Construction Management Plan

pro forma v2.1

200 Gray's Inn Road

2012/6889/P

DRAFT - 02

Camden

Contents

Revisions & additional material

Please list all iterations here:

Date	Version	Produced by
04/04/15	01 - Draft	GTMS - AZ
20/04/15	02 - Draft	GTMS - AZ

Additional sheets

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

Appendix	Date	Description
A	04/04/16	Site Local Highway Plan
B	05/04/16	Logistics Plan Coley Street
B	05/04/16	Logistics Plan Gough Street
C	01/04/16	Environmental Noise Survey, 10-16 Elm Street
D	20/04/16	Noise Vibration Predictions
E	24/09/15	BS 5228-1 CPD certificate

Introduction

The purpose of the **Construction Management Plan (CMP)** is to help developers to minimise construction impacts, and relates to both on site activity and the transport arrangements for vehicles servicing the site.

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 kind 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 Transport for London's (TfL's Standard for Construction Logistics and Cyclist Safety (**CLOCS**) scheme) and Camden's Minimum Requirements for Building Construction **(CMRBC)**.

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 in relation to the construction of the development. 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 for 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.**"

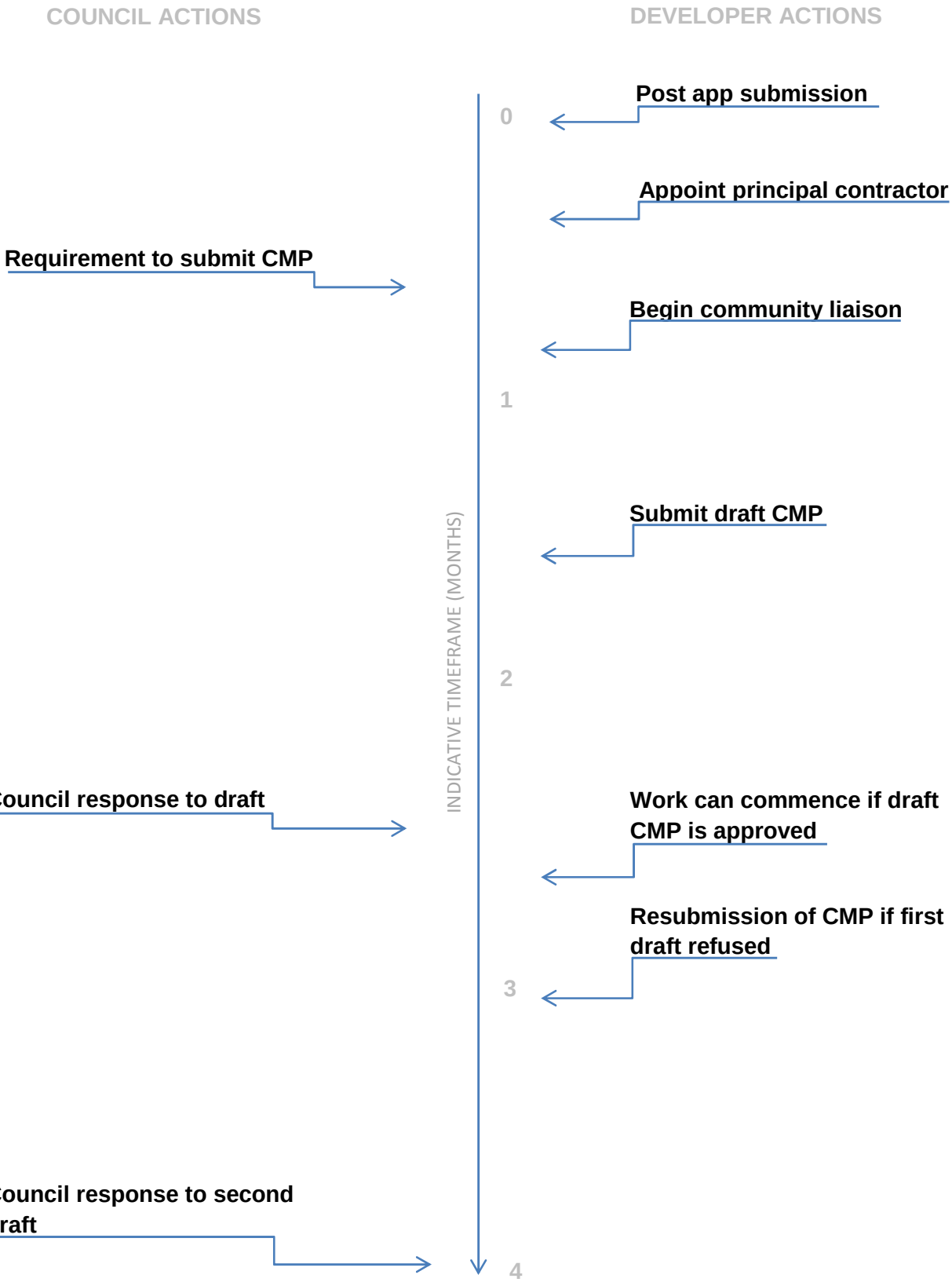
Please complete the questions below with additional sheets, drawings and plans as required. The boxes will expand to accommodate the information provided, so please provide as much information as is necessary. **It is preferable if this document, and all additional documents, are completed electronically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

Please notify that council when you intend to start work on site. Please also notify the council when works are approximately **3 months from completion.**

(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.

Timeframe


COUNCIL ACTIONS
DEVELOPER ACTIONS
Post app submission
0
Appoint principal contractor
Requirement to submit CMP
Begin community liaison
1
Submit draft CMP
INDICATIVE TIMEFRAME (MONTHS)
2
Council response to draft
Work can commence if draft CMP is approved
Resubmission of CMP if first draft refused
3
Council response to second draft
4

Contact

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

Address: 200 Gray's Inn Road, London, WC1X 8XZ

Planning ref: 2012/6889/P

Type of CMP - Section 106 planning obligation

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

Name: Jon Kirkham

Address: Gardiner and Theobald LLP, 10 South Crescent London, WC1E 4BD

Email: J.Kirkham@Gardiner.com

Phone: 020 7209 3000

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: As above

Address:

Email:

Phone:

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: To be confirmed. We expect to appoint the Primary Contractor by the end of May 2016.

Address:

Email:

Phone:

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: To be confirmed.

Address:

Email:

Phone:

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 200 Gray's Inn Road property sits between Gray's Inn Road, (front), Gough St, (rear), Coley St, (north side of the building), Elm St, (South side of the building). The development proposes the refurbishment of the existing reception including works to the façade and alterations to levels.

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 project involves the strip out and refurbishment of part of the ground floor and first floor at 200 Gray's Inn Road, (approximately 15,000 square ft.), including the installation of a new glazed front façade and general finishing works to the building entrance as well as the removal of the existing planter at the front of the building and the removal of a section of stone flooring to bring the entrance down level with the pavement.

The main issues have been identified to be:

- Management of site traffic and deliveries
- Protection of pedestrian walkways/crossings
- Management of the building occupants
- Dust from construction activities
- Proximity to Commercial and Residential properties

8. 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.).

<u>Properties on Gray's Inn Road</u>

- 222 Gray's Inn Road
- Charles Darwin House 2, 107 Gray's Inn Road
- Fanz House, 99 Gray's In Road
- 95 – 97 Gray's Inn Road
- 91 – 93 Gray's Inn Road
- 85 Gray's Inn Road
- Churston Mansions, 186 Gray's Inn Road
- 190 – 188 Gray's Inn Road
- 79 – 81 Gray's Inn Road
- Medical Practice – 77 Gray's Inn Road

<u>Other local/Community</u>

- City Academy Dance school
- Christopher Hatton Primary School, 38 Laystall Street
- 1A Children's Centre, 1A Rosebery Avenue

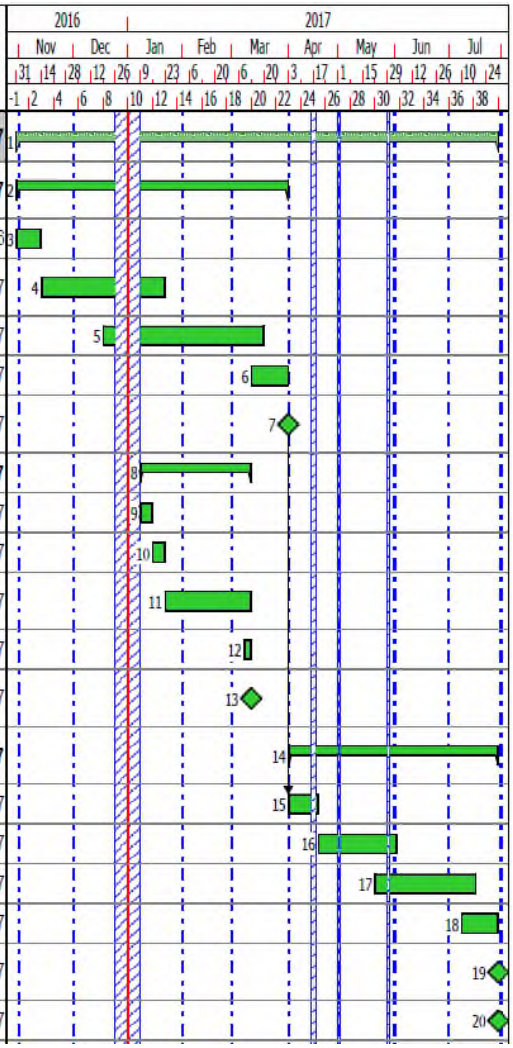
9. Please provide a scaled plan detailing the local highway network layout in the vicinity of the site. This should include details of on-street parking bay locations, cycle lanes, footway extents and proposed site access locations.

Please see appendix A showing local highway network and proposed site access locations.

10. 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).

The proposed development period between 31st October 2016 and the 31st July 2017 is 36 weeks. Please see proposed programme below.

Line	Name	Duration	Start	Finish
1	**CONSTRUCTION PERIOD**	**36w 1d**	**31/10/2016**	**31/07/2017**
2	**PHASE 1 - GROUND AND FIRST FLOOR**	**20w**	**31/10/2016**	**03/04/2017**
3	SITE SEGREGATION	2w	31/10/2016	11/11/2016
4	STRIP OUT WORKS INCLDUING STRUCTURAL DEMOLITION	8w	14/11/2016	20/01/2017
5	CONSTRUCTION WORKS	11w	19/12/2016	17/03/2017
6	COMMISSIONING WORKS	3w	13/03/2017	31/03/2017
7	SECTIONAL COMPLETION OF PHASE 1		03/04/2017	03/04/2017
8	**PHASE 2**	**9w**	**09/01/2017**	**13/03/2017**
9	SITE SEGREGATION	1w	09/01/2017	13/01/2017
10	STRIP OUT WORKS	1w	16/01/2017	20/01/2017
11	CONSTRUCTION WORKS INCLDING SCAFFOLD INSTALLATION	7w	23/01/2017	10/03/2017
12	COMMISSIONING WORKS	3d	08/03/2017	10/03/2017
13	SECTIONAL COMPLETION OF PHASE 2		13/03/2017	13/03/2017
14	**PHASE 3 - GROUND AND FIRST FLOOR**	**16w 1d**	**03/04/2017**	**31/07/2017**
15	SITE SEGREGATION	2w	03/04/2017	18/04/2017
16	STRIP OUT WORKS	6w	19/04/2017	01/06/2017
17	CONSTRUCTION WORKS	8w	22/05/2017	17/07/2017
18	COMMISSIONING WORKS	3w	10/07/2017	28/07/2017
19	SECTIONAL COMPLETION OF PHASE 3		31/07/2017	31/07/2017
20	PRACTICAL COMPLETION		31/07/2017	31/07/2017



11. 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

Although the regular site opening hours will be between 08:00 and 17:00, vehicles will only make deliveries after 09:30 and before 15:00 to avoid the times associated with local school opening and closing times. We also believe that this will minimise the impact of traffic during the rush hour periods.

12. 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.

All services alterations will take place within the site demise. No statutory services are affected by the development works.

Community Liaison

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

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 should consider establishing contact with other sites in the vicinity in order to manage traffic routeing and volumes. Developers in the Tottenham Court Road area have done this to great effect.

The Council can advise on this if necessary.

13. 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. Details of meetings including minutes, lists of attendees etc. must be included.

In response to the comments received, the CMP should then be amended where appropriate and, where not appropriate, a reason should be 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.

The developer has an relationship with the local community having completed a number of projects within at Elm House, 214 Gray's In Road and 200 Gray's Inn Road over the past 3 years and would look to maintain and improve relationships at all phases of these proposed works.

The contractor will continue the consultation on a regular basis and hold a residents meeting prior to commencement of works.

The developer and contractor will communicate the contents of the construction management plan to local residents and businesses via a mail drop to include an open cover letter summarising the outline plans. In addition, they will provide monthly updates in the form of a newsletter which again would be mail dropped and emailed to local businesses and residents.

14. Construction Working Group

Please provide details of community liaison proposals including any Construction Working Group that will be set up, addressing the concerns of the community affected by the works, the way in which the contact details of the person responsible for community liaison 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.

The contractor will appoint a community liaison manager in charge of neighbourly and community consultation. Communication will be via a mail drop to include an open cover letter summarising the outline plans. In addition, we will provide fortnightly updates in the form of a newsletter which again would be mail dropped and emailed to local businesses and residents

15. Schemes

Please provide details of any schemes such as the 'Considerate Constructors Scheme', such details should form part of the consultation and be notified to the Council. Contractors will also be required to follow the "Guide for Contractors Working in Camden" also referred to as "Camden's Considerate Contractors Manual".

The contractor will sign up to the Considerate Constructors Scheme as part of this project and each of our subcontractors and suppliers will be expected to follow and promote the requirements and values promoted under this scheme. They will also confirm that they will closely follow the 'Camden Considerate Contractors Manual'.

16. 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.

There are no other building projects in the immediate vicinity to 200 Gray's Inn Road. The closest building sites are on:

- Guildford Street
- Charterhouse Street
- Great Ormond Street

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 the council to ensure compliance. Please refer to the CLOCS Standard when completing this section. Guidance material which details CLOCS requirements can be accessed here, details of the monitoring process are available here.

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

Please refer to the CLOCS Overview and Monitoring Overview documents referenced above which give a breakdown of requirements.

CLOCS Considerations

17. Name of Principal contractor:

To be confirmed

18. Please submit the proposed method for checking operational, vehicle and driver compliance with the CLOCS Standard throughout the duration of the contract (please refer to our CLOCS Overview document in the appendix and CLOCS Standard point 3.4.7).

The contractor will ensure that any sub-contractors or suppliers operating HGV's close to site would met all of the following conditions:

a. Operators will be a member of TFL's Fleet Operator Recognition Scheme or similar at Bronze level.

b. All drivers must have undertaken cycle awareness training such as safe urban driver module through FORS or similar.

c. All Vehicles associated with the project must:

i. Have Side guards fitted, unless it can be demonstrated to the reasonable satisfaction of the Employer, that the lorry will not perform the function, for which it was built, if side guards were fitted.

ii. Have a close proximity warning system fitted comprising of a front mounted, rear facing CCTV camera, (or a Frensel Lens where this provides a reliable alternative, a close proximity sensor, an in-cab warning devise, (visible or audible), and an external warning devise to make the road user in close proximity aware of the drivers planned manoeuvre.

iii. Have a glass VI mirror

iv. Bear prominent signage on the rear of the vehicle to warn cyclists of the dangers of passing the vehicle on the inside.

19. 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. Please sign-up to join the CLOCS Community to receive up to date information on the standard by expressing an interest online.

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

Contractors contact to be confirmed.

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

Site Traffic

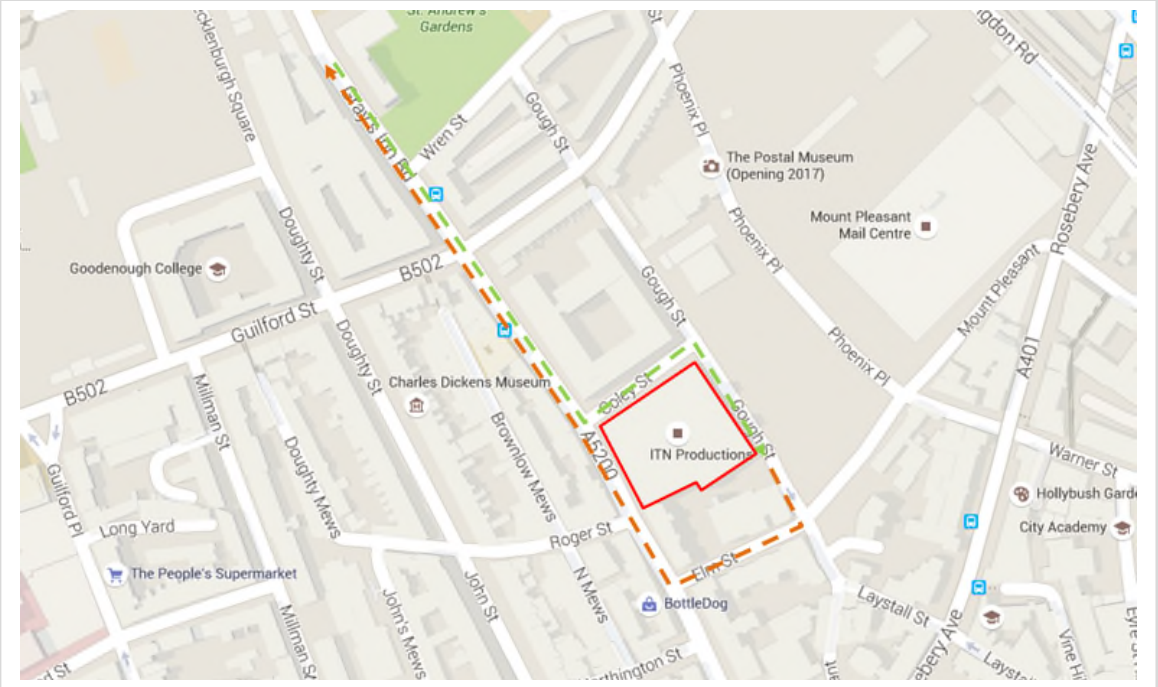
Sections below shown in blue directly reference the CLOCS Standard requirements. The CLOCS Standard should be read in conjunction with this section.

20. 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, public buildings, museums etc. Where appropriate, on routes that use high risk junctions (i.e. those that attract high volumes of cycling traffic) installing Trixi mirrors to aid driver visibility should be considered.

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.

a. Please indicate routes on a drawing or diagram showing the public highway network in the vicinity of the site including details of links to the Transport for London Road Network (TLRN).



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

The contractor will ensure that all workers, suppliers and sub-contractors will be briefed on appointment. Where possible compliance with this CMS will be included in contract documents, all project appointment briefings and site inductions.

21. 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 are generally acceptable between 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 between 9.30am and 3pm on weekdays during term time. (Refer to the *Guide for Contractors Working in Camden*).

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**.** Consideration should be given to the location of any necessary holding areas for large sites with high volumes of traffic. Vehicles must not wait 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.

a. Please provide details of the typical sizes of all vehicles and the approximate frequency and times of day when they will need access to the site, for each phase of construction. You should estimate the average daily number of vehicles during each major phase of the work, including their dwell time at the site. High numbers of vehicles per day and/or long dwell times may require vehicle holding procedures.

Typically delivery vehicles will vary in size but most will be small vans to long wheel based transit vans. Some lighting and mechanical plant will be delivered using a 7.5 tonne lorry. The Façade framework and glazing will most likely be delivered using an articulated lorry. We would also look to use a standard sized compactor vehicle to collect our waste from site. We would expect an average of 6-10 deliveries a week and as detailed in section C, we would ensure they arrive between the hours of 09:30 and 15:00. The larger deliveries associated with the glazing would be programmed to happen on a Saturday from approximately 08:00 when the building is largely unoccupied and there are far fewer pedestrians. We anticipate that the glazed façade would be split over approximately 4-5 deliveries. As such, we believe that the deliveries planned for 200 Grays Inn Road will have a negligible effect on the congestion to the surrounding roads and will certainly ensure that traffic associated with this project is kept well within the capacity of the surrounding highway infrastructure.

b. Please provide details of other developments in the local area or on the route.

The proposed route takes delivery vehicles along Euston Road the turn onto the A501. There are no current restrictions or developments on either the A501 or the A5200. The size and type of construction & delivery vehicles proposed will have minimal impact on additional traffic and disruption.

c. Please outline the system that is to be used to ensure that the correct vehicle attends the correct part of site at the correct time.

The Primary Contractor will be responsible for the management of deliveries and advise all contractors that no parking will be provided within the loading bay at 200 Gray's Inn Road for operatives involved with the works in line with the protocol of building management. Arrangements for off-site parking and bussing in of the operatives will be the responsibility of the contractor.

d. Please identify the locations of any off-site holding areas (an appropriate location outside the borough may need to be identified, particularly if a large number of delivery vehicles are expected) and any measures that will be taken to ensure the prompt admission of vehicles to site in light of time required for any vehicle/driver compliance checks. Please refer to question 24 if any parking bay suspensions will be required for the holding area.

We do not foresee the requirement for any off site holding areas.

e. Please provide details of any other measures designed to reduce the impact of associated traffic (such as the use of construction material consolidation centres).

We do not foresee the requirement for any construction material consolidation centres.

22. 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)

Vehicles entering and leaving the site should be carefully managed, using gates that are clearly marked and free from obstacles. Traffic Marshalls must ensure the safe passage of pedestrians, cyclists and other traffic when vehicles are entering and leaving site, particularly if reversing.

a. Please detail the proposed access and egress routes to and from the site

From the vehicle drop off point on Gough St. deliveries will then enter the building via the loading bay and come into the site demise via the goods lift. The deliveries associated with the glazing, will be dropped off at the proposed delivery drop off point on Coley St. From there they will be taken round the corner to the site entrance within the proposed site hoarding. The provision of the Coley St. drop off point is based upon the suspension of the parking space and 'solo motorcycles' bay adjacent what will be the site entrance:

Please refer to Appendix A for a marked up plan showing the proposed delivery drop off point for both Gough St. and Coley St.

b. Please describe how the access and egress arrangements for construction vehicles will be managed.

The site deliveries and access will be managed by the Primary Contractors site manager. Delivery times will be specified and allocated according to the programme of works and will be strictly enforced.

c. Please provide swept path drawings for any tight manoeuvres on vehicle routes to and from the site including proposed access and egress arrangements at the site boundary (if necessary).

Not applicable.

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.

As delivery and personal vehicles will be unable to access the site wheel washing facilities will be isolated to checks upon departure of the site vicinity and clean as necessary. It should be noted that nature of the development involves minimal demolition and no excavation of open ground.

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

If this is not possible, 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 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 loading is to take place off site, please identify where this is due to take place and outline the measures you will take to ensure that loading/unloading is carried out safely. Please outline in question 24 if any parking bay suspensions will be required.

The loading and offloading of materials and removal of waste will primary occur of the highway off Gough Street. For the installation of the glazed façade the contractor will temporary suspend the car parking space and bike spaces on Coley Street (pictured below). Please see appendix B, logistics plans.

Highway interventions

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.

24. Parking bay suspensions and temporary traffic orders

Please note, parking bay suspensions should only be requested where absolutely necessary. Parking bay suspensions are permitted for a maximum of 6 months, requirement of exclusive access to a bay for longer than 6 months you will be required to obtain Temporary Traffic Order (TTO) for which there is a separate cost.

Please provide details of any proposed parking bay suspensions and TTO's which would be required to facilitate construction. **Building materials and equipment must not cause obstructions on the highway as per your Considerate Contractors obligations unless the requisite permissions are secured.**

Information regarding parking suspensions can be found here.

> The provision of the Coley St. drop off point is based upon the suspension of the parking space and 'solo motorcycles' bay adjacent what will be the site entrance. The programme and duration of the suspension will be confirmed by the Primary Contractor.

25. Scaled drawings of highway works

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. You must submit a detailed (to-scale) plan showing the impact on the public highway that includes the extent of any hoarding, pedestrian routes, parking bay suspensions and remaining road width for vehicle movements. 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 accurate scaled drawings of any highway works necessary to enable construction to take place (e.g. construction of temporary vehicular accesses).

No Highway works required.

b. Please provide details of all safety signage, barriers and accessibility measures such as ramps and lighting etc.

No Highway works required.

26. Diversions

Where applicable, please supply details of any diversion, disruption or other anticipated use of the public highway during the construction period (alternatively a plan may be submitted).

No diversions are foreseen for the development works.

27. VRU and pedestrian diversions, scaffolding and hoarding

Pedestrians and/or cyclist 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 ramping 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. 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. Please provide details describing how pedestrian and cyclist safety will be maintained, including any proposed alternative routes (if necessary), and any Traffic Marshall arrangements.

A hording will be erected on the site boundary to completely enclose the site. In this way the pedestrians on the streets around the development will not be affected. There are no above ground floor works adjacent the highway. For the deliveries and site access points the contractor will manage using a Traffic Marshall and any necessary banksmen required.

b. Please provide details of any temporary structures which would overhang the public highway (e.g. scaffolding, gantries, cranes etc.) and details of hoarding requirements or any other occupation of the public highway.

No temporary structures to overhang the public highway.

SYMBOL IS FOR INTERNAL USE

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.

The scope of works includes the breaking out of the existing external ground floor stone clad barriers, facade upstands and planters, and the removal and extension of sections of the ground, mezz and ground floor, most of which is within the existing building façade (these are the structural demolitions identified in question 10) . These together with the lowering of the existing ground floor reception slab and formation of new at a different level will constituent the major items of noisy works. In addition there will be some noisy works associated with the refit out of the ground floor reception area.

Removal of External Barriers and Upstands

These RC structure will be removed by horizontal drilling of the non-structural upstand and bursting the concrete structure, this will then be removed in section and the steel reinforcing cut using an angle grinder.

The area will be enclosed within a 2.4m high sound reducing hoarding for its full length within the demise of the existing building

Alterations to Existing Ground, Mezz and First Floor slabs

In the main these works will be carried out within the enclosed building demise, as such and in order to minimize disruption to the public and building users all works will be carried within acoustic enclosures and where possible none vibrational catting and drilling methods will be employed to minimize noise and vibration transfer.

All noisy works will be carried between 08.00am – 19.00pm, Monday-Friday 08.00-13.00 Saturday

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.

The client carried out a noise survey connected to a neighbouring site in July 2015, this will be updated for the proposed development prior to commencement on site in the coming months. Please see appendix C.

30. Please provide predictions for noise and vibration levels throughout the proposed works.

Predicted noise activities have been identified as the following:

- Concrete deliveries
- Diamond Drilling
- Floor Saw Cutting
- Angle Grinding

The noise level prediction calculations are included in appendix D.

The project requires the localised breaking out of the existing concrete structure. Where this is required best practice will be used including:

- Where suitable using cutting rather than breaking
- Dust control measures
- Acoustic barriers and enclosures

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.

The majority of works to the slabs are internal and are not expected to be audible beyond the façade. However the work for the removal of the external stone clad barriers will be enclosed within an acoustic hoarding. The following measures will be put in place to prevent noise and vibration disturbance from site activities.

- All Site personnel will be instructed to be mindful of noise and neighbours, when entering and leaving site, unloading deliveries, and if working externally (e.g. the roof or the front entrance). Signage and patrols will reinforce this policy.
- Where possible none vibrational catting and drilling methods will be employed to minimize noise and vibration transfer.
- A manager will be assigned to liaise with both the building users and
- Sound reducing material will be fixed to the existing glazed facades to reduce noise from cutting works and these works will be carried out behind an acoustic hoarding
- The breaking out of the entrance steps will require machinery and produce considerable noise. A sound reducing hoarding 3m high will be erected to shield the works. (a hoarding licence has been applied for separately)
- A sound reducing temporary hoarding will be erected around the works zone.
- All contractors/sub-contractors will demonstrate and undertake best working practices to avoid exceeding noise or vibration limits. Where no limits are specified all works will aim to reduce noise and vibration to its lowest level.
- All equipment shall be modern, quiet and well-maintained (all equipment must comply with the EC Directives and UK Regulations set out in BS 5228-1:2009).
- Weekly contractors meetings with previous week's performance regarding noise to be discussed.
- Static noise creating plant to be placed at locations furthest from noise receptors.
- The project will have an appointed Community Relations officer (also the Construction Manager).
- An email and a "hotline" for neighbours to contact Site will be available on the Site Hoarding Notice Board.
- Newsletters on progress and upcoming works will be distributed as necessary.
- Regular communication also takes place with the FM of our ITV and neighbours. Any potentially disruptive woks will be scheduled around their filming schedule.
- Newsletter to be positioned on hoarding, indicating progress, milestones and other key topics; and the site will also be registered to the Considerate Contractors Scheme scores and contact details displayed prominently on site hoardings.

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

Please see certificate provided for evidence in appendix E.

33. Please provide details on how dust nuisance arising from dusty activities, on site, will be prevented.

All cutting and sawing works will be carried out using wet methods to minimize the emission of dust, where this proves impractical local filtered extraction will be provided.

As dust nuisance occurs more readily during prolonged periods of dry weather and especially in strong winds. The contractor will put a process in place in order to have the ability to respond quickly to such conditions by employing such techniques local monitoring as and when any dust works take place, damping down (i.e. using a spray hose to deliver a fine spray) and bagging of materials.

The site will be enclosed on the line of the building elevation by timber hoarding and suitable screening to entirely separate the site and the external pavement and highway.

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.

The contractor will use all reasonably practical measures avoid the deposition of dust / dirt outside of the site boundaries. We would ensure that the routes between the material drop off points and the site / loading bay, would be cleaned following any deliveries after which debris / dust / dirt are left on the pavement and road. The cleaning would be done using a pressure washer and the area in question would be barriered off using 'chapter 8' barriers during the cleaning process. Furthermore, during the construction works we would make use of tools that utilise a dedicated hoover extract to minimise the dust at source, (orbital sanders / skill saws etc). In addition we would use 'dust cubes' as a measure of keeping the quality of air within the construction site as high as possible.

35. Please provide details describing arrangements for monitoring of noise, vibration and dust levels.

Continuous noise monitoring will be in place for the duration of the project during working hours.

Monitoring will commence 1 wk prior to starting any site works to assist in confirming the background noise levels and setting an alert level.

Dust monitoring will be carried as and when any dusty works are in progress, we do not envisage any vibrational nuisance associated with these works

36. Please confirm that a Risk Assessment has been undertaken at planning application stage in line with the GLA's Control of Dust and Emissions Supplementary Planning Guidance (SPG), and the risk level that has been identified, with evidence. Please attach the risk assessment as an appendix if not completed at the planning application stage.

A Risk assessment was not required at planning application stage due to the size, value and nature of the proposed works will which will have minimal to no dust emissions/ pollution to the surrounding environment.

The contractor will comply with the council's guidelines for minimal requirements for construction sites.

The contractor has proposed mitigation measures, question 33, to ensure that any dust emissions that do escape the site demise are mitigated.

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

Please see question 36.

38. If the site is a 'High Risk Site', 4 real time dust monitors will be required. If the site is a 'Medium Risk Site', 2 real time dust monitors will be required. The risk assessment must take account of proximity to sensitive receptors (e.g. schools, care homes etc), as detailed in the SPG. Please confirm the location, number and specification of the monitors in line with the SPG and confirm that these will be installed 3 months prior to the commencement of works, and that real time data and quarterly reports will be provided to the Council detailing any exceedances of the threshold and measures that were implemented to address these.

Please see question 36.

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 building is occupied and has a preventative management solution for rodents and vermin. Should the contractor identify that further measures are required they will seek to expand the current measures proportionally.

We do not envisage that the proposed works will involve any alteration or connection to the existing system drainage system, but if this does occur all pipework and drainage will be suitably capped off or if redundant removed to the most suitable point.

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

There is an existing asbestos management survey available for the building. This will be upgraded to a Refurbishment and Demolition survey prior to commencement on site.

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.

Due to the sensitivity of the buildings activity and the neighbouring area all contractors and workers will be briefed on acceptable site conduct upon induction. The contractor will assign a suitable location for site welfare and smoking area.

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.

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 provide evidence to demonstrate 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:

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.

Please notify that council when you intend to start work on site. Please also notify the council when works are approximately 3 months from completion.

Signed: ……

Date: ……..

Print Name: …….

Position: ……

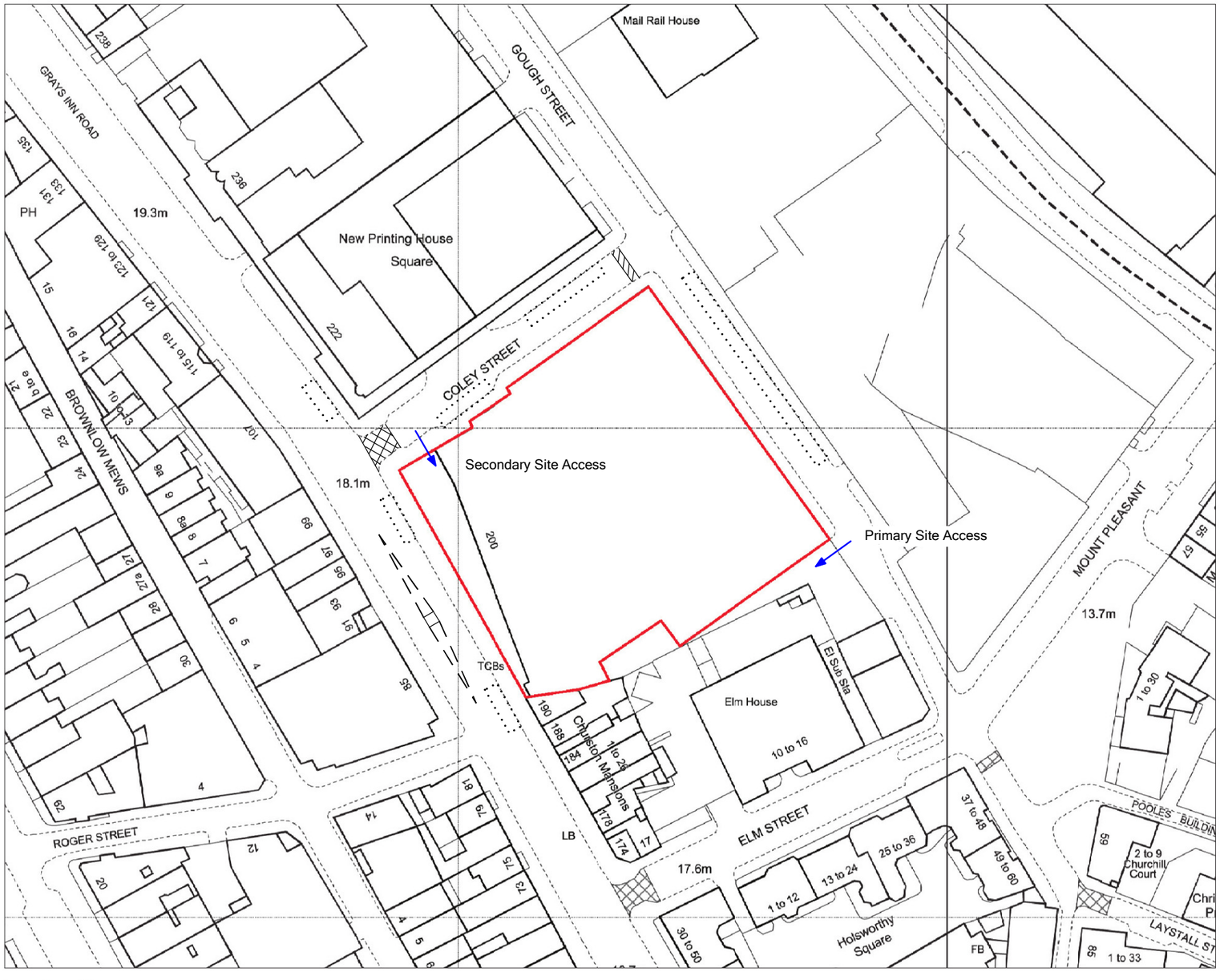
Please submit to: planningobligations@camden.gov.uk

End of form.

Appendices

Appendix A

Site Local Highway Plan



Location Plan

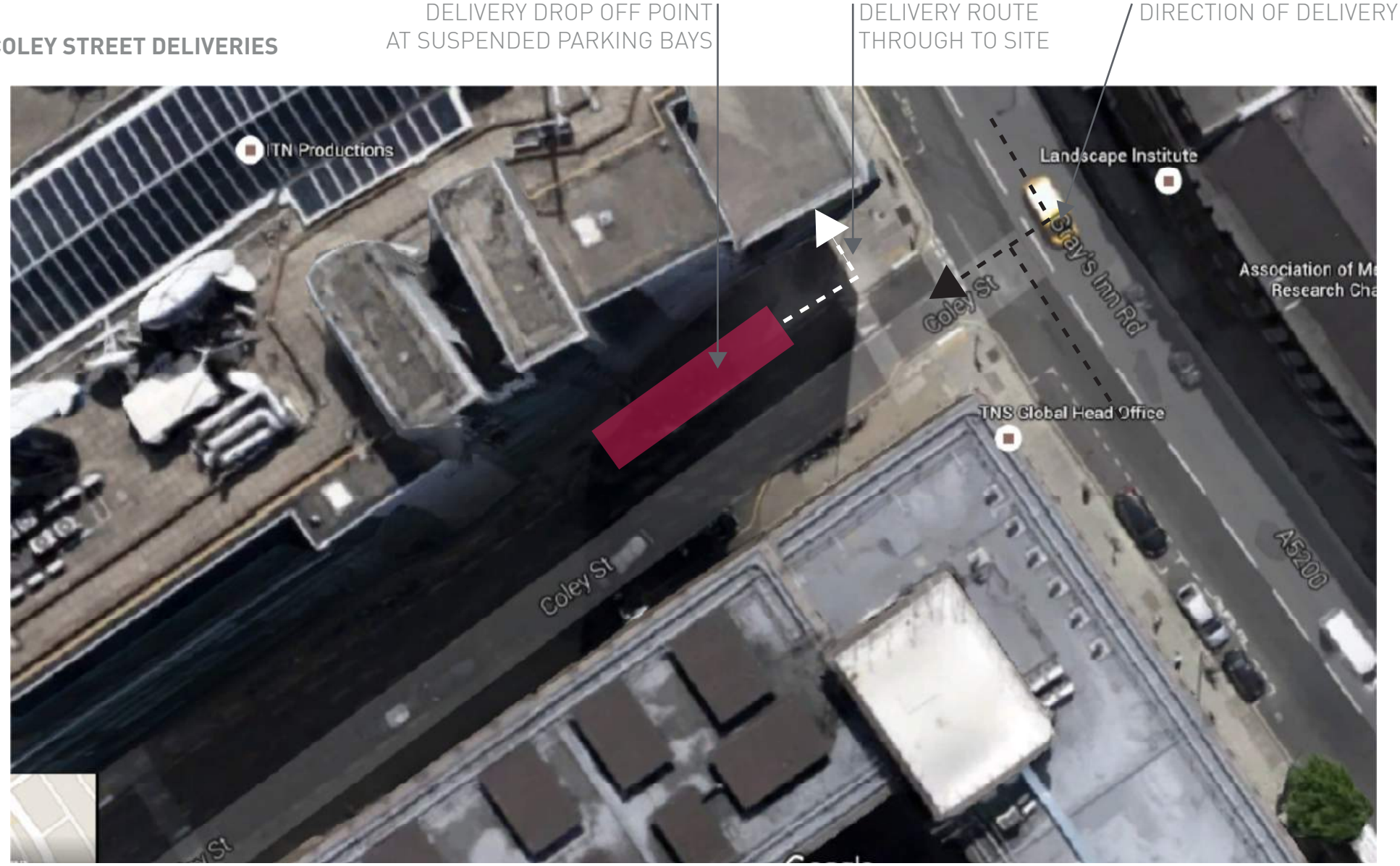
note	key	rev	description	date				drawn by
North 01 Do not scale from this drawing 02 All dimensions to be checked on site by the contractor, such dimensions to be his responsibility 03 Report all drawing errors, omissions & discrepancies to the architect.			Issued for Planning	07.12.12		info@ianmcardlearchitects.com t: 07557 209 395		
		A				job title 200 Gray's Inn Road	status PLANNING	scale 1:1250 @ A3	checked by
		B							
		C				drawing title / location Site Local Highways Plan	project number 11-11	drawing number 00	revision -
		D							

Appendix B

Logistics Plan Coley Street

DELIVERY PLAN

COLEY STREET DELIVERIES

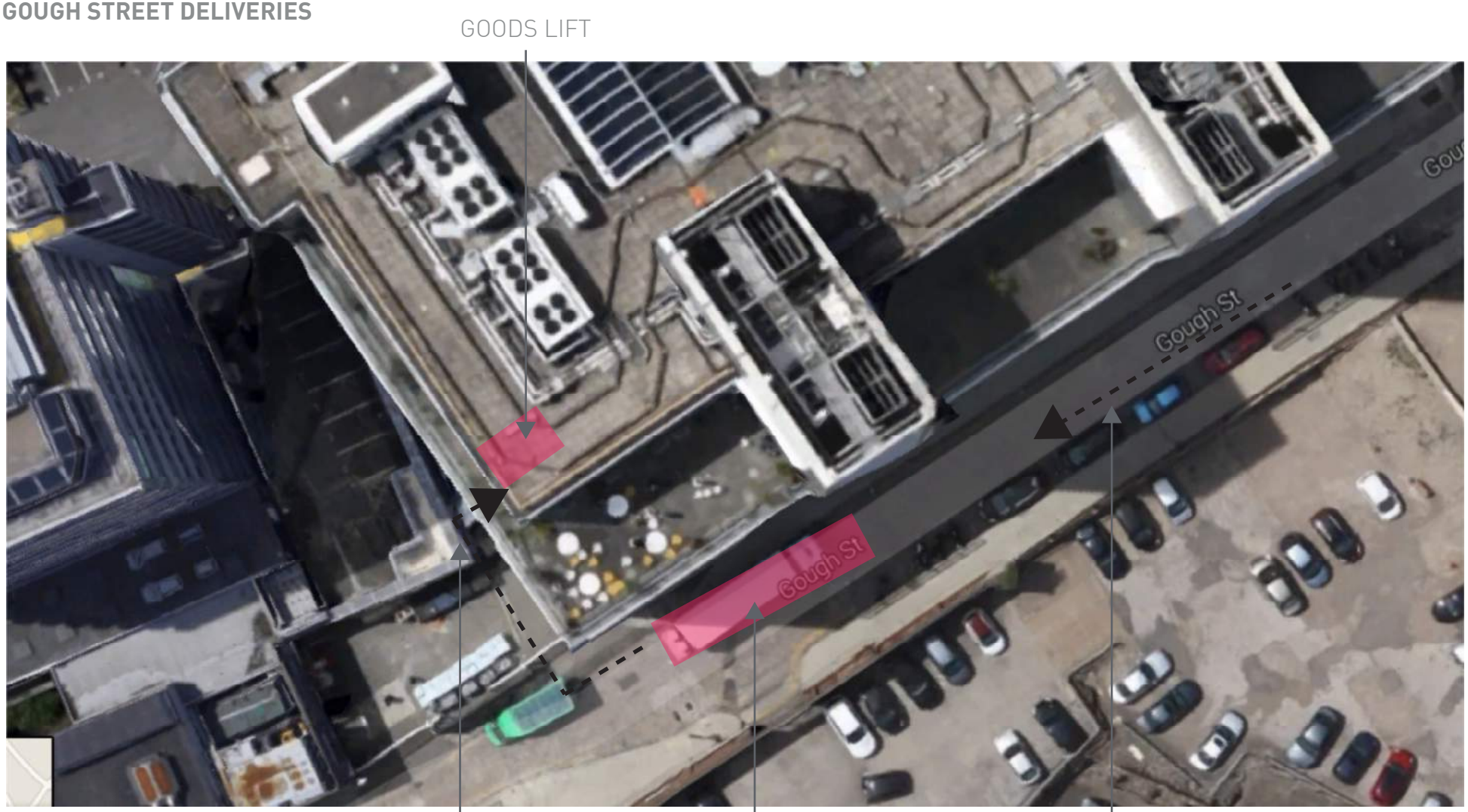


Appendix B

Logistics Plan Gough Street

DELIVERY PLAN

GOUGH STREET DELIVERIES



Appendix C

Environmental Noise Survey, 10-16 Elm Street

Elm House
10-16 Elm Street
London

Environmental Noise Survey and Plant Noise Assessment Report

22827/PNA1

1 April 2016

For:
Como
155 Moorgate
London
EC2M 6XB

Hann Tucker Associates
Consultants in Acoustics Noise & Vibration

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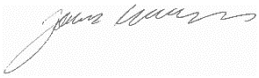
(w) hanntucker.co.uk (e) enquiries@hanntucker.co.uk

Hann Tucker Associates

Environmental Noise Survey and Plant Noise Assessment Report 22827/PNA1

Document Control

Rev	Date	Comment	Prepared by	Authorised by
0	01/04/2016	-		
			James Mackenzie Assistant Consultant BSc(Hons), MA, AMIOA	Adam Kershaw Associate BSc(Hons), MIOA

Hann Tucker Associates

Environmental Noise Survey and Plant Noise Assessment Report 22827/PNA1

Contents

Attachments

1.0 Introduction

The current site at Elm House is undergoing redevelopment. New items of building services plant are proposed to be installed.

Hann Tucker Associates have therefore been commissioned to undertake a detailed environmental noise survey of the site, propose suitable plant noise emission criteria based on the results of the survey and the requirements of the Local Authority. The data has been used to assess the proposed plant and subsequently make recommendations to ensure the criteria of the Local Authority are met.

This report presents the survey methodology and findings.

2.0 Objectives

To establish by means of detailed short period manned environmental noise measurements, the existing A-weighted (dBA) L_{90}, L_{eq} and L_{max} environmental noise levels at selected accessible street and roof level positions around the site, thought to be representative of the nearest affected properties.

To measure L_{eq}, L_{90} and L_{max} octave band spectra noise levels at each measurement position in order to obtain a more detailed description of the noise climate.

To use the results of the manned survey to review and validate the more extensive noise survey data previously undertaken by Waterman.

To recommend suitable plant noise emission criteria based on the results of the noise survey data, and in conjunction with the Local Authority

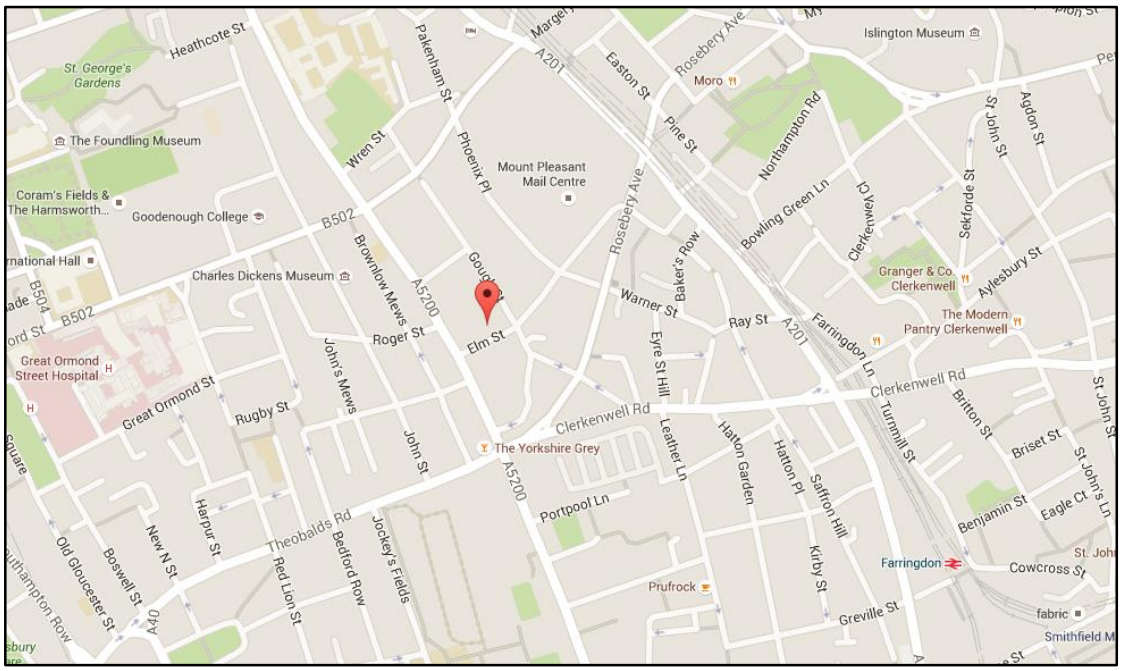
To assess the proposed plant based on manufacturer's noise data and comment on its acceptability.

These objectives are as set out our Outline Brief dated 15 January 2016 and Como's written instructions received on 23 February 2016.

3.0 Site Description

3.1 Location

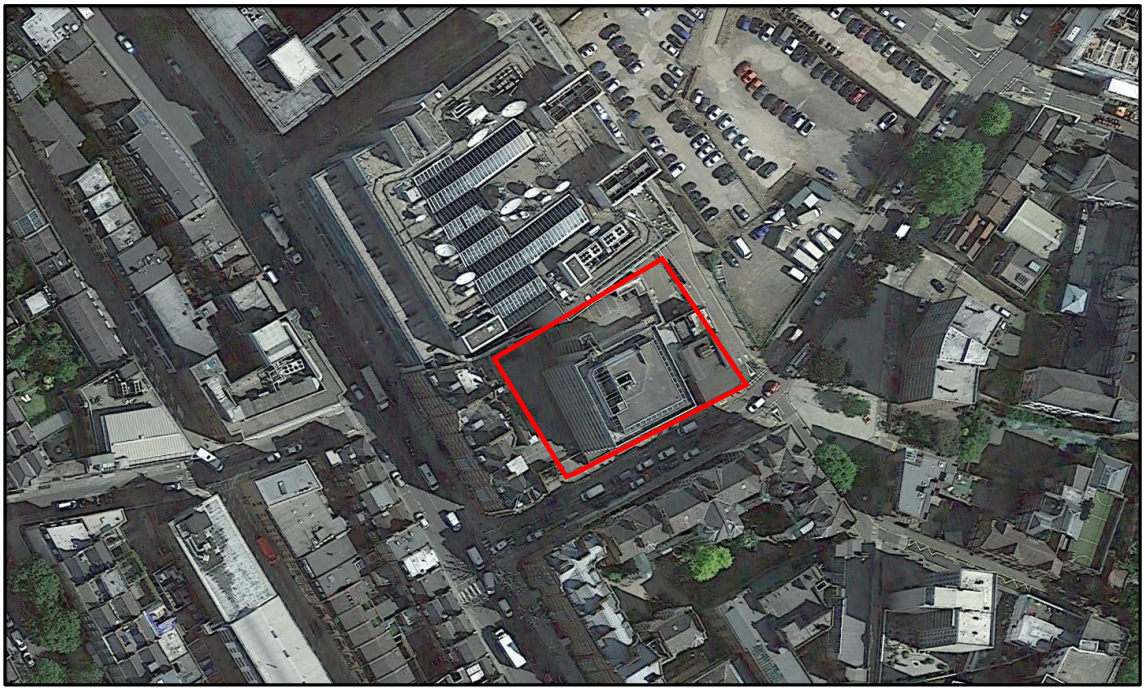
The site is located at Elm Street, London, WC1X 0BJ and falls within Camden Borough Council's jurisdiction. See location map below.



Location Map (Imagery © 2016 Google Inc.)

3.2 Description

The current site is a twelve storey building including ground and basement levels. The building is bounded by Elm Street to the south and Gough Street to the north-east. To the north of the site is 200 Grays Inn Road which is a commercial property of similar height to Elm House. To the east of the site is an open air ground level car park. To the west of the site is Churston Mansions and to the south of the site is Holsworthy Square, both of which are residential properties. See site plan below.



Site Plan (Imagery © 2016 Google Inc.)

4.0 Acoustic Terminology

For an explanation of the acoustic terminology used in this report please refer to Appendix A enclosed.

5.0 Methodology

An baseline noise survey was previously undertaken by Waterman from 24 November to 25 November 2015, and the results are presented in the report Ref: WIE10742-100-TN-001. In order to validate the noise survey data for use in our acoustic assessment, a short manned daytime survey undertaken at selected positions representative of those used in the Waterman's.

The manned survey was undertaken by James Mackenzie BSc(Hons) MA AMIOA.

5.1 Procedure

Manned environmental noise monitoring was undertaken from approximately 16:30 to 18:00 hours on 2 March 2016.

During the survey period the wind conditions were moderate, the sky was generally patchy cloud and there was no rain. Road surfaces were dry throughout the survey period. These

conditions are considered suitable for obtaining representative measurement results.

Measurements were taken of the A-weighted (dBA) L_{90}, L_{eq} and L_{max} sound pressure levels over periods of not less than 5 minutes. Atypical noises were excluded as far as reasonably possible. The noise levels measured are therefore assumed to be representative of the noise climate during the period in which the measurements were taken.

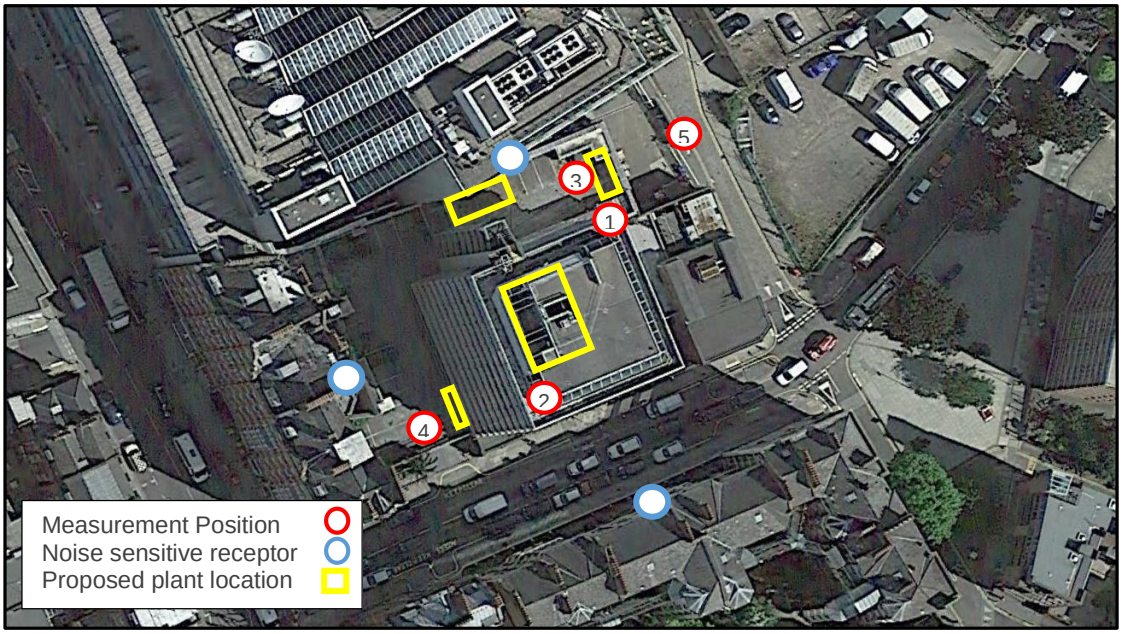
In addition, at each position typical L_{90}, L_{eq} and L_{max} octave band spectra (from 63Hz to 8kHz) were taken in order to gain a more detailed description of the prevailing noise climate.

5.2 Measurement Positions

The noise level measurements were undertaken at 5 positions as described in the table below.

Position No	Description
1	North east corner of Elm House at roof level. The microphone was held approximately 1.5m above the floor and around 1.5m from the closest reflective surface.
2	South west corner of Elm House at roof level The microphone was held approximately 1.5m above the floor and around 1.5m from the closest reflective surface.
3	North east corner of Elm house at ground level. The microphone was held approximately 1.5m above the ground and at least 4m from the closest reflective surface.
4	South west corner of Elm house at ground level. North east corner of Elm house at ground level The microphone was held approximately 1.5m above the ground and around 2m from the closest reflective surface.
5	North east corner of Elm House on Gough Street. North east corner of Elm house at ground level The microphone was held approximately 1.5m above the ground around 1m from the closest reflective surface.

The positions were selected in order to assess typical noise levels incident at the building façade for subsequent use for validating noise survey data from the Waterman survey. This data is used to obtain the lowest L_{90} noise levels at the development site for subsequent use in setting plant noise emission criteria and are shown on the plan below.



Plan Showing Manned Measurement Positions (Imagery © 2016 Google Inc.)

5.3 Instrumentation

The instrumentation used during the survey is presented in the table below:

Description	Manufacturer	Type	Serial Number	Calibration
Type 1 Precision Sound Level Meter	Brüel and Kjær	2260	2001716	B & K calibration on 17/03/2015
Type 1 Calibrator	Brüel and Kjær	4231	2545668	B & K calibration on 09/03/2015

The sound level meter was fitted with a Brüel and Kjær microphone windshield.

The sound level meter was calibrated prior to and on completion of the survey. No significant change was found to have occurred (no more than 0.1 dB).

6.0 Results

6.1 Results of Noise Survey

The results of the noise survey previously conducted by Waterman, as presented in their report Ref: WEI10742-100-TN-001, are presented below.

Position	Period	Sound Levels dBA		
		L_{90}	L_{eq}	L_{max}
1 (Long term)	Daytime (07:00 -23:00)	59	64	79
	Night-time (23:00 – 07:00)	58	60	73
2 (Long term)	Daytime (07:00 -23:00)	55	61	78
	Night-time (23:00 – 07:00)	49	53	70
3 (Short term)	Daytime (16:00 - 16:20)	52	56	66
4 (Short term)	Daytime (15:15 – 15:35)	57	63	76
5 (Short term)	Daytime (15:40 – 15:55)	52	65	85

6.2 Results of the Manned Survey

The A-weighted (dBA) L_{90}, L_{eq} and L_{max} sound levels recorded during the Fully Manned survey are presented below.

Position	Time	Sound Levels dBA		
		L_{90}	L_{eq}	L_{max}
1	16:30 – 16:35	58	60	70
2	16:40 – 16:45	53	56	67
3	16:50 – 17:05	54	57	73
4	17:10 – 17:25	55	59	76
5	17:45 – 18:00	53	60	86

The L_{90}, L_{eq} and L_{max} values measured during the manned survey are comparable to those undertaken by Waterman. We believe that the results of the manned survey validate the more extensive data previously collected in 2015, and therefore both surveys have been used as a basis for our acoustic assessment.

7.0 Discussion Of Noise Climate

Over the course of the survey period the dominant noise sources were noted to be plant noise from neighbouring 200 Grays Inn Road along with road traffic noise from Elm Street and Grays Inn Road.

8.0 Plant Noise Emission Criteria

Building services plant external noise emission levels will need to comply with Local Planning/Environmental Authority requirements and statutory noise nuisance legislation.

We understand that the requirements/planning condition imposed by the London Borough of Camden states as follows:

"Noise levels at a point 1 metre external to sensitive facades shall be at least 5dB(A) less than the existing background measurement (LA90), expressed in dB(A) when all plant/equipment (or any part of it) is in operation unless the plant/equipment hereby permitted will have a noise that has a distinguishable, discrete continuous note (whine, hiss, screech, hum) and/or if there are distinct impulses (bangs, click, clatters, thumps), then the noise levels from that piece of plant/equipment at any sensitive façade shall be at least 10dB(A) below the LA90, expressed in dB(A)".

Based on the above criteria, and having reviewed existing noise survey data (Ref: WIE10742-100-TN-001), we therefore propose the following plant noise emission criteria measured 1m from the nearest noise sensitive receptor:

Noise Emission Limit (dBA)	
Daytime (07 :00 – 23:00 hours)	**Night Time (23 :00 – 07 :00 hours)**
47	44

We understand Camden consider emergency plant on a case by case basis. We would therefore suggest the criteria presented above may be increased by 10dBA for emergency plant such as life safety generators. Noise from emergency smoke extract fans to external areas is not normally a concern. If plant contains tonal or impulsive characteristics the external design criteria should be reduced by 5dBA.

The above is subject to approval by the local Authority.

9.0 Plant Noise Assessment

It is understood that the plant operating times will be during the daytime (07:00 to 20:00 hours). It is imperative that we are advised if this is not the case for any item of plant. As such the daytime criteria from Section 8.0 above is deemed to comply.

9.1 Plant Data

The attached Plant Noise Schedule 22827/PNS (enclosed) details the manufacturer's sound level data used in our acoustic analysis for each item of building services plant.

This data presents "maximum" sound levels which should not be exceeded. The sound levels shown have been based upon manufacturer's data, and should thus be typical for these units with their respective duties.

It is essential that we are appraised of any alterations or additions to this list. Should the selection of any item of plant differ from that shown on the schedule, provided their sound levels are comparable to (or less than) those shown then it should not be necessary to make significant changes to our current attenuation recommendations.

9.2 Roof Level Plant

We understand that the following items of plant are to be installed at roof level.

Plant Ref.	Plant Description	Location	Qty	Plant Make	Model Number
AHU:10:01	Air Handling Unit	Raised Roof	1	IV Produkt	Size: 740-1V 6.20/5.30m^3/s
TE:RF:01	Toilet Extract Fan	Raised Roof	1	Nuaire	AVT7-R
Type 1: PURY-P400 YLM-A1	Condenser	West side roof level in acoustic enclosure	9	Mitsubishi	PURY-P400 YLM-A1
Type 2: PURY-P550 YLM-A1	Condenser	West side roof level in acoustic enclosure	1	Mitsubishi	PURY-P550 YLM-A1
Type 3: PURY-P300 YLM-A1	Condenser	West side roof level in acoustic enclosure	1	Mitsubishi	PURY-P300 YLM-A1

9.2.1 Location of Plant

It is proposed that 11 No. condensers are proposed to be situated on west side of the roof housed in an existing acoustic enclosure, with the louvres directed towards the west. The nearest noise sensitive window appears to be located at Churston Mansions, a residential property approximately 20m towards the west.

An air handling unit and toilet extraction fan will be located on a raised section of roof. The nearest noise sensitive window appears to be located at 200 Grays Inn Road a commercial property approximately 14m towards the north.

9.2.2 Plant Noise Impact Assessment

The following tables present our calculations relating to the proposed plant installation.

11 No. condensers on Roof	Sound Pressure Level (dB re $2x10^{-5}$ Pa) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Plant Ref: Type 1: PURY-P400 YLM-A1, Type 2: PURY-P550 YLM-A1, Type 3: PURY-P300 YLM-A1.	85	88	75	72	66	59	53	48	75
Distance Loss (20m)	-23	-23	-23	-23	-23	-23	-23	-23	
Barrier Correction	-2	-2	-2	-2	-2	-2	-3	-3	
Acoustic Louvre	-4	-5	-8	-9	-12	-10	-8	-6	
Façade effect	+3	+3	+3	+3	+3	+3	+3	+3	
Calculated Noise Level at Window	58	61	45	41	32	26	22	19	46

Roof level AHU and Toilet Extract	Sound Level at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Plant Ref: AHU:10:01, TE:RF:01. Sound Power Level (SWL) *	73	78	73	67	62	55	52	44	70
Distance Loss (SWL to SPL 14m)	-28	-28	-28	-28	-28	-28	-28	-28	
Barrier Correction	-5	-5	-5	-6	-6	-8	-11	-14	
Façade effect	+3	+3	+3	+3	+3	+3	+3	+3	
Calculated Noise Level at Window	43	48	43	37	30	22	16	5	39

*It should be noted that the plant noise data in the table above includes the attenuators specified in 22827/AS (enclosed).

We understand that the proposed units will be operational during daytime hours (07:00 - 20:00). Our calculations indicate that the proposed plant should be capable of achieving the requirements of the Local Authority outlined in Section 8.0.

9.3 Ground Level Plant

We understand that the following item of plant is to be installed at ground level.

Plant Ref.	Plant Description	Location	Qty	Plant Make	Model Number
AHU:00:03	Air Handling Unit	North site boundary	1	IV Produkt	Size: 100-1V 0.66/0.66 m^3/s
AHU:00:04	Air Handling Unit	North east site boundary	1	IV Produkt	Size: 100-1V 0.66/0.66 m^3/s
HP:00:01	Condenser	North site boundary	1	Mitsubishi	PUMY-P112YKM1
HP:00:02	Condenser	North site boundary	1	Mitsubishi	PURY-P200YSLM-A1
HP:00:03	Condenser	North east site boundary	1	Mitsubishi	PURY-P200YSLM-A1
AHU:B1:05	Air Handling Unit	Basement	1	M&Y Ventilation	-
Life Safety Generator	Generator	North site boundary - Ground level	1	Bells	-

9.3.1 Location of Plant

It is proposed that a single Air Handling Unit and 2No. Condensers are located towards the north boundary of the site. The nearest noise sensitive window is located approximately 6m away at 200 Grays Inn Road.

A single Air Handling Unit and 1No. condenser is to be located towards the north east site boundary. The nearest noise sensitive window is located 10m at 200 Grays Inn Road.

The supply and extract grilles for the basement level Air Handling Unit are to be located at the west of the property at ground level. The nearest effected noise sensitive window will be located at Churston Mansions approximately 14m away.

9.3.2 Plant Noise Impact Assessment

The following tables present our calculations relating to the proposed plant installation.

AHU and 2No. Condensers at north boundary	Sound Pressure Level (dB re $2x10^{-5}$ Pa) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Plant Ref: AHU:00:03, HP:00:01, HP:00:02. *	75	65	62	58	52	47	40	34	60
Distance Loss (6m)	-9	-9	-9	-9	-9	-9	-9	-9	
Barrier Correction	-7	-9	-11	-13	-16	-19	-20	-20	
Façade effect	+3	+3	+3	+3	+3	+3	+3	+3	
Calculated Noise Level at Window	63	51	46	40	31	22	14	8	43

AHU and condenser at north east site boundary	Sound Pressure Level (dB re 2x10^{-5} Pa) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Plant Ref: AHU:00:04, HP:00:03. *	75	65	62	58	51	45	39	33	59
Distance Loss (12m)	-16	-16	-16	-16	-16	-16	-16	-16	
Barrier Correction	-4	-2	0	0	0	0	0	0	
Façade effect	+3	+3	+3	+3	+3	+3	+3	+3	
Calculated Noise Level at Window	59	51	49	45	38	32	26	20	46

Basement AHU supply and extract grilles	Sound Power Level (SWL) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Plant Ref: AHU:B1:05	85	78	83	75	75	75	72	66	82
Distance Loss (SWL to SPL)	-28	-28	-28	-28	-28	-28	-28	-28	
Barrier Correction	0	0	0	0	0	0	0	0	
Duct Attenuator	-2	-4	-9	-15	-17	-14	-10	-8	
Façade effect	+3	+3	+3	+3	+3	+3	+3	+3	
Calculated Noise Level at Window	58	49	49	35	33	36	37	33	45

*It should be noted that the plant noise data in the table above includes the attenuators specified in 22827/AS (enclosed).

We understand that the proposed units will be operational during daytime hours (07:00 - 20:00). Our calculations indicate that the proposed plant should be capable of achieving the requirements of the Local Authority outlined in Section 8.0.

9.4 Generator

A Life Safety Generator is to be installed at ground level. It is our understanding that it will only operate for a short weekly test and in case of an emergency. We have contacted the Local Authority with regards to their policy on noise criteria for Life Safety Plant. They state:

"*the relaxation of limits on generators such as these would be applied on a case by case basis and needs to be reviewed in context*".

We would recommend that a limit of 10dB above the normal criteria is employed for Life Safety Plant, however this is to be approved by the Local Authority.

At present the proposed Life Safety Generator should be capable of achieve this.

9.5 Mitigation Measures

In order to bring the proposed installations into compliance with the proposed criterion, our calculations have included attenuation on the Air Handling Units. The attenuator schedule 22827/AS (enclosed) details roomside and atmospheric attenuation requirements such that the cumulative level from all plant assessed in this report meets the Local Authority requirements.

It should be noted that:

- All attenuator selection dimensions are suggestions and could be altered in most instances.

- In the majority of cases it would be possible to reduce attenuator length by increasing cross-sectional area, and vice-versa.

- In all cases it would be possible to alter attenuator width and height providing the cross-sectional area is maintained and the width to height aspect ratio does not exceed 3:1.

- All alterations must be confirmed by ourselves.

It is our understanding that 11No. condensers are to be installed towards the west side of the property at roof level. It is proposed that these will be housed in an existing acoustic enclosure. We were not able to obtain manufacturers data for the performance of the current enclosure, however Hann Tucker Associates conducted a visual inspection of it to assess its possible specification. On the basis that it appears to be a 300mm acoustic louvre installation the following performance could be considered likely.

Attenuation at Octave Band Centre Frequencies (Hz)							
63	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8K**
4	5	8	9	12	10	8	6

The nearest noise sensitive receptor that could be affected by the proposed plant is believed to be Churston Mansions which lies towards the west of the site. As we do not have manufacturers data for the acoustic louvres, it may be necessary to consider the installation of an additional louvre or replace the existing with one with a known performance.

10.0 Conclusions

A detailed manned environmental noise survey has been undertaken in order to validate noise survey data previously collected by Waterman. The data from both surveys has been used in order to establish the currently prevailing roof and street level environmental noise climate around the site.

Plant noise emission criteria have been recommended based on the results of the noise surveys and in conjunction with the Local Authority.

An assessment has been carried out to determine the plant noise emissions at the nearest noise sensitive windows.

The assessment indicates that with the suitably recommended mitigation measures, the proposed plant should be capable of achieving the requirements of the Local Authority at the nearest noise sensitive receptors.

Appendix A

The acoustic terms used in this report are defined as follows:

dB — Decibel - Used as a measurement of sound level. Decibels are not an absolute unit of measurement but an expression of ratio between two quantities expressed in logarithmic form. The relationships between Decibel levels do not work in the same way that non-logarithmic (linear) numbers work (e.g. 30dB + 30dB = 33dB, not 60dB).

dBA — The human ear is more susceptible to mid-frequency noise than the high and low frequencies. The 'A'-weighting scale approximates this response and allows sound levels to be expressed as an overall single figure value in dBA. The $_A$ subscript is applied to an acoustical parameter to indicate the stated noise level is A-weighted

It should be noted that levels in dBA do not have a linear relationship to each other; for similar noises, a change in noise level of 10dBA represents a doubling or halving of subjective loudness. A change of 3dBA is just perceptible.

$L_{90,T}$ — L_{90} is the noise level exceeded for 90% of the period *T* (i.e. the quietest 10% of the measurement) and is often used to describe the background noise level.

$L_{eq,T}$ — $L_{eq,T}$ is the equivalent continuous sound pressure level. It is an average of the total sound energy measured over a specified time period, *T*.

L_{max} — L_{max} is the maximum sound pressure level recorded over the period stated. L_{max} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the L_{eq} noise level.

Sound Pressure Level (L_p) is the sound pressure relative to a standard reference pressure of 2×10^{-5} Pa. This level varies for a given source according to a number of factors (including but not limited to: distance from the source; positioning; screening and meteorological effects).

Sound Power Level (SWL or L_w) is the total amount of sound energy inherent in a particular sound source, independent of its environment. It is a logarithmic measure of the sound power in comparison to a specified reference level (usually 10^{-12} W).

Plant Noise Schedule
22827/PNS

Hann Tucker Associates
Consultants in Acoustics Noise & Vibration
Woking: 01483 770 595
Manchester: 0161 832 7041

Elm House

Revision:	Date: 24/03/2016	Prepared by: James Mackenzie			Comments:									
			Duty		Data		Sound Level (dB) at Octave Band Centre Frequency (Hz)							
Plant Ref.	Location	Plant Type	m^3/s	Pa	mfr/empir	Lw/Lp	63	125	250	500	1k	2k	4k	8k
AHU:10:01 Supply Atmospheric	Roof	Air Handling Unit	6.2	760	mfr	Lw	73	78	73	67	62	55	52	44
AHU:10:01 Supply Roomside	Roof	Air Handling Unit	6.2	760	mfr	Lw	82	87	84	82	82	79	77	74
AHU:10:01 Extract Atmospheric	Roof	Air Handling Unit	5.3	684	mfr	Lw	79	85	82	80	80	77	75	72
AHU:10:01 Extract Roomside	Roof	Air Handling Unit	5.3	684	mfr	Lw	71	75	70	64	63	60	54	44
AHU:10:01 Total	Roof	Air Handling Unit	6.2	760	mfr	Lw	79	79	66	56	54	53	50	41
AHU:00:03 Supply Atmospheric	Ground Level External	Air Handling Unit	0.66	557	mfr	Lw	65	59	65	62	54	48	46	36
AHU:00:03 Supply Roomside	Ground Level External	Air Handling Unit	0.66	557	mfr	Lw	73	68	74	75	77	75	71	66
AHU:00:03 Extract Atmospheric	Ground Level External	Air Handling Unit	0.66	453	mfr	Lw	72	68	75	76	78	76	71	66
AHU:00:03 Extract Roomside	Ground Level External	Air Handling Unit	0.66	453	mfr	Lw	65	59	63	62	57	53	52	39
AHU:00:03 Total	Ground Level External	Air Handling Unit	0.66	557	mfr	Lw	71	61	57	50	50	50	45	34
AHU:00:04 Supply Atmospheric	Ground Level External	Air Handling Unit	0.66	554	mfr	Lw	65	59	64	62	54	48	46	36
AHU:00:04 Supply Roomside	Ground Level External	Air Handling Unit	0.66	554	mfr	Lw	73	68	74	75	77	75	71	66
AHU:00:04 Extract Atmospheric	Ground Level External	Air Handling Unit	0.66	463	mfr	Lw	72	68	75	76	78	76	71	66
AHU:00:04 Extract Roomside	Ground Level External	Air Handling Unit	0.66	463	mfr	Lw	66	59	64	62	57	53	52	39
AHU:00:04 Total	Ground Level External	Air Handling Unit	0.66	554	mfr	Lw	71	61	57	50	50	50	45	34

'he above data represent 'maximum' noise levels which should therefore not be exceeded. It is essential that Hann Tucker Associates are appraised of any alterations or additions to this lis

Plant Noise Schedule
22827/PNS

Hann Tucker Associates
Consultants in Acoustics Noise & Vibration
Woking: 01483 770 595
Manchester: 0161 832 7041

Elm House

Revision:	Date: 24/03/2016	Prepared by: James Mackenzie			Comments:								
			Duty		Data		Sound Level (dB) at Octave Band Centre Frequency (Hz)							
Plant Ref.	Location	Plant Type	m^3/s	Pa	mfr/empir	Lw/Lp	63	125	250	500	1k	2k	4k	8k
AHU:B1:05	Basement	Air Handling Unit	0.388	400	mfr	Lw	85	78	83	75	75	75	72	66
TE:RF:01 Atmospheric	Roof	Toilet Extract Fan	0.826	225	mfr	Lw	88	77	74	75	74	71	67	61
TE:RF:01 Roomside	Roof	Toilet Extract Fan	0.826	225	mfr	Lw	78	76	73	73	67	65	62	57
TE:RF:01 Total	Roof	Toilet Extract Fan	0.826	225	mfr	Lw	67	59	54	46	36	33	37	27
Type 1: PURY-P400 YLM-A1	Roof	Condenser	-	-	mfr	Lp @1m	73.5	78.5	64.5	61.5	55.5	48	43	37.5
Type 2: PURY-P550 YLM-A1	Roof	Condenser	-	-	mfr	Lp @1m	78	71	67	63	57	50.5	44.5	39
Type 3: PURY-P300 YLM-A1	Roof	Condenser	-	-	mfr	Lp @1m	73.5	68.5	65	61.5	55.5	48	41	37
Life Safety Generator	Ground Level External	Generator	-	-	mfr	Lp @1m	68							
HP:00:01	Ground Level External	Condenser	-	-	mfr	Lp @1m	64	52	52	50	46	41	35	29
HP:00:02	Ground Level External	Condenser	-	-	mfr	Lp @1m	75	65	61.5	57.5	51	45	38.5	32.5
HP:00:03	Ground Level External	Condenser	-	-	mfr	Lp @1m	75	65	61.5	57.5	51	45	38.5	32.5

The above data represent 'maximum' noise levels which should therefore not be exceeded. It is essential that Hann Tucker Associates are appraised of any alterations or additions to this list

Attenuator Schedule
22827/AS

Hann Tucker Associates
Consultants in Acoustics Noise & Vibration
Woking: 01483 770 595
Manchester: 0161 832 7041

Elm House

Revision: 0	Date: 23/03/2016	Prepared by: James Mackenzie			Comments:									
			Dimensions (mm)		Vol	Max PD	Minimum Insertion Loss (dB) at Octave Band Centre Frequency (Hz)							
Attenuator Ref.	Description	.	Max Face Velocity	L	m^3/s	Pa	63	125	250	500	1k	2k	4k	8k
AHU:RF:ATT:01	AHU:10:01 Extract Atmospheric Side	1	5.5	1200	5.3	50	4	9	17	26	31	30	23	16
AHU:RF:ATT:03	AHU:10:01 Extract Roomside	1	5.5	1200	5.3	50	4	9	17	26	31	30	23	16
AHU:RF:ATT:02	AHU:10:01 Supply Atmospheric Side	1	7.2	900	6.2	50	2	4	9	15	17	14	10	8
AHU:RF:ATT:04	AHU:10:01 Supply Roomside	1	4.5	1200	6.2	50	9	18	31	48	50	49	44	24
AHU:03:ATT:01	AHU:00:03 Supply Atmospheric Side	1	7.2	900	0.66	50	2	4	9	15	17	14	10	8
AHU:03:ATT:02	AHU:00:03 Extract Atmospheric Side	1	4.5	1200	0.66	50	5	11	19	29	36	37	29	18
AHU:04:ATT:01	AHU:04 Supply Atmospheric Side	1	6.2	900	0.66	50	2	5	11	17	20	19	12	10
AHU:04:ATT:02	AHU:04 Extract Atmospheric Side	1	5.5	1200	0.66	50	4	9	17	26	31	30	23	16
AHU:05:ATT:01	AHU:B1:05 Extract Atmospheric Side	1	7.2	900	0.388	50	2	4	9	15	17	14	10	8
AHU:05:ATT:02	AHU:B1:05 Supply Atmospheric Side	1	7.2	900	0.388	50	2	4	9	15	17	14	10	8
AHU:05:ATT:03	AHU:B1:05 Supply Roomside	1	5.5	900	0.388	50	4	7	13	19	23	23	16	13
AHU:05:ATT:04	AHU:B1:05 Extract Roomside	1	6.2	900	0.388	50	2	5	11	17	20	19	12	10
TE:RF:ATT:01	TE:RF:01 Atmosphere Side	1	5.5	1200	0.826	50	2	5	11	17	20	19	12	10
TE:RF:ATT:02	TE:RF:01 Roomside	1	7.2	900	0.826	50	2	4	9	15	17	14	10	8

All attenuators must comply with Hann Tucker Associates General Specification for Acoustic and Vibration Isolation Materials and Products (copy available upon request if not supplied)

Appendix D

Noise Vibration Predictions

Appendix E

BS 5228-1 CPD certificate

CAMPBELL ASSOCIATES
SOUND & VIBRATION SOLUTIONS

Continuing Professional Development

CERTIFICATE OF ATTENDANCE

This is to certify that

Anisha Sehgal

attended a 6 hour training session entitled:

Noise Prediction for BS5228-1
Code of practice for noise and vibration control on construction and open sites

at Mace Group, 155 Moorgate, London, EC2M 6XB

on 24th September 2015.

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