

AGAR GROVE

CONSTRUCTION MANAGEMENT PLAN

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**Document prepared on behalf of the London
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AGAR GROVE REDEVELOPMENT



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CONSTRUCTION MANAGEMENT
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Contents

1	Introduction	3
2	Introduction and Background	3
3	Demolition and Construction Programme	4
3.1	Demolition and Construction Development	4
3.2	Demolition Method	4
3.3	Removal of Potential Hazardous Substances and Demolition	5
3.4	Demolition of Existing Buildings	5
3.5	General Construction Method for Each Phase	5
4	Transport Management	11
4.1	Transport Management during Demolition & Construction	11
4.2	Model Shift	13
4.3	Local Resourcing of Materials	14
4.4	Plant Equipment	14
5	Waste Management and Disposal	16
5.1	Management of Spillages and Site Runoff	16
5.2	Site Drainage	20
6	Environmental Management	21
6.1	Environmental Control Measures	21
6.2	Minimising Noise and Vibration	21
6.3	Air Quality Management	23
6.4	Surface Ground Controls	23
6.5	Visual Intrusion	23
	Appendices	24

Appendices

Appendix A

1 Introduction

This report provides the approach for managing the proposed demolition and construction works for the Agar Grove Redevelopment Project.

We have provided our approach for methods of demolition and construction works. In addition we have included the details of site logistics and environmental control measures that will be deployed before and during the works programme.

This will be a phased development with construction taking place on an occupied site. For each phase after decanting is complete, vacant possession of the site will be granted prior to demolition and construction works.

An indicative Draft Construction Programme for demolition and construction works is provided within the Appendix.

- Indicative Draft Construction Programme - dated (26.11.2013)

2 Introduction and Background

This Report is submitted in support of a planning application by the London Borough of Camden ("the applicant") for the redevelopment of the Agar Grove Estate in Camden.

Agar Grove Estate was constructed by the London Borough of Camden in the 1960s and comprises 249 residential units; two small retail units; and community facilities. The Estate consists of a series of low / medium rise blocks of flats and an 18 storey tower (Lulworth House) along with areas of open space and surface car-parking.

The site is centrally located in the borough to the east of Camden town centre in a predominantly residential area which comprises a mix of period housing; post-war municipal estates; 20th century in-fill; and some remnants of light-industrial activity.

The Estate is bordered to the north by Agar Grove beyond which sits an area of mid-to-late 19th century high-quality terraces and villas focused around Camden Square.

To the east lies Camley Street which is occupied by low rise light-industrial units. Beyond Camley Street lies the mainline railway into St Pancras and then the 1960s Benson and Forsyth Maiden Lane Estate which is also undergoing refurbishment as part of the Council's estate programme. Further to the south-east is the Kings Cross development area.

To the south is the London Overground railway line beyond which sits a pocket of low rise late 20th century housing. To the west is a predominantly residential area heading back towards Camden town.

The Agar Estate Regeneration project forms part of Camden's 'Community Investment Programme' (CIP) which aims to generate investment, deliver new homes and regenerate neighbourhoods. A detailed description of the application proposals is provided in the Design and Access Statement which, in broad terms, comprises:

- Demolition of the existing low-rise blocks (with the exception of the children's centre and Cranbourne and Ferndown) and comprehensive refurbishment of Lulworth House
- Creation of 493 new homes including a mix of social rent, shared-ownership and private units designed to meet current housing needs and space standards (including a single decant for the majority of existing tenants)
- Replacement community and retail facilities along with new small-scale business space; and
- Landscaped open and amenity spaces to support the development and contribute towards the creation of a high-quality environment.

3 Demolition and Construction Programme

This section provides our detailed approach for managing the proposed decanting, demolition, construction and occupation for each phase of the proposed development.

The intention is to build the development in six phases:

- Phase 1- Block A, will be the development of 38 residential units on the Broadstone site. Phase 2, Blocks F, G and H, will be the development of 14, 23 (in addition to 1nr commercial unit to the ground floor) and 20 units, respectively on the Manston, Sherborne, Sturminster and shop/cafe site. Phase 3, Block JKL, will be the development of 73 units on the Nettlecombe and Ashmore site.
- Phase 4, Blocks B and I, will be the development of 105 (in addition to community use units and offices on ground and first floor) and 38 units (plus 1nr commercial unit to ground floor) respectively on the vacant site adjacent to the children's centre and the previous Frampton and Abbotsbury site, respectively.
- Phase 5, Block CDE will be the development of 14 units on the Frampton and Abbotsbury site.
- Phase 6, Lulworth, will be the extensive refurbishment and internal reconfiguration of the existing

tower. New open space, highway and other improvements will accompany each phase.

The tenancy mix comprises three different residential types within the phases:

- Phase 1 - Social
- Phase 2 - Market + Commercial (block G) and Social (blocks F and H).
- Phase 3 – Market
- Phase 4 – Social and Intermediate + Commercial..
- Phase 5 – Social
- Phase 6 – Market and Intermediate.

It should be noted that this management plan is based on an approach to construction which assumes traditional concrete construction and piling as this would represent a 'worst case' from a construction impact perspective. If through the detailed design development a cross laminated timber construction approach is adopted we perceive that this will have a positive impact and improve this statement particularly in terms of noise, dust, vibration and transport activities.

3.1 Demolition and Construction Development

The project delivery for decanting, demolition, construction works and occupation for each phase of works would involve the following key stages:

- Single decant of tenants from existing accommodation to newly constructed phases, as per programme, leaseholders will be moved off site following acquisition by Camden and commercial landlords will be moved off site with a view to possibly returning to newly developed commercial units.
- Vacant possession of the given phases
- Full photographic survey of surrounding footpaths and roads before commencement
- Security & service disconnection
- Initial site establishment
- Site establishment – main compound
- Demolition works
- Substructure construction
- Superstructure construction
- External cladding and roof
- Fit out
- External works
- Testing and commissioning
- Commence occupation of each phase

3.2 Demolition Method

The precise method of demolition will be established with the build contractor after careful examination of the

existing structures.

The proposed method of demolition will be geared primarily to safety, but equally to minimise the environmental impact of the works generally. Particular consideration will be given to the safety of residents, children and the mitigation of dust, noise, vibration and transport impacts with respect to both residents and third parties within the Agar Grove Estate site, the adjacent neighbouring buildings, the Agar

Children's Centre and surrounding area.

The typical demolition sequence can be summarised as:

- Set-up and secure the site with hoarding
- Disconnect main incoming services
- Carry out condition verification and ambient noise surveys
- Install noise, vibration and air quality monitoring equipment
- Re-route existing services

Whilst the removal of potential hazardous substances and soft strip works progresses internally within vacated buildings, the external building perimeters will be scaffolded, sheeted and protection applied in preparation for main demolition works. In addition scaffolding with external protection fans will be erected to protect occupiers and third parties

- Demolish buildings down to ground level
- Complete demolitions and site clearance

3.3 Removal of Potential Hazardous Substances and Demolition

On completion of decanting within each phase, the identification and isolation of local services will take place. All classified potential substances will be double bagged and removed in sealed skips where it will be transported off site by road to one of a number of licensed hazardous substances tips. Hazardous substances consignment notes will record all waste before it leaves the site.

On completion of the hazardous substances removal, the hazardous substances enclosure will be cleaned and the area tested with samples taken to ensure all hazardous substances particles have been removed. The enclosure can then be removed and the area handed over to the demolition team for soft strip and hard demolition.

3.4 Demolition of Existing Buildings

To control dust emissions during the works, scaffold will be fully sheeted in fire retardant plastic sheeting. In addition to this, excavators will also be fitted with boom and dipper arm mounted water spray attachments that spray water directly onto the work area. The water will be supplied from temporary water supplies on site.

In general, demolition works to the proposed buildings within each Phase will be undertaken by large reach excavators mounted with hydraulic shears and crackers that will systematically cut the masonry and reinforced concrete into manageable sections which in turn will be stockpiled.

The debris will be removed from the upper levels of the building and for the residential elements of the project through the existing shafts. The raisings will be cleared from the existing lift shafts and then be loaded into roll on off bins and skips by secondary excavators fitted with grapple / bucket attachments for transportation off site to recycling facilities.

The programme for demolition works can only be indicative at this stage and should be adequate for hazardous substances removal, strip out and demolition works.

3.5 General Construction Method for Each Phase

Site Establishment & Enabling Works

The build contractor will set up the initial site accommodation and welfare facilities, including temporary services. On completion of the demolition works, the contractor will then commence with the site establishment for the main compound for that phase, with a view to relocating compound during the build

programme.

Substructure Construction

On completion of demolition works, it is planned to commence pile probing and using recycled crushed demolition materials for piling mat prior to construction of internal rotary piles.

The substructure consists of internal rotary piles with pile caps and ground beams that will support columns of the structures above.

On completion of a single bay of piling, concrete substructure works will be undertaken commencing with the construction of the pile caps, ground beams, lift pits, under slab drainage and services and followed by ground floor slab level.

In addition bases for tower cranes will be constructed. Tower cranes will be utilised for lifting rebar and concrete pouring to from the pile caps and ground floor slab. It is anticipated that ready mix lorries will be able to enter site and concrete will be poured using concrete skips or pumps.

After sections of concrete ground floor slab have been cured, reinforced concrete columns will be constructed from the ground floor slab and will support the first floor slabs.

Reinforced Concrete Frame Construction

The proposed structural system to each block comprises reinforced concrete columns and flat slabs from ground floor to roof level subject to design development.

Tower cranes will be utilised to construct reinforced concrete structures for each Phase.

Tower cranes will be used to lift rebar, erect working platforms, formwork and pour concrete on Ground floor level. After fixing of reinforcement, column formworks will be erected and concrete poured from columns at Ground floor level. Then slab formwork for the first floor slab will be erected to receive reinforcement and concrete. After curing in accordance with the structural engineer's specifications and drawings, the shutters will be stripped and Ground floor back propped to allow the first floor columns to be constructed. The construction sequence of Ground floor is then repeated to the roof level for each Phase.

As the construction of reinforced concrete frame is commencing on 3rd floor level, this will enable the first fix for mechanical, sprinkler, electrical and plumbing services to commence from ground level to upper levels.

In addition the construction of internal blockwork party and perimeter partitions could commence too, in line with first fix mechanical and electrical services. This process will repeat to upper floor levels.

Passenger and goods hoists will be erected to access each individual floor level within each Block (Phases 1, 2 & 3).

External Cladding

The external cladding to each Phase comprises of double skin facade. The installation of first fix brackets for external cladding will commence as the construction of reinforced concrete frame is commencing on fifth floor level and continuing towards upper levels. The brackets are installed and bolted to the concrete slab edge at each floor level.

On completion of the reinforced concrete frame for each Block, cladding components will be installed from ground floor level to upper floor levels using the tower cranes.

The external glazed/brickwork cladding units are delivered to site by flat-bed articulated lorries and then the units will be lifted into position by tower cranes for installation on a floor-by-floor basis.

Mast climbers will be installed in order to gain access to external elevations for each individual block.

Fit Out Works

The internal fit out works to the apartments and communal areas will commence from the Ground floor level and continue to upper floor levels.

As soon as, the external cladding is complete on the ground floor the fit out works will commence.

Typical internal fit out to each individual apartment consists of:

- First fix M&E services, e.g. plumbing & cabling
- Plasterboard division partitions & ceilings
- Plastering to walls & ceilings
- Mist coat
- First fix joinery
- Installation of bath & shower units
- Fit out of bathrooms & kitchens
- Timber floor finishes to e.g. living rooms
- Second fix joinery
- M&E second fix service
- Main-power-on-date
- Painting & decoration
- Final minor finishes
- Installation of fixtures & fittings
- Builders clean
- Snagging
- Testing & commissioning
- Final clean
- External Works
- Handover

Based on our experience of similar schemes in order to maintain the enhancement of high quality of internal finishes we have planned the internal fit out 18 weeks period per apartment and completion of 5 No. apartments per week.

External hoists will enable access, distribution of operatives, materials and waste to each individual floor level for internal fit out.

External Works

The external works will commence when external cladding and fit out works are underway for each Phase. Similar construction methods will be undertaken for all three Phases.

3.5.1 Construction Management Plan

Site Logistic Consideration

The build contractor is responsible for planning and execution of the demolition and construction works, including site establishment, site logistics strategy and logistics methodology plans.

A regular co-ordination meeting will be held between the build contractor, sub-contractors and third parties, including local residents. The agenda should cover the interface/co-ordination of the site logistical issues as well as the management of residents, all stakeholders and etc.

Initially, the purpose of the site logistics strategy is to identify the specific conditions that exist on site which will have an impact upon the works during the project delivery.

In addition, the strategy should look at the potential impact that the works may have upon the occupiers, neighbouring properties, road networks and community within the immediate vicinity.

The logistical methodology plan will communicate the proposed solutions to the professional team, sub-contractors, third parties in order that each party can make due allowances in their design, planning and implementation activities.

Site Establishment

Prior to any works being undertaken and following receipt of the relevant approvals and licenses, the perimeter of the site boundary will be hoarded. Entrance gate/s and security facilities would be installed in the hoarding.

We propose initially to install a secure hoarding around the perimeter of each Phase of the works. The hoarding will be erected to reduce the visual impact and noise transmission of the construction activities

at the ground level, as well as to secure the site. The hoarding will be approximately 2.4m high, adequately lit and include statutory safety signage.

The hoarding will be branded and maintained to the highest standard throughout the project. As part of our engagement with the local community, including schools, colleges and local residents, we would propose to instigate a competition to create a hoarding design. We propose to insert protective vision panels within hoardings in order for residents to view the progress of the works on site.

All plywood hoarding will be painted and maintained in a clean and safe condition by regular cleaning and removal of all graffiti and/or fly-posters.

The lighting to the construction site will be provided with sufficient illumination for safe demolition and construction works and in addition to the safety and comfort of the passing public. The lighting will be installed to minimise nuisance to residents or adjacent properties to reduce distraction or confusion to passing traffic on adjoining public highways.

The site establishment shall include site office and welfare facilities for the site management, construction operatives, client and third parties. Temporary power, water, telephony and drainage supplies would be fed off existing services until new services are available.

Access will not be permitted to site until each operative or third party visitor has completed the site induction at which point they will be issued with a photo identification document.

Once the induction has been completed operatives will be directed to the site welfare facilities via the safe access route identified for each phase. Full facilities will be available to allow operatives to get changed into their work clothes ready to work. The site set up will allow for a co-located project office for both the client team and the build contractor which allows for open communication and a teamwork relationship; there will also be a sub-contractor office, mock up and sample room and meeting rooms.

Construction Workforce

The total average daily workforce for the project is expected to be in the order of 200 operatives peaking at approximately 300.

Working Hours

The standard construction working hours are from 08:00 - 18:00 hours, Monday to Friday and 08.00 - 13.00 hours on Saturday. Based on our experience of similar schemes the hours of the works are dependent on the Planning Conditions and Section 106 Agreements and our build contractor will adhere to these conditions.

Site Communication

Site communication should be planned by provision of two way radios and notice boards. The Communication Plan will establish these requirements.

Security

Provision of site security guards during the project to secure the site will be considered. Provision of a 24 hour contact number for estate occupiers, the local community, construction works and site security will be considered.

Programme and Site Layouts

The build contractor will update on regular basis the procurement, construction programmes and site layouts in advance of the work phases in order to pre-plan site logistics requirements. These will be shared with the local community.

Resident Liaison Officer

Such works may cause inconvenience to the residents and the build contractor will develop a philosophy for minimising any inconvenience to residents, neighbouring properties and the wider community.

The philosophy recognises the need for detailed liaison between the build contractor, residents, and neighbouring interests and to meet this requirement we propose the build contractor to develop management function of Resident Liaison Officer. The proposal for carrying out the liaison duties will be to make the build contractor responsible for liaison and to ensure that smooth communications are maintained throughout the

project with local residents, neighbouring properties, estate maintenance teams, the client and other interested parties.

Liaison Duties

It is essential that the residents and local community have an easily identifiable point of focus to air their views during the project delivery. To achieve this goal, the Resident Liaison Officer will be resident on site throughout the project period and will be named as the key point of contact.

Key steps will be taken to ensure that a coherent management plan is developed for the project including:-

- A. Prior to contract commencement an introductory meeting with residents ideally arranged by the client to introduce the build contractor project team. The team will work closely with all project stakeholders and residents in order to address the following:-
 - The project parameters
 - Lines of communication
 - Brief description
 - Time scale and methods
 - Areas of operations
 - Security
 - Site cleanliness
 - Significant activities
 - Positively address any questions or concerns expressed by residents regarding the site
- B. Prior to contract commencement prepare and implement in association with the residents, the Client and its representatives a procedures plan for co-operation between all parties concerned and the local community
- C. Establish a Project Information Centre within the site boundary. The Information Centre would also act as the point focus for residents, where visual displays and regular bulletins will be used to illustrate the intent of the project
- D. Maintain regular meetings with the local community, especially during the pre-lead period to explain how works are to be carried out
- E. Notification to the local community of impending works through letter drops and newsletters
- F. Liaison between the local community and the build contractor of special needs such as access for the disabled, family with young children the visually impaired, specialist deliveries and functions.
- G. Maintain liaison at all times regarding matters of concern, ensuring that a satisfactory outcome is achieved
- H. Inform the status of progress of the works to the local community.

Experience has shown us that friction between the community and contractors can be avoided by continuing the process of consultation and dialogue and giving adequate prior notice of any significant operation and phasing of the works.

Public Relations

The area in vicinity of the Agar Grove site is predominately residential, with some local businesses to the South East on Camley Street.

The nature of the works being undertaken and the arrangement of deliveries mean that the impact on the neighbours will need to be stringently managed.

The aim should be to reduce this impact throughout the project through use of clear information and reporting methods, exemplary external housekeeping and satisfactory responses to any queries raised. The development and issuing a newsletter / poster to local businesses and residents will be encouraged. This will provide useful information about the Considerate Constructors approach and contact details for both the build contractor and construction team should any concerns need to be raised. The build contractor contact numbers will also be clearly displayed at the site entrance and security areas.

During the works, there should be regular communications with neighbouring residents. A monthly newsletter will be provided for the surrounding residents to keep all parties informed about progress to date and forthcoming works.

The ultimate aim of the document is to be informative to the local residents and businesses and to make the build contractor approachable when they need to engage with residents and etc.

A complaints register will be established to provide a permanent record of the performance of the project. Any complaint from residents or other parties will be treated seriously, and complaint logged and cause investigated. The outcome should allow procedures to be implemented with the aim of avoiding any recurrence.

Fire Plan

Hot work permits, fire safety systems, means of escape, fire escape routes and other measure will be provided for the protection of the existing and proposed buildings during the project delivery.

Permit to Access System

The build contractor will establish a permit to access working system for all project phases and areas.

Health and Safety

Health & safety issues on this project are a fundamental factor in influencing the decanting, demolition, constructing methods and programming/sequencing of the project and occupation, due to the size of the project and the number of vehicular and pedestrian movements associated with workforce should be created, together with the public traffic in the surrounding areas. The Health & Safety Plan will establish these requirements.

For each phase of works the Environmental Health & Safety Plans will be developed in accordance with general provisions. Housekeeping will be given a high priority.

Control of Substances Hazardous to Health (COSHH)

The strategy for controlling of all substances and materials coming onto site and all work activities and progress which generate hazardous substances will be managed and controlled in accordance with COSHH requirements.

Emergency Response Procedures

Provisions will be in place to:

- respond to spills or discharge to atmosphere, water supplies, sewerage systems or ground;
- address damage to existing assets;
- keep site and surrounding areas clean; and
- provide site information & viewing facilities

Emergency Fire & Accident Procedures

The build contractor will consider providing fire drills training and use of non-flammable fire materials.

4 Transport Management

As demolition and construction works progress, access and egress to and from different areas of the site will be subject to change and development in line with on-going site activities. This is particularly relevant during the early services diversions, demolition and substructure phases of the project.

Maintaining vehicle and pedestrian access to the occupied buildings on the estate including the Agar Children's Centre and the L&Q housing blocks.

Discussions will be held with Highways Department, Transport for London, Police, local Hospitals and other stakeholders with regard to access routes well in advance of specific works being undertaken.

We have studied and analysed the surrounding roads to Agar Grove Estate. Our review shows that:-

- Agar Grove: Residential.
- Camley Street: Industrial units / Commercial, Railway line and Residential.
- Wrotham Road: Residential.
- Agar Place: Residential.
- St Pancras Way: Residential and Local Businesses.
- Stratford Villas: Residential.
- Murray Street: Residential
- Camden Road: Residential, Local Businesses.

Our analysis shows that the only current access to Agar Grove Estate site is through Agar Grove and Wrotham Road via St Pancras Way.

In order to minimise disturbance to the surrounding residents retained on the Estate, neighbouring properties, local businesses and public transport we propose to use one of the existing accesses for construction vehicle access to the Estate.

During both demolition and construction works the roads within the vicinity of the site are to be kept clean at all times.

The build contractor will give careful consideration to preventing blocking of any roads to incoming traffic.

Vehicles and other deliveries will arrive at site on a just in time basis where they will drive into site under the control of a banksman.

Vehicle movements will be kept to a minimum in order to limit the disruption to the local system. In addition deliveries will be timed to avoid peak periods of traffic around the site such as school collection and drop off times.

4.1 Transport Management during Demolition & Construction

In order to minimise disturbance to local residents there will be limited contractor parking on the Agar Grove Estate. The majority of the workforce will therefore use public transport to Camden Road and Camden Overground station. In addition the build contractor workforce could utilise the local public buses routes, underground and train stations.

Deliveries will be carefully managed in order to avoid numerous lorry movements in short periods of time.

We estimate for each Phase daily construction heavy goods vehicles (HGV) movements (a movement relates to one lorry entering then leaving the site) associated with the works are estimated to average approximately 10- 15 per day depending on the size of phase.

Peak HGV movements are predicted to be 30 per day for each phase.

Description	HGV No.
Demolition & plant	350
Hoardings	10
Reduced level excavation	70
Internal piles, rigs & mixer concrete trucks	20
Rebar	52
Mixer concrete trucks	480
Blockwork	15
Roof steel	10
Roof finishes	25
Cladding panels	484
Windows	32
Plasterboard	352
Ceramic tiles	6
Plaster & paint	6
Internal & external doors	34
General carpentry	25
Sanitaryware - Bath & shower trays	8
Sanitary ware - Basin & vanity units	6
Kitchen units	21
Floor finishes	48
MEP	55
External hard landscaping - Paving	21
External soft landscaping	10
Skip - Waste management	750
General Plant, cranes & etc.	30
Total No.	2,920
Extra allowance (30%)	876
Sub-Total	3,796

Agar Grove Estate- Indicative total number of HGVs for Demolition & Construction works

Note on Materials Deliveries

48 hour advanced notification for all site deliveries and waste collections. The contractor must ensure that staff are on site to receive, load and unload and check all the deliveries.

Load Consolidation

Load consolidation is the requirement to substantially reduce partially loaded lorries and thus increase vehicle utilisation by achieving higher levels of vehicle fill. The build contractor will be expected (under the employer's requirements) to achieve the highest average vehicle utilisation within the site constraints (discussed below). Measures to achieve load consolidation will include:

- Backloading - This is where suppliers pick up during the same trip as they drop off supplies. In the case of Agar Grove it is most relevant to the management of on-site waste
- Dedicated deliveries - Sole suppliers for steel reinforcement cages for piles, concrete decking & formwork, steel reinforcement bars, ready mixed concrete lorries, pre-cast slabs & stairs, brick / blockwork, windows and materials for internal finishes can be controlled to ensure that all loads are consolidated by ensuring that the largest permissible lorries and concrete mix lorries are used.
- Maximise permissible carrying capacity - consideration by the build contractor, sub-contractors and suppliers should be made to achieve deliveries on the largest possible vehicle in respect of weight and size. In particular a review of double stacking vehicles should be undertaken. (see constraints below)
- Use of more space efficient packaging and palleting by the build contractor is required to review the methods of storing materials on vehicles. Key considerations would include, staking height, methods of protection and loading methods.
- Nominated Day Delivery System - we propose that the build contractor will be required to schedule deliveries around certain days and times of the days whereby traffic impact is minimised. This may include deliveries for bulk materials being done at designated "quite times" and should seek confirmation from TFL on available desktop studies on traffic counts for the area.
- Delivery Collaboration - the build contractor will be required to review horizontal collaboration in the freight demands of the job. This will entail approaching key suppliers and sub-contractors and reviewing the possibility of using a joint freight company so that vehicles could be laden with materials from different suppliers and ensure maximum utilisation.
- Reduction in Just In Time (JIT) – Just In Time delivery has become an essential requirement when working on constrained "island sites" such as Agar Grove.

Key Constraints

- Poor site management - poor material delivery scheduling, poor estimating will lead to partial loads being "couriered" to site on a regular basis.
- Just In Time (JIT) delivery - Site material storage constraints will ensure that there is some requirement for JIT which will increase the frequency of deliveries.
- Vehicle size and weight restrictions – attention should be drawn to any load restrictions on local roads and should be confirmed with TFL prior to initial deliveries. Size of vehicle may also be restricted by local road layouts, turning circles etc.
- Health and Safety Restrictions
- Supplier capacity constraints in relation to fleet vehicle size and type – the build contractor should review supplier fleets and logistics prior to entering into a supply agreement.

4.2 Model Shift

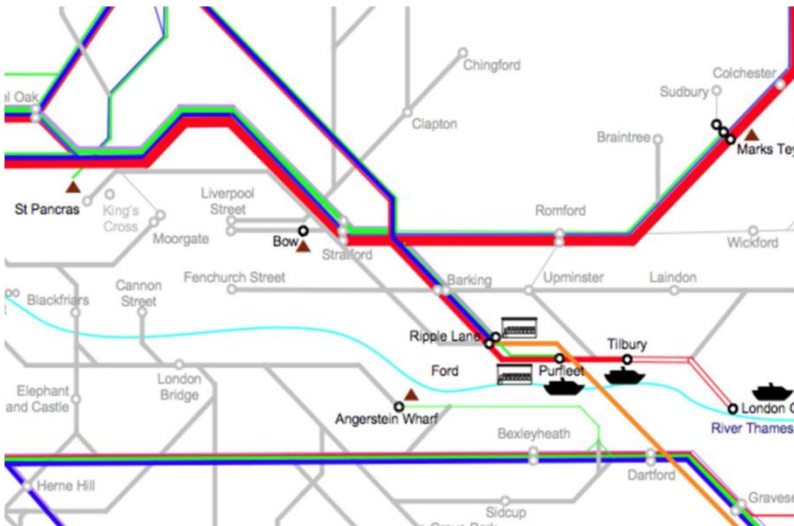
There are two other types of transport available in the area, beside road network – rail and canal. The possible use of rail and canal to deliver materials to site is summarised below:

Rail: The West London Line (WLL) runs freight via local terminals at Willesden Junction and Clapham Junction. The nearest local freight terminal is at Paddington.

Paddington is currently used for inbound construction supplies, predominantly aggregates for concrete and road construction.

The chief issue surrounding the use of rail is the redundancy involved in transporting materials from the local terminal at Paddington to the site. It should be noted that due to this stage of the journey the benefits of rail freight are negated by the requirement to run an empty lorry to the terminal to pick up the goods for site delivery. In addition this method involves double handling of goods which will likely add offset some of the carbon footprint savings achieved. It can be concluded that local traffic impact from the construction of the building will remain unchanged should rail freight be used and is largely negated by the proximity of the local concrete batching plant.

Canal: The River Thames is within –2.9 – 3.5 miles from Agar Grove site with network of canals. We would therefore conclude that due to the lack of local operational wharves within the vicinity of the site that shipping is a non-viable method of freight transportation.



4.3 Local Resourcing of Materials

The use of locally sourced materials to reduce transportation miles has been reviewed and the build contractors will, wherever financially possible, source materials from within the Home Counties to avoid unnecessary freight usage. There are three main types of materials used in the construction: concrete, steel, external cladding. The steel can be resourced from within the UK but it is unlikely to be resourced within London. Concrete should be resourced from the nearest batching plant to the site (subject to the cost being competitive) and we note that Tarmac and London Concrete have numerous batching plants in and around London. Most large suppliers of concrete already ship all their aggregates by rail and sea to reduce road usage.

The external glazed units and brickwork panels are unlikely to be sourced locally, mainly due to the lack of a UK based suppliers and manufacturers, however sourcing locally will be a priority for the project where possible.

4.4 Plant Equipment

The following table provides an indication of the typical plant that will be used during the demolition and construction works on Agar Grove Estate.

Plant & Equipment	Demolition	Substructure	Superstructure	Services & Finishes
Compressors	√	√	√	√
Concrete crusher – Off Site	√	X	X	X
Concrete formwork	X	√	X	X
Concrete & screed pumps	X	√	√	√
Cutters, drills & small tools	√	√	√	√
Dumpers	√	√	X	X
Excavators/breakers	√	√	X	X
Flatbed articulated lorry	√	√	√	√
Flatbed lorry	√	√	√	√
Forklift	√	√	√	√
Floodlights	√	√	√	√
Hoarding & temporary fencing	√	√	√	√
Hydraulic benders & cutters	√	√	√	X
Hydraulic high reach machine	√	X	X	X
Hydraulic working platform	√	X	√	√
Large low loader	√	√	√	√
Large rigid lorries	X	√	√	√
Loading shovel	√	X	X	X
Lorries/vans	√	√	√	√
Mobile cranes	√	X	√	√
Mobile lorry mounted concrete	√	√	√	X
Mobile lorry mounted crane	√	√	√	√
Passenger/goods hoist	X	X	√	√
Piling rig	X	√	X	X
Poker vibrator	X	√	√	X
Ready mixed lorry concrete lorry	X	√	√	X
Rollers	√	√	X	X
Scaffolding, edge protection, mobile Platforms & cradles	√	√	√	√
Scissor lifts	√	X	√	√
Skips	√	√	√	√
Site cabins & welfare facilities	√	√	√	√
Tipper lorry	√	√	X	X
Tower cranes	X	√	√	√
Wheel washing	√	√	X	X
Muck away lorries	√	√	X	X
Telescopic Handlers	X	√	√	√
Tracked Mobile Crane	√	√	√	X
Power Generator	√	√	√	√
Small hand held plant	√	√	√	√

5 Waste Management and Disposal

Waste will be generated during all stages of the demolition and construction works. Major sources of waste during the construction stage are:

- Demolitions spoil: hazardous materials, concrete, brick rubble, steel, wood etc.
- Packaging: plastic, pallets, expanded foams
- Waste materials generated from inaccurate ordering, poor usage, badly stored materials, poor handling and spillage
- Dirty water for example from site runoff containing silt

We propose the build contractor to develop detailed proposals for the removal and management of solid waste created during the demolition and construction works, will form the Site Waste Management Plan for the works.

All relevant sub-contractors will be required to investigate opportunities to minimise waste arising at source and, where such waste generation is unavoidable, they will be required to maximise the recycling and reuse potential of demolition and construction materials. Wherever feasible, such arising will be dealt with in a manner that reduces environmental effects and maximises potential reuse of materials. Recycling of materials will primarily take place off-site where noise and dust are more easily managed and less likely to impact on the occupants of surrounding properties.

A Site Waste Management Plan (SWMP) will be established in order to identify processes required. Waste could potentially be collected daily from site by means of skip or waste vehicles. Waste transfer notes will be held by the build contractor and will fully describe the waste in terms of type, quantity and containment in accordance with relevant regulations.

Recycling of materials will primarily take place off-site where noise and dust are more easily managed and less likely to impact on the occupants of surrounding properties.

5.1 Management of Spillages and Site Runoff

Most spills can be prevented with careful handling, storage and use of potential pollutants. Good practice measures that will be undertaken include:

- All flues, oils and chemicals will be stored in secure, appropriate containers, with labels clearly identifying the product
- All products will be kept in secure storage with integral drip trays (e.g. COSHH cages)
- Containers with more than 200 litres of oil-based products will be provided with secondary containment (e.g. interceptor drip trays) capable of holding 110% of the volume of the container, or 25% of combined volume of the containers, whichever is greatest. They should also be located away from any surface water drains
- Mobile fuel bowsers will be kept locked when not in use, and any hoses stored within the secondary containment.
- All hoses associated with delivery of oil or fuel have automatic cut off devices, and will be kept within the secondary containment.

In the event that a spill occurs, the impact will be minimised by prompt and effective action. Spill kits including granules, absorbent pads, absorbent booms and hazardous waste bags shall be provided along with training of staff in their use. All used spill kit material will be disposed of as hazardous waste. Measures for dealing with emergency spillages will need to be included in an Environmental Management Plan.

The operation and refuelling of plant can cause contamination of ground, ground water and surface waters from leaks, drips or spills. Drip trays (interceptor drip trays) will be used under generators, pumps and other plant equipment as determined necessary to protect the ground from oil/ fuel contamination. Smaller, more mobile drip trays will be used when refuelling or carrying out maintenance of larger plant. Maintenance and refuelling of plant will be undertaken in designated areas, within which contingency plans will be implemented to ensure that the risk of spillage is minimised.

Interceptor drip trays will be located on flat surfaces and primed with two to four inches of clean water and drip trays will be emptied before they are moved.

5.2 Site Drainage

The control of surface water runoff during the construction phase will be based on best practice guidance provided by the Environmental Agency & CIRIA (Construction Industry Research and Information Association) with systems put in place to ensure suitable treatment and discharge of surface waters.

Surface water drainage from the Agar Grove demolition and construction site will require discharge consent from the Environment Agency with specific limits on the water quality of the discharge. A discharge consent will normally specify pH 6-9, suspended solids <200mg/1, no trace of oils or greases and no poisonous or noxious material.

In order to comply with the conditions of any discharge licence, good practice measures will be adopted including:

- Silt busters or settlement tanks will be used to reduce silt levels from dewatering prior to discharge
- Keeping all sources of potential pollutants (e.g. flues, chemicals) away from drains on drip trays
- Underlying regular checks of quality for dewatering water will be undertaken before it is discharged to the drainage system
- All road ways and vehicle stopping areas will be sealed (for example with tarmac)
- Undertaking of concrete washout in areas with controlled drainage only (i.e. not to surface water drains)
- Surface run-off from all car park and roadway areas will be diverted to Class 1 oil separators with adequate capacity for the anticipated flows. These Class 1 separators will be designed to the standards outlined within Environment Agency Pollution Prevention Guidelines No.3
- Road sweeping to control mud on roads

6 Environmental Management

6.1 Environmental Control Measures

The measures described below will be imposed to minimise adverse environmental effects during demolition and construction. An Environmental Management Plan, detailing these environmental control measures will be prepared and adopted and inter alia will include sections on: noise, vibration, air quality, water quality, surface quality (prevention of contamination of ground surface), site transportation and traffic management, visual intrusion and waste management. It is currently known that the following will form part of the Environment Management Plan.

Plant and Equipment

Modern excavators equipped with the latest attachments for crushing and pulverising concrete will keep the use of impact breaking to a minimum

A regularly serviced modern lorry fleet will be used for the collection of waste, transportation of plant and equipment

Use of gas powered generators rather than diesel if possible and use of electric equipment and plant rather than diesel/petrol where practicable

6.2 Minimising Noise and Vibration

General Provision

Noise and vibration levels will be controlled and consent sought the London Borough of Camden under the Control of Pollution Act 1974, Environmental Protection Act 1990 and local policy and guidelines to ensure that the Agar Grove Estate is operated in a way which is not detrimental to the amenities of residents, and neighbouring properties.

Environmental monitoring measures to be adopted during demolition and construction phase to be included in the Environmental Management Plan. The build contractor will engage the services of a Specialist Consultant to undertake the environmental monitoring of noise and vibration.

All demolition and construction on-off site activities will be undertaken in accordance with Planning Conditions, Section 106 Agreements, construction site rules, agreed working hours and other constraints.

The Considerate Constructors scheme will be adapted to supplement the procedures outlined above.

Demolition and Construction Noise & Vibration

Estimates of the impact of demolition and construction noise and vibration relating to the Agar Grove Estate would be based on the latest available information. In addition to the normal site noise reduction methods, it must be noted that the physical size of this development is such that the site-generated noise will be attenuated considerably at the perimeter of each phase of the works and the site boundaries. This observation, whilst may be of some comfort to residents, neighbouring properties, commercial and retail enterprises, in no way reduces the contractor's duty to minimise noise generation at source.

Demolition, piling works, excavations, and construction of the frame and cladding will be the most significant construction site activities. The noisiest activities are likely to be piling, excavation, and construction of s l a b s . Although concreting operations will also give rise to noise, the levels generated would not be considered to be significant.

The blocks within the proposed Agar Grove Estate, rise above the ground, there will be some noise from formwork erection but the majority of activities and plant (e.g. concrete pumping); cladding installation and internal finishes are considered to generate low noise levels. In addition, the steel reinforcing to the structures could be potentially being prefabricated as much as of a possible to avoid on-site cutting.

- The monitoring regime will be reviewed with the Council Officers and the appropriate threshold and action levels agreed for the noise and vibration parameters that are to be measured, both pre & post construction. Monitoring locations will be established on and around site and on delivery routes where necessary. On a regular basis the site team will produce reports and arrange meetings with the Council Officers and Health & Safety Executive (HSE), if appropriate and other agreed stakeholders to review

the reports, monitor the procedures and review the action plans.

- Weekly monitoring will be carried out both during demolition and construction activities, from previously established and agreed monitoring stations around the development, to ensure that action levels set and agreed have not been exceeded
- The contractor will develop a neighbourhood comment and complaint procedure for recording and dealing with complaints from local residents
- The build contractor will display regular newsletters and project contact details posted on the notice board in prominent locations around site. This will give local residents a point of contact and should allow to address any nuisance issues that may arise
- Detailed construction and procurement programmes will be available in advance of work commencing on site
- Before commencement of works, all site boundaries that may be sensitive to noise or vibration will be identified. All actions that need to be undertaken in order to reduce noise and vibration will be incorporated in method statements and risk assessments.
- Careful consideration should be considered for plant selection, construction methods, programming, implementing a “noise and vibration protocol”, which outlines quiet periods, monitoring frequency and action levels.
- Noise emission and reduction measures should be considered in advance and noise should be attenuated considerably at site in accordance with both legislation and regulations
- Where the potential for noise or vibration exists “Best Practicable Means” will be used to reduce noise and vibration to achieve compliance consistent with the recommendations of BS 5228
- Unless otherwise agreed with Council Officers, noise and vibration values will be predicted in accordance with the methods set out in and the requirements of BS 5228 – Noise Control on Construction and Open Sites. In addition, the guidance and procedures given in BS 5228 Parts 1, 2 and 4 will be complied with. In the case of vibration, reference will also be made to BS 7385 and BS 6472
- In addition, specific “quiet hours of working” could be written into all contract binding agreements (i.e. those set out under Section 61 prior consent agreements) to be made between the development partners, Camden Council Officers, the build contractors sub-contractors and suppliers in order to minimise noise and vibration levels on the whole site
- Design and use of 2.4m high site hoardings and screens/noise barriers, to provide acoustic screening. The hoardings may be moved from time to time to suite the progress of the works
- Choice of routes and programming for the transport of construction plant and materials should be considered
- All demolition and construction activities, which have the potential to generate significant amounts of noise and/or vibration, will be undertaken during daytime periods
- As a general rule, where residential occupiers are likely to be affected by noise or vibration, it is expected that works of demolition and construction phase shall be carried out during normal working hours:-
 - 08.00 to 18.00 hours Monday to Friday; and
 - 08.00 to 13.00 hours on Saturdays; and
 - no working on Sundays or Bank Holidays
- Where it is necessary for work to be carried out outside normal working hours, they will be required to demonstrate and justify the need to do so in advance. Full details of proposed works shall be submitted to Camden Council in writing for approval prior to commencement
- Provision of silent vibration free piling techniques should be utilised for driving of steel sheet piles to perimeter of site boundary
- Loading excavators at ground level will reduce movement vibration by remaining static; tipper lorries with rubber tyres will be loaded from a centralised heap of rubble
- Travelling on a site road of compacted hard core will further reduce the vibration of the lorries travelling across the site
- The utilisation of tipping skips lowered to the ground by a crane will reduce the ground effect vibration
- Effective silencers will be fitted to the exhaust system of all plant and equipment
- Use mains generated electricity instead of diesel generators should be considered
- Minimise the use of vehicle reversing alarms and it is recommended that the contractor set up a one-way driving system on site
- Engines will be switched off on-site when not in use, quieter plant will be used and regular plant maintenance will be undertaken
- Radios and other audio equipment will be prohibited on site

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- The utilisation of a two-way radio communications system will be implemented to reduce the need for shouting
 - Maintenance of equipment noise register will be updated regularly and kept on site
 - Proper instruction and supervision of staff will be provided in order to reduce noise and vibration levels
 - All operatives, management and visitors will wear personal protective equipment (PPE) on site

6.3 Air Quality Management

- The utilisation of modern fuel-efficient machines will reduce the emission of exhaust gases into the atmosphere.
- All exhaust systems will be fitted with catalytic converters.
- Plant and equipment will be regularly serviced with air filters which will be regularly replaced or washed.
- The COSHH survey and report will identify any substances likely to cause offensive odours. A risk assessment will be produced and effective control measures employed to prevent the release of odours accordingly.

6.4 Surface Ground Controls

- To ensure the immediate area external to the site, including the site entrances and adjacent road/footpath, is free from dust or debris, it will be subject to regular sweeping and washing using a combination of manual and mechanical means.
- Additional care will be taken where there is the potential for surface contamination, for example the refueling of plant and equipment with diesel and the maintenance of plant and equipment involving the use of engine and hydraulic oils. This would be undertaken within designated areas, away from drainage points and traffic and plant routes.
- All diesel fuel will be stored in double skinned over-capacity bowers that will be refueled at designated times by bulk delivery tankers, reducing the total number of traffic movements
- There will be effective usage of absorbent granules on the ground in key locations.
- All engine and hydraulic oils will be provided within reusable plastic containers.

6.5 Visual Intrusion

- At the perimeter of site a hoarding will be erected to reduce the visual impact of the demolition and construction activities at the ground level, as well as to secure the site. The hoarding will be approximately 2.4m high and adequately lit. All plywood hoarding will be painted and maintained in a clean and safe condition by regular cleaning and removal of all graffiti or fly-posters.
- The buildings being demolished will be clad with plastic reinforced sheeting to reduce visual impact of the demolition works at high level. All sheeting to be used for buildings will be a grey/off white colour.

Appendices

Appendix A

- Indicative Draft Construction Programme - dated (26.11.2013)

		Prog No. AG/CP/105		Agar Grove Draft Construction Programme								<div>EC HARRIS</div> <div>BUILT ASSET</div> <div>CONSULTANCY</div>																
		Run Date: 26-Nov-13 (09:09)																										
		Data Date: 21-Oct-13										Page 1 of 4																
Activity ID	Activity Name	Duration (work wks)	Start	Finish																								
Agar Grove Master Programme																												
Demolition & Construction																												
Phase 1 (Plot A) (Social 36 No.)																												
Site Preparation																												
AG-2090	Commence Phase 1	0	06-Oct-14																									
AG-1840	Erect Hoarding & Secure Site	3	06-Oct-14*	24-Oct-14																								
AG-1860	Asbestos Removal	3	27-Oct-14	14-Nov-14																								
AG-1055	Demolish Broadstone Building	6	17-Nov-14	09-Jan-15																								
AG-1065	Clear Site	2	12-Jan-15	23-Jan-15																								
Piling & Ground Works																												
AG-1075	Piling	4	26-Jan-15	20-Feb-15																								
AG-1085	Excavate & Construct Foundations	10	09-Feb-15	27-Apr-15																								
Superstructure & External Finishes																												
AG-1770	Grd to 1st Floor incl. 1st Floor	4	14-Apr-15	12-May-15																								
AG-1780	1st to 2nd incl. 2nd Floor	4	13-May-15	10-Jun-15																								
AG-1790	2nd to 3rd incl. 3rd Floor	4	11-Jun-15	08-Jul-15																								
AG-1800	3rd to 4th incl. 4th Floor	3	09-Jul-15	29-Jul-15																								
AG-1810	4th to 5th incl. 5th Floor	3	30-Jul-15	19-Aug-15																								
AG-1250	Cladding & Roof Finishes	15	30-Jul-15	12-Nov-15																								
AG-1820	5th to 6th incl. 6th Floor	3	20-Aug-15	10-Sep-15																								
AG-1830	6th to Roof incl. Roof	4	11-Sep-15	08-Oct-15																								
Internal Finishings & Completions																												
AG-1110	Finishings	22	11-Sep-15	25-Feb-16																								
AG-1120	Completion & Handover	8	26-Feb-16	29-Apr-16																								
AG-1550	Decant Manston, Sherborne & Sturminster (34 No.)	2	25-Apr-16	09-May-16																								
External Works																												
AG-2000	External Works to Plot A	19	13-Nov-15	15-Apr-16																								
Phase 2 (Plots F, G & H) (Social 34 No. & Private 23 No.)																												
General Phase 2 Activities																												
AG-1850	Re-align Phase 1 Hoardings & Erect Hoarding for Phase 2	3	10-May-16	31-May-16																								
AG-1930	Asbestos Removal	4	01-Jun-16	28-Jun-16																								
AG-1510	Demolish Manston, Sherborne, Sturminster & Shop	12	29-Jun-16	21-Sep-16																								
AG-1890	Clear & Level Site	6	24-Aug-16	05-Oct-16																								
Plot G - 23 No. Private Dwellings																												
Piling & Ground Works																												
AG-2040	Piling	2	22-Sep-16	05-Oct-16																								
AG-1990	Foundations	8	06-Oct-16	30-Nov-16																								
Superstructure & External Finishes																												
AG-2210	Grd to 1st Floor incl. 1st Floor	4	17-Nov-16	14-Dec-16																								
AG-2220	1st to 2nd incl. 2nd Floor	3	15-Dec-16	18-Jan-17																								
AG-2230	2nd to 3rd incl. 3rd Floor	3	19-Jan-17	08-Feb-17																								
AG-2240	3rd to 4th incl. 4th Floor	3	09-Feb-17	01-Mar-17																								
AG-2250	4th to 5th incl. 5th Floor	3	02-Mar-17	22-Mar-17																								
AG-2260	5th to Roof incl. Roof Slab	3	23-Mar-17	12-Apr-17																								
AG-2010	Cladding & Roofing	12	23-Mar-17	26-Jun-17																								
Internal Finishings & Completions																												
AG-2020	Finishings	22	13-Apr-17	26-Sep-17																								
AG-2030	Completion & Handover Plot G	4	27-Sep-17	24-Oct-17																								
External Works																												
AG-2270	External Works to Plot G	12	27-Jun-17	15-Sep-17																								
Plot H - 20 No. Social																												
Piling & Ground Works																												
AG-2050	Piling	3	06-Oct-16	26-Oct-16																								
AG-1940	Excavate & Construct Foundations	10	27-Oct-16	18-Jan-17																								
Superstructure & External Finishes																												

Layout: Construction

Filter: TASK filter: AG-Construction.

AG-1 Agar Grove Master Programme

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