APPENDIX 3.1: CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

Ham Close Regeneration

Planning Application:

Construction Environmental Management Plan

Author: Hill Residential
April 2022

Construction Environmental Management Plan

Ham Close, Ham, Richmond Upon Thames TW10 7PG

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INTRODUCTION

1. Purpose of Document

This Construction Environmental Management Plan (CEMP) has been prepared by Hill Residential ('the Applicant') for the redevelopment of Ham Close ('the Site').

The description of development (hereafter referred to as the 'Amended Proposed Development') is as follows:

"Demolition of existing buildings on-site and phased mixed-use development comprising 452 residential homes (Class C3) up to six storeys; a Community/Leisure Facility (Class F2) of up to 3 storeys in height, a "Maker Labs" (sui generis) of up to 2 storeys together with basement car parking and site wide landscaping."

This document has been produced to demonstrate that the project will be constructed in accordance with good practice and the requirements of the London Borough of Richmond upon Thames (LBRuT) Supplementary Planning Document "Sustainable Construction Checklist – Guidance Document".

The aim of the CEMP is to ensure that potential effects to the environment and sensitive local receptors resulting from the works are kept to a minimum, as far as reasonably practicable. This document sets out the standards of construction considered necessary that will minimise the effects of the project upon the local environment and local community surrounding the Site. The Applicant are committed to undertaking the construction works on the Site in a responsible manner to keep disruption to a minimum.

The construction works on Site will comply with arrangements proposed within this document and will be required to develop further detail to reflect proposed working methods. The Applicant will have overall responsibility for the works at the Site. The CEMP will therefore be subject to refinement as the project evolves and any significant changes would be agreed with LBRuT in advance.

The CEMP has been prepared to anticipate the Conditions that will accompany any Planning Permission. We have set out within this CEMP the site management principles that will address the following:

- Construction Management including site logistics
- Neighbourhood and Community Liaison
- Environmental Management
- Waste and Materials Management
- Transport Management
- Water Management
- Materials Storage
- Noise Control (see Section 5).
- Construction Waste Management.
- Construction Mitigation from Environmental Statement (see Appendix 1).

This report should be read in conjunction with the separate Outline Construction Logistics Plan.

1.1. Site Description

The existing site is rectangular in shape set within an existing residential area. It is bounded by Woodville Road to the north, Ham Village Green to the east, Ashburnham Road to the south and the Woodville Centre and St Richard's School to the west. The site is formed of several land parcels owned by RHP and LBRuT.

The majority of the site comprises of 192 flats within 14 blocks. Of these 143 are considered to be affordable including 11 leased to LBRuT for temporary accommodation. There is three terraces of 47 garages and eleven outbuildings containing locked sheds. There is an existing youth centre and a community Maker Labs facility that are proposed to be reprovided. The existing structures are brick and concrete clad buildings. There are two existing substations on the site.

The site vehicular access is via two parallel minor roads known as Ham Close that generally run north west to south east through the site, connecting to Ashburnham Road in the south and Woodville Road in the north.

Figure 1 Site Red Line Plan

1.2. The Proposed Development

The project involves the demolition of the existing residential blocks of flats and redevelopment of the site to form 410 apartments over 14 new residential blocks and 42 houses providing a total of 452 homes plus basement car park and associated public realm, a Community Centre and Makers Lab. There are a range of building heights with the highest building being Ground Floor plus 5 storeys.

The new development will include the provision of rainwater tanks at roof (blue roofs) and at ground level surface water attenuation drainage from the site.

Access to the site will be from the north and south with access to/agress from the basement car park from both north and south also.

The current 'Red Line' for the site takes in the full extent of the site.

1.3. Surrounding Area

The site is within a well-established residential area, to the east of the site and Ham Village Green is a local parade of shops and to the west of the site is St Richards CE Primary School and the Woodville Centre. Ham Clinic is adjacent to the south.

Figure 2 Site Location

The site is constrained by its location and by the requirement that most of the existing households will remain in-situ throughout the development of the site which will require close management processes to reduce and mitigate any potential adverse impacts on the local environment.

The following pages outline principle constraints on the site and the receptors that have potential to be affected by the works and which are to be considered in developing detailed plans for the works. They are:

- Residential properties on site at Ham Close
- Ensure the operation of Grey Court School, St Richards CE Primary School are unaffected and unhindered throughout development works.
- The nearby shops and businesses
- Maintain unobstructed access and normal operation to the Ham Youth Centre, Richmond Maker Labs, Woodville Centre and Ham Clinic
- Residential properties surrounding the site on Woodville Road, Ashburnham Road and Ham Street
- Retain and protect the pedestrian footway on Ashburnham Road and Ham Street that run parallel to the site

1.3 Applicable Code Standards

Specific guidance on Construction and Environmental Management is provided in the London Borough of Richmond upon Thames (LBRuT) Supplementary Planning Document "Sustainable Construction Checklist – Guidance Document".

The LBRuT's Sustainable Construction Checklist – Guidance Document provides clear guidance on measures that should be taken to manage and reduce the environmental impact of the development.

It concentrates on reduction of Carbon Dioxide emissions and sets out the aspiration to minimise emissions to achieve zero carbon targets.

Richmond Local Plan Policy LP 10 (Local Environmental Impacts, Pollution and Land Contamination) and Policy LP 24 (Waste Management) are relevant. In addition, London Plan policies regarding Air Quality (Draft Policy SI 2), Circular Economy (Draft Policy SI 7) and Deliveries Servicing and Construction (Draft Policy T7) are also applicable.

1.4 Considerate Constructors Scheme

The aim of the Considerate Constructors Scheme (CCS) is to improve the image of construction by encouraging good communications with Site neighbours and the general public, improved welfare facilities and greater environmental awareness. We will register the site and operate within the guidance of the CCS, throughout the duration of the construction works.

1.4.1 Proposed Contractor

As the Main Contractor the Applicant will secure compliance with CCS and ISO 14001.

1.4.2 General Good Practice

Within the construction industry, local authority codes of construction practice seek to encourage the use of the best environmental options in planning and managing construction and deconstruction (demolition) of buildings. The area is densely populated by residents and other sensitive premises, all of which can be affected by construction work and associated activities.

The development team will work to mitigate and minimise noise and noise impacts that could adversely affect health and well-being of local residents including school children, workers and visitors and will avoid noise and noise impacts that could have a significant adverse effect.

1.4.3 Contractor Management System

Works will be carried out in accordance with our Environmental Management Systems and we are accredited to ISO 14001, the international standard for Environmental Management Systems. We will adhere to all procedures and guidelines stated within this CEMP, and our own policies, procedures, targets and objectives will be considered in line with this CEMP. We will also comply with all relevant legislation.

1.4.4 Statutory Regulations and Code

The latest editions of regulations, codes and guidance will be used, including all current amendments and additions, for construction work.

2. WORKS ACTIVITIES AND RESPONSIBILITIES

2.1. Key Responsibilities

To ensure that standards are maintained, it is necessary that every person working on the Site is aware of their responsibilities. Responsibilities have been set out in Table 2 below, in general, Hill Residential will have overall responsibility for implementation of the CEMP. Hill Residential will also detail roles and responsibilities in method statements and Plans of Work for each activity. It should be noted that multiple roles can be fulfilled by one person / party. This table will be completed and reproduced to be displayed on Site notice boards or used in staff training as required.

As part of their induction all personnel must be made aware of the importance of maintaining good relations with the local community, residents on site and neighbours.

Table 1: Key Responsibilities

PERSON / ORGANISATION	RESPONSIBILITY
The Developer (the Applicant)	Undertaking formal communication with residents on site, neighbours and LBRuT in relation to key stages of the works.
Contractor (the Applicant)	Ensuring that the requirements of this CEMP are adhered to at all times and liaising with LBRuT
Contractor (the Applicant)	Ensuring that all Site staff and subcontractor(s) undertake their activities in accordance with best practice the requirements of the CEMP.
Contractor (the Applicant)	Ensuring that the appropriate monitoring is being undertaken by the nominated Environmental Monitoring Coordinator.
Transport / Logistics Coordinator (nominated by, and reporting to, the Contractor)	Planning and coordinating deliveries and controlling vehicles accessing and leaving the Site.
Environmental Monitoring Coordinator (nominated by, and reporting to the Contractor)	Monitoring dust, noise and vibration within the vicinity of the Site as required.
Resident Liaison Officer (nominated by, and reporting to, The Contractor)	Liaison with residents on site, neighbours and LBRuT regarding Site specific issues, including producing a regular newsletter to inform stakeholders of progress, issues and upcoming work.

2.2. Project Timeline

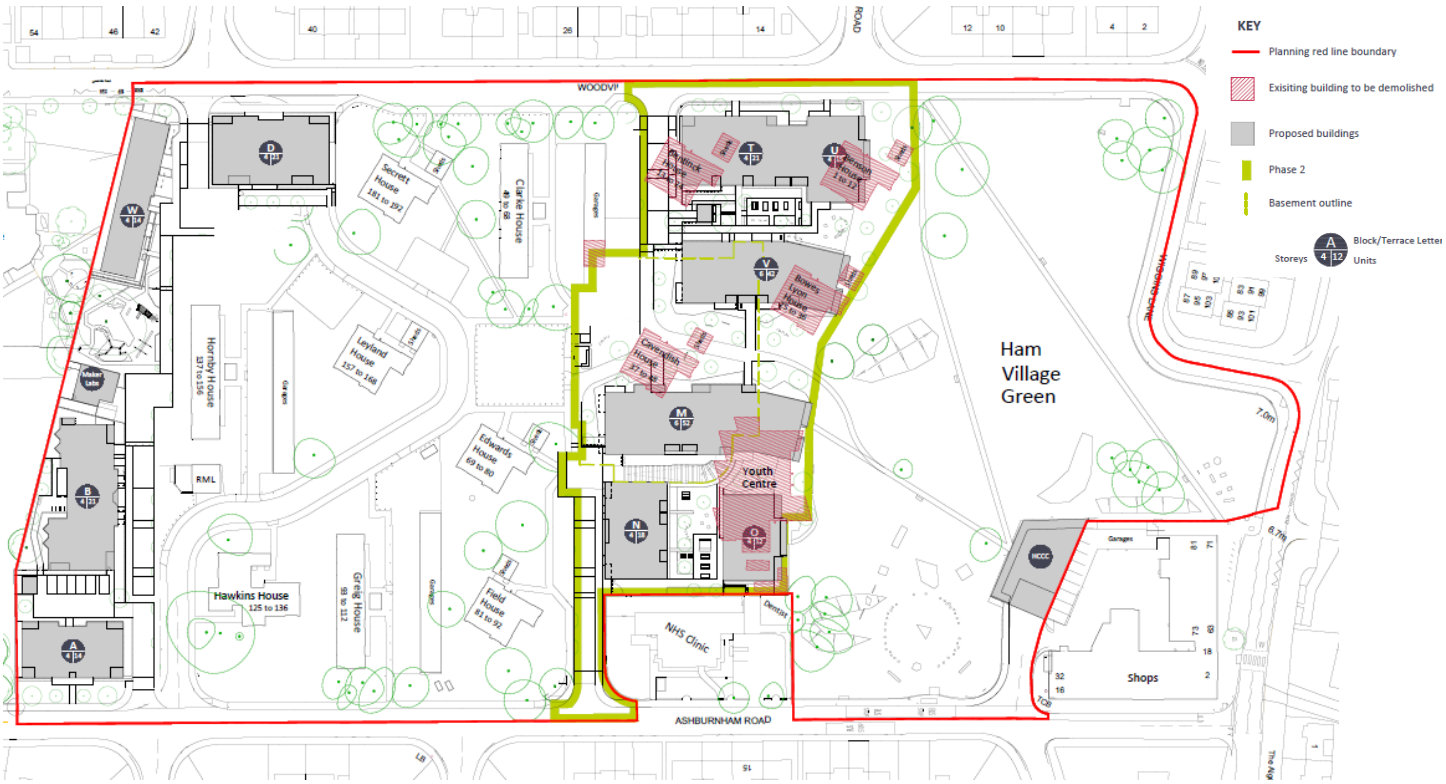
The project will be phased with sequential building-by-building completion.

The demolition of existing buildings and construction of the new buildings and their associated public realm will be broken into three primary phases. The plan on the following page shows the primary phases of work:

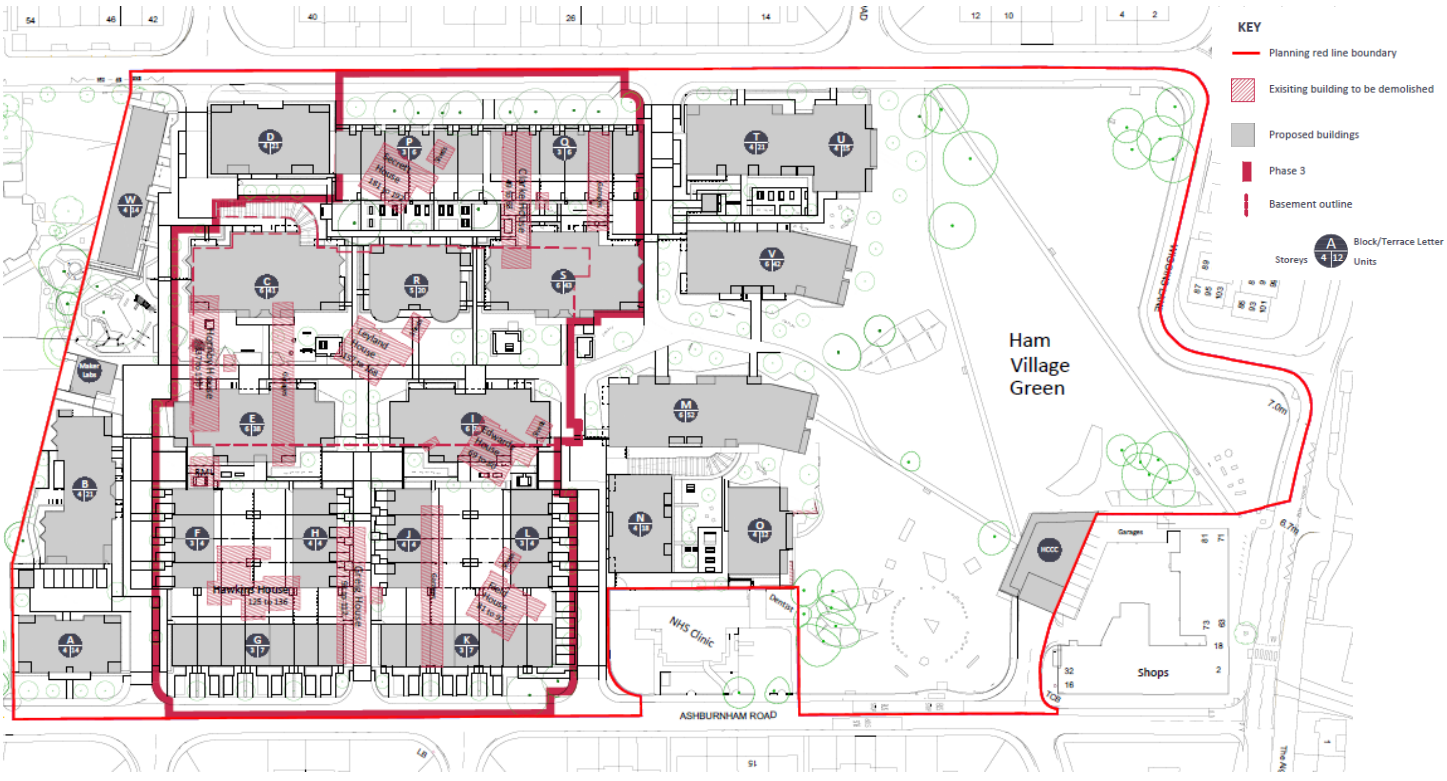
- Phase 1 March 2023 to October 2024
- Phase 2 October 2024 to May 2027
- Phase 3 May 2027 to March 2030

<u>Phase 1</u>

Phase 2



Phase 3



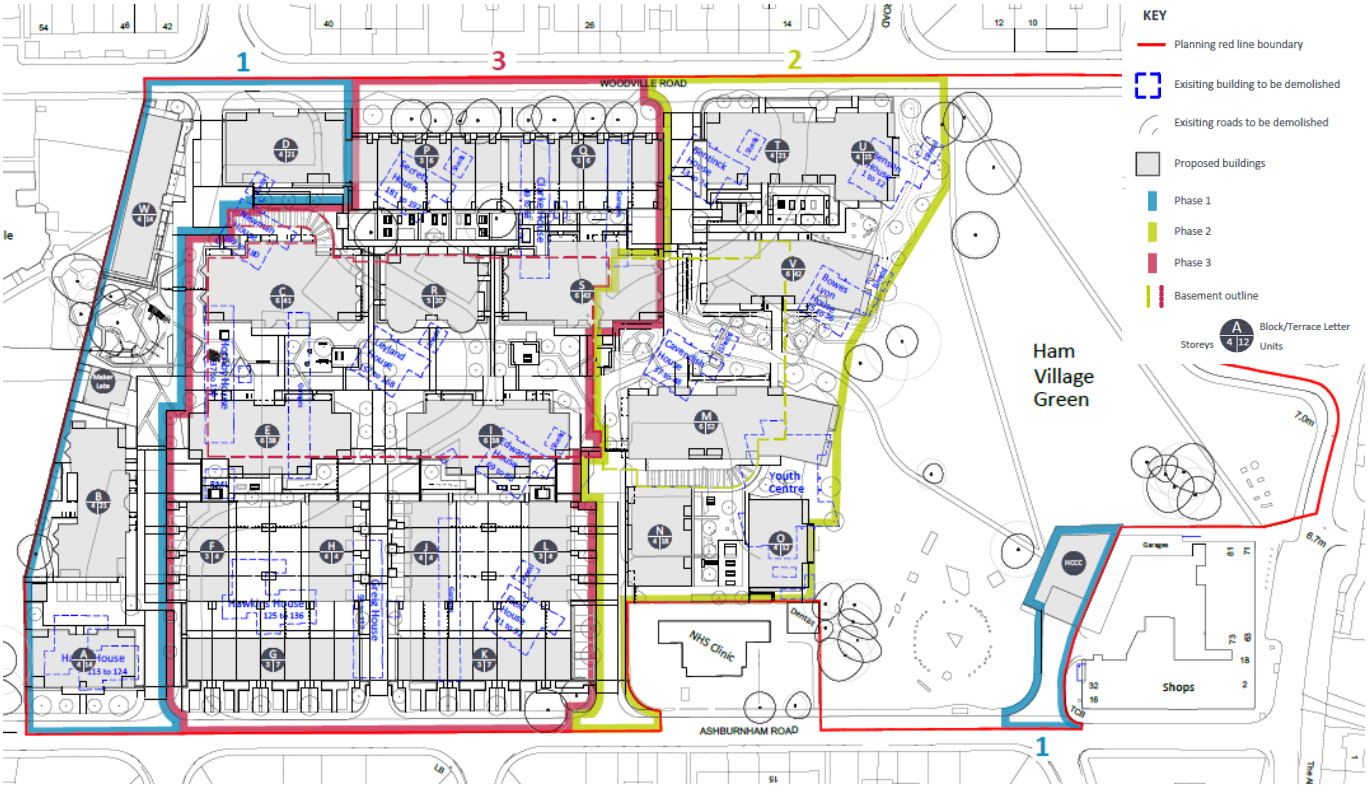


Figure 3 Phasing Plans

3. CONSTRUCTION MANAGEMENT

3.1. Introduction

This section addresses the general site management practices that will be employed to ensure the safe and compliant operation of the Site.

Prior to work commencing, the Applicant will review, update and submit to LBRuT further information as may be necessary for compliance with this CEMP. Throughout the construction works, further consultation with LBRuT may be necessary. The names and contact details of appropriate Site personnel will be forwarded to the Environmental Protection Team.

Site access to the works and the loading and unloading of materials for the site will be undertaken in general accordance with the requirements of the LBRuT's Environmental and Highways teams. No unloading will be permitted from Woodville Road or Ashburnham Road themselves, and all unloading will be from within the development site area.

The works will be undertaken by contractors and their sub-contractors with experience and skills appropriate to a major scheme of this size.

3.2. Site Welfare Arrangements

Welfare and First Aid arrangements shall, as a minimum, be in accordance with the CDM Regulations (2015) Approved Code of Practice and the Health and Safety (First Aid) Regulations Approved Code of Practice and Guidance (L74).

It is anticipated that the Applicant/ contractor will locate their site accommodation within the site boundary, but outside the actual building footprints. Site welfare will be positioned with due consideration to the location of Ham Close residents already re-housed or awaiting an offer of re-housing.

This is likely to be a 2-storey temporary sectional building. At the latter stages of the project the Applicant will need to decant from this space to enable the public realm to be completed. This will require the relocation of welfare facilities to a reduced temporary facility in one of the residential blocks to manage the completion of the works.

3.3. Site Access, Works Compound, Traffic Management

3.3.1. Site Access / Egress

Site construction traffic will be routed where there are the fewest sensitive receptors i.e. fewest numbers of homes and schools etc. For Ham Close this means accessing from the A307 via Sandy Lane. We have identified a tight bend to the north of the A307 which is a very severe pinch point that will be avoided by construction traffic.

Due to the proximity of the residential properties on Ashburnham Road and Woodville Road it is essential that no unloading or loading of site vehicles is undertaken on the highway to ensure site vehicles do not impact the flow of residential traffic around the site.

Because of these interfaces, it is planned that all material deliveries and all waste removal from site will be loaded and unloaded from within the site.

Roads, footpaths and all access routes will be kept clear of debris and free of mud at all times by use of hand sweeping and road sweepers.

We will ensure activities do not impede access to residents of Ham Close and local residents of the surrounding area and will develop and operate a traffic management system to control the timing and numbers of vehicles arriving at site throughout the construction period.

3.3.2. Routing of Construction Vehicles

The anticipated routing of construction vehicles to/from the site is shown on the marked maps below (figure 4).

Please see the separate Outline Construction Logistics plan document submitted as part of the planning application for further information.

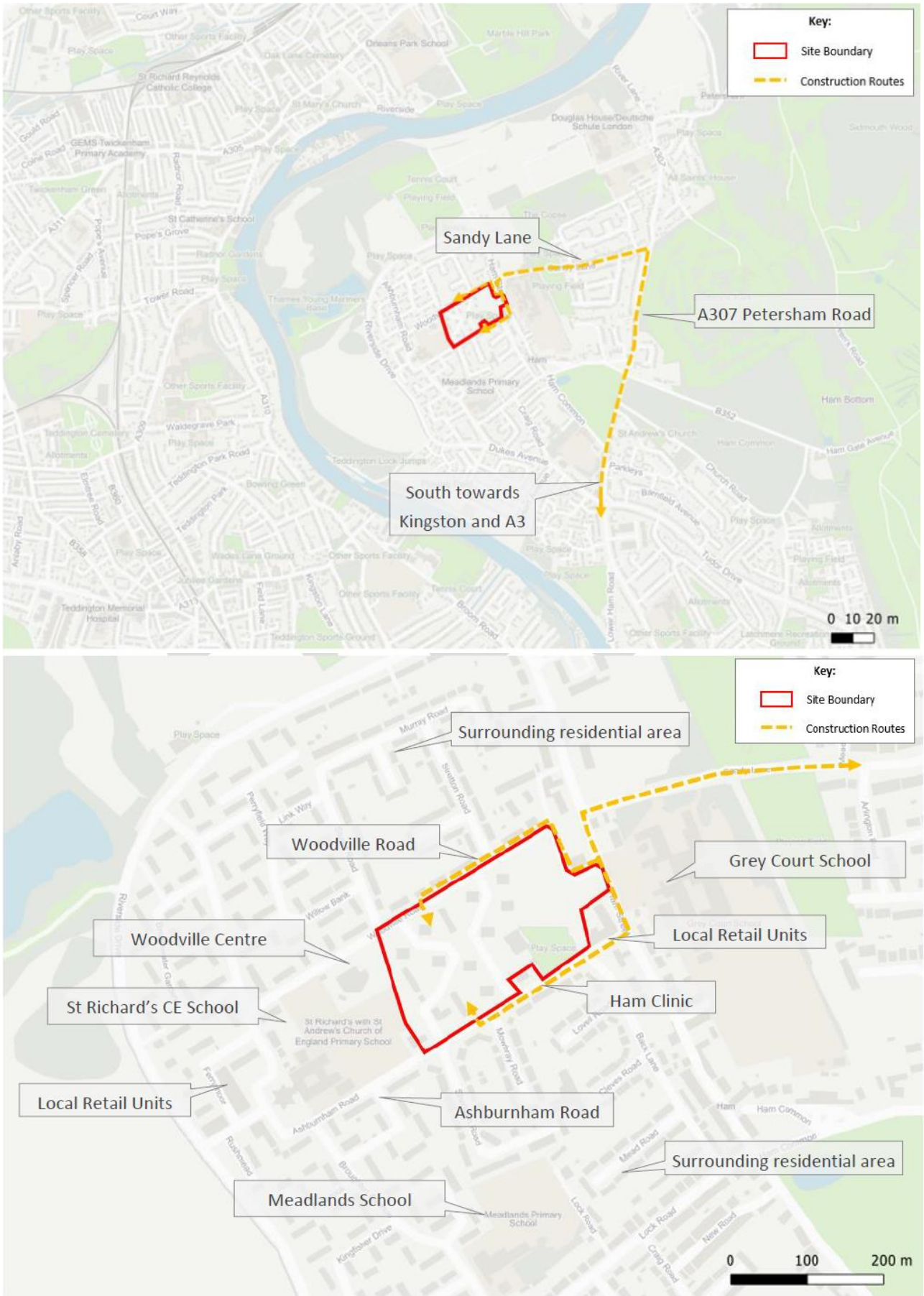


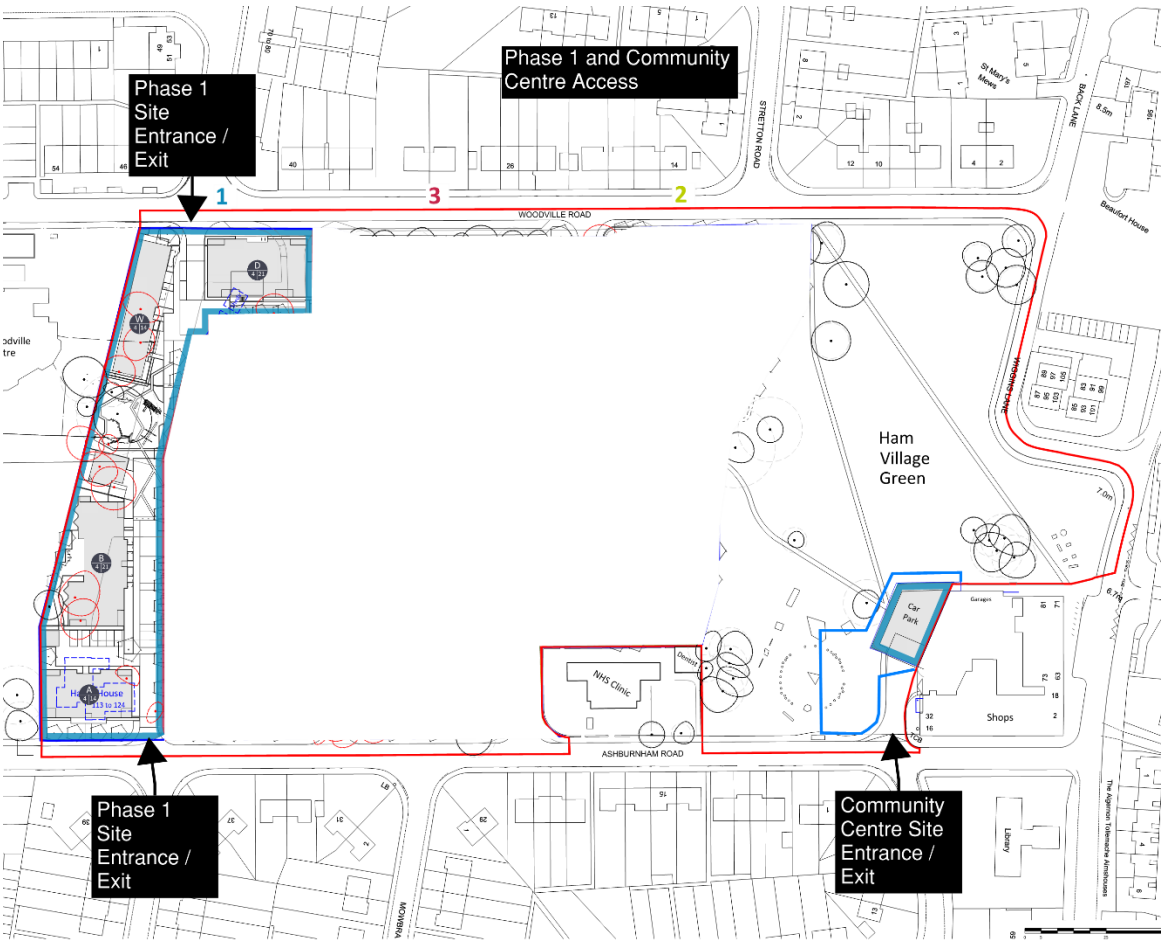
Figure 4 Traffic Routes to Site

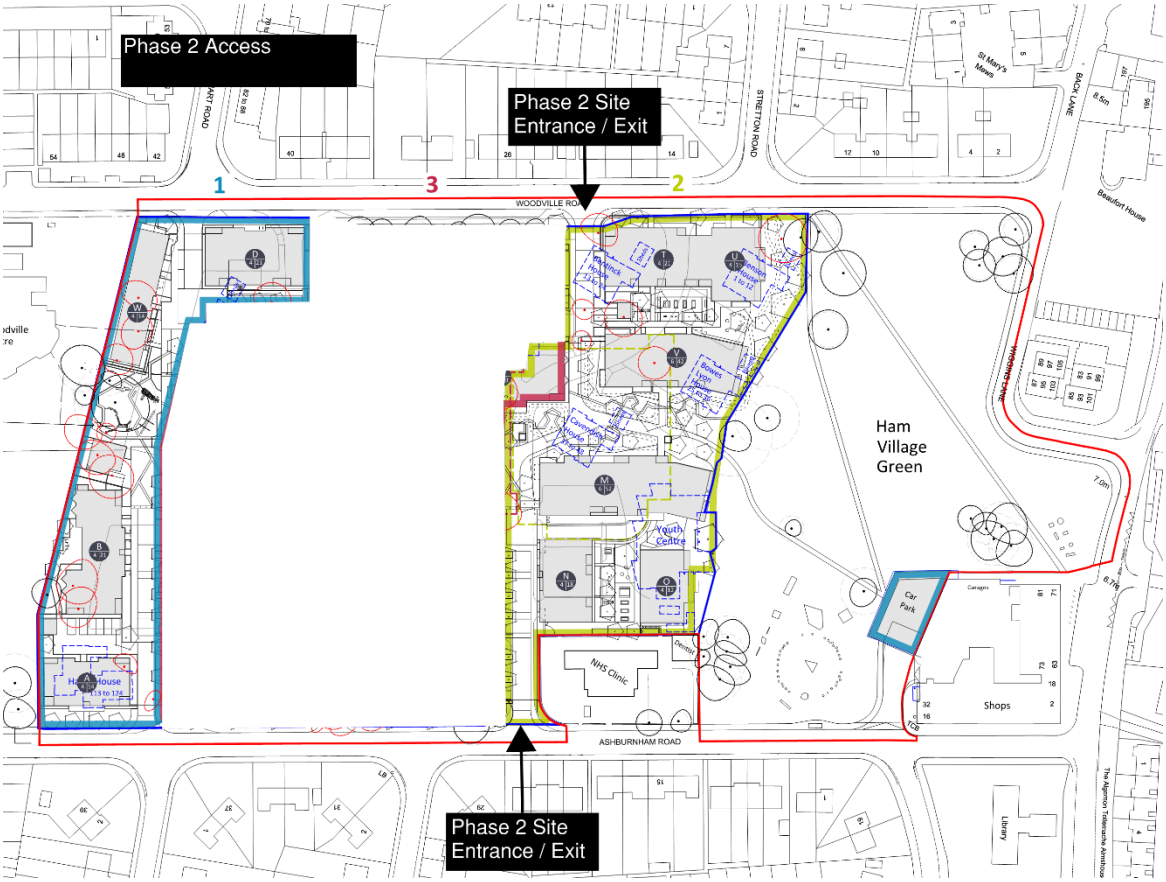
Delivery vehicles will be required to use such delivery routes as are agreed with LBRuT and the contractor will be required to demonstrate compliance by their supply chain. The contractor will be actively discouraged from using minor roads in the vicinity of the site and will likewise be required to demonstrate monitoring and compliance. Evidence of this monitoring will be requested and if necessary, separate monitoring via spot checks can take place.

3.3.3. Traffic Management

Where construction traffic needs to be segregated from passing traffic this will be achieved by the use of physical barriers. Traffic marshals will be in place to direct construction vehicles into the site to unload or load which will significantly reduce the site interfaces with residents and the public. There will be no loading from the highway.

The proposed site access points are shown below. Only Hill Residential site management will be permitted to park on the site. Through site inductions, site toolbox talks and site focused campaigns, site operatives and sub-contractors will be actively encouraged to walk, cycle or use public transport to get to work. Furthermore, we will actively encourage and seek to employ local labour which will mean shorter travel distances to site and enable operatives to use means of travel that will not impact on the surrounding areas. In addition, bike sheds will be installed within the welfare compound that will allow site operatives to leave bikes in a secure and safe area, which will further encourage their use.





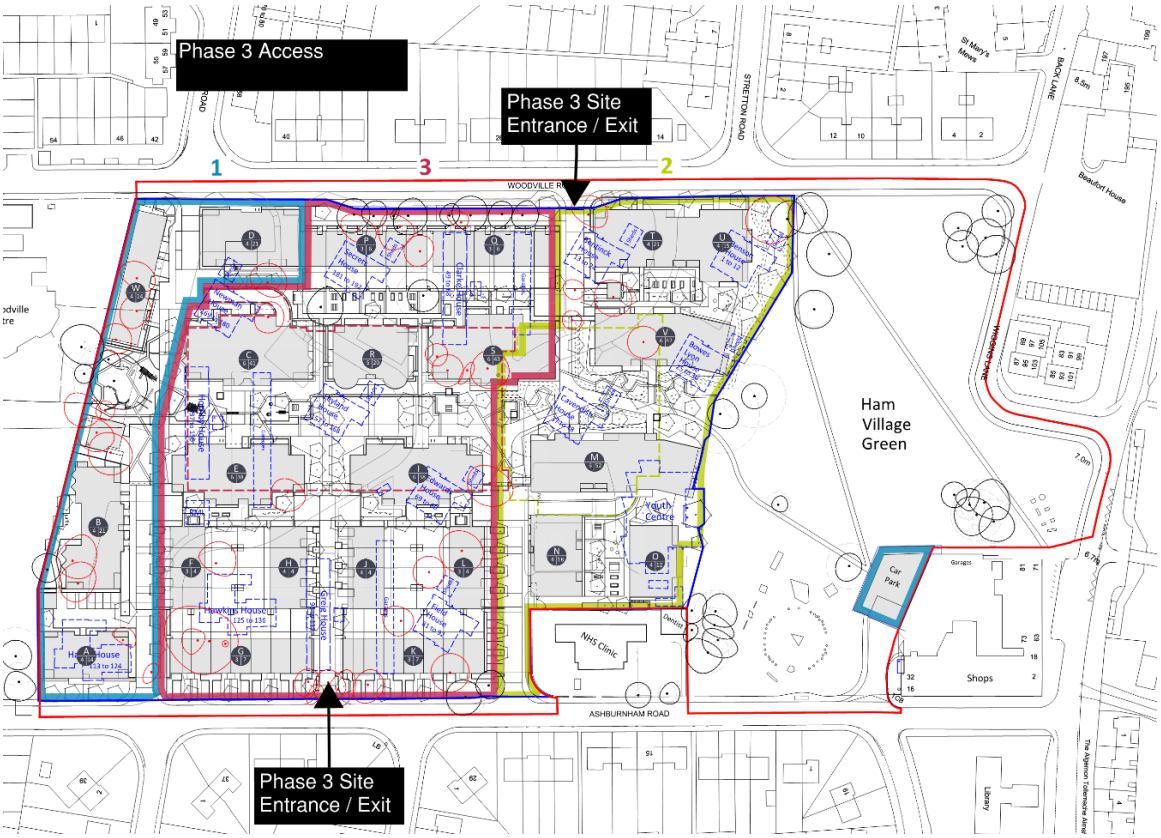


Figure 5 Proposed site access points

There will be an average of approx. 25 construction vehicles movements per day. There will be minimal Heavy Good Vehicles (HGV) movements to and from site outside normal working hours and these will be by agreement with LBRuT and in exceptional circumstances, such as weekend working for crane erection or dismantle

HGV access and egress will be timed to be outside peak congestion hours wherever possible in the interests of ensuring minimal impact is caused to residents, schools and local amenities.

There will be no loading / unloading of vehicles carried out on the public highways, unless prior approval has been obtained from the Local Planning Authority and suitable traffic management measures put in place.

3.4. Works Compound

It is proposed that the works compound will be limited to the application 'Red Line' and that site office and welfare facilities will be accommodated within the site area. Please see below indicative locations in figure 6 subject to agreement with LBRuT and RHP.

All plant and materials delivered to site will be unloaded from approved loading bays agreed with LBRuT and RHP under the direction of Hill site management team. Likewise, materials to be removed from site will be loaded onto vehicles within the approved loading bays under the direction of the Hill site management team.

Tower cranes will be necessary to carry out the works. These locations will be subject to review and RHP and Ham Close residents will be provided confirmation of locations prior to the crane's erection.

The below plan illustrates indicative crane positions, to be agreed:

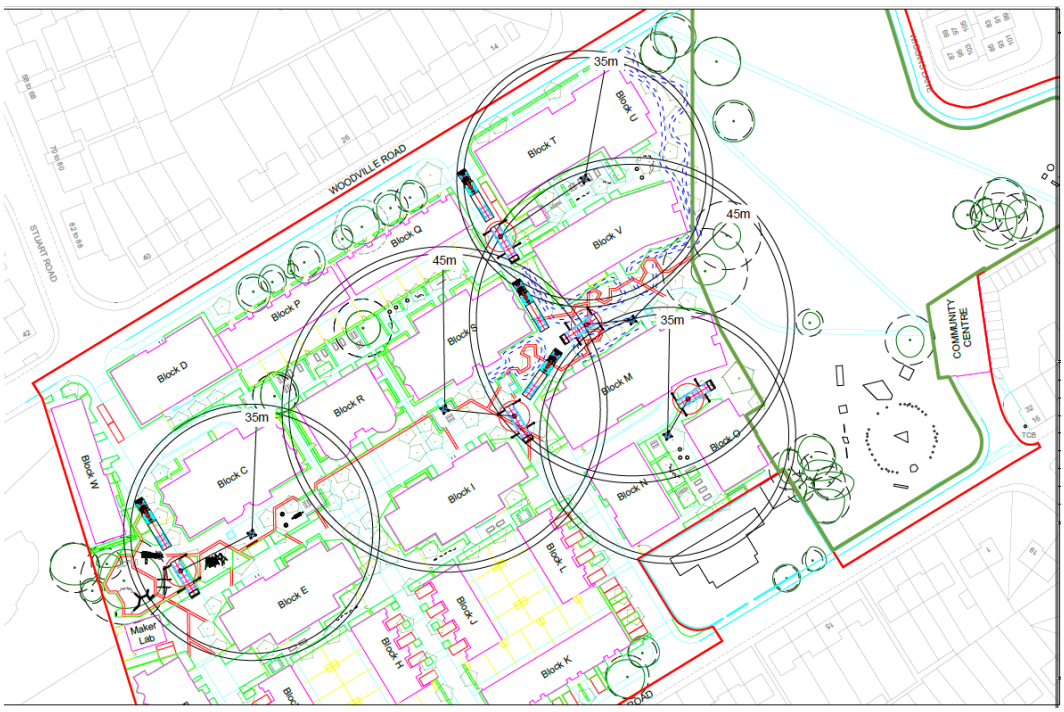
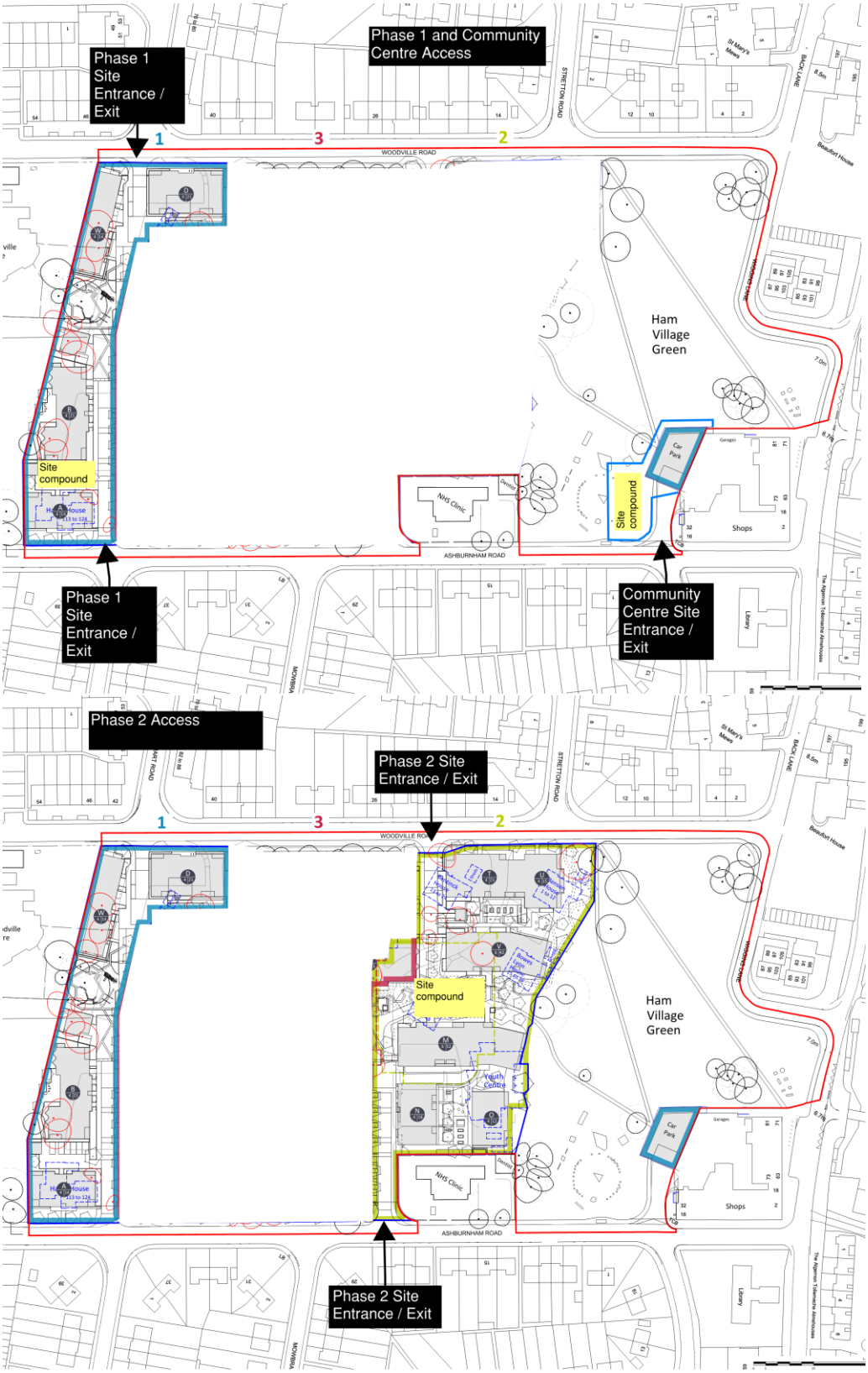


Figure 6 – Indicative Crane Positions

Hill Residential will submit firm proposals and to make all necessary applications for hoarding licenses and approvals for unloading bays and submit full traffic management proposals to ensure that the site safety measures proposed are within our control and will be delivered.



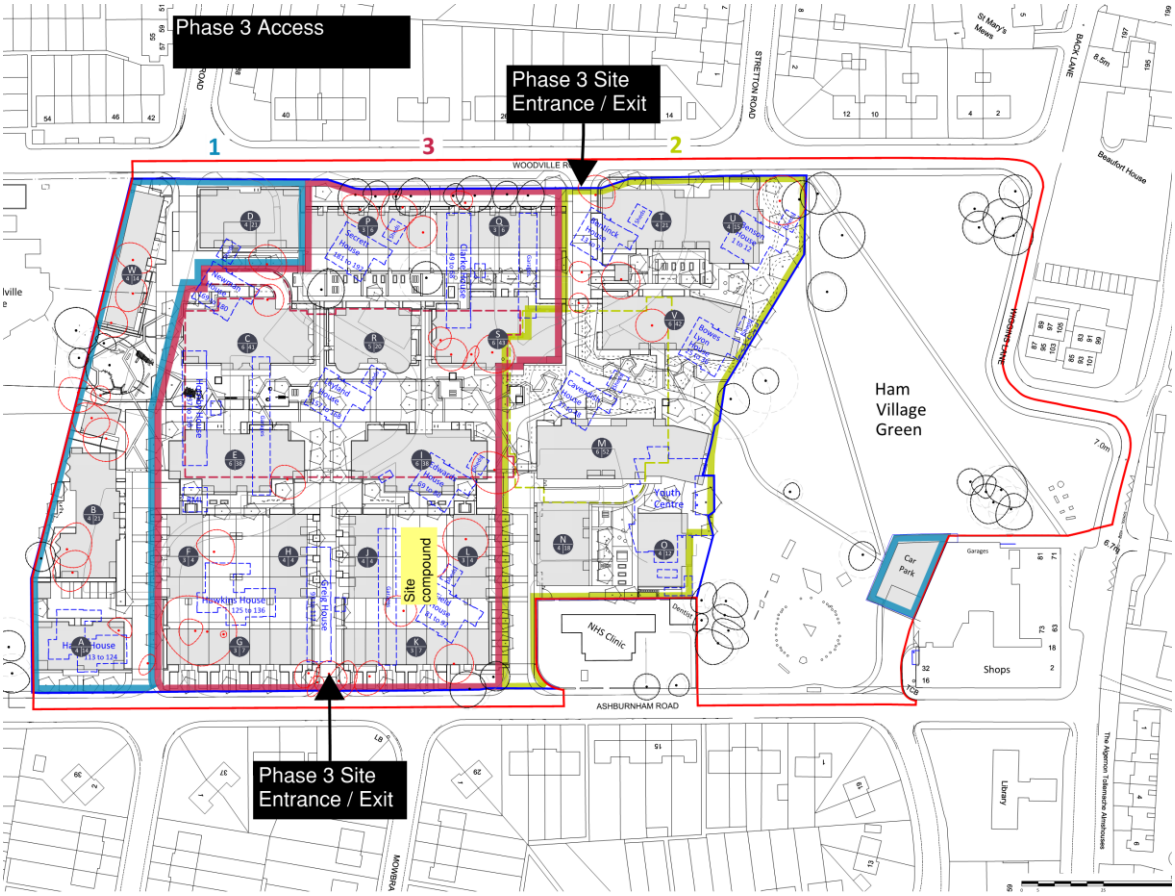


Figure 7 Indicative Proposed Temporary Compound Locations

3.5. Site Liaison Officer

Hill Project Manager and Resident Liaison Officer will be responsible for ensuring appropriate communication and to ensure the distribution of information to the residents on site, local community, and the Local Planning Authority. This includes ensuring appropriate arrangements are in place for monitoring and responding to concerns relating to demolition and construction works

The Resident Liaison Officer will be required to have a broad knowledge of the background of the scheme and a thorough appreciation of the works that are being undertaken. Additionally, the RLO will have an understanding of the role of the Employer. The job of the RLO will be as follows:

- To answer general questions or provide general information about the scheme to existing residents of Ham Close and members of the public.
- To proactively liaise with existing residents or neighbouring properties, businesses and schools that will be directly affected by the works.
- Recording comments, feedback and/or complaints made by residents and working with the Supervisor and/or Project Manager to resolve or put in place a process to manage a specific issue.
- To supply information relating to progress to date, forthcoming works and any other relevant information or photographs for incorporation into reports to residents.

3.6. Site Preparation and Design of Construction Procedures

The following discusses activities considered during the site preparation and construction phases of the development.

In planning and designing work activities, the Applicant will demonstrate that the following issues have been addressed:

- Details of personnel access and working platforms, including the procedure for their maintenance and subsequent removal.
- Arrangements for the protection of the general public, the site workforce and property and communication measures.
- A site traffic plan, detailing arrangements for, and the control of site traffic during the specific construction works.
- Waste minimisation and the management of materials will be in accordance with the industry protocol.
- Surface water management will be designed to prevent collection and ponding of run- off/percolation such as within below-ground structures and service walkways during earthworks operations.
- Assessment and control of noise at site boundaries during all works.
- Control of dust during all works.
- Procedures and methods to ensure the control of the level of suspended solids in surface water run- off from the site.
- The above list is not exhaustive and specific issues, in relation to individual items of work, will be incorporated into risk assessments and method statements as necessary.

3.7. Phasing of Development

It is envisaged that the works will be carried out in three phases, as detailed in Section 2.2

3.8. Hours of Operation

The standard working hours for all works and ancillary operations which are audible at the site boundary shall be as follows:

- Between 08:00 and 18:00 Monday to Friday.
- Between 08:00 and 13:00 on Saturday.

Relaxation / Flexibility to hours of operation as a result of Covid-19 may be requested. This will depend on the extent of any potential restrictions imposed at the time of construction.

No work will be carried out on Sundays and Bank Holidays, and no work will be undertaken out of hours without prior agreement with LBRuT. This can be secured by way of a planning condition.

There may be circumstances where the restriction on hours of work cannot be adhered to (such as crane erection). We will endeavour to minimise the frequency and duration of such works. However, where unavoidable, we will be required to fully justify any proposed deviation from these operating periods, provide written justification to LBRuT giving at least 5 working days' notice (except in case of an emergency) and notify neighbours before works outside normal hours commence.

3.9. Site Security

To maintain the security of the works, the working phases of the Site will be hoarded. During working hours access to the individual phased working sites will be kept closed, except in emergency.

The Site access / egress points will operate a security system, and access to the Site will only be granted after a Site induction has been undertaken. Site entrances and exits will be clearly marked with fixed warning signs at the entrance / exit and around work perimeters which will detail the potential hazards of the area. Segregated access for pedestrian and vehicle entrances will be provided.

Outside of working hours the Contractor will ensure that Site access points are securely locked and appropriate security provisions are in place to prevent unauthorised access.

3.10. Pedestrian Management and Safety

External hoardings will be erected which will be clad with marine quality plywood which will be 2.4m minimum height decorated using good quality paint products and will be maintained at all times. Where works obstruct pedestrian lighting, additional lighting will be provided. These shall be lit during the hours of darkness and maintained during the works. An appropriate licence will be sought for any structures that overhang the pavements in line with the local authority requirements.

At each site entry / exit point secure site gates will be installed which will be staffed by traffic marshals/ security guards at all working times and as far as practicable will remain closed whilst not in use.

It is possible that certain portions of the surrounding pavement will be closed during the construction works and that the hoarding will therefore follow the kerb line in order to provide working room. The positioning of this hoarding must be agreed in writing with LBRuT, and all relevant licences acquired prior to its installation. Pedestrians shall be redirected safely to alternative pedestrian routes.

It is also possible whilst working on the site perimeter that it may be necessary to erect scaffolding for access to carry out the works, which may need to be based upon the pavements outside the site boundary. Wherever this is required, the scaffolding will be erected in accordance with local highway authority requirements and the appropriate licence obtained.

Due to the high number of schools, the youth centre, the local playing fields and local pool that attract a high volume of children, a number of safety focussed visits to schools to highlight the dangers of construction sites will be undertaken prior to commencement and during construction.

3.11. Site Floodlighting

Site lighting will be kept to a minimum, taking into account the needs for Site Health and Safety and security.

Site floodlighting shall generally be limited to the working hours identified in Section 3.8, and when seasonal changes in natural daylight require it. Where light glare may cause a nuisance, light shielding will be considered. The avoidance of unnecessary impacts on neighbours and wildlife will be a big consideration.

3.12. Incident Reporting Procedures

The Project Manager or the Resident Liaison Officer will advise LBRuT of any incidents of non-compliance with the CEMP. In the event of working practices being deemed as non-compliant or requiring improvement either by LBRuT or the Health and Safety Executive, remedial action will be taken immediately.

Hill Residential will maintain an on-Site system for recording any incidents and action taken.

Any reports forwarded by LBRuT, the Police or other agencies will be dealt with by Hill Residential, as soon as practicable. The contractor will record the report, investigate the incident fully and will undertake a suitable corrective measure and thereafter monitor and ensure suitable action has been taken, where appropriate remedial action will be agreed with LBRuT.

4. HAM CLOSE RESIDENTS, NEIGHBOURS AND LOCAL COMMUNITY LIAISON

4.1. Introduction

Hill Residential will be responsible for ensuring compliance with all necessary requirements with respect to Neighbourhood liaison and will undertake this process in consultation with RHP. In addition, all staff and subcontractors will be responsible for adhering to the procedures agreed for the Ham Close Project.

4.2. Potential Effects or Mitigation Measures

The following is a list of the significant factors to be considered;

- Maintaining vehicular and safe pedestrian access for residents and businesses in Ashburnham Road and Woodville Road and the surrounding streets.
- Careful planning with LBRuT and Transport for London (TfL) for road closures, footway closures, craneage and oversize deliveries.
- Coordination with LBRuT's highways department in respect of scaffolding licences and any proposed maintenance of surrounding roads.
- Maintaining security during the works e.g., agreed removal of bollards / site access and egress / parking suspensions, etc.
- The site is within a residential area where it will be seen by local residents to have a potentially significant impact upon them. A clear line of communication will be established with the on-site residents, neighbours and regular newsletters will be issued by Hill Residential.
- Potential restricted noisy works due to neighbouring residential premises.
- Moderate to high volumes of pedestrian and vehicle movements around the site.
- Pedestrian / vehicle traffic management around the site.
- Enrolling into the Considerate Constructors Scheme and complying with the scheme requirements especially with regard to complaints and site appearance / cleanliness.
- Early and committed engagement with local stakeholders and distribution of regular newsletters with a channel for informal communications to be maintained.

4.3. Neighbourhood Liaison

At least 14 days prior to commencement of the construction works, the neighbouring properties will be contacted by Hill Residential Liaison Manager to explain the nature of activities to be undertaken, the start date and duration of the works and the working hours. The Contractor will maintain a Resident Liaison Manager contact for the public and Local Authority in order to obtain information, register a complaint or request action. A contact telephone number and / or e-mail address will be provided.

During the works, communication with the neighbours will be maintained via notice boards on the hoardings (displaying contact details for key personnel) and neighbours will also be specifically informed about any abnormal work or emergency road works, road closures proposed and a monthly newsletter will be produced by the contractor.

All licenses issued must be displayed prominently on hoardings, scaffolds, gantries or fences.

4.4. Complaints

In the event of a complaint from a neighbour or a member of the public in relation to any site activity, it will be recorded in a designated logbook, stating the nature of the complaint, the cause and, where appropriate, the corrective action to be taken and visits of regulatory offices. Sub-contractors shall immediately notify the Project Manager or Liaison Manager should they receive any complaints.

Should complaints about noise, dust or vibration be received, they will be addressed directly by the Project Manager or the Liaison Manager to enable results at the time of the complaint to be reviewed, and where appropriate immediate actions employed to rectify the problem.

All complainants will be contacted by the Liaison Manager or the Project Manager for further discussion and identification of a mutually acceptable resolution if the problem persists. When a valid grievance is raised, measures will be put in place where practicable to avoid recurrence of the complaint.

The Resident Liaison Manager will update RHP of any complaints received on a regular basis.

4.5. Documentation

All complaints will be recorded in a complaints log with details of remedial action taken and details of the response provided to the complainant.

5. ENVIRONMENTAL MANAGEMENT

5.1. Introduction

Environmental management is discussed in the following sections, to satisfy LBRuT requirements. This section will deal with the management of the project in respect of;

- Noise and Vibration
- Potential Air Pollution
- Protection of watercourse and drainage
- Energy Management
- Control of site waste.

5.2. Noise and Vibration

This section applies to the management of noise and vibration during the construction works. All staff and subcontractors will be responsible for complying with the requirements of these procedures.

The significance of noise effects depends upon a number of factors, including the noise level, the nature of the noise, the time at which the noise occurs, whether the noise is temporary or permanent, whether the effect is as a

result of a new source, or whether it is a change to an existing source and the sensitivity of the receptor.

5.2.1. Potential Effects

Potential effects from noise and vibration include disturbance to nearby residential / commercial / retail properties and people, potentially leading to loss of productivity and potential damage to structures in the event of significantly elevated vibration levels.

5.2.2. Relevant Legislation and Guidance

- Environmental Protection Act 1990 Part III Statutory Nuisance.
- Control of Pollution Act 1974 Part IV (Sections 60 and 61).
- The Control of Noise (Codes of Practice for Construction and Open Sites) (England) Order 2002.
- Noise Emission in the Environment by Equipment for Use Outdoors Regulations 2001.
- Control of Noise at Work Regulations 2005, as amended.
- Environmental Noise (England) Regulations 2006.
- The Environmental Noise (Identification of Noise Sources) (England) Regulations 2007, as amended.
- BS 4142:1997: Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas.
- BS 5228-1:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.
- BS 5228-2: Code of practice for noise and vibration control on construction and open sites – Part 1: Vibration.
- BS 7385-1:1993 Evaluation and measurement for vibration in buildings – Part 1: Guide for measurement of vibrations and evaluation of their effects on buildings.
- BS 7385-2:1993 Evaluation and measurement for vibration in buildings – Part 2: Guide to damage levels from ground borne vibration.
- BS 6472-1:2008 Guide to Evaluation of Human Exposure to Vibration in Buildings (1Hz to 80Hz). Part 1: Vibration sources other than blasting.
- BRE "Controlling particles, vapour and noise pollution from construction sites" 2003.
- LBRuT's Code of Construction Practice – regarding Noise and Vibration.

5.2.3. Baseline Noise and Vibration Monitoring

Baseline noise and vibration monitoring will be undertaken ahead of site activity. These surveys will monitor existing daytime and night-time background noise and vibration levels in accordance with relevant British Standards (BS). Predominant sources of noise will be attributed to vehicular traffic and ambient noise.

Noise monitoring will be carried out on a number of different occasions and locations across the Site.

Baseline vibration monitoring will be undertaken at the Site. The surveys will be undertaken to establish the potential for perceptible vibration and structure-borne noise effects. The vibration surveys will be intended to help determine vibration levels in terms of VDV (with reference to British Standard 6472: 2008) and, where required, to inform predictions of structure- borne noise levels in buildings.

Like noise, the Development has the potential to give rise to sources of vibration during construction works. This

will also be subject to monitoring.

5.2.4. Mitigation Measures

The following mitigation measures should be implemented by all contractors at all times to minimise noise and vibration generated from Site activities and disruption to any sensitive receptors:

- Hoarding and sheeting to public boundaries, with sensitive receptors.
- Controlled lorry movements.
- Use of modern plant with inherent noise suppression (e.g., Exhaust silencers) where available.
- Use equipment that crushes bursts or "nibbles" concrete in preference to percussive tools where practicable.
- Use of screens around static plant, and other temporary acoustic barriers where appropriate.
- Shutting down or throttling down machines in intermittent use.
- Appropriate handling of storage materials.
- Restrictions on working hours, for particularly noisy activities.
- Regular maintenance in accordance with manufacturers instructions.
- Regular communications held between contractors, local authority officers and neighbours (as per Section 4).
- Trigger levels will be set and monitored daily and if they are exceeded then a revised method of working will be used.
- Reviewing techniques, especially in response to exceeding of the action level and / or complaints.

5.2.5. Monitoring

Should any complaints regarding noise and vibration be received, via the Project Manager or the Liaison Manager then they should be referred to the Environmental Monitoring Co-ordinator nominated by the Contractor.

Monitoring frequency will be determined by the nature of the works being undertaken at the Site at a particular time and through liaison with LBRuT. During phases that have the potential to generate excessive noise and / or vibration, continuous monitoring is likely to be required. During quieter periods, monitoring may be undertaken once or twice per week. This frequency will be defined following liaison with LBRuT. During quieter activities, sample noise and vibration monitoring using portable equipment once per day by the Contractor is likely to be suitable. Such a reduction in monitoring frequency will require approval in advance from LBRuT.

Dust and noise monitoring record sheets will be completed.

Trigger levels should be set and monitored daily and if exceeded then a revised method of working will be used.

Measures will be taken to ensure that vehicles will be switched off and left without engines idling unnecessarily.

Where the results of the monitoring exercises indicate that the noise levels have been exceeded, the following actions should be undertaken:

- The activity or activities causing the Action Levels to be exceeded will be identified through discussions with the Environmental Monitoring Coordinator.

- Investigations will be made to determine whether the activities could be easily changed, or other simple actions taken to substantially reduce noise levels.
- If simple and effective remedial measures are not identified, consideration will be given to the implementation of alternative techniques and / or additional mitigation measures.
- In all cases where Action Levels are anticipated to be exceeded, neighbourhood liaison will be carried out to the degree that is appropriate for the levels likely to be reached and their estimated duration.

5.2.6. Equipment

Noise monitors will comply with BS 61672-1 (2003) and conform to a minimum Type 2 integrating sound level meter that simultaneously records LAeq, LMAX, L90 and L10 noise levels.

The vibration monitors must continuously sample the vibration levels and record the maximum vertical Peak Particle Velocity (PPV) every second for sample vibration monitoring and every 5-minute period for continuous vibration monitoring. The vibration monitors will be capable of measuring 3- dimensional levels of vibration.

5.2.7. Documentation

The following documentation must be held on file on Site:

- Noise and vibration monitoring data.
- Details of complaints received.
- Details of corrective action taken if complaints are received, or excessive noise is identified.
- Information regarding maintenance of the monitors.
- Plant and vehicle maintenance records.

5.3. Control of Emissions to Air

5.3.1. Introduction

Typical emissions arising from plant operating during the demolition and remediation works and from vehicles going to and from the Site would have the potential to contribute to local levels of air pollution, particularly Nitrogen Dioxide (NO_2), Carbon Dioxide (CO_2) and particulate measuring 10µm or less (PM10). Dust nuisance occurs more readily during prolonged dry weather and especially in strong winds, and dust becomes more difficult to suppress once it is made airborne. Consequently, good Site management includes the ability to respond quickly to such conditions. The emphasis of the construction phase would be to minimise the potential effects at source, through appropriate Site management and control practices, including controls on vehicle movements.

The Control of Dust and Emissions from Construction and Demolition: Supplementary Planning Guidance, produced by London Councils and the Mayor of London in July 2014, outlines best practice and provides a consistent approach covering all aspects of dust control and emissions from construction and demolition activities. This guidance states that, as part of the Air Quality Assessment, a dust risk assessment for each phase of works should be included.

Suggested mitigation measures and monitoring that are required to effectively manage the potential effects of the work on Site are outlined below.

5.3.2. Potential Effects

Potential Effects are as follows;

- Nuisance from dust deposition onto surfaces such as clothes, cars or windows.
- Effect on sensitive individuals from dust inhalation and air pollution.
- Effect on local commercial properties.

5.3.3. Relevant Legislation and Guidance

Environmental Protection Act 1990; Part III Statutory Nuisance;

- Control of Substances Hazardous to Health Regulations 1994.
- Control of Pollution Act 1974.
- Clean Air Act 1993.
- The Health and Safety at Work Act 1974.
- Clean Neighbourhoods and Environment Act 1995.
- Air Quality Regulations 2000, as amended.
- Air Quality Standards Regulations 2010.
- London Low Emission Zone.
- BRE "Controlling particles, vapour and noise pollution from construction sites" 2003.
- Environmental Permitting (England and Wales) Regulations 2010.
- LBRuT's Code of Construction Practice – regarding Dust and Air Quality.
- Health and Safety Executive (HSE) Guidance Notes EH 40/2002 on Occupational Expose Limits.
- Control of Asbestos at Work Regulations, 2002 (as amended).
- Greater London Authority and London Councils Best Practice Guidance; The Control of Dust and Emissions during Construction and Demolition 2014.

The Mayor of London's Supplementary Planning Guidance on Sustainable Design and Construction (April 2014) states that, as an essential standard, all developers should comply with the Mayor's and Association of London Governments' (ALG) London Best Practice Guidance on the Control of Dust Emissions during Demolition and Construction (July 2014).

Guidance from the BRE states that the most effective mitigation technique for dust control is to prevent dust from becoming airborne, since it is difficult to suppress after this stage.

Good Site management would include the ability to respond quickly to such conditions by employing such techniques as damping down (i.e., using a spray hose to deliver a fine spray) of stockpiles and sheeting of Lorries. Specific mitigation measures to be employed on Site are given below.

5.3.4. On-site Preventative Procedures

The following mitigation measures will be adopted in order to reduce and manage dust and other emissions from Site activities and minimise disruption or nuisance to neighbouring occupiers:

A) *Pre Project-Planning and Effective Site Management*

- Method statements to include processes for controlling dust.
- A stakeholder communications plan will be developed and implement, including community engagement before work commences on site.
- A Dust Management Plan (DMP) will be developed.
- Display contact details for the person(s) accountable for air quality pollutant emissions and dust issues, and the head or regional office contact information on the Site boundary.
- Record and respond to all dust and air quality pollutant emissions complaints.
- Make a complaints log available to the local authority when asked.
- Carry out regular Site inspections to monitor compliance with air quality and dust control procedures, record inspection results, and make an inspection log available to the Local Authority when asked.
- Increase the frequency of site inspections by those accountable for dust and air quality pollutant emissions issues when activities with a high potential to produce dust and emissions are being carried out and during prolonged dry or windy conditions.
- Record any exceptional incidents that cause dust and air quality pollutant emissions, either on or off the site, and ensure that the action taken to resolve the situation is recorded in the logbook.
- Hold regular liaison meetings with any other high risk construction sites within 500m of the site boundary, to ensure plans are coordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.

B) *Preparing and Maintaining the Site*

- Visual assessment of dust levels will be undertaken by all Site personnel at all times to identify where excess dust levels are being generated.
- Site layout will be planned so that machinery and dust-causing activities are located away from receptors, as far as is possible.
- Where suitable, solid screens or barriers will be erected around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site run-off 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 they are being re-used on-site cover as described below;
- Cover, or fence stockpiles to prevent wind whipping.
- Put in place real-time dust and air quality pollutant monitors across the site and ensure they are checked regularly.
- Agree monitoring locations with the Local Authority.

- Where possible, commence baseline monitoring at least three months before each phase begins.

C) *Operating Vehicle/ Machinery and Sustainable Travel*

- Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone.
- Ensure all Non-Road Mobile Machinery (NRMM) comply with the standards set by the GLA.
- Control of Dust and Emissions during Construction and Demolition SPG.
- From the 1st September 2015, all NRMM of net power 37 kW to 560 kW used on the site of a major development in Greater London must meet Stage IIIA of EU Directive 97/68/EC and its subsequent amendments as a minimum. All vehicles will be required to meet Stage IV of the Directive as a minimum.
- 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.
- Implement the Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement the Travel Plan that supports and encourages sustainable staff travel (public transport, cycling, walking, and car-sharing).

D) *Operations*

- Only use cutting, grinding, or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression / mitigation, using recycled water where possible and appropriate.
- Use enclosed chutes, conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- 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.

E) *Waste Management*

- Reuse and recycle waste to reduce dust from waste materials.
- Reuse demolition rubble (after sorting) for use as piling mats and for temporary site roads.
- Sort and send all metal products for recycling off site.
- Gypsum and other recyclable products will be separated on site for recycling off site.
- Avoid bonfires and burning of waste materials.

F) *Measures Specific to Demolition*

- Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).

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

G) *Measures Specific to Construction*

- Avoid scabbling (roughening of concrete surfaces), if possible.
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.

H) *Measures Specific to Construction*

- Regularly use a water-assisted dust sweeper on the access and local roads, as necessary, to remove any material tracked out of the site.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Access gates should be located at least 10m from receptors, where possible.

Ensure that all plant and vehicles are in good state of repair and conform to the manufacturers' specification or legislative / British Standard Emission Standards. Plant maintenance and defect reports shall be held on Site in a designated file. Where appropriate; electrically powered plants shall be used in place of machinery fuelled by petrol or diesel.

Care should be taken that damping down and wheel washing activities do not create excess mud that could cause excessive run-off into water courses and drainage.

Special precautions shall be taken if materials containing asbestos are encountered. The contractor must adhere to the exposure limits and measurements methods for asbestos in relevant guidance.

5.3.5. Monitoring

LBRuT's Code of Construction Practice states that we shall take all necessary measures to avoid creating a dust nuisance during both construction and demolition works. Dust within enclosed areas and Air Quality levels must be measured with appropriate equipment to compare to the relevant Occupational Exposure Limits (made under the Control of Substances Hazardous to the Health) Regulations 2002 and any other relevant guidelines. As such, on-going visual inspection of the Site will be undertaken at all times. If dust clouds are observed or if complaints are received relating to dust / air quality, action should be taken immediately and a formal monitoring programme should be enacted.

When such a situation arises, we will set up a transect across the Site according to the direction of the prevailing

wind. A minimum of two automatic particulate monitors, capable of measuring PM10 levels, shall be deployed at either end of the transect. These instruments must provide data that can be downloaded in real-time. The dust monitors must also provide an alert to Site management, such as in the form of an alarm or text message, when the Action Level has been exceeded.

Where monitoring of the dust level is undertaken, it is currently considered suitable to adopt the guidance level suggested by the Greater London Authority and London Councils' Best Practice Guidance. This states that a PM10 Action Level of 200µg/m3 averaged over a 15-minute period should be adopted. Baseline particulate levels do not provide an indication that this level would be unsuitable. If levels exceed this threshold, further investigation / mitigation should be undertaken. Where the results of monitoring exercises indicate that the Action Levels have been exceeded, the following will be undertaken by the Contractor:

- Identify the activity or activities causing the Action Level to be exceeded.
- Investigate whether the activities could be easily changed or other simple actions taken to substantially reduce dust levels.
- If simple and effective remedial measures are not identified, adopt alternative techniques and / or additional mitigation measures, until the problem is rectified.
- In all cases where Action Levels are likely to be exceeded, undertake liaison with neighbours and LBRuT to the degree that is appropriate for the levels likely to be reached and their estimated duration.
- Log the incidents of exceeding along with the identified source and the action taken to mitigate the issue. This log should be available for review by LBRuT at all times.
- The residents and local community will be informed of proposed Site operations (as per Section 4) and potentially disturbing operations will be programmed for times that would minimise any effects.

5.4. Protected Species

There are no known requirements for measures in relation to specific protected species on this project. However, Greengage Environmental are employed to provide ongoing expert ecological advice.

5.5. Energy Management

Appropriate targets must be set for monthly energy usage and displayed on the Site. Monthly measurements of energy use arising from site activities must be displayed as a graph in the Site office and show consumption over the project duration and compare actual consumption against target consumption. This will also include monthly plant maintenance and energy targets displays.

5.6. Documentation

The following documentation must be held on file on Site:

- Dust monitoring sheets.
- Records of targets and progress against these targets for on Site energy use.
- Complaints with source and details of corrective action taken.
- Method Statements.
- Risk Assessments.
- Plant maintenance and defect reports.

- Complaint's procedure.

6. WASTE MINIMISATION AND MANAGEMENT

6.1. Introduction

This procedure applies to the minimisation, storage and disposal of all waste generated during the demolition and construction works. It is also concerned with the establishment of procedures for complying with statutory and good practice requirements for waste management. The relevant documentation will be completed and held on Site. In addition, all staff are responsible for adhering to the requirements of the procedure.

The Mayor of London's Supplementary Planning Guidance on Sustainable Design and Construction states that an essential standard is to reduce waste on Site where practical.

6.2. Relevant Legislation and Guidance

- Environmental Protection Act 1990, Part II.
- Waste (England and Wales) Regulations 2011.
- List of Wastes (England) Regulations 2005.
- Hazardous Waste (England and Wales) Regulations, 2005.
- Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations 1991.
- Environmental Permitting (England and Wales) Regulations 2010.
- Clean Neighbourhoods and Environment Act 1995.

6.3. Procedure

All potentially hazardous materials, such as contaminated arisings, require additional handling, storage and disposal precautions. They will be clearly labelled and removed by a specialist, licensed Waste Contractor and appropriate measures made for their disposal in accordance with all applicable environmental and health and safety legislation.

Waste management priorities and practical actions that can be undertaken on Site should follow the principles of the waste hierarchy, as outlined below. Some waste types with potential to be reused or recycled on Site include concrete, blacktop, excavation spoil, topsoil, timber, metals, architectural features, clay, concrete pipes, tiles, blocks and bricks, packaging, and plastics.

Stockpiling of potentially contaminated material shall be avoided.

All waste will be stored in an appropriate container to prevent escape of material.

The Site will be left in a clean and tidy condition at the end of each day. Welfare facilities and skips will be clean and tidy. Food waste will be collected regularly to avoid attracting vermin to the Site.

All roads, pavements, construction equipment, temporary structures, materials and machines will be kept clean and tidy at all times with litter and rubbish removed promptly. When leaving the Site appropriate measures will be taken to prevent waste escaping onto the public highways; for example, containers must be secured and open skips must be covered by sheeting. Where the Site is anticipated to produce more than 500kg of hazardous waste in one year, the Site will need to register with the Environment Agency as a hazardous waste producer. No hazardous waste must leave the Site without the correctly completed consignment note.

6.4. Documentation

The following documentation must be completed and held on-Site by the Contractor in a designated file:

- Waste Transfer Notes (Controlled Waste).
- Hazardous Waste Consignment Notes.
- Waste carrier's registration licences.
- Environmental Permits for disposal sites.

7. MATERIALS MANAGEMENT

7.1. General

In accordance with Part (iv) of PC17 the details of provision for recycling materials and the provision of on-site of storage/delivery area for all materials is discussed below.

7.2. Storage of Materials

Excavated arisings generated during the earthworks will be temporarily stockpiled at a location away from the site entrance and in such a manner that they will not be carried into any watercourse. Any drainage arising from the storage of such materials will not enter a watercourse.

Material (such as construction material) storage shall be within the phase 1 area of the site compound during the early phases. For Phase 1 where the site compound is significantly small, material storage will need to be kept to a minimum and a just-in-time delivery regime will be required.

Stockpiles shall be managed efficiently and all movements will be recorded to supplement the requirements for consignment documentation.

Contaminated materials (asbestos and hydrocarbon impacted material) which cannot be re-used in accordance with the remediation and reclamation strategy for the site will only be stored on site in skips or disposed of under license.

7.3. Management of Arisings and Documentation

In the event of buried obstructions and structures being encountered, these will be excavated, segregated, stockpiled, crushed and tested prior to determine suitability for re-use within the site.
Upon agreement with the Client, this and all materials arising from the works will be the responsibility of the Appointed Contractor. Materials will only be disposed off-site to suitably permitted or licensed waste management facilities.

A Demolition and Site Waste Management Plan (DandSWMP) will be prepared for the site to identify potential waste streams prior to redevelopment so that they can be effectively managed, therefore minimising waste from the development. This will be secured via condition (in accordance with Richmond Local Plan Policy LP 24 which requires all major developments to produce site waste management plans to arrange for the efficient handling of construction, excavation and demolition waste and materials).

Waste management proposals will cover waste segregation, re-use, recycling and recovery of materials. The proposals will include the following waste management options:

- Segregation of recoverable material streams and non-recoverable waste. Recoverable materials comprising principally concrete and brickwork which can be crushed and re-used for development;

- Non recoverable materials will be taken off site by the Appointed Contractor for pre- treatment and disposal at an appropriate licensed or permitted facility.

- Recoverable materials may be recovered on site subject to appropriate environmental permitting or mobile treatment licensing or recovered off-site at a suitably permitted facility.

7.4. Materials for Re-use and Recycling

All materials identified which are to be recycled and processed for reuse as aggregates in the future on-site development will be reclaimed in accordance with the Waste and Resources Action Programme (WRAP) protocol.

As part of the remediation and reclamation phase, bulk earthworks and construction works, the Appointed Contractor will recycle and process suitable materials.

In line with London Plan (2021) Policy SI 7, a separate Circular Economy Statement has been developed. This includes commitments to 95% diversion from landfill for all construction, demolition and excavation waste, and a minimum 20% recycled or reused materials target. Please also see separate Sustainability Statement for further information. Excavated arising's will be managed and re-used (where appropriate) in accordance with a bulk earthwork's specification (which will be prepared for tendering prior to development following the reserved matters planning application) and under the CLAIRE Voluntary Code of Practice (CoP).

The (CoP) was published in March 2011 (Ref. 3). To maximise re-use of materials within the site, materials requiring off-site disposal will be classified in the demolition and site waste management plan and subject to pre-treatment to minimise volumes. Under the CoP, materials excavated on-site are not deemed to be waste if they are suitable for re-use (chemically and geotechnically) at specified locations or generally within the site. A 'Qualified Person', as defined under the CoP, will review the development of the Materials Management Plan.

Selected materials (e.g. appropriately graded) will be used to regulate the ground level.

The recycled fill materials will be inert and free from organic matter, plastic, plasterboard, timber, lead painted bricks and other contamination. We will ensure, so far is reasonably practicable, that all materials and contamination is removed from any excavated brick and concrete prior to processing.

We will provide segregated processing and stockpiling areas within the site boundary. We will take relevant caution to deal with surface water runoff and possible subsequent potential pollution such as suspended solids from any temporary storage bunds and stored materials.

8. ASBESTOS

Prior to the demolition of buildings and construction works, a full intrusive survey of the buildings will be undertaken to ascertain the location, extent and nature on any residual asbestos materials that remain within the building.

Any asbestos or hazardous materials that are discovered during these intrusive surveys will be notified to HSE as appropriate and following the required notice period will be removed under controlled conditions in accordance with the Control of Asbestos at Work Regulations, 2002 and removed from site to licensed asbestos waste facilities.

9. TRANSPORT MANAGEMENT

9.1. Introduction

This procedure applies to the management of vehicles accessing the Site during the works and vehicle circulation within the Site. Hill Residential will be responsible for managing traffic and ensuring that drivers adhere to both on Site and off-Site transport protocols. All staff are responsible for complying with this procedure.

Proposed traffic routes for local trunk routes and site access and egress have been included within this document within 3.3.1 Site Access/Egress.

A detailed Construction Traffic Management Plan will be developed for the project. Included within this document (figure 4), it shows the principal site logistics and local trunk route access via A307.

9.2. Potential Effects

The potential effects as a result of construction traffic are:

- Pedestrian Safety
- Congestion on the local road network resulting from vehicle routing and / or queuing to access the Site.
- Pollution as a result of queuing vehicles.
- Dust and noise and vibration of vehicles visiting and operating on-Site (please refer to Section 5).
- Impact on operation of Ham Close residents, local residents, business/ shops, Ham Clinic, Grey Court School, St Richards CE Primary School and The Woodville Centre at Ham.

9.3. Relevant Legislation and Guidance

- The Highways Act 1980.
- Environmental Protection Act 1990.
- Road Vehicles (Construction and Use) Regulations 1986, as amended.
- The Non-Road Mobile Machinery (Emission of Gaseous and Particulate Pollutants) Regulations 1999, as amended.
- Road Vehicles (Construction and Use) Regulations 1986.
- The Road Traffic (Vehicle Emissions) (Fixed Penalty) (England) Regulations 2002.
- Mayor of London's London Low Emission Zone.
- Transport for London's Standard for construction logistics: Managing work related road risk (WRRR) 2014.

9.4. Public Safety

From the site commencement, there will be a total of approximately 180 households in-situ, therefore Operational areas will be properly separated from publicly accessible areas using hoardings, barriers, fences, or other appropriate equipment.

Where Site works require the public footpath to be diverted, appropriate signage will be erected to show safe alternative routes. Similarly, if partial road closure is required at any time, the appropriate temporary structure

license, safety measures will be installed and signs and barriers erected.

All heavy goods vehicle (HGV) drivers will have attended HGV Cycle Awareness sessions to ensure they are aware of and understand (and look out for) cyclists on the roads.

All access to and egress from the Site will be made in forward direction.

9.5. Transport Routes

The specific routes to be used by construction traffic will be defined and agreed with LBRuT and Transport for London (TfL) prior to the commencement of construction works. Once confirmed, construction vehicles will not be permitted (through contractual obligations) to use any other route. Unless agreed in advance with the LBRuT, all vehicle movements onto or off the Site will be in a forward's direction. These routes will be detailed within the Construction Traffic Management Plan, prepared prior to construction activity by the Contractor in coordination with the project team.

A minimum of one dedicated Banks person dressed in high visibility clothing should be deployed at each of the Site entrances and exits. The Banks person will protect pedestrians whilst marshalling wagons on and off Site.

9.6. Site Access and Deliveries

The hours that vehicles related to the works will be allowed to access the Site will be:

- Between 08:00 and 18:00 Monday to Friday.
- Between 08:00 and 13:00 on Saturday.

With approx. 25 construction vehicles movements anticipated per day, no vehicular access will be permitted to site on Sundays and Bank Holidays, and no work will be undertaken out of hours without prior agreement with LBRuT but likely to be limited to one off activity such as out of hours crane operations.

Prior written approval from the Local Planning Authority will be required if removal of materials needs to take place outside these times. All deliveries will be controlled, to minimise disruption to traffic during peak periods. Deliveries will also take place on a 'just in time' basis to limit waiting times as well as stockpiling of materials on Site.

Prior permission from LBRuT or the Metropolitan Police is required for the delivery/ collection of loads likely to cause major disruption or that require a police escort. Such deliveries must also take place after 19:00 on a weekday or during a weekend to avoid road closures and / or delays during peak times. The Environmental Health Officer and neighbours must also be informed in advance.

It is not anticipated that vehicles will accumulate mud or debris as all movements will be on areas of hard standing. Vehicles will not be operating on unmade ground. Vehicles leaving the Site will be clean. If necessary, pressure washing of the wheels and chassis will be carried out before the vehicle leaves the Site.

As the roads around the Site provide access to nearby residences and businesses, vehicles queuing to access the Site will be avoided at all times by, for example, phased and pre-arranged deliveries and communication with drivers. The locations of any holding points, if identified, shall be discussed and agreed with the planning authority.

The public highway will not be used for the loading or unloading of materials, save with the express consent of LBRuT and / or TfL. Vehicles waiting to leave the Site will be required to switch off their engines. All vehicles will be booked in and out of Site at the security point.

Dedicated access gates for pedestrians and vehicles will be provided, which will be staffed by a banks person to ensure pedestrian safety during arrival or departure of vehicles.

9.7. Street Sweeping and Cleaning

The Contractor will assess the condition of the highway on a daily basis. Road sweeping measures will be employed by the Contractor, when required, to ensure that highways are kept clean (as outlined in the planning application).

9.8. Vehicle Maintenance and Emissions

All vehicles should be regularly maintained in accordance with the manufacturer's specifications. All commercial road vehicles used must meet European Emission Standards pursuant to EC Directive 715/2007/EC (commonly known as Euro standards) of Euro 5.

All non-road mobile vehicles with compression ignition engines used within the Site must comply with emission standards set in EC directive 97/68/EC. Vehicles must meet Stage IV limits from commencements of works.

Exemptions to the standards set out above for road and non-road vehicles may be granted for specialist equipment with alternative emission reduction equipment or run-on alternative fuels. Such exemptions shall be applied for in writing to Local Planning Authority in advance of use.

Vehicles or equipment not complying with these standards must not be used on Site without prior written approval from the Local Planning Authority.

Any diesel-powered machines used on Site must be run on low Sulphur diesel, which is a fuel meeting the specification within BS EN 90. Electric plant or machinery will be considered where possible.

All non-road mobile machinery (NRMM) of net power between 37KW and 560KW and with engines that emit Nitrogen Oxides (NOx) and Particulate Matter (PM) should meet the emissions standards set in EC Directive 97/68/EC.

9.9. Documentation

- Copies of vehicle maintenance records must be held in a designated file and made accessible if requested.
- Travel plans will be held on Site and made available on request.
- A log of correspondence with the council regarding non-conformance / complaints.

10. WATER MANAGEMENT AND POLLUTION CONTROL

10.1. Introduction

This procedure applies to discharges of trade effluent and other waters from the Site and control of ground and water pollution during the redevelopment works. All staff are responsible for complying with the requirements of the procedure.

10.2. Potential Effects

The potential effects from construction activities to the current hydrological conditions are:

- Incorrect disposal of Site effluent.

- Pollution of groundwater or surface water runoff through chemical, oil and fuel spills.
- Introduction of other pollutants (e.g. excessive amounts of solid particles) into the surface water drainage system.

10.3. Relevant Legislation and Guidance

- Environmental Protection Act 1990.
- Water Industry Act 1991.
- Environmental Permitting Regulations (England and Wales) 2010.
- Greater London Authority and London Councils Best Practice Guidance; The Control of Dust and Emissions from Construction and Demolition 2014.
- Environment Agency Pollution Prevention Guidelines – General Guidance to the Prevention of water pollution (PPGO1).
- Environmental Damage (Prevention and Remediation) Regulations 2009.

10.4. Site Drainage

Hill Residential will hold a drainage plan on Site which shows the location of all surface and foul water drains and will implement working practices to ensure that contaminated water does not affect upon controlled waters. The Contractor will make relevant staff aware of the existing drainage network.

Under no circumstances will waste chemicals, fuels, silt, or sediments be discharged to the drainage system, surface water or groundwater without appropriate permission. In the event of a blockage, a specialist trade contractor will clear out the drains and the waste material disposed of accordingly. Filters and / or settling tanks will be installed on drains to protect from emissions to sewer or controlled waters and these will be checked regularly.

Trade effluent from the Site shall not be discharged to surface or foul water drains without obtaining consent from the Environment Agency or Thames Water respectively. The Contractor is responsible for obtaining necessary consents and ensuring compliance with any conditions, for example, relating to the quantity and quality of effluent.

Care should be taken that damping down and wheel washing activities do not create excess mud that could cause excessive run-off into water courses and drainage. Washing activities will be located away from drains and will be carried out on impermeable hard standing to prevent infiltration to ground.

10.5. Hazardous Substances

Significant quantities of hazardous substances are not anticipated to be used during the redevelopment works. However, some fuels and oils may be required to be present on the Site.

Hazardous substance stores (including fuel and chemical stores) and areas at risk of spillage / leakage of polluting materials will be bunded above ground where possible. Bunded compounds will have an impervious base, which can hold at least 110% of the capacity of the tank or drum it contains to minimise the risk of hazardous substances entering the drainage system or the underlying Secondary Aquifer. Stored materials on Site will be checked regularly for containment integrity, quantity stored, and security of storage.

A suitable number of spill kits will be kept on Site in the vicinity of the work in progress and areas of hazardous material storage, which as a minimum should contain absorbent granules, sandbags and drain covers. Absorbent pads and booms should preferably be used instead of granules and sandbags where possible.

Labels will be used to clearly indicate the contents of containers. There should be no storage of hazardous substances near open drains.

Delivery of fuel and oil will be supervised at all times and checks will be made to ensure that the correct type and quantity of fuel is being delivered.

All pipelines and fuelling points will be protected from vandalism and unauthorised interference and will be turned off and locked when not in use. Drip trays will be used when filling smaller containers from tanks or drums to avoid drips and spills from entering the ground or drainage system.

During the construction phase, the construction of concrete structures will be monitored to prevent associated contaminated material entering the drainage system or the underlying groundwater and/ or soils.

10.6. Spills

A spill control procedure will be in place as part of the site operating procedures, which will be adhered to in the event of a spill.

Incidents that must be reported are:

- Spills of chemicals, oils, fuels, unplanned or non-consented discharges.
- Release of fumes and gases.
- Any incident that could lead to Local Authority or regulatory enforcement, resident or public complaint or media attention.

In the event of a spillage or other pollution incident, the project team will be notified immediately and immediate steps shall be taken to prevent environmental pollution, for example:

- Protection of drains following a spillage of oil or other chemical.
- Use of spill kits following a spillage of oil or other chemical.
- Turning off equipment or other source of fumes, noise, or dust.

A suitable number of spill kits will be kept on Site in the vicinity of the work in progress and areas of hazardous material storage, which as a minimum should contain absorbent granules, sandbags and drain covers. Absorbent pads and booms should preferably be used instead of granules and sandbags where possible. Used spill kits must be disposed of appropriately, for example as hazardous waste, where relevant.

If it is considered that a fugitive release to air, water or ground may have occurred, the following action will be taken:

1) Ensure that it is safe to remain in the area.
2) Locate and switch any isolation switches, valves, or pumps if possible.
3) Contact the following bodies where appropriate and follow their instructions:
    - Environment Agency (Tel: 0800 807 060).
    - Fire Brigade - 999 (emergencies) 020 8555 1200 (non-emergencies).
    - Corporation of London Pollution Team.
4) Where possible, undertake damage control measures to prevent dispersion of gases or pollution

from entering drains or water courses. For example, create containment sumps, pump liquid to temporary storage areas such as lined skips and block or clear drains as appropriate.

10.7. Other

The following practices should also be adhered to:

- Vehicle routing will take into consideration the location of any external storage areas to ensure that accidental effect does not occur.
- Site and surrounding drainage will be managed to prevent sediment laden / contaminated run-off from entering water courses or drains without consent.
- Stockpiling on Site will be minimised.
- Provision for the safe disposal of wastewaters, including surface water, groundwater and sewerage.

10.8. Documentation

The following documents will be held on Site:

- Copies of Environmental Permits and / or discharge consents and records of any effluent monitoring will be held in a designated file by Contractor and be available for inspection.
- Should any pollution incident occur, appropriate notification to the Environment Agency / Thames Water will take place, and a record of incidents and remedial actions taken will be maintained in an Environmental Incident Logbook by The Contractor.
- Records of any material spillages / incidents.
- Material safety data sheets.

11. MINIMISATION OF ECOLOGICAL DISTURBANCE

11.1. Introduction

The Site comprises habitats of limited ecological value, being dominated by buildings and hard standing. All buildings within the Site boundary have negligible potential to support roosting bats.

Whilst the Site is not considered to be of high ecological value, protection and conservation of any ecologically valuable resources will be undertaken in accordance with LBRuT's Code of Construction Practice and other relevant legislation.

11.2. Potential Effects

Potential effects during the Construction Phase of the Development are considered to include all works associated with site clearance, land forming, land contouring, construction of infrastructure (including services, drainage, roads, car parks, etc.), buildings, landscaping works including habitat loss through disturbance and removal of soils and existing habitats. The construction activities most likely to have an effect on habitats and species include site clearance and all construction works due to movement and operation of heavy plant and effects from use / storage of fuels and if spillages occur.

The Relevant Legislation includes the following;

- Wildlife and Countryside Act, 1981.
- Water Resources Act, 1991.
- Town and Country Planning Act 1990.
- Conservation (Natural Habitats, etc.) Regulations 1994, as amended.
- Conservation (Natural Habitats, etc.) (Amendment) Regulations 1997.
- LBRuT's Code of Construction Practice.

All British birds (except a few pest species) are protected from disturbance whilst actively nesting under the Wildlife and Countryside Act 1981. The bird breeding season is generally considered to be between March and July. Bats are also protected under this Act.

11.3. Procedure

The procedures and mitigations outlined intend to minimise the ecological effect of the works:

- No waste materials, including silt laden Site drainage and spillages, hazardous materials, chemicals, or fuels will be allowed to enter the surface water drainage system without consent from the Environment Agency and or Thames Water as appropriate.
- In the unlikely event that bat roosts, hibernating bats or nesting birds are encountered during Site works, the Construction Manager shall be informed. A strategy will be agreed with Natural England (NE) and LBRuT as to the most appropriate method for dealing with these protected species.
- The contractor shall take responsibility of arboriculture works to these trees as required by BS Arboricultural Impact Assessment, Tree Protection and Arboricultural Method Statement.

12. LIGHT POLLUTION

12.1. Introduction

The Construction Industry Research and Information Association (CIRIA) provide good practice guidance documents noting that lighting on construction sites is typically required as part of on- site health and safety requirements. The lighting assessment also highlights the potential negative effects upon surrounding sensitive receptors as identified in Table 1, such as residents of Ham Close, neighbouring residential properties and schools neighbouring the site. The need to minimise potentially negative effects on these receptors through the controlled application of lighting, in accordance with current standards, is set out.

12.2. Potential Effects

The potential effects from the construction lighting are:

- Glare caused by poorly directed security and flood lighting.
- Visible light and light spill outside the boundary of the Site.
- Temporary increase in sky glow during certain construction phases (ambient condition dependent) where operations require working or safety lighting during the hours of darkness.

12.3. Relevant Legislation and Guidance

- Artificial Light in the Environment, 2009.
- Institution of Lighting Professionals, Guidance Notes for the Reduction of Obtrusive Light, 2011.
- British Standards Institution, BS EN 12464-2 – Light and Lighting – Lighting of Work places. Part 2: Outdoor Work Places.
- Health and Safety Executive, HSG 38 – Lighting at Work.
- Health and Safety Executive, HSG 150 – Health and Safety in Construction.
- Institution of Lighting Professionals, Guidance for the Reduction of Obtrusive Light, 2012.
- LBRuT's Code of Construction Practice.

12.4. Procedure

Temporary lighting, including floodlighting and security lights on the Site or constructors' compounds will be required during construction works for the health and safety of construction staff, visitors and security of the Site. The following measures shall be adhered to by the Contractor:

- Specified working hours (as specified above in Section 3.2.1 above), uses of lighting, location of temporary floodlights and construction compound to be considered to ensure impact on neighbouring properties is kept to a minimum.
- Lighting to be switched off when not required specifically for construction works or required for security or health and safety.
- Precautions should be taken to avoid shadows cast by site activates on the surrounding footpaths and roads and therefore lighting to the Site Boundaries should be provided with illumination sufficient for the safety of passing public. Wherever possible, such lighting should be fed from a mains electricity supply.
- Glare caused by poorly directed security and flood lighting shall be minimised by limiting the aiming angle of lights to a maximum of <70º from the downward vertical and directing into the centre of the Site.
- Light spill shall be minimised by avoiding poorly sighted lights along the Site boundary, particularly near to residential properties and historically sensitive areas.
- Sky glow shall be minimised by use of modern flood lights of the flat glass construction to minimise any direct upward light.

16. CONCLUSION

The Construction Environmental Management Plan (CEMP) has been prepared for the Ham Close application, to ensure the construction works are undertaken in a manner which minimises adverse impacts, especially to Ham Close residents, who will be living in-situ throughout the construction period as well as the local highway network and to provide safe access and egress to and from the site. The information provided should be satisfactory to provide a background to support the Proposed Development and provide a framework for the developer to present and agree appropriate management procedures with LBRuT for the delivery of the project. This report should be read in conjunction with the separate Outline Construction Logistics Plan.

APPENDIX 1 - HAM CLOSE CONSTRUCTION MITIGATION FROM ES

Receptor	Construction Phase Mitigation
Archaeology	
Below ground archaeology	There are no known archaeological remains within the site with moderate potential fragmentary locally significant early prehistoric occupation evidence to be impacted by the proposed development. A staged programme of archaeological works will be secured as a condition of planning which will allow the identification of archaeological assets, if present, within the site and a suitable mitigation strategy to be developed and agreed with LBRuT and their archaeological advisors. The programme of further works will also include provision for geoarchaeology and public outreach.
Air Quality	
Surrounding residential receptors (including existing and future residents of Ham Close) and retained habitats	Measures include: • 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; • Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of the site boundary, with cleaning to be provided if necessary; • Carry out regular site inspections to monitor compliance with the DMP, record inspection results and make inspection log available to PCC 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;

Receptor	Construction Phase Mitigation
	• 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 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; • Impose and signpost a maximum speed limit of 15mph on surfaces and 10mph on un-surfaces haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate); • Produce a construction logistic plan to manage the sustainable delivery of goods and materials; • Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking and car-sharing); • 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;

Receptor	Construction Phase Mitigation
	• Avoid bonfires and burning of waste materials; • 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; • Avoid scabbing (roughening of concrete surfaces) if possible; • Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place; • Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery; • Use water-assisted dust sweepers on the access and local roads, to remove, as necessary, any material tracked out of the site; • Avoid dry sweeping of large areas; • Ensure vehicles entering and leaving the site are covered to prevent the escape of materials during transport; • Inspect on-site haul routes for integrity and instigate necessary repairs to the surfaces as soon as reasonably practicable; • Record all inspections of haul routes and any subsequent action in a site log book; • Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned; • Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud); • Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit; and • Access gates to be located at least 10 m from receptors where possible.
Noise	
Surrounding residential receptors (including existing and future residents of Ham Close)	To control the impact of noise during construction of the proposed development, contractors will ensure that works are carried out in accordance with best practicable means (BPM) as described in BS 5228 comprising of the following: • Where possible, 'silenced' plant and equipment will be used; • Where vehicles are standing for a significant period of time, engines will be switched off;

Receptor	Construction Phase Mitigation
	• Acoustic enclosures will be fitted where possible to suppress noisy equipment; • Plant will operate at low speeds, where possible, and incorporate automatic low speed idling; • Where possible, electrically driven equipment will be selected in preference to internal combustion powered, hydraulic power in preference to pneumatic and wheeled in lieu of tracked plant; • All plant will be properly maintained (greased, blown silencers replaced, saws kept sharpened. Teeth set and blades flat, worn bearings replaced etc); • Consideration will be given to temporary screening or enclosures for static noisy plant to reduce noise emissions and plant should be certified to meet any relevant EC Directives; • All contractors will be made familiar with the guidance in BS 5228 (Parts 1 and 2) which will form a pre-requisite of their appointment; and • Early and good public relations with the adjacent tenants and occupants of buildings will also reduce the likelihood of complaints.
Ground Conditions	
Construction works, surrounding site users and controlled waters	• Dust management and suppression techniques to mitigate potential spread of dust to prevent impacts to construction works and off-site users during construction. • Construction and site workers equipped with appropriate PPE and RPE in compliance with the construction phase plan, which will state other health and safety requirements specific to this site and previous site investigations. • Validation and implementation of appropriately designed SUDs, attenuation basins and Swales to avoid mobilisation of contamination. • Obtaining and working under all necessary permits. • Derivation of Acceptance Criteria for any material imported or re-use of excavated made ground onsite. • Storage of any fuels/chemicals used during construction in appropriately bunded areas to prevent contamination by leaks and spills. • Avoidance of removal of materials to landfill, where of suitable quality to remain on site, by implementation of a Materials Management Plan. A Materials Management Plan would be a planning condition. • A reactive strategy to be implemented during groundworks so that Construction Workers are advised on being vigilant for any anomalous ground conditions and evidence of contamination (e.g, visible asbestos fragments/materials discoloured, odorous

Receptor	Construction Phase Mitigation
	or oily soils/groundwater) that are uncovered during earthworks. In the event that suspected contamination is uncovered, the advice of a contaminated land expert to be sought and the affected materials removed, treated or encapsulated as appropriate. This will result in an overall improvement in local ground quality. A reactive remediation strategy would be a planning condition.
Ecology	
Light sensitive receptors	The lighting will be installed so as to not cause unnecessary light spill onto sensitive areas (e.g. Ham Village Green). This will be achieved through directional lighting and the use of hoods. There will be no uncontrolled lighting; the lighting will be switched off when not in use.
Badgers	Given the potential presence of badger on site and in the vicinity, best practice protection measures are recommended to be implemented and incorporated into a CEMP to ensure badger (and other small to medium sized mammals) are protected throughout the works: • Any trenches or deep pits within the development site that are to be left open overnight should be provided with a means of escape should a badger enter. The simplest method for this would be in the form of a roughened plank of wood placed in the trench as a ramp to the surface. This is particularly important if the trench fills with water. • Any trenches/pits should be inspected each morning to ensure no badgers have become trapped overnight. Should a badger become trapped in a trench it will likely attempt to dig itself into the side of the trench, by forming a temporary sett. • The storage of topsoil or other 'soft' building materials on site should be given careful consideration. Badgers will readily adopt such mounds as setts. So as to avoid the adoption of any mounds, these should be kept to a minimum and any essential mounds subject to daily inspections with consideration given to temporarily fencing any such mounds to exclude badgers. • The storage of any chemicals/liquids on site should be well away from the boundaries, and contained in such a way that they cannot be accessed or knocked over by any roaming badgers. • Fires should only be lit in secure compounds away from areas of potential badger activity and not allowed to remain lit during the night. • Food and litter should not be left within the working area overnight. • The above recommendations will also ensure the protection of hedgehogs and other mammals.

Receptor	Construction Phase Mitigation
Bats	Given the phased nature of the development, as a minimum it is recommended that an updated bat scoping survey should be undertaken prior to the commencement of works on Phases 2 and 3. This survey will inform the requirement for updated emergence/re-entry surveys and any associated mitigation. This requirement can be secured by planning condition.
Nesting Birds	The clearance/demolition of the vegetation and buildings with nesting bird potential/confirmed nesting activity will be undertaken outside of bird nesting season (taken to run from March to August inclusive) or after a suitably qualified ecologist has confirmed absence. Any nests recorded by the ecologist would be protected until they are no longer active.
Hedgehog	In order to minimise the potential for killing or injuring of hedgehogs (and other small to medium sized mammals) during site clearance, removal of dense vegetation should be undertaken in two phases, by cutting to 30cm in the first instance, then to ground level after that. The vegetation should be checked for mammals by hand search between these two cuts. Should any hedgehogs be found, they should be moved to a suitable area of habitat that is not subject to clearance. Hedgehog will also benefit from the badger mitigation discussed above.