Construction Management Plan

pro forma v2.2

Camden

Contents

Revisions & additional material

Please list all iterations here:

Date	Version	Produced by
29/09/17	REV 004	George Abbott

Additional sheets

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

Appendices	**Name**
Appendix 1	Development Location Plan
Appendix 2	Site Plan
Appendix 3	Centric Close Programme
Appendix 4	Site Set Up
Appendix 5	Train Links
Appendix 6	Bus Links
Appendix 7	Traffic Management Plan
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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 Community 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.**"

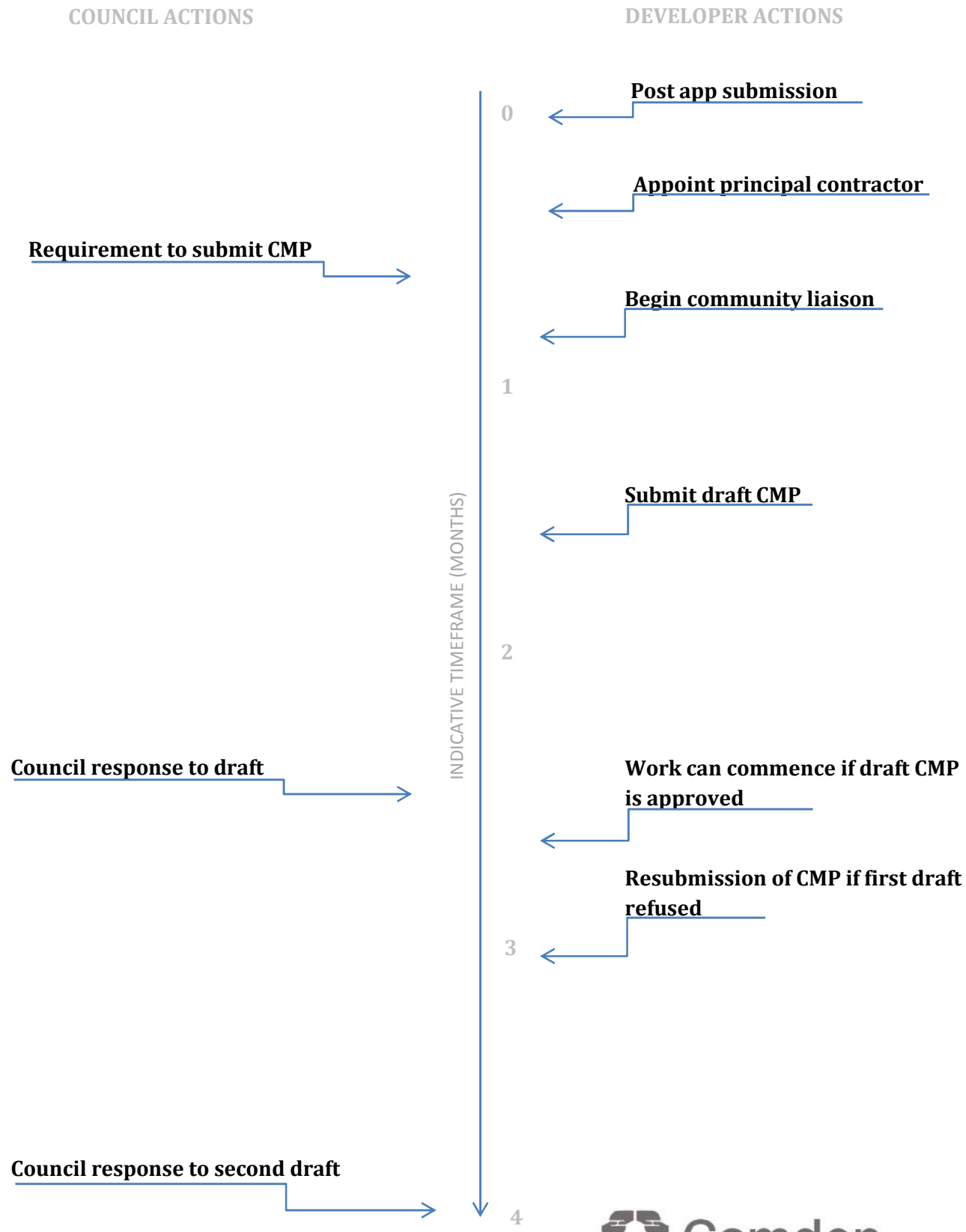
Please complete the questions below with additional sheets, drawings and plans as required. The boxes will expand to accommodate the information provided, so please provide as much information as is necessary. **It is preferable if this document, and all additional documents, are completed electronically 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: 1-6 Centric Close, Oval Road, Camden, NW1 7EP

Planning reference number to which the CMP applies: 2016/6891/P

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

Name: John Wood

Address: 50 Lancaster Road, Enfield, Middlesex, EN2 0BY

Email: John.Wood@Fairview.co.uk

Phone: 0208 366 1271

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: Michael Nevins

Address: 1-6 Centric Close, Oval Road, Camden, NW1 7EP

Email: Michael.Nevins@Fairview.co.uk

Phone: 0208 366 1271

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: Michael Nevins

Address: 1-6 Centric Close, Oval Road, Camden, NW1 7EP

Email: Michael.Nevins@Fairview.co.uk

Phone: 0208 366 1271

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: John Wood

Address: 50 Lancaster Road, Enfield, Middlesex, EN2 0BY

Email: John.Wood@Fairview.co.uk

Phone: 0208 366 1271

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.

Please see Appendix 1 – Development Location Map

The site is located on the western side of Oval Road, in the London Borough of Camden. Camden Town underground station is situated 320m to the east of the site, is within Zone 2, and provides services on the Northern Line to Edgware and High Barnet to the North, and to Morden in the South via either Charing Cross or Bank. Regents Park is located 500m to the south west of the site. Oval Road provides access to Gilbeys Yard to the north, and is a no through route. Oval Road to the south provides access to Gloucester Road.

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 proposed development comprises the demolition of existing buildings and the erection of 76 residential units and 1,219 sqm of commercial floor space (Use Class B1) over 4, 5, 6 and 7 storeys providing a mix of 1, 2 and 3 bed apartments. The development includes a landscaped courtyard and communal amenity areas.

The redevelopment of the site will make a positive enhancement to the visual appearance of the area, providing much needed homes for the local area, including commercial floor space to reflect the Council's aspirations for the area.

Prior to build month 1, a 3 month period has been allowed for the demolition of the existing Industrial buildings, removal of hardstandings. Following which, due to the restrictive access to Site a period of 2 months enabling works has been allowed, for the installation of the new/upgraded utility services required for the Development within Centric Close.

Sub-structure works will commence with C.F.A. piles including contig Piles to the basement, followed by pile caps, ground beams and reinforced ground floor slabs.

The Superstructure construction will be reinforced concrete frame with elevational treatment being brickwork on a Metsec inner skin and Curtain Walling to the Upper levels. Inboard and cantilever balconies are incorporated within the design

Main issues include the restricted vehicular access on site, close proximity to both the Railway line to the western boundary and the residential dwellings on the eastern boundaries either side of the access road.

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.).

Please see Appendix 2 - Site Plan

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 1 – Development Location Plan

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).

See Appendix 3 – Centric Close Programme

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

Fairview New Homes will abide by the Standard working hours for construction Sites in Camden as above, 8:00am to 18:00pm Monday to Friday and 8:00 to 13:00 on Saturdays. Also no work on Sundays or public holidays.

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.

Electricity

There are 2 x LV cables exiting the site along the northern side of the access road into the footway on Oval Road. Cable depth is unrecorded. A sub-station will be needed to serve the development. Whilst not currently shown on the layout the Architect has confirmed that one can be accommodated.

Gas

There is 63 PE LP Gas Main running along the frontage of the units on site that connects into a 90 PE LP Main which runs along the southern side of the access road and connects into the 125 PE LP main on the eastern side of Oval Road.

Water

A 125mm water main runs along the eastern side of Oval Road. Whilst not indicated on record drawings it should be assumed that a water service pipe serves the existing development. Water boosters are required for all units above 3 storeys.

British Telecom

BT apparatus is located within the footway of Oval Road on site frontage. Underground BT ducting is shown running along the northern side of the site access road connecting into the footway on Oval Road. Additionally an overhead service cable is shown connecting the units to No. 31 Oval Road.

Cable television

There is Virgin media apparatus that runs from the site, along the southern side of the access road and connects into the Oval Road footway along the site frontage.
CA Telecoms also has apparatus running along the nearside footway of Oval Road.

Please see appendix 17 - showing an extract from a method statement that was produced by one of the demolition contractors employed by Fairview, along with a proposed drainage layout for the site.

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.

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 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.

A meeting with the local residents was held on Wednesday 26th July of which a contact report / letter inviting residents to attend, map of properties notified and Minuites of the meeting taken:

Please see Appendix 14 – Construction Management Community Meeting

Furthermore the Project Manager Mike Nevins will deal with any queries or issues regarding the site. His Contact information will be available on the considerate constructors board located on the hoarding of the site.

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 Project Manager Mike Nevins will respond to any issues form the local residents, his contact information will be available from the considerate constructors board located on the site hoarding.

In accordance with best practice and supplemental to enrolment on the Considerate Contractors Scheme, residents will be given prior notification of potentially significant noise- and/or vibration-generating works. Furthermore we propose to hold community liaison meetings within the community.

See Appendix 14 – Construction Management Community Meeting

A live website will be set up which will provide details/updates during the construction process. Along with a Commitment to monthly meetings. Construction updates will be sent via email (inclusive of particularly noisy activities)

15. Schemes

Please provide details of your 'Considerate Constructors Scheme' registration, and details of any other similar relevant schemes as appropriate. Contractors will also be required to follow the "Guide for Contractors Working in Camden" also referred to as "Camden's Considerate Contractors Manual".

This site will be registered to the Considerate Constructors Scheme, also any delivery company's used will be registered by FORS and this will be written into their contracts as part of a standard. As a result we will endeavour to abide by CLOCS and wherever possible checks will be made to ensure that all sub-contractors are signed up to this scheme to ensure that cyclists and other road users are as protected as possible.

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.

The development of **Hawley Infant School by Mace on Hawley Road** has been avoided as a potential delivery route to avoid congestion and potential stop of traffic due to width restrictions due to their loading bays and road closures along the route.

The HS2 Rail link development will be monitored and any necessary action will be taken should access routes be distrupted.

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 Contractual Considerations

17. Name of Principal contractor:

Fairview New Homes LTD

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 and Q18 example response).

Fairview Estates (Housing) will meet the conditions as outlined in (CLOCS) by ensuring that our Sub-contractors are (FORS) registered, also that all delivery routes are followed. Furthermore that the (WRRR) is followed as closely as possible.

Please See Appendix 10 - Standard Purchasing Order & Extract from a method statement showing details of FORS that was provided by one of the demolition contractors that has been employed by Fairview.

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:

We confirm that we have included requirements required to abide by the CLOCS Standards in contracts to all contractors and suppliers.

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 how vehicles will be routed to the Transport for London Road Network (TLRN) on approach and departure from the site.

Delivery drivers will Ingress and Egress the site via Oval Road. The routing (Via A1, A41 or A501) will be communicated to the drivers via the Sub-Contract order and the purchasing order statement, furthermore this will be written into the delivery drivers contracts.

See Appendix 5 – Local Road Train Map

See Appendix 6 – Local Bus Map

See Appendix 18 – Lorry Routes

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.

All delivery companies will be made aware of the construction route via the issue being discussed in meeting which will be held regularly to ensure that all of these issues are being monitored and implemented fully. There will be a pedestrian access directly from the footpath to the compound.

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.

The 5 Construction phases are as follows: (All Vehicle movements are an Average)

Demolition (3 Months) Muck Away Vehicles, 3-4 Movements per day.

Enabling Works (2 Months) Services input/ Resurfacing, 1-2 Movements per day.

Substructure (5 Months) Steel Rebar/Concrete, 6-8 Movements per day.

Superstructure (11 Months) Steel Rebar/Concrete/ Brick/CurtainWalling, 8-10 Movements per day.

Fit-out (12 Months) Internal standard deliveries, 4-6 Movements per day.

Deliveries in the fit-out period will be a mix of Rigid's and Arctic's.

The Delivery times will be in accordance with Guide for Contractors Working in Camden.

Dwell time for delivery vehicles on site will be kept to a minimum with Just in time deliveries.

After reviewing the local school hours 'Cavendish School' construction deliveries will be between 9:00 – 3:00 and then resume at 4:00 – 6:00 to accommodate the local school traffic.

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

Please see Appendix 2 – Site Plan

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 single point of access for vehicles will be managed by a dedicated Traffic Marshall to ensure that construction traffic can enter and exit the site safely. Furthermore Just in time deliveries will be implemented to prevent any congestion on the public highway. A clause will be implemented into the delivery driver's contracts, stating that they will have to contact site 30 minutes before arrival to coordinate vehicle unloading, this will minimise any disruption to the surrounding area.

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.

All vehicles and drivers will comply with Just in time deliveries minimizing the risk of any congestion on the public highway, drivers will have to contact site 30 minutes before arrival. There is a designated unloading area at the front of the site which is located off of the main public highway (See Appendix 4 – Site Set Up) showing there will be no need 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).

Due to the scale and location of this project it is not applicable.

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 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 access and egress routes to and from the site

Delivery drivers will Ingress and Egress the site via Oval Road. The routing (Via A1, A41 or A501) will be communicated to the drivers via the Sub-Contract order and the purchasing order statement, furthermore this will be written into the delivery drivers contracts.

See Appendix 5 – Local Road Train Map

See Appendix 6 – Local Bus Map

See Appendix 18 – Lorry Routes

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

Site Access and Exit's will be managed by a dedicated Traffic Marshall/ Gatesman to ensure that construction traffic can enter and exit the site safely. Furthermore Just in time deliveries will be implemented to prevent any congestion on the public highway. A clause will be implemented into the delivery driver's contracts, stating that they will have to contact site 30 minutes before arrival to coordinate vehicle unloading, this will minimise any disruption to the surrounding area.

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).

Please see appendix 7 – Traffic Management Plan

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.

A mobile water pressure washer unit operated by site personnel will be installed at commencement of the demolition works. For the remainder of the works these facilities will be positioned in a suitable location within the site (see Appendix 3); as to have optimum affect with vehicles exiting the construction works area.

In addition to the above wheel washing facility, once able, it is our intention to advance the provision of the site entrance to 'base course' during the initial groundworks package. In this way any traffic movement onsite will be off 'hard surfaces', reducing the impacts of transference on the public highways.

For the duration of the groundwork operations the site road (and off-site if necessary) will be swept by mechanical means. Thereafter whenever required by prevailing conditions and work programme regular visits by road sweeper will be provided. Emergency road cleaning will be undertaken by hand if required.

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.

See Appendix 7 – Traffic Management Plan

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.

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.

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.

N/A

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).

See Appendix 4 – Site Set up

No footpath closures will be necessary. Unloading will take place on site as shown on appendix 4, barriers may be used to close off access to site during deliveries for pedestrian safety.

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

N/A

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).

Hoarding requirements for the site are minimal as existing chain-link backed with corrugated sheeting, Palisade fencing & brick walls already confine the site. Boundary hoardings of 8FT timber post with ply faced hoarding will be erected to the boundaries of the site where existing segregation is insufficient.

Pedestrian access gates and a vehicle access gate in centric close will be implemented.

Occupation of the highway will only be to manoeuvre delivery vehicles out of the site and onto Oval Road which will be managed by the traffic marshal/ Gatesman with all necessary mitigation measures in place.

All will be shown on Appendix 4 Site Set Up.

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.

Pedestrian and Cyclist safety will be maintained by Fairview Estates (Housing) adhering to the (FORS) scheme in terms of vehicle deliveries along with the (CLOCS) scheme aiming to ensure that full training has been provided to all delivery drivers thus offering the best protection to other road users. Furthermore a full time Traffic Marshall will be employed to monitor pedestrian and highway traffic throughout the construction process. A secure hoarding will be in place around the boundary of the site with any vehicular access appropriately signed and securely gated with a wheel wash facility located in this area to ensure that the public highway is kept as clean as possible and minimising disruption to the surrounding area.

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.

Via the use of the a Luffing JIB tower crane we will not oversail the site boundary with the exception of the proposed vehicle unloading area as we will utilise the use of the tower crane to unload delivery's in the designated area as shown.

Please See Appendix 9 – Crane Reach.

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 hours of construction works are between 08:00 – 18:00 Mondays to Fridays and 08:00 – 13:00 on Saturdays. Fairview Estates (Housing) intends to carry out as much of the "Noisy Operations" during the hours that will least affect the local residents: i.e. 9:30 – 4:30 Weekdays, 9:30 – 12:00 Saturdays.

The Construction process will be carried out in 5 main phases:

- Demolition
- Enabling Works
- Sub Structure
- Super Structure
- Fit Out

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.

See Appendix 11 – Noise and Vibration Assessment

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

See Appendix 11 – Noise and Vibration Assessment

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.

Noisy plant or equipment is to be situated as far as possible from noise sensitive buildings. Furthermore where practical the operation of noisy plant within sheds or an enclosure lined with sound absorbent material. Vehicles and mechanical plant shall be fitted with effective exhaust silencers and maintained in good and efficient working order. Also compressors shall be fitted with properly lined and sealed acoustic covers and pneumatic percussive tools shall be fitted with mufflers or silencers. Machines that are in intermittent use will be shut down or throttled down to a minimum.

All construction works will be carried out to follow standard good construction practice as outlined in BS 5228-1:2009+A1:2014 and BS 5228-2:2009+A1:2014. This will include the following measures:

a) Electrical items of plant will be used instead of diesel plant where possible particularly in sensitive locations.
b) Plant will be started up sequentially rather than all together.
c) Loading/unloading activities will be located away from residential properties and shielded from those properties where practicable.
d) Drop heights of materials will be minimised.
e) Continuous noisy plant will be housed in acoustic enclosures, where practicable.
f) Exhaust silencing and plant muffling equipment will be fitted and maintained in good working order.
g) Each item of plant used will be selected so as to comply with the noise limits quoted in the relevant European Commission Directive 2000/14/EC/United Kingdom Statutory Instrument (SI) 2001/1701.
h) Consideration will be given to the recommendations set out in Annex B of Part 1 of BS 5228 noise sources, remedies and their effectiveness.
i) Equipment will be well-maintained and where possible will be used in the mode of operation that minimises noise.
j) Plant and equipment will be shut down when not in use.
k) Semi-static equipment will be sited and orientated as far as is reasonably practicable away from occupied buildings and, where feasible, will be fitted with suitable enclosures.
l) Mobile construction plant will be located, as far as is reasonably practicable, away from adjacent occupied buildings or as close as possible to site hoardings to provide additional screening from sensitive noise receptors.
m) Materials will be handled in a manner that minimises noise.
n) Vehicles will not wait or queue on the public highway with engines idling;
o) Noisy activities will be staggered in time and space where feasible.

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

All site managers are trained in accordance with the SMSTS and hold a valid certificate, within this course. The above segment is also covered –

See Appendix 13 – Site Managers SMSTS Certificate

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

Dust emissions will be controlled on site through the following key measures. The Dust Management Plan provides further details of the control measures and mitigation which will be implemented by Fairview Homes during the construction phase of the development.

Prevention of dust generation

- Cutting equipment to be used on site will be fitted with water tanks to prevent dust being generated whilst cutting is being undertaken.

Suppression of dust particles

- During demolition water will be used to dampen down the demolition rubble
- Material stockpiles will be dampened to reduce the risk of suspension of particles through wind movement.

Containment of dust emissions

- Skips located on site will be covered to contain the materials

Stockpiles in addition to be being dampened using water will also be covered with tarpaulin to contain dust emissions from the loose materials

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.

There will be a wheel wash facility on site to alleviate dirt and mud from exiting the site and spreading onto the public highway thus causing a nuisance. Also any stockpiles of susceptible material to be damped down and covered with tarpaulin to prevent dust spreading to the surrounding area. Emergency road cleaning will be untaken by hand with brooms if necessary.

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

Noise and Vibration Monitoring
Three semi-permanent noise and vibration monitors with SMS alert systems will be installed at the following locations:

- 31 Oval Road (residential)
- 25 Oval Road (residential)
- 35 Oval Road (residential)

The noise monitors will be in place throughout the demolition and construction works, whilst the vibration monitoring will take place during piling works only.

Data obtained from the noise monitors will be used to assess any noise impacts arising as a result of the demolition and construction works. SMS alerts will be sent to the relevant personnel (including site manager and noise specialist) upon exceedance of a pre-defined trigger level (usually the predicted noise levels). Results will be analysed and data reports subsequently issued on a monthly basis.

Likewise, the vibration meter will send SMS alerts will be sent to the relevant personnel (including site manager and noise specialist) upon exceedance of a pre-defined trigger level (see below). Results will be analysed and data reports subsequently issued on a weekly basis.

All monitoring equipment will also be capable of remote downloading of stored data for regular reporting/analysis. This includes upload of real-time data to a secure webserver.

All sound level meters used shall be a Class 1 integrating sound level meter complying with BS EN 61672:2003 and the field calibrator(s) comply with the requirements of BS EN 60942:2003. The monitoring equipment shall be calibrated every other year and the field calibrator every year.

Peak Particle Velocity (PPV) levels in excess of 1 mm/s may be considered to represent a significant impact on the occupants of residential buildings; and 2 mm/s for commercial premises (although higher levels may be tolerated in certain instances).

As well as the results of the vibration monitoring, detailed observations of various factors shall be recorded, including:

- condition of the building;
- construction activities which may give rise to significant vibration;
- other extraneous vibration inducing activities (e.g. train or HGV movements);
- indicative ambient vibration levels, including transient event peaks;
- mitigation measures in place; and
- whether Best Practicable Means are in use at the time of the vibration monitoring.

Noise Trigger Action Plan
The table below details the noise trigger action plan (refer to Appendix 11).

Alert	Trigger Level	Action To Be Taken
GREEN	$L_{Aeq,1hr} < L_{Predicted} +3dB$	OK to continue
RED	$L_{Predicted} +3dB < L_{Aeq,1hr}$	a. Review the works being undertaken on site to determine whether the works are being undertaken in accordance with the consent requirements and amend accordingly; b. Where the works are being undertaken in accordance with the consent, undertake activity measurements for comparison with the plant levels in this document and review the works to identify any further mitigation / amendments to the works methodology which can reduce the levels; c. Implement the additional mitigation measures at the first available safe time to do so, and if applicable, raise a variation / dispensation to update the predicted noise levels;

The above trigger levels and associated actions form the Noise Trigger Action Plan for the works. Data from continuous noise monitoring will be reviewed at regular intervals and working methods adjusted where necessary. All noise monitoring reports, along with details of exceedances of noise trigger levels and actions taken to mitigate these, will be retained on site for inspection by the Council, if requested.

Vibration Trigger Action Plan
The table below details the vibration trigger action plan (refer to Appendix 11).

Alert	Trigger Level	Action To Be Taken
GREEN	PPV levels < 1mm/s	OK to continue
AMBER	1mm/s ≤ PPV levels < 3mm/s	OK to continue however review and consider further mitigation measures.
RED	3mm/s ≤ PPV	Stop works and assess the potential for additional mitigation methods and/or alternative working methods.

The above trigger levels and associated actions form the Vibration Trigger Action Plan for the works. Data from continuous vibration monitoring will be reviewed at regular intervals and working methods adjusted where necessary. Data from unattended vibration monitoring, along with details of exceedances of vibration trigger levels and actions taken to mitigate these will be retained on site for inspection by the Council, if requested.

36. Please confirm that a 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 2104 (SPG), that the risk level that has been identified, and that the appropriate measures within the GLA mitigation measures checklist have been applied. Please attach the risk assessment and mitigation checklist as an appendix.

See Appendix 12 – MLM Air Quality Report

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.

General Mitigation Measures

- Develop and implement a stakeholder communications plan that includes community
- engagement before work commences on site
- Display the name and contact details of the person accountable for air quality and dust
- issues on the site boundary (i.e. the environment manager/engineer or site manager)
- Display the head or regional office contact information on the site boundary
- Record all dust and air quality complaints, identify cause, take appropriate measures
- to reduce emissions in a timely manner and record the measures taken
- Make the complaints log available to the local authority when asked
- Record any exceptional incidents that cause dust and/or air emissions, either on- or
- off- site and the action taken to resolve the situation in the log book
- Carry out regular site inspections to monitor compliance with the CMP, record
- inspection results and make inspection log available to LBC Council when asked
- Increase frequency of site inspection by the person accountable for air quality and dust
- issues on site when activities with a high potential to produce dust are being carried
- out and during prolonged periods of dry or windy conditions
- Plan site layout so that machinery and dust causing activities are located away from
- receptors, as far as is possible
- Erect solid screens or barriers around dusty activities or the site boundary that are at
- least as high as any stockpiles
- Fully enclose site or specific operations where there is a high potential for dust
- production and the activities are being undertaken for an extensive period
- Avoid site runoff of water or mud
- Keep site fencing, barriers and scaffolding clean using wet methods
- Remove materials that have a potential to produce dust from site as soon as possible,
- unless being re-used on site. If being re-used on site, cover as detailed below
- Cover, seed or fence stockpiles to prevent wind whipping
- Ensure all on-road vehicles comply with the requirements of the London Low Emissions
- Zone and the London NRMM standards, where applicable
- 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 practicable
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials

- 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
- Ensure an adequate water supply on site for effective dust/particulate matter
- suppression/mitigation, using non-potable water where possible and appropriate
- Use enclosed chutes and 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
- 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
- Avoid bonfires and burning of waste materials
- Ensure effective water suppression is used during demolition operations. Hand held
- sprays are more effective than hoses attached to equipment as the water can be
- directed to where it is needed. In addition high volume water suppression systems,
- manually controlled, can produce fine water droplets that effectively bring dust
- particles to the ground
- Avoid explosive blasting, using appropriate manual and mechanical alternatives
- Bag and remove any biological debris or damp down such material before demolition.

Measures Specific to Demolition

- Ensure effective water suppression is used during demolition operations. Hand held
- sprays are more effective than hoses attached to equipment as the water can be
- directed to where it is needed. In addition high volume water suppression systems,
- manually controlled, can produce fine water droplets that effectively bring the dust
- particles to the ground.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives
- Bag and remove any biological debris or damp down such material before demolition

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as
- soon as practicable
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover
- with topsoil, as soon as practicable
- Only remove the cover in small areas during work and not all at once

Measures Specific to Construction

- 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,

- 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.

N/A

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 Demolition Contractor shall provide suitable measures to protect drains, manholes, gullies, vent pipes and fittings still in use and ensure that they are kept free of debris at all times. Make good any damage arising from demolition work and leave clean and in working order.

No excavation or removal of existing underground obstructions shall be undertaken within 3m either side of the retained drainage/sewer systems. The Demolition Contractor shall mark the locations of the retained drainage/sewer systems on-site and shall provide physical measures on-site to identify the extent of the protection zone.

Any drainage/sewer systems not indicated on the drawings as being retained shall be abandoned, grubbed out and backfilled in accordance with the Company's specification for such works. All redundant connections to retained manholes are to be sealed prior to removal of adjacent redundant drainage/sewer systems to prevent to inflow of debris and groundwater and to prevent the harbouring of vermin.

Refer to Tfl best practice guidance and (CMRBC) sections: noise operations, abatement techniques, noise levels, vibration levels, dust levels, rodent control, community liaison, etc.)

Please see Appendix 18 – Showing the pest control order that has been placed along with relevant certificates for pest control.

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

Demolition Asbestos surveys have been carried out to industrial units 2, 3 and 6 by Mainstream Ltd:

Please see appendix 15 – Asbestos Surveys

The asbestos removal work is to be undertaken by specialist, licenced contractors and Include any additional investigations, testing and analysis as deemed necessary, prior to the commencement of any demolition.

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 Site will be registered under the Considerate Constructor Scheme. Site personnel will be informed of this as part of their site induction along with the standard of conduct expected of them whilst on site. Any complaint received relating to undesirable conduct of site personnel will be thoroughly investigated. If proven, we have a "Performance Monitoring Notice" system within the company that will be initiated which could ultimately lead to the individual concerned being removed from site. Furthermore, it could have a detrimental effect on the subcontractor when tendering for future works within our company.

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): **July 2017 – November 2019**

b) Is the development within the CAZ? (Y/N): **NO**

c) Will the NRMM with net power between 37kW and 560kW meet the standards outlined above? (Y/N): **YES**

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:

Please see Appendix 16 - Which shows an example of a NRMM register used at one of our sites

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:

An inventory of all Non Road Mobile Machinery (NRMM) shall be kept on-site and registered.

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:

The emission limits for all equipment and shall be made available to local authority officers if 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: 29/9/17

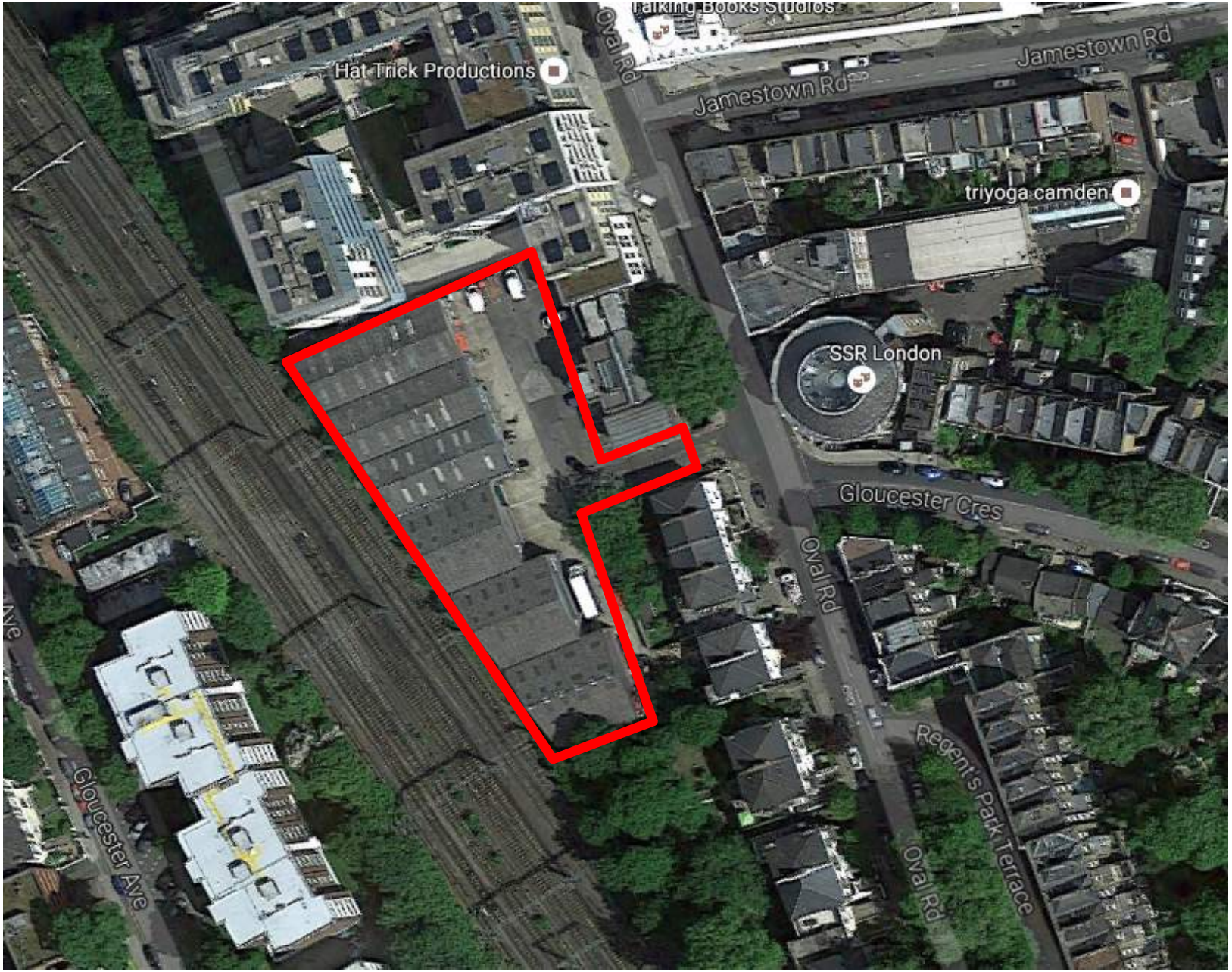
Print Name: John Wood

Position: Building Director

Please submit to: planningobligations@camden.gov.uk

End of form.

Camden



Site Location

Fairview NEW HOMES Ltd.

Construction Department

Telephone No: 020-8366-1271 ext 217

Email: George.Abbott@Fairview.co.uk

FNH425

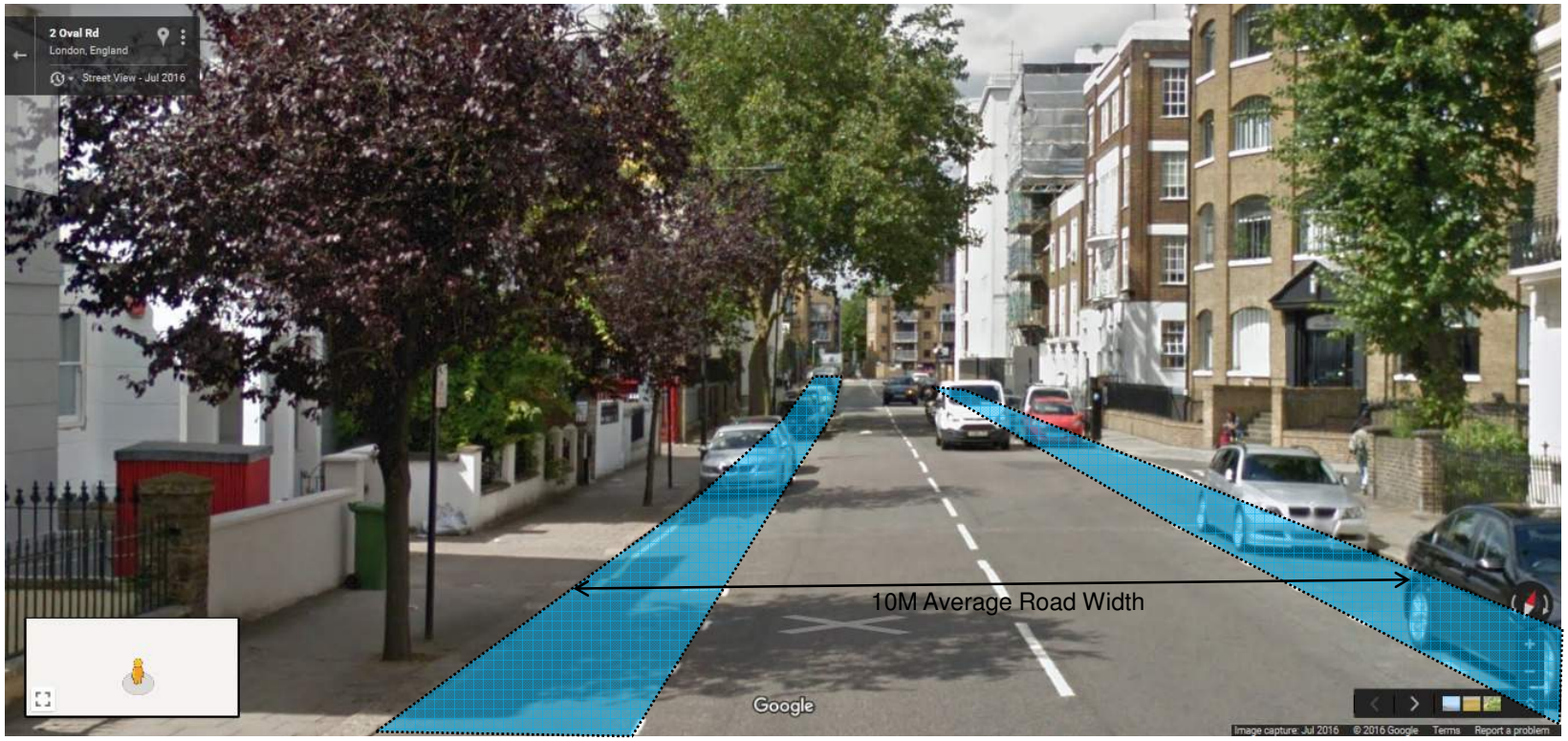
Centric Close, Camden

Appendix 1

Date:	Logic:	Drawn:
12.05.17	J. Wood	G. Abbott

REF:

Development Location



Site Access for vehicles

Vehicle Parking bays staggered across both edges of Oval Road

No Cycle Lanes are located close to the immediate entrance to site.

Fairview NEW HOMES Ltd.

Construction Department

Telephone No: 020-8366-1271 ext 217

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FNH425

Centric Close, Camden

Appendix 1

Date:	Logic:	Drawn:
12.05.17	J. Wood	G. Abbott

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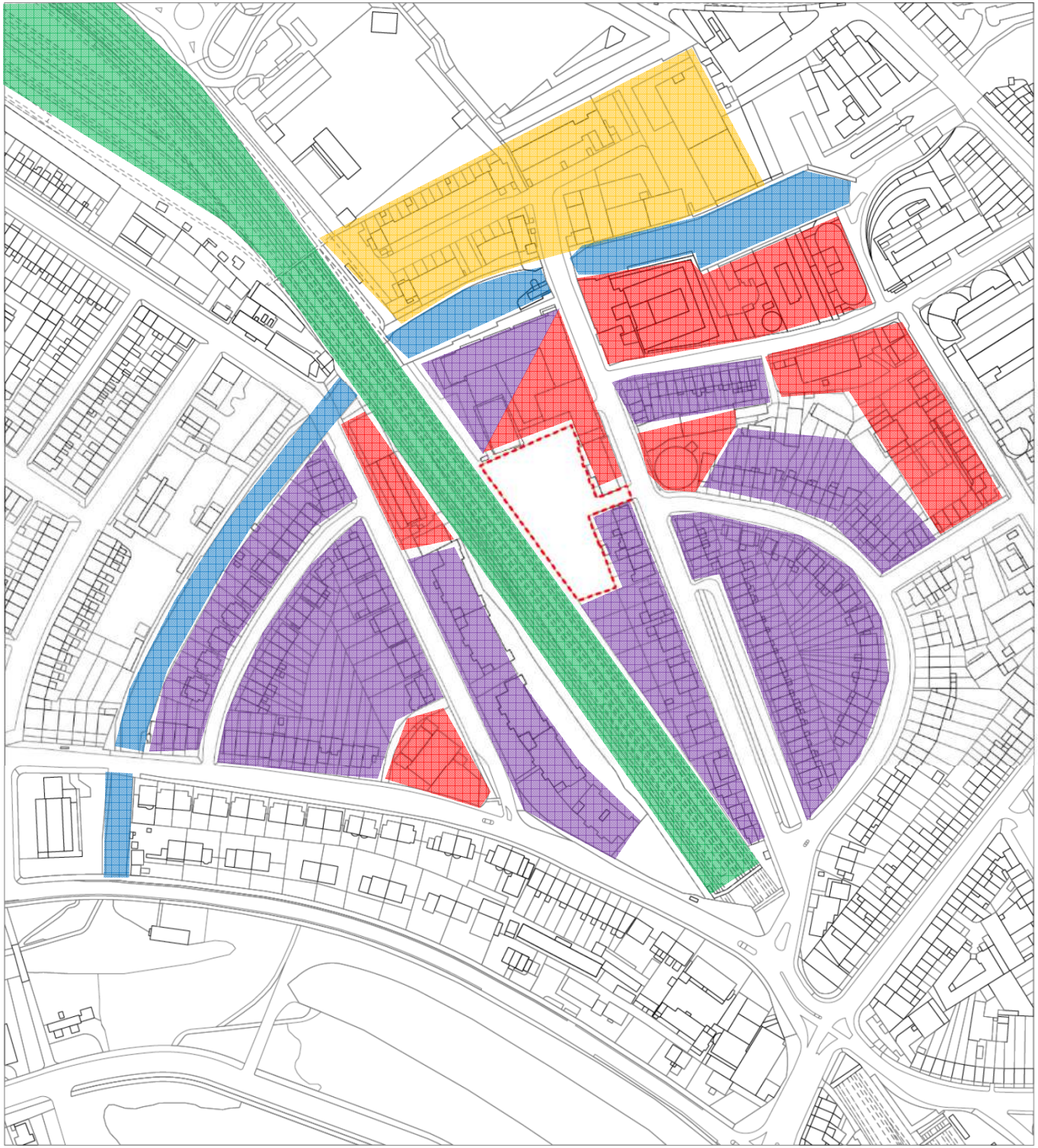
Development Location



KEY

- Mixed Use Commercial Buildings
- Residential Building
- Railway Lines
- Camden Canal
- Gilbeys Yard

Fairview NEW HOMES Ltd.

Construction Department

Telephone No: 020-8366-1271 ext 217

Email: George.Abbott@Fairview.co.uk

FNH425

Centric Close, Camden

Appendix 2

Date:	Logic:	Drawn:
12.05.17	J. Wood	G.Abbott

REF:

Site Plan

Centric Close, Camden

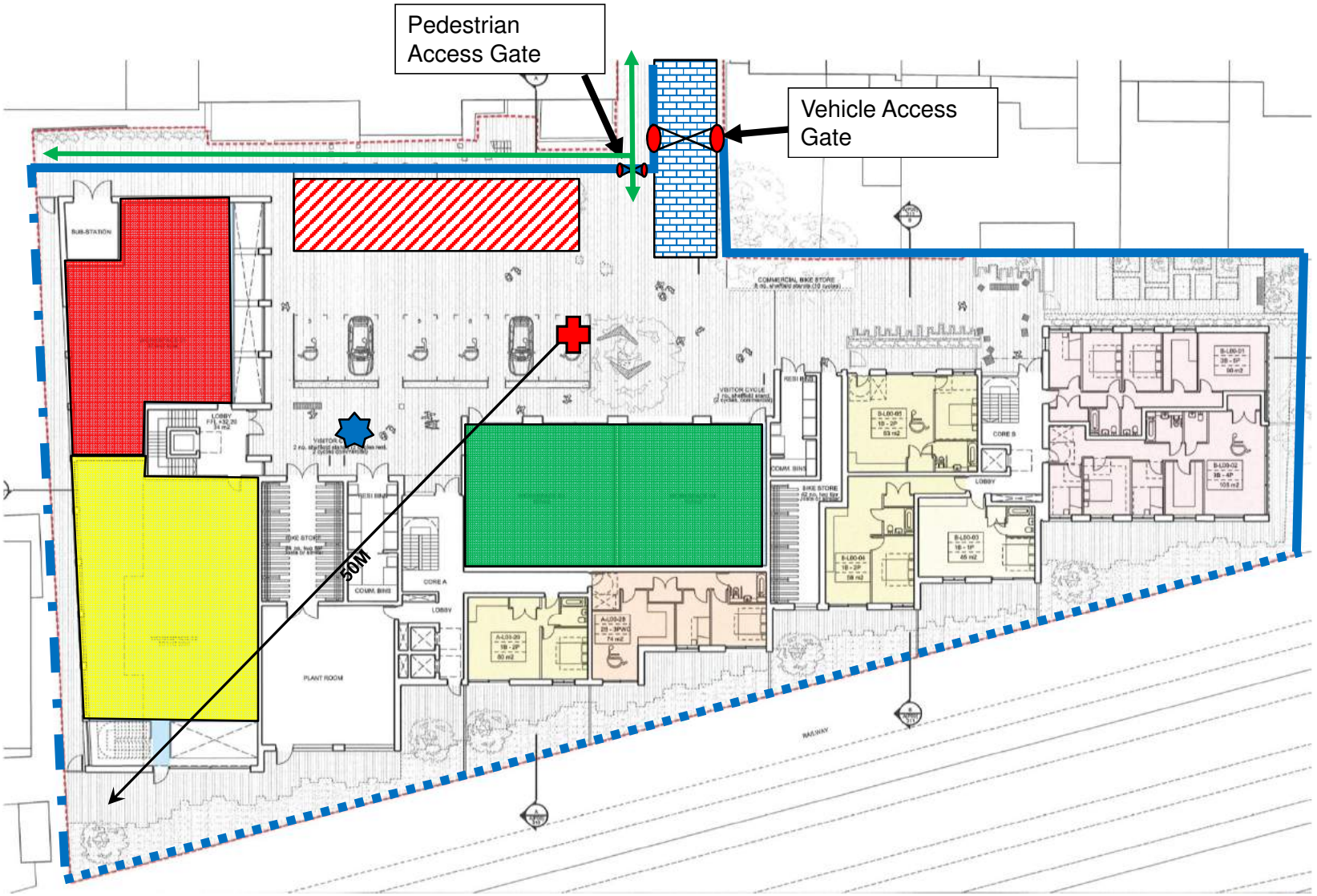
Programme

DATE: 1st September 2017

DRAWN: G.Abbott

REF: Centric Close, Programme

	2016							2017											2018												2019												2020		
	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
ACQUISITION MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
BUILD MONTH	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Planning Submission							◆																																							
Scheme Fix									◆																																					
Planning Resolution													◆																																	
S106																◆																															
V.P													◆																																	
IPP																			◆																													
ConDoc											▬	▬	▬	▬	▬	◆																													
Demo ConDoc								▬	▬	◆																																				
Demolition																	▬	▬	▬																												
Enabling Works / Services																				▬	▬																											
Build Month 1																						◆																									
Construction of Units																						▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
Private Flats (49)																																											4	7	8	8	8	8	6
HA Flats (27)																																												4	6	6	6	5
Total White Cards (76)																																										4	7	12	14	14	14	11



KEY

- Double stacked site compound from BM1 – BM12
- Site Offices from BM12
- Material Storage
- Unloading area
- 50M Luffing JiB T/C
- Passenger/Goods Hoist
- Site access gates
- Sales Offices from BM16
- Timber Hoarding
- Existing Brick Wall
- Existing Palisade
- Pedestrian Route

Fairview NEW HOMES Ltd.

Construction Department

Telephone No: 020-8366-1271 ext 217

Email: George.Abbott@Fairview.co.uk

FNH425

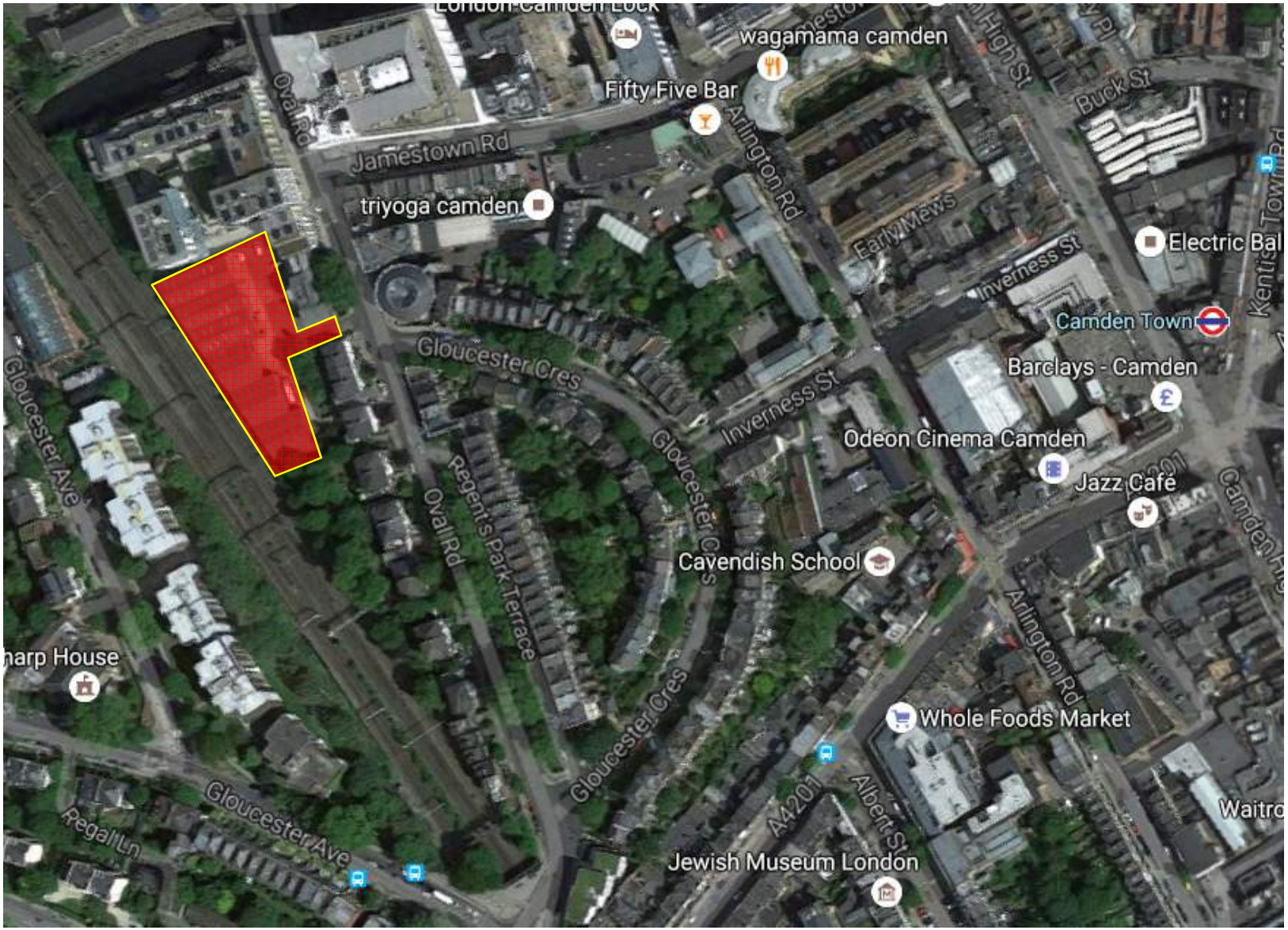
Centric Close, Camden

Appendix 4

Date:	Logic:	Drawn:
04.08.17	J. Wood	G. Abbott

REF:

Cent, Camden SSU 001



Site Location

Note:
Centric Close has good transport links within close proximity, Camden Town Underground station is located 400M East of the site.

Fairview NEW HOMES Ltd.

Construction Department

Telephone No: 020-8366-1271 ext 217

Email: George.Abbott@Fairview.co.uk

FNH425
Centric Close, Camden

Appendix 5

Date:	Logic:	Drawn:
12.05.17	J. Wood	G. Abbott

REF:
Train Links

Site Location

Fairview NEW HOMES Ltd.

Construction Department

Telephone No: 020-8366-1271 ext 217

Email: George.Abbott@Fairview.co.uk

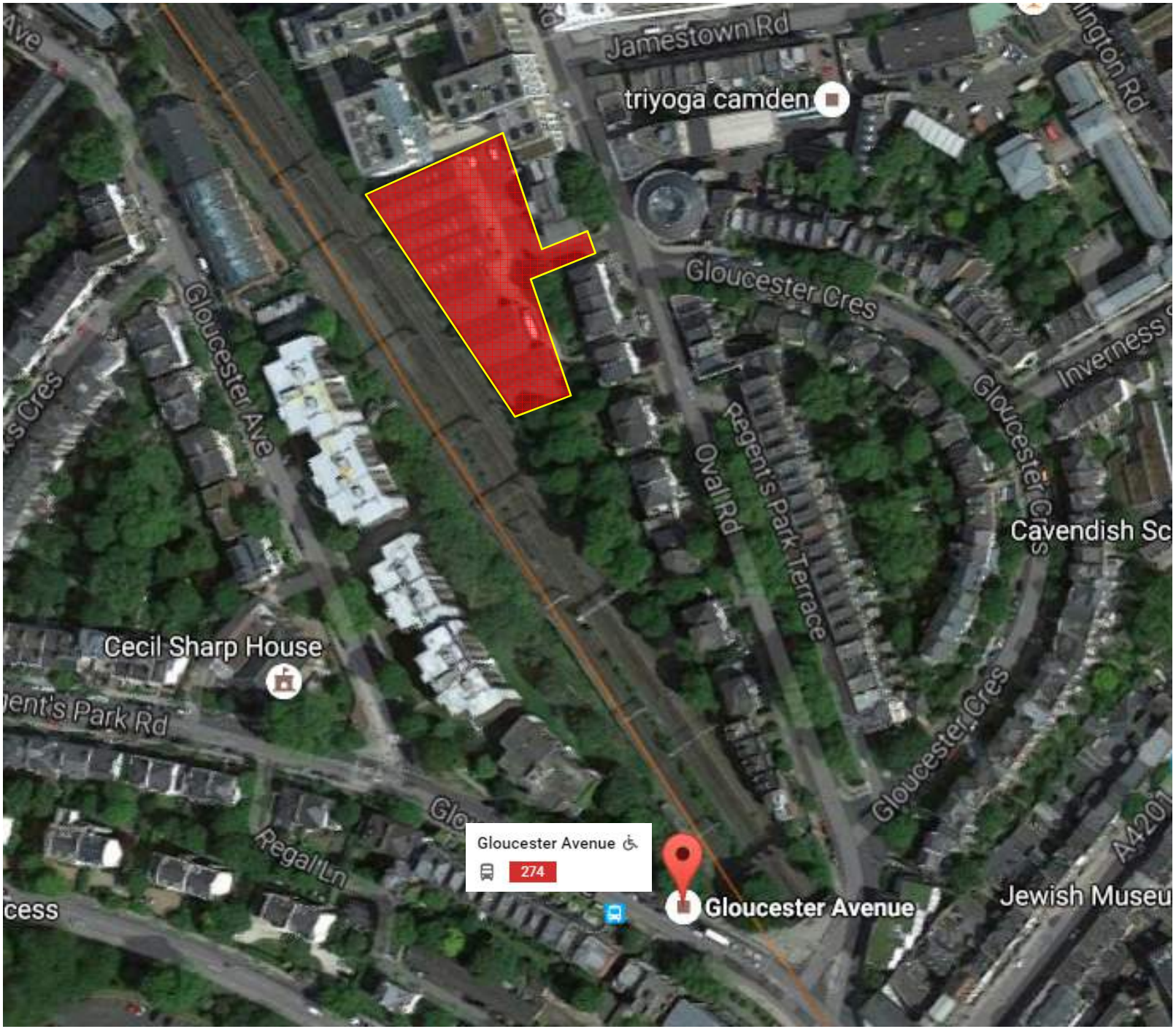
FNH425
Centric Close, Camden

Appendix 5

Date:	Logic:	Drawn:
12.05.17	J. Wood	G. Abbott

REF:

Cent, Camden Train



Site Location

Note:

Centric Close has good transport links within close proximity, the Highlighted bus stop, Gloucester Avenue which is located 300M South of the site.

Fairview NEW HOMES Ltd.

Construction Department

Telephone No: 020-8366-1271 ext 217

Email: George.Abbott@Fairview.co.uk

FNH425

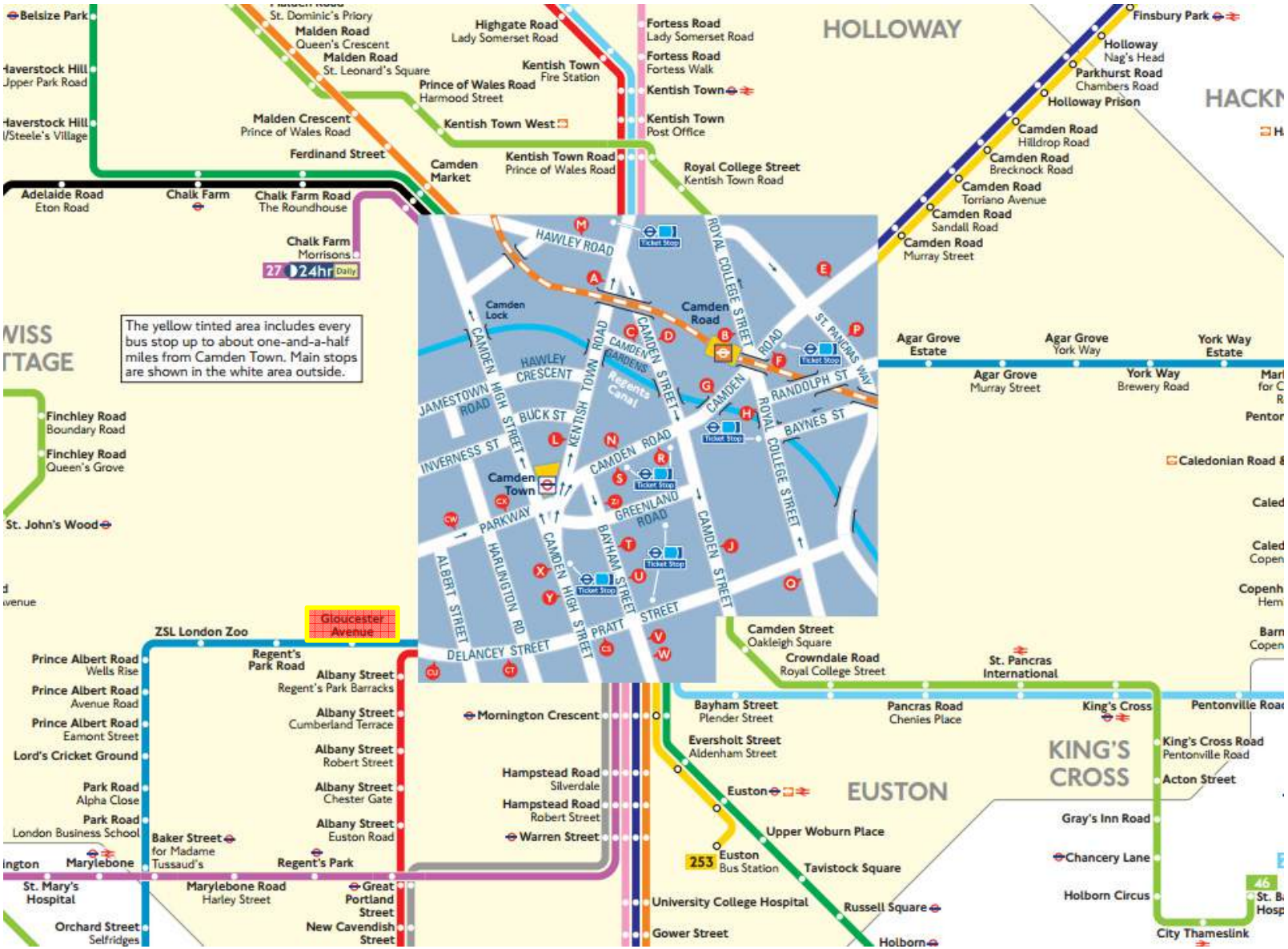
Centric Close, Camden

Appendix 6

Date:	Logic:	Drawn:
12.05.17	J. Wood	G. Abbott

REF:

Cent, Camden Bus



Site Location

Fairview NEW HOMES Ltd.

Construction Department

Telephone No: 020-8366-1271 ext 217

Email: George.Abbott@Fairview.co.uk

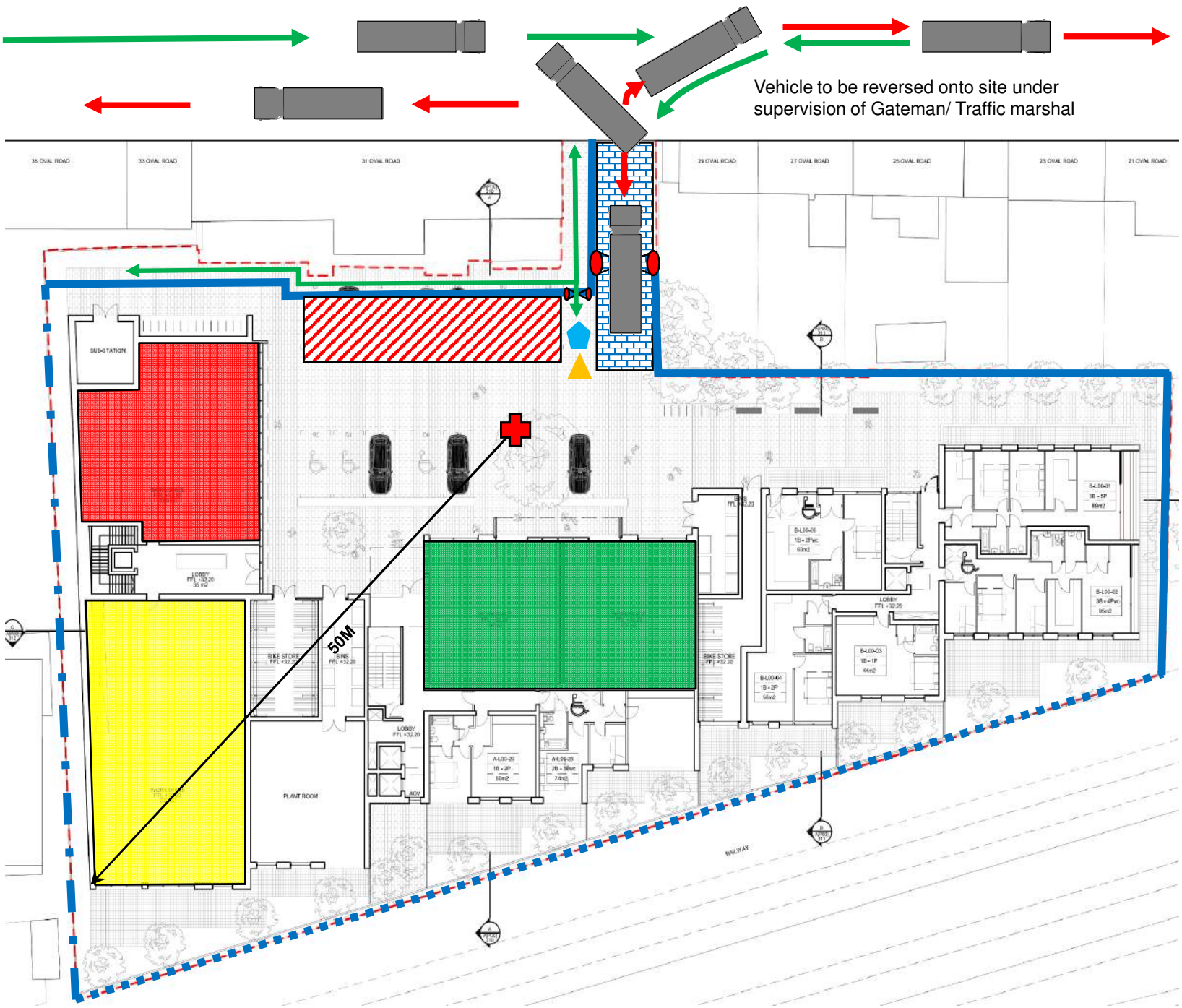
FNH425
Centric Close, Camden

Appendix 6

Date:	Logic:	Drawn:
12.05.17	J. Wood	G. Abbott

REF:

Bus Links



KEY

- Double stacked site compound from BM1 – BM12
- Site Offices from BM12
- Material Storage
- Unloading area
- 50M Luffing JiB T/C
- Site access gates
- Sales Offices from BM16
- Pedestrian Route
- IN / OUT — Vehicle Route
- Wheel Wash
- Gatesman / Traffic Marshal

Fairview NEW HOMES Ltd.

Construction Department

Telephone No: 020-8366-1271 ext 217

Email: George.Abbott@Fairview.co.uk

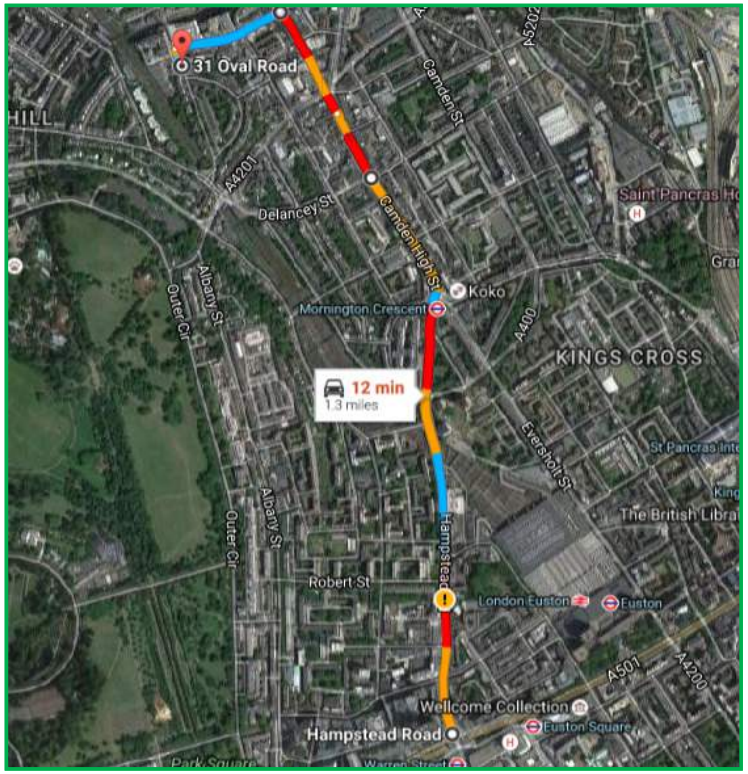
FNH425
Centric Close, Camden

Appendix 7

Date:	Logic:	Drawn:
12.05.17	J. Wood	G. Abbott

REF:

Traffic Management Plan



Hampstead Road
London NW1, UK

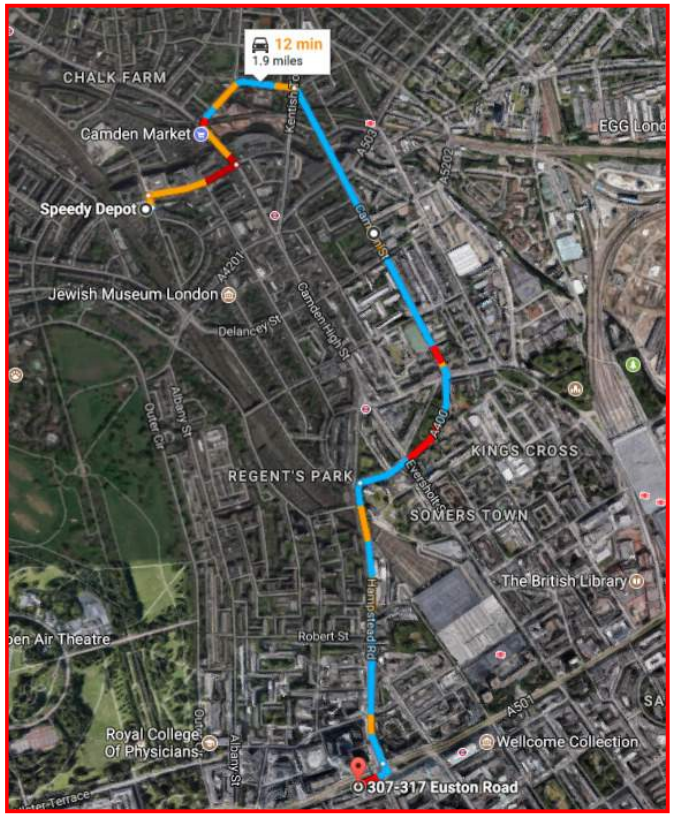
1. Head north on Hampstead Rd/A400 towards Brock St
   Continue to follow A400
2. Keep left to continue on Camden High St/A400
   Continue to follow Camden High St
3. Turn left onto Jamestown Rd
4. Turn left onto Oval Rd

31 Oval Road
London NW1, UK

Speedy Depot
1, Centric Close, Oval Rd, Camden NW1 7EP

- Head north on Oval Rd towards Jamestown Rd
  121 ft
- Turn right onto Jamestown Rd
  0.2 mi
- Turn left onto Camden High St/A502
  463 ft
- Turn right onto Castlehaven Rd/A502
  Continue to follow A502
  0.2 mi
- Continue onto Camden St/A400
  Continue to follow A400
  0.9 mi
- Use the left 2 lanes to turn left onto Hampstead Rd/A400
  0.5 mi
- Use the right 2 lanes to turn right onto Euston Rd
  413 ft

307-317 Euston Rd
London NW1 3AD



KEY

Vehicle Routing to Site

Vehicle Routing from Site

Note:

This is vehicle routing to and from the:

A501

Fairview NEW HOMES Ltd.

Construction Department

Telephone No: 020-8366-1271 ext 217

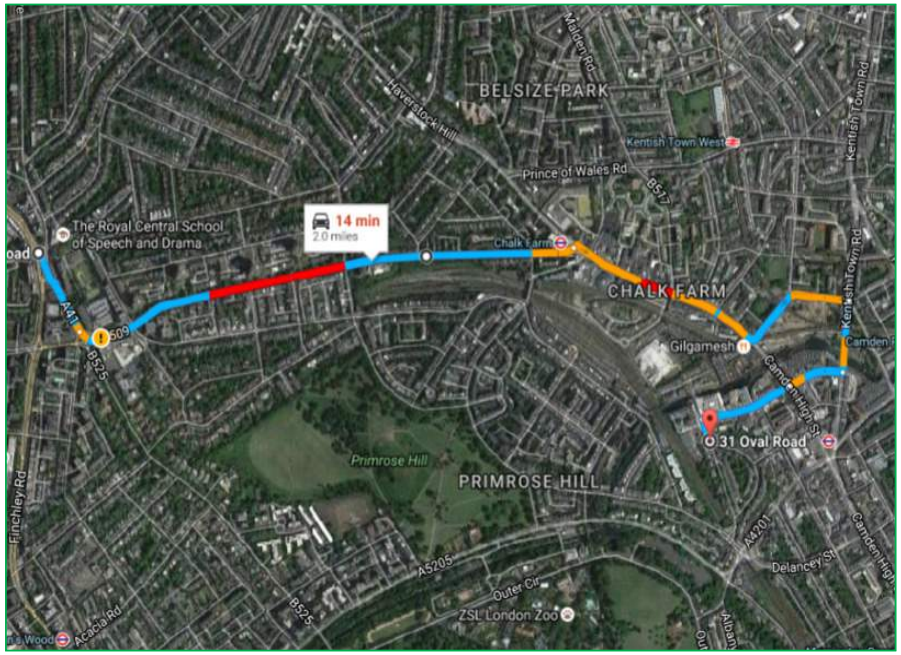
Email: George.Abbott@Fairview.co.uk

FNH425
Centric Close, Camden

Appendix 8

Date:	Logic:	Drawn:
01.09.17	J. Wood	G. Abbott

REF:
Vehicle Routing



135 Finchley Road
London NW3 6JH, UK

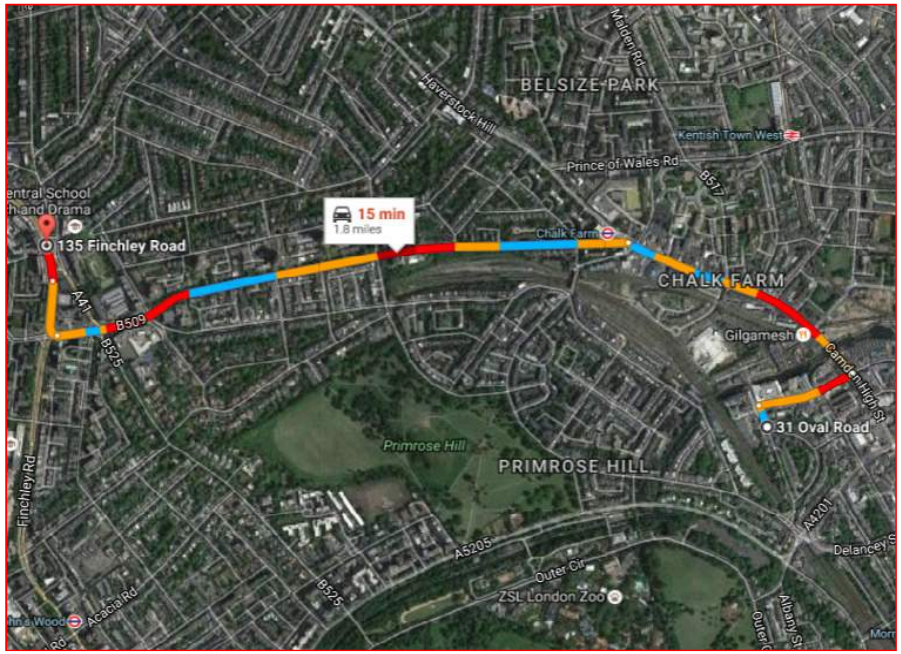
1. Head south on Finchley Rd/A41 towards College Cres/B511
   Continue to follow A41
2. Turn left onto Adelaide Rd/B509
3. Turn right onto Haverstock Hill/A502
   Continue to follow A502
4. Turn right onto Kentish Town Rd/A400
5. Turn right onto Hawley Cres
6. Continue onto Jamestown Rd
7. Turn left onto Oval Rd

31 Oval Road
London NW1, UK

31 Oval Road
London NW1, UK

1. Head north on Oval Rd towards Jamestown Rd
2. Turn right onto Jamestown Rd
3. Turn left onto Camden High St/A502
   Continue to follow A502
4. Slight left onto Adelaide Rd/B509
   Continue to follow Adelaide Rd
5. Use the 2nd from the right lane to turn right onto Finchley Rd/A41
6. Keep left to stay on Finchley Rd/A41

135 Finchley Road
London NW3 6JH, UK



KEY

Vehicle Routing to Site

Vehicle Routing from Site

Note:

This is vehicle routing to and from the:

A41

Fairview NEW HOMES Ltd.

Construction Department

Telephone No: 020-8366-1271 ext 217

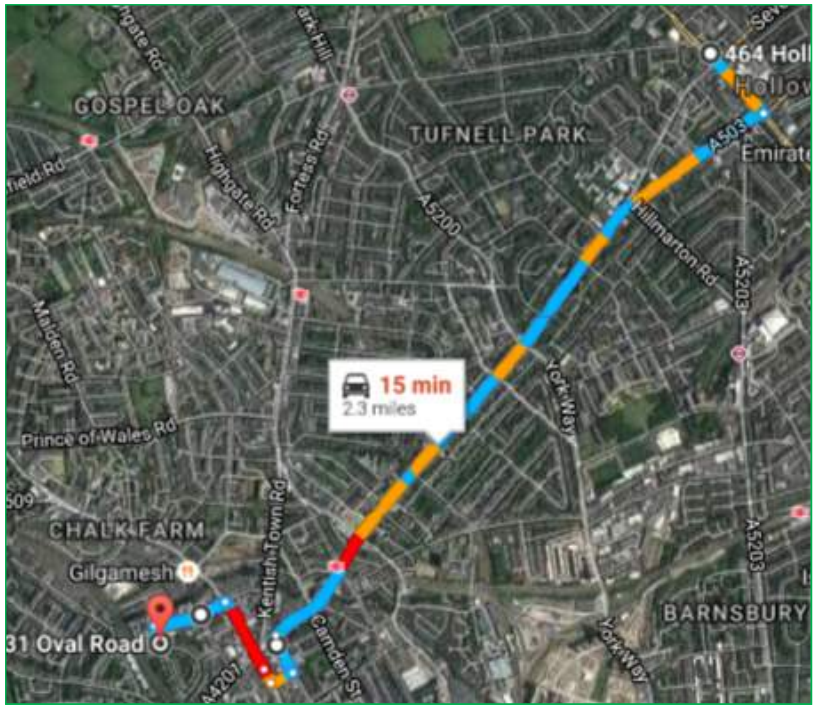
Email: George.Abbott@Fairview.co.uk

FNH425
Centric Close, Camden

Appendix 8

Date:	Logic:	Drawn:
01.08.17	J. Wood	G. Abbott

REF: Vehicle Routing



464 Holloway Road
London N7 6HT, UK

Take Camden Rd/A503 to Bayham St

1. Head south-east on Holloway Rd/A1 towards Seven Sisters Rd/A503
2. Turn right at the 2nd cross street onto Camden Rd/A503

Continue on Bayham St to Camden High St/A400

3. Camden Rd/A503 turns left and becomes Bayham St
4. Turn right onto Greenland St

Follow Camden High St to Jamestown Rd

5. Turn right onto Camden High St/A400
6. Keep left to stay on Camden High St/A400
   Continue to follow Camden High St

Continue on Jamestown Rd. Drive to Oval Rd

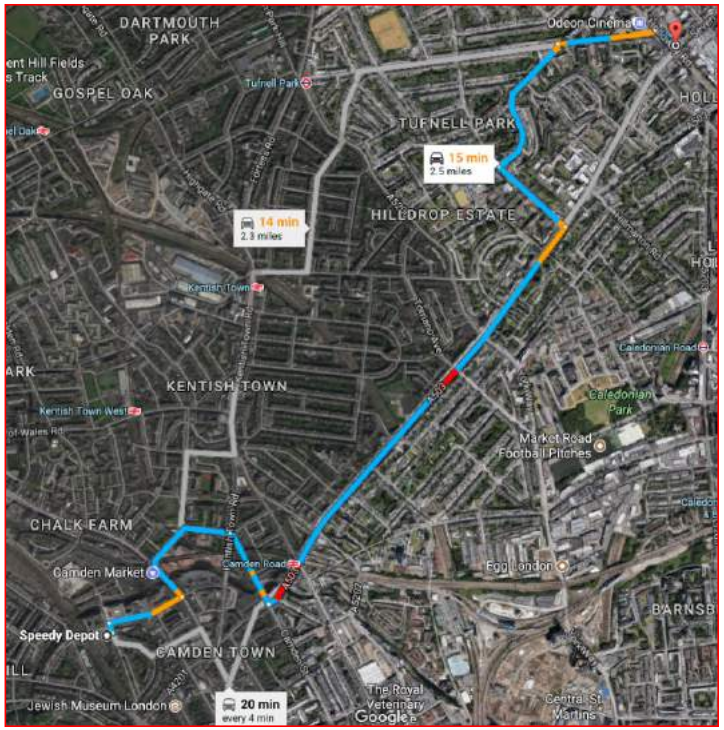
7. Turn left onto Jamestown Rd
8. Turn left onto Oval Rd

31 Oval Road
London NW1, UK

Speedy Depot
1, Centric Close, Oval Rd, Camden NW1 7EP

- Head north on Oval Rd towards Jamestown Rd
  121 ft
- Turn right onto Jamestown Rd
  0.2 mi
- Turn left onto Camden High St/A502
  463 ft
- Turn right onto Castlehaven Rd/A502
  Continue to follow A502
  0.2 mi
- Continue onto Camden St/A400
  0.2 mi
- Turn left onto Camden Rd/A503
  Continue to follow A503
  1.5 mi
- Turn right onto Holloway Rd/A1
  164 ft

440-448 Holloway Rd
London N7



KEY

Vehicle Routing to Site

Vehicle Routing from Site

Note:

This is vehicle routing to and from the:

A1/A503

Fairview NEW HOMES Ltd.

Construction Department

Telephone No: 020-8366-1271 ext 217

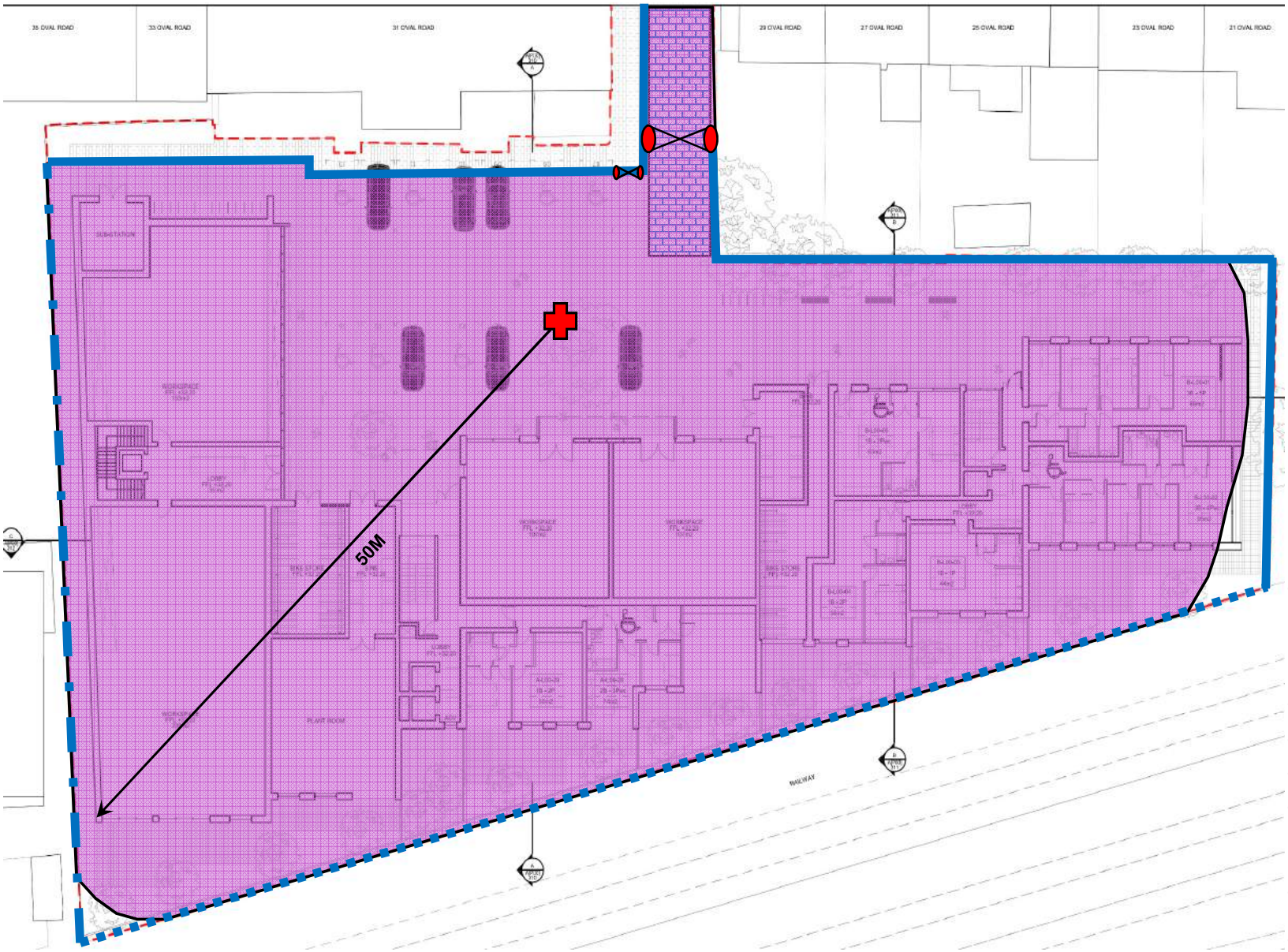
Email: George.Abbott@Fairview.co.uk

FNH425
Centric Close, Camden

Appendix 8

Date:	Logic:	Drawn:
01.09.17	J. Wood	G. Abbott

REF:
Vehicle Routing



KEY

- Unloading area
- 50M Luffing JiB T/C
- Maximum Crane reach
- Crane Reach
- Timber Hoarding
- Existing Brick Wall
- Existing Palisade

Fairview NEW HOMES Ltd.

Construction Department

Telephone No: 020-8366-1271 ext 217

Email: George.Abbott@Fairview.co.uk

FNH425
Centric Close, Camden

Appendix 9

Date:	Logic:	Drawn:
12.05.17	J. Wood	G. Abbott

REF:

Crane Reach

Fairview Estates (Housing) Limited Standard Purchase Order Condition And Health/Safety Clauses

Centric Close Oval Road Camden London NW1 7EP

1. **All materials, packaging, plant, and equipment supplied must comply with all relevant statutory provisions.**

2. **Material safety data sheets must accompany all materials delivered to site and a copy forwarded to the buying department of Fairview.**

3. **Where appropriate, a copy of current thorough examination certificates must accompany plant and equipment when delivered to site, along with the necessary health and safety literature for its safe operation and use.**

4. **Drivers of delivery vehicles must report to the site office on arrival. They must adhere to site rules and wear a hard hat, protective footwear, a high visibility vest/ jacket and suitable protective gloves at all times.**

5. **Delivery drivers off loading plant, equipment or materials must be trained and competent in the use of any lifting appliance and/ or accessory used. Copies of necessary documentation confirming this must be kept by the driver for presentation to Fairview as and when requested.**

6. **Plant, equipment and materials off loaded on site by delivery drivers must not obstruct access/ egress routes, footpaths or roadways. If the delivery driver is working from the lorry or unloading materials, fall prevention measures must be put in place by the supplier/haulage company**

7. **Materials off loaded by delivery drivers must be stacked in a safe manner that will prevent tipping, collapse or unintentional movement.**

8. **Delivery drivers must not off load onto public footpaths or carriageways.**

9. **All delivery drivers must be CRB checked and carry all necessary identification.**

10. **The quantities detailed in the purchase order are the maximum to be supplied.**

11. **All vehicles arriving on site must be FORS (Fleet Operator Recognition Scheme) Bronze level certified as a minimum and comply to the Transport for London CLOCS requirements at all times**

12. **The wheel wash provided on site will be mandatory for all vehicles egressing the site.**

13. **Deliveries will be between 9:00am – 3:00pm and then resume at 4:00pm – 6:00pm. No queuing/parking is allowed on site/development or on adjacent roads outside these hours.**

14. **All delivery notes and invoices must contain the following information:**
    a) **Site address**
    b) **Purchase order number**
    c) **Flat type, plot number and/ or floor level**
    d) **Product description and quantity**
    e) **Product unit rate and total**
    f) **Material safety data sheets for products supplied**

15. **The site contact will be Michael Nevins who can be contacted on mobile number 07740 800918**

16. **The following personnel are authorised to sign delivery tickets:**
    a) **Michael Nevins**
    b) **Alex Knight**
    c)

    If delivery tickets are not signed by the above, payment will not be processed.

17. **Please contact the site manager 24 hours prior to delivery to inform if an AM OR PM delivery. On the date of delivery please contact the site manager 1 hour prior to delivery to confirm this site is clear for the delivery to be completed.**

18. **Large deliveries vehicles for bricks, blocks, roof trusses, eco joist etc… must park in a sensible area AWAY from site and call site manager. (DO NOT BLOCK entrance) site manager will inform driver when they can safely enter the site.**

5. Plant and Equipment

Heavy Goods Vehicles (HGVs)

Erith Contractors Limited prides itself on having HGV vehicles at the pinnacle of the safety industry.
All of Erith's vehicles are also Crossrail compliant and in September 2014 Erith Group attained the prestigious FORS Gold Award.

We employ over 60 HGV drivers, all of whom have received NVQ Level 2 qualifications and attended an in-house economic driving course.

Erith's progression from Silver to Gold FORS accreditation involved the demonstration and implementation of an enhanced and continuous improvement plan in line with the FORS criterion objective.

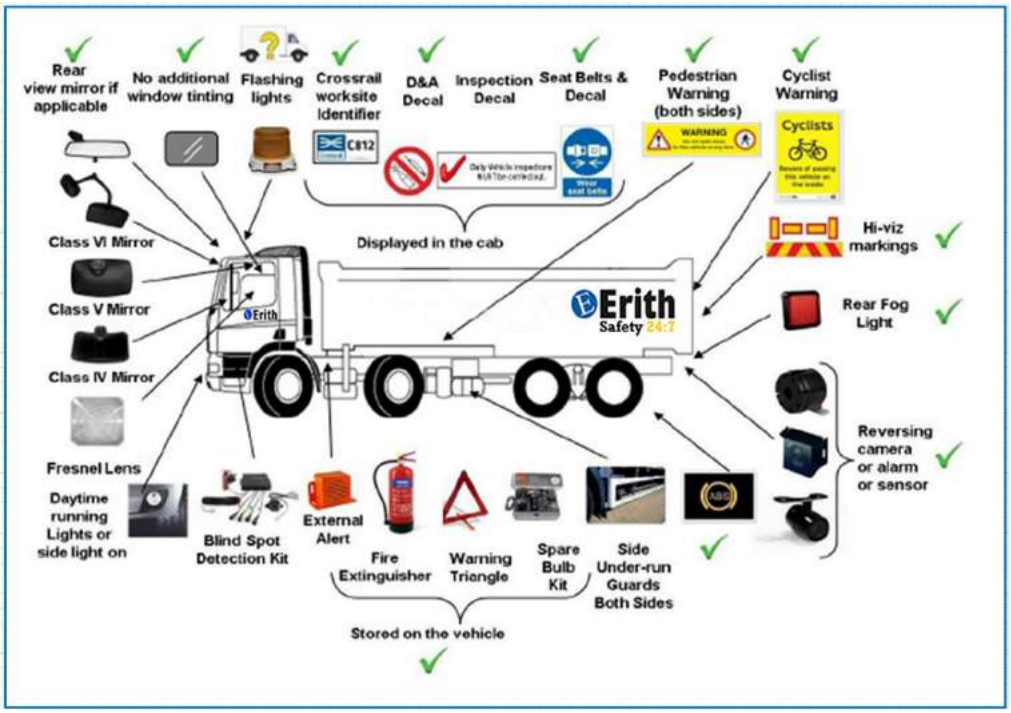
Key Performance Criteria achieved include:

- Promotion of the **FORS Standards** across the supply chain
- Investment and development of an enhanced training plan
- Close proximity safety equipment implementation plan demonstrating the commitment to improving safety standards in conjunction with vulnerable road user initiatives
- Improve operational efficiency and environmental impact by reducing fuel cost and CO_2 emissions

Every vehicle has a tracker fitted, which enables the transport manager to plan routes via the least congested routes, which reduces our operational costs and risks to road users.

Our transport planning manager ensures that all fleet operators have all information to hand and vehicle dimensions are considered when routing to avoid low and narrow bridges and sharp turns. All drivers are aware of any route restrictions and their load.

All of Erith's HGVs are also now fitted with the following safety enhancements:



Fairview (New Homes) Ltd

Centric Close, Camden

Construction Noise and Vibration Assessment

2873505 – October 2017

Move Forward with Confidence

BUREAU VERITAS

Document Control Sheet

Identification	
Client	Fairview (New Homes) Ltd
Document Title	Centric Close, Camden – Construction Noise and Vibration Assessment
Bureau Veritas Ref No.	2873505-02

Contact Details		
Company Name	Bureau Veritas UK Limited	Fairview Estates (Housing) Ltd
Contact Name	Norbert Skopinski	David Scanlan
Position	Consultant	Engineering Manager
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Configuration				
Version	**Date**	**Author**	**Reason for Issue/Summary of Changes**	**Status**
02	02/10/17	R Cope	Final Issue	Final

	Name	Job Title	Signature
Prepared By	N Skopinski	Consultant	
Approved By	R Cope	Technical Director	

Contents

Executive Summary

This report assesses the noise and vibration impact from Fairview's demolition and construction works at Centric Close, Camden on nearby residential properties and other sensitive receptors.

The assessment has been undertaken with reference to Camden's Minimum Requirements for Building / Construction / Demolition Sites.

Noise levels have been predicted at neighbouring sensitive receptors during each key phase of the works in accordance with British Standard BS5228-1:2009+A1:2014.

Vibration and structure-borne noise levels have been assessed at neighbouring sensitive receptors during each key phase of the works in accordance with British Standard BS5228-2:2009+A1:2014.

The worst-case noise assessment indicates that the noise insulation and temporary rehousing thresholds are unlikely to be met for any property, due to the level of the noise predicted and the expected exposure period.

The highest noise levels are predicted at the south-facing 1st – 4th storey properties at 35 Oval Road, Lock House (nearest receptor building). However, the predicted exposure levels would occur for a limited period during the least sensitive time of the day (core daytime working hours only). In accordance with best practice and supplemental to enrolment on the Considerate Contractors Scheme, residents will be given prior notification of potentially noisy works, and a formal communication and complaints procedure will be implemented. Furthermore, continuous unattended construction noise monitoring will be undertaken at three receptor locations throughout the demolition and construction works.

Likewise, whilst vibration generated during some construction activities (piling and ground/surface compaction) may be perceptible in nearby properties, the levels will generally not be significant. It is predicted that the most significant vibration impacts will occur during short-term ground compaction works close to the site boundary. To minimise the potential for disturbance and concern, prior notification will be given to all neighbouring residents ahead of piling and ground compaction works. Vibration levels generated during the construction works are expected to be well below the levels that would cause even cosmetic damage to properties.

1 Introduction

Overview

1.1 As requested by Camden Council, Fairview (New Homes) Ltd have commissioned Bureau Veritas UK Ltd (BV) to undertake a Construction Noise and Vibration Assessment (CNVA) for their Centric Close, Camden development (Planning Application Ref 2016/6891/P). This CNVA provides supplementary evidence to the project's Construction Management Plan (CMP), and demonstrates that the construction works can be completed in accordance with best practice.

1.2 The Centric Close site demolition and construction works take place in close proximity to the following residential and commercial properties, namely:

- 35 Oval Road, Lock House
- 35 Oval Road, South-West
- 35 Oval Road, North
- 35 Oval Road
- 33 Oval Road
- 31 Oval Road
- 29 Oval Road
- 27 Oval Road
- 25 Oval Road
- 23 Oval Road
- 21 Oval Road
- 15-17 Oval Road

1.3 A detailed programme of works has been produced for the construction works until completion in March 2020 (estimate). Noise levels impacting on the nearest of the aforementioned receptors (those identified with an asterisk) have been assessed up to August 2019, following which noise from the site will be significantly reduced due to internal fit-out works only.

2 Activities

2.1 The demolition works on the Centric Close site are scheduled to commence in October 2017. This assessment covers the main programme of works from this date through to the intended completion of the building superstructure in July 2019. Table 2.1 details the activities that are scheduled to take place during this period of construction works. All work will take place during core hours (Monday to Friday 08:00 to 18:00 and Saturday 08:00 to 13:00) in accordance with Camden requirements.

Table 2.1 Centric Close Activities

Activity Number and Description	Methodology	Start Date	End Date
Activity 1 – Demolition	Demolition works will be undertaken by a combination of machinery (tracked excavator and mounted breaker) and hand tools (sledge hammers, mattocks, pinch bars etc). Access to higher levels will be provided by a MEWP. All demolition waste will be exported from site leading to up to 4no. muckaway loads per day. A vehicle wheel wash will be utilised during this phase, close to the eastern site gate.	16/10/2017	29/12/2017
Activity 2 – Reduce Level Excavation + lay services & pile mat	Enabling works will continue to prepare the site in preparation of the new construction, including ground levelling and installation of new/upgraded services. Waste will be exported from site leading to up to 2no. muckaway loads per day. A vehicle wheel wash will be utilised during this phase, close to the eastern site gate.	02/01/2018	28/02/2018
Activity 3 – Piling	Substructure works will commence with continuous flight augur (C.F.A) piles followed by the construction of Reinforced concrete pile caps, ground beams and ground floor slabs.	01/03/2018	13/04/2018
Activity 4 – Basement Excavations & Cut Down Piles	A hydraulic pile cropper (excavator mounted) will be used to cut down piles, with a jack hammer used for pile cap finishing works. During this phase it is assumed that there will be up to 8no. deliveries of concrete and/or steel rebar. A vehicle wheel wash will be utilised during this phase, close to the eastern site gate.	16/04/2018	31/05/2018
Activity 5 – Fix Reinforcement & Framework	These works will utilise a tower crane to manoeuvre the frame into position and fixing using hand tools (disk cutter, hammer, saw). Access to higher levels will be provided by a MEWP.	01/05/2018	30/11/2018
Activity 6 – Concrete	The superstructure construction will be a reinforced concrete frame, requiring up to 10no. concrete deliveries per day. Concrete pumping and occasional cutting will be the main noise-generating activities during this phase.	04/06/2018	28/12/2018
Activity 7 – Strike Formwork	The removal of formwork will be undertaken by using hand tools (hammer, saw), and the tower crane.	02/07/2018	31/01/2019
Activity 8 – Erect Metsec Frame	Elevational treatments will predominately be brickwork with areas of rain screen cladding and render. All with a metsec inner skin. The main noise-generating sources during this phase will be the use of hand-tools (e.g. bolters, drills and circular saws).	05/11/2018	31/05/2019
Activity 9 – Build Brickwork	The lower levels of brickwork will be undertaken at ground level, and then from scaffolding as that is built upwards. The tower crane will be in use intermittently to distribute materials.	02/01/2019	26/07/2019
Activity 10 – Erect Scaffolding	Scaffolding will be erected using hand tools, with the tower crane used intermittently to distribute materials.	04/02/2019	30/08/2019

Activity Number and Description	Methodology	Start Date	End Date
Activity 11 – Lay Roof Covering	The roof will be single ply membrane on insulation laid to falls. The main noise-generating activities during this phase will be the use of hand-tools (e.g. bolters, drills and circular saws) and cranes.	02/01/2019	22/02/2019
Activity 12 – Fix Windows	Hand tools (drill) will be used to complete these works, with access from the scaffolding.	03/12/2018	28/06/2019

Note: All activities to be undertaken during core daytime working hours (Mon-Fri 08:00-18:00 and Sat 08:00-13:00)

Onsite Mitigation

2.2 During construction works, the undertaker is obliged under the Control of Pollution Act 1974 to mitigate noise and vibration where possible through use of Best Practicable Means (BPM).

2.3 A 2.4m solid site boundary hoarding will be maintained to reduce noise emissions for all activities (where there are no existing boundary treatments of similar noise attenuation performance).

2.4 Careful selection of plant and tools will be undertaken for each activity, as well as consideration of the methodology used for completion of the works to ensure that noise emissions per activity are kept to a minimum as far as is reasonably practicable.

2.5 Fixed plant will be screened where possible to reduce the impact of noise on nearby receptors.

3 Legislative Framework

Construction Noise Assessment Methodology

British Standard 5228-1:2009+A1:2014 Noise and vibration control on construction and open sites - Part 1: Noise (BS5228-1)

3.1 On 6th April 2015, BS5228-1 gained Approved Code of Practice status (in England) under the powers conferred by sections 71(1)(b), (2) and (3) of CoPA 1974, as enacted under The Control of Noise (Code of Practice for Construction and Open Sites) (England) Order 2015. Compliance with the best practice noise mitigation requirements stated therein became a statutory obligation under the Act.

3.2 Noise emissions from the construction of a proposed development are assessed differently to noise from permanent installations as it is recognised that the former are an inevitable by-product of required works and their effects are temporary. They are controlled by guidelines and subject to Local Authority control. BS5228-1 contains a database of noise emissions from individual items of equipment and activities for use in predicting the noise from demolition and construction methods at sensitive receptors. Guidance is given on the effects of different ground type, barrier attenuation and how to assess the impact of fixed and/or mobile plant. Predictions of noise levels in accordance with BS5228-1 were undertaken and the full details, including inputs and assumptions, are presented in Appendix Four.

3.3 Whilst not mandatory, Annex E of BS5228-1 provides advice to assist the development of noise assessment criteria based on previous published guidance and methodologies adopted successfully for other planning applications.

3.4 In assessing the requirement for noise limits, or operating period controls relating to construction, Government Agencies and Local Authorities generally give consideration to the following aspects of planned works, all of which have a bearing on the 'significance' of the impact:

- the duration of the planned construction activities (weeks, months, years);
- whether some construction works are planned for the night-time and/or weekend periods;
- the proximity of construction works relative to residential areas; and
- the predicted noise levels and noise impact at residential areas.

3.5 Central to the setting of construction noise limits is the concept of "best practicable means (BPM)" which is defined by section 16, part 2 of the Public Health Act 1990, as follows:

(a) 'Practicable' means reasonably practicable having regard, among other things, to local conditions and circumstances, the current state of technical knowledge and the financial implications;

(b) The means to be employed include the design, installation, maintenance and manner and periods of operation of plant and machinery, and the design, construction and maintenance of buildings and structures; In the context of this scheme this includes consideration of:

- What plant and methods will carry out the job;
- How noisy are the plant and methods that will carry out the job;
- How long it will it take to do the works with such plant; or any alternative quieter methods

(c) The test of best practicable means is to apply only so far as compatible with-

(i) any duty imposed by law; In the context of this scheme this includes consideration of:
(ii) safety and safe working conditions; and
(iii) the exigencies of any emergency or unforeseeable circumstances.

3.6 The above mean that when setting noise limits for construction works it is important to consider what noise levels are achievable and compare these with appropriate criteria to assess the impact; and where impacts are assessed as unacceptable to implement mitigation, and then re-assess the impacts against the same criteria after mitigation.

3.7 For the purposes of this assessment, work sites shall include the main working areas, plus those locations utilised by the Contractor for the purposes of delivery and storage of plant, machinery, materials and the siting of cabins, workers accommodation, etc., in connection with the construction works.

Construction Vibration Assessment Methodology

British Standard 5228-2:2009+A1:2014 Noise and vibration control on construction and open sites - Part 2: Vibration (BS5228-2)

3.8 On 6th April 2015, BS5228-2 gained Approved Code of Practice status (in England) under the powers conferred by sections 71(1)(b), (2) and (3) of CoPA 1974, as enacted under The Control of Noise (Code of Practice for Construction and Open Sites) (England) Order 2015. Compliance with the best practice vibration mitigation requirements stated therein became a statutory obligation under the Act.

Perception of Vibration

3.9 The proposed development will potentially introduce vibration from temporary construction plant and processes to the area.

3.10 There are no accepted formulae for prediction of passage of vibration through ground due to the non-uniform effects of different ground conditions, although some empirical formulae are proposed for known ground conditions based on previously measured data.

3.11 In this instance, vibration due to demolition and construction has been calculated using measured source data and the propagation relationship taken from the British Standard BS 5228-2. The standard suggests that attenuation with distance should be calculated as the reciprocal of the source-receiver distance. Vibration predicted from construction routines (or from measurements taken at similar installations) can then be compared to both building damage criteria and human annoyance criteria described earlier.

3.12 Human perception to vibration is of the order of 0.15 mms^{-1} to 0.3 mms^{-1} Peak Particle Velocity (PPV), in the frequency range 0.1 Hz to 1500 Hz. (The lowest note, 'A', on a full size piano keyboard has a fundamental frequency of 28 Hz). However, the human body is not equally sensitive to all frequencies of vibration; and weighting curves to reflect the frequency dependency of the body have been developed and are contained within ISO Standards. Those frequencies to which the human body is most sensitive are given a much heavier weighting than those at frequencies to which the body is less sensitive. This weighting gives a good correlation between the measured vibration level and the subjective feeling or impact produced by the vibration.

Vibration Limits - Human Perception

3.13 Ground vibrations may cause reactions ranging from 'just perceptible', through 'concern' to 'alarm' and 'discomfort'. The subjective response varies widely and is a function of situation, information, time of day and duration.

3.14 British Standard BS 6472-1: 2008 'Guide to evaluation of human exposure to vibration in buildings. Part 1: Vibration sources other than blasting' gives base curves of vibrations for minimal adverse comment, and vibration dose values (VDVs) at which complaints are probable. VDVs may be used to assess the severity of impulsive and intermittent vibration, such as that experienced from blasting at quarries, from rail traffic, or from steady vibration such as from a busy road or fixed plant.

3.15 The adoption of the VDV parameter is based on social studies undertaken in the 1980s and early 1990s into human response to vibration. BS 6472-1 requires that the VDV be determined separate for the 16-hour daytime (07.00-23.00) and 8-hour night-time (23.00-07.00) periods.

3.16 The VDV is given by the fourth root of the integral of the fourth power of the acceleration after it has been frequency-weighted:

$$VDV = \left(\int_0^T a^4(t)dt\right)^{0.25}$$

Where:

VDV is the vibration dose value (in $ms^{-1.75}$)

a(*t*) is the frequency-weighted acceleration (ms^{-2})

T is the total period of the day (in seconds) during which vibration may occur

3.17 The basic procedure is to estimate, or measure, the frequency weighted root mean square (r.m.s.) acceleration levels, and to integrate the several components with respect to time over the day or night-time period so as to compute the VDV. The VDV is measured in each of the three whole-body orthogonal axes and the maximum from the three axes used.

Where the vibration conditions are constant or regularly repeated throughout the day and assessment is based on measured data, only one representative period need be measured, and the 16-hour daytime (or 8-hour night-time) overall VDV level may be calculated from the shortened measurement.

3.18 The predicted or measured VDV may then be compared to Table 1 of BS6472-1, reproduced as Table 3.1 below, to identify the likelihood of complaint.

3.19 For example, between 0.4 and 0.8 $ms^{-1.75}$ adverse comment regarding daytime vibration levels becomes possible, also when the VDV increases above 0.4 $ms^{-1.75}$ at night adverse comment becomes probable. Daytime limits are relaxed by a factor of two for daytime office use.

3.20 Data included in BS 6472-1 may therefore be used to assess the likelihood of adverse comment arising from construction vibration to local residential properties, and to occupiers of offices.

3.21 Where it is not possible from the available information to determine the VDV levels, an alternative is to at least consider if the vibration would be perceptible. As stated above, the threshold of perception in residential environments is identified as 0.3mm/s Peak Particle Velocity (PPV) in accordance with guidance in BS 5228-2. Complaint is likely where levels occur above 1.0mm/s PPV at residential properties.

Table 3.1: (from BS 6472-1) Vibration Dose Values ($ms^{-1.75}$) above which various degrees of adverse comment may be expected in residential buildings

Place	Low Probability of Adverse Comment	Adverse Comment possible	Adverse Comment Probable
Residential buildings, 16h day	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6
Residential buildings, 8h night	0.1 to 0.2	0.2 to 0.4	0.4 to 0.8

Note: For offices and workshops, multiplying factors of 2 and 4 respectively should be applied to the above vibration dose value ranges for a 16 h day.

Vibration Limits - Building Effects

3.22 Buildings are reasonably resilient to ground-borne vibration, so vibration-induced damage is rare, with, Section 6.1 of BS5228-2 stating that *"considerably greater levels of vibration* [than may be felt] *are required to cause damage to buildings and structures or to cause computers and similar electronic equipment to malfunction"*. Vibration-induced damage can arise in different ways, making it difficult to arrive at universal criteria that will adequately and simply indicate damage risk. Damage can occur directly due to high dynamic stresses, due to accelerated ageing, or indirectly when high quasi-static stresses are induced by, for example, soil compaction.

3.23 The criteria shown in Table 3.2 (from BS 5228-2) can be applied to piling works.

Table 3.2: Vibration limits relating to minor or cosmetic damage to buildings from piling operations (from BS 5228-2)

Type of Building	Peak component particle velocity in frequency range of predominant pulse	
	4Hz to 15Hz	15Hz and above
Reinforced or framed structures	50 mm/s at 4Hz and above	50 mm/s at 4Hz and above
Industrial and heavy commercial buildings		
Unreinforced or light framed structures	15 mm/s at 4Hz increasing to 20 mm/s at 15Hz	20 mm/s at 15Hz increasing to 50 mm/s at 40Hz and above
Residential or light commercial buildings		

Note: Values are at the base of the building.

4 Baseline Noise Measurements

4.1 Baseline noise surveys were conducted by Grant Acoustics (Report Ref. GA-2016-0026-R1, dated 30th November 2016) between Friday 21st and Monday 24th October 2016. A summary of the survey data at the three monitoring locations, relevant to proposed construction working hours, is provided in Table 4.1 below.

Table 4.1 Baseline Noise Levels (Grant Acoustics, October 2016)

	Monday-Friday	Saturday
Baseline Reference Location	08:00 - 18:00	08:00 - 13:00
	10hr	5hr
MP1 – Western site boundary adjacent to the railway line (Free-field)	71.9	71.4
a (sample measurements) – near to plant ventilation louvres at ground floor apartments to the north of the construction works (Free-field)	53	53*
b (sample measurements) – near site entrance, and representative of rear façade of No. 29 Oval Road (Free-field)	57-58	57-58*

Note: *No measurement data available but assumed to be similar to weekday.

4.2 Further baseline measurements were conducted by Bureau Veritas on Thursday 28th September 2017 at the nearest noise sensitive receptor locations (see Figure 4.1). A summary of the measured ambient noise levels is presented in Table 4.2.

Figure 4.1 Baseline Noise Monitoring Locations (Bureau Veritas, September 2017)

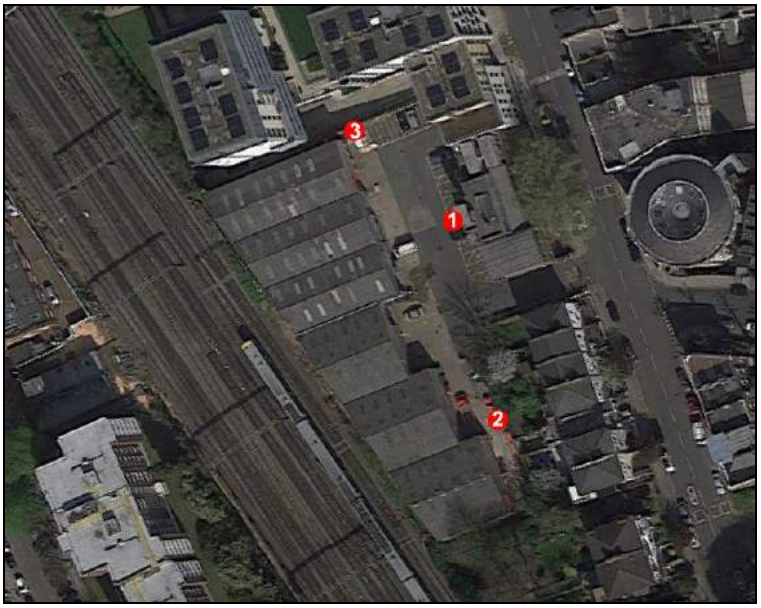


Table 4.2 Baseline Noise Levels (Bureau Veritas, 28th September 2017)

Baseline Reference Location	Start Time	Sound Pressure Level, dB $L_{Aeq,T}$
1 – No. 31 Oval Road	08:20	54.4
	09:10	53.8
	09:59	55.3
	Average	***54.0***
2 – No. 35 Oval Road	08:36	52.5
	09:27	52.7
	10:15	51.6
	Average	***53.0***
3 – No. 25 Oval Road	08:54	54.9
	09:43	52.4
	10:45	52.0
	Average	***53.3***

Note: *No measurement data available but assumed to be similar to weekday.

4.3 The measurements presented in Table 4.2 concord well with the sample measurement (a) undertaken in October 2016. These locations are screened from railway noise by the existing buildings on site (to be demolished), and from road traffic on Oval Road, by the residential properties. Clearly, noise from traffic on Oval Road increases closer to the site entrance, as screening reduces.

4.4 Once the existing site buildings are demolished by the end of 2017 (Activity 1), the screening it provides to the rear of properties on Oval Road from railway noise will be eradicated, and ambient noise levels will increase significantly.

4.5 Future baseline noise levels will therefore need to be predicted for construction activities 2 to 9, i.e. until the brickwork is complete, in order to set appropriate Trigger Action Plan thresholds for construction noise alone.

5 Noise Insulation and Temporary Rehousing Criteria

5.1 Annex E of the BS5228-1 provides criteria for the assessment of significance. Exceedances of threshold levels trigger a responsibility on the developer to provide noise insulation or a scheme to facilitate temporary rehousing. The standard suggests that noise insulation should be provided if the trigger levels shown in Table 5.1 are predicted to be exceeded for

- a period of 10 or more days of working in any 15 consecutive days; or
- for a total of 40 days or more in any 6 consecutive months.

5.2 Thresholds are relative to baseline levels that have previously been measured within the receptors vicinity.

5.3 The noise insulation and temporary rehousing thresholds for all residential receptors are presented below.

Table 5.1 Noise Insulation and Temporary Rehousing Thresholds

Day	Time Period	$L_{Aeq,T}$	Minimum NI Level	Ambient + 5dB	Final NI Level	Minimum TRH Level	Ambient + 10dB	Final TRH Level
Monday to Friday	08:00 - 18:00	54.0	75.0	59.0	**75.0**	85.0	64.0	**85.0**
Saturday	08:00 - 13:00	54.0	75.0	59.0	**75.0**	85.0	64.0	**85.0**

Noise Prediction Methodology

5.4 Predictions have been undertaken for airborne noise arising from the construction work associated with the Centric Close site at the façades of the identified receptors. The noise predictions have been undertaken in accordance with the methodology described in BS 5228-1, using a proprietary noise modelling software package (CadnaA), in accordance with Camden's Minimum Requirements.

5.5 The following information and parameters are used to predict the noise levels at the receptors:

- The sound power level (L_{WA}) of the different items of plant.
- The distance from the noise sources (plant items) to the receiver.
- The presence of screening by barriers (natural or added as part of mitigation process and calculated based on ISO 9613-2).
- The reflection of sound.
- The periods of operation of plant items (percentage on time).
- Ground absorption (if applicable).
- All mitigation measures outlined in the previous section.

5.6 Appendices One to Four contain the detailed information used to predict the noise levels emitted from the Centric Close site and the impact on the nearby receptors. The appendices include plant information, assumptions and site drawings.

5.7 Noise predictions have assumed use of standard 2.4m hoardings, where applicable.

6 Predicted Noise Levels and Analysis

Residential Receptors

6.1 Worst case construction noise levels have been predicted for each month at 1m from the façade of the receptors defined in the introduction of this report. These are presented as maximum monthly construction noise levels in Tables 6.1 to 6.4 below. For each of the nearest receptor buildings, Figure 6.1 shows the variation in worst case monthly construction noise level over the main construction period for each property (floor level) with the highest exposure level.

6.2 The assessment indicates that the noise insulation threshold (see Table 5.1) may be exceeded at 1st to 4th Floor dwellings at the southern façade of 35 Oval Road, Lock House. However, this is based on worst case assumptions and exposure as the levels predicted are unlikely to occur over the temporal thresholds detailed in Section 5. It is therefore concluded that these properties would not qualify for Noise Insulation. Furthermore, construction works will be undertaken during core working hours only (Mon-Fri 08:00-18:00, Sat 08:00-13:00) in accordance with Camden requirements. In accordance with best practice and supplemental to enrolment on the Considerate Contractors Scheme, residents will be pre-notified of potentially noisy works, and a formal communication and complaints procedure will be implemented.

6.3 At all other neighbouring residential and commercial properties, the predicted worst-case construction noise level is not expected to trigger either the noise insulation or temporary rehousing thresholds at any stage during the works.

Table 6.1: Predicted Worst Case Construction Noise Level at 35 Oval Road, Lock House, Southerly Façade ($L_{Aeq,10hrs}$)

Receptor No:	R1	R2	R3	R4	R5	R6	R7
Receptor Address:	Ground Floor	1st Floor	2nd Floor	3rd Floor	4th Floor	5th Floor	6th Floor
01/10/2017	73.1	76.5	75.3	74.1	73.2	72.3	71.5
01/11/2017	73.1	76.5	75.3	74.1	73.2	72.3	71.5
01/12/2017	73.1	76.5	75.3	74.1	73.2	72.3	71.5
01/01/2018	67.0	70.7	70.2	69.5	68.7	67.9	67.2
01/02/2018	67.0	70.7	70.2	69.5	68.7	67.9	67.2
01/03/2018	71.7	75.1	74.0	73.0	72.1	71.3	70.6
01/04/2018	73.9	77.7	76.9	76.1	75.2	74.3	73.5
01/05/2018	74.4	78.1	77.4	76.6	75.7	74.8	74.0
01/06/2018	66.5	69.7	69.3	68.7	68.1	67.4	66.7
01/07/2018	66.7	69.8	69.5	68.9	68.3	67.6	67.0
01/08/2018	66.7	69.8	69.5	68.9	68.3	67.6	67.0
01/09/2018	66.7	69.8	69.5	68.9	68.3	67.6	67.0
01/10/2018	66.7	69.8	69.5	68.9	68.3	67.6	67.0
01/11/2018	67.3	70.4	70.0	69.4	68.8	68.1	67.4
01/12/2018	64.3	67.2	66.9	66.3	65.6	65.1	64.4
01/01/2019	62.8	64.6	64.4	63.9	63.4	62.7	62.1
01/02/2019	62.9	64.8	64.6	64.1	63.5	62.9	62.2
01/03/2019	62.1	64.2	63.9	63.3	62.7	62.0	61.3
01/04/2019	62.1	64.2	63.9	63.3	62.7	62.0	61.3
01/05/2019	62.1	64.2	63.9	63.3	62.7	62.0	61.3
01/06/2019	59.7	61.4	61.1	60.6	60.0	59.4	58.8
01/07/2019	58.7	60.4	60.1	59.6	59.0	58.5	58.0
01/08/2019	54.7	56.7	56.5	56.1	55.6	55.1	54.6

Table 6.2: Predicted Worst Case Construction Noise Level at 35 Oval Road, South-Westerly Façade ($L_{Aeq,10hrs}$)

Receptor No:	R1	R2	R3	R4	R5	R6
Receptor Address:	Ground Floor	1st Floor	2nd Floor	3rd Floor	4th Floor	5th Floor
01/10/2017	66.1	70.3	70.3	70.2	69.9	69.5
01/11/2017	66.1	70.3	70.3	70.2	69.9	69.5
01/12/2017	66.1	70.3	70.3	70.2	69.9	69.5
01/01/2018	63.6	68.1	68.1	67.8	67.4	66.8
01/02/2018	63.6	68.1	68.1	67.8	67.4	66.8
01/03/2018	66.8	71.7	71.9	71.6	71.1	70.6
01/04/2018	69.3	73.8	74.1	73.8	73.4	72.9
01/05/2018	70.1	74.4	74.6	74.3	73.9	73.4
01/06/2018	64.0	67.3	67.2	67.0	66.7	66.2
01/07/2018	64.3	67.5	67.4	67.2	66.9	66.4
01/08/2018	64.3	67.5	67.4	67.2	66.9	66.4
01/09/2018	64.3	67.5	67.4	67.2	66.9	66.4
01/10/2018	64.3	67.5	67.4	67.2	66.9	66.4
01/11/2018	65.0	68.0	67.9	67.7	67.4	66.9
01/12/2018	62.0	65.0	64.9	64.7	64.4	63.9
01/01/2019	61.1	62.1	62.1	61.9	61.7	61.2
01/02/2019	61.3	62.3	62.3	62.1	61.9	61.4
01/03/2019	60.5	61.7	61.6	61.4	61.1	60.6
01/04/2019	60.5	61.7	61.6	61.4	61.1	60.6
01/05/2019	60.5	61.7	61.6	61.4	61.1	60.6
01/06/2019	58.1	59.1	59.0	58.9	58.6	58.1
01/07/2019	57.2	58.1	58.1	58.0	57.7	57.1
01/08/2019	53.7	54.7	54.7	54.6	54.4	53.8

Table 6.3: Predicted Worst Case Construction Noise Level at 33 Oval Road, Westerly Façade ($L_{Aeq,10hrs}$)

Receptor No:	R1	R2	R3
Receptor Address:	Ground Floor	1st Floor	2nd Floor
01/10/2017	66.7	70.5	70.3
01/11/2017	66.7	70.5	70.3
01/12/2017	66.7	70.5	70.3
01/01/2018	64.7	68.5	68.3
01/02/2018	64.7	68.5	68.3
01/03/2018	68.8	73.1	72.2
01/04/2018	69.8	73.9	73.6

Receptor No:	R1	R2	R3
Receptor Address:	Ground Floor	1st Floor	2nd Floor
01/05/2018	70.5	74.5	74.2
01/06/2018	64.4	67.7	67.5
01/07/2018	64.7	67.9	67.6
01/08/2018	64.7	67.9	67.6
01/09/2018	64.7	67.9	67.6
01/10/2018	64.7	67.9	67.6
01/11/2018	65.3	68.4	68.1
01/12/2018	62.5	65.6	65.3
01/01/2019	60.5	62.4	62.2
01/02/2019	60.8	62.7	62.5
01/03/2019	59.9	62.1	61.8
01/04/2019	59.9	62.1	61.8
01/05/2019	59.9	62.1	61.8
01/06/2019	57.6	59.5	59.2
01/07/2019	56.9	58.6	58.3
01/08/2019	54.0	55.6	55.3

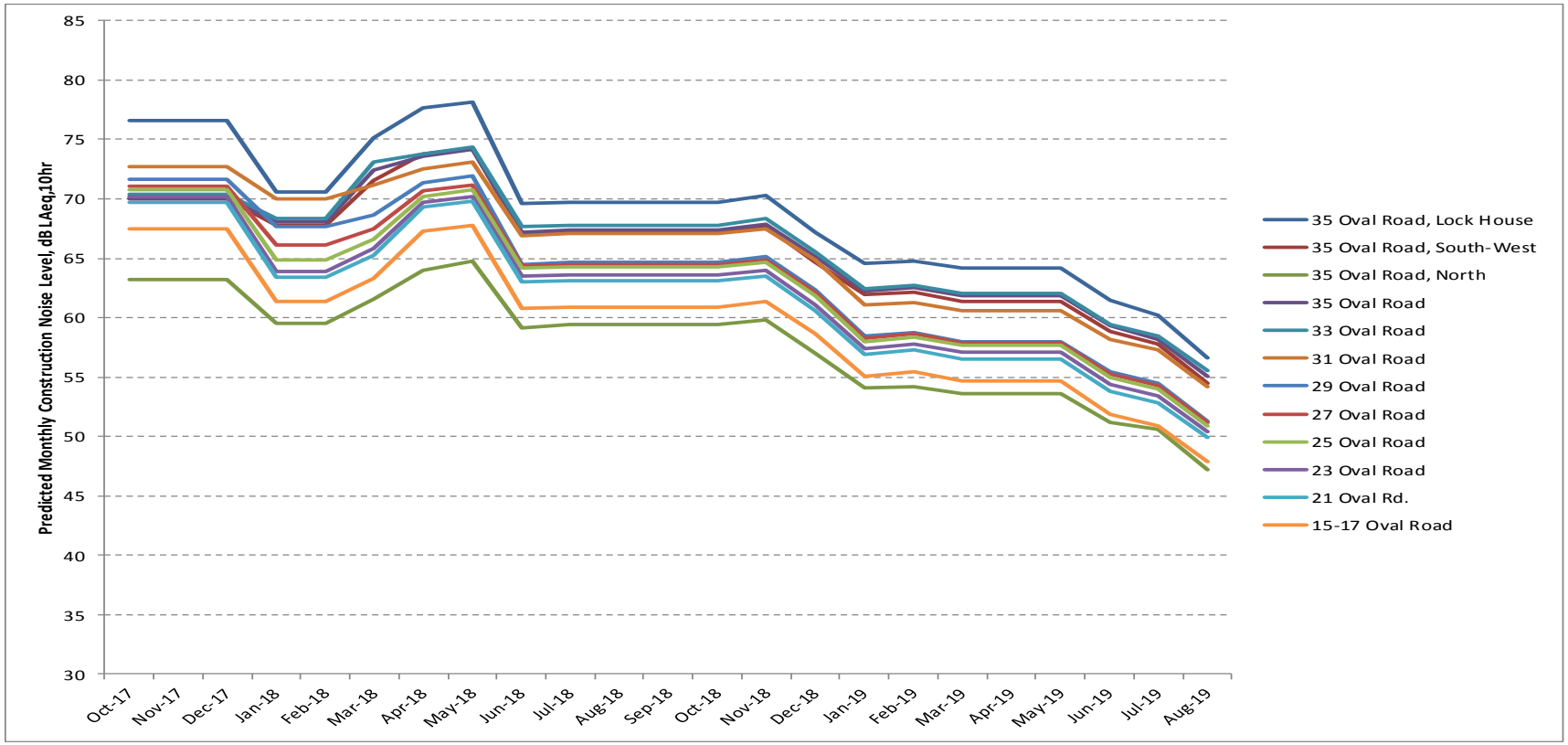
Table 6.4: Predicted Worst Case Construction Noise Levels* ($L_{Aeq, 10hrs}$)

Receptor No:	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12
Receptor Address:	35 Oval Road, Lock House	35 Oval Road, South-West	35 Oval Road, North	35 Oval Road	33 Oval Road	31 Oval Road	29 Oval Road	27 Oval Road	25 Oval Road	23 Oval Road	21 Oval Rd.	15-17 Oval Road
01/10/2017	76.6	70.0	63.2	70.1	70.4	72.7	71.6	71.1	70.8	70.2	69.7	67.5
01/11/2017	76.6	70.0	63.2	70.1	70.4	72.7	71.6	71.1	70.8	70.2	69.7	67.5
01/12/2017	76.6	70.0	63.2	70.1	70.4	72.7	71.6	71.1	70.8	70.2	69.7	67.5
01/01/2018	70.6	67.8	59.5	68.1	68.3	70.0	67.7	66.1	64.9	63.9	63.4	61.4
01/02/2018	70.6	67.8	59.5	68.1	68.3	70.0	67.7	66.1	64.9	63.9	63.4	61.4
01/03/2018	75.1	71.5	61.6	72.4	73.1	71.2	68.6	67.5	66.6	65.8	65.2	63.3
01/04/2018	77.7	73.8	64.0	73.6	73.8	72.5	71.4	70.7	70.2	69.7	69.3	67.3
01/05/2018	78.1	74.3	64.8	74.2	74.4	73.1	71.9	71.2	70.8	70.2	69.8	67.8
01/06/2018	69.6	67.0	59.1	67.2	67.7	66.9	64.5	64.4	64.2	63.5	63.0	60.8
01/07/2018	69.7	67.2	59.4	67.4	67.8	67.1	64.7	64.5	64.3	63.6	63.1	60.9
01/08/2018	69.7	67.2	59.4	67.4	67.8	67.1	64.7	64.5	64.3	63.6	63.1	60.9
01/09/2018	69.7	67.2	59.4	67.4	67.8	67.1	64.7	64.5	64.3	63.6	63.1	60.9
01/10/2018	69.7	67.2	59.4	67.4	67.8	67.1	64.7	64.5	64.3	63.6	63.1	60.9
01/11/2018	70.3	67.7	59.8	67.9	68.3	67.5	65.1	64.9	64.7	64.0	63.5	61.4
01/12/2018	67.2	64.7	57.0	65.1	65.5	64.9	62.3	62.1	61.8	61.1	60.6	58.6
01/01/2019	64.6	61.9	54.1	62.2	62.4	61.1	58.5	58.3	58.0	57.4	56.9	55.1
01/02/2019	64.8	62.1	54.2	62.5	62.7	61.3	58.7	58.6	58.4	57.8	57.3	55.4
01/03/2019	64.2	61.4	53.6	61.8	62.0	60.6	58.0	57.9	57.7	57.1	56.5	54.7
01/04/2019	64.2	61.4	53.6	61.8	62.0	60.6	58.0	57.9	57.7	57.1	56.5	54.7

Receptor No:	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12
Receptor Address:	35 Oval Road, Lock House	35 Oval Road, South-West	35 Oval Road, North	35 Oval Road	33 Oval Road	31 Oval Road	29 Oval Road	27 Oval Road	25 Oval Road	23 Oval Road	21 Oval Rd.	15-17 Oval Road
01/05/2019	64.2	61.4	53.6	61.8	62.0	60.6	58.0	57.9	57.7	57.1	56.5	54.7
01/06/2019	61.5	58.8	51.2	59.3	59.4	58.2	55.4	55.3	55.0	54.4	53.8	51.9
01/07/2019	60.2	57.8	50.6	58.2	58.5	57.3	54.5	54.3	54.0	53.4	52.8	50.9
01/08/2019	56.6	54.5	47.2	55.1	55.5	54.2	51.3	51.2	50.9	50.4	49.9	47.9

** Noise levels shown are for the highest noise level on any floor of the building.*

Figure 6.1: Predicted Worst Case Construction Noise Levels* ($L_{Aeq, 10hrs}$)



** Noise levels shown are for the highest noise level on any floor of the building.*

7 Noise Monitoring

7.1 In accordance with Camden's requirements, continuous unattended construction noise monitoring will be undertaken at three receptor locations throughout the demolition and construction works.

7.2 As well as being capable of providing email alerts on exceedances of the trigger levels, the measured noise levels will also be presented in real time using a Web Server Service.

8 Vibration Assessment

8.1 The most significant vibration-generating activities associated with the works will include:

- Piling
- Ground compaction (during enabling works)

Piling

8.2 It is proposed that the piling schedule will include Continuous Flight Auger (CFA) piles. BS 5228-2 states that piling using this method generates 'minimal' levels of vibration as the process does not involve the rapid acceleration or deceleration of plant in contact with the ground. Continuous low levels of vibration could result from the plants engine.

8.3 Continuous Flight Augur drilling typically generates the lowest level of vibration of all piling techniques. Measurements of vibration levels during augur boring in similar ground conditions, as presented in Tables D.1 and D.6 of BS5228-2, are presented in Table 8.1 below. From these values and the calculation procedure listed in BS 6472 it is possible to estimate daytime VDV at the nearest potential residential and commercial properties.

Table 8.1: Historic Vibration Level Measurements for Augur Boring

BS5228-2 Table D.1 / D.6 Reference No.	Ground Conditions	Mode	Measured Peak Particle Velocity (PPV) (mm/s)	Plan Distance (m)
1	Made ground / gravel / London clay	Boring	3.9*	0.9
			1.6*	2.4
			1.1*	3.7
101	Fill / dense ballast / London clay	Auguring	0.05	20
104	Fill / sand / clay	Auguring	0.57	10
			0.1	15
			0.02	26
107	Fill including pockets of gravel over London clay	Auguring	0.13	5.5

Note: * calculated from measured displacement and frequency of vibration

8.4 The closest residential building to a potential pile location is approximately 3m (No.35 Oval Road, Lock House at the northern boundary), therefore whilst short-term events may possibly exceed Camden's recommended threshold of 1mm/s, this does not take account of the transmission reduction (impedance boundary) between the ground and the building, which typically halves the vibration level.

8.5 If it is assumed that a typical rotary bored piling rig would generate a ppv of 1.6 mms^{-1} at 2.4m from the operation; then, with the impedance reduction, the level at the property would be in the order of 0.8mms^{-1}. This is well below the level above which cosmetic building damage commences, and equates to an acceleration level, from BS 6472, of approximately 0.028 ms^{2}. When operating, at 65% on-time, over a 10-hour day the corresponding vibration dose value, VDV, is calculated to be 0.49 $ms^{-1.75}$. This predicted daytime VDV is within the band for 'adverse comment possible' (0.4-0.8 $ms^{-1.75}$) for daytime operation.

8.6 It is understood that No. 31 Oval Road, located approximately 5.8m from the nearest proposed building, has a music studio in the basement. Based on the historical measurements, the vibration level would be below 0.13mms^{-1} and predicted daytime VDV would be 0.08mms^{-1}. At these levels, vibration from piling is unlikely to be perceptible within the residence. Likewise, it is not expected that CFA piling will cause audible ground-borne noise within the basement studio at this property. It should be noted that the prediction of ground-borne noise is beset with uncertainty given the inhomogeneity of the vibration propagation medium (i.e. soil and/or rock) and detailed knowledge required of the receiver building's vibro-acoustic response.

8.7 In accordance with best practice and supplemental to enrolment on the Considerate Contractors Scheme, local residents will be pre-notified of piling work, and a formal communication and complaints procedure will be implemented.

8.8 Furthermore, a programme of continuous vibration monitoring (see Section 9) is proposed at three receptor property locations throughout the piling operations, which are expected to take approximately 8 weeks to complete. In addition, vibration survey will commence one week prior to the piling works to establish a baseline, and close observations of measured levels will be made during initial piling works in order to confirm the findings of this assessment.

Ground compaction

8.9 A vibratory roller would be used for surface compaction. Based on assumptions of typical vibratory roller plant, vibration will be perceptible during compaction works close to properties, with significant vibration levels (>1mms^{-1}) generated when the vibratory roller is operated within 10m. At the closest approach (3m), the predicted vibration level at the nearest property is predicted to be around 5mms^{-1} for this short period. The impact on local amenity would be minimised through the prior notification process, and ensuring these works are conducted during the least sensitive periods (09:30-16:30 weekdays and 09:30-12:00 Saturdays), where practicable.

8.10 Vibration levels generated during all construction works would be significantly below the levels that may cause even cosmetic damage to properties.

9 Vibration Monitoring

9.1 In accordance with Camden's requirements, continuous unattended construction vibration monitoring will be undertaken at three receptor locations during the piling works (approximately 8 weeks).

As well as being capable of providing email alerts on exceedances of the trigger levels, the measured vibration levels will also be presented in real time using a Web Server Service.

10 Conclusions

10.1 The potential noise and vibration impact of Centric Close, Camden demolition and construction works on sensitive receptors that are located within the local area has been assessed.

10.2 The worst-case noise assessment indicates that the noise insulation and temporary rehousing thresholds are unlikely to be met for any property, due to the level of the noise predicted and the expected exposure period.

10.3 The highest noise levels are predicted at the south-facing 1st – 4th storey properties at 35 Oval Road, Lock House (nearest receptor building). However, the predicted exposure levels would occur for a limited period during the least sensitive time of the day (core daytime working hours only). In accordance with best practice and supplemental to enrolment on the Considerate Contractors Scheme, residents will be given prior notification of potentially noisy works, and a formal communication and complaints procedure will be implemented. Furthermore continuous unattended construction noise monitoring will be undertaken at three receptor locations throughout the demolition and construction works.

10.4 Likewise, whilst vibration generated during some construction activities (piling/ground compaction) may occasionally be perceptible in nearby properties, the levels are unlikely to be significant. To minimise the potential for disturbance and concern, prior notification will be given to residents of surrounding properties ahead of piling. Vibration levels generated during the construction works are expected to be significantly below the levels that may cause even cosmetic damage to properties. Furthermore, a programme of continuous vibration monitoring (see Section 9) is proposed at three receptor property locations throughout the piling operations.

Appendix One – Site Plans

Figure A1.1: Site Plan

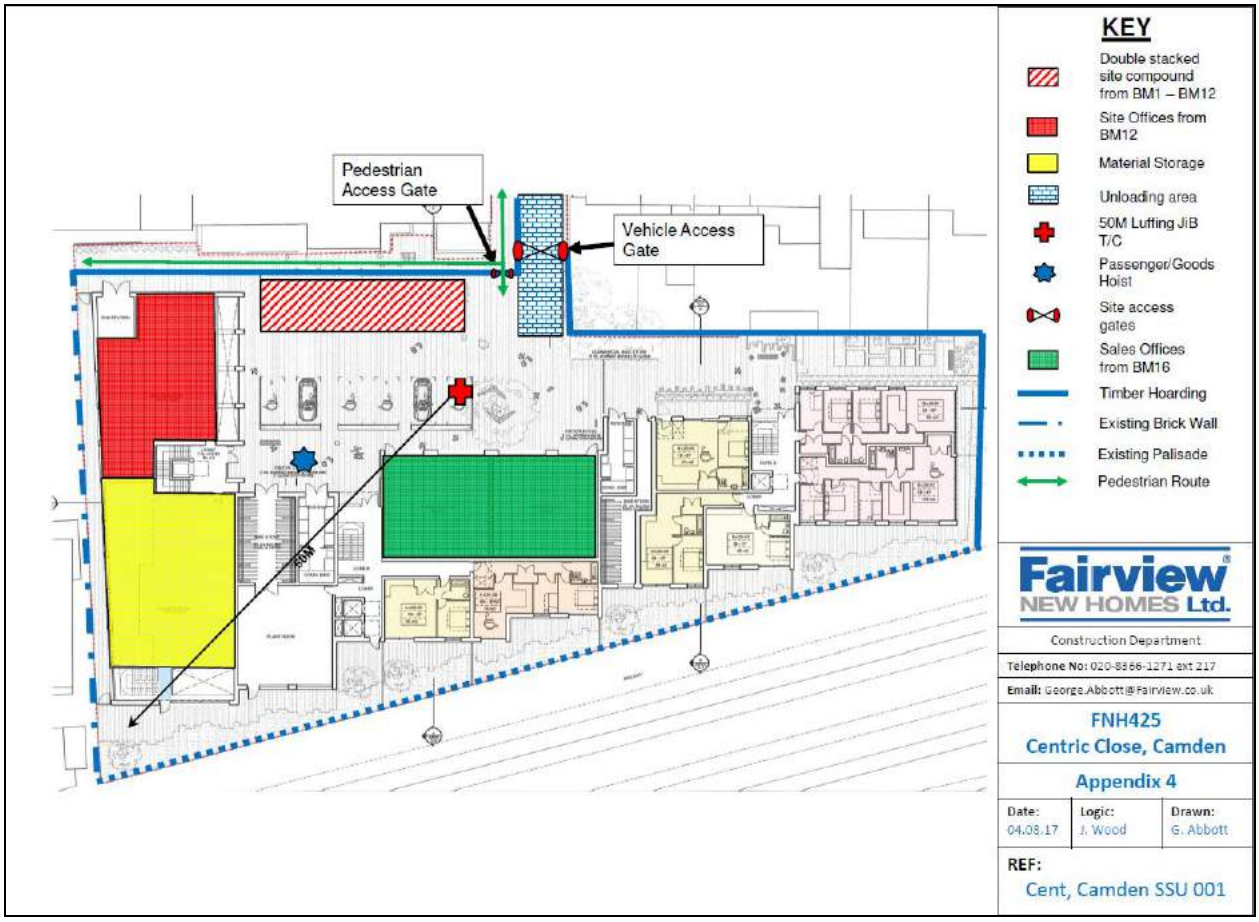
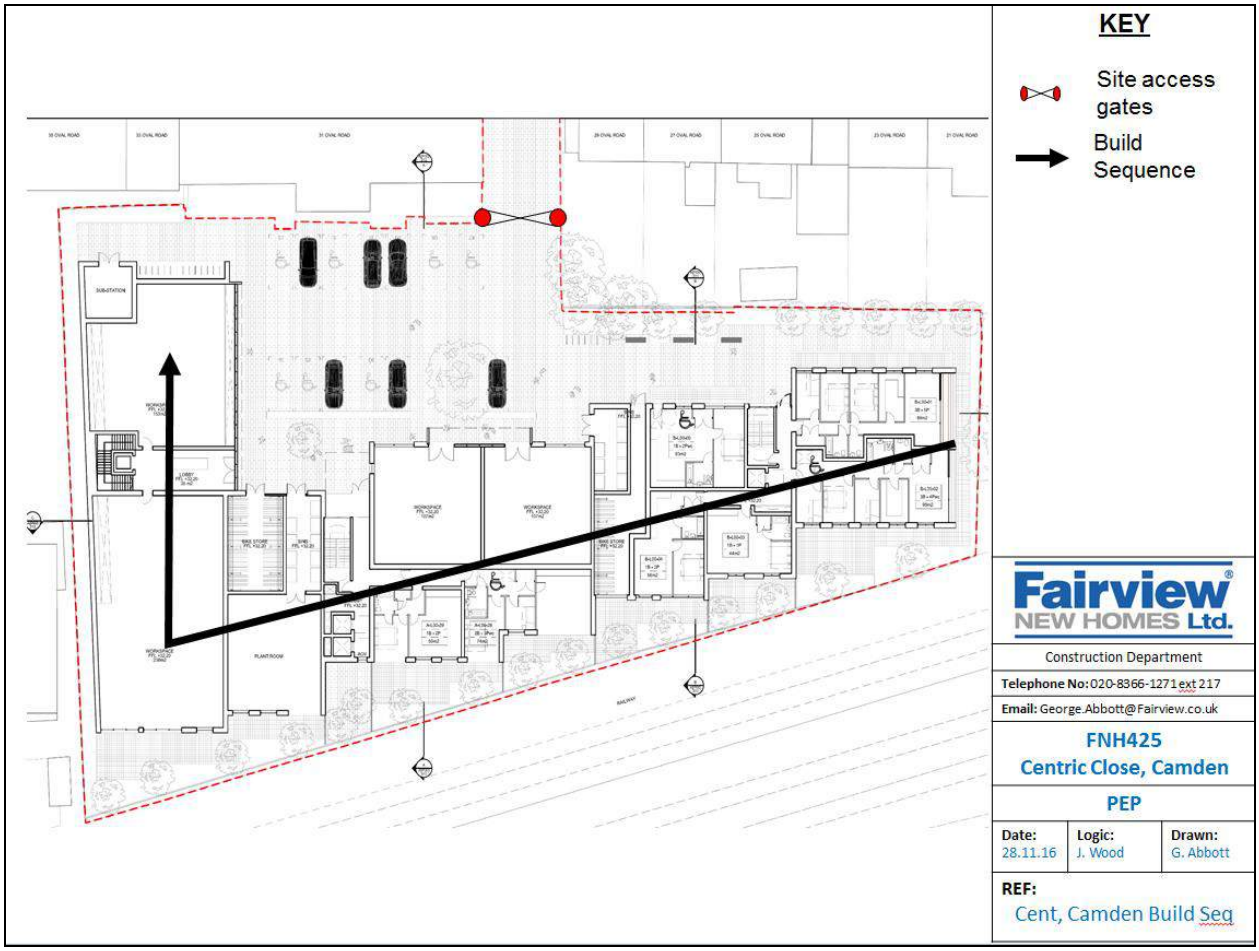


Figure A1.2: Build Sequence

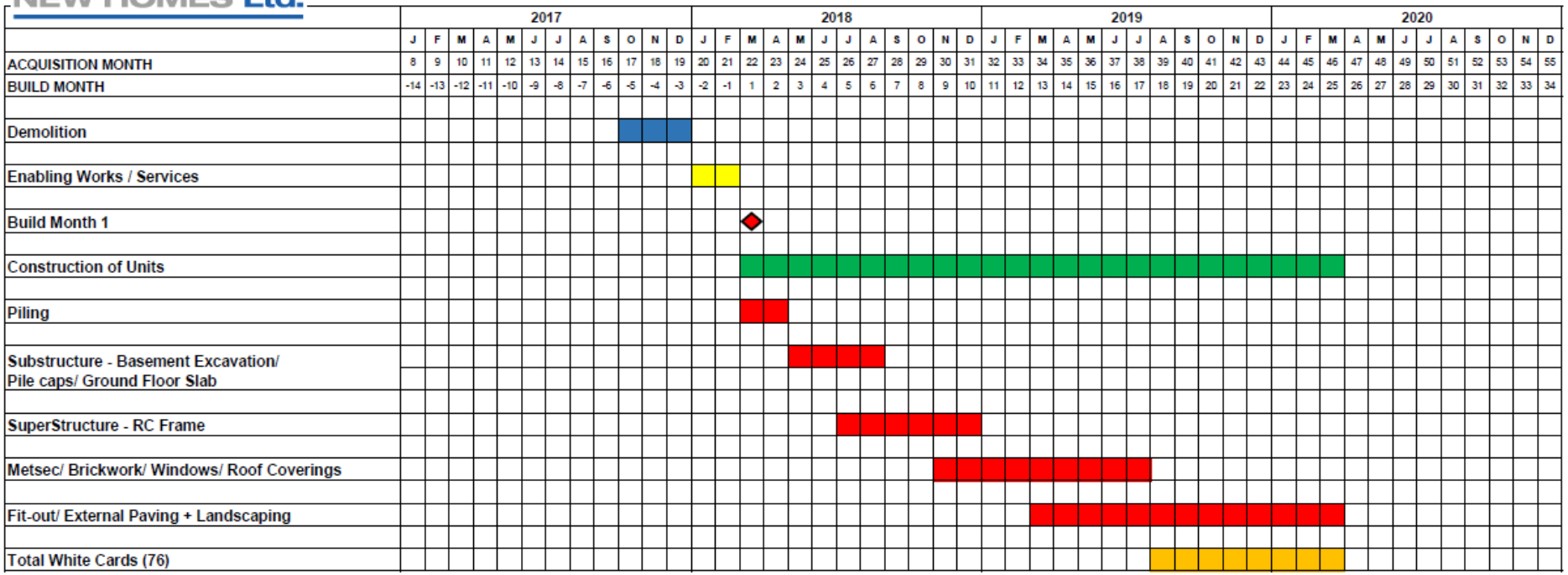


Appendix Two – Programme

Fairview NEW HOMES Ltd.

Centric Close, Camden

Indicative Programme



Appendix Three – Activity Details

Table A3.1 Centric Close Site Activity Data

Activity	Location	Plant	No(s)	Source (BS 5228)	Plant dB L_{Aeq} at 10m	% on-time	Start Date	End Date
Activity 1 – Demolition	Ground Level	360 Excavator	1	C2_3	78	60	16/10/2017	29/12/2017
	Ground Level	360 Excavator with breaker	1	C1_9	90	10		
	Ground Level	Muck Away Truck	4/day	C2_33	81	-		
	Ground Level	Hand Tools	1	Estimate	72	25		
	Ground Level	Scissor Lift	1	C4_59	78	50		
	Ground Level	Jet Wash	1	C6_37	81	5		
Activity 2 – Reduce Level Excavation + Lay services & pile mat	Ground Level	360 Excavator	1	C2_3	78	80	02/01/2018	28/02/2018
	Ground Level	Muck Away Truck	4/day	C2_33	81	-		
	Ground Level	Vibrating Roller	1	C2_39	74	20		
	Ground Level	Jet Wash	1	C6_37	81	5		
	Ground Level	Stone Delivery Wagons	4/day	C2_33	81	-		
Activity 3 – Piling	Ground Level	Crawler Mounted CFA Piling Rig	1	C3_21	79	65	01/03/2018	13/04/2018
	Ground Level	Concrete Wagon (Discharging)	1	Measured	77	65		
	Ground Level	Jet Wash	1	C6_37	81	5		

Activity	Location	Plant	No(s)	Source (BS 5228)	Plant dB L_{Aeq} at 10m	% on-time	Start Date	End Date
Activity 4 – Basement Excavation & Cut Down Piles	Ground Level	360 Excavator	1	C2_3	78	70	16/04/2018	31/05/2018
	Ground Level	Pile Cropper	1	C1_1	92	10		
	Ground Level	Muck Away Truck	8/day	C2_33	81	-		
	Ground Level	Jet Wash	1	C6_37	81	5		
	Ground Level	Pile Cutter	1	C3_34	68	10		
Activity 5 – Fix Reinforcement and Formwork	Ground Level	Tower Crane	1	C4_48	76	25	01/05/2018	30/11/2018
	Ground Level – Level 6	Disc Cutter	1	D6_53	84	10		
	Ground Level – Level 6	Power Tools	2	C4_72	79	10		
	Ground Level	Scissor Lift	1	C4_59	78	25		
Activity 6 – Concrete	Ground Level	Concrete mixer truck idling	1	C4_19	71	25	04/06/2018	28/12/2018
	Ground Level	Concrete mixer truck (discharging) & concrete pump (pumping)	1	C4_28	75	20		
	Ground Level	Poker Vibrator	1	C4_33	78	15		
	Ground Level	Tower Crane	1	C4_48	76	20		
	Ground Level	Compressor	1	C5_5	65	5		
Activity 7 – Strike Formwork	Ground Level	Tower Crane	1	C4_48	76	20	02/07/2018	31/01/2019
	Ground Level – Level 6	Power Tools	2	C4_96	77	5		

Activity	Location	Plant	No(s)	Source (BS 5228)	Plant dB L_{Aeq} at 10m	% on-time	Start Date	End Date
Activity 8 – Erect Metsec Frame	Ground Level – Level 6	Circular Saw	1	C4_72	79	10	05/11/2018	31/05/2019
	Ground Level – Level 6	Power Tools	2	C4_96	77	25		
Activity 9 – Build Brickwork	Ground Level	Tower Crane	1	C4_48	76	20	02/01/2019	26/07/2019
	Ground Level – Level 6	Hand Tools	1	Estimate	72	10		
Activity 10 – Erect Scaffolding	Ground Level	Tower Crane	1	C4_48	76	15	04/02/2019	30/08/2019
	Ground Level – Level 6	Hand Tools	1	Estimate	72	10		
Activity 11 – Lay Roof Covering	Ground Level	Tower Crane	1	C4_48	76	5	02/01/2019	22/02/2019
	Level 6	Hand Tools	1	Estimate	72	10		
Activity 12 – Fix Windows	Ground Level – Level 6	Power Tools	1	C4_96	77	15	03/12/2018	28/06/2019

Appendix Four – Noise Prediction Model

Construction noise prediction modelling using CadnaA software

a) Objective

The objective of the noise prediction model was to determine the sound propagation from construction noise from the Centric Close site at each stage of the works.

b) Noise prediction modelling software and calculation methodology

The noise modelling study utilised CadnaA noise prediction model (Version 4.4) software, created by DataKustik GmbH, Germany. Noise propagation calculations were undertaken in accordance with the International Standards Organisation guidance document ISO 9613: Part 2: 1996 'Attenuation of sound during propagation outdoors' (Ref. 1).

ISO 9613 specifies an engineering method for calculating the attenuation of sound during propagation outdoors, in order to predict the levels of environmental noise at a distance from a variety of sources. The method predicts the sound pressure level under meteorological conditions favourable to propagation from source to the receiver. These conditions are for downwind propagation, as specified in 5.4.3.3 of IS0 1996/BS 7445 or, equivalently, propagation under a well-developed moderate ground-based temperature inversion, such as can occur at night.

The method specified in part 2 of IS0 9613 consists specifically of octave-band algorithms (with nominal mid-band frequencies from 63 Hz to 8 kHz) for calculating the attenuation of sound that originates from a point sound source, or an assembly of point sources. The source (or sources) may be moving or stationary. Specific terms are provided in the algorithms for the following physical effects:

- geometrical divergence A_{div};
  - A_{div} = [20 log(d/d_0) +11] dB
  - where: d= the distance from source to receiver (m) and d_0 is the reference distance (1m).
- atmospheric absorption A_{atm};
  - A_{atm} = αd/1000
  - where; α = the atmospheric absorption coefficient (dB Km^{-1}), d = distance in metres.
- ground effect Agr;
  - A_{gr} = A, + A, + A,
  - Where A, = attenuation in the source region, A, = attenuation in the receiver region and A, = attenuation in the middle region.
- screening by obstacles Abar;
  - Where A_{bar} is calculated using an octave band based Makaewa/fresnel number based algorithm taking into account diffraction over the top and around the edges of any barrier.

Additionally the methodology includes allowances for reflection of sound off surfaces in the vertical plane (reflections off the ground and in the horizontal plane are allowed for in the calculation of the ground effect).

The ISO 9613 method is applicable in practice to a great variety of noise sources and environments. It is applicable, directly or indirectly, to most situations concerning road or rail traffic, commercial and industrial noise sources, construction activities, and many other ground-based noise sources.

The calculation of the equivalent continuous downwind sound pressure level at a receiver location, L_{AT}(DW), is calculated for each point source, using:

$L_{AT}(DW) = L_w + D_c - A$

Where:

L_w, is the octave-band sound power level, in decibels, produced by the point sound source relative to a reference sound power of one picowatt (1 pW);

D_c is the directivity correction, in decibels, that describes the extent by which the equivalent continuous sound pressure level from the point sound source deviates in a specified direction from the level of an omni-directional point sound source producing sound power level L_w; D_c equals the directivity index D_I of the point sound source plus an index D_Ω, that accounts for sound propagation into solid angles less than 4π steradians; for an omni-directional point sound source radiating into free space, D_c, = 0 dB. Where sources are immediately external to building elements (façades/roof), the model includes directivity (i.e. $D_c = 3$);

A is the octave-band attenuation, in decibels, that occurs during propagation from the point sound source to the receiver.

The attenuation term A is given by:

$$A = A_{div} + A_{atm} + A_{gr} + A_{bar} + A_{mis}$$

Where:

- A_{div} is the attenuation due to geometrical divergence;
- A_{atm} is the attenuation due to atmospheric absorption;
- A_{gr} is the attenuation due to the ground effect;
- A_{bar} is the attenuation due to a barrier; and
- A_{mis} is the attenuation due to miscellaneous other effects.

c) Modelling parameters

i. Modelling the topography

The model included 10m ground height data (OS).

ii. Modelling buildings and other obstacles

Existing and proposed buildings (with rooflines) were incorporated within the model based on visual estimates (existing neighbouring buildings) and development designs drawings. The location and 2-dimensional extent of existing buildings were based on CAD drawing data.

iii. Modelling sound sources (emission points)

Two types of sound sources were included in the model, including:

- Point sources – Construction plant; and
- Line sources; Vehicle delivery routes (muckaway and concrete deliveries).

Details of the assumed plant are provided in Appendix 3, Table A3.1.

d) Other modelling parameters

i. Ground absorption

As a worst-case assessment, the ground absorption was set to G = 0 (reflective).

ii. Meteorological conditions

As recommended in ISO 9613, the following meteorological conditions were assumed:

- Temperature: 10ºC
- Relative Humidity: 70%

iii. Foliage/woodland areas

Areas of existing foliage have no acoustic effects and are therefore not accounted for within noise propagation calculations.

iv. Reflections

Given the distance separation between the site and the nearest noise sensitive receptors, two orders of reflection were permitted within the model.

e) Noise sensitive receptor locations (immission points)

All immission points were located at 1m from the façade, facing the construction works. All receptors used in this assessment are listed in the tables of results (Tables 6.1 to 6.4).

f) Noise model

The basic layout of the model (Activity 3) is shown in Figures A4.1 below:

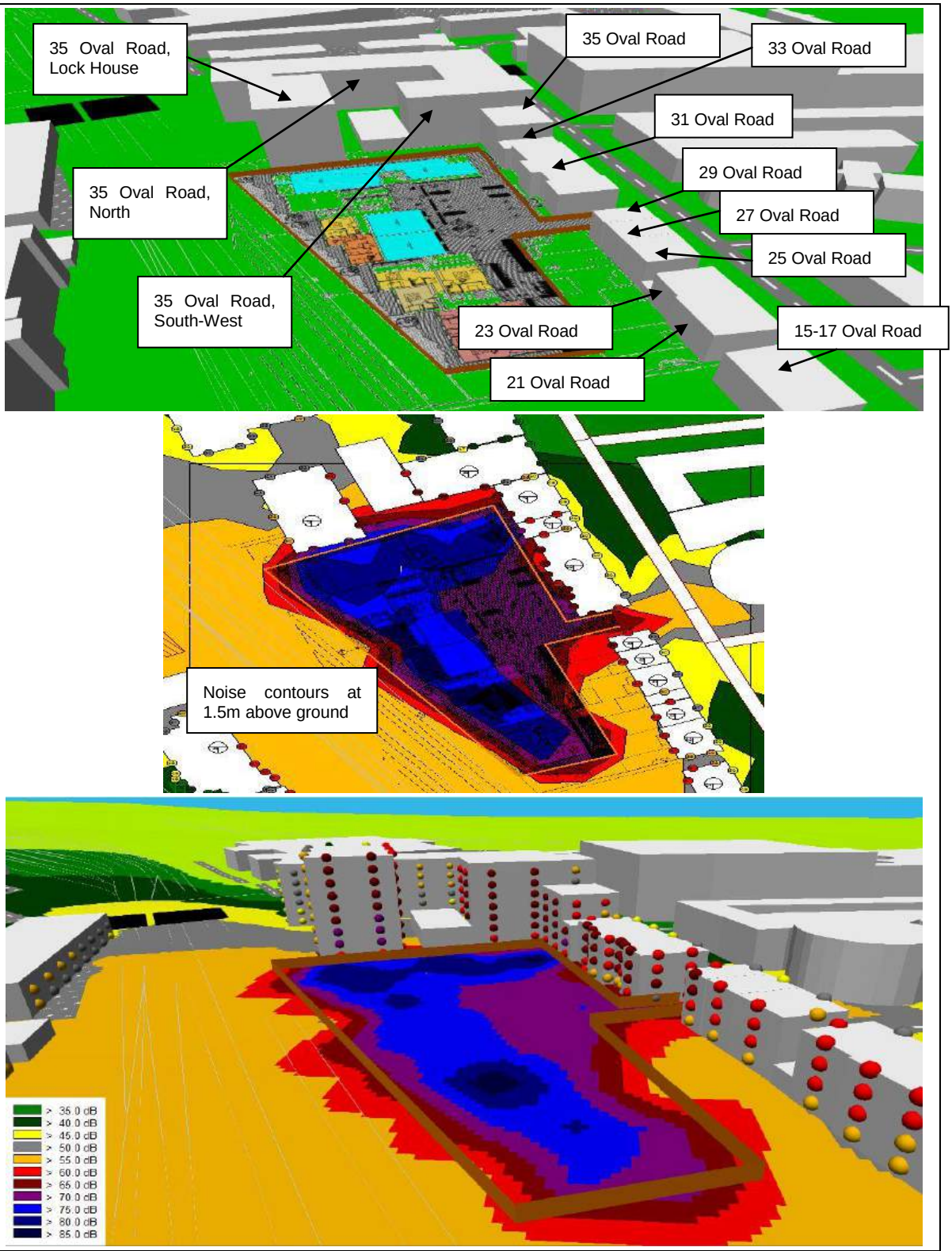


Figure A4.1: Noise prediction model (example – Activity 3, Piling)