2010, Ventilation; Approved Document F, f1 Means of Ventilation.

6. Fixed Plant and Building Service Noise

Table 6-1 presents a list of nearby noise sensitive receptors and recommended operational limits, expressed as rating levels, for proposed building services plant noise levels affecting these nearby sensitive receptors. Limits have been determined using the summary of measured noise levels presented in section 4.3 of this report.

Table 6-1 Fixed plant and building services - Recommended operational noise limits

Sensitive receptor locations	Receptor Type	Daytime 07:00 – 23:00		Night-time 23:00 – 07:00	
		Predicted background levels	Operational limit rating level	Predicted background levels	Operational limit rating level
		dB $L_{A90,T}$	dB $L_{Ar,Tr}$	dB $L_{A90,T}$	dB $L_{Ar,Tr}$
Properties behind Tottenham Court Road (Morwell Street)	Residential and Office	47	37	46	36
Properties adjacent to the Site	Office	60	50	53	43
Properties opposite along Tottenham Court Road	Residential and Office	60	50	53	43

The specification of plant machinery with low noise emission and properly attenuated supply and extract terminations will help to ensure that noise emissions are minimised. The use of enclosures, local screening, mufflers and silencers will also be used as appropriate.

Building services and fixed plant will be designed to achieve appropriate operational noise limits. Noise emissions from proposed building plant will be considered during detailed design in order to ensure that operational noise does not adversely affect nearby residents (both existing residents as well as future occupants of the proposed development).

7. Conclusion

AECOM were appointed to carry out a noise assessment to support a planning application for the proposed 247 Tottenham Court Road mixed use office led development.

Noise levels at the façades across the proposed development have been predicted based on use of historic baseline noise levels in the area and from DEFRA noise maps. Outline façade sound insulation performance requirements have been determined.

The use of high-performance acoustic glazing is recommended for residential windows facing Tottenham Court Road, Bayley Street and Morwell Street. Example configurations for glazing have been provided in order to mitigate against external ambient noise and achieve LBC's ambient noise criteria. Final building facade configurations will be determined during detailed design.

Outdoor amenity areas were found to be 5db above LBC's criteria as such it is recommended further noise screening is provided for these areas.

Based on this assessment and the recommended mitigation measures, the site is considered suitable for the intended use. The required mitigation strategy covering glazing and ventilation performance will be finalised during detailed design.

Appendix A – Acoustic Glossary

Term	Definition
Decibel (dB)	The range of audible sound pressures is approximately 2×10^{-5} Pa to 200 Pa. Using decibel notation presents this range in a more manageable form, 0dB to 140dB. Mathematically Sound Pressure level = $20 \log \{p(t)/p_0\}$ Where $P_0 = 2 \times 10^{-5}$ Pa.
A" Weighting (dB(A))	The human ear does not respond uniformly to different frequencies. "A" weighting is commonly used to simulate the frequency response of the ear. It is used in the assessment of risk of damage of hearing due to noise.
Frequency (Hz)	The number of cycles per second, for sound this is subjectively perceived as pitch.
Frequency Spectrum	Analysis of the relative contributions of different frequencies that make up a noise.
Ambient Noise	Totally encompassing noise in a given situation at a given time usually composed of noise from many sources near and far (<i>The ambient noise comprises the residual noise and the specific noise when present</i>).
Ambient Sound Level $L_a = L_{Aeq,T}$	Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T.
Background Sound Level $L_{A90,T}$	A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels.
Equivalent Continuous A-weighted Sound Pressure Level $L_{Aeq,T}$	Value of the A-weighted sound pressure level in decibels of continuous steady sound that, within a specified time interval, $T = t_2 - t_1$, has the same mean-squared sound pressure as a sound that varies with time, and is given by the following equation: $L_{Aeq,T} = 10 \lg_{10} \left\{ \left(\frac{1}{T} \right) \int_{t_1}^{t_2} \left[p_A \frac{(t)^2}{p_0^2} \right] dt \right\}$ <p>Where p_0 is the reference sound pressure (20μPa); and $P_A(t)$ is the instantaneous A-weighted sound pressure level at time t</p>
Measurement Time Interval T_m	Total time over which measurements are taken (<i>This may consist of the sum of a number of non-contiguous, short-term measurement time intervals</i>)
Rating level $L_{Ar,Tr}$	Specific sound level plus any adjustment for the characteristic features of the sound
Reference Time Interval, T_r	Specified interval over which the specific sound level is determined (<i>This is 1 h during the day from 07:00 h to 23:00 h and a shorter period of 15 min at night from 23:00 h to 07:00 h</i>)
Residual Sound	Ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound
Residual sound level $L_r = L_{Aeq,T}$	Equivalent continuous A-weighted sound pressure level of the residual sound in a given situation at the assessment location over a given time interval, T.
Specific sound level $L_s = L_{Aeq,Tr}$	Equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given time interval, T.
Specific Sound Source	Sound source being assessed
$L_{A10,T}$	The A-weighted sound pressure level of the residual noise in decibels exceeded for 10% for a given time interval. This is the parameter defined by the government to describe road traffic noise
L_{AFmax}	The maximum RMS A-weighted sound pressure level occurring within a specified time period. Fast time weighting indicates sound pressure level measurements undertaken using a 125-millisecond moving average time weighting period
Weighted sound reduction index R_w	A single-figure value of sound reduction index, derived according to procedures given in BS5821, used for rating and comparing partitions and based on the values of sound reduction index at different frequencies.

Appendix B – Planning Policy Context / Noise Guidance

B.1 National Policy

National Planning Policy Framework (2019)

The revised National Planning Policy Framework (NPPF) was published in February 2019¹¹. The NPPF sets out the Government planning policies for England and how these are expected to be applied. This NPPF supersedes the previous NPPF published in July 2018.

Policies and objectives which are of particular relevance to noise and vibration include:

Paragraph 170

“planning policies and decisions should contribute to and enhance the natural and local environment by:...

“preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans...

Paragraph 180 also relates to noise through the following statement:

“Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

- a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
- b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason”*

With regards to ‘adverse effects’ and ‘significant adverse effects’, the NPPF refers to the Noise Policy Statement for England (NPSE)¹²; see below.

Noise Policy Statement for England (2010)

The NPSE seeks to clarify the underlying principles and aims in existing policy documents, legislation and guidance that relate to noise. The statement applies to all forms of noise, including environmental noise, neighbour noise and neighbourhood noise.

The statement sets out the long term vision of the government’s noise policy, which is to *“promote good health and a good quality of life through the effective management of noise within the context of policy on sustainable development”*.

This long term vision is supported by three aims:

- ‘avoid significant adverse impacts on health and quality of life;*
- mitigate and minimise adverse impacts on health and quality of life; and*
- where possible, contribute to the improvements of health and quality of life.’*

¹¹ Department for Communities and Local Government (DCLG), (2019); National Planning Policy Framework..

¹² Noise Policy Statement for England (2010); Department for Environment Food and Rural Affairs.

The long term policy vision and aims are designed to enable decisions to be made regarding what is an acceptable noise burden to place on society.

The Explanatory Note within the NPSE provides further guidance on defining 'significant adverse effects' and 'adverse effects' using the following concepts:

- No Observed Effect Level (NOEL) – the level below which no effect can be detected. Below this level no detectable effect on health and quality of life due to noise can be established;
- Lowest Observable Adverse Effect Level (LOAEL) – the level above which adverse effects on health and quality of life can be detected; and
- Significant Observed Adverse Effect Level (SOAEL) – the level above which significant adverse effects on health and quality of life occur.

With reference to the SOAEL, the NPSE states:

"It is recognised that it is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available."

For situations where noise levels are between the LOAEL and SOAEL, all reasonable steps should be taken to mitigate and minimise the effects. However, this does not mean that such adverse effects cannot occur.

Planning Practice Guidance Noise (July 2019)

The national Planning Practice Guidance (PPG) for noise¹³ advises that "Noise needs to be considered when development may create additional noise, or would be sensitive to the prevailing acoustic environment (including any anticipated changes to that environment from activities that are permitted but not yet commenced)" and provides guidelines that are designed to assist with the implementation of the NPPF.

The PPG states that local planning authorities should take account of the acoustic environment and in doing so consider:

- 'whether or not a significant adverse effect is occurring or likely to occur;
- whether or not an adverse effect is occurring or likely to occur; and
- whether or not a good standard of amenity can be achieved.'

Factors to be considered in determining whether noise is a concern are identified including the absolute noise level of the source, the existing ambient noise climate, time of day, frequency of occurrence, duration, character of the noise and cumulative effects.

Further details on the hierarchy of noise effects are presented in Table 7-1, which has been reproduced from PPGN

Table 7-1 Planning Practice Guidance Noise Exposure Hierarchy

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not present	No effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life	No Observed Adverse Effect	No specific measures required

¹³ <https://www.gov.uk/guidance/noise--2>

Perception	Examples of Outcomes	Increasing Effect Level	Action
Lowest Observed Adverse Effect Level (LOAEL)			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level (SOAEL)			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

B.2 Local Policy

Camden Local Plan

LBC's Local Plan was adopted in 2017¹⁴ and provides a planning framework for the borough. The policy which is relevant to noise affecting residential dwellings and industrial noise is found in 'Appendix 3: Noise thresholds' of the Local Plan. This appendix provides the following information for noise:

'The significance of noise impact varies dependent on the different noise sources, receptors and times of operation presented for consideration within a planning application. Therefore, Camden's thresholds for noise and vibration evaluate noise impact in terms of various 'effect levels' described in the National Planning Policy Framework and Planning Practice Guidance:

- NOEL – No Observed Effect Level
- LOAEL – Lowest Observed Adverse Effect Level
- SOAEL – Significant Observed Adverse Effect Level

Three basic design criteria have been set for proposed developments, these being aimed at guiding applicants as to the degree of detailed consideration needed to be given to noise in any planning application. The design criteria outlined below are defined in the corresponding noise tables. The values will vary depending on the context, type of noise and sensitivity of the receptor:

- Green – where noise is considered to be at an acceptable level.

¹⁴ Camden Borough Council, (2017); Camden Local Plan

- **Amber** – where noise is observed to have an adverse effect level, but which may be considered acceptable when assessed in the context of other merits of the development.
- **Red** – where noise is observed to have a significant adverse effect.

Proposed Developments Likely to be Sensitive to Noise

Special consideration will need to be given to noise sensitive developments that are proposed in areas which are, or expected to become, subject to levels of noise likely to have an adverse effect. The threshold of acceptability of the noise will primarily depend on two factors: the intended use of the noise sensitive development and the source of the noise experienced, or likely to be experienced.

Table B: Noise levels applicable to noise sensitive residential development proposed in areas of existing noise

Dominant Noise Source	Assessment Location	Design Period	LOAEL (Green)	LOAEL to SOAEL (Amber)	SOAEL (Red)
Anonymous noise such as general environmental noise, road traffic and rail traffic ~	Noise at 1 metre from noise sensitive façade/free field	Day	<50dBL _{Aeq,16hr} *	50dB to 72dBL _{Aeq,6hr} *	>72dBL _{Aeq,16hr} *
		Night	<45dBL _{Aeq,8hr} <40 dBL _{Aeq,8hr} **	45dB to 62dBL _{Aeq,8hr} * >40dBL _{night} **	>62dBL _{Aeq,8hrs} *
	Inside a bedroom	Day	<35dBL _{Aeq,16hr}	35dB to 45dBL _{Aeq,16hr}	>45dBL _{Aeq,16hr}
		Night	<30dBL _{Aeq,8hr} 42dBL _{Amax,fast}	30dB to 40dBL _{Aeq,16hr} 40dB to 73dBL _{Amax,fast}	>40dBL _{Aeq,8hr} >73dBL _{Amax,fast}
	Outdoor living space (free field)	Day	<50dBL _{Aeq,16hr}	50dB to 55dBL _{Aeq,6hr}	>55dBL _{Aeq,16hr}
Non-anonymous noise	See guidance note on non-anonymous noise				

*LAeq, T values specified for outside a bedroom window are façade levels

**Lnight values specified for outside a bedroom window are free field levels

The levels given above are for dwellings, however, levels are use specific and different levels will apply dependent on the use of the premises. The Council will also take into account the likely times of occupation for types of development and will be amended according to the times of operation of the establishment under consideration.

Industrial and Commercial Noise Sources

A relevant standard or guidance document should be referenced when determining values for LOAEL and SOAEL for non-anonymous noise. Where appropriate and within the scope of the document it is expected that British Standard 4142:2014 'Methods for rating and assessing industrial and Camden Local Plan | Appendices 347 commercial sound' (BS 4142) will be used. For such cases a 'Rating Level' of 10 dB below background (15dB if tonal components are present) should be considered as the design criterion).

Table C: Noise levels applicable to proposed industrial and commercial developments (including plant and machinery)

Existing Noise sensitive receptor	Assessment Location	Design Period	LOAEL (Green)	LOAEL to SOAEL (Amber)	SOAL (Red)
Dwellings**	Garden used for main amenity (free field) and Outside living or dining or bedroom window (façade)	Day	'Rating level' 10dB* below background	'Rating level' between 9dB below and 5dB above background	'Rating level' greater than 5dB above background
Dwellings**	Outside bedroom window (façade)	Night	'Rating level' 10dB* below background and no events exceeding 57dBL _{Amax}	'Rating level' between 9dB below and 5dB above background or noise events between 57dB and 88dB L _{Amax}	'Rating level' greater than 5dB above background and/or events exceeding 88dBL _{Amax}

*10dB should be increased to 15dB if the noise contains audible tonal elements. (day and night). However, if it can be demonstrated that there is no significant difference in the character of the residual background noise and the specific noise from the proposed development then this reduction may not be required. In addition, a frequency analysis (to include, the use of Noise Rating (NR) curves or other criteria curves) for the assessment of tonal or low frequency noise may be required.

**levels given are for dwellings, however, levels are use specific and different levels will apply dependent on the use of the premises.

The periods in Table C correspond to 0700 hours to 2300 hours for the day and 2300 hours to 0700 hours for the night. The Council will take into account the likely times of occupation for types of development and will be amended according to the times of operation of the establishment under consideration. There are certain smaller pieces of equipment on commercial premises, such as extract ventilation, air conditioning units and condensers, where achievement of the rating levels (ordinarily determined by a BS:4142 assessment) may not afford the necessary protection. In these cases, the Council will generally also require a NR curve specification of NR35 or below, dependant on the room (based upon measured or predicted Leq,5mins noise levels in octave bands) 1 metre from the façade of affected premises, where the noise sensitive premise is located in a quiet background area.'

B.3 Other Relevant Standards and Guidance

BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings

BS 8233:2014¹⁵ provides criteria for the assessment of internal and external noise levels for various uses including dwellings and commercial properties. Criteria for provision of suitable living conditions inside dwellings are provided in Table 4 of BS 8233:2014 presents the desirable internal noise levels for dwellings that should not be exceeded in new developments. Table 2 in BS8233:2014 presents the indoor ambient noise level in other noise sensitive buildings including offices.

Note that BS 8233 does not specify maximum ($L_{A_{Fmax}}$) noise level criterion within bedrooms during night-time periods; this criterion has been taken from ProPG which advises the following:

¹⁵ British Standards Institution (2014) BS 8233: 2014 Guidance on sound insulation and noise reduction for buildings, BSI

"In most circumstances in noise-sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45dB $L_{Amax,F}$ more than 10 times a night. However, where it is not reasonably practicable to achieve this guideline then the judgement of acceptability will depend not only on the maximum noise levels but also on factors such as the source, number, distribution, predictability and regularity of noise events."

While there is no national requirement for external noise levels to be achieved in garden spaces, BS 8233 also advises that: *"For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments."*

ProPG: Planning & Noise (2017)

ProPG: Planning & Noise - Professional Practice¹⁶ has been produced by the Institute of Acoustics (IoA), the Association of Noise Consultants (ANC) and the Chartered Institute of Environmental Health (CIEH) to provide practitioners with guidance on a recommended approach to the management of noise within the planning system in England. ProPG provides planning guidance for the consideration of new residential development that will be exposed predominantly to airborne noise from transport sources.

Recommended ProPG indoor ambient noise levels are identical to those within BS8233:2014. In addition, with regards to sleep quality and well-being, a noise level of 45 dB L_{Amax} inside bedrooms has been identified as a threshold value above which sleep is disturbed.

¹⁶ ProPG: Planning & Noise - Professional Practice Guidance on Planning & Noise – New Residential Development (May 2017)

Appendix C Review of Historic Surveys

Austin Friars House 1 Stephen Street

A noise survey was carried out as part of the noise assessment for the planning application to install a new roof plant at Austin Friars House 1 Stephen Street, London, W1T 1AL (planning ref. 2019/2356/P).

Long term unattended measurements were carried out between 10:57 on Wednesday 17th April 2019 and 11:52 on Thursday 18th April 2019. The measurements included L_{Aeq} , L_{A90} and L_{Amax} sound level indicators over daytime and night-time periods. However only the L_{A90} noise level indicator was tabulated with the other noise indicators shown graphically in a time history plot. The noise monitor was located on the 12th floor rooftop in free-field conditions. Noise levels from Tottenham court road would have been screened. The noise climate during the measurements was observed to be existing plant and road traffic from the surrounding road network.

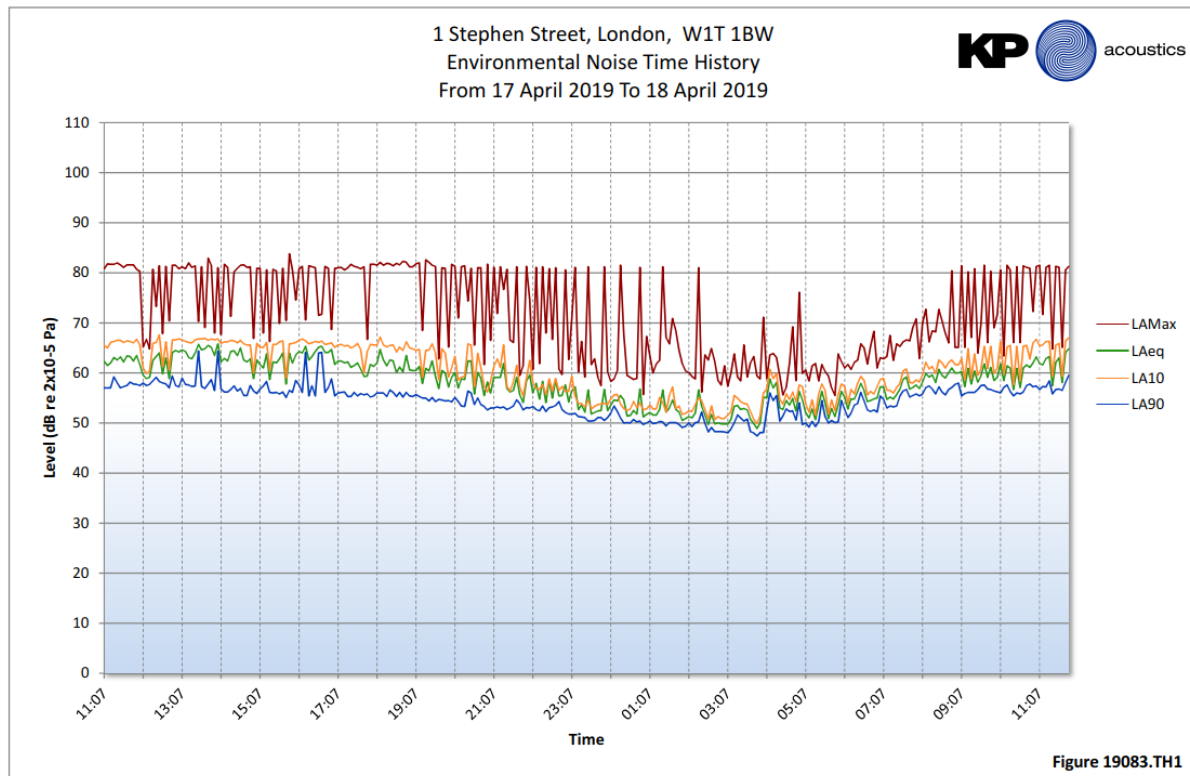
Noise measurement data is summarised in Table C-1.

Table C-1 Survey Results, Austin Friars House 1 Stephen Street

Measurement Period	Time	Typical Background Noise Level (L_{A90} , 5mins, dB)
Daytime	(07:00 – 23:00)	56
Night-time	(23:00 – 07:00)	50

Figure C-2 shows the time history of the measurements at Austin Friars House.

Figure C-2. Austin Friars House 1 Stephen Street Time History



Central YMCA, 112 Great Russell Street

A noise survey was carried out as part of the noise assessment for the planning application to install replacement heat pump units at the Central YMCA, 112 Great Russell Street, London, WC1B 3NQ (planning ref. 2017/0487/P).

long term attended measurements were carried out between 12:30 on Friday 25th November 2016 and 17:00 on Saturday 26th November 2016. The measurements included L_{Aeq} , L_{A90} and L_{Amax} sound level indicators over daytime (07:00 – 23:00) and night-time (23:00 – 07:00) periods. However only the L_{A90} noise level indicator was tabulated with the other noise indicators shown graphically in a time history plot. The noise monitor was located on a first-floor balcony facing Bedford Avenue in non-free field conditions. Noise from Tottenham Court Road would not have been screened at this location. The noise climate during the measurements was observed to be dominated by road traffic with some small contribution from existing plant on the balcony area where the sound level meter was located.

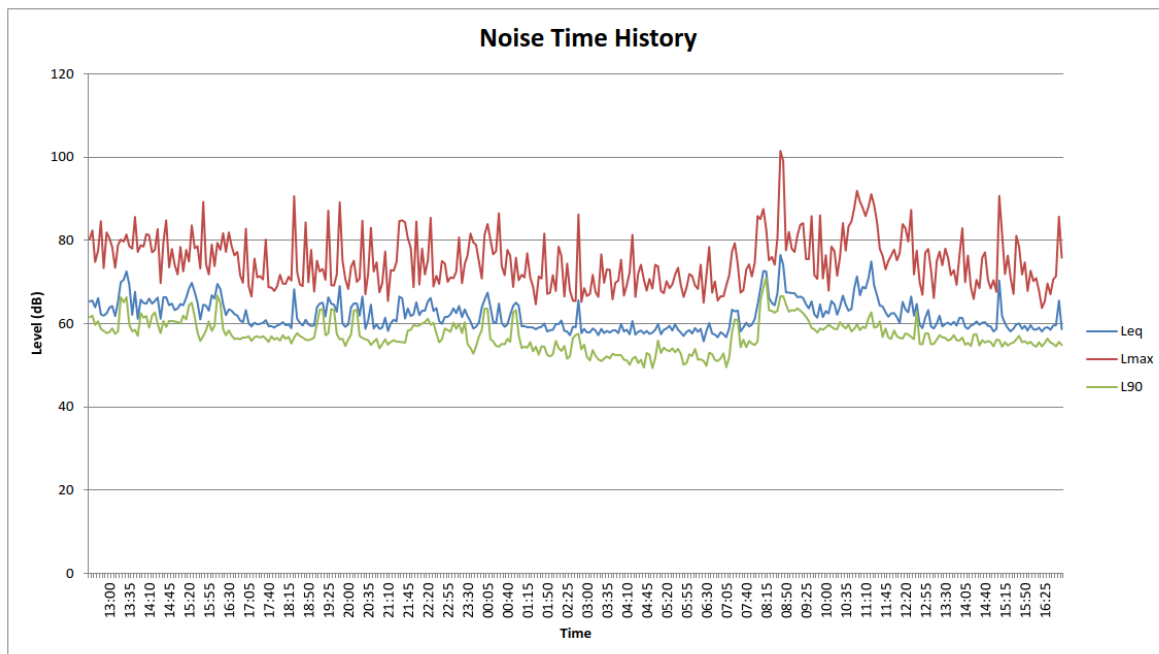
Noise measurement data is summarised in Table C-2.

Table C-2. Survey Results, Central YMCA, 112 Great Russell Street

Measurement Period	Time	Typical Background Noise Level (L_{A90} , 5mins, dB)
Daytime	(07:00 – 23:00)	50
Night-time	(23:00 – 07:00)	49

Figure C-3 below shows the time history at Central YMCA

Figure C-3. Central YMCA, 112 Great Russell Street Time History



21 Stephen Street

A noise survey was carried out as part of the noise assessment for the planning application for three new pieces of plant items and railing at 21 Stephen Street, London, W1T 1LN (planning ref. 2017/1922/P).

Long-term unattended measurements were carried out between 12th and 16th May 2017. The measurements included L_{Aeq} and L_{A90} sound level indicators for daytime (07:00 -19:00), evening (19:00 -23:00) and night-time (23:00 -00:00). No L_{Amax} noise levels were reported. Noise measurements were taken on the 1st floor rooftop facing Stephen Street in free field conditions. The noise climate during the measurements was observed to be dominated by mechanical plant installed on the rooftop of the first-floor level of 21 Stephen Street. Noise additions are from road traffic from Tottenham Court Road and activity of the external terrace associated with the BFI Kitchen at the rear of the building during operating hours.

Noise measurement data is summarised in Table C-3.

Table C-3. Survey Results, 21 Stephen Street

2017 Measurement Location	Measurement Period	Ambient Noise Level ($L_{Aeq,T}$, dB)	Typical Background Noise Level ($L_{A90,15mins}$, dB)
P1	Daytime (07:00 – 19:00)	59	56-57
	Evening (19:00 – 23:00)	59	56-57
	Night-time (23:00 – 00:00)	61	56-57
P2	Daytime (07:00 – 19:00)	59	52-53
	Evening (19:00 – 23:00)	60	52-53
	Night-time (23:00 – 00:00)	57	52-53

233 Tottenham Court Road

A noise survey was carried out as part of the noise assessment for the planning application to install three air conditioning units at 233 Tottenham Court Road, London, W1T 7QH (planning ref. 2016/2440/P).

Short term attended measurements were carried out on Thursday 3rd March 2016 between 19:00 and 19:30. The measurements included L_{Aeq} , L_{A90} and L_{Amax} sound level indicators over 5-minute measurement periods. Measurements were taken facing South Crescent with noise from Tottenham Court Road screened. The noise climate during the measurements was observed to be dominated by road traffic.

Noise measurement data is summarised in Table C-4.

Table C-4. Survey Results, 231-233 Tottenham Court Road

Start Time	Ambient Noise Level ($L_{Aeq, 5 mins}$, dB)	Maximum Noise Level ($L_{Amax, 5 mins}$, dB)	Typical Background Noise Level ($L_{A90, 5mins}$, dB)
19:00	65.4	79.6	60.6
19:05	64.4	81.3	61.1
19:10	66.5	82.4	60.8
19:16	63.6	77.5	60.6
19:22	65.6	84.6	60.5
19:27	64.1	77.4	60.7
19:32	62.8	74.0	60.5
Noise Level	65	85	61

1 Stephen Street

A noise survey was carried out as part of the noise assessment for the planning application for a new air conditioning unit at 1 Stephen Street, London, W1T 1AL (planning ref. 2015/5822/P).

Short-term attended measurements were carried out between 12:00 and 15:00 on Tuesday 12th January 2016. The measurements included L_{Aeq} , L_{A90} and L_{Amax} sound level indicators. The monitor was located on a 3rd floor balcony in free field conditions. No noise climate information was given in the report although it was noted there was an existing piece of plant on the roof as well as a number of plant items on adjacent rooftops.

Noise measurement data is summarised in Table C-5.

Table C-5. Survey Results, 1 Stephen Street

Measurement Period	Ambient Noise Level ($L_{Aeq,T}$, dB)	Typical Background Noise Level ($L_{A90,T}$, dB)	Maximum Noise Level ($L_{Amax,T}$, dB)
12:00 – 13:00	64.9	63.2	74.3
13:00 – 14:00	65.0	63.6	81.6
14:00 – 15:00	65.2	64.1	81.2
Noise Level	65	64	82

Units 6 - 7, 6 - 17 Tottenham Court Road

A noise survey was carried out as part of the noise assessment for the planning application to install a new air conditioning unit at Barclays Bank, Tottenham Court Road, London, W1T 1AZ (planning ref. 2015/1816/P).

Long-term unattended measurements were carried out between Thursday 18th June 2015 and Monday 22nd June 2015. The measurements included L_{Aeq} , L_{A90} and L_{Amax} sound level indicators over daytime (07:00 -19:00), evening (19:00 -23:00) and night-time periods (23:00 – 07:00). However only the L_{A90} noise level indicator was tabulated with the other noise indicators shown graphically in a time history plot. The monitor was located at roof level in free field conditions. The noise climate during the measurements was observed to be dominated by road traffic noise, however existing plant building services and commercial activities also contributed to background levels. Noise levels from Tottenham Court Road were screened due to location on roof.

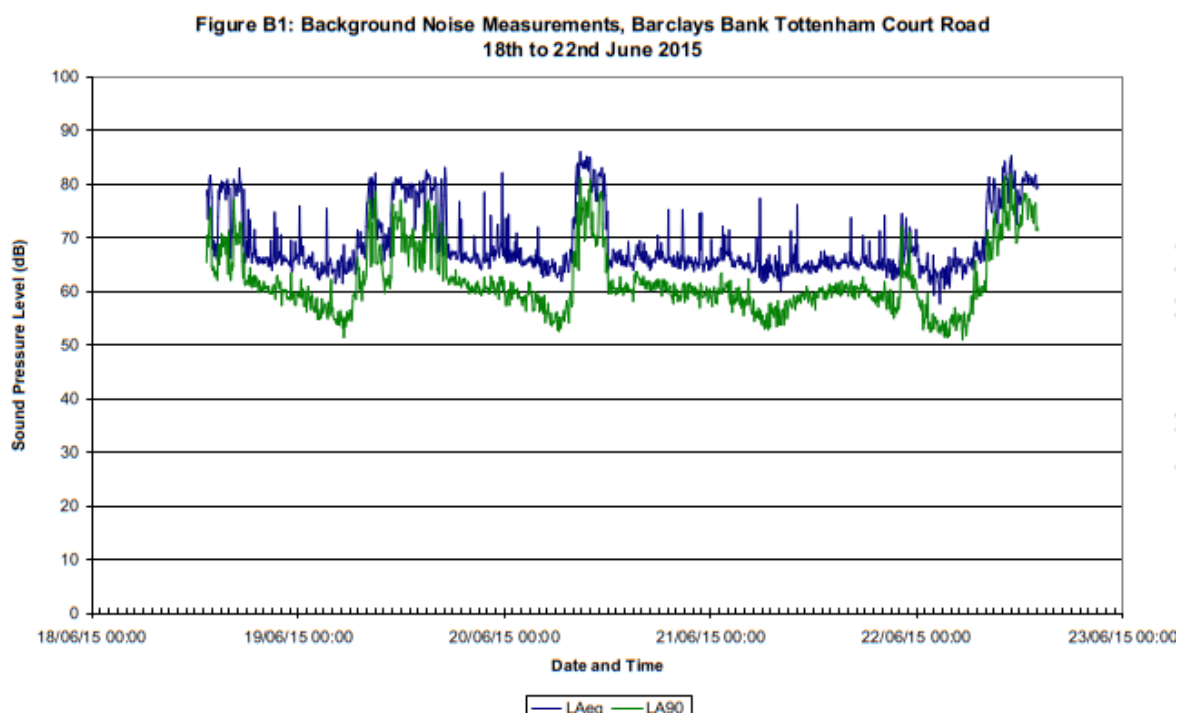
Noise measurement data is summarised in Table C-6

Table C-6. Survey Results, Units 6 - 7, 6 - 17 Tottenham Court Road

Date	Daytime Level (07:00 – 19:00) dB Minimum L_{A90} , 1 hour	Evening Level (19:00 – 23:00) dB Minimum L_{A90} , 1 hour	Night-time Level (23:00 – 07:00) dB Minimum L_{A90} , 15 min
Thu 18 th June	62	60	53
Fri 19 th June	62	60	54
Sat 20 th June	60	59	54
Sun 21 st June	56	58	52
Mon 22 nd June	62	-	-
Noise Level	60	59	53

Figure C-4 shows the time history plot for the measurement.

Figure C-4. 1 Units 6 - 7, 6 - 17 Tottenham Court Road Time History



112A Great Russell Street

A noise survey was carried out as part of the noise assessment for the planning application for redevelopment of basement levels -4 and -5 of 112 Great Russell Street, London, WC1B 3NP (planning ref. 2015/3605/P).

Long-term unattended measurements were carried out between 15th and 16th March 2012. The measurements included L_{Aeq} , L_{A90} and L_{Amax} sound level indicators for daytime (07:00 -19:00), evening (19:00 -23:00) and night-time periods (23:00 – 07:00). The noise monitor was located on a flat roof on floor two facing Adaline Place. Noise from Tottenham Court Road was screened. The noise climate during the measurements was observed to be dominated by road traffic from surrounding roads in the vicinity of the site. During the daytime it was noted that distant construction work was also occasionally audible.

Noise measurement data is summarised in Table C-7.

Table C-7. Survey Results, 21 Stephan Street

Measurement Period	Time	Ambient Noise Level ($L_{Aeq,T}$, dB)	Maximum Noise Level ($L_{Amax,T}$, dB)	Typical Background Noise Level ($L_{A90,15mins}$, dB)
Daytime	(07:00 – 19:00)	61.6	95.6	57.2
Evening	(19:00 – 23:00)	59.1	81.1	55.6
Night-time	(23:00 – 07:00)	57.3	85.3	52.2

Air Quality and Dust Management Plan

Reference:	EEMC-AQDMP001-206 Rev00
Project:	247 Tottenham Court Road
Client:	Deconstruct

DOCUMENT REFERENCE: EEMC-AQDMP001-247 Tottenham Court Road-206 Rev00

REVIEW AND AUTHORISATION

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AMENDMENT HISTORY

Issue	Status	Description	Date
00	Draft	First Issue (draft)	16 th July 2021

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1. Introduction

1.1. Document Purpose

- 1.1.1. Deconstruct (UK) Ltd (hereafter referred to as the 'client') has been appointed to undertake demolition, piling and associated works at 247 Tottenham Court Road (hereafter referred to as the 'site') located in London Borough of Camden (LBC). The client have commissioned European Environmental Monitoring and Consultancy (EEMC) to prepare an Air Quality and Dust Management Plan (AQDMP) for the project.
- 1.1.2. (EEMC) Limited has extensive experience in providing noise, vibration and air quality monitoring and consultancy services to major construction and infrastructure projects and has worked on some challenging developments in London and the UK.
- 1.1.3. EEMC has prepared this AQDMP following communications with client's project team.
- 1.1.4. The proposed works on site include: Soft strip, demolition, piling and reduced level excavations with associated works.
- 1.1.5. Relevant air pollutants, (fine particulate matter (PM₁₀) and nitrogen dioxide (NO₂)) have been explored in this document. Dust, in the form of PM₁₀, will be monitored on site, however NO₂ will only be monitored on site if deemed necessary by LBC.
- 1.1.6. Draft planning condition 27 is noted to be as follows:

"Construction related impacts – Monitoring

Air quality monitoring shall be implemented on site. No development shall take place until:

a. prior to installing monitors, full details of the air quality monitors have been submitted to and approved by the local planning authority in writing. Such details shall include the location, number and specification of the monitors, including evidence of the fact that they have been installed in line with guidance outlined in the GLA's Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance;

b. prior to commencement, evidence has been submitted demonstrating that the monitors have been in place for at least 3 months prior to the proposed implementation date. The monitors shall be retained and maintained on site for the duration of the development in accordance with the details thus approved.

Reason: To safeguard the amenity of adjoining premises and the area generally in accordance with the requirements of policies A1 (Managing the impact of development) and CC4 (Air quality) of the London Borough of Camden Local Plan 2017."

- 1.1.7. This document looks to fulfil item 'a' above and open discussions on item 'b'.

1.2. Site Location

- 1.2.1. The site is located at 247 Tottenham Court Road, London, W1T 7QZ, and is shown in Figure 4.0 along with sensitive receptors surrounding site.
- 1.2.2. The site is bounded by roads on three sides and shares a party wall with 248 Tottenham Court Road on the fourth side, to the south. Tottenham Court Road lies to the west of site, with Bayley Street to the north and Morwell Street to the east.
- 1.2.3. In the wider surrounding area, Tottenham Court Road Underground Station is approximately 250m to the south, and Googe Street Underground Station is 300m to the north of site. Bedford Square Garden is approximately 50m to the east.

- 1.2.4. London Borough of Camden declared the whole borough as an Air Quality Management Area (AQMA) in 2002, due to exceedances of the annual mean NO₂ air quality objective and the 24-hour mean PM₁₀ objective. Therefore the site is located within an AQMA.

2. Legislation and Guidance

2.1. UK Legislation

- 2.1.1. The Air Quality Standards Regulations (England) (2010, amended in 2016) provides the regulatory framework for air quality limit values in ambient air. PM₁₀ is one of the pollutants outlined, which has a limit value of 40µg/m³ as an annual mean and 50µg/m³ as a 24-hour mean (not to be exceeded more than 35 times a year). NO₂ has a limit value of 40µg/m³ as an annual mean and 200µg/m³ as a 1-hour mean (not to be exceeded more than 18 times a year).
- 2.1.2. The Environment Act (1995) requires the Secretary of State for the Environment to develop and implement an Air Quality Strategy, to reduce atmospheric emissions and improve air quality. The Air Quality Strategy provides the framework for ensuring compliance with the air quality limit values and requires that local authorities carry out local air quality management duties. Where a local authority identifies an area where ambient pollutant concentrations exceed the limit values, they are required to declare an Air Quality Management Area (AQMA) and produce an Air Quality Action Plan (AQAP) to improve air quality in that area.

2.2. Local Authority

- 2.2.1. The site is within the jurisdiction of the London Borough of Camden (LBC).
- 2.2.2. LBC's Local Plan was published in 2017, and it sets out strategic objectives and policies from 2016 to 2031.
- 2.2.3. With regard to air quality, the Local Plan makes reference to Policy CC4 which states:
"Air Quality Assessments (AQAs) are required where development is likely to expose residents to high levels of air pollution. Where the AQA shows that a development would cause harm to air quality, the Council will not grant planning permission unless measures are adopted to mitigate the impact. Similarly, developments that introduce sensitive receptors (i.e. housing, schools) in locations of poor air quality will not be acceptable unless designed to mitigate the impact."
- 2.2.4. Camden's Planning Guidance (CPG) on Air Quality, January 2021, is a Supplementary Planning Document to the Local Plan. The CPG provides information on key air quality issues within the borough and supports Local Plan Policy CC4 Air quality.
- 2.2.5. The document states: *"We may require monitoring, before and during the construction and demolition phases, dependent upon the scale of the proposed development. Medium risk schemes usually require a minimum of two real-time monitors, while high risk schemes usually require four. The choice of locations and positions must clearly be demonstrated on the basis of identified nearby receptors, the prevailing atmospheric conditions, off-site emission sources, local topography, and the relevant dust-generating site activities. Baseline monitoring would normally be required for at least 6 months (ideally 12 months) prior to commencement, and the results used to inform interpretation of construction phase monitoring and any actions required to be taken to avoid exceedances."*

- 2.2.6. In line with the above, this document outlines the proposed monitoring locations and provides details on nearby receptors and the proposed real-time monitors.
- 2.2.7. With regard to construction, LBC have a requires 'Camden's Minimum Requirements for Building Construction' document which outlines a series of measures to minimise air pollution and nuisance to receptors nearby. The measures include:
- Dusty operations being identified and reported in any CMP/DMP.
 - Consideration of the location of any aggregate stockpiles.
 - Good condition consolidated surfaces being used for areas where there is vehicular movement.
 - Containment of dusty processes and effective use of dust suppression
 - Inspection and assessment of any dust by site contractors, and monitoring of dust levels.
 - Implementation of corrective action (mitigation) should any dust emissions arise.
 - Effective preventative maintenance on all site aspects, to control emissions to air
 - Good site management to control and prevent emissions to air.
- 2.2.8. The above measured have been taken into consideration, and proposed mitigation measures have been outlined in section 6.
- 2.2.9. The London Borough of Camden requires compliance with the Greater London Authority (GLA) document 'The Control of Dust and Emissions During Construction and Demolition (2014) Supplementary Planning Guidance (SPG)'. This guidance is explored further in section 2.3 and proposed mitigation measures are outlined in section 6.
- 2.2.10. LBC have declared the entire borough as an AQMA, as such they have a Clean Air Action Plan (CAAP). Their current CAAP covers 2019 to 2022 and has three overarching aims:
- *"Continue to meet the EU objectives for Carbon Monoxide, Benzene, 1,3-Butadiene, Lead and PM₁₀.*
 - *Continue to reduce concentrations of PM₁₀ and PM_{2.5}, and to meet the EU Objective for NO₂.*
 - *Drive forward compliance with WHO Guidelines by 2030"*
- 2.2.11. The key priorities identified in the CAAP include:
- Reducing construction emissions
 - Reducing building emissions
 - Reducing transport emissions
 - Supporting communities and schools
 - Reducing emissions from delivery, servicing and freight
 - Continuing public health and awareness raising
 - Lobbying
- 2.2.12. The existing air quality situation in the area around the site has been considered during the preparation of this document, and is outlined in section 3.

2.3. Other guidance

- 2.3.1. Construction sites can lead to a release of pollutants to air. To help assess the likely impact and therefore determine appropriate mitigation measures, the Institute of Air Quality Management (IAQM) produced the 'Guidance on the assessment of dust from demolition and construction (v1.1 2016)' document.
- 2.3.2. The GLA produced 'The Control of Dust and Emissions During Construction and Demolition (2014)' Supplementary Planning Guidance (SPG) document which follows the same method as the IAQM guidance to outline a methodology for assessing the likely impact of a construction site, based on carrying out a Dust Risk Assessment, outlining appropriate mitigation and proposed monitoring strategy.
- 2.3.3. The GLA SPG document has been used in this assessment to determine the likely impact and dust risk from each phase of the project. The SPG document also provides guidance on mitigation measures, dependant on the risk categories. These have been determined for this project and are outlined in Table 5.3 in Section 5.
- 2.3.4. Following the assessment guidance, the IAQM produced the 'Guidance on Monitoring in the Vicinity of Demolition and Construction Sites (v1.1 2018)' document. This provides further guidance on monitoring and advises on appropriate PM₁₀ Action Levels for construction sites. The document states that:

"The Site Action Levels set out below are recommended. These will be reviewed in the future as additional information becomes available.

PM₁₀ Concentrations: 190µg/m³ averaged over a 1-hour period."

- 2.3.5. It is noted that the IAQM monitoring guidance document (v1.1 2018) was an update to the previous document (2012), which provided the following guidance on Action Levels:

"The Site Action Levels set out below are recommended. These will be reviewed in the future as additional information becomes available.

PM₁₀ Concentrations: 250µg/m³ averaged over a 15-minute period."

- 2.3.6. With regards to NO₂ the IAQM monitoring guidance document (v1.1 2018) states:

"No consideration is given to measurement of concentrations of other pollutants, such as nitrogen dioxide, around construction sites, although emissions of NOx from these sites may represent an important source in urban areas."

- 2.3.7. Based on the GLA and IAQM guidance this document reviews the existing air quality situation in the vicinity of the site, outlines relevant receptors, presents the dust risk assessment for the site, provides recommended mitigation measures and site management, and outlines the methodology for the proposed on-site dust monitoring.

3. Baseline Monitoring

3.1. Baseline Monitoring

- 3.1.1. To understand the existing air quality in the vicinity of the site, baseline information has been obtained from the nearest automatic monitoring sites.
- 3.1.2. Baseline monitoring on site for PM₁₀ is being undertaken by the client at three locations on site prior to the commencement of works to provide baseline data for all project phases. However, it should be noted that the monitoring positions used for baseline monitoring will differ from the monitoring positions proposed during works on site.
- 3.1.3. It is understood that the monitors used on site for baseline monitoring are Aeroqual Dust Profilers, particle counter type devices.

3.2. Automatic Monitors

- 3.2.1. Baseline measurements have been obtained from the London Air website from three automatic monitors within 1km of the site. These monitors are outlined in Table 3.1 in increasing order of distance from site.
- 3.2.2. The site is considered to be a 'roadside' location where is adjacent to Tottenham Court Road. As such, pollutant concentrations measured at the Oxford Street East and Bloomsbury sites will likely be most representative of the site.

Table 3.1 – Automatic Monitoring Locations Within 1km of Site

Monitoring site name	Monitor type	Monitoring site classification	Approx. distance to Site (m) and orientation		Pollutants Measured
BL0: Camden - Bloomsbury	Automatic	Urban background	170m	North-East of Site	NO ₂ , CO, PM ₁₀ , PM _{2.5} , SO ₂ , O ₃
WMB: Westminster – Oxford Street East	Automatic	Roadside	340m	South-West of Site	NO ₂ , PM ₁₀ ,
IM1: Camden - Holburn	Automatic	Kerbside	770m	South-East of Site	NO ₂

- 3.2.3. Table 3.2 below shows the measured NO₂ concentrations at these locations for 2017, 2018 and 2019. Results for 2020 have not been included, as it is not considered that they represent typical concentrations due to the Covid-19 pandemic.
- 3.2.4. The annual mean NO₂ concentration was exceeded at WMB and IM1 for 2017-2019. This is likely to be due to WMB and IM1 being roadside and kerbside monitoring sites, at BL0, an urban background monitoring site, the annual mean objective was not exceeded.
- 3.2.5. It is considered that NO₂ concentrations at the site are likely to be between those measured at WMB and BL0.
- 3.2.6. For all three monitoring locations it is noted that there is a general downwards trend for NO₂ between 2017 and 2019.

Table 3.2 – Measured Concentrations of NO₂ at Automatic Monitoring Locations Within 1km of Site

Monitoring Position	Monitoring Site Classification	Annual Mean Objective	Annual Mean NO ₂ Concentration (µg/m ³)		
			2017	2018	2019
BL0	Urban background	40µg/m ³	37.8	36.4	31.5
WMB	Roadside		-	67.6	51.5
IM1	Kerbside		74.3	66.7	54.9

Note: '-' denotes no data for that year

Bold denotes an exceedance of the annual mean objective

3.2.7. Monitoring at BL0 and WMB sites include automatic monitoring of PM₁₀, Table 3.3 below shows the measured concentrations at this location in 2017, 2018 and 2019.

3.2.8. Table 3.3 shows that the annual mean PM₁₀ objective was not exceeded for any year between 2017-2019.

3.2.9. It is considered likely that PM₁₀ concentrations at the likely to be between those measured at WMB and BL0. This means measured PM₁₀ concentrations should be below the annual mean objective on site.

3.2.10. To take a precautionary approach, monitoring at the Oxford Street East (WMB) roadside site has been used in the dust risk assessment.

Table 3.3 – Measured Concentrations of PM₁₀ at Automatic Monitoring Locations Within 1km of Site

Monitoring site	Monitoring site classification	Annual mean objective	Annual mean PM ₁₀ concentration (µg/m ³)		
			2017	2018	2019
BL0	Urban background	40 µg/m ³	19	17	18
WMB	Roadside		-	26	22

Note: '-' denotes no data for that year

3.3. Baseline Monitoring on Site

3.3.1. As mentioned in LBC's Air Quality CPG "baseline monitoring would normally be required for at least 6 months (ideally 12 months) prior to commencement".

3.3.2. Baseline monitoring on site for PM₁₀ is being undertaken by the client at three locations on site prior to the commencement of works, using three Aeroqual Dust Profiler particle counting units.

3.3.3. LBC may wish to review the baseline monitoring locations and equipment to make ensure they are in line with their recommendations and are fit for purpose for these works.

3.3.4. Section 7 details the proposed dust monitoring plan for the site during commencement of works, and Figure 7.1 shows the proposed monitoring locations. Monitors will be installed as per Section 7 and Figure 7.1, in line with LBC requirements. If required, monitors could be installed on site prior to commencement of works to measure additional baseline data.

- 3.3.5. Monitoring at a nearby site, the Castlewood and Medius House project, which is approx. 200m to the south, has been previously carried out by EEMC. Baseline data for this project was measured from 31st August to 1st December 2019. Further details on this and a review of the results could be carried out and brought into discussions for this site if required.
- 3.3.6. A review of the current baseline monitoring carried out on site from 5th May to 6th July 2021 has been undertaken. The reports show that two dust monitors were installed on site at positions D01 and D03 on 5th May 2021 at *internal* locations on site.
- 3.3.7. On the 21st May 2021 the positions were changed and three dust monitors were installed at positions D04, D05 and D06. Figure 3.1 and 3.2 below are monitoring maps reproduced from the reports showing monitoring positions D01, D02 and D03, and, D04, D05 and D06, respectively.

Figure 3.1 – Baseline Monitoring Positions D01, D02 and D03, reproduced from “Report SES-11526-RP-ENV-001-DNV”

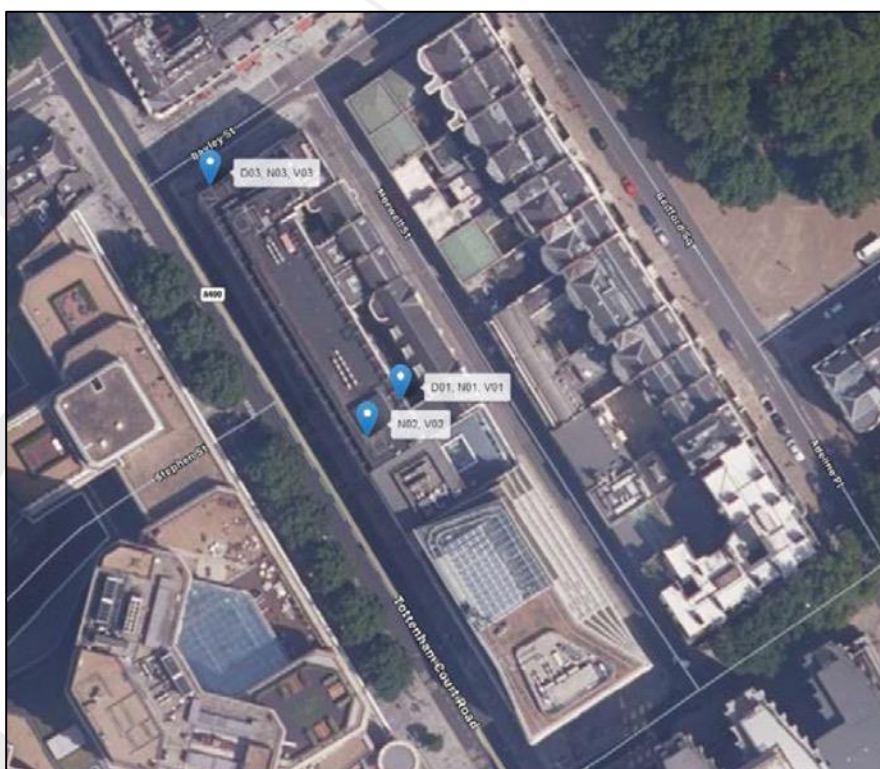
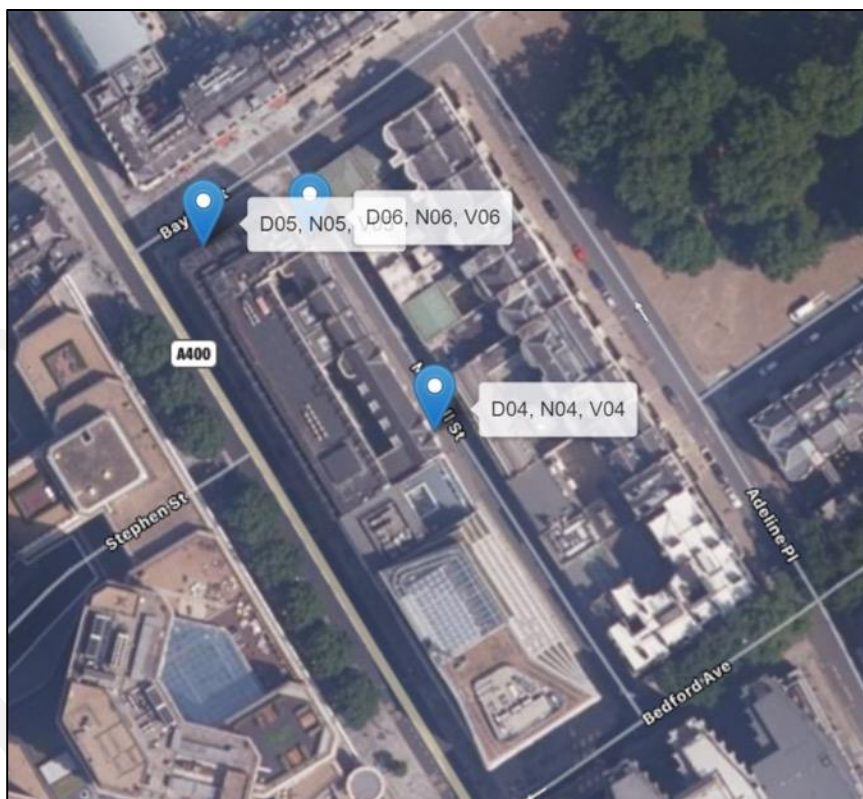


Figure 3.2 - Baseline Monitoring Positions D04, D05 and D06, reproduced from “Report SES-11526-RP-ENV-003-DNV”



3.3.8. The baseline monitoring reports note that baseline data has been measured in $\mu\text{g}/\text{m}^3$ 15-minute averages.

3.3.9. Results show that:

- From 5th May to 21st May at *internal* monitoring positions D01 and D03 the PM_{10} concentration was predominantly below $3 \mu\text{g}/\text{m}^3$.
- From 21st May to 6th July at external monitoring position D04 PM_{10} concentrations fluctuated predominantly between $3 \mu\text{g}/\text{m}^3$ and $18 \mu\text{g}/\text{m}^3$. The maximum recorded concentration was around $28 \mu\text{g}/\text{m}^3$.
- From 21st May to 6th July at external monitoring position D05 PM_{10} concentrations stayed predominantly below $5 \mu\text{g}/\text{m}^3$. The maximum recorded concentration was around $16 \mu\text{g}/\text{m}^3$.
- From 21st May to 6th July at external monitoring position D06 PM_{10} concentrations stayed below $5 \mu\text{g}/\text{m}^3$ with only one exception where the recorded concentration was around $7 \mu\text{g}/\text{m}^3$.

4. Sensitive Receptors

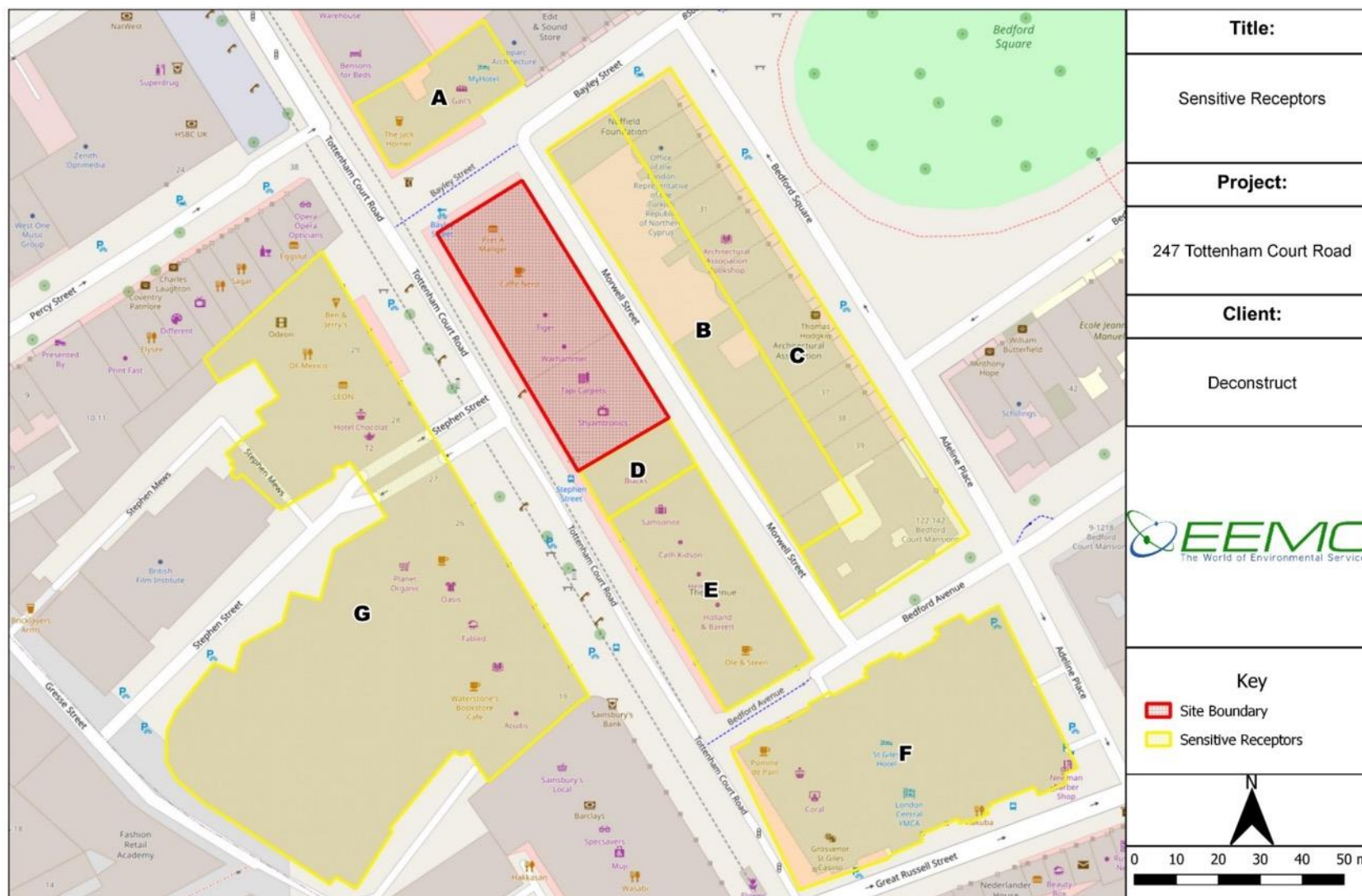
4.1. Sensitive Receptors

- 4.1.1. A review of nearby sensitive receptors has been carried out. The area around site is surrounded largely by commercial receptors with some residential receptors nearby.
- 4.1.2. Nearby sensitive receptors and the site location are shown in Figure 4.1 and Table 4.1.
- 4.1.3. A review of the Defra MAGIC map shows that there are no ecological receptors within 50m of the Site, therefore these are not considered further.
- 4.1.4. Pedestrians, cyclists and road users within proximity of the site have also been recognised as potential short-term sensitive receptors to the works.

Table 4.1 – Sensitive Receptors

Receptor ID	Building Use	Sensitive Receptor
A	Flats, Shops, Pub and Hotel	11 – 13 Bayley Street and 234-236 Tottenham Court Road
B	Residential and Offices	Morwell Street Properties
C	Residential, Offices, Hotel and a College	122 – 142 Bedford Court Mansions, 28-39 Bedford Square and Sotheby's Institute of Art
D	Shop and Offices	250 Tottenham Court Road
E	Shops and Offices	251 – 256 Tottenham Court Road
F	Hotel	St Giles Hotel
G	Shops and Offices	19-30 Tottenham Court Road

Figure 4.1 – Site Location and Sensitive Receptors

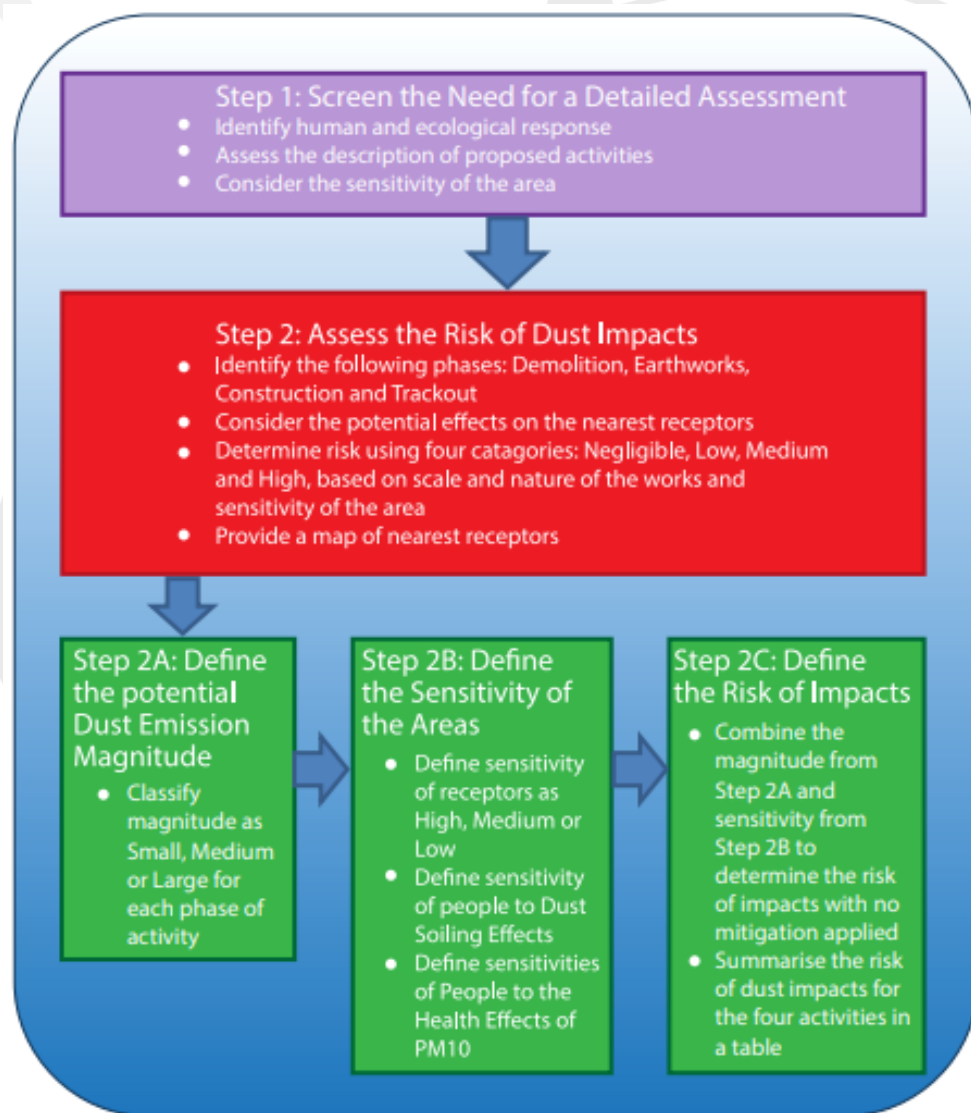


5. Dust Risk Assessment

5.1. Overview

- 5.1.1. The potential air quality impacts from the demolition, piling and associated works at 247 Tottenham Court Road have been assessed using the risk assessment approach from the IAQM and GLA 'The Control of Dust and Emissions During Demolition and Construction 2014 SPG' published in July 2014. Figure 5.1 provides a summary of the methodology, as outlined in the GLA SPG.
- 5.1.2. The methodology requires consideration of likely works on site, nearby sensitive receptors, and a risk assessment of these in relation to potential dust and emissions generation. This is followed by identification and selection of suitable mitigation measures for the risk level identified.
- 5.1.3. A dust risk assessment for the site was completed at planning stage and included in the Air Quality Assessment (AQA) prepared by AECOM in July 2020. This section presents a refined assessment with updates to some details of the assessment carried out at planning stage.

5.1.4. **Figure 5.1 – Summary of the dust risk assessment requirements (GLA, 2014)**



5.2. Step 1

- 5.2.1. Several sensitive human receptors have been identified near the site and therefore a detailed assessment of potential dust impacts is required.
- 5.2.2. Sensitive receptors include residential properties, the Sotheby's Institute of Art, My Bloomsbury Hotel and St. Giles Hotel. It is considered that there are between 10 and 100 residential properties within 50m of the Site.
- 5.2.3. No ecological receptors have been identified within 50m of the Site, therefore these are not considered further.

5.3. Step 2A

- 5.3.1. The Air Quality Risk Assessment has been undertaken for each phase of development.
- 5.3.2. The potential dust emission magnitude for each phase is summarised in Table 5.1, a precautionary approach has been taken.

Table 5.1 – The Dust Emission Magnitudes for Each Phase

Phase	Magnitude	Criteria
Demolition	Large	<p>The total demolition volume is estimated to be approximately 27,500m³ (<i>Medium magnitude</i>)</p> <p>Main materials being demolished are concrete and brickworks which are considered to be potentially dusty (<i>Large magnitude</i>)</p> <p>There will likely be a mobile crusher on site to crush and back fill demolition arisings (<i>Large magnitude</i>)</p> <p>Highest point of demolition is approximately 18m high (<i>Medium magnitude</i>)</p> <p>Demolition is expected to be undertaken from September to December 2021 (4 months).</p>
Earthworks	Small	<p>The total area of the site is estimated to be 2000m² (<i>Small magnitude</i>)</p> <p>It is estimated that less than 5 heavy earth moving vehicles will be active at any one time. (<i>Small magnitude</i>)</p> <p>Earthwork activities are anticipated to be undertaken between late November 2021 and June 2022 (6-7 months).</p>
Construction	Medium	<p>The total building volume constructed is estimated to be between 25,000m³ - 100,000 m³ (<i>Medium magnitude</i>)</p> <p>Construction materials are likely to comprise of concrete, steel, glass and terracotta cladding (<i>Small-Medium magnitude</i>)</p>
Trackout	Medium	<p>It is likely, as a worst case scenario, that the number of HDVs (>3.5t) on site in any one day will be between 10 - 50 (<i>Medium magnitude</i>)</p> <p>Unpaved roads likely to be less than 50m and will be over predominantly concreted areas. (<i>Small magnitude</i>)</p>

5.4. Step 2B

5.4.1. The sensitivity of the area takes account of several factors including:

- Specific sensitivities of receptors in the area.
- Proximity and number of these receptors.
- Local background PM₁₀ concentrations.

5.4.2. The sensitivity of receptors to dust soiling effects and the effects to human health as a result of PM₁₀ are considered. These impacts remain the same for each of the four phases of the project (demolition, earthworks, construction and trackout).

5.4.3. The sensitivity of the area in relation to dust soiling and the effect on human health are considered and shown in Table 5.2 below.

Table 5.2 – Sensitivity of the Area

Impact	Sensitivity	Criteria
Dust Soiling	High	There are between 10-100 residences within a 20m radius of site.
Human Health	Low	The annual mean of PM ₁₀ is below 24µg/m ³ . Automatic baseline monitoring from 2019 suggests the likely annual mean for site will be 22 µg/m ³ (see Table 3.3).

5.5. Step 2C

5.5.1. The sensitivity of the area for both dust soiling and human health impacts are compared against the dust emission magnitude to achieve a risk category for each phase. The risk categories are summarised in Table 5.3 below.

Table 5.3 – Summary of Unmitigated Dust Risk Categories for Each Phase

Phase	Risk	
	Dust Soiling	Human Health
Demolition	High	Medium
Earthworks	Low	Negligible
Construction	Medium	Low
Trackout	Medium	Low

6. Dust Mitigation Measures

- 6.1.1. The GLA guidance provides potential mitigation measures to reduce impacts during all four phases; demolition, earthworks, construction and trackout.
- 6.1.2. Table 5.4 below summarises the mitigation measures required for the site based on the dust risk assessment: *high risk* identified for demolition, and *medium risk* identified for construction and trackout.
- 6.1.3. No additional mitigation measures are proposed for earthworks due to this phase being *low risk*.

Table 5.4 – Highly Recommended Fugitive Dust Mitigation Measures

Phase	Control Measure
<i>Mitigation Measures Relevant for Demolition, Earthworks, Construction and Trackout</i>	
Site Management	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
	Develop a Dust Management Plan (this document).
	Display the name and contact details of a person(s) accountable for air quality pollutant emissions and dust issues on the site boundary.
	Display the head or regional office contact information.
	Record and respond to all dust and air quality pollutant emissions complaints.
	Make a complaint log available to the local authority when asked.
	Carry out regular site inspections to monitor compliance with air quality and dust control procedures, record inspection results, and make an inspection results, and make an inspection log available to the local authority when asked.
	Increase the frequency of site inspections by those accountable for dust and air quality pollutant emissions issues when activities with a high potential to produce dust and emissions are being carried out, and during prolonged dry or windy conditions.
	Record any exceptional incidents that cause dust and air quality pollutant emissions, either on or off the site, and the action taken to resolve the situation is recorded in the log book.
	Carry out supervision and training for process operations and proper use of equipment in order to control emissions to air.
	Hold liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and PM ₁₀ emissions are minimised.
Preparing and Maintaining the Site	Plan site layout: machinery and dust causing activities should be located away from receptors.
	Erect solid screens or barriers around dust activities or the site boundary that are, at least, as high as any stockpiles on site.
	Fully enclosed site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
	Avoid site runoff of water or mud.

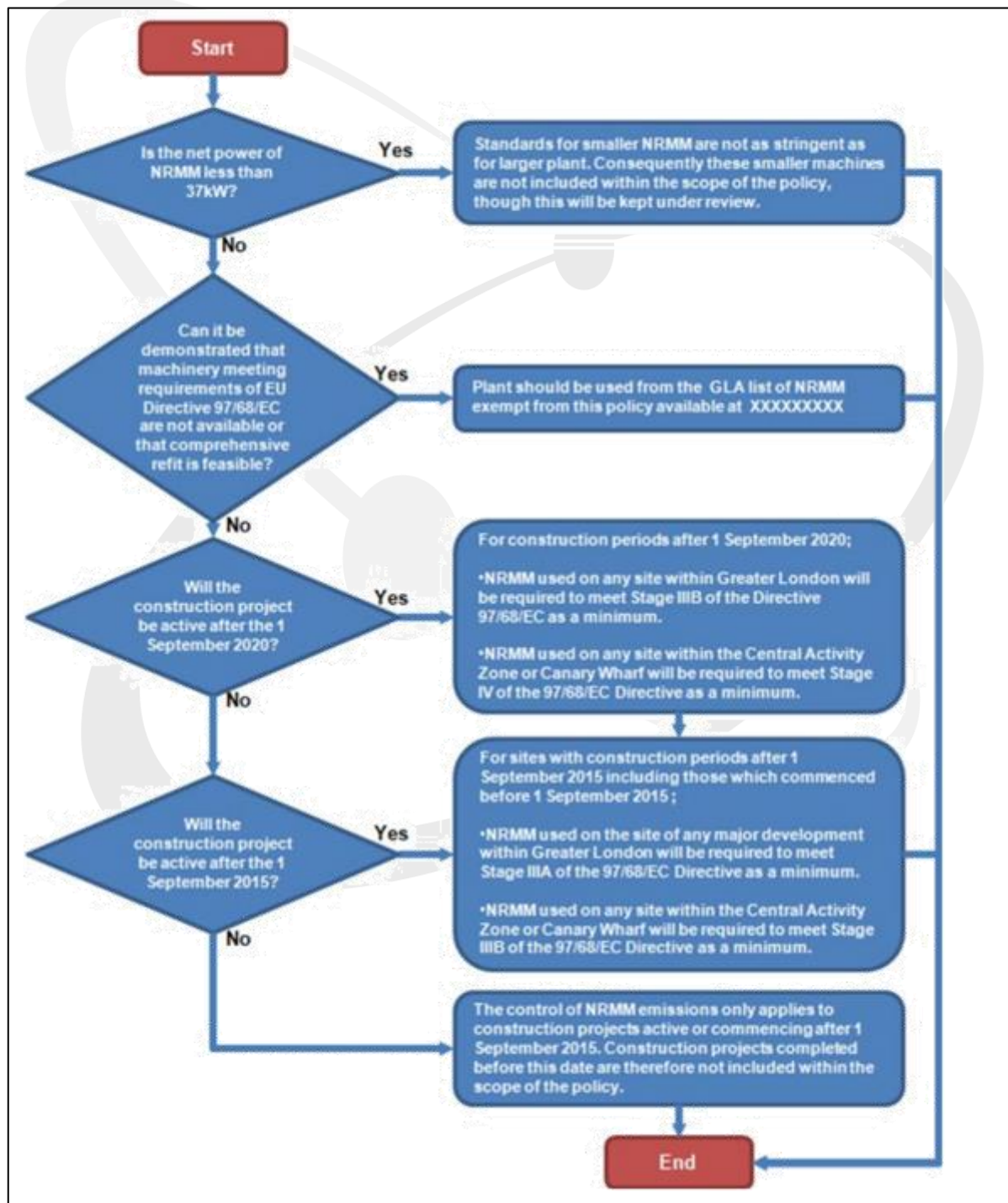
	Keep site fencing, barriers and scaffolding clean using wet methods.
	Remove materials from site as soon as possible.
	Cover, seed or fence stockpiles to prevent wind whipping.
	Aggregate stockpiles to be located away from receptors and drop heights minimised.
	Any storage bays to be designed with internal walls, which are at least ½ metre lower than external walls of the bays.
	Carry out regular dust soiling checks within 100m of site boundary and provide cleaning if necessary.
	Agree monitoring locations with the Local Authority.
	Where possible, commence baseline monitoring at least three months before phase begins.
	Put in place real-time dust and air quality pollutant monitors across the site and ensure they are checked regularly.
Operating Vehicle/Machinery and Sustainable Travel	Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone.
	Ensure all non-road mobile machinery (NRMM) comply with the standards set within the GLA SPG. A summary of NRMM emission requirements is replicated from the GLA SPG as Figure 5.2 below.
	Ensure all vehicles switch off engines when stationary – no idling vehicles.
	Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where possible.
	Impose and signpost a maximum-speed-limit of 10mph on surfaced haul routes and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
	Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
	Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking and car-sharing).
Operations	Only use cutting, grinding or sawing equipment fitting or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
	Make sure there is an adequate water supply on the site for effective dust/particulate matter mitigation (using recycled water where possible).
	Use enclosed chutes, conveyors and covered skips.
	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
	Make sure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management	Reuse and recycle waste to reduce dust from waste materials
	Avoid bonfires and burning of waste materials
<i>Measures Specific to Demolition</i>	
Demolition	Soft strip inside buildings before demolition (retaining the walls and windows in the rest of the building where possible, to provide a screen against dust).
	Make sure that water suppression is used during demolition operations.
	Avoid explosive blasting, use appropriate manual or mechanical alternatives.
	Bag and remove any biological debris or damp down such materials before demolition.
<i>Measures Specific to Construction</i>	
Construction	Avoid scabbling if possible.
	Make sure sand and other aggregates are stored in bunded areas and are not allowed to dry out.
	Make sure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
	Make sure that smaller supplies (bags) of fine powder materials are sealed after use and stored appropriately to prevent dust.
<i>Measures Specific to Trackout</i>	
Vehicles and Trackout	Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary any material tracked out of the site. This may require the sweeper being continuously in use.
	Avoid dry sweeping of large areas.
	Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
	Inspect on-site haul routes regularly for integrity and instigate necessary repairs to the surface as soon as possible.
	Record all inspections of haul routes and any subsequent action in a site log book.
	Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
	Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
	Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layouts permit.
	Access gates to be located at least 10m from receptors where possible.
	All commercial road vehicles attending the site must meet European Emission Standards pursuant to the EC Directive 98/69/EC of Euro 4 for petrol vehicles and Euro 6 for diesel vehicles and Euro VI for all lorries and specialist heavy goods vehicles.

	Ensure that all on-road vehicles comply with the Low Emission Zone (LEZ) and Ultra Low Emission Zone (ULEZ).
	For more information regarding proposed site access and vehicles specifications and requirements please refer to the sites Construction Site Management Plan (CTMP).

6.1.4. With the relevant mitigation measures outlined in Table 5.4 implemented, the residual effect from all dust generating activities is predicted to be **not significant**, in accordance with the GLA guidance.

Figure 5.2 – NRMM Emission Requirements



7. Site Management

7.1. Roles and Responsibilities

- 7.1.1. Clear definition and communication of environmental roles and responsibilities are required to facilitate effective environmental management.
- 7.1.2. The contact details for the person accountable for air quality and dust issues will be displayed at the site boundary.
- 7.1.3. Responsibilities will include:
- Stakeholder communication and community engagement before work commences on site.
 - Record and respond to all dust and air quality pollutant emissions complaints.
 - Keep a complaint log and make it available to the local authority when asked.
 - Carry out regular site inspections to monitor compliance with air quality and dust procedures, record the results of the inspection and make an inspection log available to local authority when asked.
 - Increase frequency of site inspections when activities on site have high potential to produce increased dust emissions and during prolonged dry or windy conditions.
 - Record any exceptional incidents that cause dust and air quality emissions on or off site and take action to resolve the situation and record in log book.
 - Make sure all required mitigation measures noted in Table 5.3 are implemented.

7.2. Working Hours

- 7.2.1. In 'Camden's Minimum Requirements' released in February 2019, the first section outlines the site working hours that are permitted. This has been replicated below as Figure 5.3

Figure 5.3 – Hours of Work

TIME OF OPERATIONS.

- Time of operations and ancillary works which are audible at the site boundary shall normally be carried out between the following hours:
 - Mondays to Fridays - 08.00 – 18.00
 - Saturdays - 08.00– 13.00
 - no time Sundays and Bank Holidays.

NB The above is the Camden's standard times. However, the times operated should be specific to the site and related to the type of work being carried out. There are some occasions where the times have to be shorter and with break out schedules.

8. Monitoring Plan

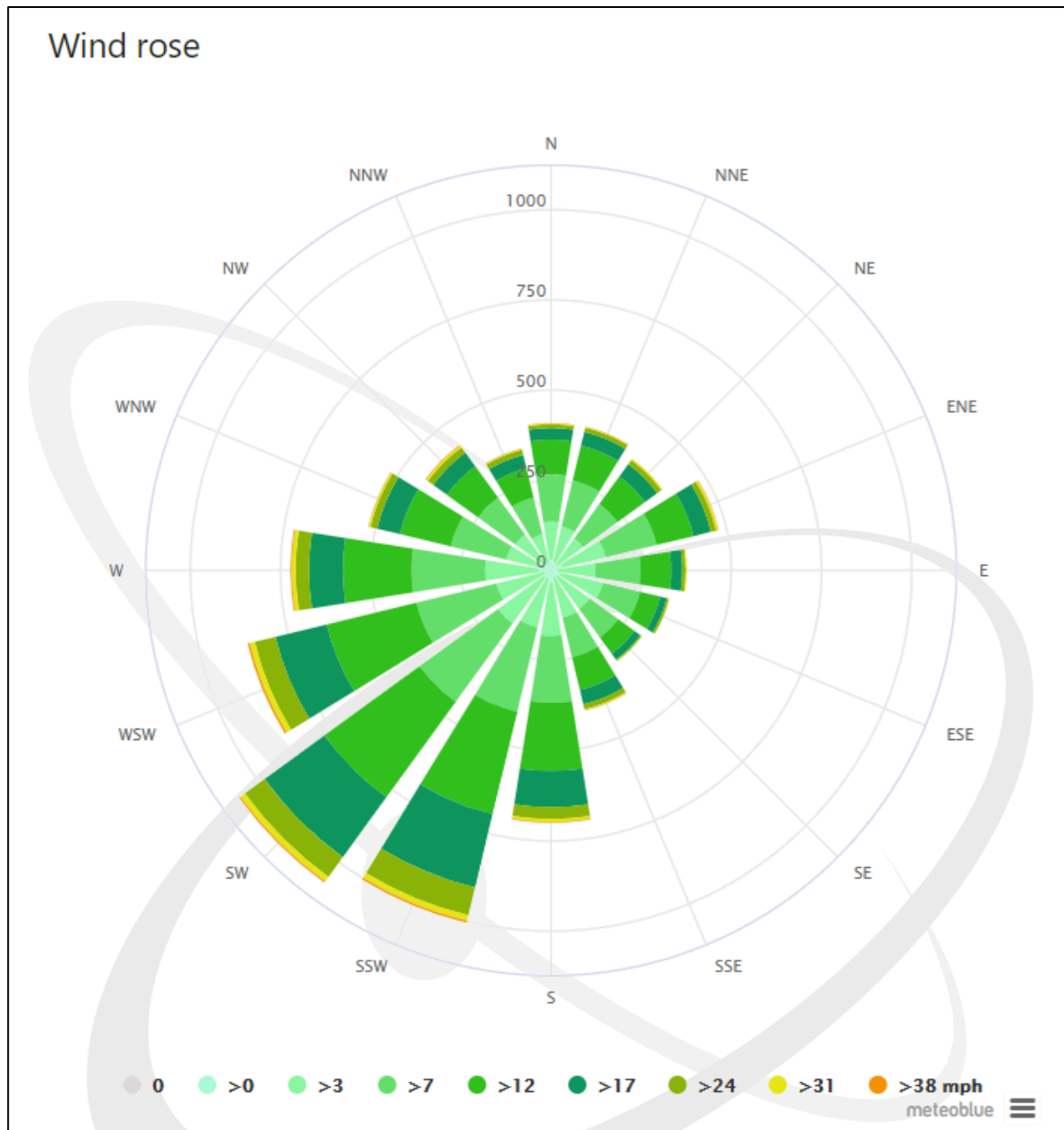
8.1. Dust (PM₁₀) Monitoring

- 8.1.1. It is proposed to carry out real-time monitoring for dust (PM₁₀) on site to make sure the recommended mitigation measures are effective and appropriate.
- 8.1.2. EEMC can, if instructed undertake dust monitoring. In this case the Dust (PM₁₀) monitors proposed to be installed would MetOne ES-642 monitors, which are MCerts compliant instruments meeting the requirements for Indicative Ambient Particulate Monitors.
- 8.1.3. Each monitor would be fitted with a modem to allow data-streaming to an online web portal. The monitors sample PM₁₀ concentrations in air in real-time and provide average readings over 1 to 15-minute measurement periods.
- 8.1.4. An example specification for the appropriate PM₁₀ monitors is provided as Appendix 1 to this document.
- 8.1.5. It should be noted that there are currently three Aeroqual Dust Profilers installed on site undertaking baseline measurements, however it is noted that these are not certified to MCerts for PM₁₀.
- 8.1.6. The proposed monitoring system for works commencement will be configured with trigger levels that send automatic email alerts when the trigger levels are reached or exceeded at any of the monitoring positions. The site management team can then review site activities and identify any available practicable mitigation measures that can be implemented.
- 8.1.7. The dust monitors will require periodic on-site maintenance as required, typically once every 3-6 months.
- 8.1.8. Noise and vibration monitoring will also be undertaken as required, see the Noise, Dust and Vibration Monitoring Plan (NDVMP) for this project for more information.

8.2. Dust Monitors

- 8.2.1. Camden's Construction Management Plan for this project and the Local Plan from 2017 states 'if the site is a "High Risk Site", four (4) real time dust monitors will be required'. The Dust Risk Assessment shows site to be a High Risk site for the demolition phase of works, therefore 4 real time dust monitors have been proposed.
- 8.2.2. The dust monitors will be installed in appropriate locations that are in-line with the prevailing wind direction (south-westerly) and close to sensitive receptors.
- 8.2.3. Figure 8.1 shows the prevailing wind for London. Information is taken from Meteoblue and is based on 30 years of hourly historical weather data.
- 8.2.4. Baseline monitoring is currently being undertaken by the client on site, dust monitors were installed on 5th May 2021. It is noted that new dust monitors and new dust monitoring positions proposed will be for the duration of works on site.

Figure 8.1 – Prevailing Wind for London



8.3. Monitoring Locations

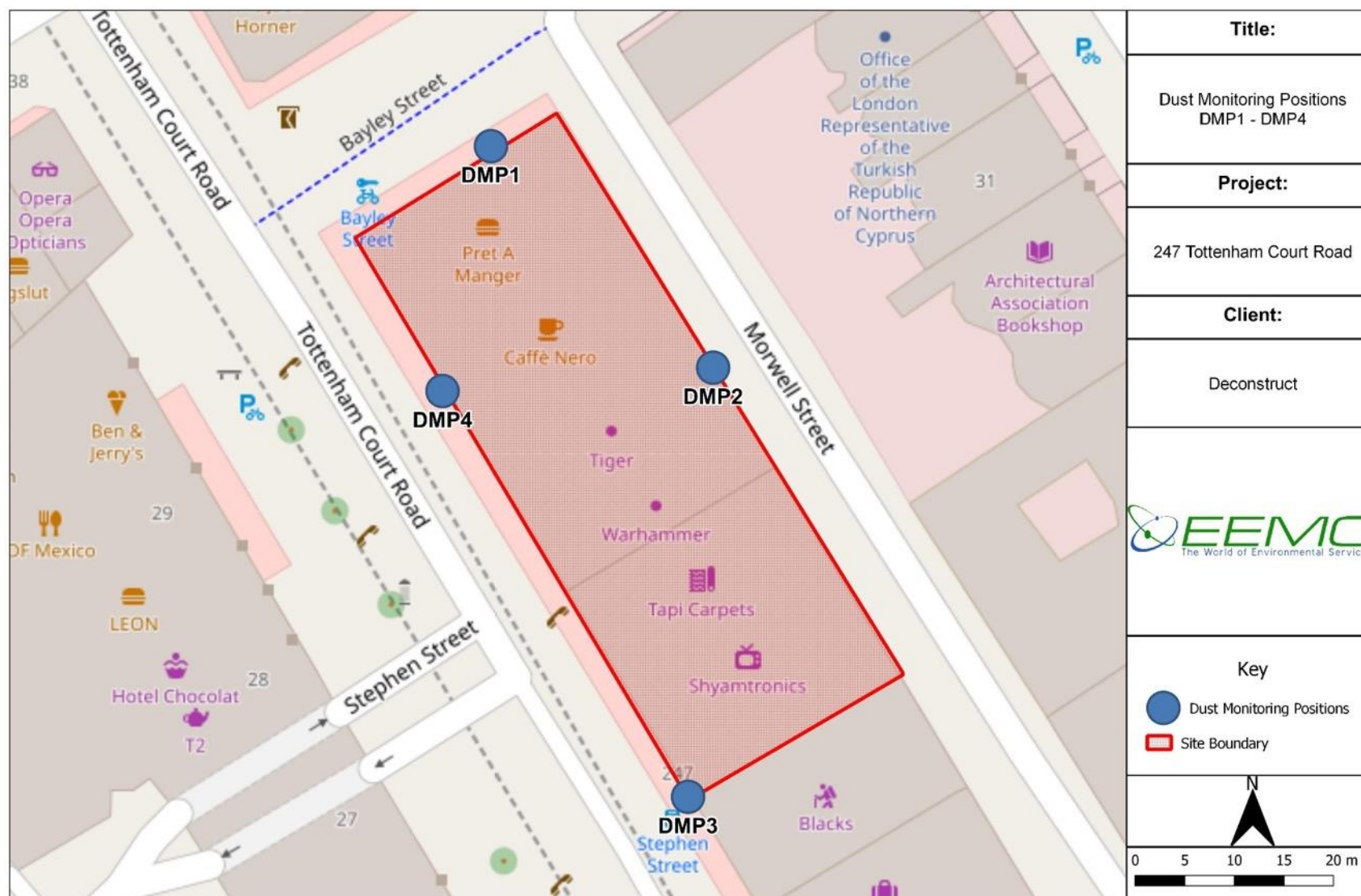
- 8.3.1. The monitoring locations, including access, fixings and power, will be provided by the client. Where possible, monitoring positions will remain throughout the planned works. Where movements are required these will be within 10m of the existing locations and at comparable installation heights.
- 8.3.2. As far as is reasonably practicable the dust (PM₁₀) monitors will be installed in line with the IAQM Guidance on AQ Monitoring in the Vicinity of Demolition and Construction Sites. This guidance states the following:
- “Sampler inlets should be located in a clear, unobstructed position, and some metres away from any large structures (such as walls of buildings) that might interrupt airflow; immediately above should be open to the sky (free in an arc of at least 270°),*

with no overhanging trees or other structures. To measure airborne dust concentrations, the sampler head should ideally be located between 1.5 to 4m above ground level as suggested in the 2008 Ambient Air Quality Directive (2008/50/EC)."

8.4. Proposed Monitoring Locations

- 8.4.1. Current baseline monitoring positions can be seen in Figures 3.1 and 3.2 in Section 3 of this document.
- 8.4.2. The proposed dust monitoring locations will be subject to an assessment on site to identify practical locations. Locations have been proposed keeping in mind the prevailing wind direction and proximity to sensitive receptors. The proposed locations are shown in Figure 8.2 below and identified as DMP1 – DMP4.

Figure 8.2 – Proposed Dust Monitoring Locations



8.5. Trigger levels

- 8.5.1. The proposed action and trigger levels are those outlined in the IAQM dust monitoring guidance and replicated in Section 2.3:
- 8.5.2. Proposed PM₁₀ Trigger Level:
- 150µg/m³ (15-minute mean concentration)
- 8.5.3. Proposed PM₁₀ Action Levels:
- 250 µg/m³ (15-minute mean concentration)
 - 190 µg/m³ (1-hour mean concentration)
- 8.5.4. Should PM₁₀ concentrations on site exceed the proposed trigger or action levels an automated email will be sent to designated site personnel to investigate and/or action additional mitigation measures as needed.
- 8.5.5. The proposed trigger level has been set as a warning level. If this is exceeded, site personnel will investigate the cause of the alert and implement additional mitigation measures where appropriate, with the aim that the action level is not exceeded.
- 8.5.6. Should the proposed action levels be exceeded, site personnel should cease work and investigate the cause and assess if there are any further mitigation measures that can be implemented.
- 8.5.7. Following any exceedance of an action level, site personnel should complete the form in Appendix 2, and any exceedances should be automatically be sent by email to: airquality@camden.gov.uk.

8.6. Reporting

- 8.6.1. Reports will be prepared on a monthly basis by EEMC and issued as PDF documents to the client's project team.
- 8.6.2. Reports will be sent by the client's project team to LBC at the following email addresses: AirQuality@camden.gov.uk; Tom.Parkes@camden.gov.uk; and Ben.Spode@camden.gov.uk.
- 8.6.3. The reports will present:
- Details of the monitoring equipment used, and any recent servicing or calibration records.
 - Site plan of the monitoring locations and recent photographs.
 - A summary of activities that have taken place on site during the reporting period.
 - A summary of the previous months monitoring data, including average PM₁₀ concentrations, data capture rates and graphs of data.
 - The measured PM₁₀ data against the 150µg/m³ (15-minute) Trigger Level and the 250µg/m³ (15-minute) and 190µg/m³ (1-hour) Action Levels and will refer to any exceedances of these alert levels.
 - A summary table of any exceedances.
 - The report will outline actions taken following alert exceedances, should any have occurred.
 - The report will outline Quality Assurance (QA) and Quality Control (QC) information pertaining to the monitoring units. This will consist of instrument calibration certificates, a copy of the instrument MCERTS certificate in the first report, and a log of any maintenance.

Appendix 1

Example Dust (PM₁₀) monitor type:

MetOne MCerts ES-642 PM₁₀ Particulate Monitor, with web-based data interface.

 **Met One Instruments, Inc.**

Remote Dust Monitor Model ES-642

The ES-642 Remote Dust Monitor is an industrial air-quality sensor designed to provide accurate measurements of particle concentration in both indoor and outdoor environments.

The unit is supplied in a rugged weatherproof enclosure. It includes an LCD display to provide information about particulate concentration, flow rate, instrument status and power. The electronics and optical system are protected from moisture by a built in intake heater that is humidity level controlled. The heater power is regulated to maintain a minimum humidity level. Additional features include a purge air system and an automatic zero calibration routine. The sensor can be wall mounted or installed on a vertical mast up to 3 inch in diameter.

The ES-642 is supplied with a 10 ft cable and connector for power (15 to 40 VDC) and signal output. The ES-642 measures particulate concentration using a highly sensitive forward scatter laser nephelometer, having a measurement range of 0 to 100 mg/cubic meter or 0 to 100,000 ug/cubic meter. Optional sharp-cut cyclones are used to set the measurement level of the ES-642. As supplied it provides particulate monitoring for TSP, with the addition of the sharp-cut cyclone it can be set for particulate smaller than PM₁₀ or smaller than PM_{2.5}, or PM₁. The accuracy of the instrument is set for particles +/-5% based on a traceable PSL 0.6 micron reference standard.



- Applications:**
- Building Automation
 - Military Applications
 - Environmental Clean Up Stes
 - Air Pollution Level Monitoring
 - Dust Level Warning Systems

Appendix 2

Exceedance/Complaint Recording Form

Exceedance/Complaints Form					
Exceedance/Complaint Reference No.:			Date:		Time:
YES/NO	Noise :				
Monitor Location:					
Trigger Level: dB(A) (L _{eq} 15 min):					
Action Level: dB(A) (L _{eq} 1 Hour):					
Level of Exceedance:					
YES/NO	Vibration:				
Monitor Location:					
Trigger Level: PPV mm/s					
Action Level: PPV mm/s					
Level of Exceedance:					
YES/NO	Dust:				
Monitor Location:					
Trigger Level: µg/m ³ 15 min					
Action Level: µg/m ³ 15 min					
Action Level: µg/m ³ 1 hour					
Activities on site during exceedance:					
Suspected cause of exceedance:					
Actions taken (if any):					

Complaint Notification		
Contract/Project Name:		Contract/Project Number:
Date: / /2021	Time: :	Received by:
Complainants Name:		Telephone Number:
Complainants Address:		Weather Conditions:

Type of Complaint (Tick Appropriate Box)					
Noise		Dust		Highways	
Other (Specify)					

Description of Complaint:
Action Taken:

Site Assistance/Advice Requested?		(If Yes Who?)			
Is the Complaint considered:	Justified		Unsubstantiated		Unfounded
Signed:		Print Name:		Date:	/ /21
Copy to:	Operations Director		EHO		Client

AIR QUALITY ASSESSMENT





AECOM

247 TOTTENHAM COURT ROAD

JULY 2020



Quality information

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1. Introduction

This Air Quality Assessment has been prepared by AECOM on behalf of Prudential UK Real Estate Nominee 1 Limited and Prudential UK Real Estate Nominee 2 Limited ('the Applicant') in support of a planning application at 247 Tottenham Court Road, London, W1T 7HH ('the Site') for full planning permission for:-

"Demolition of 247 Tottenham Court Road, 3 Bayley Street, 1 Morwell Street, 2-3 Morwell Street and 4 Morwell Street and the erection of a mixed use office led development comprising ground plus five storey building for office (Class B1) use, flexible uses at ground and basement (Class A1/A2/A3/B1/D1/D2), residential (Class C3) use, basement excavation, provision of roof terraces, roof level plant equipment and enclosures, cycle parking, public realm and other associated works."

The Proposed Development incorporates mechanical ventilation, photovoltaic cells, residential balconies to the rear and winter gardens facing onto Tottenham Court Road. The heating, cooling and hot water for the residential properties will be provided by air source heat pumps while heating/cooling for the office space will be via a central air source heat pump at roof level and hot water provided by a water source heat pump. For full details and scope of the application, please refer to the submitted Energy Statement, prepared by Watkins Payne.

1.1 Scope of Work

The Site is located within the jurisdiction of the London Borough of Camden (LBC). LBC has declared the entire Borough an Air Quality Management Area (AQMA) due to exceedances of the Air Quality Strategy (AQS) objective for annual mean nitrogen dioxide (NO₂) and daily mean AQS objective for particulate matter (PM₁₀). This assessment will, therefore, focus on the pollutants of primary concern within the LBC administrative area which are NO₂ and particulate matter (PM₁₀ and PM_{2.5}).

During the construction phase of the Proposed Development, there is the potential for demolition and construction activities to generate fugitive emissions of dust and PM₁₀. There is the risk of such emissions affecting amenity or health at receptors located in proximity to the source of emissions, unless appropriate mitigation measures are adopted. An assessment of the effects from fugitive emissions of dust and PM₁₀ from the Proposed Development has been undertaken and where required, suitable dust mitigation measures have been identified for the construction phase.

The air quality assessment considers the operational phase of the Proposed Development and impacts on local air quality due to emissions from road traffic associated with the Proposed Development. No on-site or on-street parking is provided as part of the Proposed Development, with existing parking spaces to be removed. The Proposed Development is car-free. The Proposed Development seeks to minimise the generation of CO₂ by using highly efficient building envelope with high efficiency mechanical and electrical services, along with air source heat pump and photovoltaic cells.

This Report presents the findings of the assessment of the likely effects on air quality as a result of the construction and operation of the Proposed Development and considers site suitability in terms of the location of air intakes serving the mechanical ventilation system and residential balconies.

2. Policy Context

2.1 European Air Quality Directives

The Clean Air for Europe (CAFE) (Ref 1) programme revisited the management of Air Quality within the EU and replaced much of the existing air quality legislation with a single legal act, Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe (Ref 2). This Directive repealed and replaced the EU Framework Directive 96/62/EC on Ambient Air Quality Assessment and Management and its associated Daughter Directives 1999/30/EC (Ref 3), 2000/69/EC (Ref 4), 2002/3/EC (Ref 5), (relating to limit values for ambient air pollutants) and the Council Decision 97/101/EC (Ref 6) which established a reciprocal exchange of information and data within Member States.

2.2 National Air Quality Legislation

2.2.1 UK National Air Quality Strategy

The UK National Air Quality Strategy (Ref 8) (AQS) was initially published in 2000, under the requirements of the Environment Act 1995 (Ref 9). The most recent revision of the strategy (2007) (Ref 10) sets objective values for key pollutants as a tool to help local authorities manage local air quality improvements in accordance with the EU Air Quality Framework Directive. Some of these objective values have subsequently been laid out within the Air Quality (England) Regulations 2000 (Ref 11) and later amendments (2015) (Ref 12).

The AQS objective values, referred to below, have been outlined in legislation solely for the purposes of local air quality management. Under the local air quality management regime, the local authority has a duty to carry out regular assessments of air quality against the objective values and if it is unlikely that the objective values will be met in the given timescale, they must designate an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) with the aim of achieving the objective values. The boundary of an AQMA is set by the governing local authority to define the geographical area that is to be subject to the management measures to be set out in a subsequent action plan. Consequently, it is not unusual for the boundary of an AQMA to include relevant locations where air quality is not at risk of exceeding an AQS objective.

The UK's national AQS objective values for the pollutants of relevance to this assessment are displayed in Table 1 as stated in H.M. Government (2016) Air Quality Standards Regulations 2010 (Ref 7).

Table 1: UK AQS Objectives

Pollutant	Averaging Period	Value	Maximum Permitted Exceedances
Nitrogen Dioxide (NO ₂)	Annual Mean	40 µg/m ³	None
	Hourly Mean	200 µg/m ³	18 times per year
Particulate Matter (PM ₁₀)	Annual Mean	40 µg/m ³	None
	24 Hour Mean	50 µg/m ³	35 times per year
Fine Particulate Matter (PM _{2.5})	Annual Mean	25 µg/m ³	None

2.2.2 National Clean Air Strategy

In 2019, the UK government released its Clean Air Strategy 2019 (Ref 13), part of its 25 Year Environment Plan. The Strategy places greater emphasis on improving air quality in the UK than has been seen before and outlines how this is to be achieved (including the development of new enabling legislation).

Air quality management focus in recent years has primarily related to one pollutant, NO₂, and its principal source in the UK, road traffic. However, the Strategy broadens the focus to other areas, including domestic emissions from wood burning stoves and from agriculture. This shift in emphasis is

part of a goal to reduce the levels of fine particulate matter (PM_{2.5}) in the air to below the World Health Organisation guideline level; far lower than the current EU limit value.

The strategy included the provision of a clear effective guidance on how AQMAs, Clean Air Zones (CAZ) and Smoke Control Areas interrelate and how they can be used by local government to tackle pollution.

In relation to NO_x the UK Clean Air Strategy sets the following reduction target:

- Nitrogen oxides (NO_x) – reduce emissions against the 2005 baseline by 55% by 2020, and by 73% by 2030; and
- Primary Particulate Matter (PM_{2.5}) - reduce emissions against the 2005 baseline by 30% by 2020, and 46% by 2030.

It is noted within the strategy document that the *“current legislative framework has not driven sufficient action at a local level”*. New legislation will seek to shift the focus towards prevention of exceedances rather than tackling pollution when limits have been surpassed. The shift of focus encourages more of a proactive rather than reactive policy framework at regional and local levels on air quality.

2.2.3 Air Quality Standards Regulations (2010)

Directive 2008/50/EC is transcribed into UK legislation by the Air Quality Standards Regulations 2010 (as amended by the Air Quality Standards (Amendment) Regulations 2016) (Ref 7), which came into force on 11th June 2010. This sets binding limit values or objectives on pollutants with the aim of avoiding, preventing or reducing harmful effects on human health and on the environment as a whole.

2.2.4 National Planning Policy

2.2.4.1 National Planning Policy Framework (2019)

The revised National Planning Policy Framework (NPPF) (Ref 14) was published in February 2019 and sets out the Government's planning policies for England and how these are expected to be applied. The NPPF supersedes the previous NPPF published in March 2012.

Paragraph 103 of the NPPF states that:

“The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions and improve air quality and public health.”

Air quality is considered as an important element of the natural environment. On conserving and enhancing the natural environment, paragraph 170 states that:

“Planning policies and decisions should contribute to and enhance the natural and local environment by: ...

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality ...”

Air quality in the UK has been managed through the Local Air Quality Management (LAQM) regime using national objectives. The effect of a Proposed Development on the achievement of such policies and plans may be a material consideration by planning authorities when making decisions for individual planning applications. Paragraph 181 of the NPPF states that:

“Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions

should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.”

The different roles of a planning authority and a pollution control authority are addressed by the NPPF in paragraph 183:

“The focus of planning policies and decisions should be on whether Proposed Scheme is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.”

2.2.4.2 Planning Practice Guidance

The Planning Practice Guidance (PPG) (Ref 15) supports the NPPF and was first published online in 2014. With specific reference to air quality the PPG was updated on 1st November 2019. The PPG states that the planning system should consider the potential effect of new developments on air quality where relevant limits have been exceeded or are near the limit. Concerns also arise where the development is likely to adversely affect the implementation of air quality strategies and action plans and/or, in particular, lead to a breach of EU legislation (including that applicable to wildlife). In addition, air quality may also be considered to be material if the Proposed Development would be particularly sensitive to poor air quality in its vicinity.

When deciding whether air quality is relevant to a planning application the PPG states that the following criteria may be required to be taken into consideration by:

- the ‘baseline’ local air quality, including what would happen to air quality in the absence of the development;
- whether the Proposed Scheme could significantly change air quality during the construction and operational phases (and the consequences of this for public health and biodiversity); and
- whether occupiers or users of the development could experience poor living conditions or health due to poor air quality.

On how detailed an air quality assessment needs to be, the PPG states (Ref 15):

“Assessments should be proportionate to the nature and scale of the development proposed and the level of concern about air quality... Mitigation options where necessary will be locationally specific, will depend on the Proposed Scheme and should be proportionate to the likely impact. It is important therefore that local planning authorities work with applicants to consider appropriate mitigation so as to ensure the new development is appropriate for its location and unacceptable risks are prevented.”

2.2.5 A Green Future: Our 25 Year Plan to Improve the Environment

The 25 Year Environment Plan, published in January 2018 and updated in 2019, sets out the actions the UK Government will take to help the natural world regain and retain good health (Ref 16). This references several actions that are being taken to improve air quality, most notably the publication of the Clean Air Strategy (referenced earlier) and tighter controls on Medium Combustion Plant. Emphasis is also placed on the ‘Future of Mobility’, in the establishment of flexible regulatory framework to encourage new modes of transport and encouraging opportunities to move toward zero emission transport.

The 25 Year Environment Plan reinforces the demand for high environmental standards for all new build development. Resilient buildings and infrastructure will more readily adapt to a changing climate, and by extension have a lesser impact on local air quality.

2.3 Regional Planning Policy

2.3.1 The Mayor’s London Plan, Spatial Development Strategy for London

The Mayor’s London Plan represents a spatial development strategy for Greater London (Ref 17) and is the overall strategic plan for London, and it sets out a fully integrated economic, environmental, transport and social framework for the development of the capital to 2031. It forms part of the

development plan for Greater London. London boroughs' local plans need to be in general conformity with the London Plan and its policies guide decisions on planning applications by councils and the Mayor.

Policy 7.14 Improving Air Quality states:

"Development proposals should:

- a) minimise increased exposure to existing poor air quality and make provision to address local problems of air quality (particularly within Air Quality Management Areas (AQMA's) and where development is likely to be used by large numbers of those particularly vulnerable to poor air quality, such as children or older people) such as by design solutions, buffer zones or steps to promote greater use of sustainable transport modes through travel plans (see Policy 6.3)*
- b) promote sustainable design and construction to reduce emissions from the demolition and construction of buildings following the best practice guidance in the GLA and London Councils' 'The control of dust and emissions from construction and demolition'*
- c) be at least 'air quality neutral' and not lead to further deterioration of existing poor air quality (such as areas designated as Air Quality Management Areas (AQMA's)).*
- d) ensure that where provision needs to be made to reduce emissions from a development, this is usually made on-site. Where it can be demonstrated that on-site provision is impractical or inappropriate, and that it is possible to put in place measures having clearly demonstrated equivalent air quality benefits, planning obligations or planning conditions should be used as appropriate to ensure this, whether on a scheme by scheme basis or through joint area-based approaches*
- e) where the development requires a detailed air quality assessment and biomass boilers are included, the assessment should forecast pollutant concentrations. Permission should only be granted if no adverse air quality impacts from the biomass boiler are identified".*

Policy 5.7 Renewable Energy states that

"all renewable energy systems should be located and designed to [...] avoid any adverse impacts on air quality".

Policy 6.13 Parking states that:

"in locations with high public transport accessibility, car-free developments should be promoted (while still providing for disabled people)."

2.3.2 Intend to Publish London Plan 2019

The 'Intend to Publish London Plan 2019' (Ref 18) considers air quality in the following policies:

- Policy Sustainable Infrastructure 1 (SI1) 'Improving Air Quality' states:

"Development plans, through relevant strategic, site specific and area-based policies should seek opportunities to identify and deliver further improvements to air quality and should not reduce air quality benefits that result from the Mayor's or boroughs' activities to improve air quality.

To tackle poor air quality, protect health and meet legal obligations the following criteria should be addressed;

1) development proposals should not:

- a. lead to further deterioration of existing poor air quality;*
- b. create any new areas that exceed air quality limits, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits;*
- c. create unacceptable risk of high levels of exposure to poor air quality.*

2) In order to meet the requirements in Part 1, as a minimum:

- a. *Development proposals must be at least air quality neutral*
 - b. *Development proposals should use design solutions to prevent or minimise increased exposure to existing air pollution and make provision to address local problems of air quality in preference to post-design or retrofitted mitigation measures*
 - c. *Major development proposals must be submitted with an Air Quality Assessment. Air quality assessments should show how the development will meet the requirements of B1*
 - d. *Development proposals in Air Quality Focus Areas or that are likely to be used by large numbers of people particularly vulnerable to poor air quality, such as children or older people should demonstrate that design measures have been used to minimise exposure.*
- 3) *Masterplans and development briefs for large-scale development proposals subject to an Environmental Impact Assessment should consider how local air quality can be improved across the area of the proposal as part of an air quality positive approach. To achieve this, a statement should be submitted demonstrating:*
- a. *How proposals have considered ways to maximise benefits to local air quality, and*
 - b. *What measures or design features will be put in place to reduce exposure to pollution, and how they will achieve this.*
- 3A) *major development proposals must be at least air quality neutral and be submitted with an Air Quality Assessment.*
- 4) *In order to reduce the impact on air quality during the construction and demolition phase development proposals must demonstrate how they plan to comply with the Non-Road Mobile Machinery Low Emission Zone and reduce emissions from the demolition and construction of buildings following best practice guidance.*
- 5) *development proposals should ensure that where emissions need to be reduced, this is done on-site. Where it can be demonstrated that on-site provision is impractical or inappropriate, off-site measures to improve local air quality may be acceptable, provided that equivalent air quality benefits can be demonstrated."*
- Policy D3 'Optimising site capacity through the design-led approach' states that:
"Development proposals should:
- 9) *help prevent or mitigate the impacts of noise and poor air quality."*

2.3.3 London Environment Strategy

The London Environment Strategy (Ref 20) was published by the Mayor of London in May 2018 and sets out the Mayor's vision of London's environment to 2050. The London Environment Strategy includes a number of policies and aspirations, with an accompanying implementation plan, setting out actions the Mayor is prioritising for the next five years to implement the aims of this strategy.

Chapter 4 of the Strategy relates to air quality and supersedes the 2010 Mayor's Air Quality Strategy (Ref 21). It sets the ambitious target for London to have the best air quality of any major world city by 2050 and goes further than the previous strategy by requiring developments to be 'air quality positive'. To date, however, the underpinning guidance outlining the method of assessment and the effective approaches to be taken to ensure that larger developments are 'air quality positive', has not been published. Therefore, the minimum requirement must remain for Proposed Development to be air quality neutral, until such time as this guidance is available.

2.3.4 Sustainable Design and Construction SPG

In April 2014, the Mayor of London published a revised Sustainable Design and Construction – Supplementary Planning Guidance (SPG) (Ref 22). This document provides guidance to developers and local authorities on what measures can be included in their designs and operations in order to achieve sustainable development and the objectives set out in the London Plan.

Section 4.3 of the SPG concerns air quality, and sets out the Mayor's priorities, as follows:

- “Developers are to design their scheme so that they are at least ‘air quality neutral’.
- Developments should be designed to minimise the generation of air pollution;
- Developments should be designed to minimise and mitigate against increased exposure to poor air quality;
- Developers should select plant that meets the standards for emissions from combined heat and power and biomass plants set out in Appendix 7; and
- Developers and contractors should follow the guidance set out in the Control of Dust and Emissions during Construction and Demolition SPG when constructing their development.”

2.3.5 The Control of Dust and Emissions during Construction and Demolition SPG

The Control of Dust and Emissions during Construction and Demolition SPG provides the methodology for assessing construction phase impacts and recommends mitigation measures appropriate to the risk associated with development sites (Ref 23). This methodology has been applied in this air quality assessment.

Non-Road Mobile Machinery (NRMM) is identified as a significant emissions source in the SPG, and NRMM to be used on any construction sites in Greater London need to comply with the latest European emission standards, as set out in the SPG. This policy is enforced through the planning process and compliance with the NRMM standards should be secured by local authorities as a planning condition or a Section 106 agreement. If emissions of NRMM are unknown, developers will be required to provide a written statement of their commitment and ability to meet these standards as part of an Air Quality Statement. An inventory of all NRMM should be kept, stating the emission limits for all equipment, and made available to local authority officers.

2.4 Local Planning Policy

2.4.1 Camden Local Plan

The Camden Local Plan (Ref 24) was adopted on July 2017 replacing the Core Strategy and Camden Development Policies. It sets the overarching vision, strategic objectives and policies for development in the London Borough of Camden from 2016-2031. The Plan identifies a number of spatial development issues across the Borough including accommodating population growth, achieving economic prosperity, tackling climate change, infrastructure provision, community cohesion, and creating and maintaining attractive and distinctive places.

Policy CC4: Air Quality states that:

“The Council will ensure that the impact of development on air quality is mitigated and ensure that exposure to poor air quality is reduced in the borough.

The Council will take into account the impact of air quality when assessing development proposals, through the consideration of both the exposure of occupants to air pollution and the effect of the development on air quality. Consideration must be taken to the actions identified in the Council's Air Quality Action Plan.

Air Quality Assessments (AQAs) are required where development is likely to expose residents to high levels of air pollution. Where the AQA shows that a development would cause harm to air quality, the Council will not grant planning permission unless measures are adopted to mitigate the impact. Similarly, developments that introduce sensitive receptors (i.e. housing, schools) in locations of poor air quality will not be acceptable unless designed to mitigate the impact.

Development that involves significant demolition, construction or earthworks will also be required to assess the risk of dust and emissions impacts in an AQA and include appropriate mitigation measures to be secured in a Construction Management Plan.”

Policy A1: Managing the impact of development states that:

“The Council will seek to protect the quality of life of occupiers and neighbours. We will grant permission for development unless this causes unacceptable harm to amenity....The factors we will consider include....odour, fumes and dust”

Policy T2: Parking and car free development states that:

“To promote sustainable transport for all and to make Camden a better place to cycle and walk around, to reduce air pollution, reliance on private cars and congestion and to support and promote new and improved transport links.”

2.4.2 Our Camden Plan

Our Camden Plan (Ref 25) is LBC’s plan for how they will implement their Camden 2025 vision. It states that LBC will use all the resources at their disposal to play a part in improving air quality. The Camden Plan key objectives are to focus on building communities, strong growth and access to jobs, recognise the needs of the full range of employees and businesses, create safe and open communities, and build clean and sustainable places.

2.4.3 Camden Clean Air Action Plan 2019-2022

The Clean Air Quality Action Plan (AQAP) (Ref 26) was published in 2019. The plan has seven main themes for monitoring air quality, reducing emissions from buildings and new development, reducing emissions from transport, awareness raising and lobbying and partnership working. LBC’s commitments include:

- Working to reduce emissions from our own estate and operations;
- Helping residents and visitors to reduce emissions and exposure;
- Using planning policy and regulation to reduce air pollution;
- Implementing innovative projects across the borough to improve air quality;
- Using our influence to lobby for increased financial and regulatory support for the mitigation of air pollution;
- Maintaining a monitoring network and ensuring the data is freely accessible;
- Raising awareness on how to reduce emissions and exposure

2.4.4 Camden Planning Guidance – Air Quality

The Camden Planning Guidance, 2019 (Ref 28) provides information on key air quality issues within the borough and supports Local Plan Policy CC4 Air Quality.

Key messages regarding from the guidance are that:

- All of Camden is a designated Air Quality Management Area due to the high concentrations of nitrogen dioxide (NO₂) and particulate matter (PM₁₀).
- All developments in areas of poor air quality are to protect future occupants from exposure to poor air quality.
- All developments are to limit their impact on local air quality and be at least air quality neutral.
- Air quality neutral assessments are required for all major developments. Major developments are schemes of 10 or more dwellings or buildings where the floorspace created is 1,000 square metres or more.
- All proposals involving demolition and construction should adopt best practice measures to reduce and mitigate emissions.
- On-site monitoring may be required dependant on the scale of demolition and construction.
- Certain developments using Non-Road Mobile Machinery (within the KW range) need to meet standards in the Mayor’s Dust and emissions SPD.

- The impact of outdoor air pollution on indoor air quality in new developments needs to be taken into account at the earliest stages of building design.
- Development should take into consideration the location of amenity space and opportunities for appropriate planting 'greening'.
- Development should reduce emissions by being energy efficient (reducing emissions associated with the operation of the building).
- Development should prioritise more sustainable modes of transport and where applicable improve the walking and cycling environment.

2.4.5 Camden's Minimum Requirements

LBC has outlined a series of measures to minimise air pollution and nuisance to those nearby within its Camden's Minimum Requirements document (Ref 30). These include:

- All dusty operations should be identified (and Reported in any CMP / DMP) and establish the best available techniques are required to control dust emissions...
- Consideration should be given to the siting of aggregate stockpiles, based upon such factor as the prevailing winds, proximity of site boundary and proximity of neighbours....
- Areas where there is vehicular movement should have a consolidated surface which should be kept in good repair.
- The main principles for preventing dust emissions are containment of dusty processes and suppression of dust using water or proprietary suppressants. Suppression techniques need to be properly designed, used and maintained, in order to be effective.
- Where there is evidence of airborne dust from the building construction/demolition activities the site, the contractor should make their own inspection and assessment, and where necessary undertake ambient monitoring with the aim of identifying those process operations giving rise to the dust. Once the source of the emission is known, corrective action should be taken without delay.
- Effective preventative maintenance should be employed on all aspects of the construction/demolition works including all plant, vehicles, buildings and the equipment concerned with the control of emissions to air.
- It is useful to have an audited list of essential items.

2.5 Other Relevant Policy, Standard and Guidance

2.5.1 Local Air Quality Management Technical Guidance

The Department for Environment, Food and Rural Affairs (Defra) provides and maintains guidance and tools to support local authorities in carrying out their duties under the Environment Act 1995 and subsequent regulations. In order to provide consistency with the Council's own work on air quality, the guiding principles for air quality assessments, as set out in the latest guidance and tools provided by the technical guidance - LAQM.TG(16) (Ref 31), have been followed in this assessment.

2.5.2 Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) Planning Guidance

When determining the significance of the air quality assessment results with the Proposed Development, this assessment follows the non-statutory best practice guidance relating to air quality and development control published by EPUK and IAQM (Ref 32). The guidance ensures that air quality is adequately considered during land-use planning and development control process and is applicable to assessing the effect of changes in exposure of members of the public consequential to residential and mixed-use developments. This is of particular importance in urban areas where air quality is of a poorer standard. The guidance states that:

"Land-use planning can play a critical role in improving local air quality. At the strategic level, spatial planning can provide for more sustainable transport links between the home, workplace, educational, retail and leisure facilities, and identify appropriate areas for potentially polluting industrial development.

For an individual development proposal, there may be associated emissions from transport or combustion processes providing heat and power.”

2.5.3 Local Air Quality Management

The whole of the Borough of Camden was declared an AQMA in 2002 due to concern over the achievement of long-term NO₂ AQS objective and short-term PM₁₀ AQS objective.

The Greater London Authority (GLA) has also declared 187 Air Quality Focus Areas (AQFAs) in London (Ref 33). These areas have been identified as locations of high levels of human exposure to concentrations of NO₂ above the national air quality objective(s) for NO₂. The Focus Area designation was designed to address concerns relating to forecasted air pollution trends, or those raised during the LAQM review process. It is noted, however, that this does not represent an exhaustive list of London's air pollution hotspot locations, but where the GLA believes problems to be more acute.

LBC has 7 AQFAs which are detailed below:

- Camden High Street from Mornington Crescent to Chalk Farm and Camden Road.
- Holborn and Southampton Row Junction.
- Kilburn Town Centre.
- Marylebone Road from Marble Arch / Euston / King's Cross Junction.
- Oxford Street from Marble Arch to Bloomsbury.
- King's Cross / Caledonian Road.
- Swiss Cottage from South Hampstead to Finchley Road Station.

Although the Site is not located within an AQFA, 2 AQFAs (Oxford Street from Marble Arch to Bloomsbury and Marylebone Road from Marble Arch / Euston / King's Cross Station) are within approximately 50m and 720m of the site boundary, respectively. These are illustrated in Figure 2 in Appendix A.

3. Assessment Methodology

There is currently no statutory guidance on the methodology for air quality impact assessments. Several bodies have published their own guidance relating to air quality and development control, such as that by Defra (Ref 31), the guidance on the Control of Dust and Emissions during Construction and Demolition (Ref 23), Institute of Air Quality Management (IAQM) Guidance on the assessment of dust from demolition and construction (Ref 47) Environmental Protection United Kingdom (EPUK) and IAQM Land-use Planning & Development Control: Planning for Air Quality (Ref 32) which have been used in the preparation of this report.

Receptors potentially sensitive to air quality have been identified through review of mapping and aerial photography of the area surrounding the Proposed Development. This section presents the methodology used to assess the potential effects on air quality during the construction phase and the operational phase of the Proposed Development.

Detailed information of the scenarios to be considered for the assessment of the emissions for the construction and operational phases are described in the following sections. The methods used to determine the significance of effects associated with air quality impacts are described in the 'Significance Criteria' sub-section of this report.

3.1 Construction Phase

3.1.1 Fugitive Emissions of Dust and PM₁₀

Fugitive emissions (i.e. emissions which are not associated with a single fixed release point) of airborne particulate matter are readily produced through the action of abrasive forces on materials. A qualitative construction dust risk assessment has been undertaken in accordance with the SPG on the control of dust and emissions during construction and demolition (Ref 23).

Activities on construction sites with the potential to generate dust and emissions can be categorised into four types of activities, which are:

- Demolition – any activities associated with the removal of existing structures on site;
- Earthworks – includes the processes of soil-stripping, ground-levelling, excavation and landscaping;
- Construction – any activities relating to the provision of new structures on site; and
- Trackout – the transport of dust and dirt from the construction site onto the public road network where it may be deposited and re-suspended by traffic using the network.

The potential for dust emissions has been assessed for each activity that will take place as part of the construction phase. The GLA SPG (Ref 23) has been used to assess the risk and significance of any impacts associated with the construction phase and to identify appropriate mitigation measures to be adopted to reduce any potential impacts.

A detailed assessment is required where a sensitive human receptor is located within 350m from the site boundary and/or within 50m of the route(s) used by vehicles on the public highway, up to 500m from the site entrance(s) or if there is a relevant ecological receptor within 50m of the site boundary. Due to the central location of the site, there are a number of sensitive human receptors located within 350m of the site boundary and hence the assessment is required.

The first step of the detailed assessment is to assess the risk of dust impacts. This is undertaken separately for each of the four activities (demolition, earthworks, construction and trackout) and takes account of:

- The scale and nature of the works, which determines the potential dust emission magnitude; and
- The sensitivity of the area.

These factors are combined following criteria set out in the Guidance to give an estimate of the risk of dust impacts occurring.

The regulation and control of construction dust should focus on the adoption of good working practices as standard. Good practice is a process that is informed by the assessment, which seeks to avoid the potential for adverse effects. Site-specific mitigation, set out in Section 7 of this assessment, is then determined based on the risk of dust impacts identified. These measures are either 'highly recommended', 'desirable' or 'not required', depending on the level of risk identified. For general mitigation measures, the highest risk category should be applied. For example, if the site is medium risk for earthworks and construction, but a high risk for demolition and track-out, the general measures applicable to a high-risk site should be applied.

Where a local authority has issued guidance on measures to be adopted at demolition / construction sites, these should then be taken into account. LBC has published its "Camden's Minimum Requirements" (Ref 30) which has been considered. Professional judgment is employed to examine the residual dust effects assuming mitigation is undertaken to determine significance. It is expected that best practice mitigation measures will be documented within a Construction Management Plan (CMP) (or equivalent). The need for a CMP is generally secured by an appropriately worded planning condition and will need to be agreed with LBC prior to the commencement of construction works. A draft CMP has been prepared by Momentum and submitted separately. With effective mitigation and management commensurate with the level of risk identified in the construction dust assessment, the residual dust effects during demolition and construction works are generally considered to be 'not significant'.

3.1.2 Construction Phase Sensitive Receptors

For the assessment of construction dust emissions, a construction dust receptor is defined simply as a location that may be affected by dust emissions. Human receptors include locations where people spend time and where property may be impacted by dust. Ecological receptors are habitats that might be sensitive to dust.

When assessing the impact of dust emissions generated during construction works, the methodology requires only the quantities of the nearest, highest sensitivity receptors to the boundary of the Site in each direction be considered. These receptors have the potential to experience impacts of greater magnitude, when compared with other more distant receptors, or less sensitive receptors. Moreover, receptors located within 50m of routes to be used by construction vehicles might be impacted by dust originating from the track-out of material onto the road, and as such have been considered in this assessment.

There are a number of existing sensitive human receptors within 200m of the Site boundary, including properties along Bayley Street, Morwell Street, Tottenham Court Road, Bedford Avenue and Bedford Square.

3.1.3 Non-Road Mobile Machinery (NRMM)

Emissions from construction NRMM will have the potential to increase NO₂ and PM₁₀ concentrations locally when in use on the construction site associated with the Proposed Development. This source is considered temporary, and localised.

The Mayor of London, through "The Control of Dust and Emissions during Construction and Demolition – SPG" (Ref 23), has put in place a strategy to address emissions from NRMM in the London area. In order to reduce emissions from NRMM, this equipment will need to meet set emission standards. The SPG requires that NRMM of net power between 37 kW and 560 kW used in London has been required to meet emission standards, based upon engine emissions standards set in EU Directive 97/68/EC (Ref 49) and its subsequent amendments (Ref 50). From 1 September 2020, NRMM used on any site within Greater London, including the Proposed Development, will be required to meet Stage IIIB of the Directive as a minimum. NRMM used on any site within the Central Activity Zone or Canary Wharf will be required to meet Stage IV of the Directive as a minimum, however, the Proposed Development falls outside of this zone.

The Local Planning Authorities (LPAs) are responsible for the application and enforcement of this policy through the planning process. The developers will typically be required to prepare a CMP, Air Quality Dust Risk Assessment (AQDRA) and/or Air Quality Dust Management Plan (AQDMP), or similar document, to discharge a planning condition once planning approval is granted and demolition/construction contractors are appointed. The CMP/AQDRA/AQDMP typically has to include

a written statement of the developers commitment, and ability of appointed contractors, to meet the NRMM standards to discharge the condition prior to works commencing on site.

Emissions from NRMM will be temporary and localised and will be controlled via the application of the NRMM standards and through best practice mitigation measures. For that reason, the construction phase NRMM emissions should not be significant. These emissions have not been modelled and are not considered any further in this assessment.

3.1.4 Construction Phase Traffic Generation

The demolition and construction phase of the Proposed Development will result in temporary increases in traffic movements associated with site works. Traffic generation due to the construction phase will be controlled using best practice measures, implemented via AQDRA/AQDMP/CMP, will include:

- Compliance with the London Low Emission Zone;
- Reducing vehicle idling;
- Preparation of a construction logistics plan; and
- Preparation of a travel plan.

Given that the Proposed Development is to be car free once the construction phase is complete traffic flows will return to original levels and, as such, the air quality impacts due to construction phase traffic emission are considered to be short-term and impacts are scoped out as insignificant on this basis.

3.2 Operational Phase

3.2.1 Road Traffic Emissions

The incomplete combustion of fuel in vehicle engines results in the presence of hydrocarbons (HC) such as benzene and 1,3-butadiene, and sulphur dioxide (SO₂), carbon monoxide (CO), PM₁₀ and PM_{2.5} in exhaust emissions. Better emission control technology and fuel specifications are expected to reduce emissions per vehicle in the long term.

Although SO₂, CO, benzene and 1,3-butadiene are present in motor vehicle exhaust emissions, detailed consideration of the associated effects on local air quality is not considered relevant in the context of this assessment. This is because road traffic emissions of these substances have been reviewed by the LBC as part of their local air quality management obligations since the introduction of Part IV of the Environment Act (1995), and nowhere within the administrative area is at risk of exceeding these objectives. Emissions of SO₂, CO, benzene and 1,3-butadiene from road traffic are therefore not considered further within this assessment.

At high temperatures and pressures found within vehicle engines, some of the nitrogen in air and fuel is oxidised to form NO_x mainly in the form of nitric oxide (NO), which is then converted to NO₂ in the atmosphere. The presence of NO₂ in the atmosphere is associated with adverse effects on human health. Vehicle emissions can also result in the exposure at sensitive receptors to concentrations of PM₁₀ and PM_{2.5}.

The Proposed Development is to be car-free. The project's transport consultant, Momentum, has confirmed that the Proposed Development trip generation is anticipated to be 21 servicing vehicle trips per day. The number of vehicle trips associated with the Proposed Development is below the IAQM criteria for potential effects on air quality and, therefore, the potential for significant adverse impacts to occur on nearby sensitive receptors as a result of changes in road traffic movements is considered to be negligible. However, as the site is located within the LBC AQMA, detailed dispersion modelling has been undertaken to consider site suitability and as part of this modelling off-site receptors close to the site have also been included to demonstrate that the impact of the Proposed Development are anticipated to be negligible.

LBC has requested that 2019 vehicle emission factors, used for model verification, be used when modelling the 2024 opening year. This approach is considered to be a very conservative one, as it is generally accepted that vehicle emissions have started to show a reducing trend and that the current Defra emission factors (EFT v9) are now considered to show realistic improvement in future years which coincide with monitored reductions.

3.2.2 Traffic Data

Due to the current lockdown due to Covid-19 traffic surveys could not be undertaken to support the assessment. The project's traffic consultants, Momentum, have, therefore, provided traffic data for Morwell Street and Bedford Avenue which has been derived from 2013 data from the 1 Bedford Avenue Transport Statement, while traffic flows on Tottenham Court Road and other major roads have been derived from Department for Transport (DfT) traffic surveys (Table 2) (Ref 38).

Table 2: Traffic Counts

Road	Survey Year	Traffic Flow	%HDV
Morwell Street	2013 ¹	158	1.0
Bedford Avenue	2013 ¹	838	4.0
New Oxford Street (DfT location 75097)	2018	12677	3.3
Oxford Street (DfT location 46433)	2018	11321	2.0
Bayley Street	2013 ¹	174	0.0
Tottenham Court Road (DfT location 8469)	2018	13943	4.0
Gower Street (DfT location 48159)	2018	14191	1.9
Goodge Street (DfT location 38595)	2018	6226	3.3

¹ – Traffic data derived from 1 Bedford Avenue Transport Statement.

The traffic data in Table 2 was factored forwards to give flows in 2019 and 2024 using TEMPro growth factors using a 'Taxi' scenario. The adjusted traffic data for the following scenarios is presented in Table 3:

- 2019 Base – existing situation;
- 2024 Without – future base without the Proposed Development traffic (2024); and
- 2024 With – future base with the Proposed Development traffic (2024).

Table 3: Traffic Data for Modelling

Source ID	Road Type	Traffic Flow	% HDV	Speed (kph)
2019 Base				
Morwell Street	London - Inner	170	1.0	32.2
Bedford Avenue	London - Inner	901	4.0	32.2
New Oxford Street	London - Inner	12,883	3.3	32.2
Oxford Street	London - Inner	11,505	2.0	32.2
Bayley Street	London - Inner	0	0.0	32.2
Tottenham Court Road	London - Inner	14,170	4.0	32.2
Gower Street	London - Inner	14,422	1.9	32.2
Goodge Street	London - Inner	6,327	3.3	32.2
2024 Without the Proposed Development				
Morwell Street	London - Inner	180	0.9	32.2
Bedford Avenue	London - Inner	955	3.5	32.2
New Oxford Street	London - Inner	6,957	6.1	32.2
Oxford Street	London - Inner	6,213	3.7	32.2
Bayley Street	London - Inner	0	0.0	32.2

Source ID	Road Type	Traffic Flow	% HDV	Speed (kph)
Tottenham Court Road	London - Inner	7,652	7.3	32.2
Gower Street	London - Inner	7,788	3.4	32.2
Goodge Street	London - Inner	3,417	6.1	32.2
2024 With the Proposed Development				
Morwell Street	London - Inner	184	0.9	32.2
Bedford Avenue	London - Inner	959	3.5	32.2
New Oxford Street	London - Inner	6,961	6.0	32.2
Oxford Street	London - Inner	6,216	3.7	32.2
Bayley Street	London - Inner	0	0.0	32.2
Tottenham Court Road	London - Inner	7,656	7.3	32.2
Gower Street	London - Inner	7,792	3.4	32.2
Goodge Street	London - Inner	3,419	6.1	32.2

Note: road speeds have been adjusted at junction and road crossings to reflect stop start and queuing traffic.

It should be noted that traffic counts decrease between 2019 and 2024, especially on Tottenham Court Road. This is due to the committed development of the West End Project (Ref 51). This project has also resulted in Tottenham Court Road change from a one-way road to a two-way road in 2020.

3.2.3 Road Modelling and Vehicle Emissions Factors

This assessment has used the latest version dispersion modelling software 'ADMS-Roads'. ADMS-Roads is a modern dispersion model that has an extensive published track record of use in the UK for the assessment of local air quality impacts, including model validation and verification studies (Ref 40).

Details of general model conditions set up in ADMS-Roads are provided in Table 4. Some of these conditions are summarised in detail below.

Table 4: General ADMS-Roads Model Conditions

Variables	ADMS-Roads Model Input: Road Traffic Model
Surface roughness at source	1.5m
Surface roughness at Meteorological Site	1.0m
Minimum Monin-Obukhov length	100m
Terrain types	Flat
Receptor location	x, y coordinates determined by GIS, z = various.
Emissions	NO _x , PM ₁₀ , PM _{2.5}
Emission factors	Defra's Emission Factor Toolkit (EFT) version 9.0 (Ref 48), using the "London" vehicle fleet composition and the "Basic Split" traffic format. LBC have requested that 2019 emission factors used for model verification, be used when modelling the 2024 opening year.
Meteorological data	1 year (2019) hourly sequential data from London City Airport meteorological station.
Receptors	Facades of selected sensitive receptors.
Model output	Annual mean NO _x , PM ₁₀ and PM _{2.5} concentrations.

The dispersion modelling has taken account of ‘canyon effects’ due to the tall buildings that line the roads which limit dispersion and result in higher pollutant concentration as the facades of buildings. Canyon effects are modelled in ADMS-Roads by calculating the distance between building on each side of the road and comparing it to the height of the building. This methodology is detailed in the ADMS-Roads user manual (Ref 52). The modelling of roads as ‘street canyons’ makes a significant difference to predicted roadside pollutant concentrations especial for roads lined by very tall buildings.

3.2.4 NO_x to NO₂ Conversion

The proportion of NO₂ in NO_x varies greatly with location and time according to a number of factors including the amount of ozone available and the distance from the emission source.

Defra have produced a NO_x to NO₂ Calculator (Ref 48) spreadsheet tool which provides a methodology for converting modelled road NO_x concentrations to NO₂ concentrations for any given year up to 2030. This conversion methodology has been used for the purpose of this assessment for all scenarios as the best representation of the NO₂/NO_x relationship for the study area. Version v7.1 of the NO_x to NO₂ Calculator has been used and is designed to be used in combination with Defra’s 2017-reference year background maps and Emission Factors Toolkit version 9.0. The traffic mix option used was the ‘All London traffic’ option. The local authority area used was selected based on the location of the modelled receptors and diffusion tube locations.

3.2.5 NO₂ Hourly Mean AQS Objective

LLAQM.TG(16) (Ref 42) states that the hourly mean NO₂ objective is unlikely to be exceeded if annual mean concentrations are less than 60 µg/m³. The assessment, therefore, evaluates the likelihood of exceeding the hourly mean NO₂ objective by comparing predicted annual mean NO₂ concentrations at all receptors to an annual mean equivalent threshold of 60 µg/m³. Where predicted concentrations are below this value, it can be concluded that the hourly mean NO₂ objective (200 µg/m³ NO₂ not more than 18 times per year) is likely to be achieved.

3.2.6 Air Quality Predicting the Number of Days in which the PM₁₀ 24-hour Mean Objective is Exceeded

The guidance document LLAQM.TG(16) (Ref 42) sets out the method by which the number of days in which the PM₁₀ 24-hour objective is exceeded can be obtained based on a relationship with the predicted PM₁₀ annual mean concentration. The formula is:

$$\text{No. of Exceedances} = 0.0014 * C^3 + \frac{206}{C} - 18.5$$

Where C is the annual mean concentration of PM₁₀.

Based on this formula an annual mean PM₁₀ concentration of 32 µg/m³ is broadly equivalent to 35 days of exceedance and, as such, if the predicted annual mean is less than 32 µg/m³ the short-term (daily) PM₁₀ AQS objective can be considered to have been achieved.

3.2.7 Meteorological Data

One year (2019) of hourly sequential observation data from London City Airport meteorological station has been used in the dispersion modelling. London City Airport is located approximately 13 km east of the Proposed Development and is considered representative of the meteorological conditions on and around the Application Site. Figure 1 in Appendix A shows that the dominant direction of wind is from the south-west, as is typical for the UK. The wind speed ranges from 0-18 knots (0- ~9.3 m/s).

3.2.8 Receptors

The concentration of road traffic emitted pollutants at the roadside or at sensitive receptors is influenced by a number of factors. These include background pollution levels and the amount of traffic emissions, which is dictated by traffic flow rates, composition and speed.

The AQS objective values for pollutants associated with road traffic were set by the Expert Panel of Air Quality Standards (and subsequently adopted as UK AQS objectives) at a level below the lowest concentration at which the more sensitive members of society have been observed to be adversely

affected by exposure to each pollutant (Ref 45). Therefore, all receptors that represent exposure of the public are of equal sensitivity as any member of the public could be present at those locations.

Commercial properties are not considered sensitive to changes in ambient pollutant concentrations and are legislated separately as part of occupational health and safety regulations. These are, therefore, not included in the assessment and the focus is on proposed and existing residential buildings and sensitive receptors, such as schools, hospitals and care homes, as these are considered most sensitive to changes in air quality.

Annual NO₂, PM₁₀ and PM_{2.5} concentrations have been predicted at a selection of receptors, representing the façades of buildings closest to Tottenham Court Road and Oxford Street. Receptors have been selected from aerial photography and publicly available mapping. The selected receptors are set out in Table 5 and illustrated in Figure 3 and Figure 4 in Appendix A.

LBC has requested that air quality at the proposed residential balconies be assessed so receptors have been modelled representing each proposed balcony. LBC has also requested that the air quality at mechanical ventilation air intake points be assessed. Currently the location of these air intakes has not been determined; however, receptors have been selected which represent each facade of the building as well as the balconies, winter gardens and the rooftop terrace have been included in the model so that the location of air intakes and need for NO_x filtration can be considered. The location of these receptors is illustrated in Figure 4. Receptors have been modelled representing each floor of the building from ground floor (1.5 m) to Rooftop (25.05 m) and the modelled pollutant concentration at each receptor/floor is presented in Table 21 in Appendix B. The receptor heights presented in Table 5, below, are the lowest height at which there is relevant exposure, i.e. lowest floor with a residential balcony or terrace on each façade.

Table 5: Summary of Receptors

ID	Receptor	Height (m)	Use (lowest floor)
R1	6 Gower Street	4	Residential
R2	24 Tottenham Court Road	4	Residential
R3	91 New Oxford Street	4	Residential
R4	41 Oxford Street	4	Residential
R5	13 Bayley Street	4	Residential
R6	10 Bayley Street	4	Residential
R7	26A Morwell Street	1.5	Residential
R8	24 Morwell Street	1.5	Residential
R9	27 Tottenham Court Road	4	Residential
R10	51 Morwell Street	4	Residential
R11	1 Bedford Avenue	4	Office
R12	4-1 Morwell Street	4	Residential
P1	Retail entrance from Bayley Street	1.5	Retail
P2	Office entrance from Bayley Street	1.5	Office
P3	Retail entrance from Tottenham Court Road (1)	1.5	Retail
P4	Retail entrance from Tottenham Court Road (2)	1.5	Retail
P5	Small Winter Garden southwest facing	5.7	Residential
P6	Terrace on 5 th floor	19.7	Residential
P7	Large Terrace on 4 th floor	16.2	Residential
P8	Small Terrace on 4 th floor	16.2	Residential
P9	Residential lobby	1.5	Residential

ID	Receptor	Height (m)	Use (lowest floor)
P10	Large Balcony northeast facing	5.7	Residential
P11	Large Winter Garden southwest facing	5.7	Residential
P12	Small Balcony northeast facing	5.7	Residential
P13	Large Terrace on Green Roof	26.6	Residential

Note: R = Existing Receptor, P = Proposed Receptor.

3.2.9 Model Verification

Predicted results from an air quality dispersion model may differ from measured concentrations for a number of reasons, including uncertainties associated with traffic flows and emissions factors, meteorology and limitations inherent to the modelling software. In light of this, and in accordance with advice in LLAQM.TG(16), for roads-based air quality assessments, it is best-practice to perform a comparison of modelled results with local monitoring data to minimise these modelling uncertainties. This provides a verification factor, by which the output of the ADMS-Roads 5 model is adjusted, to gain greater confidence in the final results. The verification of the modelling output was carried out as prescribed in Chapter 7 of LLAQM.TG(16) (Ref 42).

Available air quality monitoring sites in Camden and Westminster were reviewed and it was concluded that there were two diffusion tube sites within the study area; CA11 and CA21, that could potentially be used for verification, along with the Oxford Street East automatic monitor. These sites were located at roadside / kerbside locations on the Tottenham Court Road, Gower Street / Bloomsbury Street and Oxford Street close to the Proposed Development and are illustrated in Figure 5 in Appendix A. However, CA21 is located adjacent to a bus stop and was, therefore, discounted from the model verification.

A model verification was undertaken using the 2019 traffic data in Table 3. The unadjusted model has a root mean squared error (RMSE) of 13.8 $\mu\text{g}/\text{m}^3$ and fractional bias of 0.3. After applying an adjustment factor of 3.76 the RMSE reduced to 0.4 $\mu\text{g}/\text{m}^3$ and the fractional bias to 0.0. All modelled NO_2 , PM_{10} and $\text{PM}_{2.5}$ results have, therefore been adjusted using this factor.

3.2.10 Significance Criteria and Effects

Air quality impacts are considered to be significant if a development leads to significant impacts at existing sensitive receptors or if air quality objectives / EU limit values are predicted to be exceeded at proposed sensitive receptor locations. Guidance on land-use planning and development control (Ref 32) suggests that a two-stage approach should be adopted to determine whether or not a Proposed Development has a significant impact on local air quality:

- a qualitative or quantitative description of the impacts on local air quality arising from the development; and
- professional judgement on the overall significance of the effects.

In order to assess the potential impacts of a proposed development on local air quality, a description of the impact is given based on the magnitude of change as a percentage of a relevant Air Quality Assessment Level (AQAL). Account must also be taken of predicted pollutant concentrations and their relationship to the Air Quality Objective / EU limit value for the pollutants of concern. Table 6 summarises the impact descriptors for annual mean NO_2 and PM_{10} concentrations and Table 7 annual $\text{PM}_{2.5}$ concentrations. The impact descriptors may be adverse or beneficial depending upon whether concentrations are predicted to increase or decrease.

Table 6: Effects Descriptors at Individual Receptors – Annual Mean NO₂ and PM₁₀

Annual Mean Concentration at Receptor in Assessment Year		Change in Concentration Relative to AQAL ^a				
		0%	1%	2% – 5%	6% – 10%	> 10%
As % of AQAL	NO ₂ / PM ₁₀ (µg/m ³) ^b	<0.2 µg/m ³	0.2 – <0.6 µg/m ³	0.6 – <2.2 µg/m ³	2.2 – ≤4.0 µg/m ³	>4.0 µg/m ³
≤75%	≤30.2	Negligible	Negligible	Negligible	Slight	Moderate
76% - 94%	30.2 – 37.8	Negligible	Negligible	Slight	Moderate	Moderate
95% - 102%	37.8 – 41.0	Negligible	Slight	Moderate	Moderate	Substantial
103% - 109%	41.0 – 43.8	Negligible	Moderate	Moderate	Substantial	Substantial
≥110%	≥43.8	Negligible	Moderate	Substantial	Substantial	Substantial

Notes: ^a The percentage change in pollutant concentration is calculated and rounded to the nearest whole number to make it clearer which column the impacts fall within. Changes of less than 0.5% are rounded down to zero and therefore described as negligible. ^b Concentrations quoted were obtained from EPUK/IAQM.

Table 7: Effects Descriptors at Individual Receptors – Annual Mean PM_{2.5}

Annual Mean Concentration at Receptor in Assessment Year		Change in Concentration Relative to AQAL ^a				
		0%	1%	2% – 5%	6% – 10%	> 10%
As % of AQAL	PM _{2.5} (µg/m ³) ^b	<0.1 µg/m ³	0.1 – <0.4 µg/m ³	0.4 – <1.4 µg/m ³	1.4 – ≤2.5 µg/m ³	>2.5 µg/m ³
≤75%	≤18.9	Negligible	Negligible	Negligible	Slight	Moderate
76% - 94%	18.9 - 23.6	Negligible	Negligible	Slight	Moderate	Moderate
95% - 102%	23.6 - 25.6	Negligible	Slight	Moderate	Moderate	Substantial
103% - 109%	25.6 - 27.4	Negligible	Moderate	Moderate	Substantial	Substantial
≥110%	≥27.4	Negligible	Moderate	Substantial	Substantial	Substantial

Notes: ^a The percentage change in pollutant concentration is calculated and rounded to the nearest whole number to make it clearer which column the impacts fall within. Changes of less than 0.5% are rounded down to zero and therefore described as negligible. ^b Concentrations quoted were obtained from EPUK/IAQM.

For determining the air quality impacts of a development on short-term PM₁₀ concentrations (i.e. the number of days where the daily mean PM₁₀ concentration is greater than 50 µg/m³) the significance criteria in Table 8 has been adapted to derive a value for the AQS objective equivalent to 35 days per year of PM₁₀ concentrations greater than 50 µg/m³. An annual mean PM₁₀ concentration of 32 µg/m³ is broadly equivalent to 35 days of exceedance; and as such this value has been used as the AQS objective and has been used to calculate the changes in concentration thresholds for assessing the air quality impacts on short-term (daily) PM₁₀ concentrations, as set out in Table 8.

Table 8: Local Air Quality Impact Descriptors for Daily PM₁₀ Concentrations at Individual Receptors

Mean Concentration at Receptor in Assessment Year		Change in Annual Mean Concentration of PM ₁₀ (µg/m ³) and Percentage (%) as a Proportion of the AQS Objective				
		0%	1%	2% – 5%	6% – 10%	> 10%
As % of AQAL	PM ₁₀ (µg/m ³) ^b	<0.2 µg/m ³	0.2 – <0.5 µg/m ³	0.5 – <1.8 µg/m ³	1.8 – ≤3.5 µg/m ³	>3.2 µg/m ³
≤75%	<24.2	Negligible	Negligible	Negligible	Slight	Moderate
76% - 94%	24.2 – <30.2	Negligible	Negligible	Slight	Moderate	Moderate
95% - 102%	30.2 – <32.8	Negligible	Slight	Moderate	Moderate	Substantial
103% - 109%	32.8 – <35.0	Negligible	Moderate	Moderate	Substantial	Substantial
≥110%	≥35.0	Negligible	Moderate	Substantial	Substantial	Substantial

Notes: Adapted from the EPUK/IAQM Air Quality Guidance. For the assessment of short-term PM₁₀ impacts, a value of 32 µg/m³ has been calculated as being equivalent to the AQS objective of 35 days per year not to exceed 50 µg/m³.

The descriptors presented in Table 6 to Table 8 are ascribed to impacts at individual sensitive receptor locations; however they are not, of themselves, a clear and unambiguous guide to reaching a conclusion on overall significance. The guidance on land-use planning and development control (Ref 32) makes it clear that the assessment of significance of the overall effect should be based on professional judgement. Whilst it may be that there are 'slight', 'moderate' or 'substantial' impacts at one or more receptors, the overall effect may not necessarily therefore be judged as being significant in some circumstances. A 'moderate' or 'substantial' impact may not have a significant effect if it is confined to a very small area.

Where a single development can be judged in isolation, it is likely that a 'moderate' or 'substantial' impact will give rise to a significant effect and a 'negligible' or 'slight' impact will not have a significant effect, but such judgements are always more likely to be valid at the two extremes of impact severity. The EPUK/IAQM guidance also advises that for new occupants of a proposed development, the impacts are best described in relation to whether or not an air quality objective / limit value will be met or is at risk of not being met. An exceedance of the objective / limit value is likely to be considered significant.

The EPUK/IAQM guidance notes that overall significance is determined using professional judgement and should consider:

- The existing and future air quality in the absence of development;
- The extent of current and future population exposure to any air quality impacts associated with a proposed development;
- The influence and validity of any assumptions made in the assessment approach;
- The cumulative effects arising from other committed developments in the study area; and
- The introduction of new occupants into the proposed development and the levels of air pollution to which they are likely to be exposed.

3.2.11 Assumptions, Constraints and Limitations

The following assumptions have been made in undertaking this assessment:

- Road traffic emissions modelling has used traffic data taken data from old surveys undertaken in the area as well as DfT traffic counts and factored to verification and assessment years (2019 and 2024);
- Road traffic emissions related impact predictions have been checked against baseline monitoring data to capture and adjusted for variations in model performance. By carrying out model verification

and adjusting the results in line with measured 2019 NO₂ concentrations according to Defra's published guidance, the uncertainty in the predictions for the current baseline is reduced;

- Worst case receptor locations have been assumed, which represent the location of maximum exposure to air pollutants within an area; and
- A greater level of uncertainty is associated with predictions for future years than for the base year, with greater uncertainty the further into the future the predictions are made. LBC have requested that the 2024 opening year background air quality and road traffic emission be modelled using the verified 2019 data, as such, the assessment has taken no account of future improvements in air quality which is considered to be a very conservative approach.

3.2.12 Air Quality Neutral Assessment

Using the GLA's Sustainable Design and Construction SPG (Ref 22), an Air Quality Neutral Assessment has been undertaken using the latest information about the Proposed Development. The methodology and emission factors are taken from the Air Quality Neutral Planning Support document (Ref 34). The methodology assesses two sources of emissions: road traffic and energy production.

The Air Quality Neutral Assessment for the road traffic associated with the Proposed Development compares the road traffic related emissions against calculated benchmark values which are based upon land use, the number of anticipated trips per year, and the average distance travelled per trip, in accordance with the Air Quality Neutral Planning Support (Ref 34).

The Transport Emissions Benchmarks (TEB) for the Proposed Development are calculated using default NO_x and PM₁₀ emission factors per square metre, which have been determined for the different land use classes, and for each of the three areas within London, as defined in the guidance. In this assessment, Central Activity Zone (CAZ) emission factors have been used.

For building emissions, Building Emissions Benchmarks (BEB) for NO_x and PM₁₀ are calculated using information relating to energy supply and demand considerations for different land use classes, as defined in the guidance. The Proposed Development does not include any on-site centralised combustion plant. The heating, cooling and hot water for the residential properties will be provided by air source heat pumps while heating/cooling for the office space will be via a central air source heat pump at roof level and hot water provided by a water source heat pump.

4. Baseline Conditions

4.1 Local Monitoring Data

Under the requirements of Part IV of the Environment Act (1995) (Ref 9), LBC has carried out a review and assessment of local air quality. Currently, LBC monitors NO₂, PM₁₀ and PM_{2.5} with monitoring conducted using both automatic continuous monitors and non-automatic NO₂ diffusion tubes. The Council undertake automatic continuous monitoring at 3 locations and NO₂ diffusion tube monitoring at 14 monitoring locations which are illustrated in Figure 6 in Appendix A.

NO₂ concentrations measured at the monitoring sites within 1km of the Proposed Development are presented in Table 9. This includes monitoring undertaken by the neighbouring Borough, the City of Westminster. All monitoring data has been taken from LBC's and City of Westminster's respective 2019 Annual Status Reports (ASRs) (Ref 35 and Ref 53).

Table 9: LBC and Westminster Annual Mean NO₂ Monitoring Results

ID	Location	OS X, Y Coordinate	Approx. Distance to Site (km)	Monitor Type	Location Type	Annual Mean NO ₂ concentration (µg/m ³)				
						2015	2016	2017	2018	2019
LB	London Bloomsbury	530500, 182500	0.5	CM	Urban Background	48	42	38	36	32
CD9	Euston Road	529500, 182500	1.0	CM	Roadside	<u>90</u>	<u>88</u>	<u>83</u>	<u>82</u>	<u>70</u>
CA10	Tavistock Gardens	529500, 182500	0.7	DT	Urban Background	45	40	46	35	33
CA11	Tottenham Court Road	529580, 181764	0.2	DT	Kerbside	<u>86</u>	<u>84</u>	<u>74</u>	<u>66</u>	<u>61</u>
CA21	Bloomsbury Street	529959, 181622	0.2	DT	Kerbside	<u>71</u>	<u>72</u>	<u>71</u>	59	48
CA29	Endsleigh Gardens	529500, 182500	0.8	DT	Roadside	-	-	-	-	48
OSE	Oxford Street East	529495, 181330	0.3	CM	Roadside	-	-	-	<u>76</u>	51

Numbers in bold show the concentrations exceeding the annual mean AQS objective (40 µg/m³) while values bold and underlined (equal to or greater than 60 µg/m³) indicate potential exceedance of the short-term NO₂ AQS objective. DT = Diffusion Tube, CM = Continuous Monitor.

In 2019, NO₂ concentrations were above the annual mean NO₂ objective of 40 µg/m³ at five of the seven monitoring locations within 1 km of the Proposed Development.

4.2 Defra Mapped Background Pollutant Concentrations

A large number of small sources of air pollutants exist, which individually may not be significant, but collectively, over a large area, need to be considered in the modelling process. Pollutant emissions from these sources contribute to background air quality, which when added to modelled emissions allow estimates of total ambient pollutant concentrations to be made.

Defra has produced maps of background pollutant concentrations covering the whole of the UK for use by local authorities and consultants in the completion of LAQM reports and Air Quality Assessments where local background monitoring is unavailable or inappropriate for use. The current Defra maps are based on projections from 2017 monitoring data and provide background pollutant concentrations for each 1-km grid square within the UK for all years between 2017 and 2030 (Ref 45).

Table 10 presents a comparison between the 2019 monitored urban background NO₂ concentrations reported by LBC, City of Westminster and the Defra mapped background values for the corresponding grid square in 2019.

Table 10: LBC Urban Background Monitoring vs Defra Mapped Background Concentrations in 2019

Monitoring Location	Defra Grid Square (X,Y)	Monitored Annual Mean NO ₂ (µg/m ³)	Annual Mapped Annual Mean NO ₂ (µg/m ³)
London Bloomsbury	530500, 182500	32	35.7
Tavistock Gardens	529500, 182500	33	34.2

Table 10 shows that the Defra Mapped background is more conservative than the monitored concentrations within the grid squares. To ensure that this assessment uses a conservative background, the modelling will be based on the Defra mapped background concentrations.

4.3 Backgrounds Used in Dispersion Modelling

Defra mapped background NO₂, PM₁₀ and PM_{2.5} concentrations for 2019 are presented in Table 11. Within grid square road contributions from motorways and primary A roads have been discounted from the Defra mapped background concentrations in accordance with the methodology set out in LLAQM.TG(16) and using the Defra NO₂ source apportionment calculator to avoid double counting (Ref 31) as the major roads close to the Proposed Development are included within the dispersion model. Emission from minor roads and roads outside the Defra grid square have not been removed.

LBC has requested that the opening year background air pollution concentrations be modelled without assuming any future improvement in air quality. As such, the 2019 background data in Table 11 has also been used in the 2024 opening year modelling. This is considered to be a very conservative approach however as both the background and roadside monitoring data presented in Table 9 does show that NO₂ concentrations have generally reduced over the past 5 years.

Table 11: Defra Mapped Background Pollutant Concentrations (µg/m³) in 2019

Receptor	Grid Square (X, Y)	Annual Mean Concentrations (µg/m ³)			
		NO _x	NO ₂	PM ₁₀	PM _{2.5}
All receptors	529500, 181500	68.0	37.4	19.2	12.9

5. Results

5.1 Construction Phase

5.1.1 Predicted Effects during Demolition and Construction

An Air Quality Dust Risk Assessment has been undertaken based on currently available information concerning construction phase activities, in accordance with GLA supplementary planning guidance (Ref 23). There are no relevant ecological receptors (nationally designated sites) within 50m of the site boundary, 50m of the route used by construction traffic or within 500m of the site entrance. Therefore, ecological receptors have been scoped out of the dust risk assessment.

The sensitivity of the receptors identified within the vicinity of the site has been assessed as shown in Table 12 as per the GLA's Control of Dust and Emissions SPG (Ref 23).

Table 12: Sensitivity of Receptors

Area Affected Sensitivity Justification

Dust Soiling	High	There are between 10 to 100 high sensitivity receptors, i.e. residential properties, within 20m of the site boundary.
Human Health	Medium	There are between 10 to 100 high sensitivity receptors, i.e. residential properties, within 20m of the site boundary, however, annual mean PM ₁₀ concentrations are below 24 µg/m ³ .

5.1.2 Demolition

The Site is currently occupied by 5 separate buildings which will require demolition prior to construction work commencing on the Proposed Development. The total building volume of the buildings to be demolished is approximately 9,244m³, however, they are constructed of potential dusty materials, i.e. concrete, and works will take place between 10m - 20m above ground level. As such the potential dust emission magnitude for demolition activities is, therefore, considered to be medium. Taking account of the sensitivity of receptor in the area the Site is considered to be medium risk in terms of dust soiling and low risk in terms of human health.

5.1.3 Earthworks

The Proposed Development site area is under 2,500m² and given the limited size of the site is anticipated that there will be less than 10 heavy earth moving vehicles active at any one time. The potential dust emissions magnitude associated with earthworks is estimated to be small. Taking account of the sensitivity of receptor in the area the Site is considered to be low risk in terms of dust soiling and negligible risk in terms of human health.

5.1.4 Construction

The building volume of the Proposed Development is between 25,000m³ and 100,000m³ (45,000m³), so would be classified as medium risk due to construction volume. Taking account of the sensitivity of receptor in the area the Site is considered to be medium risk in terms of dust soiling and low risk in terms of human health.

5.1.5 Trackout

The number of construction-related heavy-duty vehicle (HDV) movements generated by the Proposed Development is likely to be between 10 and 50 vehicle movements per day at its peak. Considering the size of the site, the potential dust emissions class for trackout is conservatively assumed to be medium. Taking account of the sensitivity of receptor in the area the Site is considered to be medium risk in terms of dust soiling and low risk in term of human health.

The dust risk assessment discussed above is summarised in Table 13 and Table 14.

Table 13: Summary of Potential Dust Emission Magnitudes for Construction Phase Activities

Activity	Risk Magnitude	Justification
Demolition	Medium	Total building volume to be demolished is <20,000 m ³ . However, the buildings are made of potentially dust materials, i.e. concrete, and demolition activities will occur between 10-20m above ground level.
Earthworks	Small	Earthworks site area is <2,500m ² with limited heavy earth moving vehicles present on site.
Construction	Medium	The construction volume is approximately 45,000m ³ so falls within the medium range (25,000m ³ to 100,000m ³).
Trackout	Medium	The peak number of construction-related heavy-duty vehicle (HDV) movements generated by the Proposed Development may be between 10 and 50 so the risk magnitude is considered to be medium.

Table 14: Summary Dust Risk Table

Potential Impact	Risk of Dust Impacts			
	Demolition	Earthworks	Construction	Track out
Dust Soiling	Medium Risk	Medium Risk	Medium Risk	Medium Risk
Human Health	Low Risk	Low Risk	Low Risk	Low Risk

Overall, the Dust Risk Assessment conservatively identifies the Site as having a 'medium risk' of causing impacts during demolition and construction activities on the site and mitigation measures consistent with a medium-risk site should therefore be implemented. Proposed mitigation measures are, therefore presented in Table 20.

5.2 Operational Phase

The following Sections present the results of the air quality assessments at selected receptors, providing the predicted levels Without and With the Proposed Development.

5.2.1 Existing Receptor Locations

Predicted NO₂ concentrations, presented in Table 15, are above the respected AQS objective of 40 µg/m³ in the base year, 2019, at all modelled receptor locations. The highest concentration of NO₂, PM₁₀ and PM_{2.5}, 60.0 µg/m³, 24.1 µg/m³ and 15.8 µg/m³ respectively, occurs at Receptor R3.

Predicted PM₁₀ and PM_{2.5} concentrations are well below their respected AQS objectives. Predicted NO₂ concentrations at receptors R1-R4 and R9 are within or meet the AQS of 60 µg/m³ and, as such, it is likely that the hourly mean AQS objective for NO₂ will be achieved at these receptors with the exception of Receptor R3.

Table 15: Annual Mean Air Quality Results Baseline Results, 2019

Receptor	Locations	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
R1	6 Gower Street	56.0	23.1	15.3
R2	24 Tottenham Court Road	56.3	23.2	15.3
R3	91 New Oxford Street	<u>60.0</u>	24.1	15.8
R4	41 Oxford Street	57.9	23.6	15.6
R5	13 Bayley Street	42.7	20.3	13.5
R6	10 Bayley Street	40.7	19.9	13.3
R7	26A Morwell Street	41.6	20.0	13.4
R8	24 Morwell Street	40.6	19.8	13.3
R9	27 Tottenham Court Road	56.4	23.2	15.3
R10	51 Morwell Street	41.8	20.1	13.4
R11	1 Bedford Avenue	44.8	20.7	13.8
R12	4-1 Morwell Street	42.0	20.1	13.5

Numbers in bold show the concentrations exceeding the annual mean NO₂ and PM₁₀ AQS objective (40 µg/m³) while values bold and underlined (equal to or greater than 60 µg/m³) indicate potential exceedance of the short-term NO₂ AQS objective.

Table 16 provides the predicted annual mean concentrations for the future opening year of 2024 (with 2019 EFT) Without and With the Proposed Development. The results are presented for the lowest floor with relevant exposure.

Annual mean NO₂ concentrations are predicted to be above the AQS objective both Without and With the Proposed Development at all receptors except for R6, R7 and R8. The highest NO₂ concentration is predicted to be 50.1 µg/m³ at Receptor R3 (91 New Oxford Street). The change in annual mean NO₂ concentrations as a result of the Proposed Development is predicted to be less than 0.1 µg/m³ at all receptors and, as such, is considered negligible. Predicted NO₂ concentrations at all modelled receptors are below 60 µg/m³ and, as such, it is unlikely that the hourly mean AQS objective for NO₂ will be exceeded at any receptors.

Annual mean PM₁₀ and PM_{2.5} concentrations were predicted to be below the relevant AQS objective values in 2024 both Without and With the Proposed Development at all modelled receptors. The changes in annual mean PM₁₀ and PM_{2.5} concentrations as a result of the Proposed Development are less than 0.1 µg/m³ and, as such, are considered to be negligible. Predicted annual mean PM₁₀ concentrations are predicted to be below 32 µg/m³ and, as such, the daily PM₁₀ AQS objective of 50 µg/m³, not be to be exceeded more than 35 times per year, is likely to be achieved at all modelled receptor locations.

The total modelled annual NO₂ concentrations and change as a result of the Proposed Development have been illustrated graphically in Figure 7 and Figure 8 in Appendix A.

Table 16: Annual Mean Concentrations With and Without the Proposed Development in 2024

Receptor ID	Locations	NO ₂ (µg/m ³)				PM ₁₀ (µg/m ³)				PM _{2.5} (µg/m ³)			
		Without	With	Change	Effect Descriptor	Without	With	Change	Effect Descriptor	Without	With	Change	Effect Descriptor
R1	6 Gower Street	47.5	47.5	<0.1	Negligible	21.4	21.4	<0.1	Negligible	14.3	14.3	<0.1	Negligible
R2	24 Tottenham Court Road	48.1	48.1	<0.1	Negligible	21.5	21.5	<0.1	Negligible	14.3	14.3	<0.1	Negligible
R3	91 New Oxford Street	50.1	50.1	<0.1	Negligible	22.0	22.0	<0.1	Negligible	14.6	14.6	<0.1	Negligible
R4	41 Oxford Street	48.6	48.6	<0.1	Negligible	21.7	21.7	<0.1	Negligible	14.4	14.4	<0.1	Negligible
R5	13 Bayley Street	40.4	40.4	<0.1	Negligible	19.8	19.8	<0.1	Negligible	13.3	13.3	<0.1	Negligible
R6	10 Bayley Street	39.2	39.2	<0.1	Negligible	19.6	19.6	<0.1	Negligible	13.1	13.1	<0.1	Negligible
R7	26A Morwell Street	39.9	39.9	<0.1	Negligible	19.7	19.7	<0.1	Negligible	13.2	13.2	<0.1	Negligible
R8	24 Morwell Street	39.2	39.2	<0.1	Negligible	19.6	19.6	<0.1	Negligible	13.1	13.1	<0.1	Negligible
R9	27 Tottenham Court Road	48.1	48.1	<0.1	Negligible	21.6	21.6	<0.1	Negligible	14.3	14.3	<0.1	Negligible
R10	51 Morwell Street	40.1	40.1	<0.1	Negligible	19.8	19.8	<0.1	Negligible	13.2	13.2	<0.1	Negligible
R11	1 Bedford Avenue	42.8	42.8	<0.1	Negligible	20.4	20.4	<0.1	Negligible	13.6	13.6	<0.1	Negligible
R12	4-1 Morwell Street	40.2	40.2	<0.1	Negligible	19.8	19.8	<0.1	Negligible	13.3	13.3	<0.1	Negligible

Numbers in bold show the concentrations exceeding the annual mean NO₂ and PM₁₀ AQS objective (40 µg/m³) while values bold and underlined (equal to or greater than 60 µg/m³) indicate potential exceedance of the short-term NO₂ AQS objective.

5.2.2 Proposed Receptor Locations

Table 21 in Appendix B presents the predicted pollutant concentrations at the facades of the Proposed Development in the opening year 2024 and at the residential balconies on each floor. Annual mean NO₂ concentrations are predicted to be above the AQS objective at all modelled receptors for the Proposed Development site on the ground floor. Receptors P3, P4, P5 and P11 exceed the annual NO₂ objective at all floors.

The highest NO₂ concentration is predicted to be 47.6 µg/m³ at P3. Predicted NO₂ concentrations at all modelled receptors are below 60 µg/m³ and, as such, it is unlikely that the hourly mean AQS objective for NO₂ will be exceeded at any receptors.

Receptor P13 (Roof Terrace), Receptors P10 and P12 (large and small balconies facing northeast) and Receptors P6 and P7 (large and small terraces facing northeast) do not exceed the annual mean NO₂ AQS objective at height. Therefore, winter gardens are not needed at these locations. The receptors facing Tottenham Court Road (P5 and P11) are predicted to exceed the NO₂ annual mean AQS objectives, as such, Winter Gardens will be provided rather than open balconies. If mechanical ventilation air intakes are to be located on this façade then NO_x filtration will be required to protect internal air quality.

Annual mean PM₁₀ and PM_{2.5} concentrations were predicted to be below the relevant AQS objective values at the facades of the Proposed Development in the opening year 2024. Predicted annual mean PM₁₀ concentrations are predicted to be significantly below 32 µg/m³ and, as such, the daily PM₁₀ AQS objective of 50 µg/m³, not be to be exceeded more than 35 times per year, is likely to be achieved at all modelled receptor locations.

While the modelling predicts that the annual mean AQS objective for NO₂ will be exceeded at all heights on the west façade of the Proposed Development facing Tottenham Court Road, and on the lowest levels of the rear-facing Morwell Street façade, it should be noted that the modelling methodology employed is very conservative as, in accordance with the approach requested by LBC. It takes no account of future improvement in background pollutant concentrations or vehicle fleet emission rates.

The local air quality monitoring, as shown in the Baseline section of this report, suggests that there has been a downward trend in both background and roadside annual mean NO₂ concentrations over the last 5 years, which would be expected to continue due to the phasing out of older more polluting vehicles, reduction in diesel car sales, hybrid/electric vehicle uptake, implementation of the London Low and Ultra Low Emission Zones and congestion zone charging along with wider government policies favouring green transport. Additional modelling results are presented in Appendix C, which has used the 2019 background concentration but the Defra EFT 2024 fleet emission rates, rather than 2019. This approach is still considered conservative, as it does not consider reductions in background pollutant concentrations. These show that whilst the west facing façade still exceeds the AQS objective at all modelled receptors (albeit to a lesser extent), the east facing façade is predicted to achieve the AQS objective at all heights.

As the annual mean AQS objective for PM₁₀, and the short-term AQS objectives for NO₂ and PM₁₀, will be achieved at all modelled receptors representative of the Proposed Development, the site is considered appropriate for its proposed use, subject to the application of appropriate mitigation measures as described above.

It should be noted that the commercial office areas are to be future proofed with natural ventilation apertures located behind screened louvres adjacent to the windows within each bay of the office areas from 1st floor level and above. These apertures will allow the commercial office space to operate a mixed mode ventilation and cooling strategy if improvements to the Tottenham Court Road air quality and noise allow in the future. Based on the modelling undertaken and presented in Table 21 even assuming worst-case assumptions, i.e. that there is no improvement in air quality between 2019 and 2024, the modelling at façade locations has demonstrated that while the annual mean AQS objective for NO₂ is predicted to be exceeded the concentration is below 60 µg/m³ indicating that the short-term AQS objective, which applies at offices etc, will not be exceeded. Air quality may already be acceptable to allow the office element of the development to operate in mixed mode.

This is further supported by the modelling presented in Table 22 which shows predicted concentrations in 2024 assuming that road vehicle emissions decrease in line with Defra estimates between 2019 and 2024 but that there is no improvement in background air quality. This assumption is still considered conservative given that LBCs monitoring in the Borough has shown decrease in both background and roadside NO₂ concentrations over the past 5 years. The results in Table 22 illustrates that the annual mean NO₂ objective of 40 µg/m³ is only marginally exceeded (maximum of 43.7 µg/m³) in 2024 when road emission improvement are considered.

6. Air Quality Neutral Results

6.1 Introduction

In order to address the GLA's policy for new developments to be 'air quality neutral', and in-line with the relevant requirements of its Sustainable Design and Construction SPG (Ref 22), emissions for the Proposed Development were estimated, and used to evaluate its performance against site-specific benchmark values from the SPG.

The Proposed Development is mixed use with 8 residential dwellings (land use category C3), 1,350 m² of retail space (land use category A1/A2/A3/D2) and 7,717 m² of office space (land use category B1) combined with 656 m² of Flexible Class (land use category D1/B1). The Proposed Development does not contain an energy centre. The heating, cooling and hot water for the residential properties will be provided by air source heat pumps while heating/cooling for the office space will be via a central air source heat pump at roof level and hot water provided by a water source heat pump.

6.2 Transport Related Emissions

The Proposed Development is car-free, with the exception of limited disability parking, so though there will be some vehicle movements for other modes of transport i.e. taxi and service vehicle trips which have been considered within this transport Section of the Air quality neutral assessment. The trips generated as a result of the Proposed Development amount to 21 servicing vehicle trips per day.

As both the NO_x and PM₁₀ transport emissions for the Proposed Development are smaller than the calculated benchmark emissions for NO_x and PM₁₀, the Proposed Development is considered to be air quality neutral with regard to transport-related emissions. The results of the air quality neutral assessment are presented in Table 17, Table 18 and Table 19 below.

Table 17: Calculation of Benchmarked Transport Emissions

Land Use	Quantity	NO _x Transport Emission Benchmark (g/m ² /annum)	Total NO _x Transport Emissions Benchmark (kg)
Retail (A1/A2/A3/D2)	1,350 m ²	169	228.2
Office (B1) and Flexible Class (B1/D1)*	8,373 m ²	1.27	10.6
Residential (C3)	8 dwellings	234	1.9
Total NO_x Benchmarked Transport Emissions			240.7
Land Use	Quantity	PM ₁₀ Transport Emission Benchmark (g/m ² /annum)	Total PM ₁₀ Transport Emissions Benchmark (kg)
Retail (A1/A2/A3/D2)	1,350 m ²	29.3	39.6
Office (B1) and Flexible Class (B1/D1)*	8,373 m ²	0.22	1.8
Residential (C3)	8 dwellings	40.7	0.3
Total PM₁₀ Benchmarked Transport Emissions			41.7

Note * flexible class B1/D1 has been taken to be B1 use for calculation purposes.

Table 18: Calculation of Total Transport Emissions

Land Use	Total Average Distance travelled per year (km/yr ²)	NO _x Transport Emission Factor (gNO _x /vehicle-km)	Total NO _x Transport Emissions (kg/yr)
Retail (A1/A2/A3/D2)	71,285	0.4224	30.1
Office (B1) and Flexible Class (B1/D1)*	22,995	0.4224	9.7
Residential (C3)	32,960	0.4224	13.9
Total NO_x Transport Emissions			53.7

Land Use	Total Average Distance travelled per year (km/yr)	PM ₁₀ Transport Emission Factor (gPM ₁₀ /vehicle-km)	Total PM ₁₀ Transport Emissions (kg/yr)
Retail (A1/A2/A3/D2)	13,578	0.0733	5.2
Office (B1) and Flexible Class (B1/D1)*	4,380	0.0733	1.7
Residential (C3)	6,278	0.0733	2.4
Total PM₁₀ Transport Emissions			9.3

Note * flexible class B1/D1 has been taken to be B1 use for calculation purposes.

Table 19: Comparison Between Total Transport Emissions and Benchmarked Transport Emissions**NO_x**

Total Transport Emissions (kg/yr)	53.7
Total Benchmarked Transport Emissions (Assessment Criteria) (kg/yr)	240.7
Difference (kg/yr)	-186.9

PM₁₀

Total Transport Emissions (kg/annum)	9.3
Total Benchmarked Transport Emissions (Assessment Criteria) (kg/annum)	41.7
Difference (kg/annum)	-32.4

Traffic related NO_x and PM₁₀ emissions are below the relevant Transport Emission Benchmark for a mixed use development with comparable number of residential properties and retail/office floor space. As such the development is considered air quality neutral.

7. Mitigation Measures

7.1 Construction Phase Mitigation Measures

Based on the results of the dust risk assessment, the following mitigation measures are recommended by The Control of Dust and Emissions during Construction and Demolition – Supplementary Planning Guidance (Ref 23) for Medium Risk Sites. It is recognised that not all of the recommended measures maybe be appropriate or feasible for all high-risk sites. It is provided to recommend the desirable mitigation and is intentionally designed not to limit mitigation that is finally selected by the demolition/construction company to avoid issues once the planning is agreed. The dust controls are generally agreed after planning as a condition with the requirement that the demolition/construction company issue a dust management plan (DMP) or Construction Environmental Management Plan (CEMP) prior to works commencing on site.

Table 20: Mitigation Measures

Mitigation Measure	Highly Recommended (H) / Desirable (D)
Site Management	
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	H
Develop a Dust Management Plan.	H
Display the name and contact details of person(s) accountable for air quality pollutant emissions and dust issues on the site boundary.	H
Display the head or regional office contact information.	H
Record and respond to all dust and air quality pollutant emissions complaints.	H
Make a complaint log available to the local authority when asked.	H
Carry out regular site inspections to monitor compliance with air quality and dust control procedures, record inspection results, and make an inspection log available to the local authority when asked.	H
Increase the frequency of site inspections by those accountable for dust and air quality pollutant emissions issues when activities with a high potential to produce dust and emissions and dust are being carried out, and during prolonged dry or windy conditions.	H
Record any exceptional incidents that cause dust and air quality pollutant emissions, either on or off the site, and the action taken to resolve the situation is recorded in the logbook.	H
Hold regular liaison meetings with other high-risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised.	
Preparing and Maintaining the Site	
Plan site layout: machinery and dust causing activities should be located away from receptors.	H
Erect solid screens or barriers around dust activities or the site boundary that are, at least, as high as any stockpiles on site.	H
Fully enclosure site or specific operations where there is a high potential for dust production and the site is active for an extensive period.	H
Install green walls, screens or other green infrastructure to minimise the impact of dust and pollution.	D
Avoid site runoff of water or mud.	H
Keep site fencing, hoarding, barriers and scaffolding clean using wet methods.	H
Remove materials from site as soon as possible.	H
Cover, seed or fence stockpiles to prevent wind whipping.	H

Mitigation Measure	Highly Recommended (H) / Desirable (D)
Avoid double handling of material wherever reasonably practicable.	H
Carry out regular dust soiling checks of buildings within 100m of site boundary and cleaning to be provided if necessary.	D
Provide showers and ensure a change of shoes and clothes are required before going off-site to reduce transport of dust.	
Agree monitoring locations with the Local Authority.	H
Where possible, commence baseline monitoring at least three months before phase begins.	H
Put in place real-time dust and air quality pollutant monitors across the site and ensure they are checked regularly.	H
Operating Vehicle/Machinery and Sustainable Travel	
Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone.	H
Ensure all non-road mobile machinery (NRMM) comply with the standards set within this guidance.	H
Ensure all vehicles switch off engines when stationary – no idling vehicles.	H
Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where possible.	H
Impose and signpost a maximum-speed-limit of 10mph on surfaced haul routes and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).	D
Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	H
Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).	H
Loading of material into lorries within designated bay.	H
Plant working on site to have exhausts positioned such that the risk of re-suspension of ground dust is minimised (exhausts should preferably point upwards), where reasonably practicable.	H
Ensure all vehicles carrying loose or potentially dusty material to or from the site are fully sheeted.	H
Use ultra-low sulphur fuels in plant and vehicles.	H
Operations	
Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.	H
Ensure an adequate water supply on the site for effective dust/particulate matter mitigation (using recycled water where possible).	H
Use enclosed chutes, conveyors and covered skips.	H
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	H
Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	H

Mitigation Measure	Highly Recommended (H) / Desirable (D)
Waste Management	
Reuse and recycle waste to reduce dust from waste materials	H
Avoid bonfires and burning of waste materials.	H
Measures Specific to Demolition	
Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust)	D
Ensure water suppression is used during demolition operations.	H
Avoid explosive blasting, using appropriate manual or mechanical alternatives.	H
Bag and remove any biological debris or damp down such material before demolition.	H
Measures Specific to Earthworks	
No specific measures are recommended as the site is Low Risk, however, general good practice measures should be implemented.	-
Measures Specific to Construction	
Avoid scabbling (roughening of concrete surfaces) if possible	D
Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place	H
Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.	D
For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.	D
Measures Specific to Trackout	
Regularly use a water-assisted dust sweeper on the access and local roads, as necessary, to remove any material tracked out of the site.	H
Avoid dry sweeping of large areas.	H
Ensure vehicles entering and leaving sites are securely covered to prevent escape of materials during transport.	H
Record all inspections of haul routes and any subsequent action in a site logbook.	H
Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems and regularly cleaned.	H
Inspect haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable	H
Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	H
Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.	H
Access gates to be located at least 10m from receptors where possible.	H
Apply dust suppressants to locations where a large volume of vehicles enter and exit the construction site	D

7.1.1 Camden's Minimum Construction Dust Mitigated Requirements

- Consideration should be given to the siting of aggregate stockpiles, based upon such factor as the prevailing winds, proximity of site boundary and proximity of neighbours. Minimisation of drop

height is very important in stockpiling to reduce wind whipping of particulates. When designing storage bays, internal walls separating storage bays should be at least ½ metre lower than external walls of the bays.

- Areas where there is vehicular movement should have a consolidated surface which should be kept in good repair.
- The main principles for preventing dust emissions are containment of dusty processes and suppression of dust using water or proprietary suppressants. Suppression techniques need to be properly designed, used and maintained, in order to be effective. For example, where water is used for dust suppression, processes require an adequate supply of water and all water suppression systems need adequate frost protection.
- Where there is evidence of airborne dust from the building construction/demolition activities the site, the contractor should make their own inspection and assessment, and where necessary undertake ambient monitoring with the aim of identifying those process operations giving rise to the dust. Once the source of the emission is known, corrective action should be taken without delay.
- Effective preventative maintenance should be employed on all aspects of the construction/demolition works including all plant, vehicles, buildings and the equipment concerned with the control of emissions to air.
- Important management techniques for effective control of emissions include; proper management, supervision and training for process operations; proper use of equipment; effective preventative maintenance on all plant and equipment concerned with the control of emissions to the air; and it is good practice to ensure that spares and consumables are available at short notice in order to rectify breakdowns rapidly. This is important with respect to arrestment plant and other necessary environmental controls. It is useful to have an audited list of essential items.

7.2 Operational Phase Mitigation Measures

To address concentrations predicted above the NO₂ thresholds, NO_x filtration systems are recommended for any air intake vents that will be facing Tottenham Court Road and Bayley Street. They could also be considered on the façade facing Morwell Street due to concentrations being within 10% of the Air Quality Objectives. NO_x filtration systems and green infrastructure, such as the roof top gardens, are included within Camden's Clean Air Action Plan 2019-2022.

In addition to these measures, winter gardens (enclosed balconies) are recommended instead of open balconies due to the NO₂ exceedances predicted on the façade facing Tottenham Court Road. This will reduce exposure of residents to NO₂ within the development at all heights on the side facing Tottenham Court Road.

It should be noted that the commercial office areas are to be future proofed with natural ventilation apertures located behind screened louvres adjacent to the windows within each bay of the office areas from 1st floor level and above. These apertures will allow the commercial office space to operate a mixed mode ventilation and cooling strategy if improvements to the Tottenham Court Road air quality and noise allow in the future. Based on the modelling undertaken and presented in Table 21 even assuming worst-case assumptions, i.e. that there is no improvement in air quality between 2019 and 2024, the modelling at façade locations has demonstrated that while the annual mean AQS objective for NO₂ is predicted to be exceeded the concentration is below 60 µg/m³ indicating that the short-term AQS objective, which applies at offices etc, will not be exceeded. Air quality may already be acceptable to allow the office element of the development to operate in mixed mode.

This is further supported by the modelling presented in Table 22 which shows predicted concentrations in 2024 assuming that road vehicle emissions decrease in line with Defra estimates between 2019 and 2024 but that there is no improvement in background air quality. This assumption is still considered conservative given that LBCs monitoring in the Borough has shown decrease in both background and roadside NO₂ concentrations over the past 5 years. The results in Table 22 illustrates that the annual mean NO₂ objective of 40 µg/m³ is only marginally exceeded (maximum of 43.7 µg/m³) in 2024 when road emission improvement are considered.

8. Summary and Conclusions

This air quality assessment has been undertaken in order to assess the potential air quality impacts associated with the demolition and construction of the development at 247 Tottenham Court Road ('The Site') within the jurisdiction of the London Borough of Camden (LBC).

LBC has declared the entire Borough an Air Quality Management Area (AQMA) due to exceedances of the Air Quality Strategy (AQS) objective for annual mean NO₂ and daily mean objective for PM₁₀.

The results of the construction phase assessment indicate that, in the absence of mitigation, construction phase impacts associated with the Proposed Development, such as removal / demolition of existing structures, earthworks, construction and track-out, can be described as low to medium risk with regard to dust soiling, and negligible to low risk in terms of human health impacts. There are a range of mitigation measures which can be followed to reduce the nuisance and human-health impacts of the dust and PM₁₀ which, if effectively implemented, can reduce impacts to an insignificant level. Appropriate mitigation measures are set out in Table 20 and should be implemented through a Dust Management Plan or CEMP.

The operational impact of the Proposed Development on local air quality was assessed at 12 off-site receptor locations representing existing sensitive receptors. Predicted NO₂ concentrations are predicted to be above the annual mean air quality objective of 40 µg/m³ at all the receptors except for R6, R7 and R8 for both the Without and With Development operational traffic scenarios. Annual mean PM₁₀ and PM_{2.5} concentrations are predicted to be below the EU limit value of 40 µg/m³ and 25 µg/m³ respectively at all modelled receptors for both the Without and With Development operational traffic scenarios. Air quality impacts due to the Proposed Development at all existing receptor locations are predicted to be negligible, according to the EPUK/IAQM significance criteria. Overall, the Proposed Development operational traffic impacts on local air quality are considered to be not significant.

Thirteen additional receptors were modelled to represent the facades, balconies and terraces of the Proposed Development. PM₁₀ and PM_{2.5} concentrations are predicted to be below the annual mean AQS objective and EU limit value at all modelled receptors. The annual mean NO₂ objective is predicted to be exceeded at all receptors at ground floor, therefore any air flow intakes at ground level will need to consider NO_x filtration systems. Receptors P3, P4, P5 and P11 are predicted to exceed the annual mean NO₂ objective at all floors. Receptor P13 (Roof terrace) does not exceed the annual mean NO₂ objective at roof height and receptors P10 and P12 (large and small balconies facing northeast) and receptors P6 and P7 (large and small terraces facing northeast) do not exceed the objective at height.

Winter Gardens will be provided rather than balconies on the residential properties facing Tottenham Court Road (P5 and P11). If mechanical air intakes are to be located on the building façade facing Tottenham Court Road, then these will need to be fitted with NO_x filtration systems to protect internal air quality.

The Proposed Development does not contain an energy centre. The heating, cooling and hot water for the residential properties will be provided by air source heat pumps while heating/cooling for the office space will be via a central air source heat pump at roof level and hot water provided by a water source heat pump. The Proposed Development is, therefore, considered air quality neutral in terms of building emissions. Transport related emissions associated with the Proposed Development have been calculated in accordance with the Sustainable Design and Construction SPG (Ref 22). This has demonstrated that the Proposed Development's transport related emissions are significantly below the calculated emissions for a development of a similar size and land-use class (residential, office and retail). As such, the Proposed Development is considered to be air quality neutral.

It should be noted that the commercial office areas are to be future proofed with natural ventilation apertures located behind screened louvres adjacent to the windows within each bay of the office areas from 1st floor level and above. These apertures will allow the commercial office space to operate a mixed mode ventilation and cooling strategy if improvements to the Tottenham Court Road air quality and noise allow in the future. Based on the modelling undertaken and presented in Table 21 even assuming worst-case assumptions, i.e. that there is no improvement in air quality between 2019 and 2024, the modelling at façade locations has demonstrated that while the annual mean AQS objective for NO₂ is predicted to be exceeded the concentration is below 60 µg/m³ indicating that the short-term

AQS objective, which applies at offices etc, will not be exceeded. Air quality may already be acceptable to allow the office element of the development to operate in mixed mode.

This is further supported by the modelling presented in Table 22 which shows predicted concentrations in 2024 assuming that road vehicle emissions decrease in line with Defra estimates between 2019 and 2024 but that there is no improvement in background air quality. This assumption is still considered conservative given that LBCs monitoring in the Borough has shown decrease in both background and roadside NO₂ concentrations over the past 5 years. The results in Table 22 illustrates that the annual mean NO₂ objective of 40 µg/m³ is only marginally exceeded (maximum of 43.7 µg/m³) in 2024 when road emission improvement are considered.

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Appendix A - Figures

Figure 1: Wind Rose from London City Airport Meteorological Station, 2019

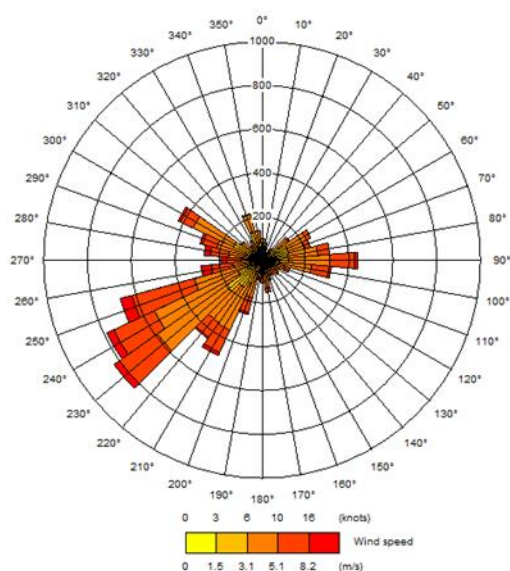


Figure 2: Air Quality Focus Areas

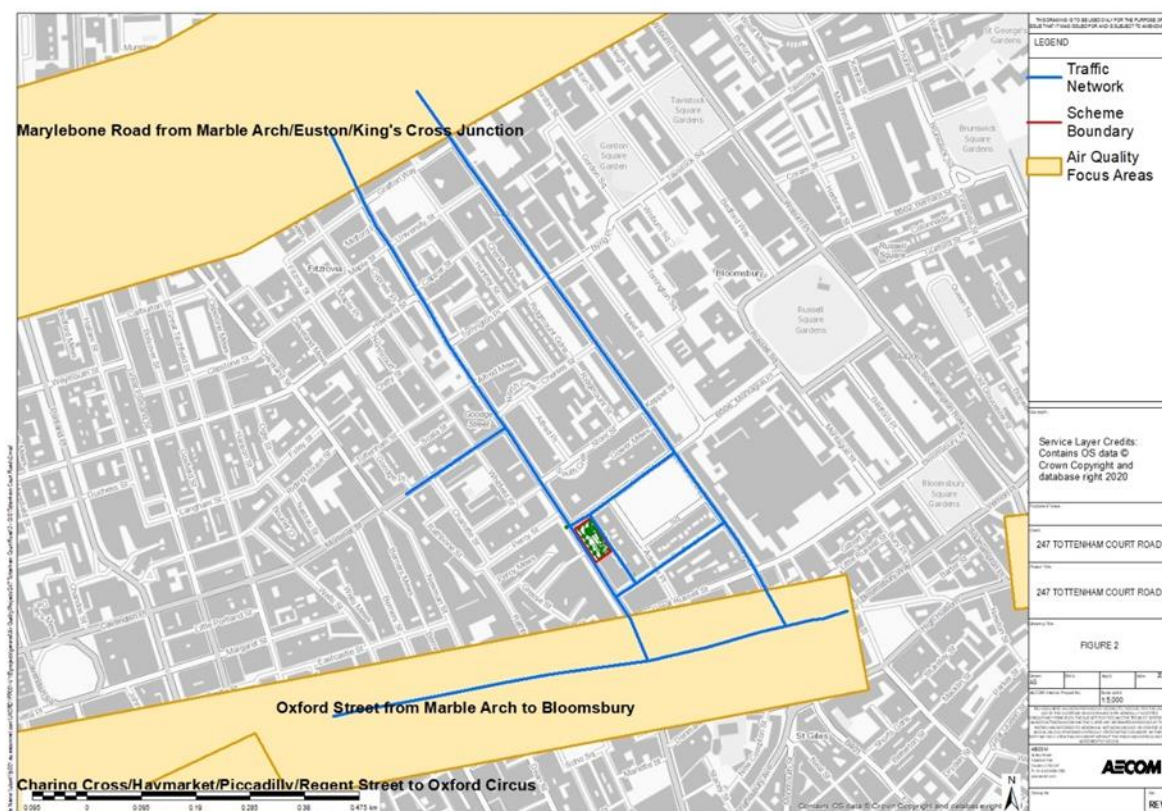


Figure 3: Modelled Road and Off-Site Receptors Locations



Figure 4: Modelled Road and Proposed On-site Receptors

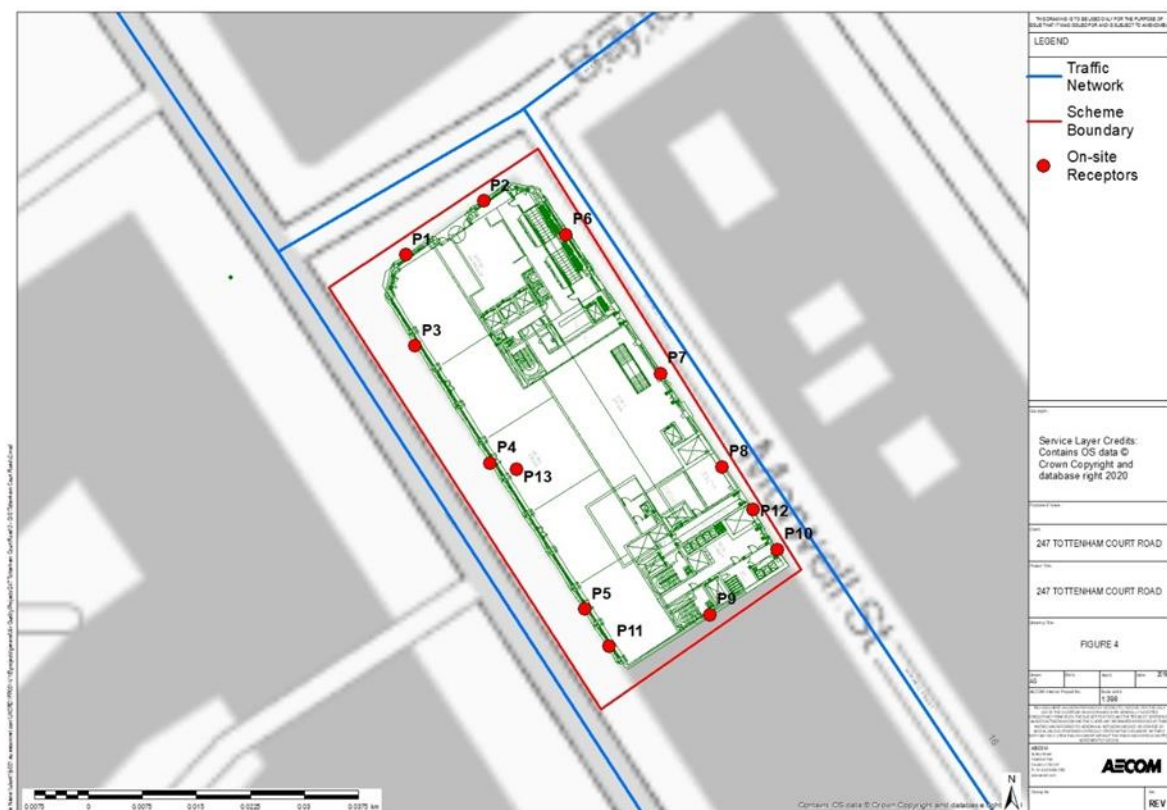


Figure 5: Model Verification - Modelled Roads and Monitoring Locations

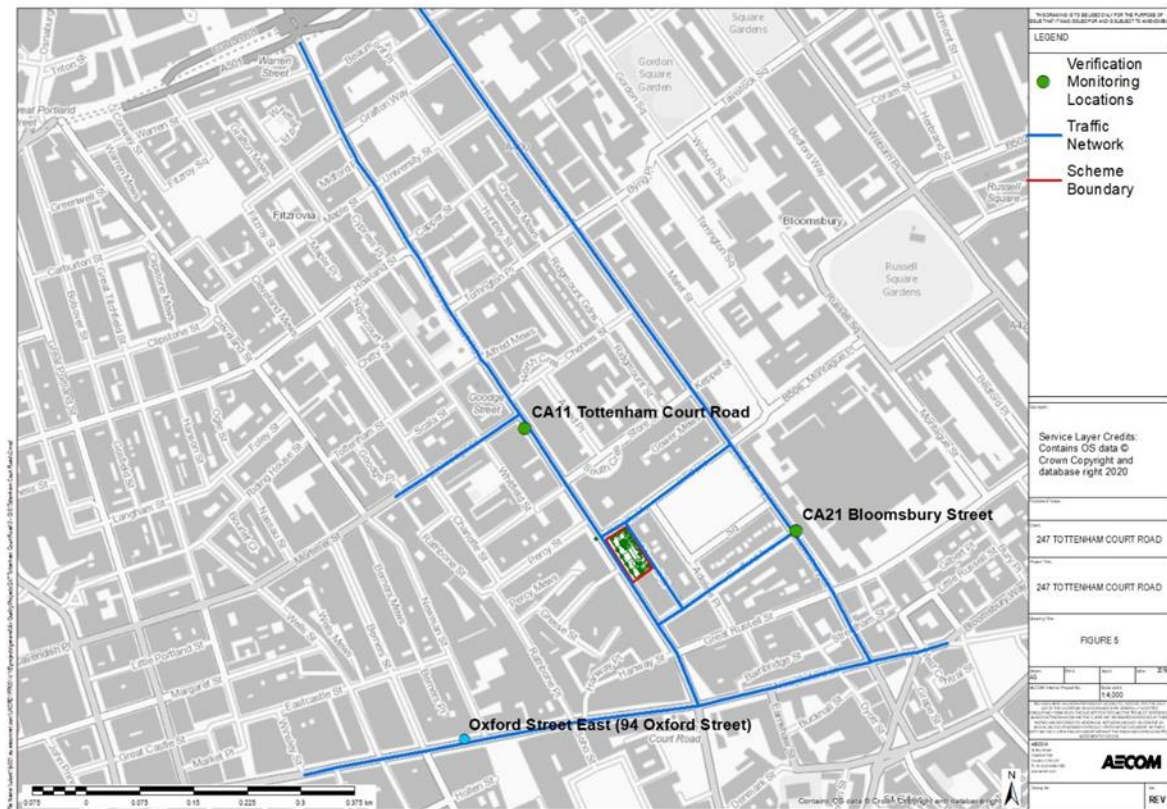


Figure 6: LBC Monitoring Locations

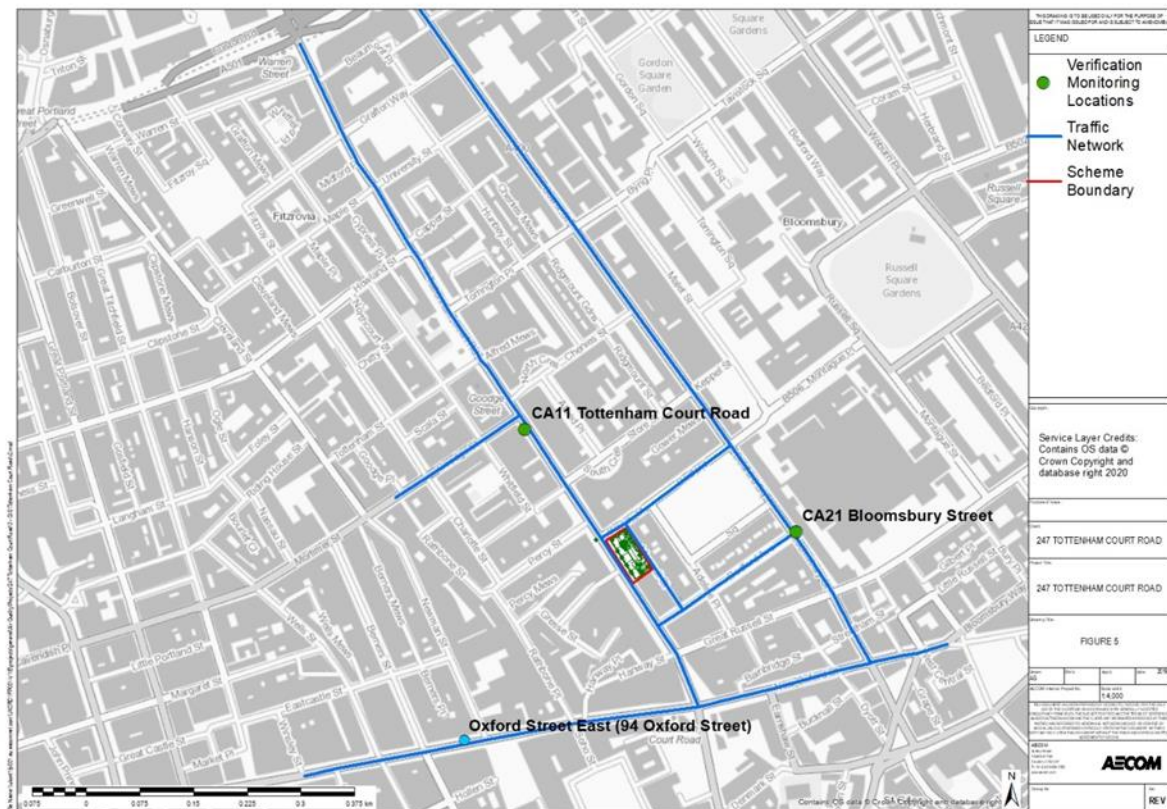


Figure 7: Change in NO₂ Concentrations Between Without and With ScenariosFigure 8: NO₂ Concentrations With Proposed Development at Receptor Locations

Appendix B - On-Site Receptor Results

Table 21: Onsite Receptor Results

Receptor name	X co-ordinate	Y co-ordinate	Height (m)	Annual Mean Concentrations (µg/m ³)		
				NO ₂	PM ₁₀	PM _{2.5}
P1a	529703	181616	1.5	42.0	20.1	14.1
P1b	529703	181616	5.65	40.1	19.7	14.1
P1c	529703	181616	9.15	38.9	19.5	14.4
P1d	529703	181616	12.65	38.3	19.4	14.2
P1e	529703	181616	16.15	38.1	19.3	13.2
P1f	529703	181616	19.65	37.9	19.3	13.1
P1g	529703	181616	23.15	37.8	19.3	13.2
P2a	529715	181623	1.5	40.3	19.8	13.1
P2b	529715	181623	5.65	39.6	19.6	14.1
P2c	529715	181623	9.15	38.9	19.5	13.2
P2d	529715	181623	12.65	38.4	19.4	13.5
P2e	529715	181623	16.15	38.1	19.4	13.2
P2f	529715	181623	19.65	38.0	19.3	13.4
P2g	529715	181623	23.15	37.8	19.3	13.2
P3a	529706	181601	1.5	47.6	21.3	13.1
P3b	529706	181601	5.65	47.4	21.2	13.0
P3c	529706	181601	9.15	47.2	21.2	13.0
P3d	529706	181601	12.65	47.0	21.1	13.0
P3e	529706	181601	16.15	46.8	21.1	13.0
P3f	529706	181601	19.65	46.7	21.1	13.2
P3g	529706	181601	23.15	46.7	21.0	13.2
P4a	529716	181586	1.5	47.1	21.1	13.1
P4b	529716	181586	5.65	47.0	21.1	13.0
P4c	529716	181586	9.15	46.9	21.1	13.0
P4d	529716	181586	12.65	46.7	21.1	13.0
P4e	529716	181586	16.15	46.6	21.0	13.0
P4f	529716	181586	19.65	46.5	21.0	14.1
P4g	529716	181586	23.15	46.4	21.0	14.0
P5a	529730	181565	1.5	47.2	21.2	14.0
P5b	529730	181565	5.65	47.1	21.1	14.0
P5c	529730	181565	9.15	46.9	21.1	14.0
P5d	529730	181565	12.65	46.8	21.1	14.0
P5e	529730	181565	16.15	46.7	21.1	13.9
P5f	529730	181565	19.65	46.6	21.0	14.0
P5g	529730	181565	23.15	46.5	21.0	14.0

Receptor name	X co-ordinate	Y co-ordinate	Height (m)	Annual Mean Concentrations (µg/m³)		
				NO ₂	PM ₁₀	PM _{2.5}
P6a	529728	181617	1.5	40.2	19.8	14.0
P6b	529728	181617	5.65	39.8	19.7	13.9
P6c	529728	181617	9.15	39.4	19.6	13.9
P6d	529728	181617	12.65	39.0	19.5	13.9
P6e	529728	181617	16.15	38.2	19.4	13.9
P6f	529728	181617	19.65	38.0	19.3	14.0
P6g	529728	181617	23.15	37.9	19.3	14.0
P7a	529741	181598	1.5	40.2	19.8	14.0
P7b	529741	181598	5.65	39.9	19.7	14.0
P7c	529741	181598	9.15	39.4	19.6	13.9
P7d	529741	181598	12.65	39.0	19.5	13.9
P7e	529741	181598	16.15	38.2	19.4	13.9
P7f	529741	181598	19.65	38.0	19.3	13.2
P7g	529741	181598	23.15	37.9	19.3	13.2
P8a	529749	181585	1.5	40.2	19.8	13.1
P8b	529749	181585	5.65	39.9	19.7	13.1
P8c	529749	181585	9.15	39.4	19.6	13.0
P8d	529749	181585	12.65	39.0	19.5	13.0
P8e	529749	181585	16.15	38.2	19.4	13.0
P8f	529749	181585	19.65	38.0	19.3	13.2
P8g	529749	181585	23.15	37.9	19.3	13.2
P9a	529746	181564	1.5	40.8	19.9	13.1
P9b	529746	181564	5.65	39.9	19.7	13.1
P9c	529746	181564	9.15	39.0	19.5	13.0
P9d	529746	181564	12.65	38.5	19.4	13.0
P9e	529746	181564	16.15	38.2	19.4	13.0
P9f	529746	181564	19.65	38.0	19.3	13.2
P9g	529746	181564	23.15	37.9	19.3	13.2
P10a	529757	181574	1.5	40.3	19.8	13.1
P10b	529757	181574	5.65	39.9	19.7	13.1
P10c	529757	181574	9.15	39.4	19.6	13.0
P10d	529757	181574	12.65	39.0	19.5	13.0
P10e	529757	181574	16.15	38.2	19.4	13.0
P10f	529757	181574	19.65	38.0	19.3	13.3
P10g	529757	181574	23.15	37.9	19.3	13.2
P11a	529733	181560	1.5	47.3	21.2	13.1
P11b	529733	181560	5.65	47.2	21.2	13.0
P11c	529733	181560	9.15	47.0	21.1	13.0

Receptor name	X co-ordinate	Y co-ordinate	Height (m)	Annual Mean Concentrations ($\mu\text{g}/\text{m}^3$)		
				NO ₂	PM ₁₀	PM _{2.5}
P11d	529733	181560	12.65	46.9	21.1	13.0
P11e	529733	181560	16.15	46.8	21.1	13.0
P11f	529733	181560	19.65	46.7	21.1	13.2
P11g	529733	181560	23.15	46.6	21.0	13.2
P12a	529753	181579	1.5	40.2	19.8	13.1
P12b	529753	181579	5.65	39.9	19.7	13.1
P12c	529753	181579	9.15	39.4	19.6	13.0
P12d	529753	181579	12.65	39.0	19.5	13.0
P12e	529753	181579	16.15	38.2	19.4	13.0
P12f	529753	181579	19.65	38.0	19.3	14.0
P12g	529753	181579	23.15	37.9	19.3	14.0
P13a	529723	181586	1.5	42.0	20.1	14.0
P13b	529723	181586	5.65	40.2	19.7	14.0
P13c	529723	181586	9.15	38.9	19.5	14.0
P13d	529723	181586	12.65	38.4	19.4	13.9
P13e	529723	181586	16.15	38.1	19.4	13.9
P13f	529723	181586	19.65	37.9	19.3	13.2
P13g	529723	181586	23.15	37.8	19.3	13.2
P13g	529723	181586	27.55	37.8	19.3	13.1

Numbers in bold show the concentrations exceeding the annual mean NO₂ and PM₁₀ AQS objective (40 $\mu\text{g}/\text{m}^3$) while values bold and underlined (equal to or greater than 60 $\mu\text{g}/\text{m}^3$) indicate potential exceedance of the short-term NO₂ AQS objective.

Appendix C - On-Site Receptor Results (Sensitivity Test using 2024 EFT Emission Rates)

As a sensitivity test to show the impact of predicted improvements in vehicle fleet emission rates, results have been presented below showing predicted annual mean concentrations at on site receptors using EFT v9.0 projections of emission rates, but keeping 2019 background concentrations, which still provides a conservative methodology, as background concentrations are expected to decrease in line with historical trends and projections of improvements to the vehicle fleet. Additionally, the EFT v9.0 is considered to be more realistic than previous versions of the toolkit, which often overestimated the rate of vehicle fleet improvements in relation to emissions, so the results based on this sensitivity test may be more realistic whilst still being conservative.

Table 22: Onsite Receptor Results (Sensitivity Test, using EFT 2024 Emission Rates)

Receptor name	X co-ordinate	Y co-ordinate	Height (m)	Annual Mean Concentrations (µg/m³)		
				NO ₂	PM ₁₀	PM _{2.5}
P1a	529703	181616	1.5	40.2	20.1	13.4
P1b	529703	181616	5.65	39.1	19.7	13.2
P1c	529703	181616	9.15	38.3	19.5	13.1
P1d	529703	181616	12.65	38.0	19.4	13.0
P1e	529703	181616	16.15	37.8	19.3	13.0
P1f	529703	181616	19.65	37.7	19.3	13.0
P1g	529703	181616	23.15	37.7	19.3	13.0
P2a	529715	181623	1.5	39.1	19.8	13.2
P2b	529715	181623	5.65	38.7	19.6	13.2
P2c	529715	181623	9.15	38.3	19.5	13.1
P2d	529715	181623	12.65	38.0	19.4	13.0
P2e	529715	181623	16.15	37.9	19.4	13.0
P2f	529715	181623	19.65	37.8	19.3	13.0
P2g	529715	181623	23.15	37.7	19.3	13.0
P3a	529706	181601	1.5	43.7	21.3	14.1
P3b	529706	181601	5.65	43.6	21.2	14.0
P3c	529706	181601	9.15	43.4	21.2	14.0
P3d	529706	181601	12.65	43.3	21.1	14.0
P3e	529706	181601	16.15	43.2	21.1	14.0
P3f	529706	181601	19.65	43.1	21.1	14.0
P3g	529706	181601	23.15	43.1	21.0	13.9
P4a	529716	181586	1.5	43.4	21.1	14.0
P4b	529716	181586	5.65	43.3	21.1	14.0
P4c	529716	181586	9.15	43.2	21.1	14.0
P4d	529716	181586	12.65	43.1	21.1	13.9
P4e	529716	181586	16.15	43.1	21.0	13.9
P4f	529716	181586	19.65	43.0	21.0	13.9
P4g	529716	181586	23.15	43.0	21.0	13.9

Receptor name	X co-ordinate	Y co-ordinate	Height (m)	Annual Mean Concentrations (µg/m³)		
				NO ₂	PM ₁₀	PM _{2.5}
P5a	529730	181565	1.5	43.4	21.2	14.0
P5b	529730	181565	5.65	43.4	21.1	14.0
P5c	529730	181565	9.15	43.3	21.1	14.0
P5d	529730	181565	12.65	43.2	21.1	14.0
P5e	529730	181565	16.15	43.1	21.1	13.9
P5f	529730	181565	19.65	43.1	21.0	13.9
P5g	529730	181565	23.15	43.0	21.0	13.9
P6a	529728	181617	1.5	39.1	19.8	13.2
P6b	529728	181617	5.65	38.9	19.7	13.2
P6c	529728	181617	9.15	38.6	19.6	13.1
P6d	529728	181617	12.65	38.4	19.5	13.1
P6e	529728	181617	16.15	37.9	19.4	13.0
P6f	529728	181617	19.65	37.8	19.3	13.0
P6g	529728	181617	23.15	37.7	19.3	13.0
P7a	529741	181598	1.5	39.2	19.8	13.2
P7b	529741	181598	5.65	38.9	19.7	13.2
P7c	529741	181598	9.15	38.6	19.6	13.1
P7d	529741	181598	12.65	38.4	19.5	13.1
P7e	529741	181598	16.15	37.9	19.4	13.0
P7f	529741	181598	19.65	37.8	19.3	13.0
P7g	529741	181598	23.15	37.7	19.3	13.0
P8a	529749	181585	1.5	39.2	19.8	13.2
P8b	529749	181585	5.65	38.9	19.7	13.2
P8c	529749	181585	9.15	38.6	19.6	13.1
P8d	529749	181585	12.65	38.4	19.5	13.1
P8e	529749	181585	16.15	37.9	19.4	13.0
P8f	529749	181585	19.65	37.8	19.3	13.0
P8g	529749	181585	23.15	37.7	19.3	13.0
P9a	529746	181564	1.5	39.5	19.9	13.3
P9b	529746	181564	5.65	38.9	19.7	13.2
P9c	529746	181564	9.15	38.4	19.5	13.1
P9d	529746	181564	12.65	38.1	19.4	13.0
P9e	529746	181564	16.15	37.9	19.4	13.0
P9f	529746	181564	19.65	37.8	19.3	13.0
P9g	529746	181564	23.15	37.7	19.3	13.0
P10a	529757	181574	1.5	39.2	19.8	13.2
P10b	529757	181574	5.65	38.9	19.7	13.2
P10c	529757	181574	9.15	38.7	19.6	13.1

Receptor name	X co-ordinate	Y co-ordinate	Height (m)	Annual Mean Concentrations ($\mu\text{g}/\text{m}^3$)		
				NO ₂	PM ₁₀	PM _{2.5}
P10d	529757	181574	12.65	38.4	19.5	13.1
P10e	529757	181574	16.15	37.9	19.4	13.0
P10f	529757	181574	19.65	37.8	19.3	13.0
P10g	529757	181574	23.15	37.7	19.3	13.0
P11a	529733	181560	1.5	43.5	21.2	14.0
P11b	529733	181560	5.65	43.4	21.2	14.0
P11c	529733	181560	9.15	43.3	21.1	14.0
P11d	529733	181560	12.65	43.3	21.1	14.0
P11e	529733	181560	16.15	43.2	21.1	14.0
P11f	529733	181560	19.65	43.1	21.1	13.9
P11g	529733	181560	23.15	43.1	21.0	13.9
P12a	529753	181579	1.5	39.2	19.8	13.2
P12b	529753	181579	5.65	38.9	19.7	13.2
P12c	529753	181579	9.15	38.7	19.6	13.1
P12d	529753	181579	12.65	38.4	19.5	13.1
P12e	529753	181579	16.15	37.9	19.4	13.0
P12f	529753	181579	19.65	37.8	19.3	13.0
P12g	529753	181579	23.15	37.7	19.3	13.0
P13a	529723	181586	1.5	40.2	20.1	13.4
P13b	529723	181586	5.65	39.1	19.7	13.2
P13c	529723	181586	9.15	38.3	19.5	13.1
P13d	529723	181586	12.65	38.0	19.4	13.0
P13e	529723	181586	16.15	37.8	19.4	13.0
P13f	529723	181586	19.65	37.7	19.3	13.0
P13g	529723	181586	23.15	37.7	19.3	13.0
P13g	529723	181586	27.55	37.6	19.3	13.0

Numbers in bold show the concentrations exceeding the annual mean NO₂ and PM₁₀ AQS objective (40 $\mu\text{g}/\text{m}^3$) while values bold and underlined (equal to or greater than 60 $\mu\text{g}/\text{m}^3$) indicate potential exceedance of the short-term NO₂ AQS objective.

